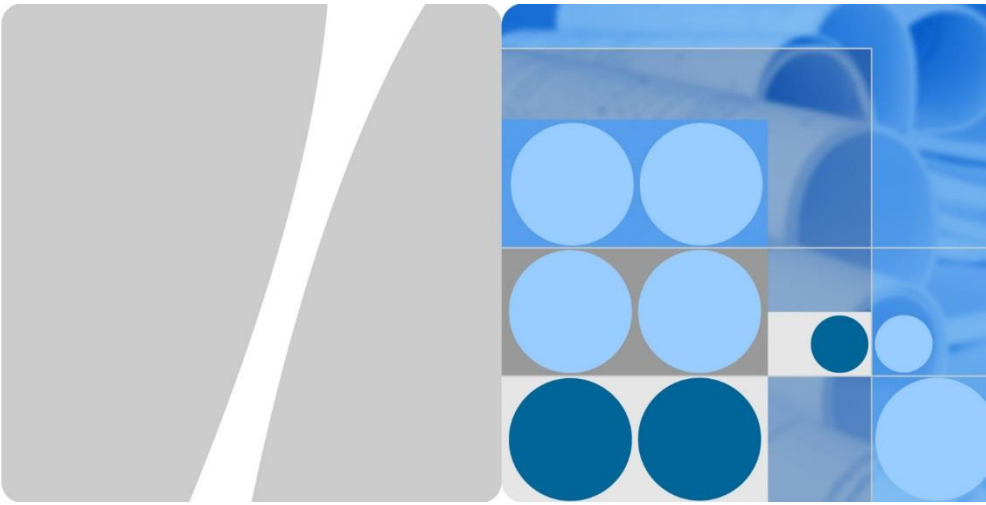


SUN2000-(9KTL, 10KTL, 11.4KTL)-USL0

Quick Guide

Issue: 04
Part Number: 31509358
Date: 2019-08-16

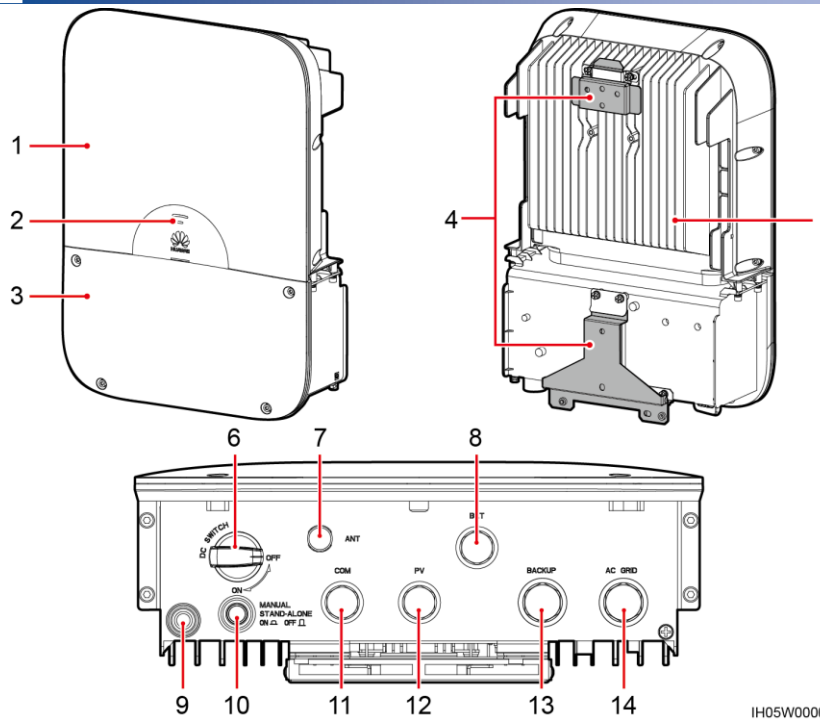
HUAWEI TECHNOLOGIES CO., LTD.

HUAWEI

NOTICE

- The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure the accuracy of its contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.
- 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.
- Before installing the device, read the user manual carefully to become familiar with product information and safety precautions. 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.
- Use insulated tools when installing the device. For your safety, wear proper personal protective equipment (PPE).

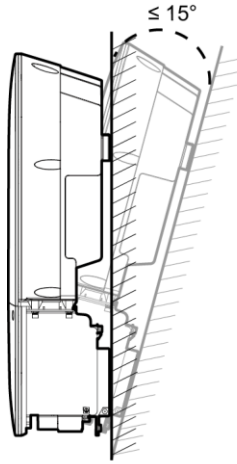
1 Overview



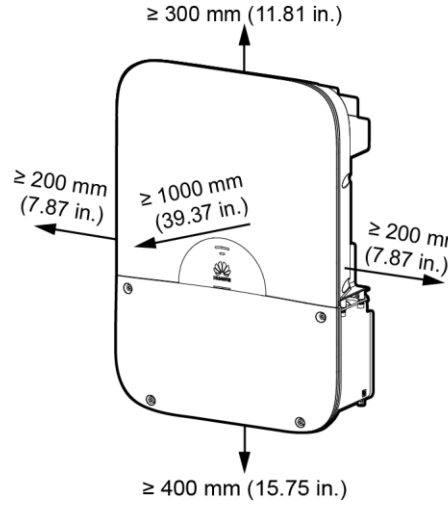
(1) Host panel
(2) LED indicators
(3) Maintenance compartment door
(4) Mounting bracket
(5) Heat sink
(6) DC switch (DC SWITCH)
(7) Antenna port (ANT)
(8) Battery cable waterproofing bolt (BAT, 3/4 in.)
(9) Ventilation valve
(10) Backup enable button (MANUAL STAND-ALONE)
(11) Signal cable waterproofing bolt (COM, 3/4 in.)
(12) PV input power cable waterproofing bolt (PV, 3/4 in.)
(13) AC output power cable waterproofing bolt for critical load (BACKUP, 1 in.)
(14) AC output power cable waterproofing bolt for home load (AC GRID,1 in.)

2 Installation Requirements

Angle



Space



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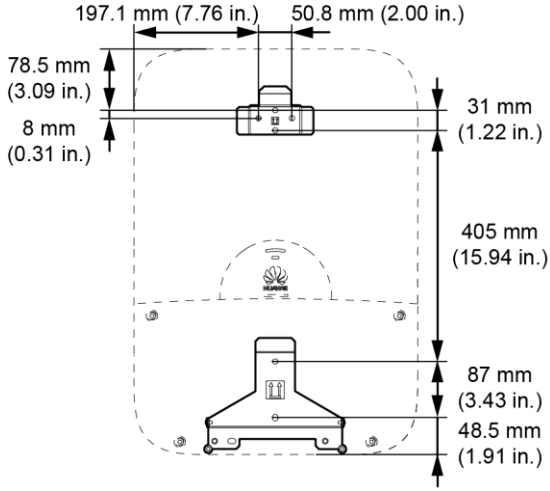
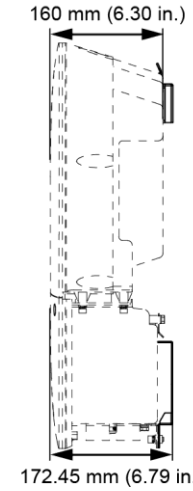
Dimensions





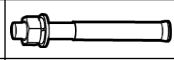
IH05W00010

3 System Installation

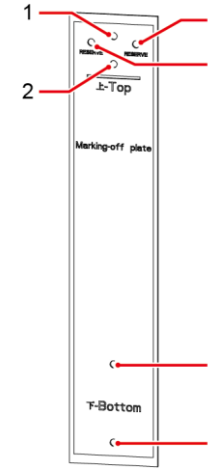
3.1 Installing the SUN2000

NOTE

- Select tightening screws suitable for the load-bearing structure. This section introduces how to install the SUN2000 on a wall. For details about the support-mounted installation, see the user manual.
- Prepare an anti-theft lock suitable for the lock hole diameter Φ8 mm (0.31 in.)by yourself.

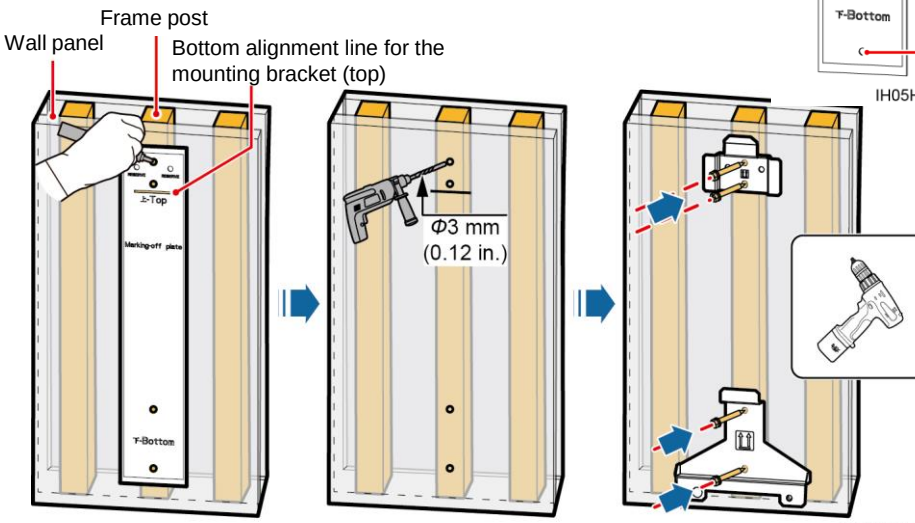
Load-Bearing Structure	Frame post (recommended)	Brick wall/Fiber-cement composite panel	Plywood
Tightening Screw Type	M6 tapping screw	M6 expansion bolt	M6 expansion anchor screw
Screw Quantity	4 PCS	4 PCS	4 PCS
Screw Appearance			
Hole Combination in Marking-off Template	1, 2, 3, 4	3, 4, 5, 6	3, 4, 5, 6

Marking-off Template



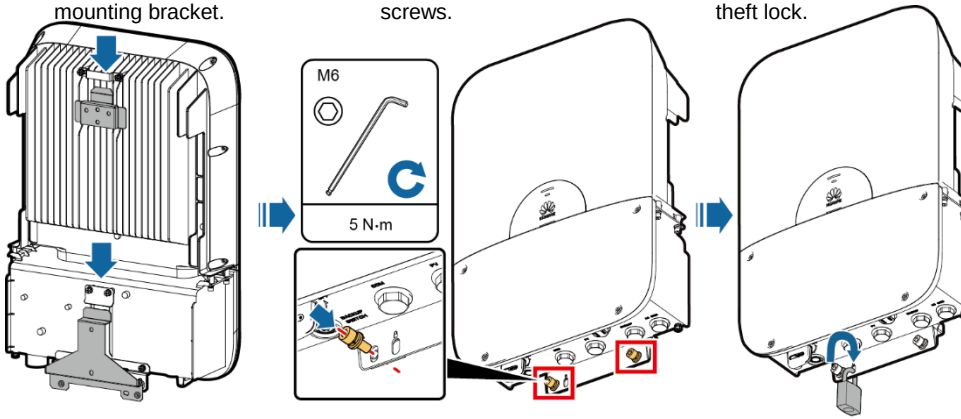
IH05H00037

1. Install the mounting bracket (for example, on a frame post).



IH05H00017

2. Install the SUN2000 on the mounting bracket.
3. Tighten the hex socket screws.
4. (Optional) Install an anti-theft lock.



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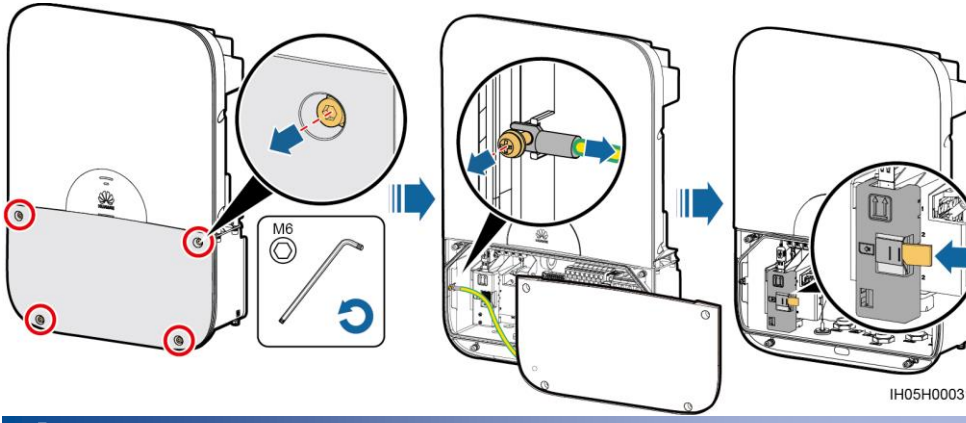
3.2 Installing the SIM Card

NOTICE

- Do not open the host panel of the SUN2000.
- Before opening the SUN2000 maintenance compartment door, turn off the downstream AC output switch and the bottom DC switch.
- Do not open the maintenance compartment door during rainfall or snowfall. If you must, take protective measures to prevent rain or snow from entering the maintenance compartment.
- Do not leave unused screws in the maintenance compartment.

NOTE

- If the 4G function is configured, you need to prepare a standard SIM card size: 25 mm x 15 mm (0.98 in. x 0.59 in.). After being installed with the SIM card and being powered on, the 4G module can access the 4G network without being commissioned. Do not remove the 4G module when installing the SIM card.
- Install the SIM card in the direction shown on the arrow on the slot.
- To install the SIM card, press it in place until it locks.
- To remove the SIM card, push it inward and then let go to eject it.



4 Electrical Connections

NOTICE

- Connect cables in accordance with local installation laws and regulations.
- Ensure that power is off before connecting cables.

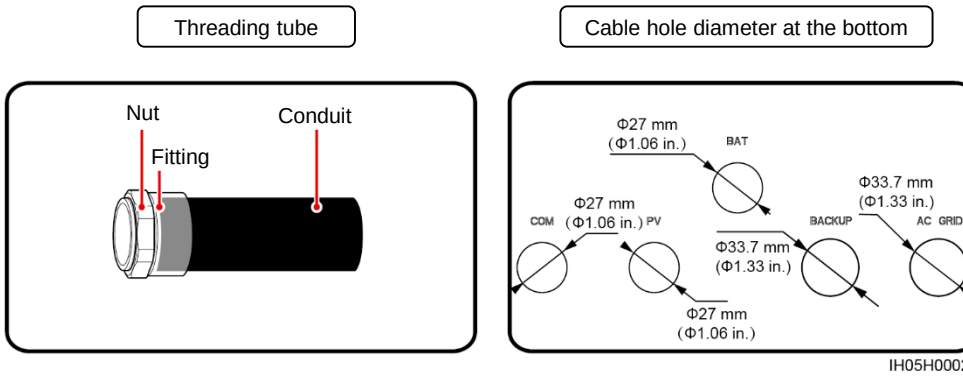
4.1 Preparing Cables

No.	Cable		Type	Conductor Cross-Sectional Area
1	AC output power cable	AC output power cable for home load	• Use cables that can withstand 90 °C (194 °F) or 105°C (221 °F). • If the output mode is set to L1/L2/N, use four single-core outdoor copper cables (L1, N, L2, PE). • If the output mode is set to L1/L2, use three single-core outdoor copper cables (L1, L2, PE).	• L1, N, L2: 6–4 AWG (SUN2000-9KTL/10KTL-USL0)/ 4 AWG(SUN2000-11.4KTL) • PE: 6 AWG
		AC output power cable for critical load	• Use cables that can withstand 90°C (194 °F) or 105°C (221 °F). • Two single-core outdoor copper cables (L1, L2)	10–4 AWG

No.	Cable	Type	Conductor Cross-Sectional Area
2	PV input power cable	• PV cable that meets the 600 V standard • Use cables that can withstand 90 °C (194 °F) or 105° C (221 °F). • Single-core outdoor copper cable	10–8 AWG
	(Optional) Ground cable at the PV side (GND)	• Use cables that can withstand 90 °C (194 °F) or 105° C (221 °F). • Single-core outdoor copper cable	6 AWG
3	(Optional) Battery cable	• PV cable that meets the 600 V standard • Use cables that can withstand 90 °C (194 °F) or 105° C (221 °F). • Single-core outdoor copper cable	12–8 AWG
4	(Optional) Signal cable	Multi-paired and individually foil-shielded cable that complies with UL2919, CM/CMG (NEC type), or CMH (CSA type)	24–16 AWG

4.2 Preparing the Threading Tube

The specifications of the tubes should comply with those of the waterproofing bolts. For example, for a 3/4 in. waterproofing bolt, a 3/4 in. tube is recommended. The tube appearance shown in the following figure is for reference only. The actual tube is the standard.



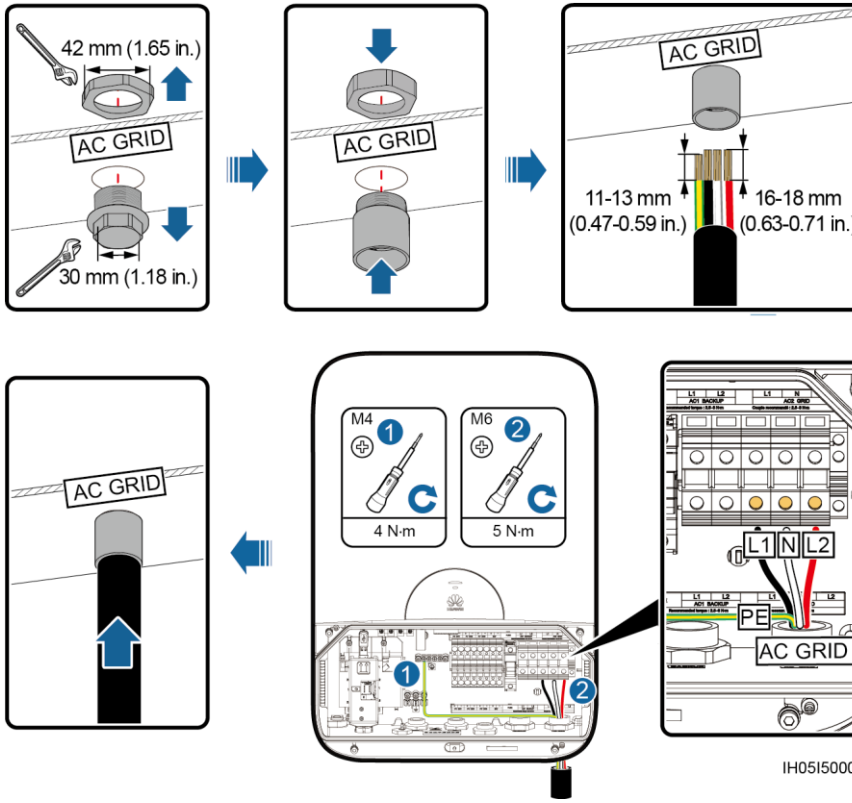
IH05H00023

4.3 Installing the AC Output Power Cable

NOTICE

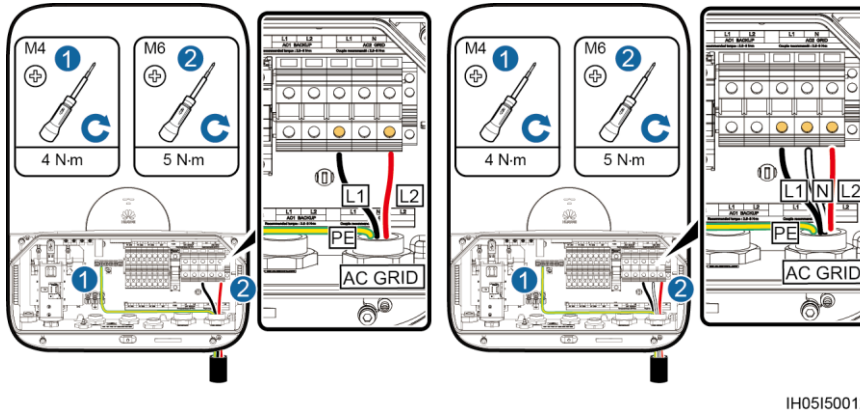
- Ensure that the exposed core wire is completely inserted into the cable hole and connected securely. Failing to do so may cause the SUN2000 to malfunction or be damaged.
- If the AC output power cable bears pulling force because the inverter is not installed securely, ensure that the last cable that bears the force is the PE cable.

1. Connect the AC output power cable for home load (L1/L2/N is used as an example here).

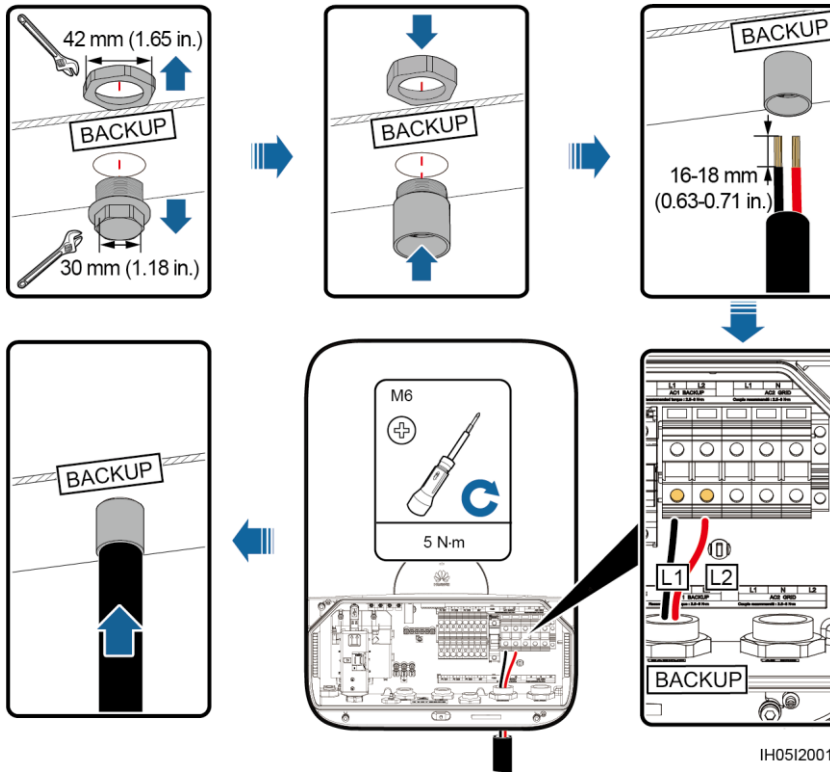


L1/L2

L1/L2/N



2. Connect the AC output power cable for critical load.



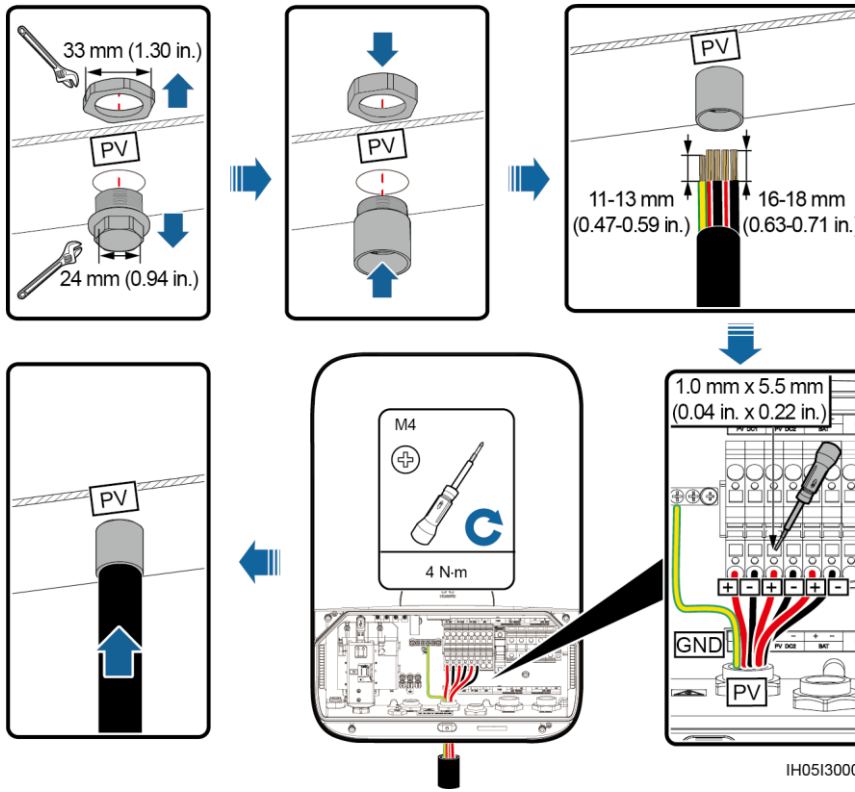
4.4 Installing the PV Input Power Cable

⚠ WARNING

- Ensure that the PV module output is well insulated to ground.
- Ensure that the PV input power cable is correctly connected and that the voltage does not exceed 500 V DC. Otherwise, the SUN2000 will be damaged.
- The output wiring terminals of PV modules or connected optimizers may have hazardous voltages. Touching the terminals may cause electric shock. Before connecting PV input power cables, ensure that the DC SWITCH of the SUN2000 is OFF and that the DC input terminals of the SUN2000 have no voltage.

NOTICE

- The ground cable at the PV side (GND) is connected to the ground point on the PV module support, ensuring reliable connection between the PV module frame and the SUN2000 ground point.
- Ensure that the positive and negative cables of PV strings are connected to the PV positive (+) and negative (–) terminals respectively.

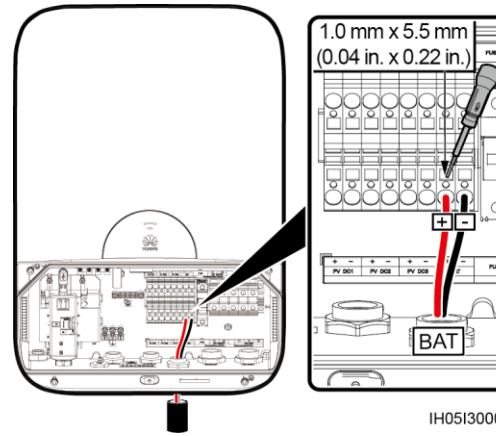


4.5 Installing the Battery Cable

For details about how to install the battery cable, see section 4.4 Installing the PV Input Power Cable.

DANGER

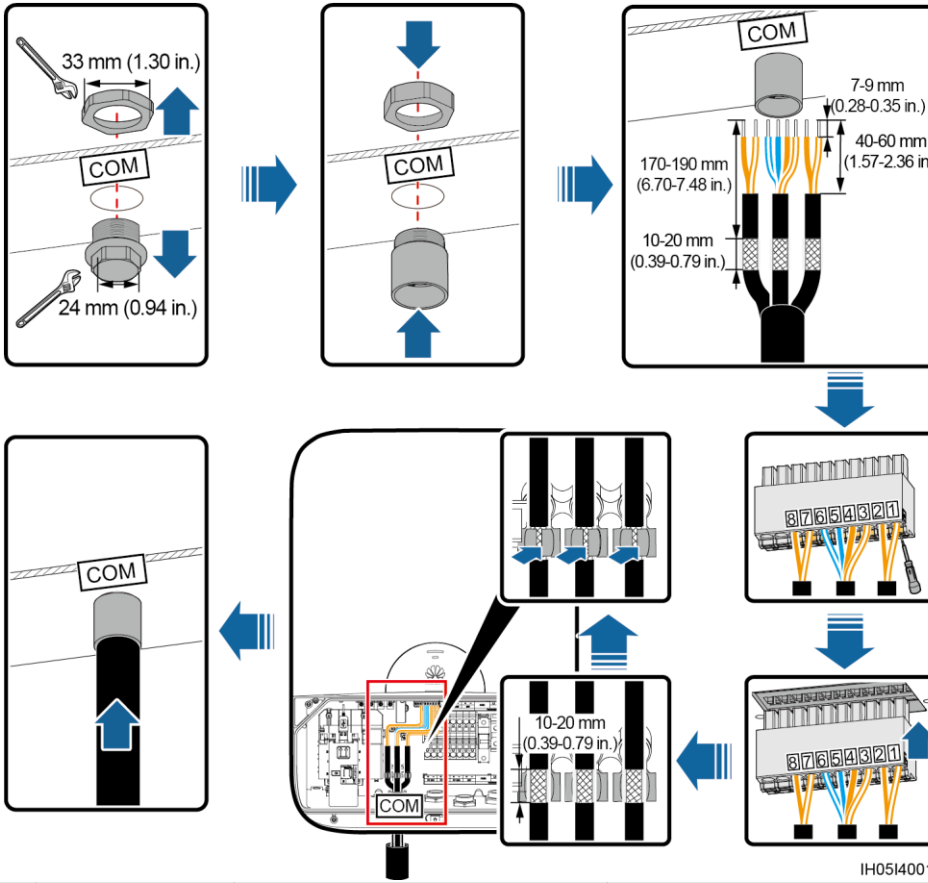
- Use dedicated insulation tools when connecting cables. Otherwise, serious injury may occur due to the high battery voltage.
- Ensure that the battery cable is correctly connected. Ensure that the polarities are not reversed.



4.6 Installing the Signal Cable

NOTICE

- When laying out a signal cable, separate it from the power cable to avoid signal interference.
- Cut off extra wires from the signal cable to be flush with the protection layer. Ensure that the exposed core wire is completely inserted into the cable hole and connected securely.

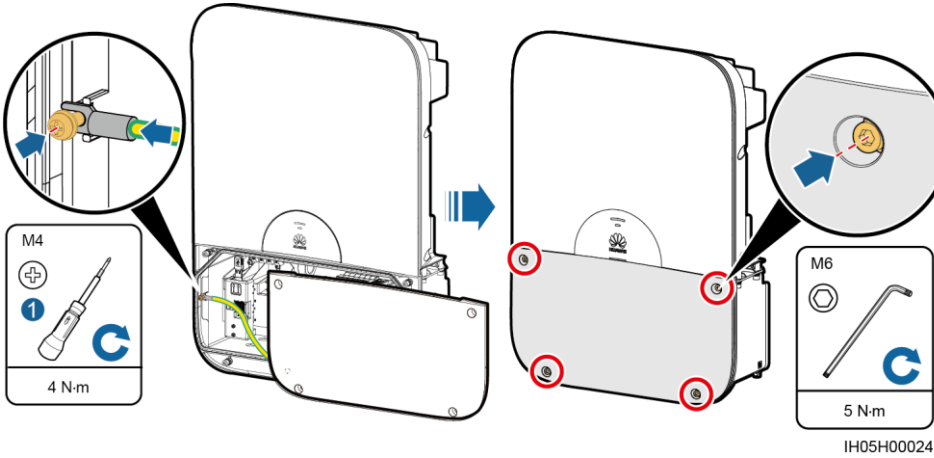


No.	Label	Definition	Description
1	RSS+	EMERGENCY STOP switch signal input	Can connect to the signal port on the emergency stop switch (NC).
2	RSS–		
3	EN+	Enable signal+	Can connect to the battery enable signal port and RS485 signal port.
4	EN–	Enable signal–	
5	485A2	RS485A, RS485 differential signal+	
6	485B2	RS485B, RS485 differential signal–	
7	485A1	RS485A, RS485 differential signal+	Can connect to the RS485 signal port on the energy meter.
8	485B1	RS485B, RS485 differential signal–	

5 Closing the Maintenance Compartment Door

NOTICE

- Before closing the maintenance compartment door, check that cables are connected correctly and securely. Then, take appropriate measures to ensure that the conduit and fitting of the threading tube are secured, seal the cable holes, and clear foreign matter from the maintenance compartment.
- If the screws on the enclosure door are lost, obtain the spare screws from the fitting bag.



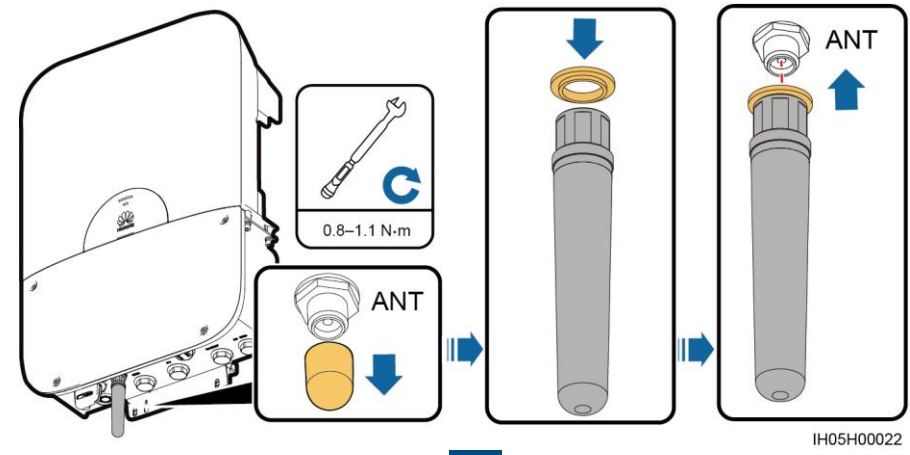
IH05H00024

6 Installing the Antenna

The 4G antenna and WLAN antenna are installed in the same way. This document uses the 4G antenna as an example.

NOTICE

- Ensure that the pad for the antenna is reliably installed. Otherwise, the protection rating of the device will be affected.
- Check that the antenna is securely connected.



IH05H00022

7 Verifying the Installation

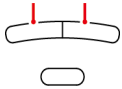
No.	Acceptance Criteria
1	The SUN2000 is installed correctly and securely.
2	The antenna and SIM card are installed correctly and securely.
3	Cables are routed properly as required by the customer.
4	DC SWITCH and all the switches connecting to the SUN2000 are in the OFF position.
5	All cables are connected correctly and securely.
6	Unused ports are blocked by waterproofing bolts.
7	The threading tubes at the bottom of the enclosure are sealed.
8	The maintenance compartment interior is clean and tidy, with no foreign matter.
9	The installation space is proper, and the installation environment is clean and tidy, without foreign matter.

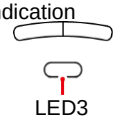
8 Powering On the System

NOTICE

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

1. Turn on the AC switch between the SUN2000 and the power grid.
2. Turn the DC switch at the bottom of the SUN2000 to the ON position.
3. If the battery terminal connects to the batteries, turn on the battery power switch and then the battery switch.
4. Observe the LED indicators to determine the SUN2000 operating status. (Blinking at long intervals: alternating 1s on and 1s off; blinking at short intervals: alternating 0.2s on and 0.2s off)

Category	Status		Indication
Running indication LED1 LED2 	LED1	LED2	N/A
	Steady green	Steady green	The SUN2000 operates in the grid-tied mode.
	Blinking green at long intervals	Off	The DC is on and the AC is off.
	Off	Blinking green at long intervals	The DC is off and the AC is on.
	Blinking green at long intervals	Blinking green at long intervals	Both the DC and AC are on, and the SUN2000 is not operating in the grid-tied mode.
	Steady orange	Steady orange	The SUN2000 operates in the backup mode.
	Blinking orange at long intervals	Off	The DC is on, and the SUN2000 has no output in the backup mode.
	Off	Off	Both the DC and AC are off or the SUN2000 operates in the low power consumption mode.
	Steady red	Steady red	Faulty
	Blinking red slowly	Steady green	Exporting power to the powergrid, optimizer fault.
	Blinking red slowly	Steady Orange	Backup mode, optimizer fault.

Category	Status	Indication
Communication indication 	LED3	N/A
	Blinks green at short intervals	The SUN2000 is in communication.
	Blinking green at long intervals	The SUN2000 is connecting to a mobile phone.
	Off	No communication.

9 Using the FusionHome App

NOTE

– The mobile phone application used for the SUN2000 is called FusionHome. This app communicates with the SUN2000 monitoring system over WiFi. As a convenient local monitoring and maintenance platform, it allows for querying alarms, configuring parameters, and performing routine maintenance.
– Search for "FusionHome" from the following app stores or scan the corresponding QR code, download the installation package, and install the FusionHome app by following the instructions.

- Huawei App Store (http://appstore.huawei.com)
- Google Play (Android) (https://play.google.com)
- App Store (iOS)

Google Play (Android)

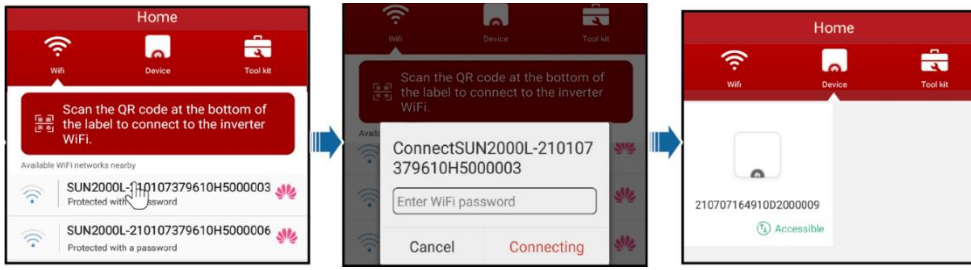
App Store (iOS)

9.1 Connecting to the SUN2000 over a Mobile Phone

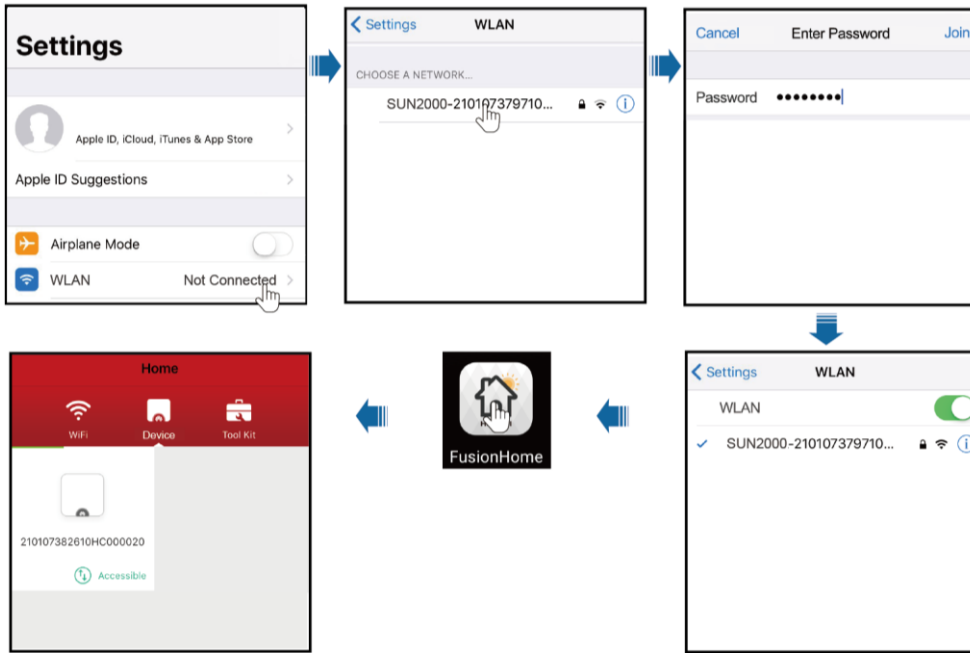
NOTICE

- The app screen snapshots provided in this document correspond to FusionHome 3.1.00.003. The figures are for reference only.
- The name of the connected SUN2000 WiFi network is represented by **SUN2000-***Serial number (SN)*. The SN is available on the label attached to the side of the SUN2000.
- Use the initial password **Changeme** upon first login. To ensure account security, change the password immediately after login.
- If you log in for the first time and the initial SUN2000 WiFi password is not changed, you can scan the WiFi login QR code on the side of the SUN2000 to connect to the SUN2000 WiFi network. If connecting through the app does not work, try to connect from your mobile phone.

Android

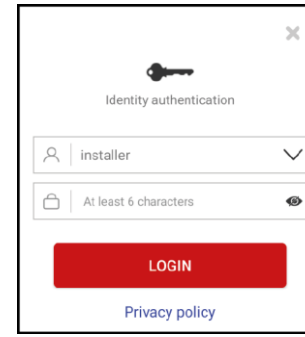


iOS



9.2 Quick Setting

1. On the **Inverter** screen, tap the corresponding SUN2000, select **installer**, enter the password, and then tap **LOGIN**.



NOTE

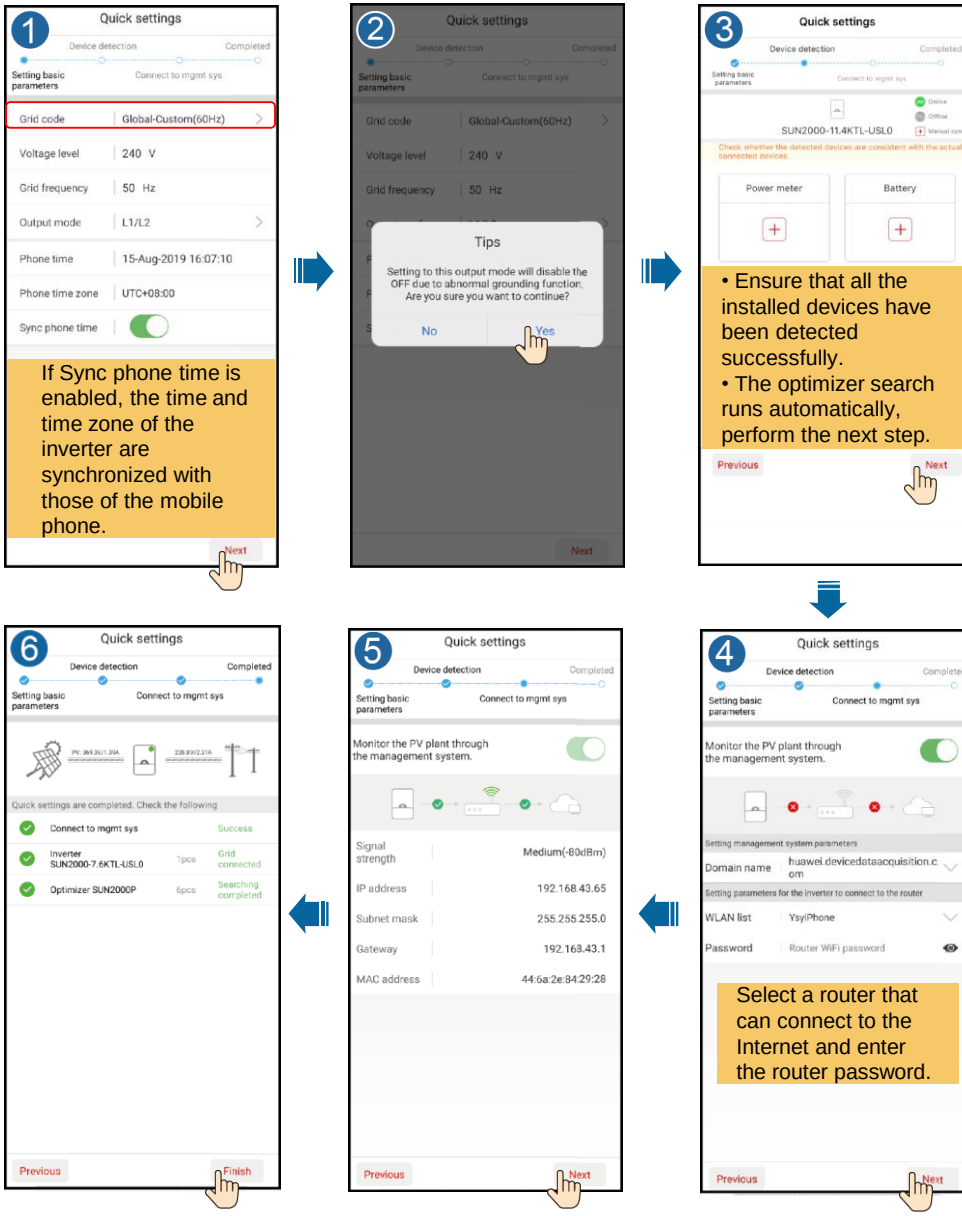
- The name of the connected SUN2000 is represented by its SN, which is available on the label attached to the side of the SUN2000.
- The initial password is **00000a**. Use the initial password upon first login. To ensure account security, change the password immediately after login.

2. On the **Home** screen, choose **Quick settings** to perform quick setting.

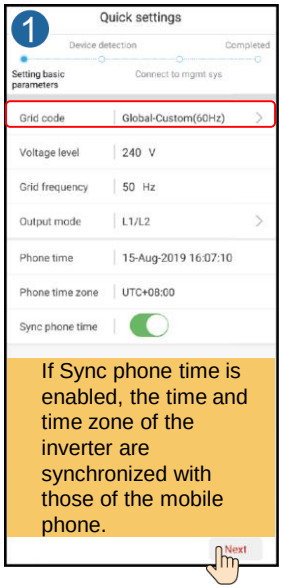
NOTE

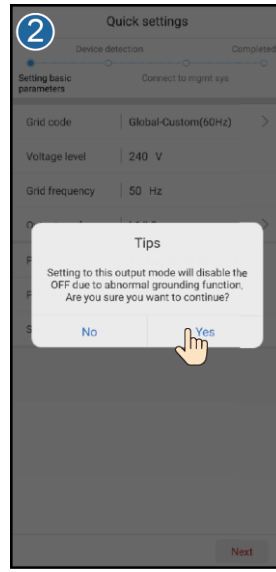
Set the grid code applies to the country or region where the SUN2000 is being used and the SUN2000 application scenario. Before setting the grid code, ensure that the DC side of the inverter is energized.

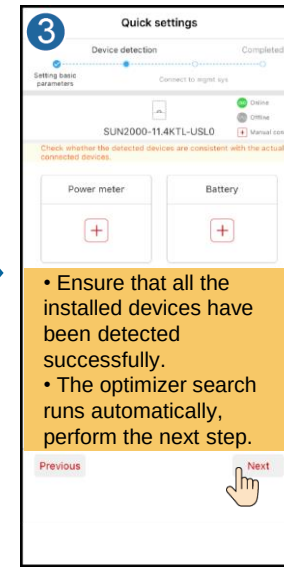
WLAN connection

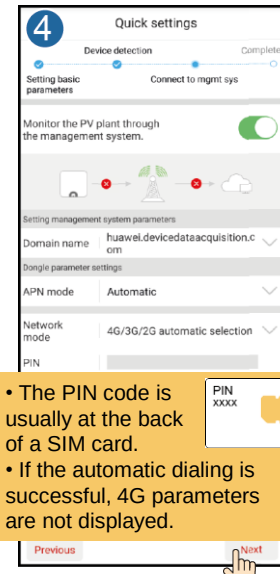


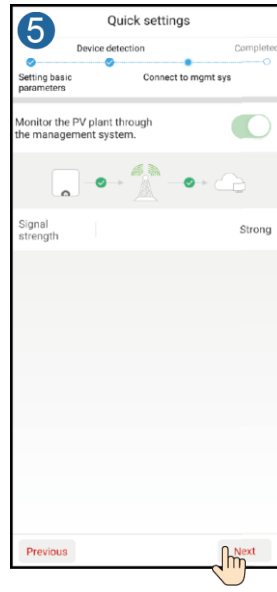
4G connection

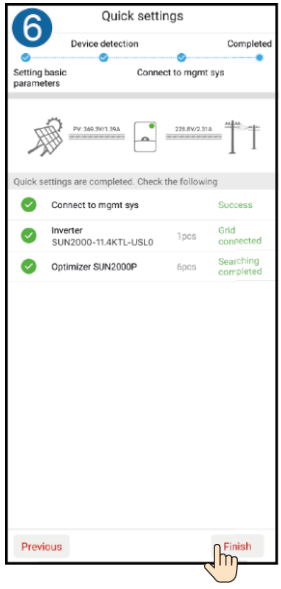










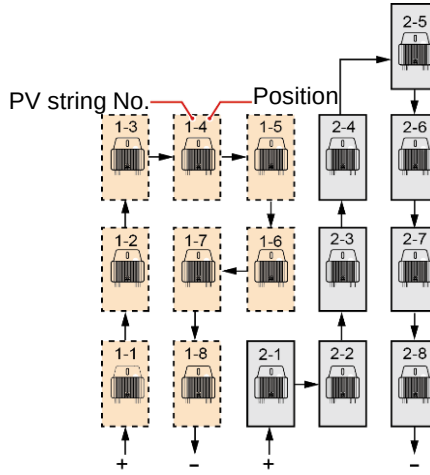


10 Physical Layout of Optimizers

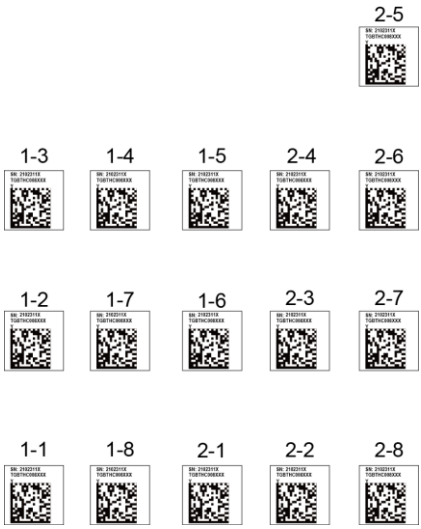
10.1 Attaching Optimizer SN Labels

Attach the SN labels based on the PV module and optimizer installation positions. The SN labels can be attached on a blank paper to facilitate the physical layout of PV modules on the FusionHome app.

Installation Positions of PV Modules and Optimizers

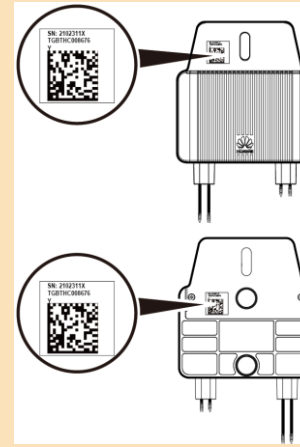


Attaching Optimizer SN Labels

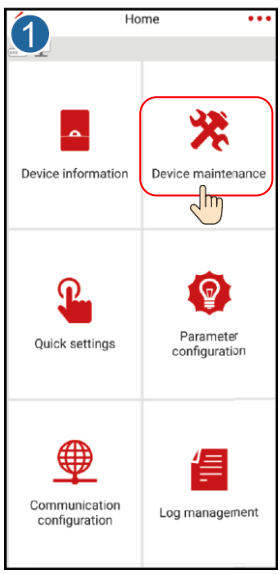


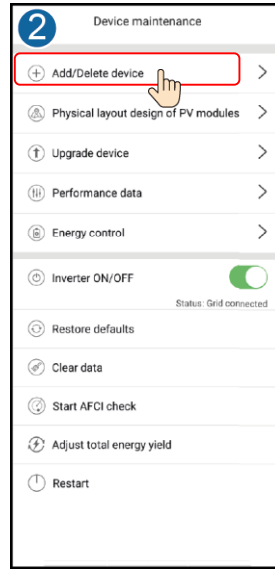
NOTE

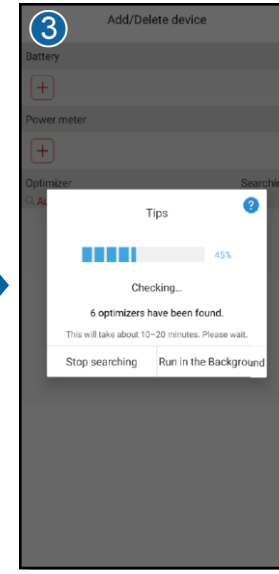
An optimizer has an SN label both on the front and rear sides. You can use either.

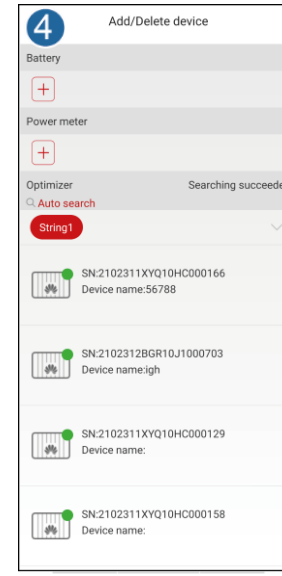


10.2 Verifying that the Search for Optimizers Is Successful

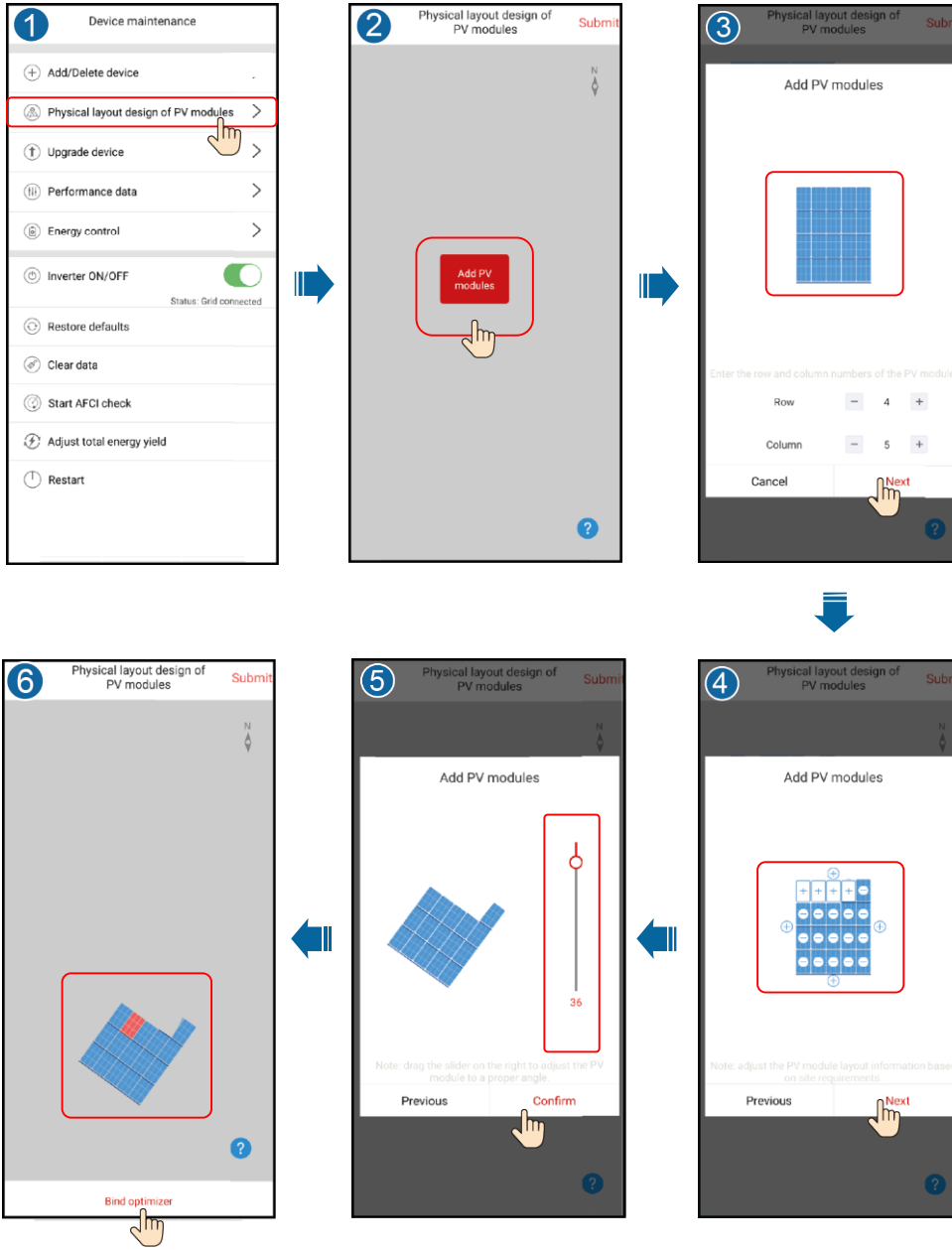


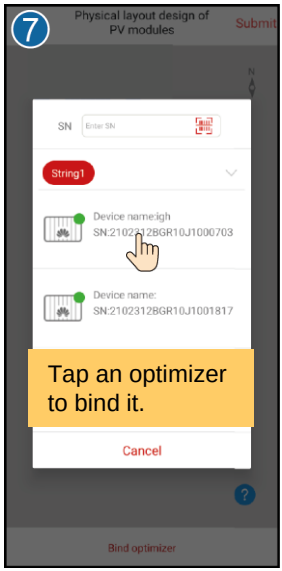


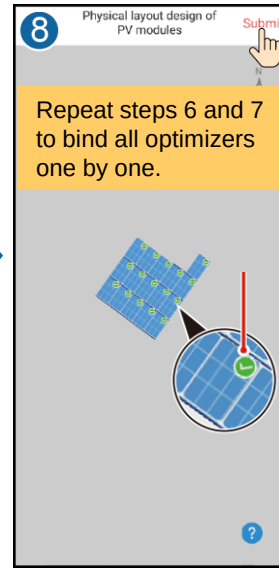




10.3 Physical Layout of PV Modules

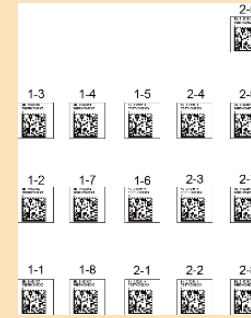




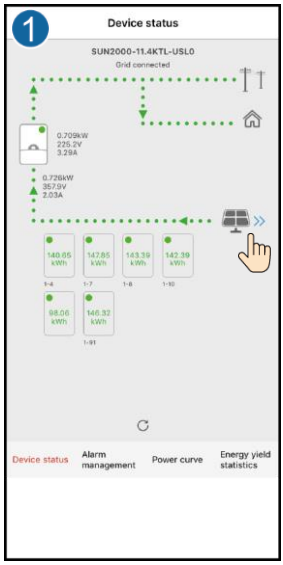


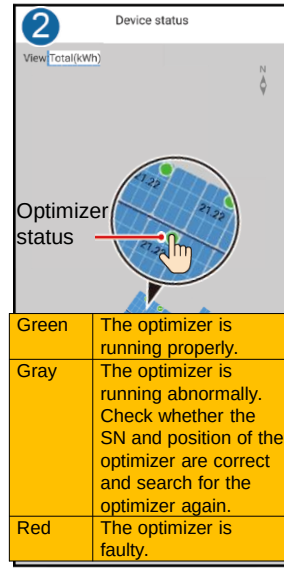
NOTE

Draw a physical layout diagram and bind the optimizers by referring to the paper attached with the optimizer SN labels mentioned in section 10.1.

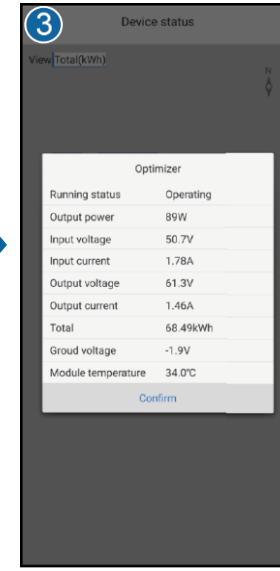


3. Choose **Home** > **Device information** > **Device status** to view the optimizer status.





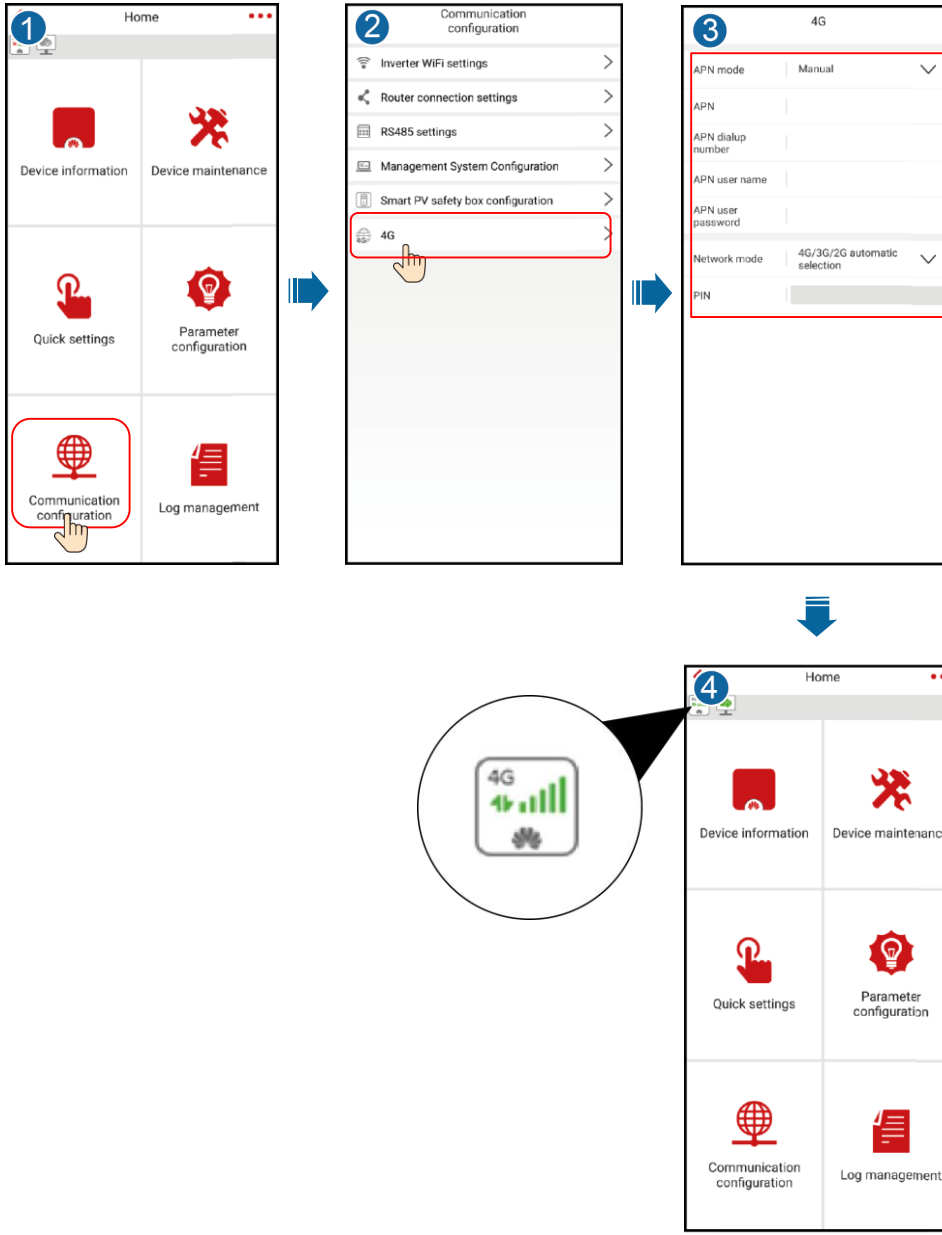
Green	The optimizer is running properly.
Gray	The optimizer is running abnormally. Check whether the SN and position of the optimizer are correct and search for the optimizer again.
Red	The optimizer is faulty.



11 FAQ

11.1 How Do I Set 4G Parameters?

For 4G inverters, if the 4G signal is good but the 4G network is disconnected, set the 4G parameters.



11.2 Meanings of Status Icons on the Home Screen

SIM Card Connection Status

		
The SIM card is not installed. Install it.	Failed to read the card. The signal is poor, or the subscriber is in arrears.	Not connected (signal strength) The 2G, 3G, or 4G display varies with the site conditions. The preceding icons use 4G as an example.
		
Enter the PIN, which can be obtained from the carrier.	The PIN is entered incorrectly for multiple times. The SIM card is locked. Contact the carrier to unlock the SIM card.	Connected (signal strength) The 2G, 3G, or 4G display varies with the site conditions. The preceding icons use 4G as an example.
		
Signal strength.		

Router Connection Status

		
Disconnected. Connect to routers.	The password is incorrect. Enter the correct password.	Connected (signal strength)

Management System Connection Status

	The connection failed. Connect to a management system.
	The connection is successful.

12 Grid Code Mapping Table

NOTE

Grid codes are subject to change. The listed codes are for your reference only.

No.	Grid Code	Description	No.	Grid Code	Description
1	IEEE 1547-LV208	US low-voltage power grid	2	IEEE 1547-LV240	US low-voltage power grid
3	IEEE 1547a-LV208	US low-voltage power grid	4	IEEE 1547a-LV240	US low-voltage power grid
5	ELECTRIC RULE NO.21-LV208	US California low-voltage power grid	6	ELECTRIC RULE NO.21-LV240	US California low-voltage power grid
7	HECO-LV208	US Hawaii low-voltage power grid	8	HECO-LV240	US Hawaii low-voltage power grid
9	PRC_024_Eastern-LV208	Eastern US low-voltage power grid	10	PRC_024_Eastern-LV240	Eastern US low-voltage power grid
11	PRC_024_Western-LV208	Western US low-voltage power grid	12	PRC_024_Western-LV240	Western US low-voltage power grid
13	PRC_024_Quebec-LV208	Canada Quebec low-voltage power grid	14	PRC_024_Quebec-LV240	Canada Quebec low-voltage power grid

13 Customer Service Contact Information

Customer Service Contact Information			
Region	**Country**	**Email**	**Hotline**
North America	United States	na_inverter_support@huawei.com	1-877-948-2934
	Canada	na_inverter_support@huawei.com	1-855-482-9343

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