

## SUN2000-(3KTL-10KTL)-M0 Quick Guide

Issue: 04 Part Number: 31509649 Date: 2019-05-15

HUAWEI

HUAWEI TECHNOLOGIES CO., LTD.

#### NOTICE

- The information in this document is subject to change due to version upgrades or other reasons. 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 installing the device, read the user manual carefully to get familiar with product information and safety precautions.
- Only qualified and trained electrical technicians are allowed to operate the device. Operation
  personnel should understand the composition and working principles of the grid-tied PV power
  system and local regulations.
- 4. Before installing the device, check that the package contents are intact and complete against the packing list. If any damage is found or any component is missing, contact your dealer.
- Use insulating tools when installing the device. For personal safety, wear proper personal protective equipment (PPE).
- Huawei shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.



 $\begin{array}{l} \mbox{Copyright} @ \mbox{Huawei Technologies Co., Ltd. 2019.} \\ \mbox{All rights reserved.} \end{array}$ 

## **2** Installing the Device

## 2.1 Installation Requirements

## Tilt and Space



### Dimensions



## 2.2 Installing the SUN2000

#### 

When drilling holes, avoid the water pipes and power cables buried in the wall.

1. Install the mounting bracket.

#### 

- M6x60 expansion bolts are delivered with the SUN2000. If the length and amount of the bolts
  do not meet installation requirements, prepare M6 stainless steel expansion bolts by yourself.
- The expansion bolts delivered with the inverter are used for solid concrete walls. For other types of walls, prepare bolts by yourself and ensure that the wall meets the load bearing requirements of the inverter.
- · Loosen the nuts, flat washers, and spring washers of the two expansion bolts below.



IS10H00003

2. Install the SUN2000 on the mounting bracket.

 (Optional) Install an antitheft lock.



#### 

Prepare an anti-theft lock suitable for the lock hole diameter ( $\Phi 8 \text{ mm}$ ) by yourself. An outdoor waterproof lock is recommended.

## **3** Electrical Connections

## 3.1 Preparing for Installation

## NOTICE

- · Connect cables in accordance with the local installation laws and regulations .
- Before connecting cables, ensure that the DC switch on the SUN2000 and all the switches connecting to the SUN2000 are set to OFF position. Otherwise, the high voltage of the SUN2000 may result in electric shocks.

No.	Item	Туре	Specifications
1	PE cable	Single-core outdoor copper cable	Conductor cross-sectional area $\ge 4$ mm <sup>2</sup>
2	AC output power cable	Outdoor copper cable	<ul> <li>Conductor cross-sectional area: 4–6 mm<sup>2</sup></li> <li>Cable outer diameter: 10–21 mm</li> </ul>
3	DC input power cable	Standard outdoor PV cable in the industry (recommended model: PV1-F)	<ul> <li>Conductor cross-sectional area: 4–6 mm<sup>2</sup></li> <li>Cable outer diameter: 4.5–7.8 mm</li> </ul>
4	(Optional) RS485 communications cable (used to cascade inverters or connect to the RS485 signal port on the SmartLogger)	Two-core outdoor shielded twisted pair cable	<ul> <li>Conductor cross-sectional area: 0.2–1 mm<sup>2</sup></li> <li>Cable outer diameter: 4–11 mm</li> </ul>
5	(Optional) RS485 communications cable (used to connect to the RS485 signal port on devices such as the Smart Power Sensor and the energy storage device)	Two-core outdoor shielded twisted pair cable	<ul> <li>Conductor cross-sectional area: 0.2–1 mm<sup>2</sup> Note: When devices such as the Smart Power Sensor and the energy storage device are both connected to the inverter, use 0.2–0.5 mm<sup>2</sup> cords.</li> <li>Cable outer diameter: 4–11 mm</li> </ul>
6	(Optional) Grid scheduling signal cable	Five-core outdoor cable	<ul> <li>Conductor cross-sectional area: 0.2–1 mm<sup>2</sup></li> <li>Cable outer diameter: 4–11 mm</li> </ul>

## 3.2 Installing the PE Cable

#### 

Do not connect the neutral wire to the enclosure as a PE cable. Otherwise, electric shocks may occur.



#### 

- The PE point at the AC output port is used only as a PE equipotential point, not a substitute for the PE point on the enclosure.
- It is recommended that silica gel or paint be used around the ground terminal after the PE cable is connected.

#### 3.3 Installing the AC Output Power Cable

#### NOTICE

Ensure that the protection layer of the AC output power cable is inside the connector, the core wires are totally inserted into the cable hole, and the cable is connected securely. Failing to do so may cause device malfunction or damage.







IS06I20048

1. Connect the AC output power cable to the AC connector.

### Three-core cable (L1, L2, and L3)



IS10I20004

## Four-core cable (L1, L2, L3, and PE)



## Four-core cable (L1, L2, L3, and N)



## Five-core cable (L1, L2, L3, N and PE)



2. Connect the AC connector to the AC output port.



3. Check the route of the AC output power cable.



## 3.4 Installing DC Input Power Cables

#### NOTICE

- 1. Use the Amphenol Helios H4 PV connectors supplied with the SUN2000. If the PV connectors are lost or damaged, purchase the connectors of the same model. The device damage caused by incompatible PV connectors is not covered under any warranty.
- 2. Crimp the metal stamping forming contacts using crimping tool H4TC0003 (Amphenol, recommended) or H4TC0002 (Amphenol).
- 3. Ensure that the PV module output is well insulated to ground.
- 4. The DC input voltage of the SUN2000 shall not exceed 1100 V DC under any circumstance.
- 5. Before installing the DC input power cable, label the cable polarities to ensure correct cable connections.
- 6. If the DC input power cable is reversely connected, do not operate the DC switch as well as positive and negative connectors immediately. Failing to do so may cause device damage, which is not covered under any warranty. Wait until the night when solar irradiance declines and the PV string current drops to below 0.5 A. Then set the DC switch to the OFF position, remove the positive and negative connectors, and correct the polarities of the DC input power cable.



IS10H30001



## 3.5 (Optional) Installing the WLAN Smart Dongle

## 

The WLAN Smart Dongle is delivered with the SUN2000.



IS10H00016

LED		Description	
Color	Status		
Yellow (blinking green and red simultaneously)	Steady on	The Dongle is secured and powered on.	
Red	Blinking at short intervals (on for 0.2s and then off for 0.2s)	The parameters for connecting to the router are to be set.	
Green	Blinking at long intervals (on for 0.5s and then off for 0.5s)	Connecting to the router	
Green	Steady on	Successfully connected to the management system.	
Blinking red and green alternatively	Blinking at short intervals (on for 0.2s and then off for 0.2s)	The inverter is communicating with the management system through the Dongle.	

## 3.6 (Optional) Installing the Signal Cable

#### NOTICE

- Not all SUN2000 models are delivered with the signal cable connector.
- When laying out the signal cable, separate it from the power cable and keep it away from strong interference sources to avoid strong communication interference.
- Ensure that the protection layer of the cable is inside the connector, surplus core wires are cut off from the protection layer, the exposed core wire is totally inserted into the cable hole, and that the cable is connected securely.
- If the Smart Dongle is configured, you are advised to install the Smart Dongle before connecting the signal cable.

#### **Communication Port Pin Definition**



Pin Definition Function Description Pin Definition Function Description RS485A. RS485A. Used to Used to RS485 RS485 cascade 1 485A1-1 2 485A1-2 cascade differential differential inverters or inverters or signal+ signal+ connect to connect to the the RS485 RS485B. RS485B. RS485 signal signal port RS485 RS485 port on the 3 485B1-1 4 485B1-2 on the differential differential SmartLogger SmartLogger signalsignal-Shieldina Shieldina PE N/A 6 PE N/A 5 ground ground RS485A, Used to RS485 connect to the 7 485A2 8 DIN1 differential RS485 signal port on devices signal+ such as the RS485B. Smart Power RS485 Sensor and the 485B2 10 9 DIN2 differential energy storage signaldevice Drv contact Reserved. for grid N/A Used to scheduling connect to the Enabling 11 12 FN enable signal DIN3 signal port on an energy storage device GND GND N/A 14 DIN4 13 Rapid 15 DIN5 Reserved. 16 GND shutdown

#### 

- When the RS485 communications cables of devices such as the Smart Power Sensor and the energy storage device are both connected to the inverter, 485A2 (pin 7), 485B2 (pin 9), and PE (pin 5) are shared.
- When the enable signal cable of the energy storage device and the signal cable of the rapid shutdown switch are both connected to the inverter, GND (pin 13) is shared.

#### NOTICE

When multiple inverters are cascaded, only one Smart Dongle or one SmartLogger1000A is allowed in the RS485 communications link.

#### Single Inverter + Smart Dongle Networking



The Smart Power Sensor is necessary for export limitation. Only the DTSU666-H Smart Power Sensor (provided by Huawei) can be used.

#### Multiple Inverter + SmartLogger1000A Networking



#### NOTE

- A maximum of 80 devices can connect to a single SmartLogger1000A, such as inverters, Smart Power sensor, and EMI. You are advised to connect fewer than 30 devices to each RS485 route.
- The Smart Power Sensor is a necessary export limitation. Select the Smart Power Sensor according to the actual project.
- To ensure the system response speed, the Smart Power Sensor is recommended to be connected to a COM port separately from inverter COM port.

#### (Optional) Installing the RS485 Communications Cable (Inverter Cascading)

1. Connect the signal cable to the signal cable connector.



2. Connect the signal cable connector to the Communication port.

IS10I20006



# (Optional) Installing the RS485 Communications Cable (Only Smart Power Sensor Connected)

1. Connect the signal cable to the signal cable connector.



2. Connect the signal cable connector to the Communication port.



IS10I20007

# (Optional) Installing the RS485 Communications Cable (Smart Power Sensor and Energy Storage Device Connected)

1. Connect the signal cable to the signal cable connector.





2. Connect the signal cable connector to the Communication port.

IS10I20012



Communication port (COM)



#### (Optional) Installing the Grid Scheduling Dry Contact Signal Cable

1. Connect the signal cable to the signal cable connector.



2. Connect the signal cable connector to the Communication port.

<image><image><image><image><image><image><image><image>

4	Verifying Installation
No.	Acceptance Criteria
1	The SUN2000 is installed correctly and securely.
2	Cables are routed properly as required by the customer.
3	The Smart Dongle is installed correctly and securely.
4	Cable ties are evenly distributed and no burr exists.
5	The PE cable is connected correctly, securely, and reliably.
6	The DC switch and all the switches connected to the SUN2000 are set to the OFF position.
7	The AC output power cable, DC input power cable, and signal cable are connected correctly, securely, and reliably.
8	Unused terminals and ports are locked by watertight caps.
9	The installation space is proper, and the installation environment is clean and tidy.

## **5** Powering On the System

#### NOTICE

Before turning on the AC switch between the SUN2000 and the power grid, check that the AC voltage is within the specified range using a multimeter.

- 1. Turn on the AC switch between the SUN2000 and the power grid.
- 2. Turn on the DC switch between the PV string and the SUN2000 if there is any.
- 3. Turn on the DC switch at the bottom of the SUN2000.
- 4. Observe the LED indicators to check the SUN2000 operating status.

#### 

Blinking at Long Intervals: On for 1s and then Off for 1s; Blinking at Short Intervals: On for 0.2s and then Off for 0.2s.

Category	Status		Meaning		
Running indicator		]~ O	N/A		
	Steady green	Steady green	The SUN2000 is operating in grid-tied mode.		
	Blinking green at long intervals	Off	The DC is on and the AC is off.		
	Blinking green at long intervals	Blinking green at long intervals	The DC is on, the AC is on, and the SUN2000 is not exporting power to the power grid.		
	Off	Blinking green at long intervals	DC is off and AC is on.		
	Off	Off	DC and AC are both off.		
	Blinking red at short intervals	N/A	DC environmental alarm		
	N/A	Blinking red at short intervals	AC environmental alarm		
	Steady red	Steady red	Faulty		

Category	Status	Meaning
Communication indicator	(m) ()	N/A
	Blinking green at short intervals	Communication is in progress. (When a mobile phone is connected to the SUN2000, the indicator first indicates that the phone is connected to the SUN2000): blinks green at long intervals.)
	Blinking green at long intervals	The mobile phone is connected to the SUN2000.
	Off	There is no communication.

## **6** Commissioning

## 6.1 Scenario 1: Single inverter + Smart Dongle

The screenshots shown in the quick guide are from FusionSolar V2.3.0. Data in the screenshots is for reference only. The actual screens prevail.

#### 1. Downloading the App

Search for "FusionSolar" from the following app stores or scan the corresponding QR code, download the installation package, and install the FusionSolar app by following the instructions.

- Google Play (Android)
- App Store (iOS)



Android



iOS

#### 2. (Optional) Installer Account Registration

## 

If you have an installer account, skip this step.

Creating the first installer account will generate a domain named after the company.

	]	<	Installer Registration	
HUAWEI		Ēh	Company Name	
FusionSolar	_		Please enter the email address	
intl.fusionsolar.huawei.com			Please enter your email again	
<b>2</b> User name, phone or email		-	Please enter the password.	₩
Delease enter the password.	<u> </u>			***
Auto Login Forgot	Password?		Please enter the verification code	<b>5</b> Rít
Login		O I have	read and agree to the"Terms of Use"	and
		"Priva	cy Policy"	
			Registration	
Installer Registration	Demo Site			

#### NOTICE

To create multiple installer accounts for the same company, log in to the FusionSolar app and tap **New User**.

	Q 2		<	New User	<	Selecting Plant
			Role	Installer 💌 📀	Q.	Please input the plant name
33 Total number	<ul><li>Normal 17</li><li>Faulty 4</li></ul>	5	Plant	Please select a plant.	Curr	ently 1 power stations selected. Click to view
		F	Photo			<ul> <li>Company Name</li> </ul>
•		Г		<b>4</b>		PV Plant 1
Setup Wizard 🚿	New User		User name			PV Plant 2
Direct	Chart at an	<b></b>	Password	Please enter the password.		DV Diant 2
Plant	Statistics	F	Phone			PV Plant 3
SUN2000-001 * ××	1	E	Email	Please enter the email of the new account.	•	
DC Capacity: 0.0 Daily energy: 9.2	200kWp 26GWh				-	
SUN2000-002	Normal 2					
P XX DC Capacity: 60	.000kWp					
Daily energy: 73.	.59kWh					
Home O&M	Device My	(	Cance			Confirm

#### 3. Creating a PV Plant and an Account for User



### 6.2 Scenario 2: Multiple Inverters + SmartLogger1000A

See the SmartLogger1000A Quick Guide.

The quick guide is delivered with the *SmartLogger1000A*. You can scan the QR code to obtain it.



#### 6.3 Other Scenarios

#### 1. Access Inverter commissioning.

#### Method 1: before login



#### Method 2: after login





2. Connect to the inverter WiFi. Log in as installer, and perform Quick settings.



3. (Optional) When multiple inverters are connected to a third-party data collector, set RS485 parameters.

<	Home •••		Communication configuration		<	RS485 settings	
<u>₽</u>			Tinverter WiFi settings	>	Protocol type	MODBUS	~
	234		Dongle parameter settings	>	Baud rate	9600	~
	~		RS485 Pettings	>	Parity mode	No parity	~
Device information	Device maintenance		Management System Configuration	>	Comm. address	1	
Quick settings	Parameter configuration						
Communication confi Imprion	Log management					Submit	
NOTICE	addresses of diff	erent	inverters must be differe	nt			

## 7 Customer Service Contact

Customer Service Contact								
Region	Country	Service Support Email	Phone					
	France							
	Germany							
	Spain	eu inverter support@huawei.com	0080033888888					
Europe	Italy							
	UK							
	Netherlands							
	Other countries	For details, see <u>solar.huawei.com</u> .						
	Australia	au_inverter_support@huawei.com	1800046639					
	Turkey	tr_inverter_support@huawei.com	-					
	Malaysia		0080021686868 /1800220036					
Asia Pacific	Thailand	apsupport@huawei.com	(+66) 26542662 (charged by local call)					
			1800290055 (free in Thailand)					
	China	solarservice@huawei.com	4008785555					
	Other countries	apsupport@huawei.com	0060-3-21686868					
Japan	Japan	Japan_ESC@ms.huawei.com	0120258367					
India	India	indiaenterprise_TAC@huawei.com	1800 103 8009					
South Korea South Korea		Japan_ESC@ms.huawei.com	-					
North	USA	na_inverter_support@huawei.com	1-877-948-2934					
America	Canada	na_inverter_support@huawei.com	1-855-482-9343					
	Mexico		018007703456 /0052-442-4288288					
Lotin	Argentina		0-8009993456					
America	Brazil	la_inverter_support@huawei.com	0-8005953456					
	Chile		800201866 (only for fixed)					
	Other countries		0052-442-4288288					
	Egypt		08002229000					
		-	/0020235353900					
	UAE	-	08002229000					
Fast and	South Africa	mea inverter support@huawei.com	0800222900					
Africa	Saudi Arabia		8001161177					
	Pakistan		0092512800019					
	Morocco		0800009900					
	Other countries		0020235353900					

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