

Contents

01 Products

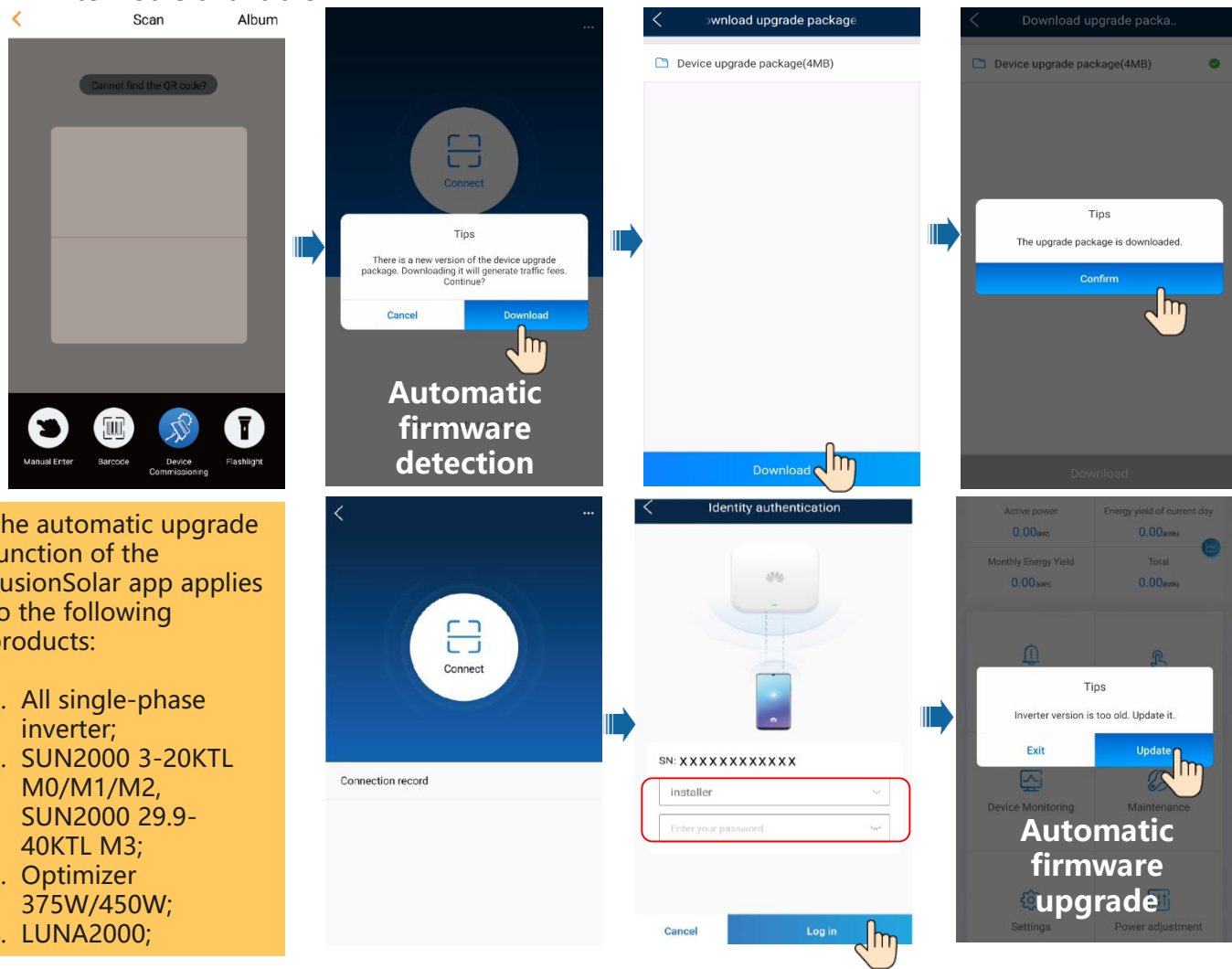
02 Installation

03 Commissioning

04 Maintenance and Troubleshooting

4.1 Upgrading Device Firmware

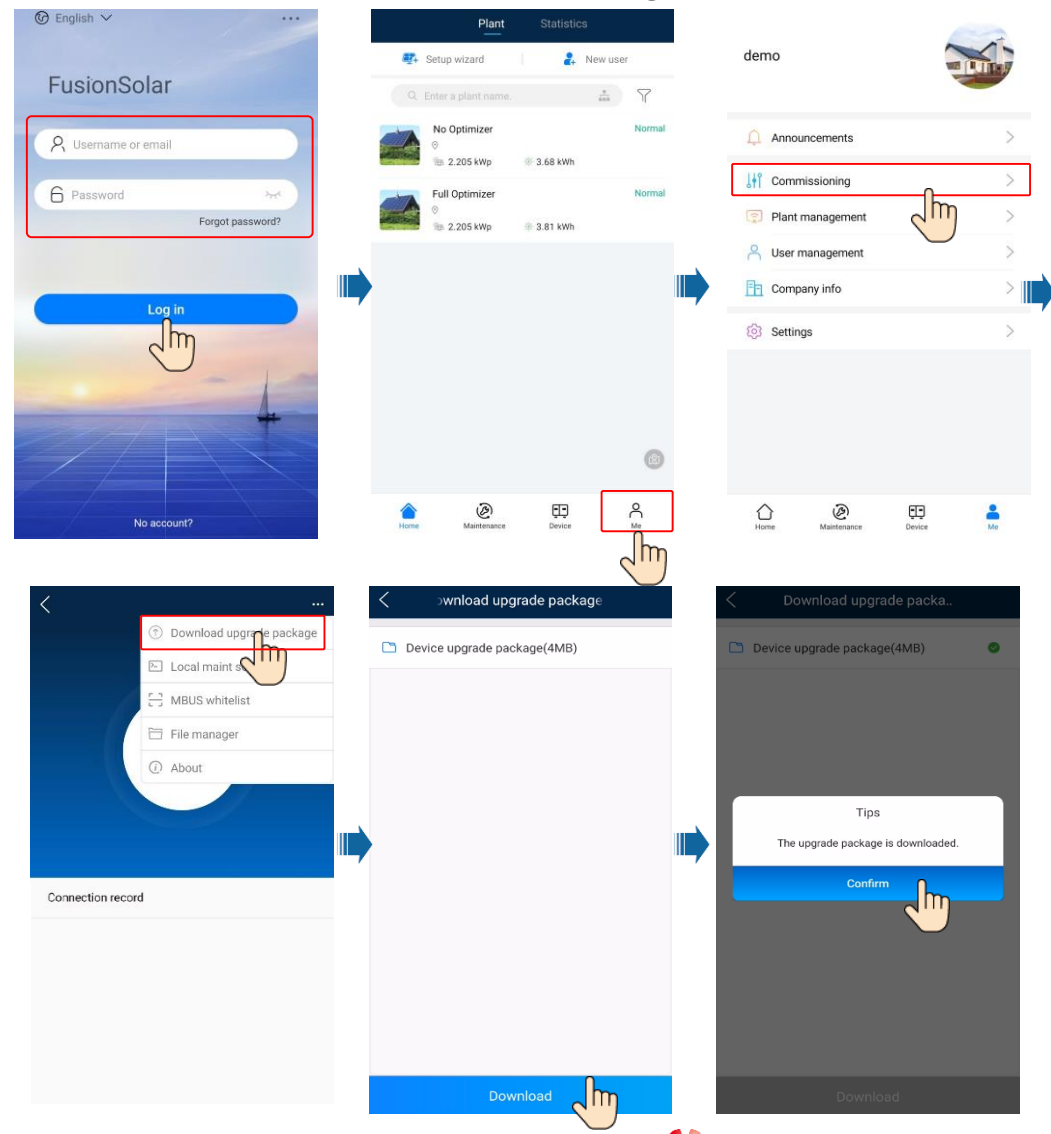
Method 1: Auto firmware detection and upgrade during setup wizard when Internet is available



The automatic upgrade function of the FusionSolar app applies to the following products:




1. All single-phase inverter;
2. SUN2000 3-20KTL M0/M1/M2, SUN2000 29.9-40KTL M3;
3. Optimizer 375W/450W;
4. LUNA2000;

Method 2: Manual firmware downloading



4.2 Checking the Indicator Status

You can view alarms, fault causes, and rectification suggestions on the FusionSolar app.

Type	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)		Meaning
Running indication			N/A
	Steady green	Steady green	Operating mode
	Blinking green at long intervals	Blinking green at long intervals	Standby mode
	Off	Off	Sleep mode
	Blinking red at short intervals	N/A	Battery power control module environment alarm
	N/A	Blinking red at short intervals	Battery expansion module environment alarm
	Steady red	N/A	Battery power control module fault
	N/A	Steady red	Battery expansion module fault
Battery system indication			N/A
	Display green		Indicates battery level. One bar represents 10%.
	Steady red		The first three bars indicate the number of faulty battery expansion modules.

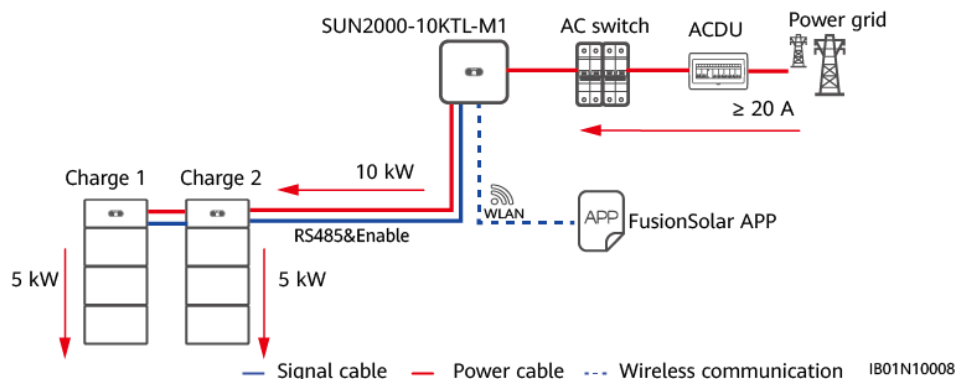
FAQ: How do I locate a faulty battery expansion module when multiple battery expansion modules are connected?

1. If you can log in to the app, you can view the SN of the faulty battery expansion module on the app and determine the specific position of the battery expansion module based on the SN.
2. If you cannot log in to the app, connect the network cable of the power control module to a battery expansion module and check the indicator status.

Alarm ID	Alarm Name	Indicator
3000	Low battery DC input bus voltage	Blinking red
3001	Abnormal battery power control module	Steady red
3002	Battery power control module overtemperature	Blinking red
3003	Battery power control module fuse blown	Blinking red
3004	Battery power control module reversely connected	Blinking red
3005	Battery power control module DC switch OFF	Blinking red
3006	Abnormal battery expansion module	Steady red
3007	Battery expansion module cable disconnected	Blinking red
3008	Battery expansion module overtemperature	Blinking red
3009	Battery expansion module low temperature	Blinking red
3010	Battery expansion module short circuit	Blinking red
3011	Battery expansion module undervoltage	Blinking red
3012	Abnormal battery power control module parallel communication	Blinking red
3013	Abnormal battery expansion module communication	Blinking red

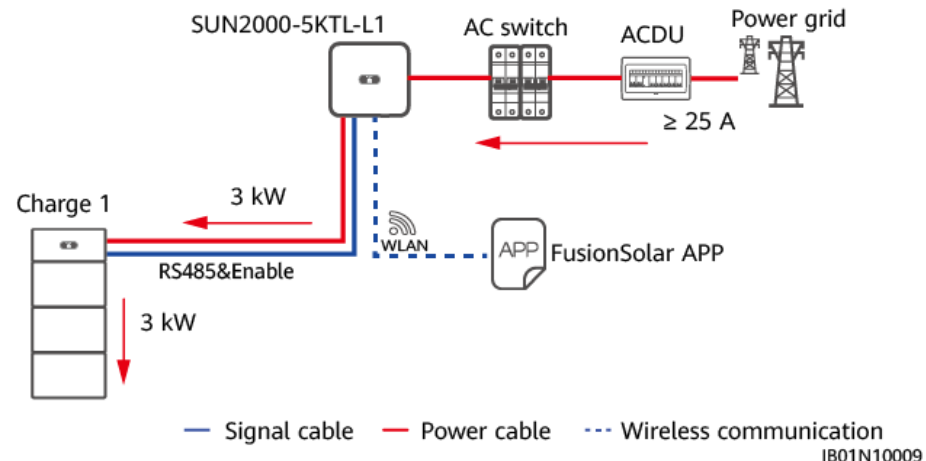
4.3 Battery Storage and Charging

Battery Recharging Scenarios



Three-Phase Power Supply Scenario

The SUN2000-10KTL-M1 inverter provides 10 kW power to charge batteries. It allows two charge units (six battery packs) to be charged at the same time. Other M1 models can charge batteries with a power of less than 10 kW.



Single-phase power supply scenario

The SUN2000-(3KTL-6KTL)-L1 provides 3 kW power to charge batteries. It allows one charge unit (three battery packs) to be charged at the same time.

Recharge Interval

Required Storage Temperature	Actual Storage Temperature	Recharge Interval	Remarks
-10°C ~ 55°C	$T \leq -10^\circ\text{C}$	Not allowed	Not reaching the time for recharge: Use the batteries as soon as possible. Reaching the time for recharge: Recharge the batteries. The total storage duration should not exceed the warranty period.
	$-10^\circ\text{C} < T \leq 25^\circ\text{C}$	15 months	
	$25^\circ\text{C} < T \leq 35^\circ\text{C}$	9 months	
	$35^\circ\text{C} < T \leq 55^\circ\text{C}$	6 months	
	$55^\circ\text{C} \leq T$	Not allowed	

蓄电池请及时使用，切忌超期存储。若长期存放，必须定期按使用手册对电池进行充电维护！

Be sure the batteries be used in time, and to avoid the batteries stored longer than expectation time. Please do charge maintance following the user's manual when long-time storage.

第一次充电时间:

The first time charged at:



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第二次充电时间:

The second time charged at:

第三次充电时间:

The third time charged at:

4.4 Three-Phase Backup Box Damage Detection Solution

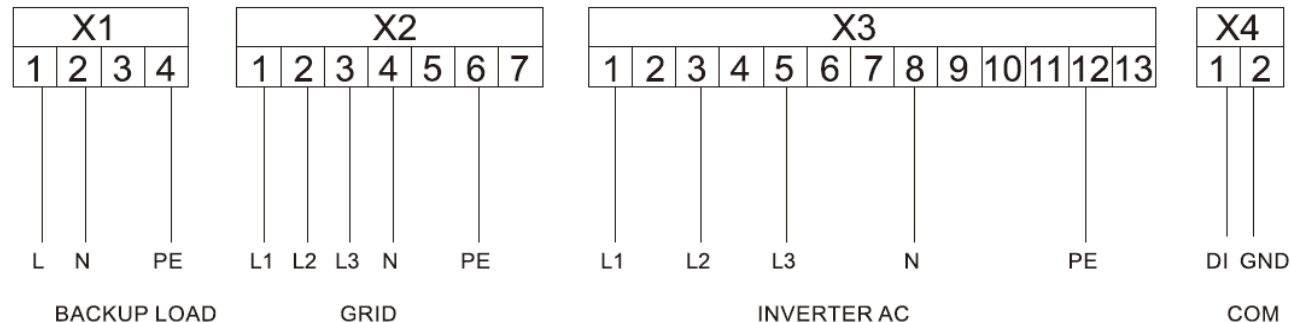
After arriving at the site, the maintenance personnel can check whether the Backup Box is damaged as follows:

1. It is recommended that loads be disconnected before detection.
2. Use a multimeter to check the connectivity between the Backup Box terminals, as shown in the following table.

SN.	Cable Connection Requirements			Detection Terminal				
	Load Circuit Breaker (QF)	Grid	Inverter	X4-1 & X4-2 COM-1 & COM-2	X2-1 & X3-1 GRID-L1 & INVERTER-L1	X3-3 & X3-8 INVERTER-L2 & INVERTER-N	X2-1 & X1-1 GRID-L1 & LOAD-L	X3-3 & X1-2 INVERTER-L2 & LOAD-N
1	On	Power off	Shutdown	Connected	Disconnected	Disconnected	Disconnected	Disconnected
2	On	Power on	Shutdown	Disconnected	Connected	Disconnected	Connected	Disconnected
3	On	Power off	Off-grid output	Connected	Disconnected	Connected	Disconnected	Connected

3. If the connectivity status of a certain item is different with that in the table, you can determine that the Backup Box is damaged.

Terminal Block Diagram 端子排图



4.4 Single-Phase Backup Box Damage Detection Solution

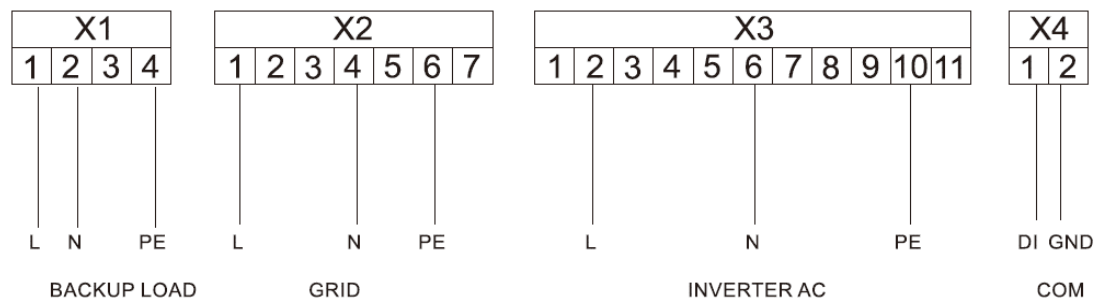
After arriving at the site, the maintenance personnel can check whether the Backup Box is damaged as follows:

1. It is recommended that loads be disconnected before detection.
2. Use a multimeter to check the connectivity between the Backup Box terminals, as shown in the following table.

SN.	Cable Connection Requirements			Detection Terminal				
	Load Circuit Breaker (QF)	Grid	Inverter	X4-1 & X4-2 COM-1 & COM-2	X2-1 & X3-2 GRID-L1 & INVERTER-L	X3-6 & X3-10 INVERTER-N & INVERTER-PE	X2-1 & X1-1 GRID-L1 & LOAD-L	X3-6 & X1-2 INVERTER-N & LOAD-N
1	On	Power off	Shutdown	Connected	Disconnected	Disconnected	Disconnected	Connected
2	On	Power on	Shutdown	Disconnected	Connected	Disconnected	Connected	Connected
3	On	Power off	Off-grid output	Connected	Disconnected	Connected	Disconnected	Connected

3. If the connectivity status of a certain item is different with that in the table, you can determine that the Backup Box is damaged.

Terminal Block Diagram



4.5 Replace a Fuse

Background of Fuse Replacement

If the SUN2000 is faulty, the fuse is likely to be damaged. In this case, check whether the fuse is open-circuited and replace it.

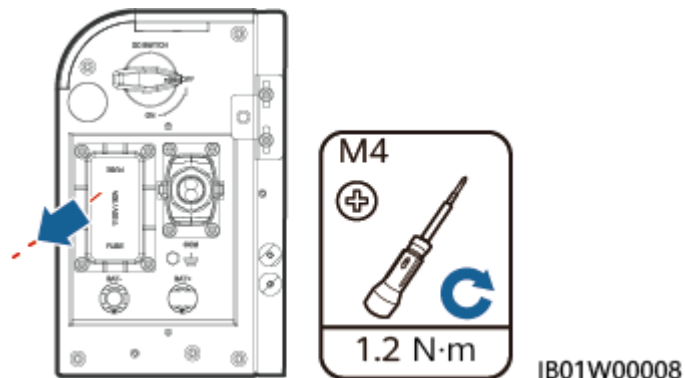
Replacing a Fuse

1. Power off the system

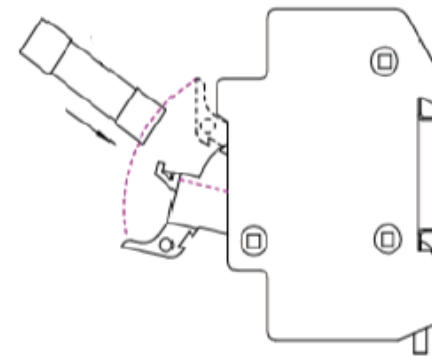
⚠ WARNING

After the system is powered off, the remaining electricity and heat still exist in the chassis, which may cause electric shocks or burns. Therefore, you need to wear protective gloves and perform operations 5 minutes after the system is powered off.

2. Loosen the screws on the fuse shell.



3. Lift the fuse box opening, remove the fuse, insert a new fuse into the slot, and close the fuse box. If you hear a click sound and the bulge on the side is inside the box, the fuse box is properly installed.



Fuse	Required Specifications		
	Lower Limit	Typical Value	Upper Limit
Type	-	Fuse	-
Component type	-	Fuse	-
Fuse type	-	Fast blow fuse	-
Rated voltage (V AC&V DC)	1100 V DC	-	-
Rated current	32 A	-	-
Breaking capacity	10 kA	-	-
Nominal fusing heat I2T	-	-	-
Cold resistance value	-	-	0.005 Ω
Package dimensions (the dimension tolerance should be specified in the specifications provided by the supplier)	-	14 mm x 51 mm	-

4.6 Warranty Terms of LUNA2000

Warranty Specification

Region	Power Module	Battery Module (5kWh)		Extended Warranty Scope
	Years	Years	ESS Performance	
China	10	10	16.45Mwh@60% EOL	Not Applicable
Australia	10	10	16.45Mwh@60% EOL	Not Applicable
Europe (not include German)	10	10	16.45Mwh@60% EOL	Not Applicable
German	10	10	13.17Mwh@80% EOL	Not Applicable
Japan	10	10	16.45Mwh@60% EOL	Allow to extend to 15 years, 18.5 Mwh@60% EOL
APAC	5	5	13.17Mwh@60% EOL	Not Applicable
India	5	5	13.17Mwh@60% EOL	Not Applicable
MEA (not include South Africa)	5	5	13.17Mwh@60% EOL	Not Applicable
South Africa	10	10	16.45Mwh@60% EOL	Not Applicable
LATAM (Brazil, Peru, Chile, Argentina, Paraguay, Uruguay)	7	7	13.17Mwh@60% EOL	Not Applicable
LATAM (Others)	5 Confidential	5	13.17Mwh@60% EOL	Not Applicable

Warranty Condition

1. Battery warranty is defined as when the battery pack reaches the warranty period or the life cycle discharge is completed, the remaining capacity EOL meets the specification requirements, and the first comes into effect; the power module DCDC only involves the warranty period and has nothing to do with the battery performance. The battery pack and power module provide independent warranty.
2. Capacity test conditions: at an ambient temperature of $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$, after charging to 100% SOC, let it stand for 10 minutes, and discharge the tested battery module at a set current of 0.2C to the discharge termination voltage, and record the amount of electricity released in the process.
3. In order to remotely upgrade the latest firmware to ensure battery life, the PV system with battery is highly recommended to connect to the Huawei FusionSolar SmartPV management system.
4. After the battery is purchased by the end user, the installation needs to be completed within one month. If the battery is faulty, it needs to be reported within one month. The battery module damage caused by the negligence of battery that cannot be charged for a long time will not be covered by the warranty.
5. The operation and service life of battery are related to the working temperature. Please install the battery at a temperature equal to or better than the ambient temperature. The recommended working temperature for battery is 15~30°C.

Appendix 1: Spare Parts List

Category	Document	Link (Support-E)	
Spare Parts Lists and Catalogs	SUN2000-(2KTL-6KTL)-L1 Spare Parts List	Chinese	English
	SUN2000-(3KTL-12KTL)-M Spare Parts List	Chinese	English
	SUN2000-450W-P Smart PV Optimizer Spare Parts List	Chinese	English
	LUNA2000-(5-30)-S0 Spare Parts List	Chinese	English
Spare Parts Catalog	SUN2000-(2KTL-6KTL)-L1 Spare Parts Catalog	Chinese	English
	SUN2000-(3KTL-10KTL)-M Spare Parts Catalog	Chinese	English
	SUN2000-450W-P Smart PV Optimizer Spare Parts Catalog	Chinese	English
	LUNA2000-(5-30)-S0 Spare Parts Catalog	Chinese	English

HiKnow App

1. Download the **HiKnow** app.



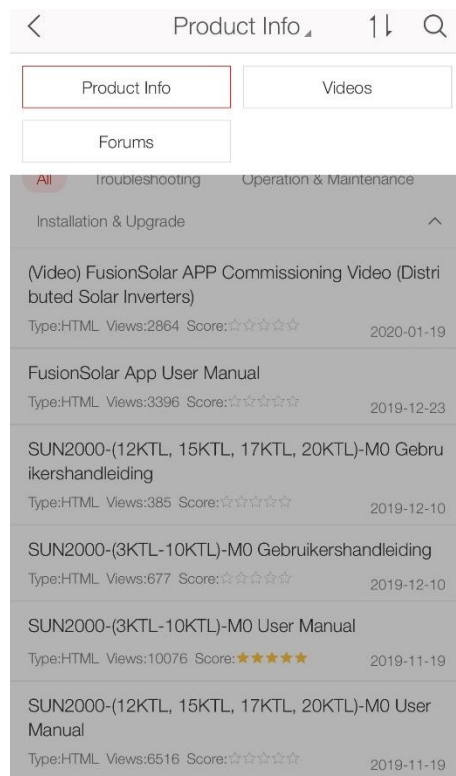
Method 1: Scan the QR code.



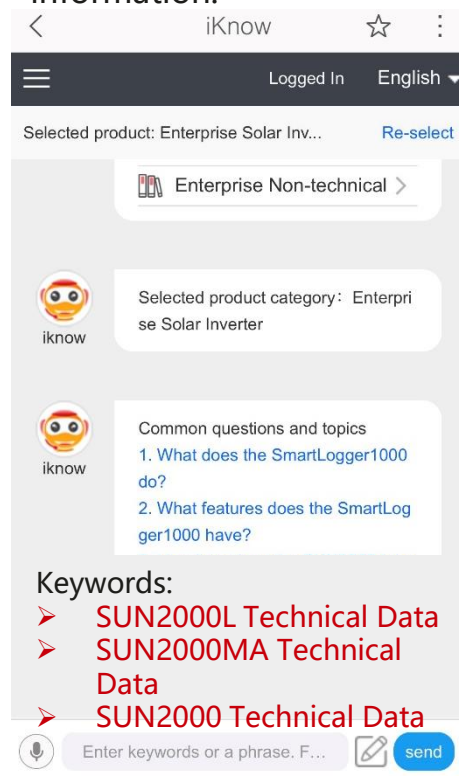
Method 2: Search for **Enterprise Support** on the following platforms:

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

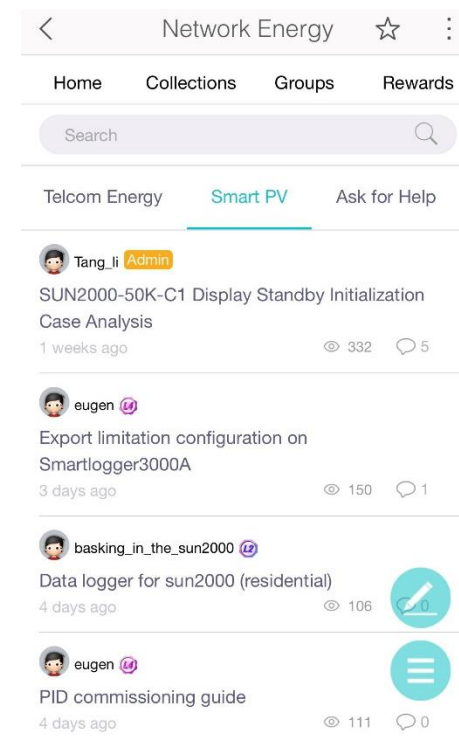
2. Choose **Products > Network Energy > FusionSolar PV > SUN2000/SUN2000MA/... > Product Info** to obtain the required documents.



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



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

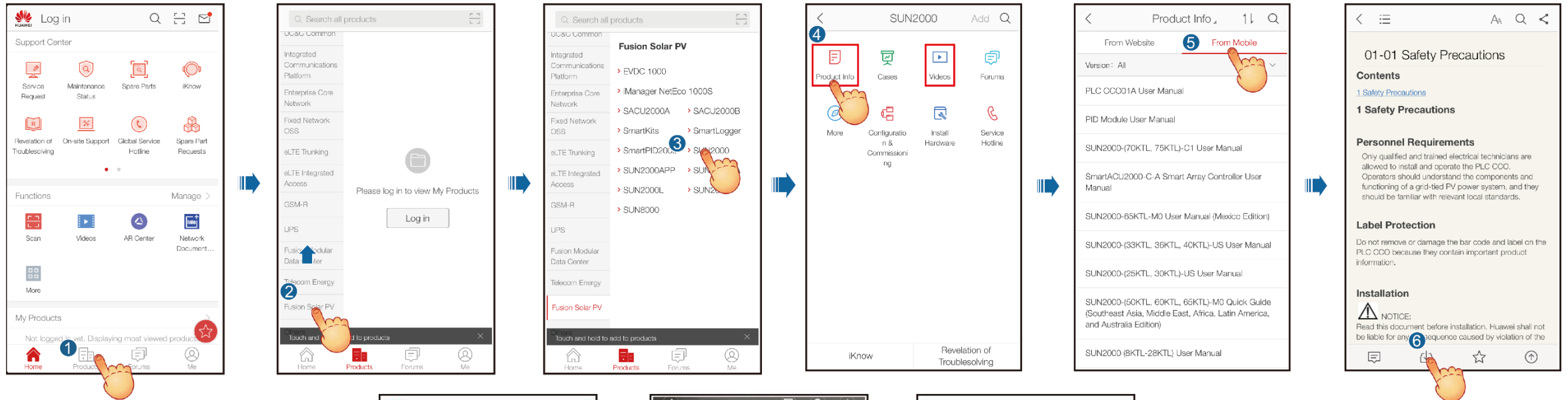


Web link for iKnow: <https://support.huawei.com/iknow/?source=SupportE>

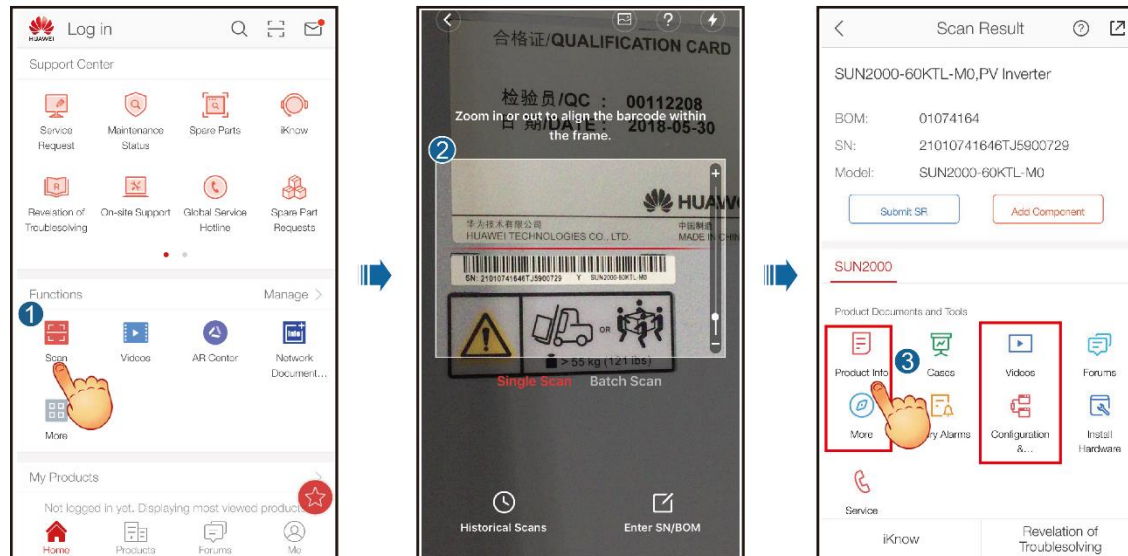
Web link for the forum: <https://forum.huawei.com/enterprise/en/Network-Energy/forum/100027?typeid=2313>

HiKnow App – How to Obtain Documents

Method 1: Tap **Fusion Solar PV**, select a product, and query documents.



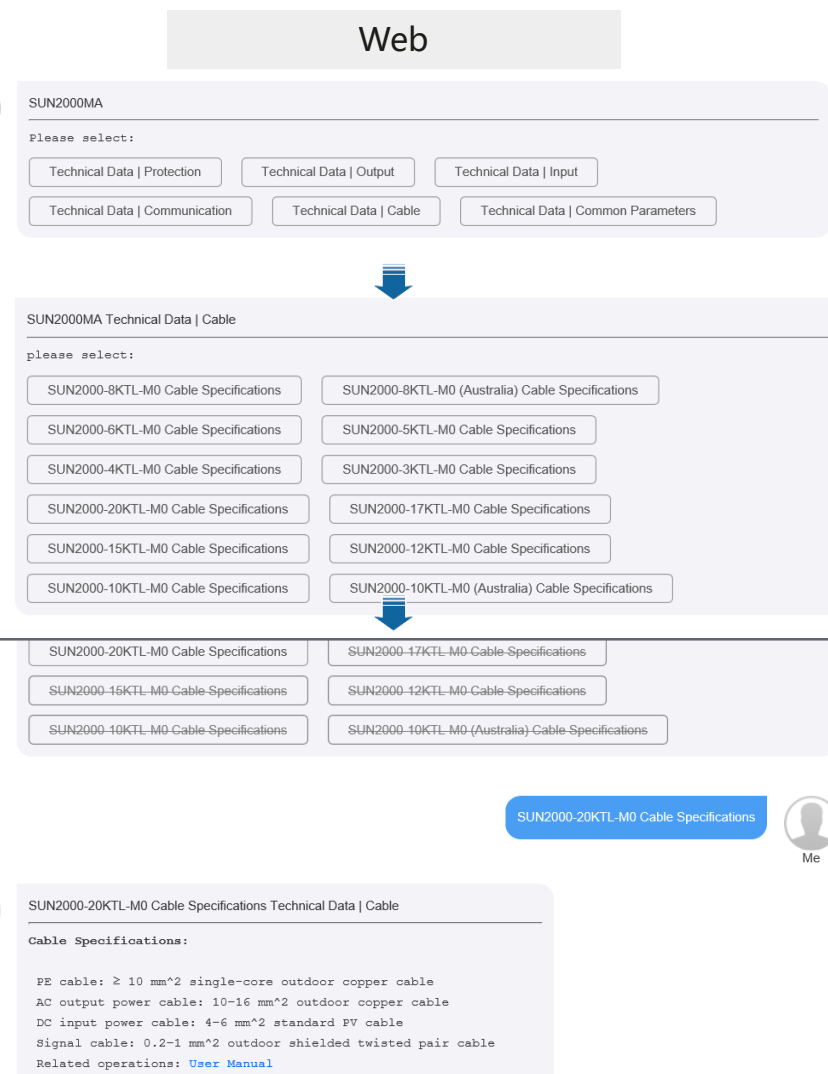
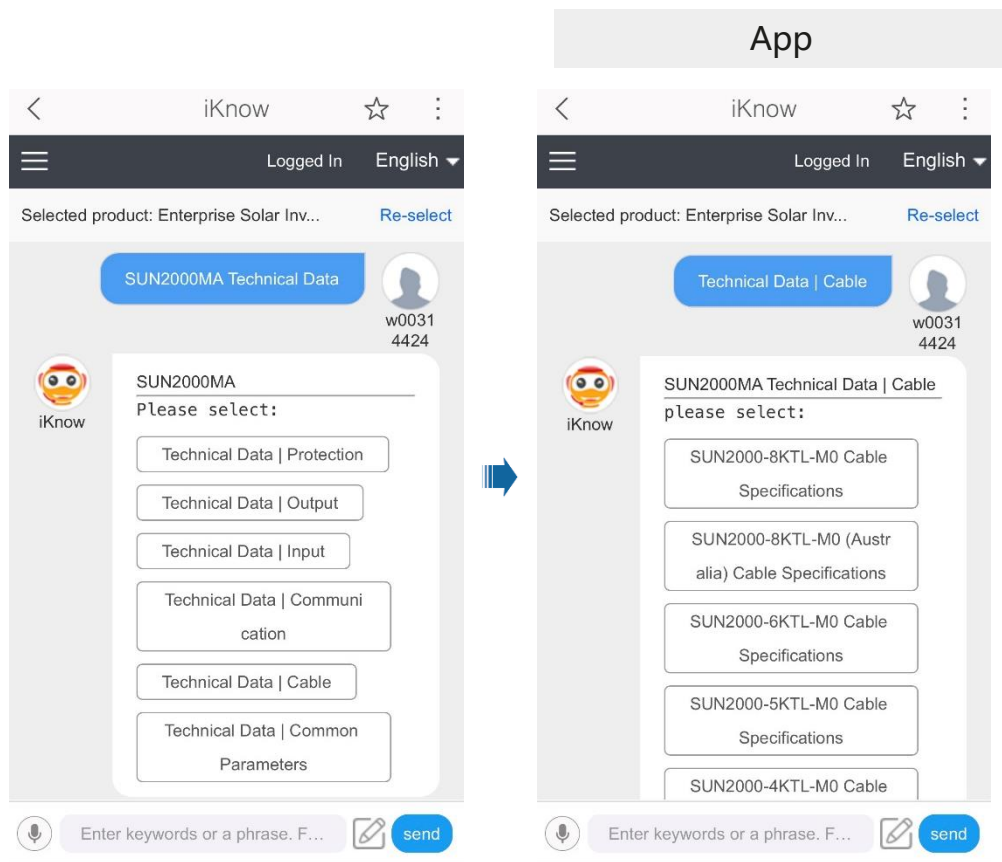
Method 2: Scan the SN.



HiKnow App – How to Use iKnow

Keywords:

- SUN2000L Technical Data
- SUN2000MA Technical Data
- SUN2000 Technical Data



Thank you.

Bring digital to every person, home, and organization for a fully connected, intelligent world.

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