1 Inverter appearance

1.1 Inverter front picture

1、The front of the machine contains an upper cover, a lower cover and six LED indicators

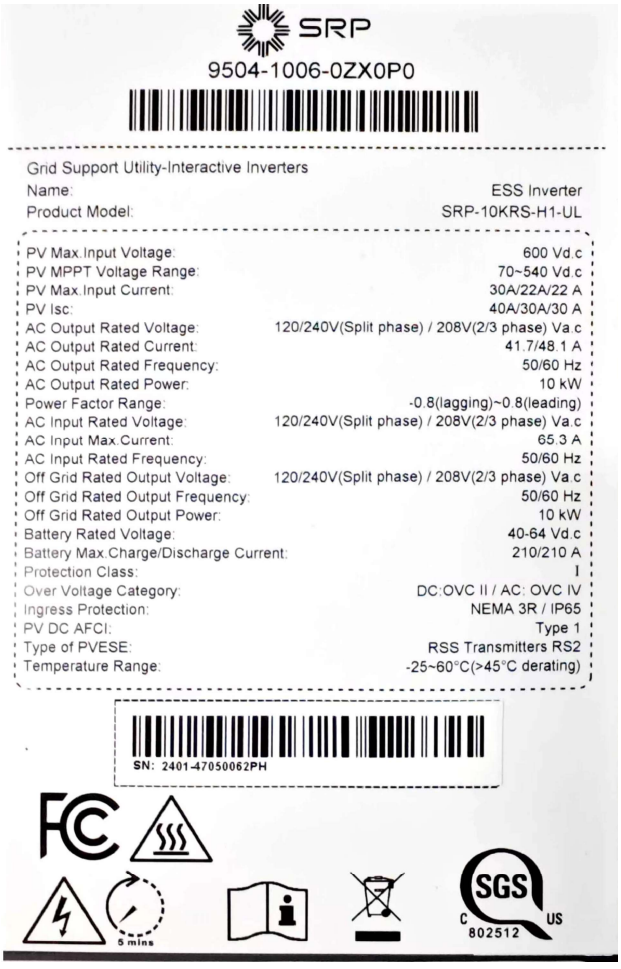
2、There are two buckles on the left side of the lower cover (with a key), open the buckles, and you can connect the wires (PV wire, city wire, battery wire, communication, etc.) in the lower cover.

3、LED indicators include “PV、BAT、Grid、BACKUP、COM，ALARM “ indicator

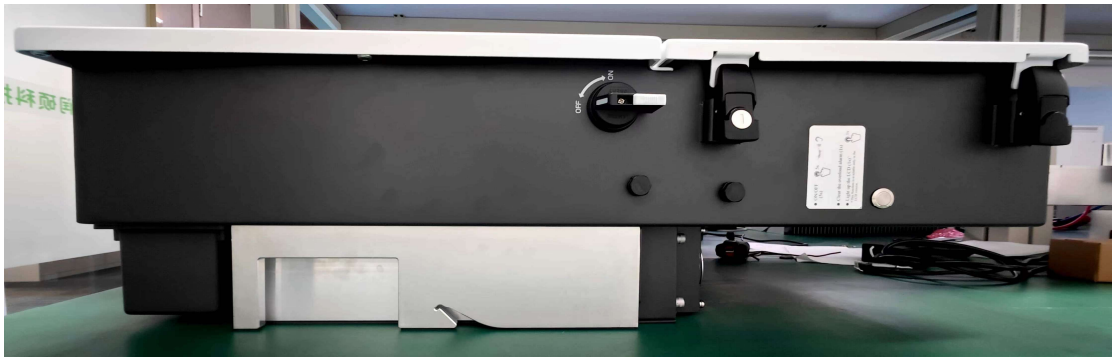
light。

1.2 Inverter right-hand photograph

There is a machine nameplate on the right side of the machine. You can obtain the basic information of the machine through the machine nameplate, as shown in the following figure.



1.3 Inverter left side photograph



There is a PV switch on the left side of the machine with a latch on the lower cover and a push-button switch.

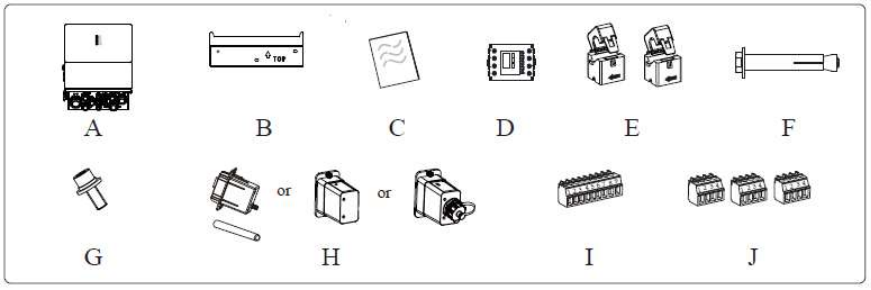
1.4 Inverter bottom photograph

The bottom of the machine contains three fans, battery, PV, communication, AC and other wiring ports.

2 Inverter installation

2.1 packing list

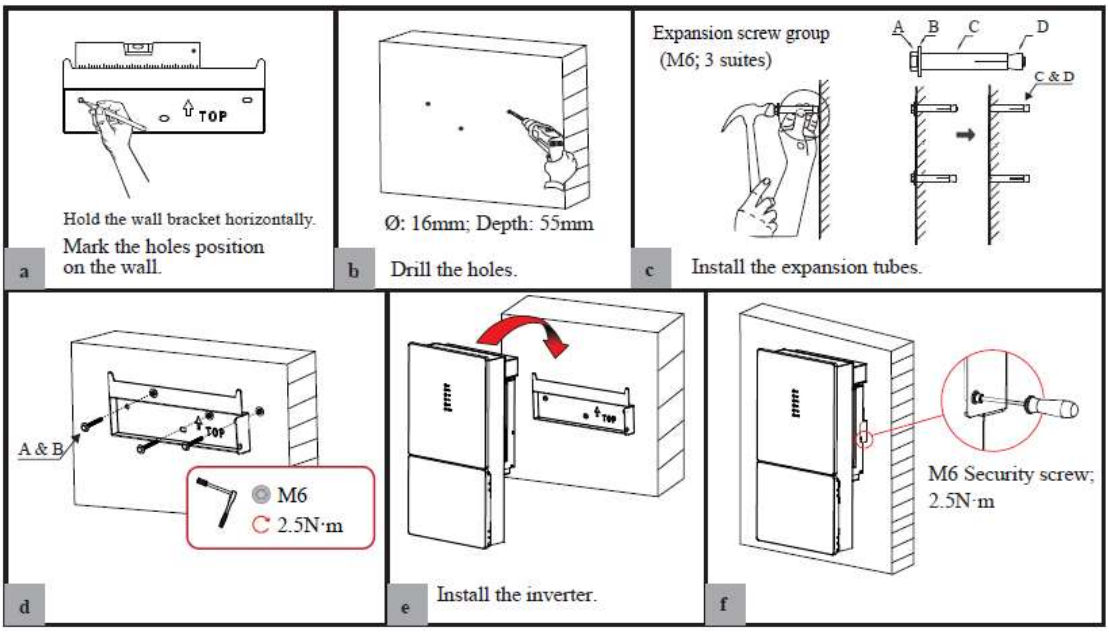
After unpacking, check the following packing list carefully for any damage or missing parts. In case of damage or missing parts, contact the supplier for assistance .



Number	Quantity	Description
A	1	Inverter
B	1	Mounting bracket
C	1	File package
D	1	Meter (Optional)
E	2	CT
F	3	M6 Expansion screws
G	1	M6 Security screw
H	1	GPRS/WIFI/LAN module (Optional)
I	1	9-Pins terminal
J	3	4-Pins terminal

2.2 Installation demonstration drawing

Install the inverter on the mounting bracket, and then lock the inverter with safety screws. Refer to the picture below



matters need attention

1、The storage inverter is IP65 protected and can be installed indoors or outdoors.

2、Install the inverter with a maximum vertical or backward tilt of 15°.

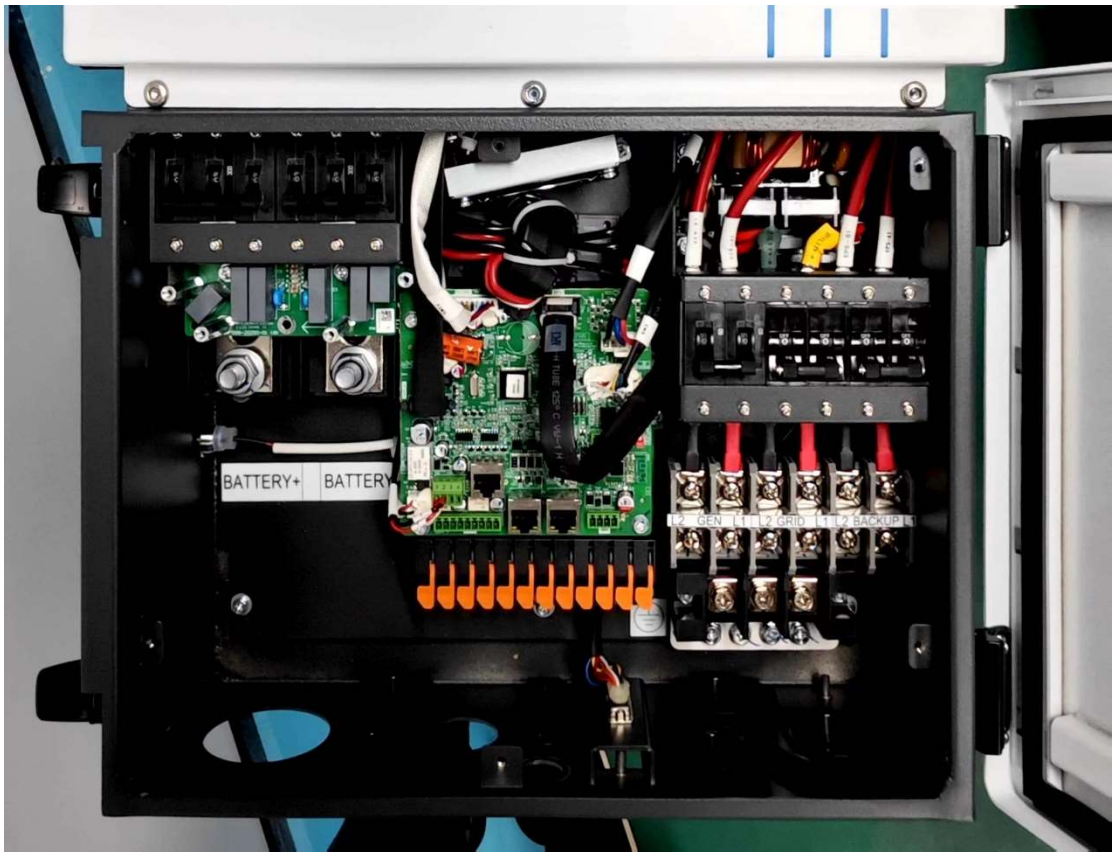
3、In order to ensure the service life, the energy storage inverter shall not be exposed to direct sunlight, rain, and snow. You are advised to install the inverter in a sheltered place.

4、Do not install the inverter in the rest area, the machine fan heat rotation, will disturb the rest of the people.

5、The installation height should be reasonable, and ensure that it is easy to operate and view the display.

2.3 Electrical Connection

Open the lower cover of the machine, the machine wiring port, as shown in the figure below.



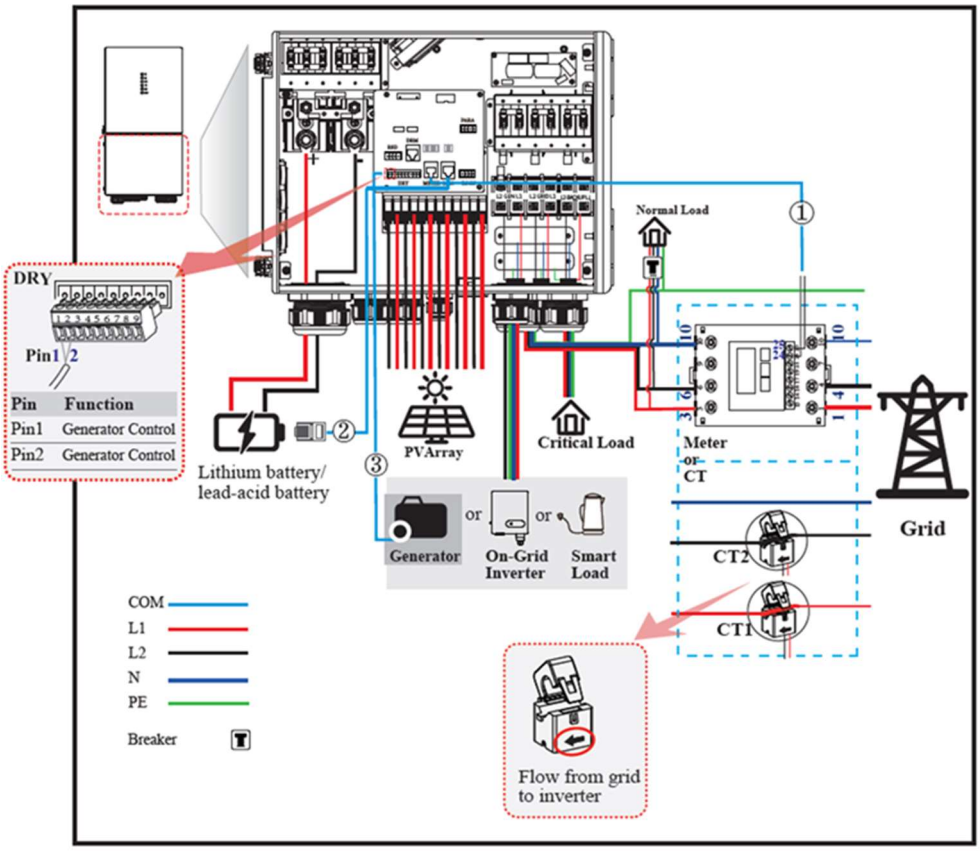
1、Battery connection (screw fixed, there is a circuit breaker protection switch for the positive and negative terminals of the upper battery)

2、Photovoltaic connection (the machine has three PVS and each PV has two sets of interfaces).

3、Mains input, and AC output (screw fixed, each with an AC short circuiter above)

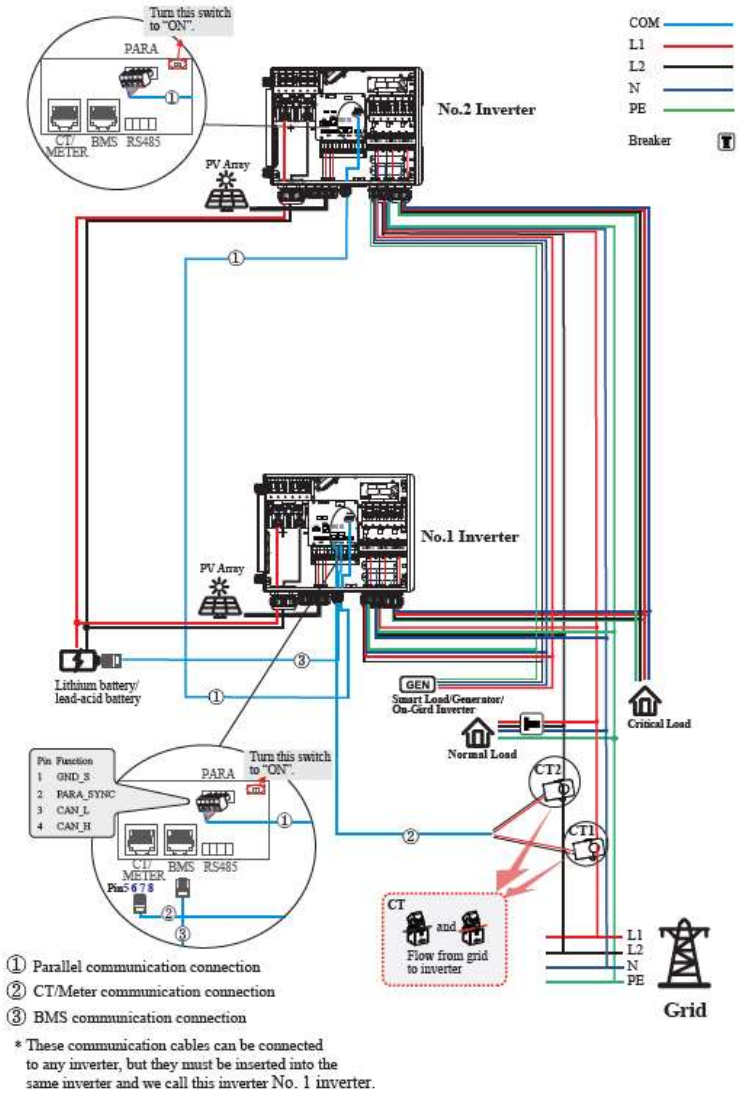
2.3.1 Non-parallel connection mode

Split phase (120/240Vac) connection diagram (US



DANGER	Ensure that inverter and all cables to be installed are completely powered off during whole installation and connection. Otherwise, fatal injury can occur due to the high voltage.

2.3.2 Split Phase parallel connection mode-Scheme A (N=2)

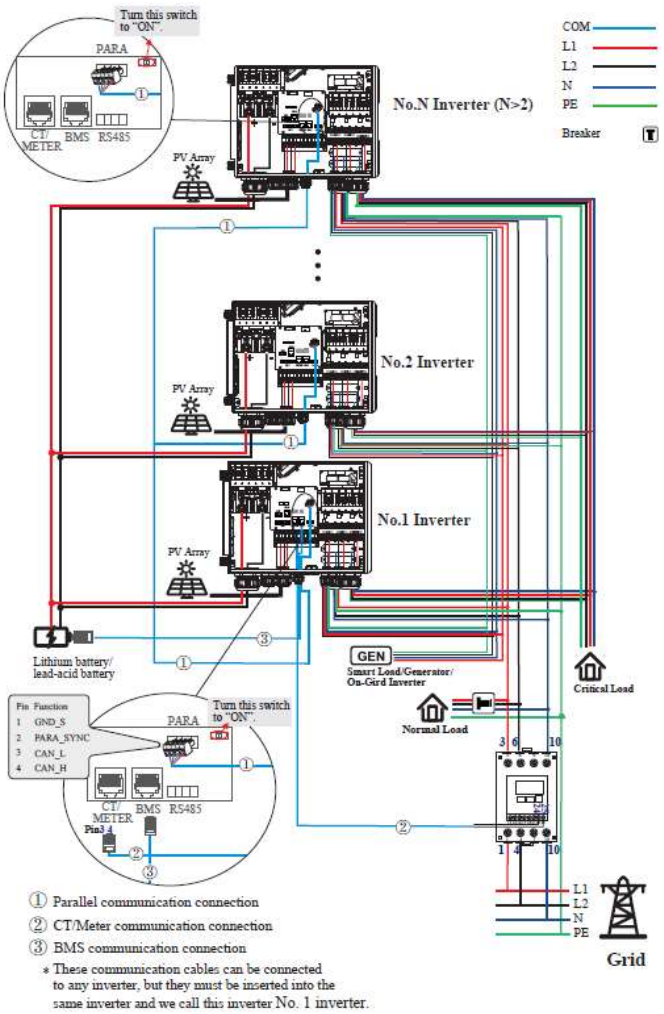


Note:

1. PV related contents are N/A for AC Couple inverter.
2. BMS communication connection is only for lithium battery.
3. It is necessary to turn the matched resistance switch of No. 1 inverter and No. 2 inverter to “ON” in
parallel connection mode.
4. With parallel connection mode, it is necessary to connect APP to one of inverters and then go to
Console > Other Setting page to enable Parallel mode on APP.
5. About breakers:
DC breaker on BATTERY side: 300A
AC breaker on GEN side ≥60A

AC breaker on Grid side ≥70A
AC breaker on Backup side ≥70A

2.3.3 Split Phase parallel connection mode-Scheme B (N>2)

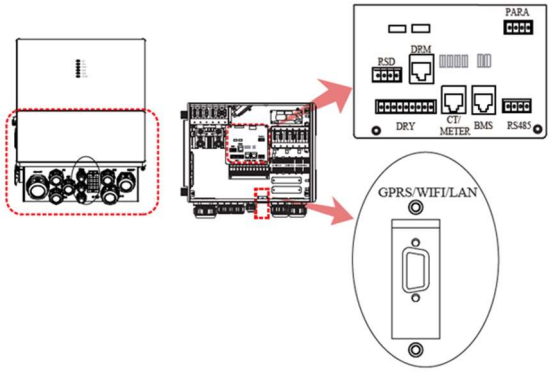


Note:
1. PV related contents are N/A for AC Couple inverter.
2. BMS communication connection is only for lithium battery.
3. It is necessary to additionally purchase suitable CT and meter according to the specific requirements
in parallel connection mode-Scheme B.
4. It is necessary to turn the matched resistance switch of No. 1 inverter and No. N inverter to “ON” in
parallel connection mode.
5. With parallel connection mode, it is necessary to connect APP to one of inverters and then go to Console >Other Setting page to enable Parallel mode on APP.
6. About breakers:
DC breaker on BATTERY side: 300A

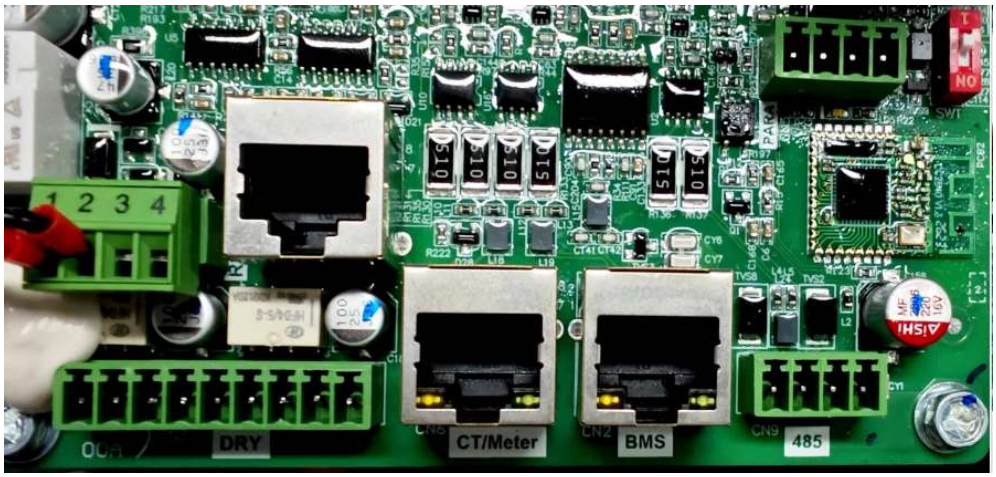
AC breaker on GEN side ≥60A
AC breaker on Grid side ≥70A
AC breaker on Backup side ≥70A

2.4 Communication Connection

There are communication interfaces in the communication port on the bottom of the inverter as show below：



photograph

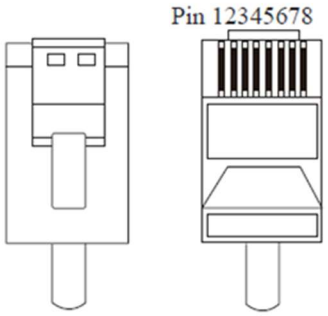


Port introduction

Interface		Descriptions
PARA		4-Pins interface for parallel communication
		A matched resistance switch for parallel communication
RS485		4-Pins interface for RS485 communication
DRM		Demand response mode for Australia application
METER		For Meter communication or Grid current sense
BMS		Lithium battery communication interface
9-Pins	GEN	Generator control
	NTC	Temperature sensor terminal of lead-acid battery
	RMO	Remote off control
	DRY	DI/DO control
RSD		RSD control interface
GPRS/WIFI/LAN		For GPRS/WIFI/LAN communication

2.4.1 BMS Connection (Only for Lithium Battery)

RJ45 Terminal Configuration of Battery Communication (BMS)

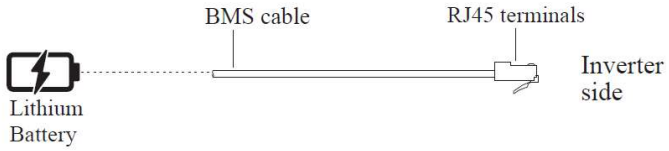


PIN	1	2	3	4
Function Description	RS485_ A	RS485_B	/	CAN_H

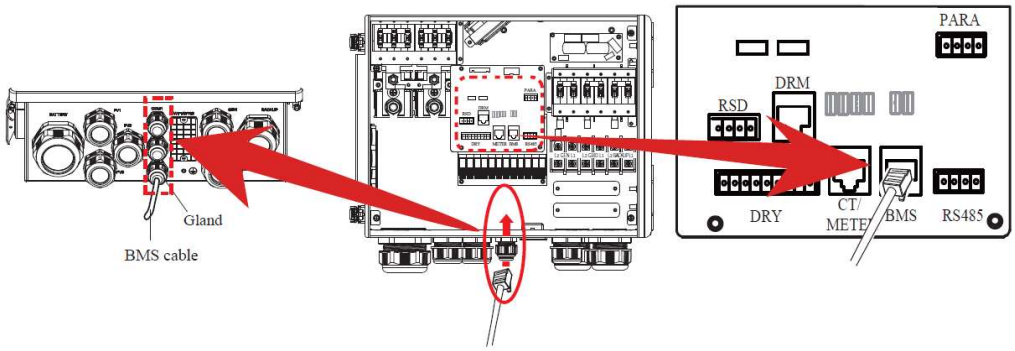
PIN	5	6	7	8
Function Description	CAN_L	/	/	/

Refer to the following steps:

a. Make the RJ45 terminal according to above function description of each Pin definition.

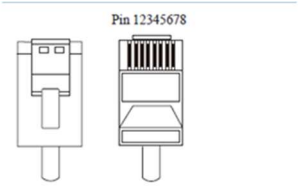


b. Lead the BMS cable through the gland. And insert the RJ45 terminals into corresponding ports.



2.4.2 Meter Connection

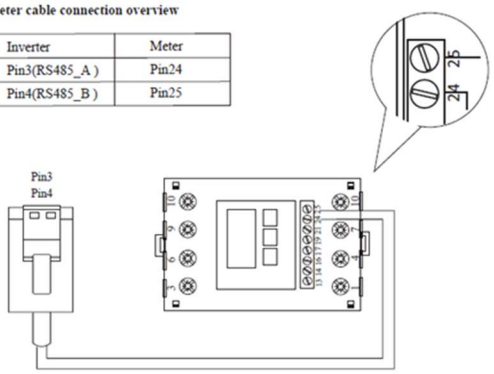
RJ45 Terminal Configuration of Meter Communication



PIN	1	2	3	4	5	6	7	8
Function Description	/	/	RS485_A	RS485_B	/	/	CT1+	CT1-

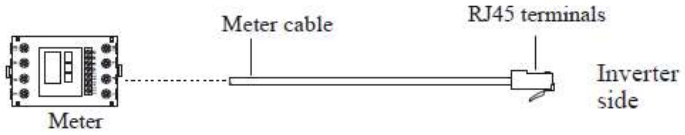
Meter cable connection overview

Inverter	Meter
Pin3(RS485_A)	Pin24
Pin4(RS485_B)	Pin25

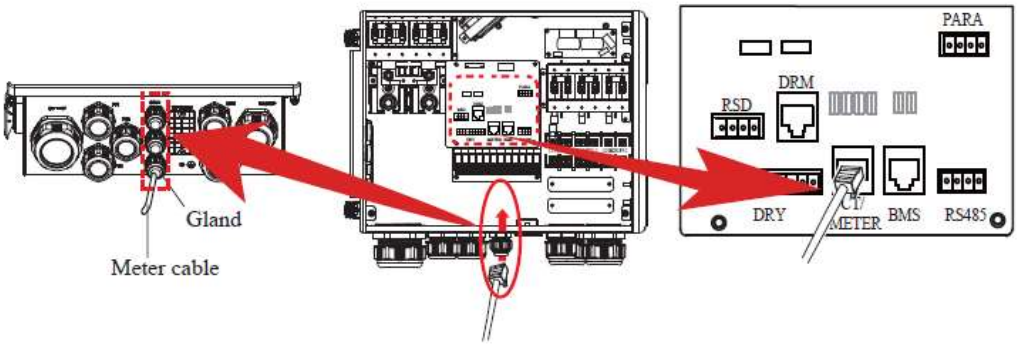


Connect meter. Refer to the following steps:

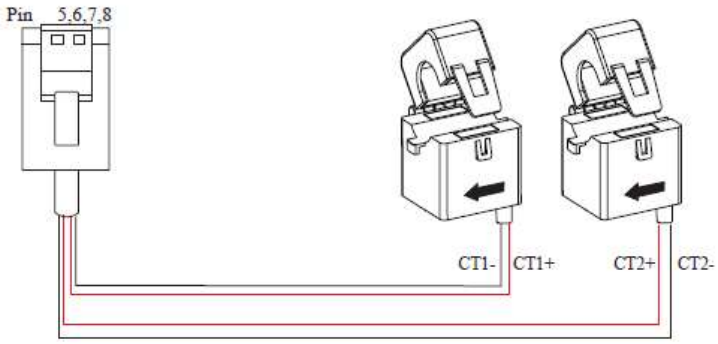
a. Make the RJ45 terminal according to above function description of each Pin definition.



b. Lead the meter communication cable through the gland. And insert the RJ45 terminals into corresponding ports.



2.4.3 CT Connection



Inverter	CT
Pin5(CT2-)	Black
Pin6(CT2+)	Red
Pin7(CT1+)	Red
Pin8(CT1-)	Black

2.4.4 RS485 Connection

4-Pin Terminal Configuration of RS485 Communication

PIN	1	2	3	4
Function Description	RS485_A	RS485_B	PE	PE

2.4.5 Parallel Communication Connection

4-Pin Terminal Configuration of parallel Communication

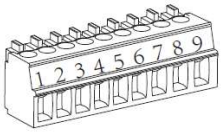
PIN	1	2	3	4
Function Description	GND_S	PARA_SYNC	CAN_L	CAN_H

2.4.6 RSD Connection(s)（快速关断功能）

PIN	1	2	3	4
Function Description	+12V	GND	Emergency Stop Signal Button	

2.4.7 NTC/RMO/DRY Connection(s)

Pin 123456789



PIN	Function Description
1	GEN Control
2	GEN Control
3	NC1 (Normal Close)
4	NC2 (Normal Close)
5	N2
6	NC2 (Normal Close)
7	REMO OFF
8	GND S(NTC BAT)
9	NTC BAT+

3 System Operation

3.1 Inverter Working Mode

The inverter supports several different working modes.

3.1.1 Self Used Mode

Go to the "Hybrid work mode" menu, and select the "Self used mode" working mode. Under Self Used mode, the priority of PV energy will be Load > Battery > Grid, that means the energy produced by PV gives priority to local loads, excess energy is used for charging the battery, and the remaining energy is fed into the grid.

3.1.2 Feed-in Priority Mode

Go to the "Hybrid work mode" menu, and select the "Self used mode" working mode. Under this mode, the priority of PV energy will be Load > Grid > Battery, that means the energy produced by PV gives priority to local loads, excess energy is fed into the grid, and the remaining energy is used for charging the battery.

3.1.3 Time-Based Control Mode

Under this mode, you can control the charging and discharging of the inverter. You can set the following parameters based on your requirements:
- Charge and discharge frequency: one time or daily
- Charging start time: 0 to 24 hours
- Charging end time: 0 to 24 hours
- Discharge start time: 0 to 24 hours
- Discharge end time: 0 to 24 hours

You can also choose whether to allow the grid to charge the battery, which is prohibited by default. If the user enable the "Grid charge function" , the "Maximum grid charger power" and"Capacity of grid charger end" can be set. When the battery capacity reaches the set value of "Capacity of grid charger end", the grid will stop charging the battery.

3.1.4 Back-up Mode

Under this mode, the priority of PV energy will be Battery > Load > Grid.
This mode aims at charging the battery quickly, and at the same time, you can choose whether to allow AC to charge the battery.

3.1.5 Off Grid Mode

When the power grid is cut off, the system automatically switches to Off Grid mode. Under off-grid mode, only critical loads are supplied to ensure that important loads continue to work without power failure.
Under this mode, the inverter can’t work without the battery.

3.2 Startup/Shutdown Procedure

3.2.1 Startup Procedure

Check and confirm that the installation is secure and strong enough and that the system grounding is OK. Then confirm the connections of AC, battery, PV etc. are correct.
Confirm the parameters and configurations conform to relevant requirements.

AC Frequency 50/60Hz	PV Voltage 70~540V
Battery Voltage 40~64V	Grid AC Voltage 120/240V(Split phase) /208V(2/3 phase)

Make sure all the above aspects are right, then follow the procedure to start up the inverter:
1) Power on the PV.
2) Power on the battery.
3) Power on the AC.
4) Power on the EPS(BACKUP).
5) Connect the cell phone App via blue-tooth.
6) Click the Power ON on the App for the first time.
And you can press the button on the side of the inverter for 1 seconds in this step when performing

3.2.2 Shutdown Procedure

According to actual situation, if have to shut-down the running system, please follow below procedure:
1) Connect the cell phone App via blue-tooth.
2) Click the Power OFF on the App. Or you can press the button on the side of the inverter for 5 second in this step when performing subsequent starup.
3) Power off the EPS(BACKUP).
4) Power off the AC.
5) Power off the Battery.
6) Power off the PV.
7) If need to disconnect the inverter cables, please wait at least 5 minutes before touching these parts of inverter.

4 User Interface

This section describes the LED panel. LED indicator includes PV, BAT, GRID, EPS(BACKUP), COM, ALARM indicators.
It includes the explanation of indicator states and summary of indicator states under the running state of the machine.

LED Indicator	Status	Description
PV	On	PV input is normal.
	Blink	PV input is abnormal.
	Off	PV is unavailable.
BAT	On	Battery is charging.
	Blink	Battery is discharging. Battery is abnormal.
	Off	Battery is unavailable.
GRID	On	GRID is available and normal.
	Blink	GRID is available and abnormal.
	Off	GRID is unavailable.
COM	On	Communication is ok.
	Off	Power supply is unavailable.
EPS (BACKUP)	On	EPS(BACKUP) power is available.
	Blink	EPS(BACKUP) output is abnormal.
	Off	EPS(BACKUP) power is unavailable.
ALARM	On	Fault has occurred and inverter shuts down.
	Blink	Alarms has occurred but inverter doesn't shut down.
	Off	No fault.

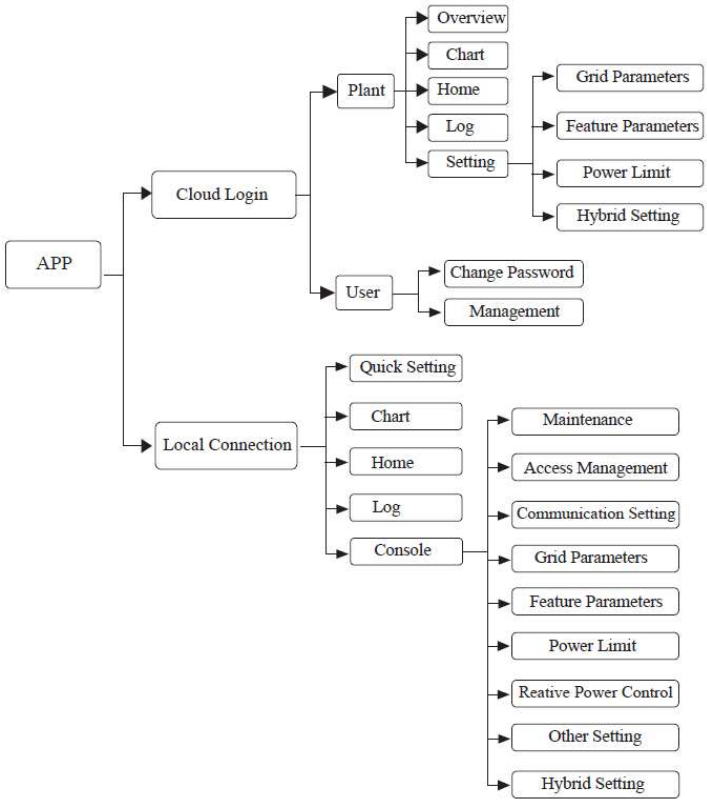
5 App Setting Guide

5.1 Download App

a. Scan the QR code on the inverter to download the APP.
b. Download the APP from the App Store or Google Play.
The APP should access some permissions such as the device's location. You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.

5.2 App Architecture

It contains "Cloud Login" and "Local Connection".
a. Cloud login: APP read data from cloud server through API and display inverter parameter.
b. Local connection: APP read data from inverter through Bluetooth connection with Modbus protocol to display and configure inverter parameter.



5.3 Local Setting

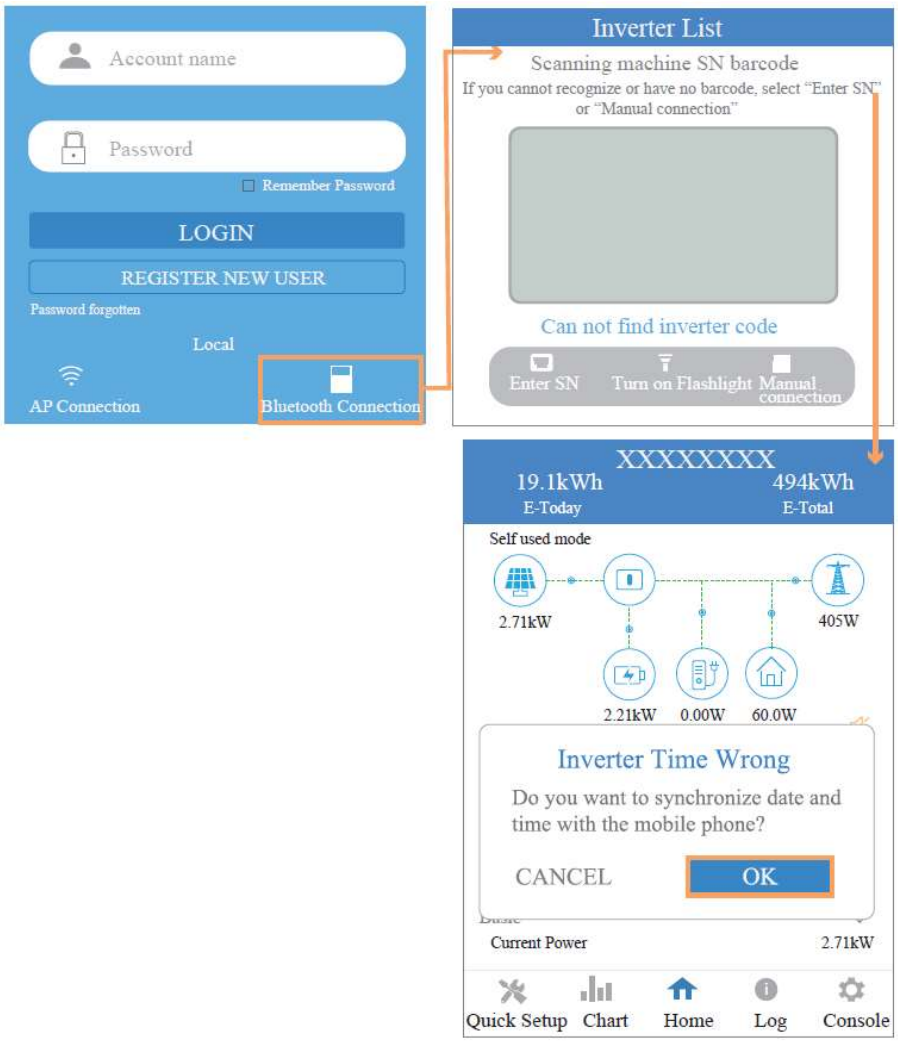
Access Permission

Before using the local setting, the APP should access some permissions. (You can allow them when you install the APP or grant permissions in your own phone setting.) When the APP asks for permission, please click Allow.

Connect Inverter

Firstly, open the Bluetooth on your own phone, then open the APP.

Press Local Setting to go to the connect page. This page shows the inverters which you can connect or you have connected. (As shown below) Press the inverter's name to connect it.



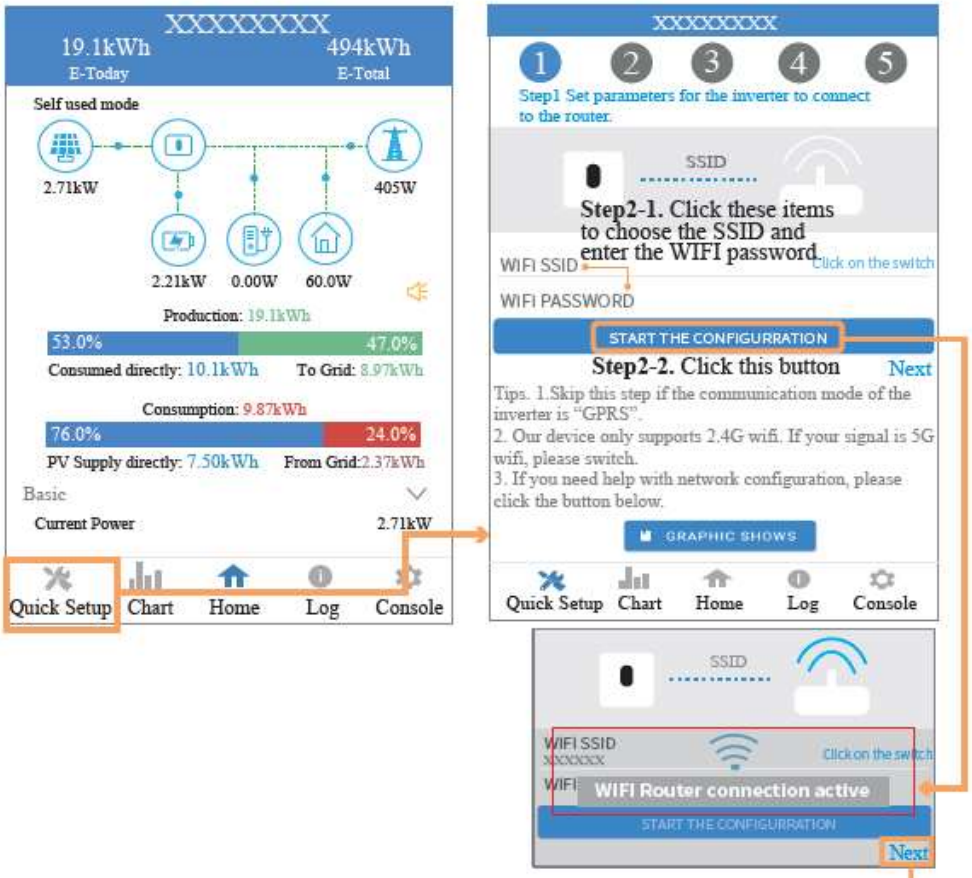
5.4 Quick Setting

■ **Quick Setting**

1. Connect to the router.

   Step 1 Go to Quick Setting page.

   Step 2 Click each item to enter the information, then click Next.



2. Set parameters of power grid

   Step 1 Click each item to enter the parameters of power grid.

   Step 2 Click Next.

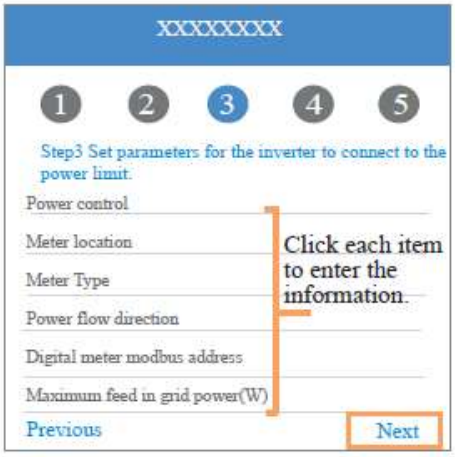
   Step 3 Click Previous back to the previous page.

3. Set parameters of power limit

Step 1 Click each item to enter the parameters of power limit.

Step 2 Click Next.

Step 3 Click Previous back to the previous page.

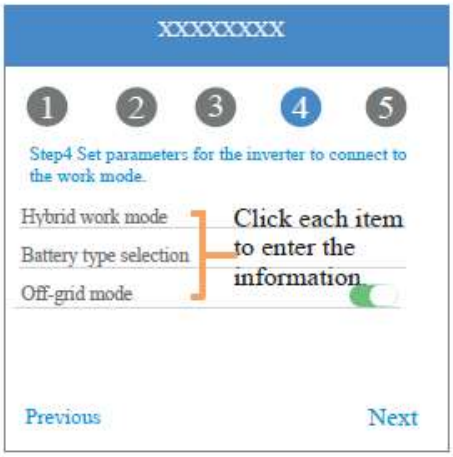


4. Set parameters of work mode

Step 1 Click each item to enter the information of work mode.

Step 2 Click Next.

Step 3 Click Previous back to the previous page.



5. Start Inverter

Step 1 Click ⏻.

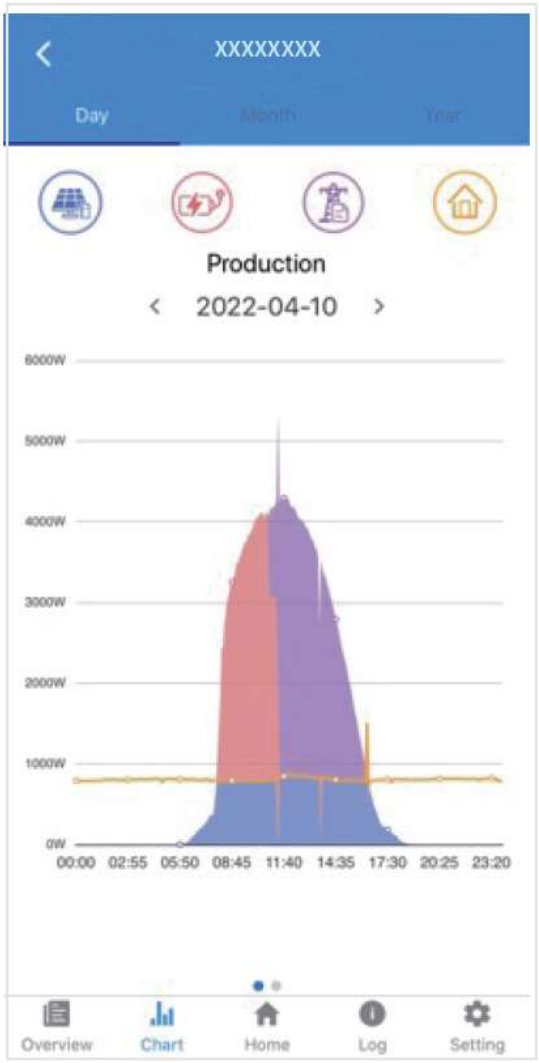
Step 2 Click Previous back to the previous page.

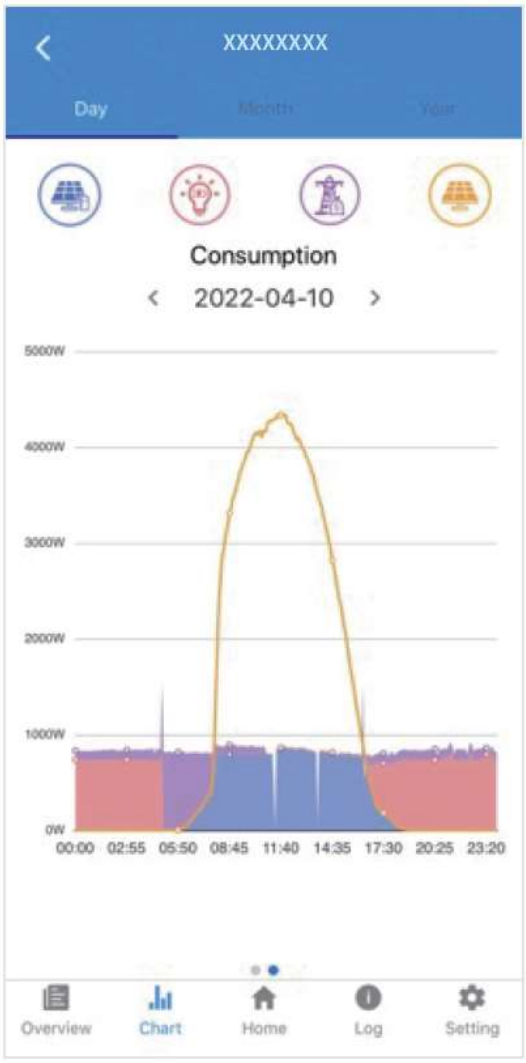
5.5 Chart

Under this menu, you can check the relevant data curve of energy (including Daily, Monthly and Annually).

1. Query(Daily) Data

Go to Chart > Day page. It will show the Daily Production or Consumption Curve in this page. You can swipe the screen left and right to switch the graph.

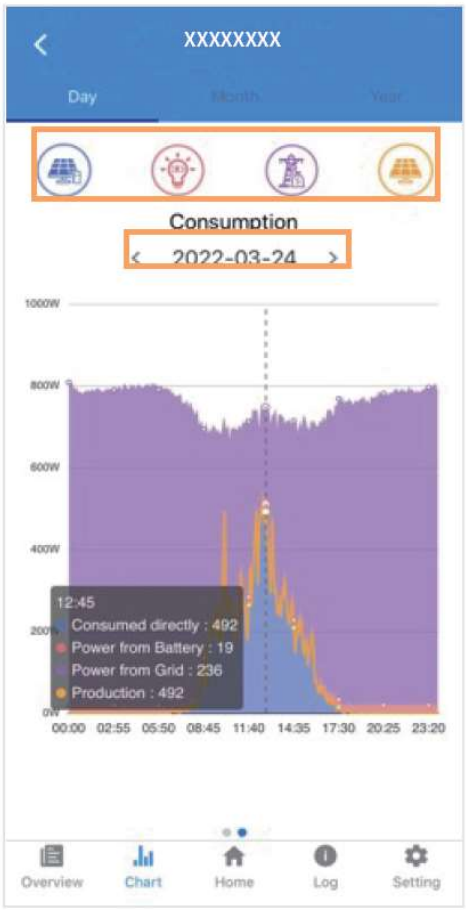




Different color curves represent energy data of different icons.
Click the icon to show and hide the corresponding curve of the corresponding content.

Click the curves to display the specific data.

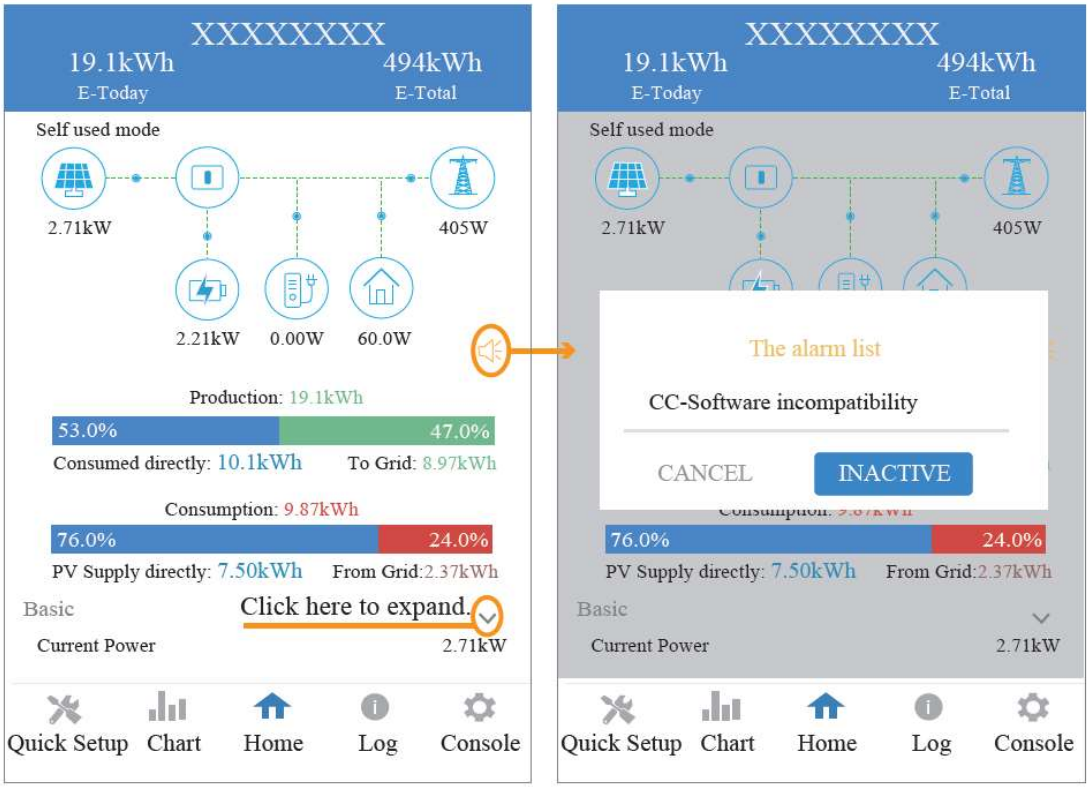
You can also press the date such as “2022-03-24” in the figure to choose the day which you want to check. Or click the left and right arrows to switch the data of the day before yesterday and tomorrow (as shown in the Figure)



2. Query(Monthly or Yearly) Data
Go to Chart > Month or Year page. It will show the Daily Production or Consumption bars in this page.You can swipe the screen left and right to switch the graph. And the specific operation of checking data is the same as Daily.
Daily data retention: 7 days
Monthly data retention: 36 months
yearly data retention: 10 years

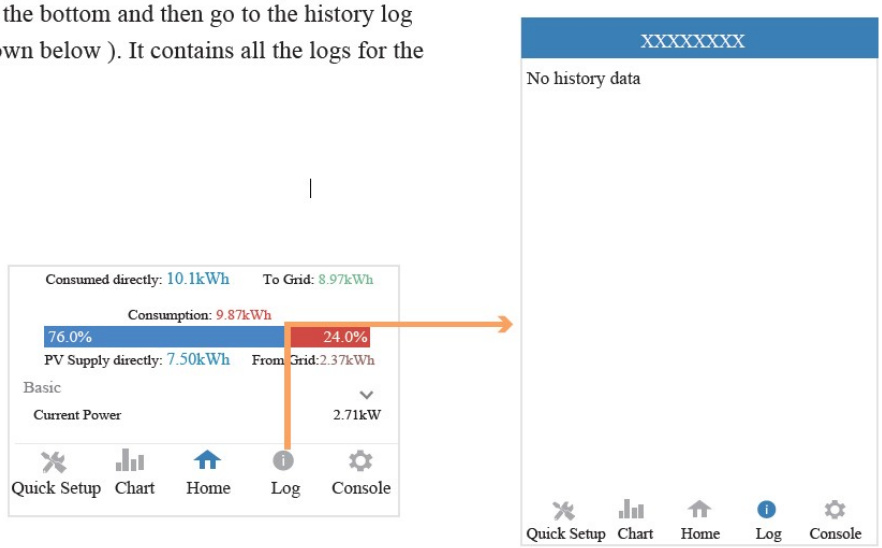
5.6 Local Setting Homepage

This page shows the basic information of inverter. Click to display the warning message.



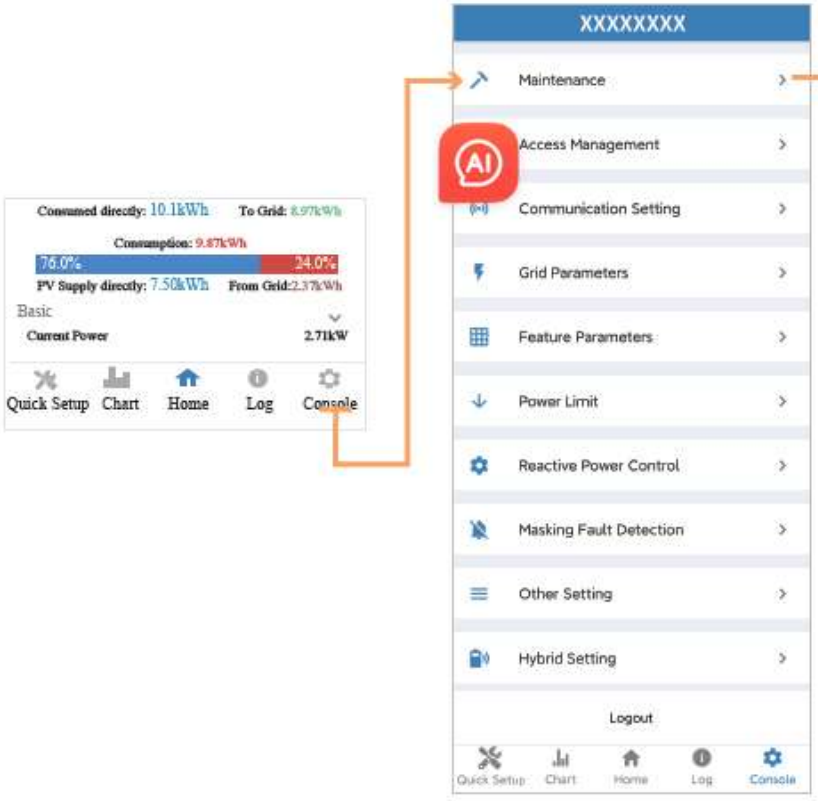
5.7 History Log

Press Log at the bottom and then go to the history log page (as shown below). It contains all the logs for the inverter.

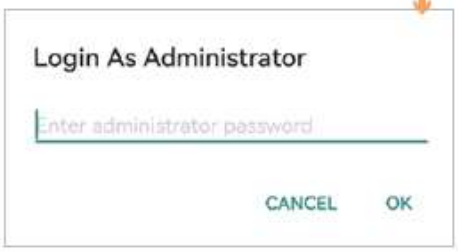


Maintenance

Go to Console page. And click Maintenance



Then you need to enter password in a popup window (as shown below).

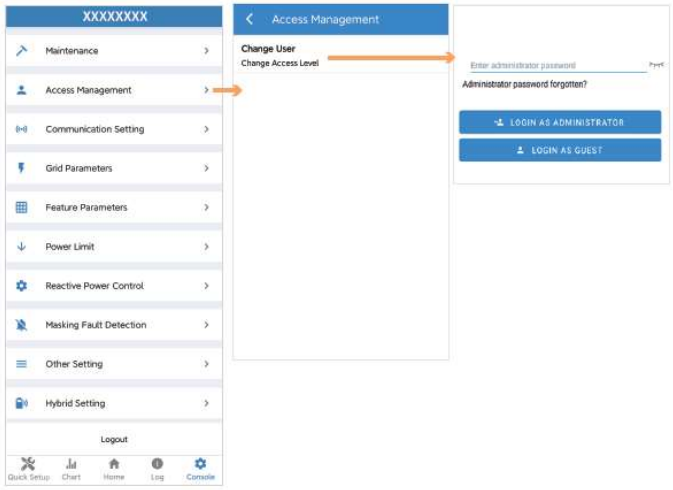


In this page, you can view the basic information like some version information, do some maintaining operations like turn off/on the inverter and manage data.

5.8 Console

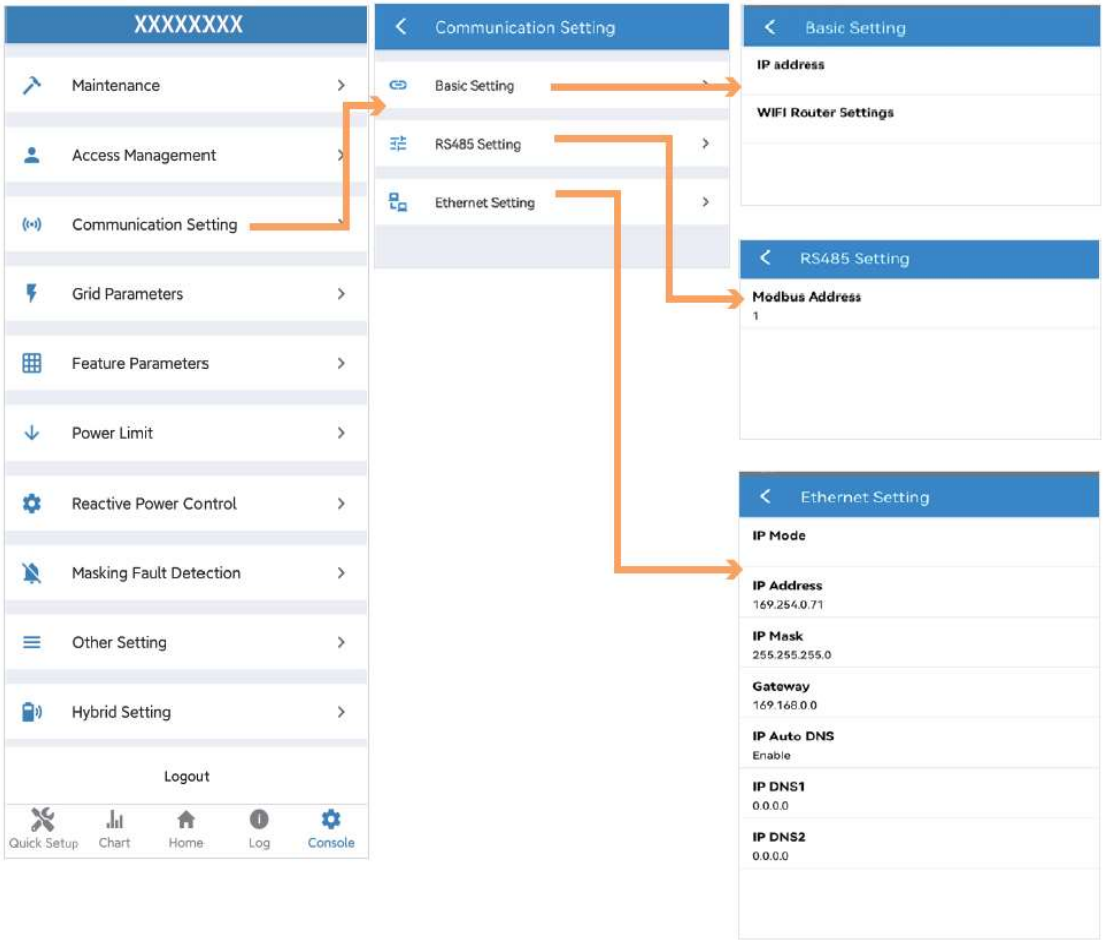
Access Management

Go to Console > Access Management page. In this page, you can switch the login permission.



5.8.1 Communication Setting

Go to Console > Communication Setting page. In this page, you can set or change the parameters of communication settings: Basic Setting, RS485 Setting and Ethernet Setting.



Grid Parameters

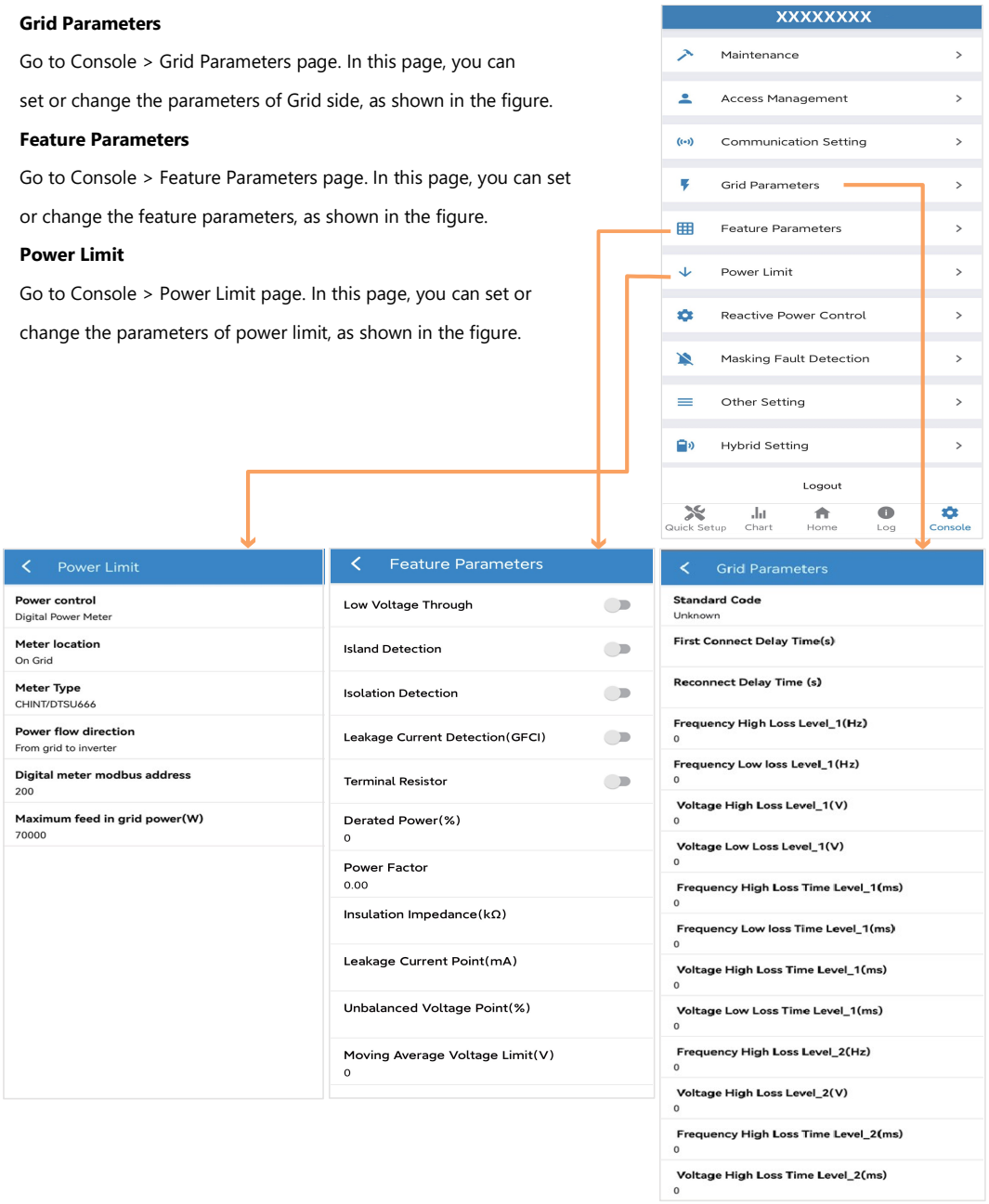
Go to Console > Grid Parameters page. In this page, you can set or change the parameters of Grid side, as shown in the figure.

Feature Parameters

Go to Console > Feature Parameters page. In this page, you can set or change the feature parameters, as shown in the figure.

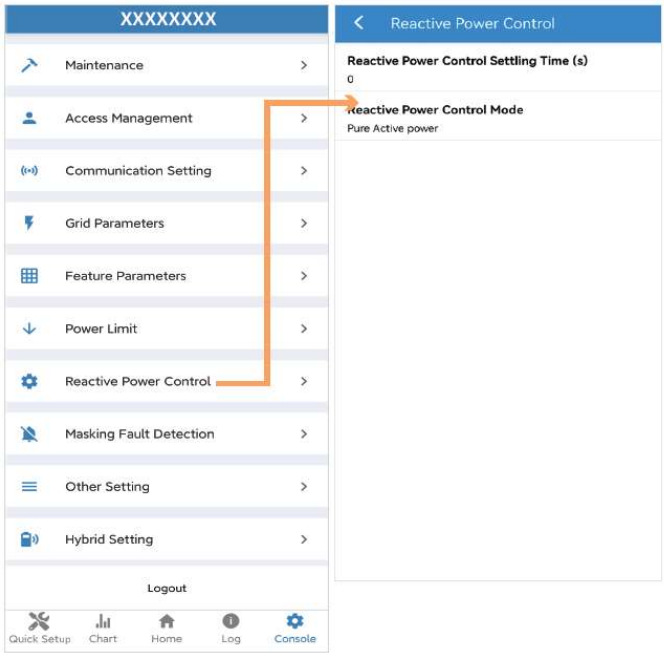
Power Limit

Go to Console > Power Limit page. In this page, you can set or change the parameters of power limit, as shown in the figure.



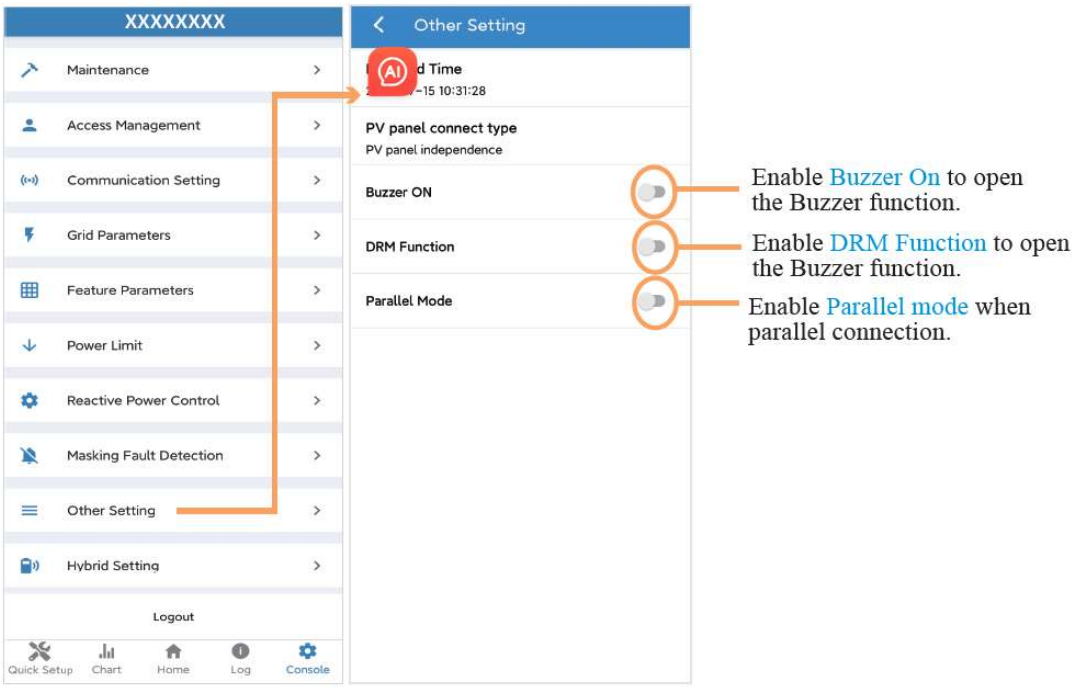
5.8.2 Reactive Power Control

Go to Console > Reactive Power Control page. In this page, you can set or change the Reactive Power Control parameters.



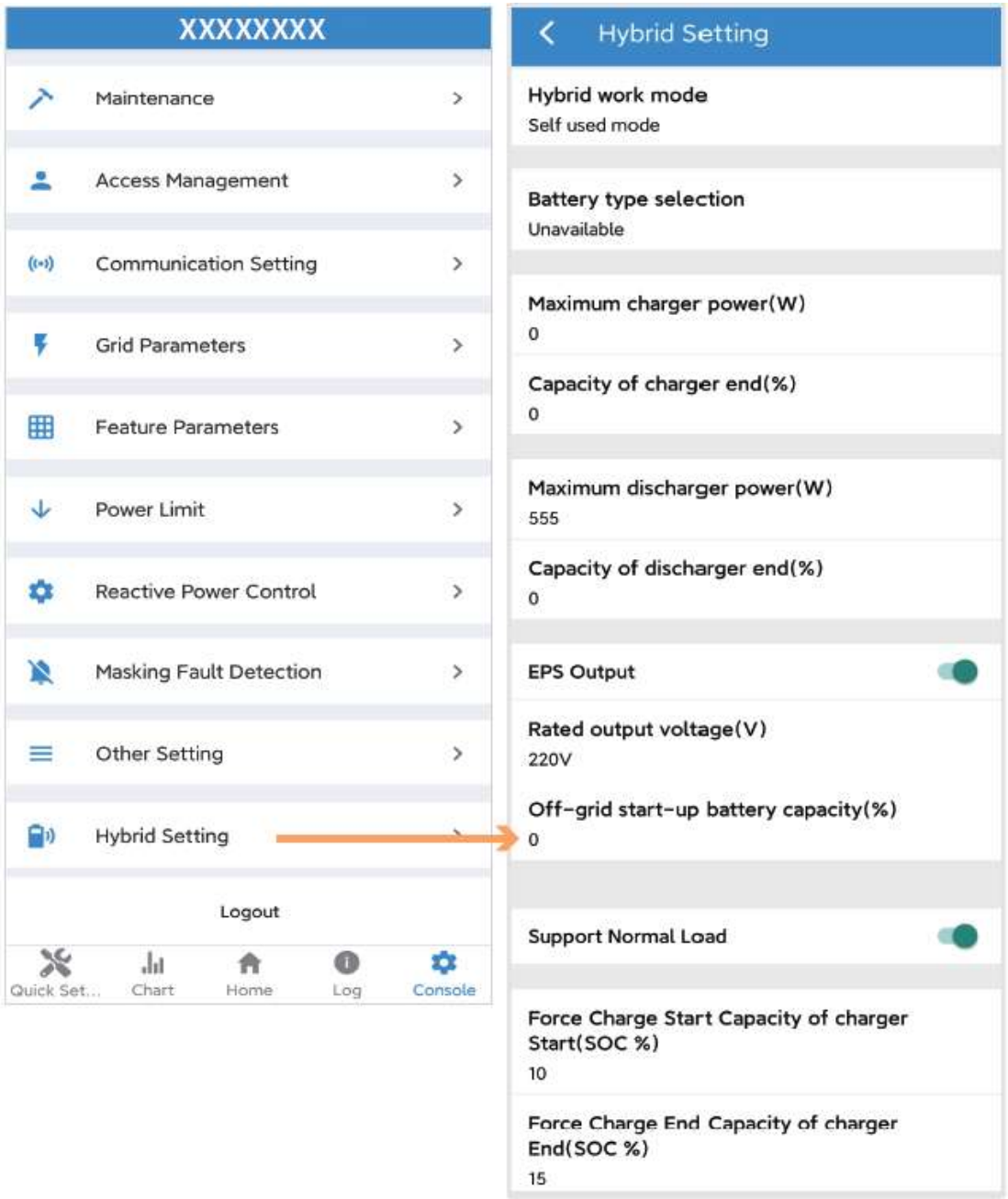
5.8.3 Other Setting

Go to Console > Other Setting page. In this page, you can set other setting parameters.



5.8.4 Hybrid Setting

Go to Console > Hybrid Setting page. In this page, you can set Hybrid Setting parameters.



6 Inverter Troubleshooting

When the inverter has an exception, its basic common warning and exception handing methods are shown below.

Code	Alarm Information	Suggestions
A0	Grid over voltage	1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required. 2. If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameters settings on the inverter through the App. 3. If the alarm persists for along time, check whether the AC circuit breaker /AC terminals is disconnected or not, or if the grid has a power outage.
A1	Grid under voltage	
A3	Grid over frequency	
A4	Grid under frequency	
A2	Grid absent	Wait till power is restored.
B0	PV over voltage	Check whether the maximum voltage of a single string of input PV modules is greater than the allowable voltage. If the maximum voltage is higher than the standard voltage, modify the number of pv module connection strings.
B1	PV insulation abnormal	1. Check the insulation resistance against the ground for the PV strings. If a short circuit has occurred, rectify the fault. 2. If the insulation resistance against the ground is less than the default value in a rainy environment, set insulation resistance protection on the App.
B2	Leakage current abnormal	1. If the alarm occurs occasionally, the inverter can be automatically recovered to the normal operating status after the fault is rectified. 2. If the alarm occurs repeatedly, contact your dealer for technical support.
B4	PV under voltage	1. If the alarm occurs occasionally, possibly the external circuits are abnormal accidentally. The inverter automatically recovers to the normal operating status after the fault is rectified. 2. If the alarm occurs repeatedly or last a long time, check whether the insulation resistance against the ground of PV strings is too low.
C0	Internal power supply abnormal	1. If the alarm occurs occasionally, the inverter can be automatically restored, no action required. 2. If the alarm occurs repeatedly, pls. contact the customer service center.

C2	Inverter over dc-bias current	1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required. 2. If the alarm occurs repeatedly, and the inverter fails to generate power, contact the customer service center.
C3	Inverter relay abnormal	1. If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required. 2. If the alarm occurs repeatedly, pls. refer to the suggestions or measures of Grid over voltage. and the inverter fails to generate power, contact the customer service center. If there is no abnormality on the grid side, the machine fault can be determined. (If you open the cover and find traces of damage to the relay, it can be concluded that the machine is faulty.) And pls. contact the customer service center.
CN	Remote off	1. Local manual shutdown is performed in APP. 2. The monitor executed the remote shutdown instruction. 3. Remove the communication module and confirm whether the alarm disappears. If it does, replace the communication module. Otherwise, please contact the customer service center.
C5	Inverter over temperature	1. If the alarm occurs occasionally, the inverter can be automatically restored, no action required. 2. If the alarm occurs repeatedly, pls. check the installation site for direct sunlight, good ventilation, and high ambient temperature (Such as installed on the parapet). If the ambient temperature is lower than 45 ° C and the heat dissipation is good, contact the customer service center.
C6	GFCI abnormal	1. If the alarm occurs occasionally, it could have been an occasional exception to the external wiring, the inverter can be automatically recovered, no action required. 2. If it occurs repeatedly or cannot be recovered for a long time, pls. contact customer service to report repair.
B7	PV string reverse	Check and modify the positive and negative polarity of the input of the circuit string.
C8	Fan abnormal	1. If the alarm occurs occasionally, pls. restart the inverter. 2. If it occurs repeatedly or cannot be recovered for a long time, check whether the external fan is blocked by foreign objects. Otherwise, contact customer service.
C9	Unbalance Dc-link voltage	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CA	Dc-link over voltage	

CB	Internal communication error	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CC	Software incompatibility	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CD	Internal storage error	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CE	Data inconsistency	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CF	Inverter abnormal	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CG	Boost abnormal	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
CJ	Meter lost	1. Check the meter parameter Settings 2. Local APP checks that the communication address of the inverter is consistent with that of the electricity meter 3. The communication line is connected incorrectly or in bad contact 4. electricity meter failure. 5. Exclude the above, if the alarm continues to occur, please contact the customer service center.

D2	Battery over voltage	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. Check that the battery overvoltage protection value is improperly set. 3. The battery is abnormal. 4. If exclude the above, the alarm continues to occur, please contact the customer service center.
D3	Battery under voltage	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. Check the communication line connection between BMS and inverter (lithium battery). 3. The battery is empty or the battery voltage is lower than the SOC cut-off voltage. 4. The battery undervoltage protection value is improperly set. 5. The battery is abnormal. 6. If exclude the above, the alarm continues to occur, please contact the customer service center.
D4	Battery discharger over current	1. Check whether the battery parameters are correctly set. 2. Battery undervoltage. 3. Check whether a separate battery is loaded and the discharge current exceeds the battery specifications. 4. The battery is abnormal. 5. If exclude the above, the alarm continues to occur, please contact the customer service center.
D5	Battery over temperature	1. If the alarm occurs repeatedly, please check whether the installation site is in direct sunlight and whether the ambient temperature is too high (such as in a closed room). 2. If the battery is abnormal, replace it with a new one. 3. If exclude the above, the alarm continues to occur, please contact the customer service center.
D6	Battery under temperature	
D7	BACKUP output voltage abnormal	1. Check whether the BACKUP voltage and frequency Settings are within the specified range. 2. Check whether the BACKUP port is overloaded. 3. When not connected to the power grid, check whether BACKUP output is normal. 4. If exclude the above, the alarm continues to occur, please contact the customer service center.
D8	Communication error (Inverter-BMS)	1. Check whether the battery is disconnected. 2. Check whether the battery is well connected with the inverter. 3. Confirm that the battery is compatible with the inverter. It is recommended to use CAN communication. 4. Check whether the communication cable or port between the battery and the inverter is faulty. 5. If exclude the above, the alarm continues to occur, please contact the customer service center.

D9	Internal communication loss(E-M)	1. Check whether the communication cables between BACKUP, electricity meter and inverter are well connected and whether the wiring is correct 2. Check whether the communication distance is within the specification range 3. Disconnect the external communication and restart the electricity meter and inverter. 4. If exclude the above, the alarm continues to occur, please contact the customer service center.
DA	Internal communication loss(M-D)	
CU	Dcdc abnormal	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, please check: 1) Check whether the MC4 terminal on the PV side is securely connected. 2) Check whether the voltage at the PV side is open circuit, ground to ground, etc. If exclude the above, the alarm continues to occur, please contact the customer service center.
CP	BACKUP over dc-bias voltage	1. If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required. 2. If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.
DB	BACKUP short circuit	1. Check whether the live line and null line of BACKUP output are short-circuited. 2. If it is confirmed that the output is not short-circuited or an alarm, please contact customer service to report for repair. (After the troubleshooting of alarm problems, BACKUP switch needs to be manually turned on during normal use.)
DC	BACKUP over load	1. Disconnect the BACKUP load and check whether the alarm is cleared 2. If the load is disconnected and the alarm is generated, please contact the customer service. (After the alarm is cleared, the BACKUP switch needs to be manually turned on for normal use.)

END，Thanks for watching!!!