PV Plants Connecting to Huawei Hosting Cloud Quick Guide (Inverters + SmartLogger3000 + MBUS Networking) Issue: 01 Date: 2019-12-10



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The SmartLogger3000 (SmartLogger for short) is dedicated for monitoring and managing PV power systems. It converges ports, converts protocols, and stores data, and centrally monitors and maintains all the devices in the PV power systems.



Туре	Description	Service Owner
PV module	Purchased by the customer.	Device supplier
Inverter	All Huawei inverters that support MBUS communication and provide the same output voltage.	Huawei
SmartLogger	SmartLogger3000 whose nameplate contains MBUS as the communication mode. The software version should be V300R001C00 or later.	Huawei
SIM card (applicable only to wireless networking)	 Customers need to purchase the standard SIM card of a local carrier (size: 25 mm x 15 mm; capacity ≥ 64 kB). Monthly traffic of the SIM card ≥ Monthly traffic of the inverters (10 MB + Number of inverters x 4 MB) + Monthly traffic of the power meter (3 MB) + Monthly traffic of the EMIs (Number of EMIs x 3 MB) + Monthly traffic of other communications devices (provided by the device supplier). 	Customer
LAN switch or router (applicable only to wired networking)	Provided by the customer and does not require a specific model.	Customer
Management system	Huawei Hosting Cloud Center. The software version should be PVMS730V300R006C10SPC100 or later.	Huawei
Mobile app	FusionSolar app that is remotely connected to the Huawei Hosting Cloud Center. The software version should be 2.5.0 or later.	Huawei
Combiner box, transformer station	Provided by the installation contractor.	Device supplier

Start Connecting Smart Powering On Logger Cables Connecting Smart Connecti

Deploying the Management System (FusionSolar APP/FusionSolar Web)

1 Connecting SmartLogger Cables (Inverter, Combiner box, transformer station, Power meter)

For details about adding devices and setting parameters, see the *SmartLogger3000 User Manual*. You can scan the QR code to obtain it.



🗀 NOTE

A maximum of 80 inverter devices can connect to a single SmartLogger3000A. A maximum of 150 inverter devices can connect to a single SmartLogger3000B.

2 Connecting SmartLogger Cables (Huawei Hosting Cloud)

Networking diagram for access over a Wireless Network



 Insert a SIM card into the SIM card slot on the right of the SmartLogger.
 Install an antenna.

🛄 NOTE

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

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Networking diagram for access over a Wired Network



D NOTE

- The SmartLogger can connect to an Ethernet switch, router, or PC over a WAN port. The SmartLogger can connect to a PC over a LAN port.
- Set the IP address for the PC on the same network segment as the SmartLogger IP address.

3 Powering On the System

- 1. Turn on the AC switch between the inverters and the power grid.
- 2. Turn on all DC switches at the bottom of the inverters.
- Power on the SmartLogger by connecting the output terminal of its power adapter to the DC IN port and the input terminal to an AC socket.



4 Setting SmartLogger Parameters

D NOTE

The SmartLogger parameters can be set by running the FusionSolar app or SmartLogger Web. Set the parameters based on actual requirements.

Method 1: FusionSolar app

1. Search for FusionSolar in Huawei app store (Android) and install the app.

D NOTE

The iOS edition can be used only to view plant information. You can search for **FusionSolar** in Apple App Store to download the iOS edition.

Scan the QR code to download the app (Android).

2. Run the FusionSolar app. If no account or password is available, tap **No Account?**, select **Installer role**, and enter the registration information.

	< Role	Installer Registration
English ¥ OHelp	Select your role. Select your role type from the lower part to enjoy exclusive functions.	Note: If your company has registered an account, you do not need to register the account again. Contact the administrator to add the registered account to the user list.
FusionSolar	Residential plant user role Real-time acquisition of the running	En Company Name
Q User name, phone or email	Contact the installer to create an account for you.	Please enter the email address.
Please enter the password.	Installer role 2	Please enter the email address again.
Auto Login Forgot Password?	Quick site deployment, plant O&M, and plant operation monitoring	Please enter a user name
LOGIN		Please enter the password.
		Please confirm the password.
		Please enter the verificatio jjj2
0		
No Account? Demo Site https://intl.fusionsolar.huawei.com		 I have read and agree to the Terms of Use and Privacy Policy
		Devilation

- Log in to the FusionSolar app. Tap My and choose Device Commissioning, scan the QR code on the SmartLogger or connect to the WLAN of the SmartLogger.
- 4. Log in as **installer**. On the SmartLogger device commissioning screen. The initial password is **00000a**, ensure that **Embedded MBUS enable** is enabled.

D NOTE

- The initial name of the built-in WLAN hotspot of the SmartLogger is Logger_SN, and the initial
 password is Changeme. The initial password for logging in to the app as installer is 00000a.
- 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 the SmartLogger is powered on for the first time or the factory defaults are restored, the **Quick Settings** screen is displayed after you log in to the app. You can set parameters as required.
- When the SmartLogger WLAN is OFF in idle state, hold down the RST button for 1s to 3s to power on the WLAN module. The alarm/maintenance indicator (ALM) then blinks green fast for 2 minutes (other indicators are off) and the SmartLogger waits for connecting to the app. If the app is not connected, the WLAN module is automatically powered off after it is powered on for 4 hours.

Identity authentication	< ^{SI}	nartLogger3000 _{Online} *	<		More
	Communication s	tatus Network managemi ce Connection failed	ent 🤇	Settings	
		rotal Inverter Qty 1	G	Inverter Inspect	
	Rated power	Output power	0	System Maintena	ance
	100.000	0.000cw		Device Mgmt.	3
	E-Total 0.00(www	E-Daily 0.00(swo		Device List	
*	0.00	n Income 0.00te	e	Device Logs	
SN:SUN123456889	P:Disable	Grid scheduling Q=Q-U curve	(U pgrade	
installer				Inverter Spot	
	- L	ا <u>ل</u>			
Enter your password.	Alarm	Monitor			
	l l l				
	Energy yiel	d More			
Cancel Log in					
	< A	ccess Param.	<	Dev	ice Mgmt. 🗮
	Embedded MBUS e	nable		MBU	Auto Device Search
	Connection detection	on interval 5 minutes	6 SN: Poi	PLC020195214156666 rt-Comm Addr.: 0-249 jkal Addr.: 27	Auto Assign Address Import Configuration Export Configuration
			61	XXKTL-M0(COM1-1)	Reset Alarms

5. (Perform this step in the MBUS anti-crosstalk scenario). On the **Anti-crosstalk list** screen, import the serial number (SN) file of the MBUS devices or manually enter the SNs.

Port-Comm Addr.: 1-6 Logical Addr.: 24 Logical Addr.: 24 EMI(COM2-1) SN: EM00201952141566656 Port-Comm Addr.: 2-1 Logical Addr.: 26



🛄 NOTE

Click Template on the **Anti-crosstalk List** page to download the SN file template, obtain the SN information from the PV plant to be created, enter the SN information in the template, and click Import.

6. Set MBUS parameters.

🛄 NOTE

- Baud rate: Retain the default value 115200 for optimal communications performance.
- Anti-crosstalk: If this parameter is enabled, when Box-type transformer No. and Winding No.
 of the inverter are the same as those of the MBUS, or when the inverter SN is in the SN list, the
 inverter can connect to the SmartLogger over an MBUS network.
- Network frequency band: For the United States, set this parameter to 1.7–4.9 (MHz). For other areas, retain the default value 2.5–5.7 (MHz). Other network frequency bands are reserved.
- · Box-type transformer No. and Winding No.: Set the parameters as required.
- Networking: Enable this parameter or else the MBUS devices such as the inverter cannot be connected.

SmartLo On	ngger3000	< Monitor	< MBUS	-inside
nmunication status I card no service	Network management	✓ SmartLogger3000	Running Info.	Settings
Total Inve	erter Qty 1	∧ MBUS		
Rated power	Output power	MBUS-inside Online	STA list	Maintenance
E-Total	E-Daily	\sim emi		
0.00(107)	0.00(6000)	✓ SUN2000(1)	Device Logs	About
CO2 reduction	Income	SUMEDOUTY	t≡ł	(<u>i</u>)
0.00(kg)	0.00(6)			
Grid so	cheduling		< Set	tings
P:DISable	Q=Q-U curve		Baud rate(bos)	
<u> </u>			115200	4
Alarm	Monitor		Anti-crosstalk	
h l t	88		And crosses.	
Energy yield	More		Set network frequency bar	nd
			2.5-5.7 (MHz)	
			Box-type transformer No	6
			Winding No.	
			0	
			Networking	

7. Add communications devices connected to the SmartLogger.

- Tap Auto Device Search or Add device to add devices connected to the SmartLogger.
- If not all devices are detected due to duplicate communications addresses of MBUS devices such as the inverter, tap Auto Assign Address to assign and adjust the addresses as prompted.

For details about adding devices, see the SmartLogger3000 User Manual.



- 8. Set the network parameters of the SmartLogger.
- Method 1: When the SmartLogger connects to the Huawei Hosting Cloud over the wireless network, set Monthly traffic package and Network mode parameters.

< SmartLo	igger3000	 < More	Mobile Data (4G/3G/2G)	
Communication status	Network management Connection failed	Settings 2	4G module status	4
Total inve	· rter Qty 1	< Settings	Network operator	
Rated power	Output power	\checkmark User param.	Monthly usage traffic(MB)	
E-Total	E-Daily		Average daily usage traffic(MB)	
CO2 reduction	0.00(www)	Device WLAN hotspot	Monthly traffic package(MB)	
0.00 _{Mp}) Grid sc	0.00(e)	Ethernet	Network mode	
P:Disable	Q=Q-U curve	R5485	 4G/3G/2G automatic selection	\sim
(P		Power Meter	APN mode	\sim
Alarm	Monitor	Management System	IMEI	
Energy vield	More	Modbus TCP	SIM card number	
		IEC103		
		IECI 04		
		Mobile Data (4G/3G/2G)		

D NOTE

- Set Monthly traffic package and Network mode based on the SIM card information.
- By default, APN mode is set to Automatic. When this mode cannot be used to access the Internet, set the parameter to Manual. In this case, set the parameters related to the SIM card with the information obtained from the carrier.
- Perform operations based on **4G module status**. When **4G module status** is **Connected** and an IP address has been assigned, SmartLogger dialup is successful.
- Method 2: When the SmartLogger connects to the Huawei Hosting Cloud over a wired network, set Ethernet parameters.

SmartLc	ogger3000	< More	< Ethernet
Communication status SIM card no service	Network management	Settings	2 IP address
Total linve	erter Qty 1	< Settings	Subnet mask
Rated power	Output power	\checkmark User param.	Default gateway
100.000.ww	0.000(wm	🛆 Comm. Param.	Primary DNS server
0.00(im)	0.00(sws	Device WLAN hotspot	
CO2 reduction	Income	Ethernet	Secondary DNS server
0.00(%)	0.00(6)		
Grid s	cheduling	R5485	
P:Disable	Q=Q-U curve	Power Meter	
L.	\Box	Management System	
Alarm	Monitor		
ili		Modbus TCP	
Energy yield	More	15(10)	

D NOTE

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- Set **IP address** and **Subnet mask** for the SmartLogger according to the network plan. Ensure that the SmartLogger and the router are on the same network segment and that the SmartLogger has a different IP address from other devices on the LAN.
- Set Default gateway and Primary DNS server to the IP address of the LAN router.
- · If Primary DNS server cannot resolve the domain name, use Secondary DNS server.

in Frinnan,				ondary bito server.	
9. Set param	eters for connect	ting the SmartLogger to the Huawe	ei Hos	ting Cloud.	
< SmartL	ogger3000	< More		K Management System	ļ
Communication status SIM card no service	Network management Connection failed	Settings 2		Server	
Total inv	verter Qty 1	< Settings		Part number	
Rated power	Output power	✓ User param.		Address mode	
100.000,000	0.000mm	🔿 Comm. Param.			
E-Total	E-Daily 0.000aww	Device WLAN hotspot		SSL encryption	
CO2 reduction	Income 0.00(e)	Ethernet		Second challenge authentication	
Grid	scheduling	R5485		Management system	
P:Disable	Q=Q-U curve	Power Meter		4G module status	
Alarm	Monitor	Management System		Ethernet state	
<u>h li</u>	1 ==	Modbus TCP			
Energy yield	More	IEC103			

🛄 NOTE

- Set Server to intl.fusionsolar.huawei.com and Port number to 27250.
- Set Address mode to Logical address. If the communication address of the device connected to the SmartLogger is unique, you are advised to set Address mode to Comm. address. In other cases, you must select Logical address.
- Enable SSL encryption and Secondary challenge authentication.
- If the status of Management system is Connected, the SmartLogger is properly connected to the Huawei Hosting Cloud.

Method 2: SmartLogger WebUI

Enter https://XX.XX.XX (SmartLogger IP address, default value: 192.168.0.10 (WAN) /192.168.8.10 (LAN)) in the address box of a browser, log in to the WebUI as **admin**, and configure the SmartLogger as instructed by **Deployment Wizard**. The following steps in this section is only for check and supplement.

D NOTE

- Set parameters as prompted. For details, see Help on the page.
- The initial password for logging in to the WebUI as **admin** is **Changeme**. When you log in to the WebUI for the first time, you are forced to change the password.
- 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.



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1. Log in as admin and ensure that Built-in MBUS is set to Enable, click Submit.

F e power system								English	* (0F)
Enspire		Deployn	ent Wizard Ov	er View Monitoring Qu	ery Settings	Maintenance	2		<u>A0 😬 0 👀 0</u>
Ucense Management	Total D	evice Qty	u1						000
E Device MgmL	2						Ϋ́	Maintenance	
Connect Device	Cor	nnec	t Device	Built-In MBUS	Enable	~			
Device List	00.	miou	Dovido	Device disconnection time	S	min[5, 30]			
Export Param.	+				Submit				
Clear Alarm		No.	Device C		Port-Comm Add	ir./IP address 🕈	SN 0	Device status	
Data Re-collection		1	60KTL(COM1-1)		1-1			•	
Adjust total energy yield	Auto	Search	Add Devices	Remove Devices Auto Assign J	Address Impor	t Config. Expe	ort Config		

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- (Perform this step in the MBUS anti-crosstalk scenario). Add the serial number (SN) file of MBUS devices such as inverters.
 - Click **Template** to download the SN file template. Obtain SNs from the PV plant to be built, fill the SNs in the template, and click **Import**.
 - Click **Add** to manually enter the SNs.



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3. Set running parameters, click Submit.

4 Running Para	m	Deployment Wiz	ard Over Vie	w Monitoring	-	Monitoring		English Latil	
= MBUS	Runn Runn R	ing Param. OSN I	.ist						
MBUS-inside		No.	Signal Name			_		Unit	
		1	Baud rate	Netwo	orking	Setting	~		^
0	1	2	Anti-crosstalk				~		
	1	3	Network frequer	ncy band	4	2-12 (MHz)	~		
WBUS-Inside]	4	Box-type transfo	rmer No.	0)	[0, 511]		
	J	5	Winding No.		0)	[0, 7]		Ŷ
	Submi								

- Baud rate: Retain the default value 115200 for optimal communications performance.
- Anti-crosstalk: If this parameter is set to Enable, when Box-type transformer No. and Winding No. of the inverter are the same as those of the MBUS, or when the inverter SN is in the SN list, the inverter can connect to the SmartLogger over an MBUS network.
- Network frequency band: For the United States, set this parameter to 1.7–4.9 (MHz). For other areas, retain the default value 2.5–5.7 (MHz). Other network frequency bands are reserved.
- Box-type transformer No. and Winding No.: Set the parameters as required.
- **Networking**: Set this parameter to **Enable** or else the MBUS devices such as the inverter cannot be connected.
- 4. Add communications devices connected to the SmartLogger.
 - Click Auto. Search or Add Devices to add devices connected to the SmartLogger. For details about adding devices, see the SmartLogger3000 User Manual.
 - If not all devices are detected due to duplicate communications addresses, click Auto Assign Address to assign and adjust the addresses as prompted.

F e power system								English	~ (DE)
Enspire		Deployn	nent Wizard Over	View Monitoring Qu	ery Settings	Maintenance			<u>A</u> o 🙆o \varThetao)
Ucense Management	Total	Device Qty	y::1						000
E Device Mgmt.	2						Ma	intenance	
Connect Device	Co	nnec	t Device	Built-in MBUS	Enable	~			
Device List		miloc	I DOTIOU	Device disconnection time	5	min[5, 30]			
Export Param.					Submit				
Clear Alarm		No.	Device C		Port-Comm Add	r./IP address =	SN =	Device status	
Data Re-collection		1	60KTL(COM1-1)		1-1			•	
Adjust total energy yield	Auto	. Search	Add Devices Re	move Devices Auto Assign A	ddress Impor	t Config. Expo	rt Config		

5. Set the network parameters of the SmartLogger.

 Method 1: When the SmartLogger connects to the Huawei Hosting Cloud over the wireless network, set Monthly traffic package and Network mode parameters and click Submit.

Ensoire			1 Settings	English v 🔞 🕞
	Deployment Wizard Over View Monitoring Qu	ry Settings	Cettings	
u User Param.	WLAN	L.		
= Comm. Param.		AN OFF in idle state	•	
Wireless Network		SID Logger_20190817CN6	0	
Minud Manual	Mireless Network	••••••• bro	'a-z','A-Z','0-9'(8-19 characters, at least two types of ch	aractersi
Willed Network	WIICICSS NELWOIK	Contraction of Contraction		
R\$485		Sucmit		
Power Meter	Mobile Data(4G/3G/2G)			
Management System	Monthly traffic pad	age 0.00	[0.00, 1024.60]MB	
Modbus TCP	Network n	ode 4G/3G/2G automatic		
IEC103	APN n	ode Automatic	•	
IEC104	Authentication	ype CHAP	7	
FTP		PN		
Email	APN dialup nur	ber		
D Power Adjustment	APN user n	ime		
- Remote Shutdown	APN user pass	ord		
		Submit		
DI				

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D NOTE

- Set Monthly traffic package and Network mode based on the SIM card information.
- By default, **APN mode** is set to **Automatic**. When this mode cannot be used to access the Internet, set the parameter to **Manual**. In this case, set the parameters related to the SIM card with the information obtained from the carrier.
 - Method 2: Connect the SmartLogger to the Huawei Hosting Cloud over the wired network, and set Wired Network parameters and click Submit.

Enspire	Deployment Wizard	ver View Monitoring	Query Settings	1 Settings	English 🗸 🚯 💽 💽
🗉 User Param.	Wired Network Parameters)
E Comm. Param.		IP address			
Wireless Network		Subnet mask			
Wired Network	Wined Methyank	Default gateway			
DC 10/	Wired Network	Primary DNS server			
K5485		Secondary DNS server			
Power Meter			Submit		
Management System			Justin		

- Set **IP address** and **Subnet mask** for the SmartLogger according to the network plan. Ensure that the SmartLogger and the router are on the same network segment and that the SmartLogger has a different IP address from other devices on the LAN.
- Set Default gateway and Primary DNS server to the IP address of the LAN router.
- If Primary DNS server cannot resolve the domain name, use Secondary DNS server.

6. Set parameters for connecting the SmartLogger to the Huawei Hosting Cloud and click Submit.

o User Param.	Management System				
= Comm, Param.		Server	-	(1-65535)	
Wireless Network		Address mode	Logical address	¥	
РБ485 Ма	nagement System	SSL encryption Second challenge authentication	Enable	<u>⊻</u>	
Power Meter	1	NMS connection status	Connected		
Management System	Security Certificate		Submit		

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D NOTE

- · Set Server to intl.fusionsolar.huawei.com and Port number to 27250.
- Set Address mode to Logical address. If the communication address of the device connected to the SmartLogger is unique, you are advised to set Address mode to Comm. address. In other cases, you must select Logical address.
- · Enable SSL encryption and Second challenge authentication.
- If the status of NMS connection status is Connected, the SmartLogger is properly connected to the Huawei Hosting Cloud.

5 Deploying the Management System

D NOTE

You can creat a site by using the FusionSolar app or FusionSolar Web. Select a site deployment mode based on the actual requirements.

Method 1: FusionSolar app

D NOTE

Before creating a PV plant, ensure that the inverters are properly connected to the SmartLogger which is properly connected the management system.

- 1. Log in to the FusionSolar app and tap Setup Wizard.
- 2. Enter site information as prompted and tap Save.

D NOTE

After the SmartLogger is added, the inverters and smart power sensor/power meter connected to the SmartLogger are automatically added. Select the corresponding PV plant and check the device status. Ensure that the devices are correctly added.



Method 2: FusionSolar Web

D NOTE

- Before site deployment, ensure that the inverters and SmartLogger are powered on and the communication is normal.
- Ensure that you have matched the devices in a PV plant with the PV plant with the help of the installation contractor.
- Before creating a PV plant, ensure that you have obtained the login account and password from the installation contractor or Huawei service engineer. If no account or password is available, create an account.
- 1. Enter the Huawei Hosting Cloud address https://intl.fusionsolar.huawei.com in the address box of a browser. Log in to the Huawei Hosting Cloud. If no account or password is available, create an account.

🛄 NOTE

- Use Internet Explorer 11, Chrome 67, Safari 9.0, or a later version. Otherwise, exceptions may occur.
- The installation contractor can be registered by email address. Select a registration mode based on actual requirements.

	- F	usionSolar	Installer Registratio	n
	Note: If your to regi Contac	company has registered ar ster the account again. t the administrator to add i	account in the system, you do not need the registered account to the user list.	
ser Login	Company Name	Please input company na	me	
User name/Phone number/Email	Email Confirm email			
Enter your password.	User name			
LOGIN	Password			•
staller Registration 1 Demo Site	Confirm password			•
	Verification code		MmZ4 ·	
	3	I have read and agreed to the	Terms of Use and Privacy Policy. (Terms of Use)	and (Privacy
	(4)	Submit	Back	
			IL	.03J00078

2. Create a PV plant.

Ir



3. Enter the basic information, access device, string configuration, electric price configuration, other information, and camera information based on the site requirements.

Basic Information	Access Device	String Configuration	Electric Price Configuration	Other Information	Camera Information
	Company				* ⑦
	Plant name				•
In	stalled capacity	Sum of component po	wer under STC conditions		* kWp
Grid	connection time				-
	Contact Person				
c	Contact Number	Enter a phone numbe	r or an email address.		0
		User's authorization of	btained *	nformation, obtain auth	orization in advance

D NOTE

• Enter the SN and name of the SmartLogger. After the SmartLogger is added, the inverters and smart power sensor connected to the SmartLogger are automatically added.

Next Cancel

- If the capacity of the PV plant is greater than 25 kWp, the **Camera Information** tab page is displayed.
- 4. Click Save.

The PV plant is successfully created.

Setting MBUS Parameters for the Inverters

Log in to the FusionSolar app. Tap **My** and choose **Device Commissioning**, scan the QR code or bar code of the WLAN module or Bluetooth module or connect a USB data cable, a Bluetooth module, or a WLAN module to the USB port of the inverter to implement communication between the inverter and the app. Set RS485 communications parameters for the inverters.



D NOTE

- MBUS protocol: MODBUS RTU.
- Box-type transformer No.: Set the number of the transformer stations connecting to the inverters.
- Winding No.: Set the number of the windings connecting to the inverters.
- Com address: The value ranges from 1 to 247. Set this parameter as planned. The value must be unique. If there is no location requirement, you do not need to set this parameter. The SmartLogger automatically allocates the value.
- 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 the inverter is powered on for the first time or restored to factory settings, the **Quick settings** page is displayed when you log in to the app. You can set the parameters according to the actual situation.

Huawei Technologies Co., Ltd. Huawei Industrial Base, Bantian, Longgang, Shenzhen 518129, People's Republic of China solar.huawei.com