

**SUN2000-4.95KTL-NHL2**

# **Quick Guide**

**Issue: 02**

**Part Number: 31500GBL**

**Date: 2022-03-10**

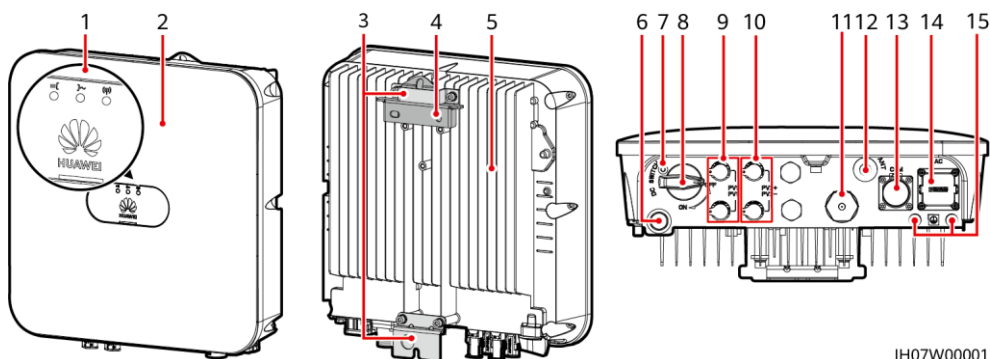
**HUAWEI TECHNOLOGIES CO., LTD.**



## NOTICE

1. The information in this document is subject to change without notice. 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, closely read the user manual to get familiar with product information and safety precautions.
3. Only certified electricians are allowed to operate the device. Operation personnel must wear proper personal protective equipment (PPE).
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. The device damage caused by the violation of instructions in this document is not covered under warranty.
6. The cable colors involved in this document are for reference only. Select cables in accordance with local cable specifications.

## 1 Overview



IH07W00001

- |   |  |
|---|--|
| (1) LED indicators                            | (2) Front panel                        |
| (3) Hanging kit                               | (4) Mounting bracket                   |
| (5) Heat sink                                 | (6) Ventilation valve                  |
| (7) Screw hole for the DC switch <sup>a</sup> | (8) DC switch <sup>b</sup> (DC SWITCH) |
| (9) DC input terminals (PV1+/PV1-)            | (10) DC input terminals (PV2+/PV2-)    |
| (11) Reservado                                | (12) Antenna port (ANT)                |
| (13) COM port (COM)                           | (14) AC output port (AC)               |
| (15) Ground point                             |  |

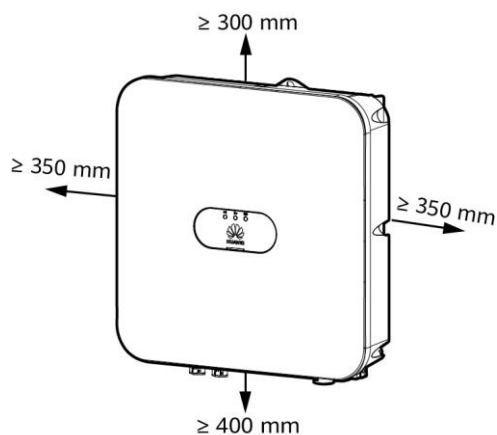
## NOTE

- a: The screw is used to secure the DC switch to prevent accidental startup. The screw is delivered with the solar inverter.
- b: DC input terminals PV1 and PV2 are controlled by the DC switch.

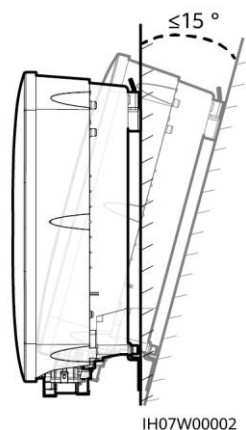
## 2 Installing the Device

### 2.1 Installation Requirements

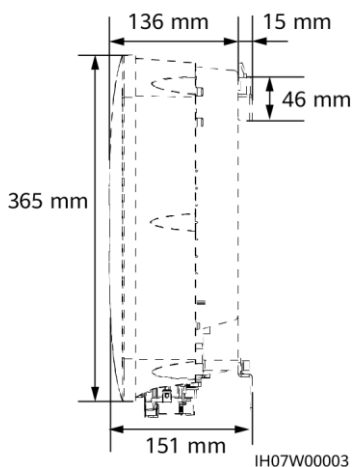
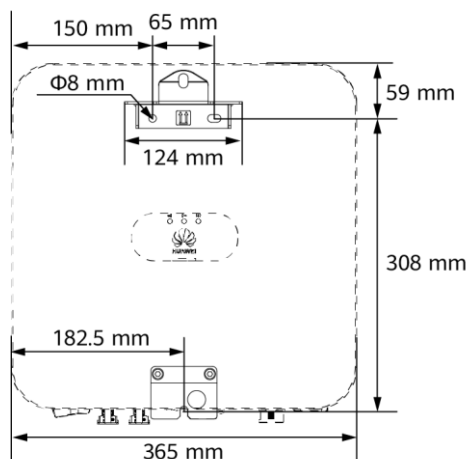
#### Space



#### Angle



#### Mounting Hole Dimensions



### 2.2 Installing the Solar Inverter

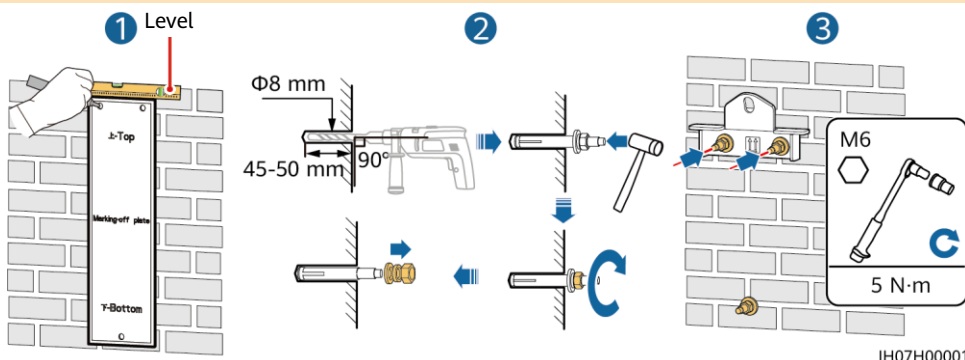
1. Install the mounting bracket.



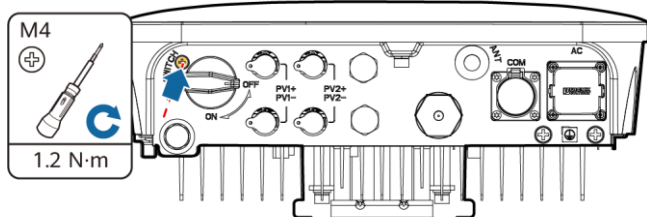
Avoid drilling holes in the water pipes and cables buried in the wall.

# **NOTE**

- M6x60 expansion bolts are delivered with the solar inverter. If the length and number of the bolts do not meet installation requirements, prepare M6 stainless steel expansion bolts by yourself.
- The expansion bolts delivered with the solar inverter are mainly 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 solar inverter.
- In residential areas, do not install the solar inverter on drywalls or walls made of similar materials which have a weak sound insulation performance because the noise generated by the solar inverter is noticeable.
- Loosen the nut, flat washer, and spring washer of the expansion bolt at the bottom.

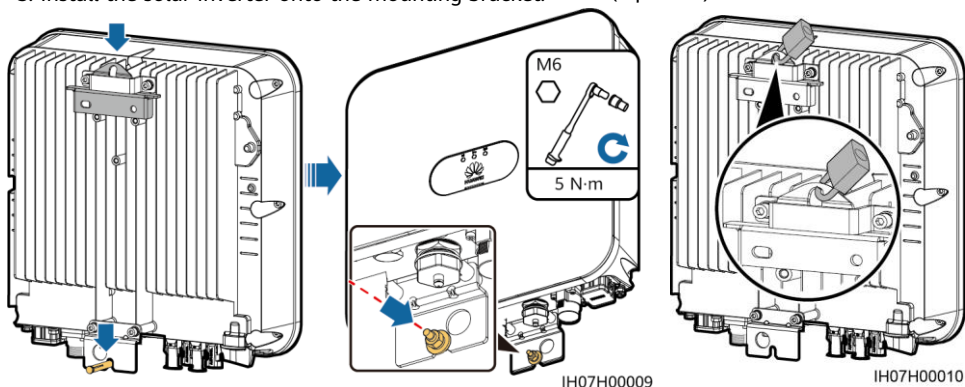


2. (Optional) Install the screw for locking the DC switch.



3. Install the solar inverter onto the mounting bracket.

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



# **NOTE**

Prepare an anti-theft lock by yourself. The lock should be suitable for the lock hole diameter ( $\Phi 10\text{ mm}$ ) so that it can be installed successfully. An outdoor waterproof lock is recommended.

## 3 Connecting Cables

### 3.1 Preparing Cables

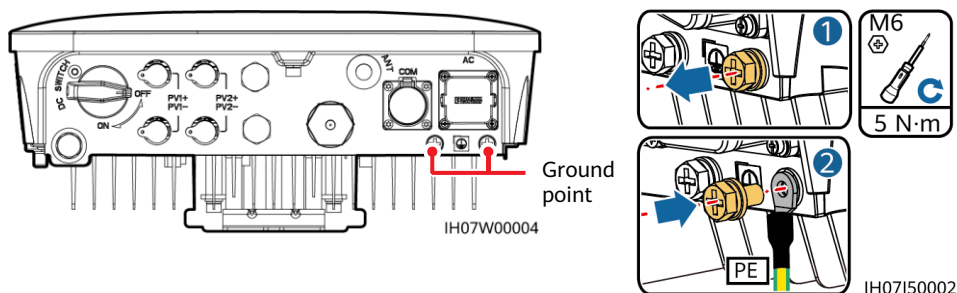
#### NOTICE

- Connect cables in accordance with the local installation laws and regulations.
- Before connecting cables, ensure that the DC switch of the solar inverter and all the switches connected to it are set to OFF. Otherwise, the high voltage produced by the solar inverter may cause electric shocks.

Prepare cables based on site requirements.

No.	Cable	Type	Conductor Cross-Sectional Area Range	Outer Diameter
1	Protective earthing (PE) cable	Single-core outdoor copper cable	3.5–5.5 mm <sup>2</sup>	N/A
2	AC output power cable	Three-core (U, O, and W) outdoor copper cable	3.5–5.5 mm <sup>2</sup>	10–21 mm
3	DC input power cable	Standard outdoor PV cable in the industry	3.5–5.5 mm <sup>2</sup>	5.5–9 mm
4	Signal cable	Outdoor shielded twisted pair cable	0.20–1 mm <sup>2</sup>	<ul style="list-style-type: none"> <li>• Four-hole rubber plug: 4–8 mm</li> <li>• Two-hole rubber plug: 8–11 mm</li> </ul>

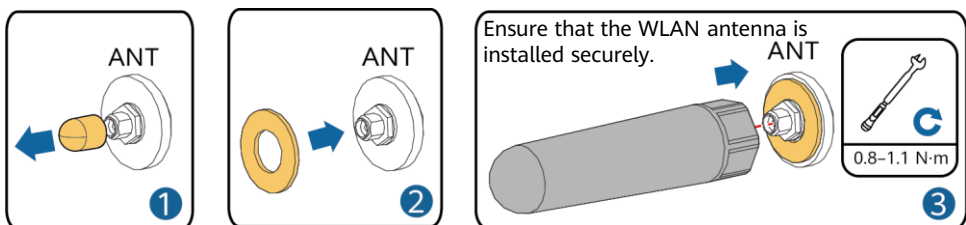
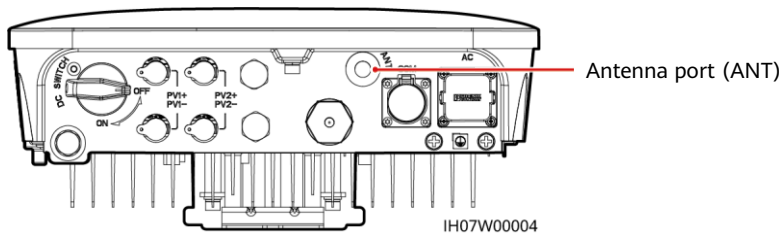
### 3.2 Installing the PE Cable



#### NOTE

- Silica gel or paint be applied around the ground terminal after the PE cable is connected.
- It is recommended that the right ground point be used for grounding. The other ground point is reserved.

### 3.3 Installing a WLAN Antenna



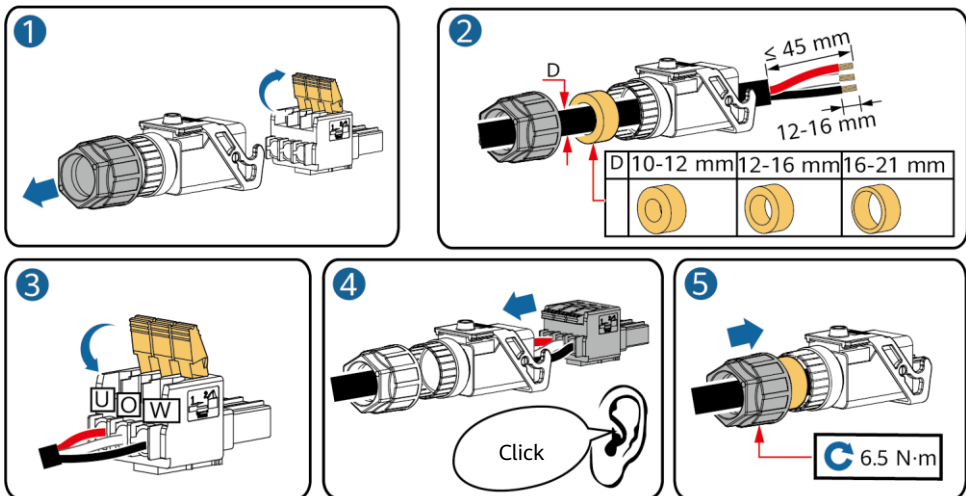
IH07H00021

### 3.4 Installing the AC Output Power Cable

#### NOTICE

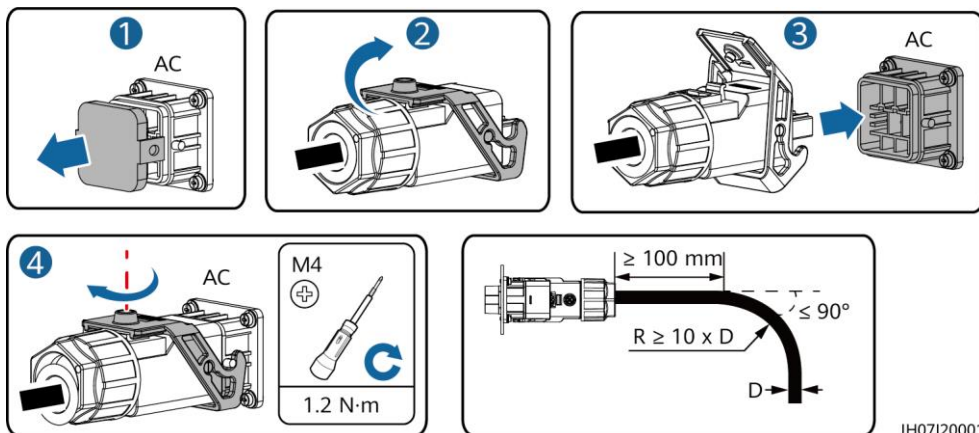
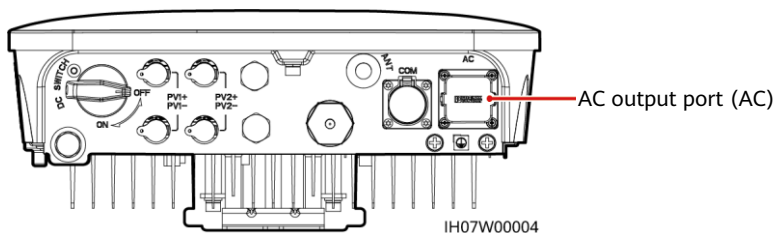
Ensure that the protective layer of the AC output power cable is inside the connector, that the core wires are totally inserted into the cable hole, and that the cable is connected securely. Failing to do so may cause device malfunction or damage.

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



IH05120017

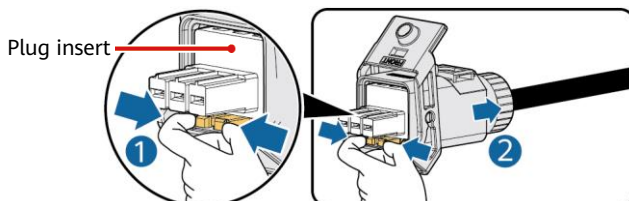
2. Connect the AC connector to the AC output port. Check the route of the AC output power cable.



IH07I20001

#### NOTE

To remove the AC connector, perform the operations in reverse order of installing the AC connector. Then, remove the plug insert, as shown in the following figure.



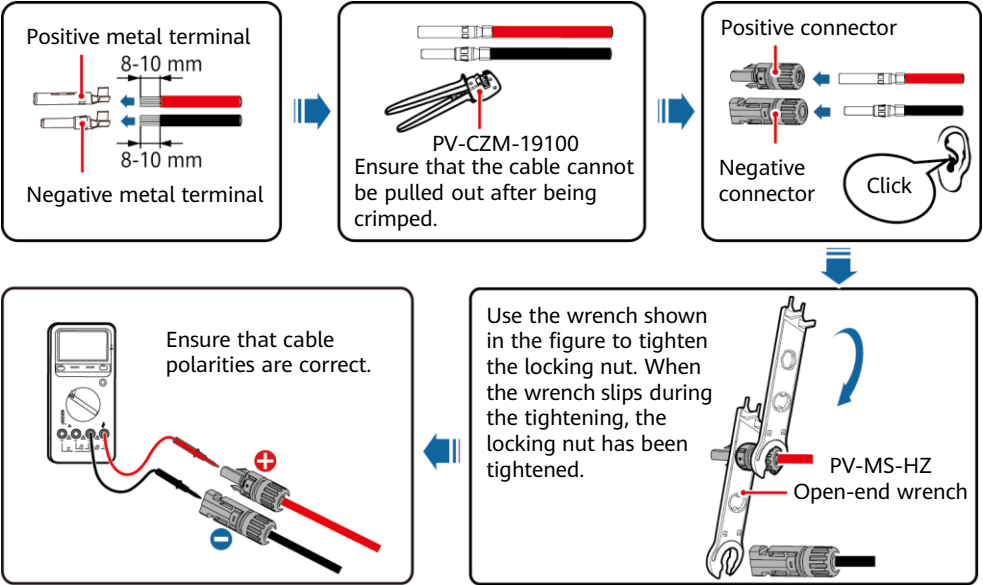
IH05I20019

## 3.5 Installing DC Input Power Cables

### NOTICE

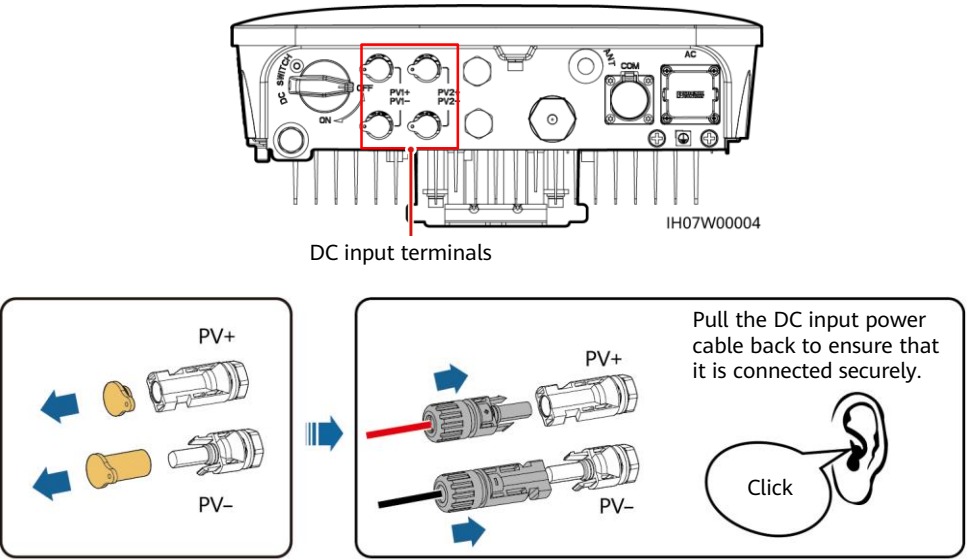
1. Ensure that the PV module output is well insulated to ground.
2. Use the Staubi MC4 positive and negative metal terminals and DC connectors supplied with the solar inverter. Using incompatible positive and negative metal terminals and DC connectors may result in serious consequences. The caused device damage is not covered under warranty.
3. The DC input voltage of the solar inverter must not exceed maximum input voltage.
4. Before installing DC input power cables, label the cable polarities to ensure correct cable connections.
5. If DC input power cables are 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 warranty. Wait until the solar irradiance declines at night and the PV string current reduces to below 0.5 A, and then turn off the DC switch and remove the positive and negative connectors. Correct the string polarity before reconnecting the PV string to the solar inverter.

1. Assemble DC connectors.



IH07I30001

2. Connect DC input power cables.



IH07I30002

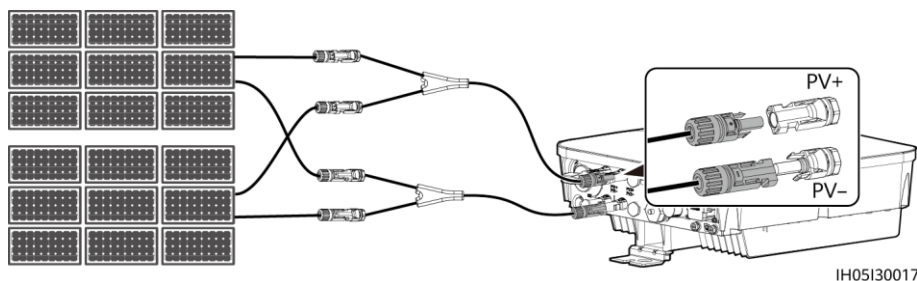


## NOTE

Y-branch connectors can be used to connect multiple PV modules to a SUN2000. However, it is recommended that the same number of PV modules be connected to each Y-branch connector.

## NOTICE

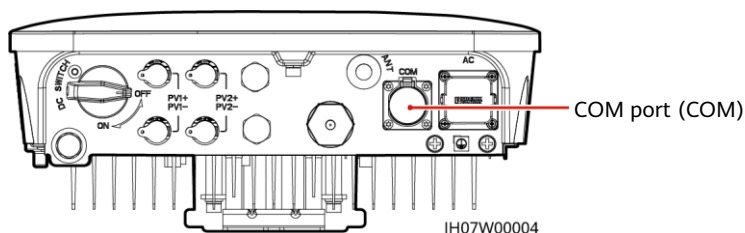
Use the Staubli Y-branch connectors, MC4 positive and negative metal terminals, and DC connectors. Those of other brands may be incompatible and cause damages, which will not be covered under warranty.



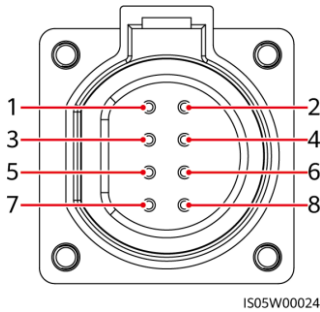
## 3.6 Installing Signal Cables

### NOTICE

- When laying out a signal cable, separate it from power cables to avoid strong signal interference.
- Ensure that the protective layer of the cable is inside the connector, that excess core wires are cut off from the protection layer, that the exposed core wire is totally inserted into the cable hole, and that the cable is connected securely.
- Block the unused cable hole using a cap and tighten the cable gland.
- If more than one signal cables are required, ensure that they have the same outer diameter.

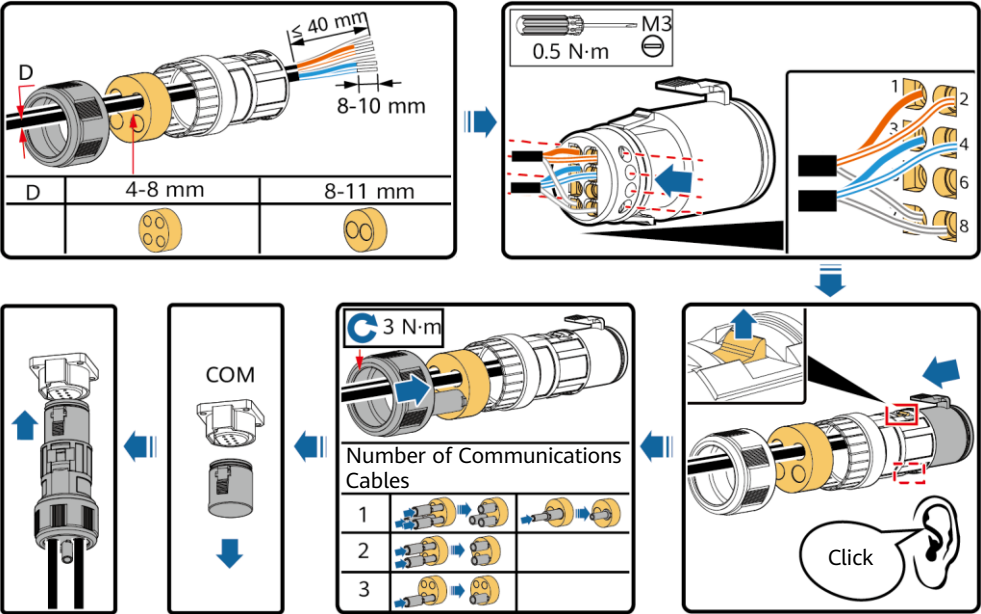


# COM Port Pin Definitions



No.	Label	Definition	Description
1	485B1	RS485B, RS485 differential signal-	Used for cascading solar inverters or connecting to the JX01 terminal block of the 10-in 1-out SmartACBox.
2	485A1	RS485A, RS485 differential signal+	
3	485B2	RS485B, RS485 differential signal-	Used for cascading solar inverters or connecting to the JX01 terminal block of the 10-in 1-out SmartACBox.
4	485A2	RS485A, RS485 differential signal+	
5	GND	GND	Reserved GND
6	DI	DI signal	Reserved, connecting to the positive terminal of the DI.
7	PE	Shielding ground	Shielding layer
8	PE	Shielding ground	Shielding layer

# Connecting Signal Cables



IH07140001

## 3.7 Connecting the Combiner Box

For details about system commissioning, see *SmartACBox 10-In 1-Out Smart AC Combiner Box Quick Guide*, which can be obtained by scanning the QR code.

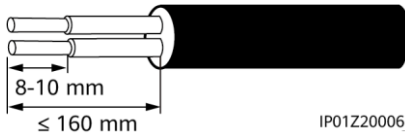


### 3.7.1 Connecting the RS485 Communications Cable

Connect the RS485 communications cable of an external device to the RS485-1 or RS485-2 port on the JX01 terminal block.

No.	Port on the JX01 Terminal Block	Definition
1	RS485-1(+)_COM1(+)	RS485-1, RS485 differential signal+
2	RS485-1(-)_COM1(-)	RS485-1, RS485 differential signal-
3	RS485-2(+)_COM2(+)	RS485-2, RS485 differential signal+
4	RS485-2(-)_COM2(-)	RS485-2, RS485 differential signal-

1. Prepare an RS485 communications cable.



IP01Z20006

#### ⚠ WARNING

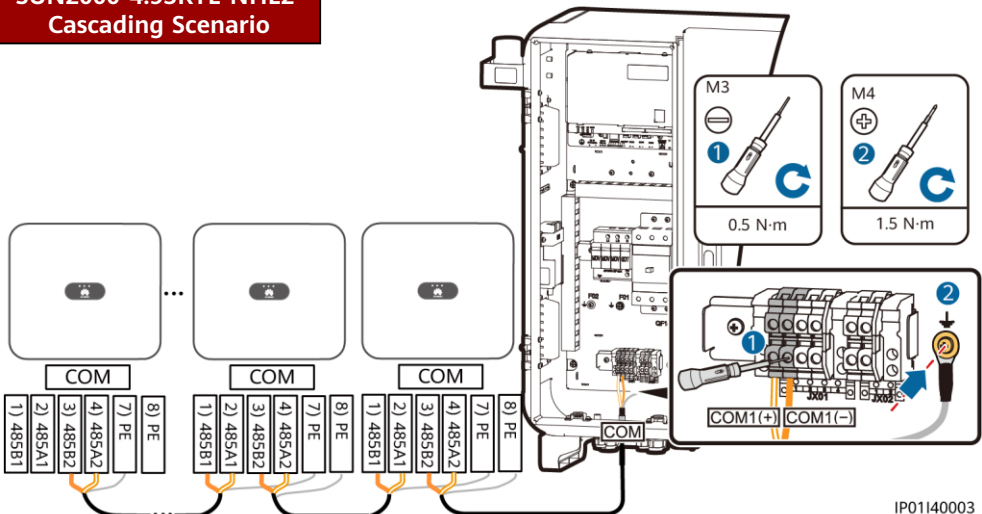
Insulate the shielding layer of the RS485 communications cable that is connected to the ground point in the chassis.

#### 📖 NOTE

The RS485 communications cable and single-phase power cable share a ground point.

2. Connect the RS485 communications cable to the JX01 terminal block.

### SUN2000-4.95KTL-NHL2 Cascading Scenario



IP01140003

## SUN2000-4.95KTL-NHL2 and SUN2000-4.95KTL-JPL1 Cascading Scenario



### 3.7.2 Connecting the AC Input Power Cable

 NOTE

Connect AC input power cables of the SmartACBox to input circuit breakers QF01 to QF05 and QF07 to QF11. It is recommended that AC input power cables be routed to input circuit breakers QF01 to QF05 through AC input cable hole 1 and be routed to QF07 to QF11 through AC input cable hole 2.

1. Remove an appropriate length of the jacket and insulation layer from each AC input power cable using a wire stripper.

## NOTICE

- The lengths of the jackets and insulation layers that need to be removed from the AC input power cables to input circuit breakers QF01 to QF05 are different. When connecting a stripped cable, ensure that the exposed insulation layer is in the enclosure, and the jacket is outside the enclosure.
- For the lengths of the jackets and insulation layers that need to be removed from the AC input power cables to input circuit breakers QF07 to QF11, refer to the AC input power cables to input circuit breakers QF01 to QF05.



2. Crimp OT terminals.
3. Route the cables through AC input cable holes 1 and 2.
4. Connect each AC input power cable to the U, O, and W terminals of the circuit breaker, and use a torque screwdriver to tighten the bolts.

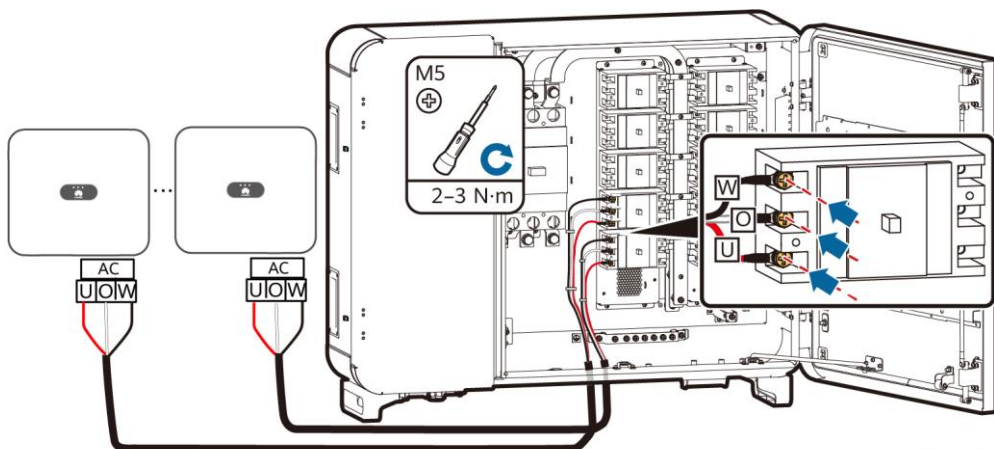
## NOTICE

To avoid device damage, do not mix up the U, O, and W terminals when connecting cables.

#### NOTE

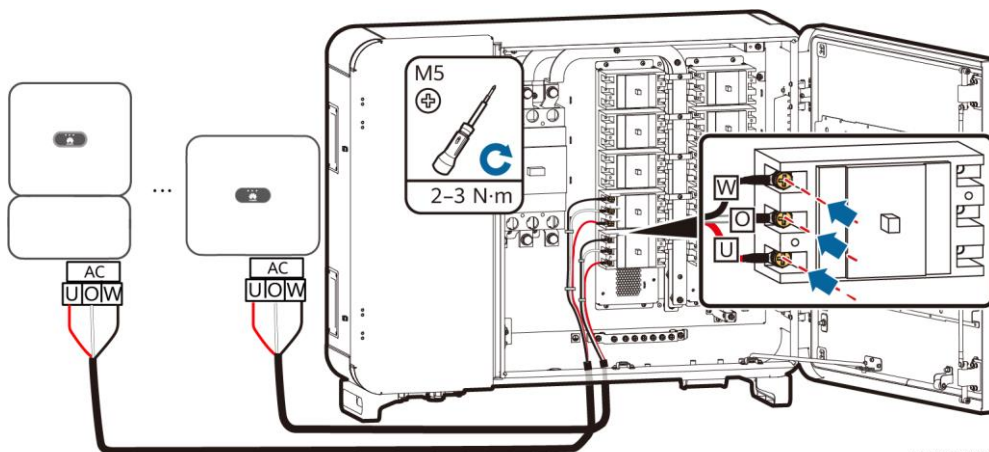
The right figure shows how to connect an AC input power cable to input circuit breaker QF05. Connect cables to input circuit breakers QF01 to QF04 and QF07 to QF11 in the same way.

### SUN2000-4.95KTL-NHL2 Cascading Scenario



IP01120007

### SUN2000-4.95KTL-NHL2 and SUN2000-4.95KTL-JPL1 Cascading Scenario



IP01120007

## 4 Verifying the Installation

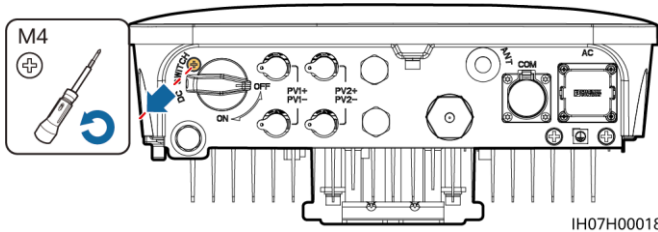
No.	Acceptance Criteria
1	The solar inverter is installed correctly and securely.
2	The WLAN antenna is installed correctly and securely.
3	Cables are routed properly as required by the customer.
4	Cable ties are evenly distributed and no burr exists.
5	The PE cable is connected correctly and securely.
6	The DC switch and all the switches connected to the solar inverter are set to the OFF position.
7	The AC output power cable, DC input power cables, and signal cable are connected correctly and securely.
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 solar inverter and the power grid, check that the AC voltage is within the specified range using a multimeter set to the AC position.

1. Turn on the AC switch between the solar inverter and the power grid.
2. (Optional) Remove the screw for locking the DC switch.



3. Turn on the DC switch (if any) between the PV string and the solar inverter.
4. Turn on the DC switch at the bottom of the solar inverter.
5. Observe the LED indicators to check the operating status of the solar inverter.

Type	Status (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)		Meaning
Running indication	LED1 	LED2 	-
	Steady green	Steady green	The solar inverter 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	Both the DC and AC are on, and the solar inverter is not exporting power to the power grid.
	Off	Blinking green at long intervals	The DC is off and the AC is on.
	Off	Off	Both the DC and AC are off.
	Blinking red at short intervals	-	There is a DC environmental alarm, such as an alarm indicating that High String Input Voltage, String Reverse Connection, or Low Insulation Resistance.
	-	Blinking red at short intervals	There is an AC environmental alarm, such as an alarm indicating Grid Undervoltage, Grid Overvoltage, Grid Overfrequency, or Grid Underfrequency.
	Steady red	Steady red	Fault.
Communication indication	LED3 		N/A
	Blinking green at short intervals		Communication is in progress.
	Blinking green at long intervals		A mobile phone is connected to the solar inverter.
	Off		There is no communication.

Type	Status			Meaning
Device replacement indication	LED1 	LED2 	LED3 	N/A
	Steady red	Steady red	Steady red	The solar inverter hardware is faulty. The solar inverter needs to be replaced.

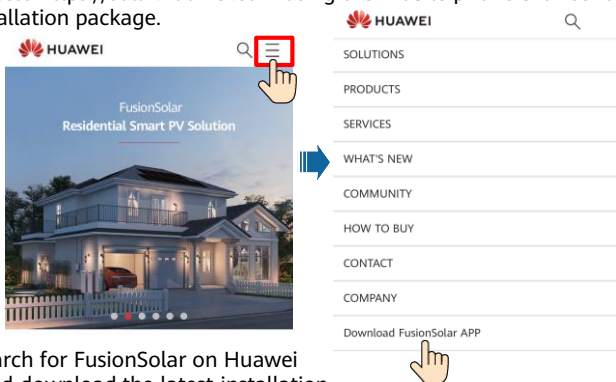
## 6 Commissioning

### NOTE

- The screenshots are for reference only. The actual screens may vary.
- Obtain the initial password for connecting to the solar inverter WLAN from the label on the side of the solar inverter.
- Set the password at the first login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the 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.
- You can set parameters on the FusionSolar app or SmartLogger WebUI as required.

### 6.1 Downloading the App

- Method 1: Access <https://solar.huawei.com> using the mobile phone browser and download the latest installation package.



- Method 2: Search for FusionSolar on Huawei AppGallery and download the latest installation package.
- Method 3: Scan the following QR code and download the latest installation package.



### NOTE

The screenshots in this document correspond to app version should be 5.7.001.

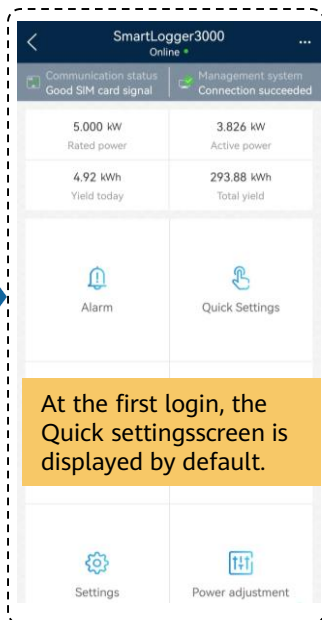
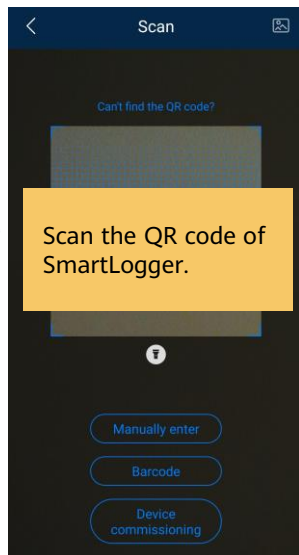
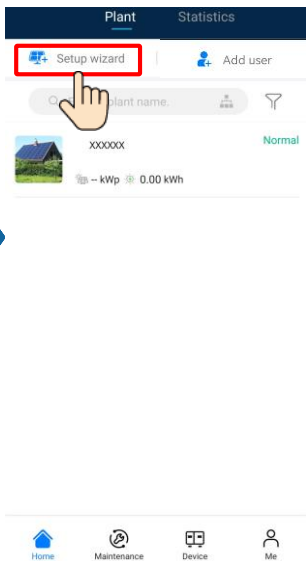
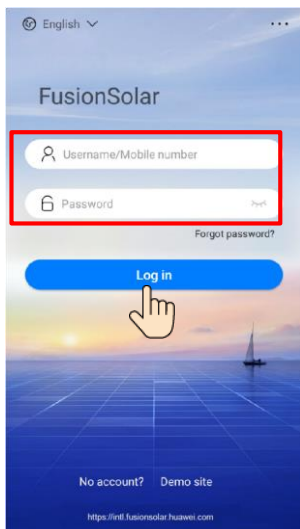
### 6.2 Device Commissioning (FusionSolar App)

#### 6.2.1 Creating a PV Plant

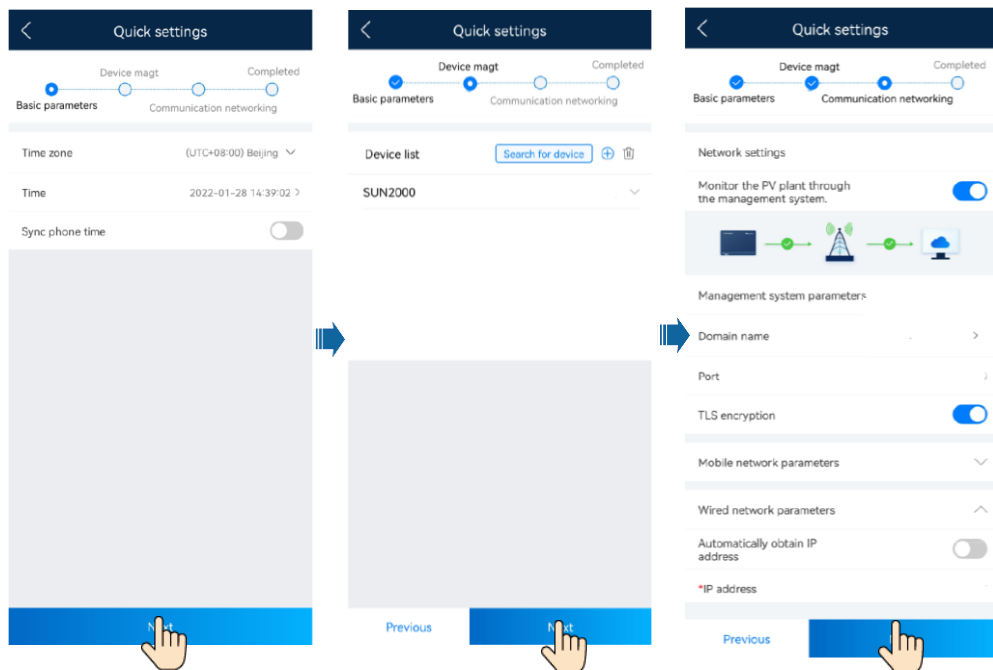


## NOTE

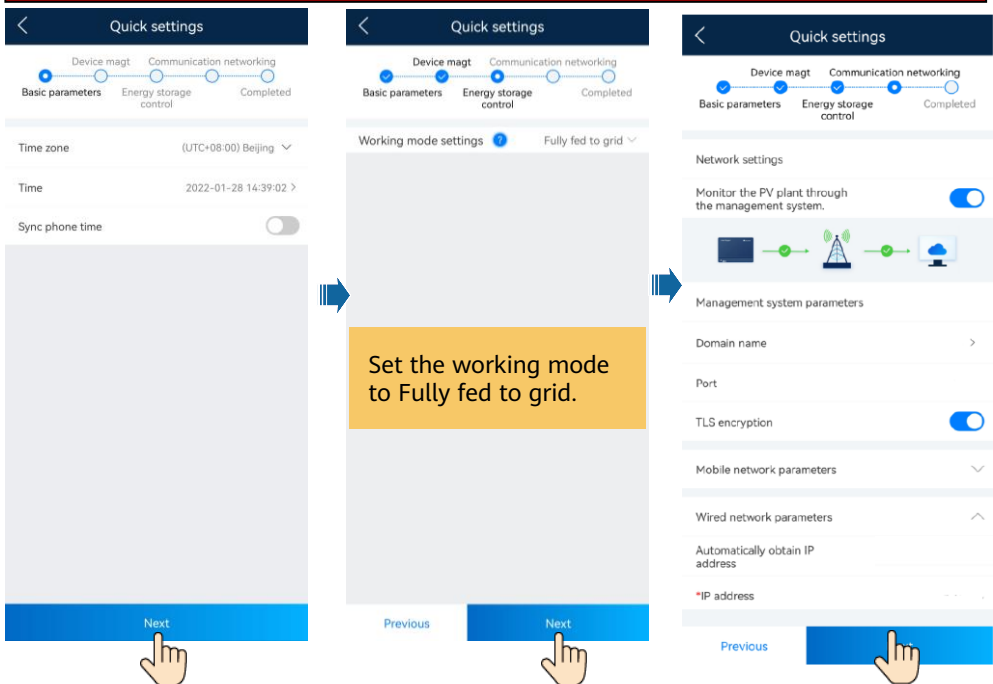
If the SmartLogger has been upgraded through the FusionSolar app management system, scan the SmartLogger. When the message "The device has been bound to a plant. Commission the device?" is displayed, tap Confirm to enter the device commissioning screen, tap **Quick Settings**, and set battery parameters.



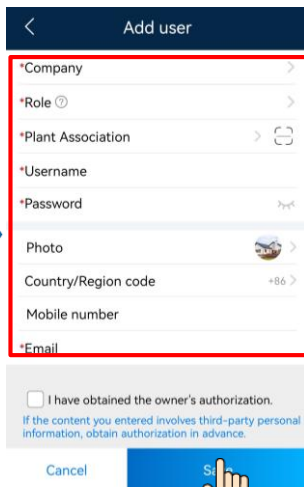
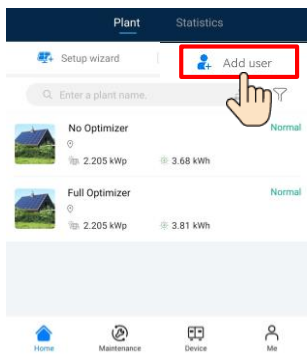
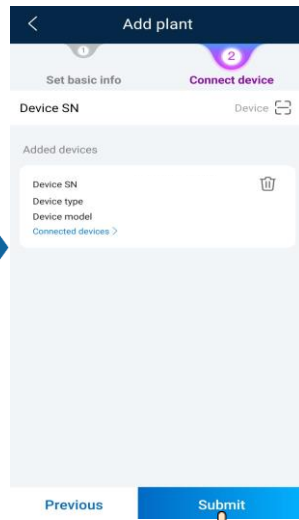
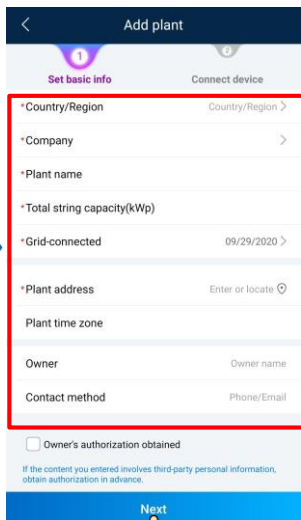
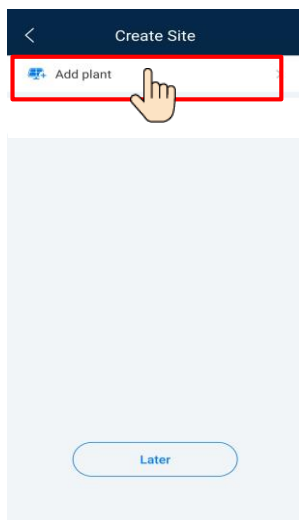
## SUN2000-4.95KTL-NHL2 Cascading Scenario



## SUN2000-4.95KTL-NHL2 and SUN2000-4.95KTL-JPL1 (with batteries) Cascading Scenario



## Create plant and an owner account



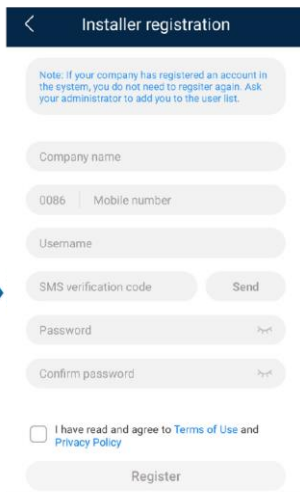
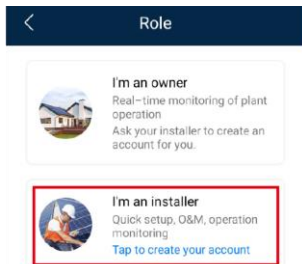
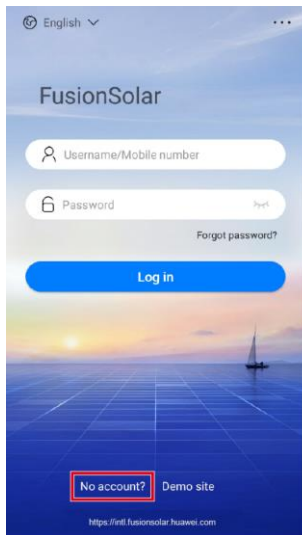
### NOTE

For details about how to use the site deployment wizard, see *FusionSolar App Quick Guide*. During the FusionSolar app upgrade, scan the QR code to download the quick guide.



## Register an Installer Account (Optional, for Installers Without an Account)

Run the FusionSolar app. If no account and password are created, tap **No account**, select **I'm an installer**, and enter the registration information.



## 6.3 System Commissioning (SmartLogger Web)

### NOTE

1. The operating system of Windows 7 or later is supported.
2. The WebUI snapshots are for reference only, and the actual display may vary.

### 6.3.1 Preparations and WebUI Login

1. Connect the network cable between the network port of the PC and the WAN or LAN port of the SmartLogger.
2. Set the IP addresses of the PC and SmartLogger in the same network segment.

Port	IP Settings	SmartLogger Default Value	PC Setting Example
WAN port	IP address	192.168.0.10	192.168.0.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.0.1	192.168.0.1
LAN port	IP address	192.168.8.10	192.168.8.11
	Subnet mask	255.255.255.0	255.255.255.0
	Default gateway	192.168.8.1	192.168.8.1

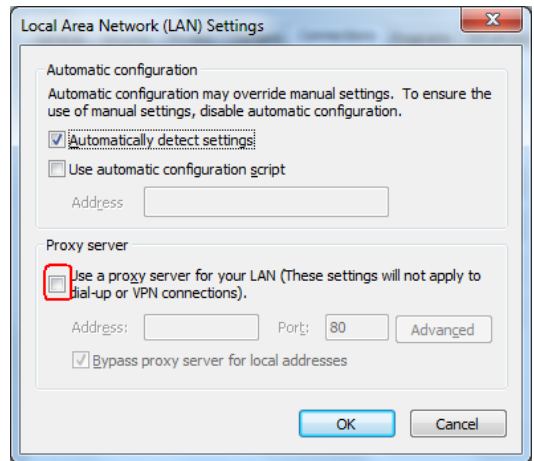
### NOTE

When the IP address of the WAN port is on the 192.168.8.1–192.168.8.255 network segment, the IP address of the LAN port is automatically switched to 192.168.3.10, and the default gateway is 192.168.3.1. If the connection port is a LAN port, adjust the network configuration of the PC accordingly.

3. Set LAN parameters.

### NOTICE

- If the SmartLogger is connected to a local area network (LAN) and a proxy server has been set, you need to cancel the proxy server settings.
  - If the SmartLogger is connected to the Internet and the PC is connected to the LAN, do not cancel the proxy server settings.
- a. Open Internet Explorer.
  - b. Choose **Tools > Internet Options**.
  - c. Click the **Connections** tab and then click **LAN settings**.
  - d. Clear **Use a proxy server for your LAN**.
  - e. Click **OK**.



## 6.3.2 Commissioning Through Deployment Wizard

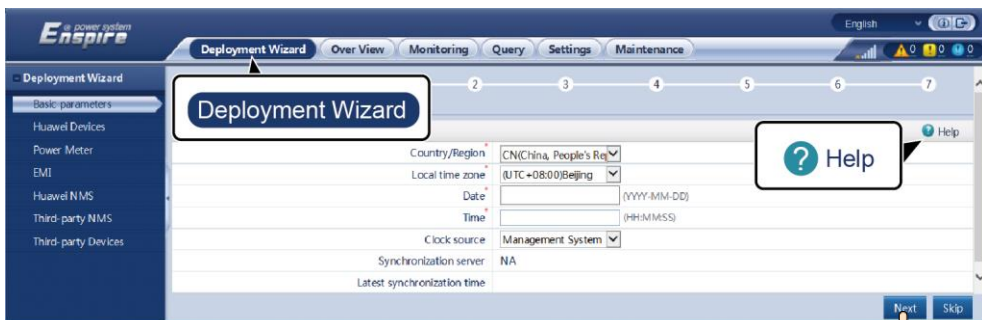
1. Enter `https://XX.XX.XX.XX` in the address box of the browser (XX.XX.XX.XX is the default IP address of the SmartLogger). If you log in to the WebUI for the first time, a security risk warning is displayed. Click Continue to this website.
2. Select a **User Name** to log in.



IL03J00002

Parameter	Description
Language	Set this parameter as required.
User name	Select <b>admin</b> .
Password	<ul style="list-style-type: none"> <li>The initial password is <b>Changeme</b>. 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.</li> <li>If you enter wrong passwords for five consecutive times within 5 minutes, your account will be locked out. Try again 10 minutes later.</li> </ul>

3. Click **Deployment Wizard** and set parameters as prompted. Click **Skip** for unused devices.
  - a. Set basic parameters.



- b. Set wireless or wired network parameters based on the SmartLogger communication mode.

**Deployment Wizard** | Overview | Monitoring | Query | Settings | Maintenance

Basic parameters | Huawei Devices | Power Meter | EMI | Huawei NMS | Third-party NMS | Third-party Devices

Set the network parameters of the SmartLogger

**Wired Network Parameters**

DHCP: Disable (Set it using the SUN2000 app.)

IP address:

Subnet mask:

Default gateway:

Primary DNS server:

Secondary DNS server:

Previous | Next | Skip

**Deployment Wizard** | Overview | Monitoring | Query | Settings | Maintenance

Basic parameters | Huawei Devices | Power Meter | EMI | Huawei NMS | Third-party NMS | Third-party Devices

Set the network parameters of the SmartLogger

**Wireless Network Parameters(4G/3G/2G)**

Monthly traffic package: 0.00 | 0.00, 1024.00]MB

Network mode: 4G/3G/2G automatic

APN mode: Automatic

Authentication type: CHAP

APN:

APN dialup number:

APN user name:


APN user password:

Previous | Next | Skip

Time: 2019-09-26 14:38 | Grid dispatch: P: Disable | Q: Disable | Copyright © Huawei Technologies Co., Ltd. 2019. All rights reserved.

#### NOTE

The mobile data parameters are obtained from the SIM card carrier.

- c. Click **Search Device** to add the communication devices connected to the SmartLogger. Ensure that the found devices are the same as the connected devices. If any device is missing, check the RS485 cable connection and search for the device again. You can also click  to manually add the device.

**Deployment Wizard** | Overview | Monitoring | Query | Settings | Maintenance

Basic parameters | Huawei Devices | Power Meter | EMI | Huawei NMS | Third-party NMS | Third-party Devices

Device Mgmt.

Number of inverters: 1 | Number of PIDs: 0 | Number of STSs: 0

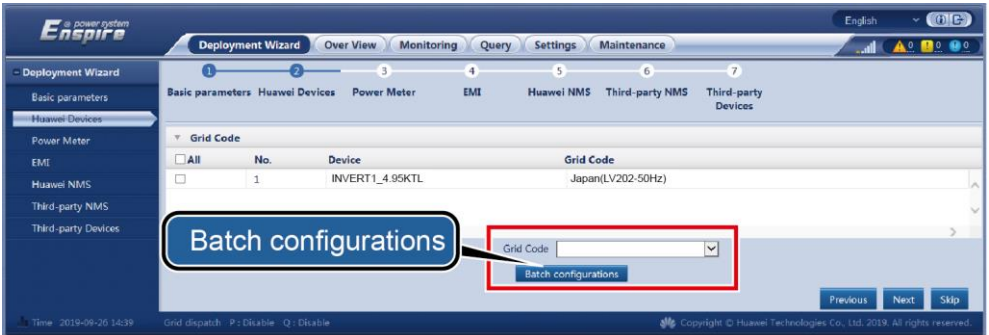
All	No.	Device	port	Comm Address	Logical addr.	SN	Device status
<input type="checkbox"/>	1	INVERT1_495KTL	1	11	22	101950029453	

**Search Device** 

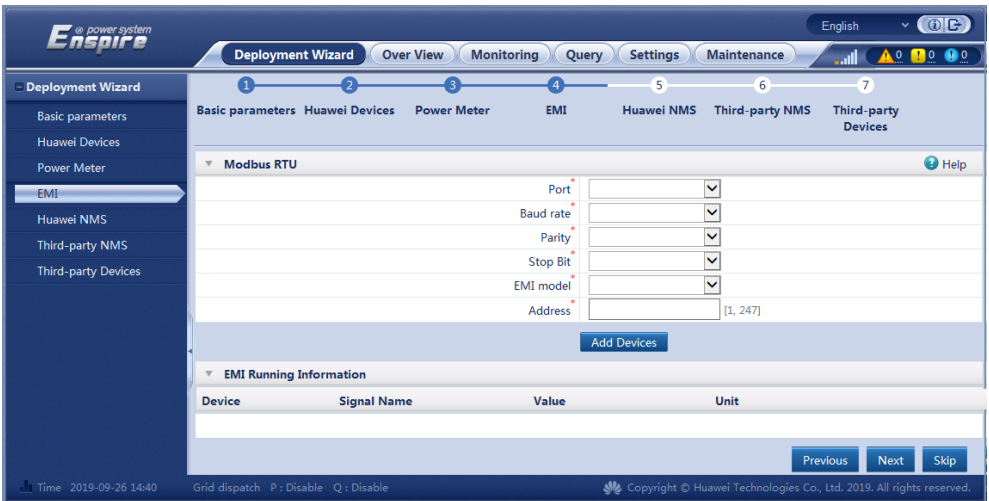
Previous | Next | Skip

Time: 2019-09-26 14:39 | Grid dispatch: P: Disable | Q: Disable | Copyright © Huawei Technologies Co., Ltd. 2019. All rights reserved.

d. Select a device and set the grid code.



e. (Optional) If an EMI is available, set EMI parameters. Otherwise, skip this step.

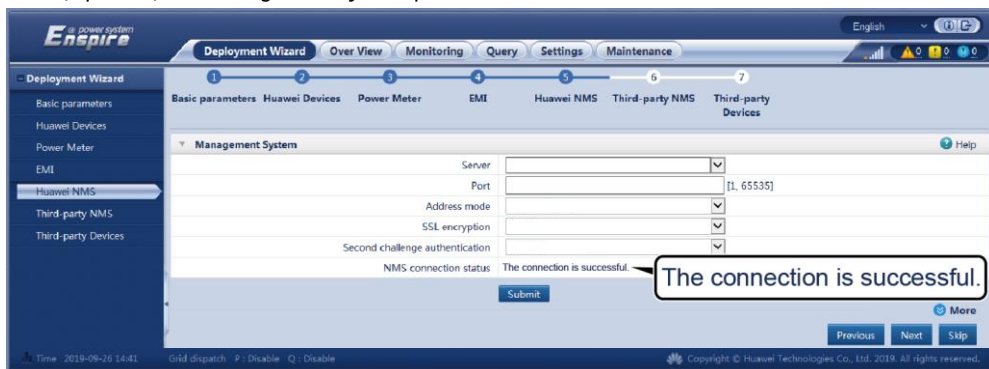


#### NOTE

- **Port:** The number of the SmartLogger COM port connected to EMI.
- The **Baud rate**, **Parity**, and **Stop bit** should be consistent with those of the EMI.
- **EMI model:** Select the model of the connected EMI from the drop-down list. If the EMI does not support the collection of a certain signal, set Signal address to 65535.
- **Address:** Set the communications address according to the EMI manual.



f. (Optional) Set management system parameters.

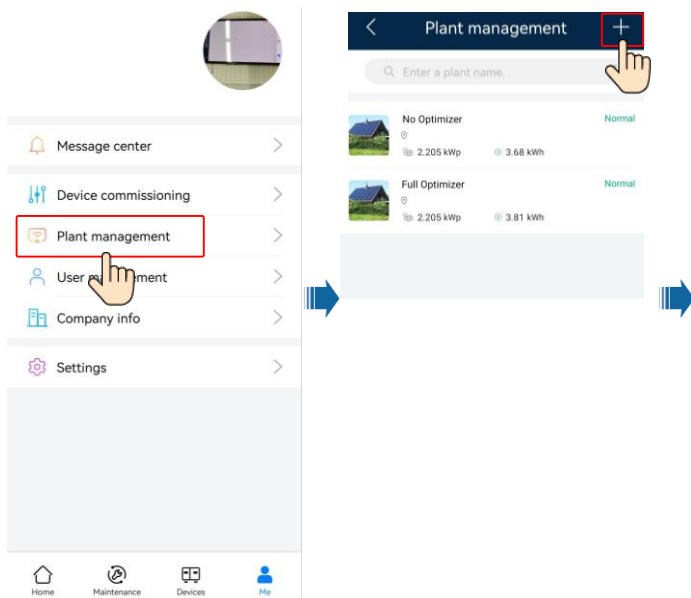


#### NOTE

- Set **Server** to the IP address or domain name of the connected management system and **Port** to the port number of the connected management system.
- Set **Address mode** to **Logical address**. If the communication address of the device connected to the SmartLogger is unique, you are advised to select **Comm. address**.
- Enable **SSL encryption** and **Second challenge authentication**.
- You can view the value of **NMS connection status** to check the connection status. Ensure that the connection is successful.

## 6.3.3 Creating a Plant

After the connection management status on the SmartLogger WebUI is successful, log in to the FusionSolar app and create a PV plant.



**Add plant**

1 Basic info 2 Add devices

\*Country/Region Country/Region>

\*Company Company>

\*Plant name

\*Total string capacity(kWp)

\*Grid connection date 06/21/2021>

\*Plant address Enter or locate

\*Plant time zone >

Owner Owner name

Contact method Phone/Email

☐ I have obtained the owner's authorization.

If the content you entered involves third-party personal information, obtain authorization in advance.

Next

**Add plant**

1 Basic info 2 Add devices

Device SN Scan the device SN

Previous Submit

## 7 FAQ

### 7.1 Device Commissioning

#### 1. Access Device commissioning.

Scenario 1: Your phone is not connected to the Internet.

Scenario 2: Your phone is connected to the Internet.

English

FusionSolar

When your phone is connected to the Internet, Device commissioning is not displayed after you tap ...

User manual

2 Commissioning video

Device commissioning For no-network

Login setting

Cancel

English

FusionSolar

Enter the username or phone number

Password

Forgot password?

1 Log In

No account? <https://intl.fusionsolar.huawei.com>

m\*\*\*\*\* 178\*\*\*\*\*

Announcements

3 Commissioning

Plant management

User management

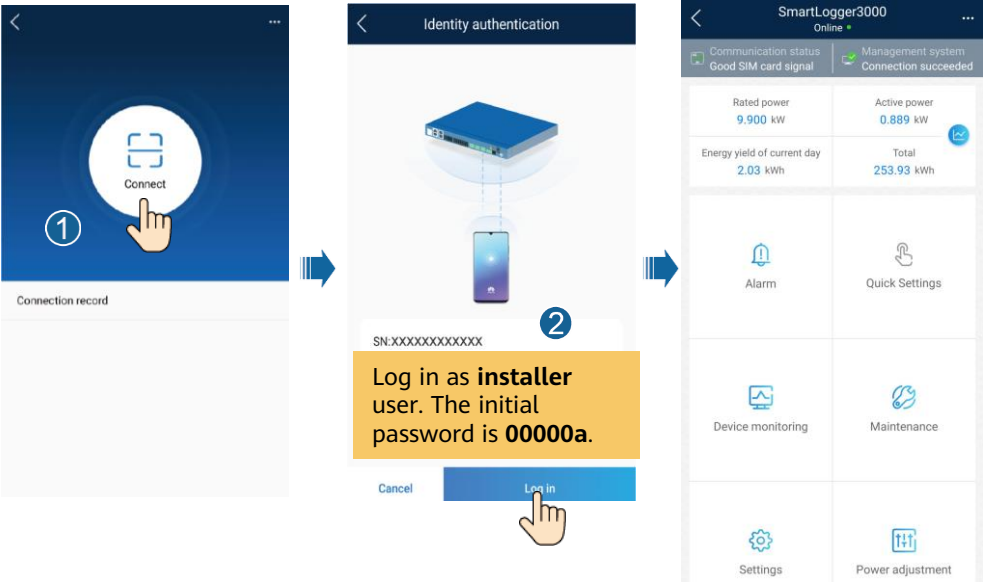
Company info

Settings





2

Home Maintenance Device Me

2. Connect to the solar inverter WLAN and log in as **installer** to access the device commissioning screen.



## 7.2 Resetting the Password

1. Ensure that the SUN2000 connects to the AC and DC power supplies at the same time. Indicators  and  are steady green or blink at long intervals for more than 3 minutes.
2. Perform the following operations within 3 minutes:
  - a. Turn off the AC switch and set the DC switch at the bottom of the SUN2000 to OFF.
  - b. Turn on the AC switch and set the DC switch to ON. Ensure that the indicator  is blinking green at long intervals.
  - c. Turn off the AC switch and set the DC switch to OFF. Wait until all LED indicators on the SUN2000 panel are off.
  - d. Turn on the AC switch and set the DC switch to ON.
3. Reset the password within 10 minutes. (If no operation is performed within 10 minutes, all inverter parameters remain unchanged.)
  - a. Wait until the indicator  blinks green at long intervals.
  - b. Obtain the initial WLAN hotspot name (SSID) and initial password (PSW) from the label on the side of the SUN2000 and connect to the app.
  - c. On the login screen, set a new login password and log in to the app.

## 8 Customer Service Contact Information

Customer Service Contact Information			
Area	Country/R egion	Email	Phone
Japan	Japan	Japan_ESC@ms.huawei.com	0120258367

