

# **Product Installation Manual**

MA1000K030/ MA1000K060

Version: A05

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## 1. History of Changes

A00 2020 .7.23 First release

A01 2020 .10.12 Added REPO short-circuit connection.

A02 2020 .11.30 Added instructions for disassembling and assembling metal sheets with withstand voltage and short circuits

A03 2020.12.30 Added warning symbols and changed the debugging operation guide

A04 2021 .1.14 Changed the signal definition in Section 3.2

A05 2021 .4.08 Changed the AC access mode in the technical parameters

## 2. Safety

### 2.1 Attention

The Company shall not be liable for any of the following situations:

- Use the device in harsh environments beyond the description of this manual;
- use the equipment in any installation and practical environment that exceeds the requirements of the relevant international standards;
- Unauthorised alteration of the product or modification of the software code;
- Failure to follow the operating instructions and safety warnings in the product and documentation;
- Man-made damage to the device.

	Note! Failure to follow the warnings in this manual could result in personal injury.
	There is a danger of high voltage and electric shock!
	See operating instructions
	Please install the inverter after 5 minutes of turning it off and disconnecting to ensure safety, otherwise there will be a risk of electric shock.
	Protective grounding

### 2.2 General Safety Precautions

 Warning	When handling equipment by hand, wear protective gloves to prevent sharp cuts.
 Attention	Confirm that the cable is properly labeled before connecting the cable.
 Dangerous	Construction operations on high-voltage lines may result in fire or electric shock accidents. The area through which the AC cable is connected and routed must comply with the local regulations and specifications.

- ◆ Electrical Safety
  - Electrical connections must be made in strict accordance with the description in the manual and the electrical wiring diagram;
  - Before powering on the system, please confirm that the device is properly grounded and check that the wiring is connected correctly;
  - Specialised tools should be used for high-voltage and alternating current operation;
  - When the equipment needs to be moved or rewired, the power supply should be disconnected, and the corresponding operation should be carried out after the equipment is completely powered off.
- ◆ Personnel Safety
  - Personnel who carry out various high-voltage operations and install alternating current equipment must have high-voltage and alternating current operation qualifications;
  - When installing and overhauling the equipment, relevant personnel should take appropriate protective measures, such as wearing anti-static work clothes, wearing anti-static gloves, etc., and removing easily conductive objects such as jewellery and watches to avoid electric shock or burns.
- ◆ Operation Safety
  - Please read the "Safety Precautions" carefully before using this product to ensure proper and safe use;
  - Please operate according to the requirements when operating;
  - Avoid using this appliance in direct sunlight, rain, or humidity;

- Do not place the appliance in a fire, or near an electric heater, hot stove, or similar device;
- In case of fire, please use a dry chemical fire extinguisher correctly to extinguish the fire, if you use a liquid fire extinguisher, there will be a risk of electric shock.

## 2.3 Environment

- Please be careful not to use it in the following work environments:
- High and low temperatures and humid places that exceed the technical index provisions (temperature: -30 °C ~ 60 °C, relative humidity: 0%RH~ 95%RH);
- Places exposed to direct sunlight or near heat sources;
- Places with vibrations and susceptibility to impacts;
- Places where there are dust, corrosive substances and salts.

### 3. Product Introduction

#### 3.1 Dimensions and Clearance

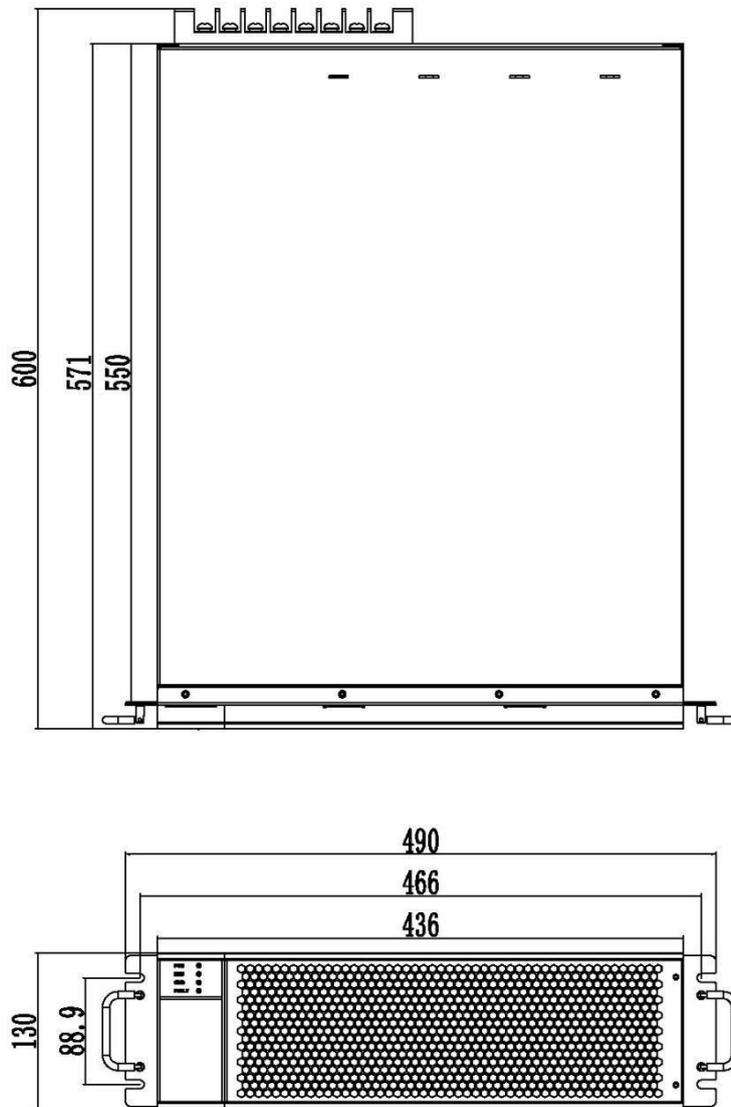


Figure 3-1.1 Installation dimensions

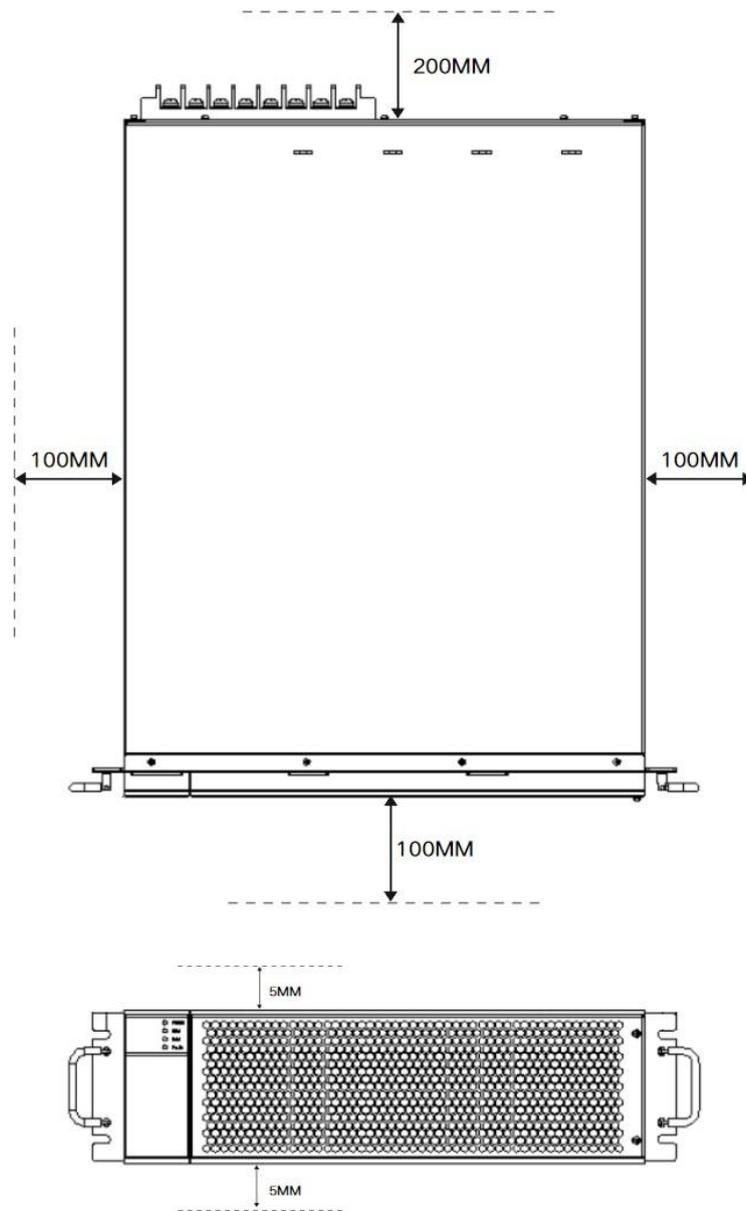


Figure 3-1.2 Minimum spacing

## 3.2 Appearance and Interface Description

### 3.2.1 Appearance and Interface Location

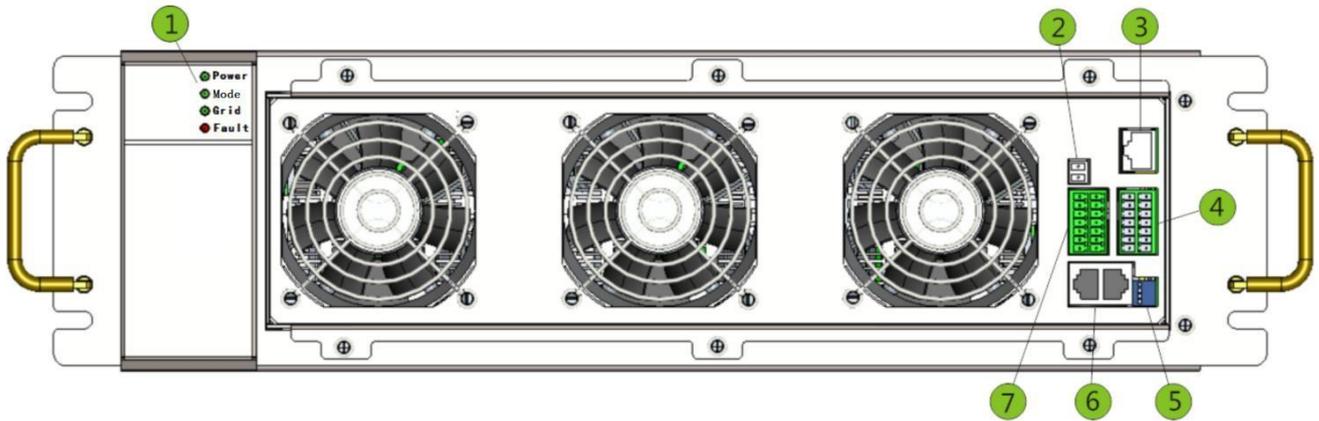


Figure 3-2 Front panel

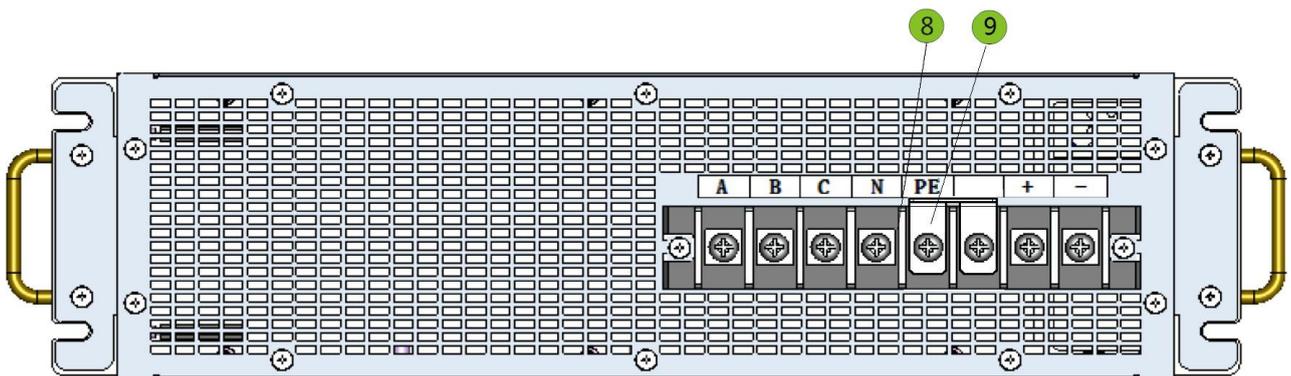
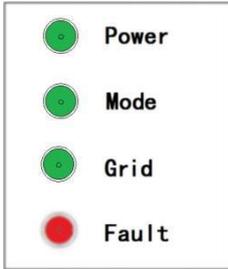


Figure 3-3 Rear panel

- ① LED indicator
- ② Reserved interface
- ③ RJ45 communication interface
- ④ CAN/RS485 communication interface
- ⑤ DIP switch
- ⑥ Parallel communication interface
- ⑦ DI, DO interface
- ⑧ Input and output terminals
- ⑨ PE short-circuit metal sheet

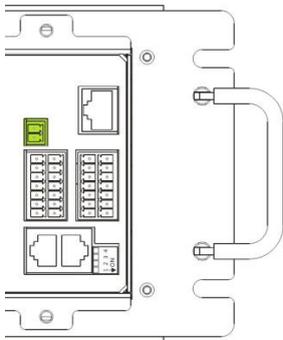
### 3.2.2 Interface Description

#### 1. LED working status indicator



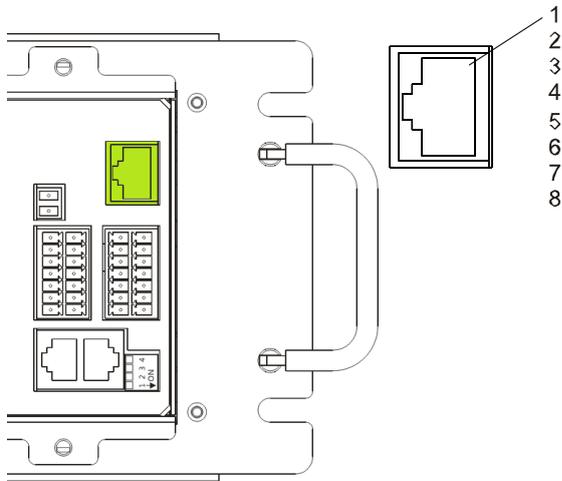
Indicator light description			
LED indicator	Indicator status		Status description
Power		Solid on	System standby
		flashing	Boot
Mode		Solid on	Standby
		flashing	charge
		Flashing rapidly	discharge
Grid		Solid on	Off-grid
		flashing	Grid
Fault		Solid on	System failure
		Off	No faults

#### 2. Reserved interfaces



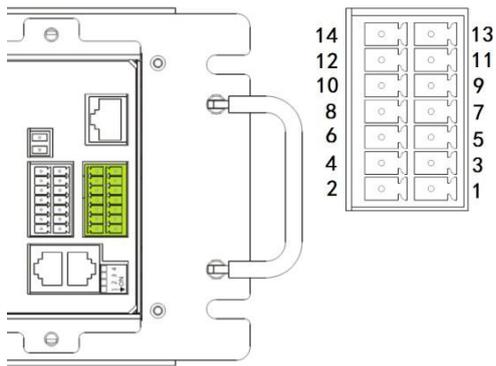
Pins	Reserved interfaces
1	Reserved
2	Reserved

### 3. RJ45 port



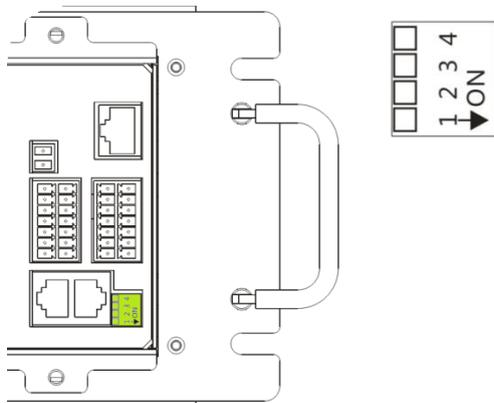
RJ45 port		
Pins	Signal definition	Cable color
1	TD+_1	Orange-white
2	TD-_1	orange
3	RD+_1	Green and white
4	\	blue
5	\	Blue and white
6	RD-_1	green
7	\	Brown and white
8	\	Brown

### 4. RS485 and CAN communication interface



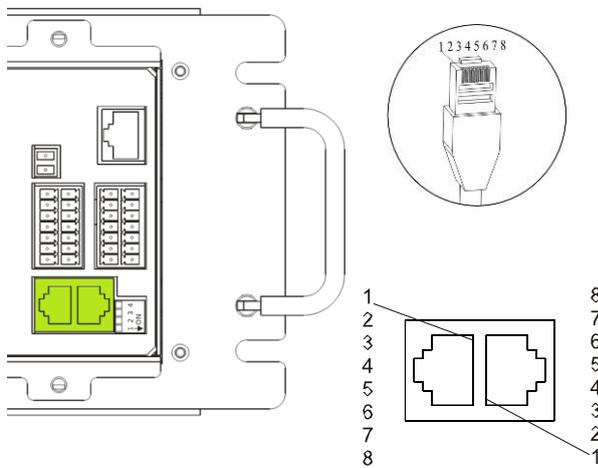
RS485 and CAN communication interface					
Pins	Signal definition	Description of the function	Pins	Signal definition	Description of the function
14	CANBH	Parallel communication	13	RS_485A+	Parallel communication
12	CANBL		11	RS_485A-	
10	CANAH	Battery communication	9	RS_485B+	EMS communication
8	CANAL		7	RS_485B-	
6	GND	Grounding	5	RS_485C+	Meter communication
4	GND		3	RS_485C-	
2	GND		1	GND	Grounding

### 5. DIP switch (reserved)



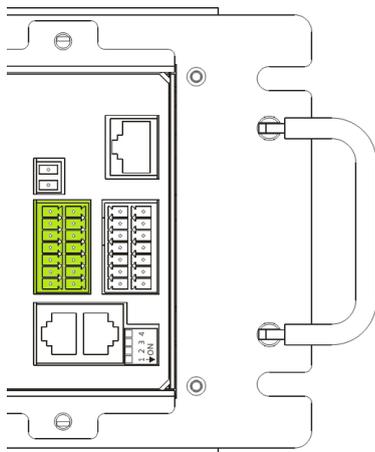
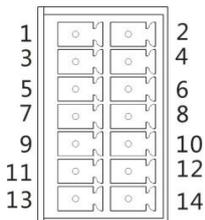
DIP switch	
Pins	Signal definition
1	Bit0
2	Bit1
3	Bit2
4	Bit3

### 6. Parallel communication interface



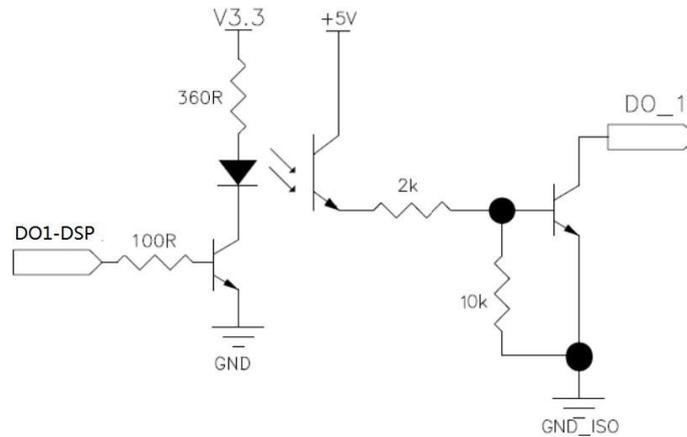
Parallel communication interface			
Pins	Signal definition	Description of the function	Cable color
1	HFSYN	High-frequency synchronous signal	Orange-white
2	LFSYN	Low-frequency synchronous signal	orange
3	CANAH	Parallel machine CAN correspondence	Green and white
4	CANAL		blue
5	CANBH		Blue and white
6	CANBL		green
7	GND_ISO	Grounding	Brown and white
8	Parallel_test_IN	Parallel test signals	Brown

### 7. DI/DO signal interface

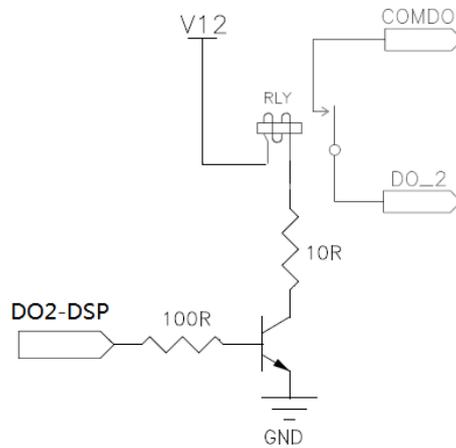


DI/DO signal interface					
Pins	Signal definition	Description of the function	Pins	Signal definition	Description of the function
1	CANBH	Parallel communication	2	DI_1	REPO
3	CANBL	Parallel communication	4	DI_2	/
5	RS485+	Parallel communication	6	DI_3	/
7	RS485-	Parallel communication	8	DI_4	Parallel and off-grid signals
9	DO_2	Fault Signal + and off-grid handshake signal	10	GND_ISO	DI/DO signal
11	DO_1		12	GND_ISO	
13	COMDO	Fault Signals-	14	GND_ISO	

**Instruction 1: DO\_1 internal block diagram**

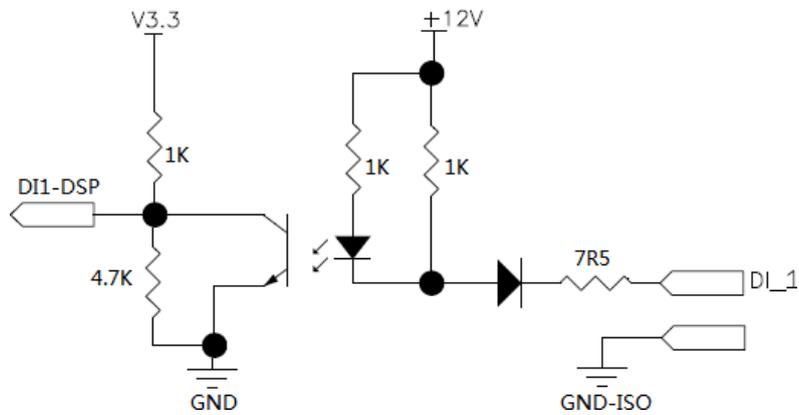


**Instruction 2: DO\_2 internal block diagram**

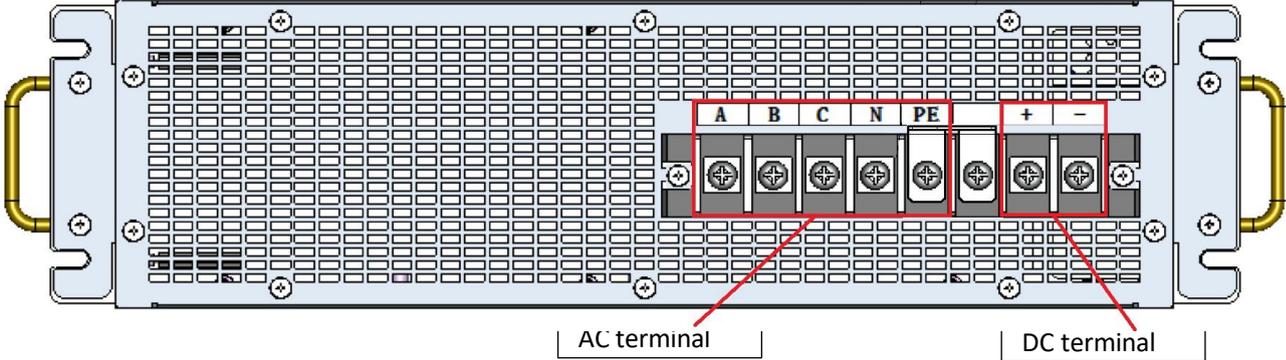


COMDO, DO\_2 open circuit indicates no fault, short circuit indicates a fault.

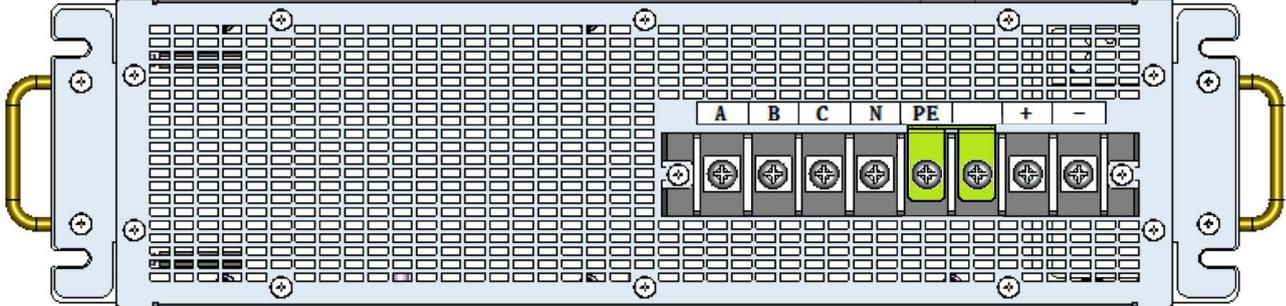
**Instruction 3: DI\_1, DI\_2, DI\_3, DI\_4 internal block diagrams**



8. DC, AC terminal blocks



9. PE jumper terminals



Mode	Yes/No
DRM0	Yes <input checked="" type="checkbox"/> / No <input type="checkbox"/>

## 4. Installation

### 4.1 Installation Environment

- The area where the equipment is placed should be well-ventilated and kept away from dangerous goods such as water sources, heat sources, corrosives and flammable and explosive materials;
- Avoid installation in environments with direct sunlight, dust, volatile gases, corrosive substances and high salt content;
- It is strictly forbidden to install the equipment in a working environment with metal conductive dust;
- Keep the front and rear panel air inlets and outlets unobstructed.
- The protection level of this equipment is IP20, and it does not have waterproof function. It should be installed indoors. If installed outdoors, it must be placed in a container/energy storage cabinet with a protection level of IP54 or higher.

### 4.2 Unpacking Inspection

- Unpack the equipment and visually check the machine's appearance to check for collision damage in transit.
- Check whether the random accessories are complete against the shipping list.

Table 4-1 Shipping list

Attachment name	Quantity	Unit
AC/DC module	1	PCS
RJ45 cable	1	PCS
User Manual	1	PCS
Screws M6*16	4	PCS

Connectors (7pin)	4	PCS
OT terminals	7	PCS

## 4.3 Power Cable Preparation

Table 4-2 Recommended power cable specifications

Power	Ports	Voltage	Breakers	Cable	Terminal Type	Torque
<b>30kW</b>	AC	460Vac	63A	8mm <sup>2</sup>	OT-8mm <sup>2</sup> -M6 terminal	2.8N·m
	DC	1000Vdc	63A			
<b>60kW</b>	AC	460Vac	125A	16mm <sup>2</sup>	OT-16mm <sup>2</sup> -M6 terminals	2.8N·m
	DC	1000Vdc	100A			
<b>PE Wire</b>	PE	460Vac	63A	8mm <sup>2</sup>	OT-8mm <sup>2</sup> -M6 terminals	2.8N·m

## 4.4 Installation

### 4.4.1 Rack Mounting

Place the device on the rail of the cabinet and fix the device to the rack with the M6×16 panel screws through the mounting holes on the mounting ears.

**Note:** Please make sure the rack is securely grounded before operation.

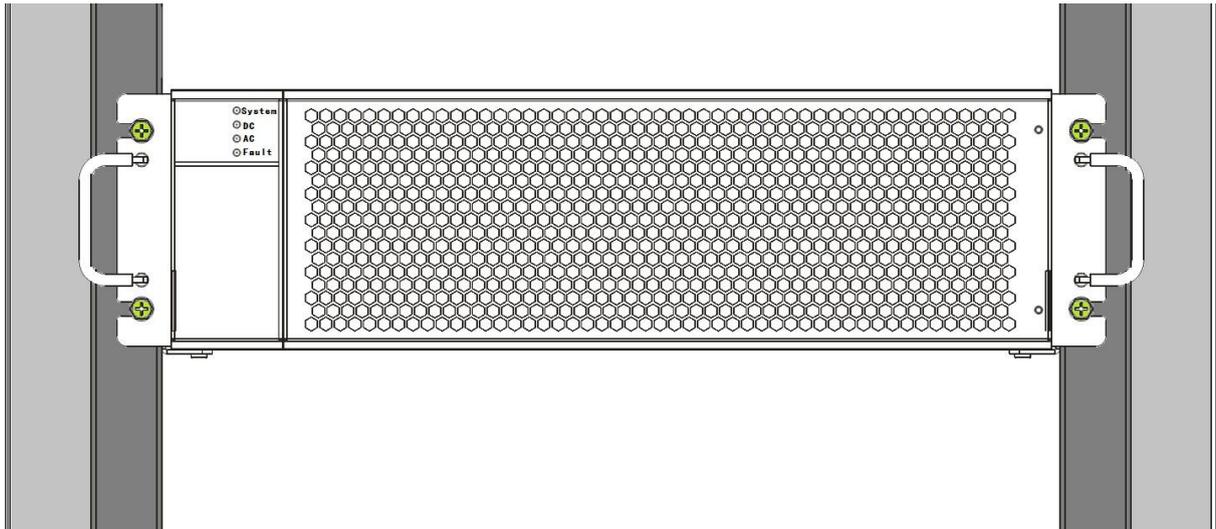


Figure 4-1 Single rack installation

### 4.4.2 Power Cable Connection

Connect AC side cables A, B, C, N, PE, and DC side "+" "-" according to the label definition. The cable connection is the same in the grid-connected operation mode and the off-grid operation mode.

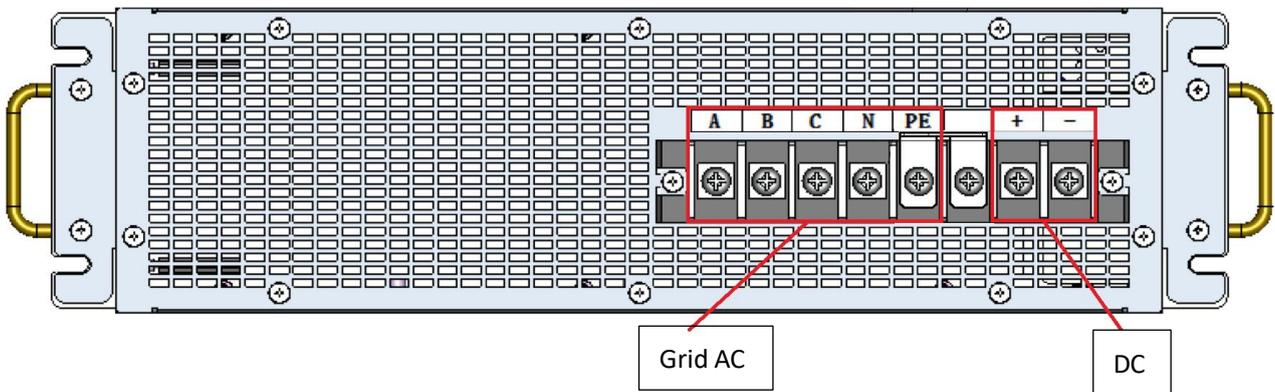


Figure 4-2 Cable connection

**Note:** The PE in the figure has been connected to the chassis, and if the system withstand voltage test is required after the assembly is completed, the short-circuit block needs to be removed. After the Withstand Voltage Test is completed, install the short-circuit block back in place!

PE short-circuit block: Connect PE with chassis

Purpose: to achieve ground protection

PE Connection: directly connected to the bronze medal

PE Wire diameter: 8mm<sup>2</sup>

PE Color: Yellow and green

### 4.4.3 Communication Cable Connection

#### 4.4.3.1 Remove the front cover

A. Remove the screws of the dust cover

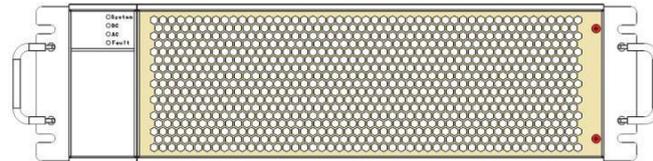


Figure 4-3

B. Slide the dust cover to the right

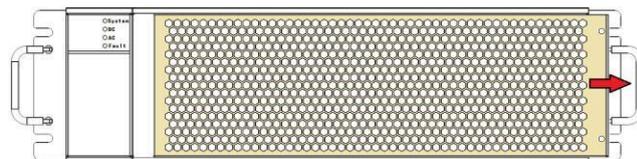


Figure 4-4

C. Remove the dust cover

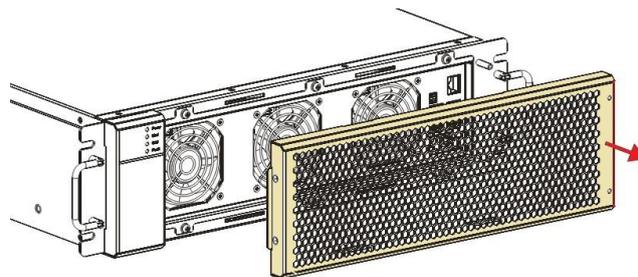


Figure 4-5

#### 4.4.3.2 Connect the communication cables

Choose one of the RJ45 port or RS485 port as communication port.

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

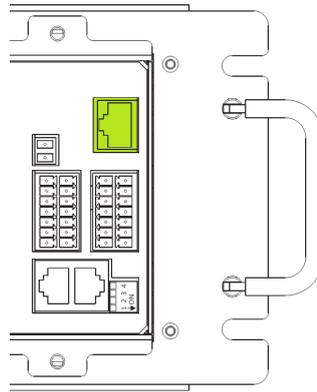


Figure 4-6

2. RS485 port: connect to the computer through the 485 to USB module.

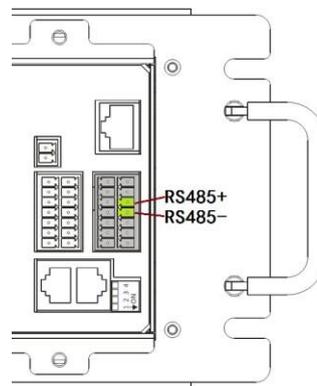
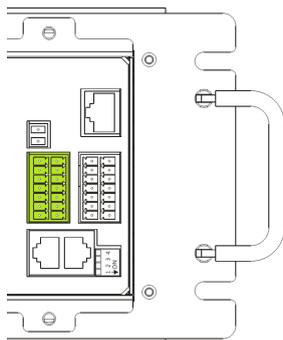
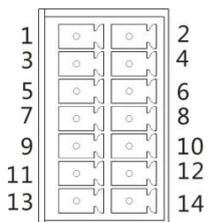


Figure 4-7

4.4.3.3 Connect other cables as needed

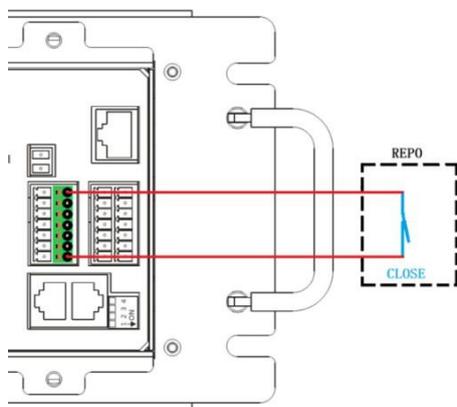


DI/DO signal interface					
Pins	Signal definition	Description of the function	Pins	Signal definition	Description of the function
1	CANBH	Parallel communication	2	DI_1	REPO
3	CANBL	Parallel communication	4	DI_2	/
5	RS485+	Parallel communication	6	DI_3	/
7	RS485-	Parallel communication	8	DI_4	On-grid & Off-grid transfer signals
9	DO_2	Fault Signal + and off-grid handshake signal	10	GND_ISO	DI/DO grounding
11	DO_1		12	GND_ISO	
13	COMDO		14	GND_ISO	

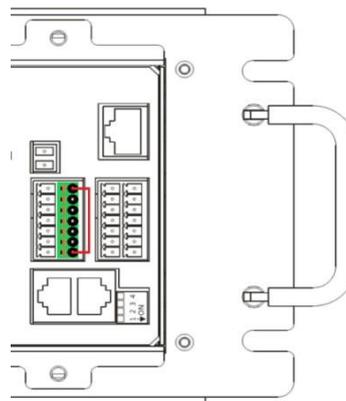
**Note:** DI\_1 (REPO), GND\_ISO must be short-circuited; otherwise, it will not be able to power on.

**REPO:** Remote Emergency Power Off

A. Connecting the REPO (Normally Closed)

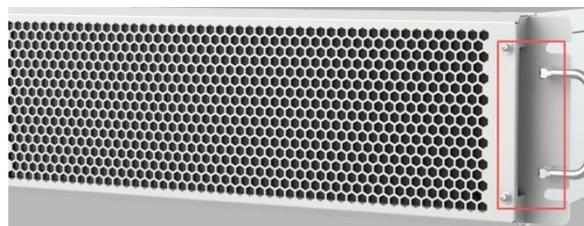


B. Use the connector that comes with the accessory (short route is connected).



#### 4.4.3.4 Communication line routing method

The communication cable is installed through the gap between the front dust cover and the device itself.



#### 4.4.3.5 Install the front cover

A. Buckle the dust cover

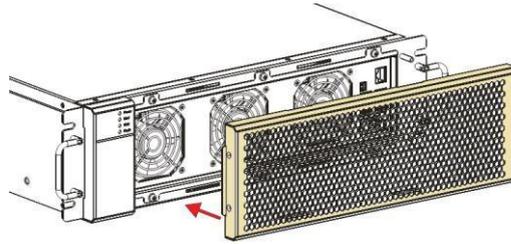


Figure 4-8

B. Slide the dust cover to the left

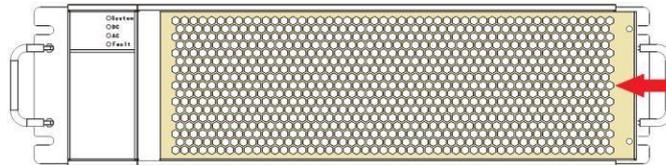


Figure 4-9

C. Fix the dust cover plate screws

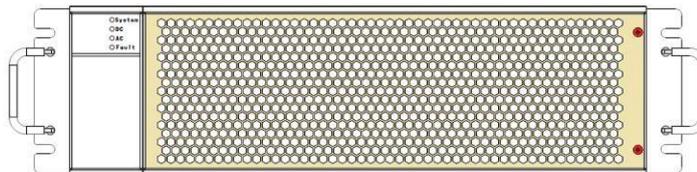


Figure 4-10

#### 4.4.3.6 Leakage circuit breaker

Connect a Residual Current Device (RCD for short) based on local laws and regulations. Type A RCDs can be connected to the outside of the inverter for protection when the DC component of the leakage current exceeds the limit value. It is recommended that a Type-A RCD with a threshold current of 100mA or higher be installed.

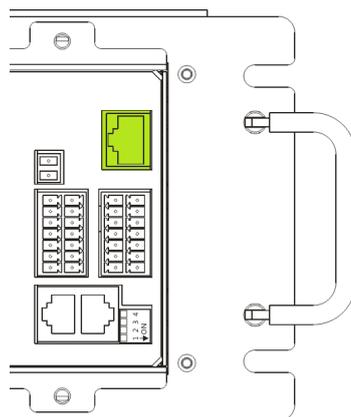
#### 4.4.3.7 Earth fault alarm function

The PCS does not have an earth fault protection alarm function. An external insulation impedance tester is required to generate the alarm for the third-party EMS that controls the PCS. Once the EMS detects an earth fault, the PCS will shut down within 0.1 seconds.

## 5. Commissioning Guide

### 5.1 RJ45 (Modbus TCP) Communication

1. Insert the network cable into the RJ45 network cable interface on the front panel of the module, and connect the other end to the computer RJ45 network cable interface.



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

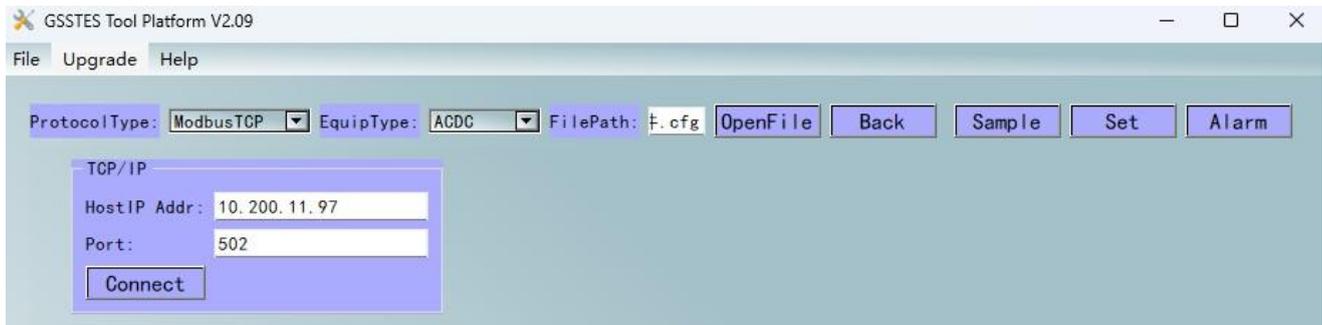


3. Confirm that the network cable has been plugged in, then power on the module, and after the product indicator lights up, open the HostApp software < GSSTESToolPlatform.exe >.

#### 4. Configure the HostApp

1) Protocol Type: Modbus TCP    2) Equip Type: ACDC    3) File Path: XXXXXXXX-ACDC.cfg

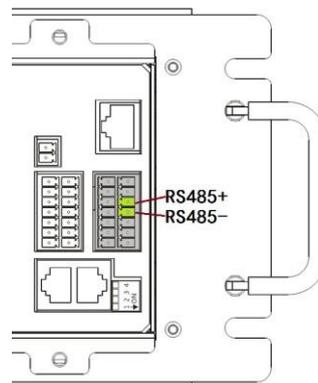
4) HostIP Addr: 10.200.11.97    5) Port: 502



5. Click: Connect

## 5.2 RS485 Communication

1. Connect the RS485 to USB module, RS485 is terminated with the 7-pin connector, the 3rd pin and the 4th pin are inserted according to the position shown, and the other end of the USB interface is connected to the computer.

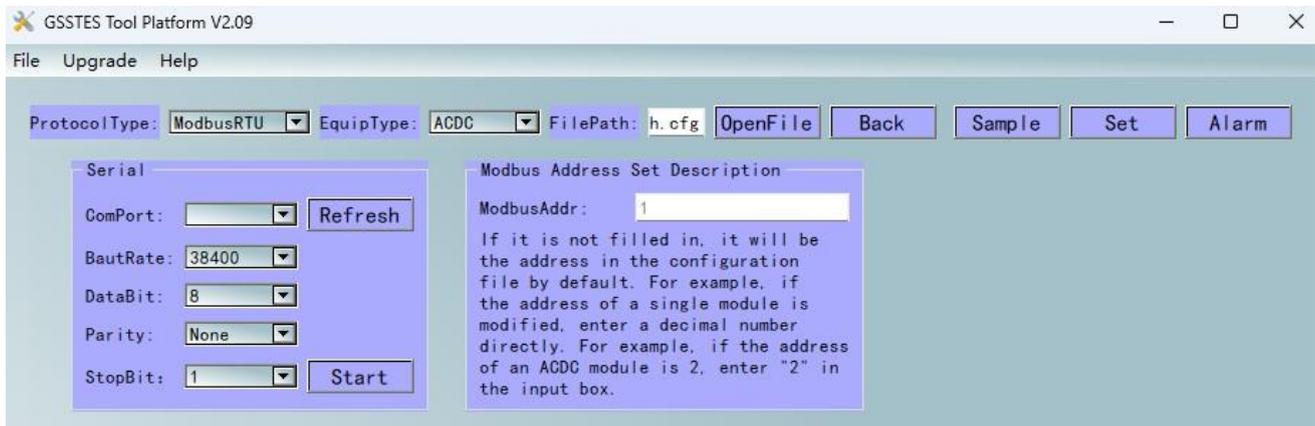


2. After confirming that the cable connection is normal, power on the module, and open the software when the product indicator lights up.

3. Open the software < GSSTESToolPlatform.exe >

4. Configure the software

- 1) Protocol Type: Modbus RTU    2) EquipType: ACDC    3) File Path: XXXXXXXX-ACDC.cfg
- 4) Com Port: ComX            5) BautRate: 38400            6) DataBit: 8            7) Parity: None
- 8) Parity: None                9) StopBit: 1                10) ModbusAddr: 1



5. Click: Start

### 5.3 Parallel Communication for Multiple PCSs

- 1. Connect the Parallel communication interface (refer to Section 3.2.2, item 6)
- 2. Setting parameters in the case of dual parallel machines (Master)



- 3. Setting parameters in the case of dual parallel machines (Slave)



4. Click: Set

## 5.4 Software Version

The software version can be checked in the following area of HostApp.

DSP Software Version High:	0
DSP Software Version Low:	0
Hardware Version High:	0
Hardware Version Low:	0

## 5.5 Start-up Procedure

To start up the PCS, the following start procedure should be undertaken:

1. Check the AC circuit breaker located at the main switchboard is off;
2. Connect a three-phase AC cable from the AC circuit breaker to the PCS;
3. Connect to a battery bank via DC cable, and make sure the BMS is not energised at the time of connection and the DC circuit breaker is off;
4. For the on-grid start-up, turn on the AC circuit breaker first; when the connection indicator is steady green, and there is no warning indicator, turn on the DC circuit breaker. For the off-grid start-up, turn on the DC circuit breaker first; when the connection indicator is steady green, and there is no warning indicator, turn on the AC circuit breaker;
5. The PCS will start automatically when it sees both AC and DC sources are viable.

It is also possible to turn on the PCS through the HostApp or Modbus controlled by the third-party EMS. To use the HostApp, follow the following steps.

1. Work Mode set: Select working mode
2. Click: Set (Work Mode set)

3. Start/Stop Command: On
4. Click: Set (Start/Stop Command)

Start/Stop Command	On	Set
Work Mode Set	INVALID	Set

## 5.6 Shutdown Procedure

To shut down the PCS, the following shutdown procedure should be undertaken:

1. Stop the device via the application as described in the following;
2. Disconnect the AC circuit breaker located at the main switchboard;
3. If connected to a battery bank, follow the shutdown procedure of the BMS;
4. Disconnect three-phase cable from the AC circuit breaker to the PCS.

**Note:** Upon shutting down the PCS, allow at least 1 minute for the device to fully discharge before touching any components.

It is also possible to turn off the PCS through the HostApp or Modbus controlled by the third-party EMS. To use the HostApp, follow the following steps.

1. Start/Stop Command: Off
2. Click: Set (Start/Stop Command)
3. Work Mode set: INVALID
4. Click: Set (Work Mode set)

Start/Stop Command	Off	Set
Work Mode Set	INVALID	Set

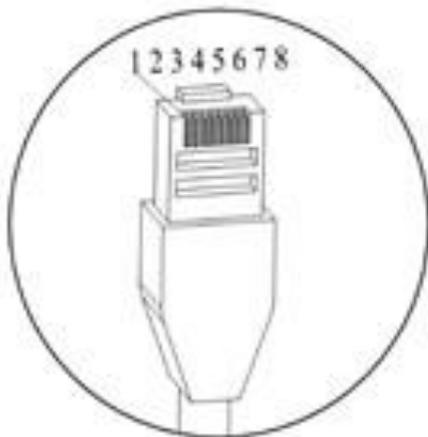
## 5.7 DRM

This application meets the requirements of the local Australian grid code (AS/NZS 4777.2), which, among specific requirements for the connection. Calls for compatibility with Demand Response Enabling Devices (DRED), The DRED is under the control of a local network operator and allows to put the inverter in one of the Demand Response Modes (DRMs) defined by the standard:

- DRM 0 Operate the disconnection device

It is mandatory to respond to DRM0, which allows the network manager to remotely decouple the installation from the distribution network.

The RJ45 socket pin assignments for DRED:



DRED		
PIN	Signal Name	Cable Color
1	N/A	Orange-white
2	N/A	Orange
3	N/A	Green-white
4	N/A	Blue
5	N/A	Blue-white
6	Com/DRM0	Green
7	N/A	Brown-white
8	N/A	Brown

Click: Set DRE (Default prohibition)



## 5.8 Grid Code Settings

For compliance with AS/NZS 4777.2:2020, please select from Australia A/B/C/ or New Zealand.

Please contact your local grid operator to select the region according to the grid code list.

1. Grid Code Set: Australia A/B/C、NewZealand

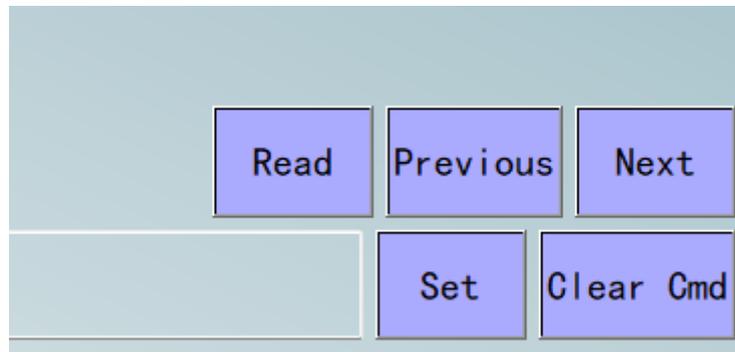
According to the selection of power grid codes in different regions, the software adapts to the corresponding voltage, frequency, and other protection ranges.



2. Select the Work Mode you want to switch



3. Click: Read



4. The setting succeeds if the Work Mode Set does not change.

## 5.9 :Grid Protection\_Set

For compliance with AS/NZS 4777.2:2020, please Open the power grid protection settings and set the parameters for Over voltage, Under voltage, Over frequency and 10MinAVGprotection.

1、Set Over voltage, Under voltage, Over frequency protection

1)Click:Grid Protection\_Set (Default prohibition)

2)Click:enable

3)Set: Over voltage、 Under voltage、 Over frequency Parameter

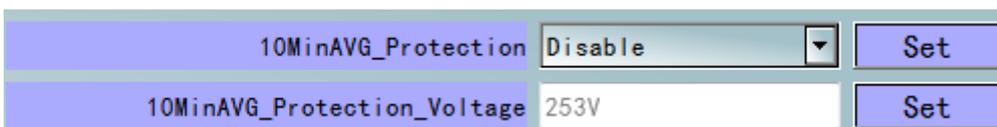


2、 Set 10MinAVGprotection

1)Click:Set 10MinAVGprotection (Default prohibition)

2)Click:enable

3)Set: Set 10MinAVGprotection\_Voltage Parameter



## 5.10 Grid Reconnection

For compliance with AS/NZS 4777.2:2020, please Open the Grid Reconnection settings and set the Reconnect parameters.

1)Click:Grid Reconnection\_set

2)Click:enable

3)Set:Set Reconnect parameters

Active_Power_Set	0kW	Set
Reactive_Power_Set	0kVar	Set
Grid_Reconnection_Set	Enable	Set
Upper_Limit_Of_Voltage	253V	Set
Lower_Limit_Of_Voltage	200V	Set
Upper_Limit_Of_Frequency	51.5Hz	Set
Lower_Limit_Of_Frequency	47.5Hz	Set
Grid_Reconnection_Time	180s	Set
Power_Recovery_Speed	10%/min	Set

## 5.11 Power quality response

1、Power Quality Response Mode

Power Quality Response Mode  Fixed power factor mode : 0.8 lagging to 0.8 leading  
 Fixed reactive power mode : Reactive power fixed at <100% rating

AC Reactive Power Set Mode	Invalid	Set
AC Reactive Power Changing Rate	Invalid Reactive Power Regulation Power Factor Regulation	Set
Three Phase Unbalance	Disable	Set

2、PU\_Curve

1)Click:PU (Default prohibition)

2)Click:enable

3)Set:Set PU\_Curve

Active_Power_Set	5kW	Set
Reactive_Power_Set	-12kVar	Set
PU	Enable	Set
P_U_X2	0V	Set
P_U_X1	0V	Set
Tau	20s	Set

### 3、QU/Power Factor/Over Power Factor/Under Power Factor/cosP

1)Click:QU\_Curve

2)Click:QU/Power Factor/Over Power Factor/Under Power Factor/cosP (Default Invalid)

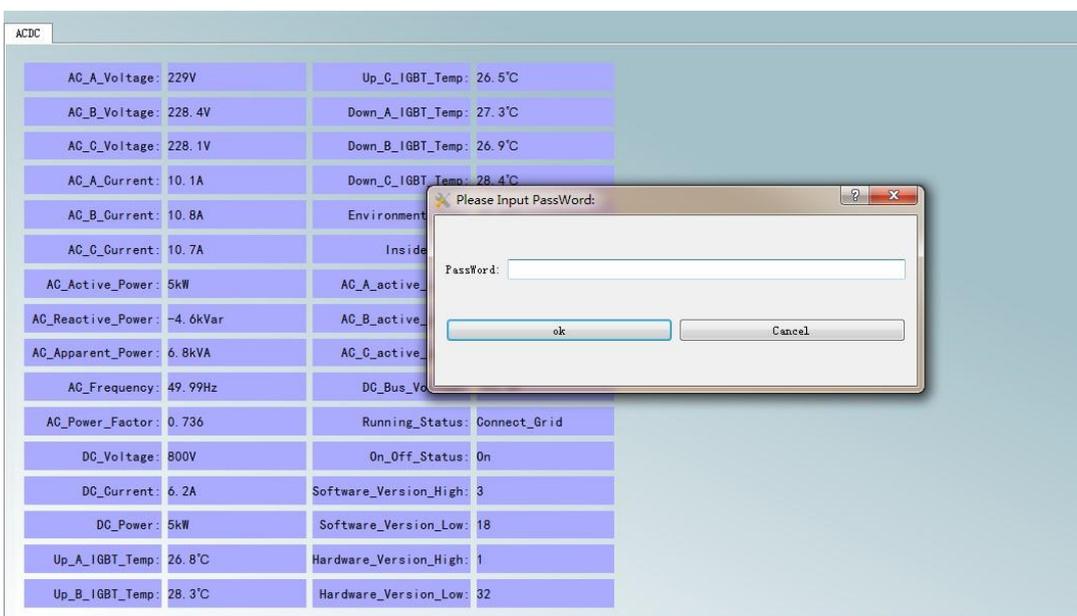
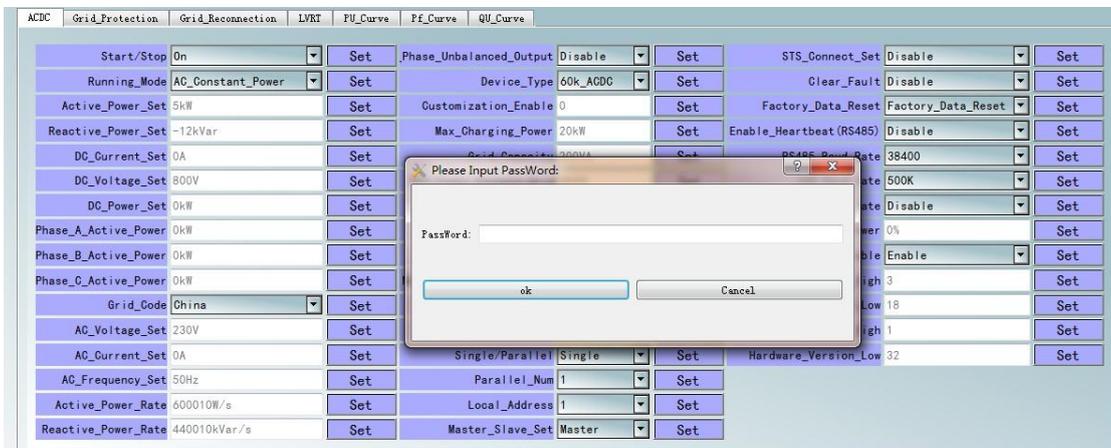
3)Set:Set parameters

Active_Power_Set	5kW	Set
Reactive_Power_Set	-12kVar	Set
Reactive_Power_Control	Q	Set
QU_Max_Reactive_Power_Set	Invalid	Set
Reactive_Power_Percentage_Set	0	Set
Power_Factor_Set	Power_Factor Over_Power_Factor Under_Power_Factor cosP	Set
QU	Enable	Set
Q_U_X4	241.5V	Set
Q_U_X3	230V	Set
Q_U_X2	230V	Set
Q_U_X1	218.5V	Set
Tau	400s	Set
PF_P_Initial_Power	0kW	Set
PF_P_End_Power_Factor	-0.73	Set

## 5.12 Parameter setting query and password protection

The device parameter setting, query, and password protection functions enable parameter modification or data query when specific device operating parameters need to be modified or queried. After entering the password and unlocking it, parameter modification or data query can be performed.

The login password is shared with the local operator for installation, parameter setting, and debugging work.



## 5.13 Instructions for switching between grid-connected and off-grid modes

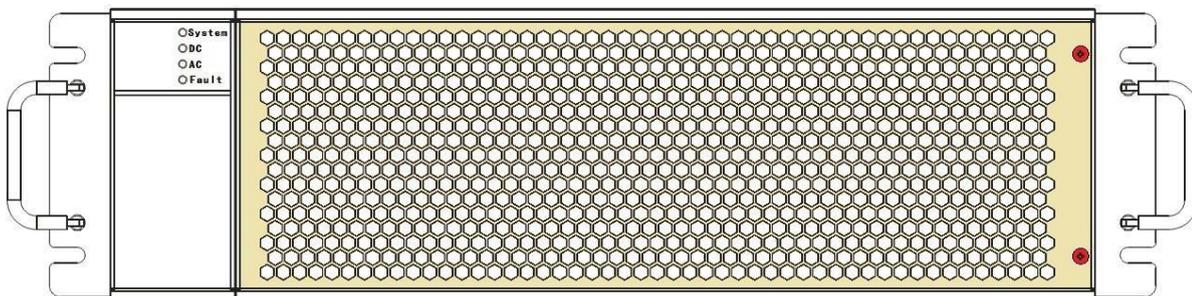
The PCS module supports both grid-connected and off-grid operations, and the mode switching between grid-connected and off-grid requires a switching command issued by the system control terminal or manually issued. The PCS device itself does not have the function

of automatic network connection and disconnection switching.

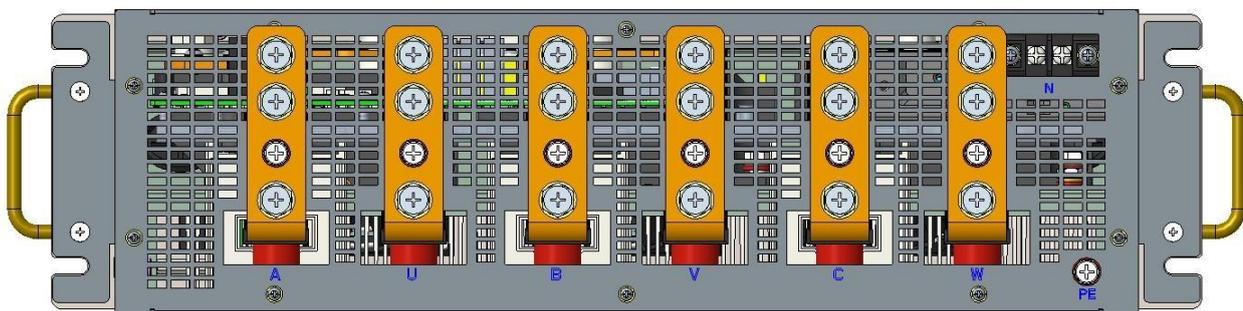
PCS needs to be paired with a dedicated external switch device, STS, to achieve automatic grid-off and grid-on switching functionality. The STS static transfer switch integrates the same grid code requirements as the PCS internally. Based on the selected grid code requirements, it detects grid information such as grid voltage and frequency. When the grid voltage is abnormal and exceeds the protection range, STS informs PCS through a dry contact signal to switch to grid-off operation. When the grid voltage returns to the reconnection range and meets the reconnection time, STS informs PCS through a dry contact to switch to grid-on operation. The grid-off and grid-on switching of PCS is achieved through STS control.

1、 STS Introduction

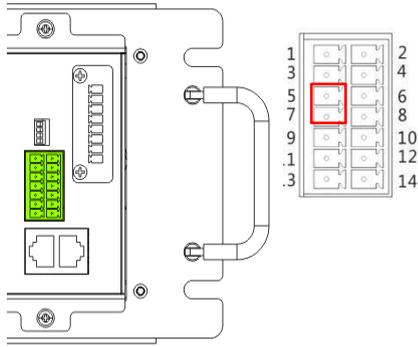
1) STS appearance



2) STS Terminal Block



3) STS communication

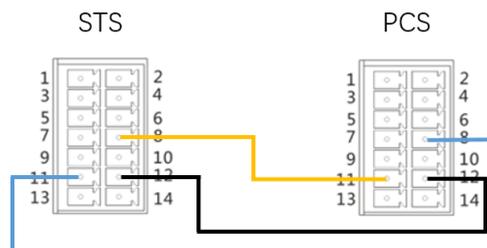


DI/DO signal					
Pin	Signal	Functional	Pin	Signal	Functiona
1	/	Reserved	2	DI_1	REPO
3	/	Reserved	4	DI_2	/
5	RS_485A+	485	6	DI_3	/
7	RS_485A-	485	8	DI_4	Confirm the
9	DO_2	/	10	GND_ISO	DI signal
11	DO_1	And off	12	GND_ISO	
13	COMDO	/	14	GND_ISO	

RS485 is used for STS communication, and the cable length is less than 1000m.

Connect PIN5 to RS485 + and connect PIN7 to RS485-.

## 2、Communication between STS and PCS



After the communication wiring between PCS and STS is completed, and the PCS is set and enabled for grid-off switching, the automatic grid-off system is fully established.

After the communication wiring between PCS and STS is completed, and the PCS is set and enabled for grid-off switching, the automatic grid-off system is fully established.

Backup and stand-alone operation of the PCS requires a manufacturer-specified external STS(GS-ST5-120), this STS is mandatory, supplied by the manufacturer, and forms part of the PCS supply scope.

The PCS cannot operate in backup or stand-alone mode without this STS. Use of third-party or installer-selected transfer switches is not permitted.

## 6. Maintenance

### Do the Maintenance when power off!!

 Dangerous	When the system is running, there is a dangerous voltage in the equipment, so it should not be operated and maintained by non-professionals.
 Dangerous	Perform system power-off operations when performing maintenance such as system cleaning, electrical connections, grounding reliability, etc., otherwise there is a risk of electric shock or fire

**For each on-site maintenance, the power module should be routinely checked for function, mainly including the following aspects:**

- 1) Check the working condition of the power module;
- 2) Check the operation mode switching of the power module;
- 3) Check the indicator light display of the power module;
- 4) Check the dust filter, if the dust accumulation is serious, replace the dust filter;
- 5) Check the connecting cables and cables.

Maintenance cycle description: once every six months.

## 7. Troubleshooting

	The type of failure	Causes	Solution
1	Module A1/B1/C1 phase overcurrent alarm	The load is too large	Reduce the load
2	Module A2/B2/C2 phase overcurrent alarm	The load is too large	Reduce the load
3	AC output short-circuit fault	AC side wiring shorted	Check the terminal wiring
4	Fan 1/2/3 is faulty	The ambient temperature exceeds the limit value or the fan is not operating properly	Check the device fan
5	Grid phase sequence alarm	The wiring sequence on the AC side is incorrect	Adjust the line order
6	Battery undervoltage alarm	The DC input voltage is too low	Check whether the DC input voltage exceeds the limit value
7	Battery overvoltage alarm	The DC input voltage is too high	Check whether the DC input voltage exceeds the limit value
8	The total voltage of the bus is too low alarm	The bus voltage exceeds the limit value during the operation of the equipment	Check the equipment parameters, bus voltage given whether it exceeds the limit
9	The total voltage of the bus is too high	The bus voltage exceeds the limit value during the operation of the equipment	Check the equipment parameters, bus voltage given whether it exceeds the limit
10	Low grid frequency alarm	The grid frequency is too low	It can be automatically restored when the grid frequency returns to normal
11	Grid frequency high alarm	The grid frequency is too high	It can be automatically restored when the grid frequency returns to normal
12	Grid voltage low alarm	The grid voltage is too low	It can be automatically restored when the grid voltage returns to normal
13	Grid voltage high alarm	The grid voltage is too high	It can be automatically restored when the grid voltage returns to normal
14	Module A1/B1/C1 is too high alarm	1. The ambient temperature is too high 2. The dust filter has serious dust accumulation, 3. The ambient temperature is too high	1. Reduce the ambient temperature 2. Wash or replace the dust filter 3. Reduce the ambient temperature 4. Wash or replace the dust filter
15	Module A2/B2/C2 is too high alarm		

		4. The dust filter has serious dust accumulation,	
16	The network port cannot communicate	1. Plug in the network cable after powering on	1. Confirm that the network cable is plugged in and then power on

**Note:** If the device still fails to work after being processed according to the solutions provided, even after being powered off and restarted, please contact Gsstes or a corresponding service agent in the local area.

### Contact Details

Company Name: Xi'an Golden Stone Electric Technology Co Ltd

Address: 2nd Floor, Building 4, Lingxian Wanbang Factory Area, No. 29, Shanglinyuan 3rd Road, Xiliu Street Office, High-tech Zone, Xi'an City, Shaanxi Province

Tel: +86-029-68312715

Email: [gs@gsstes.com](mailto:gs@gsstes.com)

### Australian Importer Information

Importer Company Name: EVE Australia PTY LTD

Trading Address: 14 Millennium Ct Silverwater NSW 2128

Website: [www.ocularcharging.com.au](http://www.ocularcharging.com.au)

Phone: 1300 912 650

Email: [help@ocularcharging.com.au](mailto:help@ocularcharging.com.au)

## 8. Specification

	MA1000K030	MA1000K060
DC side		
Maximum DC power (kW).	30	60
The maximum voltage of the DC bus (V).	1000	1000
Maximum current on the DC side (A).	44	88
DC voltage operating range (V).	680-1000	680-1000
DC voltage ripple coefficient (%).	2%	2%
AC side		
Rated power (kW).	30	60
Maximum AC output power (kW).	30	60
AC wires	3P4W	
Build in transformer	No	
Rated grid voltage (Vac).	400	
Voltage range	-20%~+15%	
Rated current (A).	43	86
Maximum AC current(A)	43	86
Maximum short circuit current(A)	144	144
Rated Grid Frequency (Hz)	50/60	
Grid Frequency (Hz±%)	±5Hz	
THDi	3%	
Factor	0.8 lead ~ 0.8 lag	
Rated output voltage (Vac).	400	
Voltage accuracy	1%	
Voltage unbalance	100%	
Total harmonic distortion of voltage	2% @Linear load	
Rated output frequency (Hz)	50/60	
Overload capacity	≤ 110% load for long-term work, 110%~120% load for 10min	
Dynamic voltage transient range (%).	GBT34120-2017	
Output overvoltage protection value (V).	GBT34120-2017	
Output undervoltage protection value (V).	GBT34120-2017	
Efficiency	98.5%	98.5%
Allowable ambient humidity	-30°C~60°C (derating above 45°C).	
Relative humidity is allowed	≤95%	
Noise (dB).	65	
Dimensions (W*D*H) (mm).	490*620*130	
Weight (kg).	21	28
Ingress protection	IP20	
Battery type	Lithium battery	
Class of pollution degree	III	

Environment class	I
Overvoltage class	AC III / DC II
Cooling method	Forced air cooling
Insulation Resistance (MΩ).	GBT34120-2017
Medium strength	GBT34120-2017
Altitude (m)	3000
Communication interfaces	RS485 (2 channels), CAN (2 channels), dry contact, LAN, REPO
Communication Protocol	MODBUS-RTU / CAN2.0 / MODBUS-TCP

## 9. Quality Assurance

**If the product fails during the warranty period, Xi'an Golden Stone Electric Technology Co Ltd. (hereinafter referred to as the company) will repair or replace the new product free of charge. The company has the right not to carry out quality assurance in the following cases:**

- The whole machine and parts have exceeded the free warranty period
- Shipping damage
- Improper installation, modification, or use
- Operate beyond the very harsh environments described in this manual
- Damage to tear tags, machine failure or damage caused by installation, repair, alteration or disassembly by non-service personnel of the company
- Machine failure or damage caused by the use of non-standard or non-company parts or software
- Any installation and use that exceeds the scope of installation and use specified in the relevant international standards
- Damage caused by force majeure

**Due to the product failure caused by the above situation, the customer requested maintenance services. After being judged by the company's service organization, paid maintenance services can be provided.**

**In order to continuously improve customer satisfaction, the company's products and product manuals are in continuous improvement and upgrading. If there is a discrepancy between the manual in your hand and the product, it may be due to the version, please refer to the specific product. If you still have questions, please contact us.**