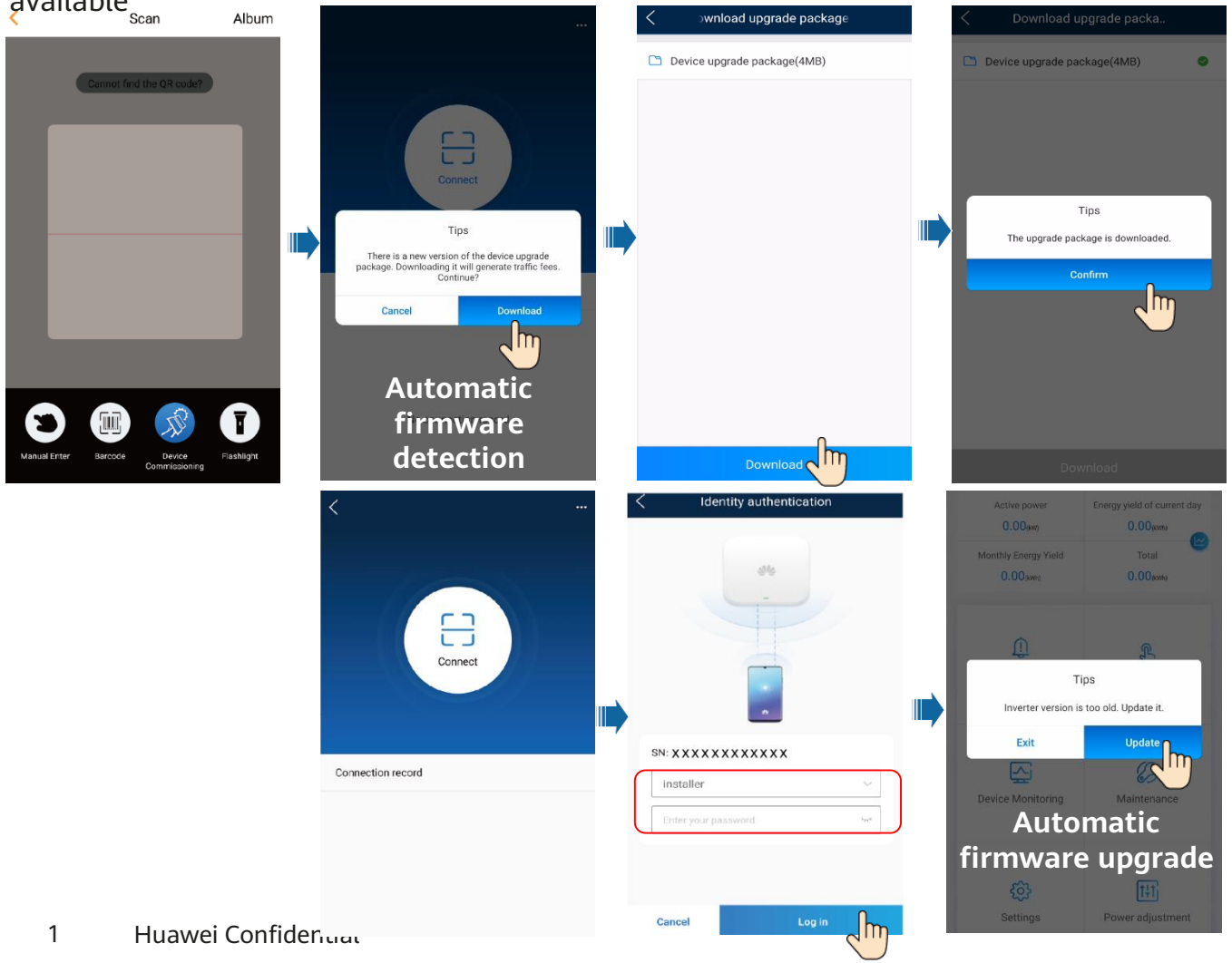
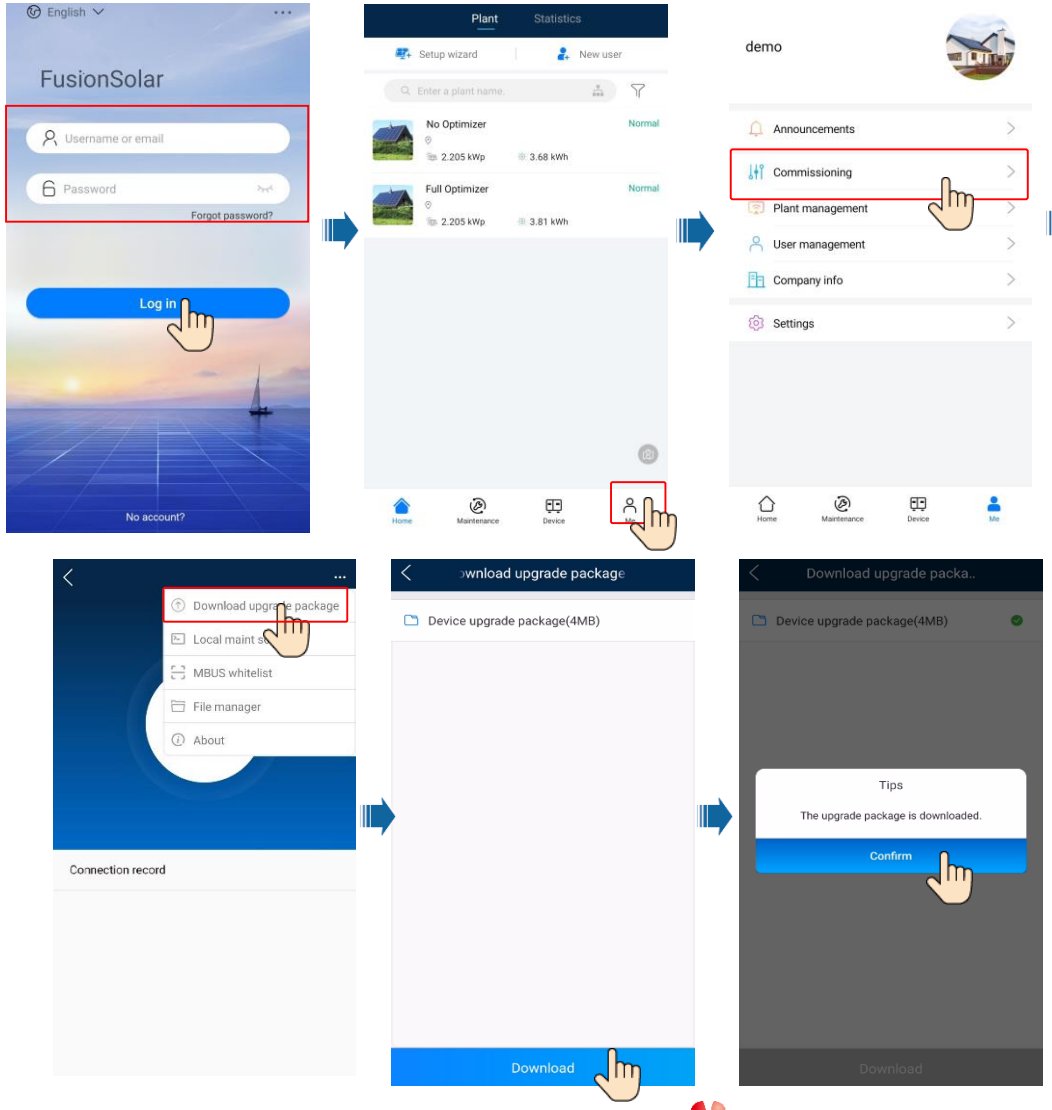
4.1 Upgrading Devices

SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3

Method 1: Auto firmware detection and upgrade during setup wizard when Internet is available



Method 2: Manual firmware downloading



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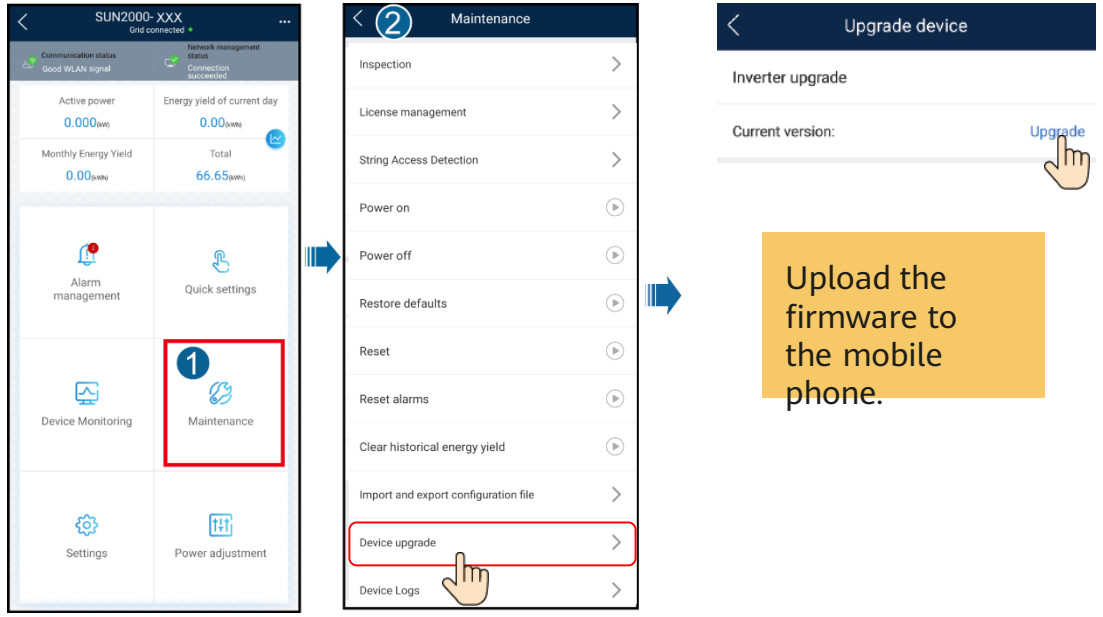
Other Devices

Obtain the latest firmware from Support-E: https://support.huawei.com/enterprise/en/software/index.html. If you do not have the download permission, contact the distributor to obtain the latest firmware.

Upgrade device by app: Upgrade the firmware version of devices as

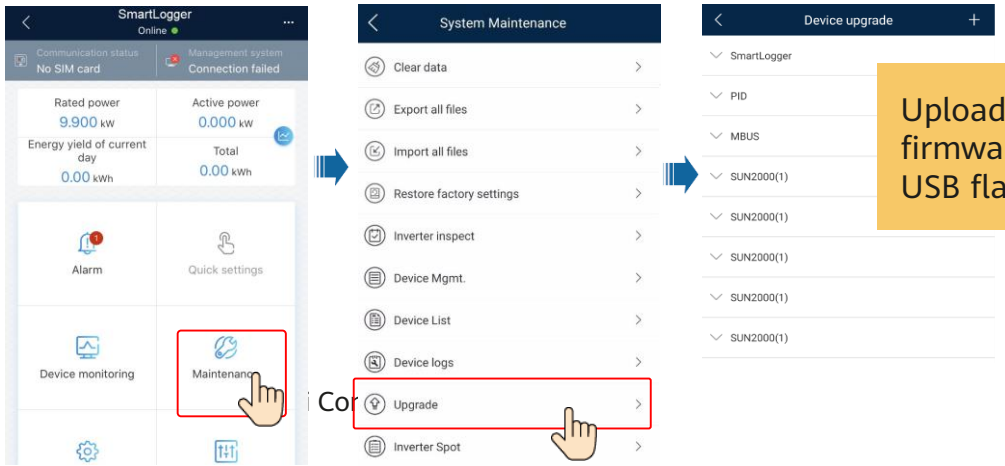
SUN2000-50/60KTL-M0, 100KTL-M1



Upload the firmware to the mobile phone.

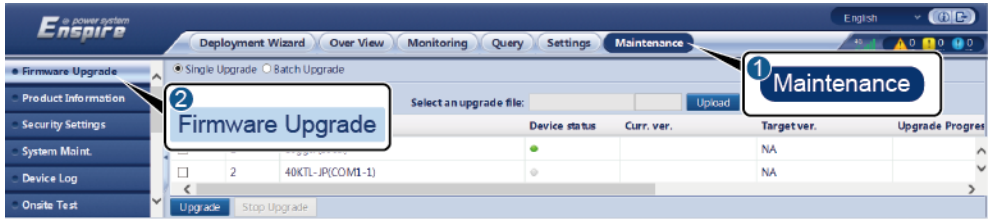
SmartLogger

Insert the USB flash drive that stores the firmware into the USB port on the SmartLogger.



Upload the firmware to the USB flash drive.

Upgrade device by SmartLogger WebUI: Upgrade the firmware of the SmartLogger or inverter over the WebUI.



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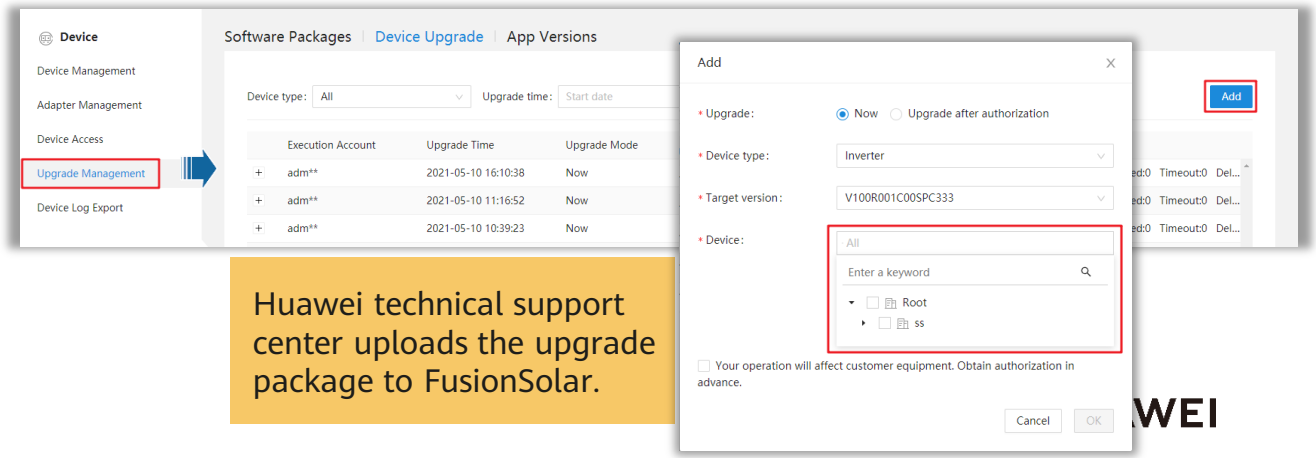
Upload the firmware to the laptop.

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

Upgrade device by FusionSolar WebUI: Upgrade the firmware of the SmartLogger, Smart Dongle, and inverter over the WebUI.

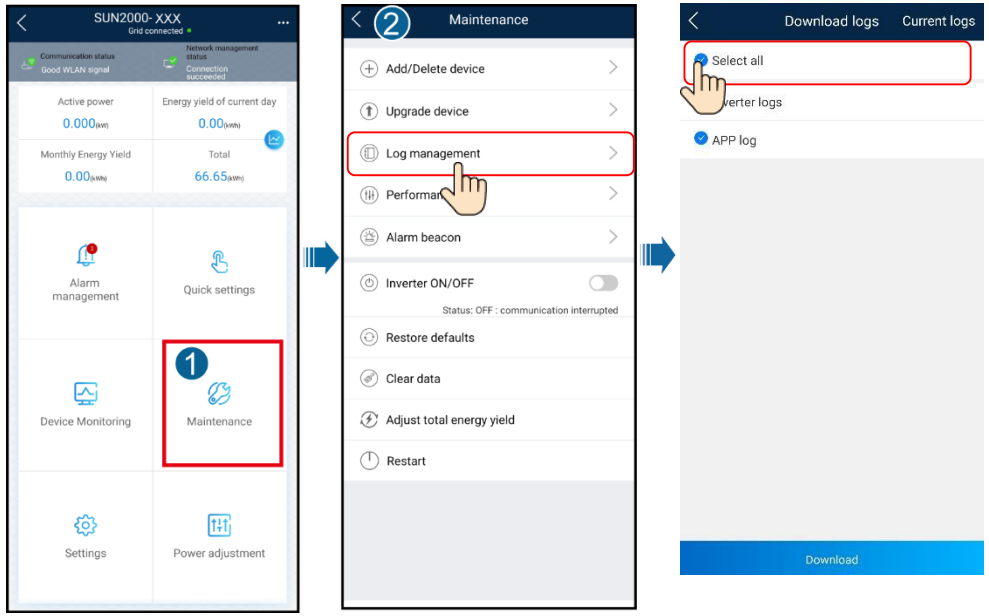


Huawei technical support center uploads the upgrade package to FusionSolar.

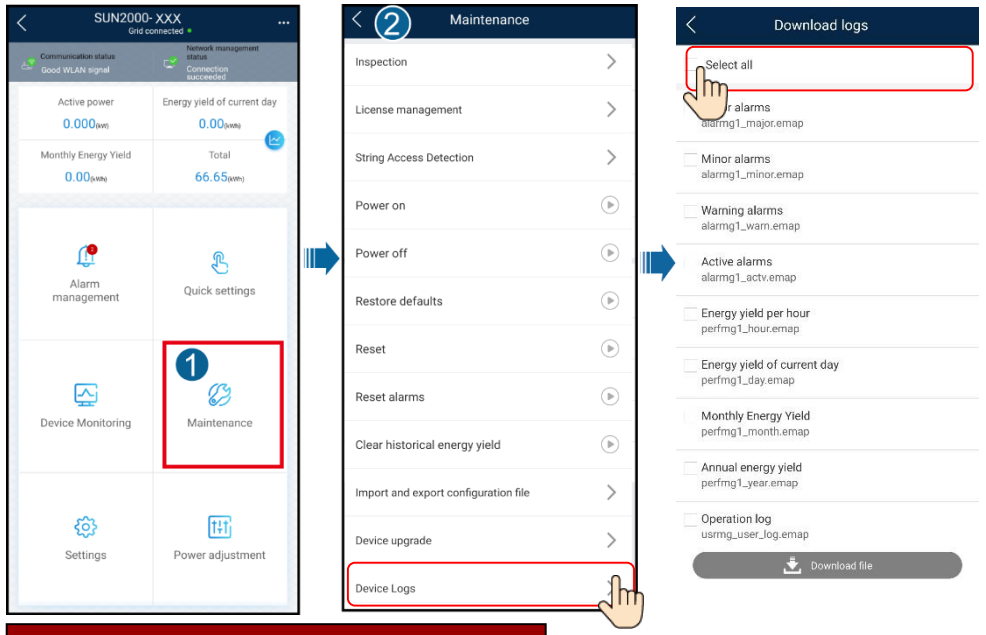
4.2 Exporting Device Logs

Export device logs by app: You can tap **Log management** or **Device Logs** to export operation logs.

SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3

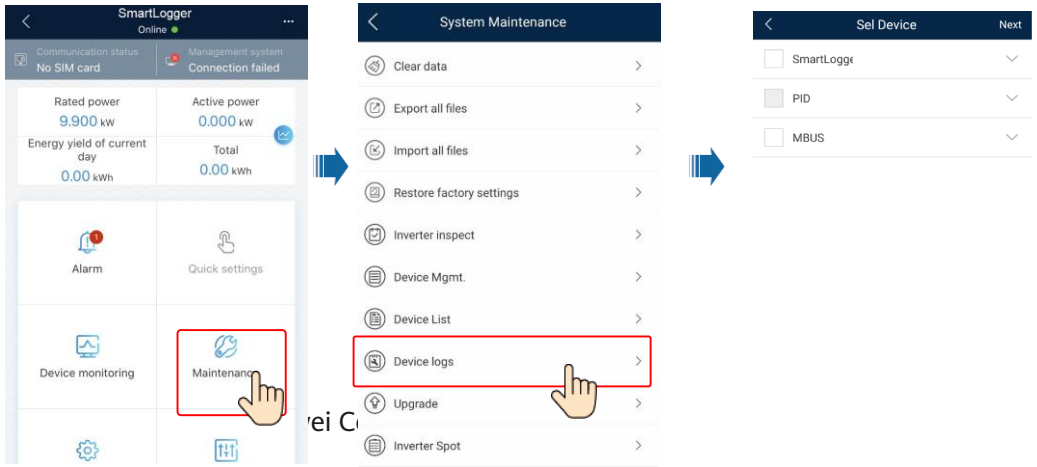


SUN2000-50/60KTL-M0, 100KTL-M1

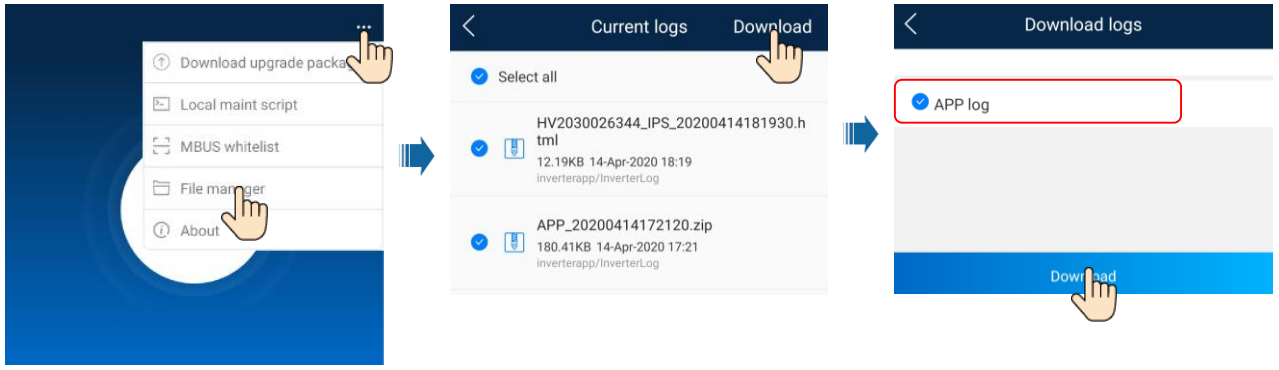


SmartLogger

Insert a USB flash drive into the USB port on the SmartLogger.

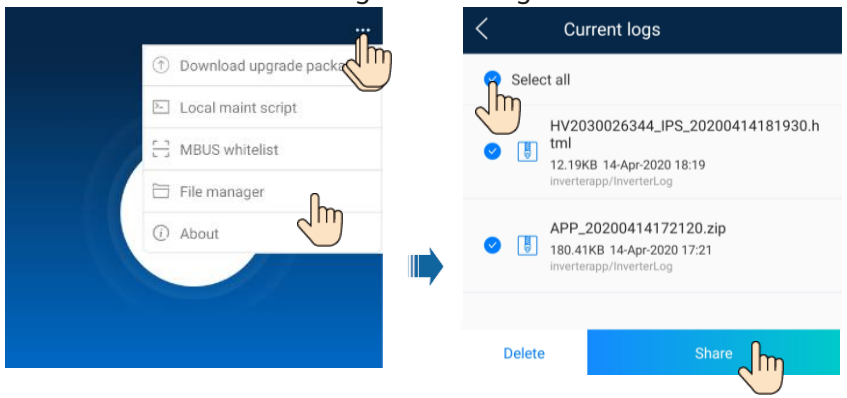


App Log

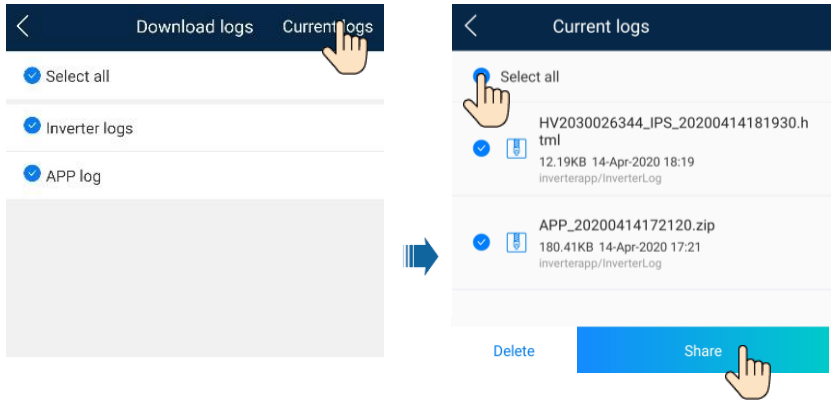


Sharing logs

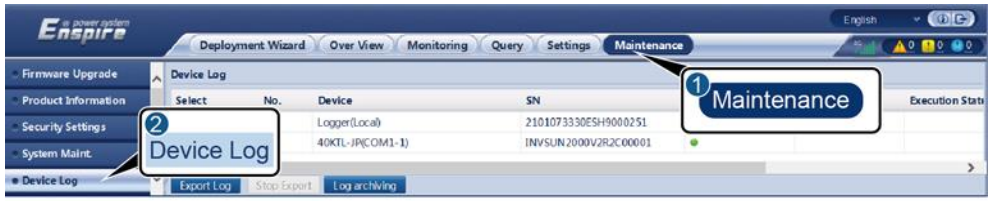
Method 1: Share files through file management.



Method 2: Share logs through log management



Export device logs by SmartLogger WebUI: Select the device whose logs are to be exported and click **Export Log**.



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

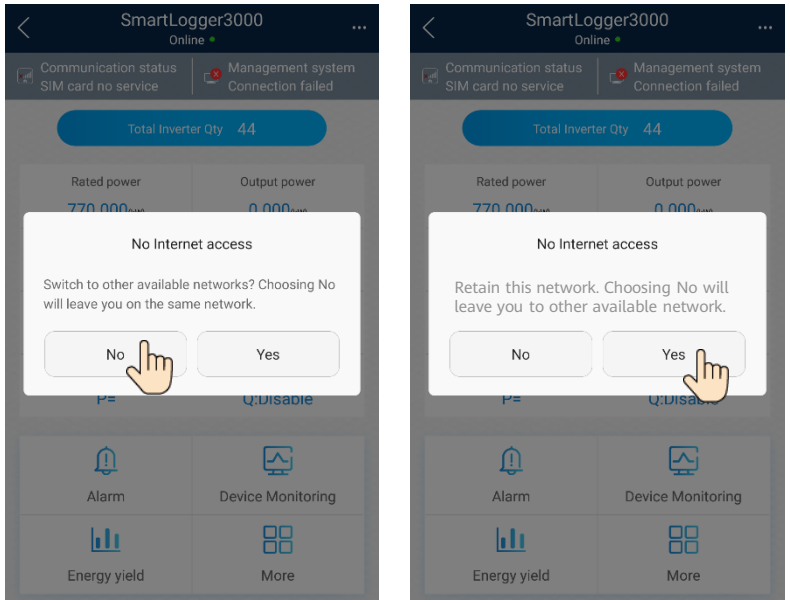
4.3 WLAN Connection Failure

1. The WLAN hotspot is automatically disabled if it is not used for a long time after connection.

   Hold down the RST button (for 1s to 3s) to enable the WLAN function.

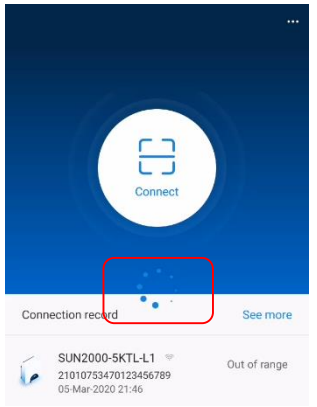
- By default, **WLAN** is set to **OFF in idle state**.
- When **WLAN** is set to **OFF in idle state**, the WLAN function is available within 4 hours after the SmartLogger is powered on. In other cases, hold down the RST button (for 1s to 3s) to enable the WLAN function.
- If **WLAN** is set to **Always OFF**, choose **Settings** > **Wireless Network** on the SmartLogger WebUI and set **WLAN** to **Always ON** or **OFF in idle state**.

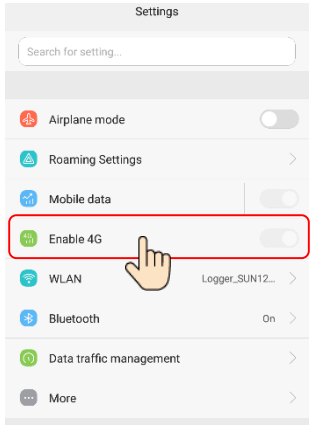
2. Select the correct option for the WLAN not to access the Internet.



If the setting is incorrect, forget the WLAN network from the WLAN list in the phone system and reconnect to the network. The screen varies depending on the phone model.

3. If the device is connected to the WLAN but the device cannot be accessed, disable the 4G network and reconnect to the device.

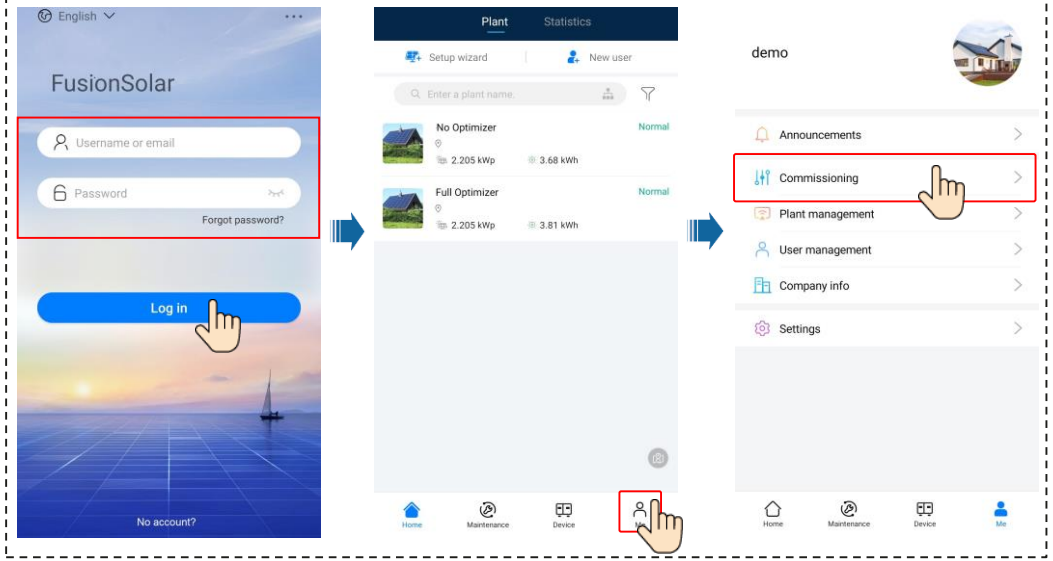




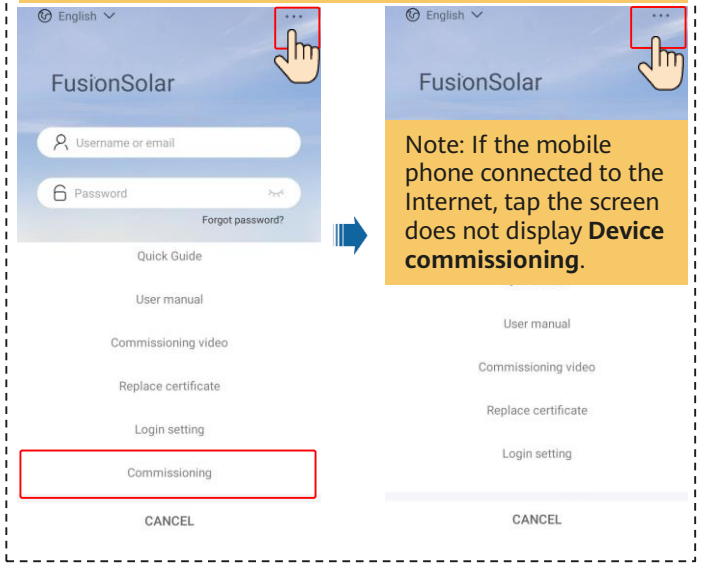
4.4 Checking the Device Status

- **Checking the Device Status Using Device Commissioning**

Mobile phone connected to the Internet

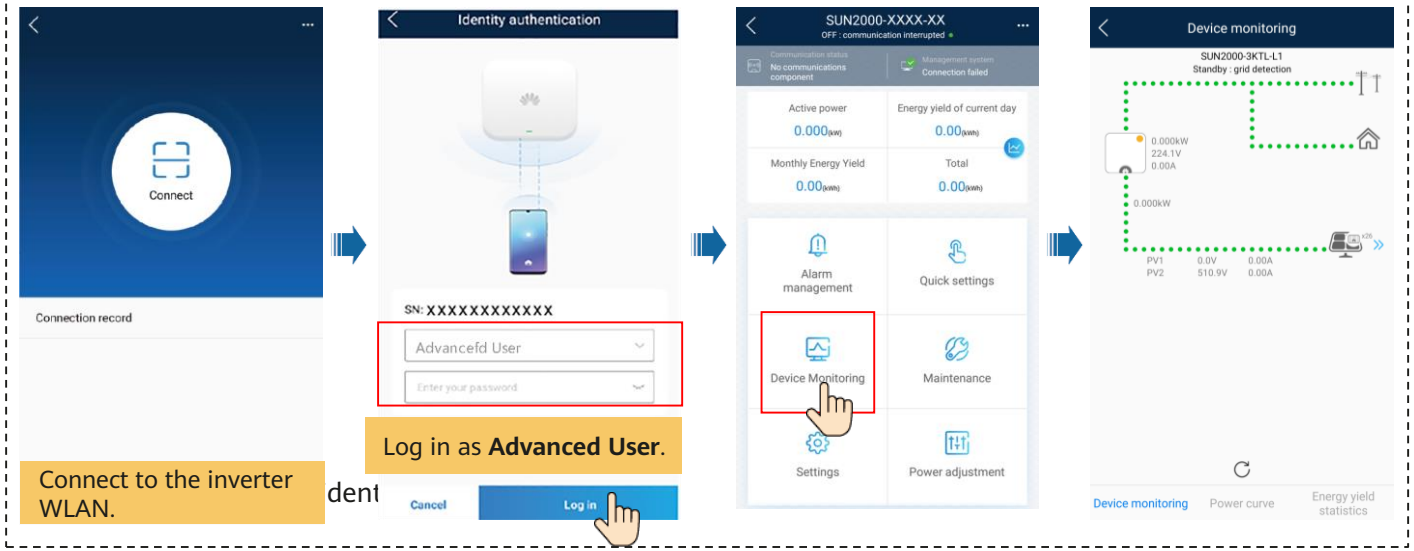


Mobile phone not connected to the Internet



Note: If the mobile phone connected to the Internet, tap the screen does not display **Device commissioning**.

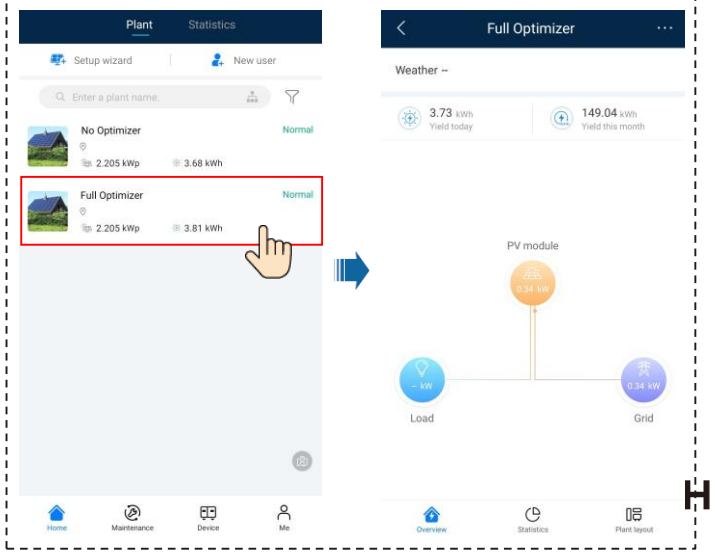
Check the device status using device commissioning.



Connect to the inverter WLAN.

Log in as **Advanced User**.

- **Checking the Device Status Remotely.**



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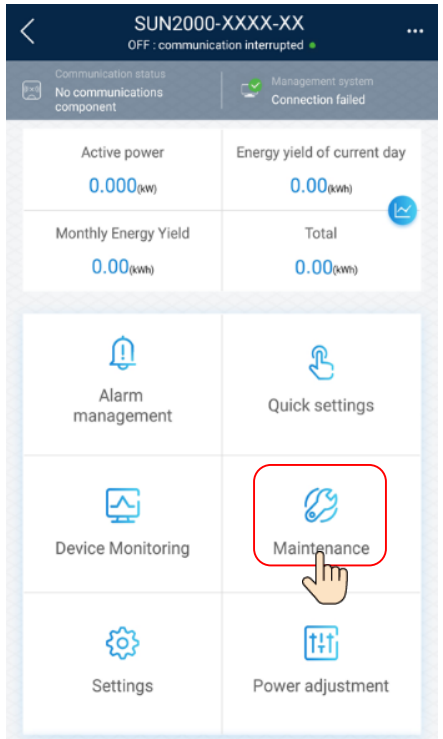
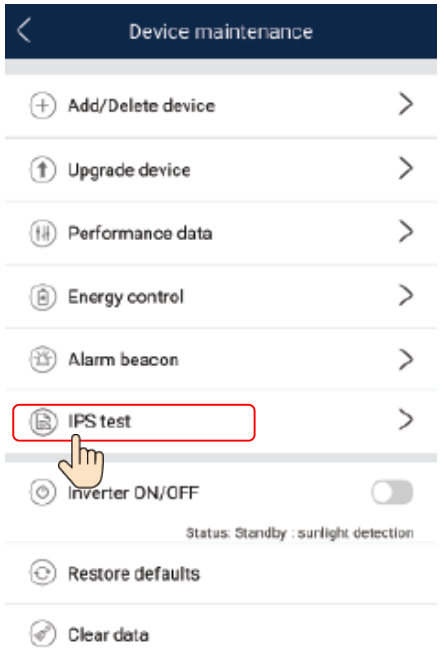
4.5 IPS Test

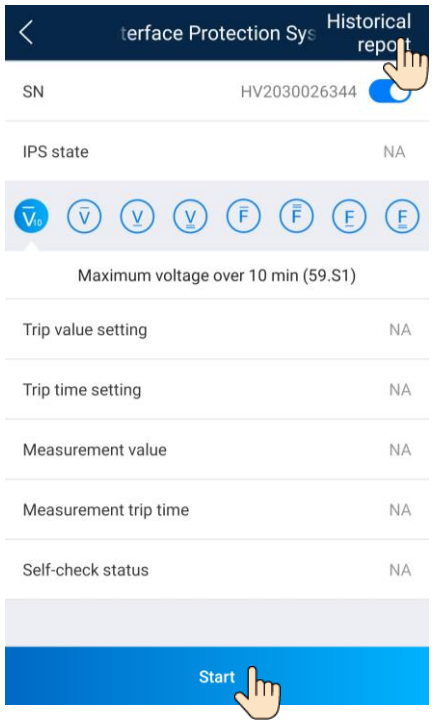
(For Italy CEI0-21 grid code only & SUN2000-12/15/17/20KTL-M0/M2)

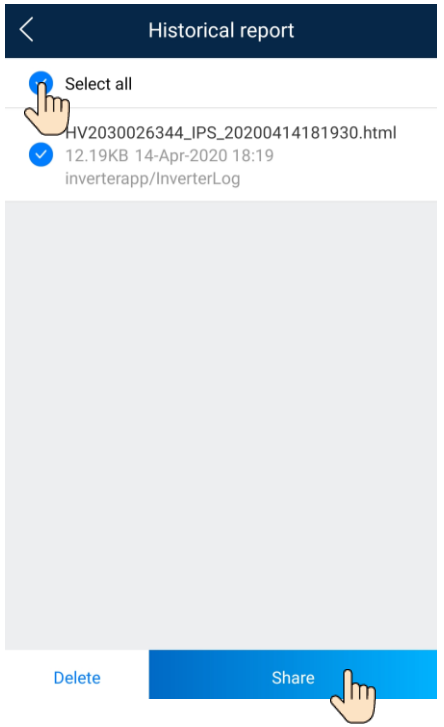
The Italy CEI0-21 grid code requires an IPS test for the SUN2000. During the IPS test process, the SUN2000 consecutively tests the protection thresholds and time for 10-min overvoltage, level 1 overvoltage, level 1 undervoltage, level 1 overfrequency, and level 1 underfrequency. The SUN2000 shuts down after the IPS test starts, and it restarts after the IPS test is successful.

1. Log in to the FusionSolar app as **installer** or **Advanced User**. On the **Device commissioning** screen, choose **Maintenance**, and tap **IPS test**.
2. Tap **Start** to start the IPS test. After the IPS test is complete, **IPS State** is displayed as **IPS state success**. Tap **Reports** in the upper-right corner of the **IPS test** screen to view **IPS Self-Check Report**.









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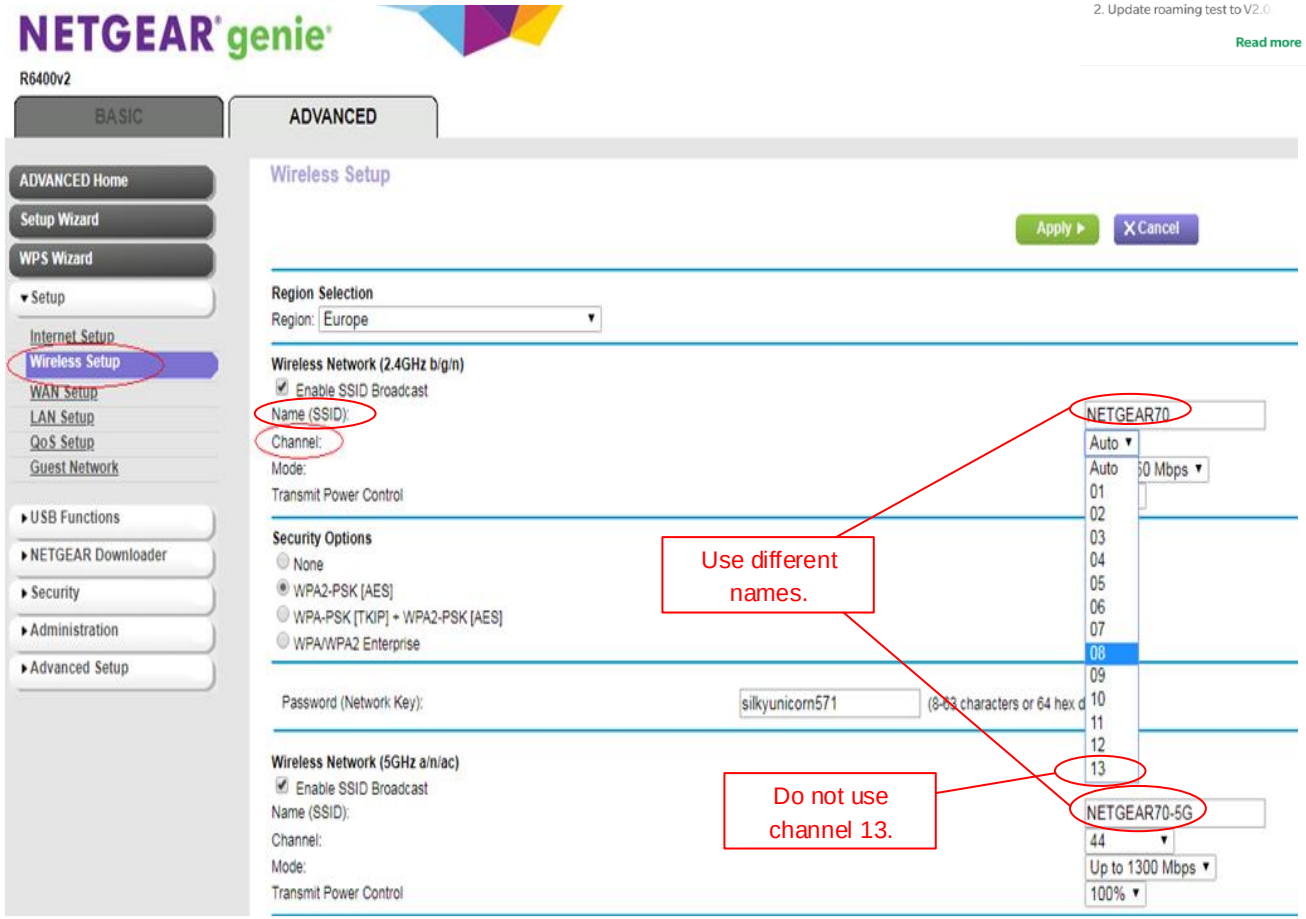
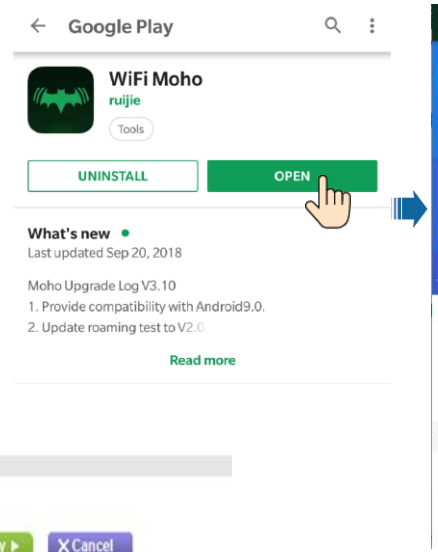
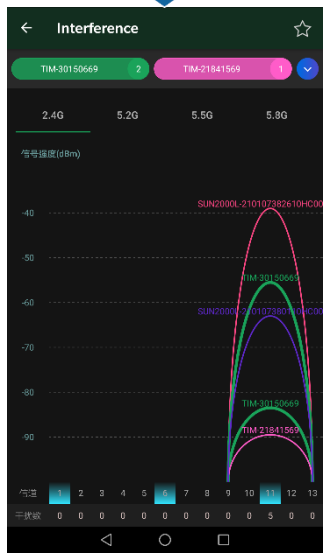
4.6 WLAN-FE Dongle Cannot Find Signals When Adapting to Some Routers

1. For a dual-band router (use 2.4G and 5G WLAN signals at the same time), check whether the 2.4G WLAN signal is enabled. (The WLAN Dongle does not support 5G WLAN.)
2. Confirm that the 2.4G WLAN SSID name is different from the 5G WLAN SSID name. If they are the same, set them to be different.
3. Log in to the router settings page. If the 2.4G WLAN channel is 13, change the channel to one in the range of channel 1 to 11, which has small interference.

The NETGEAR router settings page is used as an example:







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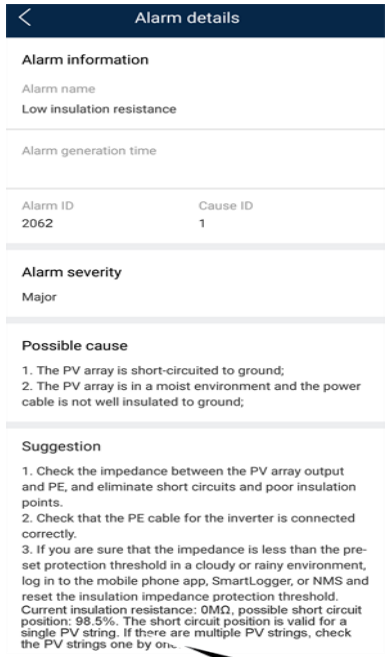
4.7 Locating Insulation Resistance Faults

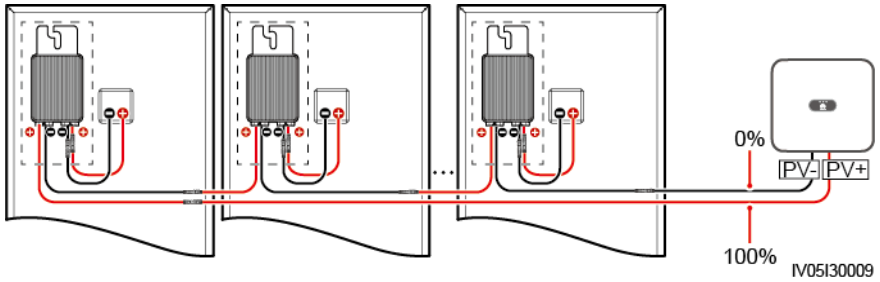
If the ground impedance of a PV string connected to the inverter is too low, the inverter generates a **Low insulation resistance** alarm.
The possible causes are as follows:

- A short circuit occurs between the PV array and the ground.
- The ambient air of the PV array is damp and the insulation between the PV array and the ground is poor.

If a system is not configured with any optimizer, skip the corresponding operations. To locate the fault, Only applicable to **SUN2000-12/15/17/20KTL-M0/M2 ,** do as follows:

Step 1 Locate the faulty PV string: Connect each PV string to the inverter, power on and check the inverter, and locate the fault based on the alarm information reported by the FusionSolar app.



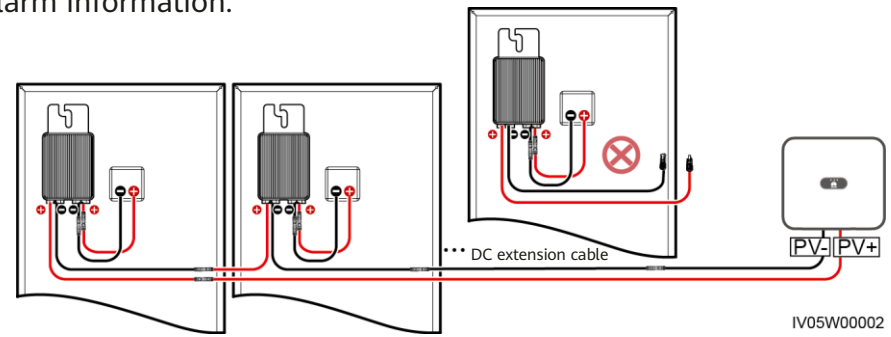


- The positive and negative terminals of a PV string are respectively connected to the PV+ and PV– terminals of the inverter. The PV– terminal represents a possibility of 0% for the short-circuit position and the PV+ terminal represents a possibility of 100% for the short-circuit position. Other percentages indicate that the fault occurs on a PV module or cable in the PV string.
- Possible fault position = Total number of PV modules in a PV string x Percentage of possible short-circuit positions. For example, if a PV string consists of 14 PV modules and the percentage of the possible short-circuit position is 34%, the possible fault position is 4.76 (14 x 34%), indicating that the fault is located near PV module 4, including the previous and the next PV modules and the cables of PV module 4. The inverter has a detection precision of ±1 PV module.

Current insulation resistance: XX MΩ; possible short circuit position: XX%. The short circuit position is valid for a single PV string. If there are multiple PV strings, check the PV strings one by one.

Step 2 Locate the faulty cable: Power off the inverter. Check whether the connector or DC cable between the possible faulty PV modules and the corresponding optimizers, or those between the adjacent PV modules and the corresponding optimizers are damaged. Replace the damaged connector or DC cable. Power on the inverter and view the alarm information.

Step 3 Locate the faulty PV module: Power off the inverter, disconnect the possible faulty PV modules and corresponding optimizers from the PV string, and connect a DC extension cable with an MC4 connector to the adjacent PV modules or optimizers. Power on the inverter and view the alarm information.



Step 4 Locate the faulty component:

1. Disconnect the possible faulty PV module from the optimizer.
2. Power off the inverter.
3. Connect the possible faulty optimizer to the PV string.
4. Power on the inverter. Check whether the **Low insulation resistance** alarm is reported.
   - If the **Low insulation resistance** alarm is not reported, the PV module is faulty.
   - If the **Low insulation resistance** alarm is still reported, the optimizer is faulty.
5. Replace the faulty component to clear the insulation resistance fault.

If two or more ground insulation faults occur in a single PV string, the following method cannot locate the fault. You need to check the PV modules one by one.

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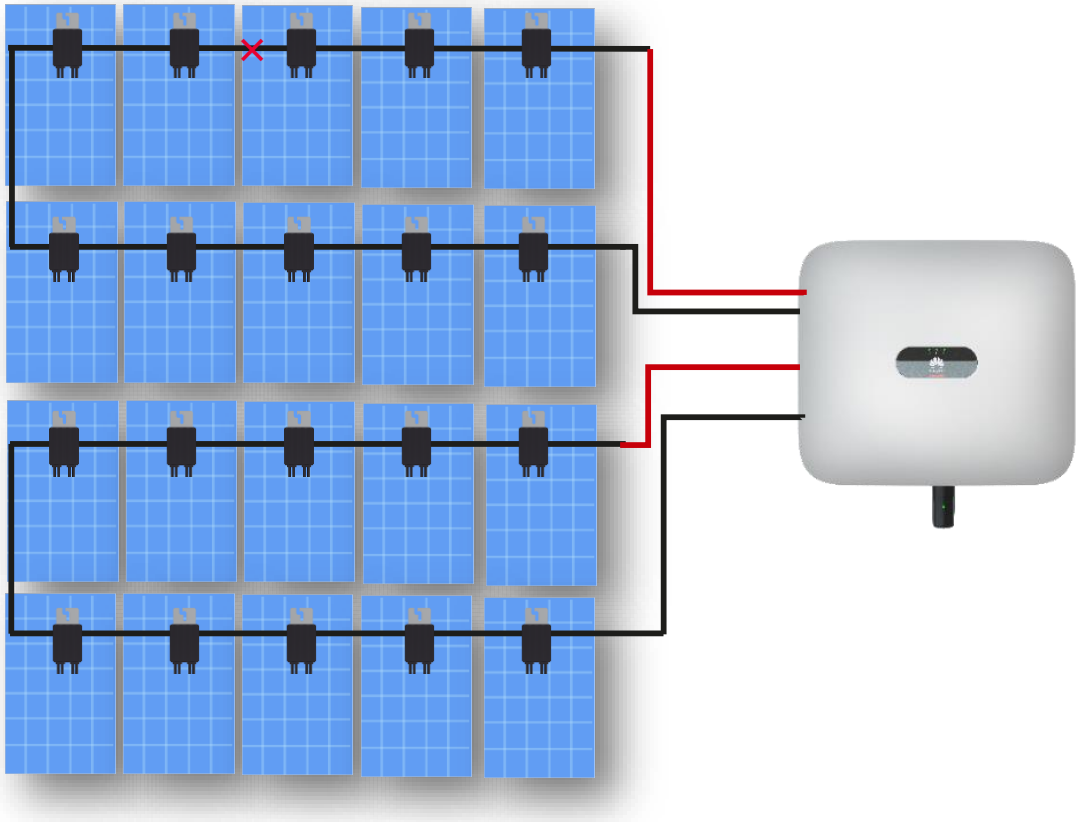
4.8 Optimizer Disconnection Detection

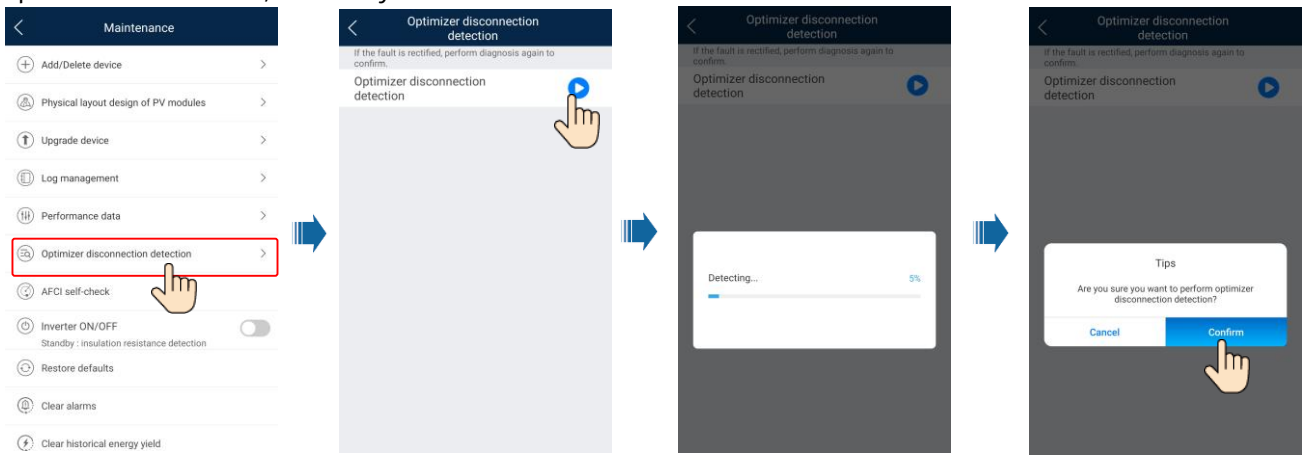
Description

Terminals are used to connect the inverter and PV strings and to interconnect adjacent PV modules. If the terminals are loose or in poor contact, the adjacent PV modules will be disconnected. As a large number of PV modules are deployed on a rooftop, the troubleshooting is laborious and inefficient. Optimizer disconnection detection can accurately and efficiently determine the physical location of a fault point.

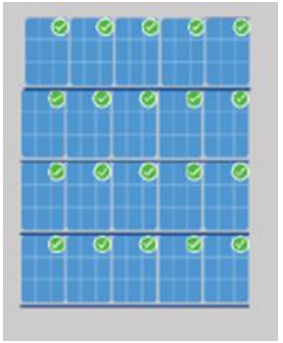


Optimizer disconnection detection

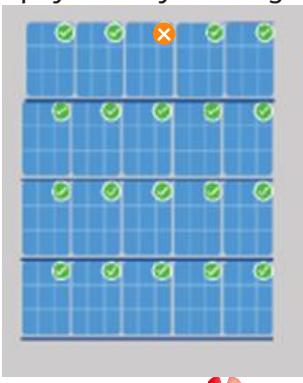
On the **Maintenance** screen, choose **Optimizer disconnection detection**, tap the detection button to detect the optimizer disconnection, and rectify the fault based on the detection result.



When PV string connections are normal, the optimizer connection status is green on the optimizer physical layout diagram.



When a PV string cable is disconnected, the connection status of the disconnected optimizer is red on the optimizer physical layout diagram.



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4.9 Rapid Shutdown

When all PV modules connected to the solar inverter are configured with optimizers, the PV system shuts down quickly and reduces the output voltage of the PV string to below 30 V within 30 seconds.

Perform the following step to trigger rapid shutdown:

Method 1: Turn off the AC switch between the solar inverter and the power grid.[1]

Method 2: Set the DC switch at the bottom of the SUN2000 to OFF. (Turning off an extra switch on the DC side of the SUN2000 will not trigger rapid shutdown. The PV string may be energized.)[2]

Method 3: To enable the rapid shutdown function, you need to connect the access switch to pins 13 and 15. The switch is closed by default. The rapid shutdown is triggered when the switch changes from closed to open.[3]

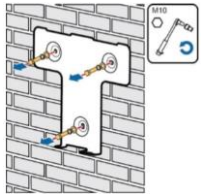
1. When backup box is connected in the system and AC switch is turned off, system operating modes switches to backup mode without rapid shutdown function enabled.
2. When ESS is connected in the system and rapid shutdown is triggered, inverter keeps operating with ESS charging and discharging as an AC coupled storage system. When ESS is not connected in the system, inverter shuts down in a few minutes when rapid shutdown is triggered.
3. Inverter shuts down immediately even to stop ESS charging and discharging.

4.10 Spare Part Substitution for V1 Models

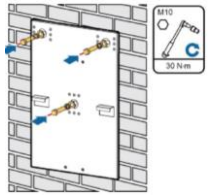
Spare Part Model		Low-/Medium-Power Three-Phase Substitute Model		DC Terminal Replacement	AC Terminal Replacement	RS485 Communications Terminal	Spare Mounting Plate Replacement	Protocol Adaptation Replacement
BOM Number	Model	BOM Number	Model					
01071470	SUN2000-8KTL	01074317-002	SUN2000-8KTL-M2	04153468	Y	Y	21155142	Y
01071471	SUN2000-10KTL	01074318-002	SUN2000-10KTL-M2	04153468	Y	Y	21155142	Y
01071472	SUN2000-12KTL	01074319-002	SUN2000-12KTL-M2	04153468	Y	Y	21155142	Y

Inverter installation and replacement

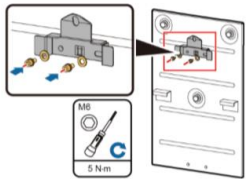
Remove the mounting plate from the original inverter.



Replace the mounting plate with a new one and align the mounting holes.

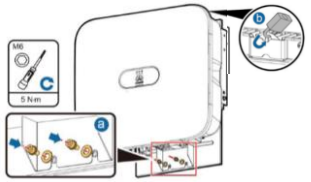


Install the mounting bracket.

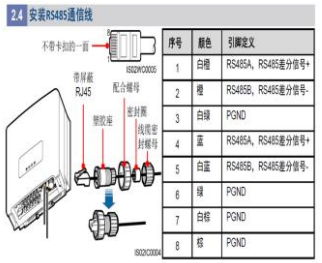


Install the inverter on the mounting bracket.

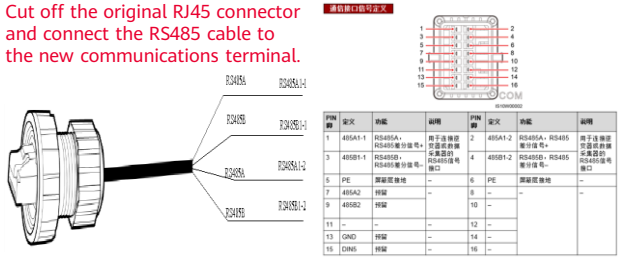
Secure the inverter.



Communications cable replacement

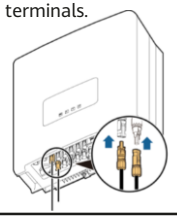


Cut off the original RJ45 connector and connect the RS485 cable to the new communications terminal.

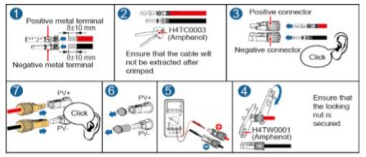


DC power cable replacement

Remove the original DC terminals.



Remove the original PV cable connector and use a new Staubli DC terminal to replace the original one.



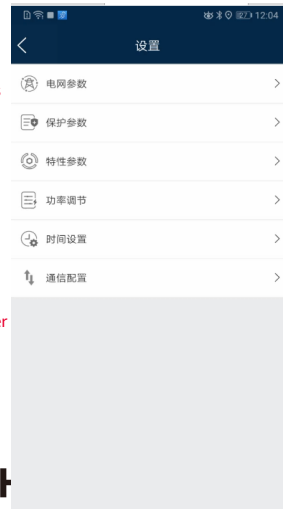
If the original cable is not long enough, connect an extension cable for the DC terminals.

Connect the DC power cables to the DC terminals of the inverter.

Protocol replacement for V1 models

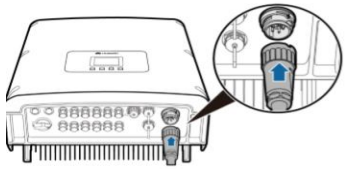
Device replacement screen: If the model in the **Device replacement** screen is inconsistent with the actual model, do not select the model and directly set the power grid code, time zone, and communication address.

If other parameters need to be set, set them on the parameter setting screen.



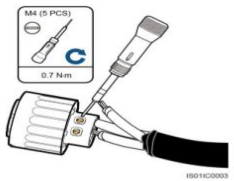
AC power cable replacement

Remove the original AC terminal.

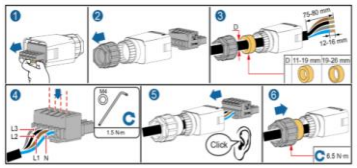


Loose the fastening socket.

Remove the AC power cable.



Connect the cable to the AC terminal on the new inverter.

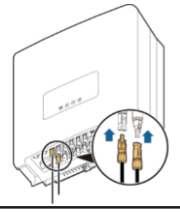


4.10 Spare Part Substitution for Low-Power Three-Phase M0 Models

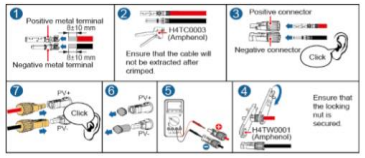
Spare Part Model		Low-Power Three-Phase Substitute Model		DC Terminal Replacement	AC Terminal Replacement	RS485 Communications Terminal	Spare Mounting Plate Replacement	Protocol Adaptation Replacement
BOM Number	Model	BOM Number	Model		No replacement is required.	No replacement is required.	No replacement is required.	No replacement is required.
01074301	SUN2000-5KTL-M0	To be determined	SUN2000-5KTL-M1	04153468	-	-	-	-
01074302	SUN2000-6KTL-M0	To be determined	SUN2000-6KTL-M1	04153468	-	-	-	-
01074300	SUN2000-8KTL-M0	To be determined	SUN2000-8KTL-M1	04153468	-	-	-	-
01074295	SUN2000-10KTL-M0	To be determined	SUN2000-10KTL-M1	04153468	-	-	-	-
01074306	SUN2000-12KTL-M0	To be determined	SUN2000-12KTL-M1	04153468	-	-	-	-
01074303	SUN2000-15KTL-M0	To be determined	SUN2000-15KTL-M2	04153468	-	-	-	-
01074304	SUN2000-17KTL-M0	To be determined	SUN2000-17KTL-M2	04153468	-	-	-	-
01074305	SUN2000-20KTL-M0	To be determined	SUN2000-20KTL-M2	04153468	-	-	-	-
01074316	SUN2000-3KTL-M0	01074316-001	SUN2000-3KTL-M1	04153468	-	-	-	-
01074467	SUN2000-4KTL-M0	01074467-001	SUN2000-4KTL-M1	04153468	-	-	-	-
01074320	SUN2000-5KTL-M0	01074320-001	SUN2000-5KTL-M1	04153468	-	-	-	-
01074315	SUN2000-6KTL-M0	01074315-001	SUN2000-6KTL-M1	04153468	-	-	-	-
01074314	SUN2000-8KTL-M0	01074314-001	SUN2000-8KTL-M1	04153468	-	-	-	-
01074311	SUN2000-10KTL-M0	01074311-001	SUN2000-10KTL-M1	04153468	-	-	-	-
01074317-001	SUN2000-8KTL-M0	01074317-002	SUN2000-8KTL-M2	04153468	-	-	-	-
01074318-001	SUN2000-10KTL-M0	01074318-002	SUN2000-10KTL-M2	04153468	-	-	-	-
01074319-001	SUN2000-12KTL-M0	01074319-002	SUN2000-12KTL-M2	04153468	-	-	-	-
01074303-001	SUN2000-15KTL-M0	01074303-002	SUN2000-15KTL-M2	04153468	-	-	-	-
01074304-001	SUN2000-17KTL-M0	01074304-002	SUN2000-17KTL-M2	04153468	-	-	-	-
01074305-001	SUN2000-20KTL-M0	01074305-002	SUN2000-20KTL-M2	04153468	-	-	-	-

DC power cable replacement

Remove the original DC terminals.



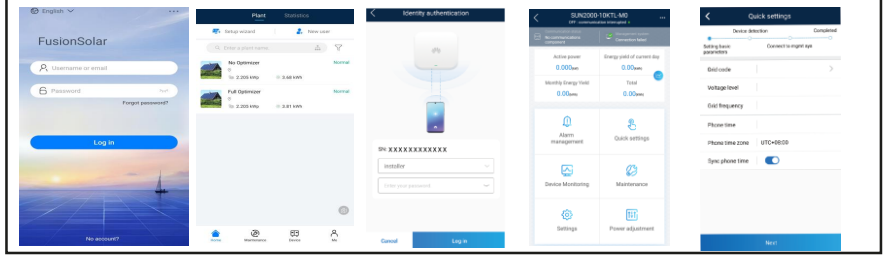
Remove the original PV cable connector and use a new Staubli DC terminal to replace the original one.



If the original cable is not long enough, connect an extension cable for the DC terminals.

Connect the DC power cables to the DC terminals of the inverter.

PV plant deployment process (same as that of a new inverter)



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4.10 Spare Part Substitution for Medium-Power Three-Phase Inverters

Version	Old Model			Corresponding Medium-Power Three-Phase Inverters					BOM Number of the Corresponding Medium-Power Three-Phase Inverters
	Original Model	Number of MPPTs	Number of PV Input Terminals	Spare Part Model	Default Number of MPPTs (May Switch to the Number of MPPTs of the Old Model when Setting the Spare Part Model for Substitution)	Number of PV Input Terminals	Area	Electrical Specifications	
V1 spare parts	SUN2000-15KTL	3	6	SUN2000-15KTL-M3	4	8	Pan-Europe and China	The maximum input voltage, maximum input current, maximum MPPT voltage range, and maximum short-circuit current share the same platform and are the same as those of the medium-power three-phase sales model. The parameters on the AC side are the same as those of the old model.	01075485-043
	SUN2000-17KTL	3	6	SUN2000-17KTL-M3	4	8	Pan-Europe and China		01075485-045
	SUN2000-20KTL	3	6	SUN2000-20KTL-M3	4	8	Pan-Europe and China		01075485-046
	SUN2000-23KTL	3	6	SUN2000-23KTL-M3	4	8	Pan-Europe and China		01075485-047
	SUN2000-24.5KTL	3	6	SUN2000-24.5KTL	3	6	Japan	The electrical specifications are the same as those of old models of Japan version.	01075485-048
	SUN2000-28KTL	3	6	SUN2000-28KTL-M3	4	8	Pan-Europe and China	The maximum input voltage, maximum input current, maximum MPPT voltage range, and maximum short-circuit current share the same platform and are the same as those of the medium-power three-phase sales model. The parameters on the AC side are the same as those of the old model.	01075485-049
	Sanken SUN2000-28KTL	3	6	SUN2000-28KTL	3	6	Japan Sanken	The electrical specifications are the same as those of old models of Japan version.	01075485-041
	SUN2000-28KTL	3	6	SUN2000-28KTL	3	6	Japan		01075485-050
V2.1 spare parts	SUN2000-33KTL, SUN2000-33KTL-E001, SUN2000-30KL-A	3	6	SUN2000-30KTL-M3	4	8	Pan-Europe and China	The maximum input voltage, maximum input current, maximum MPPT voltage range, and maximum short-circuit current share the same platform and are the same as those of the medium-power three-phase sales model. The parameters on the AC side are the same as those of the old model.	01075485-051
	SUN2000-40KTL	3	6	SUN2000-36KTL-M3	4	8	Pan-Europe and China		01075485-028
	SUN2000-25KTL-US	3	6	SUN2000-25KTL-NAM3	4	8	North America		01075485-016
	SUN2000-30KTL-US	3	6	SUN2000-30KTL-NAM3	4	8	North America		01075485-017
V2.2 spare parts	SUN2000-29.9KTL	4	8	SUN2000-29.9KTL-M3	4	8	Australia	The maximum input voltage, maximum input current, maximum MPPT voltage range, and maximum short-circuit current share the same platform and are the same as those of the medium-power three-phase sales model. The parameters on the AC side are the same as those of the old model.	01075485-018
	SUN2000-33KTL-A	4	8	SUN2000-30KTL-M3	4	8	Europe		01075485-019
	SUN2000-36KTL	4	8	SUN2000-36KTL-M3	4	8	Pan-Europe and China		01075485-020
	SUN2000-42KTL	4	8	SUN2000-42KTL-M3	4	8	Europe		01075485-021
	SUN2000-43KTL	4	8	SUN2000-43KTL-INM3	4	8	India		01075485-022
	SUN2000-50KTL, SUN2000-50KTL-C1	4	8	SUN2000-50KTL-M3	4	8	China		01075485-052
	SUN2000-33KTL-JP	4	8	SUN2000-33KTL-JP	4	8	Japan	The electrical specifications are the same as those of old models of Japan version.	01075485-053
	SUN2000-40KTL-JP	4	8	SUN2000-40KTL-JP	4	8	Japan		01075485-023
	SUN2000-33KTL-US	4	8	SUN2000-33KTL-NAM3	4	8	North America	The maximum input voltage, maximum input current, maximum MPPT voltage range, and maximum short-circuit current share the same platform and are the same as those of the medium-power three-phase sales model. The parameters on the AC side are the same as those of the old model.	01075485-025
	SUN2000-36KTL-US	4	8	SUN2000-36KTL-NAM3	4	8	North America		01075485-026
	SUN2000-40KTL-US	4	8	SUN2000-40KTL-NAM3	4	8	North America		01075485-027
	Sanken SUN2000-33KTL-JP	4	8	SUN2000-33KTL-JP	4	8	Japan Sanken	The electrical specifications are the same as those of old models of Japan version.	01075485-039
	Sanken SUN2000-40KTL-JP	4	8	SUN2000-40KTL-JP	4	8	Japan Sanken		01075485-040

4.11 Common alarms and troubleshooting measures

For details about how to handle alarms, see the user manual.

Alarm ID	Alarm Name	Alarm Severity	Possible Causes	Suggestions
2001	High String Input Voltage	Major	The PV array is not properly configured. Excessive PV modules are connected in series to a PV string, and therefore the PV string open-circuit voltage exceeds the maximum operating voltage of the solar inverter.	Reduce the number of PV modules connected in series in the PV string until the PV string open-circuit voltage is not greater than the maximum operating voltage of the solar inverter. After the PV array configuration is corrected, the alarm disappears.
2011	String Reverse Connection	Major	The PV string is reversely connected.	Check whether the PV string is reversely connected to the solar inverter. If yes, wait until the solar irradiance declines at night and the PV string current drops below 0.5 A. Then, turn off the DC switches and correct the PV string connection.
2012	String Current Backfeed	Warning	Only a few PV modules are connected in series in the PV string. Therefore, the terminal voltage is lower than that of other PV strings.	1. Check whether the number of PV modules connected in series in the PV string is less than that in other PV strings connected in parallel. If yes, wait until the solar irradiance declines at night and the PV string current drops below 0.5 A. Then, turn off the DC switches and add more PV modules. 2. Check whether the PV string is shaded. 3. Check whether the open-circuit voltage of the PV string is normal.
2031	Phase Wire Short-Circuited to PE	Major	The impedance of the output phase wire to PE is low or the output phase wire is short-circuited to PE.	Check the impedance of the output phase wire to PE, locate the position with lower impedance, and rectify the fault.
2032	Grid Loss	Major	1. The power grid experiences an outage. 2. The AC circuit is disconnected or the AC switch is off.	1. Check the AC voltage. 2. Check whether the AC circuit is disconnected or the AC switch is off.
2062	Low Insulation Resistance	Major	1. The PV array is short-circuited to ground. 2.The PV array is in a moist environment and the power cable is not well insulated to ground.	1. Check the impedance between the PV array output and PE, and eliminate short circuits and poor insulation points. 2. Check that the PE cable for the inverter is connected correctly. 3. If you are sure that the impedance is less than the preset protection threshold in a cloudy or rainy environment, log in to the mobile phone app, SmartLogger, or NMS and reset the insulation impedance protection threshold.

Appendix 1: Compatible Smart Power Meters for 50/60KTL-M0, 100KTL-M1

Manufacturer	Model	12-20KTL-M2	29.9/30/36/40KTL-M3	Export Limitation for 50/60KTL-M0	Export Limitation for 100KTL-M1
Huawei	DTSU666-H 250 A/50 mA	Supported	Supported	Supported. The system power capacity shall not be higher than 170 kW due to the power measurement limit of DTSU666-H 250 A/50 mA smart power sensor.	
Janitza	JANITZA-UMG604	-	Supported	-	Supported
Janitza	JANITZA-UMG103	-	Supported	-	Supported
Janitza	JANITZA-UMG104	-	Supported	-	Supported
Schneider	Schneider-PM1200	-	Supported	-	-
GAVAZZI	GAVAZZI-EM340-DIN AV2 3 X S1 X	-	Supported	-	-
REAL ENERGY SYSTEM	REAL ENERGY SYSTEM-PRISMA-310A	-	Supported	-	-
Algodue	Algodue-UPM209	-	Supported	-	-
Mitsubishi	Mitsubishi-LMS-0441E	-	Supported	-	-
WEG	WEG-MMW03-M22CH	-	Supported	-	-

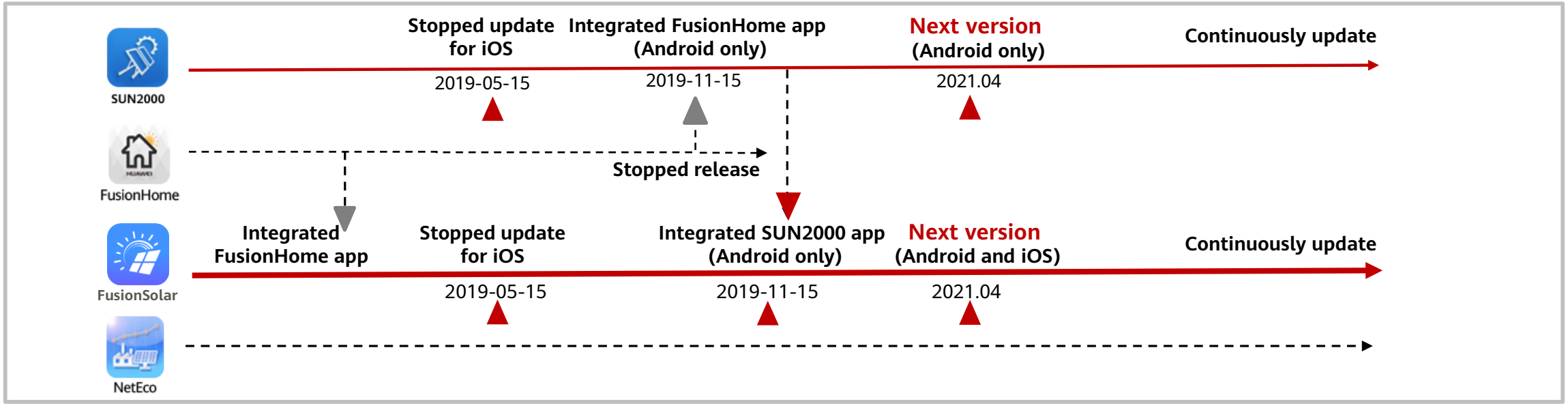
Appendix 2: Compatible Smart Power Meters for SmartLogger3000A

Manufacturer	Model	Zero Export
ABB	A44	-
Acrel	PZ96L	Supported
Algodue	UPM209	Supported
CHINT	DTSU666	-
Huawei	DTSU666-H	Supported
Elster	A1800ALPHA	-
GIMAC-i	MODBUS ENG MAP (120613)	-
Iskra	MC320	-
Iskra	MC774	-
Janitza	UMG604/UMG103/UMG104	Supported
Lead	LD-C83	-
MingHua	CRDM-830	-
Mitsubishi	LMS-0441E	-
NARUN	PD510	-
Netbiter	CEWE	-
People	RM858E	-
PowerLogic	ION6200	-
PowerLogic	ION7600ION7550/ION7600	-
SATEC	PM130 PLUS	-
Schneider	iEM3000 series	-
Schneider	PM1000	
Schneider	PM1200	-
SFERE	PD194Z	-
Socomec	COUNTIS E43	Supported (Note: The meter does not support the scenario with imbalanced loads.)
Toshiba	S2MS	-
Weisheng	DSSD331	-

Appendix 3: Compatible EMIs

Manufacturer	Model	Collected Information
Kipp&Zonen	SMPx	• Wind speed • Wind direction • Module surface temperature • Ambient temperature • Irradiation intensity • Daily irradiance • Status of the connected device
Jinzhou Lichen	JZLC	
Hukseflux	Hukseflux_SRx	
Gill	Gill_MetPak-Pro	
Rainwise	Pvmet-200	
Ingenieurbüro	Si-RS485TC	
Soluzione_Solare	SunMeter	
Handan	RYQ-3	
Lufft	Lufft_WSx-UMB	
Rainwise	Pvmet-150	
Meteocontrol	SR20-D2	
YANGGUANG	PC-4	
ABB	ABB_VSN800-12	
ABB	ABB_VSN800-14	

Appendix 4: Evolution of Apps



App	Positioning	Compatibility	Download Path
SUN2000 + FusionHome → SUN2000 App version (Android): 3.2.00.008 SUN2000 app integrated FusionHome app (Android only)	• Local commissioning tool for connecting to a third-party system • Applied in areas without FusionSolar management system	• All Huawei inverters, SmartLogger, Smart Dongle	• Huawei AppGallery • QR code
SUN2000 + FusionSolar → FusionSolar App version: 5.7.008 FusionSolar app integrated SUN2000 app (Android and iOS)	• Local commissioning and plant registration app for connecting to FusionSolar management system	• All Huawei inverters, SmartLogger, Smart Dongle	• Huawei AppGallery • QR code

Appendix 5: PV Connector Comparison

Differences Between SUN2000 H4 and MC4 Terminals		H4 (Amphenol)	MC4 (Staubli)	Comparison
Applicable inverter		SUN2000-12/15/17/20KTL-M0	SUN2000-8-20KTL-M2	
Terminal appearance	Conductive core appearance			1. The conductive core appearance is obviously different. 2. The Staubli male and female cores are marked as "MC", and the Amphenol male and female cores are marked as "A".
	Cables with plastic shells			1. The dimensions of fasteners are inconsistent. 2. Staubli connectors use white silk screen, and Amphenol connectors use imprinting marks.
	Board end connectors with plastic shells			1. Staubli connectors use round thread heads, and Amphenol connectors are D-type connectors. 2. Staubli connectors use white silk screen, and Amphenol connectors use imprinting marks.
Fastener	Connector unlocking tool			Staubli fasteners support torque protection, while Amphenol fasteners do not.
Crimping tool	Crimping tool			1. The jaws of the crimping pliers are consistent. 2. The compression ratio must be less than 90%.

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