

# SmartLogger1000 Quick Guide

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HUAWEI TECHNOLOGIES CO., LTD.

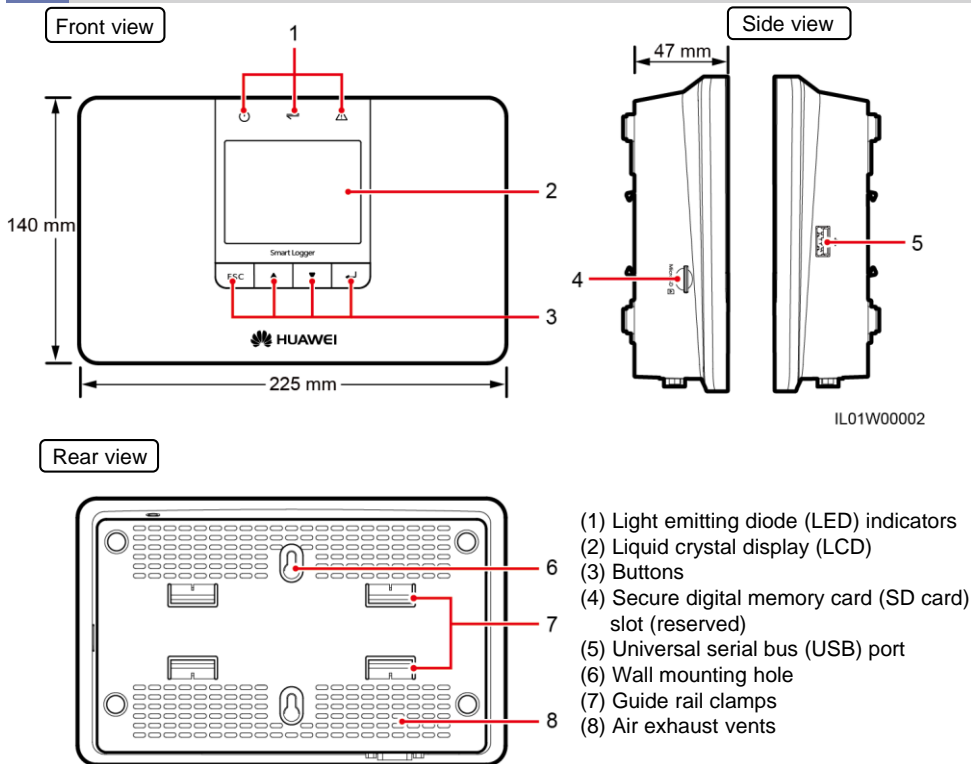


## NOTICE

1. The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents. But all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.
2. Before you install the device, closely read the *SmartLogger1000 User Manual* to get familiar with product information and precautions. In the following text, SmartLogger1000 is abbreviated as SmartLogger.
3. Install and use the device according to this document and the user manual. Otherwise, the device may be damaged. Use insulated tools when installing the device.
4. This document uses the typical scenario where the SmartLogger is applied as an example to describe the operations about installation and cable connection.

# 1 Product Overview

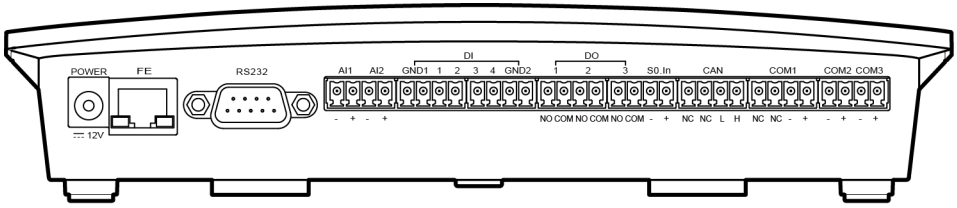
## 1.1 Appearance



- (1) Light emitting diode (LED) indicators
- (2) Liquid crystal display (LCD)
- (3) Buttons
- (4) Secure digital memory card (SD card) slot (reserved)
- (5) Universal serial bus (USB) port
- (6) Wall mounting hole
- (7) Guide rail clamps
- (8) Air exhaust vents

(1) LED indicators		(3) Buttons	
Symbol	Name	Symbol	Name
	Power indicator	ESC	Escape
	Run indicator		Up
	Alarm indicator		Down
N/A	N/A		OK

## Bottom view



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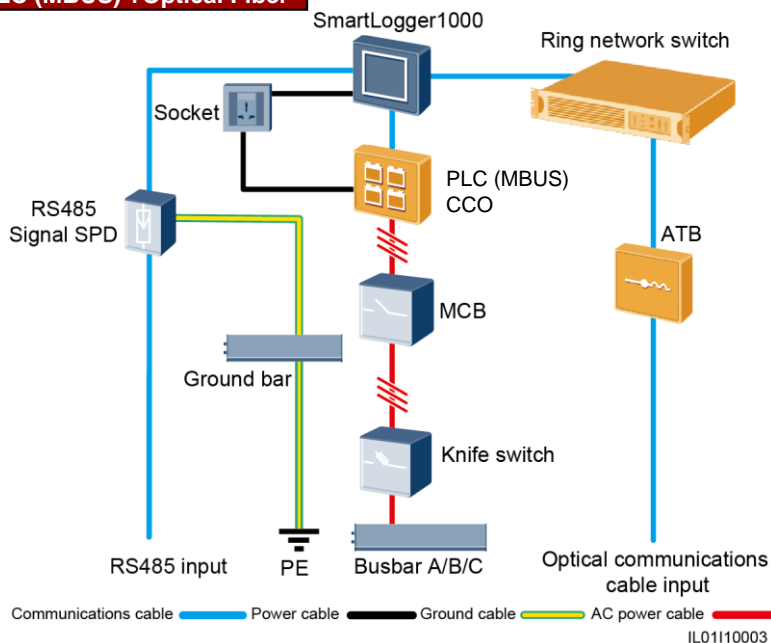
Port (Silk Screen)	Function	Description
POWER	Power supply	12 V DC
FE	Fast Ethernet	Connects to a local area network (LAN) switch, router, power over Ethernet (PoE) or PC.
RS232	RS232	Connects to an external RS232 device.
AI	Analog input	4–20 mA and 0–20 mA current input (active), reserved
DI	Digital input	Connects to a dry contact input.
DO	Digital output	Relay output
S0.In	Connects to a pulse output power meter.	Reserved
CAN	CAN	Reserved
COM1–COM3	RS485	Supports three RS485 ports that can connect to devices such as the inverter and environmental monitoring instrument (EMI).

## 2 Typical Cable Connection Scenarios

### NOTICE

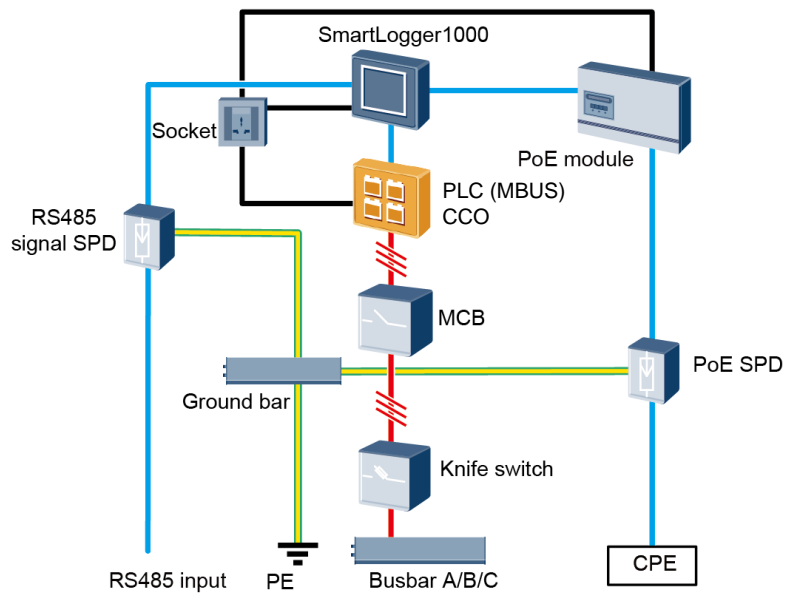
1. If the SmartLogger communicates with an inverter over an AC power cable, the power line communication (PLC/MBUS) central controller (CCO) module needs to be connected to the SmartLogger. In addition, a miniature circuit breaker (MCB) and a knife switch need to be installed between the PLC (MBUS) CCO module and the busbar to prevent device damage in the case of short circuits.
2. If the SmartLogger communicates with an inverter over an AC power cable, the cable from the knife switch to the MCB and the cable from the busbar to the knife switch both need to be prepared by yourself. Recommended cable: three-core armor cable with the operating voltage to the ground greater than or equal to 600 V and the cross-sectional area of a single core wire being 4 mm<sup>2</sup>.
3. The network cable delivered with the SmartLogger is 2.2 meters long. Determine the installation position of each component based on the cable length.

## RS485/PLC (MBUS) +Optical Fiber



Component		Recommended Model or Specifications	Component Source	Quantity
SmartLogger		SmartLogger1000	Can be purchased from Huawei	1 PCS
RS485 signal surge protective device (SPD)		PowerSA-5KA-15V	Can be purchased from Huawei	2 PCS
PLC (MBUS) CCO		PLC CCO01A (SmartMBUS CCO01A)	Can be purchased from Huawei	1 PCS
Ring switch		AR531 or a ring-network LAN switch of a local model	Prepared by yourself	1 PCS
Optical module		FTLF1323P1BTR-HW or an optical module of a local model	Prepared by yourself	2 PCS
Access terminal box (ATB)		CT-GZF2PJ-8, CT-GPH-A-8, or an ATB of a local model	Prepared by yourself	1 PCS
Knife switch	Fuse	Rated voltage $\geq 500$ V; rated current: 6 A	Prepared by yourself	3 PCS
	Knife switch box	Rated voltage $\geq 500$ V; rated current $\geq 6$ A; number of poles: three	Prepared by yourself	1 PCS
MCB		Rated voltage $\geq 500$ V; rated current $\geq 6$ A	Prepared by yourself	1 PCS
Socket		Matching with the power adapter	Prepared by yourself	1 PCS

RS485/PLC (MBUS) +LTE

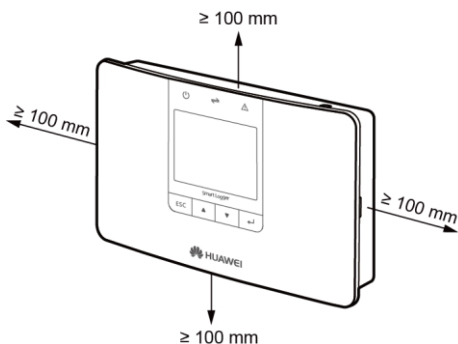


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Component		Recommended Model or Specifications	Component Source	Quantity
SmartLogger		SmartLogger1000	Can be purchased from Huawei	1 PCS
RS485 signal SPD		PowerSA-5KA-15V	Can be purchased from Huawei	2 PCS
PLC (MBUS) CCO		PLC CCO01A (SmartMBUS CCO01A)	Can be purchased from Huawei	1 PCS
PoE module		POE35-54A or POE85-56A	Can be purchased from Huawei	1 PCS
PoE SPD		POE-2	Can be purchased from Huawei	1 PCS
CPE		EG860V2-C71	Can be purchased from Huawei	1 PCS
Knife switch	Fuse	Rated voltage $\geq 500$ V; rated current: 6 A	Prepared by yourself	3 PCS
	Knife switch box	Rated voltage $\geq 500$ V; rated current $\geq 6$ A; number of poles: three	Prepared by yourself	1 PCS
MCB		Rated voltage $\geq 500$ V; rated current $\geq 6$ A	Prepared by yourself	1 PCS
Socket		Matching with the power adapter	Prepared by yourself	1 PCS

## 3 Installing the SmartLogger

### 3.1 Installation Space



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#### NOTE

Chassis dimensions (W x H x D):  
225 mm x 140 mm x 50 mm

### 3.2 Installation Mode

#### On a Wall

#### NOTICE

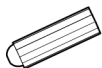
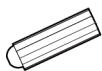
Install the SmartLogger on a wall that is flat and has the bearing capacity to securely hold the SmartLogger which weighs 500 g.

1. Determine mounting holes based on the holes positions in the rear of the SmartLogger, and mark the mounting holes using a marker.

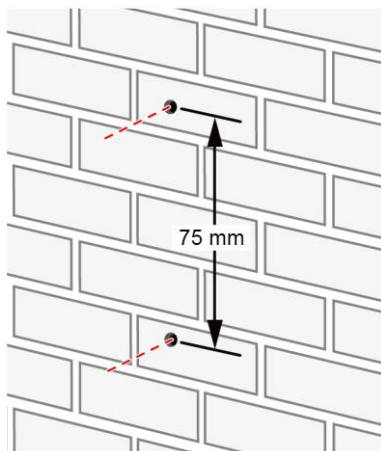
Fittings used for wall-mounting the SmartLogger

Expansion sleeve

Bolt



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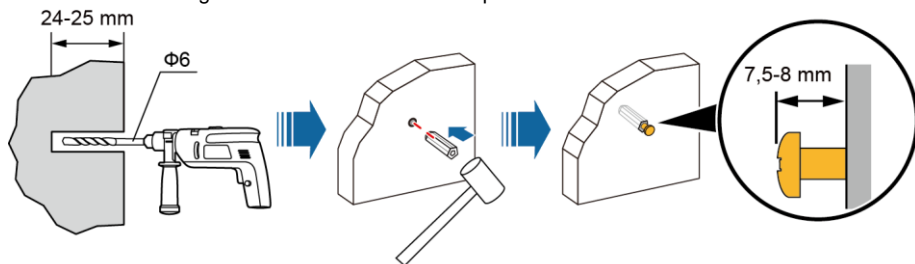


IL01S00001

#### NOTICE

If you step on a ladder when drilling holes and installing the SmartLogger at a high position, exercise caution to avoid falling down.

2. Drill holes using a hammer drill and install expansion sleeves and bolts.



IL01H00001

3. Mount the SmartLogger to the bolts that have been secured to the wall with the mounting holes in the rear of the SmartLogger.

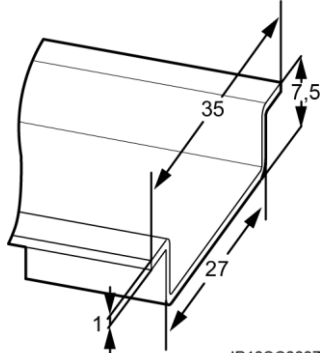
#### NOTICE

When wall-mounting the SmartLogger, ensure that the cable connection area faces downwards for ease of cable connection and maintenance.

#### Along a Guide Rail

Huawei does not provide the SmartLogger guide rail. If you choose this installation mode, prepare a 35 mm standard guide rail by yourself.

Unit: mm

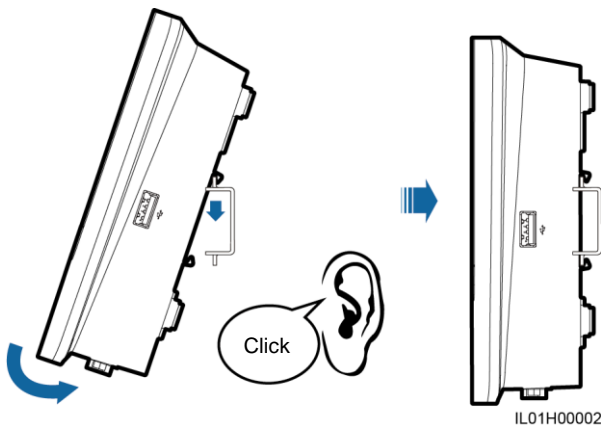


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#### NOTE

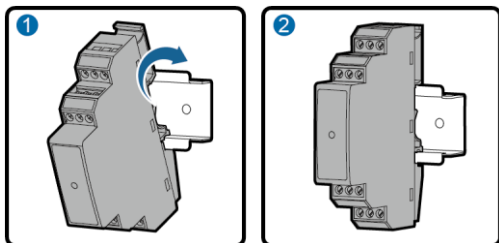
1. Secure the guide rail before mounting the SmartLogger.
2. Verify that the length of the guide rail is sufficient for securing the SmartLogger. The recommended length is 250 mm or greater.

1. Snap the guide rail clamp in the rear of the SmartLogger into the guide rail.



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## 4 Installing the RS485 Signal SPD



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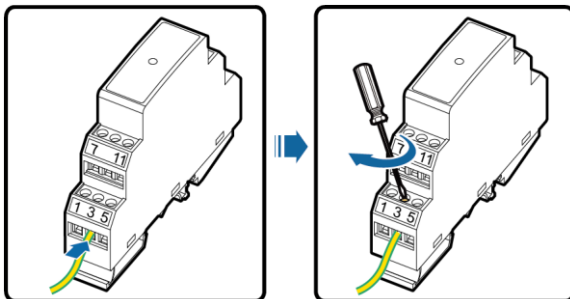
### NOTE

1. The SmartLogger provides three COM ports. To connect a COM port on the SmartLogger to a COM port on an outdoor device, you are recommended to connect an RS485 signal SPD to strengthen the surge protection capability.
2. Each RS485 signal SPD can connect to two COM ports. Each SmartLogger can be configured with a maximum of two RS485 signal SPDs.
3. If the SmartLogger is installed on a guide rail, the RS485 signal SPD can share the guide rail with the SmartLogger. In this case, the recommended guide rail length is 400 mm or greater.
4. Secure the guide rail before mounting the RS485 signal SPD.

## 5 Installing the RS485 Signal SPD Ground Cable

An outdoor copper-core cable with a cross-sectional area of 4 mm<sup>2</sup> or 12 AWG is recommended.

1. Prepare a ground cable with an appropriate length, and strip 8 mm of the insulation layer from one end.
2. Strip a part of the insulation layer from the wire core, and insert the stripped part into port 3 of the RS485 signal SPD.



IL02IC1001

3. Tighten the screw on port 3 using a flat-head screwdriver to secure the core wire.

### NOTICE

- Connect the other end of the ground cable to the ground bar.
- To enhance the corrosion resistance of the ground terminal, apply silica gel or paint on it after connecting the PGND cable.

## 6 Connecting Cables to COM Ports

### NOTE

1. The SmartLogger can connect to devices such as the inverter and EMI through its COM ports.
2. The SmartLogger provides three COM ports. To connect a COM port on the SmartLogger to a COM port on an outdoor device, you are recommended to connect an RS485 signal SPD to strengthen the surge protection capability.
3. Each RS485 signal SPD can connect to two COM ports. Each SmartLogger can be configured with a maximum of two RS485 signal SPDs.



# 6.1 Port Definitions

## NOTICE

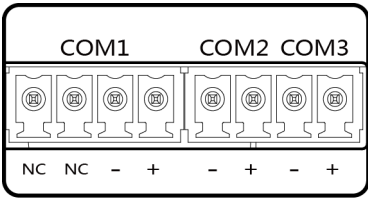
For the definitions of the communications ports on the devices such as the EMI and power meter, see the documents delivered with the devices. When connecting cables, ensure that RS485+ connects to the COM+ port on the SmartLogger and that RS485– connects to the COM– port on the SmartLogger.



## NOTE

- For ease of operation, this document describes only the ports that need to be wired.
- Terminal block of types 1 and 2 are located in different models of SUN2000s.
- The RJ45 network port is located in all models of SUN2000s.

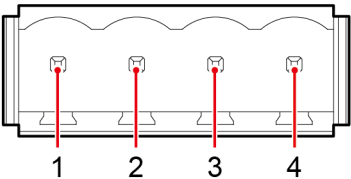
## COM Port (SmartLogger)



IL01WC0007

Port	Identifier	Function
COM1	NC	Reserved
	NC	Reserved
	–	RS485B, RS485 differential signal–
	+	RS485A, RS485 differential signal+
COM2	–	RS485B, RS485 differential signal–
	+	RS485A, RS485 differential signal+
COM3	–	RS485B, RS485 differential signal–
	+	RS485A, RS485 differential signal+

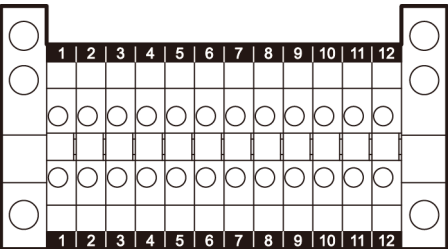
## Terminal Block Type 1 (SUN2000)



IS03WC0009

No.	Port Definition	Function
1	RS485A IN	RS485A, RS485 differential signal+
2	RS485A OUT	RS485A, RS485 differential signal+
3	RS485B IN	RS485B, RS485 differential signal–
4	RS485B OUT	RS485B, RS485 differential signal–

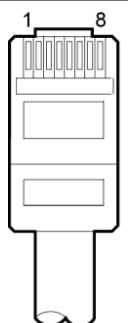
## Terminal Block Type 2 (SUN2000)



IU01ZC0001

No.	Port Definition	Function
5	RS485A IN	RS485A, RS485 differential signal+
6	RS485A OUT	RS485A, RS485 differential signal+
7	RS485B IN	RS485B, RS485 differential signal–
8	RS485B OUT	RS485B, RS485 differential signal–

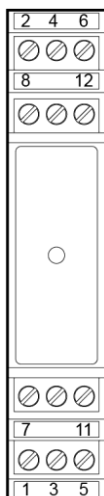
## RJ45 Network Port (SUN2000)



IS012C0011

No.	Color	Function
1	White and orange	RS485A, RS485 differential signal+
2	Orange	RS485B, RS485 differential signal–
3	White and green	N/A
4	Blue	RS485A, RS485 differential signal+
5	White and blue	RS485B, RS485 differential signal–
6	Green	N/A
7	White and brown	N/A
8	Brown	N/A

## RS485 Signal SPD



IL02SC0002

RS485 Surge Protection Port	Protection Port	Function	Surge Port	Function
RS485 surge protection port 1	2	RS485A, RS485 differential signal+	1	RS485A, RS485 differential signal+
	6	RS485B, RS485 differential signal–	5	RS485B, RS485 differential signal–
RS485 surge protection port 2	8	RS485A, RS485 differential signal+	7	RS485A, RS485 differential signal+
	12	RS485B, RS485 differential signal–	11	RS485B, RS485 differential signal–



### NOTE

1. Protection ports connect to COM ports on the SmartLogger. Port 4 is not connected.
2. Surge ports connect to RS485 ports on other devices. Port 3 is the ground port.
3. Protection ports and surge ports must not be confused.
4. One RS485 signal SPD can protect two COM ports.
5. Protection ports 2 and 6 and surge ports 1 and 5 form an RS485 surge protection port for protecting one COM port. Protection ports 8 and 12 and surge ports 7 and 11 form another RS485 surge protection port for protecting one more COM port.

## 6.2 Connecting the RS485 Signal SPD

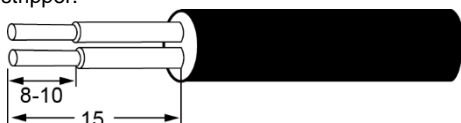


### NOTE

The DJYP2VP2-22 2x2x1 computer cable or a communications cable with a conductor cross-sectional area of 1 mm<sup>2</sup> and outer diameter of 14–18 mm is recommended.

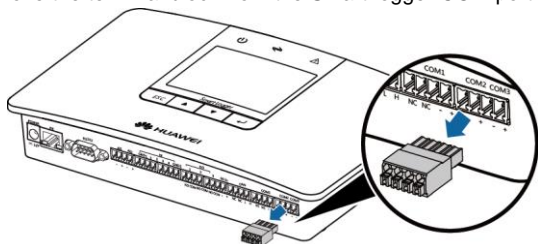
1. Remove an appropriate length of the steel armor and insulation layer from one end of the cable using a wire stripper.

Unit: mm



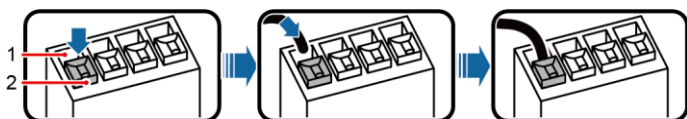
IS01ZC0036

2. Remove the terminal block from the SmartLogger COM port.



IL01IC0001

3. Connect the cable to the SmartLogger terminal block.



IL01IC3002

(1) Wiring terminal

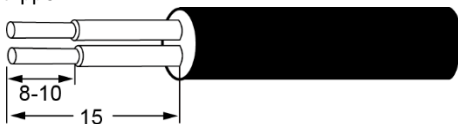
(2) White contact plate



#### NOTE

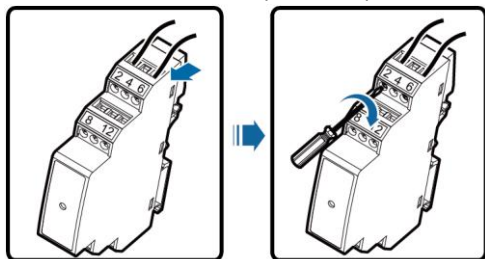
1. Press the white contact plate of the corresponding wiring terminal to flip the metal spring inside the wiring terminal.
2. Insert the uninsulated part of the core wire into the wiring terminal.
3. Release the white contact plate to fasten the core wire.
4. Insert the terminal block into the SmartLogger COM port.
5. Remove an appropriate length of the steel armor and insulation layer from the other end of the cable using a wire stripper.

Unit: mm



IS01ZC0036

6. Connect the cable to the protection port on the RS485 signal SPD.



IL02IC1003

#### NOTICE

Verify that the COM+ port on the SmartLogger connects to protection port 2 or 8 on the RS485 signal SPD, and that the COM- port on the SmartLogger connects to protection port 6 or 12 on the RS485 signal SPD.

## 6.3 Connecting the RS485 Communications Cable

### NOTE

1. Verify that the RS485 communications cable is not longer than 1000 meters.
2. A terminal block is recommended for connecting cables to the SUN2000. The following uses the SUN2000-33KTL/40KTL terminal block as an example to describe cable connection.
3. When you connect a terminal block to the inverter, you are recommended to use a computer cable (DJYP2VP2-22 2x2x1) or a communications cable with the conductor cross-sectional area being 1 mm<sup>2</sup> and the cable outer diameter in the range of 14 mm to 18 mm.
4. When you connect the RJ45 network port to the inverter, you are recommended to use the CAT 5E outdoor shielded network cable.
5. The delivered cables are recommended for connecting to devices such as the EMI, power meter, and potential induced degradation (PID) module.

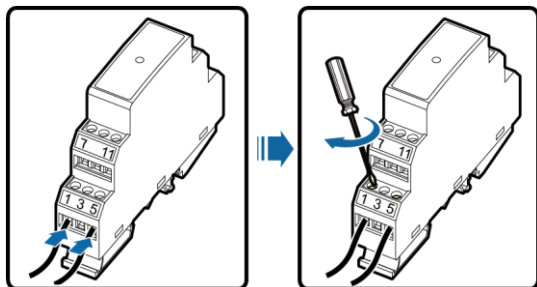
1. Remove an appropriate length of the steel armor and insulation layer from one end of the cable using a wire stripper.

Unit: mm



IS01ZC0036

2. Connect the cable to the surge port on the RS485 signal SPD.

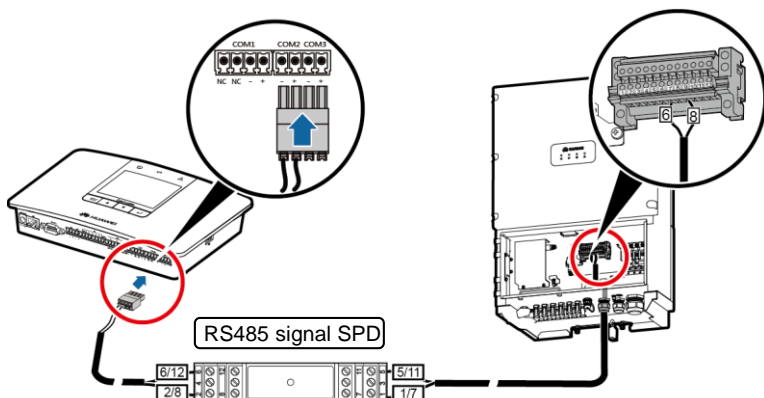


IL02IC1002

### NOTICE

1. Verify that the RS485A port on the inverter connects to surge port 1 or 7 on the RS485 signal SPD, and that the RS485B port on the inverter connects to surge port 5 or 11 on the RS485 signal SPD.
2. After connecting cables, wrap the part without insulation layer using insulation tape.

3. Strip an appropriate length from the other end of the cable and connect the end to the SUN2000 terminal block.



IL01IC3001

### NOTICE

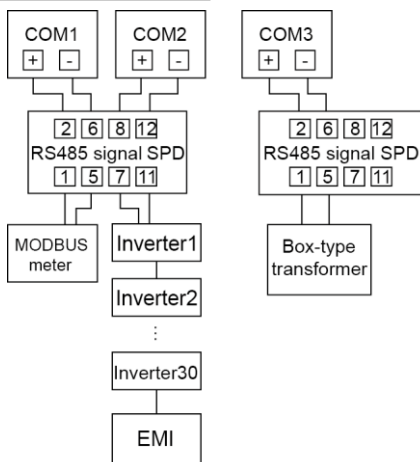
1. The RS485 IN and RS485 OUT ports on the SUN2000 can both connect to the SmartLogger. This document uses the RS485 OUT port as an example to describe the connection between the SUN2000 and the SmartLogger.
2. Verify that the COM+ (RS485A) port on the SmartLogger connects to protection port 2 or 8 on the RS485 signal SPD, and that the COM- (RS485B) port on the SmartLogger connects to protection port 6 or 12 on the RS485 signal SPD.
3. Verify that surge port 1 or 7 on the RS485 signal SPD connects to terminal 6 (RS485A OUT) on the SUN2000 terminal block, and that surge port 5 or 11 on the RS485 signal SPD connects to terminal 8 (RS485B OUT) on the SUN2000 terminal block.

## 6.4 Connecting Multiple Devices

### NOTICE

1. A maximum of 80 devices can be connected to one SmartLogger. You are advised to connect less than 30 devices to each RS485 route.
2. Ensure that the devices connecting to the same COM port comply with the same communications protocol.

### Recommended Connection Mode



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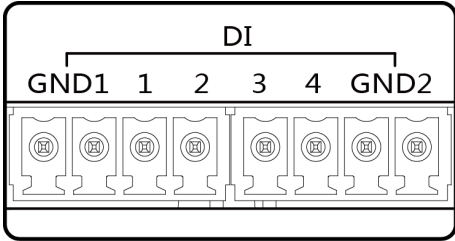
## 7 Connecting a Cable to the DI Port



### NOTE

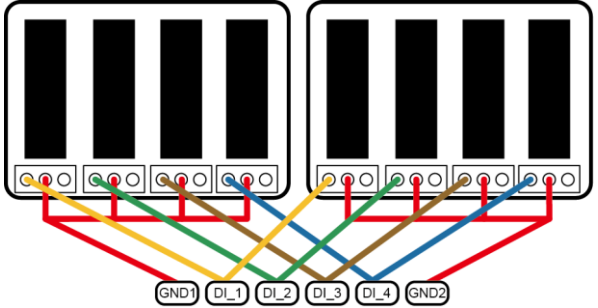
1. In Germany and some other European areas, a ripple control receiver is used to convert power grid scheduling signals into dry contact signals, in which a dry contact is required.
2. Two-core or multiple-core cables with a cross-sectional area of 1 mm<sup>2</sup> are recommended.

No.	Port Definition	Function
1	GND1	Dry contact input common terminal 1, used for active power derating for DI1–DI4
2	DI1	DI_1
3	DI2	DI_2
4	DI3	DI_3
5	DI4	DI_4
6	GND2	Dry contact input common terminal 2, used for reactive power compensation for DI1–DI4



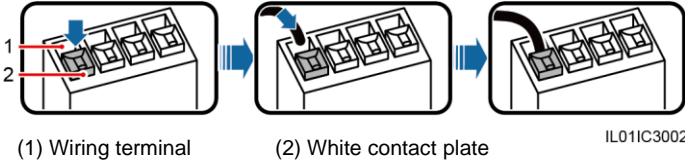
IL01WC0008

1. Prepare a cable with an appropriate length, strip a part of the insulation layer, and connect the stripped core wire to the ripple control receiver.



IL01IC3010

2. Connect the other end of the cable to the DI port on the SmartLogger.



IL01IC3002



#### NOTE

1. Press the white contact plate of the corresponding wiring terminal to flip the metal spring inside the wiring terminal.
2. Insert the uninsulated part of the core wire into the wiring terminal.
3. Release the white contact plate to fasten the core wire.

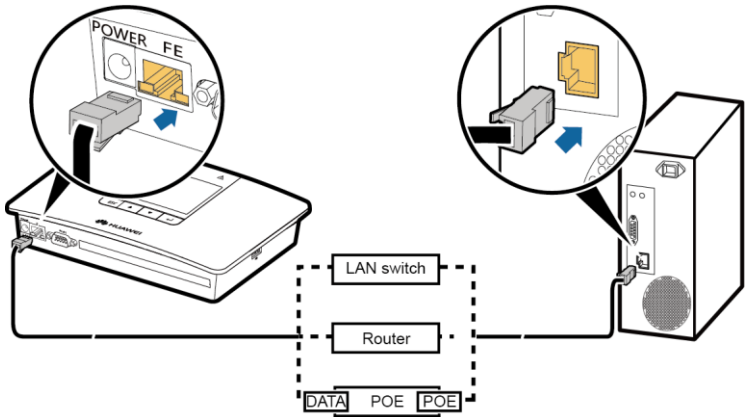
## 8 Connecting an Ethernet Network Cable



#### NOTE

1. The SmartLogger provides one Ethernet port, through which the SmartLogger can connect to a third-party device.
2. The SmartLogger can connect to a LAN switch, router, or PoE device, and then to a PC. It can also directly connect to a PC. Select the connected device based on the actual networking scenario.
3. If the cable between the SmartLogger and the PC over a PoE device is routed outdoors, connect a PoE SPD to the PoE device to enhance the surge protection function. Ensure that the Ethernet network cable length does not exceed 100 meters.
4. Connect the POE port on the PoE device to the PROTECT port on the PoE SPD.

1. Connect one end of the delivered network cable to the Ethernet port of a device.
2. Connect the other end of the network cable to the FE port of the SmartLogger.



IL01IC3005

## 9 Verifying the Installation

No.	Check That	Check Result
1	The SmartLogger is properly installed.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
2	All cables are properly connected, without open circuits or short circuits.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
3	Routing for the power cable and signal cable meets the requirements for routing strong-current and weak-current cables and complies with the cable routing plan.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
4	Cables are bound neatly, and cable ties are secured evenly and properly in the same direction.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed
5	There is no unnecessary adhesive tape or cable tie on cables.	<input type="checkbox"/> Passed <input type="checkbox"/> Failed

## 10 System Power-on

1. Insert the output terminal of the power adapter into the POWER port of the SmartLogger.
2. Insert the power cable plug into an AC socket.

# 11 System Commissioning

The SmartLogger allows users to commission devices on the LCD, embedded WebUI, and the NMS. This document introduces the main commissioning operations using the LCD connection as an example.

Login Mode	User Name	Initial Password
LCD	Common user	000001
	Advanced user	
	Special user	
WEB <sup>a</sup>	Common user	Changeme
	Advanced user	(If the SmartLogger software version is SUN2000 V100R001C95SPC010 or earlier, the initial password is 000001.)
	Special user	

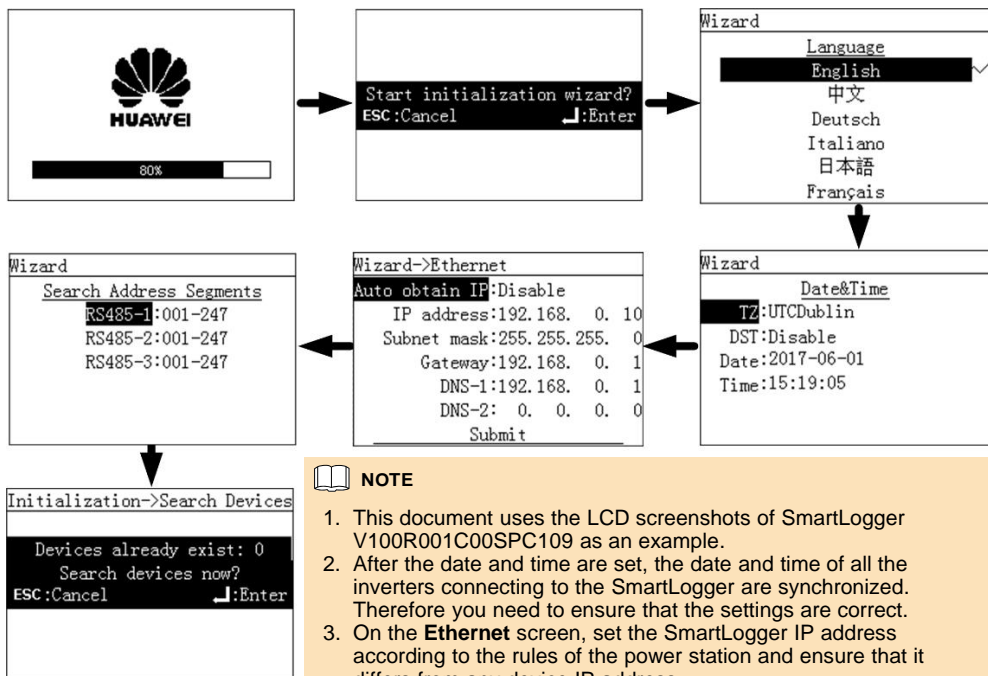
Note a: If the SmartLogger connects to the WebUI, enter https://XX.XX.XX.XX (XX.XX.XX.XX is the SmartLogger IP address and is 192.168.0.10 by default) in the address bar of the browser. The IP address of the SmartLogger can be queried on the LCD.



## 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.

When starting the SmartLogger for the first time, set initialization parameters such as the system language, system time, the address search scope for the RS485 port, and Ethernet parameters on the monitoring panel.



## NOTE

1. This document uses the LCD screenshots of SmartLogger V100R001C00SPC109 as an example.
2. After the date and time are set, the date and time of all the inverters connecting to the SmartLogger are synchronized. Therefore you need to ensure that the settings are correct.
3. On the **Ethernet** screen, set the SmartLogger IP address according to the rules of the power station and ensure that it differs from any device IP address.



## 12 FAQ

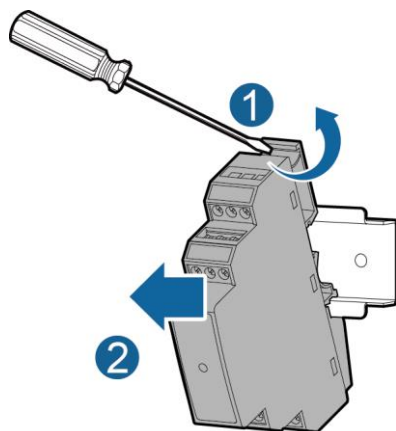
### 12.1 The SmartLogger cannot be powered on.

1. Check that the power cable connects to the power adapter.
2. Check that the power cable connects to the AC socket.
3. Replace the power adapter.
4. Contact the vendor or Huawei technical support.

### 12.2 The SmartLogger cannot find devices.

1. Check the RS485 communications cable connection. If the cable is loose, disconnected, or reversely connected, reconnect and secure it.
2. Check the RS485 communication parameter settings on the SmartLogger and ensure that the baud rate and communication address are set correctly.
3. Manually add the devices that cannot be detected automatically, such as the EMI and power meter.
4. Ensure that the EMI parameters are set correctly.
5. Set the inverter address to be within the search address range set for the SmartLogger.
6. Contact the vendor or Huawei technical support.

### 12.3 How can I remove the RS485 signal SPD?



IL02H00006

Reshape the slot beside port 1,3, or 5 using a flat-head screwdriver, and pull the RS485 signal SPD outwards.

