GOODWE

User Manual

Solar Communication Box

(SCB3000A | SCB3000B)

V1.0-2022-07-30

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Notice

The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product labels or the safety precautions unless otherwise specified. All descriptions in the manual are for guidance only.

CONTENT

1 About This Manual

This manual describes the product information, installation, electrical connection, commissioning, troubleshooting, and maintenance of solar communication box SCB3000A and SCB3000B. Read through this manual before installing and operating the product. All the installers and users have to be familiar with the product features, functions, and safety precautions. This manual is subject to update without notice. For more product details and latest documents, please visit www.gesolarinverter.com.

1.1 Applicable Model

This manual is applied to SCB3000Aand SCB3000B.

1.2 Target Audience

This manual applies to trained and knowledgeable technical professionals. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbol Definition

Different levels of warning messages in this manual are defined as follows:

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlight and supplement the texts. Or some skills and methods to solve product-related problems to save time.

1.4 Updates

The latest document contains all the updates made in earlier issues.

V1.0 2022-07-30
First Issue

2 Safety Precaution

NOTICE

The communication box SCB3000A and SCB3000Bhave been designed and tested strictly according to the relative safety regulations. As an electrical and electronic equipment, below safety instructions shall be followed during its installation and maintaining. Improper operations may cause severe injuries or property loss to the operator and a 3rd party.

2.1 General Safety

Notice

- The wiring between the grid and the communication box must be disconnected during its installation and maintaining, in case of electric shock.
- Do not touch the electrical parts such as the internal components or cables during the communication box in operation, in case of electric shock.
- The wiring between the grid and the communication box must be disconnected for internal components replacement. Ensure that the new components meet the communication box using requirements. GoodWe shall not be liable for such human injuries or quality warranty.
- It is forbidden to insert or pull the cables when the communication box is in operation.
- Ensure the AC input voltage and current are matched with the communication box's rated voltage and current. Otherwise it may cause damages to the components and the device can not operate. In this case, GoodWe will not be liable for such damage or quality warranty.

2.2 Symbol Definition

	Potential risks exist. Wear proper PPE before any operations.		Fragile. Handle with care.
	Recyclable.		Ensure that no moisture can penetrate the product.
	Do not dispose of the inverter as household waste.Discard the product in compliance with local laws and regulations, or send it back to the manufacturer.		CE marking
	Grounding point. Indicates the position for connecting the PE cable.	-	-

3 Product Introduction

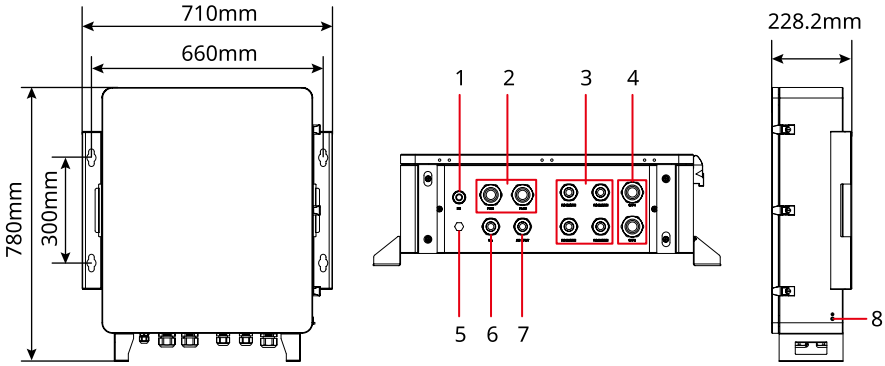
3.1 Product Overview

SCB3000A and SCB3000B are applied in PV power generating system for data acquisition, which achieve data acquisition, protocol switching, centralized monitoring, centralized maintenance and other functions for the inverters, watthour meter, environmental monitors and other devices within the system.

Flexible in networking:
Support PLC or RS485 communication when connecting with the inverter.
Support Ethernet or optical fiber communication when connecting with the server.

NOTICE
For PLC communication, SCB3000A and SCB3000B can only communicate with inverters matched. Contact GoodWe after-sale service for details.

3.2 Appearance Introduction



No.	Screen print	Description
1	PE	PE cable hole
2	PLC1/PLC2	Three-phase AC input Cable hole
3	RS485/ETH	RS485 communication cable and network cable hole
4	SEP1/SEP2	Optical fiber cable hole
5	-	Ventilation valve
6	NA	Reserved
7	AC INPUT	Single-phase AC input Cable hole
8	⏚	PE Terminal

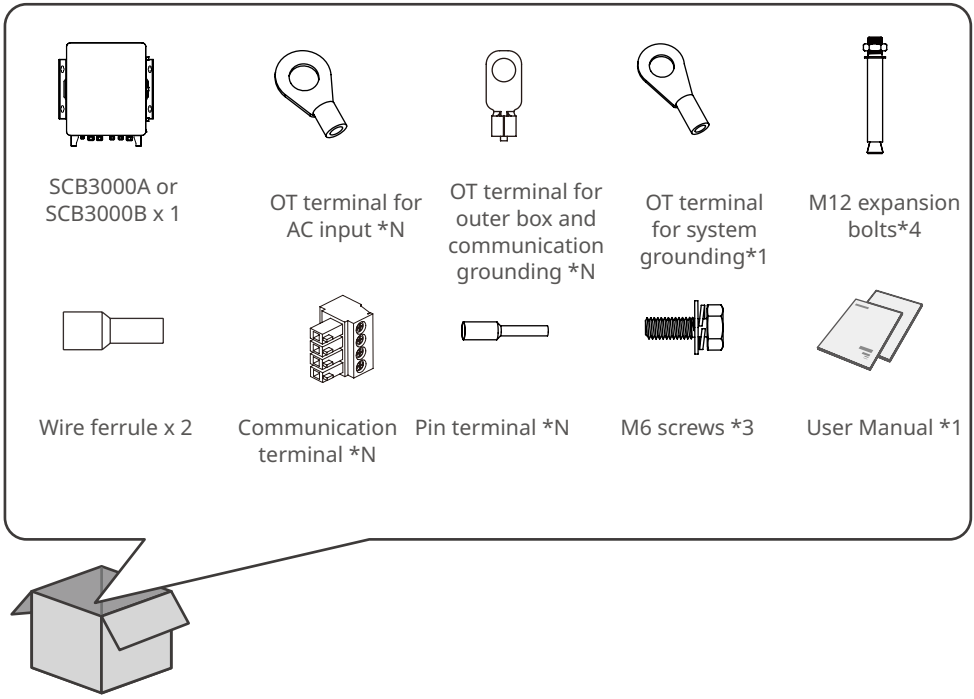
4 Check and Storage

4.1 Check Before Receiving

Check the following items before receiving the product.

1. Check the outer packing box for damage, such as holes, cracks, deformation, and others signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the product model. If the product model is not what you requested, do not unpack the product and contact the supplier.
3. Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

4.2 Deliverables



Explanation
N refers to: • OT terminal for AC input: SCB3000A *5; SCB3000B *9 • OT terminal for outer box and communication grounding: SCB3000A *2; SCB3000B *3 • Communication terminal: SCB3000A *1; SCB3000B *2 • Pin terminal: SCB3000A *4; SCB3000B *8

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

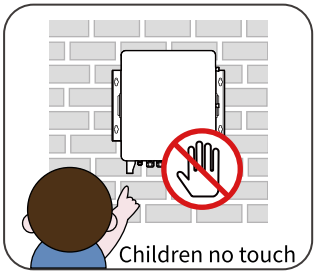
1. Do not unpack the outer package or throw the desiccant away.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
3. The height and direction of the stacking inverters should follow the instructions on the packing box.
4. The equipment must be stacked with caution to prevent them from falling.
5. If the equipment has been long term stored, it should be checked by professionals before being put into use.

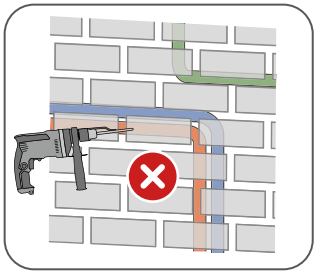
5 Installation

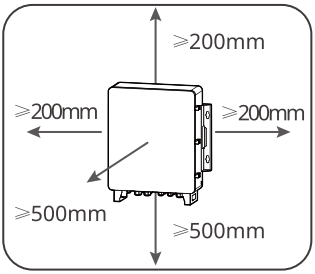
5.1 Installation Requirements

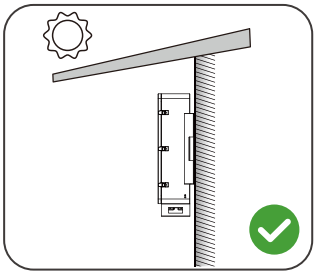
Installation Environment Requirements

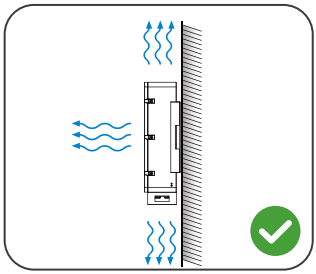
1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. Install the equipment on a surface that is solid enough to bear the equipment weight.
3. Install the equipment in a well-ventilated place to ensure good dissipation. Also, the installation space should be large enough for operations.
4. The equipment with a high ingress protection rating can be installed indoors or outdoors. The temperature and humidity at the installation site should be within the appropriate range.
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
6. Do not install the equipment in a place that is easy to touch, especially within children's reach. High temperature exists when the equipment is working. Do not touch the surface to avoid burning.
7. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
8. Install the equipment away from high magnetic field to avoid electromagnetic interference.

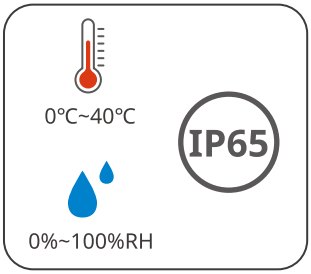


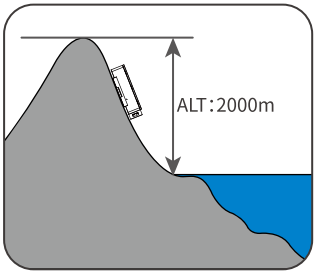










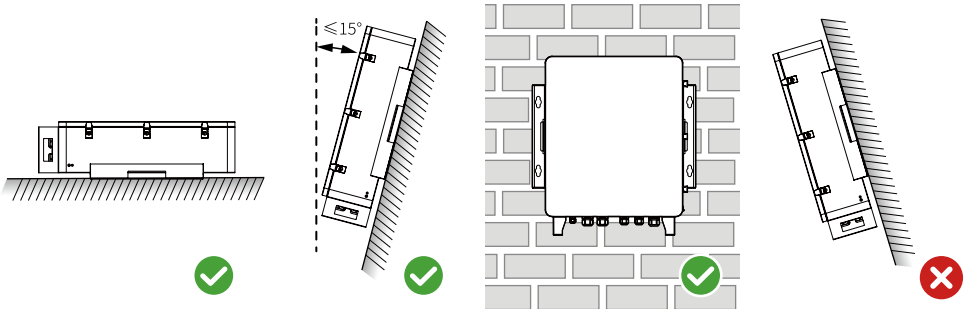


Mounting Support Requirements

1. The mounting support shall be nonflammable and fireproof.
2. Make sure that the support surface is solid enough to bear the product weight load.

Installation Angle Requirements

- Install the equipment vertically or at a maximum back tilt of 15 degrees.
- Do not install the equipment upside down, forward tilt, back forward tilt.



5.2 Installation

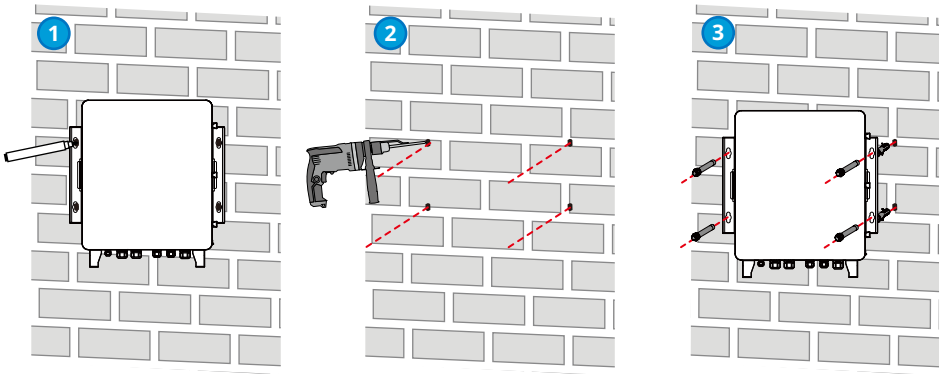
NOTICE

- Avoid the water pipes and cables buried in the wall when drilling holes.
- Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.

Step 1: Put the communication box on the wall horizontally and mark positions for drilling holes.

Step 2: Drill holes to a depth of 75-80mm using the hammer drill. The diameter of the drill bit should be 15mm.

Step 3: Use the expansion bolts to fix the communication box on the wall.



6 Electrical Connection

6.1 Safety Precaution

DANGER

- Ensure the switches of communication box and its upstream are powered off before electrical connection. Do not work with power on. Otherwise, an electric shock may occur.
- All operations, cables and parts specification during the electrical connection shall be in compliance with local laws and regulations.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to the communication box's cable port.

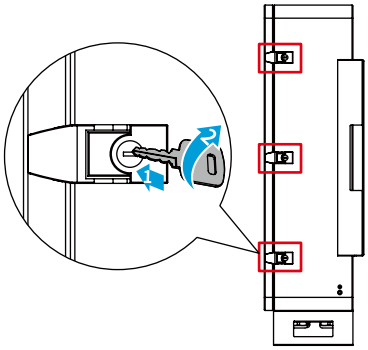
NOTICE

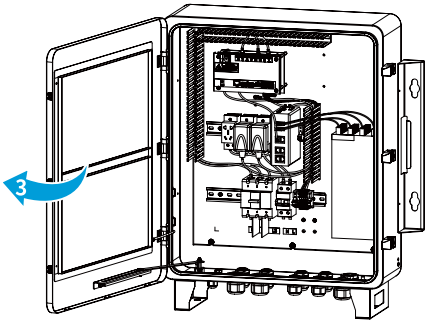
- Wear personal protective equipment like safety shoes, safety gloves and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.

6.2 Open the Box

NOTICE

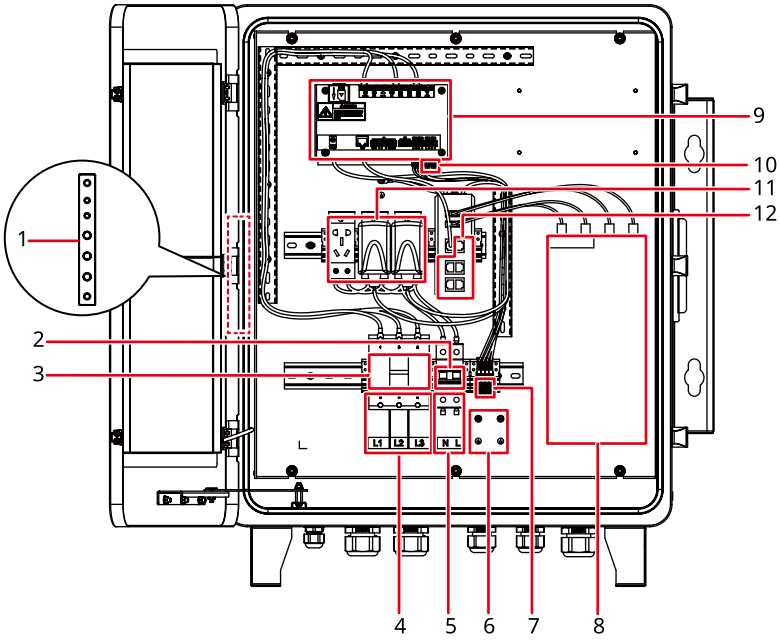
- Contact after-sale service to obtain the key for the box.
- Keep the key after usage and do not lose it.



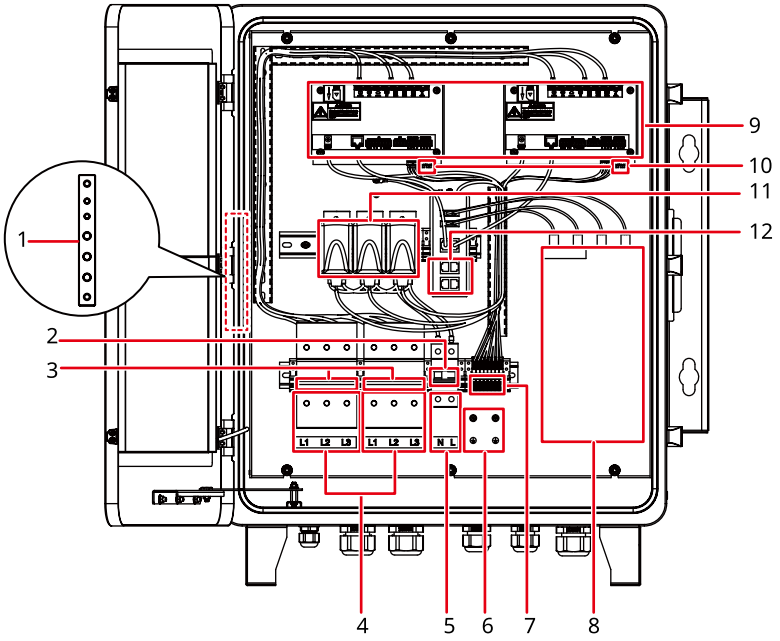


6.3 Internal Parts Introduction

SCB3000A



SCB3000B



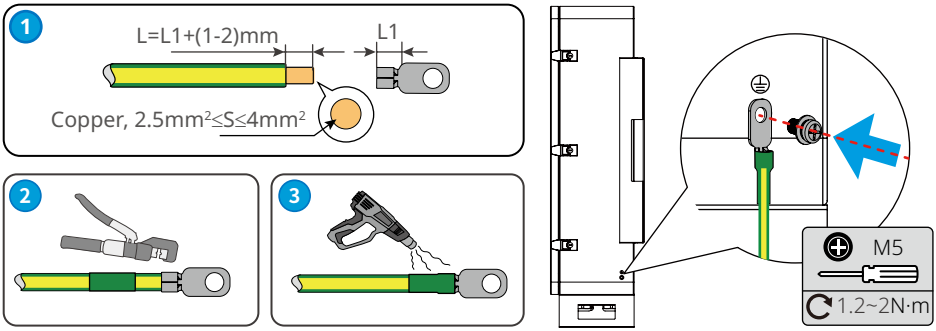
No.	Item	Function
1	Grounded bus-bar	For the communication box grounding, PLC grounding or the AC power cable grounding.
2	Single phase AC input switch	To connect or disconnect the single phase AC input.
3	Three phase AC input switch	To connect or disconnect the three phase AC input.
4	Three phase AC input terminal	To connect Three phase AC input cables for PLC communication. For SCB 3000B: the left Three phase AC connecting terminals are corresponded to the left data logger and the right ones for the right data logger.
5	Single phase input terminal	To connect with Single phase input cables for supplying power to the equipment.
6	RS485 grounding terminal	To connect with RS485 communication grounding cables.
7	RS485 communication terminal	To connect with inverter. For SCB 3000B: the left 4 pins are corresponded to the left data logger; while the right pins are for the right data loggers.
8	Fiber splice tray	To connect with optical fiber devices connected to the network.
9	Data logger	To collect and analyze the PLC and RS485 signals.
10	RS485 communication terminal	To connect with the inverter or a third party device.
11	Power adapter	To supply power to the data logger.
12	Ethernet port and Indicator	To connect with the computer, router and other Internet devices.

6.4 Wiring

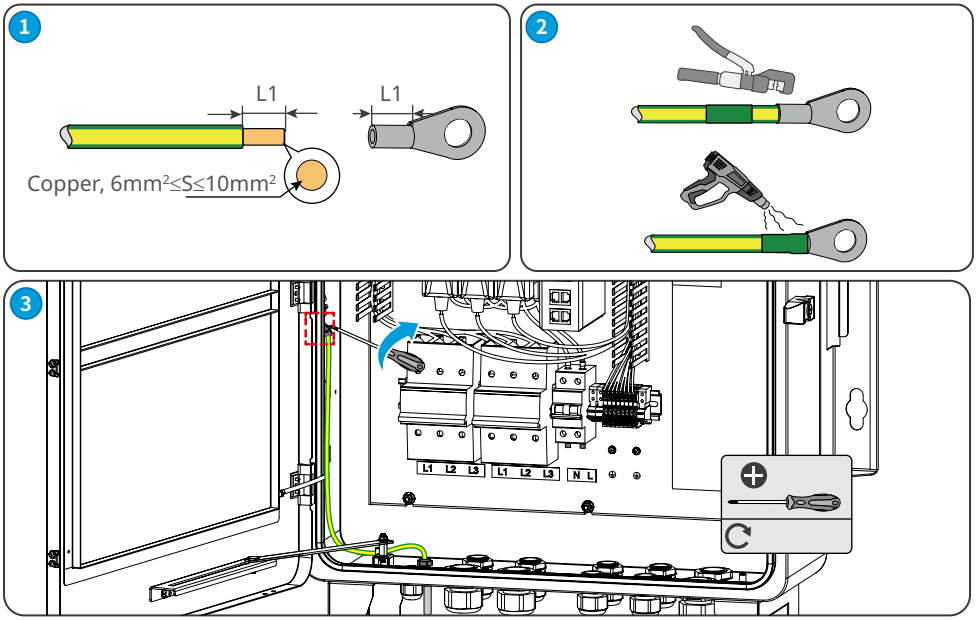
6.4.1 Connecting the Box for Grounding

PE grounding of the communication box shall not replace the groundings of other ports. Ensure each grounding connections are reliable while wiring.

PE connection outside of the box



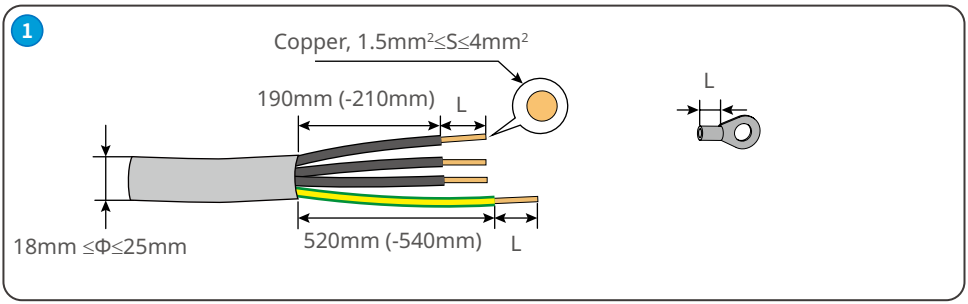
PE connection inside of the box

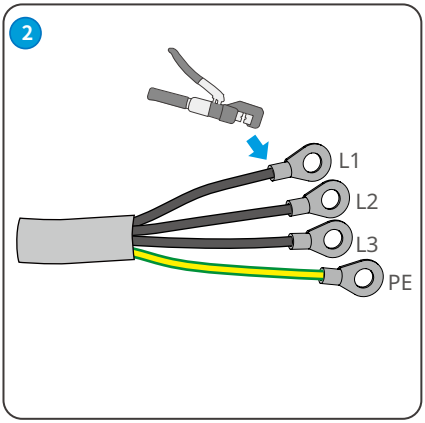


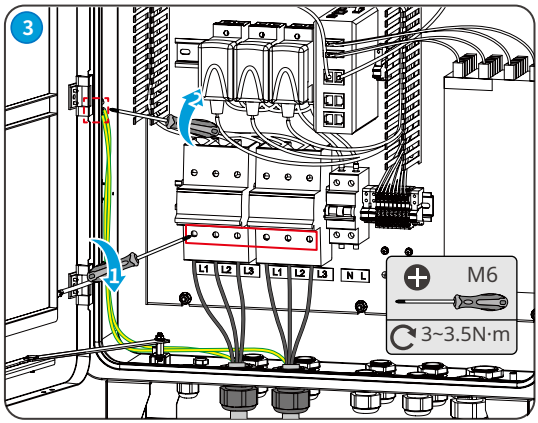
6.4.2 Connecting the Three Phase AC Input Cable

NOTICE

- Ensure the upstream switches of the communication box are disconnected before connecting the three phase AC input cable.
- The voltage range for the three phase AC input cables: AC342V~AC800V; the AC frequency is 50Hz/60Hz.
- For three phase AC input cables, it is recommended to use copper ones.



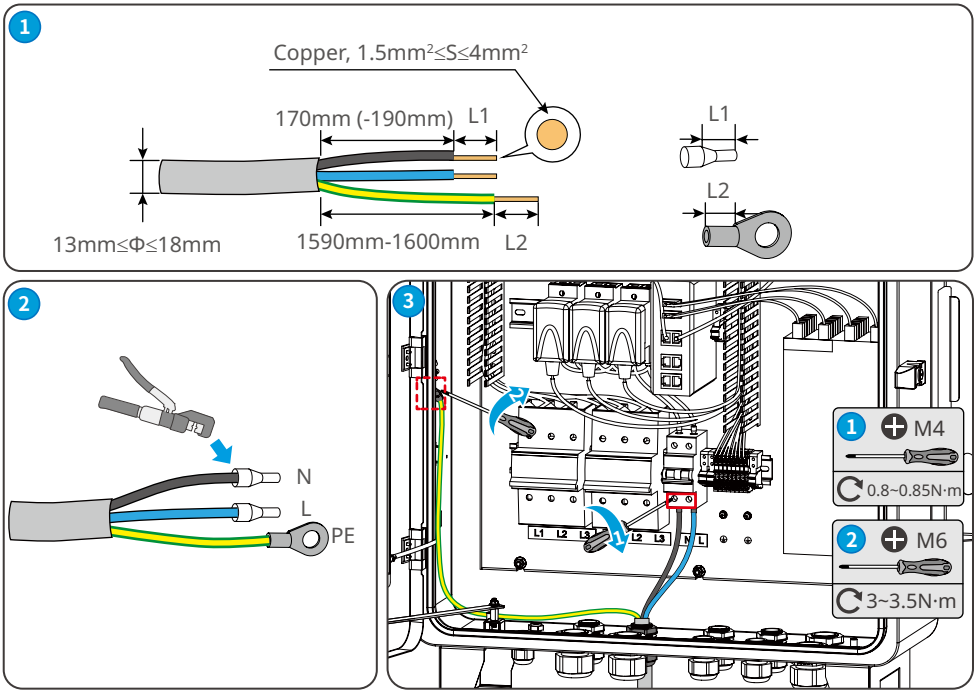




6.4.3 Connecting the Single Phase Input Cable

NOTICE

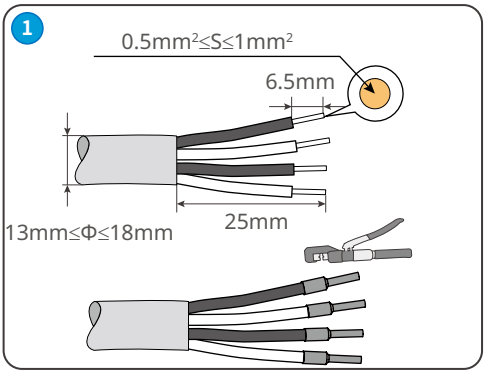
- Ensure the upstream switches of the communication box are disconnected before connecting the single phase AC input cables.
- The voltage range for the single phase AC input cables: AC100V~AC240V; the AC frequency is 50Hz/60Hz.
- For single phase AC input cables, it is recommended to use copper ones.

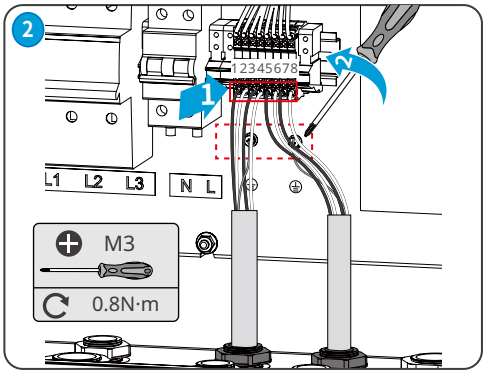


6.4.4 Connecting the RS485 Communication Cable (with the inverter)

RS485 here refers to the RS485 port communicating with the inverter. Users can choose one specific RS485 port to communicate with the inverter upon their demanding.
For RS485 communication cables, it is recommended to use Shielded Twisted Pair(STP).
Use OT terminals to crimp the shielding layer of the STP. Insert the cable into the communication cable grounding port.

No.	Type	Port	No.	Type	Port
1	SCB3000A& SCB3000B	RS485 A	5	SCB3000B	RS485 A
2		RS485 B	6		RS485 B
3		RS485 A	7		RS485 A
4		RS485 B	8		RS485 B

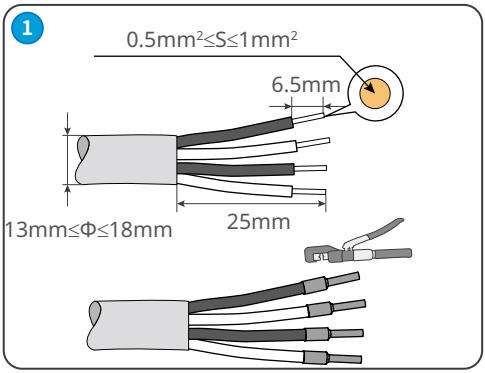


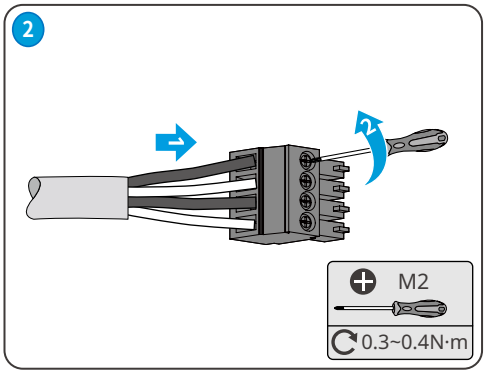


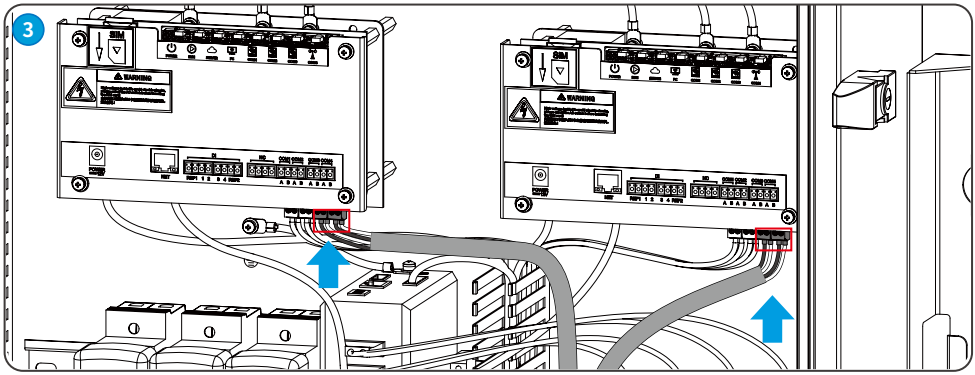
6.4.5 Connecting RS485 Communication Cables (with the inverter or a third party device)

For RS485 communication cables, it is recommended to use Shielded Twisted Pair(STP).

Silk Screen	Type	Port
COM3	RS485 A	Connect with the inverter.
	RS485 B	
COM4	RS485 A	Connect with a third party device like the environmental monitor and so on. Contact after-sale service for this specific function Contact after-sale service to connect the environmental monitor.
	RS485 B	

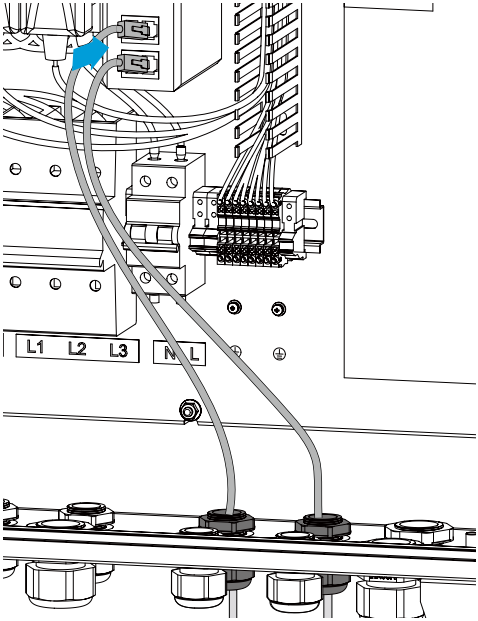


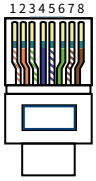




6.4.6 Connecting the Ethernet Cable

The communication box can connect with Router, computer, switch and other devices via the Ethernet cables.
For Ethernet cables, it is recommended to use Cat5e or above.





No.	Color
1	Orange white
2	Orange
3	Green white
4	Blue
5	Blue white
6	Green
7	Brown white
8	Brown

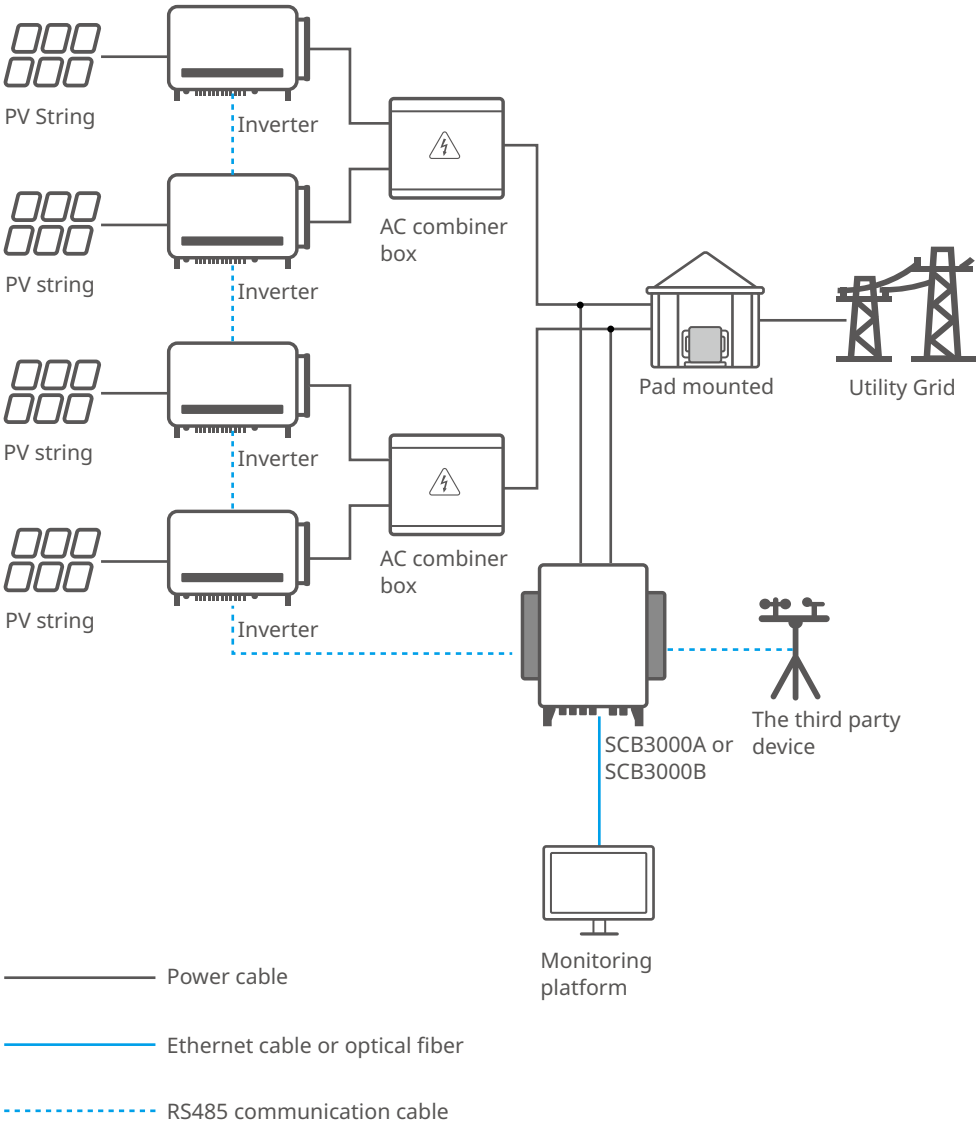
6.4.7 Connecting the Optical Fiber

The communication box can connect with optical fiber equipments via the optical fiber for data transmitting. The optical fiber shall be connected by the professionals.

6.5 Network Diagram

NOTICE

- The maximum quantity of inverters connected with the communication box single PLC cable shall not exceed 60 pieces.
- For the paralleling quantity connected with the inverter, please refer to the specific inverter's statement.
- Contact after-sale service for this specific function Contact after-sale service to connect the environmental monitor.



7 Equipment Commissioning

7.1 Check Before Power ON

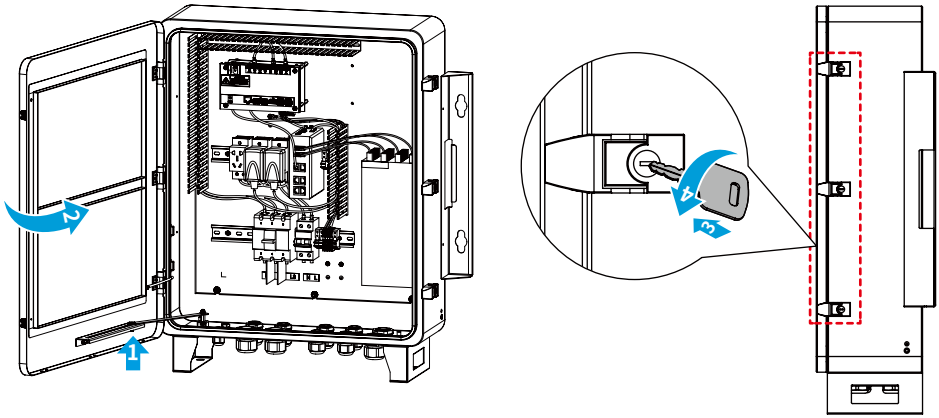
No.	Check Item
1	The communication box is firmly installed at a clean place that is well-ventilated and easy-to operate.
2	The PE, AC input&AC output cables, RS485 communication cables, PLC communication and the optical fiber are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	Unused ports and terminals are sealed.

7.2 Power On

Step 1 Turn off the power supply switch of the communication box.
Step 2 Turn off the three phase AC input switch.

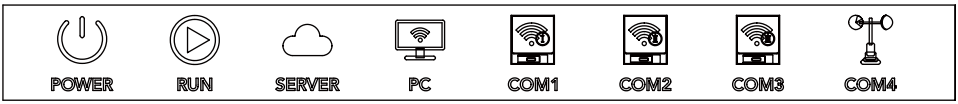
7.3 Close the Box

NOTICE
Close the door of the box the moment finishing power on, to avoid wrong operations or electric shock danger.



8 System Commissioning

8.1 Indicators



Port	Status	Description
POWER	ON	The power supply is normal.
	OFF	The power supply is abnormal.
RUN	Blinking (1 second ON, 1second OFF)	The device is working normally.
	ON or OFF	The device cannot work normally.
SERVER	ON	The network is normal.
	Blinking (1 second ON, 1 second OFF)	The connection to the router is normal, but the connection to the server fails.
	OFF	The network is abnormal.
PC	ON	The device is connected to the computer and the ProMate app.
	OFF	The device is not connected to the computer or the ProMate app.
COM1	ON	The actual number of inverters collected by the communication box is equal to that set by the ProMate app.
	Blinking (1 second ON, 1second OFF)	The actual number of inverters collected by the communication box is smaller than that set by the ProMate app.
	Blinking (1 second ON, 3 seconds OFF)	The number of inverters to be collected was not set by the ProMate app.
	OFF	The communication box cannot collect any inverter data.
COM2	ON	The actual number of inverters collected by the communication box is equal to that set by the ProMate app.
	Blinking (1 second ON, 1 second OFF)	The actual number of inverters collected by the communication box is smaller than that set by the ProMate app.
	Blinking (1 second ON, 3 seconds OFF)	The number of inverters to be collected was not set by the ProMate app.
	OFF	The communication box cannot collect any inverter data.

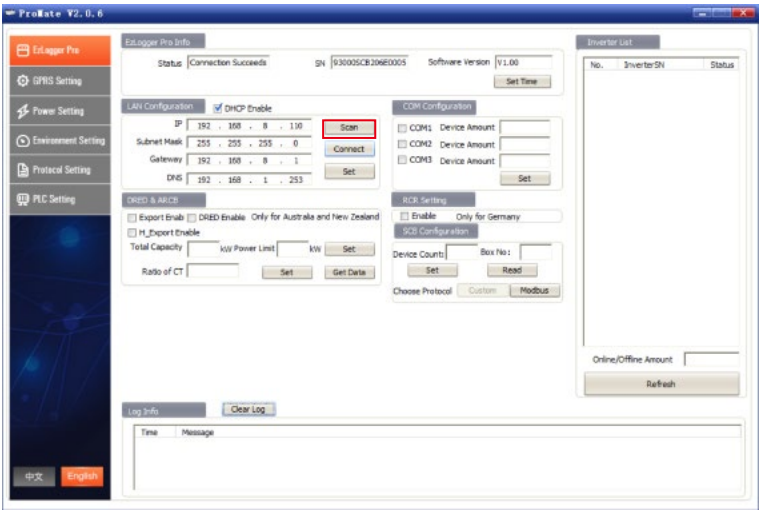
Port	Status	Description
COM3	ON	The actual number of inverters collected by the communication box is equal to that set by the ProMate app.
	Blinking (1 second ON, 1 seconds OFF)	The actual number of inverters collected by the communication box is smaller than that set by the ProMate app.
	Blinking (1 second ON, 3 seconds OFF)	The communication box cannot collect any inverter data.
	OFF	The inverter data is not collected.
COM4	ON	Communication with third-party devices like environmental monitoring equipment is normal.
	OFF	Not connected to third-party devices like environmental monitoring equipment.

8.2 Setting the Communication Box Parameters via ProMate APP

ProMate software is designed by GoodWe for functional configuration of the communication box, by which we can realize modification to the IP address of communication box, quantity setting of connected inverters via ports, configuration and field debugging for PLC communication and RS485 communication, etc.
Please download the ProMate app at https://en.goodwe.com/.
Use a network cable to connect the computer and the communication box.

8.2.1 Connecting with PC Software

When Users configure the communication box via ProMate software, there are two ways for the network connection with the PC: through Dynamic IP (DHCP) or Static IP.
Deploy Static IP addresses when use a computer to configure the communication box directly.
Deploy Dynamic IP addresses for long-term communication for the communication box.
1. Communication box dynamic IP address connection:
The default value for the communication box is Dynamic IP mode. The communication box can be connected to the Internet in a plug-and-play way simply through the connection of the ETH port of the communication box to the LAN port of the router with an Internet cable. To configure the communication box, connect the computer to the router with a network cable. Open the ProMate software, click **Scan** in the ProMate software, and the Internet connection is successful. Disconnect the computer from the router after the configuration is complete.

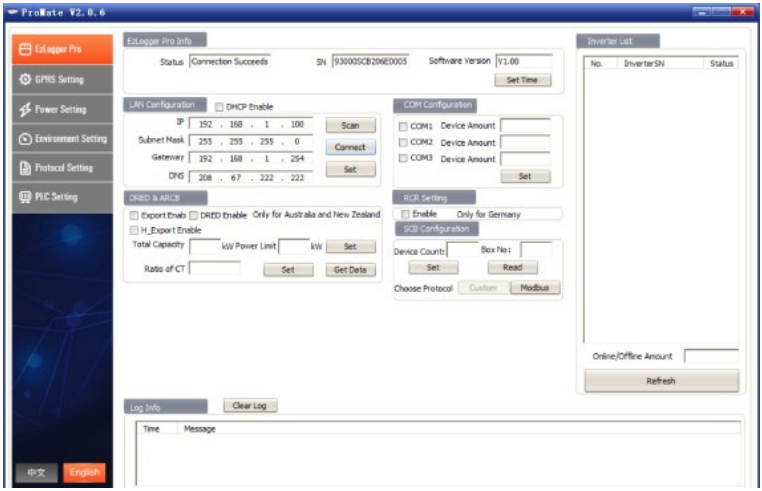


NOTICE

If the communication box is set as Static IP mode, it is necessary to switch to Dynamic IP mode before configurations under the Dynamic IP connection mode. Press **RELOAD** button for about 4 seconds to reset and restart the communication box, and the LEDs blink one after another from left to right. After the restart, the communication box will be switched to Dynamic IP mode.

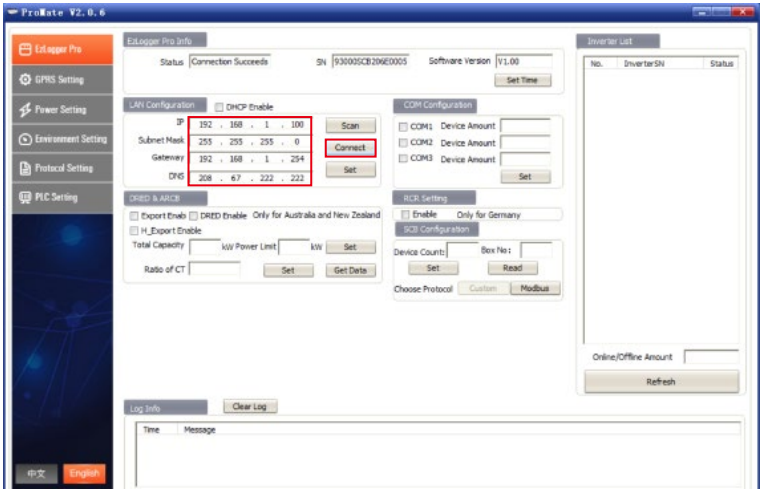
2. Communication box static IP address connection:
Note: If the communication box is set as Dynamic IP mode, it is necessary to switch to Static IP mode first. Press the RELOAD button for about 10 seconds to reset and restart the communication box, and the LEDs blink one after another from left to right. After the restart, the communication box will be switched to Static IP mode. (The default IP address for the Ezlogger of SCB3000A is 192.168.1.200. While the default IP addresses are respectively 192.168.1.200 for Ezlogger A of SCB3000B and 192.168.1.100 for Ezlogger B).
When the communication box is in Static IP mode, the computer it is connected with shall be set to Static IP mode as well. The IP addresses of the computer and the communication box must be set in the same network segment while not the same one. Please configure the IP address on the computer by yourself.

Click the **Connect** button in ProMate. After the connection is displayed successfully, the ProMate will be successfully connected to the communication box.



NOTICE

If there is only one communication box on the site of the customer and the data is uploaded to GoodWe servers, there is no need to configure the communication box number and location via ProMate software. Connect the ProMate software, click and get the inverter list to see whether all inverters are on line. If there are multiple communication boxes on the site, refer to 8.2.2 for the setting.



8.2.2 Parameter Configuration (For PLC communication on the inverter)

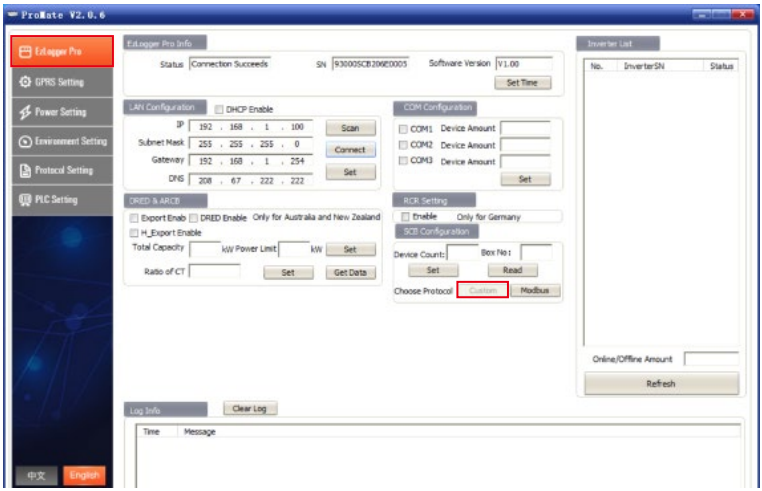
When the ProMate software is successfully connected, start parameter settings for the communication box and the inverter.

(a) Protocol Selection

Click the **Ezlogger Pro** button to select the protocol in the following popping out window.

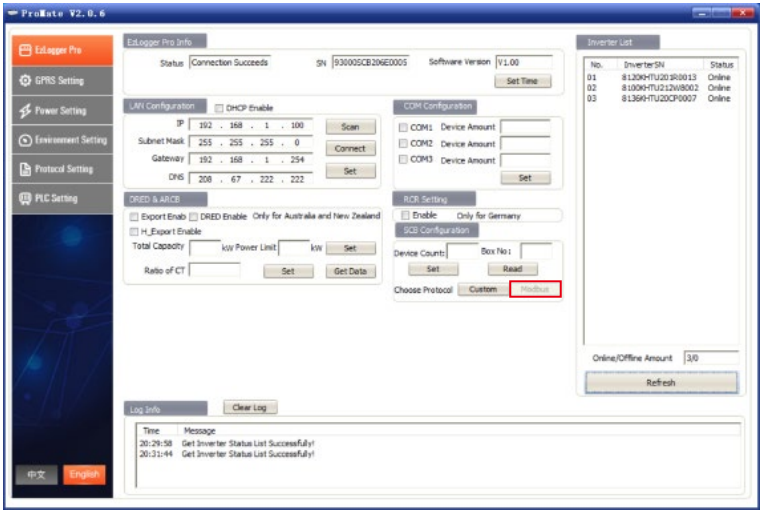
The **Custom** protocol is used for parameter configuration and the **Modbus** protocol is used for normal communication.

The default value for the communication box is the Custom protocol. The following protocol in gray is the current using one. The communication box restarts automatically after changing the protocols. Wait about 1 minute to operate the ProMate software.

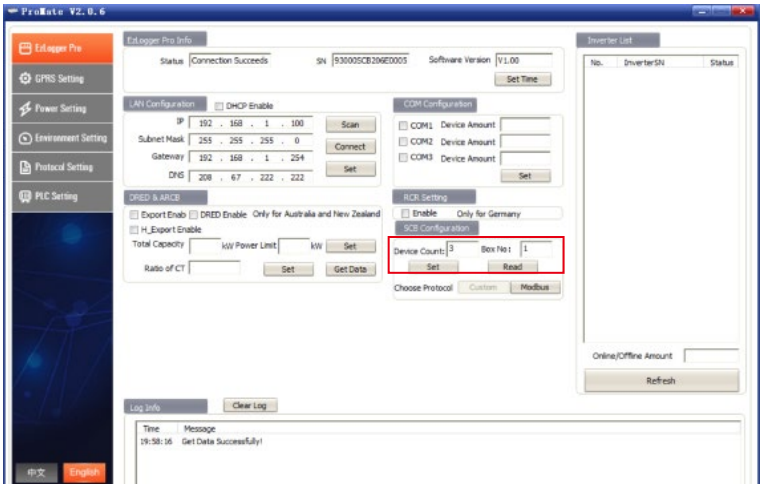


NOTICE

Select **Custom** protocol first to configure the communication box number and the inverter address. After all parameters are configured, switch to **Modbus** protocol for communication.



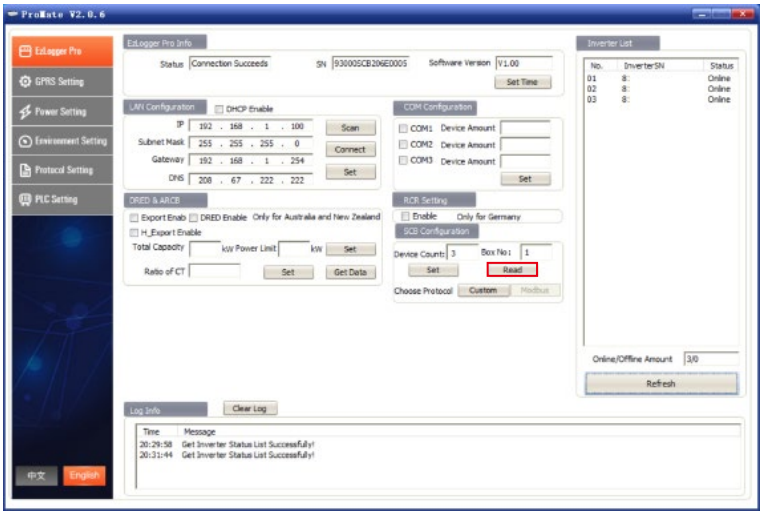
(b) **Device Count** and **Box No** Setting
Please fill in Arabic numbers for **Device Count** and **Box No**.
Fill in the actual quantity of inverters connected to the current communication box in **Device Count**.
Box No is used to distinguish the multiple communication boxes on site (i.e. multiple communication boxes in the field should be corresponded to different **Box No**)
As in below figure: the quantity of inverters connected to the communication box on site is 3, then fill 3 into **Device Count**.



NOTICE

Device Count and **Box No** must be filled in, otherwise the device cannot work properly.

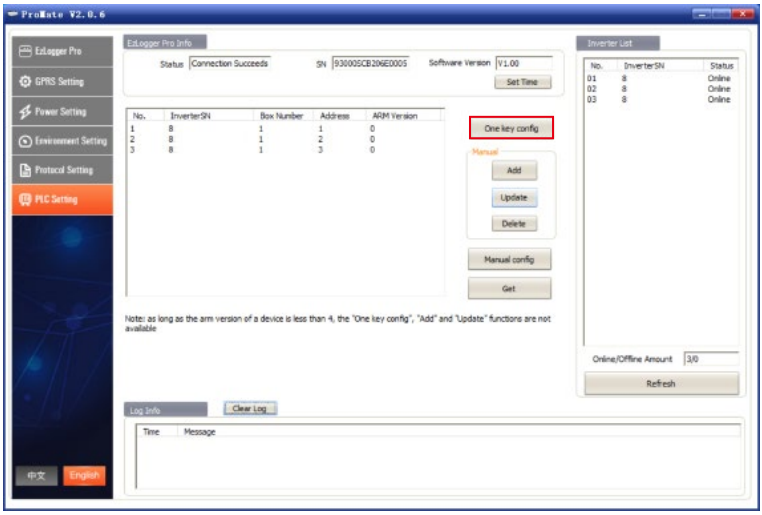
Below figure: after the **Device Count** and **Box No**. are set, click the **Read** button to check whether the settings are successful.



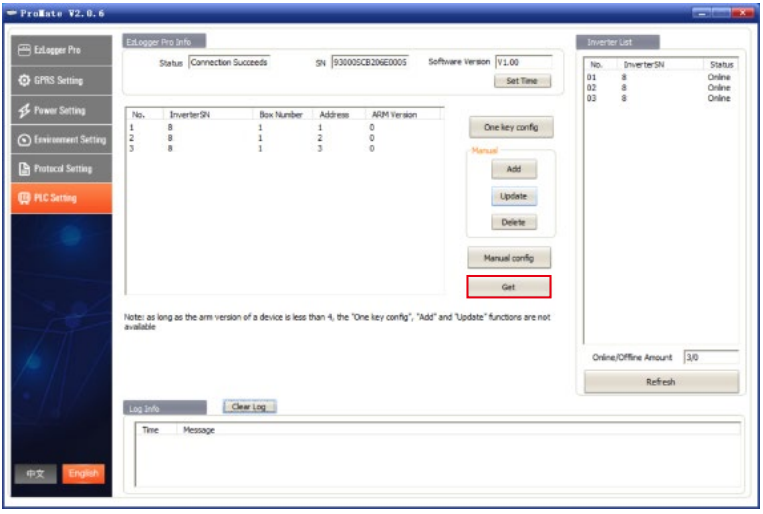
(c) Inverter Address Configuration

The communication box and the inverter shall be configured with Modbus address. Users can choose to configure the inverter address by one key or manually.

Below figure: click **One key config** button, and the software randomly assigns the inverter address.

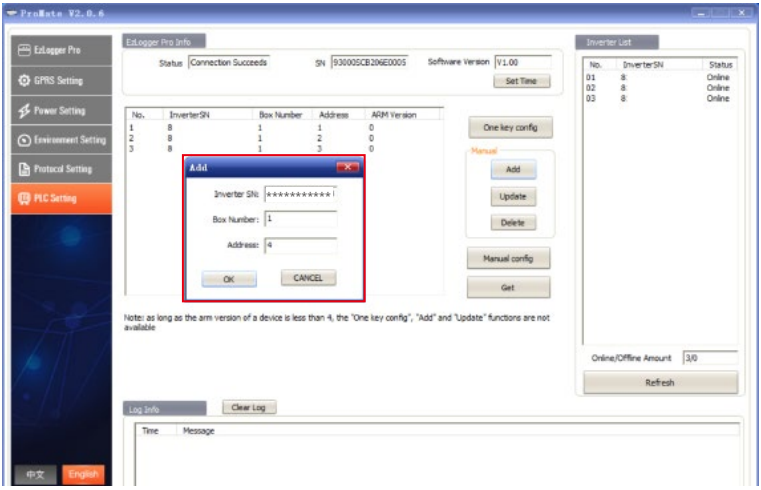


Below figure: click the **Get** button to check whether the configuration is successful.

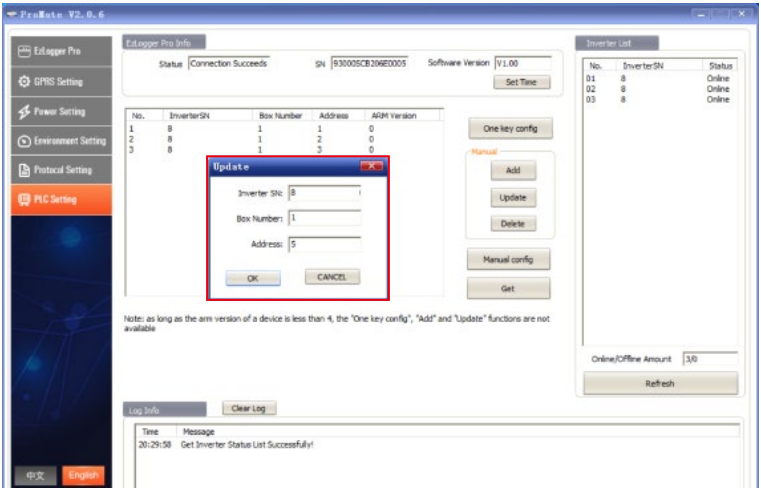


(D) Inverter Address Configuration Manually

Below figure: choose to add **Modbus** address manually if there is special requirements about the inverter's address on site. Click **Add**, the following box will pop up. Then enter **Inverter SN**, **Box Number** and the corresponding Modbus **Address**. Select **OK**, and click **Manual config**.



Below figure: if you need to modify the Modbus address after adding it, you can select the Inverter serial number for modification. Click **Update** button, and a dialog box will pop up. Enter the parameters for modification, click **OK**, and then click **Manual config**.

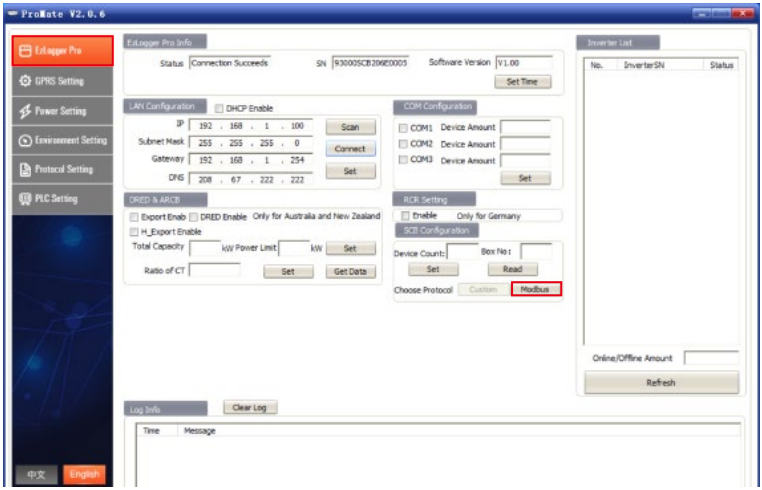


NOTICE

After selecting **Add**, **Update**, or **Delete** under Manual, you must click the **Manual config** button and the settings becomes effective.

(E) Protocols Switching

Click **Get** via the Inverter List on the right, and the on line inverters connected to the communication box can be displayed. Confirm that all inverters are on line with Modbus address configured. Then select Modbus in Choose Protocol when back to **EzLogger Pro** interface.

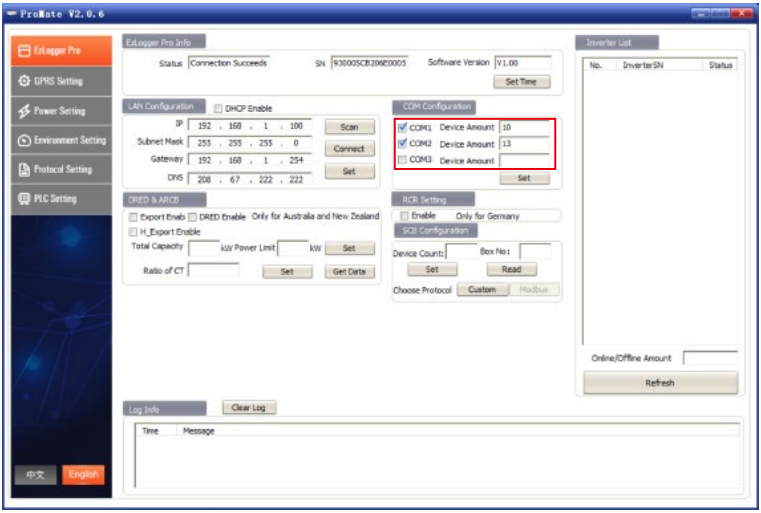


NOTICE

1. Please confirm whether the settings of **Box No** on the inverter and the communication box are the same. If not, the communication box and the inverter are not able to communicate after choosing the **Modbus** protocol.
2. Wait for about 1 minute to switch protocols. After the switch is successful, wait for all inverters to become online, then the communication box and the inverter can have normal communications.

8.2.3 RS485 Port Configuration

If the customer needs the three RS485 ports **COM1**, **COM2** and **COM3** connected to the inverter, the number of inverters can be preset by port configuration. Suppose that **COM1** port connecting 10 inverters and **COM2** port connecting 13 pieces, then click **COM1**, **COM2** respectively and enter 10, 13. After that, click **Set** to finish the configuration.



8.3 Optical Fiber Switch Configuration Instructions

For optical fiber switch configuration, refer to the relative manuals.

9 Maintenance

9.1 Local Upgrading

Put the bin file for upgrading under the root directory of U disk (the U disk shall be with 2.0 interface and FAT32 in format). Insert the U disk into USB port of the data logger. Degenerate the communication box and then power on it again, and the program will upgrade automatically.

NOTICE

Name the bin file for upgrading as **SCB3000_new.bin**. The bin file will be sent to the customer in E-mail. The customer shall put the file under the root directory of U disk. Then check whether the file name is “SCB3000_new.bin”. The program is upgrading if all the 8 indicators are lighted. The upgrading is successful when all indicators return to normal. The power supply shall not be disconnected during the upgrading.

9.2 Power Off

⚠ DANGER

Power off the communication box before maintain it. Otherwise it may cause damages to the communication box or electric shock.

Step 1 Disconnect the switch for the communication box’s power supply.
Step 2 Disconnect the three phase AC input switch.

9.3 Maintenance

Ensure that there is no strong electromagnetic interference device around the communication box.
Ensure that there is no heating source around the communication box.
Check whether the wiring of the communication box is loosen regularly. Ensure that the cables are firmly connected.

9.4 Troubleshooting

No.	Fault	Cause	Troubleshooting
1	The system is not able to power on.	There is no power supply to the socket.	Check whether LN power input is normal.
2		The adapter does not been connected well on the AC input side.	Check the adapter and ensure it is fully inserted into the socket on the AC input side.
3		The adapter does not been connected well on the AC input side.	Check the adapter and it is inserted into the Power port on the DC output side.
4		The adapter is fault.	Replace a new adapter.
5		The communication box has system fault.	Contact with the supplier or GoodWe after-sale service.
6	It is unable to obtain the inverter on the ProMate software.	The three phase AC power cable does not being connected.	Check whether the three phase AC power cable is connected. If not, re-connect it.
7		The Modbus address of the communication box does not being set.	Set the Modbus address according to the actual connected inverter.
8		The three phase switch does not being closed.	Check whether the three phase switch inside of the communication box is connected.
9		The communication board of the PLC is faulty.	Contact with the supplier or GoodWe after-sale service.

NOTICE

The communication box is maintained as a whole part. If there is faulty happening inside of it, contact GoodWe after-sale service.

10 Technical Parameters

Model	SCB3000A	SCB3000B
Communication		
Max. Inverters Supported	60	120
RS485 interface	4	8
Ethernet	1*RJ45, 10/100 Mbps	2*RJ45, 10/100 Mbps
Number of PLC	1	2
Input Voltage Range of PLC (V)	800	
Configuration		
Datalogger	Ezlogger Pro*1	Ezlogger Pro*2
Fibre Channel Switch	2 optical ports, 6 electrical ports	
Fiber Termination Box	4-input, 24-ouput, SC single-mode	
Power Supply	100–277Vac, 50/60 Hz	
Power Consumption (W)	≤18	≤30
Mechanical		
Dimensions (W×H×D mm)	724*780*229	
Weight (kg)	25.5	
Installation Method	Wall mounting, bracket mounting, pole mounting	
Environment		
Operating Temperature Range (℃)	-30 ~ 60°C	
Storage Temperature Range(℃)	-40 ~ 70°C	
Relative Humidity	0-100% (non-condensing)	
Max. Operating Altitude (m)	2000	
Ingress Protection Rating	IP65	

GoodWe Website

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