

SDongleA-05

MODBUS TCP Guide

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Preface

Purpose

This document describes how to enable/disable Modbus TCP and provides the common-fault rectification methods, operations, and tool use guide.

Intended Audience

This document is intended for Modbus TCP personnel. Operator must:

- Be familiar with the product networking and related NEs' versions.
- Have device maintenance experience and be familiar with device operation and maintenance.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

Change History

Issue	Date	Description
01	2021-11-07	This issue is the first official release.
02	2022-04-19	Add Chapter 3.2 Remote Enable/Disable MODBUS TCP
03	2022-08-29	Modify Chapter 1.1 Models that support the Modbus TCP function
04	2023-10-19	Added device models supported in Chapter 1.1.
05	2024-07-10	Add Chapter 1.3 Description of the response error code or query timeout scenario

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1 Before You Start

1.1 Software of Device

To properly use the Modbus TCP function, each device subcomponent has a minimum version number. The following table lists the minimum version number requirements

Device	Minimum version number
SDongleA-05	V100R001C00SPC124
SUN2000L	V200R001C00SPC115
SUN2000-M1/M2	V100R001C00SPC139
SUN2000MA	V100R001C20SPC127
SUN2000MC	V200R023C00SPC105

Detailed Models:

SUN2000L	SUN2000-M1/M2
SUN2000-2KTL-L1	SUN2000-3KTL-M1
SUN2000-3KTL-L1	SUN2000-4KTL-M1
SUN2000-3.68KTL-L1	SUN2000-5KTL-M1
SUN2000-4KTL-L1	SUN2000-6KTL-M1
SUN2000-4.6KTL-L1	SUN2000-8KTL-M1
SUN2000-5KTL-L1	SUN2000-10KTL-M1
SUN2000-6KTL-L1	SUN2000-12KTL-M1

SUN2000L	SUN2000-M1/M2
SIW300H M020 L1	SUN2000-8KTL-M2
SIW300H M030 L1	SUN2000-10KTL-M2
SIW300H M040 L1	SUN2000-12KTL-M2
SIW300H M050 L1	SUN2000-15KTL-M2
SIW300H M060 L1	SUN2000-17KTL-M2
SUN2000-4.95KTL-JPL1	SUN2000-20KTL-M2
SUN2000-4.95KTL-NHL2	
GIN300-2KTL-L1	
GIN300-3KTL-L1	
GIN300-4KTL-L1	
GIN300-4.6KTL-L1	
GIN300-5KTL-L1	
GIN300-6KTL-L1	
SIW300G M020 W0	
SIW300G M030 W0	
SIW300G M040 W0	
SIW300G M050 W0	
SIW300G M060 W0	
SUN600-2KTL-L0	
SUN600-3KTL-L0	
SUN600-3.68KTL-L0	
SUN600-4KTL-L0	
SUN600-4.6KTL-L0	
SUN600-5KTL-L0	
SUN600-6KTL-L0	

SUN2000MA	SUN2000MC
SUN2000-30KTL-M3	SUN2000-50KTL-ZHM3
SUN2000-36KTL-M3	

SUN2000MA	SUN2000MC
SUN2000-40KTL-M3	

1.2 Precautions

Before enable/disable Modbus TCP, pay attention to the following:

- During the configuration, ensure that the Dongle is not powered off.
- After the configuration is complete, you do not need to perform the configuration again after the device is powered off and then powered on.
- After the inverter is replaced, reconfigure the inverter.
- After the Dongle is replaced, you do not need to reconfigure the inverter.

1.3 Response Error Codes or Response Timeout Scenarios

Common error codes are as follows:

0x06: The slave device is busy.

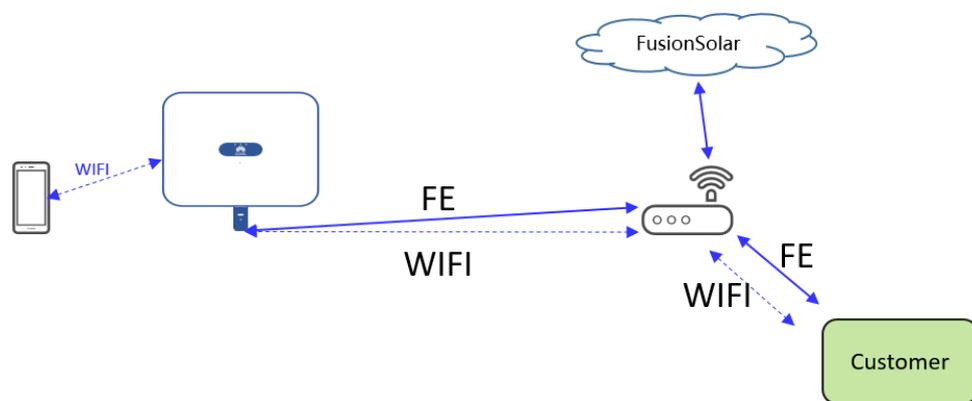
0x04: The slave node is faulty.

Note: For details about other error codes, see section 3.3.2 "Exception Code List" in the SDongle V200R022CC10 MODBUS Interface Definitions.

The following describes the common error codes (0x06 and 0x04) and the causes of query timeout:

1. The SDongle communicates with the inverter over an RS485 bus, and it's half-duplex mode. 9600 baud rate, and limited serial bus channel resources. The modbustcp function and internal communication of Huawei optical storage system use the same link. Therefore, when the 485 link is occupied, the system responds with an error code or the response times out.
2. The scenarios where the device returns an error code or the query times out are as follows:
 - Transferring files such as log export and upgrade files.
 - The current query instruction is not processed. (For example, the commands for querying or setting inverters on the NMS have not been executed.)
 - High-priority task scenarios, such as grid-tied power control and battery power control.
3. If an error code or query timeout message is received, wait for 5s and then continue the query.

2 Networking Diagram



NOTE

The Dongle and the customer's device must be in the same LAN. The access mode is not limited (either network cable or Wi-Fi).

3 Operations

3.1 Local Enable/Disable MODBUS TCP

3.1.1 Environment Setup

[Required Devices]

- Mobile phone
- The Dongle is powered on and running properly.

[Device requirements]

- Mobile phone operating system: Android 4.0 or later.
- Recommended mobile phones: Huawei and Samsung.
- The mobile phone supports the web browser and can connect to the Internet.
- The mobile phone supports the Wi-Fi function.

3.1.2 Procedure

Step 1 Downloading and Installing the App

Search for SUN2000 in the following app market, download the app installation package (the version number must be 3.2.00.015 or later), and install the app by following the instructions.

- Baidu Mobile Assistant (Android)
- Huawei AppGallery (Android)

After the installation is complete, the SUN2000 icon is displayed.



Step 2 Downloading the Inverter Upgrade Package

Download the update package from <http://e.huawei.com> and copy the update package to the root directory of your phone's internal storage or microSD card.

Step 3 Connects to the inverter. The app supports the following connection mode.

- **Method 1: Connect the mobile phone to the inverter through the inverter Wi-Fi hotspot.**

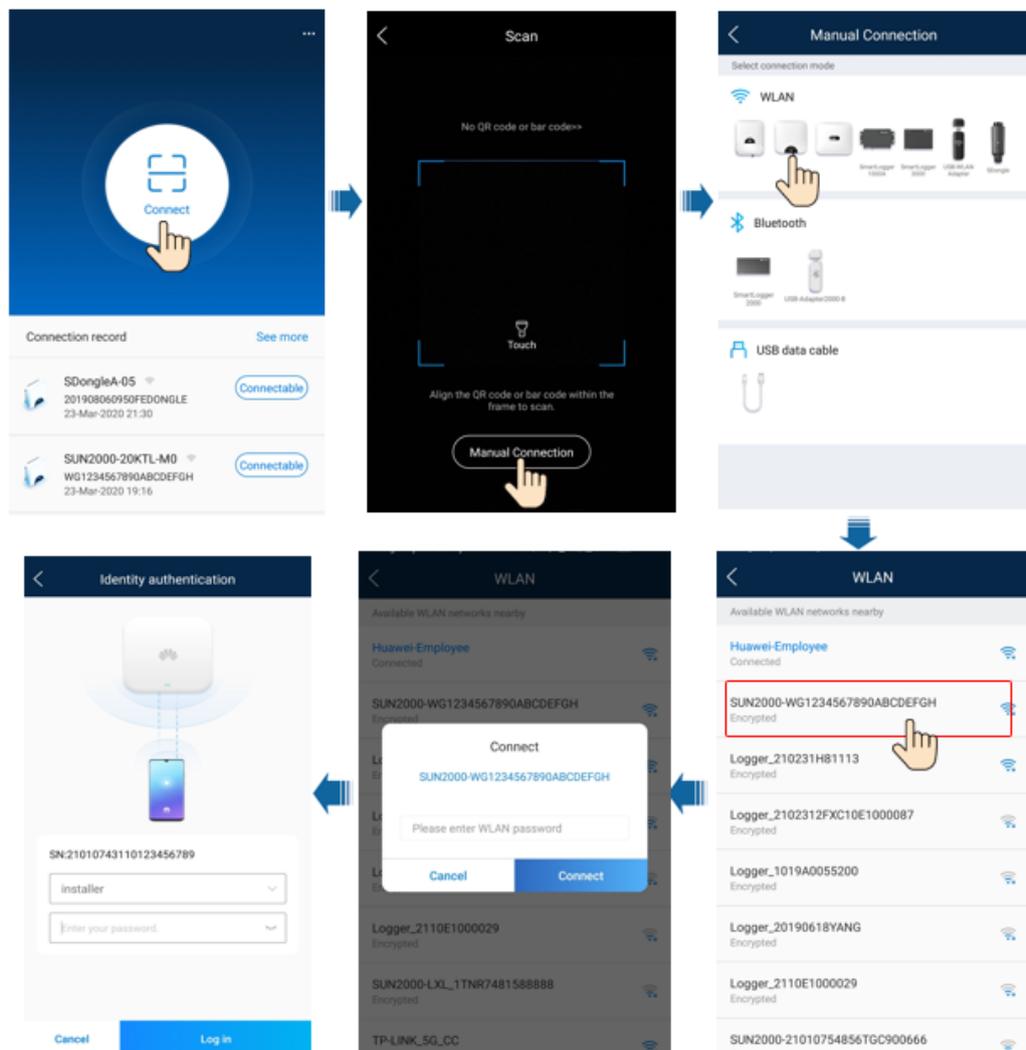
Open the SUN2000 APP, touch Connect, and select the device type you want to connect. Here, select WLAN.

Select the WiFi name of the inverter and enter the WiFi password of the inverter. Use the initial password Changeme for the first login and change the password as soon as possible to ensure account security.

NOTE

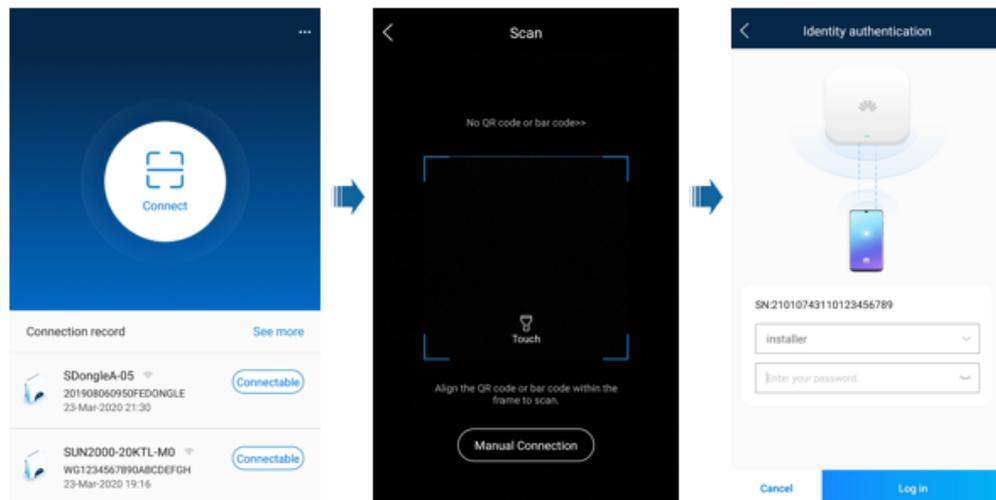
The WiFi name of the connected inverter is SUN2000-SN, which can be obtained from the inverter label.

Figure 3-1 Connect to inventor



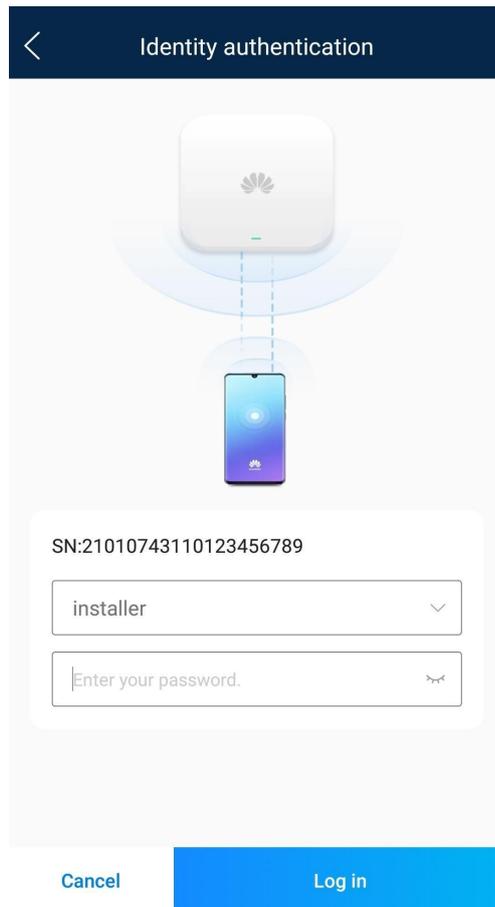
If you log in to the SUN2000 for the first time and do not change the WiFi password, you can scan the WiFi QR code of the SUN2000 to connect to the WiFi network.

Figure 3-2 Scan to upgrade



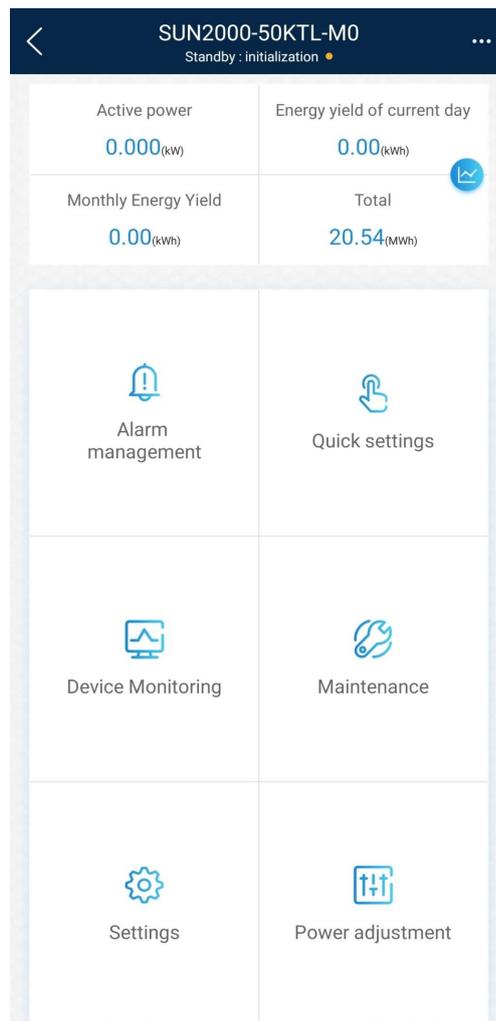
Step 4 Select a user name and enter the password (select **installer**, and enter the correct password, which is 00000a by default) to log in to the operation console.

Figure 3-3 Log in



Step 5 On the home page, select **Settings**.

Figure 3-4 Home page



Step 6 On the Settings page, click **Communication configuration**. The Communication configuration page is displayed.

Figure 3-5 Settings

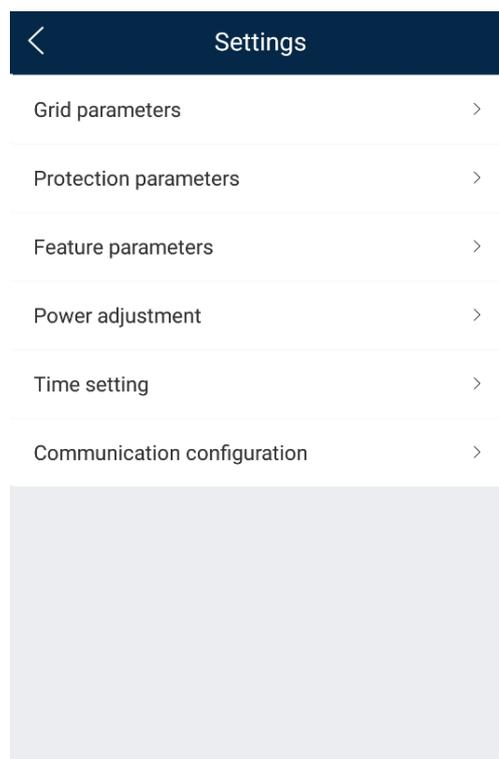
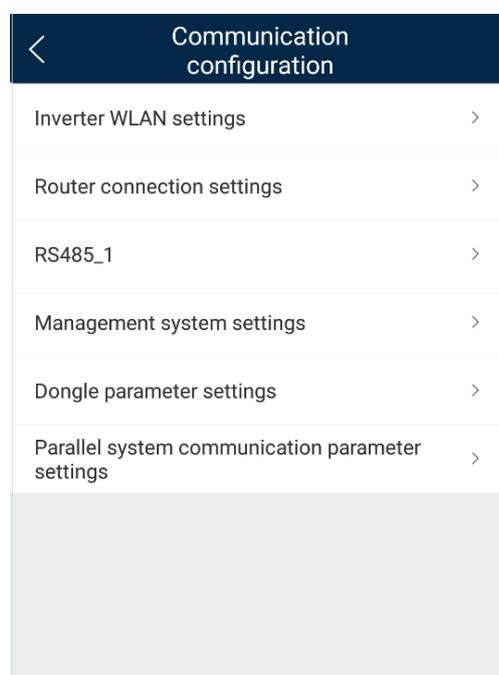
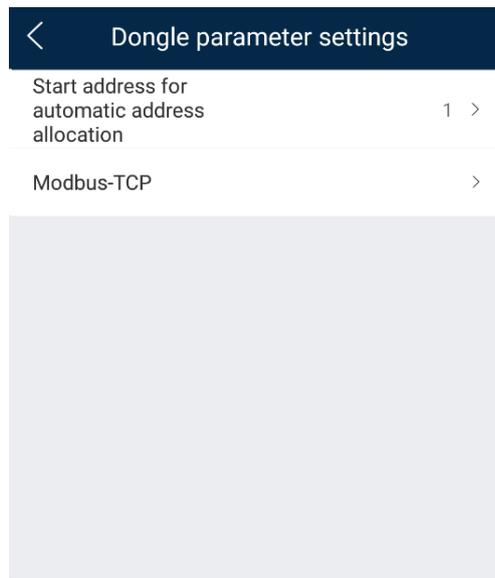


Figure 3-6 Communication configuration



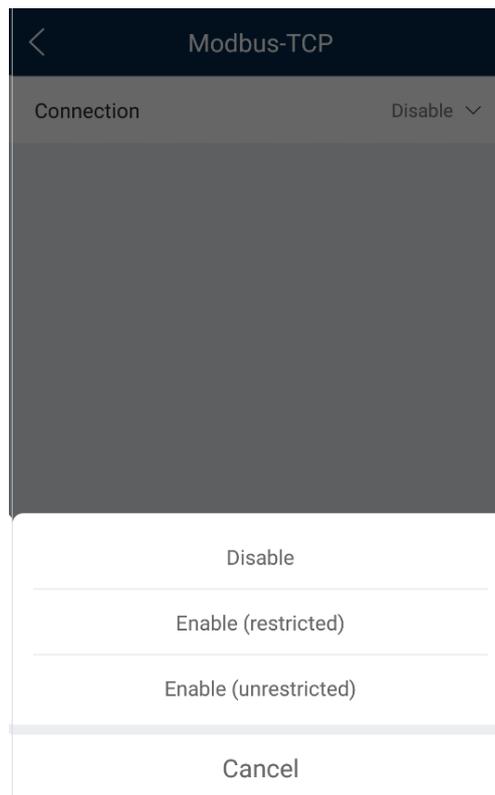
Step 7 On the Communication configuration page, click **Dongle parameter settings**. The Dongle parameter settings page is displayed.

Figure 3-7 Dongle parameter settings



Step 8 On the Dongle parameter settings page, click **Modbus-TCP**.

Figure 3-8 Modbus TCP



 **NOTE**

If the MODBUS TCP function is disabled, customer devices cannot access the network.

If the restriction function is enabled, you must configure a trustlist IP address (currently, only one trustlist IP address is supported) so that only the client devices with the trustlist IP address can access the network.

If unrestricted is enabled, all client devices on the same LAN can access the network, but only one client device can access the network at a time.

----End

3.1.3 Troubleshooting

If Modbus TCP is not found in step 6, check whether the inverter version and app version meet requirements.

If MODBUS TCP still cannot be used after the configuration is complete, check whether the SDongle version meets the requirements.

3.2 Remote Enable/Disable MODBUS TCP

3.2.1 Environment Setup

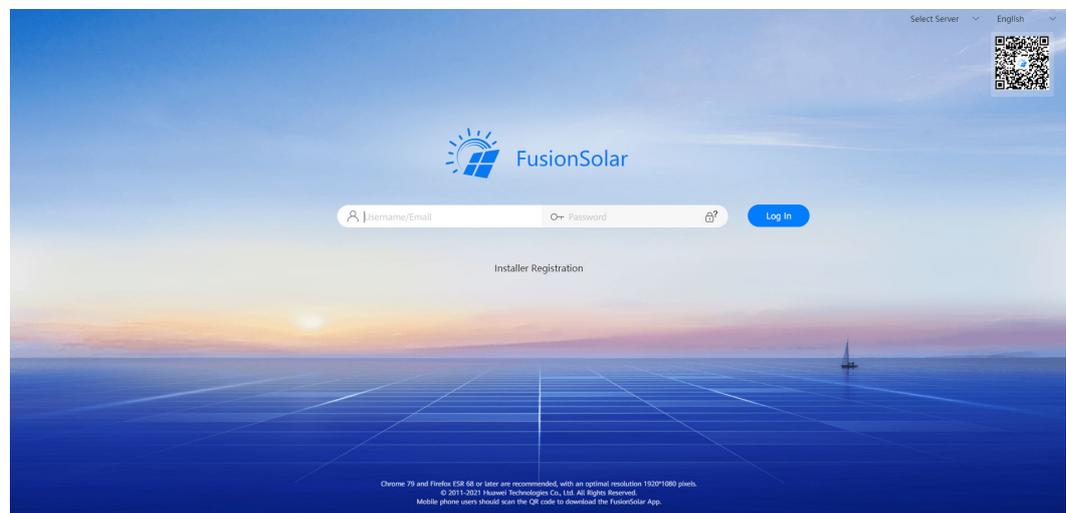
[Required devices] A PC, a Dongle, a SUN2000MA, a power cable, and a network cable

[Device requirements] The SUN2000MA and the Dongle are powered on normally and are connected to the network. The communication between them is normal.

3.2.2 Procedure

Open a browser, enter **https://intl.fusionsolar.huawei.com** to access the NMS. Enter the user name and password to log in.

Figure 3-9 Login

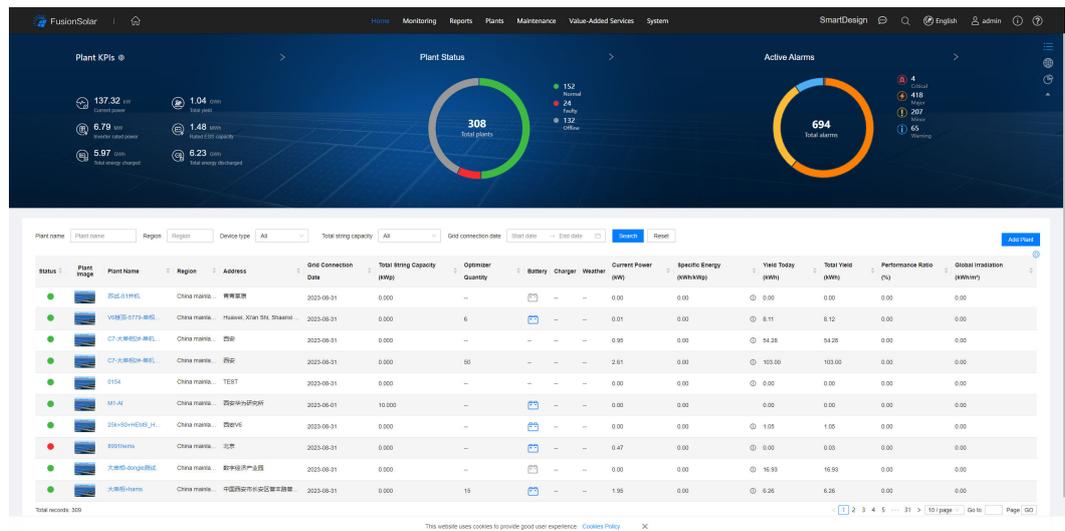


NOTE

- This document uses <https://intl.fusionsolar.huawei.com/> as an example to describe related operations. The operation is subject to the NMS to which the inverter connects.
- If you do not have an account, you need to register an installer account before logging in to the system.
- Use Internet Explorer 11, Chrome 67, Safari 9.0, or a later version. Otherwise, exceptions may occur.

Step 1 On the home page of the NMS, click **Home --> List View** at the upper page.

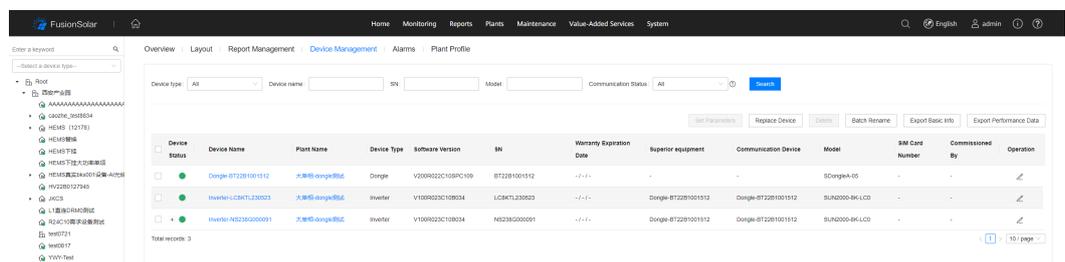
Figure 3-10 List View



Before upgrading the inverter, ensure that the PV plant is created successfully and you can find the corresponding device on the **Device Management** tab page.

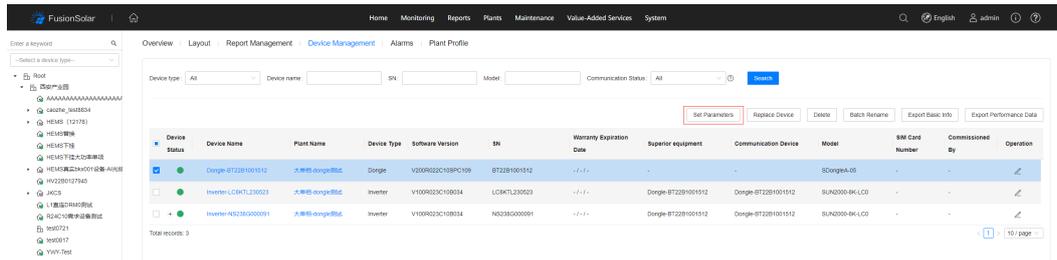
Step 2 On the list View, Choose your plant, and Click **Device Management**.

Figure 3-11 Device Management



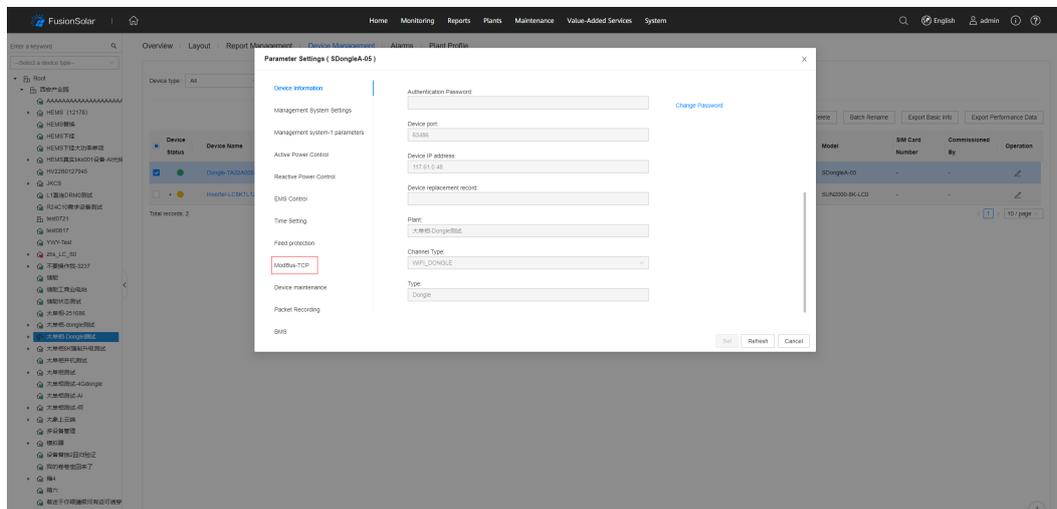
Step 3 Choose your SDongleA-05, click **Set Parameters**.

Figure 3-12 Set Parameters



Step 4 On the Parameter Settings, click **Connection parameters**, there is Connection settings of MODBUS TCP.

Figure 3-13 MODBUS TCP settings



----End

3.2.3 Troubleshooting