QUICK INSTALLATION GUIDE

CH1000

102040200148-2

01 SAFETY INSTRUCTIONS

Only a qualified electrician should install and maintain the device, with all power disconnected to prevent electric shock.

Install the SOFAR CH1000 in full compliance with national and local electrical codes.

Read and understand the manual and familiarize yourself with safety symbols before installing or commissioning the equipment.

For any maintenance or repairs, contact an authorized service center; do not attempt repairs yourself to avoid injury or damage.

02 INSTALLATION

Danger

- Do not mount the CH1000 on flammable materials or in areas where such materials are stored.

Notice

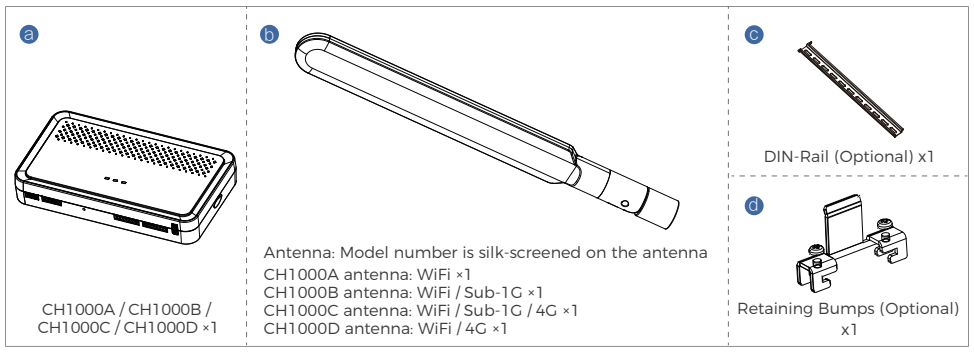
- Ensure all Inverters' firmware are updated to the latest version.

2.1 PRODUCT APPEARANCE

CH1000 product appearance size (L*W*H): 218*125*34, unit: mm.

2.2 PACKING LIST

Check the packing list and ensure that the contents of the box have been delivered as follows:



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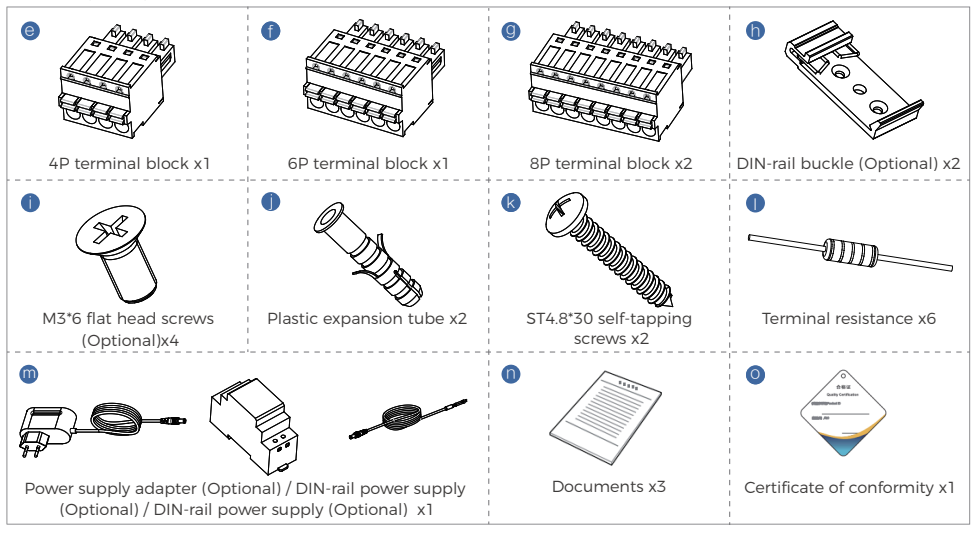
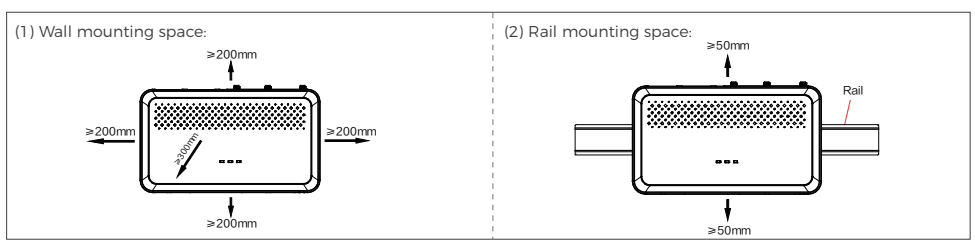


2.3 INSTALLATION ENVIRONMENT

- This product is IP20 rated for indoor use, away from sunlight and rain.
- Ensure parameters and warning signs are visible after installation.
- Operating temperature range: -30℃ to +65℃; storage temperature range: -40℃ to +80℃.
- Working humidity range: 5%RH to 95%RH.

2.4 DEVICE INSTALLATION

2.4.1 Installation Space



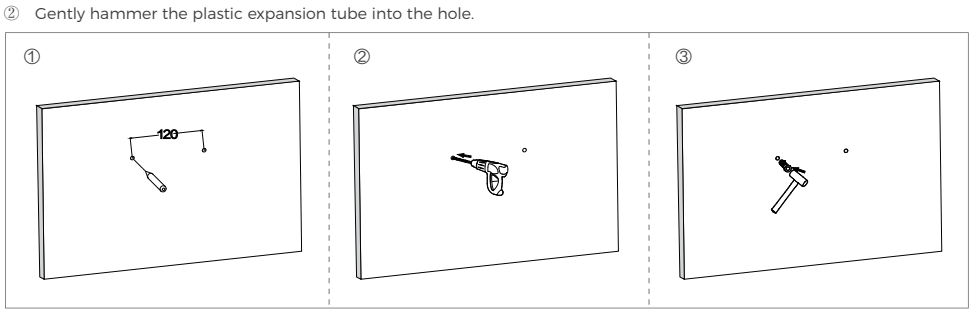
2.4.2 Installation Of CH1000

CH1000 can be mounted in three ways: on a wall, on a rail, or on a desk.

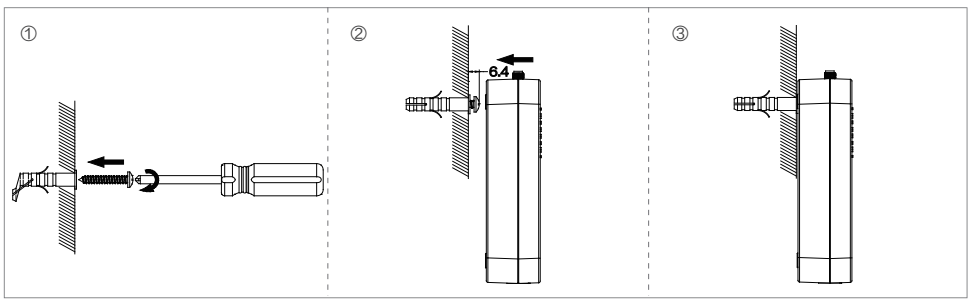
(1) Wall mounting

① Drill holes (spaced 120mm apart, with a depth slightly greater than the plastic expansion pipe's length. The product includes M5*30 self-tapping screws and plastic expansion tubes).

② Gently hammer the plastic expansion tube into the hole.



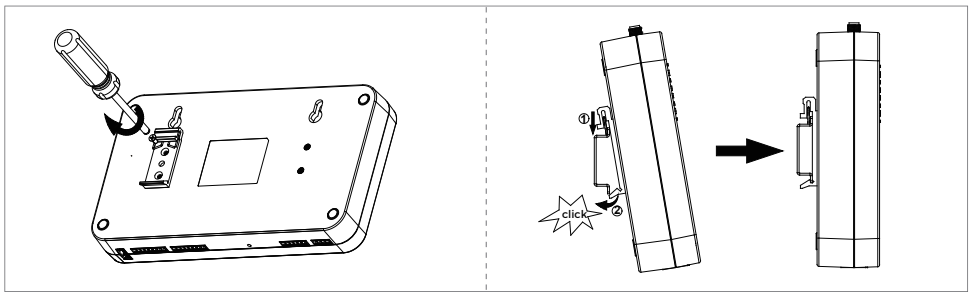
③ Secure the expansion screws so they protrude about 6.4 mm from the wall surface and mount the CH1000 on them.



(2) DIN-rail installation

① Mount the DIN-rail clips using a Phillips screwdriver in the designated holes on the product's back..

② Tilt the product, latch the top of its DIN-rail clip onto the rail, then press down the bottom part until you hear a click, indicating the installation is done.



2.4.3 CH1000 WIRING

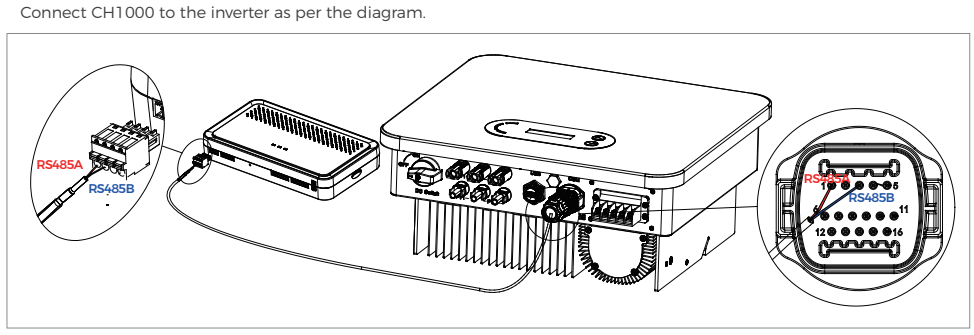
NOTICE

Disconnect all power before wiring and be mindful of safety.

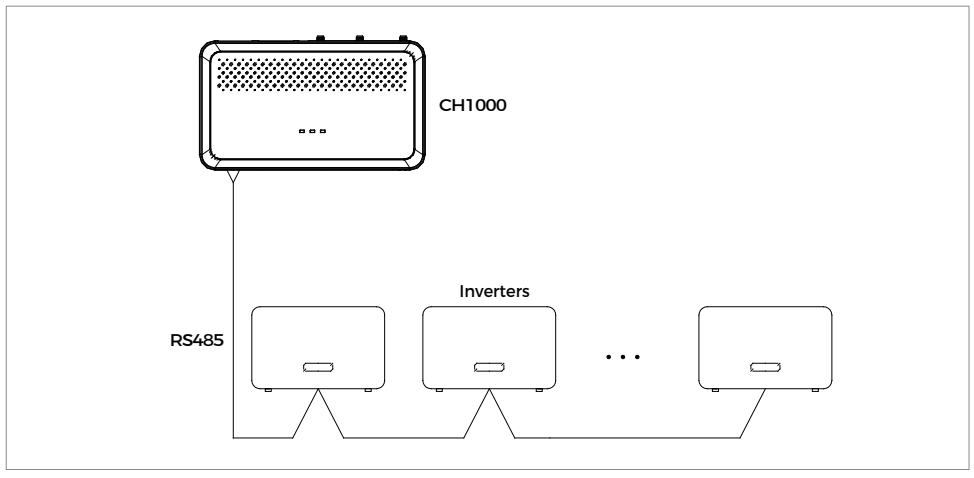
(1) RS485 Wiring (Cable preparation: Use shielded twisted pair cable, 0.75mm² to 1.5mm² in cross-section, with a max communication line length of 1,000m)

The CH1000 has three RS485 ports; connect inverters or meters to any of them, but the inverter and meter must use separate RS485 ports.

- **Connect the inverter**
  Connect CH1000 to the inverter as per the diagram.



Inverters connect in a daisy chain. Keep the chain to fewer than 20 devices.



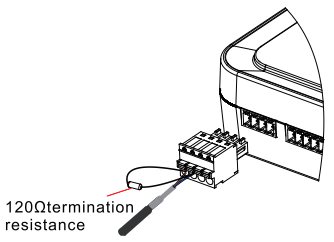
Cable type	One end of cable		Other end of cable	
	Device	Port	Port	Device
Shielded twisted pair	CH1000	RS485A	COM-1	Inverter 1
		RS485B	COM-3	
	Inverter 1	COM-2	COM-1	Inverter 2
		COM-4	COM-3	
	Inverter 2	COM-2	COM-1	Inverter 3
		COM-4	COM-3	

NOTICE

Please set the baud rate of all inverters to 9600.

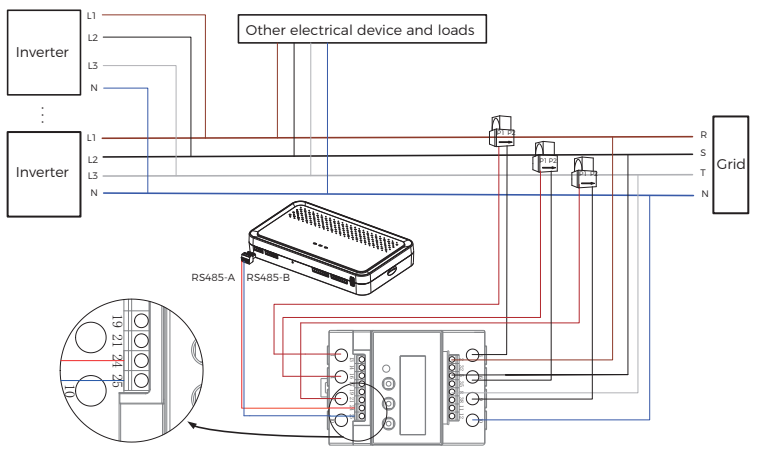
• **Connecting RS485 terminal resistance**

If there are more than 15 inverters on a RS485 bus line or the line distance is over 1000 meters, please add a 120Ω resistor at the RS485 ports of both CH1000 and the last inverter, as shown in the figure.



• **Connect the meter and CT**

CT should be connected at the grid tie point of all inverters and other electrical devices and loads, with the direction pointing to the power grid.



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	

NOTICE

- If communicate failed with meter, check the setup according the user manual: address: 1, baud rate: 9600, protocol: 3 (Modbus-RTU).
- The supported meter model is Chint's DTSU666, which works with CT and needs CT parameter setup in SOFAR Cloud/APP/Web.
- Install the meter inside a cabinet or box; don't leave it exposed.
- Prepare CT with specifications like xxx/5A (e.g., 1000A/5A, 2000A/5A). Choose the CT based on the max current of AC line, typically 1.2 to 1.5 times the max value. Ensure the CT has the right hole size for AC line.
  For instance, if the current of AC line can be up to 1000A, select a CT with 1200A/5A rating.

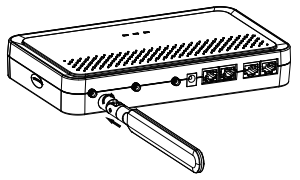
(2) Antenna and SIM card Installation

• Installation of Antenna

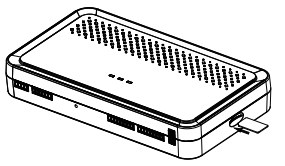
Attach the correct model antenna to the CH1000's antenna connector, then rotate the antenna handle 90°.

• Installation of SIM card

Prepare a SIM card, which should be 25mm × 15mm. To insert the SIM card, turn off the device, align it with the case's silkscreen, and push until it clicks into place.



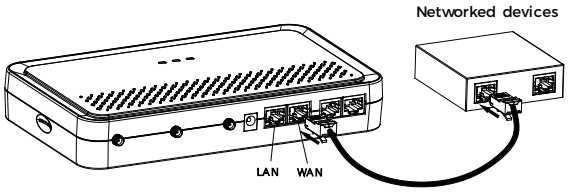
Installation of Antenna



Installation of SIM card

(3) Ethernet port

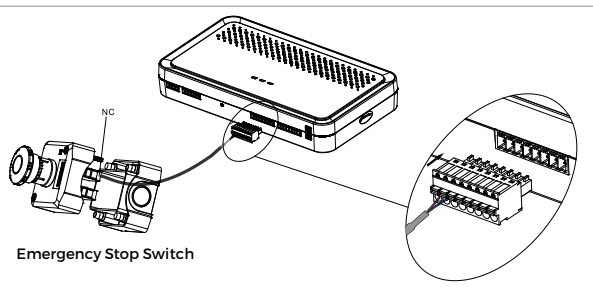
• The WAN port is for connecting to networking devices like routers and switches, with a network cable distance not exceeding 100m.



• The LAN port is used as a debugging backup.

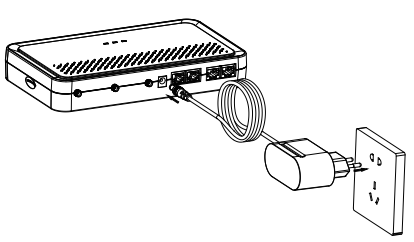
(4) External emergency stop button

Supply your own normally closed emergency stop button. The DI1 input port is for the emergency stop switch. Connect DI1 to the "NC" port of the stop switch; the polarity of the connecting wires doesn't matter.

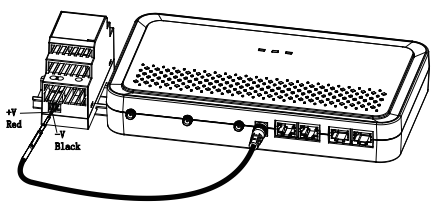


Emergency Stop Switch

(5) Connecting the power supply



Power supply adapter



DIN-Rail power supply

NOTICE

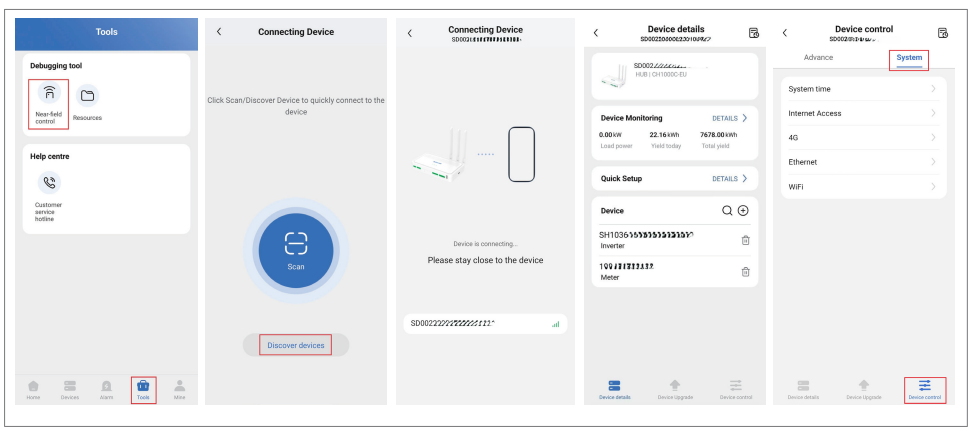
- Ensure the wiring is correct and secure before turning on the power supply.
- Align the power and signal cables to meet the strong and weak power alignment requirements, following the system's alignment specifications.

03 APP LOCAL COMMISSION

(1) Connecting CH1000 and configuring network

Turn on the cell phone's WiFi and Bluetooth。

Open the SOFAR Cloud APP, scan the CH1000's SN QR code (or tap "Discover devices" and choose the CH1000's SN) to connect to the CH1000 device. Once connected, go to "Device Control"—"System" to access the system settings. From there, select and configure either Ethernet, 4G, or WiFi as needed, as illustrated in the figure.



NOTICE

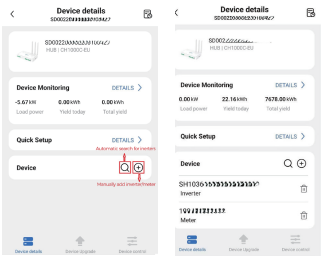
If choose WiFi, make sure the router WiFi supports 2.4G band.

(2) Adding inverters or meters device

Go to the CH1000 device details page to add inverters and meters.

Click the "🔍" button to automatically find inverters. Once all devices are found, click "Stop Finding", and click "Add".

Click "⊕" to add the meter manually, input details like the meter's SN and model type. The 12-digit meter SN is found in the barcode on the meter.



(3) Set system time and feed-in limit setting in quick setup of CH1000 page.
(4) Click the meter to set the CT ratio on the device control page of meter.

NOTICE

Once local commissioning with the APP is done, create a plant and add CH1000 in the SOFAR Cloud APP. See the CH1000 user manual for detailed steps.

04 CHECK

After installation and tuning, please check:

1. LED indicators status check: 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
		On: 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)

2. APP operation: whether it can read CH1000, inverter and meter devices.
3. If the NET LED flashes slowly, it indicates network connection is normal but connection with SOFAR Cloud is abnormal. Check your local network's firewall settings and add pv-emqx.sofarcloud.com with port 8885 to the whitelist.

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