

# **User Installation Manner**

30/MA1000K060

Version:A05

# Contest

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## 1. Modification Record

The Document Version A00 ( 2020.7.23 )

*The First release*

The Document Version A01 ( 2020.10.12 )

Add REPO connect

The Document Version A02 ( 2020.11.30 )

Add the disassembly and assembly instructions of short circuit metal sheet for Hi-pot test.

The Document Version A03 ( 2020.12.30 )

Add warning symbols and change the debugging operation guide

The Document Version A04 ( 2021.1.14 )

Change 3.2 signal definition

The Document Version A05 ( 2021.4.08 )






Change the AC access method in the Product parameters

## 2. Safety Precautions




### 2.1 Statement

When any of the following conditions occur, the company does not assume any responsibility :

- Use of equipment in harsh environments is beyond the scope of this manual ;
- Use the equipment in an environment that exceeds the relevant standards ;
- Change product or modify software code without authorization ;
- Failure to follow the operating instructions and safety warnings in the product and documentation;
- Equipment damage caused by humans.

	Note! Failure to follow the warnings in this manual may result in personal injury.
	There is a danger of high voltage and electric shock!
	Please refer to the operating instructions
	Please after 5 minutes the inverter is turned off and disconnected to ensure safety, install the inverter. Otherwise there is a danger of electric shock.
	Protective grounding

### 2.2 General safety notes

 Warning	When carrying the equipment by hand, wear protective gloves to prevent cuts from sharp objects.
 Attention	Before connecting the cable, confirm that the cable label is correct.
 Dangerous	High voltage operation may cause fire or electric shock accidents. The installation and routing of AC cables must comply with local laws and regulations.

### Electrical Safety

- Electrical wiring must be strictly in accordance with the electrical schematic ;

- Before powering up, please make sure the wiring is correct ;
- Use professional tools for high voltage and AC operation ;
- When the equipment needs to be moved or rewired, the power supply shall be disconnected and the operation shall be conducted after the equipment is completely powered off;

### **Personnel safety**

- Staff must be qualified for relevant operations when performing various live operations ;
- When installing, overhauling, etc., relevant personnel should take protective measures, such as wearing anti-static overalls, wearing anti-static gloves, etc., and removing conductive objects such as jewelry and watches to avoid electric shock or burns.

### **Operational safety**

- Please read the "Safety Precautions" carefully before using this product to ensure correct and safe use;
- Please follow the instructions when operating ;
- Avoid using this device in direct sunlight, rain or humidity ;
- Do not place the device in a fire, or near an electric heater, stove, etc. ;
- In case of fire, please use the dry powder fire extinguisher correctly.

## **2.3 Operating environment**

- Prohibit use beyond normal operating conditions  
(Normal use condition temperature : -25°C~50°C , Relative humidity : 0%RH~95%RH ; )
- Please avoid using in the following working environment.
- Direct sunlight or near a heat source ;
- Vibrating, vulnerable place ;
- Dust, corrosive and high salt spray.

## 3. Product Introduction

### 3.1 Features Size

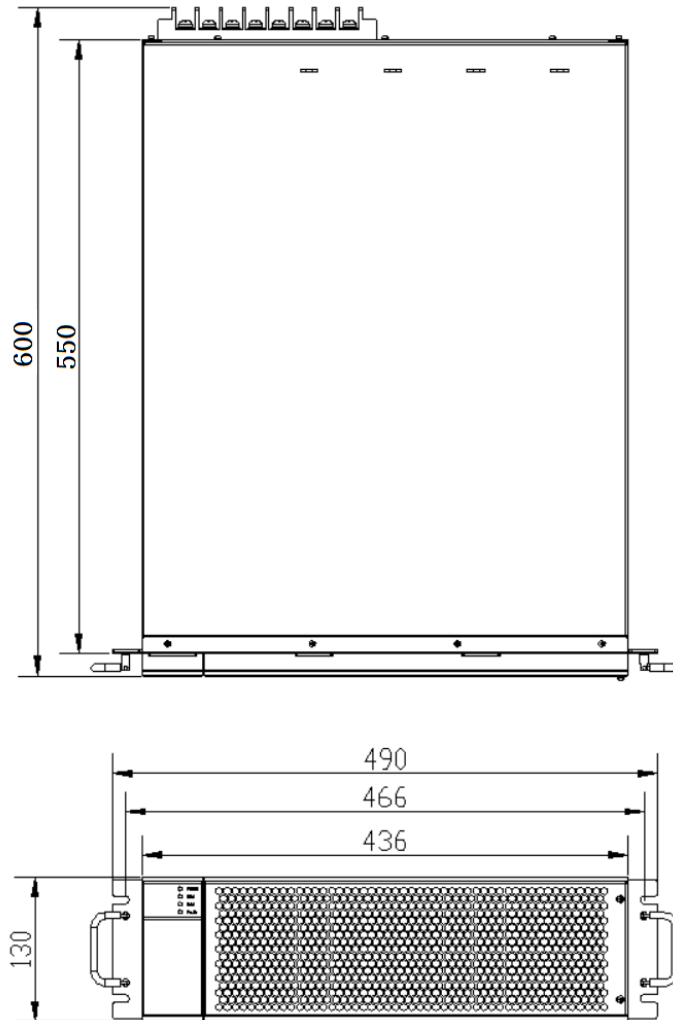


Fig 3-1 Installation Size

### 3.2 Appearance and Interface Description

#### 3.2.1 Appearance and Interface

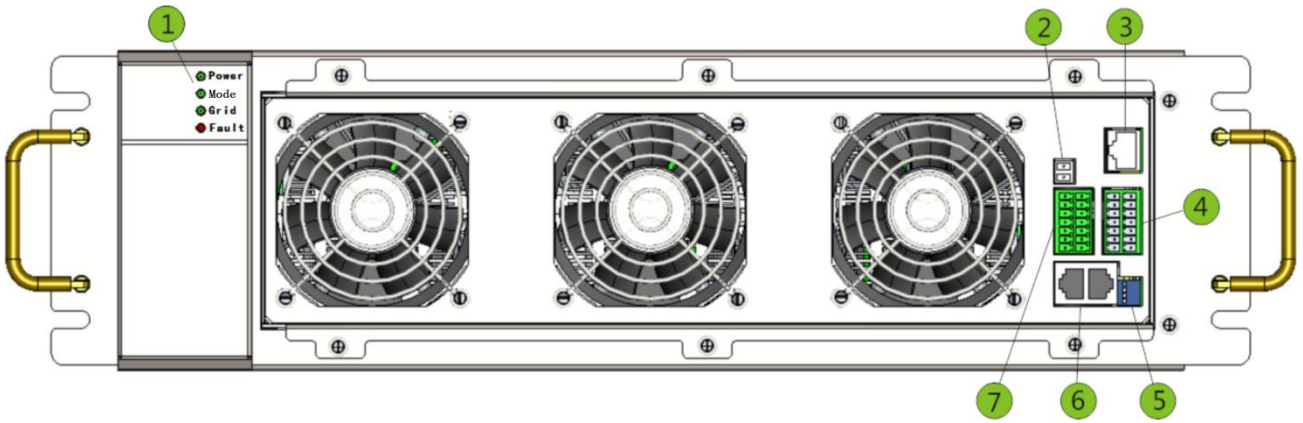


Fig 3-2 Front panel

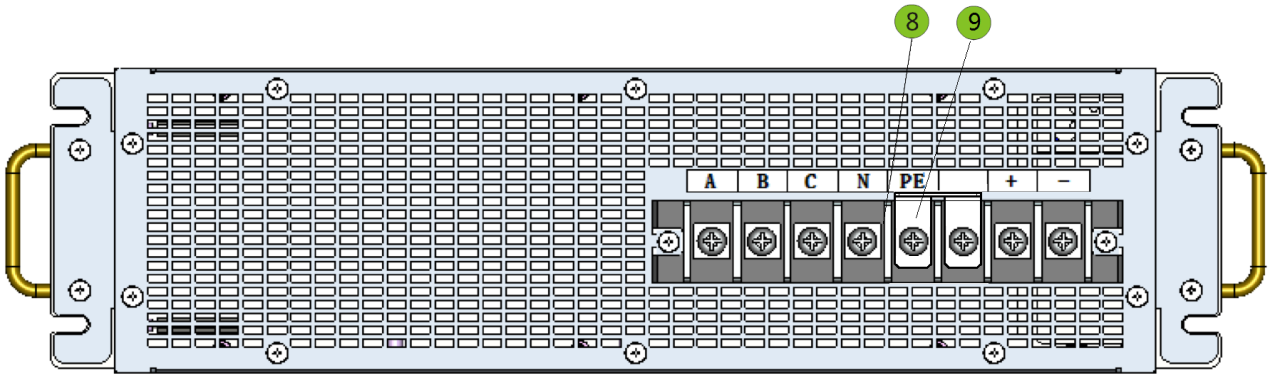
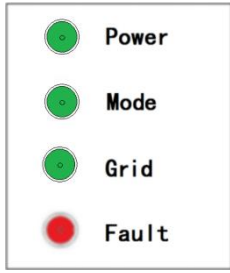


Fig3-3 Back panel

- ①LED Indicator Light
- ②Reserved Interface
- ③RJ45 Communication Interface
- ④CAN/RS485 Communication Interface
- ⑤DIP Switch
- ⑥Parallel Communication Interface
- ⑦DI/DO Interface
- ⑧ DC&AC Terminals
- ⑨PE Short circuit metal sheet

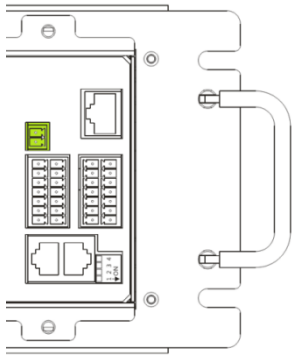
### 3.1.2.2 Interface Description

#### 1. LED Status Indicator



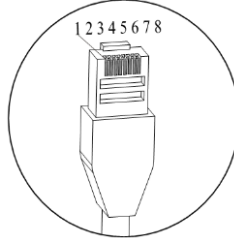
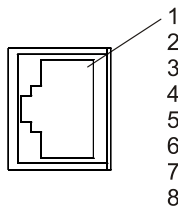
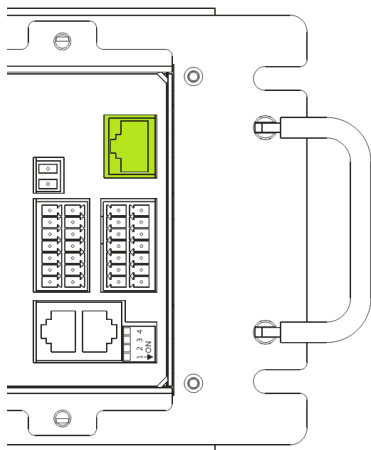
Indicator description			
Indicator light	Indicator status		State description
Power		On	System Standby
		Blink	Start
Mode		On	Standby
		Blink	Charge
		Blink	Discharge
Grid		On	Off-Grid
		Blink	On-Grid
Fault		On	System Error
		Off	No Fault

### 2. Reserved Interface



Pin	Reserved Interface
1	Reserve
2	Reserve

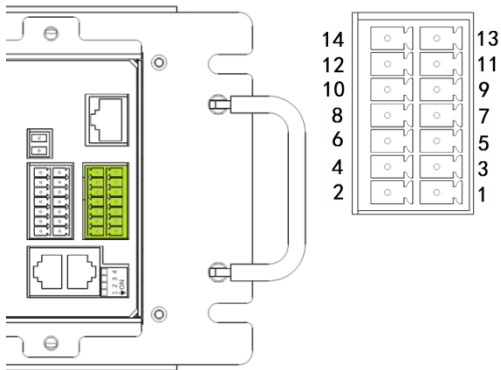
### 3. RJ45 Network Cable Interface



RJ45 Communication Interface		
Pin	Signal Definition	Cable color
1	TD+_1	Orange-white
2	TD-_1	Orange
3	RD+_1	Green-white
4	\	blue
5	\	Blue-white
6	RD-_1	green
7	\	Brown-white
8	\	Brown

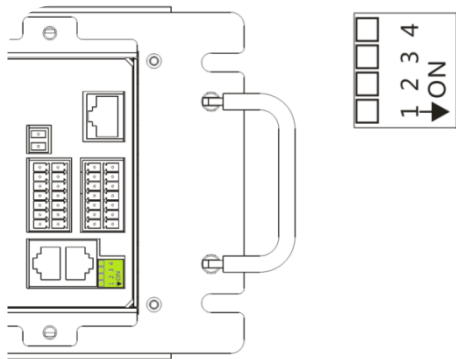


#### 4. RS485 & CAN Communication Interface



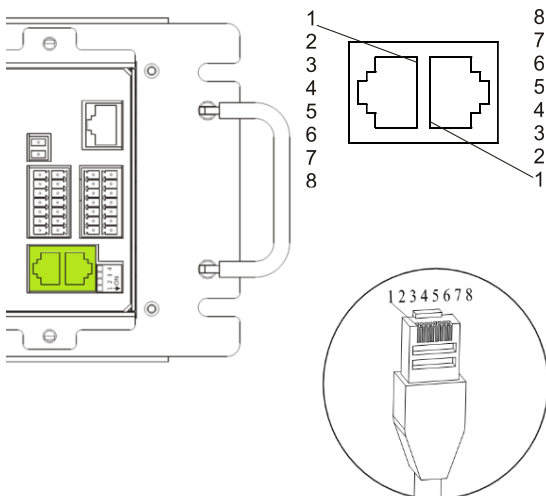
RS485 & CAN Communication Interface					
Pin	Signal Definition	Functional Description	Pin	Signal Definition	Functional Description
14	CANBH	Parallel communication	13	RS_485A+	Parallel
12	CANBL		11	RS_485A-	communication
10	CANAH	Battery communication	9	RS_485B+	EMS
8	CANAL		7	RS_485B-	communication
6	GND	Signal ground	5	RS_485C+	Meter
4	GND		3	RS_485C-	communication
2	GND		1	GND	Signal ground

#### 5. DIP Switch ( Reserve )



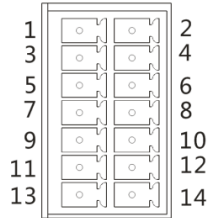
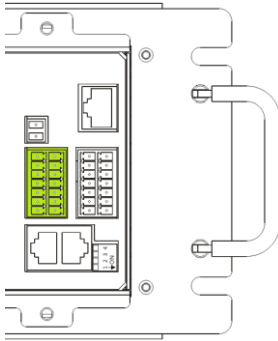
DIP switch	
Pin	Signal Definition
1	Bit0
2	Bit1
3	Bit2
4	Bit3

#### 6. Parallel Communication Interface



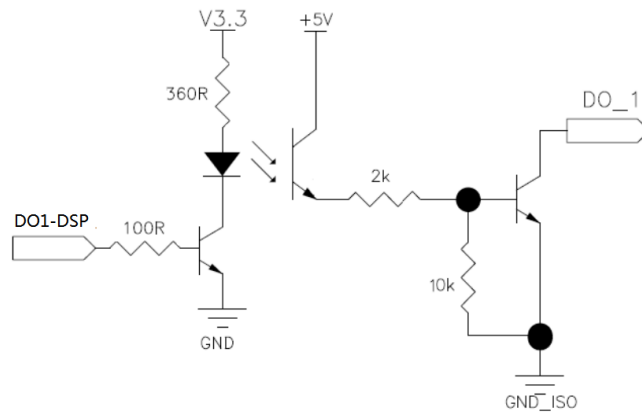
Parallel Communication Interface			
Pin	Signal Definition	Functional Description	Cable Color
1	HFSYN	High frequency synchronization signal	Orange-white
2	LFSYN	Low frequency synchronization signal	Orange
3	CANAH	Parallel CAN Communication	Green-white
4	CANAL		blue
5	CANBH		Blue-white
6	CANBL	green	
7	GND_ISO	Signal ground	Brown-white
8	Parallel_test_IN	Parallel test signal	Brown

## 7. DI/DO Signal Interface

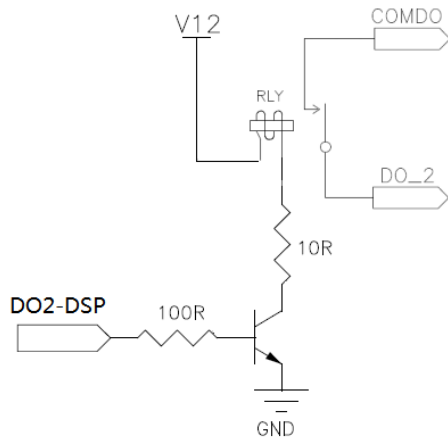


DI/DO signal interface					
Pi n	Signal definition	Functional description	Pi n	Signal definition	Functional description
1	CANBH	Parallel communication	2	DI_1	REPO
3	CANBL	Parallel communication	4	DI_2	/
5	RS485+	Parallel communication	6	DI_3	/
7	RS485-	Parallel communication	8	DI_4	On/Off-Grid Signal
9	DO_2	Fault Signal+	10	GND_ISO	DI/DO Signal Ground
11	DO_1	On/Off-Grid handshake signal	12	GND_ISO	
13	COMDO	Fault Signal-	14	GND_ISO	

### NOTE1: DO\_1 Internal Circuit Architecture

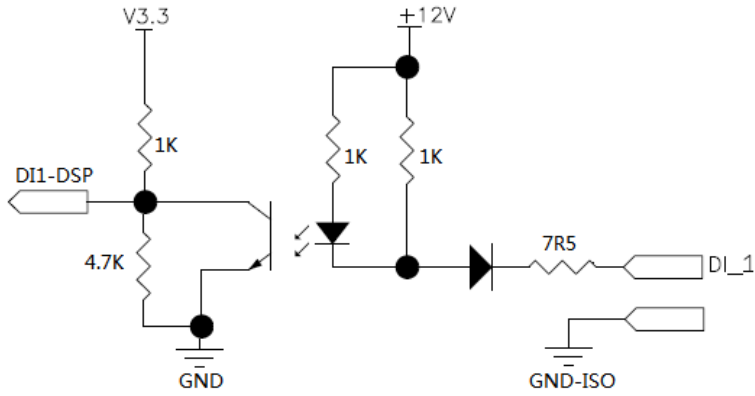


### NOTE2: DO\_2 Internal Circuit Architecture

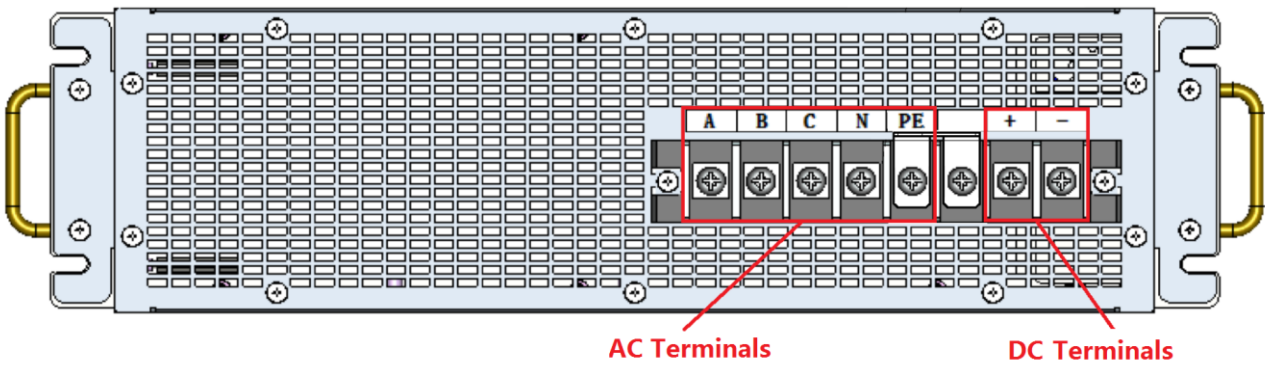


COMDO, DO\_2 OPEN-----NO Fault  
 COMDO, DO\_2 Close-----Fault

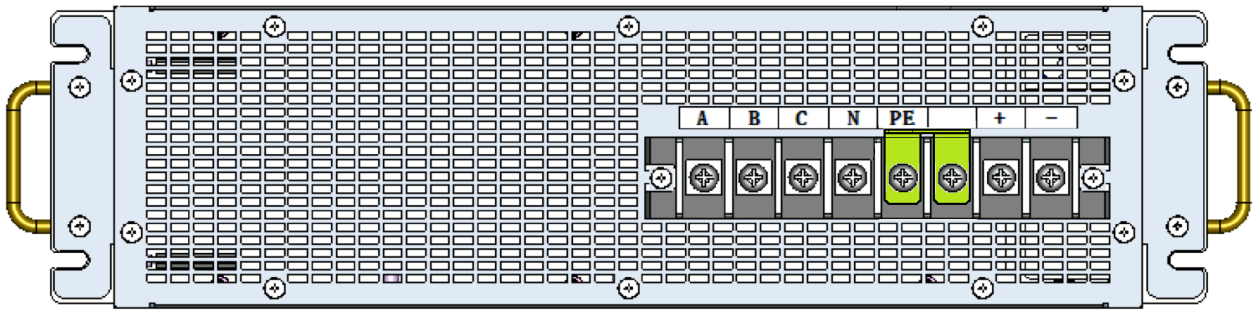
**NOTE3:** DI\_1 , DI\_2 , DI\_3 , DI\_4 Internal Circuit Architecture



8. DC&AC Terminals



9. PE Short circuit metal sheet



## 4. Installation

### 4.1 Installation Environment

- The equipment must be installed in a well-ventilated area, away from water, heat, corrosives, and flammable and explosive materials;
- It is forbidden to install in the environment with direct sunlight, dust, volatile gas, corrosive substances and excessive salt;
- It is forbidden to install the equipment in the working environment with metal conductive dust;
- Ensure that the air inlets and outlets of the front and rear panels are smooth.

### 4.2 Unpacking and checking

- Unpack the package, visually inspect the appearance of the machine, and check whether it is damaged by collision during transportation.
- According to the delivery list , check whether the accessories are complete.

Table 4-1 Packing List

Annex name	Number	Unit
AC/DC Module	1	PCS
RJ45 cable	1	PCS
Quickly Install Guide	1	PCS
User Manual	1	PCS
Screw M6*16	4	PCS
Connector ( 7pin )	4	PCS
OT Terminal	7	PCS

## 4.3 Power cable specifications

Table 4-2 Recommend cable specifications

Rate Power	Wiring Port	Voltage Range	External breaker	Wiring Cross-sectional area	Terminal Type	Screw tightening torque
30kW	AC	320-460Vac	63A	8mm <sup>2</sup>	OT-8mm <sup>2</sup> -M6	2.8N·m
	DC	600-1000Vdc	63A			
60kW	AC	320-460Vac	125A	16mm <sup>2</sup>	OT-16mm <sup>2</sup> -M6	2.8N·m
	DC	600-1000Vdc	100A			

## 4.4 Installation

**4.4.1** Place the device on the rails of the cabinet , Use M6×16 panel screws to fix the device to the rack through the mounting holes on the mounting ears.

**Note: Make sure that the frame is reliably grounded before operation.**

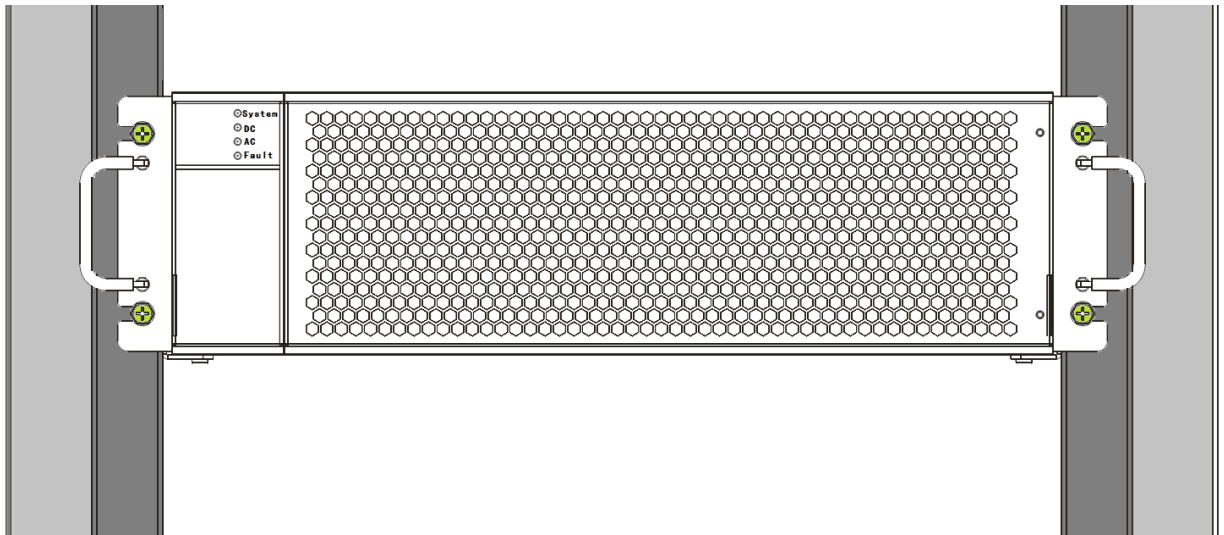


Figure 4-1 Stand-alone rack installation

#### 4.4.2 Power cable connection

Connect the AC side cables and DC side cables according to the label definition.

AC side: "A" , "B" , "C" , "N" , "PE"

DC side: "+" , "-"

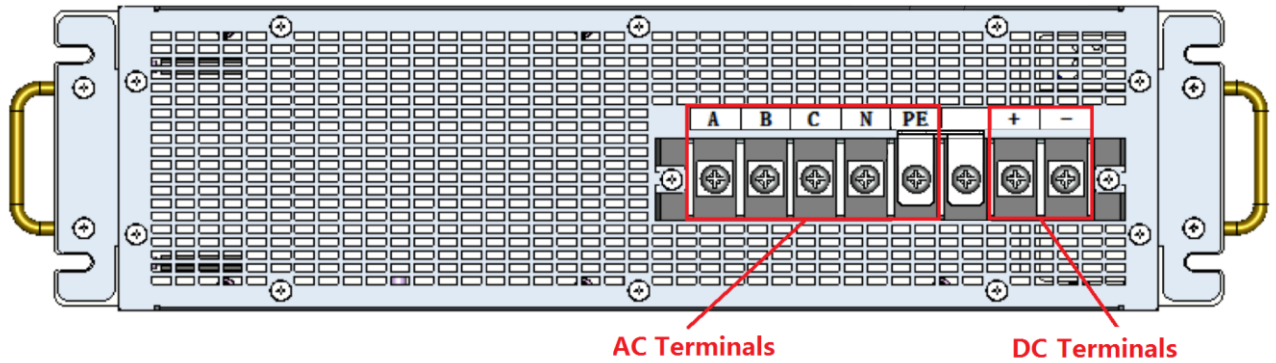


Figure 4-2 Cable connection schematic diagram

**Note :** PE has been connected to the shell inside.

**If the Pressure test is required after the assembly, the short circuit block needs to be removed. After the Pressure test, the short circuit block shall be installed back to its original position!**

### 4.4.3 Communication cable connection

#### 4.4.3.1 Remove the front cover

A. Remove the dust cover screw.

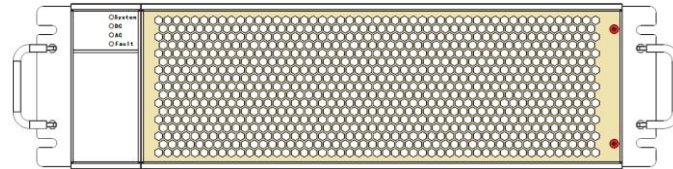


Figure 4-3

B. Slide the dust cover to the right.

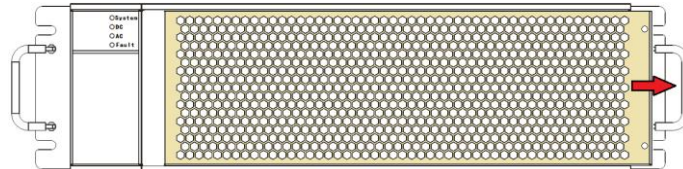


Figure 4-4

c. Remove the dust cover.

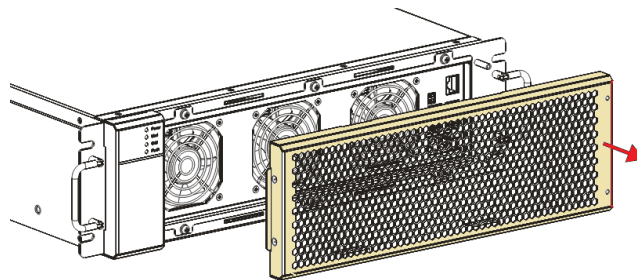


Figure 4-5



### 4.4.3.2 Communication cable connection

Users can choose RJ45 network or RS485 communication

1. RJ45 network communication: One end of the network cable is inserted into the module RJ45 interface, and the other end is inserted into the computer RJ45 interface.

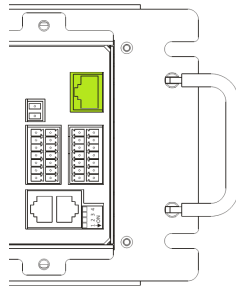


Figure 4-6

RS485 communication : Users need to prepare 485 to USB module by yourselves , connect the RS485+ , RS485- to a 7PIN connector, connect the USB to the computer USB interface .

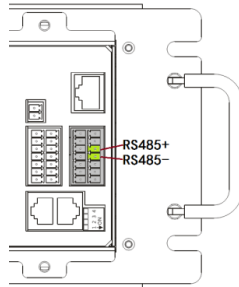
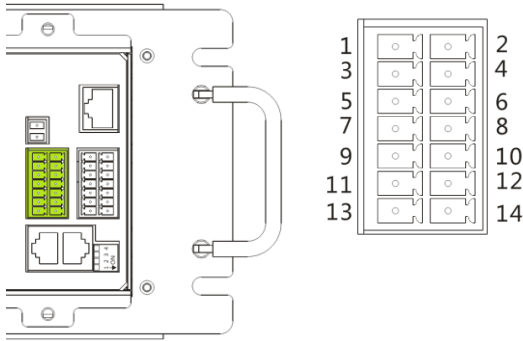


Figure 4-7

### 4.4.3.3 Connect other cables

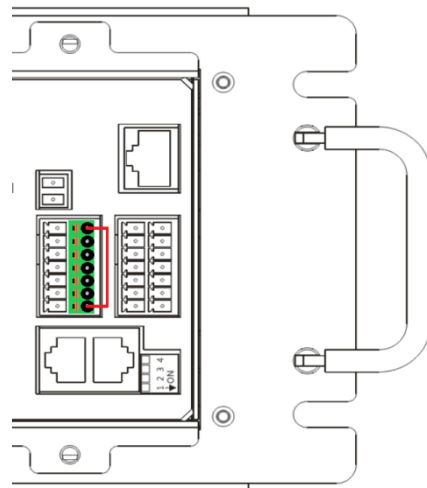
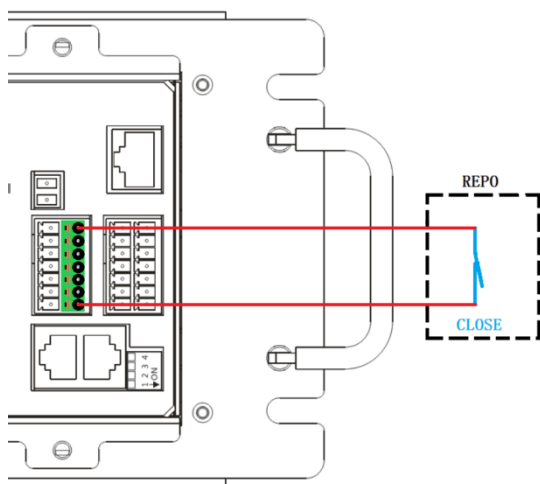


DI/DO signal interface					
Pi n	Signal definition	Functional description	Pi n	Signal definitio n	Functional description
1	CANBH	Parallel communication	2	DI_1	REPO
3	CANBL	Parallel communication	4	DI_2	/
5	RS485+	Parallel communication	6	DI_3	/
7	RS485-	Parallel communication	8	DI_4	On/Off-Grid Signal
9	DO_2	Fault Signal+	10	GND_ISO	DI/DO Signal Ground
11	DO_1	On/Off-Grid handshake signal	12	GND_ISO	
13	COMDO	Fault Signal-	14	GND_ISO	

**NOTE:** DI\_1(REPO), GND\_ISO must be short circuited, otherwise the equipment cannot be started.

A. Connect REPO (normally closed)

B. Use the connector provided by the manufacturer



#### 4.4.3.4 Install the front cover

##### A. Buckle up the dust cover

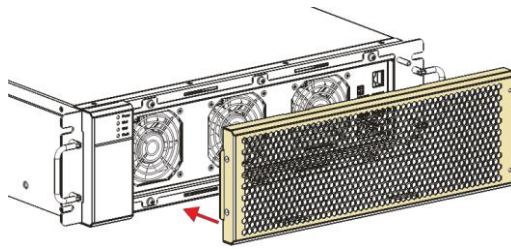


Figure 4-8

##### B. Slide the dust cover to the left

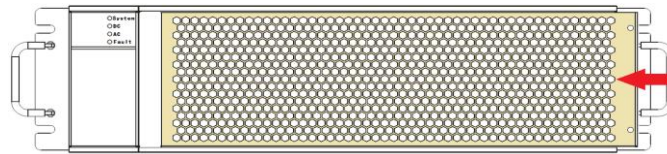


Figure 4-9

##### C. Fix the dust cover screw

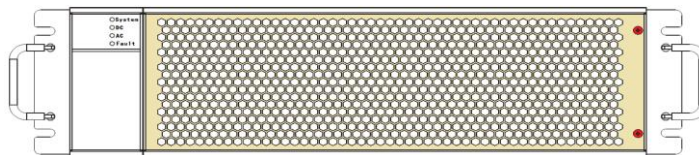


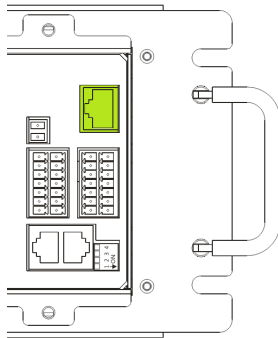
Figure 4-10

## 5. Software Operation Guide

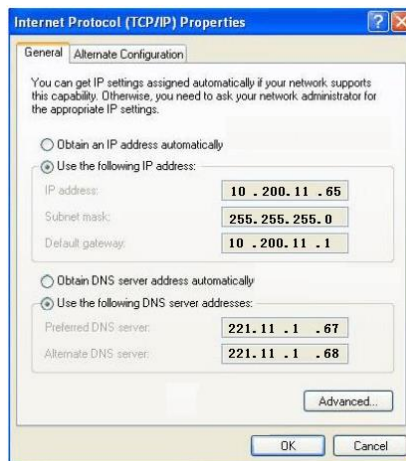
### 5.1 Communication Connection

#### 5.1.1 Select RJ45 Communication

a. First insert the network cable into the RJ45 network cable interface, and then connect the other end to the RJ45 interface of computer.



b. Set the computer IP address as follows, click OK to save

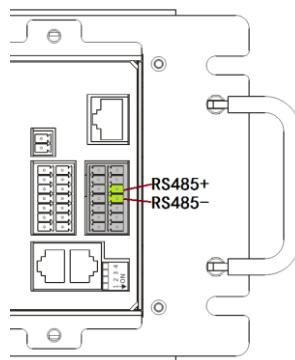


c. Confirm that the network cable is connected, and then power on the module. When the product indicator lights up, open the host computer file GSSTESToolPlatform.exe.

d. Please refer to "Software Debugging Manual" for host computer debugging.

### 5.1.2 Select RS485 Communication

a. Users need to prepare 485 to USB module by yourselves , connect the RS485 to a 7PIN connector (RS485+ , RS485-), connect the USB to the computer' s USB interface .





b. Confirm that the cable is connected properly, and then power on the module. After the indicator lights up, open the host computer file GSTESToolPlatform.exe

d. Please refer to "Software Debugging Manual" for host computer debugging.

## 6. Maintain

### Must Turn Off The Power ! ! !

 Dangerous	When the system is running, there are dangerous voltages in the equipment. Non-professionals should not operate and maintain it.
 Dangerous	When performing system cleaning, electrical connection, grounding reliability and other maintenance, perform system power-off operations, otherwise there is a risk of electric shock or fire

**During on-site maintenance, the module routine function checks mainly including the following aspects:**

- a. Check the working status of the module;
- b. Check the operating mode switching of the module;
- c. Check the indicator display of the module;
- d. Check the air filter of the module, if the dust accumulation is serious, replace the air filter;
- e. Check whether the connecting cable is normal.

## 7. Fault list

	<b>Fault type</b>	<b>The reason</b>	<b>Repair Method</b>
1	Module A1/B1/C1 phase over current alarm	load too much	Reduce load
2	Module A2/B2/C2 phase over current alarm	load too much	Reduce load
3	AC output short circuit fault	AC side wiring short circuit	Check terminal wiring
4	Fan 1/2/3 failure	The ambient temperature exceeds the limit or the fan is not running normally	Check device fan
5	Grid phase sequence alarm	AC side wiring sequence error	Adjust the phase sequence
6	Battery under-voltage alarm	DC input voltage is lower	Check if the DC input voltage exceeds the limit
7	Battery over voltage alarm	DC input voltage is higher	Check if the DC input voltage exceeds the limit
8	Bus total voltage lower alarm	Bus voltage exceeds the limit during operation	Check the device parameters, whether the bus voltage setting exceeds the limit
9	Bus total voltage Higher alarm	Bus voltage exceeds the limit during operation	Check the device parameters, whether the bus voltage setting exceeds the limit
10	Grid frequency Lower alarm	Grid frequency is lower	Automatic recovery after the grid frequency returns to normal
11	Grid frequency Higher alarm	Grid frequency is higher	Automatic recovery after the grid frequency returns to normal
12	Grid voltage Lower alarm	Grid voltage is lower	Automatic recovery after the grid voltage returns to normal
13	Grid voltage Higher alarm	Grid voltage is higher	Automatic recovery after the grid

			voltage returns to normal
14	Module A1/B1/C1 over temperature alarm	<ol style="list-style-type: none"> <li>1. The ambient temperature is higher.</li> <li>2. Filter Serious dust accumulation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower the ambient temperature.</li> <li>2. Clean or replace the air filter</li> </ol>
15	Module A2/B2/C2 over temperature alarm	<ol style="list-style-type: none"> <li>1. The ambient temperature is higher.</li> <li>2. Filter Serious dust accumulation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Lower the ambient temperature.</li> <li>2. Clean or replace the air filter</li> </ol>
16	RJ45 communication failure	Plug in the network cable after power on	Make sure that the RJ45 network cable is plugged in before power on.

After processing according to the processing methods in the table, it still cannot run normally. It is recommended to power off and restart the device. Still not working, please contact our company.



## 8. Product parameters

Parameter list	30kW	60kW	Remark
<b>DC side parameters</b>			
Maximum DC power (kW)	36	72	
DC bus maximum voltage (V)	1000	1000	
DC side maximum current (A)	53	106	
DC voltage working range (V)	680-1000	680-1000	
DC voltage ripple coefficient	2%	2%	
<b>AC side parameters</b>			
Rated power (kW)	30	60	
Maximum output power (kW)	36	72	
AC access method	3P4W		
Isolation method	non-isolated		
<b>On-grid operating parameters</b>			
Rated grid voltage (Vac)	400		
voltage range	-20%~+15%		
Rated current (A)	43	86	
Maximum current (A)	52	104	
Rated frequency (Hz)	50/60		
Allowable frequency (Hz±%)	±5		
Current harmonic distortion	3%		
Power factor	-0.8~+0.8		
<b>Off-grid operating parameters</b>			
Rated output voltage (Vac)	400		
Voltage accuracy	1%		
Voltage unbalance	100%		
Voltage harmonic distortion	2%@ line load		

Rated output frequency (Hz)	50/60		
Overload capacity	≤110%load, normal running		
Dynamic voltage transient	GBT34120-2017		
Output overvoltage protection	GBT34120-2017		
Output undervoltage	GBT34120-2017		
<b>General parameters</b>			
Efficiency	98.5%	98.5%	
Temperature	-30°C~60°C ( Derating above 50°C )		
Humidity	≤95%		
Noise (dB)	65		
Dimensions	436*550*130		
Mass (kg)	25	28	
Protection class	IP20		
Cooling method	Forced air cooling		
Insulation resistance (MΩ)	GBT34120-2017		
Medium strength	GBT34120-2017		
Altitude (m)	3000		
<b>Display and Communication</b>			
Communication Interface	RS485 (2 way), CAN (2 way), Dry contact		
Communication protocol	MODBUS-RTU、CAN2.0、MODBUS-TCP		

## 9. Quality Assurance

**During the warranty period, if the product fails, the company will repair or replace the new product for free.**

**The following situations are not included in the scope of liability exemption**

- The whole machine and components have exceeded the free warranty period
- Transport damage
- Improper installation, modification or use
- Exceeds the instructions in this manual and operates in a very harsh environment
- Tear proof label damage, machine failure or damage caused by installation, repair, change or disassembly not by the company's service personnel
- Machine failure or damage caused by the use of non-standard or non-our parts or software
- Any beyond the scope of installation and use specified in the relevant standards
- Damage due to force majeure.

**When the failure caused by the above conditions requires maintenance service,**

**After confirmed by our service organization, we can provide paid maintenance**

**service. In order to continuously improve customer satisfaction, our company's**

**products and product manuals are in continuous improvement and upgrading.**

**If there is a difference between the manual and the product, it may be the cause of the version, please refer to the specific product.**

**If you still have doubts, please contact our company.**