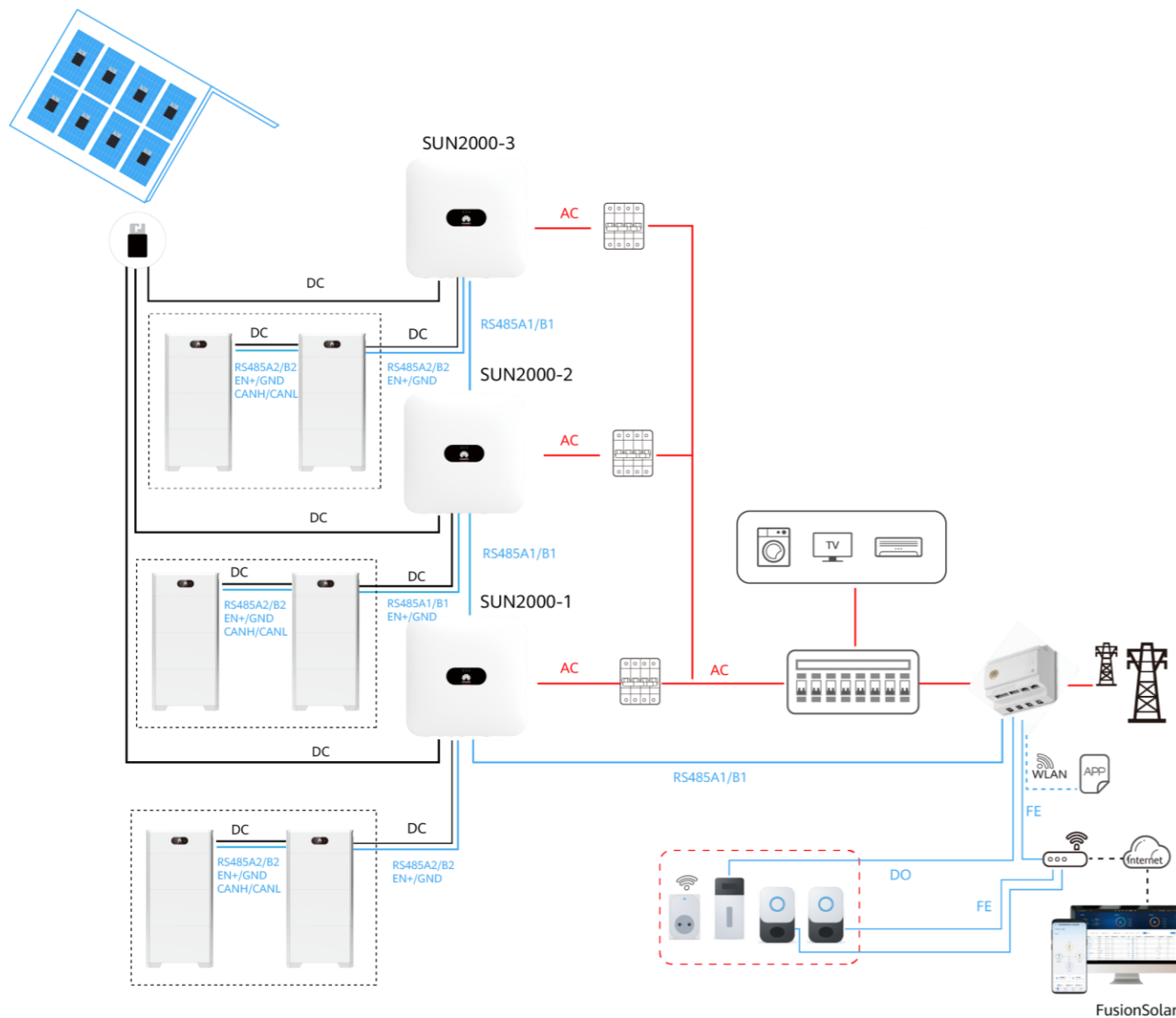


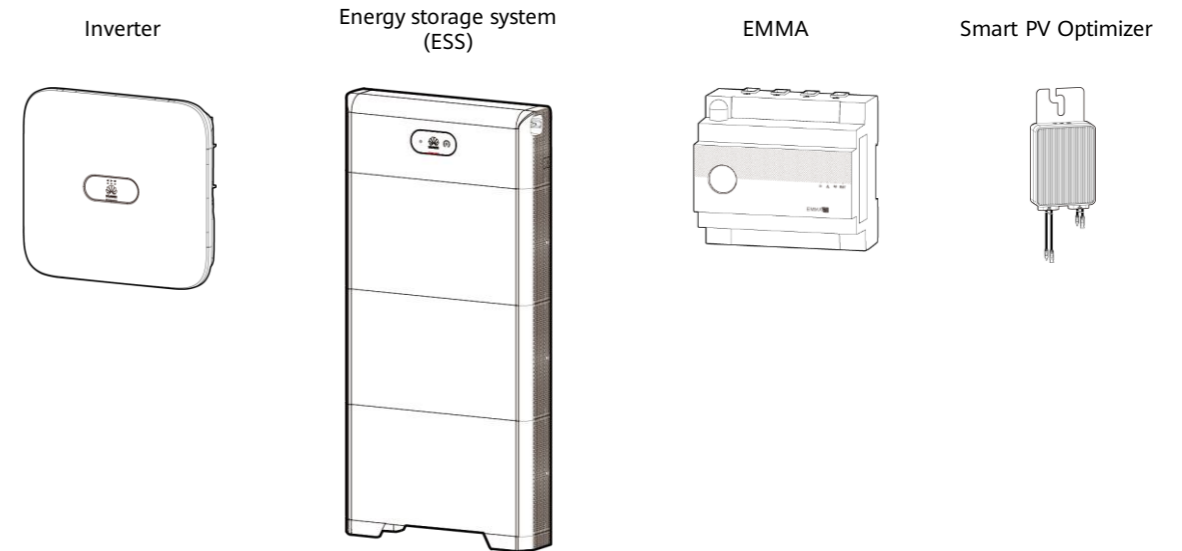
1

Networking



2

Product Overview



Component	Model	Description
Inverter	SUN2000-(12KTL-25KTL)-MB0 SUN2000-(15KTL-25KTL)-MB0-ZH SUN2000-(3KTL-12KTL)-M1 SUN2000-(8KTL-20KTL)-M2 SUN2000-(12KTL-25KTL)-M5 Series	A maximum of three inverters can be cascaded.
ESS	LUNA2000-(5-30)-S0	The capacity of a battery module is 5 kWh. A maximum of two ESSs can be cascaded and the maximum capacity is 30 kWh.
EMMA	EMMA-A01 EMMA-A02	<ul style="list-style-type: none"> A01: Only PV and ESS features are supported. A02: Features of PV, ESSs, smart chargers, and smart loads are supported.
Smart PV Optimizer	SUN2000-450W-P SUN2000-450W-P2 SUN2000-600W-P	SUN2000-600W-P: Long and short input cables are available to connect to PV modules with different cable lengths.

NOTE

- Each M1 can connect to a maximum of two ESSs, and each MB0 can connect to a maximum of four ESSs. In the EMMA networking scenario, a maximum of three inverters and twelve ESSs can be connected.
- 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.
- For details about the solution components, installation, and cable connections, see the corresponding user manuals and quick guides.
- The cable colors involved in this document are for reference only. Select cables in accordance with local cable specifications.

Residential Smart PV Solution Quick Guide

(Three-Phase PV+ESS Scenario + EMMA Networking)

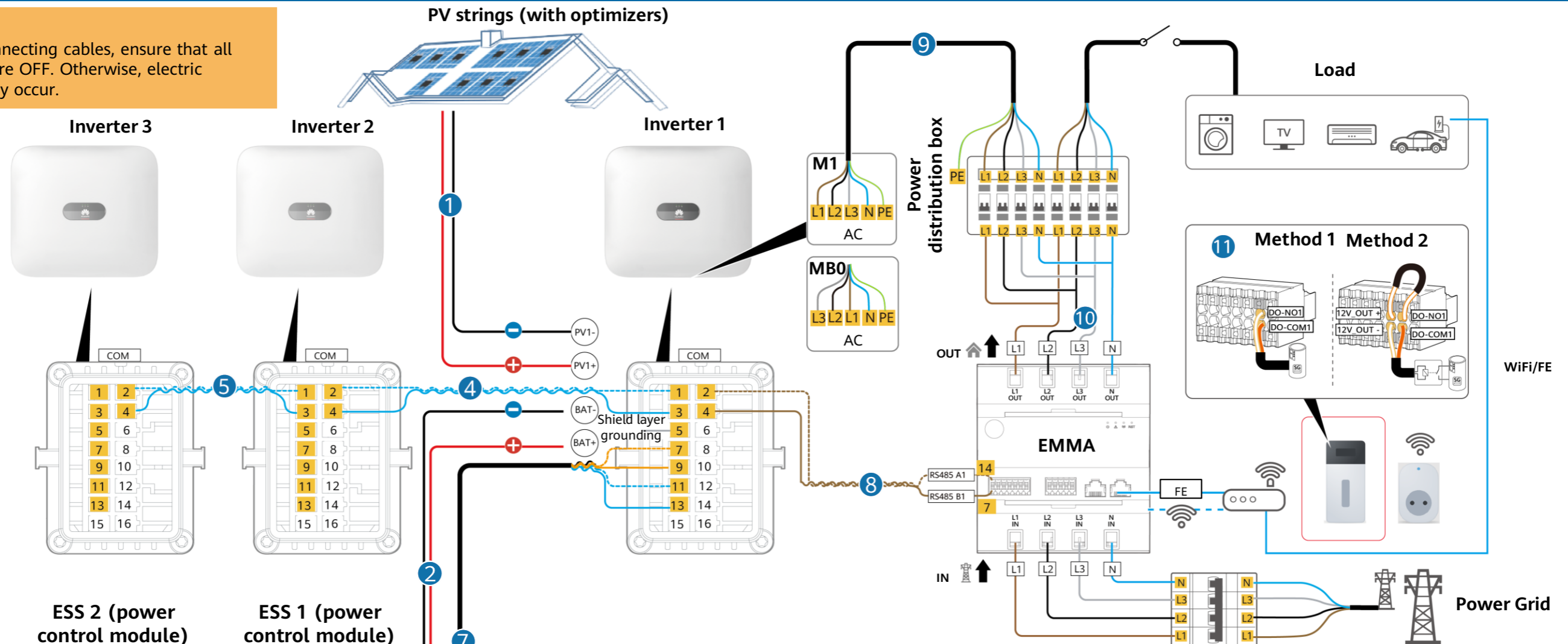


3

Cable Connections (Three-Phase Inverter + ESS S0 + EMMA with an Internal CT)

DANGER

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



NOTICE
Connect other cables to inverters by referring to the connection method for the inverter 1.

NOTICE
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	Inverter 1	PV1+ Positive terminal	Positive terminal	PV string
	2	Inverter 1	PV1- Negative terminal	Negative terminal	PV string
	3	ESS 1	BAT+ BAT+	BAT+ BAT+	ESS 1
Signal cable	4	ESS 1	BAT- BAT-	BAT- BAT-	ESS 2
	4	Inverter 1	COM-1	COM-2	Inverter 2
	5	Inverter 1	COM-3	COM-4	Inverter 2
	5	Inverter 2	COM-1	COM-2	Inverter 3
	5	Inverter 2	COM-3	COM-4	Inverter 3
Signal cable	6	ESS 1	COM-2 (left)	COM-2 (right)	ESS 2
	6		COM-3 (left)	COM-3 (right)	
	6		COM-4 (left)	COM-4 (right)	
	6		COM-7 (left)	COM-7 (right)	
Signal cable	7	Inverter 1	COM-8 (left)	COM-8 (right)	ESS 1
	7		COM-9 (left)	COM-9 (right)	
	7		COM-11	COM-3 (right)	
	7		COM-5 (PE)	COM-1 (right) (PE)	

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
Signal cable	8	Inverter 1	COM-2	COM-14	EMMA
			COM-4	COM-7	
AC power cable	9	Inverter 1	AC-L1	L1	Power distribution box
			AC-L2	L2	
			AC-L3	L3	
			AC-N	N	
AC power cable	10	EMMA	L1 OUT	L1	Power distribution box
			L2 OUT	L2	
			L3 OUT	L3	
			N OUT	N	

Cable Type	No.	Cable Connection Description
Signal cable	11	Method 1: Use DO dry contacts to directly drive the SG Ready heat pump. The capability of the DO dry contacts is 12 V DC@1 A. Method 2: Use a 12 V@30 mA power supply to drive the external relay. Choose the proper contact capability of the external relay according to the SG Ready heat pump port.

Residential Smart PV Solution Quick Guide

(Three-Phase PV+ESS Scenario + EMMA Networking)

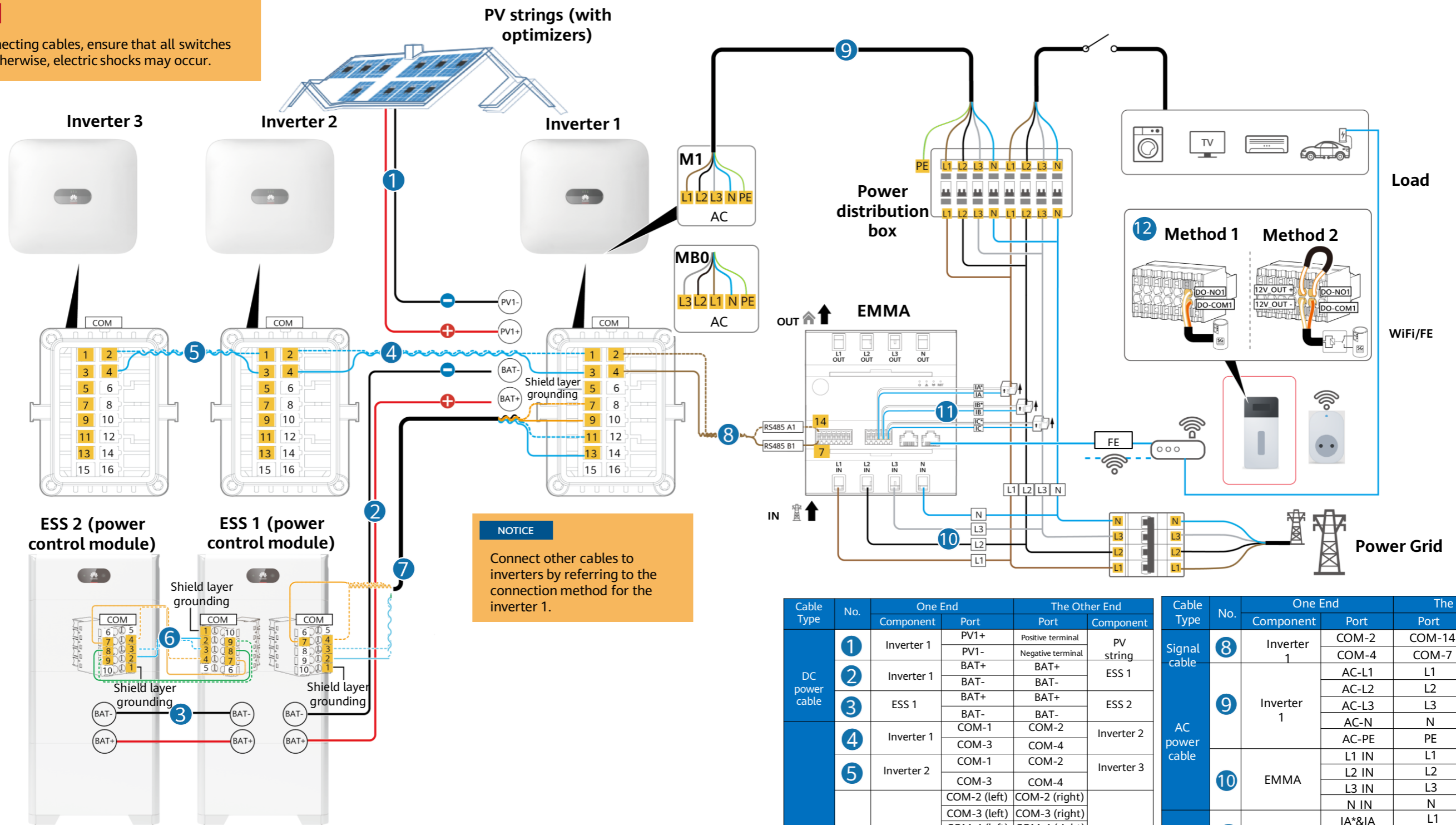


3

Cable Connections (Three-Phase Inverter + ESS S0 + EMMA with an External CT)

⚠ DANGER

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



NOTICE
Connect other cables to inverters by referring to the connection method for the inverter 1.

NOTICE
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	Inverter 1	PV1+ PV1-	Positive terminal Negative terminal	PV string
	2	Inverter 1	BAT+ BAT-	BAT+ BAT-	ESS 1
	3	ESS 1	BAT+ BAT-	BAT+ BAT-	ESS 2
Signal cable	4	Inverter 1	COM-1 COM-2	COM-3 COM-4	Inverter 2
	5	Inverter 2	COM-1 COM-3	COM-2 COM-4	Inverter 3
	6	ESS 1	COM-2 (left) COM-3 (left) COM-4 (left) COM-7 (left) COM-8 (left) COM-9 (left)	COM-2 (right) COM-3 (right) COM-4 (right) COM-7 (right) COM-8 (right) COM-9 (right)	ESS 2
Signal cable	7	Inverter 1	COM-11	COM-3 (right)	ESS 1
			COM-7	COM-4 (right)	
			COM-9	COM-7 (right)	
Signal cable	7	Inverter 1	COM-5 (PE)	COM-1 (right) (PE)	ESS 1

Cable Type	No.	One End		The Other End	
		Component	Port	Port	Component
Signal cable	8	Inverter 1	COM-2 COM-4	COM-14 COM-7	EMMA
AC power cable	9	Inverter 1	AC-L1 AC-L2 AC-L3 AC-N AC-PE	L1 L2 L3 N PE	Power distribution box
AC power cable	10	EMMA	L1 IN L2 IN L3 IN N IN	L1 L2 L3 N	Power distribution box
Signal cable	11	EMMA	IA*&IA IB*&IB IC*&IC	L1 L2 L3	Power distribution box

Cable Type	No.	Cable Connection Description
Signal cable	12	Method 1: Use DO dry contacts to directly drive the SG Ready heat pump. The capability of the DO dry contacts is 12 V DC@1 A.
		Method 2: Use a 12 V@30 mA power supply to drive the external relay. Choose the proper contact capability of the external relay according to the SG Ready heat pump port.

Residential Smart PV Solution Quick Guide (Three-Phase PV+ESS Scenario + EMMA Networking)



4 System Commissioning

App-based Deployment Procedure

- Download and install the FusionSolar app
- Sign up as an installer (optional, required for initial registration)
- Enter setup wizard
- Check the device status

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.

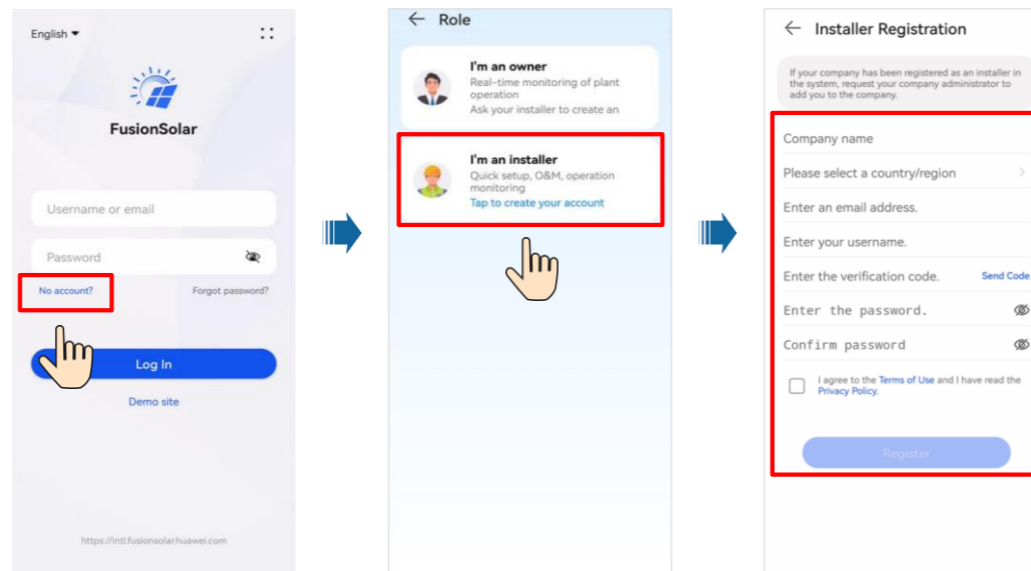


FusionSolar

Installer Registration

Initial registration

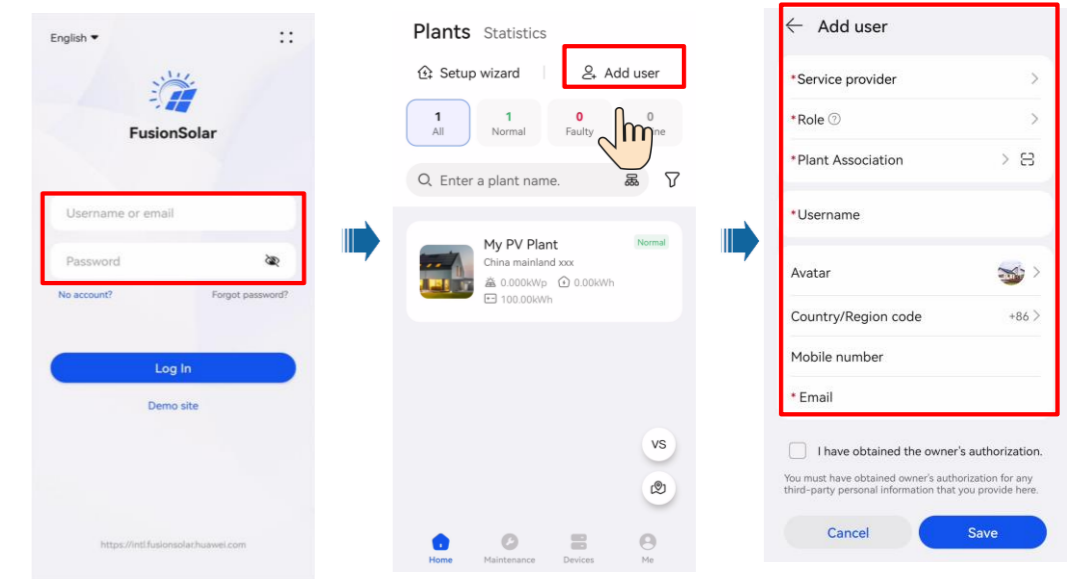
Create the first installer account, and generate a domain named after the company.



Or

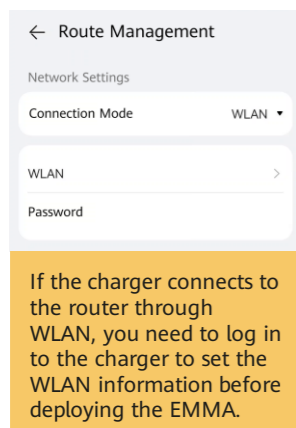
Non-initial registration

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

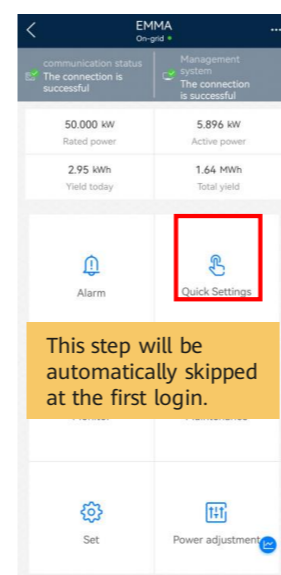
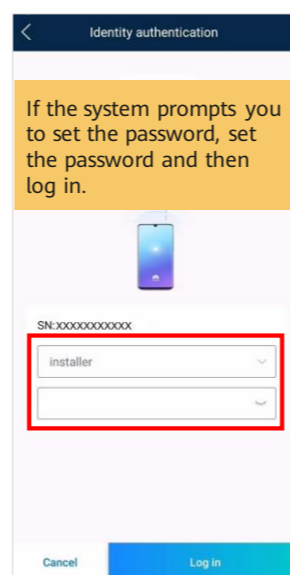
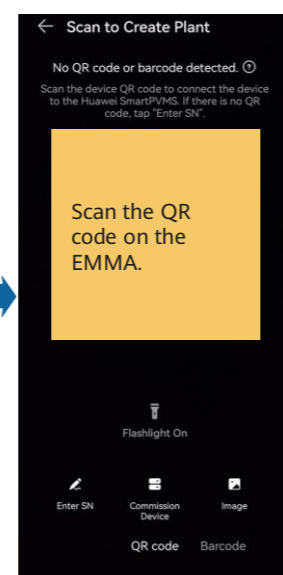
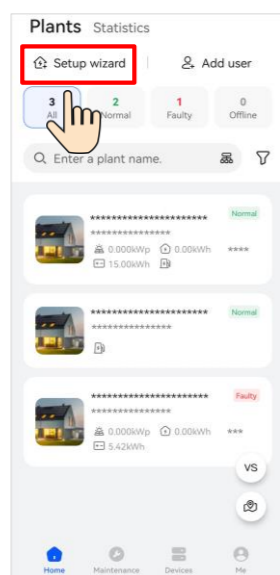


Setup Wizard (Connecting to the Inverter WLAN for Commissioning)

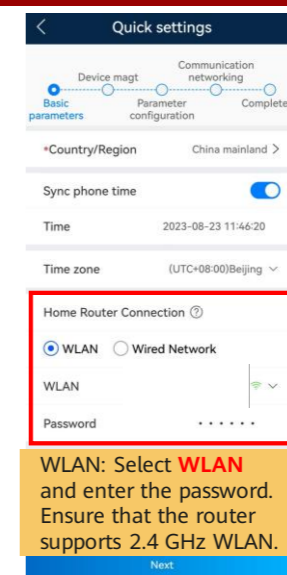
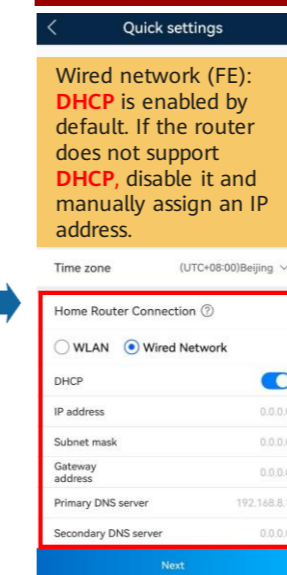
Set the WLAN information of the charger.



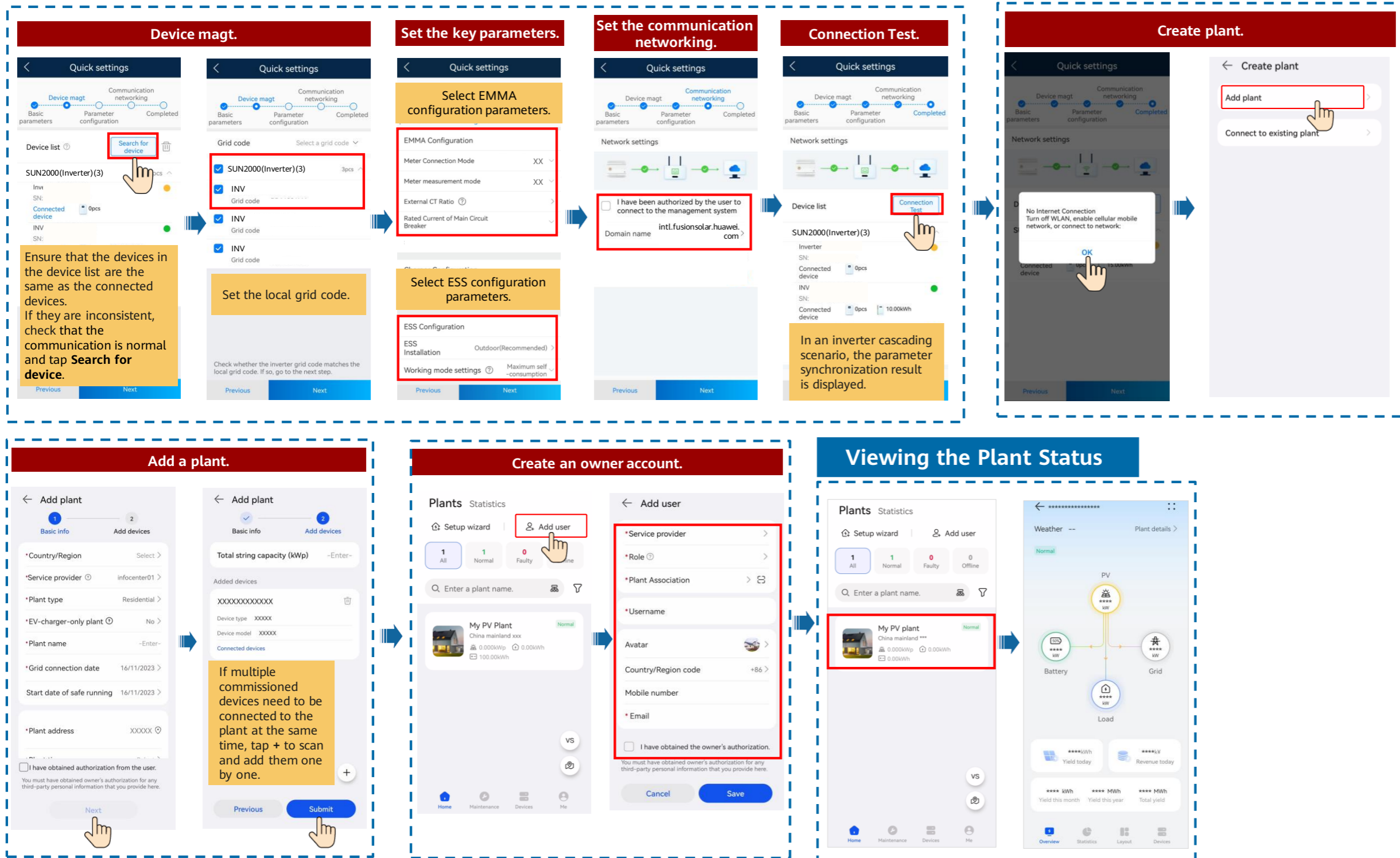
If the charger connects to the router through WLAN, you need to log in to the charger to set the WLAN information before deploying the EMMA.



Set the route parameters.



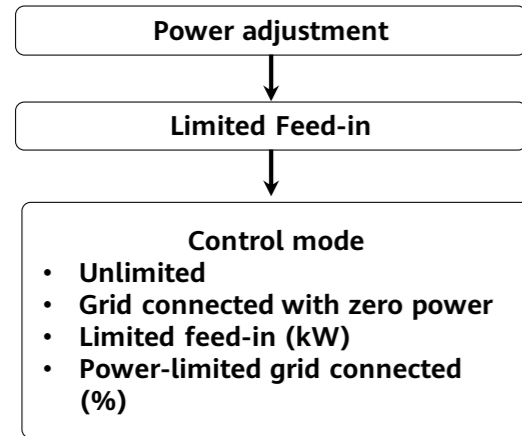
Residential Smart PV Solution Quick Guide (Three-Phase PV+ESS Scenario + EMMA Networking)



5

Off-Grid/Grid-tied Control Parameters

Setting Grid-tied Point Control



The screenshot shows the EMMA mobile app interface. The main dashboard displays system status and power/yield data. The 'Power adjustment' icon is highlighted in red. The 'Power adjustment' screen shows 'Limited Feed-in' as the selected option. The 'Limited Feed-in' settings screen shows various control parameters.

Parameter	Value
Rated power	50.000 kW
Active power	5.896 kW
Yield today	2.95 kWh
Total yield	1.64 MWh

Control mode

- Unlimited
- Grid connected with zero power
- Limited feed-in (kW)
- Power-limited grid connected (%)

Residential Smart PV Solution Quick Guide

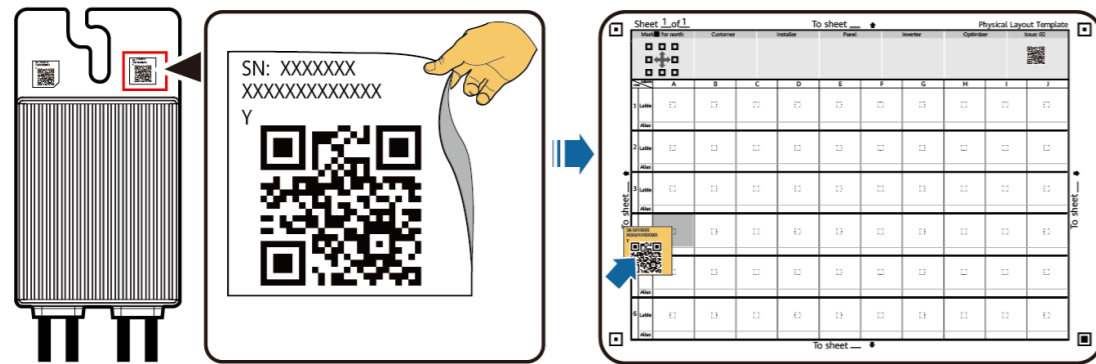
(Three-Phase PV+ESS Scenario + EMMA Networking)



6 Physical Layout of Smart PV Optimizers

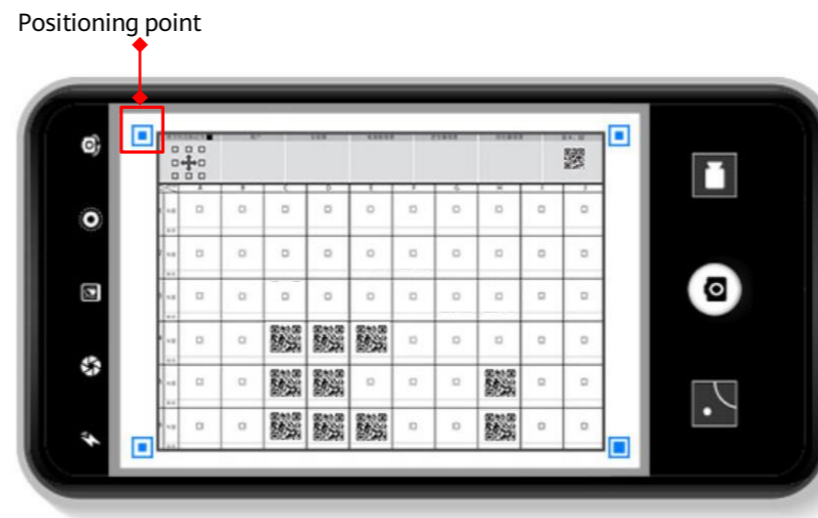
Attaching SN Labels

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.



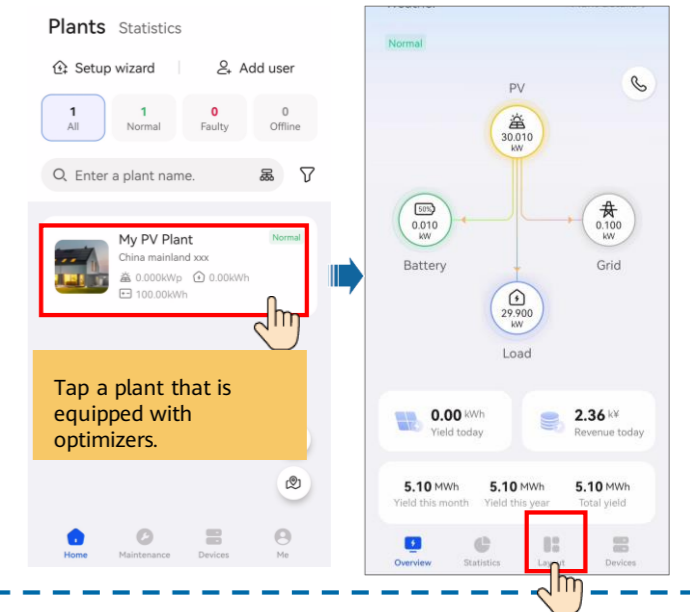
Taking a Photo of the Physical Layout Template

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



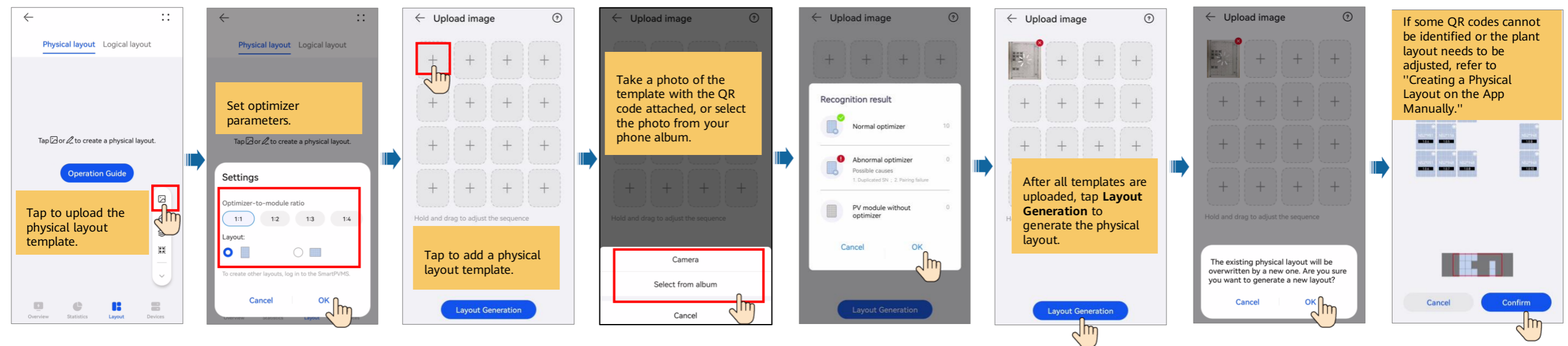
Generating a Physical Layout on the App

Enter the Plant Layout screen.



Generating a Physical Layout on the App

Upload the template and generate a layout.



If some QR codes cannot be identified or the plant layout needs to be adjusted, refer to "Creating a Physical Layout on the App Manually."

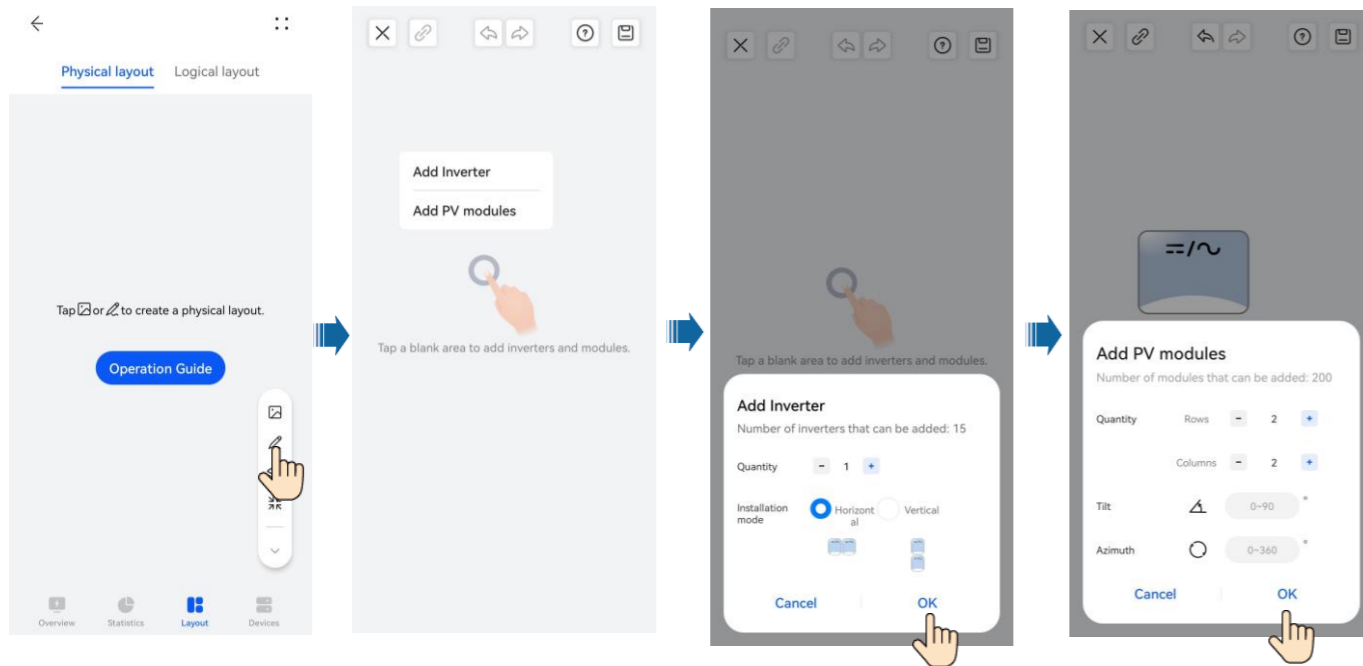
Residential Smart PV Solution Quick Guide

(Three-Phase PV+ESS Scenario + EMMA Networking)



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.

