Three-Phase Micro-Grid System

User Manual

Preface

Micro-grid system which can be widely used by residents and commercial users is a multi-functional electrical power system. This system can provide sustainable and stable electric power to users, and power loads uninterruptedly. If customer has already installed solar panels, the system can running the most economical, practical mode for users according to practical demand of power. This system can provide users with longer time, more stable electrical power by using a high capacity, long lifetime, high safe, environmental Li-ion battery. This System can also bring users considerable economic benefit without harm to the environment.

Micro-grid system is a kind of multi-mode running power supply. There are different working modes under different external conditions. Users' using environment and actual electric using situation are considered, and it provides users with the most perfect solution.

Micro-grid system provides users with two solutions according to different requirement.

- Single or three-phase DC connection system
- Single or three-phase AC connection system.

This manual mainly introduces operation, installation, and system specification etc. about the three-phase DC connection micro-grid system.

Contents

1 Introduction

1.1 Features

This system which is a power supply with full function, easy operation, is suitable for house.

Features ：

- Suitable for indoor or outdoor (IP 44, when outside must be covered by a roof).
- Wide MPP tracking range, effective MPPT ability.
- Fleetly automatic switch from on-grid to off grid, which can keep users' devices working without power failure.
- Multi-applications of PV energy, which can bring direct economic benefit and environmental effect in the long run.
- High capacity, high safety lithium battery, which can provide with longer power.
- Satisfy different requirements by selectable working modes and changeable running parameters.

Micro-grid system comprises of PV arrays, Bi-directional inverters, solar charge controllers, energy storage battery and battery management system (BMS), etc. As shown Fig 1.1.

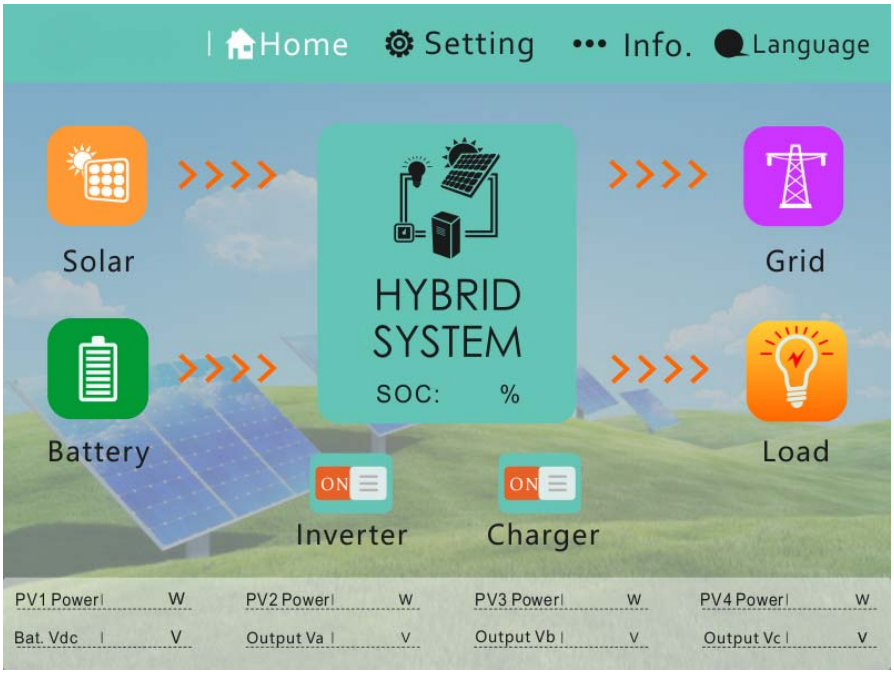


Fig 1.1 Architecture of Micro-grid system

1.2 Typical applications but not limited

Micro-grid system can work on Off-grid mode or On-grid mode to charge the battery and power the loads.

In the On-grid mode, excess energy produced by the PV system that cannot be consumed by the loads when the battery is full will be feed back to the grid if permitted by the local authorities.

1.2.1 Applications

- Mobile telecommunication base station.
- Family homes.
- Small commercial and industrial area.
- Areas with no or unstable electricity, etc.

1.2.2 Off-grid

When there is no grid or grid outage, the micro-grid system will switch over to the off-grid mode automatically and supply power to the loads. Under this mode, system will convert solar energy and (or) battery energy to AC power and power the loads. As shown Fig 1.2.

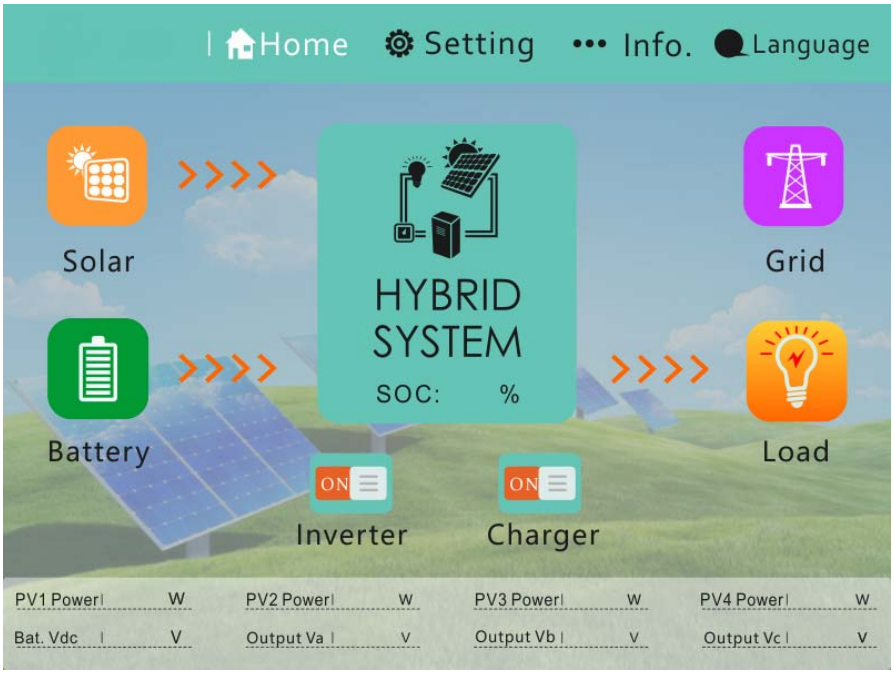


Fig 1.2 Off-grid load power function

1.2.3 On-grid

- **Economical mode:** System will use battery to provide electricity for loads under the premise of guarantee battery remaining electricity. System will convey additional PV energy to grid when battery is fully charged.

- **Environmental power saving mode:** Under the premise of guarantee battery remaining electricity, system use solar energy to provide electricity to loads and excess power used to charge the battery.

When battery is fully charged, then the additional power is feed back to the grid if possible.

As shown Fig 1.3

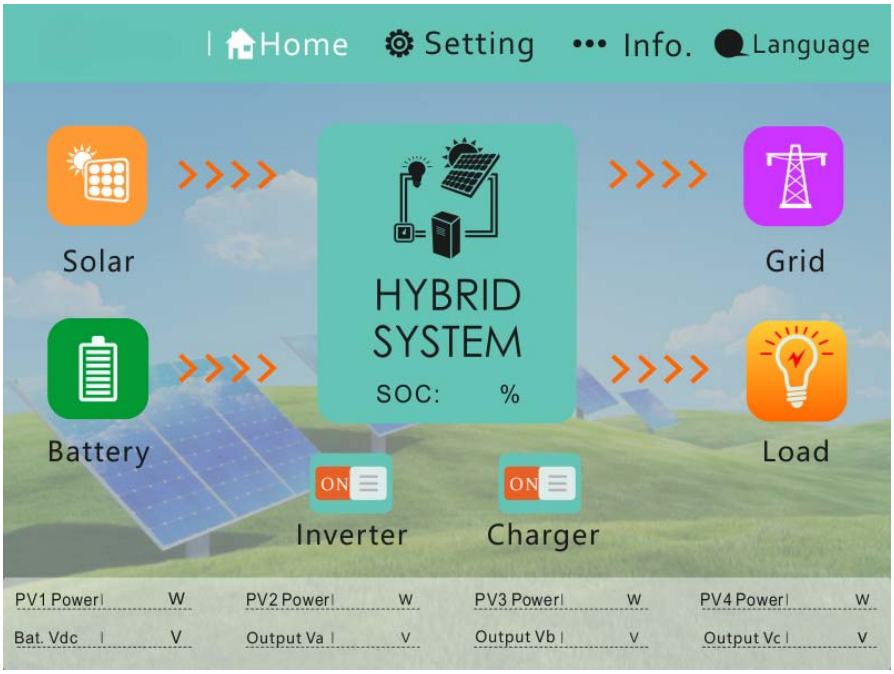


Fig 1.3 On-grid discharge function

- **Peak avoiding mode:** In this mode, the system can be programmed to charge the battery from the grid at the preset time range when the grid tariff is low and power the loads from the Battery when the grid tariffs is high.

As shown Fig 1.4.

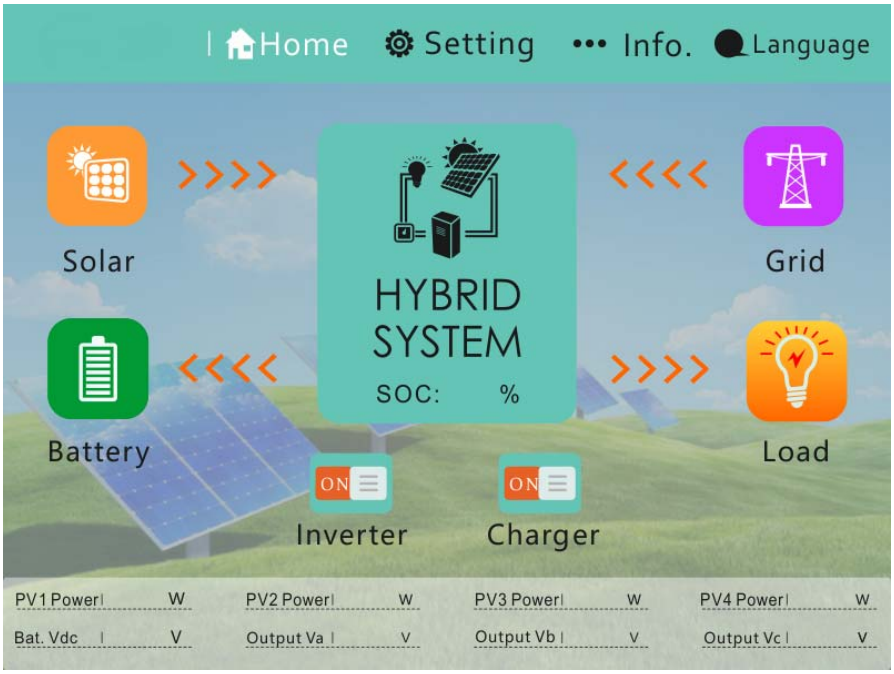


Fig 1.4 On-grid charge function

Note: Running of the system with chosen mode is dependent on the external conditions. It will switch automatically without manual operation.

1.3 Shipping list

Please check the components after open the package according below list and pictures. Make sure all components and accessories are complete without damage and lost.

Table 1.1 System spare part list

System components		
A	Battery Cabinet（Model：MG3215K Battery ）	1 set
B	Inverter Cabinet（Model：MG3215K Inverter ）	1 set
Accessories and spare parts		
C	AC cable	1 PCS
D	DC cable	1 PCS
E	Communication cable	1 PCS
F	Battery cable	4 PCS
G	Needle terminal（Model：S1382）	6 PCS
H	Power connector（Model：MPC175）	3 PCS
Documents		
I	User manual	1 PCS
J	Testing reports	1 PCS

1.3.1 Components

1. Battery cabinet:

Battery cabinet is made up of 14 PCS battery packs, one BMS, one fuse, one control circuit breaker, one main circuit breaker and other electric components. It is the energy storage element of the system. As shown in Fig 1.5.

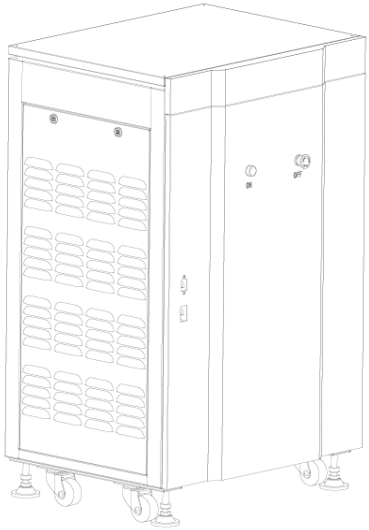


Fig 1.5 Battery cabinet (A)

2. Inverter cabinet

Inverter cabinet, as shown in figure 1.6 includes three bi-directional inverters, four solar charge controllers, one communication module, AC and DC lightning protection modules, and distribution switches etc. The inverter cabinet is the functional element of the system.

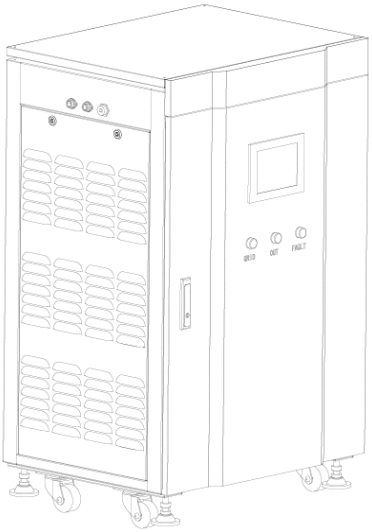
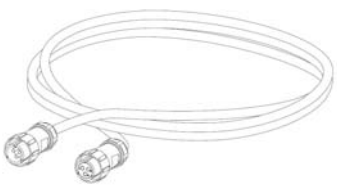


Fig 1.6 Inverter cabinet (B)

1.3.2 Accessories

Make sure all accessories and spare parts are complete without damage and lost.



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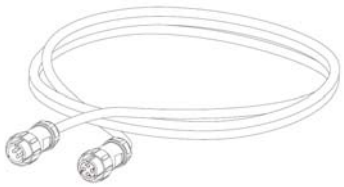

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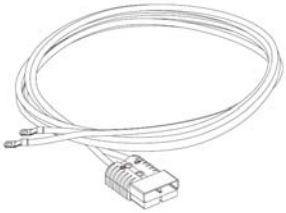

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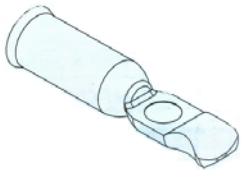

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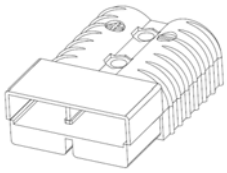


H

1.4 Quality inspection

The system was carefully inspected before shipment. Please ensure package and components are complete and free of damage before operation.

Table 1.2 Quality inspection

Operations	Attentions
Check package	No damage, all markings visible and clear
Check components	No damage and complete
Check accessories and spare parts	No damage and complete

1.5 Markings

	**Danger: High voltage**
	**Warning: Risk of injury or facility damage.**
	**Warning: Risk of burning, stay away from danger**

1.6 Safety instruction

This manual includes important safety instruction.

Please read carefully this manual and all the warning marks on the system before operation and maintenance.

Please be careful when operating and prevent accidents. If system was not installed according to user manual, or did not operate according to the methods and steps in the manual, it may lead to electric shock or fatal injuries.

1.7 Definition

1.7.1 Term list

Off-grid: Bi-directional inverter with no access to the grid, converts battery DC power or solar power to provide electricity to loads.

On-grid: Bi-directional inverter with access to the grid, converts battery power or solar power to AC, or converts AC electricity from the grid to DC electricity and charge the battery.

1.7.2 Alphabet

Table 1.3 Alphabetical definition terms

Terms	Definition
GRID	Public grid
LOAD	Electrical loads
PV	Solar panel
PE / EARTH	Ground wire

2 Installation

2.1 Installation preparation

2.1.1 Facilities

The tools listed below in Table 2.1 need to be prepared before assembling and installation.

Table 2.1: Tools required

NO	Facility	Operation process
1	Wire stripper/bolt clipper	AC Cable
2	Screw (one set)	AC Cable
3	Socket head wrench(one set)	Power Cable

2.1.2 Requirements of cables

Requirements of cables are listed in Table 2.2. Please verify the length of cables connecting to the system according to actual position between cabinets and distribution box (and combiner box).

Warning: Please use spare parts recommended by this manual. (AC, DC cables should be suitable for local electric standard.)

Table 2.2 Cable specifications (recommended)

Terminal	Cable specs (recommended)	Cable color
Positive of PV panel	6 AWG (or 16mm^2)	Red
Negative of PV panel	6 AWG (or 16mm^2)	Black
Lines of AC input（R / S / T）	9 AWG (or 6mm^2)	Red/Green/Yellow
Lines of AC output（A / B / C）	9 AWG (or 6mm^2)	Red/Green/Yellow
Neutral of AC input（N）	9 AWG (or 6mm^2)	Blue
Neutral of AC output（N）	9 AWG (or 6mm^2)	Blue
Ground of AC input and output	≥16 mm^2	Yellow & Green
Battery positive (Accessories F)	1-0 AWG（or 50mm^2）	Red
Battery negative (Accessories F)	1-0 AWG（or 50mm^2）	Black

2.2 Location of installation

Battery cabinet and inverter cabinet of the micro-grid system should be placed and installed on flat cemented floor indoor (or outdoor). The place of installation must be stable, safe, well ventilated, and free from heat source or fire, rain or dust.

Warning:

- Ensure the place of installation is ventilated and the environment suits the working requirements of the product.
- No explosives, flammable or corrosive materials near the system.
- Environment temperature of installation should be between 0°C~45°C.

Warning:

- No smoking and fireworks near system and solar panels.
- Ensure the installation surroundings clean and ventilated.
- Ensure cables used suits requirements. Unsuitable cables may lead sparks or fire.

2.3 Installation

This micro-grid system is a highly centralized designed product to make users use it easier. All installation should be finished refer to following steps.

DANGER:

To avoid accidents due to wrong operation, please use insulated tool during installation and maintenance.

WARNING:

Do ensure all the switches are switch off before installation, and the red emergency stop button is locked (Pushed in).

In order to maintain sufficient ventilation, a minimum distances to wall must be maintained.

- Keep a minimum clearance of 0.8m between the inverter cabinet and battery cabinet.
- Keep a minimum clearance of 0.5m from the wall to inverter/battery cabinet.
- Keep a minimum distance of 0.5m from the roof to cabinets.

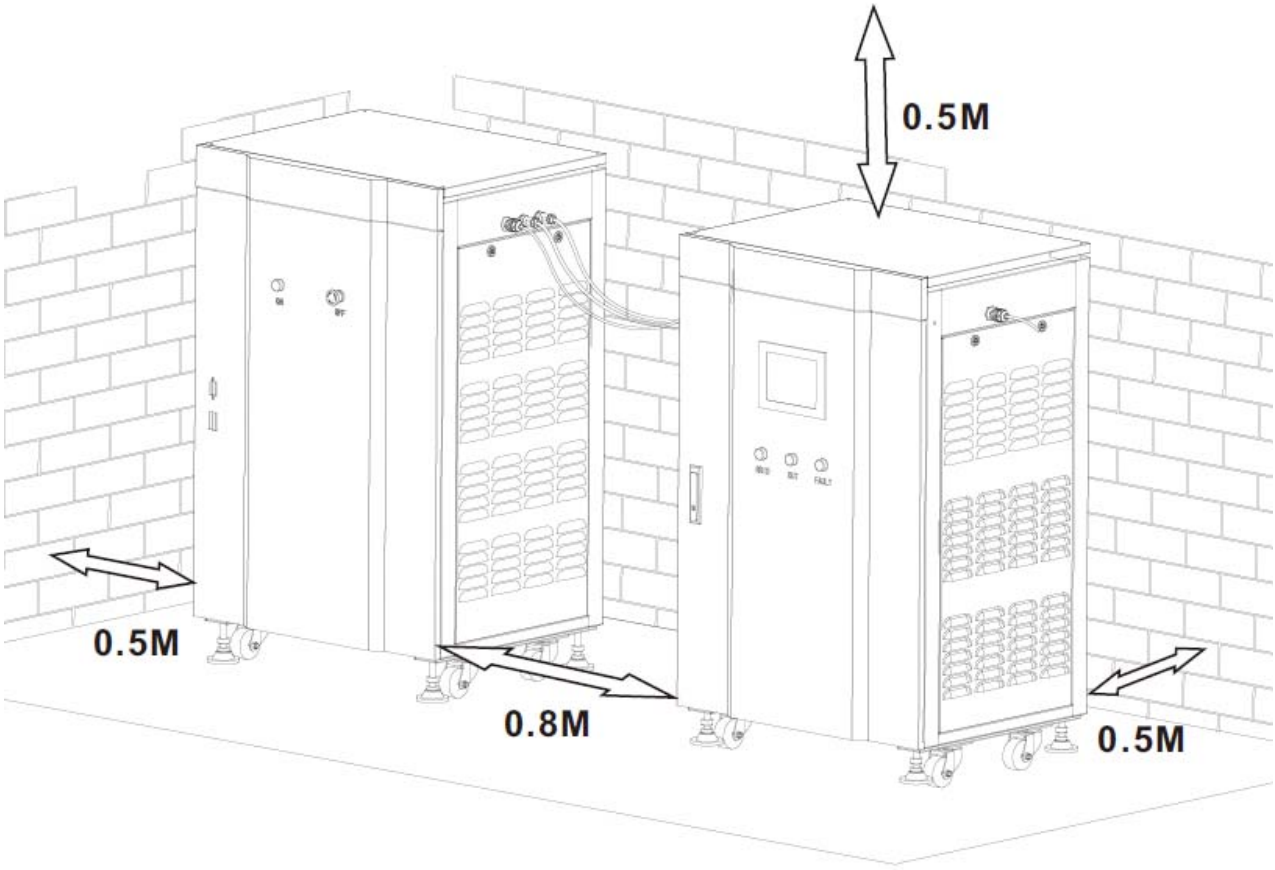


Fig 2.1 Clearance of the cabinets from the wall

2.4 Connection

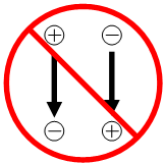
WARNING:
Please use components recommended by this manual (DC and AC cables used must suit local electric standard).

2.4.1 Connection of inverter cabinet

- **Battery input electric connection:**

The steps and methods of connecting the cable interface are shown below.

DANGER:
- DO ensure the correct connection of DC (battery) input.
- DO NOT connect DC loads.



1. Open the door of the inverter cabinet, and remove the plate for proofing. Then the terminals for connection will exposed in front.

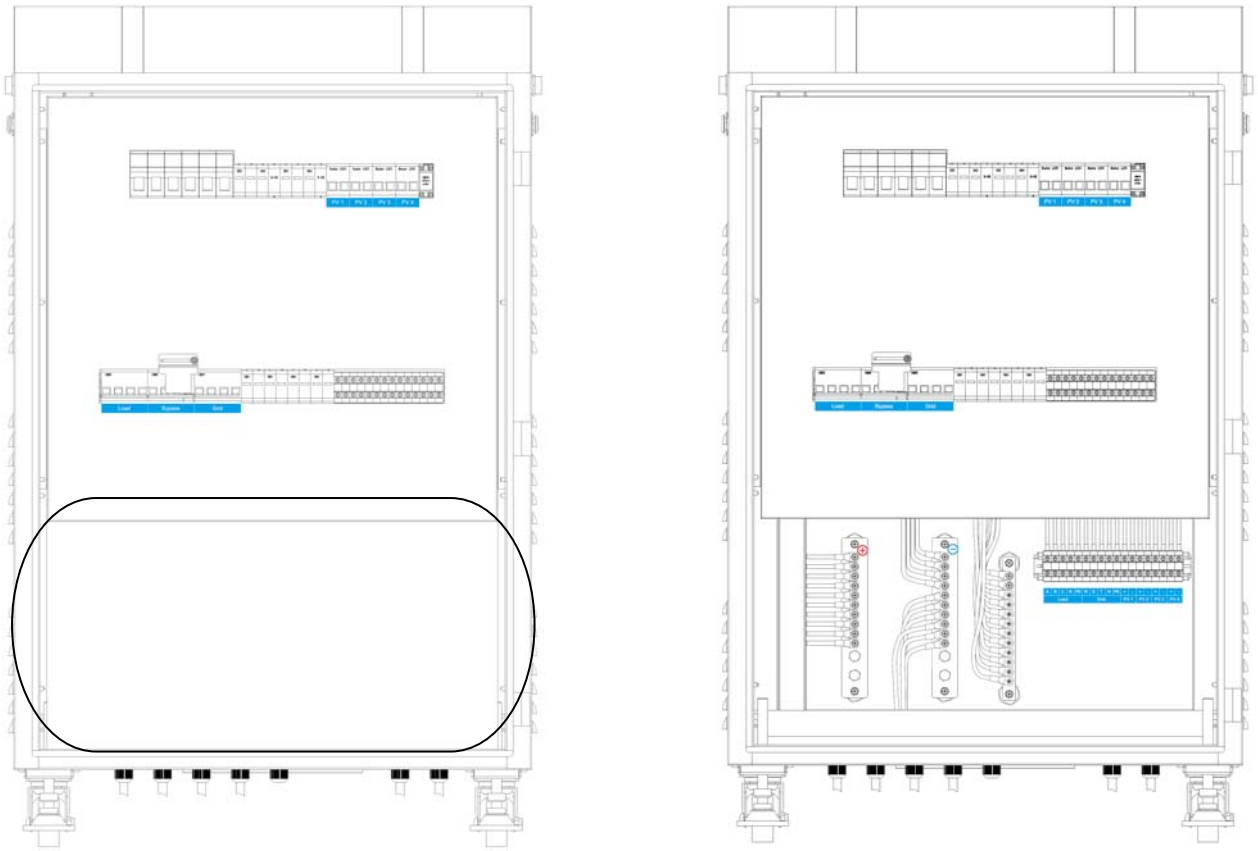


Fig 2.2 Remove the plate for proofing

2. Through the cables (F) from the front bottom of the inverter cabinet, and fixes cables by screwing the plug.

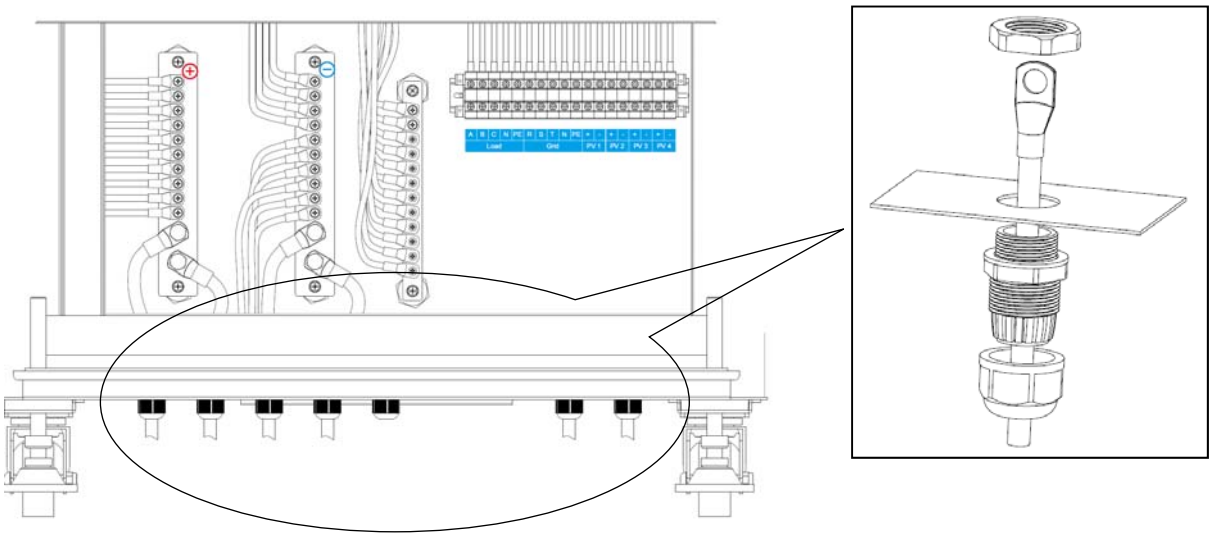


Fig 2.3 Screw cables to the inverter cabinet

3. Fix the red cables to the “+” bus terminal and the black cables to the “-” terminal.

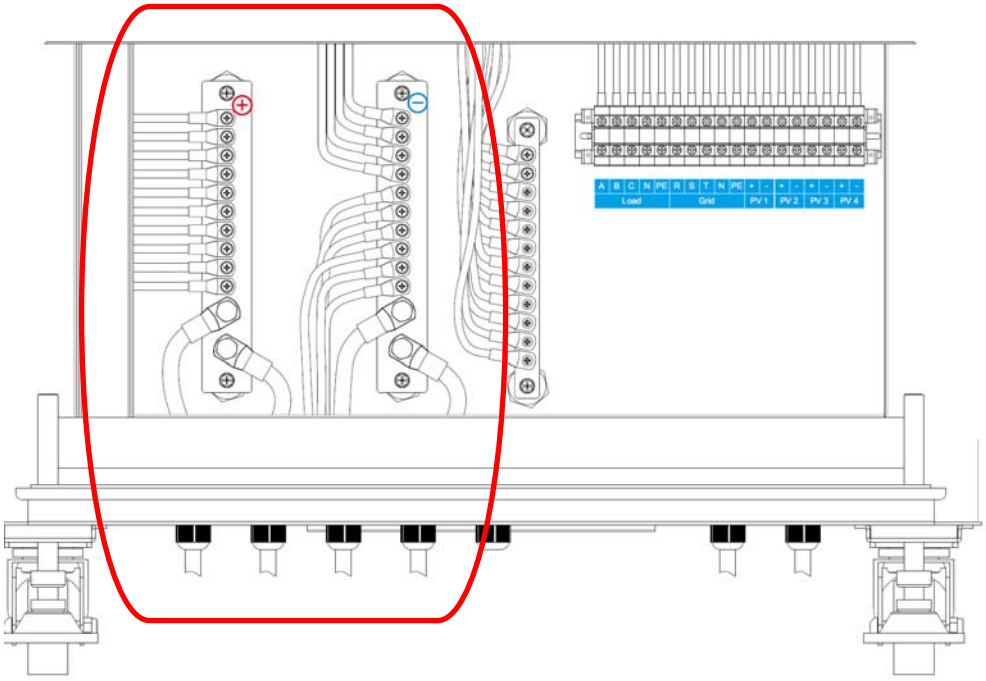


Fig 2.4 Fix cables to the inverter cabinet

- **PV input electric connection:**

1. Check out the distance of PV parallel connection box and inverter cabinet to determine the length of PV input positive, negative connection cable（6 AWG (or 16mm2)），when necessary, use correct connection interface to connect the 2 sides of the cable.

2. Connect PV input positive cables to inverter cabinet interface with marking “PVx+”.

3. Connect PV input negative cables to inverter cabinet interface with marking “PVx-”.

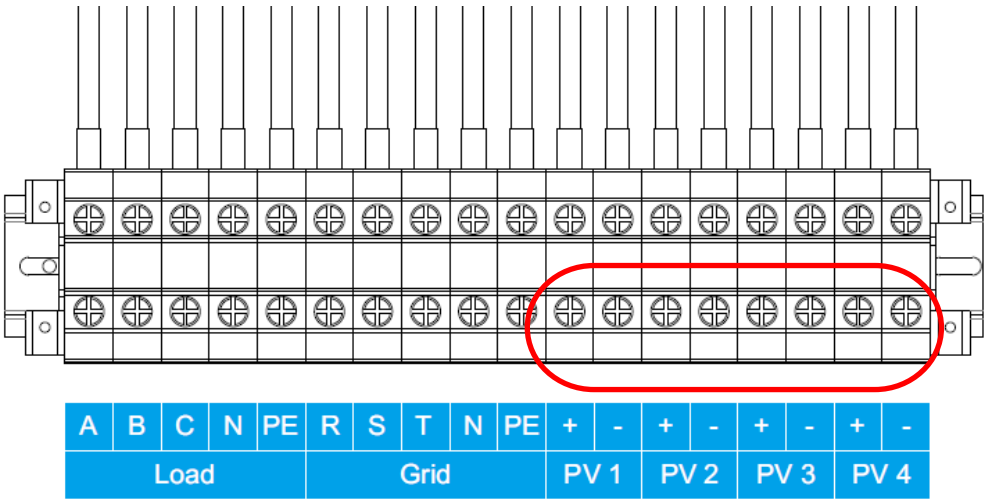


Fig 2.5 PV input connection

- **AC input (From Grid to inverter) electric connection:**

1. Check out the distance of grid distribution box and inverter cabinet to determine the length of AC input fire line, null line connection cable(9 AWG (or 6mm2)), when necessary, use correct connection interface to connect the 2 sides of the cable.

2. Connect 3 grid fire lines L1, L2, L3 one by one to inverter cabinet interface with marking R, S, T.

3. Connect one null line of grid input NETURAL one by one to inverter cabinet interface which marked "N".

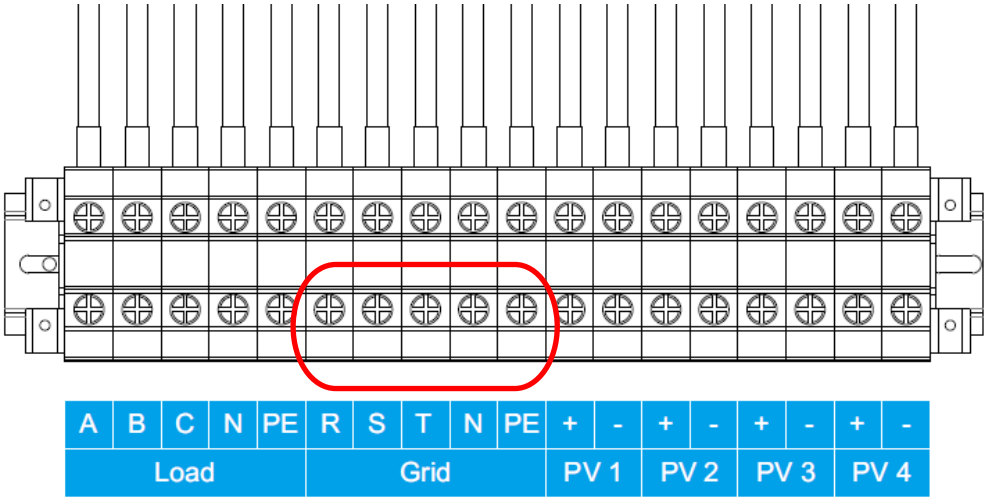


Fig 2.6 AC input connection

- **AC output (From inverter load terminal to distribution box) electric connection:**

1. Check out distance of load distribution box and inverter cabinet to determine the length of AC output fire line, null connection cable (9 AWG (or 6mm2)), when necessary, use correct connection interface to connect the 2 sides of the cable.

2. Connect 3 fire lines of loads L1, L2, L3 one by one to inverter cabinet interface which marked A, B, C.

3. Connect one null line of load distribution box NETURAL one by one to inverter cabinet interface which marked "N".

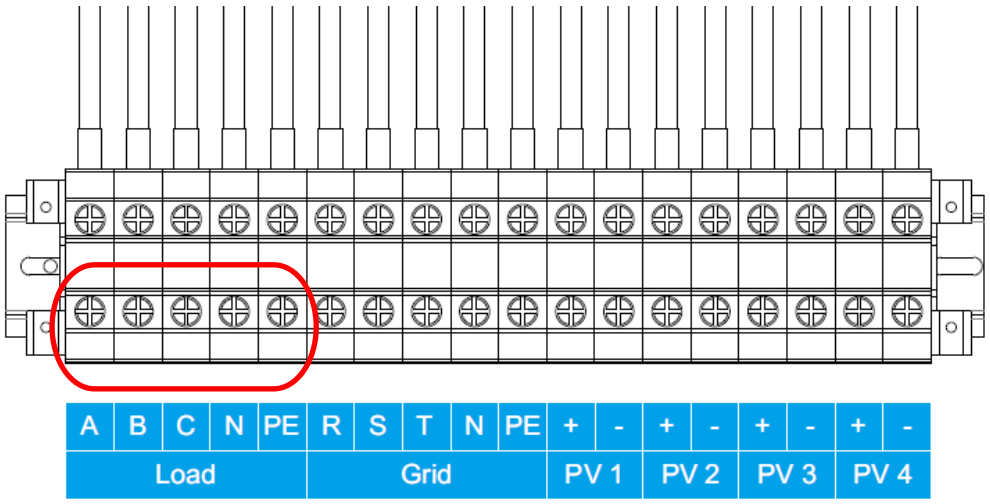
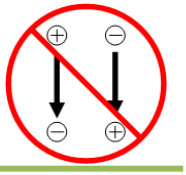


Fig 2.7 AC output connection

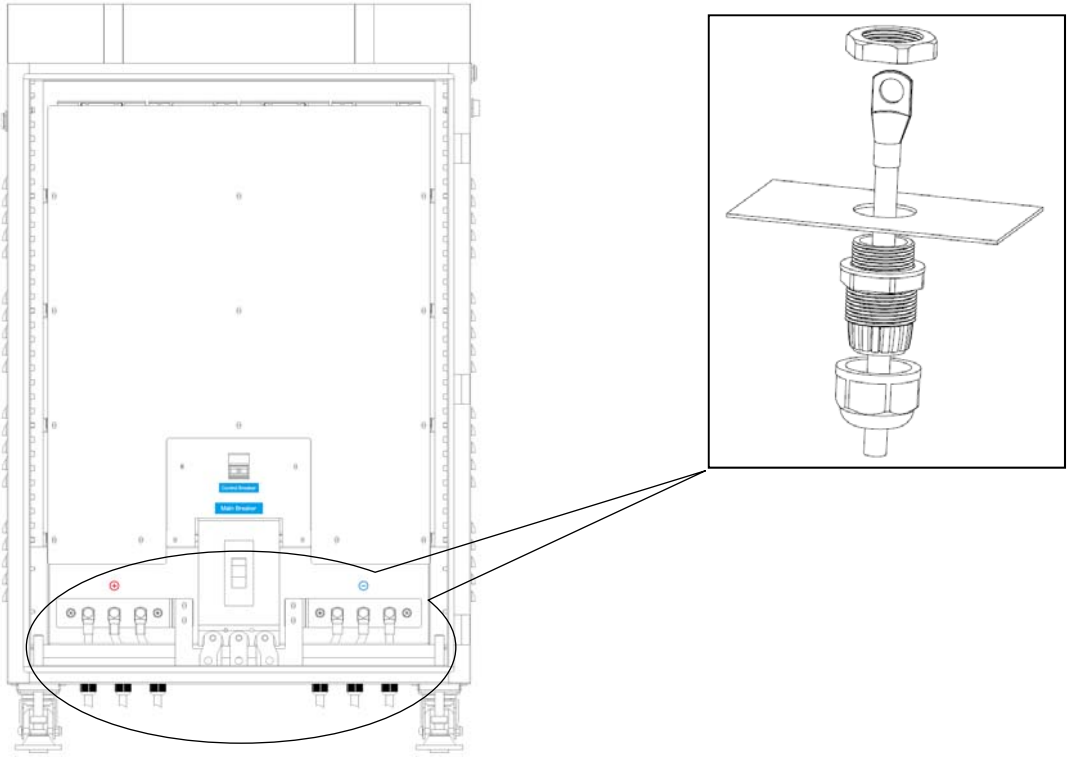
2.4.2 Connection of battery cabinet

DANGER:

- DO ensure the correct connection of DC cables.
- DO NOT connect DC loads.

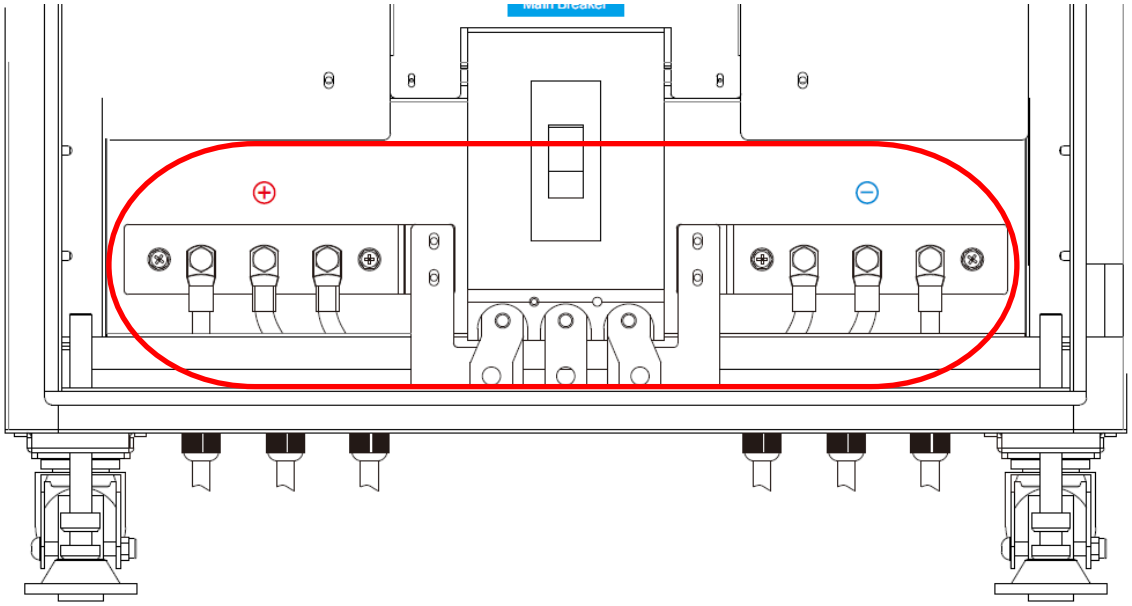


1. Through the cables (F) from the front bottom of the battery cabinet, and fixes cables by screwing the plug.



2.8 Screw cables to the battery cabinet

2. Fix the red cables to the “+” bus terminal and the black cables to the “-” terminal.

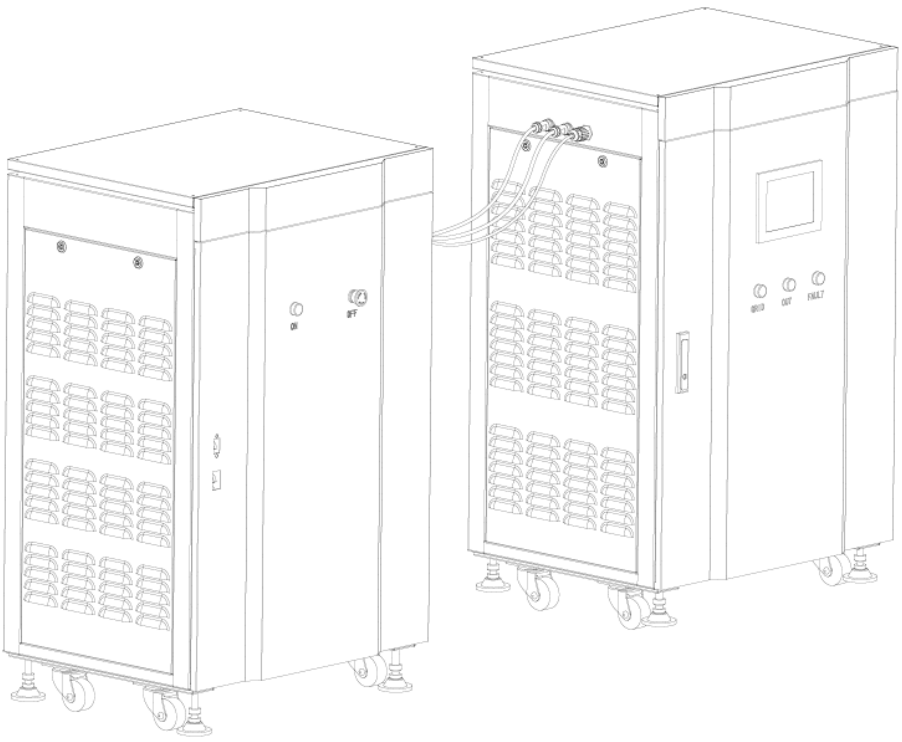


2.9 Fix cables to the battery cabinet

2.4.3 Connection between inverter and battery cabinet

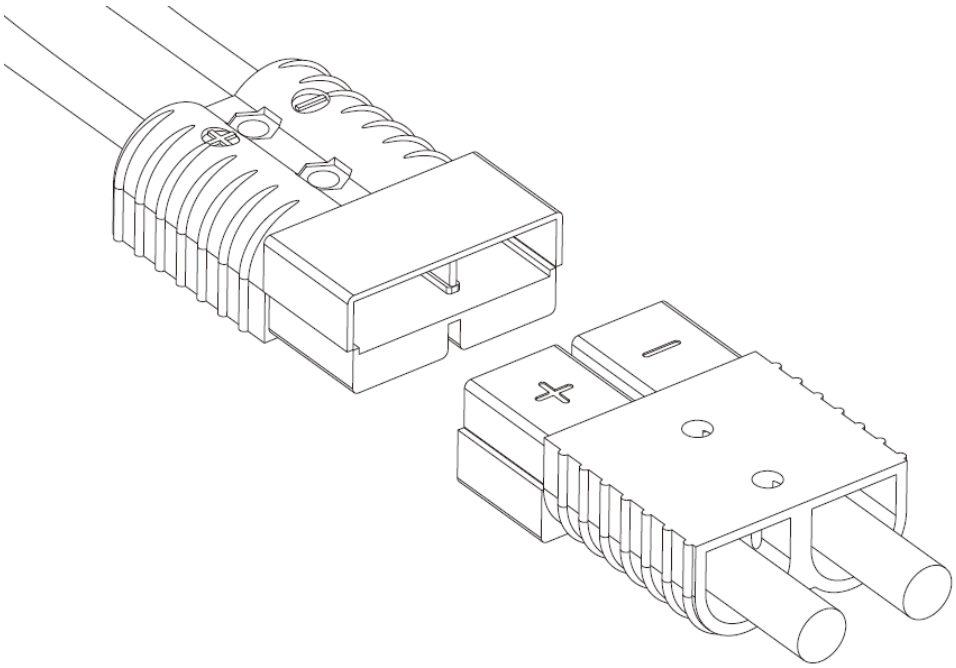
In order to ensure the normal operation and display of the data, three control cables between the battery cabinet and inverter cabinet need to be connected.

1. Insert the accessories A, B, C to the sockets of the battery cabinet and inverter cabinet.



2.10 Control cables connection

2. Plug in the terminals of DC cables between the battery cabinet and inverter cabinet.



2.11 DC cables connection

⚠	**WARNING:** Please ensure the correct connection of telecommunication and control cables.

Re-install the plate for protection on the inverter cabinet.

⚠	**WARNING:** ● This system is not suitable for being used as backup power for medical devices ● Please ensure the connections of all cables are fine.

After above operations are done, make sure all connections are correct according to the appended drawing (in the last section of this manual).

3 Operation

3.1 Operation of cabinets

3.1.1 Start

Normal functioning of the micro-grid system relies on the normal running of battery storage system. So please turn on/off the equipment in strict accordance with the following steps.

3.1.1.1 Start of the battery cabinet

1. Open the door of the battery cabinet, and check the handle of breaker inside the battery cabinet. The handle should be available for operation (refer to Fig.3.1).

2. Switch on the breaker marking “Main breaker”.

3. Switch on the breaker marking “Control breaker”.

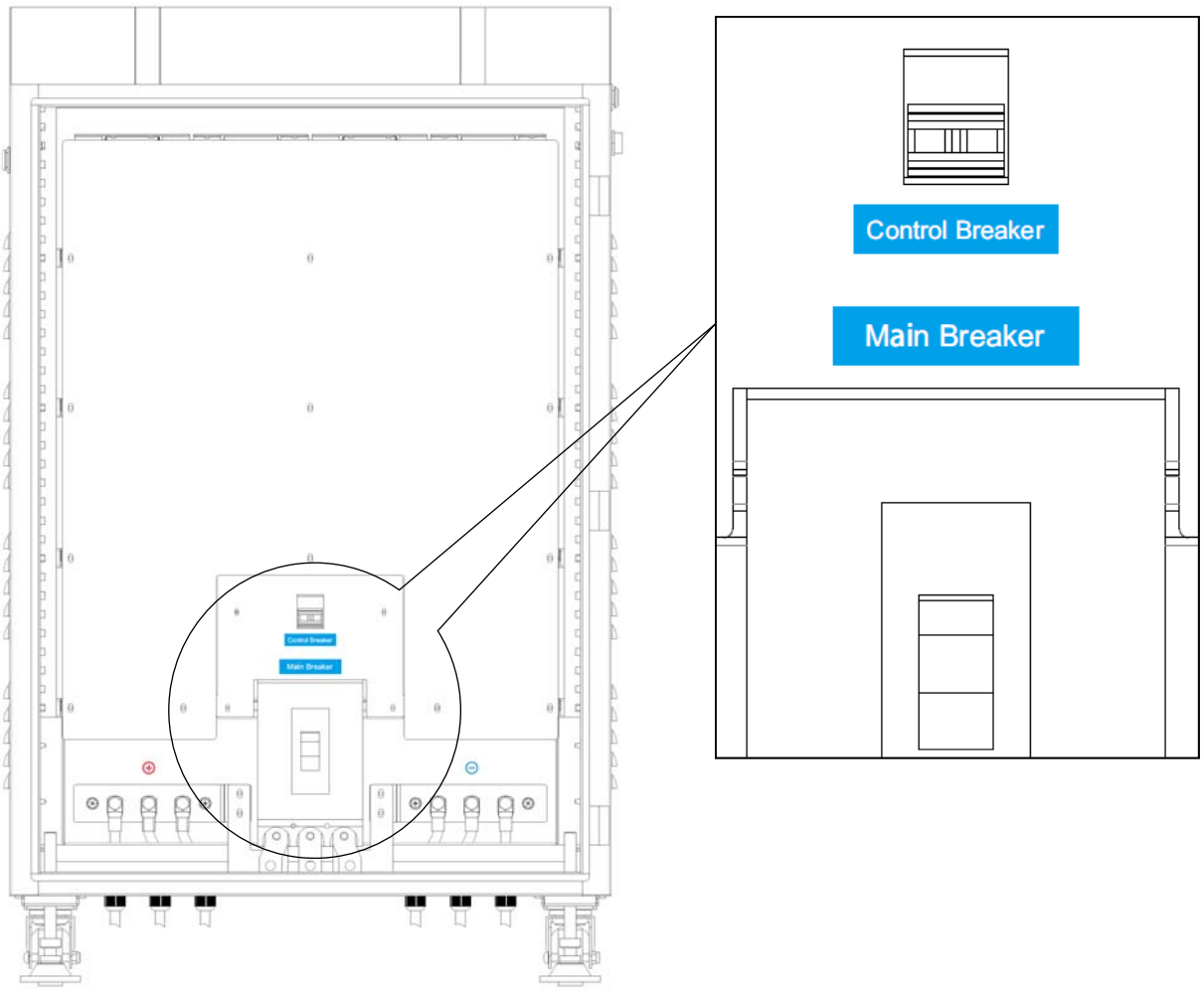


Fig 3.1 Start of the battery cabinet

4. Screw CLOCKWISE to release the RED emergency stop button and press the GREEN start button.

5. Check if the display on the inverter cabinet normally started or not. There should have two continuous sounds “ba” in a few seconds after a first “ba” when press the GREEN button.

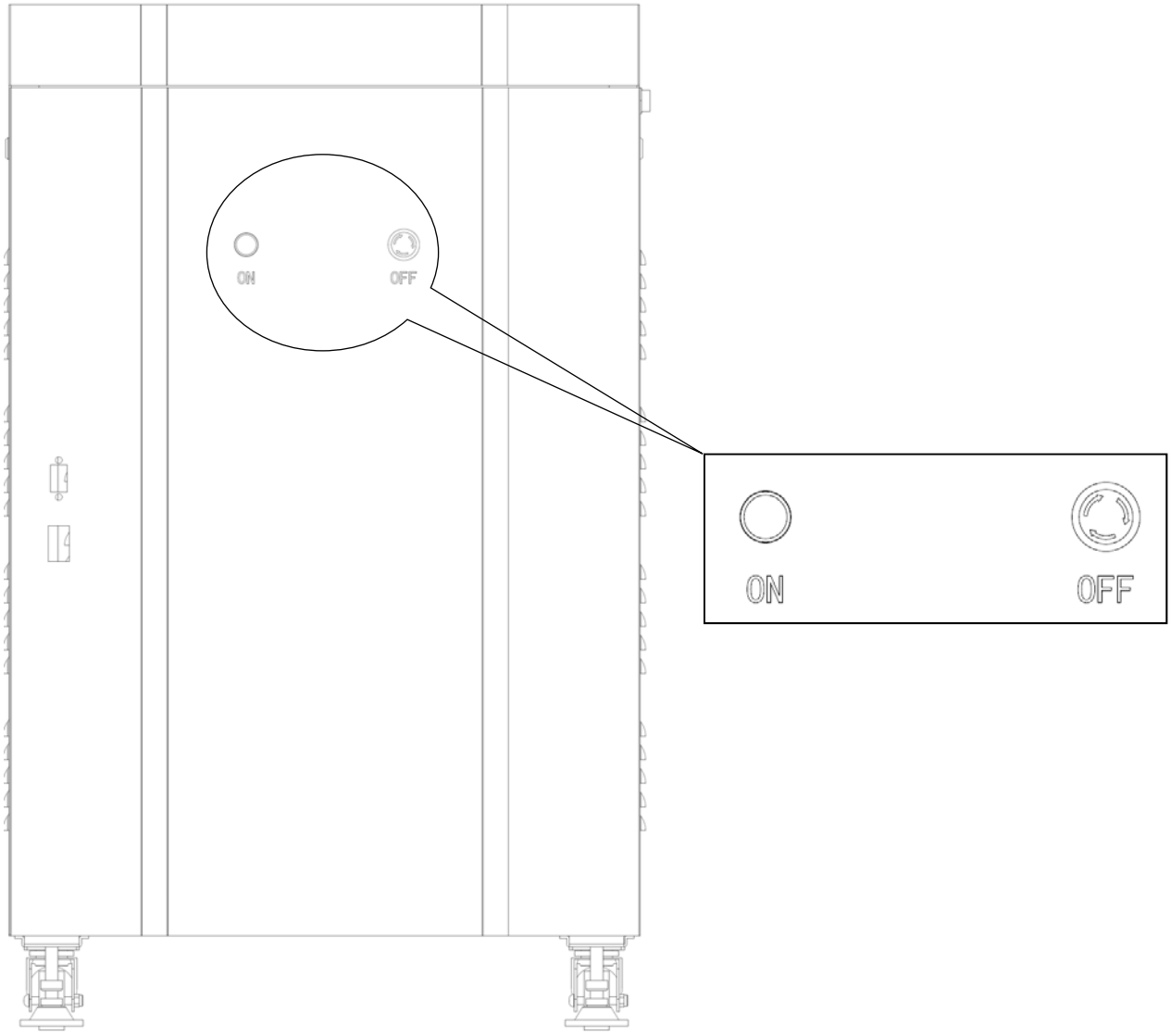


Fig 3.2 ON/OFF buttons of the battery cabinet

6. Use a multi-meter to check the voltage of battery between the positive and negative wire (normal voltage range is 44~58V).

3.1.1.2 Start of the inverter cabinet.

1. Press the inverter icon (circle as Fig 3.3) on the display interface and confirm, then the medium GREEN indicator on the cabinet door should be lighted on, and the output voltage of each single phase displayed on the display interface should be 230V (default voltage).

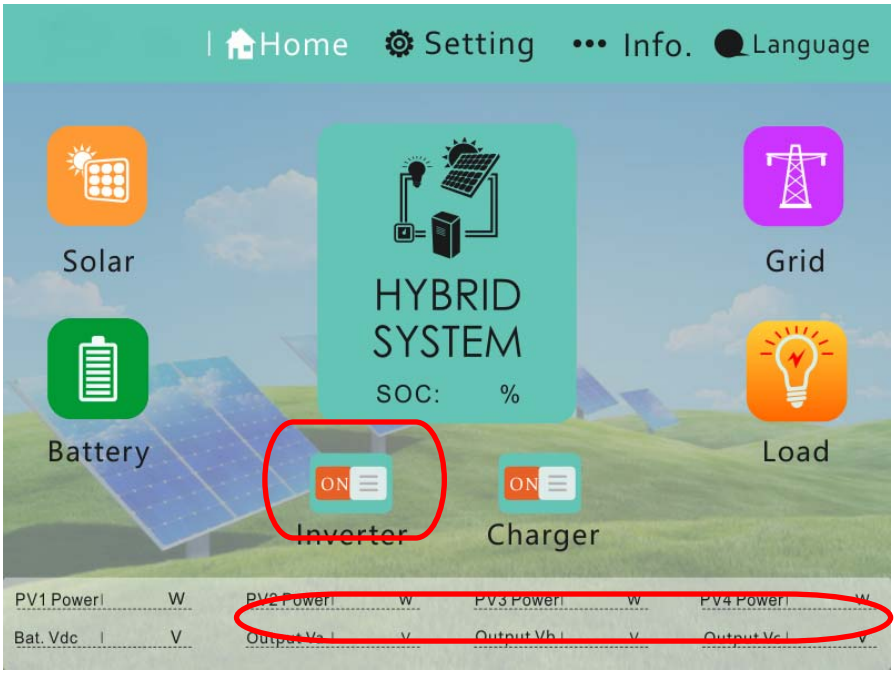


Fig 3.3 Inverter icon and output voltage display

2. Switch on the breaker marking “LOAD”, as shown Fig 3.4.

3. Use a multi-meter to check the voltage of grid (normal voltage range of R-S, S-T, T-S is 400V±10%, normal voltage range of R-N, S-N, T-N is 230V±10%). If all the voltage is normal, then switch on the breaker marking “Grid”, and the YELLOW indicator on the cabinet door should be lighted on.

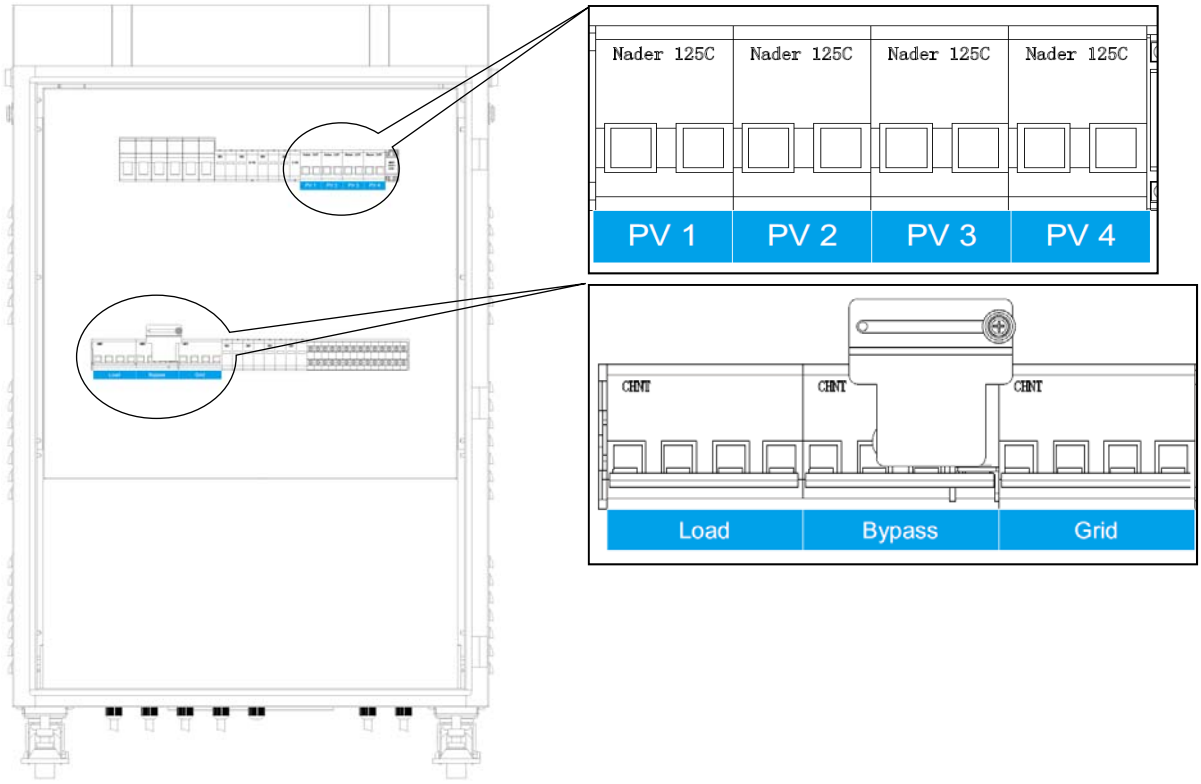


Fig 3.4 AC input/output and PV input breakers

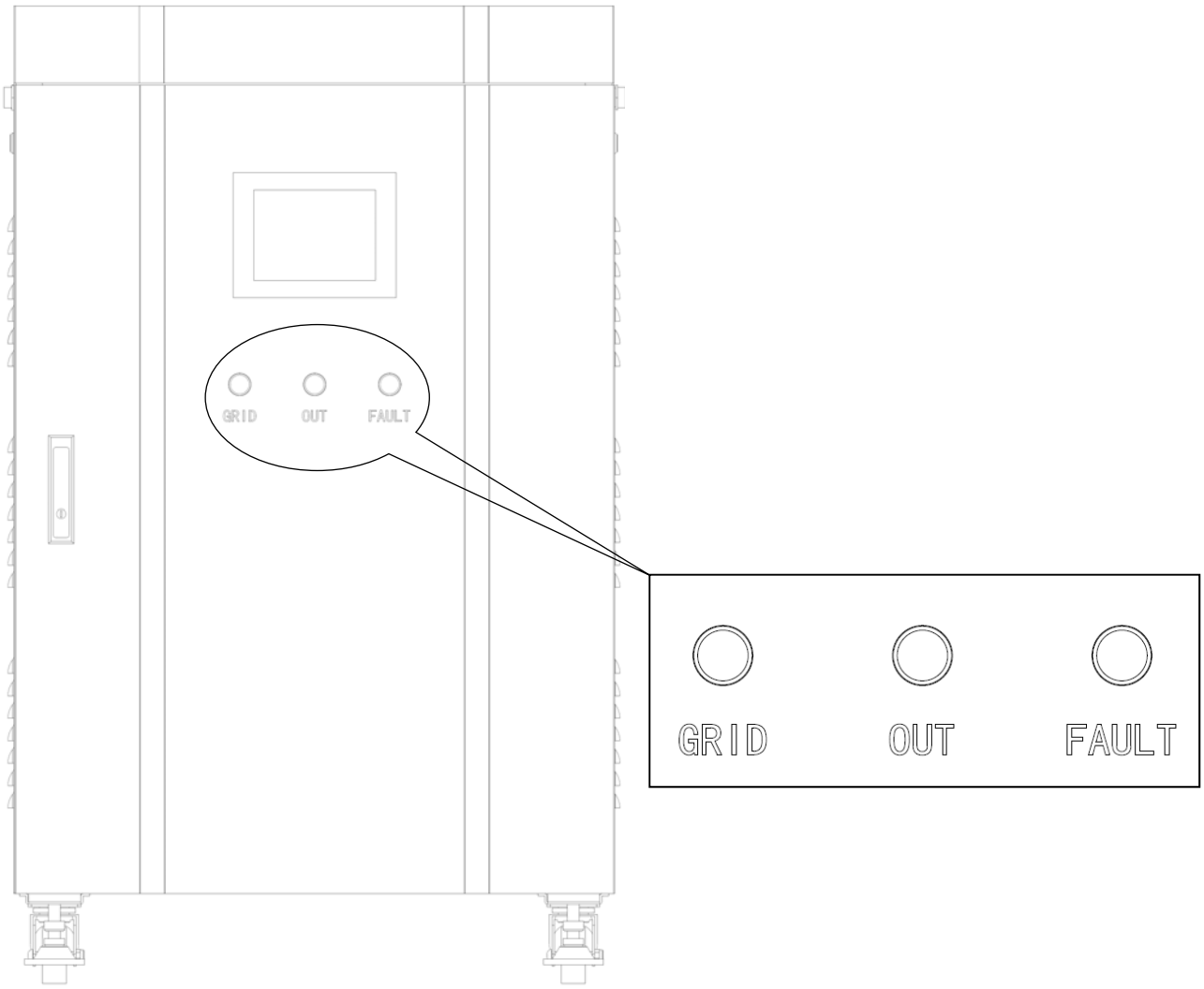


Fig 3.5 AC input/output indicator

4. Use a multi-meter to check the voltage of PV panels if there were PV panels installed and connected to this system (normal range of PV input voltage is 70~140V). If all the voltage is normal, then switch on the breaker marking “PV1”, “PV2”, “PV3”, “PV4”.

CAUTION:

To ensure the normal running of the system, please operate in strict accordance with the procedures above.

Operate 3.1.1.1, 3.1.1.2 in sequence to start the system normally.

Close and lock the doors of the two cabinets once the system start running normally.

To ensure the normal running of the system, please check the breaker state according to Table 2.2 after initial start or restart when maintenance finished.

Table 2.2 Breaker State

No	Breaker Marking	Normal running state	Bypass running state
1	Main Breaker	ON	ON/OFF
2	Control Breaker	ON	ON/OFF
3	LOAD Breaker	ON	OFF
4	GRID Breaker	ON/OFF	OFF
5	BYPASS Breaker	OFF	ON
6	PV1,PV2,PV3,PV4 Breaker	ON/OFF	ON/OFF

3.1.2 Shut off

3.1.2.1 Shut off of the inverter cabinet

Switch off the breaker “PV1”, “PV2”, “PV3”, “PV4”, “GRID”, “LOAD” in sequence to normally shut off the inverter cabinet.

3.1.2.2 Shut off of the battery cabinet

Press the RED emergency stop button to normally shut off the battery. Then switch off the breaker marking “Control Breaker”, “Main Breaker” in sequence.

Operate in sequence as above procedures to normally shut off the micro-grid system.

DANGER:

Before installation, maintenance, or demonstration, please make sure to break the link between inverter and grid and load. Then shut off the electric switch inside the cabinets.

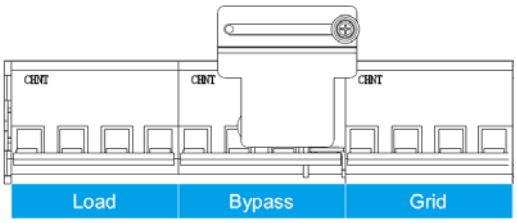
CAUTION:

To ensure the normal running of the system, please operate in strict accordance with the procedures above.

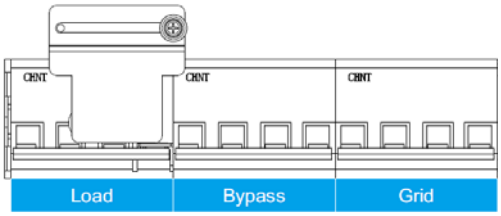
3.1.3 Start of bypass

Micro-grid system has a function of bypass which is designed for the situation that loads

should be powered during maintenance or inverter, or charger controller, or battery, or BMS error when the grid is running normally. Although this situation does not occur frequently, the micro-grid system retains the design of bypass in order to satisfy demands for electricity in the event of this situation.



Normal running state



Bypass running state

The states of breakers in bypass running mode shown as in table 2.3.

Table 2.3 Breaker state during maintenance

No	**Breaker Marking**	**Bypass running state (or maintenance)**	
		Inverter, Charger and Battery	**Fan and others**
1	Main Breaker	OFF	ON
2	Control Breaker	OFF	ON
3	LOAD Breaker	OFF	OFF
4	GRID Breaker	OFF	OFF
5	BYPASS Breaker	ON	ON
6	PV1,PV2,PV3,PV4 Breaker	OFF	ON/OFF

During bypass running mode, loads connected to micro-grid system are powered by the gird through the breaker “BYPASS”, but not the micro-grid system. The breaker “LOAD” is designed to be mutually exclusive with the breaker “BYPASS”, so it is possible to effectively separate the loads powered by the inverters from the grid.

DANGER:

DO care of this operation when maintenance or repairs causing the grid is running normally.

CAUTION:

Any operation to the system is forbidden in any condition of system error or the condition does not meet the requirement.

3.2 Operation of display interface

Micro-grid system running in off-grid mode or certain specific set up by users can provide power to loads when there is no grid. The system switches automatically to supply electricity to loads uninterrupted when power quality of the grid is weak or useless, causing it detects the voltage of the grid in real time. The system also can charge or discharge battery according to the settings selected by user.

Micro-grid system can work in different running mode to achieve complete function needed by user. Additionally, suitable settings of the system lead it working more close to the requirement of user. Four working mode as below of the system can be selected by user.

Peak-avoiding

Micro-grid system charges the battery until maximum SOC from grid during charging time or discharges the battery until minimum SOC to grid during discharging time. User need to set the charging and discharging time only when peak-avoiding mode was selected.

Energy saving

Micro-grid works on-grid mode, but there is almost no electricity from or to grid. Loads are powered by the battery and PV panels. The excess electricity produced from PV panels will charge the battery firstly, and it will be reduced to zero if the battery is full. Also, battery will be charged when reach to the minimum SOC from grid until to the maximum SOC.

Economic

Micro-grid system provides electricity to loads from battery and PV panels. The excess electricity produced from PV panels will charge the battery firstly, and it will be fed back to the grid if the battery is full. Also, battery will be charged when reach to the minimum SOC from grid until to the maximum SOC. In this working mode, the state of charge keeps a higher level to react to a sudden power outage.

Off-grid

Micro-grid provides electricity to loads from battery and PV panels at any time. But it will switch to grid power the loads when the minimum state of charge below 10%, and the battery will be charged until maximum SOC.

Debugging (NOT recommended)

Almost working like energy saving mode. But a different situation is that the excess electricity produced from PV panels will be fed back to grid once the battery is full.

CAUTION:

Debugging mode is really not recommended to be selected by users.

More detailed settings of working mode, inverter, charger and battery can be operated after logged in from the display interface on door of inverter cabinet. Refer to following please.

3.3 Display of the system

Users can get to know the system running state and parameter through the display interface. This section will give illustration of operation about information and settings of the system.

3.3.1 Home

Home of the display interface shows main running parameter and energy flowing of the system. As shown Fig 3.6.

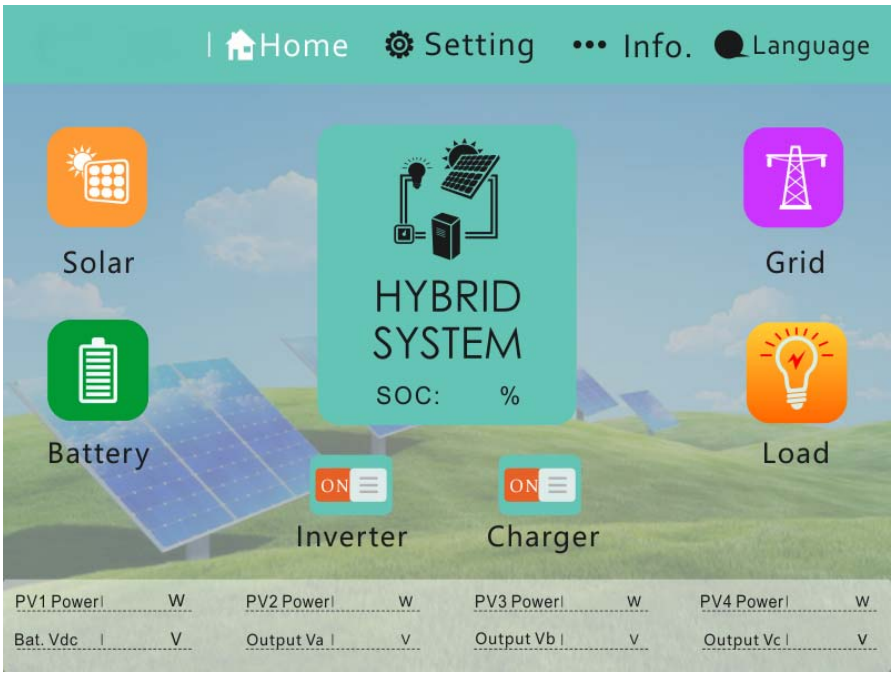


Fig 3.6 Home

Touch picture icon will enter into the corresponding detail information list.

Icons on the top of the menu also can enter into corresponding information.

3.3.2 Solar Charger Information

☞ Touch “Solar” icon to enter in to “Solar Charger Information” page.

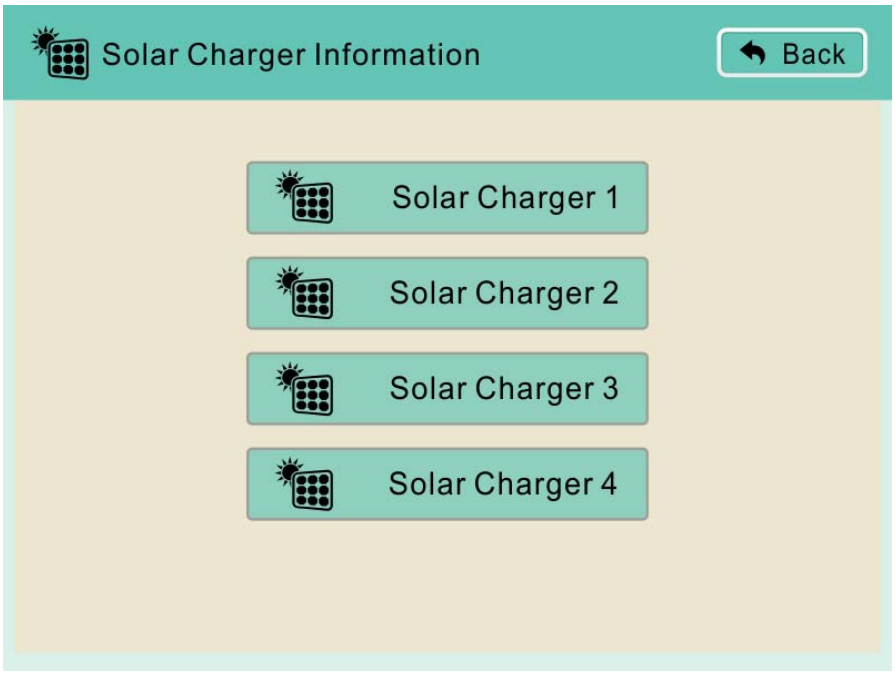


Fig 3.7 Solar charger information

☞ Touch “Solar Charger 1” icon to enter in to “Solar Charger_1 Information” page.

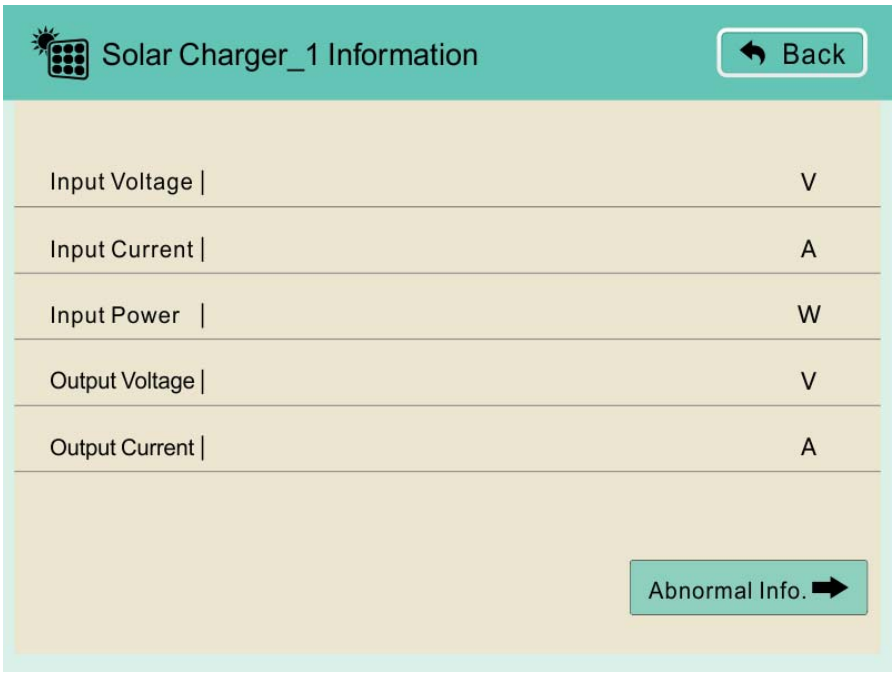


Fig 3.8 Solar charger_1 information

If the solar charger does not working, abnormal information can be known by touch and check in the next page.

☞ Touch “Abnormal Info.” icon to enter in to “Solar Charger_1 Information” page.

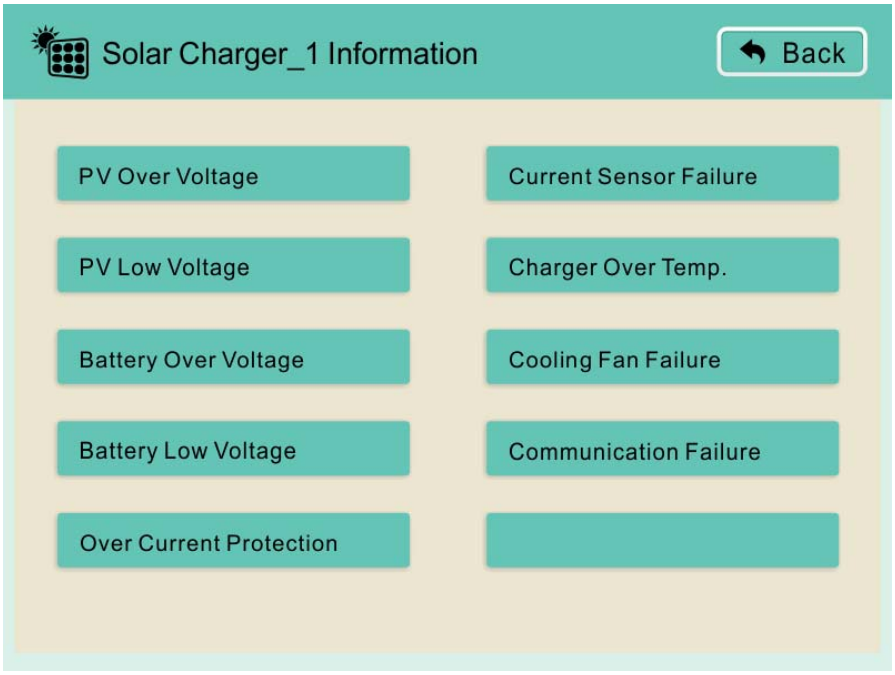


Fig 3.9 Abnormal information of solar charger_1

3.3.3 Inverter Information

☞ Touch “HYBRID SYSTEM” icon to enter into “Inverter Information”.

Inverters running state could be checked after entered into inverter information page.

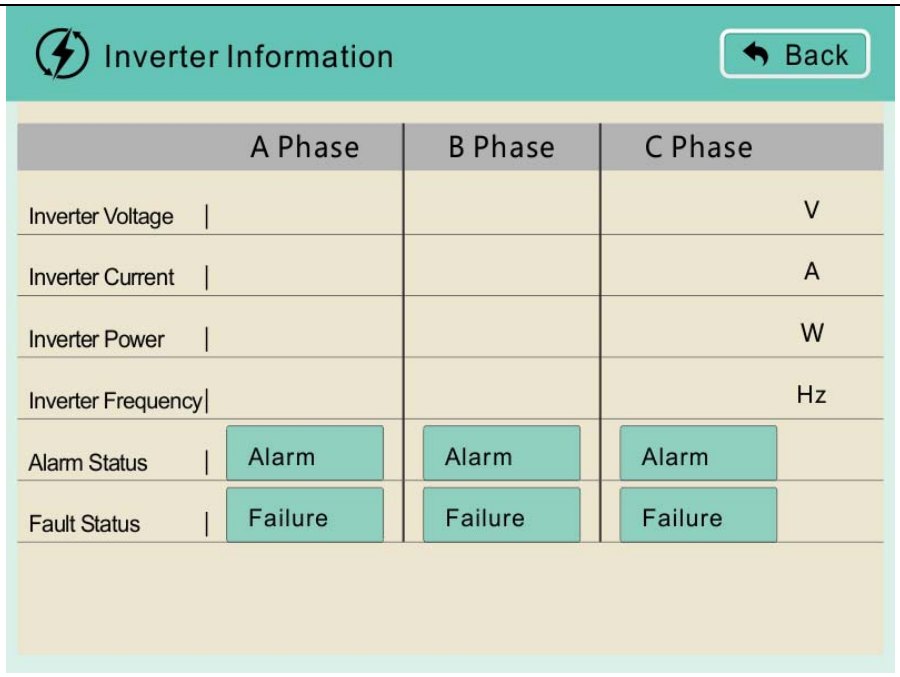


Fig 3.10 Inverter information

Users can click the corresponding icon of “Alarm” or “Failure” to get the detailed information of each inverter if there is any number more than zero which means there is alarm or error.

☞ Touch “Alarm” of A Phase icon to enter in to “A Phase Inverter Information” page.

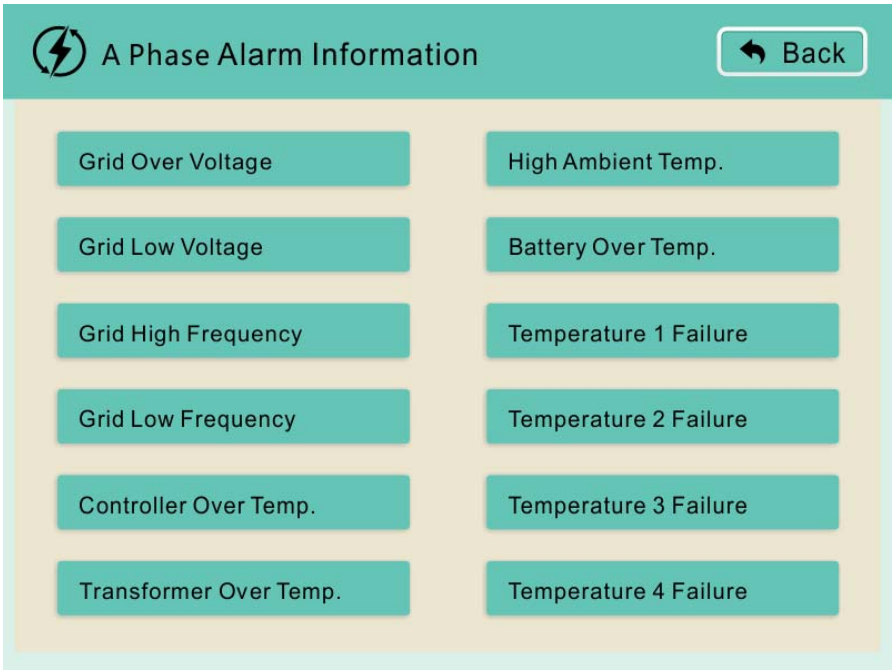


Fig 3.11 A Phase alarm information

☞ Touch “Failure” of A Phase icon to enter in to “A Phase Inverter Information” page.

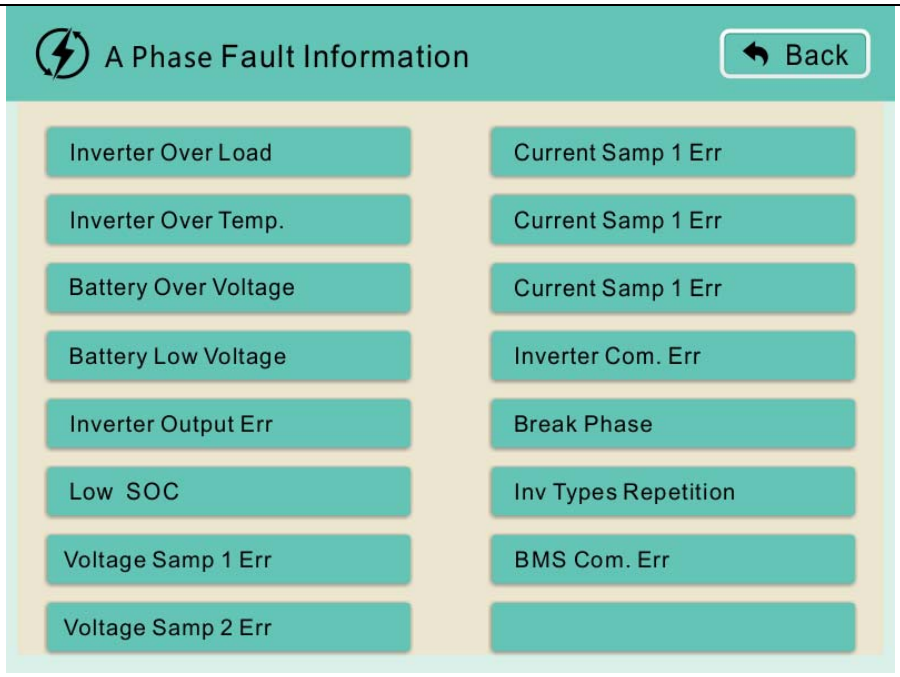


Fig 3.12 A Phase fault information

CAUTION:

Users should provide the failure code to supplier to help solving the problem if inverters cannot return to working from error state.

3.3.4 Input Information

☞ Touch “Grid” icon to enter into “Grid input information”.

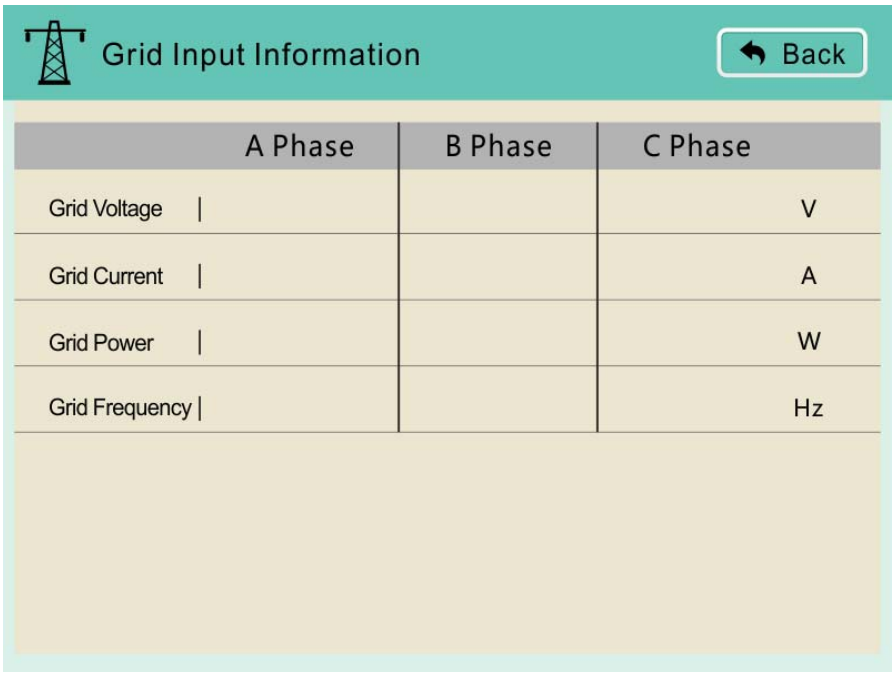


Fig 3.13 Grid input information

3.3.5 Output Information

☞ Touch “Load” icon to enter into “Output Information”.

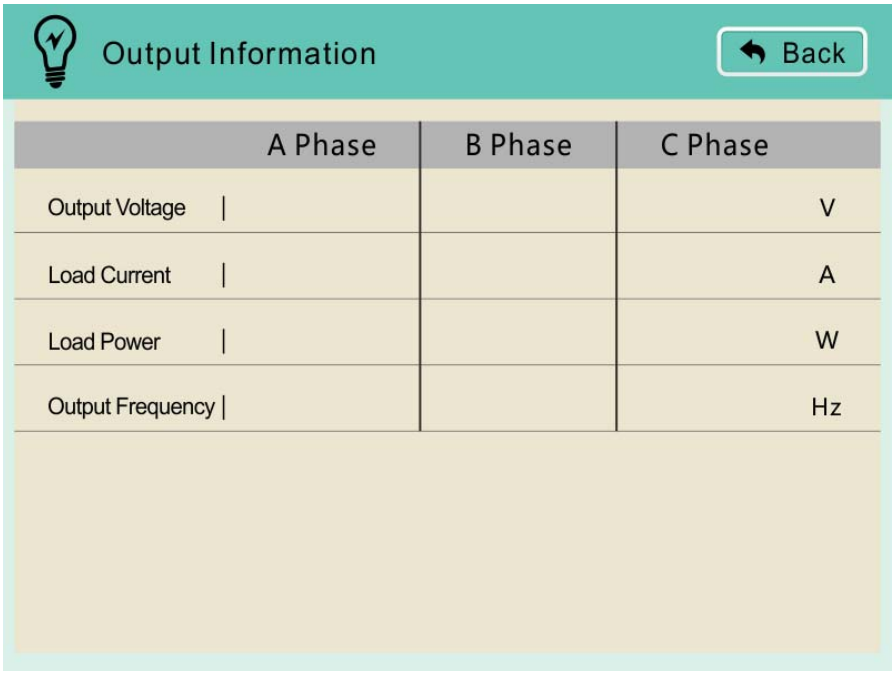


Fig 3.14 Output information

3.3.6 Battery Information

☞ Touch “Battery” icon to enter into “Battery information”.

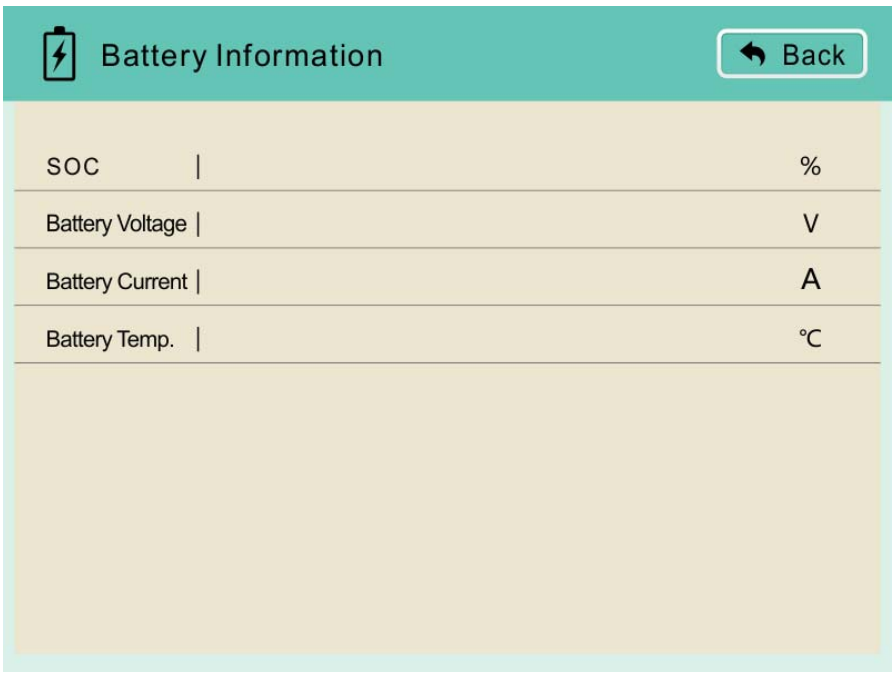


Fig 3.15 Battery information

3.4 Setting

Normal running of the micro-grid under specific mode relies on the real-time status of external condition. And proper settings of the system parameter will meet the specific user need. This section will illustrate the setting of system.

⚠	***Initial password: 123456***
⚠	***1、Password should be six Arabic numerals.*** ***2、Password will be reset to initial if entered the wrong password six times consecutively.***

3.4.1 Log in

☞ Click the “Setting” leading to enter into the log in page, then enter password to log in.

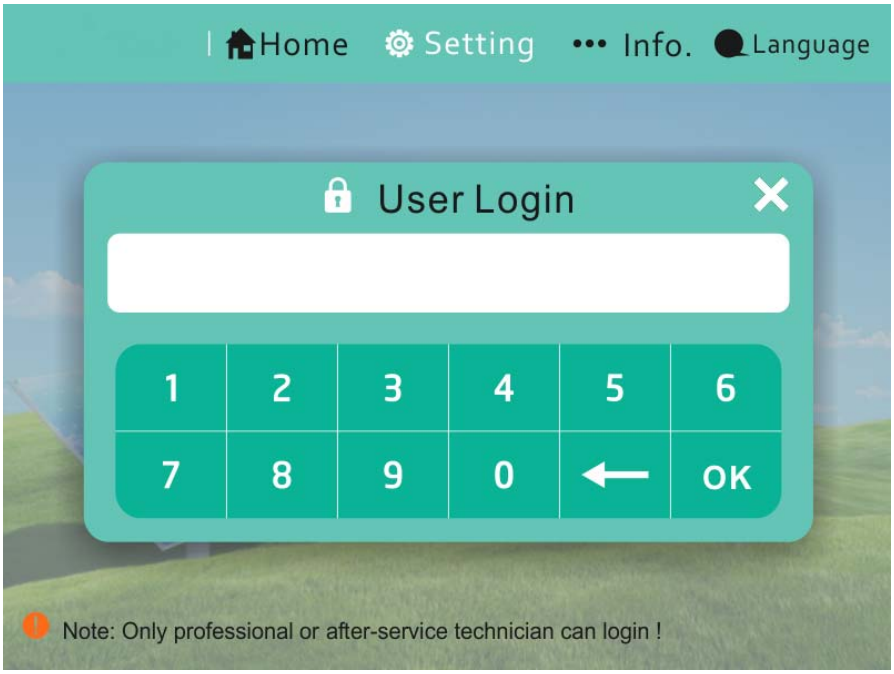


Fig 3.16 Log in

Users can have personalized settings about system working mode, inverter and charger running parameter, BMS maintenance and password setting of the micro-grid system after logged in.

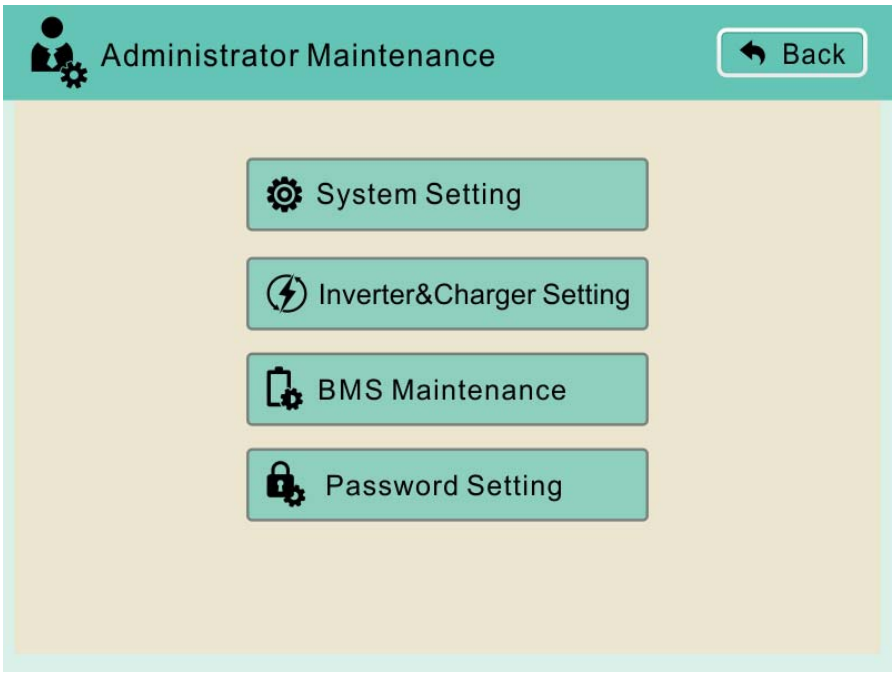


Fig 3.17 Administrator maintenance

3.4.2 System

☞ Click “System Setting” to enter into the setting page of the system about the parameter and working mode.

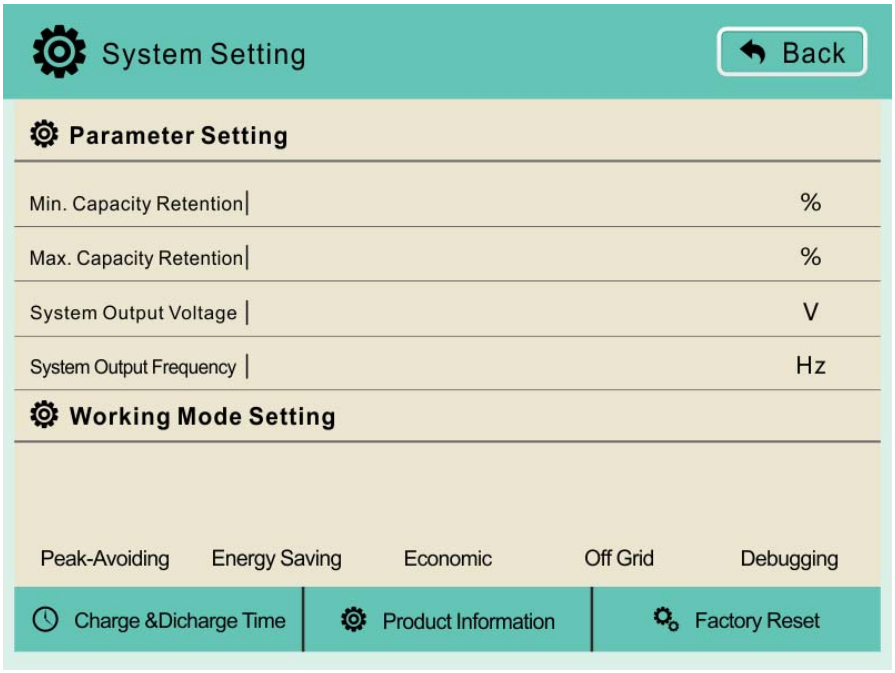


Fig 3.18 System setting

CAUTION:

Inverters should be shut off before change the system working mode. New working mode takes effect after a confirmation and restart.

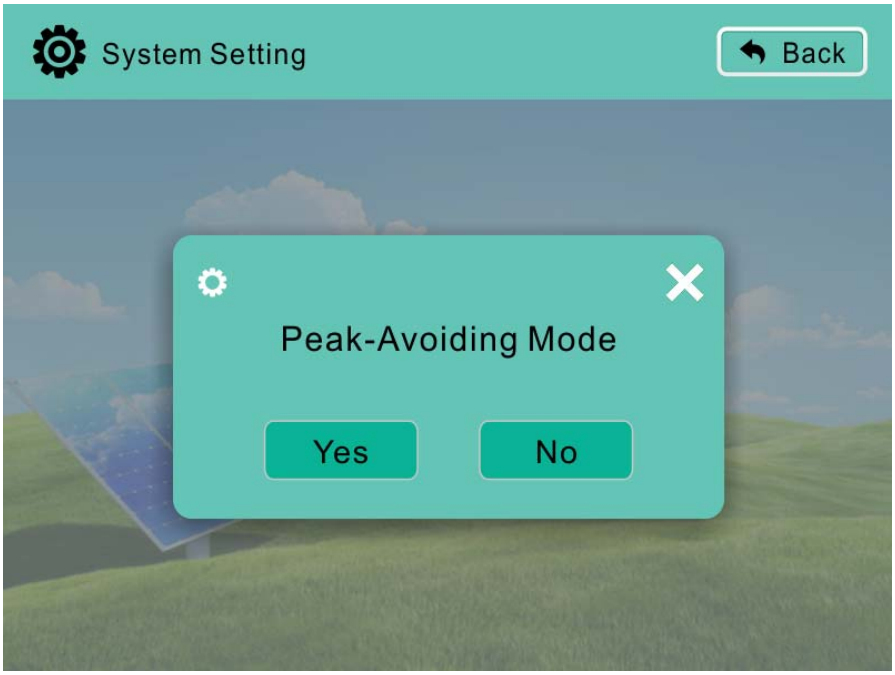


Fig 3.19 Confirmation of change the system working mode

User need to set the charging and discharging time when peak-avoiding mode was selected.

☞ Click “Charge & Discharge Time” to set the time of peak-avoiding mode.

Fig 3.20 Charge and discharge time

3.4.3 Inverter and charger

☞ Click “Inverter & Charger Setting” to enter into the parameter setting page of inverter and solar charger.

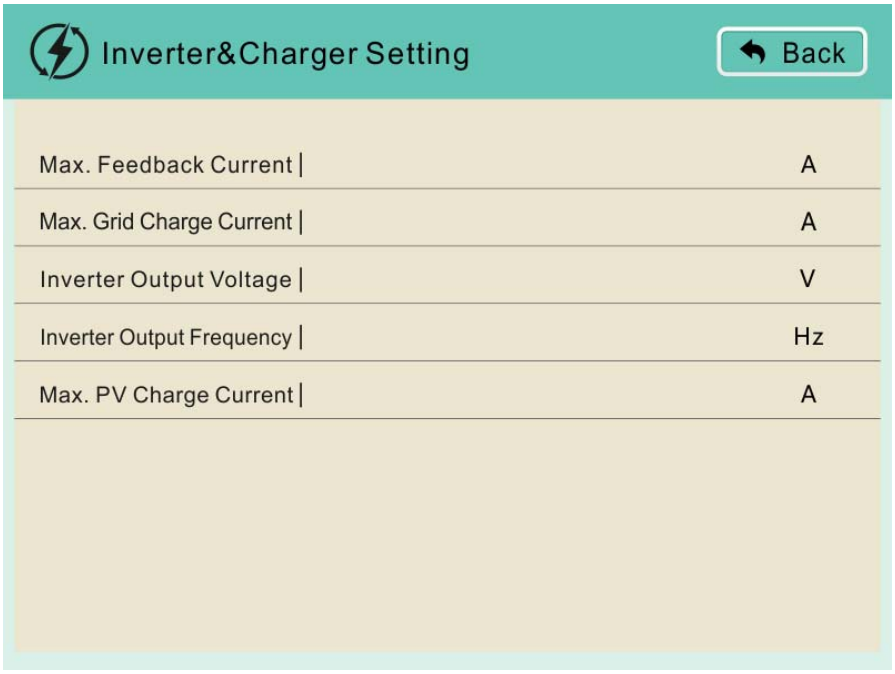


Fig 3.21 Inverter and charger setting

3.4.4 BMS maintenance

☞ Click “BMS maintenance” to enter into the battery detailed parameter page.

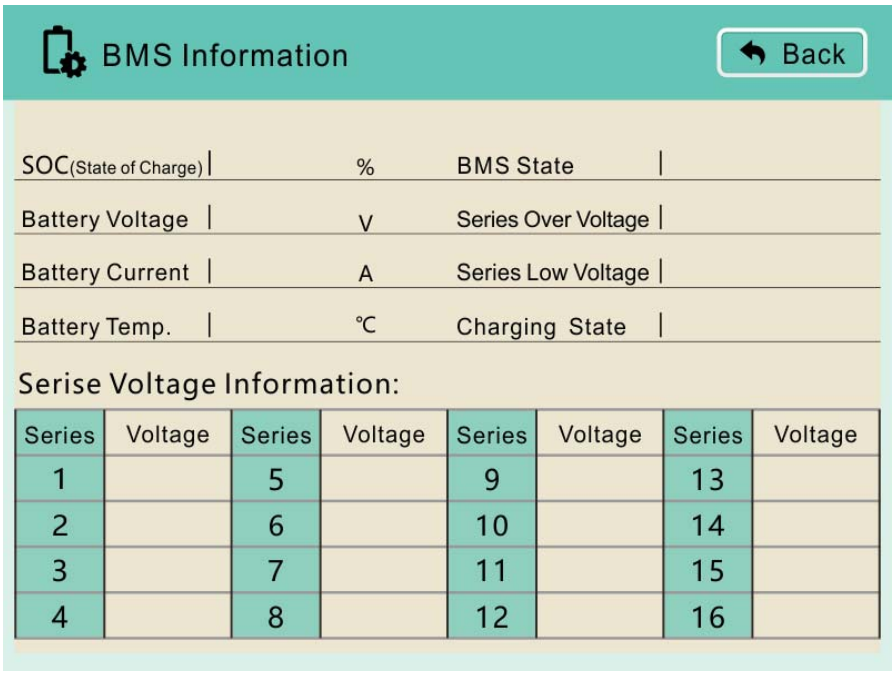


Fig 3.22 BMS maintenance

3.4.5 Password

☞ Click “Password Setting” icon to enter into password changing for administrator page.

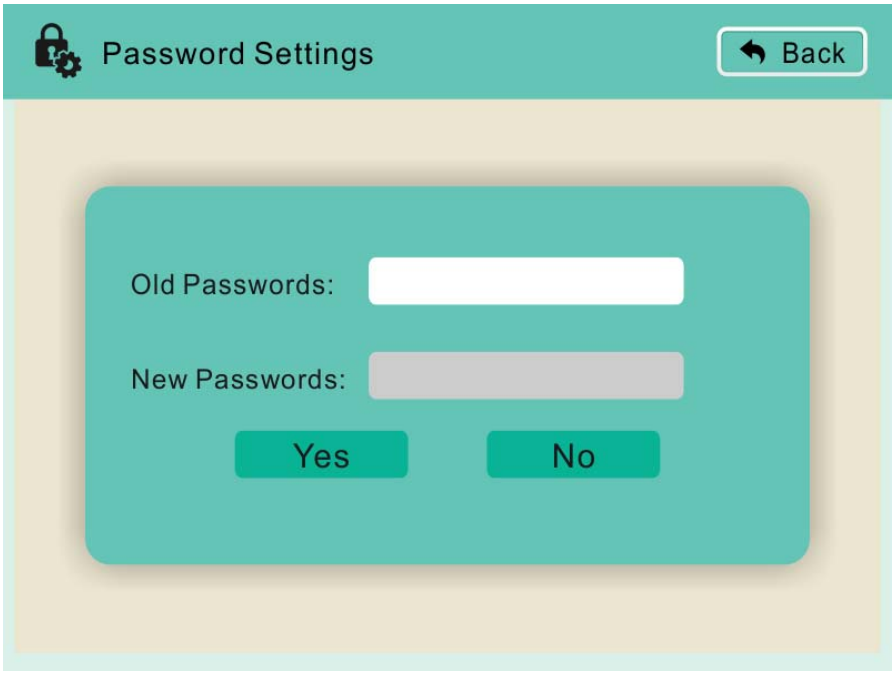


Fig 3.23 Password setting

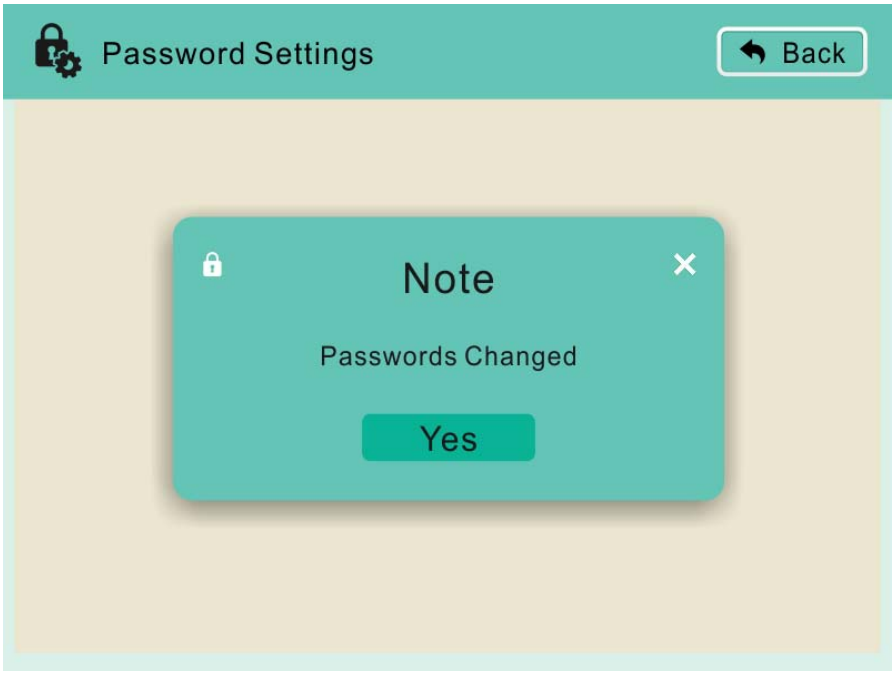


Fig 3.24 Confirmation of change password

3.4.6 Information

☞ Click the “Info.” icon to enter into the summaries page of the system.

CAUTION:

This is a summaries page of the system. More detailed information can be got after logged in.

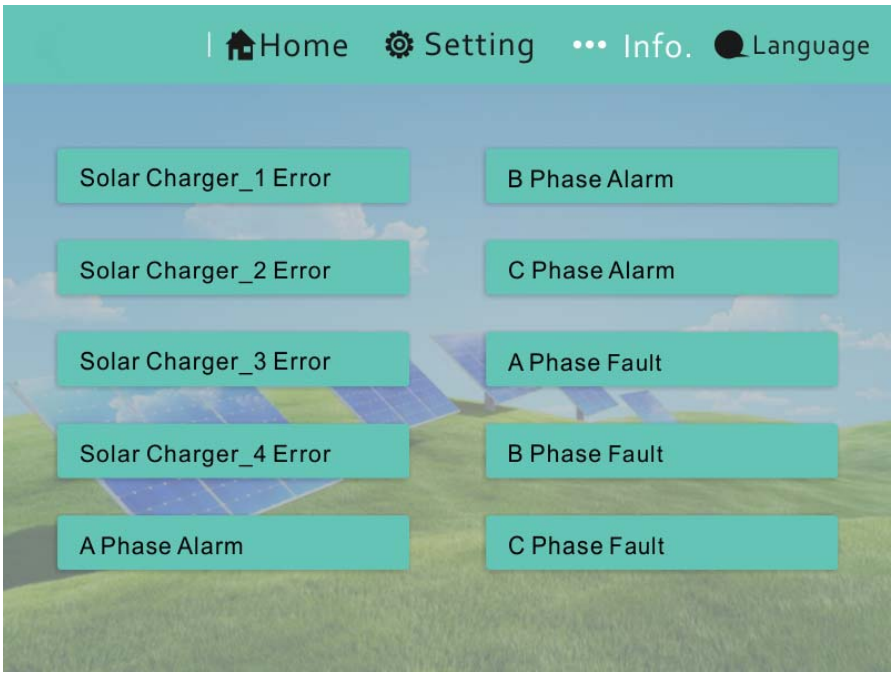


Fig 3.25 Summaries of the system

3.4.7 Language

☞ Click the “Language” icon to enter into language choosing page.

Fig 3.26 Language choosing

3.5 Remote access

3.5.1 Website

Users can access to monitor remotely the running state of this micro-grid system through local area network. WIFI network is provided recently. Users can monitor the system in any place around the world through the following website once connected the communication of this system to internet through WIFI.

NOTE:

www.shinemonitor.com

3.5.2 Network setting

NOTE:

Please use a computer with wireless network adapter or APP "SmartLink" (download from website) to set the network parameters.

1. Get the PN of Wi-Fi RTU to begin network setting.

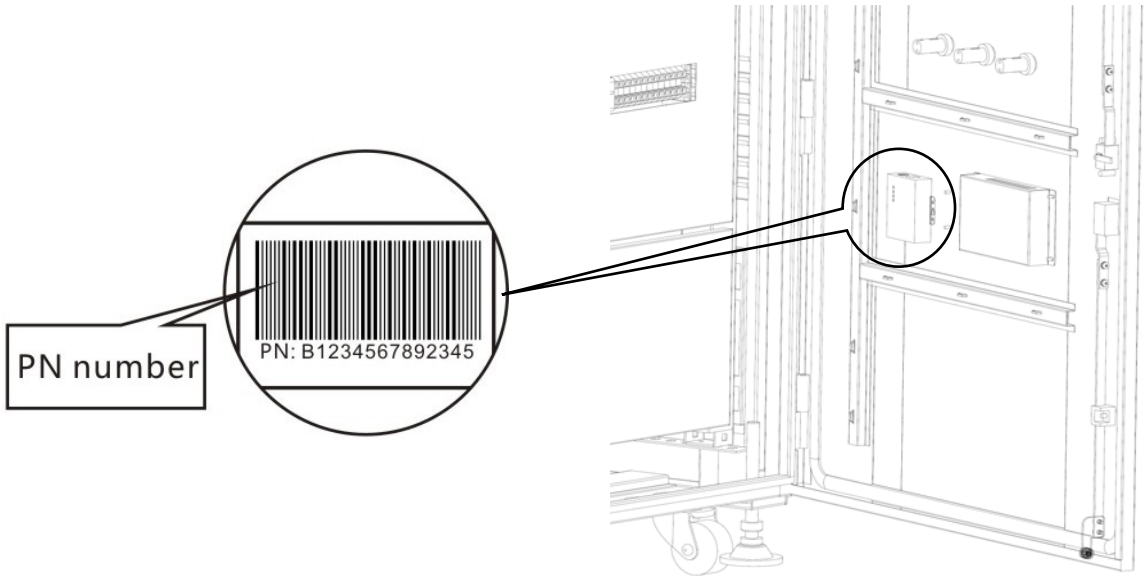


Fig 3.27 Get the PN of Wi-Fi RTU

2. Connect Wi-Fi RTU using Wi-Fi

NOTE:

- Access: PN of Wi-Fi RTU
- Password: 12345678

Fig 3.28 Connect Wi-Fi RTU

3. Visit setting page of Wi-Fi RTU

NOTE:

- IP address: 192.168.8.66
- User name: admin
- Password: admin

NOTE:

Please don't refresh the web frequently and use the web browser under version IE 9.0.

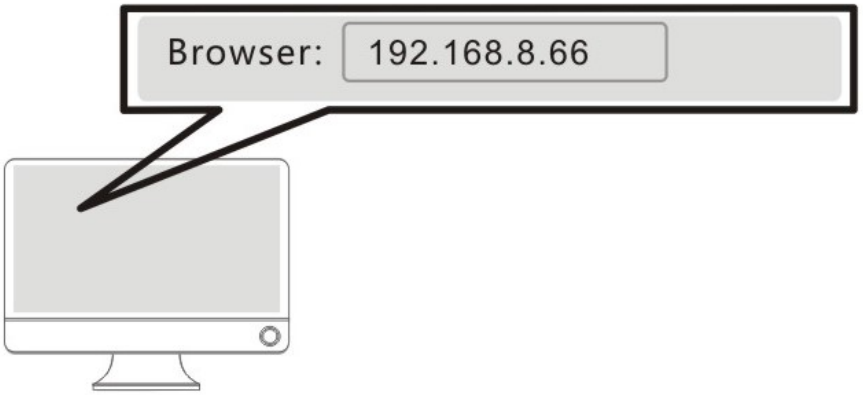


Fig 3.29 Visit setting page of Wi-Fi RTU

4. Set network parameters

- Click on “STA set”.
- Click on “Scan” to search APs.
- Select the right AP.
- Fill in the password.
- Click on “Save”.
- Restart to be effective.

NOTE:

Please make sure the router has connected to internet.

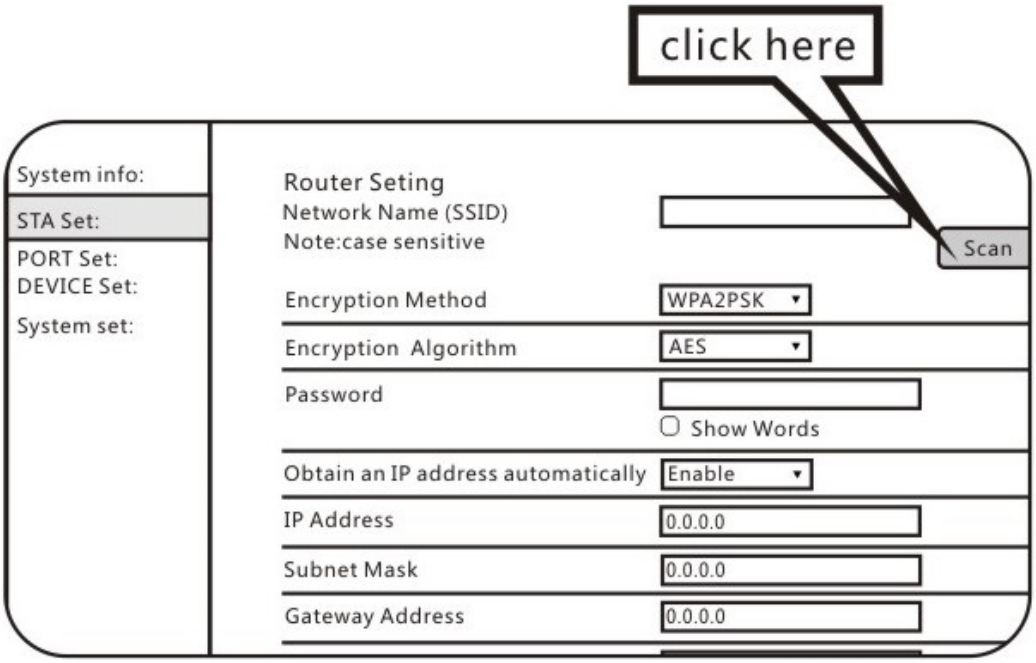


Fig 3.30 Set network parameters

3.5.3 Registering

1. Register account

Enter (http://ksolare.shinemonitory.com) in the web browser, and click on Register to fill in details.

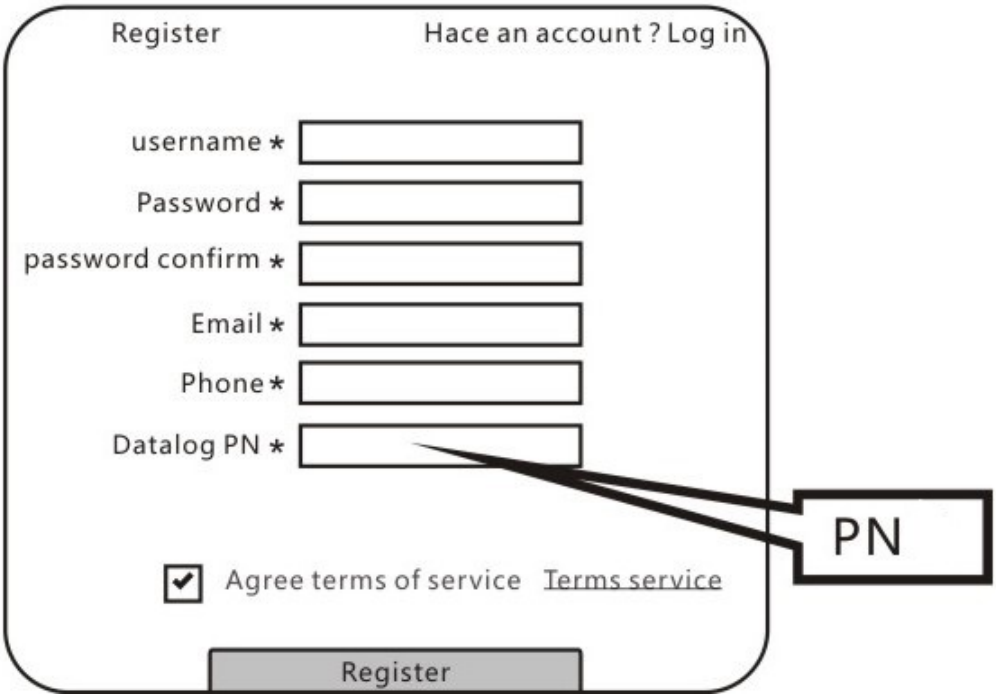


Fig 3.31 Register account

2. Create plant

Click on the "+" in the home page to create a new plant and fill in the related information.

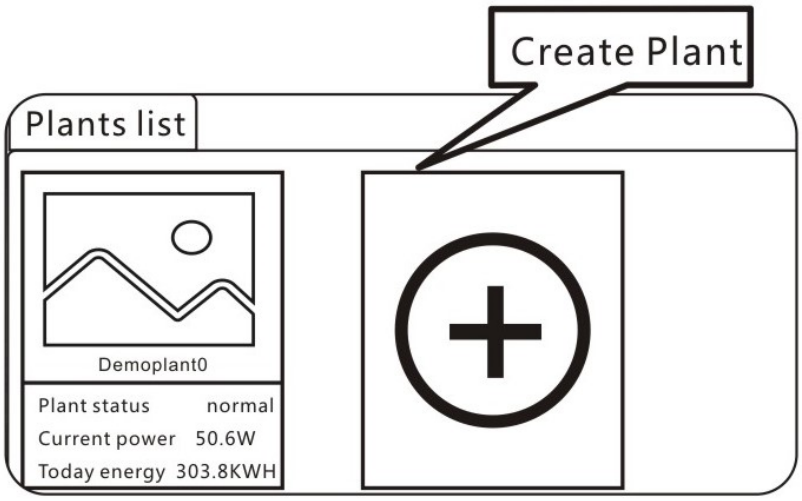


Fig 3.32 Create plant

3. Add new Wi-Fi RTU

- Select the created plant.
- Click on "Device Management".
- Click on "Add new datalog".
- Fill in PN and Name of Wi-Fi RTU.
- Success to add Wi-Fi RTU.

NOTE:

- *One account can create mangy plant.*
- *One plant can contain many Wi-Fi RTU.*

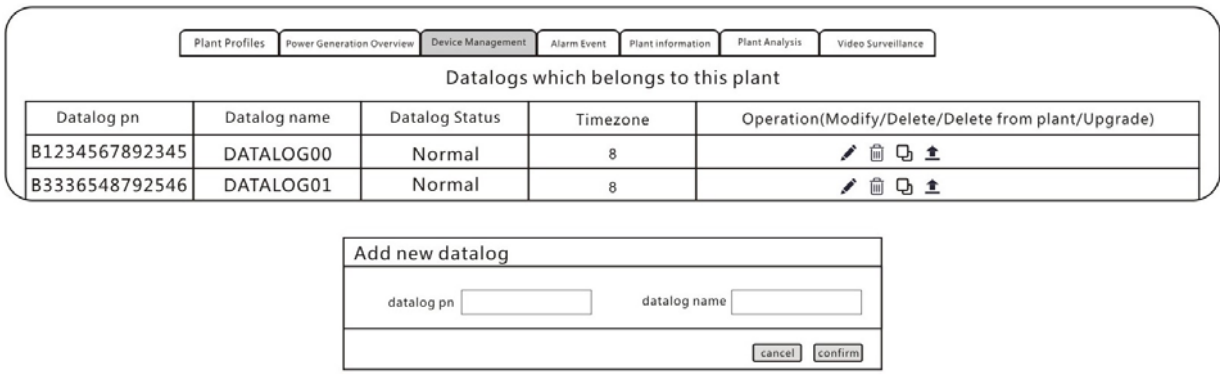


Fig 3.33 Add new Wi-Fi RTU

4 Specification

— Three phase Micro-grid System

Product name		MG3215K
Rated output power		15000VA
AC parameter		
Rated AC voltage	On-grid	230V(Single phase)/400V(Three phase)
	Off-grid	230V(Single phase)/400V(Three phase)
rated frequency		50Hz
Continuous AC output current		21.7A at 25℃
THD	On-grid current	<4%
	Off-grid voltage	2%
Max. AC input current		32A
Switching time		<20ms
Max inverter efficiency		93 %
Referenced standard		VDE 0126-1-1
Output wave		Sine
DC parameter		
Suggested PV input power		16000W
Max. open voltage of each solar panel		145VDC (at absolute maximum coldest conditions)
MPP voltage range		70～140VDC
Max. charger input current		320A
Max. charger efficiency		97.3%
Battery Capacity		32KWh
Battery voltage	Rated	52VDC
	Range	44～58VDC
System parameter		
Capacity of AC load		≥26KWh
External communication		RS485/Wi-Fi
Operating temperature		0°C～45°C
Operating humidity		10%～90%
Elevation		<2000m
IP level		IP44
Dimension(L*W*H)	Inverter cabinet	606mm X 581mm X 1273mm
	Battery cabinet	606mm X 581mm X 1273mm
Weight	Inverter cabinet	240kg
	Battery cabinet	270kg

5 Maintenance

Do conduct regular or irregular maintenance to the micro-grid system to ensure the normal running of the system, and guarantee the normal power supply to users' electric equipment.

1. Make regular check of the cables. Do shut off the system and screw it up if any loosen found. Take special attention to the parts such as fan, input terminal, output terminal.

2. Make regular check and make sure that there is no vibration, no abnormal sound and no abnormal odor.

3. Make regular check and clean up the accumulated dust in system in time.

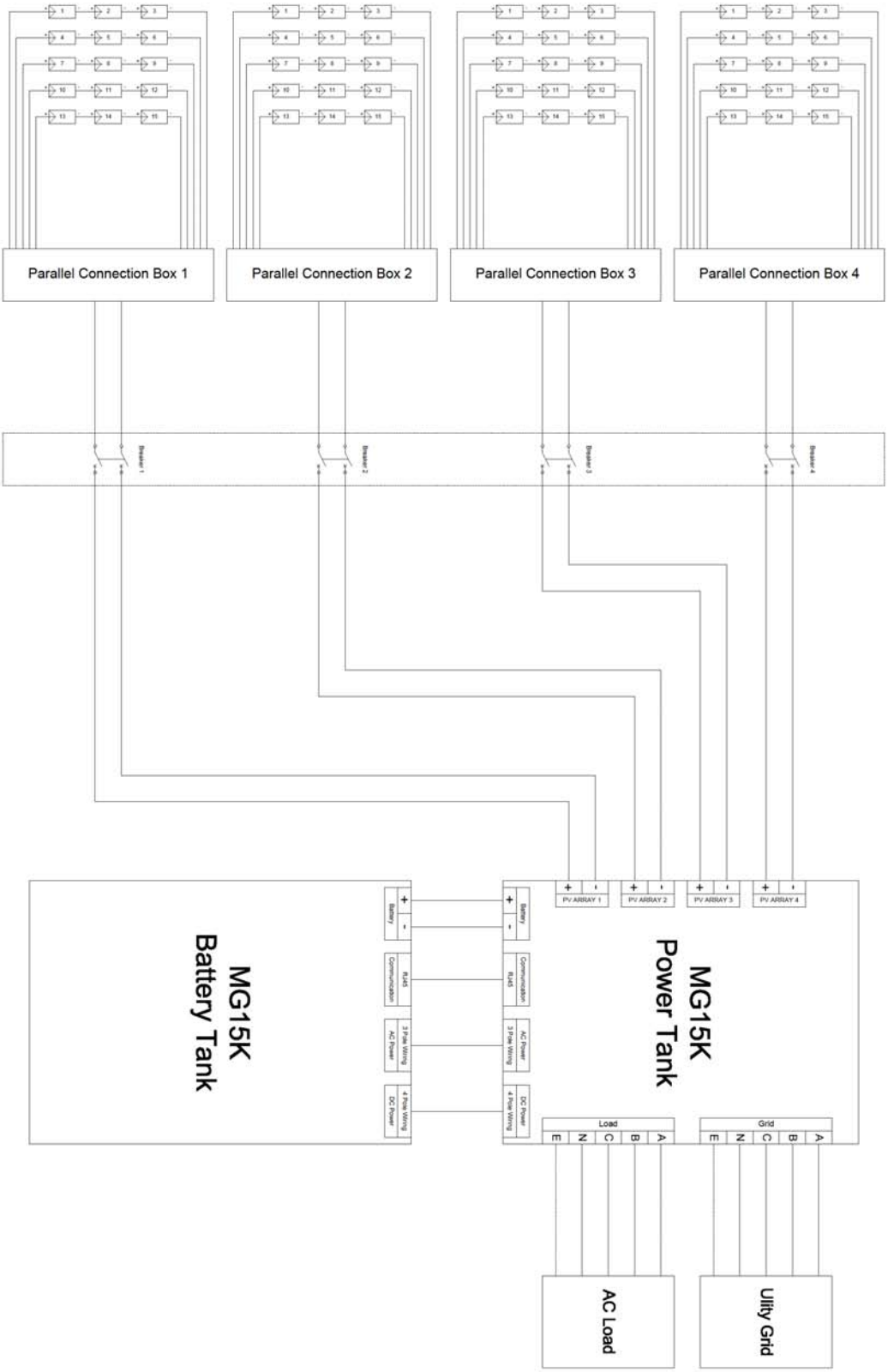
4. Make regular check and replace the damaged cable immediately.

5. Please notify the manufacturer in time with detailed record about the system if any difficult failure or the unknown failure occurred.

CAUTION:

- *No smoking and firework near the cabinets and solar panel*
- *Make sure the environment around the cabinets and solar panel clean and ventilated.*
- *Make sure the cables reliable, using unqualified cable may lead to fire.*

Appended drawing



Micro-grid system was designed according to the standard of electromagnetic compatibility and related national voltage standard.

Copyright

Commitment

Shenzhen PowerOak Newener Co., Ltd. promise to supply free maintenance for the machine failure caused by product quality problem under normal use within warranty time.

Shenzhen PowerOak Newener Co., Ltd. is not responsible for any machine failure or breakdown or personnel harm caused by improper operation.

Disclaimer

Please understand that as the continuous update of product and quality, the picture in this manual may not be completely comply with the material object.

Date and edition

2016-12 Edition A

Contact info.

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