2.1 Installation Videos for Inverters

SUN2000-12/15/17/20KTL-M0/M2 (Three-phase inverter)

Website:
https://support.huawei.com/enterprise/en/doc/EDOC1100087197

QR code:

The methods for installing the SUN2000-8KTL-M0 and SUN2000-10KTL-M0 inverters in Australia are the same as those in the video.

SUN2000-29.9KTL/33KTL-A/36KTL (Three-phase inverter)

Website:
https://support.huawei.com/enterprise/en/doc/EDOC1100164794/62e14c08

QR code:

SUN2000-50/60KTL-M0 (Three-phase inverter)

Website:
https://support.huawei.com/enterprise/en/doc/EDOC1100042179

QR code:

SUN2000-100KTL-M1 (Three-phase inverter)

Website:
https://support.huawei.com/enterprise/en/doc/EDOC1100111807

QR code:

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2.2 Installation Videos for Communication Modules

Smart Dongle-WLAN-FE

Website:

(Q2 2020)

QR code:

Smart Dongle-4G

Website:

https://support.huawei.com/enterprise/en/doc/EDOC1100118294?section=o002
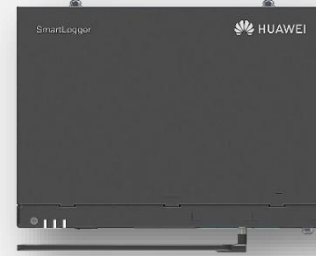
QR code:

SmartLogger3000A

Website:

https://support.huawei.com/enterprise/en/doc/EDOC1100133449

QR code:

USB-Adapter2000-C

For details, see the inverter installation video.

Document Links for Inverters

Category	Document	Link (Support-E)											
Installation Video	(Video) SUN2000-(12KTL-20KTL)-M0/2 Installation Video	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish				Polish
	(Video) SUN2000- (29.9KTL, 33KTL-A, 36KTL, 42KTL) Installation Video	Chinese	English										
	(Video) SUN2000- (50KTL, 60KTL, 65KTL) -M0 Installation Video	Chinese	English										
	(Video) SUN2000- (100KTL, 110KTL, 125KTL) Series Installation Video	Chinese	English	German	French				Spanish		Korean		
User Manual	SUN2000-(12KTL-20KTL)-M0 User Manual	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish				Polish
	SUN2000-(12KTL-20KTL)-M2 User Manual	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish				Polish
	SUN2000-(20KTL, 29.9KTL, 30KTL, 36KTL, 40KTL)-M3 User Manual	Chinese	English	German	French	Dutch	Italian		Spanish				
	SUN2000- (29.9KTL, 33KTL-A, 36KTL, 42KTL) User Manual	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish	Turkish			
	SUN2000- (50KTL, 60KTL, 65KTL) -M0 User Manual	Chinese	English	German	French			Portuguese	Spanish	Turkish	Korean		
	SUN2000- (100KTL, 110KTL, 125KTL) Series User Manual	Chinese	English	German	French				Spanish		Korean		

Document Links for Inverters

Category	Document	Link (Support-E)											
Quick Guide	SUN2000-(12KTL-20KTL)-M0 Quick Guide	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish				Polish
	SUN2000-(8KTL-20KTL)-M2 Quick Guide	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish				Polish
	SUN2000-(20KTL, 29.9KTL, 30KTL, 36KTL, 40KTL)-M3 Quick Guide	Chinese	English	German	French	Dutch	Italian		Spanish				
	SUN2000- (29.9KTL, 33KTL-A, 36KTL, 42KTL) Quick Guide	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish	Turkish			
	SUN2000- (50KTL, 60KTL, 65KTL) -M0 Quick Guide	Chinese	English	German	French			Portuguese	Spanish	Turkish	Korean	Vietnamese	
	SUN2000- (100KTL, 110KTL, 125KTL) Series Quick Guide	Chinese	English	German	French				Spanish		Korean		

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Document Link for Networking Devices

Category	Document	Link (Support-E)								
Commissioning Video	(Video) FusionSolar APP Commissioning Video	Chinese	English							
	(Video) SmartLogger3000A Commissioning Video	Chinese	English							
User Manual	SmartLogger3000A User Manual	Chinese	English	German	French				Spanish	
	SmartLogger1000A User Manual	Chinese	English	German	French				Spanish	
	FusionSolar App and SUN2000 App User Manual	Chinese	English							
	DTSU666-H and DTSU666-H 250 A (50 mA) Smart Power Sensor User Manual		English							
Quick Guide	SDongleA-03 Quick Guide (4G)	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish	
	SDongleA-05 Quick Guide (WLAN-FE)	Chinese	English	German	French	Dutch	Italian	Portuguese	Spanish	Polish
	SmartLogger3000 Quick Guide	Chinese	English	German	French				Spanish	
	SmartLogger3000A Commissioning Quick Guide	Chinese	English							
	SmartLogger1000A Quick Guide	Chinese	English	German	French				Spanish	
	FusionSolar App Quick Guide	Chinese	English							

HiKnow App

1. Download the **HiKnow** app.

Method 1: Scan the QR code.

Method 2: Search for **Enterprise Support** on the following platforms:

- ✓ **Android:** Huawei AppGallery (or https://appstore.huawei.com); Google Play (or https://play.google.com)
- ✓ **iOS:** App Store

2. Choose **Products** > **Network Energy** > **FusionSolar PV** > **SUN2000/SUN2000MA/...** > **Product Info** to obtain the required documents.

3. Choose **iKnow** > **Enterprise Network Energy** > **Enterprise Solar Inverter** and use keywords to quickly search for required information.

Keywords:
- ➢ SUN2000L Technical Data
- ➢ SUN2000MA Technical Data
- ➢ SUN2000 Technical Data

4. Choose **Forums** > **Enterprise Network Energy** > **Network Energy** > **Smart PV** to participate in the discussion.

Web link for iKnow: https://support.huawei.com/iknow/?source=SupportE
Web link for the forum: https://forum.huawei.com/enterprise/en/Network-Energy/forum/100027?typeid=2313
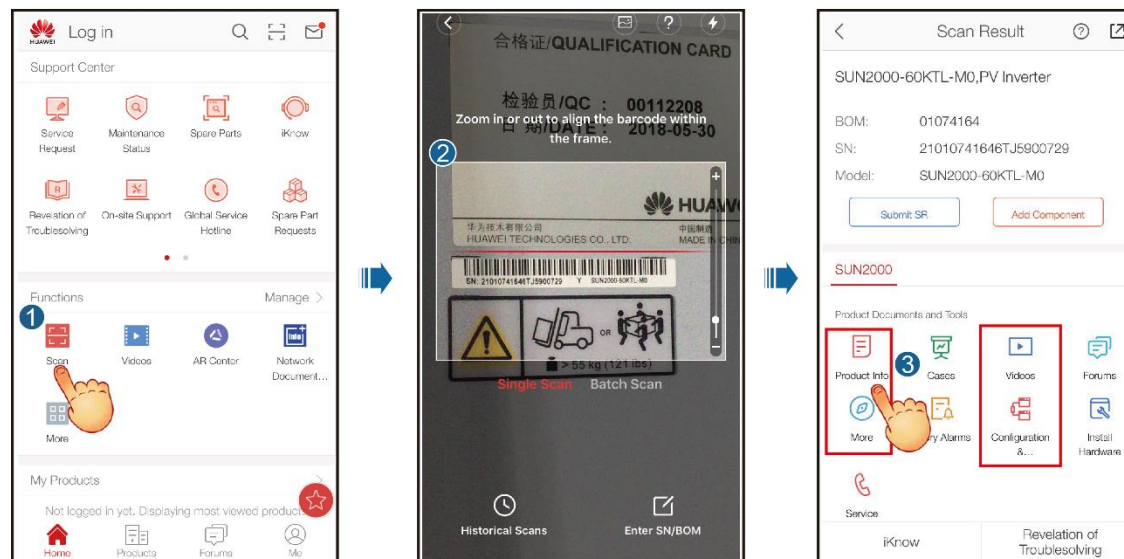
HiKnow App – How to Obtain Documents

Method 1: Tap **Fusion Solar PV**, select a product, and query documents.
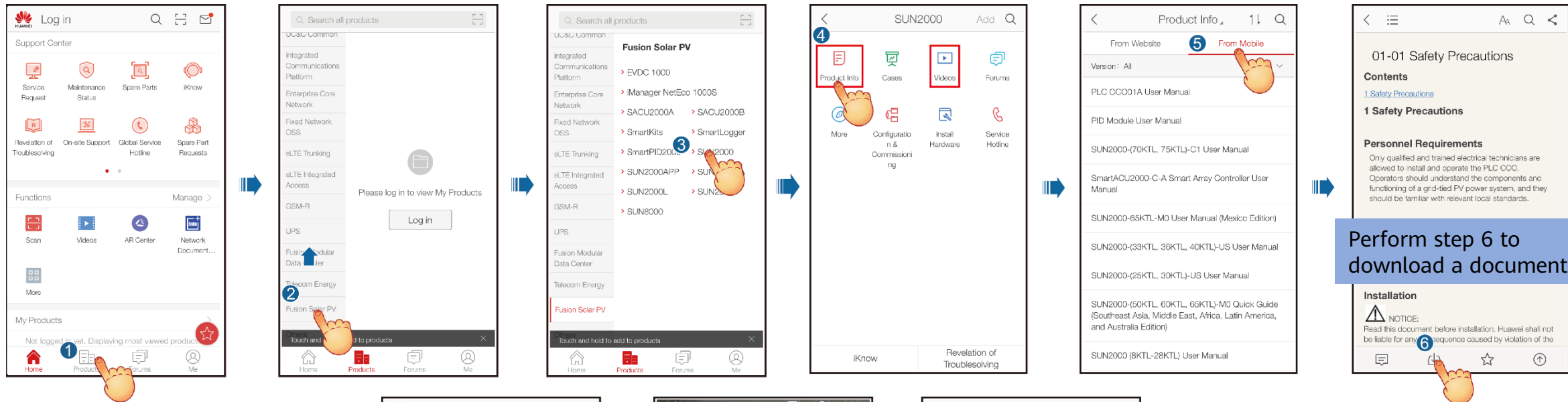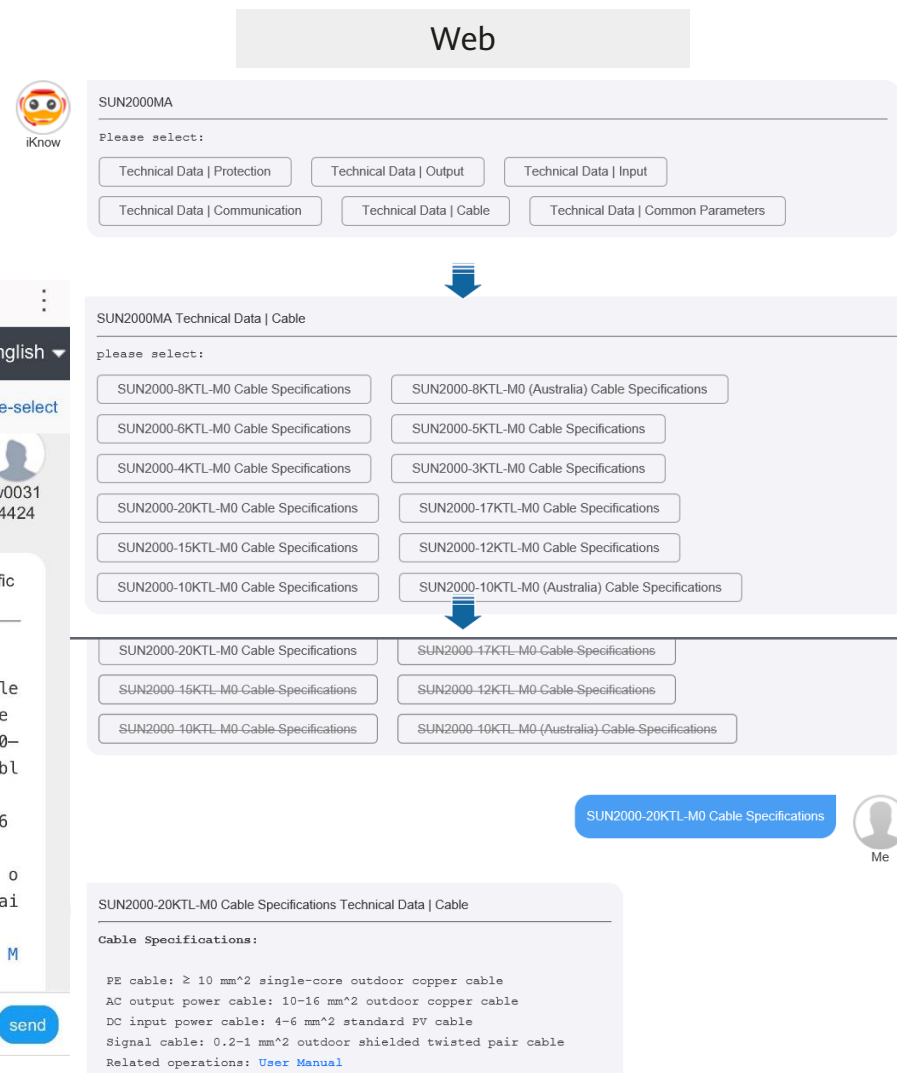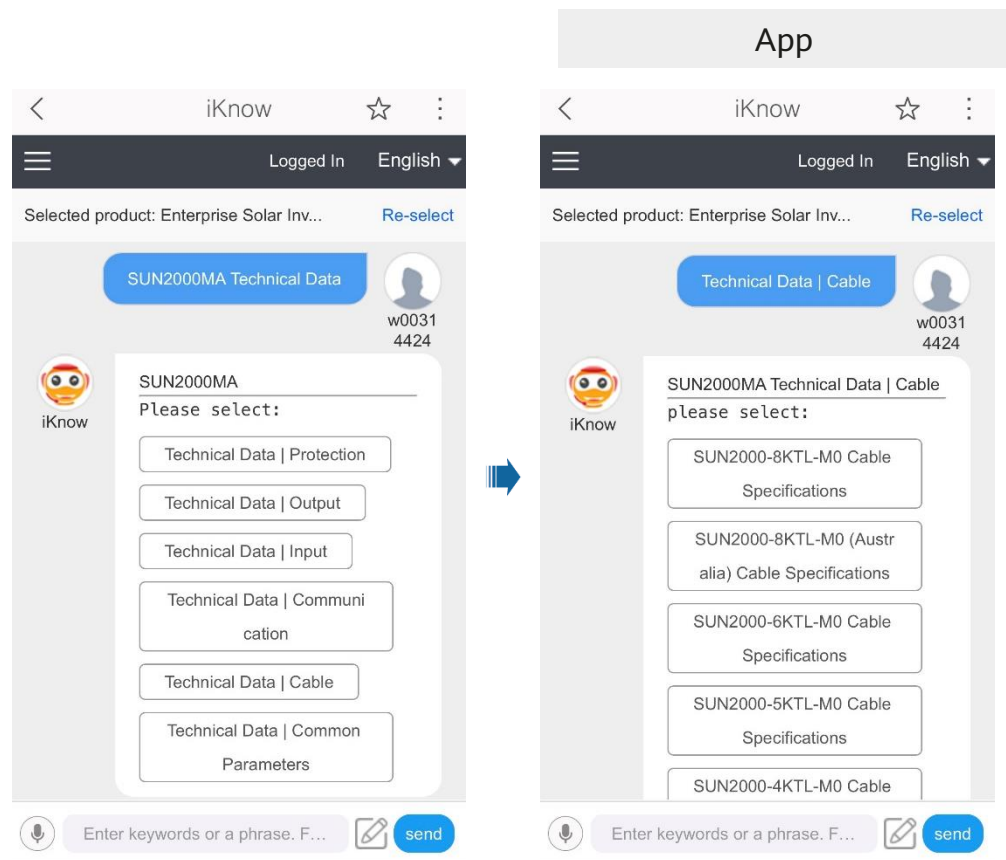
Perform step 6 to download a document.

Method 2: Scan the SN.

HiKnow App – How to Use iKnow

Keywords:
- ➤ **SUN2000L Technical Data**
- ➤ **SUN2000MA Technical Data**
- ➤ **SUN2000 Technical Data**

App

Web

2.3 Comparison Between Normal and Long String Design

PV String Design in the Scenario Without Optimizers

Technical Specification	SUN2000-12KTL-M0	SUN2000-15KTL-M0	SUN2000-17KTL-M0	SUN2000-20KTL-M0
	Input			
Recommended max. PV power	24,000 Wp	29,760 Wp	29,760 Wp	29,760 Wp
Max. Input voltage [1]	1,080 V			
Operating voltage range [2]	160 V ~ 950 V			

Refer to JKM300M-60/1000V datasheet

Maximum System Voltage	1000VDC (UL and IEC)

22 PV modules in each PV string

Maximum number of PV modules in each PV string:
Three-phase scenario: 1080 V/(39.1 V x K) ≈ 22
Use the JKM300M-60/1000 V as an example. K is the ambient temperature correction factor.
K = 1 + (Local lowest temperature – 25°C) x PV module temperature correction factor
Local lowest temperature = –20°C; PV module temperature correction coefficient = –0.38%

PV String Design in the Scenario with Full Configuration of Optimizers

For details, see the SUN2000-450W-P brochure.

Long String Design [2]	SUN2000L-2-6KTL-L1	SUN2000-3-10KTL-M1	SUN2000-12-20KTL-M2
Minimum optimizer number per string	4	6	6
Maximum optimizer number per string	25	50	50
Maximum DC power per string	5,000 W	10,000 W	10,000 W

33 PV modules in each PV string

Maximum number of PV modules in each PV string:
Three-phase: 10000 W/300 W ≈ 33
Use the JKM300M-60/1000 V as an example.

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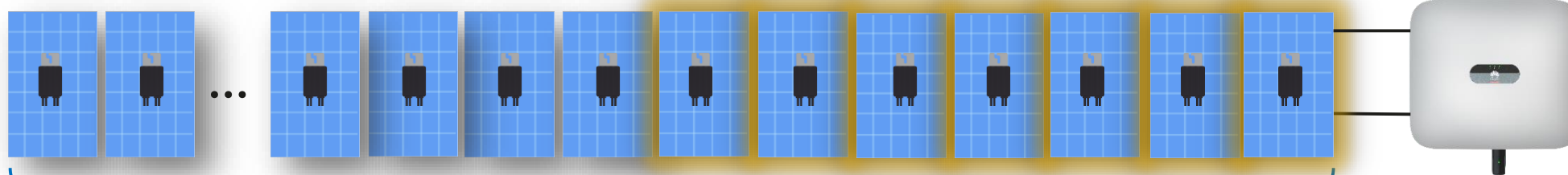
2.4 Connecting the Optimizer （Only applicable to **SUN2000-12/15/17/20KTL/M2** ）

1. Connect the optimizer input power cables.

2. Connect the positive probe of the multimeter to the positive output terminal of the optimizer and the negative probe to the negative output terminal. Check the output voltage and resistance of a single optimizer.

3. Check that the optimizer is normal, and connect the output power cables to the optimizer. Measure the PV string resistance when the sunlight is sufficient.

PV module connection box
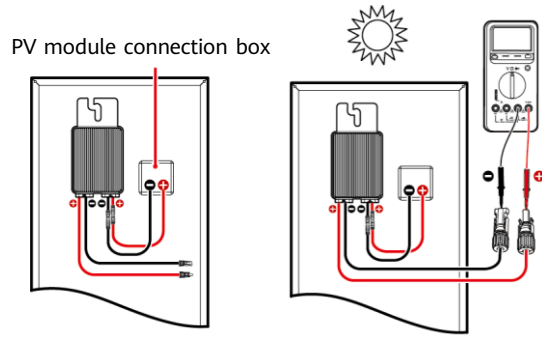
- The voltage V1 is 0 V.
- The resistance R1 is 1 kΩ (±10%).

If the probes are reversely connected, the measured resistance is smaller than the resistance measured when the probes are correctly connected, which may be less than 0.9 kΩ.

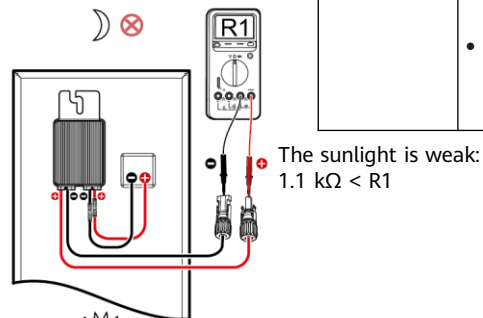| Resistance	Cause	Troubleshooting
0.9 kΩ ≤ R1 ≤ 1.1 kΩ	The optimizer is normal.	N/A
R1 < 0.9 kΩ	If the probes of the multimeter are correctly connected, the optimizer is faulty.	Replace the optimizer.
1.1 kΩ < R1	• The sunlight is weak. • The optimizer input is not connected. • The optimizer output is connected to the PV module output. • The optimizer is faulty.	1. Measure the resistance when the sunlight is sufficient. 2. Connect the optimizer input power cables. 3. Correct the optimizer cable connection. Connect the optimizer input power cables to the PV module output cables. 4. If the resistance is still abnormal, replace the optimizer.

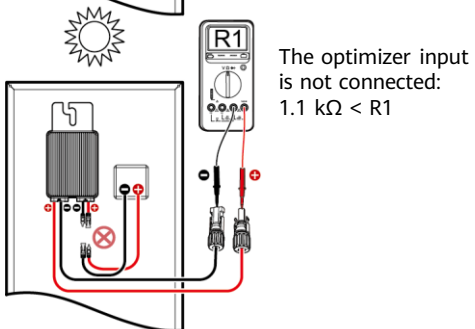**Full configuration of optimizers**

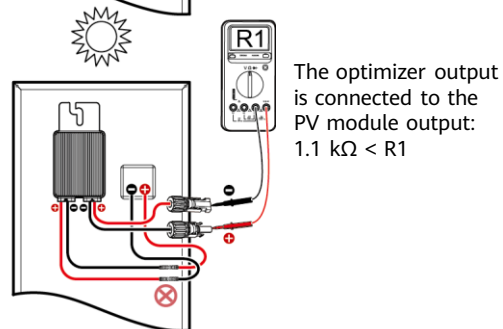PV string
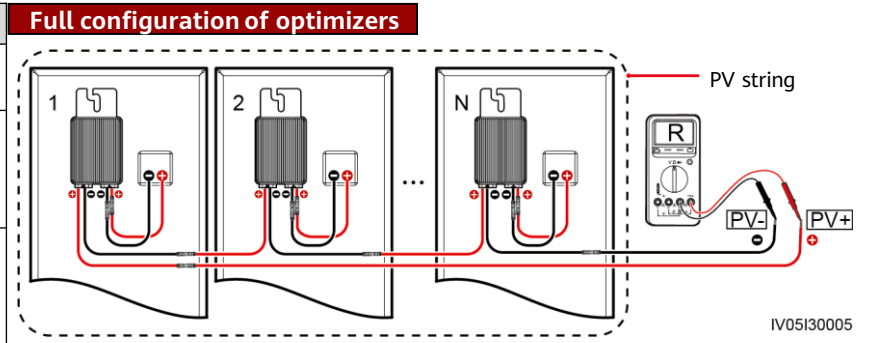
IV05I30005

Common exception scenarios
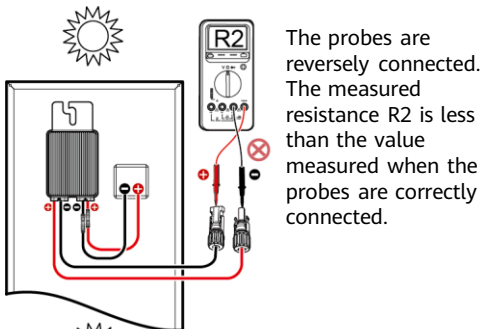
The probes are reversely connected. The measured resistance R2 is less than the value measured when the probes are correctly connected.
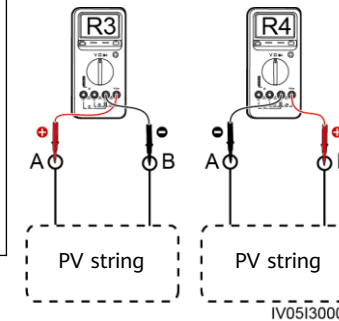
The sunlight is weak: 1.1 kΩ < R1

PV string   PV string

IV05I30007

a. If R is infinite, an open circuit occurs in the PV string or the cables are connected to different PV strings. Rectify the PV string open-circuit fault and correctly group the PV string cables.
b. If R4 is less than R3, A is the positive cable of the PV string, and B is the negative cable of the PV string. If R3 is less than R4, B is the positive cable of the PV string, and A is the negative cable of the PV string. Attach correct cable labels.

The optimizer input is not connected: 1.1 kΩ < R1

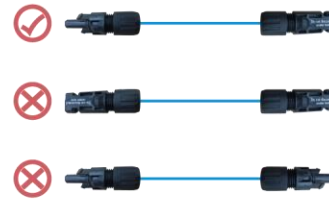The optimizer output is connected to the PV module output: 1.1 kΩ < R1

The resistance measurement range of the multimeter affects the measured string output resistance. If the resistance measurement range of the multimeter is too large, the measured string output resistance may be greater than N x 1.1 kilohms. Select the minimum resistance measurement range that meets the measurement requirements of the multimeter.
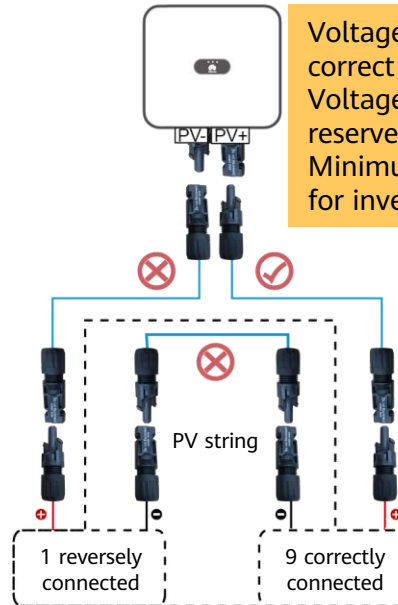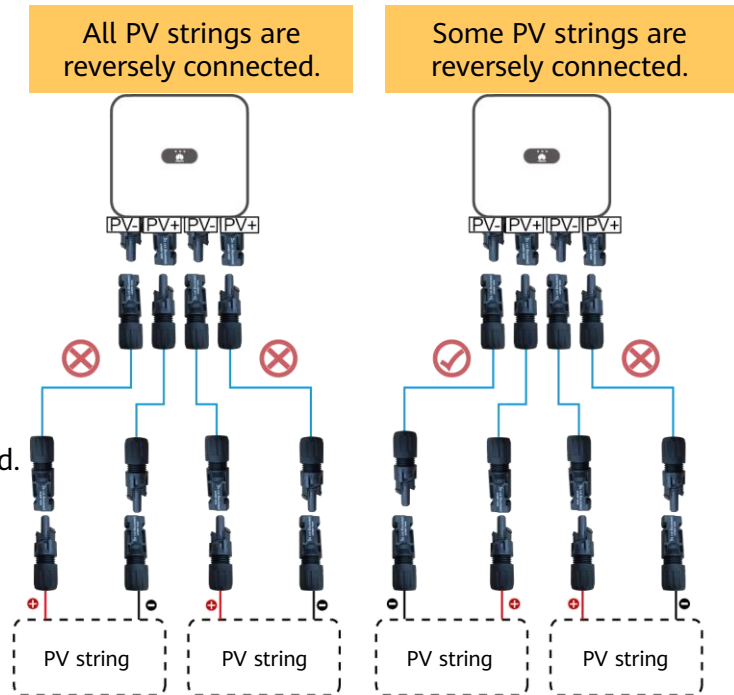
4. Connect cables between the PV string and the inverter.

Inverter

IV05I30003

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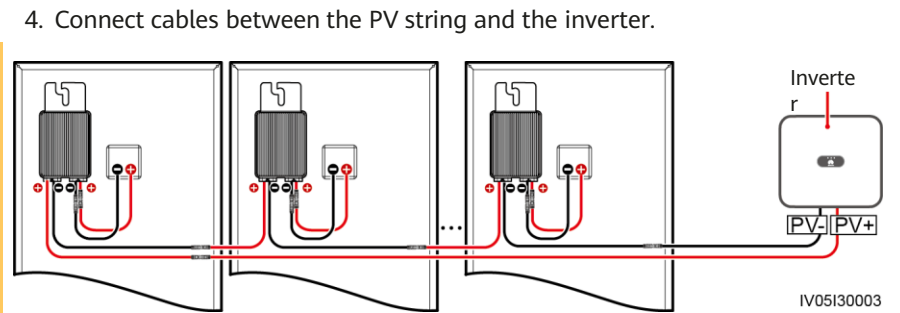
(Full configuration of optimizers) PV string reverse connection

Fault Mode	Symptom	Alarm
All PV strings are reversely connected.	The networking is normal. Voltages of all PV strings are low and cannot be adjusted. The inverter is in the irradiation detection state.	Inverter alarm: Abnormal PV Module Configuration (ID = 3)
Some PV strings are reversely connected.	The networking is normal, with a backfeed current from the faulty PV string to the inverter.	Inverter alarm: PV string reversed (ID = PV string number)
Some optimizers of PV strings are reversely connected: Voltage during correct connection – Voltage during reserve connection > Minimum voltage for inverter startup	The networking is normal. After the inverter is connected to the power grid, the abnormal PV strings can output power.	Optimizer alarm: Abnormal output voltage
Some optimizers of PV strings are reversely connected: Voltage during correct connection – Voltage during reserve connection < Minimum voltage for inverter startup	The networking is normal. After the inverter is connected to the power grid, the abnormal PV strings can not work.	Optimizer alarm: Abnormal output voltage

The extension cables with the same connectors at both ends are connected.

All PV strings are reversely connected.

Some PV strings are reversely connected.

PV string

PV string

PV string

PV string

Voltage during correct connection – Voltage during reserve connection > Minimum voltage for inverter startup

Voltage during correct connection – Voltage during reserve connection < Minimum voltage for inverter startup

PV string

1 reversely connected

9 correctly connected

PV string

5 reversely connected

5 correctly connected

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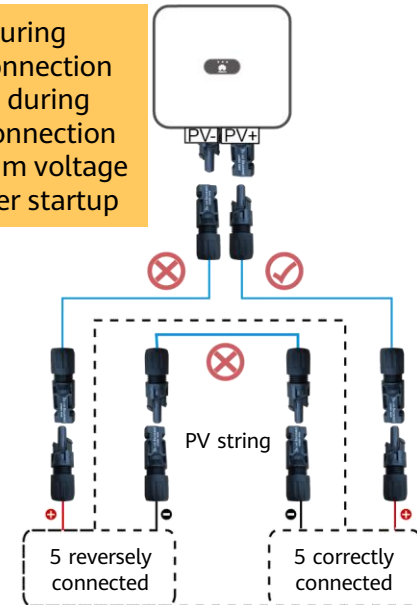
PV string resistance exception

The resistance of PV strings configured with optimizers is infinite.

Causes:
- There is a disconnected point in the PV string.
- Optimizer installation is optional.

Troubleshooting:
1. Set the multimeter to the voltage mode and measure the PV string voltage. The PV string voltage should be 0 V. If the PV string voltage is not 0 V, some PV modules are not connected to optimizers. Check the PV string cable connections.
2. If the voltage is 0 V, then the cables are not in the same PV string, the optimizer cables in the PV string are not properly connected, or there is a disconnected point in the PV string.
3. Check that the two cables to be tested are in the same PV string.
4. PV string cable connection detection method: Disconnect PV strings from the middle, measure the resistance after disconnection, and repeat this step to narrow down the fault scope.
5. Narrow down the fault scope to the last optimizer and rectify the fault based on the measured resistance of the optimizer.

The resistance of PV strings configured with optimizers is not infinite but is greater than 100 kΩ.

Causes:

Some optimizers in the PV string are not connected to PV modules, or the input and output of some optimizers are reversely connected.

Troubleshooting:
1. PV string cable connection detection method: Disconnect PV strings from the middle, measure the resistance after disconnection, and repeat this step to narrow down the fault scope.
2. Narrow down the fault scope to the last optimizer and rectify the fault based on the measured resistance of the optimizer.

Video of a case:

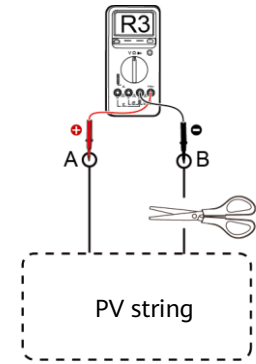http://3ms.huawei.com/documents/docinfo/472978044911235072?l=en

Common exception scenarios

If the test cables are from different PV strings, the value of R3 is infinite.
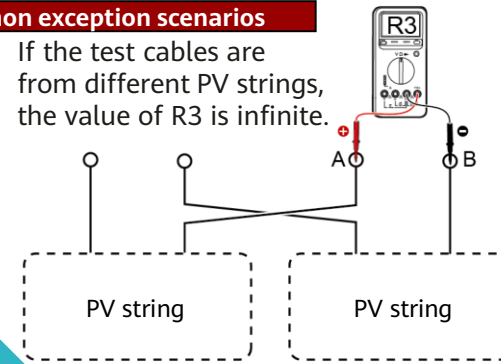
If there is a disconnected point in the PV string, the measured value R3 is infinite.


Optimizer-related alarms

Alarm ID	Alarm Name	Alarm Severity	Cause	Troubleshooting
2011	String Reversed	Major	The PV string is reversely connected. Cause ID = 1, 2 • 1: String 1 connected reversely • 2: String 2 connected reversely	Check whether the PV string is reversely connected to the inverter. If so, wait until the PV string current decreases to below 0.5 A. Then, turn off the DC switch and correct the PV string polarity.
2065	Upgrade Failed or Version Mismatch	Minor	The upgrade does not complete normally. • Cause ID = 7: Optimizer upgrade failure	1. Perform an upgrade again. 2. If the upgrade fails several times, contact your supplier or Huawei technical support.
2080	Abnormal PV Module Configuration	Major	ID1: The total number of optimizers exceeds the maximum number of optimizers allowed by the inverter. ID2: The PV string power exceeds the specifications or the number of PV string optimizers connected in series exceeds the specifications. ID3: The number of PV string optimizers connected in series is less than the upper limit, the PV string output is reversely connected, or some optimizers in the PV string output are reversely connected. ID4: The number of PV strings exceeds the maximum number allowed by the inverter. ID5: The PV string output is reversely connected or short-circuited. ID6: Under the same MPPT circuit, the number of parallel PV string optimizers connected in series is different, or some PV string optimizers are reversely connected. ID7: The optimizer installation position is changed, or PV strings are combined or switched. ID8: The light is weak or abnormal. ID9: In the optional scenario, the PV string voltage exceeds the inverter input voltage specifications.	<ID1:>Check whether the total number of optimizers exceeds the upper limit. <ID2:> Check whether the PV string power exceeds the upper limit or the number of PV modules connected in series exceeds the upper limit. <ID3:> 1. Check whether the number of PV string optimizers connected in series is less than the lower limit. 2. Check whether the PV string output is reversely connected. 3. Check whether the PV string output is disconnected. 4. Use an extension cable for the optimizer output. Check that the extension cable is correctly prepared (one end is a positive connector and the other end is a negative connector). <ID4:> Check whether the number of PV strings exceeds the upper limit. <ID5:> Check whether the PV string output is reversely connected or short-circuited. <ID6:> 1. Check whether the number of parallel PV string optimizers connected in series under the same MPPT circuit is the same. 2. Use an extension cable for the optimizer output. Check that the extension cable is correctly prepared (one end is a positive connector and the other end is a negative connector). <ID7:> When the light is normal, perform the optimizer search function again. <ID8:> When the light is normal, perform the optimizer search function again. <ID9:> Calculate the string voltage based on the number of PV modules in the string. Check whether the string voltage exceeds the upper input voltage threshold of the inverter.
2081	Optimizer Fault	Warning	Cause ID = 1 The optimizer is offline or faulty.	Contact your dealer or Huawei technical support for optimizer replacement.

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When the inverter generates an optimizer fault alarm, perform the following steps to view the optimizer status to obtain the fault alarm information:
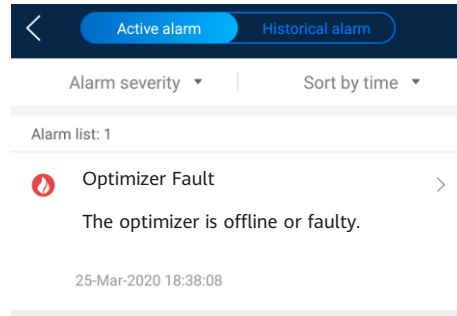

1. Open the FusionSolar app, log in to intl.fusionsolar.huawei.com using the installer account, choose **My** > **Device commissioning**, and connect to the WLAN hotspot of the inverter.
2. Select **installer**, enter the login password, and tap **Log In**. The device commissioning page is displayed.
3. Choose **Device Monitoring**, select the PV string, and check the optimizer status.

Optimizer status

Status	Description
Green	The optimizer is running properly.
Gray	The optimizer is offline. Check that the SN and location information are correct and search for the device again.
Red	The optimizer is faulty.

Fault Alarm	Cause	Suggestion
Input overvoltage	Optimizer input overvoltage.	Check whether the open-circuit voltage of the PV module connected to the optimizer exceeds 80 V.
Over temperature	The internal temperature of the optimizer is too high.	1. Check the ventilation and ambient temperature at the optimizer installation position. If the ventilation is poor or the ambient temperature exceeds the upper threshold, improve the ventilation and heat dissipation. 2. If the ventilation and ambient temperature are normal, contact the installation contractor.
Internal hardware fault	The optimizer is faulty.	Contact the installation contractor.
Output backfeed	The optimizer outputs backfeed.	1. Check whether PV modules are seriously shaded when PV modules are connected in parallel. 2. If the fault persists, contact the installation supplier.
Abnormal output voltage	The optimizer output voltage is abnormal.	1. When the illumination is normal, perform the optimizer search function again. 2. Use an extension cable for the optimizer output. Check that the extension cable is correctly prepared (one end is a positive connector and the other end is a negative connector). 3. Check whether the PV string is correctly connected to the inverter or whether there is a break point in the PV string. 4. If the fault persists, contact the installation supplier.
Upgrade Failed	The optimizer fails to upgrade the software.	1. When the illumination is normal, perform the optimizer upgrade again. 2. If the fault persists, contact the installation supplier.

Resistance measurement example

The positive and negative polarities of a PV string configured with optimizers are determined based on the ratio of the resistance by common measurement to the resistance by reverse measurement.

Resistance by common measurement R5 (kΩ)

Resistance by reverse measurement R6 (kΩ)
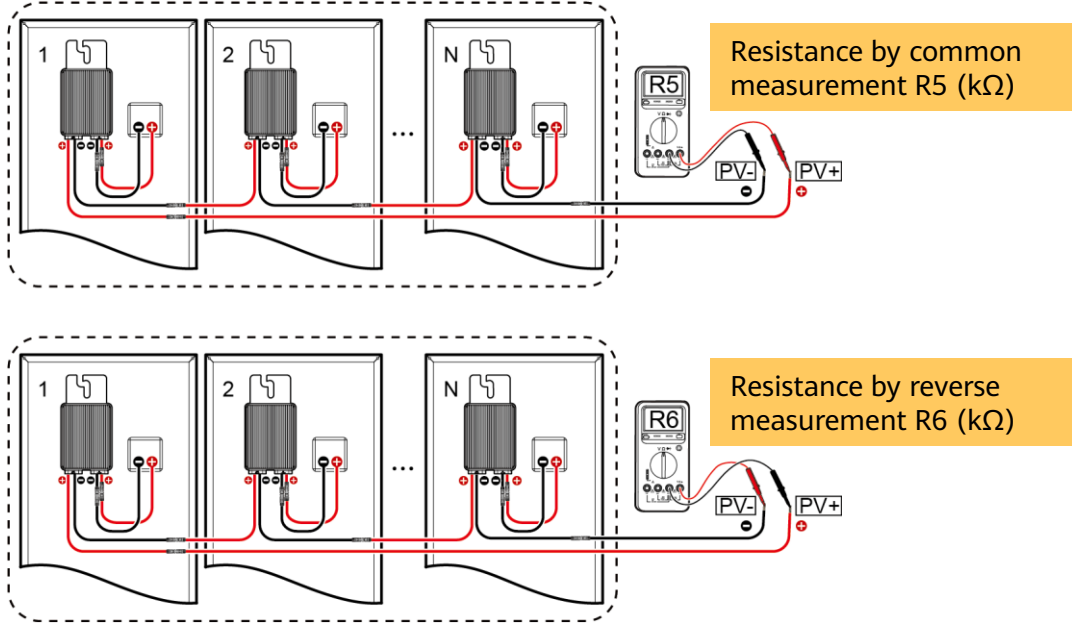
Resistance by common measurement/Resistance by reverse measurement = R5/R6
Precision = (R5/Number of optimizers – 1 kΩ)/1 kΩ x 100%

Measurement result analysis:
- The precision is related to the multimeter model.
- The precision is related to the number of optimizers.
- The resistance by common measurement is greater than the resistance by reverse measurement.

Note: The ratio on rainy days changes slightly, yet without affecting the measurement result.

| Quantity | FLUKE 87 (60k) | | FLUKE 375 (Auto) | | FLUKE 17B+ (100k) | | EM33D (200k) | |
| | Common Measurement | Reverse Measurement | Common Measurement | Reverse Measurement | Common Measurement | Reverse Measurement | Common Measurement | Reverse Measurement |
	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)	Resistance (kΩ)
4	3.93	3.26	3.694	3.36	3.72	3.43	3.7	3.4
5	4.97	4.03	4.616	4.174	5.3	3.6	4.6	4.2
10	9.85	8.13	10.05	7.93	10.8	7.2	9.3	8.5
15	14.79	12.19	15.08	11.89	14.21	12.77	14	12.7
20	19.7	16.27	20.09	15.89	19.07	16.93	18.7	17
25	24.64	20.37	25.12	19.88	24.04	21.08	23.4	21.2
30	29.6	24.43	30.18	23.83	29.08	25.11	28.1	25.5
35	34.53	28.48	35.23	27.75	34.5	29.08	32.8	29.8
40	39.5	32.52	40.28	31.69	39.4	32.94	37.5	34
44	43.46	35.73	44.35	34.8	43.73	36.01	41.4	37.4
50	49.48	40.53	50.49	39.54	49.4	40.7	47.1	42.4

Quantity	Precision	Common Measurement/Reverse Measurement	Precision	Common Measurement/Reverse Measurement	Precision	Common Measurement/Reverse Measurement	Precision	Common Measurement/Reverse Measurement
4	-1.75%	1.21	-7.65%	1.10	-7.00%	1.08	-7.50%	1.09
5	-0.60%	1.23	-7.68%	1.11	6.00%	1.47	-8.00%	1.10
10	-1.50%	1.21	0.50%	1.27	8.00%	1.50	-7.00%	1.09
15	-1.40%	1.21	0.53%	1.27	-5.27%	1.11	-6.67%	1.10
20	-1.50%	1.21	0.45%	1.26	-4.65%	1.13	-6.50%	1.10
25	-1.44%	1.21	0.48%	1.26	-3.84%	1.14	-6.40%	1.10
30	-1.33%	1.21	0.60%	1.27	-3.07%	1.16	-6.33%	1.10
35	-1.34%	1.21	0.66%	1.27	-1.43%	1.19	-6.29%	1.10
40	-1.25%	1.21	0.70%	1.27	-1.50%	1.20	-6.25%	1.10
44	-1.23%	1.22	0.80%	1.27	-0.61%	1.21	-5.91%	1.11
50	-1.04%	1.22	0.98%	1.28	-1.20%	1.21	-5.80%	1.11

2.5 Installation for Networking Devices
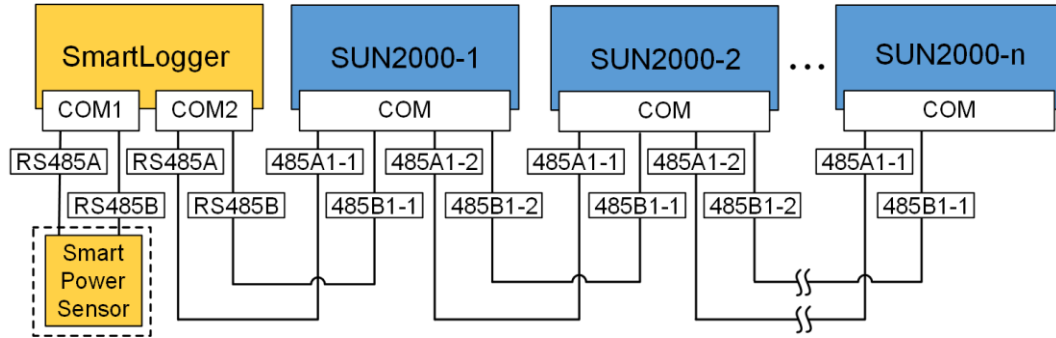
Smart Dongle Networking Scenario
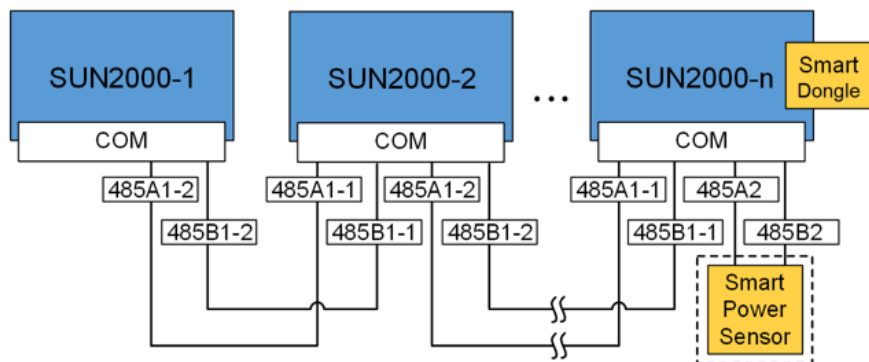
NOTE

- In the Smart Dongle networking scenario, the SmartLogger cannot be connected.
- The smart power sensor is necessary for export limitation.
- The Smart Dongle and smart power sensor must be connected to the same inverter. The inverter can be any inverter in the network and its model can be SUN2000-12/15/17/20KTL-M0/M2, 50/60KTL-M0, or 100KTL-M1.

Port Pin Definition				Function	Description
12-20KTL-M0/M2 29.9/30/36/40KTL-M3	29.9KTL, 33KTL-A, 36KTL	50/60KTL-M0	100KTL-M1		
1: 485A1-1	1: RS485A IN (RS485-1)	1: RS485A IN (RS485-1)	1: RS485A IN (RS485-1)	RS485 differential signal+	Used to cascade inverters.
3: 485B1-1	3: RS485B IN (RS485-1)	3: RS485B IN (RS485-1)	3: RS485B IN (RS485-1)	RS485 differential signal–	
2: 485A1-2	2: RS485A OUT (RS485-1)	2: RS485A OUT (RS485-1)	2: RS485A OUT (RS485-1)	RS485 differential signal+	
4: 485B1-2	4: RS485B OUT (RS485-1)	4: RS485B OUT (RS485-1)	4: RS485B OUT (RS485-1)	RS485 differential signal–	
7: 485A2	N/A	5: RS485A IN (RS485-2)	7: RS485A (RS485-2)	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
9: 485B2	N/A	7: RS485B IN (RS485-2)	8: RS485B (RS485-2)	RS485 differential signal–	

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# SmartLogger Networking Scenario

📖 NOTE

- In the SmartLogger networking scenario, the Smart Dongle cannot be connected.
- A maximum of 80 inverters can be connected to a single SmartLogger. You are advised to connect fewer than 30 devices to each RS485 route.
- The smart power sensor is necessary for export limitation. Select a smart power sensor according to the project requirements.
- To ensure the system response speed, it is recommended that the smart power sensor be connected to a COM port other than the inverter COM port.

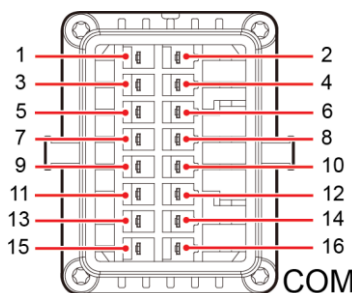| Port Pin Definition				Function	Description
12-20KTL-M0/M2 29.9/30/36/40KTL-M3	29.9KTL, 33KTL-A	50/60KTL-M0	100KTL-M1		
1: 485A1-1	1: RS485A IN (RS485-1)	1: RS485A IN (RS485-1)	1: RS485A IN (RS485-1)	RS485 differential signal+	Used to cascade inverters or connect to the RS485 signal port on the SmartLogger.
3: 485B1-1	3: RS485B IN (RS485-1)	3: RS485B IN (RS485-1)	3: RS485B IN (RS485-1)	RS485 differential signal–	
2: 485A1-2	2: RS485A OUT (RS485-1)	2: RS485A OUT (RS485-1)	2: RS485A OUT (RS485-1)	RS485 differential signal+	
4: 485B1-2	4: RS485B OUT (RS485-1)	4: RS485B OUT (RS485-1)	4: RS485B OUT (RS485-1)	RS485 differential signal–	

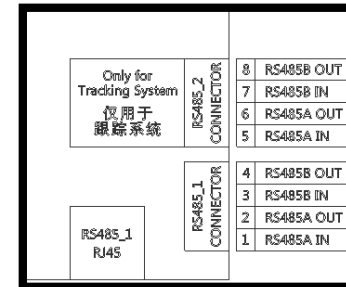# (Optional) Installing the DTSU666-H (Three-phase Four-wire)
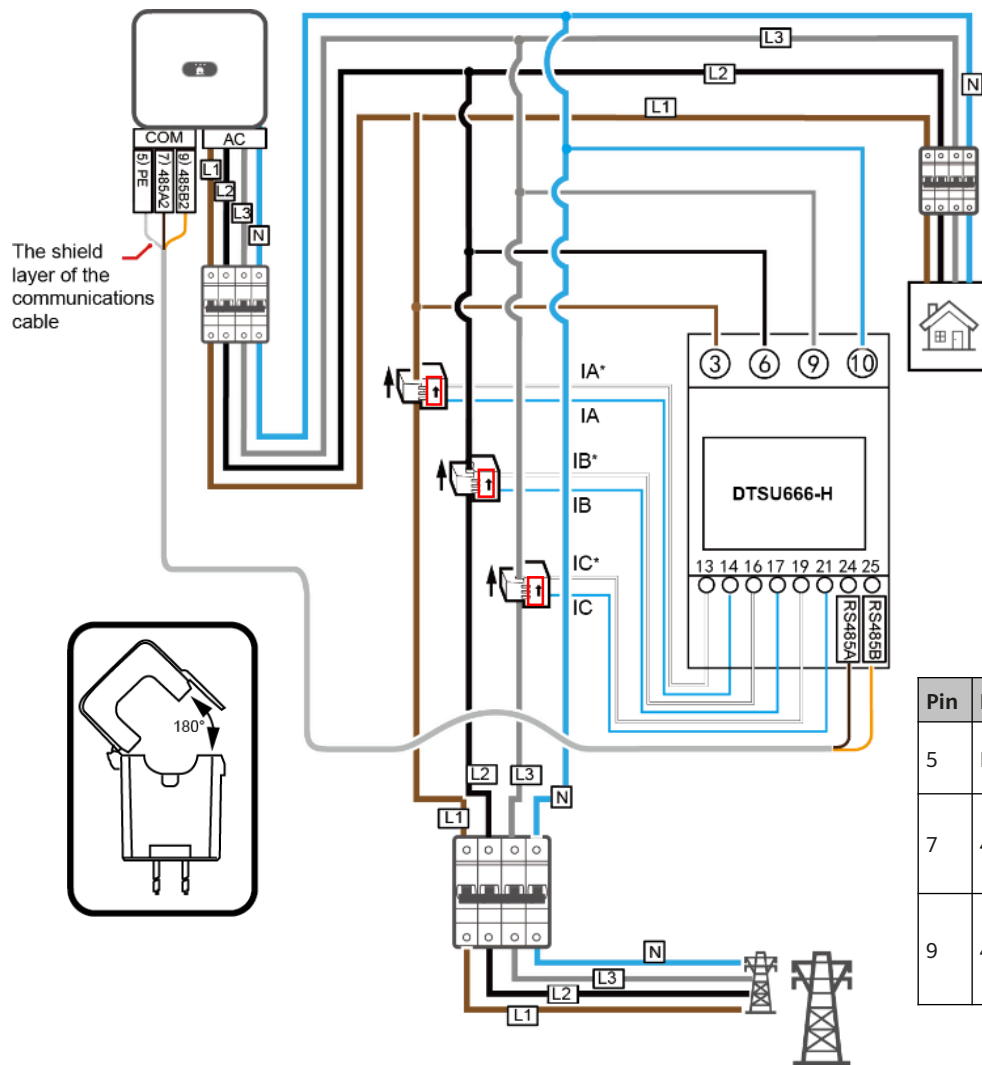
1. Connect the L1, L2, L3, N voltage lines to the 3, 6, 9 and 10 terminals of the connector respectively. Connect current transformer outlets IA*, IA, IB*, IB, IC*, IC to terminals 13, 14, 16, 17, 19, 21 of the connector respectively.
2. Connect RS485A and RS485B to the communication host.

Note: The CT direction must be consistent with the arrow direction shown in the figure on the left.
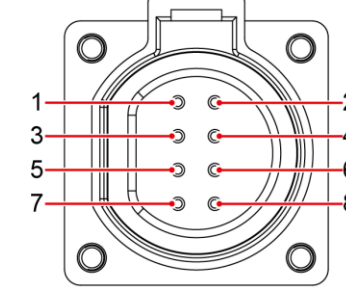
SUN2000-(12KTL-20KTL)-M0/M2 SUN2000-20/29.9/30/36/40KTL-M3

Pin	Definition	Function	Description
5	PE	Shielding ground	N/A
7	485A2	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
9	485B2	RS485 differential signal–	

SUN2000-50/60KTL-M0

Pin	Definition	Function	Description
5	RS485-2: RS485A IN	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
7	RS485-2: RS485B IN	RS485 differential signal–	
PE	N/A	Shielding ground	N/A

SUN2000-100KTL-M1

Pin	Definition	Function	Description
6	PE	Shielding ground	N/A
7	RS485-2: RS485A	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
8	RS485-2: RS485B	RS485 differential signal–	

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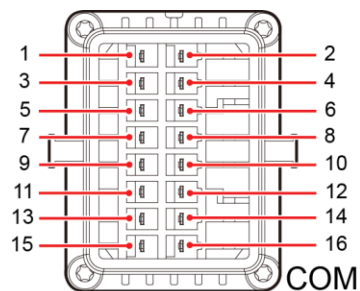# (Optional) Installing the DTSU666-H (Three-phase Three-wire)

1. Connect the L1, L3, L2 voltage lines to the 3, 9 and 10 terminals of the connector respectively. Connect current transformer outlets IA*, IA, IB*, IB, IC*, IC to terminals 13, 14, 16, 17, 19, 21 of the collector.
2. Connect RS485A and RS485B to the communication host.

Note a: The CT direction must be consistent with the arrow direction shown in the figure on the left.
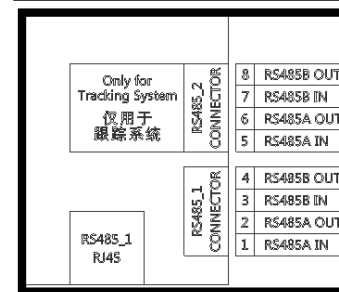
Note b: When the DTSU666-H 250 A/50 mA smart power sensor is connected to the inverter in three-phase, three-wire mode, one phase line needs to be connected to the Ub (10) interface of the smart power sensor.

The shield layer of the communications cable

In this scenario, the L2 phase current transformer IB does not need to be connected.

SUN2000-(12KTL-20KTL)-M0/M2 SUN2000-20/29.9/30/36/40KTL-M3

Pin	Definition	Function	Description
5	PE	Shielding ground	N/A
7	485A2	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
9	485B2	RS485 differential signal–	

SUN2000-50/60KTL-M0

Pin	Definition	Function	Description
5	RS485-2: RS485A IN	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
7	RS485-2: RS485B IN	RS485 differential signal–	
PE	N/A	Shielding ground	N/A

SUN2000-100KTL-M1

Pin	Definition	Function	Description
6	PE	Shielding ground	N/A
7	RS485-2: RS485A	RS485 differential signal+	Used to connect to an RS485 signal port on a smart power sensor for export limitation.
8	RS485-2: RS485B	RS485 differential signal–	

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2.6 Installation Troubleshooting

If polarity of the DC input power cable is reversed and the DC switch is ON, do not turn off the DC switch immediately or unplug positive and negative connectors. The inverter may be damaged if you do not follow the instruction. This damage is not covered under any warranty or service agreement. Wait until the solar irradiance declines at night and the PV string current reduces to below 0.5 A, and then turn off the DC switch and remove the positive and negative connectors. Correct the string polarity before reconnecting the string to the inverter.

Power-Off for Troubleshooting