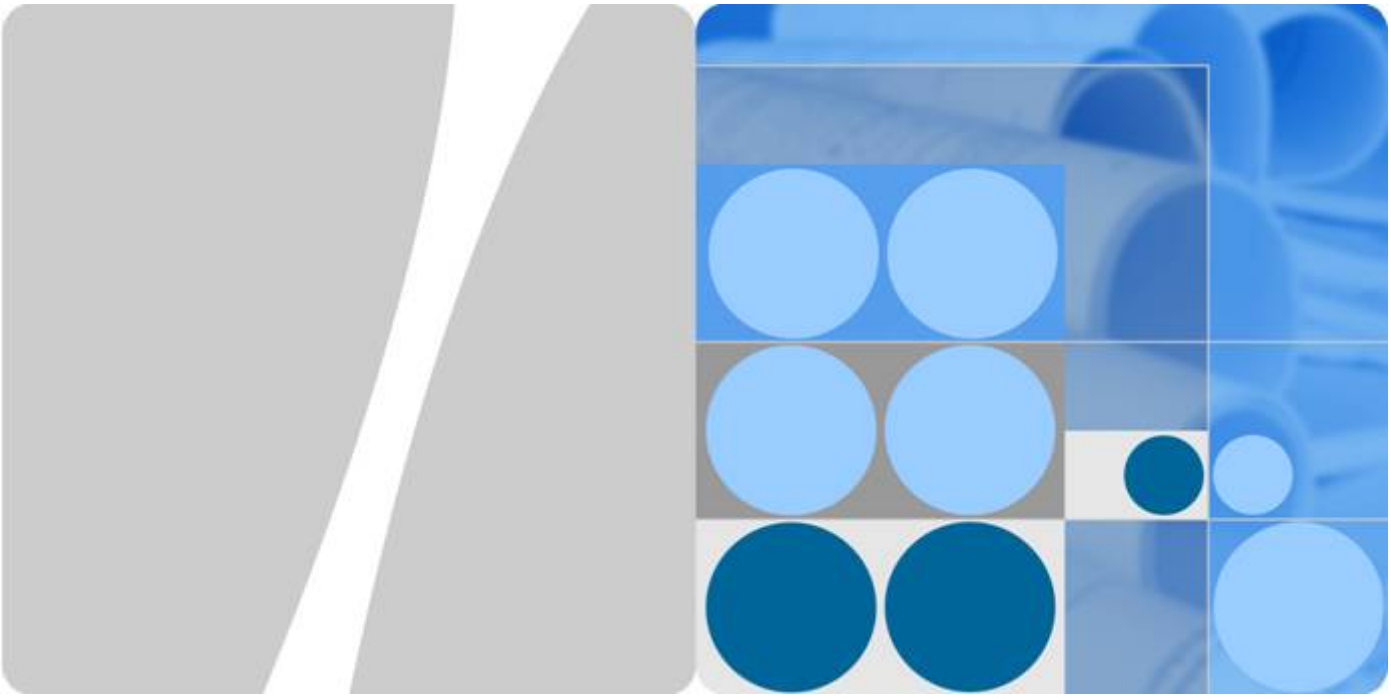


SmartLogger1000A

User Manual

Issue 05

Date 2020-03-30

HUAWEI TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: https://e.huawei.com

About This Document

Purpose

This document introduces the SmartLogger1000A (SmartLogger for short) in terms of installation, electrical connections, system operation and maintenance, and troubleshooting. Understand the SmartLogger features, functions, and safety precautions provided in this document before installing and operating the SmartLogger.

Intended Audience

This document is intended for photovoltaic (PV) plant operators and qualified electrical technical personnel.

Symbol Conventions

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

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

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

Change History

Changes between document issues are cumulative. The latest document issue contains all the changes made in earlier issues.

Issue 05 (2020-03-30)

Updated **6 WebUI Operations**.

Updated **6.2.1 Preparations and WebUI Login**.

Updated **6.4 Power Grid Scheduling**.

Updated **8.13 What Types of Electricity Meters and EMIs does the SmartLogger Support?**.

Added **8.14 How To Use the Mobile Network Sharing?**.

Issue 04 (2019-12-18)

Updated **1 Safety Information**.

Updated **6 WebUI Operations**.

Issue 03 (2019-06-10)

Updated **2.3 Appearance**.

Updated **6.4.5 Setting Export Limitation Parameters**.

Issue 02 (2019-01-15)

Updated **6.4.5 Setting Export Limitation Parameters**.

Added **6.4.6 Setting DRM Parameters**.

Updated **7.4.3 Sending a System Maintenance Command**.

Issue 01 (2018-11-20)

This issue is the first official release.

Contents

1 Safety Information

1.1 General Safety

Statement

Before installing, operating, and maintaining the equipment, read this document and observe all the safety instructions on the equipment and in this document.

The "NOTICE", "CAUTION", "WARNING", and "DANGER" statements in this document do not cover all the safety instructions. They are only supplements to the safety instructions. Huawei will not be liable for any consequence caused by the violation of general safety requirements or design, production, and usage safety standards.

Ensure that the equipment is used in environments that meet its design specifications. Otherwise, the equipment may become faulty, and the resulting equipment malfunction, component damage, personal injuries, or property damage are not covered under the warranty.

Follow local laws and regulations when installing, operating, or maintaining the equipment. The safety instructions in this document are only supplements to local laws and regulations.

Huawei will not be liable for any consequences of the following circumstances:

- Operation beyond the conditions specified in this document
- Installation or use in environments which are not specified in relevant international or national standards
- Unauthorized modifications to the product or software code or removal of the product
- Failure to follow the operation instructions and safety precautions on the product and in this document
- Equipment damage due to force majeure, such as earthquakes, fire, and storms
- Damage caused during transportation by the customer
- Storage conditions that do not meet the requirements specified in this document

General Requirements

DANGER

Do not work with power on during installation.

- After installing the equipment, remove idle packing materials such as cartons, foam, plastics, and cable ties from the equipment area.
- In the case of a fire, immediately leave the building or the equipment area, and turn on the fire alarm bell or make an emergency call. Do not enter the building on fire in any case.
- Do not scrawl, damage, or block any warning label on the equipment.
- Tighten the screws using tools when installing the equipment.
- Understand the components and functioning of a grid-tied PV power system and relevant local standards.

Personal Safety

- If there is a probability of personal injury or equipment damage during operations on the equipment, immediately stop the operations, report the case to the supervisor, and take feasible protective measures.
- Use tools correctly to avoid hurting people or damaging the equipment.

1.2 Personnel Requirements

- Personnel who plan to install or maintain Huawei equipment must receive thorough training, understand all necessary safety precautions, and be able to correctly perform all operations.
- Only qualified professionals or trained personnel are allowed to install, operate, and maintain the equipment.
- Only qualified professionals are allowed to remove safety facilities and inspect the equipment.
- Personnel who will operate the equipment, including operators, trained personnel, and professionals, should possess the local national required qualifications in special operations such as high-voltage operations, working at heights, and operations of special equipment.
- Only professionals or authorized personnel are allowed to replace the equipment or components (including software).

  NOTE

  - Professionals: personnel who are trained or experienced in equipment operations and are clear of the sources and degree of various potential hazards in equipment installation, operation, and maintenance
  - Trained personnel: personnel who are technically trained, have required experience, are aware of possible hazards on themselves in certain operations, and are able to take protective measures to minimize the hazards on themselves and other people
  - Operators: operation personnel who may come in contact with the equipment, except trained personnel and professionals

1.3 Electrical Safety

Grounding

- For the equipment that needs to be grounded, install the ground cable first when installing the equipment and remove the ground cable last when removing the equipment.
- Do not damage the ground conductor.
- Do not operate the equipment in the absence of a properly installed ground conductor.
- Ensure that the equipment is connected permanently to the protective ground. Before operating the equipment, check its electrical connection to ensure that it is securely grounded.

General Requirements

DANGER

Before connecting cables, ensure that the equipment is intact. Otherwise, electric shocks or fire may occur.

- Ensure that all electrical connections comply with local electrical standards.
- Ensure that the cables you prepared meet local regulations.

AC and DC Power

DANGER

Do not connect or disconnect power cables with power on. Transient contact between the core of the power cable and the conductor will generate electric arcs or sparks, which may cause fire or personal injury.

- Before making electrical connections, switch off the disconnector on the upstream device to cut off the power supply if people may contact energized components.
- Before connecting a power cable, check that the label on the power cable is correct.
- If the equipment has multiple inputs, disconnect all the inputs before operating the equipment.

Cabling

- When routing cables, ensure that a distance of at least 30 mm exists between the cables and heat-generating components or areas. This prevents damage to the insulation layer of the cables.

- Bind cables of the same type together. When routing cables of different types, ensure that they are at least 30 mm away from each other.

ESD

When installing, operating, and maintaining the equipment, comply with the ESD protection regulations and wear the ESD clothing, gloves, and wrist strap.

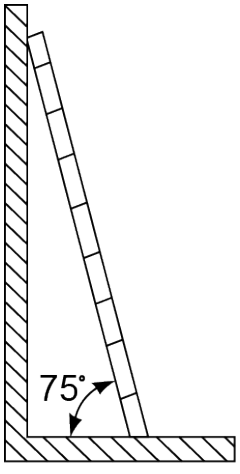
1.4 Installation Environment Requirements

- Ensure that the equipment is installed in a well ventilated environment.
- Do not expose the equipment to flammable or explosive gas or smoke. Do not perform any operation on the equipment in such environments.

1.5 Mechanical Safety

Using Ladders

- Use wooden or fiberglass ladders when you need to perform live working at heights.
- When a step ladder is used, ensure that the pull ropes are secured and the ladder is held firm.
- Before using a ladder, check that it is intact and confirm its load bearing capacity. Do not overload it.
- Ensure that the wider end of the ladder is at the bottom, or protective measures have been taken at the bottom to prevent the ladder from sliding.
- Ensure that the ladder is securely positioned. The recommended angle for a ladder against the floor is 75 degrees, as shown in the following figure. An angle rule can be used to measure the angle.



PI02SC0008

- When climbing a ladder, take the following precautions to reduce risks and ensure safety:
  - Keep your body steady.
  - Do not climb higher than the fourth rung of the ladder from the top.

– Ensure that your body's center of gravity does not shift outside the legs of the ladder.

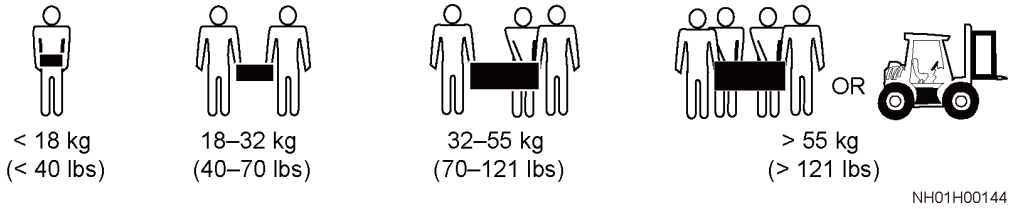
Drilling Holes

When drilling holes into a wall or floor, observe the following safety precautions:

- Wear goggles and protective gloves when drilling holes.
- When drilling holes, protect the equipment from shavings. After drilling, clean up any shavings that have accumulated inside or outside the equipment.

Moving Heavy Objects

- Be cautious to avoid injury when moving heavy objects.



- When moving the equipment by hand, wear protective gloves to prevent injuries.

1.6 Commissioning

When the equipment is powered on for the first time, ensure that professional personnel set parameters correctly. Incorrect settings may result in inconsistency with local certification and affect the normal operation of the equipment.

1.7 Maintenance and Replacement

- Maintain the equipment with sufficient knowledge of this document and using proper tools and testing equipment.
- If the equipment is faulty, contact your dealer.
- The equipment can be powered on only after all faults are rectified. Failing to do so may escalate faults or damage the equipment.

2 Product Overview

2.1 Product Model

Model Description

This document covers the following product models:

- SmartLogger1000A01CN
- SmartLogger1000A02JP
- SmartLogger1000A01EU
- SmartLogger1000A01UK
- SmartLogger1000A01AU
- SmartLogger1000A02KR
- SmartLogger1000A01US

Figure 2-1 Model

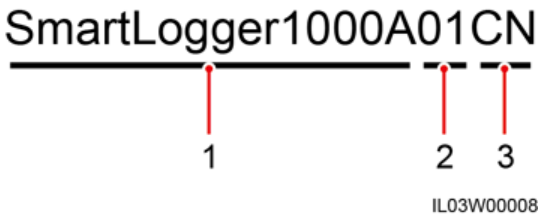


Table 2-1 Model description

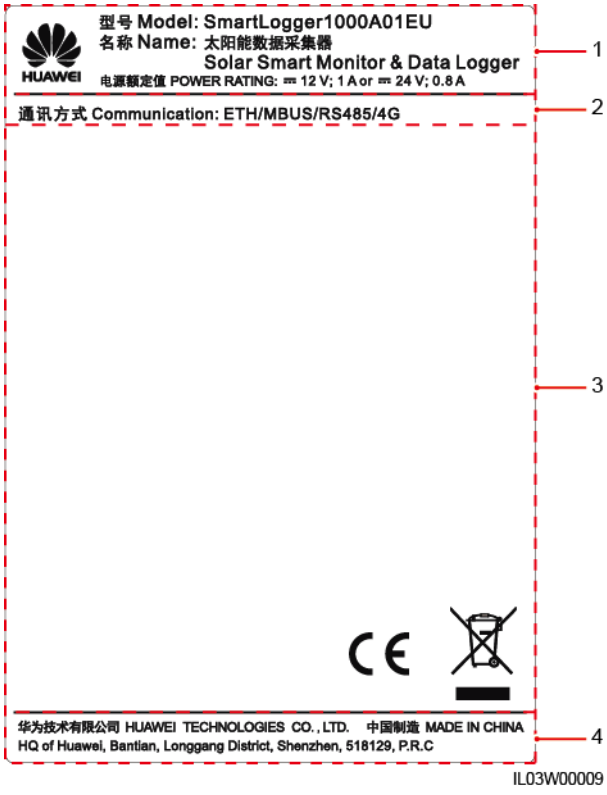
No.	Meaning	Description
1	Product name	SmartLogger1000A: data collector
2	Feature ID	• 01: The MBUS function is optional. • 02: The MBUS function is not supported.

No.	Meaning	Description
3	Region	• CN: China • JP: Japan • EU: Europe • UK: United Kingdom • AU: Australia • KR: South Korea • US: United States

Model Identification

You can view the SmartLogger model on the nameplate on the enclosure.

Figure 2-2 Nameplate



(1) Trademark, product model, and power rating (2) Communications mode

(3) Compliance symbols (4) Company name and place of manufacture

NOTE

The nameplate figure is for reference only.

2.2 Overview

Function

The SmartLogger monitors and manages the PV power system. It converges all ports, converts protocols, collects and stores data, and centrally monitors and maintains the devices in the PV power system.

Network Application

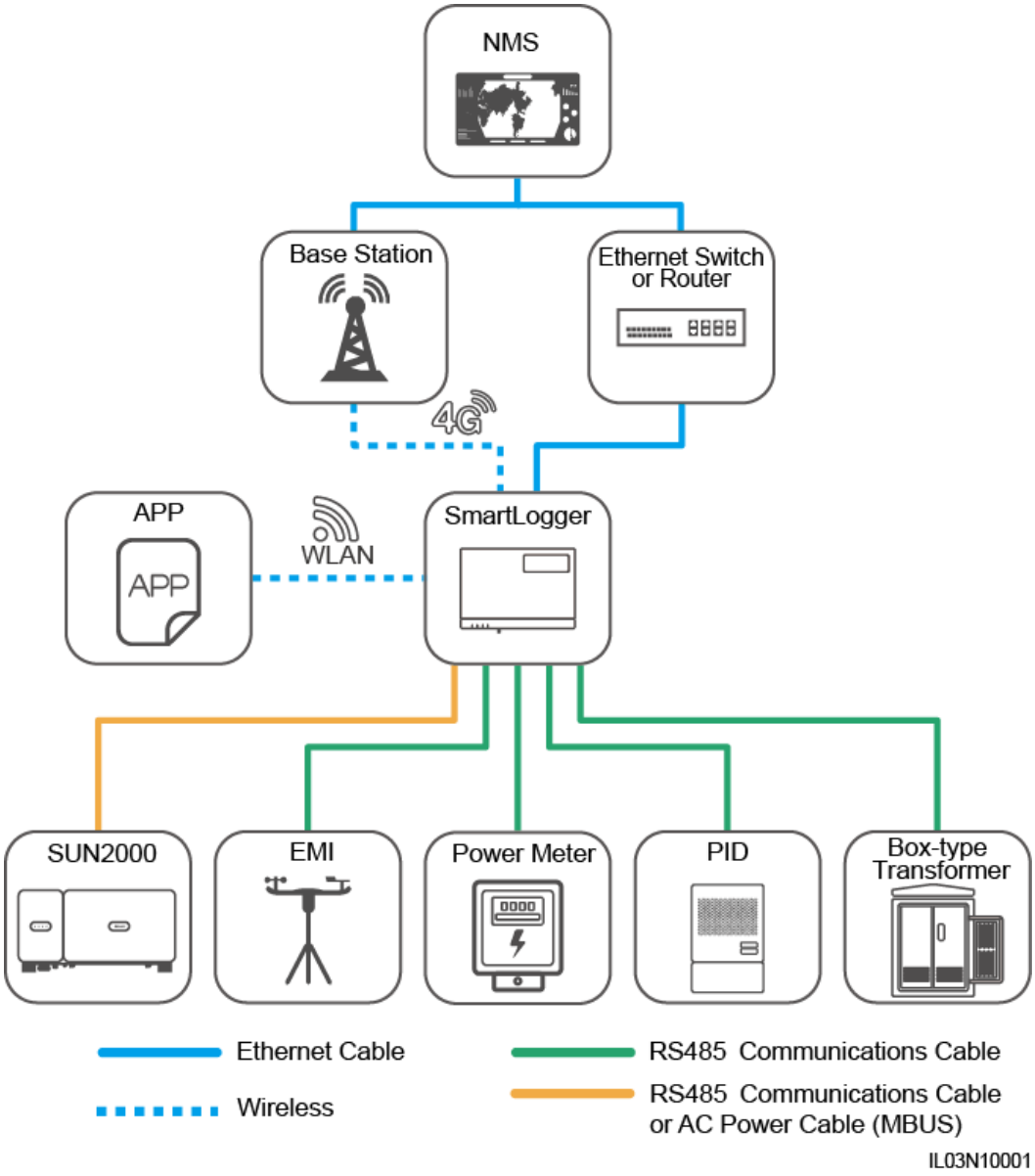
The SmartLogger applies to a PV power system. It supports the following:

- Local operations on the SmartLogger using the mobile phone app through the built-in WLAN
- RS485 networking, which enables the SmartLogger to connect to:
  - Huawei devices such as solar inverters and PID modules
  - Third-party solar inverters, environment monitoring instruments (EMIs), transformer substations, and power meters that use the Modbus-RTU protocol
  - Power meters that use the DL/T645 protocol
  - Devices that use the IEC103 protocol
- MBUS networking, which enables the SmartLogger to connect to the SUN2000 solar inverters and the PID-PVBOX.
- Ethernet, 2G, 3G, or 4G networking, which allows the SmartLogger to connect to a management system that uses the Modbus TCP or IEC104 protocol

NOTE

When the IEC104 protocol is used, 4G/3G/2G networking is not recommended.

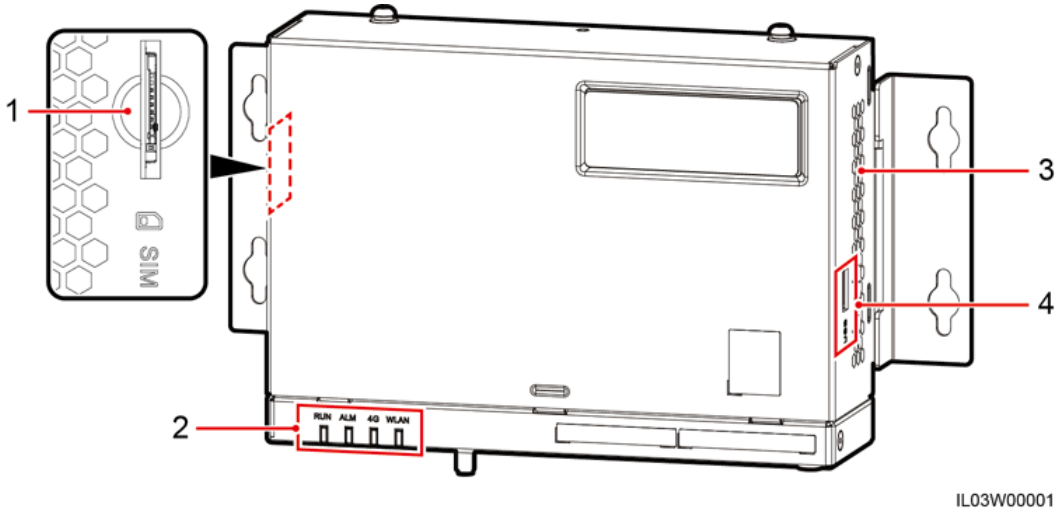
Figure 2-3 Network application



2.3 Appearance

Front View

Figure 2-4 Front view



(1) SIM card slot (2) LED indicators (3) Heat dissipation holes (4) USB port

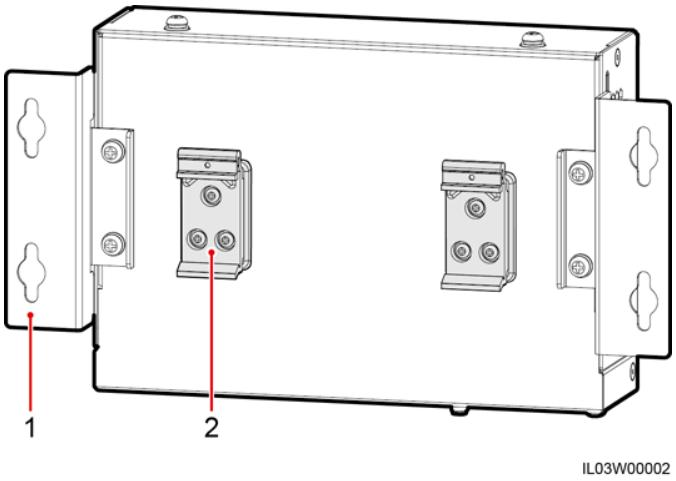
Table 2-2 LED indicator description

Indicator	Status		Description
Running indicator (RUN)	Off		The SmartLogger is not powered on.
	Blinking fast (on for 0.2s and then off for 0.2s)		The communication with the encrypted management system is interrupted.
	Blinking slowly (on for 1s and then off for 1s)		The connection with the encrypted management system is normal.
Alarm/ maintenance indicator (ALM)[a]	Alarm status	Red off	No system alarm is raised.

Indicator	Status		Description
		Blinking red slowly (on for 1s and then off for 4s)	The system raises a warning alarm.
		Blinking red fast (on for 0.5s and then off for 0.5s)	The system raises a minor alarm.
		Steady red	The system raises a major alarm.
	Maintenance status	Green off	No local maintenance is underway[b].
		Blinking green slowly (on for 1s and then off for 1s)	Local maintenance is in progress.
		Steady green	Local maintenance succeeds.
		Blinking green fast (on for 0.2s and then off for 0.2s)	Local maintenance fails.
4G/3G/2G indicator (4G)	Blinking fast (on for 0.2s and then off for 0.2s)		4G/3G/2G is not connected.
	Blinking slowly (on for 1s and then off for 1s)		Succeeds in dialing through 4G/3G/2G network.
WLAN indicator (WLAN)	Off		No mobile phone is connected.
	Blinking slowly (on for 1s and then off for 1s)		A mobile phone is successfully connected.
a: If an alarm and local maintenance happen concurrently, the alarm/maintenance indicator shows the near-end maintenance state first. After the USB flash drive is removed, the indicator shows the alarm state. b: Local maintenance refers to operations performed by connecting a USB flash drive to the SmartLogger USB port, such as full data import and export using a USB flash drive.			

Rear View

Figure 2-5 Rear view



(1) Mounting ear (2) Guide rail clamp

Bottom View

Figure 2-6 Bottom view

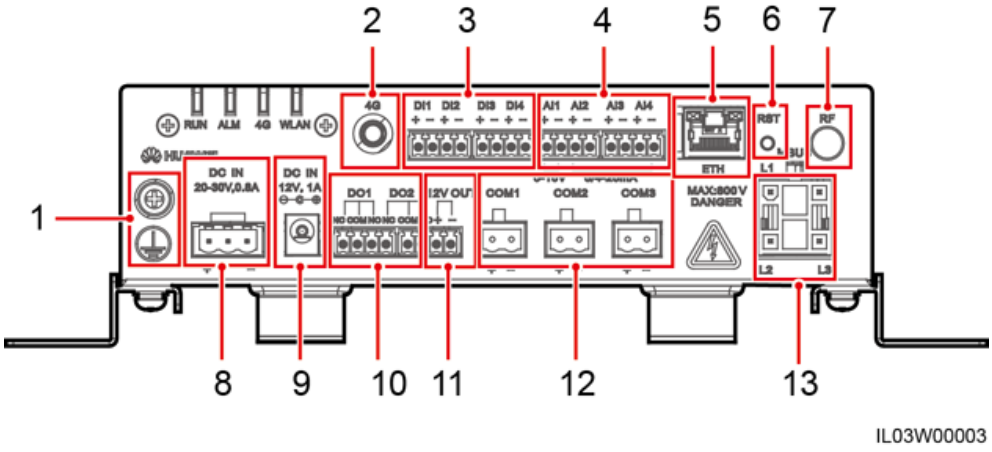


Table 2-3 Port description

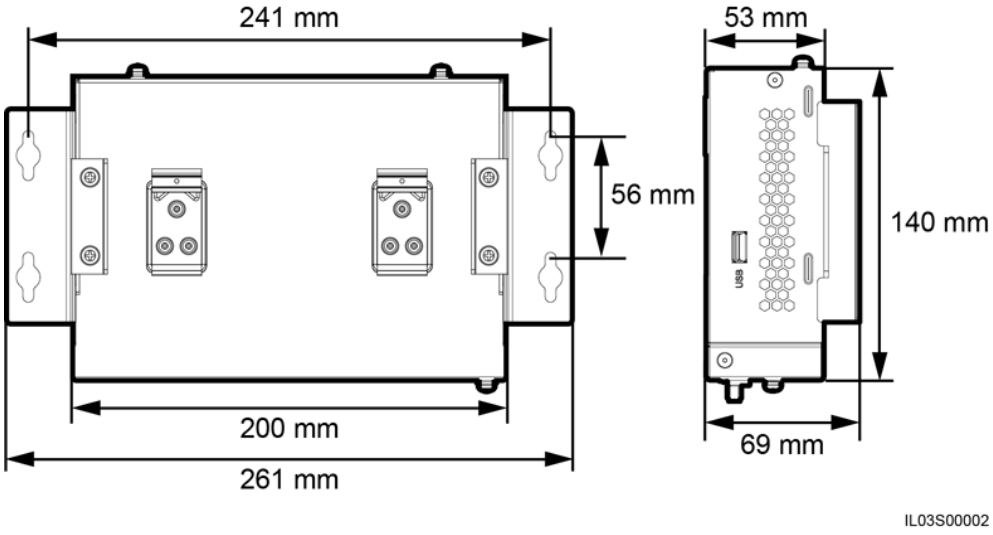
No.	Port	Function	Description
1		External grounding	N/A
2	4G	4G antenna port	N/A
3	DI1–DI4	Digital input	Connects to a dry contact input.

No.	Port	Function	Description
4	AI1–AI4	Analog input	• AI1 detects 0–10 V signals. • AI2 to AI4 detect 4–20 mA or 0–20 mA signals. The signal current range can be configured on the WebUI or mobile phone app.
5	ETH	Ethernet electrical port	Connects to an Ethernet switch, router, or PC.
6	RST[a]	Button	• To perform a WLAN restart, hold down the button for 3s to 10s. • To restore to the default IP address (192.168.0.10), hold down the button for more than 10s. The restored IP address is valid for 5 minutes.
7	RF	Reserved	N/A
8	DC IN 20–30 V, 0.8 A	20–30 V DC input	N/A
9	DC IN 12 V,1 A	12 V power input	N/A
10	DO1–DO2	Digital output	NO and COM are normally open contacts, and NC and COM are normally closed contacts. The maximum signal voltage of 12 V is supported.
11	12 V OUT	12 V power output	N/A
12	COM1–COM3	RS485 communication	N/A
13	MBUS	MBUS port	Use this port when the MBUS function is required for power line communication between the SmartLogger and the solar inverter. If the MBUS function is not required, you do not need to connect a cable to this port.

No.	Port	Function	Description
a: • If the app fails to connect to the SmartLogger or you have forgotten the IP address, you can press the RST button to restart the WLAN or restore the IP address to the default IP address (192.168.0.10). • Press and hold down the RST button for 3s to 10s to restart the WLAN. Press and hold down the button for 3s to 10s until the WLAN indicator blinks green fast (on for 0.2s and then off for 0.2s) and all the other indicators are off, and then release the button. • Press and hold down the RST button for more than 10s to restore the IP address to the default IP address. Press and hold down the button for more than 10s until the RUN indicator blinks green fast (on for 0.2s and then off for 0.2s) and all the other indicators are off, and then release the button. You can log in to the WebUI using the default IP address that is valid for 5 minutes.			

Dimensions

Figure 2-7 Dimensions

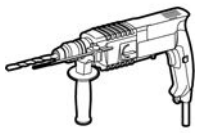
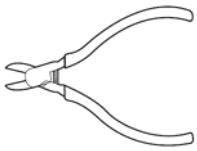
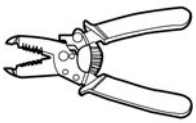
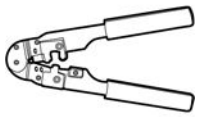
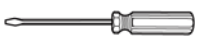
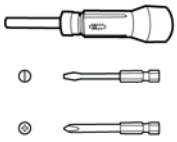


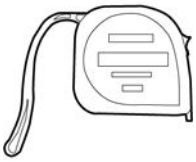
3 Device Installation

3.1 Checking Before Installation

Check Item	Criteria
Outer packaging	The outer package is intact. If it is damaged or abnormal, do not unpack it and contact your dealer.
Deliverables	Check the quantity of deliverables against the *Packing List* in the packing case. If any component is missing or damaged, contact your dealer.

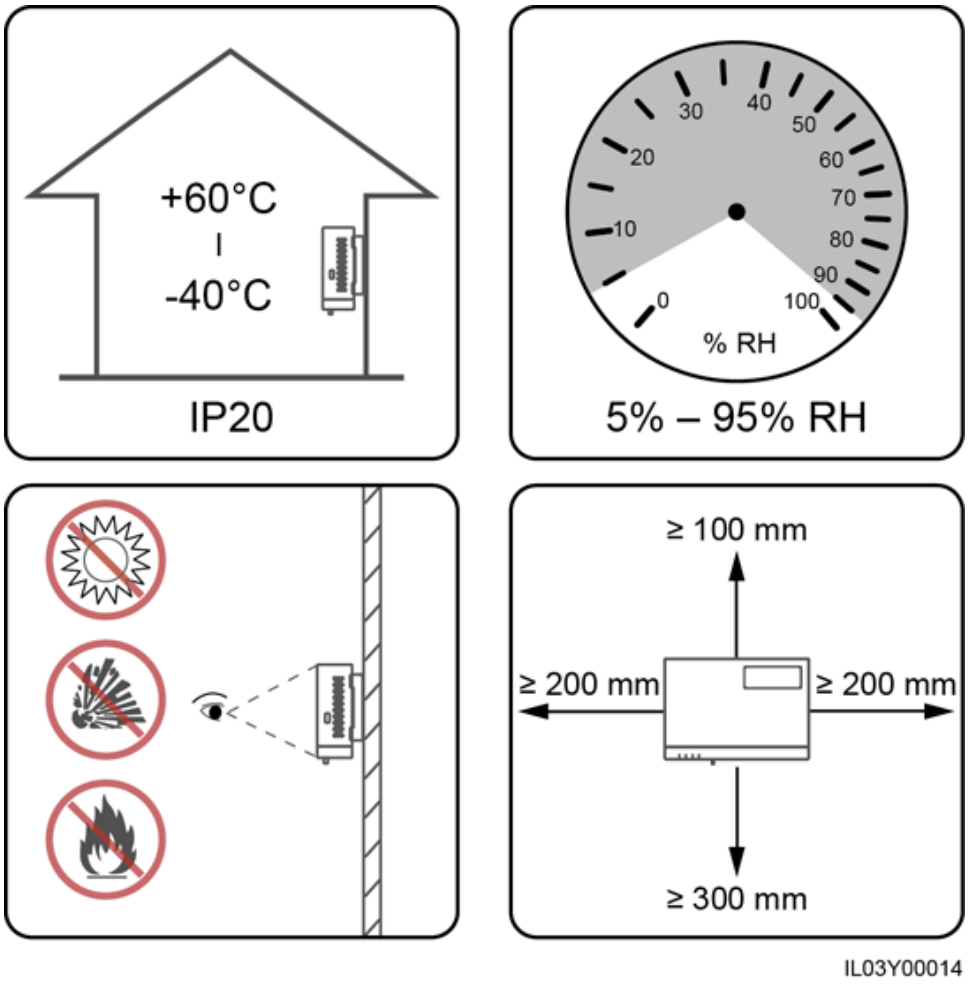
3.2 Tools

Type	Tool			
Installation	 Hammer drill	 Diagonal pliers	 Wire stripper	 Crimping tool
	 RJ45 crimping tool	 Flat-head screwdriver	 Torque screwdriver	 Rubber mallet

Type	Tool			
	 Utility knife	 Cable cutter	 Vacuum cleaner	 Marker
	 Measuring tape	 Cable tie	 Heat gun	 Multimeter
	 Heat shrink tubing	 Bubble or digital level	-	-
PPE	 Safety gloves	 Safety goggles	 Anti-dust respirator	 Safety shoes

3.3 Installation Requirements

Figure 3-1 Installation position



3.4 Installing the SmartLogger

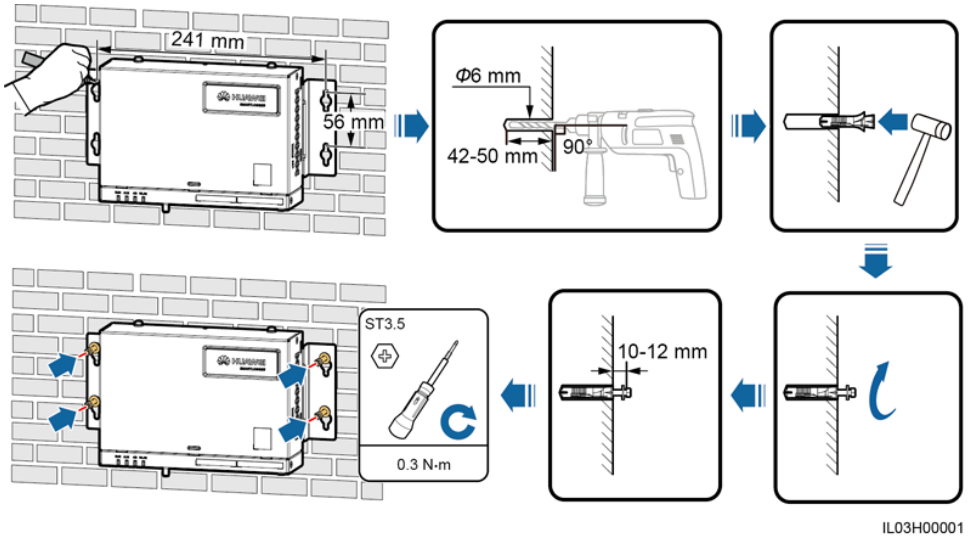
The SmartLogger can be wall-mounted or guide rail-mounted.

Wall-Mounted Installation

WARNING

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

Figure 3-2 Wall-mounted installation

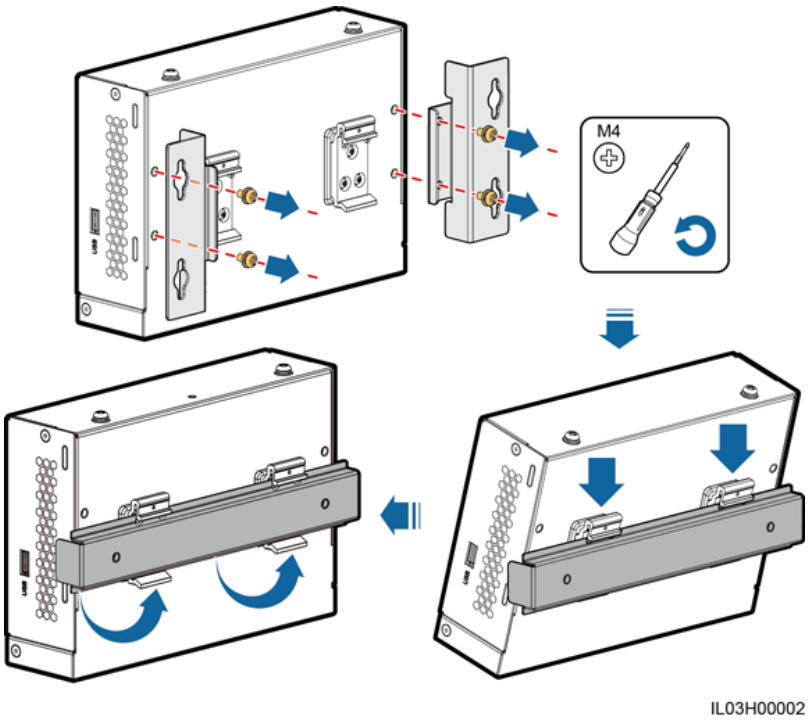


Guide Rail-Mounted Installation

Prepare a 35 mm standard guide rail by yourself. Ensure that the guide rail:

- Has sufficient length for securing the SmartLogger. The recommended effective length is 200 mm or greater.
- Has been secured before you install the SmartLogger.

Figure 3-3 Guide rail-mounted installation



3.5 Installing a Power Adapter

A power adapter can be installed on a wall or flat surface.

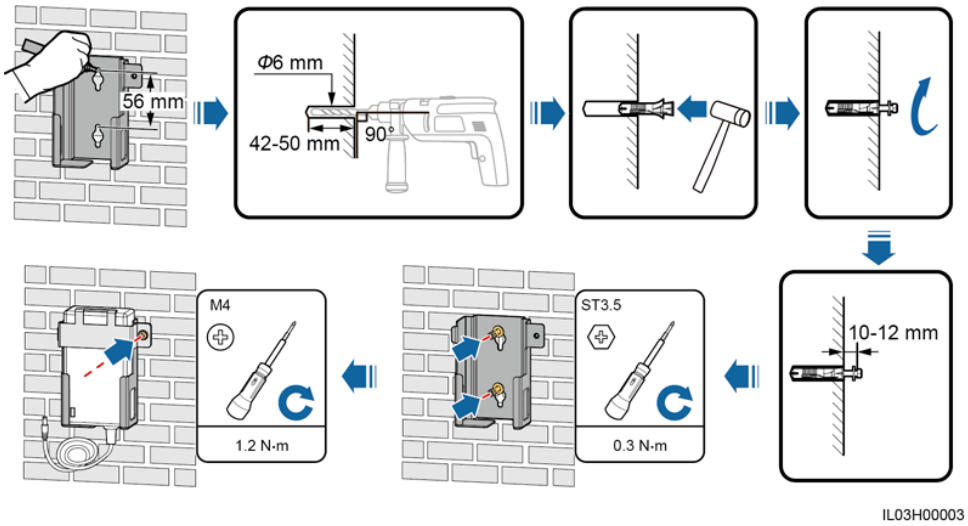
If a power adapter is needed for the SmartLogger, install the adapter on the left side of the SmartLogger, and keep the AC power cable port upward.

Wall-Mounted Installation

WARNING

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

Figure 3-4 Wall-mounted installation



Flat Surface-Mounted Installation

Install the power adapter on a flat surface. This section describes how to install the power adapter on the top of the SmartLogger.

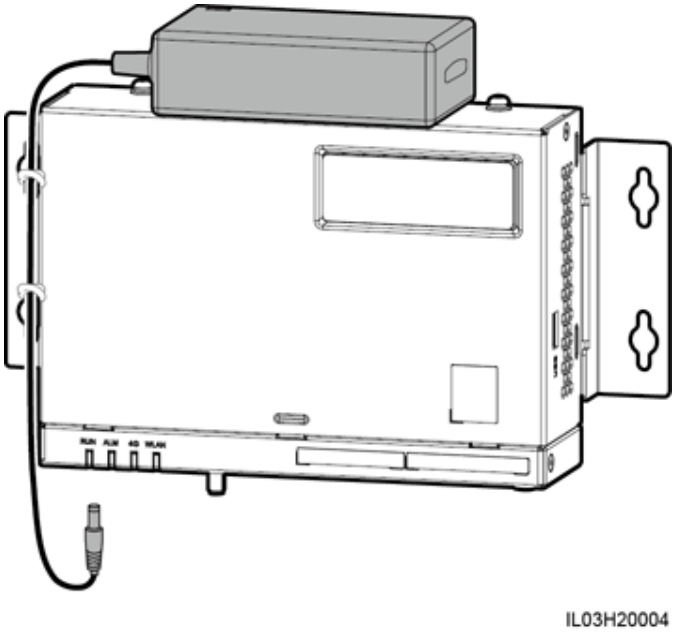
Step 1 Place the power adapter horizontally on the top of the SmartLogger.

NOTICE

Ensure that the power adapter indicator faces upward or outward.

Step 2 Plan the route for the power adapter cable and bind the cable to the heat dissipation holes of the SmartLogger.

Figure 3-5 Flat surface-mounted installation



----End

4 Cable Connections

4.1 Preparing Cables

Type	Recommended Cable Specifications
PE cable	Outdoor copper-core cable with a cross-sectional area of 4–6 mm^2 or 12–10 AWG
RS485 communications cable	Two-core or multiple-core cable with a cross-sectional area of 1.5 mm^2 or 20 AWG
AI, DI, and DO signal cables	Two-core or multiple-core cable with a cross-sectional area of 1.5 mm^2 or 20 AWG
MBUS cable (optional)	Delivered with the SmartLogger. The length is 1.5 m.
Network cable	Delivered with the SmartLogger. The length is 2.2 m.
Power cable (optional)	Two-core or multiple-core cable with a cross-sectional area of 1.5 mm^2 or 20 AWG

NOTE

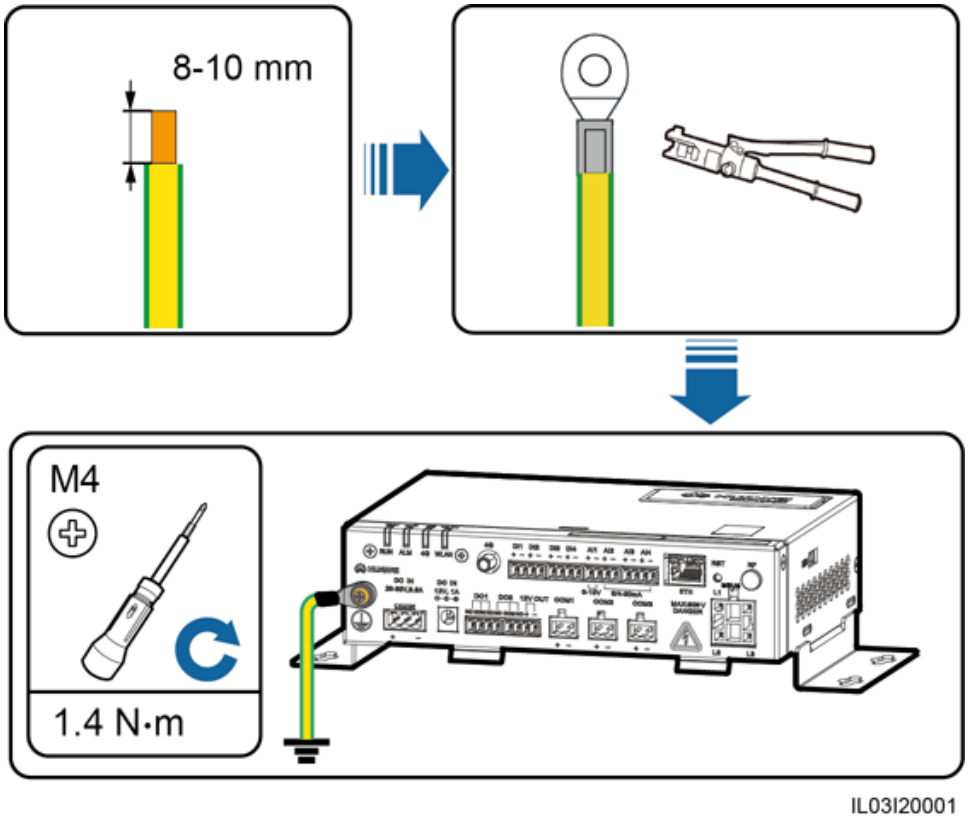
If the delivered network cable is too short, use a shielded network cable of CAT 5E or higher specifications. The cable length should not exceed 100 m.

4.2 Connecting a PE Cable

Procedure

Step 1 Connect the PE cable.

Figure 4-1 Connecting a PE cable



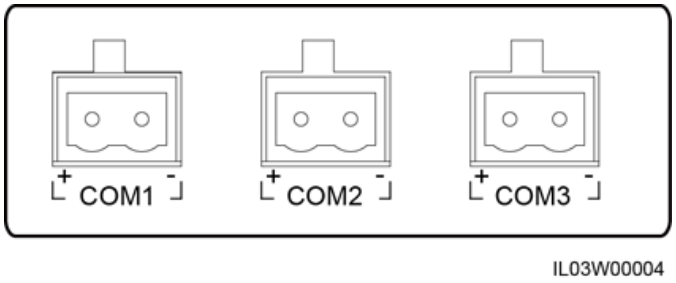
----End

4.3 Connecting an RS485 Communications Cable

Context

- The SmartLogger can connect to RS485 communications devices such as the inverter, EMI, power meter, and PID module over COM ports.
- Ensure that RS485+ is connected to COM+ of the SmartLogger and RS485– is connected to the COM- of the SmartLogger.

Figure 4-2 COM ports

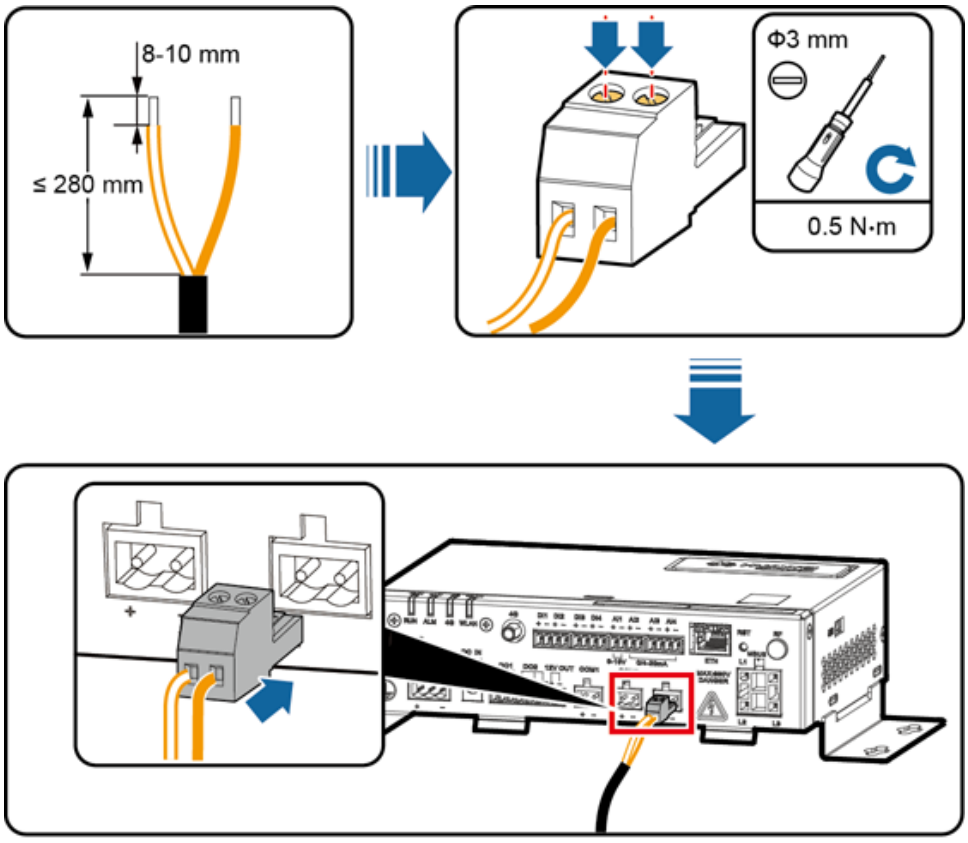


Port	Silk Screen	Description
COM1–COM3	+	RS485A, RS485 differential signal+
	-	RS485B, RS485 differential signal–

Procedure

Step 1 Connect the RS485 communications cable.

Figure 4-3 Connecting an RS485 communications cable

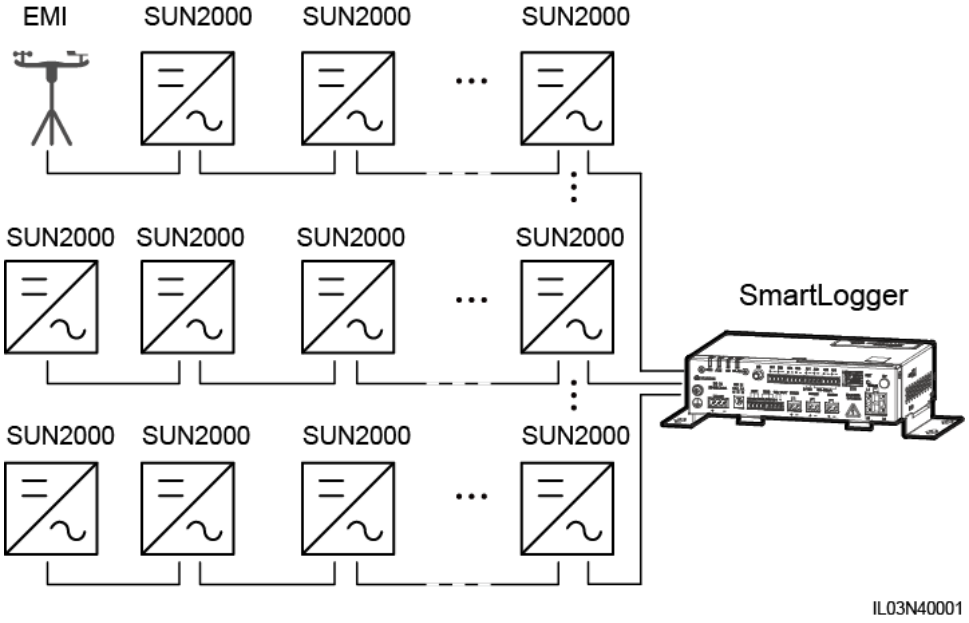


Step 2 If devices need to be cascaded, cascade the devices and then connect them to the SmartLogger.

NOTICE

- A maximum of 80 devices can connect to a single SmartLogger. You are advised to connect less than 30 devices to each RS485 route.
- The baud rate, communications protocol, and parity mode of all devices on an RS485 cascading link must be the same as those of the COM port on the SmartLogger.

Figure 4-4 Cascading connection



----End

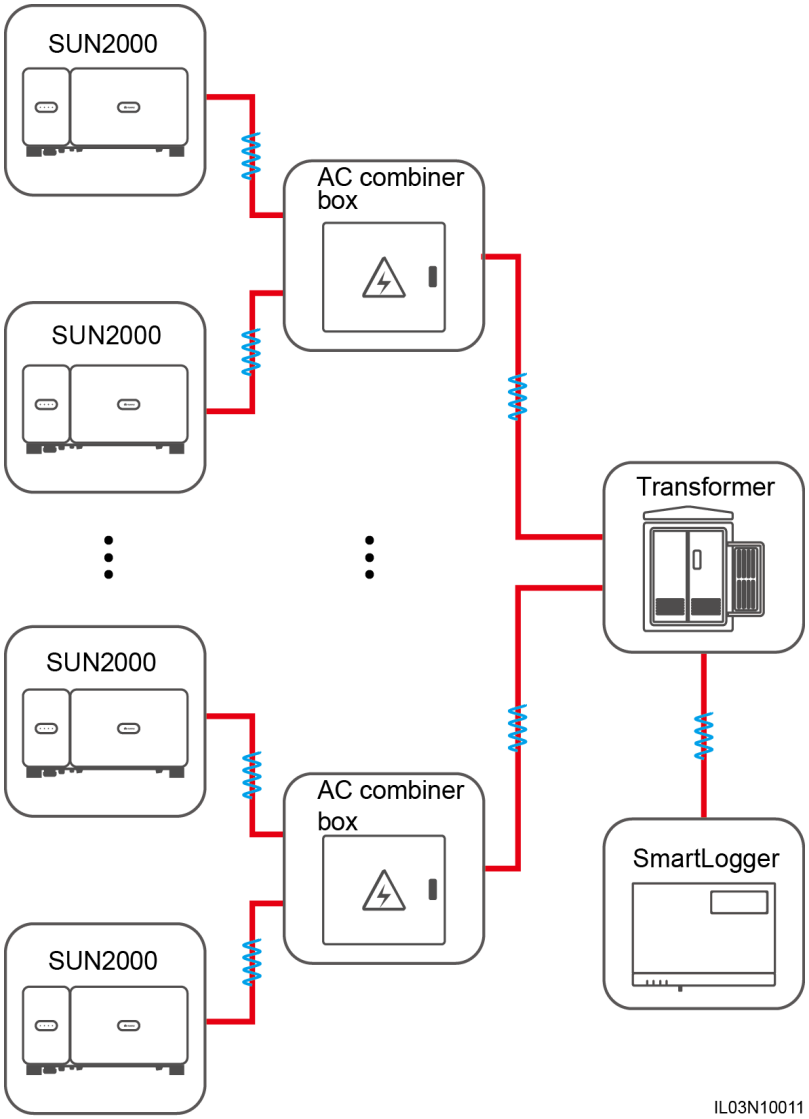
4.4 Connecting an MBUS cable

Context

If both the SmartLogger and the solar inverter support MBUS, the SmartLogger can be connected to the solar inverter through an AC power cable. In this case, you do not need to connect the RS485 communications cable to the solar inverter.

If the SmartLogger uses an AC power cable as the communications cable, an MCB and a knife fuse switch need to be installed to prevent device damage in the case of short circuits.

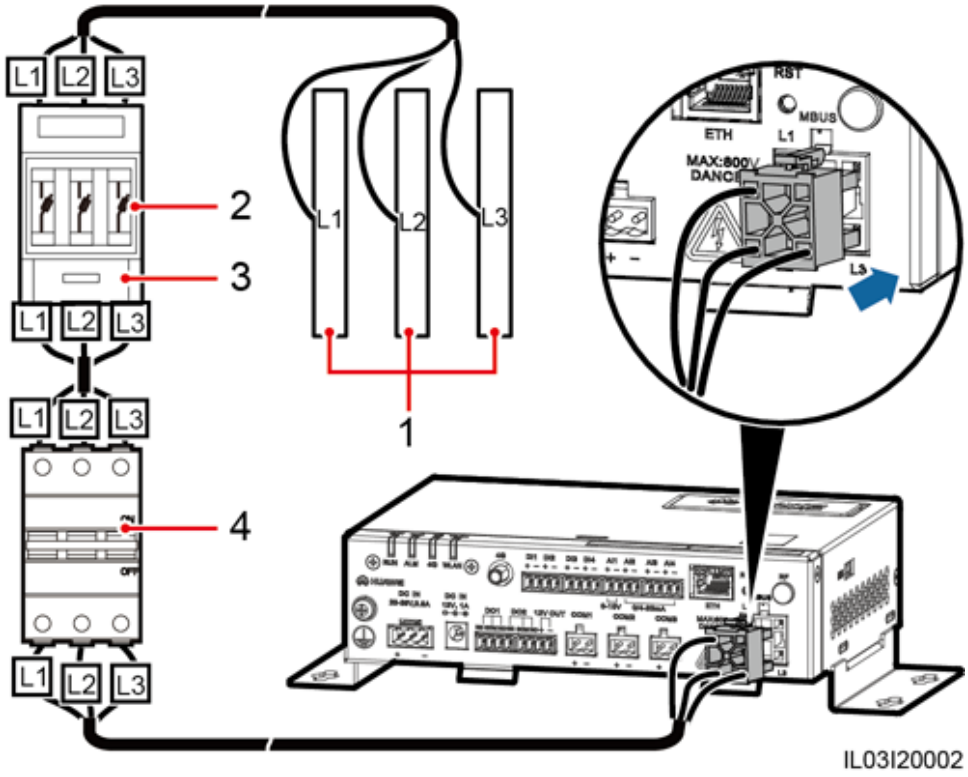
Figure 4-5 MBUS networking



Procedure

Step 1 Connect an AC power cable.

Figure 4-6 Connecting an AC power cable



(1) Busbars L1, L2, and L3 of the transformer substation (2) Fuse (3) Knife fuse switch (4) MCB

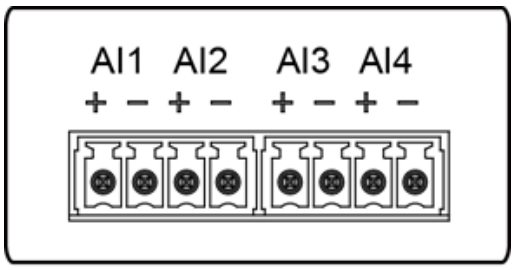
----End

4.5 Connecting an AI Signal Cable

Context

The SmartLogger can receive AI signals from devices including sensors and the environmental monitoring instrument (EMI) through AI ports. The signal transmission distance is recommended not to exceed 10 m.

Figure 4-7 AI ports

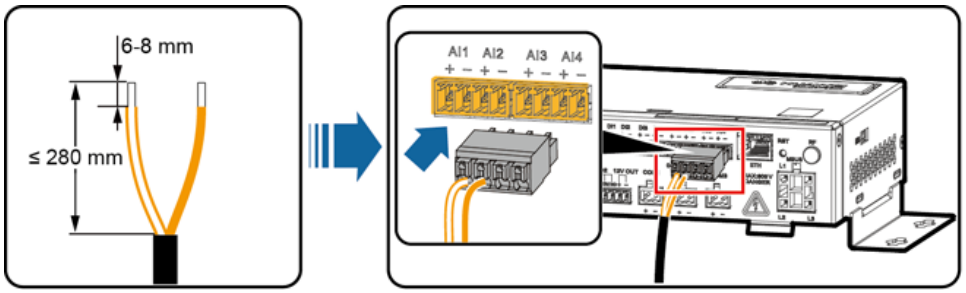


Port	Description
AI1	Supports 0–10 V input voltage.
AI2–AI4	Supports 4–20 mA or 0–20 mA input current.

Procedure

Step 1 Connect an AI signal cable.

Figure 4-8 Connecting an AI signal cable



----End

4.6 Connecting a DI Signal Cable

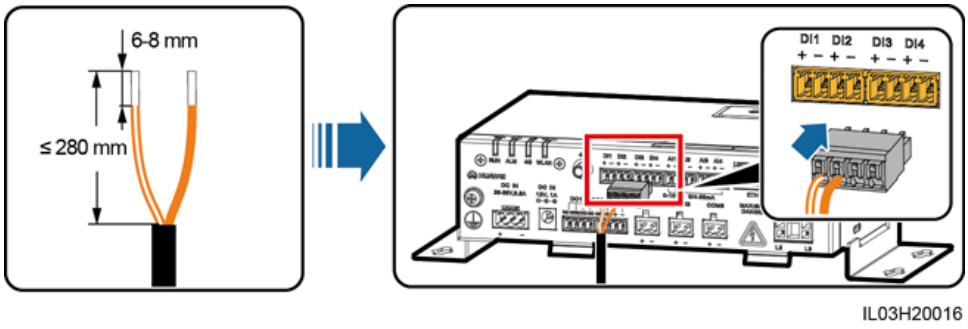
Context

The SmartLogger can receive DI signals from power grid scheduling and alarms through DI ports. It can only receive passive dry contact signals. It is recommended that the signal transmission distance be less than or equal to 10 m.

Procedure

Step 1 Connect a DI signal cable.

Figure 4-9 Connecting a DI signal cable



----End

4.7 Connecting a DO Signal Cable

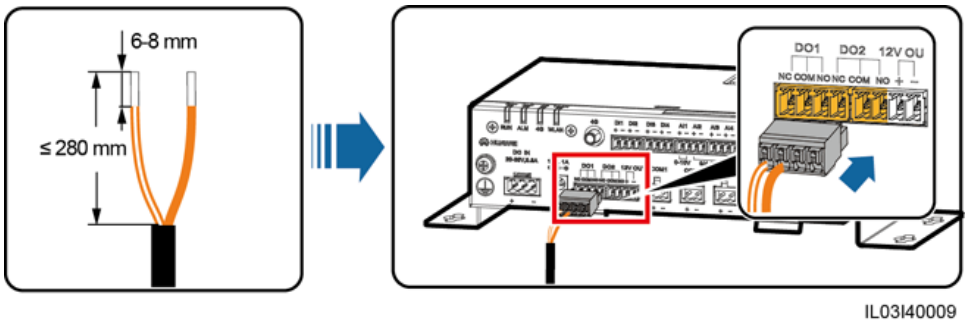
Context

The DO port supports a signal voltage of 12 V at most. NC and COM are normally closed contacts, and NO and COM are normally open contacts. It is recommended that the signal transmission distance be less than or equal to 10 m.

Procedure

Step 1 Connect a DO signal cable.

Figure 4-10 Connecting a DO signal cable



----End

4.8 Connecting an Ethernet Cable

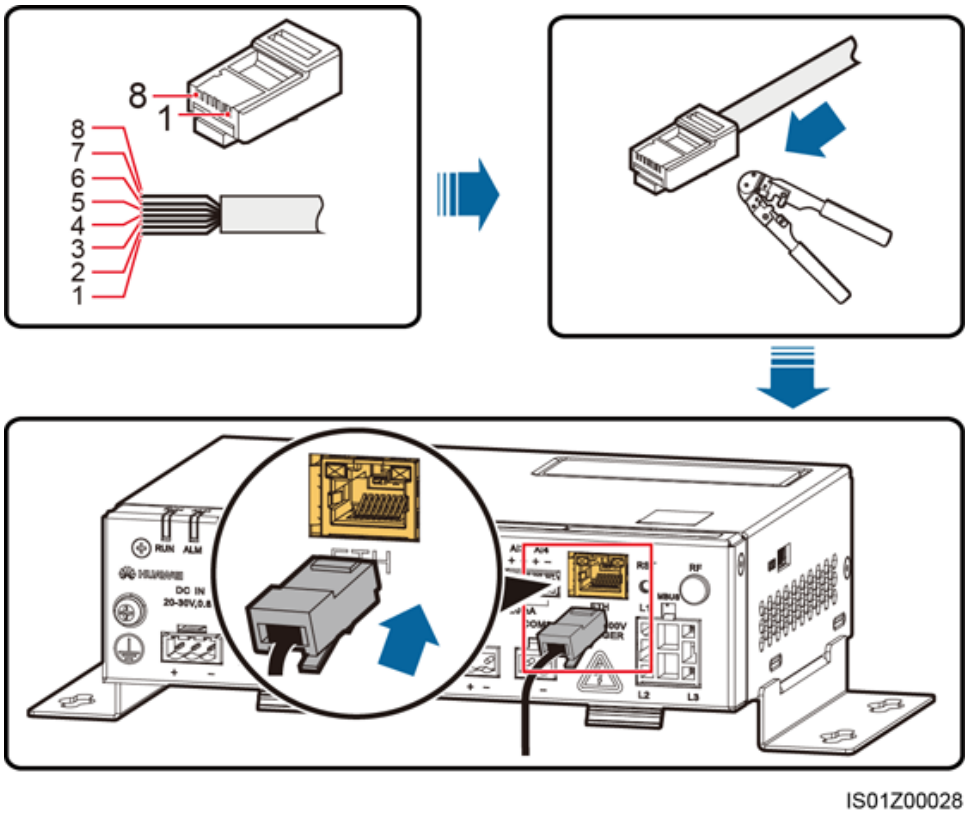
Context

The SmartLogger can connect to an Ethernet switch, router, or computer over an Ethernet cable.

Procedure

Step 1 Connect an Ethernet cable.

Figure 4-11 Connecting an Ethernet cable



(1) White and orange (2) Orange (3) White and green (4) Blue

(5) White and blue (6) Green (7) White and brown (8) Brown

----End

4.9 Installing a SIM Card and a 4G Antenna

Context

The SmartLogger provides the 4G wireless communication function. A SIM card of the local carrier can be inserted for dial-up access.

Prepare a standard SIM card (dimensions: 25 mm x 15 mm; capacity ≥ 64 KB)

Table 4-1 SIM card traffic description

Monthly Traffic Requirement of the SIM Card		Traffic Baseline
Solar Inverter	10 MB + 4 MB x Number of solar inverters	• Device performance data can be updated every 5 minutes.

Monthly Traffic Requirement of the SIM Card		Traffic Baseline
Power meter	3 MB x Number of power meters	• The solar inverter logs and I-V curve diagnosis data can be exported monthly. The solar inverters can be upgraded monthly.
EMI	3 MB x Number of EMIs	

Procedure

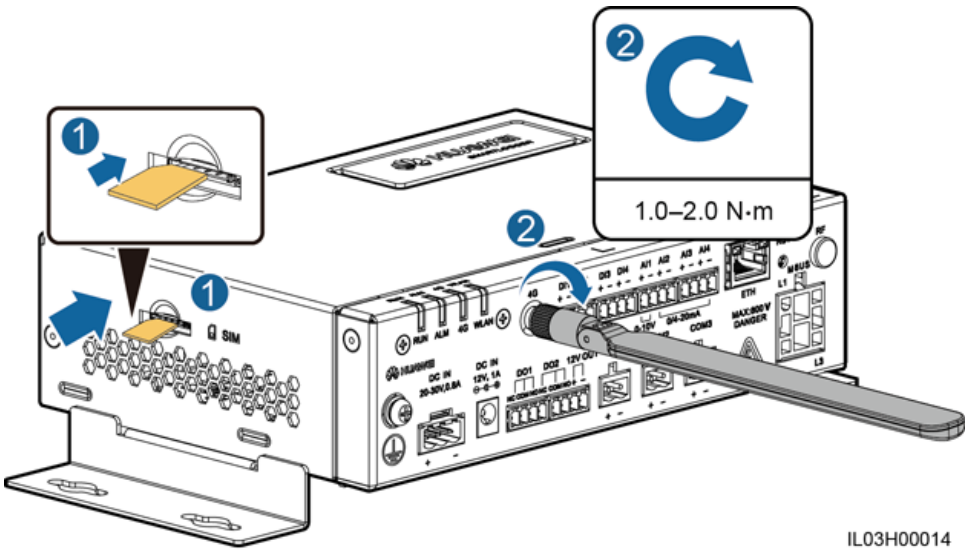
Step 1 Insert a SIM card into the SIM card slot.

NOTICE

- When installing the SIM card, determine its installation direction based on the silk screen and arrow on the card slot.
- Press the SIM card in place to lock it. In this case, the SIM card is correctly installed.
- When removing the SIM card, push it inward to eject it.

Step 2 Install the antenna.

Figure 4-12 Installing the SIM card and antenna



----End

5 System Operation

5.1 Check Before Power-On

No.	Check That
1	The SmartLogger is installed correctly and securely.
2	All cables are connected securely.
3	Routing for the power cables and signal cables meets the requirements for routing strong-current and weak-current cables and complies with the cable routing plan.
4	Cables are bound neatly, and cable ties are secured evenly and properly in the same direction.
5	There are no sundries such as unnecessary adhesive tape or cable ties on cables.

5.2 Powering On the System

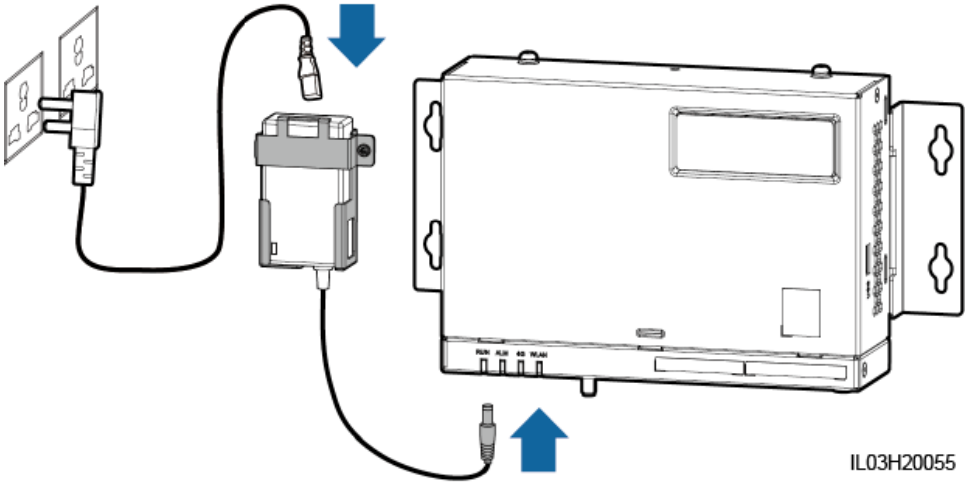
Step 1 Connect the input power cable.

- **Method 1**: When a power adapter is used, connect the power adapter cable and turn on the switch on the AC socket side.

  NOTE

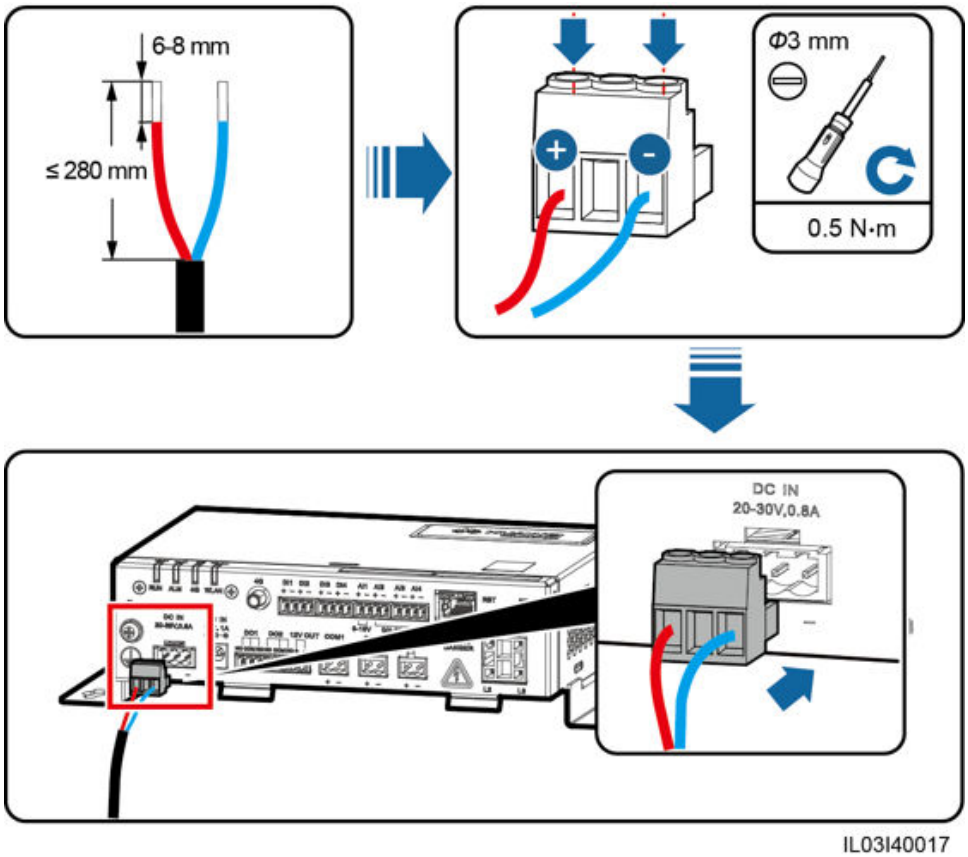
  - The rated input of the power adapter is 100–240 V AC, 50/60 Hz.
  - Select an AC socket that matches the power adapter.

Figure 5-1 Supplying power through a power adapter



- **Method 2**: When a DC power supply is used, connect the cable between the DC power supply and the SmartLogger. Then, turn on the upstream power switch of the DC power supply.

Figure 5-2 Supplying power through a DC power supply



Step 2 When MBUS is used for communication, turn on all the upstream switch of the AC power cable

----End

6 WebUI Operations

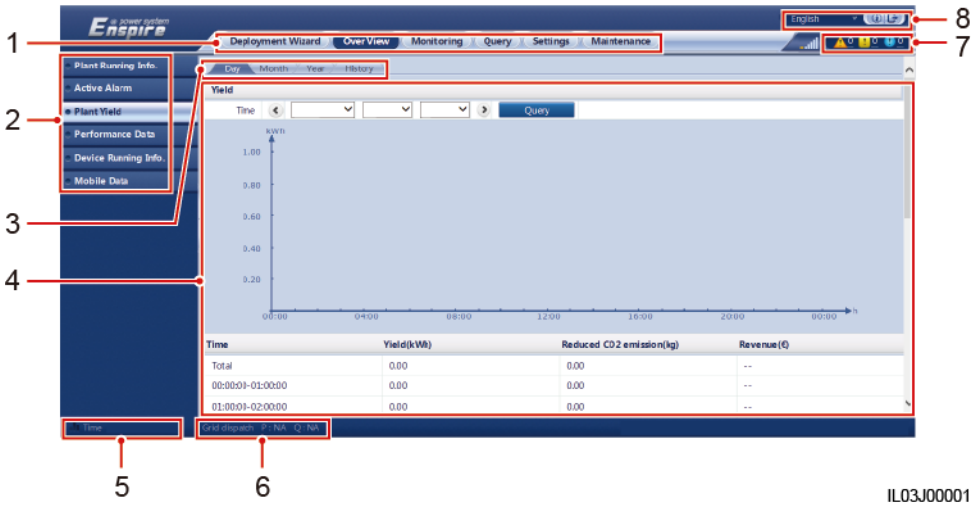
6.1 Introduction to WebUI

NOTICE

- The web software version corresponding to the WebUI snapshots in this document is SmartLogger V100R002C00SPC020. The snapshots are for reference only.
- The parameter names, value ranges, and default values are subject to change. The actual display prevails.
- Delivering a resart, factory reset, shutdown, or upgrade command to the solar inverters may cause power grid connection failure, which affects the energy yield.
- Only professionals are allowed to set the grid parameters, protection parameters, feature parameters, and power adjustment parameters of the solar inverters. If the grid parameters, protection parameters and feature parameters are incorrectly set, the solar inverters may not connect to the power grid. If the power adjustment parameters are incorrectly set, the solar inverters may not connect to the power grid as required. In these cases, the energy yield will be affected.
- Only professionals are allowed to set the power grid scheduling parameters of the SmartLogger. Incorrect settings may cause the PV plant to fail to connect to the power grid as required, which affects the energy yield.

6.1.1 WebUI Layout

Figure 6-1 WebUI layout



No.	Function	Description
1	Main menu	Click the corresponding main menu before you perform an operation over the WebUI.
2	Second-level menu	Under the main menu, choose the device to be queried or the parameter to be set under the second-level menu.
3	Third-level menu	• After selecting a second-level menu, choose a third-level menu to access the query or setting page. • There is no third-level menu under some second-level menus.
4	Details page	Displays the details of the queried information or parameter settings.
5	System time	Displays the current system time.
6	Power grid scheduling status	Displays the current power grid scheduling mode of the system.
7	Alarm icon	Displays the severities and number of active system alarms. You can click a number to access the alarm page.
8	Display language and logout button	Allows you to select the display language and log out.

6.1.2 Icon Description

Icon	Description	Icon	Description
	Click the About icon to query the WebUI version information.		Click the Drop-down icon to select a parameter or time.
	Click the Exit icon to log out.		Alarms are classified into major, minor, and warning ones. Click the Alarm icon to query an alarm.
	Click the Increase/ Decrease icon to adjust time.		Click the Start icon to start the device.
	The Select icon indicates that a parameter is selected.		Click the Stop icon to shut down the device.
	The Select icon indicates that a parameter is not selected. Click the icon to select a parameter.		Click the Reset icon to reset the device.
	Hide icon and Display icon.		• The solar inverter is in **On-grid** state. • The device such as the EMI, power meter, slave SmartLogger, or MBUS is in **Online** state. • The PID is in **Running** state.
	The device is in **Disconnection** state. If a device is in **Disconnection** state, its parameters cannot be set.		The solar inverter is in **Loading** state.

Icon	Description	Icon	Description
	• The solar inverter is in **Initializing**, **Power-off**, **Idle**, or other state in which it is not feeding power into the grid. • The PID device is in **Power-off**, **Idle** or other state in which it is not running properly.		Ascending order or descending order icon. Click the icon to sort the items in ascending or descending order for the corresponding column.

6.1.3 WebUI Menu

NOTE

- ● indicates that the user has permission to operate the menu.
- ○ indicates that the user does not have permission to operate the menu.

Table 6-1 WebUI menus and user operation permissions

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
Deployment Wizard	N/A	N/A	Supports the deployment wizard function. You can set deployment parameters, connect devices, and connect to the management system according to the wizard.	○	●	●
Over View	Plant Running Info.	N/A	Queries PV plant information.	●	●	●
	Active Alarm	N/A	Queries active alarms.	●	●	●

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
	Plant Yield	N/A	Queries the energy yield of the system. • Daily energy yield: The data can be stored for 30 days on an hourly basis. • Monthly energy yield: The data can be stored for one year on a daily basis. • Annual energy yield: The data can be stored for 10 years on a monthly basis. • Historical energy yield: The data can be stored for 25 years on a yearly basis.	•	•	•
	Performance Data	N/A	Queries or exports performance data.	•	•	•
	Device Running Info.	N/A	Queries or exports device running information.	•	•	•
	Mobile Data	N/A	Queries mobile network data.	•	•	•
Monitoring	SmartLogger1000A	Running Info.	Queries the running information.	•	•	•
		Active Alarm	Queries active alarms.	•	•	•
		About	Queries the version and communication information of the master SmartLogger.	•	•	•
	SmartLogger	About	Queries the version and communication information of the slave SmartLogger.	•	•	•
	SUN2000	Running Info.	Queries the running information.	•	•	•

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
		Active Alarm	Queries active alarms.	●	●	●
		Performance Data	Queries or exports performance data.	●	●	●
		Yield	Queries the energy yield.	●	●	●
		Running Param.	Sets running parameters.	○	●	●
		Tracking System	Sets tracing system parameters.	○	●	○
		LVRT Characteristic Curve	Sets the curve of the LVRT feature.	○	○	●
		About	Queries the version and communication information.	●	●	●
	MBUS	Running Info.	Queries the running information.	●	●	●
		STA List	• Sets or synchronizes the baud rates of MBUS communication devices. • Exports the STA list.	○	●	○
		Networking Settings	• Sets running parameters. • Manages the SN list.	○	●	○
		About	Queries the version and communication information.	●	●	●
	EMI	Running Info.	Queries the running information.	●	●	●
		Performance Data	Queries or exports performance data.	●	●	●
		Running Param.	Sets running parameters.	○	●	○

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
		About	Queries the version and communication information.	●	●	●
	Power Meter	Running Info.	Queries the running information.	●	●	●
		Performance Data	Queries or exports performance data.	●	●	●
		Running Param.	Sets the running parameters of the DL/T645 power meter.	○	●	●
		About	Queries the version and communication information.	●	●	●
	PID	Running Info.	Queries the running information.	●	●	●
		Active Alarm	Queries active alarms.	●	●	●
		Performance Data	Queries or exports performance data.	●	●	●
		Running Param.	Sets running parameters.	○	●	○
		About	Queries the version and communication information.	●	●	●
	Custom Device and IEC103 Device	Running Info.	Queries the running information.	●	●	●
		Teleindication	Queries teleindication parameters.	●	●	●
		Telemetering	Queries telemetering parameters.	●	●	●
		Telecontrol	Sets telecontrol parameters.	●	●	●
		Teleadjust	Sets teleadjust parameters.	●	●	●
Query	Alarm History	N/A	Queries historical alarms.	●	●	●

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
	Operation Log	N/A	Queries operation logs.	○	●	●
	Export Data	N/A	Exports historical alarms, energy yield, operation logs, and power grid scheduling data.	○	●	●
Settings	User Param.	Date&Time	Sets the date and time.	●	●	○
		Plant	Sets PV plant information.	●	●	○
		Revenue	Sets the revenue parameters.	●	●	○
		Save Period	Sets the save period of performance data.	●	●	○
	Comm. Param.	Wireless Network	● Changes the SSID and password of the built-in WLAN. ● Sets mobile data (4G/3G/2G) parameters.	○	●	○
		Wired Network	Sets wired network parameters.	○	●	○
		RS485	Sets RS485 parameters.	○	●	●
		Power Meter	Sets power meter parameters.	○	●	●
		Management System	● Sets management system parameters. ● Uploads the security certificate.	○	●	○
		Modbus TCP	Sets Modbus TCP parameters.	○	●	●
		IEC103	Sets IEC103 parameters.	○	●	○
		IEC104	Sets IEC104 parameters.	○	●	○

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
	Extended Parameters	FTP	Sets FTP parameters.	○	●	○
		Email	Sets email parameters.	○	●	○
	Port Settings	DO	Configures the DO port function.	○	●	○
		USB	Configures the USB port function.	○	●	○
	Alarm Output	N/A	Sets the association between the solar inverter alarms and DO port.	○	●	○
	Other Parameters	N/A	• Sets **RS485 upgrade rate autonegotiation**. • Sets **AI1 SPD detection alarm**.	○	●	○
	Active Power Control	N/A	Sets parameters for active power control.	○	○	●
	Reactive Power Control	N/A	Set parameters for reactive power control.	○	○	●
	Dry Contact Remote Shut	N/A	Sets parameters for remote shutdown over dry contacts.	○	○	●
	DI	N/A	Configures the DI port function.	○	○	●
	Export Limitation	N/A	Sets export limitation parameters.	○	○	●
	DRM	N/A	Sets the DRM parameters.	○	○	●
Maintenance	Firmware Upgrade	N/A	Upgrades the firmware of the SmartLogger, solar inverter, MBUS module, or PID module.	○	●	●
	Product Information	N/A	Queries product information.	●	●	●

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
	Security Settings	N/A	• Changes the user password. • Sets the automatic logout time. • Uploads a network security certificate. • Updates the key. • Sets web TLS1.0. • An advanced user or a special user can configure digital signature verification.	●	●	●
	System Maint.	N/A	• Resets the system. • Restores the factory settings. • Clears data. • Exporting all configuration files • Importing all configuration files	○	●	●
	Device Log	N/A	Exports device logs.	○	●	●
	Onsite Test	Inspection	Starts the solar inverter health check.	○	●	●
		Spot-check	Starts the solar inverter spot-check.	○	●	●
	License Management	N/A	• Views the license information. • Exports the license application file. • Loads or revokes a license.	○	●	●
	Device Mgmt.	Connect Device	• Adds or removes a device. • Imports or exports configurations.	○	●	●

Main Menu	Second-Level Menu	Third-Level Menu	Function	Common User	Advanced User	Special User
		Device List	• Modifies device information. • Imports or exports device information.	○	●	●
		Export Param.	Exports device parameters.	○	●	●
		Clear Alarm	Clears device alarms.	○	●	●
		Collect Perf. Data	Recollects historical performance data and energy yield of devices.	○	●	●
		Adjust total energy yield	Calibrates the accumulated energy yield.	○	●	●

NOTE

The third-level menu varies with the device model and grid code. The displayed menu prevails.

6.2 Device Commissioning

Prerequisites

- Device and cable installation has been checked according to PV plant specifications and requirements.
- The PV plant devices and SmartLogger are powered on.
- You have obtained the IP address of the SmartLogger as well as the user name and password used for logging in to the WebUI.

Context

After installing or replacing a device or SmartLogger, you need to set device parameters and add the device.

6.2.1 Preparations and WebUI Login

Prerequisites

- The operating system of Windows 7 or later is supported.
- Browser: Chrome52, Firefox58, Internet Explorer 11 or later is recommended.

Procedure

Step 1 Connect the network cable between the network port on the PC and the ETH port on the SmartLogger.

Step 2 Set the IP addresses of the PC and SmartLogger in the same network segment.

Item	SmartLogger Default Value	Example PC Setting
IP address	192.168.0.10	192.168.0.11
Subnet mask	255.255.255.0	255.255.255.0
Default gateway	192.168.0.1	192.168.0.1

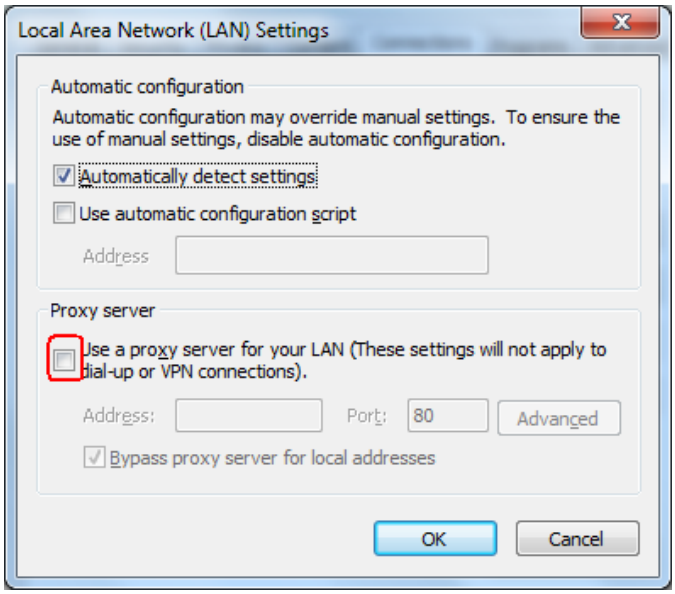
Step 3 Set LAN parameters.

NOTICE

- If the SmartLogger is connected to a local area network (LAN) and a proxy server has been set, you need to cancel the proxy server settings.
- If the SmartLogger is connected to the Internet and the PC is connected to the LAN, do not cancel the proxy server settings.

1. Open Internet Explorer.
2. Choose **Tools** > **Internet Options**.
3. Click the **Connections** tab and then click **LAN settings**.
4. Clear **Use a proxy server for your LAN**.

Figure 6-2 LAN settings



5. Click **OK**.

Step 4 Log in to the SmartLogger WebUI.

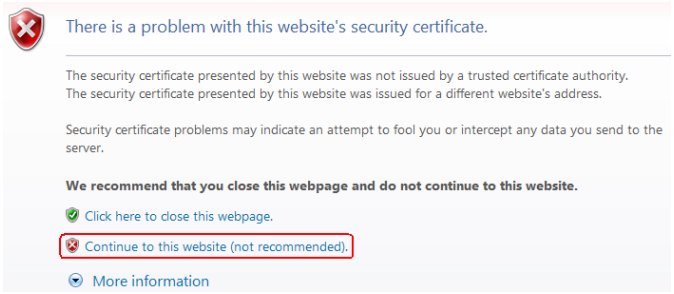
1. In the address box of a browser, enter **https://XX.XX.XX.XX** (XX.XX.XX.XX is the IP address of the SmartLogger) and press **Enter**. The login page is displayed.

   If you log in to the WebUI for the first time, a security risk warning is displayed. Click **Continue to this website** to log in to the WebUI.

   NOTE

   - It is recommended that users use their own certificates. If the certificate is not replaced, the security risk warning will be displayed during each login.
   - After logging in to the WebUI, you can import a certificate under **Maintenance** > **Security Settings** > **Network Security Certificate**.
   - The imported security certificate needs to be bound to the SmartLogger IP address. Otherwise, the security risk warning will still be displayed during login.

   Figure 6-3 Security risk warning



2. Specify **Language**, **User Name**, and **Password**, and click **Log In**.

   Figure 6-4 Login page

Parameter	Description
Language	Set this parameter as required.

Parameter	Description
User Name	If device commissioning is required, select **Advanced User** or **Special User**.
Password	– The initial password is **Changeme**. – Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant. – If you enter incorrect passwords for five consecutive times within 5 minutes, your account will be locked out. You need to try again with the account 10 minutes later.

----End

Follow-up Procedure

If any page is blank or a menu cannot be accessed after you log in to the WebUI, clear the cache, refresh the page, or log in again.

6.2.2 Performing Deployment Wizard

Context

The SmartLogger supports the deployment wizard for configuring basic SmartLogger parameters, connecting Huawei devices, power meters, and EMIs, configuring Huawei NMS, and interworking with third-party devices.

Procedure

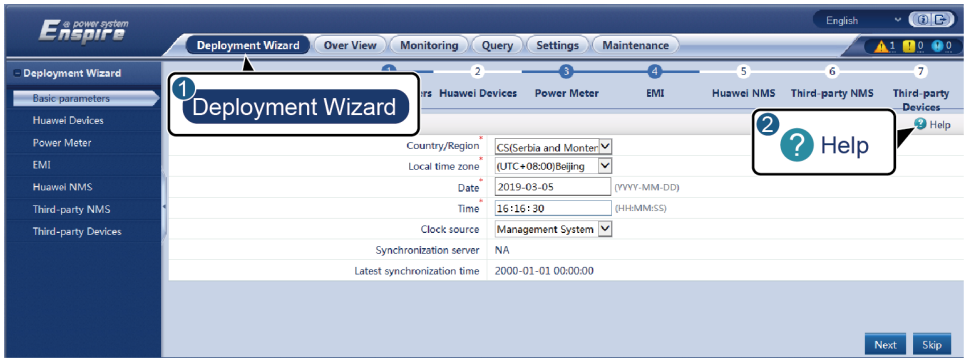
Step 1 Log in as **Advanced User** or **Special User** to access the deployment wizard page.

Step 2 Set parameters as prompted. For details, click **Help** on the page.

NOTE

When setting parameters, click **Previous**, **Next**, and **Skip** as required.

Figure 6-5 Deployment wizard



IL03J00003

Step 3 After setting parameters, click **Finish**.

----End

6.3 Parameter Settings

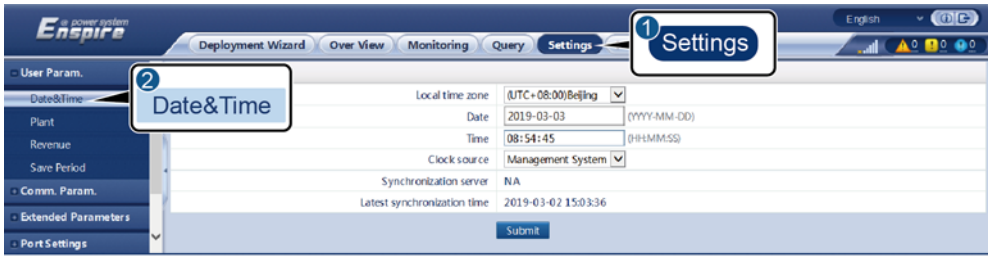
NOTICE

- If the parameters listed in this section have been set in **Deployment Wizard**, ignore the settings for these parameters.
- If the PV plant does not contain certain devices, such as electricity meters, EMIs, IEC103 devices, and custom devices, ignore the corresponding settings.
- You are advised to log in as **Advanced User** and set related parameters.

6.3.1 Setting User Parameters

Log in as **Common User** or **Advanced User**, set user parameters, and click **Submit**.

Figure 6-6 Setting user parameters



IL03J00004

Date&Time

Parameter	Description
Local time zone	Select a time zone based on the region where the PV plant is located.
DST enable	Set this parameter as required. **NOTE** This parameter is unavailable for zones without DST.
Date	Set this parameter to the local date.
Time	Set this parameter to the local time.
Clock source	Set this parameter as required. The value can be **NTP**, **Management System**, **IEC104**, or **Modbus TCP**. If there is no management system, ignore the corresponding setting.

NOTICE

- After the date and time are set, the date and time of all the inverters connected to the SmartLogger are updated accordingly. Ensure that the settings are correct.
- Changing the date and time affects the recording of system energy yield and performance data. Do not change the time zone or system time unless necessary.

Plant

Parameter	Description
Plant name	Set this parameter as required. **NOTE** In the English half-width status, you cannot enter any of the following characters: <>:,`'?()#&\$|%+;~^"
Plant address	
Plant owner	
Plant owner address	
Country/Region	Select a country/region based on the region where the PV plant is located.

Revenue

Parameter	Description
Currency	Set this parameter as required. The value can be **EUR**, **GBP**, **USD**, **CNY**, or **JPY**.
Electricity price/kWh	Set this parameter to the local electricity price, which is used to calculate the converted revenue of the energy yield.
CO2 emission reduction coefficient	Set this parameter based on the local standard.

Save Period

Parameter	Description
Performance data save period	Set this parameter to the save period of performance data. After the setting, the data will be displayed accordingly on the performance data page.

6.3.2 Setting Parameters for Connecting to the Management System

Procedure

Step 1 Log in as **Advanced User** and set up a network connection.

- **Method 1**: If the SmartLogger connects to the management system over the 4G/3G/2G network, set mobile data parameters and click **Submit**.

Figure 6-7 Setting mobile data parameters

IL03J00005

Parameter	Description
Monthly traffic package	Set this parameter based on the SIM card traffic package.
Network mode	Set this parameter based on the SIM card network mode.
APN mode	The default value is **Automatic**. Set this parameter to **Manual** if the dial-up connection cannot be set up in **Automatic** mode.
Authentication type	When **APN mode** is set to **Manual**, you need to set the parameters related to the SIM card. Obtain the information about the parameters from the SIM card operator.
APN	
APN dialup number	
APN user name	
APN user password	

- **Method 2**: If the SmartLogger connects to the management system over a wired network, set the wired network parameters and click **Submit**.

Figure 6-8 Setting wired network parameters

IL03J00006

Parameter	Description
DHCP	The SmartLogger can obtain an IP address through dynamic host configuration protocol (DHCP) and automatically register with the network.
IP Address	Set this parameter based on the PV plant plan. **NOTE** If the IP address is changed, use the new IP address to log in again.
Subnet mask	Set this parameter based on the actual subnet mask of the LAN where the SmartLogger is located.
Default gateway	Set this parameter based on the actual gateway of the LAN where the SmartLogger is located.

Parameter	Description
Primary DNS server	You can ignore this parameter if the SmartLogger connects to the LAN. Set this parameter to the IP address of the LAN router when the SmartLogger connects to the public network (for example, connecting to the hosting cloud server, email server, or third-party FTP server).
Secondary DNS server	In normal cases, you can ignore this parameter. If the primary DNS server cannot resolve the domain name, the secondary DNS server is used.

Step 2 Set management system parameters.

- **Method 1**: If the SmartLogger connects to the Huawei management system or a third-party management system using the encrypted Modbus TCP protocol, log in as **Advanced User**, set management system parameters, and click **Submit**.

Figure 6-9 Setting management system parameters

Parameter	Description
Server	Set this parameter to the IP address or domain name of the management system.
Port	Set this parameter based on the connected management system.
Address mode	The value can be **Comm. Address** or **Logical address**. If the communications address of the device connected to the SmartLogger is unique, you are advised to select **Comm. Address**. In other cases, you must select **Logical address**.
SSL encryption	Retain the default value **Enable**. **NOTE** If this parameter is set to **Disable**, data exchange between the SmartLogger and the management system will not be encrypted, which poses security risks.

Parameter	Description
Second challenge authentication	Set this parameter based on the connected management system. **NOTE** If this parameter is set to **Disable**, the second challenge authentication result is not checked, and user data may be stolen. Therefore, exercise caution when setting this parameter.
Security certificate	Optional. Set this parameter only when the certificate has expired or the customer needs to use their own certificate.

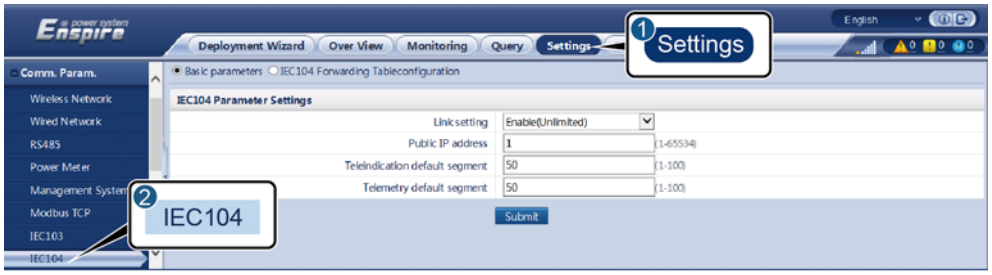
- **Method 2**: If the SmartLogger connects to a third-party management system using the unencrypted Modbus-TCP protocol, log in as **Advanced User** or **Special User**, set Modbus TCP parameters, and click **Submit**.

Figure 6-10 Setting Modbus TCP parameters

Parameter	Description
Link setting	Modbus TCP is a universal standard protocol used to connect to a third-party management system. Because there is no security authentication mechanism, data transmitted by Modbus TCP is not encrypted. To reduce network security risks, the function of connecting to a third-party management system using Modbus TCP is disabled by default. This protocol can transmit the running data and control commands of PV plants, which may cause user data breach and control permission theft. Therefore, exercise caution when using this protocol. Users are liable for any loss caused by the use of this protocol to connect to a third-party management system (non-secure protocol). Users are advised to take measures at the PV plant level to reduce security risks, or use Huawei management system to mitigate the risks. To use this function, set this parameter to **Enable(Limited)** or **Enable(Unlimited)**. ● If this parameter is set to **Enable(Limited)**, the SmartLogger can connect to a maximum of five preset third-party management systems. ● If this parameter is set to **Enable(Unlimited)**, the SmartLogger can connect to a maximum of five third-party management systems with a valid IP address.
Client N IP Address **NOTE** N is 1, 2, 3, 4, or 5.	If **Link setting** is set to **Enable(Limited)**, set this parameter based on the IP address of the third-party management system.
Address mode	The value can be **Comm. Address** or **Logical address**. If the communications address of the device connected to the SmartLogger is unique, you are advised to select **Comm. Address**. In other cases, you must select **Logical address**.
SmartLogger address	Set this parameter to the communication address of the SmartLogger.

- **Method 3**: If the SmartLogger connects to a third-party management system using the IEC104 protocol, log in as **Advanced User**, set IEC104 parameters, and click **Submit**.

Figure 6-11 Setting IEC104 parameters



IL03J00009

Tab	Parameter	Description
Basic parameters	Link setting	IEC104 is a universal standard protocol used to connect to a third-party management system. Because there is no security authentication mechanism, data transmitted by IEC104 is not encrypted. To reduce network security risks, the function of connecting to a third-party management system using IEC104 is disabled by default. This protocol can transmit the running data and control commands of PV plants, which may cause user data breach and control permission theft. Therefore, exercise caution when using this protocol. Users are liable for any loss caused by the use of this protocol to connect to a third-party management system (non-secure protocol). Users are advised to take measures at the PV plant level to reduce security risks, or use Huawei management system to mitigate the risks. To use this function, set this parameter to **Enable(Limited)** or **Enable(Unlimited)**. • If this parameter is set to **Enable(Limited)**, the SmartLogger can connect to a maximum of five preset third-party management systems. • If this parameter is set to **Enable(Unlimited)**, the SmartLogger can connect to a maximum of five third-party management systems with a valid IP address.

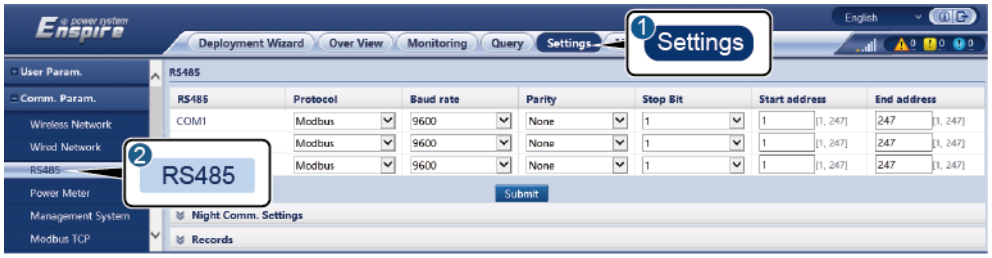
Tab	Parameter	Description
	IEC104-N IP **NOTE** N is 1, 2, 3, 4, or 5.	If **Link setting** is set to **Enable(Limited)**, set this parameter based on the IP address of the third-party management system.
	Public IP address	Set these parameters as required.
	Teleindication default segment	
	Telemetry default segment	
IEC104 Forwarding Tableconfiguration	N/A	Set this parameter as required. **NOTE** After the IEC104 configuration file exported from the SmartLogger and the IEC104 information files delivered with devices are correctly configured in a third-party management system, the third-party management system will be able to monitor devices connected to the SmartLogger over the IEC104 protocol.

----End

6.3.3 Setting RS485 Communications Parameters

Log in as **Advanced User** or **Special User**, set RS485 parameters, and click **Submit**.

Figure 6-12 Setting RS485 parameters



RS485

Protocol, **Baud rate**, **Parity**, and **Stop Bit** must be set to the same values for the devices connected to the same COM port.

Parameter	Description
Protocol	Set this parameter based on the protocol type of the connected device. The value can be **Modbus**, **IEC103**, **DL/T645**, **Modbus-Slave**, or **Modbus-Control**. **NOTE** • 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 solar inverter performs rapid power grid scheduling using both MBUS and RS485, set **Protocol** to **Modbus-Control**.
Baud rate	Set this parameter based on the baud rate of the connected device. The value can be **1200**, **2400**, **4800**, **9600**, **19200**, or **115200**.
Parity	Set this parameter based on the parity mode of the connected device. The value can be **None**, **Odd parity**, or **Even parity**.
Stop Bit	Set this parameter based on the stop bit of the connected device. The value can be **1** or **2**.
Start address	1 ≤ Start address ≤ Communication address of the connected device ≤ End address ≤ 247 The address segments of COM ports can overlap. **NOTE** The start and end addresses have no impact on the devices that have been connected.
End address	

Night Comm. Settings

If device information query is not required at night, enable **Night silent**.

Parameter	Description
Night silent	Specifies whether the night silent mode is enabled.
Enter time	Specifies the time for entering the night silent mode.
Exit time	Specifies the time for exiting the night silent mode.
Wakeup period	Specifies the wakeup period for the night silent mode.

Records

The SmartLogger supports exporting of MBUS and RS485 communication packets.

Set **Choose port** and click **Start** to start packet recording. Then, click **Export** to stop packet recording and export the packets.

Parameter	Description
Choose port	Specifies the port for recording packets.

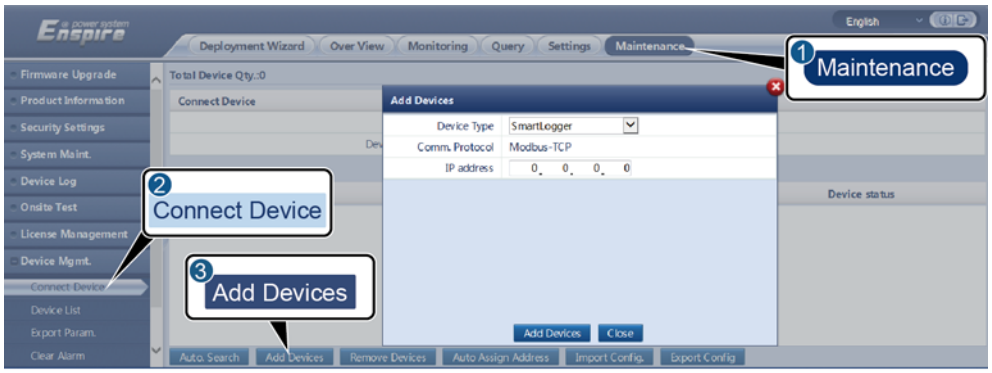
6.3.4 Setting Slave SmartLogger Parameters

Log in as **Advanced User** or **Special User**, set the access parameters for the slave SmartLogger, and click **Add Devices**.

NOTE

For the slave SmartLogger, set the communications parameter Modbus-TCP to **Enable(Limited)** and set **Client IP Address** to the IP address of the master SmartLogger.

Figure 6-13 Setting access parameters



IL03J00011

Parameter	Description
Device Type	Set this parameter to **SmartLogger**.
IP address	Set this parameter to the IP address of the slave SmartLogger.

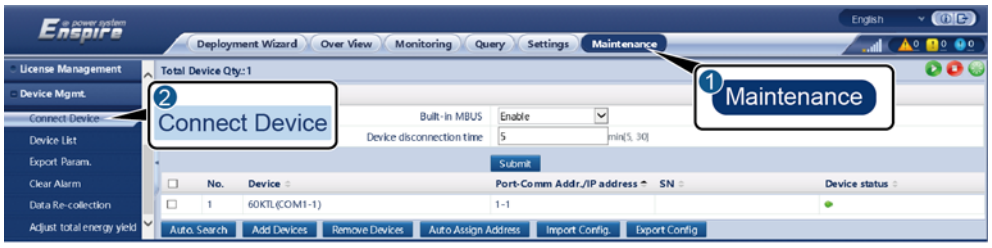
6.3.5 Setting MBUS Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User** and set access parameters.

- Set parameters for the built-in MBUS and click **Submit**.

Figure 6-14 Setting parameters for the built-in MBUS

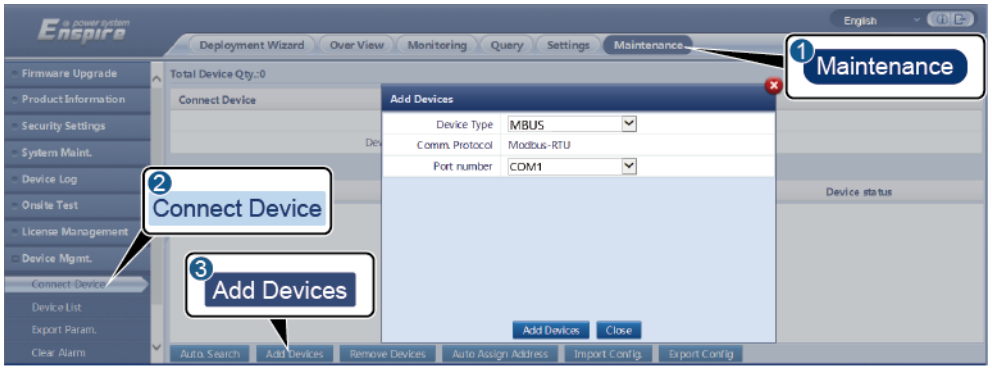


IL03J00012

Parameter	Description
Built-in MBUS	• If the SmartLogger communicates with the solar inverter using a built-in MBUS, set this parameter to **Enable**. • If only RS485 communication is used between the SmartLogger and the solar inverter and third-party device, set this parameter to **Disable**.
Device disconnection time	Specifies the duration for determining device disconnection.

- Set access parameters for an external MBUS.
  - **Method 1**: Click **Auto. Search** to connect the MBUS.
  - **Method 2**: Click **Add Devices**, set access parameters, and click **Add Devices**.

Figure 6-15 Setting access parameters for an external MBUS

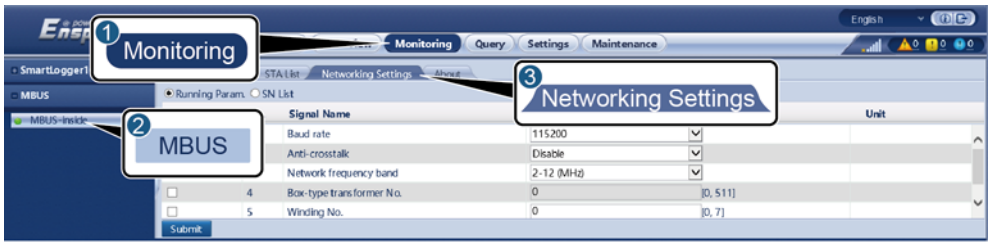


IL03J00013

Parameter	Description
Device type	Set this parameter to **MBUS**.
Port number	Set this parameter to the serial number of the COM port connected to the MBUS.

Step 2 Log in as **Advanced User** and set networking parameters.

Figure 6-16 Networking settings



IL03J00014

Category	Parameter	Description
Running Param.	Baud rate	Retain the default value **115200** for optimal communications performance.
	Anti-crosstalk	Set this parameter to **Enable**. When the transformer substation number and winding number of the solar inverter are the same as those of the MBUS, or the solar inverter SN is in the SN list, the solar inverter can connect to the SmartLogger over an MBUS network.
	Network frequency band	Set this parameter as required.
	Transformer substation No.	Set this parameter based on the number of the transformer substation connected to the SmartLogger.
	Winding No.	In multi-split transformer substation scenarios, set this parameter based on the number of the winding of the transformer station connected to the SmartLogger.
	Networking	• When the SmartLogger communicates with the solar inverter over MBUS, set **Networking** to **Enable**. • When the SmartLogger communicates with the solar inverter only over RS485, set **Networking** to **Disable**.
SN List	N/A	• Maintain the solar inverter SN list. • You can click **Synchronize** to synchronize the transformer substation number and winding number of the MBUS to the solar inverters in the SN list.

----End

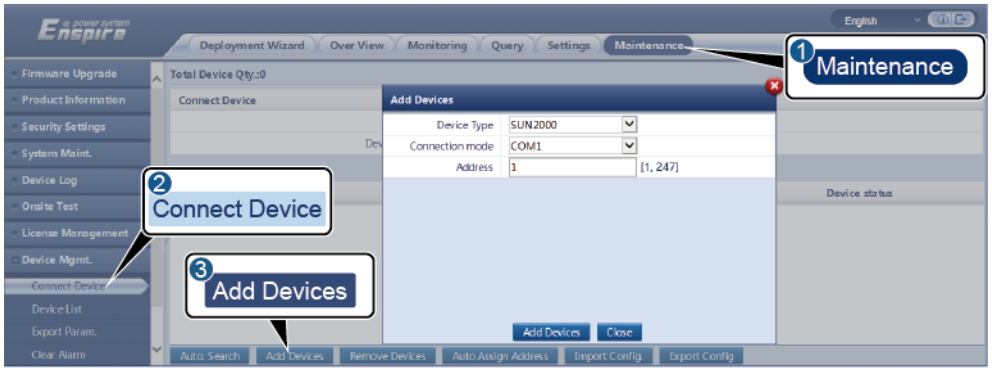
6.3.6 Setting Solar Inverter Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User** and set access parameters.

- **Method 1**: Click **Auto. Search** to connect to the solar inverter.
- **Method 2**: Click **Add Devices**, set access parameters, and click **Add Devices**.

Figure 6-17 Setting access parameters



IL03J00015

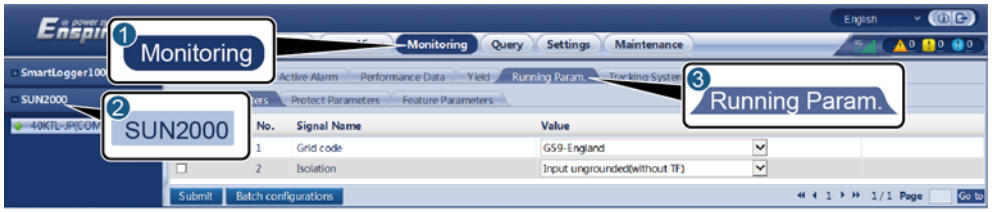
Parameter	Description
Device type	Set this parameter to **SUN2000**.
Connection mode	• If the solar inverter uses the MBUS for communication, set this parameter to **MBUS**. • If the solar inverter uses RS485 for communication, set this parameter to the COM port connected to the solar inverter.
Address	Set this parameter to the communication address of the solar inverter.

Step 2 Set running parameters and click **Submit**.

NOTICE

Before setting the running parameters of the solar inverter, ensure that the DC side of the solar inverter is energized.

Figure 6-18 Setting running parameters



IL03J00016

----End

6.3.6.1 Running Parameters (Advanced User)

Grid Parameters

Parameter	Description
Grid code	Set this parameter based on the grid code of the country or region where the solar inverter is used and the solar inverter application scenario.
Isolation	Specifies the solar inverter working mode based on the grounding status at the DC side and the connection to the power grid.

Protection Parameters

Parameter	Description
Insulation resistance protection	To ensure device safety, the solar inverter 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 solar inverter does not feed power to the power grid.

Feature Parameters

Parameter	Description
MPPT multi-peak scanning	When the solar inverter is used in scenarios where PV strings are obviously shaded, set this parameter to **Enable**, and then the solar inverter will perform MPPT scanning at regular intervals to locate the maximum power.
MPPT scanning interval	Specifies the MPPT multi-peak scanning interval.

Parameter	Description
RCD enhancing	RCD refers to the residual current of the solar inverter to the ground. To ensure device and personal safety, RCD should be limited to the specified value in the standard. If an AC switch with a residual current detection function is installed outside the solar inverter, you need to set this function to **Enable** to reduce the residual current generated during solar inverter running, thereby preventing the AC switch from misoperations.
Reactive power output at night	In some specific application scenarios, a power grid company requires the solar inverter to perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements. This parameter is available only when **Isolation** is set to **Input ungrounded (with TF)**.
Strong adaptability	If the value of power grid short circuit capacity/power plant installed capacity is less than 3 and the power grid impedance is too high, the power grid quality will be affected and the solar inverter may be unable to run properly. Set **Strong adaptability** to **Enable**.
Power quality optimization mode	If **Power quality optimization mode** is set to **Enable**, the output current harmonics of the solar inverter will be optimized
PV module type	Specifies the type of PV module. The PV module type determines the solar inverter shutdown time. If concentration PV modules are shaded, the power may drop to 0 abruptly and the solar inverter shuts down. The energy yield would be affected since it takes too long for the power to recover and the solar inverter to restart. • If **PV module type** is set to **Crystalline silicon** or **Film**, the solar inverter will run properly and will not shut down if PV modules are blocked. • When concentration PV modules are used: – When **PV module type** is set to **CPV 1**, the solar inverter can quickly restart in 60 minutes if the input power of PV modules drops drastically due to shading. – When **PV module type** is set to **CPV 2**, the solar inverter can quickly restart in 10 minutes if the input power of PV modules drops drastically due to shading.
Crystalline silicon PV compensation mode	This parameter reduces the DC voltage of PV modules to the PE by reducing the impedance of the solar inverter input side to the PE, thereby effectively reducing PID effect of PV modules. Set this parameter to **P-type output** for P-type PV modules and **N-type output** for N-type PV modules.

Parameter	Description
Communication interrupt shutdown	The standards of certain countries and regions require that the solar inverter must shut down after the communication is interrupted for a certain time. If **Communication interrupt shutdown** is set to **Enable** and the solar inverter communication has been interrupted for a specified time (set by **Communication interruption duration**), the solar inverter will automatically shut down.
Communication interruption duration	Specifies the duration for determining communication interruption, and is used for automatic shutdown for protection in case of communication interruption.
Communication resumed startup	If this parameter is enabled, the solar inverter automatically starts after communication recovers. If this parameter is disabled, the solar inverter needs to be started manually after communication recovers.
Soft start time	Specifies the duration for the power to gradually increase when the solar inverter starts.
AFCI	The North American standard requires the solar inverter to provide the DC arc detection function.
Arc detection adaptation mode	Adjusts the sensitivity of arc detection.
AFCI self-test	Sends the AFCI self-check command manually.
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. When the current exceeds the specified value, it is determined that the sunlight changes, and the IV curves should be scanned again.
OVGR linked shutdown	• If this parameter is set to **Enable**, the solar inverter shuts down after receiving the OVGR signal. • If this parameter is set to **Disable**, the solar inverter does not shut down after receiving the OVGR signal.
Dry contact function	Identifies the dry contact signals from the SmartLogger. Set this parameter to **OVGR** for OVGR signals, and set it to **NC** for other signals.
Hibernate at night	The solar inverter monitors PV strings at night. If **Hibernate at night** is set to **Enable**, the monitoring function of the solar inverter will hibernate at night, reducing power consumption.

Parameter	Description
MBUS communication	For solar inverter models that support both RS485 and MBUS communication, when RS485 communication is used, you are advised to set **MBUS communication** to **Disable** to reduce power consumption. • If the solar inverter communicates with the SmartLogger in MBUS mode and the solar inverter does not support the setting of **RS485-2 communication**, this parameter cannot be set to **Disable**. • If **Tracker controller** is set to a manufacturer model, this parameter cannot be set to **Disable**.
Upgrade delay	**Upgrade delay** is mainly used in the upgrade scenarios where the PV power supply is disconnected at night due to no light or unstable at dawn or dusk due to poor sunlight. After the solar inverter 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 solar inverter automatically activates the upgrade.
String monitor	The solar inverter monitors PV strings in real time. If any PV string is abnormal (such as energy yield decrease as a result of a shaded PV string), the solar inverter raises an alarm to remind maintenance personnel to maintain the PV string in a timely manner. If PV strings are easily shaded, you are advised to set **String monitor** to **Disable** to prevent false alarms.
String detection low power delay	Specifies the delay time for raising abnormal string alarms when the solar inverter 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.
String detection high power delay	Specifies the delay time for raising abnormal string alarms when the solar inverter detects that a PV string is working with high power.
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.
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 the value of this parameter.
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 the value of this parameter.

Parameter	Description
Shutdown at 0% power limit	• If this parameter is set to **Enable**, the solar inverter shuts down after receiving the 0% power limit instruction. • If this parameter is set to **Disable**, the solar inverter does not shut down after receiving the 0% power limit instruction.
Maximum apparent power	Specifies the output upper threshold for the maximum apparent power to adapt to the capacity requirements of standard and customized transformers. If the maximum active power equals Smax_limit, this parameter is not displayed.
Maximum active power	Specifies the output upper threshold for the maximum active power to adapt to various market requirements.
Tracker controller	Selects a controller vendor based on the actual situation.
Commanded shutdown hold after power recovery	The standards of certain countries and regions require the solar inverter to remain in the commanded shutdown state after being powered off by a command and experiencing a power failure and recovery.
String connection mode	Specifies the connection mode of PV strings. • You do not need to set this parameter if each PV string is separately connected to a solar inverter. The solar inverter can automatically detect the connection mode of the PV strings. • Set this parameter to **All PV strings connected** if all PV strings are connected in parallel and then connected to the inverter in parallel.
PID protection at night	When the solar inverter outputs reactive power at night and this parameter is set to **Enable**, the solar inverter will shut down automatically if it detects that the voltage compensation of the PID module is abnormal.
RS485-2 communication	If this parameter is set to **Enable**, the RS485-2 port can be used. If the RS485-2 port is not used, you are advised to set this parameter to **Disable** to reduce power consumption.
PID running mode	Specifies the running mode of the built-in PID of the solar inverter.
PID nighttime off-grid repair	Specifies whether to enable the PID nighttime off-grid repair.
PID daytime off-grid repair	Specifies whether to enable the PID daytime off-grid repair.

Tracking System

If a PV string uses a tracking system with a controller, set corresponding parameters on the **Tracking System** tab page.

6.3.6.2 Running Parameters (Special User)

Grid Parameters

Parameter	Description
Grid code	Set this parameter based on the grid code of the country or region where the solar inverter is used and the solar inverter application scenario.
Output mode	Specifies whether the solar inverter output has a neutral wire. Set this parameter based on the solar inverter application scenario.
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.
Auto start upon grid recovery	Specifies whether to allow the solar inverter to automatically start after the power grid recovers.
Grid connection duration after power grid recovery	Specifies the waiting time for solar inverter restart after the power grid recovers.
Grid reconnection voltage upper limit	The standards of certain countries and regions require that the solar inverter must not connect to the power grid when the power grid voltage is higher than the upper limit.
Grid reconnection voltage lower limit	The standards of certain countries and regions require that the solar inverter must not connect to the power grid when the power grid voltage is lower than the lower limit.
Grid reconnection frequency upper limit	The standards of certain countries and regions require that the solar inverter must not connect to the power grid when the power grid frequency is higher than the upper limit.
Grid reconnection frequency lower limit	The standards of certain countries and regions require that the solar inverter must not connect to the power grid when the power grid frequency is lower than the lower limit.
Reactive power compensation (cosψ-P) trigger voltage	Specifies the voltage threshold for triggering reactive power compensation when low voltage ride-through (LVRT) occurs.
Reactive power compensation (cosψ-P) exit voltage	Specifies the voltage threshold for exiting reactive power compensation when the solar inverter recovers from LVRT.
Isolation	Specifies the solar inverter working mode based on the grounding status at the DC side and the connection to the power grid.

Protection Parameters

Parameter	Description
Unbalance voltage protection	Specifies the solar inverter protection threshold when the power grid voltage is unbalanced.
Phase protection point	The Japanese standard requires that protection should be triggered if an abrupt voltage phase change is detected during passive islanding detection.
Phase angle offset protection	The standards of certain countries and regions require that the solar inverter needs to be protected when the three-phase angle offset of the power grid exceeds a certain value.
10 minute OV protection	Specifies the 10-minute overvoltage protection threshold.
10 minute OV protection time	Specifies the 10-minute overvoltage protection duration.
Level-N OV protection	Specifies the level-N grid overvoltage protection threshold.
Level-N OV protection time	Specifies the level-N grid overvoltage protection duration.
Level-N UV protection	Specifies the level-N grid undervoltage protection threshold.
Level-N UV protection time	Specifies the level-N grid undervoltage protection duration.
Level-N OF protection	Specifies the level-N grid overfrequency protection threshold.
Level-N OF protection time	Specifies the level-N grid overfrequency protection duration.
Level-N UF protection	Specifies the level-N grid underfrequency protection threshold.
Level-N UF protection time	Specifies the level-N grid underfrequency protection duration.

NOTE

N is 1, 2, 3, 4, 5, or 6.

Feature Parameters

Parameter	Description
LVRT	When the power grid voltage is abnormally low for a short time, the solar inverter cannot disconnect from the power grid immediately and has to work for some time. This is called LVRT.
LVRT triggering threshold	Specifies the threshold for triggering LVRT. The threshold settings should meet the local grid standard.
LVRT undervoltage protection shield	Specifies whether to shield the undervoltage protection function during LVRT.

Parameter	Description
LVRT reactive power compensation power factor	During LVRT, the solar inverter needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the solar inverter. For example, if you set **LVRT reactive power compensation power factor** to **2**, the reactive current generated by the solar inverter is 20% of the rated current when the AC voltage drops by 10% during LVRT.
HVRT	When the power grid voltage is abnormally high for a short time, the solar inverter cannot disconnect from the power grid immediately and has to work for some time. This is called high voltage ride-through (HVRT).
HVRT triggering threshold	Specifies the threshold for triggering HVRT. The threshold settings should meet the local grid standard.
HVRT reactive power compensation power factor	During HVRT, the solar inverter needs to generate reactive power to support the power grid. This parameter is used to set the reactive power generated by the solar inverter. For example, if you set **HVRT reactive power compensation power factor** to **2**, the reactive current generated by the solar inverter is 20% of the rated current when the AC voltage increases by 10% during HVRT.
Grid voltage protection shield during HVRT/LVRT	Specifies whether to shield the undervoltage/overvoltage protection function during HVRT/LVRT.
Grid voltage jump triggering threshold	To meet the standards of certain countries and regions, when the power grid voltage goes through transient changes, the solar inverter cannot disconnect from the power grid immediately and has to work for some time. This is called transient voltage jump. This parameter specifies the threshold for triggering transient voltage jump.
Zero current due to power grid fault	Specifies the working mode of the solar inverter when LVRT or HVRT occurs. If this parameter is set to **Enable**, the output current of the solar inverter will be less than 10% of the rated current during LVRT or HVRT.
Active islanding	Specifies whether to enable the active islanding protection function.
Passive islanding	Specifies whether to enable the passive islanding protection function.
Voltage rise suppression	The standards of certain countries and regions require that the active power of the solar inverter be derated according to a certain slope when the output voltage exceeds a certain value.
Voltage rise suppression reactive adjustment point	The standards of certain countries and regions require that the solar inverter must generate a certain amount of reactive power when the output voltage exceeds a certain value.

Parameter	Description
Voltage rise suppression active derating point	The standards of certain countries and regions require that the active power of the solar inverter be derated according to a certain slope when the output voltage exceeds a certain value. The value of **Voltage rise suppression active derating point** must be greater than that of **Voltage rise suppression reactive adjustment point**.
Frequency change rate protection	Specifies whether to protect the solar inverter when the power grid frequency changes too fast.
Frequency change rate protection point	Specifies the frequency change rate protection threshold.
Frequency change rate protection time	Specifies the frequency change rate protection duration.
Soft start time after grid failure	Specifies the time for the power to gradually increase when the solar inverter restarts after the power grid recovers.

Power Adjustment Parameters

Parameter	Description
Active power change gradient	Adjusts the change speed of the solar inverter active power.
Fixed active power derated	Adjusts the active power output of the solar inverter based on fixed values.
Active power percentage derating	Adjusts the active power output of the solar inverter based on the percentage. If this parameter is set to 100%, the solar inverter delivers the maximum output power.
Reactive power change gradient	Adjusts the change speed of the solar inverter reactive power.
Power factor	Adjusts the power factor of the solar inverter.
Overfrequency derating	If this parameter is enabled, the active power of the solar inverter will be derated according to a certain slope when the power grid frequency exceeds the frequency that triggers overfrequency derating.
Trigger frequency of over frequency derating	The standards of certain countries and regions require that the output active power of the solar inverter be derated when the power grid frequency exceeds a certain value.
Quit frequency of over frequency derating	Specifies the frequency threshold for exiting overfrequency derating.

Parameter	Description
Cutoff frequency of overfrequency derating	Specifies the frequency threshold for cutting off overfrequency derating. The parameter setting should meet the following condition: **Quit frequency of over frequency derating** ≤ **Trigger frequency of over frequency derating** < **Cutoff frequency of overfrequency derating**.
Cutoff power of overfrequency derating	Specifies the power threshold for cutting off overfrequency derating.
Power recovery gradient of overfrequency derating	Specifies the power recovery gradient for overfrequency derating.
Remote power schedule	• If this parameter is set to **Enable**, the solar inverter responds to the scheduling instruction from the remote port. • If this parameter is set to **Disable**, the solar inverter does not respond to the scheduling instruction from the remote port.
Schedule instruction valid duration	Adjusts the duration within which the scheduling instruction is valid. If this parameter is set to **0**, the scheduling instruction is valid permanently.
Maximum apparent power	Specifies the output upper threshold for the maximum apparent power to adapt to the capacity requirements of standard and customized transformers.
Maximum active power	Specifies the output upper threshold for the maximum active power to adapt to various market requirements.
Shutdown at 0% power limit	• If this parameter is set to **Enable**, the solar inverter shuts down after receiving the 0% power limit instruction. • If this parameter is set to **Disable**, the solar inverter does not shut down after receiving the 0% power limit instruction.
Reactive power compensation (Q/S)	Adjusts the output reactive power of the solar inverter.
Reactive power output at night	In some specific application scenarios, a power grid company requires the solar inverter to perform reactive power compensation at night to ensure that the power factor of the local power grid meets requirements. This parameter is available only when **Isolation** is set to **Input ungrounded (with TF)**.

LVRT Characteristic Curve

On the **LVRT Characteristic Curve** tab page, configure the LVRT feature.

NOTE

The SmartLogger supports only the curve configuration for LVRT that lasts no more than 10s. If a power grid standard requires that LVRT be longer than 10s, **LVRT Characteristic Curve** is not displayed for the grid code.

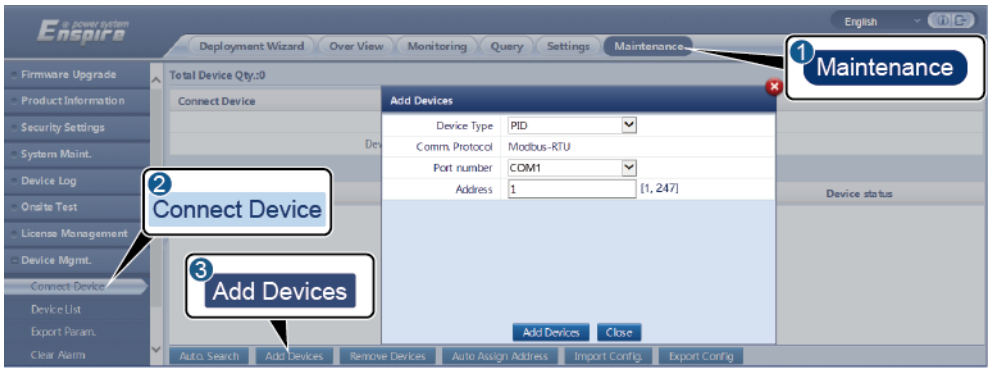
6.3.7 Setting PID Module Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User** and set access parameters.

- **Method 1**: Click **Auto. Search** to connect the PID.
- **Method 2**: Click **Add Devices**, set access parameters, and click **Add Devices**.

Figure 6-19 Setting access parameters

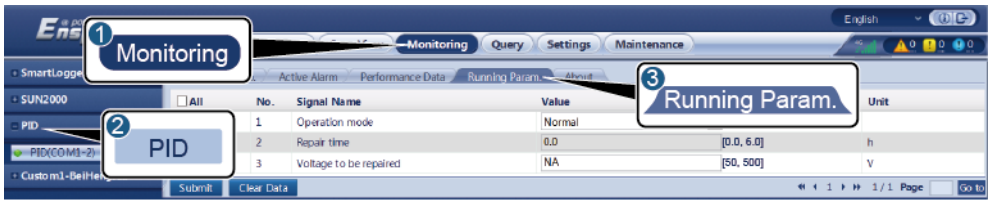


IL03J00017

Parameter	Description
Device Type	Set this parameter to **PID**.
Port number	• If the PID-PVBOX uses the MBUS for communication, set this parameter to **MBUS**. • If the PID uses RS485 for communication, set this parameter to the COM port connected to the PID.
Address	Set this parameter to the communications address of the PID.

Step 2 Log in as **Advanced User**, set running parameters, and click **Submit**.

Figure 6-20 Setting running parameters



IL03J00018

Table 6-2 Running parameters of PID01

Parameter	Description
Offset mode	Specifies the offset mode of the PID module. • Select **Disabled** if the PID module is not required. • Select **N/PE** if the PID module is required to use voltage output from the inductor virtual midpoint. • Select **PV/PE** if the PID module is required to use voltage output from the negative PV terminal. This mode is applicable only to Huawei SUN8000. • In the SUN2000 scenario, **Automatic** indicates the **N/PE** offset mode.
Output enabled	Specifies whether PID module output is enabled.
PV type	Specifies the type of the PV module used in the PV plant. For details about the PV module type, consult the manufacturer.
PV/PE offset voltage	Specifies the DC output voltage when the offset mode is set to PV/PE. • If the PV module type is P, set this parameter to **P-type**. In this case, the output voltage of the PID module is positive. • If the PV module type is N, set this parameter to **N-type**. In this case, the output voltage of the PID module is negative.

Parameter	Description
Operation Mode	Specifies the working mode of the PID module. • **Manual** mode: If **Offset mode** is set to **N/PE** or **PV/PE**, and **Output enabled** is set to **Enable**, the PID module outputs data based on **Output voltage (manual)**. • **Automatic** mode: After the PID module and solar inverter communicate with the SmartLogger properly, the PID module automatically runs. **NOTE** • To check whether the PID module functions properly, it is recommended that **Operation Mode** be set to **Manual** upon first power-on. • After checking that the PID module functions properly, set **Operation Mode** to **Automatic**.
Output voltage (manual)	Specifies the output voltage. **NOTE** After this parameter is set and the output from the PID module becomes stable, use a multimeter that is set to the DC position to measure the three-phase (A, B, and C) voltages of the power grid to the ground, and check whether the voltages are the same as the configured values.
Maximum DC voltage	Specifies the PV-PE voltage when the normal operation mode is used. If the PV module type is P, the parameter value indicates the highest DC voltage between PV+ and PE. If the PV module type is N, the parameter value indicates the highest DC voltage between PV– and PE.
Maximum output voltage	Specifies the maximum output voltage of the PID module. If the offset mode is **PV/PE**, the parameter value indicates the highest DC output voltage between PV and PE. If the offset mode is **N/PE**, the parameter value indicates the highest DC output voltage between N and PE.

Parameter	Description
IMD access	Specifies whether the PID module and insulation monitor device (IMD) can 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** You can set **Periodic PID runtime**, **Periodic IMD runtime**, and **IMD control dry contact** only when **IMD access** is set to **Enable**.
Periodic PID runtime	Specifies the operating time segment of the PID module when the PID module and IMD operate in cycle mode. The IMD is shut down when the PID module is operating.
Periodic IMD runtime	Specifies the operating time segment of the IMD when the PID module and IMD operate in cycle mode. The PID module is standby when the IMD is operating.
IMD control dry contact	Specifies the dry contact No. over which the SmartLogger controls the IMD. Set appropriate ports based on the cable connections between the IMD and the SmartLogger.
Clear data	Clears the active alarms and historical alarms stored on the PID module. You can select **Clear data** to clear active alarms and historical alarms for the PID module.

----End

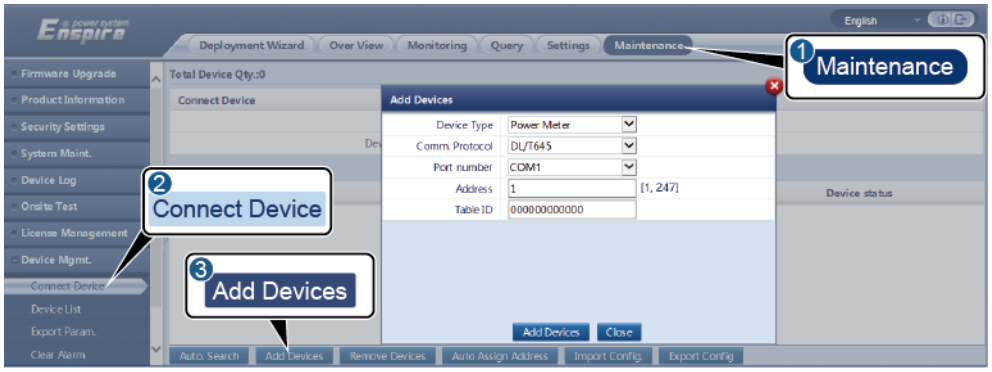
6.3.8 Setting Power Meter Parameters

6.3.8.1 Setting DL/T645 Power Meter Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User**, set access parameters, and click **Add Devices**.

Figure 6-21 Setting access parameters

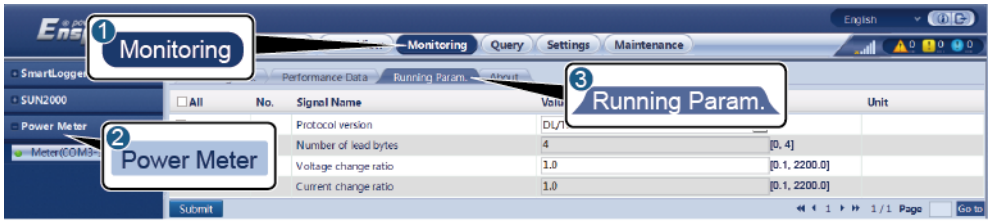


IL03J00019

Parameter	Description
Device Type	Set this parameter to **Power Meter**.
Comm. Protocol	Set this parameter to **DL/T645**.
Port number	Set this parameter to the serial number of the COM port connected to the power meter.
Address	Set this parameter to the communication address of the power meter.
Table ID	Set this parameter to the meter ID.

Step 2 Set running parameters and click **Submit**.

Figure 6-22 Setting running parameters



IL03J00020

Parameter	Description
Protocol version	Select **DL/T645-2007** or **DL/T645-1997** based on the protocol version of the power meter.
Number of lead bytes	Retain the default value unless otherwise specified.
Voltage change ratio Current change ratio	• Set this parameter to **1** when the power meter uploads a value once. • When the power meter uploads a value twice, set this parameter based on the actual transformer ratio.

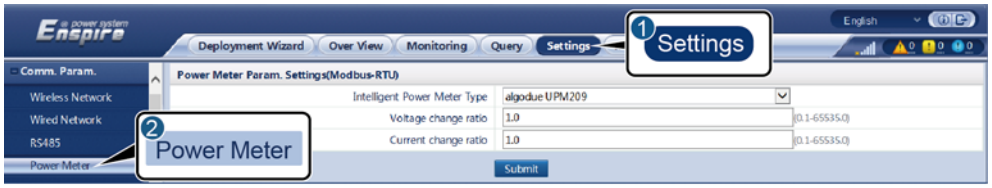
----End

6.3.8.2 Setting Modbus-RTU Meter Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User**, set power meter parameters, and click **Submit**.

Figure 6-23 Setting power meter parameters



IL03J00021

- If the model of the connected device is displayed in the **Intelligent Power Meter Type** drop-down list box, set parameters as follows.

Parameter	Description
Intelligent Power Meter Type	Set this parameter to the corresponding meter model.
Voltage change ratio	• Set this parameter to **1** when the power meter uploads a value once. • When the power meter uploads a value twice, set this parameter based on the actual transformer ratio.
Current change ratio	

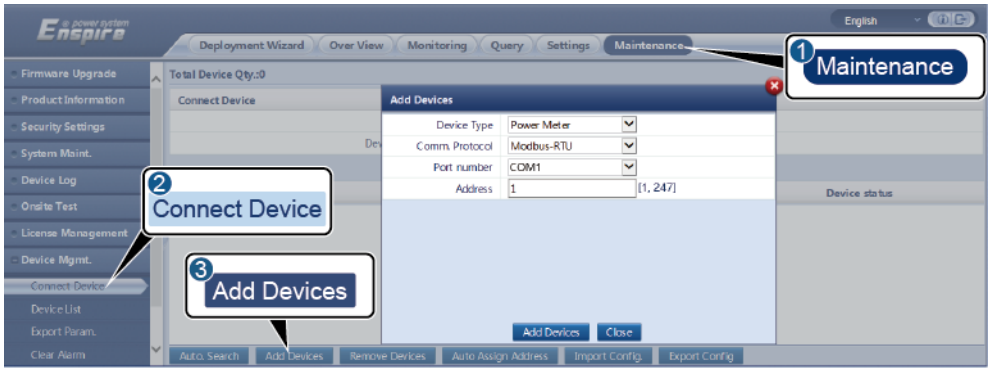
- If the connected power meter is of another model, set parameters as follows.

Parameter	Description
Intelligent Power Meter Type	Set this parameter to **Other**.
Read function code	Set this parameter to **Read holding register 03H** or **Read holding register 04H** based on the protocol adopted by the vendor.
Read mode	The value can be **Multiple read** or **Single read**.
Word ordering	Set this parameter to **Big endian** or **Little endian** based on the protocol adopted by the vendor.
Start address	If **Read mode** is set to **Multiple read**, set the start address for reading.

Parameter	Description
End address	If **Read mode** is set to **Multiple read**, set the end address for reading.
Voltage change ratio Current change ratio	• Set this parameter to **1** when the power meter uploads a value once. • When the power meter uploads a value twice, set this parameter based on the actual transformer ratio.
Signal parameters **NOTE** Signal parameters include **Signal Name**, **Signal address**, **Number of Registers**, **Gain**, **Data Type**, and **Unit**.	Set this parameter based on the vendor protocol. **NOTE** If the power meter can collect a signal, set **Signal address** for the signal to the corresponding register address. If the power meter cannot collect a signal, set **Signal address** for the signal to **65535**.

Step 2 Set access parameters and click **Add Devices**.

Figure 6-24 Setting access parameters



IL03J00022

Parameter	Description
Device Type	Set this parameter to **Power Meter**.
Comm. Protocol	Set this parameter to **Modbus-RTU**.
Port number	Set this parameter to the serial number of the COM port connected to the power meter.
Address	Set this parameter to the communication address of the power meter.

----End

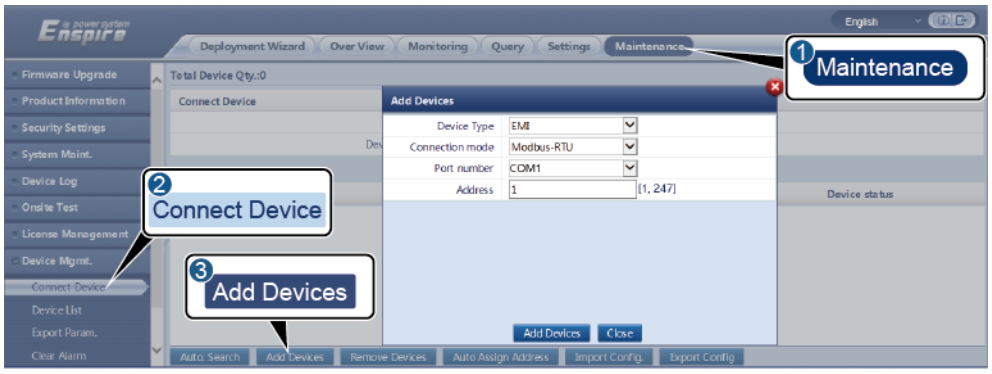
6.3.9 Setting EMI Parameters

6.3.9.1 Setting Modbus-RTU EMI Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User**, set access parameters, and click **Add Devices**.

Figure 6-25 Setting access parameters



IL03J00023

Parameter	Description
Device Type	Set this parameter to **EMI**.
Connection mode	Set this parameter to **Modbus-RTU**.
Port number	Set this parameter to the serial number of the COM port connected to the EMI.
Address	Set this parameter to the communication address of the EMI.

Step 2 Log in as **Advanced User**, set running parameters, and click **Submit**.

Figure 6-26 Setting running parameters

IL03J00024

- If the model of the connected EMI is displayed in the **EMI model** drop-down list box, set parameters as follows.

Parameter	Description
EMI model	Set this parameter to the model of the connected EMI.

Parameter	Description
Synchronize Environment Data	You are advised to retain the default value **Disable**. **NOTE** When this parameter is set to **Enable**, the SmartLogger transmits the wind speed and direction data to the solar inverter in a PV plant with the tracking system.
Master/Slave	When the SmartLogger connects to multiple EMIs, set one of them to **master mode**. The solar inverter performance data displayed is the data of the EMI in **master mode**.

- If the connected EMI is a split EMI that supports Modbus-RTU, set parameters as follows.

Parameter	Description
EMI model	Set this parameter to **Sensor(ADAM)**.
Synchronize Environment Data	You are advised to retain the default value **Disable**. **NOTE** When this parameter is set to **Enable**, the SmartLogger transmits the wind speed and direction data to the solar inverter in a PV plant with the tracking system.
Master/Slave	When the SmartLogger connects to multiple EMIs, set one of them to **master mode**. The solar inverter performance data displayed is the data of the EMI in **master mode**.
Read function code	Set this parameter to **Read holding register 03H** or **Read holding register 04H** based on the protocol adopted by the vendor.
Data reporting mode	Set this parameter to **Integer** or **Floating point** based on the protocol adopted by the vendor.
Word ordering	Set this parameter to **Big endian** or **Little endian** based on the protocol adopted by the vendor.
Read mode	The value can be **Multiple read** or **Single read**.
Start address	If **Read mode** is set to **Multiple read**, set the start address for reading.
End address	If **Read mode** is set to **Multiple read**, set the end address for reading.

Parameter	Description
Signal parameters **NOTE** Signal parameters include **Signal Name**, **Signal address**, **Lower Thres.**, **Upper Thres.**, **Spec**, **Start (mV/mA)**, **End (mV/mA)**, and **Unit**.	Set these parameters based on the vendor protocol. **NOTE** If the EMI can collect a signal, set **Signal address** for the signal to the corresponding register address. If the EMI cannot collect a signal, set **Signal address** for the signal to **65535**.

- If the connected EMI is of another model, set parameters as follows.

Parameter	Description
EMI model	Set this parameter to **Other**.
Synchronize Environment Data	You are advised to retain the default value **Disable**. **NOTE** When this parameter is set to **Enable**, the SmartLogger transmits the wind speed and direction data to the solar inverter in a PV plant with the tracking system.
Master/Slave	When the SmartLogger connects to multiple EMIs, set one of them to **master mode**. The solar inverter performance data displayed is the data of the EMI in **master mode**.
Read function code	Set this parameter to **Read holding register 03H** or **Read holding register 04H** based on the protocol adopted by the vendor.
Data reporting mode	Set this parameter to **Integer** or **Floating point** based on the protocol adopted by the vendor.
Word ordering	Set this parameter to **Big endian** or **Little endian** based on the protocol adopted by the vendor.
Read mode	The value can be **Multiple read** or **Single read**.
Start address	If **Read mode** is set to **Multiple read**, set the start address for reading.
End address	If **Read mode** is set to **Multiple read**, set the end address for reading.
Signal parameters **NOTE** Signal parameters include **Signal Name**, **Signal address**, **Gain**, **Offset**, and **Unit**.	Set these parameters based on the vendor protocol. **NOTE** If the EMI can collect a signal, set **Signal address** for the signal to the corresponding register address. If the EMI cannot collect a signal, set **Signal address** for the signal to **65535**.

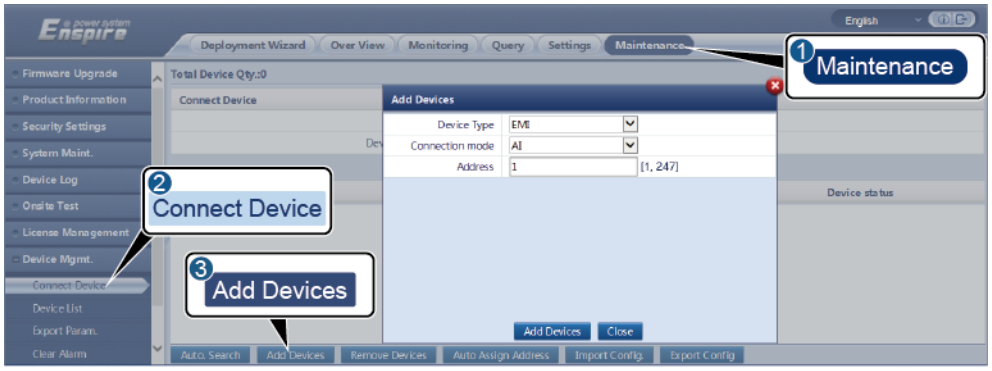
----End

6.3.9.2 Setting AI EMI Parameters

Procedure

Step 1 Log in as **Advanced User** or **Special User**, set access parameters, and click **Add Devices**.

Figure 6-27 Setting access parameters

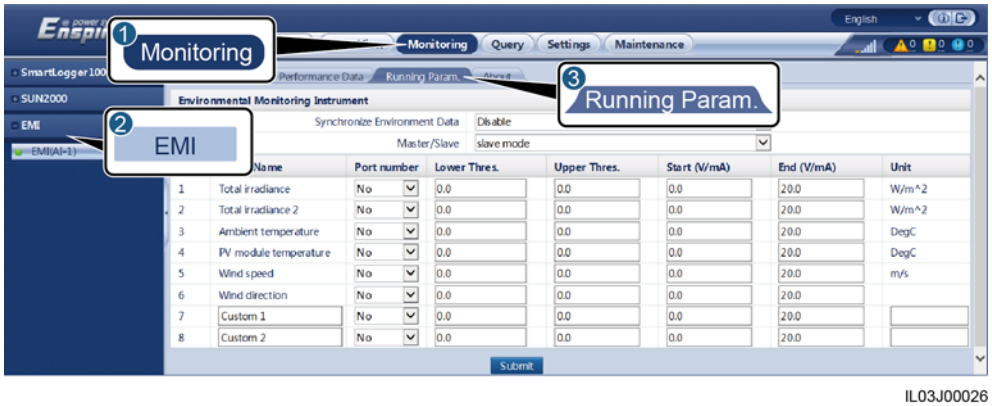


IL03J00025

Parameter	Description
Device Type	Set this parameter to **EMI**.
Connection mode	Set this parameter to **AI**.
Address	Set this parameter to the communication address of the EMI.

Step 2 Log in as **Advanced User**, set running parameters, and click **Submit**.

Figure 6-28 Setting running parameters



IL03J00026

Parameter	Description
Synchronize Environment Data	You are advised to retain the default value **Disable**. **NOTE** When this parameter is set to **Enable**, the SmartLogger transmits the wind speed and direction data to the solar inverter in a PV plant with the tracking system.
Master/Slave	When the SmartLogger connects to multiple EMIs, set one of them to **master mode**. The solar inverter performance data displayed is the data of the EMI in **master mode**.
Signal parameters **NOTE** Signal parameters include **Signal Name**, **Port number**, **Lower Thres.**, **Upper Thres.**, **Start (V/mA)**, **End (V/mA)**, and **Unit**.	Set these parameters as required. **NOTE** When you need to change the configured port number, set **Port number** to **No** first, then to the required port number.

----End

6.3.10 Setting IEC103 Device Parameters

Description

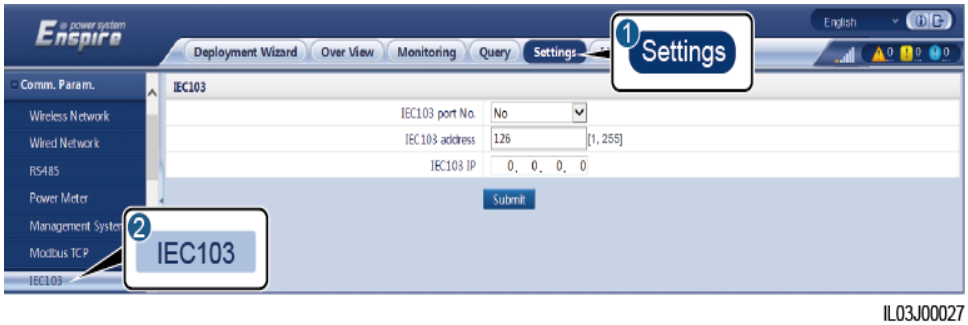
An IEC103 device supports two data transmission modes:

- **Transparent transmission mode**: When connecting to the management system, the SmartLogger transparently transmits the IEC103 device information to the management system. The SmartLogger does not parse the IEC103 device data.
- **Parsing mode**: The IEC103 device is connected to the SmartLogger, and the SmartLogger parses the IEC103 device data.

Transparent Transmission Mode

Step 1 Log in as **Advanced User**, set IEC103 parameters, and click **Submit**.

Figure 6-29 Setting IEC103 parameters



IL03J00027

Parameter	Description
IEC103 port No.	Set this parameter based on the COM port connected to the device.
IEC103 address	Set this parameter to the IEC103 device address.
IEC103 IP	Set this parameter to the IP address of the management system.

----End

Parsing Mode

The SmartLogger can connect to third-party devices that support IEC103, such as the relay protection or monitoring device like the transformer substation. The protocol information points vary depending on vendors. Therefore, you need to obtain a protocol information file in **.cfg** format from Huawei and import the file into the SmartLogger for successfully connecting to a custom device.

The supported device types are IEC103 device 1 to IEC103 device 5. The corresponding configuration file names are **iec103_equip_custom_1.cfg** to **iec103_equip_custom_5.cfg**. Multiple devices of the same type can be connected.

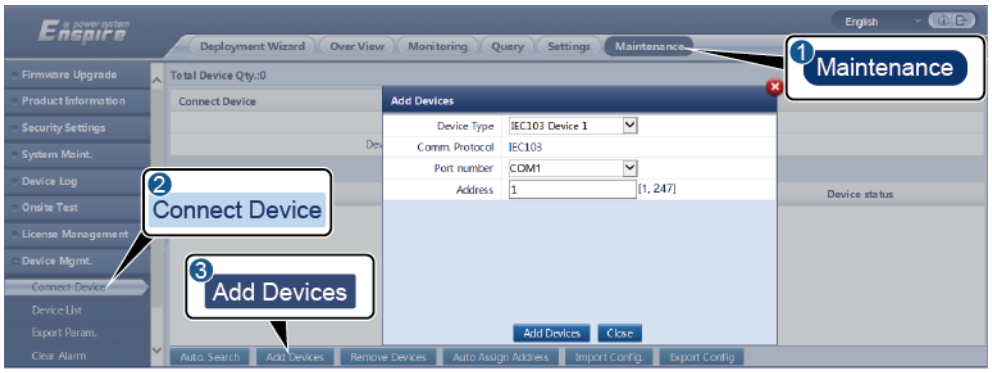
Step 1 Log in as **Advanced User** or **Special User**, configure a protocol information point file in **.cfg** format, and import the file to the SmartLogger.

Figure 6-30 Importing configuration

IL03J00028

Step 2 Set access parameters and click **Add Devices**.

Figure 6-31 Setting access parameters



IL03J00029

Parameter	Description
Device Type	The value can be **IEC103 Device 1** to **IEC103 Device 5**. Select a value based on the configuration file. For example, if **iec103_equip_custom_1.cfg** needs to be imported, select **IEC103 Device 1**.
Port number	Set this parameter to the COM port connected to the IEC103 device.
Address	Set this parameter to the communication address of the IEC103 device.

Step 3 Log in as **Common User**, **Advanced User**, or **Special User**, set device monitoring parameters, and click **Submit**.

Figure 6-32 Device monitoring

IL03J00030

Tab	Function	Description
Running Info.	View the running information about the IEC103 device.	N/A
Teleindication	View the device status, such as the switch status.	N/A
Telemetering	View the real-time analog data of the device, such as the voltage.	N/A
Telecontrol	Set the status control parameters, such as the parameters for turning on or off switches.	Set the parameters on the tab page as required.
Teleadjust	Set analog parameters, for example, set voltage protection parameters.	Set the parameters on the tab page as required.

----End

6.3.11 Setting Parameters for a Custom Device

Context

The SmartLogger can connect to third-party devices supporting the Modbus-RTU protocol, such as the transformer substation and EMI. The protocol information points vary depending on vendors. Therefore, you need to configure a protocol information file in **.cfg** format and import the file into the SmartLogger for successfully connecting to a custom device.

The supported device types are custom device 1 to custom device 5. The corresponding configuration file names are **modbus_equip_custom_1.cfg** to **modbus_equip_custom_5.cfg**. Multiple devices of the same type can be connected.

Procedure

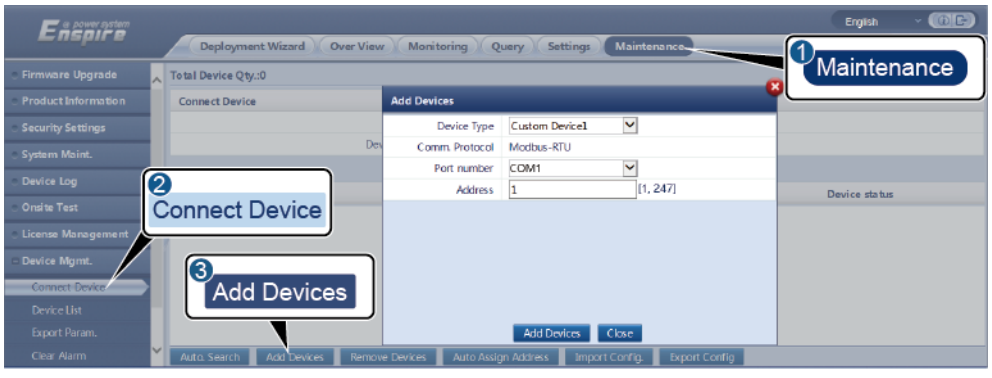
Step 1 Log in as **Advanced User** or **Special User**, configure a protocol information point file in **.cfg** format, and import the file to the SmartLogger.

Figure 6-33 Importing configuration

IL03J00028

Step 2 Set access parameters and click **Add Devices**.

Figure 6-34 Setting access parameters

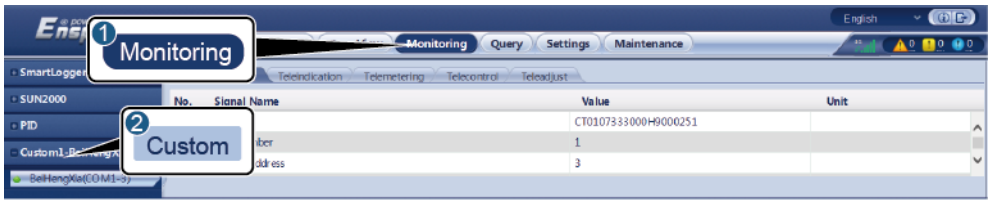


IL03J00031

Parameter	Description
Device Type	The value can be **Custom Device 1** to **Custom Device 5**. Select a value based on the configuration file. For example, if **modbus_equip_custom_1.cfg** needs to be imported, select **Custom Device 1**.
Port number	Set this parameter to the serial number of the COM port connected to the custom device.
Address	Set this parameter to the communication address of the custom device.

Step 3 Log in as **Common User**, **Advanced User**, or **Special User**, set device monitoring parameters, and click **Submit**.

Figure 6-35 Device monitoring



IL03J00032

Tab	Function	Description
Running Info.	View the running information about the custom device.	N/A
Teleindication	View the device status, such as the switch status.	N/A
Telemetering	View the real-time analog data of the device, such as the voltage.	N/A
Telecontrol	Set the status control parameters, such as the parameters for turning on or off switches.	Set the parameters on the tab page as required.
Teleadjust	Set analog parameters, for example, set voltage protection parameters.	Set the parameters on the tab page as required.

----End

6.4 Power Grid Scheduling

According to standard requirements, the SmartLogger can reliably adjust power for the connected inverters in real time to ensure that the PV plant can respond to requirements of the power grid company in a timely manner.

6.4.1 Power Adjustment Description

According to standard requirements, the SmartLogger can reliably adjust power for the connected inverters in real time to ensure that the PV plant can respond to requirements of the power grid company in a timely manner.

NOTICE

- To ensure that the SmartLogger will deliver scheduling commands to the connected inverters, you must enable active or reactive power control before adjusting the active or reactive power for a PV plant.
- If you disable active or reactive power control, the SmartLogger will not deliver scheduling commands to the connected inverters and the inverters will retain their status after the previous change.

6.4.2 Setting Active Power Control

If the PV plant has requirements of power limitation, the power grid scheduling personnel should limit the active power or disable all the active power for the PV plant, that is, to enable the active power derating mode.

Step 1 Log in as **Special User**, and choose **Monitoring** > **SUN2000** > **Running Param.Power Adjustment**. On the displayed page, ensure that **Remote power schedule** is set to **Enable**.

Step 2 Set the parameters for active power control and click **Submit**.

Figure 6-36 Active power control

----End

No Limit

Parameter	Description
Active power control mode	If this parameter is set to **No limit**, the solar inverter runs at full load.

DI Active Scheduling

NOTICE

- When setting this function, ensure that the user-defined DI port is not occupied. Otherwise, the setting will fail.
- When setting this function, ensure that the SmartLogger is correctly connected to a ripple control receiver. (In Germany and some other European areas, a Ripple Control Receiver is used to convert a power grid scheduling signal to a dry contact signal, in which a dry contact is needed.)

Parameter	Description
Active power control mode	Set this parameter to DI active scheduling.
DI parameters **NOTE** DI parameters include **DI1**, **DI2**, **DI3**, **DI4**, and **Percentage(%)**.	• Sixteen levels are supported for the active power derating percentage. • "√" indicates a low level. When the four DI ports of the SmartLogger are connected, the ports are low-level ports. When not connected, the ports are high-level ports. • The percentage levels of DI1–DI4 should differ from each other. Otherwise, an abnormal command will be generated. • If the actual input DI signal is inconsistent with that configured on the WebUI, the SmartLogger controls the solar inverter to work at full load and the Abnormal Active Schedule alarm is raised.

Percentage Fixed-valve Limitation (open loop)

The SmartLogger provides simplified active power percentage configuration as well as power control automation, that is, to automatically adjust the active power derating percentage in different periods of a day.

Parameter	Description
Active power control mode	Set this parameter to **Percentage fixd-value limitation (open loop)** to control the maximum power output of the solar inverter in different periods of a day.
Start time Percentage(%)	If the solar inverter needs to run with specified maximum power in certain periods of a day, add setting records based on site requirements. When multiple time points are set, the solar inverter will run with the maximum power specified for the time point that is earlier than and the closest to the current system time. For example, if you add 00:00:00 and 12:00:00 on the WebUI and the current system current is 14:30:00, the solar inverter will run with the maximum power specified for 12:00:00.

Remote Communication Scheduling

The management system or independent power adjustment device sends scheduling commands over the communications port that works with Modbus-TCP or IEC104, without the need of user configuration or operation. The SmartLogger can automatically switch between scheduling modes and send scheduling commands.

Parameter	Description
Active power control mode	Set this parameter to **Remote communication scheduling**. The SmartLogger parses the scheduling command delivered by the upper-layer management system to valid instruction data that can be identified by the solar inverters in the PV plant and delivers the data to all solar inverters connected to the SmartLogger. As the **Remote communication scheduling mode** has a higher priority, the SmartLogger automatically changes **Active power control mode** to **Remote communication scheduling** after receiving a scheduling command from the upper-layer management system.

Parameter	Description
Schedule strategy	The value can be **Disable**, **Strategy 1**, or **Strategy 2**. • **Disable**: The SmartLogger controls the solar inverter to work at full load and will not receive scheduling commands sent by the management system. • **Strategy 1**: Open-loop scheduling policy. That is, the SmartLogger evenly allocates the power value from the scheduling and delivers the average value to each solar inverter, which then operates with the specific power. The adjustment value delivered by the SmartLogger is constant. If **Adjustment coefficient** is set, the power value will be sent to the solar inverter after being multiplied by the preset coefficient. • **Strategy 2**: The customized function is provided for a specific power plant. Set **Overshoot**, **Adjustment period**, and **Adjustment deadband** based on the scheduling requirements of the power plant. – **Overshoot**: Indicates the maximum overshoot percentage during adjustment. If a PV plant cannot reach the preset target value due to factors such as insufficient sunlight, the set target value is the current value plus the overshoot. – **Adjustment period**: Indicates the time required from adjustment instruction delivery, solar inverter response to the instruction, to the detection of the preceding actions by the SmartLogger. – **Adjustment deadband**: Indicates the percentage of the adjustment deviation value to the rated output capacity. In the adjustment deadband, strategy 2 does not deliver control instructions but still detects the deviation in real time.
Shutdown upon communication exceptions	If this parameter is set to **Enable**, the SmartLogger shuts down solar inverters when the communication between the SmartLogger and the scheduling background is interrupted and the duration of communication interruption exceeds the value specified by **Time for communication exception detection**.

Parameter	Description
Time for communication exception detection	If the duration of communication interruption between the SmartLogger and the scheduling background exceeds the value specified by **Time for communication exception detection**, the communication between the SmartLogger and the scheduling background is abnormal.
Automatic startup upon communication recovery	Allows a solar inverter to be automatically started if the communication recovers after an exception.

Export Limitation (kW)

NOTICE

- You are advised to choose **Settings** > **Export Limitation (kW)** and enable the grid connection with limited power function.
- To enable this function, you need to set power meter, inverter, and grid connection with limited power parameters. This section describes how to set grid connection with limited power parameters.
- Before setting the parameters, ensure that a power meter has been connected to the SmartLogger.

Step 1 Set export limitation parameters and click **Submit**.

Parameter	Description
Active power control mode	Set this parameter to **Export Limitation (kW)** Export.
Power meter	Set this parameter to **Smart meter**. Otherwise, the function will not take effect.
Electric meter power direction	When the inverter has no output power, set this parameter to **Positive** if the active power reading of the power meter is positive. Otherwise, set this parameter to **Reverse**.
Limitation mode	• Total power: controls the total power at the grid-tied point to limit the power fed to the power grid. • Single-phase power: controls the power of each phase at the grid-tied point to limit the power fed to the power grid.

Parameter	Description
Maximum grid feed-in power	Indicates the maximum power that the inverter can feed into the power grid. Suggestion: Set this parameter based on the export limitation threshold allowed by the power grid company.
Power lowering adjustment period	Specifies the period for lowering the inverter output power.
Maximum protection time	Specifies the maximum duration from the time when the SmartLogger detects backflow to the time when the inverter output power reaches 0. Suggestion: Set this parameter based on the maximum backflow duration allowed by the power grid company.
Power raising threshold	Specifies the threshold for raising the inverter output power.
Fail-safe power threshold	Inverter output power percentage is controlled by the SmartLogger when communication between the SmartLogger and the power meter is abnormal.
Switch-off with 0% power limit	Specifies whether the DO port is allowed to control switch-off.
Switch-off control port	Set this parameter to the DO port that controls switch-off.
Switch-on control port	Set this parameter to the DO port that controls switch-on.
Switch-off state feedback port	Set this parameter to the DI port that reports the switch-off status.
Switch-on state feedback port	Set this parameter to the DI port that reports the switch-on status.

Step 2 Verify that the SmartLogger can remotely turn on and off circuit breakers in scenarios with circuit breakers.

- Click **Switch off** and check that the circuit breaker is switched off properly.
- Click **Switch on** and check that the circuit breaker is switched on properly.

----End

Remote Output Control

Step 1 Log in as **Advanced User** and synchronize the clock source of the server.

Path	Parameter	Description
Settings > **User Param.** > **Date&Time**	Clock source	Set this parameter to **NTP**.
	Server	Set this parameter to the IP address or domain name of the server for time synchronization.
	Port	Set this parameter to the port number of the server for time synchronization.
	Synchronization time interval	Set this parameter to the interval for the SmartLogger to synchronize time with the server.
	NTP synchronization test	You can click this button to check the time synchronization status.

Step 2 Log in as **Special User** and set remote output control parameters.

Path	Parameter	Description
Settings > **Active Power Control**	Active power control mode	Set this parameter to **Remote output control**.
	Control area	Set this parameter to the area where the remote output control function is used. To enable the function in some areas, the license needs to be imported and enabled.
	Output control duration	Set this parameter to the time required for the solar inverter to change its output power from 0% to 100% or from 100% to 0%.
	PV plant ID	Set this parameter to the PV plant ID.
	Remote output control server	Set this parameter to the IP address or domain name of the server.
	Enable certificate	Determine whether to import and enable a certificate based on the actual situation.
	PV module capacity	Set this parameter to the capacity of PV modules connected to the PV plant.
	Plant AC capacity	Set this parameter to the AC capacity of the restricted power that is fed into the power grid from the PV plant.

NOTE

- If the connection between the SmartLogger and the server is abnormal, obtain the output control file in .data format from the website of the power company and import the file.
- After the SmartLogger connects to the server, you can export the relevant file.

----End

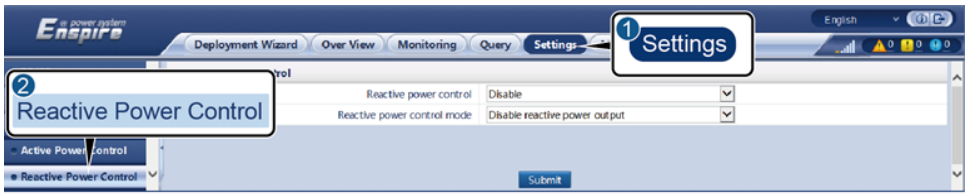
6.4.3 Setting Reactive Power Control

Large-scale PV plants are required to adjust the voltage at the grid-tied point. Power grid scheduling personnel enable a PV plant to absorb or add reactive power at the grid-tied point, that is, to enable the reactive power compensation, based on the real-time reactive power transmission status in the power grid.

Step 1 Log in as **Special User**, and choose **Monitoring** > **SUN2000** > **Running Param.Power Adjustment**. On the displayed page, ensure that **Remote power schedule** is set to **Enable**.

Step 2 Set the parameters for reactive power control and click **Submit**.

Figure 6-37 Reactive power control



----End

No Output

Parameter	Description
Reactive power control mode	If the PV plant is not required to adjust the voltage at the grid-tied point or perform reactive power compensation, solar inverters can run with only active power output. In this case, set this parameter to **No Output**.

DI Reactive Scheduling

NOTICE

- Before setting this function, ensure that the DI port is not occupied. Otherwise, the setting fails.
- Before setting this function, ensure that the SmartLogger is correctly connected to a ripple control receiver.

Parameter	Description
Reactive power control mode	Set this parameter to **DI reactive schelduling**.
DI parameters **NOTE** DI parameters include **DI1**, **DI2**, **DI3**, **DI4**, and **Power factor**.	• Sixteen levels are supported for power factors. • "√" indicates a low level. When the four DI ports of the SmartLogger are connected, the ports are low-level ports. When not connected, the ports are high-level ports. • The percentage levels of DI1–DI4 should differ from each other. Otherwise, an abnormal command is generated. • If the actual input DI signal is inconsistent with that configured on the WebUI, the SmartLogger controls the solar inverter to work at full power and the Abnormal Reactive Schedule alarm is raised.

Reactive Power Fix Control

Parameter	Description
Reactive power control mode	If the PV array is required to generate constant reactive power at a specified time, set this parameter to **Reactive power fix control**.
Start time	If the solar inverter is required to run with specified maximum power in certain periods of a day, add setting records based on site requirements. When multiple time points are set, the solar inverter will run with the maximum power specified for the time point that is earlier than and the closest to the current system time. For example, if you add 00:00:00 and 12:00:00 on the WebUI and the current system current is 14:30:00, the solar inverter will run with the maximum power specified for 12:00:00.
Reactive power (kVar)	

Power Factor Fix Control

Parameter	Description
Reactive power control mode	If the PV plant is required to generate a constant power factor at the grid-tied point and the solar inverter is required to adjust the real-time reactive power based on the preset power factor, set this parameter to **Power factor fix control**.
Start time	If the solar inverter is required to run with a specified power factor in certain periods of a day, add setting records based on site requirements. When multiple time points are set, the solar inverter will run with the maximum power specified for the time point that is earlier than and the closest to the current system time. For example, if you add 00:00:00 and 12:00:00 on the WebUI and the current system current is 14:30:00, the solar inverter will run with the maximum power specified for 12:00:00.
Power factor	

Q-U Characteristic Curve

If you do not need the SmartLogger to send remote reactive power control commands, you can configure the characteristic curve as a substitute. The SmartLogger delivers the values configured for the characteristic curve to the solar inverter, which then operates according to the configuration. The SmartLogger no longer adjusts the values.

NOTICE

Configure the characteristic curve under instructions from professionals to ensure that the solar inverter works properly.

The Q-U characteristic curve control mode is to dynamically adjust the ratio Q/S of output reactive power to apparent power in accordance with the ratio U/Un(%) of the actual grid voltage to the rated grid voltage.

Parameter	Description
Reactive power control mode	Set this parameter to **Q-U characteristic curve**.

Parameter	Description
Reactive power adjustment time	Specifies the change interval of the reactive power for a grid-tied point.
Percents of trigger frequency	Under a specific grid code, after you set this parameter, the characteristic curve takes effect only when the actual output active power of the solar inverter is greater than the preset value.
Exit power percentage	Under a specific grid code, after you set this parameter, the characteristic curve becomes invalid when the actual output active power of the solar inverter is less than the preset value.
Limit value for minimum PF	After you set this parameter, the actual output PF of the solar inverter is greater than the value of this parameter.
Characteristic curve points	Specifies the number of characteristic curve points. The characteristic curve supports a maximum of 10 valid points.
U/Un(%)	When configuring the curve, ensure that the U/Un(%) value of a point is greater than the U/Un(%) value of the previous point. Otherwise, the message indicating invalid input will be displayed.
Q/S	

cosϕ-P/Pn Characteristic Curve

If you do not need the SmartLogger to send remote reactive power control commands, you can configure the characteristic curve as a substitute. The SmartLogger delivers the values configured for the characteristic curve to the solar inverter, which then operates according to the configuration. The SmartLogger no longer adjusts the values.

NOTICE

Configure the characteristic curve under instructions from professionals to ensure that the solar inverter works properly.

The cosϕ-P/Pn characteristic curve control mode is to dynamically adjust the power factor cosϕ in accordance with the P/Pn (%) based on the VDE-4105 and BDEW German standards.

Parameter	Description
Reactive power control mode	Set this parameter to **cosϕ-P/Pn characteristic curve**.
Reactive power adjustment time	Controls the reactive power change time at the grid connection point.
Characteristic curve points	Specifies the number of characteristic curve points. The characteristic curve supports a maximum of 10 valid points.
U/Un(%)	When configuring the curve, ensure that the P/Pn(%) value of a point is greater than the P/Pn(%) value of the previous point. Otherwise, the message indicating invalid input will be displayed.
cosϕ	

Q-U Hysteresis Curve (CEI0-16)

If you do not need the SmartLogger to send remote reactive power control commands, you can configure the characteristic curve as a substitute. The SmartLogger delivers the values configured for the characteristic curve to the solar inverter, which then operates according to the configuration. The SmartLogger no longer adjusts the values.

NOTICE

Configure the characteristic curve under instructions from professionals to ensure that the solar inverter works properly.

The Q-U hysteresis curve (CEI0-16) control mode is the Italian standard CEI0-16 version of the Q-U characteristic curve. It dynamically adjusts the output reactive power of the solar inverter in accordance with the ratio of the actual voltage to the rated voltage. The final value should be in the form of Q/S.

Parameter	Description
Reactive power control mode	Set this parameter to **Q-U hysteresis curve(CEI0-16)**.
Reactive power adjustment time	Specifies the change interval of the reactive power for a grid-tied point.
Trigger power ratio	Under a specific grid code, after you set this parameter, the characteristic curve takes effect only when the actual output active power of the solar inverter is greater than the preset value.

Parameter	Description
Exit power percentage	Under a specific grid code, after you set this parameter, the characteristic curve becomes invalid when the actual output active power of the solar inverter is less than the preset value.
Limit value for minimum PF	After you set this parameter, the actual output PF of the solar inverter is greater than the value of this parameter.
U/Un(%)	When configuring the curve, ensure that the U/Un(%) value of a point is greater than the U/Un(%) value of the previous point. Otherwise, the message indicating invalid input will be displayed. When configuring the curve, ensure that the Q/S values at points A and B are the same and set in sequence, and that the Q/S values at points C and D are the same and set in sequence. Otherwise, a message indicating invalid input is displayed.
Q/S3	

Remote Communication Scheduling

The management system or independent power adjustment device sends scheduling commands over the communications port that works with Modbus-TCP or IEC104, without the need of user configuration or operation. The SmartLogger can automatically switch between scheduling modes and send scheduling commands.

Parameter	Description
Reactive power control mode	As the **Remote communication scheduling** has a higher priority, the SmartLogger automatically changes **Reactive power control mode** to **Remote communication scheduling** after receiving a scheduling command from the upper-layer management system. If this parameter is set to **Remote communication scheduling**, the SmartLogger parses the scheduling command delivered by the upper-layer management system to valid instruction data that can be identified by the solar inverters in the PV plant and delivers the data to all solar inverters connected to the SmartLogger.

Power Factor Closed-Loop Control (Old Policy)

NOTICE

Before setting this parameter, ensure that the power meter is correctly connected to the SmartLogger.

Parameter	Description
Reactive power control mode	Set this parameter to **Power factor closed-loop control (old policy)**.
Target power factor	Specifies the target value for the adjustment power factor of the power meter.
Adjustment period	Specifies the interval for sending adjustment commands by the SmartLogger.
Adjustment deadband	Specifies the adjustment power factor precision. **NOTE** This parameter is valid only when the power factor of the power meter is greater than 0.9.

Power Factor Closed-Loop Control

To improve the revenue, a distributed PV plant needs to reduce or avoid the power factor surcharge by performing the distributed reactive power compensation. To enable the function, set the related parameters.

NOTICE

Before setting this parameter, ensure that the power meter is correctly connected to the SmartLogger.

Parameter	Description
Reactive power control mode	Set this parameter to **Power Factor Closed-Loop Control**.

Parameter	Description
Electric meter power direction	When the solar inverter has no output power, set this parameter to **Positive** if the active power displayed on the meter is positive. Otherwise, set this parameter to **Reverse**. After the setting is complete, you can check the power direction of the power meter if you are not sure about it.
Power meter	Set this parameter to **Smart meter**.
Target power factor	Specifies the target value for the adjustment power factor of the power meter. The target value should be larger than the appraisal value of the PV plant power factor.
Adjustment period	Specifies the interval for sending adjustment commands by the SmartLogger.
Adjustment deadband	Specifies the adjustment power factor precision. **NOTE** This parameter is valid only when the power factor of the power meter is greater than 0.9.
Reactive compensation delay	Specifies the delay time for starting the distributed power factor compensation if the current power factor is lower than the target power factor.

NOTE

When the SmartLogger receives a remote reactive power scheduling command from the PV plant, **Reactive power control mode** automatically switches to **Remote communication scheduling**. To perform distributed reactive power compensation again, set **Reactive power control mode** to **Power Factor Closed-Loop Control** and set the target power factor correctly.

PF-U Characteristic Curve

If you do not need the SmartLogger to send remote reactive power control commands, you can configure the characteristic curve as a substitute. The SmartLogger delivers the values configured for the characteristic curve to the solar inverter, which then operates according to the configuration. The SmartLogger no longer adjusts the values.

NOTICE

Configure the characteristic curve under instructions from professionals to ensure that the solar inverter works properly.

The control mode of the PF-U characteristic curve is to dynamically adjust the PF value in accordance with the ratio U/Un(%) of the actual grid voltage to the rated grid voltage.

Parameter	Description
Reactive power control mode	Set this parameter to **PF-U characteristic curve**.
Characteristic curve points	Specifies characteristic curve points. The characteristic curve supports a maximum of 10 valid points.
U/Un(%)	When configuring the curve, ensure that the U/Un(%) value of a point is greater than that of the previous point. Otherwise, the "Invalid input" message will be displayed.
PF	

Q-P Characteristic Curve

If you do not need the SmartLogger to send remote reactive power control commands, you can configure the characteristic curve as a substitute. The SmartLogger delivers the values configured for the characteristic curve to the solar inverter, which then operates according to the configuration. The SmartLogger no longer adjusts the values.

NOTICE

Configure the characteristic curve under instructions from professionals to ensure that the solar inverter works properly.

The control mode of the Q-P characteristic curve is to dynamically adjust the PF value in accordance with the ratio P/Pn of the actual grid voltage to the rated grid voltage.

Parameter	Description
Reactive power control mode	Set this parameter to **Q-P characteristic curve**.
Reactive power adjustment time	Controls the reactive power change time at the grid connection point.

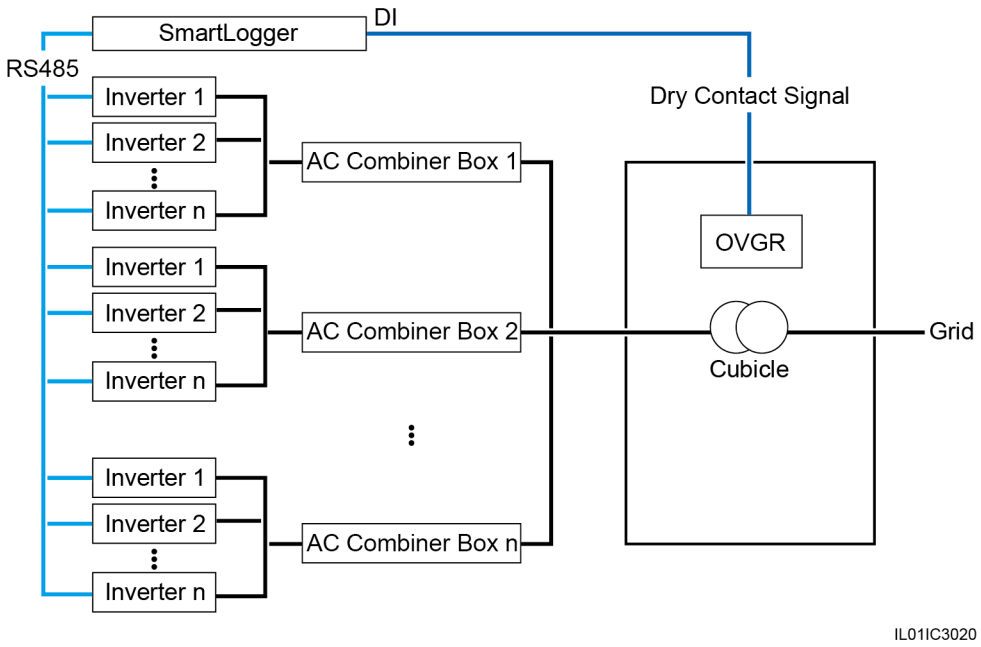
Parameter	Description
Characteristic curve points	Specifies characteristic curve points. The characteristic curve supports a maximum of 10 valid points.
P/Pn	When configuring the curve, ensure that the P/Pn(%) value of a point is greater than that of the previous point. Otherwise, the **Invalid input** message will be displayed.
Q/Pn	

6.4.4 Setting Remote Shutdown over Dry Contacts

Context

The SmartLogger provides four DI ports. The OVGR can connect to any DI port. The SmartLogger shuts down the solar inverter over OVGR signals.

Figure 6-38 Networking



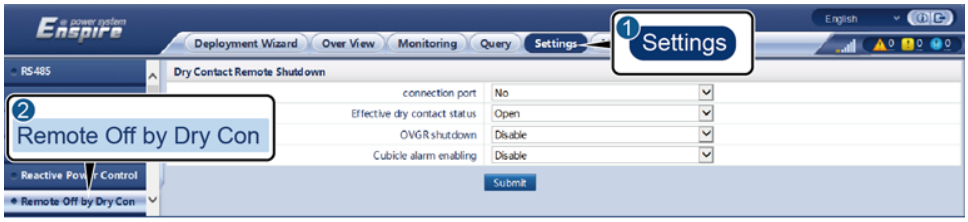
NOTICE

When setting this function, ensure that the user-defined DI port is not occupied. Otherwise, the setting will fail.

Procedure

Step 1 Log in as **Special User** and set parameters for remote shutdown over dry contacts.

Figure 6-39 Remote Off by Dry Con



IL03J00035

Parameter	Description
connection port	Set this parameter to the DI port connected to OVGR signals.
Effective dry contact status	The value can be **Open** or **Close**. **NOTE** If OVGR shutdown is enabled and this parameter is set to **Close**, the SmartLogger sends a solar inverter shutdown command only when the corresponding DI port is in the **Close** state.
OVGR shutdown	Specifies whether to enable shutdown over OVGR.
Cubicle alarm enabling	If this parameter is set to **Enable**, the Abnormal Cubicle alarm is raised when the dry contact signal is effective and the Cubicle is abnormal.

----End

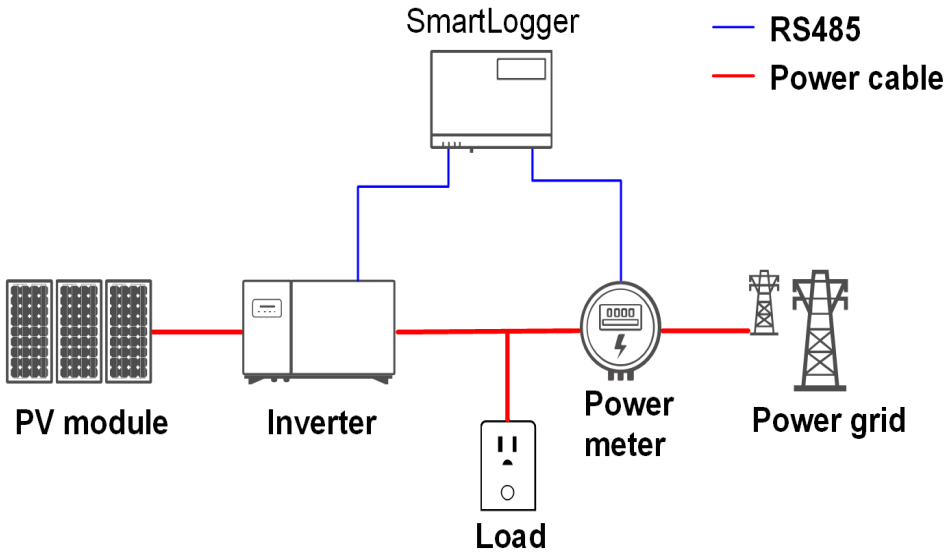
6.4.5 Setting Export Limitation Parameters

Context

When the PV plant generates power for self-consumption, countercurrent may feed into the power grid if the loads cannot consume all the power. In this case, you can set the export limitation parameters over the WebUI to prevent countercurrent.

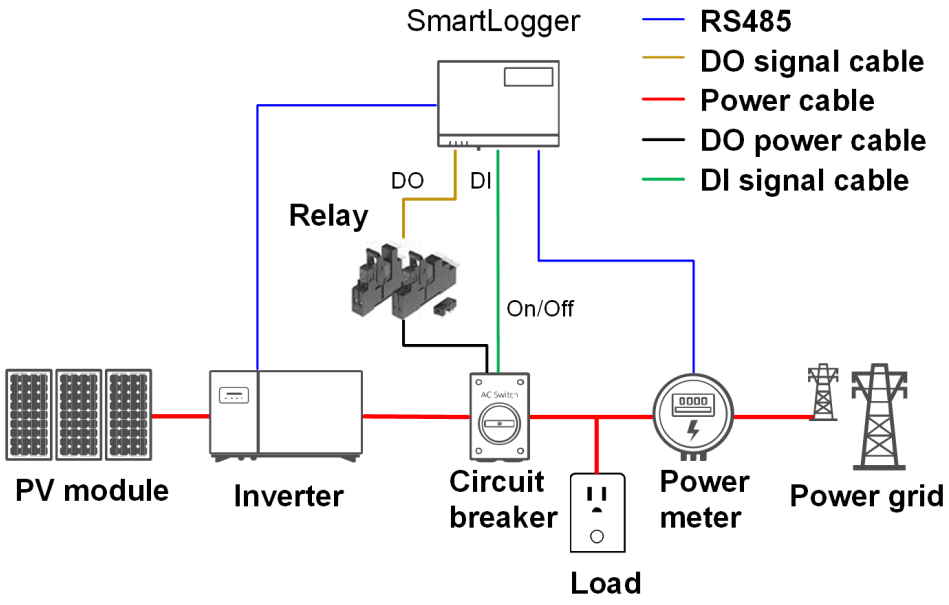
- Scenario without a circuit breaker: The countercurrent feeding into the power grid can be eliminated by sending a command from the SmartLogger to lower the solar inverter output power.

Figure 6-40 Network diagram (without a circuit breaker)



- Scenario with a circuit breaker: If the countercurrent feeding into the power grid cannot be eliminated by sending a command from the SmartLogger to lower the solar inverter output power, and **Maximum protection time** is exceeded, the SmartLogger drives the relay to switch off the circuit breaker by controlling the DO port to prevent countercurrent. When the DI port detects that the circuit breaker is switched off, the DO port of the SmartLogger and the relay will be switched off, and the SmartLogger will restore to the initial state.

Figure 6-41 Network diagram (with a circuit breaker)



CAUTION

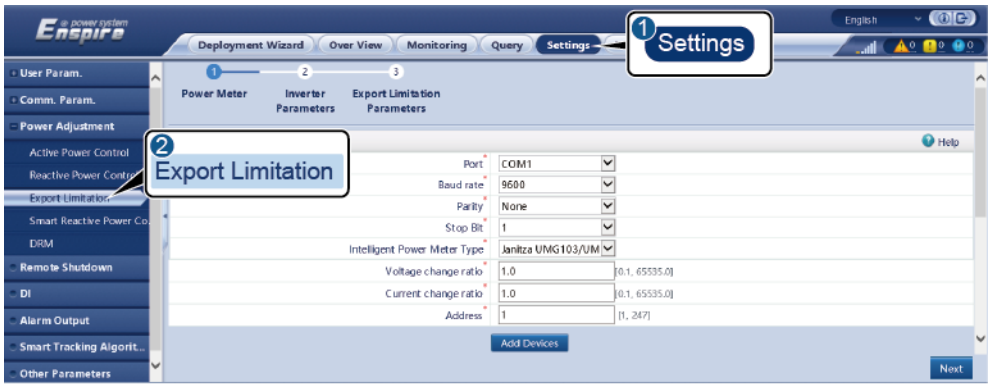
In the scenario with a circuit breaker, place the power supply of the SmartLogger before the circuit breaker to avoid the SmartLogger power-off after the DO switches off the circuit breaker.

Procedure

Step 1 Log in as **Special User**.

Step 2 Set parameters as prompted. For details, click **Help** on the page.

Figure 6-42 Setting export limitation parameters



IL04J00011

----End

6.4.6 Setting DRM Parameters

Context

According to an Australian standard, the inverters must comply with demand response modes (DRM).

Figure 6-43 Wiring diagram for the DRM function

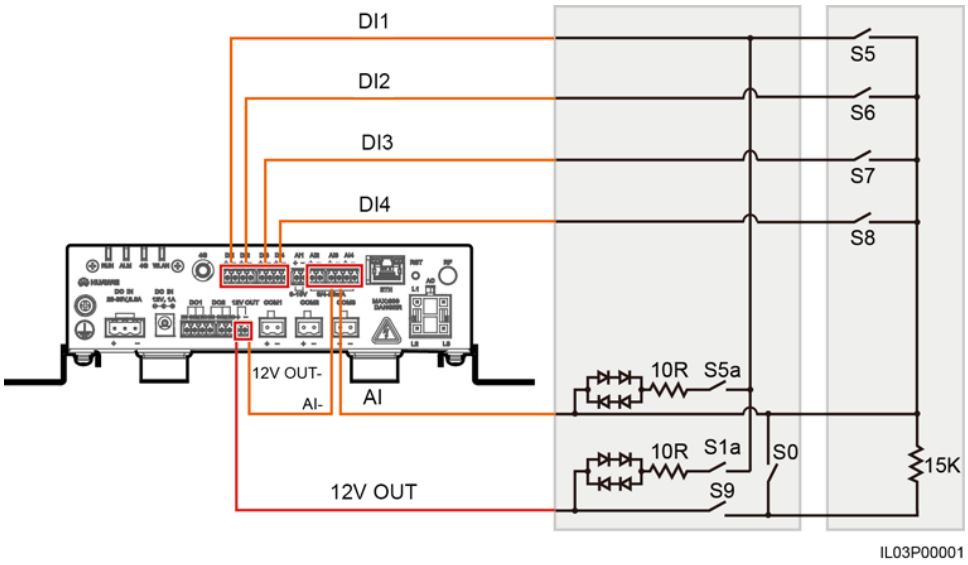


Table 6-3 DRM requirements

Mode	Corresponding Port on the SmartLogger	Requirements	Remarks
DRM0	AI2–AI4	• When S0 is turned on, the inverters shut down. • When S0 is turned off, the inverters are connected to the power grid.	N/A
DRM5	DI1	When S5 is turned on, the inverters do not output active power.	When two or more DRM modes are used at the same time, the strictest requirement must be met.
DRM6	DI2	When S6 is turned on, the output active power of the inverters does not exceed 50% of the rated power.	
DRM7	DI3	When S7 is turned on, the output active power of the inverters does not exceed 75% of the rated power, and the inverters consume the maximum reactive power.	
DRM8	DI4	When S8 is turned on, the output active power of inverters recovers. **NOTE** The inverters output active power based on the percentage set on the SmartLogger.	

Procedure

Step 1 Log in as **Special User** and click **Settings**. Ensure that **Active power control** and **Reactive Power Control** are set to **Disable**, and **Dry Contact Remote Shutdown** does not include DI ports.

Step 2 Set DRM parameters and click **Submit**.

Figure 6-44 Setting DRM parameters

IL02J00001

Parameter	Description
connection port	Set the parameter to the AI port for DRM signals.
Startup current range	If the current of the AI port is within the setting range, inverters are turned on. Otherwise, inverters are turned off.
Power Control	Set DI parameters based on the DRM requirements.

----End

7 Device Maintenance

7.1 Routine Maintenance

- Ensure that the SmartLogger is free from strong electromagnetic interference.
- Ensure that the SmartLogger is away from heat sources.
- Ensure that the heat dissipation holes are not blocked.
- Regularly clean the SmartLogger.
- Regularly check that cables are secured.

7.2 Troubleshooting

No.	Symptom	Possible Cause	Suggestion
1	The SmartLogger cannot be power on	1. The DC output power cable for the power adapter does not connect to the 12V IN port of the SmartLogger. 2. The power cable does not connect to the AC power receiving port of the power adapter. 3. The AC input power cable does not connect to the AC socket. 4. The power adapter is faulty. 5. The SmartLogger is faulty.	1. Connect the DC output power cable for the power adapter to the 12V IN port of the SmartLogger. 2. Check that the power cable connects to the AC power receiving port of the power adapter. 3. Check that the power cable connects to the AC socket. 4. Replace the power adapter. 5. Contact the vendor or Huawei technical support.

No.	Symptom	Possible Cause	Suggestion
2	No device is found	1. The COM port does not connect to any device, or the cable is loose, disconnected, or reversely connected. 2. RS485 communications parameters are not correctly set, and the solar inverter address is beyond the search range preset on the SmartLogger. 3. The devices that cannot be detected automatically, such as the EMI and power meter, are not manually added.	1. Check the RS485 cables. If they are loose, disconnected, or connected reversely, reconnect them securely and correctly. 2. Check that the settings of RS485 communications parameters, such as the baud rate and communications address, are correctly set, and that the solar inverter address is within the search range preset on the SmartLogger. 3. Manually add the devices that cannot be detected automatically, such as the EMI and power meter. 4. Contact the vendor or Huawei technical support.
3	The communication for MBUS networking fails	1. The solar inverter and SmartLogger do not support MBUS. 2. The AC power cable is loose, disconnected, or reversely connected. 3. The upstream circuit breaker for the AC power cable is switched off. 4. In MBUS networking, **Built-in MBUS** or **Networking** is set to **Disable**. 5. The SmartLogger is faulty.	1. Check whether the solar inverter and SmartLogger support MBUS. 2. Check the AC power cable. If it is loose, disconnected, or connected reversely, reconnect it securely and correctly. 3. Check that the upstream circuit breaker for the AC power cable is switched on. 4. Set **Built-in MBUS** and **Networking** to **Enable**. 5. Contact the vendor or Huawei technical support.

No.	Symptom	Possible Cause	Suggestion
4	The communication for optical fiber networking fails	1. The cable between the device and the SmartLogger is loose or disconnected. 2. The device is powered off. 3. The baud rate or RS485 address of the device is changed. 4. The device is replaced. 5. The device is removed and not reconnected.	1. Check the cable between the device and the SmartLogger. If it is loose or disconnected, reconnect it firmly. 2. Check the device connection and power on the device. 3. Verify that the baud rate and RS485 address of the device are set correctly. 4. If any device is replaced, enable the SmartLogger to search for the device again or manually add the device. 5. If the device has been removed, perform the **Remove Devices** operation on the **Device Mgmt.** page.
5	The EMI fails in communication	1. The RS485 communications cable between the EMI and the SmartLogger is connected incorrectly, loose, or disconnected. 2. The EMI is not powered on. 3. The EMI and SmartLogger use different RS485 communications parameter settings. 4. The EMI parameters are not set correctly.	1. Check the RS485 communications cable. If it is loose or disconnected, reconnect it securely and correctly. 2. Power on the EMI. 3. Check that the RS485 communications parameters are correctly set on the EMI. 4. Log in to the WebUI and ensure that the EMI parameters are set correctly.
6	The SmartLogger cannot communicate with the management system	1. The SmartLogger is not connected to the PC, or the cable is loose or disconnected. 2. The settings of the wired or wireless network parameters are incorrect. 3. The settings of the management system parameters are incorrect.	1. Check that the Ethernet port of the SmartLogger correctly connects to a PC or router. 2. Check that the wired or wireless network parameters are set correctly. 3. Check that the management system parameters are set correctly.

No.	Symptom	Possible Cause	Suggestion
7	The communication fails in RS485 networking	1. The RS485 communications cable connection is incorrect, loose, disconnected. 2. The SmartLogger or its connected device is not powered on. 3. The RS485 communications parameter values are incorrect.	1. Terminal block connection: Check that the RS485 communications cable is connected to the correct port on the terminal block. 2. RJ45 network port connection: Check that the RJ45 connector is properly crimped and that each core wire connects to the correct pin. 3. Verify that the RS485 ports of other devices connect to the correct ports on the SmartLogger. 4. Check the RS485 cables. If they are loose, disconnected, or connected reversely, reconnect them securely and correctly. 5. Power on the SmartLogger and its connected device. 6. Check the settings of RS485 communications parameters. 7. Contact the vendor or Huawei technical support.
8	The 4G communication is abnormal.	1. The SIM card is not inserted, is in arrears, or is damaged. 2. The 4G antenna is damaged or not tightened. 3. the management system parameters and wireless network parameters are not set correctly. 4. Failed to register the SIM card.	1. Insert or replace the SIM card. 2. Tighten or change the 4G antenna. 3. Check whether the management system parameters and wireless network parameters are set correctly. 4. Contact the SIM card carrier or Huawei technical support.

7.3 Alarm List

Alarm ID	Alarm	Alarm Severity	Alarm Sub-ID	Causes	Measure
1100	Abnormal P-Control	Major	4	Under the active power **Dry contact remote control** mode, the four DI ports read command combinations not configured.	1. Verify that the cables are connected correctly to the DI ports. 2. Access the active power **Dry contact remote control** configuration page and check the mapping table of the DI signal configuration. 3. Contact the power grid company and verify that the combination configurations in the table are complete and meet the requirements of the company.
1101	Abnormal Q-Control	Major	4	Under the reactive power **Dry contact remote control** mode, the four DI ports read command combinations not configured.	1. Verify that the cables are connected correctly to the DI ports. 2. Access the reactive power **Dry contact remote control** configuration page and check the mapping table of the DI signal configuration. 3. Contact the power grid company and verify that the combination configurations in the table are complete and meet the requirements of the company.
1103	Breaker Disconnect	Major	1	The general breaker at the grid connection point is disconnected.	Check whether the disconnection is normal. If it is abnormal, contact service engineers to restore the breaker.
1104	Abnormal Cubicle	Major	1	The Cubicle device has detected an exception at the grid connection point.	When the Cubicle alarm is enabled, check whether the DI signal received by the SmartLogger is consistent with the dry contact status. If so, restart the solar inverter.

Alarm ID	Alarm	Alarm Severity	Alarm Sub-ID	Causes	Measure
1105	Device Address Conflict	Major	1	The SmartLogger RS485 address conflicts with the physical address (RS485 address) or logical address for the connected southbound device.	• If the SmartLogger RS485 address conflicts with the communications address for the connected southbound device, choose **Settings** > **Modbus TCP** and change the SmartLogger address, or choose **Maintenance** > **Device Mgmt.** > **Connect Device** and change the southbound device address. If the southbound device is a solar inverter, you can change its address on the app. • If the SmartLogger RS485 address conflicts with the logical address for the connected southbound device, choose **Settings** > **Modbus TCP** and change the SmartLogger address.
1106	AC SPD fault	Major	1	The SPD in the smart array controller is faulty.	• Check whether the cable to the SPD in the smart array controller is loose, disconnected, or connected in reverse. If so, reconnect the cable securely. • Check whether the SPD in the smart array controller is faulty. Replace the faulty SPD.
1107–1110	DI1 custom alarm–DI4 custom alarm	Major	1	The dry contact signal from the peripheral to the corresponding DI port on the SmartLogger is abnormal.	• Check whether the cable to the 24 V power module in the smart array controller is loose, disconnected, or connected in reverse. If so, reconnect the cable securely. • Check whether the 24 V power module in the smart array controller is faulty. Replace the faulty power module.
1116	WebUI server certificate invalid	Warning	1	WebUI server digital signature certificate invalid	Check the time or change the digital signature certificate.
1117	WebUI server certificate to expire	Warning	1	WebUI server digital signature certificate to expire	Change the digital signature certificate in time.

Alarm ID	Alarm	Alarm Severity	Alarm Sub-ID	Causes	Measure
1118	WebUI server certificate expired	Major	1	WebUI server digital signature certificate expired	Change the digital signature certificate immediately.
1119	License expired	Warning	1	• The privilege license has entered the grace period. • The privilege feature will be invalid soon.	Apply for a new license and replace the current one.
1120	Management system certificate invalid	Warning	1	Management system digital signature certificate invalid	Check the time or change the digital signature certificate.
1121	Management system certificate to expire	Warning	1	Management system digital signature certificate to expire	Change the digital signature certificate in time.
1122	Management system certificate expired	Major	1	Management system digital signature certificate expired	Change the digital signature certificate immediately.
1123	Remote output control certificate invalid	Warning	1	Remote output control digital signature certificate invalid	Check the time or change the digital signature certificate.

Alarm ID	Alarm	Alarm Severity	Alarm Sub-ID	Causes	Measure
1124	Remote output control certificate to expire	Warning	1	Remote output control digital signature certificate to expire	Change the digital signature certificate in time.
1125	Remote output control certificate expired	Major	1	Remote output control digital signature certificate expired	Change the digital signature certificate immediately.
1126	Monitoring center certificate invalid	Warning	1	Monitoring center digital signature certificate invalid	Check the time or change the digital signature certificate.
1127	Monitoring center certificate to expire	Warning	1	Monitoring center digital signature certificate to expire	Change the digital signature certificate in time.
1128	Monitoring center certificate expired	Major	1	Monitoring center digital signature certificate expired	Change the digital signature certificate immediately.

7.4 WebUI Maintenance Operations

7.4.1 Upgrading the Device Firmware Version

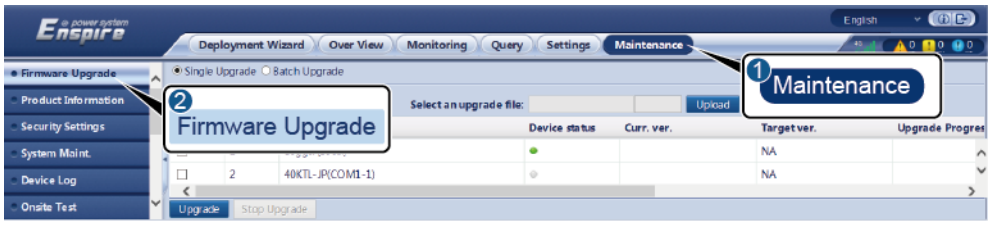
Context

You can upgrade the firmware of the SmartLogger, solar inverter, MBUS module, or PID module over the WebUI.

Procedure

Step 1 Log in as **Advanced User** or **Special User** and perform an upgrade.

Figure 7-1 Upgrade



IL03J00037

Tab	Function	Operation Description
Single Upgrade	Upgrade a device of any type. **NOTE** The Single Upgrade mode does not apply to two or more types of device at a time. For example, you cannot select both **SUN2000** and **MBUS**.	1. Select the upgrade package and click **Upload**. 2. Select the device that requires a firmware upgrade. 3. Click **Upgrade**.
Batch Upgrade	Upgrade solar inverters in batches.	1. Select the upgrade package and click **Upload**. 2. Click **Upgrade**.

NOTE

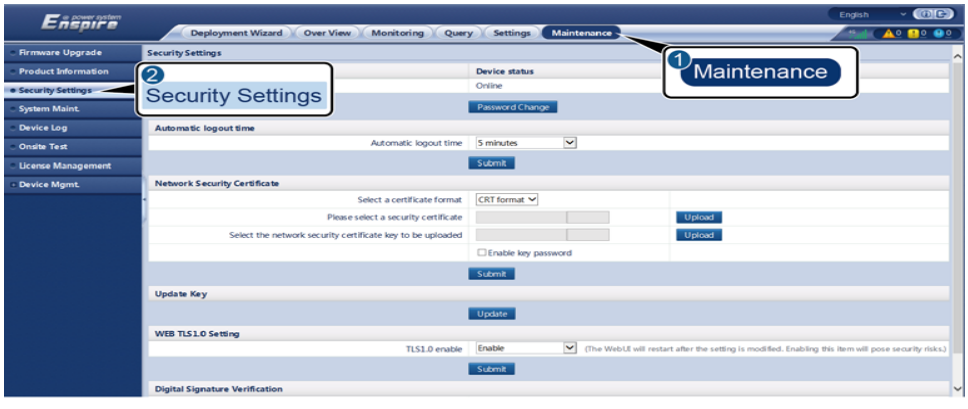
The **Stop Upgrade** function applies only to the devices waiting to be upgraded.

----End

7.4.2 Configuring Security Parameters

Log in as **Common User**, **Advanced User**, or **Special User** and configure security parameters.

Figure 7-2 Setting security parameters



IL03J00038

Parameter	Description
Password Change	Change the password for the current login user to log in to the WebUI.
Automatic logout time	After this parameter is set, a user is automatically logged out if the user does not perform any operation within the period specified by this parameter.
Network Security Certificate	You are advised to use the existing network security certificate and key.
Update Key	Update the key for saving the password.
TLS1.0 enable	Enables or disables the TLS1.0 function.
Digital signature verification for upgrade package	• If this parameter is set to **Enable**, the upgrade package must contain the digital signature file and the upgrade package must not be modified. • If this parameter is set to **Disable**, the digital signature of the upgrade package is not verified. **NOTE** Only **Advanced User** or **Special User** supports modification of this parameter.

7.4.3 Sending a System Maintenance Command

Log in as **Advanced User** or **Special User** and send a system maintenance command.

Figure 7-3 System maintenance

IL03J00039

Function	Description
Reset System	Resets the SmartLogger, which will automatically shut down and restart.

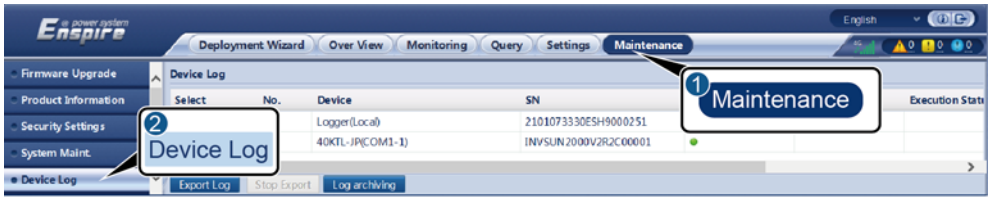
Function	Description
Restore Factory Settings	After the factory settings are restored, all configured parameters (except the current date, time, and communication parameters) are restored to their factory default values. The running information, alarm records, and system logs are not changed. Exercise caution when deciding to perform this operation.
Clear Data	Clears all historical data of the SmartLogger.
Full profile export	Before replacing the SmartLogger, export the SmartLogger configuration file to a local PC.
Full profile import	After replacing the SmartLogger, import the local configuration file to the new SmartLogger. After the import is successful, the SmartLogger restarts for the configuration file to take effect. Ensure that the parameters on the **Settings** tab page and the parameters for the built-in MBUS are correctly set.

7.4.4 Exporting Device Logs

Procedure

Step 1 Log in as **Advanced User** or **Special User** to access the device log page.

Figure 7-4 Exporting logs



IL03J00040

Step 2 Select the device whose logs are to be exported and click **Export Log**.

NOTE

- Logs of two or more types of devices cannot be exported at a time. For example, you cannot select both **SUN2000** and **MBUS**.
- Logs can be exported for a maximum of five devices of the same type at a time.

Step 3 Observe the progress bar and wait until the log export is complete.

Step 4 After the export is successful, click **Log archiving** to save the logs.

----End

7.4.5 Starting an Onsite Test

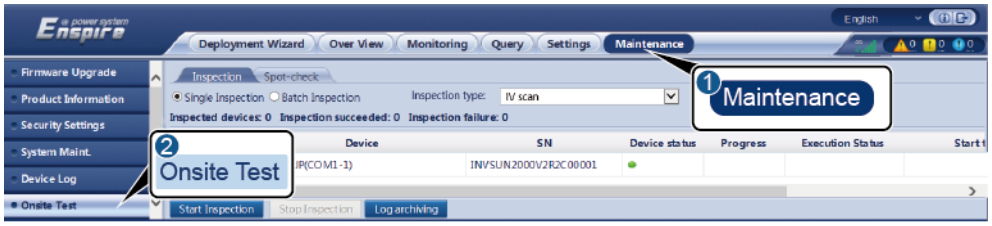
Context

After an inverter is put into use, you need to periodically check its health to detect potential risks and problems.

Procedure

Step 1 Log in as **Advanced User** or **Special User** and start the onsite test.

Figure 7-5 Onsite test



IL03J00041

Tab	Function	Operation Description
Inspection	Check the health status of the inverter.	1. If **Single Inspection** is selected, select the device to be inspected. If **Batch Inspection** is selected, you do not need to select a device. 2. Set **Inspection type**. 3. Click **Start Inspection**. 4. Observe the progress bar and wait until the inspection is complete. 5. After the inspection is successful, click **Log archiving** to download the inspection log.
Spot-check	Start a spot-check. **NOTE** The spot-check function is available only for a device whose grid code is set to the Japanese standard.	1. Select the device to be spot-checked. 2. Click **Start Spot-Check**. 3. Perform a spot-check test onsite. 4. After the spot-check test is complete, click **Stop Spot-Check**.

----End

7.4.6 Managing the Solar Inverter License

Context

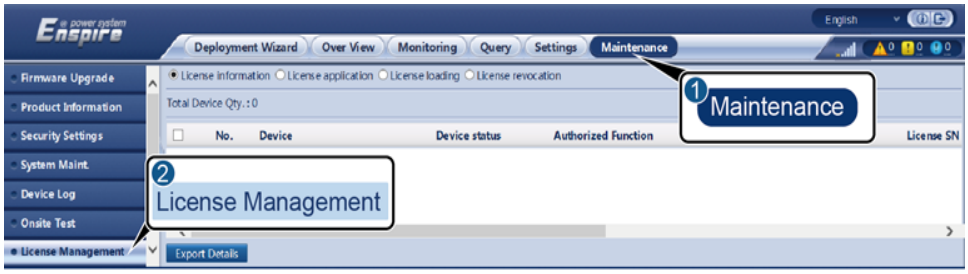
Smart I-V Curve Diagnosis can be used only after a license is purchased. The license file for Smart I-V Curve Diagnosis is stored in the solar inverter. The solar inverter SN uniquely maps to the license.

License management allows you to view the license information about the solar inverter and obtain the current license status. Before a device is replaced, the current device license needs to be revoked so that the revocation code can be generated and used for applying for a new device license.

Procedure

Step 1 Log in as **Advanced User** or **Special User** to access the license management page.

Figure 7-6 License management



IL03J00042

Tab	Function	Operation Description
License information	View the information about the solar inverter license.	1. Select the name of the device whose license details are to be exported. 2. Click **Export Details**.
License application	Export the solar inverter license application file.	1. Select the name of the device for which you want to apply for a license. 2. Click **Export License Appli File**.
License loading	Load the obtained license to the solar inverter.	1. Click **Upload License**. 2. Select the name of the device whose license is to be loaded. 3. Click **Load License**.

Tab	Function	Operation Description
License revocation	Revoke the existing license or export the revocation code file.	1. Select the name of the device whose license is to be revoked. 2. Click **Revoke License**. 3. Click **Export Revo Code File**.

NOTE

Ensure that the extension of the license file to be imported is .dat or .zip.

----End

7.4.7 Collecting Performance Data

Context

You can recollect the solar inverter performance data as well as daily, monthly, and yearly energy yields.

Procedure

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Collect Perf. Data**.

Step 2 Select the type of the data to be collected and set the collection period.

Step 3 Select the name of the device whose data is to be collected and click **Collect Data**.

Step 4 Wait until all data is gathered. On the **Monitoring** page, query the collection result.

----End

7.4.8 Adjusting the Total Energy Yield

Procedure

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Adjust total energy yield**.

Step 2 Set **Adjust total energy yield(kWh)**, select the name of the device whose total energy yield is adjusted, and click **Submit**.

----End

7.5 Device Disposal

If the service life of the SmartLogger expires, dispose of the SmartLogger according to the local disposal act for waste electric appliances.

8 FAQ

8.1 How to Connect the SmartLogger to the SUN2000 App?

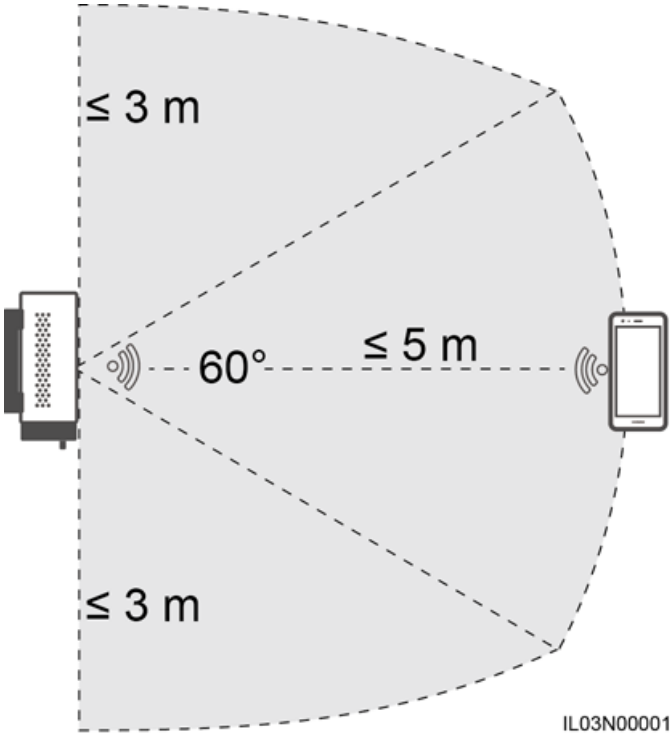
Prerequisites

- The SmartLogger has been powered on.
- The SUN2000 app has been installed on your phone.

Context

- The SUN2000 app is an app that communicates with the SmartLogger through the WLAN. As a convenient local monitoring and maintenance platform, it provides functions such as alarm query, parameter settings, and routine maintenance.
- Mobile phone operating system: Android 4.0 or later
- Access the Huawei app store (https://appstore.huawei.com) or Google Play (https://play.google.com), search for SUN2000, and download the app installation package.

Figure 8-1 WLAN Connection Range



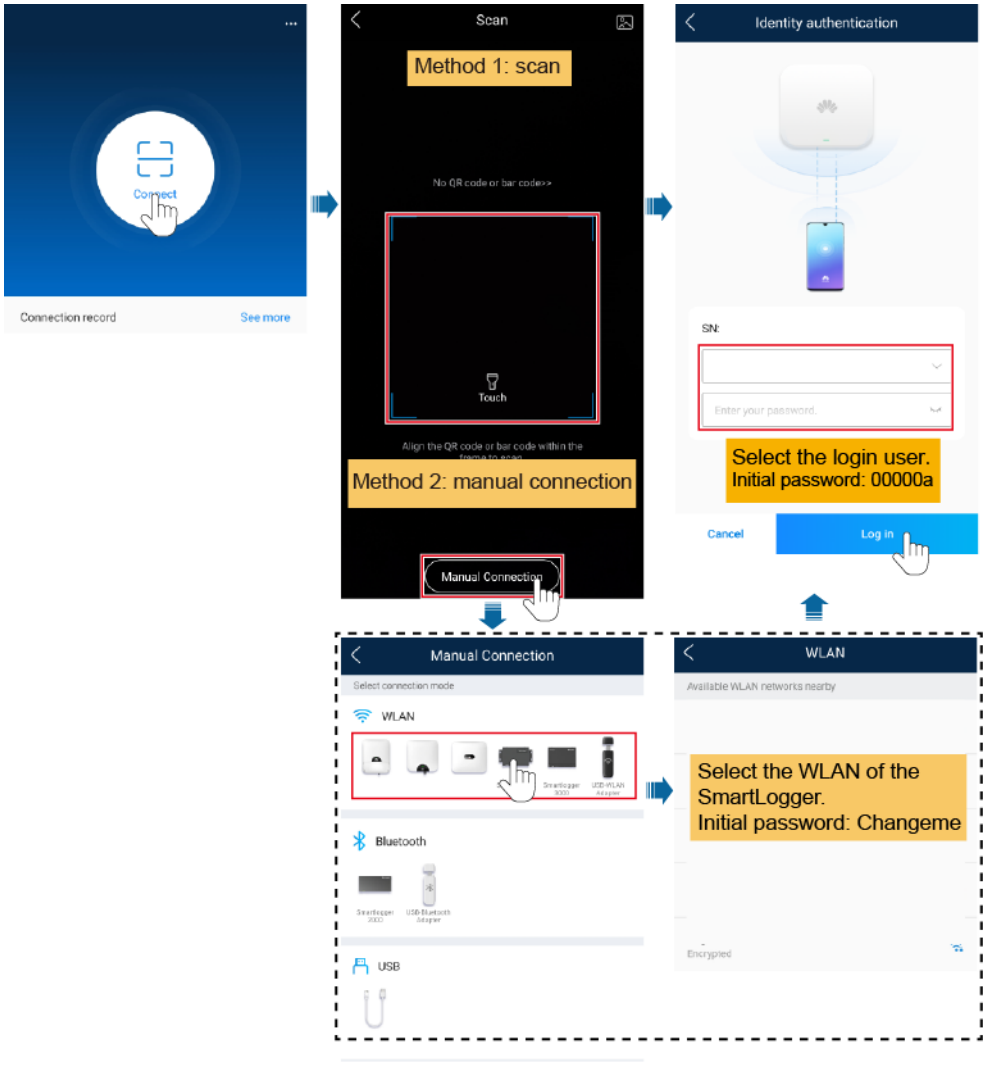
Procedure

Step 1 Run the SUN2000 app and select the WLAN of SmartLogger to connect.

NOTE

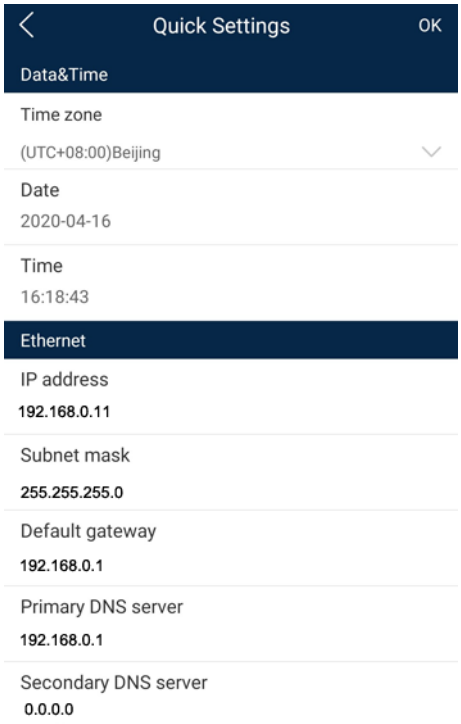
- The screenshots in this document correspond to app version 3.2.00.003 (Android).
- The initial password for **Common User**, **Advanced User**, and **Special User** is **00000a**.
- The WLAN name of the SmartLogger is **Logger_SN** and the initial password is **Changeme**. The SN can be obtained from the SmartLogger label.
- Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.

Figure 8-2 Selecting a user to log in



Step 2 (Optional) Quick settings.

Figure 8-3 Quick settings



NOTE

If the SmartLogger is powered on for the first time or the factory defaults are restored and parameter configuration is not performed on the embedded WebUI, the quick settings screen is displayed when the SmartLogger connects to the app. You can set parameters based on site requirements.

----End

8.2 How Do I Set FTP Parameters?

Context

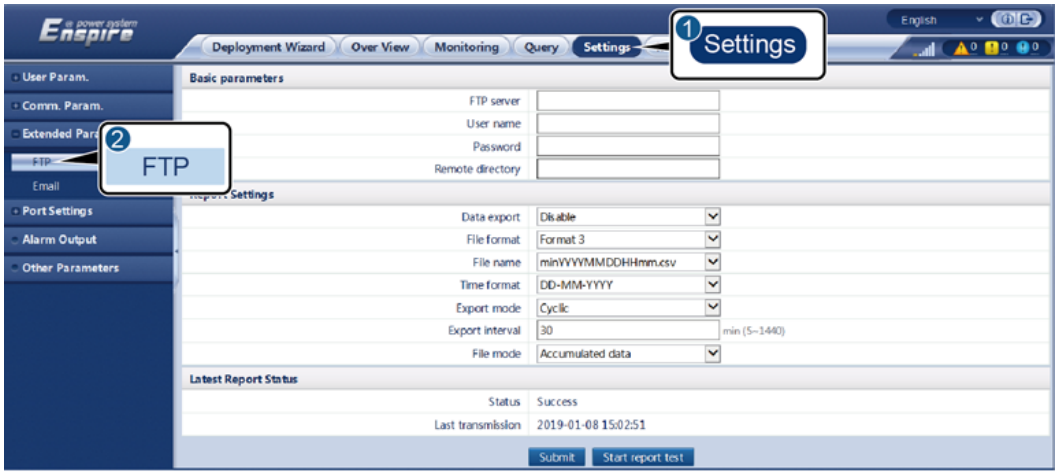
The FTP function is used to access a third-party NMS. The SmartLogger can report the configuration information and running data of the managed PV plant system through FTP. A third-party NMS can access Huawei devices after being configured.

FTP is a universal standard protocol without any security authentication mechanism. Data transmitted by FTP is not encrypted. To reduce network security risks, the IP address of the connected third-party FTP server is left blank by default. This protocol can transmit the running data of PV plants, which may cause user data breach. Therefore, exercise caution when using this protocol. Users are liable for any loss caused by the enabling of the FTP protocol (non-secure protocol). Users are advised to take measures at the PV plant level to reduce security risks, or use Huawei management system to mitigate the risks.

Procedure

Step 1 Log in as **Advanced User**, set FTP parameters, and click **Submit**.

Figure 8-4 Setting FTP parameters



IL03J00043

Parameter	Description
FTP server	Set this parameter to the domain name or IP address of the FTP server.
User name	Set this parameter to the user name for logging in to the FTP server.
Password	Set this parameter to the password for logging in to the FTP server.
Remote directory	After you set this parameter, a subdirectory of the same name is created in the default data upload directory (specified by the FTP server).
Data export	Specifies whether data can be reported.
File format	**Format 1**, **Format 2**, **Format 3**, and **Format 4** are supported. **NOTE** **Format 2** has two more information points than **Format 1**: E-Day (current-day energy yield) and E-Total (total energy yield). **Format 3** has more information points than **Format 1** and **Format 2**: power meter, PID module, user-defined device, and SmartLogger data. **Format 4** has more information points than **Format 3**: active and reactive power of power meters.
File name	Set this parameter to the format of the file name.
Time format	Set this parameter to the time format.

Parameter	Description
Export mode	The value can be **Cyclic** or **Fixed time**. • **Cyclic**: Periodically reports data. **Export interval** specifies the period for reporting data. **File mode** specifies whether all data or only the incremental data of a day is reported each time. • **Fixed time**: Reports data at a specified time. **Fixed time** specifies the time for reporting data.

NOTE

You can click **Start report test** to check whether the SmartLogger can report data to the FTP server.

----End

Troubleshooting

Error Code	Troubleshooting Suggestion	Error Code	Troubleshooting Suggestion
0x1002	Configure the FTP server address.	0x1003	1. Check whether the DNS server address is correctly configured. 2. Check whether the domain name of the third-party FTP server is correctly configured.
0x1004	Configure the user name of the FTP account.	0x1005	Configure the user name of the FTP account.
0x3001	1. Check whether the FTP server address is correctly configured. 2. Check whether the third-party FTP server is working properly.	0x3002	1. Check whether the user name of the FTP account is correctly configured. 2. Check whether the password of the FTP account is correctly configured.
0x3007	Check whether the third-party FTP server allows the client to upload data.	0x3008	Ensure that the SmartLogger data upload directory exists on the third-party FTP server.
Other Codes	Provide SmartLogger run logs and contact Huawei technical support.	N/A	N/A

8.3 How Do I Set Email Parameters?

Context

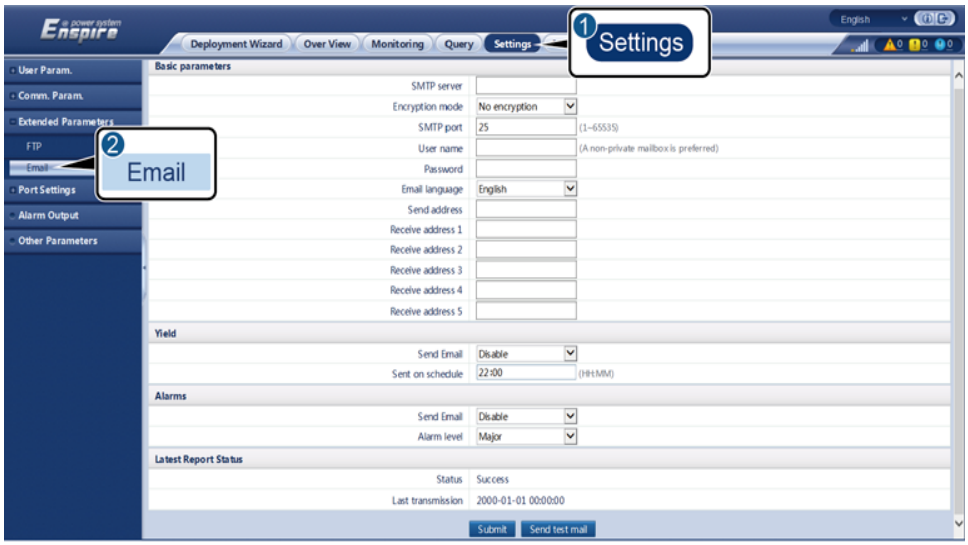
The SmartLogger can send emails to inform users of the current energy yield information, alarm information, and device status about the PV plant system, helping users know the running conditions of the PV plant system in time.

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

Procedure

Step 1 Log in as **Advanced User**, set email parameters, and click **Submit**.

Figure 8-5 Setting email parameters



IL03J00044

Parameter	Description
SMTP server	Set this parameter to the domain name or IP address of the SMTP server.
Encryption mode	Set this parameter to the email encryption mode.
SMTP port	Set this parameter to the email sending port.
User name	Set this parameter to the user name for logging in to the SMTP server.
Password	Set this parameter to the password for logging in to the SMTP server.
Email language	Set this parameter to the language for sending emails.

Parameter	Description
Send address	Set this parameter to the email address for sending emails.
Receive address N **NOTE** N is 1, 2, 3, 4, or 5.	Set this parameter to the email address for receiving emails.
Yield	Specifies whether to send energy yield data by email and the time for sending emails.
Alarms	Specifies whether to send alarms by email and the severity of the alarms to be sent.

NOTE

You can click **Send test mail** to check whether the SmartLogger can successfully send emails to users.

----End

Troubleshooting

Error Code	Troubleshooting Suggestion	Error Code	Troubleshooting Suggestion
0x2002	1. Check whether the DNS server address is correctly configured. 2. Check whether the domain name and the IP address of the SMTP server are correct. 3. Check whether the network communication between the management system and the DNS server is normal.	0x2003	1. Try again later. 2. Check whether the domain name and the IP address of the SMTP server are correct.
0x200b	1. Check whether the DNS server address is correct. 2. Check whether the domain name and the IP address of the SMTP server are correct.	0x4016	1. Try again later. 2. Check whether the DNS server address is correctly configured. 3. Check whether the domain name and the IP address of the SMTP server are correct.

Error Code	Troubleshooting Suggestion	Error Code	Troubleshooting Suggestion
0x406e	Confirm the encryption mode and port supported by the email box, and check whether they are correct.	0x8217	1. Check whether the user name and password are correct. 2. Log in to the email box of the email sender and start the SMTP service. 3. Log in to the email box of the email sender and start the third-party client license code function.
0xa003	Check whether the domain name and the IP address of the SMTP server are correct.	0xa005	Enter the user name correctly.
0xa006	Enter the password correctly.	0xe002	Configure the domain/IP of the SMTP server correctly.
0xe003	Configure the addresses for sending and receiving emails correctly.	Others	Please provide SmartLogger running logs and contact Huawei Service Center.

8.4 How Do I Change the SSID and Password of the Built-in WLAN?

Procedure

Step 1 Log in as **Advanced User**, choose **Settings** > **Wireless Network**, set parameters for the built-in WLAN, and click **Submit**.

Parameter	Description
SSID	• Specifies the name of the built-in WLAN. • The default name of the built-in WLAN is **Logger_*SN***.

Parameter	Description
Password	• Specifies the password for accessing the built-in WLAN. • The preset password of the built-in WLAN is **Changeme**. • Use the initial password upon first power-on and change it immediately after login. To ensure account security, change the password periodically and keep the new password in mind. Not changing the initial password may cause password disclosure. A password left unchanged for a long period of time may be stolen or cracked. If a password is lost, devices cannot be accessed. In these cases, the user is liable for any loss caused to the PV plant.

----End

8.5 How Do I Use DI Ports?

The SmartLogger provides four DI ports, which support dry contact remote control, dry contact remote shutdown, and input of correlated alarms.

For details about dry contact remote control and dry contact remote shutdown, see **6.4 Power Grid Scheduling**.

NOTICE

Before setting the corresponding function, ensure that the DI port is not set for other purposes. Otherwise, the setting will fail.

Alarm Input

When a valid level is delivered into a DI port, an alarm is raised. You can set the alarm name and severity.

Step 1 Log in as **Special User**, choose **Settings** > **DI**, and associate alarms with DI ports.

Parameter	Description
Activation status	If this parameter is set to **Activated** for a DI port, you can set the function of the DI port. Otherwise, you cannot set the function of the DI port.
Dry contact status	Specifies the valid input status of a DI port.
Alarm generation	Specifies whether to allow alarm generation.
Alarm severity	Specifies the alarm severity.

Parameter	Description
Trigger shutdown	Specifies whether to deliver a solar inverter remote shutdown command.
Trigger startup	Specifies whether to deliver a solar inverter remote startup command.
Alarm name	Specifies the alarm name.
Startup delay	Specifies the delay time for the automatic startup of the solar inverter after **Trigger startup** is set to **Enable**.

----End

8.6 How Do I Use DO Ports?

The SmartLogger provides two DO ports, which support the reset of external routers, audible and visual alarming for grounding faults, and output of correlated alarms.

NOTICE

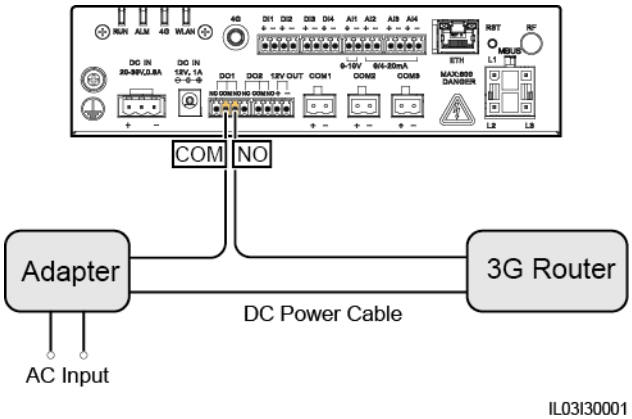
Before setting the corresponding function, ensure that the DO port is not set for other purposes. Otherwise, the setting will fail.

Resetting External Router

Connect one DC power cable of the 3G router to one of the DO ports on the SmartLogger, power on or off the wireless module by connecting or disconnecting the DO dry contact to control the reset of the 3G router.

Step 1 Cut off a DC power cable of the router, and connect the DC power cable to a DO port on the SmartLogger.

Figure 8-6 Connecting to a DO port



Step 2 Log in as **Advanced User**, choose **Settings** > **DO**, and set the connected DO port to **Reset the external router**.

----End

Audible and Visual Alarming for Grounding Faults

Connect one DC power cable of the audible and visual alarm to a DO port on the SmartLogger, and power on and off the audible and visual alarm by connecting and disconnecting the DO dry contact to implement audible and visual alarming for grounding faults.

Step 1 Connect one DC power cable of the audible and visual alarm to the DO port (COM/NO) on the SmartLogger.

Step 2 Log in as **Advanced User**, choose **Settings** > **DO**, and set the connected DO port to **Ground fault audi and vis alm**.

----End

Alarm Output

After a solar inverter alarm is associated with a DO port, the alarm signal is delivered from the DO port when the solar inverter raises the alarm.

Step 1 Log in as **Advanced User**, choose **Settings** > **Alarm Output**, and associate solar inverter alarms with the DO port.

NOTE

After the function is enabled, the DO port status may change and the alarm output may be abnormal if the SmartLogger restarts or is powered off.

----End

8.7 How Do I Use the USB Port?

The SmartLogger has a USB port, which provides 5 V/1 A power supply.

- The USB port can connect to a 3G router to supply power to the router, and the power supply of the USB port is disconnected when communication is disconnected, implementing 3G router reset control.

  NOTICE

  If the maximum operating current of the 3G router is greater than 1 A, it cannot be connected through the USB port.

- The USB port can connect to a USB flash drive for local maintenance, device log export, and device upgrade.

  NOTE

  It is recommended that you use a SanDisk, Netac, or Kingston USB flash drive to ensure compatibility.

Connecting to a 3G Router

If the DC power cable of the 3G router has a standard USB connector with the maximum operating current of less than 1 A, it can be directly connected to the USB port on the SmartLogger.

Step 1 Connect the USB connector of the DC power cable for the 3G router to the USB port on the SmartLogger.

Step 2 If the reset function of the external router is required, log in as **Advanced User**, choose **Settings** > **USB**, and set **USB** to **Reset the external router**.

----End

Connecting to a USB Flash Drive for Local Maintenance

Local Maintenance Item	Description	Preparations
Exporting Data	By exporting data, you can obtain active alarms, historical alarms, performance data, abnormal takeover logs, debug logs, operation logs, fault information files, and electronic labels.	-
Upgrading the Application	-	The **smartlogger1000a.zip** file in the upgrade package is stored in the root directory of the USB flash drive. Do not decompress the file.
Upgrading the BSP	-	The **smartlogger1000a_bsp.zip** file in the upgrade package is stored in the root directory of the USB flash drive. Do not decompress the file.

Connecting to a USB Flash Drive to Export Device Logs

Step 1 Connect the USB flash drive to the USB port on the SmartLogger.

Step 2 Log in to the app as **Advanced User**, choose **MoreDevice Logs**, select the device whose logs are to be exported, and tap **Next**.

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

Step 4 After the logs are exported, remove the USB flash drive.

----End

Connecting to a USB Flash Drive for Device Upgrade

You can upgrade the SmartLogger, solar inverter, MBUS module, or PID module using a USB flash drive.

Step 1 Save the device upgrade package to the USB flash drive.

NOTE

Do not decompress the upgrade package.

Step 2 Connect the USB flash drive to the USB port on the SmartLogger.

Step 3 Log in to the app as **Advanced User**, choose **MoreUpgrade**, select a single device or multiple devices of the same type, and tap **Next**.

Step 4 Select the upgrade package and tap **Next**.

Step 5 Confirm the upgrade package and the device to be upgraded, and tap **Finish** to start upgrading the device.

NOTE

After the upgrade is complete, the device automatically restarts.

Step 6 After the upgrade is complete, remove the USB flash drive.

----End

8.8 How Can I Change a Device Name?

Procedure

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Device List**.

Step 2 Modify the device name based on the actual situation, select the modified entry, and click **Modify Device Info**.

NOTE

You can also export device information to a .csv file, modify the file, and import the modified file to modify device information.

----End

8.9 How Do I Change the Communication Address?

The SmartLogger allows you to change the communication address of Huawei devices on the **Connect Device** or **Device List** page.

Changing Communication Address on the Connect Device Page

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Connect Device**.

Step 2 Click **Auto Assign Address**, set the start address for assignment, and confirm the address assignment.

Step 3 Confirm the address adjustment, adjust the device address as required, and click **Address Adjustment**.

Step 4 Confirm to search for the device again.

Step 5 After the search is complete, click **Close**.

----End

Changing Communication Address on the Device List Page

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Device List**.

Step 2 Change the device communication address and device name based on the site requirements, select the modified entries, and click **Modify Device Info**.

Step 3 Choose **Maintenance** > **Device Mgmt.** > **Connect Device**, and click **Auto. Search**.

Step 4 After the search is complete, click **Close**.

----End

8.10 How Do I Export Inverter Parameters?

Context

You can export configuration parameters of multiple inverters to a .csv file. Site engineers can then check whether the inverter configurations are correct in the exported file.

Procedure

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Export Param.**.

Step 2 Select the device whose parameters are to be exported and click **Export**.

Step 3 Observe the progress bar and wait until the export is complete.

Step 4 After the export is successful, click **Log archiving** to save the file.

----End

8.11 How Do I Clear Alarms?

Context

You can clear all active and historical alarms for the selected device and re-collect alarm data.

Procedure

Step 1 Log in as **Advanced User** or **Special User**, and choose **Maintenance** > **Device Mgmt.** > **Clear Alarm**.

Step 2 Select the device from which the alarms need to be cleared, click **Submit**. Choose **All**, **Locally synchronized alarms**, or **Alarms stored on devices** clear the alarms.

NOTE

If alarms are cleared for the SmartLogger, you must reset alarms on the NMS. Otherwise, the NMS cannot obtain the alarm information collected by the SmartLogger after the alarms are cleared.

----End

8.12 How Do I Enable the AI1 Port to Detect SPD Alarms?

Context

In the SmartACU2000C smart array controller application scenario, the AI1 port of the SmartLogger can be connected to the SPD alarm output to raise an alarm when the SPD is faulty.

Procedure

Step 1 Log in as **Advanced User**, choose **Setting** > **Other Parameters**, and set **AI1 SPD detection** to **Enable**.

----End

8.13 What Types of Electricity Meters and EMIs does the SmartLogger Support?

Table 8-1 Meters Supported

Vendor	Model	Reversed current prevention
Janitza	UMG604/UMG103/ UMG104	Yes
NARUN	PD510	N/A
Acrel	PZ96L	Yes
algodue	UPM209	Yes **NOTE** When the power meter connects to the SmartLogger, an external 120–ohm resistor needs to be connected to the RS485 bus of the power meter. For details, see the user manual of the power meter.
CHNT	DTSU666	N/A
Socomec	COUNTIS E43	Yes **NOTE** • Not applicable to single-phase power scenarios. • When the power meter connects to the SmartLogger, an external 120–ohm resistor needs to be connected to the RS485 bus of the power meter. For details, see the user manual of the power meter.
ABB	A44	N/A
Netbiter	CEWE	N/A
Schneider	PM1200	N/A
SFERE	PD194Z	N/A
Lead	LD-C83	N/A
MingHua	CRDM-830	N/A
People	RM858E	N/A
Elster	A1800ALPHA	N/A
N/A	DTSU666-H	N/A

Vendor	Model	Reversed current prevention
Mitsubishi	EMU4-BD1-MB	Yes **NOTE** • Not applicable to single-phase power scenarios. • When the power meter connects to the SmartLogger, an external 120–ohm resistor needs to be connected to the RS485 bus of the power meter. For details, see the user manual of the power meter.
Mitsubishi	ME110SR/NSR/SSR-MB	N/A
Toshiba	S2MS	N/A

NOTE

Only one meter under the MODBUS protocol can be connected to the SmartLogger.

Table 8-2 Environment Monitoring Instruments (EMIs) Supported

Vendor	Model	EMI information
Jinzhou sunlight	PC-4	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
Handan	RYQ-3	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
ABB	VSN800-12	Total radiation, ambient temperature, and PV module temperature
	VSN800-14	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
Kipp&Zonen	SMPx series	Total radiation and ambient temperature

Vendor	Model	EMI information
Lufft	WSx-UMB	Total radiation, ambient temperature, wind direction, and wind speed
	WSx-UMB (external sensors)	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
Hukseflux SRx	Hukseflux SRx	Total radiation and ambient temperature
MeteoControl	SR20-D2	Total radiation and ambient temperature
RainWise	PVmet-150	Total radiation, ambient temperature, and PV module temperature
	PVmet-200	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
Gill MetPak Pro	Gill MetPak Pro	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed
Ingenieurbüro Si-RS485TC	Ingenieurbüro Si-RS485TC	Total radiation, ambient temperature, PV module temperature, and wind speed
Meier-NT ADL-SR	Meier-NT ADL-SR	Total radiation, ambient temperature, PV module temperature, and wind speed
Soluzione Solare	SunMeter	Total radiation and ambient temperature
Jinzhou Licheng	Jinzhou Licheng	Total radiation, ambient temperature, PV module temperature, wind direction, and wind speed

Vendor	Model	EMI information
Sensor (ADAM) **NOTE** Sensor (current-type or voltage-type) EMI needs to communicate with the SmartLogger using the ADAM analog-to-digital converter.	N/A	N/A

8.14 How To Use the Mobile Network Sharing?

Using the Mobile Network to Access the SmartLogger WebUI Procedure

NOTE

A 4G SmartLogger supports remote access to the SmartLogger WebUI over the built-in 4G wireless communication.

Step 1 Prepare a SIM card with a fixed IP address and insert it into the SIM card slot of the SmartLogger to ensure normal 4G wireless communication.

Step 2 Log in to the SmartLogger WebUI as an **Advanced User**, choose **Settings > Other Parameters**, and set the **Mobile network sharing** function to **Enable**.

Step 3 Open a web browser, enter **https://XX.XX.XX.XX** (XX.XX.XX.XX is the fixed IP address of the SIM card) in the address box, and press **Enter**. The login page is displayed.

----End

Sharing the Mobile Network to Other Devices

NOTE

A 4G SmartLogger supports share the mobile network to other device over the built-in 4G wireless communication.

Step 1 Log in to the SmartLogger WebUI as an **Advanced User**, choose **Settings > Other Parameters**, and set the **Mobile network sharing** function to **Enable**.

Step 2 Set network parameters for other devices based on the IP address, subnet mask, gateway, and DNS server address of the SmartLogger. Then the devices can access the Internet through the built-in 4G network of the SmartLogger.

Step 3 Set network parameters for other devices based on the IP address, subnet mask, gateway of the SmartLogger, and on the address of the DNS server on the public netework. Then the devices can access the Internet through the built-in 4G network of the SmartLogger.

----End

9 Technical Specifications

Device Management

Item	Technical Specifications
Number of solar inverters that can be connected	≤ 80
Communications mode	RS485, ETH, MBUS (optional), 4G
Maximum communication distance	• RS485: 1000 m • ETH: 100 m • MBUS (multi-core cable): 1000 m; MBUS (single-core cable): 400 m (The three-phase cables must be bound at 1 m intervals) • Optical fiber (single-mode, 1310 nm optical module): 10,000 m (with the 1000M optical module); 12,000 m (with the 100M optical module)

Common Specifications

Item	Technical Specifications
Power adapter	• AC input: 100–240 V, 50/60 Hz • DC output: 12 V, 2 A
DC power supply	20–30 V, 0.8 A
Power consumption	Typical: 8 W; maximum: 15 W
Dimensions (W x H x D)	• 261 mm x 140 mm x 69 mm (including mounting ears) • 200 mm x 140 mm x 53 mm (excluding mounting ears)

Item	Technical Specifications
Net weight	2 kg
Operating temperature	–40°C to +60°C
Storage temperature	–40°C to +70°C
Relative humidity	5%–95%
Protection level	IP20
Installation mode	Installed on a wall or guide rail
Highest operating altitude	4000 m
Pollution degree	2

Ports

Item	Technical Specifications
Ethernet electrical port (ETH)	1; 10/100M auto-negotiation
MBUS port (AC)	1; supports an AC input voltage of 800 V at most
RS485 (COM) port	3; supported baud rates: 2400 bit/s, 4800 bit/s, 9600 bit/s, 19200 bit/s, and 115200 bit/s
USB port	USB2.0
Digital input (DI) port	4; supports only the access from relay dry contacts
Digital output (DO) port	2; relay dry contact output ports, supporting normally open or closed contacts; supports 12 V, 0.5 A signal voltage
Analog input (AI) port	4; AI1 supports 0–10 V voltage (passive); AI2–AI4 support 4–20 mA or 0–20 mA input current (passive)

Wireless Communication

Item	Technical Specifications
4G/3G/2G	The SmartLogger1000A01CN supports 2G, 3G, and 4G networks of China Mobile and China Unicom, and 4G networks of China Telecom. The following frequency bands are supported: ● LTE FDD: B1, B3, B8 ● LTE TDD: B38, B39, B40, B41 ● WCDMA: B1, B5, B8, B9 ● TD-SCDMA: B34, B39 ● GSM/GPRS/EDGE: 900 MHz/1800 MHz
	The SmartLogger1000A02JP supports 3G and 4G networks of Docomo. The following frequency bands are supported: ● LTE FDD: B1, B3, B19, B21 (B3 is supported only in Tokyo, Nagoya and Osaka). ● WCDMA: B1, B6, B19
	The SmartLogger1000A01EU and SmartLogger1000A01UK support networks of T-Mobile, Vodafone, Orange, and KPN. The following frequency bands are supported: ● LTE FDD: B1, B2, B3, B4, B5, B7, B8, B20 ● LTE FDD: B1, B2, B3, B4, B5, B7, B8, B20 ● GSM/GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz
	The SmartLogger1000A01AU supports networks of Telstra, Optus, and Vodafone. The following frequency bands are supported: ● LTE FDD: B1, B3, B5, B7, B28 ● LTE TDD: B40 ● WCDMA: B1, B5, B8 ● GSM: 900 MHz/1800 MHz

Item	Technical Specifications
	The SmartLogger1000A02KR supports the network of SK Telecom. The following frequency bands are supported: • LTE FDD: B1, B3, B5, B7 • WCDMA: B1
	The SmartLogger1000A01US supports the networks of AT&T. The following frequency bands are supported: • LTE FDD: B2, B4, B5, B17, B30 • WCDMA: B2, B5 • GSM: 850 MHz/1900 MHz
WLAN (local maintenance using app)	2.4G

RF Bands of the 4G Module (SmartLogger1000A01EU)

Frequency Band	Tx	Rx
WCDMA Band 1	1920–1980 MHz	2110–2170 MHz
WCDMA Band 2	1850–1910 MHz	1930–1990 MHz
WCDMA Band 5	824–849 MHz	869–894 MHz
WCDMA Band 8	880–915 MHz	925–960 MHz
GSM 850	824–849 MHz	869–894 MHz
GSM 900	880–915 MHz	925–960 MHz
GSM 1800	1710–1785 MHz	1805–1880 MHz
GSM 1900	1850–1910 MHz	1930–1990 MHz
LTE Band 1	1920–1980 MHz	2110–2170 MHz
LTE Band 2	1850–1910 MHz	1930–1990 MHz
LTE Band 3	1710–1785 MHz	1805–1880 MHz
LTE Band 4	1710–1755 MHz	2110–2155 MHz
LTE Band 5	824–849 MHz	869–894 MHz
LTE Band 7	2500–2570 MHz	2620–2690 MHz
LTE Band 8	880–915 MHz	925–960 MHz

Frequency Band	Tx	Rx
LTE Band 20	832–862 MHz	791–821 MHz

Output Power of the 4G Module (SmartLogger1000A01EU)

Frequency Band		Standard Value (Unit: dBm)	Remarks (Unit: dB)
GSM 850	GMSK (1 Tx Slot)	32.5	±1.5
	8PSK (1 Tx Slot)	27	±1.5
GSM 900	GMSK (1 Tx Slot)	32.5	±1.5
	8PSK (1 Tx Slot)	27	±1.5
GSM 1800	GMSK (1 Tx Slot)	29.5	±1.5
	8PSK (1 Tx Slot)	26	±1.5
GSM 1900	GMSK (1 Tx Slot)	29.5	±1.5
	8PSK (1 Tx Slot)	26	±1.5
WCDMA Band 1		23.5	±1.5
WCDMA Band 2		23.5	±1.5
WCDMA Band 5		23.5	±1.5
WCDMA Band 8		23.5	±1.5
LTE Band 1		23	±2
LTE Band 2		23	±2
LTE Band 3		23	±2
LTE Band 4		23	±2
LTE Band 5		23	±2
LTE Band 7		23	±2
LTE Band 8		23	±2
LTE Band 20		23	±2

WLAN

Item	Technical Specifications
Frequency band	2.4 GHz: 2.4–2.4835 GHz

Item	Technical Specifications
Gain	2.4 GHz: 2.85 dBi
Transmit power	2.4 GHz: 1 x 100 mW
Maximum throughput	2.4 GHz: 65 Mbit/s
Single/Dual band mode	Single
MIMO	2.4 GHz: 1 Tx and 1 Rx
Maximum number of online users	6
Polarization mode	Linear
Directivity	Multi-dimensional

A Product User Lists

NOTE

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

Table A-1 Monitoring user lists

Login Mode	User Name	Initial Password
App	Common User	00000a
	Advanced User	00000a
	Special User	00000a
Web	Common User	Changeme
	Advanced User	Changeme
	Special User	Changeme
NetEco	emscomm	/EzFp+2%r6@IxSCv

Table A-2 Operating system user lists

User Name	Initial Password
enspire	Changeme
root	Changeme
prorunacc	No initial password
bin	No initial password
daemon	No initial password

User Name	Initial Password
nobody	No initial password
sshd	No initial password

B Domain Name List of Management Systems

NOTE

The list is subject to change.

Table B-1 Domain names of management systems

Domain Name	Data Type	Scenario
intl.fusionsolar.huawei.com	Public IP address	FusionSolar hosting cloud **NOTE** The domain name is compatible with cn.fusionsolar.huawei.com (Chinese mainland).
neteco.alsoenergy.com	Public IP address	Partner management system
re-ene.kyuden.co.jp	Public IP address	Remote output control server of Kyushu Electric Power Company
re-ene.yonden.co.jp	Public IP address	Remote output control server of Shikoku Electric Power Company

C Acronyms and Abbreviations

A	
APP	Application
F	
FTP	File Transfer Protocol
L	
LED	Light Emitting Diode
N	
NMS	Network Management System
M	
MBUS	Monitoring Bus
P	
PID	Potential Induced Degradation
PV	Photovoltaic

S

STA	Station