Residential Smart Inverter

ES LD 5.0-10kW

· LX A5.0-30

Solutions Manual



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NOTICE

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

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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	ES LD Series	Rated output power: 5kW-10kW
Battery system	LX A5.0-30	Nominal capacity of 5.12kWh, supports a maximum of 30 batteries connected in parallel.
Smart Meter	GM330	Monitors and detects running data in the system, such as voltage, current, etc.
Smart Dongle	WiFi/LAN Kit-20	System operation information can be uploaded to 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.

MARNING

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.

AWARNING

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 user manual is subject to change due to product updates or other reasons. This manual cannot replace the product safety labels 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(PPE) 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.

MARNING

- 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.
- The inverter output power may decrease if the PV string inputs high voltage or current.

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.
- The inverter output power may decrease when the grid voltage and frequency changes.

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 or the power control unit 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 °C, it will cause fire.
- Do not use the battery or the power control unit 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.

MARNING

- 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.

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°C. 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 Novec1230 or FM-200 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	<u> </u>	Potential risks exist. Wear proper PPE before any operations.
2	4	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.
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	5min	Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
8		Install the equipment away from fire sources.

No.	Symbol	Descriptions
9		Keep 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.
15		Recycle regeneration mark.
16	CE	CE Mark.
17	TO/Whiteland CC11116D	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.

3 System Introduction

3.1 System Overview

The residential smart inverter 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 Software & Accessories in the system controls the electrical equipment by recognizing the overall power consumption situation. So that the power will be managed in a smart way, deciding whether the power is to be used by the loads, stored in batteries, or exported to the grid, etc.

MARNING

- Select the battery model according to the inverter model and the approved battery list. For battery requirements used in the same system, such as whether the models can be mixed and matched, and whether the capacities are consistent, please refer to the corresponding model's battery user manual or contact the battery manufacturer for relevant requirements. <u>Battery</u> <u>Compatibility Overview</u>:
 - https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Battery%20Compatibility%20Overview-EN.pdf
- Due to product upgrades or other reasons, the document content may be updated irregularly. The matching relationship between inverters and Software & Accessories products can refer to: https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility
 - https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf
- For the detailed network configuration and wiring schemes for various scenarios, please refer to: <u>6.2.Detail System Wiring Diagram(Page 71)</u>.
- In a system where the inverter operates completely off-grid, if the battery is in low light or rainy weather for a long time and fails to be recharged in a timely manner, it may cause over-discharging, which will lead to battery performance degradation or damage. To ensure the long-term stable operation of the system, the battery should be prevented from being fully discharged. Recommended measures are as follows:
 - 1. During off-grid operation, set the minimum SOC protection threshold. It is recommended to set the lower limit of the off-grid battery SOC to 30%.
 - 2. When the SOC is close to the protection threshold, the system will automatically enter the load-limiting or protection mode.
 - 3. If there is insufficient sunlight for consecutive days and the battery SOC is too low, timely recharge the battery through external energy sources (such as generators or grid-assisted charging).
 - 4. Regularly check the battery status to ensure it is within the safe operating range.
 - 5. It is recommended to fully charge and discharge the battery once every six months to calibrate the SOC accuracy.

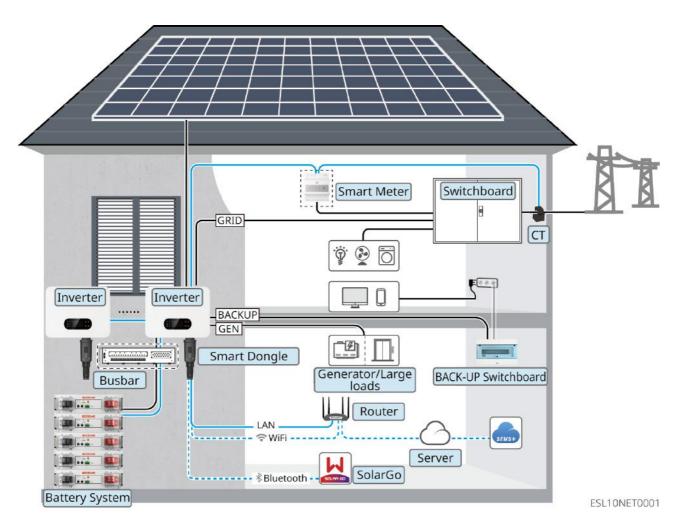
When the energy storage system is in the off-grid state, the following loads can be used normally:

Description for Off-Grid Load-Carrying Capacity of the Inverter						
Load Type GW5K-ES-LD-G10		GW7.5K-ES-LD-G10		GW10K-ES-LD-G10		
	Single phase (L- N)	Two- phase / Split- phase (L1-L2)	Single phase (L- N)	Two- phase / Split- phase (L1-L2)	Single phase (L- N)	Two- phase / Split- phase (L1-L2)
Rated Power of Single Generator Load (kVA)	1.1	2.2	1.1	2.2	1.1	2.2
Total Rated Power of Generator Loads (kVA)	0.44*Pn/2	0.44*Pn	0.5*Pn/2	0.5*Pn	0.5*Pn/2	0.5*Pn
Capacitive Load (kVA)	0.33*Pn/2	0.33*Pn	0.33*Pn/2	0.33*Pn	0.33*Pn/2	0.33*Pn
Half-wave load(kW)	1.5	NA	2	NA	2.5	NA

Note:

- Pn: Rated Output Power of the inverter.
- For 2 or more units operating in parallel, the allowable total generator load nominal power = Single generator load nominal power * Number of parallel units * 80%.
- Half-wave load: Some old household appliances or those that do not meet EMC standards (such as hair dryers and small heaters using half-wave rectification).

General Scenarios



Device Type	Model	Description
Inverter	GW5K-ES-LD-G10 GW7.5K-ES-LD-G10 GW10K-ES-LD-G10	 When only one inverter is used in the system, it supports connecting to a generator or large loads or on-grid inverter. The system supports a maximum of 6 inverters to form a parallel system; when operating in parallel, the microgrid function is not supported. The following version requirements must be met when operating in parallel for grid connection: The software version of all inverters in the system is the same. The model of all inverters in the system is the same.

Device Type	Model	Description	
Battery system	LX A5.0-30	A maximum of 30 batteries can be connected in parallel in one system.	
	Lead Acid Battery	 Supports lead-acid batteries of AGM, GEL, and Flooded types. The number of batteries that can be connected in series is calculated based on the voltage of lead-acid batteries, and the total voltage of batteries connected in series is not allowed to exceed 60V 	
		Please select the busbar according to the charging/discharging capacity of the inverter, the load size, and the charging/discharging capacity of the battery in the system.	
Busbar	BCB-22-WW-0 BCB-32-WW-0 (Purchase from GoodWe)	 BCB-22-WW-0: Used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can connect to a maximum of 6 inverters, and 6 batteries. BCB-32-WW-0: Used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can connect to a maximum of 6 inverters, and 15 batteries. Others: Please prepare busbar based on actual system power and current. 	
Smart Meter	 Built-in Smart Meter (Standard) GM330 (purchase from GoodWe) 	 Please use the CT supplied with the box to connect to the inverter, and the default CT ratio is 120A: 40mA. GM330: Purchasing from GOODWE or third-party, and the default CT ratio is nA: 5A. nA: CT Primary side input current, the range of n is 200-5000 5A: CT Secondary side output current. 	

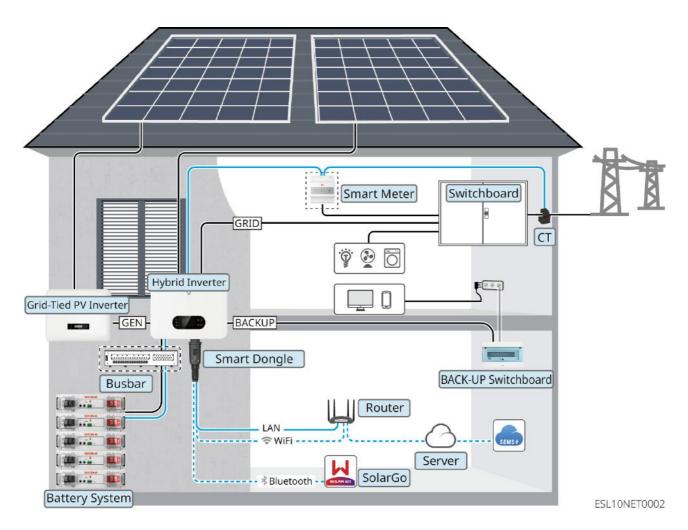
Device Type	Model	Description	
Commu nication Module	• WiFi/LAN Kit-20 (Standard)	 Please use the WiFi/LAN Kit-20 Smart Dongle to perform local testing of the equipment and remote monitoring of system operation information. In a parallel system, each inverter must be equipped with a WiFi/LAN Kit-20. The software version requirements are V2.5 or above. 	
Large Load	-	SG Ready is supported, and specification requirements for large loads are as follow: 1. Large load total power < GEN port maximum output power 2. Large load power + BACK-UP power < AC maximum input power (grid)	
Generat or	-	 The power of the generator must be greater than the total power of all loads at the BACKUP port The generator type must be consistent with the power grid type. 	

Microgrid Scenarios

In the microgrid scenarios, the on-grid inverter is connected to the GEN port of the hybrid inverter.

WARNING

- In microgrid scenarios, the PV open-circuit voltage of the hybrid inverter is not recommended to be >= 490V, to avoid the system voltage becoming too high and triggering overvoltage protection under adverse conditions.
- In the microgrid system, inverter paralleling is not supported by the inverter, and only a single inverter can be supported to use in the system.
- 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 hybrid inverter.
- Make sure that the overfrequency derating curve of the on-grid inverter is set according to the following:
 - Set the Response Delay Time to 0
 - Set the Deactivation Threshold Fstop to Off
 - It is recommended to use the Stop mode, with the overfrequency end value set lower than the overfrequency protection threshold.



Device Type	Model	Description	
Inverter	GW5K-ES-LD-G10 GW7.5K-ES-LD-G10 GW10K-ES-LD-G10	In the microgrid system, parallelization is not supported by the inverter, and only a single inverter can be supported to use in the system.	
	LX A5.0-30	A maximum of 30 batteries can be connected in parallel in one system.	
Battery system	Lead Acid Battery	 Supports lead-acid batteries of AGM, GEL, and Flooded types. The number of batteries that can be connected in series is calculated based on the voltage of lead-acid batteries, and the total voltage of batteries connected in series is not allowed to exceed 60V 	

Device Type	Model	Description		
Busbar	BCB-22-WW-0 BCB-32-WW-0 (Purchase from GoodWe)	Please select the busbar according to the charging/discharging capacity of the inverter, the load size, and the charging/discharging capacity of the battery in the system. • BCB-22-WW-0: • Used with LX A5.0-30, the battery system supports a maximum working current of 720A working power of 36kW, and can connect to a maximum of 6 inverters, and 6 batteries. • BCB-32-WW-0: • Used with LX A5.0-30, the battery system supports a maximum working current of 720A working power of 36kW, and can connect to a maximum of 6 inverters, and 15 batteries. • Others: Please prepare busbar based on actual system power and current.		
Smart Meter	 Built-in Smart Meter (Standard) GM330 (purchase from GoodWe) 	 Please use the CT supplied with the box to connect to the inverter, and the default CT ratio is 120A: 40mA. GM330: Purchasing from GOODWE or third-party, and the default CT ratio is nA: 5A. nA: CT Primary side input current, the range of n is 200-5000 5A: CT Secondary side output current. 		
Commu nication Module	• WiFi/LAN Kit-20 (Standard)	 Please use the WiFi/LAN Kit-20 Smart Dongle to perform local testing of the equipment and remote monitoring of system operation information. In a parallel system, each inverter must be equipped with a WiFi/LAN Kit-20. The software version requirements are V2.5 or above. 		

Device 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 a microgrid system, please ensure that: The safety regulation parameters of the ongrid inverter are set consistently with those of the hybrid inverter, such as grid type, overfrequency load reduction function, etc. The rated output power of the on-grid inverter should not exceed the rated output power of the hybrid inverter. When the coupled system is in parallel, if power limitation is required, please make sure: The hybrid inverter should be set in the Export Power Limit interface of the SolarGo APP, and the on-grid inverter should be set according to the actual instruments 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. In the microgrid system, if the grid type of the photovoltaic-storage hybrid inverter is configured as a two-phase grid, when matched with a single-phase on-grid inverter, the output power of the on-grid inverter will be affected by the output voltage, and a load reduction may occur. In the microgrid system, if the battery SOC is lower than 5% or the load power exceeds the inverter's rated power by 5%, the inverter cannot

Device Type	Model	Description	
		be awakened via the automatic wake-up function.	

3.2 Product Overview

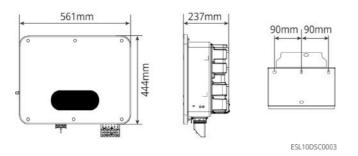
3.2.1 Inverter

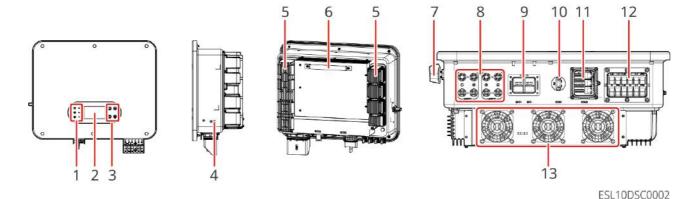
Inverters control and optimize the power in PV systems through an integrated energy management system. The electricity generated in the photovoltaic system can be used for loads, stored in batteries, output to the power grid, etc.

No.	Model	Nominal Output Power	Nominal Output Voltage
1	GW5K-ES-LD-G10	5kW	120/208, 2L/N/PE
2	GW7.5K-ES-LD-G10	7.5kW	127/220, 2L/N/PE
3	GW10K-ES-LD-G10	10kW	120/240, 2L/N/PE 127/254, 2L/N/PE

Notice

Inverters with different power ratings may vary in appearance. Please refer to the actual product for details.





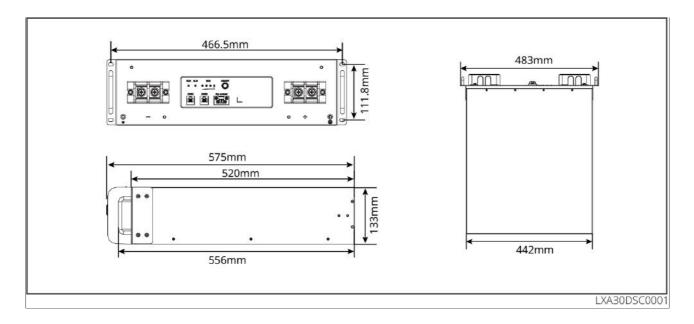
Components / No. Silk Screen Description Printing Indicator Indicating the working status of the inverter. 1 2 LCD Used to check the parameters of the inverter. Setting up the inverter in conjunction with the display 3 Button screen. Grounding 4 Connecting the PE Cable. Terminal 5 Heat Sink Used for heat dissipation of the inverter. 6 Mountings Used for installing the inverter. 7 DC Switch Controlling the connection or disconnection of DC input. Connecting the DC input cable of the PV module. GW5K-ES-LD-G10: PV+/PV- x 2 PV input 8 GW7.5K-ES-LD-G10: PV+/PV- x 3 terminal GW10K-ES-LD-G10: PV+/PV- x 4 9 **Battery Port** Connecting the Battery DC input cables. Smart Dongle Connecting the Smart Dongle, and select the type of the 10 Port Smart Dongle according to actual needs. Communicatio Connecting to communication cables such as load control, 11 n Port CT, RS485, remote shutdown/rapid shutdown. **AC Output** Connecting the AC cables and connecting the inverter to 12 Port the utility grid.

		The inverter is equipped with an external fan to cool the inverter when the temperature is too high.
13	Fan	GW5K-ES-LD-G10: Without external fan.
		• GW7.5K-ES-LD-G10: With external fan x 2.
		• GW10K-ES-LD-G10: With external fan x 3.

3.2.2 Battery

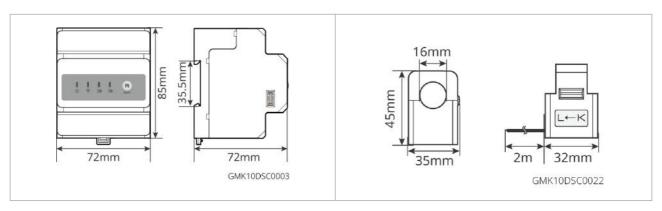
The battery system stores and releases electricity based on the requirements of a PV energy storage system. The input and output ports of the energy storage system are both high-voltage direct current. The inverter supports connecting lead-acid batteries, and the product material of the battery can be obtained from the battery manufacturer.

3.2.2.1 LX A5.0-30



3.2.3 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.



No.	Model	Applicable scenarios
		Order the CT for GM330 from GoodWe or other suppliers.CT ratio: nA: 5A
1	GM330	 nA: For the primary input current of CT, n ranges from 200 to 5000. 5A: CT secondary output current.

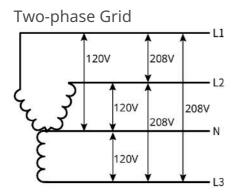
3.2.4 Smart Dongle

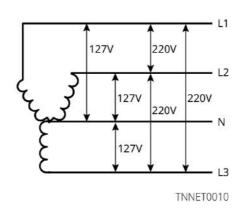
The smart dongle can transmit various power generation data to the remote monitoring platform in real time, and can communicate with the SolarGo App to complete the near-end equipment commissioning.



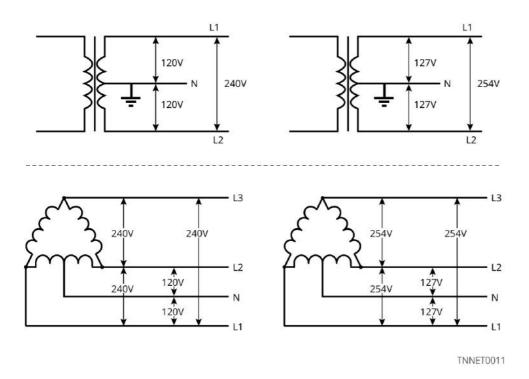
The WiFi/LAN Kit-20 supports Bluetooth, WiFi, and LAN signal types, and is suitable for near-end device testing and transmission of device operation information to remote monitoring systems.

3.3 Supported Grid Types





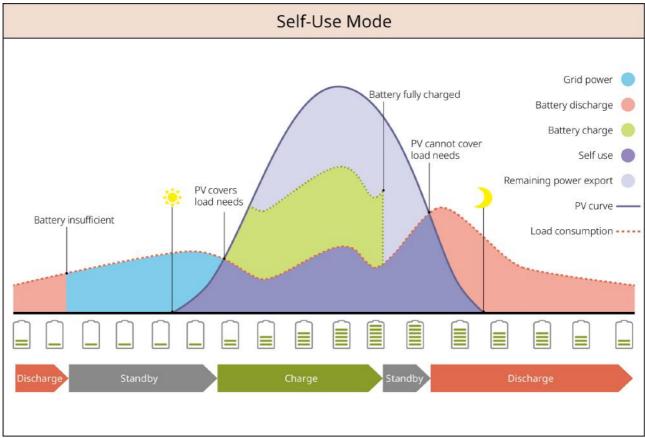
Split-phase Grid



3.4 System Working Mode

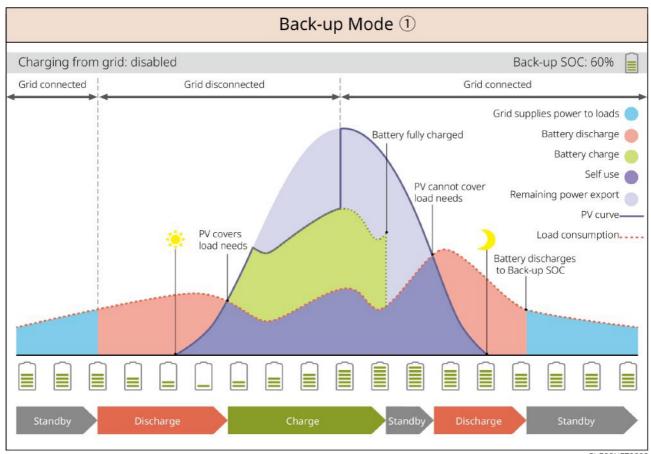
Self-use Mode

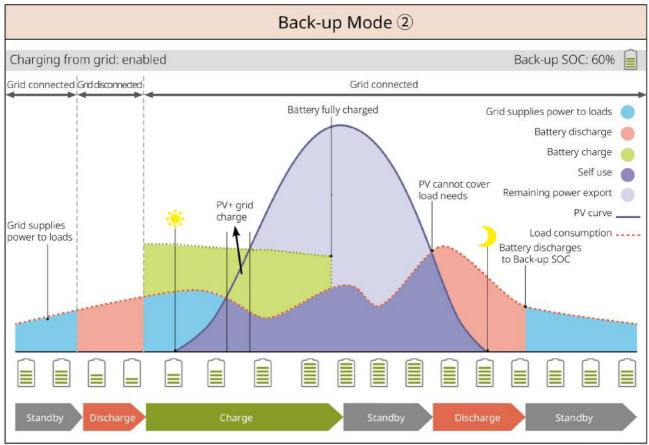
- Basic mode of system operation.
- The power generated by the PV system supply the loads in priority, and the excess power will charge the batteries, then the remaining power will be sold to the utility grid. When the power generated in the PV system is insufficient, the battery will supply the loads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



Back-up Mode

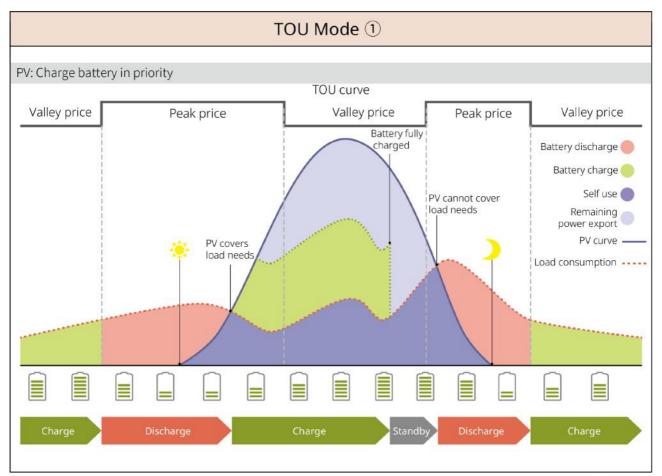
- The BACK-UP mode is mainly applied to the scenario where the grid is unstable.
- When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACK-UP loads; when the grid is restored, the inverter switches to grid-tied mode.
- The battery will be charged 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. The purchase of electricity from the power grid to charge the battery must comply with local laws and regulations.

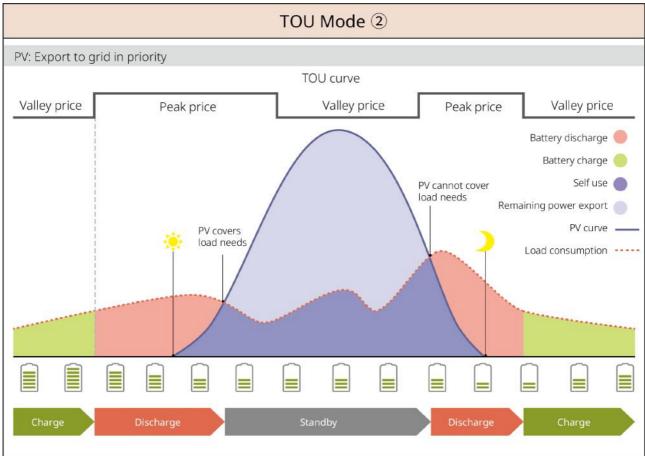




TOU mode

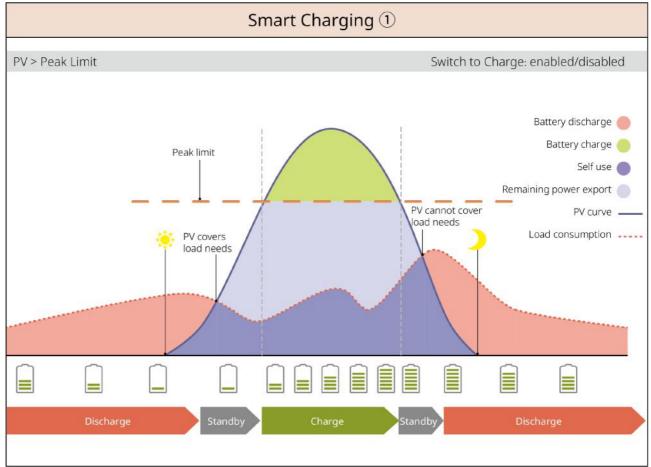
It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. For example, set the battery to charging mode during Valley period to charge battery with grid power. And set the battery to discharging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

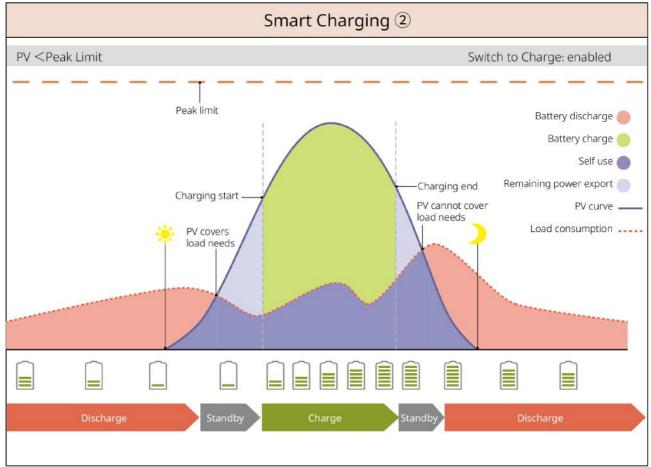


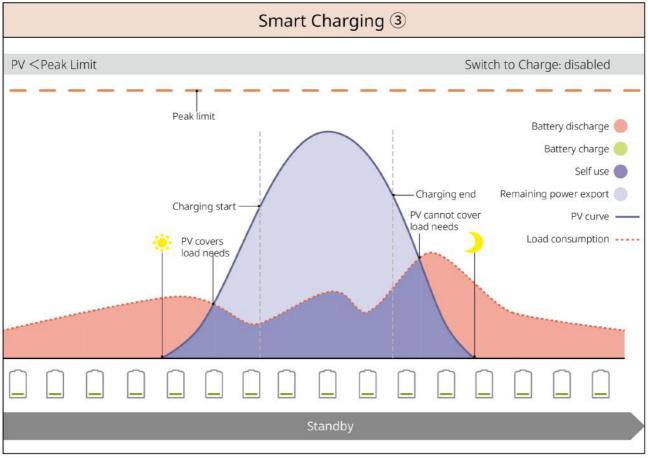


Delayed Charging Mode

- Suitable for areas with export power limit.
- Set peak limit power, charge the battery using the surplus power when the PV power exceeds the peak limit power. Or set charging time, during the charging time, the PV power can be used to charge the battery.

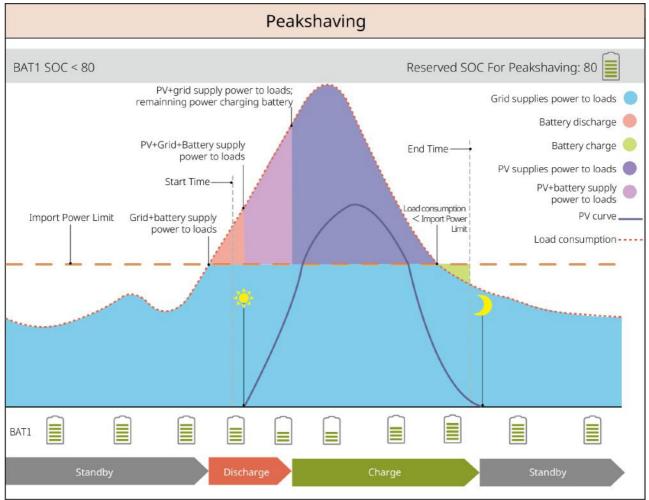






Peakshaving Mode

- Peakshaving mode 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 Peakshaving, the system will import power from the utility grid according to the set time period, load power, and import power limit.



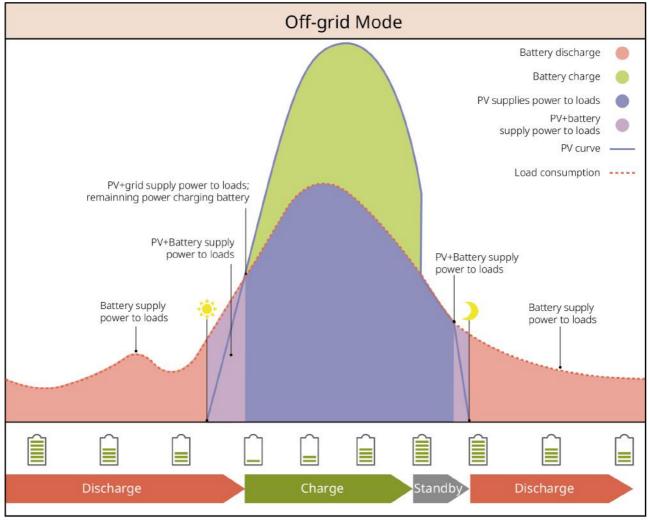
Off-grid Mode

Notice

Do not operate the energy storage system in pure off-grid mode for a long time; otherwise, under low-temperature conditions or when sunlight is weak, the battery will be unable to charge, leading to the risk of over-discharge.

When the grid is power off, the inverter will switch to off-grid operating mode.

- The power generated by the PV system supply the loads in priority, and the excess power will charge the batteries, then the remaining power will be sold to the utility grid.
- At nighttime, the battery discharges to supply power to the loads, ensuring that the BACK-UP loads remain powered without interruption.



3.5 Features

AFCI

The inverter is integrated with an AFCI (Arc-Fault Circuit Interrupter) protection device used to detect arc faults and rapidly disconnect the circuit to avoid electrical fires.

Reason to occur electric arcs:

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

Troubleshooting:

- 1. When the inverter detects an arc, the type of fault can be viewed through the App.
- 2. The alarm can be cleared automatically in 5 minutes if the inverter triggers a fault for less than 5 times within 24 hours. The inverter will shutdown for 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.

Load Control

The inverter has a dry contact controlling port, which supports connecting additional contactors to enable/disable the load. It supports domestic loads, heat pumps, etc. Load control methods are as follows:

- Time control: Set the time to turn the load on or off, and the load will automatically turn on or off within the set time period.
- Switch control: When the control mode is set to ON, the load turns on; when set to OFF, the load turns off.
- BACK-UP load control: The inverter is equipped with a built-in relay dry contact control port, which enables load on/off control via the relay. In off-grid mode, if the BACK-UP terminal is detected to be overloaded and the battery SOC is lower than the set value for battery off-grid protection, the load connected to the relay port can be turned off.

Three-phase Unbalanced Output

Both the on-grid and the BACK-UP ports of the inverter support three-phase unbalanced output, and each phase can be connected to loads of different power. The maximum output power per phase for different models is shown in the table below:

No.	Model	Single-phase maximum output power
1	GW5K-ES-LD-G10	2.5kW
2	GW7.5K-ES-LD-G10	3.7kW
3	GW10K-ES-LD-G10	5kW

Rapid Shutdown (RSD)

In the rapid shutdown system, the receiver and transmitter work together to shutdown the PV system rapidly. The receiver maintains the modules working by continuously receiving a heartbeat signal from a transmitter. The transmitter can be external or integrated into the inverter. In case of an emergency, you can enable the external initiator to shut down the transmitter, by which the RSD will stop working and the modules be shut down.

- 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://.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf
- Integrated Transmitter
 - External initiator: An external breaker
 - Receiver Model: GR-B1F-20-GR-B2F-20
 https://.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 inverter model. If the inverter model is not what you requested, do not unpack the product and contact the supplier.

4.2 Deliverables

MARNING

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		Mounting plate x 1
O gang	Expansion screws x 4		PE terminal x 1

Component	Description	Component	Description
	 PV DC terminal GW5K-ES-LD-G10: PV+/PV- x 2 GW7.5K-ES-LD-G10: PV+/PV- x 3 GW10K-ES-LD-G10: PV+/PV- x 4 		Battery OT terminal x 2
	Batteries connector x1	7.9mm 6.2mm	AC PIN terminal x 24 (7.9mm x 12; 6.2mm x 12)
	AC cover x 1		Communication PIN terminal x 18
	6PIN Communication terminal x 3		BMS communication cable x 1
	CT x 2		Lead-acid battery temperature sensor cable x 1
	Lead-acid battery temperature sensor cable fixing sticker x 2		Smart Dongle x 1
	Documents x 1		

4.2.2 Batteries Deliverables

4.2.2.1 LX A5.0-30

Componen	Description	Component	Description
	Battery module x1		Terminal resistor x 1 When connecting to a third-party busbar, this terminal resistor needs to be installed.
	 M5 OT terminal x 2: Recommended for 10mm² cable M8 OT terminal x 4: Recommended for 50mm² cable M10 OT terminal x 2: Recommended for 70mm² cable 		M5*12 grounding screw x 2
	Bracket x 2 For wall-mounted installation		M6* 70 Expansion bolts x 4 For wall-mounted installation
	M5*12 grounding screw x 2 For wall-mounted installation	: :	Line drawing template x 1 For wall-mounted installation
	Battery bracket x 2 (optional) For floor-mounted installation		M4*8 screw x 8 For floor-mounted installation
	Documents x 1		Negative power cable (optional) x 1

Componen t	Description	Component	Description
	Positive power cable (optional) x 1		Grounding cable (optional) x 1
	Communication cable (optional) x 1	<u>т.</u> тт	Decorative cover (optional) x 1

4.2.3 Busbar Deliverables

4.2.3.1 BCB-22-WW-0

Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolts x 4
	(258) OT terminal x 36 (7010) OT terminal x 6	-	-

4.2.3.2 BCB-32-WW-0 (Optional)

Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolt x 4
	(508) OT terminal x 30 (7010) OT terminal x 6	-	-

4.2.4 Smart Meter Deliverables

4.2.4.1 GM330

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

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements: If the equipment has been stored for a long time, it needs to be checked and confirmed by professionals before being put into use.

- 1. 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.
- 2. 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.
- 3. In order to protect the performance and service life of the battery, it is recommended to avoid idle 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:

Battery type	Initial SOC Range for Battery Storage	Recommen ded Storage Temperatur e (°C)	Charge and Discharge Maintaining Period ^[1]	Battery Maintenance Method ^[2]
LX A5.0-30	30%~ 40%	0~35°C	-20~45°C, <=6 months	Contact the dealer or the after-sales service for maintenanc e method.

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 + charging/discharging maintenance cycle). To view the SN date, please refer to :13.4.the meaning of SN code(Page 356).

[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 and keep the data to facilitate the keeping of maintenance records.

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 away from direct sunlight.
- 2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation. Do not install the equipment if the ports or terminals are condensed.
- 3. Keep the equipment away from flammable, explosive, and corrosive matters.

Stacking requirements:

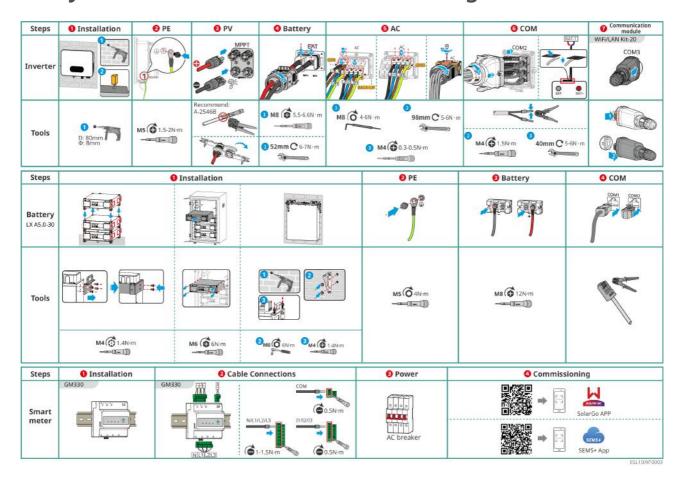
- 1. The height and direction of the stacking equipment should follow the instructions on the packing box.
- 2. The equipment must be stacked with caution to prevent them from falling.

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 System Installation and Commissioning Procedure



5.2 Installation Requirements

5.2.1 Installation Environment Requirements

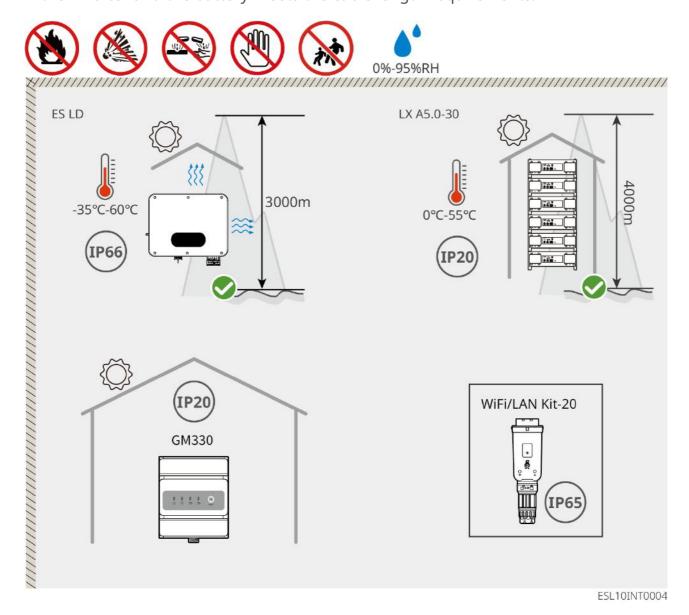
Notice

If installed in an environment below 0°C, the battery will not be able to continue charging to restore energy after being discharged, resulting in undervoltage protection.

- LX A5.0-30: Charging temperature range: 0<T<=55°C; Discharging temperature range: -20<T<=55°C
- 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. The installation site should be out of the reach of children and away from areas that are easily accessible.
- 4. Do not touch the running equipment to avoid being hurt as its temperature may exceed 60°C.
- 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. The installation height of the equipment shall be convenient for operation and maintenance. Ensure that the equipment indicator lights, all labels are easy to view, and the terminal blocks are easy to operate.
- 9. The altitude to install the equipment shall be lower than the maximum working altitude.
- 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. Install the equipment away from electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the equipment, you have to:
 - a. Inverter: Add a ferrite core with multiple windings or a low-pass EMI filter at the DC input line or AC output line of the inverter; or ensure the distance between the inverter and wireless electromagnetic interference equipment is more than 30 meters.
 - b. Other equipment: the distance between the equipment and the wireless EMI

equipment should be more than 30m.

12. The length of the DC cable and communication cable between the battery and the inverter must be less than 3m. Please ensure that the installation distance between the inverter and the battery meets the cable length requirements.

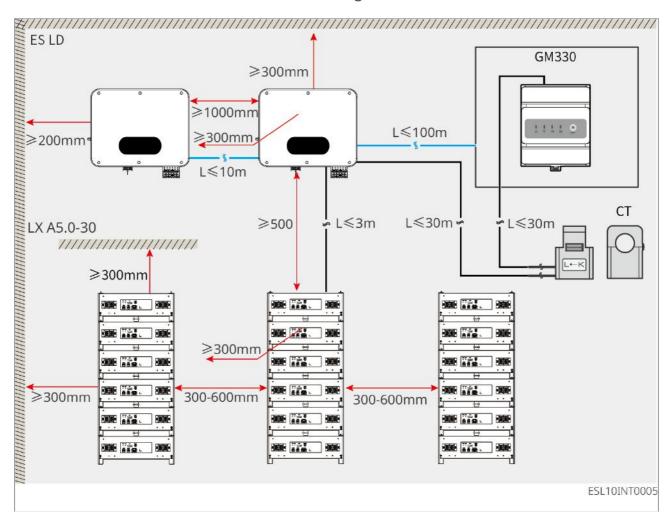


5.2.2 Installation Space Requirements

Reserve enough space for operations and heat dissipation when installing the system.

• When using CAT7E communication cables among inverters, the maximum distance can reach 10 meters, while using CAT5E CAT6E communication cables, the

- maximum distance can reach 5 meters. The length of the communication cable should not exceed 10 meters; otherwise, it may cause communication abnormality.
- For the installation of the CT, a shielded network cable of CAT5E or higher grade must be used, and the cable length should not exceed 30 meters.
- For the RS485 twisted-pair shielded cable used for communication between the inverter and the smart meter, the cable length should not exceed 100 meters.



5.2.3 Tool Requirements

Notice

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

Installation Tools

Tool Type	Description	Tool Type	Description
	Diagonal pliers		RJ45 crimping tool
15 Aug	Wire stripper	⑤ — — ⊘	Level ruler
3	Adjustable wrench		PV connector tool A-2546B
	AC connector tool YQK-70		Torque wrench M2, M4, M5, M8
77	Impact drill (drill bits Ф8mm)		Cable tie
	Rubber hammer		Socket wrench set
	Marker		Multimeter Range<=600V
	Heat shrink tube		Heat gun
	Vacuum cleaner		

Personal Protective Equipment

Tool Type	Description	Tool Type	Description
	Insulating gloves, protective gloves		Dust mask
	Goggles		Safety shoes

5.3 Equipment Handling

!CAUTION

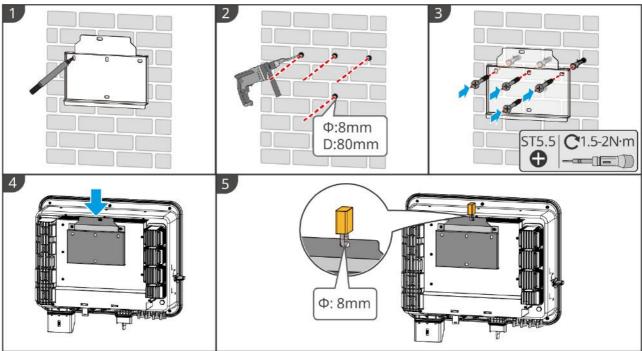
- Operations such as transportation, turnover, installing and so on must meet the requirements of local laws and regulations.
- Move the inverter to the site before installation. Follow the instructions below to avoid personal injury or equipment damage:
- 1. Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
- 2. Wear safety gloves to avoid personal injury.
- 3. Keep the equipment in balance to avoid its falling down during moving.

5.4 Inverter Installation

ACAUTION

- 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.
- Make sure the inverter is firmly installed in case of falling down.

- 1. Put the mounting plate on the wall horizontally and mark positions for drilling holes.
- 2. Drill holes with the impact drill.
- 3. Use expansion bolts to fix the mounting plate on the wall.
- 4. Install the inverter on the mounting plate. Tighten the nuts to secure the mounting plate and the inverter.



ESL10INT0002

5.5 Installing the Battery System

MARNING

- Ensure that the battery system is installed vertically and securely. When using the locking bracket, the bracket should be vertically attached to the wall and the surface of the battery system.
- Cover the equipment with a cardboard to prevent foreign matters when drilling holes. Otherwise, the system may be damaged.
- After marking the drilling position with a marker pen, the battery system needs to be moved away to avoid equipment damage caused by the impact drill when drilling.

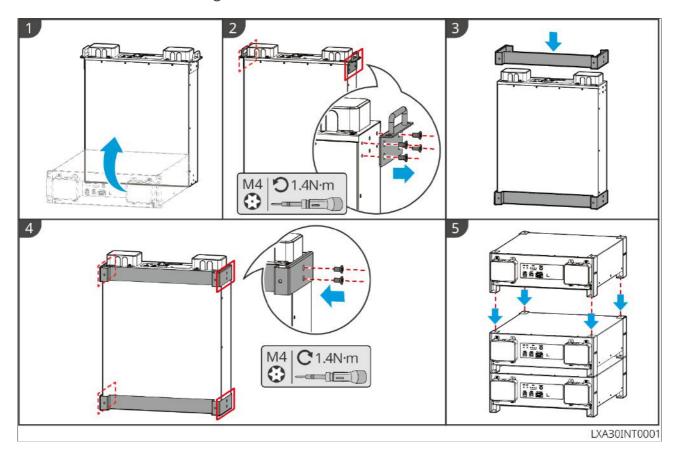
5.5.1 LX A5.0-30

LX A5.0-30: Stacking installation

VOTICE

Up to 6 batteries can be stacked.

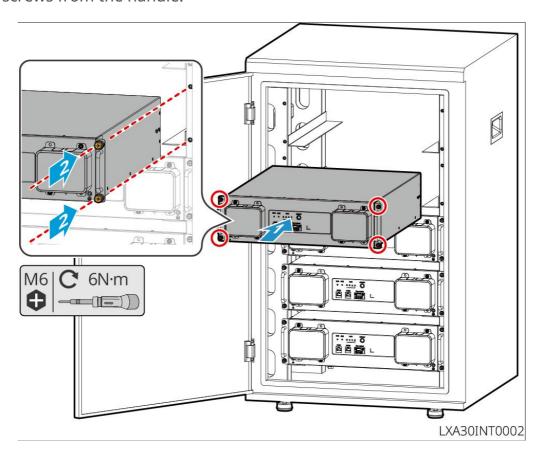
- 1. Place the battery vertically, and remove the battery handles.
- 2. Install brackets on the battery, and secure them with screws.
- 3. Place the battery flat and stack multiple batteries. Ensure that the locating pin is inserted into the locating hole.



LX A5.0-30: Cabinet Installation

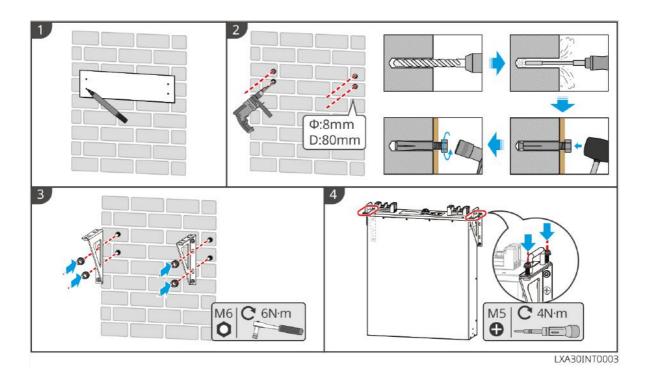
NOTICE

- It is recommended to install it in a 19-inch standard cabinet with a length * width of 600*800mm and above, and the height should be determined based on the thickness of the battery (133mm) and above.
- For cabinet installation, electrical labels and warning labels need to be attached to any position of the front panel of the battery (these labels are shipped as additional accessories).
- 1. Place the battery on the guide rail of the rack and secure the battery to the rack with screws from the handle.



LX A5.0-30: Wall-mounted Installation

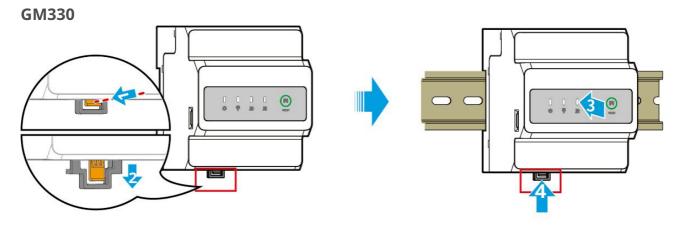
- 1. Determine the drilling position with installation positioning cardboard and marker pen.
- 2. Use an impact drill to drill holes.
- 3. Install the battery brackets.
- 4. Install the battery on the brackets and use screws to secure the battery.



5.6 Installing the Smart Meter

MARNING

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.



GMK10INT0003

6 System Wirings

ADANGER

- 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.
- For parallel systems, follow the safety precautions in the user manuals of related products in the system.

6.1 System Wiring Electrical Block Diagram

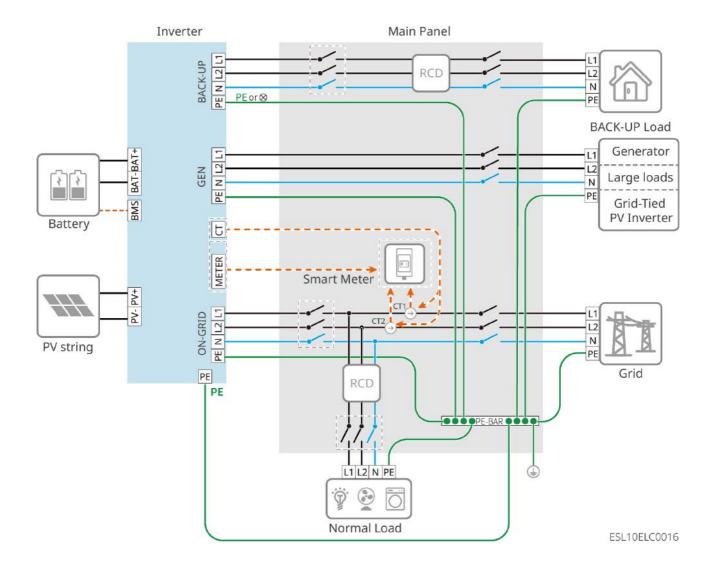
Note

- N and PE wiring ON-GRID and BACK-UP of the inverter are different based on the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- The inverter's built-in meter can be used by connecting it directly to the CT. The CT cable supplied with the box is 10 meters long. If a longer cable is required, a shielded cable that complies with local regulations can be used to extend the cable 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.
- There are built-in relays inside of the inverter's ON-GRID AC ports. When the inverter is in the off-grid mode, the built-in ON-GRID relay is open; while when the inverter is in grid-tied mode, it is closed.
- When the inverter is powered on, the BACK-UP AC port is charged. Power off the inverter first if maintenance is required on the BACK-UP loads. Otherwise, it may cause electric shock.

N and **PE** cables in the Main Panel shall be wired separately.

Notice

- Please ensure that the PE cable of the BACK-UP is connected correctly and securely; otherwise, the BACK-UP function may be abnormal when a grid fault occurs.
- Other areas except Australia, New Zealand are applicable to the following wirings:



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, a smart meter or a CT can be used in conjunction to monitor the system's power generation and control the amount of electricity fed into the grid.

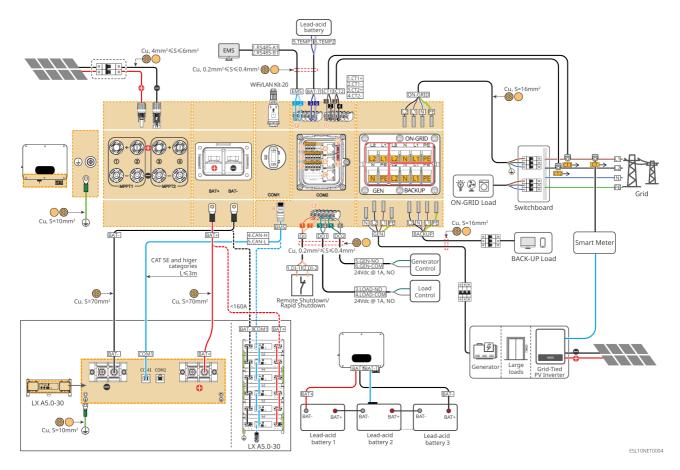
- Connecting a smart meter enables the functions of export power limit and load monitoring.
- After connecting a smart meter, please enable the **Power Limit** via the SolarGo App.

Notice

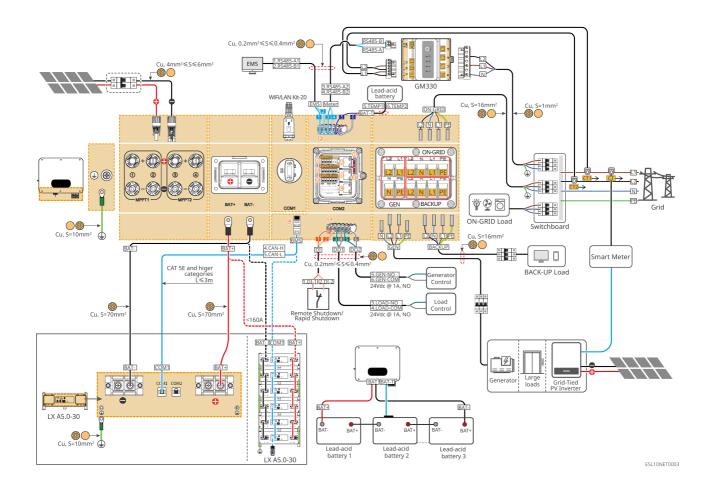
- The GM330 smart meter is available as an option. Please contact GoodWe to purchase if required.
- When the built-in smart meter of the inverter is not used in the system, do not connect the inverter's CT port.
- If export power limit is required for the on-grid inverter, please connect a separate device such as a smart meter or CT.
- In two-phase and split-phase systems, the safety regulation parameters of the on-grid inverter must be set to be consistent with those of the hybrid inverter.
 Only the relevant wiring methods are shown in the system wiring diagram. For the specific wiring method of the on-grid inverter, please refer to the on-grid inverter Manual.
- In the single-unit system wiring diagram, only some models of equipment are used for wiring demonstration. Please perform the wiring according to the actual equipment in use and refer to the corresponding wiring guide chapter.
- The following diagram mainly introduces parallel connections. For other port connections, refer to the single-unit system.

6.2.1 Detailed System Wiring Diagram for Single Inverter

With built-in smart meter scenarios



With GM330 scenarios



6.2.2 Detailed System Wiring Diagram for Parallel System

NOTICE

- The inverter connected to the smart meter is considered as the master inverter, while all the others are slave inverters.
- The GM330 Smart Meter is standard for parallel scenarios.
- If functions such as remote shutdown, load control, and generator control are required, please connect the communication cable to the main inverter.
- The following diagram mainly introduces parallel connections. For other port connections, refer to the single system.
- In a parallel operation system, if you need to disconnect the circuit breaker of any port on a slave inverter, please disconnect the circuit breakers of other ports on this inverter simultaneously; otherwise, it may cause abnormal system operation.
- The built-in smart meter supports up to 2 inverters in parallel. The GM330 Smart Meter is standard for 2 or more inverters in parallel.

Multiple Inverters, Off-Grid Parallel Operation

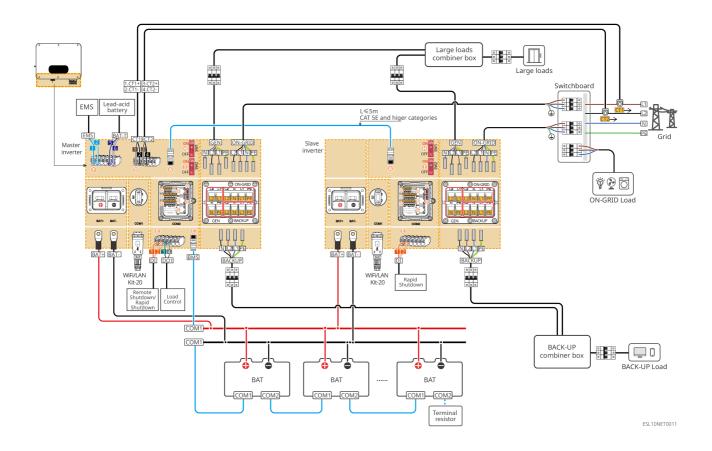
- In parallel scenarios, the inverter connected to the smart meter is considered as
 the master inverter, while all the others are slave inverters. The master inverter
 must be set as the master unit through the parallel system settings in the **SolarGo App**. For specific settings, please refer to <u>8.4."Setting Up the RS485 Parallel</u>
 <u>System"(Page 164)</u>.
- The parallel system does not support the connection of generators and on-grid inverters.
- If a remote shutdown device needs to be connected in the system, please connect it to the main inverter.

With built-in smart meter scenarios

DIP Switch

• Master inverter: SW1: ON, SW2: ON.

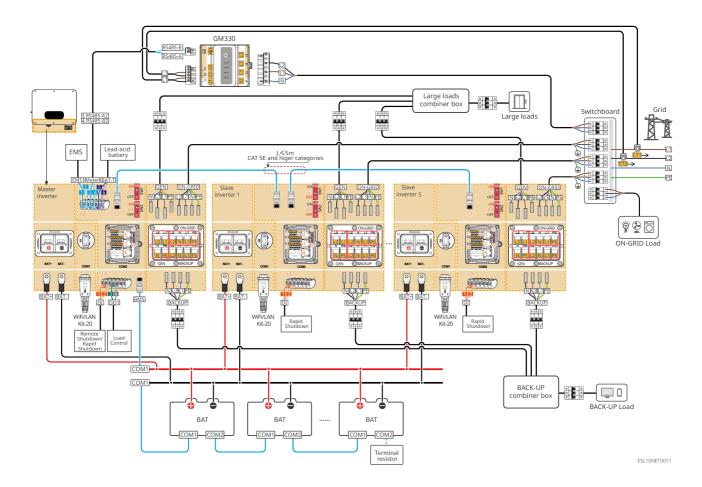
Slave inverter 1: SW1: ON, SW2: ON.



With GM330 scenarios

DIP Switch

- Master inverter: SW1: ON, SW2: ON.
- Slave inverter 1 and slave inverter n-1: SW1: OFF, SW2: OFF.
- Slave inverter n: SW1: ON, SW2: ON.



6.3 Preparing Materials

MARNING

- 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 AC cable for BACK-UP port of each inverter
 - The AC cable for ON-GRID port of each inverter
 - The power cable between inverter and battery
 - The power cable between batteries
 - The power cable between inverter and busbar
 - The power cable between battery and busbar

6.3.1 Preparing Breakers

No.	Circuit breaker	Recommended specifications	Commen t	
1	ON-GRID circuit breaker			

No.	Circuit breaker	Recommended specifications	Commen t	
		The whole-house backup power scenario are recommended as follows:	When selecting	
		Nominal Current: >= 80ANominal Voltage: >=127Vac	a circuit breaker , you can	
		The partial power scenario are recommended as follows:	also choose one that meets	
2	BACK-UP load circuit breaker	• Nominal Current: • GW5K-ES-LD-G10: >=32A	local installatio	
		GW7.5K-ES-LD-G10: >=40AGW10K-ES-LD-G10: >=63A	regulatio	
		Nominal Voltage: >=127Vac	ns based on	
		Note: If the inverter's BACK-UP port is not used, the ON-GRID circuit breaker can be selected according to the maximum grid-connected current.	the actual working current.	
		Optional in compliance with local laws and regulations		
3 Battery Breaker		 GW5K-ES-LD-G10: the nominal current is >=120A, the nominal voltage is >=60Vdc GW7.5K, ES-LD-G10: the nominal current is >=165A, the nominal voltage is >= 230Vdc. GW10K-ES-LD-G10: the nominal current is >=220A, the nominal voltage is >=60Vdc 		
4	GEN circuit breaker	 Nominal Current: GW5K-ES-LD-G10: >=25A GW7.5K-ES-LD-G10: >=38A GW10K-ES-LD-G10: >=50A Nominal Voltage: >=127Vac 		

No.	Circuit breaker	Recommended specifications	Commen t
5	RCD	Optional in compliance with local laws and regulations • Type A • ON-GRID: 300mA • BACK-UP: 30mA	Prepared by customer s
6	Load Circuit Breaker	The specification requirements shall be determined based on the actual operating load.	Prepared by customers

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=10mm² 	Prepared by customers
2	Battery PE cable	 Single-core outdoor copper cable Cross-sectional area: LX A5.0-30: 10mm² 	 Prepared by customers LX A5.0-30: Accessory acquisition (optional)
3	PV DC cable	 Commonly used outdoor photovoltaic cable Cross-sectional area: 4mm²-6mm² Outer diameter: 4.8mm-6.3mm 	Prepared by customers

No.	Cable	Recommended specifications	Acquisition method
4	Battery DC cable	 Single-core outdoor copper cable Wiring requirements for inverter battery ports: Cross-sectional area: 70mm² Outer diameter: 15.7mm-16.7mm Requirements for cables between battery and busbar: LX A5.0-30, Cross-sectional area: 50mm² Requirements for cables between batteries: LX A5.0-30, Cross-sectional area: 50mm² 	LX A5.0-30: Accessory acquisition (optional)
5	AC cable	 AC input and output cables of inverter (BACKUP/ GRID): Cross-sectional area: 16mm² Outer diameter of multi-core outdoor copper cable: <=10.5mm Outer diameter of single-core outdoor copper cable: <=30mm Generator power cable (GEN): Cross-sectional area: 16mm² Outer diameter of multi-core outdoor copper cable: <=10.5mm Outer diameter of single-core outdoor copper cable: <=30mm 	Prepared by customers
6	Smart meter power cable	 Outdoor copper cable Cross-sectional area: 1mm² 	Prepared by customers

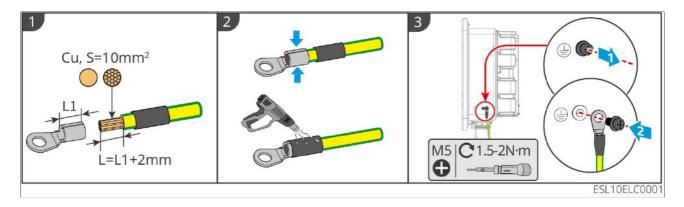
No.	Cable	Recommended specifications	Acquisition method
7	Battery communication cable	CAT 5E and above standard shielded network cable and RJ45 shielded connector.	LX A5.0-30: Accessory acquisition (optional)
8	Smart meter RS485 communication cable	 Shielded twisted pair cable Cross-sectional area: 0.2mm²-0.4mm² 	Prepared by customers
9	Communicatio n cable for parallel connected inverters	CAT 5E and above standard shielded network cable and RJ45 shielded connector	Prepared by customers
10	Remote shutdown communication cable	 Copper core twisted pair cable Cross-sectional area: 0.2mm²-0.4mm² 	Prepared by customers
11	Inverter-Side Batteries Communication Cable	-	Inverter Accessories Acquisition

6.4 Connecting the PE Cable

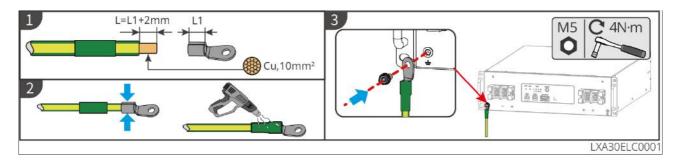


- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Make sure that both of the two PE cables are securely connected.
- Make sure that all the grounding points on the enclosures are equipotential connected when there are multiple inverters.
- To improve the corrosion resistance of the terminal, it is 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.

Inverter



Battery (LX A5.0-30)



6.5 Connecting the PV cable



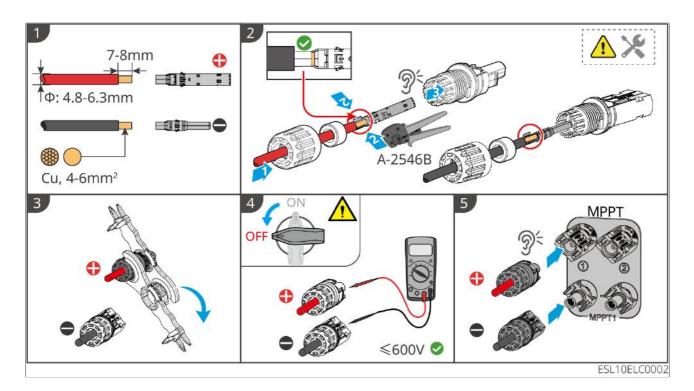
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and personal and property losses.
 - 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

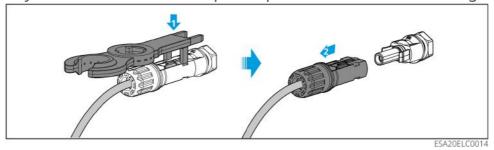
- The PV strings cannot be grounded. Ensure the minimum insulation resistance of PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter (R=maximum input voltage/30mA).
- Ensure the DC cables are connected tightly, securely and correctly.
- 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 be of the same type, the same number of PV panels, the same tilt and angle to ensure the best efficiency.



If disassembly of the PV terminal is required, please refer to the following steps:

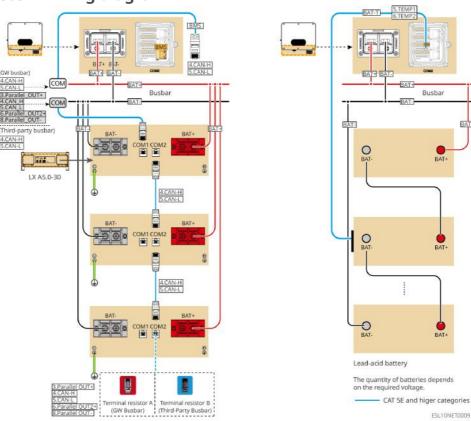


6.6 Connecting the Battery Cable



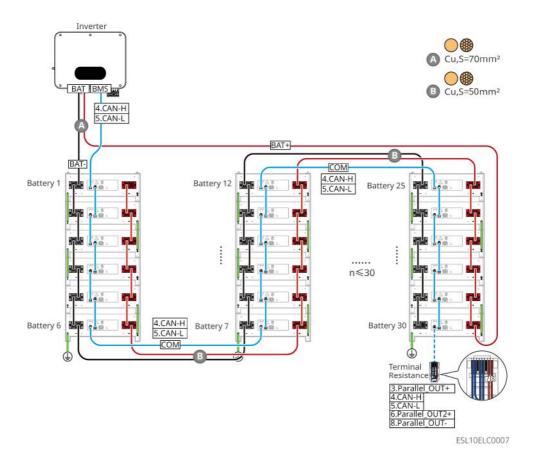
- Do not connect one battery pack to more than one inverter at the same time. Otherwise, it may cause damage to the inverter.
- Connecting loads between the inverter and the battery is prohibited.
- When connecting the battery cables, use insulated tools to prevent accidental electric shock or battery short circuit.
- Please ensure that the battery open-circuit voltage is within the allowable range of the inverter.
- Install a DC breaker between the inverter and the battery in compliance with local laws and regulations.

Battery system wiring diagram



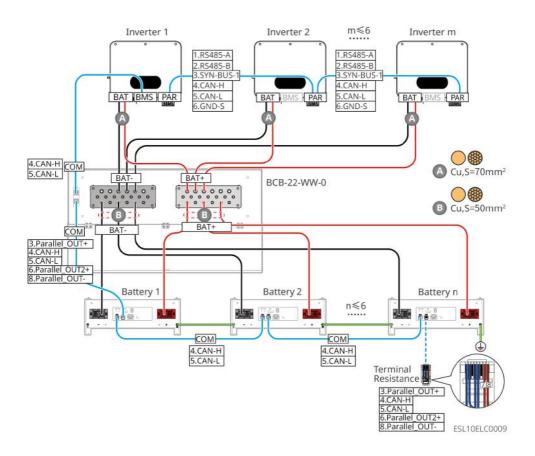
LX A5.0-30: Hand-to-hand connection

• The battery system supports a maximum working current of 160A, working power of 8kW, and can connect to a maximum of 1 inverter, and 30 batteries.



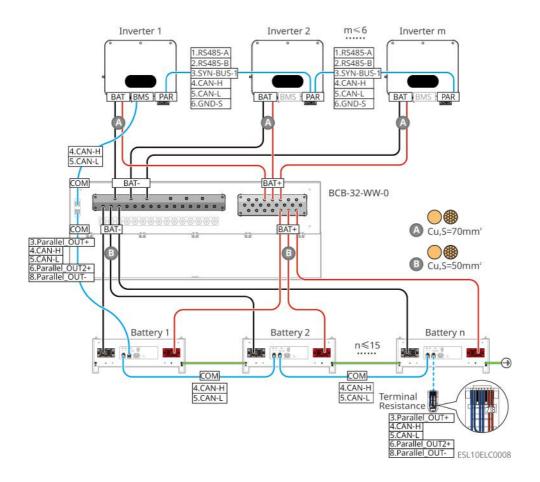
LX A5.0-30: Connection with the busbar BCB-22-WW-0

• The battery system supports a maximum working current of 720A, working power of 36kW, and can connect to a maximum of 6 inverter, and 6 batteries.



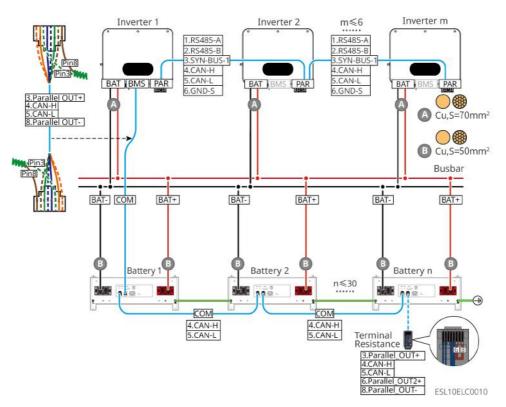
LX A5.0-30: Connection with the busbar BCB-32-WW-0

• The battery system supports a maximum working current of 720A, working power of 36kW, and can connect to a maximum of 6 inverter, and 15 batteries.



LX A5.0-30: Connection with the third-party busbar

• The nominal charging current of a single battery is 60A, and the nominal discharging current is 100A; the maximum charging current is 90A; the maximum discharging current is 150A. a maximum of 30 batteries can be connected in parallel in one system.



LX A5.0-30 Communication Port Definition

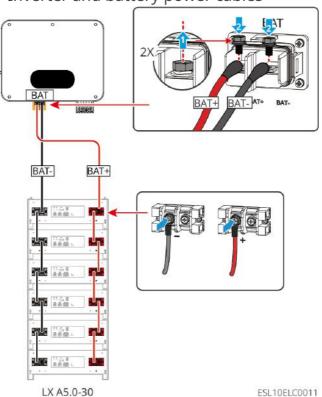
PIN	COM1 COM2 Description		Description
1	-	-	Reserved
2	-	-	Reserved
3	Parallel OUT+	Parallel OUT+	Parallel communication port
4	CAN_1H	CAN_1H	Connect the inverter communication port
5	CAN_1L	CAN_1L	or battery parallel communication port
6	Parallel OUT2+	Parallel OUT2+	Parallel interlock communication port
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel communication port

6.6.1 Connecting the Power Cable between the Inverter and Battery

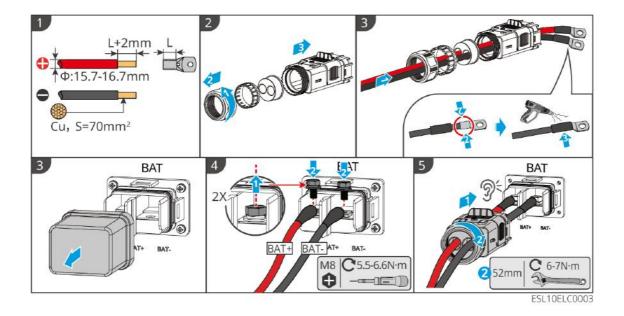


- Measure the DC cables using a multimeter to avoid reverse polarity connection. Also, the voltage should be under the permissible range.
- Connect the battery cables to the corresponding terminals such BAT BAT+, BAT BAT- and grounding ports correctly. Otherwise it will cause damage to the inverter.
- 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 cables are connected securely. Otherwise it will cause damage to the inverter due to overheat during its operation.
- Do not connect one battery pack to more than one inverter at the same time. Otherwise, it may cause damage to the inverter.

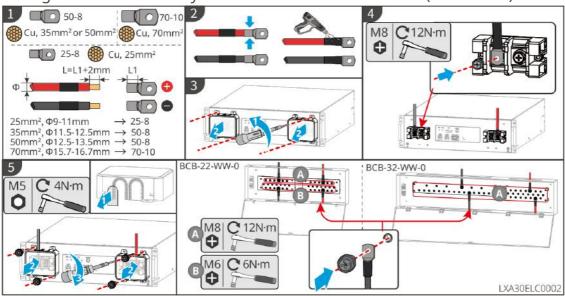
Overview of wiring for Inverter and battery power cables



Wiring Steps for the Inverter Terminal



Wiring Method for Battery and Combiner Box Terminals (LX A5.0-30)



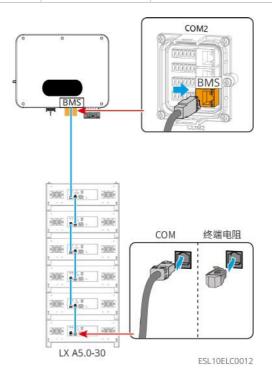
6.6.2 Connecting the Communication Cable between the Inverter and Battery

Notice

The BMS battery communication cable is provided with the inverter, it is recommended to use these supplied cables. If the communication cable provided with the box cannot meet the requirements, only PIN4 and PIN5 of the RJ45 connector should be crimped when crimping homemade cables, otherwise communication failure may occur.

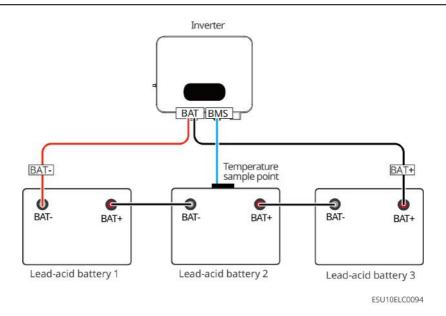
BMS Communication Connection Instructions Between Inverter and Battery:

Inverter port	Connected to the battery port	Port definition	Description
BMS(CAN)	COM1	4: CAN_H 5: CAN_L	 The inverter communicates with the battery through CAN Connect the BMS port of the inverter to the COM1 port of the battery.



Notice

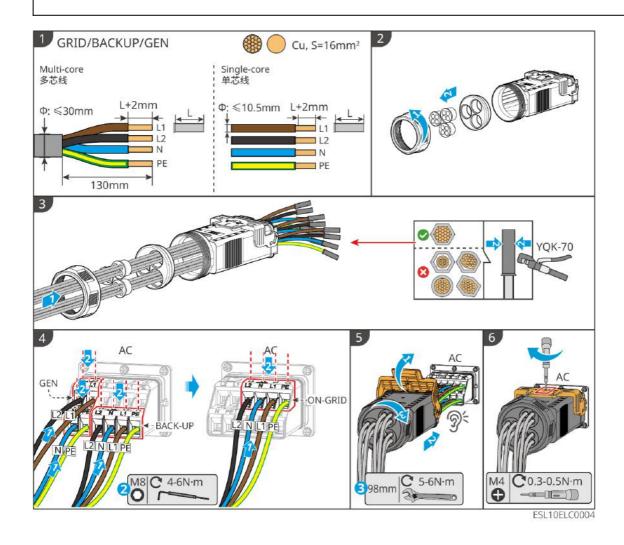
- When connecting the lead-acid battery temperature sensor cable, it is recommended to connect the temperature sensor cable at a location with poor heat dissipation. For example, when lead-acid batteries are placed side by side, the sensor should be fixed on the lead-acid battery located in the middle.
- To better protect the battery cell, a temperature sampling cable must be installed, and it is recommended to place the battery in a well-ventilated environment.



6.7 Connecting the AC Cable



- The residual current monitoring unit (RCMU) is integrated into the inverter to avoid the residual current exceeds the limit. The inverter will disconnect the utility grid quickly once it found the residual current exceeds the limit.
- Connect the AC cables to the corresponding terminals such as "BACK- UP", "ON-GRID", "GEN", grounding ports correctly. Otherwise it will cause damage to the inverter.
- 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.

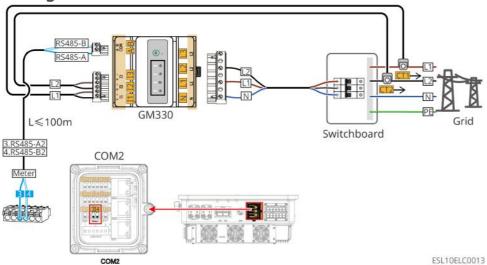


6.8 Connecting the Meter Cable

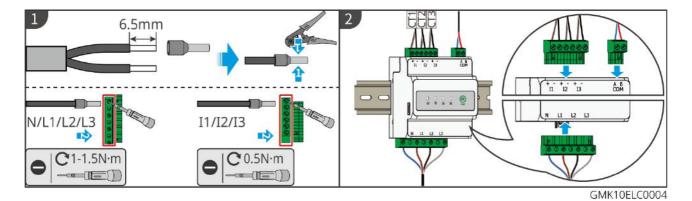
Notice

- 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 tightly, securely, and correctly. Inappropriate wiring may cause poor contacts or high impedances, and damage the inverter.
- 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.
- Outer diameter of the AC cable should be smaller than the holes diameter of the CT, so that the AC cable can be routed 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 depending on the model, but they are installed and connected in the same way.

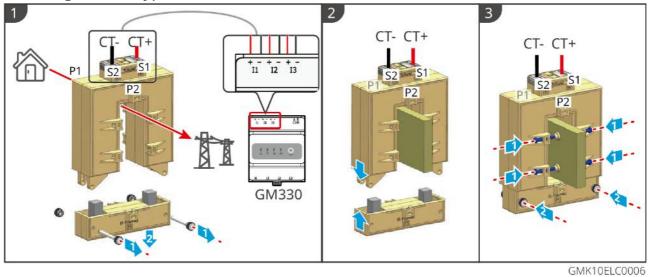
Wiring of GM330



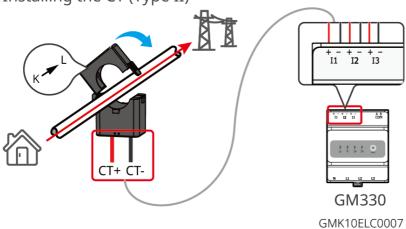
Connection steps



Installing the CT (Type I)



Installing the CT (Type II)

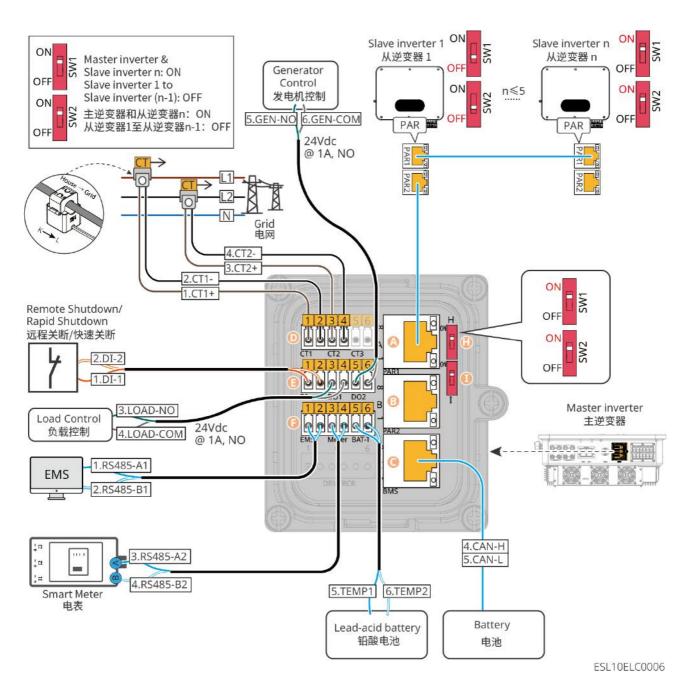


6.9 Connecting the Inverter Communication Cable

Notice

- The communication functions are optional. Connect the cables based on actual needs.
- The inverter supports connecting to mobile phones or WEB interfaces via Bluetooth, WiFi, and LAN communication methods to set relevant device parameters, view device operation information and error messages, and keep track of the system status in a timely manner.
- In the single inverter system, installation of the WiFi/LAN Kit-20 smart dongle is supported.
- In a parallel system, both the master and slave inverters must be installed with the WiFi/LAN Kit-20 smart dongle for networking.
- If you need to use the remote shutdown function, please turn it on in the SolarGo App after wiring is completed.
- 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 on-grid.
- Remote shutdown function: please connect the communication cable to the
 master inverter. Rapid shutdown function: please connect the communication
 cable to each inverter respectively. If the rapid shutdown function and remote
 shutdown function need to be used at the same time, please contact the aftersales service center.

Communication Function Description



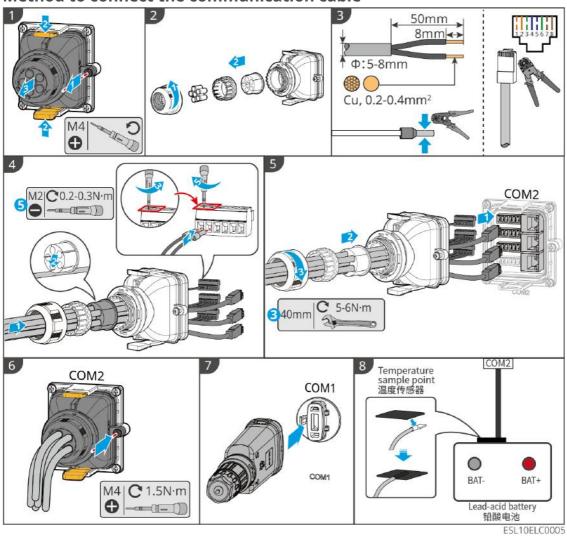
Port (Silk screen printing)		Function	Description
А	PAR1	Parallel communicatio n port 1	Parallel communication port. Please use CAT5E
В	PAR2	Parallel Communicatio n Port 2	and above standard network cable and RJ45 connector

Port (Silk screen printing)		Function	Description
С	BMS	Battery BMS communicatio n	When connecting lithium-ion batteries, it is used to connect the BMS communication cable of the battery system and supports CAN signal communication.
D	CT1, CT2	CT connection port	Connecting the CT communication cable
	CT3	Reserved	-
E	DI	Remote Shutdown/Rapi d Shutdown	 Remote Shutdown Function: When an accident occurs, the equipment can be controlled to shut down. The remote shutdown device needs to be a normally closed switch Rapid Shutdown: In the rapid shutdown system, the receiver and transmitter work together to shutdown the PV system rapidly. The receiver maintains the module output by receiving signals from the transmitter. The transmitter can be external or integrated into the inverter. In case of an emergency, you can enable the external initiator to shut down the transmitter, by which the RSD will stop working and the modules be shut down

Port (Silk screen printing)		Function	Description
	DO1	Load Control	 Support connecting dry contact signals to achieve load control and other functions. DO contact capacity is 24Vdc @1A, NO/COM normally open contact Support SG Ready heat pump connection, control the heat pump through dry contact signal to control the heat pump Supported working modes: Working mode 2 (signal: 0:0): Energy saving mode, in which the heat pump operates in energy-saving mode Working mode 3 (signal: 0:1): It is recommended to activate. In this mode, the heat pump increases the hot water reserve to store heat while maintaining its current operation
	DO2	Generator start/stop controlling Port	Support accessing the generator controlling signals DO contact capacity is 24Vdc @1A, NO/COM normally open contact
	EMS	EMS Communicatio n Port	Connect to the third-party EMS devices for energy control. In the parallel system, it is not supported to connect third-party EMS monitoring devices.
F	Meter	Meter Communicatio n	Support the use of RS485 communication to connect external smart meters.
	BAT-T	Lead-Acid Temperature Measurement Port	Used to connect temperature sensing wire to lead- acid temperature measurement
D	CT1, CT2	CT connection port	CT communication cables only need to be connected when using the inverter's built-in meter.

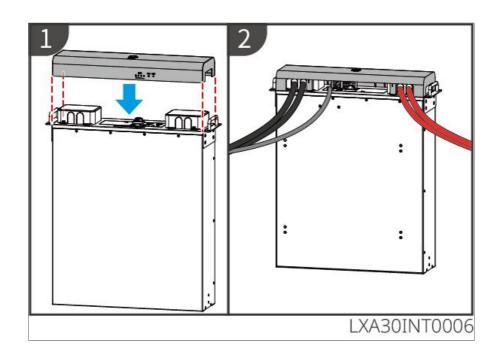
Port (Silk screen printing)		Function	Description
Н	SW1	Parallel DIP Switches	In a multi-inverter parallel operation scenario, set the parallel DIP switches of the first and last
I	SW2	Switches	inverters to the ON position, and set those of the other inverters to the OFF position

Method to connect the communication cable



6.10 Installing the Battery Cover

6.10.1 LX A5.0-30



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	Ensure that the ground wire, DC wire, AC wire, communication wire, and terminal resistor are connected correctly and securely.		
3	The cable binding shall comply with routing requirements, with reasonable distribution and no damage.		
4	Unused wire holes and ports should connect with reliable terminals provided with the accessories and 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 Function: When there is no PV power generation in the photovoltaic system and the grid is abnormal, if the inverter cannot operate normally, the battery black start function can be used to force the battery to discharge and start the inverter. The inverter can then enter off-grid mode and operate, with the battery supplying power to the load.
- 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 normally with the battery system, the battery system switch will be automatically disconnected, and the battery system will be powered off.
- When there are multiple batteries in the system, starting any one of them can start all the batteries.

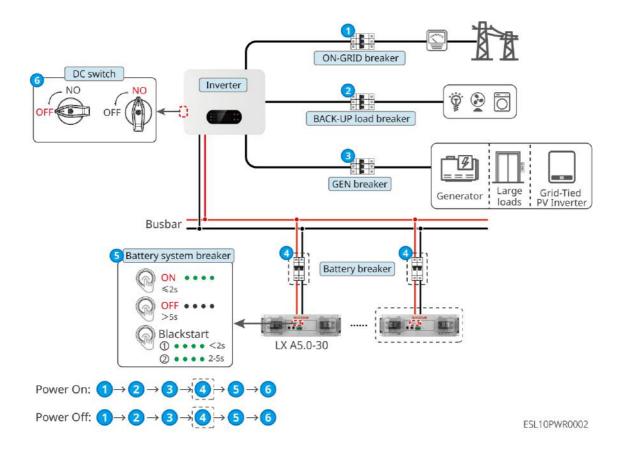
Power On Process

- 1. Turn on the ON-GRID circuit breaker.
- 2. Turn on the BACK-UP circuit breaker.
- 3. (Optional) Turn on the GEN circuit breaker.
- 4. (Selected in accordance with local laws and regulations) Turn on the circuit breaker between the PV module and the inverter.
- 5. (Selected in accordance with local laws and regulations) Turn on the switch between the inverter and the battery.
- 6. Turn on the battery system switch.
- 7. Turn on the DC switch of the inverter.

Battery Black Start:

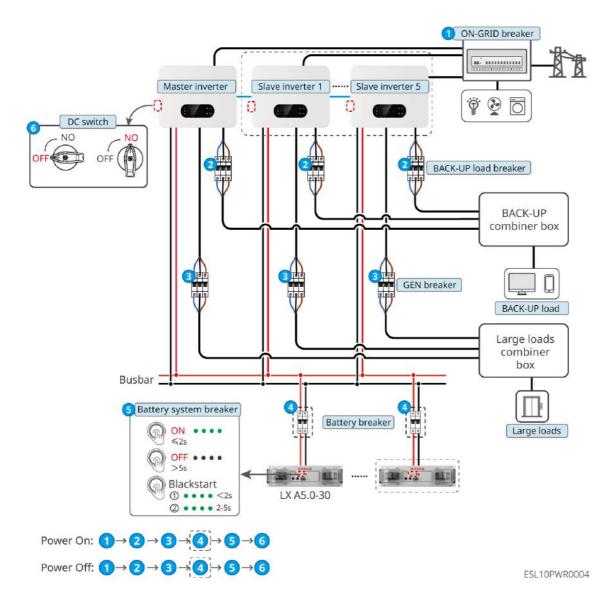
- 1. Turn on the ON-GRID circuit breaker.
- 2. Turn on the BACK-UP circuit breaker.
- 3. (Optional) Turn on the GEN circuit breaker.
- 4. Turn on the battery switch.
- 5. Turn on the DC switch of the inverter.
- 6. Press any multi-function button on the battery briefly (for less than 2 seconds) first, then press and hold it for 2-5 seconds to start the battery system; the battery will discharge forcibly to activate the inverter.

Single Inverter System



Parallel System

Multiple inverters with off-grid parallel function



7.3 Indicators

7.3.1 Inverter Indicators

Indicat or	Status	Description
(1)	<u>шшшш</u>	The inverter is starting up and in the self-check mode.
		The inverter is powered on and in the standby mode.
	шшшш	BACK-UP output overload.
		System failure.

Indicat or	Status	Description
		LCD ON: The inverter is powered on and in the standby mode. LCD OFF: The inverter is powered off.
		The grid is abnormal, and the power supply to the BACK-UP port of the inverter is normal.
(4)		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.
		The monitoring module of the inverter is resetting.
		The inverter fails to connect with the communication Termination.
((•))	шшшш	Communication fault between the communication termination and server.
		The monitoring of the inverter operates well.
		The monitoring module of the inverter has not been started yet.

7.3.2 Battery Indicators

7.3.2.1 LX A5.0-30

In	dicator	System Status
0000	No SOC indicator shows green.	SOC=0%
•000	The first SOC indicator shows green.	0% < SOC ≤ 25%
••00	The first two SOC indicators are green.	0% < SOC ≤ 25%

Indicator		System Status
•••0	The first three SOC indicators are green.	0% < SOC ≤ 25%
••••	All SOC indicators are green.	0 % < SOC ≤ 25%
	Green light is on. Green light flashes 1 time/s.	The battery system is working normally. The battery system is in the standby mode.
	Green light flashes 3 time/s.	The PCS communication is lost.
RUN light	Green flashes slowly.	The battery system gives an alarm, and conducts a self-check. After the self-checking is over, it will change to normal working status or fault status.
ALM Light	Red light is on.	Check the SOC indicator status to identify the fault type and handle the problem as recommended in the Troubleshooting section.

7.3.3 Smart Meter Indicator

7.3.3.1 GM330

Туре	Status	Description
D 1: 1 :	On	Power on, no RS485 communication.
Power light	Blinks.	Power on, RS485 communication works properly.
	Off	The smart meter has been powered off.
Communication	Off	Reserved.
indicator	Blinks.	Press the Reset button for more than 5 seconds, power light, buying or selling electricity indicator light flash: Reset the meter.
	On	Importing from the grid.
	Blinks.	Exporting to the grid.

Туре	Status	Description
Importing or exporting indicator	Off	Exporting to the grid.
∰ø	Reserved.	

7.3.4 Smart Dongle Indicator

7.3.4.1 WiFi/LAN Kit-20

Indicator	Status	Description
Power		On: The smart dongle has been powered on.
light		Power Off: The smart dongle is not powered on.
		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.
Communi cation		Blinks 2 times: The smart dongle is not connected to the router.
indicator		Blinks 4 times: The smart dongle is
(G)))		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
	Green	On	The 100Mbps wired network is normally connected.

Indicator	Color	Status	Description
Communic ation indicator in LAN Port		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.

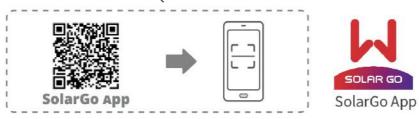
NOTICE

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

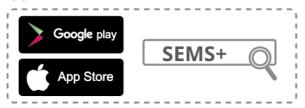
Make sure that the mobile phone meets the following requirements:

- 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.



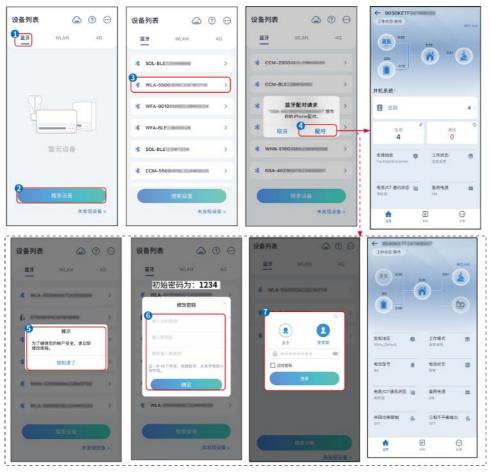
8.2 Connecting the inverter via SolarGo

NOTICE

The device name varies depending on the inverter model or smart dongle type:

- Wi-Fi Kit: Solar-WiFi***
- Bluetooth Module: Solar-BLE***
- WiFi/LAN Kit-20: WLA-***
- Ezlink3000: CCM-BLE***; CCM-***; ***

Connect to the inverter via Bluetooth



Connect to the inverter via WiFi



8.3 Setting Communication Parameters

NOTICE

The communication configuration interface may be different if the inverter uses different communication modes or connects different communication modules. Please refer to the actual interface.

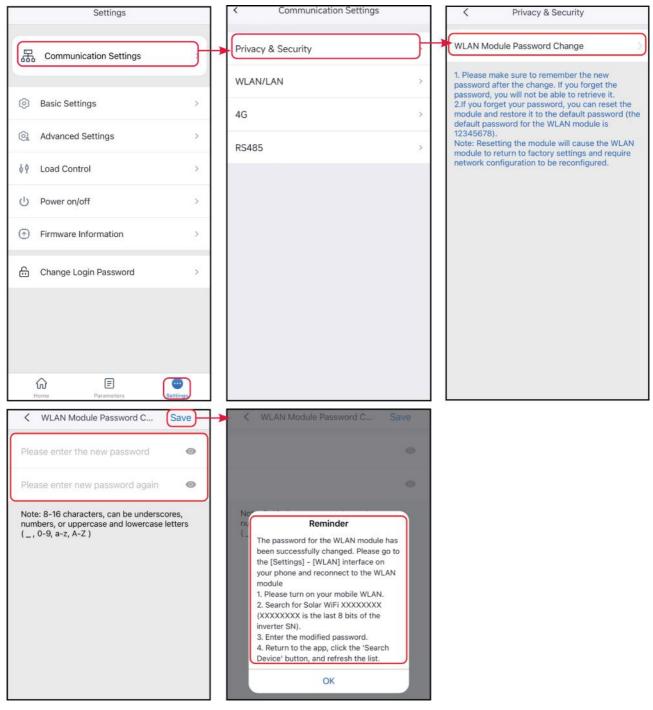
8.3.1 Setting Privacy and Security Parameters

Type I

Step 1: Tap **Home > Settings > Communication Setting > Privacy & Security** to set the parameters.

Step 2: Set the new password for the WiFi hotspot of the communication module, and tap **Save**.

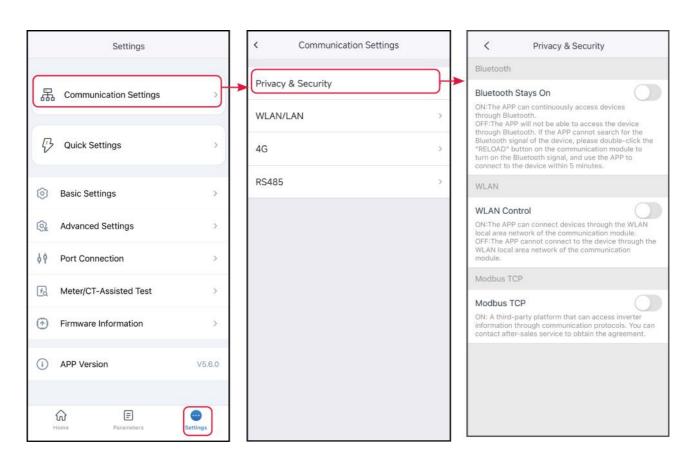
Step 3 Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi***) with the new password.



Type II

Step 1: Tap **Home > Settings > Communication Setting > Privacy & Security** to set the parameters.

Step 2 Enable Bluetooth Stays On or WLAN Control based on actual needs.



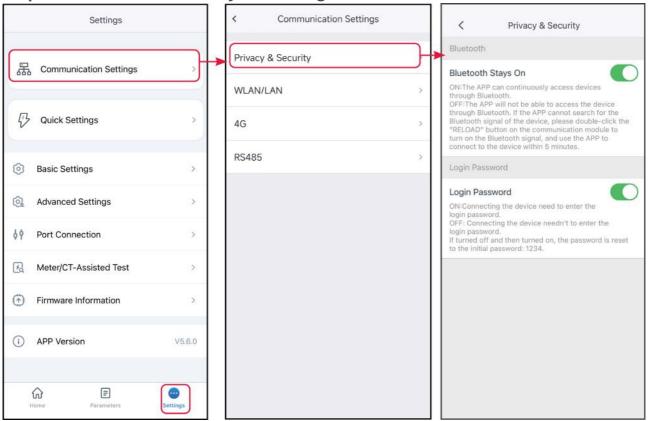
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default. Enable the function, the device and the SolarGo can be connected through the WLAN when they are on the same LAN. Otherwise, they cannot be connected even if they are on the same LAN.
3	Modbus-TCP	Enable the function, the third party monitoring platform can access inverter through Modbus-TCP communication protocol.
4	SSH control Ezlink	After enabling this function, third-party platforms can connect to and control EzLink's Linux system.

Type III

Step 1 : Tap Home > Settings > Communication Setting > Privacy & Security to set

the parameters.

Step 2: Enable Bluetooth Stays On or Login Password based on actual needs.



No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	Password	Disabled by default. Enable the function, you will be prompted to enter the login password when connecting the device to SolarGo. Use the initial password and change it at the first login prompt.

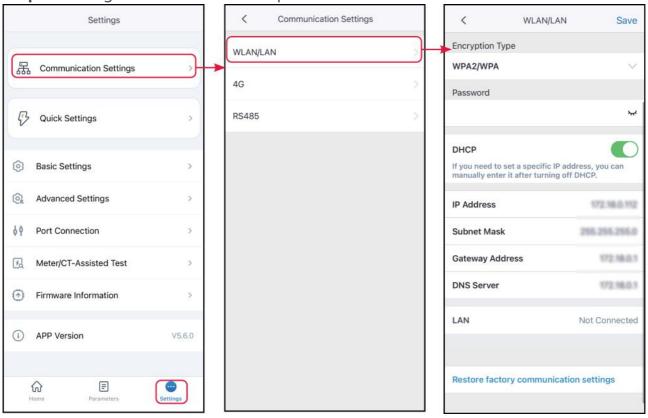
8.3.2 Setting WLAN/LAN Parameters

NOTICE

When the inverter is connected to different communication modules, the communication configuration interface may be different. Please refer to the actual interface.

Step 1: Tap **Home > Settings > Communication Setting > WLAN/LAN** to set the parameters.

Step 2: Configure the WLAN or LAN parameters based on actual needs.



No.	Parameters	Description
1	Network Name	Only for WLAN. Select WiFi based on the actual connecting.
2	Password	Only for WLAN. WiFi password for the actual connected network.
3	DHCP	Enable DHCP when the router is in dynamic IP mode. Disable DHCP when a switch is used or the router is in static IP mode.

No.	Parameters	Description
4	IP Address	Do not configure the parameters when DHCP is
5	Subnet Mask	enabled.
6	Gateway Address	Configure the parameters according to the router or
7	DNS Server	switch information when DHCP is disabled.

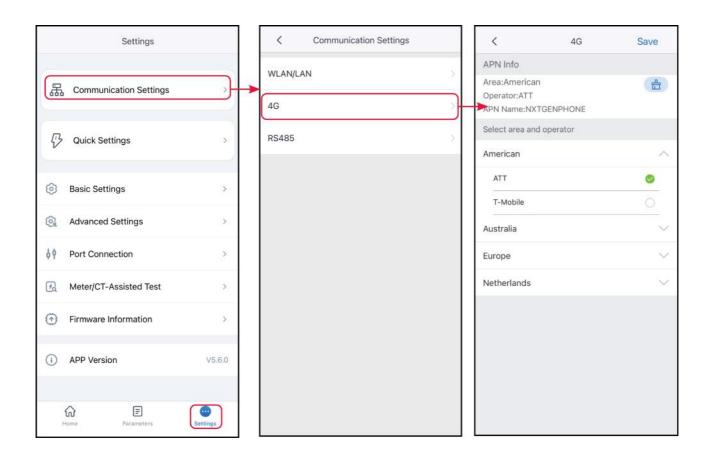
8.3.3 Configuring APN Parameters

NOTICE

- Configure the SIM card information of 4G communication device.
- If the 4G module does not offer bluetooth signal, please configure the APN parameters through the Bluetooth module or WiFi module first to achieve 4G communication.

Step 1: Tap **Home > Settings > Communication Settings > 4G** to set the parameters.

Step 2: Set the region and operator based on actual needs.



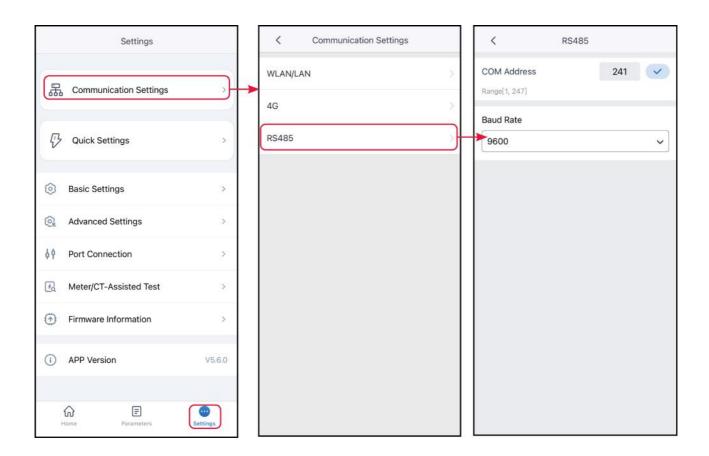
8.3.4 Setting RS485 Communication Parameters

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.



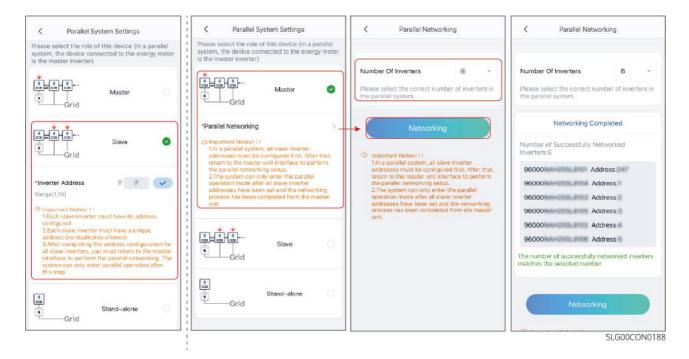
8.4 Setting Up the RS485 Parallel System

NOTICE

- When paralleling hybrid inverters via RS485, you must set each inverter as the master or slave inverter individually using the SolarGo App.
- When an inverter in a parallel system needs to be used as a single unit, it must be set to standalone inverter via the SolarGo App.
- Please set the inverter connected to the meter as the master.
- Please first set the slave inverter address, then set the parallel network through the master.
- **Step 1**: Go to the settings interface via **Settings > Parallel System Settings** .
- **Step 2**: Set the inverter to Master, Slave, or Stand-alone based on its actual wiring.
- If the inverter is the master, set it to Master and then exit the connection. After setting the slave inverter address, return to this interface, click **Parallel Networking**, set the number of inverters in the parallel system, and then click

Network.

• If the inverter is the slave, set the **Inverter Address** and click \lor .



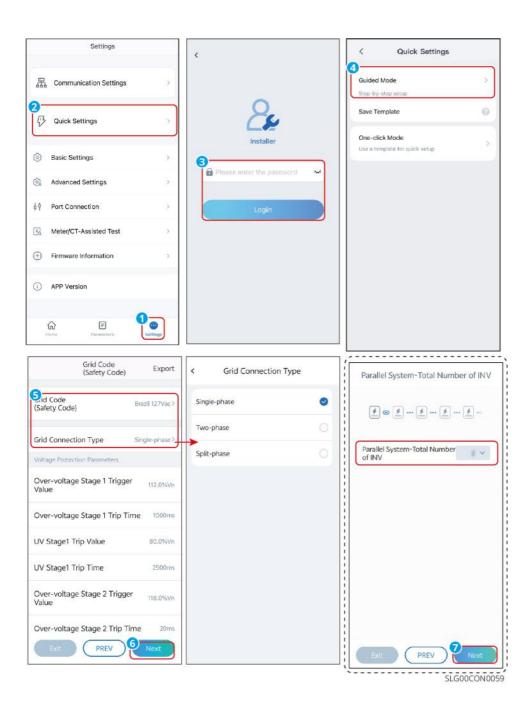
8.5 Quick Setting the Basic Information

NOTICE

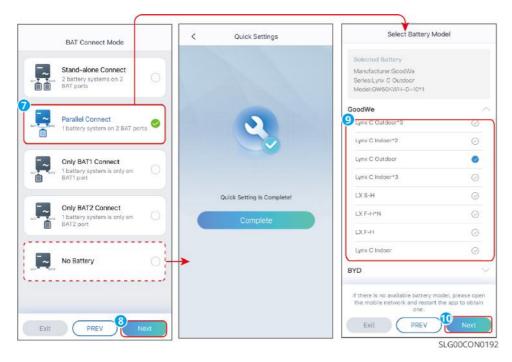
- The setting page varies depending on inverter model.
- The parameters will be configured automatically after selecting the safety country/region, including overvoltage protection, undervoltage protection, overfrequency protection, underfrequency protection, voltage/frequency connection protection, cosφ curve, Q(U) curve, P(U) curve, FP curve, HVRT, LVRT, etc. Tap Home > Settings > Advanced Settings > Safety Parameters to check the parameters after selecting the safety country.
- The power generation efficiency is different in different working modes. Set the working mode according to the local requirements and situation.
 - Self-use mode: The basic working mode of the system. PV power generation is used to supply power to the load first, the excess power is used to charge the battery, and the remaining power is sold to the grid. When PV power generation cannot meet the load's power demand, the battery will supply power to the load; when the battery power also cannot meet the load's power demand, the grid will supply power to the load.
 - 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 load; when the grid is restored, the inverter switches to grid-tied mode.
 - Economic mode: It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot. Select Economic mode only when it meets the local laws and regulations. Set the battery to charge mode during Vally period to charge battery with grid power. And set the battery to discharge mode during Peak period to power the load with the battery.
 - Off-grid mode: suitable for areas without power grid. PV and batteries form a
 pure off-grid system. PV generates electricity to power the load and excess
 electricity charges the battery. When PV power generation cannot meet the
 power demand of the load, the battery will supply power to the load.
 - Smart charging: In some countries/regions, the PV power feed into the utility grid is limited. Select Smart Charging to charge the battery using the surplus power to minimize PV power waste.
 - Peak shaving mode: Peak shaving mode is mainly applicable to peak power limited scenarios. When the total power consumption of the load exceeds the power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

8.5.1 Quick System Setup (Type II)

- **Step 1**: Go to the parameter settings page via **Home > Settings > Quick Configuration**.
- **Step 2**: Enter your login password.
- **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. Meanwhile, you need to select the grid type according to the actual connected grid form for some models. After completing the settings, click **Next** to set the battery connection mode or the number of parallel inverters. The grid standard code only supports configuration by installers.
- **Step 5**: Only for parallel scenarios. Setting the number of parallel inverters. After completing the settings, click Next to set the battery connection mode.

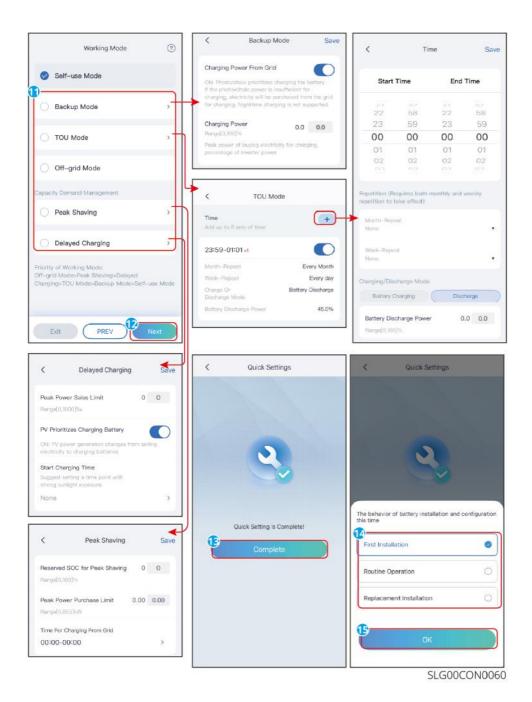


Step 6: Select the battery connection mode based on the actual battery connection situation. If no battery is connected, the basic parameter settings are complete. If a battery is connected, click **Next** after completing the settings to set the battery type. **Step 7**: Select the battery model based on the actual battery connection. After completing the settings click **Next** to set the working mode.



Step 8: 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/meter self-check state. At this point, the inverter will temporarily disconnect from the grid and then automatically reconnect.

Step 9: Select the battery according to the actual situation: **initial installation, daily operation**, or **replacement installation**.

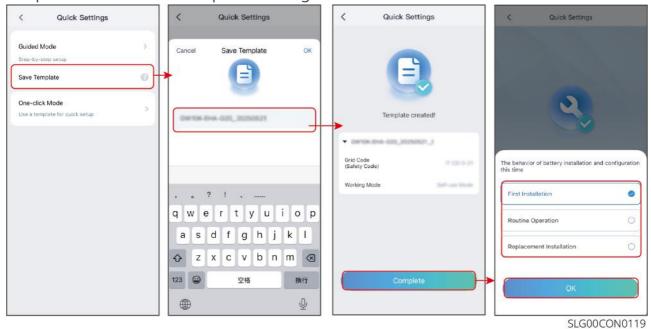


No.ParametersDescriptionBack-up Mode1Charging from GridUse this function, enable the system to purchase power from the utility grid.2Charging PowerThe percentage of power purchased compare to the rated power of the inverter.TOU mode

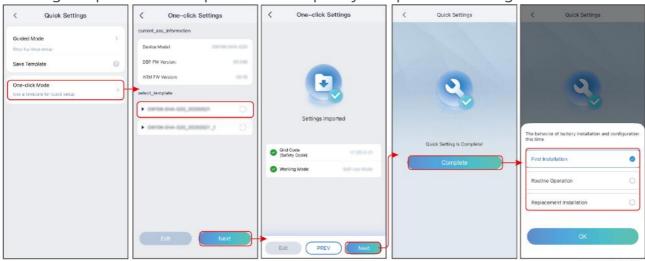
No.	Parameters	Description	
3	Start Time	During the period between the start time and end time, the battery will charge or discharge in accordance with the set charge-discharge mode and its rated power.	
4	End Time		
5	Charge and Discharge mode	Set Charge and discharge mode according to actual needs.	
6	Rated Output Power of the inverter.	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.	
Peaksha	ving		
8	Reserved SOC For Peakshaving	In the Peakshaving mode, when the battery SOC is lower than the reserved SOC for demand management, the function remains active. When the battery SOC is higher than the reserved SOC for demand management, the demand management function becomes invalid.	
9	Peak Power Purchase Limit	Set the maximum power limit allowed for purchasing electricity from the grid. When the power consumed by the load exceeds the sum of the electricity generated by the photovoltaic system and this limit, the excess power will be supplemented by battery discharge.	
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	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.	

No.	Parameters	Description
12	PV Prioritizes Battery Charging	Within the charging time range, photovoltaic power generation is prioritized for charging the battery.
13	Charging Start Time	

Step 10: For devices that support one-click configuration, you can generate a template based on the completed configuration.



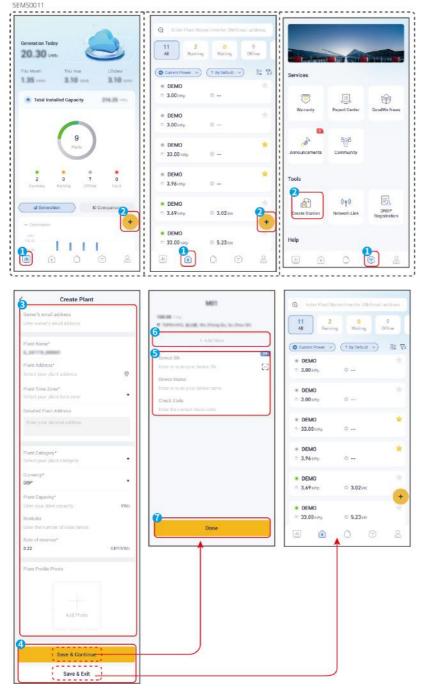
Step 11: If there is an existing one-click configuration template, you can use the existing template direct import mode to quickly complete the configuration.



SLG00CON0120

8.6 Creating a Station

- **Step 1**: Tap on overview or station page, or tap **Create Station** on service page.
- **Step 2**: Enter station information on the **Creat Station** page.
- **Step 3**: Tap **Save&Exit** to complete creating a station, without devices added. Or tap **Save&Continue** to add devices. Support adding multiple devices.



9 System Commissioning

9.1 Commissioning Method Overview

The inverter with LCD screen, users can configure parameters either via the SolarGo App or directly through the LCD screen.

9.2 Configuration via LCD

9.2.1 LCD Overview

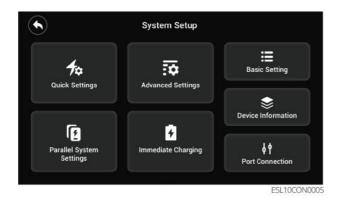
With the LCD screen, the user can:

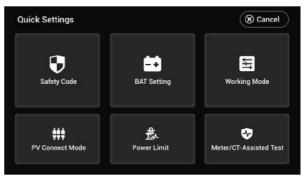
- 1. Check the operating data, software version, alarms, etc.
- 2. Set parameters, safety regions, power limit, etc.

Introduction of LCD interface

LCD supports both touch and keys.



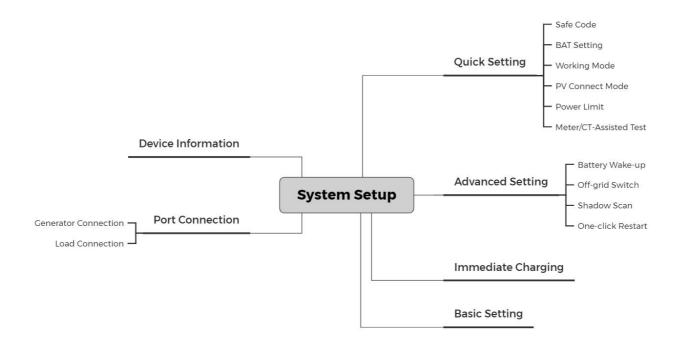




ESU10CON0008

Name/Icon	Description	
	Up button.	
	Down button.	
	Enter button.	
ESC	• Short press: Exit button. Long press 5 seconds: Restart the device	
(%)	Used to view information such as PV current, voltage, and power generation.	
	Used to view information such as battery model and status.	
	Used to view the alarm code of the inverter.	
•	Used to enter the settings interface of the inverter.	
**	Used to view the status of the power grid and information.	
	Used to check the status of the generator.	
^	Used to view the load information of the inverter.	
•	Return to the main screen.	
Cancel	Return to previous menu.	
Next	Go to the next setting page.	
Back	Return to the previous setting page.	

LCD setting interface structure



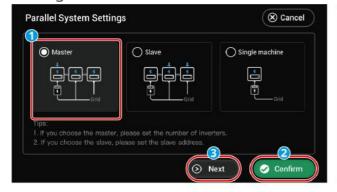
9.2.2 Parallel System

- 1. Tap 🐑 Parallel System Settings via the Home page to access the Parameter Settings interface.
- 2. Set the inverter to "Master", "Slave", or "Single Unit" according to its actual wiring of the inverter.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

Notice

Please ensure that you click "Confirm" on each page to make the parameters take effect; otherwise, the system will operate with the default parameters.

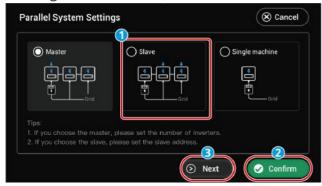
Setting Master Inverter Parameters

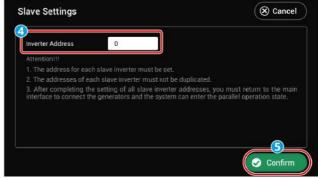




ESL10CON000

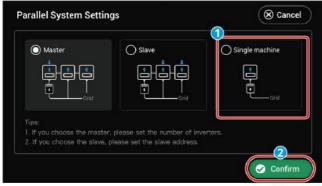
Setting Slave Inverter Parameters





ESL10CON0007

Settings Single Unit

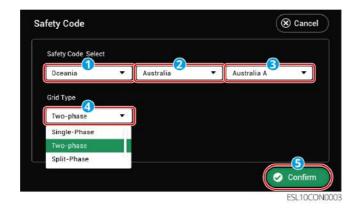


ESL10CON0008

9.2.3 Quick Settings

Setting the safety regulations

- 1. Tap ②> Quick Settings > Safe Code via the Home page to access the Parameter Settings interface.
- 2. Select the corresponding safety code based on the country or region where the equipment is located.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

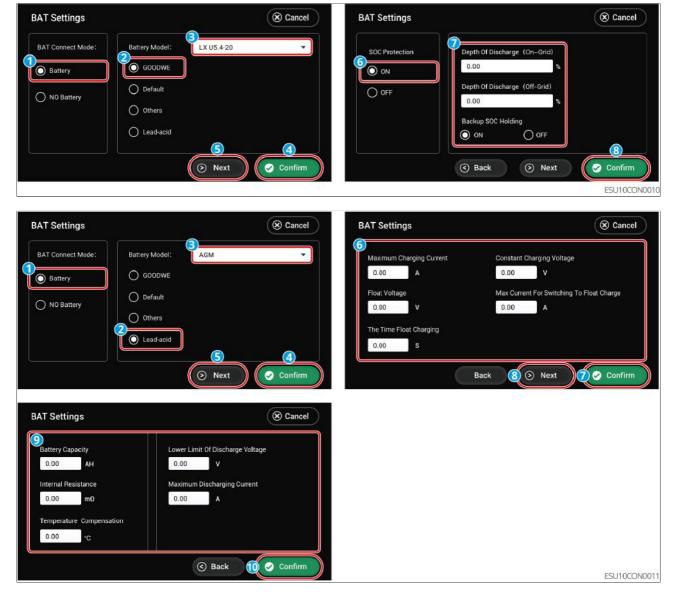


Setting the Battery Parameters

- 1. Tap ② > Quick Settings > BAT Setting via the Home page to access the Parameter Settings interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

Notice

Please ensure that you click "Confirm" on each page to make the parameters take effect; otherwise, the system will operate with the default parameters.



Basic Parameters

BAT Connection Mode	Туре	Description
	GOODW E	If the lithium battery connected to the system is of the GOODWE brand, please select "GOODWE" and choose the correct model.
Battery	Default	If the model of the third-party lithium battery connected to the system is not listed here, please make your selection based on the actual situation. • Lithium 50Ah • Lithium 100Ah
	Others	If the third-party lithium battery model connected to the system is included in this list, please select the correct model based on the actual situation.
	Lead acid	If the battery connected to the system is a lead-acid battery, please select "Lead acid" and choose the correct lead-acid type. Currently, the supported types are GEL, AGM, and Flooded.
NO Battery	No battery	y connected to the system
BAT Setting	Set the display language.	

Setting the Lithium Battery Parameters

Parameters	Description	
SOC Protection	Enable or disable the SOC Protection Function	
Depth of Discharge (On-Grid)	Inverter The maximum depth of discharge of the battery when the system is working on-grid.	
Depth of Discharge (Off-Grid)	Inverter The maximum depth of discharge of the battery when the system is working off-grid.	
Backup SOC Holding	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.	

Setting Lead-acid Battery Parameter

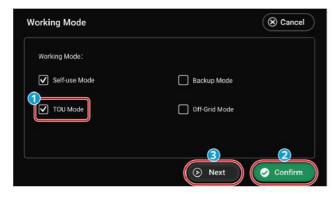
Parameters	Description
Maximum Charging	The battery charging defaults to constant charging
Current	mode;
Constant Charging Voltage	You need to set the maximum charging voltage and maximum charging current under this mode. Please set based on the battery's technical parameters.
Float Voltage	When the battery charging current is less than the
The Time Float Charging	Maximum Current For Switch To Float Charge and
Maximum Current For Switch To Float Charge	this state persists for The Time Float Charging, the battery's charging mode will switch from constant charging mode to float charging mode. Float Voltage refers to the maximum charging voltage of the battery in float charging mode. Please set it according to the battery's technical parameters.
Battery Capacity	Set the battery capacity according to the actual parameters.
Internal Resistance	Set the internal resistance of the battery according to the battery's technical parameters.
Temperature Compensation	When the default temperature is above 25°C, the upper limit of the charging voltage decreases by 3mV for every 1°C increase in temperature. Set according to the battery's technical parameters.
Lower Limit Of Discharge Voltage	Set according to the battery's technical parameters.
Maximum Discharging Current	Set according to the battery's technical parameters. The larger the discharge current, the shorter the battery operating time.

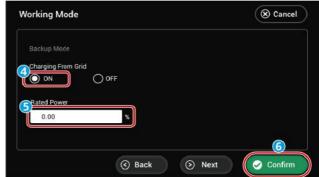
Setting Working Modes

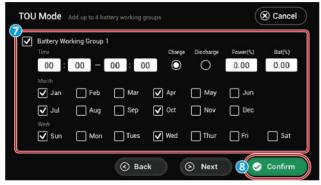
- 1. Tap ②> Quick Settings > Working Mode via the Home page to access the Parameter Settings interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

Notice

Please ensure that you click "Confirm" on each page to make the parameters take effect; otherwise, the system will operate with the default parameters.







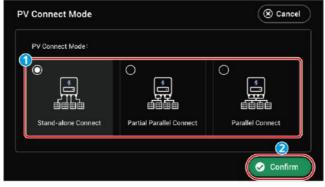
ETL10CON0008

Parameters		Description
Self-use Mode		Based on Self-use Mode, Back-up Mode, TOU Mode and Off-Grid Mode can be enabled at the same time, and the inverter will automatically select the working mode. Operation priority: Off-Grid Mode>Back-up Mode>TOU Mode >Self-use Mode.
Back-up	Charging From Grid	Use this function, enable the system to purchase power from the utility grid.
Mode	Rated Power	The percentage of power purchased compare to the rated power of the inverter.
TOU Mode	Time	During the period between the start time and end time, the battery will charge or discharge in accordance with the set charge-discharge mode and its rated power.

	Charge/Dischar ge	Set Charge and discharge mode according to actual needs.
	Power (%)	The percentage of power during charging or discharging compared to the rated power of the inverter.
	Bat (%)	The battery stop charging once the battery SOC reaches Charge Cut-off SOC. If you need to set the stop SOC (State of Charge) for battery discharge, please refer to Section 9.3.8.5. "Setting Battery Parameters" (Page 180) and configure the Depth of Discharge (On-Grid) and Depth of Discharge (Off-Grid) via the LCD screen.
Off-Grid Mode		In off-grid mode, the inverter disconnects from the grid and only supplies power to the BACK- UP load, with any excess energy charged to the battery.

Setting PV Connect Mode

- 1. From the main interface, tap > Quick Settings > PV Connect Mode to access the Parameter Settings interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.



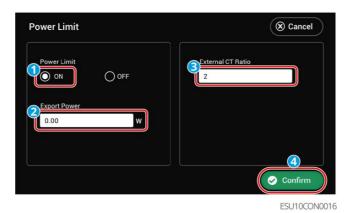
ESU10CON001

Parameters	Description
------------	-------------

Stand-alone Connect	The PV strings are connected to the MPPT terminals one by one.
When a PV string is connected to multiple MPPT partial Parallel Connect the inverter side, there are also other PV modules connected to other MPPT ports on the inverter side.	
Parallel Connect	The external photovoltaic strings are connected with the photovoltaic input ports on the inverter side, one PV string shall be connected to multiple PV input ports.

Setting the Export Power Limit

- 1. Tap ②> Quick Settings > Power Limit via the Home page to access the Parameter Settings interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.



Parameters	Description		
According to the grid standard requirements of certain countries or regions, turn on this function when it is neces to limit the output power.			
Export Power	Set the value based on the actual maximum power feed into the utility grid.		

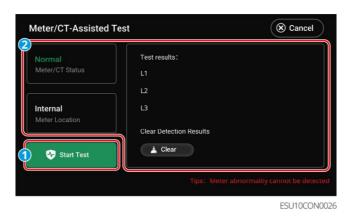
Set it as the ratio of the primary side current to the secondary side current of the external CT.

External CT Ratio

- Built in electric meter: No need to set CT ratio. The default CT ratio is 120A/40mA.
- GM330: Purchasing from GOODWE or by customers independently, and the default CT ratio requirement is nA: 5A.
 - nA: CT Primary side input current, the range of n is 200-5000.
 - 5A: CT Secondary side output voltage.

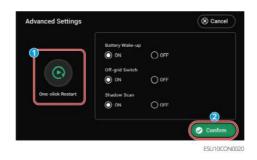
Meter/ CT Assisted Test

- 1. Tap ② > Quick Settings > Meter/CT Assisted Test via the Home page to access the Parameter Settings interface.
- 2. Click Start Test to begin the detection. After the detection is completed, judge the test result according to the on-screen prompts.



9.2.4 Setting Advanced Parameters

- 1. Tap Home (•) Advanced Settings to set the parameters. Enter the initial password: 1111.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.



Parameter	Description
One-click restart	By using this function, the inverter can be quickly restarted.
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.
Off-grid Switch	In off-grid mode, the switch controls the on/off of the inverter's off-grid function. In on-grid mode, this function does not take effect. The switch is initially in the ON state, and the off-grid function is enabled. After the inverter is powered on, the off-grid output function of the inverter is enabled. In the off-grid state, turning off and then turning on the off-grid switch, the off-grid overload time can be known and the off-grid output can be restarted.
Shadow Scan	Enable Shadow Scan when the PV panels are severely shadowed to optimize the power generation efficiency.

9.2.5 Setting Immediate Charging

- 1. Tap Home ③> Immediate Charging to set the parameters.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.



Description
Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.
Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.
Indicates the percentage of the charging power to the inverter rated power when enabling Immediate Charging. For example, setting the Immediate Charging Power of a 10kW inverter to 60, which means the charging power of the inverter is 10kW*60%=6kW.

9.2.6 Setting the Basic Information

- 1. Tap Home 🕩 Basic Settings to set the parameters.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.



9.2.7 Viewing Device Information

1. Tap Home 🕩 Device Information to search the parameters.

NOTICE

Inverter serial number, DSP, BMS, LCD and ARM can be queried.



9.2.8 Setting Port Connection

NOTICE

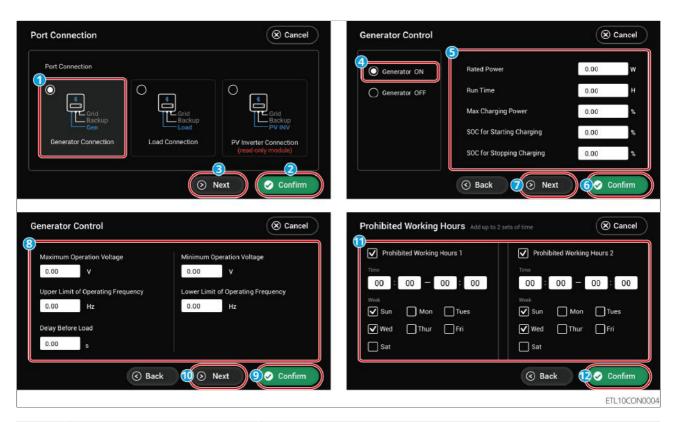
If you need to set the relevant parameters of the grid-connected inverter in microgrid mode, please connect to the SolarGo APP to configure the settings.

Setting Port Connection Generators

- 1. After connecting to the SolarGo APP, go to Home > Port Connection, entering the parameter setting interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

NOTICE

Please make sure that you click Confirm on each page to ensure that the parameters take effect, otherwise the system will run with default parameters.



No.	Parameter	Description
1	Generator ON/OFF	Controls the start and stop of the generator. Only applicable to generators that support dry contact.
2	Rated Power	Rated power of the generator.
3	Run Time	The duration of continuous operation of a generator. When the working time exceeds the set value, the generator will automatically shut down. This feature only applies to generators that support dry contact connection.
4	Max Charging Power	Set the maximum charge power for the generator battery.
5	SOC for Starting Charging	Set the starting SOC for the generator to charge the battery. When the SOC of the battery is lower than the set value, the generator will charge the battery.
6	SOC For Stopping Charging	Set the stopping SOC for the generator stopping charging the battery. When the SOC of the battery reaches the set value, the generator will stop charging the battery.

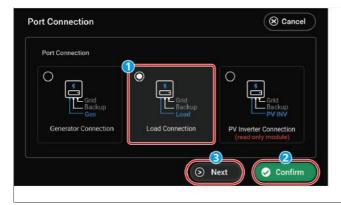
7	Maximum Operation Voltage	Set the upper limit of operating voltage for the generator.
8	Minimum Operation Voltage	Set the lower limit of operating voltage for the generator.
9	Upper Limit Of Operating Frequency	Set the upper limit of operating frequency for the generator.
10	Lower Limit Of Operating Frequency	Set the lower limit of operating frequency for the generator.
11	Delay Before Load	The no-load preheating time before the generator is loaded.
12	Prohibited Working Hours	Please set the generator prohibition time according to the actual situation.

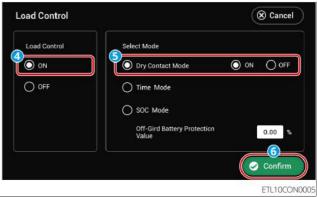
Setting Port Connection Load Control Dry Contact Mode

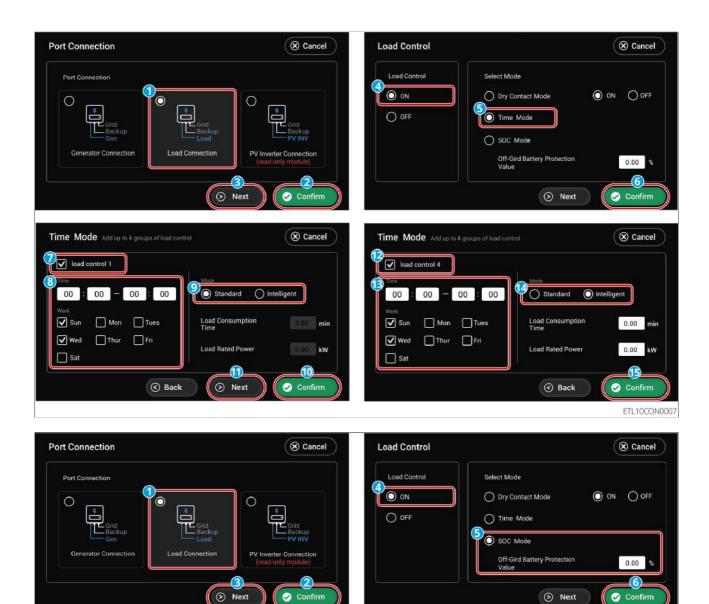
- 1. After connecting to the SolarGo APP, go to Home > Port Connection, entering the parameter setting interface.
- 2. Set the parameters based on actual needs.
- 3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

NOTICE

Please make sure that you click Confirm on each page to ensure that the parameters take effect, otherwise the system will run with default parameters.







No.	Parameter	Description
1	Load Control ON/OFF	Set the load control function on/off.
2	Dry Contact Mode	ON: When the switch is ON, the loads will be powered. OFF: When the switch is OFF, the power will be cut off.
3	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.

ETL10CON0006

4	Load Control 1	Set the 1st group of load control time, and a total
		of 4 groups can be set.
5	Mode: Standard/Intelligent	Standard: The loads will be powered within the setting time period. Intelligent: 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.
6	Load Consumption 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.
8	SOC Mode	The inverter has an integrated relay controlling port, which can control whether to power the loads or not.
9	Off-Grid Battery Protection Value	In off-grid mode, the load connected to the port will not be powered if the BACKUP overload is detected or the battery SOC value is lower than the Off-grid battery protection value. Please set off-grid battery protection values based on actual needs.

9.3 Configuration via SolarGo APP

9.3.1 Product Introduction

NOTICE

- All the user interface (UI) screenshots or words in this document are based on **SolarGo app V6.6.0**. The UI may be different due to the version upgrade. The screenshots, words or data are for reference only.
- The method to set parameters is the same for all inverters. But the parameters displayed varies based on the equipment model and safety code. Refer to the actual interface display for specific parameters.
- Before setting any parameters, read through user manual of the App and the inverter or charger to learn the product functions and features. When the inverter parameters are set improperly, the inverter may fail to connect to the utility grid or fail to connect to the utility grid in compliance with related requirements and damage the battery, which will affect the inverter's power generation.

SolarGo App is a mobile application that communicates with the inverter via Bluetooth, WIFi, 4G, or GPRS. Commonly used functions are as follows:

- Check the operating data, software version, alarms of the inverter, etc.
- Set grid parameters and communication parameters of the inverter.
- Set charging mode of the charger.
- · Maintain the equipment.

9.3.1.1 Downloading and Installing the App

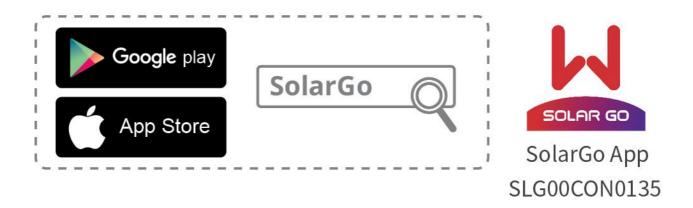
Make sure that the mobile phone meets the following requirements:

- 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.

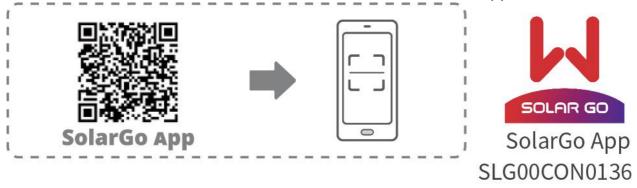
NOTICE

After installing the app, it can automatically prompt users to update the app version.

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.

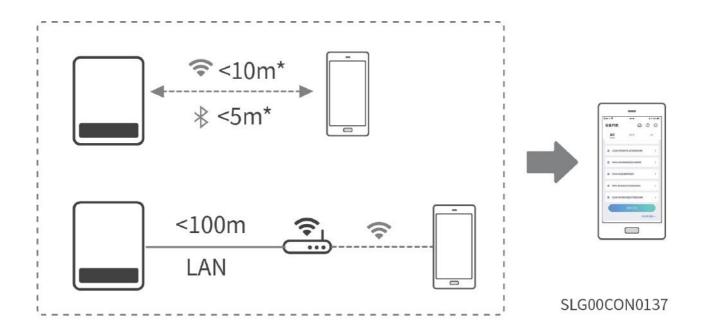


9.3.1.2 App Connection

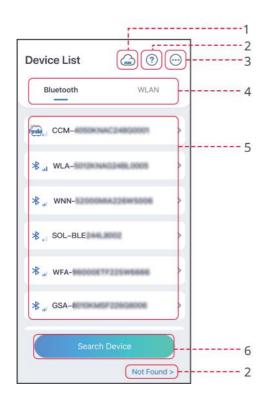
Connect as the following shows after powering on the equipment.

NOTICE

The connection distance varies depending on smart dongles. Refer to the actual used smart dongles.



9.3.1.3 GUI Introductions to Login Page



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

No.	Name/Icon	Description
2	?	Tap to read the connection guide.
	Not found	
3	·	 Check information such as app version, local contacts, etc. Other settings, such as update date, switch language, set temperature unit, etc.
4	Bluetooth/Wi Fi/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 model: Wi-Fi/LAN Kit, Wi-Fi Kit, Wi-Fi Box: Solar-WiFi*** External or integrated bluetooth mudule:Solar-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-*** Micro inverter: WNN*** AC Charger: ***
6	Search Device	Tap Search Device if the device is not found.

9.3.2 Connecting the Hybrid Inverter

9.3.2.1 Connecting the Hybrid Inverter (Bluetooth)

Step 1 Ensure that the inverter is power on, both the inverter and the communication module are working properly.

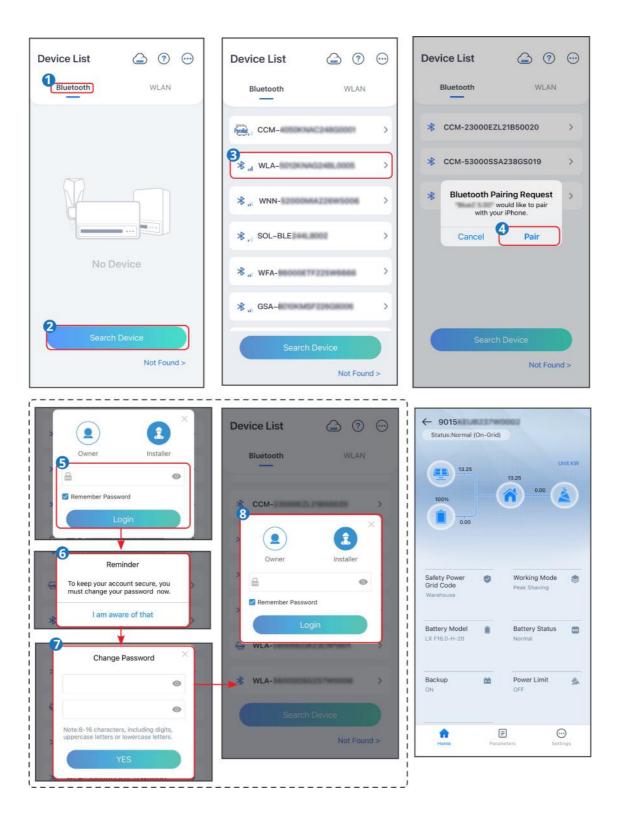
Step 2 Select **Bluetooth** tab on the SolarGo app hompage.

Step 3 Pull down or tap **Search Device** to refresh the device list. Find the device by the the inverter serial number. Tap the device name to log into the **Home** page. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.

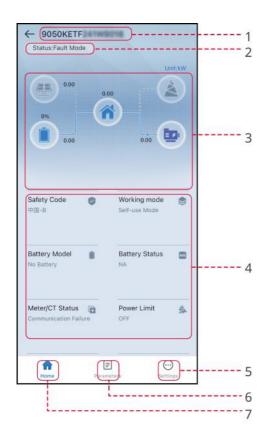
Step 4 For first connection with the equipment via Bluetooth, there will be a Bluetooth pairing prompt, tap **Pair** to continue the connection.

Step 5 Log in as an Owner or an Installer. Initial password: 1234. Default password: 1234.

Step 6 (Optional): If connecting via WLA-*** or WFA-***, enable Bluetooth Stays On following the prompts as entering the device details page. Otherwise, the bluetooth signal of the device will be off after disconnection.



9.3.3 GUI Introductions to Hybrid Inverters



No.	Name/Icon	Description
1	Serial Number	Serial number of the connected inverter.
2	Device Status	Indicates the status of the inverter, such as Working,Fault, etc.
3	Energy Flow Chart	Indicates the energy flow chart of the PV system. The actual page prevails.
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	A	Home. Tap Home to checkSerial Number, Device Status, Energy Flow Chart, System Status, etc.
6	=	Parameters. Tap Parameters to check the inverter Data.

No.	Name/Icon	Description
7	⊙	 Settings Tap to perform quick settings, basic settings, advanced settings, etc. on the inverter. Login required to access Quick Setup and Advanced Setting. Contact the supplier or after sales service for password. Password for professional technicians only.

9.3.4 Setting Communication Parameters

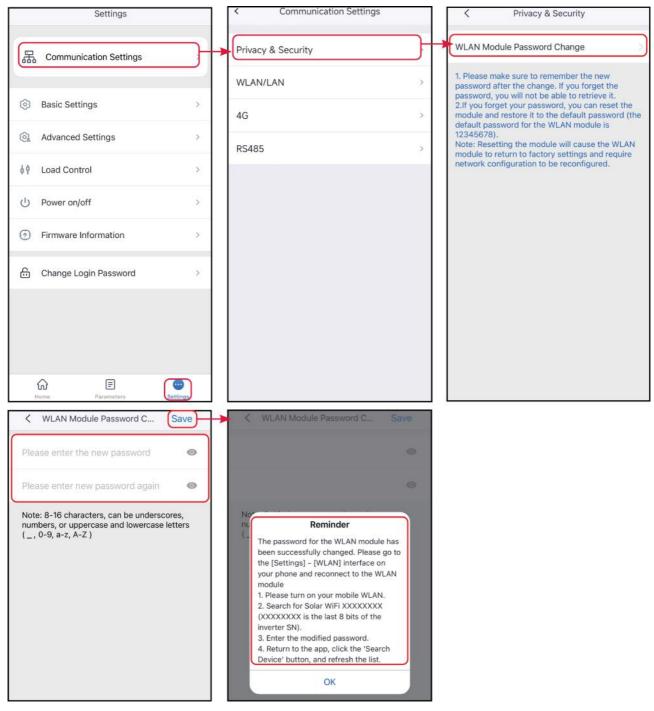
NOTICE

The communication configuration interface may be different if the inverter uses different communication modes or connects different communication modules. Please refer to the actual interface.

9.3.4.1 Setting Privacy and Security Parameters

Type I

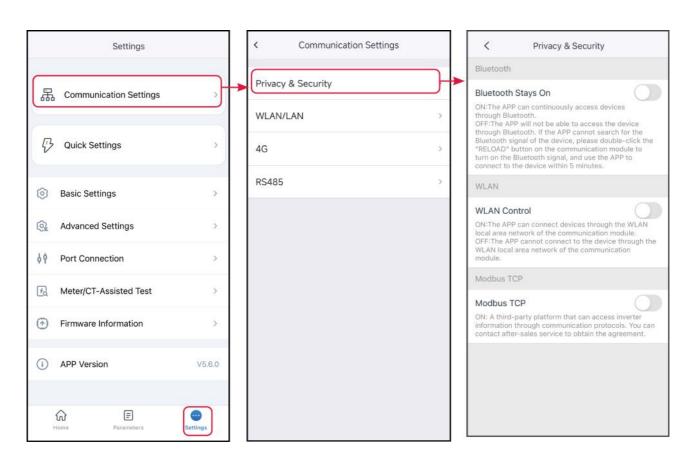
- **Step 1**: Tap **Home > Settings > Communication Setting > Privacy & Security** to set the parameters.
- **Step 2**: Set the new password for the WiFi hotspot of the communication module, and tap **Save**.
- **Step 3** Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi***) with the new password.



Type II

Step 1: Tap **Home > Settings > Communication Setting > Privacy & Security** to set the parameters.

Step 2 Enable Bluetooth Stays On or WLAN Control based on actual needs.



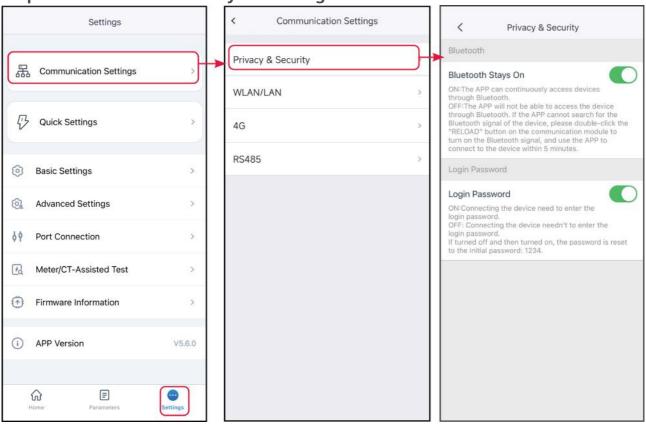
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default. Enable the function, the device and the SolarGo can be connected through the WLAN when they are on the same LAN. Otherwise, they cannot be connected even if they are on the same LAN.
3	Modbus-TCP	Enable the function, the third party monitoring platform can access inverter through Modbus-TCP communication protocol.
4	SSH control Ezlink	After enabling this function, third-party platforms can connect to and control EzLink's Linux system.

Type III

Step 1: Tap Home > Settings > Communication Setting > Privacy & Security to set

the parameters.

Step 2: Enable Bluetooth Stays On or Login Password based on actual needs.



No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	Password	Disabled by default. Enable the function, you will be prompted to enter the login password when connecting the device to SolarGo. Use the initial password and change it at the first login prompt.

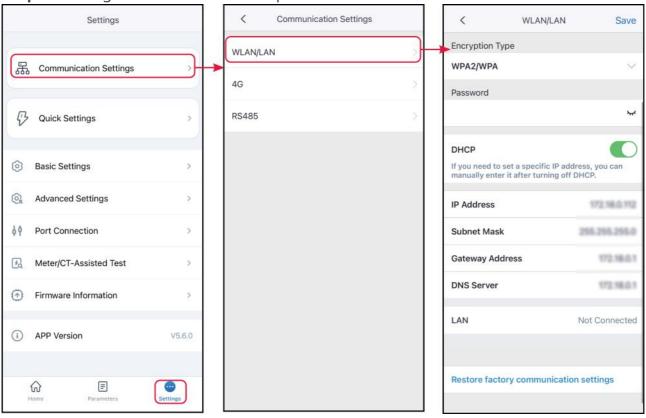
9.3.4.2 Setting WLAN/LAN Parameters

NOTICE

When the inverter is connected to different communication modules, the communication configuration interface may be different. Please refer to the actual interface.

Step 1: Tap **Home > Settings > Communication Setting > WLAN/LAN** to set the parameters.

Step 2: Configure the WLAN or LAN parameters based on actual needs.



No.	Parameters	Description
1	Network Name	Only for WLAN. Select WiFi based on the actual connecting.
2	Password	Only for WLAN. WiFi password for the actual connected network.
3	DHCP	Enable DHCP when the router is in dynamic IP mode. Disable DHCP when a switch is used or the router is in static IP mode.

No.	Parameters	Description
4	IP Address	Do not configure the parameters when DHCP is
5	Subnet Mask	enabled.
6	Gateway Address	Configure the parameters according to the router or switch information when DHCP is disabled.
7	DNS Server	

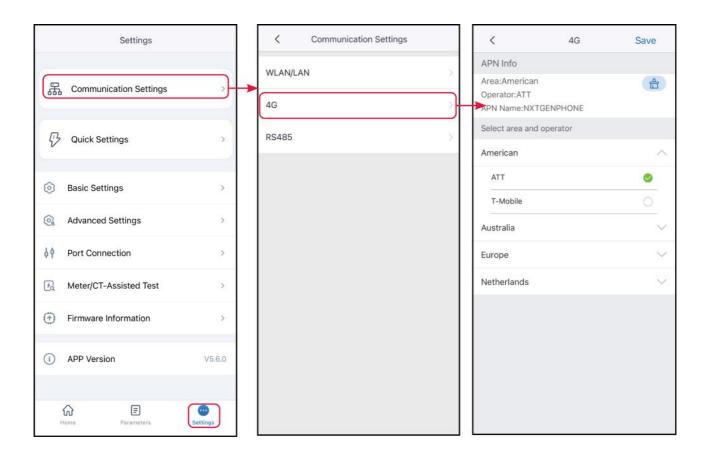
9.3.4.3 Configuring APN Parameters

NOTICE

- Configure the SIM card information of 4G communication device.
- If the 4G module does not offer bluetooth signal, please configure the APN parameters through the Bluetooth module or WiFi module first to achieve 4G communication.

Step 1: Tap **Home > Settings > Communication Settings > 4G** to set the parameters.

Step 2: Set the region and operator based on actual needs.



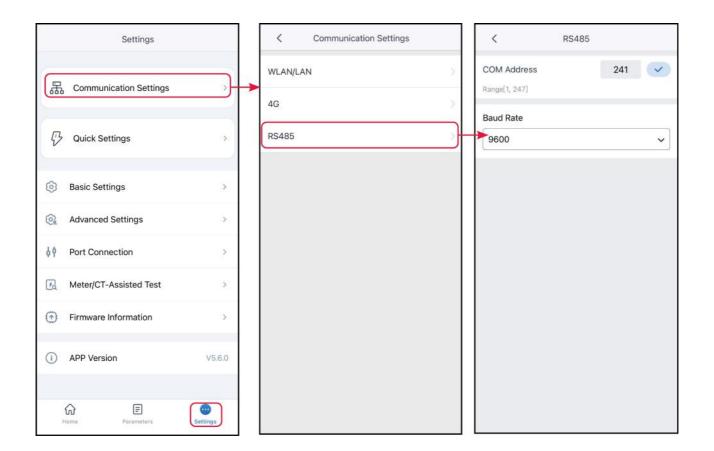
9.3.4.4 Setting RS485 Communication Parameters

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.



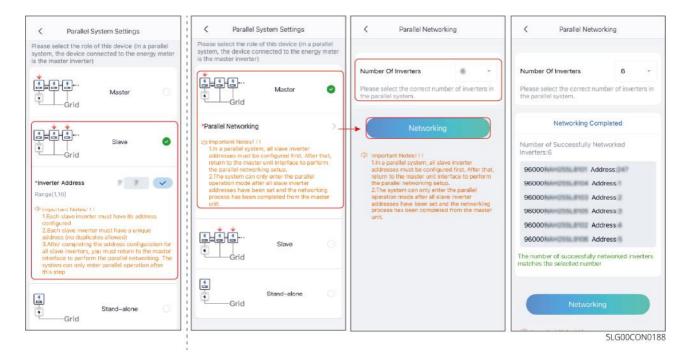
9.3.5 Setting Up the RS485 Parallel System

NOTICE

- When paralleling hybrid inverters via RS485, you must set each inverter as the master or slave inverter individually using the SolarGo App.
- When an inverter in a parallel system needs to be used as a single unit, it must be set to standalone inverter via the SolarGo App.
- Please set the inverter connected to the meter as the master.
- Please first set the slave inverter address, then set the parallel network through the master.
- **Step 1**: Go to the settings interface via **Settings > Parallel System Settings** .
- **Step 2**: Set the inverter to Master, Slave, or Stand-alone based on its actual wiring.
- If the inverter is the master, set it to Master and then exit the connection. After setting the slave inverter address, return to this interface, click **Parallel Networking**, set the number of inverters in the parallel system, and then click

Network.

• If the inverter is the slave, set the **Inverter Address** and click \lor .



9.3.6 Quick Setting the Basic Information

NOTICE

- The setting page varies depending on inverter model.
- The parameters will be configured automatically after selecting the safety country/region, including overvoltage protection, undervoltage protection, overfrequency protection, underfrequency protection, voltage/frequency connection protection, cosφ curve, Q(U) curve, P(U) curve, FP curve, HVRT, LVRT, etc. Tap Home > Settings > Advanced Settings > Safety Parameters to check the parameters after selecting the safety country.
- The power generation efficiency is different in different working modes. Set the working mode according to the local requirements and situation.
 - Self-use mode: The basic working mode of the system. PV power generation is used to supply power to the load first, the excess power is used to charge the battery, and the remaining power is sold to the grid. When PV power generation cannot meet the load's power demand, the battery will supply power to the load; when the battery power also cannot meet the load's power demand, the grid will supply power to the load.
 - 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 load; when the grid is restored, the inverter switches to grid-tied mode.
 - Economic mode: It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot. Select Economic mode only when it meets the local laws and regulations. Set the battery to charge mode during Vally period to charge battery with grid power. And set the battery to discharge mode during Peak period to power the load with the battery.
 - Off-grid mode: suitable for areas without power grid. PV and batteries form a pure off-grid system. PV generates electricity to power the load and excess electricity charges the battery. When PV power generation cannot meet the power demand of the load, the battery will supply power to the load.
 - Smart charging: In some countries/regions, the PV power feed into the utility grid is limited. Select Smart Charging to charge the battery using the surplus power to minimize PV power waste.
 - Peak shaving mode: Peak shaving mode is mainly applicable to peak power limited scenarios. When the total power consumption of the load exceeds the power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

9.3.6.1 Quick System Setup (Type II)

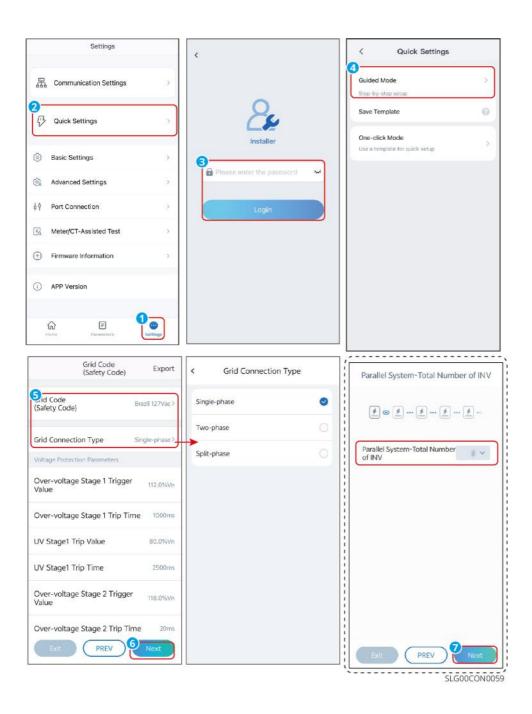
Step 1: Go to the parameter settings page via **Home > Settings > Quick Configuration**.

Step 2: Enter your login password.

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. Meanwhile, you need to select the grid type according to the actual connected grid form for some models. After completing the settings, click **Next** to set the battery connection mode or the number of parallel inverters. The grid standard code only supports configuration by installers.

Step 5: Only for parallel scenarios. Setting the number of parallel inverters. After completing the settings, click Next to set the battery connection mode.

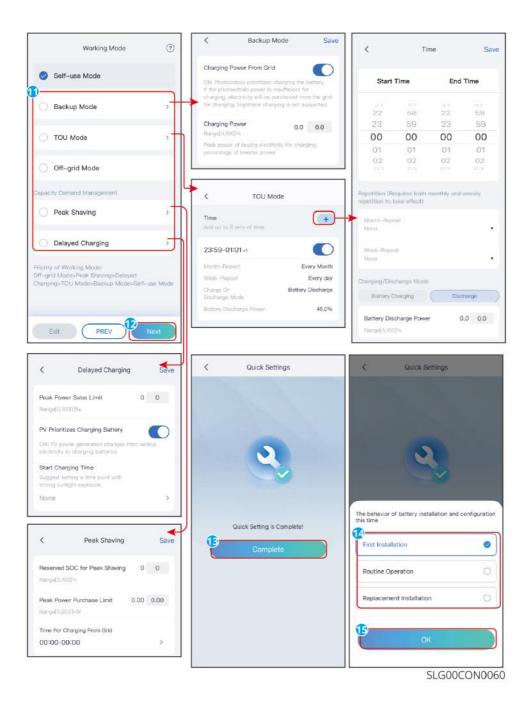


Step 6: Select the battery connection mode based on the actual battery connection situation. If no battery is connected, the basic parameter settings are complete. If a battery is connected, click **Next** after completing the settings to set the battery type. **Step 7**: Select the battery model based on the actual battery connection. After completing the settings click **Next** to set the working mode.



Step 8: 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/meter self-check state. At this point, the inverter will temporarily disconnect from the grid and then automatically reconnect.

Step 9: Select the battery according to the actual situation: **initial installation, daily operation**, or **replacement installation**.

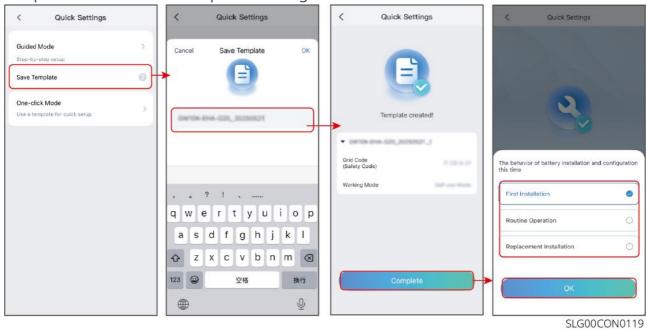


No.ParametersDescriptionBack-up Mode1Charging from GridUse this function, enable the system to purchase power from the utility grid.2Charging PowerThe percentage of power purchased compare to the rated power of the inverter.TOU mode

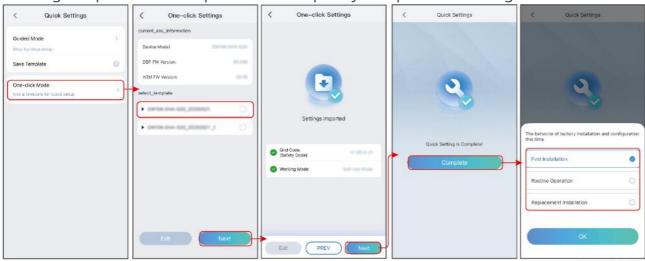
No.	Parameters	Description	
3	Start Time	During the period between the start time and end time, the battery will charge or discharge in accordance with the set charge-discharge mode and its rated power.	
4	End Time		
5	Charge and Discharge mode	Set Charge and discharge mode according to actual needs.	
6	Rated Output Power of the inverter.	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.	
Peaksha	Peakshaving		
8	Reserved SOC For Peakshaving	In the Peakshaving mode, when the battery SOC is lower than the reserved SOC for demand management, the function remains active. When the battery SOC is higher than the reserved SOC for demand management, the demand management function becomes invalid.	
9	Peak Power Purchase Limit	Set the maximum power limit allowed for purchasing electricity from the grid. When the power consumed by the load exceeds the sum of the electricity generated by the photovoltaic system and this limit, the excess power will be supplemented by battery discharge.	
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	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.	

No.	Parameters	Description
12	PV Prioritizes Battery Charging	Within the charging time range, photovoltaic power generation is prioritized for charging the battery.
13	Charging Start Time	

Step 10: For devices that support one-click configuration, you can generate a template based on the completed configuration.



Step 11: 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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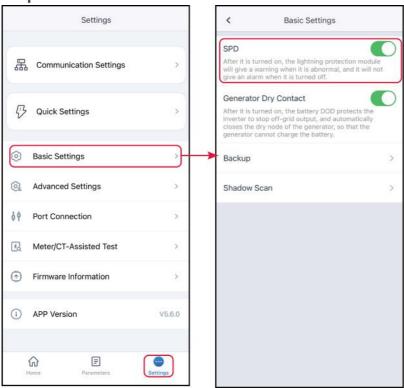
9.3.7 Setting the Basic Information

9.3.7.1 Setting the SPD

After enabling SPD, when the SPD module is abnormal, there will be SPD module abnormal alarm prompt.

Step 1: Tap **Home > Settings > Basic Settings > SPD**, to set the parameters.



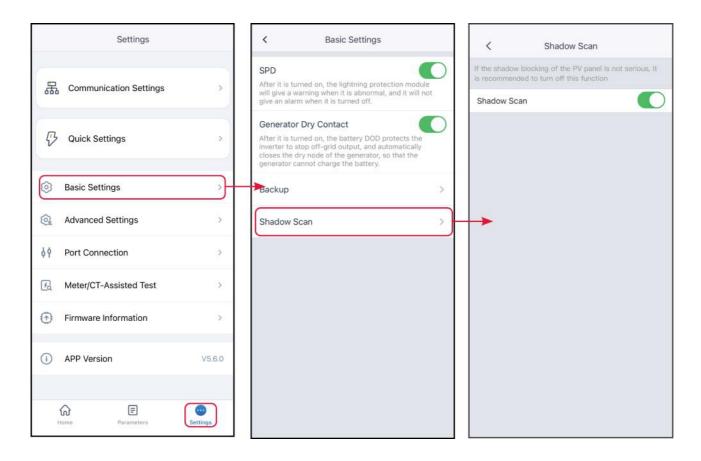


9.3.7.2 Setting the Shadow Scan

Enable Shadow Scan when the PV panels are severely shadowed to optimize the power generation efficiency.

Step 1: Tap **Home > Settings > Basic Settings> Shadow Scan**, to set the parameters.

Step 2: Enable or disable the function based on actual needs. Set the Shadow Scan interval and MPPT shadow scan if the inverter supports.

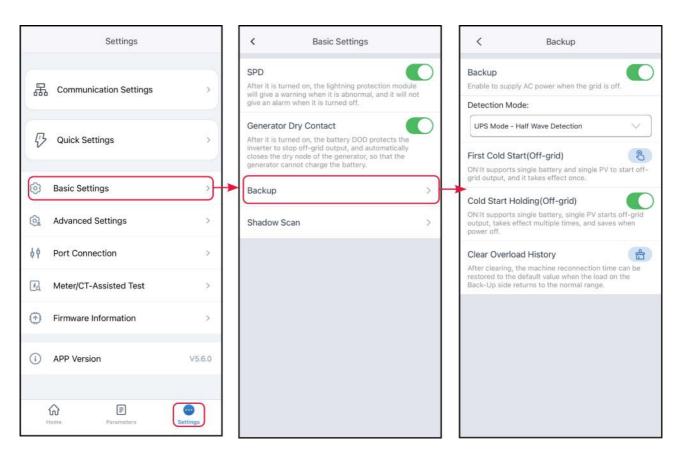


9.3.7.3 Setting the Back-up Power Parameters

After enabling Backup, the battery will power the load connected to the backup port of the inverter to ensure Uninterrupted Power Supply when the power grid fails.

Step 1: Tap **Home > Settings > Basic Settings > Backup**, to set the parameters.

Step 2: Set the backup supply function based on actual needs.



No.	Parameters	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	EPSmode-with LVRT support.	Stop detecting utility grid voltage.
4	First Cold Start (Off-grid)	It will only take effect once. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.
5	Cold Start Holding (Off-grid)	Take effect multiple times. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.

No.	Parameters	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. 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.

9.3.8 Setting Advanced Parameters

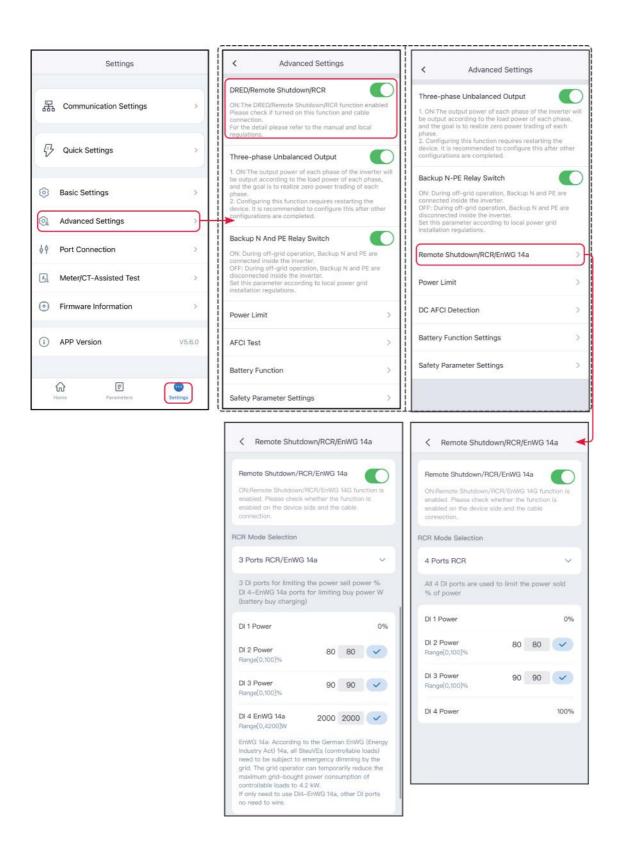
NOTICE

Contact the supplier or after sales service for Advanced Setting password. Password for professional technicians only.

9.3.8.1 Setting DRED/Remote Shutdown/RCR/EnWG 14a

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**: Tap **Home > Settings > Advanced Settings > DRED/Remote Shutdown/RCR** to set the parameters.
- **Step 2**: Enable or disable the function based on actual needs.
- **Step 3**: For areas where the EnWG 14a regulation applies, when enabling the RCR function, you need to select the RCR mode according to the actual device type and set the DI port power.



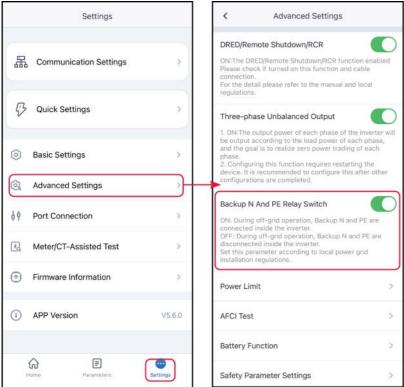
9.3.8.2 Setting the Backup N and PE Relay Switch

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: Tap **Home > Settings > Advanced Settings > Backup N and PE Relay Switch** to set the parameters.

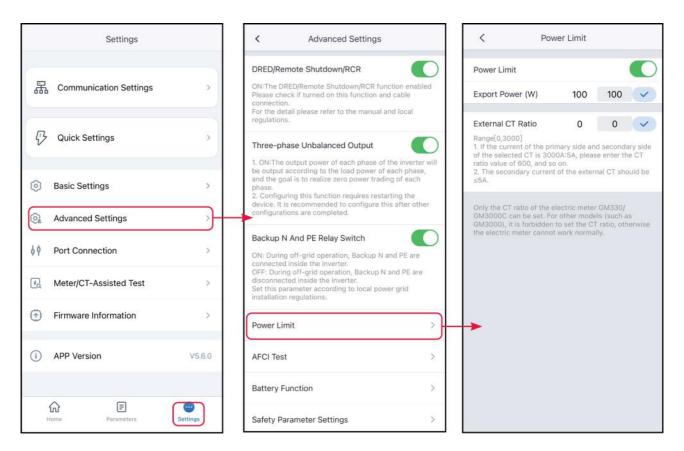




9.3.8.3 Setting the Power Limit Parameters

- **Step 1**: Tap **Home > Settings > Advanced Settings > Power Limit** to set the parameters.
- **Step 2**: Turn on or off the power limit function according to actual needs.
- **Step 3**: After turning on the function, enter the parameter value according to actual needs and tap "\" to successfully set the parameter.

9.3.8.3.1 Set the grid-connected power limit parameters (general)

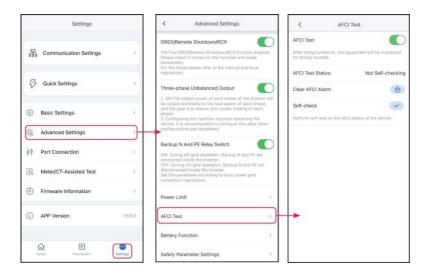


No.	Parameters	Description
1	IPOWERLIMIT	Turn on this function when output power needs to be limited according to the grid standards of some countries or regions.
2	IEXDORF POWER	Set according to the maximum power that can be input to the grid.
3	1	Set the ratio of the primary current to the secondary current of the external CT.

9.3.8.4 Setting the AFCI Detection

Step 1: Tap **Home > Settings > Advanced Settings > AFCI Test** to set the parameters.

Step 2: Enable AFCI Test, Clear AFCI Alarm and Self-Check based on actual needs.

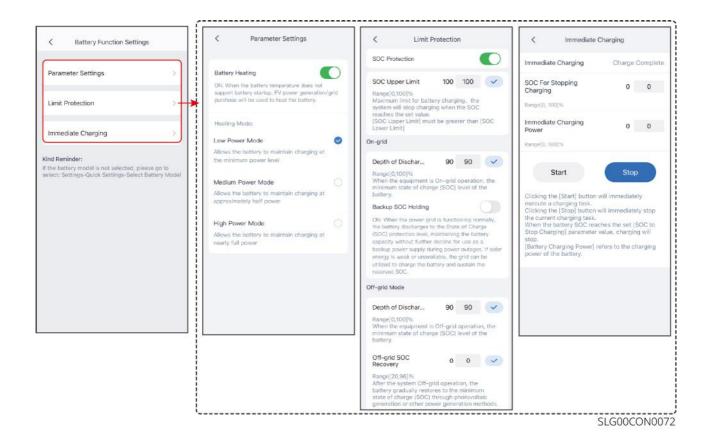


No.	Parameters	Description
1	AFCI Test	Enable or disable AFCI accordingly.
2	AFCI Test Status	The detection status like Not Self-checking.
3	Clear AFCI Alarm	Clear ARC Faulty alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

9.3.8.5 Setting the Battery

9.3.8.5.1 Set Parameters for Lithium Battery

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



No.	Parameter	Description	
Parame	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.	

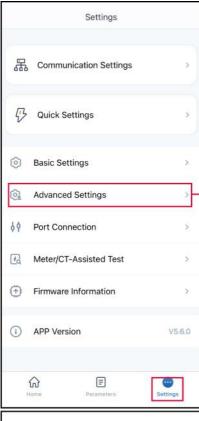
No.	Parameter	Description
No.	Parameter Battery Heating	Optional. This option is displayed on the interface when a battery that supports heating is connected. After the battery heating function is turned on, when the temperature is below the value that starts up the battery, PV power or electricity from the grid will be used to heat the battery. Heating Mode: • 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°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 6°C, and turned off when it is greater than or equal to 8°C. • 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°C, and turned off when it is greater than or equal to 13°C. • GW14.3-BAT-LV-G10 • 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°C, and turned off when it is greater than or equal to 12°C.
		 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°C, and turned off when it is greater than or equal to 22°C.

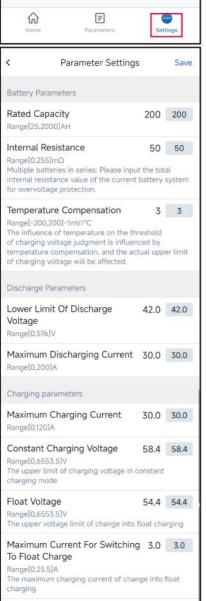
No.	Parameter	Description
4	Battery Wake-up	 After being turned on, the battery can be awakened when it shuts down due to undervoltage protection. Only applicable to lithium batteries without circuit breakers. After being turned on, the output voltage of the battery port is about 60V.
Limit P	rotection	
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.
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%.
Immed	iate Charging	
11	Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.

No.	Parameter	Description
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.

9.3.8.5.2 Setting Lead-acid Battery Parameter

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





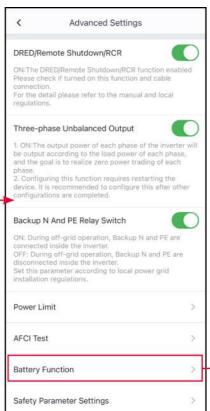
The Time Of Float Charging

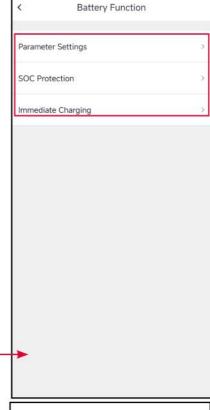
The time of uniform charging/constant charging

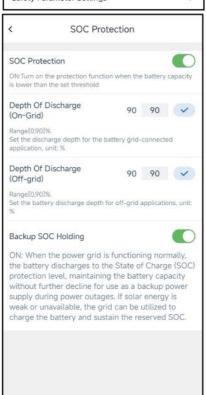
Range[0,65535)S

change into float charging

180 180









No.	Parameter	Description
1	Nominal Capacity	Set the battery capacity according to the actual parameters.
2	Battery Internal Resistance	Set the battery internal resistance according to the actual parameters.
3	Temperature Compensation	When the battery temperature changes, the battery charging voltage will be affected. Based on 25°C, the charging voltage upper limit is adjusted according to the set value for every degree change in battery temperature. For example, if the charging temperature influence coefficient is set to 10, when the battery temperature rises to 26 degrees, the charging voltage upper limit decreases by 10 mV.
4	Lower Discharge Voltage	Set the minimum voltage during battery discharge according to actual requirements.
5	Max. Discharging Current	Set the maximum discharging current based on actual needs.
6	Max. Charging Current	Set the maximum charging current based on actual needs.
7	Constant Charging Voltage	Set the voltage value for constant charging of the battery according to actual requirements.
8	Floating Voltage	Set the voltage value for battery float charging according to actual requirements.
9	Maximum Current When Switching to Floating Charge	The maximum charging current after switching the battery charging mode from constant charging/equal charging to float charging.

No.	Parameter	Description	
10	Time to Switch to Float Charging Mode	The time required to switch the battery charging mode from constant charging/equal charging to float charging.	
11	Equalization Charging Cycle	Set the interval days for battery equalization charging.	
Restr	iction protection.		
12	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.	
13	SOC Lower Limit (Grid Connection)	The minimum battery charge that must be maintained when the inverter is connected to the grid.	
14	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.	
15	SOC Lower Limit (Off-Grid)	The minimum battery charge that must be maintained when the inverter is operating off-grid.	
16	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%.	
Imme	Immediate Charging		
17	SOC for Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.	

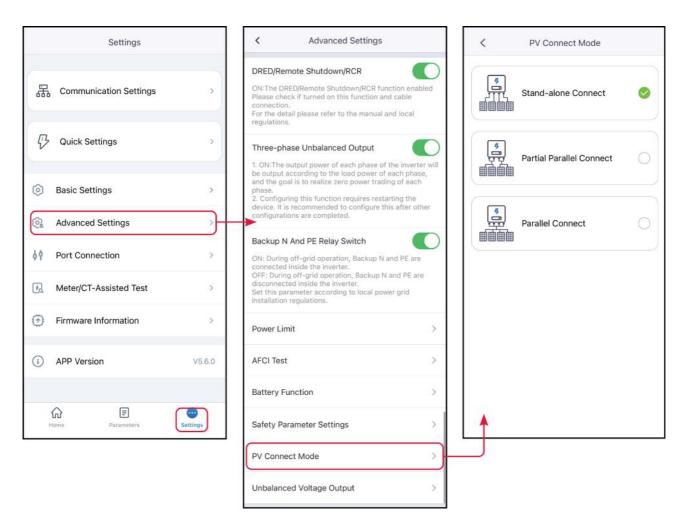
No.	Parameter	Description
18	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling Immediate Charging. For example, for an inverter with a rated power of 10kW, when set to 60, the charging power is 6kW.
19	Start	Start charging immediately.
20	Stop	Immediately stop the current charging task.

9.3.8.6 Setting PV Connect Mode

Select the PV connect mode based on the actual connections between the PV strings and MPPT ports of the inverter.

Step 1: Tap **Home > Settings > Advanced Settings > PV Connect Mode** to set the parameters.

Step 2: Set the connect mode to Independent Access, Partial Parallel Connect or Parallel Connection based on actual connections.

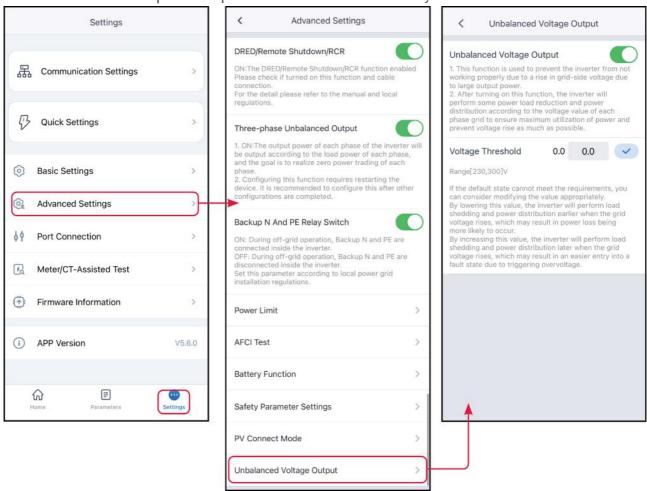


No.	Parameters	Description
1	Stand-alone Connect	The external PV string is connected to multi MPPT terminals of the inverter.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another PV string connect to MPPT3.
3	Parallel Connect	When an external PV string is connected to the PV input port on the inverter side, one PV string is connected to multiple PV input ports.

9.3.8.7 Setting the Unbalanced Voltage Output

Step 1: Tap **Home > Settings > Advanced Settings > Unbalanced Voltage Output** to se the parameters.

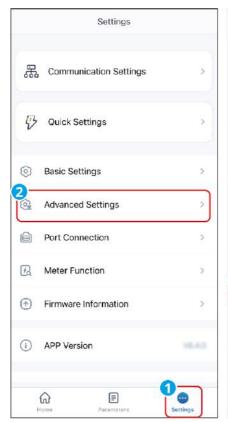
- **Step 2**: Enable or disable the function based on actual needs.
- **Step 3**: After enabling the Unbalance Voltage Function, set parameters based on actual needs. And tap 'v'. The parameters are set successfully.

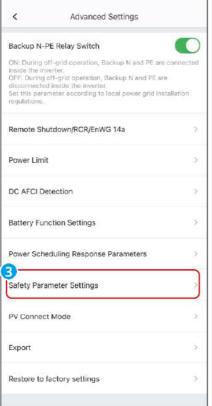


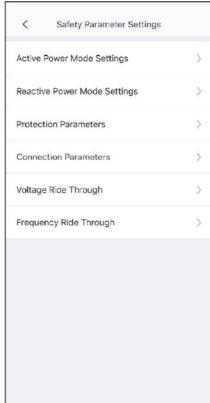
9.3.9 Setting Safety Parameters

NOTICE

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





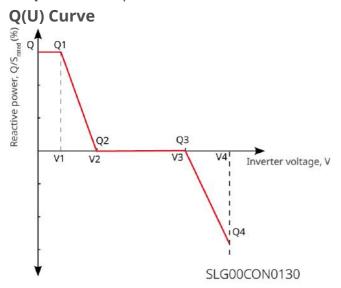


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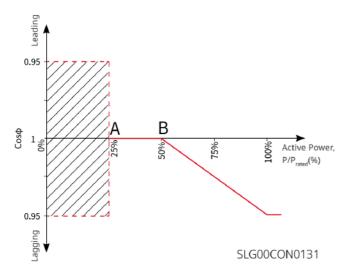
9.3.9.1 Setting the Reactive Power Mode

Step 1 : Tap Home > Settings > Advanced Settings > Safety Parameter Setting > Reactive Power Mode Settings to set the parameters.

Step 2: Set the parameters based on actual needs.



Cosφ Curve



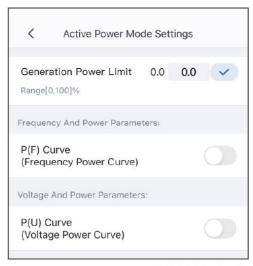
No.	Parameters	Description	
Fix PF	Fix PF		
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements. After the parameters are set successfully, the power factor remains unchanged during the operation of the inverter.	
2	Under-excited	Set the power factor as lagging or leading based on actual	
3	Over-excited	needs and local grid standards and requirements.	
4	Power Factor	Set the power factor based on actual needs. Range: 0-~- 0.8, or +0.8~+1.	
Fix Q			
1	Fix Q	Enable Fix Q when it is required by local grid standards and requirements.	
2	Over- excited/Under- excited	Set the reactive power as inductive or capacitive reactive power based on actual needs and local grid standards and requirements.	
3	Reactive Power	Set the ratio of reactive power to apparent power.	
Q(U) (Q(U) Curve		
1	Q(U) Curve	Enable Q(U) Curve when it is required by local grid standards and requirements.	

No.	Parameters	Description
2	Mode Selection	Set Q(U) curve mode, supporting basic mode and slope mode.
3	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. When set to 90, it means: V/Vrated% = 90%.
4	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting Vn Reactive Power to 48.5 means Q/Srated%=48.5%。
5	Voltage Deadband Width	When Q(U) curve mode is set to slope mode, this parameter defines the voltage deadband range where no reactive power output is required.
6	Over-excitation Slope	(In Q(U) slope mode) Sets the positive or negative slope
7	Under- excitation Slope	for reactive power variation during over-voltage conditions.
8	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting Vn Reactive Power to 48.5 means Q/Srated%=48.5%。
9	Q(U) Curve Response Time Constant	The reactive power must reach 95% of the target value within 3 time constants, following a first-order low-pass filter curve.
10	Extended Function	Enable the extended function and configure the corresponding parameters.
11	Lock-In Power	When the inverter output reactive power to the rated
12	Lock-out Power	power ratio is between the Lock-in power and Lock-out power, the ratio meets Q(U) curve requirements.
Cosφ	(P) Curve	

No.	Parameters	Description
1	Cosφ(P) Curve	Enable Cosφ Curve when it is required by local grid standards and requirements.
2	Mode Selection	Set cosφ(P) Curve Mode and support basic mode and slope mode configurations.
3	N-point Power	The percentage of inverter output active power relative to rated power at the N-point. N=A, B, C, D, $\rm E_{\circ}$
4	N-point cosφ Value	N-point Power Factor N=A, B, C, D, E。
5	Over-excitation Slope	When cosφ(P) curve mode is set to slope mode,
6	Under- excitation Slope	configures the power variation slope as either positive or negative.
7	N-point Power	The percentage of inverter output active power relative to rated power at the N-point. N=A, B, C。
8	N-point cosφ Value	N-point Power Factor N=A, B, C。
9	cosφ(P) Curve Response Time Constant	The reactive power must reach 95% of the target value within 3 time constants, following a first-order low-pass filter curve.
10	Extended Function	Enable the extended function and configure the corresponding parameters.
11	Lock-in Voltage	When the grid voltage is between Lock-in Voltage and
12	Lock-out Voltage	Lock-out Voltage, the voltage meets Cosφ curve requirements.
Q(P) (Curve	
1	Q(P) Curve Function	Enable Q(P) Curve when it is required by local grid standards and requirements.
2	Mode Selection	Set Q(P) curve mode, supporting basic mode and slope mode.

No.	Parameters	Description	
3	Pn-point Power	The percentage of the output reactive power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, setting to 90 means Q/Prated%=90%.	
4	Pn-point 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, When set to 90, it means: P/Prated% = 90%.	
5	Over-excitation Slope	When the Q(P) curve mode is set to slope mode, configure	
6	Under- excitation Slope	the power variation slope as either a positive or negative value.	
7	Pn-point Power	Ratio of reactive power to rated power at Pn points (n=1, 2, 3). For example, setting to 90 means Q/Prated%=90%.	
8	Pn-point Reactive Power	Ratio of active power to rated power at Pn points (n=1, 2, 3). For example, When set to 90, it means: P/Prated% = 90%.	
9	Time Constant	The reactive power must reach 95% of the target value within 3 time constants, following a first-order low-pass filter curve.	

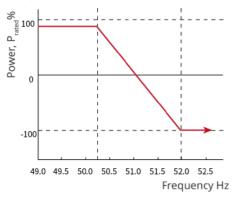
9.3.9.2 Setting the Active Power Mode

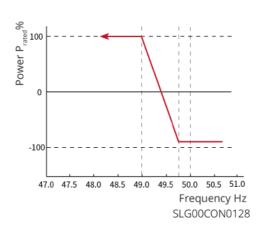


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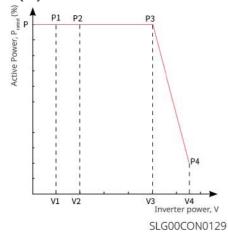
Step 1: Tap Home > Settings > Advanced Settings > Safety Parameter Settings > Active Power Mode Settings to set the parameters.











No.	Parameter s	Explanation
1	Generation Power Limit	Set the change slope when the active output power increases or decreases.
2	Power Gradient	Set the active power change slope.
Overf	requency Unl	oading
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Over- Frequency Load Shedding Mode	 Set the overfrequency unloading mode based on actual needs. Slope mode: adjusts power based on the over frequency point and load reduction slope. Stop mode: adjusts the power based on the over-frequency start point and over-frequency end point.
3	Overfreque ncy Threshold	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will decrease when the utility grid frequency is higher than Overfrequency Threshold .
4	Import/Exp ort Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Overfreque ncy Endpoint	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will stop decreasing when the utility grid frequency is higher than Overfrequency Endpoint .

No.	Parameter s	Explanation
6	Over- Frequency Power Slope Reference Power	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.
7	Power response to overfreque ncy gradient	The inverter output active power will increase when the utility grid frequency is too high. Indicates the slope when the inverter output power decreases.
8	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is higher than the Overfrequency Threshold .
9	Hysteretic Function	Enable the hysteretic function.
10	Frequency Hysteresis Point	During over-frequency load reduction, if the frequency decreases, the power output is based on the lowest point of the load reduction power until the frequency is less than the hysteresis point and the power is restored.
11	Hysteresis Waiting Time	For over-frequency load reduction and frequency decrease, when the frequency is less than the hysteresis point, the power recovery waiting time, that is, it takes a certain amount of time to recover the power.
12	Hysteresis Power Recovery Slope Reference Power	For over-frequency load reduction and frequency decrease, when the frequency is less than the hysteresis point, the power recovery benchmark, that is, the power recovery is based on the recovery slope * the rate of change of the reference power. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (\triangle P).

No.	Parameter s	Explanation
13	Hysteretic Power Recovery Slope	For over-frequency load reduction and frequency reduction, when the frequency is less than the hysteresis point, the power change slope when the power is restored.
Unde	rfrequency Lo	ading
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Underfrequ ency Load Mode	 Set the underfrequency unloading mode based on actual needs. Slope mode: adjusts power based on the underfrequency point and load increase slope. Stop mode: adjusts the power based on the underfrequency start point and underfrequency end point.
3	Underfrequ ency Threshold	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will increase when the utility grid frequency is lower than Underfrequency Threshold .
4	Import/Exp ort Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Underfrequ ency Endpoint	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will stop increasing when the utility grid frequency is lower than Underfrequency Endpoint .

No.	Parameter s	Explanation
6	Over- Frequency Power Slope Reference Power	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.
7	Under- Frequency Power Slope	The inverter output active power will increase when the utility grid frequency is too low. The slope of the inverter output power when it rises.
8	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is lower than the Underfrequency Threshold .
9	Hysteretic Function	Enable the hysteretic function.
10	Frequency Hysteresis Point	During underfrequency loading, if the frequency increases, the power is output according to the lowest point of the loaded power until the frequency is higher than the hysteresis point and the power is restored.
11	Hysteresis Waiting Time	For underfrequency loading, the frequency increases, when the frequency is higher than the hysteresis point, the waiting time for power recovery, that is, it takes a certain amount of time to recover the power.
12	Hysteresis Power Recovery Slope Reference Power	For underfrequency loading, the frequency increases, when the frequency is higher than the hysteresis point, the benchmark for power recovery, that is, the power recovery is carried out according to the recovery slope * the rate of change of the benchmark power. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (\triangle P).

No.	Parameter s	Explanation
13	Hysteretic Power Recovery Slope	For under-frequency loading, frequency increase, when the frequency is higher than the hysteresis point, the power change slope when power is restored.
14	P(U) Curve	Enable P(U) Curve when it is required by local grid standards and requirements.
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 Power	The percentage of the output active power to the apparent power at Vn point, (n= 1, 2, 3, 4). For example, setting Vn Reactive Power to 48.5 means P/Prated%=48.5%.
17	Output Response Mode	Set the active power 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 Gradient	When the output response mode is set to Gradient Control, active power scheduling is achieved according to the power change gradient.
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 First-order Low-pass Filter Time Parameter.
20	Overload Function Switch	When enabled, the maximum active power output is 1.1 times the rated power; otherwise, the maximum active power output is consistent with the rated power value.

9.3.9.3 Setting Protection Parameters

Step 1 : Tap Home > Settings > Advanced Settings > Safety Parameter Settings >

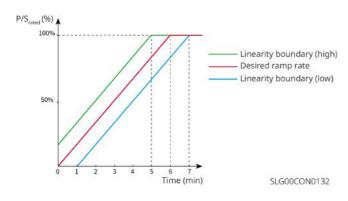
Protection Parameters to set the parameters.

Step 2: Set the parameters based on actual needs.

No.	Parameters	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 grid overvoltage protection tripping time, n=1,2,3,4.
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.
5	10min Overvoltage Trip Threshold	Set the 10min overvoltage protection threshold value.
6	10min Overvoltage Trip Time	Set the 10min overvoltage protection tripping time.
7	OF Stage n Trip Value	Set the grid overfrequency triggering n-th order protection point, n=1,2,3,4.
8	OF Stage n Trip Time	Set the grid overfrequency trigger n-th order trip time, n=1,2,3,4.
9	UF Stage n Trip Value	Set the grid underfrequency triggering n-th order protection point, n=1,2,3,4.
10	UF Stage n Trip Time	Set the grid underfrequency trigger n-th order trip time, n=1,2,3,4.

9.3.9.4 Setting Connection Parameters

Step 1 : Tap Home > Settings > Advanced Settings > Safety Parameter Settings > Protection Parameters to set the parameters.



No.	Parameters	Description	
Ramp	Ramp Up		
1	Upper Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is higher than the Upper Voltage .	
2	Lower Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is lower than the Lower Voltage .	
3	Upper Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is higher than the Upper Frequency .	
4	Lower Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is lower than the Lower Frequency .	
5	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is powered on for the first connection. 2. The utility grid voltage and frequency meet certain requirements.	
6	Soft Ramp Up Gradient	Enable the start up power slope.	
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.	
Reconnection			

No.	Parameters	Description
8	Upper Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is higher than the Upper Voltage .
9	Lower Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is lower than the Lower Voltage .
10	Upper Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is higher than the Upper Frequency .
11	Lower Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is lower than the Lower Frequency .
12	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is reconnecting to the grid due to a fault. 2. The utility grid voltage and frequency meet certain requirements.
13	Reconnection Gradient	Enable the start up power slope.
14	Reconnection 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. For example, setting Reconnection Gradient to 10 means the reconnect slope is 10%P/Srated/min.

9.3.9.5 Setting Voltage Ride Through Parameters

Step 1 : Tap Home > Settings > Advanced Settings > Safety Parameter Settings > Voltage Ride Through to set the parameters.

No.	Parameters	Description
LVRT		
1	UVn Voltage	The ratio of the ride through voltage to the rated voltage at UVn point during LVRT. $n=1,2,3,4,5,6,7$.
2	UVn Time	The ride through time at UVn point during LVRT. n=1,2,3,4,5,6,7
3	Enter Into LVRT Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between Enter Into
4	Exit LVRT Endpoint	LVRT Threshold and Exit LVRT Endpoint.
5	Slope K2	K-factor for reactive power during LVRT.
6	Zero Current Mode	The system outputs zero current during LVRT.
7	Entry Threshold	Set the entry threshold of zero current mode.
HVRT		
1	OVn Voltage	The ratio of the ride through voltage to the rated voltage at OVn point during HVRT. n=1,2,3,4,5,6,7。
2	OVn Time	The ride through time at OVn point during HVRT. n=1,2,3,4,5,6,7。
3	Enter High Crossing Threshold	The inverter will not be disconnected from the utility grid
4	Exit High Crossing Threshold	immediately when the grid voltage is between Enter High Crossing Threshold and Exit High Crossing Threshold.
5	Slope K2	K-factor for reactive power during HVRT.

No.	Parameters	Description
6	Zero Current Mode	The system outputs zero current during HVRT.
7	Entry Threshold	Set the entry threshold of zero current mode.

9.3.9.6 Setting Frequency Ride Through Parameters

Step 1 : Tap Home > Settings > Advanced Settings > Safety Parameter Settings > Frequency Ride Through to set the parameters.

Step 2: Set the parameters based on actual needs.

No.	Parameters	Description
1	UFn Frequency	The frequency at the UFn point during frequency ride through.
2	UFn Frequency	The frequency at the UFn point during frequency ride through. n=1,2,3。
3	UFn Time	The ride through duration at the UFn point during frequency ride through. n=1,2,3。
4	OFn Frequency	The frequency at the OFn point during frequency ride through. n=1,2,3。
5	OFn Time	The ride through duration at the OFn point during frequency ride through. n=1,2,3。

9.3.10 Setting Generator/Load Control

9.3.10.1 Setting Load Control

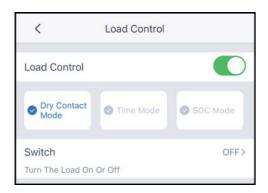
NOTICE

- Loads and generators can be controlled by SolarGo app when the inverter supports load control function.
- For ET40-50kW series inverters, the load control function is supported only when the inverter is used with STS. The inverter supports load control of the GENERATOR port or the BACKUP LOAD port.

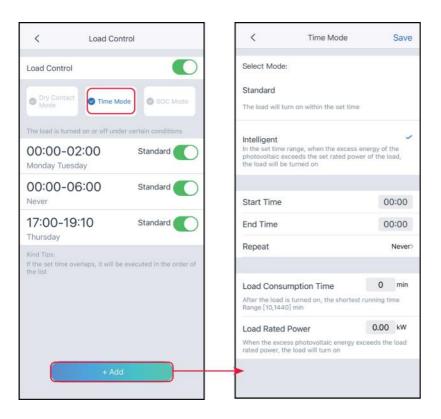
Step 1: Tap **Home > Settings > Port Connection** to set the parameters.

Step 2: Select **Generator Control** or **Load Control** based on actual needs.

• 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 on or off the switch 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. Select standard mode or intelligent mode.



No.	Parameters	Description
1	Standard	The loads will be powered within the setting time period.
2	Intelligent	Once the excess energy of the photovoltaic exceeds the load nominal power within the time period, the loads will be powered.
3	Start Time	The time mode will be on between the Start Time and End Time.
4	End Time	
5	Repeat	The repeat days.
6	Load Consumption Time	The shortest load working time after the loads been powered. The time is set to prevent the loads be turned on and off frequently when the PV power fluctuates greatly. Only for Intelligent mode.
7	Load Rated Power	The loads will be powered when the excess energy of the photovoltaic exceeds the nominal power of load. Only for Intelligent mode.

• SOC Mode: the inverter has integrated dry contact controlling port, which can control whether the load is powered or not by contactor. In off-grid mode, the load connected to the port will not be powered if the BACKUP overload is detected or

the battery SOC value is lower than the Off-grid battery protection value. Set Off-grid Battery Protection Value based on actual needs.

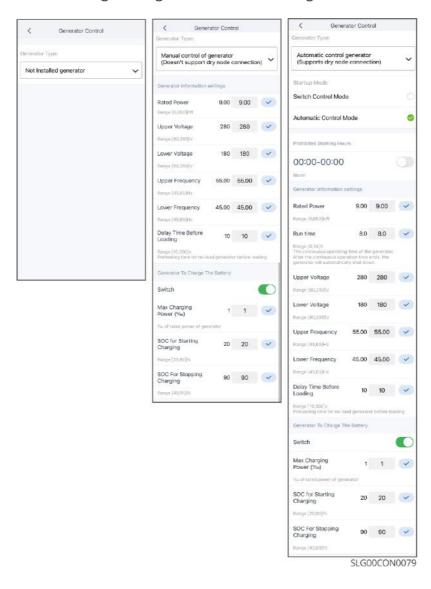


9.3.10.2 Setting the Generator Parameters

NOTICE

- When the inverter supports the generator control function, the generator can be controlled through the SolarGo App.
- For ET40-50kW series inverters, the generator can be connected and controlled only when the inverter is used with STS.
- **Step 1**: Tap **Home > Settings > Port Connection** to set the parameters.
- **Step 2**: Select Generator Connection or Load Connection based on actual needs.
- **Step 3**: When setting the generator control function, select the generator type according to the actual access situation. Currently supported:**Not Installed, Manual Control Of Generator** or **Automatic Control Generator**. And set the parameters according to the selected generator type.
- Not Installed: If no generator is connected in the system, select Not Installed.
- Manual Control Of Generator(Doesn't Support Dry Node Connection): Start or stop the generator manually. The inverter cannot control the generator when Manual Control Of Generator(Doesn't Support Dry Node Connection) is selected.

- Automatic control generator (Supports dry node connection): If the generator has dry contact port and is connected to the inverter, set the generator control mode to Switch Control Mode or Automatic Control Mode based on actual needs.
 - Switch Control Mode: The generator will start working when the Generator Dry Node Switch is on, and stop automatically after reaching Run Time.
 - Automatic Control Mode: The generator will work during Run Time, but stop working during Prohibited Working Hours.



No.	Parameters	Description
1	Startup Mode	Switch Control Mode/Automatic Control Mode
Switch Control Mode		

No.	Parameters	Description
2	Generator Dry Node Switch	Only for Switch Control Mode.
3	Run Time	Set the generator's continuous runtime, after which the generator will be turned off.
Automatic Control Mode		
4	Prohibited Working Hours	Set the time period during which the generator cannot work.
5	Run Time	Set the generator's continuous runtime, after which the generator will be turned off. If the generator start-up operation time includes prohibited working time, the generator will stop running during this time period; after the prohibited working time, the generator will restart running and timing.

No.	Parameters	Description	
Gener	Generator Information Settings		
1	Rated Power	Set the rated power of the generator.	
2	Run Time	Set the continuous running time of the generator. The generator will be shut down after the continuous running time ends.	
3	Upper Voltage	Set the operation voltage range of the generator.	
4	Lower Voltage		
5	Frequency Cap	Set the operation frequency range of the generator.	
6	Lower Frequency		
7	Preheating time	Set the generator no-load preheating time.	
Parameter settings for generator charging batteries			
8	Switch	Select whether to use the generator to generate electricity to charge the battery.	

No.	Parameters	Description
9	Max.charging power (‰)	The charging power when the generator generates electricity to charge the battery.
10	Start charging SOC	When the battery SOC is lower than this value, the generator generates electricity to charge the battery.
11	Stop charging SOC	When the battery SOC is higher than this value, stop charging the battery.

9.3.10.3 Setting Microgrid Parameters

NOTICE

When the inverter supports microgrid function, you can set microgrid parameters through SolarGo App.

Step 1: Tap **Home > Settings > Port Connection** to set the parameters.

Step 2: According to the actual interface prompts, enter the microgrid control interface and set the microgrid parameters according to actual needs.



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No.	Parameters	Description
1	Maximum SOC for Charging	Set the upper limit of charging SOC, and stop charging when the upper limit is reached.
2	Manual wake-up	 When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the grid. Click this button to force the energy storage inverter to output voltage to the grid-connected inverter, thereby starting the grid-connected inverter. Single effect.

No.	Parameters	Description
3	Automatic wake- up	 When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the 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. Multiple effect.
4	Grid Import Power Limit Offset	Set the adjustable range of the maximum power that the device can actually buy from the grid.

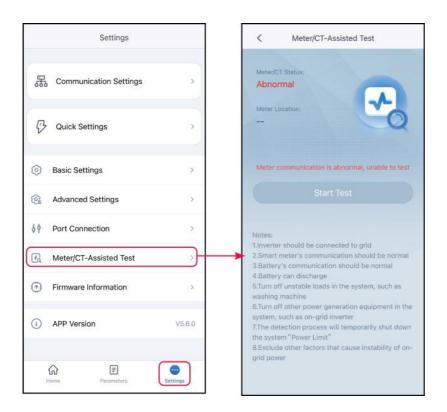
9.3.11 Setting the Meter Parameters

9.3.11.1 Meter/CT-Assisted Test

Meter/CT-Assisted Test is used to auto-check if the Smart Meter and CT are connected in the right way and their working status.

Step 1: Tap **Home > Settings > Meter/CT Assisted Test** to set the function.

Step 2: Tap **Start Test** to start test. Check Test Result after test.



9.3.12 Equipment Maintenance

9.3.12.1 Checking Firmware Information/Upgrading Firmware Version

Upgrade the DSP version, ARM version, BMS version, AFCI version, or STS version of the inverter, or firmware version of the communication module. Some devices do not support upgrading the firmware version through SolarGo app.

NOTICE

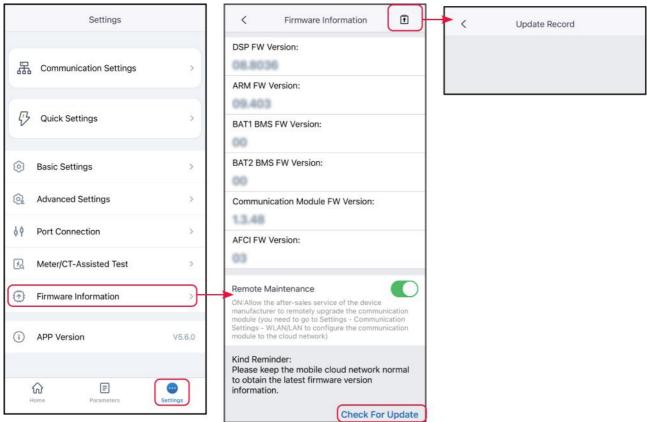
If the Firmware Upgrade dialog box pops up once logging into the app, click Firmware Upgrade to directly go to the firmware information page.

9.3.12.1.1 Regular 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 the device is connected to SolarGo, otherwise the upgrade may fail.
- **Step 1**: Tap **Home > Settings > Firmware Information** to check the firmware version. If the firmware upgrade dialog box pops up, tap **Firmware Upgrade** and turn to the upgrade interface.
- **Step 2**: (Optional) Tap **Check For Update** to confirm whether the latest firmware version is available for updating.
- **Step 3**: Tap **Firmware Upgrade** to enter the firmware upgrade interface.
- **Step 4**: (Optional) Tap **Learn More** to view firmware-related information, such as the current version, the latest version, firmware update records, etc.

Step 5: Tap **Upgrade** and complete the upgrade according to the prompts on the interface.

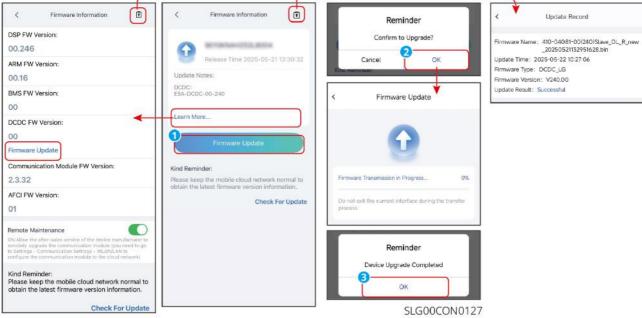


9.3.12.1.2 One-click Upgrade

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 the device is connected to SolarGo, otherwise the upgrade may fail.
- **Step 1**: Tap **Home > Settings > Firmware Information**. Tap **Firmware Information** as prompted to enter the firmware upgrade page.
- **Step 2**: Tap **Upgrade** and follow the prompts to complete the upgrading. If you only need to upgrade a specific firmware version, tap **Learn More** to check the firmware related information and tap **Firmware Upgrade** below the firmware version you want to upgrade, and follow the on-screen prompts to complete the operation.
- **Step 3**: Tap **Learn More** to view all current firmware version information.

Step 4: (Optional)Tap ,to view the version upgrade record.



9.3.12.1.3 Automatic Upgrade

NOTICE

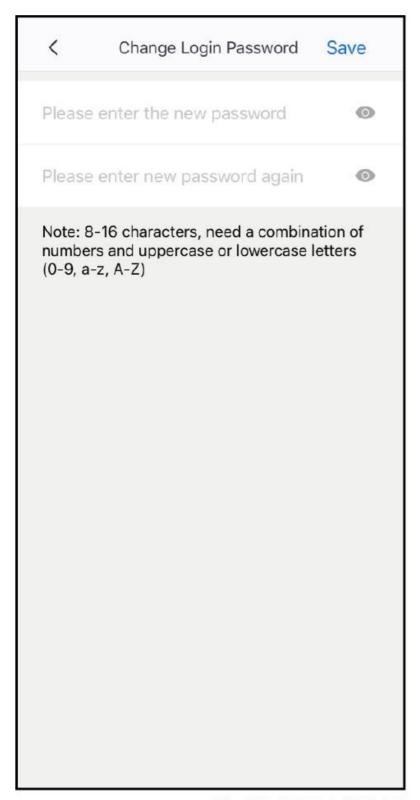
- When using WiFi/LAN Kit-20 or WiFi Kit-20 module communication and the module firmware version is V2.0.1 or above, the device automatic upgrade function can be enabled.
- After the device automatic upgrade function is enabled, if the module version is updated and the device has been connected to the network, the corresponding firmware version can be automatically upgraded.
- **Step 1**: Tap **Home > Settings > Firmware Information**.
- **Step 2**: Enable or disable the automatic device upgrade function according to actual needs.

9.3.12.2 Change the Login Password

NOTICE

The login password can be changed. Keep the changed password in mind after changing it. Contact the after-sales service if you forget the password.

- **Step 1**: Tap **Home > Settings > Change Login Password** to change the password.
- **Step 2**: Change the password based on actual needs.



SLG00CON0088

10 Power Plant Monitoring

10.1 SEMS+

10.1.1 Product Introduction

SEMS+ App is a monitoring platform to manage power plants and devices, and check the operating data and alarming information of the power plant.

10.1.1.1 Applicable Product Model

SEMS+ App can be used to monitor and manage GoodWe products, such as inverters, smart meters, smart loggers, chargers, batteries and so on.

10.1.1.2 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

- Operating system: Android 6.0 or later, iOS 13.0 or later.
- Internet connection via browser.
- WLAN/Bluetooth capabilities.

Download Methods:

Method I

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

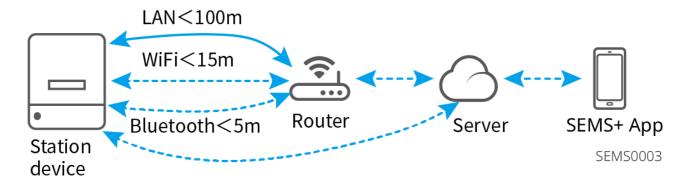


Method II

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



10.1.1.3 App Connection



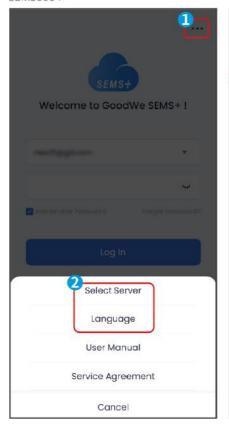
10.1.1.4 Setting Language and Server

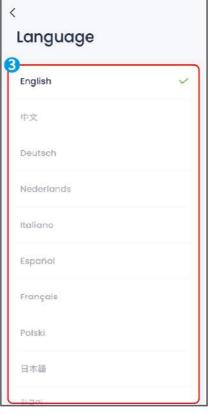
NOTICE

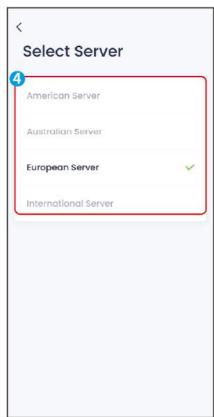
The server is automatically matched based on login account information. To set it manually, ensure that the selected region matches the region of the account. Otherwise, login may fail.

Select the language and the server based on the actual situation.

SEMS0004







10.1.1.5 Setting the Network Information

The SEMS+ App allows connecting devices via Bluetooth or WiFi and configuring network parameters to realize remote monitoring or management.

NOTICE

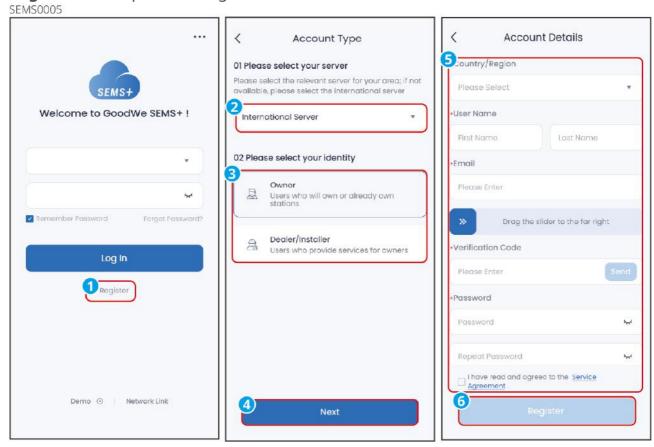
The device name varies depending on the inverter model or smart dongle model.

- 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-***
- AC Charger:***

10.1.2 Managing the Account

10.1.2.1 Registering an Account

- **Step 1:** Tap **Register** to enter the account registration interface.
- **Step 2:** Select the account type based on your actual needs and tap **Next**.
- **Step 3:** Enter your account information based on the actual situation and tap **Register** to complete the registration.



10.1.2.2 Logging in to the App

NOTICE

- Register an account or obtain an account from your dealer before logging in.
- Check and manage power station after logging in. The actual interface takes precedence.

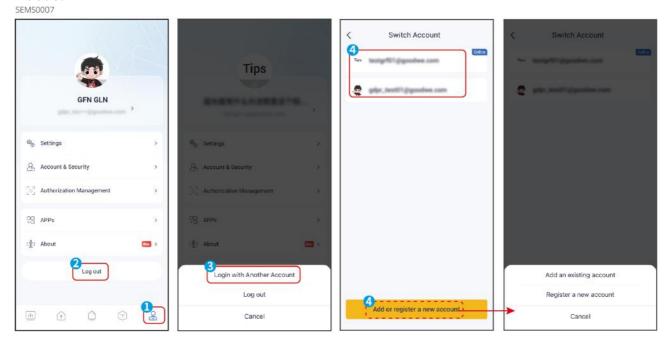
Step 1: Enter the username and password, read, and agree to the login agreement. Tap **Log In**.



10.1.2.3 Switching Accounts

Step 1: Go to **My** tab, and tap **Log Out > Log with Another Account**.

Step 2: Select an already added account or add a new account based on actual needs.

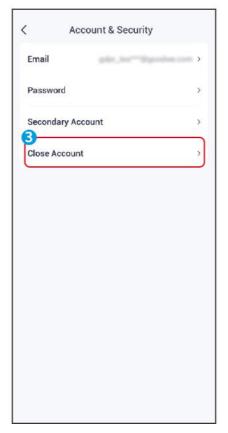


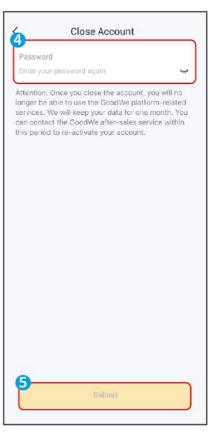
10.1.2.4 Deleting an Account

Step 1: Go to **My** tab and tap **Account&Security**.

Step 2: Tap Close Account, input the account password, and Submit.







10.1.2.5 Account Permission Descriptions

The SEMS+ App supports various types of accounts with different permissions. Refer to the table below for details.

Primary menu	Submenu	Third-Level Menu	Fourth-Level Menu	Fifth-Level Menu	Permissions
Login & Register	-	-	-	-	Administrator, Technician, Browser, End User, Visitor
Overview	Monitoring Information	-	-	-	Administrator, Technician, Browser, End User, Visitor
	Create Station	-	-	-	Administrator,

					Technician, End User
					and Visitor
					Administrator,
	Station List	-	-	-	Technician, Browser,
					End User, Visitor
					Administrator,
		Monitoring	-	-	Technician, Browser,
					End User, Visitor
			Add Davies		Administrator,
			Add Device	-	Technician, End User
				6	Administrator,
				Search	Technician, Browser,
		Device		Device	End User, Visitor
	Station Details			Replace	Administrator,
			Device List	Device	Technician, End User
				- III - I	Administrator,
				Edit Device	Technician, End User
Ctation				Delete	Administrator,
Station				Device	Technician, End User
			Device Details	Device	Administrator,
				Monitoring	Technician, Browser,
				Info	End User, Visitor
				Device	A.1
				Remote	Administrator,
				Control	Technician, End User
				Device	Administrator
				Remote	Administrator,
				Upgrade	Technician
		Alarms	-		Administrator,
				-	Technician, Browser,
					End User, Visitor
		Station Configuratio	E 13 Ct		Administrator,
			Edit Station	-	Technician, End User
		n	Delete	-	Administrator,

			Station		Technician, End User
			Replacement History	-	Administrator, Technician, Browser, End User
			User Information	-	Administrator, Technician, End User
			Home Configuratio	-	Administrator, Technician, Browser,
			n	-	End User, Visitor
	Create Station	-	-	-	Administrator, Technician, End User and Visitor
Alarm	-	-	-	-	Administrator, Technician, Browser
Services	Services	Warranty	-	-	Administrator, Technician, Browser, End User, Visitor
		Report Center	-	-	Administrator, Technician, Browser, End User
		GoodWe News	-	-	Administrator, Technician, Browser, End User, Visitor
		Announceme	-	-	Administrator, Technician, Browser, End User, Visitor
		Community	-	-	Administrator, Technician, Browser, End User, Visitor
	Tools	Create Station	-	-	Administrator, Technician, End User and Visitor
		Network Link	-	-	Administrator, Technician, Browser,

					End User, Visitor
					Administrator,
		DNSP	-	-	Technician, Browser,
					End User, Visitor
					Administrator,
	Help	-	-	-	Technician, Browser,
					End User, Visitor
					Administrator,
	User Profile	-	-	-	Technician, Browser,
					End User, Visitor
					Administrator,
	User	-	-	-	Technician, Browser,
	Information				End User, Visitor
					Administrator,
	Setting	-	-	-	Technician, Browser,
					End User, Visitor
		Email	-		Administrator,
				-	Technician, Browser,
					End User, Visitor
		Password	-		Administrator,
Му	Assount			-	Technician, Browser,
	Account				End User, Visitor
	Security	Secondary			Administrator,
		Account	-	-	Technician, Browser
		Close Account	-	-	Administrator,
					Technician, Browser,
					End User, Visitor
		Damat-	-		Administrator,
	Auth	Remote Control Auth		-	Technician, Browser,
	Management	Control Auth			End User, Visitor
	wanagement	Monitoring Auth	-	-	End User
	Anns		-	-	Administrator,
	Apps	apps -			Technician, Browser,

					End User, Visitor
	About	-	-	-	Administrator, Technician, Browser, End User, Visitor
		Logout	-	-	Administrator, Technician, Browser, End User, Visitor
	Logout	Login anther Account	-	-	Administrator, Technician, Browser, End User, Visitor

10.1.3 Checking Station Information

10.1.3.1 Checking Overview Information of All Stations

After logging in, you can view an overview of all stations linked to your account from the homepage.

Or sort the list of all power stations through different sorting and filtering conditions on the power station page to view the detailed information of the power stations.



No.	Description
1	Displays the overall generation information of all stations, including: Generation Today, Generation This Month, Generation This Year, and Generation Lifetime. Generation This Year will not be displayed if the station amount exceeds 10.
2	Displays the total installed capacity and the working status of the stations. Working status: Running, Waiting, Offline, and Faulted. The stations status is running only when all the devices of the station are working properly.
3	Displays statistical chart of Generation Today, This Year, and Lifetime.Or displays comparison chart comparing current and past generation. Tap to expand the chart.
4	Displays environmental contributions like CO ₂ Reduction, Trees Stationed Equivalent, and Standard Coal Saved.
5	Creating a New Station

No.	Description
6	Searching Stations Enter the device SN, power station name or email address to quickly search for the corresponding power station.
7	Power station operation status. Display the current operation status of power stations and the number of power stations operating in each status. Tap the operation status to filter power stations in the corresponding operation status.
8	 Set KPI indicators displayed in the power station list: Current Power, Rev. Today, Rev. Total, Gen. Today, Gen. Total Set the sorting method of the power station list: By Default, By Capacity Set the display mode of the power station list: Station Card, Station List Set the filtering conditions for the power station list: Scope, Category, Capacity
9	Power station list. Tap the power station name to view the detailed information of the power station. The displayed content varies depending on the station type. The actual interface takes precedence

10.1.3.2 Checking Detailed Information of Single Station

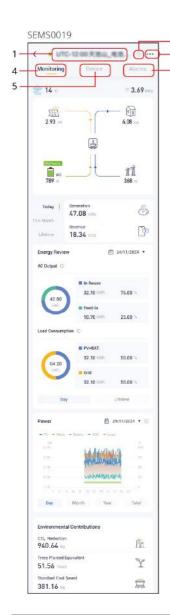
Step 1: Enter the device SN, power station name or email address to quickly search for the corresponding power station.

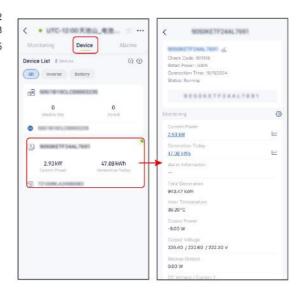
Step 2: Tap the power station name to enter the power station details page.

SEMS0052



10.1.3.2.1 Checking Detailed Information of Power Station (Traditional Mode)





No.	Description
1	The current name of the power station.
2	Favoriting a Station
3	Configuring Station Information. Supported functions: Configure basic information of the power station, modify user information, add power station photos, set PV module layout, etc.
4	Displays current power station operation information in chart form, such as energy flow diagrams, power generation, load power consumption, AC output, and other information.

No.	Description
5	 Device List Displays devices in the current power station, such as inverters, batteries, data collectors, charging piles, etc. Tap the device card to view detailed device information.
6	Alarm information.

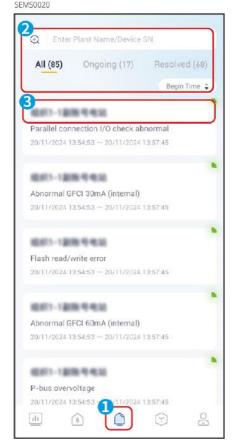
10.1.4 Checking Alarm Information

10.1.4.1 Checking Alarm Information of All Power Stations

Step 1 Tap **Alarms** tab to enter the alarm page.

Step 2 (optional) Use the search bar to locate alarms by station name or device serial number.

Step 3 Select the alarm to view detailed information.

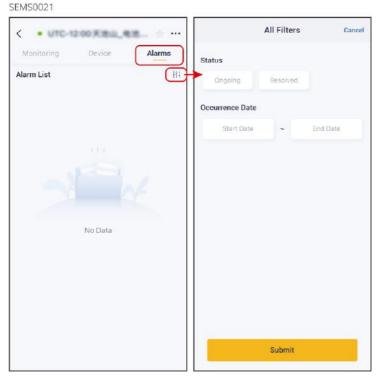


10.1.4.2 Checking Alarm Information of Current Stations

10.1.4.2.1 Checking Detailed Information of Current Power Station (Traditional Mode)

Step 1: If there are multiple power stations, tap the power station name to enter the power station details page.

Step 2: Tap **Alarms** to enter the alarm page to view alarm details. Tap ††† to filter alarm information based on actual needs.

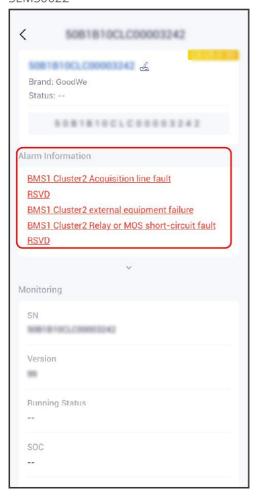


10.1.4.3 Checking Alarm Information of Current Devices

Step 1: If there are multiple power stations, tap the power station name to enter the power station details page.

Step 2:Select a device from the device list and enter the device details page. If there are alarms, the device details page allows direct viewing of the 10 latest ongoing alarms.

SEMS0022

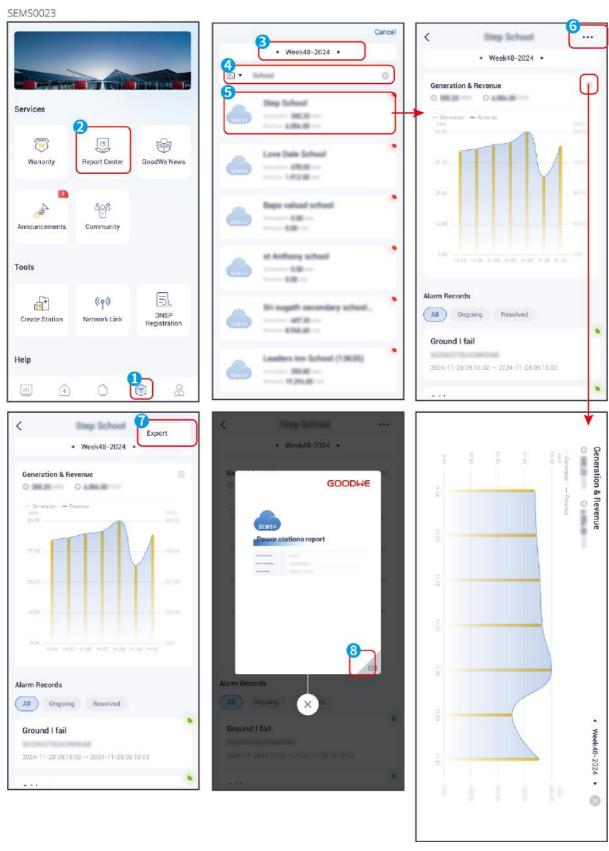


10.1.5 Checking Station Reports

Viewing Reports

Step 1: Tap **Service > Report Center**.

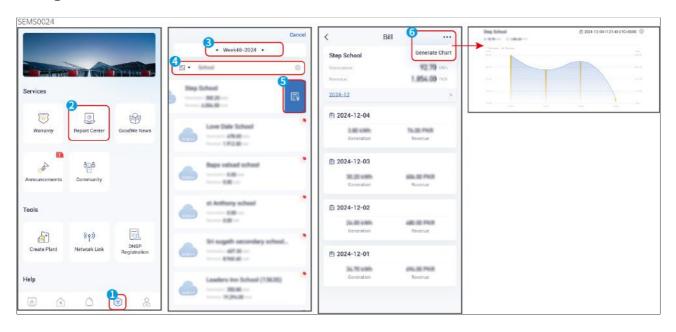
Step 2: Select a time period, search for the desired station, and tap the station name to view the report center. Tap **Export** to download the report if needed.



Viewing Bills

Step 1: Tap **Service > Report Center**.

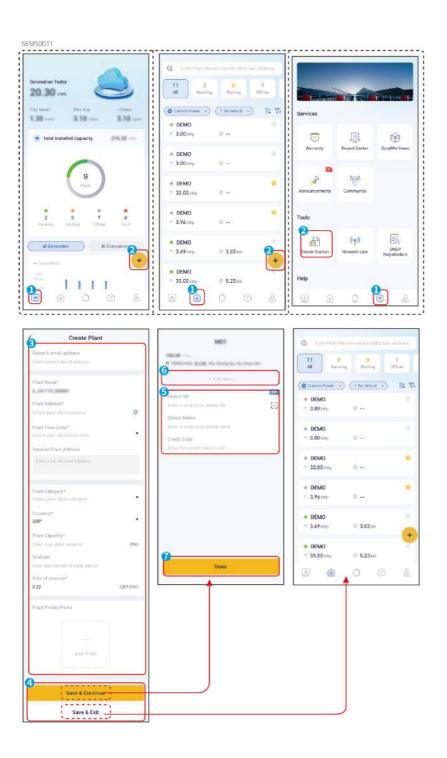
Step 2: Search for the desired station. Find the station, swipe left and tap it to view billing details of the month.



10.1.6 Managing Stations

10.1.6.1 Creating a Station

- **Step 1**: Tap on overview or station page, or tap **Create Station** on service page.
- **Step 2**: Enter station information on the **Creat Station** page.
- **Step 3**: Tap **Save&Exit** to complete creating a station, without devices added. Or tap **Save&Continue** to add devices. Support adding multiple devices.

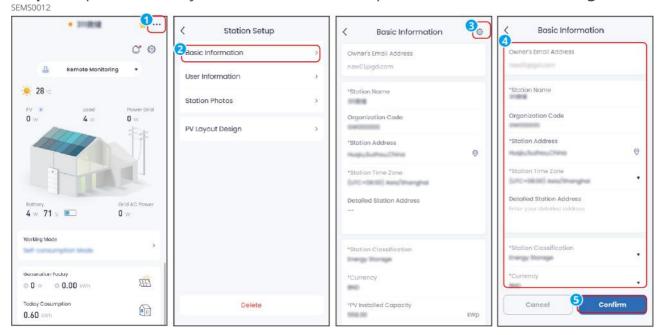


10.1.6.2 Configuring Station Information

NOTICE

The configuration information of the station can be updated as needed. When the information filled in is inconsistent with the actual situation of the power station, the actual situation of the power station shall prevail.

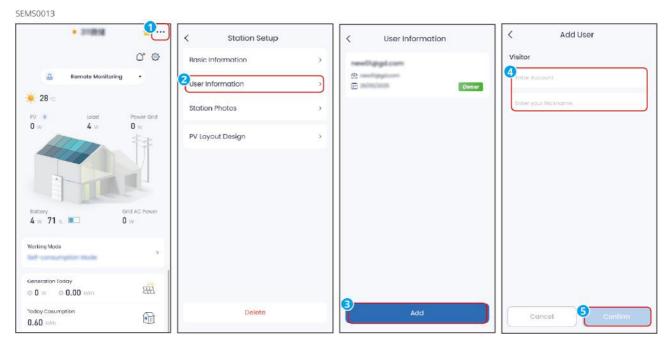
- **Step 1**: (Optional) Select the station to be updated from the station list.
- **Step 2**: Tap ••• > **Basic Information** to check the basic information.
- **Step 3**: Tap <a> to modify the information, and tap Confirm to save the changes.



10.1.6.3 Managing Station Visitors

SEMS+ App allows users to add visitors to the power station and view basic information. Visitors have limited access and cannot view all information.

- **Step 1**: (Optional) Select the station to be updated from the station list.
- Step 2: Tap ••• > User Information > Add.
- **Step 3**: Input the visitor's information and tap **Confirm**.



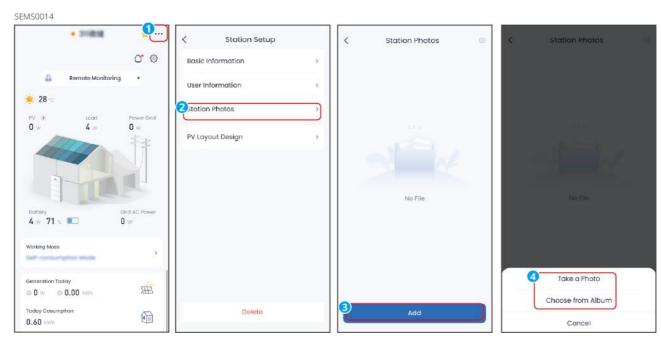
To delete a visitor, go to the User Information page, select the visitor, and tap **Delete**.



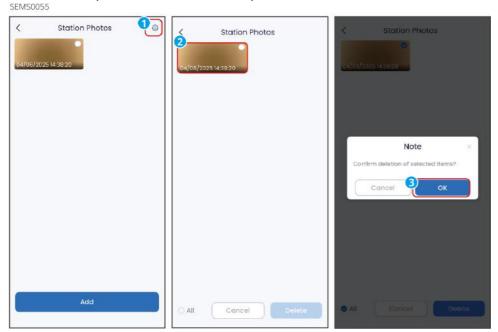
10.1.6.4 Managing Station Photos

Adding photos to a station helps users find what they need faster.

- **Step 1**: (Optional) Select the station to be updated from the station list.
- **Step 2**: Tap ******* > **Station Photos** > **Add**.
- **Step 3**: Follow the prompts to add photos by **Take a Photo** or **Choose from Album**.



To delete a photo, follow the steps below.



10.1.6.5 Set PV Module Layout

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

- **Step 1**: (Optional) Select the station to be updated from the station list.
- **Step 2:** Tap ••• > **PV Layout Design** to enter the interface.
- Step 3: Tap Row/Column ,and set the arrangement of modules in each row and each

column based on the actual installation of PV modules.

Step 4: Tap **Array Name** to enter the **Array Settings** interface, and set the name, angle, and orientation information of the PV array based on the actual situation. SEMS0056

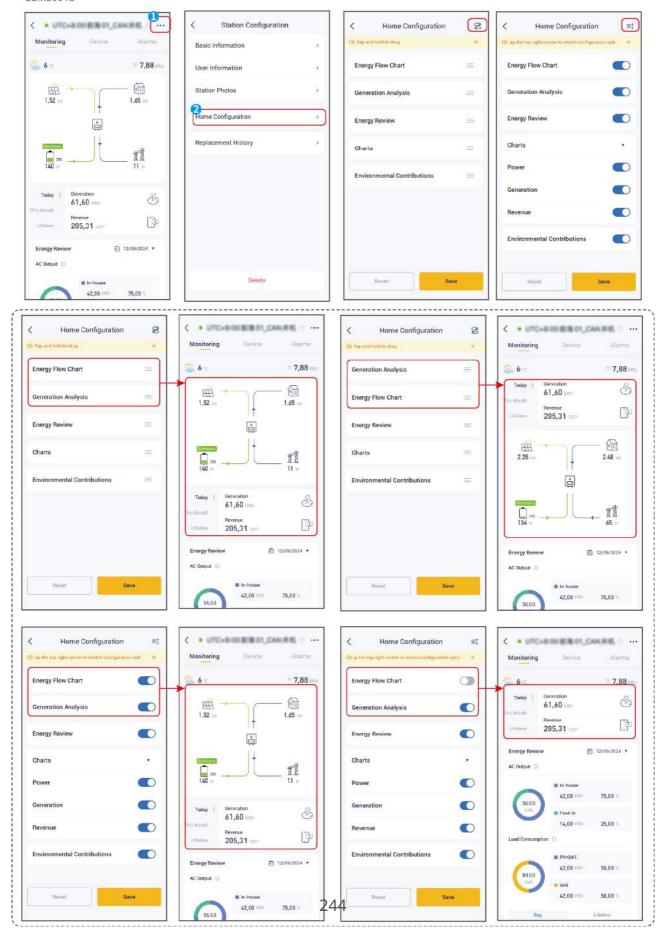


10.1.6.6 Configuring the Page Information

Change what's shown on the station details page, such as showing, hiding, or repositioning the Energy Flow Chart.

- **Step 1**: (Optional) Select the station to be updated from the station list.
- **Step 2**: Tap ••• > **Home Configuration** on the station page.
- **Step 3**: Refer to the on-screen prompts to select the information content to be displayed, or adjust the display order of various information based on actual needs.

SEMS0015



10.1.6.7 Deleting a Station

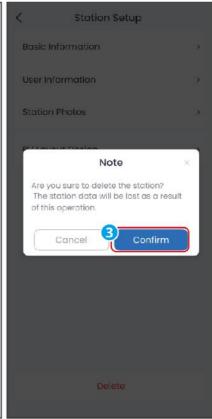
(Optional) If there are multiple power stations, tap he power station name to enter the power station details page.

Step 2:Tap ••• on the station page.

Step 3: Tap**Delete** and **Confirm** to delete the station.

SEMS0016 3110056 △ € Remote Monitoring **€** 28 ⋅c Load Power Grid 4 11 0 w 0 w Grid AC Power 4 w 71 % 🔳 Working Mode Generation Today 田 ◎ 0 w ◎ 0.00 kWh Today Cosumption





10.1.6.8 Favoriting a Station

0.60 kWh

9

To favorite a station, tap the star icon next to the station name. Tap the icon again to unfavorite it.

Tap and Select Favorited in the filtering Scope to display all the favorited power stations.



10.1.7 Managing Devices

10.1.7.1 Adding a Device

NOTICE

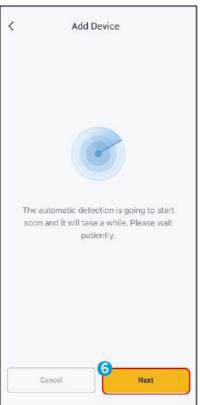
- Supported device types may vary based on the station type.
- If the environmental monitor is connected to a smart logger, add the environmental monitor to the station and view the its data.
- **Step 1**: Select a station from the station list.
- **Step 2**: Tap **Device** $> \oplus$ to enter the device addition interface.
- **Step 3**:Select the type of device to add.
- **Step 4**: Follow the instructions to scan or manually input device information. To add the scanned devices, choose devices from the scanned device list. To manually add a device, scan the device SN code or input required device information. To add multiple devices, repeat the steps as needed.
- **Step 5**: When manually adding devices, if you need to add multiple devices, return to the power station details page and repeat steps 3 and 4.











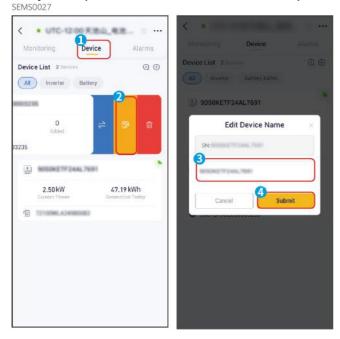


10.1.7.2 Editing Device Information

The device name can be modified.

Step 1:(Optional) If there are multiple power stations, tap he power station name to enter the power station details page.

Step 2:Tap **Device** to enter the device page. Select the device and swipe left, tap **Step 3:** Input new device name and tap **Submit**.

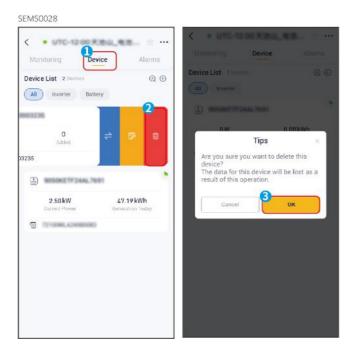


10.1.7.3 Deleting a Device

Step 1:(Optional) If there are multiple power stations, tap he power station name to enter the power station details page.

Step 2:Tap **Device** to enter the device page. Select the device and swipe left, tap ...

Step 3:: Read the prompt and tap **OK** to delete the device.

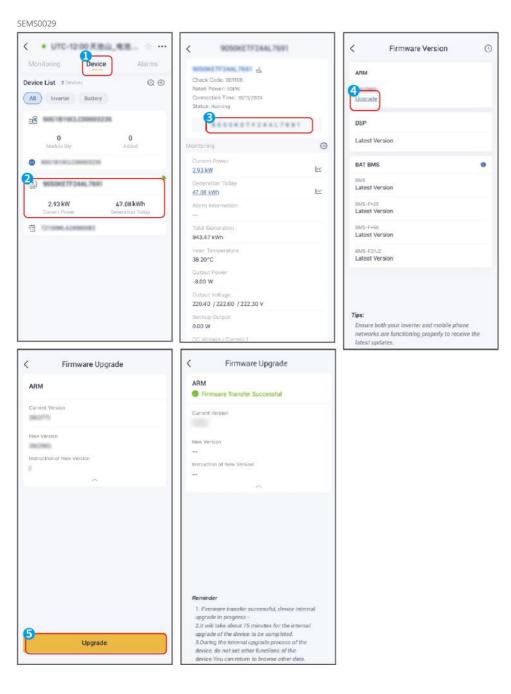


10.1.7.4 Upgrade the Firmware

Step 1: (Optional) Select the station to be updated from the station list.

Step 2: Tap **Device** to open the device details page and select the device to be upgraded.

Step 3: Tap the device serial number to enter the **Firmware Version** page. If the upgrade is available, tap **Upgrade** and follow the instructions. Tap \bigcirc to find the upgrade history.



10.1.8 Managing Device Remotely

NOTICE

- Set the device parameters via SEMS+ App after creating a plant and adding devices to it.
- Before setting any parameters, read through user manual of the App and the inverter or charger to learn the product functions and features.
 Incorrectly configured parameters, such as grid settings or start/stop commands, may result in devices failing to connect to the grid, potentially affecting power generation.
- λ Only trained professionals familiar with local regulations and electrical systems should perform parameter settings.
- Different account permissions allow for remote setting of different parameters. The interface will be displayed based on the actual account in use, and please refer to the actual interface.
- The setting page varies depending on accounts type and device model.

10.1.8.1 Configuring Hybrid Inverter Parameters

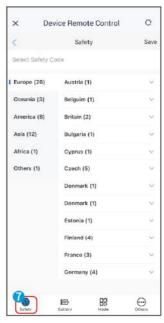
- **Step 1**: (Optional) Select the station to be updated from the station list.
- **Step 2:** Tap **Device** to enter the device page and choose the device to be configured.
- **Step 3**: Tap ^②, read the prompts and set parameters as needed.

















No.	Parameters	Description	
1	Safety	Set the safety country in compliance with local grid standards and application scenario of the inverter.	
Battery			
2	Battery Model	Set the model of the connected battery.	
3	Depth of Discharge (On- Grid)	The maximum depth of discharge of the battery when the system is working on-grid.	

No.	Parameters	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.	Parameters	Description
No. 7	Parameters Battery Heating	When a battery with heating function is connected, this option will be displayed on the interface. After enabling the battery heating function, when the battery temperature does not support battery startup, PV power generation or purchased electricity will be used to heat the battery. Heating modes: • GW5.1-BAT-D-G20/GW8.3-BAT-D-G20 • Low-power mode: Maintain the minimum power input capability of the battery. It turns on when the temperature is below -9°C and turns off when the temperature is -7°C or higher. • Medium-power mode: Maintain moderate power input capability of the battery. It turns on when the temperature is below 6°C and turns off when the temperature is 8°C or higher. • High-power mode: Maintain high power input capability of the battery. It turns on when the
		temperature is below 11°C and turns off when the temperature is 13°C or higher. • GW14.3-BAT-LV-G10 • Low-power mode: Maintain the minimum power input capability of the battery. It turns on when the temperature is below 5°C and turns off when the temperature is 7°C or higher. • Medium-power mode: Maintain moderate power input capability of the battery. It turns on when the temperature is below 10°C and turns off when the temperature is 12°C or higher. • High-power mode: Maintain high power input capability of the battery. It turns on when the temperature is below 20°C and turns off when the temperature is 22°C or higher.
8	Daily Heating Period	Set the battery heating time period based on actual needs.

No.	Parameters	Description
9	Battery Wake-up	After being enabled, the battery can be woken up when it shuts down due to undervoltage protection.
10	Battery Breathing Light	 Only applicable to the ESA 3-10kW inverter series. Set the blinking duration of the device's breathing light. Options available: Always on, Always off, 3min. The default mode is to stay on for three minutes after power-on and then turn off automatically.
Mode	i	
11	Working Mode	 Set the working mode based on actual needs. Self-use mode: 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 load; when the grid is restored, the inverter switches to on-grid mode. Eco mode: It is recommended to use economic mode in scenarios when the peak-valley electricity price varies a lot. Select Economic mode only when it meets the local laws and regulations. Set the battery to charge mode during Vally period to charge battery with grid power. And set the battery to discharge mode during Peak period to power the load with the battery. Smart charging: In some countries/regions, the PV power feed into the utility grid is limited. Select Smart Charging to charge the battery using the surplus power to minimize PV power waste. Peak shaving mode:Peak shaving mode is mainly applicable to peak power limited scenarios. When the total power consumption quota in a short period of time, battery discharge can be used to reduce the power exceeding the quota.

No.	Parameters	Description
12	On-Grid Power Limitation	Enable On-Grid Power Limitation 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.
14	Power Factor	Set the power factor based on actual needs.
15	Q(U)	Enable Q(U) Curve when it is required by local grid standards and requirements.
16	COS(φ)	Enable Cosφ Curve when it is required by local grid standards and requirements.
17	P(F)	Enable P(F) Curve when it is required by local grid standards and requirements.
Others	5	
18	Backup Supply	After enabling Backup Supply, 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	Enable Shadow Scan when the PV panels are severely shadowed to optimize the power generation efficiency.

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.
- After the equipment is powered off, the internal components require some time to discharge. Please wait until the equipment is fully discharged in accordance with the time specified on the label.
- To restart the battery, the air switch should be used to supply power for the restart process.
- When shutting down the battery system, please strictly follow the battery system's power-off requirements to prevent damage to the system.
- When there are multiple batteries in the system, starting any one of them can start all the batteries.

Notice

- The circuit breakers between the inverter and the battery, as well as those between battery systems, must be installed in compliance with local laws and regulations.
- To ensure effective protection of the battery system, the cover plate of the battery system switch should be kept closed, and the protective cover will close automatically after being opened. If the battery system switch is not to be used for a long period, it must be secured with screws.

Power Off Process

- 1. Turn off the ON-GRID circuit breaker.
- 2. Turn off the BACK-UP circuit breaker.
- 3. (Optional) Turn off the GEN circuit breaker.
- 4. (Selected in accordance with local laws and regulations) Turn off the circuit breaker between the PV module and the inverter.

- 5. (Selected in accordance with local laws and regulations) Turn off the switch between the inverter and the battery.
- 6. Turn off the battery switch.
- 7. Turn off the DC switch of the inverter.

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.

Maintainin g Item	Maintaining Method	Maintainin g Period	Maintaining Purpose
System clean	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 half a year	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.
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.

Maintainin	Maintaining Method	Maintainin	Maintaining
g Item		g Period	Purpose
Battery maintenanc e	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 on the **[SolarGo App]**, **[SEMS+ APP]**, and LCD display.If your product malfunctions and you do not see the relevant fault information on the **[SolarGo App]**, **[SEMS+ APP]**, or LCD display, please contact the after-sales service center.

· Viewing method 1: LCD screen

Click or select the fault information icon on the screen to view energy storage system alarms or fault information.

Viewing Method 2: SolarGo App

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

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.

11.5.2.1 System Failure

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.	 Please ensure that no other devices are connected to the smart dongle's wireless signal. Please ensure that the SolarGo app has been updated to the latest version. Please ensure that the smart dongle is powered on properly, and the blue indicator light is blinking or steady on. Ensure that the smart device is within the communication range of the smart dongle. Refresh the device list in the app. Restart the inverter. 	
2	Unable to connect to the wireless signal of the smart dongle.	 Please ensure that no other devices are connected to the smart dongle's wireless signal. Restart the inverter or smart dongle, and try to reconnect to the wireless signal of the smart dongle again. Ensure successful pairing of Bluetooth. 	
3	Cannot find router SSID.	 Put the router nearer to the Smart Dongle.Or add a WiFi relay device to enhance the WiFi signal. Reduce the number of devices connected to router. 	

No.	Fault	Solutions/measures to address the issue		
4	After completing all configurations, the Smart Dongle fails connecting to the router.	 Restart the inverter. Check if the SSID, encryption method and password on WiFi configuration page are the same with that of Router. Restart the router. Put the router nearer to the Smart Dongle.Or add a WiFi relay device to enhance the WiFi signal. 		
5	After completing all configurations, the Smart Dongle fails connecting to the router.	Restart the router and the inverter.		

11.5.2.2 Inverter Troubleshooting

Code	Fault	Causes	Troubleshooting Suggestions
F01	Utility Grid Power Off	 Utility grid power fails. The AC circuit or the AC breaker is disconnected. 	 The alarm is automatically cleared after the grid power supply is restored. Check whether the AC cable is connected and the AC breaker is on.

Code	Fault	Causes	Troubleshooting Suggestions
F02	Grid Overvoltage Protection	The grid voltage is higher than the permissible range or the high voltage duration exceeds the high voltage ride through setting.	 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. 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. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

Code	Fault	Causes	Troubleshooting Suggestions
F03	Grid Undervoltage Protection	The grid voltage is lower than the permissible range, or the duration of low voltage exceeds the requirement of LVRT.	 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. 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. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

Code	Fault	Causes	Troubleshooting Suggestions
F04	Grid Rapid Overvoltage Protection	The fault is triggered when the grid voltage is detected to be abnormal or ultrahigh.	 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. 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.

Code	Fault	Causes	Troubleshooting Suggestions
F05	10min Overvoltage Protection	The moving average of grid voltage in 10min exceeds the range of safety requirements.	 If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting the grid is normal. 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 10min overvoltage protection value with the consent of the local power operator.

Code	Fault	Causes	Troubleshooting Suggestions
F06	Grid Overfrequency Protection	Utility grid exception. The actual grid frequency exceeds the requirement of the local grid standard.	 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. 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.

Code	Fault	Causes	Troubleshooting Suggestions
F07	Grid Underfrequency Protection	Utility grid exception. The actual grid frequency is lower than the requirement of the local grid standard.	 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. 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.

Code	Fault	Causes	Troubleshooting Suggestions
F08	Grid Frequency Shift Protection	Utility grid exception. The actual grid frequency change rate does not meet the requirement of the local grid standard.	 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. 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.

Code	Fault	Causes	Troubleshooting Suggestions
F163	Grid Phase Shift Protection	Utility grid exception. Grid voltage phase change rates do not meet local grid standards.	 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. 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.

Code	Fault	Causes	Troubleshooting Suggestions
F09	Anti-islanding	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.	 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. 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.
F10	VRT Undervoltage Fault	Utility grid exception. The duration of the grid voltage abnormality exceeds the time specified for high and low penetration.	

Code	Fault	Causes	Troubleshooting Suggestions
F11	VRT Overvoltage Fault	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.
F43	Voltage Waveform Detection Fault	Utility grid exception. Abnormal grid voltage detection triggers a fault.	
F44	Grid Phase Loss Protection	Utility grid exception. There is a single phase drop in the grid voltage.	

Code	Fault	Causes	Troubleshooting Suggestions
F45	Grid Voltage Unbalance	Excessive differences in grid phase voltages.	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.
F46	Grid Phase Sequence Fault	Inverter-Grid Connection Abnormality: Incorrect Phase Sequence Wiring	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.

Code	Fault	Causes	Troubleshooting Suggestions
F47	Grid Rapid Overvoltage 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.
F48	Utility grid neutral line loss	Neutral Loss in Split-Phase Power Grid	 The alarm is automatically cleared after the grid power supply is restored. Check whether the AC cable is connected and the AC breaker is on.
F160	EMS/Forced Off-Grid	EMSIssue a forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
F161	Passive Anti- islanding	-	-
F162	Grid Type Fault	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.

Code	Fault	Causes	Troubleshooting Suggestions
F12	30mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If 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.
F13	60mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If 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.
F14	150mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If 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.

Code	Fault	Causes	Troubleshooting Suggestions
F15	Gfci Slow Change Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If 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.
F16	DCI Protection L1 Protection	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.
F17	DCI Protection L2 Protection	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.

Code	Fault	Causes	Troubleshooting Suggestions
F18	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 whether the resistance of the PV string to PE exceeds 50kΩ. If no, check and rectify the short circuit point. 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 monitoring platform, and set the alarm reminder, the alarm information can be sent to the customer by

Code	Fault	Causes	Troubleshooting Suggestions
			emails.
F19	System Grounding Abnormality	1. The PE cable of the inverter is not connected. 2. When the output of the 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.
F49	L-PE Short Circuit	Low resistance or short circuit between the output phase cable and PE.	Detect output phase line to PE impedance, identify locations with low impedance and repair them.
F50	DCV Protection L1 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 this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

Code	Fault	Causes	Troubleshooting Suggestions
F51	DCV Protection L2 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 this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F20	Anti Reverse Power Failure	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 this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F21	Internal Comm Loss	Reference specific subcode reasons	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F52	Multiple Fault Shutdowns Due to Leakage Current (GFCI)	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.
F53	Multiple Fault Shutdowns Due to DC Arc Fault (AFCI)	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 reon grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2.Check whether the DC side terminal is securely connected.
F54	Extern 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.
F55	Back-up Port Overload Fault	1. Prevent the Inverter from continuous overload output.	1. Disconnect some offgrid loads to reduce the off-grid output power of the inverter.

Code	Fault	Causes	Troubleshooting Suggestions
F56	Back-up Port Overvoltage Fault	2. Prevent damage to the load caused by Inverter output overvoltage.	 If it occurs occasionally, it may be caused by load switching and does not require manual intervention. If the problem occurs frequently, contact the dealer or the after-sales service.
F107	On-grid PWM Sync Fault	Abnormal occurrence in carrier synchronization ongrid	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, turn on the AC output side switch and the DC input side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F57	External Box Fault	Excessive waiting time for Box cut relay when switching on-grid to off-grid	 Check whether the Box is working properly; Check whether the Box communication wiring is correct;

Code	Fault	Causes	Troubleshooting Suggestions
-	Generator Fault	1. 1. This fault will always be displayed when	1. 1. Ignore the fault when the generator is not connected.
F22	Voltage Waveform Detection Fault	the generator is not connected.	2. The occurrence of fault
F23	Generator abnormal connection	2. During generator	in the generator under fault conditions is normal. After the generator
F24	Generator Low Voltage	operation, failure to meet generator	recovers, wait for a period of time, and the fault will
F25	Generator High Voltage	safety regulations will trigger this fault.	automatically clear. 3. The fault will not affect the normal operation of
F26	Generator Low Frequency	Tault.	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.
F27	Generator		
F109	External STS Failure	Inverter and STS connection cable abnormality	Check that the harness connection wire sequence between the inverter and STScorresponds in one-to one sequence.
F58	CT Loss Fault	CT connecting wire disconnection (required by Japanese safety regulations)	1. Check whether the CT wiring is correct.

Code	Fault	Causes	Troubleshooting Suggestions
F110	Anti Reverse Power Failure	 Inverter fault reporting and grid disconnection. Meter communication instability Reverse flow conditions occur 	 Check if there are any other error messages in inverter. If so, perform targeted troubleshooting. Check if meter connection is normal. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F111	Bypass Overload	-	-
F112	Black Start Failure	-	-
F28	Parallel IO check fail	The parallel communication cable is not firmly connected or the parallel IO chip is damaged.	Check if the parallel communication cable is firmly connected, then inspect whether the IO chip is damaged; if so, replace the IO chip.
F59	CAN Communication of parallel inverters in error	Parallel communication cable is not securely connected or some units are not online.	Check whether the parallel communication cable is connected correctly and firmly.
F29	Parallel Grid Line Reversed	Some machines have grid wires reversed from others.	Rewire the grid.

Code	Fault	Causes	Troubleshooting Suggestions
F60	ParallelBack- upConnection Reversed	Some machines have backup wires reversed from others.	Reconnect the backup Cable.
F61	Inverter Soft Start Failure	Inverter Soft Start Failure During Off- Grid Cold Start	Check if the inverter module of the equipment is damaged.
F113	Off-Grid Output Transient Overvoltage Fault	-	-
F30	AC HCT Check Abnormality	The sampling of the AC HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F62	AC Current Sensor Fault	The sampling of HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F31	GFCI HCT Check Abnormality	The sampling of the GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F63	Leakage Current Sensor Fault	GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F32	Relay Check Abnormality	Relay abnormal, reasons are as follows: 1. Relay abnormality (short-circuited) 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, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F64	Relay Fault	1. Relay abnormality (short-circuited) 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, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F164	DC Arc Fault (String17~32)	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 reon-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
F165	DC Arc Fault (String33~48)	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 reon-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.

Code	Fault	Causes	Troubleshooting Suggestions
F33	Flash Read/Write Fault	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	 Upgrade the latest version of the program. Contact the dealer or the after-sales service.
F42	DC Arc Fault (String1~16)	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 reon-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
F34	AFCI Self-test Fault	The arc-pulling module does not detect an arc-pulling fault during the arc pulling selftest.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F65	AC terminal temperature is too high, causes are possibly as follows:	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 is too high. 3. A fault occurs in the internal fan of the inverter.	1. Check whether the installation location of the inverter has good ventilation and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is poor ventilation or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions.
F35	Cavity 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 is too high. 3. A fault occurs in the internal fan of the inverter.	3. If both the ventilation and the ambient temperature are proper, please contact the dealer or after-sales service.

Code	Fault	Causes	Troubleshooting Suggestions
F66	INV Module Over- temperature	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 is too high. 3. A fault occurs in the internal fan of the inverter.	
F67	Boost Module Over- temperature	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 is too high. 3. A fault occurs in the internal fan of the inverter.	

Code	Fault	Causes	Troubleshooting Suggestions
F68	Output Filter Capacitor Over- temperature	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 is too high. 3. A fault occurs in the internal fan of the inverter.	
F114	Relay Fault 2	Relay abnormal, reasons are as follows: 1. Relay abnormality (short-circuited) 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, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F69	PV IGBT Short- Circuit Fault	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, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F70	3.IGBT open circuit Fault	 A software problem caused the wave not to be sent. The drive circuit is abnormal. IGBT open circuit 	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F71	NTC Abnormal I	Abnormal NTC temperature sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F72	Waveform Generation Abnormality Fault	Abnormal waveform appears in PWM	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F73	CPU Interruption anomaly occurred	CPU Interruption anomaly occurred	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F74	Microelectronic Fault	Functional safety detects an anomaly.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F75	PV HCT Fault	Abnormal boost current sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F76	1. 5V Ref Abnormality	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC
F77	0. 3V Ref Abnormality	The reference circuit is abnormal.	input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F78	CPLD version identification error	CPLD version identification error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F79	CPLD Communication Fault	CPLD and DSP communication content error or timeout	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F80	Troubleshooting model recognition error	Troubleshooting about model recognition error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F115	SVG precharge hardware failure	SVG precharge hardware failure	Contact the dealer or the after-sales service.
F116		PID prevent hardware anomaly	Contact the dealer or the after-sales service.
F117	DSP version identification error	DSP version identification error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F36	BUS Overvoltage	Causes are possibly as follows:	Disconnect the AC output side switch and the DC input side switch. After 5
F81	P-BUS Overvoltage	1. The PV voltage is too high; 2. Inverter BUS	minutes, turn on the AC output side switch and the
F82	N-BUS Overvoltage	Voltage Sampling Abnormality;	DC input side switch. If fault persists, please contact the dealer or
F83	BUS Overvoltage (Slave CPU 1)	3. The isolation of the transformer of	GoodWe after-sales service center.
F84	P-BUS Overvoltage (Slave CPU 1)	the inverter is poor, so two inverters influence each	
F85	N-BUS Overvoltage (Slave CPU 1)	other when connected to the grid. One of the inverters reports	
F86	BUS Overvoltage (Slave CPU 1)		
F87	P-BUS Overvoltage (Slave CPU 1)	DC overvoltage;	
F88	N-BUS Overvoltage (Slave CPU 1)		
F89	P-BUS Overvoltage(CPLD)		
F90	N-BUS Overvoltage(CPLD)		

Code	Fault	Causes	Troubleshooting Suggestions
F118	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. PV voltage is too high; 4. Mos voltage sampling anomaly.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F119	BUS Short-Circuit Fault	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.
F120	Busbar Sampling Abnormality	1. Bus voltage sampling hardware failure.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F121	DC Side Sampling Abnormality	1. Bus voltage sampling hardware failure 2. Battery voltage sampling hardware failure 3. Dcrly relay failure	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F37	PV Input Overvoltage	The 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.
F38	PV Continuous Hardware Overcurrent	1. The PVconfiguration is not proper.2. The hardware is damaged.	

Code	Fault	Causes	Troubleshooting Suggestions
F39	PV Continuous Software Overcurrent	 The PV configuration is not proper. 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.
F91	FlyCap Software Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high; 2. Inverter BUS Voltage Sampling Abnormality	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
F92	FlyCap Hardware Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high; 2. Inverter BUS Voltage Sampling Abnormality	center.
F93	FlyCap undervoltage.	FlyCap undervoltage. Causes are possibly as follows: 1. PV Energy deficit; 2. Inverter BUS Voltage Sampling Abnormality	

Code	Fault	Causes	Troubleshooting Suggestions
F94	FlyCap pre-charge failure.	FlyCap pre-charge failure. Causes are possibly as follows: 1. PV Energy deficit; 2. Inverter BUS Voltage Sampling Abnormality	
F95	FlyCap pre-charge failure.	1. Unreasonable control loop parameters 2. The hardware is damaged.	
F96	PV String Lost (String 1~ 16)	Causes are possibly as follows:	
F97	PV String Lost (String 17~ 32)	 String overcurrent. String current sensor abnormality. 	
F40	String Reversed (String 1~ 16)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.

Code	Fault	Causes	Troubleshooting Suggestions
F98	String Reversed (String 17~ 32)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
F99	PV String Lost (String 1~ 16)	String fuse disconnected (if applicable).	Check if the fuse is disconnected.
F100	PV String Lost (String 17~ 32)	String fuse disconnected (if applicable).	Check if the fuse is disconnected.
F122	Incorrect PV Access Mode Setting	There are three modes of PV access modes, taking the four-way MPPT as an example: 1. Parallel mode: i.e.AAAAmode(hom ogenous mode), PV1-PV4homogenous4 wayPVconnected to the same PV panel. 2. Partial parallel mode: i.e.AACCmode, PV1andPV2are	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

Code	Fault	Causes	Troubleshooting Suggestions
		connected in the same source,PV3andPV4 are connected in the same source. 3. Independent mode: i.e.ABCDmode(non homologous), PV1 、PV2、PV3、 PV4are connected independently, and each of the fourway PV is connected to a photovoltaic panel. This fault is reported if the actual access mode of the PV does not match the PV access mode set by the device.	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 aftersales service center.
_	String Reversed (String 33~ 48)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.

Code	Fault	Causes	Troubleshooting Suggestions
-	PV String Lost (String 33~ 48)	String fuse disconnected (if applicable).	Check if the fuse is disconnected.
-	PV String Lost (String 33~ 48)	Causes are possibly as follows: 1. String overcurrent. 2. String current sensor abnormality.	

Code	Fault	Causes	Troubleshooting Suggestions
F123	Multi-channel PV Phase Error	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 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.

Code	Fault	Causes	Troubleshooting Suggestions
F101	Battery 1 Pre- charging Fault	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.
F102	Battery 1 Relay Fault	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.
F103	Battery1 Connection 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.
F104	Battery 2 Pre- charging Fault	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.

Code	Fault	Causes	Troubleshooting Suggestions
F105	Battery 2 Relay Fault	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.
F106	Battery2 Connection 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.
F124	Battery1 Reverse Connection Fault	Battery 1 positive and negative are connected reversely.	Check the battery and machine terminals for positive and negative consistency.
F125	Battery2 Reverse Connection Fault	Battery 2 positive and negative are connected reversely.	Check the battery and machine terminals for positive and negative consistency.
F126	Battery abnormal connection	Battery abnormal connection	Check whether the battery is working properly.
-	BMS Status Bit Fault	BMS Module Fault	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F127	Battery Heat Exchanger 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 is too high. 3. A fault occurs in the internal fan of the inverter.	
F128	Reference Voltage Abnormality	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC
F129	The cavity temperature is too low.	Cavity temperature is too low, causes are possibly as follows: 1. The ambient temperature is too low.	input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F130	AC Side SPD Fault	AC side lightning protection device failure.	Replace AC side lightning protection devices.
F131	DC Side SPD Fault	DC side lightning protection device failure.	Replace DC side lightning protection devices.

Code	Fault	Causes	Troubleshooting Suggestions
F132	Internal Fan Abnormality	Internal fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply; 2. Mechanical Fault (blocking); 3. Fan aging damage.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F133	External Fan Abnormality	External fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply; 2. Mechanical exception (blocking); 3. Fan aging damage.	
F134	PID Diagnosis Abnormality	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.

Code	Fault	Causes	Troubleshooting Suggestions
F135	Trip Switch Tripping Warning	Causes are possibly as follows: 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.
F136	Historical PV IGBT Short Circuit Warning	Causes are possibly as follows: 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.

Code	Fault	Causes	Troubleshooting Suggestions
F137	Historical PV Reverse Connection Warning (Strings 1~16)	Causes are possibly as follows: 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.
F138	Historical PV Reverse Connection Warning (Strings 17~32)	Causes are possibly as follows: 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.

Code	Fault	Causes	Troubleshooting Suggestions
F139	Flash R/W Error	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	 Upgrade the latest version of the program. Contact the dealer or the after-sales service.
F140	Meter Communication Normal Alarm.	This warning may be reported after enabling the antibackflow 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.
F141	PV Panel Type Recognition Failure	PV panel recognizes hardware anomaly	Contact the dealer or the after-sales service.
F142	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.
F143	CT Loss	CT Loss	Check whether the CT wiring is correct.
F144	CT Reversed	CT Reversed	Check whether the CT wiring is correct.

Code	Fault	Causes	Troubleshooting Suggestions
F145	PE Loss Alarm PE Loss	Ground wire not connected.	Check the ground wire.
F146	String Terminals Overtemperature (String 1~ 8)	37176 Register PV Terminal Temperature Alarm Subcode 1 has a set position.	-
F147	String Terminals Overtemperature (String 9~ 16)	37177 Register PV Terminal Temperature Alarm Subcode 2 has a set position.	-
F148	String Terminals Overtemperature (String 17~ 20)	37178 Register PV Terminal Temperature Alarm Subcode 3 has a set position.	-
F149	Historical PV Reverse Connection Warning (Strings 33~48)	Causes are possibly as follows: 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.

Code	Fault	Causes	Troubleshooting Suggestions
F150	Battery 1 low voltage	Battery voltage below set value.	-
F151	Battery 2 low voltage	Battery voltage below set value.	-
F152	Low battery supply voltage.	Battery not charging, voltage below shutdown voltage	-
F153	Battery 1 High voltage	-	-
F154	Battery 2 High voltage	-	-
F155	On-line Insulation Resistance Low	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".

Code	Fault	Causes	Troubleshooting Suggestions
F156	Microgrid 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.
F157	Manual Reset	-	-
F158	Generator Phase Sequence Abnormality	-	-
F159	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
F41	Generator Port Overload	 Off-grid Side Output Exceeds Specification Requirements Off-grid Side Short Circuit Off-grid Terminal Undervoltage When used as a Heavy Load Port, the Heavy Load Exceeds Specification Requirements 	Confirm the off-grid side output voltage, current, power and other data through data to identify the cause of the problem

Code	Fault	Causes	Troubleshooting Suggestions
F108	DSP Communication Fault	-	-

Fault	Causes	Troubleshooting Suggestions
Parallel Communicatio n Timeout Shutdown	-	-
One-key Shutdown	-	-
Offline Shutdown	-	-
Remote Shutdown	-	-
Slave Node Communicatio n Fault	-	-
Diesel Generator Communicatio n Fault	Abnormal communication link between the control panel and the diesel generator.	1. Inspect the link communication wiring harness and check if the fault is resolved; 2. Try restarting the machine and check if the fault is eliminated; 3. If the fault persists after restart, please contact GoodWe Aftersales Service Center.

Fault	Causes	Troubleshooting Suggestions
Battery Overvoltage Protection	1. Excessively high voltage of a single- core 2. Voltage collection line abnormality	-
	 Excessively high total battery voltage Voltage collection line abnormality 	-
Battery Undervoltage	Excessively low voltage of a single- core 2. Voltage collection line abnormality	-
Protection	Excessively low total battery voltage Voltage collection line abnormality	
Battery Overcurrent Protection	Excessively high charging current, abnormal battery current limiting: sudden changes in temperature and voltage values Abnormal inverter response	-
	Excessively high battery discharge current	
Battery Over	Excessively high ambient temperature Abnormality of temperature sensor	
temperature protection	 Excessively high ambient temperature Abnormality of temperature sensor 	-
Low temperature protection	Excessively high ambient temperature Abnormality of temperature sensor	
	Excessively high ambient temperature Abnormality of temperature sensor	-

Fault	Causes	Troubleshooting Suggestions
Over temperature protection	Excessive pole temperature	-
Battery Unbalancing Fault	When the temperature difference is excessively large at different stages, the battery will limit its power output, i.e., restrict the charging and discharging current. Therefore, this problem is generally difficult to occur. The capacity degradation of battery cores leads to excessively high internal resistance; when an overcurrent occurs, the temperature rise becomes significant, which in turn results in a large temperature difference. Poor welding of the battery core tabs causes the cell to heat up too quickly when an overcurrent passes through. 4. Temperature sampling issue; 5. Loose connection of power cables	
	 Inconsistent aging degrees of battery cores Malfunctions of the slave board chip can also lead to excessive voltage difference between cores; Balancing problems of the slave board can also result in excessive voltage difference between cells; Caused by wiring harness issues 	

Fault	Causes	Troubleshooting Suggestions
	 Inconsistent aging degrees of battery cores Malfunctions of the slave board chip can also lead to excessive voltage difference between cores; Balancing problems of the slave board can also result in excessive voltage difference between cells; Caused by wiring harness issues 	
Insulation Resistance Protection	Insulation Resistance Damage	Check if the ground wire is properly connected, then restart the battery. If the problem persists after the restart, please contact the GoodWe after-sales service center.
Precharge Failure Fault	PreCharge Failure	It indicates that during the pre-charging process, the voltage across the pre-charging MOS has consistently exceeded the specified threshold. After shutting down and restarting the device, observe whether the fault persists, and check if the wiring is correct and if the pre-charging MOS is damaged.

Fault	Causes	Troubleshooting Suggestions
Sampling Cables Fault	Poor contact or disconnection of battery collection cables.	Check the wiring and restart the battery. If the problem persists after restarting, please contact the GoodWe after-sales service center.
	Poor contact or disconnection of single voltage sampling cables.	
	Poor contact or disconnection of single voltage sampling cables.	
	Excessively large error in dual-channel current comparison, or abnormality in the current collection line loop	Check the wiring and restart the battery. If the problem persists after restarting, please contact the GoodWe after-Sales service center.
	Excessively large error in dual-channel voltage comparison, excessively large error in voltage comparison between MCU and AFE, or abnormality in the voltage collection line loop	
	Abnormality in the temperature collection line loop, or poor contact or disconnection	
	Overvoltage level 5 or overtemperature level 5, causing the three-terminal fuse to be blown	If the three-terminal fuse are blown; please contact GoodWe aftersales service center to replace the main control board.

Fault	Causes	Troubleshooting Suggestions
Relay or MOS Over Temperature	Relay or MOS Over Temperature	This fault indicates that the MOS temperature exceeds the specified threshold; shut down the device and let it stand for 2 hours to allow the temperature to recover.
Diverter over temperature	Diverter over temperature	This fault indicates that the shunt tube temperature exceeds the specified threshold; shut down the device and let it stand for 2 hours to allow the temperature to recover.
BMS1 Other Fault 1 (Residential Energy Storage Type)	Relay or MOS Short Circuit	1. Update the software, turn off the device and let it stand for 5 minutes, restart to check if the fault persists; 2. If the fault persists, replace the battery pack.
	Relay or MOS Over Temperature	1. Update the software, turn off the device and let it stand for 5 minutes, restart to check if the fault persists; 2. If the fault persists, replace the battery pack.

Fault	Causes	Troubleshooting Suggestions
	Communication abnormalities between the master cluster and slave cluster, or inconsistencies between the cells of different clusters.	1. Check the slave unit's battery information, software version, and whether the communication line connection with the master unit is normal. 2. Upgrade Device software
	The wiring harness of the battery system loop is abnormal, resulting in the failure of the interlock signal to form a loop.	Check whether the terminal resistor is installed correctly.
	BMS and PCS Communication Abnormality	1. Confirm whether the definition of the communication line interface between the battery connected to the inverter is correct; 2. Please contact GoodWe After-sales Service Center to check the background data and verify whether the inverter and battery software are correctly matched.
	BMS Master-Slave Communication Wiring Harness Abnormality	

Fault	Causes	Troubleshooting Suggestions
	Communication Loss between Master and Slave Chips	1. Check the wiring and restart the battery; 2. Update the battery software. If the problem persists after restart, please contact GoodWe After-sales Service Center.
	Air Switch and Shunt Trip Abnormality	1. Shut down the device and let it stand for 5 minutes, then restart to check if the fault persists; 2. Inspect the blind mating connectors at the bottom of the PACK and PCU to see if the communication pins are loose or skewed.
	MCU Self-check Failure	Check the wiring and restart the battery. If the problem persists after restarting, please contact the GoodWe after-Sales service center.
	 Software version is too low or BMS board is damaged. There are too many inverters connected in parallel, causing excessive impact on the battery during precharging. 	 Update the software and observe whether the fault persists. In the case of parallel operation, first blackstart the battery and then start the inverter.

Fault	Causes	Troubleshooting Suggestions
	Internal MCU failure	Upgrade the software and restart the battery. If the problem persists after restarting, please contact the GoodWe after-Sales service center.
	Master Control Current Exceeds the Specified Threshold.	 Turn off the device and let it stand for 5 minutes, restart to check if the fault persists; Check if the inverter is set to excessive power, resulting in exceeding the battery's rated operating current.
	Batteries Inconsistency of battery cells	Confirm whether the cells of the parallel cluster batteries are consistent.
	Batteries positive and negative are connected reversely.	Batteries positive and negative are connected reversely.
	Severe over-temperature, overvoltage, etc., trigger the fire protection system.	Contact GoodWe After- sales Service Center.
System Air Conditioner Fault	Abnormal failure of the air conditioner.	Try to restart the system. If the fault is not resolved, please contact GoodWe After-sales Service Center.

Fault	Causes	Troubleshooting Suggestions
	Cabinet door not closed.	Check whether the battery is working properly.
	The PV voltage is too high.	Confirm whether the power supply voltage meets the air conditioner's input voltage requirements; re-power on after confirmation.
	Insufficient power supply voltage.	
	No voltage input.	
	Unstable power supply voltage.	
	Unstable compressor voltage.	Try to restart the system. If the fault is not resolved, please contact GoodWe After-sales Service Center.
	Poor contact or damage of the sensor.	
	Abnormal operation of the air conditioner fan.	
BMS1 Other Fault 2 (Residential Energy Storage Type)	Abnormal voltage or current inside the DCDC.	Check the specific DC fault details for reference.
	DCDC overload or excessive heat sink temperature, etc.	
	Cell Acquisition Abnormality or Inconsistent Aging Degree	Please contact the after- sales service center.
	Fan operation not performed normally.	Please contact the after- sales service center.

Fault	Causes	Troubleshooting Suggestions
	Loose screws or poor contact at the output port.	1. Shut down the battery and check the wiring and the condition of the output port screws. 2. Restart the battery after confirmation and observe whether the fault persists. If it persists, please contact GoodWe After-sales Service Center.
	The battery has been used for too long or the battery cell is severely damaged.	Please contact GoodWe After-sales Service Center to replace the PACK.
	 The software version is too low or the BMS board is damaged. The number of parallel inverters is large, resulting in excessive impact on the battery during pre-charging. 	 Update the software and observe whether the fault persists. In the case of parallel operation, first blackstart the battery and then start the inverter.
	Heating Film Damage.	Please contact GoodWe After-sales Service Center.
	The three-terminal fuse of the heating film is disconnected, making the heating function unavailable.	Please contact GoodWe After-sales Service Center.

Fault	Causes	Troubleshooting Suggestions
	Mismatch between Software Model, Cell Type, and Hardware Model.	Check whether the software model, SN number, cell type, and hardware model are consistent. If not, please contact GoodWe Aftersales Service Center.
	Thermal Management Board Communication Disconnection.	1. Shut down the device and let it stand for 5 minutes, then restart to check if the fault persists; 2. If the fault is not recovered, contact GoodWe After-sales Service Center to replace the PACK.
	Thermal Management Board Communication Disconnection.	1. Shut down the device and let it stand for 5 minutes, then restart to check if the fault persists; 2. If the fault is not recovered, contact GoodWe After-sales Service Center to replace the PACK.

Fault	Causes	Troubleshooting Suggestions
	Thermal Management Board Communication Disconnection.	1. Shut down the device and let it stand for 5 minutes, then restart to check if the fault persists; 2. If the fault is not recovered, contact GoodWe After-sales Service Center to replace the PACK.
	PACK Fan Fault Signal Triggered.	1. Shut down the device and let it stand for 5 minutes, then restart to check if the fault persists; 2. If the fault is not recovered, contact GoodWe After-sales Service Center to replace the PACK.
DCDC Fault	Output Port Overvoltage	Check the output port voltage. If the output port voltage is normal and the fault cannot be eliminated automatically after restarting the battery, please contact GoodWe After-sales Service Center.

Fault	Causes	Troubleshooting Suggestions
	The DCDC module detects that the battery voltage exceeds the maximum charging voltage	Stop charging, discharge the battery to a SOC below 90% or let it stand for 2 hours. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Heat Exchanger Temperature	Let the battery stand for 1 hour to allow the radiator temperature to drop. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Excessively high battery discharge current	Check if the load exceeds the battery's discharge capacity. Turn off the load or stop the PCS for 60 seconds. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Reverse Connection of Positive and Negative Poles of the Power Wiring Harness at the Output Port with Parallel Cluster Batteries or PCS	Turn off the battery manual switch, check whether the output port wiring is correct, and restart the battery.

Fault	Causes	Troubleshooting Suggestions
	Output Power Relay Failure to Close	Check whether the output port wiring is correct and if there is a short circuit. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Power Device Over Temperature	Let the battery stand for 1 hour to allow the temperature of the internal power devices to drop. If ineffective and the fault persists after restart, please contact GoodWe After- sales Service Center.
	Relay Sticking	If the fault persists after restart, please contact GoodWe After-sales Service Center.
Inter-cluster Circulation Fault	Cell Imbalance Incomplete Charging Calibration During First Power-on	-

Fault	Causes	Troubleshooting Suggestions
BMS1 Other Fault 3 (Large- scale Energy Storage Type)	Communication Abnormality with Linux Module	1. Check whether the communication line connection is normal. 2. Update the software, restart the battery and observe whether the fault persists. If it does, please contact GoodWe After-sales Service Center.
	Cell Temperature Rise Too Fast	Abnormal cell; contact GoodWe After-sales Service Center to replace the PACK.
	SOC Below 10%	Charge the battery.
	SN Writing Does Not Comply with Rules	Check whether the SN length is normal. If abnormal, please contact GoodWe Aftersales Service Center.
	1. Daisy Chain Communication Abnormality Within the Battery Cluster 2. Inconsistent Aging Degree of Cells Between Battery Clusters	1. Check the contact condition of the single-cluster battery PACK. 2. Confirm the usage status of each cluster battery, such as cumulative chargedischarge capacity, cycle count, etc. 3. Please contact GoodWe After-sales Service Center.

Fault	Causes	Troubleshooting Suggestions
	Excessively High Humidity Inside the PACK.	-
	Fuse Disconnection	Contact GoodWe After- sales Service Center to replace the PACK.
	Low Battery Power.	Charge the battery.
BMS1 Other Fault 4 (Large-	Air Switch Abnormality	Contact GoodWe After- sales Service Center to replace the PACK.
scale Energy Storage Type)	External Fan Abnormality	Contact GoodWe Aftersales Service Center to replace the PACK.
Contactor Fault 1	-	-
Contactor Fault 2	-	-
Overload Protection (Jinggui)	Continuous overload (exceeding 690 KVA) for 10 seconds.	Please contact GoodWe After-sales Service Center.
Overload Protection (Intelligent Port)	Continuous overload (exceeding 690 KVA) for 10 seconds.	Please contact GoodWe After-sales Service Center.
Communicatio n Abnormality Between Host AC Power-on and Smart Meter	 The smart meter may not be connected to the host. The smart meter communication cable may be loose. 	 Check whether the smart meter is connected to the host. Check whether the smart meter communication cable is loose.

Fault	Causes	Troubleshooting Suggestions
Slave Unit with Smart Meter Abnormality in Parallel Operation System	The smart meter is connected to the slave unit.	Set the unit connected to the smart meter as the host.
Communication n Timeout Abnormality Between Slave Unit and Host After AC Power-on for More Than 10 Minutes	 Incorrect slave unit address setting. Loose slave unit communication cable. 	 Check whether the slave unit addresses are duplicated. Check whether the parallel communication cable is loose.

11.5.2.3 Battery Fault (LX A5.0-30)

Alarm state

When the battery ALM indicator turns red, troubleshoot the issue by referring to the SOC indicator's display status.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
1	000•	Battery overvoltage protection Battery undervoltage protection	 Check whether the Charging Current Limit of the inverter is 0 through SolarGo. If yes, please confirm whether the communication cable connection between the battery and the inverter is reliable and the communication is normal. Power off and wait for 5 minutes, then restart to confirm if the fault persists. If the fault is not restored, please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
2	0000	Overcurrent protection	 Check if the battery model is correct through SolarGo and confirm if the real-time current of the battery is greater than the Charging/Discharging Current Limit. Please contact the after-sales service center. When it is less than the Charging/Discharging Current Limit., turn off the battery or upgrade the program, restart to confirm whether the fault persists. If the fault is not restored, please contact the after-sales service center.
3	00•0	Over temperature protection Low temperature protection Pole over temperature protection	Power off and wait for 60 minutes, wait for the temperature to recover. If the problem persists after restarting, please contact the after-sales service center.
4	0000	Balancing fault Low SOH fault	Power off and wait for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
5	•0••	Precharge failure	 Confirm if the battery output terminal is connected in reverse to the inverter. Power off and wait for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
6	0•0•	Wire harness exception	Confirm if the battery switch is closed. If the battery switch is closed and the problem still exists. Please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
7	••00	Relay or MOS over temperature Diverter over temperature	Power off and wait for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
		Other BMS faults: output port over temperature fault	 Check if the battery power cable is connected tightly. Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
8	0000	Other protections: MOS cannot be closed	Power off and wait for 5 minutes. If the problem persists after restarting, please
9	0	Other protections: MOS adhesion	contact the after-sales service center.
10	•000	Other protections: Cluster Fault	 Confirm whether the type and installation position of the terminal resistor used are correct. Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. If the fault is not restored, please contact the after-sales service center.
11	0000	Other protections: Communication loss with inverter	 Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. If the fault is not restored, please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
12	•00•	Other protections: BMU communication failure	 Confirm whether the type and installation position of the terminal resistor used are correct. Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
13	•0•0	Other protections: Air switch adhesion fault	Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
14	••••	Other protections: software fault	
15	•••0	Other protections: Hardware overcurrent fault	Restart the battery. If the problem persists after restarting, please contact the aftersales service center.
		Other protections: Microelectronic s fault	
16	••••	Heating film abnormal	 Upgrade software Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.

11.5.3 Operation After Fault Clearance

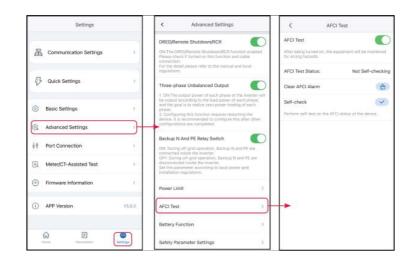
In the energy conservation system, after some fault clearances complete, further

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	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Battery Input Data			
Battery Type	LFP (LiFePO ₄) /Lead-acid	LFP (LiFePO ₄) /Lead-acid	LFP (LiFePO ₄) /Lead-acid
Battery voltage range (V)	40~60	40~60	40~60
Start-up Voltage (V)	44.2	44.2	44.2
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)	120	165	220
Max. Continuous Discharging Current (A)	120	165	220
Max Charge Power (kW)	5.0	7.5	10.0
Max Discharge Power (kW)	5.5	8.2	11.0
Nominal Battery Voltage (V)	48	48	48
PV String Input Data			
Max. Input Power (kW)	10.0	15.0	20.0

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Max. Input Voltage (V)	600	600	600
MPPT Operating Voltage Range (V)	50~550	50~550	50~550
MPPT Voltage Range at Nominal Power (V)	150-500	150-500	150-500
Start-up Voltage (V)	60	60	60
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)	20/20	40/20	40/40
Max. Short Circuit Current per MPPT (A)	26/26	52/26	52/52
Max. Backfeed Current to the Array (A)	0	0	0
Number of MPPT	2	2	2
Number of Strings per MPPT	1/1	2/1	2/2
AC Output Data (On-grid)			
Nominal Output Power (kW)	5.0	7.5	10.0
Max. Output Power (kW)	5.0	7.5	10.0

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Nominal Output Power at 40 °C(kW) *1	5.0	7.5	10.0
Max. Output Power at 40 °C (kW)*1	5.0	7.5	10.0
Nominal Apparent Power Output to Utility Grid (kVA)	5.0	7.5	10.0
Max. Apparent Power Output to Utility Grid (kVA)	5.0	7.5	10.0
Nominal Apparent Power from Utility Grid(kVA)	5.0	7.5	10.0
Max. Apparent Power from Utility Grid (kVA)	16.0	16.0	16.0
Nominal Output Voltage (V)	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE
Output Voltage Range (V)	170~290 170~290 170~290 170~290	170~290 170~290 170~290 170~290	170~290 170~290 170~290 170~290
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60
AC Grid Frequency Range (Hz)	45~55/55~65	45~55/55~65	45~55/55~65

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Max. AC Current Output to Utility Grid (A)	24.0 @120/208V, 2L/N/PE 22.7 @127/220V, 2L/N/PE 20.8 @120/240V, 2L/N/PE 19.7 @127/254V, 2L/N/PE	36.1 @120/208V, 2L/N/PE 34.1 @127/220V, 2L/N/PE 31.3 @120/240V, 2L/N/PE 29.5 @127/254V, 2L/N/PE	48.1 @120/208V, 2L/N/PE 45.5 @127/220V, 2L/N/PE 41.7 @120/240V, 2L/N/PE 39.4 @127/254V, 2L/N/PE
Max. AC Current From Utility Grid (A)	63.0	63.0	63.0
Nominal AC Current From Utility Grid (A)	24.0 @120/208V, 2L/N/PE 22.7 @127/220V, 2L/N/PE 20.8 @120/240V, 2L/N/PE 19.7 @127/254V, 2L/N/PE	36.1 @120/208V, 2L/N/PE 34.1 @127/220V, 2L/N/PE 31.3 @120/240V, 2L/N/PE 29.5 @127/254V, 2L/N/PE	48.1 @120/208V, 2L/N/PE 45.5 @127/220V, 2L/N/PE 41.7 @120/240V, 2L/N/PE 39.4 @127/254V, 2L/N/PE
Max. Output Fault Current (Peak and Duration) (A)	105A, 3us	105A, 3us	130A, 3us
Inrush Current (Peak and Duration) (A)	105A, 3us	105A , 3us	130A, 3us
Nominal Output Current (A)	24.0 @120/208V, 2L/N/PE 22.7 @127/220V, 2L/N/PE 20.8 @120/240V, 2L/N/PE 19.7 @127/254V, 2L/N/PE	36.1 @120/208V, 2L/N/PE 34.1 @127/220V, 2L/N/PE 31.3 @120/240V, 2L/N/PE 29.5 @127/254V, 2L/N/PE	48.1 @120/208V, 2L/N/PE 45.5 @127/220V, 2L/N/PE 41.7 @120/240V, 2L/N/PE 39.4 @127/254V, 2L/N/PE

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Power Factor	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)
Max. Total Harmonic Distortion	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	105A	105A	130A
AC Output Data (Bac	ck-up)		
Back-up Nominal Apparent Power (kVA)	5.0	7.5	10.0
Max. Output Apparent Power without Grid(kVA)	5.5(10.0, 10s)	8.2(15.0, 10s)	11.0(20.0, 10s)
Max. Output Apparent Power with Grid (kVA)	16.0	16.0	16.0
Nominal Output Current (A)	24.0 @120/208V, 2L/N/PE 22.7 @127/220V, 2L/N/PE 20.8 @120/240V, 2L/N/PE 19.7 @127/254V, 2L/N/PE	36.1 @120/208V, 2L/N/PE 34.1 @127/220V, 2L/N/PE 31.3 @120/240V, 2L/N/PE 29.5 @127/254V, 2L/N/PE	48.1 @120/208V, 2L/N/PE 45.5 @127/220V, 2L/N/PE 41.7 @120/240V, 2L/N/PE 39.4 @127/254V, 2L/N/PE
Max. Output Current (A)	63.0	63.0	63.0

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10	
Max. Output Fault Current (Peak and Duration) (A)	105A, 3us	105A, 3us	130A, 3us	
Inrush Current (Peak and Duration) (A)	105A , 3us	105A , 3us	130A, 3us	
Maximum Output Overcurrent Protection (A)	105	105	130	
Nominal Output Voltage (V)	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240V, 2L/N/PE 127/254V, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240V, 2L/N/PE 127/254V, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240V, 2L/N/PE 127/254V, 2L/N/PE	
Nominal Output Frequency (Hz)	50/60	50/60	50/60	
Output THDv (@Linear Load)	<3%	<3%	<3%	
On/Off-grid Switching Time (ms)	≤4	≤4	≤4	
AC Data (Generator)	AC Data (Generator)			
Nominal Apparent Power from AC generator (kVA)	5.00	7.50	10.00	
Max. Apparent Power from AC generator (kVA)	12.70	12.70	12.70	

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Nominal Intput Voltage (V)	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE	120/208, 2L/N/PE 127/220, 2L/N/PE 120/240, 2L/N/PE 127/254, 2L/N/PE
Input Voltage Range (V)	170~290 170~290 170~290 170~290	170~290 170~290 170~290 170~290	170~290 170~290 170~290 170~290
Nominal AC generator Frequency (Hz)	50/60	50/60	50/60
AC generator Frequency Range (Hz)	45~55/55~65	45~55/55~65	45~55/55~65
Max. AC Current From AC generator (A)	50	50	50
Nominal AC Current From AC generator (A)	24.0 @120/208V, 2L/N/PE 22.7 @127/220V, 2L/N/PE 20.8 @120/240V, 2L/N/PE 19.7 @127/254V, 2L/N/PE	36.1 @120/208V, 2L/N/PE 34.1 @127/220V, 2L/N/PE 31.3 @120/240V, 2L/N/PE 29.5 @127/254V, 2L/N/PE	48.1 @120/208V, 2L/N/PE 45.5 @127/220V, 2L/N/PE 41.7 @120/240V, 2L/N/PE 39.4 @127/254V, 2L/N/PE
Efficiency			
Max. Efficiency	97.60%	97.60%	97.60%
European Efficiency	/	1	1
Max. Battery to AC Efficiency	95.50%	95.50%	95.50%

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
MPPT Efficiency	99.90%	99.90%	99.90%
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 Switch	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II
AFCI	Integrated	Integrated	Integrated

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Rapid Shutdown	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-35~+60	-35~+60	-35~+60
Relative Humidity	0 ~ 95%	0 ~ 95%	0 ~ 95%
Max. Operating Altitude (m)	3000	3000	3000
Cooling Method	Natural Cooling	Smart Fan Cooling	Smart Fan Cooling
Display	LCD, WLAN+APP	LCD WLAN+APP	LCD WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485
Communication with Portal	WiFi	WiFi	WiFi
Weight (kg)	< 30	< 30	< 35
Dimension W×H×D (mm)	561*445*230	561*445*230	561*445*230
Noise Emission (dB)	<35	<45	<45
Topology	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<15	<15	<15

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
Ingress Protection Rating	IP66	IP66	IP66
DC Connector	JK01M	JK01M	JK01M
AC Connector	TG	TG	TG
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I
Storage Temperature (°C)	-40~+85	-40~+85	-40~+85
The 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 Mounted	Wall Mounted	Wall Mounted
Active Anti- islanding Method	AFDPF + AQDPF *9	AFDPF + AQDPF *9	AFDPF + AQDPF *9
Type of Electrical Supply System	Two Phase/Split Phase	Two Phase/Split Phase	Two Phase/Split Phase
Country of Manufacture	China	China	China
Certification			
Grid Standards	N140, N515, IEC 617	27 & IEC 62116, CNC	1749
Safety Regulation	IEC 62109-1, IEC 62109-2, IEC 63027		

Technical Data	GW5K-ES-LD-G10	GW7.5K-ES-LD- G10	GW10K-ES-LD-G10
EMC	IEC 61000-6-1/2/3/4; 1/3/17; EN IEC 62311	EN300328; IEC 62920 ; EN 62479	D; EN301489-

^{*1:} Nominal Output Power at 40 °C(W) and Max. Output Power at 40 °C (W) are only for Brazil.

- *2: The Li-lon battery usually contain two mainstream type: LFP and Ternary Lithium battery.
- *3: When the PV input voltage is higher than 490V, the battery charging and discharging power will be gradually limited, and the power limitation will be lifted after the input voltage is lowered.
- *4: The maximum input current per string is 20A. Or for the MPPT with two strings, the current of each string is 20A.
- *5: When the PV input voltage is 560V-600V, the inverter will enter standby mode. The inverter will return to normal operation state when the voltage returns to the MPPT working voltage range.
- *6: Please refer to the user manual for the MPPT Voltage Range at Nominal Power.

12.2 Battery Technical Data

12.2.1 LX A5.0-30

Technical Parameters	LX A5.0-30
Nominal Capacity (kWh)	5.12
Usable energy (kWh) * 1	5
Cell Type	LFP (LiFePO4)
Operating Voltage Range (V)	43.2~58.24
Nominal Charge Current (A) *2	60

Technical Parameters	LX A5.0-30
Max. Continuous Charge Current (A) *2*3	90
Nominal Discharge Current (A) *2	100
Max. Continuous Discharge Current (A) *2*3	150
Max. Pulse Discharge Current (A)*2*3	<200A (30s)
Max. Continuous Discharge Power (W)	7200
Communication	CAN
Operating Temperature Range (°C)	Charge: 0 < T ≤ 55 Discharge: -20 < T ≤ 55
Maximum Operating Altitude (m)	4000
Weight (Kg)	44
Dimensions (W x H x D mm)	442*133*520 (Excluding hanger) 483*133*559 (Including hanger)
Ingress Protection Rating	IP20
Application Method	On-grid/On-grid + Backup/ off Grid
Scalability	Max. 30 in Parallel (150kWh) (Hand to hand /Combiner box /Busbar)
Mounting Method	19-inch standard rack, Floor-mounted, Wall-Mounted
Round-trip Efficiency*1	≥96%
Safety	IEC62619、IEC63056、N140

Technical Parameters	LX A5.0-30
EMC	EN IEC61000-6-1、EN IEC61000-6-2、EN IEC61000-6-3、EN IEC61000-6-4
Transportation	UN38.3、ADR
Environment	ROHS

^{*1} Test conditions: 100% DOD, 0.2C charge & discharge at 25°C± 2°C, at the beginning of life.

12.3 Smart Meter Technical Data

12.3.1 GM330

Technical Parameters		GM330	
	Support Grid Type	Three-phase, split-phase, single-phase	
Massuring Dange	Voltage Range L-L (Vac)	172~817	
Measuring Range	Voltage Range L-N (Vac)	100~472	
	Nominal Frequency (Hz)	50/60	
	CT Ratio	nA:5A	
Companyaisation	Communication Method	RS485	
Communication Parameters	Communication Distance (m/ft)	1000/3280	
Duadaia	Voltage/Current	Class 0.5	
Precision Accuracy	Active Energy	Class 0.5	
	Reactive Energy	Class 1	
General Data	Dimension (WxHxDmm/in)	72x85x72/2.83x3.35×2.83	
Constant Data	Housing	4 modules	

^{*2} The system's working current and power values will be related to temperature and State of Charge (SOC)

^{*3} Max charge / discharge current and power values maybe variant with different inverter models.

Techr	nical Parameters	GM330
Weight (g/Ib)		240/0.53
	Mounting Method	DIN rail
	User Interface	4 LEDs, Reset Button
	Power Consumption (w)	<5
Environmental Parameters	Ingress Protection Rating	IP20
	Operating Temperature Range (°C/°F)	-30~+70/-22~+158
	Storage Temperature Range (°C/°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

12.4.1 WiFi/LAN Kit-20

Technic	al Parameters	WiFi/LAN Kit-20	
Output Voltage (V)		5	
Power Consumpti	on (W)	<2	
Communication In	nterface	USB	
	Ethernet	10M/100Mbps Self-adaption	
Communication	Wireless	IEEE 802.11 b/g/n @2.4 GHz	
Parameters	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE standard	
Mechanical Dimension (W×H×D mm)		48.3*159.5*32.1	
	Weight (g)	82	
	Ingress Protection Rating	IP65	

Technical Parameters	WiFi/LAN Kit-20	
Mounting Method	USB port insertion and removal	
Operating Temperature Range (°C)	-30~+60	
Storage Temperature Range (°C)	-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:
- 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.

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	最大充/放电电流	
Ibatt, max (C/D)	Max. Discharging Current	取入冗/双电电流	
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	
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	功率因数	

Abbreviation	English Description	Chinese Description	
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	
Haltitude,max	Max. Operating Altitude	最高工作海拔高度	
PF	Power Factor	功率因数	
THDi	Total Harmonic Distortion of Current	电流谐波	
THDv	Total Harmonic Distortion of Voltage	电压谐波	

Abbreviation	English Description	Chinese Description	
C&I	Commercial & Industrial		
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	
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	

Abbreviation	English Description	Chinese Description	
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 III: 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°C	-33~+40°C	-33~+40°C		
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°C, and it is suitable for environments with pollution degree 3.
- **Indoor Type II Inverter:** The ambient air temperature range is -25 to +40°C, and it is suitable for environments with pollution degree 3.
- **Indoor Type I Inverter:** The ambient air temperature range is 0 to +40°C, 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



LXD10DSC0002

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 are the last two digits of the year of production, 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	А	В	С

• 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	19	20
Code	Α	В	U	D	Е	F	G	Η	J	K	L

Production Date	21	22	23	24	25	26	27	28	29	30	31
Code	М	Ν	Р	Q	R	S	Т	\Box	٧	W	Χ

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