V1.0 2025-08-01

Residential All-In-One Energy Storage System

ESA 3.0-10kW

GW5.1-BAT-D-G20
GW8.3-BAT-D-G20

Solutions Manual

GOODWE

Copyright Statement

NOTICE

The information in this document is subject to change due to product updates or other reasons. This document cannot replace the product labels or the safety precautions unless otherwise specified. All descriptions in the manual are for guidance only.

Table of Contents

1 About This Manual

1.1 Overview

The energy storage system consists of inverter, battery system, and smart meter. This manual describes the product information, installation, electrical connection, commissioning, troubleshooting and maintenance of the system. Read through this manual before installing and operating the products to understand product safety information and familiarize yourself with functions and features of the product. This manual is subject to update without notice. For more product details and latest documents, visit https://en.goodwe.com/.

1.2 Applicable Model

The energy storage system consists the following products:

Product type	Product information	Description
Inverter	GW3K-EHA-G20	Nominal output power: 3kW-10kW
	GW3.6K-EHA-G20	
	GW5K-EHA-G20	
	GW6K-EHA-G20	
	GW8K-EHA-G20	
	GW9.999K-EHA-G20	
	GW10K-EHA-G20	
Battery System	GW5.1-BAT-D-G20	Nominal Energy 5.12kWh
	GW8.3-BAT-D-G20	Nominal Energy 8.32kWh
Smart Meter	GMK110	It is a monitoring module in the energy storage system which can detect information such as operating voltage, current, and other data in the system.
	GM330	
Smart Dongle	WiFi/LAN Kit-20	The system operation information can be uploaded to a monitoring platform through WiFi or LAN signals.

1.3 Symbol Definition

⚠DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
⚠WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
⚠CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time.

2 Safety Precautions

Please strictly follow these safety instructions in the user manual during the operation.

⚠WARNING

The products are designed and tested strictly to comply with related safety rules. Follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the products are electrical equipment.

2.1 General Safety

NOTICE

- The information in this document is subject to change due to product updates or other reasons. This document cannot replace the product labels or the safety precautions unless otherwise specified. All descriptions in the manual are for guidance only.
- Before installations, read through the user manual to learn about the product and the precautions.
- All operations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, wrist strips, and cloths when touching electronic devices to protect the equipment from damage.
- Unauthorized dismantling or modification may damage the equipment, and the damage is not covered under the warranty.
- Strictly follow the installation, operation, and configuration instructions in this manual or the user manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, please visit https://www.goodwe.com/warrantyrelated.html.

2.2 Personal Requirements

NOTICE

- Personnel who install or maintain the equipment must be strictly trained, learn about safety precautions and correct operations.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.

2.3 System Safety

DANGER

- Disconnect the upstream switches to power off the equipment before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Install a breaker at the voltage input side of the equipment to prevent personal injury or equipment damage caused by energized electrical work.
- All operations such as transportation, storage, installation, use and maintenance shall comply with applicable laws, regulations, standards and specifications.
- Perform electrical connections in compliance with local laws, regulations, standards and specifications, including cables and component specifications.
- Use the connectors included in the package to connect cables. The manufacturer shall not be liable for the equipment damage if connectors of other models are used.
- Ensure all cables are connected correctly, tightly, and securely. Inappropriate wiring may cause poor connection and damage the equipment.
- The PE cables must be connected and secured properly.
- To protect the equipment and components from damage during transportation, ensure that the transportation personnel are professionally trained. All operations during the transportation have to be recorded. The equipment shall be kept in balance to avoid falling down.
- The equipment is heavy. Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.
- Keep the equipment stable to avoid dumping, which can result in equipment damage and personal injuries.

⚠WARNING

- Do not apply mechanical load to terminals, otherwise the terminals may be damaged.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to corresponding ports.
- Tie the cables of the same type together, and place cables of different types at least 30mm apart. Do not place the cables entangled or crossed.
- Place the cables at least 30mm away from the heating components or heat sources, otherwise the insulation layer of the cables may be aging or broken due to high temperature.

2.3.1 PV String Safety

⚠WARNING

- Ensure the PV module frames and the bracket system are securely grounded.
- Ensure the DC cables are connected tightly, securely and correctly. Inappropriate wiring may cause poor contacts or high impedances, and damage the inverter.
- Measure the positive and negative terminals of the DC cable using a multimeter to avoid reverse polarity connection. Also, the voltage should be within the permissible range.
- Measure the DC cable using the multimeter to avoid reverse polarity connection. Also, the voltage should be under the max DC input voltage. The manufacturer shall not be liable for the damage caused by reverse connection and extremely high voltage.
- The PV strings cannot be grounded. Ensure the minimum insulation resistance of PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter (R=maximum input voltage (V)/ 30mA).
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- PV modules used with inverters must comply with IEC 61730 Class A standard.

2.3.2 Inverter Safety

⚠WARNING

- The voltage and frequency at the connecting point should meet the on-grid requirements.
- Additional protective devices like circuit breakers or fuses are recommended on the AC side. Specification of the protective device should be at least 1.25 times the maximum AC output current.
- The arc fault alarms will be cleared automatically if the alarms are triggered less than 5 times in 24 hours. The inverter will shutdown for protection after the 5th electric arc fault. The inverter can operate normally after the fault is solved.
- BACK-UP is not recommended if the PV system is not configured with batteries. Otherwise, there may be a risk of system power outage.

2.3.3 Battery Safety

⚠DANGER

- Keep Power Off before any operations to avoid danger of electric shock. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment during the operation.
- Do not disassemble, modify, or replace any part of the battery without official authorization from the manufacturer. Otherwise, it will cause electrical shock or damages to the equipment, which shall not be borne by the manufacturer.
- Do not hit, pull, drag, squeeze or step on the equipment or put the battery into fire. Otherwise, the battery may explode.
- Do not place the battery in a high temperature environment. Make sure that there is no direct sunlight and no heat source near the battery. When the ambient temperature exceeds 60 ℃, it will cause fire.
- Do not use the battery if it is defective, broken, or damaged. Damaged battery may leak electrolyte.
- Do not move the battery system while it is working. Contact after-sales service if the battery shall be replaced or added.
- A short circuit in the battery may cause personal injury. The instantaneous high current caused by a short circuit can release a large amount of energy and may cause a fire.
- To protect the equipment and components from damage during transportation, ensure that the transportation personnel are professionally trained. All operations during the transportation have to be recorded. The equipment shall be kept in balance to avoid falling down.
- Battery The equipment is heavy. Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.

⚠WARNING

- Factors such as temperature, humidity, weather conditions, etc. may limit the battery's current and affect its load.
- Contact after-sale service immediately if the battery is not able to be started. Otherwise, the battery might be damaged permanently.
- Inspect and maintain the battery regularly according to the maintenance requirements of the battery.
- Ensure that the battery system is not damaged during transportation and storage. Keep the equipment stable to avoid dumping, which can result in equipment damage and personal injuries.

Emergency Measures

- Battery Electrolyte Leakage
  If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive. It will cause skin irritation or chemical burn to the operator. Anyone contact the leaked substance accidentally has to act/respond as following:
  - Breath in the leaked substance: Evacuate from the polluted area, and seek immediate medical assistance.
  - Eye contact: Rinse your eyes for at least 15 minutes with clean water and seek immediate medical assistance.
  - Skin contact: Thoroughly wash the touch area with soap and clean water, and seek immediate medical assistance.
  - Ingestion: Induce vomiting, and seek immediate medical assistance.
- Fire
  - The battery may burn when the ambient temperature exceeds 150℃. Poisonous and hazardous gas may be released if the battery is on fire.
  - In the event of a fire, please make sure that the carbon dioxide extinguisher or water extinguishing device is nearby.
  - The fire cannot be put out by ABC dry powder extinguisher. Firefighters are required to wear full protective clothing and self-contained breathing apparatus.
- Battery triggers fire protection
  For batteries with fire protection functions, perform the following operations after the fire protection function is triggered:
  - Immediately cut off the main power switch to ensure that no current passes through the battery system.
  - Conduct a preliminary inspection of the appearance of the battery to determine

if there is any damage, deformation, leakage, or odor. Check the battery casing, connectors, and cables.
- Use temperature sensors to detect the temperature of the battery and its environment, ensuring there is no risk of overheating.
- Isolate and label damaged batteries, and handle them properly in accordance with local regulations.

2.3.4 Smart Meter Safety

⚠WARNING

If the voltage of the power grid fluctuates, resulting in the voltage over 265V. In this case, long-term overvoltage operation may cause damage to the meter. It is recommended to add a fuse with a rated current of 0.5A on the voltage input side of the meter to protect it.

2.4 Safety Symbols and Certification Marks

⚠DANGER

- All labels and warning marks should be visible after the installation. Do not cover, scrawl, or damage any label on the equipment.
- The following descriptions are for reference only. Please refer to the actual labeling of the equipment.

No.	Symbol	Descriptions
1		Potential risks exist. Wear proper PPE before any operations.
2		High voltage hazard. High voltage exists. Disconnect all incoming power and turn off the product before working on it.
3		High-temperature hazard. Do not touch the product under operation to avoid being burnt.

No.	Symbol	Descriptions
4		Operate the equipment properly to avoid explosion.
5		Batteries contain flammable materials, beware of fire.
6		The equipment contains corrosive electrolytes. In case of a leak in the equipment, avoid contacting the leaked liquid or gas.
7		Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
8		Install the equipment away from fire sources.
9		Keep the equipment away from children.
10		Do not pour with water.
11		Read through the user manual before any operations.
12		Wear PPE during installation, operation and maintaining.
13		Do not dispose of the System as household waste. Deal with it in compliance with local laws and regulations, or send it back to the manufacturer.
14		Grounding point.

No.	Symbol	Descriptions
15		Recycle regeneration mark.
16		CE Mark.
17		TUV mark.
18		RCM mark.

2.5 EU Declaration of Conformity

2.5.1 Equipment with Wireless Communication Modules

The equipment with wireless communication modules sold in the European market meets the requirements of the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

2.5.2 Equipment without Wireless Communication Modules (Except Battery)

The equipment without wireless communication modules sold in the European market meets the requirements of the following directives:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)

- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

2.5.3 Battery

The batteries sold in the European market meets the requirements of the following directives:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Battery Directive 2006/66/EC and Amending Directive 2013/56/EU
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

You can download the EU Declaration of Conformity from our official website at: https://en.goodwe.com.

3 System Introduction

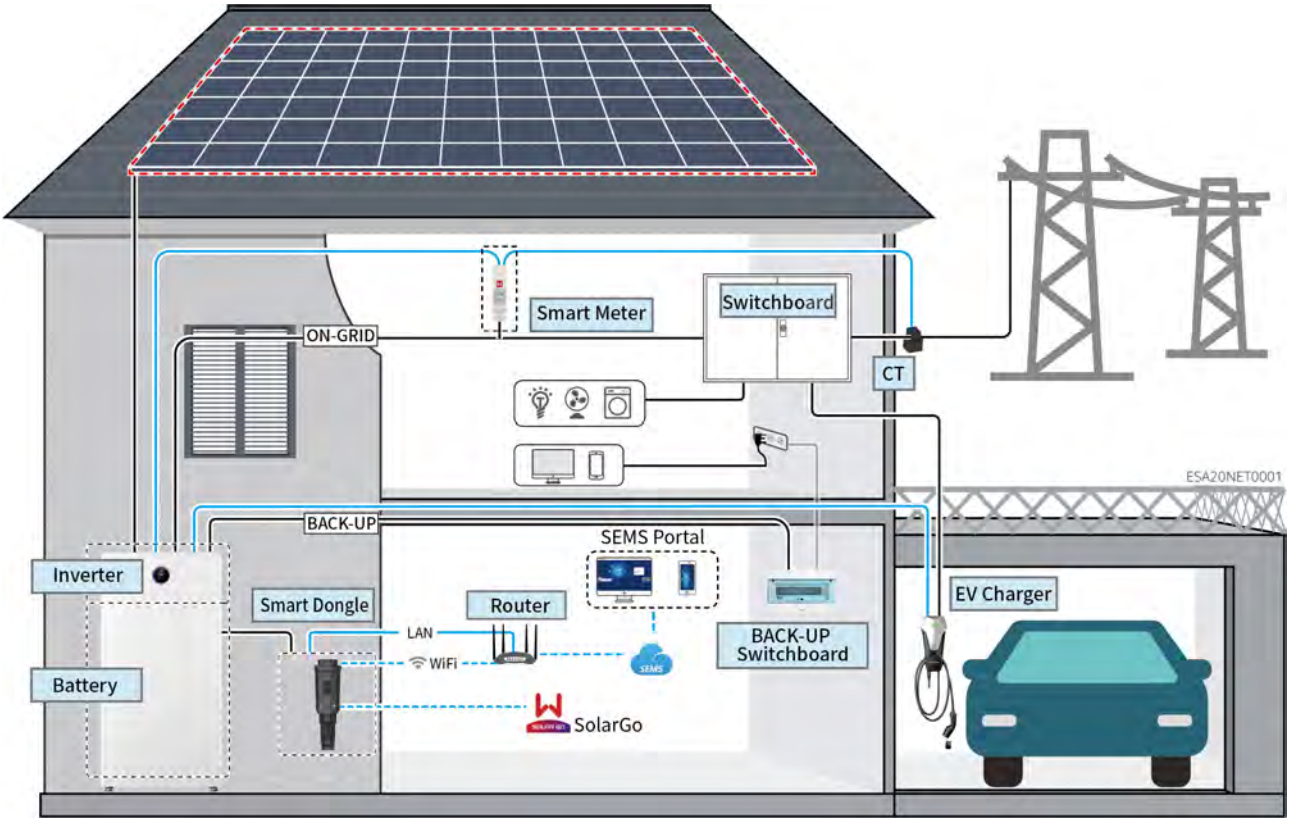
3.1 System Overview

Residential all-in-one energy storage system solution consists of inverter, battery system, smart meter, smart dongle, etc.. In the PV system, solar energy can be converted to electric energy for household needs. The IoT devices in the system manage the electrical equipment and energy consumption in a smart way by recognizing the overall power consumption and deciding whether the power is to be used by the loads, stored in batteries, or exported to the grid.

⚠WARNING

- In microgrid scenarios, the PV open-circuit voltage of the residential all-in-one energy storage system is not recommended to be < 500V, so as to avoid triggering the over-voltage protection when the system voltage is too high under severe working conditions.
- If the system is in a high temperature or BMS current limiting situation, it may cause the battery charging power to be limited, which may lead to high system voltage triggering over-voltage protection.
- In microgrid scenarios, make sure that the overfrequency derating point of the on-grid inverter is the same as that of the residential all-in-one energy storage system.
- If the on-grid inverter needs to limit the output power, please connect a separate meter or CT device.
- Make sure that the overfrequency derating curve of the on-grid inverter is set according to the following:
  - End power set to 0% Pn
  - Silent time set to 0
  - Power response mode set to off
- Due to product upgrades or other reasons, the document content may be updated irregularly. The matching relationship between inverters and IoT products can refer to: https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf

Scenario

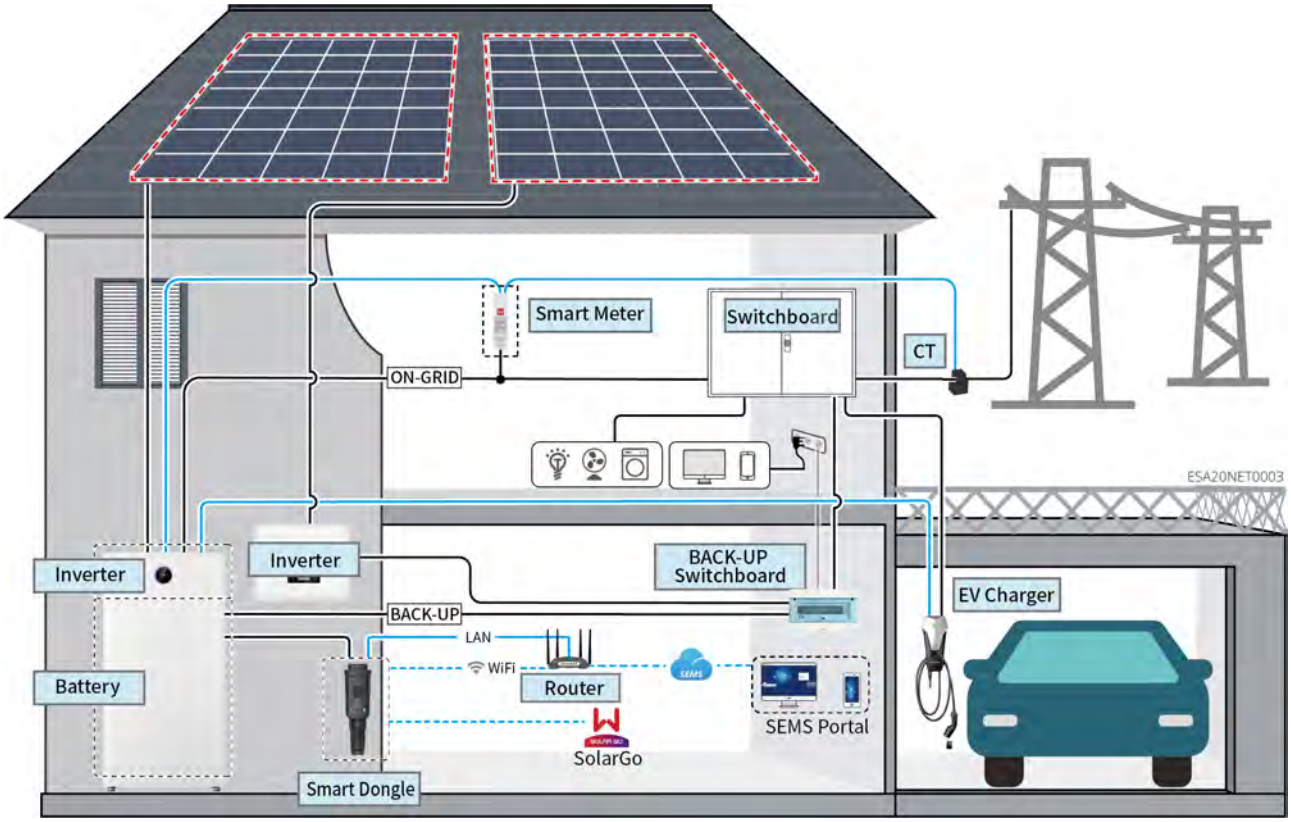


Product Type	Model	Description
Hybrid Inverter	GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20 GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20	• Compatible with GoodWe AC charging stations. • Supporting AFCI detection, battery and PV reverse connection detection. • Supporting generator control and generator charging of batteries. If you need to connect a generator, please use the GMK110 or GM330 smart meter. • If you need to use functions such as one-click upgrade and operation log export for the inverter, please ensure that the WiFi/LAN Kit-20 software version is V2.3 or above.
Battery System	GW5.1-BAT-D-G20	

Product Type	Model	Description
	GW8.3-BAT-D-G20	• Battery of different models can mixed. Matching requirements of different power and capacity can be met. • Single cluster maximum: 48kWh.
Smart Meter	• Built-in Smart Meter (shipped with inverter) • GMK110 (purchase from GoodWe) • GM330 (purchase from GoodWe)	• Built-in Smart Meter: Connect the inverter using the delivered CV. CT ratio is 120A:40mA. • When the built-in meter of the inverter does not meet your needs, you can contact your dealer to purchase a GMK110 or GM330 smart meter. ◦ GMK110: CT is not supported for changing to other type, CT ratio 120A: 40mA. ◦ GM330: Supports purchasing from GOODWE or third-party, CT ratio: nA: 5A
Smart Dongle	WiFi/LAN Kit-20（Standard）	Please use the WiFi/LAN Kit-20 smart dongle to perform local testing of the device and remote monitoring of system operation information.

Microgrid Scenario

When the on-grid inverter is connected to the BACK-UP port of the hybrid inverter, it is a microgrid scenario.



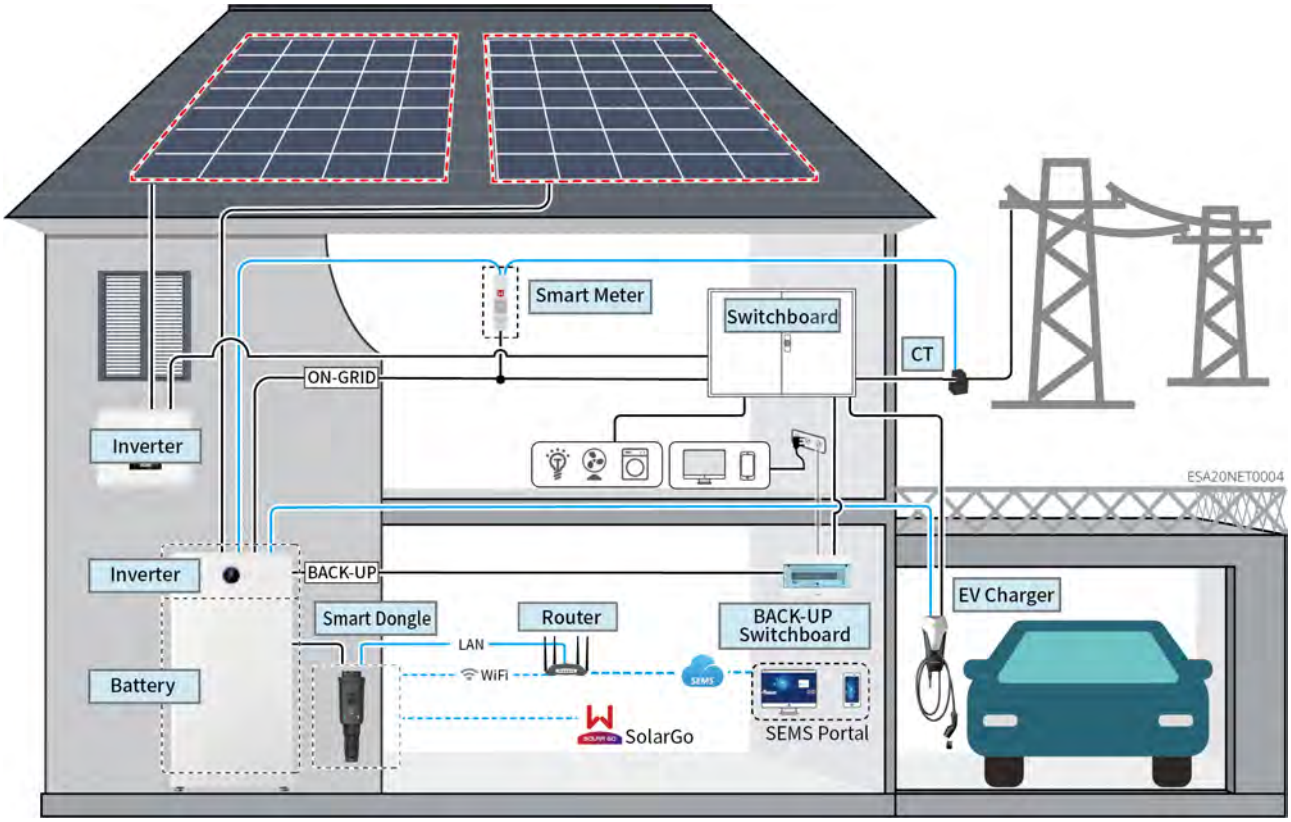
Product Type	Model	Description
Hybrid Inverter	GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20 GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20	• In the microgrid scenarios, only a single hybrid inverter can be supported to use in the system. • In the microgrid scenarios, connecting generators is not supported. • If you need to use functions such as one-click upgrade and operation log export for the inverter, please ensure that the WiFi/LAN Kit-20 software version is V2.3 or above.
Battery System	GW5.1-BAT-D-G20 GW8.3-BAT-D-G20	• Battery of different models can mixed. Matching requirements of different power and capacity can be met. • Single cluster maximum: 48kWh.

Product Type	Model	Description
Smart Meter	• Built-in Smart Meter (shipped with inverter) • GMK110 (purchase from GoodWe) • GM330 (purchase from GoodWe)	• Built-in Smart Meter: Connect the inverter using the delivered CV. CT ratio is 120A:40mA. • When the built-in meter of the inverter does not meet your needs, you can contact your dealer to purchase a GMK110 or GM330 smart meter. ◦ GMK110: CT is not supported for changing to other type, CT ratio 120A: 40mA. ◦ GM330: Supports purchasing from GOODWE or third-party, CT ratio: nA: 5A
Smart Dongle	WiFi/LAN Kit-20 (Standard)	Please use the WiFi/LAN Kit-20 smart dongle to perform local testing of the device and remote monitoring of system operation information.

Product Type	Model	Description
On-Grid Inverter	-	• It’s recommended to use on-grid inverter sold in GOODWE, and is supported to use the third-party on-grid inverter. • In microgrid scenarios, make sure that the rated output power of the on-grid inverter ≤ the rated output power of the hybrid inverter. • When the microgrid system is in parallel, if power limitation is required, make sure: ◦ The hybrid inverter should be set in the on-grid power limitation interface of the SolarGo APP, and the on-grid inverter should be set according to the actual tools used. ◦ In order to ensure that the on-grid inverters can continue to generate power, the output power of the hybrid inverters must be adjusted in the microgrid mode interface of the SolarGo APP. Note: The output power control precision of different on-grid inverters varies. Please set the on-grid power limit control parameter value according to the actual situation.

Coupled Scenarios

When the on-grid inverter is connected to the ON-GRID port of the hybrid inverter, it is a coupling scenario.



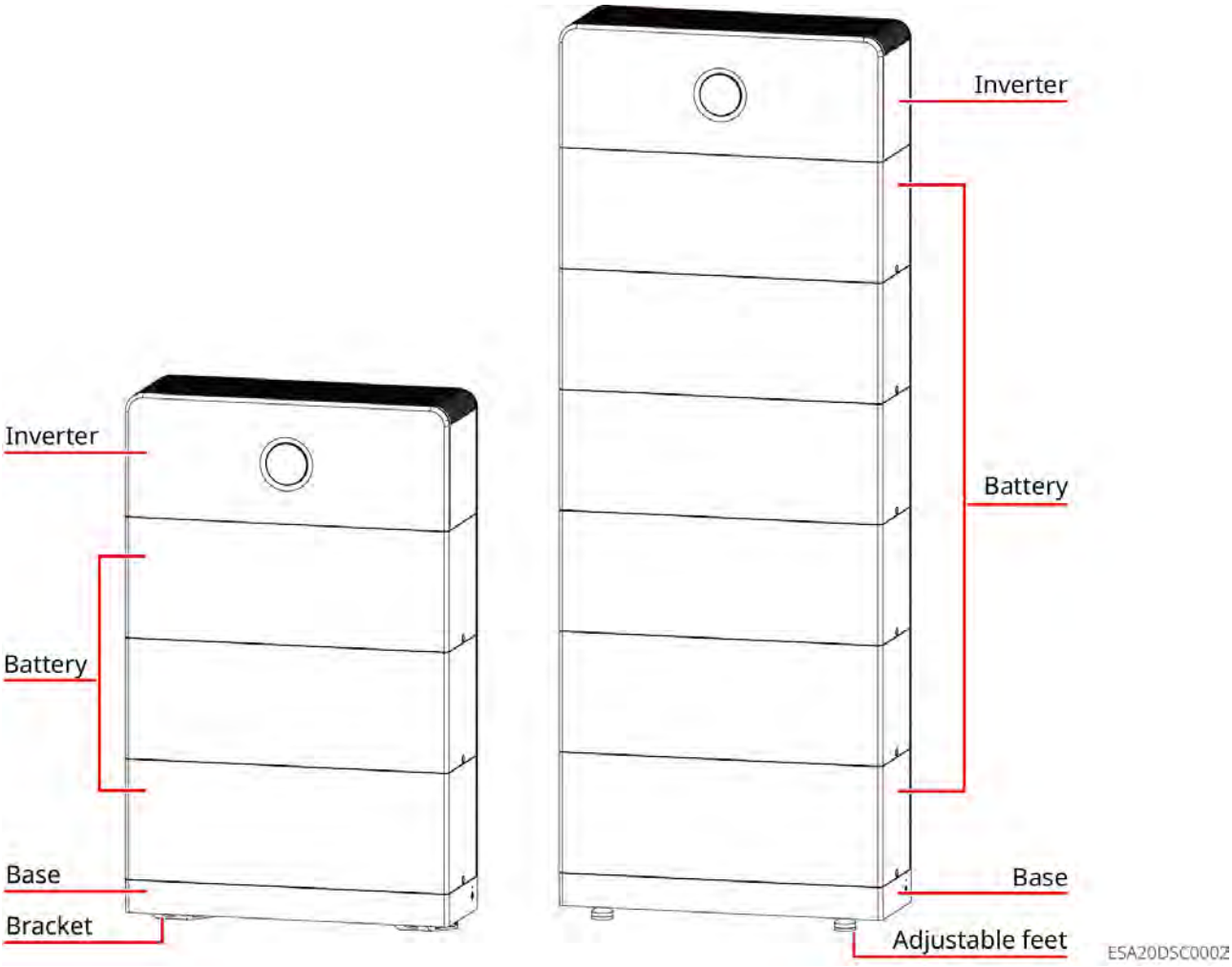
Product Type	Model	Description
Hybrid Inverter	GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20 GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20	• In the coupled scenarios, only a single hybrid inverter can be supported to use in the system. • Supporting generator control and generator charging of batteries. • If you need to use functions such as one-click upgrade and operation log export for the inverter, please ensure that the WiFi/LAN Kit-20 software version is V2.3 or above.
Battery System	GW5.1-BAT-D-G20 GW8.3-BAT-D-G20	• Battery of different models can mixed. Matching requirements of different power and capacity can be met. • Single cluster maximum: 48kWh.

Product Type	Model	Description
Smart Meter	• Built-in Smart Meter (shipped with inverter) • GMK110 (purchase from GoodWe) • GM330 (purchase from GoodWe)	• Built-in Smart Meter: Connect the inverter using the delivered CV. CT ratio is 120A:40mA. • When the built-in meter of the inverter does not meet your needs, you can contact your dealer to purchase a GMK110 or GM330 smart meter. ◦ GMK110: CT is not supported for changing to other type, CT ratio 120A: 40mA. ◦ GM330: Supports purchasing from GOODWE or third-party, CT ratio: nA: 5A
Smart Dongle	WiFi/LAN Kit-20 (Standard)	Please use the WiFi/LAN Kit-20 smart dongle to perform local testing of the device and remote monitoring of system operation information.
On-Grid Inverter	-	• It's recommended to use on-grid inverter sold in GOODWE, and is supported to use the third-party on-grid inverter. • In coupled scenarios, make sure that the rated output power of the on-grid inverter ≤ the rated output power of the hybrid inverter. • When the coupled system is in on-grid mode, If power limitation control is required, the hybrid inverter should be set in the on-grid power limitation interface of the SolarGo APP, and the on-grid inverter should be set according to the actual tools used. Note: The output power control precision of different on-grid inverters varies. Please set the on-grid power limit control parameter value according to the actual situation.

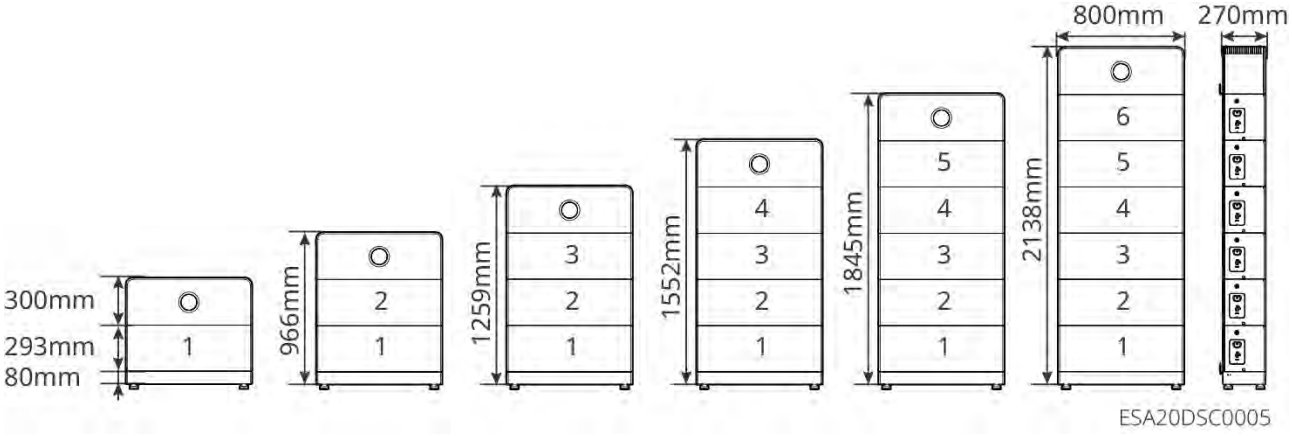
3.2 Product Overview

3.2.1 Residential All-In-One Energy Storage System(Single Phase)

Residential All-In-One Energy Storage System(Single Phase):
Residential All-In-One Energy Storage System(Single Phase), which integrates batteries and inverters through modular design and adopts a blind plug stacking connection method.

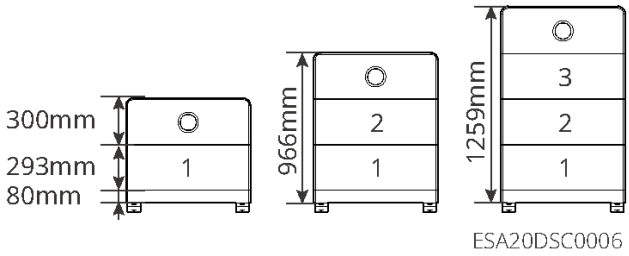


Floor-mounted installation
Ground installation supports stacking up to 6 batteries.



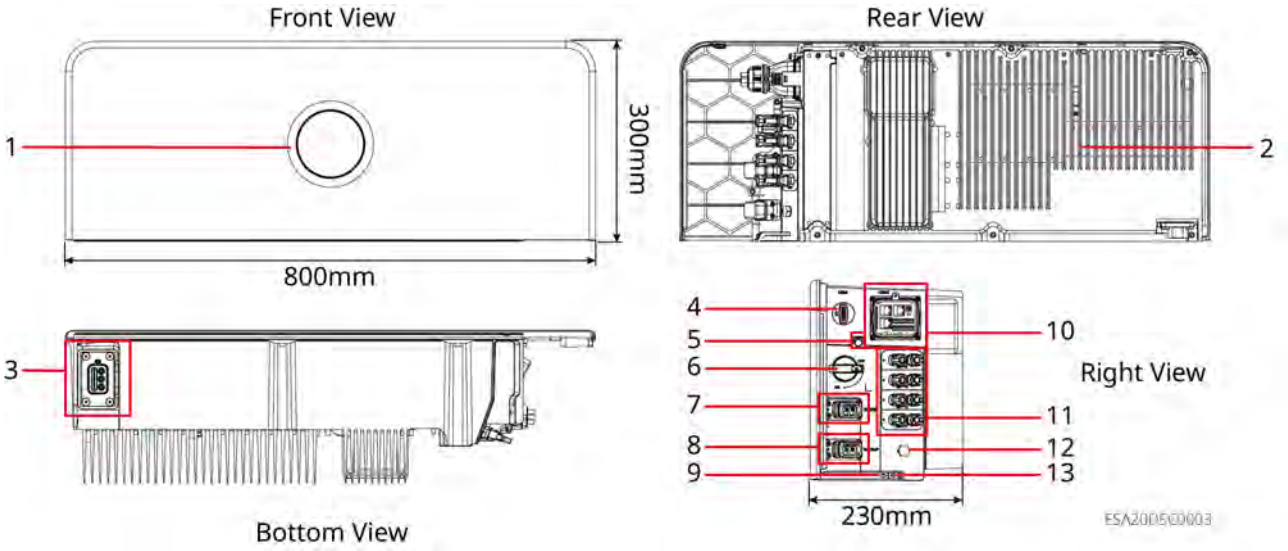
Wall-mounted Installation

Number of batteries stacked for wall mounting	
Battery Model	Maximum number of batteries that can be stacked
GW5.1-BAT-D-G20	3
GW8.3-BAT-D-G20	2
GW5.1-BAT-D-G20 +GW8.3-BAT-D-G20	2



Inverter:

Inverters control and optimize the power in PV systems through an integrated energy management system. The power generated in the PV system can be used by loads, stored in the battery, output to the utility grid, etc

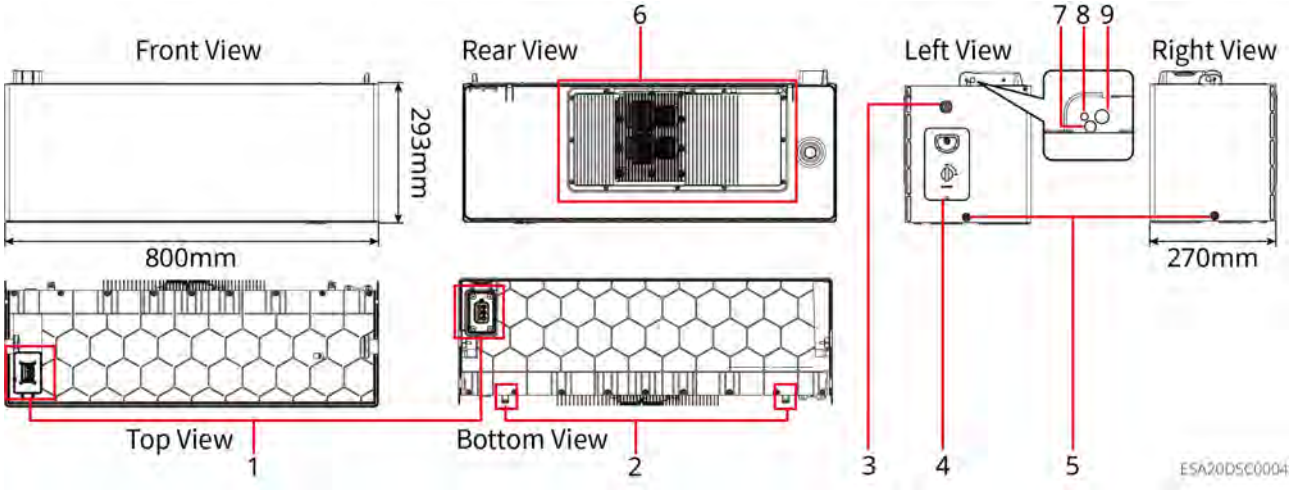


No.	Components / Silk Screen Printing	Description
1	Indicator	Indicates the operating status of the inverter.
2	Heat sink	Used to cool the inverter.
3	Connector	Power and communication ports connecting the inverter to the battery.
4	Smart Dongle Terminal	• To connect the smart dongle such as WiFi/LAN, etc. The dongle type may differ depending on actual needs. • To connect USB flash drive for local software upgrading.
5	Lifting Rod Mounting Hole	Used to install lifting rod. Used when handling inverters.
6	DC Switch	Start or stop DC input.
7	ON-GRID Port	To connect the communication cable, which links the inverter with the utility grid.
8	BACK-UP Port	Used to connect AC lines. Connected to important grid-tied inverters.

No.	Components / Silk Screen Printing	Description
9	Battery Mounting Holes	Used to Fix the inverter and the battery.
10	Communicatio n Terminal	Connected to communication lines such as load control, CT, RS485, remote shutdown/emergency shutdown, DRED (Australia) / RCR (Europe), etc.
11	PV Input Terminal	Used to connect the PV module DC input cables. • GW3K-EHA-G20, GW3.6K-EHA-G20, GW5K-EHA-G20, GW6K-EHA-G20: 2 • GW8K-EHA-G20, GW9.999K-EHA-G20, GW10K-EHA-G20: 4
12	Ventilation Valve	-
13	Protective grounding terminal	Used to connect the PE cable.

Battery:

The battery system stores and releases electricity based on the requirements of a PV energy storage system. The input and output ports of the energy storage system are both high-voltage direct current.

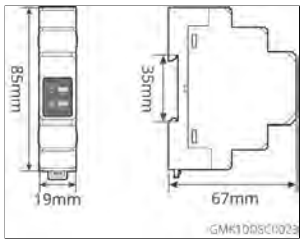
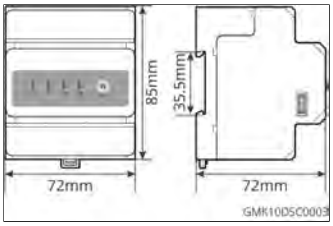
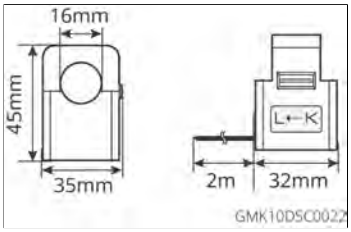


No.	Component	Description
1	Connector	Power and communication ports connecting batteries to batteries and batteries to inverters.
2	Anti-tip Bracket Fixing Hole	Used to fix batteries to walls.
3	Multi-function Button Indicator Light	• Used to indicate the operating status of the inverter. • Battery black start function: When there is no PV power generation in the photovoltaic system and the grid is abnormal, the inverter cannot operate normally. You can press and hold the multifunction button for 2 seconds to start the battery system, activate the inverter, and enable the inverter to operate in off-grid mode, with the battery discharging to supply power to the load. • Battery power-off function: Press and hold the multi-function button for more than 5 seconds to power off the battery system.
4	Battery Isolator Switch	Battery power input/output switch.
5	Battery Compartment Mounting Holes	Used to secure two batteries together.
6	Heat sink	Battery heat sinks.
7	Battery Lifting Hole	Used to hoist batteries. When stacking more than three batteries, use lifting equipment for installation.
8	Battery/Inverter Mounting Holes	Used to fix between batteries or between inverters and batteries.

No.	Component	Description
9	Lifting Rod Mounting Hole	Used to install lifting rod. Use when manually handling batteries.

3.2.2 Smart Meter

The smart meter can measure and monitor the data in the photovoltaic energy storage system, such as voltage, current, frequency, power factor, and power, etc..

GMK110	GM330	CT
		

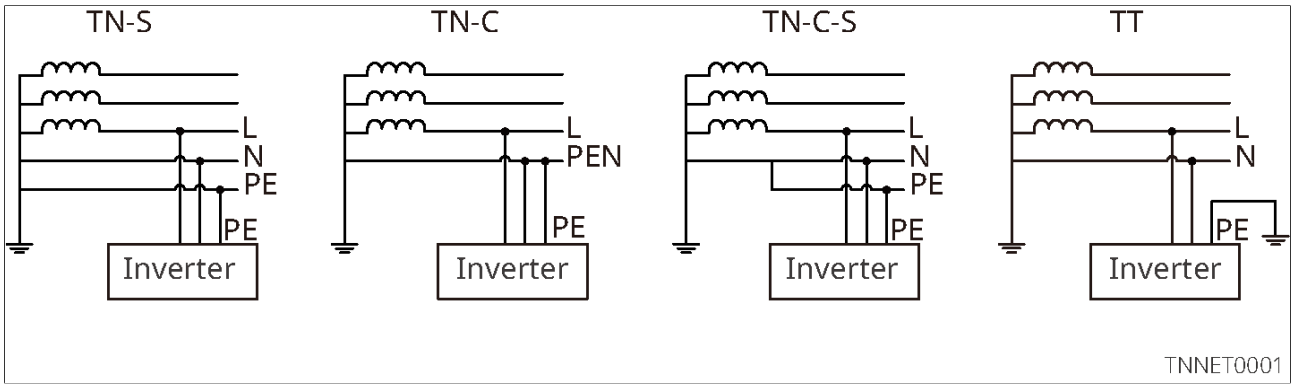
No.	Model	Applicable scenarios
1	GMK110	CT is not supported for changing to other type, CT ratio: 120A: 40mA
2	GM330	Order the CT for GM330 from GoodWe or other suppliers. CT ratio: nA: 5A • nA: For the primary input current of CT, n ranges from 200 to 5000. • 5A: CT secondary output current.

3.2.3 Smart Dongle

The smart dongle can transmit various power generation data to SEMS Portal, the remote monitoring platform, in real time, and can communicate with the SolarGo App to complete the near-end equipment commissioning.

The WiFi/LAN Kit-20 supports Bluetooth, WiFi, and LAN signal types, and is suitable for near-end device testing and transmission of device operation information to remote monitoring systems.

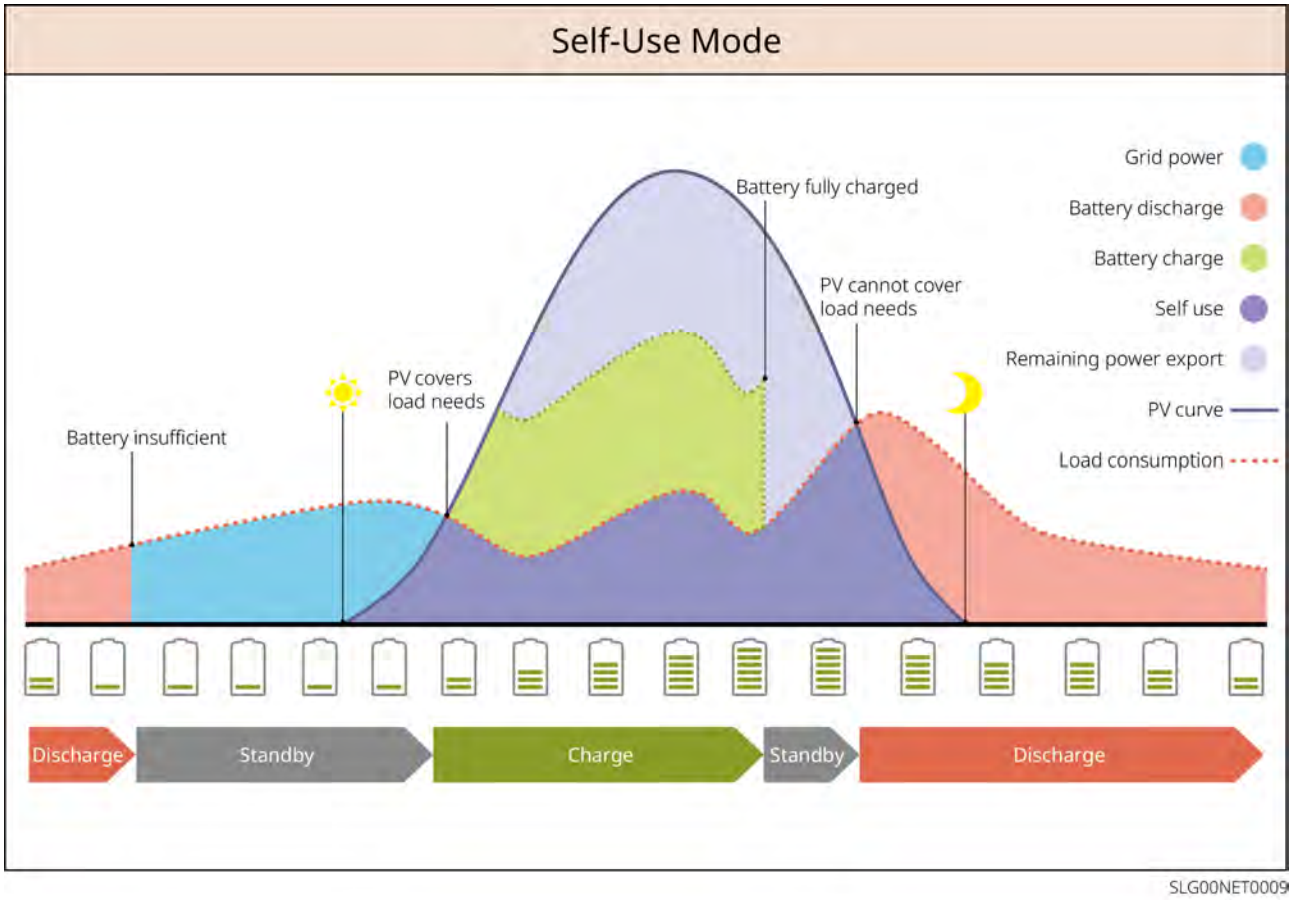
3.3 Supported Grid Types



3.4 System Working Mode

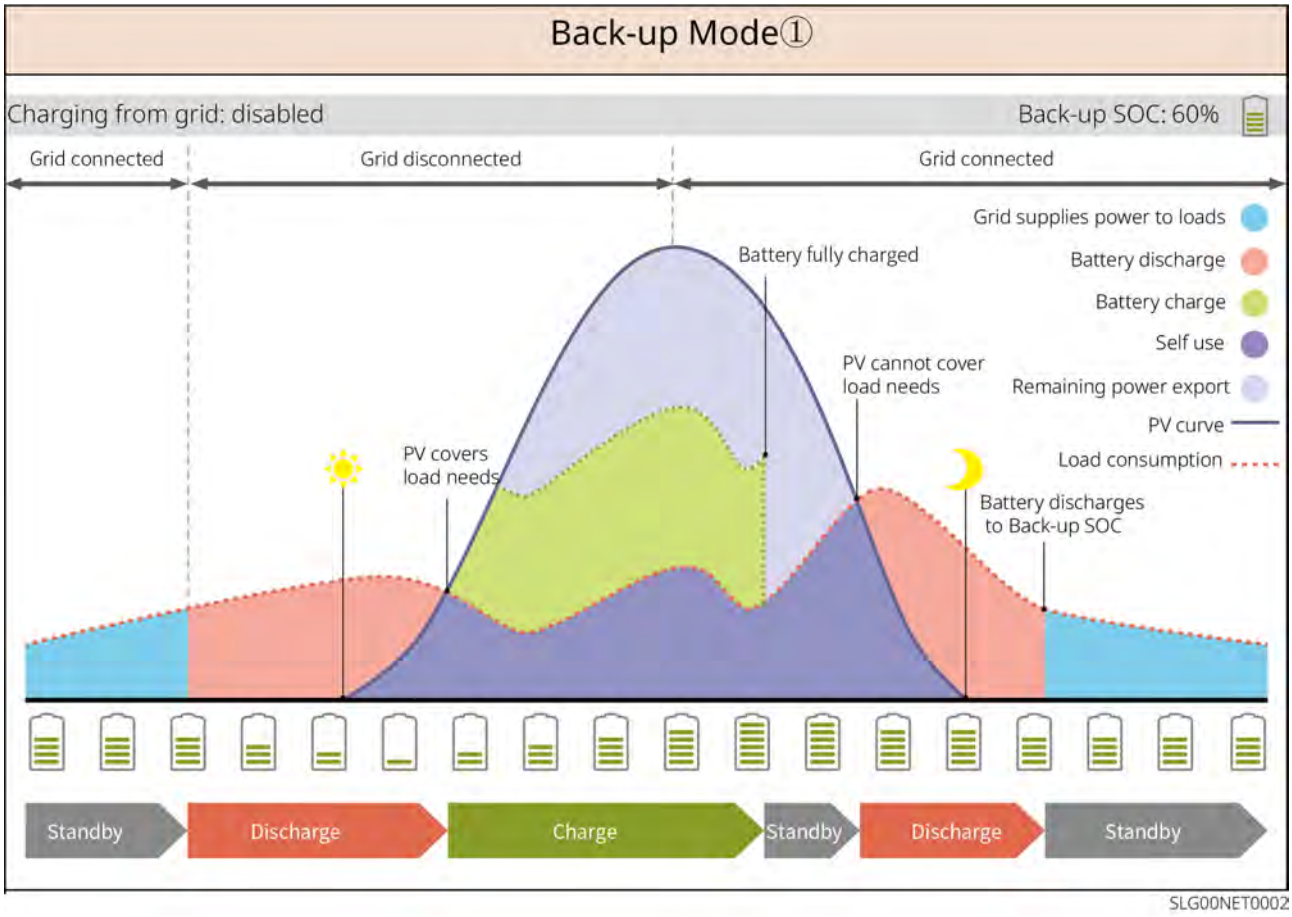
Self-use Mode

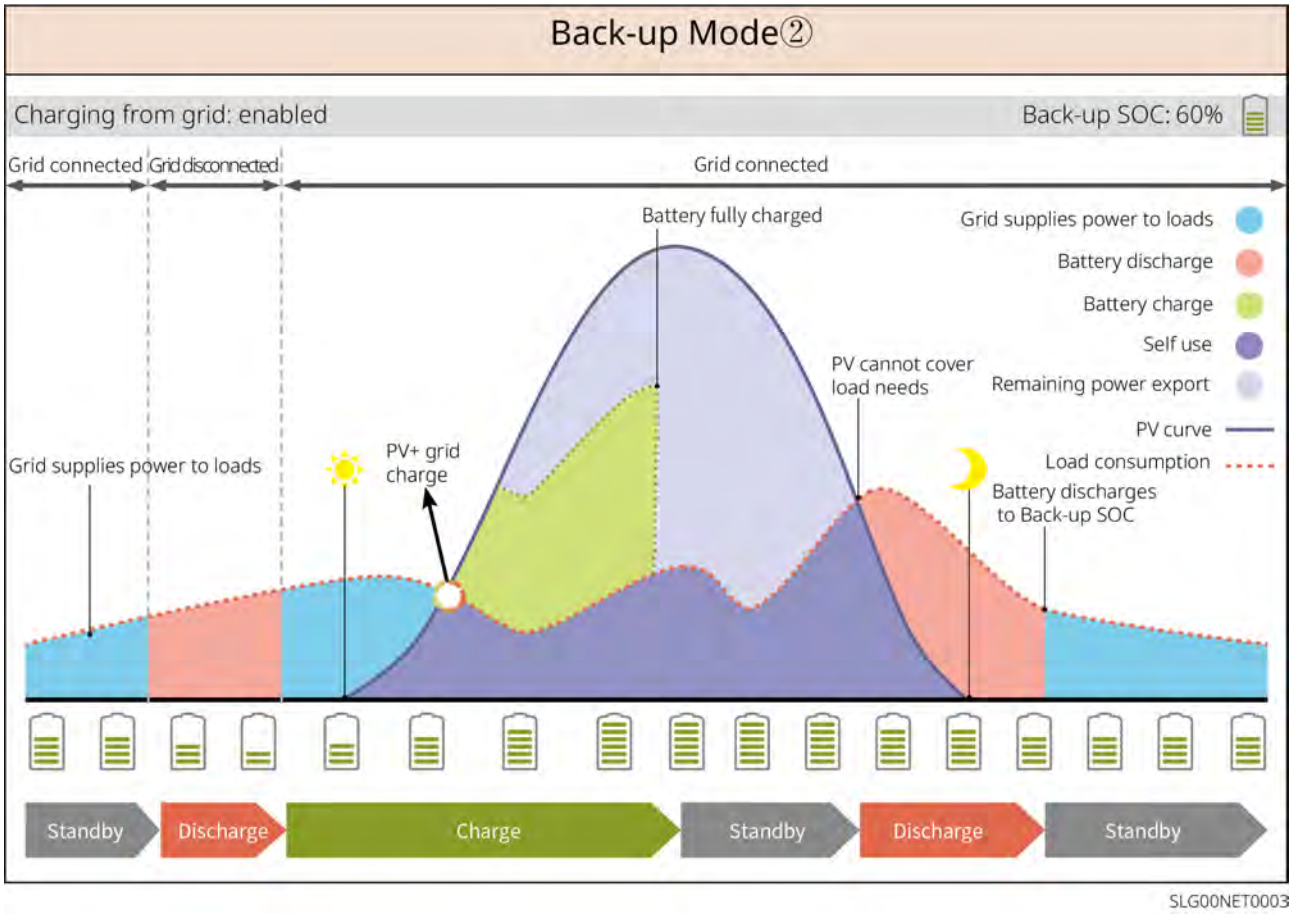
- Self-use mode is the basic working mode of the system.
- The power generated by the PV system supply the loads in priority; the excess power will charge the batteries, and then the remaining power will be sold to the utility grid. When the power generated in the PV system is insufficient, the battery will supply the loads in priority. If the battery power is insufficient, the load will be powered by the utility grid.



BACK-UP Mode

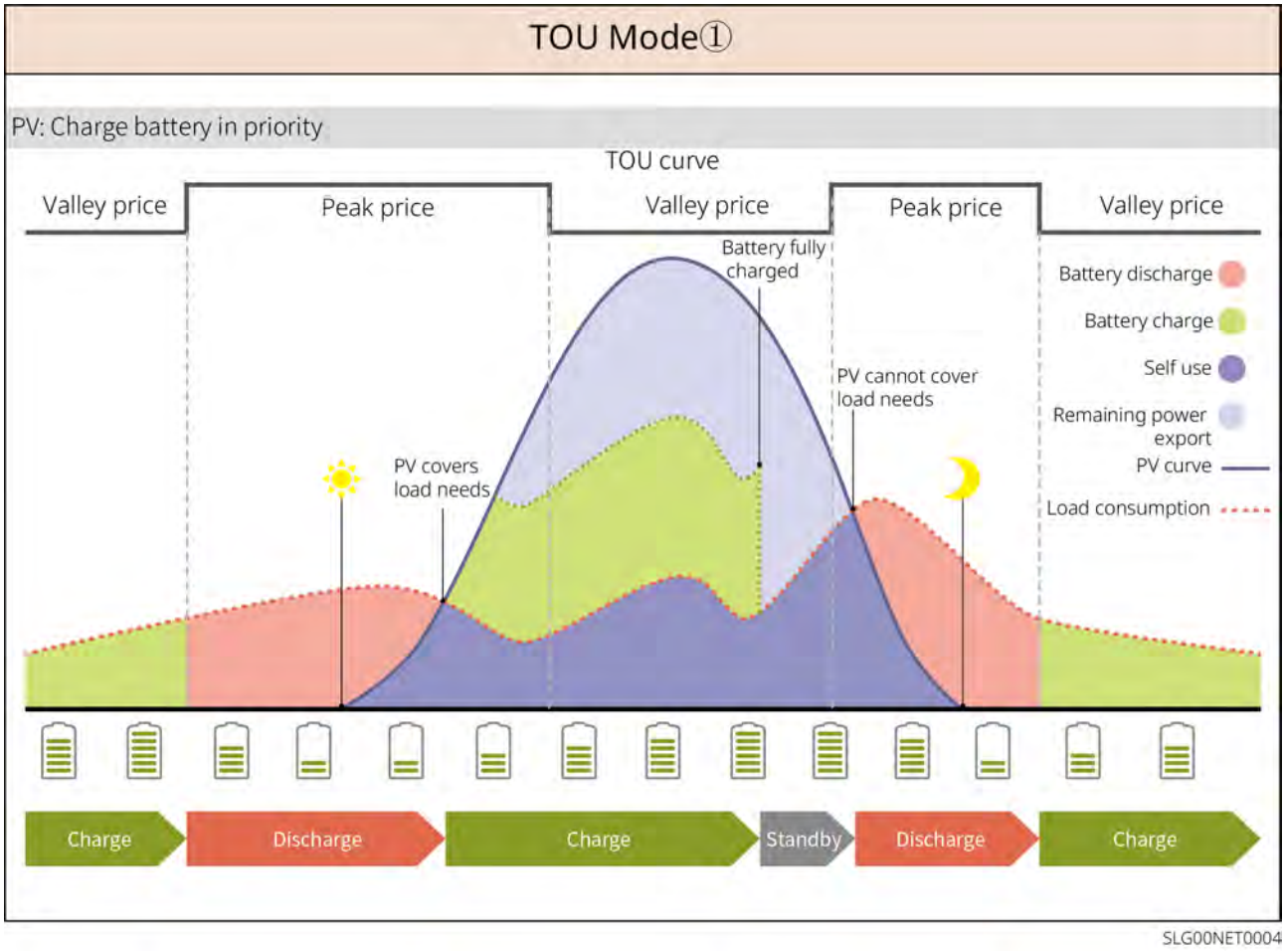
- The BACK-UP mode is mainly applied to the scenario where the grid is unstable.
- When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACK-UP loads; when the grid is restored, the inverter switches to on-grid mode.
- To ensure that the battery SOC is sufficient to maintain normal operation of the system when it is off grid, the battery will be charged to the backup power SOC using PV or grid power during on-grid operation. If you need to purchase electricity from the power grid to charge the battery, please confirm compliance with local power grid laws and regulations.

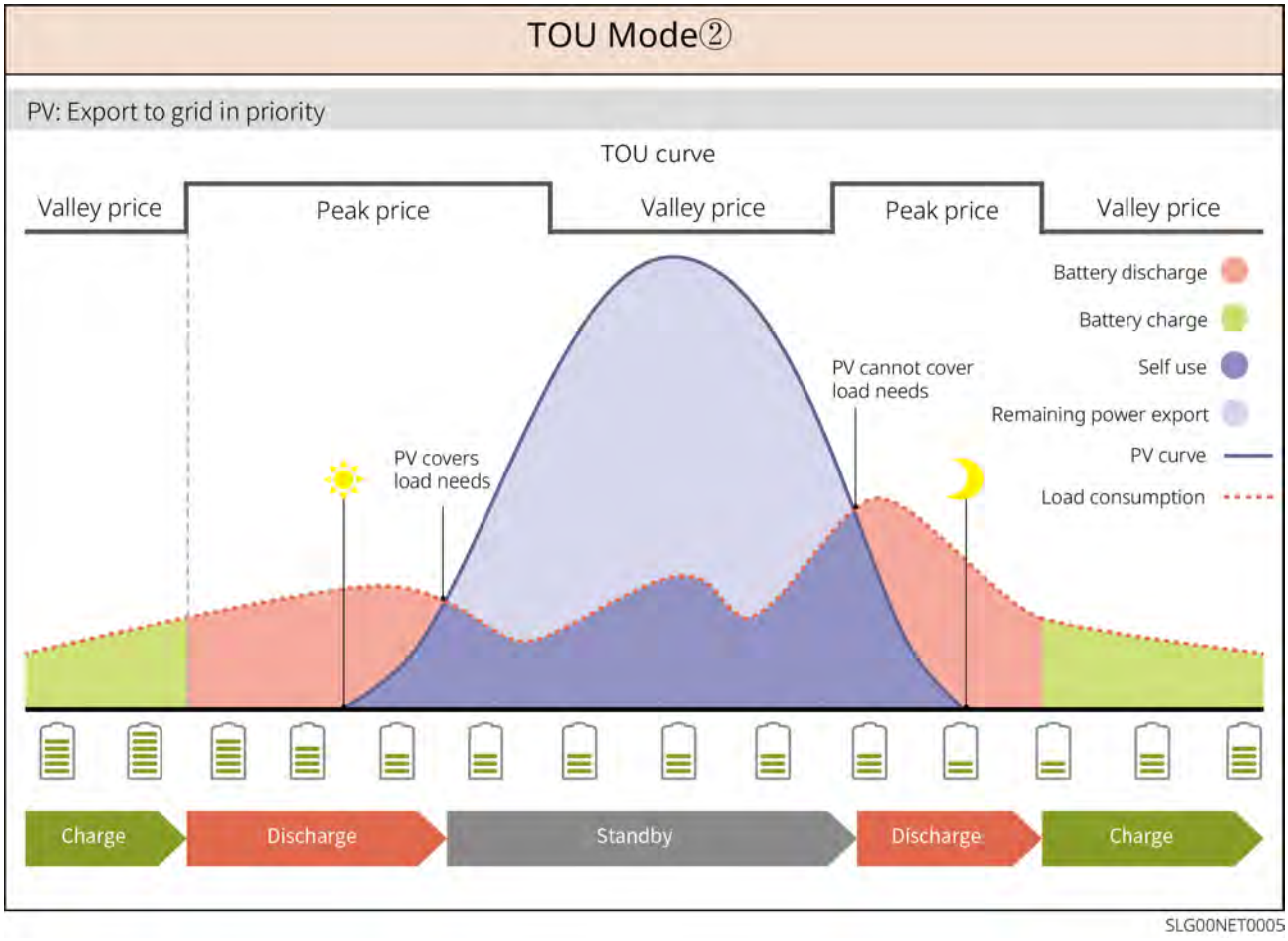

Back-up Mode①
Charging from grid: disabled
Back-up SOC: 60%
Grid connected
Grid disconnected
Grid connected
Grid supplies power to loads
Battery discharge
Battery charge
Self use
Remaining power export
PV curve
Load consumption
Battery fully charged
PV cannot cover load needs
PV covers load needs
Battery discharges to Back-up SOC
Standby
Discharge
Charge
Standby
Discharge
Standby
SLG00NET0002



TOU Mode

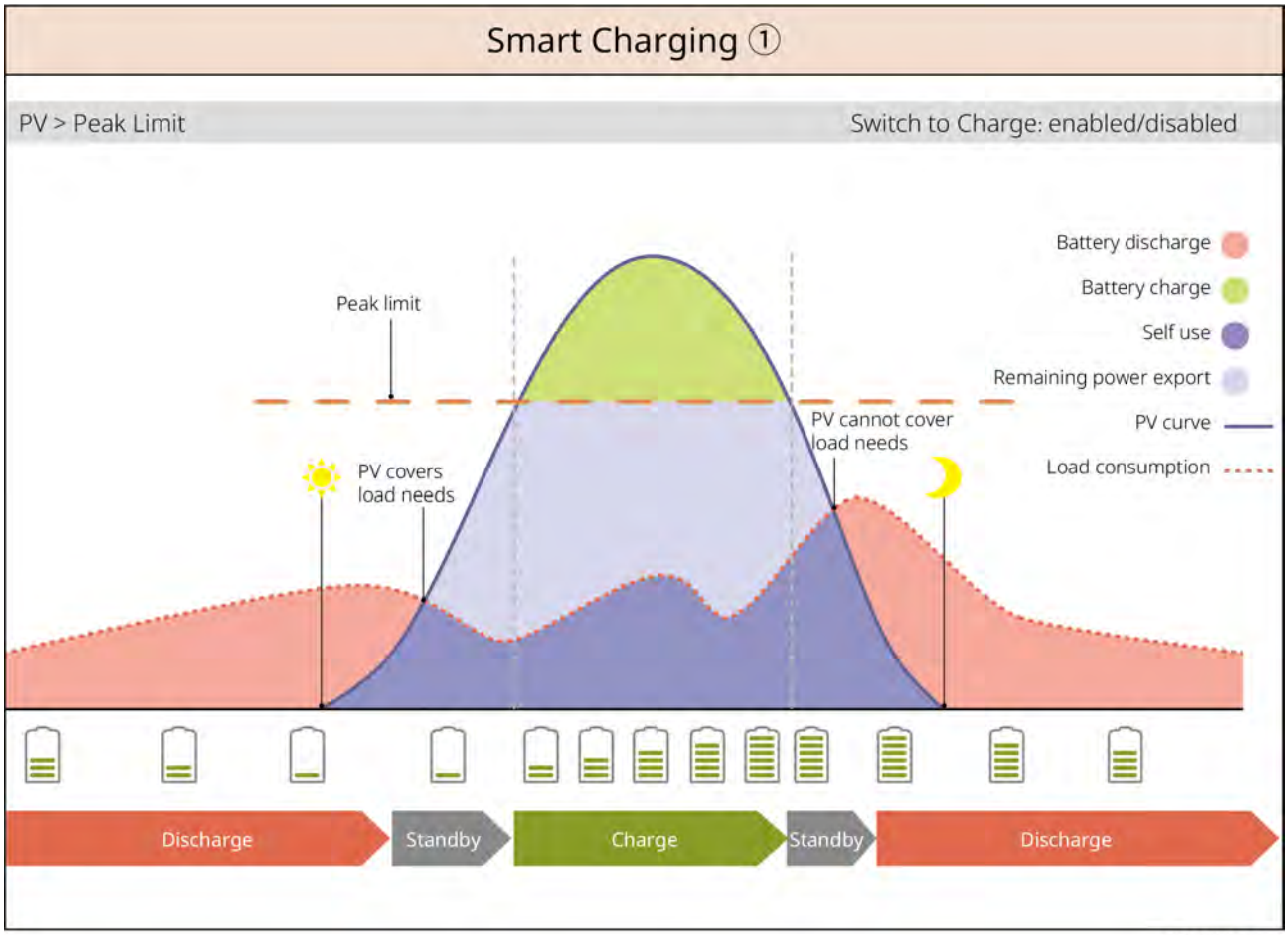
It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. For example, set the battery to charge mode during Valley period to charge battery with grid power. And set the battery to discharge mode during Peak period to power the load with the battery.

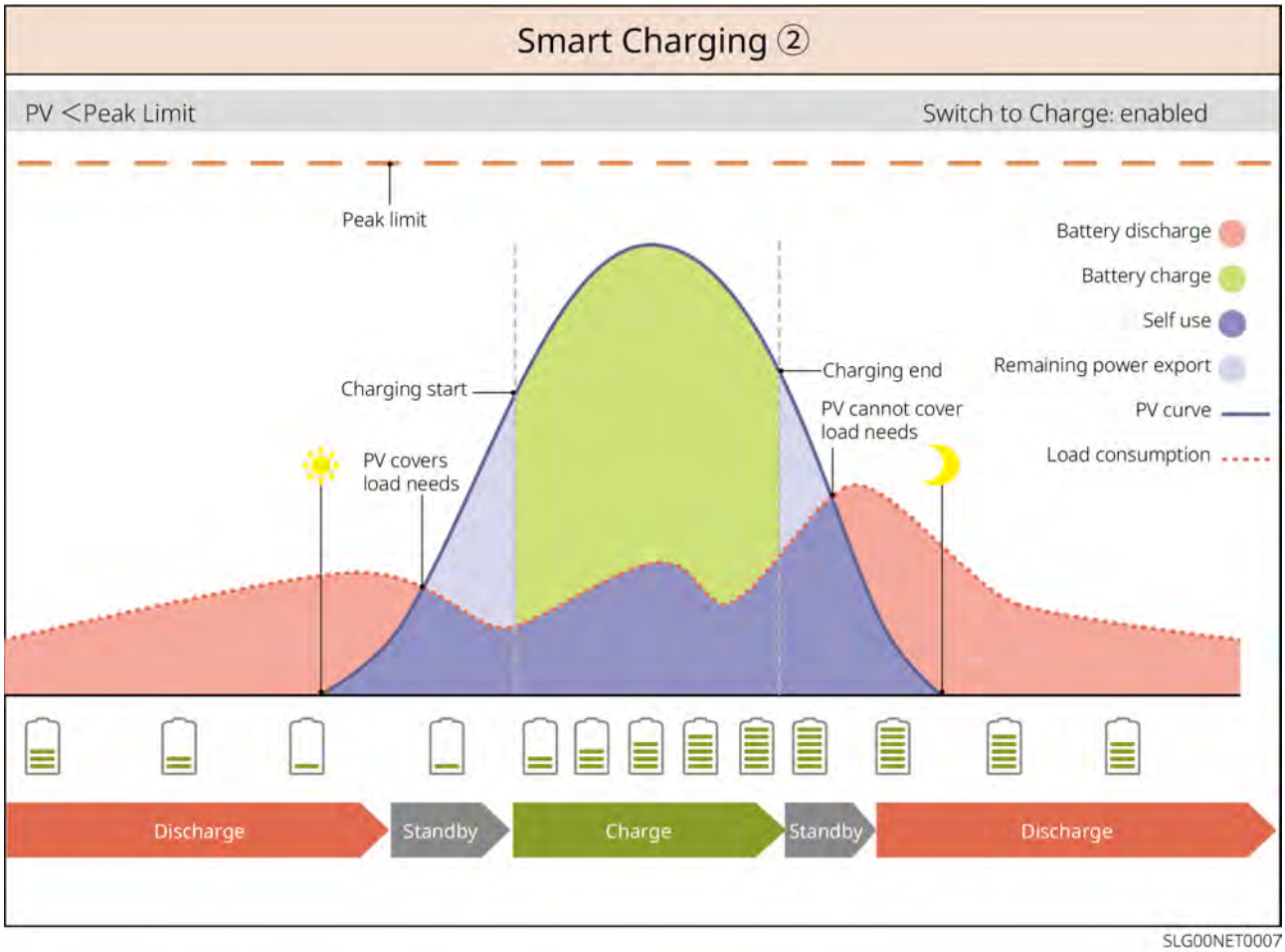

TOU Mode①
PV: Charge battery in priority
TOU curve
Valley price
Peak price
Valley price
Peak price
Valley price
Battery fully charged
PV cannot cover load needs
PV covers load needs
Battery discharge
Battery charge
Self use
Remaining power export
PV curve
Load consumption
Charge
Discharge
Charge
Standby
Discharge
Charge
SLG00NET0004

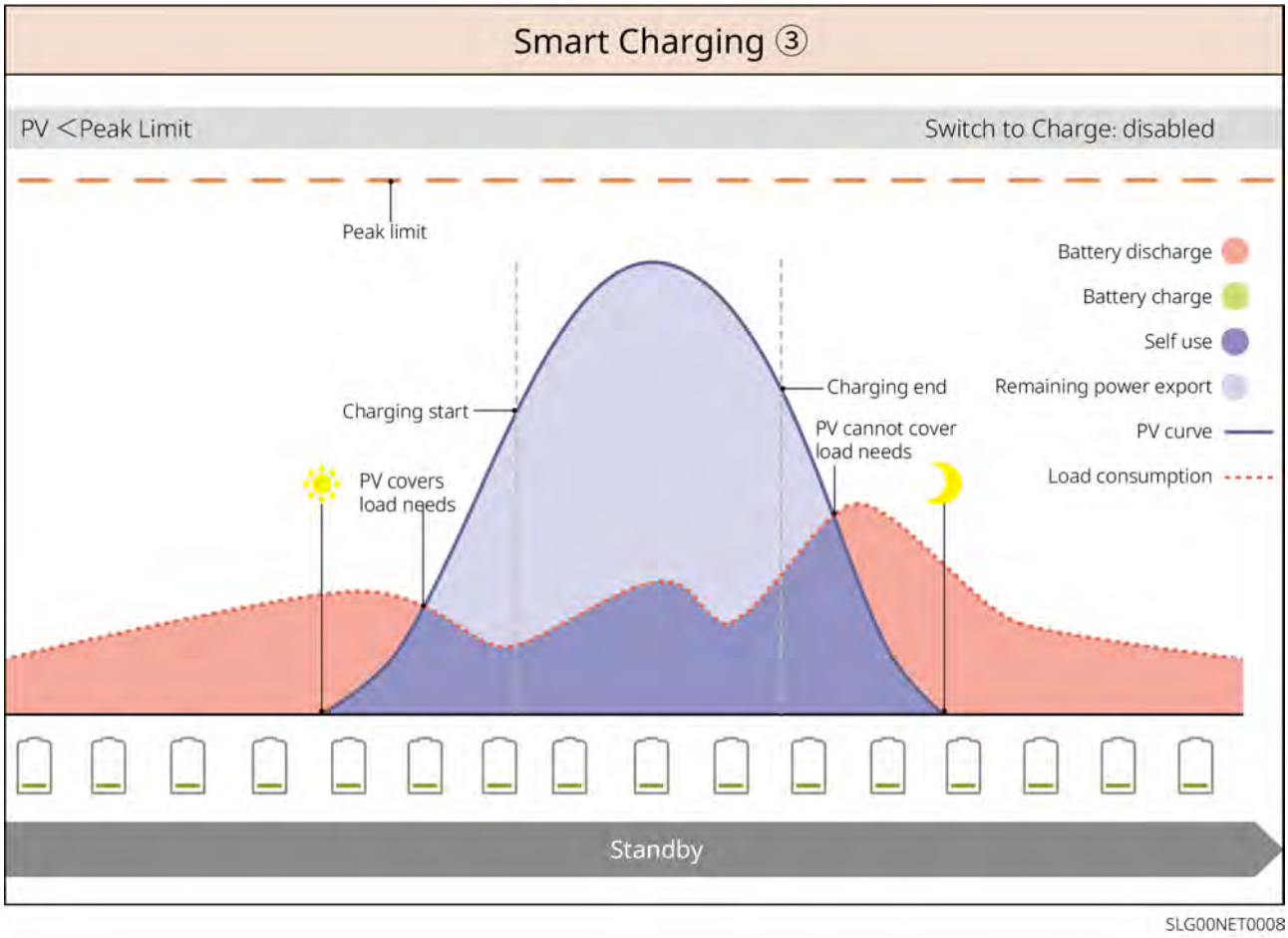


Delayed Charging Mode

- Suitable for areas with on-grid power output restrictions.
- Setting a peak power limit allows the PV power that exceeds the on-grid limit to be used to charge the battery; or setting a PV charging time period, during which the PV power is utilized to charge the battery.

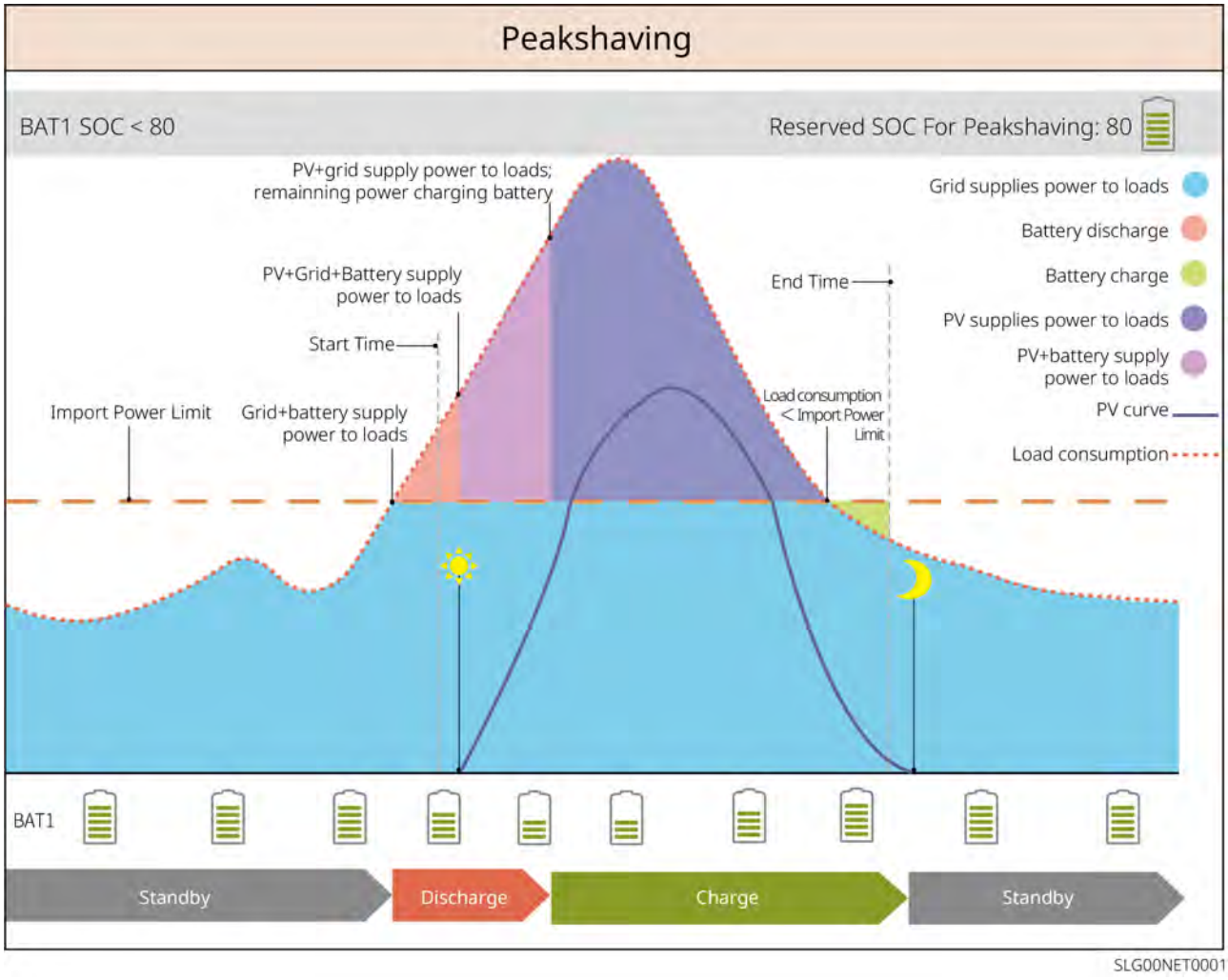

Smart Charging ①
PV > Peak Limit
Switch to Charge: enabled/disabled
Battery discharge
Battery charge
Self use
Remaining power export
PV curve
Load consumption
Peak limit
PV cannot cover load needs
PV covers load needs
Discharge
Standby
Charge
Standby
Discharge
SLG00NET0006


Smart Charging ②
PV <Peak Limit
Switch to Charge: enabled
Peak limit
Battery discharge
Battery charge
Self use
Remaining power export
PV curve
Load consumption
Charging start
Charging end
PV cannot cover load needs
PV covers load needs
Discharge
Standby
Charge
Standby
Discharge
SLG00NET0007



Demand Management Model

- It is mainly applicable to industrial and commercial scenarios.
- When the total power consumption of the load exceeds the power quota within a short period of time, battery discharge can be used to reduce the amount of power consumption exceeding the quota.
- When the battery SOC is below the reserved SOC for demand management, the system buys power from the grid based on the time period, load power usage, and the peak power buy limit.



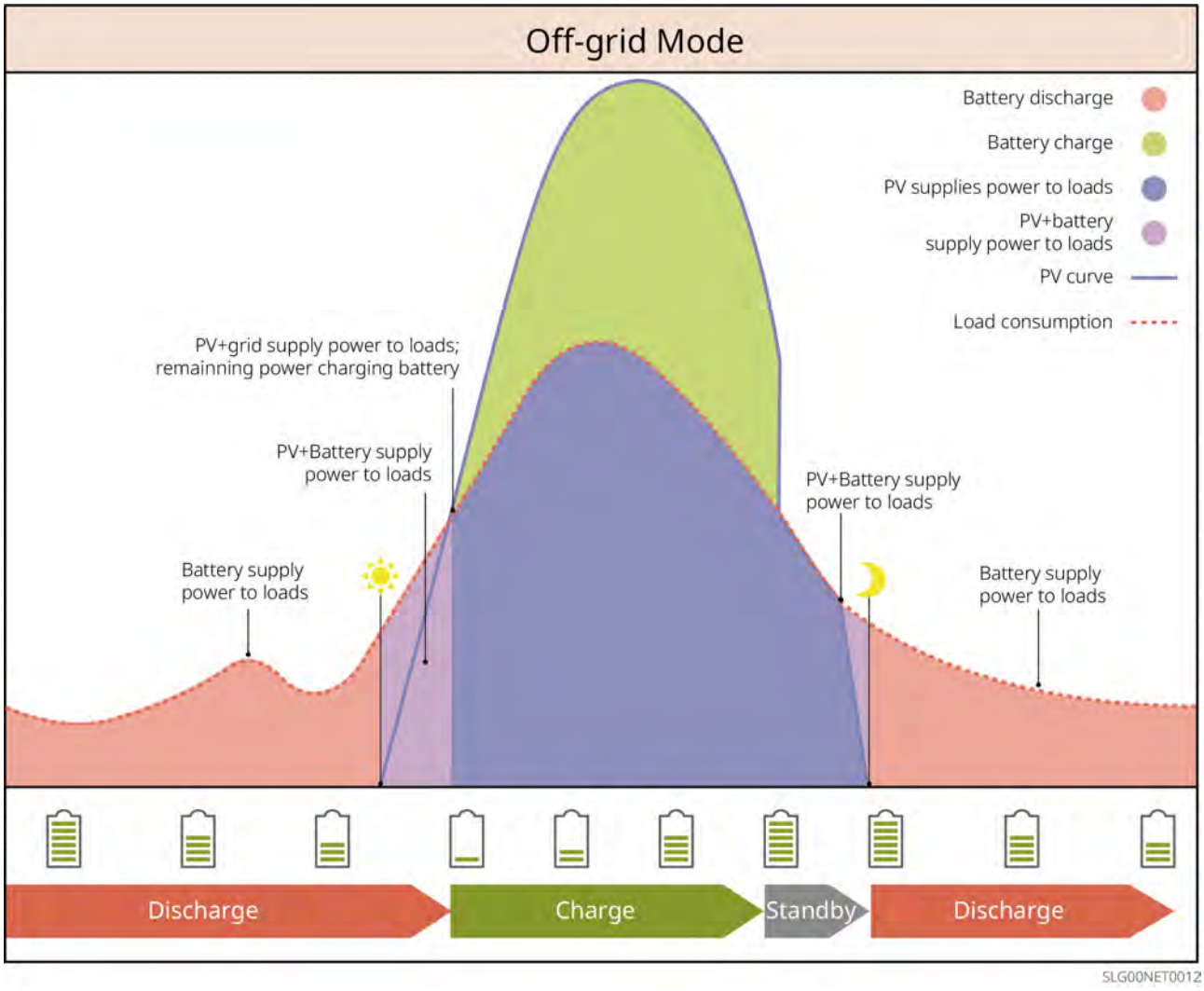
Off-grid Mode

NOTICE

Please do not operate the energy storage system in pure off-grid mode for long periods of time, otherwise there is a risk of over-discharge when the battery cannot be charged in low temperature or low light conditions.

When the power grid fails, the inverter switches to off-grid mode.

- During the day, PV power generation is prioritized for supplying power to loads, and excess power is used to charge batteries.
- Nighttime battery discharge powers the load to ensure uninterrupted power supply to the backup load.



3.5 Features

AFCI

The inverter is equipped with an integrated AFCI circuit protection device for detecting arc faults (arc fauIt) and quickly cutting off the circuit when detected, thus preventing electrical fires.

Reasons for the occurrence of electric arcs:

- Damaged connectors in the PV system.
- Wrong connected or broken cables.
- Aging connectors and cables.

Troubleshooting:

1. When the inverter detects an arc, the type of barricade can be viewed through the inverter display or the App.
2. If the inverter triggers a fault less than 5 times in 24 hours, wait 5 minutes and the machine will automatically resume grid-tied machine protection. After the 5th electric arc fault, the inverter can operate normally after the fault is solved. For more details, refer to the SolarGo APP User Manual.

Model	Tag	Description
GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20	AFCI: F-I-AFPE-1-2-1	F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2: 2 input ports per channel 1: 1 monitored channel
GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20	AFCI: F-I-AFPE-1-2/2-2	F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2/2: 2/2 input ports per channel(AFD1: 2 , AFD2: 1) 2: 2 monitored channels

Load Control

Inverter dry contact control port to support connection of additional contactors for controlling loads on or off. Supports domestic loads, heat pumps, etc.

The load control methods are as follows:

- Time Control: Set the time to control the load to turn on or off, and the load will be automatically turned on or off in the set time period.
- Switch Control: When the control mode is selected as ON, the load will be turned on; when the control mode is set to OFF, the load will be turned off.
- BACK-UP LOAD CONTROL: The inverter has a built-in relay dry contact control port to control whether the load is turned off or not via a relay. In off-grid mode, the

load connected to the relay port can be turned off if the overloaded battery SOC value at the BACK-UP end is detected to be lower than the battery off-grid protection setting.

Rapid Shutdown (RSD)

In the rapid shutdown system, the transmitter is used in conjunction with a receiver to achieve the rapid shutdown of the system. The receiver maintains the component output by receiving signals from the transmitter. The transmitter can be external or built into the inverter. In the event of an emergency, the component can be shut down by enabling an external trigger to stop the transmitter.

- External Transmitter
  - Transmitter Model: GTP-F2L-20, GTP-F2M-20
    https://www.goodwe.com/Ftp/Installation-instructions/RSD2.0-transmitter.pdf
  - Receiver Model: GR-B1F-20, GR-B2F-20
    https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf
- Built-in Transmitter
  - External trigger device: AC side circuit breaker
  - Receiver Model: GR-B1F-20, GR-B2F-20
    https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf

4 Check and Storage

4.1 Check Before Receiving

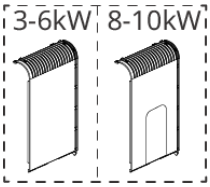
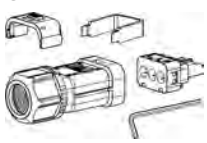
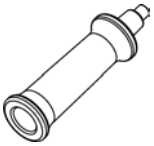
Check the following items before accept.

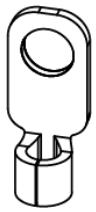
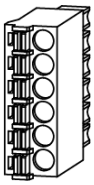
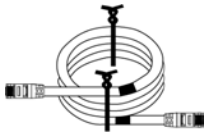
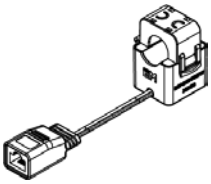
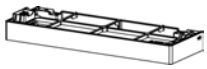
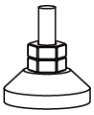
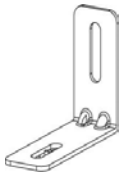
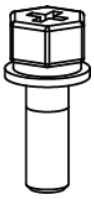
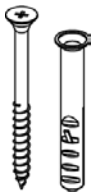
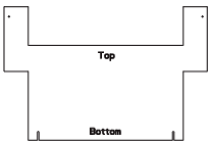
1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the product model. If the product model is not what you requested, do not unpack the product and contact the supplier.

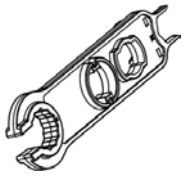
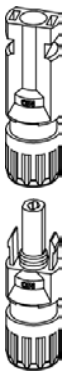
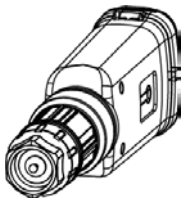
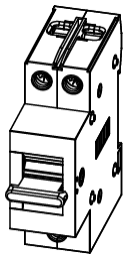
4.2 Deliverables

⚠WARNING
Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

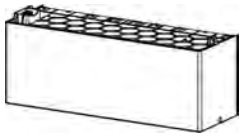
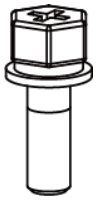
4.2.1 Inverter Deliverables

Component	Description	Component	Description
	Inverter x 1		Decorative cover x 1
	Left decorative cover x 1		Right decorative cover x 1
 or 	AC terminal x 2		Handles x 2

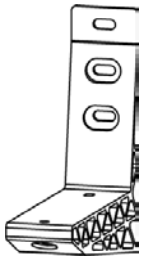
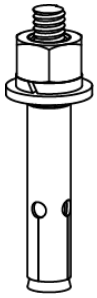
Component	Description	Component	Description
	OT grounding terminal x 1		6PIN terminal x 2
	2PIN terminal x 2		PIN terminal x 16
	CT connection cable x 1		CT x 1
	Battery base x 1		Adjustable feet x 4
	Anti-tip bracket x 4		M5*16 bolts x 9
	M5*60 Expansion bolts x 4		Punch-marked paper x 2

Component	Description	Component	Description
	PV terminal tamper-proof cover x N GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20：4 GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20：8		AC terminal unlocking tool x1
	PV terminal x N GW3K-EHA-G20 GW3.6K-EHA-G20 GW5K-EHA-G20 GW6K-EHA-G20：4 GW8K-EHA-G20 GW9.999K-EHA-G20 GW10K-EHA-G20：8		COM module x1
	Documents x 1		Manual switch (only for Australia) x 1

4.2.2 Batteries Deliverables

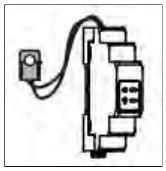
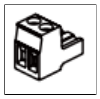
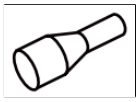
Component	Description	Component	Description
	Battery x1		M5*16 bolts x 2
	Silicone cap x 2	-	-

Hanger installation (optional)

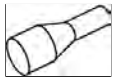
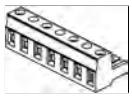
Component	Description	Component	Description
	Bracket x 2		M10 Expansion bolts x 6
	M10 bolts x 4	-	-

4.2.3 Smart Meter Deliverables

4.2.3.1 GMK110

Component	Description	Component	Description
	Smart Meter and CT x 1		RS485 communication terminals x 1
	Voltage input side terminal x 1		PIN terminal x 4
	Screw driver x 1		Documents x 1

4.2.3.2 GM330

Component	Description	Component	Description
	Smart Meter x1		2 PIN terminal x1
	PIN terminal x 6		7 PIN terminal x1
	Screw driver x 1		Documents x 1

4.3 Storage

- If the inverter has been stored for more than two years or has not been in operation for more than six months after installation, it is recommended to be inspected and tested by professionals before being put into use.
- To ensure good electrical performance of the internal electronic components of

the inverter, it is recommended to power it on every 6 months during storage. If it has not been powered on for more than 6 months, it is recommended to be inspected and tested by professionals before being put into use.

- In order to protect the performance and service life of the battery, it is recommended to avoid unused storage for a long period of time. Prolonged storage may cause deep discharging of the battery, resulting in irreversible chemical loss, leading to capacity degradation or even complete failure, timely use is recommended. If the battery needs to be stored for a long period of time, please maintain it according to the following requirements:

NOTICE
[1] The storage time starts from the SN date on the outer packaging of the battery and requires charging and discharging maintenance after the storage cycle is exceeded. (Battery maintenance time = SN date + charge/discharge maintenance cycle). For SN date, refer to 14.4.SN Code Meaning [2] After passing the charging/discharging maintenance, if there is a Maintaining Label attached to the outer box, then please update the maintenance information on the Maintaining Label. if there is no Maintaining Label, please record the maintenance time and SOC of the batteries by yourself and keep the data to facilitate the keeping of maintenance records.

Battery Model	Initial SOC Range for Battery Storage	Recommended Storage Temperature	Charge and Discharge Maintaining Period[1]	Battery Maintenance Method [2]
GW5.1-BAT-D-G20	35~95%	0~35℃	-20~35℃, 12 months 35~45℃, 6 months	Contact the dealer or the after-sales service for maintenance method.
GW8.3-BAT-D-G20				

Packing requirements:

Do not unpack the outer package or throw the desiccant away.

Installation environment requirements:

1. Place the equipment in a cool place where is away from direct sunlight.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and there is no condensation. Do not install the equipment if the ports or terminals are condensed. Battery storage humidity range: 5%-95%.
3. Keep the equipment away from flammable, explosive, and corrosive matters.

Stacking requirements:

1. The height and direction of the stacking inverter should follow the instructions on the packing box.
2. The inverter must be stacked with caution to prevent them from falling.

5 Installation

⚠DANGER
Install and connect the equipment with the deliverables included in the package. Otherwise, the manufacturer shall not be liable for the damage.

5.1 Installation Requirements

5.1.1 Installation Environment Requirements

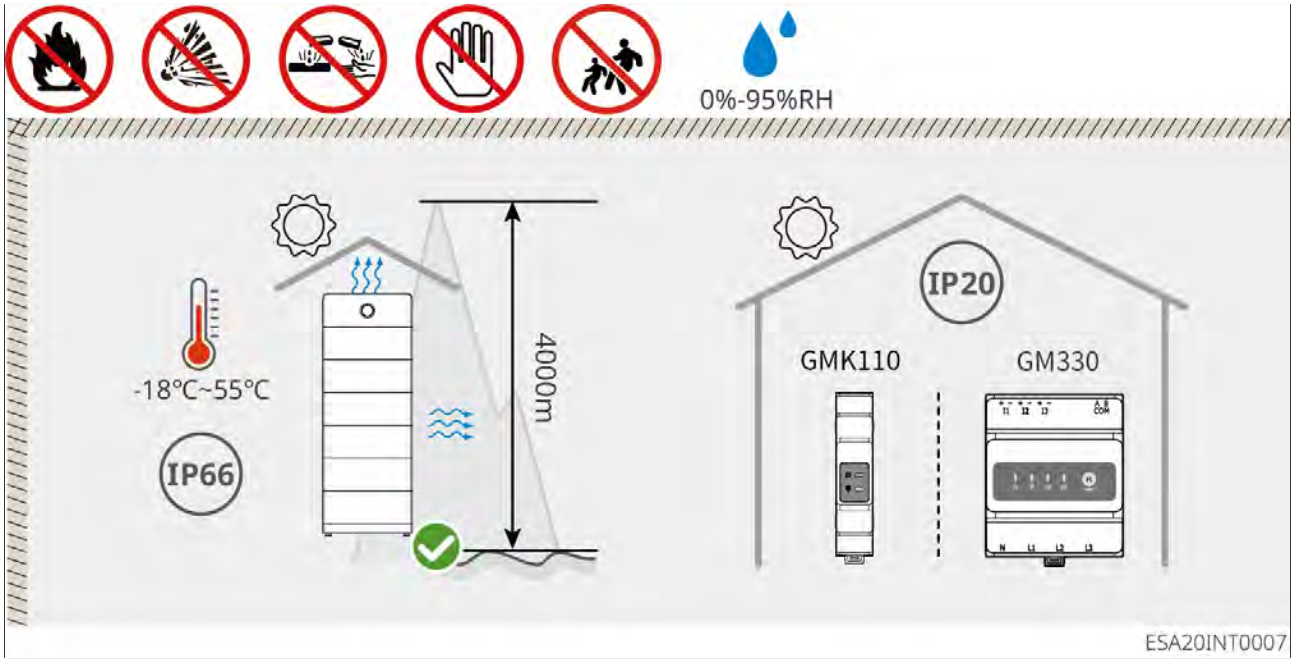
1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. The temperature and humidity at the installation site should be kept within the appropriate range.
3. Do not install the equipment in a place that is easy to touch, especially within children's reach.
4. High temperatures may exist on the surface of the equipment during operation to prevent burns.
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
6. The place to install the equipment shall be well-ventilated for heat radiation and large enough for operations.
7. Check the protection rating of the equipment and ensure that the installation environment meets the requirements. The inverter, battery system, and smart dongle can be installed both indoors and outdoors, but the smart meter can only be installed indoors.
8. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
9. The altitude to install the inverter shall be lower than the maximum working altitude of the system.
10. Consult the manufacturer before installing the equipment outdoors in salt affected areas. A salt-affected area refers to the region within 500 meters offshore, and will be related to the sea wind, precipitation and topography.
11. This inverter has not been tested and verified in accordance with the AS/NZS 4777.2:2020 standard for combinations of multiple inverters and/or multi-phase inverter combinations. Therefore, such combination schemes should not be used.
12. Install the equipment away from electromagnetic interference. If there is any radio

or wireless communication equipment below 30MHz near the equipment, you have to:

- Inverter: add a multi-turn winding ferrite core at the AC output cable of the inverter, or add a low-pass EMI filter. Or the distance between the inverter and the wireless EMI equipment should be more than 30m.
- Other equipment: the distance between the equipment and the wireless EMI equipment should be more than 30m.

NOTICE

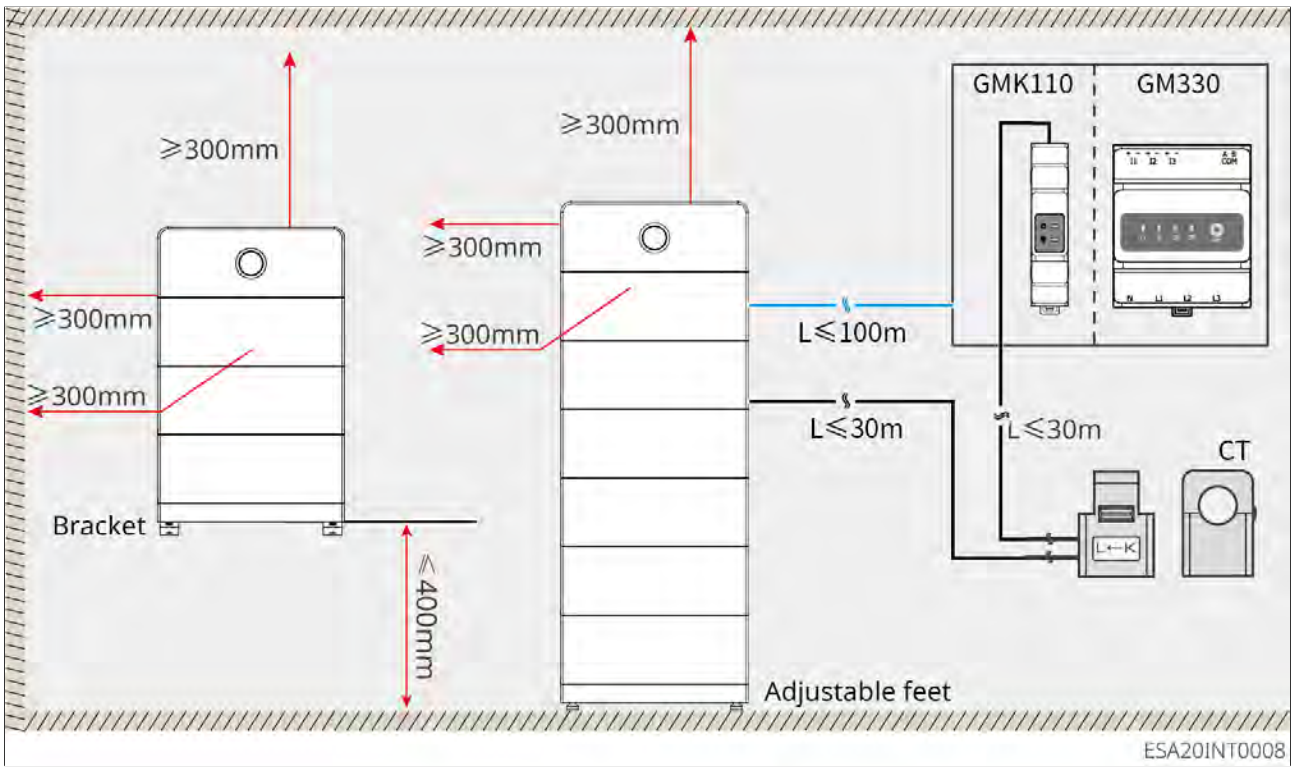
- Inverter Operating Temperature Range: -35℃-60℃.
- GW5.1-BAT-D-G20, GW8.3-BAT-D-G20: Charging temperature range: -18℃-55℃; Discharging temperature range: -20℃-55℃.
- If installed in an environment below -18℃, the battery will not be able to continue charging to restore energy after being discharged, resulting in undervoltage protection.



5.1.2 Installation Space Requirements

Reserve enough space for operations and heat dissipation when installing the system. CAT5E or higher shielded network cables must be used to install CT, with a maximum distance of 30 meters. RS485 twisted pair shielded cable for

communication between the inverter and the electricity meter, with a maximum distance of up to 100 meters.

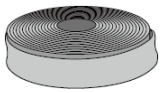
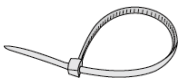


5.1.3 Tool Requirements

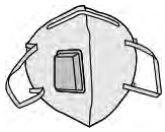
NOTICE
The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

Installation Tools

Tool Types	Description	Tool Types	Description
	Diagonal pliers		RJ45 crimping tool
	Wire stripper		YQK-70 hydraulic pliers

Tool Types	Description	Tool Types	Description
	Adjustable wrench		PV connector tool PV-CZM-61100
	Impact drill (drill bits Φ12mm)		Torque wrench M4/M5/M6/M10
	Rubber hammer		Socket wrench set
	Marker		Multimeter Range≤600V
	Heat shrink tube		Heat gun
	Cable tie		Vacuum cleaner

Personal Protective Equipment

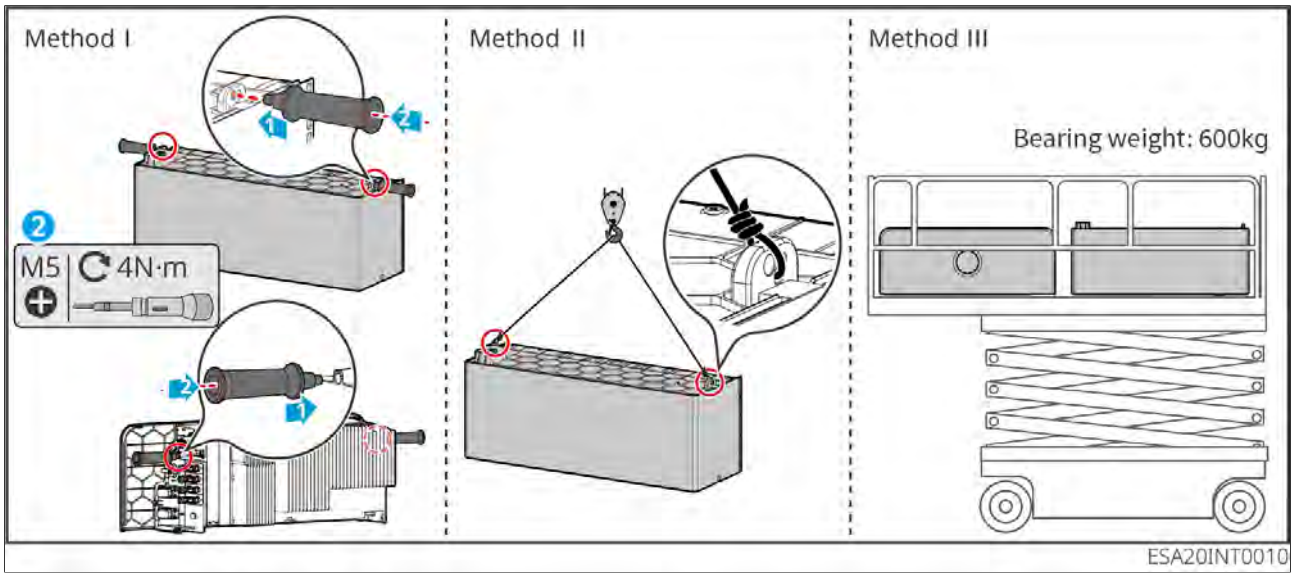
Tool Types	Description	Tool Types	Description
	Insulating gloves and safety gloves		Dust mask
	Goggles		Safety shoes

5.2 Equipment Handling

⚠CAUTION

- Operations such as transportation, turnover, installation and so on must meet the requirements of the laws and regulations of the country or region where inverters are installed.
- Move the equipment to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.

1. Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.
2. Wear safety gloves to avoid personal injury.
3. Keep balance to avoid falling down when moving the equipment.
4. The battery system can be transported to the installation site by crane.
5. When moving equipment using a hoisting method, please use flexible slings or straps. The load-bearing capacity of a single strap must meet the following requirements:
   GW5.1-BAT-D-G20≥180KG
   GW8.3-BAT-D-G20 ≥240KG



5.3 Equipment Installation

⚠CAUTION

- Avoid the water pipes and cables buried in the wall when drilling holes.
- Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes.
- The inverter is installed above the battery. Do not install the battery above the inverter.
- Ensure that the battery system is installed vertically and securely. When placing the battery base, battery, and inverter, make sure that the holes on the upper and lower layers are aligned. The anti-tip bracket should be vertically attached to the ground, wall, or battery system surface.
- Cover the equipment with a cardboard to prevent foreign matters when drilling holes. Otherwise, the system may be damaged.

NOTICE

- The battery must be installed on the base, which can be installed on the ground or on a hanging bracket.
- When using the base for installation, up to six batteries can be stacked.
- When using a hanging bracket for installation, up to three batteries can be stacked.
  - GW5.1-BAT-D-G20 supports stacking up to 3 units.
  - GW8.3-BAT-D-G20 supports stacking up to 2 units.
  - When mixing GW5.1-BAT-D-G20 and GW8.3-BAT-D-G20, a maximum of two units can be stacked.
- The base, bracket, and top battery must be secured to the wall with anti-tip brackets.
- When marking the drilling positions for mounting brackets, have one person hold the base steady while another person marks the drilling positions with a marker pen.
- When installing the battery and inverter, remove the protective cover from the blind mating connector before stacking.

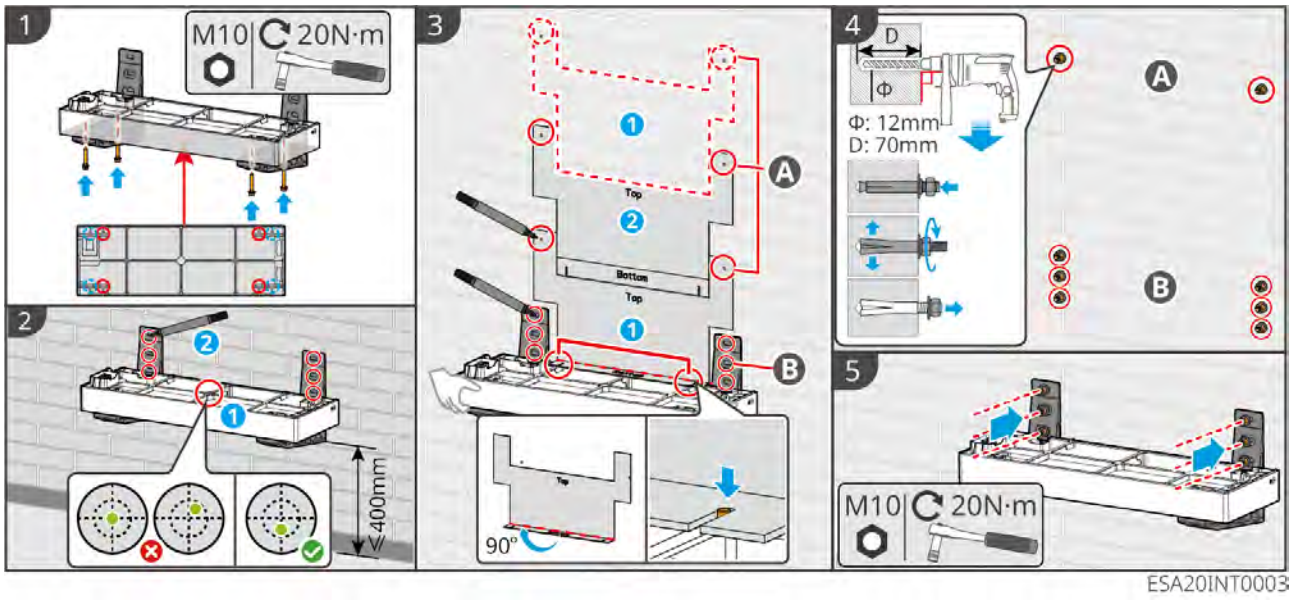
Installing the brackets

Step 1: Install the base on the hanger.

Step 2: Hang the rack close to the wall. Ensure that the hanger is securely in place

and check the level bubble in the center of the base.
Step 3: After adjusting the position and level of the hanger, use a marker to mark the drilling positions. Once you're done marking, remove the hanger. (A: PACK fixing holes; B: Bracket fixing holes.)
Step 4: Drill holes and install expansion screws.
Step 5: Use an Allen wrench to secure the bracket to the wall.

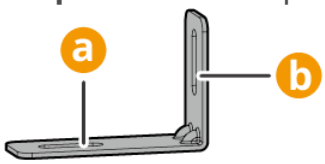
1. Drill holes with hammer drill.
2. Clean the holes.
3. Use a rubber mallet to install the expansion screws into the holes.
4. Use an Allen wrench to tighten the nut clockwise to expand the screw.
5. Remove the nut by turning it counterclockwise.
6. Use a torque screwdriver to secure the anti-tip bracket to the wall.



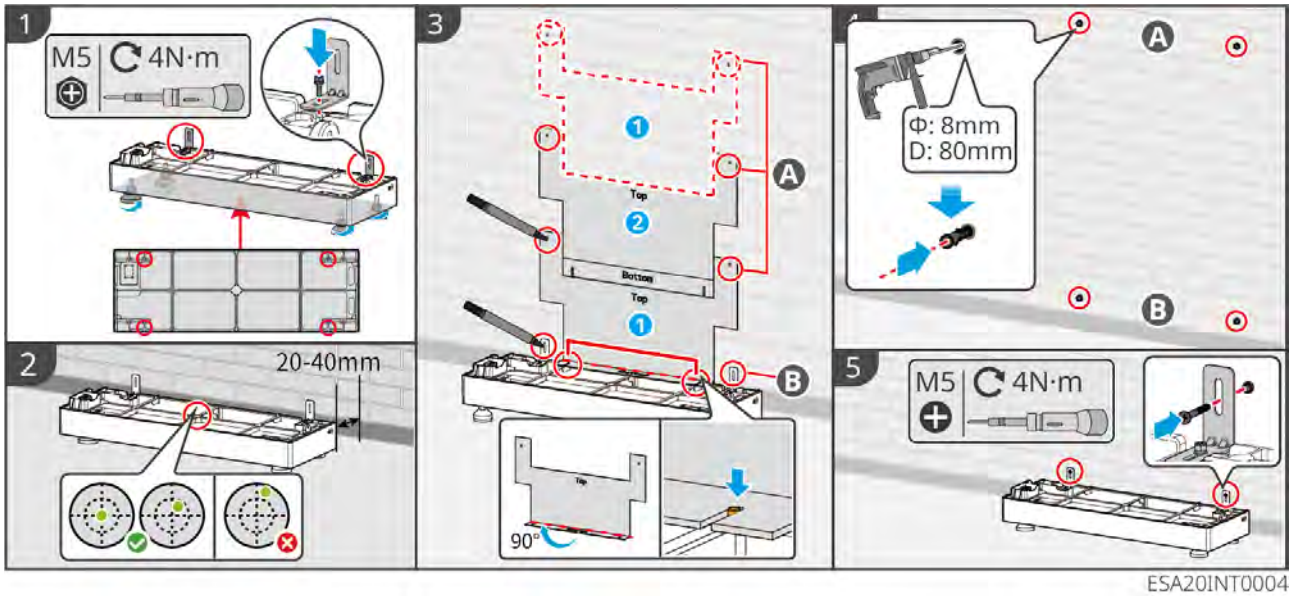
Installing the base

Step 1: Install the adjustable feet on the bottom of the base and secure the anti-tip bracket to the base.
Step 2: Place the base 35-55mm away from the wall, keeping it parallel to the wall. Observe the level bubble in the center of the base. If the bubble is not centered, use the adjustable feet to level the base.
Step 3: After adjusting the position and level of the base, use the hole marking paper to mark the hole positions. Once the marking is complete, remove the base. (A: PACK fixing holes; B: Bracket fixing holes.)

Step 4: Use an impact drill to drill holes and clean them.
Step 5: Use a Phillips screwdriver to secure the anti-tip bracket to the wall.



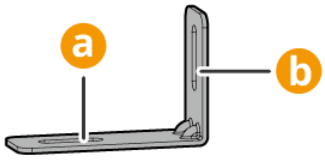
a: Fixed to the base; b: Fixed to the wall.



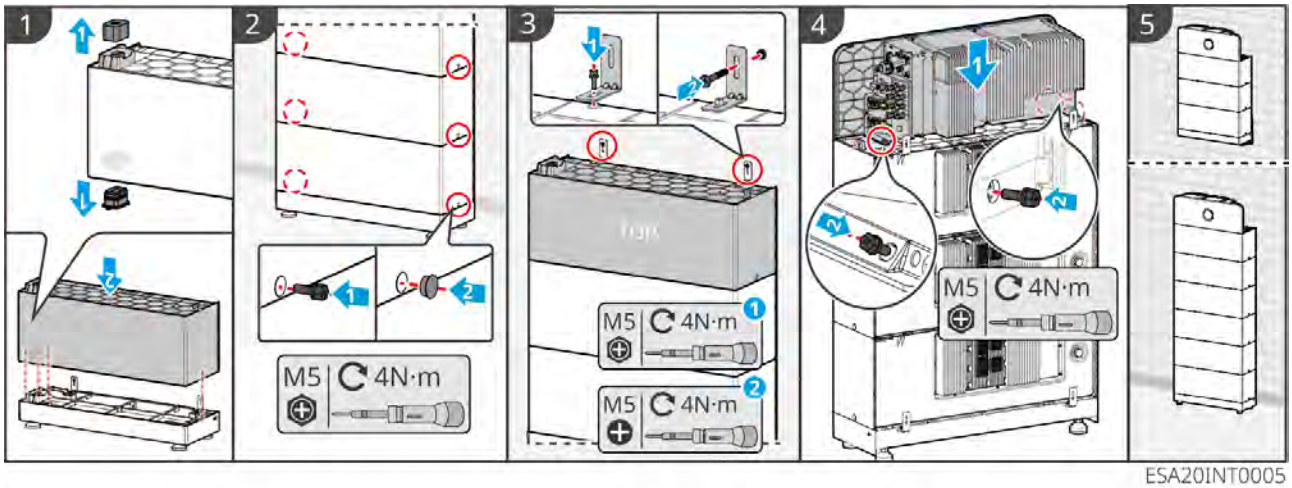
ESA20INT0004

Installing the Battery and the Inverter

Step 1: Install the handle (optional), remove the protective cover from the battery blind mating connector, and stack the batteries on the base.
If installing more than three battery, please use lifting equipment.
Step 2: Tighten the screws securing the battery to the base or between batteries.
If you need to install multiple batteries, repeat **step 1 and step 2** to complete the installation of all batteries. Do not stack more than 6 batteries in a single group.
Step 3: Secure the top battery to the wall using an anti-tip bracket.
Step 4: Remove the protective cover from the blind mating connector at the bottom of the inverter.
Step 5: Lift the inverter and stack it on top of the battery, then tighten the screws between the inverter and the battery.



a: Fixed to PACK; b: Fixed to the wall.

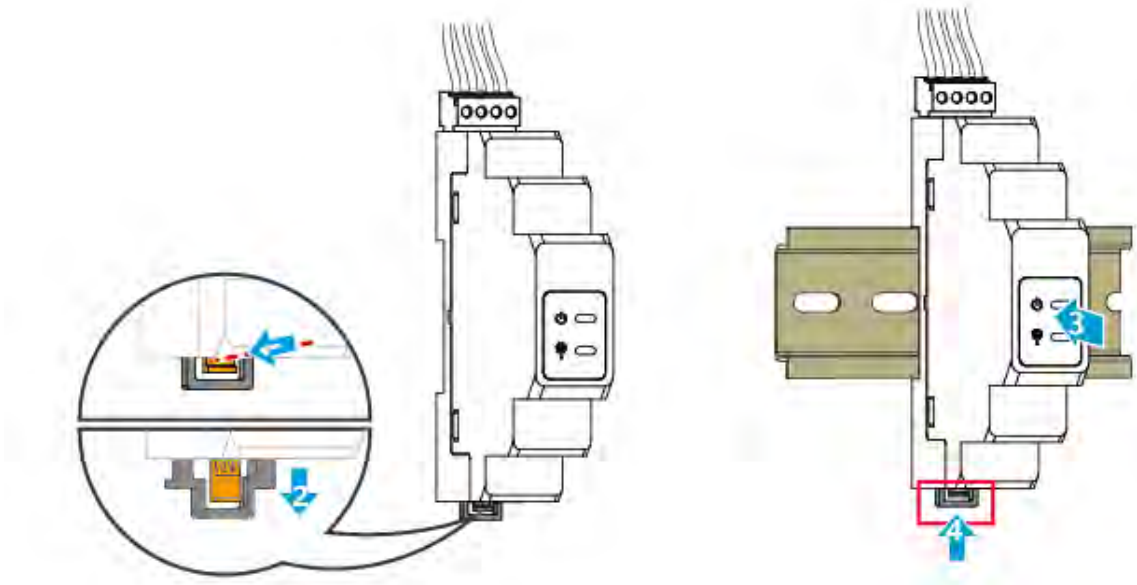


5.4 Installing the Smart Meter

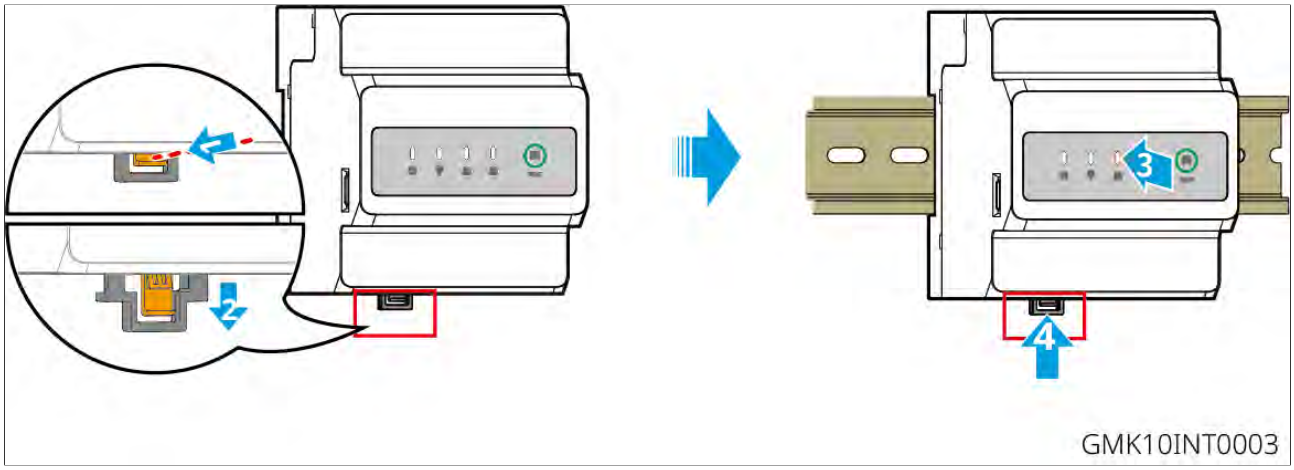
⚠WARNING

In areas at risk of lightning, if the meter cable exceeds 10m and the cables are not wired with grounded metal conduits, you are recommended to use an external lightning protection device.

GMK110



GM330


2
3
4
GMK10INT0003

6 System Wirings

DANGER

- The erection, routing, and connection of cables must be in compliance with local laws and regulations.
- Perform electrical connections in compliance with local laws and regulations, including operations, cables, and component specifications.
- Disconnect the DC switches and the AC output switches to power off the equipment before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Tie the same type cables together, and place them separately from cables of different types. Do not place the cables entangled or crossed.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to the inverter cable port.
- Make sure that the cable conductor is in full contact with the terminal and the cable insulation part is not crimped with the terminal when crimping the terminal. Otherwise, the device may not be able to work properly, or the connection may be unreliable during working, which may cause terminal block damage, etc..

NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.

6.1 System Wiring Electrical Block Diagram

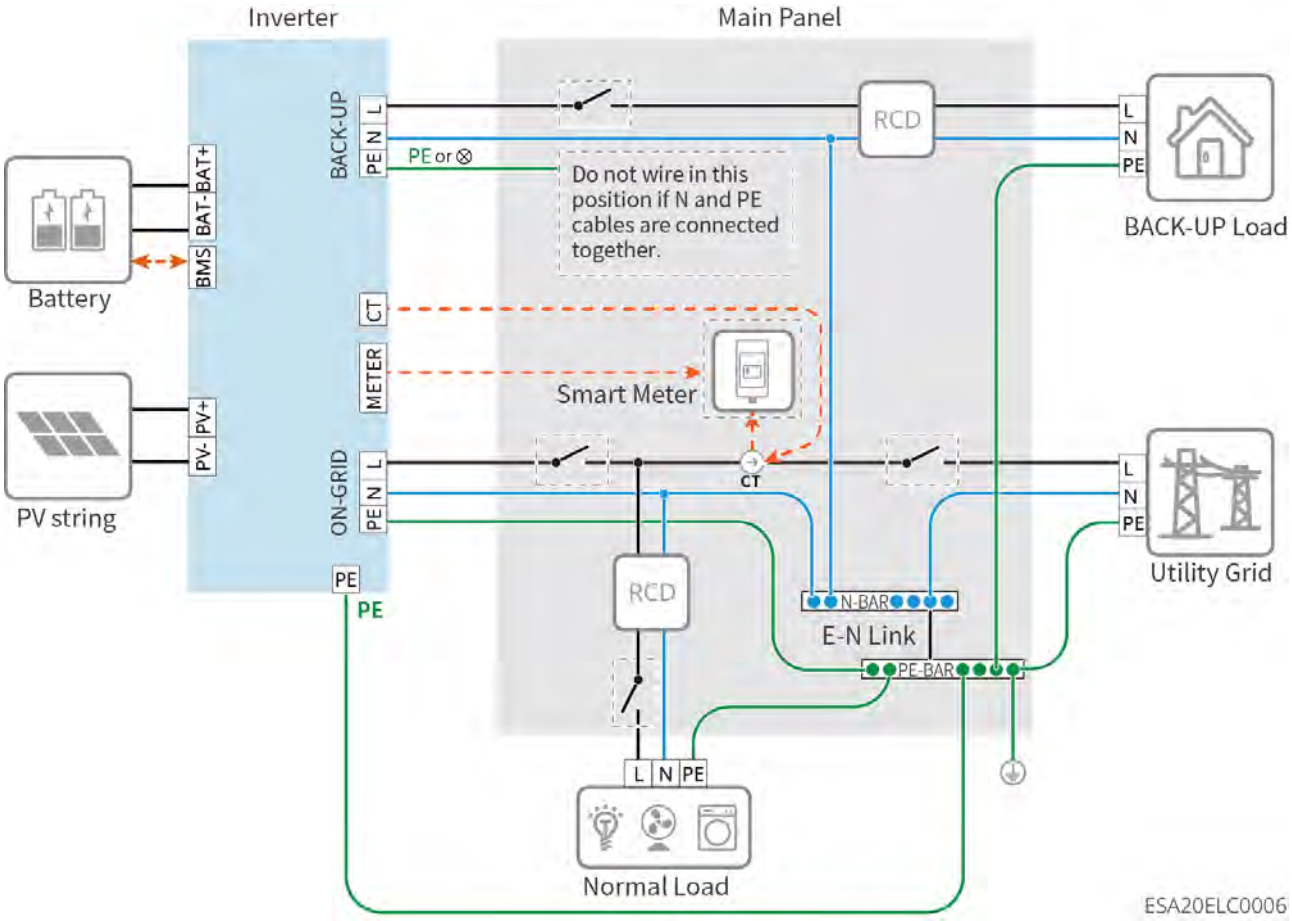
NOTICE

- N and PE wiring of ON-GRID and BACK-UP ports of the inverter are different according to the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- The inverter has a built-in electric meter that can be directly connected to a CT for use. The CT network cable included in the box is 10 meters long. If you need a longer cable, you can use a CAT5E or higher shielded network cable to extend it to 30 meters.
- When the length of the connection between the CT and the inverter exceeds 30 m, accuracy will decrease. If high accuracy is required, an external smart meter can be connected.
- The inverter features built-in relays for the ON_GRID and BACK_UP AC ports. When the inverter is in off-grid mode, the built-in ON_GRID state relay is disconnected; when the inverter is in on-grid operation mode, the built-in ON-GRID relay is connected.
- When the inverter is powered on, the BACK-UP AC port is energized. Power off the inverter first if maintenance is required on the BACK-UP loads. Otherwise, it may cause electric shock.

N and PE cables are connected together in the Main Panel.

NOTICE

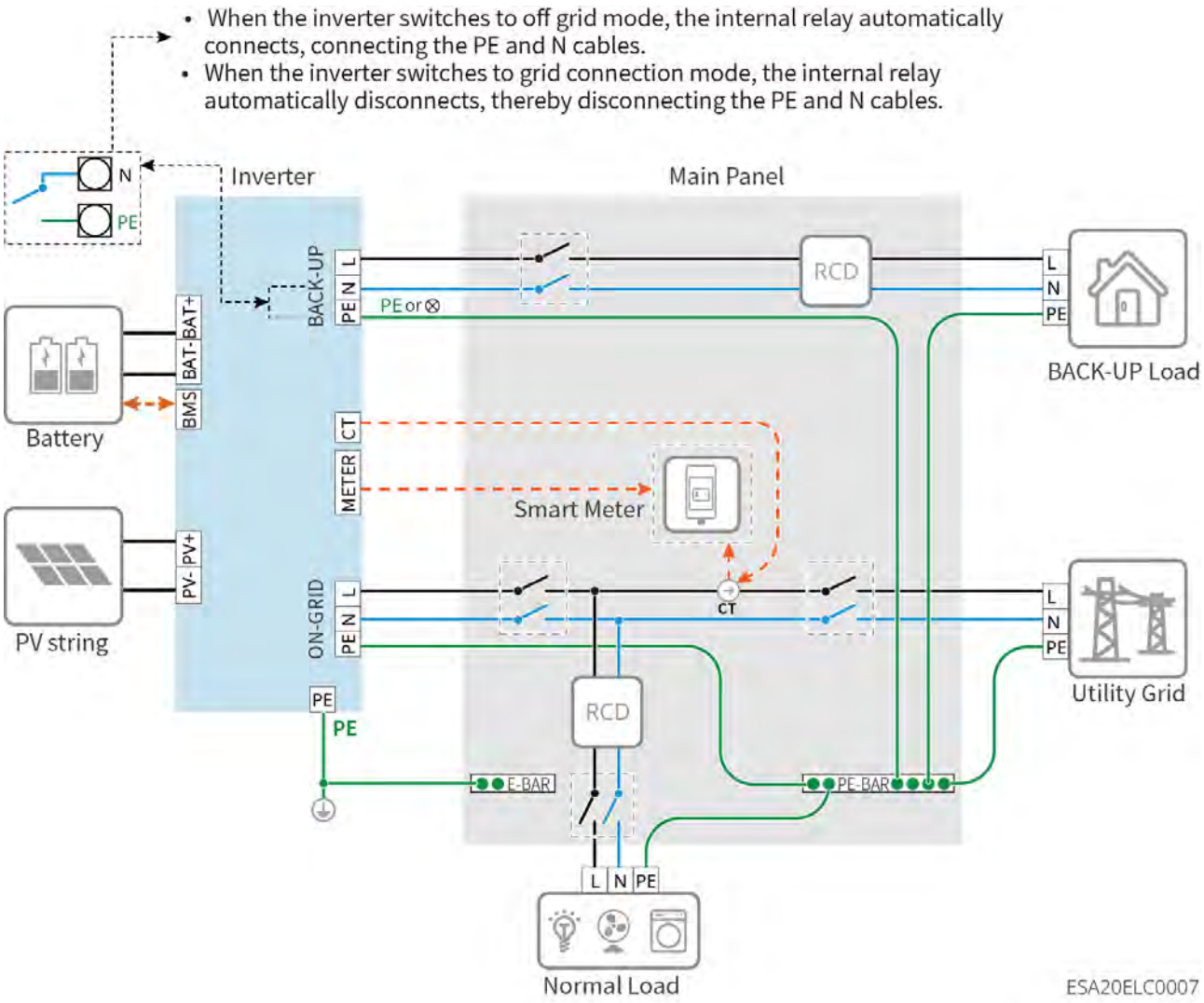
- To maintain neutral integrity, the neutral lines on the grid-connected side and the off-grid side must be connected together, otherwise the off-grid function will not work properly.
- The figure below shows a schematic diagram of the power grid systems in Australia, New Zealand, and other regions:



N and PE cables are separately wired in the Main Panel.

NOTICE

- Ensure that the grounding of BACK-UP is correctly tightened. Otherwise, the BACK-UP function may be abnormal in case of grid failure.
- The following diagram is applicable to areas except Australia or New Zealand.



6.2 Detailed System Wiring Diagram

When all loads in a photovoltaic system are unable to consume the electricity generated by the system, the remaining electricity is fed into the grid. At this point, you can use a smart meter or CT monitoring system to monitor power generation and control the amount of power fed into the grid.

- Connecting to a smart meter enables the functions of output power limitation and load monitoring.
- Please enable the "Grid-connected Power Limitation" function through the SolarGo App.

The system wiring diagram only shows wiring diagrams for some models. Please

refer to the corresponding wiring instructions for the equipment you are actually using.

NOTICE

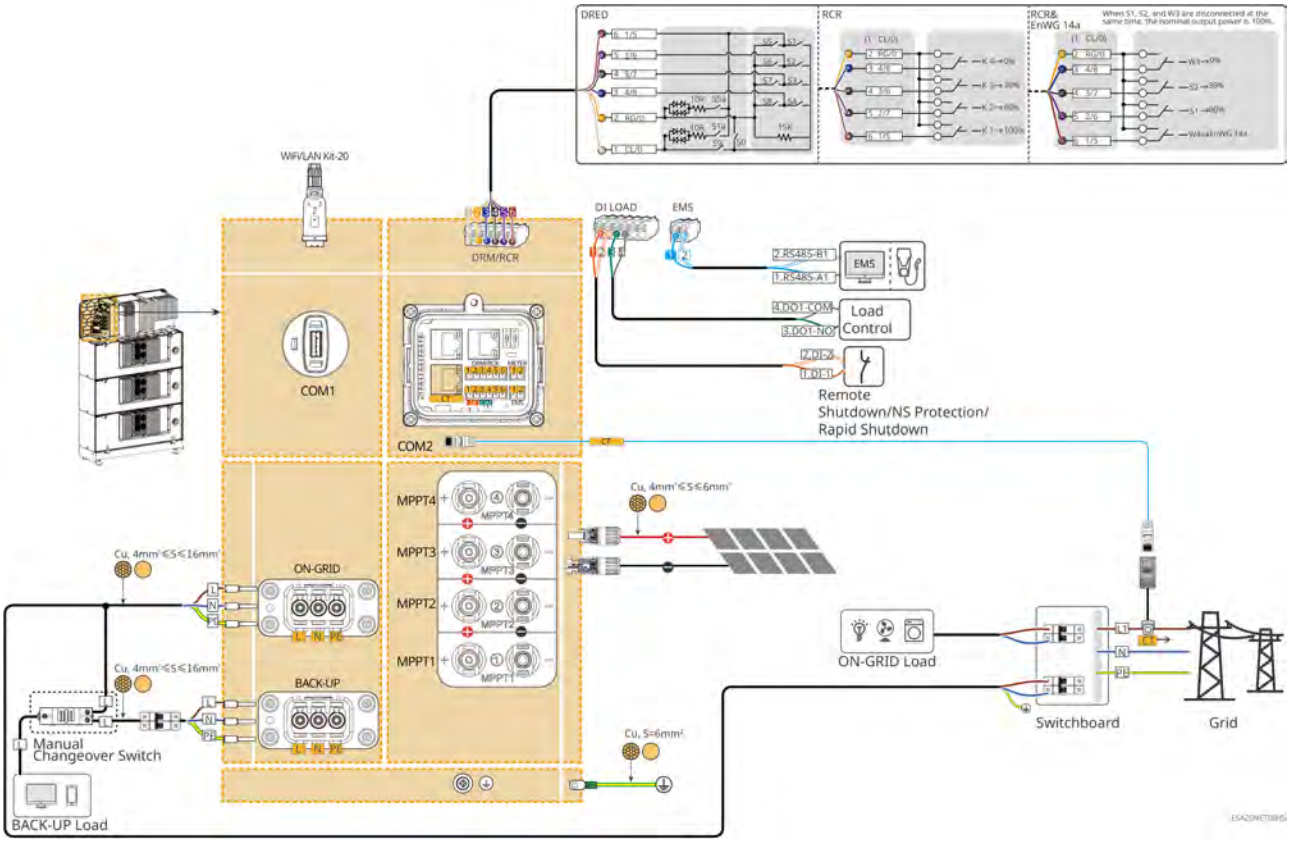
- When implementing load monitoring functions in microgrids and coupled scenarios, a dual-meter network must be used.
  - Electric meter 1 or built-in electric meter is used for system output power limitation.
  - Electricity meter 2 is used for load monitoring.
- If the grid-tied PV inverter needs to limit the output power, please connect a separate meter or CT device.
- Microgrid scenarios and coupled scenarios are paired with dual electricity meters, and the wiring methods for the meters are consistent.
- When using a dual meter, do not connect the CT port of the inverter.
- Manual conversion switches are optional. Please choose whether to install them based on the actual usage scenario. If you have your own ATS or STS switch, this switch must have an interlock function.

Dual electricity meter pairing scenario	
Electricity meter 1 (Grid end)	Smart Meter 2(Grid-Tied PV Inverter)
Built-in Smart Meter	GMK110
Built-in Smart Meter	GM330
GMK110	GMK110
GM330	GM330
GMK110	GM330
GM330	GMK110

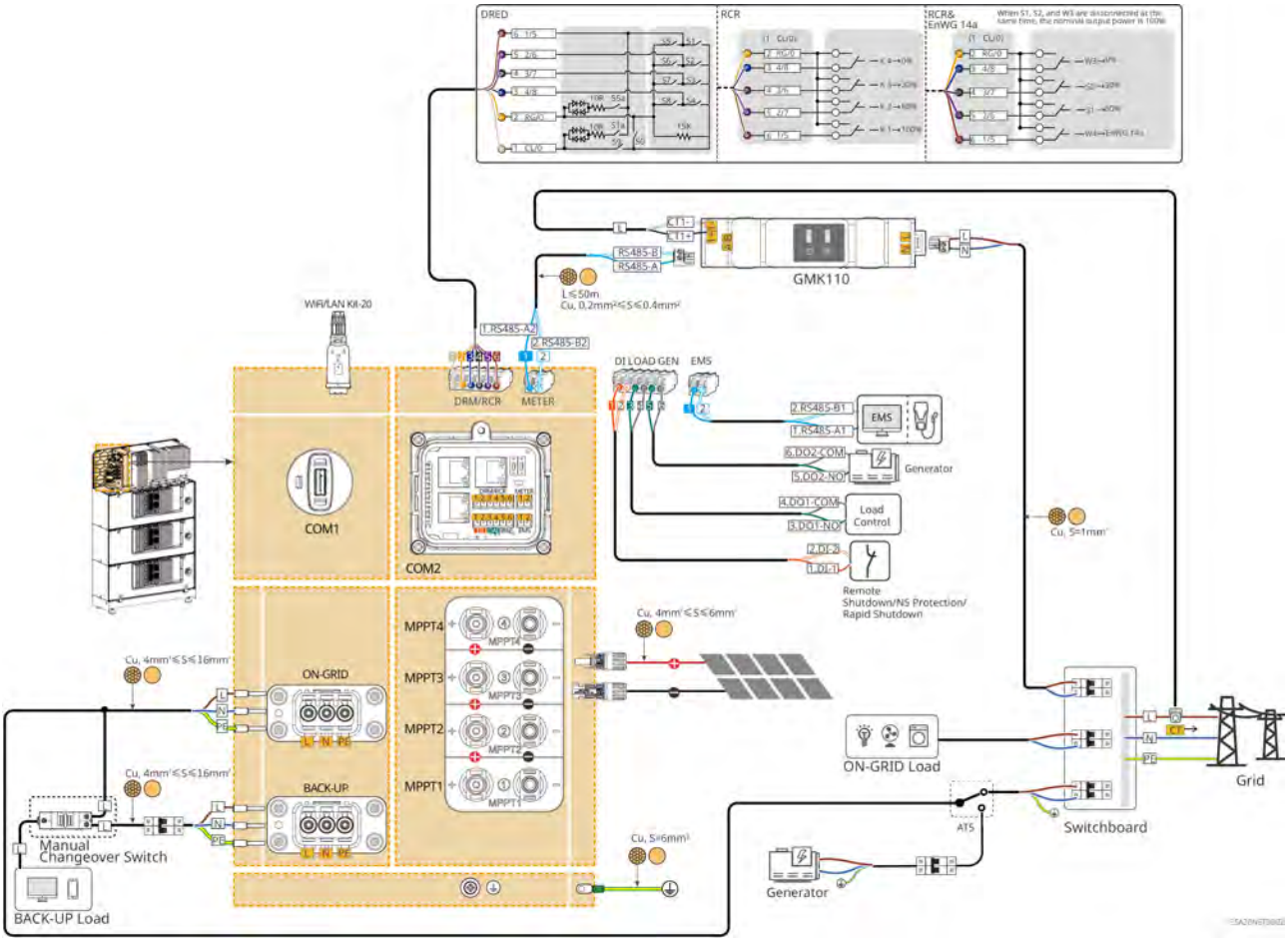
Scenario

With built-in smart meter

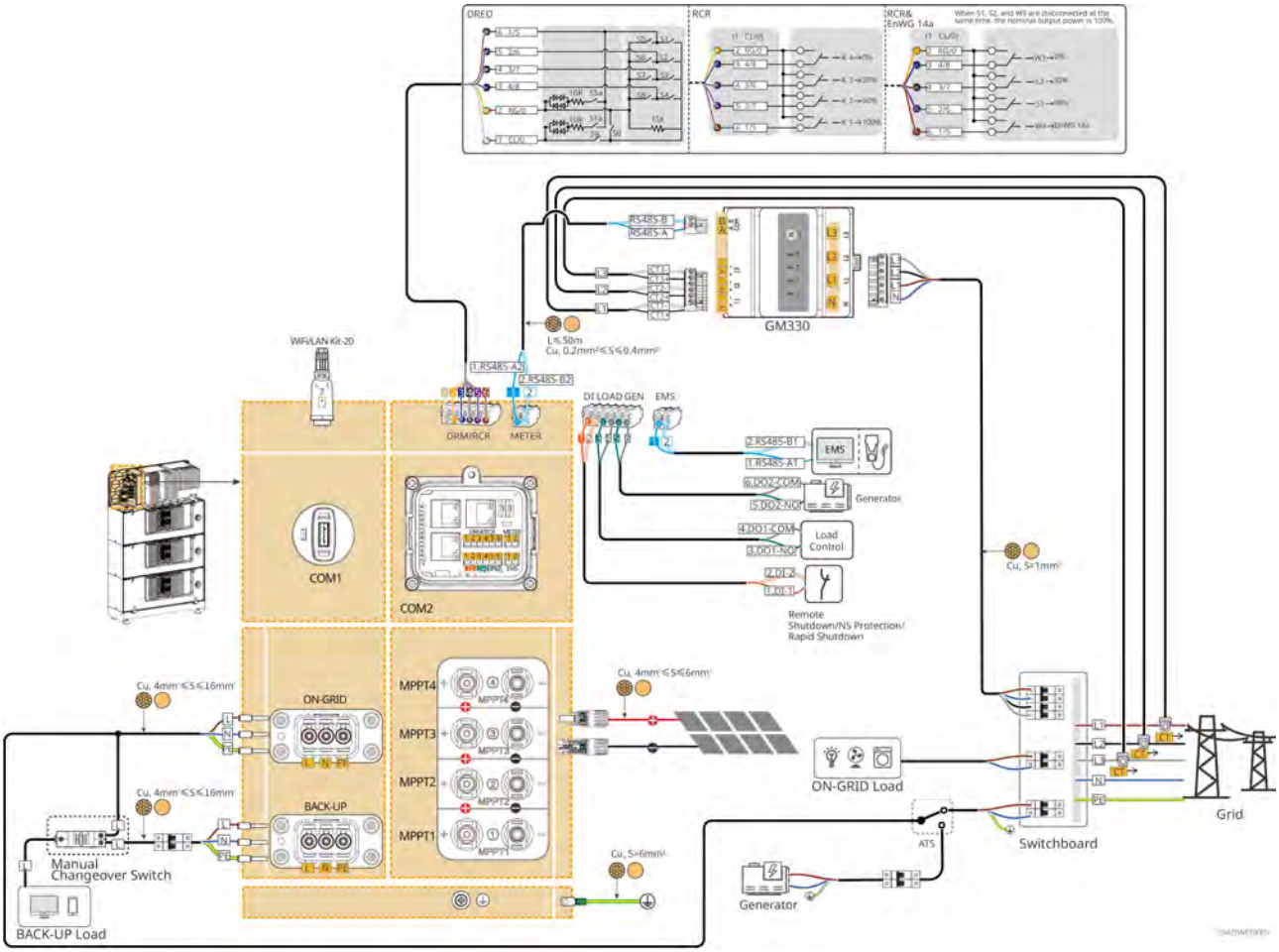
Scenarios with built-in electricity meters do not support connection to generators.



Use GMK110 smart meter in the system.



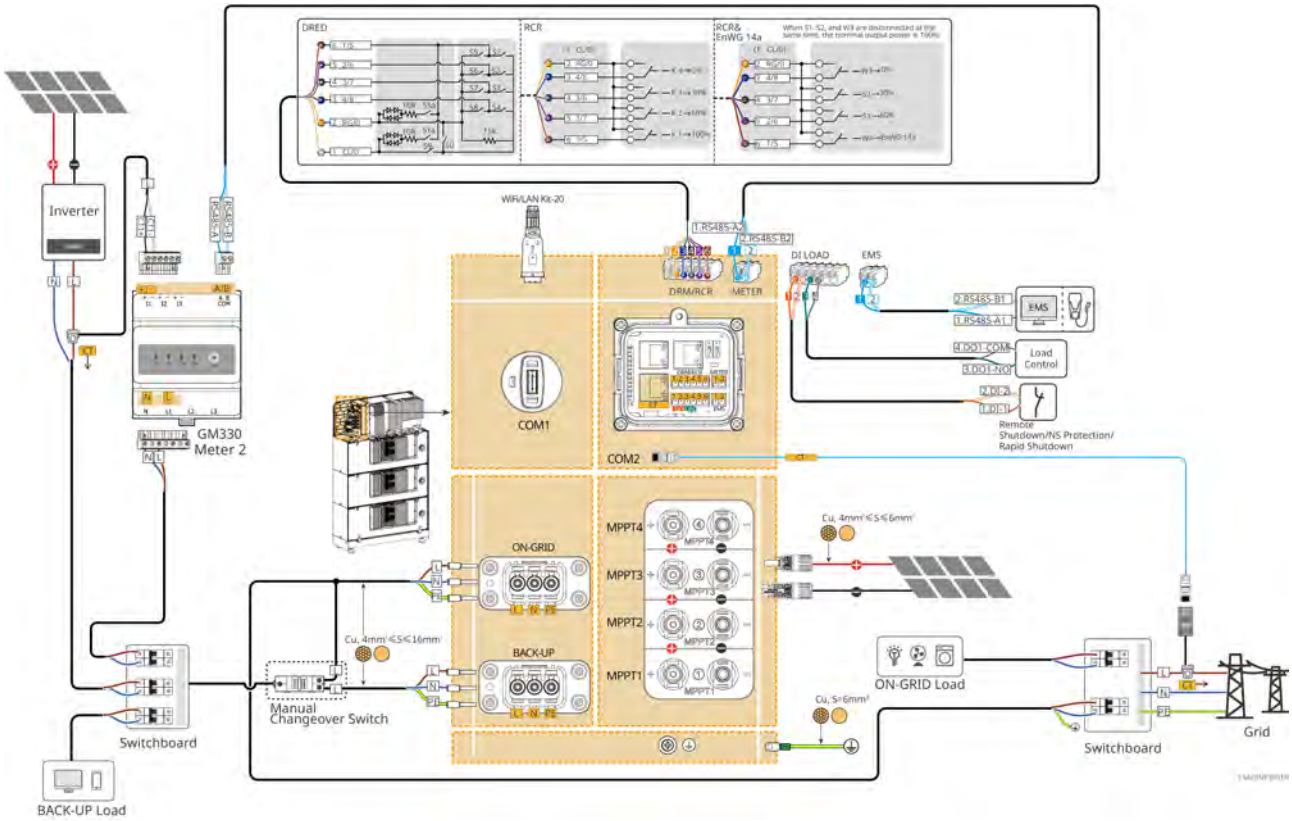
Use GM330 smart meter in the system.



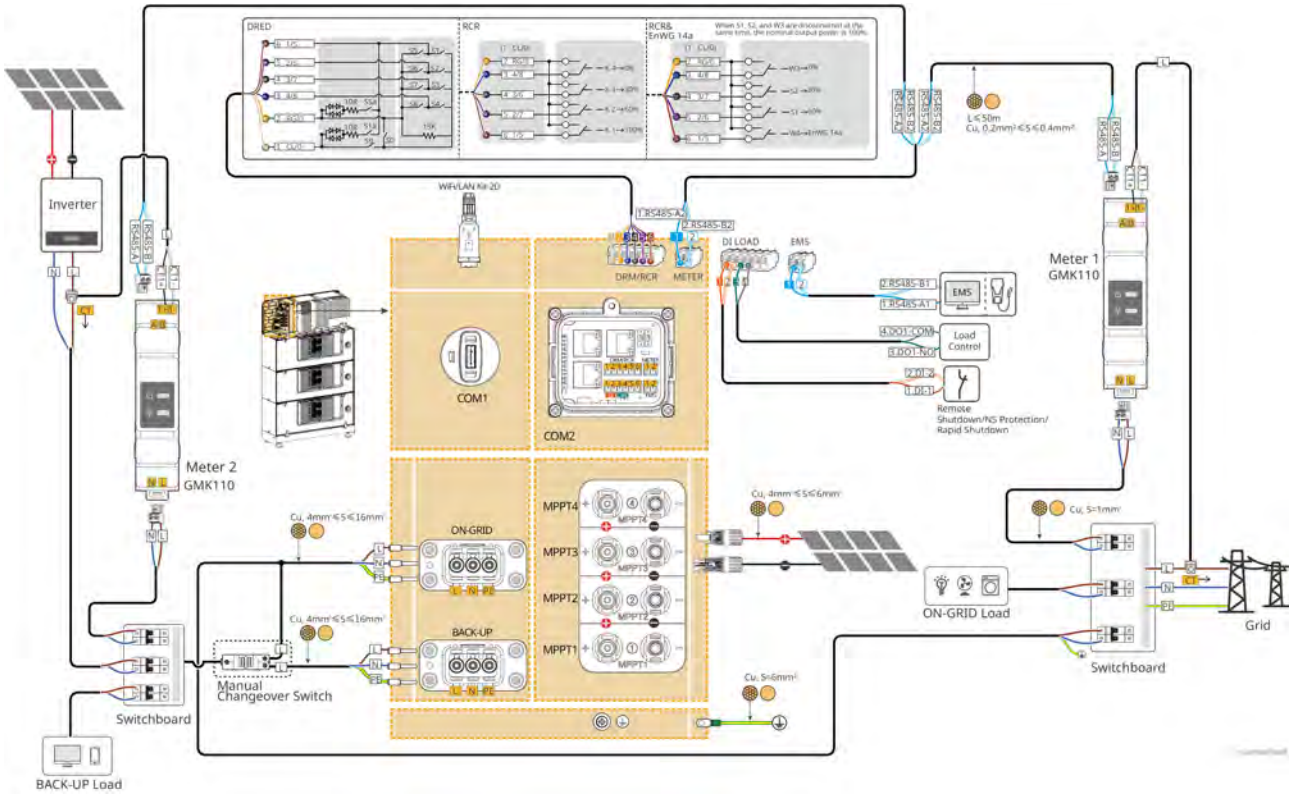
Microgrid Scenario Network Diagram

- In the microgrid scenarios, connecting generators is not supported.
- Manual conversion switches are optional. Please choose whether to install them based on the actual usage scenario.

Built-in electricity meter + GM330 electricity meter network diagram

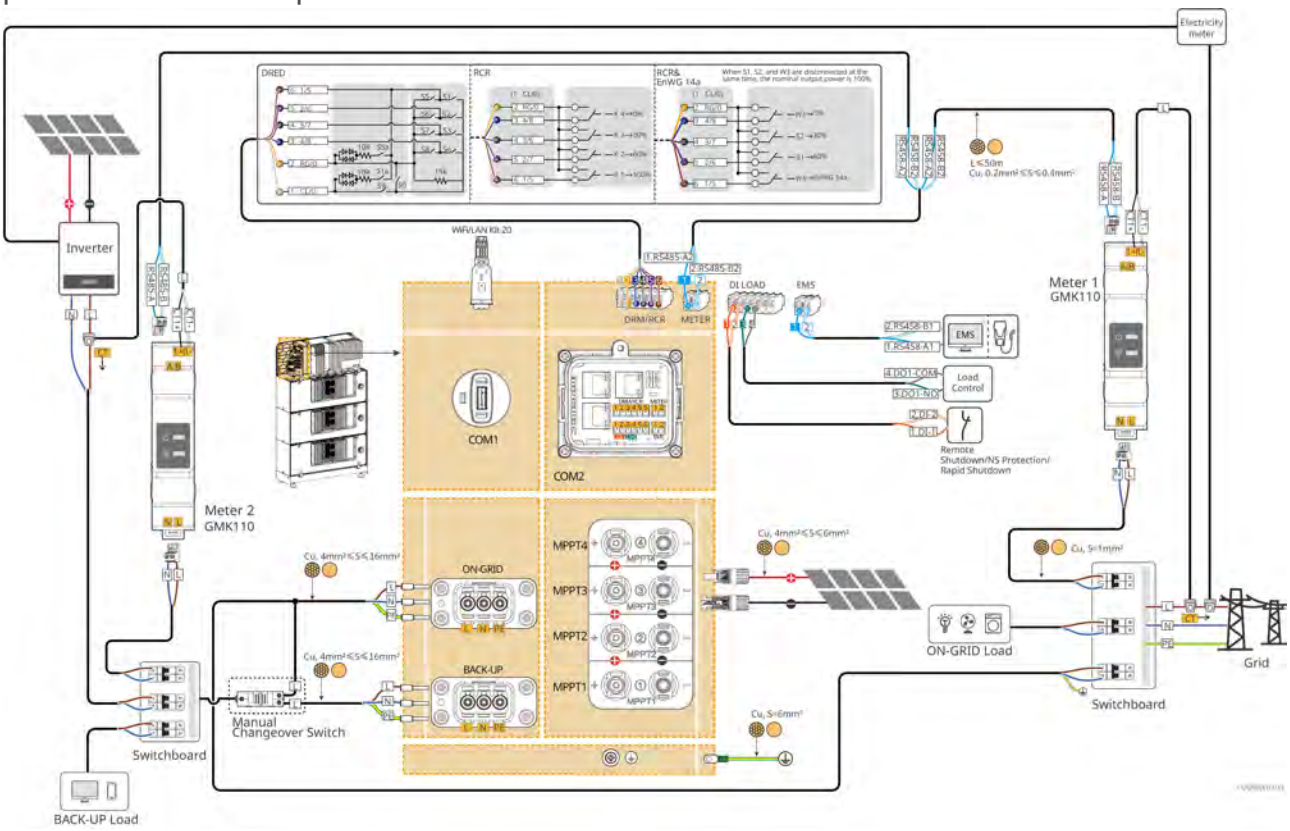


GMK110+GMK110 Network Diagram



Microgrid scenario, grid-connected inverter grid-connected power limitation network diagram

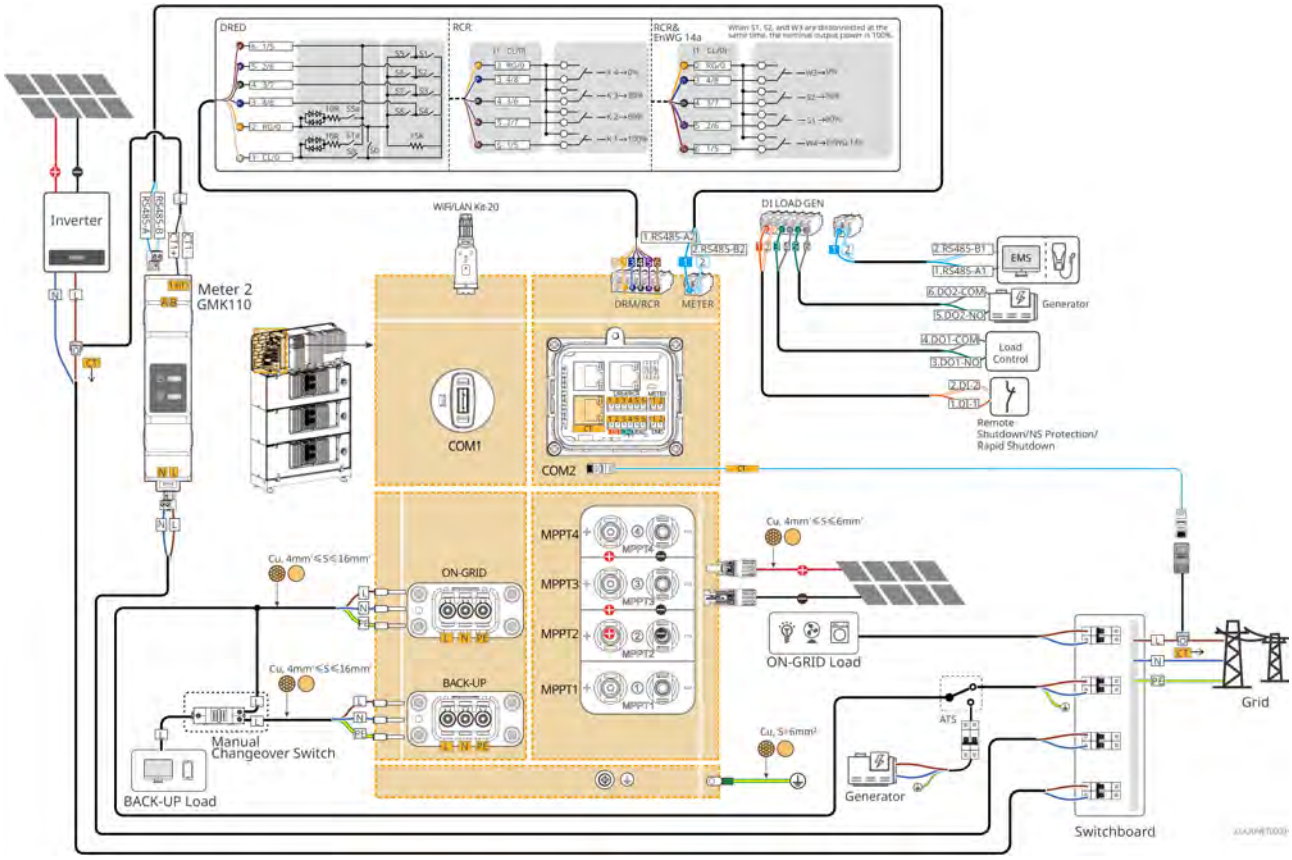
In microgrid scenario, If the grid-tied PV inverter needs to limit the output power, please connect a separate meter or CT device.



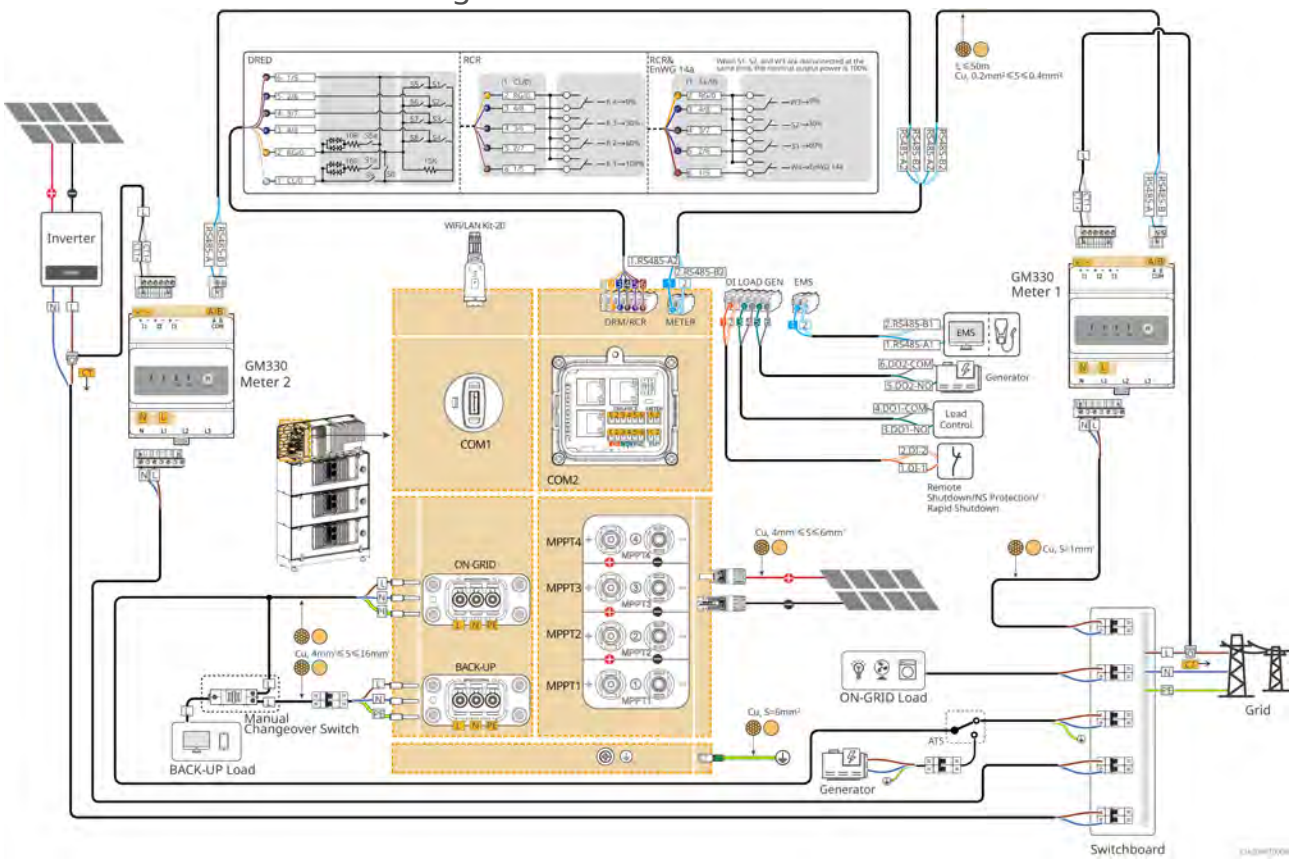
Coupled scene dual electricity meter network diagram

Manual conversion switches are optional. Please choose whether to install them based on the actual usage scenario.

Built-in electricity meter + GM330 electricity meter network diagram

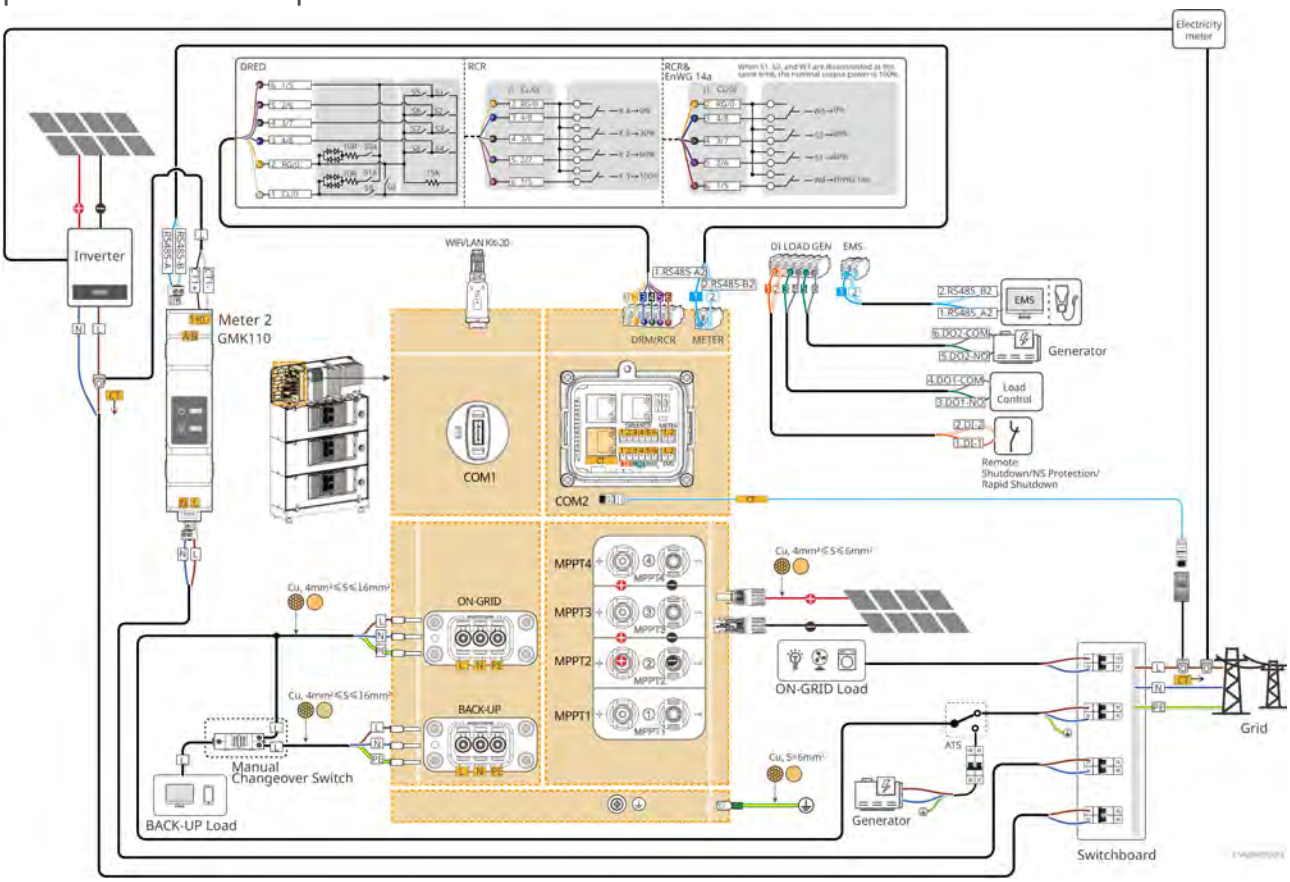


GM330+GMK110 Network Diagram



Coupled scenario, grid-connected inverter grid-connected power limitation network diagram

In coupled scenario, If the grid-tied PV inverter needs to limit the output power, please connect a separate meter or CT device.



6.3 Preparing Materials

⚠WARNING

- Do not connect loads between the inverter and the AC switch that is directly connected to the inverter.
- Install one AC output circuit breaker for each inverter. Multiple inverters cannot share one AC circuit breaker.
- An AC circuit breaker shall be installed on the AC side to make sure that the inverter can be safely disconnected with the grid when an exception happens. Select the appropriate AC circuit breaker in compliance with local laws and regulations.
- When the inverter is powered on, the BACK-UP AC port is energized. Power off the inverter first if maintenance is required on the BACK-UP loads. Otherwise, it may cause electric shock.
- For cables used in the same system, it is recommended that the conductor material, cross sectional area, length, etc. of the cables should be consistent.
- The inverter supports connection to a generator via an ATS switch, enabling switching between grid and generator power supply. The ATS switch is connected to the power grid by default.

6.3.1 Preparing Breakers

No.	Circuit breaker	Recommended specifications	Acquisition method	Comment
1	ON-GRID circuit breaker BACK-UP load breaker	Some recommended backup power scenarios are as follows: • Nominal Voltage (V) ≥230Vac • The rated current requirements are as follows: ◦ GW3K-EHA-G20：20A ◦ GW3.6K-EHA-G20：20A ◦ GW5K-EHA-G20：32A ◦ GW6K-EHA-G20：40A ◦ GW8K-EHA-G20：50A ◦ GW9.999K-EHA-G20：63A ◦ GW10K-EHA-G20：63A	Prepared by customers.	When selecting a circuit breaker, you can also choose one that meets local installation regulations based on the actual working current.
		The following are recommended scenarios for whole-house backup power supply: • Nominal Voltage (V) ≥230Vac • The rated current requirements are as follows: ◦ GW3K-EHA-G20：40A ◦ GW3.6K-EHA-G20：40A ◦ GW5K-EHA-G20：63A ◦ GW6K-EHA-G20：63A ◦ GW8K-EHA-G20：63A ◦ GW9.999K-EHA-G20：63A ◦ GW10K-EHA-G20：63A	Prepared by customers.	

No.	Circuit breaker	Recommended specifications	Acquisition method	Comment
2	ATS switch	The specifications of ATS switches and ON-GRID circuit breakers of the same model are consistent.	Prepared by customers.	
3	RCD	RCD device installation and RCD specification selection: It is recommended to connect an A-type RCD with a residual current trip threshold of ≥300mA to the AC output side of the inverter (for inverters with a capacity <30kVA, the residual current trip threshold should be selected as 300mA; for inverters with a capacity ≥30kVA, the residual current trip threshold should be selected as 10mA/kVA). Alternatively, the appropriate RCD specifications may be selected in accordance with local regulatory requirements.	Prepared by customers.	-
4	(Optional) Manual conversion switch	• Nominal Voltage (V) ≥230Vac • Nominal Current: 63A	Prepared by customers or shipped with inverter (Australia only).	Manual Changeover Switch (MCS)

6.3.2 Preparing Cables

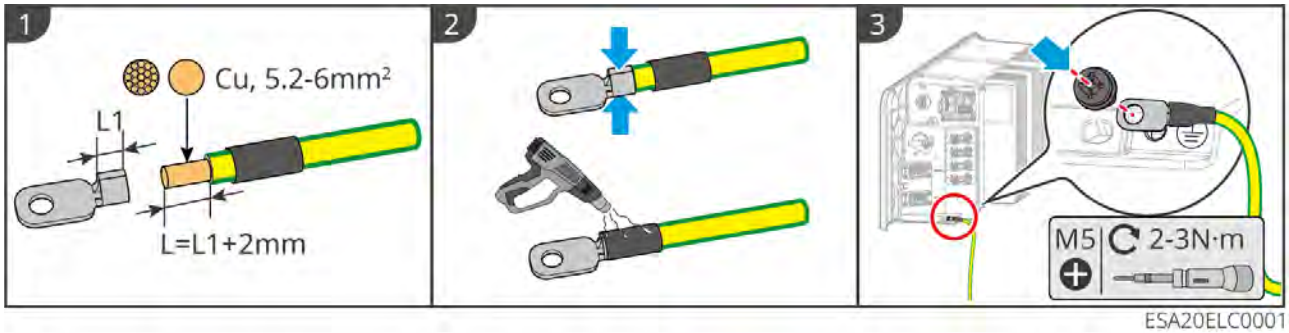
No.	Cable	Recommended specifications	Acquisition method
1	Inverter PE cable	• Single-core outdoor copper cable • Conductor cross-sectional area: S=5.2mm²--6mm²	Prepared by customers.
2	PV DC cable	• Commonly used outdoor photovoltaic cable • Conductor cross-sectional area: 4mm²--6mm² • Outer diameter: 5.9mm--8.8mm	Prepared by customers.
3	AC cable	• AC input and output cables of inverter (BACK UP/ON GRID): • Conductor cross-sectional area: 4mm²--16mm² ◦ GW3K-EHA-G20, GW3.6K-EHA-G20: 4mm²-6mm² ◦ GW5K-EHA-G20, GW6K-EHA-G20: 6mm²-10mm² ◦ GW8K-EHA-G20, GW9.999K-EHA-G20, GW10K-EHA-G20: 10mm²-16mm² • Multi-core outdoor copper cable outer diameter: 10mm--21mm	Prepared by customers.
4	Smart meter power cable	• Outdoor copper cable • Conductor cross-sectional area: 1mm²	Prepared by customers.
5	Smart meter RS485 communication cable	• Shielded twisted pair cable • Conductor cross-sectional area: 0.2mm²--0.4mm²	Prepared by customers.

No.	Cable	Recommended specifications	Acquisition method
6	EMS or charing pile RS485 communication cable		
7	Remote shutdown and NS Protection communication line	• Shielded cable that meets local standards • Conductor cross-sectional area: 0.2mm²--0.4mm² • Outer diameter: 5mm--8mm	Prepared by customers.
8	Load control and generator control DO communication line		
9	RCR/DRED signal line		
10	CT Communication Cable	Standard network cable: CAT 5E and above standard shielded network cable and RJ45 connector	Prepared by customers.

6.4 Connecting the PE cable

⚠WARNING

- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Make sure that both of the two PE cables are securely connected.
- To improve the corrosion resistance of the terminal, you are recommended to apply silica gel or paint on the ground terminal after installing the PE cable.
- Connect the PE cable first before installing the equipment. Disconnect the PE cable before dismantling the equipment.



ESA20ELC0001

6.5 Connecting the PV Cable

DANGER

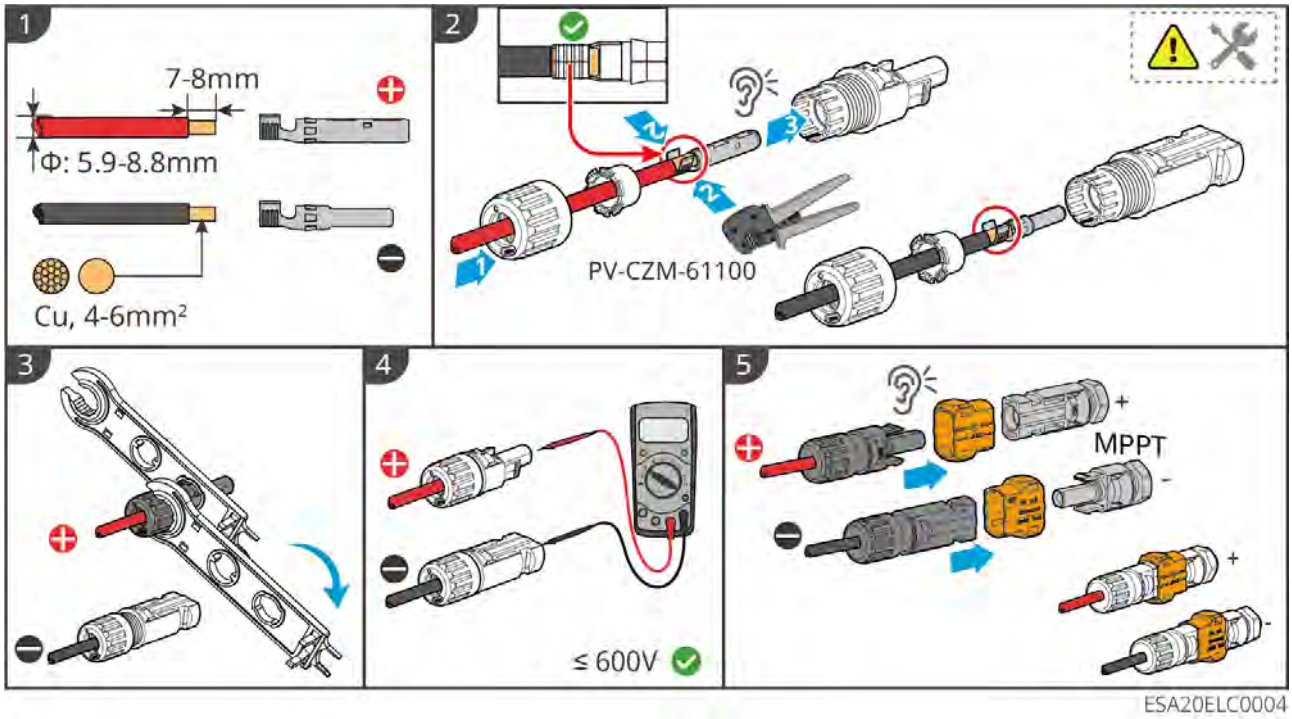
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property losses.
  1. Make sure that the max short circuit current and the maximum input voltage per MPPT are within the permissible range.
  2. Make sure that the positive pole of the PV string connects to the PV+ of the inverter. And the negative pole of the PV string connects to the PV- of the inverter.

WARNING

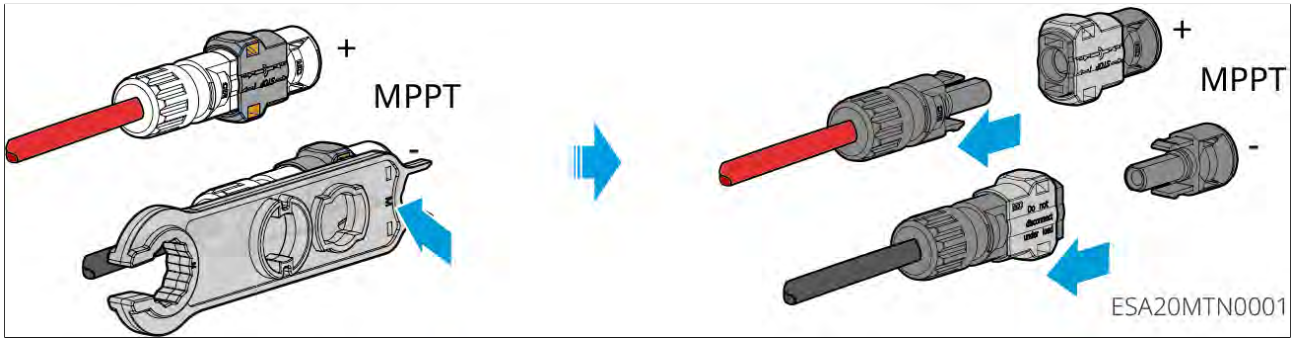
- The PV strings cannot be grounded. Ensure the minimum insulation resistance of PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter (R=maximum input voltage/ 30mA).
- Ensure the DC cables are connected tightly, securely and correctly.
- Measure the positive and negative terminals of the DC cable using a multimeter to avoid reverse polarity connection. Also, the voltage should be within the permissible range.

NOTICE

The two input strings per MPPT should contain the same number of identical PV modules with the same tilt and angle to ensure the best efficiency.



Disconnect PV connector:



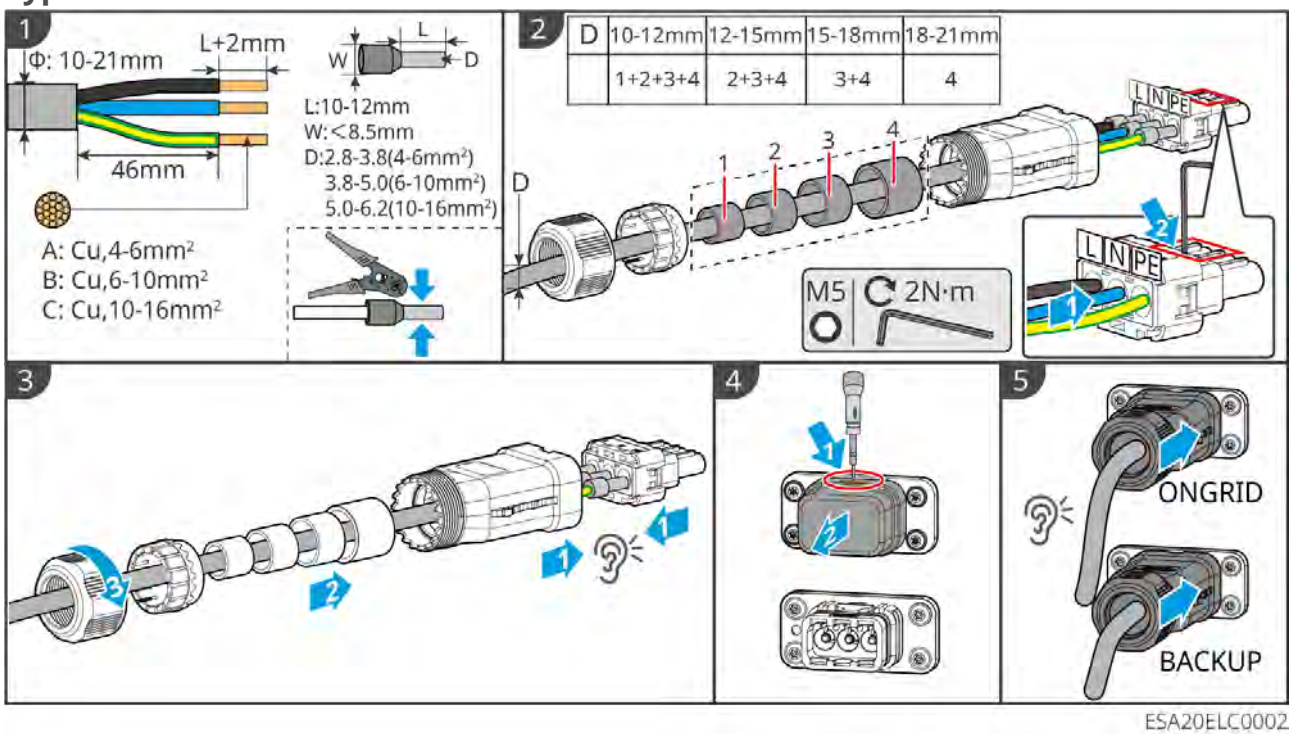
6.6 Connecting the AC Cable

⚠WARNING

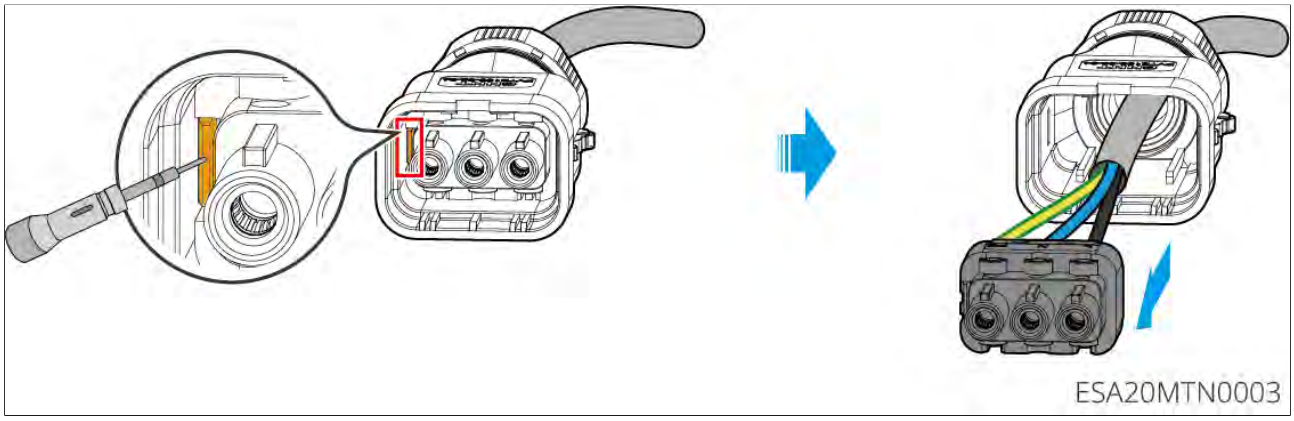
- The residual current monitoring unit (RCMU) is integrated into the inverter to avoid that the residual current exceeds the limit. The inverter will disconnect with the utility grid quickly once it found the residual current exceeds the limit.
- When wiring, ensure that the AC cable is completely matched with the "BACKUP", "ON-GRID", and grounding ports of the AC terminal. Incorrect cable connection will lead to equipment damage.
- Ensure that the whole cable cores are inserted into the terminal holes, and no part of the cable core can be exposed.
- Ensure that the insulation board is inserted into the AC terminal tightly.
- Ensure that the cables are connected securely. Otherwise it will cause damage to the inverter due to overheat during its operation.

A: GW3K-EHA-G20, GW3.6K-EHA-G20
B: GW5K-EHA-G20, GW6K-EHA-G20
C: GW8K-EHA-G20, GW9.999K-EHA-G20, GW10K-EHA-G20

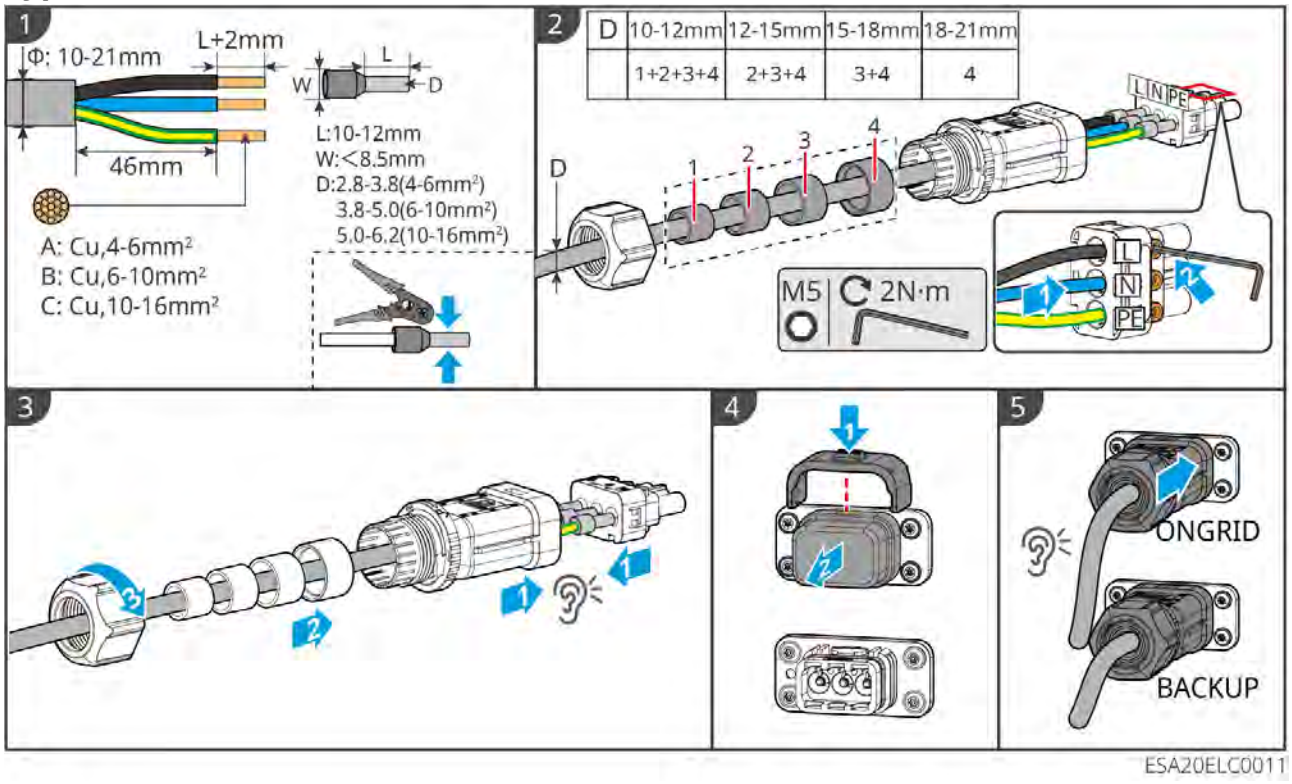
Type I:



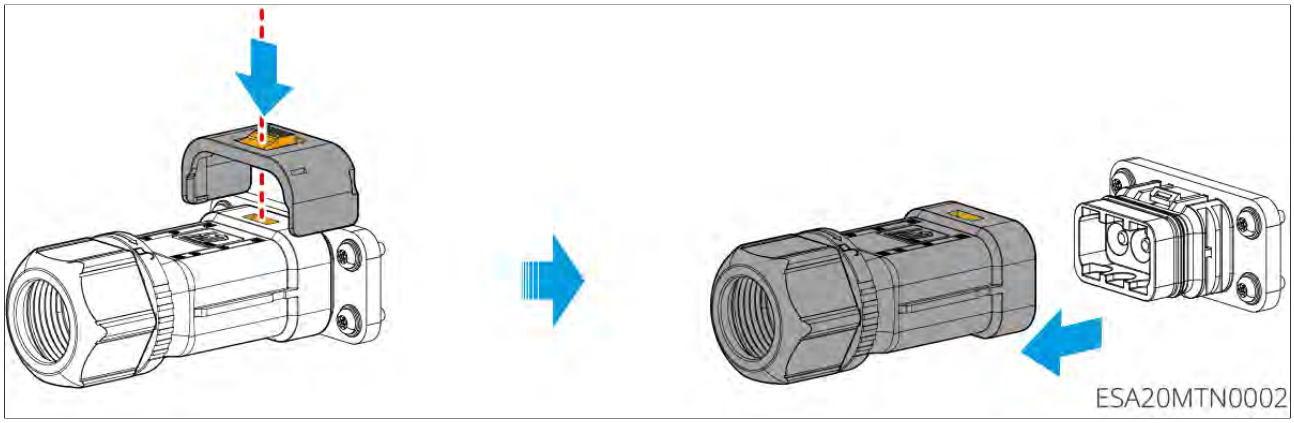
Disconnect AC connector

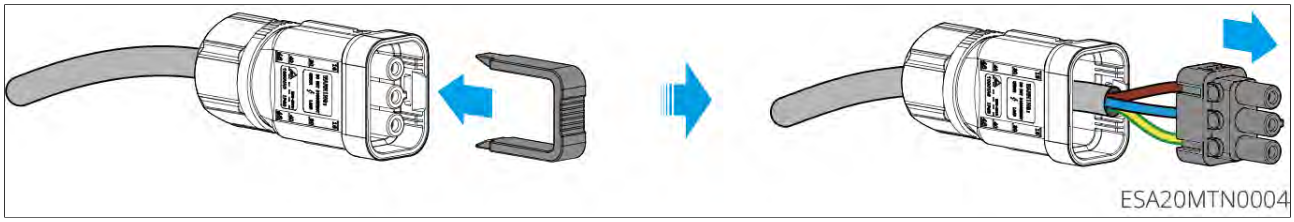


Type II:

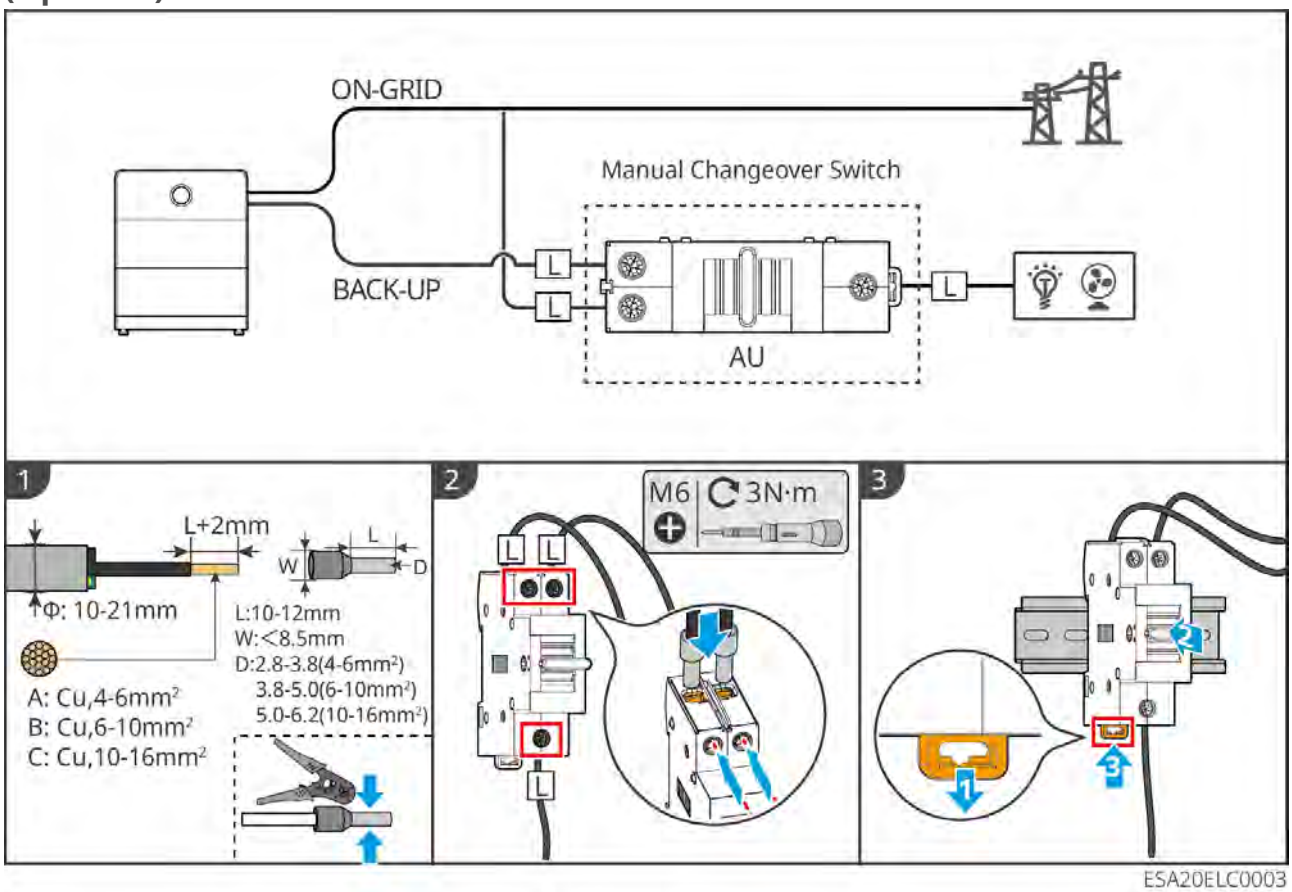


Disconnect AC connector





(Optional) Connect the manual conversion switch



6.7 Connecting the Meter Cable

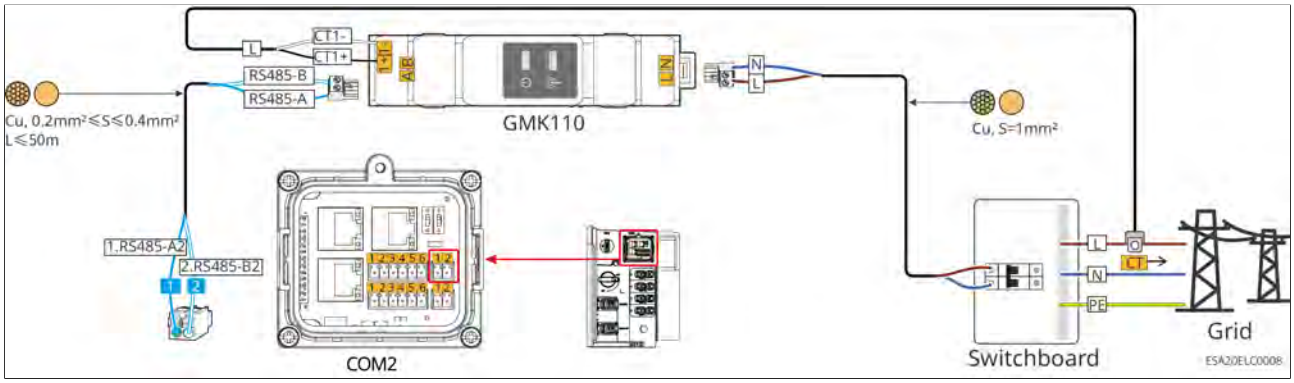
NOTICE

- Contact the manufacturer for additional smart meters if multiple inverters are connected.
- Ensure that the CT is connected in the correct direction and phase sequences, otherwise the monitoring data will be incorrect.
- Ensure all cables are connected correctly, tightly, and securely. Inappropriate wiring may cause poor contacts and damage the equipment.
- In areas at risk of lightning, if the meter cable exceeds 10m and the cables are not wired with grounded metal conduits, you are recommended to use an external lightning protection device.

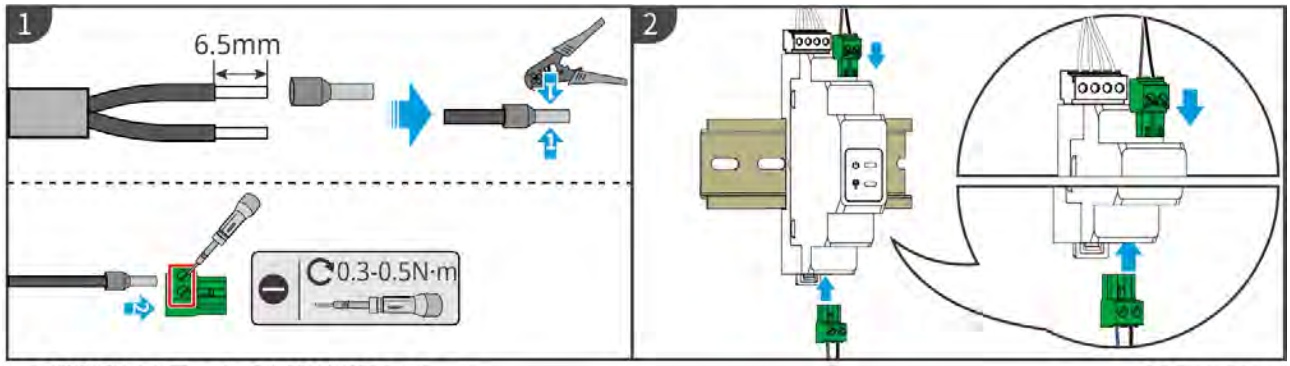
Wiring of GMK110

NOTICE

- Outer diameter of the AC cable should be smaller than the holes diameter of the CT, so that the AC cable can be threaded through the CT.
- To ensure accurate current detection, the CT cable is recommended to be shorter than 30m.
- Do not use network cable as the CT cable, otherwise the smart meter may be damaged due to high current.
- The CTs vary slightly in dimensions and appearance among different models, but they are installed and connected in the same way.



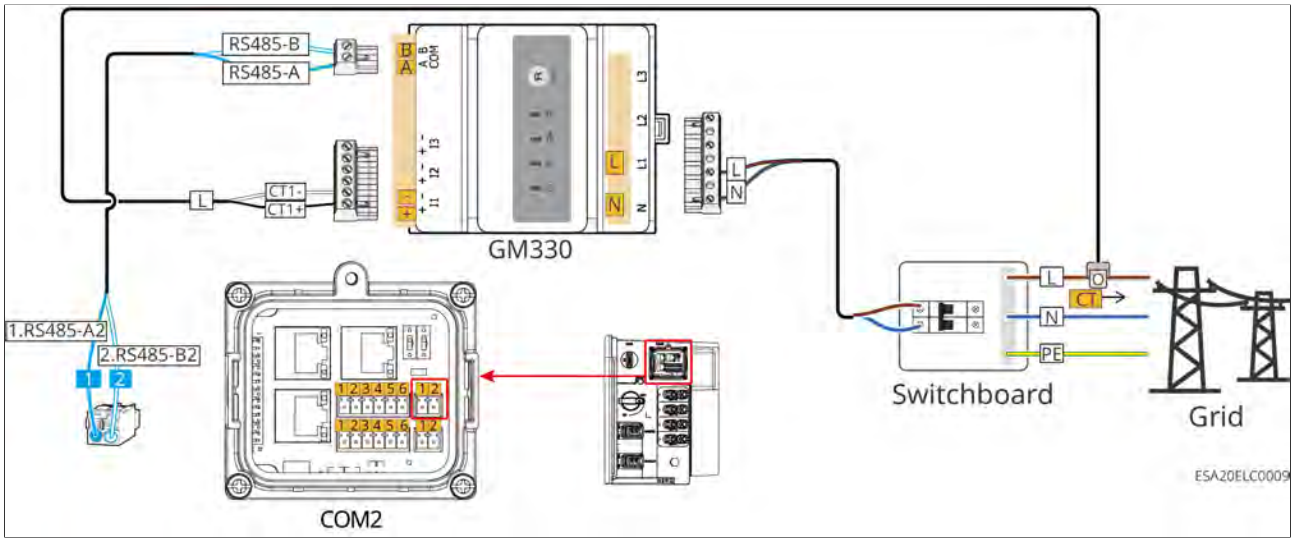
Connection steps



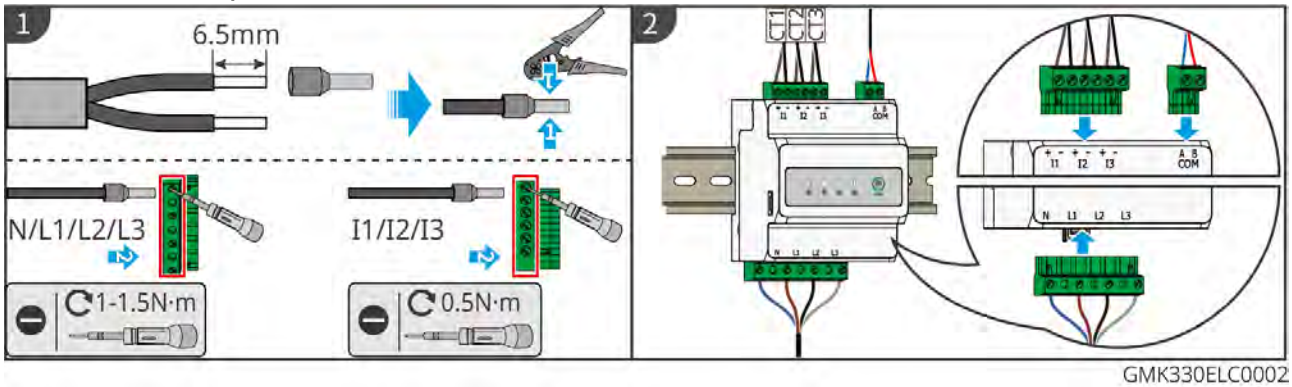
▶ GMK110: CT x 1; GMK110D: CT x 2

GMK10ELC0002

Wiring of GM330

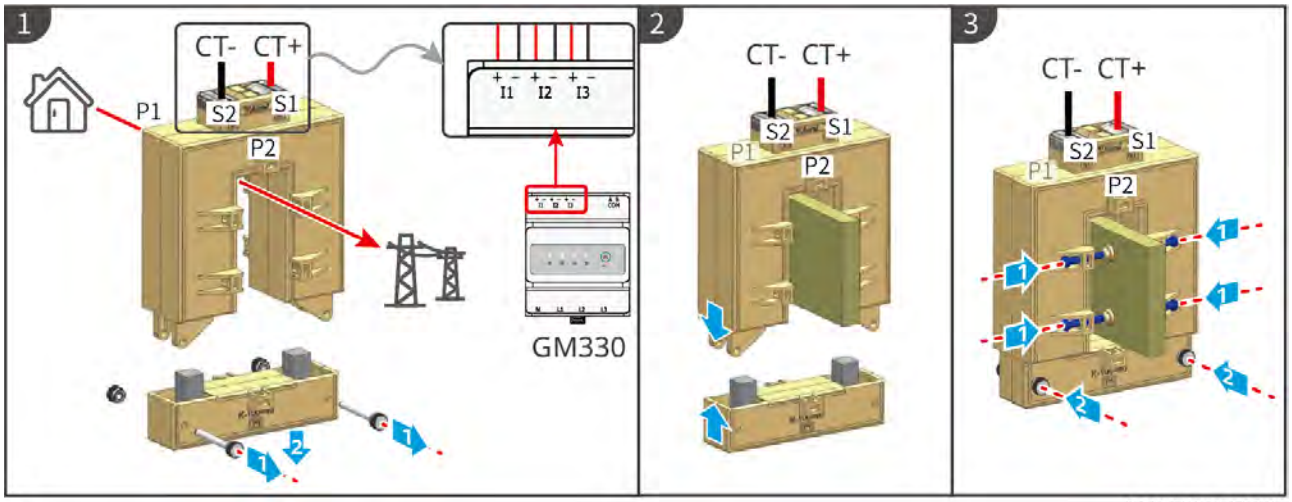


Connection steps



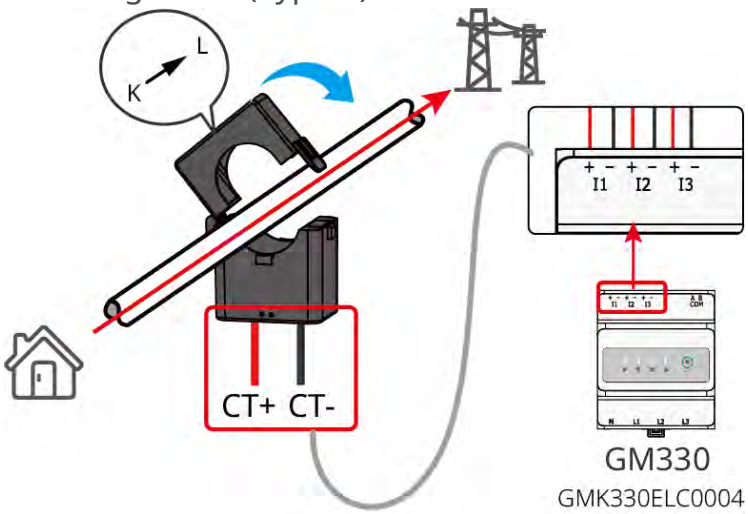
GMK330ELC0002

Installing the CT(Type I)



GMK330ELC0003

Installing the CT(Type II)



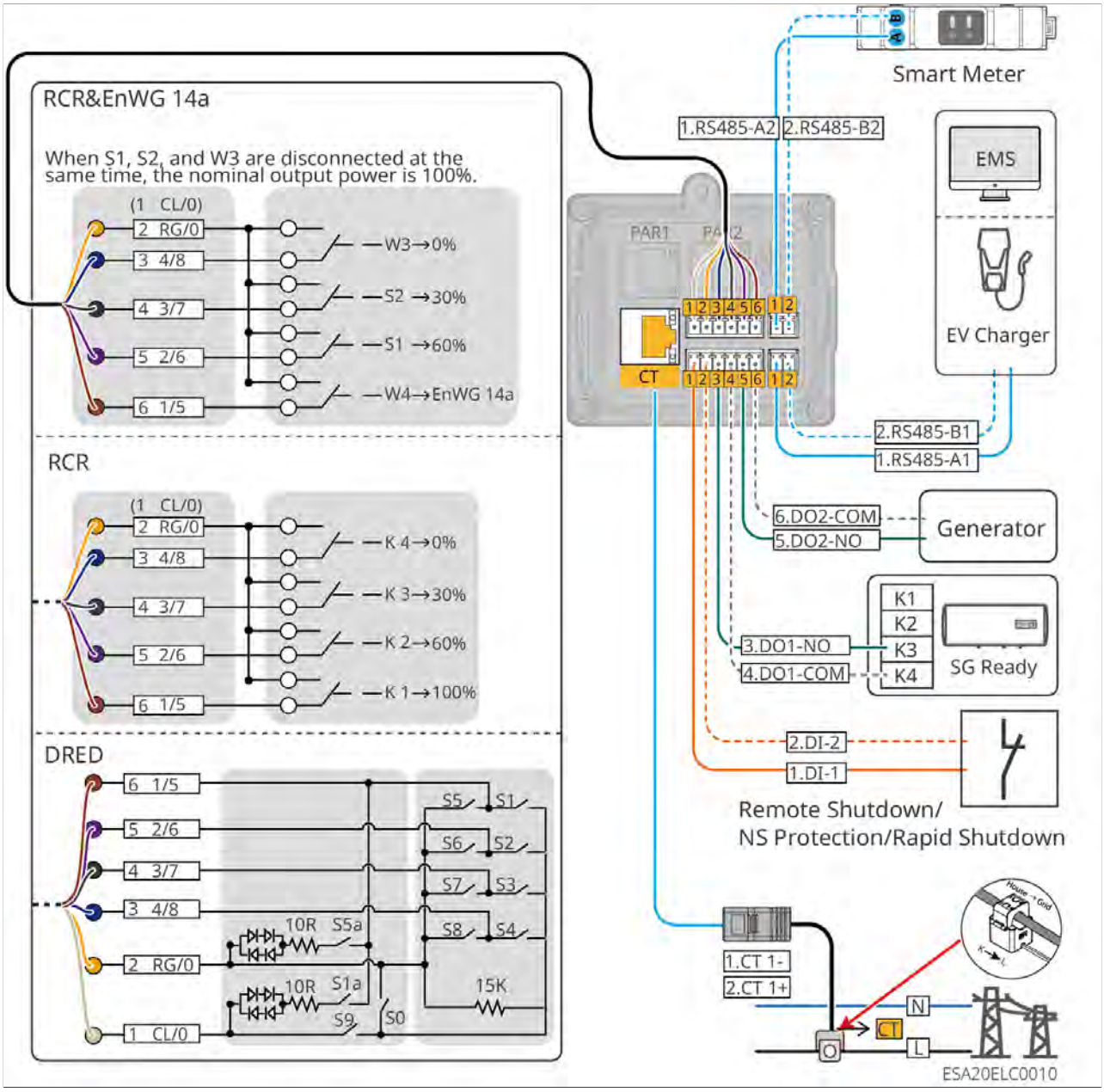
GMK330ELC0004

6.8 Connecting the Inverter Communication Cable

NOTICE

- The communication functions are optional. Connect the cables based on actual needs.
- When using the built-in smart meter, use the CT shipped with the box.
- The inverter supports parameter setting via Bluetooth nearby. It also supports connecting to mobile phones or WEB interfaces through communication modules such as WiFi and LAN to set device-related parameters, view device operation information and error messages, and keep abreast of the system status in a timely manner.
- Supports installation of WiFi/LAN Kit-20 communication modules.
- If you need to use the DRED, RCR or remote shutdown function, turn it on in the SolarGo App after wiring.
- Do not turn on the remote shutdown function in the SolarGo App if the inverter is not connected to a remote shutdown device, otherwise the inverter will be unable to operate in parallel.
- Do not turn on the remote shutdown function in the SolarGo App if the inverter is not connected to the DRED device or a remote shutdown device, otherwise the inverter will be unable to operate in parallel.
- To ensure the waterproof rating of the inverter, please do not remove the waterproof plugs from unused communication ports on the inverter.
- Inverter DO signal communication port, which can be connected to dry contact signal specifications: Max ≤ 24 Vdc, 1A.
- To use the EnWG 14a function, SolarGo must be version 6.0.0 or higher.

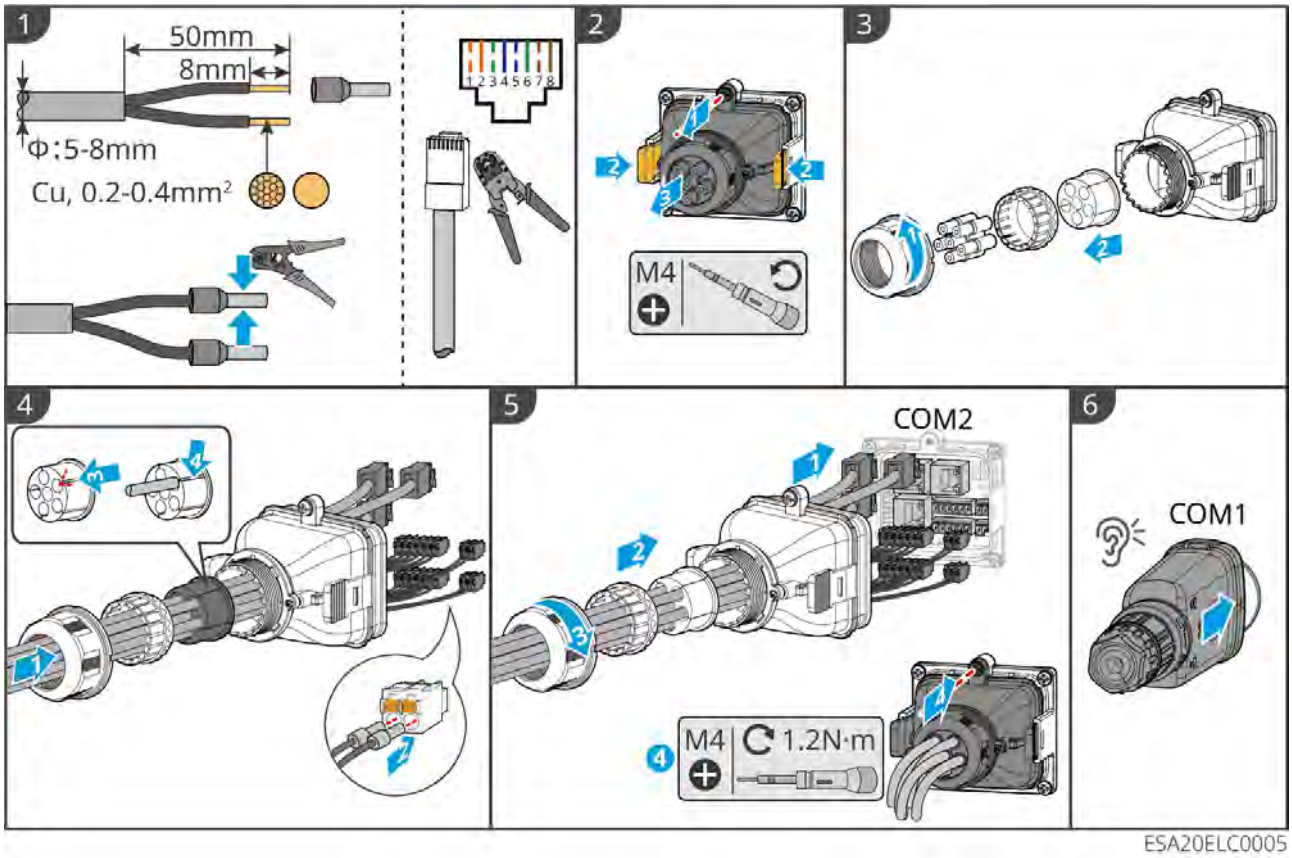
Communication Description


RCR&EnWG 14a
When S1, S2, and W3 are disconnected at the same time, the nominal output power is 100%.
(1 CL/0)
2 RG/0
3 4/8
4 3/7
5 2/6
6 1/5
W3→0%
S2 →30%
S1 →60%
W4→EnWG 14a
RCR
K 4→0%
K 3→30%
K 2→60%
K 1→100%
DRED
10R
S5a
S1a
S9
S0
15K
S5
S1
S6
S2
S7
S3
S8
S4
Smart Meter
1.RS485-A2
2.RS485-B2
EMS
EV Charger
PAR1
CT
2.RS485-B1
1.RS485-A1
6.DO2-COM
5.DO2-NO
Generator
K1
K2
K3
K4
SG Ready
3.DO1-NO
4.DO1-COM
2.DI-2
1.DI-1
Remote Shutdown/
NS Protection/Rapid Shutdown
1.CT 1-
2.CT 1+
N
L
ESA20ELC0010

Port	Function	Description
DRM/RCR	RCR, DRED, or EnWG 14a functional connection port (DRED/RCR/EnWG 14a)	• RCR (Ripple Control Receiver): It provides an RCR signal control port to meet the grid dispatching requirements in Europe. • DRED (Demand Response Enabling Device): Provides a DRED signal control port that meets DERD certification requirements in Australia and other regions. • EnWG (Energy Industry Act) 14a: All controllable loads must be subject to emergency dimming by the power grid. Grid operators can temporarily reduce the maximum grid power purchase capacity of controllable loads to 4.2 kW.
METER	Meter connection port (Meter)	Connecting to external smart meters through RS485 communication.
DI	Remote shutdown/NS protection/Fast shutdown	• External remote shutdown or local NS protection device, disabled by default. • In the rapid shutdown system, the transmitter is used in conjunction with a receiver to achieve the rapid shutdown of the system. The receiver maintains the component output by receiving signals from the transmitter. The transmitter can be external or built into the inverter. In the event of an emergency, the component can be shut down by enabling an external trigger to stop the transmitter.

Port	Function	Description
LOAD	Load Control (LOAD CNTL)	• It supports connection with dry contact signals to achieve functions such as load control. The capacity of the DO contact is 12V DC@1A. NO/COM is a Normally Open contact. • It supports the connection of SG Ready heat pumps and controls the heat pumps through dry contact signals.
GEN	Generator control port	Supports connection to generator control signals to control generator start-up and shutdown. In the microgrid and coupled scenarios, connecting generators is not supported.
EMS	EMS/Charging Pile Communication Port	Connect to external third-party devices for energy control or connect to GoodWe charging stations.
CT	CT Connection Port	When using only the inverter's built-in meter, connect the CT communication cable.
PAR1/PAR2	Parallel Operation Communication Port 1/2	Reserved

Connecting the communication cable.



ESA20ELC0005

7 System Commissioning

7.1 Check Before Power ON

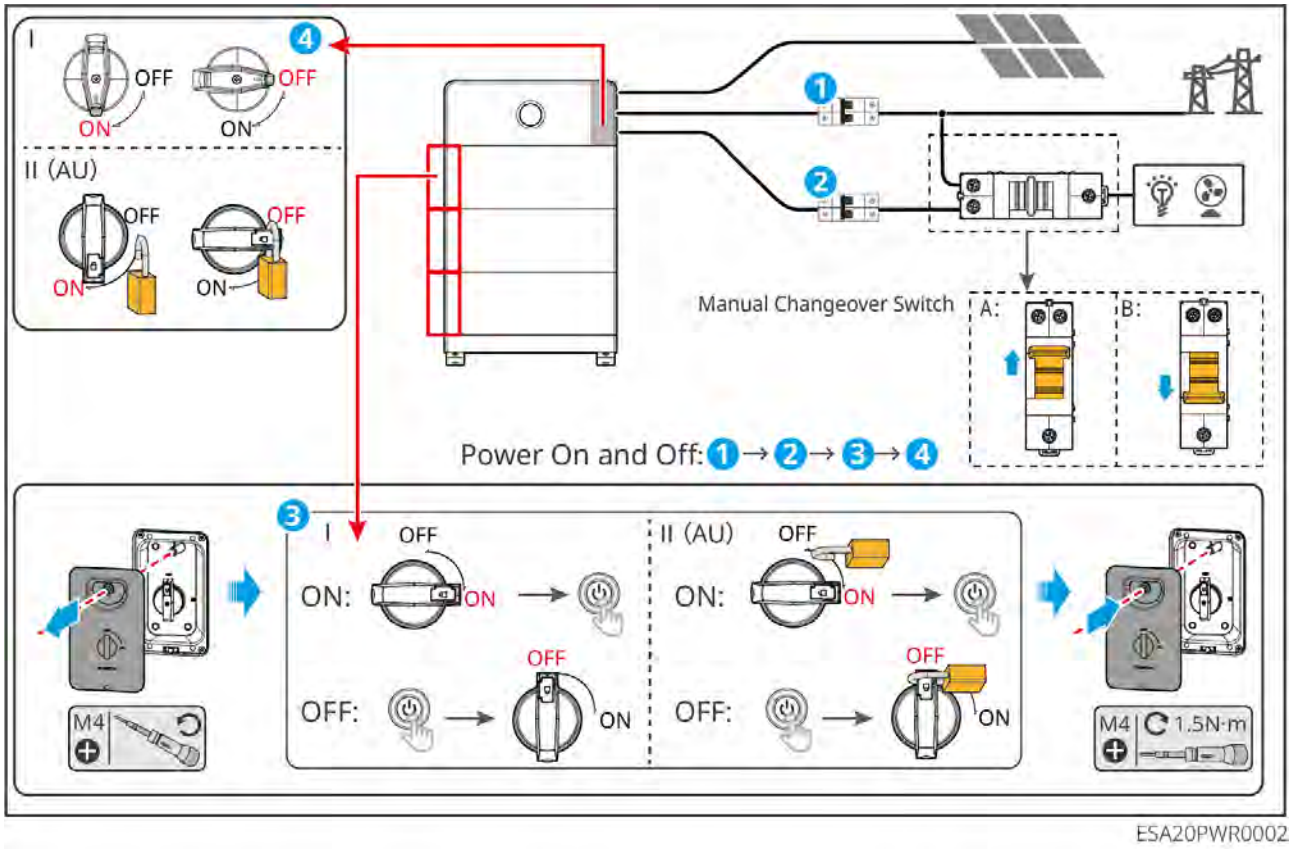
No.	Check Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE, DC, AC, communication cables are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	Unused wire holes and ports should be sealed up.
5	The used cable holes are sealed.
6	The voltage and frequency at the connection point meet the inverter grid connection requirements.

7.2 Power ON

⚠WARNING

- Battery black start scenarios:
  - The inverter needs to be activated by battery.
  - When there is no inverter and you need to charge and discharge the battery, etc..
- After the battery system is started, please ensure that the communication between the inverter and the battery system is normal within 15 minutes. If the inverter cannot communicate with the battery system, the battery system breaker will be disconnected automatically, and the battery system will be powered off.
- When there are multiple batteries in the system, turn the power switch of all batteries to the ON position. Pressing the multifunction button of any battery briefly will start all batteries.
- Manually switch the switch to position A to maintain constant power supply to the load; switch to position B to maintain power supply to the backup.

Power on

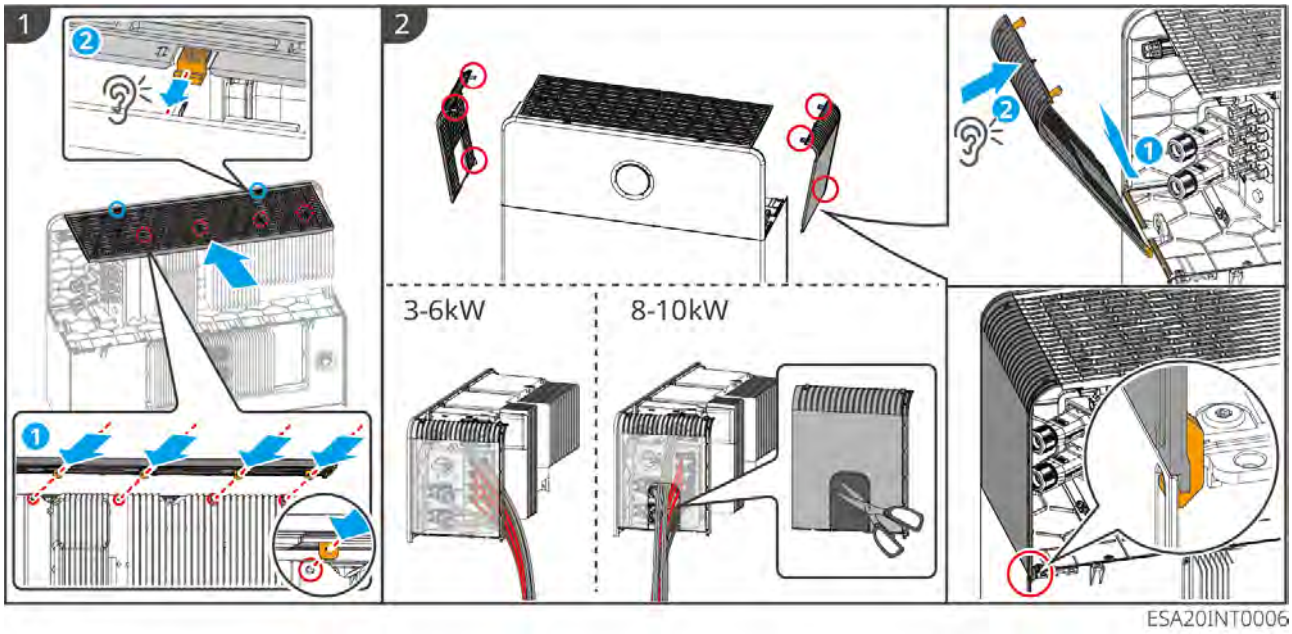


1. Turn on the BACK-UP circuit breaker.
2. Turn on the BACK-UP circuit breaker and (optionally) set the manual switch to the B position.
3. Turn the battery power switch to the ON position and briefly press the battery multifunction button.
4. Turn on the DC switch of the inverter.

Battery black start

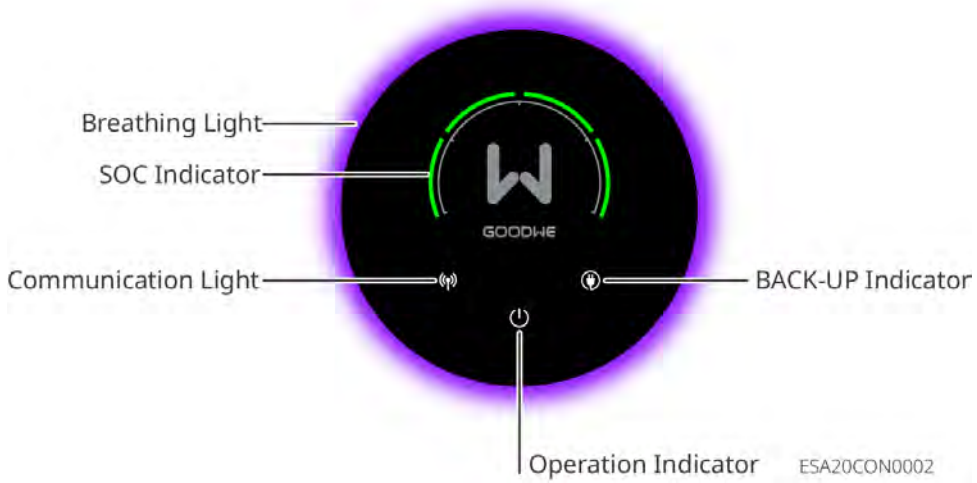
1. Turn on the BACK-UP circuit breaker.
2. Turn on the BACK-UP circuit breaker.
3. Turn on the battery system switch.
4. Turn on the DC switch of the inverter.
5. Press and hold any battery multi-function button for 2 seconds to start the battery system, and the battery will discharge to activate the inverter.

7.3 Installing Protective Cover



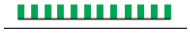
7.4 Indicators

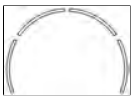
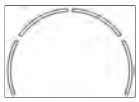
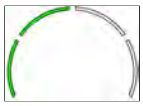
7.4.1 Inverter Indicators



Breathing light:

- When the system is in upgrade mode: The breathing light is a green scrolling light; the front of the scrolling light is the brightest and the rear is the dimmest. The length of the scrolling light is influenced by the upgrade percentage, SEMS+ APP settings, and device operating status.
- The breathing light status is affected by the settings in the SEMS+ app, except for inverter upgrades, system failures, and inverter power-off states. For settings, please refer to the section 11.7.1.Setting Energy Storage Inverter Parameters

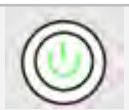
Indicator	Indicator status	Breathing light status	Description
		• 3 min/normally open: blue-purple running light stays on. • Normally closed: Stays off	The inverter is powered on and in the standby mode.
			The inverter is starting up and in the self-check mode.
		• 3 minutes: The blue-purple breathing light turns off after 3 minutes. • Always on in the APP: Blue-purple breathing light stays on. • Always off in the app: Stays off.	The inverter is powered on and in the standby mode.
		Red light flashes.	System Failure
		Power Off	The inverter is powered off.
		/	The monitoring module of the inverter is resetting.
			The inverter fails to connect with the communication termination.
			Communication fault between the communication termination and server.
			The monitoring of the inverter operates well.

Indicator	Indicator status	Breathing light status	Description
			The monitoring module of the inverter has not been started yet.
			The grid is abnormal, and the power supply to the BACK-UP port of the inverter is normal.
			The grid is normal, and the power supply to the BACK-UP port of the inverter is normal.
			The BACK-UP port has no power supply.
			System upgrade.
			System Failure
			Battery is dead.
			Steady light: Charging Flash: Discharging Battery SOC: 0%<SOC≤25%
			Steady light: Charging Flash: Discharging Battery SOC: 25%<SOC≤50%

Indicator	Indicator status	Breathing light status	Description
			Steady light: Charging Flash: Discharging Battery Battery SOC: 50%<SOC≤75%
			Steady light: Charging Flash: Discharging Battery SOC: 75%<SOC≤100%

7.4.2 Battery Indicators

Button Indicator

No.	 Green light	 Red light	Battery system status	Description
1	On	--	The system is working normally.	Run
2	Blinks 1 time/S.		The system is ready.	Standby
	Blinks 3 time/S.		The PCS communication is lost.	
3	Blinks 1 time/ 2S.	--	System alarms.	When there is an under-voltage fault of level 2, 3, or 4, the indicator flashes. For other level 2 faults, the indicator flashes.
4	--	On	System failure.	Fault list showing faults of level 3 or higher (undervoltage faults remain lit when at level 5)

7.4.3 Smart Meter Indicator

GM330

Type	Status	Description
Power light	On	Power on, no RS485 communication.
	Blinks.	Power on, RS485 communication works properly.
	Off	The smart meter has been powered off.
Communication indicator	Off	Reserved
	Blinks.	Press the Reset button for more than 5 seconds, power light, buying or selling electricity indicator light flash: Reset the meter.
Importing or exporting indicator	On	Importing from the grid.
	Blinks.	Exporting to the grid.
	Off	Do not import from and export to the grid.
	Reserved	

GMK110

Type	Status	Description
Power light	On	The smart meter is power on.
	Off	The smart meter has been powered off.
Communication indicator	Blinks.	Meter communication is normal.
	Off	Meter communication is abnormal or has no communication.

7.4.4 Smart Dongle Indicator

- WiFi/LAN Kit-20

Indicator	Status	Description
Power light		On: The smart dongle has been powered on.
		Power Off: The smart dongle is not powered on.

Indicator	Status	Description
Communication indicator		On: Communication in WiFi mode or LAN mode is normal.
		Blinks 1 time: The smart dongle Bluetooth has been turned on, and is waiting for connecting to the SolarGo App.
		Blinks 2 times: The smart dongle is not connected to the router.
		Blinks 4 times: The smart dongle is communicating normally with the router, but has not been connected to the server.
		Blinks 6 times: The smart dongle is recognizing the connected device.
		Off: The software of the smart dongle is resetting or is not powered on.

Indicator	Color	Status	Description
Communication indicator in LAN Port 	Green	On	The 100Mbps wired network is normally connected.
		Off	• The Ethernet cable is not connected. • Fail to connect the 100Mbps wired network. • The 10Mbps wired network is normally connected.
	Yellow	On	The 10/100Mbps wired network is normally connected, but no communication data is received or transmitted.
		Blinks.	The communication data is being transmitted or received.
		Off	The Ethernet cable is not connected.

Button	Description
Reload	Press and hold for 0.5 to 3 seconds to reset the Smart Dongle.
	Press and hold for 6 to 20 seconds to restore the Smart Dongle to factory settings.

8 Rapid System Configuration

8.1 Downloading the App

8.1.1 Downloading SolarGo App

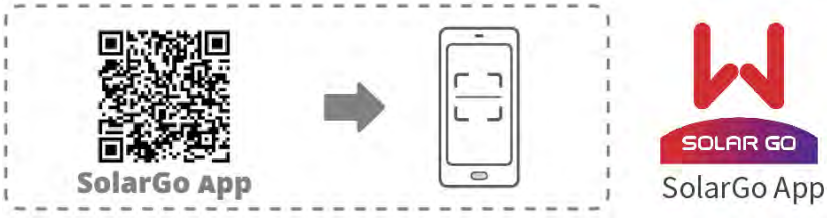
Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 5.0 or later, iOS 13.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

NOTICE
Once the SolarGo App has been installed, you will receive automatic notifications when updates are available.

Method 1: Search SolarGo in Google Play (Android) or App Store (iOS) to download and install the app.

Method 2: Scan the QR code below to download and install the App.



8.1.2 Downloading SEMS+ APP

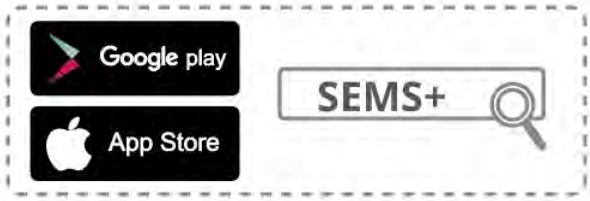
Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 6.0 or later, iOS 13.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

Download Method:

Method 1:

Search SEMS+ in Google Play (Android) or App Store (iOS) to download and install the App.



Method 2:

Scan the QR code below to download and install the App.

8.2 Connecting the Energy Storage Inverter

Step 1: Confirm that the inverter is powered on and that both the communication module and the inverter are operating normally.

Step 2: Depending on the type of communication module, select the Bluetooth or WLAN tab on the SolarGo App home page.

Step 3 (optional): If you choose to connect the device via WiFi, first open your phone's WiFi settings and connect to the inverter's WiFi signal. Default Connection Password: 12345678.

Step 4: Drag down or click Search Device to refresh the device list, confirm the inverter signal name based on the inverter serial number, and click the inverter signal name to enter the login interface. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.

Step 5 (optional): When connecting the device via Bluetooth for the first time, a Bluetooth pairing prompt will appear on the interface. Please click Pair to continue connecting and enter the login interface.

Step 6: Log in to the app using your actual role and change your login password according to the prompts on the interface. Initial Login Password: 1234.

Step 7: If you connect the inverter via Solar-WiFi***, modify the initial connection password according to the interface prompts; if you connect the inverter via WLA-***

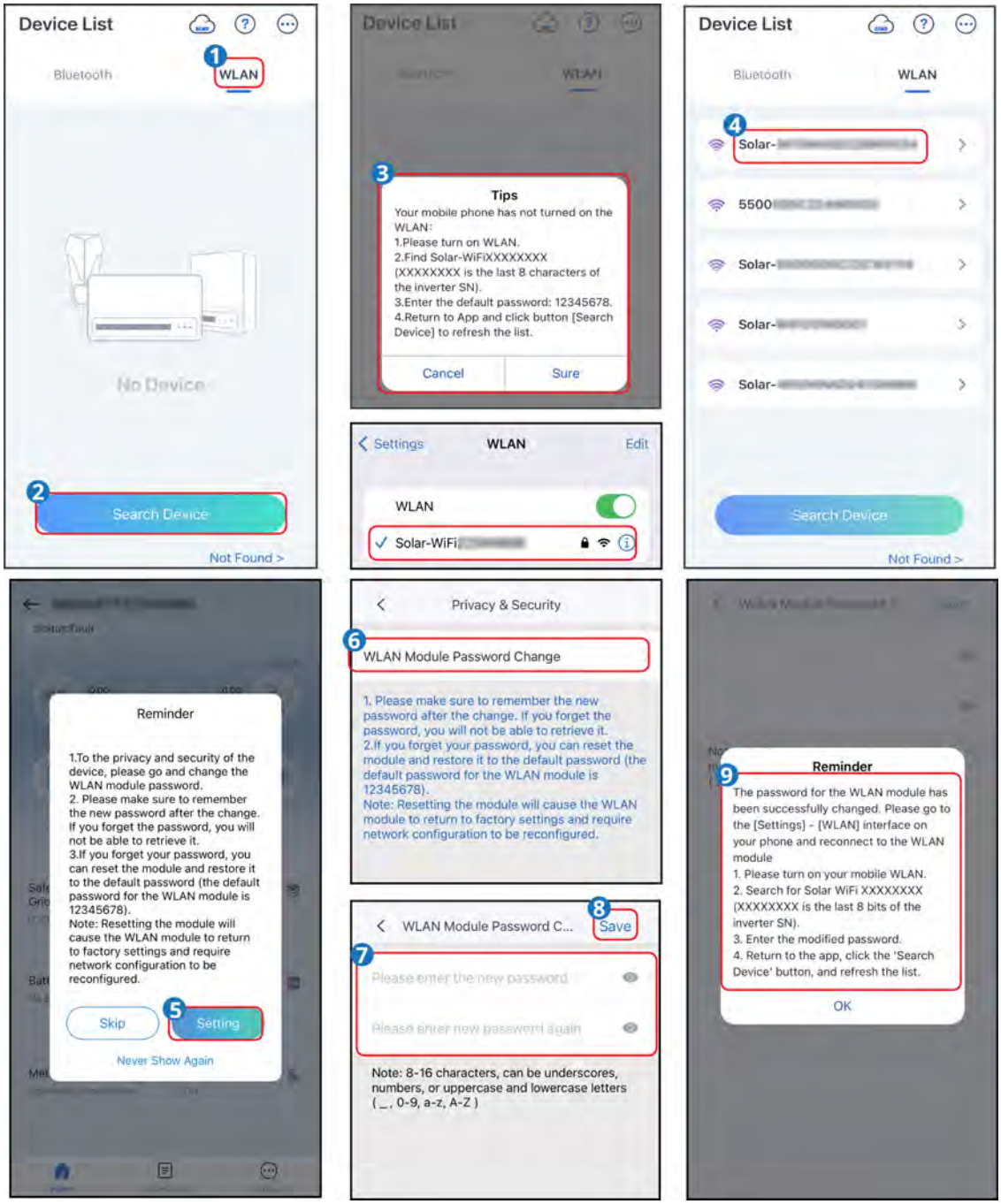
or WFA-***, modify the initial login password according to the interface prompts. After changing your password, log in again and go to the device details page. Please refer to the actual prompts on the interface.

Step 8 (optional): If you connect the inverter via WLA-*** or WFA-***, enable Bluetooth to remain on according to the interface prompts after entering the device details page. Otherwise, the Bluetooth signal will be turned off after this connection ends.

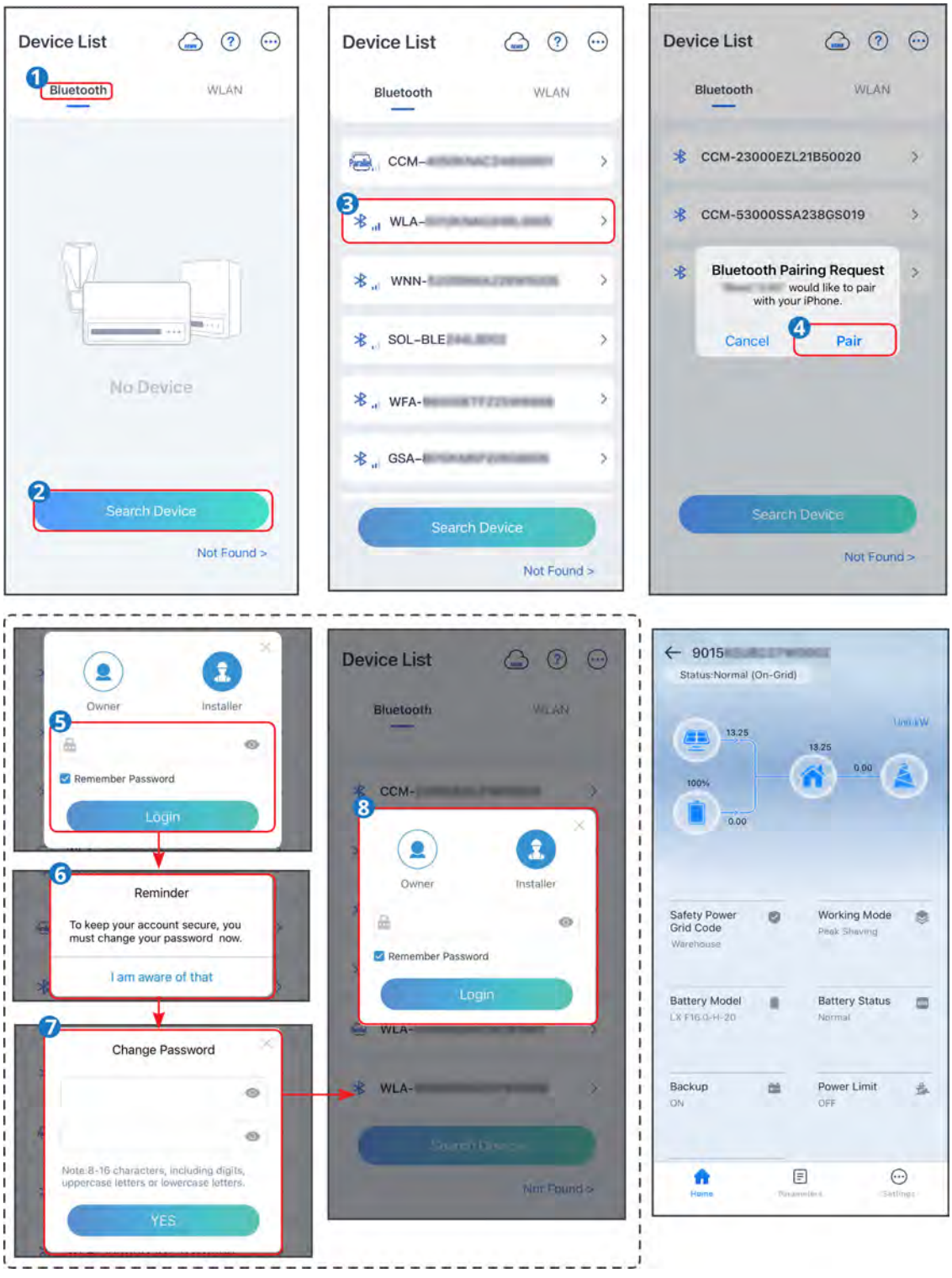
Method 1: Log in via WLAN

NOTICE

- After upgrading the SolarGo app to version V5.6.2 or higher, a pop-up window will appear prompting you to change your password each time you connect to the inverter via WLAN. If you wish to permanently close the pop-up window, please click “Do not show again” when the pop-up window appears.
- If you forget the modified password, please reset the password by resetting the smart dongle or the inverter LCD screen. Refer to the corresponding inverter or smart dongle manual for the steps. Resetting the smart dongle to restore the initial password will cause the smart dongle to be restored to factory settings.



Method 2: Log in via Bluetooth

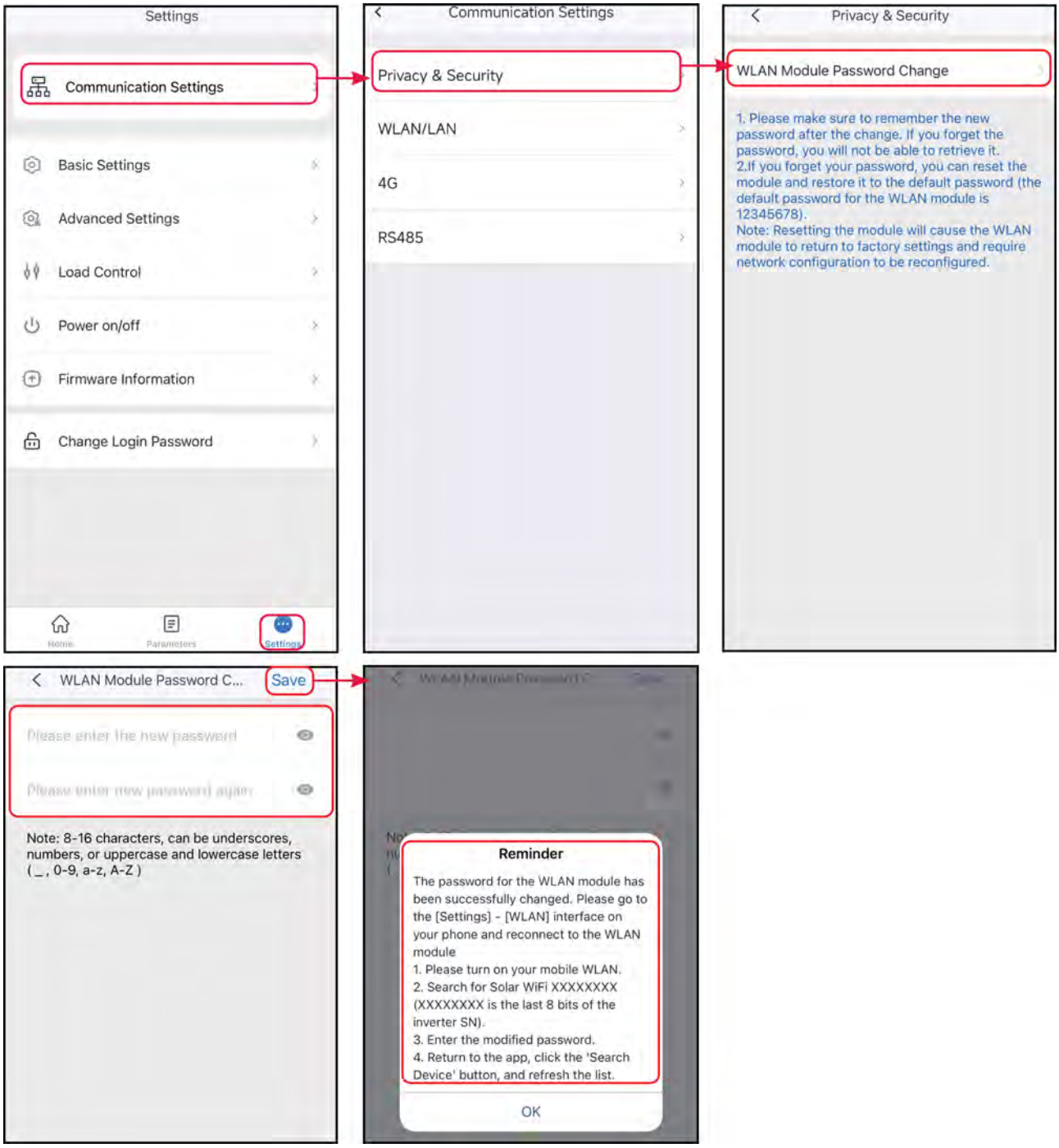


8.3 Setting Communication Parameters

NOTICE
The communication configuration interface may differ depending on the communication method used by the inverter or the communication module connected. Please refer to the actual interface.

8.3.1 Setting Privacy and Security Parameters

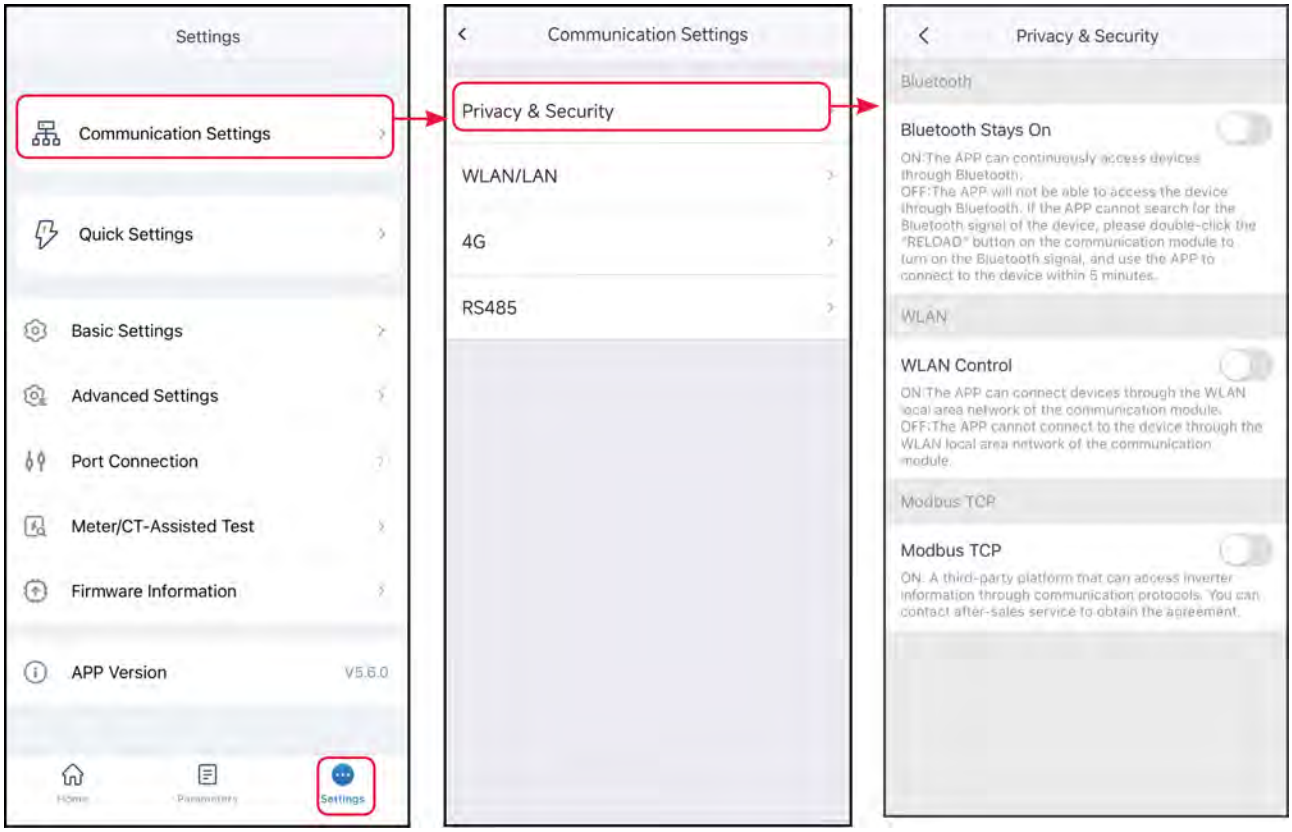
Type I:
Step 1: Go to the settings page by selecting **Home > Settings > Communication Settings > Privacy and Security > WLAN Module Password Change**.
Step 2: Set the WiFi hotspot password for the new communication module according to your actual needs, click **Save** to complete the setup.
Step 3: Open your phone's WiFi settings and connect to the inverter's WiFi signal using the new password.



Type II:

Step 1: Go to the settings page via **Home > Settings > Communication Settings > Privacy and Security**.

Step 2: Enable corresponding functions according to actual needs.



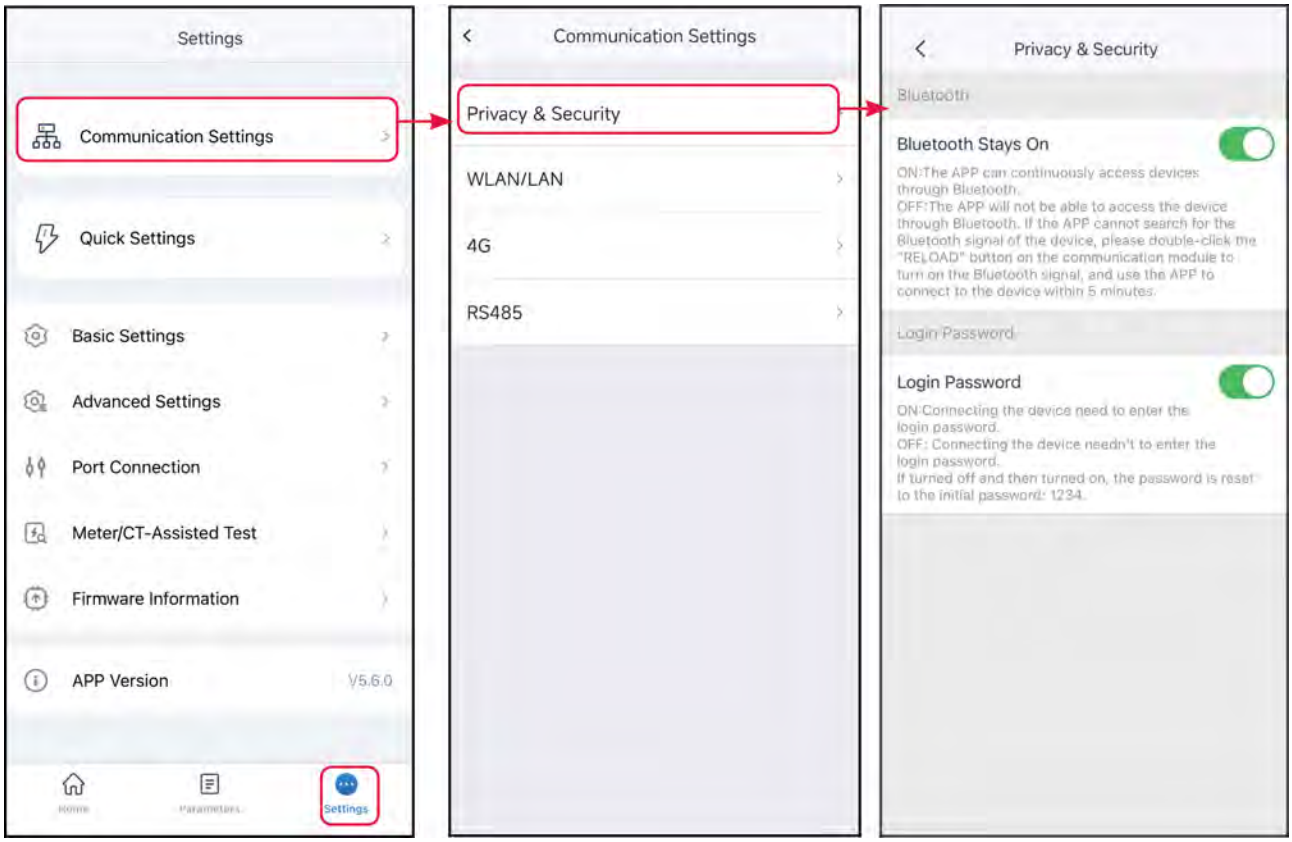
No.	Parameter	Description
1	Bluetooth Continuously Enabled	Disabled by default. After enabling this feature, the device's Bluetooth will remain on and stay connected to SolarGo. Otherwise, the device's Bluetooth will turn off after 5 minutes, disconnecting from SolarGo.
2	WLAN Control	Disabled by default. After enabling this feature, SolarGo can connect to the device via WLAN when both are on the same local area network. Otherwise, even if they are on the same local area network, they cannot connect.
3	Modbus-TCP	After enabling this feature, third-party platforms can access the inverter via the Modbus TCP protocol to perform monitoring functions.
4	SSH Control Ezlink	Once this feature is enabled, third-party platforms can connect to and control EzLink's Linux system.

Type III:

Step 1: Go to the settings page via **Home > Settings > Communication Settings >**

Privacy and Security.

Step 2: Enable **Bluetooth to remain on** and **the login password** function according to actual needs.



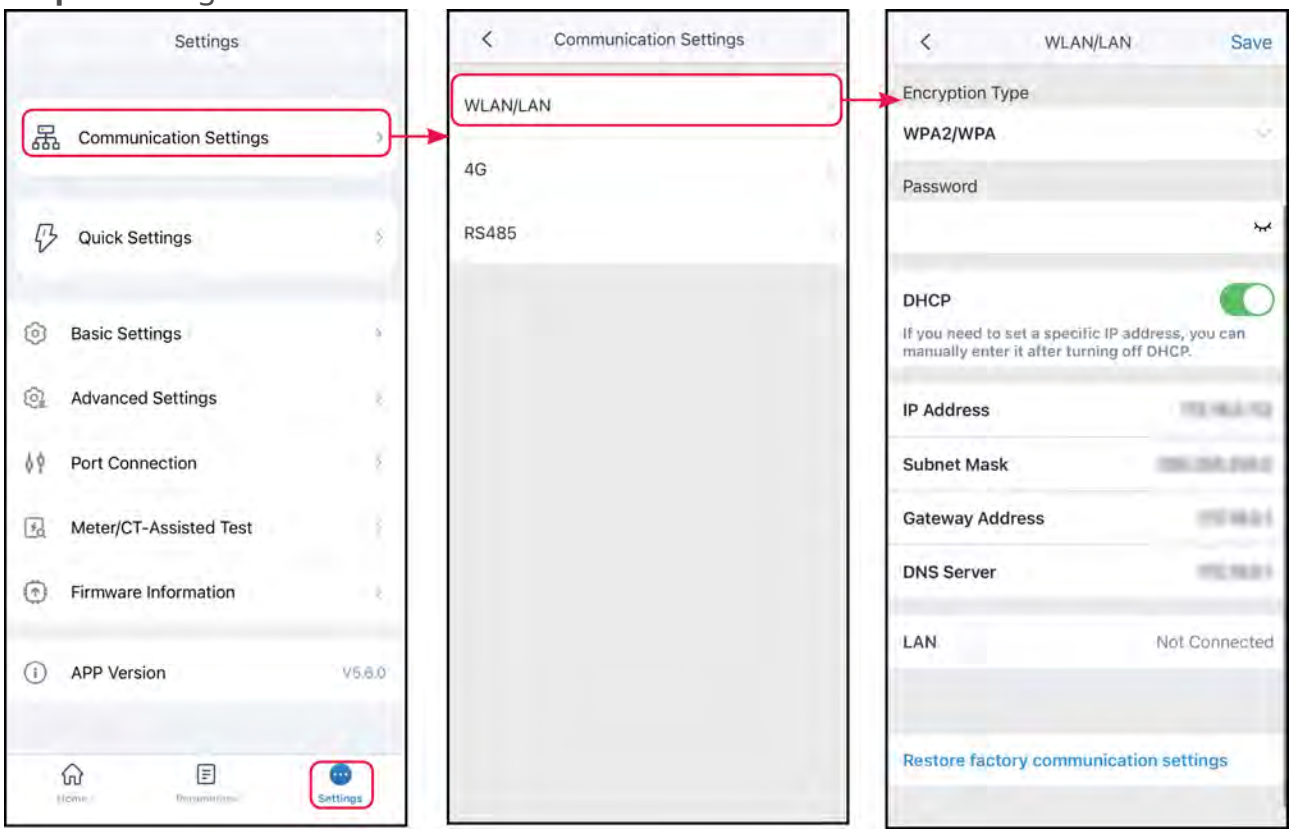
No.	Parameter	Description
1	Bluetooth Continuously Enabled	Disabled by default. After enabling this feature, the device's Bluetooth will remain on and stay connected to SolarGo. Otherwise, the device's Bluetooth will turn off after 5 minutes, disconnecting from SolarGo.
2	Login Password	Disabled by default. After enabling this feature, the device will prompt you to enter your login password when connecting to SolarGo. When using your login password for the first time, please use the initial password and change your password according to the prompts on the screen.

8.3.2 Setting WLAN/LAN Parameters

NOTICE
The communication configuration interface may vary depending on the type of smart dongle connected to the inverter. Please refer to the actual interface for accurate information.

Step 1: Go to the settings page via **Home > Settings > Communication Settings > WLAN/LAN**.

Step 2: Configure the WLAN or LAN network based on the actual situation.



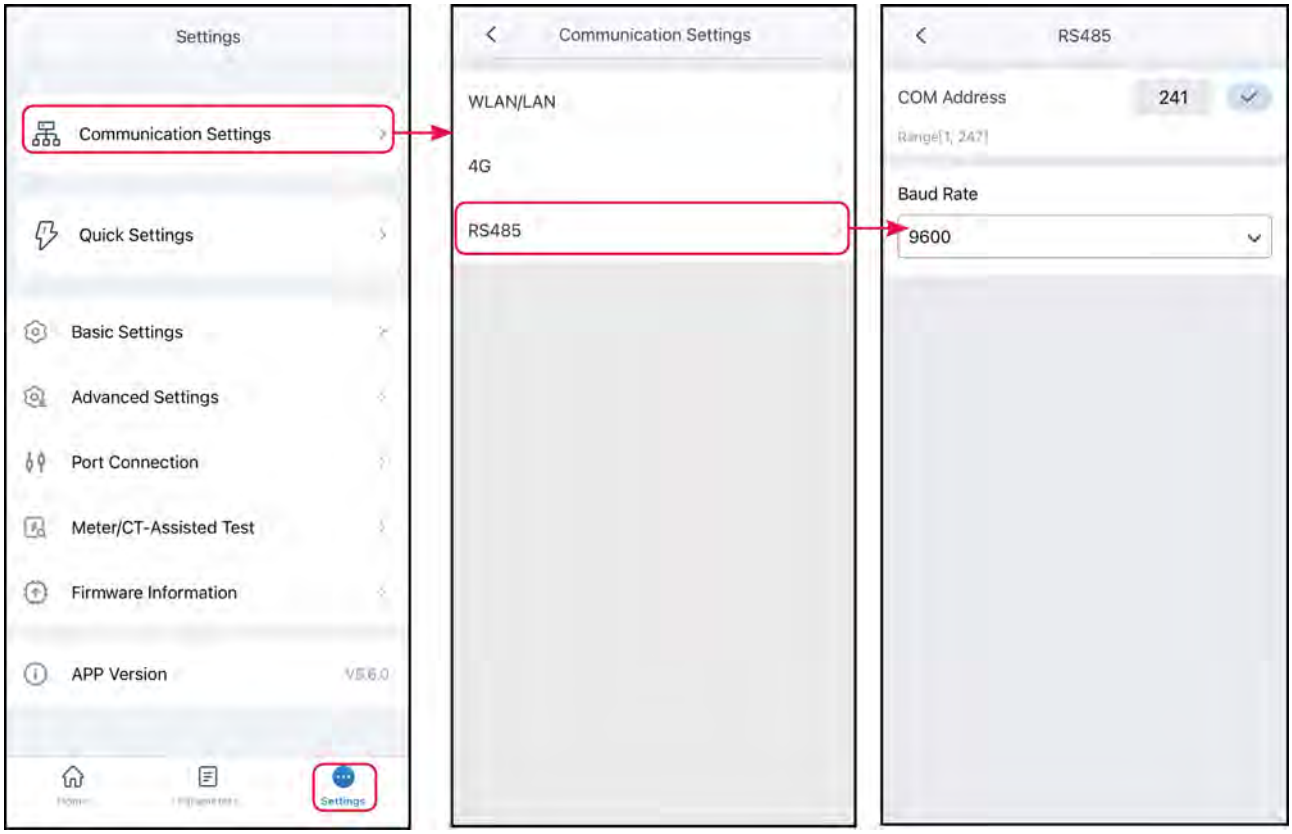
No.	Parameter	Description
1	Network Name	Applicable to WLAN. Please select the corresponding network based on your actual situation and communicate the device with the router or switch.
2	Password	Applicable to WLAN. Enter the password for the network you actually selected.

No.	Parameter	Description
3	DHCP	When the router is using the dynamic IP mode, turn on the DHCP function. When using the router in static IP mode or using a switch, turn off the DHCP function.
4	IP Address	When DHCP is enabled, there is no need to configure this parameter. When DHCP is turned off, please configure this parameter according to the information of the router or switch.
5	Subnet mask	
6	Gateway address	
7	DNS Server	

8.3.3 Setting RS485 Communication Parameters

NOTICE
Set the host communication address of the inverter. When using a single inverter, set the communication address according to the actual situation. When connecting multiple inverters, each inverter must have a different address, and none of the inverters can be set to communication address 247.

Step1: Enter the setting page through **Home > Settings > Communication Configuration > RS485.**
Step 2: Configure the communication address and baud rate according to the actual situation.



8.4 Quick System Setup

NOTICE

- When the inverter model is different, the interface display and parameter settings will vary. Please refer to the actual product for details.
- When selecting the safety code country/region, the system will automatically configure the overvoltage and undervoltage protection, overfrequency and underfrequency protection, inverter on-grid voltage/frequency, connection slope, Cosφ curve, Q(U) curve, P(U) curve, PF curve, high and low voltage ride-through, etc. according to the safety regulation requirements of different regions. For specific parameter values, please set the safety regulations region first, then check via Home > Settings > Advanced Settings > Safety Regulations Parameter Settings.
- The generation efficiency of inverter differs in different working modes. Please set according to the local actual electricity consumption.
  - Self-generated and self-consumed mode: The basic operating mode of the system. The power generated by the PV system supply the loads in priority; the

NOTICE

excess power will charge the batteries, and then the remaining power will be sold to the utility grid. When the power generated in the PV system is insufficient, the battery will supply the loads in priority. If the battery power is insufficient, the load will be powered by the utility grid.

- BACK-UP Mode: The BACK-UP mode is mainly applied to the scenario where the grid is unstable. When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACKUP loads; when the grid is restored, the inverter switches to grid-tied mode.
- TOU Mode: It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. Based on actual needs, during off-peak hours, the battery can be set to charging mode to purchase electricity from the grid for charging; during peak hours, the battery can be set to discharge mode to supply power to the load through the battery.
- Off-grid mode: Suitable for areas without a power grid. PV and batteries constitute a pure off-grid system, where PV power generation supplies power to the load and excess power charges the batteries. When PV power generation does not meet the load's power demand, the battery supplies power to the load.
- Delayed charging: Suitable for areas with grid connection power output restrictions. By setting peak power limits and charging time periods, photovoltaic power generation that exceeds grid connection limits can be used to charge batteries, reducing photovoltaic waste.
- Demand management: Mainly applicable to scenarios where peak power consumption is limited. When the total power consumption of the load exceeds the power quota within a short period of time, battery discharge can be used to reduce the amount of power consumption exceeding the quota.

8.4.1 Quick System Setup (Type I)

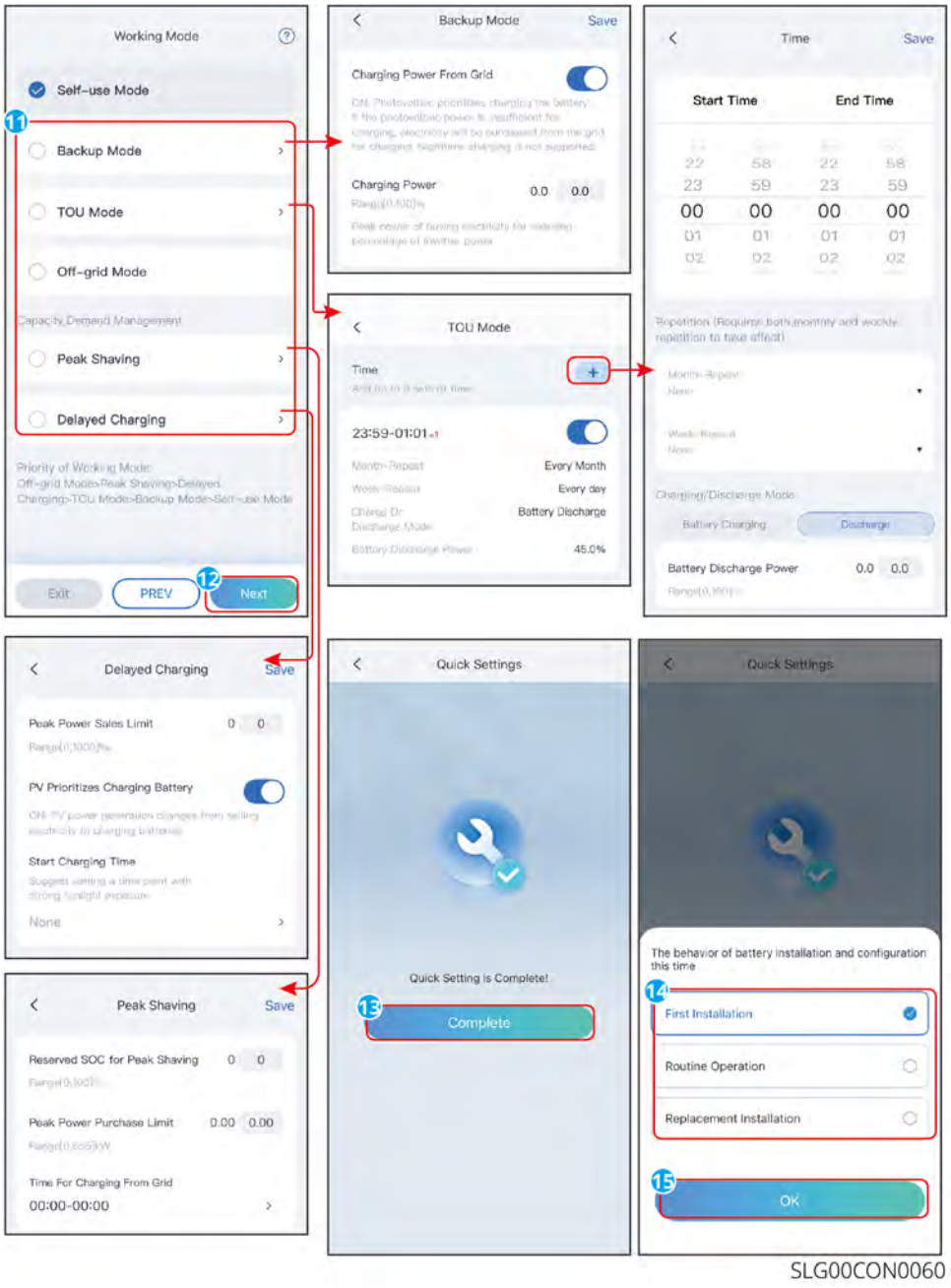
Step 1: Go to the parameter settings page via **Home > Settings > Quick Configuration**.
Step 2: Enter your login password to access the safety settings interface. Initial Installation password: goodwe2010 or 1111.
Step 3: Some models support one-click configuration. Select **the configuration wizard mode** to quickly configure the system.

Step 4: Select the safety standard country based on the country or region where the inverter is located. After completing the settings click **Next** to set the working mode.

SLG00CON0121

Step 5: Set the working mode according to actual needs. After completing the settings, click **Next** to finish configuring the work mode. For certain models, after the operating mode configuration is complete, the system will automatically enter the CT/electric meter self-check state. At this point, the inverter will temporarily disconnect from the grid and then automatically reconnect.

Step 6: Select the battery according to the actual situation: **initial installation, daily operation**, or **replacement installation**.



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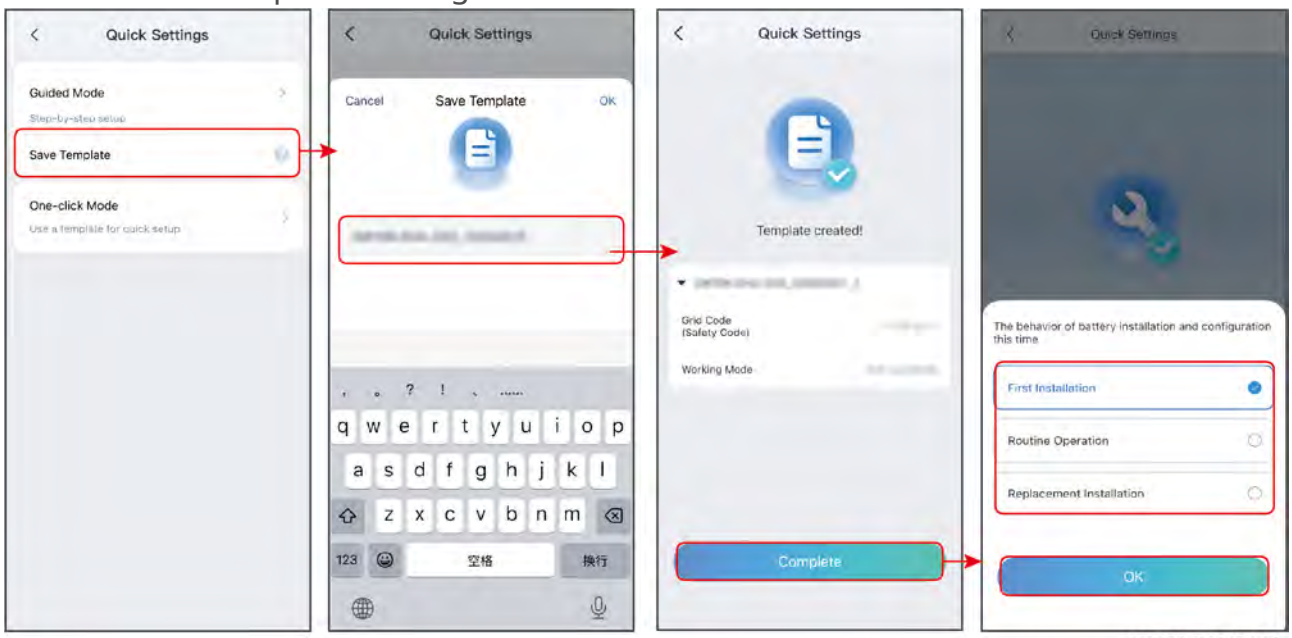
No.	Parameter	Description
BACK-UP Mode		
1	Charging from Grid	Enabling this function allows the system to purchase electricity from power grid.
2	Charging Power	The percentage of power purchased compare to the rated power of the inverter.
TOU Mode		

No.	Parameter	Description
3	Start Time	Within the start and end time, the battery will charge or discharge based on the set charge-discharge mode and rated power.
4	End Time	
5	Charge and discharge mode	Set to charge or discharge based on actual needs.
6	Rated Power	The percentage of power during charging or discharging compared to the rated power of the inverter.
7	Charge Cut-off SOC	The battery stop charging once the battery SOC reaches Charge Cut-off SOC.
Peakshaving		
8	Reserved SOC For Peakshaving	In Peak Shaving mode, the battery SOC should be lower than Reserved SOC For Peakshaving. Once the battery SOC is higher than Reserved SOC For Peakshaving, the peak shaving mode fails.
9	Peak Power Purchase Limit	Set the maximum power limit allowed to purchase from the grid. When the loads consume power exceed the sum of the power generated in the PV system and Peak Power Purchase Limit, the excess power will be made up by the battery.
10	Time Period for Purchasing Electricity and Charging	During the period when electricity is purchased for charging, if the load power consumption does not exceed the purchased electricity quota, the battery can be charged through the power grid. Otherwise, only PV power can be used to charge the battery.
Delayed charging mode		
11	Peak Power Selling Limit	Set peak power limits in accordance with grid standards in certain countries or regions. The peak power limit must be lower than the local specified output power limit.
12	PV prioritizes battery charging	Within the charging time range, photovoltaic power generation is prioritized for charging the battery.

No.	Parameter	Description
13	Charging Start Time	

Step 7: For devices that support one-click configuration, you can generate a template based on the completed configuration.



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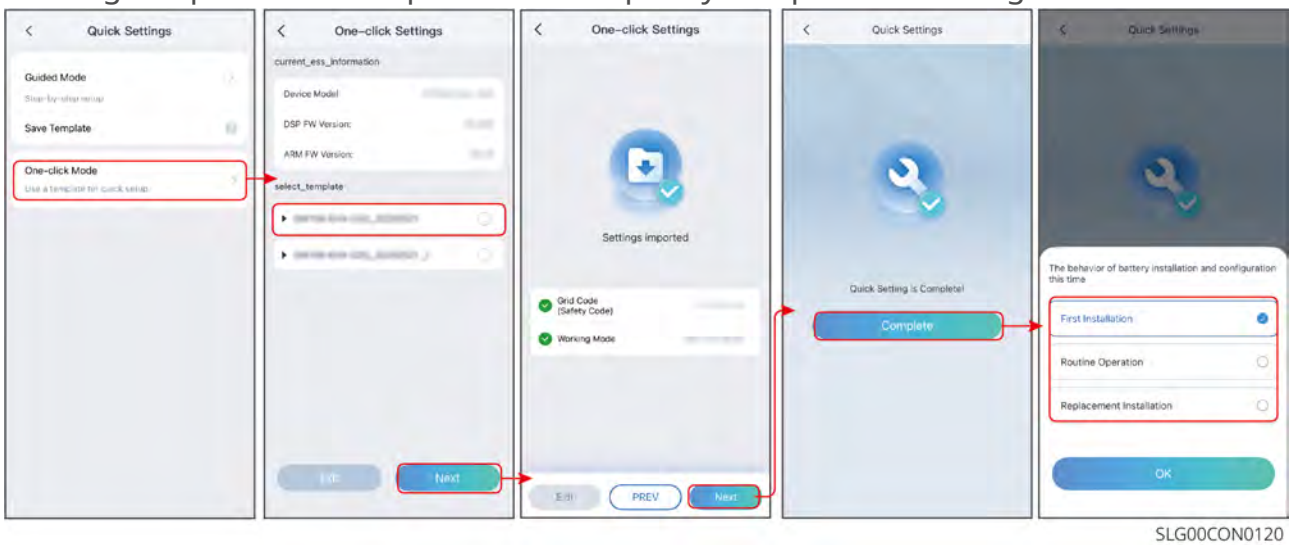
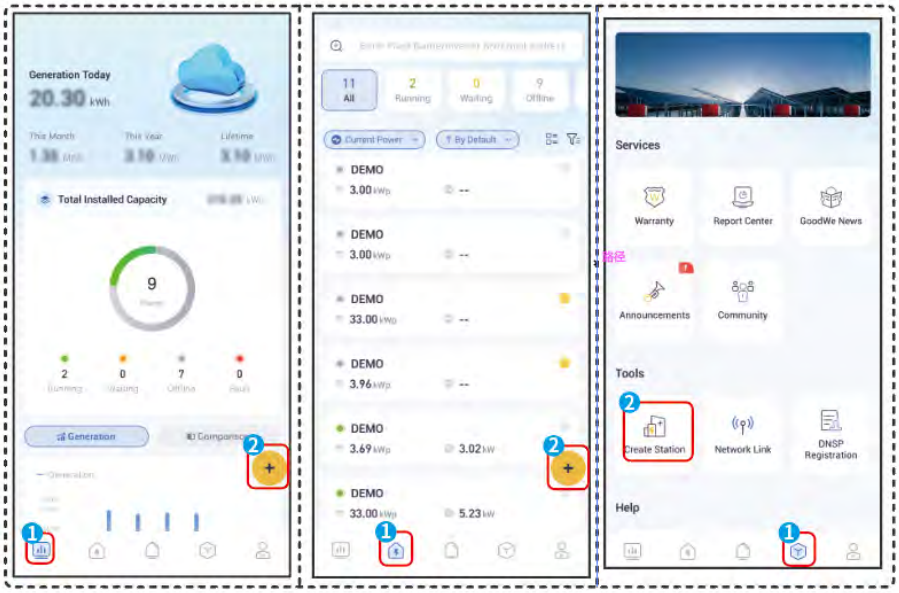
Step 8: If there is an existing one-click configuration template, you can use the existing template direct import mode to quickly complete the configuration.

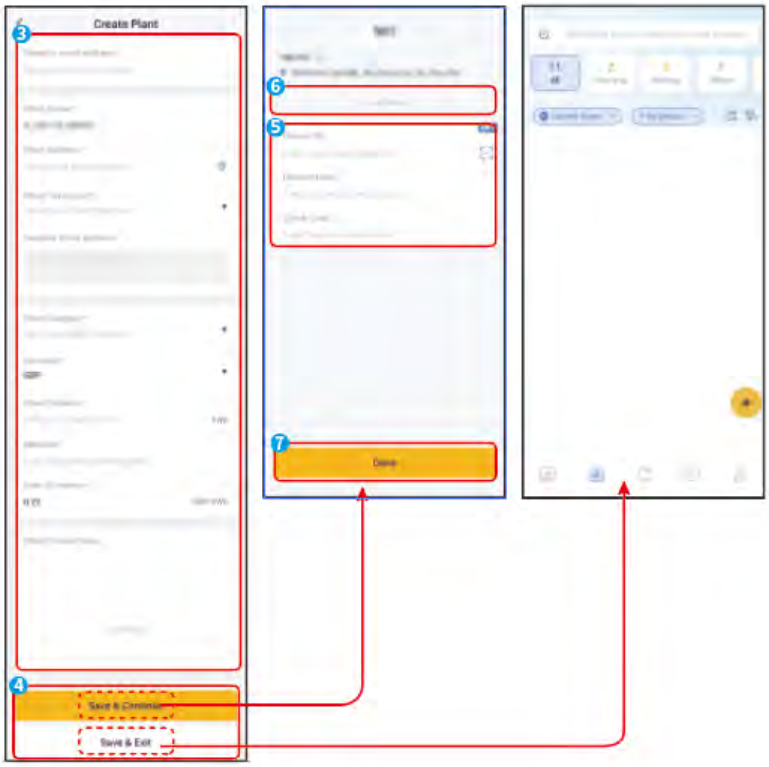


SLG00CON0120

8.5 Power Plant Creation

Step 1: Click on the home page or power station list page, or click **Create Station** on the account page.
Step 2: Based on the actual situation, fill in the relevant information about the power station in the **Create Station** interface.
Step 3: Click **Save & Exit** to complete the power plant creation. At this point, no equipment has been added to the power plant. Alternatively, click **Save & Continue** to enter the equipment addition interface and enter the relevant equipment information based on the actual situation. Multiple pieces of equipment can be added.




Create Plant
3
6
5
7
Done
4
Save & Continue
Save & Exit

9 System Commissioning

9.1 Commissioning Method Overview

Please use the SolarGo App to configure the parameters.

9.2 SolarGo APP

9.2.1 APP Introduction

NOTICE
• The interface graphics or interface words used in this article are all based on SolarGo App V6.4.0 version, App version upgrade may lead to interface changes, the picture involves data for reference only, please refer to the actual prevail. • The parameter display will be different depending on the model of the device and the country where the safety regulations are set. Please refer to the actual interface display for specific parameters. • Before setting parameters, please carefully read this manual and the user manual for the corresponding model of product to familiarize yourself with the product's functions and features. Errors in the setting of grid parameters may result in the inverter not being able to be connected to the grid or not being connected to the grid in accordance with grid requirements, affecting the amount of power generated by the inverter.

SolarGo App is a mobile application that can communicate with inverters or charging stations via Bluetooth, WiFi, 4G, or GPRS. Commonly used functions are as follows:

- Check the operating data, software version, alarms, etc.
- Set the safety standards country, power grid parameters, power limits, communication parameters, etc. for the inverter.
- Set the charging mode for the charging station, etc.
- Equipment maintenance.

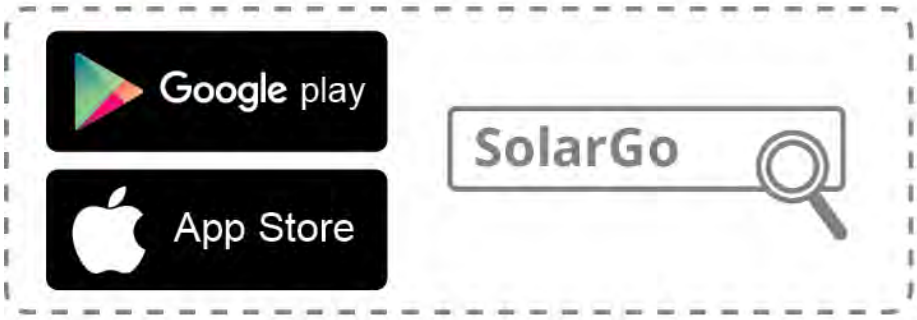
9.2.1.1 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 5.0 or later, iOS 13.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

NOTICE
Once the SolarGo App has been installed, you will receive automatic notifications when updates are available.

Method 1: Search SolarGo in Google Play (Android) or App Store (iOS) to download and install the app.



SolarGo App
SLG00CON0135

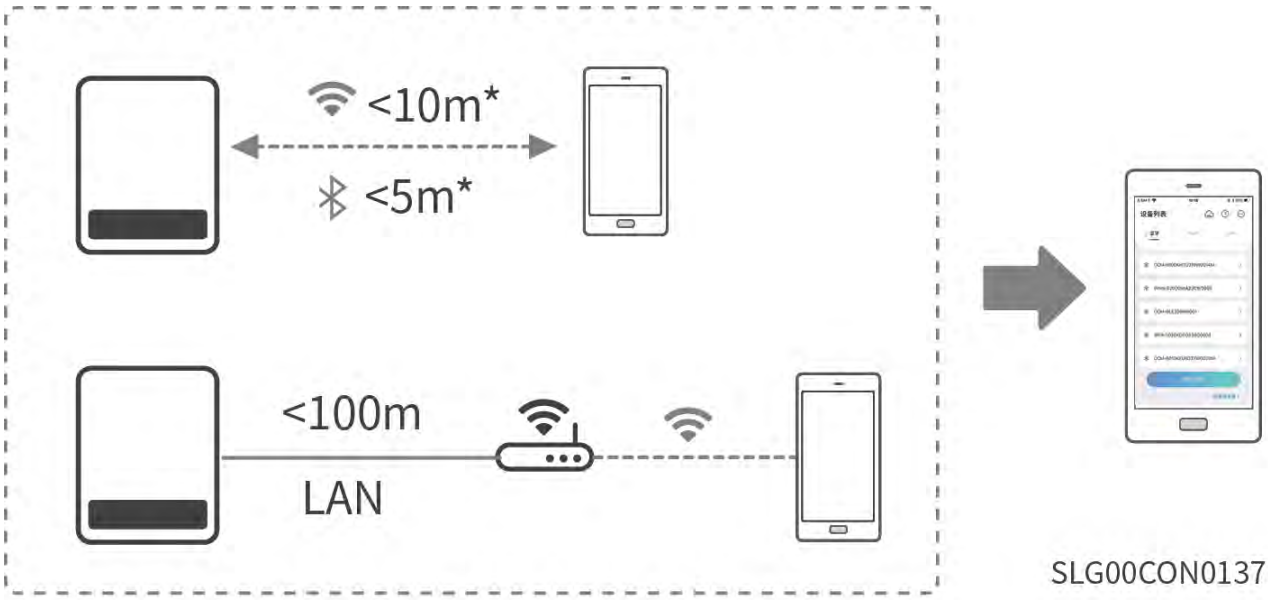
Method 2: Scan the QR code below to download and install the App.

SolarGo App
SLG00CON0136

9.2.1.2 Connection Method

After the device is powered on, it can connect to the app in the following ways:

NOTICE
Different communication modules may result in differences in the specific connection distance. Please refer to the communication module actually used.



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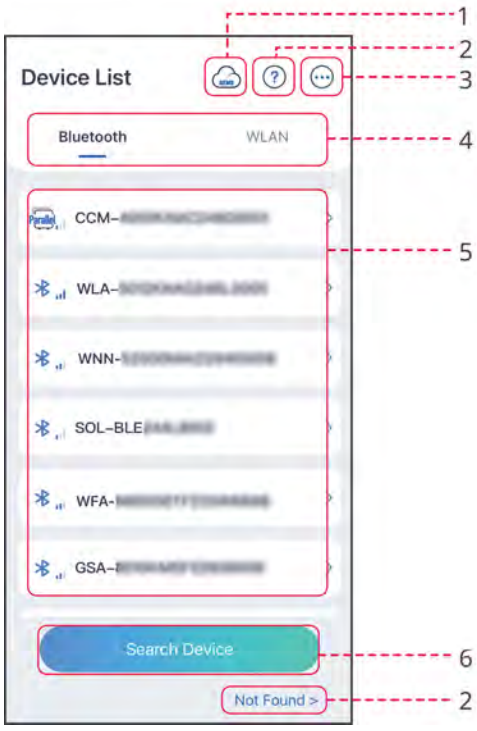
9.2.1.3 Introduction of Interface



No.	Name/Icon	Description
1	SEMS	Tap the icon to open the page downloading the SEMS Portal app.

No.	Name/Icon	Description
2	 Not found	Tap to read the connection guide.
3		• Check information such as app version, local contacts, etc. • Other settings, such as update date, switching language, set temperature unit, etc.
4	Bluetooth/WiFi/4G	Select based on actual communication method. If you have any problems, tap  or **NOT Found** to read the connection guides.
5	Device List	• The list of all devices. The last digits of the device name are normally the serial number of the device. • Select the device by checking the serial number of the master inverter when multi inverters are parallel connected. • The device name varies depending on the inverter model or smart dongle type: ◦ Wi-Fi/LAN Kit; Wi-Fi Kit; Wi-Fi Box: Solar-WiFi*** ◦ Bluetooth module or inverter with built-in Bluetooth module: SOL-BLE*** ◦ WiFi/LAN Kit-20: WLA-*** ◦ WiFi Kit-20: WFA-*** ◦ Ezlink3000: CCM-BLE***; CCM-***; *** ◦ 4G Kit-CN-G20/4G Kit-CN-G21: GSA-***; GSB-*** ◦ 4G Kit-G20: GSC-*** ◦ Microinverter: WNN*** ◦ Charging pile: ***
6	Search Device	Tap Search Device if the device is not found.

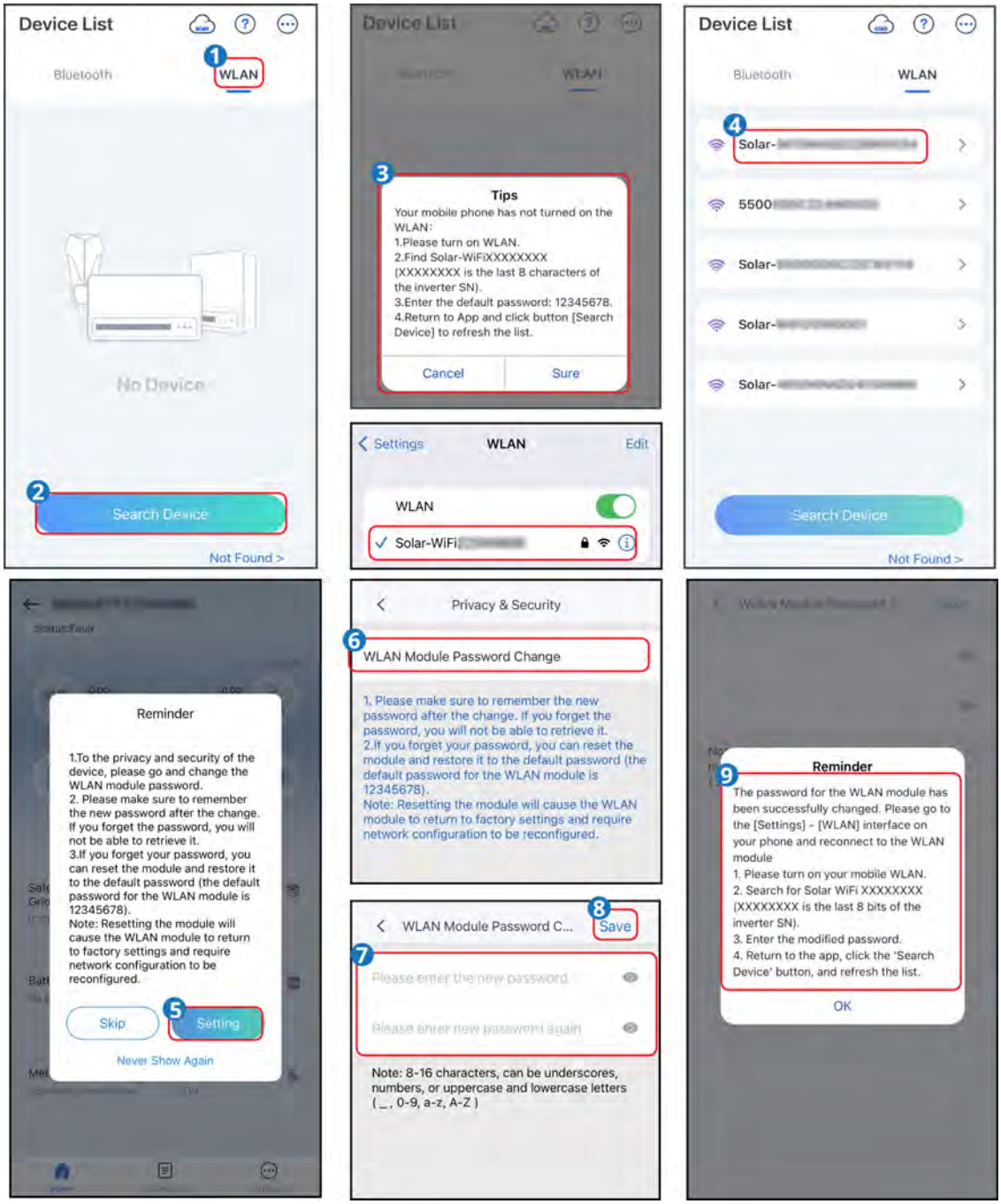
9.2.2 Connecting the Energy Storage Inverter

Step 1: Confirm that the inverter is powered on and that both the communication module and the inverter are operating normally.
Step 2: Depending on the type of communication module, select the Bluetooth or WLAN tab on the SolarGo App home page.
Step 3 (optional): If you choose to connect the device via WiFi, first open your phone's WiFi settings and connect to the inverter's WiFi signal. Default Connection Password: 12345678.
Step 4: Drag down or click Search Device to refresh the device list, confirm the inverter signal name based on the inverter serial number, and click the inverter signal name to enter the login interface. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.
Step 5 (optional): When connecting the device via Bluetooth for the first time, a Bluetooth pairing prompt will appear on the interface. Please click Pair to continue connecting and enter the login interface.
Step 6: Log in to the app using your actual role and change your login password according to the prompts on the interface. Initial Login Password: 1234.
Step 7: If you connect the inverter via Solar-WiFi***, modify the initial connection password according to the interface prompts; if you connect the inverter via WLA-*** or WFA-***, modify the initial login password according to the interface prompts. After changing your password, log in again and go to the device details page. Please refer to the actual prompts on the interface.
Step 8 (optional): If you connect the inverter via WLA-*** or WFA-***, enable Bluetooth to remain on according to the interface prompts after entering the device details page. Otherwise, the Bluetooth signal will be turned off after this connection ends.

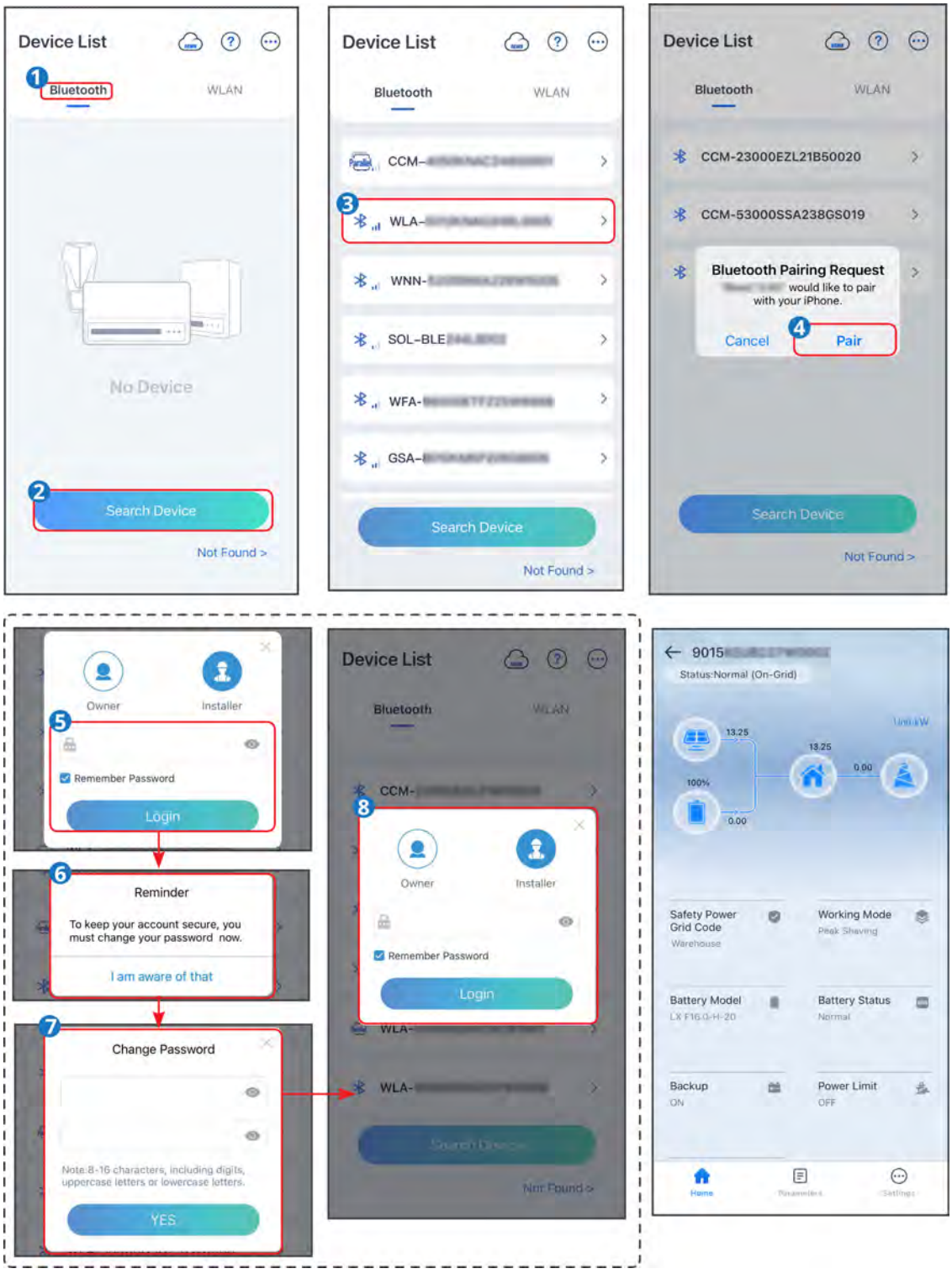
Method 1: Log in via WLAN

NOTICE

- After upgrading the SolarGo app to version V5.6.2 or higher, a pop-up window will appear prompting you to change your password each time you connect to the inverter via WLAN. If you wish to permanently close the pop-up window, please click “Do not show again” when the pop-up window appears.
- If you forget the modified password, please reset the password by resetting the smart dongle or the inverter LCD screen. Refer to the corresponding inverter or smart dongle manual for the steps. Resetting the smart dongle to restore the initial password will cause the smart dongle to be restored to factory settings.



Method 2: Log in via Bluetooth



9.2.3 Introduction of the Energy Storage Inverter Interface

No.	Name/Icon	Description
1	Serial Number	Serial number of connected device.
2	Device Status	Indicates the status of the inverter, such as Working, Fault, etc.
3	En Chart	Indicates the energy flow chart of the PV system. The actual interface may differ.
4	System Status	Indicates the system status, such as Safety Code, Working Mode, Battery Model, Battery Status, Power Limit, Three-Phase Unbalanced Output, etc.
5		Home. Click to view device serial number, operating status, energy flow chart, system operating status, and other information.
6		Parameter interface. Click to view the inverter operating parameters.

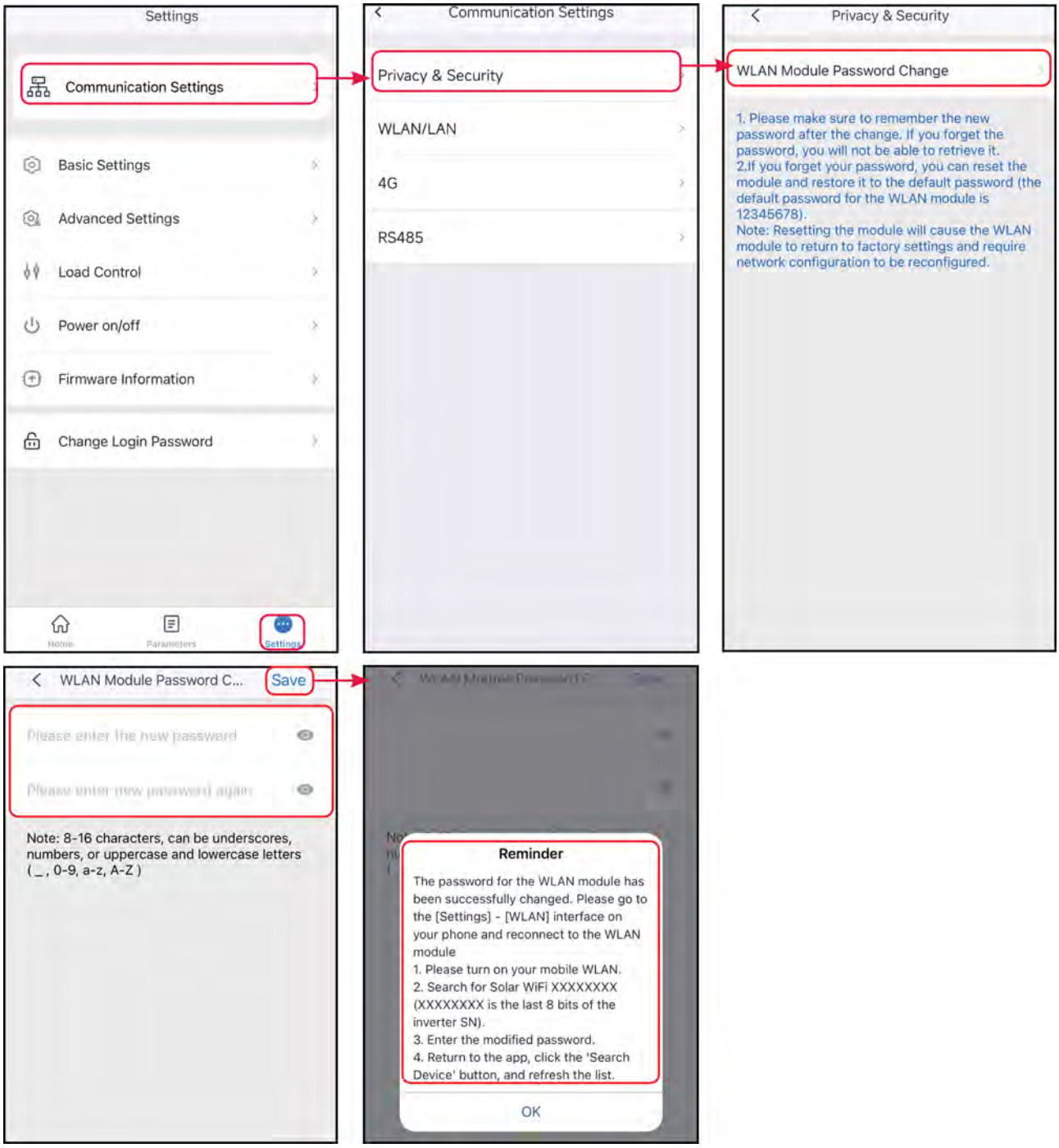
No.	Name/Icon	Description
7		• Settings interface. Click to quickly configure the inverter settings, including basic settings, advanced settings, and more. • Log in before entering Quick Settings and Advanced Settings. Initial password: goodwe2010 or 1111.

9.2.4 Setting Communication Parameters

NOTICE
The communication configuration interface may differ depending on the communication method used by the inverter or the communication module connected. Please refer to the actual interface.

9.2.4.1 Setting Privacy and Security Parameters

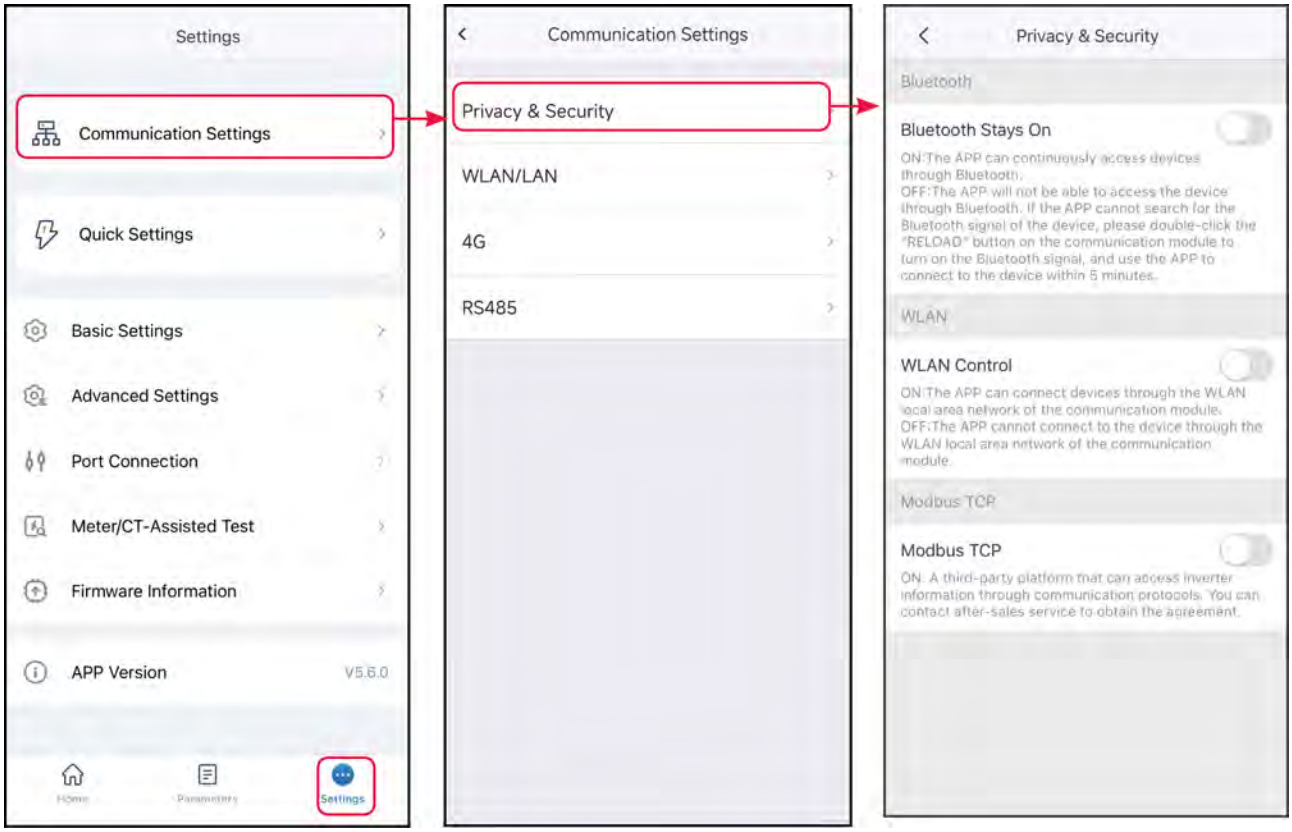
Type I:
Step 1: Go to the settings page by selecting **Home > Settings > Communication Settings > Privacy and Security > WLAN Module Password Change**.
Step 2: Set the WiFi hotspot password for the new communication module according to your actual needs, click **Save** to complete the setup.
Step 3: Open your phone's WiFi settings and connect to the inverter's WiFi signal using the new password.



Type II:

Step 1: Go to the settings page via **Home > Settings > Communication Settings > Privacy and Security**.

Step 2: Enable corresponding functions according to actual needs.



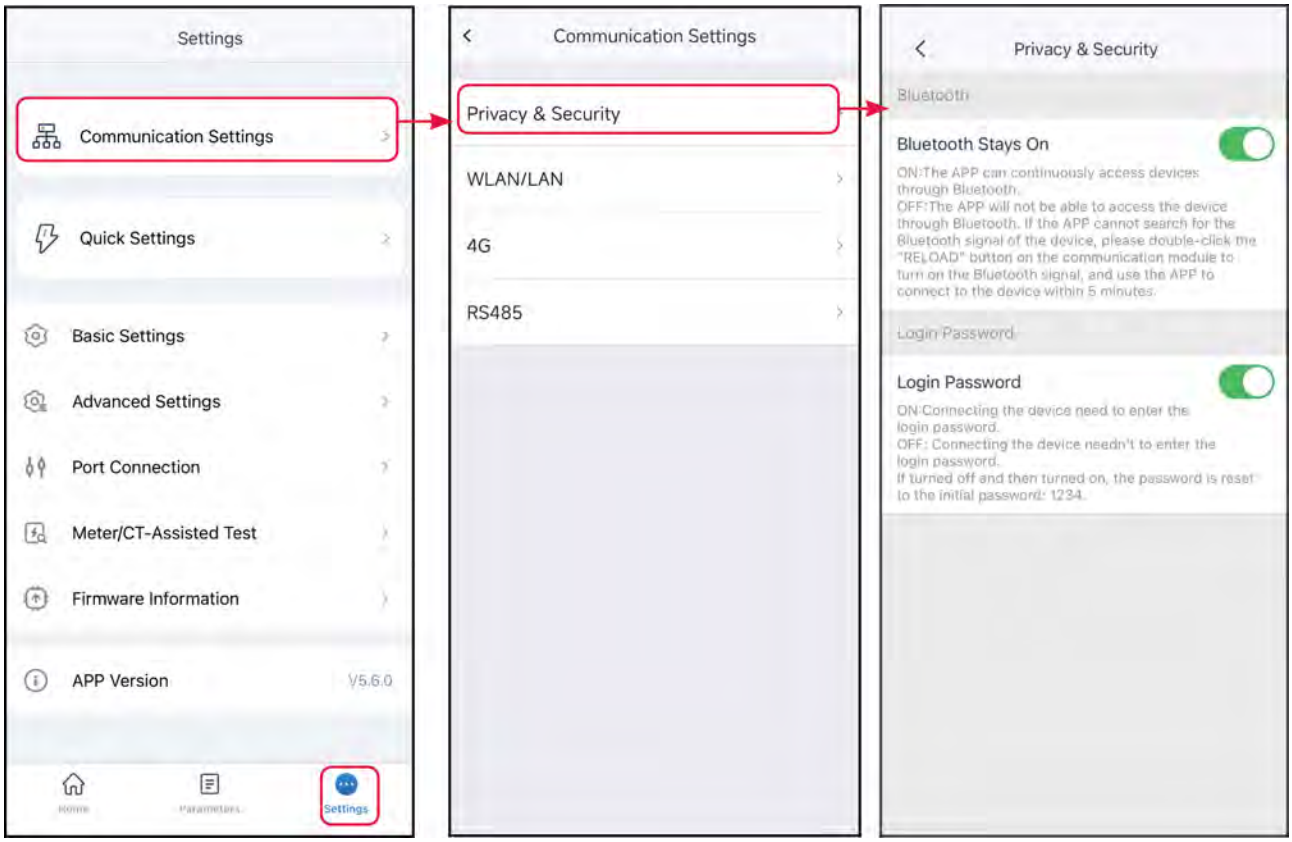
No.	Parameter	Description
1	Bluetooth Continuously Enabled	Disabled by default. After enabling this feature, the device's Bluetooth will remain on and stay connected to SolarGo. Otherwise, the device's Bluetooth will turn off after 5 minutes, disconnecting from SolarGo.
2	WLAN Control	Disabled by default. After enabling this feature, SolarGo can connect to the device via WLAN when both are on the same local area network. Otherwise, even if they are on the same local area network, they cannot connect.
3	Modbus-TCP	After enabling this feature, third-party platforms can access the inverter via the Modbus TCP protocol to perform monitoring functions.
4	SSH Control Ezlink	Once this feature is enabled, third-party platforms can connect to and control EzLink's Linux system.

Type III:

Step 1: Go to the settings page via **Home > Settings > Communication Settings >**

Privacy and Security.

Step 2: Enable **Bluetooth to remain on** and **the login password** function according to actual needs.



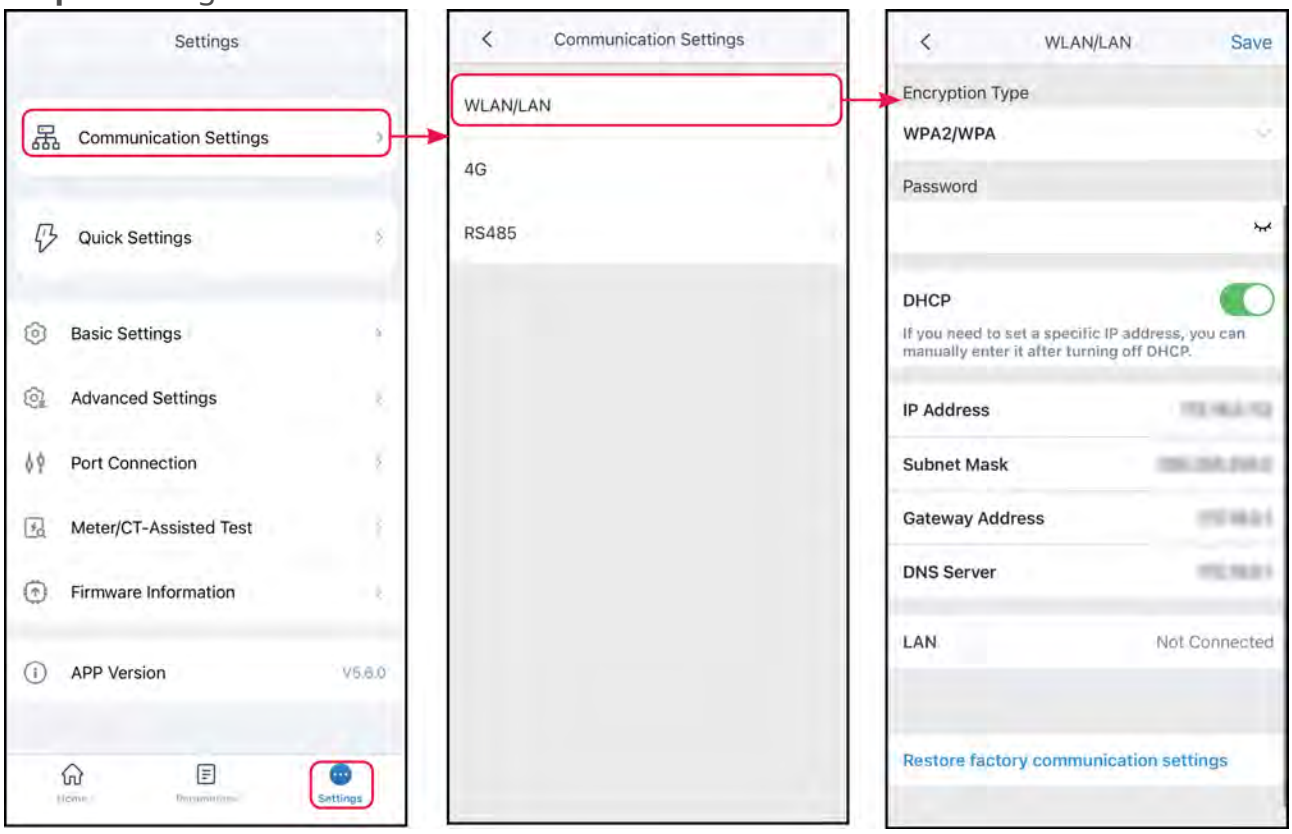
No.	Parameter	Description
1	Bluetooth Continuously Enabled	Disabled by default. After enabling this feature, the device's Bluetooth will remain on and stay connected to SolarGo. Otherwise, the device's Bluetooth will turn off after 5 minutes, disconnecting from SolarGo.
2	Login Password	Disabled by default. After enabling this feature, the device will prompt you to enter your login password when connecting to SolarGo. When using your login password for the first time, please use the initial password and change your password according to the prompts on the screen.

9.2.4.2 Setting WLAN/LAN Parameters

NOTICE
The communication configuration interface may vary depending on the type of smart dongle connected to the inverter. Please refer to the actual interface for accurate information.

Step 1: Go to the settings page via **Home > Settings > Communication Settings > WLAN/LAN**.

Step 2: Configure the WLAN or LAN network based on the actual situation.



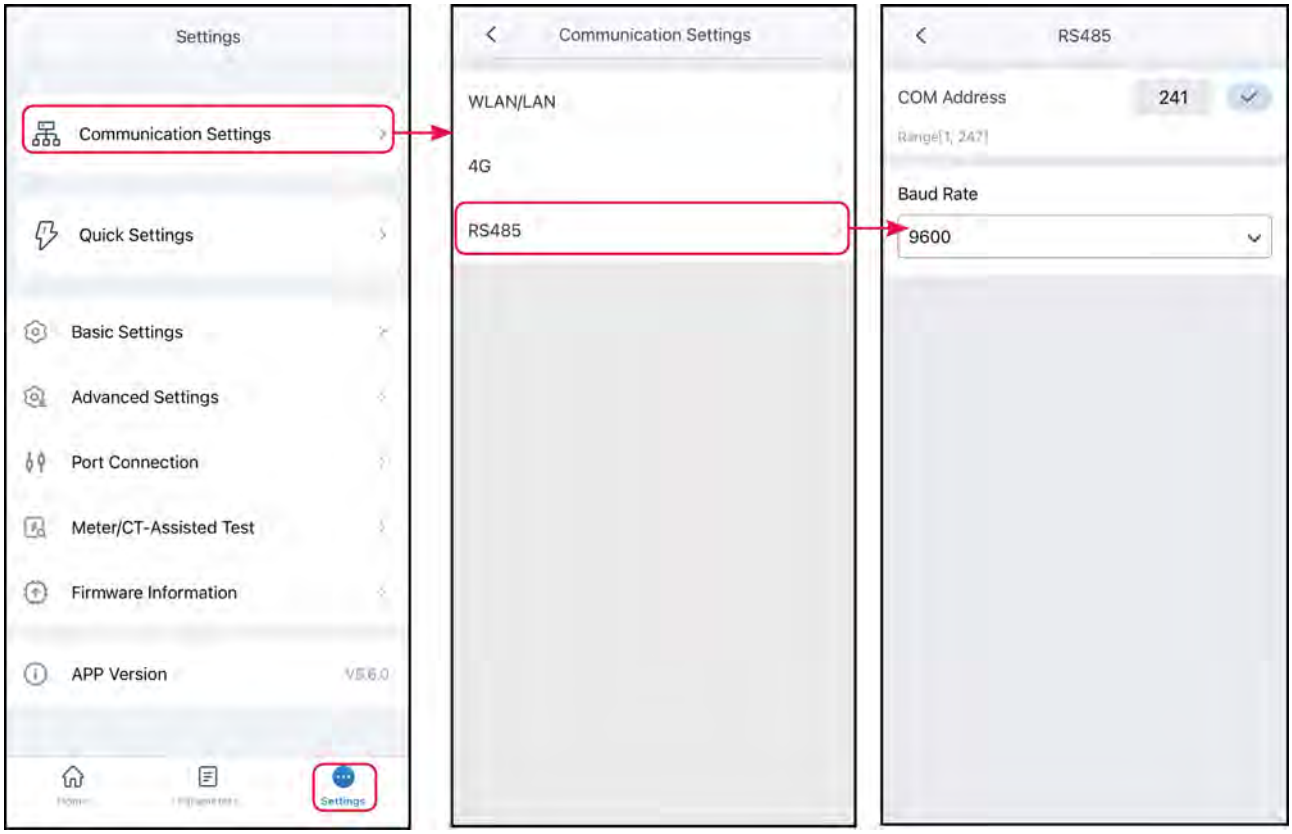
No.	Parameter	Description
1	Network Name	Applicable to WLAN. Please select the corresponding network based on your actual situation and communicate the device with the router or switch.
2	Password	Applicable to WLAN. Enter the password for the network you actually selected.

No.	Parameter	Description
3	DHCP	When the router is using the dynamic IP mode, turn on the DHCP function. When using the router in static IP mode or using a switch, turn off the DHCP function.
4	IP Address	When DHCP is enabled, there is no need to configure this parameter. When DHCP is turned off, please configure this parameter according to the information of the router or switch.
5	Subnet mask	
6	Gateway address	
7	DNS Server	

9.2.4.3 Setting RS485 Communication Parameters

NOTICE
Set the host communication address of the inverter. When using a single inverter, set the communication address according to the actual situation. When connecting multiple inverters, each inverter must have a different address, and none of the inverters can be set to communication address 247.

Step1: Enter the setting page through **Home > Settings > Communication Configuration > RS485.**
Step 2: Configure the communication address and baud rate according to the actual situation.



9.2.5 Quick System Setup

NOTICE

- When the inverter model is different, the interface display and parameter settings will vary. Please refer to the actual product for details.
- When selecting the safety code country/region, the system will automatically configure the overvoltage and undervoltage protection, overfrequency and underfrequency protection, inverter on-grid voltage/frequency, connection slope, Cosφ curve, Q(U) curve, P(U) curve, PF curve, high and low voltage ride-through, etc. according to the safety regulation requirements of different regions. For specific parameter values, please set the safety regulations region first, then check via Home > Settings > Advanced Settings > Safety Regulations Parameter Settings.
- The generation efficiency of inverter differs in different working modes. Please set according to the local actual electricity consumption.
  - Self-generated and self-consumed mode: The basic operating mode of the system. The power generated by the PV system supply the loads in priority; the

NOTICE

excess power will charge the batteries, and then the remaining power will be sold to the utility grid. When the power generated in the PV system is insufficient, the battery will supply the loads in priority. If the battery power is insufficient, the load will be powered by the utility grid.

- BACK-UP Mode: The BACK-UP mode is mainly applied to the scenario where the grid is unstable. When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACKUP loads; when the grid is restored, the inverter switches to grid-tied mode.
- TOU Mode: It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. Based on actual needs, during off-peak hours, the battery can be set to charging mode to purchase electricity from the grid for charging; during peak hours, the battery can be set to discharge mode to supply power to the load through the battery.
- Off-grid mode: Suitable for areas without a power grid. PV and batteries constitute a pure off-grid system, where PV power generation supplies power to the load and excess power charges the batteries. When PV power generation does not meet the load's power demand, the battery supplies power to the load.
- Delayed charging: Suitable for areas with grid connection power output restrictions. By setting peak power limits and charging time periods, photovoltaic power generation that exceeds grid connection limits can be used to charge batteries, reducing photovoltaic waste.
- Demand management: Mainly applicable to scenarios where peak power consumption is limited. When the total power consumption of the load exceeds the power quota within a short period of time, battery discharge can be used to reduce the amount of power consumption exceeding the quota.

9.2.5.1 Quick System Setup (Type I)

Step 1: Go to the parameter settings page via **Home > Settings > Quick Configuration**.
Step 2: Enter your login password to access the safety settings interface. Initial Installation password: goodwe2010 or 1111.
Step 3: Some models support one-click configuration. Select **the configuration wizard mode** to quickly configure the system.

Step 4: Select the safety standard country based on the country or region where the inverter is located. After completing the settings click **Next** to set the working mode.

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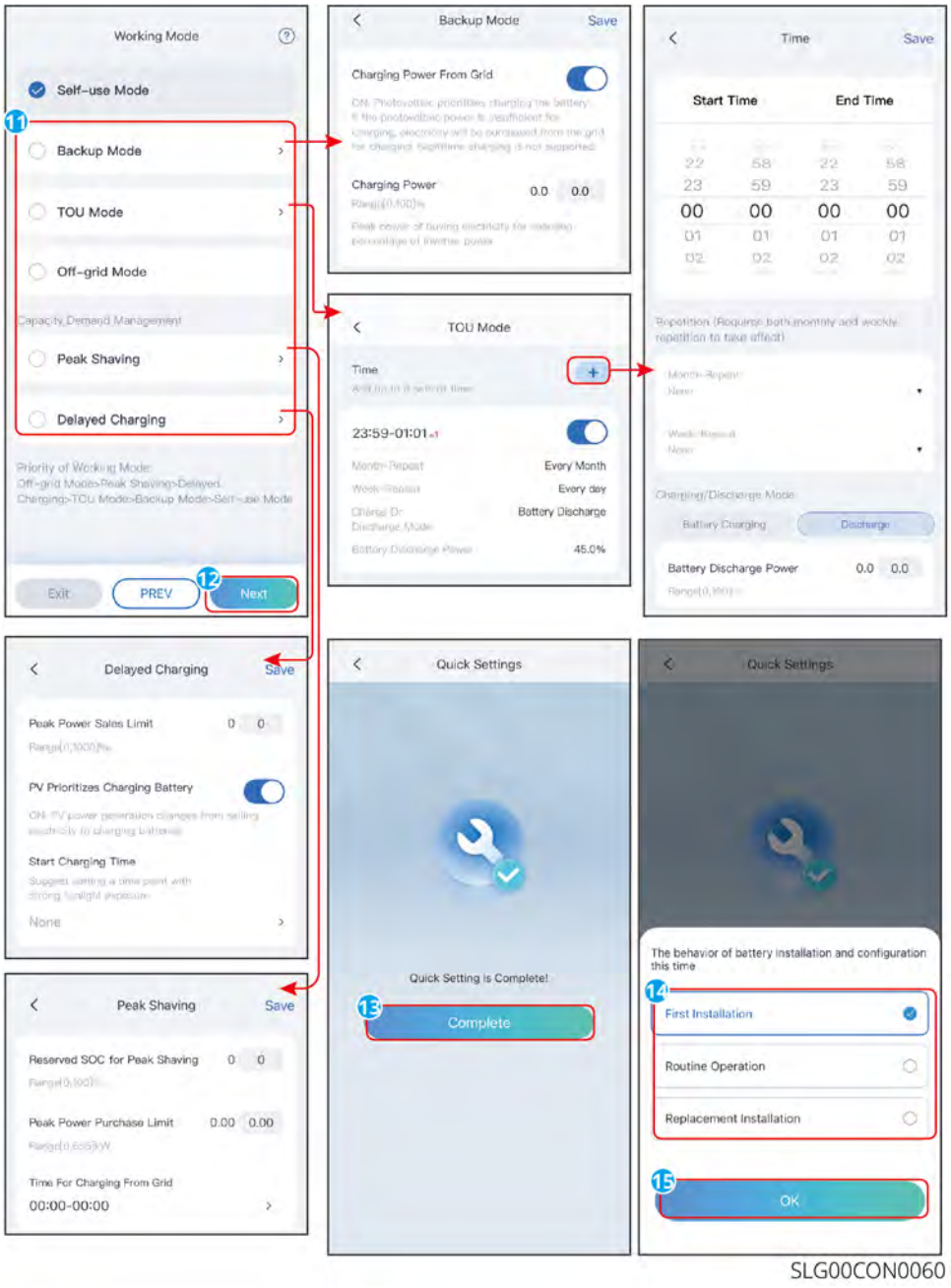
Step 5: Set the working mode according to actual needs. After completing the settings, click **Next** to finish configuring the work mode. For certain models, after the operating mode configuration is complete, the system will automatically enter the CT/electric meter self-check state. At this point, the inverter will temporarily disconnect from the grid and then automatically reconnect.

Step 6: Select the battery according to the actual situation: **initial installation, daily operation**, or **replacement installation**.



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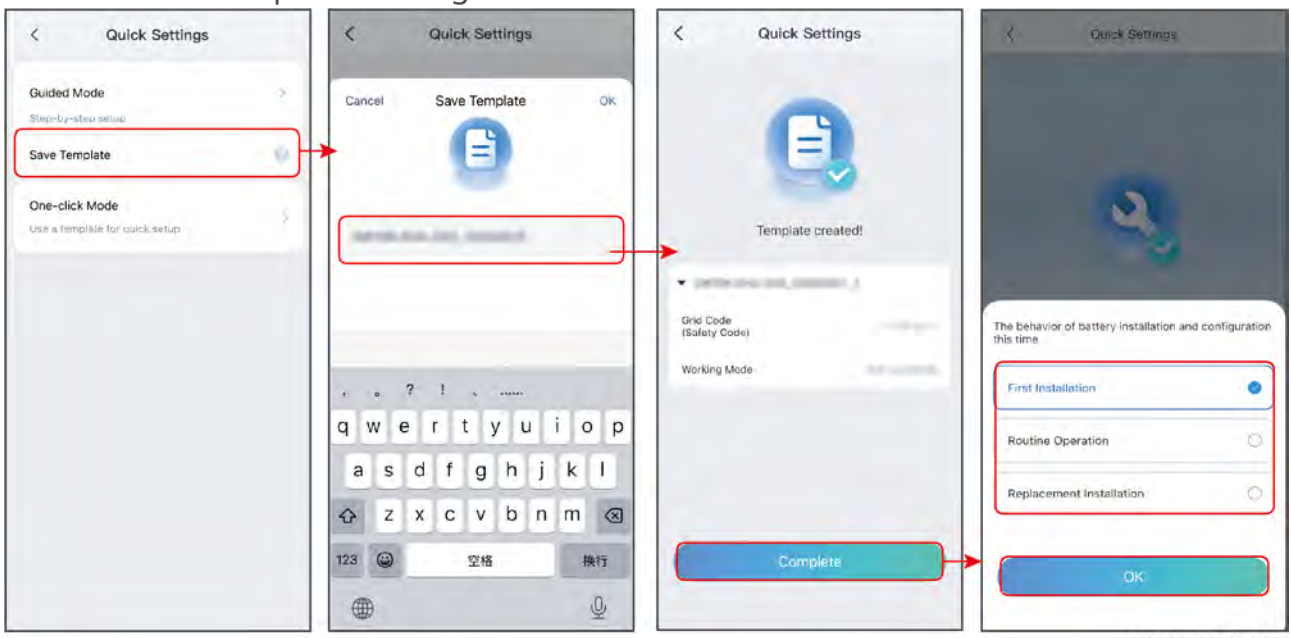
No.	Parameter	Description
BACK-UP Mode		
1	Charging from Grid	Enabling this function allows the system to purchase electricity from power grid.
2	Charging Power	The percentage of power purchased compare to the rated power of the inverter.
TOU Mode		

No.	Parameter	Description
3	Start Time	Within the start and end time, the battery will charge or discharge based on the set charge-discharge mode and rated power.
4	End Time	
5	Charge and discharge mode	Set to charge or discharge based on actual needs.
6	Rated Power	The percentage of power during charging or discharging compared to the rated power of the inverter.
7	Charge Cut-off SOC	The battery stop charging once the battery SOC reaches Charge Cut-off SOC.
Peakshaving		
8	Reserved SOC For Peakshaving	In Peak Shaving mode, the battery SOC should be lower than Reserved SOC For Peakshaving. Once the battery SOC is higher than Reserved SOC For Peakshaving, the peak shaving mode fails.
9	Peak Power Purchase Limit	Set the maximum power limit allowed to purchase from the grid. When the loads consume power exceed the sum of the power generated in the PV system and Peak Power Purchase Limit, the excess power will be made up by the battery.
10	Time Period for Purchasing Electricity and Charging	During the period when electricity is purchased for charging, if the load power consumption does not exceed the purchased electricity quota, the battery can be charged through the power grid. Otherwise, only PV power can be used to charge the battery.
Delayed charging mode		
11	Peak Power Selling Limit	Set peak power limits in accordance with grid standards in certain countries or regions. The peak power limit must be lower than the local specified output power limit.
12	PV prioritizes battery charging	Within the charging time range, photovoltaic power generation is prioritized for charging the battery.

No.	Parameter	Description
13	Charging Start Time	

Step 7: For devices that support one-click configuration, you can generate a template based on the completed configuration.



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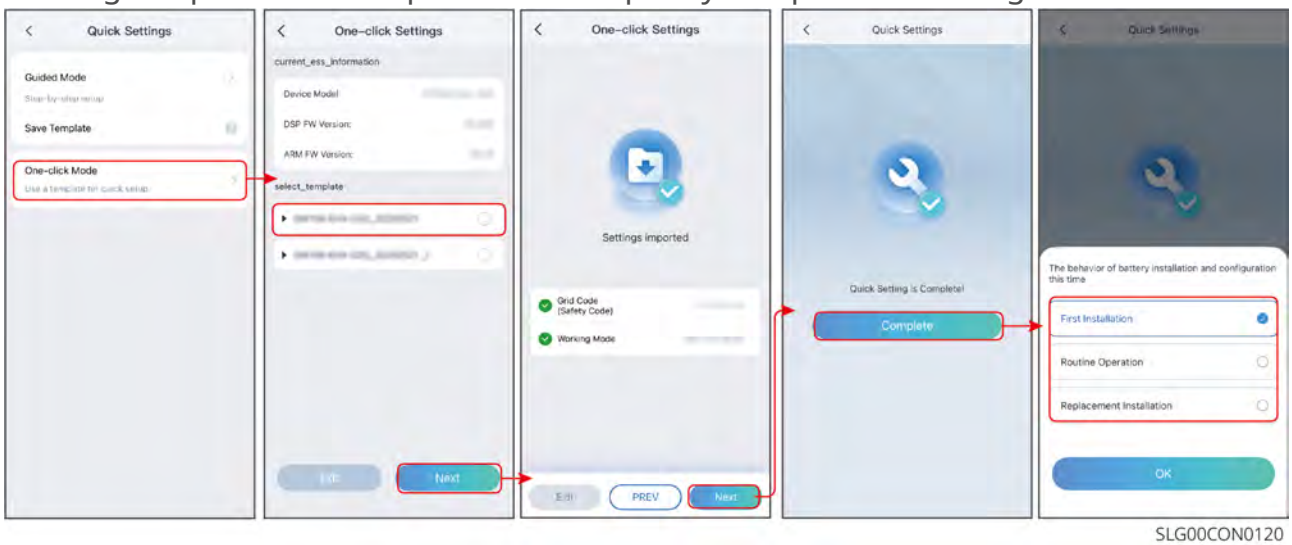
Step 8: If there is an existing one-click configuration template, you can use the existing template direct import mode to quickly complete the configuration.



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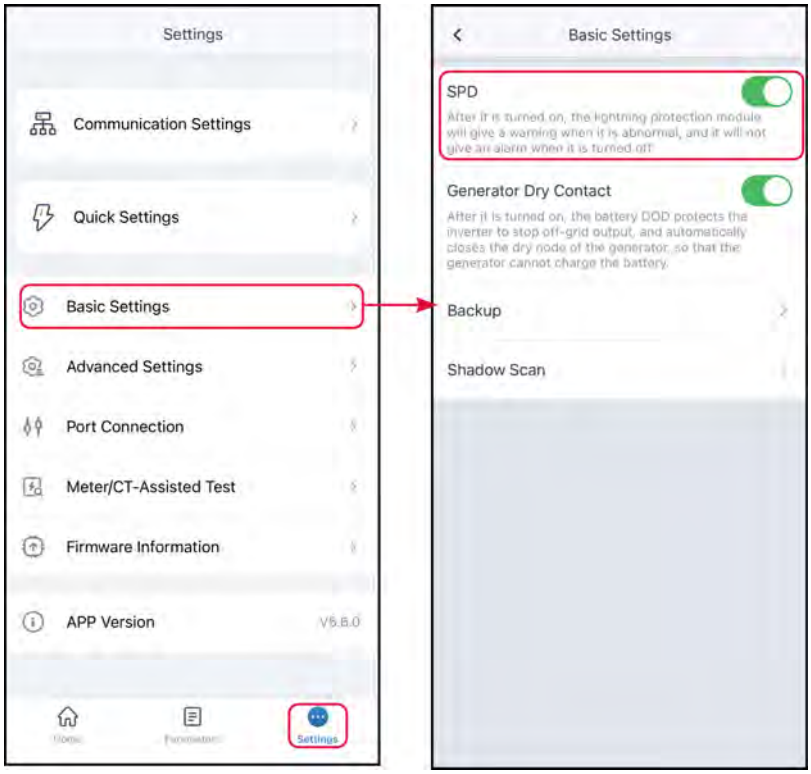
9.2.6 Setting the Basic Information

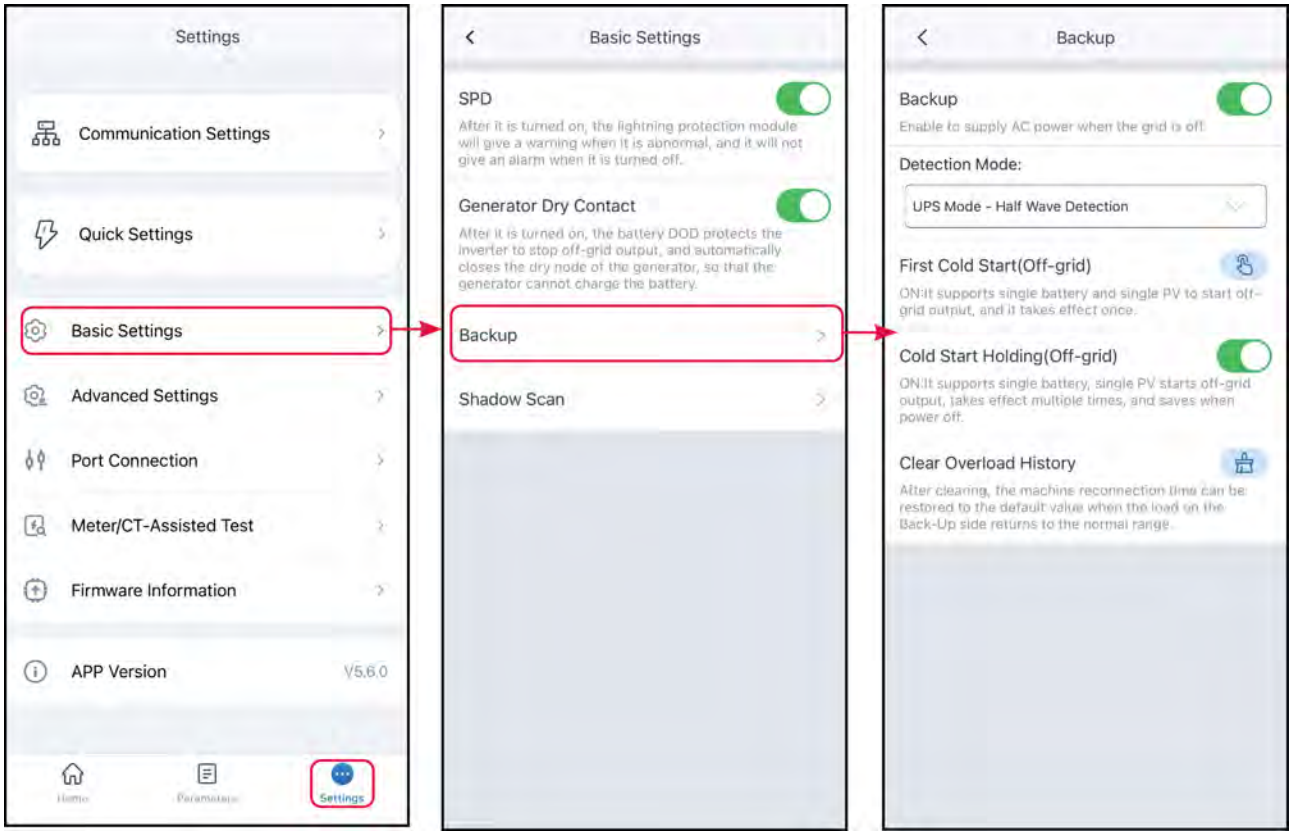
9.2.6.1 Setting up Lightning Protection Alarm Function

After enabling SPD secondary lightning protection alarm, when the lightning protection module is abnormal, there will be SPD module abnormal alarm prompt.
Step 1: Set up lightning protection alerts via **Home > Settings > Basic Settings > Lightning Protection Alerts**.
Step 2: Turn this feature on or off based on your actual needs.



9.2.6.2 Setting Backup Power Parameters

After enabling Backup, the battery will power the load connected to the BACK-UP port of the inverter to ensure Uninterrupted Power Supply when the power grid fails.
Step 1: Go to the settings page by selecting **Home > Settings > Basic Settings > Backup Power**.
Step 2: Set the Back-up Power function based on actual needs.

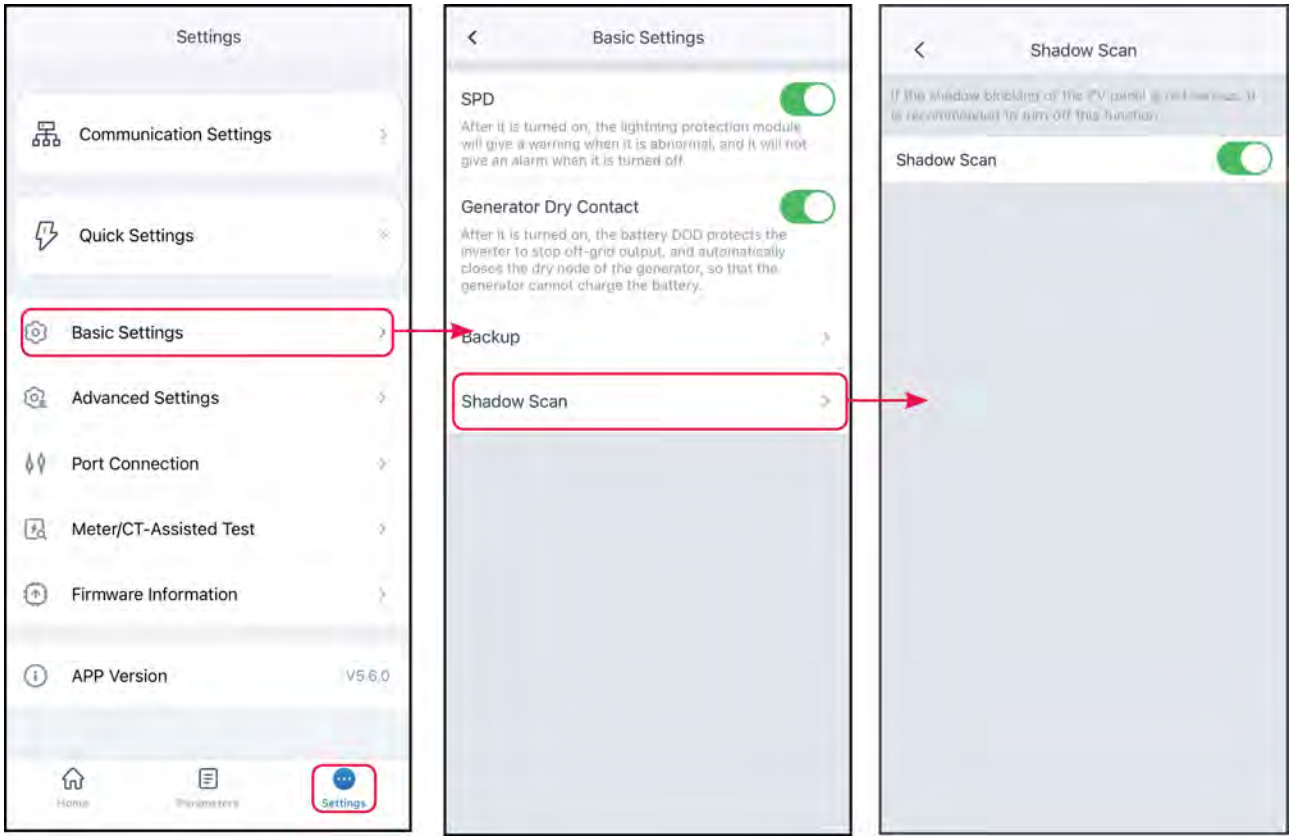


No.	Parameter	Description
1	UPS Mode - Full Wave Detection	Check whether the utility grid voltage is too high or too low.
2	UPS Mode - Half Wave Detection	Check whether the utility grid voltage is too low.
3	EPS Mode - Supports LVRT	Stop detecting utility grid voltage.
4	First Cold Start (Off - grid)	This takes effect once. Once this feature is enabled, you can use batteries or photovoltaics to output backup power in off-grid mode.
5	Cold Start Holding (Off-grid)	Take effect multiple times. Once this feature is enabled, you can use batteries or photovoltaics to output backup power in off-grid mode.

No.	Parameter	Description
6	Clear Overload History	Once the power of loads connected to the inverter BACK-UP ports exceeds the rated load power, the inverter will restart and detect the power again. The inverter will perform restart and detection several times until the overloading problem is solved. Time increases between each reboot. Tap Clear Overload History to reset the restart time interval after the power of the loads connected to the BACK-UP ports meets the requirements. The inverter will restart immediately.

9.2.6.3 Setting up Shadow Scanning Function

When photovoltaic panels are severely shaded, enabling the shadow scanning function can optimize the power generation efficiency of the inverter.
Step 1: Go to the settings page by selecting **Home > Settings > Basic Settings > Shadow Scan**.
Step 2: Turn this feature on or off based on your actual needs. Some models support setting scan interval times, MPPT shadow scanning, etc. Please set according to the actual interface.



9.2.6.4 Setting Power Adjustment Parameters

Step 1: Go to the settings interface via **Home > Settings > Basic Settings > Power Scheduling**.
Step 2: Set the active power dispatch or reactive power dispatch parameters according to the actual situation.

No.	Parameter	Description
Active Scheduling		
1	Active Scheduling Mode	According to the requirements of the power grid company in the country/region where the inverter is located, control the active power according to the selected dispatch mode. Supports: • Disabled: Disables active scheduling. • Fixed value reduction: Dispatch according to a fixed value. • Percentage reduction: Dispatch based on a percentage of the rated power.

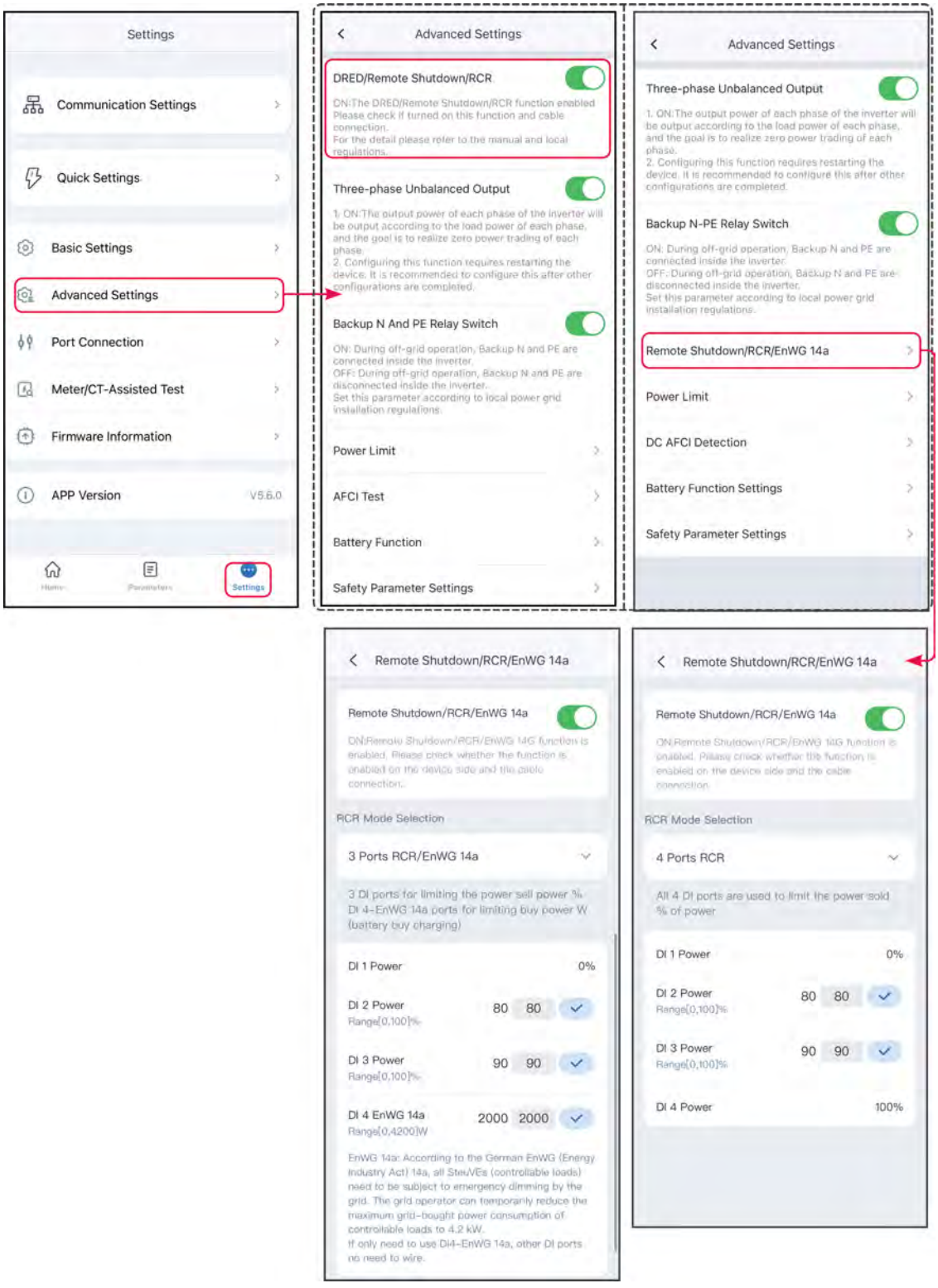
No.	Parameter	Description
2	Active Power	• When the active power dispatch mode is set to fixed value derating, the active power is set to a fixed value. • When the active power dispatch mode is set to percentage derating, the active power is set as a percentage of the rated power. 比。
Reactive Scheduling		
3	Reactive Scheduling Mode	According to the requirements of the power grid company in the country/region where the inverter is located, control the reactive power according to the selected dispatch mode. Supports: • Disabled: Disables reactive scheduling. • Fixed value compensation: Dispatch according to a fixed value. • Percentage compensation: Dispatch based on a percentage of the rated power. • PF compensation.
4	Status	Set the power factor as lagging or leading based on actual needs and local grid standards and requirements.
5	Reactive Power	• When the reactive power dispatch mode is set to fixed value derating, the reactive power is set to a fixed value. • When the reactive power dispatch mode is set to percentage derating, the reactive power is set as a percentage of the rated power.
6	Power Factor	When the reactive power dispatch mode is set to PF compensation, set the power factor.

9.2.7 Setting Advanced Parameters

NOTICE
When entering the advanced settings page, the password is goodwe2010 or 1111.

9.2.7.1 Setting DRED/Remote Shutdown/RCR/EnWG 14a Function

Enable DRED/Remote Shutdown/RCR before connecting the third party DRED, remote shutdown, or RCR device to comply with local laws and regulations.
Step 1: Set this function via **Home > Settings > Advanced Settings > DRED/Remote Shutdown/RCR**.
Step 2: Turn this feature on or off based on your actual needs.
Step 3: For regions subject to EnWG 14a regulations, when enabling the RCR function, select the RCR mode according to the actual connection device type and set the DI port power percentage value.



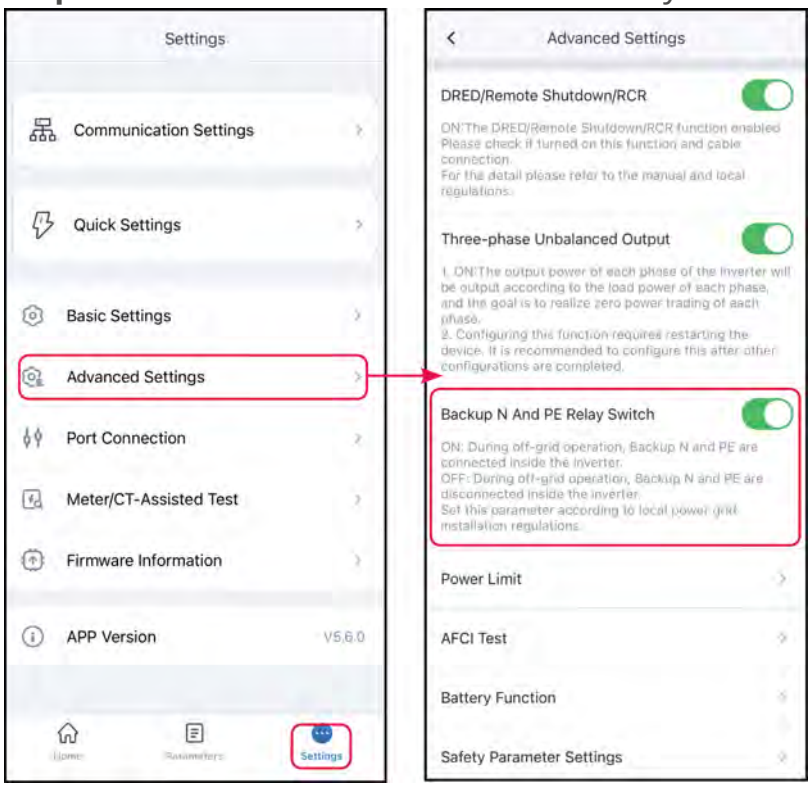
9.2.7.2 Setting BACK-UP N and PE Relay Switches

To comply with local laws and regulations, ensure that the relay inside the BACK-UP

port remains closed and the N and PE wires are connected when the inverter is working off-grid.

Step 1: Go to the parameter setting page by clicking **Home > Settings > Advanced Settings > Backup Power N and PE Relay Switch**.

Step 2: Turn this feature on or off based on your actual needs.



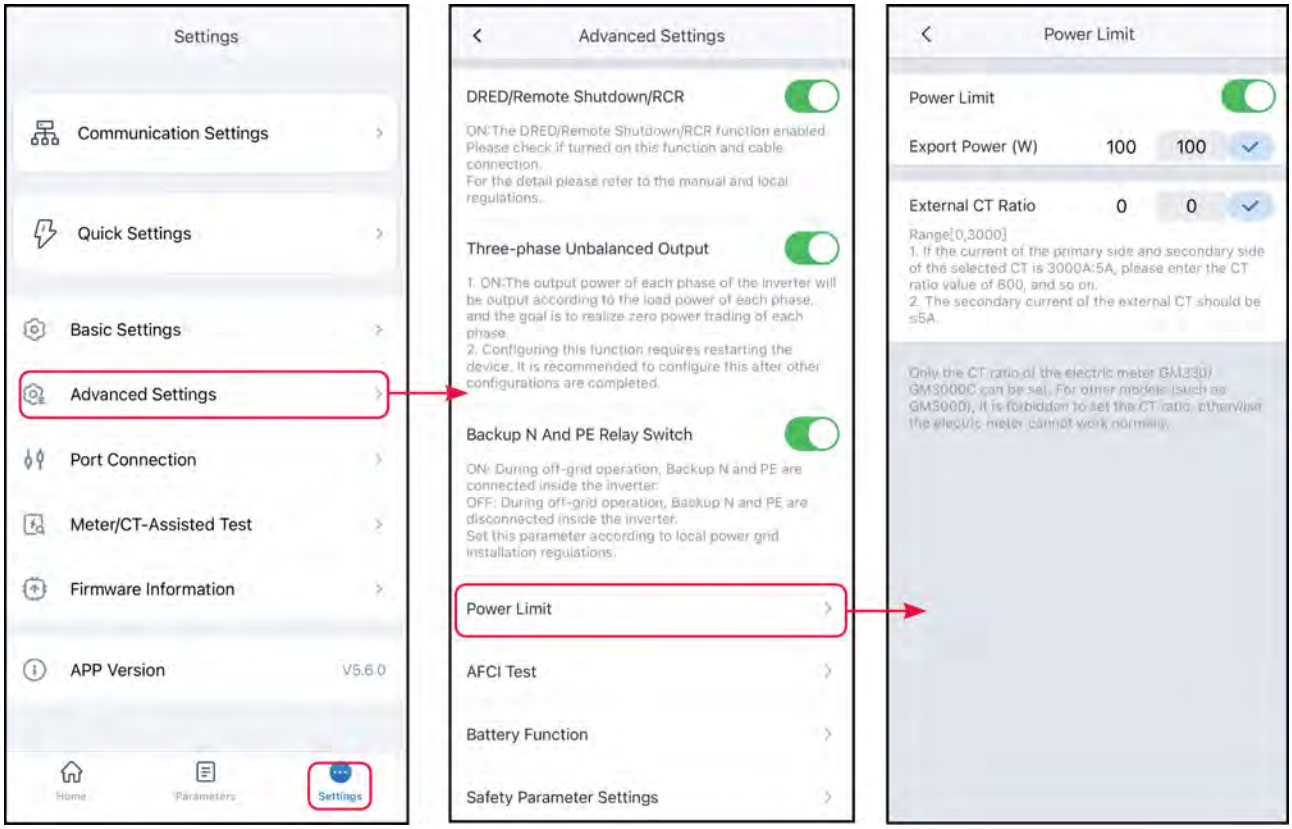
9.2.7.3 Setting the On-Grid Power Limit

Step 1: Tap **Home > Settings> Advanced Settings > Power Limit** to set the parameters.

Step 2: Turn the anti-backflow function on or off according to actual needs.

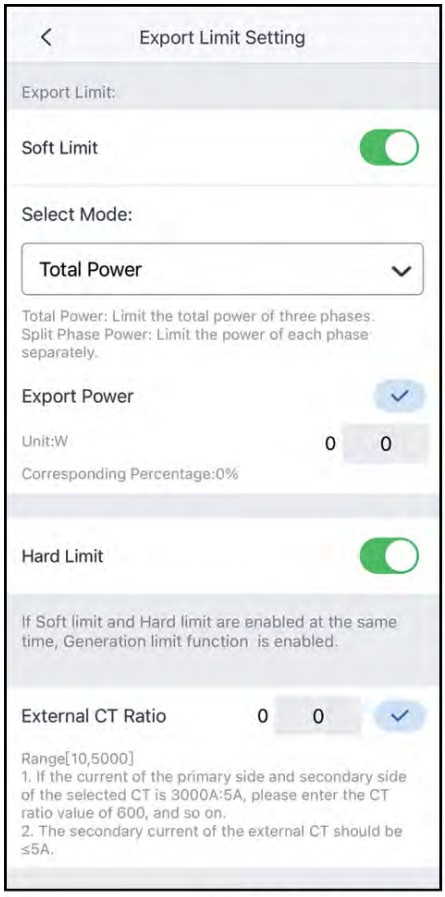
Step 3: Enter the parameters and tap √. The parameters are set successfully.

9.2.7.3.1 Setting the On-Grid Power Limit（General）



No.	Parameter	Description
1	The on-grid power limit	Enable Power Limit when power limiting is required by local grid standards and requirements.
2	Power Limit	Set the value based on the actual maximum power feed into the utility grid.
3	External MeterCT Ratio	Set the ratio of the primary current to the secondary current of the external CT.

9.2.7.3.2 Setting the On-Grid Power Limit（Australia）



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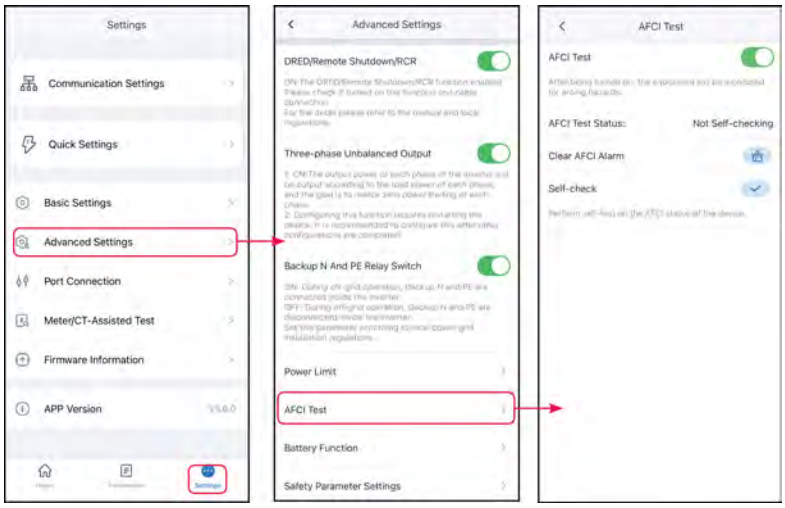
No.	Parameter	Description
1	Soft Limit	Enable Power Limit when power limiting is required by local grid standards and requirements.
2	Export Power	• Set the value based on the actual maximum power feed into the utility grid. • Supports setting of fixed power value or percentage. The set percentage is the percentage of the limit power to the rated power of the inverter. • After setting the fixed value, the percentage changes automatically; after setting the percentage, the fixed value changes automatically.

No.	Parameter	Description
3	Hard Limit	After enabling this function, when the amount of electricity fed into the grid exceeds the limit value, the inverter will automatically disconnect from the grid.
4	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.

9.2.7.4 Setting the Arc Detection Function

Step 1: Go to the settings page via **Home > Settings > Advanced Settings > DC Arc Detection** to set up the AFCI detection function.
Step 2: Detect arc faults, clear fault alarms, or perform a self-check on the AFCI as needed.



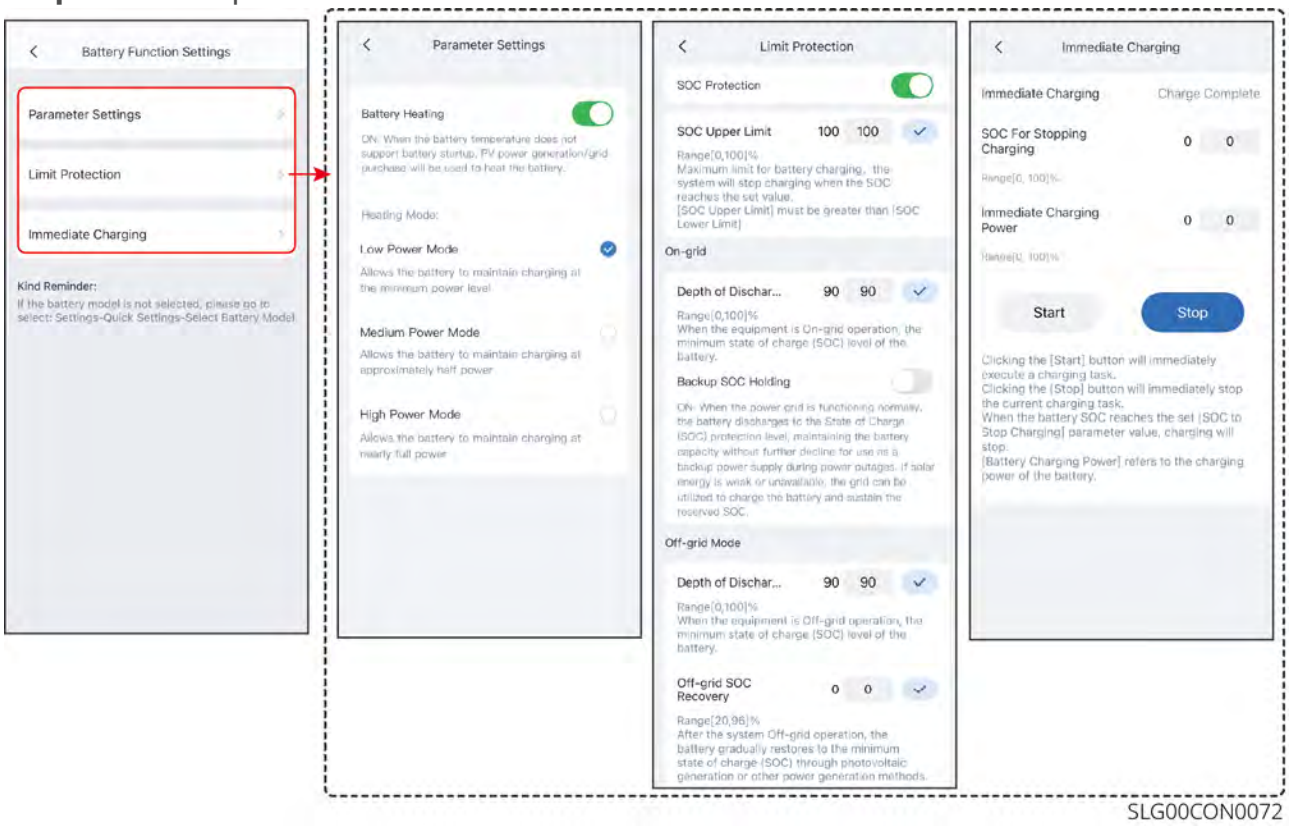
No.	Parameter	Description
1	Setting the Arc Detection	Enable or Disable based on actual needs.
2	Setting the Arc Detection Status	The test status, like Not Self-checking, self-check succeeded, etc.
3	Clear AFCI Alarm	Clear ARC Faulty alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

9.2.7.5 Set Battery Function

9.2.7.5.1 Set parameters for lithium battery

Step 1: Tap **Home > Settings> Advanced Settings > Battery Function Settings** to set the parameters.

Step 2: Set the parameters based on actual needs.



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No.	Parameter	Description
Parameter Settings		
1	Max. Charging Current	Only applicable to certain models. Set the maximum charging current based on actual needs.
2	Max. Discharging Current	Only applicable to certain models. Set the maximum discharging current based on actual needs.

No.	Parameter	Description
3	Battery Heating	Optional. This option is displayed on the interface when a battery that supports heating is connected. After the battery heating function is turned on, when the temperature is below the value that starts up the battery, PV power or electricity from the grid will be used to heat the battery. Heating Mode: • Low Power Mode: Maintains minimum battery power input capacity, turns on when the temperature is below 5°C, and turns off when the temperature is above or equal to 7°C. • Medium Power Mode: to maintain the moderate power input capacity of the battery. It will be turned on when the temperature is less than 10℃, and turned off when it is greater than or equal to 12℃. • High Power Mode: to maintain the higher power input capacity of the battery. It will be turned on when the temperature is less than 20℃, and turned off when it is greater than or equal to 22℃.
4	Battery Wake-up	• After being turned on, the battery can be awakened when it shuts down due to undervoltage protection. • Only applicable to lithium batteries without circuit breakers. After being turned on, the output voltage of the battery port is about 60V.
Limit Protection		
5	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
6	SOC Limit	The upper limit value for battery charging. Charging stops when the battery SOC reaches the SOC upper limit.
7	Discharge Depth (On-grid)	The maximum discharge value allowed for the battery when the inverter is in the on-grid scenario.

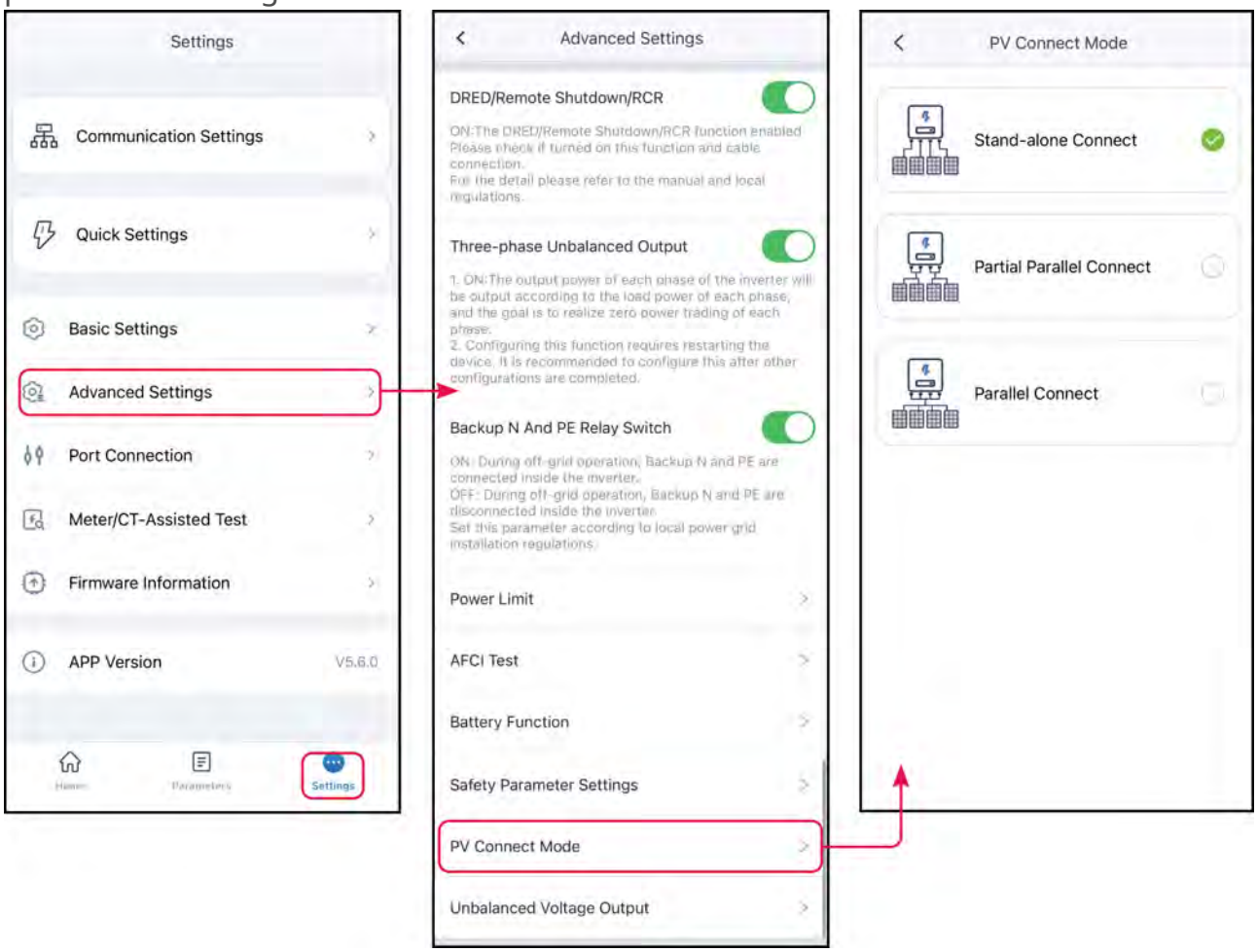
No.	Parameter	Description
8	Backup Power SOC Maintenance	To ensure that the battery SOC is sufficient to maintain normal operation when the system is off-grid, the battery will purchase electricity from the grid and charge to the set SOC protection value when the system is connected to the grid.
9	Discharge Depth (Off-grid)	The maximum discharge value allowed for the battery when the inverter is in the off-grid scenario.
10	Off-grid SOC Recovery	When the inverter is operating off-grid, if the battery SOC drops below the lower limit, the inverter stops outputting power and only charges the battery until the battery SOC returns to the off-grid recovery SOC value. If the SOC lower limit value is higher than the off-grid recovery SOC value, charge to SOC lower limit +10%.
Immediate Charging		
11	Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.
12	SOC for Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.
13	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling Immediate Charging. For example, for an inverter with a rated power of 10kW, when set to 60, the charging power is 6kW.
14	Start	Start charging immediately.
15	Stop	Immediately stop the current charging task.

9.2.7.6 Setting PV Connect Mode

For certain models, you can manually set the photovoltaic string connection method for the inverter MPPT port to avoid errors in identifying the string connection method.

Step 1: Go to the settings page via **Home > Settings > Advanced Settings > PV Access Mode**.

Step 2: Set the connection mode to independent connection, partial parallel connection, or parallel connection based on the actual connection method of the photovoltaic string.

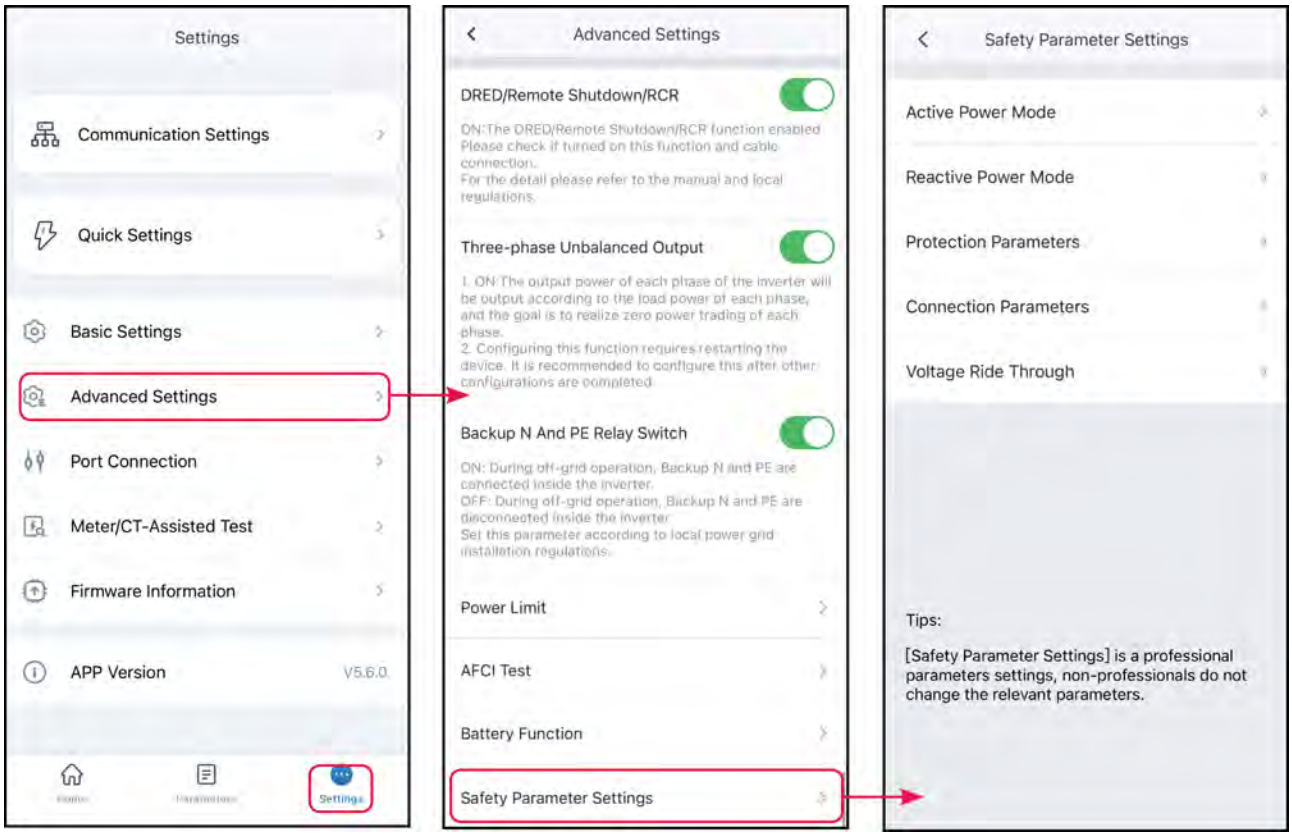


No.	Parameter	Description
1	Stand-alone Connect	The external photovoltaic strings are connected one-to-one with the photovoltaic input ports on the inverter side.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 and MPPT2, another PV string connect to MPPT3.

No.	Parameter	Description
3	Parallel Connect	When the external PV string is connected to the inverter side PV input port, the same PV string is connected to multiple PV input ports.

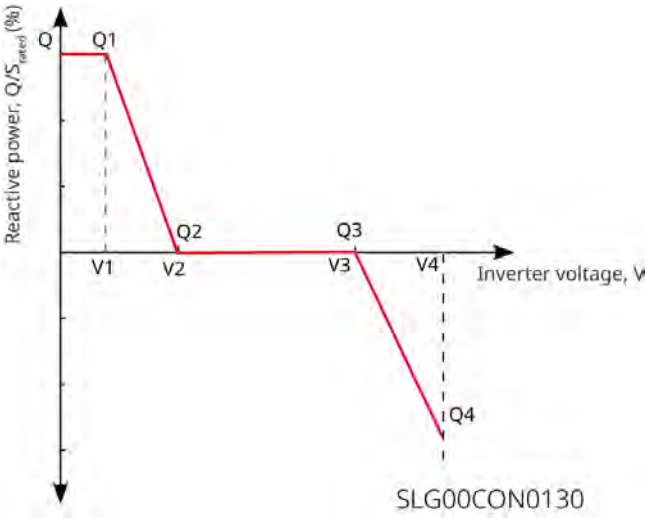
9.2.8 Setting Customized Safety Parameters

NOTICE
Set the custom safety parameters in compliance with local requirements. Do not change the parameters without the prior consent of the grid company

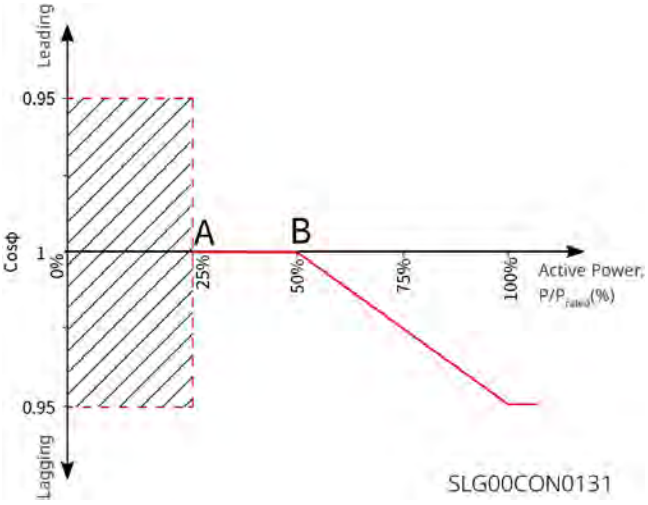


9.2.8.1 Setting Reactive Curve

Step 1: Go to the parameter setting page via **Home > Settings > Advanced Settings > Safety Parameters Settings > Reactive Power Curve Settings**.
Step 2: Set the parameters based on actual needs.
Q(U) Curve



Cosφ Curve



No.	Parameter	Description
Fix PF		
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements. The power factor remains fixed during the inverter working process.
2	Under-excited	Set the power factor as lagging or leading based on actual needs and local grid standards and requirements.
3	Over-excited	
4	Power Factor	Set the power factor based on actual needs. Range: 0-~-0.8, or +0.8~+1.
Fix Q		

No.	Parameter	Description
1	Fix Q	Enable Fix Q when it is required by local grid standards and requirements.
2	Under-excited / Over-excited	Set the reactive power as inductive or capacitive reactive power based on local grid standards and requirements, and actual needs.
3	Reactive Power	The percentage of reactive power to the apparent power.
Q(U) Curve		
1	Q(U) Curve	When Q(U) curves need to be set according to the power grid standards of certain countries or regions, enable this function.
2	Mode Option	Set Q(U) Curve mode. Supported: basic mode, slope mode.
3	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting Vn Voltage to 90 means V/Vrated%=90%.
4	Vn Reactive Power	The ratio of reactive power to apparent power output by the Vn-point inverter, n=1, 2, 3, 4. For example, setting Vn Voltage to 48.5 means Q/Srated%=48.5%.
5	Voltage Dead Zone Width	When the Q(U) curve mode is set to slope mode, set the voltage dead zone. Within this dead zone, there is no requirement for reactive power output.
6	Over-excitation Slope	In Q(U) curve mode set to slope mode, the power change slope is set to a positive or negative value.
7	Under-excitation Slope	

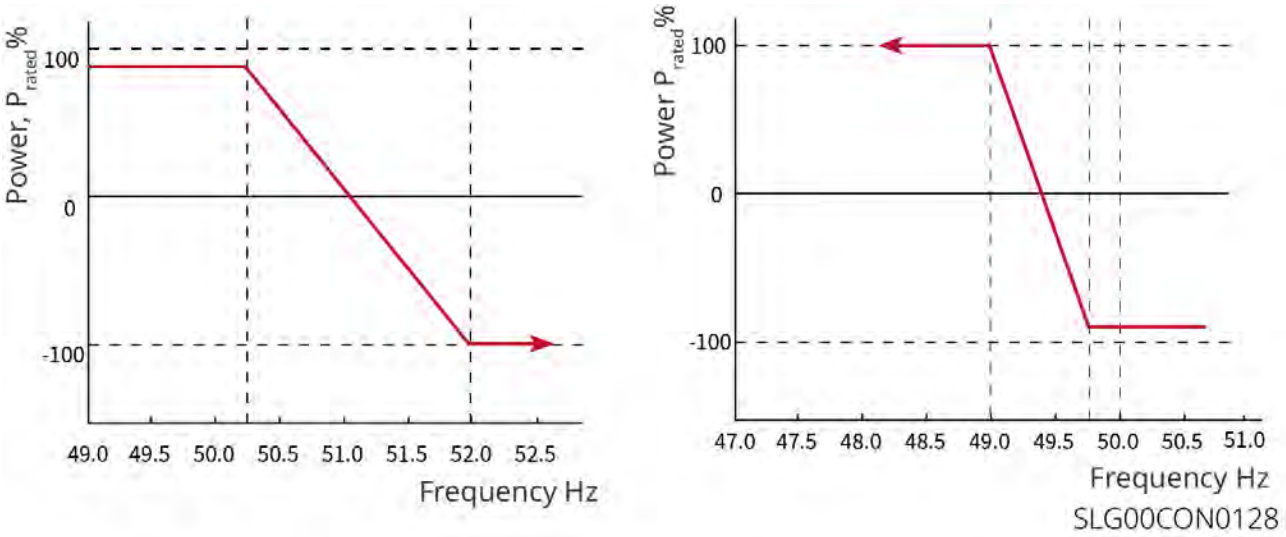
No.	Parameter	Description
8	Vn Reactive Power	The ratio of reactive power to apparent power output by the Vn-point inverter, n=1, 2, 3, 4. For example, setting Vn Voltage to 48.5 means Q/Srated%=48.5%.
9	Q(U) Curve Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
10	Enable Extension Function	After enabling, set corresponding parameters.
11	Power Input Curve	When the ratio of the reactive power output of the inverter to the rated power is between the curve power input and curve power output, the Q(U) curve requirements are met.
12	Power Output Curve	
Cos φ (P) Curve		
1	Cos φ (P) Curve	Enable Cosφ Curve when it is required by local grid standards and requirements.
2	Mode Option	Set cosφ (P) Curve mode. Supported: basic mode, slope mode.
3	Pn Power	The percentage of the output active power to the rated power at Pn point. N=A, B, C, D, E.
4	Pn Cos φ	Pn Power Factor N=A, B, C, D, E.
5	Over-excitation Slope	In cosφ (P) curve mode set to slope mode, the power change slope is set to a positive or negative value.
6	Under-excitation Slope	
7	Pn Power	The percentage of the output active power to the rated power at Pn point. N=A, B, C.
8	Pn Cos φ	Pn Power Factor N=A, B, C.

No.	Parameter	Description
9	Cos φ (P) Curve Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.
10	Enable Extension Function	After enabling, set corresponding parameters.
11	Voltage Input Curve	When the grid voltage is between the entry curve voltage and the exit curve voltage, the voltage meets the Cosφ curve requirements.
12	Voltage Output Curve	
Q(P) Curve		
1	Enable Q(P) Curve	When Q(P) curves need to be set according to the power grid standards of certain countries or regions, enable this function.
2	Mode Option	Set Q (P) Curve mode. Supported: basic mode, slope mode.
3	Pn Power	The percentage of the output reactive power to the apparent power at Pn point, n= 1, 2, 3, 4, 5, 6. For example, setting **Pn Power** to 90 means Q / Prated%=90%.
4	Pn Reactive Power	The percentage of the output active power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, setting **Pn Reactive Power** to 90 means P / Prated%=90%.
5	Over-excitation Slope	In Q(P) curve mode set to slope mode, the power change slope is set to a positive or negative value.
6	Under-excitation Slope	

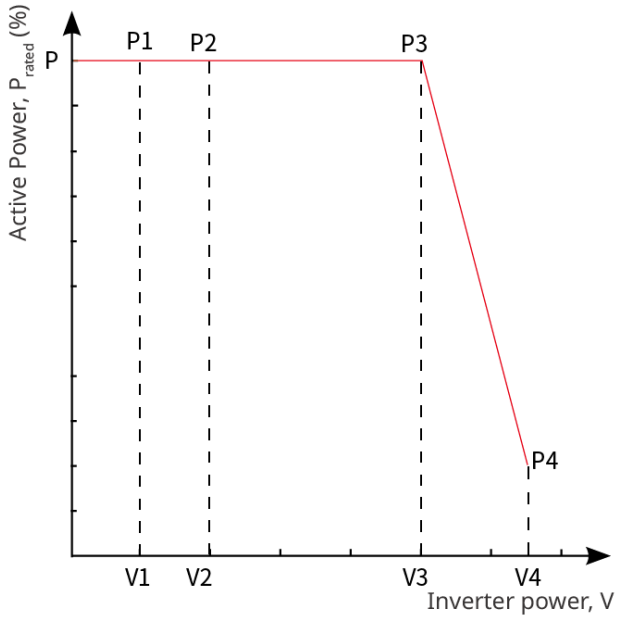
No.	Parameter	Description
7	Pn Power	The percentage of the output reactive power to the apparent power at Pn point, n= 1, 2, 3. For example, setting **Pn Power** to 90 means Q / Prated%=90%.
8	Pn Reactive Power	The percentage of the output active power to the rated power at Pn point, (n= 1, 2, 3). For example, setting **Pn Reactive Power** to 90 means P / Prated%=90%.
9	Curve Time Constant	The power is required to reach 95% in the first order LPF curve within three time constant.

9.2.8.2 Setting Active Curve

Step 1: Go to the parameter setting page via **Home > Settings > Advanced Settings > Safety Parameters Settings > Active Power Curve Settings**.
Step 2: Set the parameters based on actual needs.
P(F) Curve



P(U) Curve



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No.	Parameter	Description
1	Active Power Output Settings	Set the inverter output power limit value.
2	Power Change Gradient	Set the slope of change when the active output power increases or decreases.
Overfrequency deloading		
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Overfrequency Deloading Mode	Set the overfrequency deloading mode based on actual needs. • Slope mode: Adjusts power based on overfrequency points and load reduction slope. • Stop mode: Adjusts power based on the overfrequency start point and overfrequency end point.

No.	Parameter	Description
3	Overfrequency Threshold	When the grid frequency is too high, the active power output of the inverter decreases. When the grid frequency exceeds this value, the inverter output power begins to decrease.
4	Buying and Selling Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Overfrequency Terminal	When the grid frequency is too high, the active power output of the inverter decreases. When the grid frequency exceeds this value, the inverter output power does not continue to decrease.
6	Overfrequency Power Slope Reference Power	Adjust the active power output of the inverter based on the rated power, current power, apparent power, or maximum active power.
7	Overfrequency Power Slope	When the grid frequency exceeds the overfrequency point, the inverter output power is reduced according to the slope.
8	Quiet Time	The inverter outputs the delayed response time when the grid frequency is higher than the Underfrequency Point.
9	Hysteresis Function Enable	Enable hysteresis function.
10	Frequency Hysteresis Point	During the frequency reduction process, if the frequency decreases, the power output is adjusted to the minimum point of the reduced power output until the frequency falls below the hysteresis point, at which point the power output is restored.
11	Hysteresis Delay Time	For overfrequency load shedding and frequency reduction, when the frequency is lower than the hysteresis point, the power recovery waiting time, i.e., a certain amount of time must elapse before power is restored.

No.	Parameter	Description
12	Hysteresis Power Recovery Slope Reference Power	For overfrequency derating and frequency reduction, when the frequency is less than the hysteresis point, the reference for power restoration* is the rate of change of the reference power according to the restoration slope. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (△P).
13	Hysteresis Power Recovery Slope	For under-frequency loading and frequency increase, when the frequency exceeds the hysteresis point, the slope at which the power is recovered.
Underloaded		
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Underfrequency Loading Mode	Set the underfrequency loading mode according to actual needs. • Slope mode: Adjusts power based on underfrequency points and load slope. • Stop mode: Adjusts power based on underfrequency start point and underfrequency end point.
3	Underfrequency Threshold	When the grid frequency is too low, the active power output of the inverter increases. When the grid frequency is lower than this value, the inverter output power begins to increase.
4	Buying and Selling Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Underfrequency Terminal	When the grid frequency is too low, the active power output of the inverter increases. When the grid frequency is lower than this value, the inverter output power begins to increase.

No.	Parameter	Description
6	Overfrequency Power Slope Reference Power	Adjust the active power output of the inverter based on the rated power, current power, apparent power, or maximum active power.
7	Underfrequency Power Slope	When the grid frequency is too low, the active power output of the inverter increases. The slope of the inverter output power when it rises.
8	Quiet Time	The inverter outputs the delayed response time when the grid frequency is lower than the Underfrequency Point.
9	Hysteresis Function Enable	Enable hysteresis function.
10	Frequency Hysteresis Point	During underfrequency loading, if the frequency increases, the power is output at the lowest point of the loading power until the frequency exceeds the hysteresis point, at which point the power is restored.
11	Hysteresis Delay Time	For underfrequency loading and frequency increase, when the frequency exceeds the hysteresis point, the power recovery waiting time, i.e., a certain amount of time must elapse before power recovery occurs.
12	Hysteresis Power Recovery Slope Reference Power	For underfrequency loading and frequency increase, when the frequency exceeds the hysteresis point, the reference for power restoration* is the change rate of the reference power according to the restoration slope. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (△P).
13	Hysteresis Power Recovery Slope	For under-frequency loading and frequency increase, when the frequency exceeds the hysteresis point, the slope at which the power is recovered.
14	Enable P(U) Curve	Enable P(U) Curve when it is required by local grid standards and requirements.

No.	Parameter	Description
15	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. For example, setting Vn Voltage to 90 means V/Vrated%=90%.
16	Vn Active	The percentage of the output active power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting Vn Voltage to 48.5 means P/Prated%=48.5%。
17	Output Response Mode	Set the active output response mode. Supports: PT-1 Behavior, realize active scheduling based on the first-order LPF curve within the response time constant. Gradient Control, realize active scheduling based on the power change slope
18	Power Change Gradient	The active scheduling will be implemented based on the power gradient when the output response mode is set to slope scheduling.
19	First-order Low-pass Filter Time Parameter	Set the time constant within which the active power changes based on the first order LPF curve when the Output Response Mode is set to be PT-1 Behavior.

9.2.8.3 Setting Grid Protection Parameters

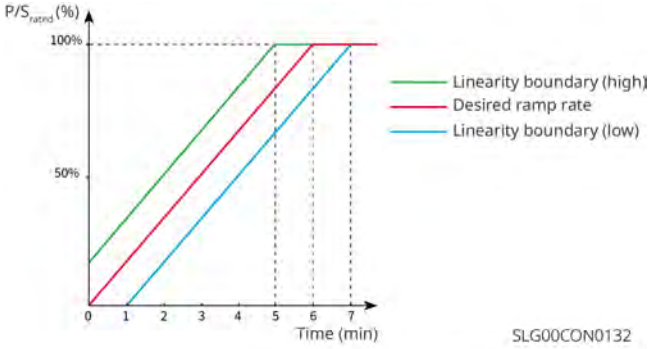
Step 1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.
Step 2: Set the parameters based on actual needs.

No.	Parameter	Description
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value, n = 1, 2, 3, 4.
2	OV Stage n Trip Time	Set the nth-order trip time for grid overvoltage triggering, where n = 1, 2, 3, 4.

No.	Parameter	Description
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value, n= 1, 2, 3, 4.
4	UV Stage n Trip Time	Set the grid undervoltage protection tripping time, n = 1, 2, 3, 4.
5	10-minute overpressure trigger value	Set the 10min overvoltage protection threshold value.
6	10-minute overpressure trip time	Set the overpressure trip time to 10 minutes.
7	OF Stage n Trip Value	Set the grid overfrequency protection threshold value, n = 1, 2, 3, 4.
8	OF Stage n Trip Time	Set the nth-order trip time for grid overfrequency triggering, where n = 1, 2, 3, 4.
9	UF Stage n Trip Value	Set the grid underfrequency protection threshold value, n = 1, 2, 3, 4.
10	UF Stage n Trip Time	Set the UF trigger n-order trip time, n=1, 2, 3, 4.

9.2.8.4 Setting Grid Connection Parameters

Step 1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Connection Parameters** to set the parameters.
Step 2: Set the parameters based on actual needs.



No.	Parameter	Description
Start up and connect to the grid		
1	Connection Voltage Upper Limit	When the inverter is connected to the grid for the first time, if the grid voltage is higher than this value, the inverter will not be able to connect to the grid.
2	Connection Voltage Lower Limit	When the inverter is connected to the grid for the first time, if the grid voltage is lower than this value, the inverter will not be able to connect to the grid.
3	Connection Frequency Upper Limit	When the inverter is connected to the grid for the first time, if the grid frequency is higher than this value, the inverter will not be able to connect to the grid.
4	Connection Frequency Lower Limit	When the inverter is connected to the grid for the first time, if the grid frequency is lower than this value, the inverter will not be able to connect to the grid.
5	Grid Connection Waiting Time	When the inverter is connected to the grid for the first time, wait for the grid connection time after the grid voltage and frequency meet the grid connection requirements.
6	Enable Soft Ramp Up Gradient	Enable the start-up slope function.
7	Soft Ramp Up Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is powered on for the first time.
Fault Reconnection		
8	Connection Voltage Upper Limit	When reconnecting to the grid after an inverter failure, if the grid voltage is higher than this value, the inverter will not be able to connect to the grid.
9	Connection Voltage Lower Limit	When reconnecting to the grid after an inverter failure, if the grid voltage is lower than this value, the inverter will not be able to connect to the grid.

No.	Parameter	Description
10	Connection Frequency Upper Limit	When reconnecting to the grid after an inverter failure, if the grid frequency is higher than this value, the inverter will not be able to connect to the grid.
11	Connection Frequency Lower Limit	When reconnecting to the grid after an inverter failure, if the grid frequency is lower than this value, the inverter will not be able to connect to the grid.
12	Grid Connection Waiting Time	After an inverter malfunctions and reconnects to the grid, wait for the grid voltage and frequency to meet the grid connection requirements before reconnecting to the grid.
13	Reconnection Load Slope Enable	Enable the start-up slope function.
14	Reconnection Load Slope	In some countries/regions, set the percentage of incremental output power per minute when the inverter is not powered on for the first connection. For example, setting Reconnection Power Loading Slope to 10 means the reconnection slope is 10% Prated/min.

9.2.8.5 Setting Voltage Ride through Parameters

Step 1: Enter the parameter setting page through **Home > Settings > Advanced Settings > Safety Parameter Settings > Voltage Fault Ride-Through.**
Step 2: Set the parameters based on actual needs.

No.	Parameter	Description
LVRT		
1	UVn Point Voltage	During low-voltage ride-through, the ratio of the ride-through voltage at the low-voltage ride-through characteristic point to the rated voltage. n=1,2,3,4,5,6,7。
2	UVn point time	The crossing time of the low-voltage crossing feature point during the low-voltage crossing process. n=1,2,3,4,5,6,7

No.	Parameter	Description
3	Enter Low Penetration Threshold	When the grid voltage is between the low penetration threshold and the exit low penetration threshold, the inverter does not immediately disconnect from the grid.
4	Exit Low Penetration Threshold	
5	Slope K1	K value coefficient of reactive power support during low voltage ride through.
6	Enable Zero Current Mode	When enabled, the system outputs zero current during low-voltage ride-through.
7	Enter Threshold	The threshold for entering zero current mode.
HVRT		
1	OVn Point Voltage	During high-voltage ride-through, the ratio of the ride-through voltage at the high-voltage ride-through characteristic point to the rated voltage. n=1,2,3,4,5,6,7。
2	OVn point time	The crossing time of the high-voltage crossing feature point during the high-voltage crossing process. n=1,2,3,4,5,6,7。
3	Enter High Penetration Threshold	When the grid voltage is between the high penetration threshold and the exit high penetration threshold, the inverter does not immediately disconnect from the grid.
4	Exit High Penetration Threshold	
5	Slope K2	K value coefficient of reactive power support during high voltage ride through.
6	Enable Zero Current Mode	The system outputs zero current during high-voltage ride-through.

No.	Parameter	Description
7	Enter Threshold	The threshold for entering zero current mode.

9.2.8.6 Setting Frequency Fault Ride-through Parameters

Step 1: Enter the parameter setting page through **Home > Settings > Advanced Settings > Safety Parameter Settings > Frequency Fault Ride-Through.**
Step 2: Set the parameters based on actual needs.

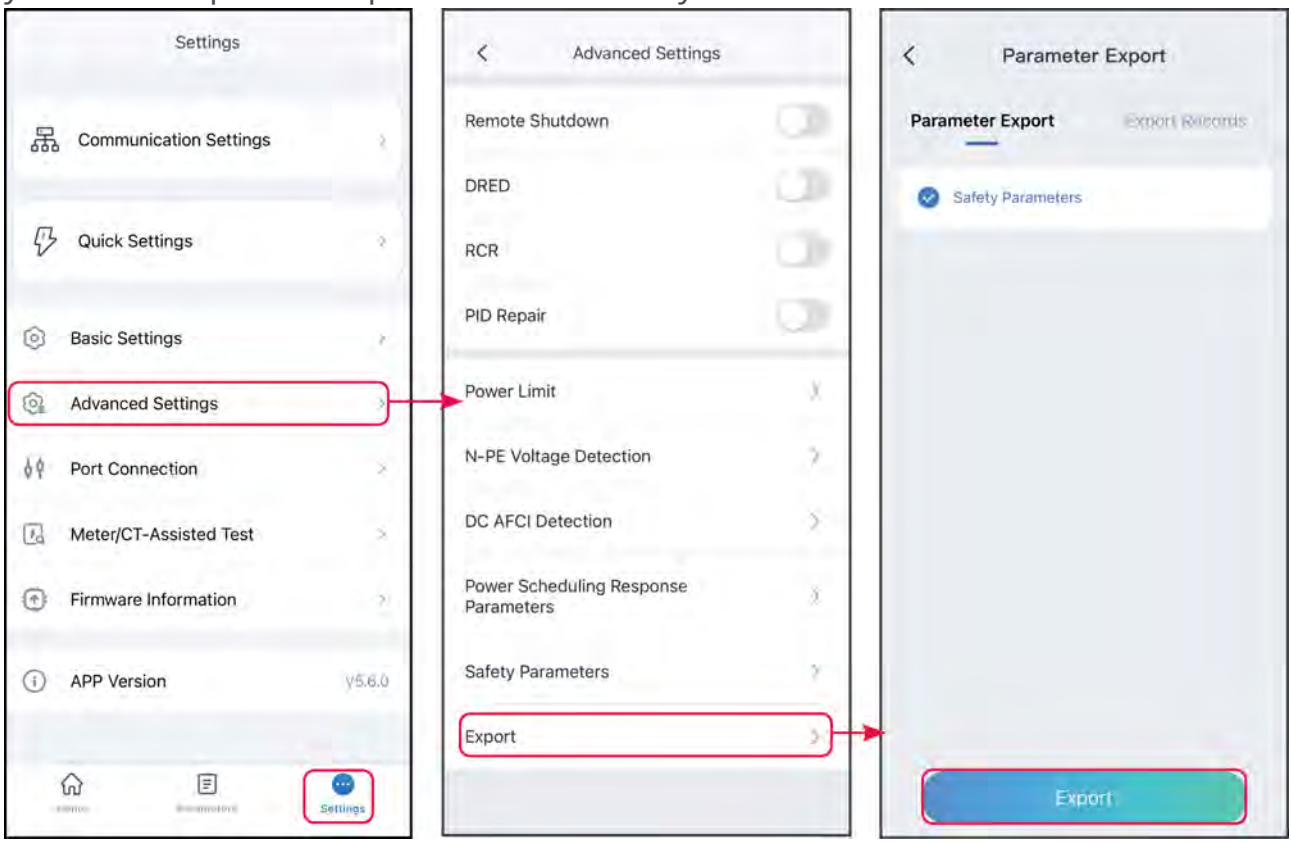
No.	Parameter	Description
1	Frequency Hopping Enabled	Enable frequency hopping function.
2	UFn point frequency	Set the frequency of the underfrequency n point. n=1,2,3.
3	UFn Point Time	Set the underfrequency time for underfrequency point n. n=1,2,3.
4	OFn point frequency	Set the frequency of the overfrequency n point. n=1,2,3.
5	OFn Point Time	Set the overfrequency time for the overfrequency n point. n=1,2,3.

9.2.9 Exporting Parameters

9.2.9.1 Exporting Safety Parameters

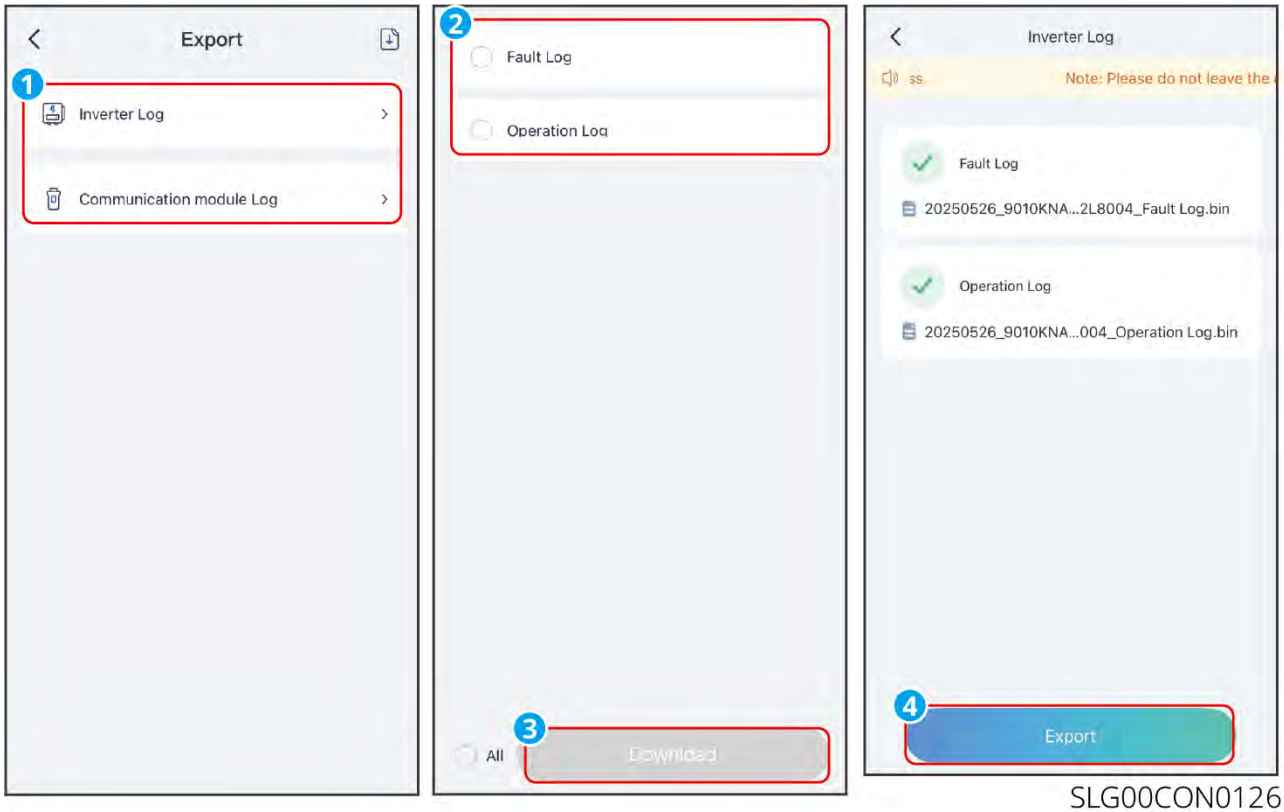
Some models support exporting safety parameter files after selecting the safety regulation country.
Step 1: Go to the Safety Parameters Export page by clicking **Home > Settings > Advanced Settings > Export**.
Step 2: After selecting the safety parameters, click **Export** to start downloading the

current safety parameter file. After exporting is complete, click **Share** and select how you want to open the exported file based on your actual needs.



9.2.9.2 Exporting Log Parameters

Step 1: Go to the Parameters Export page by clicking **Home > Settings > Advanced Settings > Export**.
Step 2: Select the device type for which you want to export logs, such as inverter logs, communication module logs, etc.
Step 3: Select the log type you want to export, download and export the log file. After exporting is complete, click **Share** and select how you want to open the exported file based on your actual needs.



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9.2.10 Setting Smart Meter Parameters

9.2.10.1 Binding/Unbinding Smart Meter

NOTICE

- When both grid-connected inverters and energy storage inverters are used in a photovoltaic system to achieve coupling or microgrid functionality, dual electricity meters may be used in the system. Please set the meter binding information according to the actual usage situation.
- Only applicable to GoodWe electricity meters.

Step 1: Go to **Home** > **Settings** > **Electricity Meter Function** > **Electricity Meter Binding** to enter the binding interface.
Step 2: Click on the drop-down menu under **Number/Location of Electric Meters** to select the actual application scenario. Supported options: Meter 1 (built-in) No Meter 2; Meter 1 (external) No Meter 2; Meter 1 (built-in) Meter 2 (external); Meter 1 (external) Meter 2 (external). This section uses the electricity meter 1 (built-in) and

electricity meter 2 (external) interfaces as examples to explain how to bind electricity meters.

Step 3: As shown in the figure below, when selecting to use an external electricity meter, you need to manually add the external electricity meter information. Click + to bind the meter by manually entering the meter SN or scanning the meter SN QR code. When the bound electricity meter model is GM330, please set the CT ratio of the electricity meter according to the actual settings, then click √ to complete the setup. If using other electricity meters, there is no need to set the CT ratio of the electricity meter.

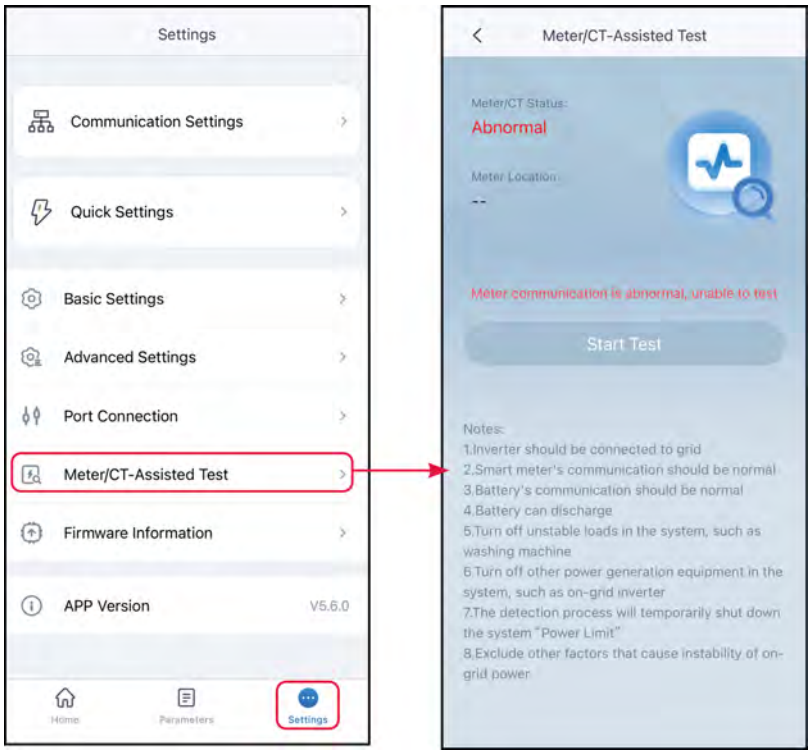
Step 4: (Optional) If you need to unbind an external meter, click **Unbind**.

9.2.10.2 Meter/CT Assisted Test

Meter detection function, which can detect whether the CT of the meter is connected correctly and the current operation status.

Step 1: Go to the detection page via **Home** > **Settings** > **Smart Meter Function** > **Smart Meter/CT Auxiliary Detection**.

Step 2: Click **Start Detection** and wait for the detection to complete. Then, view the detection results.



9.2.11 Setting Generator/Load Control Parameters

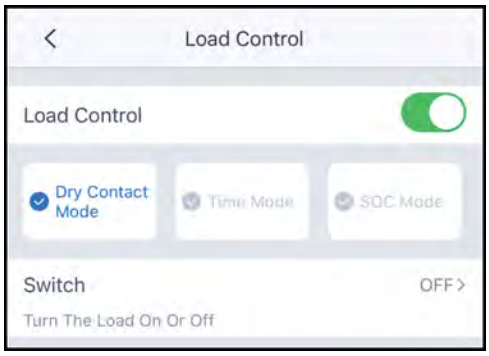
9.2.11.1 Setting Load Control Parameters

NOTICE

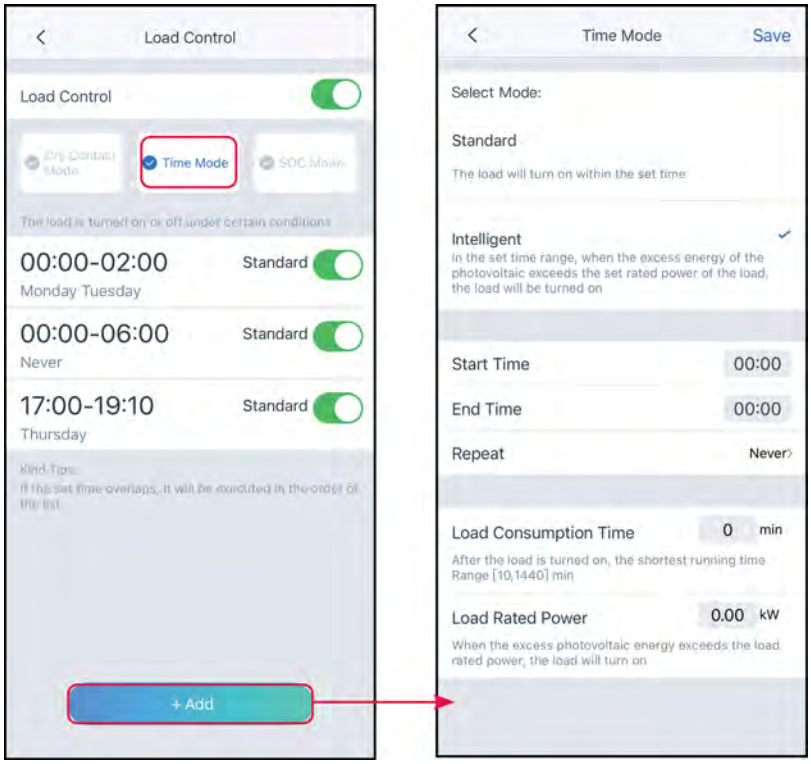
- When the inverter supports load control functionality, loads can be controlled via the SolarGo app.
- For the ET40-50kW series inverters, load control functionality is only supported when the inverter is used with STS. The inverter supports load control on the GENERATOR port or BACKUP LOAD port.

Step 1: Go to the settings page by clicking **Home > Settings > Port Connection**.
Step 2: Based on the actual interface, select **load control** to enter the load control interface and set the control mode.

- Dry Contact Mode: When the switch is ON, the loads will be powered; when the switch is OFF, the power will be cut off. Turn the switch on or off based on actual needs.



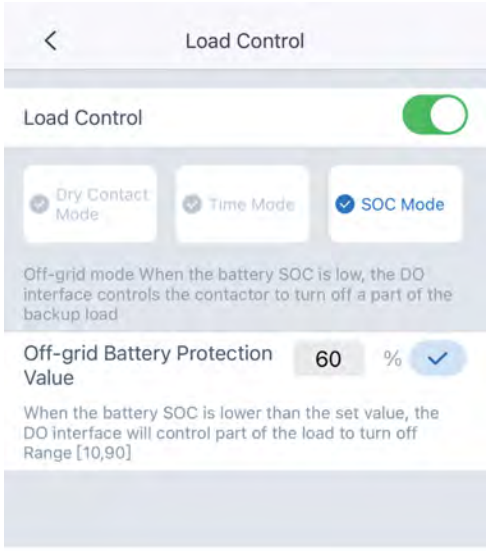
- Time Mode: Set the time to enable the load, and the load will be powered automatically within the setting time period. Standard mode or intelligent mode can be selected.



No.	Parameter	Description
1	Standard Mode	The loads will be powered within the setting time period.
2	Intelligent Mode	When the residual energy generated by the PV exceeds the preset load power rating within a set time period, it starts to supply power to the load.
3	Start Time	The time mode will be on between the Start Time and End Time.
4	Closing Time	
5	Repetition	Set the repetition frequency.
6	Minimum Load Operating Time	Minimum time of operation after the load is turned on to avoid frequent switching of the load due to energy fluctuations. Only applicable to intelligent mode.
7	Load Rated Power	When the residual energy generated by the PV exceeds the rated power of this load, it begins to power the load. Only applicable to intelligent mode.

- SOC mode: The inverter has a built-in relay dry contact control port (ET40-50kW series inverters have a built-in STS control port) that can control whether to supply power to the load. In off-grid mode, if overload is detected at the BACK-UP terminal or GENERATOR terminal, or if the battery SOC protection function is triggered,

power supply to the load connected to the terminal will be stopped.



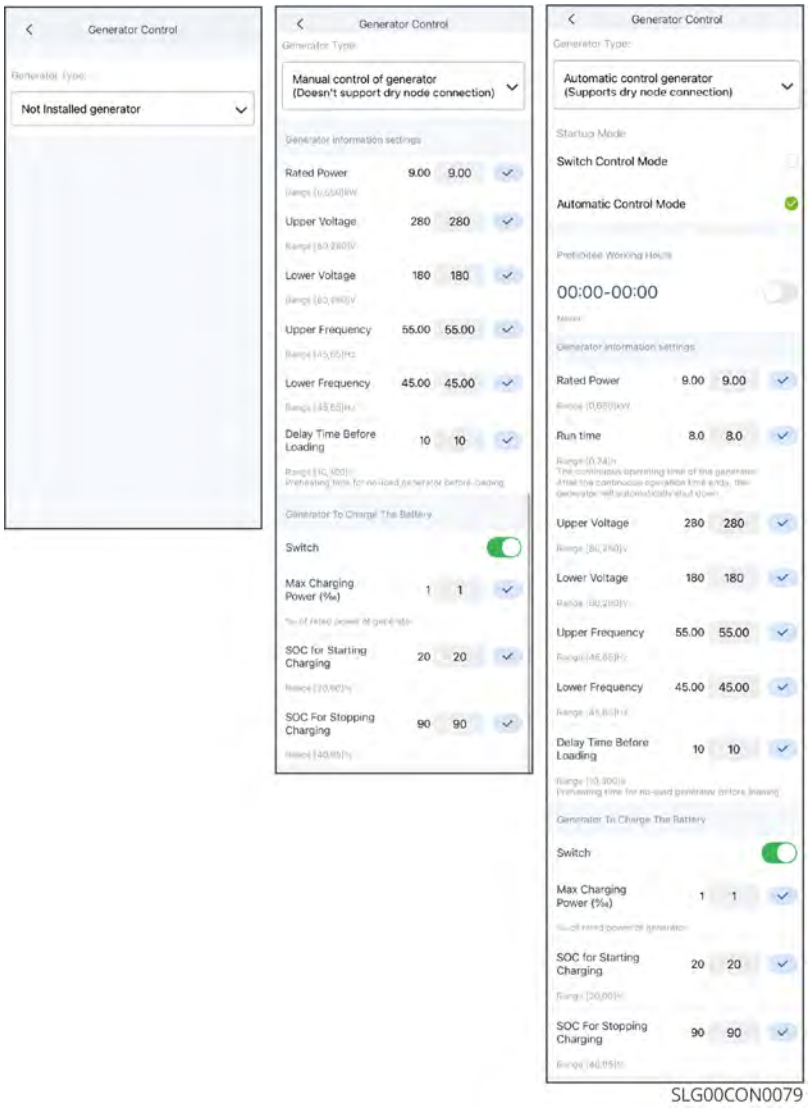
9.2.11.2 Setting Generator Parameters

NOTICE
• When the inverter supports generator control functionality, the generator can be controlled via the SolarGo app. • For the ET40-50kW series inverters, connection and control of generators is only supported when the inverter is used with STS.

Step 1: Go to the settings page by clicking **Home > Settings > Port Connection**.
Step 2: Follow the prompts on the screen to enter the generator control interface and set the generator parameters according to your actual needs.

Step 3: When setting up the generator control function, select the generator type based on the actual connection status. **Currently supported types are: no generator connected, manual start/stop generator, and automatic start/stop generator**. Set the corresponding parameters according to the selected generator type.

- No generator connected: When no generator is connected to the energy storage system, select No generator connected.
- Manual Control of Generator (Does Not Support Dry Node Connection): The generator must be manually controlled to start and stop; the inverter cannot control the generator's operation.
- Automatic generator control (supports dry contact connection): When the generator has a dry contact control port and is connected to the inverter, you need to set the generator control mode of the inverter to switch control mode or automatic control mode in the SolarGo app.
  - Switch control mode: When the switch is turned on, the generator operates; after reaching the set operating time, the generator automatically stops operating.
  - Automatic control mode: Prohibits generator operation during set prohibited operating hours and allows generator operation during operating hours.



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No.	Parameter	Description
1	Dry Contact Control Mode	The switch control mode/ automatic control mode.
Switch control mode		
2	Generator Dry Node Switch	Only applicable to switch control mode.
3	Running Time	The generator continues to run until the arrival time, at which point it stops running.
Automatic control mode		

No.	Parameter	Description
4	No Working Time	Set the time period during which the generator is prohibited from operating.
5	Running Time	After the generator starts running, it continues to run for a certain period of time. When the time is up, the generator stops running. If the generator's start-up and operation time includes a prohibited working time, the generator will stop operating during this time period. After the prohibited working time, the generator will restart and resume timing.

No.	Parameter	Description
Generator Information Settings		
1	Rated Power	Set the rated power for generator operation.
2	Running Time	Set the continuous operating time of the generator. The generator will shut down after the continuous operating time has elapsed.
3	Upper Voltage	Set the voltage range for generator operation.
4	Lower Voltage	
5	Upper Frequency	Set the frequency range for generator operation.
6	Lower Frequency	
7	Preheating Time	Set the generator no-load preheating time.
Parameter settings for charging batteries with a generator.		
8	Switch	Select whether to use the generator to charge the battery.
9	Maximum charging power (‰)	The charging power when the generator charges the battery.
10	Start Charging SOC	When the battery SOC is below this value, the generator generates electricity to charge the battery.

No.	Parameter	Description
11	Stop Charging SOC	When the battery SOC exceeds this value, stop charging the battery.

9.2.11.3 Setting Microgrid Parameters

NOTICE
When the inverter supports microgrid functionality, microgrid parameters can be set via the SolarGo app.

Step 1: Go to the settings page by clicking **Home > Settings > Port Connection**.
Step 2: Follow the prompts on the screen to enter the microgrid control interface and set the microgrid parameters according to your actual needs.

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No.	Parameter	Description
1	Maximum SOC for Charging	Set the upper limit for the charging SOC, and stop charging when the upper limit is reached.
2	Manual Wake-up	• When the power grid fails, if the battery charge is low, it cannot support the energy storage inverter to operate off-grid. Click this button to force the energy storage inverter to output voltage to the grid-connected inverter, thereby starting the grid-connected inverter. • Effective once.
3	Auto-wake	• When the power grid fails, if the battery charge is low, it cannot support the energy storage inverter to operate off-grid. After enabling this function, the system will force the energy storage inverter to output voltage to the grid-connected inverter at a fixed time, thereby starting the grid-connected inverter. • Take effect multiple times.
4	Grid Power Purchase Power Limit Bias	Set the adjustable range of the maximum power that the device can actually purchase from the power grid.

9.2.12 Equipment Maintenance.

9.2.12.1 View Firmware Information/Firmware Upgrade

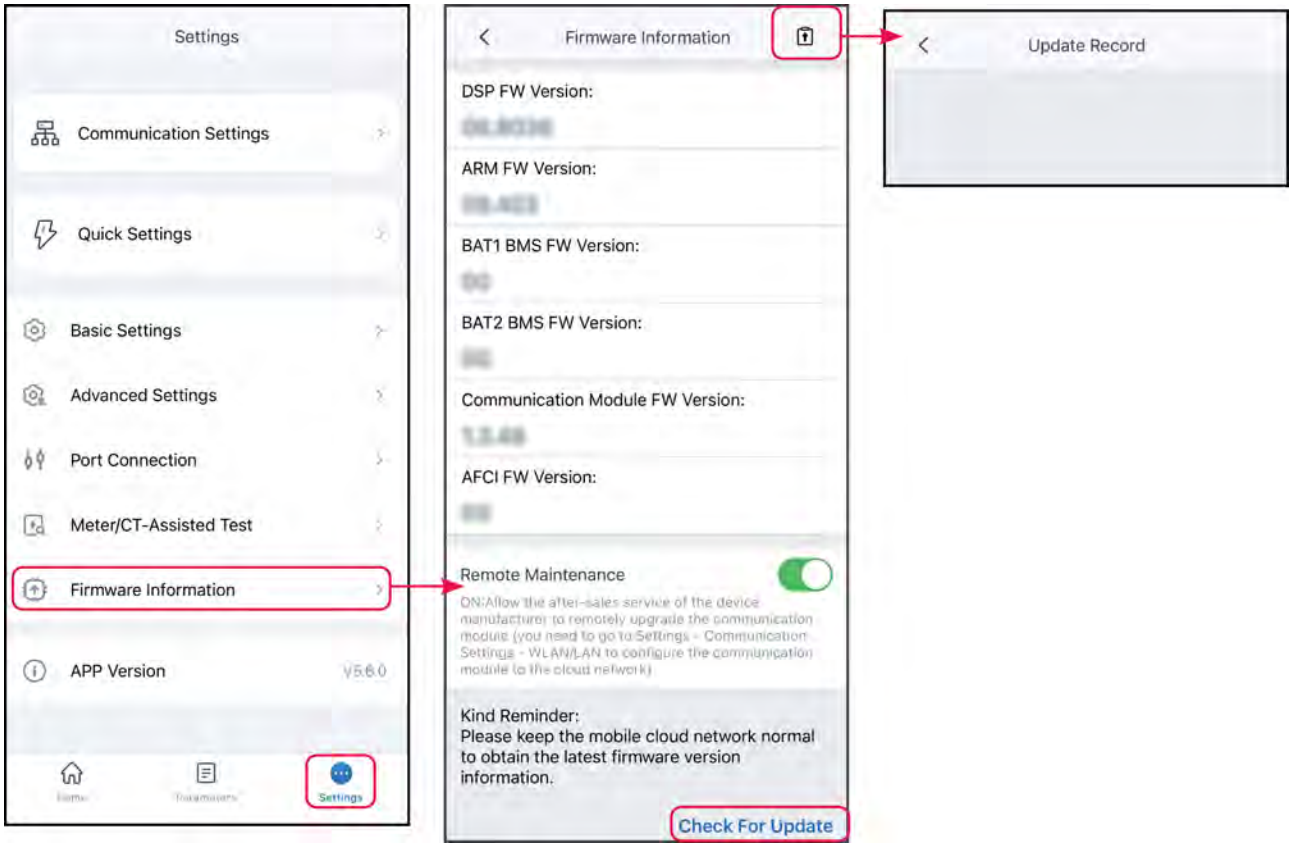
Through the firmware information, you can view or upgrade the DSP version, ARM version, BMS version, AFCI version, STS version, and communication module software version of the inverter. Some devices do not support software version upgrade via SolarGo App, and the actual situation shall prevail.

NOTICE
After logging in to the inverter, if a firmware upgrade dialog box pops up, click Firmware Upgrade to jump directly to the firmware information view interface.

9.2.12.1.1 Regular Firmware Upgrades

NOTICE
• When there is a red dot on the right side of the firmware information, please click to view the firmware update information. • During the upgrade process, please ensure that the network is stable and that the device remains connected to SolarGo, otherwise the upgrade may fail.

Step 1: **Access the firmware information viewing interface through Home > Settings > Firmware Information**. After logging in to the inverter, if a firmware upgrade dialog box pops up, click **Firmware Upgrade** to jump directly to the firmware information view interface.
Step 2: (Optional) Click **Check for Updates** to confirm whether there is a new firmware version available for update.
Step 3: Follow the prompts on the screen and click **Firmware Upgrade** to enter the firmware upgrade interface.
Step 4: (Optional) Click **Learn More** to view firmware-related information, such as the current version, latest version, firmware update history, etc.
Step 5: Click **Upgrade** and follow the prompts on the screen to complete the upgrade.



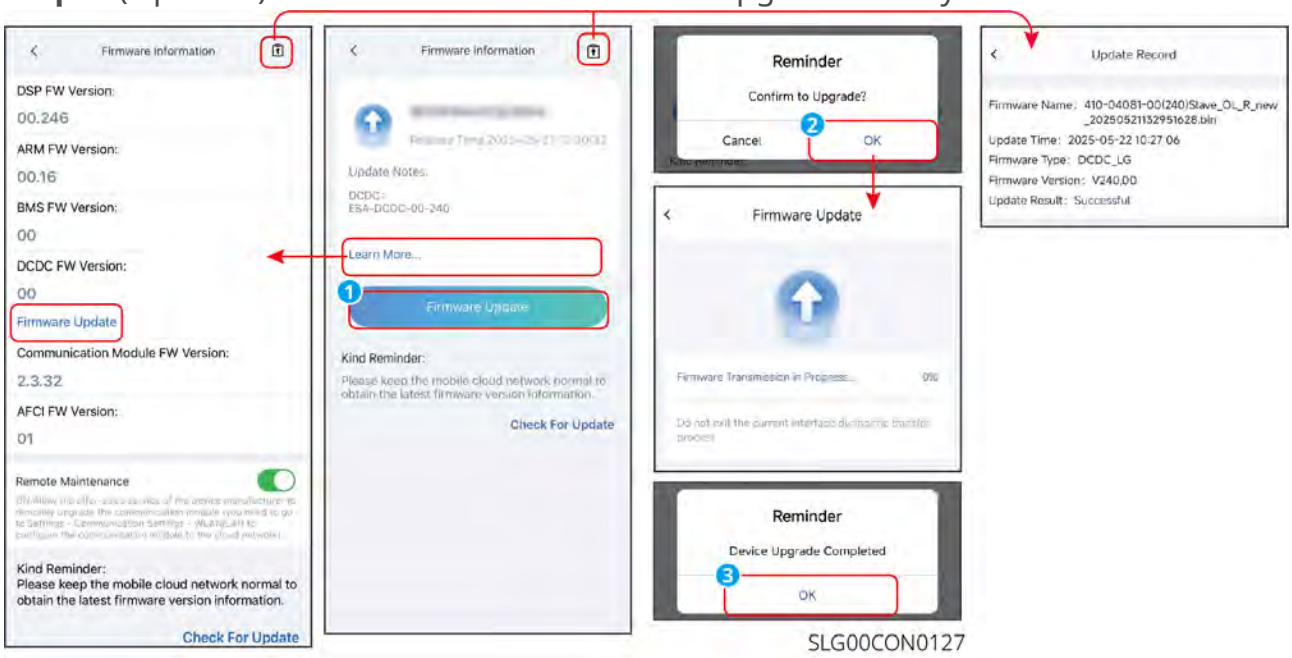
9.2.12.1.2 One-click Firmware Upgrade

NOTICE
• When there is a red dot on the right side of the firmware information, please click to view the firmware update information. • During the upgrade process, please ensure that the network is stable and that the device remains connected to SolarGo, otherwise the upgrade may fail.

Step 1: **Access the firmware information viewing interface through Home > Settings > Firmware Information**. After logging in to the inverter, if a firmware upgrade dialog box pops up, click **Firmware Upgrade** to jump directly to the firmware information view interface.
Step 2: Click **Firmware Upgrade** and follow the prompts on the screen to upgrade all firmware versions that need updating. If you only need to upgrade a specific firmware version, click **Learn More**, then click **Firmware Upgrade** below the firmware version you want to upgrade to, and follow the prompts on the screen to complete the operation.

Step 3: (Optional) Click **Learn More** to view all current firmware version information.

Step 4: (Optional) Click to view the version upgrade history.



9.2.12.1.3 Automatic Firmware Upgrade

NOTICE

- When communicating using the WiFi/LAN Kit-20 or WiFi Kit-20 module, and the module firmware version is V2.0.1 or higher, the device automatic upgrade function can be enabled.
- After enabling the device auto-upgrade feature, if there is an update to the module version and the device is connected to the network, it will automatically upgrade to the corresponding firmware version.

Step 1: **Access the firmware information viewing interface through Home > Settings > Firmware Information**.

Step 2: Turn on or off the automatic upgrade feature based on your needs.

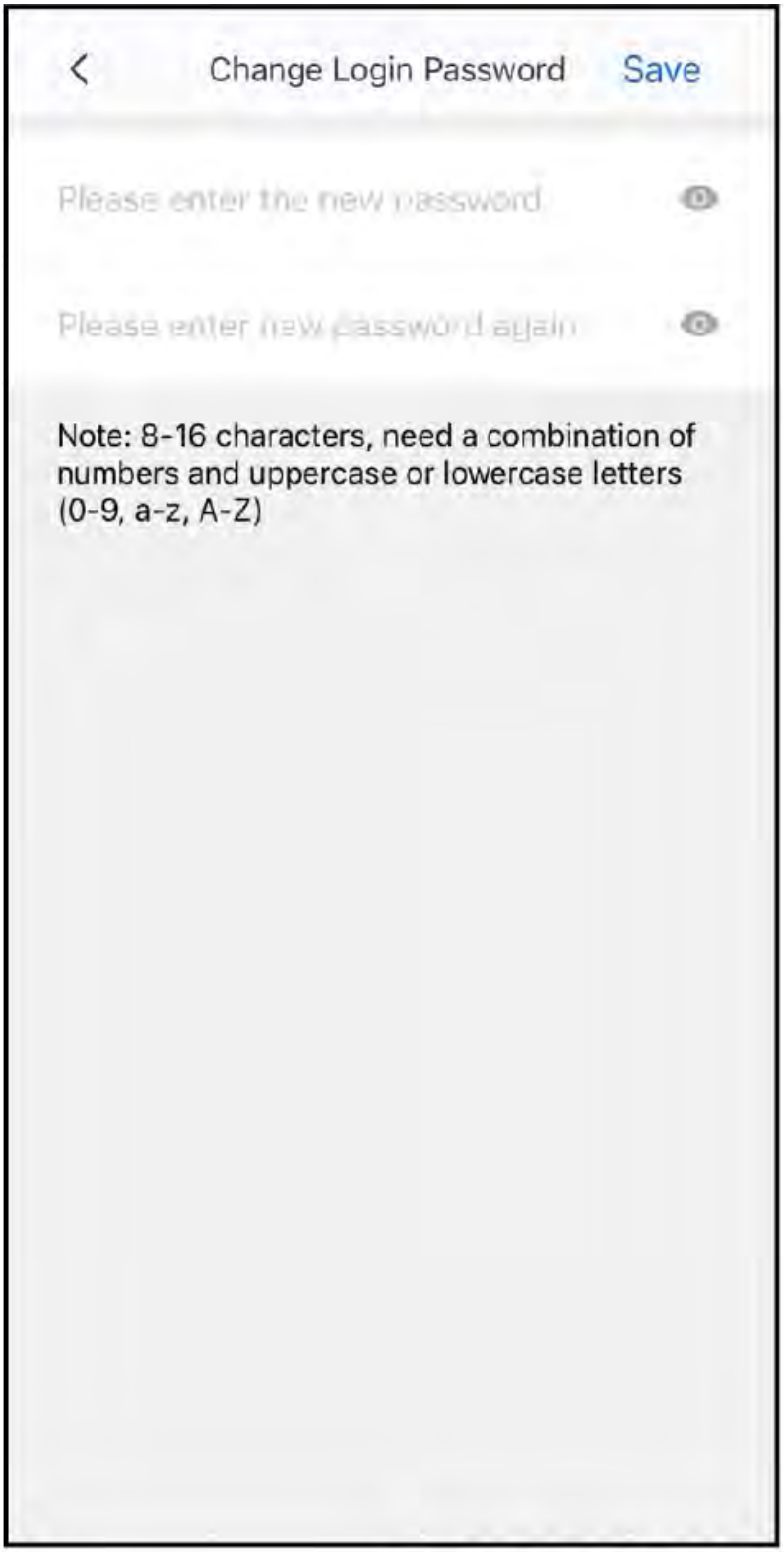
9.2.12.2 Changing Login Password

NOTICE

The login password for connecting to the inverter via the SolarGo App can be changed. After changing your password, please remember it. If you forget your password, please contact the after-sales service center for assistance.

Step 1: Go to the settings page by clicking **Home > Settings > Change Login Password**.

Step 2: Change your password based on the actual situation.



SLG00CON0088

10 Power Plant Monitoring

NOTICE
The parameters that can be viewed or set on the interface vary depending on the login account type or power plant type. Please refer to the actual interface for details.

10.1 APP Introduction

SEMS+ App is a software for power plant monitoring and control, which allows you to remotely manage the power plant and equipment, view the operating data of the power plant, alarm messages and so on.

10.1.1 Complementary Products

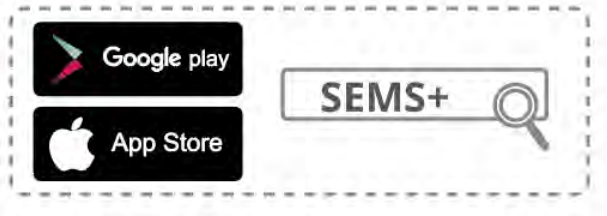
Support monitoring and management of related equipment from the GoodWe brand, such as inverters, smart meters, data loggers, charging stations, batteries, etc.

10.1.2 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 6.0 or later, iOS 13.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

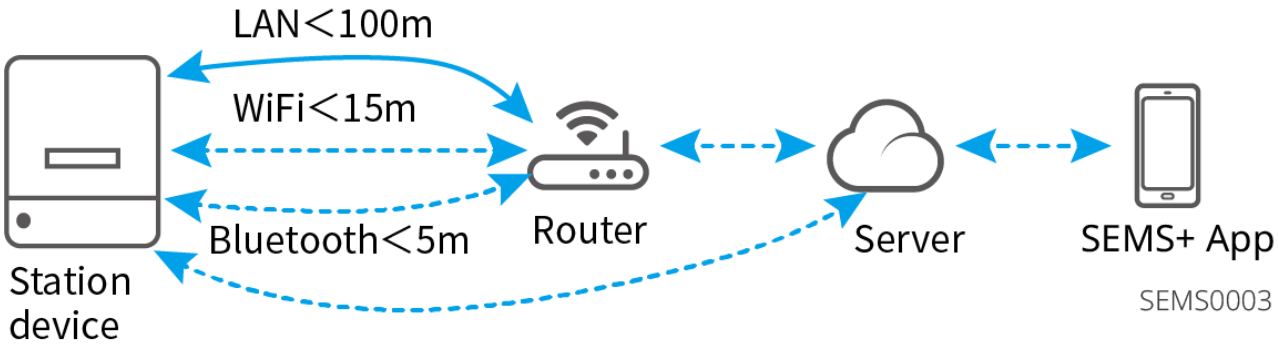
Download Method:
Method 1:
Search SEMS+ in Google Play (Android) or App Store (iOS) to download and install the App.



Method 2:

Scan the QR code below to download and install the App.

10.1.3 Connection Method

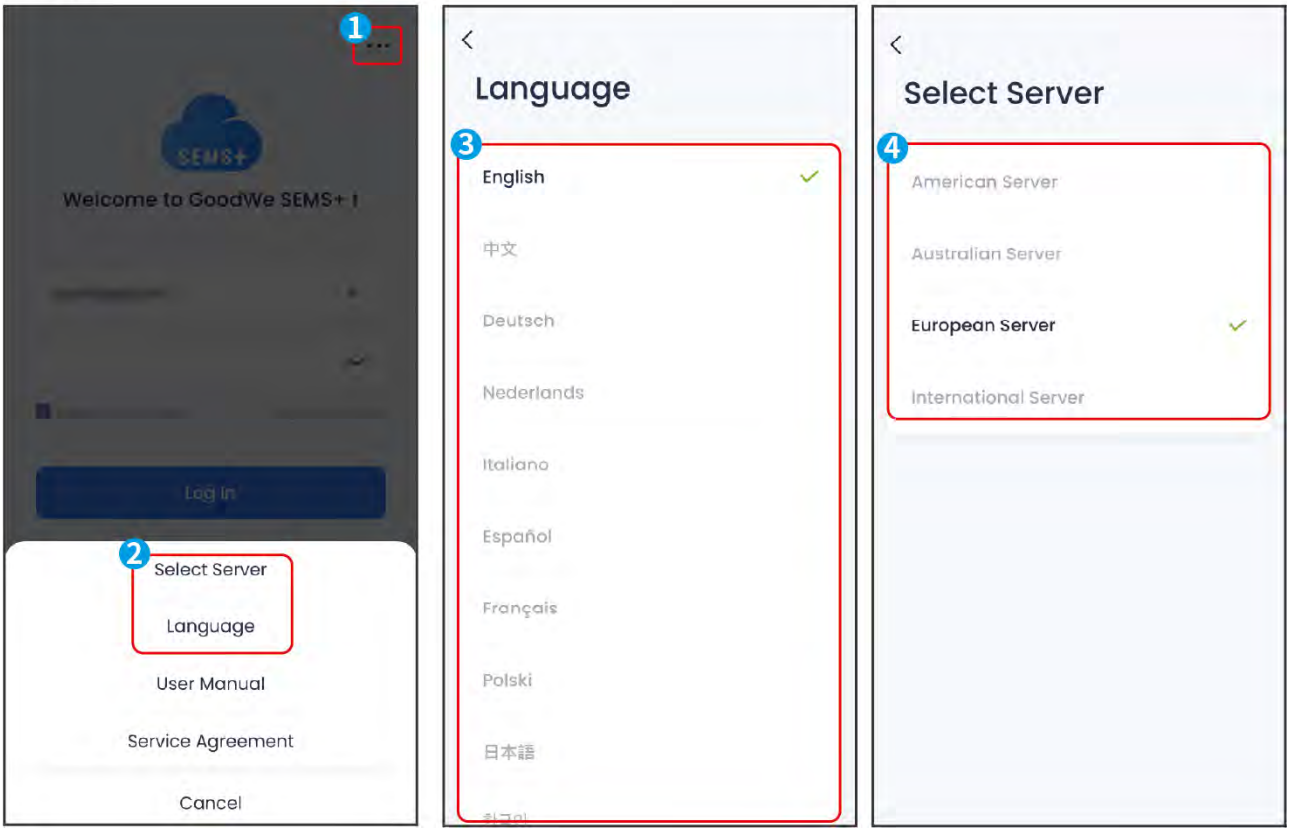


10.1.4 Setting Language and Server

NOTICE
Supports automatic server adaptation based on login account information. If you need to set it up yourself, when selecting the server, please confirm that the selected region matches the region associated with your account, otherwise you will not be able to log in.

Please select the app display language according to your actual needs, and select the corresponding server according to your actual location.

SEMS0004



10.1.5 Setting Communication Parameters

The SEMS+ app supports connecting devices via Bluetooth or WiFi and configuring device network parameters to enable remote monitoring or device management.

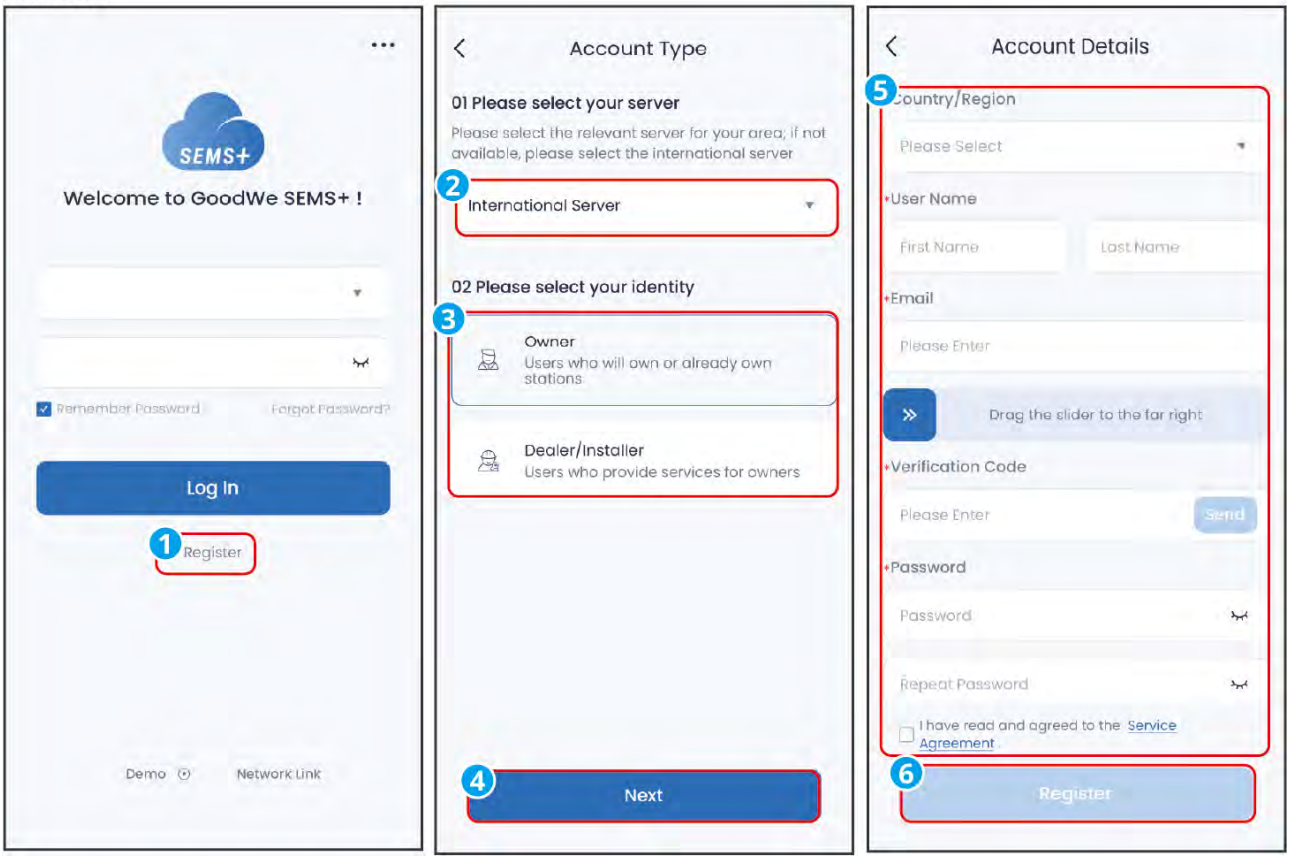
NOTICE
When the device model or smart communication stick type is different, the device name displayed will be different. *** is the device serial number: • Wi-Fi/LAN Kit; Wi-Fi Kit; Wi-Fi Box: Solar-WiFi*** • WiFi/LAN Kit-20: WLA-*** • WiFi Kit-20: WFA-*** • Ezlink3000: CCM-BLE***; CCM-***; *** • 4G Kit-CN-G20/4G Kit-CN-G21: GSA-***; GSB-*** • Charging pile: ***

10.2 Account Management

10.2.1 Registering

Step 1: Click **Register** on the app's home page to enter the account registration interface.
Step 2: Select the account type based on your actual needs, then click **Next**.
Step 3: Enter your account information according to the actual situation, and click **Register** to complete the registration.

SEMS0005

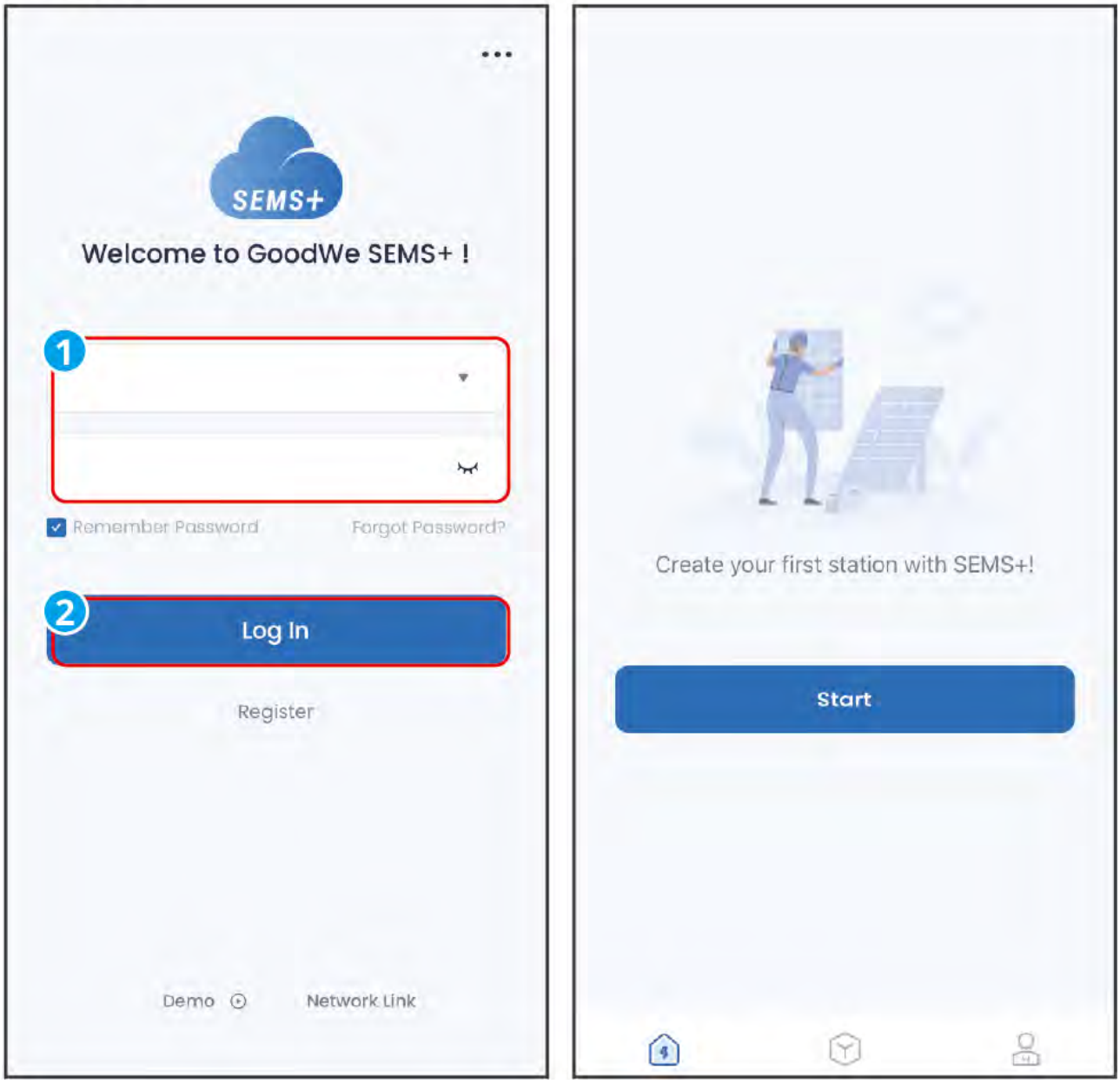


10.2.2 Login

NOTICE
• Before logging into the App, please register or get your account and password through your dealer. • After logging in your account, you can view or manage power station information, please refer to the actual interface.

Step 1: Enter your account number and password, read and check the login agreement, and click **Log In**.

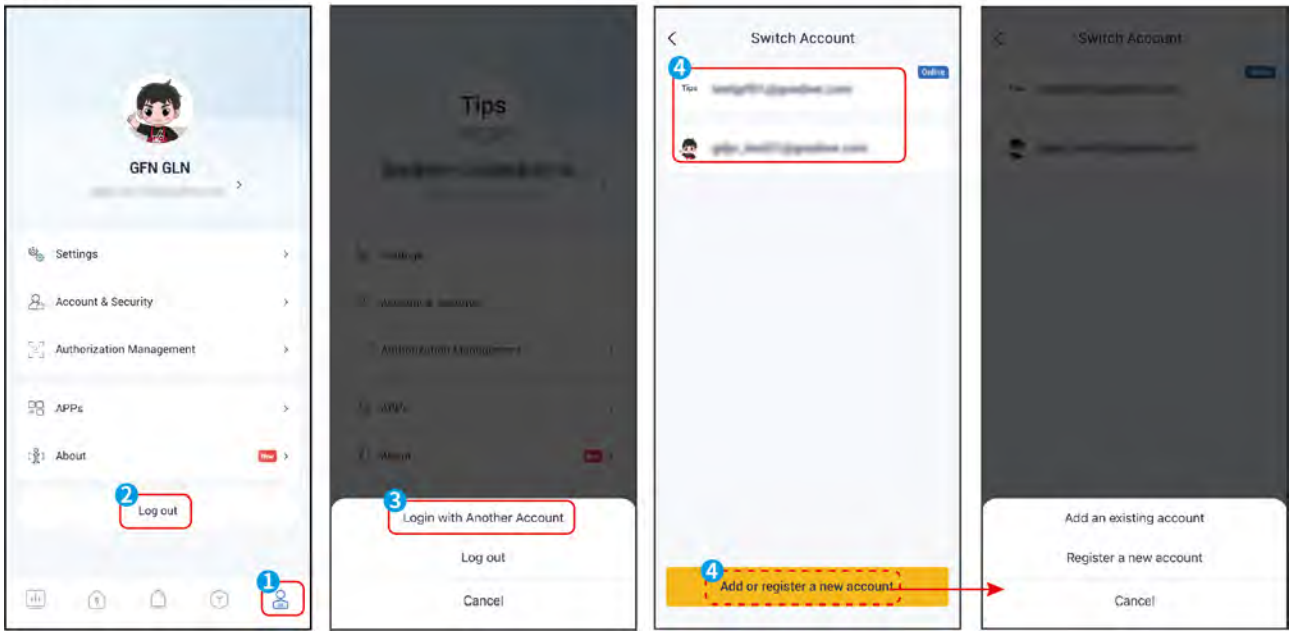
SEMS0006



10.2.3 Switch

Step 1: On the **My** interface, click **Log Out > Log in with Another Account**.
Step 2: Select an existing account or add a new account based on your actual needs.

SEMS0007

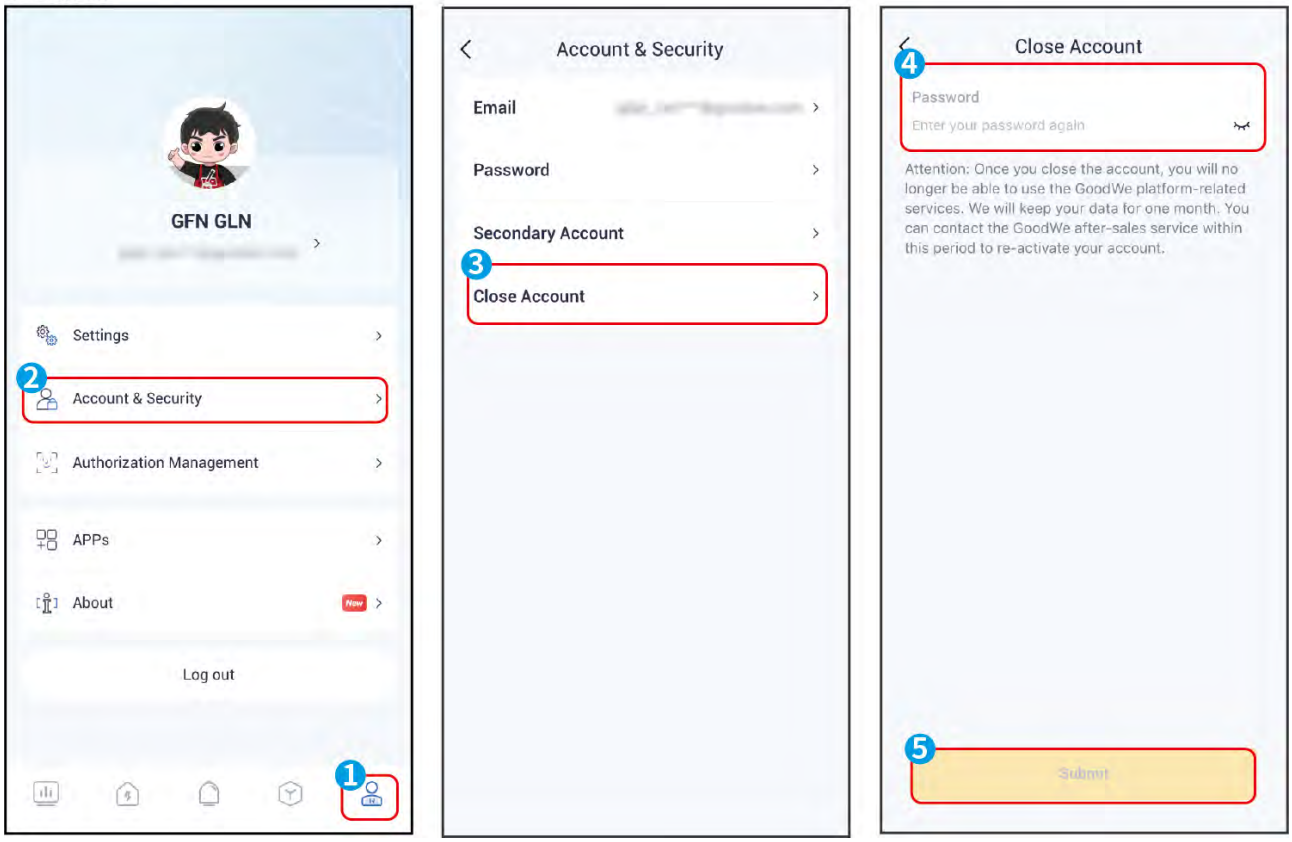


10.2.4 Canceling

Step 1: On the **My** interface, click **Account & Security**.

Step 2: Click **Close Account, enter your account password, and click** Submit.

SEMS0008



10.2.5 Account Permissions

The SEMS+ app supports different account types with different permissions. The operating permissions for different account types vary. Please refer to the table below for details.

Top-level menu	Secondary menu	Third-level menu	Four-level menu	Five-level menu	Permissions
Login & Register	-	-	-	-	Administrators, installers, marketing personnel, owners, visitors
Overview	Monitoring Information	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Create Station	-	-	-	Administrators, installers, owners, visitors
Station	Station List	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Station Details	Monitoring	-	-	Administrators, installers, marketing personnel, owners, visitors
		Device	Add Device	-	Administrators, installers, and owners
			Device List	Search Device	Administrators, installers, marketing personnel, owners, visitors
				Replace Device	Administrators, installers, and owners

				Edit Device	Administrators, installers, and owners
				Delete Device	Administrators, installers, and owners
			Device Details	Device Monitoring Info	Administrators, installers, marketing personnel, owners, visitors
				Device Remote Control	Administrators, installers, and owners
				Device Remote Upgrade	Administrators and installers
		Alarms	-	-	Administrators, installers, marketing personnel, owners, visitors
		Station Configuration	Edit Station	-	Administrators, installers, and owners
			Delete Station	-	Administrators, installers, and owners
			Replacement History	-	Administrators, installers, marketing personnel, owners
			User Information	-	Administrators, installers, and owners
			Home Configuration	-	Administrators, installers, marketing personnel, owners, visitors
	Create Station	-	-	-	Administrators, installers, owners, visitors
Alarm	-	-	-	-	Administrators,

					installers, marketing personnel
Services	Services	Warranty	-	-	Administrators, installers, marketing personnel, owners, visitors
		Report Center	-	-	Administrators, installers, marketing personnel, owners
		GoodWe News	-	-	Administrators, installers, marketing personnel, owners, visitors
		Announcements	-	-	Administrators, installers, marketing personnel, owners, visitors
		Community	-	-	Administrators, installers, marketing personnel, owners, visitors
	Tools	Create Station	-	-	Administrators, installers, owners, visitors
		Network Link	-	-	Administrators, installers, marketing personnel, owners, visitors
		DNSP	-	-	Administrators, installers, marketing personnel, owners, visitors
	Help	-	-	-	Administrators, installers, marketing

					personnel, owners, visitors
My	User Profile	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	User Information	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Setting	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Account Security	Email	-	-	Administrators, installers, marketing personnel, owners, visitors
		Password	-	-	Administrators, installers, marketing personnel, owners, visitors
		Secondary Account	-	-	Administrators, installers, marketing personnel
		Close Account	-	-	Administrators, installers, marketing personnel, owners, visitors
	Auth Management	Remote Control Auth	-	-	Administrators, installers, marketing personnel, owners, visitors
		Monitoring	-	-	Owners

		Auth			
	Apps	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	About	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Logout	Logout	-	-	Administrators, installers, marketing personnel, owners, visitors
		Login anther Account	-	-	Administrators, installers, marketing personnel, owners, visitors

10.3 Setting Communication Parameters

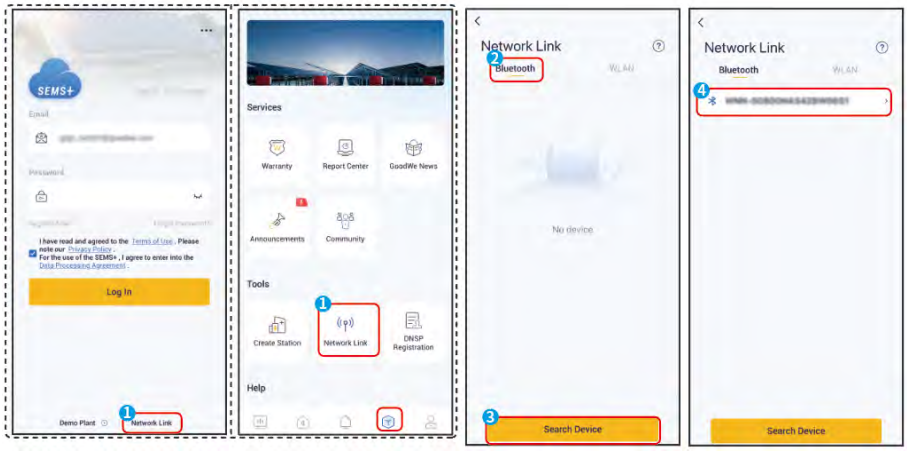
The SEMS+ app supports connecting devices via Bluetooth or WiFi and configuring device network parameters to enable remote monitoring or device management.

NOTICE
When the device model or smart communication stick type is different, the device name displayed will be different. *** is the device serial number: • Wi-Fi/LAN Kit; Wi-Fi Kit; Wi-Fi Box: Solar-WiFi*** • WiFi/LAN Kit-20: WLA-*** • WiFi Kit-20: WFA-*** • Ezlink3000: CCM-BLE***; CCM-***; *** • 4G Kit-CN-G20/4G Kit-CN-G21: GSA-***; GSB-*** • Charging pile: ***

10.3.1 Setting Communication Parameters via Bluetooth

NOTICE
• Before connecting, please confirm that: Bluetooth is enabled on your mobile phone; the device is powered on and communicating normally. • When the equipment type or smart communication stick used is different, the interface display and parameters to be set will also differ. Please refer to the actual situation.

Step 1: Click **Network Link** on the App home page, or click **Network Link** on the **Service** interface.
Step 2: Under the **Bluetooth** tab, select the device you want to connect to by its serial number.
Step 3: If prompted to log in, log in to the app according to your actual role and enter your login password to access the communication settings interface. Initial Login Password: 1234. If there is no login prompt, you can directly enter the communication settings interface.
Step 4: (Optional) Enable **Bluetooth Stays ON** according to actual needs. Otherwise, the Bluetooth signal will be turned off after this connection ends.
Step 5: Configure the **WLAN** or **LAN** network according to the actual situation, and click **Save** to complete the setup. Click **WLAN Detection** to check whether communication is normal.
Step 6: (Optional) Click **Login Password Change**, enter the new password, and click **Save** to change the login password.



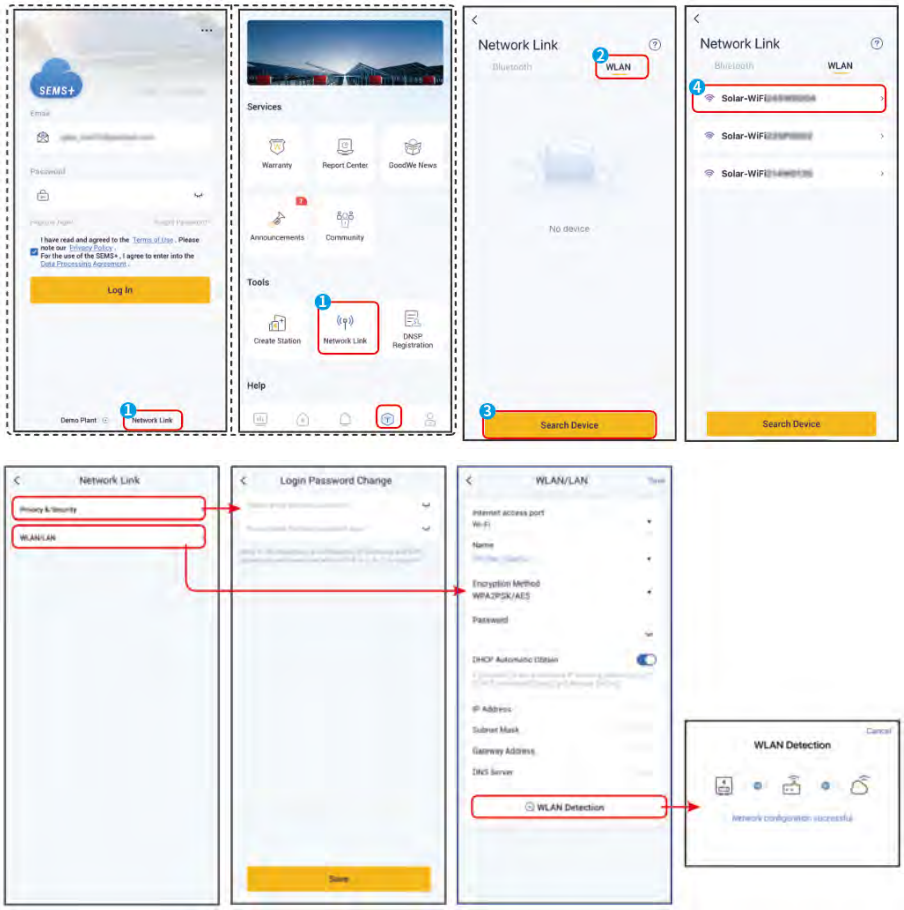
No.	Parameter	Description
Privacy&Security		
1	Bluetooth Stays ON	After enabling this feature, the device's Bluetooth will remain on and stay connected to SEMS+. Otherwise, the device's Bluetooth will turn off after 5 minutes.
WLAN/LAN		
2	WLAN	Enable or disable the WLAN function.
3	Name	Set this parameter based on the actual router network information used.
4	Encryption Method	
5	Password	
6	DHCP Automatic Obtain	When the router is using dynamic IP mode, enable this feature. When using a router in static IP mode or a switch, please disable this feature.
7	IP Address	

No.	Parameter	Description
8	Subnet Mask	When DHCP is enabled, there is no need to configure this parameter. When DHCP is turned off, please configure this parameter according to the information of the router or switch.
9	Gateway Address	
10	DNS Server	

10.3.2 Setting Communication Parameters via WiFi

NOTICE
• Before connecting, please confirm that: Wifi is enabled on your mobile phone; the device is powered on and communicating normally. • When the equipment type or smart communication stick used is different, the interface display and parameters to be set will also differ. Please refer to the actual situation.

Step 1: Open your phone's WiFi settings and connect to the inverter's WiFi signal (Solar-WiFi***). Default Connection Password: 12345678.
Step 2: Click **Network Link** on the App home page, or click **Network Link** on the **Service** interface.
Step 3: Under the **WLAN** tab, select the device you want to connect to by its serial number.
Step 4: Change the WiFi hotspot password according to your actual needs. If you change your password, you will need to open your mobile phone's WiFi settings after changing it and connect to the inverter's WiFi signal using the new password.
Step 5: Configure the **WLAN** or **LAN** network according to the actual situation, and click **Save** to complete the setup. Click **WLAN Detection** to check whether communication is normal.



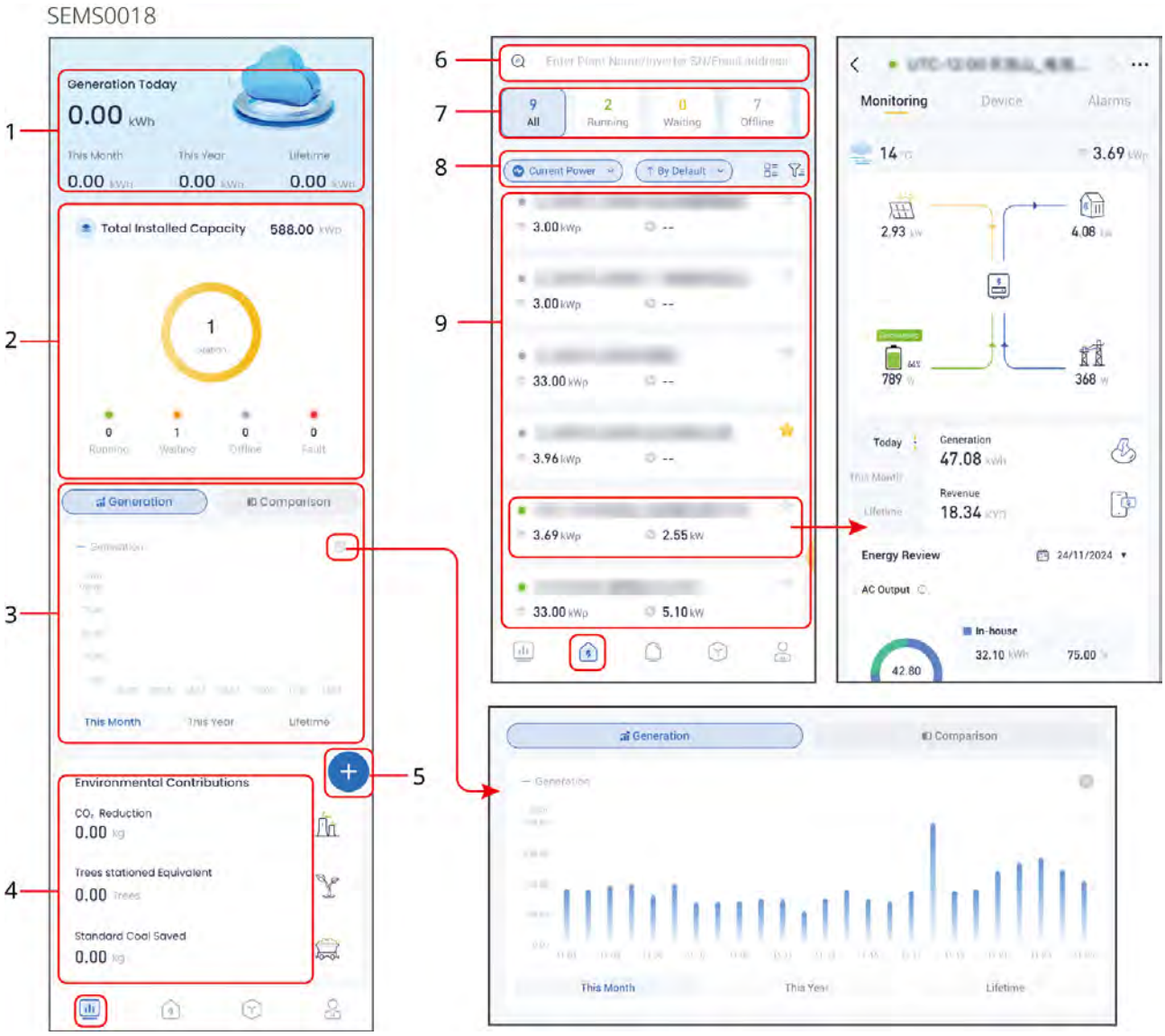
No.	Parameter	Description
Privacy&Security		
1	Login Password Change	Change the WiFi hotspot password. After making the changes, you need to reconnect to the inverter's WiFi signal using the new password in the WiFi connection settings on your phone.
WLAN/LAN		
2	Internet Access Port	Depending on the actual communication mode used, you can choose between Wi-Fi or LAN.
3	Name	Set this parameter based on the actual router network information used.
4	Encryption Method	
5	Password	
6	DHCP Automatic Obtain	When the router is using dynamic IP mode, enable this feature. When using a router in static IP mode or a switch, please disable this feature.

No.	Parameter	Description
7	IP Address	When DHCP is enabled, there is no need to configure this parameter. When DHCP is turned off, please configure this parameter according to the information of the router or switch.
8	Subnet Mask	
9	Gateway Address	
10	DNS Server	

10.4 Viewing Power Plant Information

10.4.1 View All Power Plant Overview Information

After logging into the SEMS+ App with your account password, you can view an overview of the power generation status of all power plants in your current account on the monitoring page.
Or, on the power plant page, arrange all power plant lists by different sorting and filtering conditions to view detailed information about the power plants.



No.	Description
1	Display the total power generation of all power plants, including: today's power generation, this month's power generation, this year's power generation, and total power generation. When the number of power plants is greater than or equal to 10, the power generation volume for that year is not displayed.
2	Display total installed capacity and power plant operating status. The operating status of a power station is classified as: Running, Waiting, Offline, or Faulted. The power station status is only Running when all equipment in the power station is operating normally.
3	Display statistical charts showing the power plant's electricity generation for the current month, the current year, or total electricity generation, or statistical charts comparing electricity generation with the previous year. Click to enlarge the statistical chart.

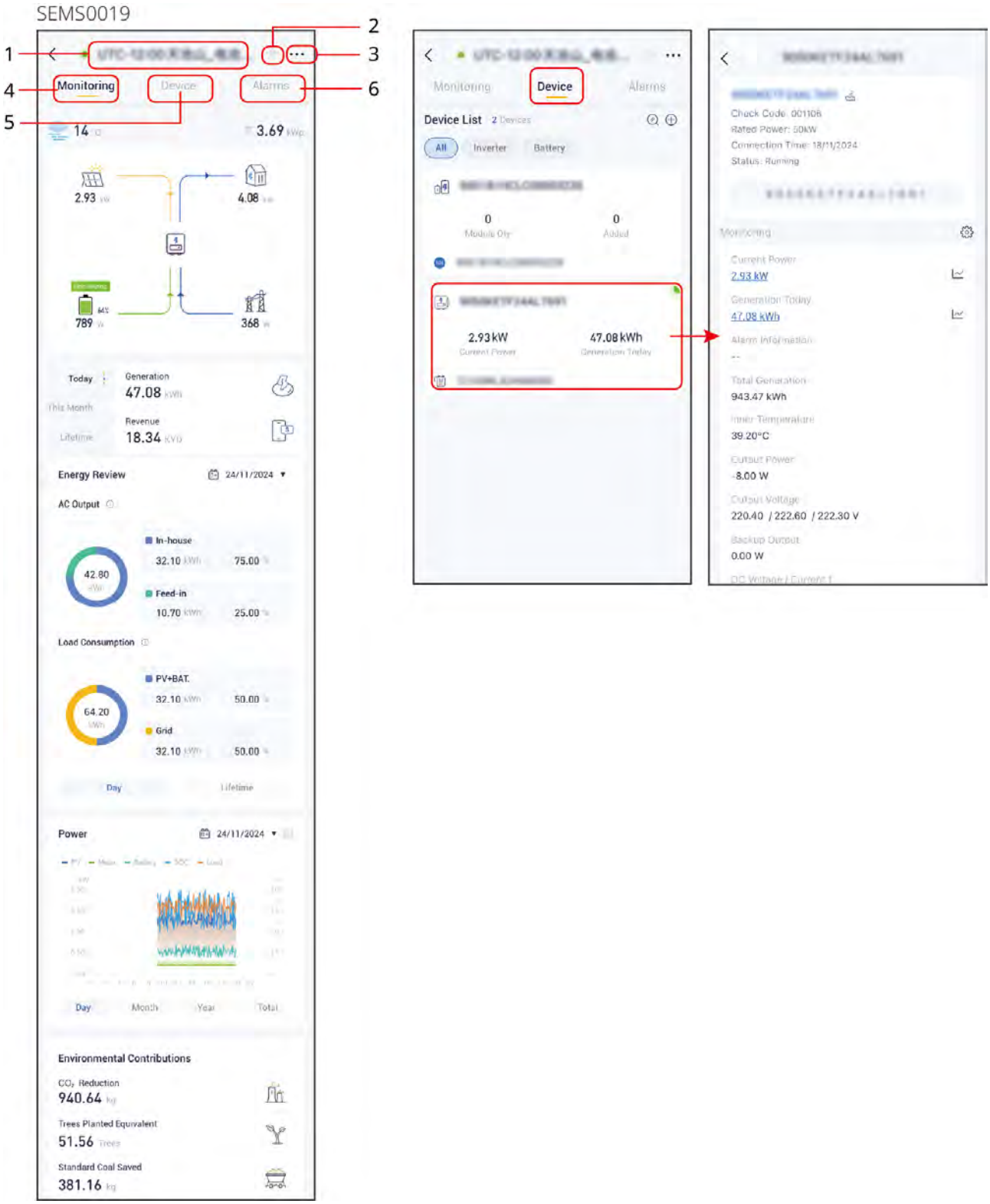
No.	Description
4	Display environmental contribution data such as **CO_2 Reduction**, **Trees Planted Equivalent**, and **Standard Coal Saved**.
5	Power Plant Creation.
6	Search for power stations. Enter the SN, power station name, or email address to quickly search for the corresponding power station.
7	Power plant operation status. Display the current power plant operating status and the number of power plants operating in each status. Click on the operating status to filter power plants with the corresponding operating status.
8	• Set up a list of power plants to display KPI indicators: Current Power, Rev. Today, Rev. Total, Gen. Today, Gen. Total • Set the sorting method for the power station list: By Default, By Capacity • Set the display mode for the power station list: Station Card, Station List • Set the selection method for the power station list: Scope, Category, Capacity
9	Power station. Click on the name of the power station to view detailed information about it. Different types of power stations display different information. Please refer to the actual situation.

10.4.2 Viewing Monopower Plant Details

Step 1: If there are multiple power stations, you can quickly search for them on the power station page by entering the equipment SN, power station name, or email address.
Step 2: Click on the power plant name to enter the power plant details interface and view detailed information.

SEMS0052

10.4.2.1 Viewing Power Plant Details (Traditional Mode)



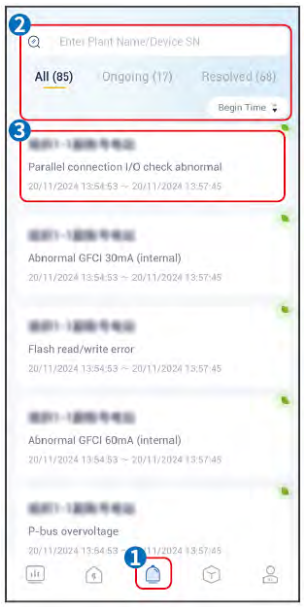
No.	Description
1	Current power plant name.

No.	Description
2	Collect Power Plant.
3	Configure power plant information. Support: Configure basic power plant information, modify user information, add power plant photos, set PV component layout, etc.
4	The chart displays current power plant operation information, such as energy flow diagrams, power generation, load power consumption, AC output, and other information.
5	• Device List. Display equipment currently used in power stations, such as inverters, batteries, data collectors, charging stations, etc. • Click on the device card to view detailed information about the device.
6	Power plant alarm information.

10.4.3 Viewing Alarm Information

10.4.3.1 Viewing Alarm Information for All Power Plants

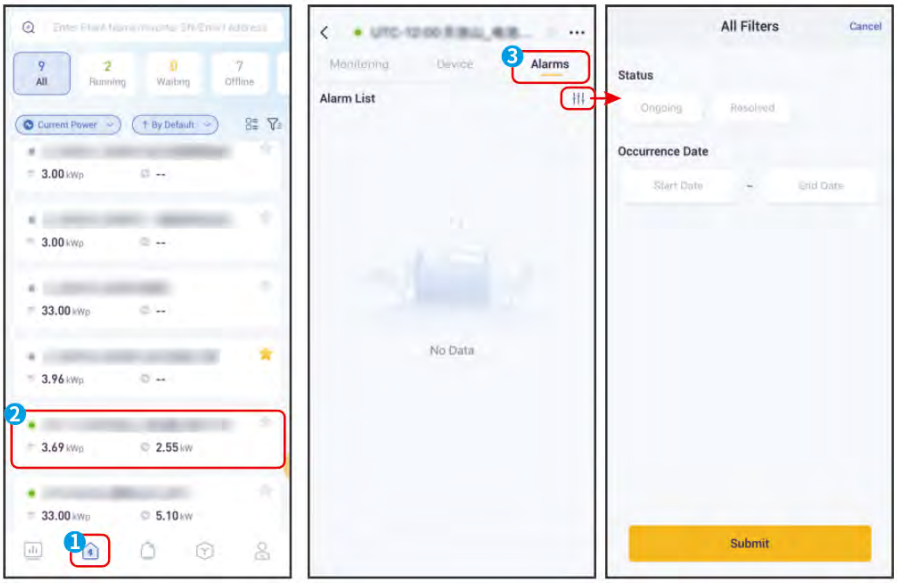
Step 1: Click the Fault tab on the power plant detailed page to enter the alarm query page.
Step 2: (Optional) Enter the power station name or equipment SN number in the search box to quickly locate the power station or equipment you want to view.
Step 3: Click on the alarm name to view detailed alarm information.



10.4.3.2 Viewing Alarm Information for the Current Power Plant (Traditional Mode)

Step 1: If there are multiple power plants, click on the power plant name on the power plant list page to enter the power plant details page.

Step 2: **Click** Alarms to go to the alarm page and check out the alarm details. Click to filter alert information according to actual needs.



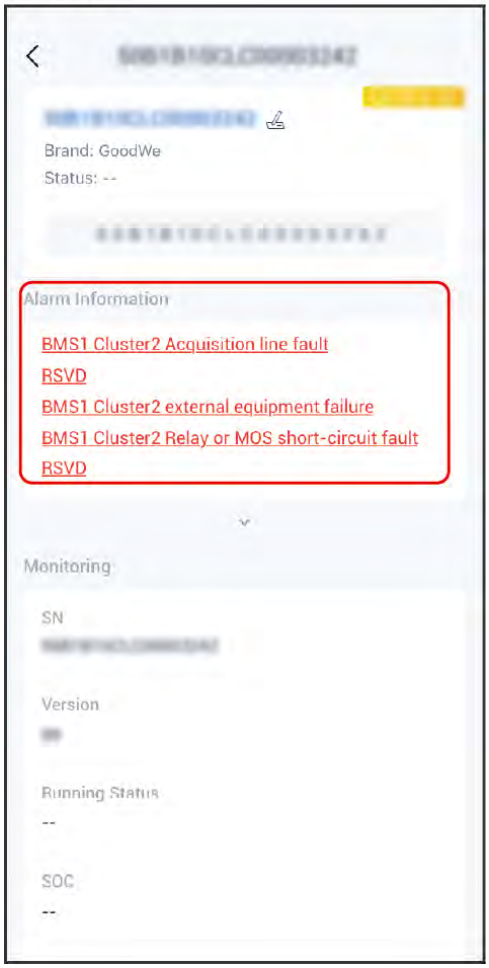
10.4.3.3 Viewing the Current Device's Alarm Information

Step 1: If there are multiple power plants, click on the power plant name on the

power plant list page to enter the power plant details page.

Step 2: Select a device from the device list to enter the device details page. If there are any alerts, you can view the 10 most recent alerts directly on the device details page.

SEMS0022



10.4.4 Viewing Power Plant Report Information

Viewing Power Plant Report

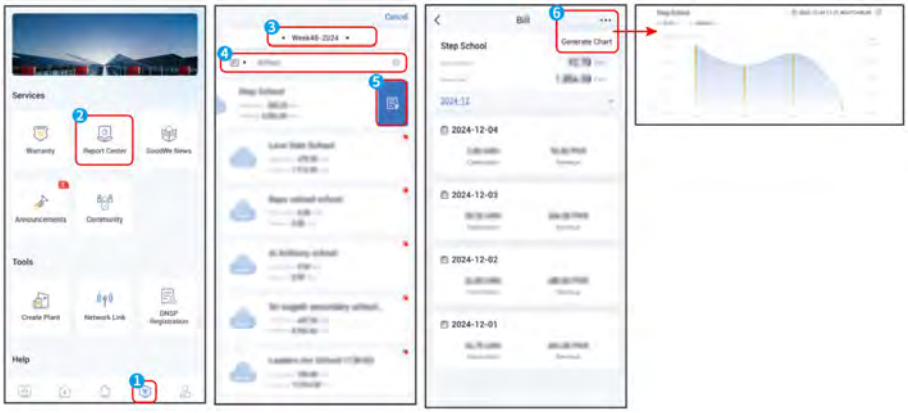
Step 1: Click **Service > Report Center** to enter the report center interface.

Step 2: Select the time period you want to query, search for the power plant you want to query, and click on the power plant name to enter the report interface. To download the report, click ••• > **Export**.

Viewing Power Plant Bills

Step 1: Click **Service > Report Center** to enter the report center interface.

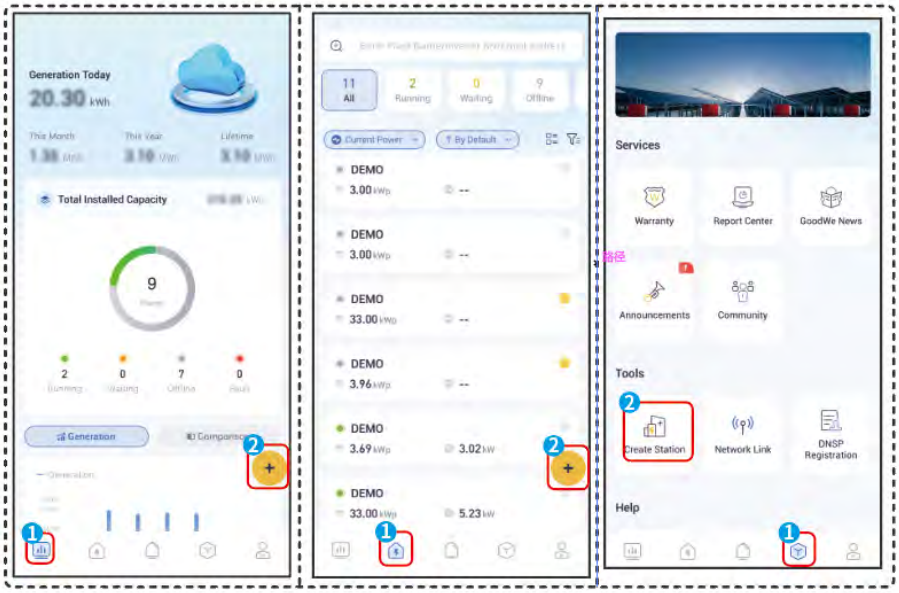
Step 2: Select the time period you want to query, search for the power station you want to query, swipe left and click to enter the Bill interface to view the bill.

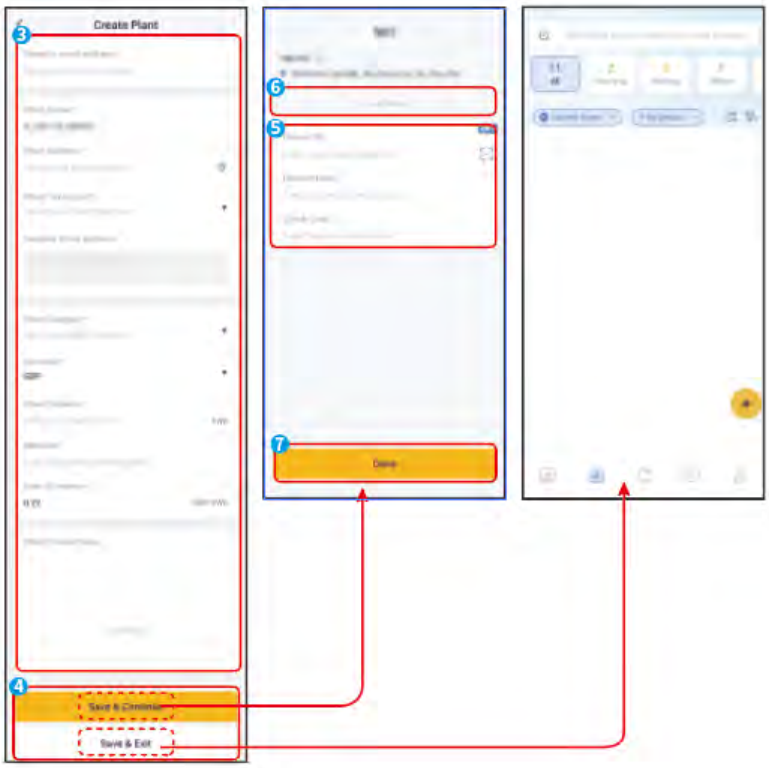


10.5 Power Plant Management

10.5.1 Power Plant Creation

Step 1: Click + on the home page or power station list page, or click **Create Station** on the account page.
Step 2: Based on the actual situation, fill in the relevant information about the power station in the **Create Station** interface.
Step 3: Click **Save & Exit** to complete the power plant creation. At this point, no equipment has been added to the power plant. Alternatively, click **Save & Continue** to enter the equipment addition interface and enter the relevant equipment information based on the actual situation. Multiple pieces of equipment can be added.



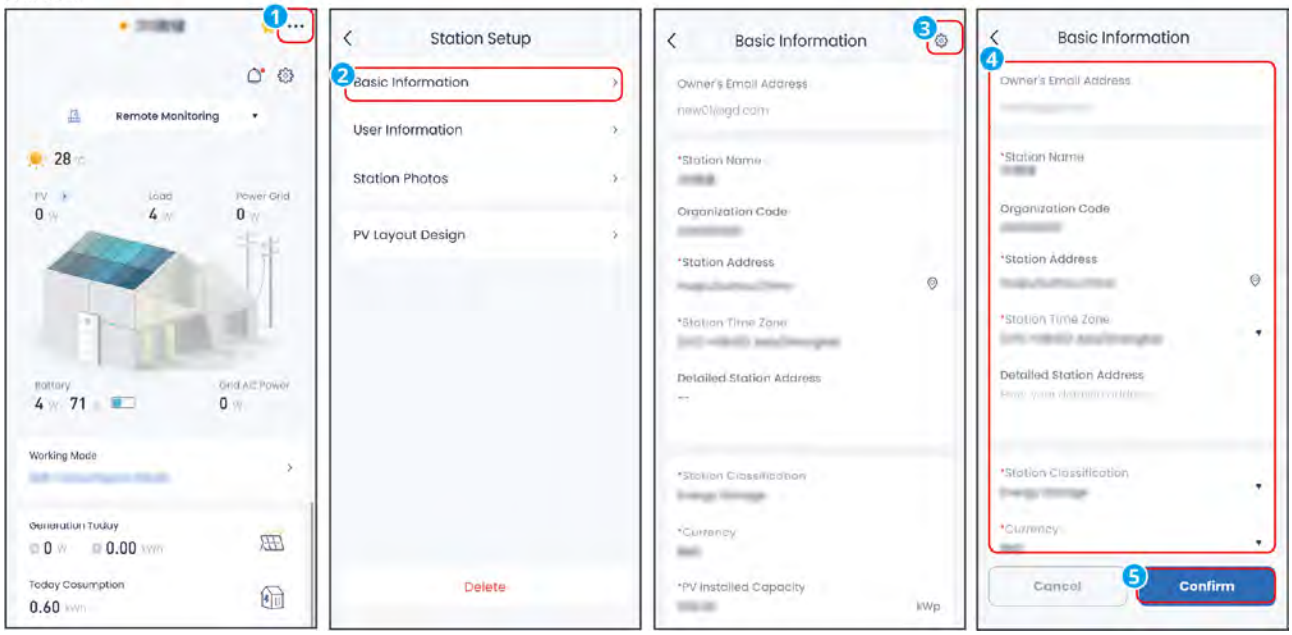


10.5.2 Configuring Power Plant Information

NOTICE
After the power station has been successfully created, you can update the power station configuration information according to actual needs. When the configuration information entered conflicts with the actual conditions of the power station, the actual conditions of the power station shall prevail. The basic information provided here is for reference only.

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: On the power plant details page, click ••• >**Basic Information** to access the information viewing interface.
Step 3: Click ⚙ to enter the information modification interface, modify the information according to your actual needs, and click **Confirm** to save the changes.

SEMS0012



10.5.3 Power Plant Visitors Management

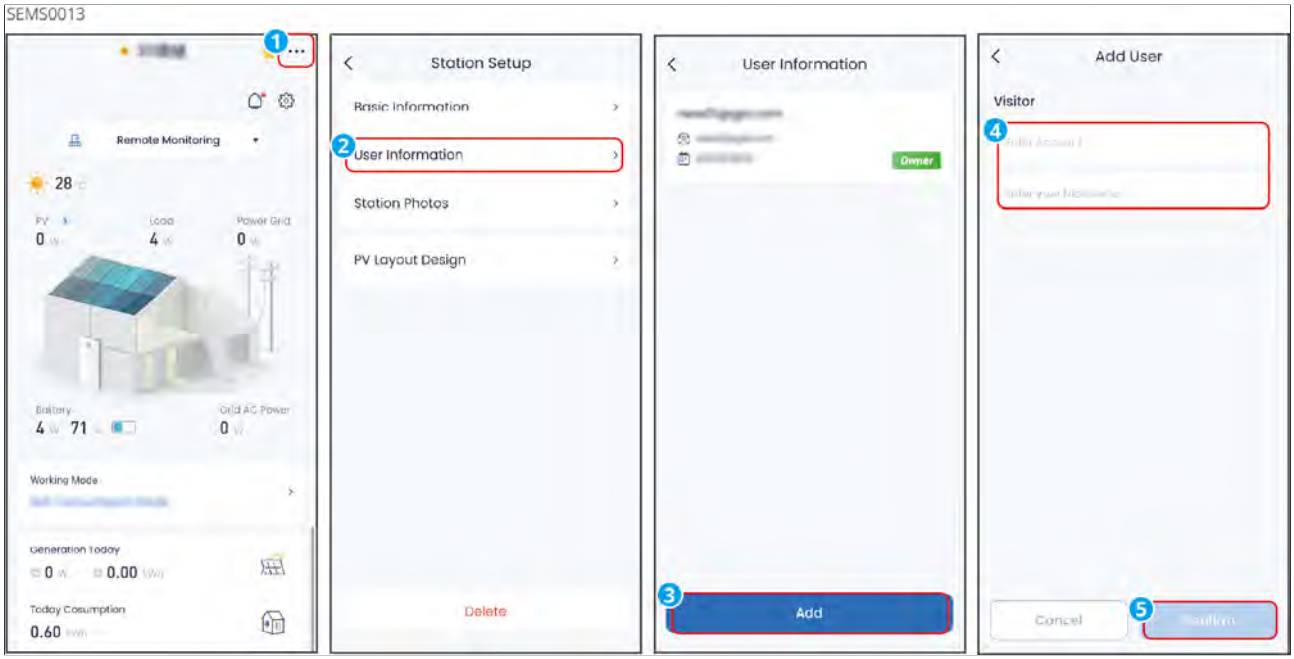
Supports adding power plant visitors to view basic power plant information. Visitors to the power station cannot view all interfaces. Please refer to the actual interface.

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.

Step 2: In the power station details interface, go to ••• >**User Information**>**Add** to enter the visitor addition interface.

Step 3: After entering the visitor information, click **Confirm** to complete the addition.

SEMS0013



To delete an added visitor, select the visitor you want to delete in the User Information interface, swipe right, and click **Delete**.

SEMS0054

10.5.4 Power Plant Photos Management

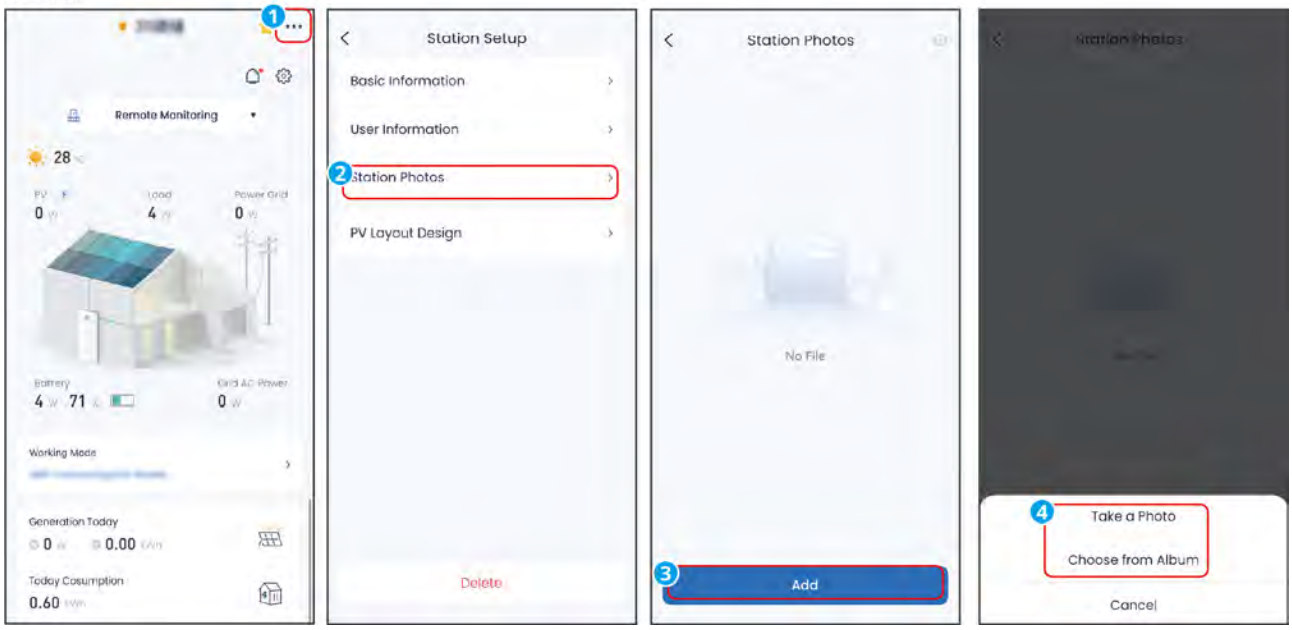
Add photos of power plants to quickly identify different power plants.

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.

Step 2: On the power station details page, click ••• >**Station Photos**>**Add** to enter the power station photo addition interface.

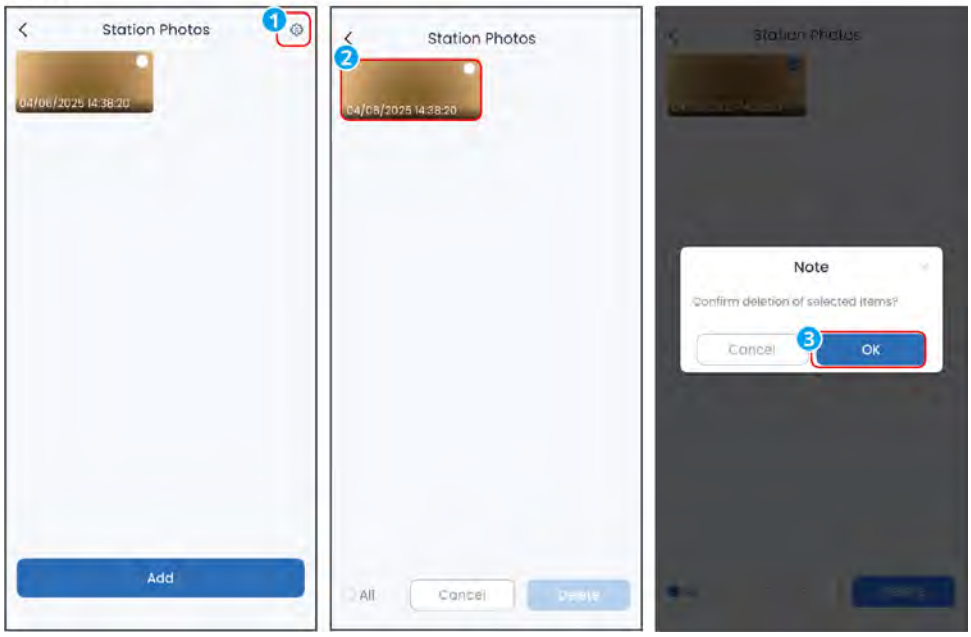
Step 3: Follow the prompts on the screen to add photos by selecting **Take a Photo** or **Choose from Album**.

SEMS0014



If you need to delete power plant photos, please refer to the following steps.

SEMS0055



10.5.5 Adjusting the Information Displayed on the Power Station Details Page

The content displayed on the power plant details page can be adjusted according to

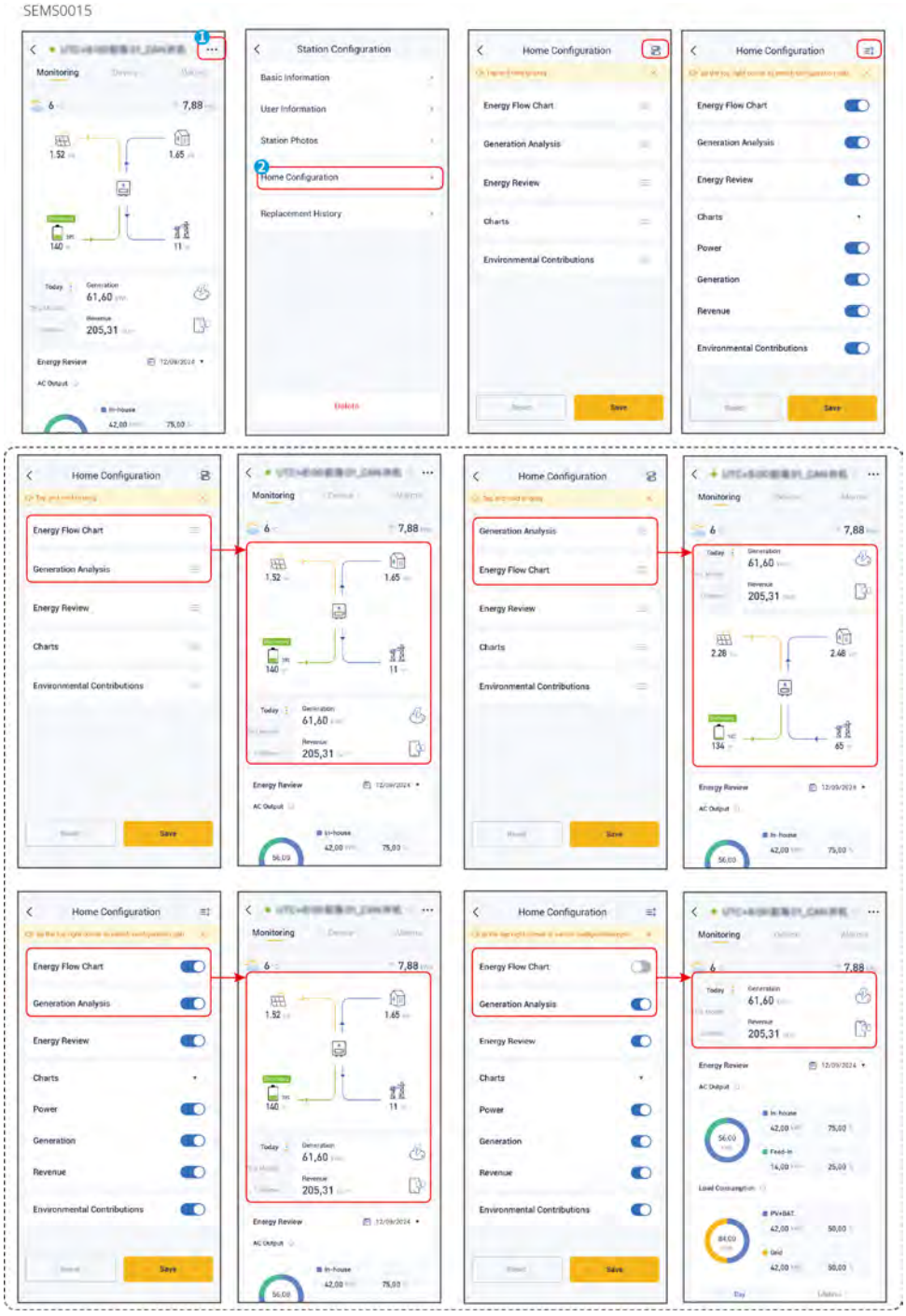
actual needs, such as displaying or hiding the Energy Flow Chart, or placing the Energy Flow Chart at the top or bottom of the interface.

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.

Step 2: Go to the power plant details page and click ••• > **Home Configuration.**

Step 3: Based on actual needs, refer to the interface prompts to select the information to be displayed, or adjust the display order of each piece of information.

SEMS0015



10.5.6 Setting PV Component Layout

Set the PV Layout Design parameters based on the actual PV module conditions. The information here is for recording PV layout only and will not change the actual PV layout.

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.

Step 2: Enter the adjustment interface via ••• > **PV Layout Design**.

Step 3: Click **Row/Column** and arrange the components in each row and column according to the actual PV component installation situation.

Step 4: Click **Array Name** to enter **the Array Settings** interface, and set the PV array name, angle, and orientation information according to the actual situation.

SEMS0056

10.5.7 Deleting Power Plant

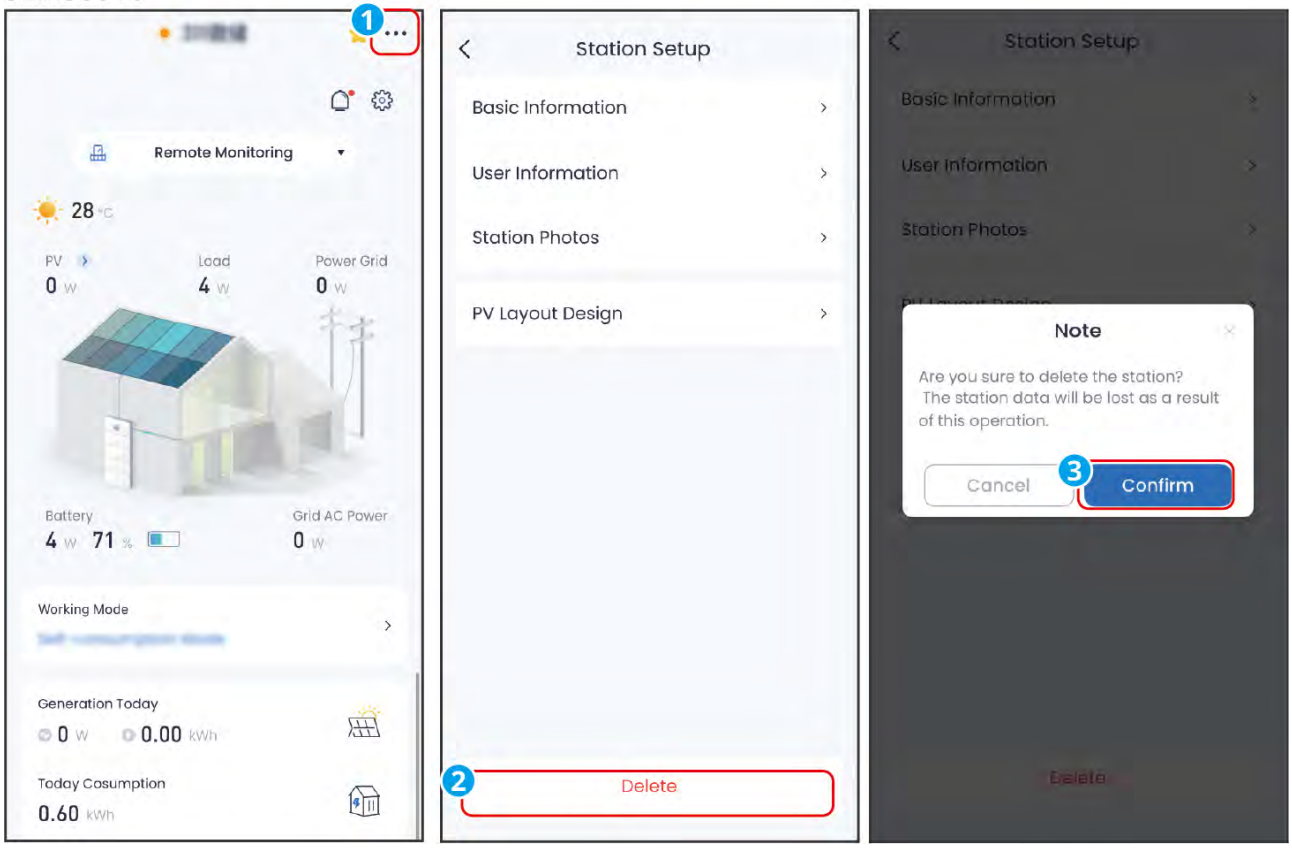
NOTICE
For power plant visitors, deleting a power plant only means unlinking this power plant from the visitor's account.

Step 1: (Optional) If there are multiple power plants, click on the power plant name to enter the power plant details page.

Step 2: Click ••• on the power plant details interface.

Step 3: Click **Delete**, then click **Confirm** to delete the current power station.

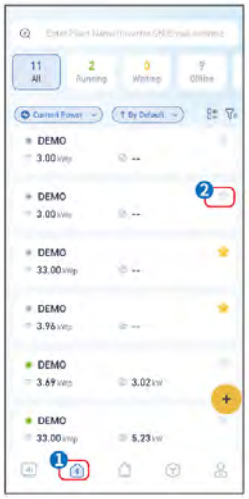
SEMS0016



10.5.8 Collect Power Plant

If there is a power plant you want to follow, click on the power plant on the right side to bookmark it. Click again to cancel the bookmark.

Click and select **Favorited** in the filter **Scope** to display all your favorite power plants.

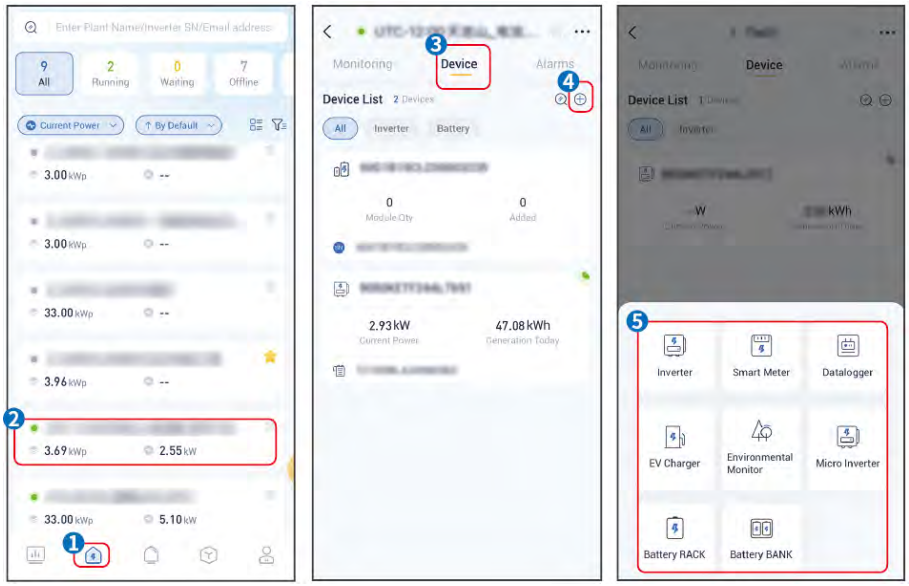


10.6 Managing the Equipment in the Power Plant

10.6.1 Additional Equipment

NOTICE
• When the type of power station varies, the type of equipment supported to be added is different, please refer to the actual interface. • When Environmental Monitor is connected to a data collector, it can be added to the station to view the data collected by Environmental Monitor.

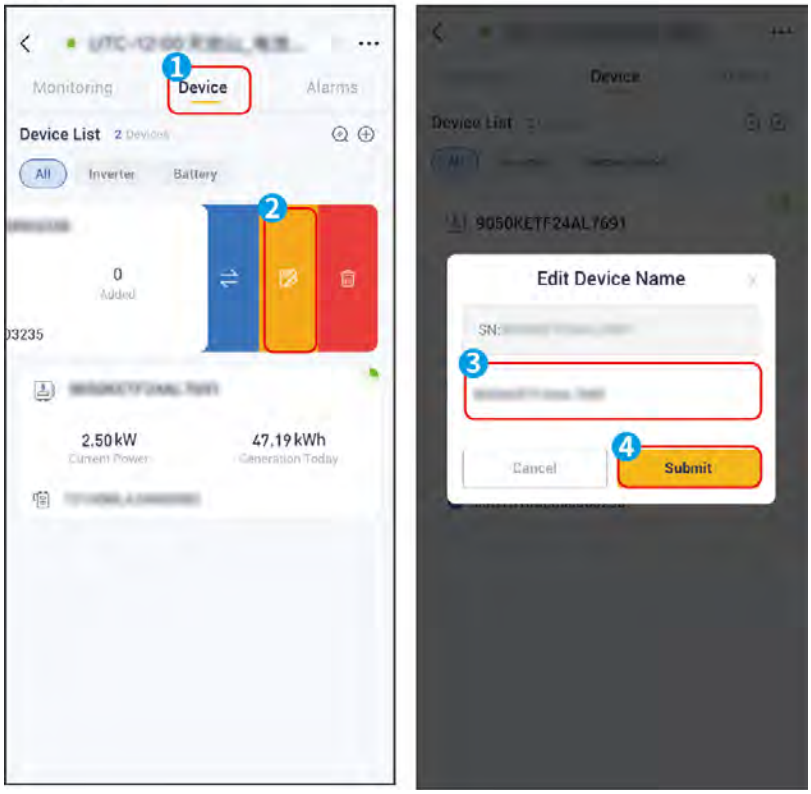
Step 1: Click the name of the plant on the plant list page to enter the plant details page.
Step 2: Click **Device** >⊕ to enter the Add Device interface.
Step 3: Select the type of device to be added according to actual needs.
Step 4: Scan for devices or manually add devices according to the interface prompts. When scanning to add, select the desired device from the scanned devices to add that device. When adding manually, add the device by scanning the device QR code or manually entering the device information. The interface for adding devices varies for different device types, so please refer to the actual situation.
Step 5: When adding devices manually, if there is a need to add more than one device, return to the Power Station Details screen and repeat steps 3 and 4.



10.6.2 Editing Device Information

Modification of equipment names in power stations is supported.
Step 1: (Optional) If there are multiple power plants, click on the power plant name to enter the power plant details page.
Step 2: On the power station details interface, click **Device** to enter the device information page. Select the device you want to edit, swipe left, and tap .
Step 3: Enter the new device name and click **Submit**.

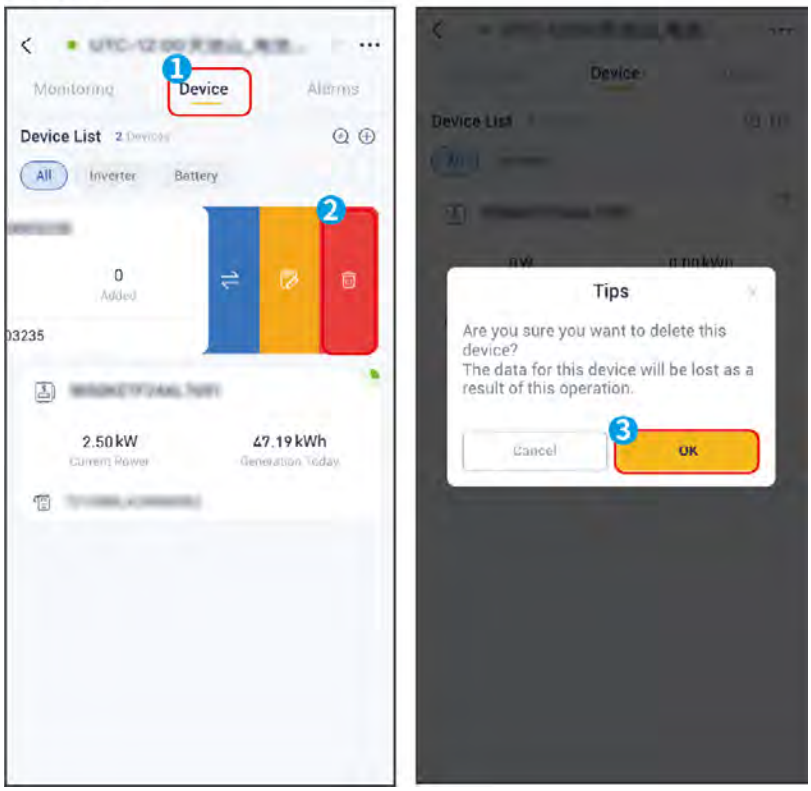
SEMS0027



10.6.3 Deleting Device

Step 1: (Optional) If there are multiple power plants, click on the power plant name to enter the power plant details page.
Step 2: On the power station details interface, click **Device** to enter the device information page. Select the device you want to alternate, swipe left, and tap .
Step 3: Read the pop-up prompt and click **OK** to delete the current device.

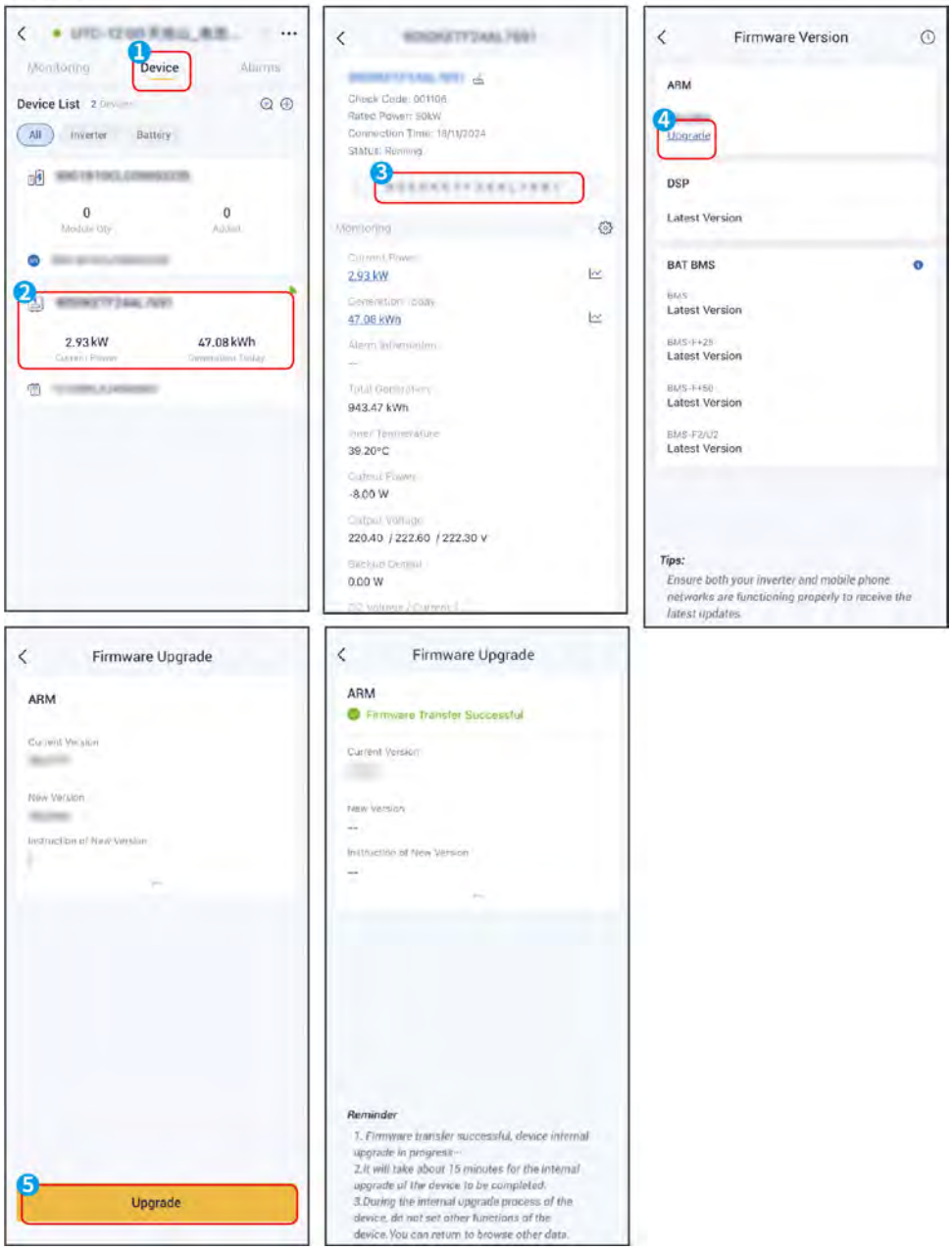
SEMS0028



10.6.4 Upgrading Device Firmware Version

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: Click **Device** to enter the device information page, and select the device for which you want to upgrade the firmware version.
Step 3: Click on the device serial number in the middle of the page to enter the **Firmware Version** page. **If there is an upgrade available, click** Upgrade and follow the instructions on the screen to upgrade your device. Click to view the firmware upgrade history.

SEMS0029



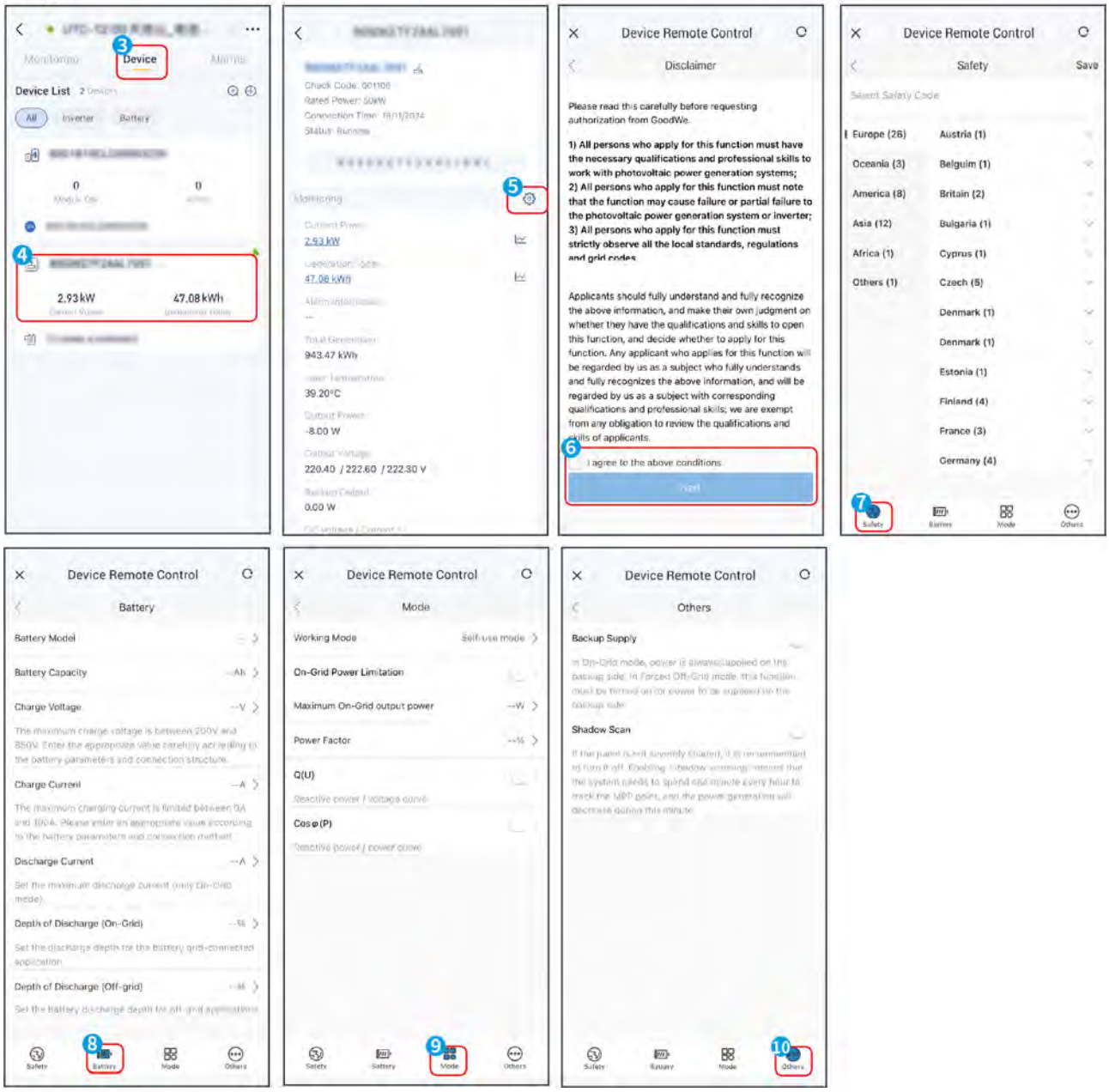
10.7 Remote Management Device

NOTICE
• After completing the creation of the power station and adding equipment to it, you can remotely set device parameters via the SEMS+ app. • Before setting parameters, please carefully read this manual and the user manual for the corresponding model of equipment to familiarize yourself with the product's functions and features. Incorrect grid parameter settings may cause devices to fail to connect to the grid or fail to connect to the grid in accordance with grid requirements when operations such as starting grid connection and stopping grid connection are issued to the devices, thereby affecting power generation. • Only for use by professionals who are familiar with local regulations and standards, electrical systems, and who have received professional training and are knowledgeable about this product. • Different account permissions have different parameters that can be set remotely. The interface is displayed based on the actual account used. Please refer to the actual interface. • Different device models have different parameter setting interfaces. Please refer to the actual device for details.

10.7.1 Setting Energy Storage Inverter Parameters

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: Click **Device** to enter the device information page, and select the device for which you want to upgrade the firmware version.
Step 3: Click, read the interface prompts, and set the inverter parameters according to actual needs.

SEMS0031



No.	Parameter	Description
1	Safety	Based on the grid standards of the country/region where the inverter is located, as well as the application scenario settings of the inverter.
Battery		
2	Battery Model	Set the battery type.
3	Depth of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.

No.	Parameter	Description
4	Depth of Discharge (Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
5	Backup SOC Holding	The battery will be charged to preset SOC protection value by utility grid or PV when the system is running on-grid, so that the battery SOC is sufficient to maintain normal working when the system is off-grid.
6	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.

No.	Parameter	Description
7	Battery Heating	This option is displayed on the interface when a battery that supports heating is connected. After the battery heating function is turned on, when the temperature is below the value that starts up the battery, PV power or electricity from the grid will be used to heat the battery. Heating Mode: • GW5.1-BAT-D-G20/GW8.3-BAT-D-G20 ◦ Low Power Mode: Maintains minimum battery power input capacity, turns on when the temperature is below -9℃, and turns off when the temperature is above or equal to -7℃. ◦ Medium Power Mode: to maintain the moderate power input capacity of the battery. It will be turned on when the temperature is less than 6℃, and turned off when it is greater than or equal to 8℃. ◦ High Power Mode: to maintain the higher power input capacity of the battery. It will be turned on when the temperature is less than 11℃, and turned off when it is greater than or equal to 13℃. • GW14.3-BAT-LV-G10 ◦ Low Power Mode: Maintains minimum battery power input capacity, turns on when the temperature is below 5℃, and turns off when the temperature is above or equal to 7℃. ◦ Medium Power Mode: to maintain the moderate power input capacity of the battery. It will be turned on when the temperature is less than 10℃, and turned off when it is greater than or equal to 12℃. ◦ High Power Mode: to maintain the higher power input capacity of the battery. It will be turned on when the temperature is less than 20℃, and turned off when it is greater than or equal to 22℃.
8	Daily Heating Period	Set the battery heating time period according to actual needs.

No.	Parameter	Description
9	Battery Wake-up	After being turned on, the battery can be awakened when it shuts down due to undervoltage protection.
10	Battery Breathing Light	• Only applicable to inverters of ESA 3-10kW series. Set the duration of the device's breathing light flashes. Support: Normally open, normally closed, 3 minutes. • The default mode is to turn on for three minutes after powering up and then automatically turn off.
Mode		

No.	Parameter	Description
11	Working Mode	Set the working mode of the inverter according to actual needs. • Self-use Mode ◦ BACK-UP Mode: Recommended for use in areas with unstable power grids. When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACKUP loads; when the grid is restored, the inverter switches to grid-tied mode. ◦ Economic Mode: It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. Based on actual needs, during off-peak hours, the battery can be set to charging mode to purchase electricity from the grid for charging; during peak hours, the battery can be set to discharge mode to supply power to the load through the battery. • Delayed charging: Suitable for areas with grid connection power output restrictions. By setting peak power limits and charging time periods, photovoltaic power generation that exceeds grid connection limits can be used to charge batteries, reducing photovoltaic waste. • Demand-based electricity fee management: Mainly applicable to scenarios where peak power consumption is limited. When the total power consumption of the load exceeds the power quota within a short period of time, battery discharge can be used to reduce the amount of power consumption exceeding the quota.
12	On-Grid Power Limitation	Enable Power Limit when power limiting is required by local grid standards and requirements.
13	Maximum On-Grid Output Power	Set the value based on the actual maximum power feed into the utility grid.

No.	Parameter	Description
14	Power Factor	Set the power factor according to actual needs.
15	Q(U)	When Q(U) curves need to be set according to the power grid standards of certain countries or regions, enable this function.
16	COS(φ)	When Cosφ curves need to be set according to the power grid standards of certain countries or regions, enable this function.
17	P(F)	When P(F) curves need to be set according to the power grid standards of certain countries or regions, enable this function.
Others		
18	Backup Supply	After enabling Backup, the battery will power the load connected to the BACK-UP port of the inverter to ensure Uninterrupted Power Supply when the power grid fails.
19	Shadow Scan	When photovoltaic panels are severely shaded, enabling the shadow scanning function can optimize the power generation efficiency of the inverter.

11 Maintenance

11.1 Power OFF the System

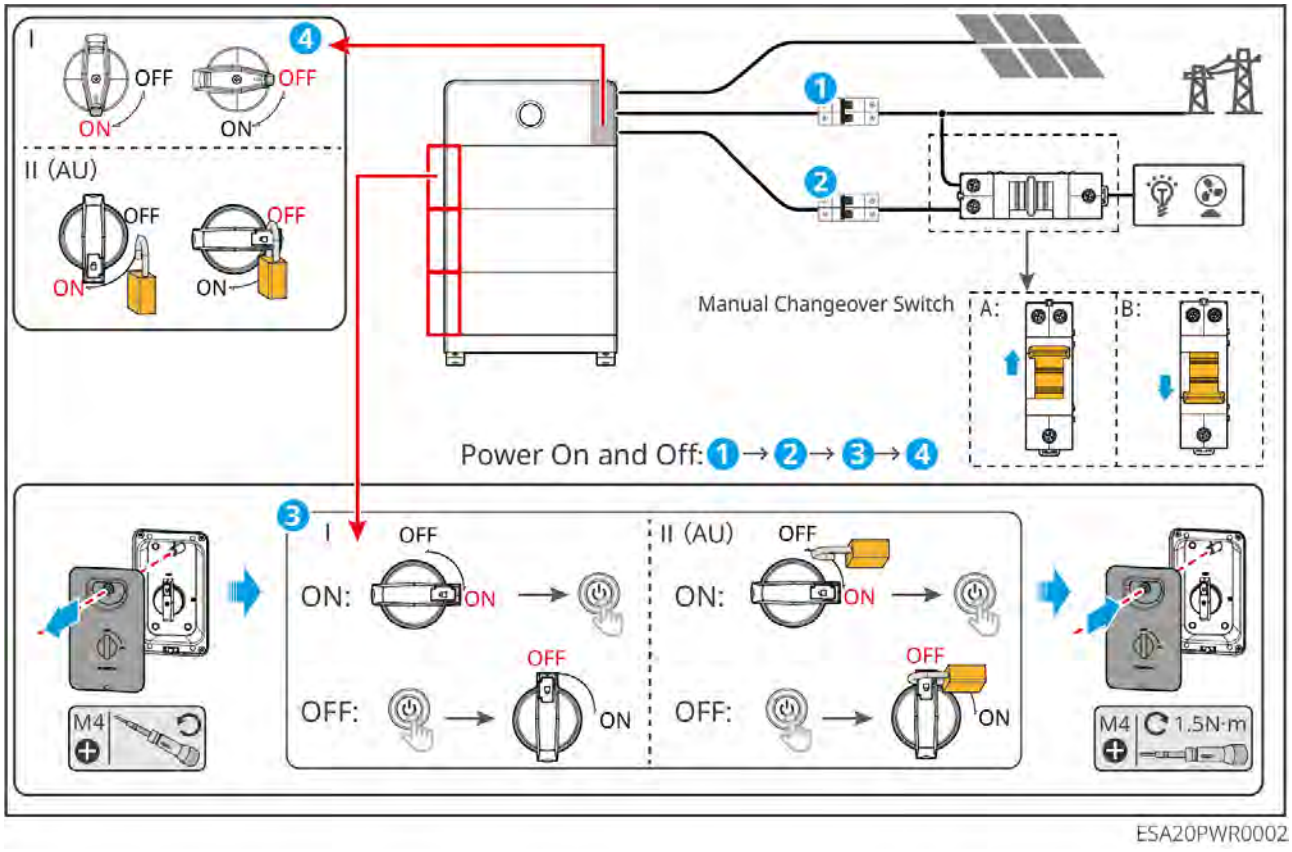
DANGER

- Power off the equipment before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
- Delayed discharge. Wait until the components are discharged after power off.
- Push the air switch to restart the battery.
- Strictly follow the power off requirements to avoid damaging the system.
- When there are multiple batteries in the system, powering off any one of the batteries can power off all the batteries.

NOTICE

To ensure effective protection, the cover of the battery system switch should remain closed. Fasten the cover with screws if the switch is not to be used for a long-term period.

Power down



1. Turn off the ON-GRID circuit breaker.
2. Turn off the BACK-UP circuit breaker.
3. Turn off the battery system switch.
4. Turn off the DC switch of the inverter.
5. (Optional) Set the manual switch to position A.

11.2 Removing the Equipment

DANGER

- Make sure that the equipment is powered off.
- Wear proper PPE during operations.
- Please use standard disassembly tools when removing wiring terminals to avoid damaging the terminals or equipment.
- Unless otherwise specified, the dismantling process of the equipment is in reverse order to the installation process, and it will not be further elaborated in this document.

1. Power off the System.
2. Label the cables connected in the system with tags indicating the cable type.
3. Disconnect the connecting cables of the inverter, battery, and smart meter in the system, such as DC cables, AC cables, communication cables, and PE cables.
4. Remove equipment such as the smart dongle, inverter, battery, and smart meter.
5. Properly store the equipment and ensure that the storage conditions meet the requirements if it needs to be put into use later.

11.3 Disposing of the Equipment

If the equipment cannot work anymore, dispose of it according to the local disposal requirements for electrical equipment waste. The equipment cannot be disposed of together with household waste.

11.4 Routine Maintenance

⚠WARNING

- Contact after-sales service for help if you find any problems that may influence the battery or the hybrid inverter. Disassemble without permission is strictly forbidden.
- Contact after-sales service for help if the copper conductor is exposed. Do not touch or disassemble privately because high voltage danger exists.
- In case of other emergencies, contact the after-sales service as soon as possible. Operate following the instructions or wait for the after-sales service personnel.

Maintaining Item	Maintaining Method	Maintaining Period	Maintaining Purpose
System Cleaning	Check the heat sink, air intake, and air outlet for foreign matter or dust. Check whether the installation space meets requirements and whether there is any debris around the device.	Once 6 months	Prevent heat dissipation failures.
System installation	Check whether the equipment are installed securely and whether the screws are installed tightly. Check whether the equipment is damaged or deformed.	Once 6-12 months	Ensure that the equipment is installed securely.
Electrical connection	Check whether the cables are securely connected. Check whether the cables are broken or whether there is any exposed copper core.	Once 6-12 months	Confirm the reliability of electrical connections.
Sealing	Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is not sealed or too big.	Once a year	Confirm that the machine seal and waterproof performance are intact.
Battery maintenance	If the battery is not used for a long time or is not fully charged, it is recommended to charge the battery regularly.	Once/15 days	Protect the battery's lifespan.

11.5 Fault

11.5.1 Viewing Fault/Alarms Information

All fault and alarm details for the energy storage system are displayed in the **[SolarGo App]**, **[SEMS Portal App]**, and **[SEMS+ APP]**. If your product malfunctions and you do not see the relevant fault information in the **[SolarGo App]**, **[SEMS Portal App]**, and **[SEMS+ APP]**, please contact the after-sales service center.

- **Method 1: SolarGo App**

View energy storage system alarm information through **Home**>**Parameters**>**Alarms**.

- **Method 2: SEMS Portal App**

1. Open the SEMS Portal App and log in with any account.
2. All power station fault information can be viewed through the **Power Plant** >**Alarm.**
3. Click on the specific fault name to view detailed information about the fault: [time of occurrence], [possible cause], and [solution].

- **Method 3: SEMS+ APP**

1. Open the SEMS+ App and log in with any account.
2. All power station fault information can be viewed through the **Power Plant** >**Alarm.**
3. Click on the specific fault name to view detailed information about the fault: [time of occurrence], [possible cause], and [solution].

11.5.2 Fault Information and Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.
Collect the information below before contacting the after-sales service, so that the problems can be solved quickly.

1. Product information like serial number, software version, installation date, fault time, fault frequency, etc.
2. Installation environment, including weather conditions, whether the PV modules are sheltered or shadowed, etc. It is recommended to provide some photos and videos to assist in analyzing the problem.
3. Utility grid situation.

If unlisted problems occur in the system, or if following the instructions does not stop the problem or abnormality, stop operating the system immediately and contact your dealer immediately.

No.	Fault	Solutions/measures to address the issue
1	Unable to search for the wireless signal of the smart dongle.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Please ensure that the SolarGo app has been updated to the latest version. 3. Please ensure that the smart dongle is powered on properly, and the blue indicator light is blinking or steady on. 4. Ensure that the smart device is within the communication range of the smart dongle. 5. Refresh the device list in the app. 6. Restart the inverter.
2	Unable to connect to the wireless signal of the smart dongle.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Restart the inverter or smart dongle, and try to reconnect to the wireless signal of the smart dongle again. 3. Ensure successful pairing of Bluetooth.
3	Cannot find router SSID.	1. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal. 2. Reduce the number of devices connected to router.
4	After completing all configurations, the Smart Dongle fails connecting to the router.	1. Restart the inverter. 2. Check if the SSID, encryption method and password on WiFi configuration page are the same with that of Router. 3. Restart the router. 4. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal.

No.	Fault	Solutions/measures to address the issue
5	After completing all configurations, the Smart Dongle fails connecting to the router.	Restart the router and the inverter.

11.5.2.1 Inverter Troubleshooting

No.	Fault	Cause	Troubleshooting Suggestions:
1	Grid Power Outage	1. Utility grid power fails. 2. The AC circuit or the AC breaker is disconnected.	1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on.

No.	Fault	Cause	Troubleshooting Suggestions:
2	Grid Overvoltage	The grid voltage is higher than the permissible range or the high voltage duration exceeds the high voltage ride-through setting.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the overvoltage protection threshold, HVRT or disable the overvoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

No.	Fault	Cause	Troubleshooting Suggestions:
3	Grid Undervoltage	The grid voltage is lower than the permissible range, or the duration of low voltage exceeds the requirement of LVRT.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the undervoltage protection threshold, LVRT or disable the undervoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

No.	Fault	Cause	Troubleshooting Suggestions:
4	Grid Overvoltage Protection	The grid voltage is detected to be abnormal or ultrahigh.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the undervoltage protection threshold, LVRT or disable the undervoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

No.	Fault	Cause	Troubleshooting Suggestions:
5	Grid 10min Overvoltage Protection	The moving average of grid voltage in 10min exceeds the range of safety requirements.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. Check if the grid voltage is running at a high voltage for a long time. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • If the grid voltage is within the allowable range, please modify the Grid 10min Overvoltage protection value with the consent of the local power operator.

No.	Fault	Cause	Troubleshooting Suggestions:
6	Grid overfrequency protection	Utility grid exception. The actual grid frequency exceeds the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Modify the grid overfrequency protection threshold after obtaining the consent of the local power company if the grid frequency is within the permissible range.

No.	Fault	Cause	Troubleshooting Suggestions:
7	Grid underfrequency protection	Utility grid exception. The actual grid frequency is lower than the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. Modify the grid overfrequency protection threshold after obtaining the consent of the local power company if the grid frequency is within the permissible range.

No.	Fault	Cause	Troubleshooting Suggestions:
8	Grid Frequency Unstable	Utility grid exception. The actual grid frequency change rate does not meet the requirement of the local grid standard	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.

No.	Fault	Cause	Troubleshooting Suggestions:
9	Grid Phase Unstable	Utility grid exception. Grid voltage phase change rates do not meet local grid standards.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.

No.	Fault	Cause	Troubleshooting Suggestions:
10	Anti-islanding Protection	The utility grid is disconnected. The utility grid is disconnected according to the safety regulations, but the grid voltage is maintained due to the loads.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.
11	LVRT Undervoltage	Utility grid exception. The duration of the grid voltage abnormality exceeds the time specified for high and low penetration.	

No.	Fault	Cause	Troubleshooting Suggestions:
12	HVRT Overvoltage	Utility grid exception. The duration of the grid voltage abnormality exceeds the time specified for high and low penetration.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the voltage and frequency of the power grid are within the permissible range and stable. If no, contact the local power operator; If yes, please contact the local service center.
13	Grid Waveform Abnormal	Utility grid exception. Abnormal grid voltage detection triggers a fault.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check whether the voltage and frequency of the power grid are within the permissible range and stable, if not, please contact your local power operator; if yes, please contact your dealer or after-sales service center.
14	Grid Phase Loss Grid Phase Loss	Utility grid exception. There is a single phase drop in the grid voltage.	
15	Grid Voltage Imbalance	Excessive differences in grid phase voltages.	

No.	Fault	Cause	Troubleshooting Suggestions:
16	Grid Phase Sequence Abnormal	Abnormal wiring of inverter and grid: wiring out of sequence	1. Check whether the wiring of Inverter and Utility grid is in positive sequence. After the wiring is corrected (e.g., by swapping any two phase wires), the fault will automatically disappear. 2. If the wiring is correct and fault persists, please contact the dealer or GoodWe Customer Service Center.
17	Grid Rapid Shutdown Protection	Quickly shut down the output upon detecting the grid disconnected operating condition..	1. The fault automatically disappears after the grid power supply is restored.
18	Neutral Line Loss (Split Grid)	Phase separation Utility grid neutral line loss	1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on.
19	EMS/Forced Off-Grid	EMS Issue a forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
20	Passive Anti-islanding Protection	-	-
21	Grid Type Abnormal	Actual grid type (two-phase or split-phase) and safety regulations settings do not match.	Switch to the corresponding safety regulations according to the actual power grid type.

No.	Fault	Cause	Troubleshooting Suggestions:
22	GFCI Protection (30mA)	The input insulation impedance becomes low when the inverter is working.	1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
23	GFCI Protection (60mA)	The input insulation impedance becomes low when the inverter is working.	1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
24	GFCI Protection (150mA)	The input insulation impedance becomes low when the inverter is working.	1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.

No.	Fault	Cause	Troubleshooting Suggestions:
25	GFCI Protection (300mA)	The input insulation impedance becomes low when the inverter is working.	1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
26	DCI Protection Level 1	The DC component of the output current exceeds the safety range or default range.	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
27	DCI Protection Level 2	The DC component of the output current exceeds the safety range or default range.	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions:
28	Low Insulation Resistance	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor. 3. The battery port circuit has low insulation resistance to ground.	1. Check the impedance of the photovoltaic string/battery port to the protective ground. A resistance value greater than 50 kΩ is normal. If the resistance value is less than 50 kΩ, please troubleshoot the short circuit point and make corrections. 2. Check whether the PE cable is connected correctly. 3. If you confirm that the impedance is indeed lower than the default value in rainy weather conditions, please reset the inverter's “insulation impedance protection point” via the SolarGo APP. Inverters for the Australian and New Zealand markets can also be alerted in the following ways in the event of insulation impedance failure: 1. The inverter is equipped with the buzzer: the buzzer sounds continuously for 1 minute in case of failure; if the fault is not resolved, the buzzer sounds every 30 minutes. 2. Add the inverter to the

No.	Fault	Cause	Troubleshooting Suggestions:
			monitoring platform, and set the alarm reminder, the alarm information can be sent to the customer by emails.
29	Grounding Abnormal	1. The PE cable of the inverter is not connected. 2. When the output of PV String is grounded, the output side of Inverter is not connected to an isolation transformer.	1. Please confirm if the PE cable of the inverter is properly connected. 2. In the scenario where the output of PV String is grounded, please confirm whether an isolation transformer is connected on the output side of Inverter.
30	L-PE Short Circuit	Output phase line to PE low impedance or short circuit	Detect output phase line to PE impedance, identify locations with low impedance and repair them.
31	DCV Protection Level 1	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions:
32	DCV Protection Level 2	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
33	Hard Export Limit Protection	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
34	Internal Comm Loss	Reference specific subcode reasons	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
35	Multiple GFCI Failures	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery	1. Check if the PV String to ground impedance is too low.
36	Multiple AFCI Failures	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
37	External Comm Loss	Inverter external device communication loss, may be peripheral power supply problems, communication protocol mismatch, not configure the appropriate peripheral, etc..	Judgment is based on the actual model and the detection enable bit, some models do not support the peripheral will not be detected.
38	Back-up Output Overload	1. Prevent the Inverter from continuous overload output.	1. Disconnect some off-grid loads to reduce the off-grid output Power of the Inverter.

No.	Fault	Cause	Troubleshooting Suggestions:
39	Back-up Output Overvoltage	2. Prevent damage to the load caused by Inverter output overvoltage.	1. If it occurs occasionally, it may be caused by load switching and does not require manual intervention. 2. If the problem occurs frequently, contact the dealer or the after-sales service.
40	On-grid PWM Sync Fault On-grid PWM Sync Fault	Abnormal occurrence in carrier synchronization on-grid	1. Check if the synchronization line connection is normal. 2. Check whether the master-slave settings are normal. 3. Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
41	External Box Failure	Excessive waiting time for Box cut relay when switching on-grid to off-grid	1. Check whether the Box is working properly; 2. Check whether the Box communication wiring is correct;

No.	Fault	Cause	Troubleshooting Suggestions:
42	Generator Failure	1. This fault will always be displayed when the generator is not connected. 2. During generator operation, failure to meet generator safety regulations will trigger this fault.	1. Ignore the fault when the generator is not connected. 2. The occurrence of fault in the generator under fault conditions is normal. After the generator recovers, wait for a period of time, and the fault will automatically clear. 3. The fault will not affect the normal operation of the off-grid mode. 4. The generator and Utility grid are connected simultaneously and meet the safety requirements, with utility grid taking priority for on-grid, operating in the Utility grid on-grid state.
43	External STS Failure	Inverter and STS connection cable abnormality	Check that the harness connection wire sequence between the inverter and STS corresponds in one-to-one sequence.
44	CT Loss	CT connecting wire disconnection (required by Japanese safety regulations)	1. Check whether the CT wiring is correct;

No.	Fault	Cause	Troubleshooting Suggestions:
45	Export Limit Protection	1. Inverter fault reporting and grid disconnection 2. Meter communication instability 3. Reverse flow conditions occur	1. Check if there are any other error messages in Inverter. If so, perform targeted troubleshooting. 2. Check if meter connection is normal. 3. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
46	Bypass Over Load	-	-
47	Black Start Failure	-	-
48	Parallel I/O Check Abnormal	Parallel communication cable is not securely connected or parallel operation IO Chip damage	Check whether the parallel communication cable is firmly connected, and then check whether the IO chip is damaged, if so, replace the IO chip.
49	Parallel CAN Comm Abnormal	Parallel communication cable is not securely connected or some units are not online.	Check whether all machines are power on and whether the parallel communication cables are securely connected.
50	Parallel Grid Line Reversed /Paralell Grid Line Reversed	Some machines have grid wires reversed from others.	Rewire the grid.
51	Parallel Back-up Line Reversed	Some machines have backup cables reversed.	Reconnect the backup cable.

No.	Fault	Cause	Troubleshooting Suggestions:
52	Inverter Soft Start Failure	Inverter soft start failure during off-grid cold start	Check machine inverter module for damage
53	Off grid AC Ins Volt High	-	-
54	AC HCT Check Abnormal	The sampling of the AC HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
55	AC HCT Failure	The sampling of HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
56	GFCI HCT Check Abnormal	The sampling of the GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
57	GFCI HCT Failure	GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
58	Relay Check Abnormal	Relay abnormal, reasons are as follows: 1. Relay abnormality (relay short circuit) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
59	Relay Failure	1. Relay abnormality (relay short circuit) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
60	AFCI Failure (String 17~32)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
61	AFCI Failure (String 33~48)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
62	Flash R/W Abnormal	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or the after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions:
63	AFCI Failure (String 1~16)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
64	AFCI Check Failure	The arc-pulling module does not detect an arc-pulling fault during the arc-pulling self-test.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
65	AC Terminal Overtemperature	AC terminal temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	

No.	Fault	Cause	Troubleshooting Suggestions:
66	Cabinet Overtemperature	Cavity temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	1. Check whether the ventilation of the inverter installation location is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If the ventilation is poor or the ambient temperature is too high, please improve the ventilation and heat dissipation conditions. 3. Contact the dealer or after-sales service if both the ventilation and the ambient temperature are normal.
67	Inv Module Overtemperature	Inverter module temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	

No.	Fault	Cause	Troubleshooting Suggestions:
68	Boost Module Overtemperature	Boost module temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	
69	AC Capacitor Overtemperature	Output filter capacitor temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	

No.	Fault	Cause	Troubleshooting Suggestions:
70	Relay Failure 2	Relay abnormal, reasons are as follows: 1. Relay abnormality (relay short circuit) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
71	PV IGBT Short Circuit	Causes are possibly as follows: 1. IGBT short circuit 2. The inverter sampling circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
72	PV IGBT Open Circuit	1. A software problem caused the wave not to be sent: 2. The drive circuit is abnormal: 3. IGBT open circuit	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
73	NTC Abnormal	Abnormal NTC temperature sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
74	PWM Abnormal	Abnormal waveform appears in PWM	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
75	CPU Interrupt Abnormal	CPU Interruption anomaly occurred	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
76	Microelectronic Failure	Functional safety detects an anomaly.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
77	PV HCT Failure	Abnormal boost current sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
78	1.5V Ref Abnormal	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
79	0.3V Ref Abnormal	The reference circuit is abnormal.	
80	CPLD Version Error	CPLD version identification error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
81	CPLD Comm Failure	CPLD and DSP communication content error or timeout	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
82	Model Type Error	Troubleshooting about model recognition error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
83	SVG Precharge Failure	SVG Precharge hardware failure	Contact the dealer or the after-sales service.
84	SVG Mode PID Prevention Failure	PID prevent hardware anomaly	Contact the dealer or the after-sales service.
85	DSP Version Error	DSP version identification error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
86	BUS Overvoltage		Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
87	P-BUS Overvoltage		
88	N-BUS Overvoltage		
89	BUS Overvoltage (Slave CPU 1) BUS Overvoltage(Slave CPU 1)		
90	P-BUS Overvoltage (Slave CPU 1)		

No.	Fault	Cause	Troubleshooting Suggestions:
91	N-BUS Overvoltage (Slave CPU 1)	BUS overvoltage. Causes are possibly as follows: 1. The PV voltage is too high. 2. The sampling of the inverter BUS voltage is abnormal. 3. The isolation of the transformer of the inverter is poor, so two inverters influence each other when connected to the grid. One of the inverters reports DC Overvoltage.	
92	BUS Overvoltage (Slave CPU 2)		
93	P-BUS Overvoltage (Slave CPU 2)		
94	N-BUS Overvoltage (Slave CPU 2)		
95	P-BUS Overvoltage(CPLD)		
96	N-BUS Overvoltage(CPLD)		
97	MOS Continuous Overvoltage	1. Software issue causes the inverter drive to shut down earlier than the flyback drive. 2. Inverter drive circuit abnormality causes failure to turn on. 3. The PV voltage is too high. 4. Mos sampling anomaly.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
98	Bus Short Circuit	1. The hardware is damaged.	If the inverter continues to be off-grid after a BUS short-circuit fault occurs, please contact your dealer or after-sales service center.
99	Bus Sample Abnormal	1. Bus voltage sampling hardware failure.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
100	DC Sample Abnormal	1. Bus voltage sampling hardware failure. 2. Battery voltage sampling hardware failure.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
101	PV Input Overvoltage	PV input voltage is too high. Causes are possibly as follows: Incorrect photovoltaic array configuration, with too many PV Battery panels connected in series in the string, causing the string's open-circuit voltage to exceed the maximum operating voltage of the Inverter.	Check the serial connection of the PV array. Make sure that the open circuit voltage of the PV string is not higher than the maximum operating voltage of the inverter. The inverter alarm disappears automatically when the PV array is configured correctly.
102	PV Continuous Hardware Overcurrent	1. The module configuration is not proper. 2. The hardware is damaged.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
103	PV Continuous Software Overcurrent	1. The module configuration is not proper. 2. The hardware is damaged.	
104	FlyCap Software Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high. 2. The sampling of the inverter FlyCap voltage is abnormal.	

No.	Fault	Cause	Troubleshooting Suggestions:
105	FlyCap Hardware Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high. 2. The sampling of the inverter FlyCap voltage is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
106	FlyCap Undervoltage	FlyCap undervoltage. Causes are possibly as follows: 1. PV Energy deficit; 2. The sampling of the inverter FlyCap voltage is abnormal.	
107	FlyCap Precharge Failure	FlyCap pre-charge failure. Causes are possibly as follows: 1. PV Energy deficit; 2. The sampling of the inverter FlyCap voltage is abnormal.	
108	FlyCap Precharge Abnormal	1. Unreasonable control loop parameters 2. The hardware is damaged.	
109	PV String Overcurrent (String 1~16)		

No.	Fault	Cause	Troubleshooting Suggestions:
110	PV String Overcurrent (String 17~32)	Causes are possibly as follows: 1. String overcurrent. 2. String current sensor abnormality.	
111	PV String Reversed (String 1~16)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
112	PV String Reversed (String 17~32)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
113	PV String Loss (String 1~16)	String fuse disconnected (if applicable).	Check if the fuse is blown.
114	PV String Loss (String 17~32)	String fuse disconnected (if applicable).	Check if the fuse is blown.

No.	Fault	Cause	Troubleshooting Suggestions:
115	PV Input Mode Error	There are three modes of PV access modes, taking the four-way MPPT as an example: 1. Parallel mode: i.e. AAAA mode (homogenous mode), PV1-PV4 homogenous, four-way PV connected to the same PV panel. 2. Partial parallel mode: i.e. AACC mode, PV1 and PV2 are connected in the same source, PV3 and PV4 are connected in the same source. 3. Independent mode: i.e. ABCD mode (non-homologous), PV1, PV2, PV3, PV4 are connected independently, and each of the four-way PV is connected to a photovoltaic panel. This fault is reported if the actual access mode of the PV does not match the PV	Check that the PV access mode is set correctly (ABCD, AACC, AAAA) and reset the PV access mode in the correct way. 1. Confirm that the actual access to each PV is properly connected. 2. If the PV has been connected correctly, check whether the currently set “PV Access Mode” corresponds to the actual access mode through APP or screen. 3. If the currently set “PV access mode” does not match the actual access mode, you need to set the “PV access mode” to a mode that matches the actual situation through APP or screen, and then disconnect the PV and AC power supply and restart after the setup is completed. 4. After the setting is completed, if the current "PV access mode" is consistent with the actual access mode, but this fault is still reported, please contact the dealer or after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
		access mode set by the device.	
116	PV String Reversed (String 33~48)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
117	PV String Loss (String 33~48)	String fuse disconnected (if applicable).	Check if the fuse is blown. As above.
118	PV String Overcurrent (String 33~48)	Causes are possibly as follows: 1. String overcurrent. 2. String current sensor abnormality.	

No.	Fault	Cause	Troubleshooting Suggestions:
119	Multi-string PV Phase Mismatch Failure	Incorrect PV Input Mode Setting	Verify that the PV connection mode is correctly set (ABCD, AACC, AAAA), and reconfigure the PV connection mode according to the correct settings. 1. Confirm that all PV connections are properly connected. 2. If the PV connections are correct, use the app or screen to verify that the currently set “PV connection mode” matches the actual connection mode. 3. If the currently set “PV connection mode” does not match the actual connection mode, use the app or screen to set the “PV connection mode” to match the actual situation. After setting, disconnect the PV from AC power and restart. 4. After setting, if the current “PV connection mode” matches the actual connection mode but the fault persists, please contact the dealer or GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
120	BAT 1 Precharge Failure	Battery 1 precharge circuit failure (burnt precharge resistor, etc.)	Check whether the pre-charging circuit is good, whether the battery voltage and bus voltage are consistent after powering up the battery only, if not, please contact the dealer or GoodWe after-sales service center.
121	BAT 1 Relay Failure	Battery 1 relay does not operate properly.	After the battery is powered up, check if the battery relay works and if you hear a closing sound, if it does not work, please contact your dealer or GoodWe after-sales service center.
122	BAT 1 Overvoltage	Battery 1 access voltage exceeds the rated range of the machine.	Verify that the battery voltage is within the rated range of the machine.
123	BAT 2 Precharge Failure	Battery 2 precharge circuit failure (burnt precharge resistor, etc.)	Check whether the pre-charging circuit is good, whether the battery voltage and bus voltage are consistent after powering up the battery only, if not, please contact the dealer or GoodWe after-sales service center.
124	BAT 2 Relay Failure	Battery 2 relay does not operate properly.	After the battery is powered up, check if the battery relay works and if you hear a closing sound, if it does not work, please contact your dealer or GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
125	BAT 2 Overvoltage	Battery 2 access voltage exceeds the rated range of the machine.	Verify that the battery voltage is within the rated range of the machine.
126	BAT 1 Reversed	Battery 1 positive and negative are connected reversedly.	Check the battery and machine terminals for positive and negative consistency.
127	BAT 2 Reversed	Battery 2 positive and negative are connected reversedly.	Check the battery and machine terminals for positive and negative consistency.
128	BAT Connection Abnormal	Battery abnormal connection	Check whether the battery is working properly.
129	Bat Overtemperature	Battery temperature is too high. Causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	
130	Ref Voltage Abnormal	The reference circuit is abnormal.	

No.	Fault	Cause	Troubleshooting Suggestions:
131	Cabinet Under Temperature	Cavity temperature is too low, causes are possibly as follows: 1. The ambient temperature is too low.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
132	AC SPD Fault	AC side lightning protection device failure.	Replace AC side lightning protection devices.
133	DC SPD Fault	DC side lightning protection device failure.	Replace DC side lightning protection devices.
134	Internal Fan Abnormal	Internal fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply. 2. Mechanical exception (blocking). 3. Fan aging damage.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
135	External Fan Abnormal	External fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply. 2. Mechanical exception (blocking). 3. Fan aging damage.	

No.	Fault	Cause	Troubleshooting Suggestions:
136	PID Abnormal	PID hardware failure or high PV voltage PID pause	PID pause warning caused by high PV voltage does not need to be dealt with, PID hardware failure can be cleared by turning the PID switch off and on again to clear the PID fault, replace the PID unit.
137	Trip-Switch Trip Warning	Causes are possibly as follows: 1. An overcurrent or PV reversal has occurred causing the disconnect switch to trip;	Contact the dealer or the after-sales service. The reason for disconnection, for the occurrence of PV short circuit or reverse connection, it is necessary to check whether there is a historical PV short circuit warning or historical PV reverse connection warning, and if there is, it is necessary for the maintenance personnel to check the corresponding PV situation. After checking that there are no faults you can manually close the disconnect switch and clear this warning via the APP interface clear history faults operation.

No.	Fault	Cause	Troubleshooting Suggestions:
138	PV IGBT Short Circuit Warning	Causes are possibly as follows: 1. An overcurrent occurs causing the disconnect switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV short circuit warning sub-code to check whether there is any fault in the short-circuited Boost hardware and external strings; after checking there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
139	PV String Reversed Warning(String 1~16)	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

No.	Fault	Cause	Troubleshooting Suggestions:
140	PV String Reversed Warning（String 17~32）	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
141	Flash R/W Error Flash R/W Error	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or the after-sales service.
142	Meter Comm Loss	This warning may be reported after enabling the anti-backflow function. Possible causes: 1. Meter not connected; 2. The communication wire connecting the meter to the inverter is wired incorrectly.	Check the wiring of the meter and connect the meter correctly, if the fault still exists after checking, contact the dealer or the after-sales service.
143	PV Type Identification Failure	PV panel recognizes hardware anomaly	Contact the dealer or the after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions:
144	PV String Mismatch	PV string mismatches. Two sets of string open-circuit voltages under the same MPPT have different configurations.	Check the open-circuit voltage of the two strings, and configure the strings with the same open-circuit voltage under the same MPPT, as long time string mismatch is a potential safety hazard.
145	CT Loss	CT Loss	Check whether the CT wiring is correct;
146	CT Reversed	CT Reversed	Check whether the CT wiring is correct;
147	PE Loss	Ground wire not connected.	Check the ground wire.
148	PV String Terminal Overtemperature (String 1~8)	37176 Register PV Terminal Temperature Alarm Subcode 1 has a set position.	-
149	PV String Terminal Overtemperature (String 9~16)	37177 Register PV Terminal Temperature Alarm Subcode 2 has a set position.	-
150	PV String Terminal Overtemperature (String 17~20)	37178 Register PV Terminal Temperature Alarm Subcode 3 has a set position.	-

No.	Fault	Cause	Troubleshooting Suggestions:
151	PV String Reversed Warning (String 33~48)	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the distributor or after-sales service center; Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
152	BAT1 Voltage Low	Battery voltage below set value.	-
153	BAT2 Voltage Low	Battery voltage below set value.	-
154	Low Voltage of BAT Power	Battery not charging, voltage below shutdown voltage	-
155	BAT1 Voltage High	-	-
156	BAT2 Voltage High	-	-

No.	Fault	Cause	Troubleshooting Suggestions:
157	On Line Low Insulation Resistance	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor.	1. Check the impedance of the PV string to the ground. If there is a short circuit phenomenon, please check the short circuit point and rectify it. 2. Check whether the PE cable is connected correctly. 3. If it is confirmed that the impedance is indeed lower than the default value in cloudy and rainy days, please reset the "insulation impedance protection value".
158	Micro-grid Overload Warning	Excessive input current at the backup end.	If the problem occurs occasionally, ignore it. If the problem occurs frequently, contact the dealer or the after-sales service.
159	Manual Recover	-	-
160	GeneratorPhase Order Error	-	-
161	Port reuse configuration error	The reuse (generator) port is configured for a microgrid or large load, but is actually connected to a generator.	Use the App to change the reuse (generator) port configuration.

11.5.2.2 Battery failure

No.	Fault	Cause	Troubleshooting Suggestions:
1	BMS1 RACK1 Total voltage is too high warning	1. Battery system voltage too high 2. Voltage collection line abnormal	1. Discharge the battery to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
2	BMS1 RACK1 Total voltage is too low warning	1. Battery system voltage too low 2. Voltage collection line abnormal	1. Charge the battery and leave it to see if the fault persists. 2. Check the inverter operation to see if it is not charging the battery due to problems such as the operating mode. Try charging the battery through the inverter and see if the fault is resolved. 3. If the fault is not restored, please contact the after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
3	BMS1 RACK1 Cell voltage is too high warning	1. Individual cell voltage is too high 2. Voltage collection line is abnormal	1. Discharge the battery and leave it idle to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
4	BMS1 RACK1 Cell voltage is too low warning	1. Individual cell voltage is too low 2. Voltage collection line is abnormal	1. Charge the battery and leave it to see if the fault persists. 2. Check the inverter operation to see if it is not charging the battery due to problems such as the operating mode. Try charging the battery through the inverter and see if the fault is resolved. 3. If the fault persists, contact GoodWe after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions:
5	BMS1 RACK1 Charging temperature is too high warning	1. Environment temperature too high 2. Temperature sensor malfunction	1. Stop charging and discharging, and leave it idle to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
6	BMS1 RACK1 Discharging temperature is too high warning	1. Environment temperature too high 2. Temperature sensor malfunction	1. Stop charging and discharging, and leave it idle to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
7	BMS1 RACK1 Charging temperature is too low warning	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. 2. If the temperature is below -20°C, turn off the battery and place it in a warm environment. Wait until the battery temperature rises before using it. 3. If the fault is not restored, please contact the after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
8	BMS1 RACK1 Discharging temperature is too low warning	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. 2. If the temperature is below -20°C, turn off the battery and place it in a warm environment. Wait until the battery temperature rises before using it. 3. If the fault is not restored, please contact the after-sales service center.
9	BMS1 RACK1 Charge overcurrent warning	1. Excessive charging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Stop charging and leave it alone to see if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
10	BMS1 RACK1 Discharge overcurrent warning	1. Excessive discharging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Stop discharging and leave it alone to see if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.
11	BMS1 RACK1 Insulation resistance is too low warning	Insulation resistance damage or abnormal contact	Check whether the ground wire is properly connected, restart the battery, and if the problem persists after restarting, please contact GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
12	BMS1 RACK1 Cell excessive temperature differentials warning	1. When the temperature difference is too large at different stages, the battery will limit the battery power, i.e., limit the charging and discharging current. Therefore, this problem generally does not occur. 2. Battery cell capacity depletion leads to excessive internal resistance, resulting in significant temperature rise during overcurrent conditions and a large temperature difference. 3. Poor welding of the cell tabs causes excessive current flow, resulting in rapid heating of the cell. 4. Temperature sampling issues; 5. Loose power line connections	Turn off the device, restart the battery, and wait for 2 hours. If the problem persists, contact GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
13	BMS1 RACK1 Post temperature is too high warning	Excessive pole temperature	1. Stop charging and discharging, and leave it idle to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
14	BMS1 RACK1 Cell excessive voltage differentials warning	1. Inconsistent battery cell aging 2. Board chip issues can also cause excessive battery cell pressure differences; 3. Board balancing issues can also cause excessive battery cell pressure differences 4. Wiring harness issues cause	1. Stop charging and discharging, and leave it idle to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
15	BMS1 RACK1 PCS communication loss warning	BMS and PCS communication error	Check that the communication cable between the battery and the inverter is properly connected.
16	BMS1 RACK1 DCDC warning	Abnormal voltage or current exists inside the DCDC.	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the Solid State After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
17	BMS1 RACK1 Heat film MOS adhesion warning	Heating film MOS damaged	Contact the after-sales service.
18	BMS1 RACK1 Heat film MOS open warning	Heating circuit malfunction	Contact the after-sales service.
19	BMS1 RACK1 Total voltage is too high fault	1. Battery system voltage too high 2. Voltage collection line abnormal	1. Discharge the battery to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
20	BMS1 RACK1 Total voltage is too low fault	1. Battery system voltage too low 2. Voltage collection line abnormal	1. Charge the battery and leave it to see if the fault persists. 2. Check the inverter operation to see if it is not charging the battery due to problems such as the operating mode. Try charging the battery through the inverter and see if the fault is resolved. 3. If the fault persists, please contact the GoodWe After-Sales Service Center.
21	BMS1 RACK1 Cell voltage is too high fault	1. Individual cell voltage is too high 2. Voltage collection line is abnormal	1. Discharge the battery and leave it to see if the fault persists. 2. If the fault persists, please contact the GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
22	BMS1 RACK1 Cell voltage is too low fault	1. Individual cell voltage is too low 2. Voltage collection line is abnormal	1. Charge the battery and leave it to see if the fault persists. 2. Check the inverter operation to see if it is not charging the battery due to problems such as the operating mode. Try charging the battery through the inverter and see if the fault is resolved. 3. If the fault persists, please contact the GoodWe After-Sales Service Center.
23	BMS1 RACK1 Charging temperature is too high fault	1. Environment temperature too high 2. Temperature sensor malfunction	1. Place the battery in a cool place, turn off the device, and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the Solid State Technology after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
24	BMS1 RACK1 Discharging temperature is too high fault	1. Environment temperature too high 2. Temperature sensor malfunction	1. Place the battery in a cool place, turn off the device, and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the Solid State Technology after-sales service center.
25	BMS1 RACK1 Charging temperature is too low fault	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. 2. If the temperature is below -20°C, turn off the battery and place it in a warm environment. Wait until the battery temperature rises before using it. 3. If the fault is not restored, please contact the after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
26	BMS1 RACK1 Discharging temperature is too low fault	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. 2. If the temperature is below -20°C, turn off the battery and place it in a warm environment. Wait until the battery temperature rises before using it. 3. If the fault is not restored, please contact the after-sales service center.
27	BMS1 RACK1 Charge temperature is too low fault	1. Excessive charging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Stop discharging and leave it alone to see if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.

No.	Fault	Cause	Troubleshooting Suggestions:
28	BMS1 RACK1 Discharge overcurrent fault	1. Excessive discharging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Stop discharging and leave it alone to see if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.
29	BMS1 RACK1 Insulation resistance is too low fault	Insulation resistance damage or abnormal contact	1. Check whether the ground wire is properly connected and restart the battery. 2. Upgrade the software. If the problem persists, please contact the GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
30	BMS1 RACK1 Cell excessive temperature differentials fault	1. When the temperature difference is too large at different stages, the battery will limit the battery power, i.e., limit the charging and discharging current. Therefore, this problem generally does not occur. 2. Battery cell capacity depletion leads to excessive internal resistance, resulting in significant temperature rise during overcurrent conditions and a large temperature difference. 3. Poor welding of the cell tabs causes excessive current flow, resulting in rapid heating of the cell. 4. Temperature sampling issues; 5. Loose power line connections	Turn off the device, restart the battery, and wait for 2 hours. If the problem persists, contact GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
31	BMS1 RACK1 Post temperature is too high fault	Excessive pole temperature	1. Shut down the device and leave it idle for 30 minutes, then restart it to see if the fault persists. 2. If the fault persists, please contact the GoodWe After-Sales Service Center.
32	BMS1 RACK1 Cell excessive voltage differentials fault	1. Inconsistent battery cell aging 2. Board chip issues can also cause excessive battery cell pressure differences; 3. Board balancing issues can also cause excessive battery cell pressure differences 4. Wiring harness issues cause	Turn off the device, restart the battery, and wait for 2 hours. If the problem persists, contact GoodWe After-Sales Service Center.
33	BMS1 RACK1 Relay or MOS short-circuit fault	MOS short circuit	1. Upgrade the software, shut down the device and leave it idle for 5 minutes, then restart it to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
34	BMS1 RACK1 Relay or MOS open-circuit fault	MOS open circuit	1. Upgrade the software, shut down the device and leave it idle for 5 minutes, then restart it to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
35	BMS1 RACK1 The precharge failed fault	The voltage across the precharge MOS always exceeds the specified threshold.	1. Upgrade the software, shut down the device and leave it idle for 5 minutes, then restart it to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
36	BMS1 RACK1 Acquisition line fault	Poor contact or disconnection of battery collection line.	Shut down the device, check the wiring, restack the batteries, and restart the device. If the problem persists, please contact GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
37	BMS1 RACK1 Relay or MOS temperature is too high fault	Relay or MOS over temperature	1. Upgrade the software, shut down the device and leave it idle for 30 minutes, then restart it to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
38	BMS1 RACK1 Diverter temperature is too high fault	Diverter over temperature	1. Upgrade the software, shut down the device and leave it idle for 30 minutes, then restart it to see if the fault persists. 2. If the fault persists, contact the GoodWe After-Sales Service Center.
39	BMS1 RACK1 Slave MCU communication fault	Loss of communication between master and slave chips	1. Check the wiring and restart the battery. 2. Upgrade the battery. If the problem persists after restarting, please contact the GoodWe After-Sales Service Center.
40	BMS1 RACK1 BMU communication fault	Abnormal communication wiring harness between BMS master control and slave control	1. Check the wiring and restart the battery. 2. Upgrade the battery. If the problem persists after restarting, please contact the GoodWe After-Sales Service Center.

No.	Fault	Cause	Troubleshooting Suggestions:
41	BMS1 RACK1 Micro-electronics fault	Internal MCU failure	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the Solid State After-Sales Service Center.
42	BMS1 RACK1 Hardware overcurrent fault	1. Software version is too low or BMS board is damaged. 2. There are too many inverters connected in parallel, causing excessive impact on the battery during pre-charging.	1. Upgrade the software and observe whether the fault persists. 2. If multiple units are connected in parallel, start the battery first, then start the inverter.
43	BMS1 RACK1 Application software fault	MCU self-test failed	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the Solid State After-Sales Service Center.
44	BMS1 RACK1 Parallel RACK fault	Communication abnormalities between the master cluster and slave cluster, or inconsistencies between the cells of different clusters.	1. Check the battery information and software version of the slave machine, and whether the communication line connection with the host machine is normal. 2. Upgrade the software.

No.	Fault	Cause	Troubleshooting Suggestions:
45	BMS1 RACK1 DCDC fault	DCDC overload or excessive heat sink temperature, etc.	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the Solid State After-Sales Service Center.
46	BMS1 RACK1 Inconsistent cell fault	1. Battery cell identification error 2. Stacking of different types of battery cells	Check the cell type.
47	BMS1 RACK1 The output port over temperature fault	Loose screws or poor contact at the output port.	1. Turn off the battery, check the wiring and output port screws. 2. After confirmation, restart the battery and observe whether the fault persists. If it does, contact the GoodWe After-Sales Service Center.
48	BMS1 RACK1 SOH too low fault	The battery has been used for too long or the battery cell is severely damaged.	Replace pack
49	BMS1 RACK1 Heating film MOS Three-terminal fault	Heating film mos damaged	Contact the after-sales service.

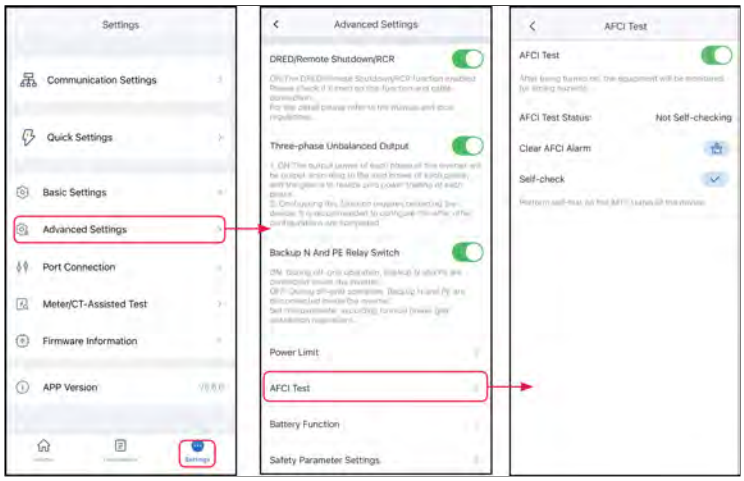
11.5.3 Operation After Fault Clearance

In the energy conservation system, after some fault clearances complete, further operations are needed for the system to restore normal work.

11.5.3.1 Clear AFCI Alarm

[Software]: SolarGo App
[Clearance method]

1. **Home** > **Settings** > **Advanced Settings** > **DC AFCI**
2. Tap **[Clear AFCI Alarm].**



12 Technical Parameters

12.1 Inverter Parameters

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
Battery Side				
Battery Type	LFP($LiFePO_4$)	LFP($LiFePO_4$)	LFP($LiFePO_4$)	LFP($LiFePO_4$)
Nominal Battery Voltage (V)	380	380	380	380
Battery Voltage Range (V)	350~550	350~550	350~550	350~550
Start-up Voltage (V)*1	380	380	380	380
Number of Battery Input	1	1	1	1
Max. Continuous Charging Current (A)	11.9	14.3	19.8	23.7
Max. Continuous Discharging Current (A)	8.7	10.5	14.5	17.4
Max. Charging Power (kW)	4.5	5.4	7.5	9
Max. Discharging Power (kW)	3.3	3.96	5.5	6.6
PV Side				
Max. Input Power (kW)	6	7.2	10	12
Max. Input Voltage (V)*2	600	600	600	600
MPPT Operating Voltage Range (V)*3	40~560	40~560	40~560	40~560
MPPT Voltage Range at Nominal Power (V)	150~500	150~500	170~500	210~500
Start-up Voltage (V)	50	50	50	50
Nominal Input Voltage (V)	400	400	400	400
Max. MPPT Current (A)	20	20	20	20
Max. MPPT Short Circuit Current (A)	26	26	26	26

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
Max. Backfeed Current to The Array (A)	0	0	0	0
Number of MPPTs	2	2	2	2
Number of Strings per MPPT	1/1	1/1	1/1	1/1
AC Side (On-grid)				
Nominal Power (kW)	3	3.6	5	6
Nominal Apparent Power to Grid (kVA)	3	3.6	5	6
Max. Apparent Power to Grid (kVA)	3	3.6	5	6
Nominal Apparent Power from Grid (kVA)	3	3.6	5	6
Max. Apparent Power from Grid (kVA)	6	7.2	10	12
Nominal Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Voltage Range (V)	170~280	170~280	170~280	170~280
Nominal Frequency (Hz)	50/60	50/60	50/60	50/60
Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. Current to Grid (A)	13.7 at 220V 13.1 at 230V 12.5 at 240V	16.4 at 220V 15.7 at 230V 15 at 240V	22.8 at 220V 21.8 at 230V 20.9 at 240V	27.3 at 220V 26.1 at 230V 25 at 240V
Max. Current From Grid (A)	27.3 at 220V 26.1 at 230V 25 at 240V	32.8 at 220V 31.4 at 230V 30 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	50 at 220V 50 at 230V 50 at 240V
Nominal Current From Grid (A)	13.7 at 220V 13.1 at 230V 12.5 at 240V	16.4 at 220V 15.7 at 230V 15 at 240V	22.8 at 220V 21.8 at 230V 20.9 at 240V	27.3 at 220V 26.1 at 230V 25 at 240V

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
Max. Output Fault Current (Peak and Duration) (A)	96 at 3μs	96 at 3μs	96 at 3μs	96 at 3μs
Inrush Current (Peak and Duration) (A)	96 at 3μs	96 at 3μs	96 at 3μs	96 at 3μs
Nominal Current (A)	13.7 at 220V 13.1 at 230V 12.5 at 240V	16.4 at 220V 15.7 at 230V 15 at 240V	22.8 at 220V 21.8 at 230V 20.9 at 240V	27.3 at 220V 26.1 at 230V 25 at 240V
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)
THDi	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	96	96	96	96
Type of Voltage	a.c.	a.c.	a.c.	a.c.
Back-up Side				
Nominal Output Apparent Power (kVA)	3	3.6	5	6
Max. Output Apparent Power (kVA)	3.0 (6.0, 10s)	3.6 (7.2, 10s)	5.0 (10.0, 10s)	6.0(12.0, 10s)
Max. Output Apparent Power (Bypass) (kVA)	6	7.2	10	12
Nominal Output Current (A)	13.7 at 220V 13.1 at 230V 12.5 at 240V	16.4 at 220V 15.7 at 230V 15 at 240V	22.8 at 220V 21.8 at 230V 20.9 at 240V	27.3 at 220V 26.1 at 230V 25 at 240V
Max. Output Current (A)	13.7 at 220V 13.1 at 230V 12.5 at 240V	16.4 at 220V 15.7 at 230V 15 at 240V	22.8 at 220V 21.8 at 230V 20.9 at 240V	27.3 at 220V 26.1 at 230V 25 at 240V
Max. Output Current (Bypass) (A)	27.3	32.8	45.5	50

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
Max. Fault Current (Peak and Duration) (A)	96 at 3μs	96 at 3μs	96 at 3μs	96 at 3μs
Inrush Current (Peak and Duration) (A)	96 at 3μs	96 at 3μs	96 at 3μs	96 at 3μs
Max. Output Overcurrent Protection (A)	96	96	96	96
Nominal Output Voltage (V)	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE	220/230/240, L/N/PE
Nominal Output Frequency (Hz)	50/60	50/60	50/60	50/60
THDv (@Linear Load)	<3%	<3%	<3%	<3%
Efficiency				
Max. Efficiency	97.6%	97.6%	97.6%	97.6%
European Efficiency	96.5%	96.5%	96.8%	97.0%
Max. Battery to AC Efficiency	98.0%	98.0%	98.0%	98.0%
Protection				
PV String Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Battery Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated	Integrated

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
AC Overvoltage Protection	Integrated	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II	Type II
RSD	Optional	Optional	Optional	Optional
AFCI	Integrated	Integrated	Integrated	Integrated
Remote Shutdown	Integrated	Integrated	Integrated	Integrated
General Data				
Operating Temperature Range (℃)	-35~+60 (Derating at +40)	-35~+60 (Derating at +40)	-35~+60 (Derating at +40)	-35~+60 (Derating at +40)
Operating Environment	Outdoor	Outdoor	Outdoor	Outdoor
Relative Humidity	0~95%	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	4000 (>2000 derating)	4000 (>2000 derating)	4000 (>2000 derating)	4000 (>2000 derating)
Cooling Method	Natural convection	Natural convection	Natural convection	Natural convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN	CAN
Communication	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth
Communication Protocols	Modbus-RTU, Modbus-TCP	Modbus-RTU, Modbus-TCP	Modbus-RTU, Modbus-TCP	Modbus-RTU, Modbus-TCP
Weight (kg)	24	24	24	24
Dimension (W×H×D mm)	800*300*270	800*300*270	800*300*270	800*300*270
Noise Emission (dB)	≤30	≤30	≤30	≤30
Topology	Non-isolated	Non-isolated	Non-isolated	Non-isolated

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
Power Self-consumption at Night (W)	≤10	≤10	≤10	≤10
Ingress Protection Rating	IP66	IP66	IP66	IP66
DC Connector	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal
AC Connector	VACONN Terminal	VACONN Terminal	VACONN Terminal	VACONN Terminal
Environmental Category	4K4H	4K4H	4K4H	4K4H
Pollution Degree	III（Outside of the inverter）	III（Outside of the inverter）	III（Outside of the inverter）	III（Outside of the inverter）
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I	I
Storage Temperature (℃)	-40~+70	-40~+70	-40~+70	-40~+70
Decisive Voltage Class (DVC)	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A
Mounting Method	Wall/Floor Mounted	Wall/Floor Mounted	Wall/Floor Mounted	Wall/Floor Mounted
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD
Country of Manufacture	China	China	China	China
Certification				
Grid Standard	IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 62920, CISPR 11, EN 55011, AS/NZS 61000.6.3/.4, AS 61000.6.4			
Safety Regulation	IEC62109-1/-2, IEC 63037			

Technical Data	GW3K-EHA-G20	GW3.6K-EHA-G20	GW5K-EHA-G20	GW6K-EHA-G20
EMC	IEC/EN 61000-6-1/-2/-3/-4			

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Battery Side			
Battery Type	LFP($LiFePO_4$)	LFP($LiFePO_4$)	LFP($LiFePO_4$)
Nominal Battery Voltage (V)	380	380	380
Battery Voltage Range (V)	350~550	350~550	350~550
Start-up Voltage (V)*1	380	380	380
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)	31.6	35.6	35.6
Max. Continuous Discharging Current (A)	23.2	29	29
Max. Charging Power (kW)	12	13.5	13.5
Max. Discharging Power (kW)	8.8	11	11
PV Side			
Max. Input Power (kW)	16	20	20
Max. Input Voltage (V)*2	600	600	600
MPPT Operating Voltage Range (V)*3	40~560	40~560	40~560
MPPT Voltage Range at Nominal Power (V)	170~500	190~500	190~500
Start-up Voltage (V)	50	50	50
Nominal Input Voltage (V)	400	400	400
Max. MPPT Current (A)	20	20	20
Max. MPPT Short Circuit Current (A)	26	26	26
Max. Backfeed Current to The Array (A)	0	0	0

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Number of MPPTs	4	4	4
Number of Strings per MPPT	1/1/1/1	1/1/1/1	1/1/1/1
AC Side (On-grid)			
Nominal Power (kW)	8	9.999	10
Nominal Apparent Power to Grid (kVA)	8	9.999	10
Max. Apparent Power to Grid (kVA)	8	9.999	10
Nominal Apparent Power from Grid (kVA)	8	9.999	10
Max. Apparent Power from Grid (kVA)	14.5	14.5	14.5
Nominal Voltage (V)	220/230/240，L/N/PE	220/230/240，L/N/PE	220/230/240，L/N/PE
Voltage Range (V)	170~280	170~280	170~280
Nominal Frequency (Hz)	50/60	50/60	50/60
Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. Current to Grid (A)	36.4 at 220V 34.8 at 230V 33.4 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V
Max. Current From Grid (A)	63 at 220V 63 at 230V 60.5 at 240V	63 at 220V 63 at 230V 60.5 at 240V	63 at 220V 63 at 230V 60.5 at 240V
Nominal Current From Grid (A)	36.4 at 220V 34.8 at 230V 33.4 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V
Max. Output Fault Current (Peak and Duration) (A)	120 at 3μs	120 at 3μs	120 at 3μs
Inrush Current (Peak and Duration) (A)	120 at 3μs	120 at 3μs	120 at 3μs

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Nominal Current (A)	36.4 at 220V 34.8 at 230V 33.4 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)
THDi	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	120	120	120
Type of Voltage	a.c.	a.c.	a.c.
Back-up Side			
Nominal Output Apparent Power (kVA)	8	10	10
Max. Output Apparent Power (kVA)	8.0(16.0, 10s)	10.0(20.0, 10s)	10.0(20.0, 10s)
Max. Output Apparent Power (Bypass) (kVA)	14.5	14.5	14.5
Nominal Output Current (A)	36.4 at 220V 34.8 at 230V 33.4 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V
Max. Output Current (A)	36.4 at 220V 34.8 at 230V 33.4 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V	43.5 at 220V 43.5 at 230V 41.7 at 240V
Max. Output Current (Bypass) (A)	63	63	63
Max. Fault Current (Peak and Duration) (A)	120 at 3μs	120 at 3μs	120 at 3μs
Inrush Current (Peak and Duration) (A)	120 at 3μs	120 at 3μs	120 at 3μs
Max. Output Overcurrent Protection (A)	120	120	120
Nominal Output Voltage (V)	220/230/240，L/N/PE	220/230/240，L/N/PE	220/230/240，L/N/PE

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Nominal Output Frequency (Hz)	50/60	50/60	50/60
THDv (@Linear Load)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	97.5%	97.5%	97.5%
European Efficiency	96.8%	96.8%	96.8%
Max. Battery to AC Efficiency	97.8%	97.8%	97.8%
Protection			
PV String Current Monitoring	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated
Battery Reverse Polarity Protection	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II
RSD	Optional	Optional	Optional
AFCI	Integrated	Integrated	Integrated
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (℃)	-35~+60 (Derating at +40)	-35~+60 (Derating at +40)	-35~+60 (Derating at +40)
Operating Environment	Outdoor	Outdoor	Outdoor

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Relative Humidity	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	4000 (>2000 derating)	4000 (>2000 derating)	4000 (>2000 derating)
Cooling Method	Natural convection	Natural convection	Natural convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth
Communication Protocols	Modbus-RTU, Modbus-TCP	Modbus-RTU, Modbus-TCP	Modbus-RTU, Modbus-TCP
Weight (kg)	26	26	26
Dimension (W×H×D mm)	800*300*270	800*300*270	800*300*270
Noise Emission (dB)	≤35	≤35	≤35
Topology	Non-isolated	Non-isolated	Non-isolated
Power Self-consumption at Night (W)	≤10	≤10	≤10
Ingress Protection Rating	IP66	IP66	IP66
DC Connector	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal
AC Connector	VACONN Terminal	VACONN Terminal	VACONN Terminal
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III (Outside of the inverter)	III (Outside of the inverter)	III (Outside of the inverter)
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I
Storage Temperature (℃)	-40~+70	-40~+70	-40~+70

Technical Data	GW8K-EHA-G20	GW9.999K-EHA-G20	GW10K-EHA-G20
Decisive Voltage Class (DVC)	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A
Mounting Method	Wall/Floor Mounted	Wall/Floor Mounted	Wall/Floor Mounted
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD
Country of Manufacture	China	China	China
Certification			
Grid Standard	IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 62920, CISPR 11, EN 55011, AS/NZS 61000.6.3/.4, AS 61000.6.4		
Safety Regulation	IEC62109-1/-2, IEC 63037		
EMC	IEC/EN 61000-6-1/-2/-3/-4		

*1: If there's no PV, start-up voltage will be 380V.

*2: When the input voltage is 560V-600V, the inverter will enter standby mode, and the voltage returns to 560V to enter the the normal operation state.

*3: Please refer to the user manual for the MPPT Voltage Range at Nominal Power.

12.2 Battery Technical Data

Technical Data	GW5.1-BAT-D-G20	GW8.3-BAT-D-G20
Rated Energy (kWh)	5.12	8.32
Usable Energy (kWh)*1	5	8
Battery Type	LFP ($LiFePO_4$)	
Operating Voltage Range (V) (single phase system)	350~550	
Operating Voltage Range (V) (three phase system)	700~950	
Max. Input Current (System) (A)	12	19

Technical Data	GW5.1-BAT-D-G20	GW8.3-BAT-D-G20
Max. Output Current (System) (A)	13.2	21
Max. Input Power (System) (kW)*2	5	8
Max. Output Power (System) (kW)*2	5	8
Peak.Output Power (System) (kW)*2	7.5 @10s	12 @10s
Charging Temperature Range (°C)	-18 < T≤55	
Discharging Temperature Range (°C)	-20 < T≤55	
Relative Humidity	5-95%	
Max. Operating Altitude (m)	4000	
Noise Emission (dB)	≤29	
Communication	CAN	
Weight (kg)	57.5±1	79±1
Dimensions (W×H×D mm)	800*326*270	
Optional Function Configuration	heating	
Ingress Protection	IP66	
Storage Temperature (℃)	-20 < T ≤55	
Max. Storage time	12 months (-20℃ < T≤35℃) 6 months (35℃ < T≤45℃)	
Scalability	6 pcs	
Mounting Method	Floor stacked / Wall-mounted	
Cycle Life	≥6000 (25±2℃ 0.5C 90%DOD 70%EOL)	

Technical Data		GW5.1-BAT-D-G20	GW8.3-BAT-D-G20
Country of Manufacture		China	
Standard and Certification	Safety	IEC62619, IEC60730, EN62477，IEC63056，IEC62040，CE, CEC	
	EMC	CE, RCM	
	Transportation	UN38.3，ADR	

*1: Test conditions, 100% DOD (cell 2.85~3.6V voltage range), 0.2P charge & discharge at 25±2 °C for battery system at the beginning of life. Usable energy is defined by its initial design value. Actual available energy may vary depending on charge/discharge rate, environmental conditions (e.g. temperature), transport and storage factors.

*2: Max. Input Power /Max. Output Power/Peak.Output Power derating will occur related to Temperature and SOC.

12.3 Smart Meter Technical Data

12.3.1 GMK110

Technical Parameters			GMK110
	Application		Single phase
Input Data	Voltage	Nominal Voltage (V)	220
		Voltage Range (V)	85~288
		Nominal Voltage Frequency (Hz)	50/60
	Current	CT Ratio	120A/40mA
		CT Quantity	1
Communication			RS485
Communication Distance (m)			1000
User Interface			2LED
	Voltage/Current		Class I

Technical Parameters		GMK110
Accuracy	Active Energy	Class I
	Reactive Energy	Class II
Power Consumption (w)		<5
Mechanical Parameters	Dimension (W×H×D mm)	19*85*67
	Weight (g)	50
	Mounting Method	Rail Installation
Environmental Parameters	Ingress Protection Rating	IP20
	Operating Temperature Range (℃)	-30~ 60
	Storage Temperature Range (℃)	-30~ 60
	Relative Humidity (Non-Condensing)	0~95%
	Max. Operating Altitude (m)	3000

12.3.2 GM330

Technical Parameters		GM330
Measuring Range	Support Grid Type	Three-phase, split-phase, single-phase
	Voltage Range L-N (Vac)	172~817
	Voltage Range L-L (Vac)	100~472
	Nominal Frequency (Hz)	50/60
	CT Ratio	nA:5A
Communication Parameters	Communication Method	RS485
	Communication Distance (m/ft)	1000/3280
Precision Accuracy	Voltage/Current	Class 0.5
	Active Energy	Class 0.5
	Reactive Energy	Class 1
General Data	Dimension (WxHxDmm/in)	72x85x72/2.83x3.35×2.83
	Housing	4 modules
	Weight (g/Ib)	240/0.53
	Mounting Method	DIN rail
	User Interface	4 LEDs, Reset Button

Technical Parameters		GM330
	Power Consumption (w)	<5
Environmental Parameters	Ingress Protection Rating	IP20
	Operating Temperature Range (℃/°F)	-30~+70/-22~+158
	Storage Temperature Range (℃/°F)	-30~70/-22~+158
	Relative Humidity (No Condensing)	0~95%
	Max. Operating Altitude (m/ft)	3000/9842
Certification Parameters	Certificate	UL1741/ANSI

12.4 Smart Dongle Technical Data

- WiFi/LAN Kit-20

Technical Parameters		WiFi/LAN Kit-20
Output Voltage (V)		5
Power Consumption (W)		<2
Communication Interface		USB
Communication Parameters	Ethernet	10M/100Mbps Self-adaption
	Wireless	IEEE 802.11 b/g/n @2.4 GHz
	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE standard
Mechanical Parameters	Dimension (W×H×D mm)	48.3*159.5*32.1
	Weight (g)	82
	Ingress Protection Rating	IP65
	Mounting Method	USB port insertion and removal
Operating Temperature Range (℃)		-30~+60
Storage Temperature Range (℃)		-40~+70
Relative Humidity		0-95%
Max. Working Altitude (m)		4000

13 Appendix

13.1 FAQ

13.1.1 How to Conduct Auxiliary Detection for Smart Meters/CT?

Meter detection function, which can detect whether the CT of the meter is connected correctly and the current operation status of the meter and CT.

- Approach 1:

1. Access the detection page through **Home** > **Settings** > **Electricity Meter/ CT** Auxiliary Detection.
2. Click "Start Detection" and wait for the detection to complete. Then, view the detection results.

- Approach 2:

1. Access the detection page through > **[System Setup]** > **[Quick Setting]** > **[Meter/CT Assisted Test]**.
2. Click "Start Detection" and wait for the detection to complete. Then, view the detection results.

13.1.2 How to Upgrade the Device Version

Through the firmware information, you can view or upgrade the DSP version, ARM version, BMS version, and smart dongle software version of the inverter. Some smart dongles do not support software version upgrade via SolarGo App, and the actual situation shall prevail.

- **Upgrade prompt:**

When the user opens the APP, an upgrade prompt will pop up on the homepage, and the user can choose whether to upgrade or not. If you choose to upgrade, you can complete the upgrade by following the prompts on the interface.

- **Regular upgrade:**

Access the firmware information viewing interface through "Home" > "Settings" > "Firmware Information"

Click "Check for Updates". If there is a new version, complete the upgrade according to the prompts on the interface.

- **Forced Upgrade:**

The APP will push upgrade information, and users need to upgrade according to the prompts to continue using the app. You can complete the upgrade by following the prompts on the interface.

Inverter Software Version Upgrade

- To connect USB flash drive for local software upgrading.
- Before upgrading the device using a USB flash drive, please contact the after-sales service center to obtain the software upgrade package and upgrade method.

13.2 Abbreviations

Abbreviation	English Description	Chinese Description
Ubatt	Battery Voltage Range	电池电压范围
Ubatt,r	Nominal Battery Voltage	额定电池电压
Ibatt,max (C/D)	Max. Charging Current Max. Discharging Current	最大充/放电电流
EC,R	Rated Energy	额定能量
UDCmax	Max.Input Voltage	最大输入电压
UMPP	MPPT Operating Voltage Range	MPPT 电压范围
IDC,max	Max. Input Current per MPPT	每路 MPPT 最大输入电流
ISC PV	Max. Short Circuit Current per MPPT	每路 MPPT 最大短路电流
PAC,r	Nominal Output Power	Nominal Output Power
Sr (to grid)	Nominal Apparent Power Output to Utility Grid	额定并网输出视在功率
Smax (to grid)	Max. Apparent Power Output to Utility Grid	最大并网输出视在功率
Sr (from grid)	Nominal Apparent Power from Utility Grid	从电网买电额定输出视在功率
Smax (from grid)	Max. Apparent Power from Utility Grid	从电网买电最大输出视在功率
UAC,r	Nominal Output Voltage	Nominal Output Voltage

Abbreviation	English Description	Chinese Description
fAC,r	Nominal AC Grid Frequency	输出电压频率
IAC,max(to grid)	Max. AC Current Output to Utility Grid	最大并网输出电流
IAC,max(from grid)	Max. AC Current From Utility Grid	最大输入电流
P.F.	Power Factor	Power Factor
Sr	Back-up Nominal apparent power	离网额定视在功率
Smax	Max. Output Apparent Power (VA) Max. Output Apparent Power without Grid	最大输出视在功率
IAC,max	Max. Output Current	最大输出电流
UAC,r	Nominal Output Voltage	最大输出电压
fAC,r	Nominal Output Freqency	额定输出电压频率
Toperating	Operating Temperature Range	工作温度范围
IDC,max	Max. Input Current	最大输入电流
UDC	Input Voltage	输入电压
UDC,r	DC Power Supply	直流输入
UAC	Power Supply/AC Power Supply	输入电压范围/交流输入
UAC,r	Power Supply/Input Voltage Range	输入电压范围/交流输入
Toperating	Operating Temperature Range	工作温度范围
Pmax	Max Output Power	最大功率
PRF	TX Power	发射功率
PD	Power Consumption	功耗
PAC,r	Power Consumption	功耗
F (Hz)	Frequency	频率
ISC PV	Max. Input Short Circuit Current	最大输入短路电流
Udcmin-Udcmax	Range of input Operating Voltage	工作电压范围
UAC,rang(L-N)	Power Supply Input Voltage	适配器输入电压范围
Usys,max	Max System Voltage	最大系统电压

Abbreviation	English Description	Chinese Description
Haltitude,max	Max. Operating Altitude	最高工作海拔高度
PF	Power Factor	Power Factor
THDi	Total Harmonic Distortion of Current	电流谐波
THDv	Total Harmonic Distortion of Voltage	电压谐波
C&I	Commercial & Industrial	工商业
SEMS	Smart Energy Management System	智慧能源管理系统
MPPT	Maximum Power Point Tracking	最大功率点跟踪
PID	Potential-Induced Degradation	电位诱发衰减
Voc	Open-Circuit Voltage	开路电压
Anti PID	Anti-PID	防PID
PID Recovery	PID Recovery	PID修复
PLC	Power-line Commucation	电力线载波通信
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol	基于TCP/IP层的modbus
Modbus RTU	Modbus Remote Terminal Unit	基于串行链路的modbus
SCR	Short-Circuit Ratio	短路比
UPS	Uninterruptable Power Supply	不间断电源
ECO mode	Economical Mode	经济模式
TOU	Time of Use	使用时间
ESS	Energy Stroage System	储能系统
PCS	Power Conversion System	电能转换系统
RSD	Rapid shutdown	Rapid Shutdown
EPO	Emergency Power Off	紧急关断
SPD	Surge Protection Device	防雷保护
ARC	zero injection/zero export Power Limit / Export Power Limit	防逆流
DRED	Demand Response Enabling Device	命令响应设备
RCR	Ripple Control Receiver	-
AFCI	AFCI	AFCI直流拉弧保护

Abbreviation	English Description	Chinese Description
GFCI	Ground Fault Circuit Interrupter	接地故障分断器
RCMU	Residual Current Monitioring Unit	残余电流监控装置
FRT	Fault Ride Through	故障穿越
HVRT	High Voltage Ride Through	高电压穿越
LVRT	Low Voltage Ride Through	低电压穿越
EMS	Energy Management System	能量管理系统
BMS	Battery Management System	电池管理系统
BMU	Battery Measure Unit	电池采集单元
BCU	Battery Control Unit	电池控制单元
SOC	State of Charge	电池的荷电状态
SOH	State of Health	电池健康度
SOE	State Of Energy	电池剩余能量
SOP	State Of Power	电池充放电能力
SOF	State Of Function	电池的功能状态
SOS	State Of Safety	安全状态
DOD	Depth of discharge	放电深度

13.3 Explanation of Terms

- **Overvoltage Category Definition**
  - **Category I**: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.
  - **Category II:** applies to fixed downstream equipment. For example, appliances, portable tools and other plug-connected equipment; Voltage category III is used if there are special requirements for the reliability and suitability of such equipment.
  - Category II**I:** applies to fixed downstream equipment, including the main distribution board. For example, switchgear and other equipment in an industrial installation
  - Category **IV**: applies to the upstream equipment in the power supply of the distribution device, including measuring instruments and upstream over-current protection devices.
- **Definition of Types of Damp Places**

Environmental Parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40℃	-33~+40℃	-33~+40℃
Humidity Range	5% to 85%	5% to 85%	5% to 85%

- **Definition of Environmental Category:**
  - **Outdoor Inverter**: The ambient air temperature range is -25 to +60℃, and it is suitable for environments with pollution degree 3.
  - **Indoor Type II Inverter:** The ambient air temperature range is -25 to +40℃, and it is suitable for environments with pollution degree 3.
  - **Indoor Type I Inverter:** The ambient air temperature range is 0 to +40℃, and it is suitable for environments with pollution degree 2.
- **Definition of Pollution Degree Categories:**
  - **Pollution Degree 1**: No pollution or only dry non-conductive pollution.
  - **Pollution Degree 2:** In general, there is only non-conductive pollution, but the transient conductive pollution caused by occasional condensation must be taken into account.
  - **Pollution Degree 3:** There is conductive pollution, or the non-conductive pollution becomes conductive pollution due to condensation.
  - **Pollution Degree 4:** Persistent conductive pollution, such as pollution caused by conductive dust or rain and snow.

13.4 Battery SN Code Meaning

Bits 11-14 of the product SN code are the production time code.
The above picture has a production date of 2023-08-08

- The 11th and 12th digits represent the last two digits of the year of manufacture,

e.g., 2023 is represented by 23.

- The 13th digit is the month of production, e.g., August is represented by 8; as follows:

Month	1~9	10	11	12
Month	1~9	A	B	C

- The 14th digit is the date of production, e.g., the 8th day is indicated by 8; priority is given to the use of numerical representation, e.g., 1~9 indicates the 1st~9th day, A indicates the 10th day, and so on. The letters I and O are not used to avoid confusion. The details are as follows:

Production Date	1	2	3	4	5	6	7	8	9
Code	1	2	3	4	5	6	7	8	9

Production Date	10	11	12	13	14	15	16	17	18
Code	A	B	C	D	E	F	G	H	J

Production Date	21	22	23	24	25	26	27	28	29
Code	M	N	P	Q	R	S	T	U	V

13.5 Safety Country

No.	Safety Code	No.	Safety Code
Europe			
1	IT-CEI 0-21	43	CZ-C
2	IT-CEI 0-16	44	CZ-D
3	DE LV with PV	45	RO-A
4	DE LV without PV	46	RO-B
5	DE-MV	47	RO-D
6	ES-A	48	GB-G98
7	ES-B	49	GB-G99-A
8	ES-C	50	GB-G99-B

No.	Safety Code	No.	Safety Code
9	ES-D	51	GB-G99-C
10	ES-island	52	GB-G99-D
11	BE	53	NI-G98
12	FR	54	IE-16/25A
13	FR-island-50Hz	55	IE-72A
14	FR-island-60Hz	56	IE-ESB
15	PL-A	57	IE-EirGrid
16	PL-B	58	PT-D
17	PL-C	59	EE
18	PL-D	60	NO
19	NL-16/20A	61	FI-A
20	NL-A	62	FI-B
21	NL-B	63	FI-C
22	NL-C	64	FI-D
23	NL-D	65	UA-A1
24	SE-A	66	UA-A2
25	SE MV	67	EN 50549-1
26	SK-A	68	EN 50549-2
27	SK-B	69	DK-West-B-MVHV
28	SK-C	70	DK-East-B-MVHV
29	HU	71	DK-West-C-MVHV
30	CH	72	DK-East-C-MVHV
31	CY	73	DK-West-D-MVHV
32	GR	74	DK-East-D-MVHV
33	DK-West-A	75	FR-Reunion
34	DK-East-A	76	BE-LV（>30kVA）
35	DK-West-B	77	BE-HV
36	DK-East-B	78	CH-B
37	AT-A	79	NI-G99-A
38	AT-B	80	NI-G99-B
39	BG	81	NI-G99-C

No.	Safety Code	No.	Safety Code
40	CZ-A-09	82	NI-G99-D
41	CZ-B1-09	83	IE-LV
42	CZ-B2-09	84	IE-MV
Globle			
1	60Hz-Default	5	IEC 61727-50Hz
2	50Hz-Default	6	IEC 61727-60Hz
3	127Vac-60Hz-Default	7	Warehouse
4	127Vac-50Hz-Default		
America			
1	Argtina	30	US-ISO-NE-480Vac
2	US-208Vac	31	US-ISO-NE-208Vac-3P
3	US-240Vac	32	US-ISO-NE-220Vac-3P
4	Mexico-220Vac	33	US-ISO-NE-240Vac-3P
5	Mexico-440Vac	34	PR-208Vac
6	US-480Vac	35	PR-240Vac
7	US-208Vac-3P	36	PR-480 Vac
8	US-220Vac-3P	37	PR-208Vac-3P
9	US-240Vac-3P	38	PR-220Vac-3P
10	US-CA-208Vac	39	PR-240Vac-3P
11	US-CA-240Vac	40	Cayman
12	US-CA-480Vac	41	Brazil-220Vac
13	US-CA-208Vac-3P	42	Brazil-208Vac
14	US-CA-220Vac-3P	43	Brazil-230Vac
15	US-CA-240Vac-3P	44	Brazil-240Vac
16	US-HI-208Vac	45	Brazil-254Vac
17	US-HI-240Vac	46	Brazil-127Vac
18	US-HI-480Vac	47	Brazil-ONS
19	US-HI-208Vac-3P	48	Barbados
20	US-HI-220Vac-3P	49	Chile-BT
21	US-HI-240Vac-3P	50	Chile-MT
22	US-Kauai-208Vac	51	Colombia

No.	Safety Code	No.	Safety Code
23	US-Kauai-240Vac	52	Colombia<0.25MW 1P
24	US-Kauai-480Vac	53	Colombia<0.25MW 3P
25	US-Kauai-208Vac-3P	54	IEEE 1547-208Vac
26	US-Kauai-220Vac-3P	55	IEEE 1547-20Vac
27	US-Kauai-240Vac-3P	56	IEEE 1547-240Vac
28	US-ISO-NE-208Vac	57	IEEE 1547-230/400Vac
29	US-ISO-NE-240Vac		
Oceania			
1	Australia-A	4	Newzealand
2	Australia-B	5	Newzealand:2015
3	Australia-C	6	NZ-GreGrid
Asia			
1	China A	25	JP-420Vac-50Hz
2	China B	26	JP-420Vac-60Hz
3	China's high pressure	27	JP-480Vac-50Hz
4	China's highest pressure	28	JP-480Vac-60Hz
5	China Power Station	29	Sri Lanka
6	China 242 Shandong	30	Singapore
7	China 242 Hebei	31	Israel-OG
8	China PCS	32	Israel-LV
9	Taiwan	33	Israel-MV
10	Hongkong	34	Israel-HV
11	China 242 Northeast	35	Vietnam
12	Thailand-MEA	36	Malaysia-LV
13	Thailand-PEA	37	Malaysia-MV
14	Mauritius	38	DEWA-LV
15	Korea	39	DEWA-MV
16	India	40	Saudi Arabia
17	India-CEA	41	JP-690Vac-50Hz
18	Pakistan	42	JP-690Vac-60Hz

No.	Safety Code	No.	Safety Code
19	Philippines	43	Srilanka
20	Philippines-127Vac	44	IEC 61727-127Vac-50Hz
21	JP-50Hz	45	IEC 61727-127Vac-60Hz
22	JP-60Hz	46	JP-550Vac-50Hz
23	JP-440Vac-50Hz	47	JP-550Vac-60Hz
24	JP-440Vac-60Hz	48	India-Higher
Africa			
1	South Africa-LV	4	Ghana
2	South Africa-B-MV	5	Ghana-HV
3	South Africa-C-MV		

13.6 Australia Safety Regulations

For the Australian market, to comply with AS/NZS 4777.2:2020, please select from Australia A, Australia B, Australia C, or New Zealand. Please contact your local electricity grid operator on which Region to select.
Selecting a Region B should then automatically load all region B setpoints for volt-watt, volt-var, underfrequency, overfrequency, etc.

Volt–var response set-point values

Region	Default value	U1	U2	U3	U4
Australia A	Voltage	207V	220V	240V	258V
	Inverter reactive power level (Q) % of S_{rated}	44 % supplying	0%	0%	60 % absorbing
Australia B	Voltage	205V	220V	235V	255V
	Inverter reactive power level (Q) % of S_{rated}	30 % supplying	0%	0%	40 % absorbing
Australia C	Voltage	215V	230V	240V	255V
	Inverter reactive power level (Q) % of S_{rated}	44 % supplying	0%	0%	60 % absorbing
New Zealand	Voltage	207V	220V	235V	244 V
	Inverter reactive power level (Q) % of S_{rated}	60 % supplying	0%	0%	60 % absorbing
Allowed range	Voltage	180 to 230 V	180 to 230 V	230 to 265 V	230 to 265 V

Region	Default value	U1	U2	U3	U4
	Inverter reactive power level (Q) % of S_{rated}	30 to 60 % supplying	0%	0%	30 to 60 % absorbing

NOTE 1: Inverters may operate at a reactive power level with a range up to 100 % supplying or absorbing.
NOTE 2: Australia C parameter set is intended for application in isolated or remote power systems.

Volt–watt response default set-point values

Region	Default value	U3	U4
Australia A	Voltage	253V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia B	Voltage	250V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia C	Voltage	253V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
New Zealand	Voltage	242 V	250V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Allowed range	Voltage	235 to 255 V	240 to 265 V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%

NOTE: Australia C parameter set is intended for application in isolated or remote power systems.

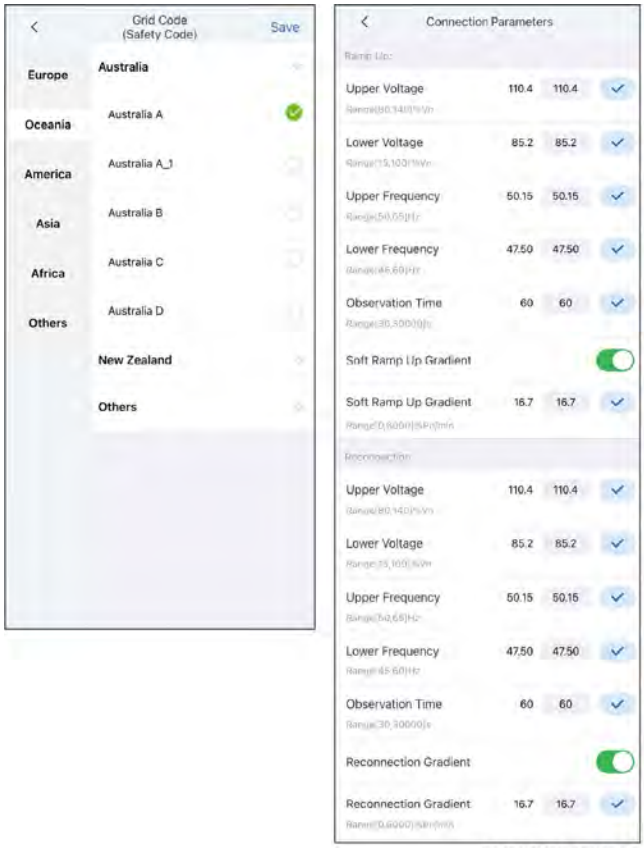
Passive anti-islanding voltage limit values

Protective function	Protective function limit	Trip delay time	Maximum disconnection time
Undervoltage 2 (V < <)	70 V	1 s	2 s
Undervoltage 1 (V <)	180 V	10 s	11 s
Overvoltage 1 (V >)	265 V	1 s	2 s
Overvoltage 2 (V > >)	275V	-	0.2 s

Upper connection and reconnection frequency (f_{URF})

Region	f_{URF}
Australia A	50.15 Hz
Australia B	50.15 Hz
Australia C	50.50 Hz
New Zealand	50.15 Hz

Setting steps:
Step 1: Set the safety code to Australia A/B/C/New Zealand on Quick Settigs page based on actual needs.
Step 2: Set the frequency parameters accordingly.



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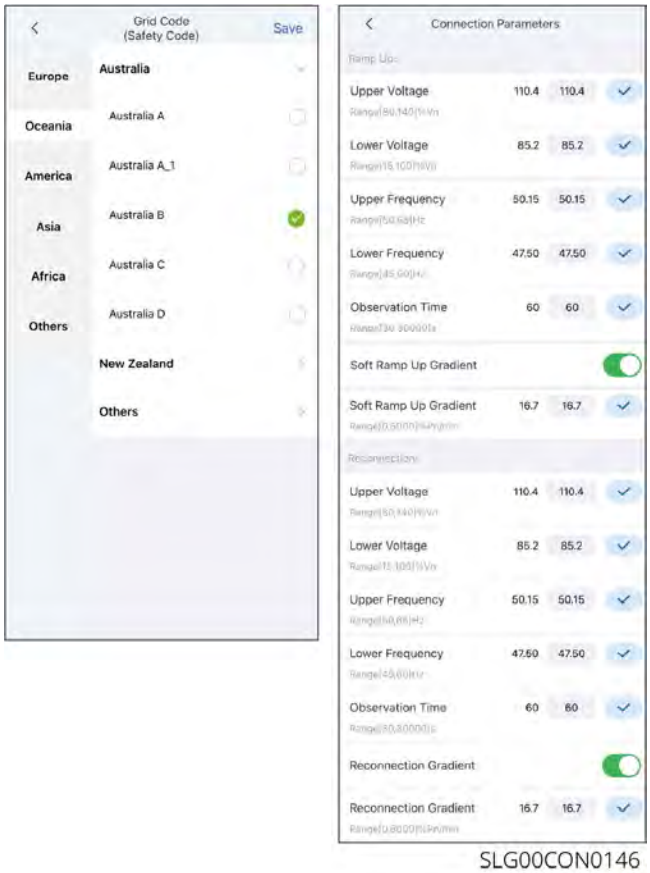

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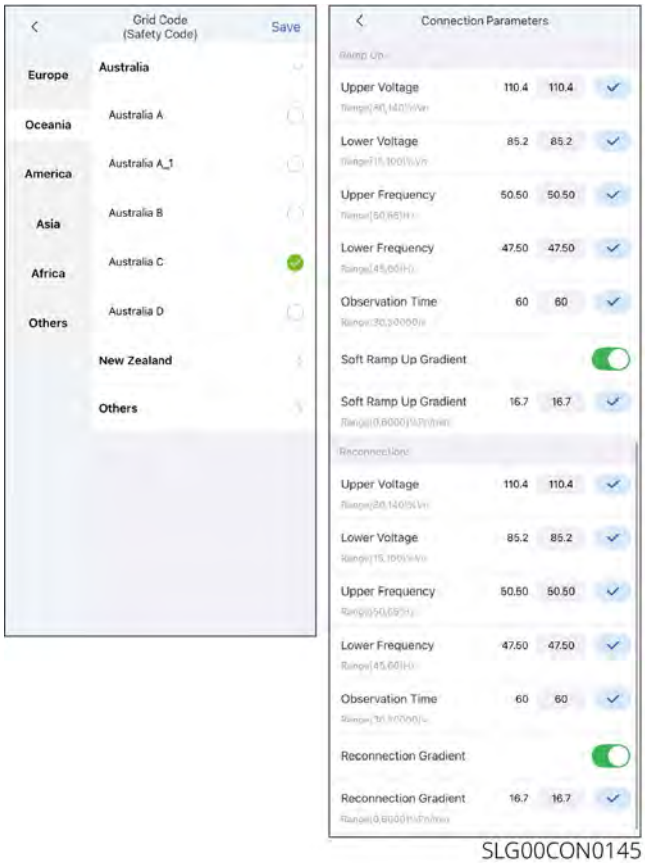

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13.7 Contact Details

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