

SUN2000-(3KTL-10KTL)-M0 Quick Guide

Issue: 06
Part Number: 31509649
Date: 2019-08-30

HUAWEI TECHNOLOGIES CO., LTD.

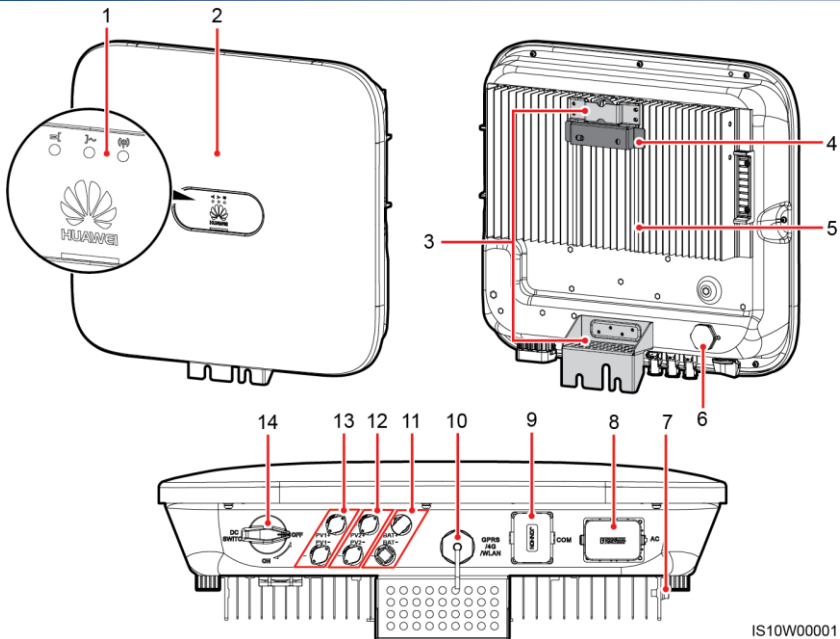


NOTICE



1. The information in this document is subject to change due to version upgrades or other reasons. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied. You can download this document by scanning the QR code.
2. Before installing the device, read the user manual carefully to get familiar with product information and safety precautions.
3. Only qualified and trained electrical technicians are allowed to operate the device. Operation personnel should understand the composition and working principles of the grid-tied PV power system and local regulations.
4. Before installing the device, check that the package contents are intact and complete against the packing list. If any damage is found or any component is missing, contact your dealer.
5. Use insulating tools when installing the device. For personal safety, wear proper personal protective equipment (PPE).
6. Huawei shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.

1 Overview



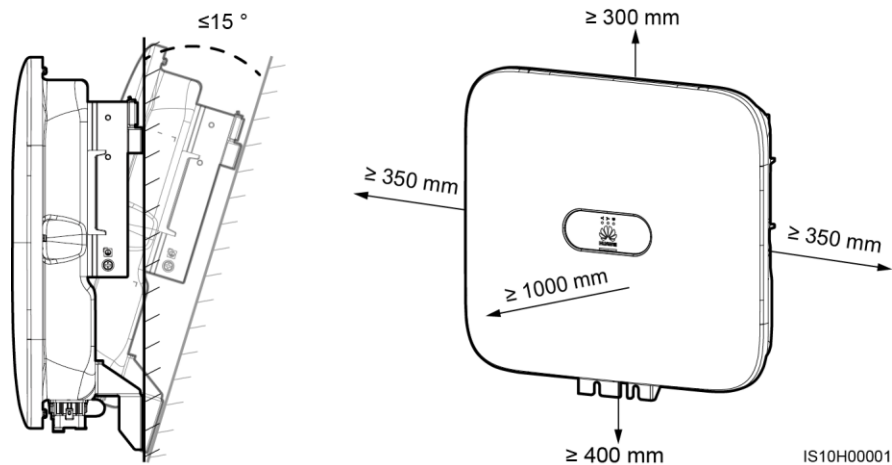
IS10W00001

- | | |
|---|---------------------------------------|
| (1) LED | (2) Front panel |
| (3) Hanging kit | (4) Mounting bracket |
| (5) Heat sink | (6) Ventilation valve |
| (7) Ground screw | (8) AC output port (AC) |
| (9) Communication port (COM) | (10) Smart Dongle port (GPRS/4G/WLAN) |
| (11) Battery terminals (BAT+/BAT-) (reserved) | (12) DC input terminals (PV2+/PV2-) |
| (13) DC input terminals (PV1+/PV1-) | (14) DC switch (DC SWITCH) |

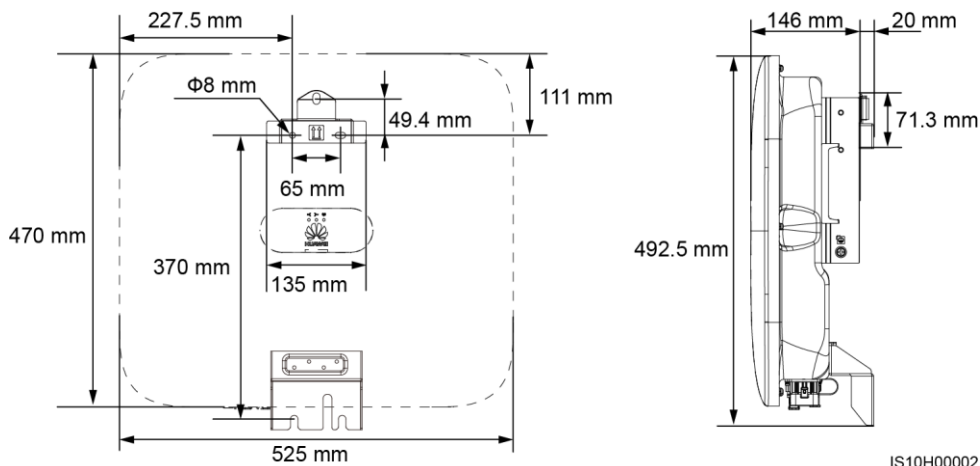
2 Installing the Device

2.1 Installation Requirements

Tilt and Space



Dimensions



2.2 Installing the SUN2000

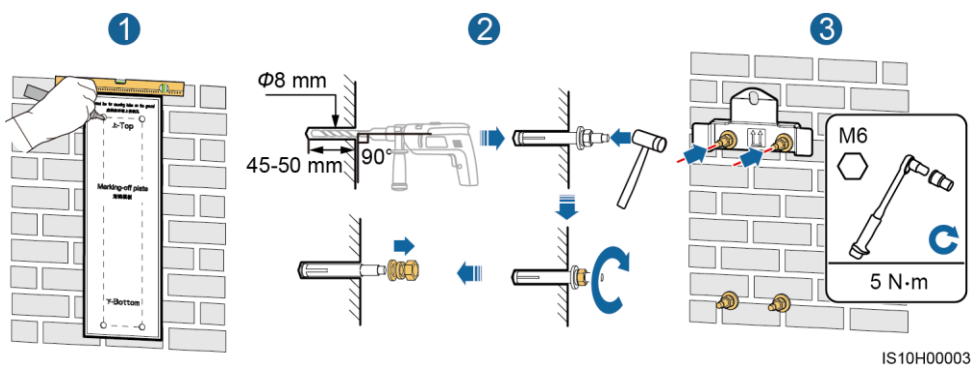
⚠ DANGER

When drilling holes, avoid the water pipes and power cables buried in the wall.

1. Install the mounting bracket.

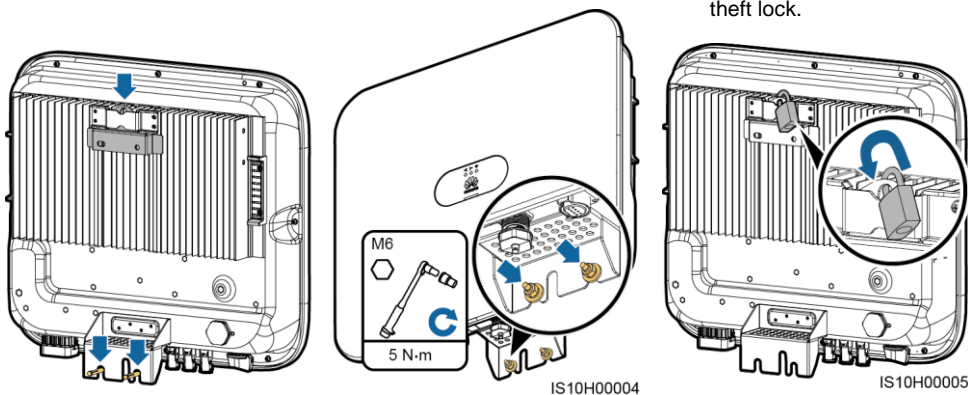
NOTE

- M6x60 expansion bolts are delivered with the SUN2000. If the length and amount of the bolts do not meet installation requirements, prepare M6 stainless steel expansion bolts by yourself.
- The expansion bolts delivered with the inverter are used for solid concrete walls. For other types of walls, prepare bolts by yourself and ensure that the wall meets the load bearing requirements of the inverter.
- Loosen the nuts, flat washers, and spring washers of the two expansion bolts below.



2. Install the SUN2000 on the mounting bracket.

3. (Optional) Install an anti-theft lock.



NOTE

Prepare an anti-theft lock suitable for the lock hole diameter ($\Phi 8$ mm) by yourself. An outdoor waterproof lock is recommended.

3 Electrical Connections

3.1 Preparing for Installation

NOTICE

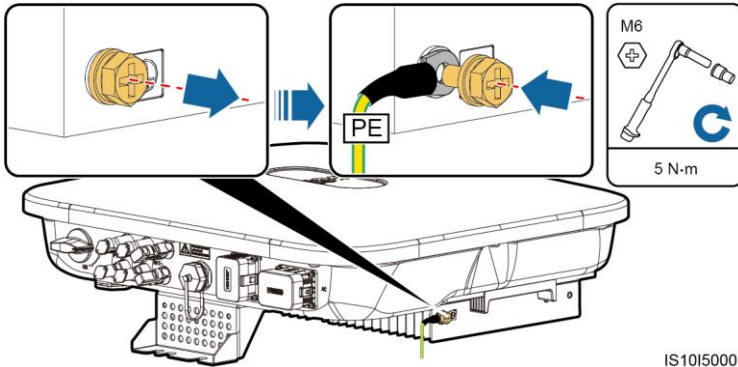
- Connect cables in accordance with the local installation laws and regulations .
- Before connecting cables, ensure that the DC switch on the SUN2000 and all the switches connecting to the SUN2000 are set to OFF position. Otherwise, the high voltage of the SUN2000 may result in electric shocks.

No.	Item	Type	Specifications
1	PE cable	Single-core outdoor copper cable	Conductor cross-sectional area $\geq 4 \text{ mm}^2$
2	AC output power cable	Outdoor copper cable	<ul style="list-style-type: none">• Conductor cross-sectional area: $4\text{--}6 \text{ mm}^2$• Cable outer diameter: $10\text{--}21 \text{ mm}$
3	DC input power cable	Standard outdoor PV cable in the industry (recommended model: PV1-F)	<ul style="list-style-type: none">• Conductor cross-sectional area: $4\text{--}6 \text{ mm}^2$• Cable outer diameter: $4.5\text{--}7.8 \text{ mm}$
4	(Optional) RS485 communications cable (used to cascade inverters or connect to the RS485 signal port on the SmartLogger)	Two-core outdoor shielded twisted pair cable	<ul style="list-style-type: none">• Conductor cross-sectional area: $0.2\text{--}1 \text{ mm}^2$• Cable outer diameter: $4\text{--}11 \text{ mm}$
5	(Optional) RS485 communications cable (used to connect to the RS485 signal port on devices such as the Smart Power Sensor and the energy storage device)	Two-core outdoor shielded twisted pair cable	<ul style="list-style-type: none">• Conductor cross-sectional area: $0.2\text{--}1 \text{ mm}^2$ <p>Note: When devices such as the Smart Power Sensor and the energy storage device are both connected to the inverter, use $0.2\text{--}0.5 \text{ mm}^2$ cords.</p> <ul style="list-style-type: none">• Cable outer diameter: $4\text{--}11 \text{ mm}$
6	(Optional) Grid scheduling signal cable	Five-core outdoor cable	<ul style="list-style-type: none">• Conductor cross-sectional area: $0.2\text{--}1 \text{ mm}^2$• Cable outer diameter: $4\text{--}11 \text{ mm}$

3.2 Installing the PE Cable

⚠ DANGER

Do not connect the neutral wire to the enclosure as a PE cable. Otherwise, electric shocks may occur.



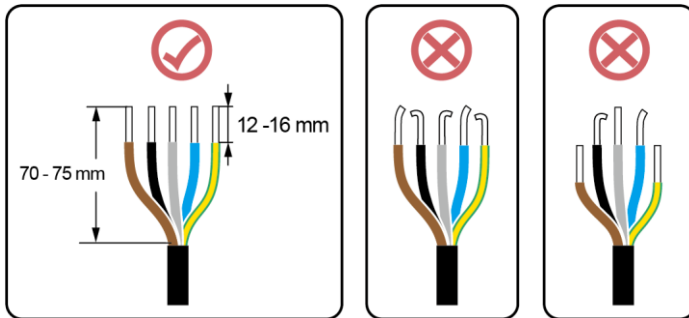
NOTE

- The PE point at the AC output port is used only as a PE equipotential point, not a substitute for the PE point on the enclosure.
- It is recommended that silica gel or paint be used around the ground terminal after the PE cable is connected.

3.3 Installing the AC Output Power Cable

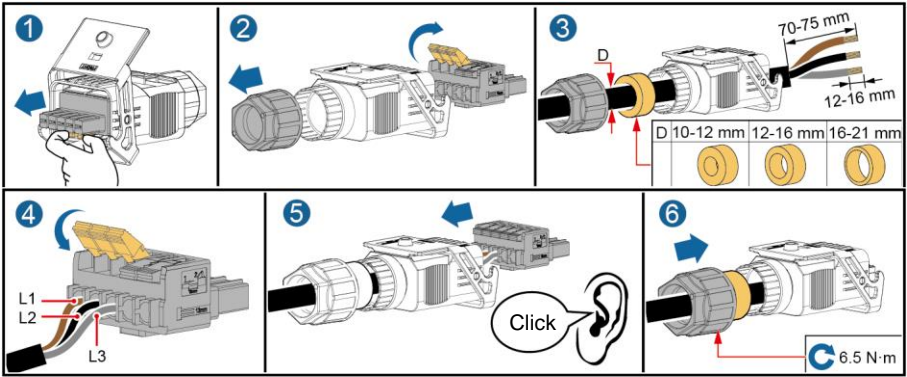
NOTICE

Ensure that the protection layer of the AC output power cable is inside the connector, the core wires are totally inserted into the cable hole, and the cable is connected securely. Failing to do so may cause device malfunction or damage.



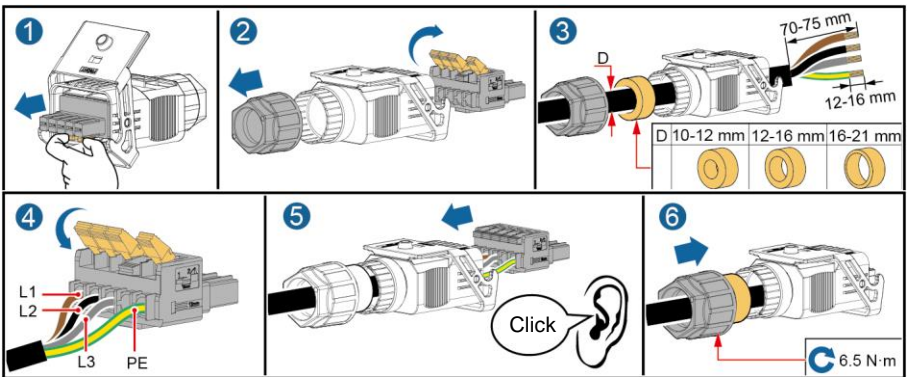
1. Connect the AC output power cable to the AC connector.

Three-core cable (L1, L2, and L3)



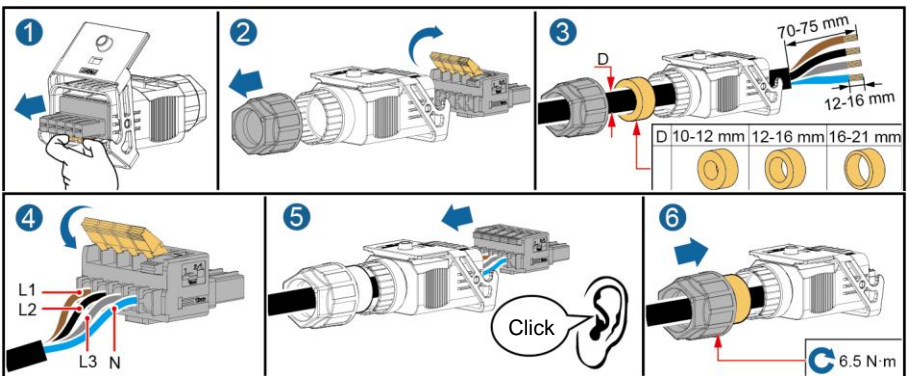
IS10I20004

Four-core cable (L1, L2, L3, and PE)



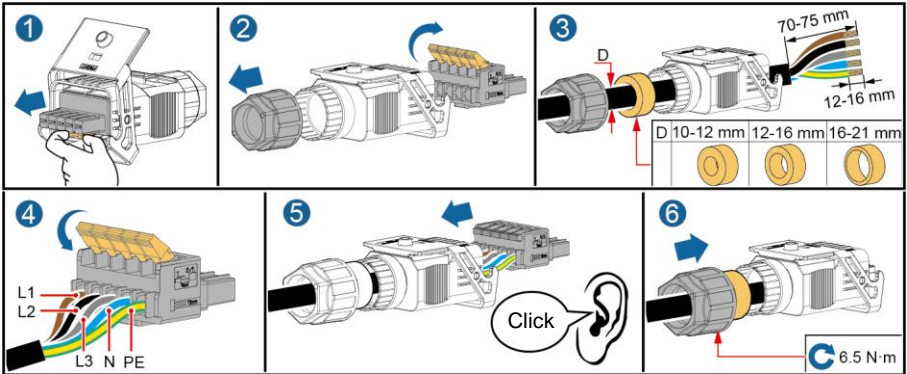
IS10I20003

Four-core cable (L1, L2, L3, and N)



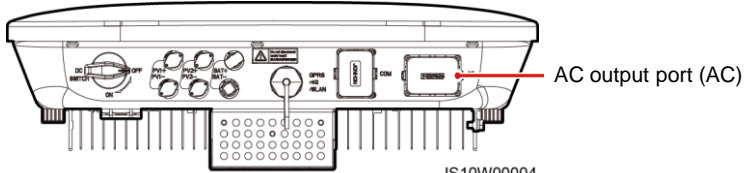
IS10I20002

Five-core cable (L1, L2, L3, N and PE)

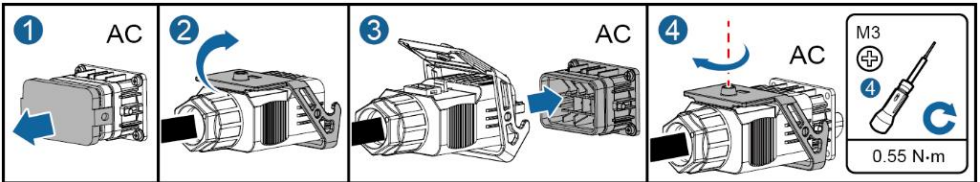


IS10I20001

2. Connect the AC connector to the AC output port.

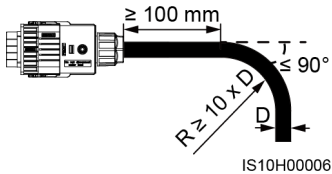


IS10W00004



IS10I20005

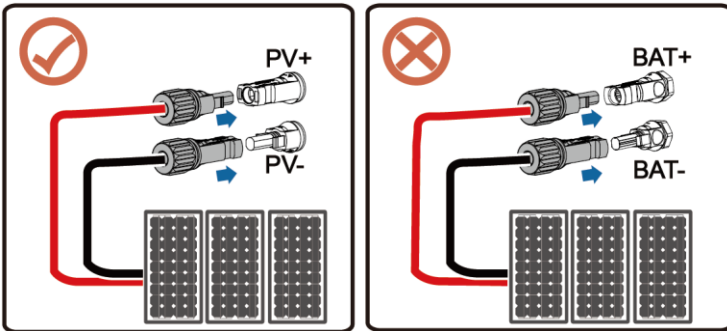
3. Check the route of the AC output power cable.



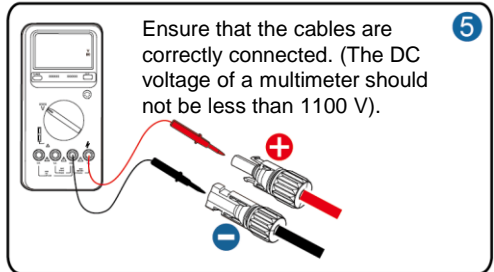
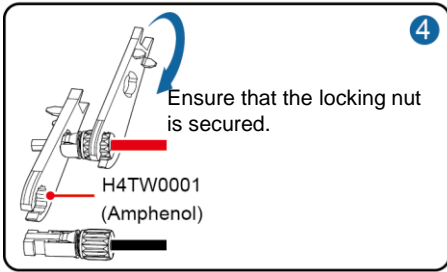
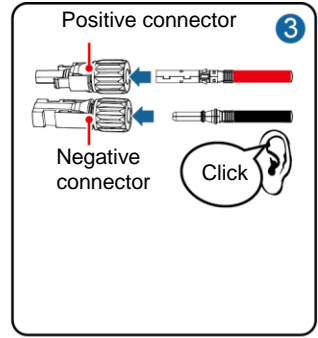
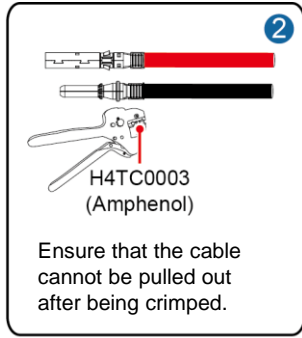
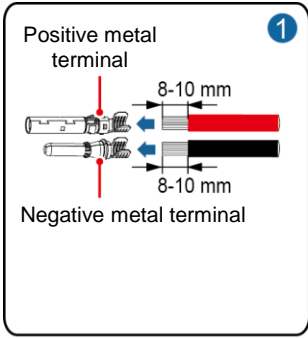
3.4 Installing DC Input Power Cables

NOTICE

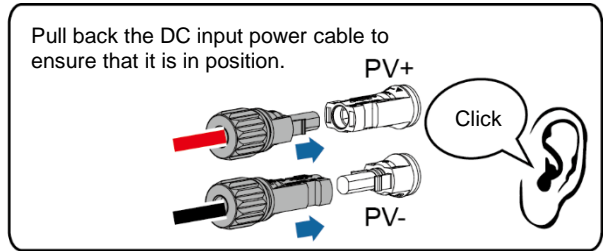
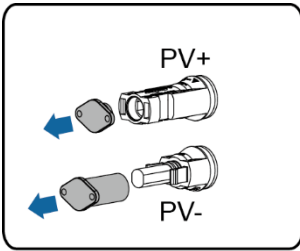
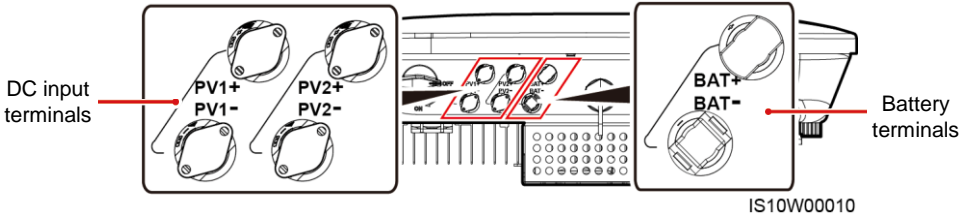
1. Use the Amphenol Helios H4 PV connectors supplied with the SUN2000. If the PV connectors are lost or damaged, purchase the connectors of the same model. The device damage caused by incompatible PV connectors is not covered under any warranty.
2. Crimp the metal stamping forming contacts using crimping tool H4TC0003 (Amphenol, recommended) or H4TC0002 (Amphenol).
3. Ensure that the PV module output is well insulated to ground.
4. The DC input voltage of the SUN2000 shall not exceed 1100 V DC under any circumstance.
5. Before installing the DC input power cable, label the cable polarities to ensure correct cable connections.
6. If the DC input power cable is reversely connected, do not operate the DC switch as well as positive and negative connectors immediately. Failing to do so may cause device damage, which is not covered under any warranty. Wait until the night when solar irradiance declines and the PV string current drops to below 0.5 A. Then set the DC switch to the OFF position, remove the positive and negative connectors, and correct the polarities of the DC input power cable.



IS10H30001



IH05130013

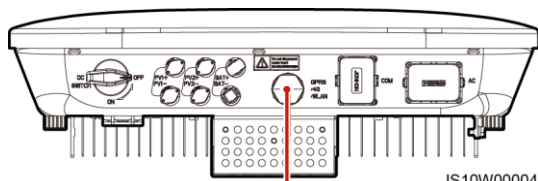


IS10I30002

3.5 (Optional) Installing the Smart Dongle

NOTE

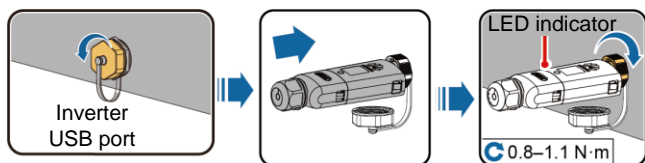
The WLAN-FE Smart Dongle is delivered with the SUN2000.



Smart Dongle port (GPRS/4G/WLAN)

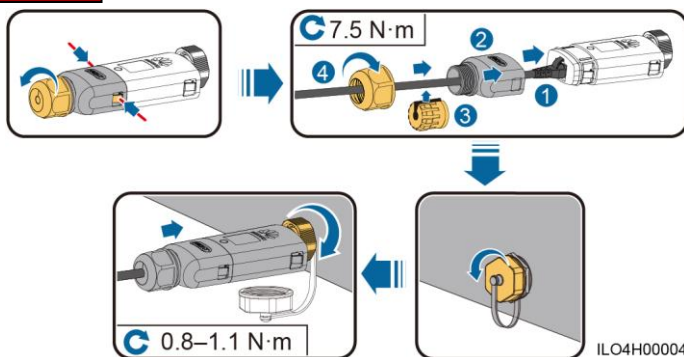
IS10W00004

WLAN Communication



IL04H00005

FE Communication



IL04H00004

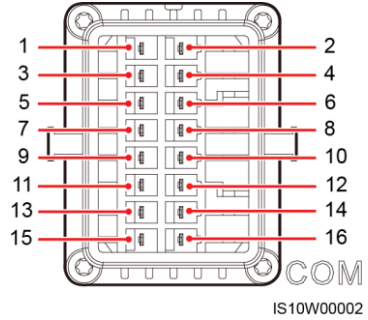
LED		Description
Color	Status	
Yellow (blinking green and red simultaneously)	Steady on	The Dongle is secured and powered on.
Red	Blinking at short intervals (on for 0.2s and then off for 0.2s)	The parameters for connecting to the router are to be set.
Green	Blinking at long intervals (on for 0.5s and then off for 0.5s)	Connecting to the router
Green	Steady on	Successfully connected to the management system.
Green	Blinking at short intervals (on for 0.2s and then off for 0.2s)	The inverter is communicating with the management system through the Dongle.

3.6 (Optional) Installing the Signal Cable

NOTICE

- Not all SUN2000 models are delivered with the signal cable connector.
- When laying out the signal cable, separate it from the power cable and keep it away from strong interference sources to avoid strong communication interference.
- Ensure that the protection layer of the cable is inside the connector, surplus core wires are cut off from the protection layer, the exposed core wire is totally inserted into the cable hole, and that the cable is connected securely.
- If the Smart Dongle is configured, you are advised to install the Smart Dongle before connecting the signal cable.

Communication Port Pin Definition

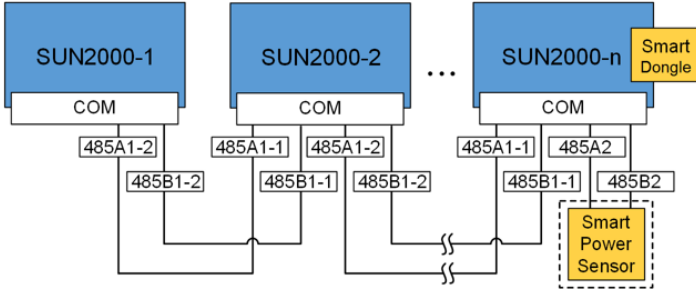


Pin	Definition	Function	Description	Pin	Definition	Function	Description
1	485A1-1	RS485A, RS485 differential signal+	Used to cascade inverters or connect to the RS485 signal port on the SmartLogger	2	485A1-2	RS485A, RS485 differential signal+	Used to cascade inverters or connect to the RS485 signal port on the SmartLogger
3	485B1-1	RS485B, RS485 differential signal-		4	485B1-2	RS485B, RS485 differential signal-	
5	PE	Shielding ground	N/A	6	PE	Shielding ground	N/A
7	485A2	RS485A, RS485 differential signal+	Used to connect to the RS485 signal port on devices such as the Smart Power Sensor and the energy storage device	8	DIN1	Dry contact for grid scheduling	N/A
9	485B2	RS485B, RS485 differential signal-		10	DIN2		
11	EN	Enabling signal	Reserved. Used to connect to the enable signal port on an energy storage device	12	DIN3		
13	GND	GND	N/A	14	DIN4		
15	DIN5	Rapid shutdown	Reserved.	16	GND		

NOTE

- When the RS485 communications cables of devices such as the Smart Power Sensor and the energy storage device are both connected to the inverter, 485A2 (pin 7), 485B2 (pin 9), and PE (pin 5) are shared.
- When the enable signal cable of the energy storage device and the signal cable of the rapid shutdown switch are both connected to the inverter, GND (pin 13) is shared.

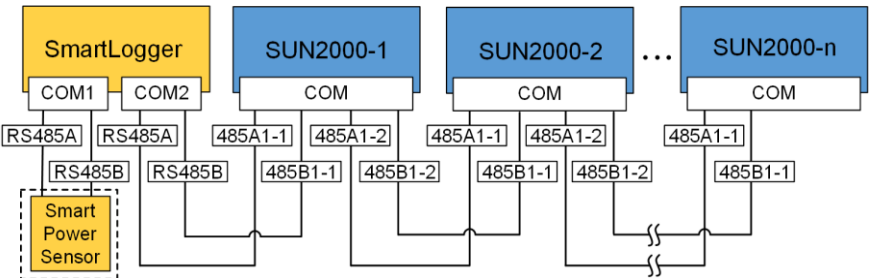
Smart Dongle Networking Scenario



NOTE

- In the Smart Dongle networking scenario, the SmartLogger1000A cannot be connected.
- The Smart Power Sensor is necessary for export limitation. Only the DTSU666-H Smart Power Sensor (provided by Huawei) can be used.

SmartLogger1000A Networking Scenario

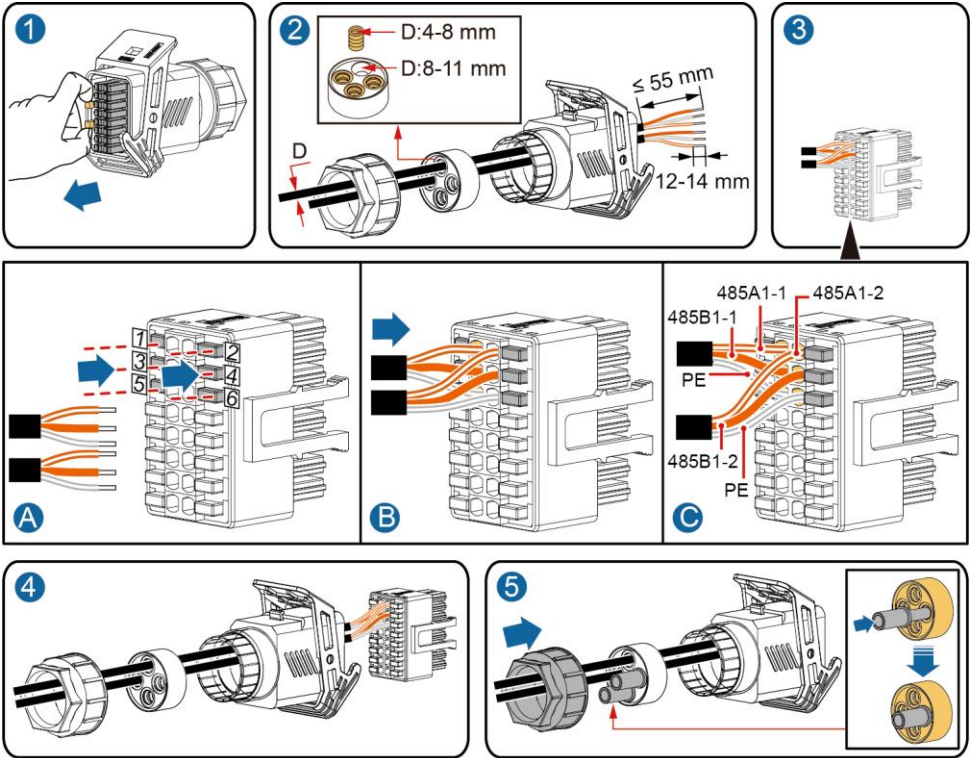


NOTE

- In the SmartLogger1000A networking scenario, the Smart Dongle cannot be connected.
- A maximum of 80 devices can connect to a single SmartLogger1000A, such as inverters, Smart Power sensor, and EMI. You are advised to connect fewer than 30 devices to each RS485 route.
- The Smart Power Sensor is necessary for export limitation. Select the Smart Power Sensor according to the actual project.
- To ensure the system response speed, the Smart Power Sensor is recommended to be connected to a COM port separately from inverter COM port.

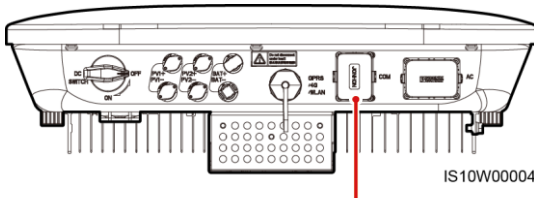
(Optional) Installing the RS485 Communications Cable (Inverter Cascading)

1. Connect the signal cable to the signal cable connector.



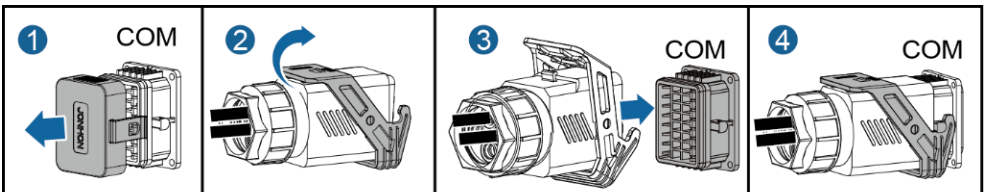
IS10I20006

2. Connect the signal cable connector to the Communication port.



IS10W00004

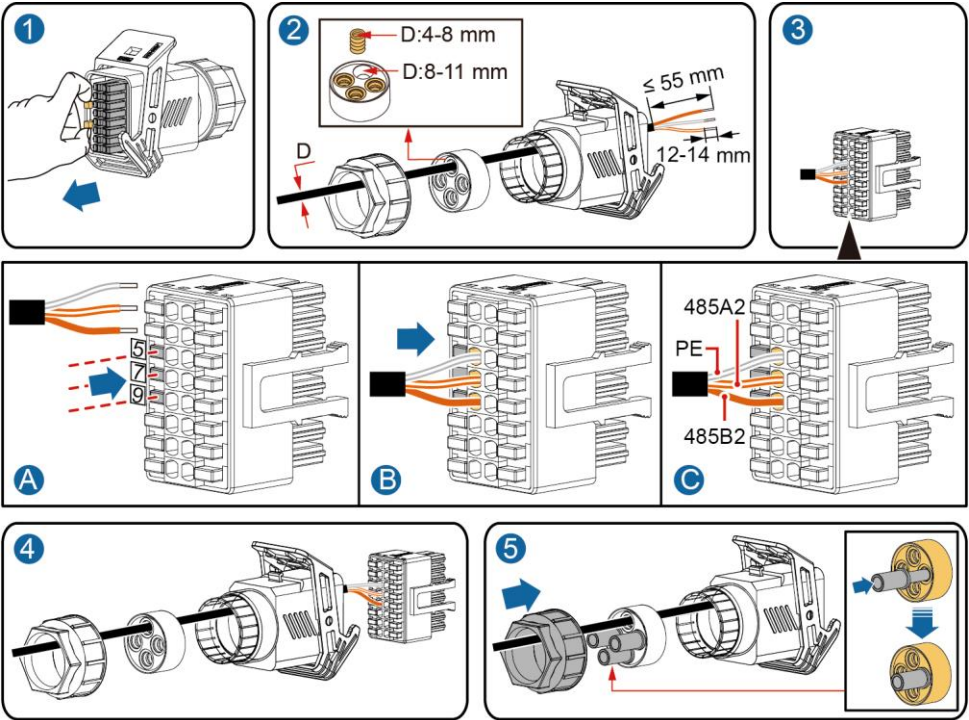
Communication port (COM)



IS10I20007

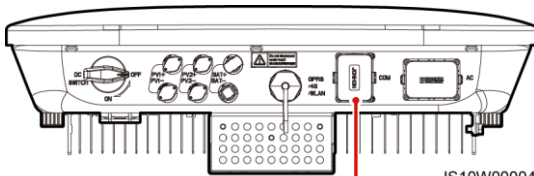
(Optional) Installing the RS485 Communications Cable (Only Smart Power Sensor Connected)

1. Connect the signal cable to the signal cable connector.



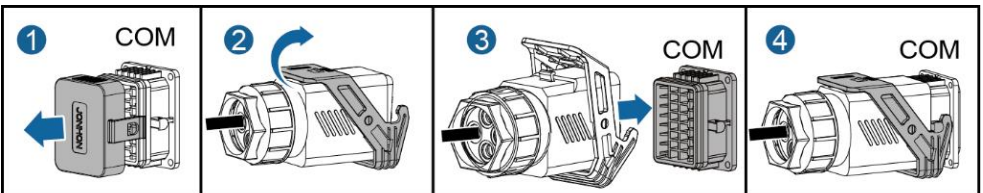
IS10I20008

2. Connect the signal cable connector to the Communication port.



IS10W00004

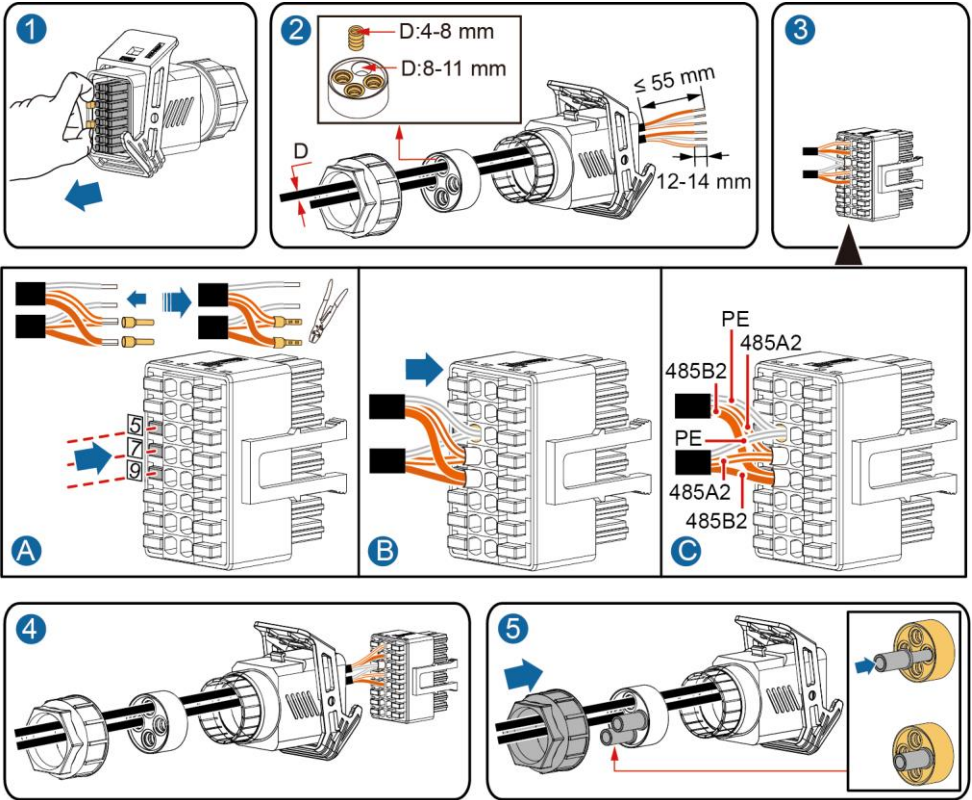
Communication port (COM)



IS10I20007

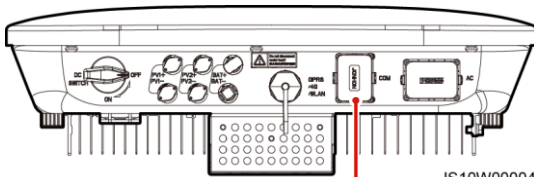
(Optional) Installing the RS485 Communications Cable (Smart Power Sensor and Energy Storage Device Connected)

1. Connect the signal cable to the signal cable connector.

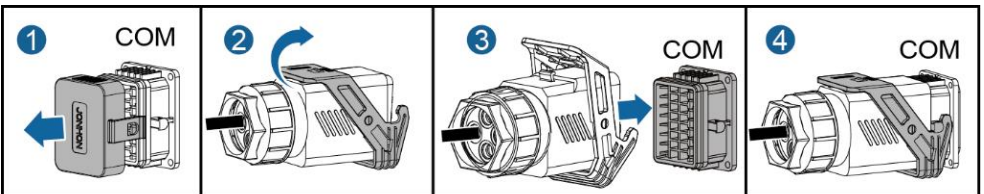


2. Connect the signal cable connector to the Communication port.

IS10I20012



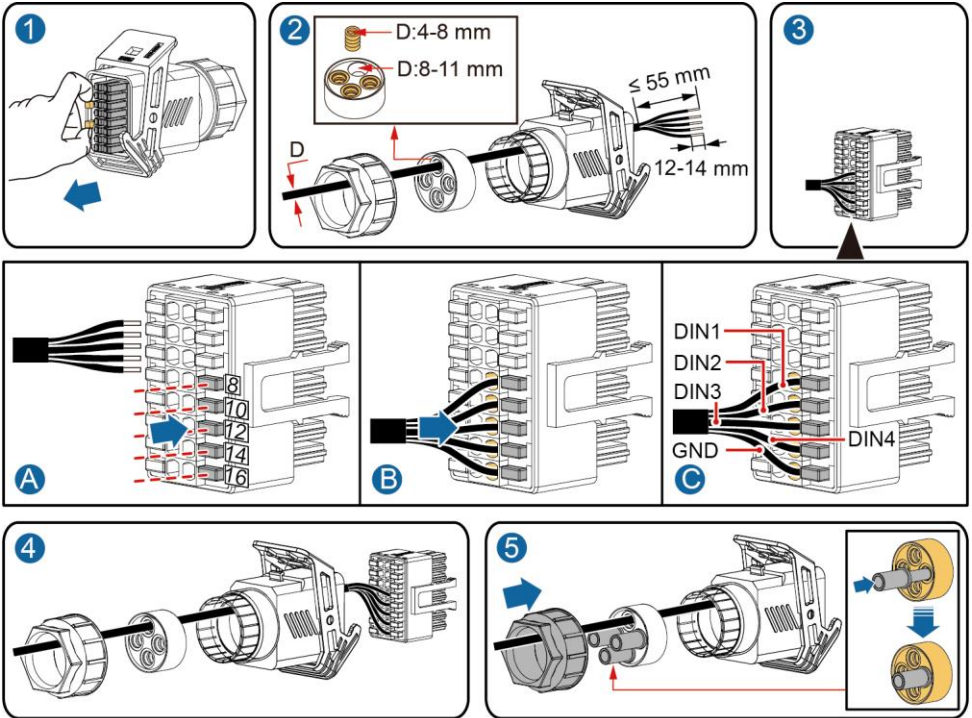
Communication port (COM)



IS10I20007

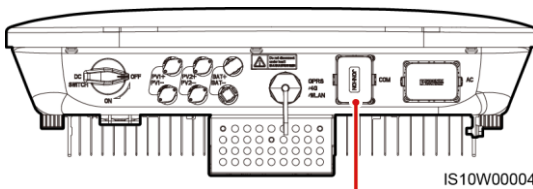
(Optional) Installing the Grid Scheduling Dry Contact Signal Cable

1. Connect the signal cable to the signal cable connector.



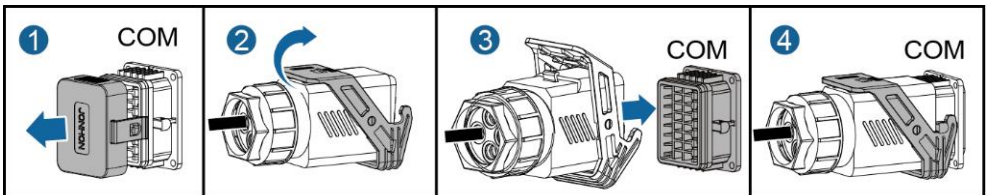
IS10I20010

2. Connect the signal cable connector to the Communication port.



IS10W00004

Communication port (COM)



IS10I20007

4 Verifying Installation

No.	Acceptance Criteria
1	The SUN2000 is installed correctly and securely.
2	Cables are routed properly as required by the customer.
3	The Smart Dongle is installed correctly and securely.
4	Cable ties are evenly distributed and no burr exists.
5	The PE cable is connected correctly, securely, and reliably.
6	The DC switch and all the switches connected to the SUN2000 are set to the OFF position.
7	The AC output power cable, DC input power cable, and signal cable are connected correctly, securely, and reliably.
8	Unused terminals and ports are locked by watertight caps.
9	The installation space is proper, and the installation environment is clean and tidy.

5 Powering On the System

NOTICE

Before turning on the AC switch between the SUN2000 and the power grid, check that the AC voltage is within the specified range using a multimeter.


1. Turn on the AC switch between the SUN2000 and the power grid.
2. Turn on the DC switch between the PV string and the SUN2000 if there is any.
3. Turn on the DC switch at the bottom of the SUN2000.
4. Observe the LED indicators to check the SUN2000 operating status.



NOTE

Blinking at Long Intervals: On for 1s and then Off for 1s; Blinking at Short Intervals: On for 0.2s and then Off for 0.2s.

Category	Status		Meaning
Running indicator			N/A
			The SUN2000 is operating in grid-tied mode.
	Blinking green at long intervals	Off	The DC is on and the AC is off.
	Blinking green at long intervals	Blinking green at long intervals	The DC is on, the AC is on, and the SUN2000 is not exporting power to the power grid.
	Off	Blinking green at long intervals	DC is off and AC is on.
	Off	Off	DC and AC are both off.
	Blinking red at short intervals	N/A	DC environmental alarm
	N/A	Blinking red at short intervals	AC environmental alarm
	Steady red	Steady red	Faulty

Category	Status	Meaning
Communication indicator		N/A
	Blinking green at short intervals	Communication is in progress. (When a mobile phone is connected to the SUN2000, the indicator first indicates that the phone is connected to the SUN2000); blinks green at long intervals.)
	Blinking green at long intervals	The mobile phone is connected to the SUN2000.
	Off	There is no communication.

6 Commissioning

6.1 Scenario 1: Smart Dongle Networking Scenario

1. Downloading the App

Search for "FusionSolar" in Google Play or scan the corresponding QR code, download the latest installation package, and install the FusionSolar app by following the instructions.



Google Play
(Android)



NOTE

The latest Android version is required for local commissioning. The iOS version is not updated and can be used only for viewing PV plant information. You can search for "FusionSolar" in App Store or scan the QR code to download the iOS version.



App Store
(iOS)



NOTE

- In Britain, only the FusionHome app can be used for commissioning. This document uses the FusionSolar app as an example to describe the commissioning method. For the FusionHome app, perform operations as required.
- Search for "FusionHome" in Google Play or scan the corresponding QR code, download the latest installation package, and install the FusionHome app by following the instructions. The latest Android version is required for local commissioning. The iOS version is not updated and can be used only for viewing PV plant information. You can search for "FusionHome" in App Store or scan the QR code to download the iOS version.
- The initial password for connecting the inverter WiFi is **Changeme**
- Log in to the FusionHome app as **installer**. The initial password is **00000a**
- Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.



Google Play
(Android)

2. (Optional) Installer Account Registration

NOTE

If you have an installer account, skip this step.

Creating the first installer account will generate a domain named after the company.

The screenshot displays the FusionSolar app interface. On the left, the login screen shows the domain `intl.fusionsolar.huawei.com` and a red box around the `Installer Registration` link. On the right, the `Installer Registration` form is shown with the following fields:

- Company Name
- Please enter the email address
- Please enter your email again
- Please enter the password.
- Please confirm the password
- Please enter the verification code (53ft)

There is a checkbox for `I have read and agree to the "Terms of Use" and "Privacy Policy"` and a `Registration` button.

NOTICE

To create multiple installer accounts for the same company, log in to the FusionSolar app and tap **New User**.

The screenshot displays the FusionSolar app interface. On the left, the home screen shows the `New User` button. In the middle, the `New User` form is shown with the following fields:

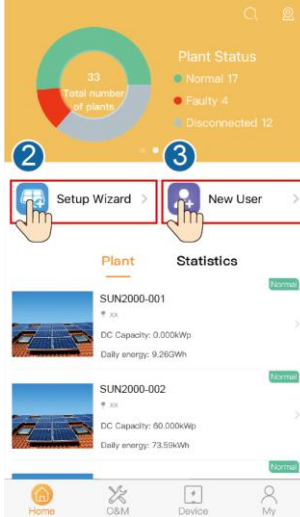
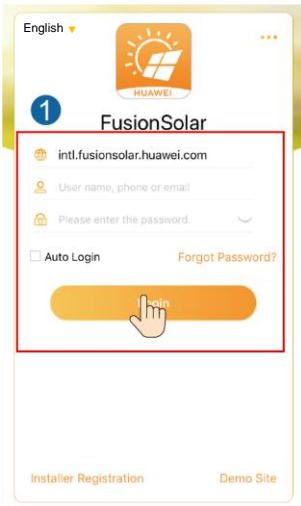
- Role: `Installer`
- Plant: `Please select a plant`
- User name: `Please enter a user name`
- Password: `Please enter the password`
- Phone: `Please enter the phone number`
- Email: `Please enter the email of the new account`

There are `Cancel` and `Confirm` buttons at the bottom. On the right, the `Selecting Plant` screen is shown with a search bar and a list of plants:

- `PV Plant 1` (checked)
- `PV Plant 2`
- `PV Plant 3`

There is a `Confirm` button at the bottom.

3. Creating a PV Plant and an Account for User



NOTE

- In the Smart Dongle networking scenario, if multiple inverters are cascaded, the FusionSolar app version must be 2.3.5 or later.
- When the SDongleA-05 WLAN-FE Smart Dongle is used, the FusionSolar app version must be 2.5.0 or later.
- For details, see the *FusionSolar App Quick Guide*. You can scan the QR code to obtain it.



6.2 Scenario 2: SmartLogger1000A Networking Scenario

See the *Distributed PV Plants Connecting to Huawei Hosting Cloud Quick Guide (Distributed Inverters + SmartLogger1000A + RS485 Networking)*.

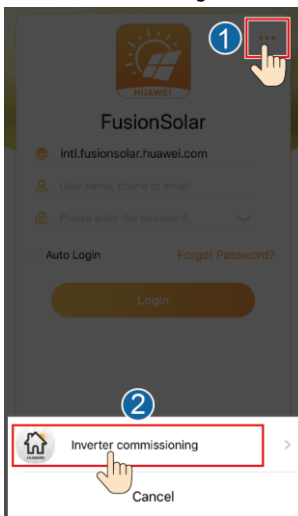
You can scan the QR code to obtain it.



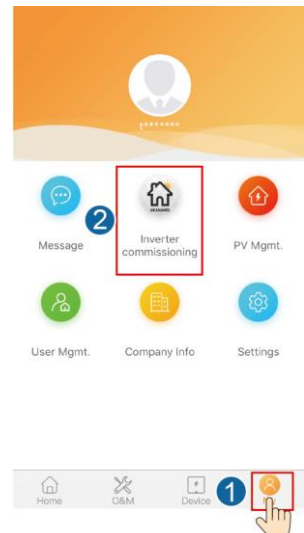
6.3 Other Scenarios

1. Access Inverter commissioning.

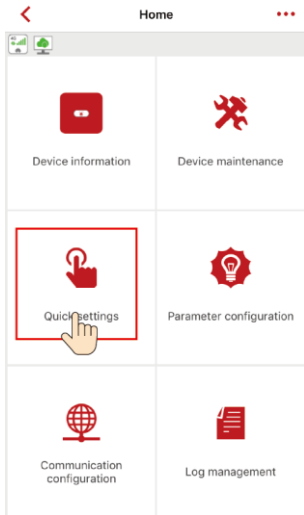
Method 1: before login



Method 2: after login



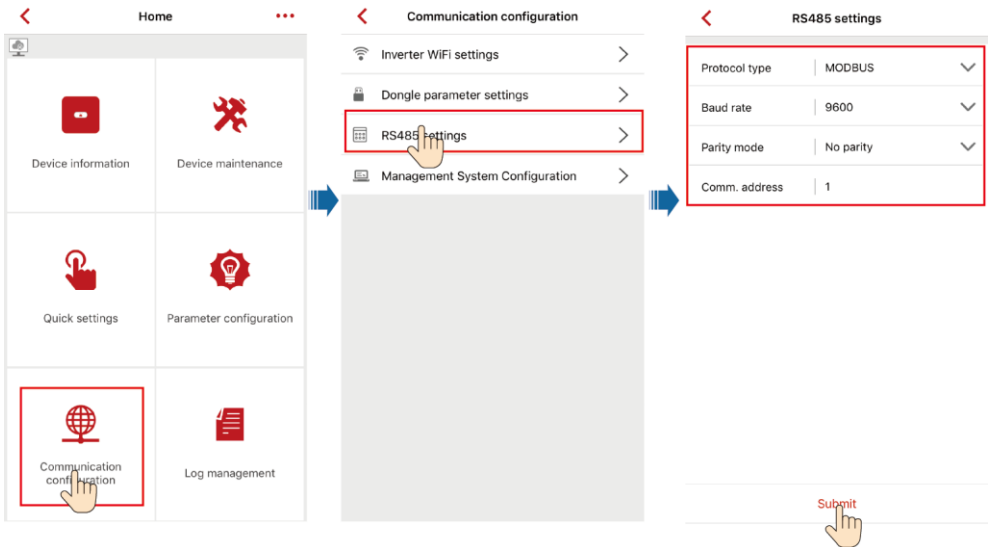
2. Connect to the inverter WiFi. Log in as **installer**, and perform **Quick settings**.



NOTE

- The initial password for connecting the inverter WiFi is **Changeme**
- The initial password of the **installer** is **00000a**.
- Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.
- To ensure account security, change the initial password immediately after login.
- To set more parameters, tap **Parameter configuration**.

3. (Optional) When multiple inverters are connected to a third-party data collector, set RS485 parameters.



NOTICE

The RS485 addresses of different inverters must be different.

7 Customer Service Contact

Customer Service Contact			
Region	Country	Service Support Email	Phone
Europe	France	eu_inverter_support@huawei.com	0080033888888
	Germany		
	Spain		
	Italy		
	UK		
	Netherlands		
	Other countries		
Asia Pacific	Australia	au_inverter_support@huawei.com	1800046639
	Turkey	tr_inverter_support@huawei.com	-
	Malaysia	apsupport@huawei.com	0080021686868 /1800220036 (+66) 26542662 (charged by local call)
	Thailand		1800290055 (free in Thailand)
	Other countries	apsupport@huawei.com	0060-3-21686868
Japan	Japan	Japan_ESC@ms.huawei.com	0120258367
India	India	indiaenterprise_TAC@huawei.com	1800 103 8009
South Korea	South Korea	Japan_ESC@ms.huawei.com	-
North America	USA	na_inverter_support@huawei.com	1-877-948-2934
	Canada	na_inverter_support@huawei.com	1-855-482-9343
Latin America	Mexico	la_inverter_support@huawei.com	018007703456 /0052-442-4288288
	Argentina		0-8009993456
	Brazil		0-8005953456
	Chile		800201866 (only for fixed)
	Other countries		0052-442-4288288
Middle East and Africa	Egypt	mea_inverter_support@huawei.com	08002229000 /0020235353900
	UAE		08002229000
	South Africa		0800222900
	Saudi Arabia		8001161177
	Pakistan		0092512800019
	Morocco		0800009900
	Other countries		0020235353900

Huawei Technologies Co., Ltd.

Huawei Industrial Base, Bantian, Longgang,
Shenzhen 518129, People's Republic of China
solar.huawei.com