USER MANUAL

SOFAR CH1000



Shenzhen SOFARSOLAR Co., Ltd.

Shenzhen SOFARSOLAR Co., Ltd.
11/F, Gaoxinqi Technology Building,
District 67, XingDong Community, XinAn Street,
Bao'An District, Shenzhen, China

SOFARSOLAR GmbH
Krämerstrasse 20
72764 Reutlingen
Germany

Email: service.uk@sofarsolar.com
service@sofarsolar.com
Web: www.sofarsolar.com

Document number
Issue 01 / 12.2023
English

Content

1 Basic Safety Information 3
1.1 Safety instructions. 3
1.2 Installation and maintenance personnel requirements 3
1.3 Device identification protection 4
1.4 Assembly conditions 4
1.5 Precautions 4

2 Product Description 8
2.1 Product Introduction 8
2.2 Product Features 10
2.3 Product Networking 11

3 Unpacking and storage 13
3.1 Unpacking 13
3.2 Checking for transportation integrity 15
3.3 Storage 15

4 Product Installation 16
4.1 Tool Preparation. 16
4.2 Installation requirements 17
4.3 Installing CH1000 17

5 Cable Connections 22
5.1 Preparation for Connection 22
5.2 Connecting RS485 Terminal Block 22
5.3 Connecting LINK/RS485-3 27
5.4 Connecting Etherne 29
5.5 Installation of antennas and SIM card 29
5.6 Connecting the power supply 31
5.7 Connecting the DO signal cable (Reservation) 32
5.8 Connecting the DI signal cable (Reservation) 33
5.9 External emergency stop switch 34
5.10 Connecting the AI signal cable(Reservation) 35
5.11 Connecting the DRMs port 36
5.12 Inspection after installation 38

6 System operation 39
6.1 Check before operation 39
6.2 Operational steps 39

7 Parameter Configuration 40
7.1 Introduction to the WEB interface 40
7.2 Plant Overview 41
7.3 Plant Manage 41
7.4 Communication 47
7.5 Device Manage 48
7.6 Protocol Conversion 50
7.7 Third Party Device 52
7.8 System Settings 53

8 SOFAR Cloud/APP Operation 55
8.1 APP Local Commission 55
8.2 SOFAR Cloud Remote Control 66
8.3 APP Remote Control 75

9 Fault Resolution 85
10 Routine maintenance 89
11 Technical Specifications 90
Appendix 92
Abbreviations 92

Copyright © Shenzhen SOFARSOLAR Co.Ltd

The contents of this manual shall not be privately diffused, copied or forwarded to a third party, or uploaded to a public network or other third-party platforms without the authorization of Shenzhen SOFARSOLAR Co.Ltd limited (hereinafter referred to as “SOFARSOLAR”).

Save this Instruction

This manual must be considered as an integral part of the equipment. Customer can print the electronic version to hard copy and keeping properly for future reference. Anyone who operates the device at any time must operate in accordance with the requirements of this manual.

Software Licenses

It is prohibited to use some or all of the data in the firmware or software developed by our company for commercial purposes in any way.

prohibits decompiling, decrypting, or otherwise destroying the original program design of the software developed by the Company.

Purpose

The user manual describes the CH1000 installation, cable connection, real-time monitoring, and troubleshooting methods. Before installing and using the CH1000, familiarize yourself with the functions and features of the CH1000, and read the safety information in this document carefully.

Scope of application

Unless otherwise noted, the scope of application of this manual includes CH1000A/CH1000B/CH1000C/CH1000D models.

Target readers

The user manual is intended for professional and technical personnel who need to install, operate and maintain the product, and for users who need to view and operate the product parameters.

Description of safety symbols

To ensure the safety of your person and property when using this product, the user manual provides relevant information on safe operation and highlights it using the appropriate symbols. It is important that you fully understand and absolutely comply with this emphasized information to avoid personal injury and property damage. The symbols used in this manual are listed below.

DANGER

– Indicates a high potential hazard which, if not avoided, will result in injury or death.

WARNING

– Indicates a moderate potential hazard which, if not avoided, will result in injury or death.

NOTE

– Indicates a potential hazard that, if not avoided, will result in equipment failure or property damage.

1 Basic Safety Information

Please read the safety precautions in this manual carefully, as ignoring them may result in serious personal injury or death. If you have problems reading the following information, please contact SOFARSOLAR.

1.1 Safety instructions

- The installation of this product must fully comply with national and local power grid standards and regulations.
- Read and understand all the instructions contained in this manual and familiarize yourself with the relevant safety symbols before you begin installing and commissioning the device.
- For any maintenance or repair, please contact the nearest authorized repair center. To find out about the nearest authorization center, contact your distributor. Please do not repair yourself, which may cause personal or property injury.
- Before installing and maintaining the device, switch off the DC switch. Otherwise, serious injuries may occur.
- The safety information in this manual does not contain all the safety regulations that should be followed, but is only a supplement to all the safety regulations that should be followed. The installation and maintenance should be carried out according to the actual situation.
- SOFARSOLAR shall not be liable for any loss caused by the violation of the general safety standards and the safety information in this manual.

1.2 Installation and maintenance personnel requirements

Some parts may be charged or hot when the product is running. Improper use, incorrect installation, or incorrect operation may result in serious injury to person or property. Transport, loading and unloading, installation, start-up and maintenance operations must be carried out by qualified electrical engineers (all effective accident prevention measures in the user's country must be observed). SOFARSOLAR shall not be liable for any personal or property injury caused by any wrong use.

1.3 Device identification protection

The model number of the CH1000 can be obtained from the nameplate, which is located on the back of the CH1000.The SN of the CH1000 is located on the front of the CH1000 in the lower left-hand corner of the QR code.

Please note: The nameplate contains important parameters, please ensure that it is clearly visible and not defaced, and is strictly prohibited from vandalism.

1.4 requirements

Assemble the product according to the detailed instructions in the following sections of this manual, and place the product on an object (wall, rail, etc.) with appropriate bearing capacity. The place suitable for the installation of equipment should be selected to ensure sufficient fire escape space for maintenance in case of failure. Maintain proper ventilation conditions to ensure sufficient air circulation for cooling, with less than 90% air humidity during assembly. If you need to drill holes before installation, ensure that water and electricity lines in the wall are completely avoided.

1.5 Precautions

The product is in the best electrical and mechanical condition when it leaves the factory. When transporting the product, use the original packaging or appropriate packaging to ensure the safety of the equipment during transportation. The transportation company is responsible for the damage caused to the machine during transportation. When taking delivery, please make a thorough inspection of this product. Notify the responsible shipping company immediately of any packaging problems that may cause damage to the product, or of any visible damage to the Product. If necessary, you can ask your system installer or SOFARSOLAR for help.

1.5.1 Electrical connection precautions

Please comply with all current national regulations related to the prevention of electrical accidents when installing this product.

DANGER

- Before electrical connection, ensure that the product is not damaged, otherwise it may cause danger.
- Before electrical connection, ensure that the product and all switches connected to it are set to “OFF”; otherwise, electric shock may occur.
- Pay attention to the warning label on the product and follow its safety instructions.
- Be sure to follow the safety precautions outlined in this manual.

WARNING

- Only professional electrical engineers are allowed to complete all installation operations.
- Be sure to be trained, have read this manual thoroughly, and understand the relevant safety matters.
- The cables must meet local laws and regulations, have proper specifications, are securely connected, and are well insulated.
- Before you connect a power cable, ensure that the label on the power cable is correct.

NOTICE

- Cable connections must comply with the rules of the local power grid.
- Periodically check the screw that connects the terminal of the device and ensure that it is tight.
- If a cable is damaged, replace it with a professional to avoid risks.

1.5.2 Operation precautions

DANGER	– Do not touch any of the product's terminals while the product is in operation, or there may be a risk of electric shock. – Do not disassemble any parts of the product during operation, otherwise there may be a risk of electric shock.

1.5.3 Running precautions

DANGER	– Tools need to be prepared and qualified by professional organizations, prohibit the use of scarred and unqualified or beyond the inspection of the validity of the tool, to ensure that the tool is solid, not overloaded
WARNING	– Do not drill holes on the device. Drilling holes may damage the sealing performance, electromagnetic shielding performance, internal components, and cables of the device. Metal chips generated from drilling may enter the device and short-circuit the circuit board.

1.5.4 Maintenance and repair precautions

DANGER	– Do not make unauthorized modifications or use parts not sold or recommended by the company, which may result in electric shock or fire hazard. – Disconnect all power sources before performing any maintenance work.

WARNING	– Do not disassemble the internal components of the equipment without authorization, and SOFARSOLAR will not bear the warranty and joint and several responsibility for any damage caused. – To prevent accidents from occurring when uninvolved persons are close by, maintenance personnel may place conspicuous warning signs around the perimeter to avoid causing accidents. – Please reboot the device after the repair is completed, otherwise it may cause the fault to expand or the device to be damaged.

1.5.5 Scrapping Precautions

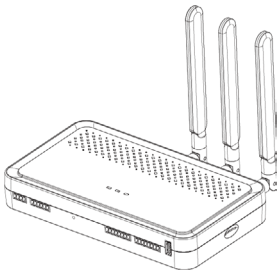
DANGER	– If the product needs to be scrapped, please do so in accordance with the relevant local standards to avoid casualties or property damage.

2 Product Description

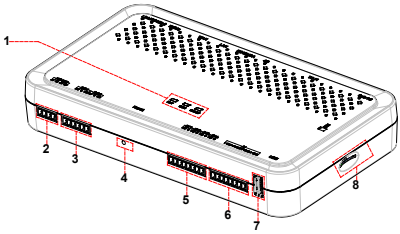
2.1 Product Introduction

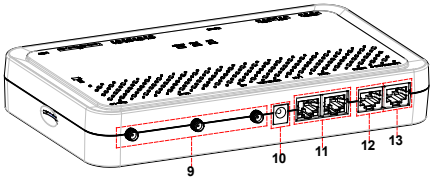
CH1000 is an all-in-one product that integrates multi-device remote and local monitoring, parameter setup, feed-in limitation, firmware upgrade, etc. Includes 4 models CH1000A, CH1000B, CH1000C and CH1000D.

CH1000 exterior dimensions (L*W*H): 218*125*34, unit: mm. the illustration shows the CH1000C model, the specific antenna according to the model optional.



The following table describes each interface of the device.





Number	Name	Silkscreen
1	LED indicator	NET COM READY
2	RS485 port	RS485(A1 B1 A2 B2)
3	DO port	DO1(NC C NO) DO2(NC C NO)
4	Reset key	Reset
5	DI port	DI1(NO C) DI2(NO C) DI3(NO C) DI4(NO C)

Number	Name	Silkscreen
6	AI port	AI(1 GND 2 GND 3 GND 4 GND)
7	USB port	USB
8	SIM card port	SIM
9	Antennae ports	Sub-1G Wi-Fi 4G
10	12V~24V power input port	DC12V/2A
11	Network port	LAN WAN
12	DRMs port	DRMs
13	Link port	Link/RS485-3

Reset key:

Long press the reset key for 10s the device will restore the factory settings, all configurations will be restored to the factory settings, the inverter and meter connected to this device need to be re-added, and the CH1000 needs to be re-distributed.

LED indicator:

CH1000 has 3 LED indicators. The indicator status is shown in the table below.

LED	Indicator Status	Indicator Definition
NET	Connectivity network and SOFAR Cloud status LED	Off: device is not connected to the power supply
		Steady: normal network connection and normal connection with SOFAR Cloud
		Blinking slowly (2s at a time): network connection is normal but connection with SOFAR Cloud is abnormal.
		Blinking rapidly (200ms at a time): no network connection and abnormal connection with SOFAR Cloud.
COM	Communication with inverter status LED	Off: no data communication
		Blinking: data communication available
READY	System status LED	Off: no power connection or system failure
		Blinking green: system normal operation
		Steady red: the system has an alarm message (CH1000 self alarm)

If the NET LED flashes slowly, it means that the network connection is normal but no connection has been established with SOFAR Cloud, you need to check the local network firewall settings and add the domain name pv-emqx.sofarcloud.com and port number 8885 to the firewall white list.

2.2 Product Features

CH1000, as the core component of the photovoltaic storage intelligent system, has the following characteristics:

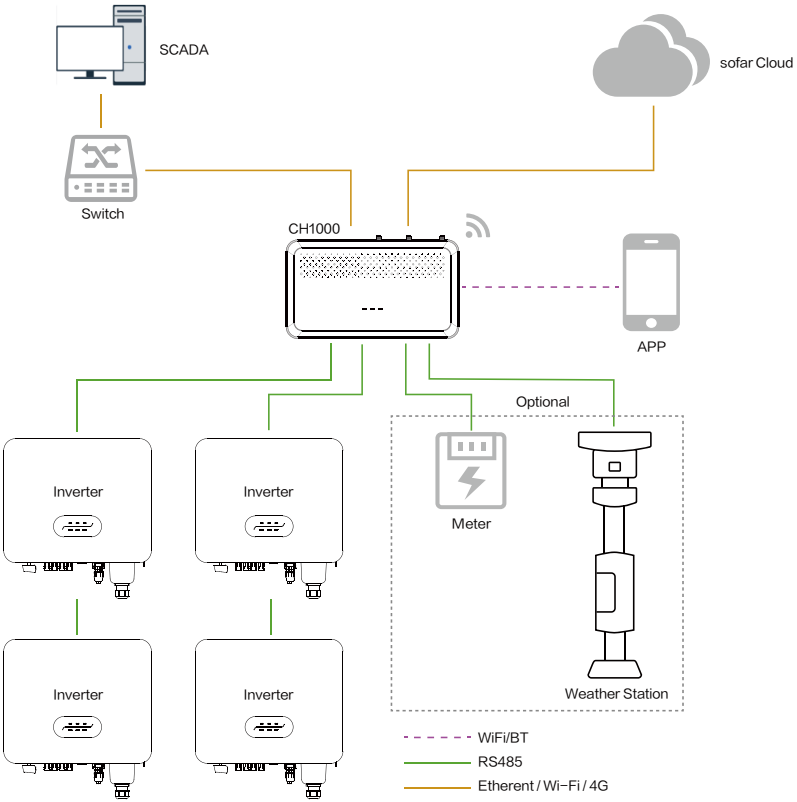
1. Support multiple device types such as inverters, meters, batteries, sensors to connect in. Count of connected devices is up to 60pcs..
2. Connect to cloud via WLAN/4G/Ethernet.
3. Support 24-hour remote status monitoring, parameter setting, firmware upgrading of the system and device by cloud or mobile APP.
4. Built-in EMS function, support including self-consumption, time of use mode, active/reactive/power factor closed-loop control..
5. Supports access to SCADA system via Modbus-TCP/IEC104 and other protocols for monitoring and power scheduling.
6. Easy access to third-party device such as weather station and transformer substation control.
7. Local fast commission through WLAN by APP.

2.3 Product Networking

CH1000 can be used in micro inverter and commercial & string inverter scenarios.

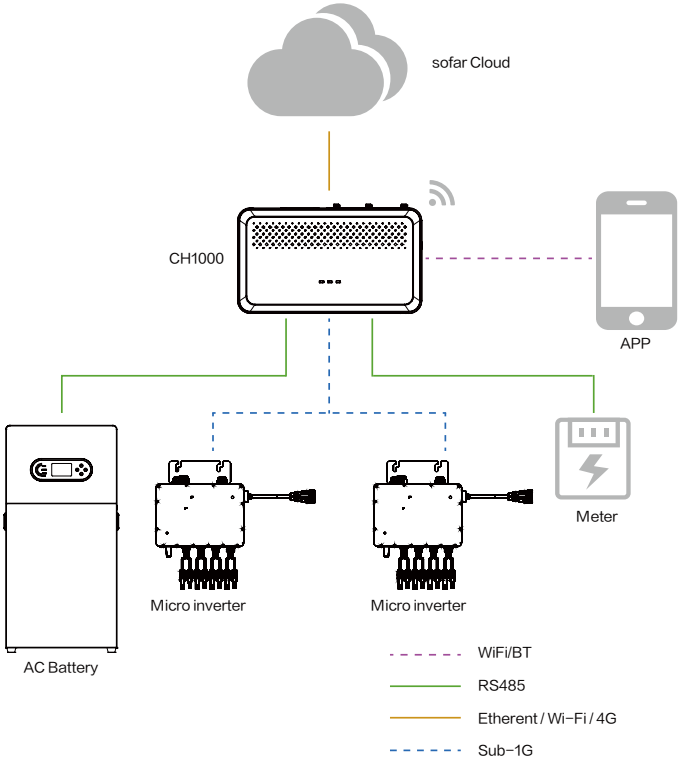
1. string inverter scenarios
   - inverter connected to CH1000 via RS485
   - CH1000 connected to meter via RS485
   - CH1000 connected to SOFAR Cloud/SCADA via Wi-Fi/Ethernet/4G

The typical network diagram for string inverter scenarios is shown below and may vary depending on the actual access device.



2. Micro inverter scenarios
   - Micro inverter connected to CH1000 via Sub-1G
   - AC battery connected to CH1000 via RS485
   - CH1000 connected to meter via RS485
   - CH1000 connected to SOFAR Cloud via WiFi/Ethernet/4G

The typical network diagram for a micro inverter scenario is shown in the following figure, which may vary depending on the actual access device.



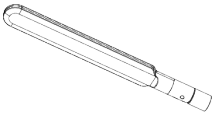
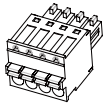
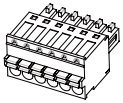
3 Unpacking and storage

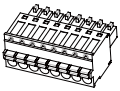
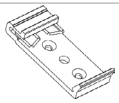
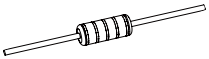
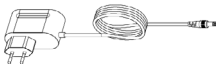
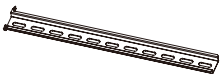
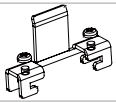
3.1 Unpacking

Please check the outer packaging for damage such as holes, cracks or other signs of possible internal damage before unpacking the CH1000. Please do not unpack it and contact your dealer as soon as possible if you find any packaging anomalies. The packaging needs to be restored to its original condition and then stored if on-site installation is not to be carried out immediately after completion of the delivery and acceptance work. It is recommended that you remove the outer packaging of the CH1000 when you are ready to install it.

Please check the delivery contents for completeness according to the packing list inside the package when you receive the product. Please contact your dealer if you find any damage or any component missing.

The delivery list is shown in the table below:

Number	Picture	Description	Quantity
1		Master, including four models CH1000A/CH1000B/CH1000C/ CH1000D	1
2		Antenna: Model number is silk-screened on the antenna CH1000A：WiFi	1
		CH1000B：WiFi、Sub-1G	2
		CH1000C：WiFi、Sub-1G、4G	3
		CH1000D：WiFi、4G	2
3		4P terminal block	1
4		6P terminal block	1

Number	Picture	Description	Quantity
5		8P terminal block	2
6		DIN-rail bucklue(Optional)	2
7		M3*6 flat head screws(Optional)	4
8		Plastic expansion tube	2
9		ST4.8*30 self-tapping screws	2
10		Terminal resistance	6
11		Power supply adapter (optional)	1
		DIN-rail power supply (optional)	1
		DC power supply cable (optional)	1
12		DIN-Rail(Optional)	1
13		Document	3
14		Certificate of conformity	1
15		Retaining Bumps (Optional)	1

3.2 Checking for transportation integrity

CH1000 has been carefully inspected and securely packed before leaving the factory. There may be equipment collision or damage during transportation. Therefore, please be sure to check the following after you receive the product:

- Ensure that all shipped components are complete against the delivery list
- Confirm that the actual model received is the same as the model you purchased
- Check the CH1000 carefully to ensure that the appearance is not damaged

Please be sure to contact SOFARSOLAR or the transportation company in time if you find any abnormality during the inspection process.

3.3 Storage

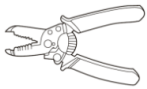
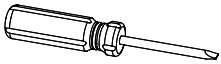
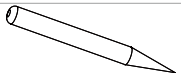
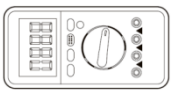
You need to pay attention to the following when you store the CH1000 if you do not put CH1000 into use immediately after you receive it.

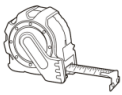
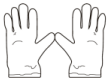
- Pack the CH1000 in its original packaging, retaining the desiccant and sealing it with adhesive tape
- Storage temperature range -40~+80°C, relative humidity range 5%RH~95%RH, non-condensing
- Storage carrier, sufficient to carry the weight of the CH1000 with outer packaging
- CH1000 storage time of half a year and above, need to be inspected and tested by professional personnel before being put into use

4 Product Installation

4.1 Tool Preparation

You must obtain the following tools before installing the CH1000:

Number	Tool	Description	Purpose
1		Wire stripper	Wire stripping
2		Phillips screw-driver	Fixed guide clips and ST5*30 self-tapping screws
3		One-piece screw-driver	Connect a wire
4		Hammers	Knocking plastic expansion tubes
5		Percussion drill	Wall punching
6		Permanent marker	Marking the mounting position
7		Heat gun	Heat shrinkable tubing
8		Tape measure	Measuring distance
9		Heat shrink tub-ing	Wrapped cables
10		Multimeter	Check that the cable wiring is correct

Number	Tool	Description	Purpose
11		Tape rule	Measuring distance
12		Protective glove	Wear when installing the machine
13		Safety goggles	Wear when installing the machine
14		Respirator	Wear when installing the machine

4.2 Installation requirements

The user should consider the following factors when installing the CH1000 in order to ensure its service life, safety in use, etc:

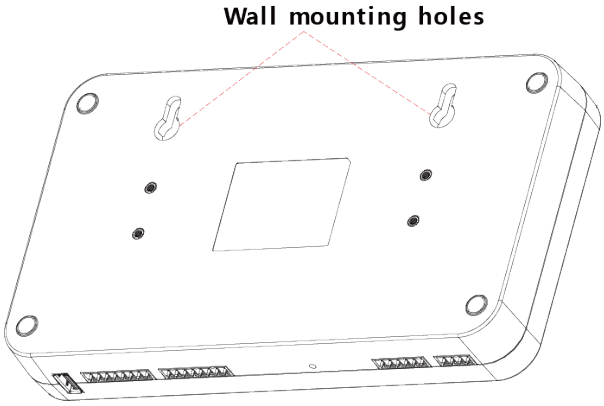
- The product is IP20 rated and should be installed in an indoor or boxed scenario
- Keep the installation away from sun, rain and snow
- The working environment temperature is -30˚C~+65˚C
- Working environment humidity range of 5%RH~95%RH
- Please pay attention to the protection against humidity and corrosive substances

4.3 Installing CH1000

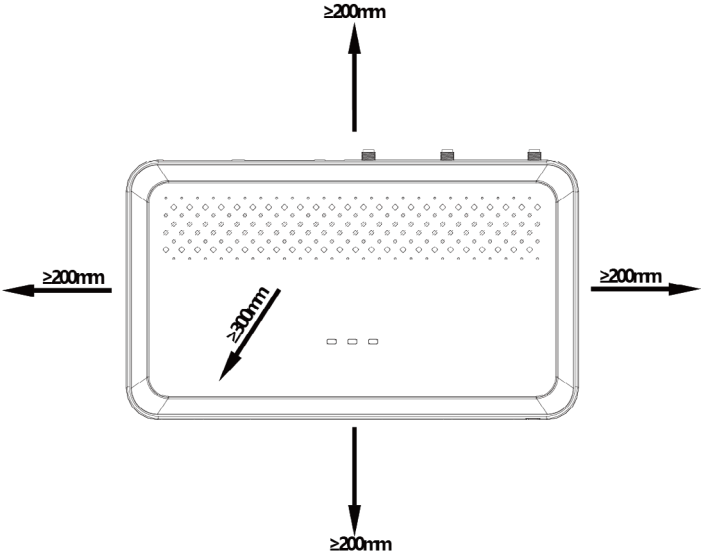
The device SN number is affixed on the outside of the device, and the first flight device SN number is a combination of a string of numbers and letters with S as the first, such as SD002200****. There are many places where you need to use the SN number in the future, so please keep it appropriately. The CH1000 supports wall mounting, rail mounting, and desktop flat. The mounting method can be chosen by the user.

4.3.1 Wall mounting

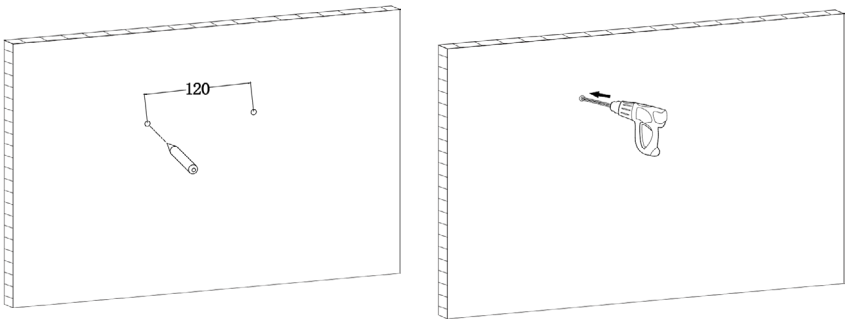
The wall mounting holes are 2 gourd holes that are on top of the back of the product (as shown below).



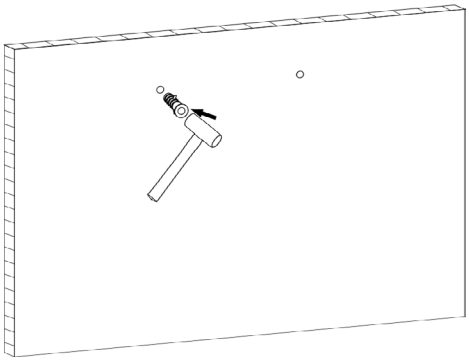
Please ensure that there is sufficient space around this product before installation, the minimum spacing requirements are shown below:



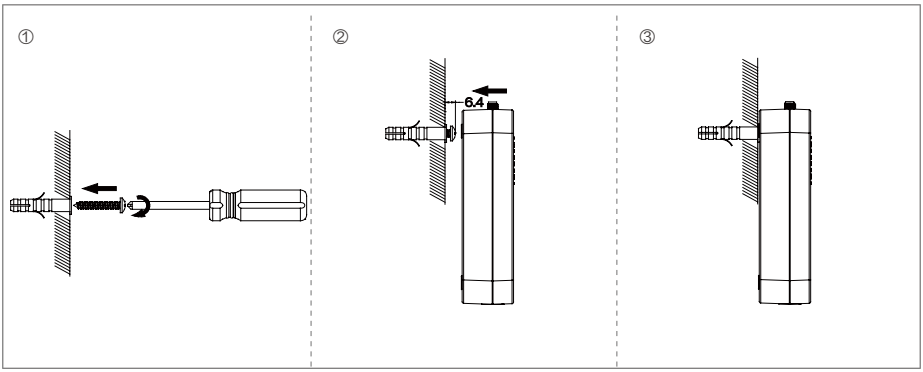
1. Please choose a wall with sufficient load-bearing capacity, mark the drilling position on the wall with a marker, and then use an impact drill to drill holes on the wall. Please keep the impact drill perpendicular to the wall, and the depth of the hole is slightly larger than the length of the plastic expansion pipe when drilling. Please use the back of the product to check whether the hole position is suitable after drilling. If the error is too large, please reposition (Note: M5*30 self-tapping screws and plastic expansion tubes are supplied with the shipment. As shown in the figure below, 120 is the distance between the two holes, unit: mm).



2. Slowly tap the plastic expansion tube into the drilled hole with a hammer (As shown below).

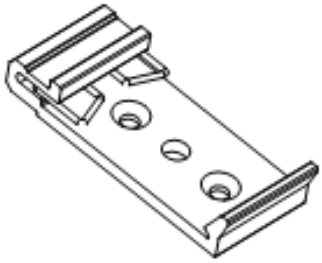


3. Fix the M5*30 self-tapping screws with a Phillips screwdriver inside the plastic expansion tube and expose the wall surface about 6.4mm and not more than 6.7mm. Attach the wall mounting holes on the back of the product to the screws (As shown below).

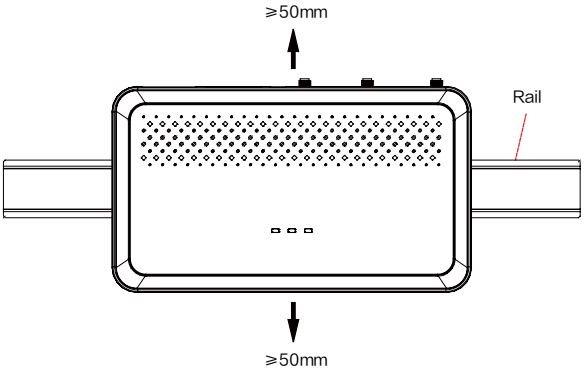


4.3.2 Rail mounting

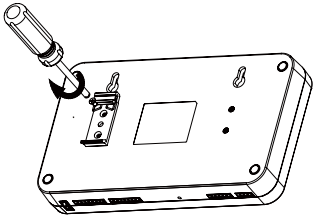
The DIN-rail mounting clips are shown below.



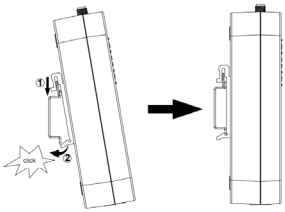
Please ensure that there is sufficient space around this product before installation, the minimum spacing requirements are shown below:



1. Install the DIN-rail clips with a Phillips screwdriver at the corresponding screw holes on the back of the product (As shown below).



2. Tilt the product at a certain angle, snap the top of its back DIN-rail clip hook into the DIN-rail, then press the lower part of the product to the DIN-rail, and when you hear a clicking sound, the installation is complete (As shown in the figure below).

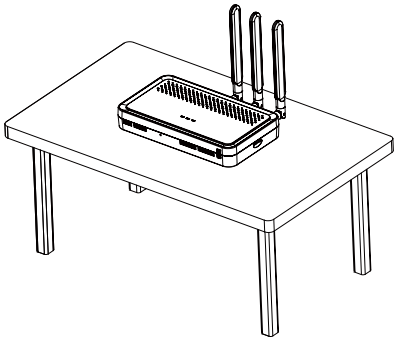


NOTICE

– When removing the DIN-rail, push the DIN-rail firmly toward the upper edge of the catch and then break out the lower edge of the DIN-rail. Do not break out the DIN-rail directly. The edges of the DIN-rail are sharp, please touch them carefully to avoid scratching.

4.3.3 Desktop flat

Place the CH1000 flat on a table with no obstructions around the antenna. As shown in the figure below.



5 Cable Connections

5.1 Preparation for Connection

It is recommended that you prepare cables with the following specifications before making cable connections. Please pay attention to the following when you make the cable connections:

- All cables must be undamaged, well insulated, properly sized and securely connected
- Make sure that the wiring procedure is correct, otherwise the equipment may be damaged and even cause injury or death to the wiring personnel.

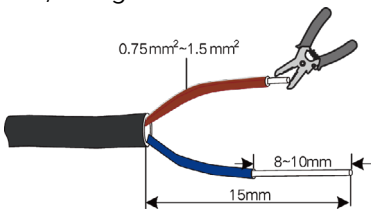
Cable type	Cable specification
RS485 cable	Shielded twisted pair with cross sectional area of 0.75mm²~1.5mm²
DI signal cable	Dual core cable with a cross-sectional area of 0.2mm²~1.5mm²
AI signal cable	Dual core cable with a cross-sectional area of 0.2mm²~1.5mm²
DO signal cable	Dual core cable with a cross-sectional area of 0.2mm²~1.5mm²

5.2 Connecting RS485 Terminal Block

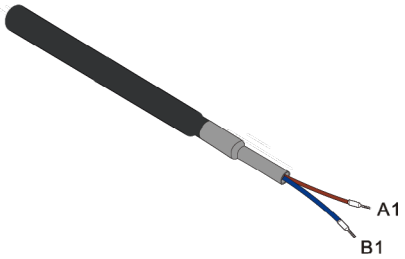
CH1000 has 3 RS485 interfaces, any of which can be connected to inverter/meter devices, but the inverter and meter need to be connected to different RS485 interfaces.

The connection steps are as follows:

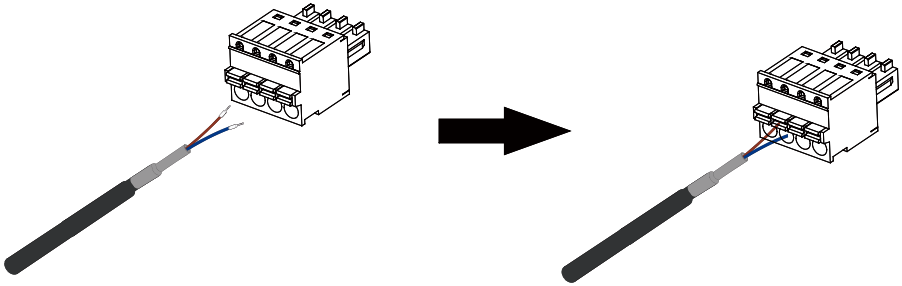
1. Use wire strippers to strip the protective layer of the communication cable by about 15mm, strip the insulation layer by 8mm~10mm, and lead out the corresponding A1/B1 or A2/B2 signal wires as shown in the figure below.



2. Install the proper size tubular pre-insulated terminal for the signal wire and crimp it tightly using crimping pliers. Cut off the excess signal wires and wrap them with heat shrink tubing, the result is shown below.



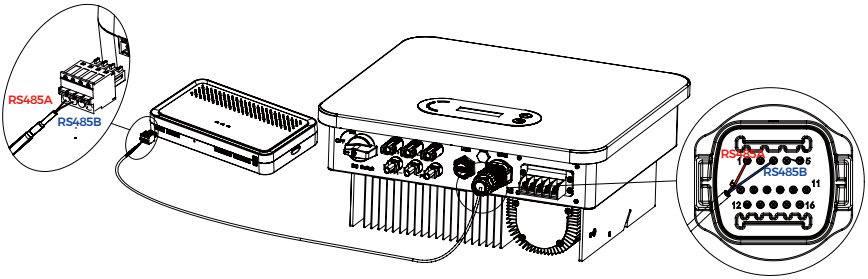
3. Connect the communication cable to the RS485 port of CH1000 as shown in the figure below.



4. Connect the inverter.

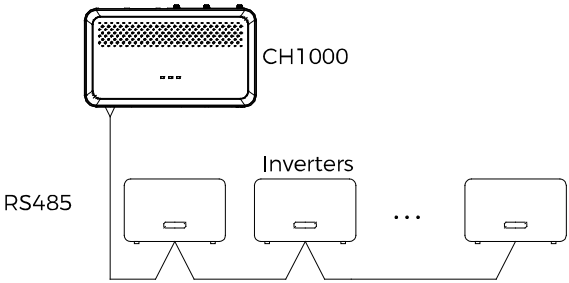
1. Connection between CH1000 and inverter:

As shown in the figure below, RS485 A and RS485 B in CH1000 are connected to RS485 A and RS485 B of COM port of inverter respectively. The RS485 pin of the inverter is located in the COM port of the inverter.



2. Connection between inverters:

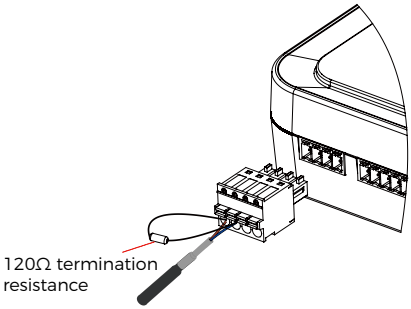
Daisy chain method, inverter RS485A/RS485B are connected to the RS485A/ RS485B of the next inverter respectively. the number of devices connected by a daisy chain is less than 20.



Cable type	One end of cable		Other end of cable	
	Device	Port	Port	Device
Shielded twisted pair	CH1000	RS485A	COM-1	Inverter 1
		RS485B	COM-3	
	Inverter 1	COM-2	COM-1	Inverter 2
		COM-4	COM-3	
	Inverter 2	COM-2	COM-1	Inverter 3
		COM-4	COM-3	

3. Connect RS485 termination matching resistor:

When the number of inverter connections exceeds 15 or the communication distance exceeds 1000 meters, it is recommended to connect a 120Ω termination matching resistor between RS485 interfaces A and B of CH1000 and the inverter at the very end of the daisy chain, as shown in the following figure. The specific situation is subject to the actual situation on site.

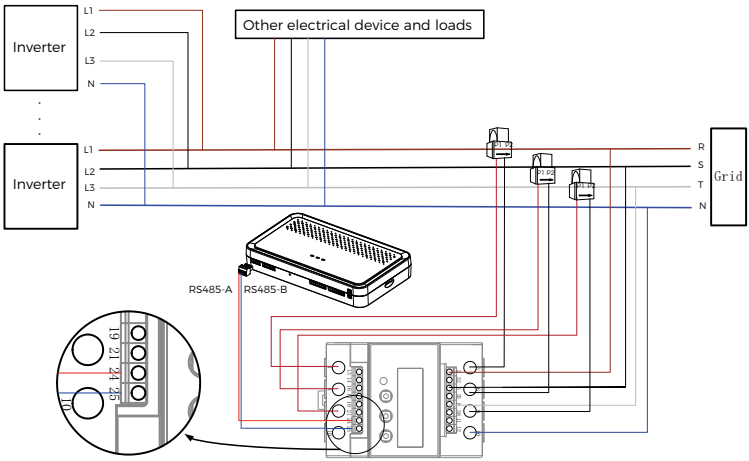


NOTICE

- The length of communication line is not more than 1000m.
- When connecting multiple inverters, the number of devices connected by one daisy chain is less than 30.
- In order for CH1000 to correctly collect inverter data, the inverter need to be updated to the latest version, as confirmed by installation and after-sales personnel.
- RS485 communication line between CH1000 and inverter and RS485 communication line between inverters should use shielded twisted pair cable.
- When arranging the alignment of the communication line, please pay attention to separate the alignment of the communication line from the power line, and the alignment should avoid the big interference source, so as to avoid the signal being interfered with and causing the communication interruption.
- Please set the baud rate of all inverters to 9600.

5. Connect the meter and CT

Please use shielded twisted pair cable to connect the free RS485A and RS485B of CH1000 to the pins 24 (RS485A) and 25 (RS485B) of the meter respectively. CT should be connected to the grid connection point of all inverters and other electrical device and loads, with the direction pointing to the power grid. The cable connection can refer to the following table.

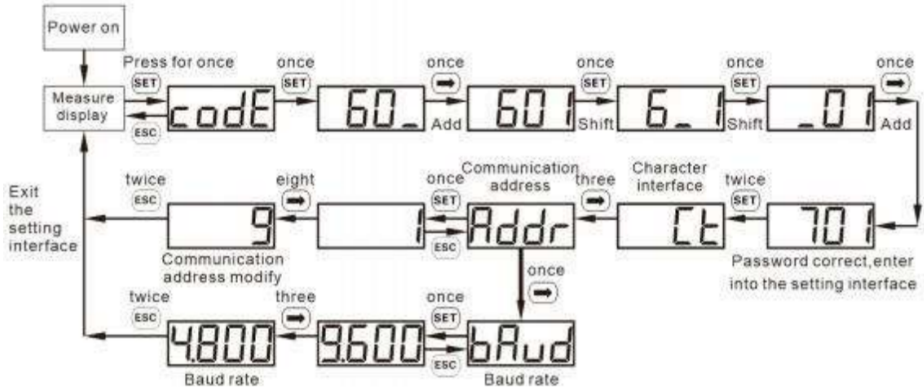


Cable type	One end of cable		Other end of cable	
	Device	Port	Port	Device
Shielded twisted pair	CH1000	RS485A	24	Meter
		RS485B	25	
AC cable	Meter	1	P1 or S1	CT1
		3	P2 or S2	
		4	P1 or S1	CT2
		6	P2 or S2	
		7	P1 or S1	CT3
		9	P2 or S2	
		2	R	Grid
		5	S	
		8	T	
		10	N	

1. The currently supported meter models are Chin meters (DTSU666, DDSU666). Among them, DTSU666 is used with CT and requires CT parameter configuration in SOFAR Cloud/APP/Local WEB.

2. The meter needs to be installed in the distribution cabinet or placed in the box, not exposed.

3. If you encounter the problem of meter communication failure, please check the meter configuration through the product user manual, communication address: 1, baud rate: 9600, protocol: 3 (Modbus-RTU).



4. Users need to prepare CT with specifications of xxx / 5A, e.g. 1000A / 5A, 2000A / 5A, etc.. The CT selection should take into account the maximum output current and load current at the inverter paralleling machine, usually select 1.2 to 1.5 times the maximum value, and ensure that the appropriate aperture size to fit the wire diameter at the paralleling machine.

For example: inverter specifications single maximum output current 200A, parallel 5 units, the maximum output current at the parallel 1000A, the maximum current of the load is 1200A, according to the market common specifications to choose the appropriate CT, can choose 1500A / 5A specifications of the CT.

5.3 Connecting LINK/RS485-3

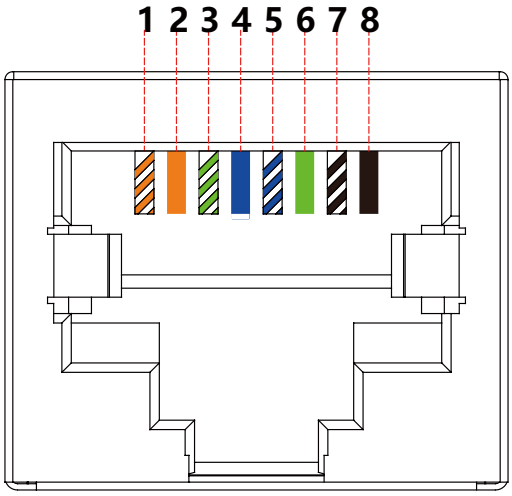
Interface	Connected device
Link/RS485-3	Inverter/Meter

It is recommended to use TIA/EIA 568B standard network cable to connect the Link/RS485-3 of CH1000 to the inverter/meter, one end of the cable is inserted into the Link/RS485-3 of CH1000, and the other end of the cable will be connected to the RS485A and RS485B of the inverter/meter on the first (white-orange) and second (orange) pins of the cable, respectively. Please see the LINK port description table for details. See the port description table for details.

NOTICE

– If the selected network cable is TIA/EIA 568A standard, connect pin 1 (white and green) and pin 2 (green) of the cable to RS485A and RS485B of the inverter/meter respectively.

· The port descriptions are as follows:



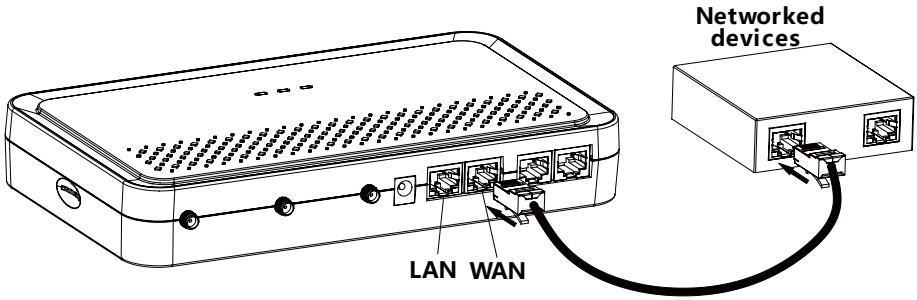
PIN Number	Interface Definition	Description	Type	TIA/EIA 568B connections	TIA/EIA 568A connections
1	RS485_A3	RS485 communication	RJ45	white-orange	white-green
2	RS485_B3	RS485 communication		orange	green
3	GND_S	--		white-green	white-orange
4	CAN_H	CAN synchronization		blue	blue
5	CAN_L	CAN synchronization		white-blue	white-blue
6	NC	Reservation		green	orange
7	NC	Reservation		white-brown	white-brown
8	NC	Reservation		brown	brown

5.4 Connecting Ethernet

The WAN port is used for device networking and the LAN port is used to connect local devices.

	Number	Connected device
WAN port	1	Connecting networking devices such as routers and switches
LAN port	1	Serve as a commissioning reserve

- WAN port connection



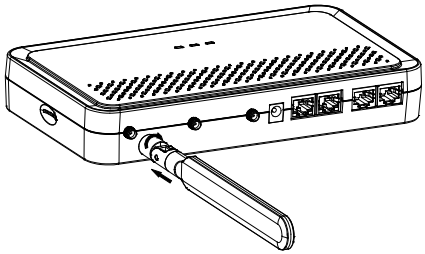
NOTICE

– The network cable communication distance does not exceed 100 meters.

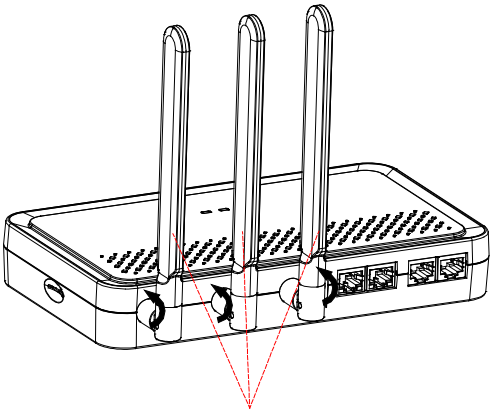
5.5 Installation of antennas and SIM card

- Installation of antennas

Just tighten the corresponding model antenna to the connector on the CH1000.



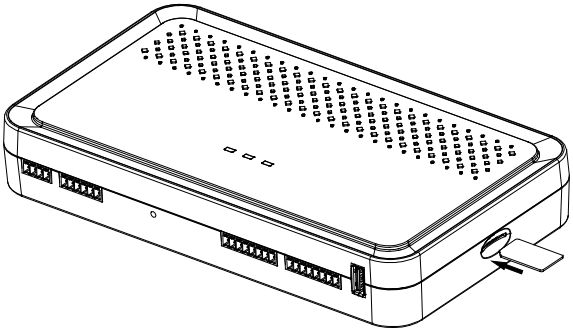
CH1000 has up to 3 antennas to be installed according to different matching models, and the antenna models are Sub-1G, Wi-Fi, and 4G. The relevant models have been silk-screened on the antennas, so users should install the antennas corresponding to the models when installing the antennas. The 3 antennas are completed, as shown in the figure below.



- Installation of SIM card

CH1000 provides 4G cellular communication function for dial-up internet access. Users are requested to provide their own SIM cards, the card slot size is 25mm × 15mm, and its installation SIM card steps are as follows:

1. Disconnect the device before installing and replacing the SIM card.
2. Insert the replacement SIM card as shown below.

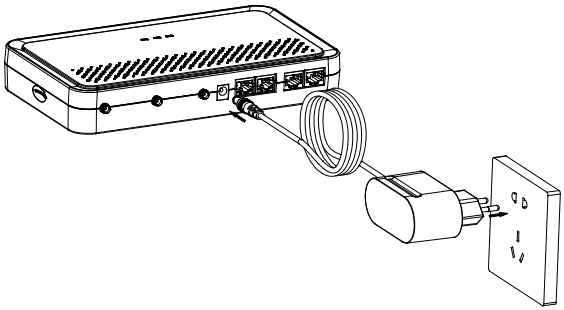


NOTICE

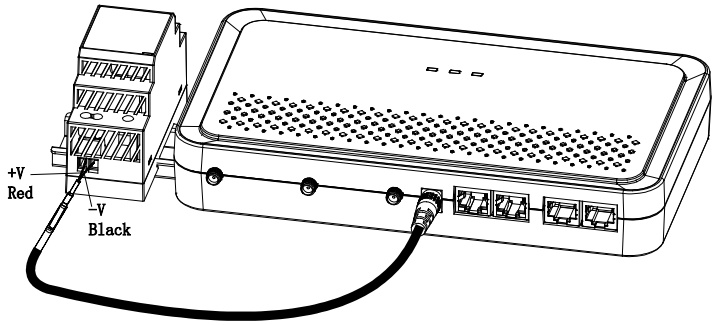
- When installing the SIM card, you can judge the direction of SIM card installation according to the silkscreen of the shell.
- The SIM card will be locked when it is pressed into the restricted position, and then the SIM card has been installed correctly.
- When removing the SIM card, you can push the SIM card inward, and the SIM card will be ejected automatically.

5.6 Connecting the power supply

- Power supply adapter

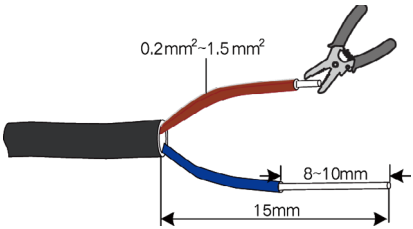


- DIN-Rail power supply

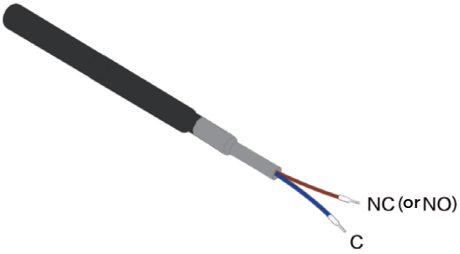


5.7 Connecting the DO signal cable (Reservation)

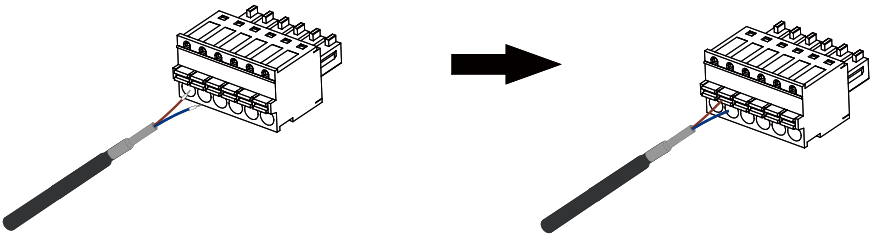
1. Use wire strippers to strip the protective layer of the communication cable by about 15mm, and strip the insulation layer by 8mm~10mm. NC/C is normally closed and NO/C is normally open.



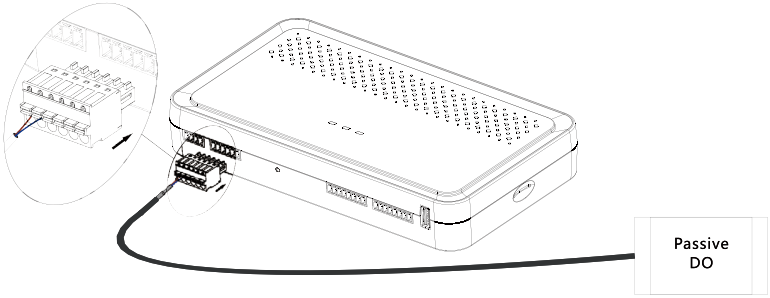
2. Cable install the proper size tubular pre-insulated terminal and crimp it down with crimping pliers. Cut off the excess signal wire and wrap it with heat shrink tubing, and the result is shown below.



3. Connect the cable to the DO port of the CH1000 as shown below.



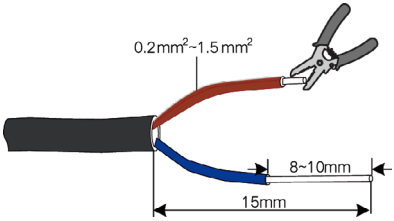
4. Connect to a passive DO with the load range of maximum voltage 250VAC/ 30VDC; maximum current 3A.



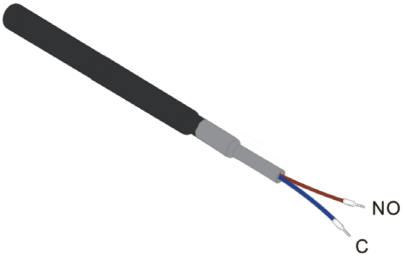
It is recommended that the signal transmission distance does not exceed 10m.

5.8 Connecting the DI signal cable (Reservation)

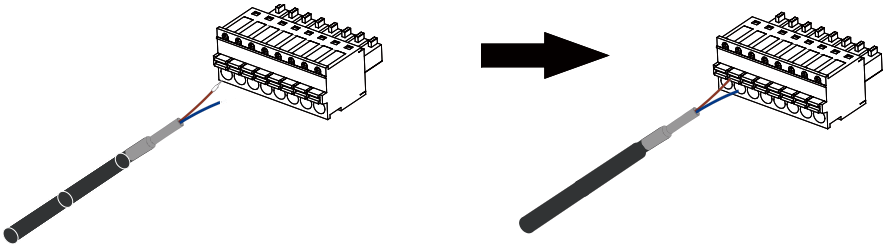
1. Use wire strippers to strip the protective layer of the communication cable by about 15mm, and strip the insulation layer by 8mm~10mm as shown in the figure below.



2. Cable install the appropriate size tubular pre-insulated terminal and use crimping pliers to compress it. Cut off the excess signal wire and wrap it with heat shrink tubing, and the result is shown below.



3. Connect the cable to the DI port of the CH1000 as shown below.



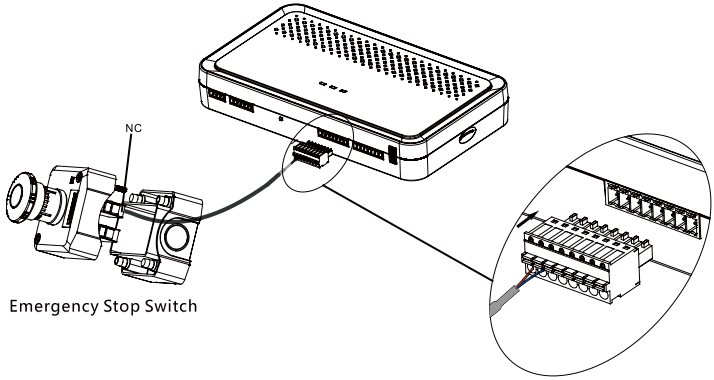
NOTICE

- DI is passive dry contact signal access, does not support active input.
- DI wiring without polarity distinction, wiring does not distinguish between NO and C.
- It is recommended that the signal transmission distance does not exceed 10m.

5.9 External emergency stop switch

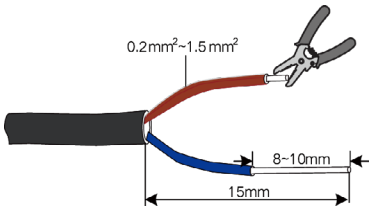
In case of emergency, all inverters of the system will immediately shut down and stop grid connection to ensure system safety when the emergency stop function is activated.

Fixed DI1 is the input interface for the emergency stop switch (External passive emergency stop switch is required. DI1 is connected to the “NC” port of the emergency stop switch, and there is no polarity requirement for the two connecting wires).

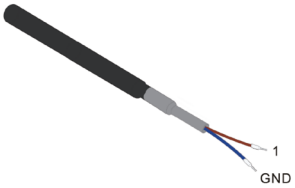


5.10 Connecting the AI signal cable (Reservation)

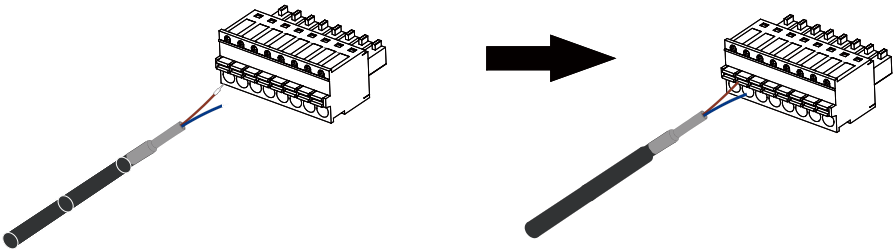
1. Use wire strippers to strip the protective layer of the communication cable by about 15mm, strip the insulation layer by 8mm~10mm, and lead out the corresponding 1-GND/2-GND/3-GND/4-GND signal cable as shown in the following figure.



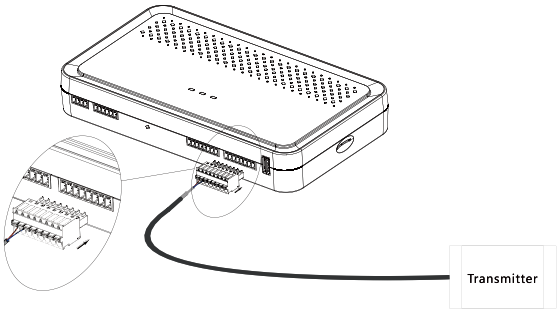
2. Cable install the appropriate size tubular pre-insulated terminal and use crimping pliers to compress it. Cut off the excess signal wire and wrap it with heat shrink tubing, and the result is shown below.



3. Connect the cable to the CH1000's AI port as shown below.



4. Connect with a 4~20mA transmitter (sensor) as shown below.



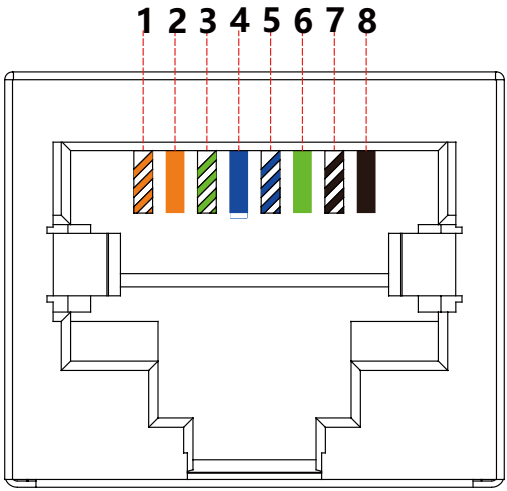
NOTICE

- 1, 2, 3, and 4 of the AI port connect to AI signal +, and GND connects to AI signal -.
- It is recommended that the signal transmission distance does not exceed 10m.

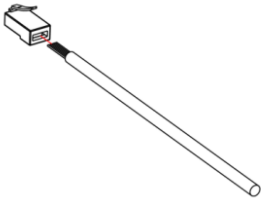
5.11 Connecting the DRMs port

The DRMs (Demand Response Modes) interface is used to fulfill the DRMs function in conjunction with DI1~DI4. The applicable safety standards for the DRMs interface include: Australia (AS 4777), European General (EN 50549), Germany (VDE-AR-N 4105). Furthermore, the DRMs interface requires the CH1000 to be connected to a DRED (Demand Response Enabling Device) device.

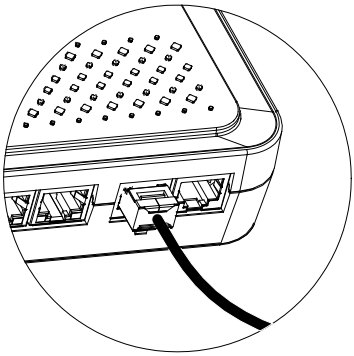
The network cable adopts the TIA/EIA 568B standard connection method, and the wire sequence of DRMs of CH1000 corresponds to the color of the network cable as shown below.



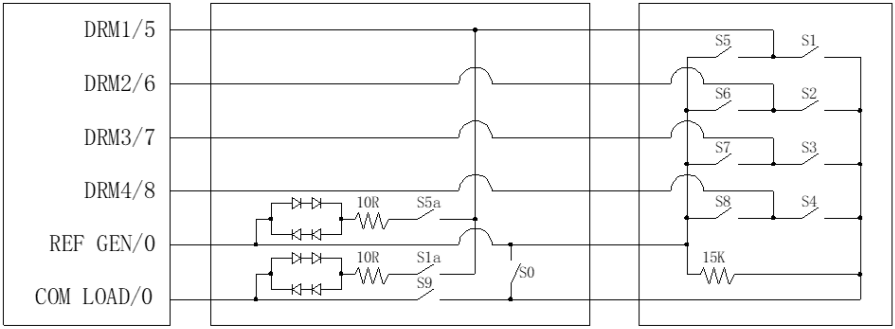
1. Crimp the network cable terminals in color order as shown below.



2. Insert the terminal through the connector and into CH1000 as shown below.



3. The DRED unit is connected to the DRMs interface with the connection wire sequence requirements shown below.



5.12 Inspection after installation

Please double-check the following to avoid danger after installing the unit:

- Confirm that the equipment is installed correctly and securely
- Check that all cable connections are correct and secure, and that cables are free of exposed metal and neatly tied.
- Check that the outside of the equipment is clean and tidy and free of dust, dirt and construction debris.

6 System operation

6.1 Check before operation

You need to double check the following before running the system:

- CH1000 is fully installed
- All cables are well connected and are strong and well insulated
- power supply adapter plugged into outlet or rail power is powered up

6.2 Operational steps

1. CH1000 is connected to the power supply.
2. Check the CH1000 indicator status.
3. Ensure that CH1000 is normally connected to its sub-devices (inverter/meter) and that the sub-devices are normally powered..
4. Connect your computer to CH1000 with a network cable and use the local WEB, or directly use the APP for local tuning. After the tuning is completed, you can monitor the data remotely using SOFAR Cloud/APP.

7 Parameter Configuration

7.1 Introduction to the WEB interface

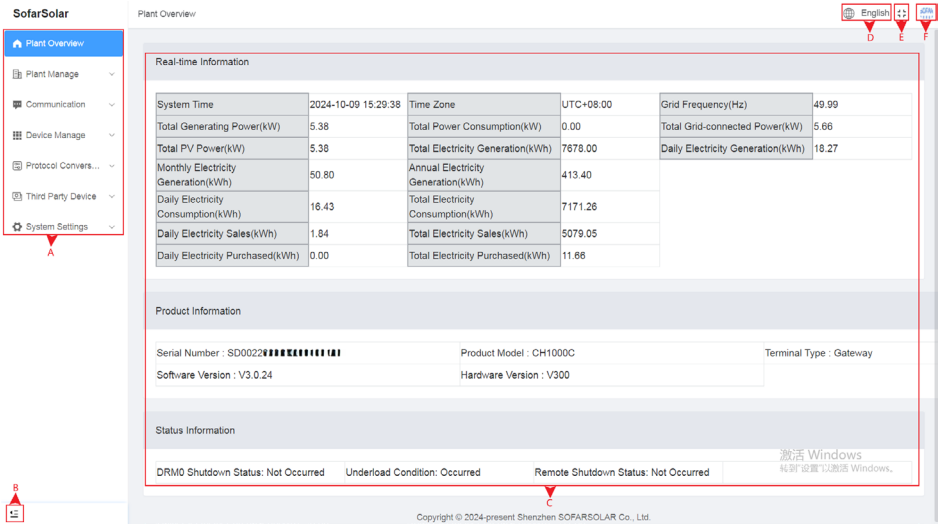
7.1.1. Login

Plug one end of the network cable into your computer and the other end into the LAN port of the CH1000. Enter the URL 192.168.2.1:7000 in the browser, the login name is admin and the login password is admin123.

1、Browser recommended to use Google chrome or Microsoft browser.
2、Testing computer Ethernet IP allocation should be set to automatically obtain (DHCP).

7.1.2. Introduction to the interface

After successful login, the WEB interface is displayed as shown below.



SN	Name	Description
A	Navigation Bar	Display local WEB main functions
B	Folding Icon	Collapsible WEB page navigation bar
C	Function Display	Displays the current function screen for querying or setting parameters
D	Select Language	Set WEB page language: Chinese or English
E	Full screen Display	WEB page full screen display
F	Registered User	Display the currently logged in user of the WEB page

7.2 Plant Overview

After logging into the WEB interface, click "Plant Overview" to access the interface.

- Real-time Information

View the device system time, time zone, grid frequency, total generating power, total power consumption, total grid-connected power, total PV power, total electricity generation, daily/monthly/annual electricity generation, daily/total electricity consumption, daily/total electricity sales, and daily/total electricity purchased.

- Product Information

View the device serial number, product model, terminal type, software version and hardware version.

- Status Information

View the device DRM0 shutdown state, underload condition, and remote shutdown state.

7.3 Plant Manage

7.3.1. Feed-in Limit

After logging into the WEB interface, click "Plant Manage"——"Feed-in Limit" to enter the interface. After setting, click "Write" to set successfully.

Parameter name	Setting instructions
Feed-in limit enable	On: CH1000 sends commands to control the output power of the system to prevent excess power from flowing back to the grid.
	Off: The CH1000 does not issue feed-in limit instructions.
Mode	Total power：The total power of the control grid point is not flowed back.
Feed-in power limit (W)	The maximum amount of power that the system is allowed to deliver to the grid.
	Positive value: the maximum value of power sold by the system to the grid.
	Negative value: the maximum value at which the system purchases power from the grid.
Overload protect enable	On: Monitors the maximum power delivered by the system to the grid to ensure that it does not exceed the power limit set by the user.
	Off：The overload protection function is turned off.
Overload protect time (s)	After the overload protection function is enabled, if the maximum power delivered to the grid exceeds the power limit value set by the user and continues to be greater than the overload protection time, the system off protection function will be triggered.

7.3.2. Active Power Control

After logging in the WEB interface, click “Plant Management”—”Active Power Control” to enter the interface. After setting, click “Write” to set successfully.

	Setting instructions
Active power enable	On: the system active output power will be controlled in accordance with the specified active control method.
	Off: the system will remain running at full load active output.
Active power control mode	Active power percentage mode: the output active power of the system is set as a percentage of the total rated output power of the system.
	Active power mode: the output active power of the system is the specific active power value.

	Setting instructions
Percentage of active power (%)	Set the value of the system output active power as a percentage of the total rated system output power.
Absolute value of active power (W)	Set the specific value of the system output active power.
Rate of change of active power	Set the active power change gradient. Advanced parameter, no setting is required by default.

The system power rating = the sum of the power ratings of all inverters in the system. The rated power of each inverter can be obtained from „Rated Output Power“ on the tab bar of inverter. Users can also add a sub-device in the local WEB, and then get the rated power of each inverter from the “Rated power” column in the sub-device detail page of the “Device Manage”—“Device Info” page.

When the protocol conversion function in Section 7.6 is disabled, active power control can be performed via the CH1000’s local WEB. Once the protocol conversion function is enabled and connected to the SCADA system, the local WEB active power control function of CH1000 will be disabled.

7.3.3. Reactive Power Control

After logging in the WEB interface, click “Plant Manage” — “Reactive Power Control” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
Reactive power enable	On: the system reactive power will be controlled according to the specified reactive power control method.
	Off: the system will remain in purely active output operation.
Reactive control mode	Reactive power percentage mode: by setting the percentage of reactive power output from the system to its rated power, it realizes dynamic regulation and compensation of reactive power on the grid.
	Power factor: the ratio of active power to apparent power output from the system, which determines the reactive power output from the inverter.
	Reactive power mode: the inverter outputs a fixed value of reactive power to meet the specific demand for reactive power from the grid or load.

Parameter name	Setting instructions
Percentage of reactive power (%)	Dynamically adjusts the inverter output reactive power according to the percentage of the system rated power.
Power factor (p.u.)	Set power factor range: -1.0~-0.8, 0.8~1.0. Positive value: leading reactive power, indicating that the inverter provides reactive power to the grid to maintain or raise the voltage level of the grid. Negative value: lagging reactive power, indicating that the inverter absorbs reactive power from the grid and reduces the voltage level of the grid.
Fixed value of reactive power (Var)	Set a fixed system output reactive power value. Range: -66% of system rated power to +66% of system rated power.
Response time (s)	Set the time for the reactive power control to change to the target value. Advanced parameter, no setting is required by default.

The system power rating = the sum of the power ratings of all inverters in the system. The rated power of each inverter can be obtained from „Rated Output Power“ on the tab bar of inverter. Users can also add a sub-device in the local WEB, and then get the rated power of each inverter from the “Rated power” column in the sub-device detail page of the “Device Manage”—“Device Info” page.

When the protocol conversion function in Section 7.6 is disabled, reactive power control can be performed via the CH1000’s local WEB. Once the protocol conversion function is enabled and connected to the SCADA system, the local WEB reactive power control function of CH1000 will be disabled.

7.3.4. SVG Control

Through its SVG function, the inverter can dynamically emit or absorb reactive power according to the reactive power demand of the grid by adjusting the amplitude and phase of the output voltage of the AC side of the inverter, thus realizing the stabilization of the grid voltage and the balance of the reactive power.

When using SVG control for reactive power regulation, the CH1000 will automatically turn on the reactive power regulation according to the set execution time period. The reactive power regulation will be turned off in the time period outside the execution time.

After logging into the WEB interface, click “Plant Manage”—”SVG Control” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
SVG enable	SVG on: the system reactive power control will work in SVG mode, according to the specified SVG operating mode.
	SVG off: the system will turn off reactive power control in SVG mode.
SVG mode	Power factor compensation mode: the SVG regulates reactive power output to maintain a specified power factor.
	Fixed reactive mode: SVG regulates the reactive power output according to the reactive power demand of the system to maintain the reactive power balance of the system.
	Voltage control mode: SVG adjusts reactive power output according to changes in grid voltage to compensate for voltage fluctuations.
FCC	Set power factor range: 0.8~1.0.
SVG reactive mode	Fixed reactive power mode: Output a fixed value of reactive power.
	Reactive power percentage mode: dynamically adjusts the output reactive power according to the percentage of the rated power.
Execution time	The SVG reactive power control command issued by CH1000 is valid only within the execution time set by the user.

When reactive power control is enabled, the current SVG mode setting will no longer take effect.

When the protocol conversion function in Section 7.6 is enabled and connected to the SCADA system, the local SVG control function of the CH1000 will not be available.

7.3.5. EPO Settings

After logging into the WEB interface, click “Plant Manage”—”EPO Settings” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
EPO enable	On: configure DI1 as an EPO function.
	Off: no configuration

7.3.6. DRMS Settings

After logging into the WEB interface, click “Plant Manage” —— “DRMS Settings” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
DRM enable	On: general enable switch
	Off: all DRM settings are disabled.
DRM0 enable	On: receive a DRM0 command from the DRED unit to shut down the system or return the system to grid connection.
	Off: No orders are given.
DRM5/6/7/8 percentage (%)	Receive DRM5/6/7/8 commands from the DRED unit to set the percentage of the system generating power limit.

7.3.7. Plant Switch Control

After logging in the WEB interface, click “Plant Manage”——”Plant Switch Control” to enter the interface. Select “On” for Plant Switch Status, then click “ON” or “OFF”, and then click “Write” after setting.

Parameter name	Setting instructions
Plant Switch Control	ON: the CH1000 sends a command to power on all inverters.
	OFF: the CH1000 sends a command to power off all inverters.

7.3.8. Night Running Control

After logging into the WEB interface, click “Plant Manage”——”Night Running Control” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
Night running control	On: the inverters that control the entire system do not go off-grid at night. This control function can be turned on when the system needs to perform reactive power compensation at night in some specific application scenarios.
	Off: the system does not perform reactive power compensation at night, and all inverters go off-grid at night.

7.3.9. Communication Security

After logging in to the WEB interface, click “Plant Manage” —— “Communication Security” to enter the interface. After setting, click “Write” to set successfully.

Parameter name	Setting instructions
Inverter/meter communication protect enable	On: set the communication protection function of the inverter/meter to on.
	Off: disable the communication protection of the inverter/meter.
Inverter communication protect time (s)	When the communication protect time between CH1000 and the inverter is greater than the communication protection time set by the user, the inverter will turn off automatically.

7.4 Communication

If users need to let CH1000 network, they can set up the CH1000’s networking method, of which there are three kinds of networking methods: Ethernet, 4G and WiFi, and users can choose one of them and set it up according to the actual situation.

7.4.1. Ethernet Settings

Log in to the WEB interface, and then click “Communication” —— “Ethernet Settings” to enter the interface.

Set up according to the actual situation of the site, and click “Write” to set up successfully.

Please set the LAN port IP address carefully. If you do need to set the IP address, please keep the modified IP address in mind.

7.4.2. 4G Settings

Insert the SIM card with internet access into the device, log in to the WEB interface, click “Communication” —— “4G Settings”, and enter the interface.

Set up according to the actual situation of the site, and click “Write” to set up successfully.

7.4.3. WiFi Settings

After logging into the WEB interface, click “Communication” —— “WiFi Settings” to enter the interface.

Set the parameters of STA working mode according to the actual situation on site and click “Write” to set successfully.

7.4.4. PLC Settings

After logging into the WEB interface, click “Communication” —— “PLC Settings” to enter the interface.

Select the CCO channel according to the actual situation, set the analog power, digital power and frequency band, and click “Write” to set up successfully.

When the CH1000 is connected externally to a CCO, PLC settings are required.

7.5 Device Manage

7.5.1. Device Info

After logging into the WEB interface, click “Device Manage” —— “Device Info” to enter the interface.

1. Add Sub-Devices

- Automatic search sub-devices

On the device information page, click “Automatic Device Search” —— “Initiate Search”.

Once you have searched for all the sub devices, click “Stop Search” —— “Add” —— “Exit Search”.

- Manually add sub-devices

On the device information page, click “Add Sub-Device”, fill in the device serial number, device type and device channel, and then click “Sure”.

- Batch import of sub-devices

On the device information page, click “Batch import devices” —— “Click to download the Excel import template”, fill in the template, and then upload the completed file.

After adding sub-devices, you can see the device serial number, address, communication type, communication port, device status, device type, and operations that can be performed on the sub-device for all sub-devices in the sub-device list.

2. Modify the sub-device communication address

After adding a sub-device, select the sub-device you want to modify in the sub-device list, click “Edit”, fill in the new communication address of the sub-device, and then click “Modify”.

3. View the sub-device details

After adding sub-devices, select the sub-device you want to view details of in the sub-device list, and click “Details” to view the details of the sub-device.

4. Delete the sub-device

After adding a sub-device, select the sub-device you want to delete in the sub-device list, and click “Delete” to view the details of the sub-device.

5. Update devices list

On the Device information screen, click “Update Device List” to update all the information of sub-devices list.

7.5.2. Device Maintenance

After logging into the WEB interface, click “Device Manage” —— “Device Maintenance” to enter the interface.

On the device maintenance page, click “Update Maintainable Devices” to get all the latest maintainable devices.

- Batch devices upgrade

Check the devices you want to upgrade, click “Batch Upgrade” —— “Selective Firmware”, and select the latest firmware.

Click “Firmware Upload” —— “Start Upgrade”, and then click “Exit Upgrade” when the upgrade is complete.

- Single device upgrade

To upgrade a single device, click the “⏏” button to the right of the device you want to upgrade in the sub-device list, and then click “Firmware Upload” —— “Start Upgrade”, and then click “Exit Upgrade” when the upgrade is finished.

7.5.3. Device Control

After logging into the WEB interface, click “Device Manage” —— “Device Control” to enter the interface.

On the device control page, click “Update Device List” to get the latest device list.

Select the device you want to control, click “Operate” —— “Control” to power on, power off, clear energy, clear events, factory reset, etc. for the device. Click “Operate” —— “More” to configure the system and PV channel of the device.

7.6 Protocol Conversion

After adding devices to the device manage or third-party device, if the SCADA system wants to collect and control data from the device, the following protocol conversion is required, and the three ways are selected according to the actual situation.

7.6.1. Modbus-TCP

After logging into the WEB interface, click “Protocol Conversion” —— “Modbus-TCP” to enter the interface.

Select “Enable” for “Enable”, and the server port number will be 502 by default.

Click the “Modify” button under “Operate” to modify the logical address of the device.

The port number and logical address of the device can be modified if necessary.

Finally, click “Submit”.

- Configuration Export

Click “Configuration Export” to view the current configuration file.

- Configuration Import

CH1000 has a default configuration file when it is shipped from the factory, the specific content of the protocol can be found in the protocol document named “Sofar_gateway_MODBUSTCP_V1.0_CN”, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

If the protocol document is updated, the configuration file will be updated synchronously, at that time, please contact Shenzhen SOFARSOLAR Co.Ltd. after-sales personnel to obtain the latest firmware to upgrade the device.

If there is a special need to increase or decrease the configuration content in the current configuration file, you can click “Configuration Export” to export the current configuration file and make changes on the file. Then, click “Configuration Import” to import the latest configuration file. Finally, click “System Settings” —— “Reset”, and the new configuration file will take effect.

If users need to add or reduce the configuration content on the current configuration file, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

7.6.2. IEC104

After logging into the WEB interface, click “Protocol Conversion” —— “IEC104” to enter the interface.

Select “Enable” for “Enable”, and the server port number will be 2404 by default.

Fill in the “Push Cycle (s)”, the default is 300 seconds to update the data, can be modified according to the actual situation. Fill in “Public Address”, the default is 1.

The port number and public address of the device can be modified if necessary.

Finally, click “Submit”.

To modify or delete the configuration content of a single device, you can click “Modify” or “Delete” in the device list.

- Device Default Configuration

Click “Device Default Configuration” to configure the default IEC104 protocol for all devices.

Click “System Settings” —— “Reset”, the default configuration will take effect.

- Device Configuration Addition

Click “Add Device Configuration” to configure a single device.

Click on “System Settings” —— “Reset” and the new configuration will take effect.

- Configuration Export

Click “Configuration Export” to view the current configuration file.

- Configuration Import

CH1000 has a default configuration file when it is shipped from the factory, the specific content of the protocol can be found in the protocol document named “Sofar_gateway_IEC104_V1.1_CN”, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

If the protocol document is updated, the configuration file will be updated synchronously, at that time, please contact Shenzhen SOFARSOLAR Co.Ltd. after-sales personnel to obtain the latest firmware to upgrade the device.

If there is a special need to increase or decrease the configuration content in the current configuration file, you can click “Configuration Export” to export the current configuration file and make changes on the file. Then, click “Configuration Import” to import the latest configuration file. Finally, click “System Settings” —— “Reset”, and the new configuration file will take effect.

If users need to add or reduce the configuration content on the current configuration file, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

7.6.3. IEC61850

After logging into the WEB interface, click “Protocol Conversion” —— “IEC61850” to enter the interface.

Select “Enable” for “Enable”. Select “Ethernet” according to the actual situation, if the test computer is connected to the “LAN” port of CH1000 with a network cable, then select “LAN” for “Ethernet”. Select “Enable” for “Data Report”. Select “Enable” for “Data Reception”. Fill in the “Push Cycle (s)”, the default is 300 seconds to update the data, can be modified according to the actual situation.

Finally, click “Submit”.

- Configuration Export

Click “Configuration Export” to view the current configuration file.

- Configuration Import

If there is a special need to increase or decrease the configuration content in the current configuration file, you can click “Configuration Export” to export the current configuration file and make changes on the file. Then, click “Configuration Import” to import the latest configuration file. Finally, click “System Settings” —— “Reset”, and the new configuration file will take effect.

If users need to add or reduce the configuration content on the current configuration file, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

7.7 Third Party Device

Users who want to add a third-party device such as weather station can follow the steps below.

1.After logging in the WEB interface, click “Third Party Device” —— “Modbus-RTU” to enter the interface.

2.Click “Configuration Export” to view the current configuration file. If you want to update the configuration file, click “Configuration Import” to import the configuration file.

3.In the “Add Sub-Device” column, select the device type, fill in the device serial number, device address, port, baud rate, parity bit and stop bit. Finally, click “Add Sub-Device”.

4.Users can view the latest third-party device list by clicking “Update Device List” in the “Device Manage” column.

If users need to add third-party device, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

7.8 System Settings

After logging into the WEB interface, click “System Settings” to enter the interface.

7.8.1. System Manage

After logging in to the WEB interface, click “System Settings” —— “System Manage” to enter the interface.

- System Information

On the System Manage page, System Information column, you can view the device serial number, software version, and hardware version.

- Firmware Upgrade

On the System Manage page, in the Firmware Upgrade column, click “Upgrade” and select “Gateway” or “PLC-CCO1” or “PLC-CCO2” or “Double CCO” depending on the type of device to be upgraded.

Click on “Selective Firmware” to select the latest firmware.

Click “Firmware Upload”, and then click “Start Upgrade” after the upload is complete.

When the upgrade is complete, click “Exit Upgrade”.

The PLC-CCO1/PLC-CCO2/Double CCO upgrade is only required when the CH1000 has an external CCO.

- Time Set

On the system manage page, in the time set column, click “Read” to get the current time and time zone of the device.

Click “Time Set” and “Timezone Set” to set the device time and timezone.

- System Reset

On the system manage page, click “Reset” in the system reset column to reset the device.

- Log Export

On the system manage page, click “Export” in the log export column to export the device logs.

7.8.2. Sofar Cloud Settings

After logging in to the WEB interface, click “System Settings” —— “Sofar Cloud Settings” to enter the interface.

Set the MQTT address and port, and then set other parameters, click “Write” to set up successfully.

If users need to set up Sofar Cloud Settings, please contact the after-sales personnel of Shenzhen SOFARSOLAR Co.Ltd.

8 SOFAR Cloud /APP Operation

8.1 APP Local Commission

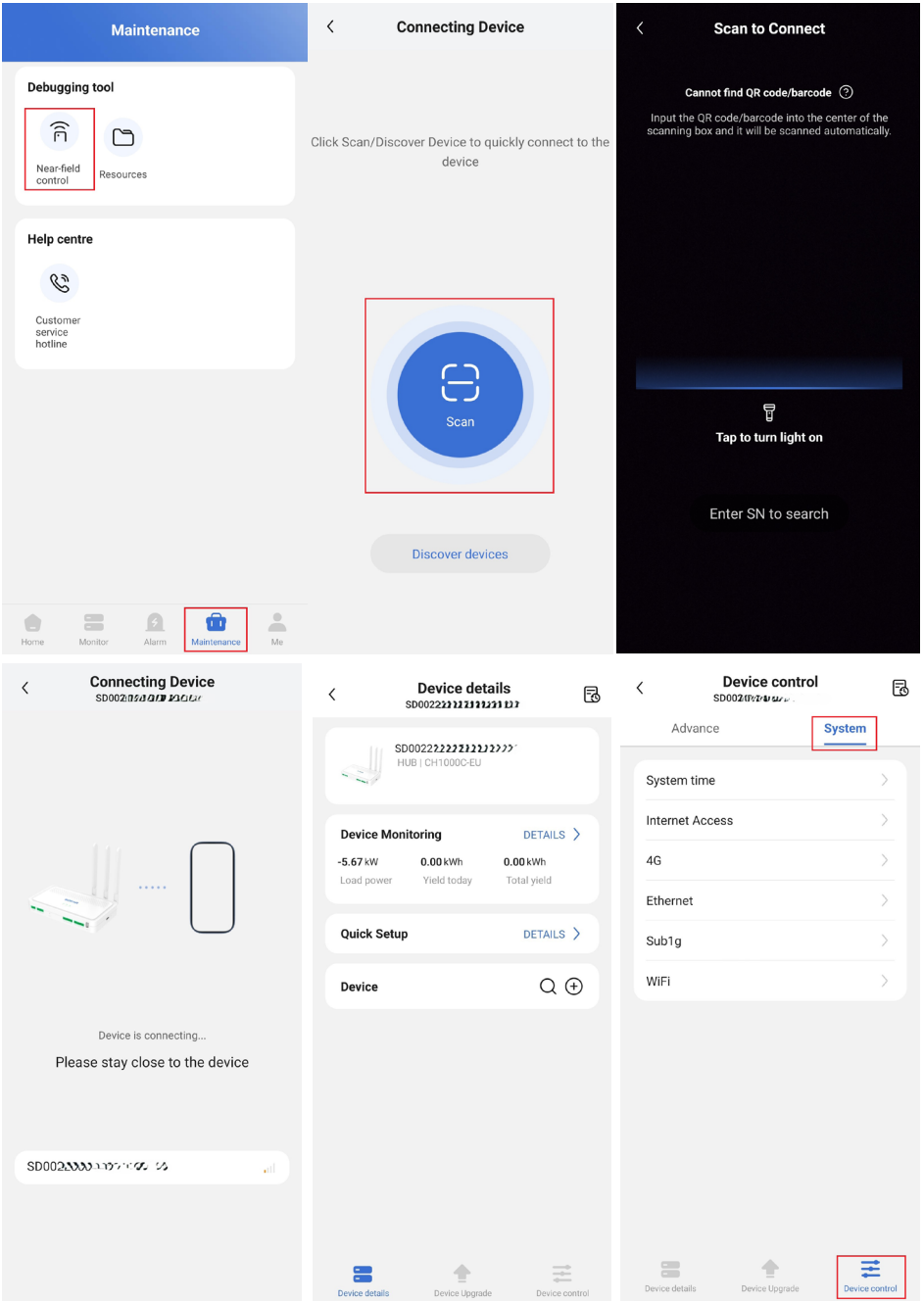
8.1.1 Performing Deployment Commission

1. Device Networking

CH1000 supports a variety of networking methods, users can choose any one of Ethernet, 4G, WiFi to CH1000 networking.

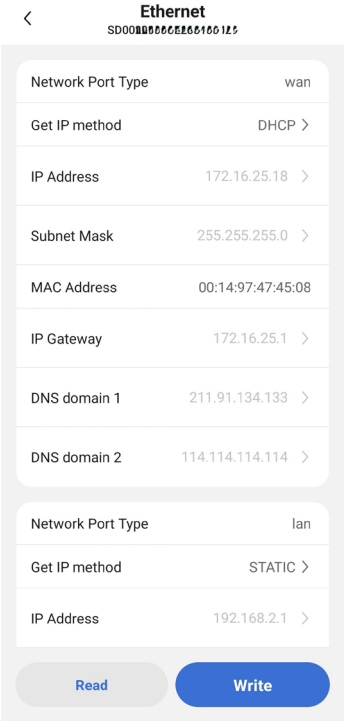
Turn on the WiFi and Bluetooth function of your cell phone, and then open the SOFAR Cloud APP, log in to your SOFAR account, and then click “Near-field control” in the “Maintenance” page, as shown in the following figure. Scan the SN barcode on CH1000 (or click “Discover devices” and select the corresponding SN of CH1000), connect to the corresponding CH1000 device, and enter the CH1000 device details page.

Click “Device control” at the bottom of the page to enter the system page, where you can configure the device networking mode. Configure the networking mode of the device as shown in the figure below.


Maintenance
Debugging tool
Near-field control
Resources
Help centre
Customer service hotline
Home
Monitor
Alarm
Maintenance
Me
Connecting Device
Click Scan/Discover Device to quickly connect to the device
Scan
Discover devices
Scan to Connect
Cannot find QR code/barcode
Input the QR code/barcode into the center of the scanning box and it will be scanned automatically.
Tap to turn light on
Enter SN to search
Connecting Device
Device is connecting...
Please stay close to the device
Device details
HUB | CH1000C-EU
Device Monitoring
DETAILS
-5.67 kW
Load power
0.00 kWh
Yield today
0.00 kWh
Total yield
Quick Setup
DETAILS
Device
Device details
Device Upgrade
Device control
Device control
Advance
System
System time
Internet Access
4G
Ethernet
Sub1g
WiFi
Device details
Device Upgrade
Device control

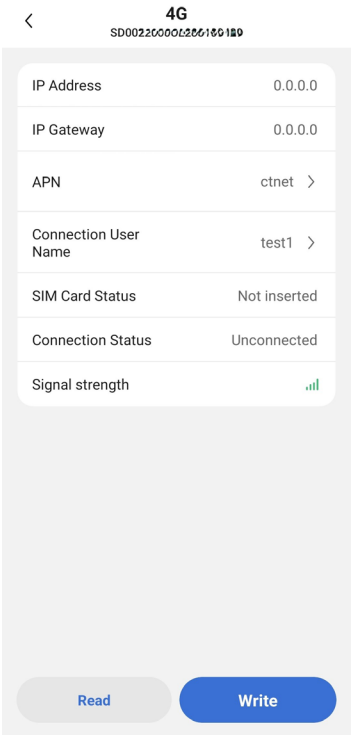
- Ethernet

Connect the device to the network with a network cable, then click “Ethernet” in the system settings page to enter the Ethernet settings page, and configure it according to the actual situation on site.



- 4G

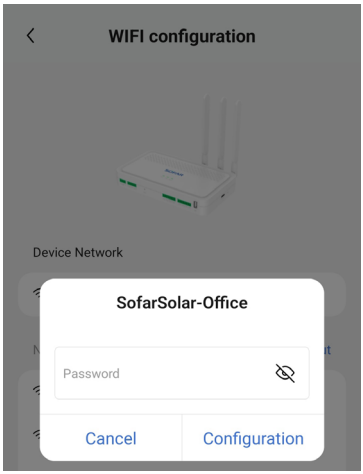
Insert a SIM card with Internet access into the device, then click “4G” in the system settings page to enter the 4G settings page, and configure it according to the actual situation on site.



- WiFi

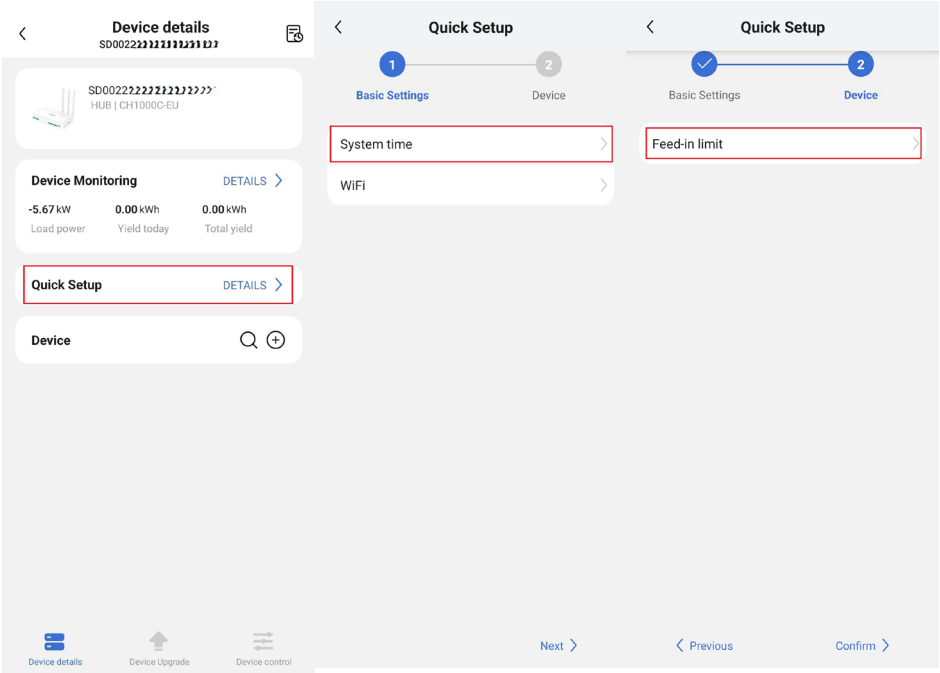
NOTICE
– If users choose CH1000 to connect to the network via WiFi, please make sure that the router WiFi that CH1000 is going to connect to supports 2.4G band first.

Click “WiFi” in the system settings page to enter the WiFi settings page, manually enter or select a WiFi that can access the Internet from nearby WLAN networks and enter the password, then click “Configuration”.



2. Quick Setup

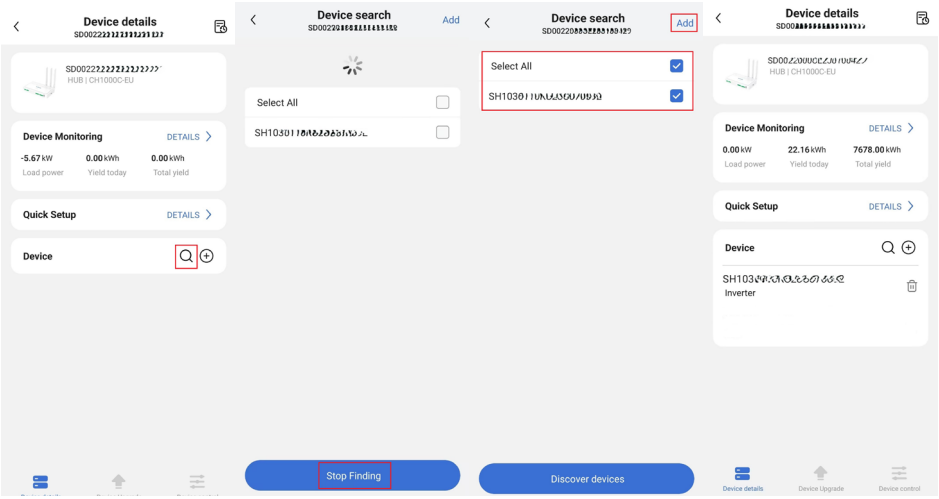
After entering CH1000 local tuning, click “Quick Setup” and follow the step-by-step instructions to set the system time, time zone, anti-reverse current and other parameters for CH1000.



3. Device Add and Configuration

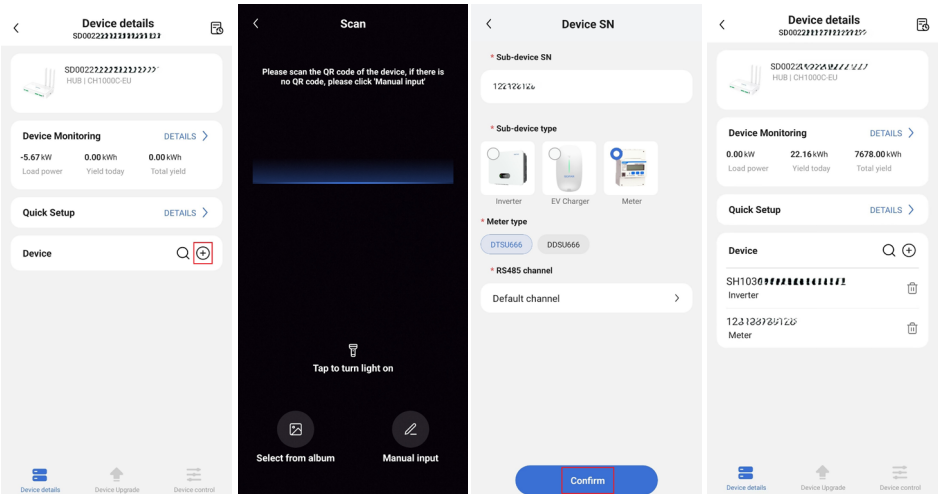
- Automatic search to add inverter

  On the device details page, click the"Q" button to automatically search for inverter devices. After searching all inverter devices, click “Stop Finding”, check the devices, and then click “Add”. As shown in the picture below.

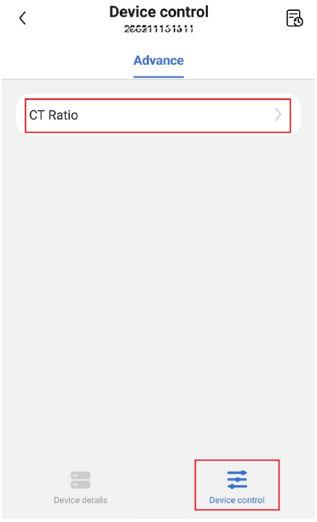


- Manually add meters/inverters

  On the device details page, click the “⊕” button to add a device and enter the SN of the inverter/meter. The meter SN is located in the SN barcode on the meter and is a 12 digit number. It is shown in the figure below.



Click on the added meter SN to enter the device control page of the meter, you need to configure the CT transformer multiplier, according to the actual selection of the CT transformer multiplier configuration.



8.1.2. Near-field Control

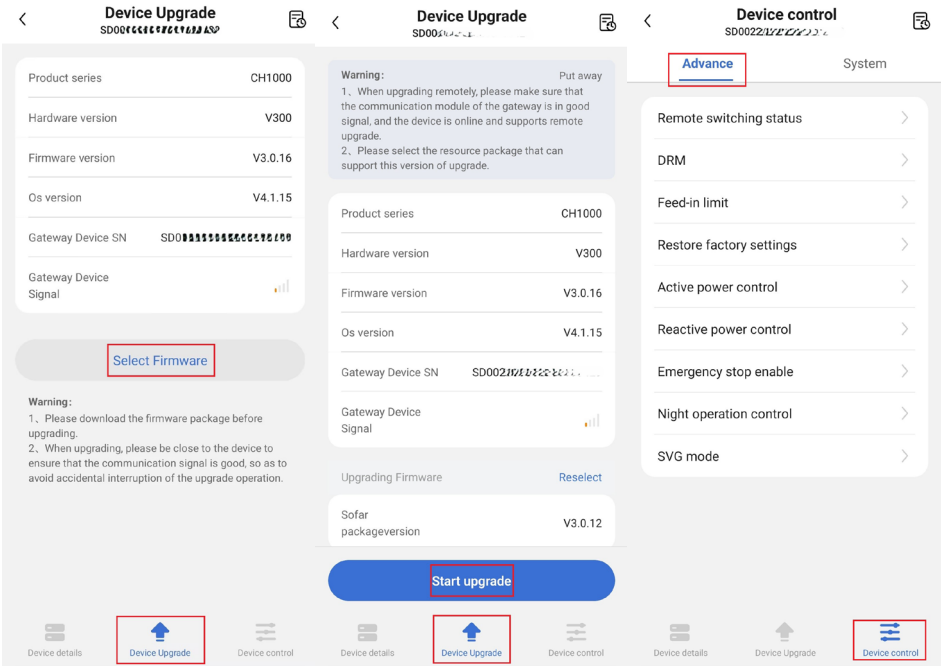
At the site where the device is used, connect to CH1000 via APP to perform near-field control of CH1000 and the devices connected under it, and the near-field control can be used when CH1000 is networked or not. Firstly, connect CH1000 and enter CH1000 device detail page, refer to section 7.1.1 for connection steps.

1. CH1000 Near-field Control

On the CH1000 device details page, view the details of CH1000 devices, and you can also add inverters, meters, and other devices. After adding, the information of added sub-devices (inverters and meters) will be displayed under “Device”.

On the CH1000 upgrade page, view the current firmware version of CH1000. To upgrade, click “Select Firmware” to choose a new firmware version, and then click “Start upgrade”.

On the CH1000 device control page, you can set DRM, active power control, emergency stop enable, and other settings for the CH1000.



2. Inverter Near-field Control

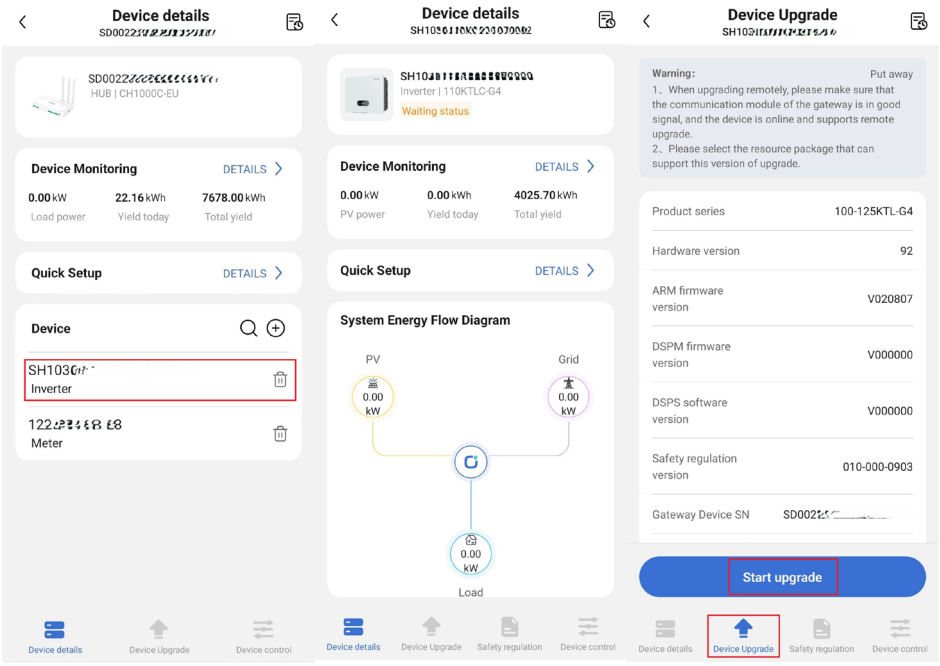
On the CH1000 device details page, click at inverter SN to view the inverter device details.

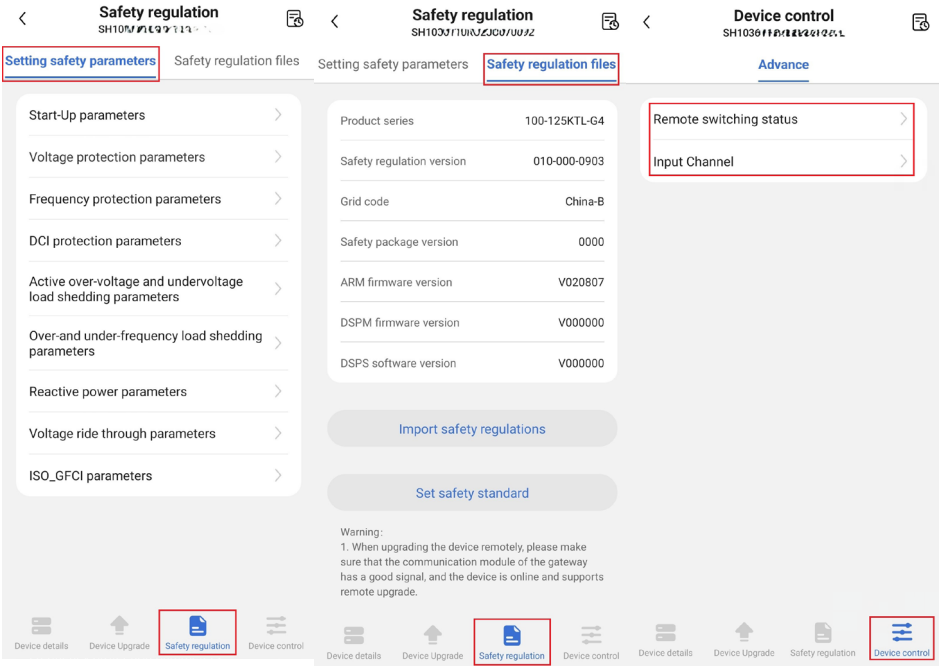
On the inverter device details screen, View information such as inverter status. This is shown in the following figure.

View the current firmware version of the inverter on the Inverter Upgrade page. If you want to upgrade, click “Select Firmware” to select the new firmware version, and then click “Start Upgrade”. As shown in the figure below.

In the inverter safety management page, set the safety parameters of the inverter, import safety regulations and other operations. As shown in the figure below.

In the inverter device control page, perform remote power on/off and input channel settings for the inverter. As shown in the figure below.

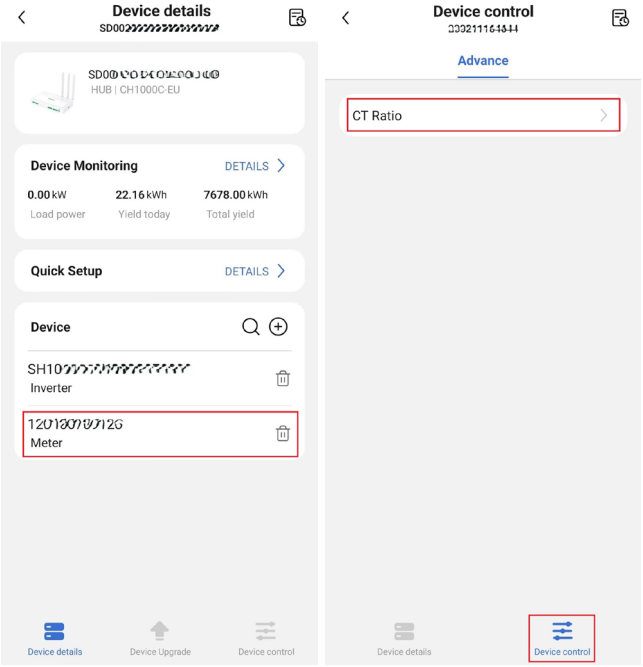



Safety regulation
Setting safety parameters
Safety regulation files
Start-Up parameters
Voltage protection parameters
Frequency protection parameters
DCI protection parameters
Active over-voltage and undervoltage load shedding parameters
Over-and under-frequency load shedding parameters
Reactive power parameters
Voltage ride through parameters
ISO_GFCI parameters
Device details
Device Upgrade
Safety regulation
Device control
Safety regulation
Setting safety parameters
Safety regulation files
Product series 100-125KTL-G4
Safety regulation version 010-000-0903
Grid code China-B
Safety package version 0000
ARM firmware version V020807
DSPM firmware version V000000
DSPS software version V000000
Import safety regulations
Set safety standard
Warning:
1. When upgrading the device remotely, please make sure that the communication module of the gateway has a good signal, and the device is online and supports remote upgrade.
Device details
Device Upgrade
Safety regulation
Device control
Device control
Advance
Remote switching status
Input Channel
Device details
Device Upgrade
Safety regulation
Device control

3. Meter Near-field Control

On the CH1000 device details page, click at the meter SN to view the meter device details.

The CT mutual inductance multiplier setting is available on the meter device control page. This is shown in the figure below.



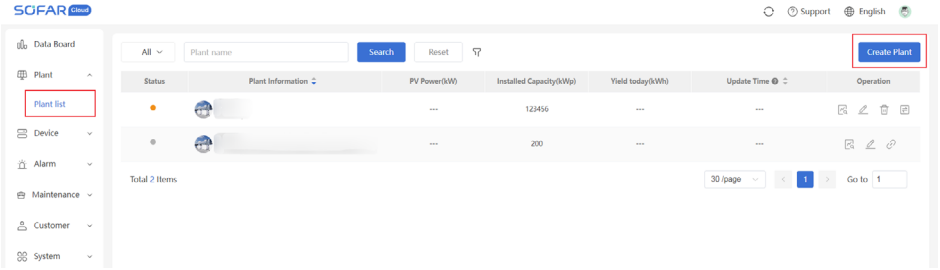
8.2 SOFAR Cloud Remote Control

8.2.1 Register/Login

SOFAR Cloud China site: https://cn.sofarcloud.com, international site: https://global.sofarcloud.com. If you are using SOFAR Cloud for the first time, you need to click “Register Merchant” on the login page to enter the account registration page, and fill in the corresponding merchant name, registration method and other information. Fill in the corresponding merchant name, registration method and other information. After the registration is completed, you can use this account to log in to SOFAR Cloud.

8.2.2 Creating plants

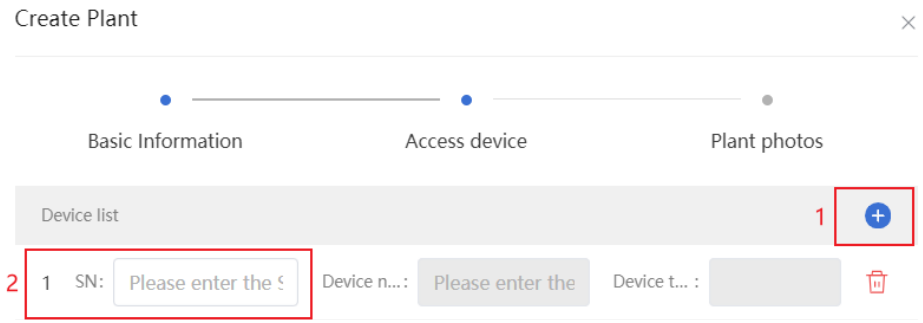
After entering SOFAR Cloud, click “Plant” under “Plant list”, and then click “Create Plant” in the upper right corner to enter the page of plant creation.



On the page of adding a new power plant, users need to fill in basic information, access equipment, and power plant photo information.

(1)Basic information: Installed capacity, plant time zone, Revenue per kwh and other information should be filled in according to the actual situation, otherwise it will affect the display of power plant data. After users fill in the information, click “Next”.

(2)Add device: as shown in the following figure, the user fills in the SN of CH1000 and adds CH1000. note that inverter and meter cannot be added here, refer to section 7.2.3 for inverter and meter additions.

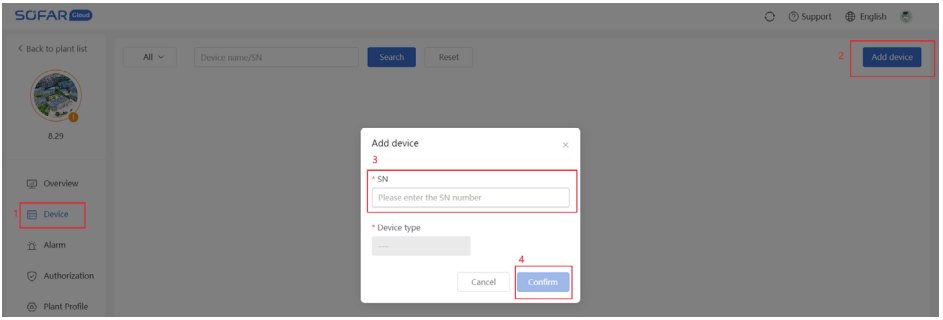


(3) Plant photos: users choose their own photos, and finally click “Save”.

8.2.3 Device Addition

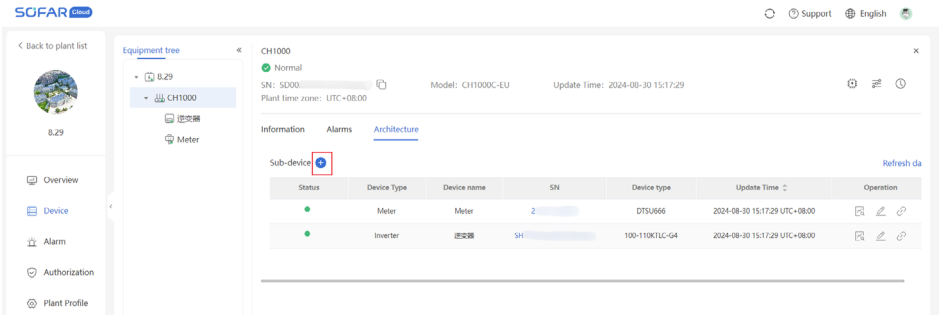
1. Add CH1000

If you did not add CH1000 when you created the plant, you can add CH1000 device after you created the power station. Enter the created power station, click “Add device” in the upper right corner, and add the corresponding SN of CH1000.



2. Add inverter and meter

After adding CH1000, users can add inverter and meter devices. After entering the plant, click “Device”, and then click the SN of CH1000 to enter the detail page of CH1000, as shown in the following figure. On the CH1000 device page, click “Architecture”, and then click the “⊕” button to add the SN of inverter or meter. The inverter SN number is located in the SN barcode on the inverter and begins with SH or SD. The meter SN is located on the meter in the SN barcode and is a 12-digit number.

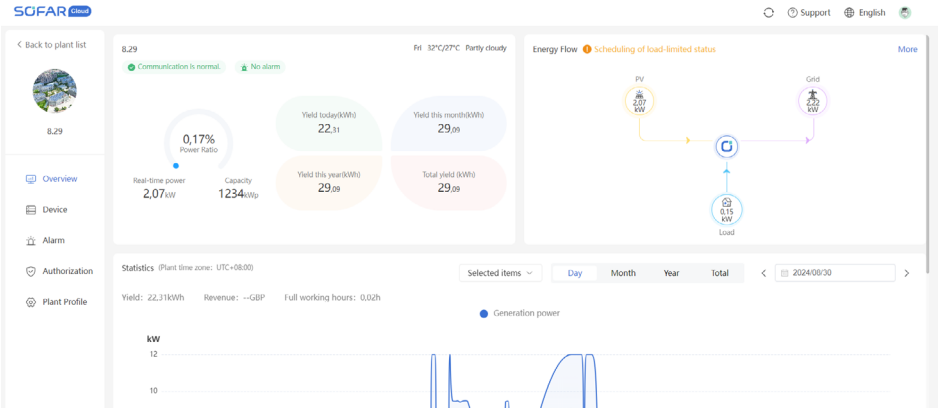


NOTICE

– If you have already added inverter and meter devices in the APP local commission, you don't need to add the same devices in the power station, please click "Refresh data" to get the latest list of sub-devices in the CH1000 device page, at the associated devices.

8.2.4 Plant Data

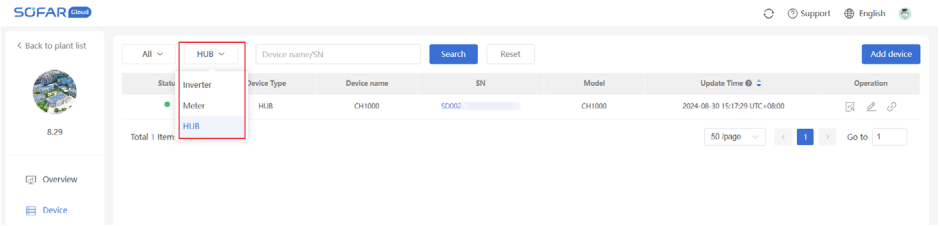
In the plant, clicking on "Overview", users can see the current total power generation, energy flow diagram showing, day, month, year, total power generation and other historical data of all inverters under the CH1000 binding of this plant, as well as the revenue and so on.



8.2.5 Device details

1. CH1000 device details

After entering the plant, click "Device", select CH1000 device. Users can see the status of CH1000 (online, offline), data update time and other information. As shown in the figure below.



By clicking at the SN number of CH1000, users can enter CH1000 device details to view CH1000's device basic information, real-time information, communication parameters and other information.

2. Inverter device details

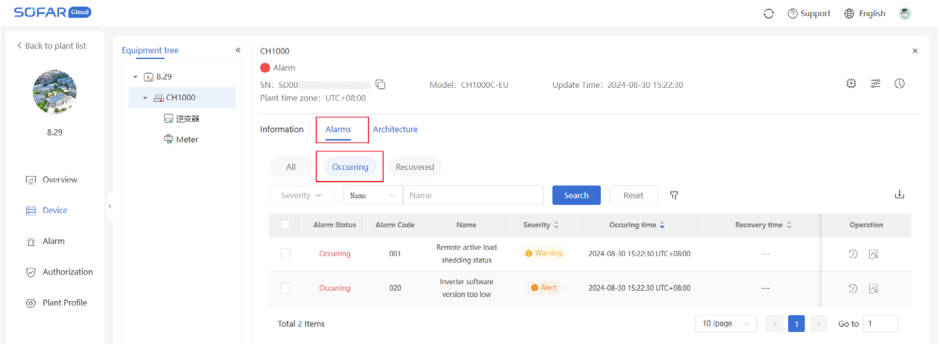
After entering the plant, click "Device", select the inverter device, click the SN of the inverter, and then users can enter the details of the inverter device. In the "Device Information" page, you can view the device status, current power generation, daily power generation, power generation time and other real-time information of the inverter, as well as basic information such as device name, model and version. On the "Historical Data" screen, you can view the historical information of the inverter, such as the total power and power generation of the inverter for the day, month, and year. View the parent and child devices associated with the inverter on the "Architecture" page.

3. Meter device details

After entering the plant, click on "Device", select the meter device, click on the SN number of the meter. Users can enter the meter device details, view basic information such as meter device name and model, as well as real-time information such as grid frequency, phase voltage, phase current and phase power.

8.2.6 Inverter Device Alarm

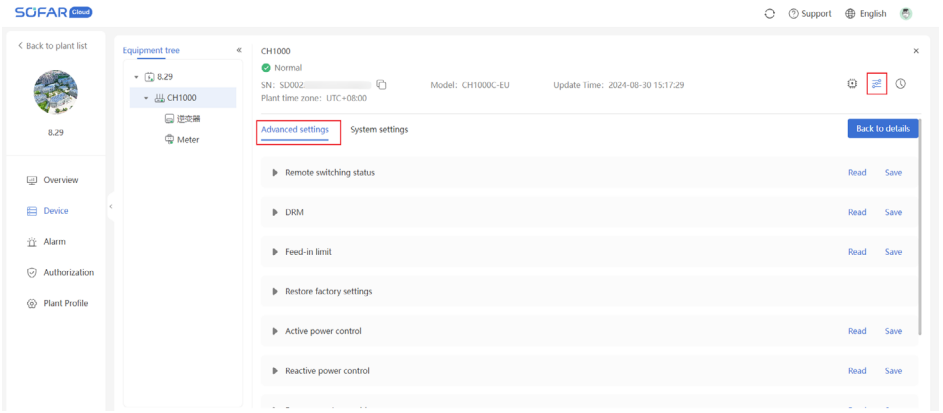
After entering the plant, click on "Device", select the inverter device. By clicking on the SN of the inverter, users can enter the inverter equipment details, view the alarms that are currently occurring and have been restored in the inverter in the "Alarm Information" page, and also can filter the alarms you want according to the conditions.

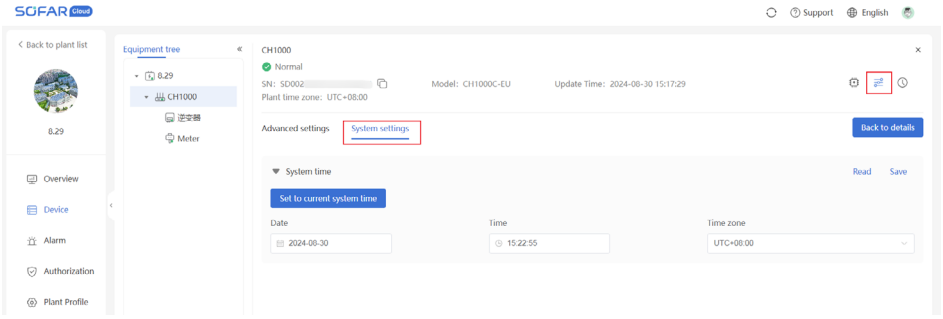


8.2.7 Device Control

1. CH1000 device control

Click the device detail page, select CH1000, and click the "⚙" button on the upper right corner to enter the remote control page, as shown in the figure below. Users can set DRM, feed-in limitation, time zone settings for CH1000.





The feed-in limitation parameters are described in the table below.

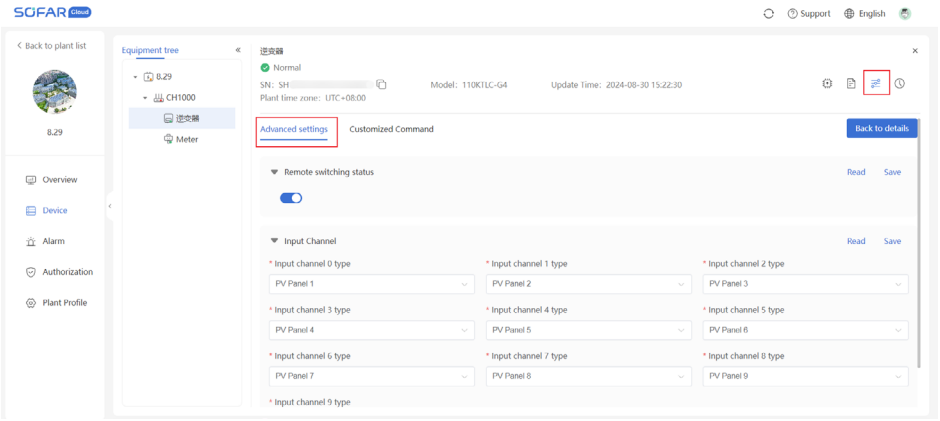
Parameter Name	Setting Instructions
Enable	Enable or disable feed-in limitation
Mode	Setting the mode of feed-in limitation control, only total power control is supported
Limit power value	Setting the power limit value for feed-in limitation

The DRM parameters are described in the following table.

Parameter Name	Setting Instructions
DRM enable	General enable switch, all DRM functions do not take effect when off
DRM0 enable	DRM0 enable switch to turn on or off the function of DRM0.
DRM5 limit power value	Percentage of inverter generating power limit when DRM5 is in effect
DRM6 limit power value	Percentage of inverter generating power limit when DRM6 is in effect
DRM7 limit power value	Percentage of inverter generating power limit when DRM7 is in effect
DRM8 limit power value	Percentage of inverter generating power limit when DRM8 is in effect

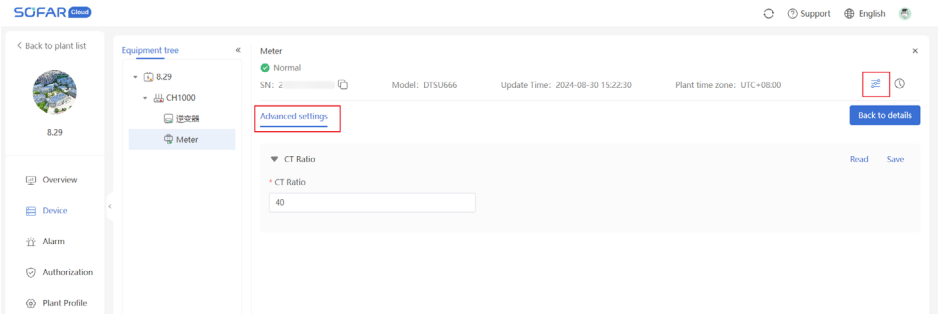
2. Inverter device control

Click the device detail page, select the inverter, click the "⚙" button on the upper right corner to enter the remote control page, as shown in the following figure. Users can set remote power on/off, input channel for the inverter.



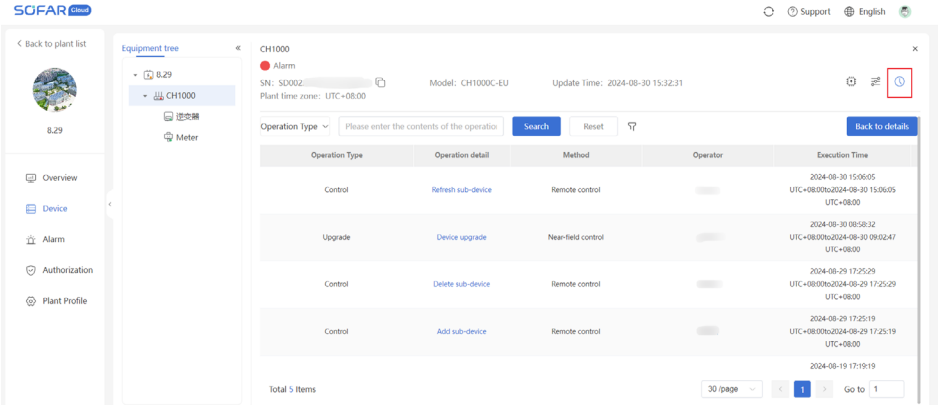
3. Meter device control

Click the device detail page, select the meter, and click the "⚙" button on the upper right corner to enter the remote control page. Users can set CT ratio for the meter.



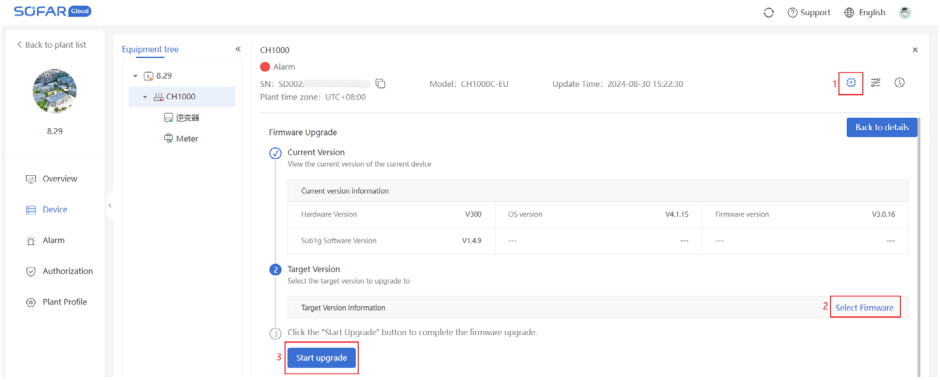
8.2.8 Operation Log

After entering the plant, select the corresponding device, and click the "🕒" button in the upper right corner to enter the Control Log page, where you can view the records of all the operations you have performed on the device.



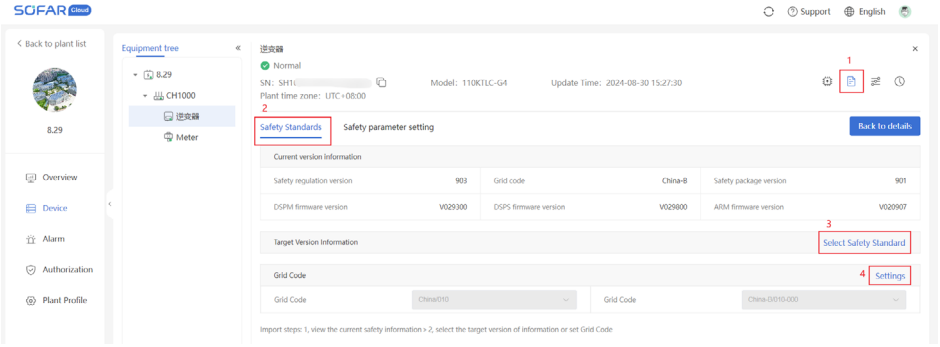
8.2.9 Device Upgrade

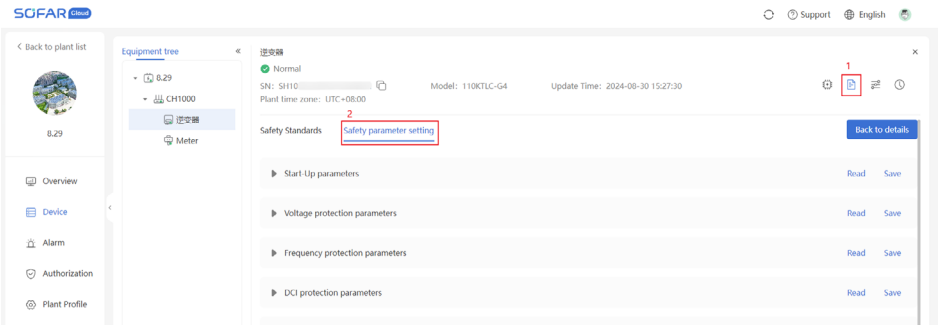
Click the "⊡" button on the upper right corner of the detail page of the device you want to upgrade to enter the firmware upgrade page, as shown in the figure below. Check the current device version number, if you want to upgrade to the latest version, first click "Select Firmware", select the latest firmware package, and then click "Start Upgrade". You can upgrade CH1000/inverter.



8.2.10 Inverter Safety Regulation

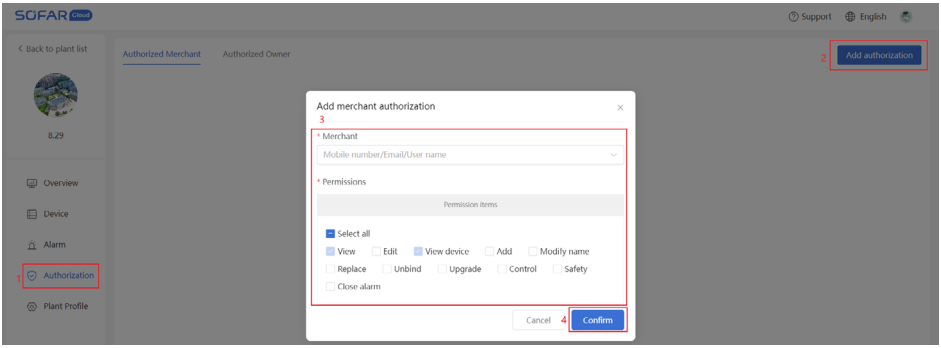
After entering the plant, click "Device" to enter the inverter device details, and click the "⊡" button on the upper right corner of the inverter device details page to enter the safety regulation page, as shown in the following figure. You can check the current safety version, country and region of the inverter, and you can also import safety regulation files and set up safety regulation parameters.





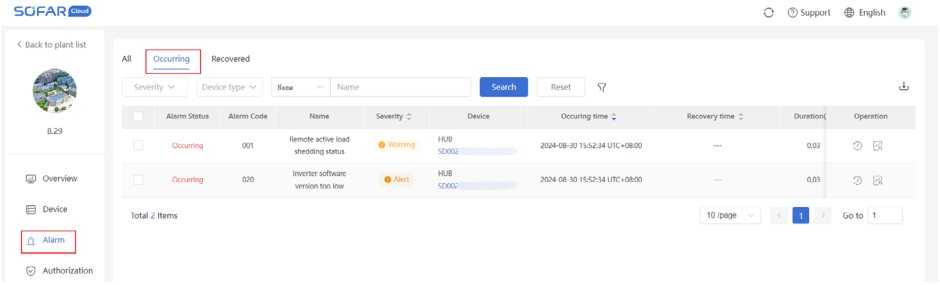
8.2.11 Plant Authorization

After entering the plant, click “Authorization”, users can authorize the plant to other people. Click “Add authorization” in the upper right corner, you can authorize the plant to other merchants, owners and other people, and you can choose to authorize different permissions.



8.2.12. Plant Alarm

After entering the plant, click “Alarm”, users can view the alarm information of all devices in the plant.



8.2.13. Plant Profile

After entering the plant, clicking on “Plant Profile”, users can see all the information about the plant, such as system information, basic information, etc. If you want to modify the information about the station, you can edit it by clicking on “Edit” in the upper right corner. If you want to modify the information, you can click “Edit” in the upper right corner. If you want to download the information about the power station, you can click “Download the report” in the upper right corner to download.

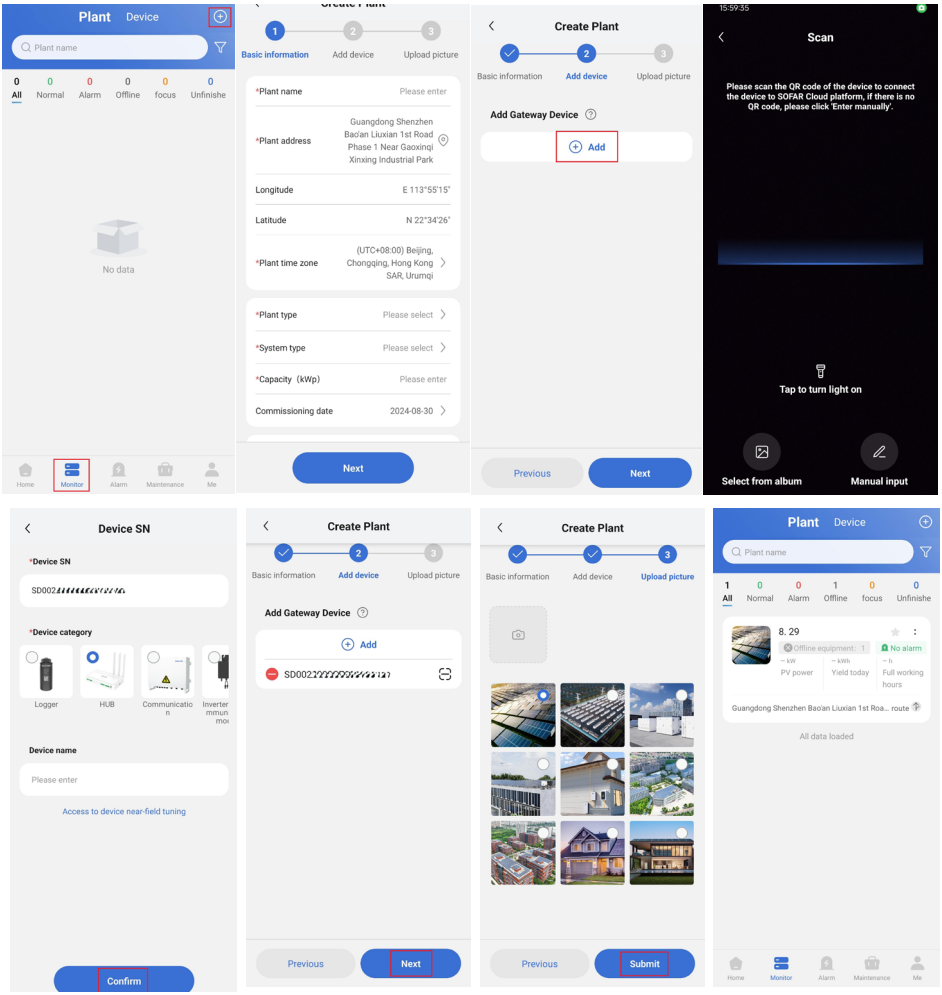
8.3 APP Remote Control

8.3.1 Register/Login

Download SOFAR Cloud APP. After downloading the APP, if you have not registered an account with SOFAR Cloud, you can register on the APP registration page and then log in to your account.

8.3.2 Creating plants

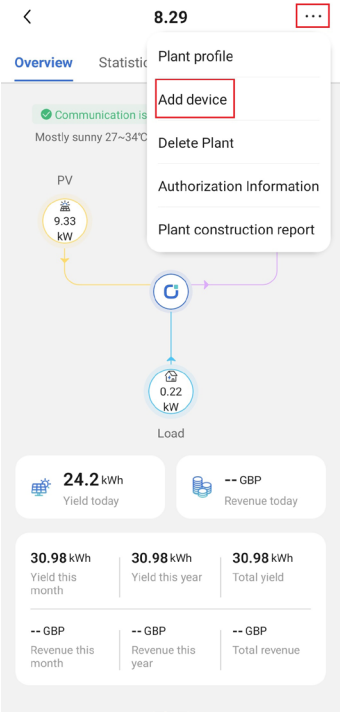
1. Click "⊕" in the upper right corner of the "Monitor" page of the app to enter the page of creating a plant. Installed capacity, plant time zone, Revenue per kwh and other information should be filled in according to the actual situation, otherwise it will affect the display of power plant data. Click "Next" to enter the add device page, enter the CH1000 SN of the device and click "Confirm". Add CH1000, note that inverter and meter cannot be added here, Please refer to section 7.3.3 for inverter and meter additions. Click "Next" to select photos, and finally click "Submit".



8.3.3 Device Addition

1. Add CH1000

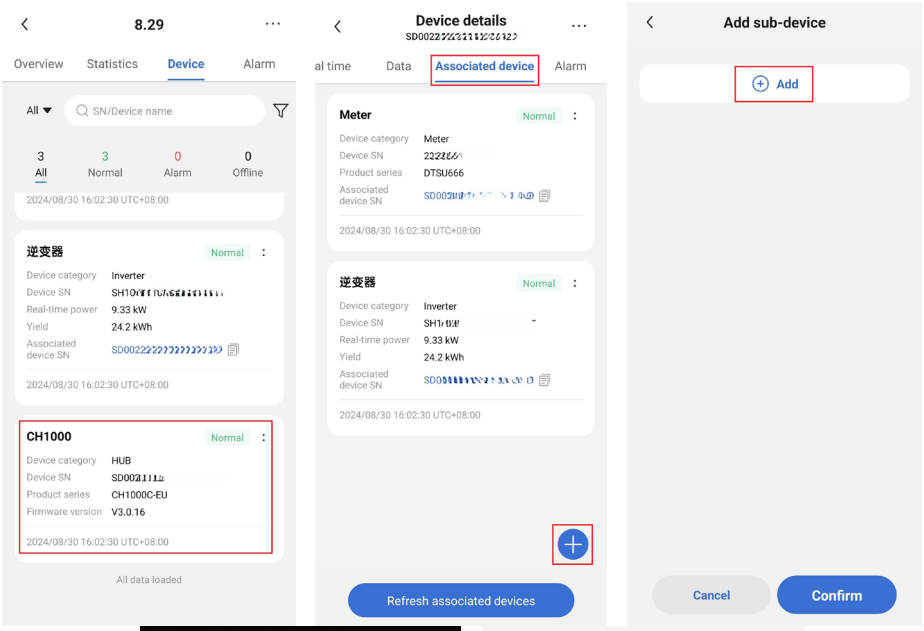
If you did not add CH1000 when you created the plant, you can add CH1000 device after you created the power station. Enter the created plant, Click “Add device” under “•••” in the upper right corner and add the corresponding SN of CH1000.

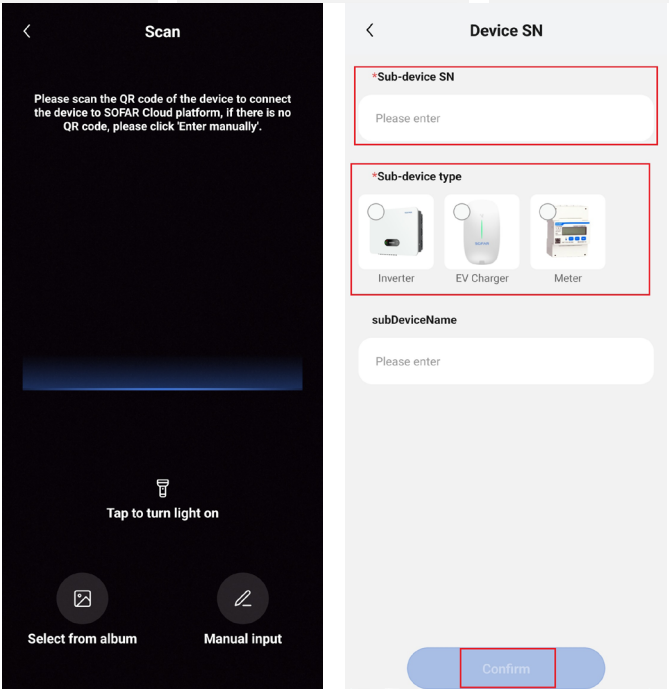


2. Add inverter and meter

After adding CH1000, users can add inverter and meter devices. After entering the plant, click “Device”, and then click the SN of CH1000 to enter the detail page of CH1000, as shown in the following figure.

On the CH1000 device page, click “Associated devices”, and then click the “⊕” button to add the SN of inverter or meter. The inverter SN number is located in the SN barcode on the inverter and begins with SH or SD. The meter SN is located on the meter in the SN barcode and is a 12-digit number.


8.29
Overview
Statistics
Device
Alarm
All
SN/Device name
3
All
3
Normal
0
Alarm
0
Offline
2024/08/30 16:02:30 UTC+08:00
逆变器
Normal
Device category
Inverter
Device SN
Real-time power
9.33 kW
Yield
24.2 kWh
Associated device SN
2024/08/30 16:02:30 UTC+08:00
CH1000
Normal
Device category
HUB
Device SN
Product series
CH1000C-EU
Firmware version
V3.0.16
2024/08/30 16:02:30 UTC+08:00
All data loaded
Device details
al time
Data
Associated device
Alarm
Meter
Normal
Device category
Meter
Device SN
Product series
DTSU666
Associated device SN
2024/08/30 16:02:30 UTC+08:00
逆变器
Normal
Device category
Inverter
Device SN
Real-time power
9.33 kW
Yield
24.2 kWh
Associated device SN
2024/08/30 16:02:30 UTC+08:00
Refresh associated devices
Add sub-device
Add
Cancel
Confirm

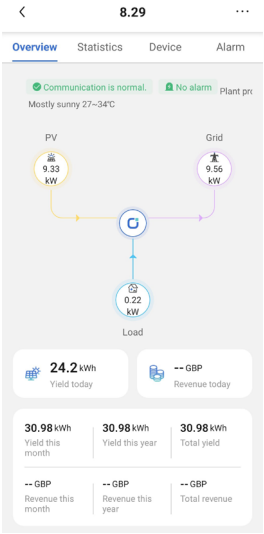

Scan
Please scan the QR code of the device to connect the device to SOFAR Cloud platform, if there is no QR code, please click 'Enter manually'.
Tap to turn light on
Select from album
Manual input
Device SN
*Sub-device SN
Please enter
*Sub-device type
Inverter
EV Charger
Meter
subDeviceName
Please enter
Confirm

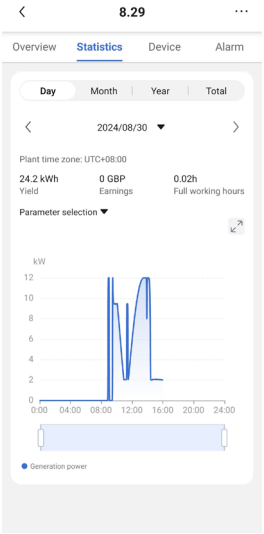
NOTICE

– If you have already added inverter and meter devices in the APP local commission, you don't need to add the same devices in the plant, please click "Refresh associated devices" to get the latest list of sub-devices in the CH1000 device page, at the associated devices.

8.3.4 Plant data

After entering the plant, users can see the current total power generation, energy flow diagram showing, day, month, year total power generation and other historical data as well as revenue of all inverters under the CH1000 binding of this power station in the "Overview" page and "Statistics" page.

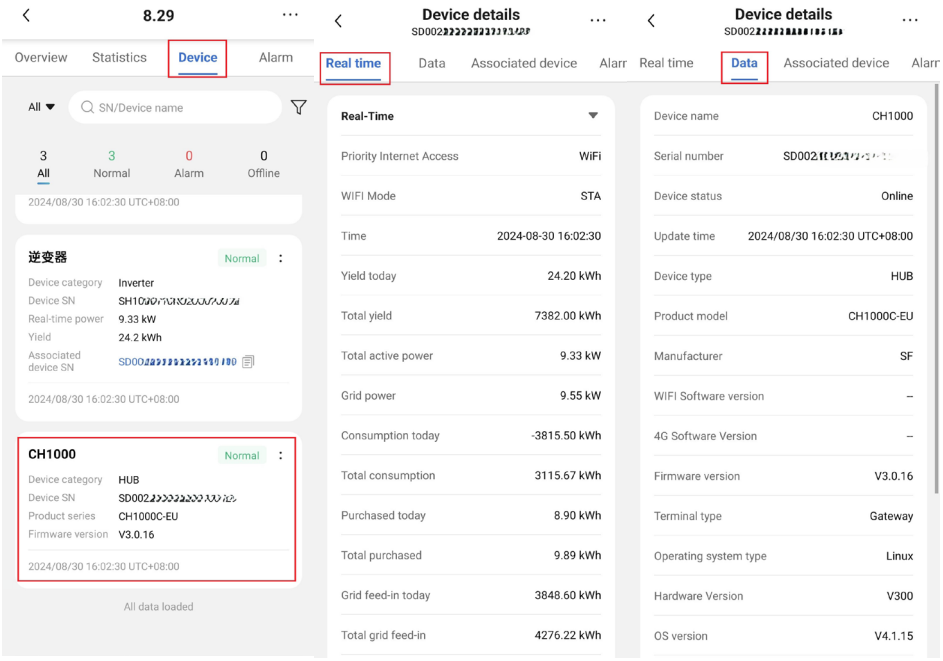




8.3.5 Device Details

1. CH1000 device details

After entering the plant, click “Device”. Users can see the status (online, offline), device type, device SN, firmware version and other information of CH1000. Clicking on the SN of CH1000, users can enter CH1000 device details, and view CH1000 device basic information, real-time information, communication parameters and other information in the “Real-time” and “Data” pages. As shown in the figure below.



2. Inverter device details

After entering the plant, click “Device”, and then click the SN of the inverter, users can enter the inverter equipment details. On the “Real-time” page, you can view the real-time information of the inverter, such as equipment status, current power generation, daily power generation, power generation time, and so on. In “Data” page, you can view the basic information of the inverter, such as device name, model, version, and so on. View the history information of the inverter, such as the total power and power generation in day, month and year on the “Statistics” page. View the current and recovered alarms of the inverter on the “Alarms” page.

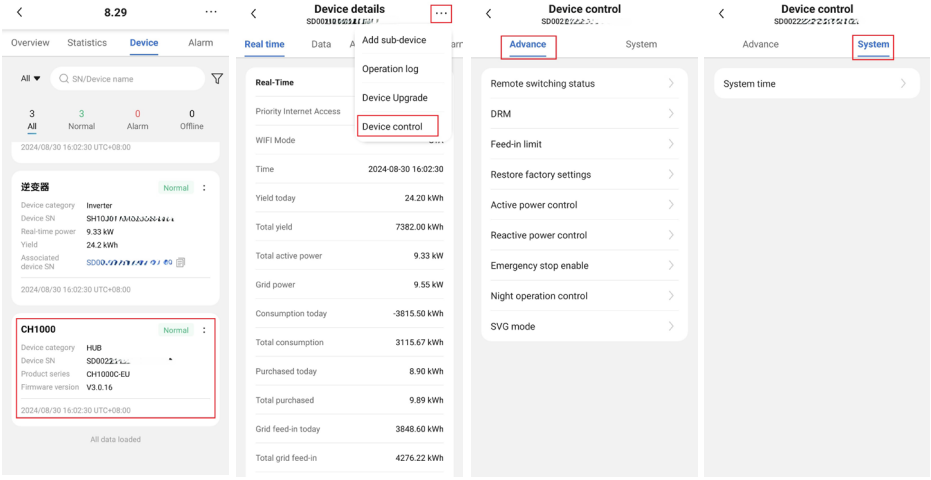
3. Meter device details

After entering the plant, click on “Device”. By clicking on the SN of the meter, users can enter the meter device details to view basic information such as meter device name and model, as well as real-time information such as grid frequency, phase voltage, phase current and phase power.

8.3.6. Device Control

1. CH1000 device control

After entering the plant, click “Device”, and then click the SN of CH1000, users will enter the CH1000 device details page. Click “Device Control” under “•••” in the upper right corner of the CH1000 device details page to enter the CH1000 remote control page, as shown in the following figure. On the advanced settings page, users can set DRM and feed-in limitation settings for CH1000. On the system settings page, users can set the system time, priority Internet access, 4G, Ethernet and so on.



The feed-in limitation parameters are described in the table below.

Parameter Name	Setting Instructions
Enable	Enable or disable feed-in limitation
Mode	Setting the mode of feed-in limitation control, only total power control is supported
Limit power value	Setting the power limit value for feed-in limitation

The DRM parameters are described in the following table.

Parameter Name	Setting Instructions
DRM enable	General enable switch, all DRM functions do not take effect when off
DRM0 enable	DRM0 enable switch to turn on or off the function of DRM0.
DRM5 limit power value	Percentage of inverter generating power limit when DRM5 is in effect
DRM6 limit power value	Percentage of inverter generating power limit when DRM6 is in effect
DRM7 limit power value	Percentage of inverter generating power limit when DRM7 is in effect
DRM8 limit power value	Percentage of inverter generating power limit when DRM8 is in effect

2. Inverter device control

Click “Device Control” under “•••” in the upper right corner of the inverter detail page to enter the inverter remote control page. Users can set the remote power on/off, power control, restore factory settings, input channel, system time and so on.

3. Meter device control

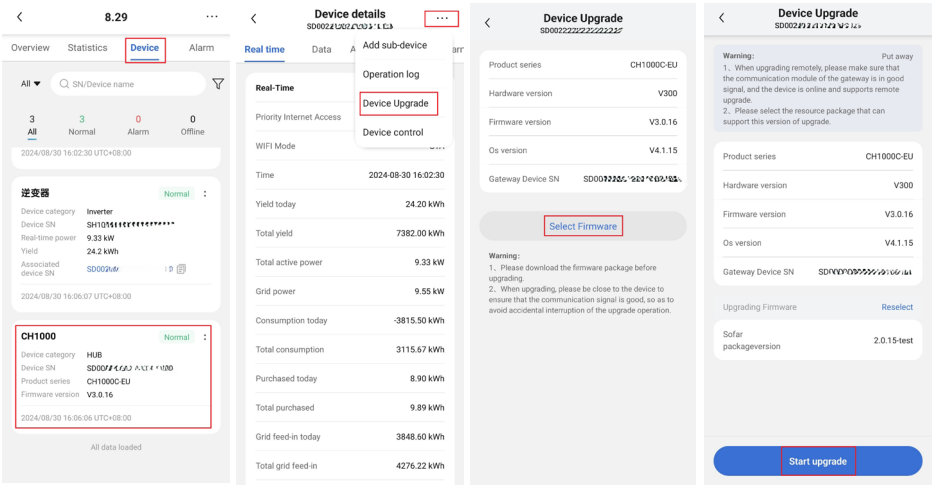
Click “Device Control” under “•••” in the upper right corner of the meter device details page to enter the meter remote control page. Users can set CT ratio and other settings for the meter.

8.3.7. Operation Log

After entering the plant, click “Device”, and then click the SN of the corresponding device to enter the device details page. Click “Operation log” under” under “•••” in the upper right corner to enter the operation log page, and you can view all the operation records of the device.

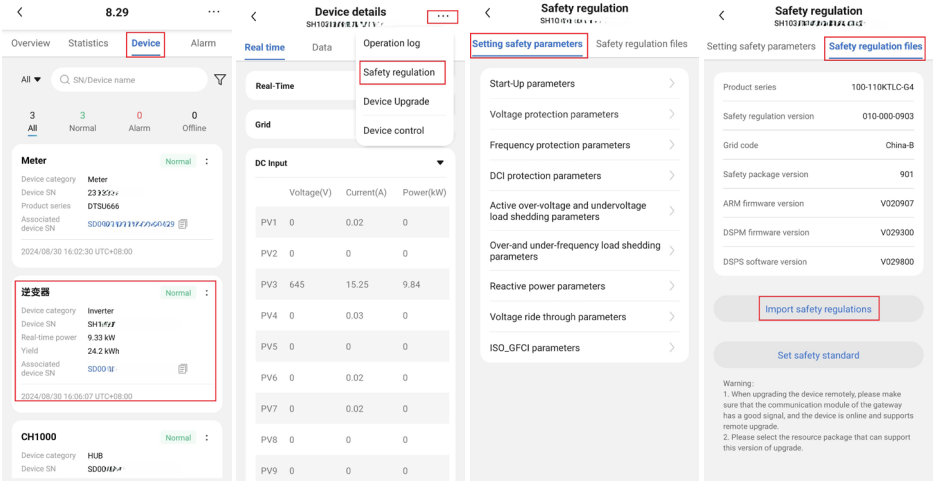
8.3.8. Device Upgrade

After entering the plant, click “Device”, click the SN of the device you want to upgrade to enter the detail page of the device. Click “Device Upgrade” under“ •••” in the upper right corner to enter the device upgrade page. Select the firmware you want to upgrade and click Upgrade. Take the CH1000 device upgrade as an example, as shown in the following figure.



8.3.9. Inverter Safety Regulation

After entering the plant, click “Device”, click the SN of the inverter to enter the inverter detail page. Click “Safety regulation” under “•••” in the upper right corner to enter the safety regulation page, as shown in the figure below. You can set safety parameters and import safety regulations for the inverter.



8.3.10. Plant Authorization

After entering the plant, click “Authorization information” under “•••” in the upper right corner to enter the plant authorization page, users can authorize the plant to other people. Click “Add”, you can authorize the plant to other merchants, owners and other people.

8.3.11. Plant Alarm

After entering the plant, click “Alarm”, users can view the alarm information of all devices in the plant.

8.3.12. Website Building Report

After entering the plant, clicking on “Station building report” under “•••”in the upper right corner, users can see all the station building information of the station, such as system information, basic information and so on.

9 Fault Resolution

CH1000 common faults and treatments are shown in the table below. If you still can't solve the problem with the help of this manual or still have questions, please contact SOFARSOLAR.

Fault Phenomenon	Cause Analysis	Exclusion Method
Unable to connect to power supply	1. CH1000 power supply port is not connected to the power supply 2. Power supply adapter failure 3. CH1000 failure	1. Connect the power supply cable correctly to the CH1000. 2. Replace the power supply adapter 3. Please contact SOFARSOLAR after-sales service personnel
Ethernet connectivity. The light for connecting to SOFAR Cloud/ APP is blinking and CH1000 shows offline on SOFAR Cloud/ APP	1. Network cable is not connected properly 2. The network cable is faulty or loose 3. User's router cannot access the Internet 4. Network device firewalls have limitations 5. CH1000 fault	1. Connect one end of the cable to the CH1000's network port and the other end to a router or gateway with Internet access. 2. Replace the network cable or plug in the network cable 3. Check whether the router network is normal or replace the router 4. Add the following domain name and port number to the whitelist of the network device: domain name: pv-emqx.sofarcloud.com, router (firewall) open port number: 8885. 5. Please contact SOFARSOLAR after-sales service

Fault Phenomenon	Cause Analysis	Exclusion Method
Wi-Fi connectivity. The light for connecting to SOFAR Cloud/ APP is blinking and CH1000 shows offline on SOFAR Cloud/ APP	1. The user's router cannot access the Internet 2. The user name and password of the Wi-Fi configuration are filled in incorrectly. 3. Wi-Fi antenna is loose. 4. No Wi-Fi configuration. 5. Network device firewalls have limitations 6. CH1000 fault	1. Check whether the router network is normal or not. 2. Enter the correct user name and password. 3. Tighten the Wi-Fi antenna. 4. Configure Wi-Fi on the APP. 5. Add the following domain name and port number to the whitelist of the network device: domain name: pv-emqx.sofarcloud.com, router (firewall) open port number: 8885. 6. Please contact SOFARSOLAR after-sales service
4G connectivity. The light for connecting to SOFAR Cloud/ APP is blinking and CH1000 shows offline on SOFAR Cloud/ APP	1. SIM card not inserted into CH1000 2. SIM card not inserted 3. SIM card has no traffic 4. 4G antenna is loose 5. CH1000 fault	1. Insert the SIM card into CH1000 2. Re-insert the CH1000 3. Replace the SIM card with a new one or top up the SIM with traffic. 4. Tighten the 4G antenna 5. Please contact SOFARSOLAR after-sales service

Fault Phenomenon	Cause Analysis	Exclusion Method
Inverter offline or data error	1. CH1000 is not networked 2. Communication cable is not connected or cable is loose 3. Shielded twisted pair cable is not used 4. Wrong SN added 5. RS485 A, B terminal connection is reversed	1. Network the CH1000 via Ethernet, Wi-Fi, or 4G 2. Check the communication cable and connect it well 3. Use shielded twisted pair cable 4. Add the correct SN 5. Switch the wiring of RS485 A and B
Meter offline	1. CH1000 is not networked 2. Communication cable is not connected or cable is loose 3. Shielded twisted pair cable is not used 4. RS485 A and B terminals are reversed	1. Network the CH1000 via Ethernet, WiFi, or 4G 2. Check the communication cable and connect it well 3. Use shielded twisted pair cable 4. Switch the wiring of RS485 A and B terminals
Meter data error	1. Wrong SN added 2. CT connection direction is wrong 3. CT ratio configuration error 4. Wrong CT mounting position	1. Add the correct SN 2. Switch the direction of CT connection 3. According to the actual CT ratio setting 4. Check that the CT mounting position is mounted on the grid connection point

Fault Phenomenon	Cause Analysis	Exclusion Method
CH1000's READY light shows red faults	Abnormal Ethernet, WiFi, 4G interfaces on CH1000	Please contact SOFARSOLAR after-sales service
Failure of the CH1000's feed-in limit function	1. CH1000 feed-in limit parameter setting error 2. Inverter wiring fault or inverter not all connected 3. Meter offline 4. Meter data error	1. Check the feed-in limit parameter settings 2. Check all inverter RS485 wiring 3. Refer to meter offline troubleshooting information 4. Refer to meter data error troubleshooting information

10 Routine maintenance

CH1000 performs routine maintenance in the following ways:

- Hardware Maintenance: Normal power supply and normal screw tightness.
- Software maintenance: SOFAR cloud monitoring platform/APP equipment monitoring is normal, and the parameters are set normally
- Device cleaning: Device chassis and interface cleaning
- Working Device: No strong electromagnetic interference device, no heat source corrosive substances around the device.

11 Technical Specifications

Parameters	Technical Indicators			
Product Series	Control Hub CH1000 Series			
Product Model	CH1000A	CH1000B	CH1000C	CH1000D
Power Supply Adapter	AC input: 100V ~ 240V, 50/60Hz; DC output: 12V/2A			
DIN-rail Power Supply	AC input: 100V ~ 240V, 50/60Hz; DC output: 12V/2A			
Operating Device Temperature	-30℃~+65℃			
Storage Ambient Temperature	-40℃~+80℃			
Relative Humidity	5%RH~95%RH non-condensing			
Operating Altitude	IEC 3000m Max			
Protection Level	IP20			
Interaction	SOFAR cloud + APP			
Heat Dissipation Method	Natural heat dissipation			
Communication Method	Wi-Fi/Ethernet/RS485/BT	Wi-Fi/Ethernet/RS485/BT/Sub-1G	Wi-Fi/Ethernet/RS485/BT/Sub-1G/4G	Wi-Fi/Ethernet/RS485/BT/4G
Wi-Fi/BT	The supported frequency bands are as follows: WiFi: 2.412~2.472GHz BT: 2.402~2.480GHz			

Parameters	Technical Indicators		
Sub-1G	/	China supports the following frequency bands: 430.05-434.79MHz. Europe supports the following frequency bands: 863-870MHz.	/
4G	/	/	China supports the following frequency bands: LTE-FDD: B1/B3/B5/B8 LTE-FDD: B34/B38/B39/B40/B41. Europe supports the following frequency bands: LTE-FDD: B1/B3/B5/B7/B8/B20/B28 LTE-FDD: B38/B40/B41 WCDMA: B1/B5/B8 GSM: EGSM900/DCS1800.
DI/DO	4/2		
AI	4, 4~20mA		
DRMs	1 RJ45		
RS485	1 RJ45, 2 port		
Ethernet Port	2 RJ45, 10/100M Adaptive		
USB	1 Type-A, USB2.0		
Power consumption	Typical 5.0W		
Structural dimensions	218*125*34mm		
Material	Plastics		
Lightning Protection	Secondary lightning protection		
Certification Requirements	EMC IEC 61000-6-1/2/3/4, ROHS, CE-RED		

Appendix

Check to see if the CH1000 is online. If offline, check if there is a network restriction on the network device firewall. If there is a network restriction, add the following domain name and port number to the network device's whitelist:

Domain	Port
emqx.sofarcloud.com	28883
eu-emqx.sofarcloud.com	28883
eu-emqx.sofarsolarmonitor.com	30085
emqx.sofarsolarmonitor.com	8885

Abbreviations

The acronyms covered in this paper are shown in the table below:

Term	Full Name
AI	Analog Input
DI	Digital Input
DO	Digital Output

Version 3.3



ENERGY TO POWER YOUR LIFE

ADDRESS
Shenzhen SOFARSOLAR Co., Ltd.
11/F, Gaoxinqi Technology Building,
District 67, XingDong Community, XinAn Street,
Bao'An District, Shenzhen, China

EMAIL
info@sofarsolar.com

Website
www.sofarsolar.com