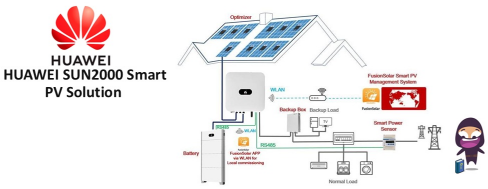
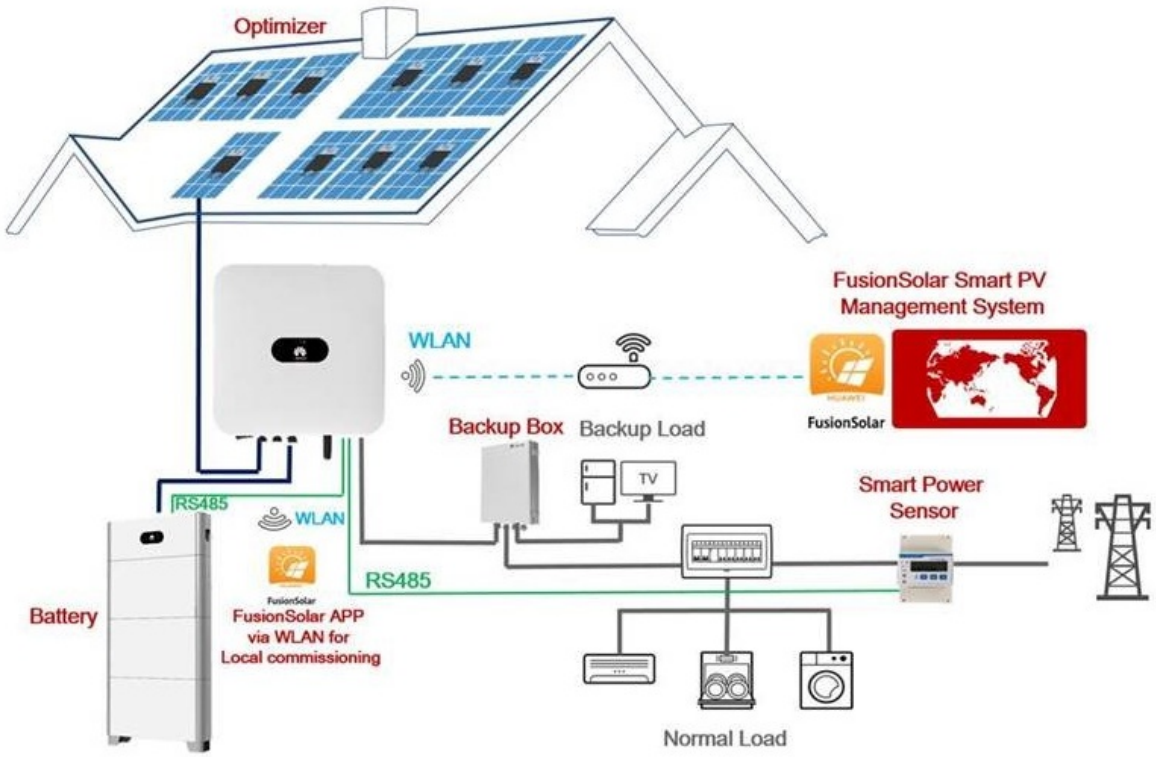


HUAWEI SUN2000 Smart PV Solution Owner's Manual

Contents

HUAWEI

HUAWEI SUN2000 Smart PV Solution



Product Information

Specifications

- **Component:** Inverter (master and slave)
- **Model:** SUN2000-(2KTL-6KTL) -L1, SUN2000-(8K, 10K)-LC0, SUN2000-(8K, 10K)-LC0-ZH
- **Energy storage system (ESS):** LUNA2000-(5-30)-S0, LUNA2000-(7, 14, 21)-S1
- **Backup Box:** Backup Box-B0
- **Smart Power Sensor:** Single-Phase: DDSU666-H YDS70-C16 DDSU71 DDSU1079-CT, Three-Phase: DTSU666-H DTSU666-HW YDS60-80 DTSU71 DHSU1079-CT
- **Smart Dongle:** SDongleA-03(4G), SDongleB-06(4G), SDongleA-05(WLAN-FE)
- **Smart PV Optimizer:** SUN2000-450W-P2, SUN2000-600W-P

Product Usage Instructions

Networking

Ensure proper networking setup according to the Smart Dongle Networking scenario. A maximum of three inverters and six ESSs can be connected in this configuration.

Cable Connections (Single-Phase Inverter L1 + ESS S0 + Backup Box B0)

- Before connecting cables, ensure all switches are OFF to prevent electric shocks.
- Use outdoor shielded twisted pair cables for signal cables.
- Ensure the wiring sequence of the Backup Box matches that of the inverter AC terminals.
- Connect other cables to slave inverters based on the connection method for the master inverter.

Component Connections

- Follow the cable connections as specified in the user manual for each component.
- Ensure correct polarity and secure connections for all cables.

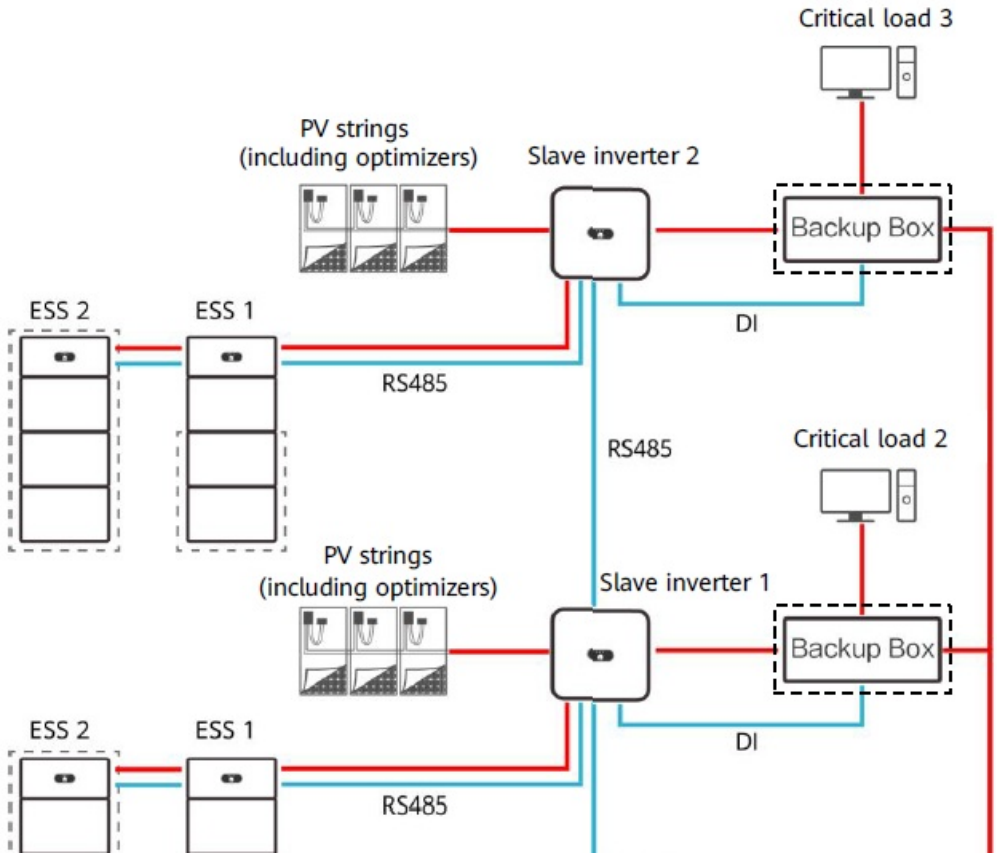
FAQ

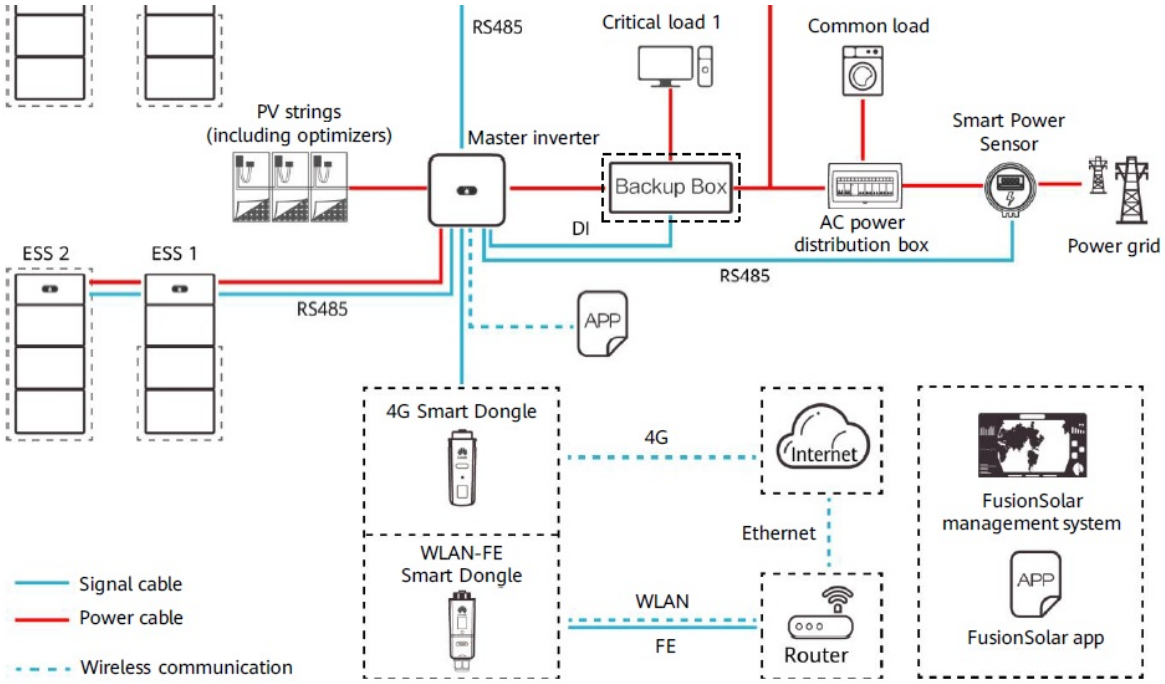
- **Q: Can I connect the ESS LUNA2000-(7, 14, 21)-S1 to different inverters?**
  - A: No, the ESS LUNA2000-(7, 14, 21)-S1 cannot connect to different inverters. It should be connected to the specified Backup Box.
- **Q: How many inverters and ESSs can be connected in the Smart Dongle networking scenario?**
  - A: In the Smart Dongle networking scenario, a maximum of three inverters and six ESSs can be connected.
- **Q: What type of cables should be used for signal connections?**
  - A: Signal cables must be outdoor shielded twisted pair cables for proper connectivity and signal transmission.

Residential Smart PV Solution Quick Guide
(Single-Phase PV+ESS Scenario + Smart Dongle Networking)

Issue: 06
Date: 2024-07-15

Networking

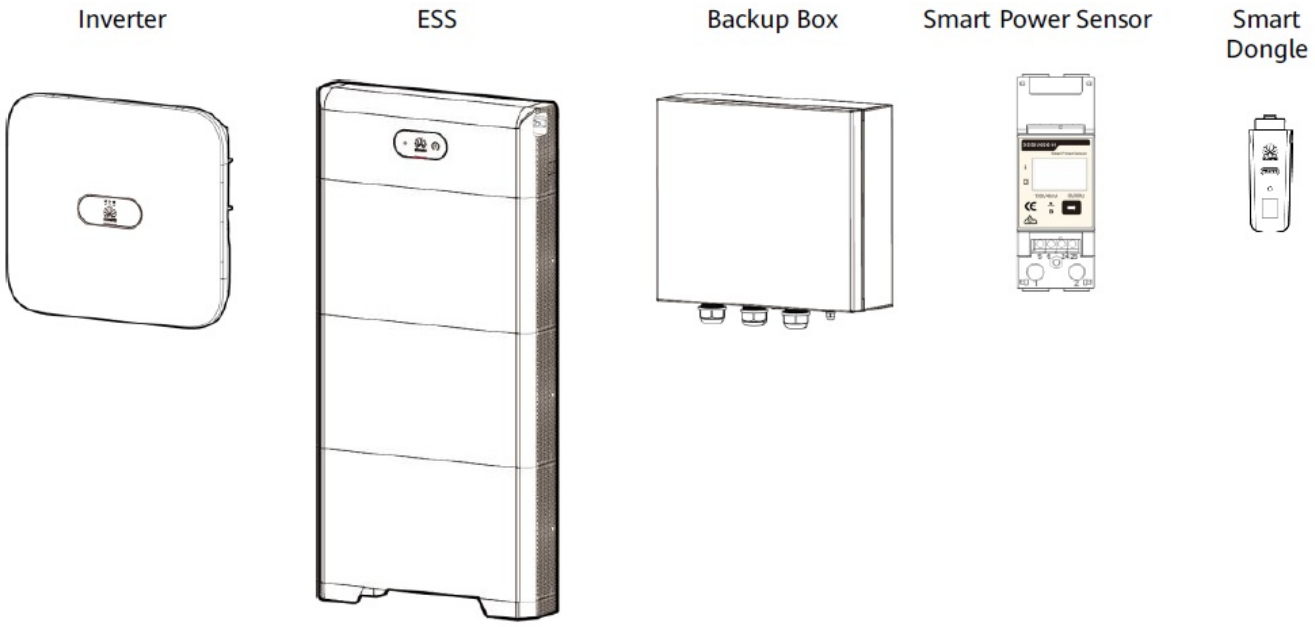




Note

1. The information in this document is subject to change without notice. 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. For details about the solution components, installation, and cable connections, see the corresponding user manuals and quick guides.
3. The cable colors involved in this document are for reference only. Select cables in accordance with local cable specifications.

Product Overview



Component	Model		Description
Inverter (master and slave)	SUN2000-(2KTL-6KTL) -L1 SUN2000-(8K, 10K)-LC0 SUN2000-(8K, 10K)-LC0-ZH		• A maximum of three inverters can be cascaded. • L1/LC0 inverters can be cascaded.
Energy storage system (ESS)	LUNA2000-(5-30)-S0 LUNA2000-(7, 14, 21)-S1		• If there is only one ESS, it must be connected to the master inverter. • Each inverter can connect to a maximum of two ESSs, each L1 can connect to a maximum of one ESS. • The LUNA2000-(5-30)-S0 and LUNA2000-(7, 14, 21)-S1 cannot connect to the same inverter in a parallel system. • If inverters are cascaded, the LUNA2000-(5-30)-S0 and LUNA2000-(7, 14, 21)-S1 cannot connect to different inverters.
Backup Box	Backup Box-B0		• AC input voltage range: 198–253 V • If there is only one Backup Box, it must be connected to the master inverter. • The SUN2000-(8K, 10K)-LC0, SUN2000-(8K, 10K)-LC0-ZH cannot be connected to the Backup Box.
Smart Power Sensor	**Single-Phase:** DDSU666-H YDS70-C16 DDSU71 DDSU1079-CT	**Three-Phase:** DTSU666-H DTSU666-HW YDS60-80 DTSU71 DHSU1079-CT	• The Smart Power Sensor must be connected to the master inverter. • It connects to the inverter over RS485 for output power management and power limiting. • Only L1 supports the three-phase smart power sensor.
Smart Dongle	SDongleA-03(4G) SDongleB-06(4G) SDongleA-05(WLAN-FE)		• The Smart Dongle must be connected to the master inverter. • It connects to the management system and performs power scheduling. • The SDongleA-03 (4G) is compatible only with the SUN2000-(2KTL- 6KTL)-L1.
Optimizer	SUN2000-450W-P2 SUN2000-600W-P		For details about the optimizer supported by the inverter, see SUN2000 Smart PV Optimizer User Manual

Note:

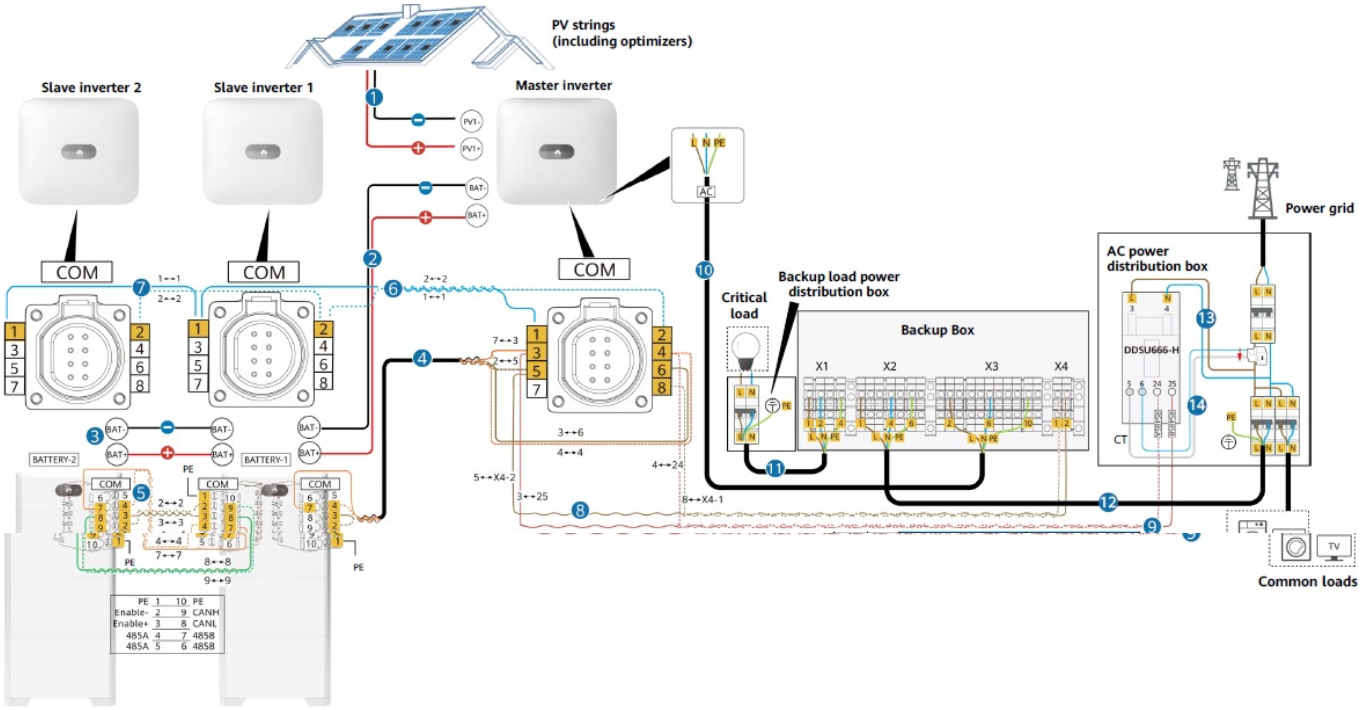
In the Smart Dongle networking scenario, a maximum of three inverters and six ESSs can be connected.

Cable Connections (Single-Phase Inverter L1 + ESS S0 + Backup Box B0)

Danger
Before connecting cables, ensure that all switches are OFF. Otherwise, electric shocks may occur.

Note
Signal cables must be outdoor shielded twisted pair cables.

Note
The wiring sequence of the Backup Box must be consistent with that of the inverter AC terminals.



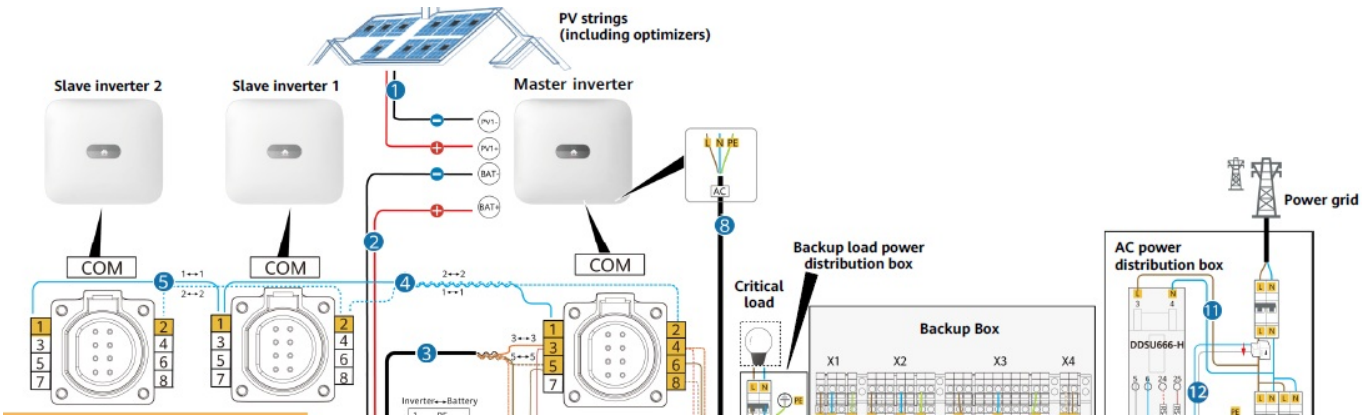
Note
Connect other cables to slave inverters by referring to the connection method for the master inverter.

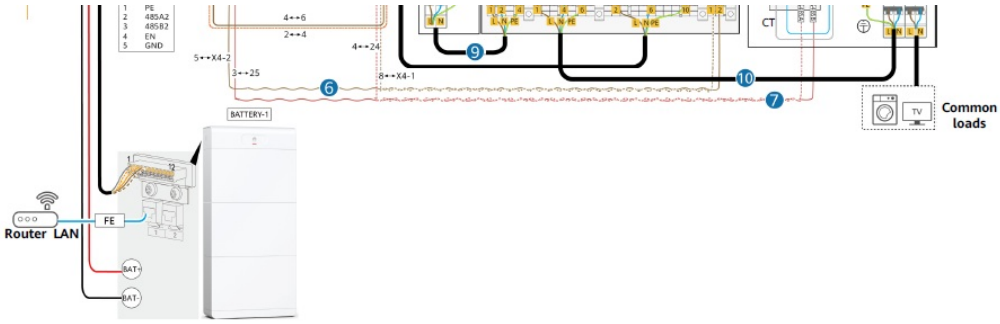
Cable Type	No.	One End		The Other End	
		Component	**Port**	**Port**	**Component**
DC power cable	**1**	Master inverter	PV1+	Positive terminal	PV strings
			PV1-	Negative terminal	
	2	Master inverter	BAT+	BAT+	ESS 1
			BAT-	BAT-	
	3	ESS1	BAT+	BAT+	ESS 2
			BAT-	BAT-	
Signal cable	**4**	Master inverter	COM-3	COM-7 (right)	ESS 1
			COM-4	COM-4 (right)	
			COM-5	COM-2 (right)	
			COM-6	COM-3 (right)	
	5	ESS 1	COM-2 (left)	COM-2 (right)	ESS 2
			COM-3 (left)	COM-3 (right)	
			COM-4 (left)	COM-4 (right)	
			COM-7 (left)	COM-7 (right)	
			COM-8 (left)	COM-8 (right)	
			COM-9 (left)	COM-9 (right)	
	6	Master inverter	COM-1	COM-1	Slave inverter 1
			COM-2	COM-2	
	7	Slave inverter 1	COM-1	COM-1	Slave inverter 2
			COM-2	COM-2	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
Signal cable	8	Master inverter	COM-8	X4-1	Backup Box
			COM-5	X4-2	
	9	Master inverter	COM-3	25	DDSU666-H
			COM-4	24	
AC power cable	10	Master inverter	AC-L	X3-2 (L)	Backup Box
			AC-N	X3-6 (N)	
			AC-PE	X3-10 (PE)	
	11	Backup load power distribution box	L	X1-1	Backup Box
			N	X1-2	
			PE	X1-4	
	12	AC power distribution box	L	X2-1	Backup Box
			N	X2-4	
			PE	X2-6	
	13	AC power distribution box	L	3	DDSU666-H
			N	4	
	14	AC power distribution box	L	5	DDSU666-H CT
				6	

Cable Connections (Single-Phase Inverter L1 + ESS S1 + Backup Box B0)

Note
The wiring sequence of the Backup Box must be consistent with that of the inverter AC terminals.





Danger
Before connecting cables, ensure that all switches are OFF. Otherwise, electric shocks may occur.

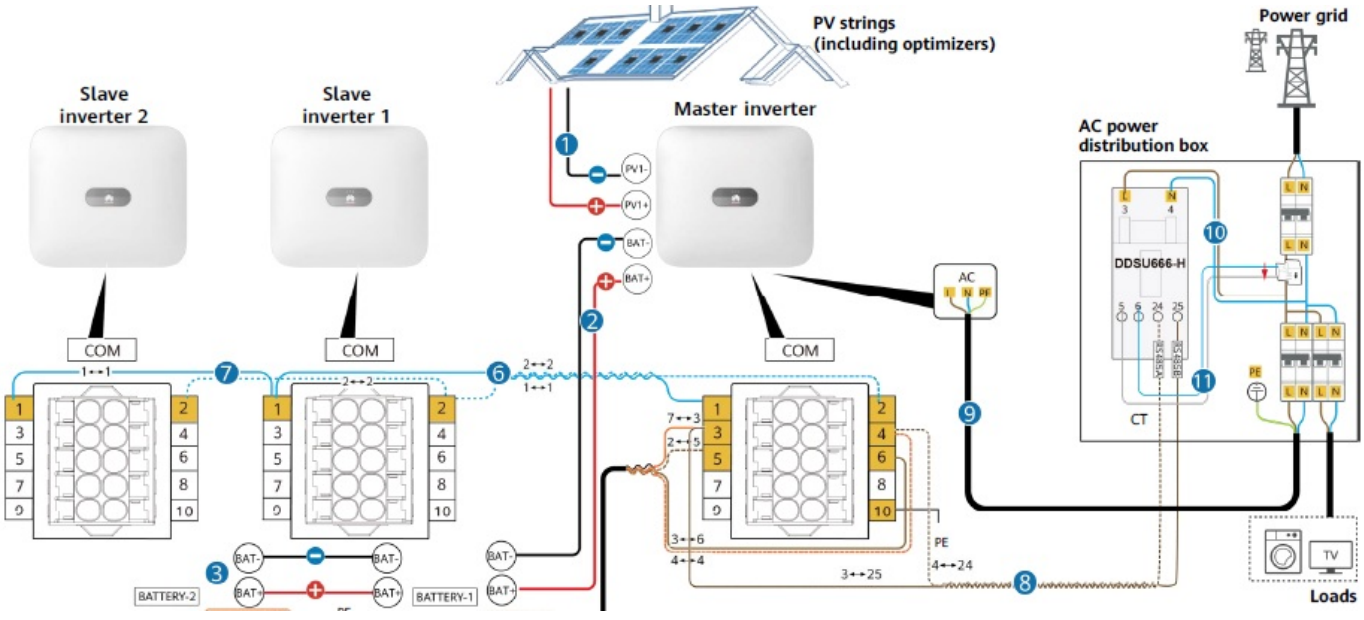
Note
Signal cables must be outdoor shielded twisted pair cables.

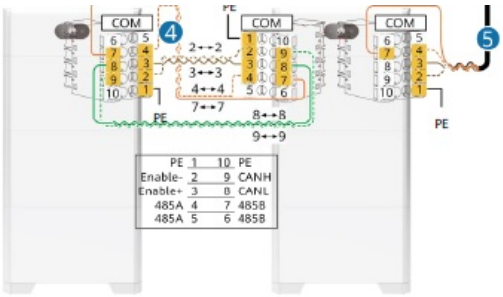
Note
Connect other cables to slave inverters by referring to the connection method for the master inverter.

Cable Type	No.	One End		The Other End	
		Component	**Port**	**Port**	**Component**
DC power cable	**1**	Master inverter	PV1+	Positive terminal	PV strings
			PV1-	Negative terminal	
	2	Master inverter	BAT+	BAT+	ESS
			BAT-	BAT-	
Signal cable	**3**	Master inverter	COM-3	COM-3	ESS
			COM-4	COM-2	
			COM-5	COM-5	
			COM-6	COM-4	
	4	Master inverter	COM-1	COM-1	Slave inverter 1
			COM-2	COM-2	
	5	Slave inverter 1	COM-1	COM-1	Slave inverter 2
			COM-2	COM-2	
	6	Master inverter	COM-8	X4-1	Backup Box
			COM-5	X4-2	
	7	Master inverter	COM-3	25	DDSU666-H
			COM-4	24	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
AC power cable	8	Master inverter	AC-L	X3-2 (L)	Backup Box
			AC-N	X3-6 (N)	
			AC-PE	X3-10 (PE)	
	9	Backup load power distribution box	L	X1-1	Backup Box
			N	X1-2	
			PE	X1-4	
	10	AC power distribution box	L	X2-1	Backup Box
			N	X2-4	
			PE	X2-6	
	11	AC power distribution box	L	3	DDSU666-H
			N	4	
	12	AC power distribution box	L	5	DDSU666-H CT
				6	

Cable Connections (Single-Phase Inverter LC0 + ESS S0)





Danger
Before connecting cables, ensure that all switches are OFF. Otherwise, electric shocks may occur.

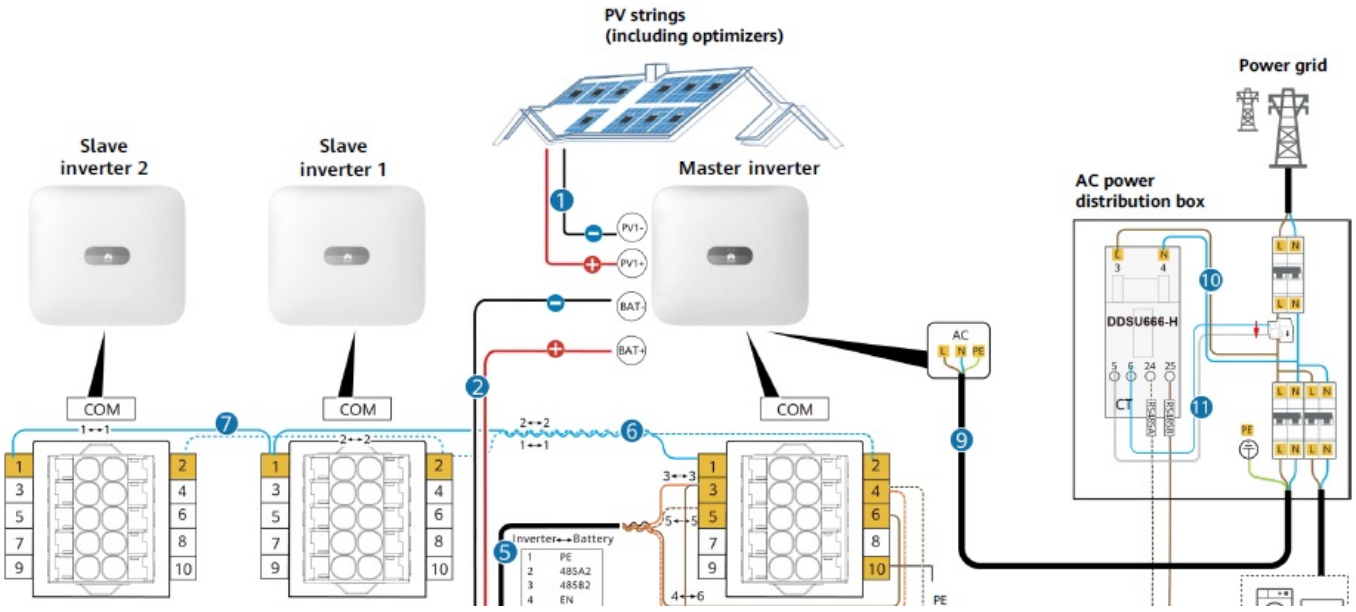
Note
Signal cables must be outdoor shielded twisted pair cables.

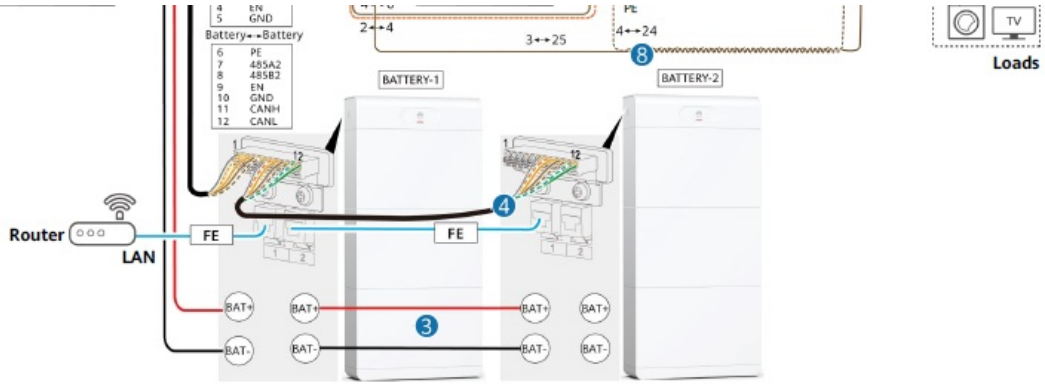
Note
Connect other cables to slave inverters by referring to the connection method for the master inverter.

Cable Type	No.	One End		The Other End	
		Component	**Port**	**Port**	**Component**
DC power cable	1	Master inverter	PV1+	Positive terminal	PV strings
			PV1-	Negative terminal	
	2	Master inverter	BAT+	BAT+	ESS 1
			BAT-	BAT-	
	3	ESS 1	BAT+	BAT+	ESS 2
			BAT-	BAT-	
Signal cable	4	ESS 1	COM-2 (left)	COM-2 (right)	ESS 2
			COM-3 (left)	COM-3 (right)	
			COM-4 (left)	COM-4 (right)	
			COM-7 (left)	COM-7 (right)	
			COM-8 (left)	COM-8 (right)	
			COM-9 (left)	COM-9 (right)	
	5	Master inverter	COM-3	COM-7 (right)	ESS 1
			COM-4	COM-4 (right)	
			COM-5	COM-2 (right)	
			COM-6	COM-3 (right)	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
Signal cable	6	Slave inverter 1	COM-1	COM-1	Slave inverter 2
			COM-2	COM-2	
	7	Master inverter	COM-1	COM-1	Slave inverter 1
			COM-2	COM-2	
	8	Master inverter	COM-3	25	DDSU666-H
			COM-4	24	
Cable Type	**No.**	**One End**		**The Other End**	
		Component	**Port**	**Port**	**Component**
AC power cable	9	Master inverter	AC-L	L	AC power Power distribution box
			AC-N	N	
			AC-PE	PE	
	10	AC power distribution box	L	3	DDSU666-H
			N	4	
	11	AC power distribution box	L	5	DDSU666-H CT
				6	

Cable Connections (Single-Phase Inverter LC0 + ESS S1)





Danger
Before connecting cables, ensure that all switches are OFF. Otherwise, electric shocks may occur.

Note
Signal cables must be outdoor shielded twisted pair cables.

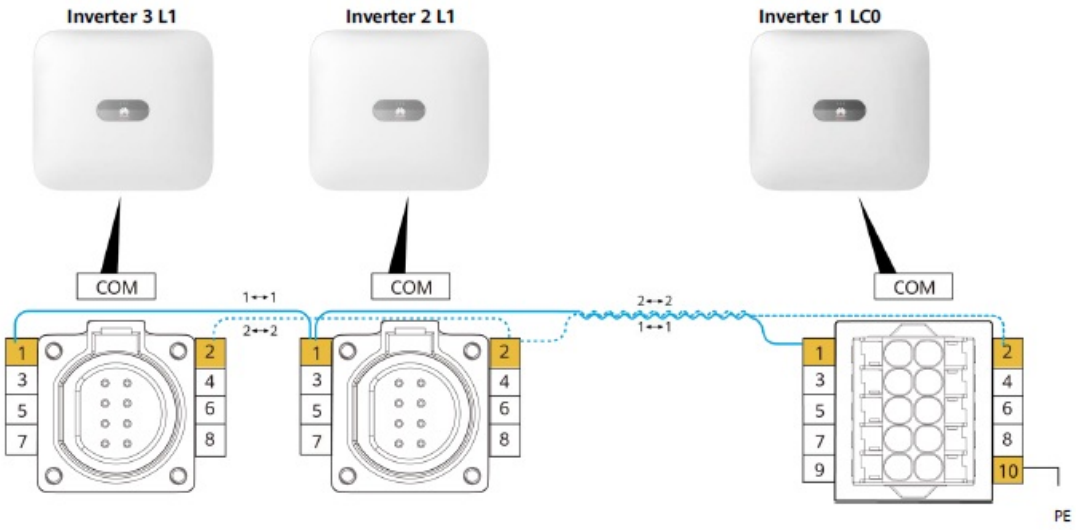
Cable Type	No.	One End		The Other End	
		Component	**Port**	**Port**	**Component**
DC power cable	**1**	Master inverter	PV1+	Positive terminal	PV strings
			PV1-	Negative terminal	
	2	Master inverter	BAT+	BAT+	ESS 1
			BAT-	BAT-	
	3	ESS 1	BAT+	BAT+	ESS 2
			BAT-	BAT-	
Signal cable	**4**	ESS 1	COM-7	COM-7	ESS 2
			COM-8	COM-8	
			COM-9	COM-9	
			COM-10	COM-10	
			COM-11	COM-11	
			COM-12	COM-12	
	5	Master inverter	COM-3	COM-3	ESS 1
			COM-4	COM-2	
			COM-5	COM-5	
			COM-6	COM-4	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
Signal cable	6	Slave inverter 1	COM-1	COM-1	Slave inverter 2
			COM-2	COM-2	
	7	Master inverter	COM-1	COM-1	Slave inverter 1
			COM-2	COM-2	
	8	Master inverter	COM-3	25	DDSU666-H
			COM-4	24	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
AC power cable	9	Master inverter	AC-L	L	AC power Power distribution box
			AC-N	N	
			AC-PE	PE	
	10	AC power distribution box	L	3	DDSU666-H
			N	4	
	11	AC power distribution box	L	5	DDSU666-H CT
				6	

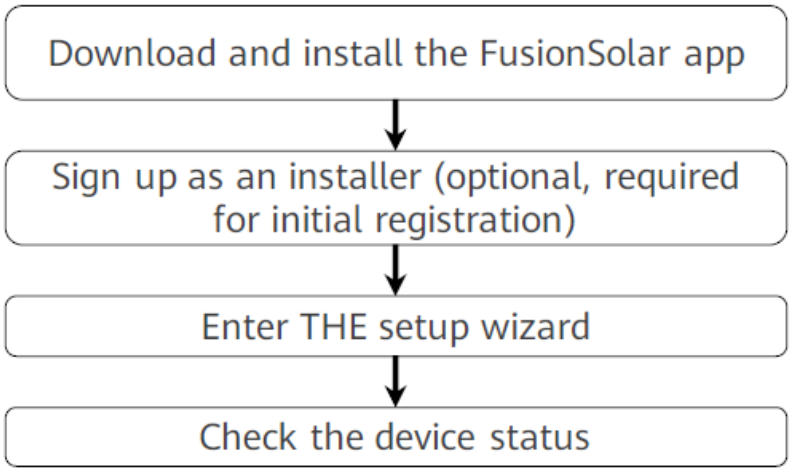
Cable Connections (Single-Phase Inverter LC0/L1 Cascading)

Note
The following figure shows the signal cable cascading of LC0/L1 single-phase inverters. For the complete networking wiring diagram, refer to the preceding cable connection diagrams.



System Commissioning

App-based Deployment Procedure



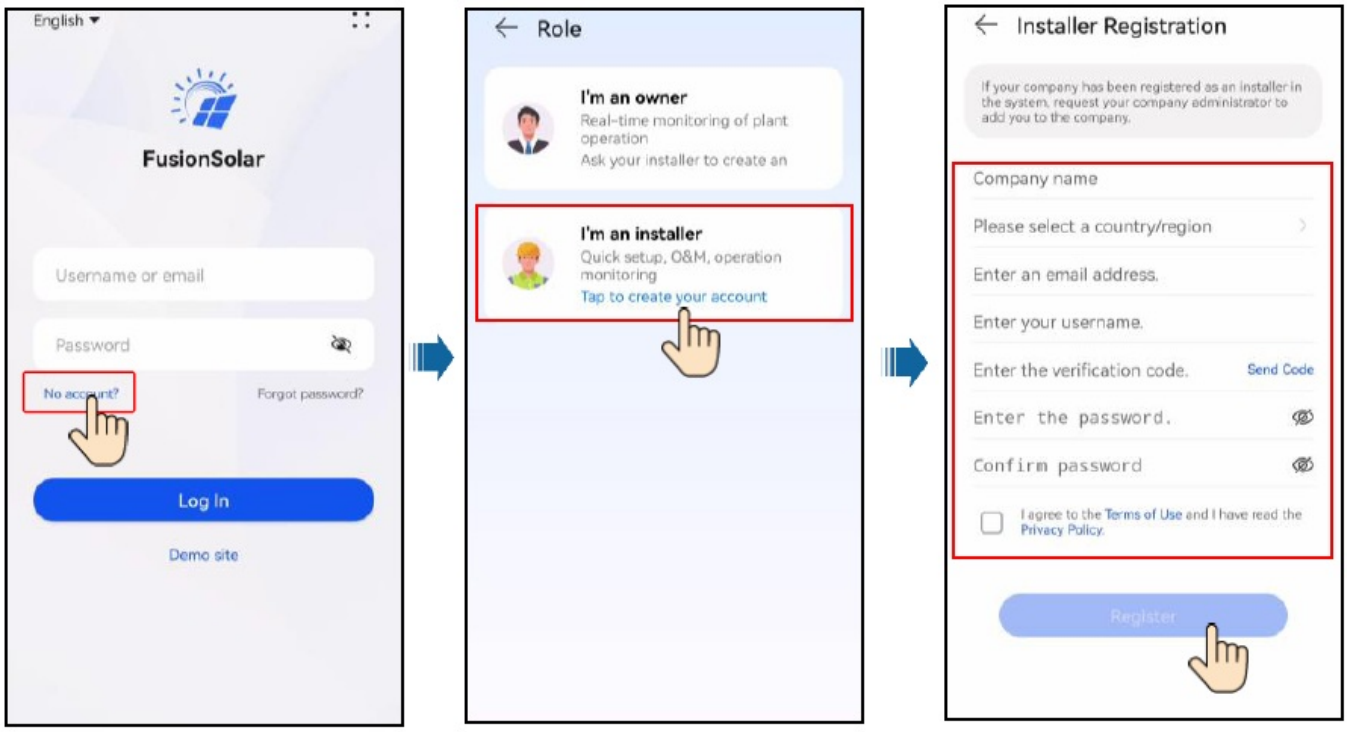
Downloading and Installing the FusionSolar App

- Search for FusionSolar in the app store to download the app.
- Scan the QR code below to download the app.

FusionSolar

Installer Registration

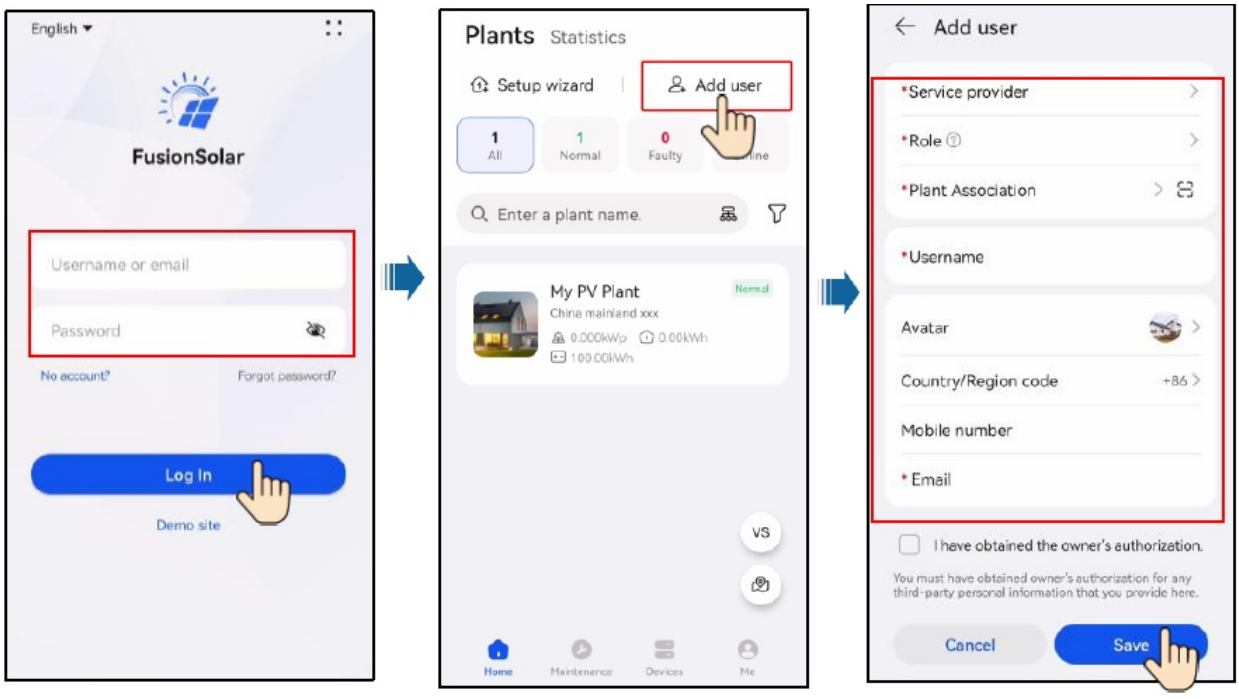
Initial registration
Create the first installer account, and generate a domain named after the company.



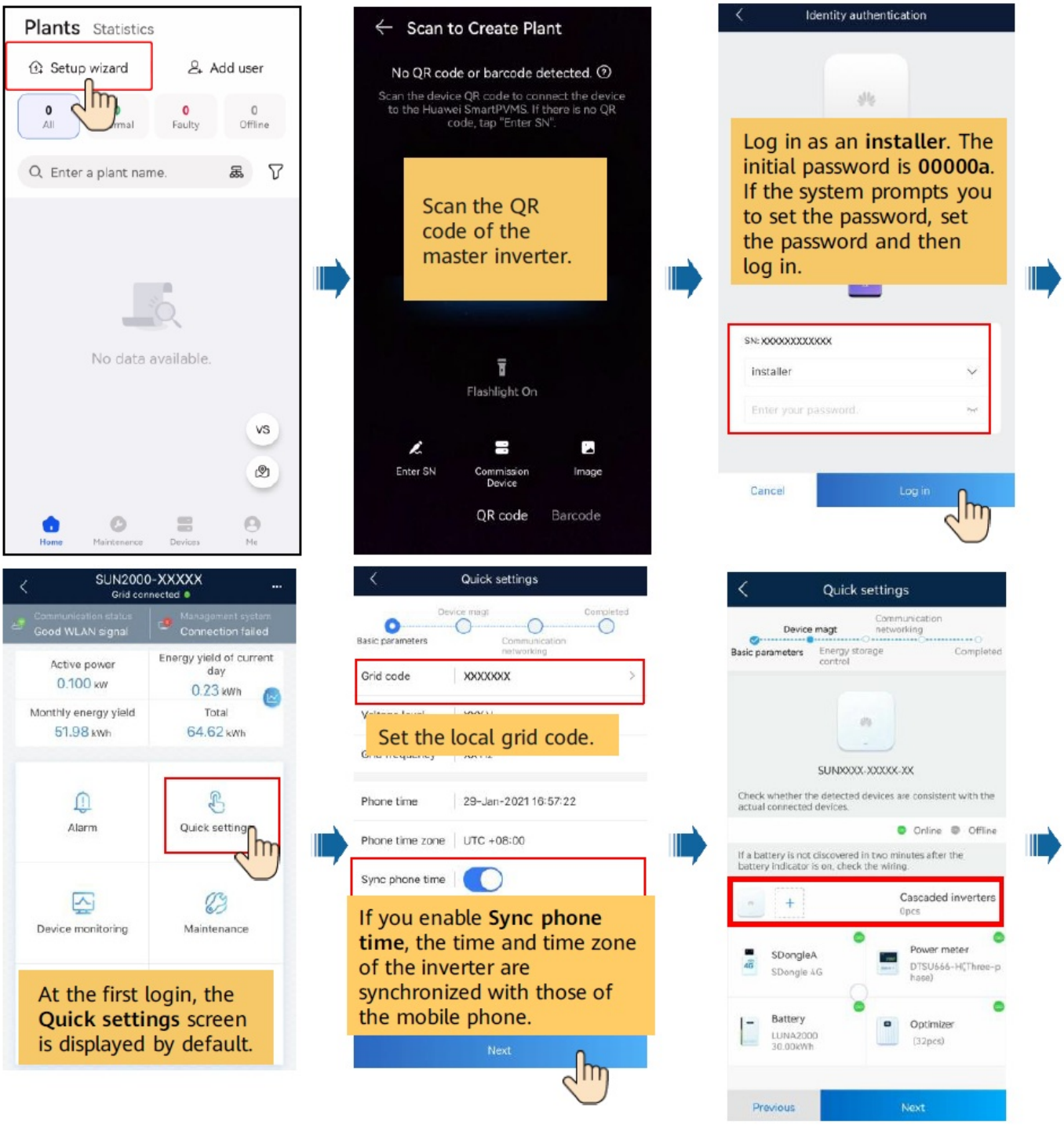
Non-initial registration

If the company requires multiple installer accounts, log in to the FusionSolar app and tap Add user to create another installer account.

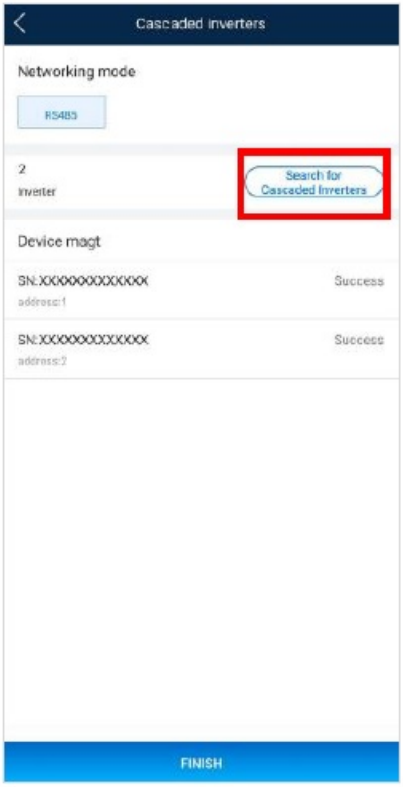
Or

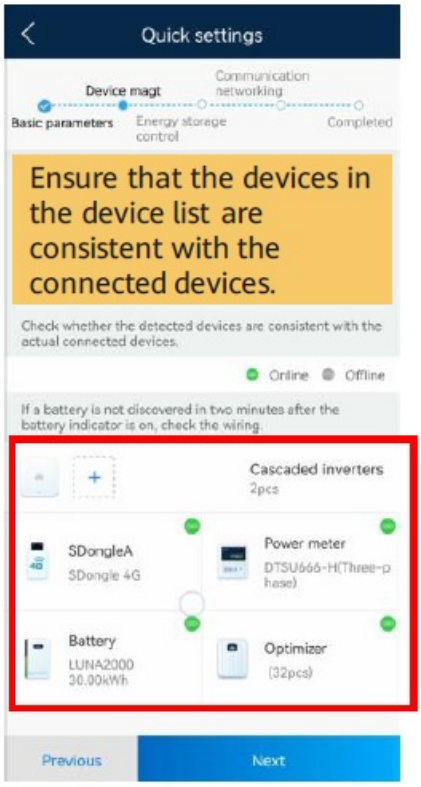


Setup Wizard (Connecting to the Inverter WLAN for Commissioning)

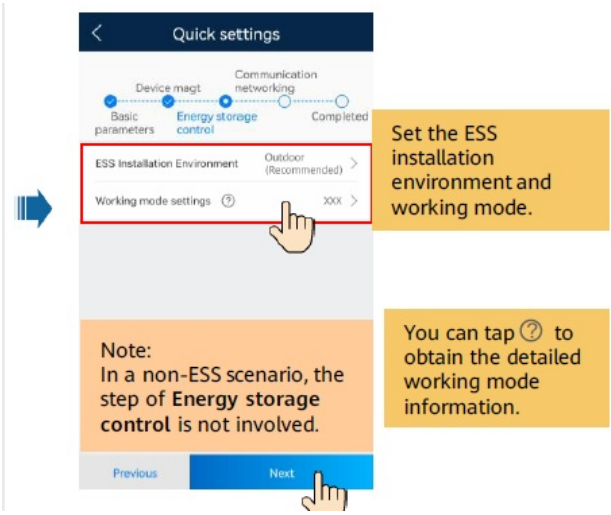


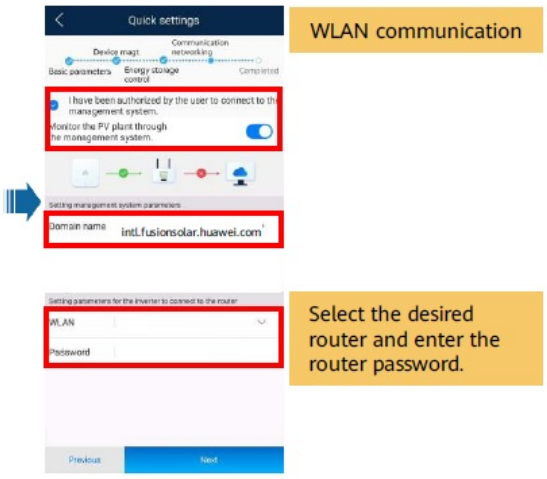
(Optional) Cascade inverters.



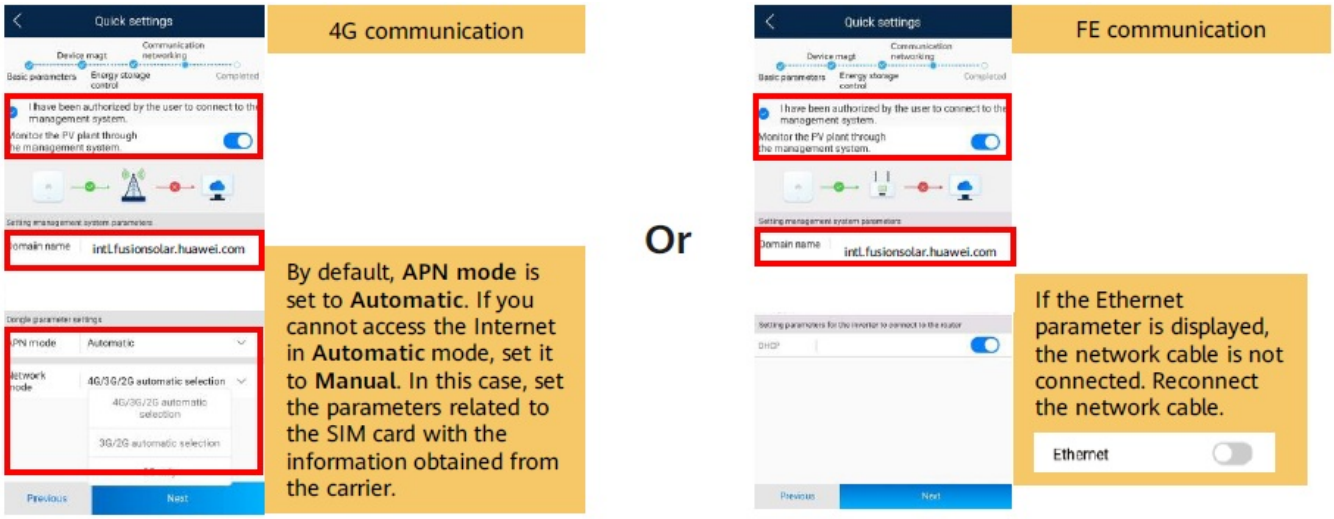


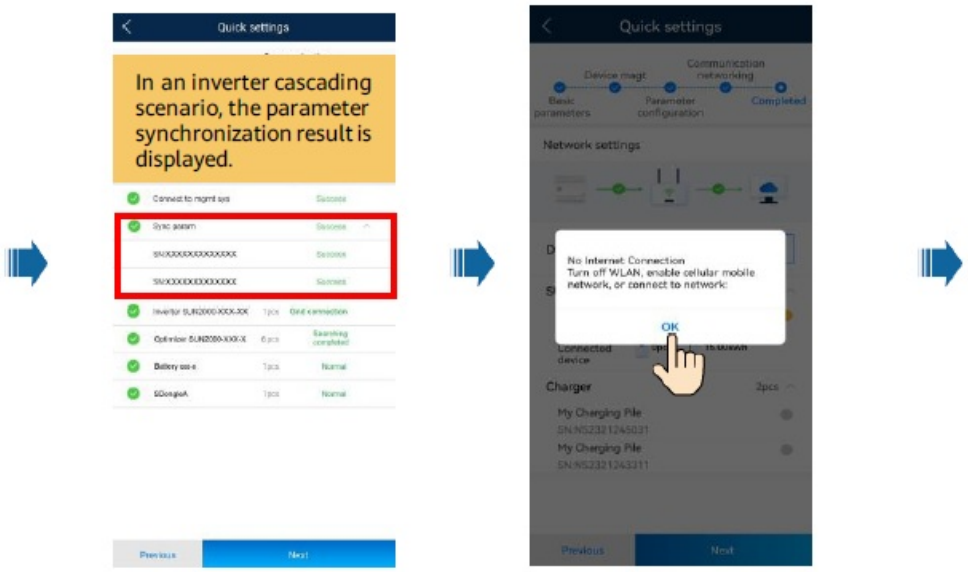
Set the ESS parameters.



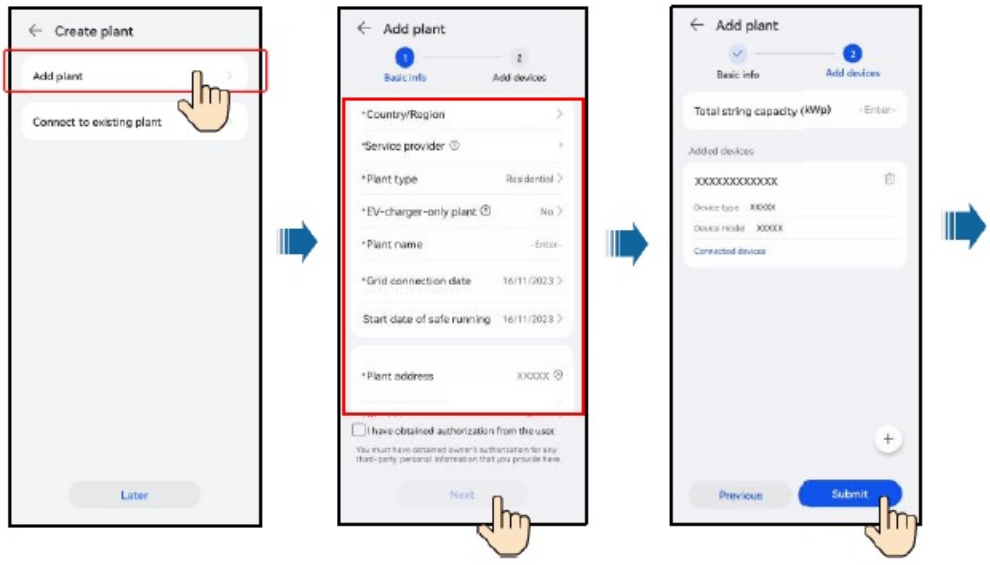


Set the communication networking.

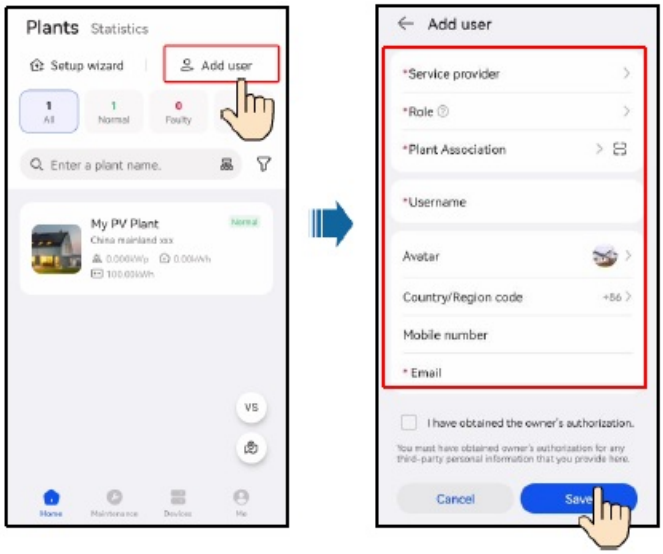




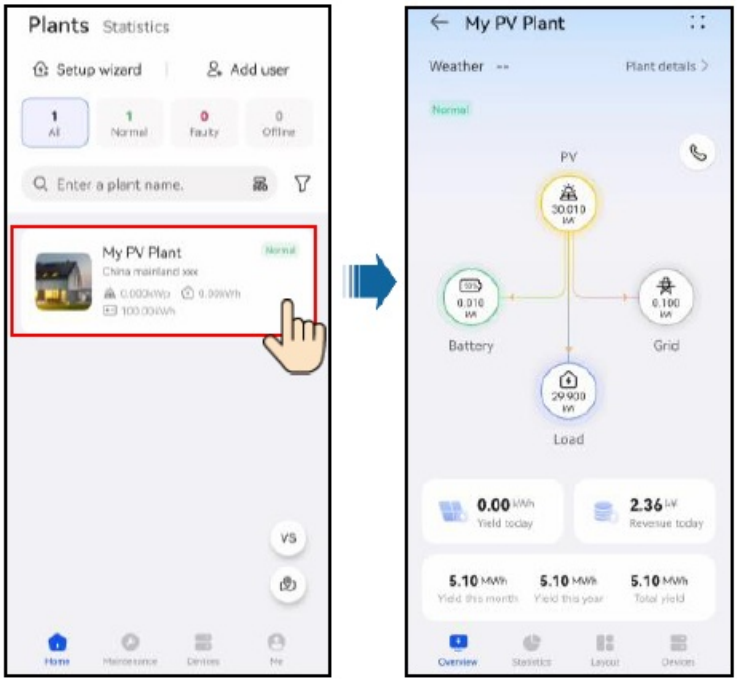
Add a plant



Checking the Plant Status

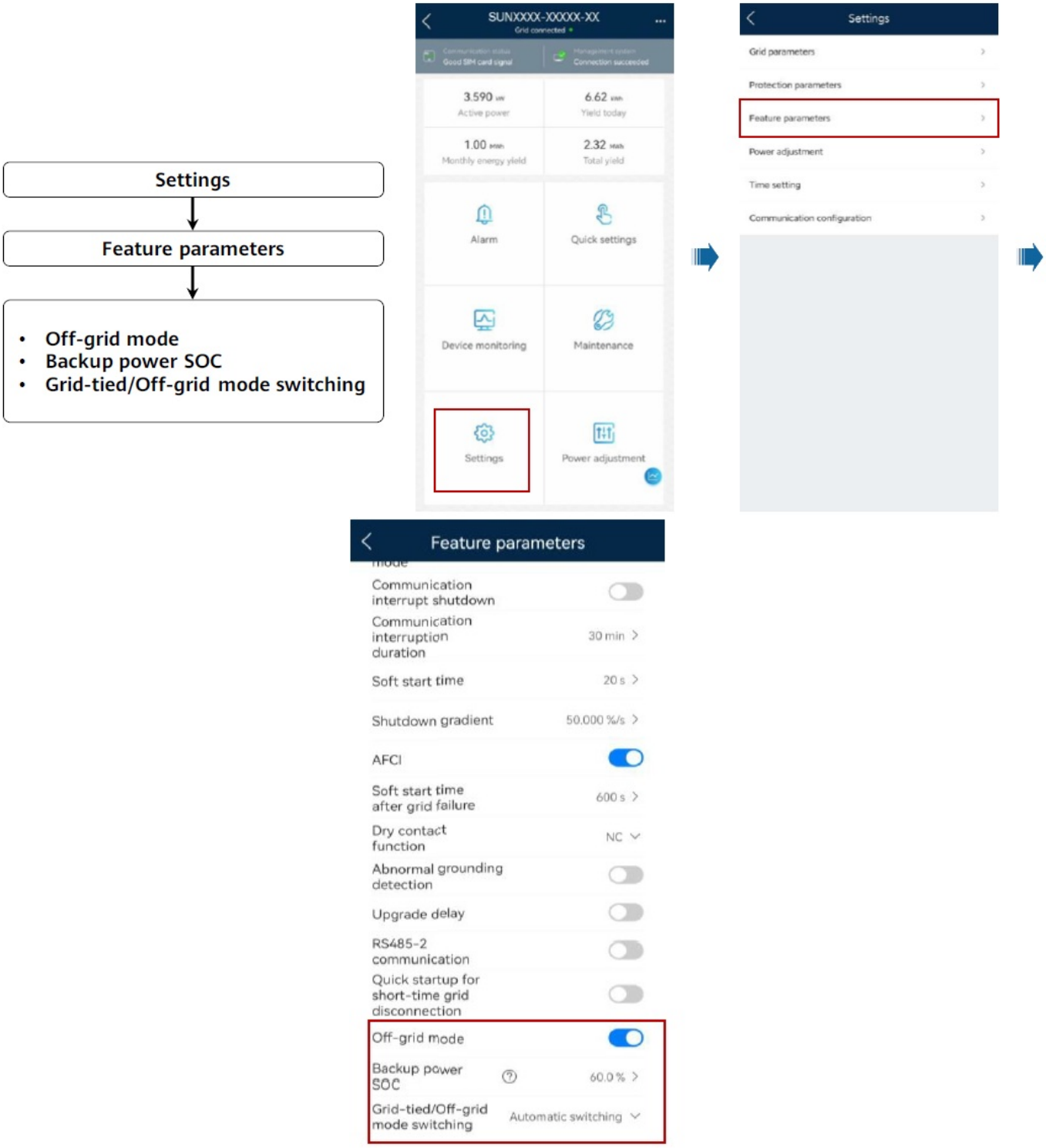


Checking the Plant Status

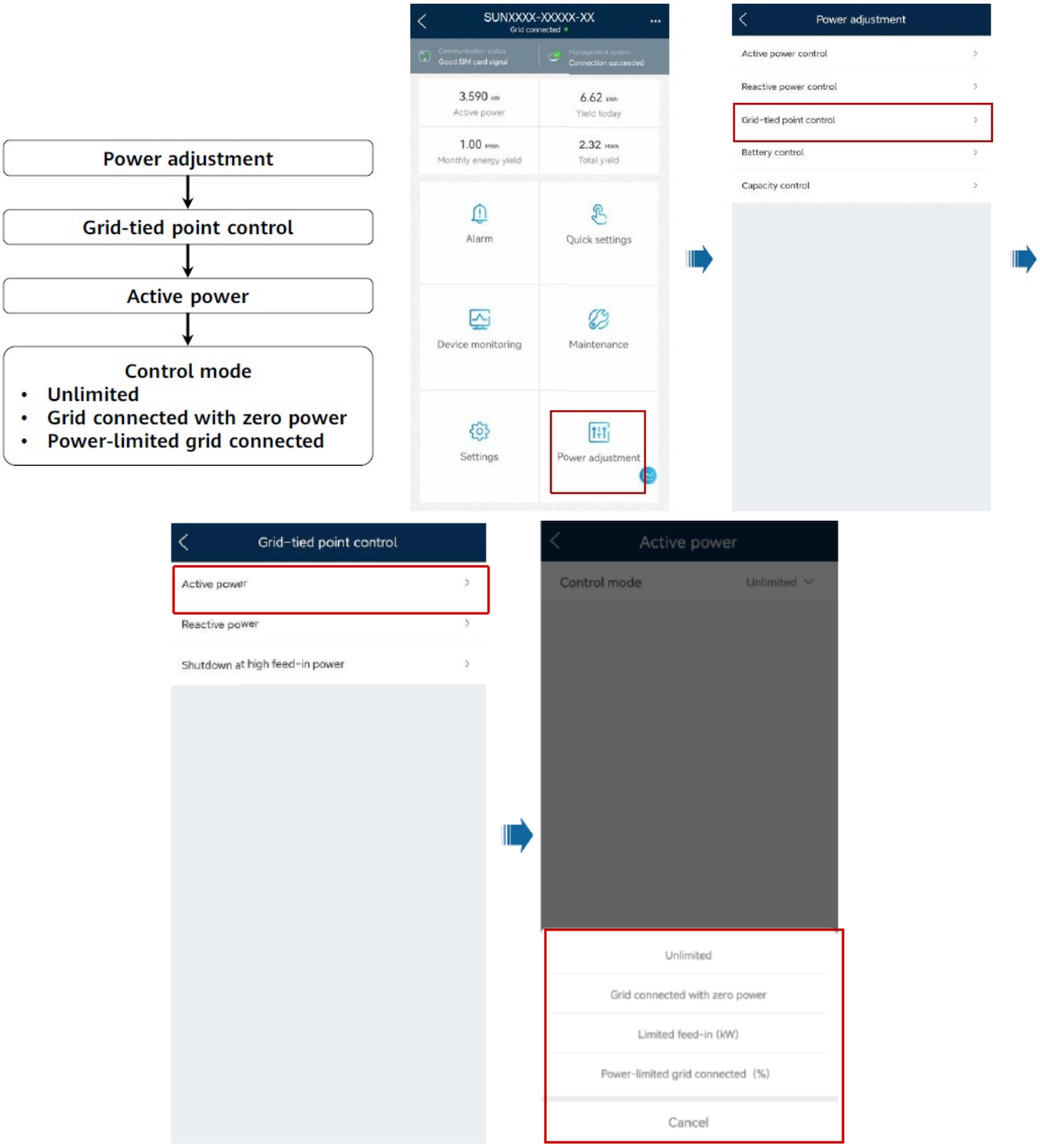


Off-Grid/Grid-tied Control Parameters

Enabling Off-Grid Mode



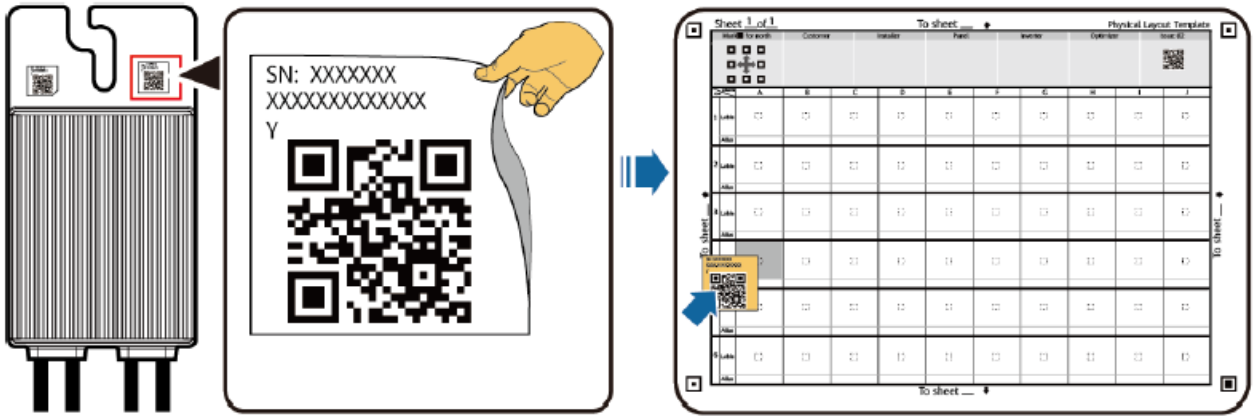
Setting Grid-tied Point Control



Physical Layout of Smart PV Optimizers

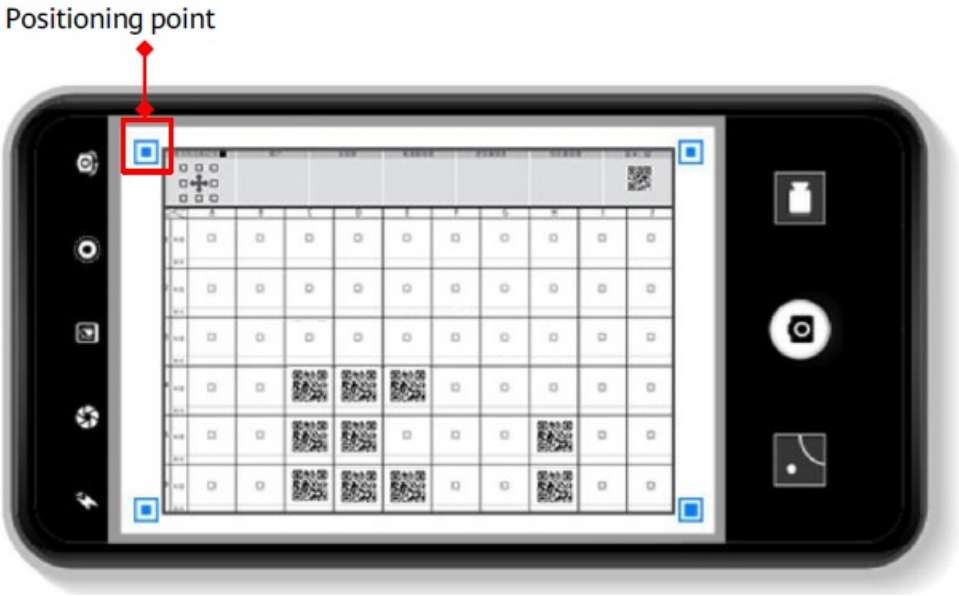
Attaching SN Labels

Remove the SN labels from optimizers and attach them to the physical layout template based on the actual positions of the optimizers in the plant.



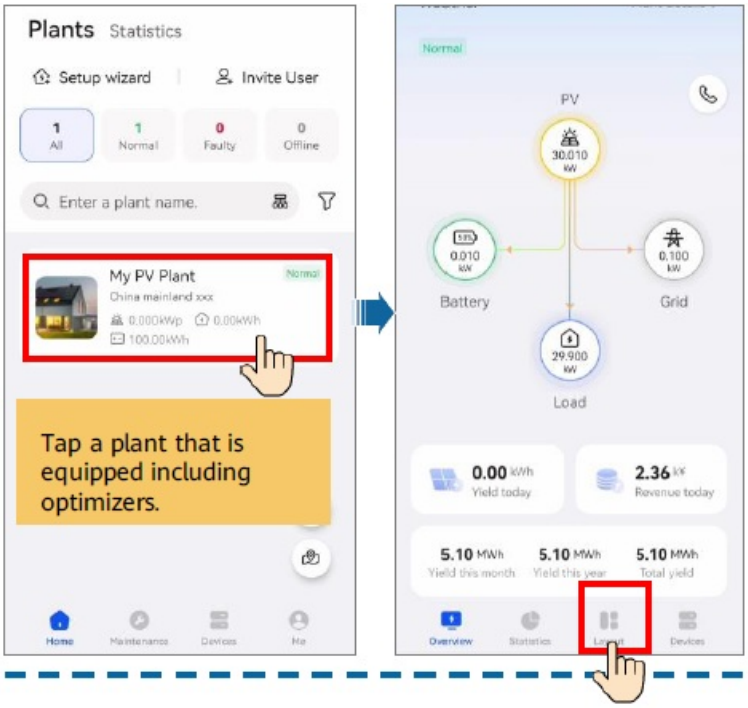
Taking a Photo of the Physical Layout Template

Ensure that the four positioning points on the template are within the frame.



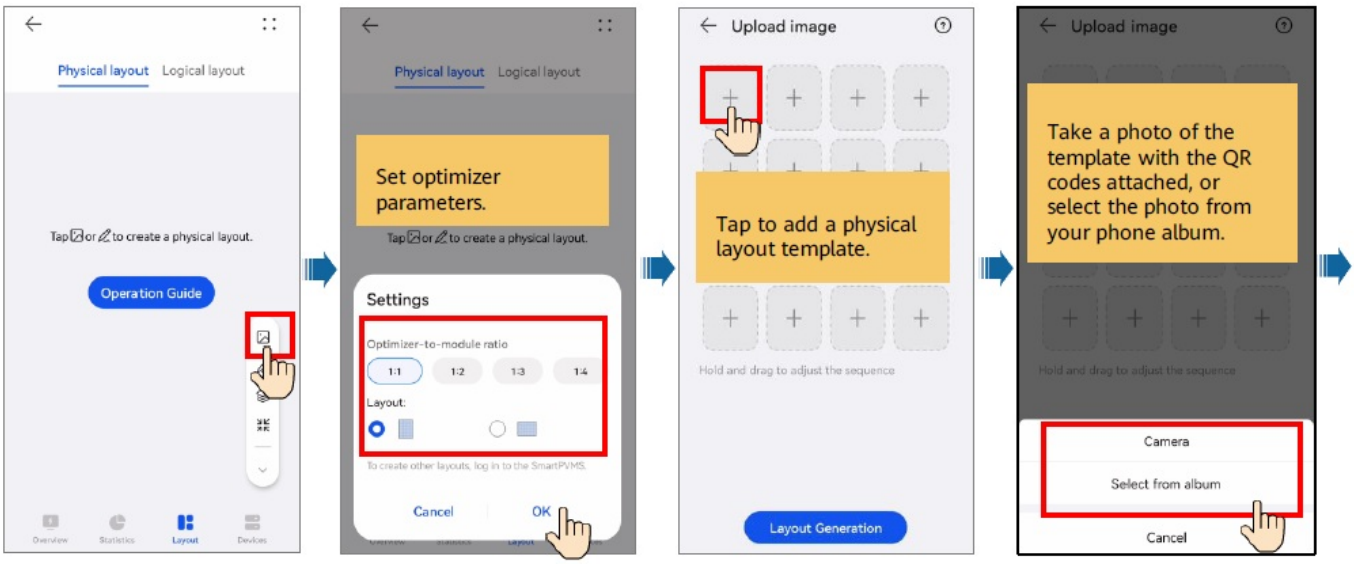
Generating a Physical Layout on the App

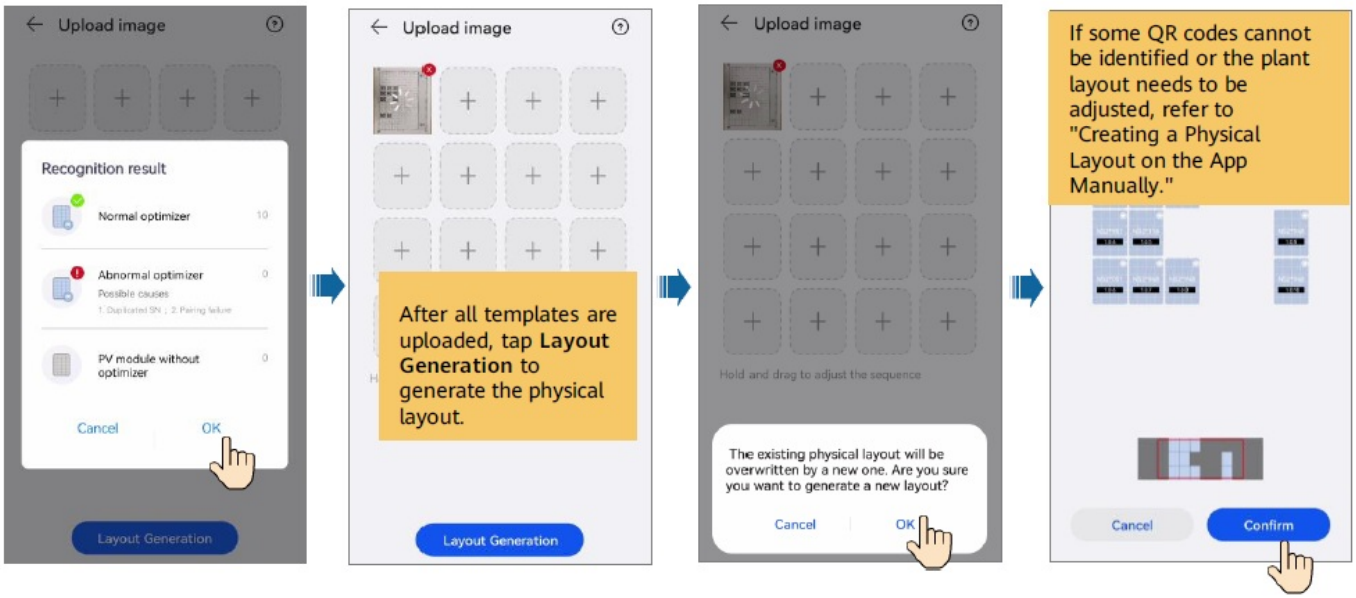
Enter the Layout screen



Generating a Physical Layout on the App Automatically

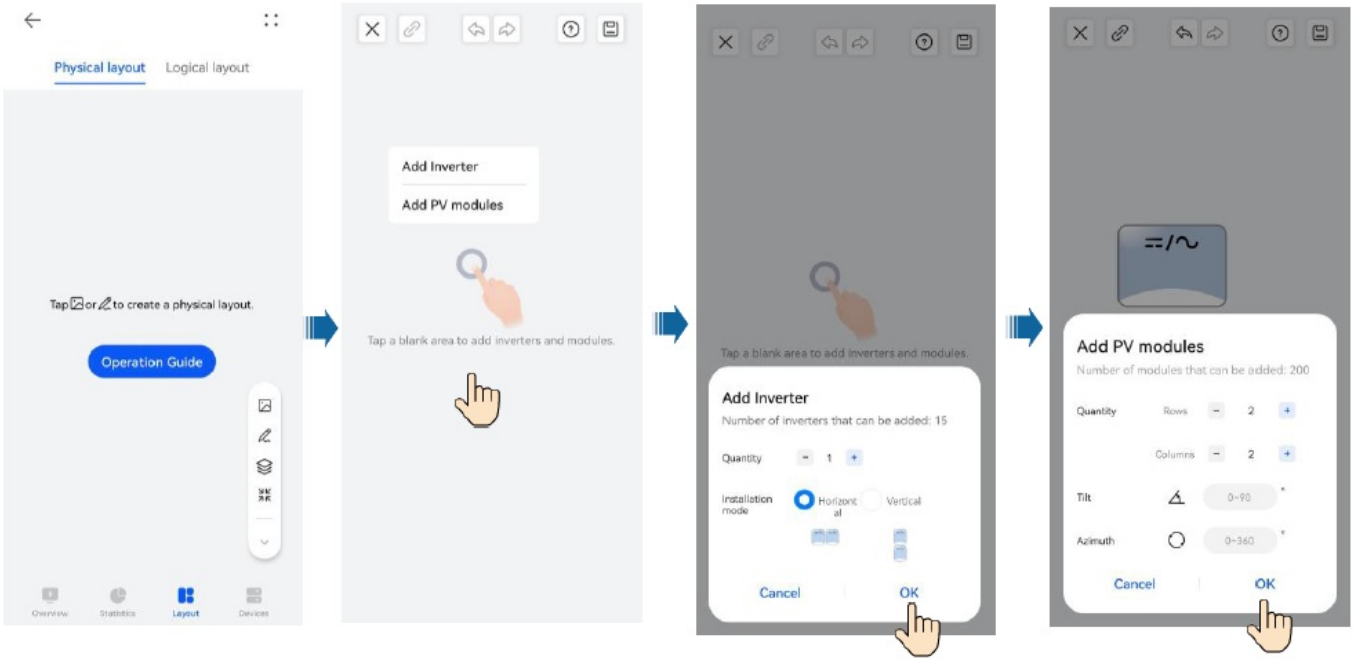
Upload the template and generate a layout



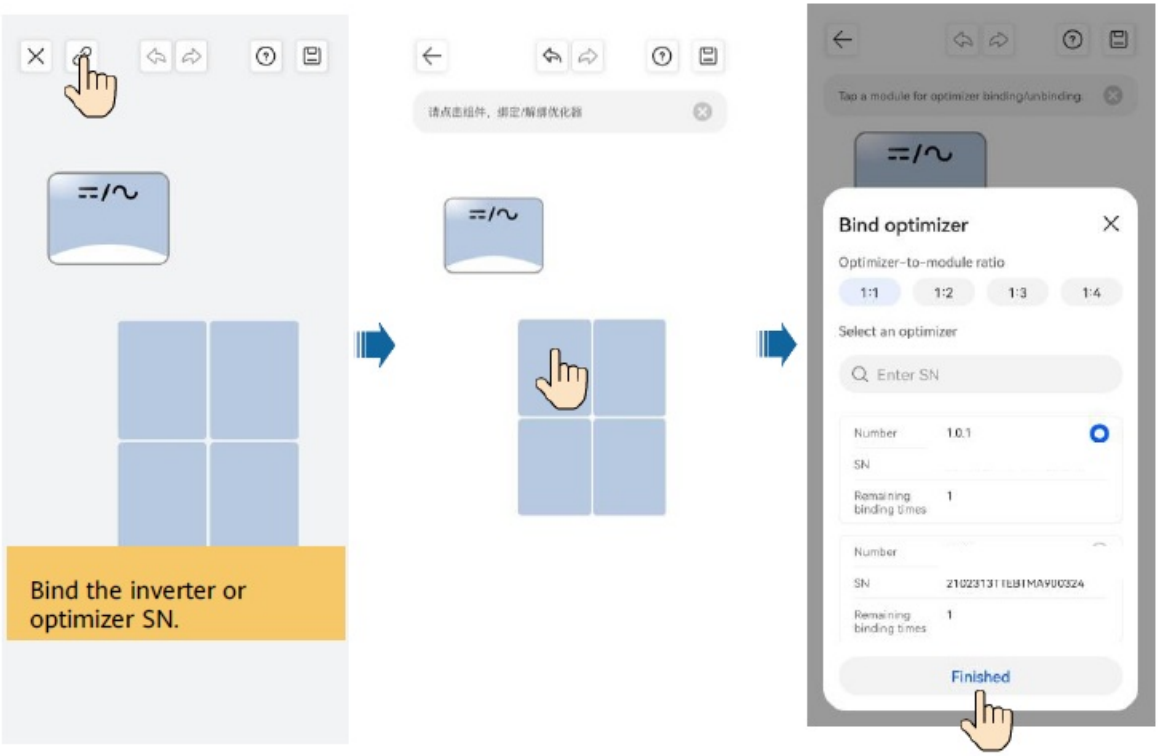


Creating a Physical Layout on the App Manually

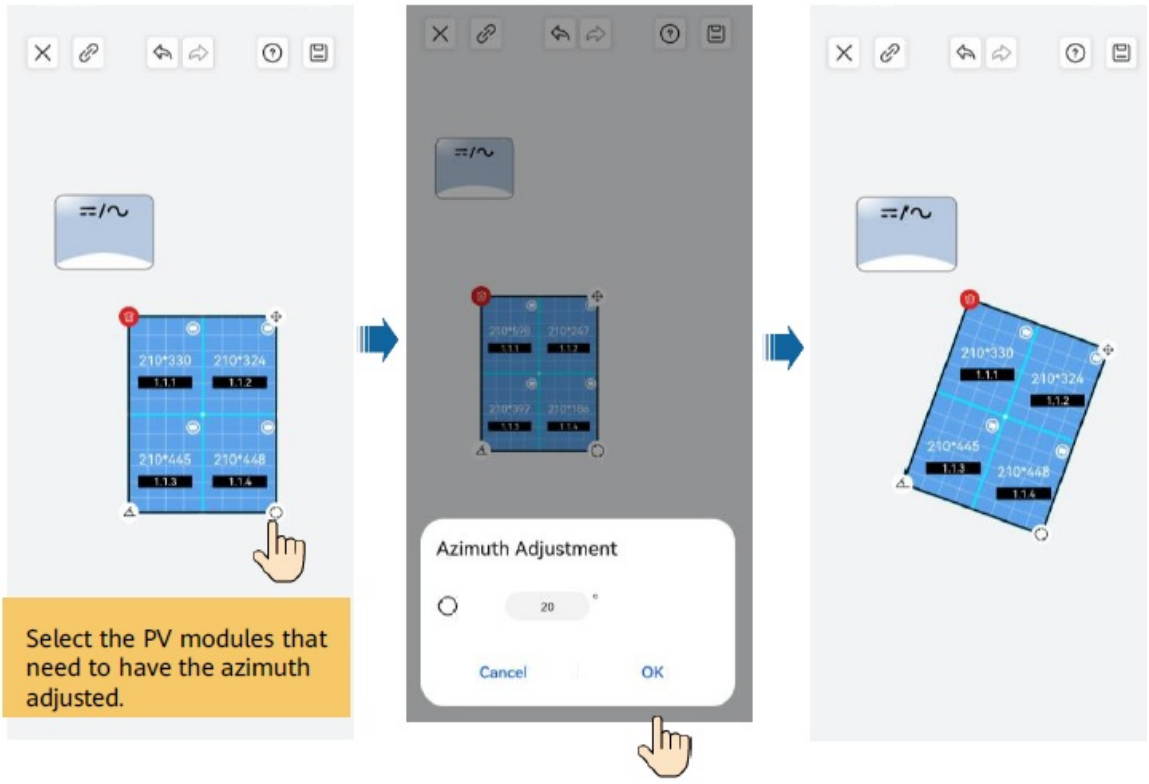
Edit the physical layout and specify the quantity of inverters and PV modules as required.



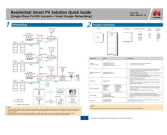
Bind the inverter or optimizer SN



Adjust the physical layout



Documents / Resources

	HUAWEI SUN2000 Smart PV Solution [pdf] Owner's Manual SUN2000, SUN2000 Smart PV Solution, Smart PV Solution, PV Solution, Solution

References

- support.huawei.com/enterprise/en/doc/EDOC1100222020/a0053780
- User Manual