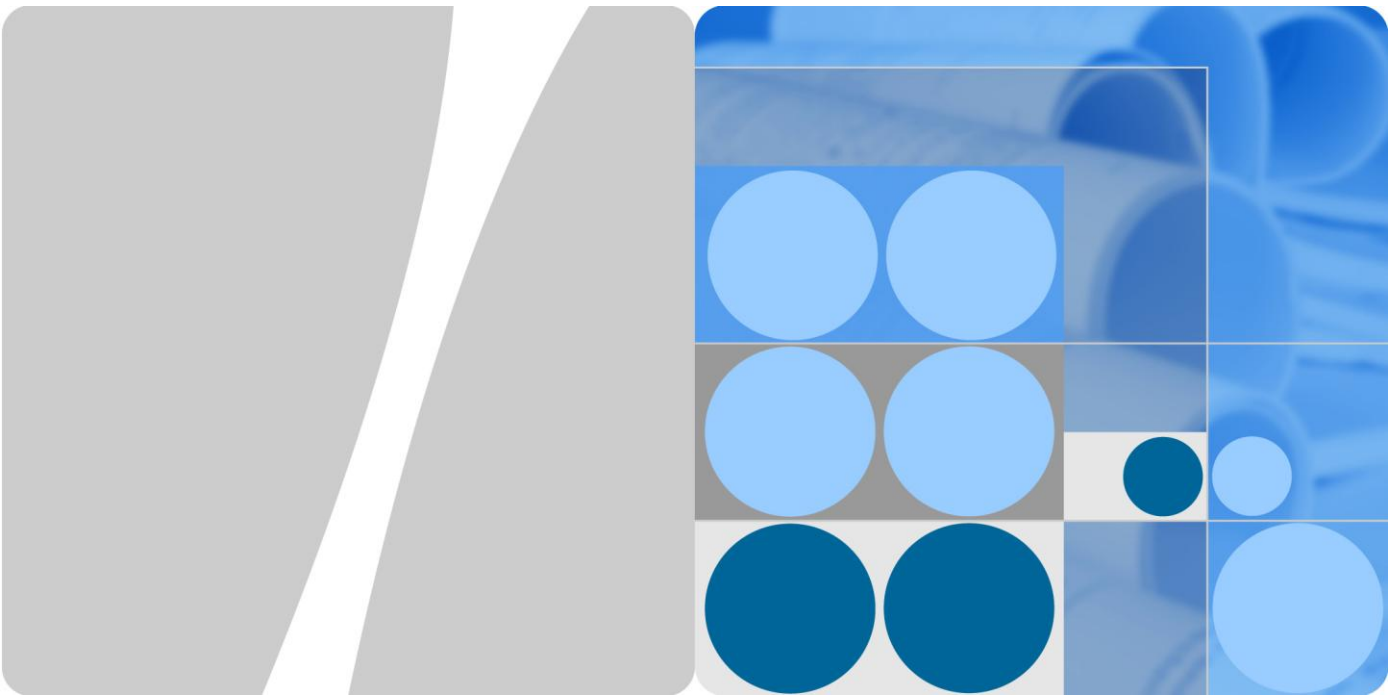

SUN2000 APP

User Manual (Android, Beta)

Issue 01

Date 2017-06-25

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About This Document

Purpose

This document describes how to download, install, use, and troubleshoot the SUN2000 app. Before downloading, installing, and using the SUN2000 app, understand the functions and features of the app and read through the precautions and instructions in this manual.

This document is subject to update and revision. You can log in to http://support.huawei.com/carrier and search **SUN2000** in the **Product Support** tab to download the latest version.

Intended Audience

This document is intended for photovoltaic (PV) power plant personnel and qualified electrical technicians.

Symbol Conventions

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

Symbol	Description
DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in serious injury or death.
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may 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.

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Symbol	Description
NOTE	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, or environment deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all updates made in previous issues.

Issue 01 (2017-06-25)

This issue is used for first office application (FOA).

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1 App Introduction

1.1 Function

The SUN2000 app is a mobile application that communicates with SUN2000s or the PID module over Bluetooth or a USB data cable and communicates with the SmartLogger over Bluetooth. The app allows you to query alarms, configure parameters, and perform routine maintenance. It is a convenient platform for local monitoring and maintenance. The app name is displayed as **SUN2000**.

1.2 Supporting Products

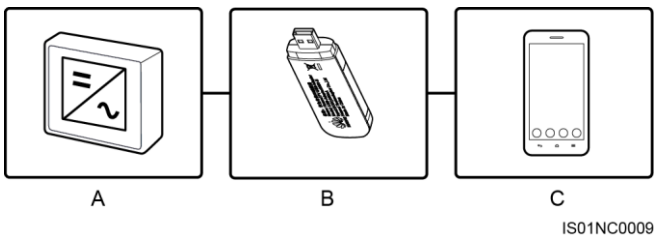
1.2.1 SUN2000

Connection Method

After the DC or AC side of the SUN2000 is energized, the SUN2000 can connect to the app in either of the following ways:

1. Use a Bluetooth module for connection.

   Figure 1-1 Connection over a Bluetooth module

   (A) SUN2000 (B) Bluetooth module (C) Mobile phone

2. Use a USB data cable for connection.

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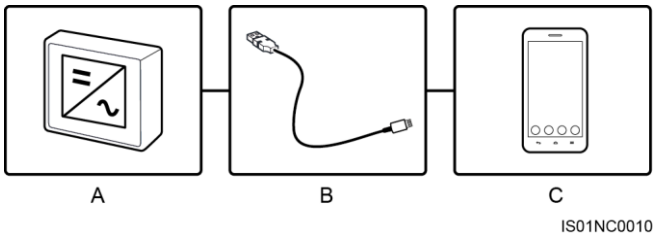
Figure 1-2 Connection over a USB data cable



(A) SUN2000 (B) USB data cable (C) Mobile phone

The SUN2000 connects to the app over a Bluetooth module with the model of USB-Adapter2000-B or BF4030. For the version mapping between the SUN2000 and the app, see Table 1-1.

Table 1-1 Version mapping

SUN2000 Model	SUN2000 Version	App Version	Connection Method		
			USB-Adapter2000-B Bluetooth Module	BF4030 Bluetooth Module	USB Data Cable
SUN2000-(8KTL-28KTL), including the SUN2000-8KTL, SUN2000-10KTL, SUN2000-12KTL, SUN2000-15KTL, SUN2000-17KTL, SUN2000-20KTL, SUN2000-23KTL, SUN2000-24.5KTL, and SUN2000-28KTL	SUN2000 V100R001C81SPC110 and later versions	2.1.20.10	Supported	Supported	Supported
SUN2000-30KTL-A/33KTL/40KTL	Versions earlier than SUN2000 V200R001C90SPC109		Not supported	Supported	
	SUN2000 V200R001C90SPC109 and later versions		Supported		
SUN2000-22KTL-US/25KTL-US/30KTL-US	Versions earlier than SUN2000 V200R001C02SPC102		Not supported		

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SUN2000 Model	SUN2000 Version	App Version	Connection Method		
			USB-Adapter2000-B Bluetooth Module	BF4030 Bluetooth Module	USB Data Cable
	SUN2000 V200R001C02SPC102 and later versions		Supported		
SUN2000-33KTL-JP/40KTL-JP/36KTL/42KTL/43KTL-IN-C1/50KTL/50KTL-C1	Versions earlier than SUN2000 V200R002C00SPC102		Not supported		
	SUN2000 V200R002C00SPC102 and later versions		Supported		
SUN2000-60KTL-HV-D1	SUN2000HA V100R001C00 and later versions		Supported		
SUN2000-45KTL-US-HV-D0	SUN2000HA V100R001C10 and later versions		Supported		
SUN2000-33KTL-US/36KTL-US/40KTL-US	SUN2000 V200R002C20 and later versions		Supported		

NOTE

- Version mapping in the previous table is for reference only. For details, see the *SUN2000APP Product Version Configuration Information Form*.
- The SUN2000 version can be queried on the app, LCD, or SmartLogger.
- When you are upgrading the SUN2000 version on the network management system (NMS), you can also view the SUN2000 version information.

1.2.2 SmartLogger

The data collector SmartLogger2000 (SmartLogger for short) uses the app for communication.

Connection Method

The SmartLogger has a built-in Bluetooth module, which allows the app to communicate with the SmartLogger.

Table 1-2 shows the version mapping between the SmartLogger and the app that are connected over a Bluetooth module.

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Table 1-2 Version mapping

SmartLogger	SmartLogger Version	App Version	Bluetooth Connection
SmartLogger2000	SmartLogger V200R001C00SPC103 and later versions	2.1.20.10	Supported
	SmartLogger V200R001C10SPC010 and later versions		
	SmartLogger V200R001C30		

1.2.3 PID

The PID product that can use the app for communication is SmartPID2000 (PID module for short).

Connection Method

After the PID module is powered on, it can connect to the app over an external Bluetooth module or a USB data cable.

The PID module connects to the app over a Bluetooth module with the model of USB-Adapter2000-B. For the version mapping between the PID module and the app, see Table 1-3.

Table 1-3 Version mapping

PID Module	PID Module Version	App Version	Connection Method	
			USB-Adapter 2000-B Bluetooth Module	USB Data Cable
SmartPID2000	SmartPID2000 V100R001C00	2.1.20.10	Supported	

1.2.4 Required Accessories

Mobile Phone

- Mobile phone operating system: Android 4.0 or later.
- Recommended brands: Huawei, Samsung.
- The mobile phone supports a web browser to connect to Internet.
- The mobile phone supports Bluetooth.

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Bluetooth Module

Purchase the Bluetooth module sold with the SUN2000. A Bluetooth module purchased from any other source may not support communication between the app and the SUN2000 or the PID module.

Table 1-1 lists the version mapping between Bluetooth module models and SUN2000s. Table 1-3 lists the version mapping between Bluetooth module models and PID modules. For the Bluetooth module working with the SUN2000, the USB-Adapter2000-B model is preferred.

Table 1-4 Bluetooth module models

Bluetooth Module	Component BOM Number	Purchased From
USB-Adapter2000-B	02311NEA	Can be purchased from Huawei
BF4030	06080358	

USB Data Cable

Use the USB data cable delivered with the mobile phone.

NOTE

- The port type of the USB data cable connected to the SUN2000 is USB 2.0.
- If the mobile phone provides a USB Type-C port, prepare a USB Type C to USB 2.0 adapter cable.

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2 Downloading and Installing the App

Obtaining the Installation Package

You can search for **SUN2000** in the following Android market apps and download the SUN2000 app installation package.

- Huawei App Store
- Google Play

Installing the App

After the installation package is downloaded, tap **Install** and install the app by following the instructions.

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3 Operations on the Screen for Connecting to the SUN2000

NOTICE

- The UI snapshots provided in this section correspond to the SUN2000APP 2.1.20.10 version. The data on the UI snapshots is for reference only.
- When the app is connected to SUN2000s of different models, parameters displayed on the screen vary.
- The 1000 V and 1500 V SUN2000s have the maximum input voltages of 1000 V and 1500 V respectively. The 1100 V SUN2000 refers to the SUN2000 with the maximum input voltage of 1100 V or the SUN2000-33KTL-US/36KTL-US/40KTL-US. The maximum input voltage can be queried from the product nameplate or the appropriate user manual.

3.1 Connecting to the SUN2000

3.1.1 Connection over a Bluetooth Module

Prerequisites

- The DC or AC side of the SUN2000 has been energized.
- A Bluetooth module is available.

NOTE

Keep the mobile phone within 5 m away from the SUN2000. Otherwise, communication between them would be affected.

Procedure

Step 1 Connect the Bluetooth module to the **USB** port at the bottom of the SUN2000.

Step 2 Enable Bluetooth on the mobile phone.

Step 3 Start the app. The login screen is displayed.

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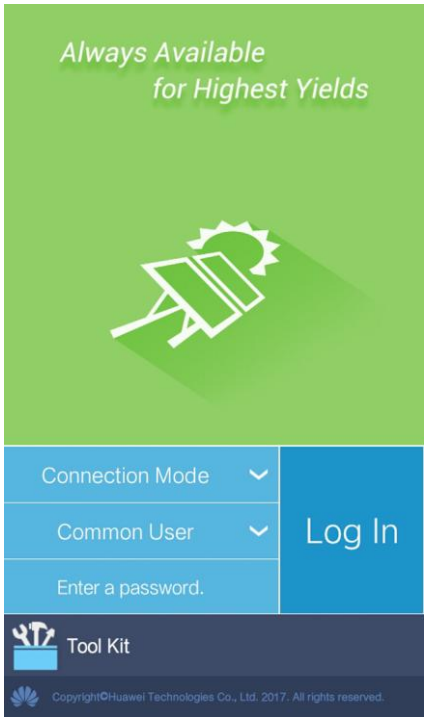
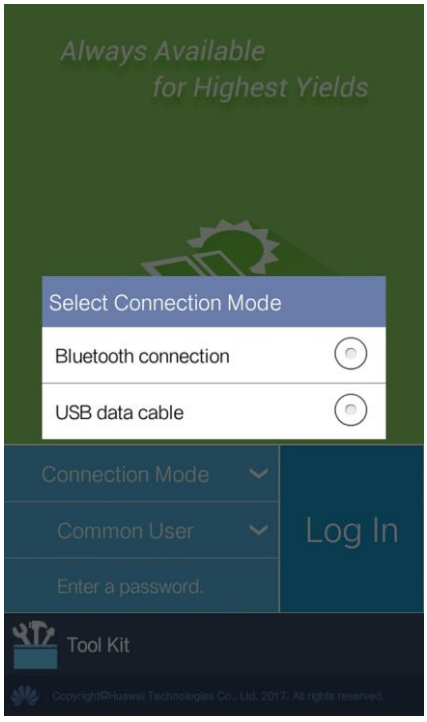
Figure 3-1 Login screen



Step 4 Tap **Connection Mode** and select **Bluetooth connection**.

Figure 3-2 Selecting a connection mode



Step 5 Tap **Search for Device** to search for a Bluetooth device.

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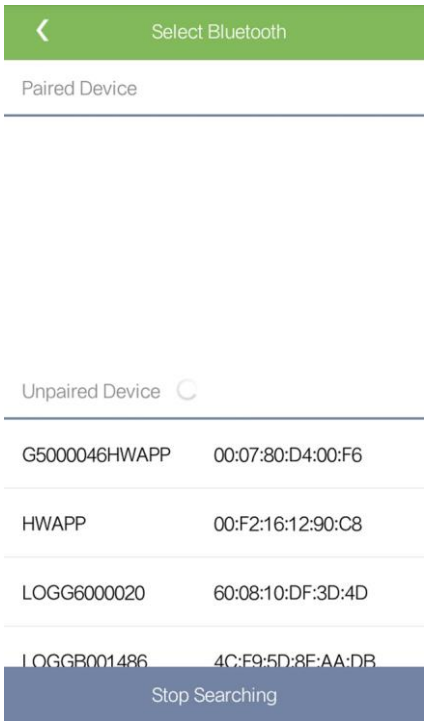
Figure 3-3 Searching for Bluetooth devices



Step 6 After Bluetooth devices are found, select the target Bluetooth device to set up a connection.

NOTE
If the Bluetooth module is USB-Adapter2000-B, the connected Bluetooth device is named after *last 8 digits of the SN bar code*+**HWAPP**. The SN bar code can be obtained from the silk screen on the USB-Adapter2000-B.

----End

3.1.2 Connection over a USB Data Cable

Prerequisites

- The DC or AC side of the SUN2000 has been energized.
- A USB data cable is available.

Procedure

Step 1 Connect the USB data cable from the USB port at the bottom of the SUN2000 to the USB port on the mobile phone.

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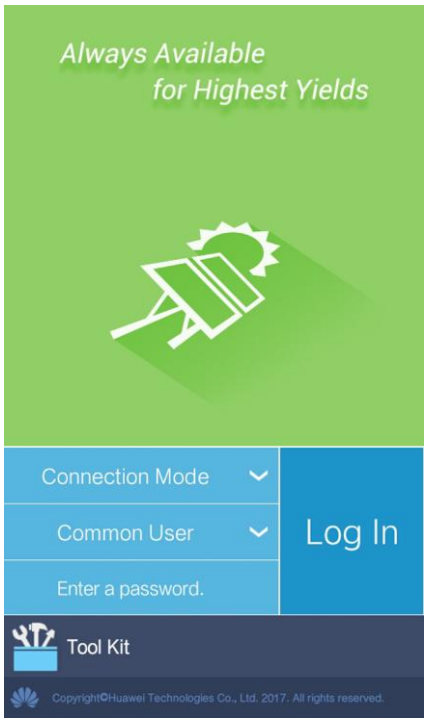
NOTICE

After connecting the USB data cable, **Connected to USB Accessory** is displayed on the mobile phone, indicating that the SUN2000 and the mobile phone have been successfully connected. Otherwise, the USB data cable connection is invalid.

Step 2 Start the app. The login screen is displayed.

Figure 3-4 Login screen



Step 3 Tap **Connection Mode** and select **USB data cable**.

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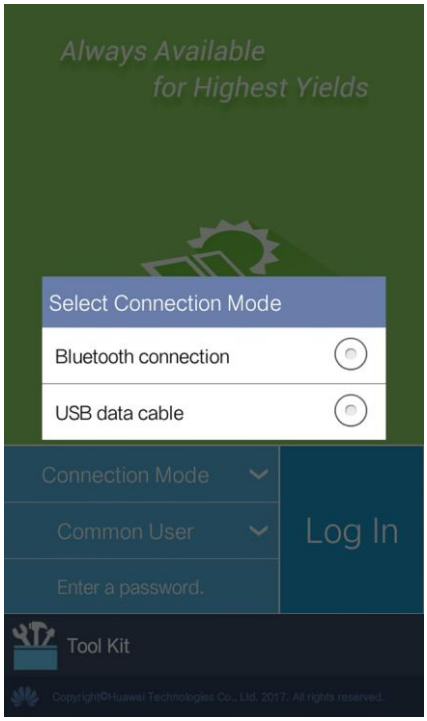
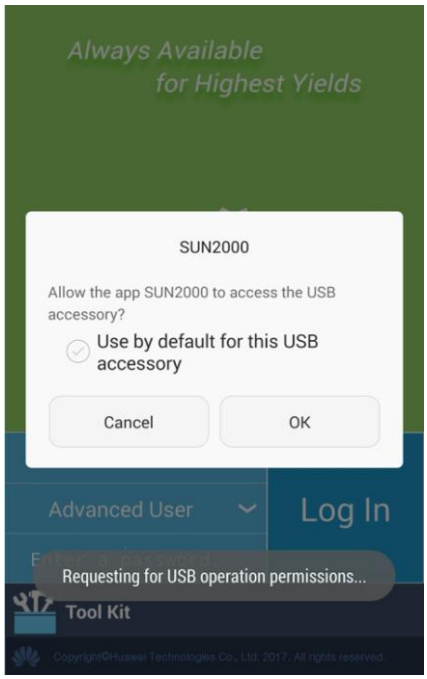
Figure 3-5 Selecting a connection mode



Step 4 A message is displayed, asking you to confirm the USB access. Tap **OK**.

Figure 3-6 Message



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NOTE

After you select **Use by default for this USB accessory**, the message will not appear if you log in to the app again without reconnecting the USB data cable.

----End

3.1.3 Logging In to the App

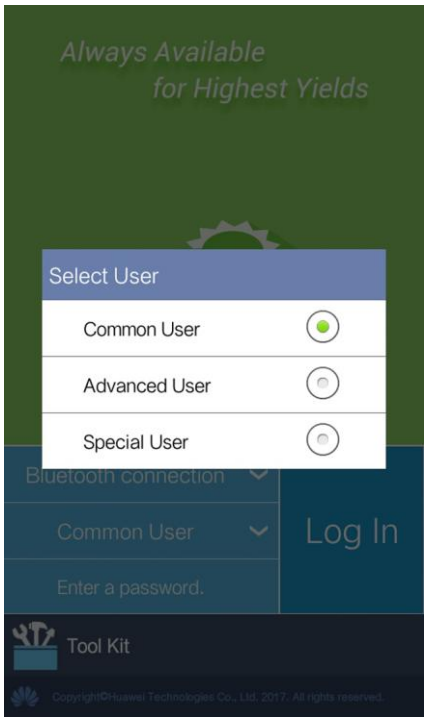
Prerequisites

The mobile phone has been connected to the SUN2000 over a Bluetooth module or a USB data cable.

Procedure

Step 1 On the app login screen, switch the user type (common user, advanced user, and special user) by tapping the user name bar.

Figure 3-7 Switching between users



NOTE

- The login password is the same as that for the SUN2000 connected to the app and is used only when the SUN2000 connects to the app.
- The preset password for a common user, advanced user, and special user is **00000a**. Use the preset password upon initial login. To ensure account security, change the password immediately after login.
- During login, if five consecutive invalid password attempts are made (the interval between two consecutive attempts is less than 2 minutes), the account will be locked for 10 minutes. The password should consist of 6 characters.

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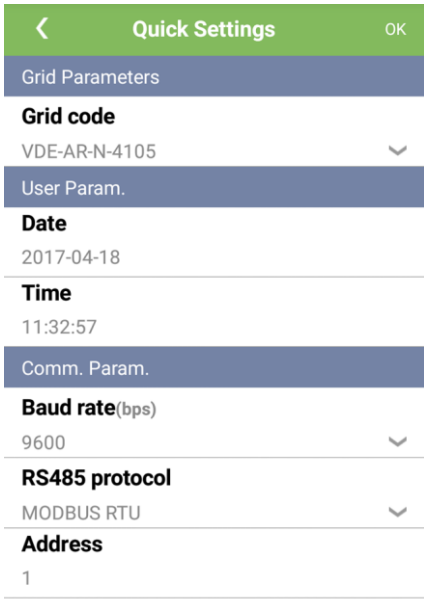
Step 2 After entering the password, tap **Log In**.

Step 3 After successful login, the quick settings screen or function menu screen is displayed.

NOTE

- If you log in to the app after the SUN2000 connects to the app for the first time or factory defaults are restored, the quick settings screen will be displayed. On the quick settings screen, you can set the SUN2000 basic parameters. After settings, you can modify the parameters by tapping **Settings** on the function menu. Figure 3-8 is the **Quick settings** screen for an advanced user.
- If you do not set SUN2000 basic parameters on the quick settings screen, the screen is still displayed when you log in to the app next time.

Figure 3-8 Quick settings (advanced user)



NOTE

- Set the grid code that applies to the country or region where the PV plant is located and the SUN2000 model.
- When multiple SUN2000s communicate with the SmartLogger over RS485, the RS485 addresses of all the SUN2000s on each RS485 route must be within the address range set on the SmartLogger and cannot be duplicate. Otherwise, communication will fail. In addition, the baud rates of all the SUN2000s on each RS485 route must be consistent with the SmartLogger baud rate.

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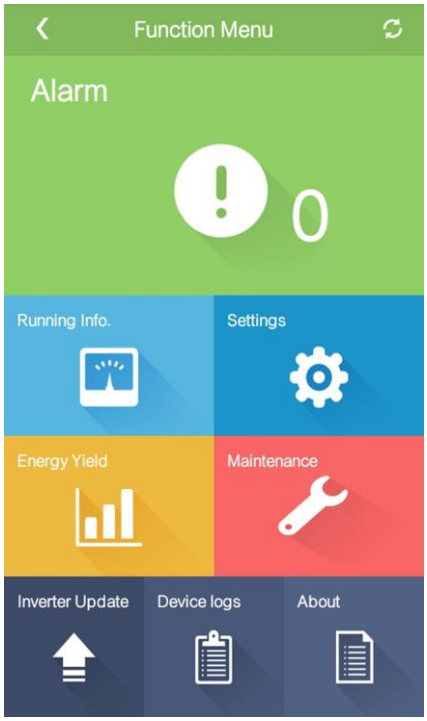
Figure 3-9 Function menu



----End

3.2 User Operation Permissions

The user accounts that can log in to the app are classified into common users, advanced users, and special users based on the responsibilities of PV plant operation personnel.

- Common user: Has the permissions of viewing SUN2000 data and setting user parameters.
- Advanced user: Has the permissions of viewing SUN2000 data, setting functional parameters, and maintaining devices.
- Special user: Has the permissions of viewing SUN2000 data, setting grid related parameters, and maintaining devices (including starting and shutting down the SUN2000, restoring factory defaults, and upgrading devices).

Figure 3-10, Figure 3-11, and Figure 3-12 show the menu operation permissions of common users, advanced users, and special users respectively.

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Figure 3-10 Operation permissions of common users

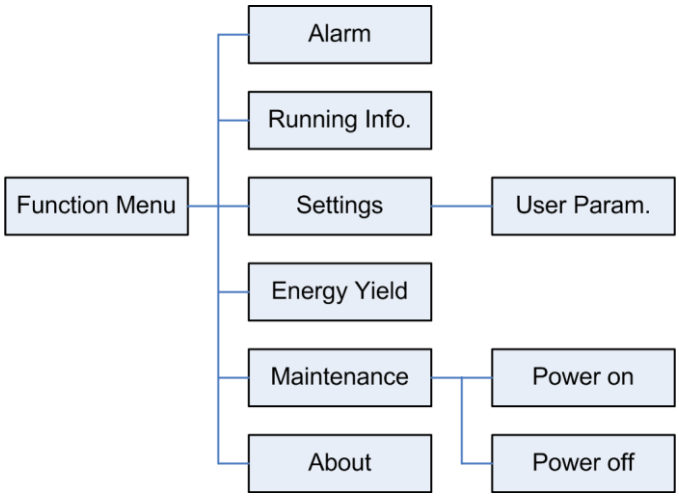

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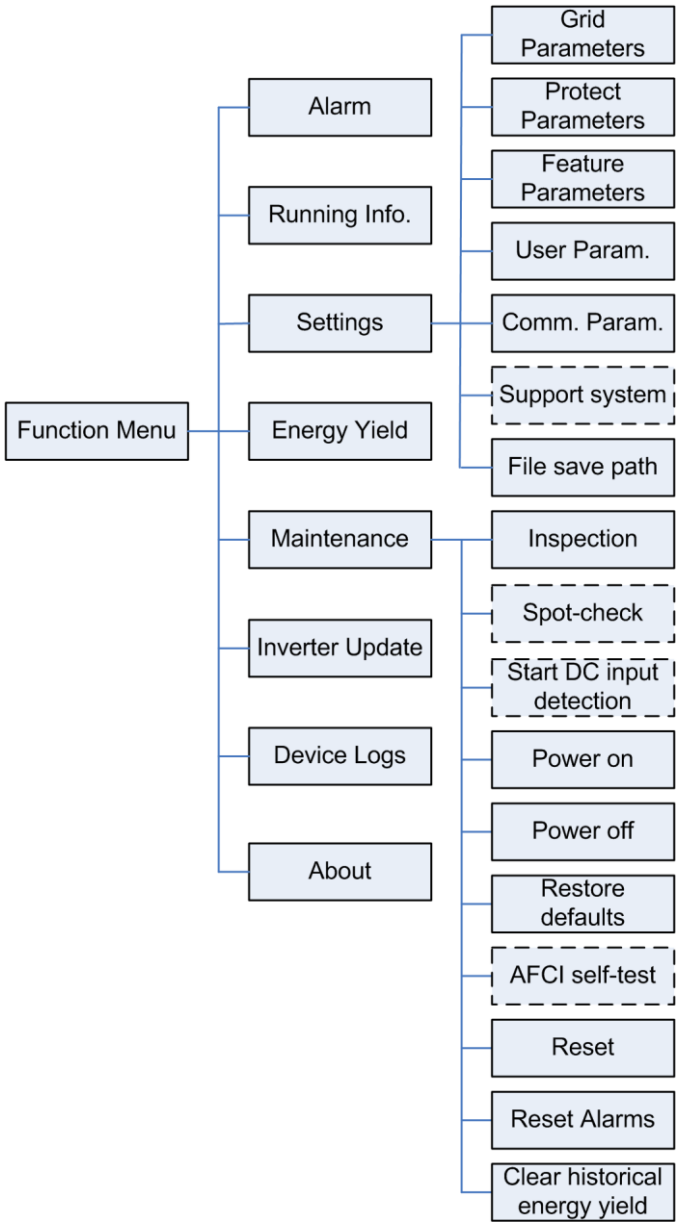
Figure 3-11 Operation permissions of advanced users



NOTE

- **Support system** is available for SUN2000 V200R001C91 and SUN2000 V200R001C93 of 1000 V inverters, all 1100 V inverters, and all 1500 V inverters.
- **Spot-check** is available only for the SUN2000 whose **Grid Code** is **Japan standard**.
- **Start DC input detection** is available only for 1500 V inverters.
- **AFCI self-test** is available only for the inverter model marked **-US**. The inverter model is provided on the product nameplate.

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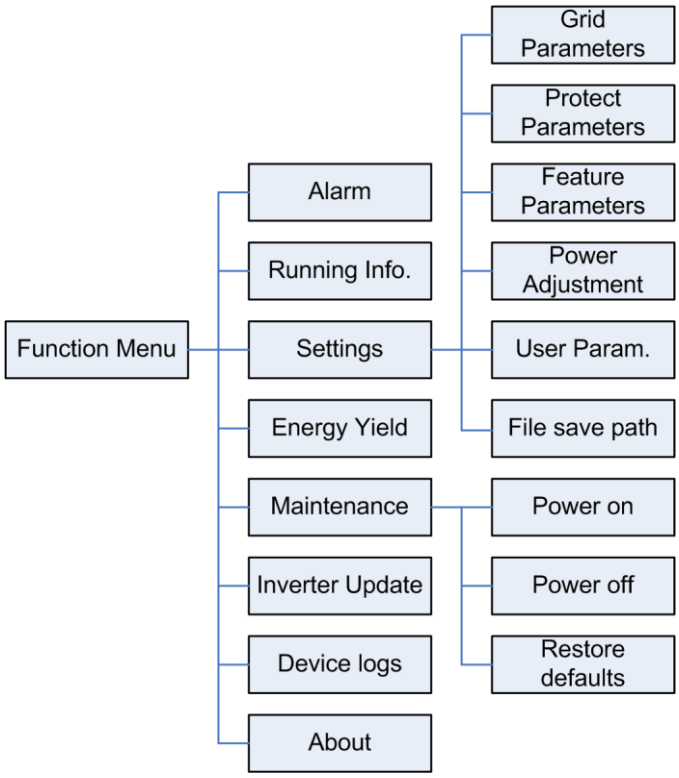
Figure 3-12 Operation permissions of special users



3.3 Screen Operations (Common User)

3.3.1 Alarms

3.3.1.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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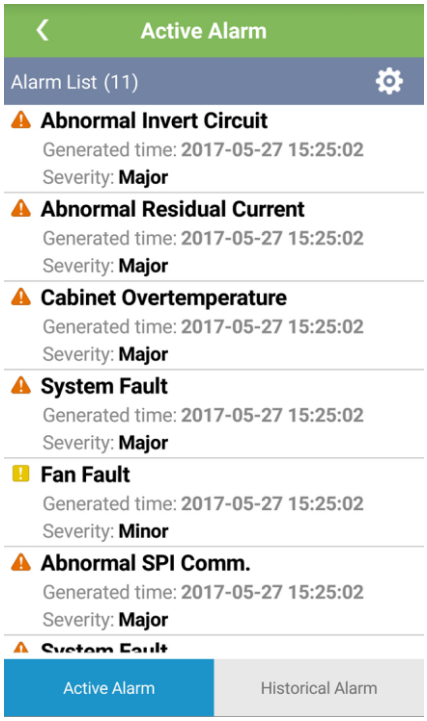
Figure 3-13 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of

to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

3.3.1.2 Manually Clearing Alarms

Context

After the **AFCI Self-Check Failure** and **DC Arc Fault** alarms have been handled, they need to be manually cleared from the active alarm list. Only products whose model includes **-US** support the function of clearing alarms manually.

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

Step 2 Hold down an alarm record, select the alarms to be cleared, and tap **Clear** to manually clear the alarms.

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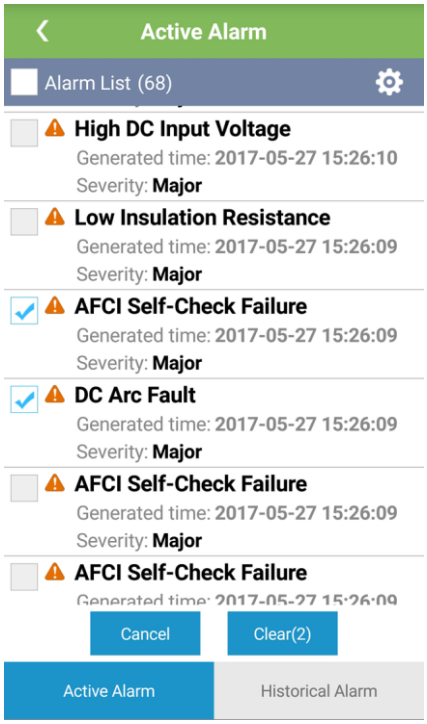
NOTE

- Alarms that have been manually cleared can be viewed in the historical alarms.
- Only the **AFCI Self-Check Failure** and **DC Arc Fault** alarms can be manually cleared.

Figure 3-14 Manually clearing an alarm



----End

3.3.2 Querying SUN2000 Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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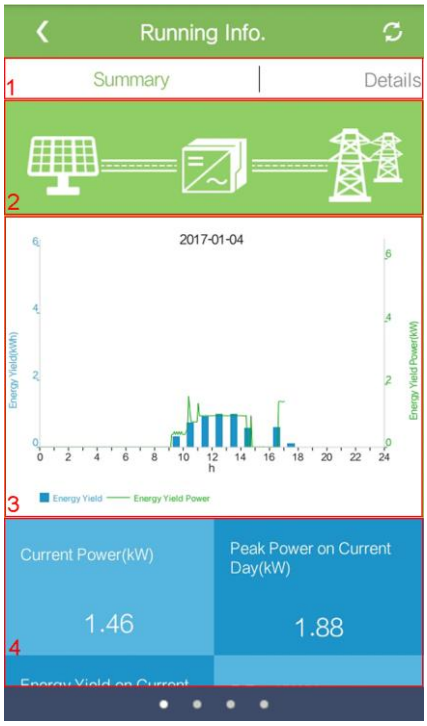
Figure 3-15 Running info



No.	Name	Description
1	Running information tabs	The **Summary**, **Details**, **Support**, and **Insulation Resistance** tab pages display relevant information about the SUN2000.
2	Power flow diagram	• Connection from PV strings to the SUN2000 • Connection from the SUN2000 to the power grid **NOTE** If the SUN2000 has generated an alarm, is displayed on the screen. Tap to access the alarm list screen and check the alarm.
3	Energy yield-Energy yield power histogram	Energy yield and energy yield power for each hour of the current day **NOTE** The SUN2000-(8KTL-28KTL) does not support the display of energy yield power.
4	Yield power, energy yield, and revenue data	Power, energy yield, and revenue of the current day

Step 2 Swipe left on the screen to view more running information of the SUN2000.

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----End

3.3.3 Parameter Settings

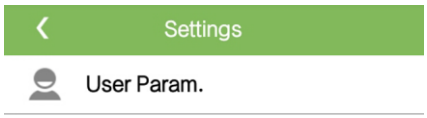
Context

Common users can only set user parameters for the SUN2000.

Procedure

Step 1 Tap **Function Menu** > **Settings** to display the Settings screen.

Figure 3-16 Settings (common user)



Step 2 Tap **User Param.** to set user parameters.

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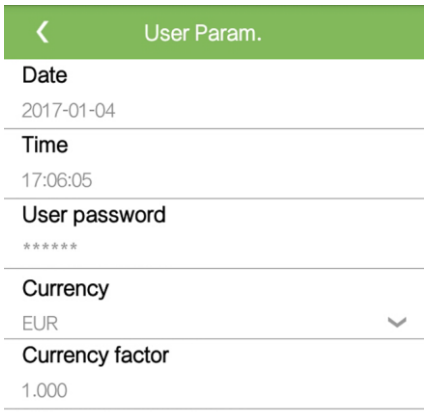
Figure 3-17 Setting user parameters



Step 3 Tap **Date** and **Time** to set the date and time for the SUN2000.

Step 4 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

Step 5 Tap **Currency** to set the SUN2000 currency.

NOTE

You can select **EUR**, **GBP**, **USD**, **CNY**, or **JPY** from the dialog box.

Step 6 Tap **Currency factor** to set the SUN2000 currency factor.

NOTE

The currency factor indicates the local power price, and is used to calculate the translation gain of the energy yield.

----End

3.3.4 Querying energy yield data

Procedure

Step 1 Tap **Function Menu** > **Energy Yield** to access the screen for querying energy yield.

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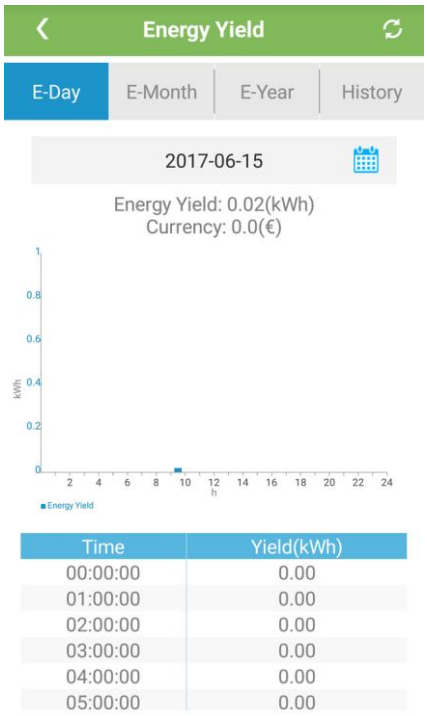
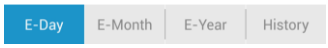
Figure 3-18 Querying energy yield data



Step 2 Swipe left or right on the screen or tap 

to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

3.3.5 System Maintenance

Context

Because of permission restriction, common users can only turn on or off the SUN2000.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Power on** or **Power off**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

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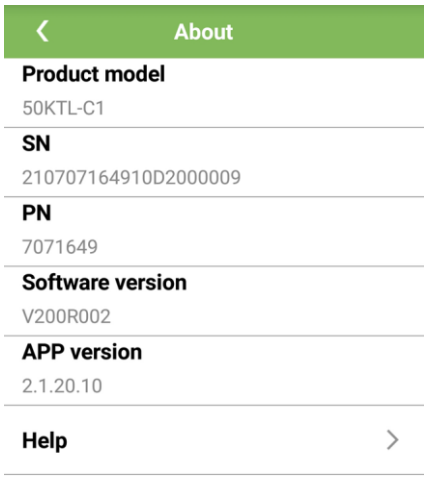
3.3.6 Viewing System Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the SUN2000 version information.

Figure 3-19 About



----End

3.4 Screen Operations (Advanced User)

3.4.1 Alarms

3.4.1.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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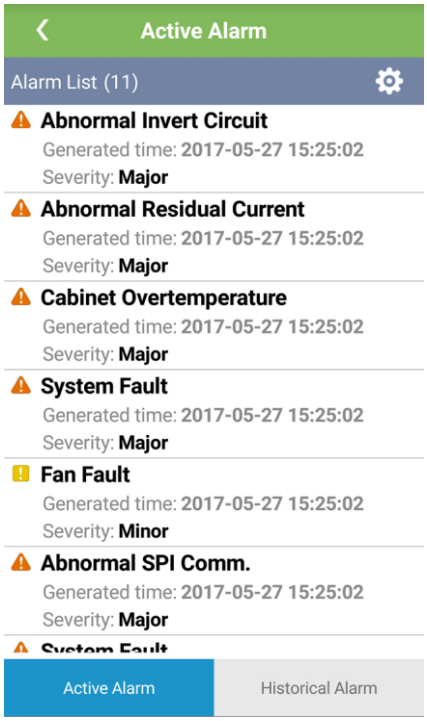
Figure 3-20 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of

to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

3.4.1.2 Manually Clearing Alarms

Context

After the **AFCI Self-Check Failure** and **DC Arc Fault** alarms have been handled, they need to be manually cleared from the active alarm list. Only products whose model includes **-US** support the function of clearing alarms manually.

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

Step 2 Hold down an alarm record, select the alarms to be cleared, and tap **Clear** to manually clear the alarms.

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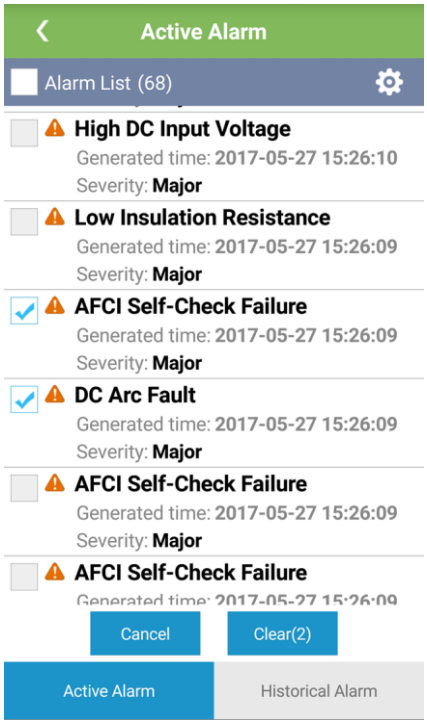
NOTE

- Alarms that have been manually cleared can be viewed in the historical alarms.
- Only the **AFCI Self-Check Failure** and **DC Arc Fault** alarms can be manually cleared.

Figure 3-21 Manually clearing an alarm



----End

3.4.2 Querying SUN2000 Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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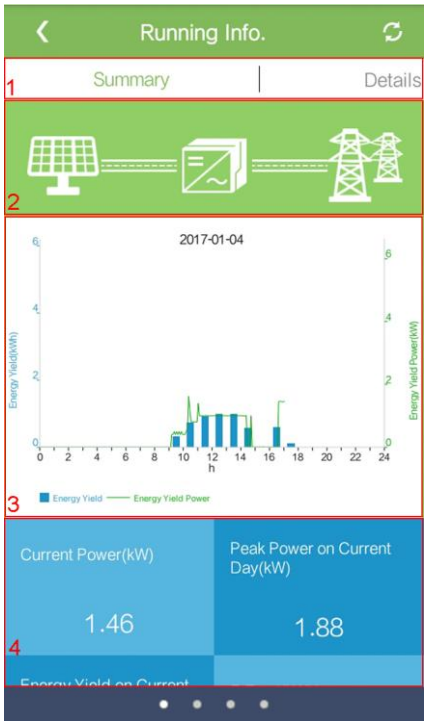
Figure 3-22 Running info



No.	Name	Description
1	Running information tabs	The **Summary**, **Details**, **Support**, and **Insulation Resistance** tab pages display relevant information about the SUN2000.
2	Power flow diagram	• Connection from PV strings to the SUN2000 • Connection from the SUN2000 to the power grid **NOTE** If the SUN2000 has generated an alarm, is displayed on the screen. Tap to access the alarm list screen and check the alarm.
3	Energy yield-Energy yield power histogram	Energy yield and energy yield power for each hour of the current day **NOTE** The SUN2000-(8KTL-28KTL) does not support the display of energy yield power.
4	Yield power, energy yield, and revenue data	Power, energy yield, and revenue of the current day

Step 2 Swipe left on the screen to view more running information of the SUN2000.

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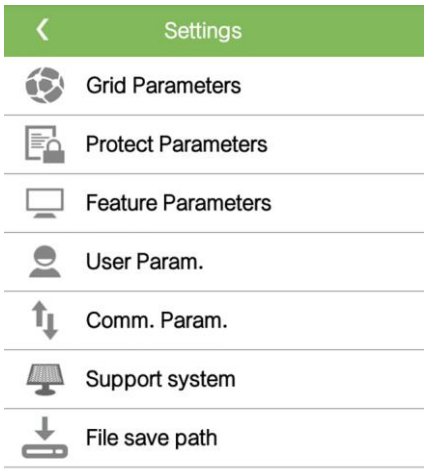
----End

3.4.3 Parameter Settings

An advanced user can choose **Function Menu** > **Settings** to set grid parameters, protection parameters, and feature parameters.

Figure 3-23 Settings (advanced user)



NOTICE

- The configurable SUN2000 parameters vary with the SUN2000 model and grid code. The displayed parameters prevail. The parameter list provided in this section includes all configurable parameters.
- The parameter names, value ranges, and default values are subject to change. The actual display prevails.

3.4.3.1 Setting Grid Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Grid Parameters** to access the parameters setting screen.

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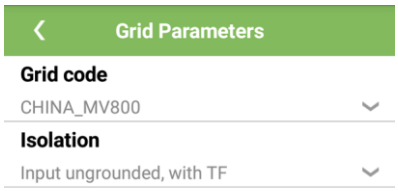
Figure 3-24 Grid parameters (advanced user)



----End

Parameter List

Table 3-1 Parameter description

No.	Parameter	Description	Default Value	Value Range
1	Grid code	Set this parameter based on the grid code of the country or region where the SUN2000 is used and the SUN2000 application scenario.	The default value varies with the model. The displayed value prevails.	N/A
2	Isolation	Specifies the working mode of the SUN2000 according to the grounding status at the DC side and the connection status to the grid.	The default value varies with the grid code. The displayed value prevails.	• Input grounded, with TF • Input ungrounded, without TF • Input ungrounded, with TF

3.4.3.2 Setting Protection Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Protection Parameters** to access the parameters setting screen.

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Figure 3-25 Protection parameter (advanced user)

----End

Parameter List

Table 3-2 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range
1	Insulation resistance protection	To ensure device safety, the SUN2000 detects the insulation resistance of the input side to the ground when it starts a self-check. If the detected value is less than the preset value, the SUN2000 does not start.	MΩ	The default value for a 1000 V SUN2000 is **0.1**, and the default value for 1100 V and 1500 V SUN2000s is **0.05**.	The value range for a 1000 V SUN2000 is [0.033, 1], and the value range for 1100 V and 1500 V SUN2000s is [0.033, 1.5].

3.4.3.3 Setting Feature Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Feature Parameters** to access the parameters setting screen.

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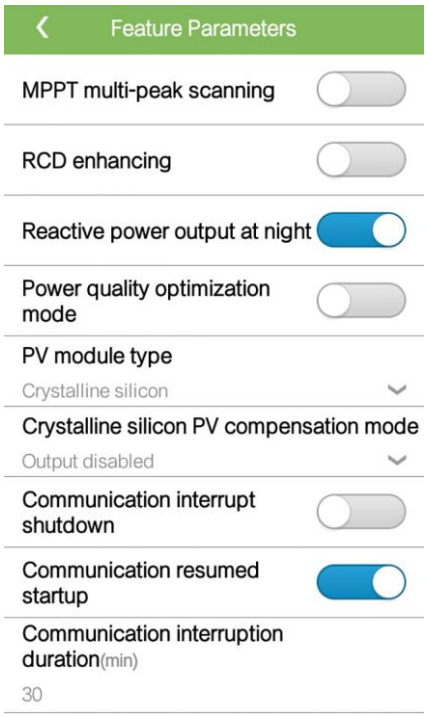
Figure 3-26 Feature Parameters (advanced user)



----End

Parameter List

Table 3-3 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
1	MPPT multi-peak scanning	When the SUN2000 is used in scenarios where PV strings are obviously shaded, enable this function. Then the SUN2000 will perform MPPT scanning at regular intervals to locate the maximum power.	N/A	Disable	• Disable • Enable	The scanning interval is set by **MPPT multi-peak scanning interval**.
2	MPPT multi-peak scanning interval	Specifies the MPPT multi-peak scanning interval.	min	15	[5, 30]	This parameter is displayed only when **MPPT multi-peak scanning** is set to **Enable**.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
3	RCD enhancing	RCD refers to the residual current of the SUN2000 to the ground. To ensure device security and personal safety, RCD should comply with the standard. If an AC switch with a residual current detection function is installed outside the SUN2000, this function should be enabled to reduce the residual current generated during SUN2000 running, thereby preventing the AC switch from misoperations.	N/A	Disable	• Disable • Enable	N/A
4	Reactive power output at night	In some specific application scenarios, a power grid company requires that the SUN2000 can perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements.	N/A	Disable	• Disable • Enable	This parameter is configurable only when **Isolation** is set to **Input ungrounded, with a transformer**.
5	Strong adaptability	If the value of **power grid short circuit capacity/power plant installed capacity** is less than 3 and the power grid impedance exceeds the upper threshold, the power grid quality will be affected and the SUN2000 may be unable to run properly. Set **Strong adaptability** to **Enable**.	N/A	Disable	• Disable • Enable	Only the 1000 V SUN2000s support this parameter.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
6	Power quality optimization mode	If **Power quality optimization mode** is set to **Enable**, the inverter output current harmonics will be optimized.	N/A	Disable	• Disable • Enable	N/A
7	PV module type	Specifies the type of PV modules.	N/A	Crystalline silicon	• Crystalline silicon • Film • CPV 1 • CPV 2	• If **PV module type** is set to **Crystalline silicon** or **Film**, the SUN2000 will run properly and will not shut down if PV modules are shaded. • If **PV module type** is set to **CPV 1**, the SUN2000 can restart quickly in 60 minutes if PV modules are shaded and the input power greatly decreases. • If **PV module type** is set to **CPV 2**, the SUN2000 can restart quickly in 10 minutes if PV modules are shaded and the input power greatly decreases.
8	Crystalline silicon PV compensation mode	This parameter reduces the DC voltage of PV modules to the PE by reducing the impedance of the SUN2000 input side to the PE, thereby effectively reducing PID effect of PV modules.	N/A	Output disabled	• Output disabled • P-type output • N-type output	This parameter is displayed if **PV module type** is set to **Crystalline silicon**. Set this parameter to **P-type output** for P-type PV modules and **N-type output** for N-type PV modules.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
9	Communication interrupt shutdown	The standards of certain countries and regions require that the SUN2000 must shut down after the communication is interrupted for a certain time.	N/A	Disable	• Disable • Enable	If **Communication interrupt shutdown** is set to **Enable** and the SUN2000 communication has been interrupted for a specified time (set by **Communication interruption duration**), the SUN2000 will automatically shut down.
10	Communication interruption duration	Specifies the duration for determining communication interruption, and is used for automatic shutdown for protection in case of communication interruption.	min	30	[1, 120]	N/A
11	Communication resumed startup	If this parameter is enabled, the SUN2000 automatically starts after communication recovers. If this parameter is disabled, the SUN2000 needs to be started manually after communication recovers.	N/A	Enable	• Disable • Enable	N/A
12	Soft start time	Specifies the duration for the power to gradually increase when the SUN2000 starts.	s	The default value varies depending on the grid code. The displayed value prevails.	[20, 1800]	This parameter is set to **360** by default if the Australian AS4777 grid code is selected, to **300** by default if the Italian CEI0-21 or CEI0-16 grid code is selected, and to **600** by default if the Egyptian EGYPT grid code is selected.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
13	AFCI	The North American standard requires the SUN2000 to provide the DC arc detection function.	N/A	Enable	• Disable • Enable	This parameter is supported by only the products marked **-US**.
14	Arc detection adaptation mode	Adjusts the sensitivity of arc detection.	N/A	Moderate	• High • Moderate • Low	This parameter is displayed only when **AFCI** is set to **Enable**.
15	Current error during scanning	When the IV curves of PV strings are being scanned, the current change of PV strings operating properly should be monitored to avoid inaccurate scanning caused by sunlight change. If the current exceeds the specified value, it is determined that the sunlight changes, and the IV curves should be scanned again.	A	0.20	[0.00, 2.00]	N/A
16	OVGR linked shutdown	If this parameter is set to **Enable**, the SUN2000 shuts down after receiving the OVGR signal. If this parameter is set to **Disable**, the SUN2000 does not shut down after receiving the OVGR signal.	N/A	Enable	• Disable • Enable	This parameter is displayed after the Japanese grid code is selected.
17	Dry contact function	Identifies dry contact signals sent from the SmartLogger.	N/A	NC	• NC • OVGR	Set this parameter to **OVGR** for OVGR signals, and set it to **NC** for other signals. This parameter is displayed after the Japanese grid code is selected.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
18	Hibernate at night	The SUN2000 monitors PV strings at night. If **Hibernate at night** is set to **Enable**, the monitoring function of the SUN2000 will hibernate at night, reducing power consumption.	N/A	Disable	• Disable • Enable	N/A
19	PLC communication	For SUN2000 models that support both RS485 and PLC communication, when RS485 communication is used, you are advised to set **PLC communication** to **Disable** to reduce power consumption.	N/A	Enable	• Disable • Enable	N/A
20	Upgrade delay	**Upgrade delay** is mainly used in the upgrade scenarios where the PV power supply is disconnected at night due to no sunlight or unstable at dawn or dusk due to poor sunlight.	N/A	Enable	• Disable • Enable	• Only the 1100 V and 1500 V SUN2000s support this parameter. • After the SUN2000 upgrade starts, if **Upgrade delay** is set to **Enable**, the upgrade package is loaded first. After the PV power supply recovers and the activation conditions are met, the SUN2000 automatically activates the upgrade.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
21	String monitor	The SUN2000 monitors PV strings in real time. If any PV string is abnormal (such as the PV string is shaded or the energy yield decreases), the SUN2000 generates an alarm to remind maintenance personnel to maintain the PV string in a timely manner.	N/A	Disable	• Disable • Enable	If PV strings are easily shaded, you are advised to set **String monitor** to **Disable** to prevent false alarms.
22	String detection low power delay	Specifies the delay time for generating abnormal string alarms when the SUN2000 detects that a PV string is working with low power. This parameter is mainly used in the scenario where PV strings are shaded for a long time in the morning and evening, and is used to prevent false alarms.	min	180	[2, 720]	This parameter is displayed when **String monitor** is set to **Enable**.
23	String detection high power delay	Specifies the delay time for generating abnormal string alarms when the SUN2000 detects that a PV string is working with high power.	min	30	[2, 720]	
24	String detection power segment division percentage	Specifies the thresholds for determining whether a PV string is working with high power or low power. This parameter is used to distinguish the working status of PV strings.	%	50	[1, 100]	This parameter is displayed when **String monitor** is set to **Enable**.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
25	String detection reference asymmetric coefficient	Specifies the threshold for determining PV string exception. The false alarms caused by fixed shadow shading can be controlled by changing this parameter.	N/A	• SUN2000-(8KTL-28KTL): 0.2 • Others: 20	• SUN2000-(8KTL-28KTL): [0.05, 1] • Others: [5, 100]	
26	String detection starting power percentage	Specifies the threshold for starting PV string exception detection. The false alarms caused by fixed shadow shading can be controlled by changing this parameter.	%	20	[1, 100]	
27	Shutdown at 0% power limit	If this parameter is set to **Enable**, the SUN2000 shuts down after receiving the 0% power limit command. If this parameter is set to **Disable**, the SUN2000 does not shut down after receiving the 0% power limit command.	N/A	Disable	• Disable • Enable	N/A
28	Maximum apparent power	Specifies the output upper threshold for the maximum apparent power to adapt to the capacity requirements for standard and customized transformers.	kW	Smax	[Maximum active power, Smax_limit]	If the maximum active power equals Smax_limit, this parameter is not displayed.
29	Maximum active power	Specifies the output upper threshold for the maximum active power to adapt to various market requirements.	kW	Pmax	[0.1, Pmax_limit]	For 1000 V SUN2000s, this parameter is configurable only for the SUN2000-25KTL-US, and the maximum value is 27.5 kW.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
30	Tracking system controller	Selects a controller vendor.	N/A	N/A	N/A	N/A
31	Duration for determining short-time grid disconnection	The standards of certain countries and regions require that the SUN2000 should not disconnect from the power grid if the power grid experiences a short-time failure. The SUN2000 needs to restart quickly after the power grid recovers.	ms	3000	[500, 20000]	N/A
32	Adjust total energy yield	Specifies the initial energy yield of the SUN2000. This parameter is used in SUN2000 replacement scenarios. Set the initial energy yield of the new SUN2000 to the total energy yield of the old SUN2000 to ensure continuous statistics of cumulative energy yield.	kWh	N/A	[0.00, 42949600.00]	N/A
33	DC input detection	If **DC input detection** is set to **Disable**, the SUN2000 does not perform automatic DC input detection or manual DC output detection.	N/A	Enable	• Disable • Enable	Only the 1500 V SUN2000 supports this parameter.
34	Commanded shutdown hold after power recovery	The standards of certain countries and regions require that the SUN2000 remains in the commanded shutdown state after being powered off by a command and experiencing a power failure and recovery.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	N/A

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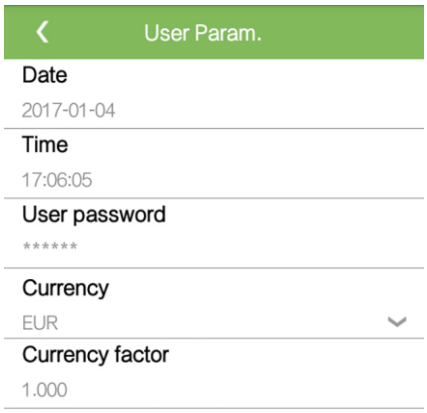
No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
35	Buzzer	If this parameter is set to **Enable**, the buzzer buzzes when a DC input cable connection error is detected. If this parameter is set to **Disable**, the buzzer does not buzz when a DC input cable connection error is detected.	N/A	Enable	• Disable • Enable	Only the 1500 V SUN2000 supports this parameter.

3.4.3.4 Setting User Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **User Param.** to access the settings screen.

Figure 3-27 Setting user parameters



Step 2 Tap **Date** and **Time** to set the date and time for the SUN2000.

Step 3 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.

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- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

Step 4 Tap **Currency** to set the SUN2000 currency.

NOTE
You can select **EUR**, **GBP**, **USD**, **CNY**, or **JPY** from the dialog box.

Step 5 Tap **Currency factor** to set the SUN2000 currency factor.

NOTE
The currency factor indicates the local power price, and is used to calculate the translation gain of the energy yield.

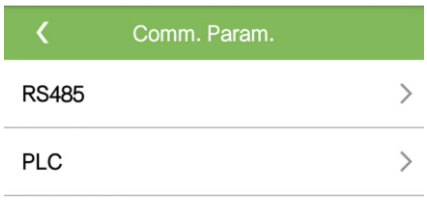
----End

3.4.3.5 Setting Communications Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Comm. Param.** to access the settings screen.

Figure 3-28 Setting communications parameters



NOTE
- The **PLC** menu item is displayed only for SUN2000s that support the PLC function.
- The **Ethernet** and **Modbus TCP** menus are displayed only for SUN2000s that support the FE function.
- You can check whether the SUN2000 supports the PLC or FE function from the nameplate on the SUN2000.

Step 2 Tap **RS485** to set RS485 communications parameters.

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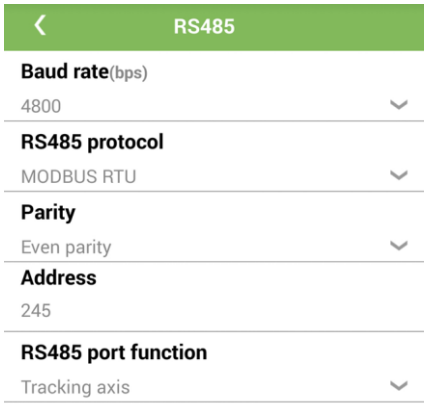
Figure 3-29 Setting RS485 parameters



NOTE

- The **RS485 CAN Resistor** parameter is displayed only for 1000 V SUN2000s. This parameter is set to by default. If signals are distorted or the communication is of poor quality because of an overlong communications cable, set the parameter to for the last SUN2000 in the daisy chain.
- The **RS485 port function** parameter is displayed only for SUN2000s that support the FE function.

Step 3 (Optional) Tap **PLC** to set PLC communications parameters.

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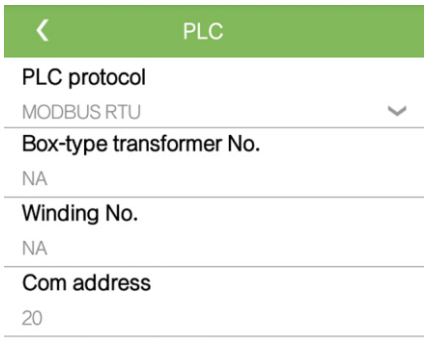
Figure 3-30 Setting PLC parameters



Step 4 (Optional) Tap **Ethernet** to set Ethernet parameters.

Figure 3-31 Setting Ethernet parameters

NOTE

- If **DHCP** is set to , the **IP address**, **Subnet mask**, and **Gateway** of the SUN2000 will be automatically allocated.

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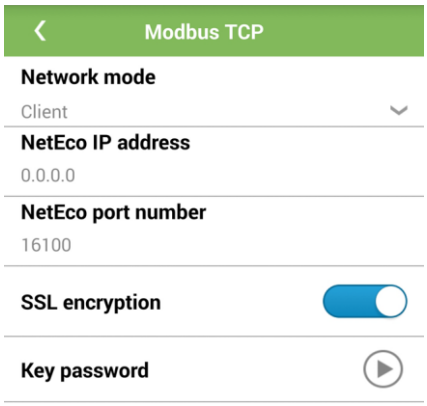
- If **DHCP** is set to , the **IP address**, **Subnet mask**, and **Gateway** of the SUN2000 can be manually allocated.

Step 5 (Optional) Tap **Modbus TCP** to set Modbus-TCP parameters.

Figure 3-32 Setting Modbus-TCP parameters



NOTE

If **SSL encryption** is set to , data will be transmitted without being encrypted, which may pose security risks. Therefore, exercise caution when deciding to set **SSL encryption** to .

----End

3.4.3.6 Setting the Support System

Context

This function is provided in the 1000 V (only SUN2000 V200R001C91 and SUN2000 V200R001C93), 1100 V, and 1500 V SUN2000s. Parameter settings of the support system may vary depending on the vendor.

NOTE

The SUN2000 version information can be queried by following the instructions in 3.4.8 Viewing System Version Information.

This section uses settings provided by **Tonking** as an example.

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Support system** to access the settings screen.

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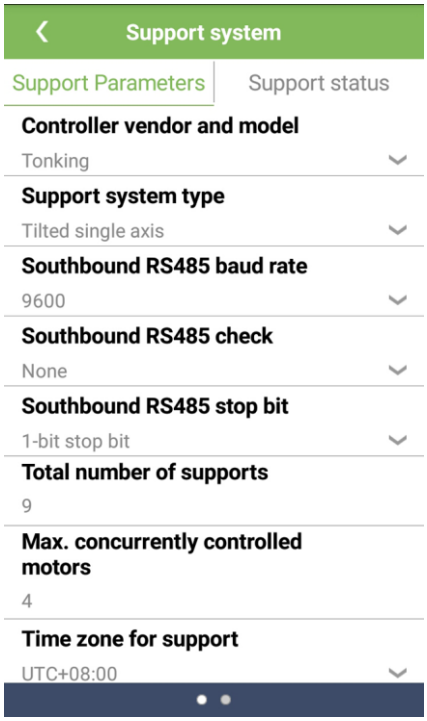
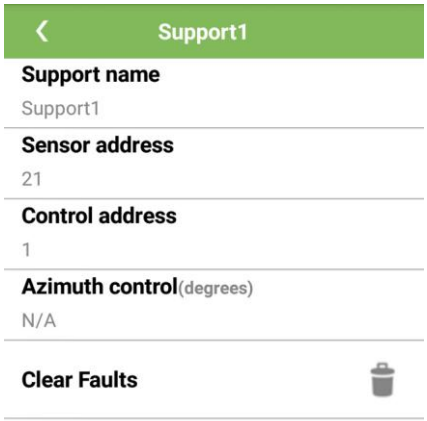
Figure 3-33 Support system



Step 2 Swipe left on the screen, tap a support, and set parameters for the support.

Figure 3-34 Setting support parameters



----End

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3.4.3.7 Setting a File Save Path

Context

You can modify the save path for operation logs and SUN2000 logs and you can export logs from the path subsequently.

Procedure

Step 1 Tap **Function Menu** > **Settings** > **File save path** to access the settings screen.

Figure 3-35 Setting a file save path

Step 2 Tap **File save path** to set the save path.

----End

3.4.4 Querying energy yield data

Procedure

Step 1 Tap **Function Menu** > **Energy Yield** to access the screen for querying energy yield.

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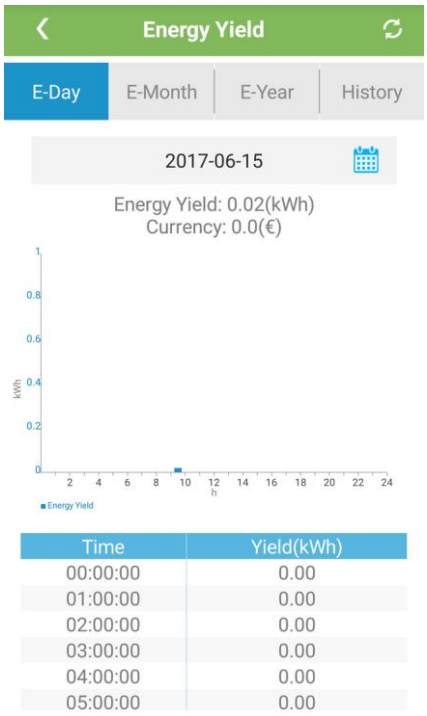
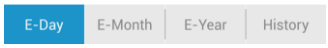
Figure 3-36 Querying energy yield data



Step 2 Swipe left or right on the screen or tap 

to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

3.4.5 System Maintenance

An advanced user can choose **Function Menu** > **Maintenance** to inspect, turn on, or turn off the SUN2000 and detect the DC input.

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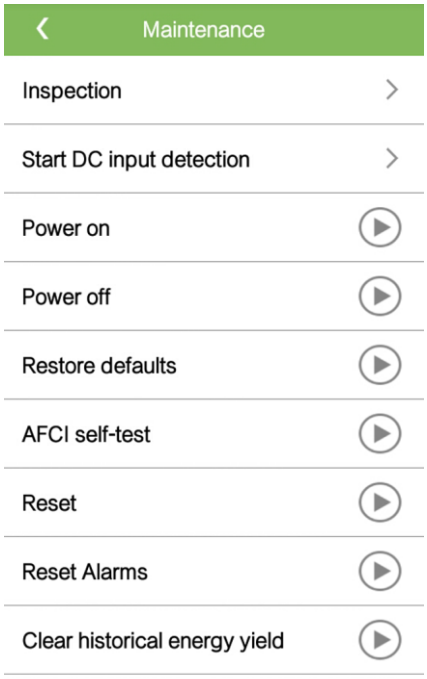
Figure 3-37 Maintenance (advanced user)



3.4.5.1 Device inspection

Context

After a SUN2000 is put into use, it should be inspected periodically to detect any potential risks and problems.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** > **Inspection** to access the inspection screen.

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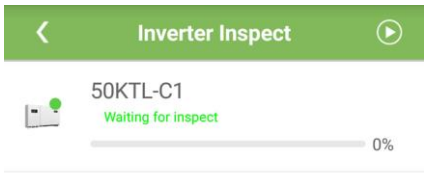
Figure 3-38 Device inspection



Step 2 Tap in the upper-right corner of the screen to start inspection for a SUN2000.

----End

3.4.5.2 Spot-Checking SUN2000s

Context

You can perform a spot check for the SUN2000 whose **Grid Code** is **Japan standard**.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** > **Spot-check** to access the **Spot-check** screen.

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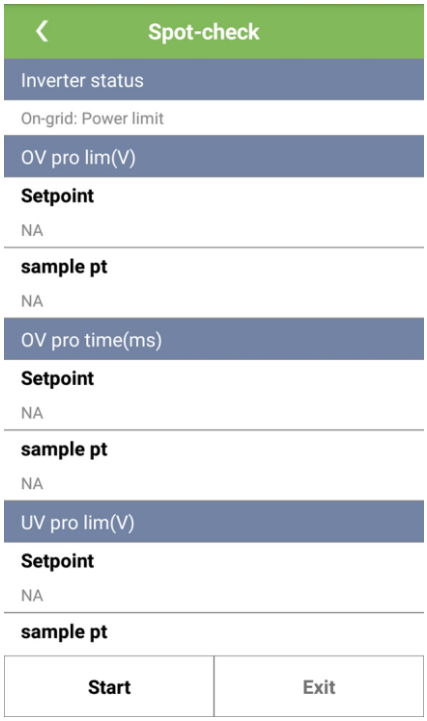
Figure 3-39 Spot-check



Step 2 Tap **Start**.

----End

3.4.5.3 DC Input Detection

Context

The DC input detection function is only applicable to the 1500 V SUN2000.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** > **Start DC input detection** to enter the detection screen.

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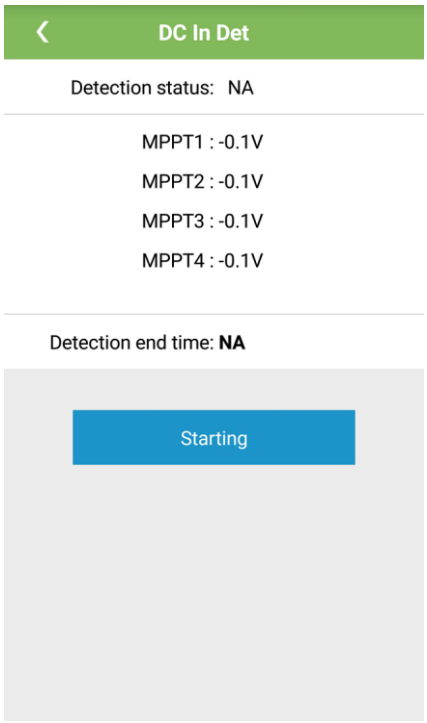
Figure 3-40 Starting DC input detection



Step 2 Tap **Starting**.

----End

3.4.5.4 Starting and Shutting Down the SUN2000

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Power on** or **Power off**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

3.4.5.5 Restoring Factory Settings

Context

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NOTICE

Perform this operation with caution because all configured parameters except the current date, time, baud rate, and address will be restored to their factory default values. This operation will not affect operating information, alarm records, or system logs.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Restore defaults**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

3.4.5.6 Performing an AFCI Self-Test

Context

The AFCI self-test function is applicable to SUN2000s whose model includes **-US**.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **AFCI self-test**.

Step 3 Tap **OK**.

----End

3.4.5.7 Resetting the SUN2000

Context

SUN2000s automatically shut down and restart after reset.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Reset**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

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3.4.5.8 Resetting Alarms

Context

After alarms are reset, all active alarms and historical alarms of the SUN2000 connected to the app will be cleared.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap ▶ next to **Clear alarms**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

3.4.5.9 Clearing Historical Energy Yield Data

Context

If you clear historical energy yield data, all the historical energy yield data of the SUN2000s connecting to the app will be cleared.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap ▶ next to **Clear historical energy yield**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

3.4.6 SUN2000 Upgrade

Prerequisites

Obtain the upgrade package with the help of the supplier or Huawei engineers.

Procedure

Step 1 Copy the upgrade package to your mobile phone without decompressing the package.

NOTE
To reduce the time of searching for the upgrade package, you are advised to save the uncompressed upgrade package in the root directory of the memory or SD card of the mobile phone.

Step 2 Tap **Function Menu** > **Inverter Update** to access the SUN2000 upgrade screen.

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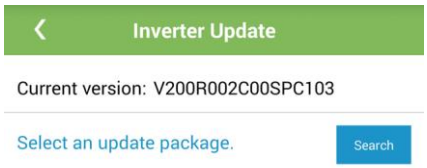
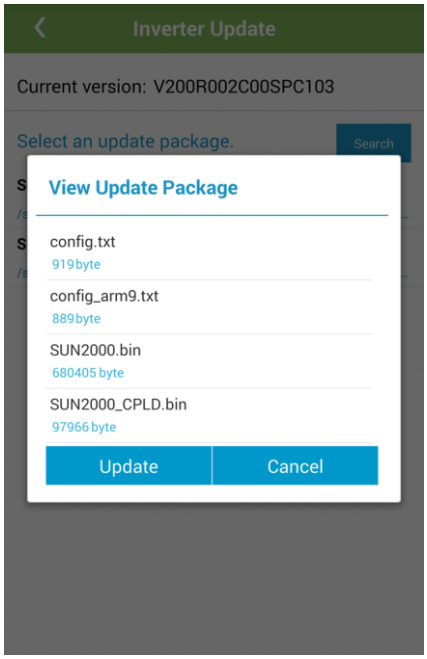
Figure 3-41 SUN2000 upgrade



Step 3 Tap **Search**. A message indicating that searching for an upgrade package will take several minutes is displayed. Tap **OK**.

Step 4 Select the correct upgrade package from the search results. The **View Update Package** dialog box is displayed.

Figure 3-42 Viewing the upgrade package



Step 5 Tap **Update**.

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Step 6 On the displayed **Compare Versions** screen, tap **Update**.

----End

3.4.7 Device Logs

Context

Tap **Device Logs** to export operation logs, as well as alarm records and energy yield information of the SUN2000 from the mobile phone.

Procedure

Step 1 Tap **Function Menu** > **Device Logs** to access the device logs screen.

Figure 3-43 Device logs

Step 2 Tap **Phone Log** to delete or export mobile phone operation logs.

Step 3 Select **Inverter Log** to download log files, such as alarms and performance data.

NOTE
The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 3.4.3.7 Setting a File Save Path to modify the log save path.

----End

3.4.8 Viewing System Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the SUN2000 version information.

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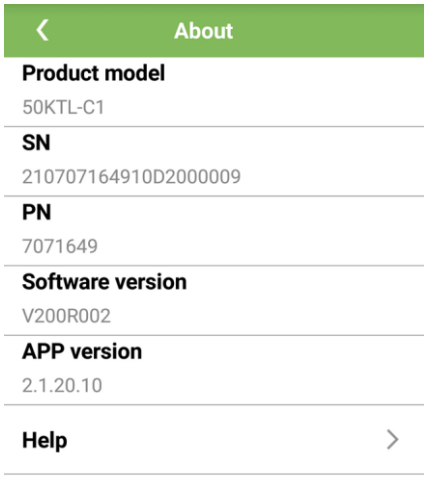
Figure 3-44 About



----End

3.5 Screen Operations (Special User)

3.5.1 Alarms

3.5.1.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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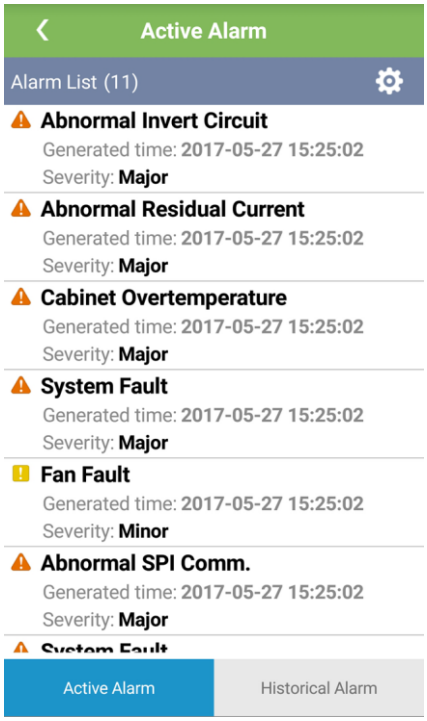
Figure 3-45 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of

to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

3.5.1.2 Manually Clearing Alarms

Context

After the **AFCI Self-Check Failure** and **DC Arc Fault** alarms have been handled, they need to be manually cleared from the active alarm list. Only products whose model includes **-US** support the function of clearing alarms manually.

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

Step 2 Hold down an alarm record, select the alarms to be cleared, and tap **Clear** to manually clear the alarms.

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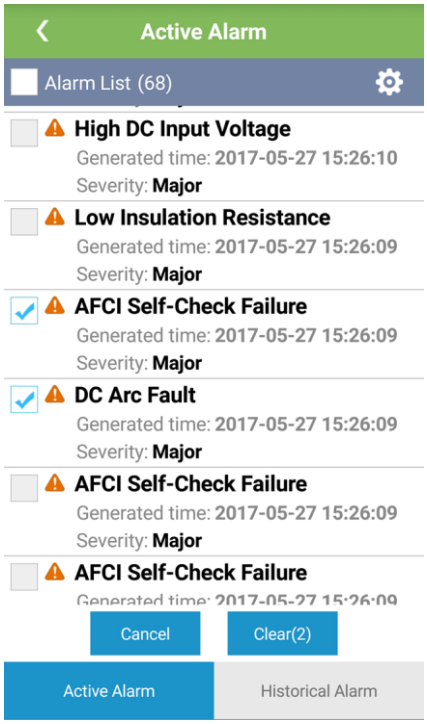
NOTE

- Alarms that have been manually cleared can be viewed in the historical alarms.
- Only the **AFCI Self-Check Failure** and **DC Arc Fault** alarms can be manually cleared.

Figure 3-46 Manually clearing an alarm



----End

3.5.2 Querying SUN2000 Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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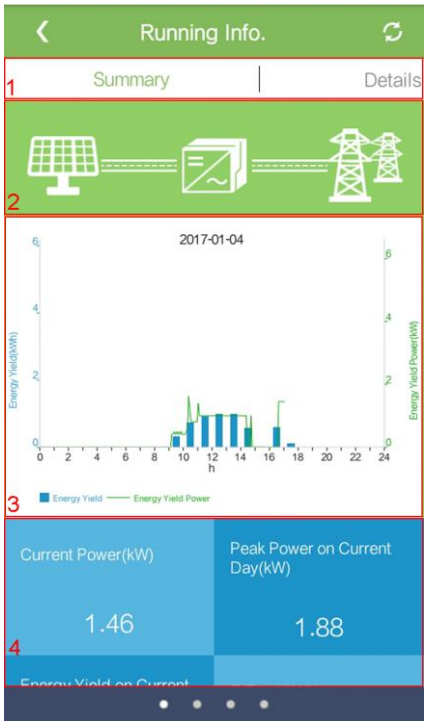
Figure 3-47 Running info



No.	Name	Description
1	Running information tabs	The **Summary**, **Details**, **Support**, and **Insulation Resistance** tab pages display relevant information about the SUN2000.
2	Power flow diagram	• Connection from PV strings to the SUN2000 • Connection from the SUN2000 to the power grid **NOTE** If the SUN2000 has generated an alarm, is displayed on the screen. Tap to access the alarm list screen and check the alarm.
3	Energy yield-Energy yield power histogram	Energy yield and energy yield power for each hour of the current day **NOTE** The SUN2000-(8KTL-28KTL) does not support the display of energy yield power.
4	Yield power, energy yield, and revenue data	Power, energy yield, and revenue of the current day

Step 2 Swipe left on the screen to view more running information of the SUN2000.

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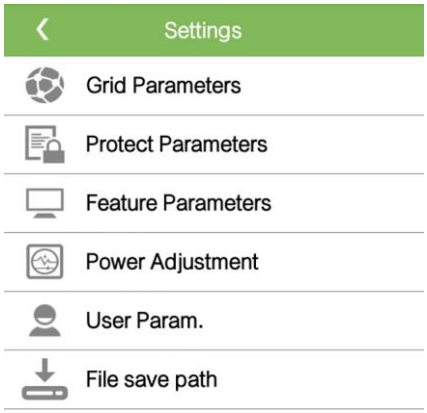
----End

3.5.3 Parameter Settings

An special user can choose **Function Menu** > **Settings** to set grid parameters, protection parameters, and feature parameters.

Figure 3-48 Settings (special user)



NOTICE

- The configurable SUN2000 parameters vary with the SUN2000 model and grid code. The displayed parameters prevail. The parameter list provided in this section includes all configurable parameters.
- The parameter names, value ranges, and default values are subject to change. The actual display prevails.

3.5.3.1 Setting Grid Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Grid Parameters** to access the parameters setting screen.

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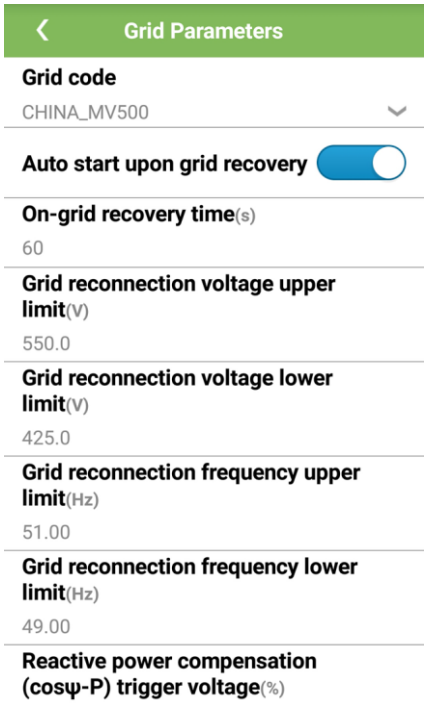
Figure 3-49 Grid Parameters (special user)



----End

Parameter List

Table 3-4 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
1	Grid code	Set this parameter based on the grid code of the country or region where the SUN2000 is used and the SUN2000 application scenario.	N/A	The default value varies depending on the model. The displayed value prevails.	N/A	N/A
2	Output mode	Specifies whether the SUN2000 has an output neutral wire based on the SUN2000 application scenario.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Three-phase three-wire • Three-phase four-wire	This parameter is available only for the SUN2000-33KTL, SUN2000-36KTL, and SUN2000s whose models include **-US**.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
3	PQ mode	If **PQ mode 1** is selected, the maximum AC output power equals the maximum apparent power. If **PQ mode 2** is selected, the maximum AC output power equals the rated output power.	N/A		• PQ mode 1 • PQ mode 2	This parameter is available only for the SUN2000-36KTL and SUN2000-42KTL.
4	Auto start upon grid recovery	Specifies whether to allow the SUN2000 to automatically start after the power grid recovers.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	This parameter is set to **Disable** by default if the Japanese grid code is selected.
5	Grid connection duration after power grid recovery	Specifies the waiting time for SUN2000 restart after the power grid recovers.	s		[0, 900]	The value range is [150s, 900s] if the Japanese grid code is selected.
6	Grid reconnection voltage upper limit	The standards of certain countries and regions require that the SUN2000 must not connect to the power grid when the power grid voltage is higher than the upper limit.	V	The default value varies depending on the grid code. The displayed value prevails.	[100%Vn, 136%Vn]	Vn represents the rated voltage.
7	Grid reconnection voltage lower limit	The standards of certain countries and regions require that the SUN2000 must not connect to the power grid when the power grid voltage is lower than the lower limit.	V		[45%Vn, 95%Vn]	
8	Grid reconnection frequency upper limit	The standards of certain countries and regions require that the SUN2000 must not connect to the power grid when the power grid frequency is higher than the upper limit.	Hz	The default value varies depending on the grid code. The displayed value prevails.	[100%Fn, 112%Fn]	Fn represents the rated frequency.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
9	Grid reconnection frequency lower limit	The standards of certain countries and regions require that the SUN2000 must not connect to the power grid when the power grid frequency is lower than the lower limit.	Hz		[85%Fn, 100%Fn]	
10	Reactive power compensation (cosψ-P) trigger voltage	Specifies the voltage threshold for triggering reactive power compensation when low voltage ride-through (LVRT) occurs.	%	The default value varies depending on the grid code. The displayed value prevails.	[100, 110]	N/A
11	Reactive power compensation (cosψ-P) exit voltage	Specifies the voltage threshold for exiting reactive power compensation when the SUN2000 recovers from LVRT.	%		[90, 100]	N/A

3.5.3.2 Setting Protection Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Protection Parameters** to access the parameters setting screen.

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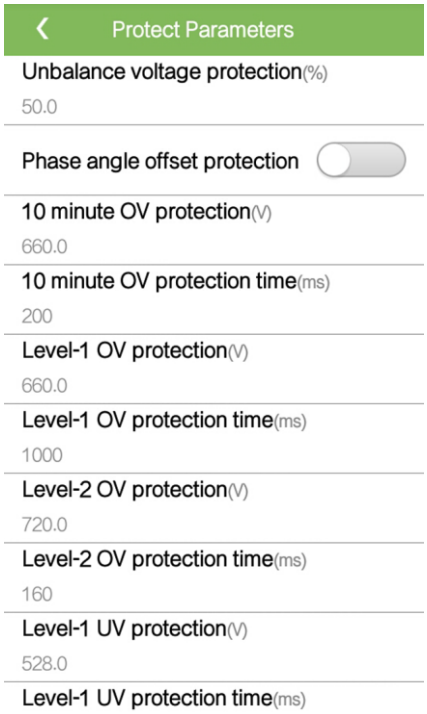
Figure 3-50 Protection Parameters (special user)



----End

Parameter List

Table 3-5 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
1	Unbalance voltage protection	Specifies the SUN2000 protection threshold in the case of unbalanced power grid voltage.	%	The default value varies depending on the grid code. The displayed value prevails.	[0.0, 50.0]	N/A
2	Phase protection point	The Japanese standard requires that during passive islanding detection, protection should be triggered if an abrupt voltage phase change is detected.	°	6	[3, 15]	Configurable abruptly changed phase angles are 3 °, 6 °, 9 °, 12 °, and 15 °, which are displayed after the Japanese grid code is selected.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
3	Phase angle offset protection	The standards of certain countries and regions require that the SUN2000 needs to be protected when the three-phase angle offset of the power grid exceeds a certain value.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	N/A
4	10 minute OV protection	Specifies the 10-minute overvoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[1 x Vn, 1.36 x Vn]	Vn represents the rated voltage.
5	10 minute OV protection time	Specifies the 10-minute overvoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
6	Level-1 OV protection	Specifies the level-1 overvoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[1 x Vn, 1.36 x Vn]	Vn represents the rated voltage.
7	Level-1 OV protection time	Specifies the level-1 overvoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
8	Level-2 OV protection	Specifies the level-2 overvoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[1 x Vn, 1.36 x Vn]	Vn represents the rated voltage.
9	Level-2 OV protection time	Specifies the level-2 overvoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
10	Level-1 UV protection	Specifies the level-1 undervoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[0.15 x Vn, 1 x Vn]	Vn represents the rated voltage.
11	Level-1 UV protection time	Specifies the level-1 undervoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
12	Level-2 UV protection	Specifies the level-2 undervoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[0.15 x Vn, 1 x Vn]	Vn represents the rated voltage.
13	Level-2 UV protection time	Specifies the level-2 undervoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
14	Level-1 OF protection	Specifies the level-1 overfrequency protection threshold.	Hz	The default value varies depending on the grid code. The displayed value prevails.	[1 x Fn, 1.15 x Fn]	Fn represents the rated frequency.
15	Level-1 OF protection time	Specifies the level-1 overfrequency protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
16	Level-2 OF protection	Specifies the level-2 overfrequency protection threshold.	Hz	The default value varies depending on the grid code. The displayed value prevails.	[1 x Fn, 1.15 x Fn]	Fn represents the rated frequency.
17	Level-2 OF protection time	Specifies the level-2 overfrequency protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
18	Level-1 UF protection	Specifies the level-1 underfrequency protection threshold.	Hz	The default value varies depending on the grid code. The displayed value prevails.	[0.85 x Fn, 1 x Fn]	Fn represents the rated frequency.
19	Level-1 UF protection time	Specifies the level-1 underfrequency protection duration.	ms		[50, 7200000]	
20	Level-2 UF protection	Specifies the level-2 underfrequency protection threshold.	Hz	The default value varies depending on the grid code. The displayed value prevails.	[0.85 x Fn, 1 x Fn]	Fn represents the rated frequency.
21	Level-2 UF protection time	Specifies the level-2 underfrequency protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
22	Level-3 OV protection	Specifies the level-3 overvoltage protection threshold.	V	The default value varies depending	[1 x Vn, 1.36 x Vn]	Vn represents the rated voltage.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
23	Level-3 OV protection time	Specifies the level-3 overvoltage protection duration.	ms	on the grid code. The displayed value prevails.	• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
24	Level-4 OV protection	Specifies the level-4 overvoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[1 x Vn, 1.36 x Vn]	Vn represents the rated voltage.
25	Level-4 OV protection time	Specifies the level-4 overvoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
26	Level-3 UV protection	Specifies the level-3 undervoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[0.15 x Vn, 1 x Vn]	Vn represents the rated voltage.
27	Level-3 UV protection time	Specifies the level-3 undervoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	
28	Level-4 UV protection	Specifies the level-4 undervoltage protection threshold.	V	The default value varies depending on the grid code. The displayed value prevails.	[0.15 x Vn, 1 x Vn]	Vn represents the rated voltage.
29	Level-4 UV protection time	Specifies the level-4 undervoltage protection duration.	ms		• 1000 V SUN2000: [50, 600000] • Others: [50, 7200000]	

3.5.3.3 Setting Feature Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Feature Parameters** to access the parameters setting screen.

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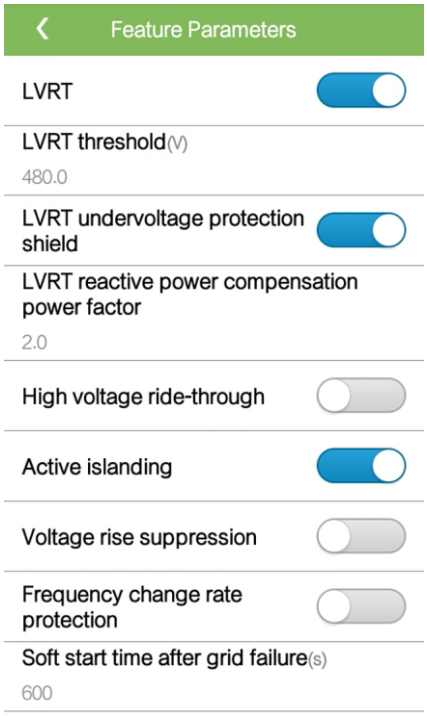
Figure 3-51 Feature Parameters (special user)



----End

Parameter List

Table 3-6 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
1	LVRT	When the power grid voltage is abnormally low for a short time, the SUN2000 cannot disconnect from the power grid immediately and has to work for some time. This is called LVRT.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	This parameter is set to **Enable** by default if the German BDEW-MV grid code is selected.
2	LVRT threshold	Specifies the threshold for triggering LVRT.	V		[50%Vn, 92%Vn]	Vn represents the rated voltage.
3	LVRT undervoltage protection shield	Specifies whether to shield the undervoltage protection function during LVRT.	N/A	The default value varies depending on the grid code. The displayed	• Disable • Enable	N/A

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
4	LVRT reactive power compensation power factor	During LVRT, the SUN2000 needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the SUN2000.	N/A	value prevails.	[0, 3]	This parameter is set to **2.5** by default if the South African SA_RPPs grid code is selected. For example, if you set **LVRT reactive power compensation power factor** to **2**, the reactive power generated by the SUN2000 is 20% of the rated power when the AC voltage drops by 10% during LVRT.
5	High voltage ride-through	When the power grid voltage is abnormally high for a short time, the SUN2000 cannot disconnect from the power grid immediately and has to work for some time. This is called high voltage ride-through (HVRT).	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	N/A
6	Active islanding	Specifies whether to enable the active islanding protection function.	N/A		• Disable • Enable	N/A
7	Passive islanding	Specifies whether to enable the passive islanding protection function.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	This parameter is displayed after the Japanese grid code is selected.
8	Voltage rise suppression	The standards of certain countries and regions require that the active power of the SUN2000 be derated according to a certain gradient when the output voltage exceeds a certain value.	N/A		• Disable • Enable	This parameter is set to **Enable** by default if the Italian CEI0-16 grid code is selected.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
9	Voltage rise suppression reactive adjustment point	The standards of certain countries and regions require that the SUN2000 must generate a certain amount of reactive power when the output voltage exceeds a certain value.	%	The default value varies depending on the grid code. The displayed value prevails.	[100, 115]	• This parameter is displayed when **Voltage rise suppression** is set to **Enable**. • The value of **Voltage rise suppression active derating point** must be greater than that of **Voltage rise suppression reactive adjustment point**.
10	Voltage rise suppression active derating point	The standards of certain countries and regions require that the active power of the SUN2000 be derated according to a certain gradient when the output voltage exceeds a certain value.	%		[100, 115]	
11	Frequency change rate protection	The SUN2000 triggers protection when the power grid frequency changes too fast.	N/A	The default value varies depending on the grid code. The displayed value prevails.	• Disable • Enable	N/A
12	Frequency change rate protection point	Specifies the frequency change rate protection threshold.	Hz/s		• 1100 V SUN2000: [0.1, 5] • Others: [0.1, 2.5]	This parameter is displayed if **Frequency change rate protection** is set to **Enable**.
13	Frequency change rate protection time	Specifies the frequency change rate protection duration.	s	The default value varies depending on the grid code. The displayed value prevails.	[0.2, 20.0]	
14	Soft start time after grid failure	Specifies the time for the power to gradually increase when the SUN2000 restarts after the power grid recovers.	s	The default value varies depending on the grid code. The displayed value prevails.	[20, 800]	This parameter is set to **360** by default if the Australian AS4777 grid code is selected, and to **300** by default if the Brazilian ABNT NBR 16149 or South African SA_RPPs grid code is selected.

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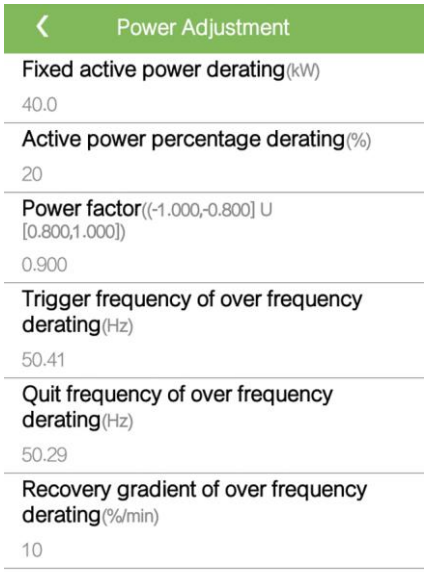
3.5.3.4 Setting Power Adjustment Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Power Adjustment** to access the parameters setting screen.

Figure 3-52 Power Adjustment (special user)



----End

Parameter List

Table 3-7 Parameter description

No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
1	Fixed active power derating	Adjusts the active power output of the SUN2000 in fixed values.	kW	Pmax_limit	• 1000 V SUN2000: [0, Pmax] • Others: [0, Pmax_limit]	Pmax represents the maximum active power. For 1000 V SUN2000s, the upper threshold for the SUN2000-25KTL-US is 27.5 kW.

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No.	Parameter	Description	Unit	Default Value	Value Range	Remarks
2	Active power percentage derating	Adjusts the active power output of the SUN2000 in percentages.	%	100	[0, 100]	If this parameter is set to **100**, the SUN2000 delivers the maximum output power.
3	Power factor	Adjusts the power factor of the SUN2000.	N/A	1.000	(–1.000, –0.800]U[0.800, 1.000]	N/A
4	Trigger frequency of over frequency derating	The standards of certain countries and regions require that the output active power of the SUN2000 be derated when the power grid frequency exceeds a certain value.	Hz	The default value varies depending on the grid code. The displayed value prevails.	• When the output frequency is 50 Hz, the value range is [45.00, 55.00]. • When the output frequency is 60 Hz, the value range is [55.00, 65.00].	N/A
5	Quit frequency of over frequency derating	Specifies the frequency threshold for exiting overfrequency derating.	Hz		• When the output frequency is 50 Hz, the value range is [45.00, 55.00]. • When the output frequency is 60 Hz, the value range is [55.00, 65.00].	N/A
6	Recovery gradient of over frequency derating	Specifies the power recovery gradient for overfrequency derating.	%/min		[5, 20]	This parameter is set to **16** by default if the Australian AS4777 grid code is selected, and to **15** by default if the Italian CEI0-21 or CEI0-16 grid code is selected.

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3.5.3.5 Setting User Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **User param.** to access the parameter settings screen.

Figure 3-53 Setting user parameters

Step 2 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

3.5.3.6 Setting a File Save Path

Context

You can modify the save path for operation logs and SUN2000 logs and you can export logs from the path subsequently.

Procedure

Step 1 Tap **Function Menu** > **Settings** > **File save path** to access the settings screen.

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Figure 3-54 Setting a file save path

Step 2 Tap **File save path** to set the save path.

----End

3.5.4 Querying energy yield data

Procedure

Step 1 Tap **Function Menu** > **Energy Yield** to access the screen for querying energy yield.

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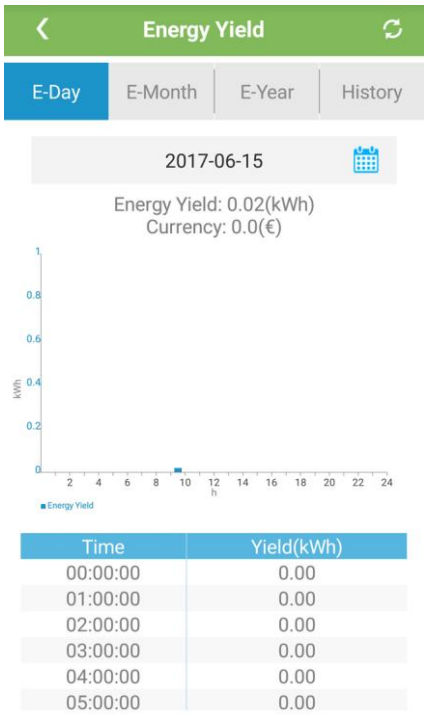
Figure 3-55 Querying energy yield data



Step 2 Swipe left or right on the screen or tap E-Day | E-Month | E-Year | History to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

3.5.5 System Maintenance

A special user can choose **Function Menu** > **Maintenance** to turn on, or turn off the SUN2000 and restore factory settings.

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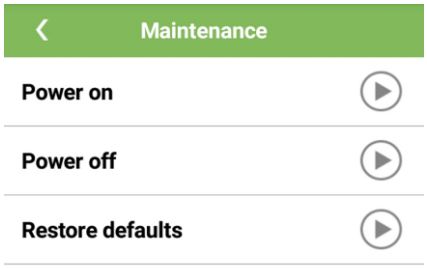
Figure 3-56 Maintenance (special user)



3.5.5.1 Starting and Shutting Down the SUN2000

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Power on** or **Power off**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

3.5.5.2 Restoring Factory Settings

Context

NOTICE

Perform this operation with caution because all configured parameters except the current date, time, baud rate, and address will be restored to their factory default values. This operation will not affect operating information, alarm records, or system logs.

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Step 2 Tap next to **Restore defaults**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

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3.5.6 SUN2000 Upgrade

Prerequisites

Obtain the upgrade package with the help of the supplier or Huawei engineers.

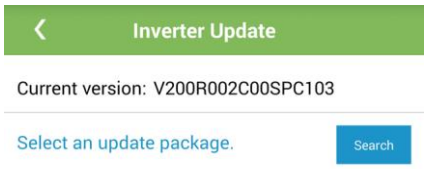
Procedure

Step 1 Copy the upgrade package to your mobile phone without decompressing the package.

NOTE
To reduce the time of searching for the upgrade package, you are advised to save the uncompressed upgrade package in the root directory of the memory or SD card of the mobile phone.

Step 2 Tap **Function Menu** > **Inverter Update** to access the SUN2000 upgrade screen.

Figure 3-57 SUN2000 upgrade



Step 3 Tap **Search**. A message indicating that searching for an upgrade package will take several minutes is displayed. Tap **OK**.

Step 4 Select the correct upgrade package from the search results. The **View Update Package** dialog box is displayed.

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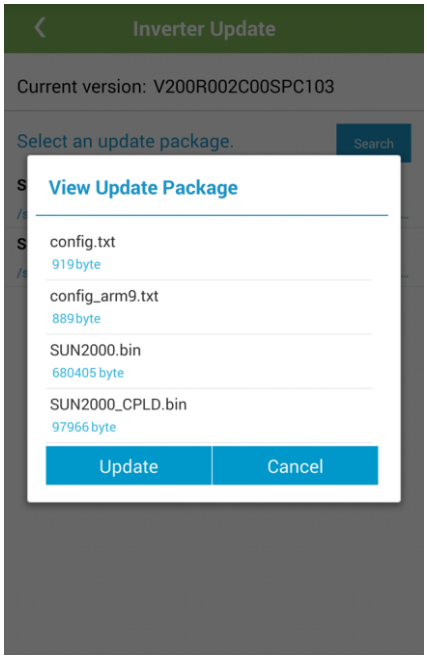
Figure 3-58 Viewing the upgrade package



Step 5 Tap **Update**.

Step 6 On the displayed **Compare Versions** screen, tap **Update**.

----End

3.5.7 Device Logs

Context

Tap **Device Logs** to export operation logs, as well as alarm records and energy yield information of the SUN2000 from the mobile phone.

Procedure

Step 1 Tap **Function Menu** > **Device Logs** to access the device logs screen.

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Figure 3-59 Device logs

Step 2 Tap **Phone Log** to delete or export mobile phone operation logs.

Step 3 Select **Inverter Log** to download log files, such as alarms and performance data.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 3.5.3.6 Setting a File Save Path to modify the log save path.

----End

3.5.8 Viewing System Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the SUN2000 version information.

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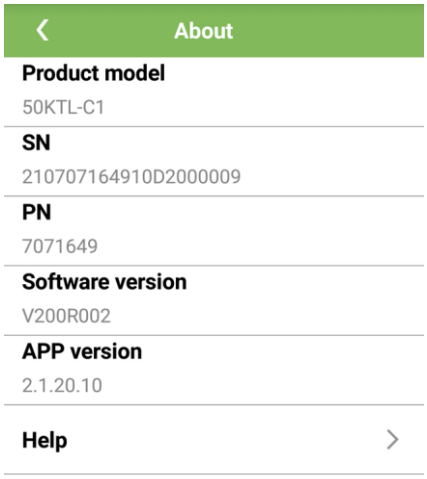
Figure 3-60 About



----End

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4 Operations on the Screen for Connecting to the SmartLogger

NOTICE

The UI snapshots provided in this section correspond to the SUN2000APP 2.1.20.10 version. The data on the UI snapshots is for reference only.

4.1 Connecting to the SmartLogger

Prerequisites

- The SmartLogger has been powered on.
- The Bluetooth function is enabled on the SmartLogger by default.

Procedure

Step 1 Enable Bluetooth on the mobile phone.

Step 2 Start the app. The login screen is displayed.

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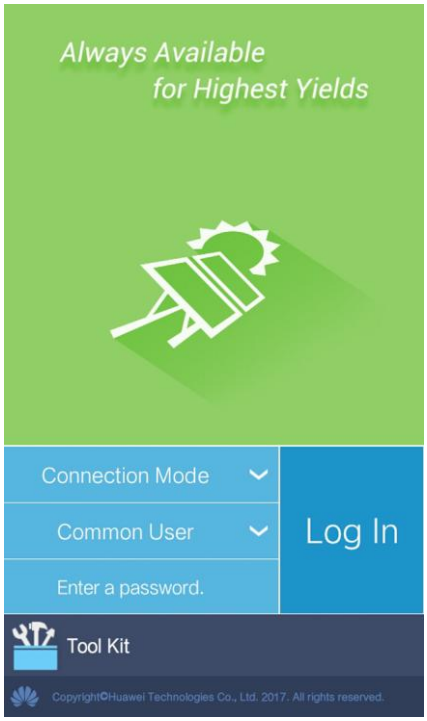
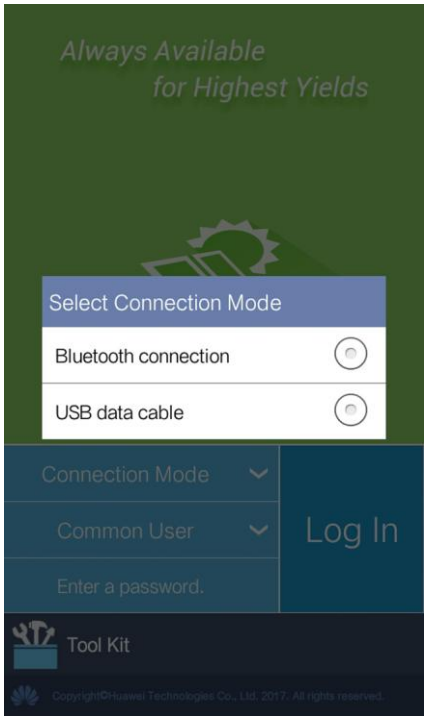
Figure 4-1 Login screen



Step 3 Tap **Connection Mode** and select **Bluetooth connection**.

Figure 4-2 Selecting a connection mode



Step 4 Tap **Search for Device** to search for a Bluetooth device.

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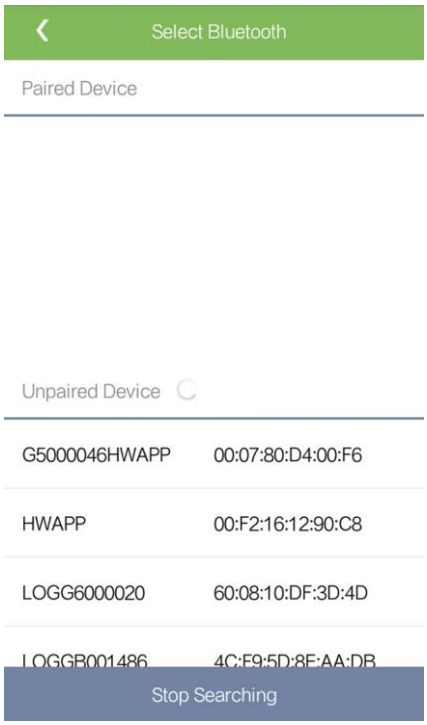
Figure 4-3 Searching for Bluetooth devices



Step 5 After Bluetooth devices are found, select the target Bluetooth device to set up a connection.

NOTE

- Bluetooth name: LOG+Last 8 digits of the SN bar code
- The SN bar code can be obtained from the SmartLogger device label or from **Product Information** on the app.

Step 6 Tap the user name area to switch between **Common User**, **Advanced User**, and **Special User**.

NOTE

- The login password is the same as that for the SmartLogger connected to the app and is used only when the SmartLogger connects to the app.
- The preset password for a common user, advanced user, and special user is **00000a**. Use the preset password upon initial login. To ensure account security, change the password immediately after login.
- During login, if five incorrect passwords have been entered consecutively (the interval between two consecutive invalid password entries is less than 2 minutes), the account will be locked for 10 minutes. The password consists of 6–20 digits.

Step 7 After entering the password, tap **Log In**.

Step 8 After successful login, the quick settings screen or home screen is displayed.

NOTE

- If you log in to the app after the device connects to the app for the first time or factory defaults are restored, the quick settings screen will be displayed. You can set basic parameters on the quick settings screen. After settings, you can modify the parameters by choosing **More** > **Settings**.Figure 4-4 is the **Quick Settings** screen for an advanced user.
- If you do not set basic parameters on the quick settings screen, the screen is still displayed when you log in to the app next time.

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Figure 4-4 Quick settings (advanced user)

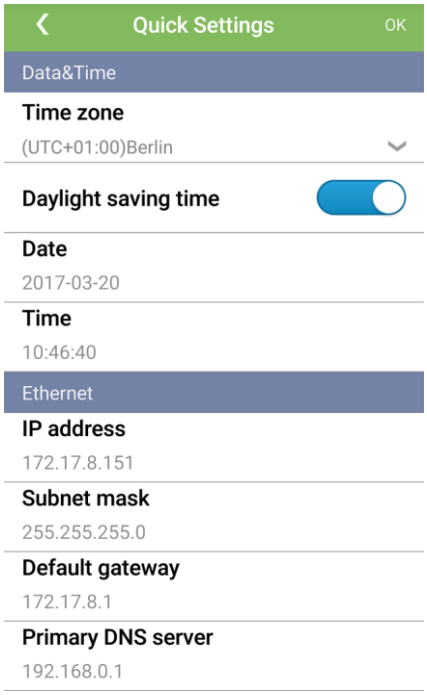
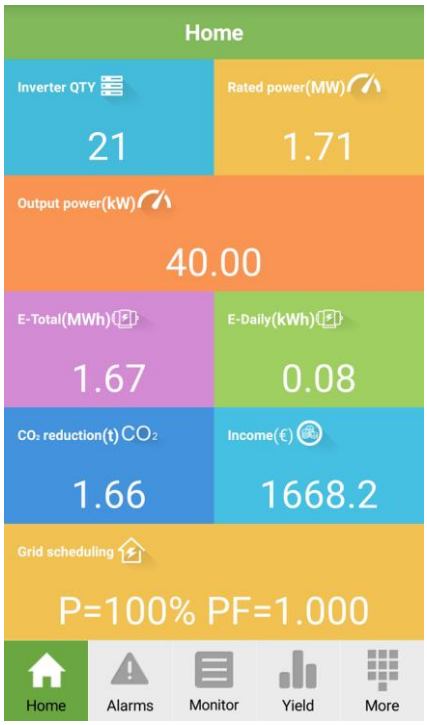


Figure 4-5 Home screen



----End

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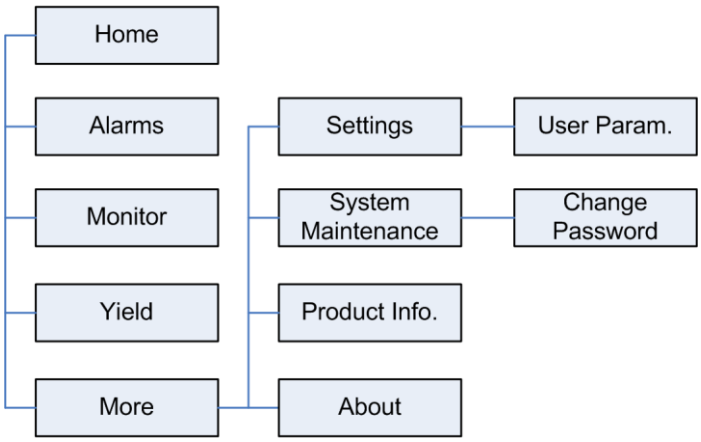
4.2 User Operation Permissions

The user accounts that can log in to the app are classified into common users, advanced users, and special users based on the responsibilities of PV plant operation personnel.

- Common user: Has the permissions of viewing data about the SmartLogger and the devices connected to it, setting SmartLogger user parameters, and changing the system password.
- Advanced user: Has the permissions of viewing data about the SmartLogger and the devices connected to it, setting functional parameters, managing devices, and maintaining the system.
- Special user: Has the permissions of viewing data about the SmartLogger and the devices connected to it, managing devices, and maintaining the system.

Figure 4-6, Figure 4-7, and Figure 4-8 show the menu operation permissions of common users, advanced users, and special users respectively.

Figure 4-6 Operation permissions of common users



NOTE

Common users can view data and start or shut down the devices under **Monitor**.

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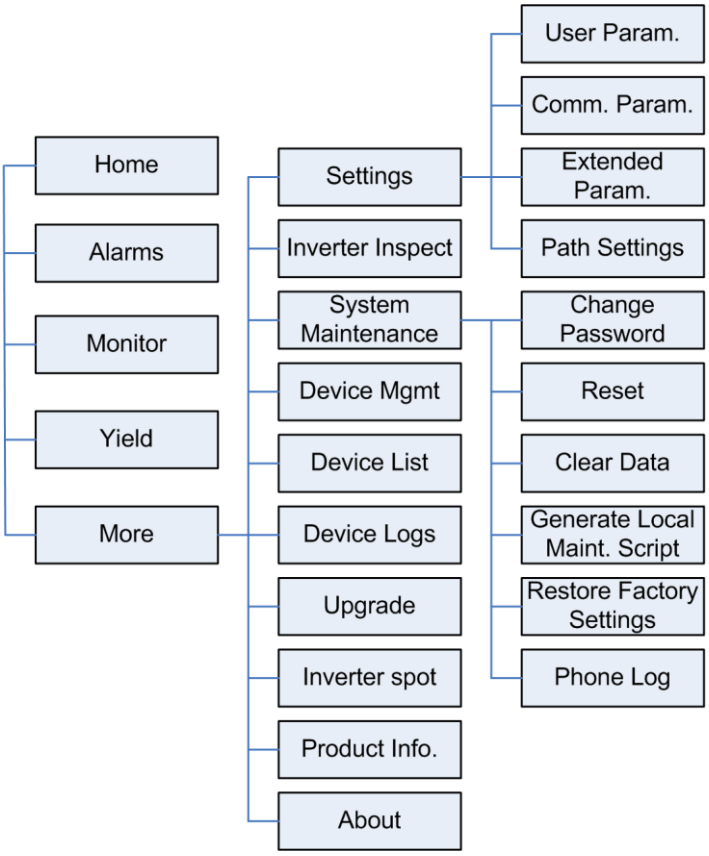
Figure 4-7 Operation permissions of advanced users



NOTE

Advanced users can view data, set parameters, download logs, and start or shut down the devices under **Monitor**.

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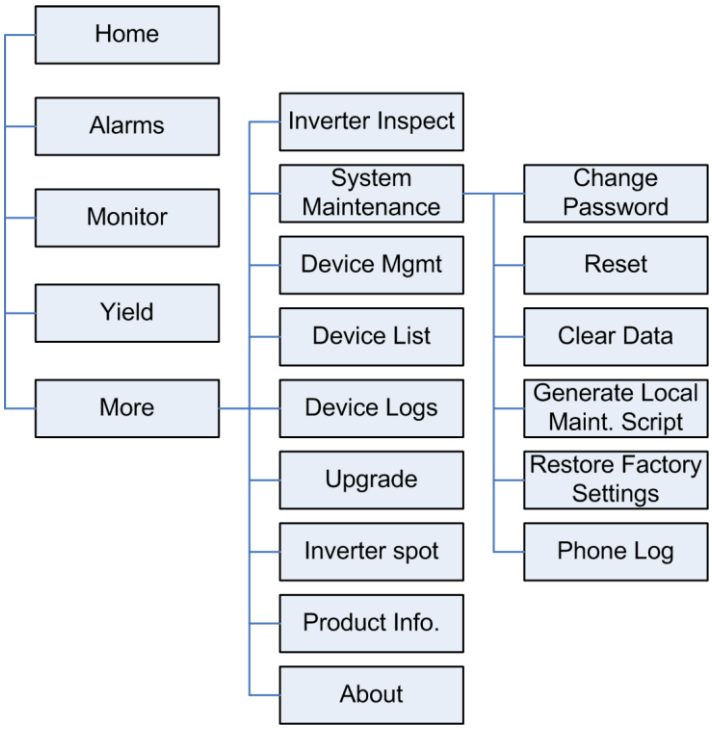
Figure 4-8 Operation permissions of special users



NOTE
Special users can view data, download logs, and start or shut down the devices under **Monitor**.

4.3 Screen Operations (Common User)

4.3.1 Querying Home Screen Information

Context

You can tap **Home** to query the detailed running information about the SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Home** at the bottom.

Table 4-1 Home

Parameter	Description
Inverter QTY	Number of SUN2000s connected to the SmartLogger
Rated power	Total rated power of SUN2000s connected to the SmartLogger
Output power	Total output power of SUN2000s connected to the SmartLogger

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Parameter	Description
E-Total	Total energy yields of the SUN2000s connected to the SmartLogger
E-Daily	Total energy yields of SUN2000s connected to the SmartLogger on the current day
CO_2 reduction	Total amount of reduced CO_2 emission of the SUN2000s connected to the SmartLogger
Income	Total revenues corresponding to energy yields of SUN2000s connected to the SmartLogger
Grid scheduling	Active power percentage and reactive power factor for power grid scheduling

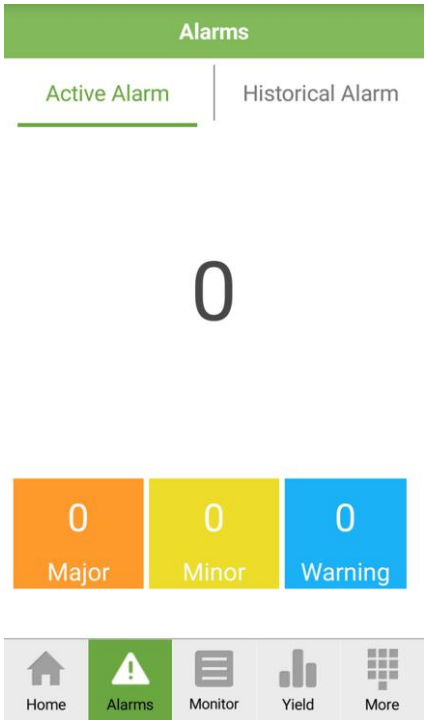
----End

4.3.2 Querying Alarm Records

Procedure

Step 1 Tap **Alarms** at the bottom of the screen to access the Active Alarm screen.

Figure 4-9 Active alarms



Step 2 To query the detailed alarms of an alarm severity, tap **Major**, **Minor**, or **Warning**.

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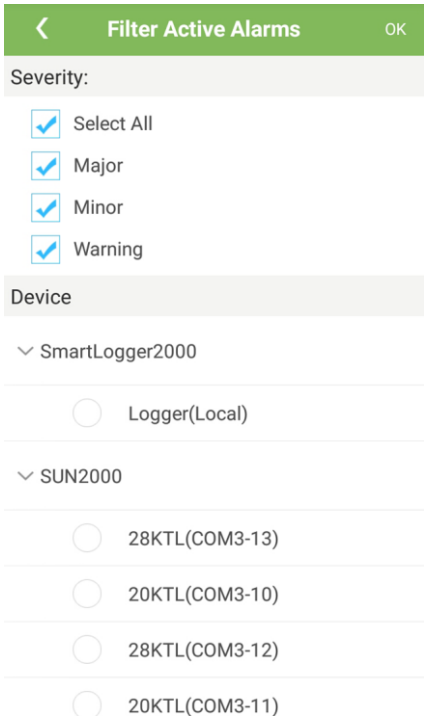
Step 3 Tap in the upper right corner of the **Active alarms** screen, and set the criteria for filtering active alarms. Then the details about the active alarms that meet the filtering criteria are displayed.

Figure 4-10 Filter active alarms



NOTE
The active alarm filtering criteria include **Severity** and **Device**.

Step 4 Tap **Historical Alarm** to access the Filter Historical Alarms screen.

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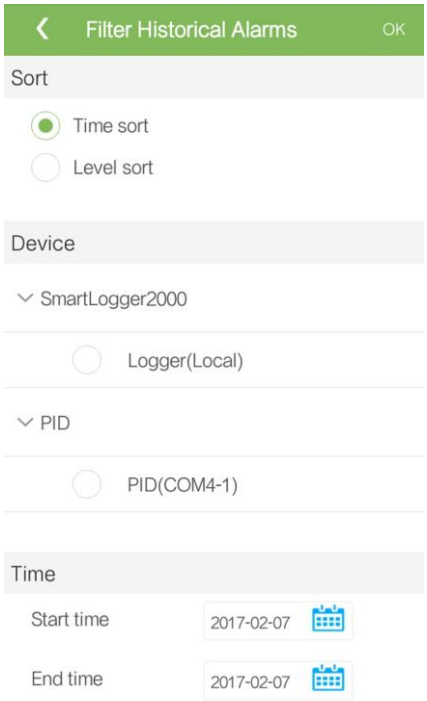
Figure 4-11 Filtering historical alarms



Step 5 Set the criteria for filtering historical alarms and tap **OK** to query the detailed historical alarm information.

NOTE
The criteria for filtering historical alarms include **Sort**, **Device**, and **Time**.

----End

4.3.3 Device Monitoring

A common user can only tap **Monitoring** to query the running information and alarms about the SmartLogger and the devices connected to it.

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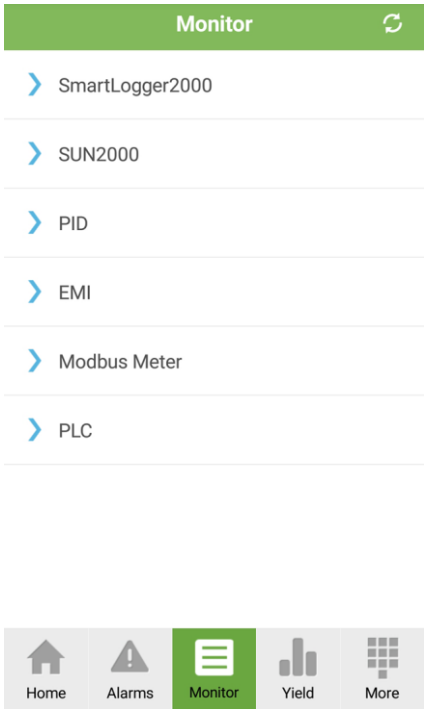
Figure 4-12 Device monitoring



4.3.3.1 Querying the SmartLogger Information

Procedure

Step 1 Tap a device name under **SmartLogger2000** on the **Monitor** screen to access the main menu screen of the SmartLogger.

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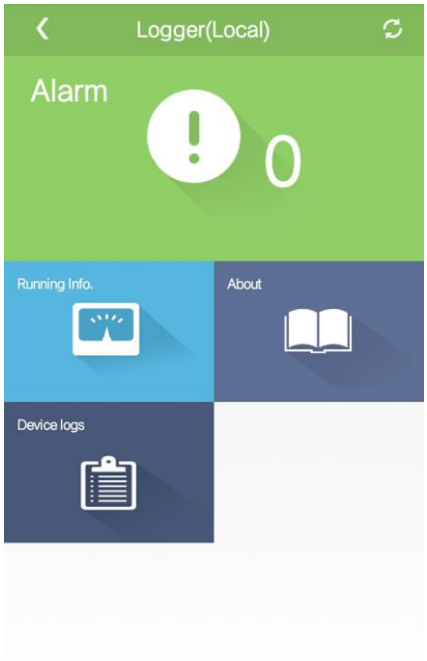
Figure 4-13 SmartLogger main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query the alarms, running information, or version information about the SmartLogger.

----End

4.3.3.2 SUN2000

4.3.3.2.1 Querying the SUN2000 Information

Procedure

Step 1 Tap **SUN2000** on the **Monitor** screen and select the device to be queried to access the main menu screen of a SUN2000.

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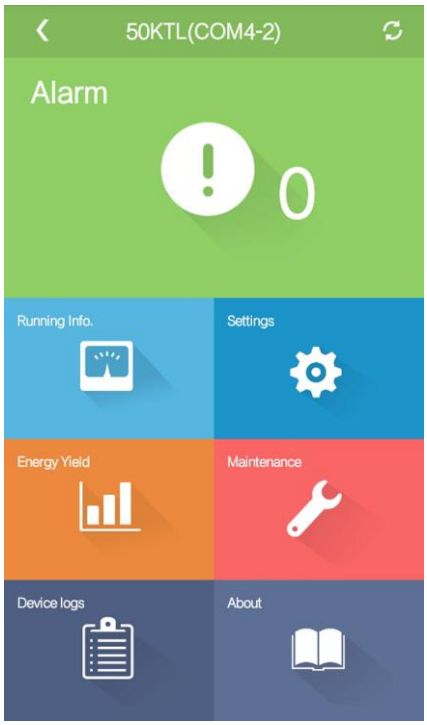
Figure 4-14 SUN2000 main menu screen



Step 2 Tap **Alarm**, **Running Info.**, **Energy Yield**, or **About** to query alarms, running information, energy yield, or version information about the SUN2000.

----End

4.3.3.2.2 Manually Sending On/Off Commands

Procedure

Step 1 Tap **Main Menu** > **Maintenance** to access the maintenance screen.

Figure 4-15 Maintenance (common user)

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Step 2 Tap next to **Power on** or **Power off**.

Step 3 Enter the password for logging in to the app and tap **OK**.

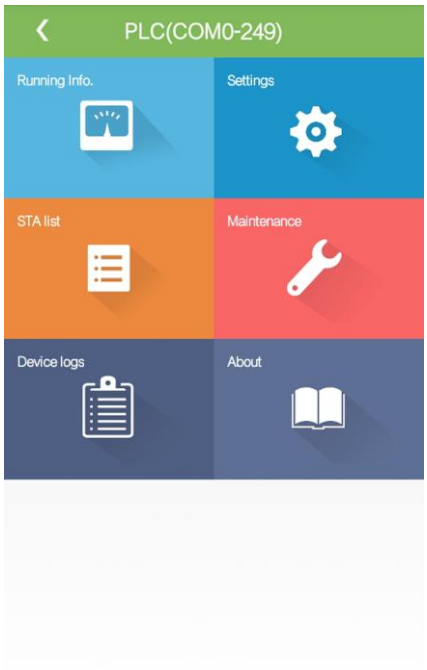
----End

4.3.3.3 Querying PLC Information

Procedure

Step 1 Tap **PLC** on the **Monitor** screen to access the main menu screen of the PLC.

Figure 4-16 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the PLC.

----End

4.3.3.4 Querying the EMI Information

Procedure

Step 1 Tap **EMI** on the **Monitor** screen to access the main menu screen.

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Figure 4-17 Main menu screen

Step 2 Tap **Running Info.** or **About** to query running information or version information about the environmental monitoring instrument (EMI).

----End

4.3.3.5 Querying PID Information

Procedure

Step 1 Tap **PID** on the **Monitor** screen to access the main menu screen of the PID.

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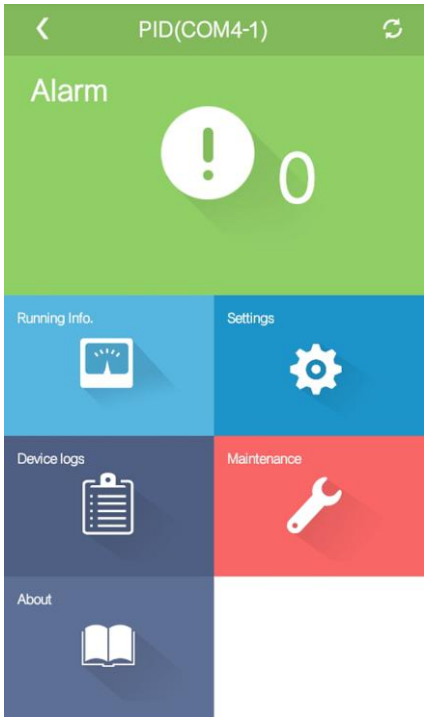
Figure 4-18 Main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query alarms, running information, or version information about the PID.

----End

4.3.3.6 Querying the Modbus Power Meter Information

Procedure

Step 1 Tap **Modbus Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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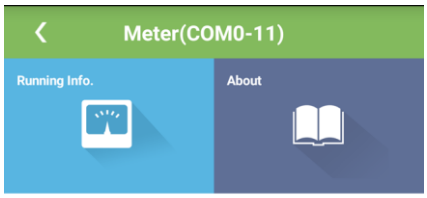
Figure 4-19 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the Modbus power meter.

----End

4.3.3.7 Querying the DL/T645 Meter Information

Procedure

Step 1 Tap **DL/T645 Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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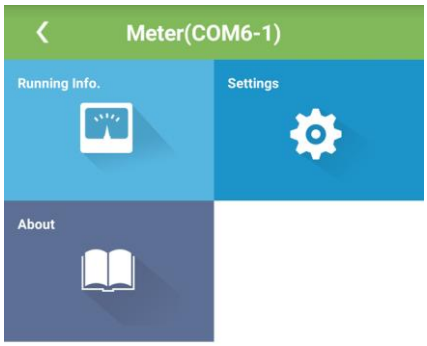
Figure 4-20 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the DL/T645 power meter.

----End

4.3.3.8 Querying User-Defined Device Information

Context

The SmartLogger can connect to third-party devices that support the Modbus-RTU protocol, such as the box-type transformer and EMI. The SmartLogger cannot automatically search user-defined devices. You need to manually add them.

The SmartLogger can connect to a maximum of five types of user-defined devices and can connect to multiple devices of the same type.

Procedure

Step 1 On the **Monitor** screen, tap **Custom** to access the screen for querying device information.

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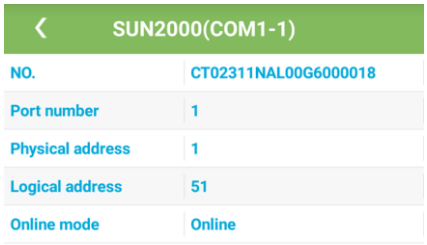
Figure 4-21 User-defined devices



----End

4.3.3.9 Querying IEC103 Device Information

Context

The SmartLogger can connect to a third-party device that supports IEC103, such as a relay protection or monitoring device like a box-type transformer. The SmartLogger cannot automatically search IEC103 devices, so they need to be added manually.

The SmartLogger can connect to a maximum of five types of IEC103 devices and can connect to multiple devices of the same type.

Procedure

Step 1 Tap a device name under **IEC103** on the **Monitor** screen to access the screen for querying device information.

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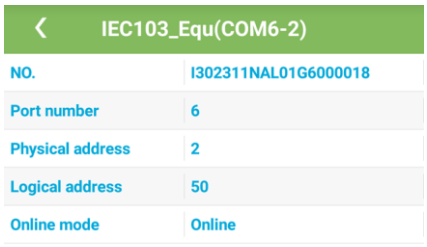
Figure 4-22 IEC103 devices



----End

4.3.4 Querying Energy Yield Data

Context

You can query the energy yield of all SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Yield** at the bottom of the home screen to access the daily energy yield screen.

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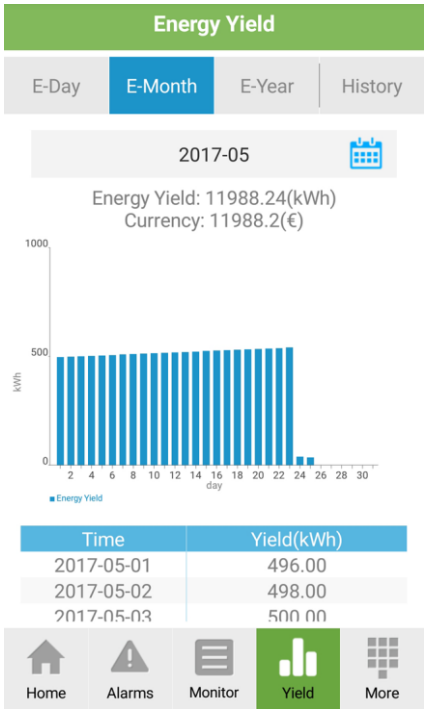
Figure 4-23 Energy yield screen



Step 2 Swipe left or right on the screen or tap

to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

4.3.5 More

A common user can tap **More** at the bottom of the home screen to set user parameters, perform maintenance, and view product information for the SmartLogger.

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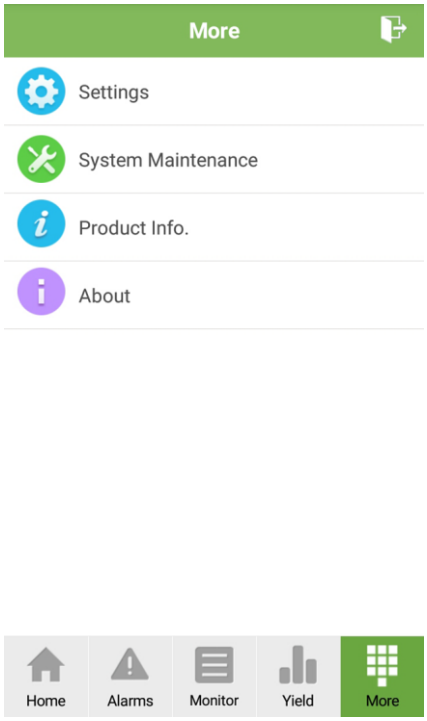
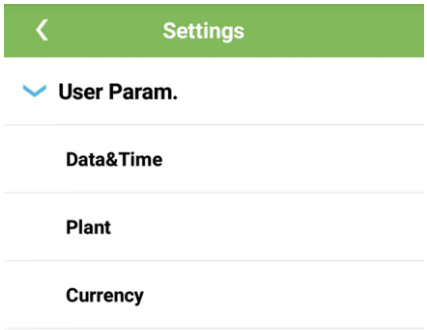
Figure 4-24 More (common user)



4.3.5.1 Setting User Parameters

A common user can choose **More** > **Settings** to set user parameters for the SmartLogger.

Figure 4-25 Settings (common user)



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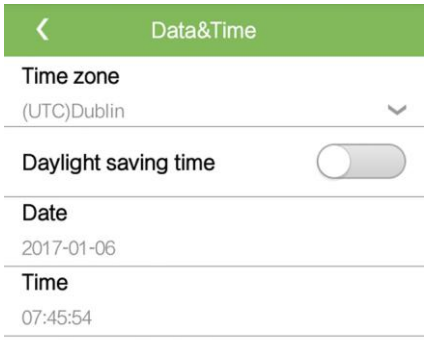
4.3.5.1.1 Setting the System Date and Time

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Date&Time** to access the settings screen.

Figure 4-26 Date and time



Step 2 Set the date and time based on the region where the SmartLogger is located.

----End

4.3.5.1.2 Setting Plant Information

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Plant** to access the settings screen.

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Figure 4-27 Plant

Step 2 Set parameters as required. On the displayed screen, enter or select relevant information.

NOTE
The plant parameters that are manually entered must not contain any special character, such as **<>:,`'?()#&\$|%+;~^"** in the English half-width status.

----End

4.3.5.1.3 Setting Gain Parameters

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Currency** to access the parameter settings screen.

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Figure 4-28 Gain

NOTE
The currency factor indicates the local power price, and is used to calculate the translation gain of the energy yield.

----End

4.3.5.2 System Maintenance

Context

A common user can choose **More** > **System Maintenance** to change the SmartLogger password.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Change Password** to access the screen for changing a password.

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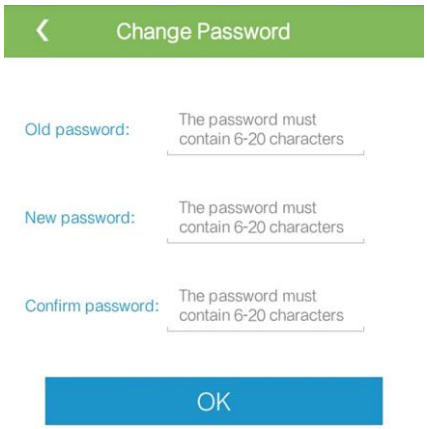
Figure 4-29 Changing a password



NOTE

The password should meet the following requirements:

- Contains 6–20 characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

4.3.5.3 Querying Product Information

Procedure

Step 1 Tap **More** > **Product Info** to query SmartLogger version information.

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Figure 4-30 Product information

----End

4.3.5.4 Viewing App Version Information

Procedure

Step 1 Tap **More** > **About** to view the app version information.

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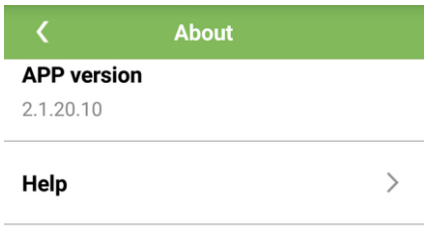
Figure 4-31 About



----End

4.4 Screen Operations (Advanced User)

4.4.1 Querying Home Screen Information

Context

You can tap **Home** to query the detailed running information about the SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Home** at the bottom.

Table 4-2 Home

Parameter	Description
Inverter QTY	Number of SUN2000s connected to the SmartLogger
Rated power	Total rated power of SUN2000s connected to the SmartLogger
Output power	Total output power of SUN2000s connected to the SmartLogger

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Parameter	Description
E-Total	Total energy yields of the SUN2000s connected to the SmartLogger
E-Daily	Total energy yields of SUN2000s connected to the SmartLogger on the current day
CO_2 reduction	Total amount of reduced CO_2 emission of the SUN2000s connected to the SmartLogger
Income	Total revenues corresponding to energy yields of SUN2000s connected to the SmartLogger
Grid scheduling	Active power percentage and reactive power factor for power grid scheduling

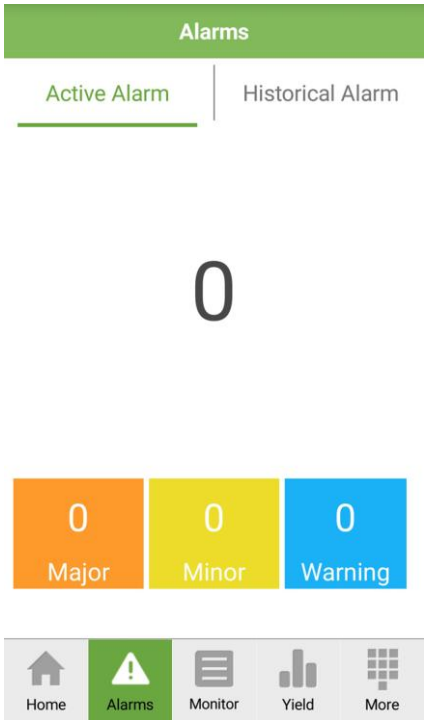
----End

4.4.2 Querying Alarm Records

Procedure

Step 1 Tap **Alarms** at the bottom of the screen to access the Active Alarm screen.

Figure 4-32 Active alarms



Step 2 To query the detailed alarms of an alarm severity, tap **Major**, **Minor**, or **Warning**.

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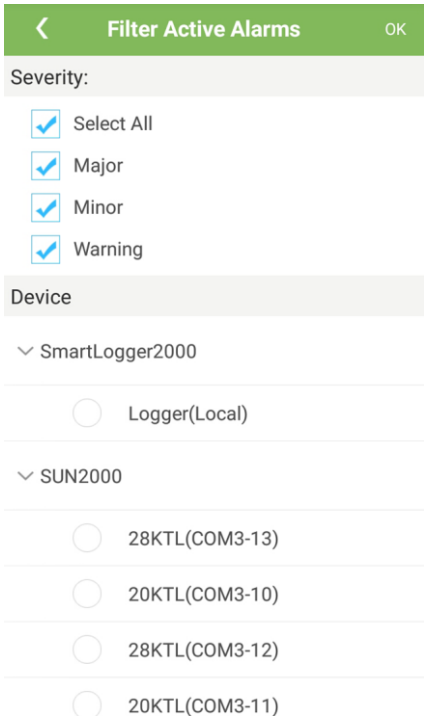
Step 3 Tap in the upper right corner of the **Active alarms** screen, and set the criteria for filtering active alarms. Then the details about the active alarms that meet the filtering criteria are displayed.

Figure 4-33 Filter active alarms



NOTE
The active alarm filtering criteria include **Severity** and **Device**.

Step 4 Tap **Historical Alarm** to access the Filter Historical Alarms screen.

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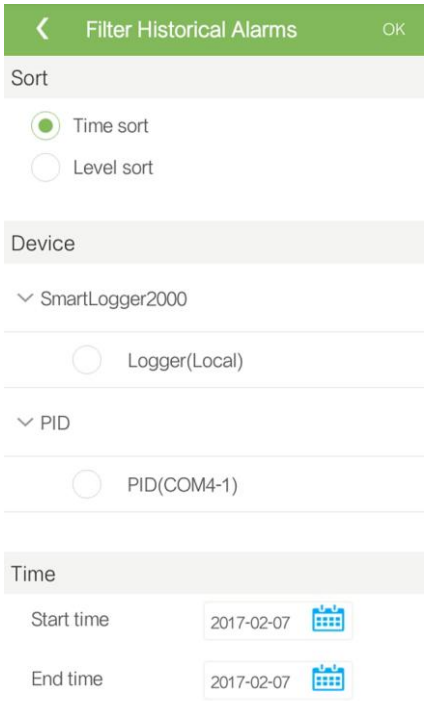
Figure 4-34 Filtering historical alarms



Step 5 Set the criteria for filtering historical alarms and tap **OK** to query the detailed historical alarm information.

NOTE
The criteria for filtering historical alarms include **Sort**, **Device**, and **Time**.

----End

4.4.3 Device Monitoring

An advanced user can tap **Monitor** to query the running information and alarms about the SmartLogger and the devices connected to it, set parameters, and send commands.

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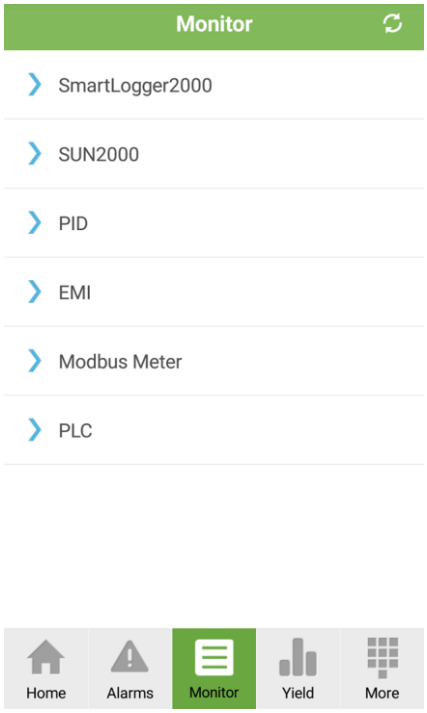
Figure 4-35 Device monitoring



4.4.3.1 SmartLogger

4.4.3.1.1 Querying the SmartLogger Information

Procedure

Step 1 Tap a device name under **SmartLogger2000** on the **Monitor** screen to access the main menu screen of the SmartLogger.

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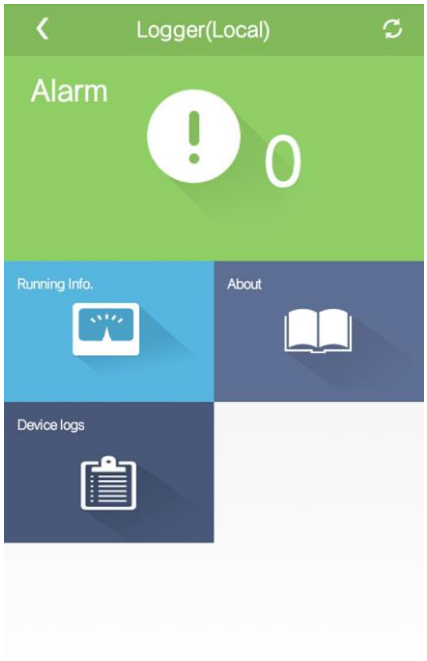
Figure 4-36 SmartLogger main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query the alarms, running information, or version information about the SmartLogger.

----End

4.4.3.1.2 Downloading logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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Figure 4-37 Downloading logs

Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.4.3.2 SUN2000

4.4.3.2.1 Querying the SUN2000 Information

Procedure

Step 1 Tap **SUN2000** on the **Monitor** screen and select the device to be queried to access the main menu screen of a SUN2000.

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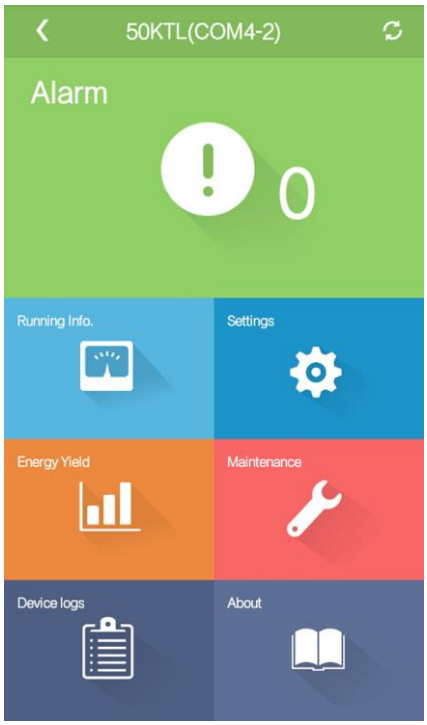
Figure 4-38 SUN2000 main menu screen



Step 2 Tap **Alarm**, **Running Info.**, **Energy Yield**, or **About** to query alarms, running information, energy yield, or version information about the SUN2000.

----End

4.4.3.2.2 Setting Running Parameters

Procedure

Step 1 Tap **Main Menu** > **Settings** to access the settings screen.

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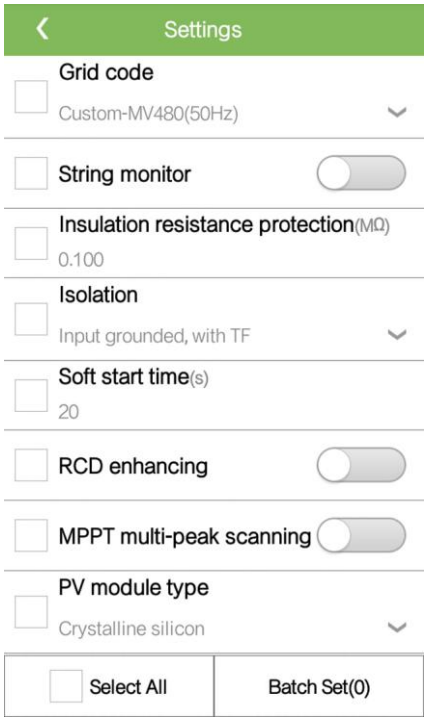
Figure 4-39 Settings (advanced user)



Step 2 Set parameters as required.

Step 3 (Optional) Select parameters as required and tap **Batch Set** to set running parameters for multiple SUN2000s of the same series.

NOTE
For description about the SUN2000 running parameters, see 3.4.3 Parameter Settings.

----End

4.4.3.2.3 Maintaining the SUN2000

Procedure

Step 1 Tap **Main Menu** > **Maintenance** to access the maintenance screen.

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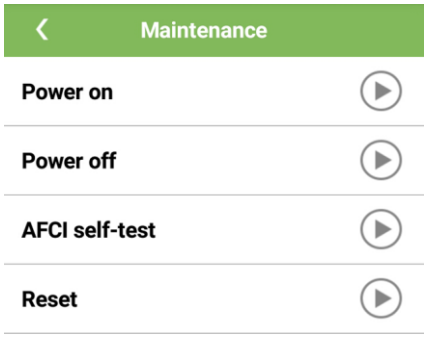
Figure 4-40 Maintenance



Step 2 Tap ▶ next to **Power on**, **Power off**, **AFCI self-test**, or **Reset**.

NOTE
AFCI self-test is available only for the SUN2000 model marked -US.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

4.4.3.2.4 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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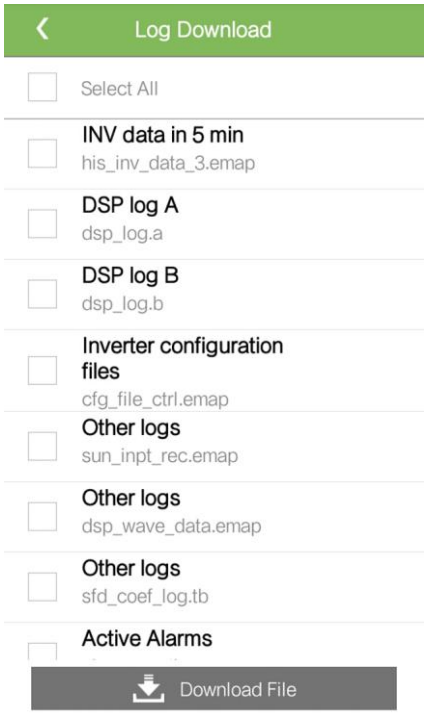
Figure 4-41 Downloading logs



Step 2 Download log files as required.

NOTE
The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.4.3.3 PLC

4.4.3.3.1 Querying PLC Information

Procedure

Step 1 Tap **PLC** on the **Monitor** screen to access the main menu screen of the PLC.

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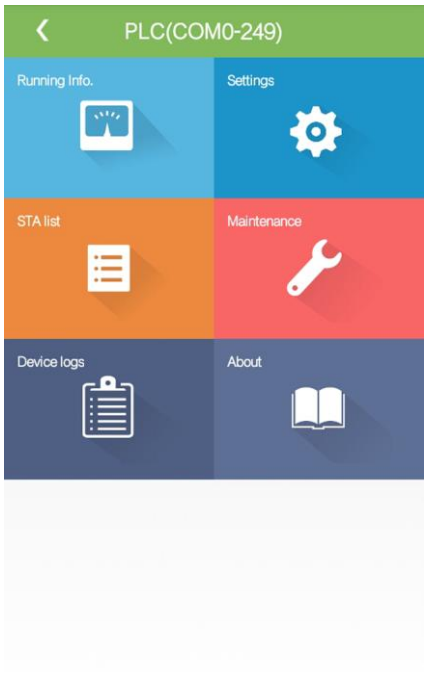
Figure 4-42 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the PLC.

----End

4.4.3.3.2 Setting Running Parameters

Procedure

Step 1 Tap **Main Menu** > **Settings** to access the settings screen.

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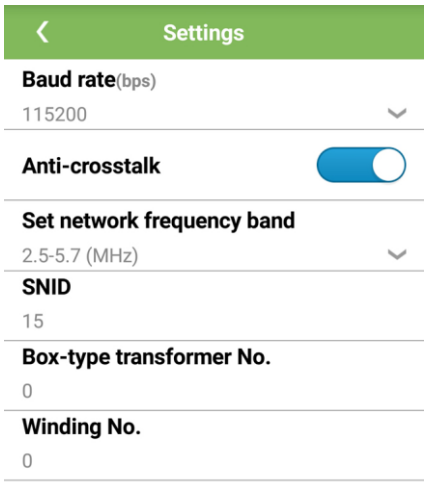
Figure 4-43 Settings



NOTE

- **Baud rate** is set to **115200** by default, which provides optimal communications performance and does not need to be changed.
- Set **Anti-crosstalk** to **Enable** to make devices in the anti-crosstalk list take effect.

----End

4.4.3.3.3 Setting the STA List

Procedure

Step 1 Tap **Main Menu** > **STA List** to access the settings screen.

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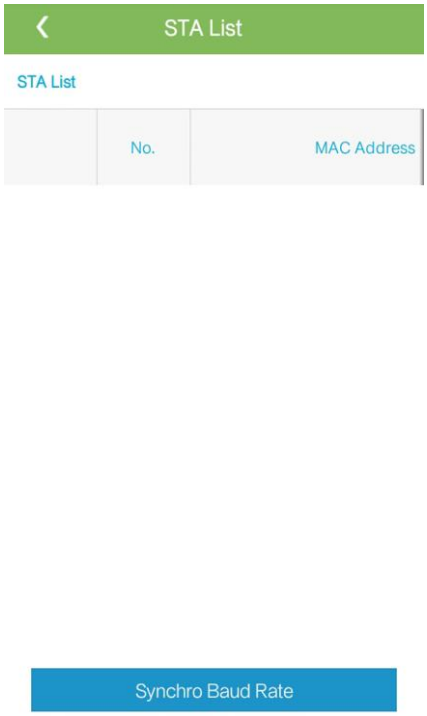
Figure 4-44 Settings



Step 2 To modify the baud rate of one device, tap **Baud rate** for the device entry on the list.

Step 3 To modify the baud rates of multiple devices in batches, select the devices from the list and tap **Synchro Baud Rate**.

----End

4.4.3.3.4 Maintaining the PLC Module

Procedure

Step 1 Tap **Main Menu** > **Maintenance** to access the maintenance screen.

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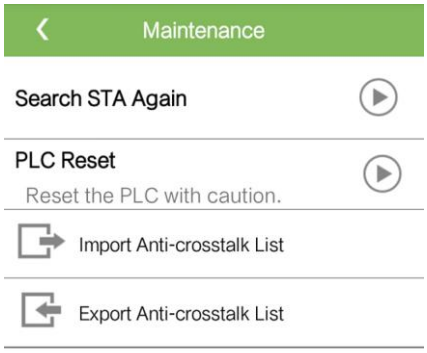
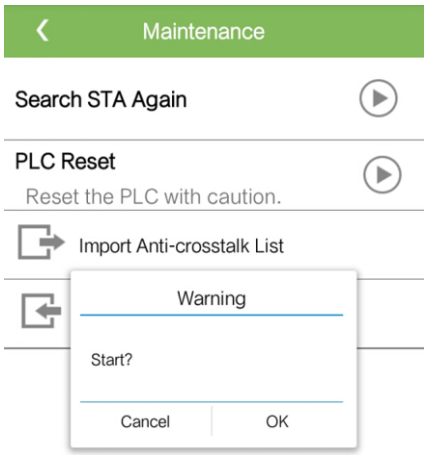
Figure 4-45 Maintenance



Step 2 Tap ▶ next to **Search STA Again** and tap **OK** on the displayed dialog box.

Figure 4-46 Searching STA Again



NOTE

If the embedded PLC module in the SmartLogger is enabled, start **Search STA Again** to establish communication between the SmartLogger and the SUN2000 over an AC power cable.

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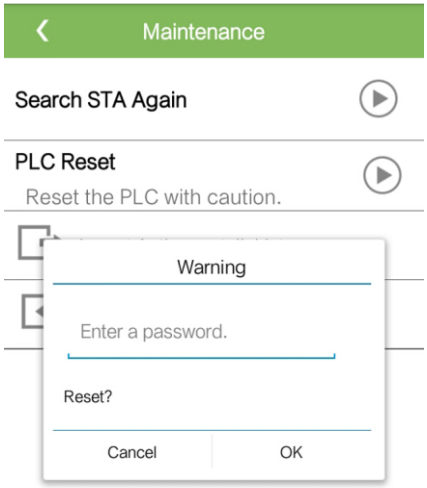
Step 3 Tap next to **PLC Reset**, enter the password for logging in to the app, and tap **OK**.

Figure 4-47 PLC reset



Step 4 Tap **Import Anti-crosstalk List** to import the anti-crosstalk list of the PLC module from the mobile phone to the PLC module.

Step 5 Tap **Export Anti-crosstalk List** to save the anti-crosstalk list of the PLC module to the mobile phone.

----End

4.4.3.3.5 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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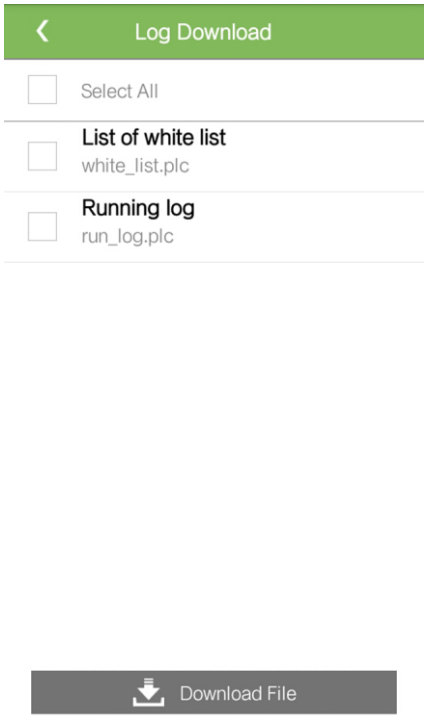
Figure 4-48 Downloading logs



Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.4.3.4 Querying the EMI Information

Procedure

Step 1 Tap **EMI** on the **Monitor** screen to access the main menu screen.

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Figure 4-49 Main menu screen

Step 2 Tap **Running Info.** or **About** to query running information or version information about the environmental monitoring instrument (EMI).

----End

4.4.3.5 PID

4.4.3.5.1 Querying PID Information

Procedure

Step 1 Tap **PID** on the **Monitor** screen to access the main menu screen of the PID.

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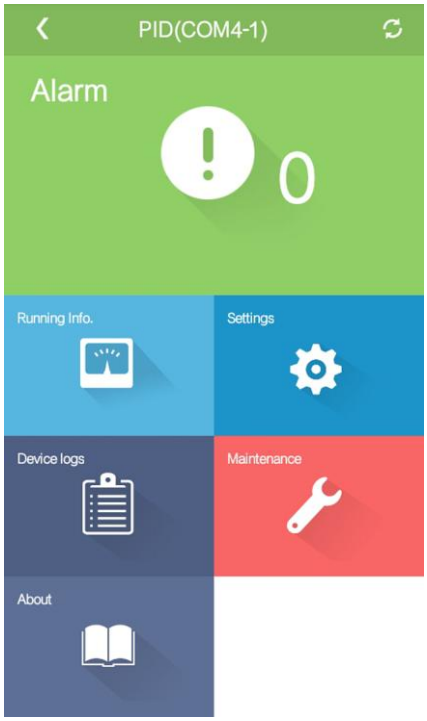
Figure 4-50 Main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query alarms, running information, or version information about the PID.

----End

4.4.3.5.2 Setting Running Parameters

Procedure

Step 1 Tap **Main Menu** > **Settings** to access the settings screen.

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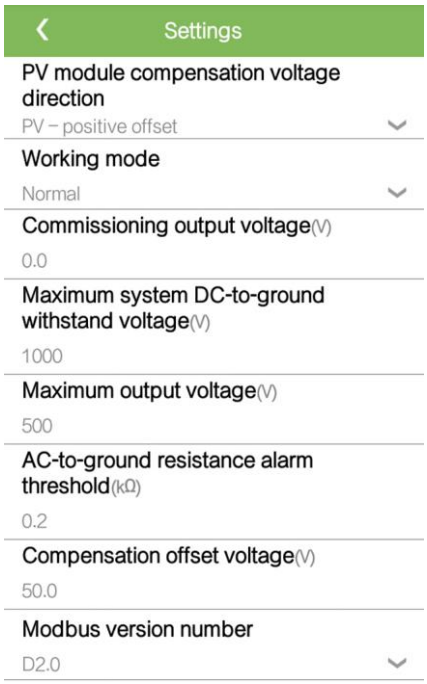
Figure 4-51 Settings



----End

4.4.3.5.3 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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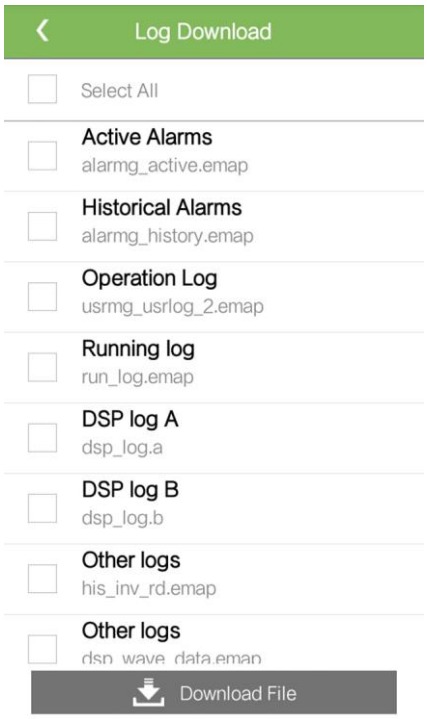
Figure 4-52 Downloading logs



Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.4.3.5.4 Maintaining the PID

Procedure

Step 1 Tap **Main Menu** > **Maintenance** to access the maintenance screen.

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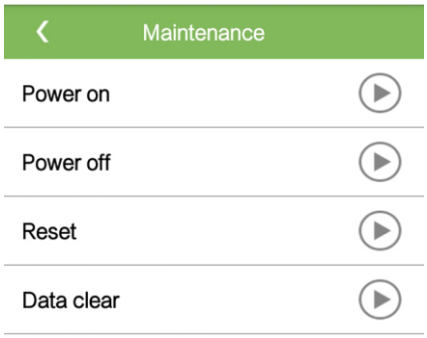
Figure 4-53 Maintenance



Step 2 Tap ▶ next to **Power on**, **Power off**, **Reset**, or **Data clear** as required.

NOTE
If you clear data, active and historical alarms stored on the PID module will all be cleared.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

4.4.3.6 Querying the Modbus Power Meter Information

Procedure

Step 1 Tap **Modbus Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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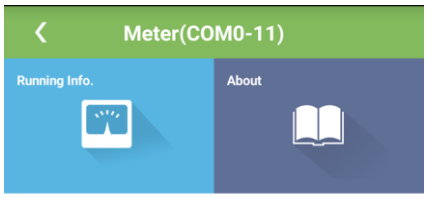
Figure 4-54 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the Modbus power meter.

----End

4.4.3.7 DL/T645 Power Meter

4.4.3.7.1 Querying the DL/T645 Meter Information

Procedure

Step 1 Tap **DL/T645 Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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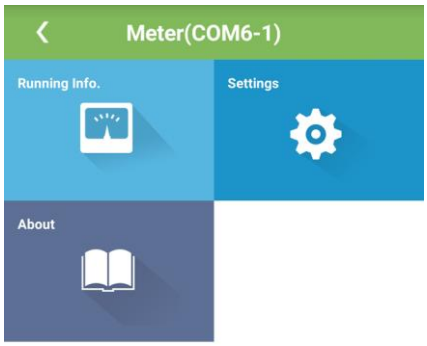
Figure 4-55 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the DL/T645 power meter.

----End

4.4.3.7.2 Setting Running Parameters

Procedure

Step 1 Tap **Main Menu** > **Settings** to access the settings screen.

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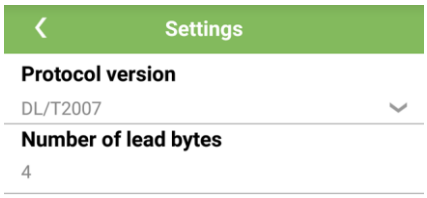
Figure 4-56 Settings



----End

4.4.3.8 Querying User-Defined Device Information

Context

The SmartLogger can connect to third-party devices that support the Modbus-RTU protocol, such as the box-type transformer and EMI. The SmartLogger cannot automatically search user-defined devices. You need to manually add them.

The SmartLogger can connect to a maximum of five types of user-defined devices and can connect to multiple devices of the same type.

Procedure

Step 1 On the **Monitor** screen, tap **Custom** to access the screen for querying device information.

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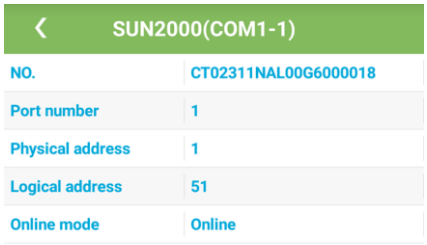
Figure 4-57 User-defined devices



----End

4.4.3.9 Querying IEC103 Device Information

Context

The SmartLogger can connect to a third-party device that supports IEC103, such as a relay protection or monitoring device like a box-type transformer. The SmartLogger cannot automatically search IEC103 devices, so they need to be added manually.

The SmartLogger can connect to a maximum of five types of IEC103 devices and can connect to multiple devices of the same type.

Procedure

Step 1 Tap a device name under **IEC103** on the **Monitor** screen to access the screen for querying device information.

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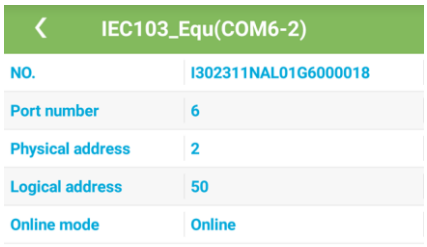
Figure 4-58 IEC103 devices



----End

4.4.4 Querying Energy Yield Data

Context

You can query the energy yield of all SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Yield** at the bottom of the home screen to access the daily energy yield screen.

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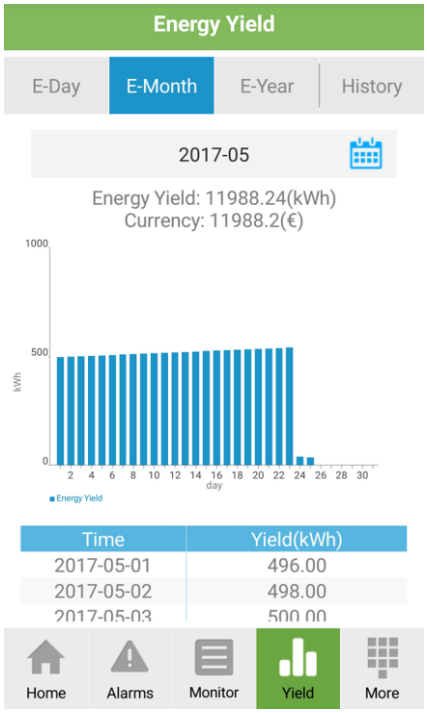
Figure 4-59 Energy yield screen



Step 2 Swipe left or right on the screen or tap

to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

4.4.5 More

An advanced user can tap **More** at the bottom of the home screen to set parameters, perform maintenance, and manage devices for the SmartLogger.

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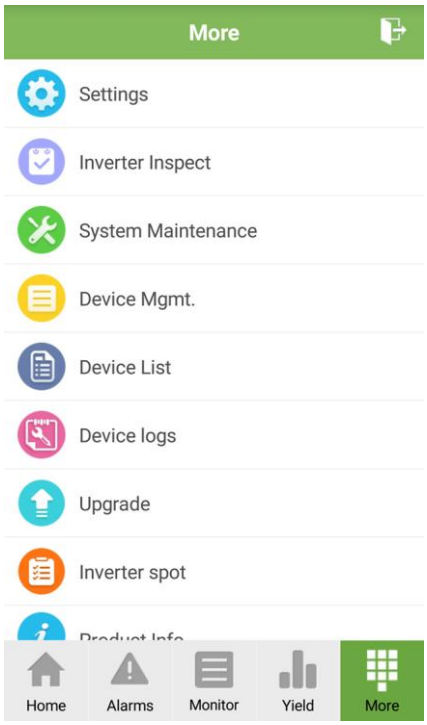
Figure 4-60 More (advanced user)



4.4.5.1 Parameter Settings

An advanced user can choose **More** > **Settings** to set user parameters, communications parameters, extended parameters, and file save path for the SmartLogger.

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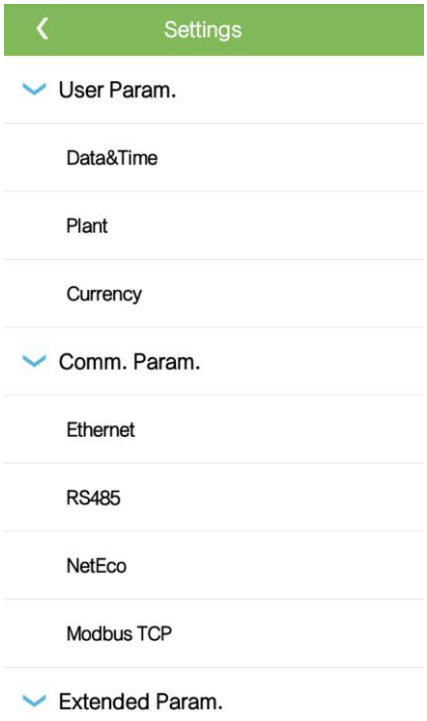
Figure 4-61 Settings (advanced user)

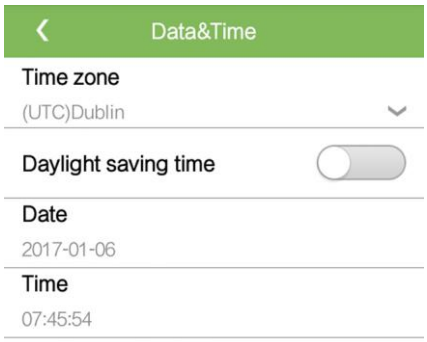


4.4.5.1.1 Setting the System Date and Time

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Date&Time** to access the settings screen.

Figure 4-62 Date and time



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Step 2 Set the date and time based on the region where the SmartLogger is located.

----End

4.4.5.1.2 Setting Plant Information

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Plant** to access the settings screen.

Figure 4-63 Plant

Step 2 Set parameters as required. On the displayed screen, enter or select relevant information.

NOTE
The plant parameters that are manually entered must not contain any special character, such as **<>:,`'?()#&\$|%+;~^"** in the English half-width status.

----End

4.4.5.1.3 Setting Gain Parameters

Procedure

Step 1 Tap **More** > **Settings** > **User Param.** > **Currency** to access the parameter settings screen.

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Figure 4-64 Gain

NOTE
The currency factor indicates the local power price, and is used to calculate the translation gain of the energy yield.

----End

4.4.5.1.4 Setting Ethernet Parameters

Context

Set Ethernet parameters to ensure proper operation of Ethernet ports and functions of logging in to the embedded WebUI of the SmartLogger, connecting to the NMS, and sending emails.

Procedure

Step 1 Tap **More** > **Settings** > **Comm. Param.** > **Ethernet** to access the settings screen.

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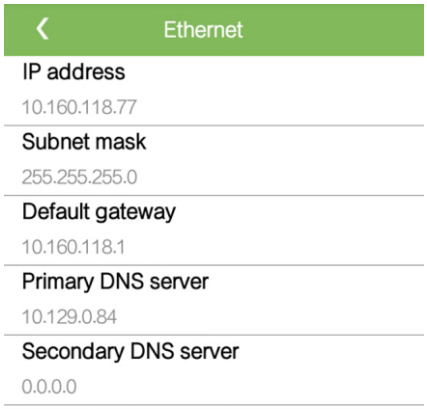
Figure 4-65 Ethernet screen



Step 2 Set parameters as required. On the displayed screen, enter relevant information.

NOTICE

If the SmartLogger connects to the Internet through a router, note the following when setting Ethernet parameters:

- Set the NMS address to the IP address of the router.
- Ensure that the IP address of the SmartLogger is in the same network segment as the NMS address.
- Set the domain name server (DNS) address to the IP address of the router or obtain the DNS address from the network provider.
- After the IP address is changed, you need to use the new IP address to log in to the system.

----End

4.4.5.1.5 Setting RS485 Parameters

Context

Set RS485 parameters to ensure normal communication between the SmartLogger and devices such as the SUN2000, EMI, and power meter.

Procedure

Step 1 Tap **More** > **Settings** > **Comm. Param.** > **RS485** to access the parameter settings screen.

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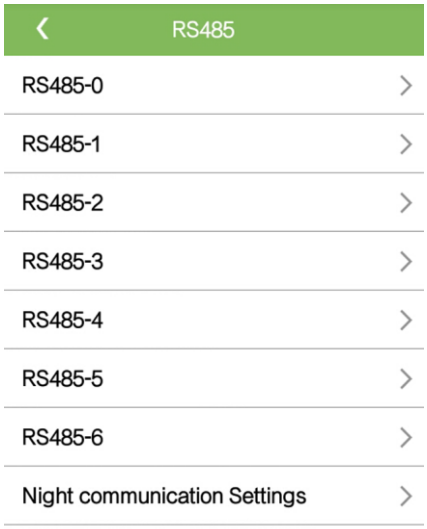
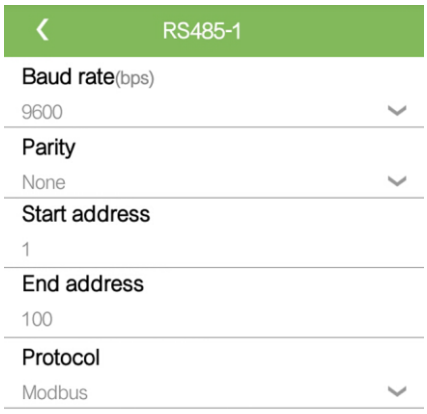
Figure 4-66 RS485



Step 2 Select a port from **RS485-0** to **RS485-6**.

For example, set parameters for **RS485-1**.

Figure 4-67 Setting RS485 communications parameters



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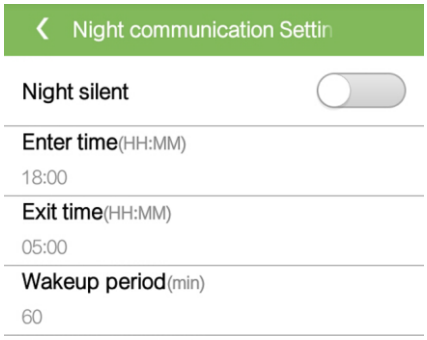
NOTE

- **RS485-0** corresponds to communications ports **AC1** and **AC2** of the PLC in the SmartLogger, and the baud rate is 115,200 bps by default. **RS485-1** to **RS485-6** respectively correspond to communications ports **COM1**–**COM6**, and the baud rate is 9600 bps by default.
- Set the protocol supported by the RS485 port based on either the protocol supported by the connected device or the status of the device in the network. When the SmartLogger serves as a slave node to interconnect with a third-party device over Modbus-RTU, set **Protocol** to **Modbus-Slave**. When the connected SUN2000 performs rapid power grid scheduling using both PLC and RS485, set **Protocol** to **Modbus-Control**.
- **Check** and **Protocol Type** must be set to the same values for all devices connected to the same RS485 port.
- The baud rate for the RS485 ports of the SmartLogger must be the same as the baud rate for the device that communicates with the SmartLogger.
- 1 ≤ Start address ≤ End address ≤ 247. The address range of the six ports can overlap. If the SmartLogger communicates with the SUN2000 over an embedded PLC module, set an address segment for **RS485-0**. Otherwise, the SmartLogger will fail to access the corresponding SUN2000. If the SmartLogger does not communicate with the SUN2000 over an embedded PLC module, you do not have to set an address segment for **RS485-0**. Set the address range as required. A larger address range requires a longer searching time. The start and end addresses have no impact on the devices that have been connected.

Step 3 Tap **Night Comm. Settings** on the **RS485** screen to set night communications parameters.

Figure 4-68 Night communications settings



----End

4.4.5.1.6 Setting NetEco Parameters

Context

Set NetEco parameters to ensure normal communication between the SmartLogger and the NetEco.

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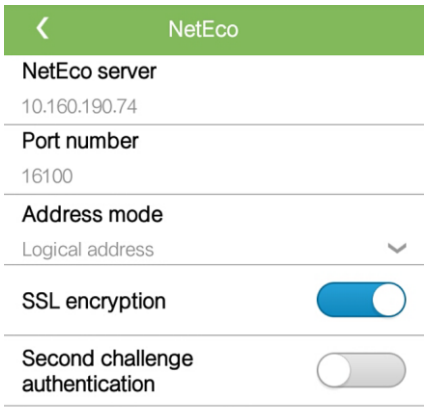
Procedure

Step 1 Tap **More** > **Settings** > **Comm. Param.** > **NetEco** to access the parameter settings screen.

Figure 4-69 NetEco



NOTE

- Set **NetEco server** to the IP address or domain name of the NetEco server.
- When the SmartLogger connects to the Huawei NMS, retain the default value 16100 for **Port number**. When the SmartLogger connects to the third-party NMS, set **Port number** according to the server port enabled in a third-party NMS.
- In most cases, set **Address mode** to **Physical address**. In this mode, addresses of devices connected to each RS485 port cannot be duplicate. If the devices connected to the six RS485 ports of the SmartLogger have duplicate addresses, you must set **Address mode** to **Logical address**.
- If **SSL encryption** is set to , data will be transmitted without being encrypted, which may pose security risks. Therefore, exercise caution when deciding to set **SSL encryption** to .
- If **Second challenge authentication** is set to , the result of the second challenge authentication is not checked, which may pose security risks. Therefore, exercise caution when deciding to set **Second challenge authentication** to .

----End

4.4.5.1.7 Setting Modbus-TCP Parameters

Context

Set Modbus-TCP parameters correctly to ensure normal communication between the SmartLogger and a third-party NMS.

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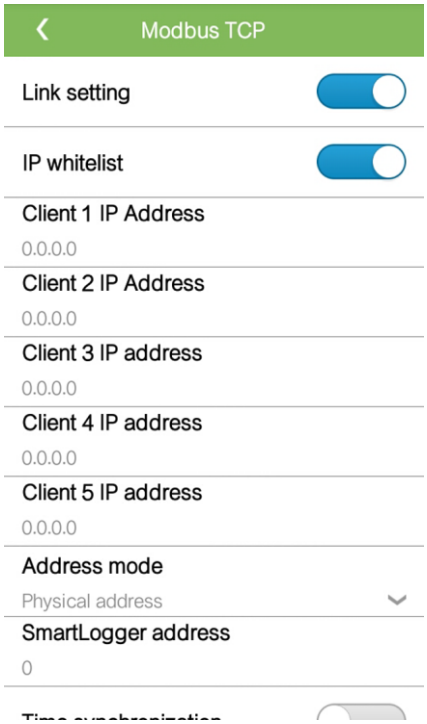
Procedure

Step 1 Tap **More** > **Settings** > **Comm. Param.** > **Modbus TCP** to access the settings screen.

Figure 4-70 Modbus TCP



NOTE

- Modbus-TCP is a general standard protocol without a security authentication mechanism. Therefore, the function of connecting to a third-party NMS using Modbus-TCP is disabled by default to reduce network security risks.
- If the function of connecting to a third-party NMS using Modbus-TCP is enabled, data will be transmitted without being encrypted, which may result in user data theft. Therefore, exercise caution when deciding to enable this function.
- If the devices connected to the six RS485 ports of the SmartLogger have duplicate addresses, **Address mode** must be set to **Logical address**.

----End

4.4.5.1.8 Setting FTP Parameters

Context

The FTP function is used to access a third-party NMS. The SmartLogger can report the configuration information and running data of the managed plant system through FTP. The third-party NMS can access Huawei devices with proper configurations.

Procedure

Step 1 Tap **More** > **Settings** > **Extended Param.** > **FTP** to access the settings screen.

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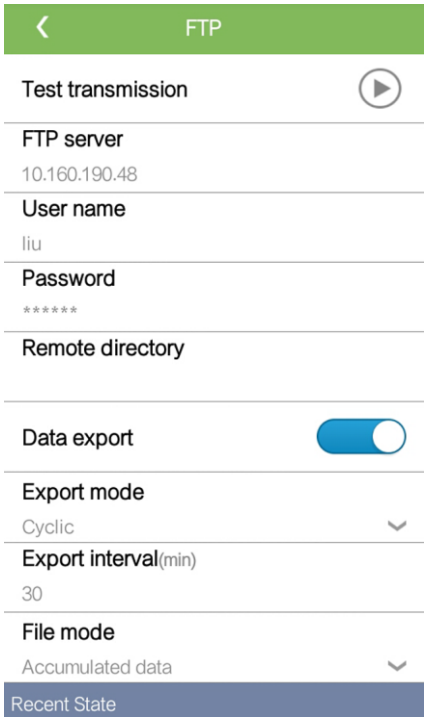
Figure 4-71 FTP



NOTE

- Perform **Test transmission** to check whether the SmartLogger can report data to the FTP server.
- **FTP server** can be set to the domain name or IP address of the FTP server. If **FTP server** is set to the domain name of the FTP server, ensure that the address of the DNS server is set correctly.
- **User name** and **Password** indicate the user name and password used for logging in to the FTP server.
- Set **Remote directory**. You can create a subdirectory of the same name under the default path for uploading data.
- If **Data export** is enabled, you can set the SmartLogger to report data regularly or at a specified time. Data reported at a specified time is all data, whose file name remains the same for a whole day. You can choose all data or incremental data to be reported regularly.

----End

4.4.5.1.9 Setting Email Parameters

Context

The SmartLogger can send emails to inform users of the current energy yield information, alarm information, and device status of the power plant system, helping users know the running status of the power plant system in time.

When using this function, ensure that the SmartLogger can be connected to the configured email server and correctly set the Ethernet parameters and email parameters for the SmartLogger.

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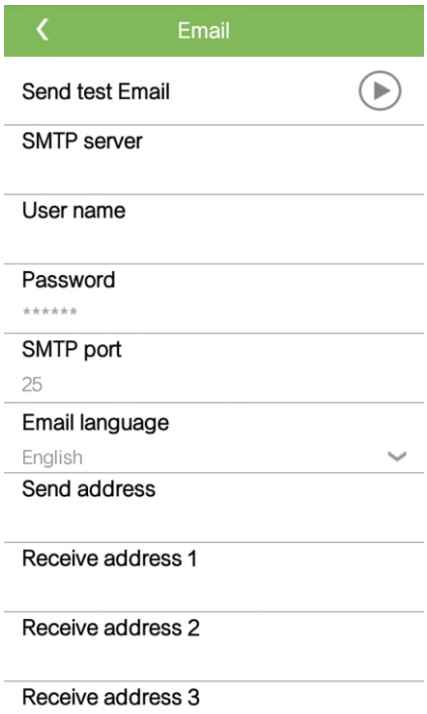
Procedure

Step 1 Tap **More** > **Settings** > **Extended Param.** > **Email** to access the parameter settings screen.

Figure 4-72 Email



NOTE

- You can tap **Send test email** to check whether the SmartLogger can successfully send emails to users.
- **SMTP server** can be set to the domain name or IP address of the SMTP server. If it is set to the domain name of the SMTP server, ensure that the address of the DNS server is set correctly.
- **User name** and **Password** indicate the user name and password used for logging in to the SMTP server.
- **Send address** indicates the sender's email address. Ensure that the sender's email server is the same as the server specified by **SMTP server**.

----End

4.4.5.1.10 Setting a File Save Path

Context

You can modify the save path for logs of devices connected to the SmartLogger and you can export logs from the path subsequently.

Procedure

Step 1 Tap **More** > **Settings** > **Path settings** > **File save path** to access the settings screen.

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Figure 4-73 Setting a file save path

Step 2 Tap **File save path** to set the save path.

----End

4.4.5.2 SUN2000 Inspection

Context

After a SUN2000 is put into use, it should be inspected periodically to detect any potential risks and problems.

Procedure

Step 1 Tap **More** > **Inverter Inspect** to access the inspection screen.

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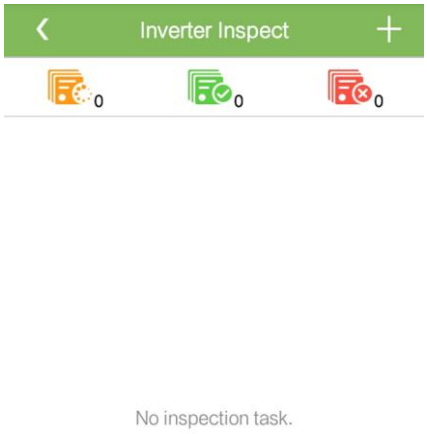
Figure 4-74 Device inspection



Step 2 Tap in the upper-right corner of the screen to select one device or multiple devices to be inspected.

Step 3 Select one or multiple SUN2000s and tap **Finish** in the upper-right corner of the screen to start inspection.

Figure 4-75 Inspecting

Step 4 A inspection file is generated after the inspection is complete.

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NOTE

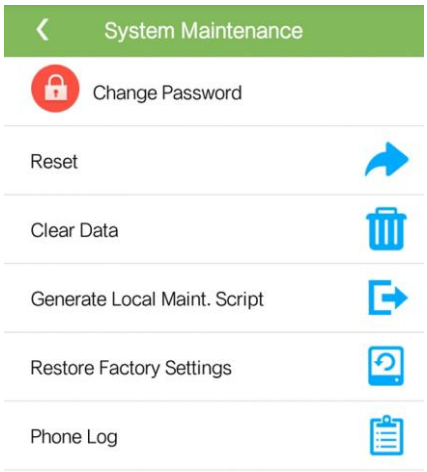
The inspection file is saved in **storage/emulated/0/Inverterapp** in the mobile phone memory by default. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.4.5.3 System Maintenance

You can choose **More** > **System maintenance** to change the password and reset the system for the SmartLogger.

Figure 4-76 System maintenance



4.4.5.3.1 Changing a User Password

Procedure

Step 1 Tap **More** > **System Maintenance** > **Change Password** to access the screen for changing a password.

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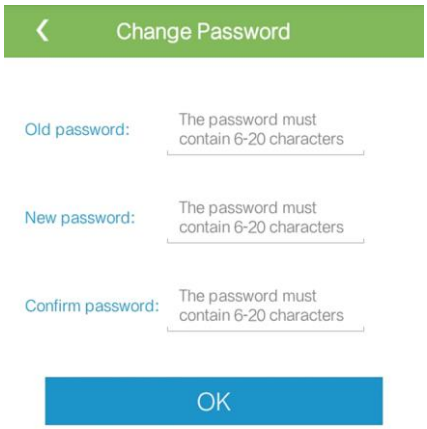
Figure 4-77 Changing a password



NOTE

The password should meet the following requirements:

- Contains 6–20 characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

4.4.5.3.2 Resetting the System

Context

After the system resets, the SmartLogger restarts.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Reset**. A dialog box for resetting the system is displayed.

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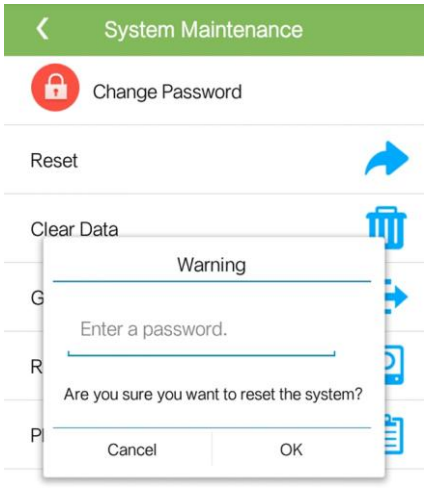
Figure 4-78 Resetting the system



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.4.5.3.3 Clearing Data

Context

Clear data if the SmartLogger is relocated and its historical data needs to be deleted.

NOTICE

- After you perform **Clear Data**, all information stored on the SmartLogger, including energy yield, performance data, and alarms, will be removed.
- After you perform **Clear Data**, the devices connected to the SmartLogger are not removed. If an original device will no longer connect to the SmartLogger, remove the device.
- If you perform **Clear Data** on the SmartLogger, you have to perform **Reset Alarms** on the NMS. Otherwise, the alarm information collected by the NMS and that collected by the SmartLogger will be different.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Clear Data**. A dialog box for clearing data is displayed.

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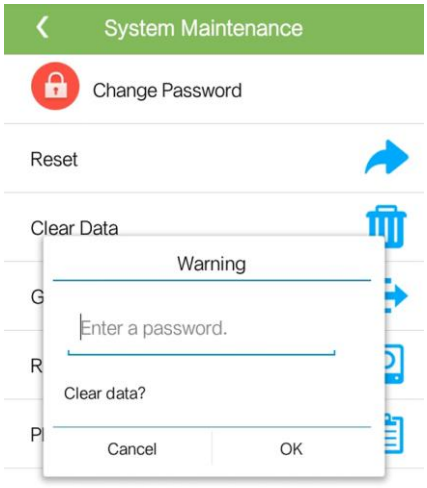
Figure 4-79 Clearing data



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.4.5.3.4 Generating the Local Maintenance Script File

Prerequisites

A USB flash drive has been inserted into the USB port on the SmartLogger.

Context

Generating the local maintenance script is used to set SmartLogger commands and save the script file in the USB flash drive. The SmartLogger executes the local script file in the USB flash drive to export SmartLogger logs, export or import all files, upgrade application software, and upgrade BSP.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Generate local Maint. Script** to access the screen for generating the script.

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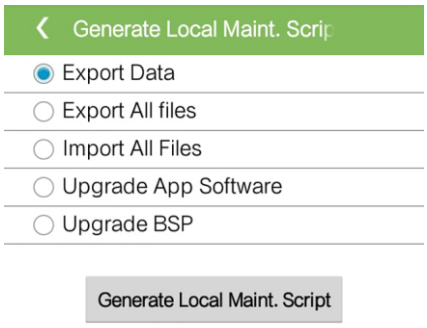
Figure 4-80 Generating the local maintenance script file



Step 2 Select operations as required and tap **Generate local Maint. Script** to save the generated local maintenance script file in the USB flash drive.

----End

Follow-up Procedure

You can also choose **Tool Kit** > **Local maintenance script** without logging in to the app to perform SmartLogger command settings. For details, see 6.2.2 SmartLogger Maintenance Script.

4.4.5.3.5 Restoring Factory Settings

Context

NOTICE

Perform this operation with caution because all configured parameters except the current date, time, baud rate, and address will be restored to their factory default values. This operation will not affect operating information, alarm records, or system logs.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Restore Factory Settings**. The dialog box for restoring factory settings is displayed.

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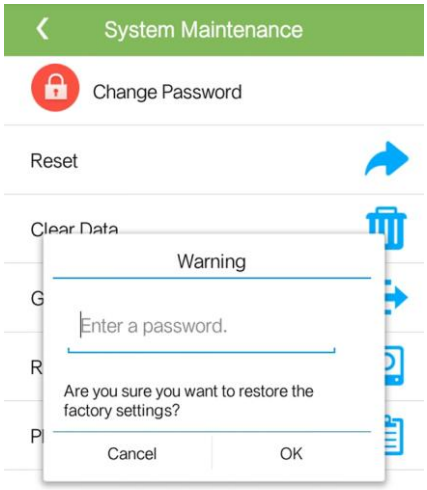
Figure 4-81 Restoring factory settings



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.4.5.3.6 Mobile Phone Logs

Procedure

Step 1 Tap **More** > **System maintenance** > **Phone Log** to delete or export mobile phone operation logs.

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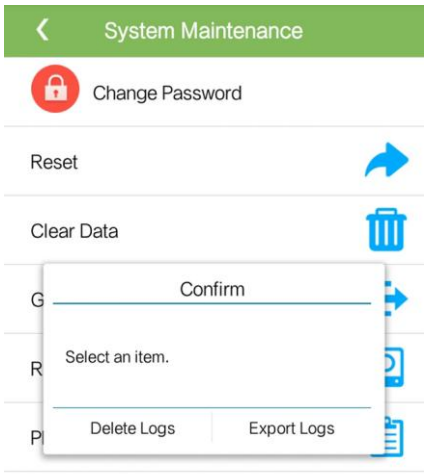
Figure 4-82 Mobile phone logs



----End

4.4.5.4 Device Management

Choose **More** > **Device Mgmt** to manage all devices connected to the SmartLogger.

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Figure 4-83 Device management

4.4.5.4.1 Changing a Device Name

Procedure

Step 1 Tap a device name to change it.

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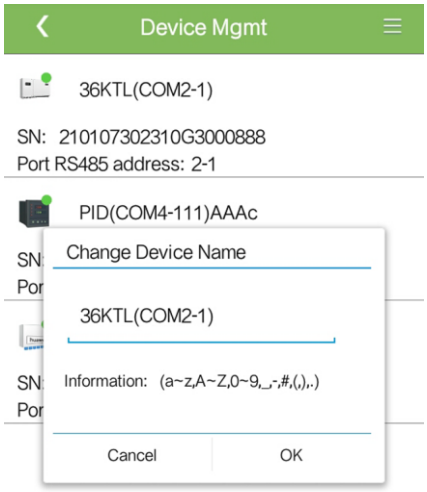
Figure 4-84 Changing a device name



NOTE
The name of the SmartLogger cannot be changed.

----End

4.4.5.4.2 Deleting Devices

Procedure

Step 1 Choose **More** > **Device Mgmt** to access the **Device Mgmt** screen.

Step 2 Hold down a device name, select the devices to be deleted, and tap **Batch Delete** to delete them.

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Figure 4-85 Deleting devices

NOTE
Deleted devices are not displayed on the **Monitor** screen.

----End

4.4.5.4.3 Automatically Searching for Devices

Context

The SmartLogger can automatically detect and connect to devices.

The EMI, power meter, slave SmartLogger, and third-party devices cannot be automatically detected. You need to add them manually. For details, see 4.4.5.4.4 Manually Adding a Device.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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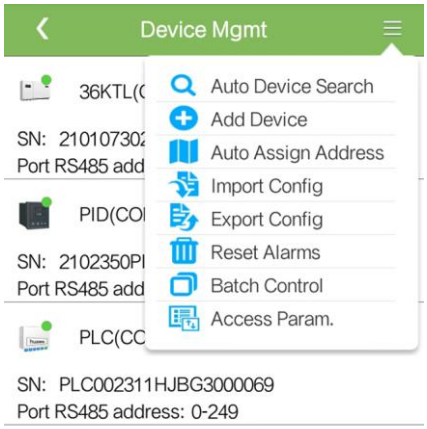
Figure 4-86 Device management



Step 2 Tap **Auto Device Search**.

----End

4.4.5.4.4 Manually Adding a Device

Context

The EMI, power meter, slave SmartLogger, and third-party devices cannot be automatically detected. You need to add them manually.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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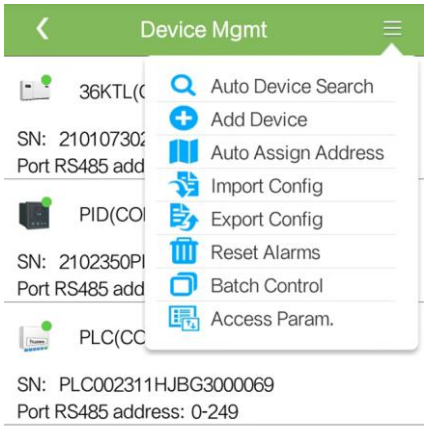
Figure 4-87 Device management



Step 2 Tap **Add Device** to set device parameters.

Figure 4-88 Adding a device

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NOTE

- **Comm. Protocol** is set to **Modbus RTU** by default. If you need to modify it, refer to 4.4.5.1.5 Setting RS485 Parameters.
- Before adding the EMI or power meter manually, set the EMI or power meter parameters. For details, see *SmartLogger2000 User Manual*.

----End

4.4.5.4.5 Automatically Allocating Addresses

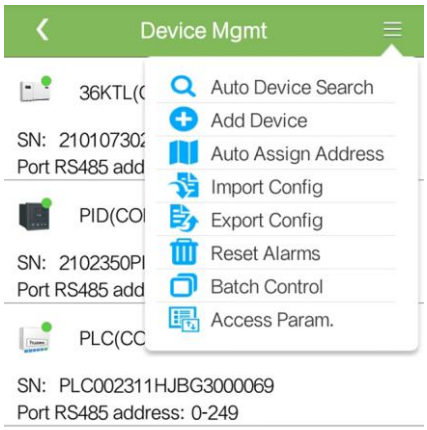
Context

The SmartLogger can automatically allocate addresses to the connected devices and adjust the addresses based on device sequence numbers.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-89 Device management



Step 2 Tap **Auto Assign Address**.

----End

4.4.5.4.6 Importing Configuration Files

Prerequisites

- The file name extension must be **.cfg**.

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- The imported file is stored in the memory or SD card of the mobile phone.

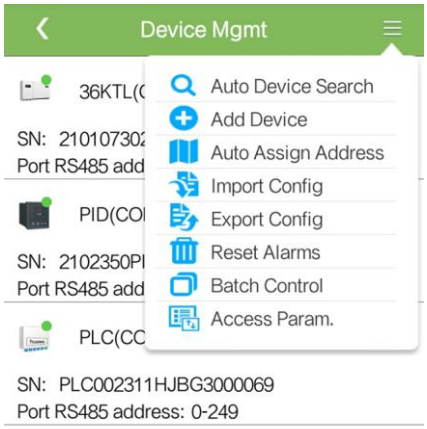
Context

When the SmartLogger connects to a user-defined device or the IEC103 device, import a configuration file and add a device manually. Then, the device can be queried on the **Monitor** screen.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-90 Device management



Step 2 Tap **Import Config** to import the .cfg file.

----End

4.4.5.4.7 Exporting Configuration Files

Context

When the SmartLogger connects to a third-party device, you can view its configuration files by performing the configuration exporting operation.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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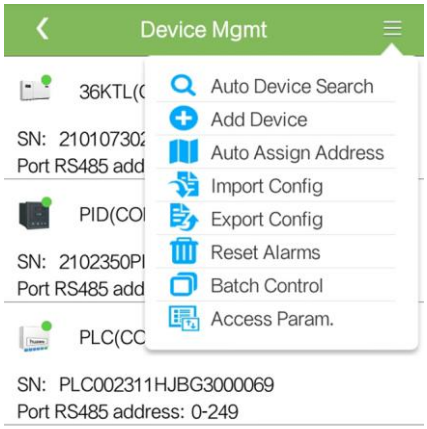
Figure 4-91 Device management



Step 2 Tap **Export Config**.

----End

4.4.5.4.8 Resetting Alarms

Context

- If you reset alarms, all the active and historical alarms of the selected device are deleted and the SmartLogger starts to collect new alarm data.
- If data is deleted for a SUN2000, you must reset alarms on the SmartLogger and the NMS; otherwise, the SmartLogger cannot collect new alarm data from the SUN2000.
- If alarms are reset on the SmartLogger, you must reset alarms on the NMS; otherwise, the NMS cannot obtain the new alarm data collected by the SmartLogger from the SUN2000.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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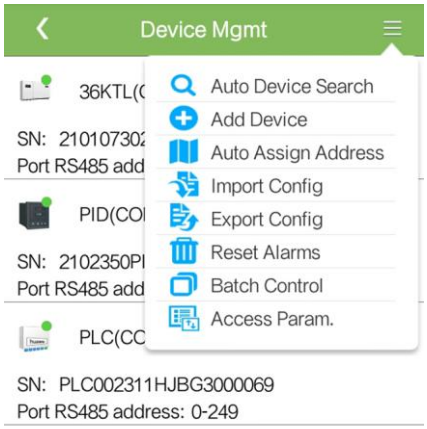
Figure 4-92 Device management



Step 2 Tap **Reset Alarms**, and select devices on the **Reset Alarms** screen.

Step 3 Tap **OK**.

----End

4.4.5.4.9 Starting, Shutting down, and Resetting in Batches

Context

Batch control operations allow the SmartLogger to start, shut down, and reset SUN2000s in batches. SUN2000s automatically restart after reset.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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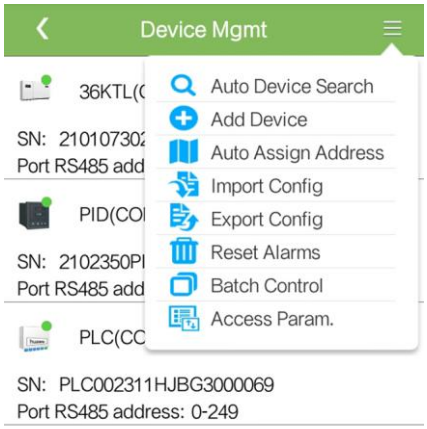
Figure 4-93 Device management



Step 2 Tap **Batch Control**.

Figure 4-94 Batch control

Step 3 Tap **Batch startup**, **Batch shutdown**, or **Batch reset**, enter the password for logging in to the app, and tap **OK**.

----End

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4.4.5.4.10 Setting Access Parameters

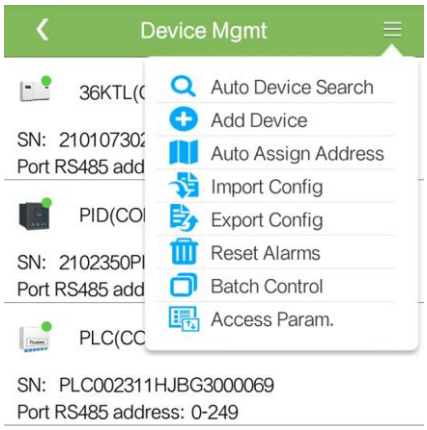
Context

Before connecting a device to the SmartLogger, configure access parameters correctly.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-95 Device management



Step 2 Tap **Access Param.** to access the settings screen.

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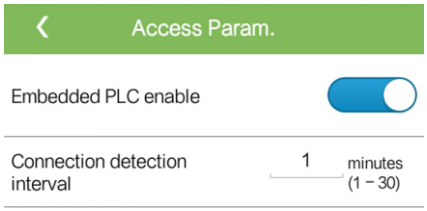
Figure 4-96 Access parameters



NOTE
If the SmartLogger communicates with the SUN2000 over PLC, set **Embedded PLC enable** to **Enable**.

----End

4.4.5.5 Managing the Device List

Context

Choose **Export Device Info** > **Edit Device Info File** > **Import Device Info** to modify device information in the information file.

Procedure

Step 1 Tap **More** > **Device List** to access the device list screen.

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Figure 4-97 Device list

Step 2 Tap **Export Device Info** to export the device information file.

NOTE
The exported device information file is in .csv format.

Step 3 Tap **Edit Device Info File** to modify the device information file.

1. In the path where the device information file is exported, tap the exported .csv file to access the screen for modifying the file.

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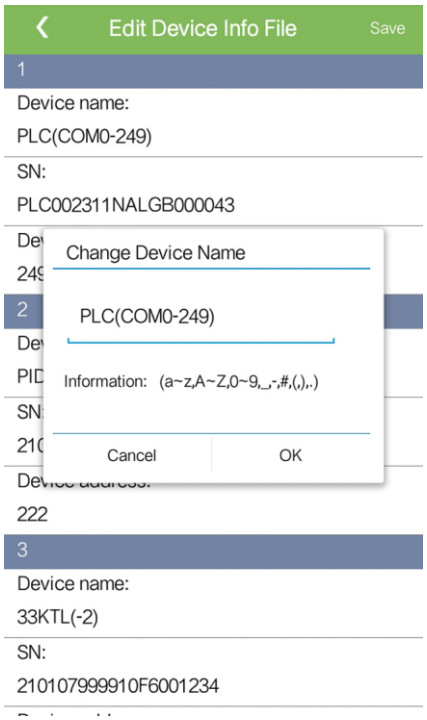
Figure 4-98 Editing a device information file

2. Tap a parameter to be modified and enter or select target information.

Figure 4-99 Modifying device information



3. After all modifications, tap **Save** in the upper-right corner of the screen.

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Step 4 Tap **Import Device Info** to import the modified device information file to the SmartLogger.

----End

4.4.5.6 Exporting Device Logs

Prerequisites

A USB flash drive has been inserted into the USB port on the SmartLogger.

Procedure

Step 1 Tap **More** > **Device Logs** to access the screen for exporting logs.

Figure 4-100 Device Logs

No log export task.

Step 2 Tap in the upper-right corner of the screen, select a device whose logs are to be exported, and tap **Next**.

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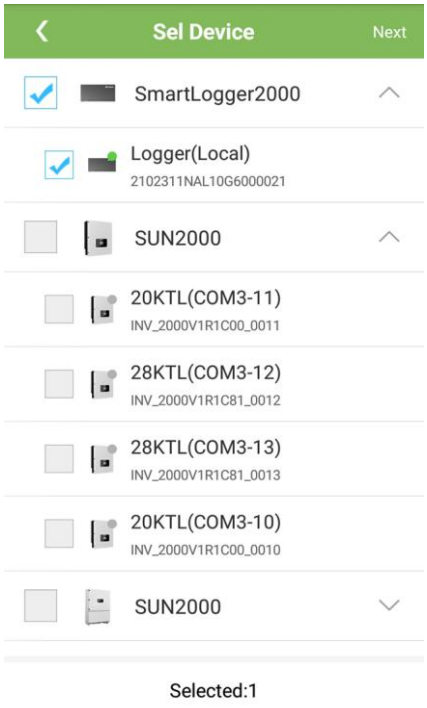
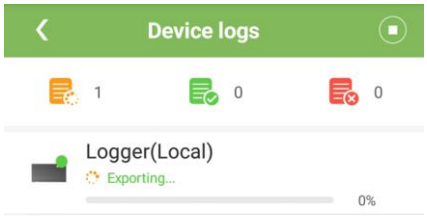
Figure 4-101 Selecting devices



Step 3 Select the log types to be exported and tap **OK** to start exporting device logs.

Figure 4-102 Exporting logs



----End

4.4.5.7 Device Upgrade

Prerequisites

- Obtain the upgrade package with the help of the supplier or Huawei engineers.

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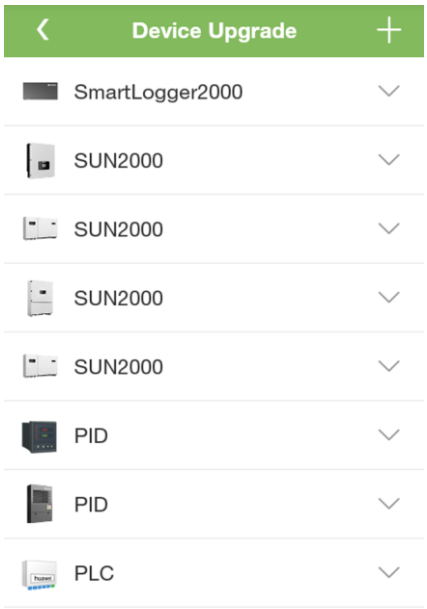
- Insert the USB flash drive where the upgrade package is saved into the USB port on the device.

Procedure

Step 1 Tap **More** > **Upgrade** to access the device upgrade screen.

Figure 4-103 Device upgrade



Step 2 Tap in the upper-right corner of the screen to select the unicast or broadcast mode.

- Unicast upgrade
  a. Select a device to be upgraded and tap **Next**.

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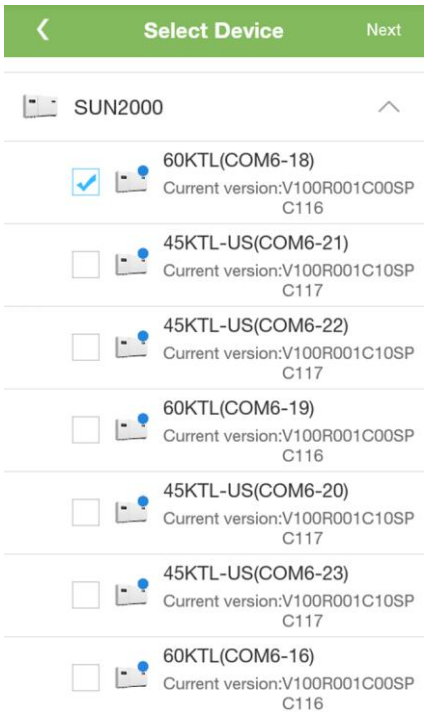
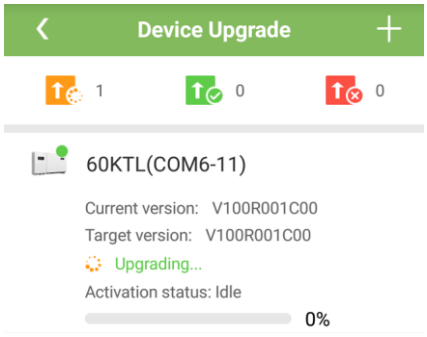
Figure 4-104 Selecting a device to be upgraded



b. Select the upgrade package and tap **Next**.

c. Confirm the upgrade package and the device to be upgraded and tap **Finish** to start upgrading the device.

Figure 4-105 Starting unicast upgrade



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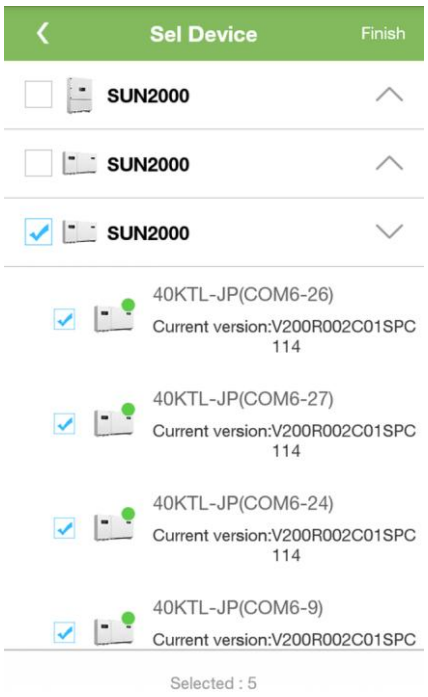
- Broadcast upgrade
  a. Select devices of the same type to be upgraded and tap **Next**.

  Figure 4-106 Selecting devices to be upgraded



  b. Select the upgrade packages and tap **Next**.
  c. Confirm the upgrade packages and the devices to be upgraded and tap **Finish** to start upgrading the devices.

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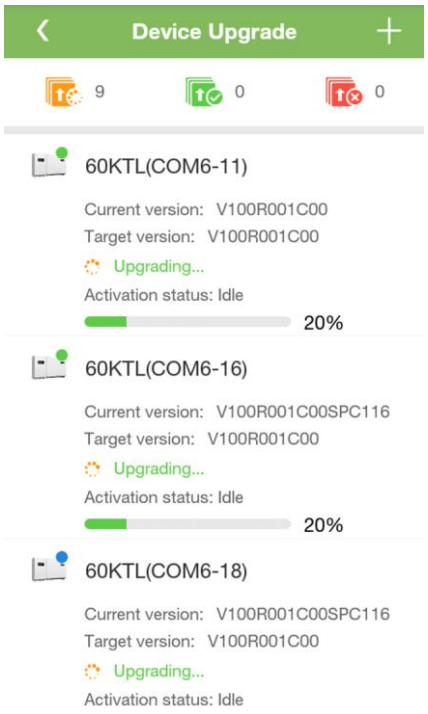
Figure 4-107 Starting broadcast upgrade



----End

4.4.5.8 Inverter Spot

Context

You can perform a spot check for the SUN2000 whose **Grid Code** is **Japan standard**.

Procedure

Step 1 Tap **More** > **Inverter Spot** to access the Inverter Spot screen.

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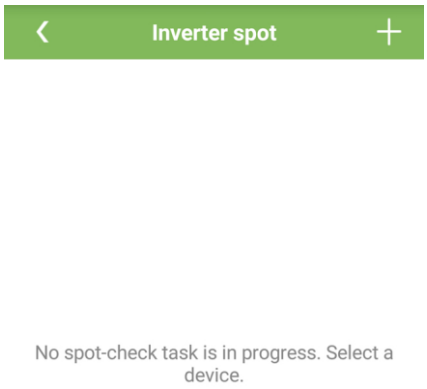
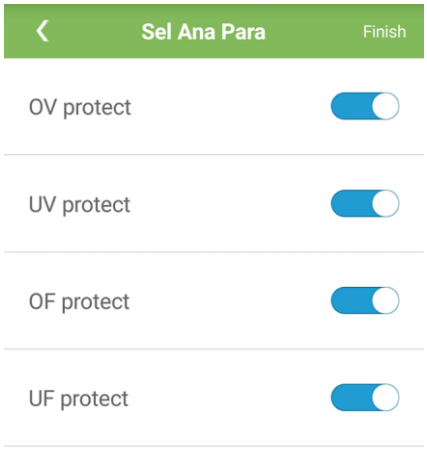
Figure 4-108 Inverter Spot



Step 2 (Optional) Tap in the upper right corner of the **Inverter Spot** screen, select **Sel Ana Para**, and tap **Finish** to set analog parameters.

Figure 4-109 Selecting analogs



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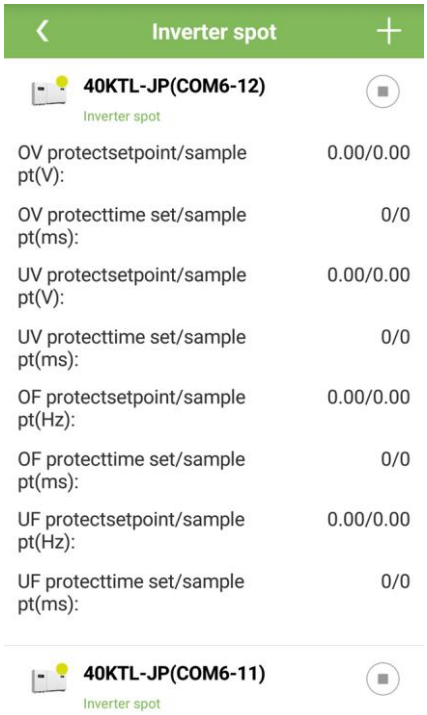
NOTE

After the parameters on the **Sel Ana Para** screen are set, the analog parameters and their values are displayed on the **Inverter Spot** screen. You can also tap **Sel Ana Para** to set analog parameters when the SUN2000s are being spot-checked.

Step 3 Tap in the upper right corner of the **Inverter Spot** screen and select **Sel Device** to access the **Sel Device** screen.

Step 4 Select one or more devices to be spot-checked, and tap **Finish** to start a spot check.

Figure 4-110 Inverter Spot



----End

4.4.5.9 Querying Product Information

Procedure

Step 1 Tap **More** > **Product Info** to query SmartLogger version information.

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Figure 4-111 Product information

----End

4.4.5.10 Viewing App Version Information

Procedure

Step 1 Tap **More** > **About** to view the app version information.

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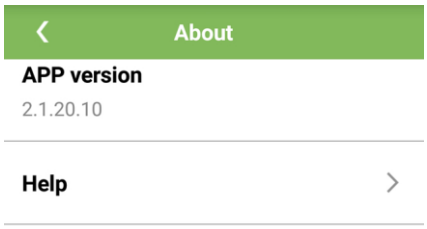
Figure 4-112 About



----End

4.5 Screen Operations (Special User)

4.5.1 Querying Home Screen Information

Context

You can tap **Home** to query the detailed running information about the SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Home** at the bottom.

Table 4-3 Home

Parameter	Description
Inverter QTY	Number of SUN2000s connected to the SmartLogger
Rated power	Total rated power of SUN2000s connected to the SmartLogger
Output power	Total output power of SUN2000s connected to the SmartLogger

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Parameter	Description
E-Total	Total energy yields of the SUN2000s connected to the SmartLogger
E-Daily	Total energy yields of SUN2000s connected to the SmartLogger on the current day
CO_2 reduction	Total amount of reduced CO_2 emission of the SUN2000s connected to the SmartLogger
Income	Total revenues corresponding to energy yields of SUN2000s connected to the SmartLogger
Grid scheduling	Active power percentage and reactive power factor for power grid scheduling

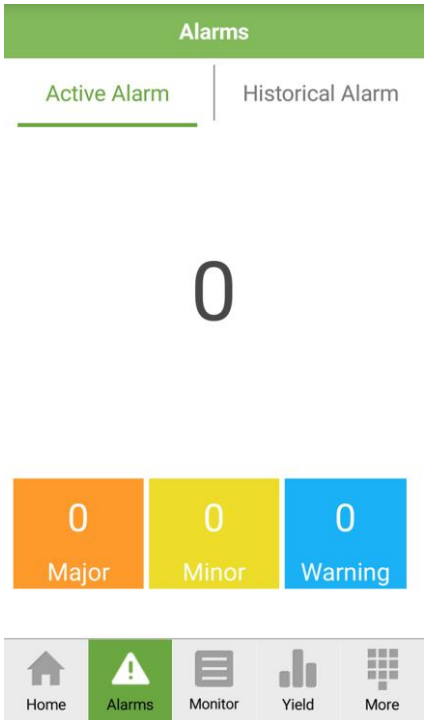
----End

4.5.2 Querying Alarm Records

Procedure

Step 1 Tap **Alarms** at the bottom of the screen to access the Active Alarm screen.

Figure 4-113 Active alarms



Step 2 To query the detailed alarms of an alarm severity, tap **Major**, **Minor**, or **Warning**.

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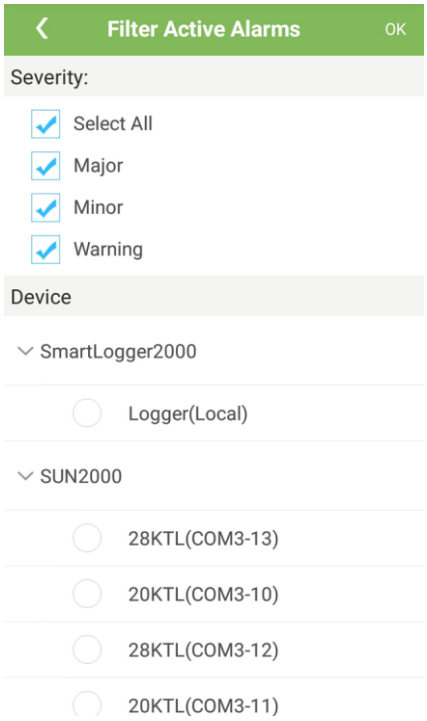
Step 3 Tap in the upper right corner of the **Active alarms** screen, and set the criteria for filtering active alarms. Then the details about the active alarms that meet the filtering criteria are displayed.

Figure 4-114 Filter active alarms



NOTE
The active alarm filtering criteria include **Severity** and **Device**.

Step 4 Tap **Historical Alarm** to access the Filter Historical Alarms screen.

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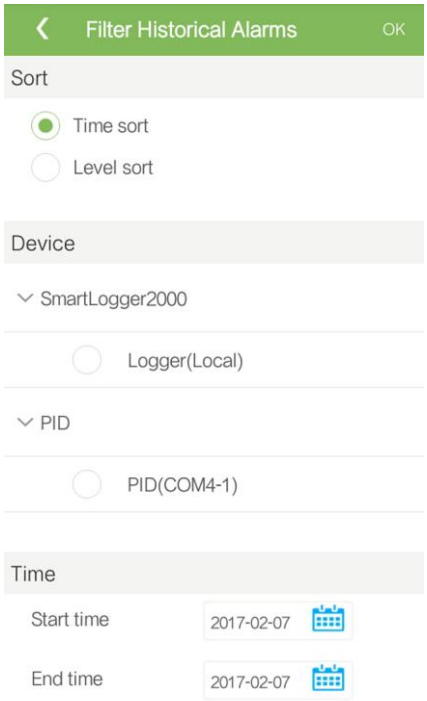
Figure 4-115 Filtering historical alarms



Step 5 Set the criteria for filtering historical alarms and tap **OK** to query the detailed historical alarm information.

NOTE
The criteria for filtering historical alarms include **Sort**, **Device**, and **Time**.

----End

4.5.3 Device Monitoring

A special user can tap **Monitoring** to query the running information and alarms about the SmartLogger and the devices connected to it, set parameters, and send commands.

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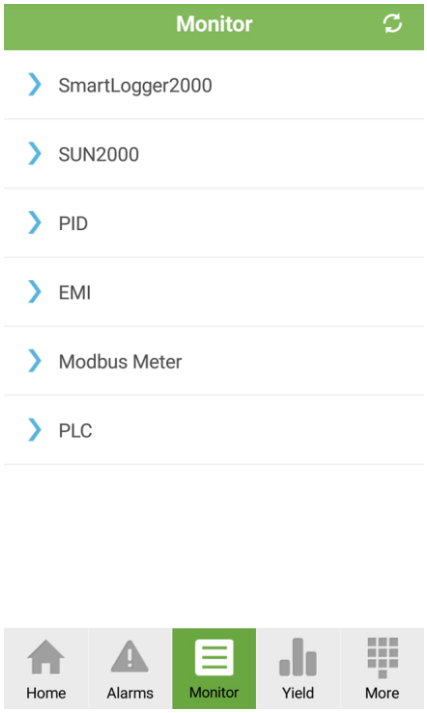
Figure 4-116 Device Monitoring



4.5.3.1 SmartLogger

4.5.3.1.1 Querying the SmartLogger Information

Procedure

Step 1 Tap a device name under **SmartLogger2000** on the **Monitor** screen to access the main menu screen of the SmartLogger.

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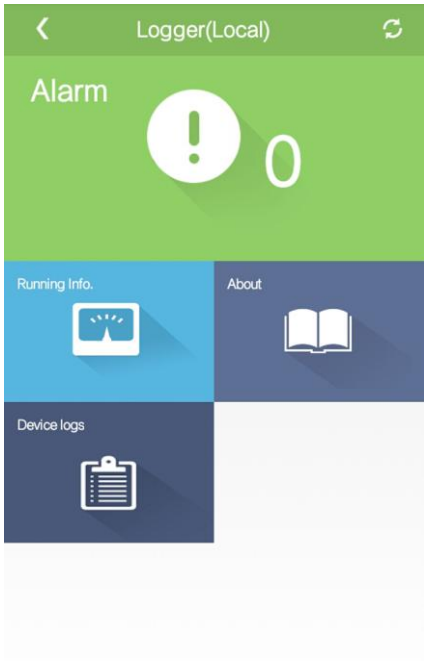
Figure 4-117 SmartLogger main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query the alarms, running information, or version information about the SmartLogger.

----End

4.5.3.1.2 Downloading logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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Figure 4-118 Downloading logs

Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.5.3.2 SUN2000

4.5.3.2.1 Querying the SUN2000 Information

Procedure

Step 1 Tap **SUN2000** on the **Monitor** screen and select the device to be queried to access the main menu screen of a SUN2000.

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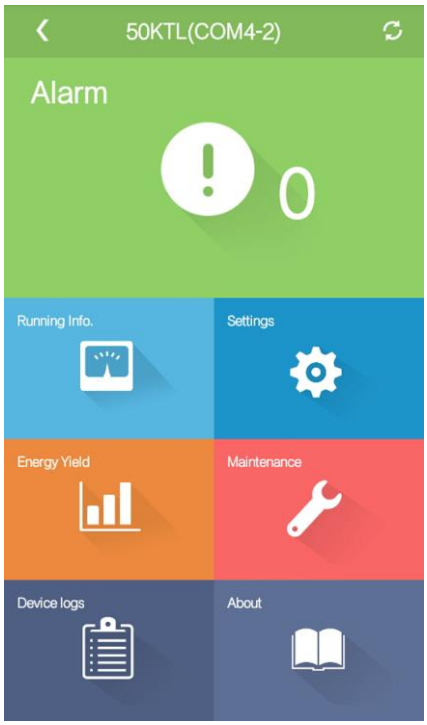
Figure 4-119 SUN2000 main menu screen



Step 2 Tap **Alarm**, **Running Info.**, **Energy Yield**, or **About** to query alarms, running information, energy yield, or version information about the SUN2000.

----End

4.5.3.2.2 Setting Running Parameters

Procedure

Step 1 Tap **Main Menu** > **Settings** to access the settings screen.

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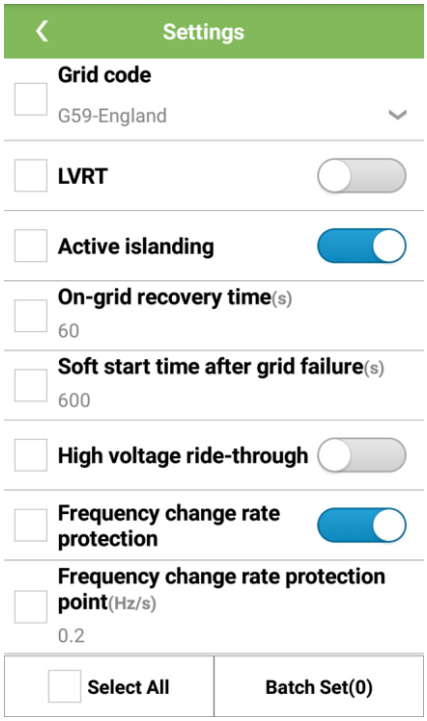
Figure 4-120 Settings (special user)



Step 2 Set parameters as required.

Step 3 (Optional) Select parameters as required and tap **Batch Set** to set running parameters for multiple SUN2000s of the same series.

NOTE
For description about the SUN2000 running parameters, see 3.5.3 Parameter Settings .

----End

4.5.3.2.3 Manually Sending On/Off Commands

Procedure

Step 1 Tap **Main Menu** > **Maintenance** to access the maintenance screen.

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Figure 4-121 Maintenance (special user)

Step 2 Tap next to **Power on** or **Power off**.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

4.5.3.2.4 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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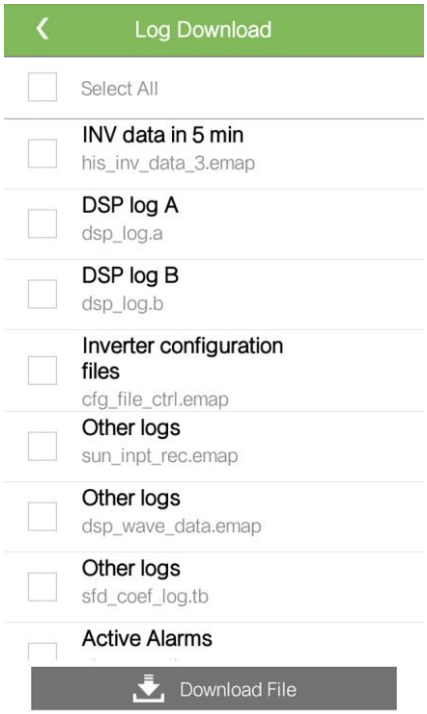
Figure 4-122 Downloading logs



Step 2 Download log files as required.

NOTE
The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.5.3.3 PLC

4.5.3.3.1 Querying PLC Information

Procedure

Step 1 Tap **PLC** on the **Monitor** screen to access the main menu screen of the PLC.

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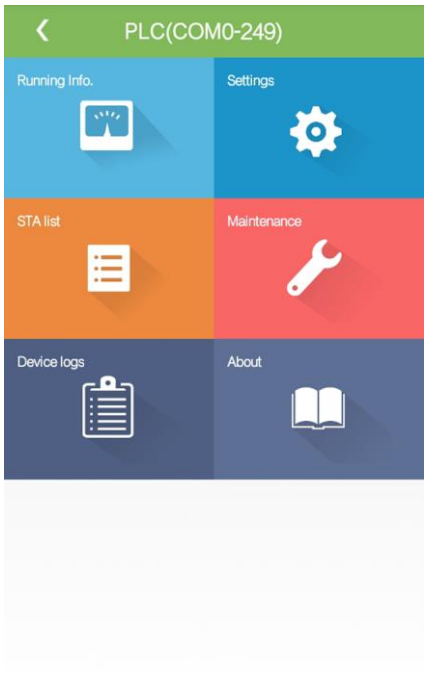
Figure 4-123 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the PLC.

----End

4.5.3.3.2 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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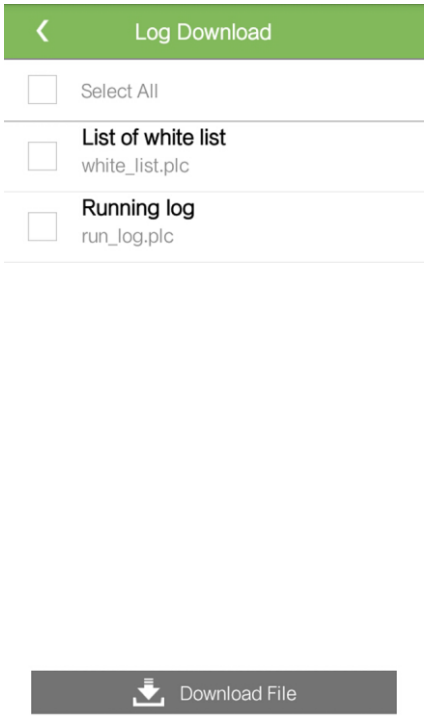
Figure 4-124 Downloading logs



Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.5.3.4 Querying the EMI Information

Procedure

Step 1 Tap **EMI** on the **Monitor** screen to access the main menu screen.

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Figure 4-125 Main menu screen

Step 2 Tap **Running Info.** or **About** to query running information or version information about the environmental monitoring instrument (EMI).

----End

4.5.3.5 PID

4.5.3.5.1 Querying PID Information

Procedure

Step 1 Tap **PID** on the **Monitor** screen to access the main menu screen of the PID.

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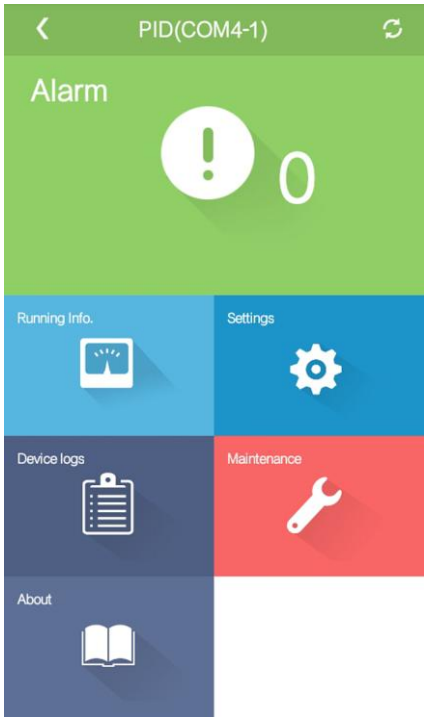
Figure 4-126 Main menu screen



Step 2 Tap **Alarm**, **Running Info.**, or **About** to query alarms, running information, or version information about the PID.

----End

4.5.3.5.2 Downloading Logs

Procedure

Step 1 Tap **Main Menu** > **Device Logs** to access the screen for downloading logs.

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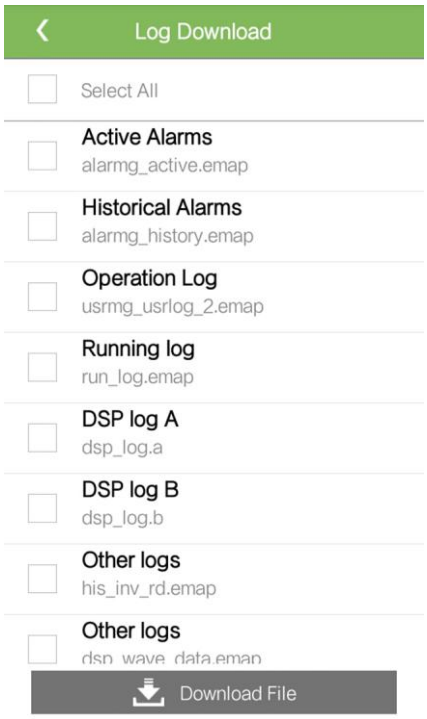
Figure 4-127 Downloading logs



Step 2 Download log files as required.

NOTE

The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.5.3.6 Querying the Modbus Power Meter Information

Procedure

Step 1 Tap **Modbus Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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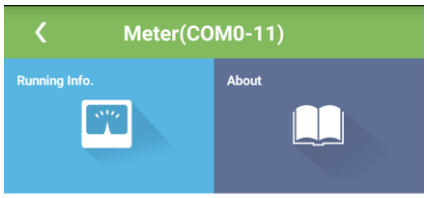
Figure 4-128 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the Modbus power meter.

----End

4.5.3.7 DL/T645 Power Meter

4.5.3.7.1 Querying the DL/T645 Meter Information

Procedure

Step 1 Tap **DL/T645 Meter** on the **Monitor** screen to access the main menu screen of the power meter.

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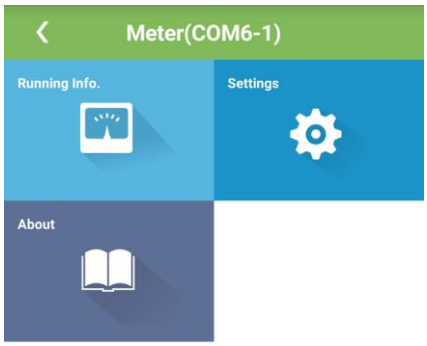
Figure 4-129 Main menu screen



Step 2 Tap **Running Info.** or **About** to query running information or version information about the DL/T645 power meter.

----End

4.5.3.8 Querying User-Defined Device Information

Context

The SmartLogger can connect to third-party devices that support the Modbus-RTU protocol, such as the box-type transformer and EMI. The SmartLogger cannot automatically search user-defined devices. You need to manually add them.

The SmartLogger can connect to a maximum of five types of user-defined devices and can connect to multiple devices of the same type.

Procedure

Step 1 On the **Monitor** screen, tap **Custom** to access the screen for querying device information.

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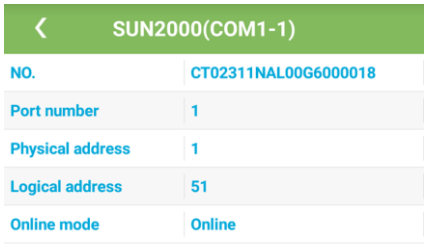
Figure 4-130 User-defined devices



----End

4.5.3.9 Querying IEC103 Device Information

Context

The SmartLogger can connect to a third-party device that supports IEC103, such as a relay protection or monitoring device like a box-type transformer. The SmartLogger cannot automatically search IEC103 devices, so they need to be added manually.

The SmartLogger can connect to a maximum of five types of IEC103 devices and can connect to multiple devices of the same type.

Procedure

Step 1 Tap a device name under **IEC103** on the **Monitor** screen to access the screen for querying device information.

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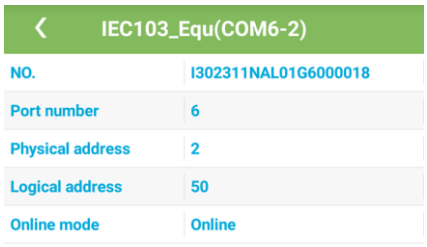
Figure 4-131 IEC103 devices



----End

4.5.4 Querying Energy Yield Data

Context

You can query the energy yield of all SUN2000s connected to the SmartLogger.

Procedure

Step 1 Tap **Yield** at the bottom of the home screen to access the daily energy yield screen.

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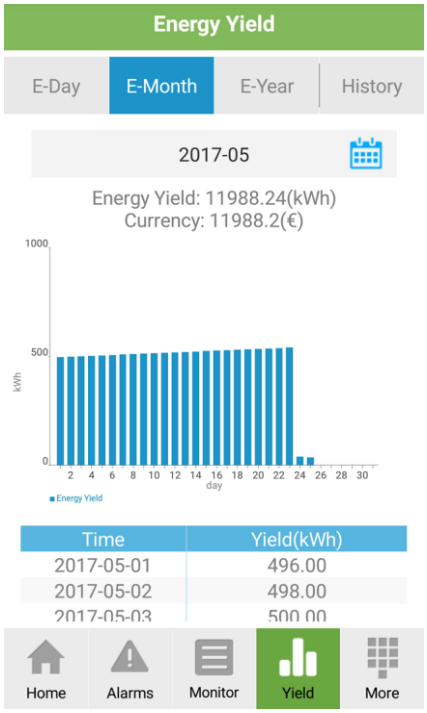
Figure 4-132 Energy yield screen



Step 2 Swipe left or right on the screen or tap

to display the energy yield data based on day, month, or year, or display historical data.

NOTE

Tap to set a time criterion. The energy yield data generated within the time segment is displayed.

----End

4.5.5 More

A special user can tap **More** at the bottom of the home screen to perform maintenance, manage devices, and view product information for the SmartLogger.

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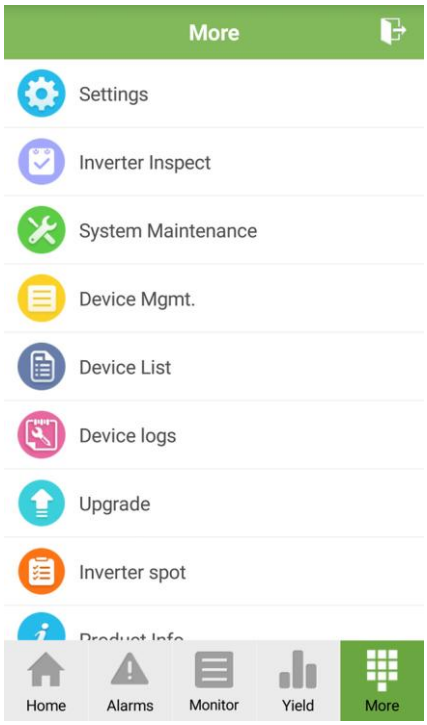
Figure 4-133 More (special user)



4.5.5.1 SUN2000 Inspection

Context

After a SUN2000 is put into use, it should be inspected periodically to detect any potential risks and problems.

Procedure

Step 1 Tap **More** > **Inverter Inspect** to access the inspection screen.

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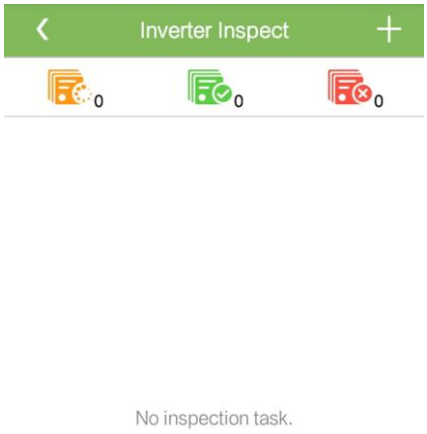
Figure 4-134 Device inspection



Step 2 Tap in the upper-right corner of the screen to select one device or multiple devices to be inspected.

Step 3 Select one or multiple SUN2000s and tap **Finish** in the upper-right corner of the screen to start inspection.

Figure 4-135 Inspecting

Step 4 A inspection file is generated after the inspection is complete.

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NOTE

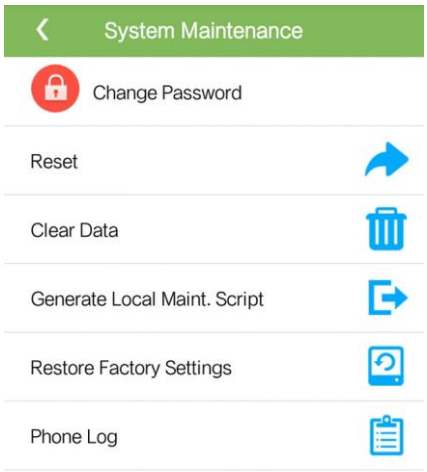
The inspection file is saved in **storage/emulated/0/Inverterapp** in the mobile phone memory by default. You can refer to 4.4.5.1.10 Setting a File Save Path to modify the log save path.

----End

4.5.5.2 System Maintenance

You can choose **More** > **System maintenance** to change the password and reset the system for the SmartLogger.

Figure 4-136 System maintenance



4.5.5.2.1 Changing a User Password

Procedure

Step 1 Tap **More** > **System Maintenance** > **Change Password** to access the screen for changing a password.

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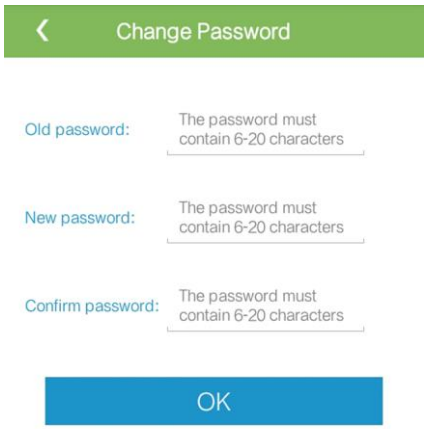
Figure 4-137 Changing a password



NOTE

The password should meet the following requirements:

- Contains 6–20 characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

4.5.5.2.2 Resetting the System

Context

After the system resets, the SmartLogger restarts.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Reset**. A dialog box for resetting the system is displayed.

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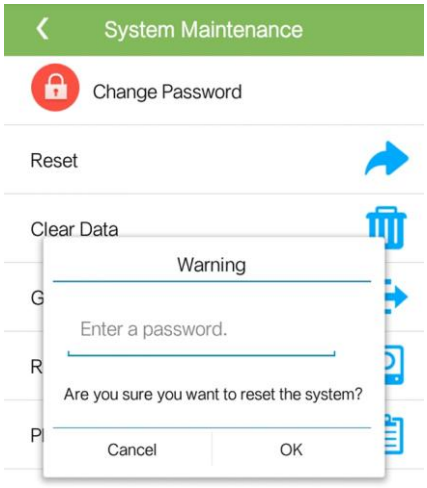
Figure 4-138 Resetting the system



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.5.5.2.3 Clearing Data

Context

Clear data if the SmartLogger is relocated and its historical data needs to be deleted.

NOTICE

- After you perform **Clear Data**, all information stored on the SmartLogger, including energy yield, performance data, and alarms, will be removed.
- After you perform **Clear Data**, the devices connected to the SmartLogger are not removed. If an original device will no longer connect to the SmartLogger, remove the device.
- If you perform **Clear Data** on the SmartLogger, you have to perform **Reset Alarms** on the NMS. Otherwise, the alarm information collected by the NMS and that collected by the SmartLogger will be different.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Clear Data**. A dialog box for clearing data is displayed.

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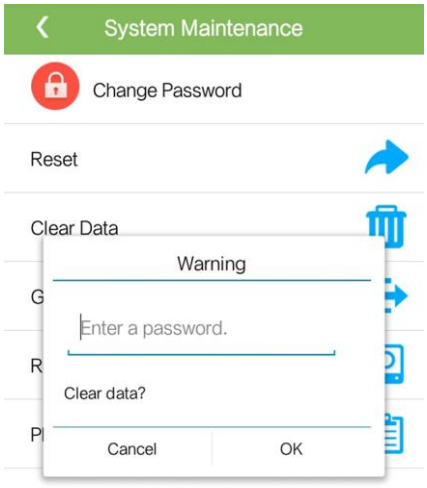
Figure 4-139 Clearing data



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.5.5.2.4 Generating the Local Maintenance Script File

Prerequisites

A USB flash drive has been inserted into the USB port on the SmartLogger.

Context

Generating the local maintenance script is used to set SmartLogger commands and save the script file in the USB flash drive. The SmartLogger executes the local script file in the USB flash drive to export SmartLogger logs, export or import all files, upgrade application software, and upgrade BSP.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Generate local Maint. Script** to access the screen for generating the script.

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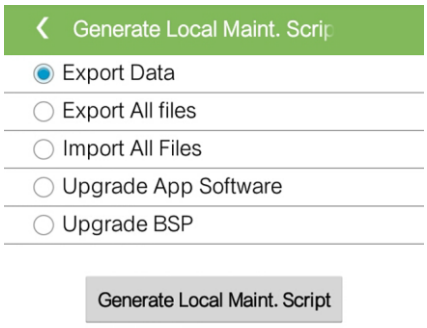
Figure 4-140 Generating the local maintenance script file



Step 2 Select operations as required and tap **Generate local Maint. Script** to save the generated local maintenance script file in the USB flash drive.

----End

Follow-up Procedure

You can also choose **Tool Kit** > **Local maintenance script** without logging in to the app to perform SmartLogger command settings. For details, see 6.2.2 SmartLogger Maintenance Script.

4.5.5.2.5 Restoring Factory Settings

Context

NOTICE

Perform this operation with caution because all configured parameters except the current date, time, baud rate, and address will be restored to their factory default values. This operation will not affect operating information, alarm records, or system logs.

Procedure

Step 1 Tap **More** > **System Maintenance** > **Restore Factory Settings**. The dialog box for restoring factory settings is displayed.

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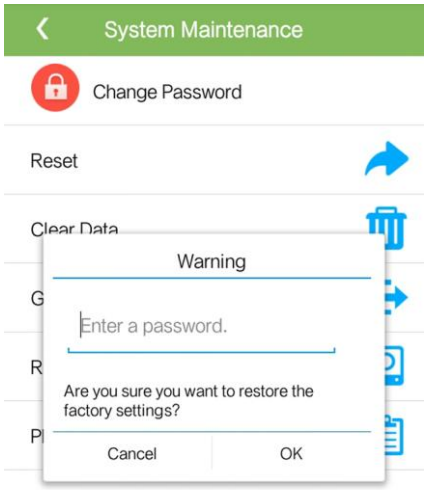
Figure 4-141 Restoring factory settings



Step 2 Enter the password for logging in to the app and tap **OK**.

----End

4.5.5.2.6 Mobile Phone Logs

Procedure

Step 1 Tap **More** > **System maintenance** > **Phone Log** to delete or export mobile phone operation logs.

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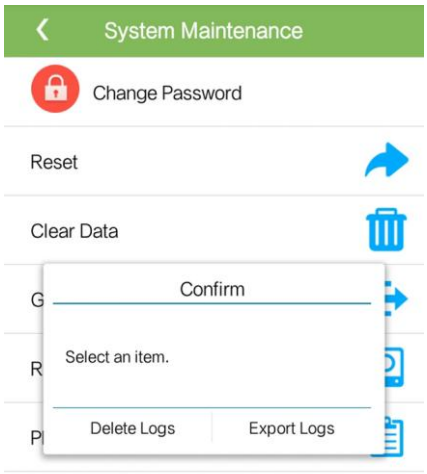
Figure 4-142 Mobile phone logs



----End

4.5.5.3 Device Management

Choose **More** > **Device Mgmt** to manage all devices connected to the SmartLogger.

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Figure 4-143 Device management

4.5.5.3.1 Changing a Device Name

Procedure

Step 1 Tap a device name to change it.

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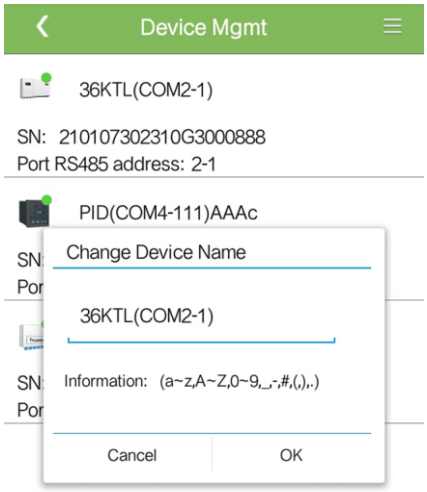
Figure 4-144 Changing a device name



NOTE

The name of the SmartLogger cannot be changed.

----End

4.5.5.3.2 Deleting Devices

Procedure

Step 1 Choose **More** > **Device Mgmt** to access the **Device Mgmt** screen.

Step 2 Hold down a device name, select the devices to be deleted, and tap **Batch Delete** to delete them.

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Figure 4-145 Deleting devices

NOTE

Deleted devices are not displayed on the **Monitor** screen.

----End

4.5.5.3.3 Automatically Searching for Devices

Context

The SmartLogger can automatically detect and connect to devices.

The EMI, power meter, slave SmartLogger, and third-party devices cannot be automatically detected. You need to add them manually. For details, see 4.5.5.3.4 Manually Adding a Device.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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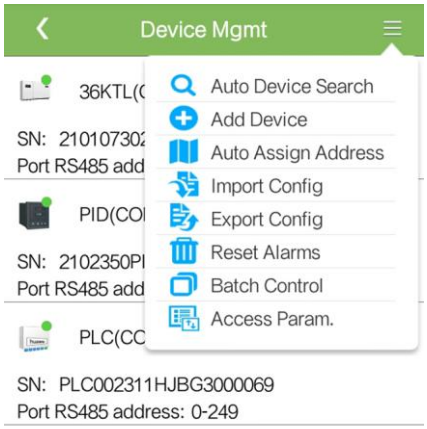
Figure 4-146 Device management



Step 2 Tap **Auto Device Search**.

----End

4.5.5.3.4 Manually Adding a Device

Context

The EMI, power meter, slave SmartLogger, and third-party devices cannot be automatically detected. You need to add them manually.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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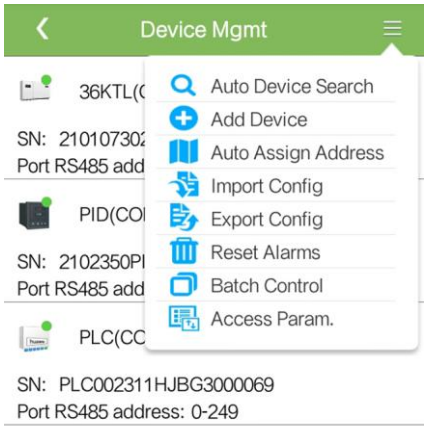
Figure 4-147 Device management



Step 2 Tap **Add Device** to set device parameters.

Figure 4-148 Adding a device

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NOTE

- **Comm. Protocol** is set to **Modbus RTU** by default. If you need to modify it, refer to 4.4.5.1.5 Setting RS485 Parameters.
- Before adding the EMI or power meter manually, set the EMI or power meter parameters. For details, see *SmartLogger2000 User Manual*.

----End

4.5.5.3.5 Automatically Allocating Addresses

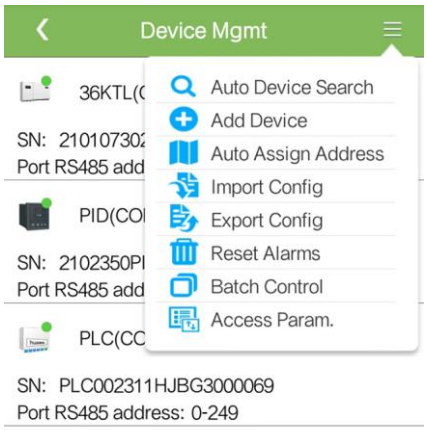
Context

The SmartLogger can automatically allocate addresses to the connected devices and adjust the addresses based on device sequence numbers.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-149 Device management



Step 2 Tap **Auto Assign Address**.

----End

4.5.5.3.6 Importing Configuration Files

Prerequisites

- The file name extension must be **.cfg**.

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- The imported file is stored in the memory or SD card of the mobile phone.

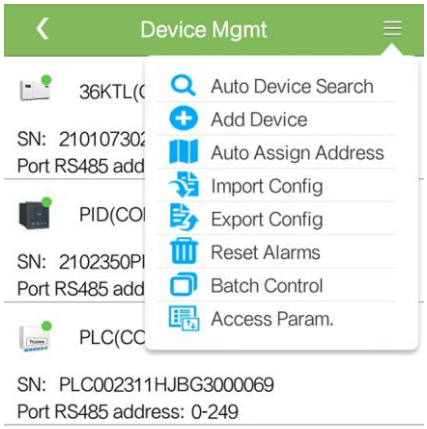
Context

When the SmartLogger connects to a user-defined device or the IEC103 device, import a configuration file and add a device manually. Then, the device can be queried on the **Monitor** screen.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-150 Device management



Step 2 Tap **Import Config** to import the .cfg file.

----End

4.5.5.3.7 Exporting Configuration Files

Context

When the SmartLogger connects to a third-party device, you can view its configuration files by performing the configuration exporting operation.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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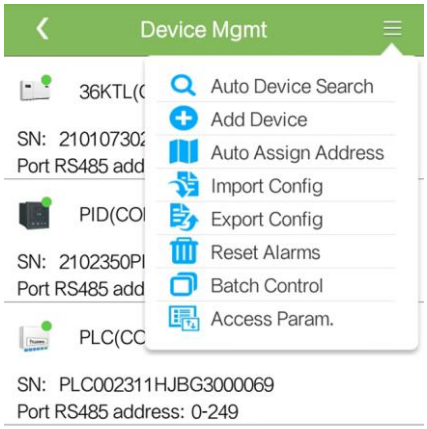
Figure 4-151 Device management



Step 2 Tap **Export Config**.

----End

4.5.5.3.8 Resetting Alarms

Context

- If you reset alarms, all the active and historical alarms of the selected device are deleted and the SmartLogger starts to collect new alarm data.
- If data is deleted for a SUN2000, you must reset alarms on the SmartLogger and the NMS; otherwise, the SmartLogger cannot collect new alarm data from the SUN2000.
- If alarms are reset on the SmartLogger, you must reset alarms on the NMS; otherwise, the NMS cannot obtain the new alarm data collected by the SmartLogger from the SUN2000.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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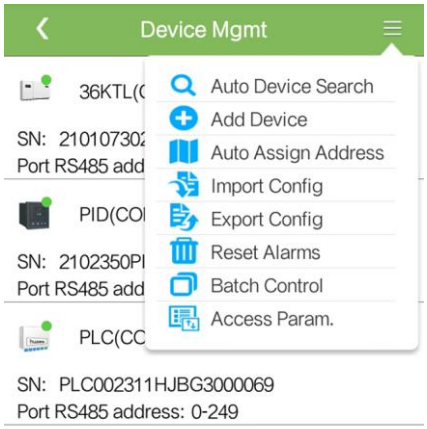
Figure 4-152 Device management



Step 2 Tap **Reset Alarms**, and select devices on the **Reset Alarms** screen.

Step 3 Tap **OK**.

----End

4.5.5.3.9 Starting, Shutting down, and Resetting in Batches

Context

Batch control operations allow the SmartLogger to start, shut down, and reset SUN2000s in batches. SUN2000s automatically restart after reset.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

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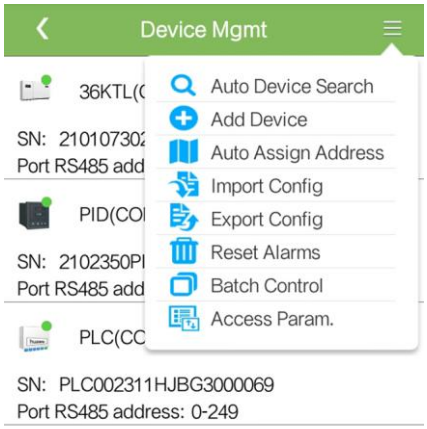
Figure 4-153 Device management



Step 2 Tap **Batch Control**.

Figure 4-154 Batch control

Step 3 Tap **Batch startup**, **Batch shutdown**, or **Batch reset**, enter the password for logging in to the app, and tap **OK**.

----End

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4.5.5.3.10 Setting Access Parameters

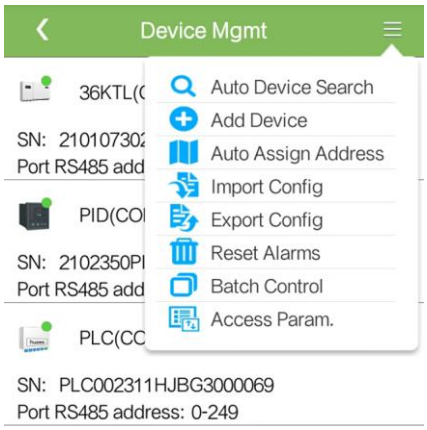
Context

Before connecting a device to the SmartLogger, configure access parameters correctly.

Procedure

Step 1 Tap in the upper-right corner of the **Device Mgmt** screen.

Figure 4-155 Device management



Step 2 Tap **Access Param.** to access the settings screen.

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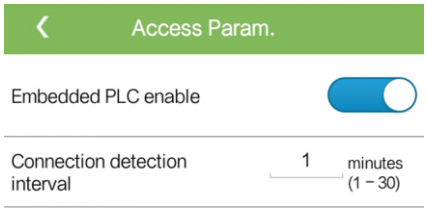
Figure 4-156 Access parameters



NOTE

If the SmartLogger communicates with the SUN2000 over PLC, set **Embedded PLC enable** to **Enable**.

----End

4.5.5.4 Managing the Device List

Context

Choose **Export Device Info** > **Edit Device Info File** > **Import Device Info** to modify device information in the information file.

Procedure

Step 1 Tap **More** > **Device List** to access the device list screen.

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Figure 4-157 Device list

Step 2 Tap **Export Device Info** to export the device information file.

NOTE
The exported device information file is in .csv format.

Step 3 Tap **Edit Device Info File** to modify the device information file.

1. In the path where the device information file is exported, tap the exported .csv file to access the screen for modifying the file.

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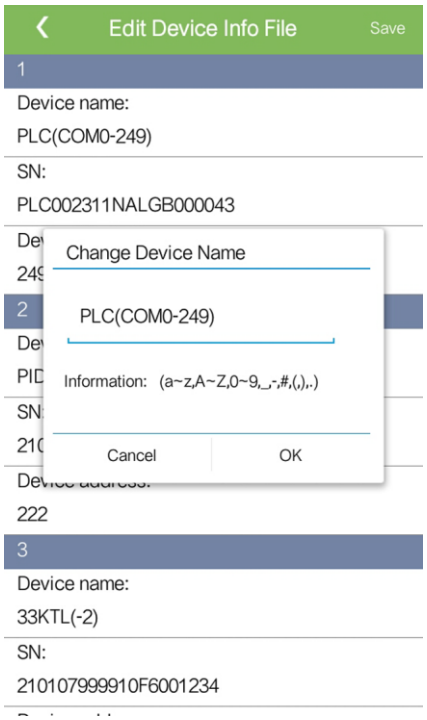
Figure 4-158 Editing a device information file

2. Tap a parameter to be modified and enter or select target information.

Figure 4-159 Modifying device information



3. After all modifications, tap **Save** in the upper-right corner of the screen.

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Step 4 Tap **Import Device Info** to import the modified device information file to the SmartLogger.

----End

4.5.5.5 Exporting Device Logs

Prerequisites

A USB flash drive has been inserted into the USB port on the SmartLogger.

Procedure

Step 1 Tap **More** > **Device Logs** to access the screen for exporting logs.

Figure 4-160 Device Logs

Step 2 Tap in the upper-right corner of the screen, select a device whose logs are to be exported, and tap **Next**.

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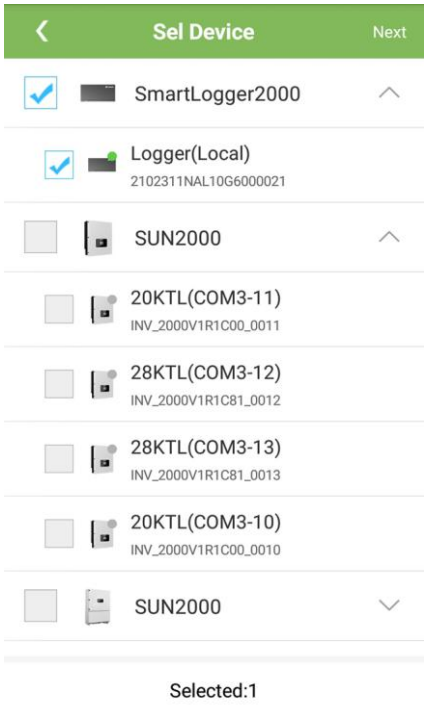
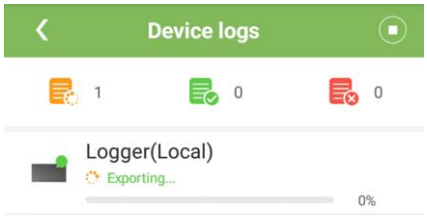
Figure 4-161 Selecting devices



Step 3 Select the log types to be exported and tap **OK** to start exporting device logs.

Figure 4-162 Exporting logs



----End

4.5.5.6 Device Upgrade

Prerequisites

- Obtain the upgrade package with the help of the supplier or Huawei engineers.

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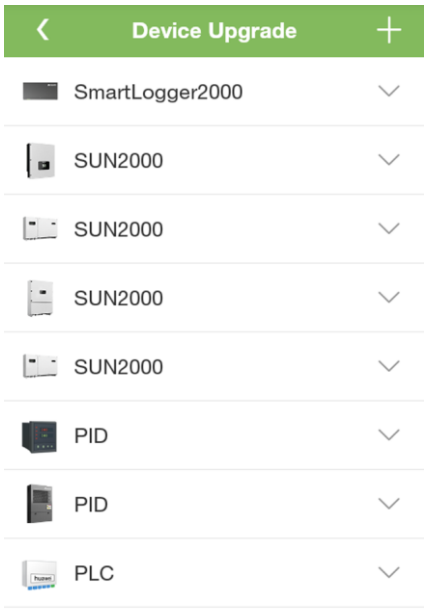
- Insert the USB flash drive where the upgrade package is saved into the USB port on the device.

Procedure

Step 1 Tap **More** > **Upgrade** to access the device upgrade screen.

Figure 4-163 Device upgrade



Step 2 Tap in the upper-right corner of the screen to select the unicast or broadcast mode.

- Unicast upgrade
  a. Select a device to be upgraded and tap **Next**.

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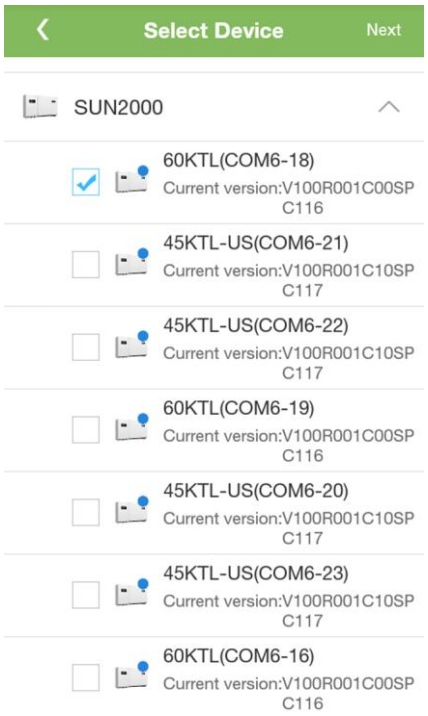
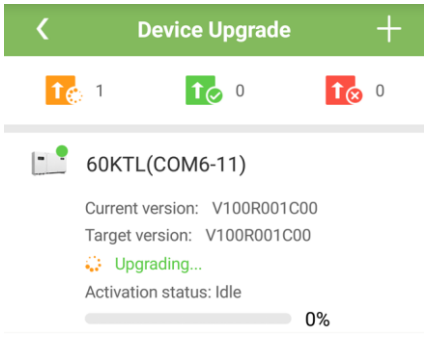
Figure 4-164 Selecting a device to be upgraded



b. Select the upgrade package and tap **Next**.

c. Confirm the upgrade package and the device to be upgraded and tap **Finish** to start upgrading the device.

Figure 4-165 Starting unicast upgrade



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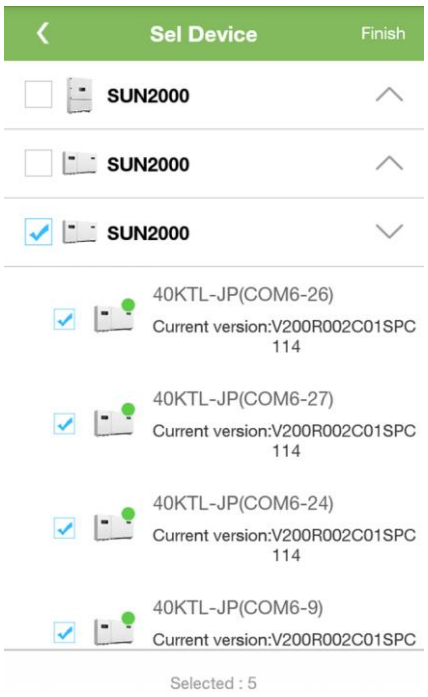
- Broadcast upgrade
  a. Select devices of the same type to be upgraded and tap **Next**.

  Figure 4-166 Selecting devices to be upgraded



  b. Select the upgrade packages and tap **Next**.
  c. Confirm the upgrade packages and the devices to be upgraded and tap **Finish** to start upgrading the devices.

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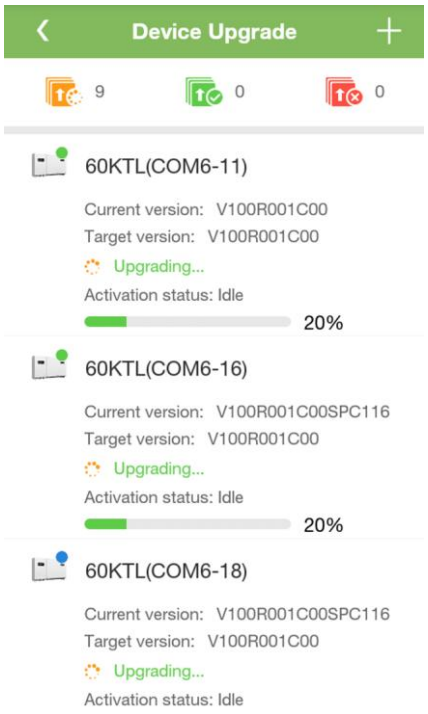
Figure 4-167 Starting broadcast upgrade



----End

4.5.5.7 Inverter Spot

Context

You can perform a spot check for the SUN2000 whose **Grid Code** is **Japan standard**.

Procedure

Step 1 Tap **More** > **Inverter Spot** to access the Inverter Spot screen.

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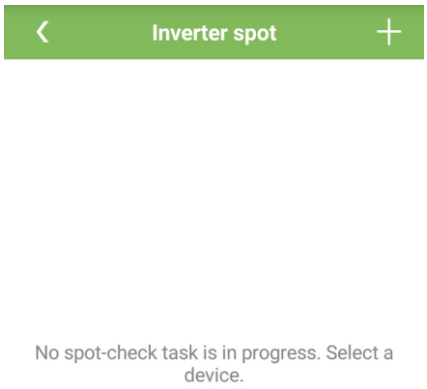
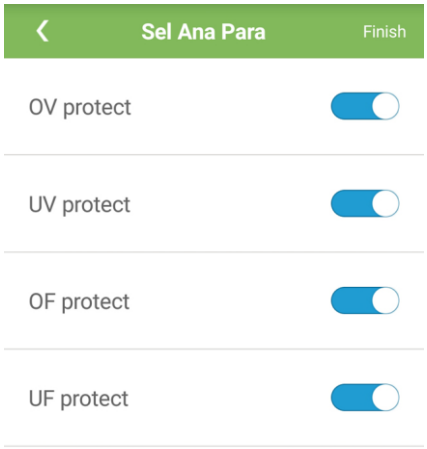
Figure 4-168 Inverter Spot



Step 2 (Optional) Tap in the upper right corner of the **Inverter Spot** screen, select **Sel Ana Para**, and tap **Finish** to set analog parameters.

Figure 4-169 Selecting analogs



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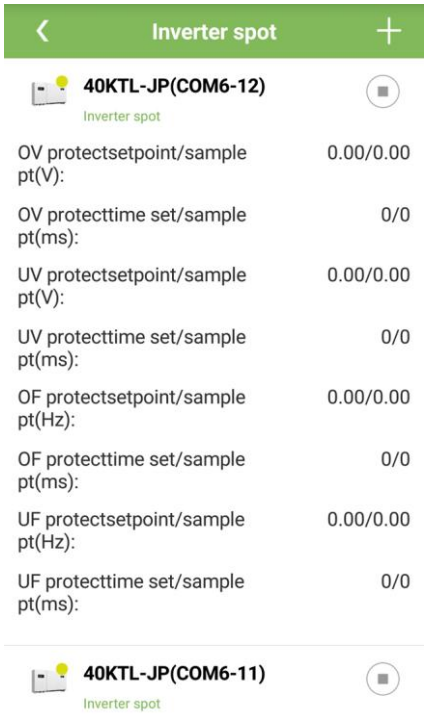
NOTE

After the parameters on the **Sel Ana Para** screen are set, the analog parameters and their values are displayed on the **Inverter Spot** screen. You can also tap **Sel Ana Para** to set analog parameters when the SUN2000s are being spot-checked.

Step 3 Tap in the upper right corner of the **Inverter Spot** screen and select **Sel Device** to access the **Sel Device** screen.

Step 4 Select one or more devices to be spot-checked, and tap **Finish** to start a spot check.

Figure 4-170 Inverter Spot



----End

4.5.5.8 Querying Product Information

Procedure

Step 1 Tap **More** > **Product Info** to query SmartLogger version information.

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Figure 4-171 Product information

----End

4.5.5.9 Viewing App Version Information

Procedure

Step 1 Tap **More** > **About** to view the app version information.

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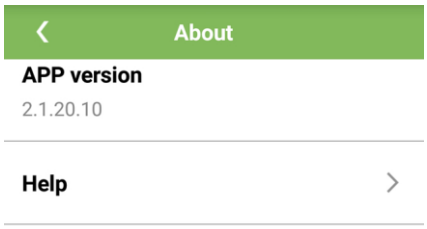
Figure 4-172 About



----End

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5 Operations on the Screen for Connecting to the PID Module

NOTICE

The UI snapshots provided in this section correspond to the SUN2000APP 2.1.20.10 version. The data on the UI snapshots is for reference only.

5.1 Connecting to the PID

5.1.1 Connection over a Bluetooth Module

Prerequisites

- The PID module has been powered on.
- A Bluetooth module is available and it has been inserted into the USB port in the maintenance compartment of the PID module.

NOTE

Keep the mobile phone within 5 m away from the PID module. Otherwise, communication between them would be affected.

Procedure

Step 1 Enable Bluetooth on the mobile phone.

Step 2 Start the app. The login screen is displayed.

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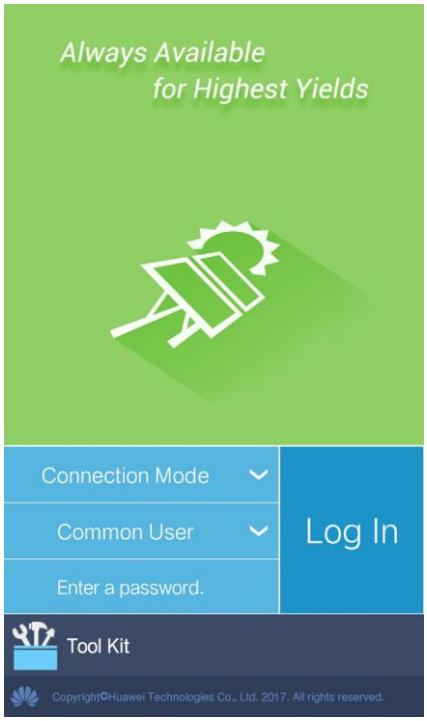
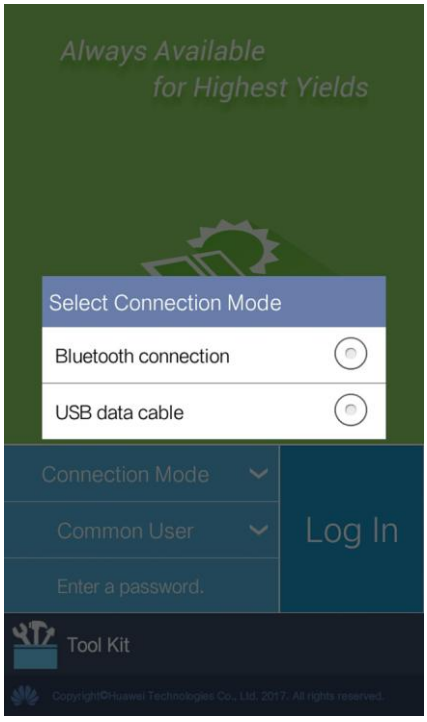
Figure 5-1 Login screen



Step 3 Tap **Connection Mode** and select **Bluetooth connection**.

Figure 5-2 Selecting a connection mode



Step 4 Tap **Search for Device** to search for a Bluetooth device.

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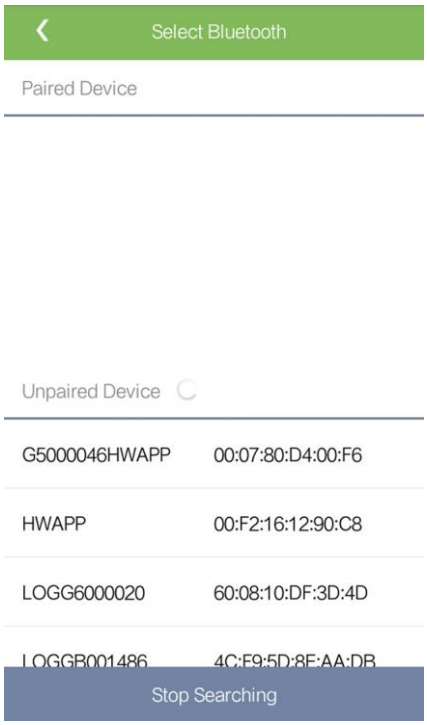
Figure 5-3 Searching for Bluetooth devices



Step 5 After Bluetooth devices are found, select the target Bluetooth device to set up a connection.

NOTE

The Bluetooth module is USB-Adapter2000-B, the connected Bluetooth device is named after *last 8 digits of the SN bar code*+**HWAPP**. The SN bar code can be obtained from the silk screen on the USB-Adapter2000-B.

----End

5.1.2 Connection over a USB Data Cable

Prerequisites

- The PID module has been powered on.
- A USB data cable is available and it has been connected from the USB port in the maintenance compartment of the PID module to the USB port on the mobile phone.

NOTICE

After connecting the USB data cable, **Connected to USB Accessory** is displayed on the mobile phone, indicating that the PID and the mobile phone have been successfully connected. Otherwise, the USB data cable connection is invalid.

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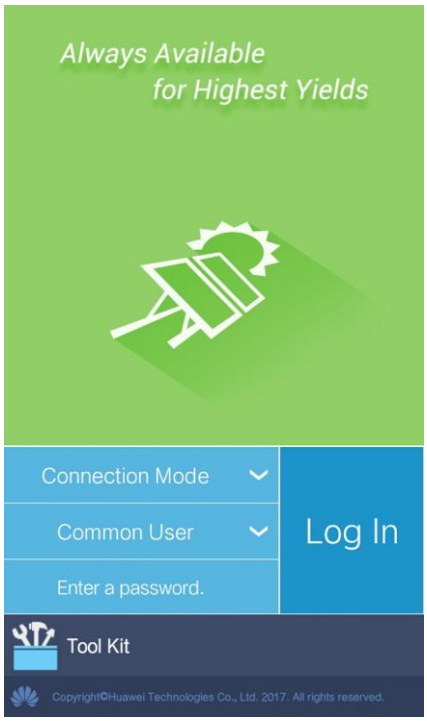
Procedure

Step 1 Start the app. The login screen is displayed.

Figure 5-4 Login screen



Step 2 Tap **Connection Mode** and select **USB data cable**.

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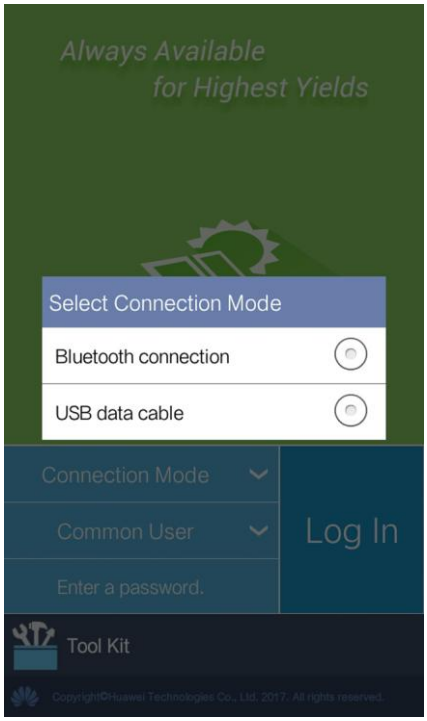
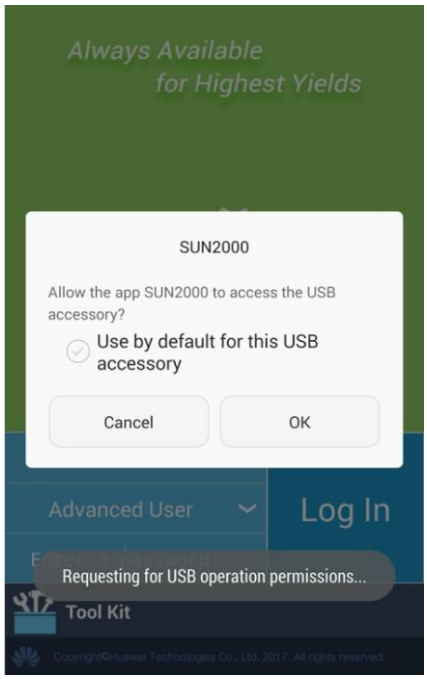
Figure 5-5 Selecting a connection mode



Step 3 A message is displayed, asking you to confirm the USB access. Tap **OK**.

Figure 5-6 Message



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NOTE

After you select **Use by default for this USB accessory**, the message will not appear if you log in to the app again without reconnecting the USB data cable.

----End

5.2 Logging In to the App

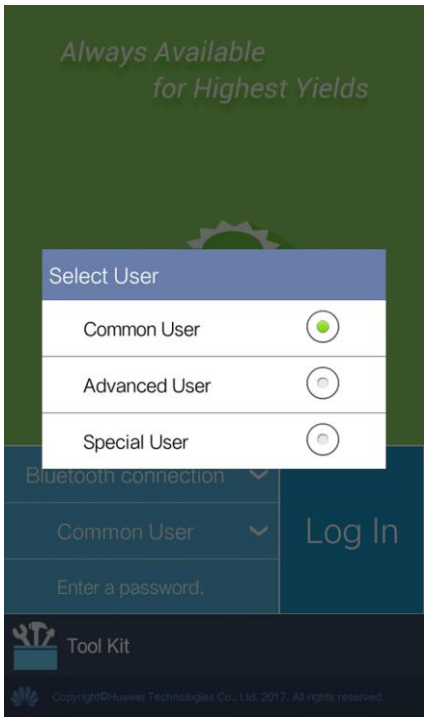
Prerequisites

The mobile phone has been connected to the PID module over a Bluetooth module or a USB data cable.

Procedure

Step 1 On the app login screen, switch the user type (common user, advanced user, and special user) by tapping the user name bar.

Figure 5-7 Switching between users



NOTE

- The login password is the same as that for the PID module connected to the app and is used only when the PID module connects to the app.
- The preset password for a common user, advanced user, and special user is **00000a**. Use the preset password upon initial login. To ensure account security, change the password immediately after login.
- During login, if five consecutive invalid password attempts are made (the interval between two consecutive attempts is less than 2 minutes), the account will be locked for 10 minutes. The password should consist of 6 characters.

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Step 2 After entering the password, tap **Log In**.

Step 3 After successful login, the quick settings screen or function menu screen is displayed.

NOTE

- If the common user or the advanced user logs in to the app after the PID module connects to the app for the first time or factory defaults are restored, the **Quick Settings** screen will be displayed. On the **Quick Settings** screen, you can set basic parameters for the PID module. After setting parameters, you can modify the parameters by tapping **Settings** on the main menu screen. Figure 5-8 is the **Quick Settings** screen for an advanced user.
- If you do not set PID basic parameters on the quick settings screen, the screen is still displayed when you log in to the app next time.

Figure 5-8 Quick settings (advanced user)

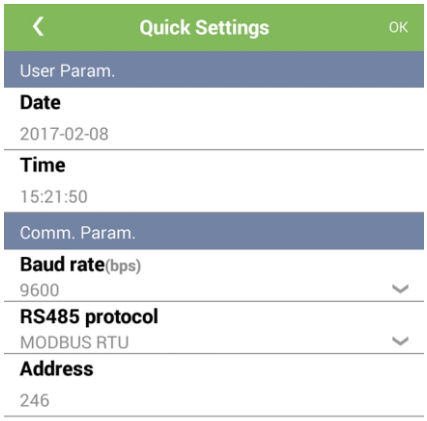

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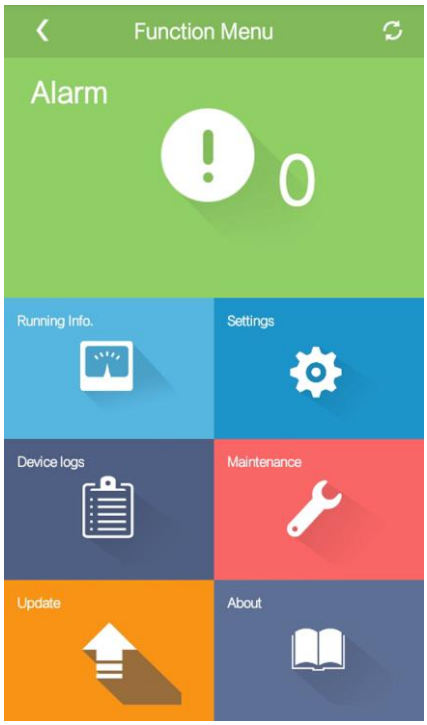
Figure 5-9 Function menu



----End

5.3 User Operation Permissions

The user accounts that can log in to the app are classified into common users, special users, and advanced users based on the responsibilities of PV plant operation personnel.

- Common user: Has the permissions of viewing PID module data and setting user parameters.
- Advanced users: Has the permissions of viewing PID module data, setting functional parameters, and maintaining devices.
- Special user: Has the permissions of viewing PID module data, setting user parameters, and maintaining devices (including starting and shutting down the PID module, clearing data, and upgrading devices).

Figure 5-10, Figure 5-11 and Figure 5-12 show the menu operation permissions of common users, advanced users, and special users respectively.

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Figure 5-10 Operation permissions of common users

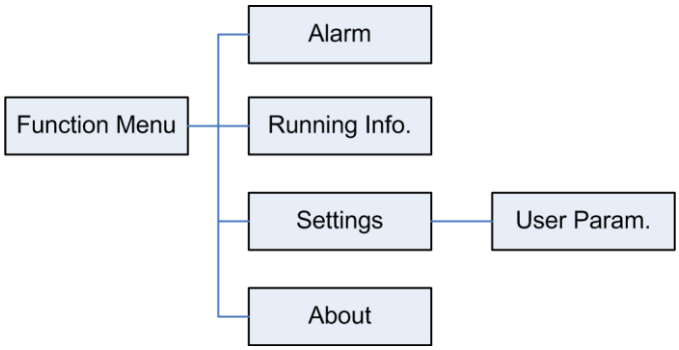

Figure 5-11 Operation permissions of advanced users

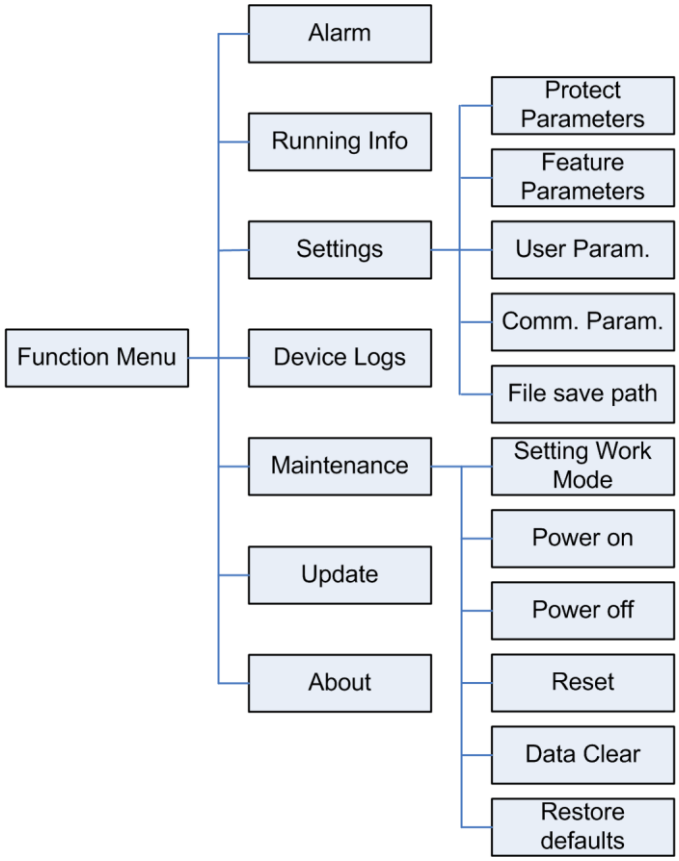

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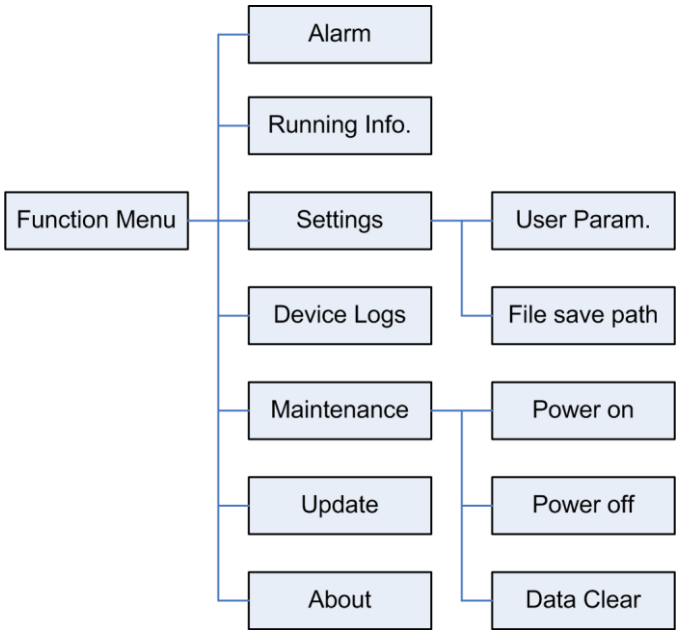
Figure 5-12 Operation permissions of special users



5.4 Screen Operations (Common User)

5.4.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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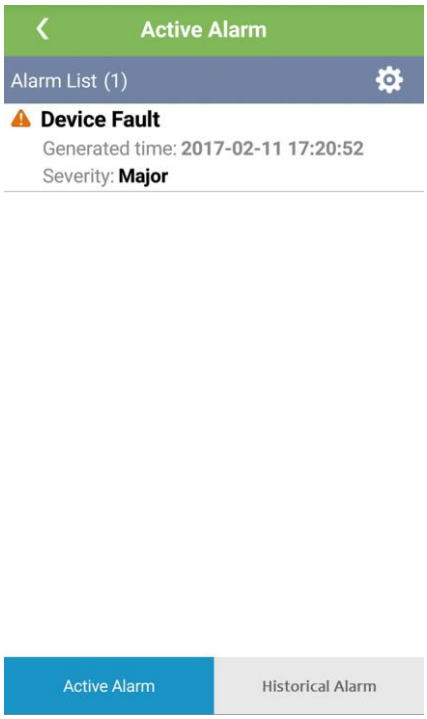
Figure 5-13 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

5.4.2 Querying PID Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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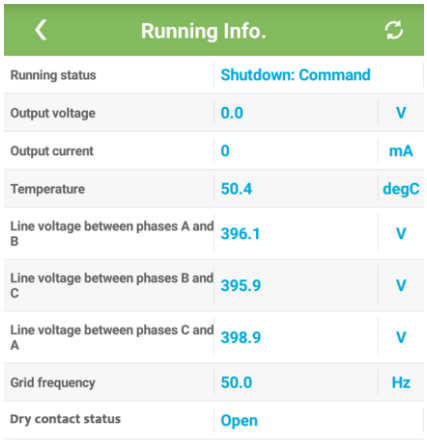
Figure 5-14 Running information



----End

5.4.3 Parameter Settings

Prerequisites

Common users can only set user parameters for the PID module.

Procedure

Step 1 Tap **Function Menu** > **Settings** to display the Settings screen.

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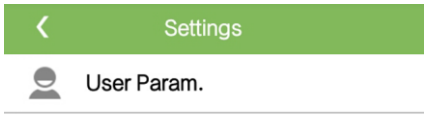
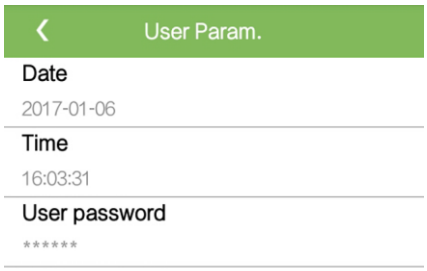
Figure 5-15 Settings (common user)



Step 2 Tap **User Param.** to set user parameters.

Figure 5-16 Setting user parameters



Step 3 Tap **Date** and **Time** to set the date and time for the PID module.

Step 4 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

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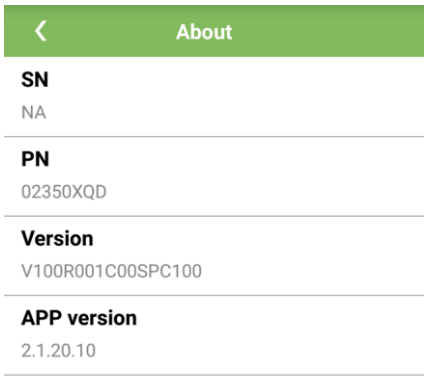
5.4.4 Viewing PID Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the PID version information.

Figure 5-17 About



----End

5.5 Screen Operations (Advanced User)

5.5.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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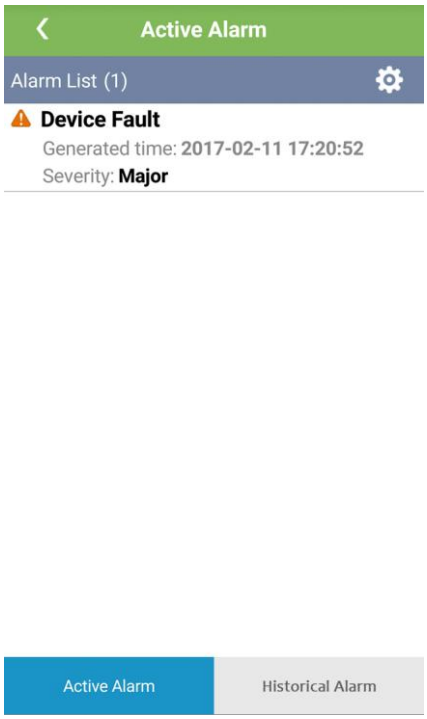
Figure 5-18 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

5.5.2 Querying PID Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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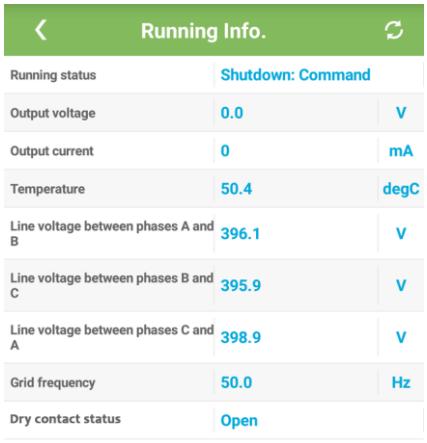
Figure 5-19 Running information



----End

5.5.3 Parameter Settings

An advanced user can choose **Function Menu** > **Settings** to set protection parameters, feature parameters, and user parameters for the PID module.

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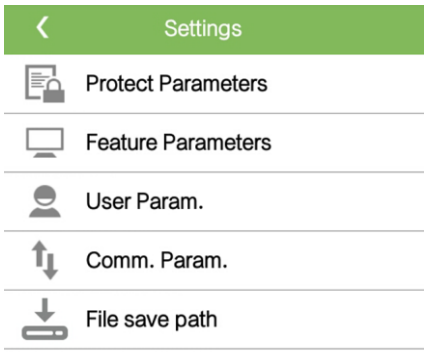
Figure 5-20 Settings (advanced user)



5.5.3.1 Setting Protection Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Protect Parameters** to access the settings screen.

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Figure 5-21 Setting protection parameters

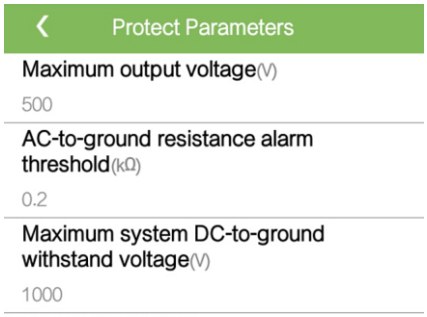

Table 5-1 Parameter description

No.	Parameter	Description	Unit	Value Range	Remarks
1	Maximum output voltage	Specifies the highest output voltage of the PID module in normal or commissioning mode.	V	0–800	The default value is 500 V. For the 1500 V SUN2000, the recommended value is 800 V. • For the 1000 V/1100 V SUN2000, the value ranges from 0 V to 550 V. The parameter value indicates the maximum DC raise voltage between PV and the ground. • For the 1500 V SUN2000, the value ranges from 0 V to 800 V. The parameter value indicates the maximum DC raise voltage between PV and ground.

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No.	Parameter	Description	Unit	Value Range	Remarks
2	AC-to-ground resistance alarm threshold	Specifies the alarm threshold for the impedance between the AC side of the PID module and the ground.	kΩ	0.2–100	You can set an alarm threshold for the impedance between the AC grid and the ground for the PID module. If the detected impedance is below the threshold, the PID module will generate an alarm.
3	Maximum system DC-to-ground withstand voltage	Specifies the voltages between the PV side and the ground and between the AC side and the ground in normal mode.	V	500–1500	Specifies the lower thresholds of the maximum voltage ranges between the SUN2000 DC side (including the SUN2000, PV module, cable, SPD, and switch) and the ground in a PV power system. The default value is 1000 V. For the 1500 V SUN2000, the recommended value is 1500 V.

----End

5.5.3.2 Setting Feature Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Feature Parameters** to access the settings screen.

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Figure 5-22 Setting feature parameters

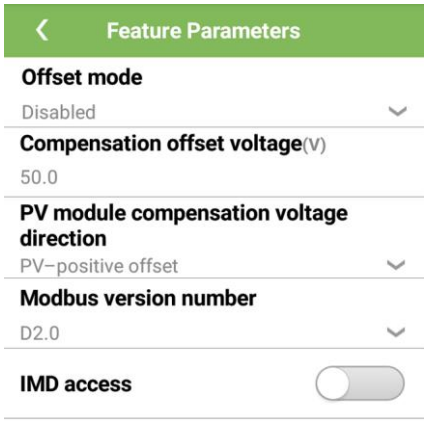

Table 5-2 Parameter description

No.	Parameter	Description	Unit	Value Range	Remarks
1	Offset mode	Specifies the offset mode of the PID module.	N/A	• Disabled • N/PE	• Select **Disabled** if the PID module is not required. • Select **N/PE** if the PID module is required to use voltage output from the power grid.

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No.	Parameter	Description	Unit	Value Range	Remarks
2	Compensation offset voltage	Specifies the compensation offset voltage between PV and the ground after the PID module operates stably.	V	0–500	• If **PV module compensation voltage direction** is set to **PV– positive offset**, this parameter specifies the positive voltage between PV– and the ground. • If **PV module compensation voltage direction** is set to **PV+ negative offset**, this parameter specifies the negative voltage between PV+ and the ground. **NOTE** If **Compensation offset voltage** is set to 500 V, the PID module provides the maximum output to enhance the voltage compensation effect. The output voltage amplitude of the PID module is automatically capped to ensure the safety of a PV power plant. The output voltage amplitude is also related to the maximum system DC-to-ground withstand voltage and maximum output voltage.
3	PV module compensation voltage direction	Specifies the offset direction of the PID module.	N/A	• PV– positive offset • PV+ negative offset	For the specific PV module compensation type, consult the PV module vendor. For example, P-type PV modules, HIT, CIS, thin-film PV modules, and CdTe PV modules meet the requirement for PV– positive offset.
4	Modbus version number	Specifies the version number of the Modbus protocol of the PID module.	N/A	• D1.0 • D2.0	N/A

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No.	Parameter	Description	Unit	Value Range	Remarks
5	IMD access	Specifies whether the PID module and insulation monitor device (IMD) can operate in cycle mode.	N/A	• Enable • Disable	• Select **Enable** if you allow the PID module and IMD to operate in cycle mode. Only the IMDs of mainstream suppliers such as DOLD and BENDER are supported, and the IMDs must have enabled dry contacts. **NOTICE** Only when **IMD access** is set to **Enable**, can you set **Periodic PID runtime** and **Periodic IMD runtime**. • Select **Disable** if you forbid the access of IMDs.
6	Periodic PID runtime	Specifies the operating time segment of the PID module when the PID module and IMD operate in cycle mode.	min	60–480	The IMD device is shut down when the PID module is operating.
7	Periodic IMD runtime	Specifies the operating time segment of the IMD when the PID module and IMD operate in cycle mode.	min	15–480	The PID module is standby when the IMD device is operating.

----End

5.5.3.3 Setting User Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **User Param.** to access the settings screen.

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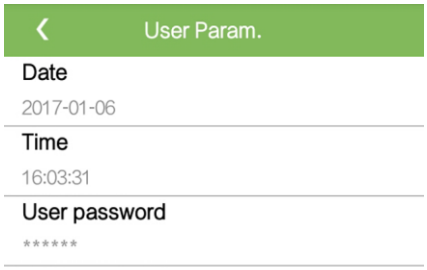
Figure 5-23 Setting user parameters



Step 2 Tap **Date** and **Time** to set the date and time for the PID module.

Step 3 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

5.5.3.4 Setting Communications Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **Comm. Param.** to access the settings screen.

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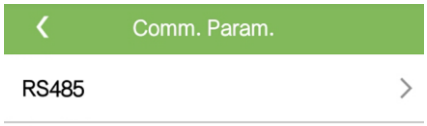
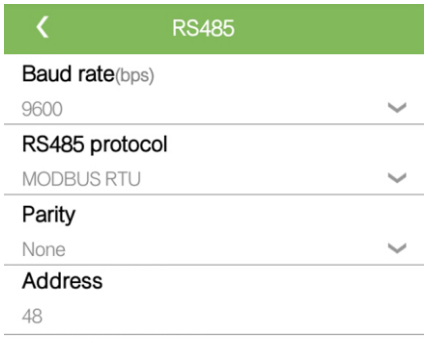
Figure 5-24 Setting communications parameters



Step 2 Tap **RS485** to set RS485 communications parameters.

Figure 5-25 Setting RS485 parameters



----End

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5.5.3.5 Setting a File Save Path

Context

You can modify the save path for operation logs and PID logs and you can export logs from the path subsequently.

Procedure

Step 1 Tap **Function Menu** > **Settings** > **File save path** to access the settings screen.

Figure 5-26 Setting a file save path

Step 2 Tap **File save path** to set the save path.

----End

5.5.4 Device Logs

Context

Tap **Device Logs** to export operation logs and PID logs from the mobile phone.

Procedure

Step 1 Tap **Function Menu** > **Device Logs** to access the device logs screen.

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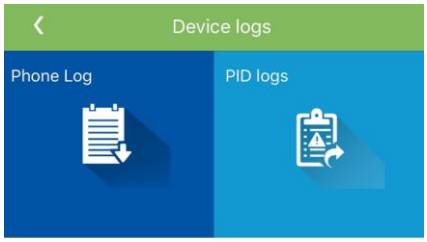
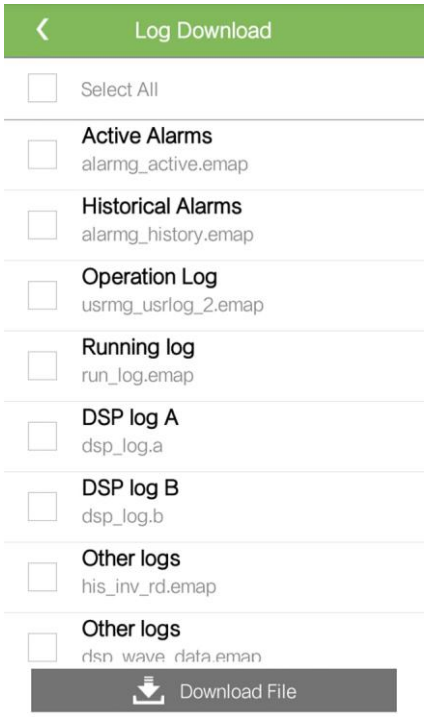
Figure 5-27 Device Logs



Step 2 Tap **Phone Log** to delete or export mobile phone operation logs.

Step 3 Tap **PID Log** to download PID logs.

Figure 5-28 Downloading logs



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Step 4 Download log files as required.

NOTE
The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 5.5.3.5 Setting a File Save Path to modify the log save path.

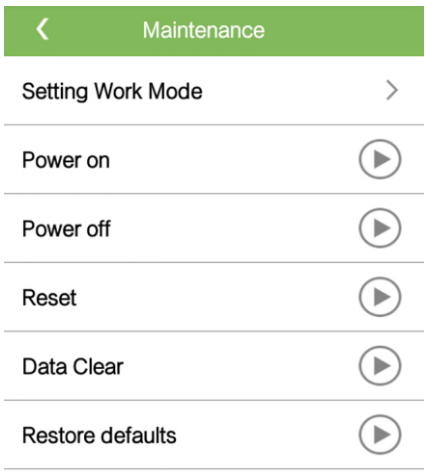
----End

5.5.5 System Maintenance

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Figure 5-29 Maintenance (advanced user)



Step 2 Tap **Setting Work Mode** to set the working mode parameter.

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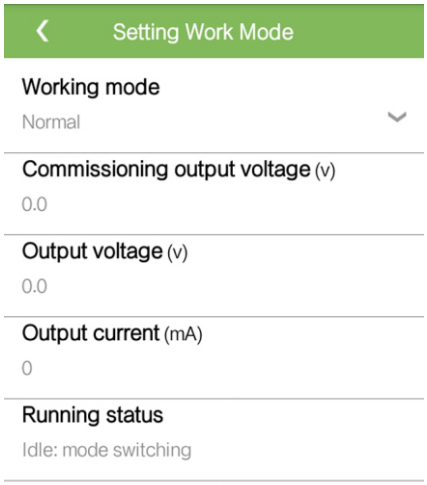
Figure 5-30 Setting work mode



Step 3 Tap next to **Power on**, **Power off**, **Reset**, **Data Clear**, or **Restore defaults** as required.

NOTE
If you clear data, active and historical alarms stored on the PID module will all be cleared.

Step 4 Enter the password for logging in to the app and tap **OK**.

----End

5.5.6 PID Upgrade

Prerequisites

Obtain the upgrade package with the help of the supplier or Huawei engineers.

Procedure

Step 1 Copy the upgrade package to your mobile phone without decompressing the package.

NOTE
To reduce the time of searching for the upgrade package, you are advised to save the uncompressed upgrade package in the root directory of the memory or SD card of the mobile phone.

Step 2 Tap **Function Menu** > **Update** to access the PID upgrade screen.

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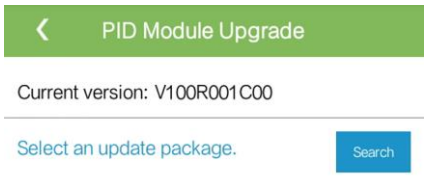
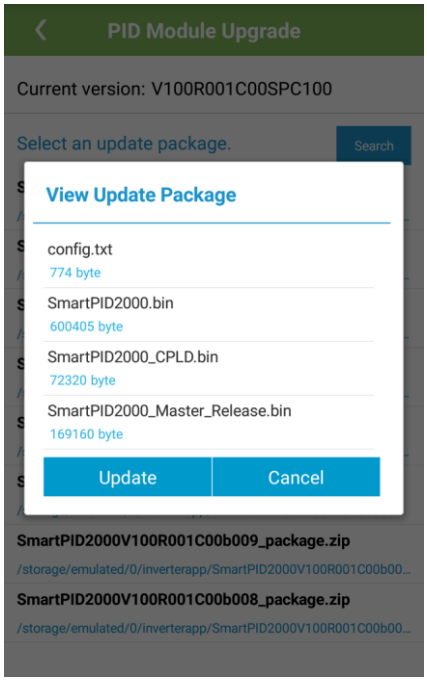
Figure 5-31 PID upgrade



Step 3 Tap **Search**. A message indicating that searching for an upgrade package will take several minutes is displayed. Tap **OK**.

Step 4 Select the correct upgrade package from the search results. The **View Update Package** dialog box is displayed.

Figure 5-32 View Update Package



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Step 5 Tap **Update**.

Step 6 On the displayed **Compare Versions** screen, tap **Update**.

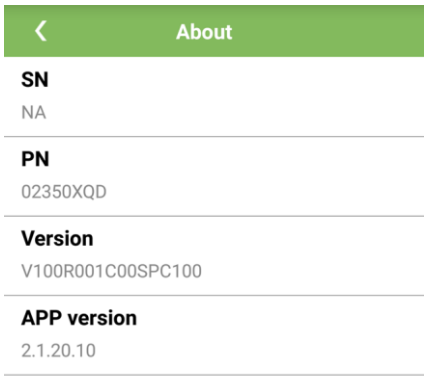
----End

5.5.7 Viewing PID Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the PID version information.

Figure 5-33 About



----End

5.6 Screen Operations (Special User)

5.6.1 Querying Alarm Records

Procedure

Step 1 Tap **Function Menu** > **Alarm** to access the screen for querying alarms.

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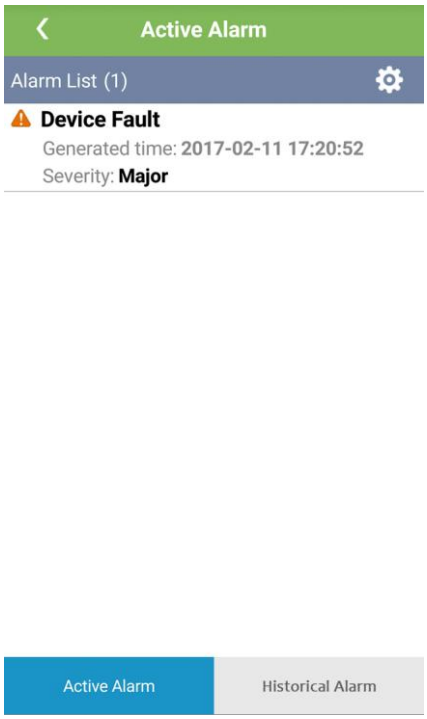
Figure 5-34 Active alarms



Step 2 Tap an alarm record and view the alarm details.

Step 3 Swipe right or left on the screen or tap either of to display a list of active alarms or historical alarms.

NOTE

- Tap to set the alarm sorting mode for active alarms or historical alarms.
- Tap to set a time criterion. The historical alarms generated within the time segment are displayed.

----End

5.6.2 Querying PID Running Information

Procedure

Step 1 Tap **Function Menu** > **Running Info.** to access the screen for querying running information.

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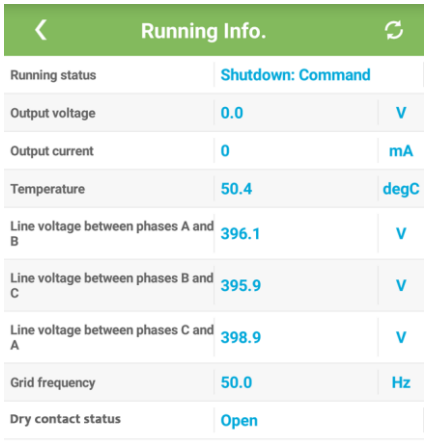
Figure 5-35 Running information

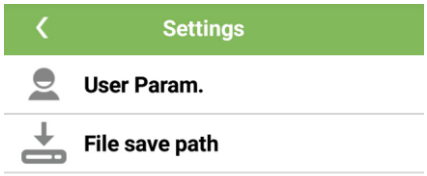


----End

5.6.3 Parameter Settings

A special user can choose **Function Menu** > **Settings** to set user parameters, and set a file save path for the PID module.

Figure 5-36 Settings (special user)



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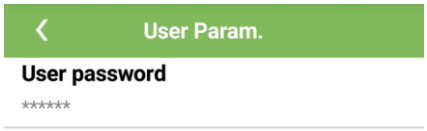
5.6.3.1 Setting User Parameters

Procedure

Step 1 Tap **Function Menu** > **Settings** > **User Param.** to access the parameter settings screen.

Figure 5-37 Setting User Parameters



Step 2 Tap **User password** to set a password.

NOTE

The password should meet the following requirements:

- Contains six characters.
- Contains at least two types of lowercase letters, uppercase letters, and digits.
- Differ from the original password in at least one character.

----End

5.6.3.2 Setting a File Save Path

Context

You can modify the save path for operation logs and PID logs and you can export logs from the path subsequently.

Procedure

Step 1 Tap **Function Menu** > **Settings** > **File save path** to access the settings screen.

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Figure 5-38 Setting a file save path

Step 2 Tap **File save path** to set the save path.

----End

5.6.4 Device Logs

Context

Tap **Device Logs** to export operation logs and PID logs from the mobile phone.

Procedure

Step 1 Tap **Function Menu** > **Device Logs** to access the device logs screen.

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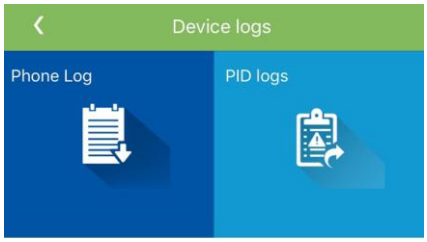
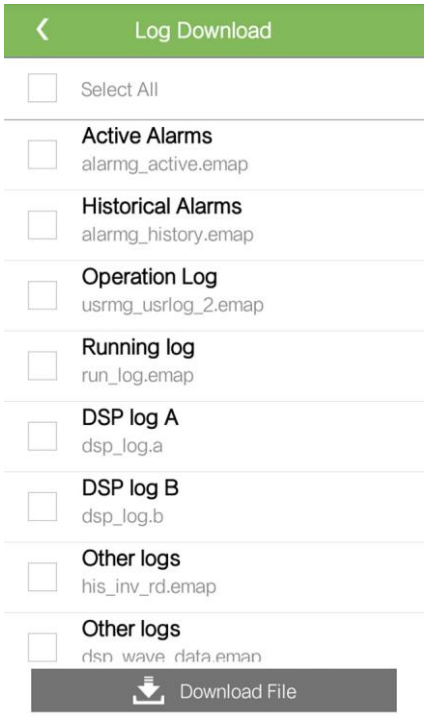
Figure 5-39 Device Logs



Step 2 Tap **Phone Log** to delete or export mobile phone operation logs.

Step 3 Tap **PID Log** to download PID logs.

Figure 5-40 Downloading logs



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Step 4 Download log files as required.

NOTE
The default log save path is **storage/emulated/0/Inverterapp** in the mobile phone memory. You can refer to 5.6.3.2 Setting a File Save Path to modify the log save path.

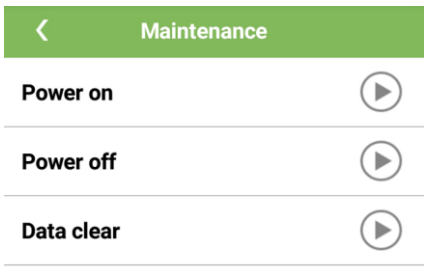
----End

5.6.5 System Maintenance

Procedure

Step 1 Tap **Function Menu** > **Maintenance** to access the maintenance screen.

Figure 5-41 Maintenance (special user)



Step 2 Tap ▶ next to **Power on**, **Power off**, or **Data Clear** as required.

NOTE
If you clear data, active and historical alarms stored on the PID module will all be cleared.

Step 3 Enter the password for logging in to the app and tap **OK**.

----End

5.6.6 PID Upgrade

Prerequisites

Obtain the upgrade package with the help of the supplier or Huawei engineers.

Procedure

Step 1 Copy the upgrade package to your mobile phone without decompressing the package.

NOTE
To reduce the time of searching for the upgrade package, you are advised to save the uncompressed upgrade package in the root directory of the memory or SD card of the mobile phone.

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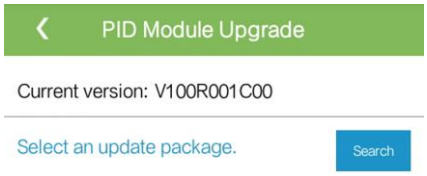
Step 2 Tap **Function Menu** > **Update** to access the PID upgrade screen.

Figure 5-42 PID upgrade



Step 3 Tap **Search**. A message indicating that searching for an upgrade package will take several minutes is displayed. Tap **OK**.

Step 4 Select the correct upgrade package from the search results. The **View Update Package** dialog box is displayed.

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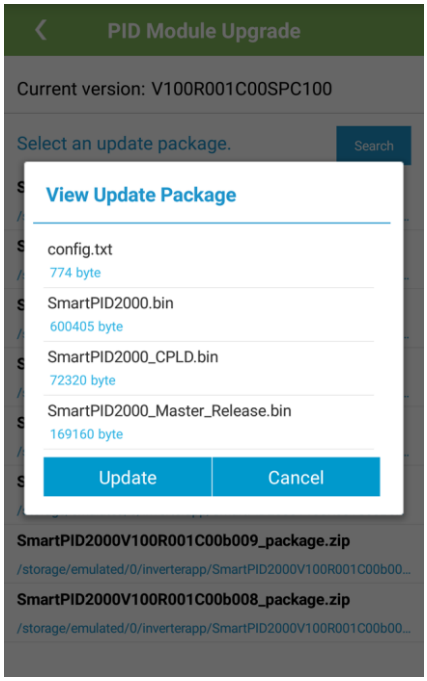
Figure 5-43 View Update Package



Step 5 Tap **Update**.

Step 6 On the displayed **Compare Versions** screen, tap **Update**.

----End

5.6.7 Viewing PID Version Information

Procedure

Step 1 Tap **Function Menu** > **About** to view the PID version information.

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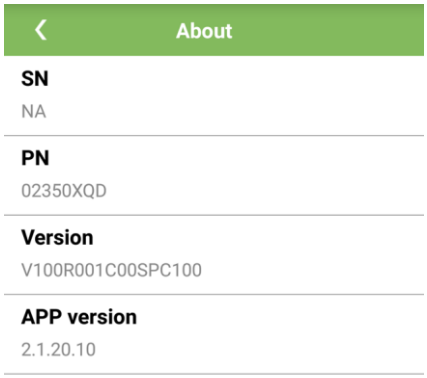
Figure 5-44 About



----End

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6 Tool Kit

You can scan the SUN2000 SN bar code and set a local maintenance script for the SUN2000, SmartLogger, or PID module using the tool kit without logging in to the app.

6.1 Scanning SN Bar Codes

Prerequisites

- Tools such as the diagonal pliers, greasy pen, Android smartphone (with the SUN2000 app installed) are available.
- You have collected SN labels.

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NOTICE

- The SUN2000 without an LCD allows you to collect and scan SN bar codes.
- When using diagonal pliers to cut off the SN bar code label suspended under the SUN2000, mark the SUN2000 device name on the back of the label to ensure mapping between SUN2000 names and SN bar codes. The SN label position of the SUN2000-33KTL is shown in Figure 6-1. The SN label position of the SUN2000-50KTL is shown in Figure 6-2.

Figure 6-1 SN label position on the SUN2000-33KTL

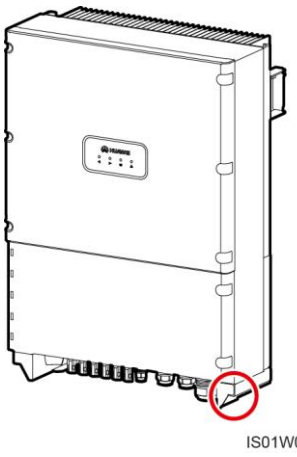
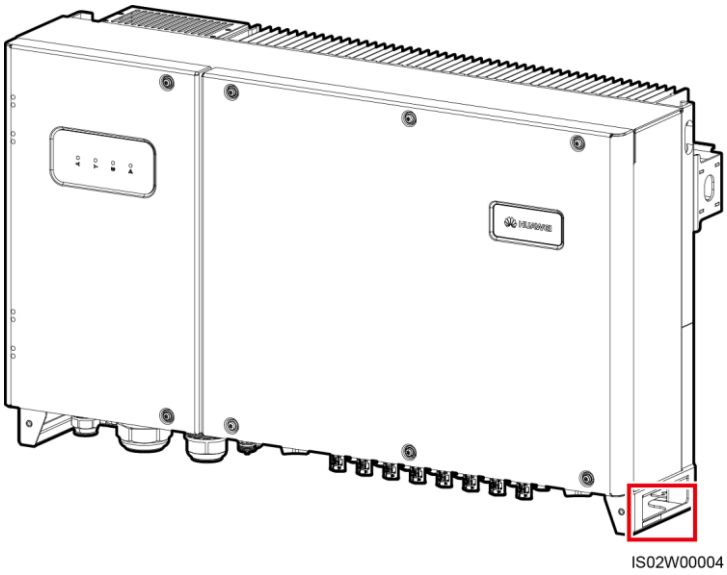


Figure 6-2 SN label position on the SUN2000-50KTL



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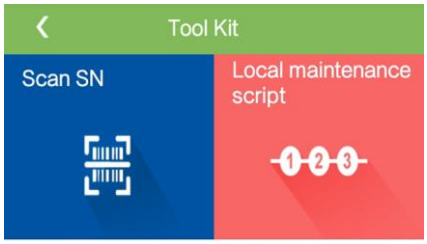
Context

The SUN2000 SN bar codes are obtained in centralized mode. These bar codes help set up mapping between SUN2000 names and SN bar codes on the SmartLogger and assist the SmartLogger to communicate with SUN2000s and commission SUN2000s.

Procedure

Step 1 Tap **Tool Kit** on the app login screen.

Figure 6-3 Tool kit



Step 2 Tap **Scan SN**, enter a file name on the **SN File** screen, and tap **Next**.

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Figure 6-4 SN file

NOTE
If the SN file already exists, open and scan the file.

Step 3 On the **SN List** screen, tap **Scan** or **Manual input** to record SN bar codes and SUN2000 names.

- Method 1: Scan
  a. Tap **Scan** to start scanning and ensure that the camera is about 15 cm away from the SN label, and the red midline cuts the bar code horizontally.
  b. After scanning, enter the SUN2000 number at the back of the scanned label on the **SN Details** screen.
- Method 2: Manual input
  a. Tap **Manual input**. On the **SN Details** screen, enter the SN bar code and the SUN2000 name at the back of the label.
  b. Tap **OK** to save the SN information.

----End

Follow-up Procedure

- You can refer to 4.4.5.5 Managing the Device List to view the scanned SN bar code information file and modify device information in the information file.
- Upload the scanned information file to the PC and rename the file as **DeviceInfo.csv**, which provides information when changing the device name and device address on the SmartLogger. For detailed operations, see the *SmartLogger2000 User Manual*.

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6.2 Local Maintenance Script

6.2.1 SUN2000 Maintenance Script

Context

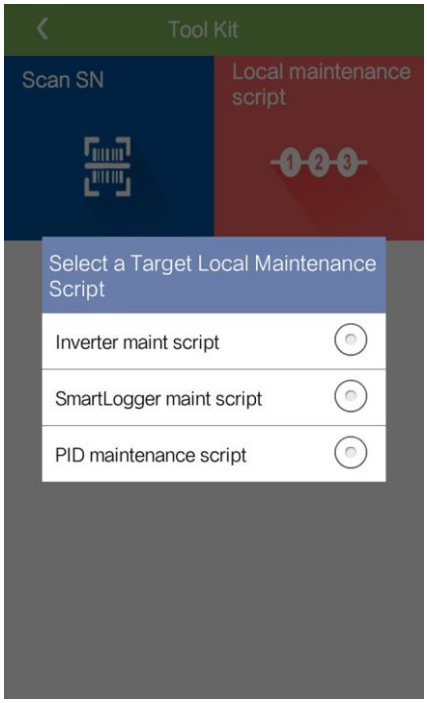
The SUN2000 maintenance script is used to set SUN2000 commands. After the script file is copied to the USB flash drive, the SUN2000 executes the maintenance script to import or export configurations, export data, and be upgraded.

NOTE
The SUN2000-(8KTL-28KTL) does not support the function of generating the SUN2000 maintenance script.

Procedure

Step 1 On the app login screen, tap **Tool Kit** > **Local maintenance script** to access the **Select a Target Local Maintenance Script** screen.

Figure 6-5 Selecting the target local maintenance script



Step 2 Select **Inverter maint script** to access the **Inverter Command Settings** screen.

Step 3 Tap ⌄ and select an operation as required.

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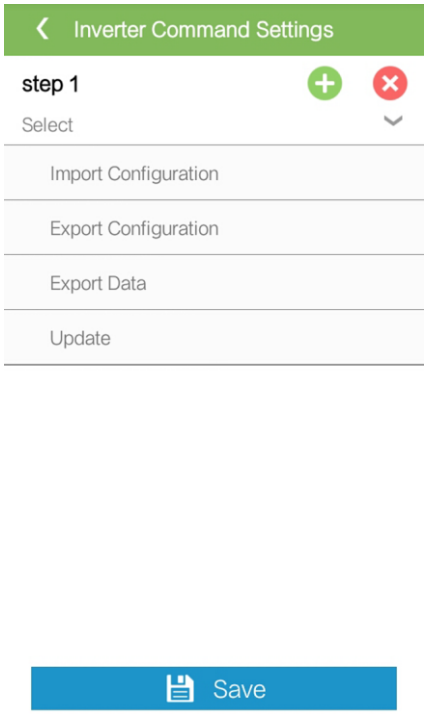
Figure 6-6 Setting SUN2000 commands



Step 4 Tap to add steps.

Step 5 Repeat Step 3 to Step 4 to finish required operations.

Step 6 Tap **Save**.

Step 7 Enter the user name and password for logging in to the app, and then tap **OK** to save the maintenance script in your mobile phone.

----End

6.2.2 SmartLogger Maintenance Script

Context

The SmartLogger maintenance script is used to set SmartLogger commands. After the script file is copied to the USB flash drive, the SmartLogger executes the script file to export SmartLogger logs, export or import all files, upgrade SmartLogger, and upgrade BSP.

Procedure

Step 1 On the app login screen, tap **Tool Kit** > **Local maintenance script** to access the **Select a Target Local Maintenance Script** screen.

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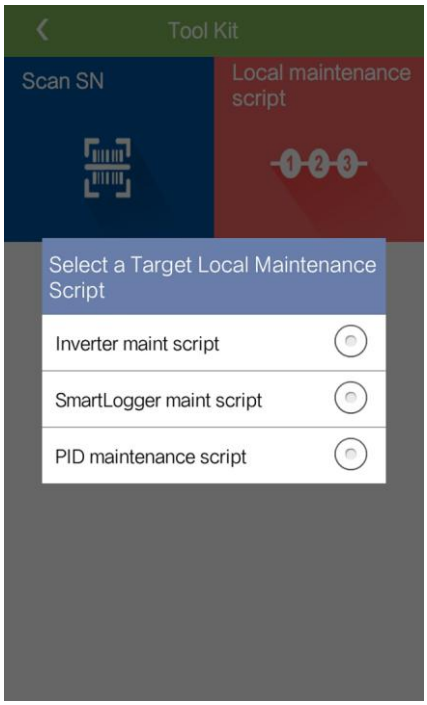
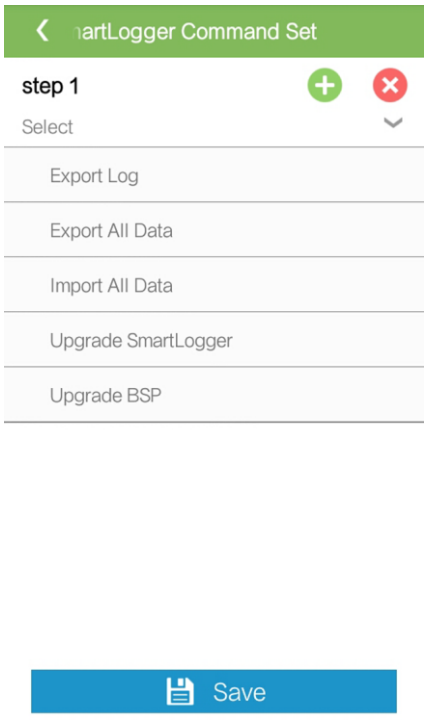
Figure 6-7 Selecting the target local maintenance script



Step 2 Select **SmartLogger maint script** to access the **SmartLogger Command Set** screen.

Step 3 Tap ⌄ and select an operation as required.

Figure 6-8 Setting SmartLogger commands



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Step 4 Tap to add steps.

Step 5 Repeat Step 3 to Step 4 to finish required operations.

Step 6 Tap **Save**.

Step 7 Enter the user name and password for logging in to the app, and then tap **OK** to save the maintenance script in your mobile phone.

----End

Follow-up Procedure

You can also log in to the app as an advanced user or special user. On the SmartLogger home screen, choose **More** > **System maintenance** > **SmartLogger Command Set** to perform operations. For details, see 4.4.5.3.4 Generating the Local Maintenance Script File.

6.2.3 PID Module Maintenance Script

Context

The PID module maintenance script is used to set PID module commands. After the script file is copied to the USB flash drive, the PID module executes the maintenance script to import or export configurations, export data, and upgrade.

Procedure

Step 1 On the app login screen, tap **Tool Kit** > **Local maintenance script** to access the **Select a Target Local Maintenance Script** screen.

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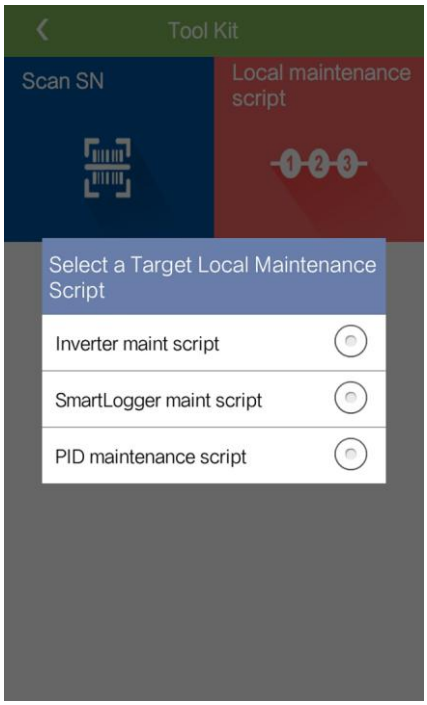
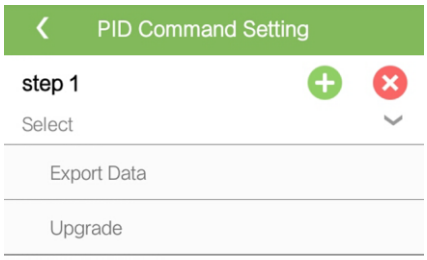
Figure 6-9 Selecting the target local maintenance script



Step 2 Select **PID maint script** to access the **PID Command Set** screen.

Step 3 Tap ⌄ and select an operation as required.

Figure 6-10 Setting PID commands



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Step 4 Tap to add steps.

Step 5 Repeat Step 3 to Step 4 to finish required operations.

Step 6 Tap **Save** to save the operations.

Step 7 Enter the user name and the password for logging in to the app and tap **OK**.

----End

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7 Troubleshooting

Table 7-1 lists the common faults and troubleshooting methods of the SUN2000 app.

Table 7-1 Troubleshooting

No.	Symptom	Possible Cause	Solution
1	The app fails to be installed.	• The version of the mobile phone operating system is earlier than the required version. • **Allow Installation of apps from unknown sources** is not selected.	• Upgrade the version of the mobile phone operating system. • Choose **Settings** > **Security** and select **Allow Installation of apps from unknown sources**.
2	The message **Program error. Reboot the program.** is displayed.	The program is abnormal.	Exit the app and log in again.
3	Communication failed.	1. When the mobile phone is more than 5 m away from the devices, the Bluetooth module is disconnected. 2. The USB data cable is incorrectly connected.	1. Keep the mobile phone within 5 m away from the devices and reconnect the Bluetooth module. 2. Reconnect the USB data cable.
4	The message **Bluetooth invalid or in use.** is displayed.	• The Bluetooth module is abnormal. • The Bluetooth module is used.	• Verify that the Bluetooth module works properly. • Verify that the Bluetooth module is not used.

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No.	Symptom	Possible Cause	Solution
5	The message **Bluetooth is off. Turn on Bluetooth.** is displayed.	The Bluetooth function is not enabled.	Enable the Bluetooth function.
6	Data failed to be obtained during operations.	1. The Bluetooth module is abnormal. 2. The USB data cable is incorrectly connected.	1. Reseat the Bluetooth module. 2. Reconnect the USB data cable.
7	The SN scanning function cannot be used.	The app does not have the permission to use the camera.	Enable the app to use the camera.
8	The label information cannot be identified when the SN scanning function is being used.	• The scan position is incorrect, or the camera is too far away from the bar code. • The light is insufficient. • The label is blocked.	• Adjust the scan position and ensure that the camera is 15 cm away from the label. • Move the label to a place with sufficient light. • Remove the blockage from the label.
9	No upgrade package is available for an upgrade.	No upgrade package is saved in the mobile phone.	Save the upgrade package in the mobile phone.
10	The battery of the mobile phone is too low.	N/A	Charge the mobile phone.

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A Acronyms and Abbreviations

A	
AFCI	arc-fault circuit interrupter
APP	application
L	
LCD	liquid crystal display
P	
PID	potential induced degradation
PLC	power line communication
PV	Photovoltaic
S	
SD	secure digital memory card

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