V1.9 2025-08-21

Residential Smart Inverter

ES Uniq 8.0-12kW

· LX A5.0-10
· LX A5.0-30
· LX U5.4-L
· LX U5.4-20
· LX U5.0-30
· GW14.3-BAT-LV-G10

Solutions Manual

GOODWE

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Copyright Statement

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.

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:

<table>
<tr><th>Product type</th><th>Product information</th><th>Description</th></tr>
<tr><td>Inverter</td><td>ES Uniq Series</td><td>Nominal output power: 8kW-12kW</td></tr>
<tr><td rowspan="6">Battery System</td><td>LX A5.0-10</td><td>Usable energy of 5.0kWh, supports a maximum of 15 batteries connected in parallel.</td></tr>
<tr><td>LX A5.0-30</td><td>Usable energy of 5.12kWh, supports a maximum of 30 batteries connected in parallel.</td></tr>
<tr><td>LX U5.4-L</td><td>Usable energy of 5.4kWh, supports a maximum of 6 batteries connected in parallel.</td></tr>
<tr><td>LX U5.4-20</td><td rowspan="2">Usable energy of 5.12kWh, supports a maximum of 30 batteries connected in parallel.</td></tr>
<tr><td>LX U5.0-30</td></tr>
<tr><td>GW14.3-BAT-LV-G10</td><td>Usable energy of 14.3kWh, supports a maximum of 16 batteries connected in parallel.</td></tr>
<tr><td rowspan="2">Smart Meter</td><td>GMK110</td><td rowspan="2">It is a monitoring module in the energy storage system which can detect information such as operating voltage, current, and other data in the system.</td></tr>
<tr><td>GM330</td></tr>
</table>

Product type	Product information	Description
Smart Dongle	WiFi/LAN Kit-20	In the single inverter scenario, the system operation information can be uploaded to a monitoring platform through WiFi or LAN signals.
	4G Kit-CN-G20, 4G Kit-CN-G21	The system operation information can be uploaded to a monitoring platform through 4G signal.
	Ezlink3000	In parallel system with multi inverters, it is installed on the master inverter to upload the system running information 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.
⚠WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time.

2 Safety Precautions

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

⚠WARNING

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

2.1 General Safety

NOTICE

- The information in this 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.

⚠WARNING

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

2.3.1 PV String Safety

⚠WARNING

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

2.3.2 Inverter Safety

⚠WARNING

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

2.3.3 Battery Safety

DANGER

- Keep Power Off before any operations to avoid danger of electric shock. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment during the operation.
- Do not disassemble, modify, or replace any part of the battery 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 ℃, 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.

⚠WARNING

- Factors such as temperature, humidity, weather conditions, etc. may limit the battery's current and affect its load.
- Contact after-sale service immediately if the battery is not able to be started. Otherwise, the battery might be damaged permanently.
- Inspect and maintain the battery regularly according to the maintenance requirements of the battery.

Emergency Measures

- Battery Electrolyte Leakage
  If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive. It will cause skin irritation or chemical burn to the operator. Anyone contact the leaked substance accidentally has to act/respond as following:
  - Breath in the leaked substance: Evacuate from the polluted area, and seek immediate medical assistance.
  - Eye contact: Rinse your eyes for at least 15 minutes with clean water and seek immediate medical assistance.
  - Skin contact: Thoroughly wash the touch area with soap and clean water, and seek immediate medical assistance.
  - Ingestion: Induce vomiting, and seek immediate medical assistance.
- Fire
  - The battery may burn when the ambient temperature exceeds 150℃. Poisonous and hazardous gas may be released if the battery is on fire.
  - In the event of a fire, please make sure that the carbon dioxide extinguisher or 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		Potential risks exist. Wear proper PPE before any operations.
2		HIGH VOLTAGE HAZARD. High voltage exists. Disconnect all incoming power and turn off the product before working on it.
3		High-temperature hazard. Do not touch the product under operation to avoid being burnt.

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

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

2.5 EU Declaration of Conformity

2.5.1 Equipment with Wireless Communication Modules

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

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

2.5.2 Equipment without Wireless Communication Modules (Except Battery)

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

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

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

2.5.3 Battery

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

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

You can download the EU Declaration of Conformity from our official website.

3 System Introduction

3.1 System Overview

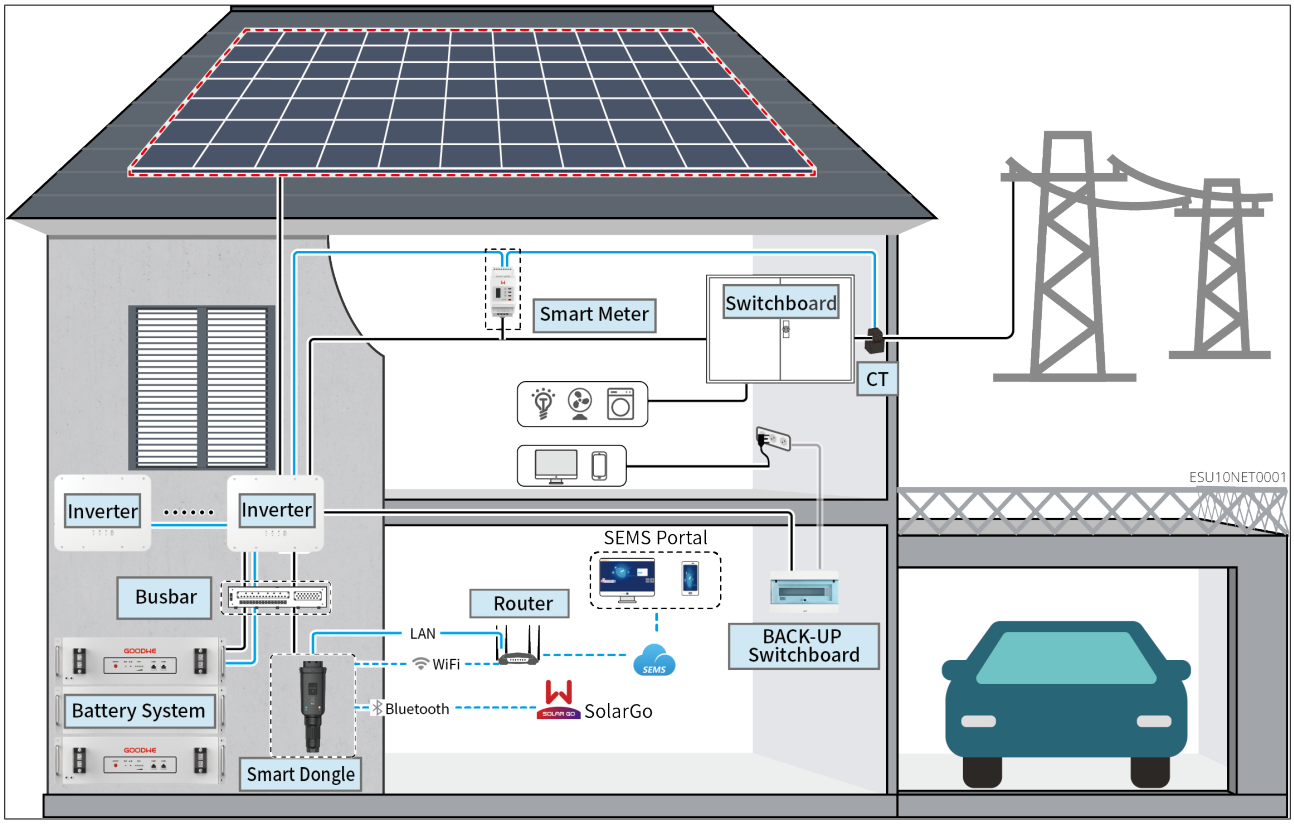
The residential smart inverter solution consists of inverter, battery system, smart meter, smart dongle, etc.. In the PV system, solar energy can be converted to electric energy for household needs. The IoT devices in the system manage the electrical equipment and energy consumption in a smart way by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

⚠WARNING

- 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. Compatibility Overview:

  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 IoT products can refer to:
  https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf

Scenario


Smart Meter
Switchboard
CT
Inverter
Inverter
Busbar
Battery System
Smart Dongle
SEMS Portal
Router
LAN
WiFi
Bluetooth
SolarGo
BACK-UP Switchboard
ESU10NET0001

<table>
<tr><th>Product Type</th><th>Model</th><th>Description</th></tr>
<tr><td>Inverter</td><td>GW8000-ES-C10
GW10K-ES-C10
GW12K-ES-C10</td><td>• When only one inverter is used in the system, it is supported to be connected to a generator or large loads.
• When multiple inverters are used in the system, it is not supported to connect a generator or large loads; a maximum of 6 inverters are supported to form a parallel system, and the Ezlink3000 is required in the parallel system.
• Requirements for parallel:
◦ The software version of all inverters in the system is the same.
◦ The ARM software version of the inverter is 08 (415) and above.
◦ The DSP software version of the inverter is 00(2525) and above.
◦ All inverters in the parallel system are of the same model number and have the same appearance and ports.</td></tr>
<tr><td rowspan="3">Battery System</td><td>LX A5.0-10</td><td rowspan="2">Battery of different models cannot be mixed.

• LX A5.0-10: The nominal charging and discharging current of a single battery is 60A; a maximum of 15 batteries can be connected in parallel in one system.
• LX A5.0-30: 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.</td></tr>
<tr><td>LX A5.0-30</td></tr>
<tr><td>LX U5.4-L</td><td rowspan="2">The maximum charging and discharging current of a single battery is 50A; a maximum of 6 batteries can be connected in parallel in one system.</td></tr>
<tr><td>LX U5.4-20</td></tr>
</table>

Product Type	Model	Description
	LX U5.0-30	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 100A. A maximum of 30 batteries can be connected in parallel in one system.
	GW14.3-BAT-LV-G10	The rated charge/discharge current for a single battery is 140A; the maximum charge current is 224A; the maximum discharge current is 260A, and the system supports up to 16 batteries in parallel.
	Lead Acid Battery	• Supports connection to 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.
Busbar	BCB-11-WW-0 BCB-22-WW-0 BCB-32-WW-0 BCB-33-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-11-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 360A, working power of 18kW, and can be connected to a maximum of 3 inverters, and 6 batteries. • BCB-22-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 12 batteries. ◦ used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 6 batteries.

Product Type	Model	Description
		◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 6 batteries. • BCB-32-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. ◦ used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 6 batteries. ◦ used with GW14.3-BAT-LV-G10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 16 batteries. • BCB-33-WW-0: ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. When the number of batteries exceeds 8, two 600A fuses need to be connected in parallel. • Others: Please prepare busbar based on actual system power and current.

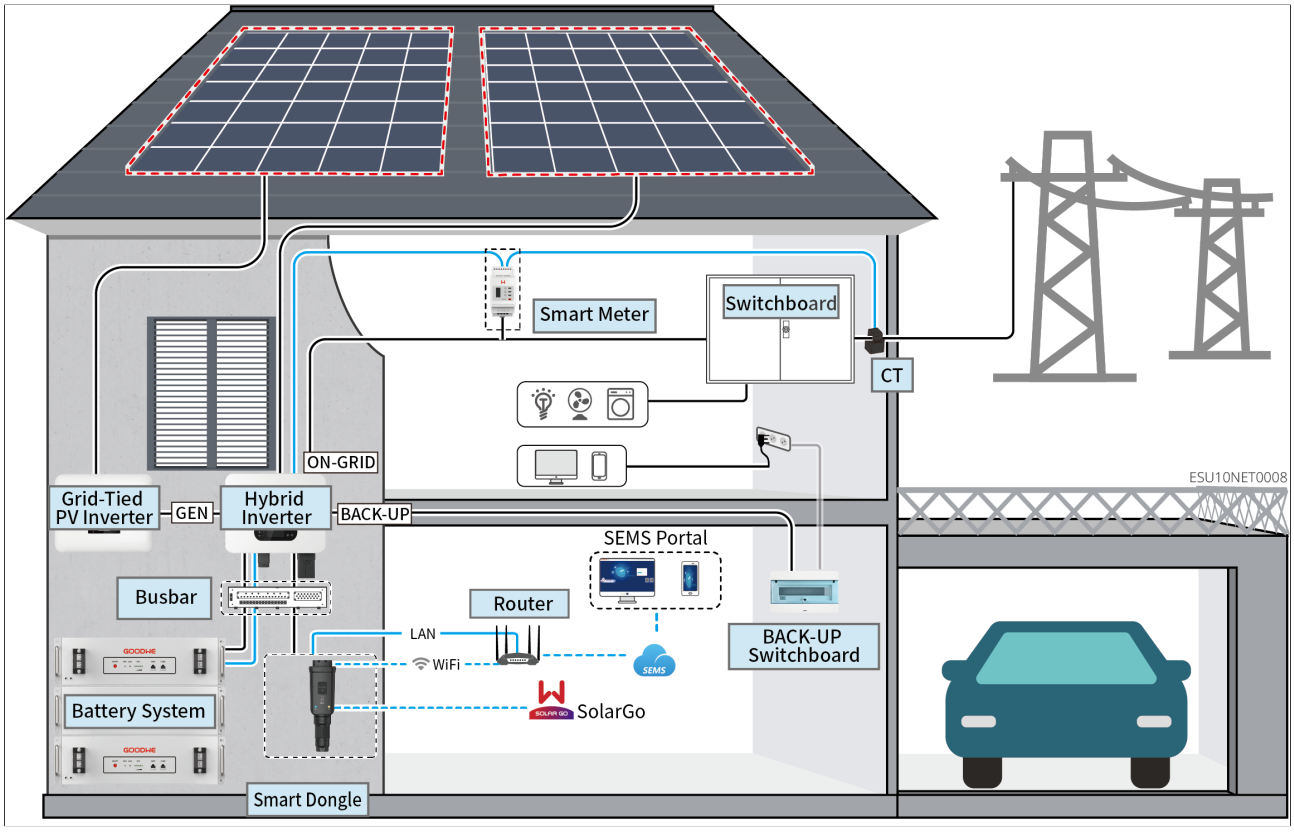
Product Type	Model	Description
Smart Meter	• Built-in Smart Meter (Standard) • GMK110 (purchase from GoodWe) • GM330 (purchase from GoodWe)	• Built-in Smart Meter: When the number of parallel inverters is ≤2 and the length of CT cable is ≤10 meters, the built-in meter can be used. Built-in smart meter: 10-meter wire CT, default CT ratio: 120A/40mA. • GMK110: When the length of the built-in CT cable of the inverter is not enough for connection to the switchboard, please connect an external GMK110 smart meter. CT is not supported for changing to other type, CT ratio: 120A/40mA. • GM330: Supports purchasing from GOODWE or third-party, CT ratio requirement: nA/5A • nA: CT primary input current, n ranges from 200 to -5000. • 5A: CT secondary output current.
Smart Dongle	• WiFi/LAN Kit-20 (Standard) • 4G Kit-CN-G20（Only for China） • 4G Kit-CN-G21（Only for China） • Ezlink3000 (purchase from GoodWe)	• Please use the WiFi/LAN Kit-20, 4G Kit-CN-G20, 4G Kit-CN-G21 modules in single inverter system. • In parallel scenarios, the EzLink3000 must be connected to the master inverter. Do not connect any smart dongle to slave inverter. Ezlink3000 requires a firmware version of 05 or above.
Heavy Load	-	Supports SG Ready, large load specification requirements: 1. Large load total power < GEN port maximum output power 2. Large load power + BACK-UP power < AC maximum input power (grid)

Product Type	Model	Description
Generator	-	Generator rated voltage meets inverter GEN port rated voltage.

Microgrid Scenario

⚠WARNING

- In microgrid scenarios, the PV open-circuit voltage of the hybrid inverter is not recommended to be ≥500V, so as to avoid triggering the over-voltage protection when the system voltage is too high under severe working conditions.
- In microgrid systems, inverters are not supported in parallel and only one inverter is supported to be used 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 via SolarGo:
  - End power set to 0% Pn
  - Silent time set to 0
  - Power response mode set to off



Product Type	Model	Description
Hybrid Inverter	GW8000-ES-C10 GW10K-ES-C10 GW12K-ES-C10	• In the microgrid system, parallelization is not supported by the inverter, and only a single inverter can be supported to use in the system. • Requirements: ◦ The ARM software version of the inverter is 13 (458) and above. ◦ The DSP software version of the inverter is 03(13) and above. ◦ Some models do not support microgrid functionality.
	LX A5.0-10	

Product Type	Model	Description
Battery System	LX A5.0-30	Battery of different models cannot be mixed. • LX A5.0-10: The nominal charging and discharging current of a single battery is 60A; a maximum of 15 batteries can be connected in parallel in one system. • LX A5.0-30: 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 U5.4-L	The maximum charging and discharging current of a single battery is 50A; a maximum of 6 batteries can be connected in parallel in one system.
	LX U5.4-20	
	LX U5.0-30	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 100A. A maximum of 30 batteries can be connected in parallel in one system.
	GW14.3-BAT-LV-G10	The rated charge/discharge current for a single battery is 140A; the maximum charge current is 224A; the maximum discharge current is 260A, and the system supports up to 16 batteries in parallel.
	Lead Acid Battery	• Supports connection to 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.

Product Type	Model	Description
Busbar	BCB-11-WW-0 BCB-22-WW-0 BCB-32-WW-0 BCB-33-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-11-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 360A, working power of 18kW, and can be connected to a maximum of 3 inverters, and 6 batteries. • BCB-22-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 12 batteries. ◦ used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 6 batteries. ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 6 batteries. • BCB-32-WW-0: ◦ used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. ◦ used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 8 batteries.

Product Type	Model	Description
		◦ used with GW14.3-BAT-LV-G10, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 16 batteries. • BCB-33-WW-0: ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. When the number of batteries exceeds 8, two 600A fuses need to be connected in parallel. • Others: Please prepare busbar based on actual system power and current.
Smart Meter	• Built-in Smart Meter (Standard) • GMK110 (purchase from GoodWe) • GM330 (purchase from GoodWe)	• Built-in Smart Meter: When the number of parallel inverters is ≤2 and the length of CT cable is ≤10 meters, the built-in meter can be used. Built-in smart meter: 10-meter wire CT, default CT ratio: 120A/40mA. • GMK110: When the length of the built-in CT cable of the inverter is not enough for connection to the switchboard, please connect an external GMK110 smart meter. CT is not supported for changing to other type, CT ratio: 120A/40mA. • GM330: Supports purchasing from GOODWE or third-party, CT ratio requirement: nA/5A • nA: CT primary input current, n ranges from 200 to -5000. • 5A: CT secondary output current.

Product Type	Model	Description
Smart Dongle	• WiFi/LAN Kit-20 (Standard) • 4G Kit-CN-G20（Only for China） • 4G Kit-CN-G21（Only for China）	Please use the WiFi/LAN Kit-20, 4G Kit-CN-G20, 4G Kit-CN-G21 modules in single inverter system.
On-Grid Inverter	-	• It’s recommended to use on-grid inverter sold in GOODWE, and is supported to use the third-party on-grid inverter. • In microgrid systems, make sure that the rated output power of the on-grid inverter ≤ the rated output power of the hybrid inverter. • When the microgrid system is in on-grid status, if power limit is required, make sure: ◦ the hybrid inverter should be set in the on-grid 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.

3.2 Product Overview

3.2.1 Inverter

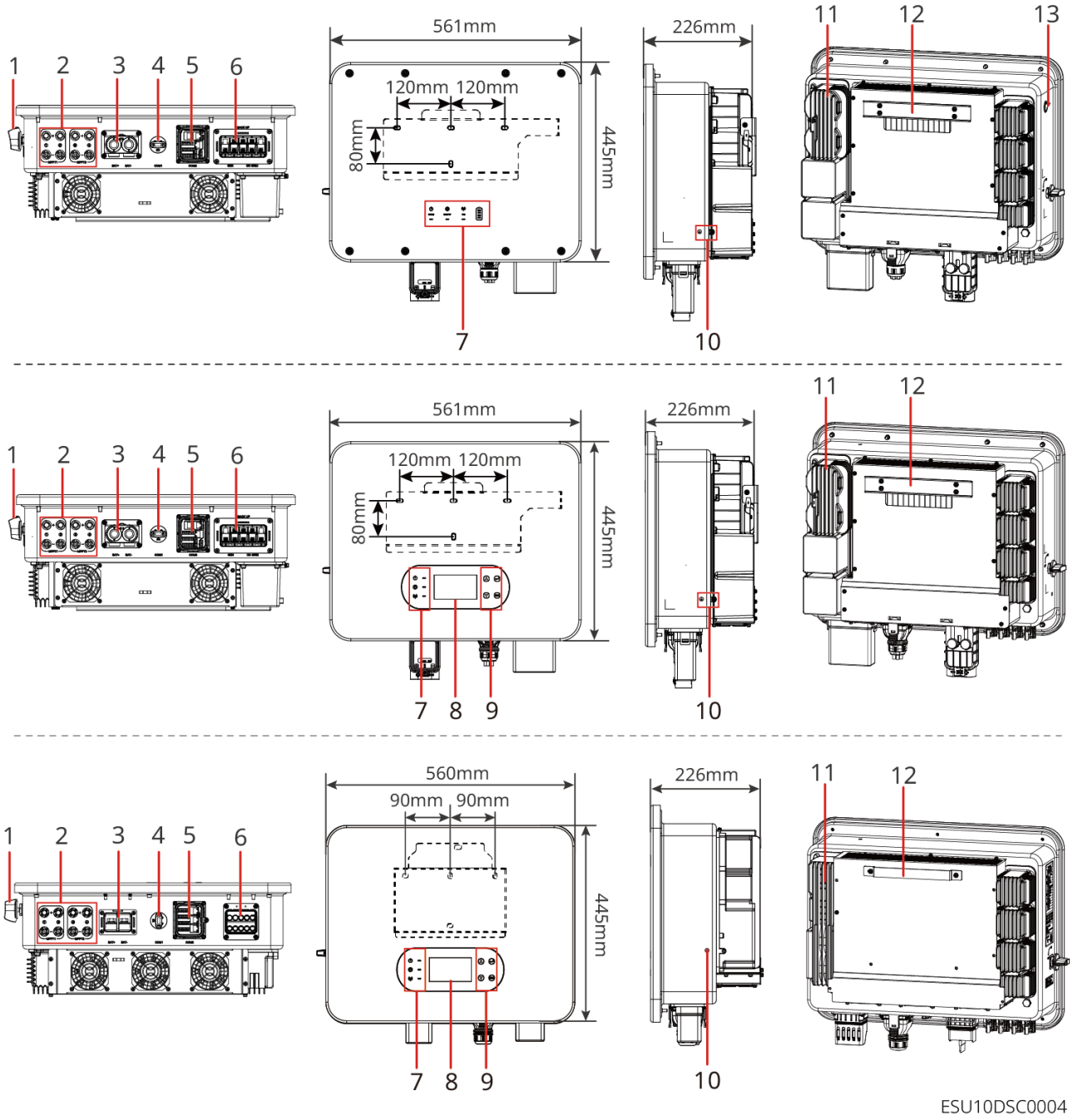
Inverters control and optimize the power in PV systems through an integrated energy management system. The power generated in the PV system can be used by

loads, stored in the battery, output to the utility grid, etc

No.	Model	Nominal Output Power	Nominal Output Voltage
1	GW8000-ES-C10	3000W	220/230/240
2	GW10K-ES-C10	3000W	220/230/240
3	GW12K-ES-C10	3000W	220/230/240

NOTICE

- ES UNIQ 8-12kW series inverters are available in different appearance types with the following differences in product appearance and components.



ESU10DSC0004

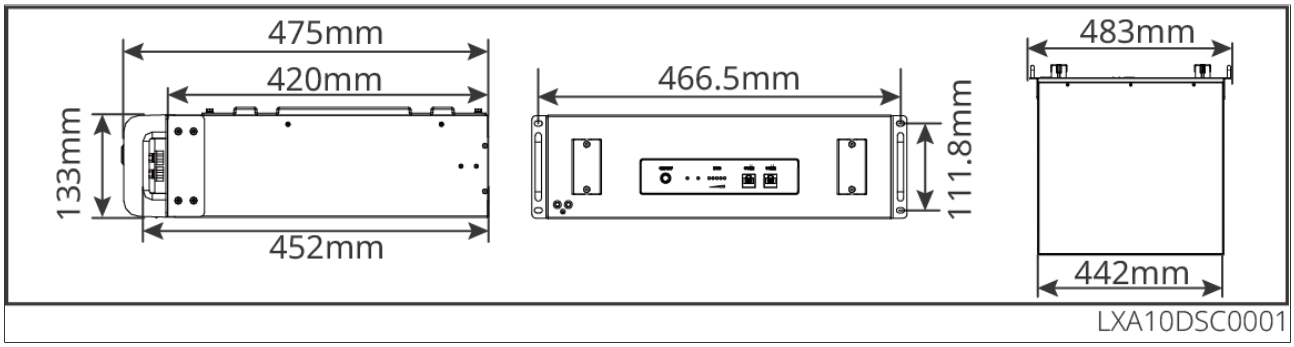
No.	Components / Silk Screen Printing	Description
1	DC Switch	Start or stop DC input.
2	PV Input Terminal	Used to connect the PV module DC input cables.
3	Battery Input Terminal	Battery DC input cable can be connected.

4	Smart Dongle Terminal	To connect the smart dongle, the dongle type may differ depending on actual needs.
4	Communication Terminal	Connected to communication lines such as load control, CT, RS485, remote shutdown/rapid shutdown, DRED (Australia) / RCR (Europe), etc.
6	AC Output Port	To connect the AC output cable, which links the inverter with the utility grid.
7	Indicator	Indicates the operating status of the inverter.
8	LCD (optional)	Used to check the parameters of the inverter.
9	Button (optional)	Works with the display to operate the inverter.
10	Grounding Terminal	Used to connect the PE cable.
11	Heat Sink	Used to cool the inverter.
12	Mountings	Inverter can be hooked up.
13	Off and On grid switch (only for screenless models)	Controls whether the inverter supports off-grid operating mode. • Switch pressed: the inverter supports off-grid operating mode. • Switch not pressed: the inverter does not support off-grid operating mode.

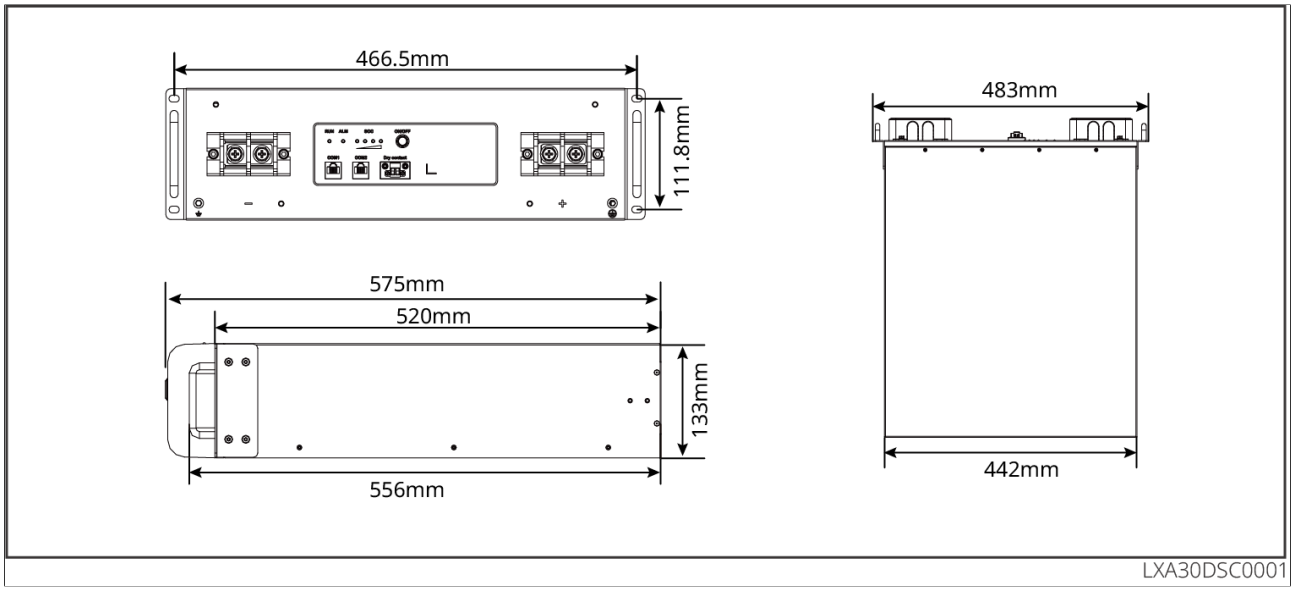
3.2.2 Battery

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 ES Uniq inverter supports connecting lead-acid batteries, and the product material of the battery can be obtained from the battery manufacturer.

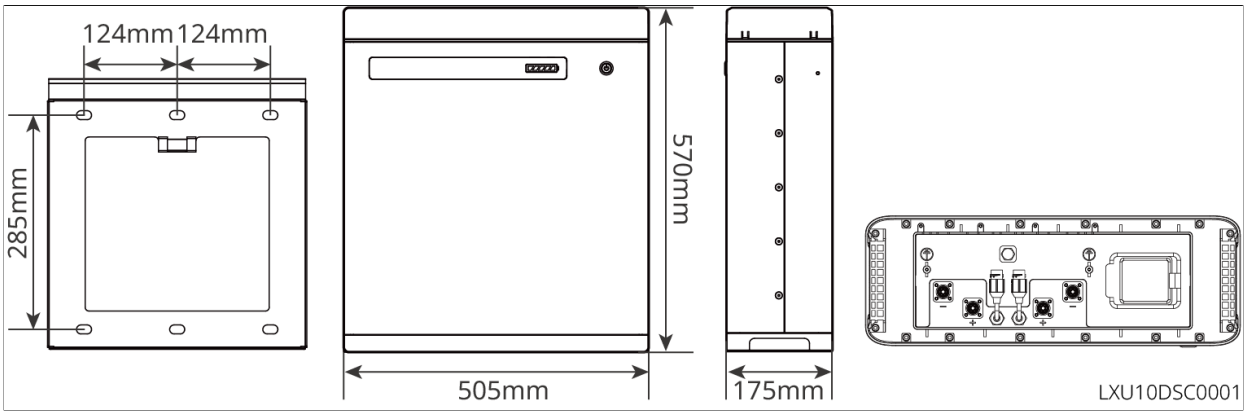
3.2.2.1 LX A5.0-10



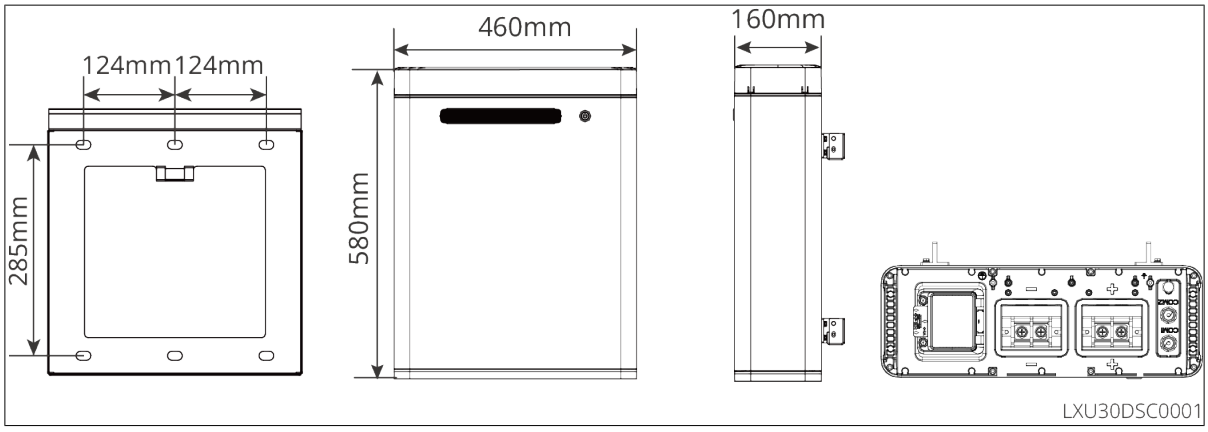
3.2.2.2 LX A5.0-30



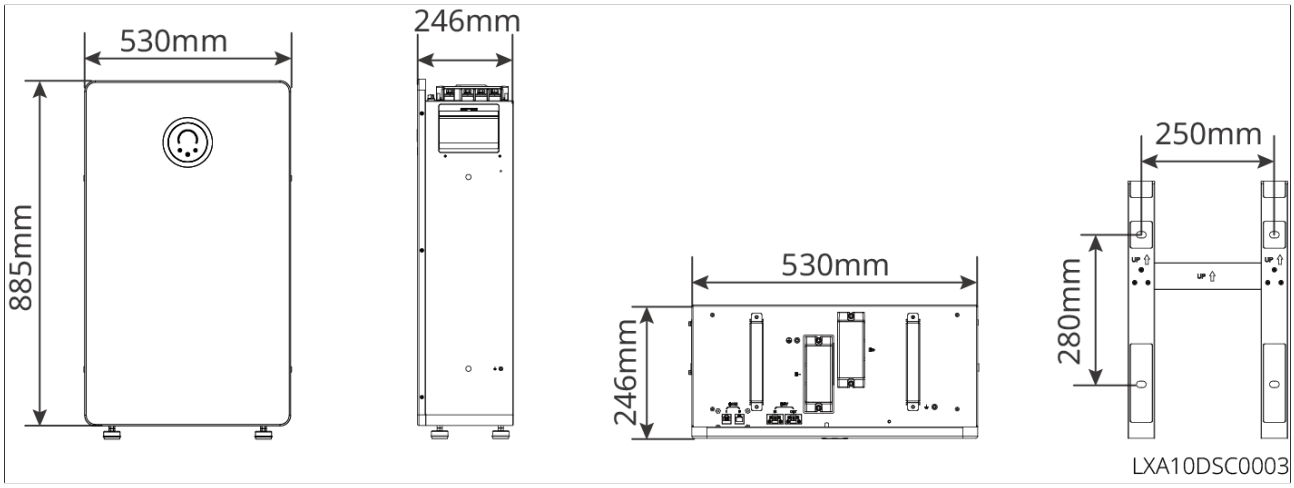
3.2.2.3 LX U5.4-L, LX U5.4-20



3.2.2.4 LX U5.0-30

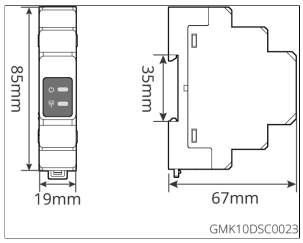
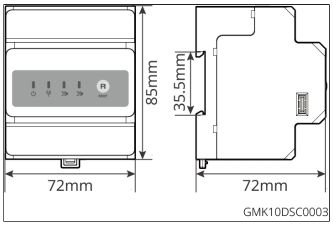
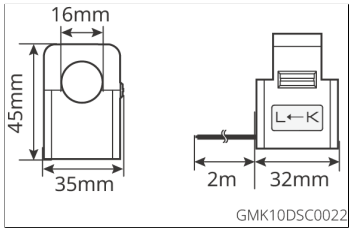


3.2.2.5 GW14.3-BAT-LV-G10



3.2.3 Smart Meter

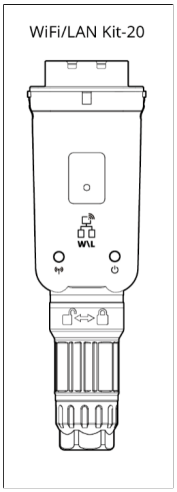
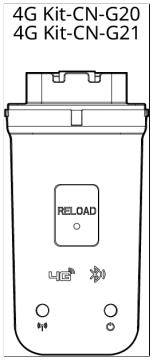
The smart meter can measure and monitor the data in the photovoltaic energy storage system, such as voltage, current, frequency, power factor, and power, etc.

GMK110	GM330	CT
		

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

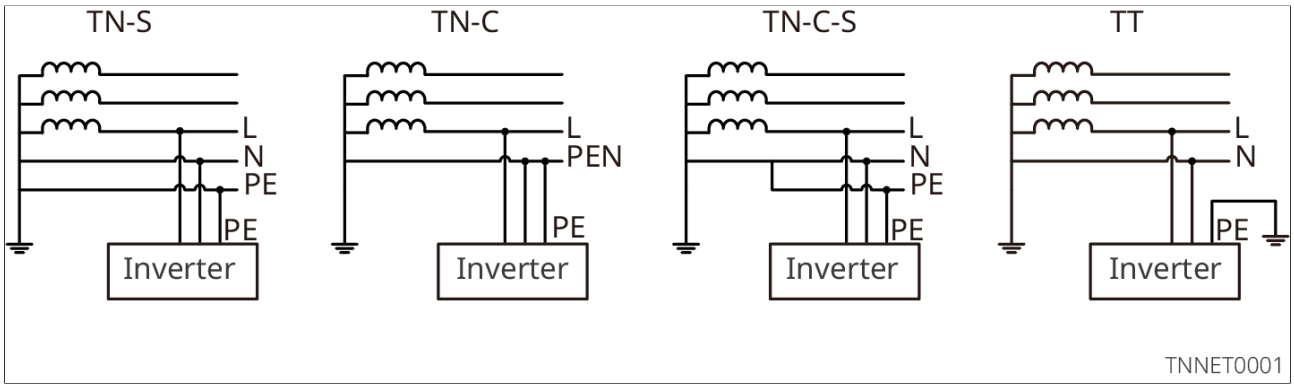
3.2.4 Smart Dongle

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

No.	Model	Signal	Applicable scenarios
1	WiFi/LAN Kit-20	Bluetooth, WiFi, LAN	Single inverter scenario
2	4G Kit-CN-G20	Bluetooth, 4G	
3	4G Kit-CN-G21	4G, bluetooth, GNSS	
4	Ezlink3000	Bluetooth, WiFi, LAN	Master inverter of a parallel system

3.3 Supported Grid Types

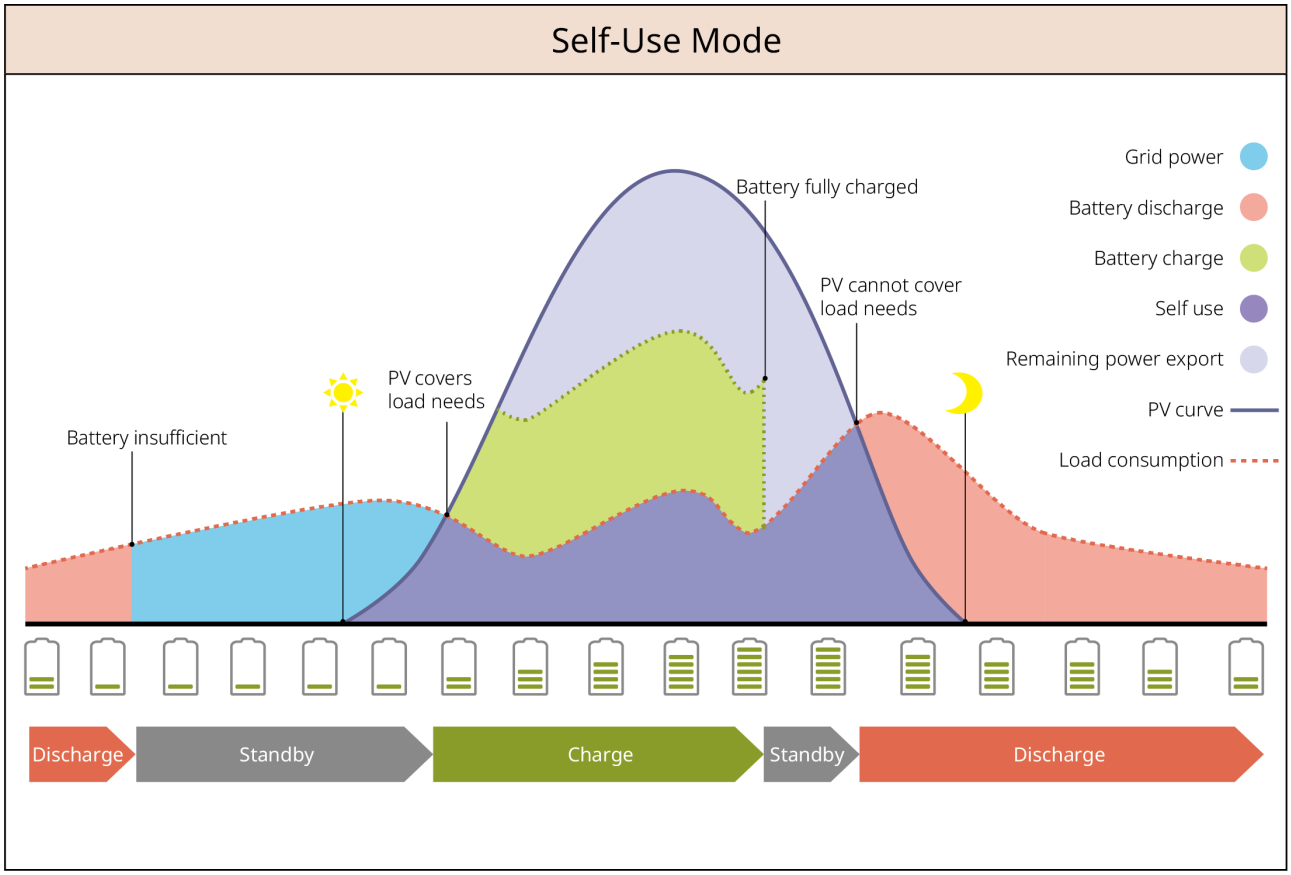


3.4 System Working Mode

NOTICE
After the GW14.3-BAT-LV-G10 battery system is installed for the first time, it will automatically perform a full charge of the battery. Once completed, it will switch to the set operating mode.

Self-use Mode

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



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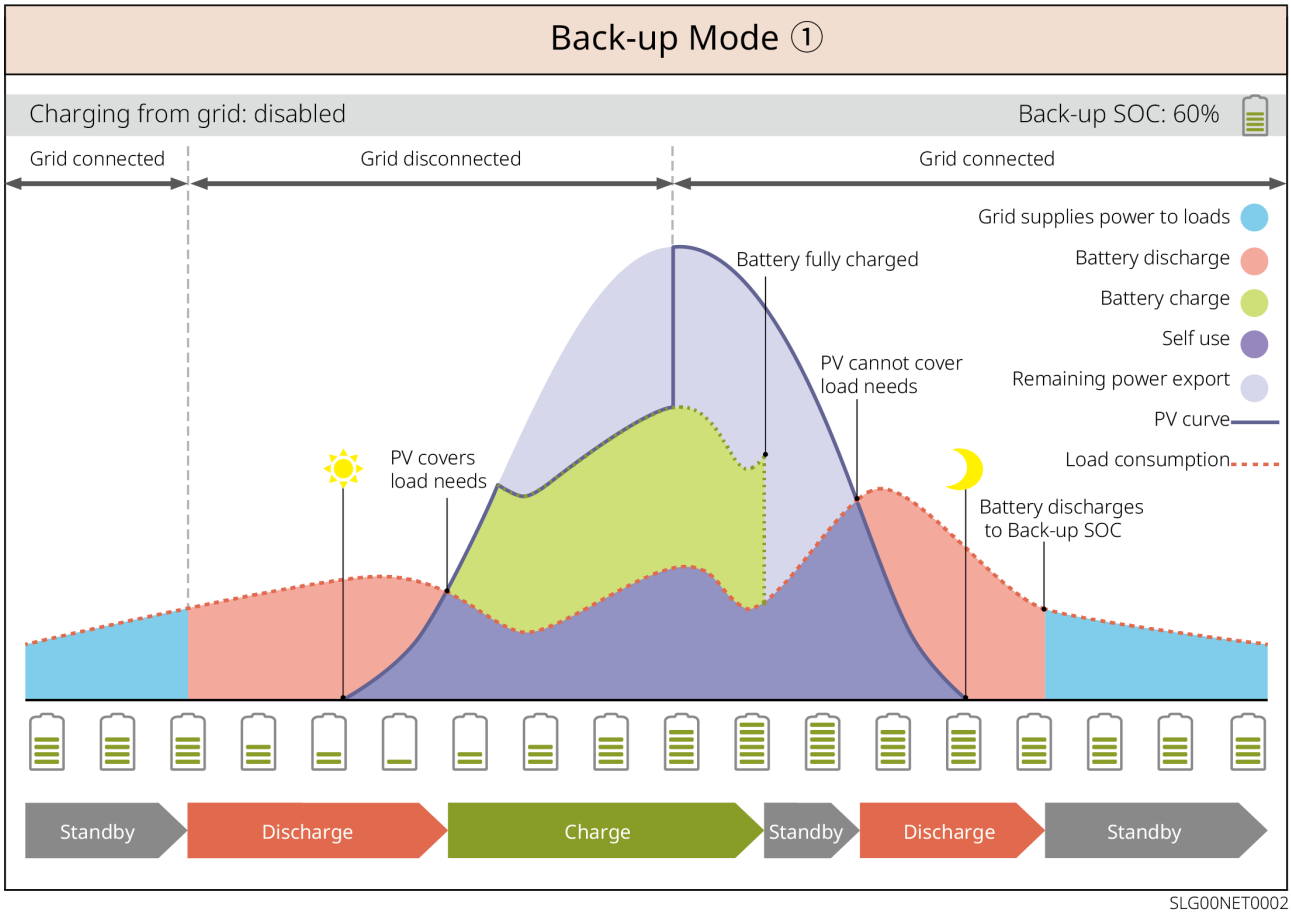
BACK-UP Mode

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



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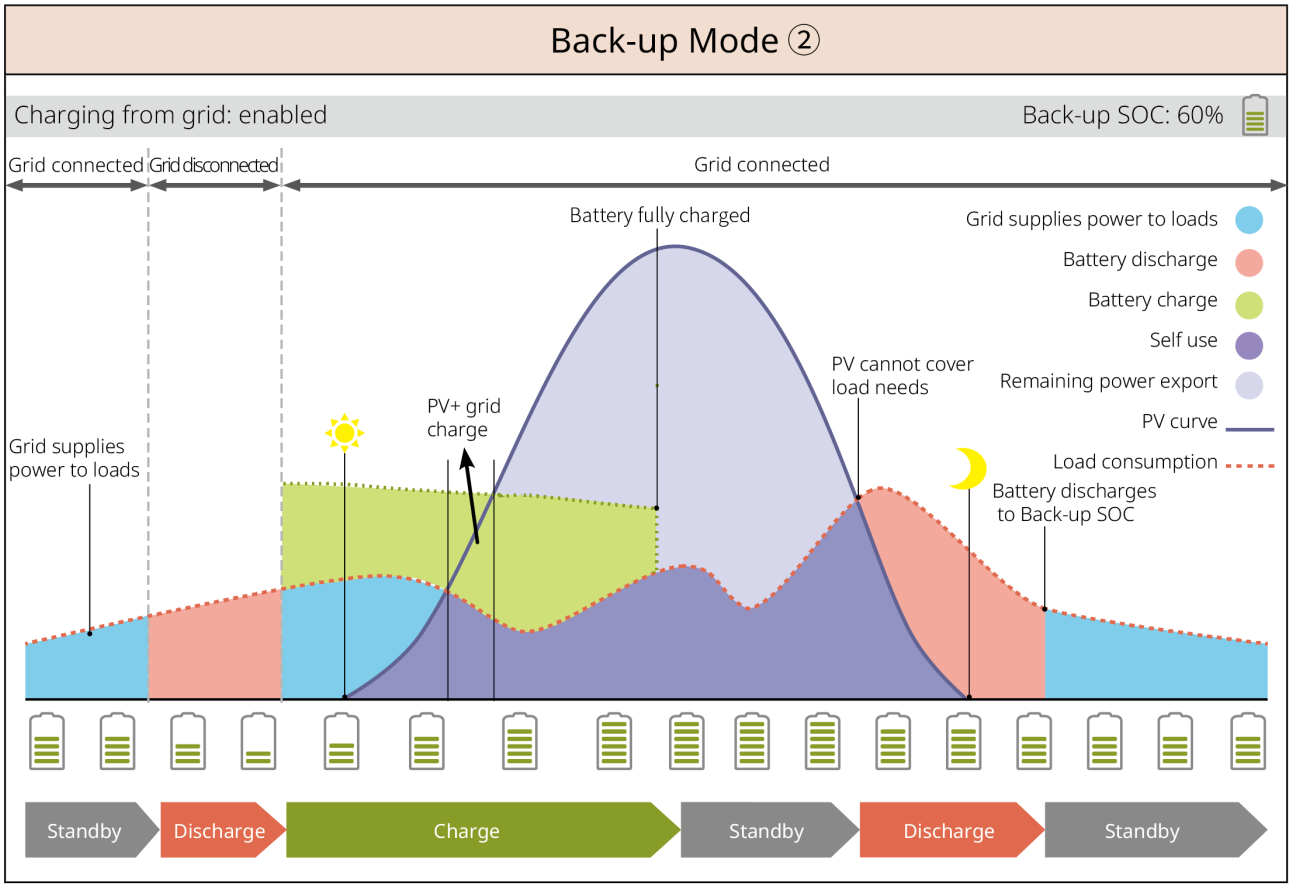

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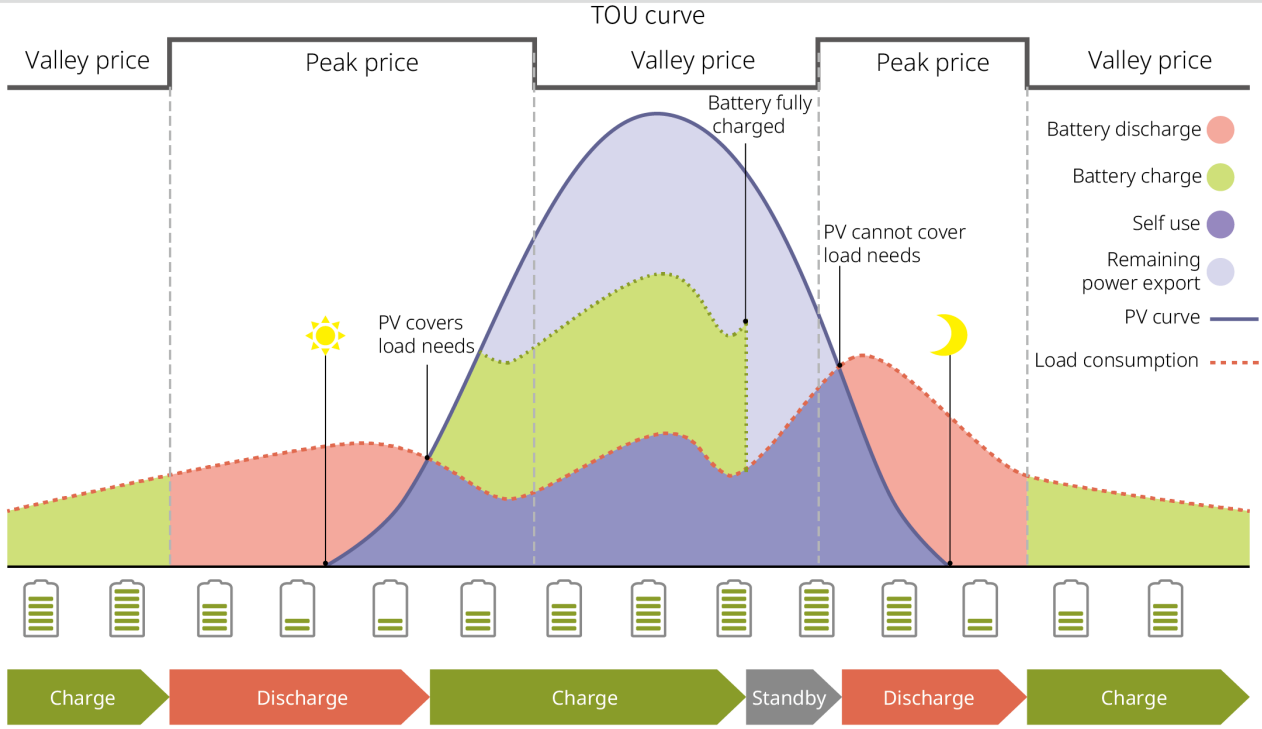
TOU Mode

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

TOU Mode ①

PV: Charge battery in priority



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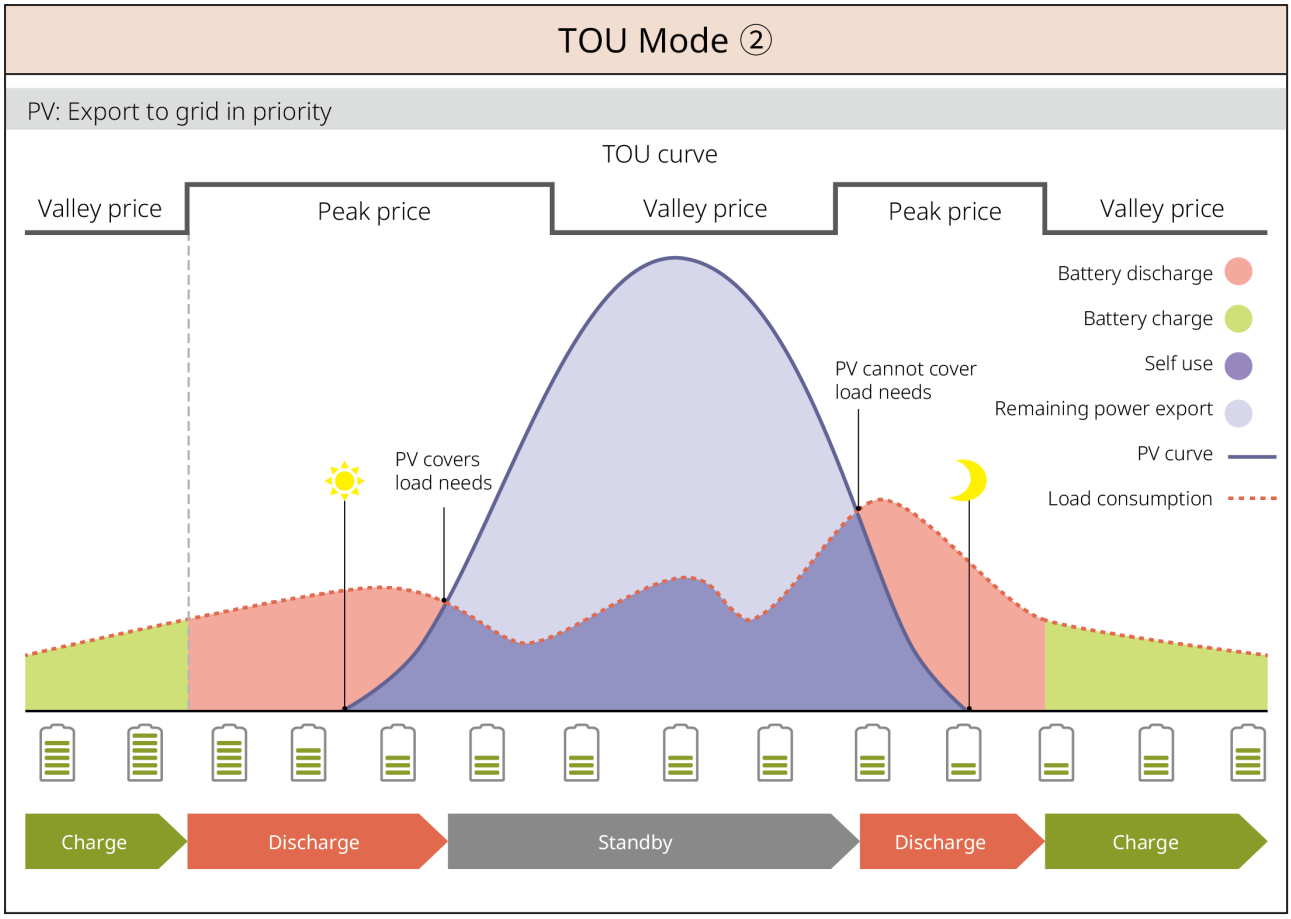


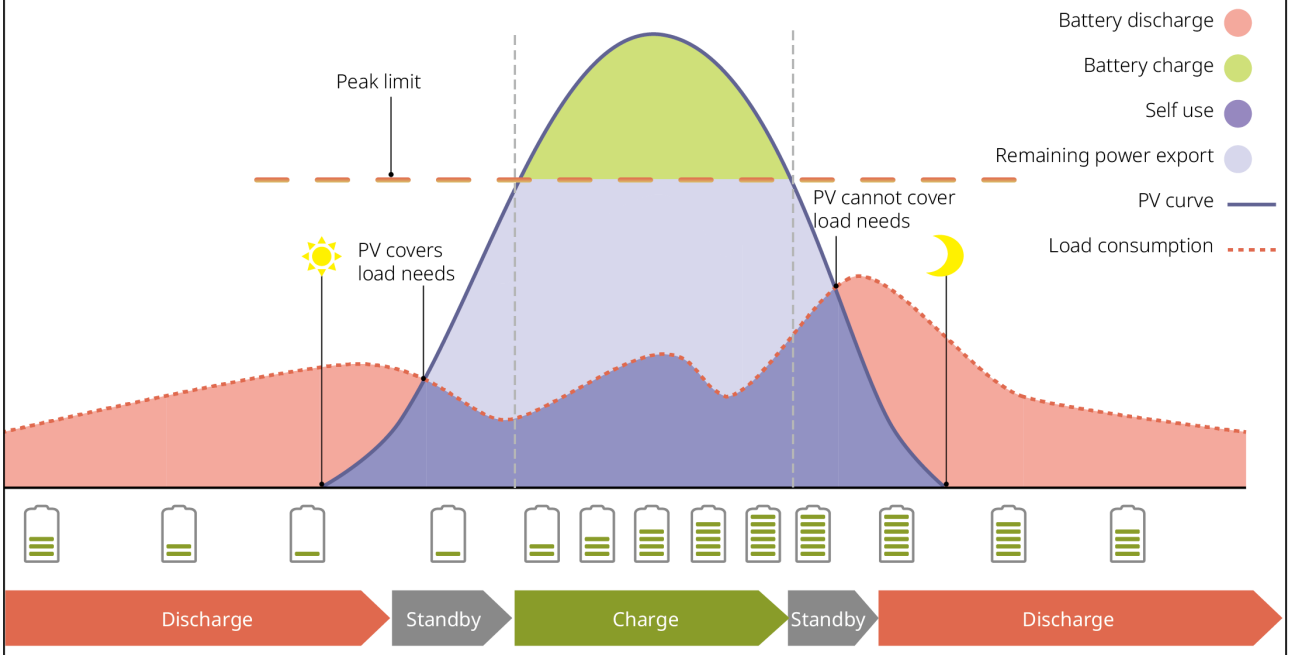
SLG00NET0005

Delayed Charging Mode

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

Smart Charging ①

PV > Peak Limit | Switch to Charge: enabled/disabled



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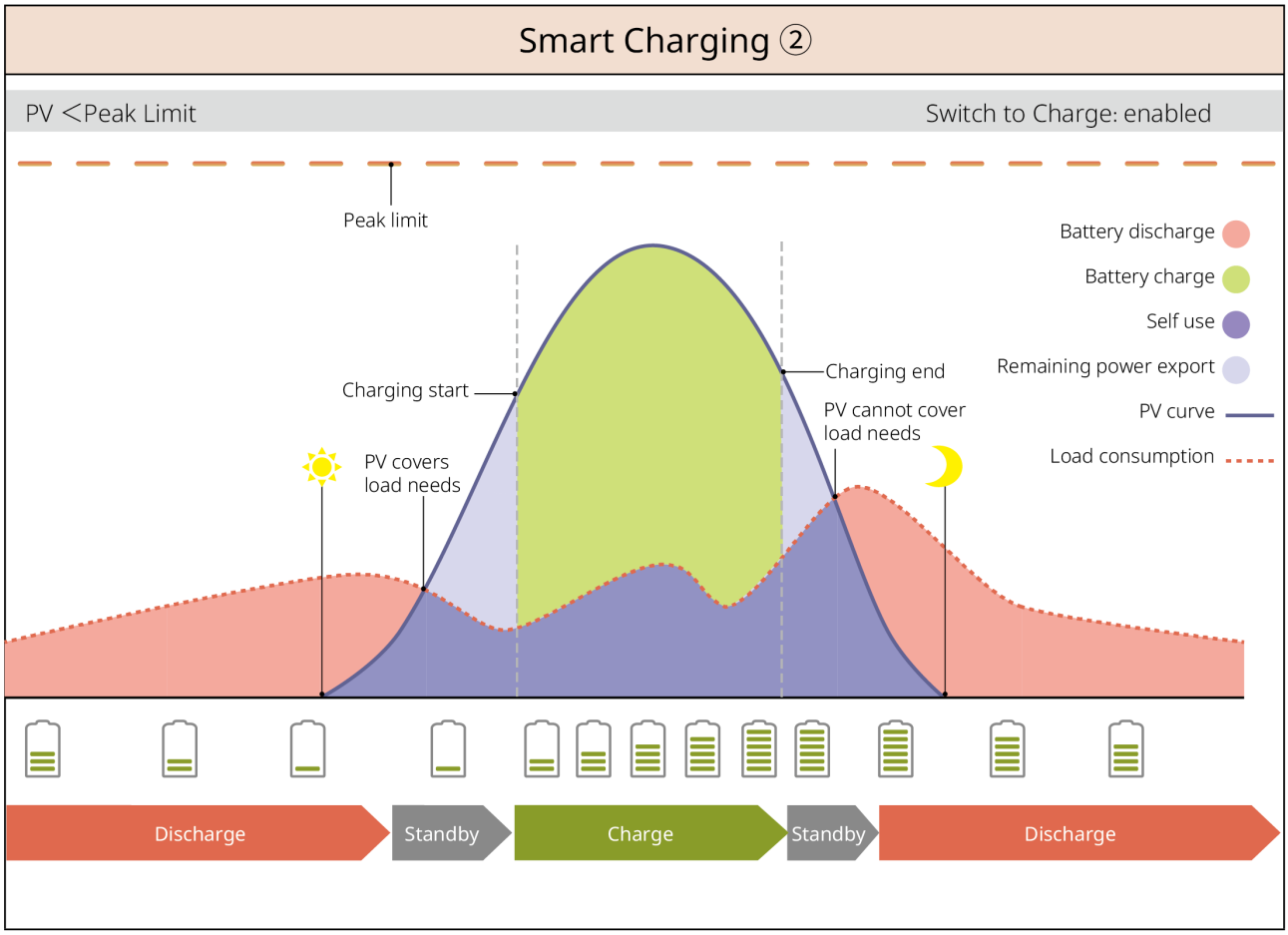

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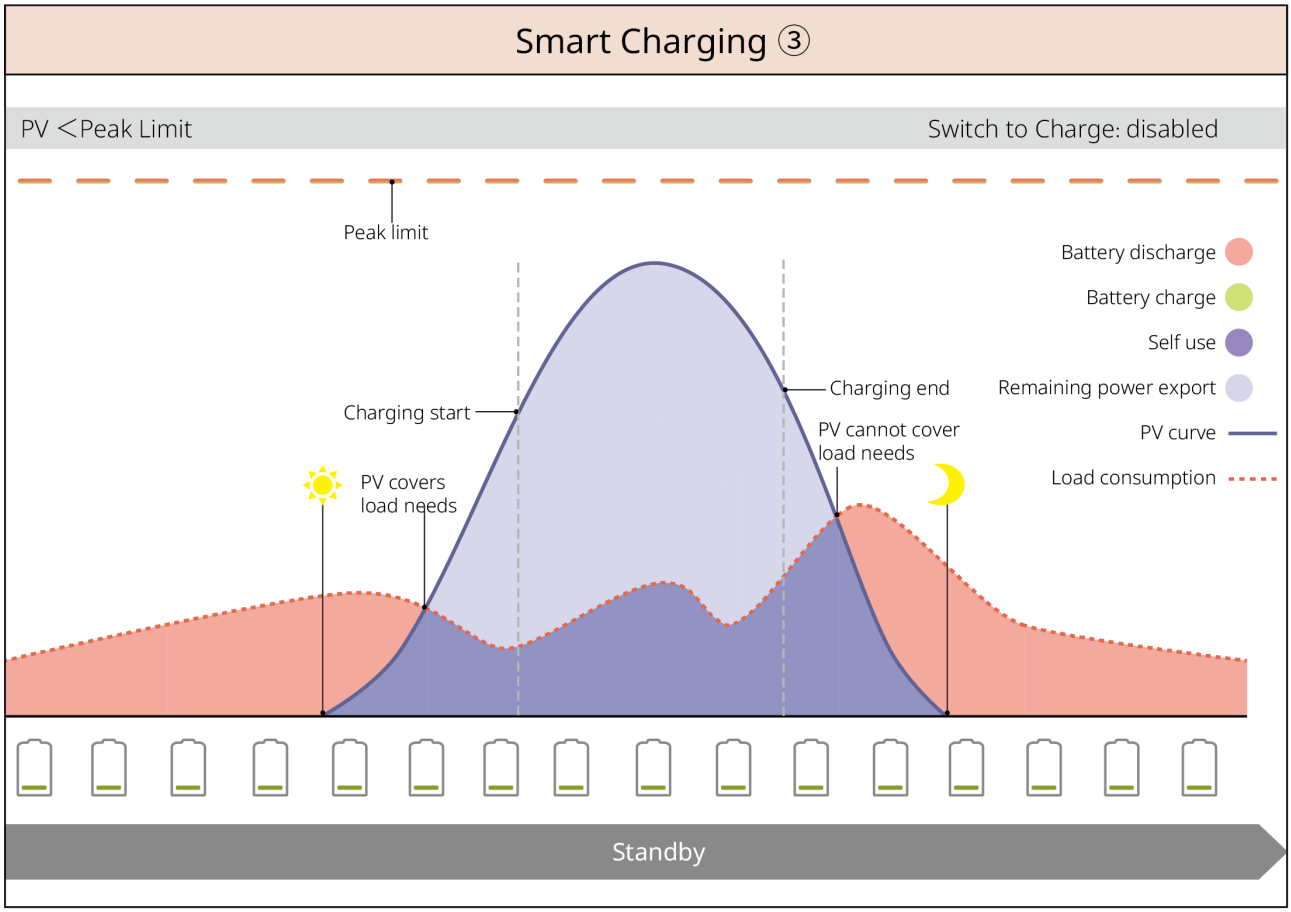
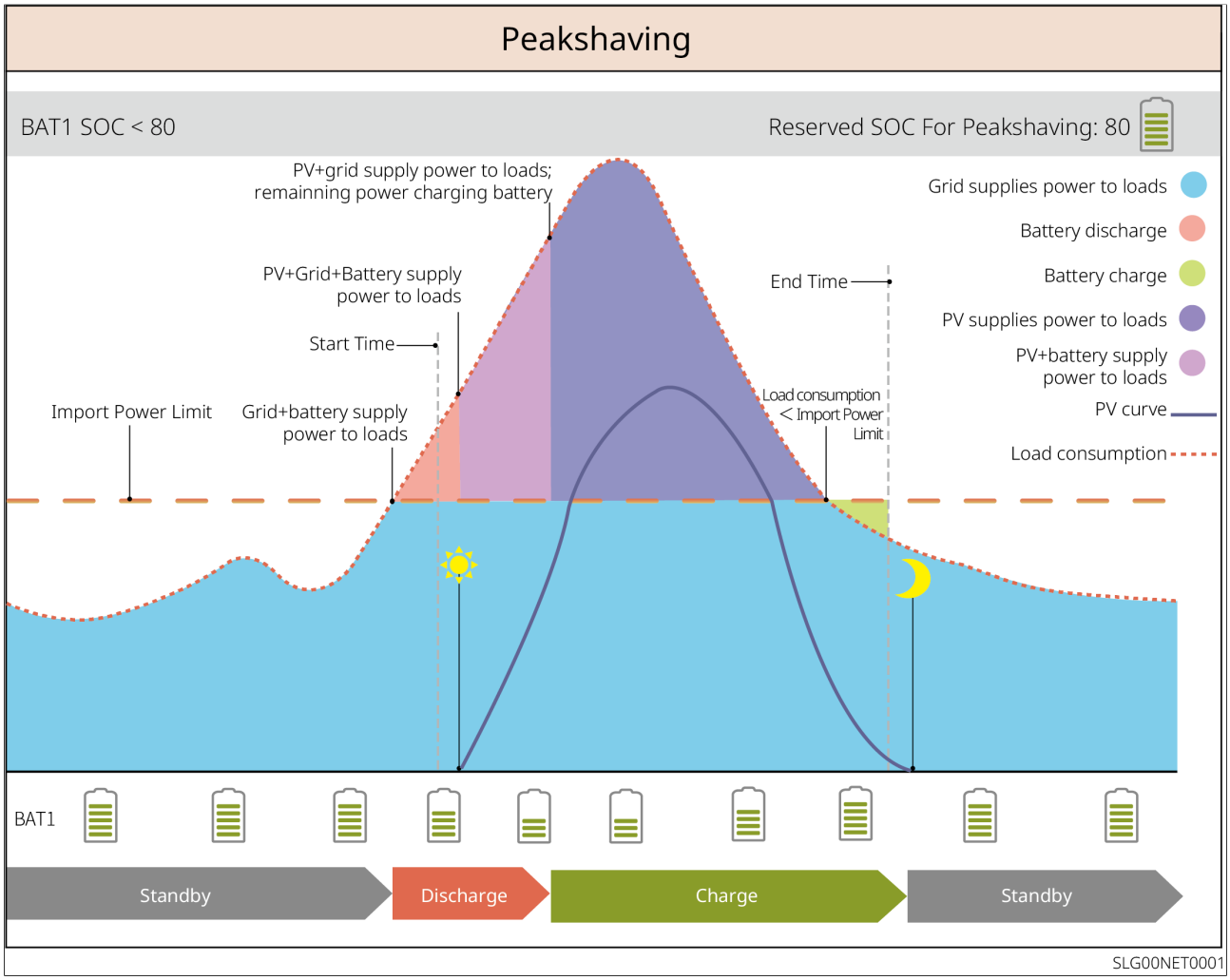


SLG00NET0008

Demand Management Model

- It is mainly applicable to industrial and commercial scenarios.
- When the total power consumption of the load exceeds the power quota within a short period of time, battery discharge can be used to reduce the amount of power consumption exceeding the quota.
- When the SOC of both battery strings in the inverter falls below the reserved SOC for demand management, the system purchases electricity from the grid based on the time period, load electricity consumption, and peak purchase limit. When the SOC of only one battery string in the inverter falls below the reserved SOC for demand management, the system purchases electricity from the grid based on load electricity consumption and the peak purchase limit.



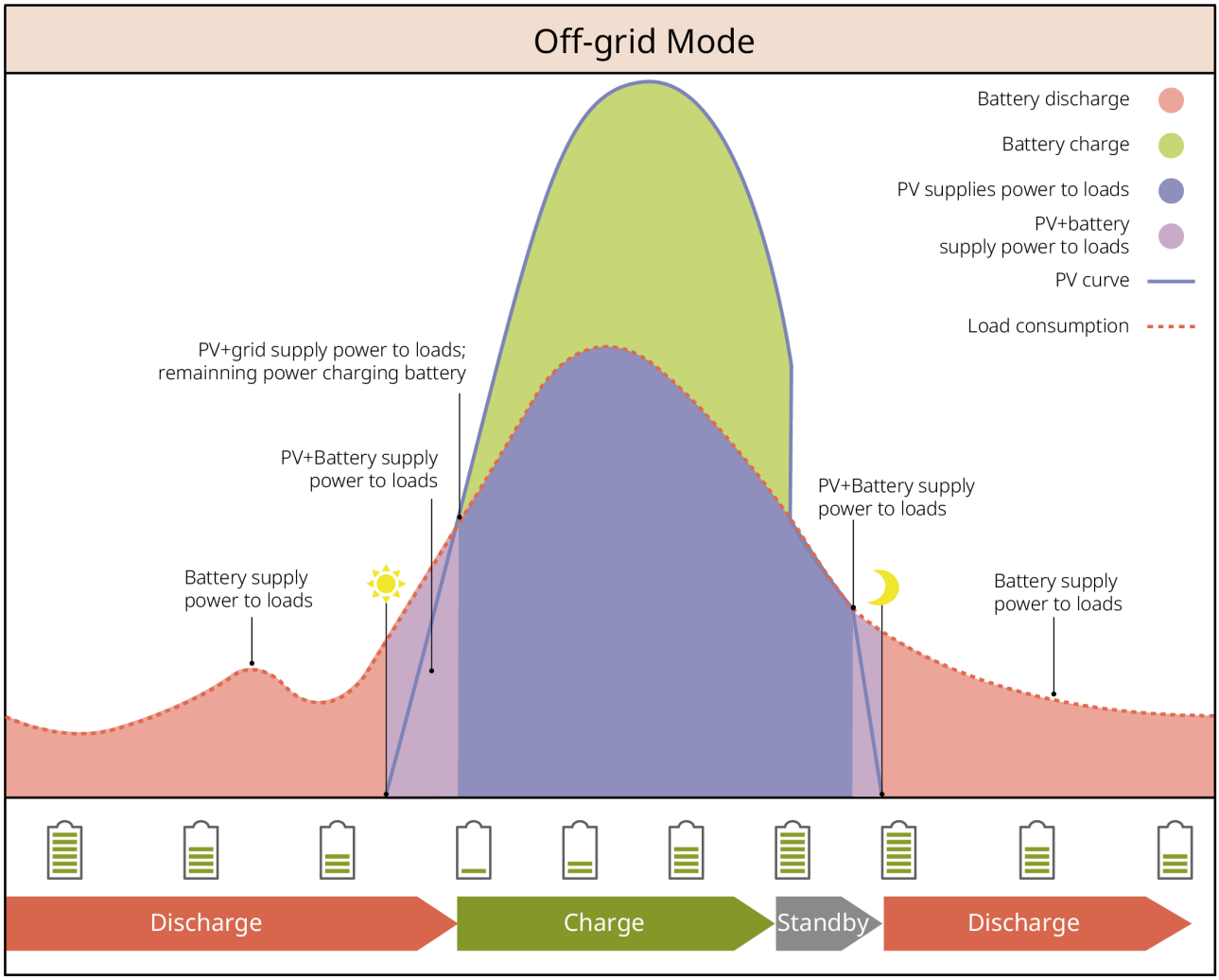
Off-grid Mode

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

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

- During the day, PV power generation is prioritized for supplying power to loads, and excess power is used to charge batteries.
- Nighttime battery discharge powers the load to ensure uninterrupted power supply to the backup load.
- Off-grid SOC recovery: After the system goes offline, the battery gradually recovers to the minimum SOC through photovoltaic power generation or other power

generation methods.



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3.5 Features

AFCI

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

Reasons for the occurrence of electric arcs:

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

Troubleshooting:

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

Load Control

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

The load control methods are as follows:

- Time Control: Set the time to control the load to turn on or off, and the load will be automatically turned on or off in the set time period.
- Switch Control: When the control mode is selected as ON, the load will be turned on; when the control mode is set to OFF, the load will be turned off.
- BACK-UP LOAD CONTROL: The inverter has a built-in relay dry contact control port to control whether the load is turned off or not via a relay. In off-grid mode, the load connected to the relay port can be turned off if the overloaded battery SOC value at the BACK-UP end is detected to be lower than the battery off-grid protection setting.

Rapid Shutdown (RSD)

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

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

- Receiver Model: GR-B1F-20, GR-B2F-20
  https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf

4 Check and Storage

4.1 Check Before Receiving

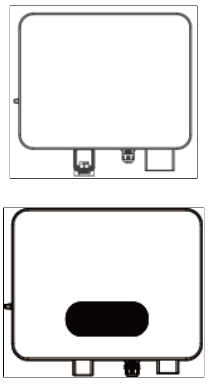
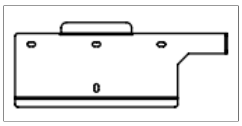
Check the following items before accept.

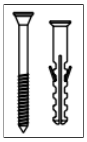
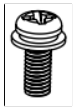
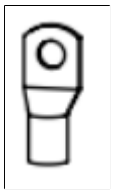
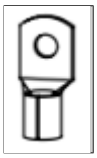
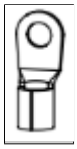
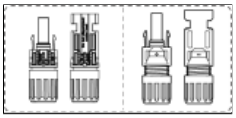
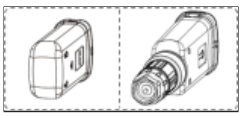
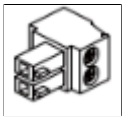
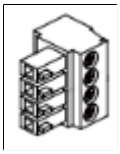
1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. When removing the GW14.3-BAT-LV-G10 battery, make sure that the packaging carton is intact. If the packaging is damaged and you need to return or exchange the product due to quality issues, please contact GoodWe after-sales service or your dealer to obtain a special packaging box.
3. Check the product model. If the product model is not what you requested, do not unpack the product and contact the supplier.

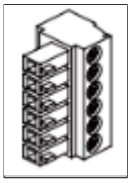
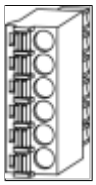
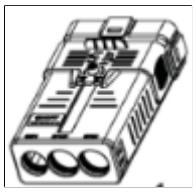
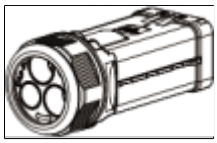
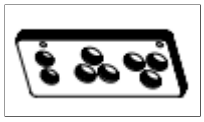
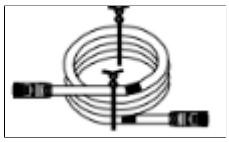
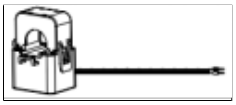
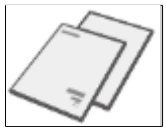
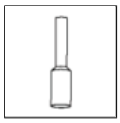
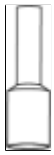
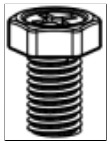
4.2 Deliverables

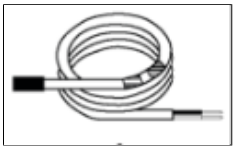
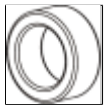
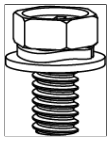
⚠WARNING
Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

4.2.1 Inverter Deliverables

Component	Description	Component	Description
	Inverter x 1 Provided on an actual basis.		Mounting plate x 1 Provided on an actual basis.

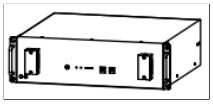
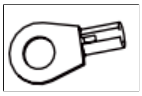
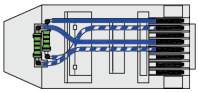
Component	Description	Component	Description
	Expansion screws x 4		Screw x 1 Only used by certain models.
	Nut x8 Only used by certain models.		Battery power connection terminal x 2 Only used by certain models.
	AC terminal: 2 or 6 Provided on an actual basis.		Protective grounding terminal: 1 or 3 Provided on an actual basis.
	PV DC terminal • GW8000-ES-C10 x 3 • GW10K-ES-C10, GW12K-ES-C10 x 4		Smart dongle x 1 Provided on an actual basis.
	2PIN terminal x 2 Used by certain models in accordance with the hardware board communication port		4PIN terminal x 1 Used by certain models in accordance with the hardware board communication port

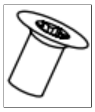
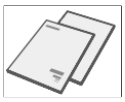
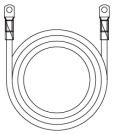
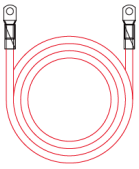
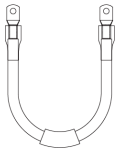
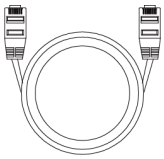
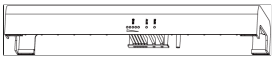
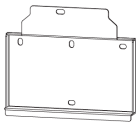
Component	Description	Component	Description
 	6PIN terminal: 2, 3, 4 Provided on an actual basis of the hardware board communication port.	 	AC protective cover x1 Provided on an actual basis.
	Battery Connector x 1 Only used by certain models.		AC unlock tool x1 Only used by certain models.
	Waterproof gasket x 1 Only used by certain models.		BMS communication cable x 1
	CT connection cable x 1		Documents x 1
	PIN communication terminal: 14, 18, 24 Provided on an actual basis.		AC pin terminal x10 Only used by certain models.
	Battery bolts x 2 Only used by certain models.		Magnet x 1 Only used by certain models.

Component	Description	Component	Description
	Lead-acid battery temperature sensor cable x 1		Magnetic ring x 1 Only used by certain models.
	Lead-acid battery temperature sensor cable fixing sticker x 2		Magnetic ring fixing cable ties x 2 Supplied with models equipped with magnetic rings
	Battery bolts x 2 Only used by certain models.		

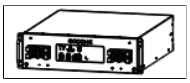
4.2.2 Batteries Deliverables

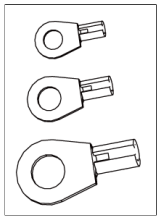
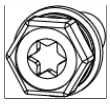
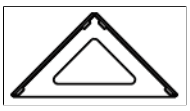
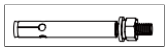
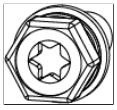
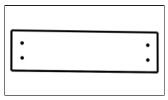
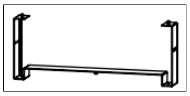
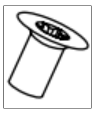
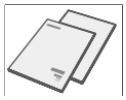
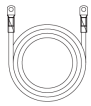
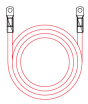
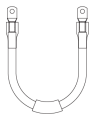
4.2.2.1 LX A5.0-10

Component	Description	Component	Description
	Battery module x1		(25--8) OT terminal x 4 (5.5--5) OT terminal x 2
	M5 grounding screw x 2		Warning label x 1
	Terminal resistor x 1		Electrical Label x 1

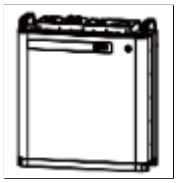
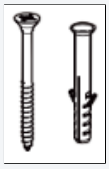
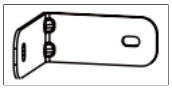
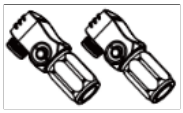
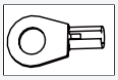
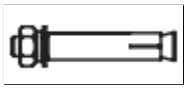
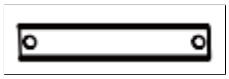
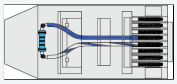
Component	Description	Component	Description
	M4*8 screw x 8 (optional) Provided when selecting bracket installation method.		Battery bracket x 2 (optional) Provided when selecting bracket installation method.
	Documents x 1		Negative power line (optional) x 1
	Positive power line (optional) x 1		Grounding cable (optional) x 1
	Communication cable (optional) x 1		Decorative cover (optional) x 1
	Mounting plate bracket expansion screws (optional) x 4		Mounting plate (optional) x 1
	Bracket (optional) x 1		Bracket screws (optional) x 4

4.2.2.2 LX A5.0-30

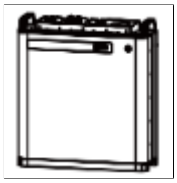
Component	Description	Component	Description
	Battery module x1		Terminal resistor x 1 When connecting to a third-party busbar, this terminal resistor needs to be installed.

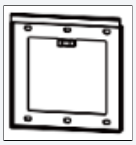
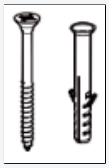
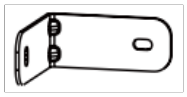
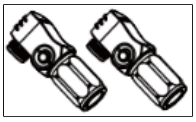
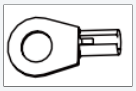
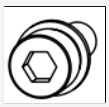
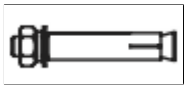
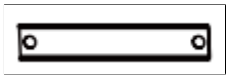
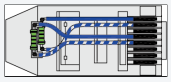
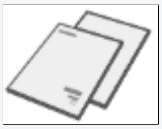
Component	Description	Component	Description
	• M5 OT terminal x 2: Recommended for 10mm^2 cable • M8 OT terminal x 4: Recommended for 50mm^2 cable • M10 OT terminal x 2: Recommended for 70mm^2 cable		M5*12 grounding screw x 2
	Bracket x 2 For wall-mounted installation		M6* 70 Expansion bolts x 4 For 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 line (optional) x 1
	Positive power line (optional) x 1		Grounding cable (optional) x 1
	Communication cable (optional) x 1		Decorative cover (optional) x 1

4.2.2.3 Battery Deliverables (LX U5.4-L)

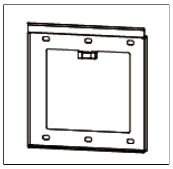
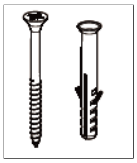
Component	Description	Component	Description
	Battery module x1		Cover x 1
	Wall-mounted panel x 1		Expansion bolt x 2
	Locking bracket x 2		Power connectors x 2
	Grounding terminals x 4		M5 Screw x 8
	M10 Expansion bolt x 6		Cable harness fixing plate x 2
	Terminal resistor x 1		Documents x 1

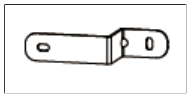
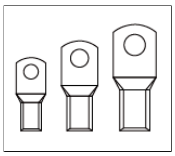
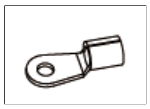
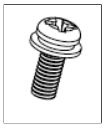
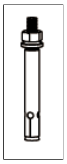
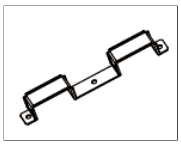
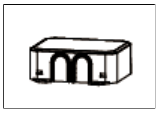
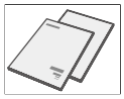
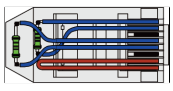
4.2.2.4 Battery Deliverables (LX U5.4-20)

Component	Description	Component	Description
	Battery module x1		Cover x 1

	Wall-mounted panel x 1		Expansion bolt x 2
	Locking bracket x 2		Power connectors x 2
	Grounding terminals x 4		M5 Combination bolts x 8
	M10 Expansion bolt x 6		Cable harness fixing plate x 2
	Terminal resistor x 1		Documents x 1

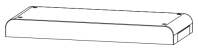
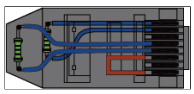
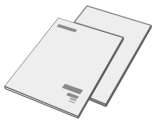
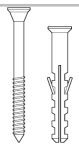
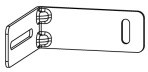
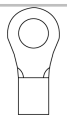
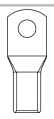
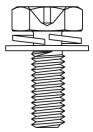
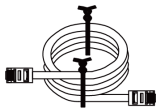
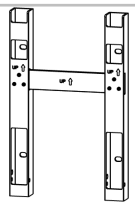
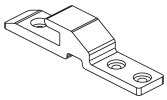
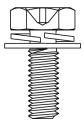
4.2.2.5 Battery Deliverables (LX U5.0-30)

Component	Description	Component	Description
	Battery module x1		Cover x 1
	Mounting plate x 1		Expansion bolt x 2

Component	Description	Component	Description
	Locking bracket x 2		• 35-8 OT terminal x 4: Recommended for connecting 25mm^2 or 35mm^2 cables • 50-8 OT terminal x 4: Recommended for 50mm^2 cable • 70-10 OT terminal x 2: Recommended for 70mm^2 cable
	14--5 Grounding terminal x 2		M5 Screw x 7
	M10 Expansion bolt x 6		Cable harness fixing plate x 1
	Power connector protect cover x 2		Documents x 1
	Terminal resistor x 1	-	-

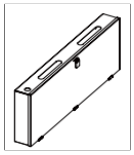
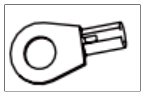
4.2.2.6 Battery Deliverables (GW14.3- BAT-LV-G10)

Component	Description	Component	Description

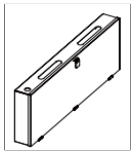
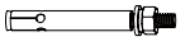
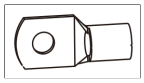
	Battery module x1		Wire cover x 1
	Terminal resistor x 1		Documents x 1
	Expansion bolt x 2		Wall locking anti-tip bracket x 2
	Grounding OT terminal x 1		DC OT connector x 6
	M5*16 internal cross external hexagon screw x 7		Communication cable x 1
	Wall mount bracket (optional) x 1		Hooks (optional) x 4
	M5*16 internal cross external hexagon (optional) x 12		M10 Expansion bolts (optional) x 4

4.2.3 Busbar Deliverables

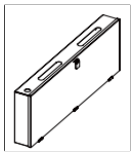
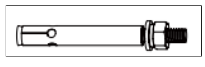
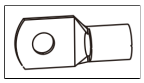
4.2.3.1 BCB-11-WW-0 (Optional)

Component	Description	Component	Description
	360A Manifold box x 1		M6 Expansion bolt x 4
	(25-8) OT terminal x 18 (70-10) OT terminal x 2	-	-

4.2.3.2 BCB-22-WW-0 (Optional)

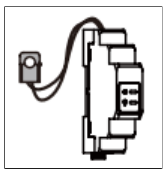
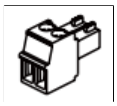
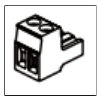
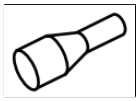
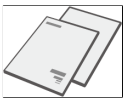
Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolt x 4
	(25-8) OT terminal x 36 (70-10) OT terminal x 6	-	-

4.2.3.3 BCB-32-WW-0, BCB-33-WW-0 (Optional)

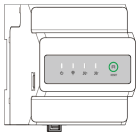
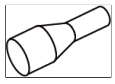
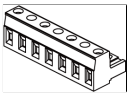
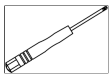
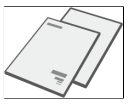
Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolt x 4
	(50-8) OT terminal x 30 (70-10) OT terminal x 6	-	-

4.2.4 Smart Meter Deliverables

4.2.4.1 GMK110

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

4.2.4.2 GM330

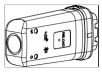
Component	Description	Component	Description
	Smart Meter x1		2 PIN terminal x1
	PIN terminal x 6		7 PIN terminal x1
	Screw driver x 1		Documents x 1

4.2.5 Smart dongle

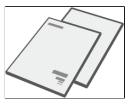
4.2.5.1 WiFi/LAN Kit-20

Component	Description	Component	Description
	Smart dongle x 1		Documents x 1

4.2.5.2 4G Kit-CN-G20, 4G Kit-CN-G21

Component	Description	Component	Description
	Smart dongle x 1		Documents x 1

4.2.5.3 Ezlink3000

Component	Description	Component	Description
	Smart dongle x 1		LAN cable connector x 1
	Documents x1		Unlock tool x1 Some modules need to be removed with the tool. If the tool is not provided, remove the module by pressing the unlock button on the module.

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements: After the equipment is stored for a long period of time, it is required to be checked and confirmed by a professional before it can be used further.

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

Battery Model	Initial SOC Range for Battery Storage	Recommended Storage Temperature	Charge and Discharge Maintaining Period[1]	Battery Maintenance Method [2]
LX A5.0-10 n*LX A5.0-10	30%~ 40%	0~35℃	-20~0℃, ≤1 month 0~35℃, ≤6 months	Contact the dealer or the after-sales service for maintenance mothod.
LX A5.0-30	30%~ 40%	0~35℃	-20~35℃, ≤12 months 35~45℃, ≤6 months	
LX U5.4-L LX U5.4-20 n*LX U5.4-20 LX U5.0-30	30%~ 40%	0~35℃	-20~0℃, ≤1 month 0~35℃, ≤6 months 35~40℃, ≤1 month	
GW14.3-BAT-LV-G10	30%~ 40%	0~35℃	-20~35℃, ≤12 months 35~45℃, ≤6 months	

NOTICE

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

Packing requirements:
Do not unpack the outer package or throw the desiccant away.

Installation environment requirements:

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

Stacking requirements:

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

5 Installation

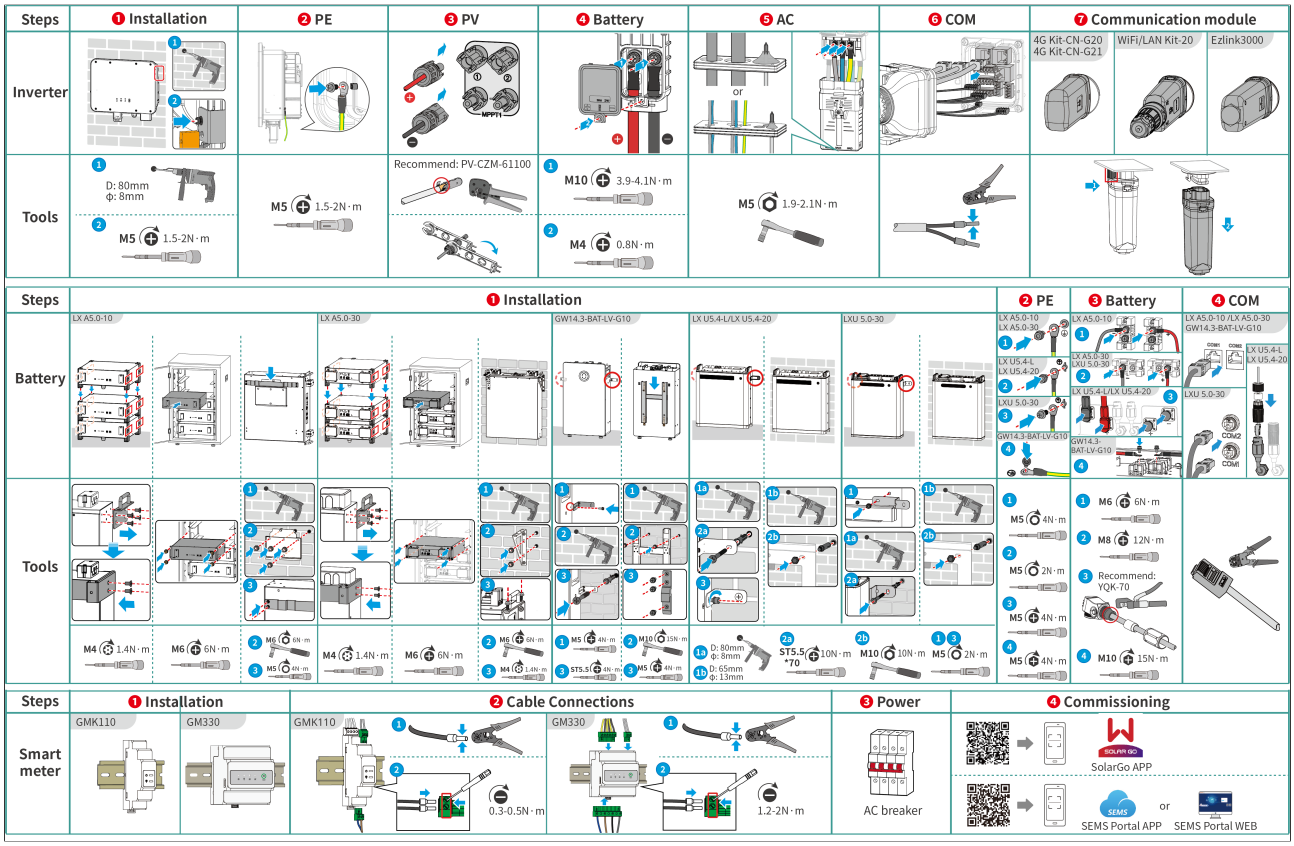
DANGER

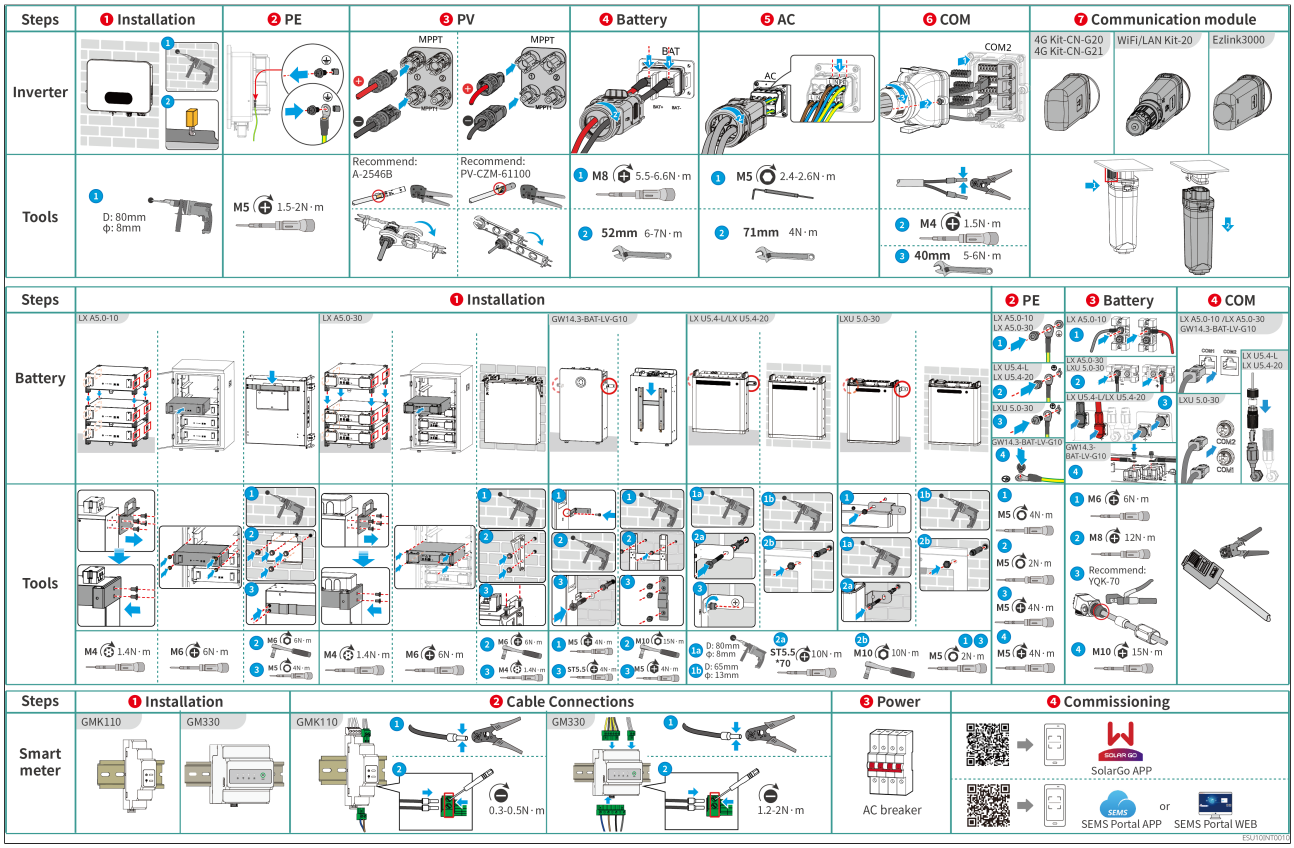
Install and connect the equipment with the deliverables included in the package. Otherwise, the manufacturer shall not be liable for the damage.

5.1 System Installation and Commissioning Procedure

DANGER

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





5.2 Installation Requirements

5.2.1 Installation Environment Requirements

1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. The temperature and humidity at the installation site should be kept within the appropriate range.
3. Do not install the equipment in a place that is easy to touch, especially within children's reach.
4. When the equipment is working, its temperature may exceed 60 °C. Do not touch the surface to avoid burn.
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed.
6. The place to install the equipment shall be well-ventilated for heat radiation and large enough for operations.
7. Check the protection rating of the equipment and ensure that the installation environment meets the requirements. The inverter, battery system, and smart dongle can be installed both indoors and outdoors, but the smart meter can only

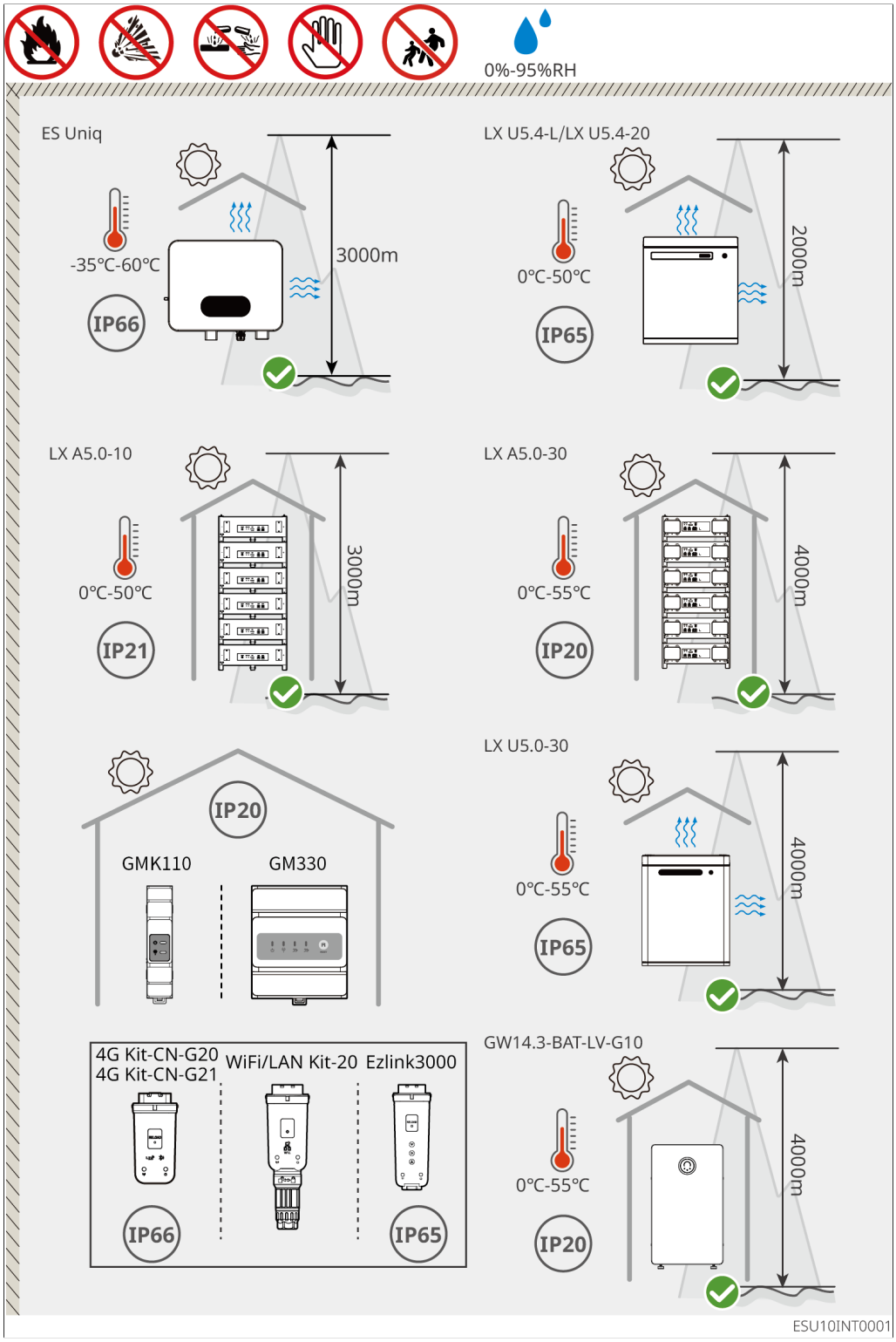
be installed indoors.

8. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
9. The altitude to install the inverter shall be lower than the maximum working altitude of the system.
10. Consult the manufacturer before installing the equipment outdoors in salt affected areas. A salt-affected area refers to the region within 500 meters offshore, and will be related to the sea wind, precipitation and topography.
11. Install the equipment away from electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the equipment, you have to:
    - Inverter: add a multi-turn winding ferrite core at the AC output cable of the inverter, or add a low-pass EMI filter. Or the distance between the inverter and the wireless EMI equipment should be more than 30m.
    - Other equipment: the distance between the equipment and the wireless EMI equipment should be more than 30m.
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.

NOTICE

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

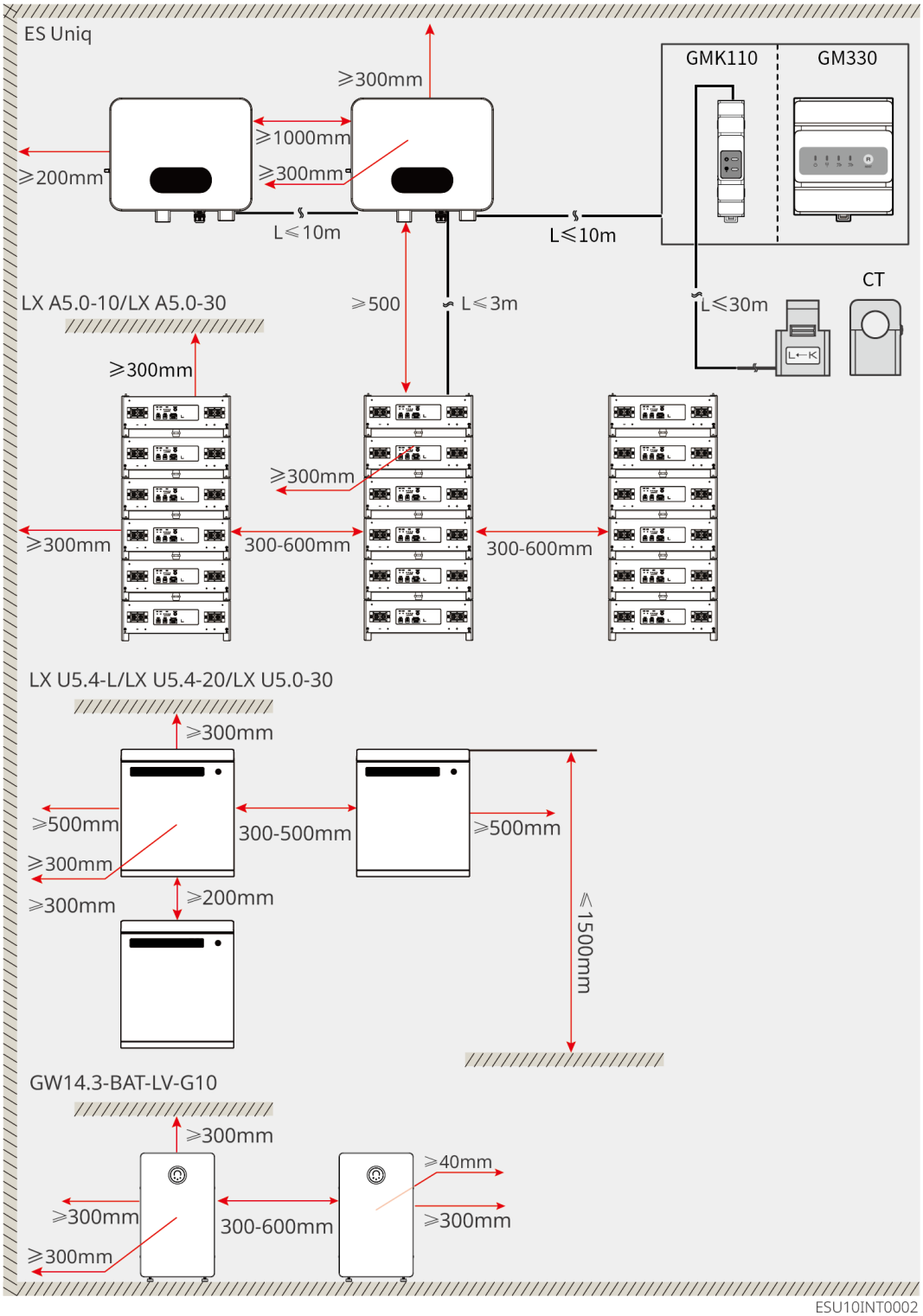
- LX A5.0-30, LX U5.0-30, GW14.3-BAT-LV-G10: Charging temperature range: 0 < T ≤ 55°C; Discharging temperature range: -20 < T ≤ 55°C.
- LX A5.0-10, LX U5.4-L, LX U5.4-20: Charging temperature range: 0 < T ≤ 50°C; Discharging temperature range: -10 < T ≤ 50°C.



5.2.2 Installation Space Requirements

Reserve enough space for operations and heat dissipation when installing the system. When using CAT7 communication cables among inverters, the maximum

distance can reach 10 meters, while using CAT5 communication cables, the maximum distance can reach 5 meters.

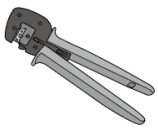
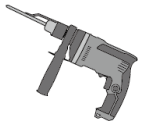
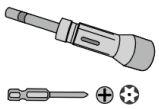
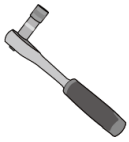
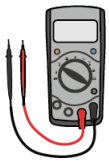
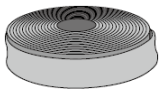


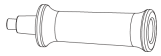
5.2.3 Tool Requirements

NOTICE

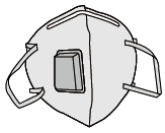
The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

Installation Tools

Tool Types	Description	Tool Types	Description
	Diagonal pliers		RJ45 crimping tool
	Wire stripper		YQK-70 hydraulic pliers
	Adjustable wrench		PV connector tool PV-CZM-61100, A-2546B
	Impact drill (drill bits Φ8mm)		Torque wrench M4/M5/M6/M8
	Rubber hammer		Socket wrench set
	Marker		Multimeter Range≤600V
	Heat shrink tube		Heat gun
	Cable tie		Vacuum cleaner

Tool Types	Description	Tool Types	Description
	Lifting handles		

Personal Protective Equipment

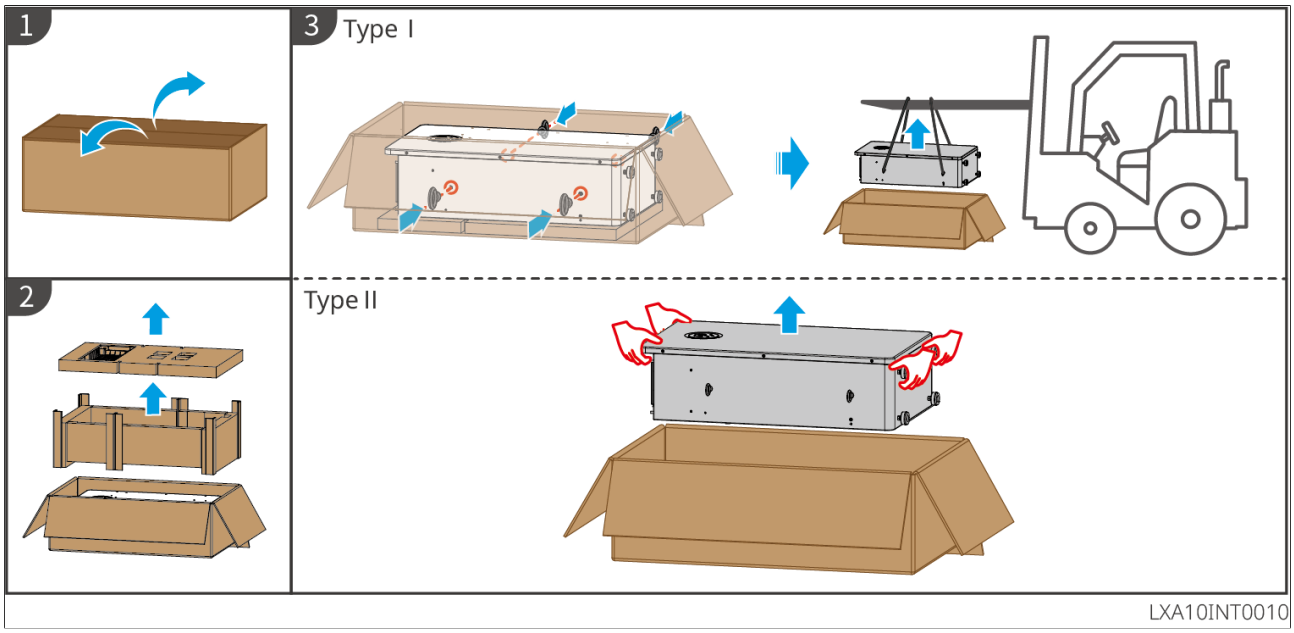
Tool Types	Description	Tool Types	Description
	Insulating gloves and safety gloves		Dust mask
	Goggles		Safety shoes

5.3 Equipment Handling

⚠CAUTION

1. Operations such as transportation, turnover, installation and so on must meet the requirements of the laws and regulations of the country or region where inverters are installed.
2. Move the equipment to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.
3. 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.
4. Wear safety gloves to avoid personal injury.
5. Keep balance to avoid falling down when moving the equipment.
6. The battery system can be removed from the packaging box using a crane or hoist and transported to the installation site.
   - Crane requirements (GW14.3-BAT-LV-G10): Load capacity ≥ 180 kg
7. When moving equipment using a hoisting method, please use flexible slings or straps. The lifting rings and ropes for GW14.3-BAT-LV-G10 must meet the following requirements:
   - Suspension Ring: 4 M10 suspension rings, load capacity ⩾ 260 kg
   - Suspension Rope: 1 suspension rope, rope length ⩾ 2.5 m, suspension rope load capacity ⩾ 600 kg

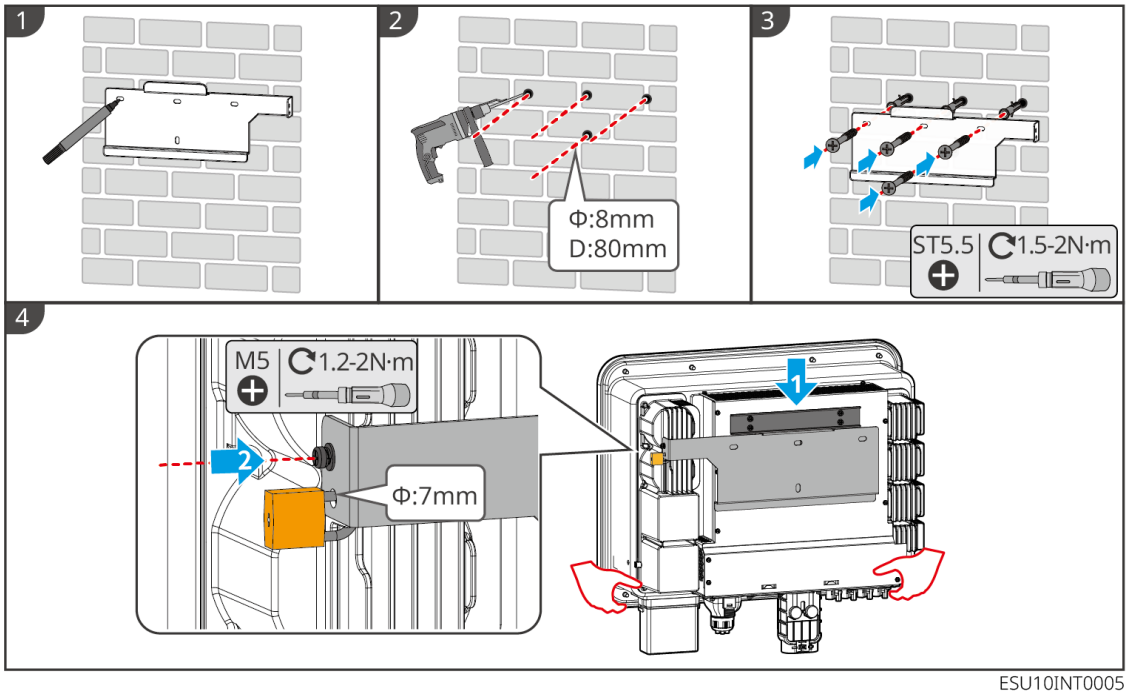
GW14.3-BAT-LV-G10:



5.4 Installing the Inverter

CAUTION
• Avoid the water pipes and cables buried in the wall when drilling holes. • Wear goggles and a dust mask to prevent the dust from being inhaled or contacting eyes when drilling holes. • 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 hammer 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.



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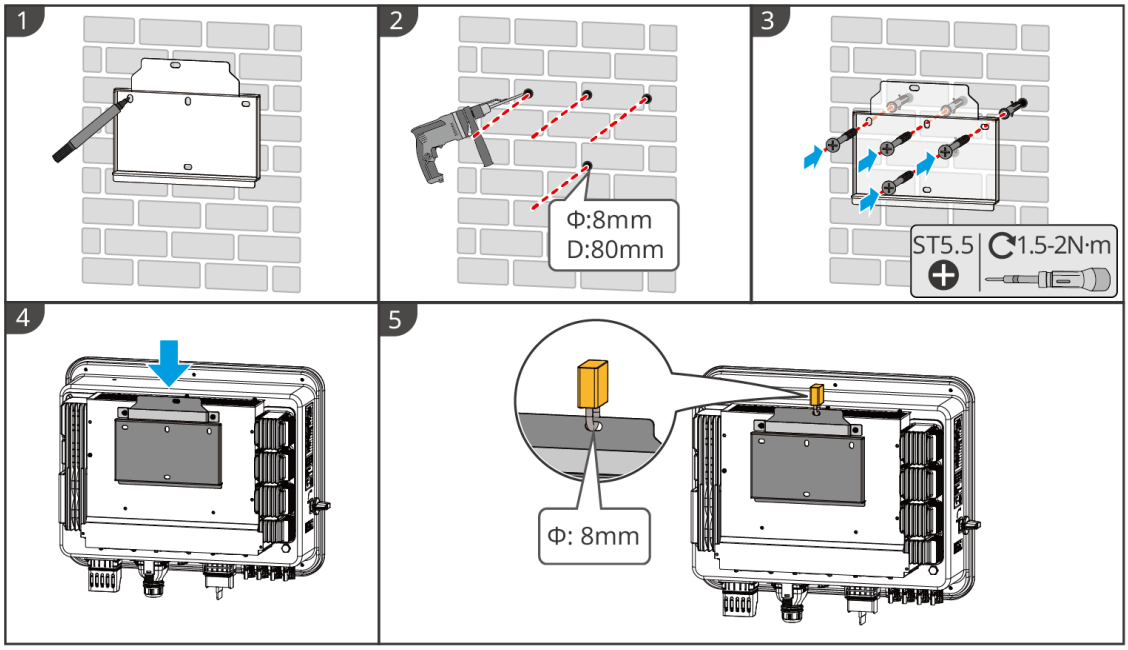


ESU10INT0007

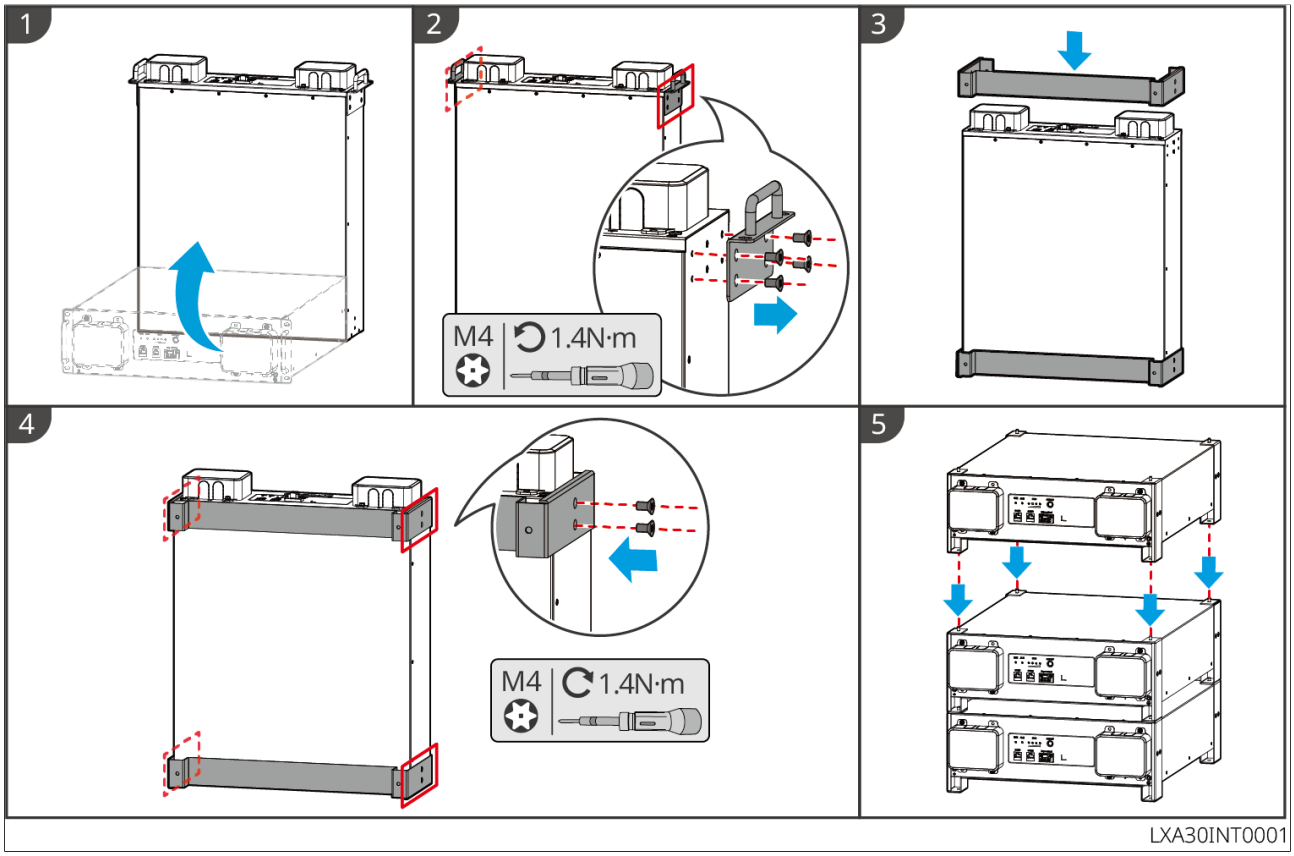
5.5 Installing the Battery System

5.5.1 LX A5.0-30

LX A5.0-30: Stacking installation

NOTICE
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.

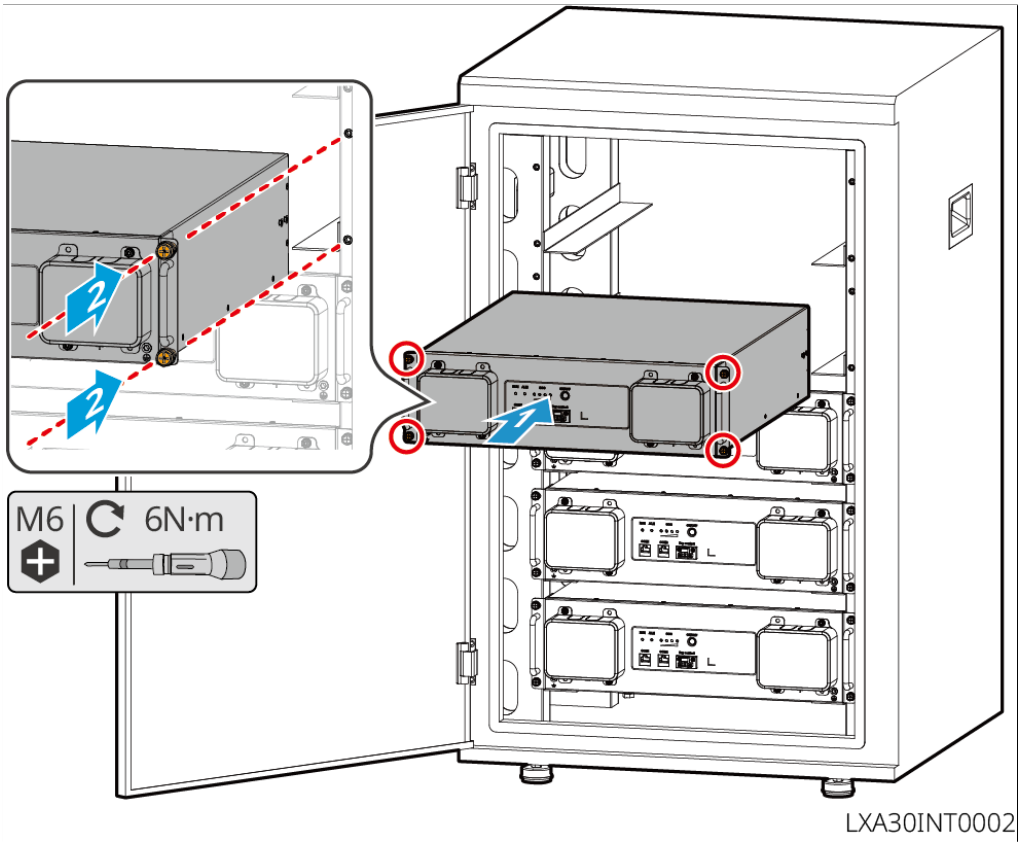


LX A5.0-30: Cabinet Installation

NOTICE

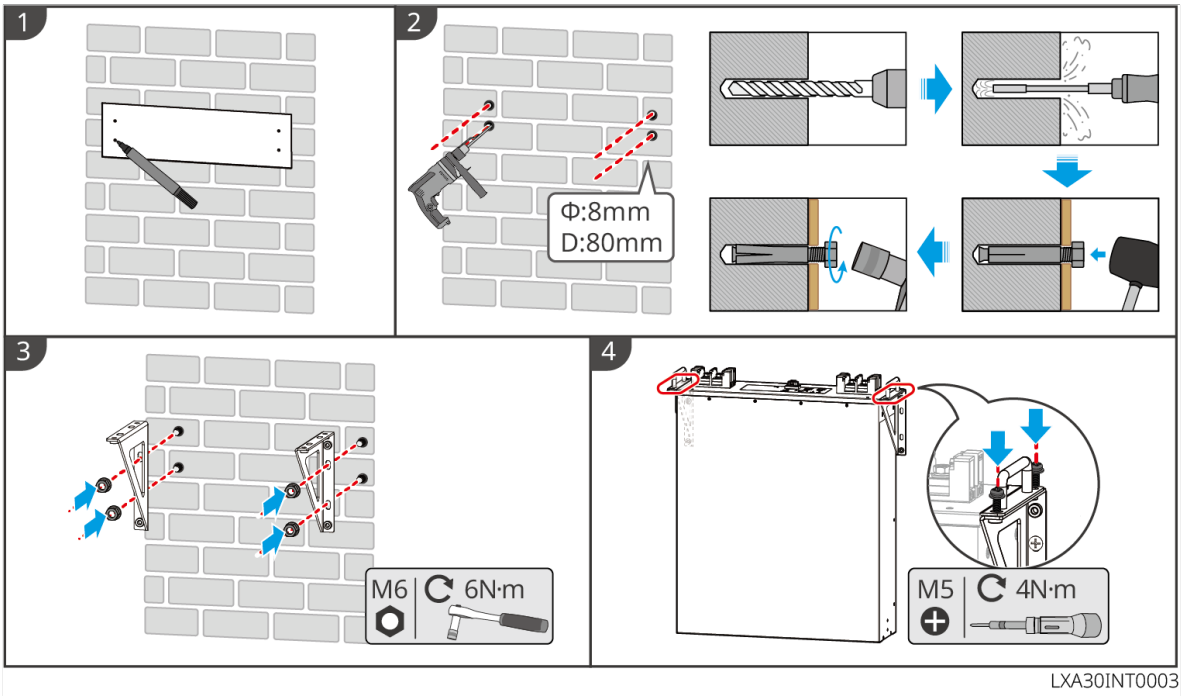
- It is recommended to install it in a 19-inch standard cabinet with a length * width of 600*800mm and above, and the height should be determined based on the thickness of the battery (133mm) and above.
- For cabinet installation, electrical labels and warning labels need to be attached to any position 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.

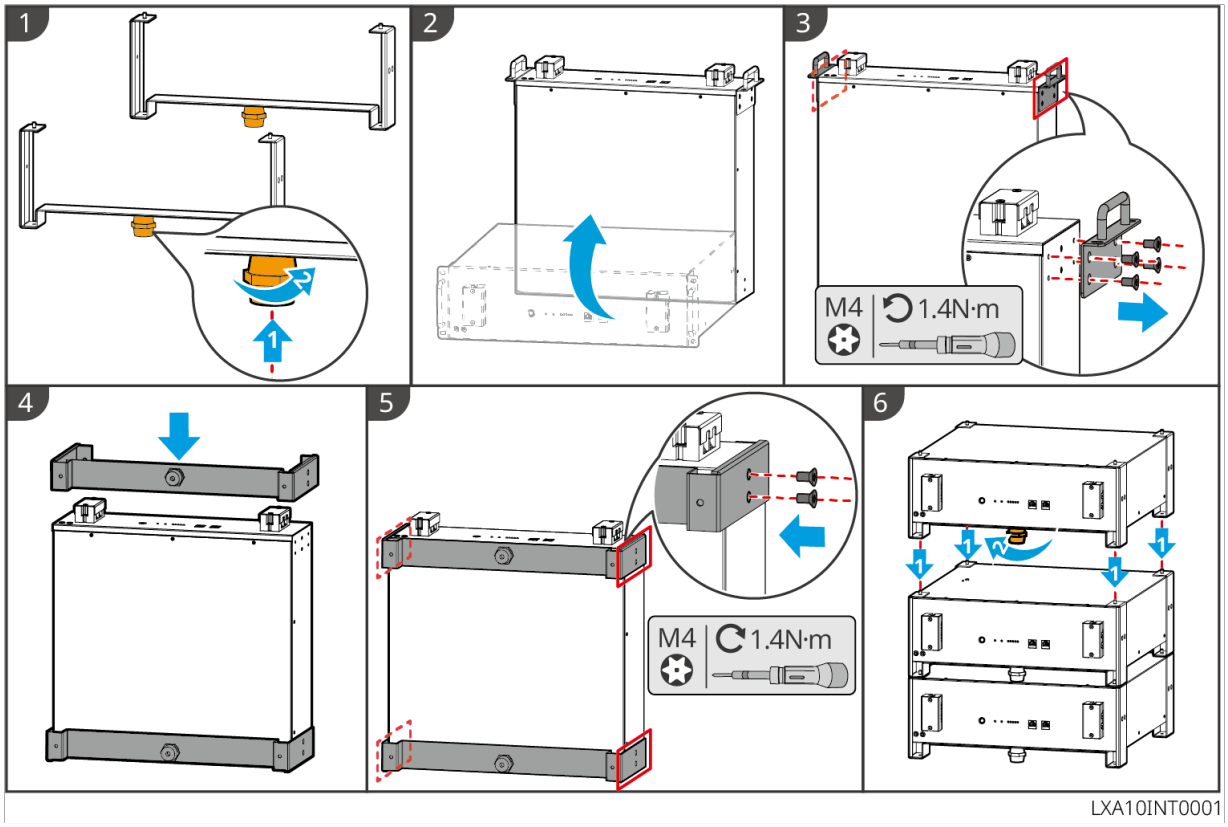


5.5.2 LX A5.0-10

LX A5.0-10: Stacking installation

NOTICE
Up to 6 batteries can be stacked for floor-mounted installation.

1. Place the battery vertically.
2. Install the bracket on the bottom of the battery, and then remove the handles from the battery.
3. Install another bracket on the battery.
4. Use screws to tight the brackets, then place the battery flatly.
5. Stack multiple batteries.
   - Insert locating pin on the bracket into locating hole. Align the positioning pins on the lower battery bracket with the positioning holes on the upper battery bracket.

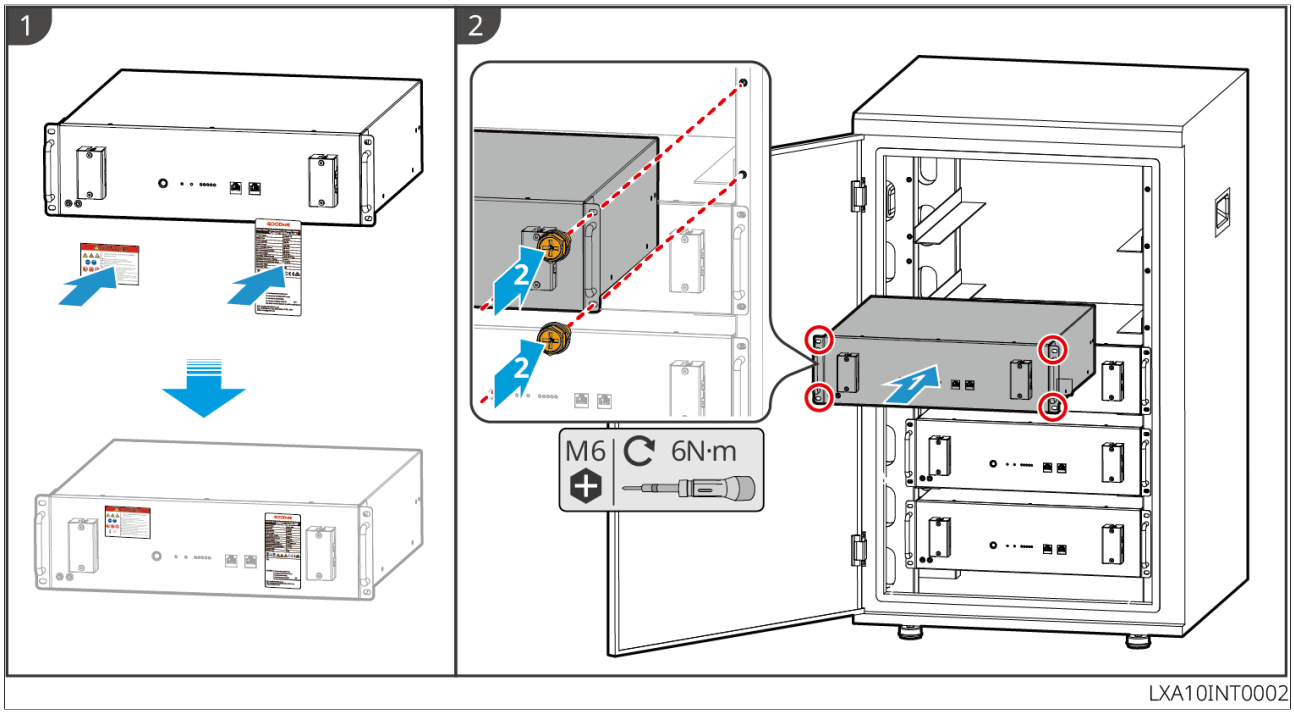


LX A5.0-10: Cabinet Installation

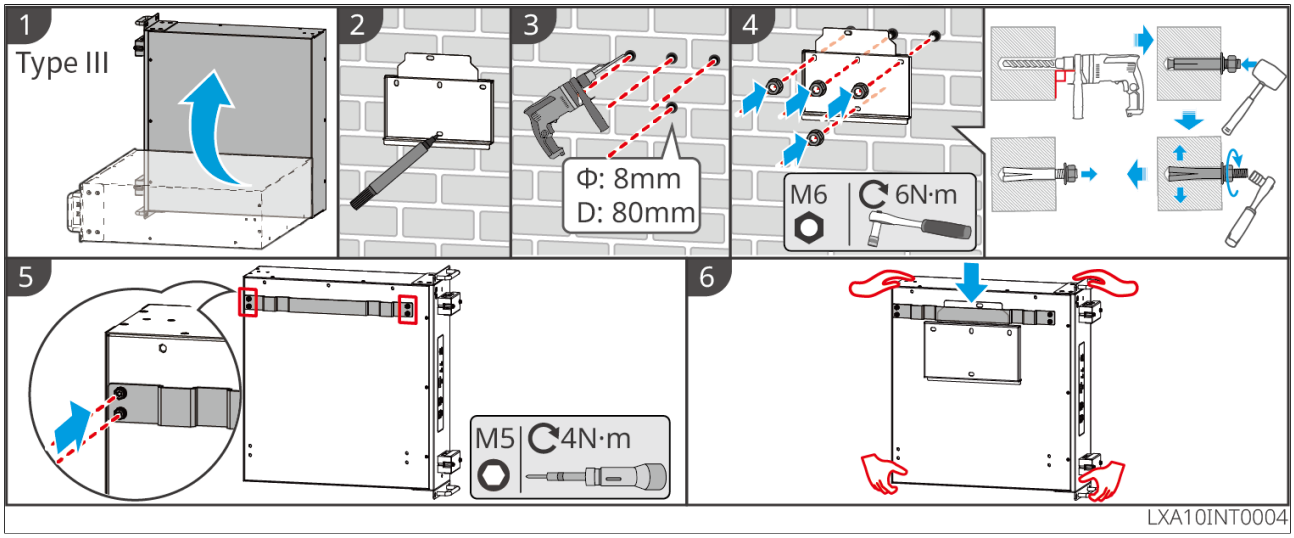
NOTICE

- It is recommended to use a 19-inch standard cabinet with physical length and width of 600*800mm and above. The height can be chosen according to the number of batteries in parallel.
- 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. Stick the electrical label and warning label to the position of the front panel of any battery.
2. Place the battery on the guide rail of the rack and secure the battery to the rack with screws from the handle.



LX A5.0-10: Wall-mounted Installation

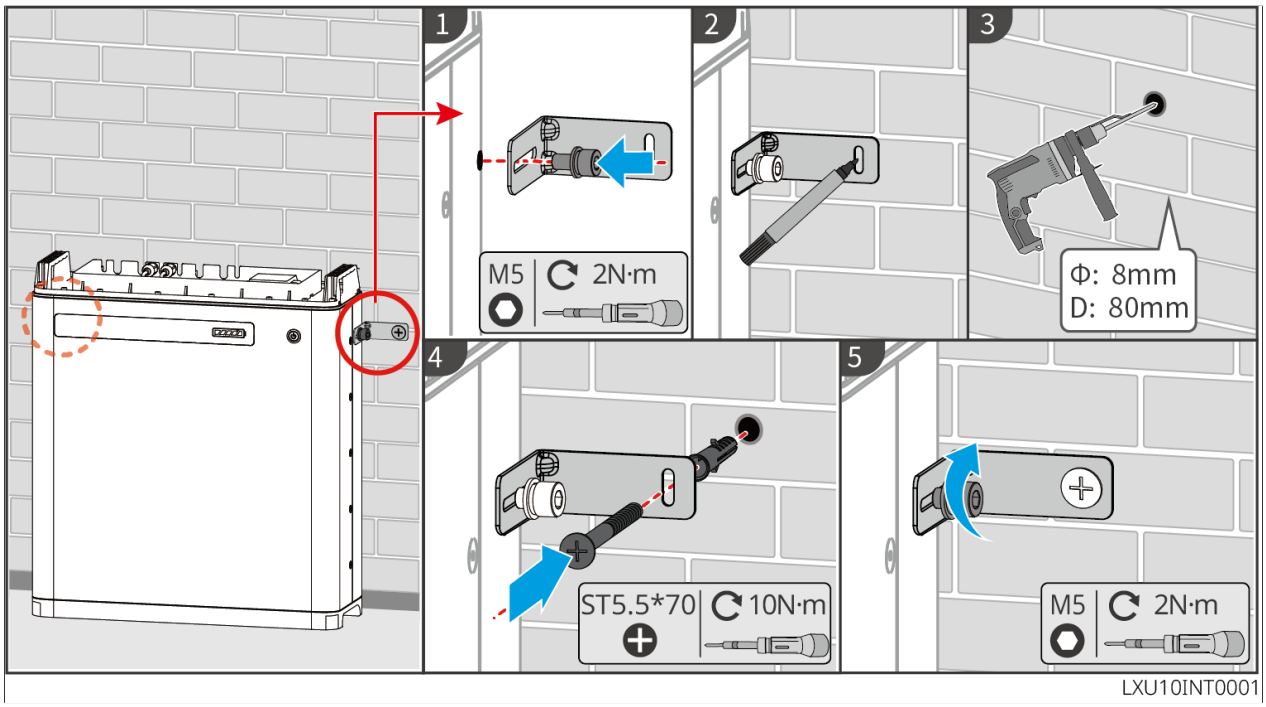


5.5.3 LX U5.4-L

LX U5.4-L: Floor-mounted installation

NOTICE
If parallel connection is required, check and select batteries with similar production dates and the same grade number for use together.

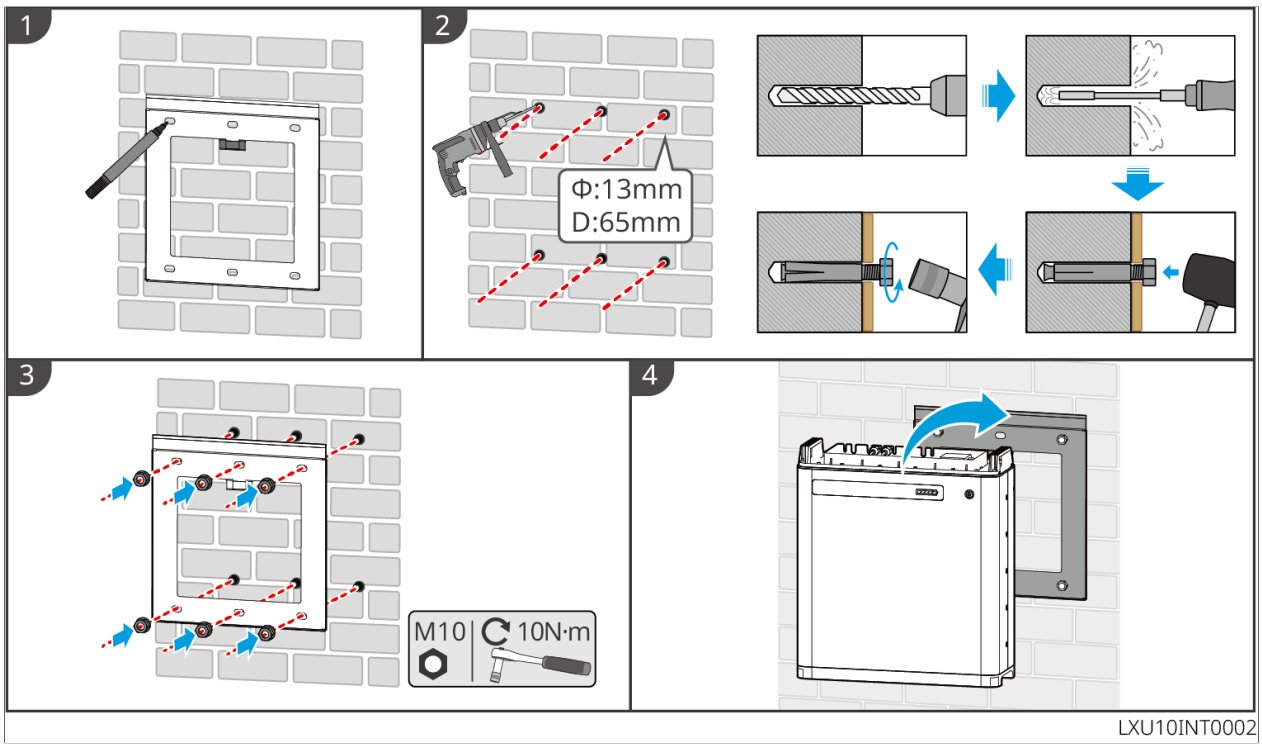
Step 1: Secure the anti-tip bracket to the battery.
Step 2: Keep the battery parallel to the wall so that the anti-tip bracket is flush against the wall. Ensure that it is securely in place, mark the hole positions with a marker pen, and remove the battery.
Step 3: Use a hammer drill to drill holes in the wall (hole diameter: 10 mm, depth: 80 mm).
Step 4: Tighten the expansion screws to a torque of 10 N·m.



LX U5.4-L: Wall-mounted Installation

NOTICE
Wall mounting requires two people.

Step 1: Make sure the wall panel is flush against the wall. Ensure that it is securely in place, mark the hole positions with a marker pen, and remove the wall panel.
Step 2: Use a hammer drill to drill holes in the wall (hole diameter: 13mm, depth: 65mm）.
Step 3: Tighten the M10 expansion bolts to a torque of 10 N·m.
Step 4: Install the battery into the backplate.

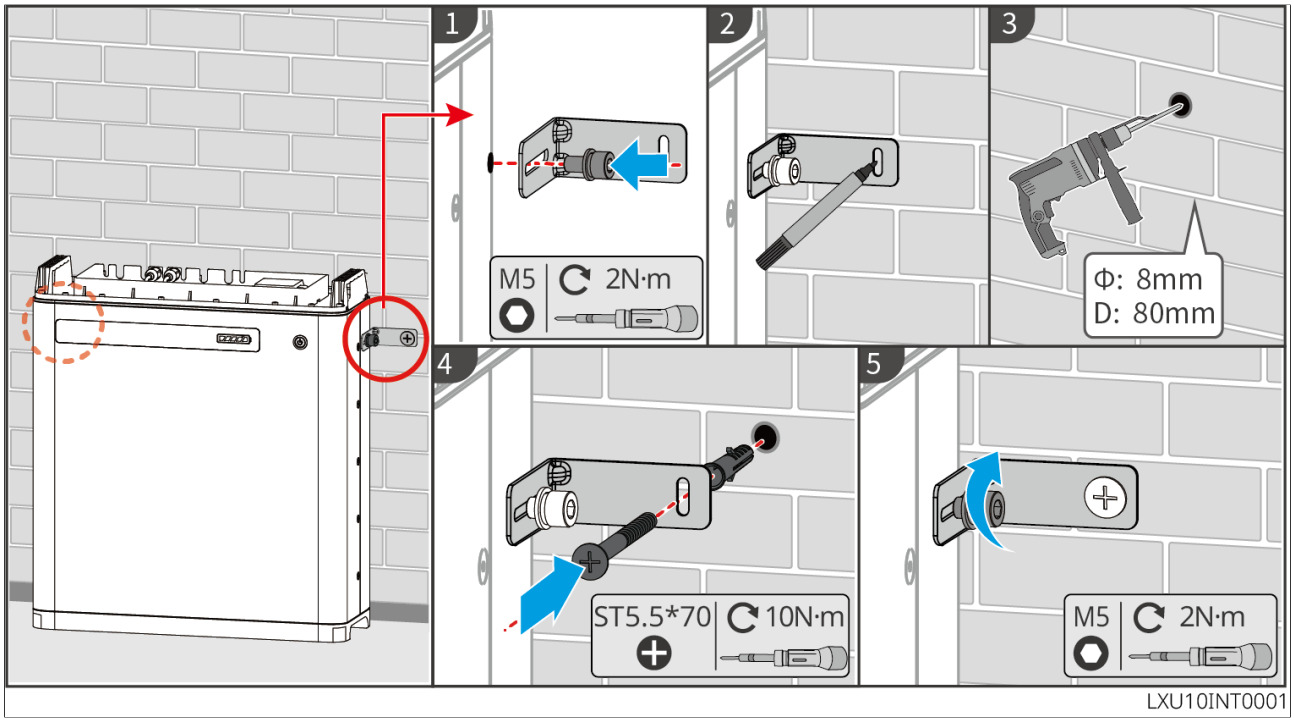


5.5.4 LX U5.4-20

LX U5.4 -20: Floor-mounted installation

NOTICE
If parallel connection is required, check and select batteries with similar production dates and the same grade number for use together.

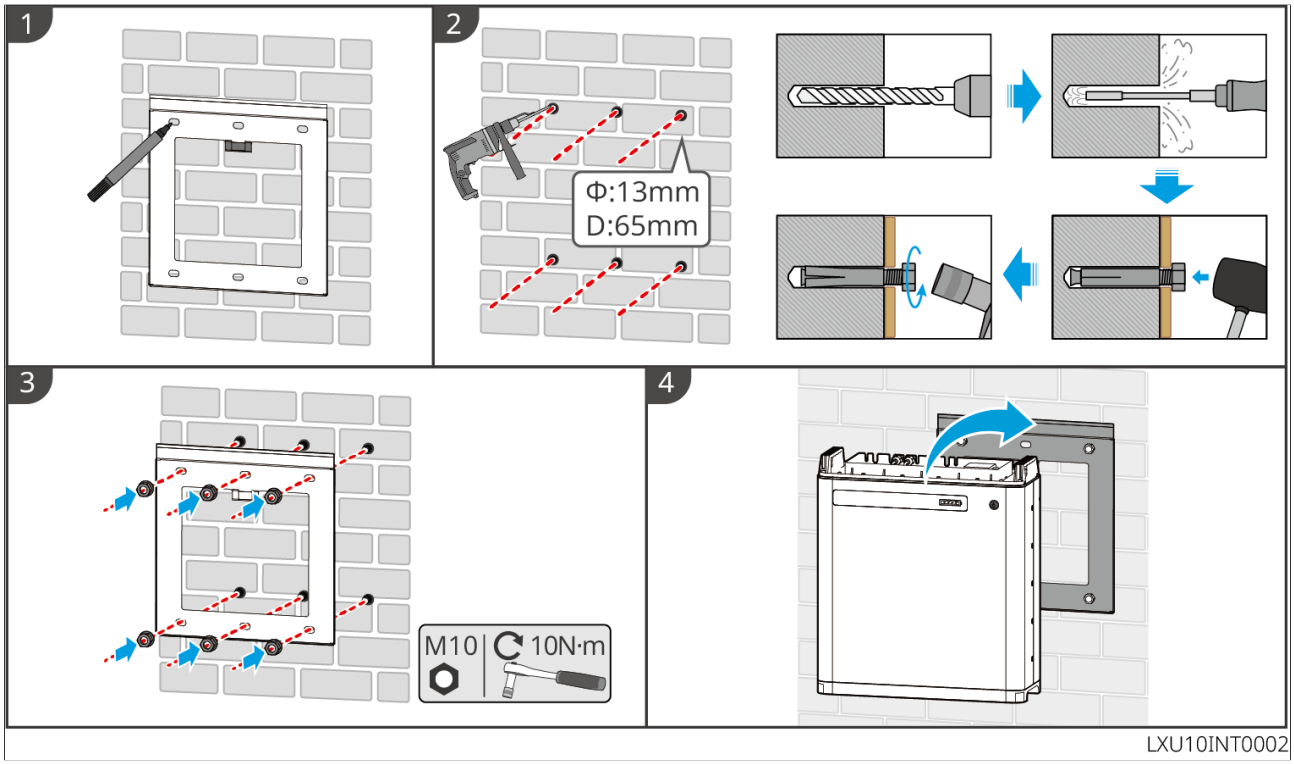
Step 1: Secure the anti-tip bracket to the battery.
Step 2: Keep the battery parallel to the wall so that the anti-tip bracket is flush against the wall. Ensure that it is securely in place, mark the hole positions with a marker pen, and remove the battery.
Step 3: Use a hammer drill to drill holes in the wall.
Step 4: Tighten the expansion screws.



LX U5.4-20: Wall-mounted Installation

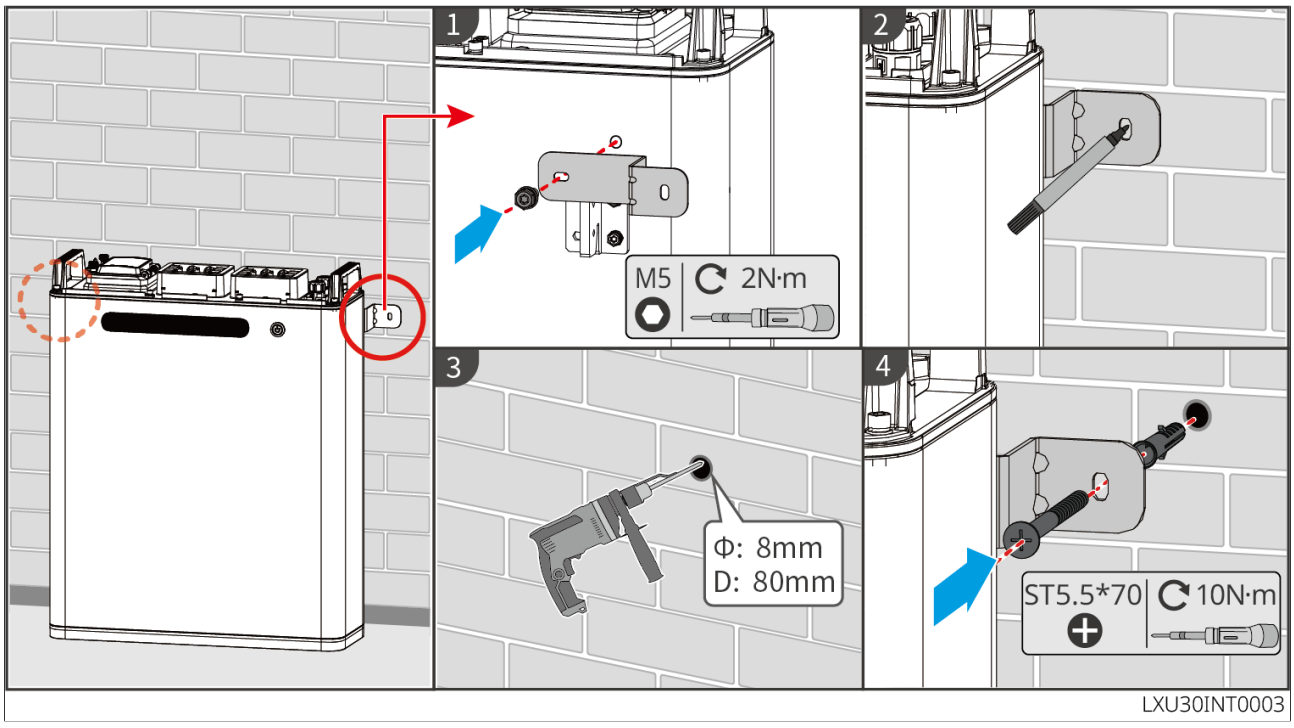
NOTICE
Wall mounting requires two people.

Step 1: Press the wall panel tightly against the wall and use a marker to mark the drilling locations.
Step 2: Use a hammer drill to drill holes in the wall.
Step 3: Secure the back plate.
Step 4: Install the battery into the backplate.

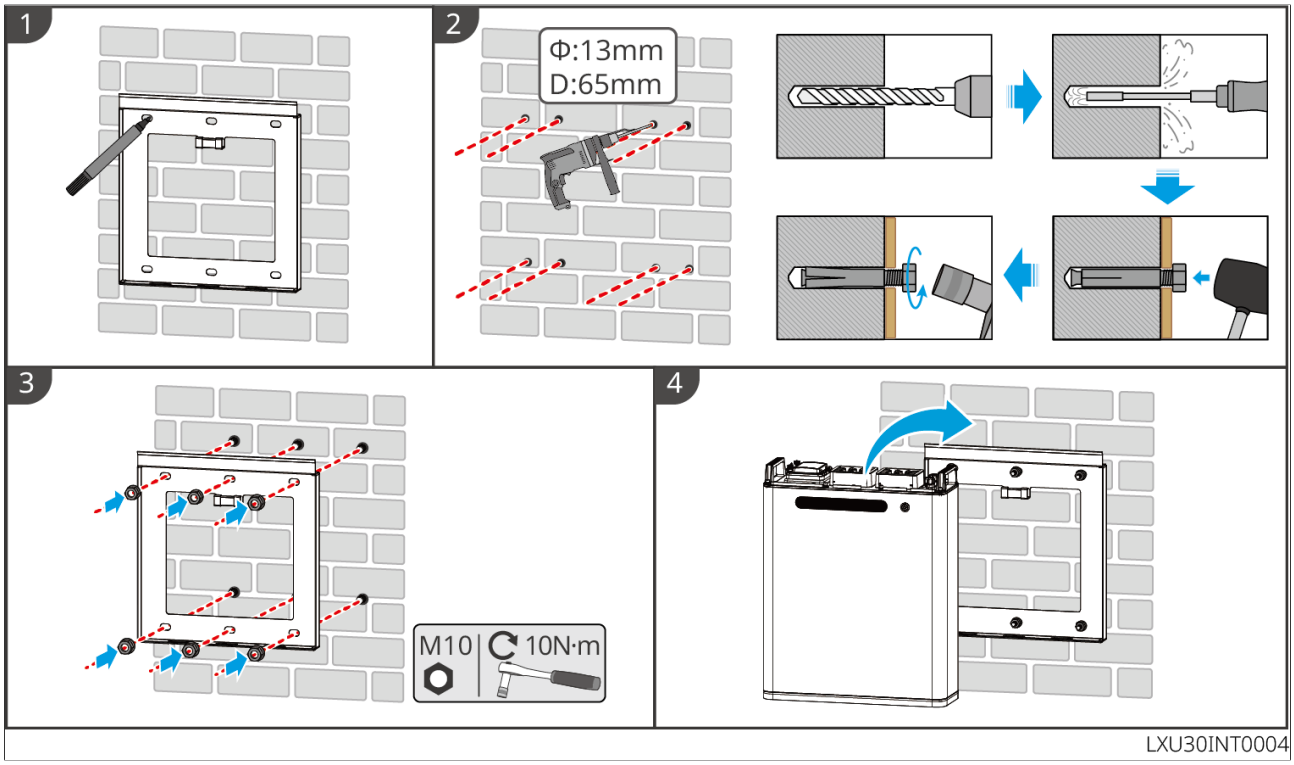


5.5.5 LX U5.0-30

LX U5.0-30: Floor-mounted Installation



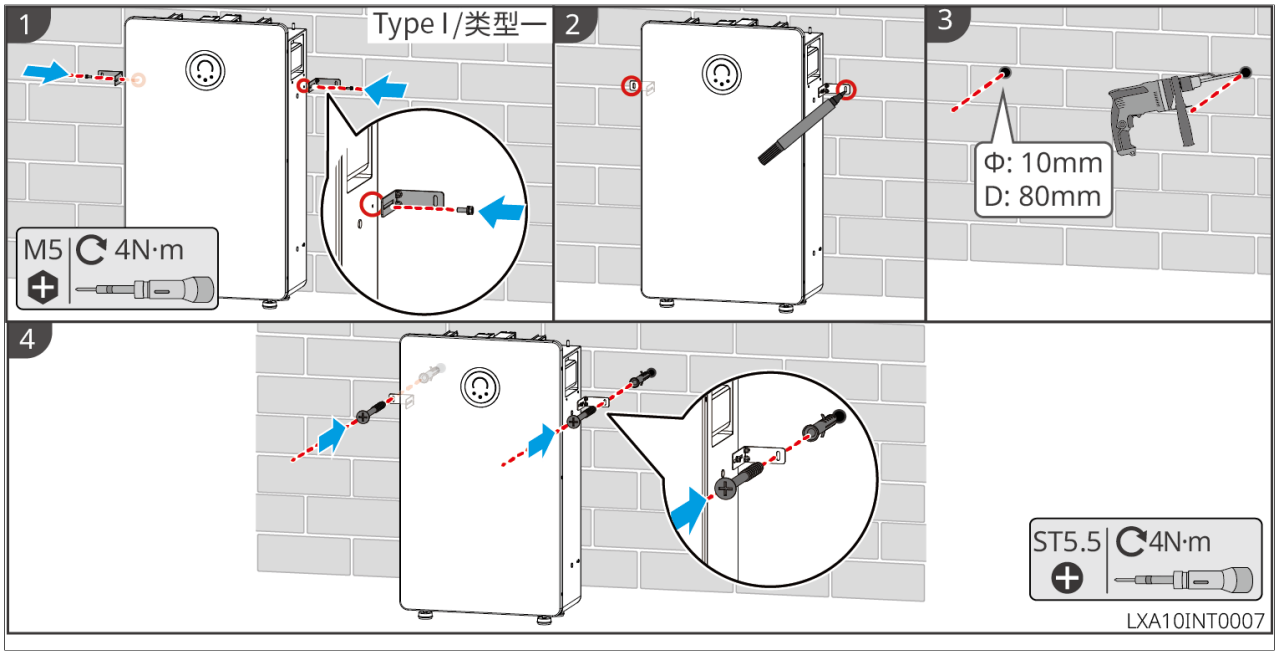
LX U5.0-30: Wall-mounted Installation



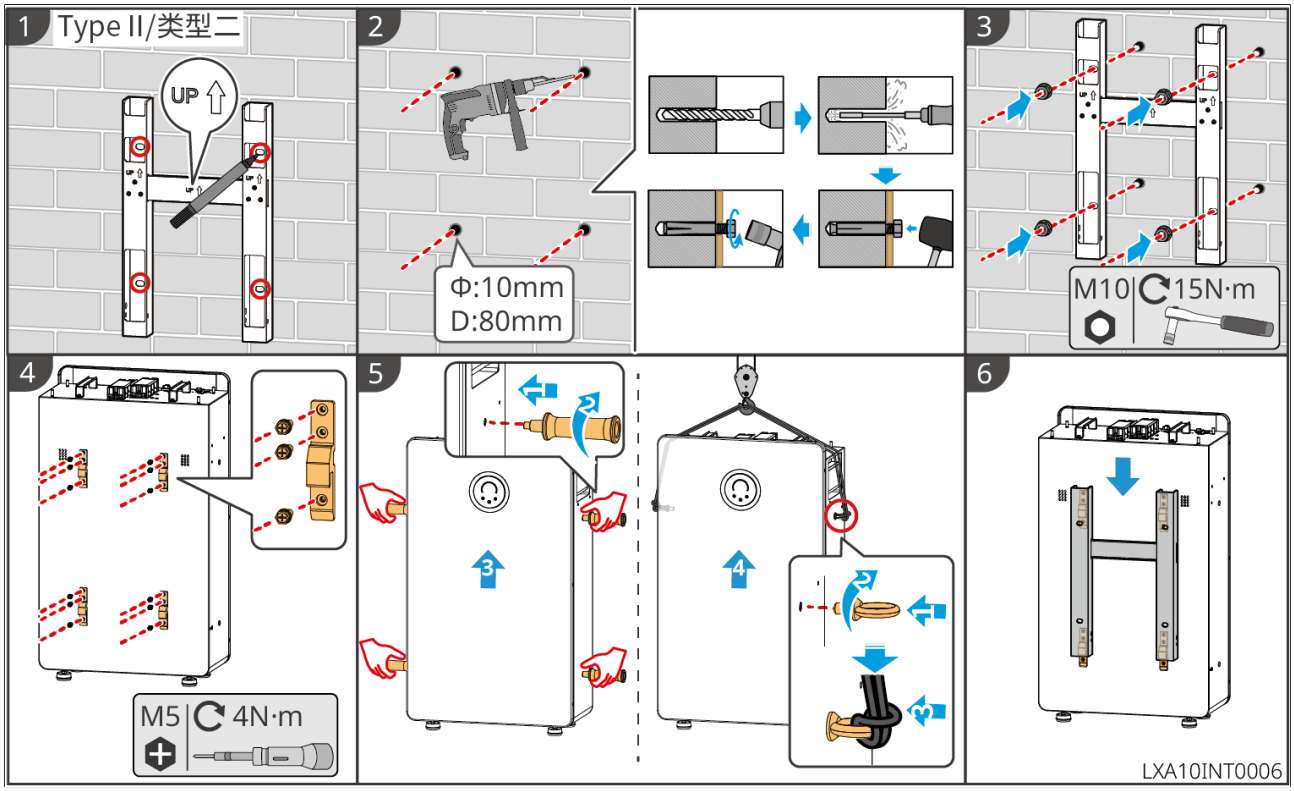
5.5.6 GW14.3-BAT-LV-G10

NOTICE
• Wall mounting requires two people.

GW14.3-BAT-LV-G10: Floor-mounted installation



GW14.3-BAT-LV-G10: Wall-mounted Installation

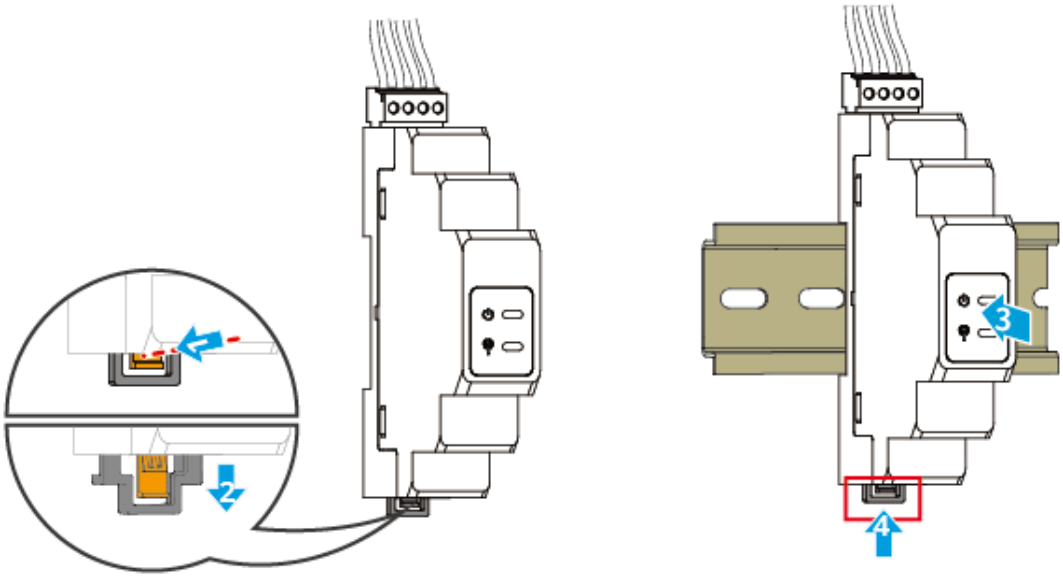


5.6 Installing the Smart Meter

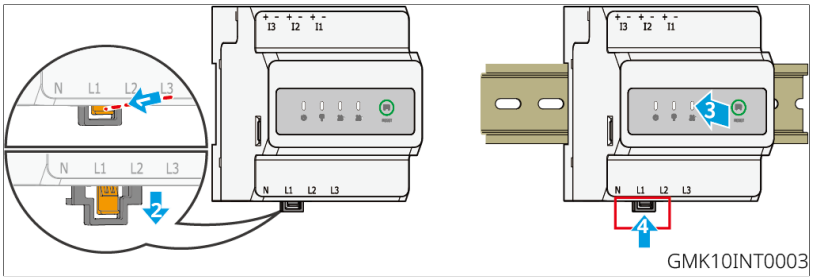
⚠WARNING

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

GMK110



GM330



6 System Wirings

DANGER

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

NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.
- For parallel systems, follow the safety precautions in the user manuals of related products in the system.

6.1 System Wiring Electrical Block Diagram

NOTICE

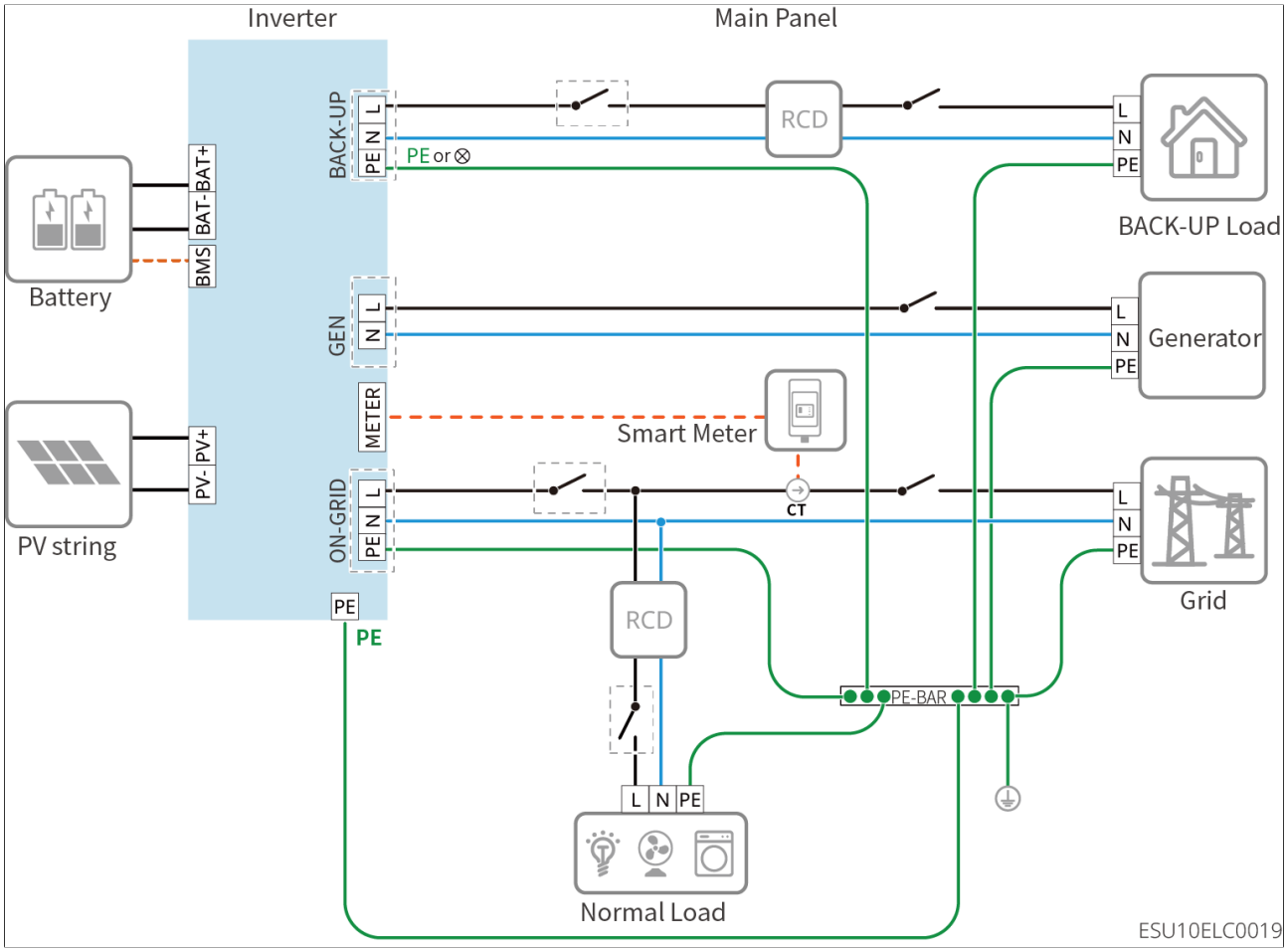
- N and PE wiring of ON-GRID and BACK-UP ports of the inverter are different according to the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- The inverter features built-in relays for the ON_GRID and BACK_UP AC ports. When the inverter is in off-grid mode, the built-in ON_GRID state relay is disconnected; when the inverter is in on-grid operation mode, the built-in ON-GRID relay is connected.
- When the inverter is powered on, the BACK-UP AC port is energized. Power off the inverter first if maintenance is required on the BACK-UP loads. Otherwise, it may cause electric shock.

N and PE cables are separately wired in the Main Panel

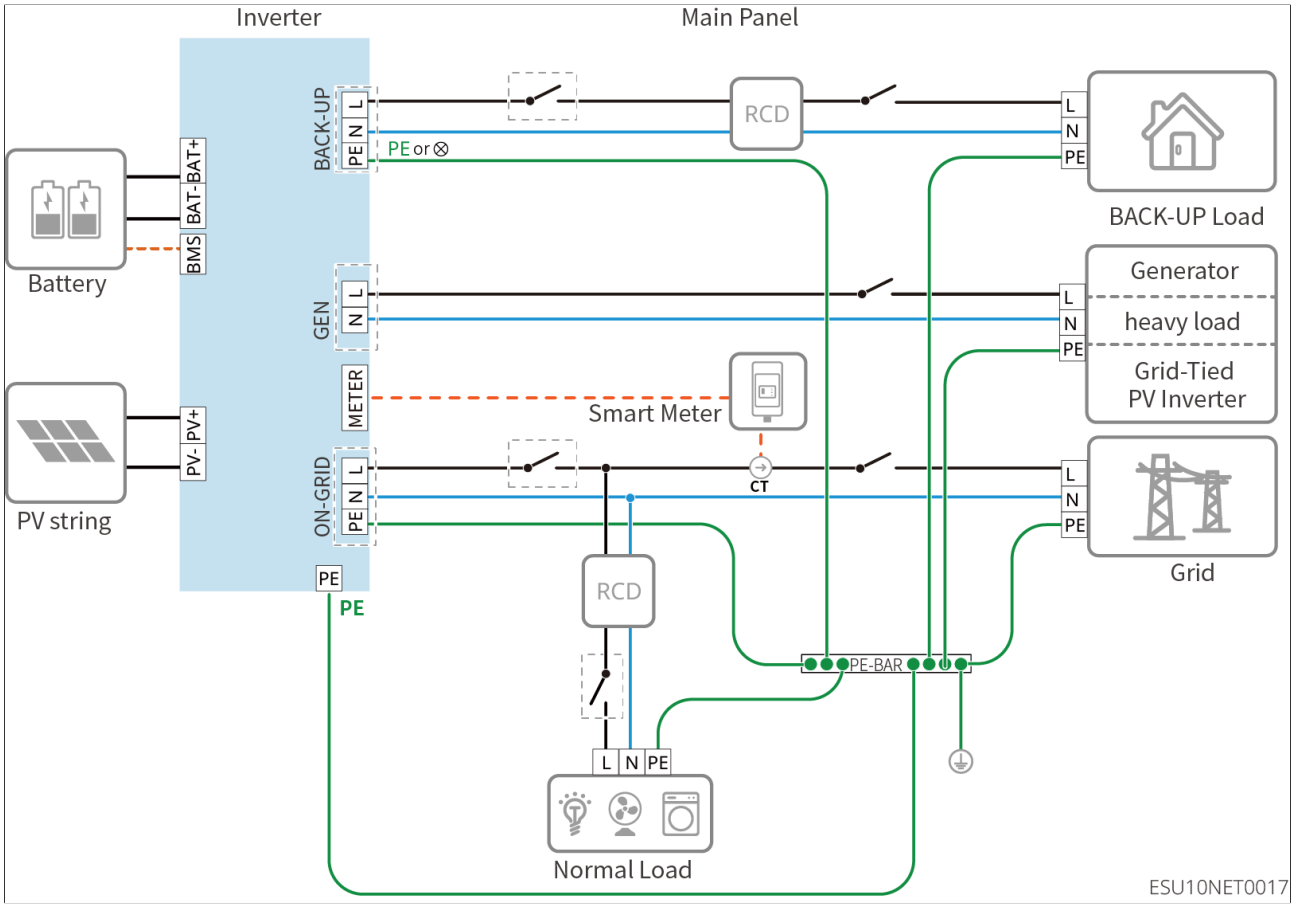
NOTICE

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

Scenario



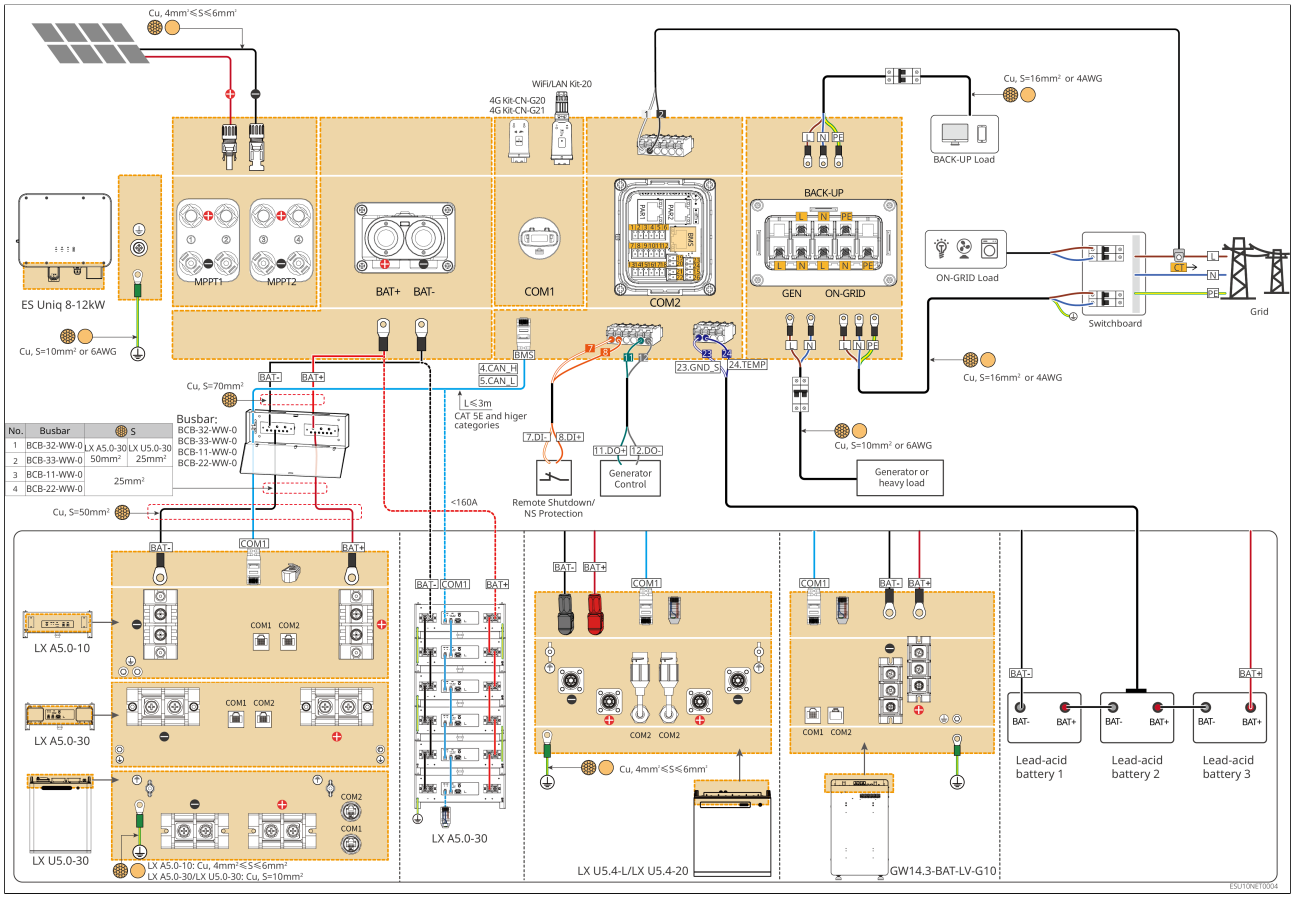
Microgrid Scenario



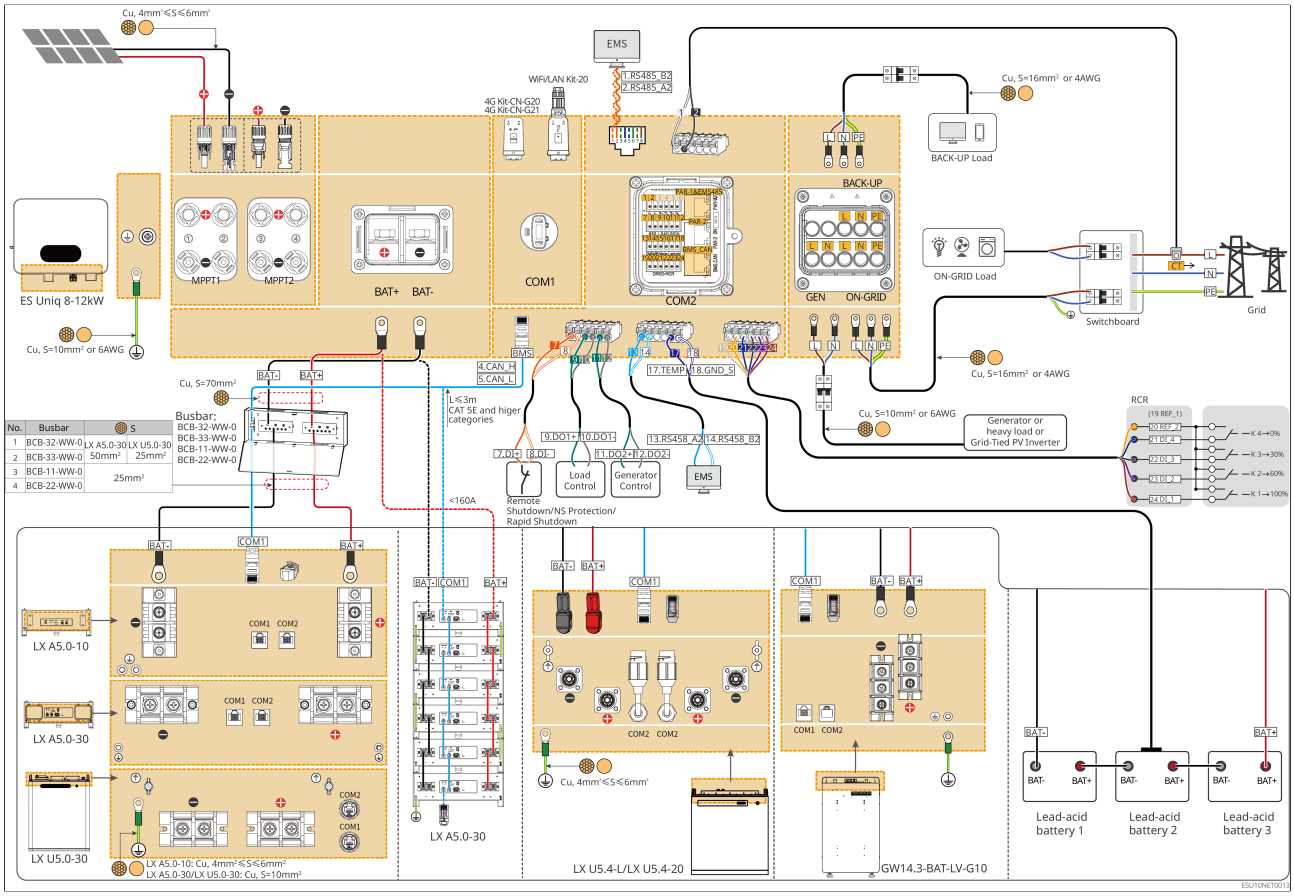
6.2 Detailed System Wiring Diagram

6.2.1 Detailed System Wiring Diagram for Single Inverter

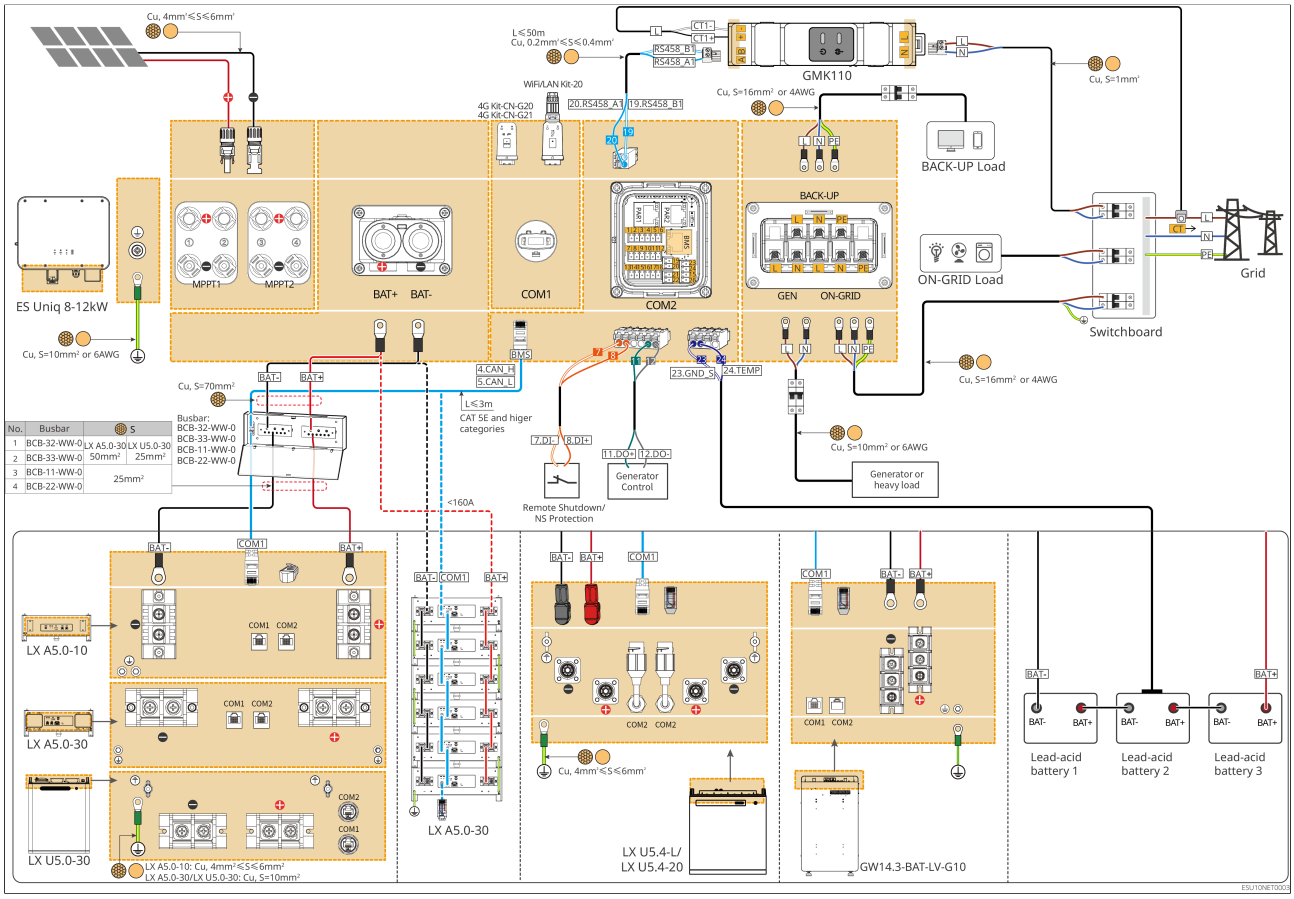
GM330 and other meters that meet the requirements can also be used in single inverter scenarios. Only the recommended types are shown here:
With built-in smart meter



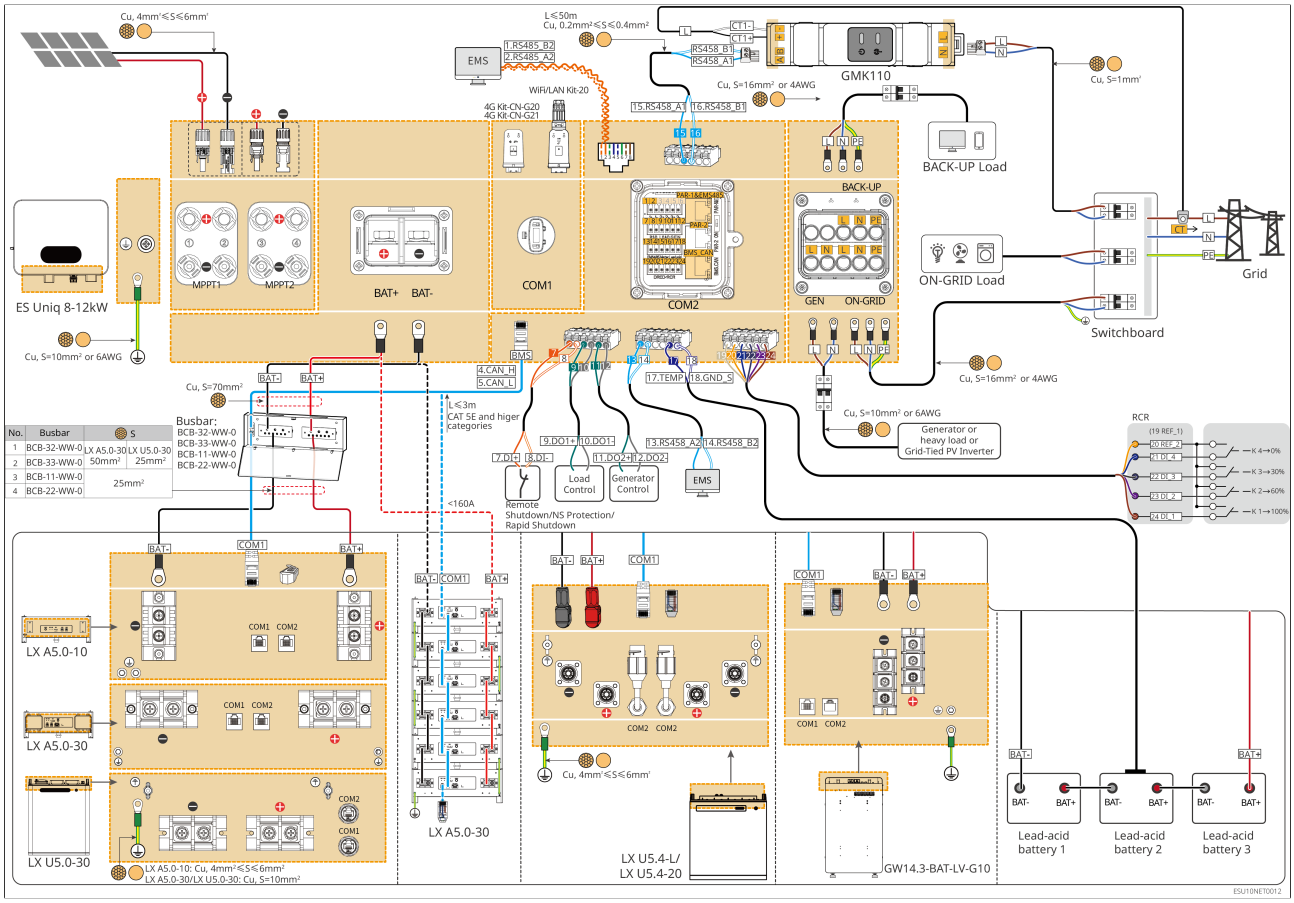
No.	Busbar	S	
1	BCB-32-WW-0	LX A5.0-30 50mm²	LX U5.0-30 25mm²
2	BCB-33-WW-0		
3	BCB-11-WW-0	25mm²	
4	BCB-22-WW-0		



Use GM110 in the system



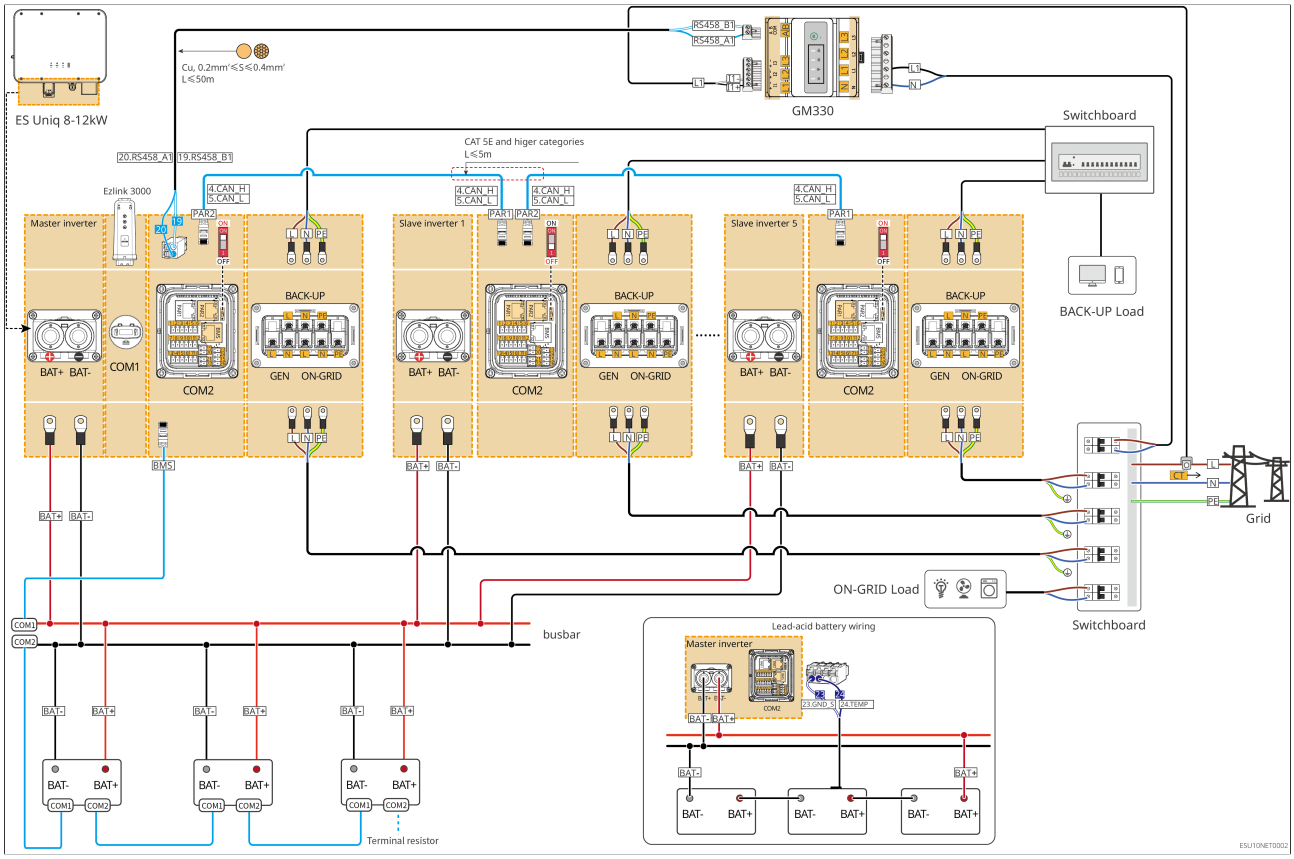
No.	Busbar	S	
1	BCB-32-WW-0	LX A5.0-30 50mm²	LX U5.0-30 25mm²
2	BCB-33-WW-0		
3	BCB-11-WW-0	25mm²	
4	BCB-22-WW-0		

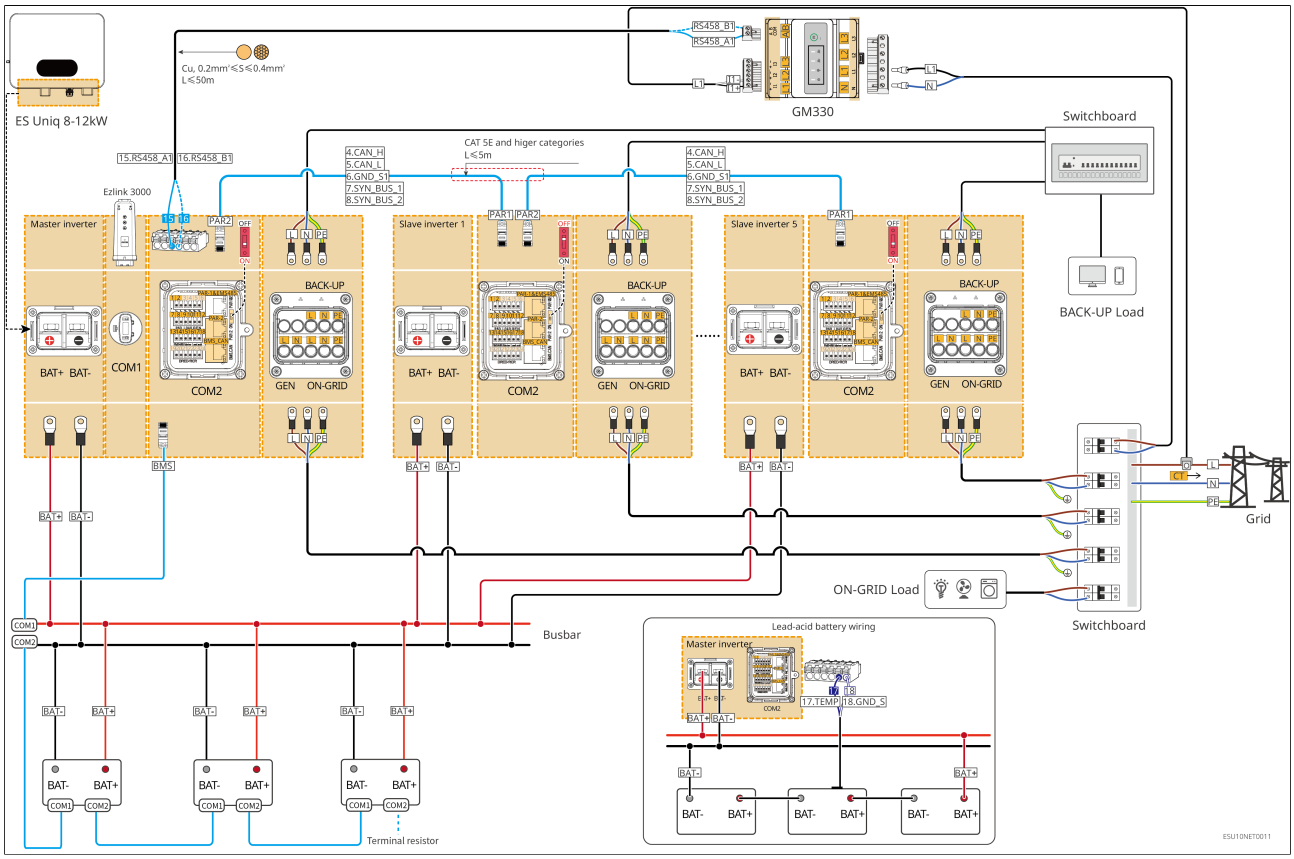


6.2.2 Detailed System Wiring Diagram for Parallel System

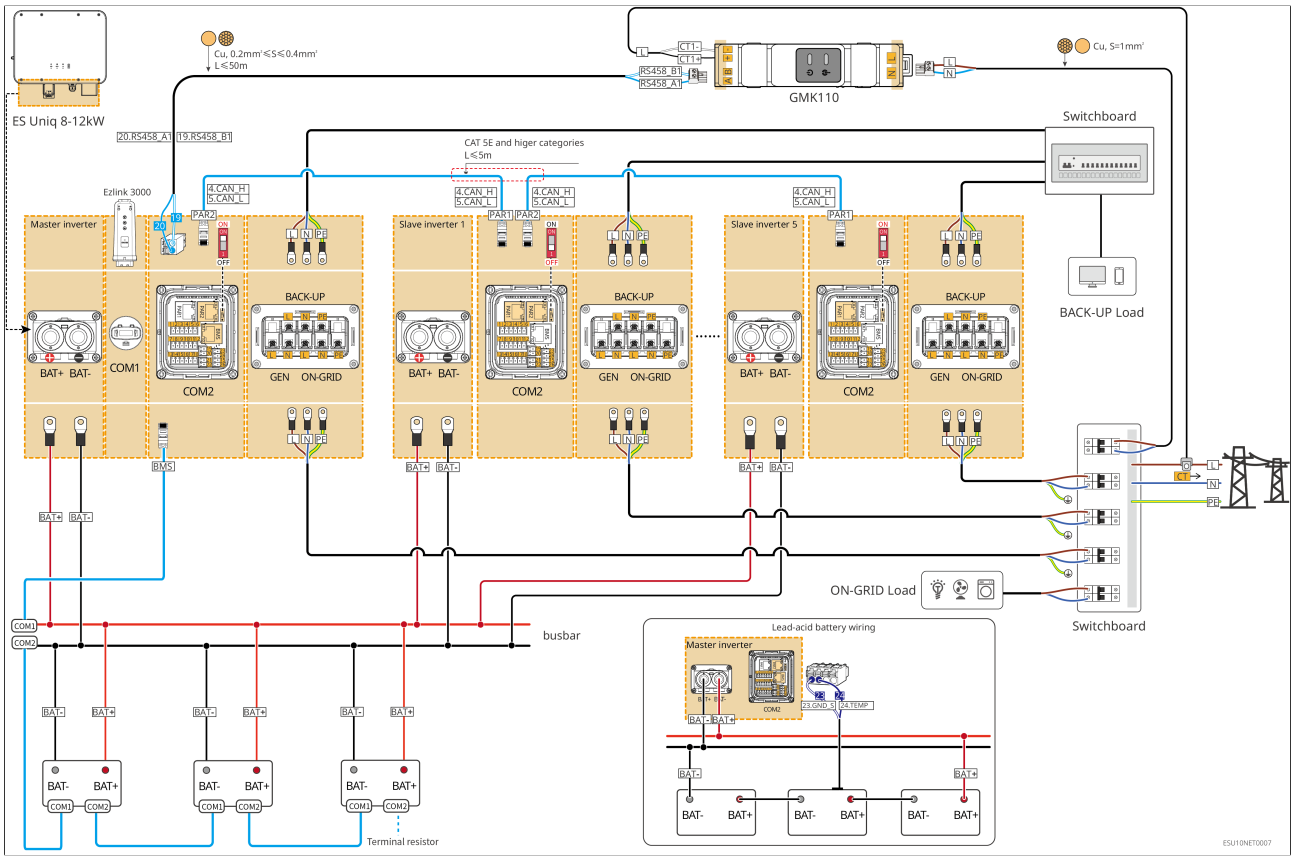
- In parallel scenarios, the inverter connected to the Ezlink and smart meter is considered as the master inverter, while all the others are slave inverters. Do not connect any smart dongle to the slave inverters.
- Generator, large loads and grid-tied PV inverter are not supported in parallel system.
- The following diagram mainly introduces parallel connections. For other port connections, refer to the single system.

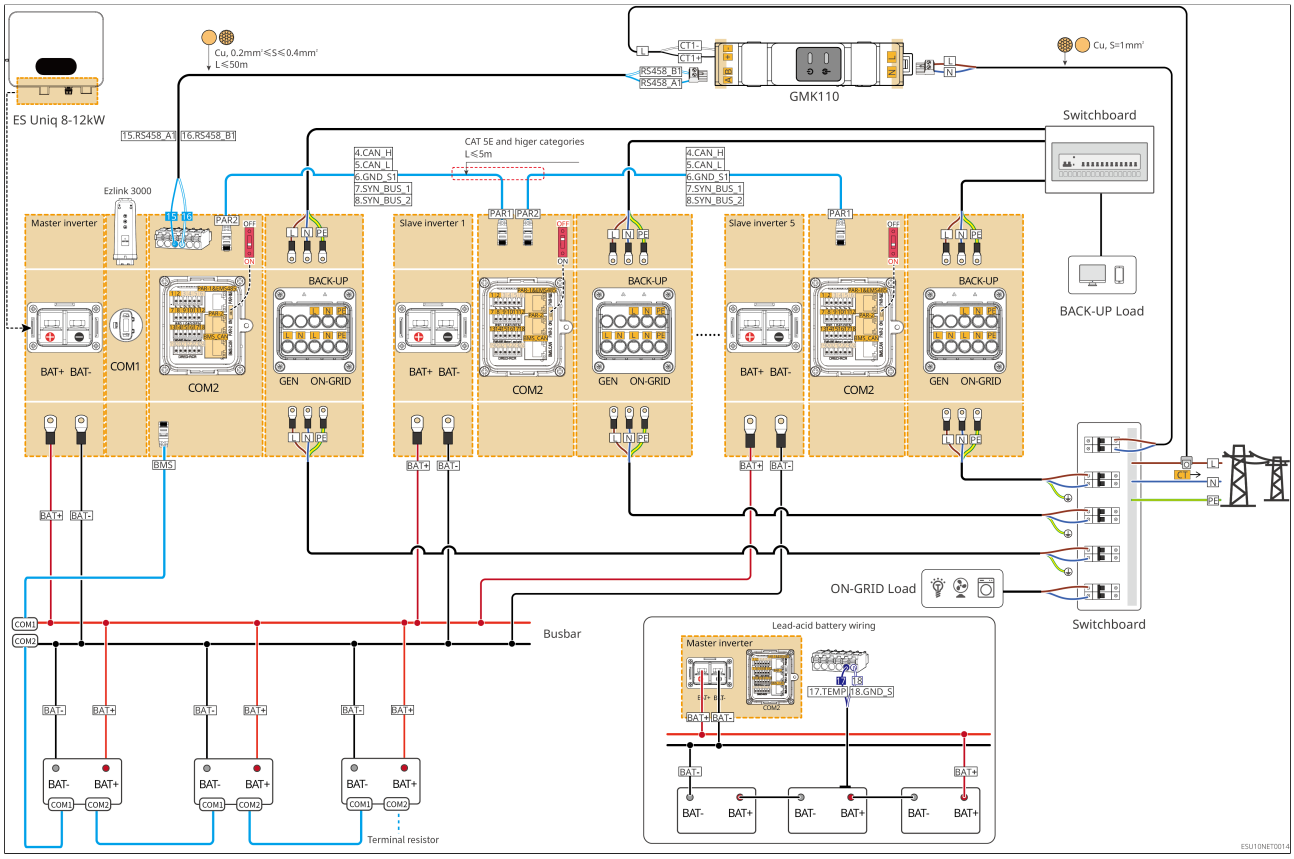
Use GM330 in the system


ES Uniq 8-12kW
Cu, 0.2mm²≤S≤0.4mm²
L≤50m
RS458_B1
RS458_A1
GM330
Switchboard
CAT 5E and higer categories
L≤5m
20.RS458_A1
19.RS458_B1
4.CAN_H
5.CAN_L
Ezlink 3000
Master inverter
Slave inverter 1
Slave inverter 5
PAR1
PAR2
ON
OFF
BACK-UP
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
BACK-UP Load
Grid
ON-GRID Load
busbar
Lead-acid battery wiring
23.GND_S
24.TEMP
Terminal resistor
ESU10NET0002


ES Uniq 8-12kW
Cu, 0.2mm²≤S≤0.4mm²
L≤50m
RS458_B1
RS458_A1
GM330
Switchboard
CAT 5E and higer categories
L≤5m
15.RS458_A1
16.RS458_B1
4.CAN_H
5.CAN_L
6.GND_S1
7.SYN_BUS_1
8.SYN_BUS_2
Ezlink 3000
Master inverter
Slave inverter 1
Slave inverter 5
PAR1
PAR2
ON
OFF
BACK-UP
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
BACK-UP Load
Grid
ON-GRID Load
Busbar
Lead-acid battery wiring
17.TEMP
18.GND_S
Terminal resistor
ESU10NET0011

Use GM110 in the system





6.3 Preparing Materials

WARNING

- Do not connect loads between the inverter and the AC switch that is directly connected to the inverter.
- Install one AC output circuit breaker for each inverter. Multiple inverters cannot share one AC circuit breaker.
- An AC circuit breaker shall be installed on the AC side to make sure that the inverter can be safely disconnected with the grid when an exception happens. Select the appropriate AC circuit breaker in compliance with local laws and regulations.
- When the inverter is powered on, the BACK-UP AC port is energized. Power off the inverter first if maintenance is required on the BACK-UP loads. Otherwise, it may cause electric shock.
- For cables used in the same system, it is recommended that the conductor material, cross sectional area, length, etc. of the cables should be consistent.
  - The 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	Comment
1	ON-GRID circuit breaker	Nominal current ≥90A, nominal voltage ≥230V	Prepared by customers.

No.	Circuit breaker	Recommended specifications	Comment
2	Battery breaker	Optional in compliance with local laws and regulations • GW8000-ES-C10: nominal current ≥200A, nominal voltage ≥60V • GW10K-ES-C10: nominal current ≥250A, nominal voltage ≥60V • GW12K-ES-C10: nominal current ≥300A, nominal voltage ≥60V	Prepared by customers.
3	GEN breaker	• GW8000-ES-C10: nominal current ≥63A, nominal voltage ≥230V • GW10K-ES-C10, GW12K-ES-C10: nominal current ≥75A, nominal voltage ≥230V	Prepared by customers.
4	BACK-UP load breaker	Nominal current ≥90A, nominal voltage ≥230V	Prepared by customers.
5	RCD	Optional in compliance with local laws and regulations • Type A • ON-GRID RCD: 300mA • BACK-UP RCD: 30mA	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: 10mm^2	Prepared by customers

No.	Cable	Recommended specifications	Acquisition method
2	Battery PE cable	• Single-core outdoor copper cable • Conductor cross-sectional area: • LX A5.0-10: 4mm²-6mm² • LX A5.0-30: 10mm² • LX U5.4-L: 4mm²-6mm² • LX U5.4-20: 4mm²-6mm² • LX U5.0-30: 10mm² • GW14.3-BAT-LV-G10: 10mm²	• Prepared by customers • LX A5.0-30, LX A5.0-10: Accessory acquisition (optional)
3	PV DC cable	• Commonly used outdoor photovoltaic cable • Conductor cross-sectional area: 4mm²--6mm² • Outer diameter: 5.9mm--8.8mm	Prepared by customers

No.	Cable	Recommended specifications	Acquisition method
4	Battery DC cable	• Single-core outdoor copper cable • Wiring requirements for inverter battery ports: ◦ Conductor cross-sectional area: 70mm² ◦ Outer diameter: 15.7mm--16.7mm • Requirements for cables between battery and busbar: ◦ LX A5.0-30, cross sectional area of conductor: 50mm² ◦ LX A5.0-10, LX U5.0-30, cross sectional area of conductor: 25mm² ◦ GW14.3-BAT-LV-G10, conductor cross-sectional area: 70 mm² • Requirements for cables between batteries: ◦ LX A5.0-30, cross sectional area of conductor: 50mm² ◦ LX A5.0-10, LX A5.4-20, LX U5.0-30, conductor cross-sectional area: 25 mm² ◦ GW14.3-BAT-LV-G10, conductor cross-sectional area: 70 mm²	• Prepared by customers • LX U5.0-30: Supports purchase from GoodWe • LX A5.0-30, LX A5.0-10: Accessory acquisition (optional)

No.	Cable	Recommended specifications	Acquisition method
5	AC cable	• AC input and output cables of inverter (BACKUP/GRID): ◦ Conductor cross-sectional area: 16 mm^2 or 4 AWG ◦ Multi-core outdoor copper cable outer diameter: 23.6mm--24.8mm ◦ Outer diameter of single-core outdoor copper cable: 9.5mm--9.9mm • Generator power cable (GEN): ◦ Conductor cross-sectional area: 10mm^2 or 6 AWG ◦ Multi-core outdoor copper cable outer diameter: 20mm--21mm ◦ Outer diameter of single-core outdoor copper cable: 8.3mm--8.7mm	Prepared by customers
6	Smart meter power cable	• Outdoor copper cable • Conductor cross-sectional area: 1mm^2	Prepared by customers
7	Battery communication cable	Communication between the combiner box and the battery, as well as between batteries, requires the use of CAT 5E or higher specification standard shielded Ethernet cables and RJ45 shielded connectors.	• Prepared by customers • LX A5.0-10, LX A5.0-30: Accessory acquisition (optional) • GW14.3-BAT-LV-G10: Standard configuration

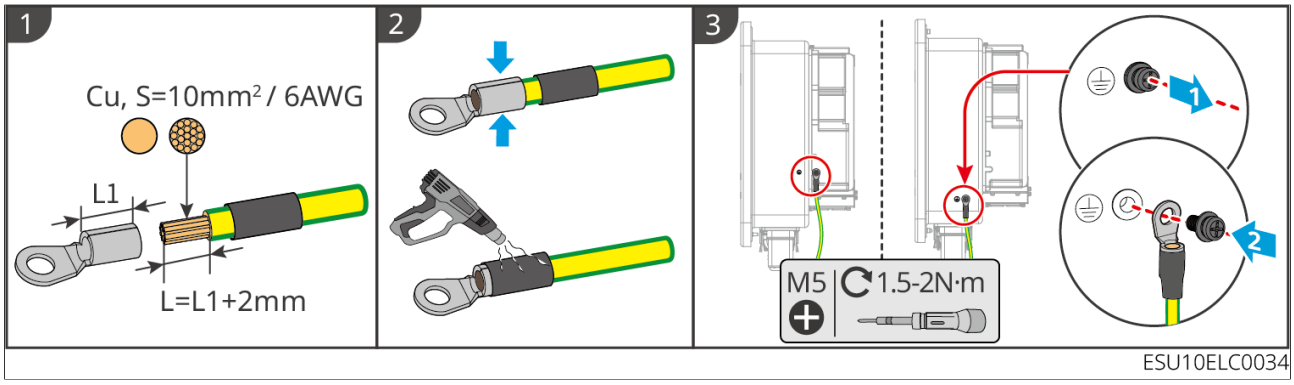
No.	Cable	Recommended specifications	Acquisition method
8	Smart meter RS485 communication cable	• Shielded twisted pair cable • Conductor cross-sectional area: 0.2mm²--0.4mm²	Prepared by customers
9	Communication cable for parallel connected inverters	CAT 5E and above standard shielded network cable and RJ45 shielded connector	Prepared by customers
10	Remote shutdown and NS Protection communication line	• Copper core twisted pair cable • Conductor cross-sectional area: 0.2mm²--0.4mm²	Prepared by customers

6.4 Connecting the PE Cable

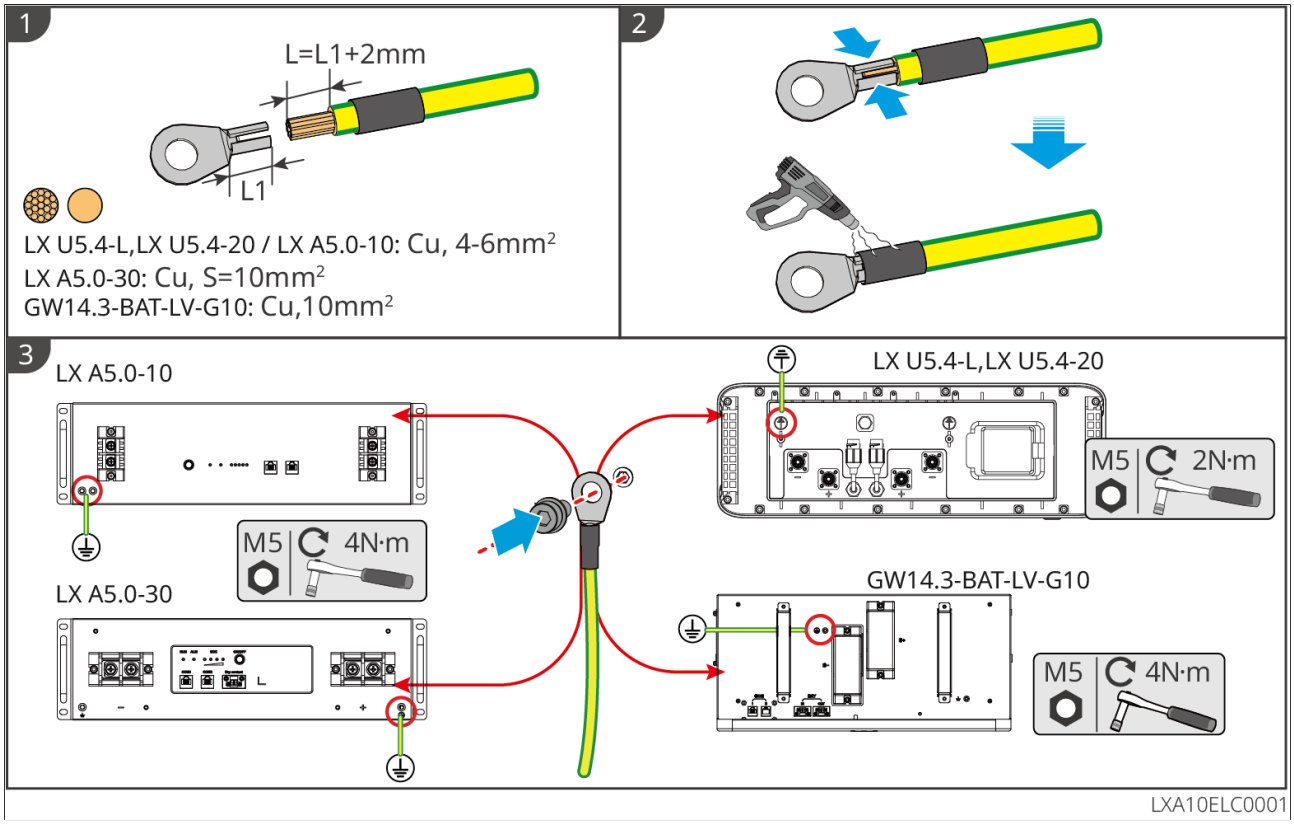
⚠WARNING

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

Inverter



Battery



6.5 Connecting the PV Cable

DANGER

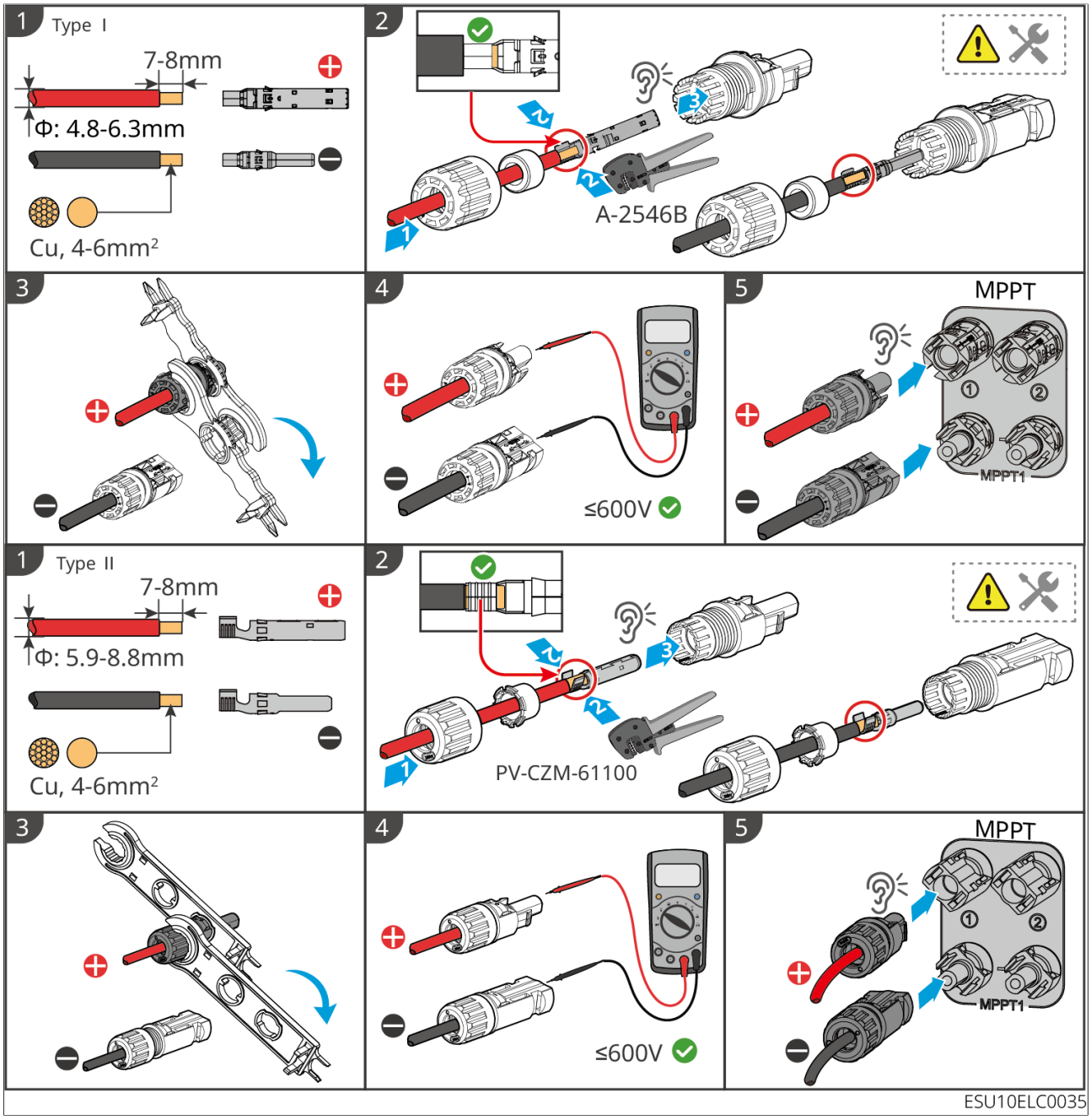
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property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

⚠WARNING

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

NOTICE

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

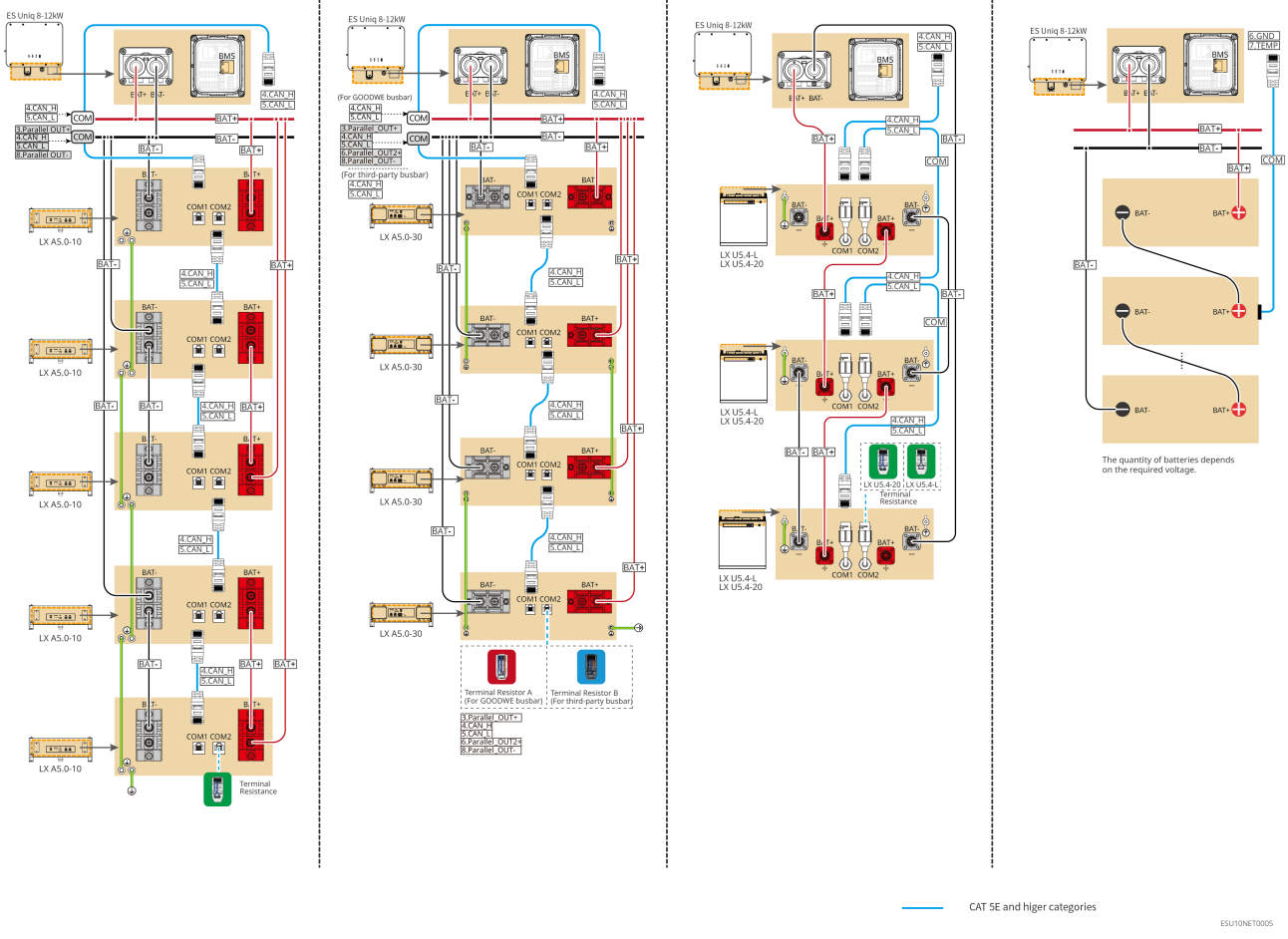


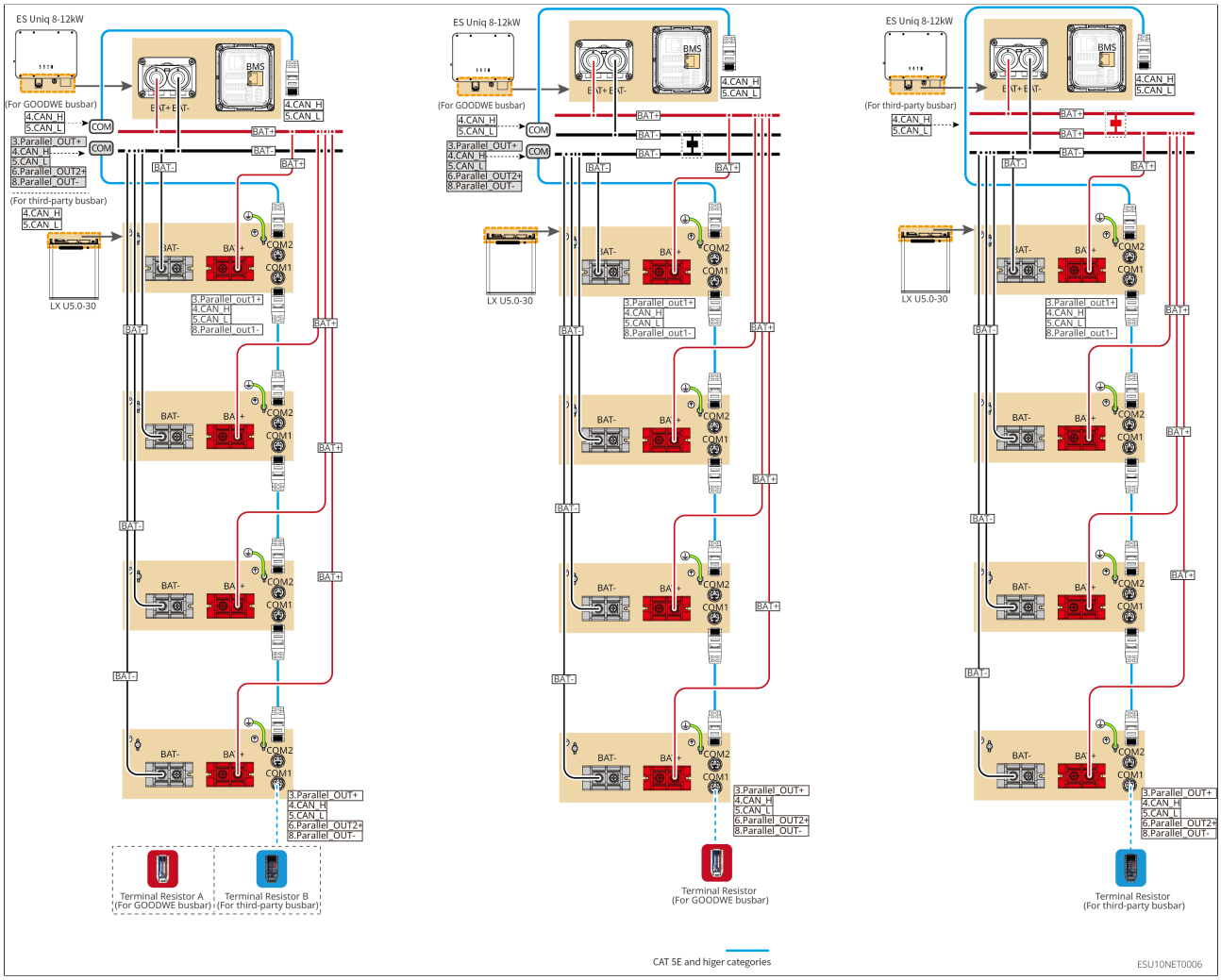
6.6 Connecting the Battery Cable

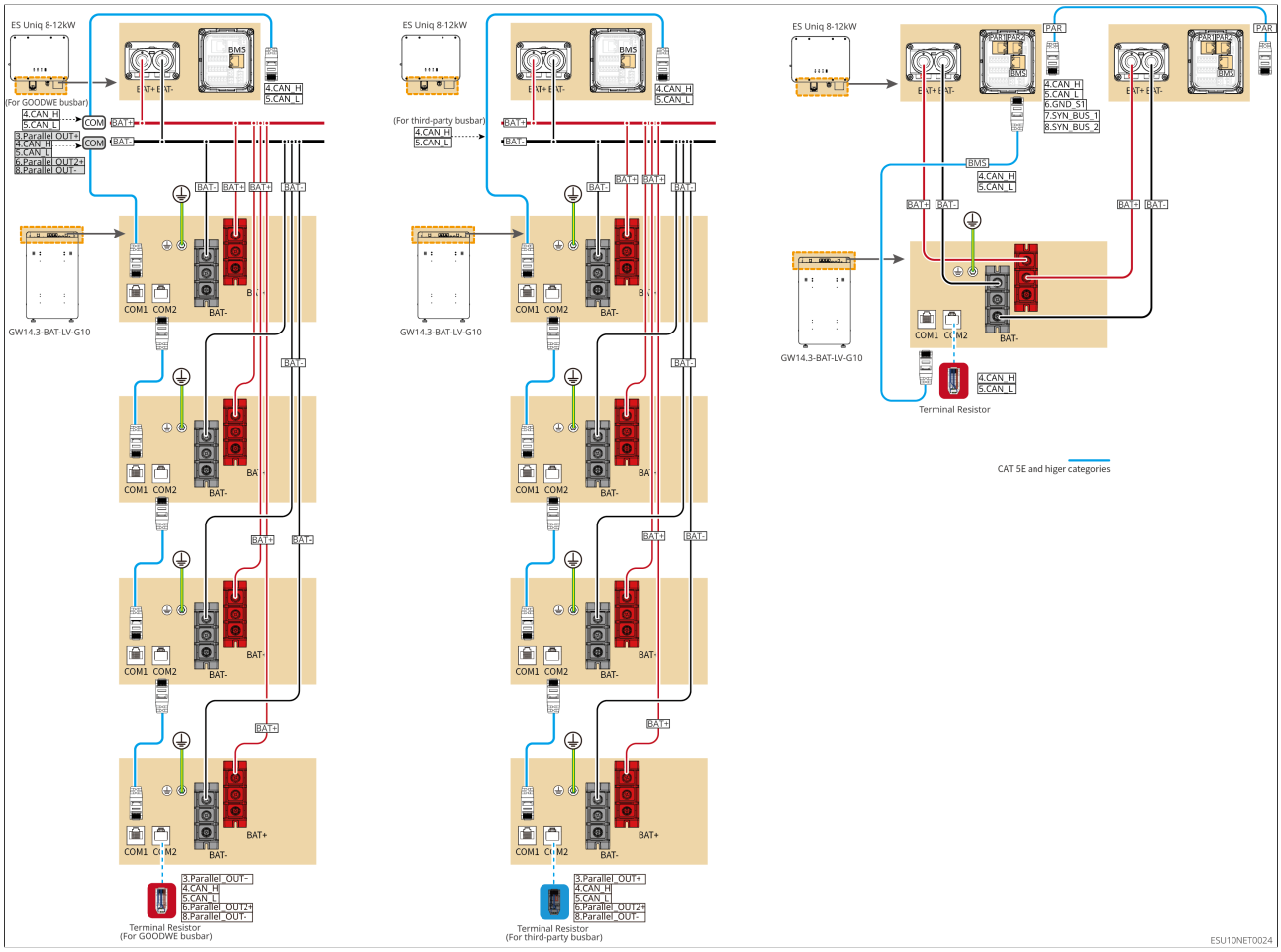
DANGER

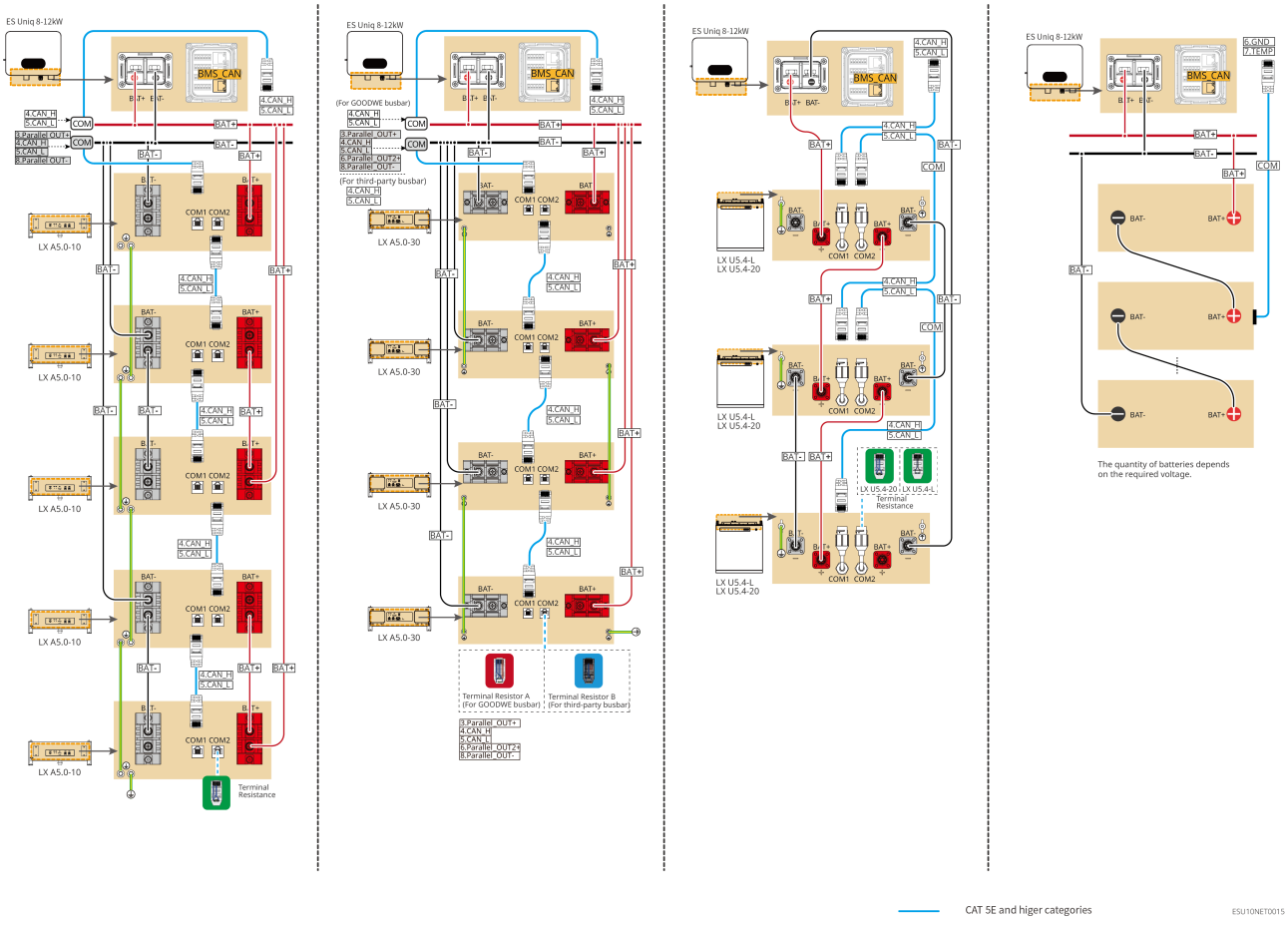
- In a single inverter system, do not connect the same battery pack to multiple inverters, which may cause inverter damage.
- It is forbidden to connect loads between the inverter and the battery.
- When connecting battery cables, use insulated tools to prevent accidental electric shock or short circuit to the batteries.
- Ensure that the open circuit voltage of the battery is within the permissible range of the inverter.
- Install a DC breaker between the inverter and the battery in compliance with local laws and regulations.

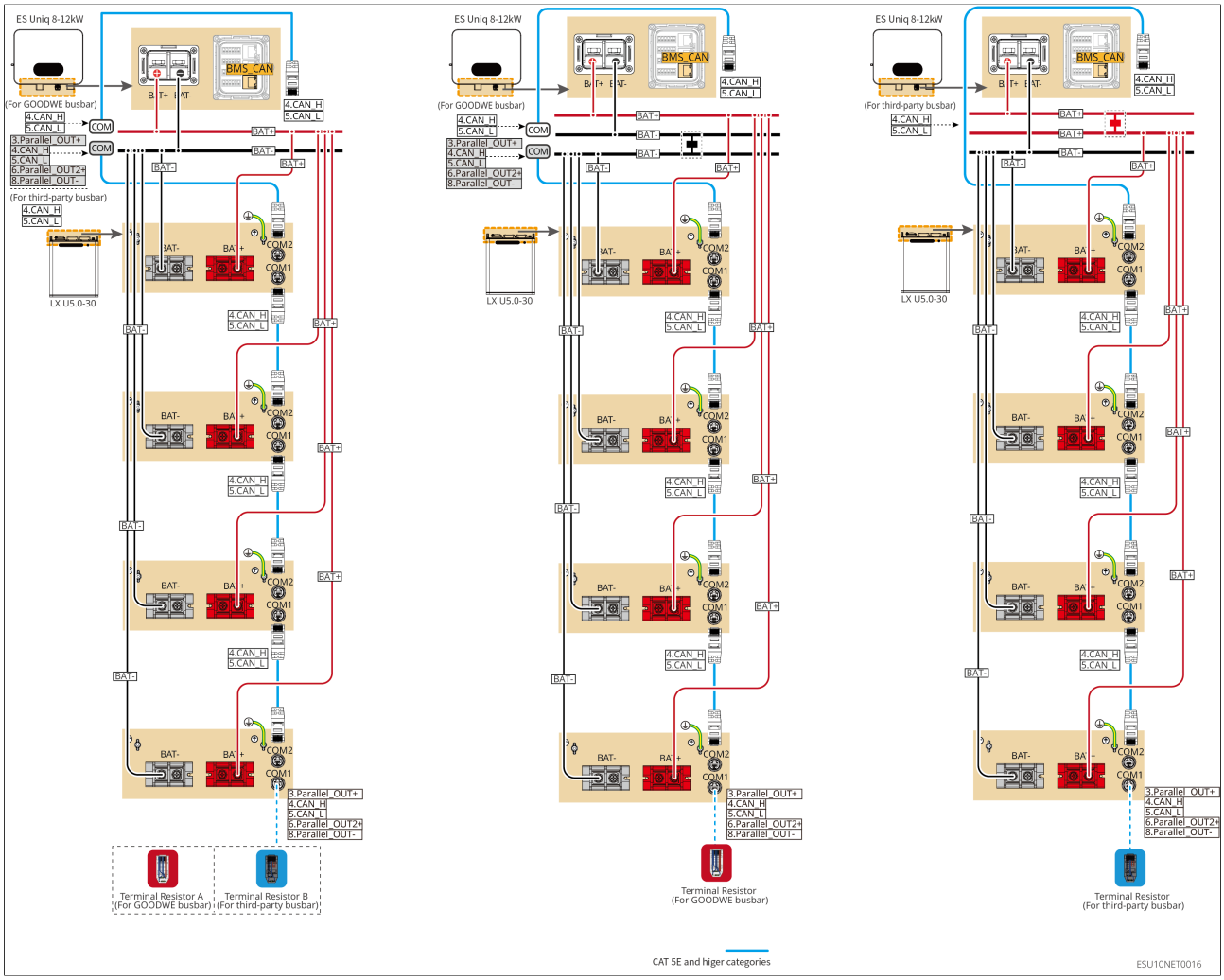
Battery system wiring diagram

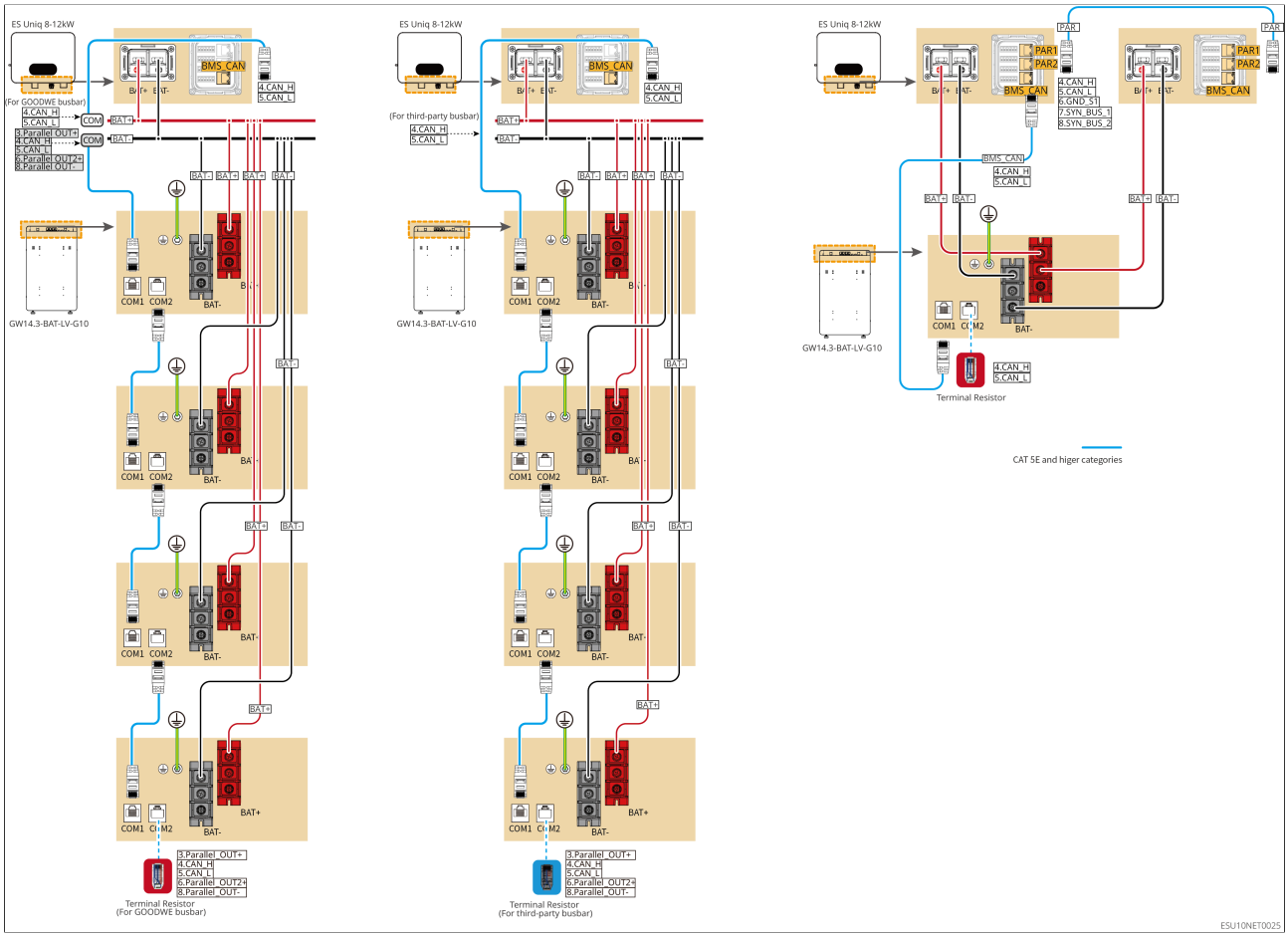



ES Uniq 8-12kW
(For GOODWE busbar)
4.CAN_H
5.CAN_L
COM
3.Parallel_OUT+
4.CAN_H
5.CAN_L
6.Parallel_OUT2+
8.Parallel_OUT-
(For third-party busbar)
4.CAN_H
5.CAN_L
BMS
BAT+
BAT-
LX U5.0-30
3.Parallel_out1+
4.CAN_H
5.CAN_L
8.Parallel_out1-
BAT-
BA +
COM2
COM1
3.Parallel_OUT+
4.CAN_H
5.CAN_L
6.Parallel_OUT2+
8.Parallel_OUT-
Terminal Resistor A
(For GOODWE busbar)
Terminal Resistor B
(For third-party busbar)
Terminal Resistor
(For GOODWE busbar)
Terminal Resistor
(For third-party busbar)
CAT 5E and higer categories
ESU10NET0006


ES Uniq 8-12kW
(For GOODWE busbar)
4.CAN_H
5.CAN_L
COM
BAT+
BAT-
3.Parallel_OUT+
4.CAN_H
5.CAN_L
6.Parallel_OUT2+
8.Parallel_OUT-
BMS
4.CAN_H
5.CAN_L
GW14.3-BAT-LV-G10
COM1
COM2
Terminal Resistor
(For GOODWE busbar)
ES Uniq 8-12kW
(For third-party busbar)
4.CAN_H
5.CAN_L
BAT+
BAT-
BMS
4.CAN_H
5.CAN_L
GW14.3-BAT-LV-G10
COM1
COM2
3.Parallel_OUT+
4.CAN_H
5.CAN_L
6.Parallel_OUT2+
8.Parallel_OUT-
Terminal Resistor
(For third-party busbar)
ES Uniq 8-12kW
PAR
8.CAN_H
5.CAN_L
6.GND_S1
7.SYN_BUS_1
8.SYN_BUS_2
BMS
4.CAN_H
5.CAN_L
BAT+
BAT-
GW14.3-BAT-LV-G10
COM1
COM2
4.CAN_H
5.CAN_L
Terminal Resistor
CAT 5E and higer categories
ESU10NET0024

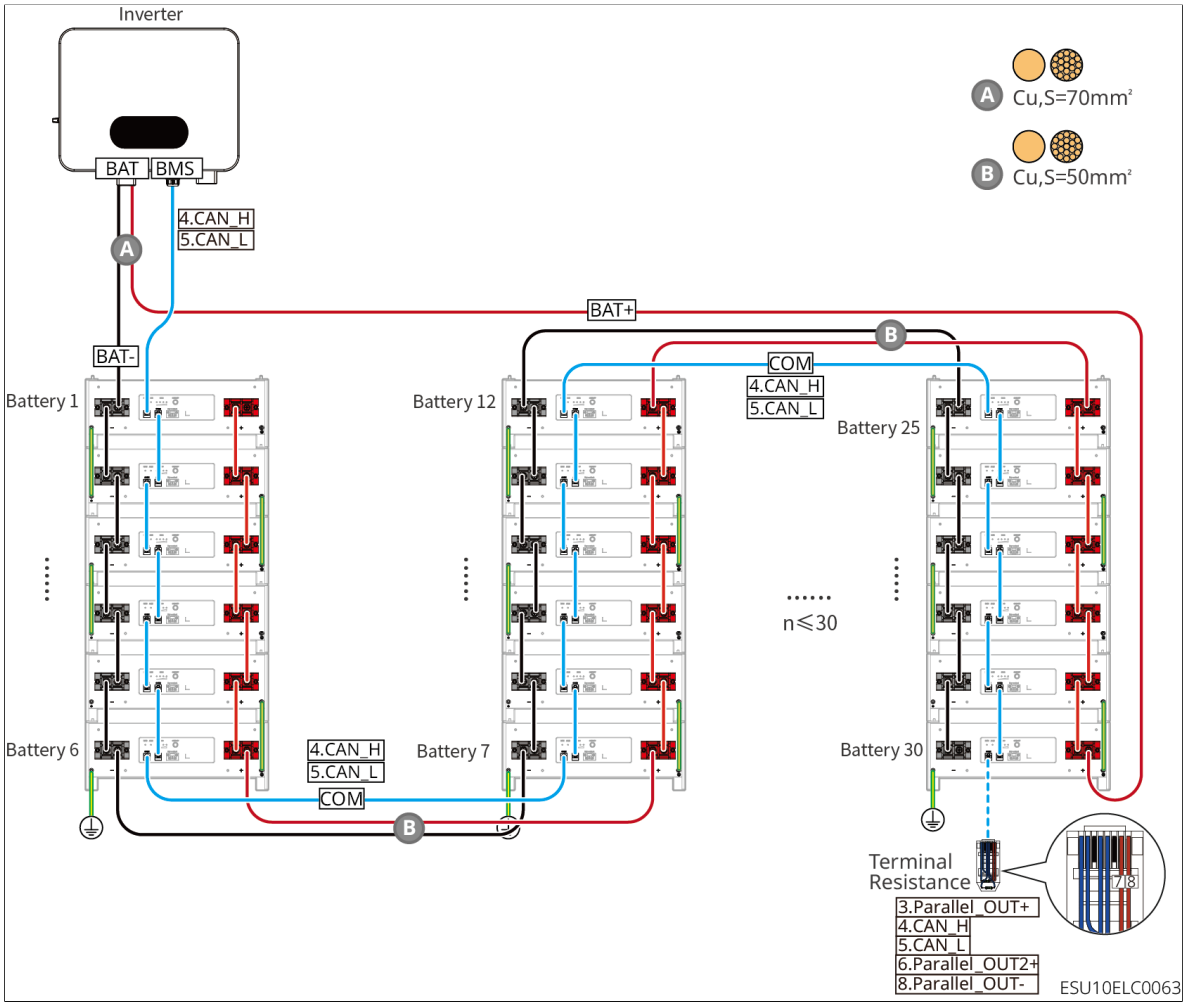

ES Uniq 8-12kW
BMS_CAN
B- T+ B- T-
4.CAN_H
5.CAN_L
COM
3.Parallel_OUT+
4.CAN_H
5.CAN_L
8.Parallel_OUT-
BAT+
BAT-
B- T-
B- T+
COM1 COM2
LX A5.0-10
Terminal Resistance
(For GOODWE busbar)
6.Parallel_OUT2+
8.Parallel_OUT2-
(For third-party busbar)
LX A5.0-30
Terminal Resistor A
(For GOODWE busbar)
Terminal Resistor B
(For third-party busbar)
BAT
LX U5.4-L
LX U5.4-20
LX U5.4-20 LX U5.4-L
Terminal Resistance
6.GND
7.TEMP
The quantity of batteries depends on the required voltage.
CAT 5E and higer categories
ESU10NET0015


ES Uniq 8-12kW
(For GOODWE busbar)
4.CAN_H
5.CAN_L
COM
3.Parallel_OUT+
4.CAN_H
5.CAN_L
6.Parallel_OUT2+
8.Parallel_OUT-
(For third-party busbar)
4.CAN_H
5.CAN_L
BMS_CAN
BAT+
BAT-
LX U5.0-30
BAT-
BA +
COM2
COM1
Terminal Resistor A
(For GOODWE busbar)
Terminal Resistor B
(For third-party busbar)
Terminal Resistor
(For GOODWE busbar)
Terminal Resistor
(For third-party busbar)
CAT 5E and higer categories
ESU10NET0016



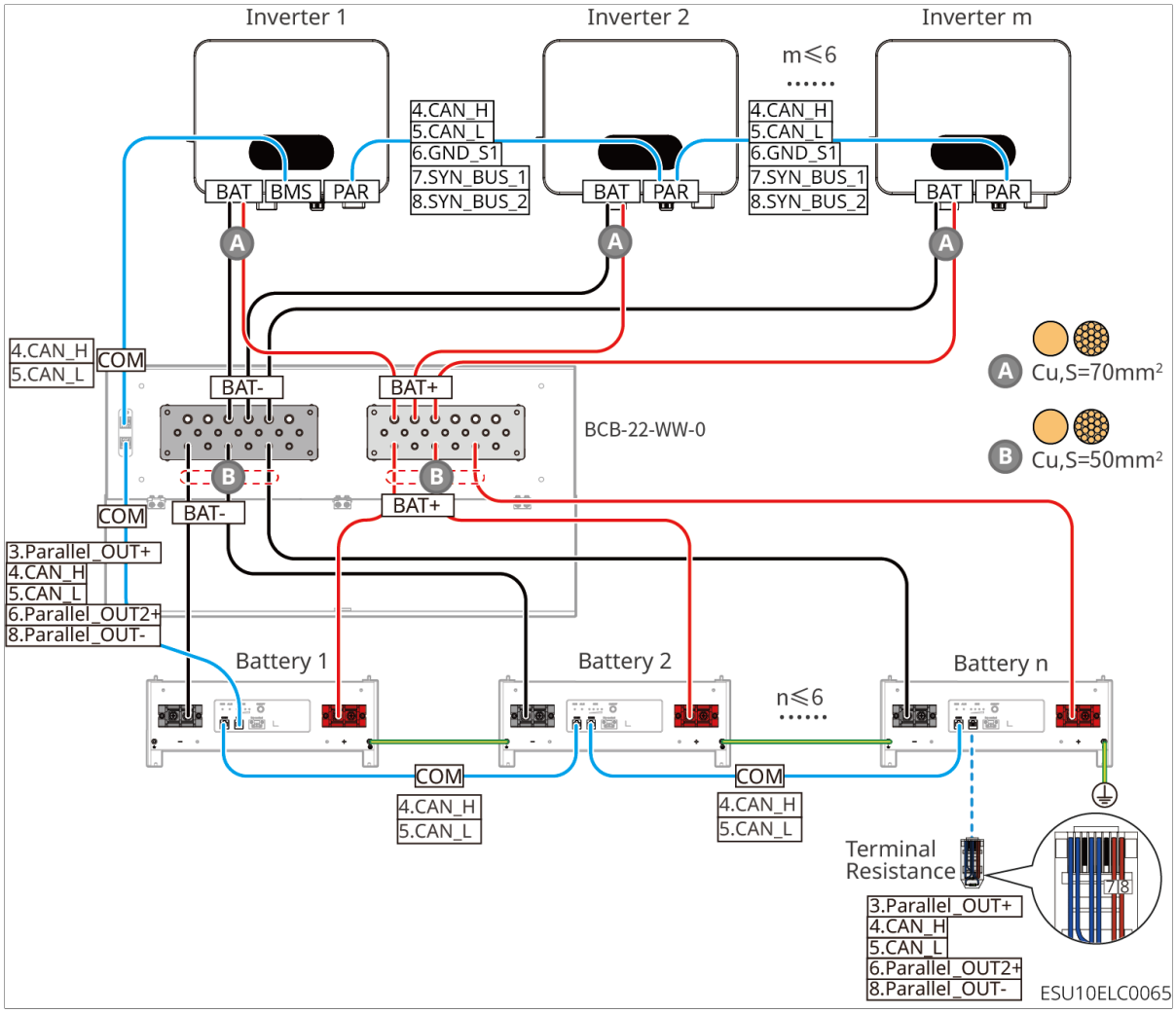
LXA5.0-30: Hand-to-hand connection

- The battery system supports a maximum working current of 160A, working power of 8kW, and it consists of a maximum of 1 inverter, and 30 batteries.



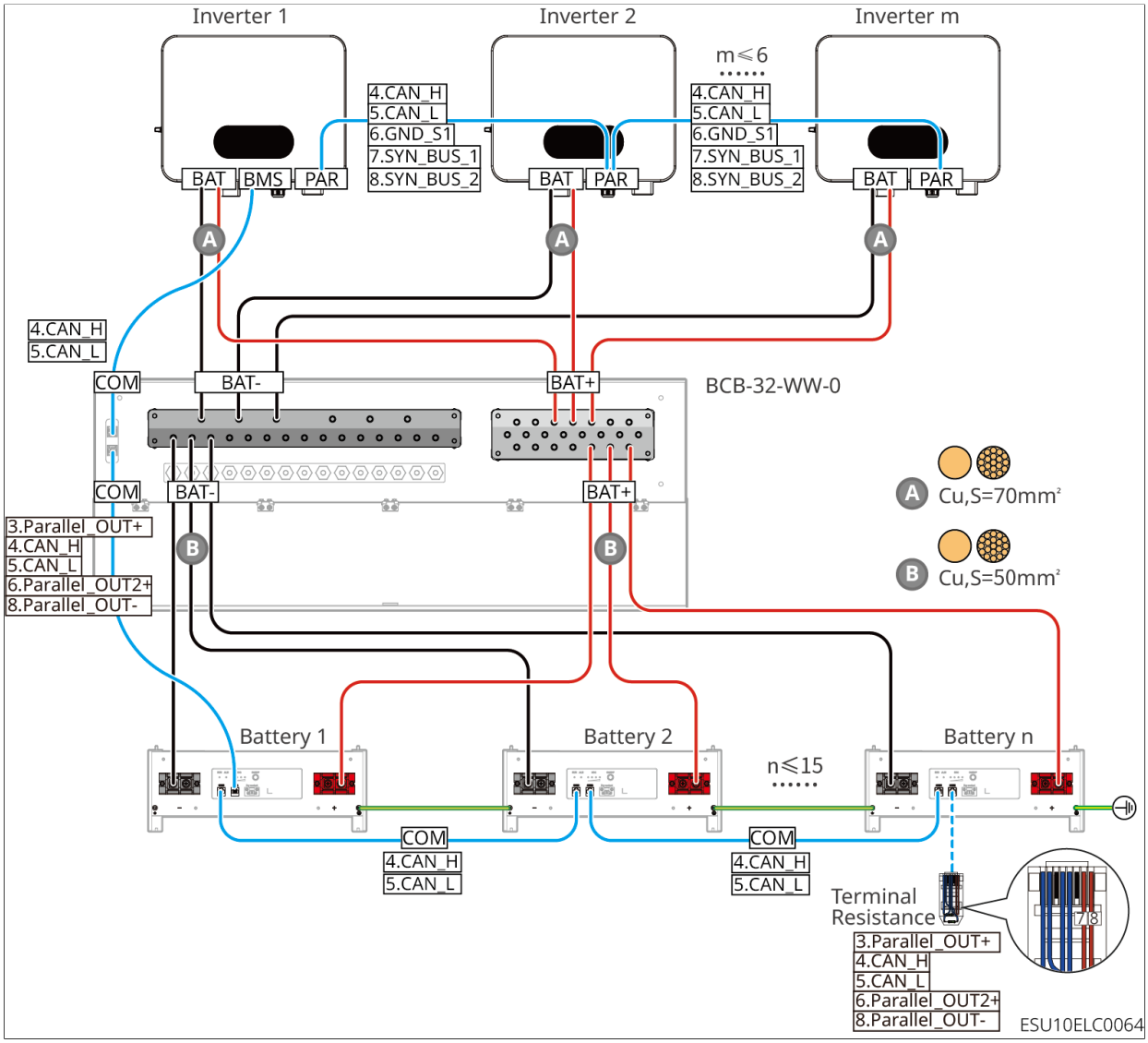
LXA5.0-30: Using with busbar BCB-22-WW-0

- The battery system supports a maximum working current of 720A, working power of 36kW, and it consists of a maximum of 6 inverter, and 6 batteries.



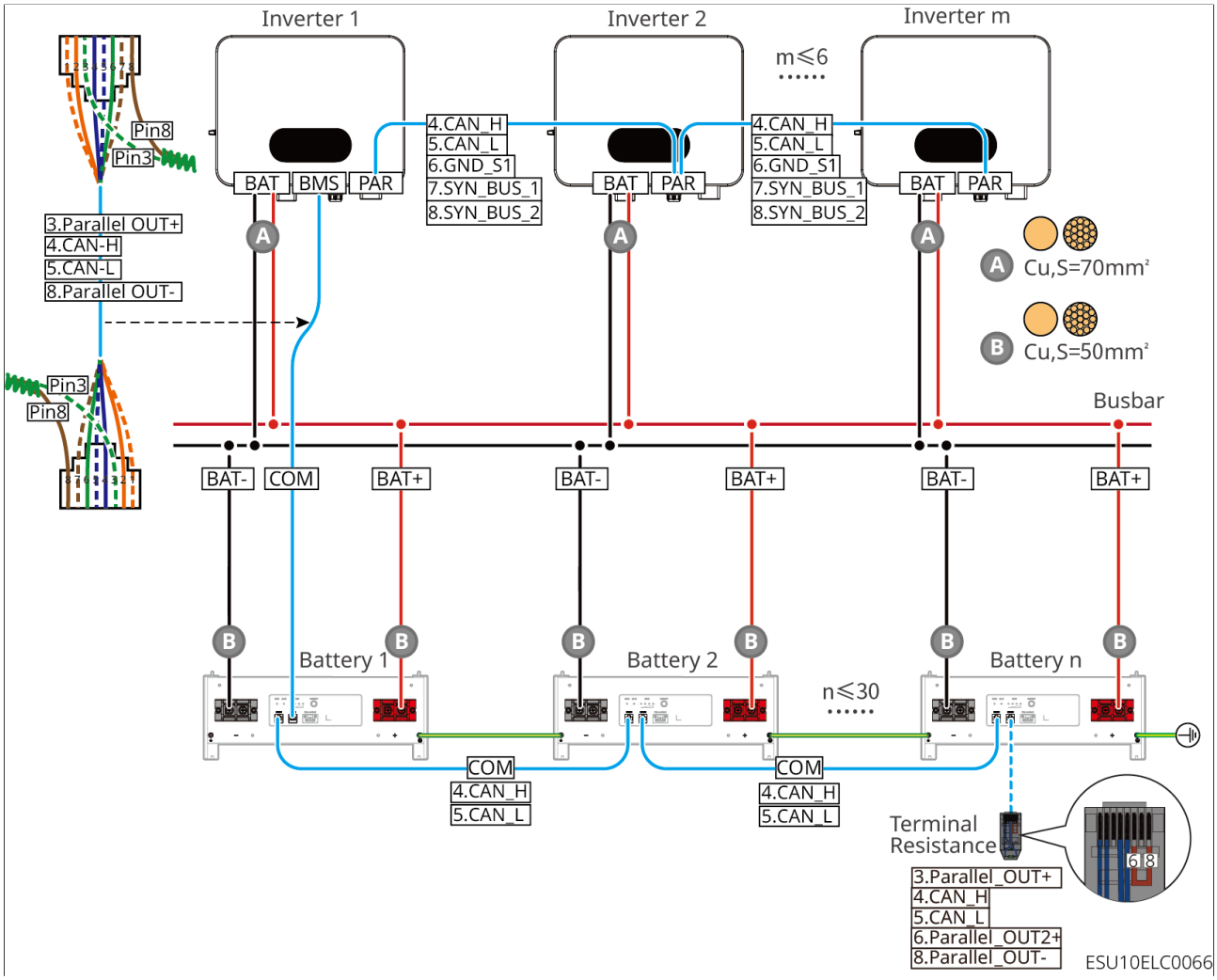
LXA5.0-30: Using with busbar BCB-32-WW-0

- The battery system supports a maximum working current of 720A, working power of 36kW, and it consists of a maximum of 6 inverter, and 15 batteries.



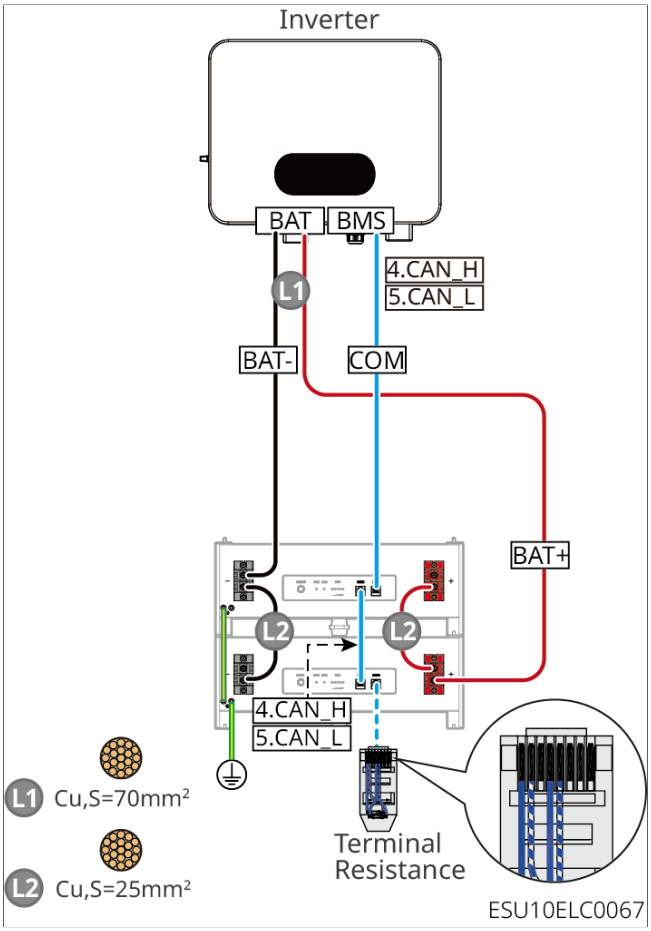
LXA5.0-30: Using with third-party busbar

- 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.



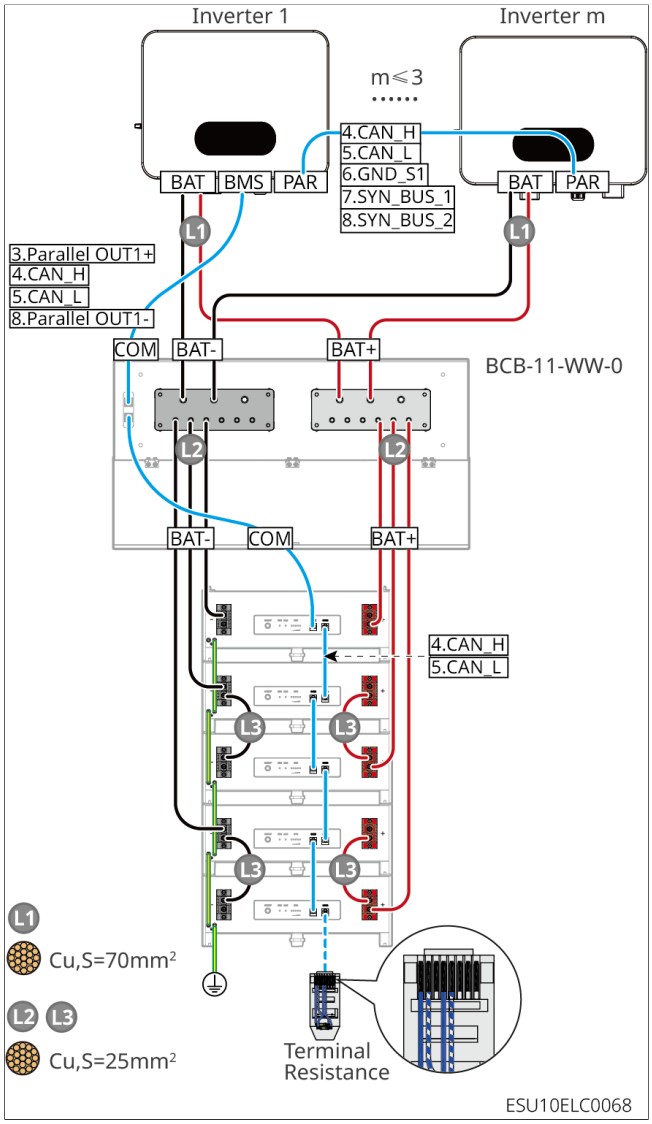
LX A5.0-10: Hand-to-Hand Connection

- The nominal charging and discharging current of a single battery is 60A.
- The battery system supports a maximum working current of 120A, working power of 6kW, and it consists of a maximum of 1 inverter, and 2 batteries.



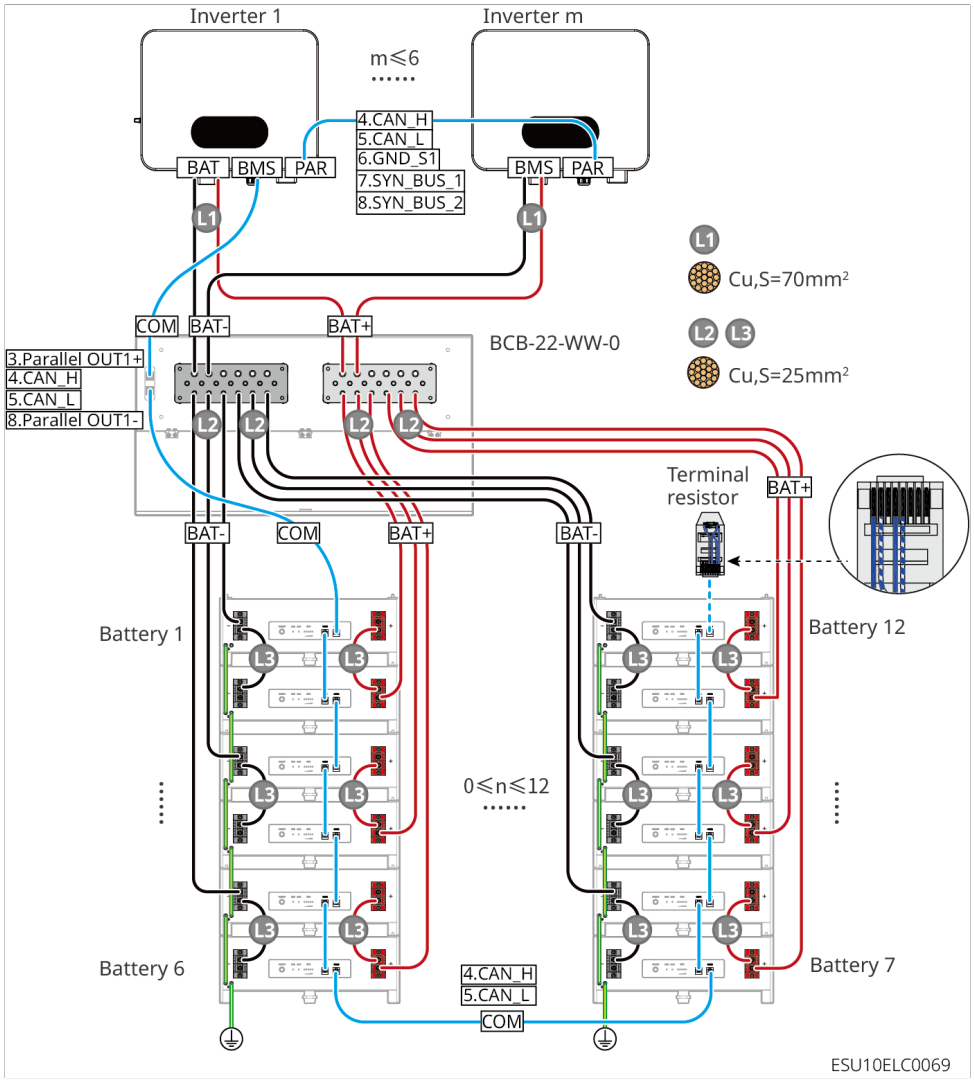
LX A5.0-10: Using with busbar BCB-11-WW-0

- The nominal charging and discharging current of a single battery is 60A.
- The battery system supports a maximum working current of 360A, working power of 18kW, and it consists of a maximum of 3 inverters, and 6 batteries.



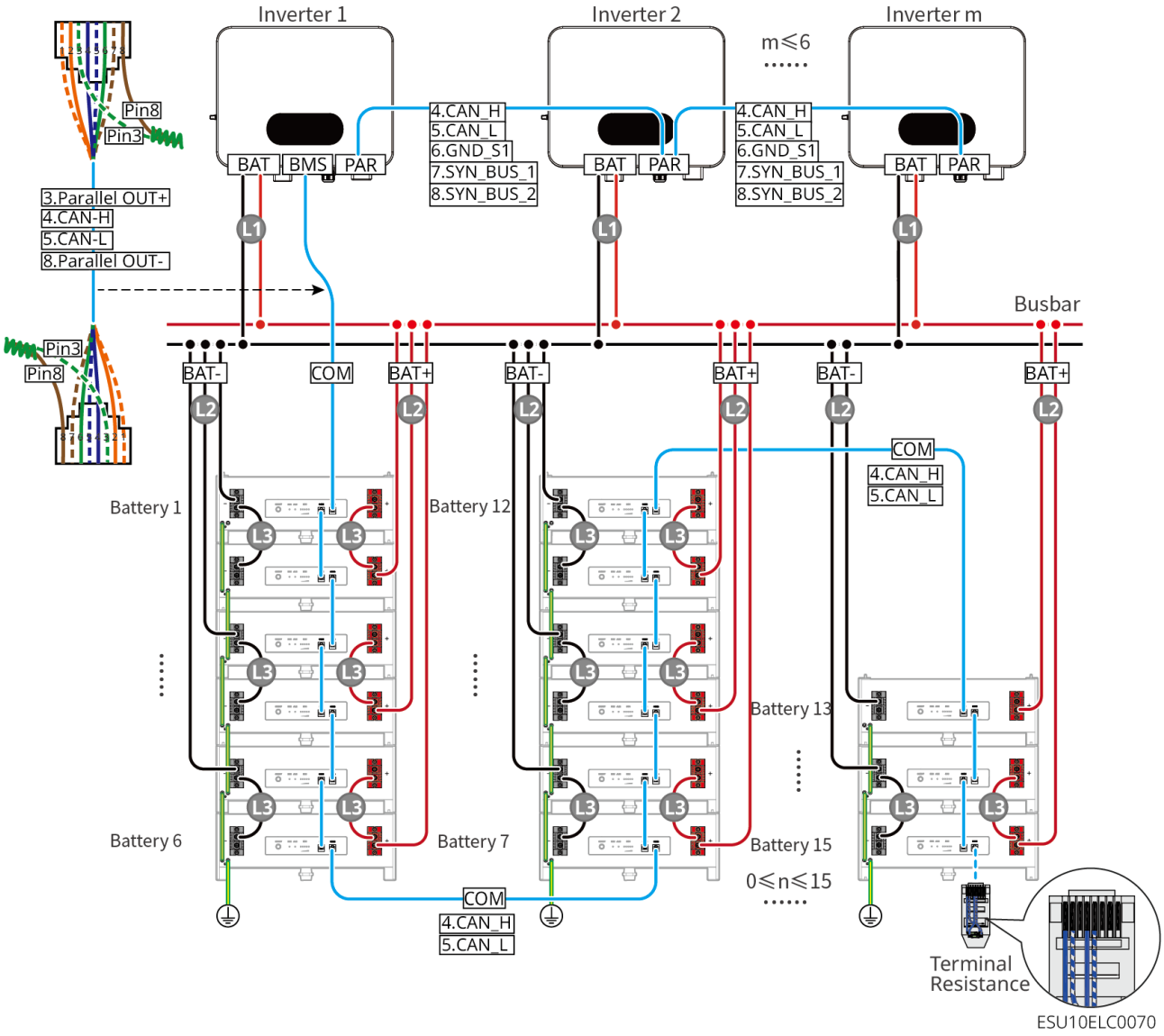
LX A5.0-10: Using with busbar BCB-22-WW-0

- The nominal charging and discharging current of a single battery is 60A.
- The battery system supports a maximum working current of 720A, working power of 36kW, and it consists of a maximum of 6 inverter, and 12 batteries.

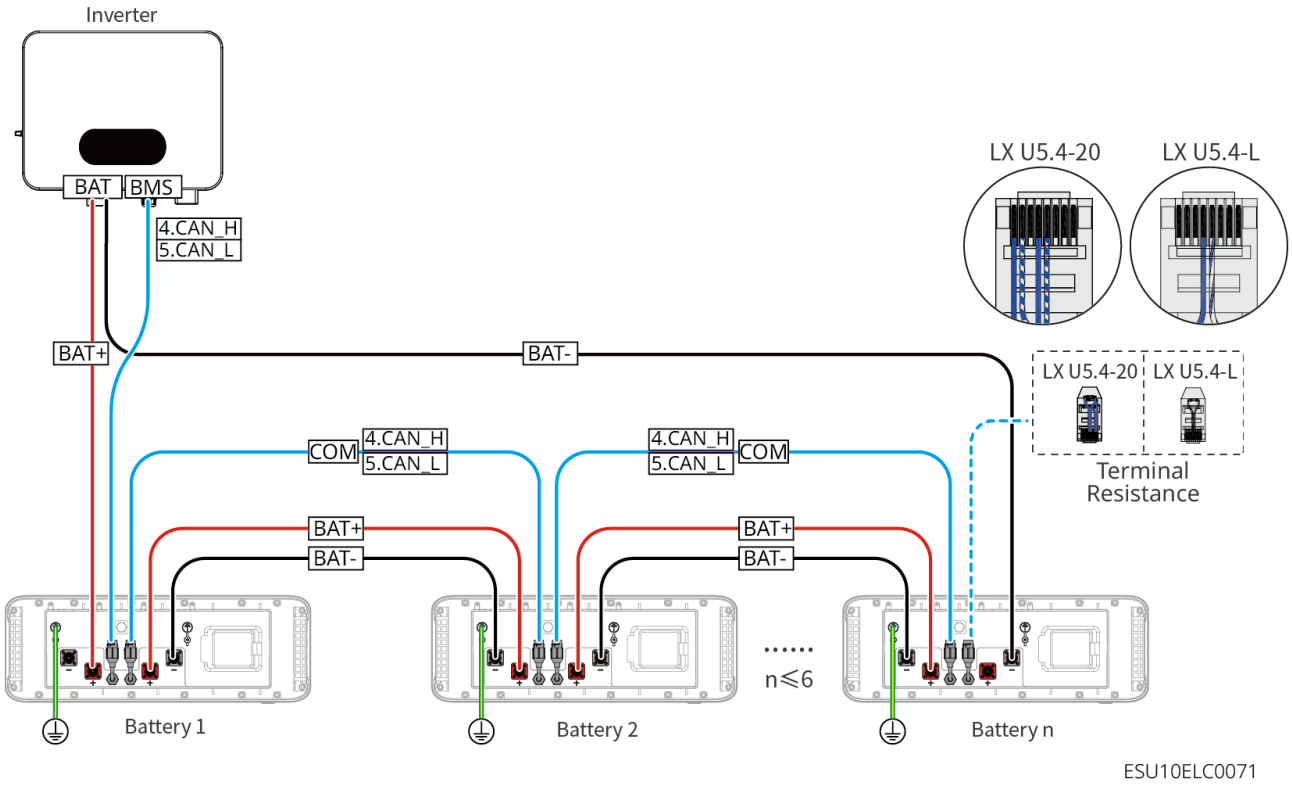


LX A5.0-10: Using with third-party busbar

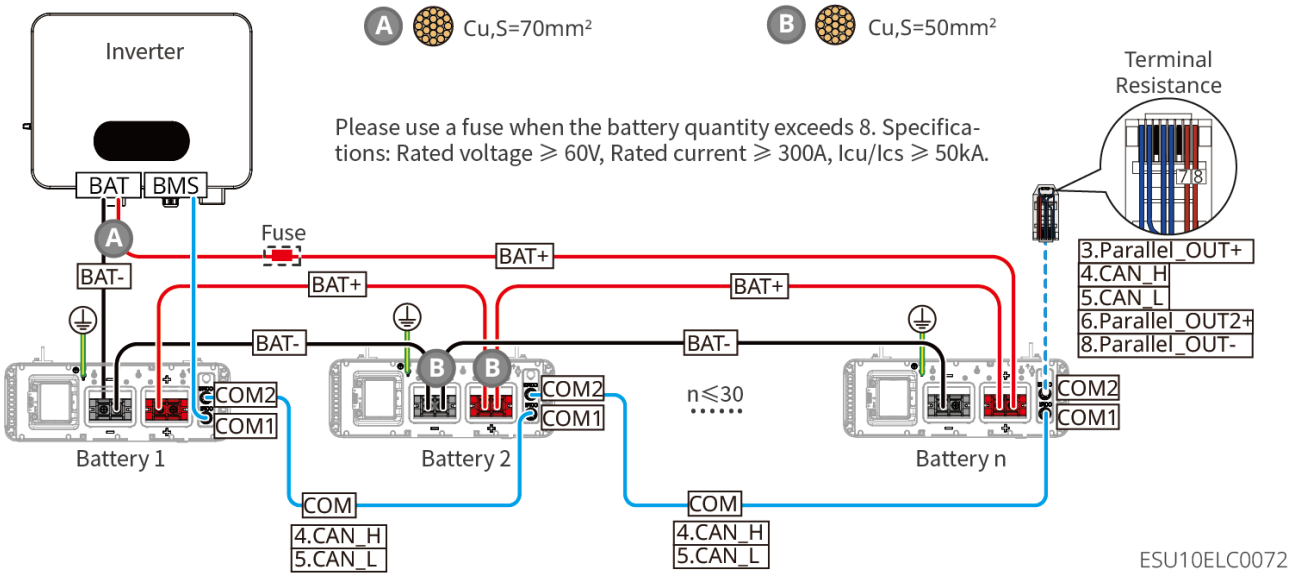
- The nominal charging and discharging current of a single battery is 60A.
- The complexity of the parallel system increases with the number of inverters in parallel. When there are six or more inverters in parallel in the system, please contact the after-sales service center to confirm the installation and application environment of the inverters to ensure stable system operation.
- The battery system supports a maximum working current of 900A, working power of 45kW, and 15 batteries.



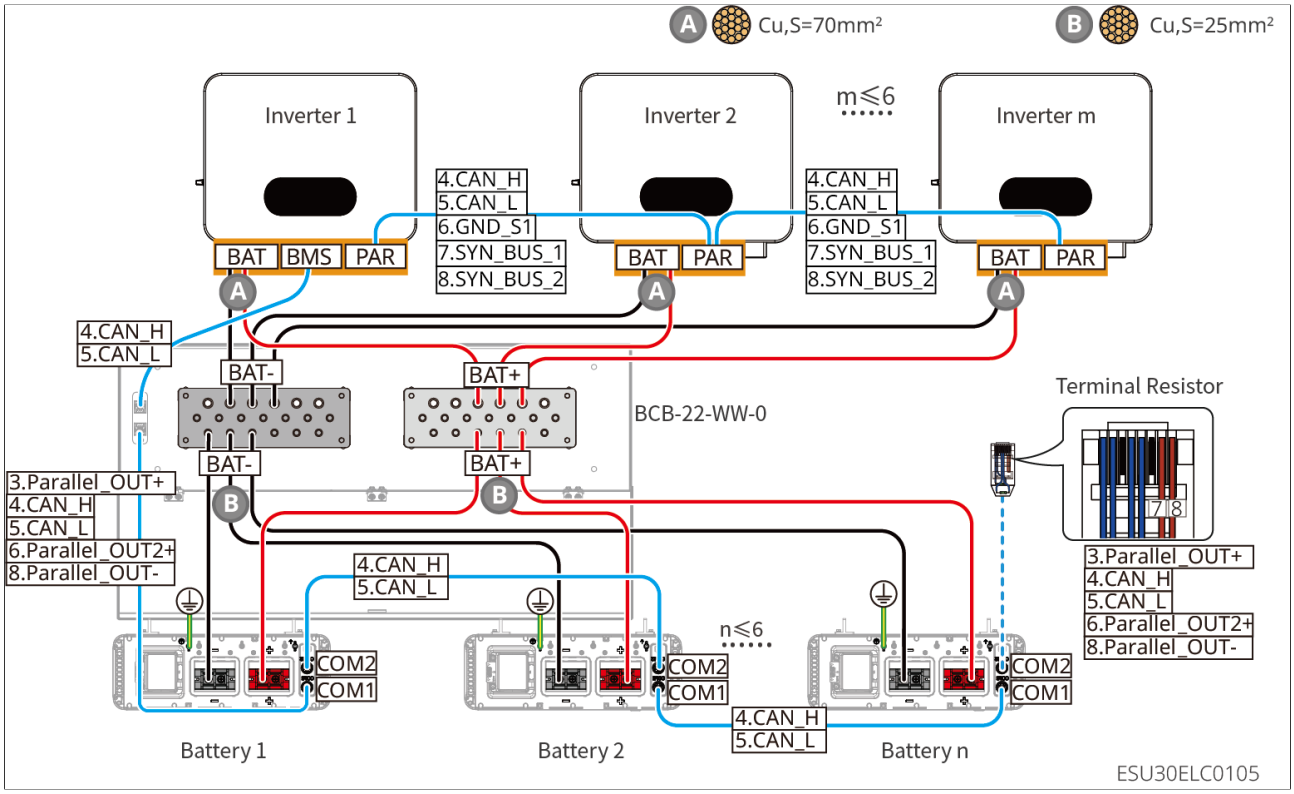
LX U5.4-L and LX U5.4-20: Hand-to-Hand Connection



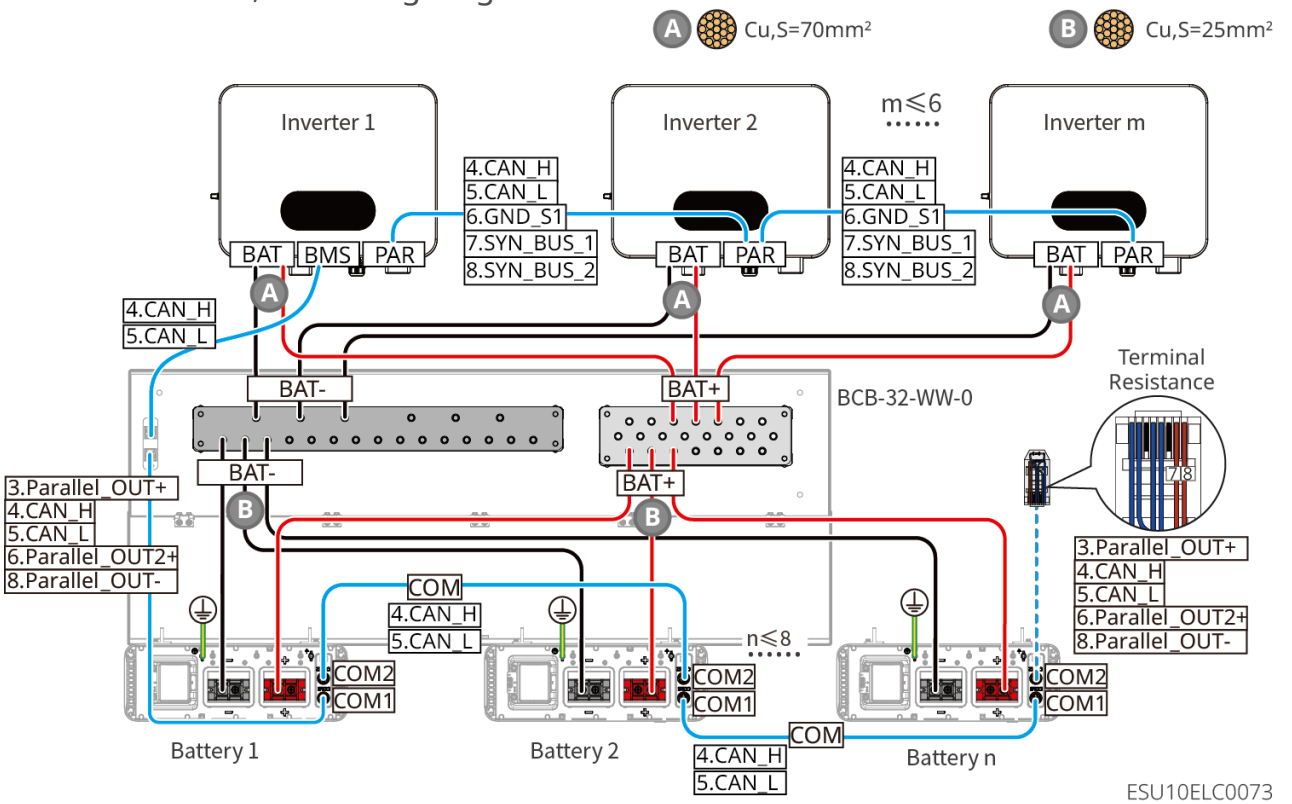
LX U5.0-30: Hand-to-Hand Connection



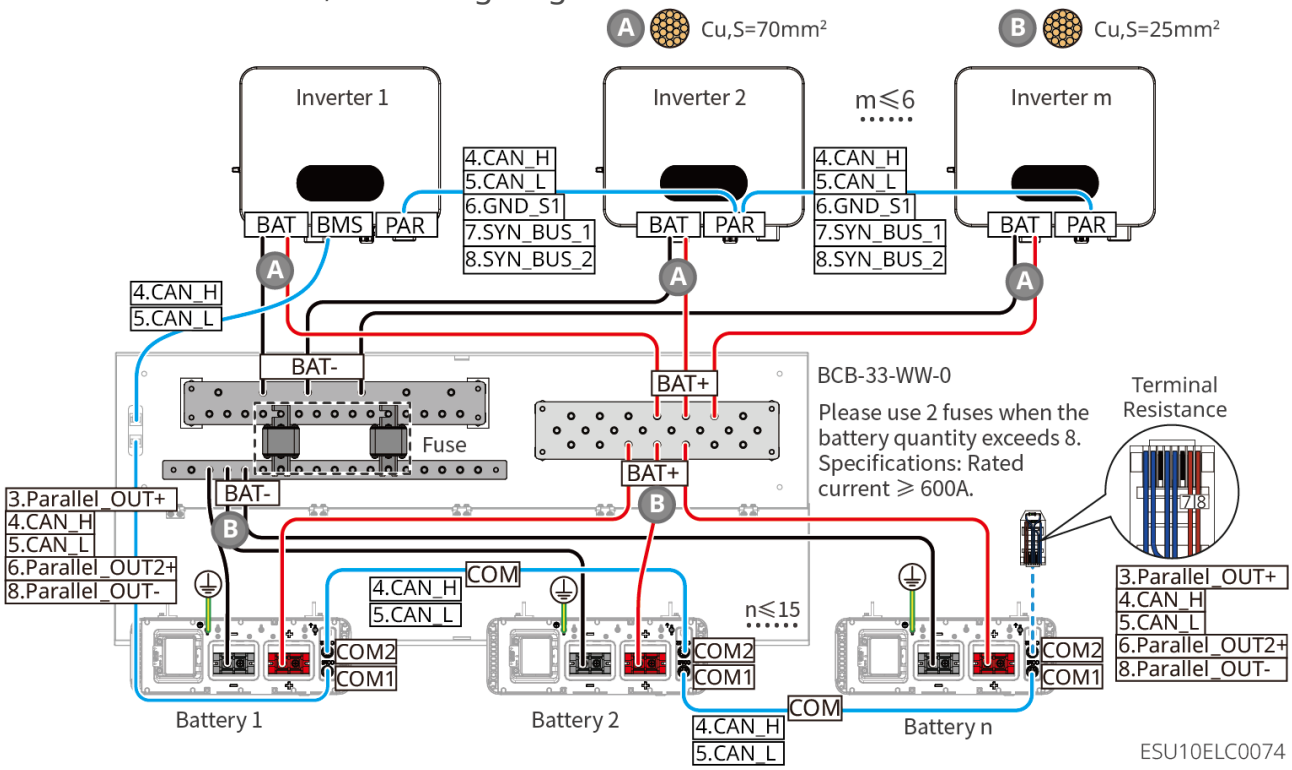
LX U5.0-30: When the battery quantity is less than or equal to 6, and the busbar BCB-22-WW-0 is used, the wiring diagram is as follows:



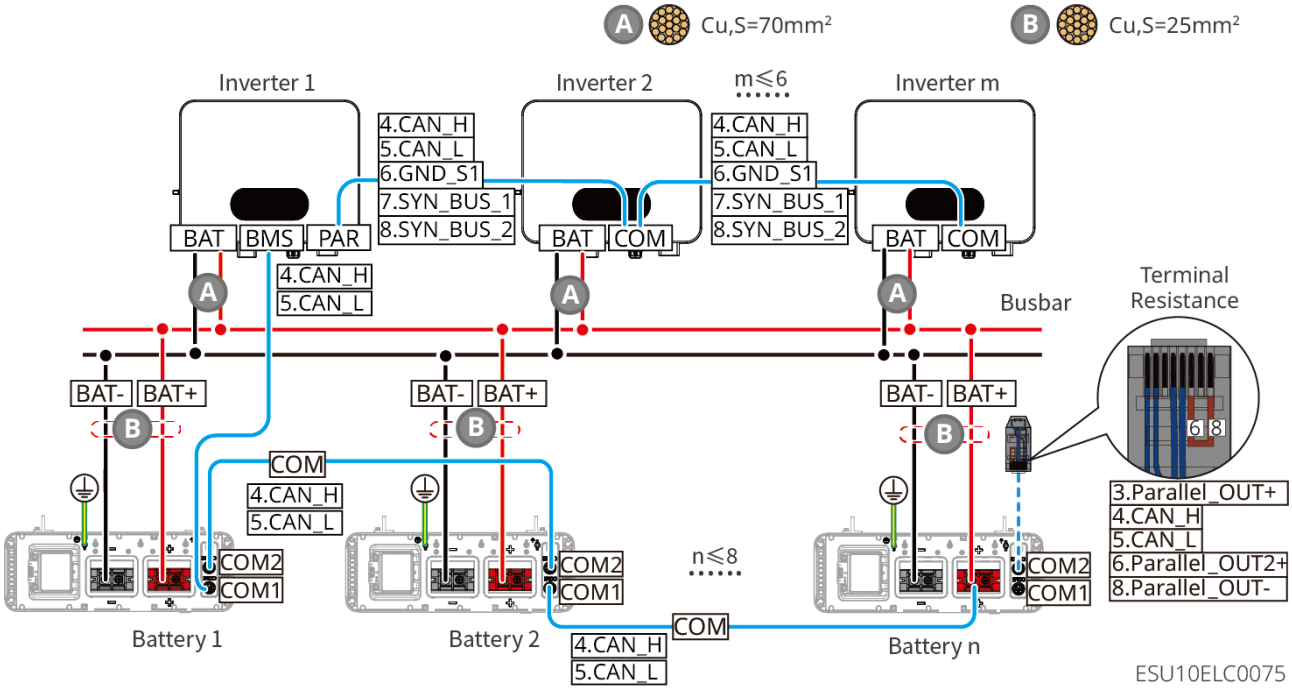
LX U5.0-30: When the battery quantity is less than or equal to 8, and the busbar BCB-32-WW-0 is used, the wiring diagram is as follows:



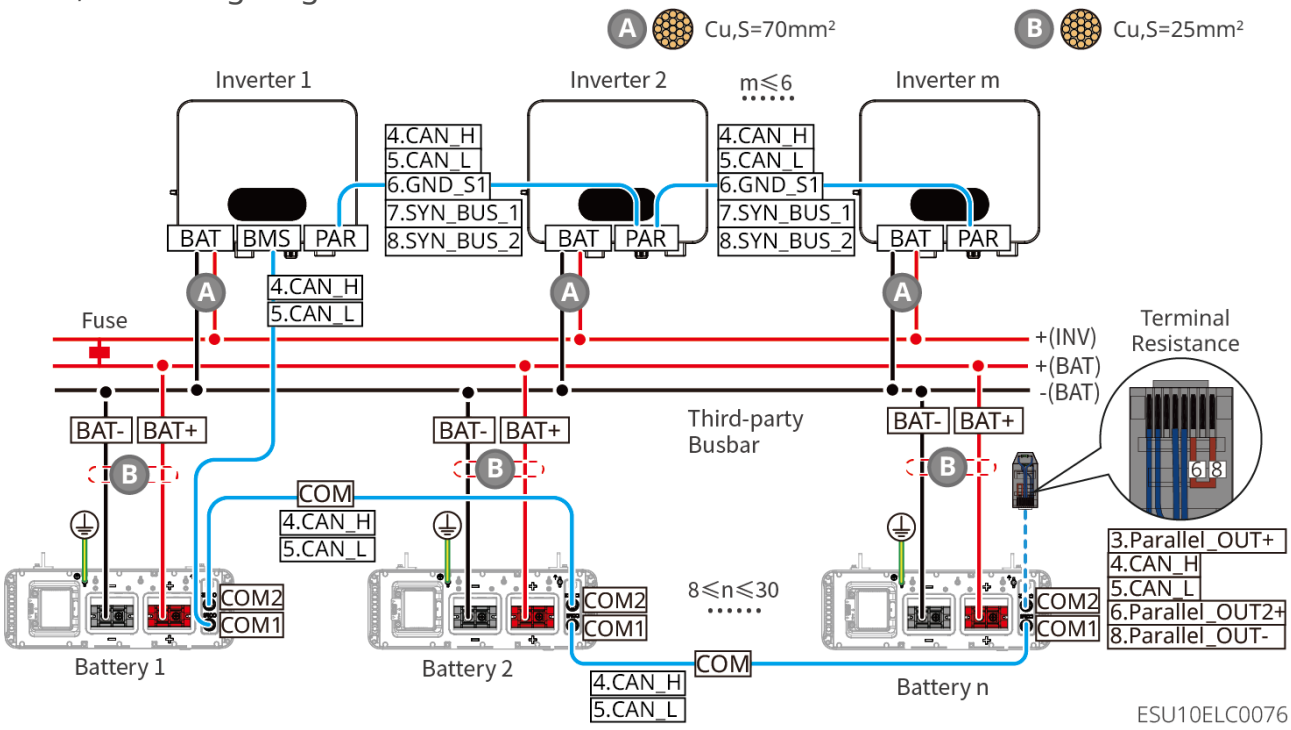
LX U5.0-30: When the battery quantity is less than or equal to 15, and the busbar BCB-33-WW-0 is used, the wiring diagram is as follows:



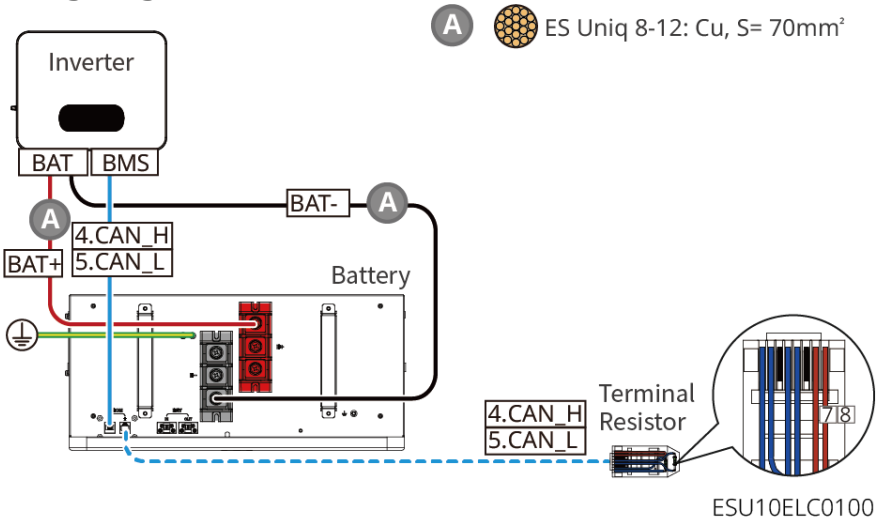
LX U5.0-30: When the battery quantity is less than or equal to 8, and a third-party busbar is used, the wiring diagram is as follows:



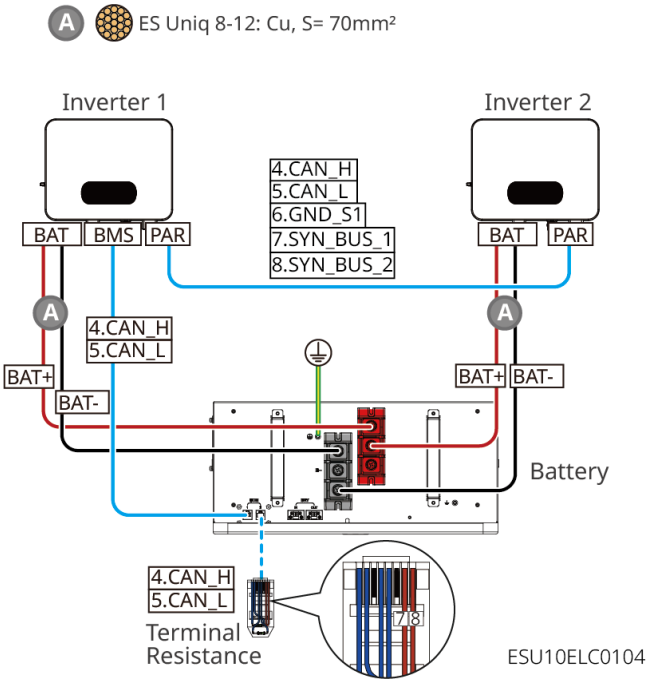
LX U5.0-30: When the battery quantity is larger than 8, and a third-party busbar is used, the wiring diagram is as follows:



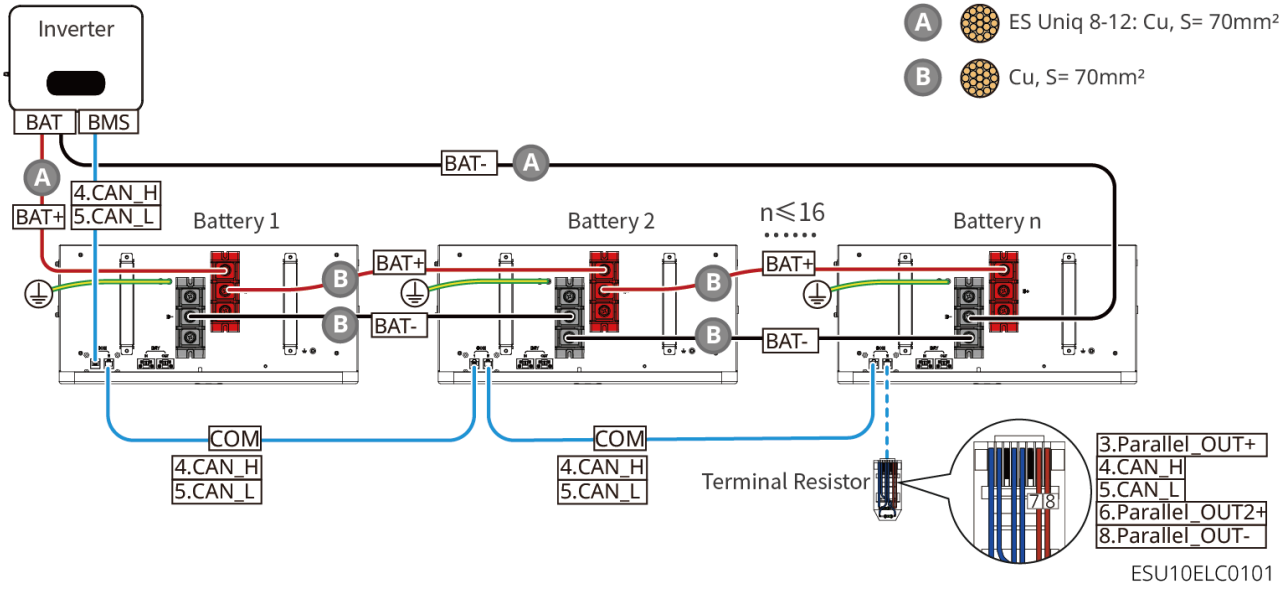
GW14.3-BAT-LV-G10: When the battery is directly connected to a single 1-way output inverter, the wiring diagram is as follows:



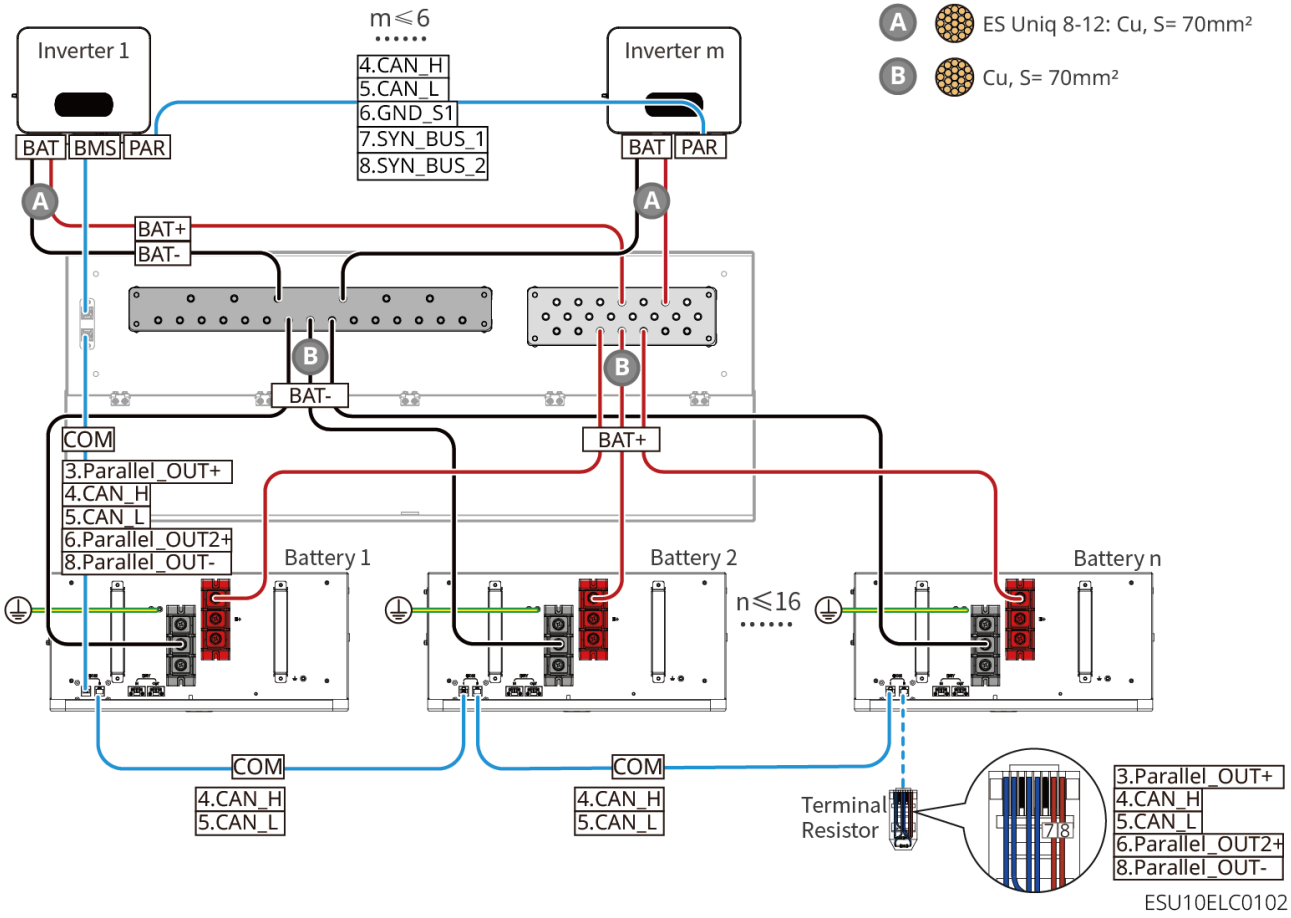
GW14.3-BAT-LV-G10: When the battery is directly connected to two 1-way output inverters, the wiring diagram is as follows:



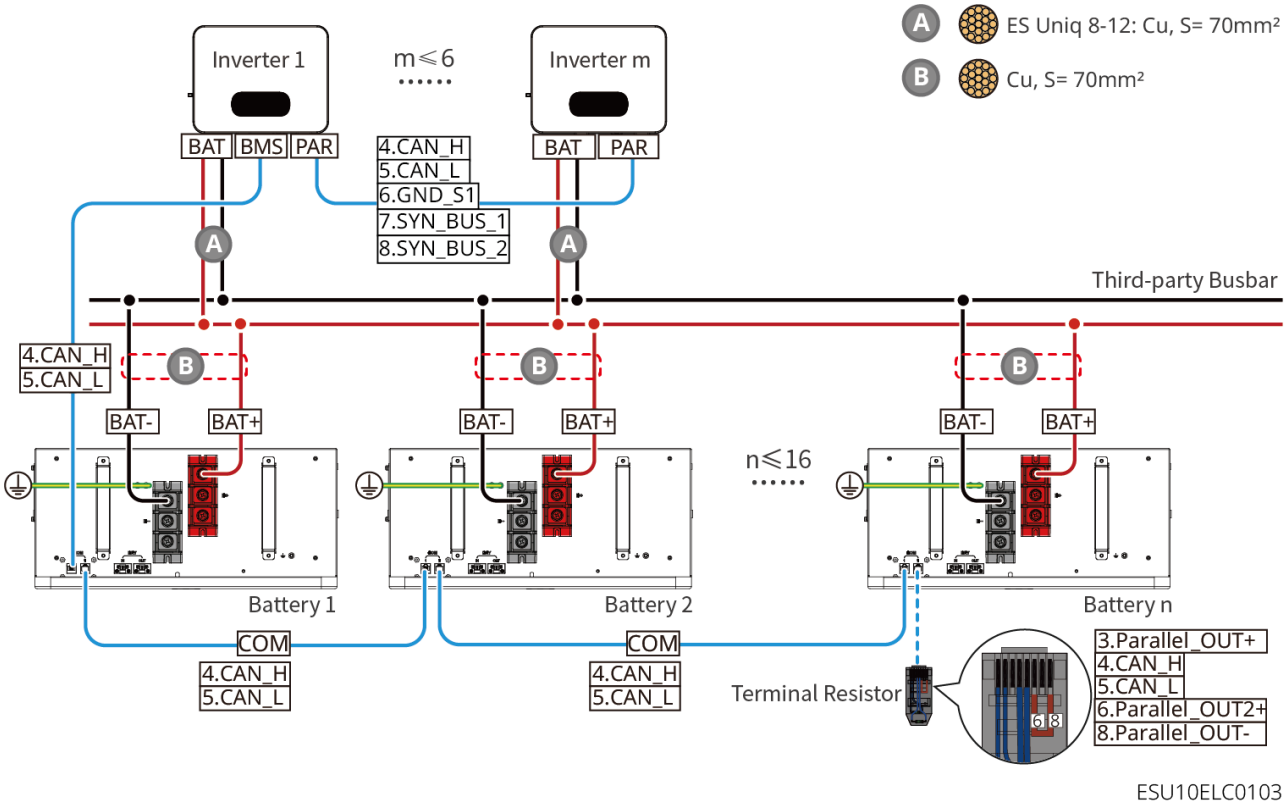
GW14.3-BAT-LV-G10: When the battery is in hand-to-hand connection with a single 1-way output inverter, the wiring diagram is as follows:



GW14.3-BAT-LV-G10: When the number of batteries is less than or equal to 16 and a busbar (BCB-32-WW-0, Current≤ 720A) is used to connect 1-way output inverter, the wiring diagram is as follows:



GW14.3-BAT-LV-G10: When the number of batteries is less than or equal to 16 and a third-party busbar is used to connect to 1-way output inverter, the wiring diagram is as follows:



LX A5.0-30 Communication Port Definition

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

LX A5.0-10 Communication Port Definition

PIN	COM1	COM2	Description
1	-	-	Reserved
2	-	-	
3	Parallel OUT+	Parallel OUT+	Parallel operation communication port

PIN	COM1	COM2	Description
4	CAN_1H	CAN_1H	Connect the inverter communication port or battery parallel communication port
5	CAN_1L	CAN_1L	
6	-	-	Reserved
7	-	-	
8	Parallel OUT-	Parallel OUT-	Parallel operation communication port

LX U5.4-L and LX U5.4-20 Communication Port Definition

PIN	COM1	COM2	Description
1	RS485A	RS485A	Smart meter RS485 communication
2	RS485B-	RS485B-	
3	CAN_H	CAN_H	Parallel operation communication port
4	CAN_L	CAN_L	Connect the inverter communication port or battery parallel communication port
5	-	-	Reserved
6	-	-	Reserved
7	-	-	Reserved
8	-	-	Reserved

LX U5.0-30 Communication Port Definition

PIN	COM1	COM2	Description
1	RS485A	RS485A	Reserved
2	RS485B-	RS485B-	
3	Parallel OUT+	Parallel OUT+	Parallel operation communication port
4	CAN_H	CAN_H	Connect the inverter communication port or battery parallel communication port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel operation communication port
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel operation communication port

GW14.3-BAT-LV-G10 Communication Port Definition

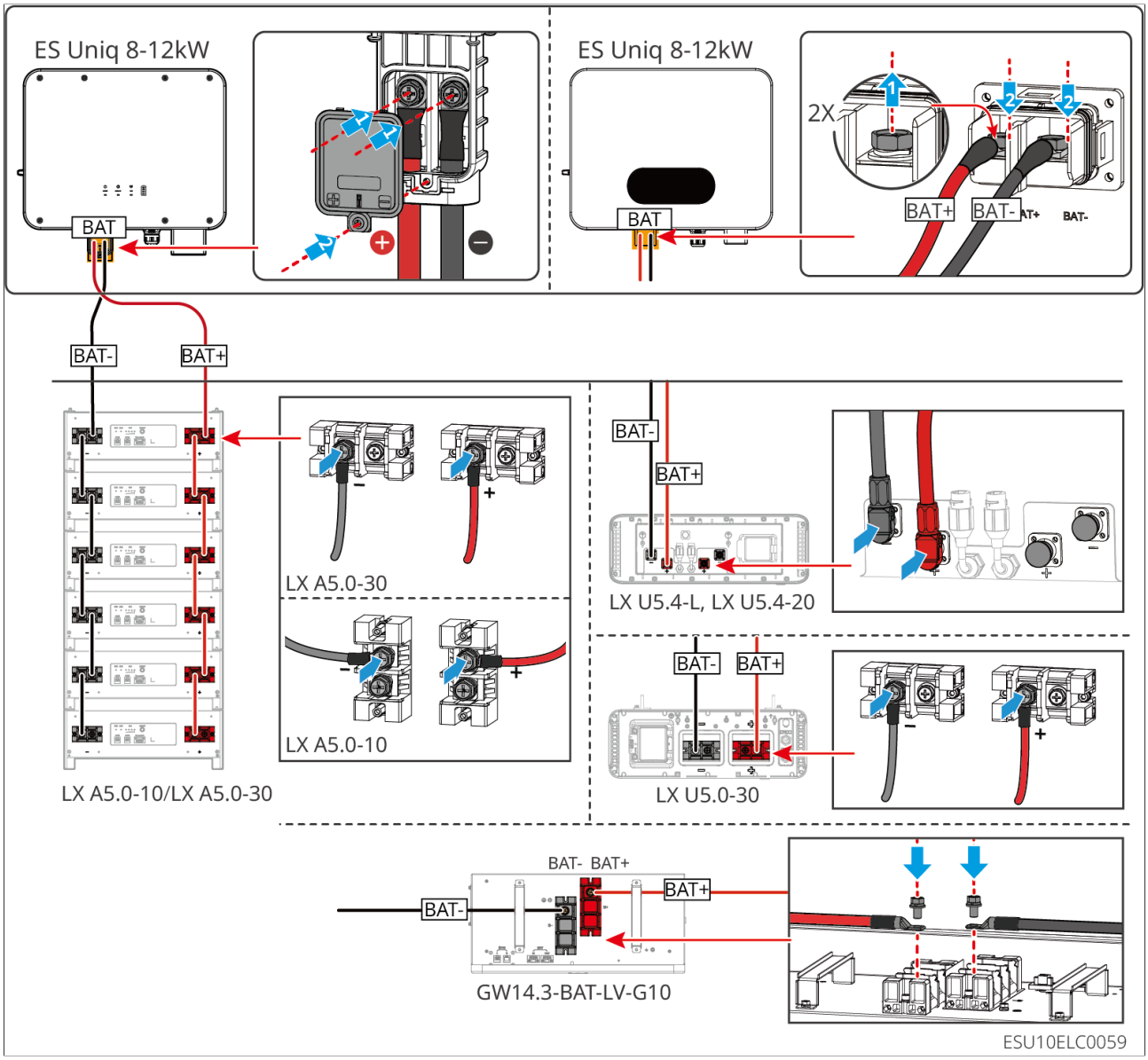
PIN	COM1	COM2	Description
1	RS485A	RS485A	Reserved
2	RS485B-	RS485B-	
3	Parallel OUT+	Parallel OUT+	Parallel operation communication port
4	CAN_H	CAN_H	Connect the inverter communication port or battery parallel communication port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel operation communication port
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel communication port

6.6.1 Connecting the Power Cable between the Inverter and Battery

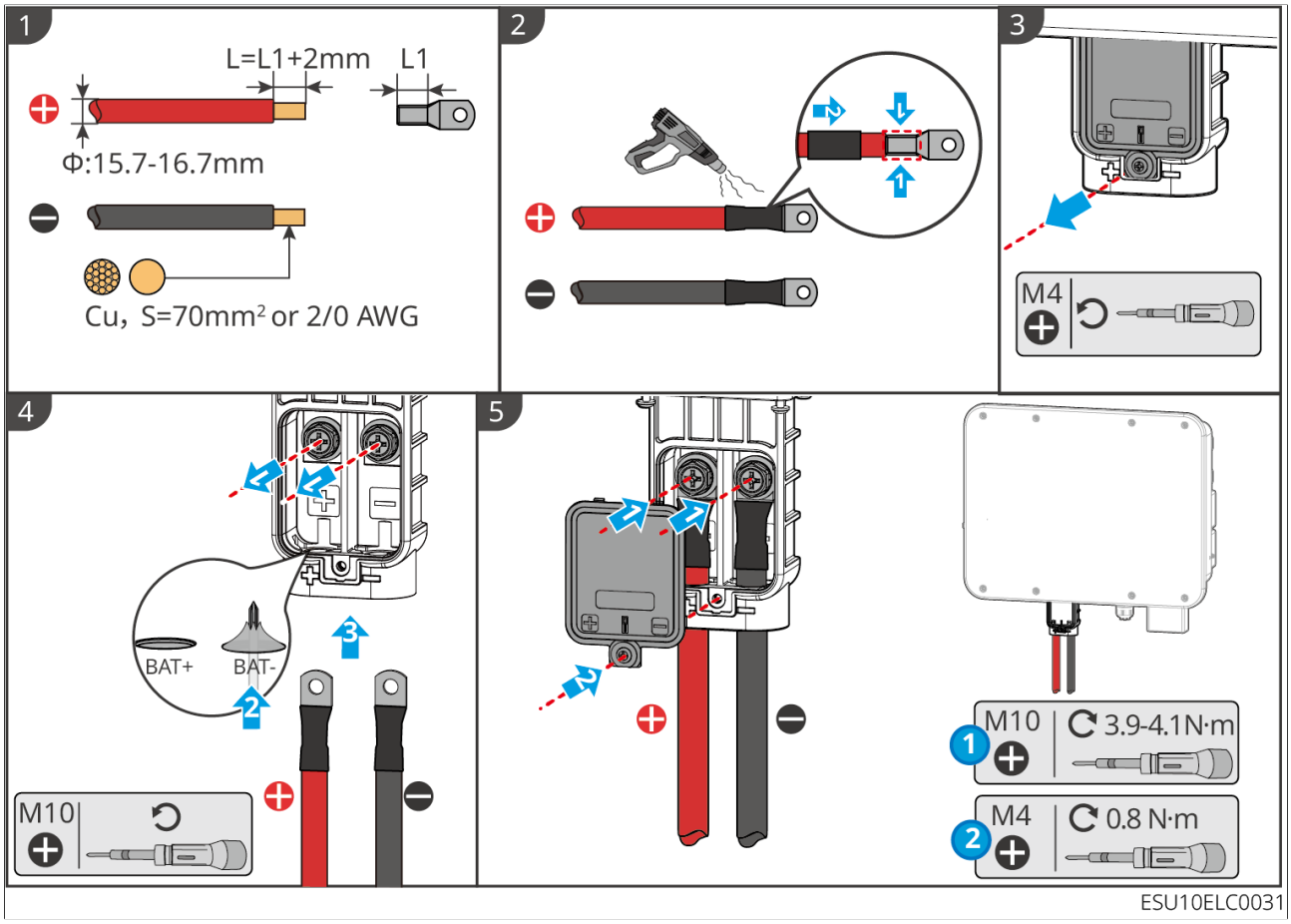
⚠WARNING

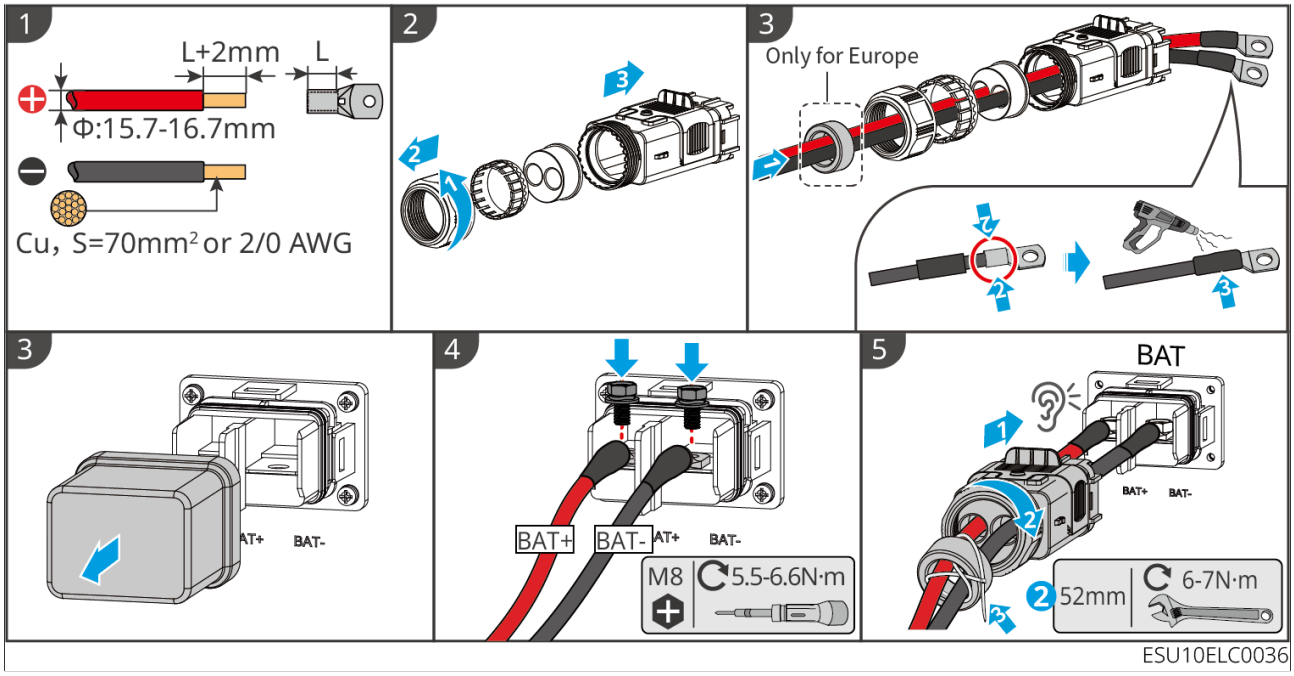
- Measure the positive and negative terminals of the DC cable using a multimeter to avoid reverse polarity connection. Also, the voltage should be within the permissible range.
- Connect the battery cables to the corresponding terminals such BAT+, BAT- and grounding ports correctly. Otherwise it will cause damage to the equipment.
- 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 inverter and battery power cable



Making the inverter power cable

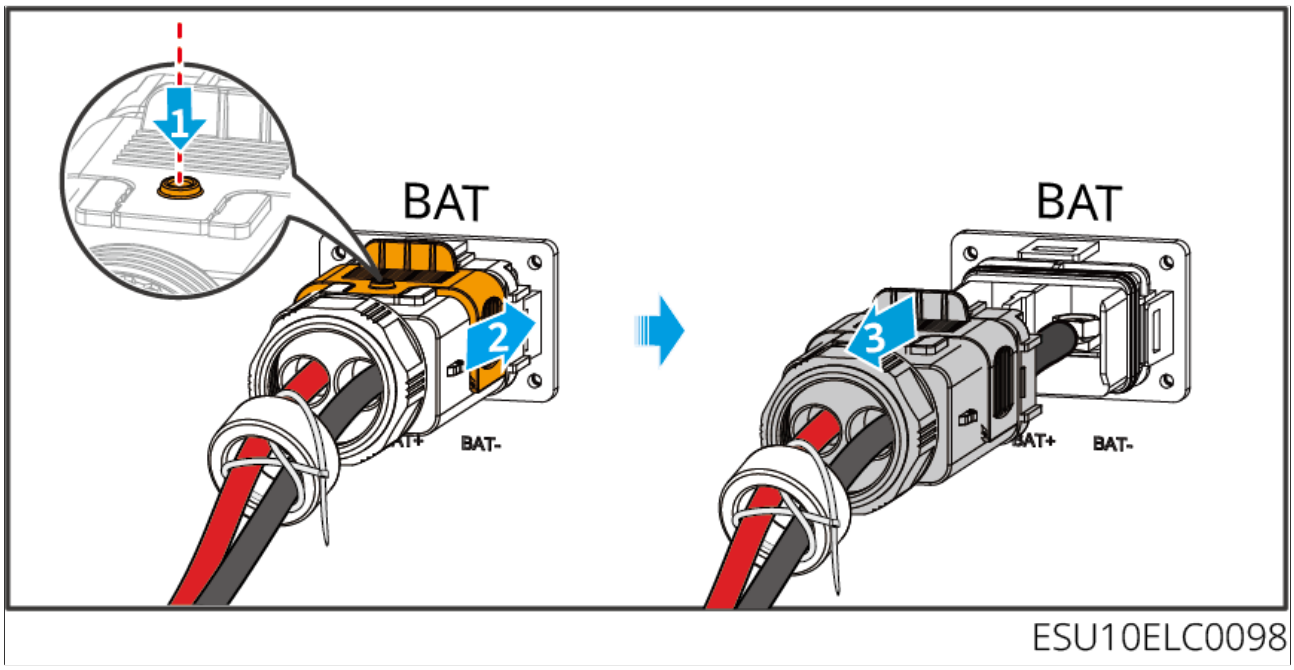




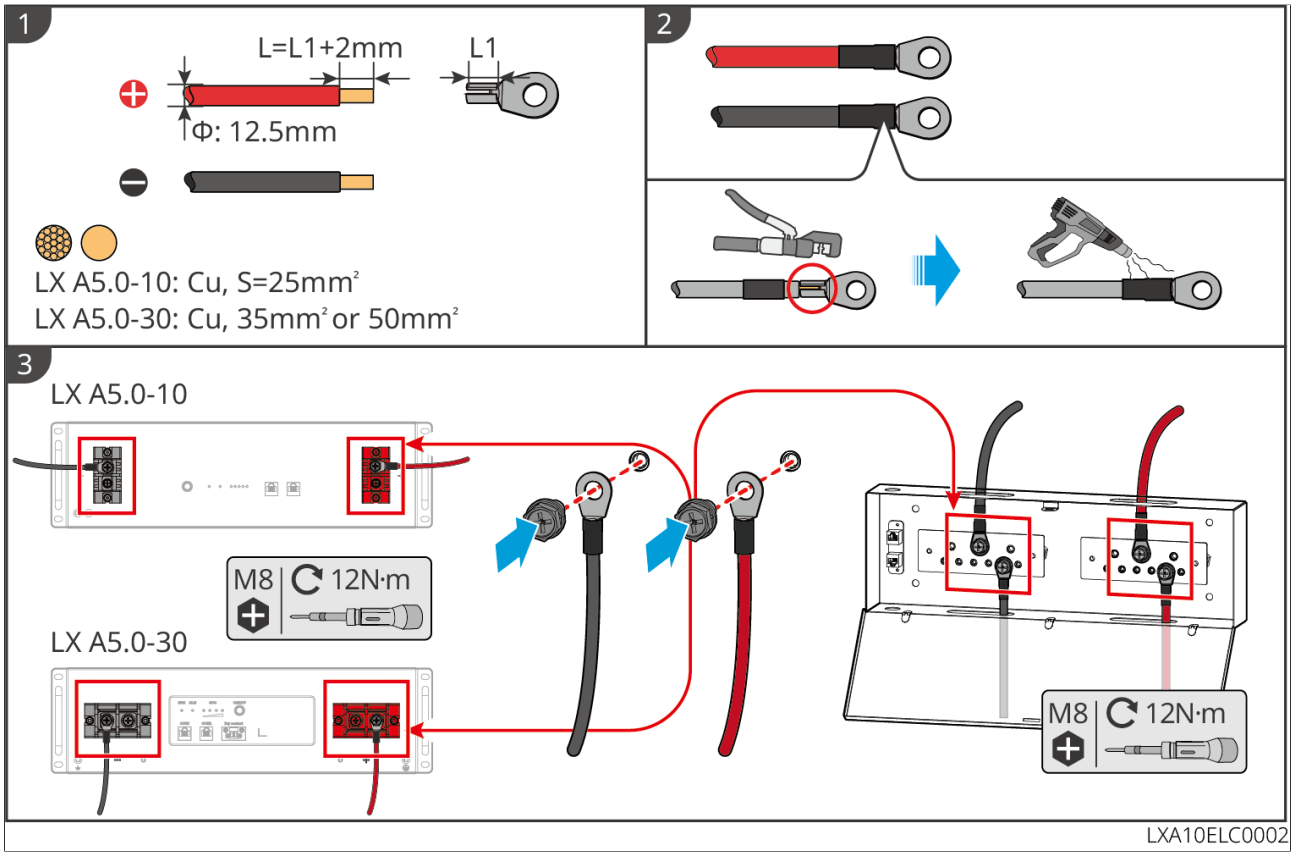
- Some models are shipped with the battery terminal screws attached to the battery

terminals. Please decide whether to remove the screws based on the actual situation.

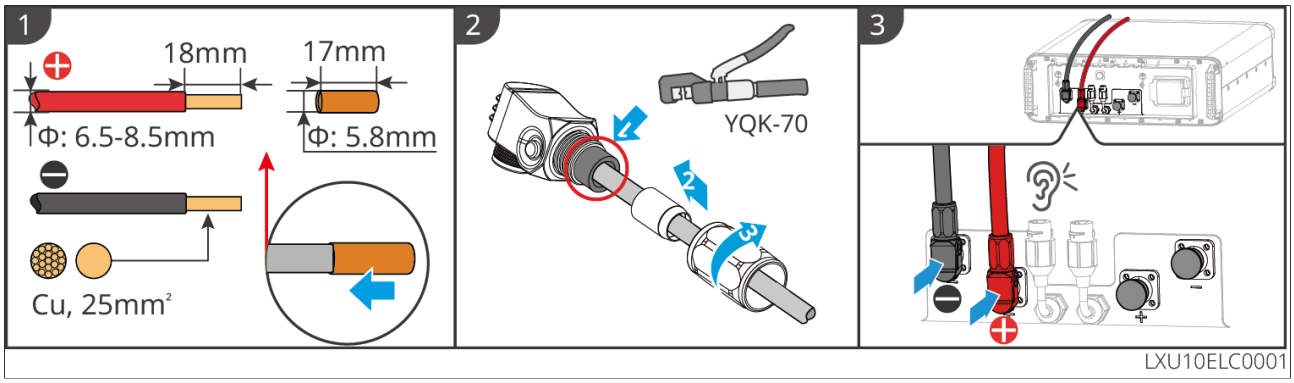
Inverter battery cover disassembly (optional)



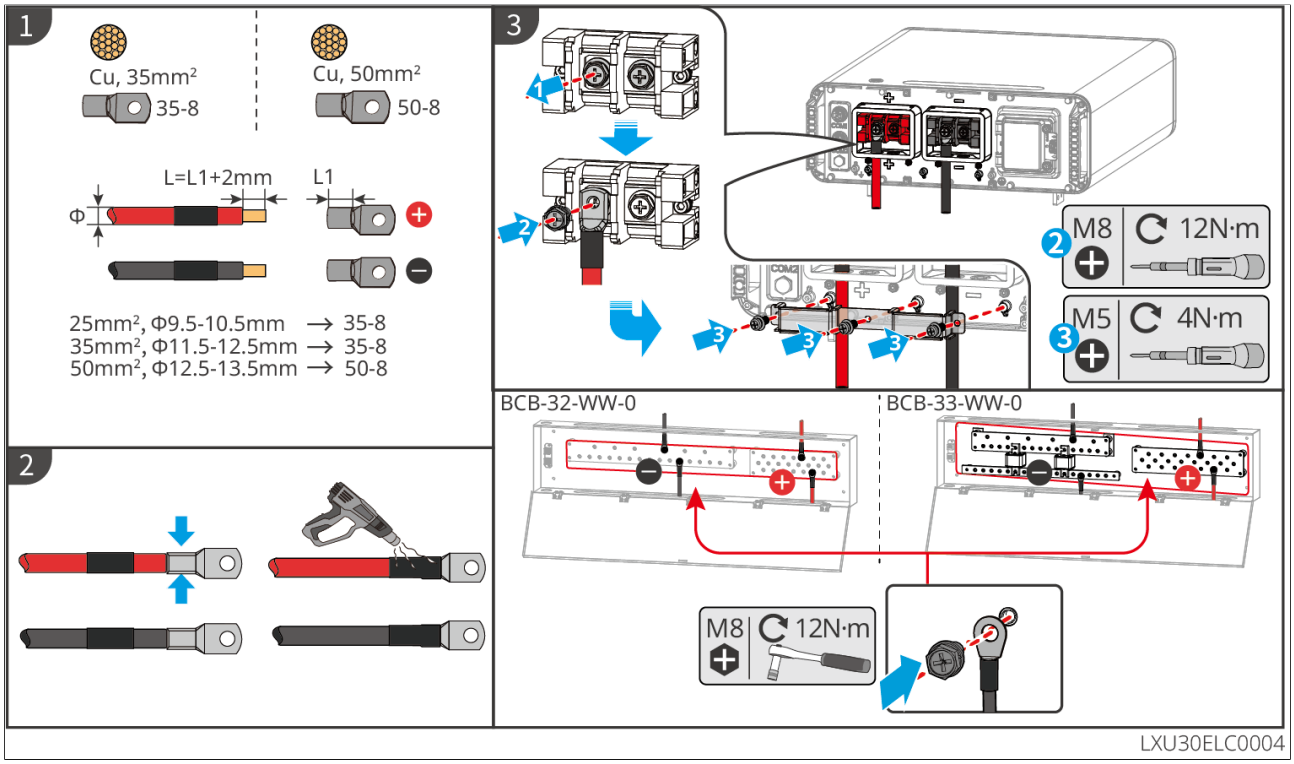
Battery power cable manufacturing (LX A5.0-10 and LX A5.0-30)



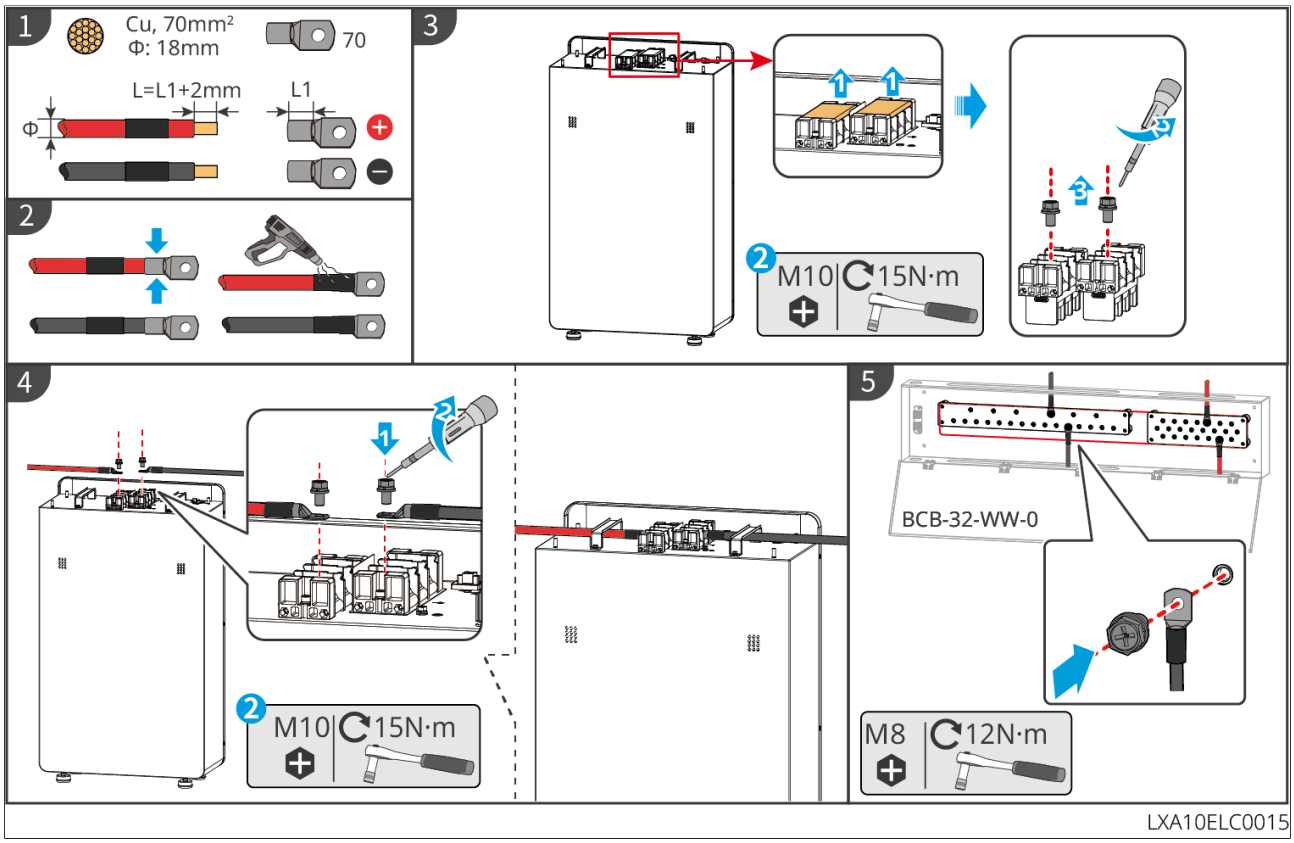
Battery power cable manufacturing (LX U5.4-L and LX U5.4-20)



Battery power cable manufacturing (LX U5.0-30)



Battery power cable manufacturing (GW14.3-BAT-LV-G10)

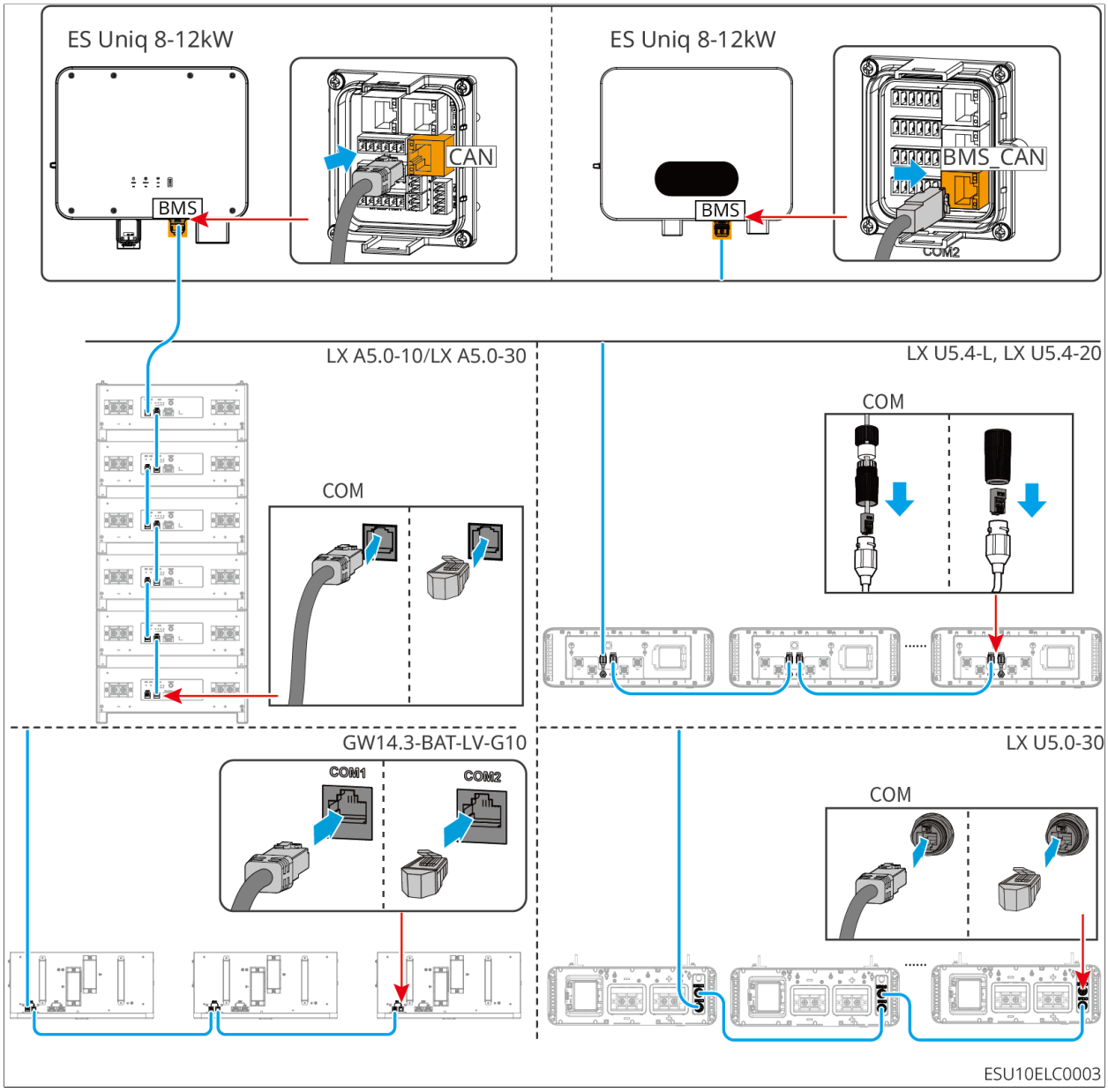


6.6.2 Connecting the Communication Cable between the Inverter and Battery

NOTICE
It is recommended to use the included BMS communication cable in the package of the inverter. If the included communication cables do not meet the requirement, prepare shielded network cables and RJ connectors by yourself to make the cable. Only crimp PIN4 and PIN5 of the connector when making the cable, otherwise the communication may fail.

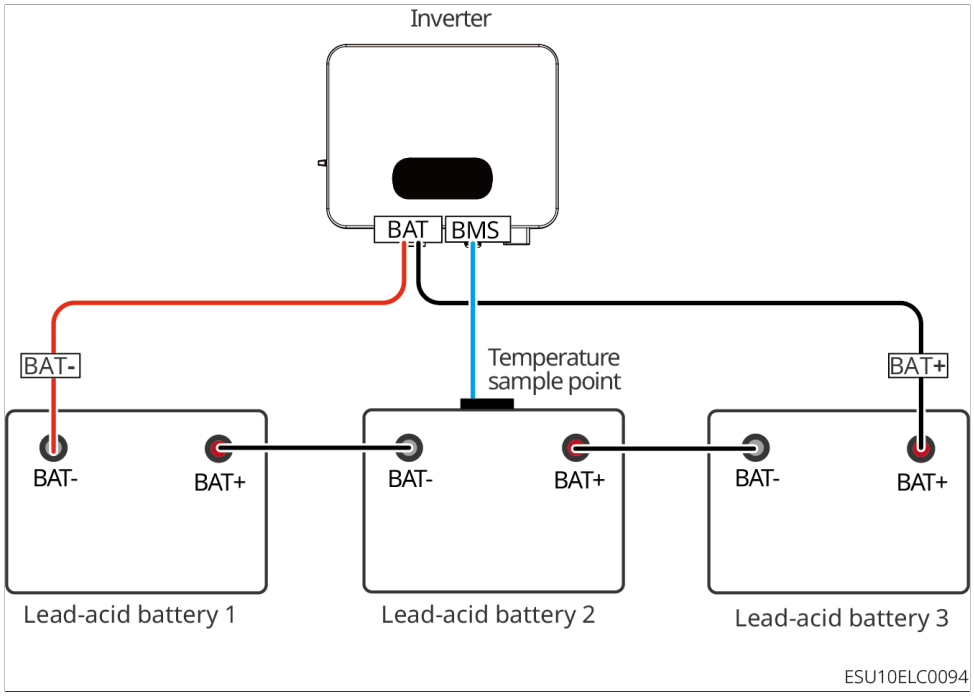
Instructions for BMS communication connection between inverter and battery

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

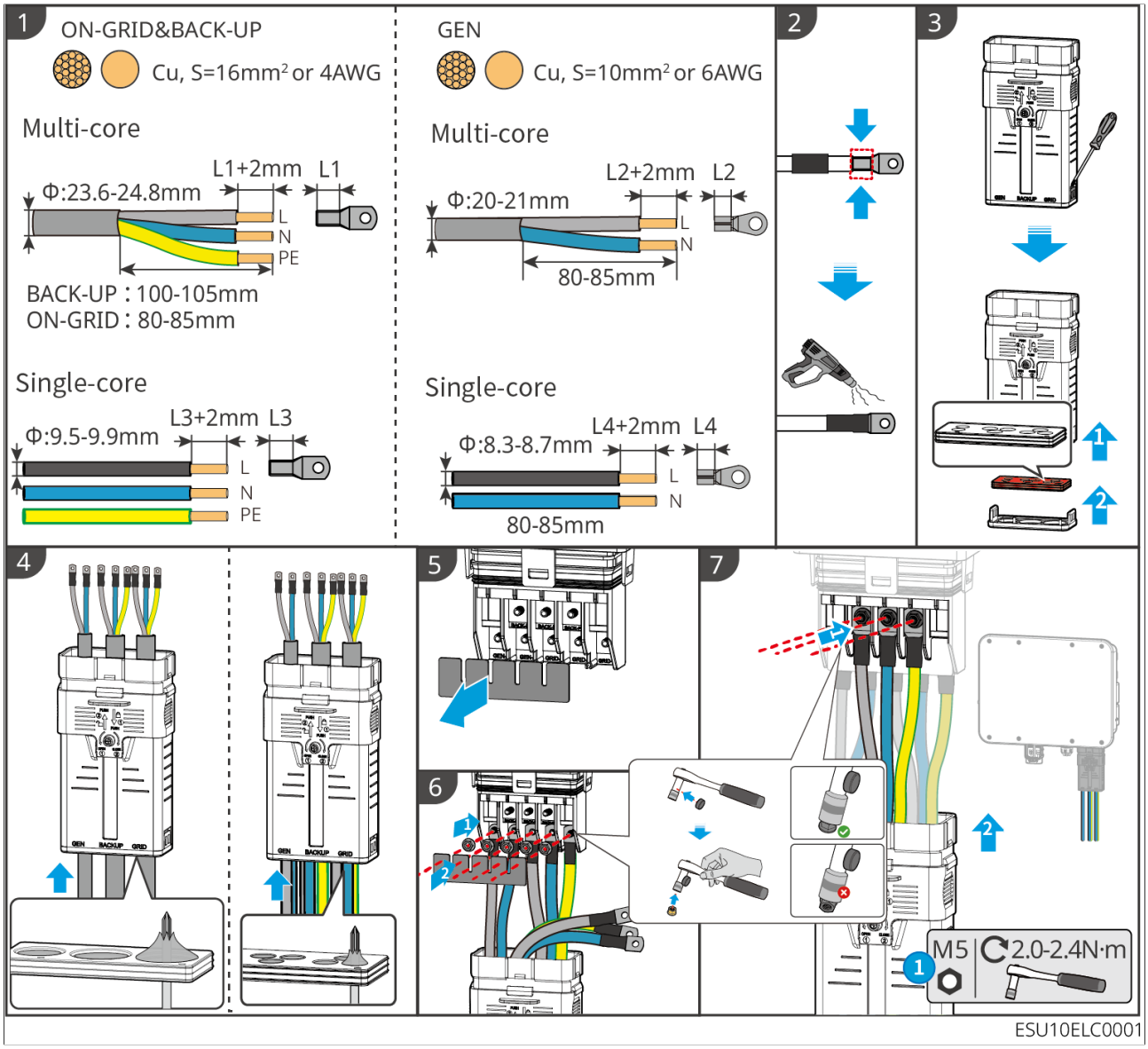
- When connecting the lead-acid battery temperature sensor cable, it is recommended to connect the temperature sensor cable at a location with poor heat dissipation. For example, when lead-acid batteries are placed side by side, the sensor should be fixed on the lead-acid battery located in the middle.
- 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.

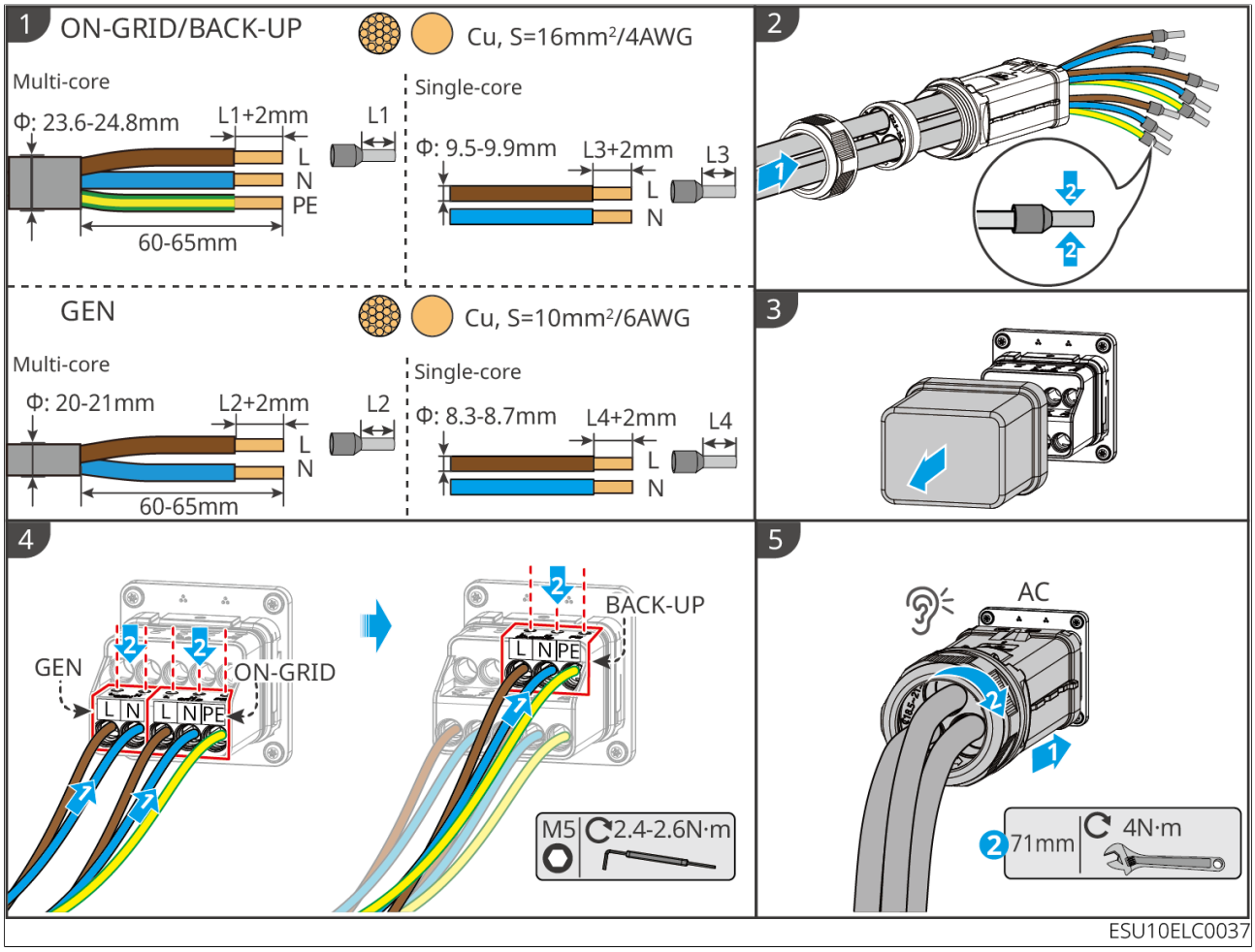


6.7 Connecting the AC Cable

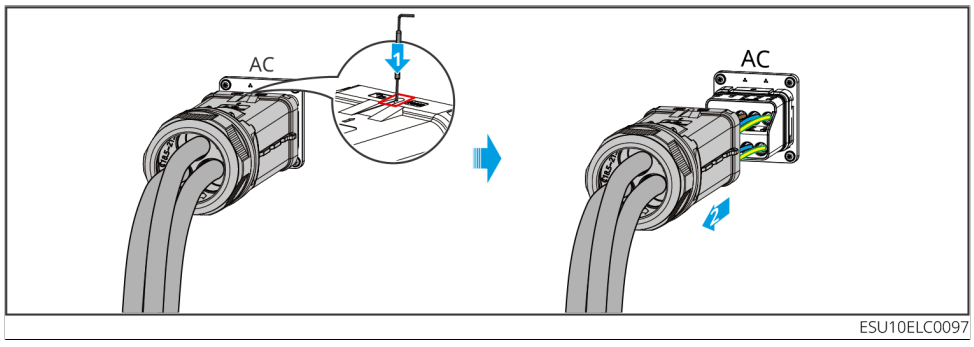
⚠WARNING

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


1
ON-GRID&BACK-UP
Cu, S=16mm² or 4AWG
Multi-core
Φ:23.6-24.8mm
L1+2mm
L1
L
N
PE
BACK-UP：100-105mm
ON-GRID：80-85mm
Single-core
Φ:9.5-9.9mm
L3+2mm
L3
L
N
PE
GEN
Cu, S=10mm² or 6AWG
Multi-core
Φ:20-21mm
L2+2mm
L2
L
N
80-85mm
Single-core
Φ:8.3-8.7mm
L4+2mm
L4
L
N
80-85mm
2
3
4
5
6
7
M5
2.0-2.4N·m
ESU10ELC0001



Inverter AC cover disassembly (optional)



6.8 Connecting the Meter Cable

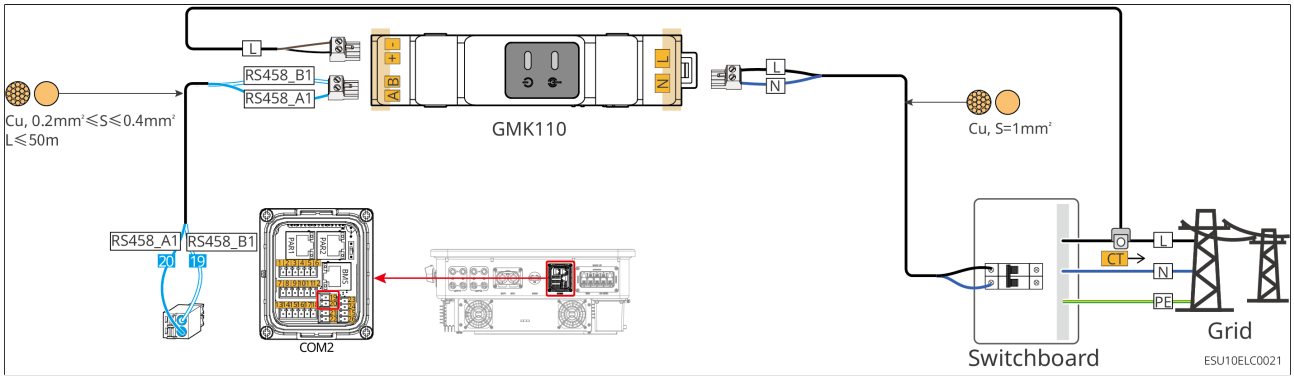
NOTICE

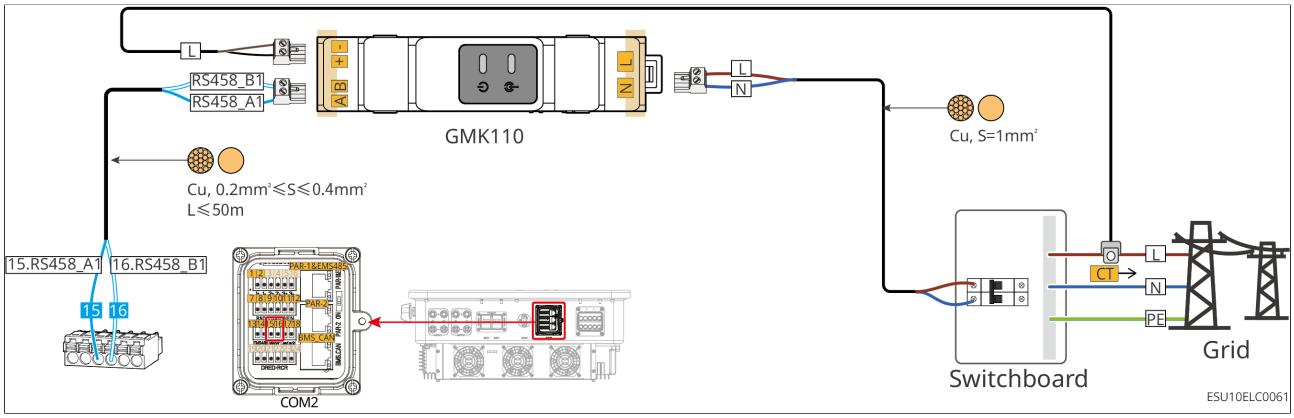
- Contact the manufacturer for additional smart meters if multiple inverters are connected.
- Ensure that the CT is connected in the correct direction and phase sequences, otherwise the monitoring data will be incorrect.
- Ensure all cables are connected correctly, tightly, and securely. Inappropriate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

Wiring of GMK110

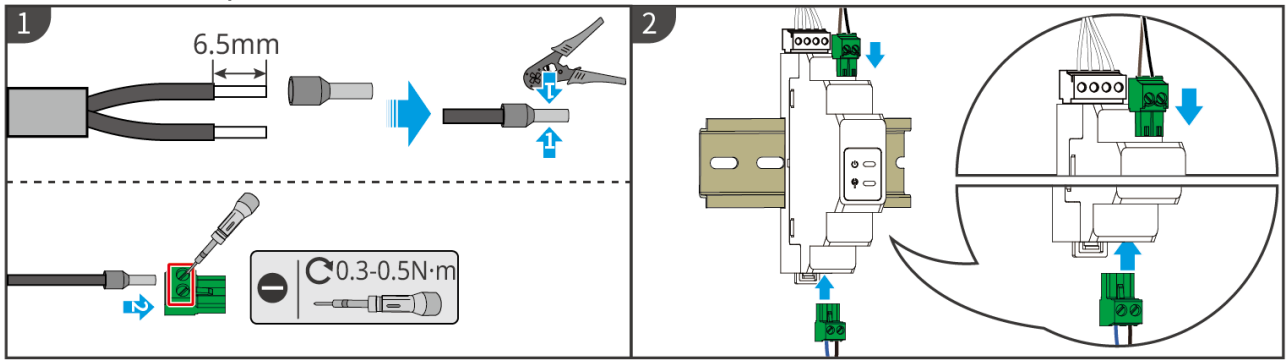
NOTICE

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





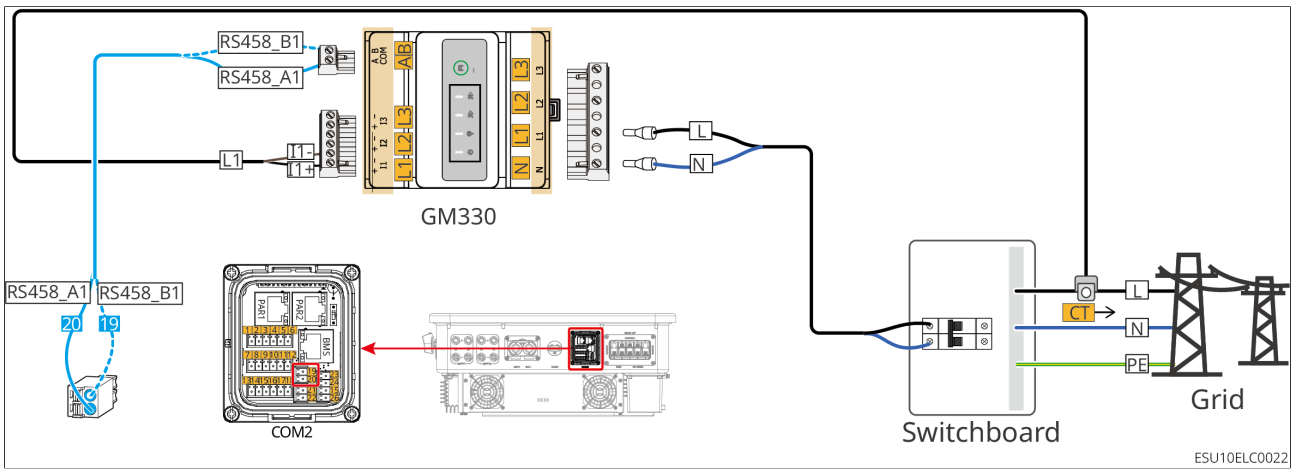
Connection steps

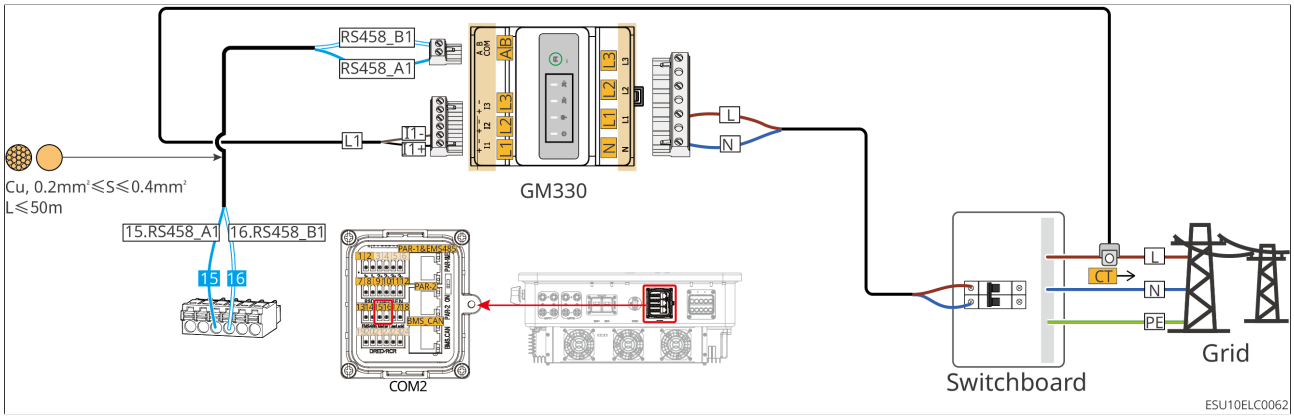


▶ GMK110: CT x 1; GMK110D: CT x 2

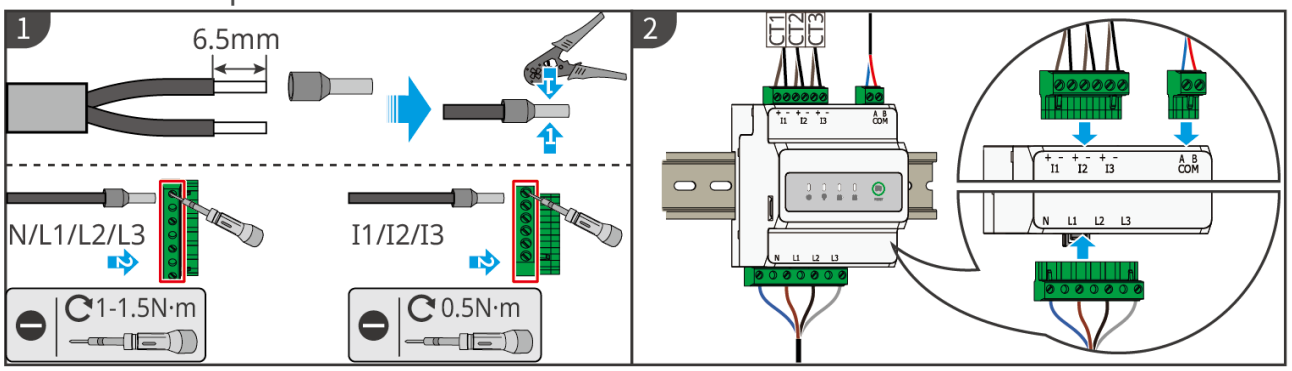
GMK10ELC0002

Wiring of GMK110



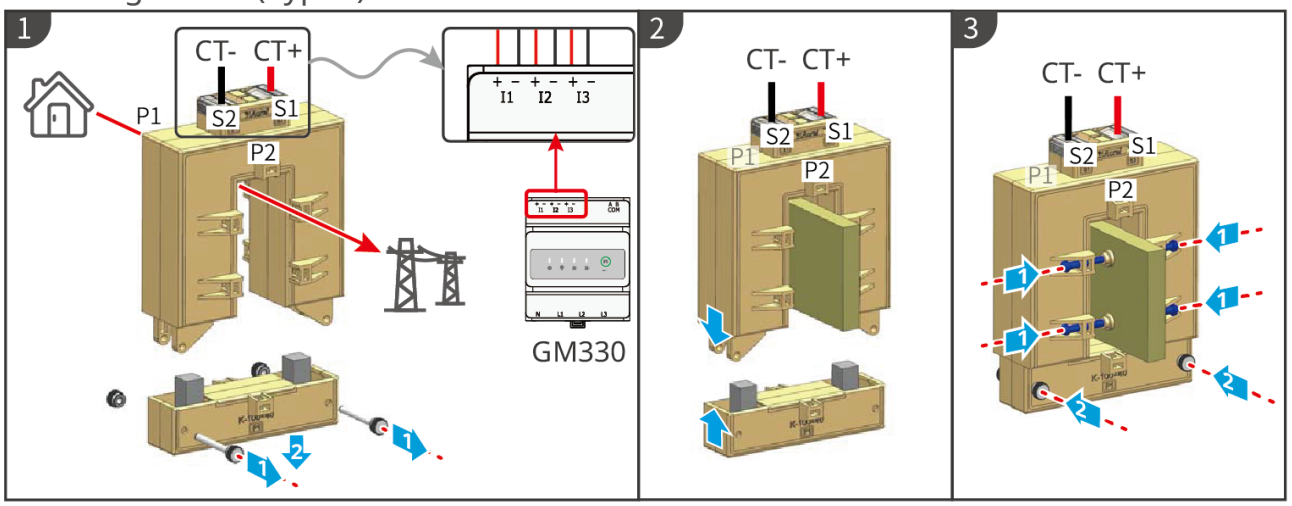


Connection steps



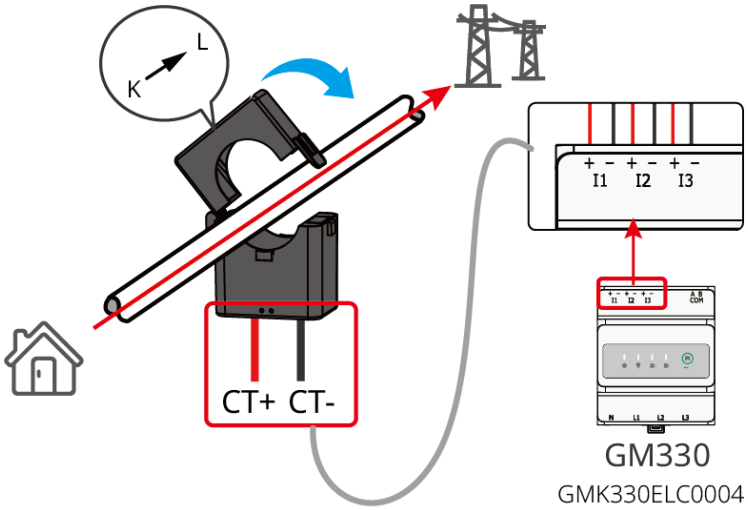
GMK330ELC0002

Installing the CT (Type I)



GMK330ELC0003

Installing the CT (Type II)

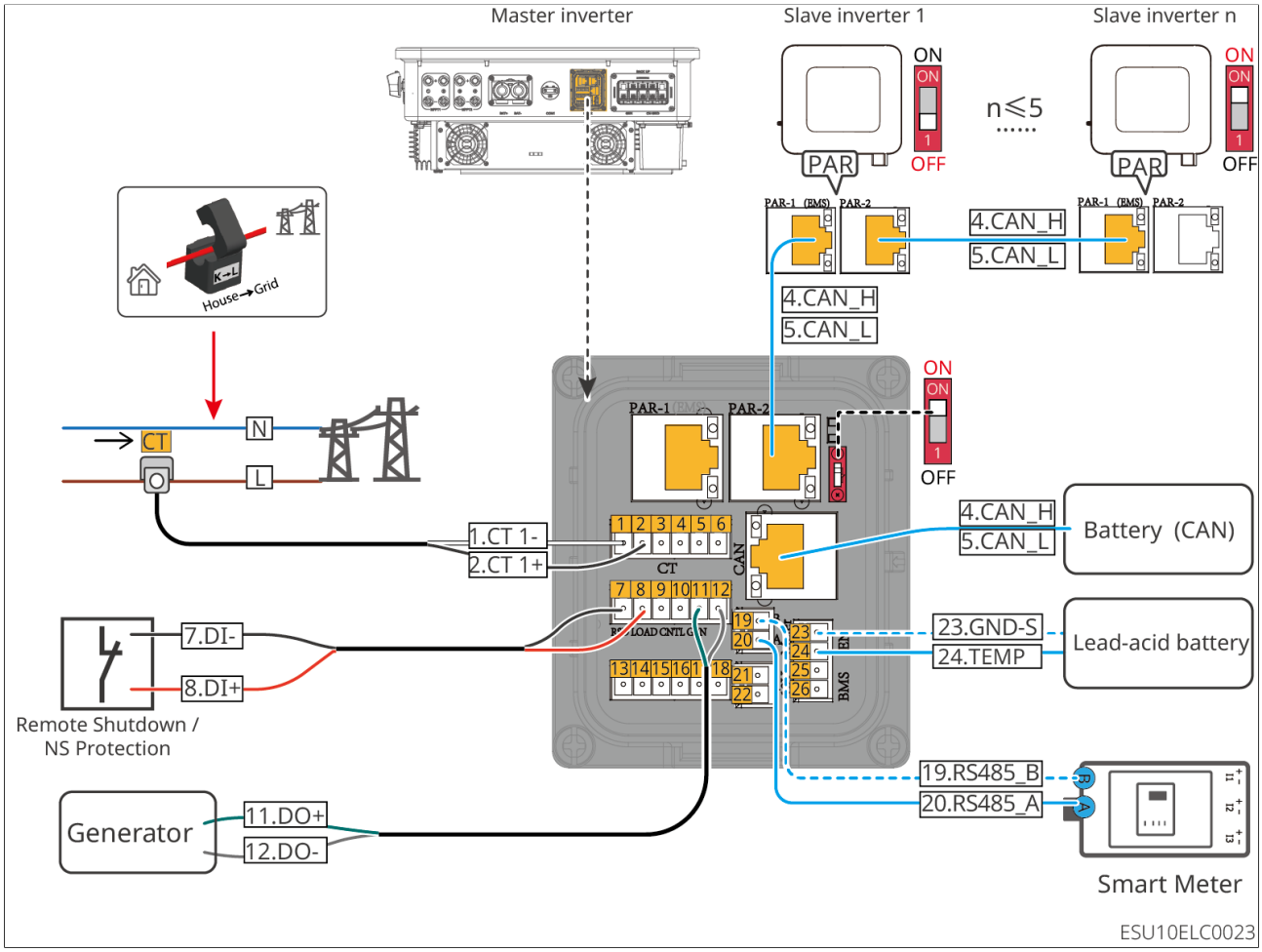


6.9 Connecting the Inverter Communication Cable

NOTICE

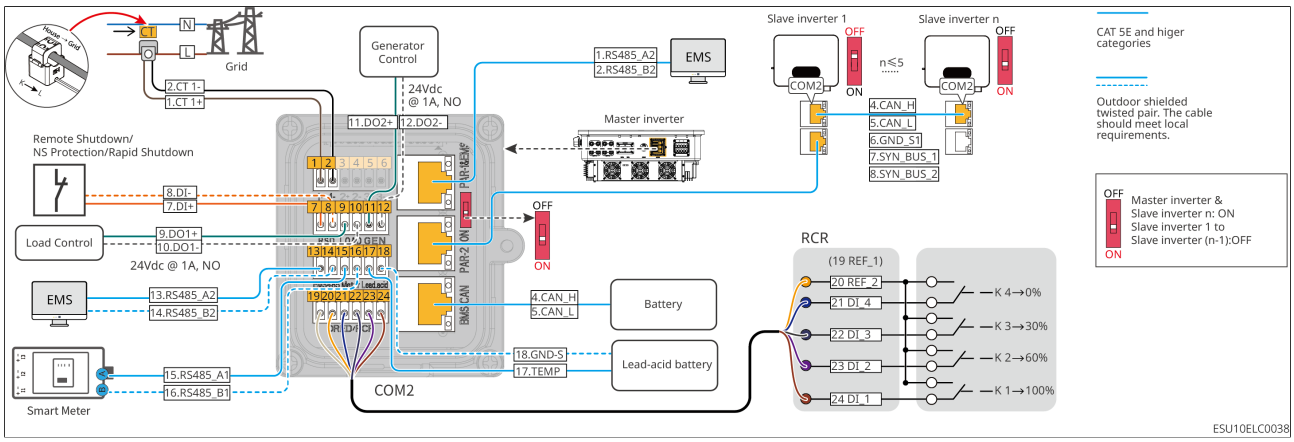
- The communication functions are optional. Connect the cables based on actual needs.
- The inverter supports parameter setting via Bluetooth nearby. It also supports connecting to mobile phones or WEB interfaces through communication modules such as WiFi, LAN and 4G to set device-related parameters, view device operation information and error messages, and keep abreast of the system status in a timely manner.
- Please use the WiFi/LAN Kit-20 module in single inverter system. When the system contains multiple inverters in parallel to the network, the master inverter needs to be installed with Ezlink3000 module 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.
- In a parallel system, please connect the communication cable to the master inverter to achieve the remote shutdown function, otherwise, the function will not work.

Communication Description



Number	Function	Description
1-2	CT	Connecting the CT Communication Cable.
7-8	Remote Shutdown/NS Protection	Provides signal control port to control equipment remote shutdown or realize NS protection function.
9-10	Reserved	-
11-12	GEN Port	Used to control the start and stop of the generator. Only available for single inverter scenarios.
13-18	Reserved	-
19-20	Smart Meter Communication	Connecting to external smart meters through RS485 communication is supported.
23-24	Lead-acid Temperature Measurement Port	Used to connect temperature sensing wire to lead-acid temperature measurement.

Number	Function	Description
PAR-1	Parallel Communication Port 1	Reserved.
PAR-2	Parallel Operation Communication Port 2	For parallel communication, using CAN communication to connect to other inverters is supported; BUS is used to control the inverters in the on-grid and off-grid status.
CAN	Battery BMS Communications	When connected to a lithium-ion battery, it is used to connect the battery system BMS communication line and supports the use of CAN signal communication.



Port	Function	Description
1-2	CT Connection Port	Connecting the CT communication cable.
3-6	Reserved	-
7-8	Remote Shutdown/NS Protection	Provides signal control port to control equipment remote shutdown or realize NS protection Remote shutdown: • In the event of an accident, the equipment can be shut down. • Remote shutdown devices need to be normally closed switches.

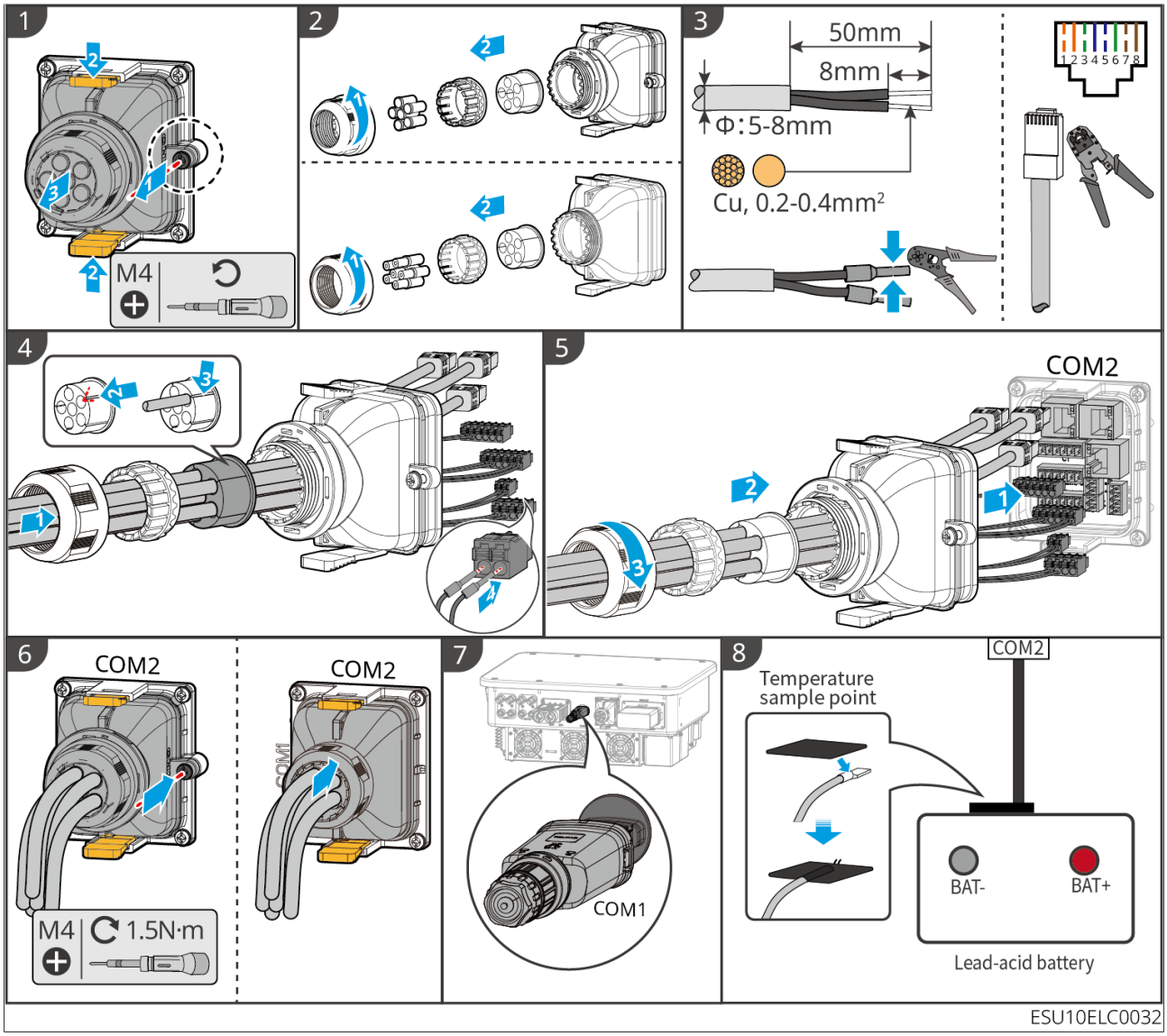
Port	Function	Description
9-10	Load Control	• It supports connection with dry contact signals to achieve functions such as load control. The capacity of the DO contact is 12V DC@1A. NO/COM is a Normally Open contact. • It supports the connection of SG Ready heat pumps and controls the heat pumps through dry contact. • Supported operating modes: ◦ Operating mode 2 (signal: 0:0): energy saving mode. In this mode, the heat pump operates in energy saving mode. ◦ Operating Mode 3 (Signal: 0:1): It's recommended to turn on. In this mode, the heat pump increases the hot water reserve while maintaining the existing operation to store heat.
11-12	Generator Start/Stop Control Port	Access to generator control signals is supported.
13-14	EMS Communication Port	It's used to connect third-party EMS devices that support RS485 communication. The third-party EMS devices are not supported to be connected in the parallel scenario. Note: It's the same line as EMS in PAR-1 & EMS port.
15-16	Smart Meter Communication	Connecting to external smart meters through RS485 communication is supported.
17-18	Lead-acid Temperature Measurement Port	Temperature sensing wire to connect lead-acid temperature measurement
19-24	RCR	RCR (Ripple Control Receiver): Provides RCR signal control terminals to meet the power grid dispatching requirements of Europe and other regions.

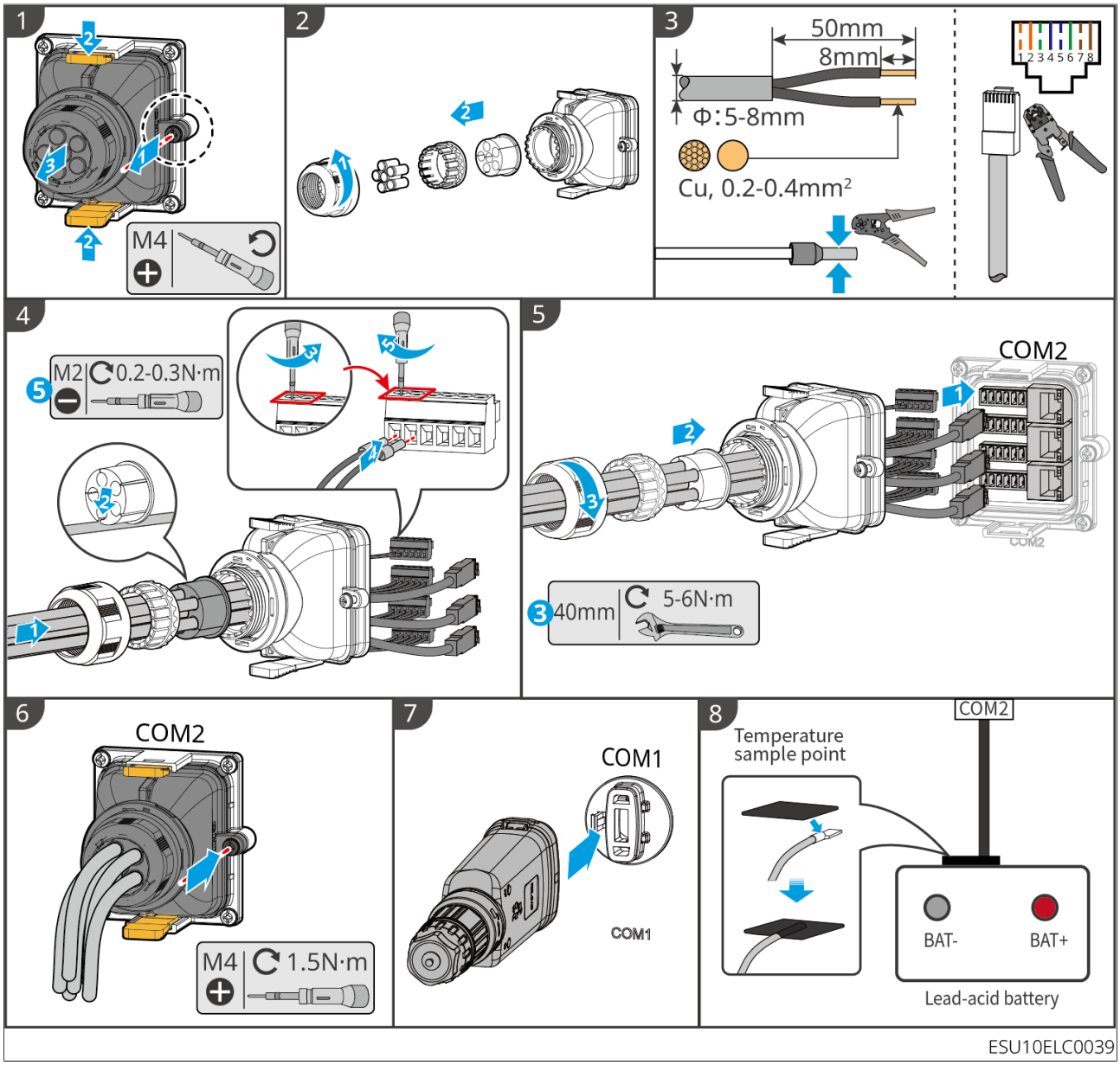
Port	Function	Description
PAR-1 &EMS	Parallel Communication Port 1 EMS Communication Port (PAR-1& EMS)	• CAN and BUS: parallel communication ports, using CAN communication to connect other inverters in the parallel network; using BUS to control the parallel inverters in the on-grid and off-grid status. • RS485: used to connect third-party EMS devices that support RS485 communication. The third-party EMS devices are not supported to be connected in the parallel scenario.
PAR-2	Parallel Operation Communication Port 2 (PAR-2)	For parallel communication, using CAN communication to connect to other inverters is supported; BUS is used to control the inverters in the on-grid and off-grid status.
BMS-CAN	Battery BMS Communications	When connected to a lithium-ion battery, it is used to connect the battery system BMS communication line and supports the use of CAN signal communication.
-	Parallel DIP Switches	In case of parallel connection of multiple inverters, the parallel dip switches of the first and last inverters should be set to the ON position, and the other inverters should be set to the 1 position.

Connecting the communication cable

NOTICE

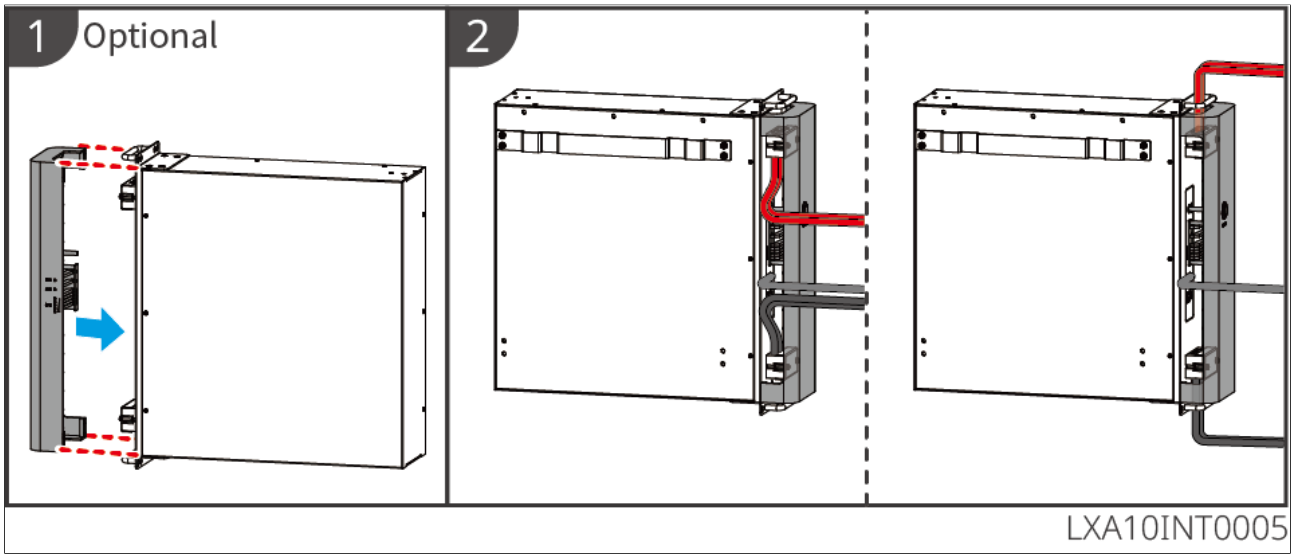
- The inverter supports parameter setting via Bluetooth nearby. It also supports connecting to mobile phones or WEB interfaces through communication modules such as WiFi, LAN and 4G to set device-related parameters, view device operation information and error messages, and keep abreast of the system status in a timely manner.
- Please use the WiFi/LAN Kit-20 module in single inverter system. When the system contains multiple inverters in parallel to the network, the master inverter needs to be installed with Ezlink3000 module for networking.


1
2
3
M4
50mm
8mm
Φ:5-8mm
Cu, 0.2-0.4mm²
1 2 3 4 5 6 7 8
4
5
COM2
6
COM2
M4
1.5N·m
COM2
7
COM1
8
COM2
Temperature sample point
BAT-
BAT+
Lead-acid battery
ESU10ELC0032

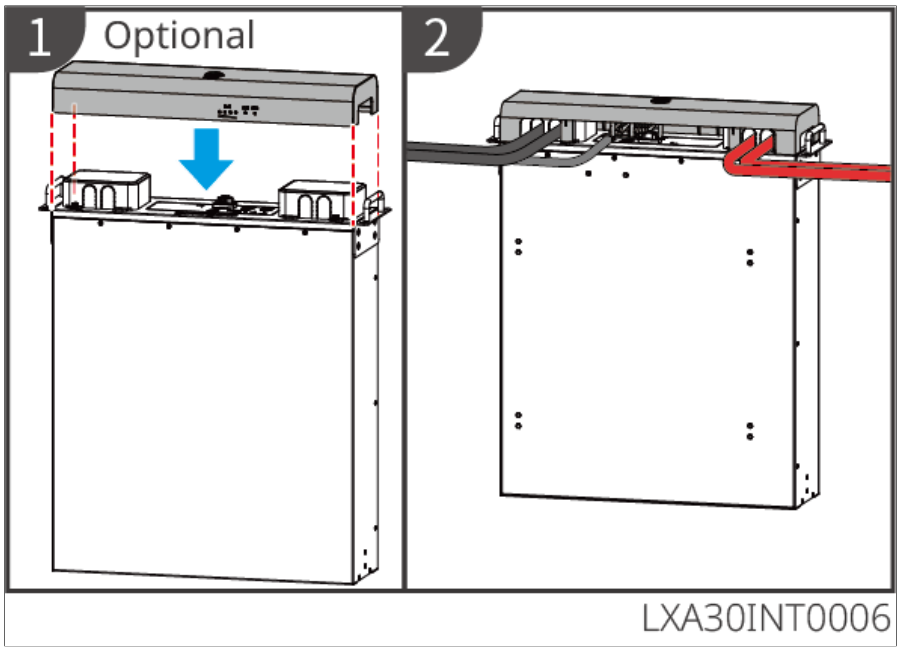


6.10 Installing the Battery Cover

6.10.1 LX A5.0-10

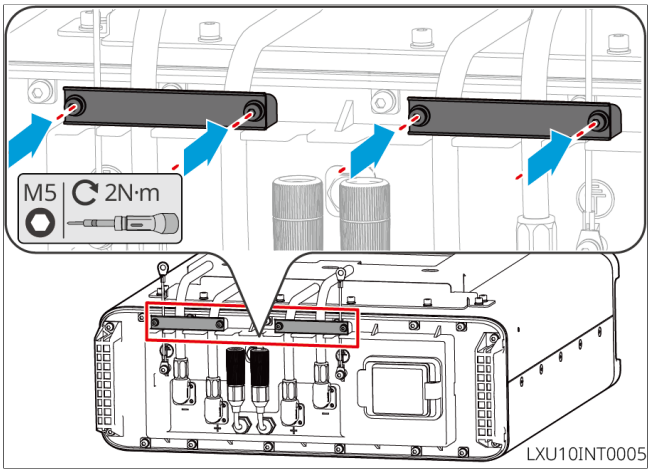


6.10.2 LX A5.0-30

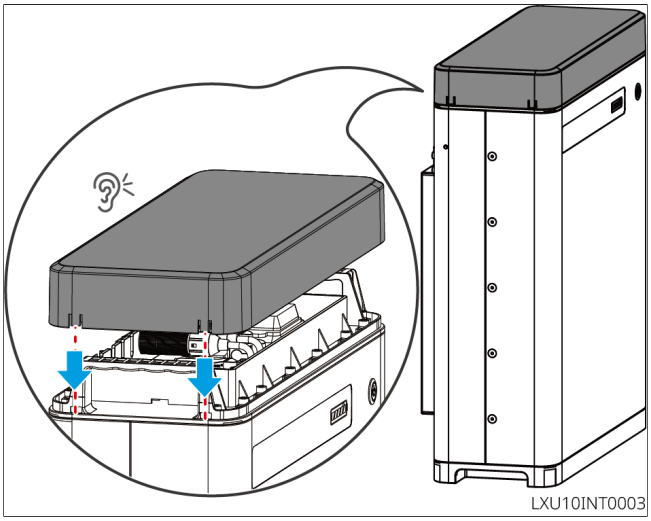


6.10.3 LX U5.4-L, LX U5.4-20

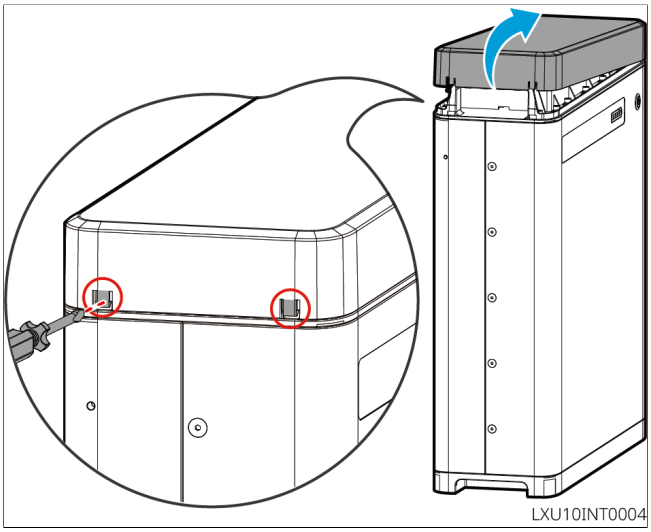
Step 1: Installing cable harness fixing plate



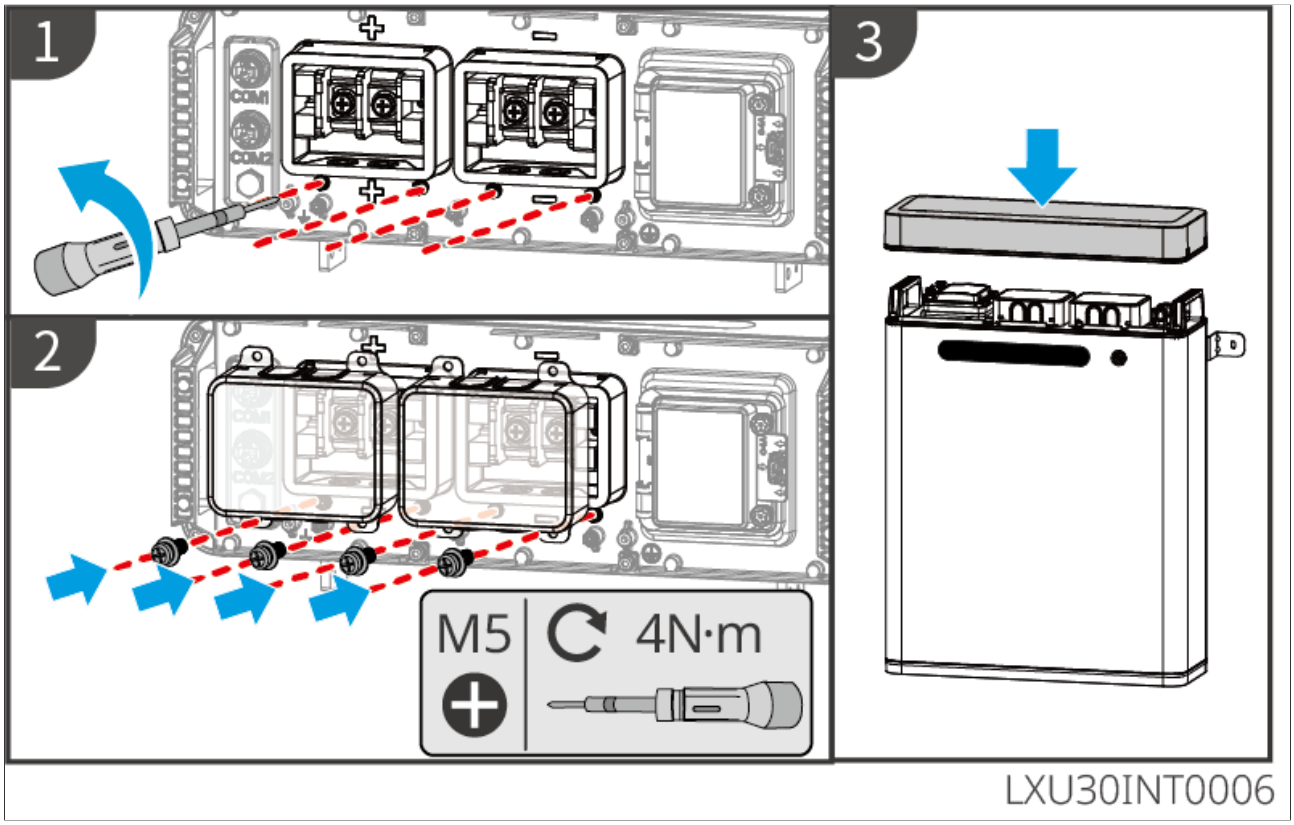
Step 2: Installing the plastic cover



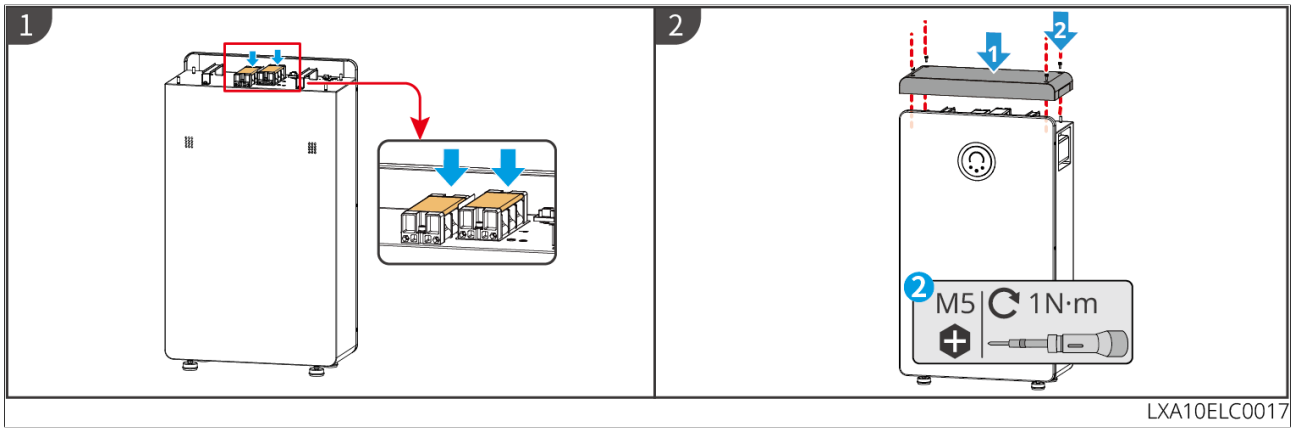
- Use a flathead screwdriver to gently pry up the two clips on one side, and then remove the plastic top cover.



6.10.4 LX U5.0-30



6.10.5 GW14.3-BAT-LV-G10


1
2
1
2
2
M5
1N·m
LXA10ELC0017

7 System Power On

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	Cable ties are intact, routed properly and evenly.
4	Unused wire holes and ports should be sealed up.
5	The used cable holes are sealed.
6	The voltage and frequency at the connection point meet the inverter grid connection requirements.

7.2 Power ON

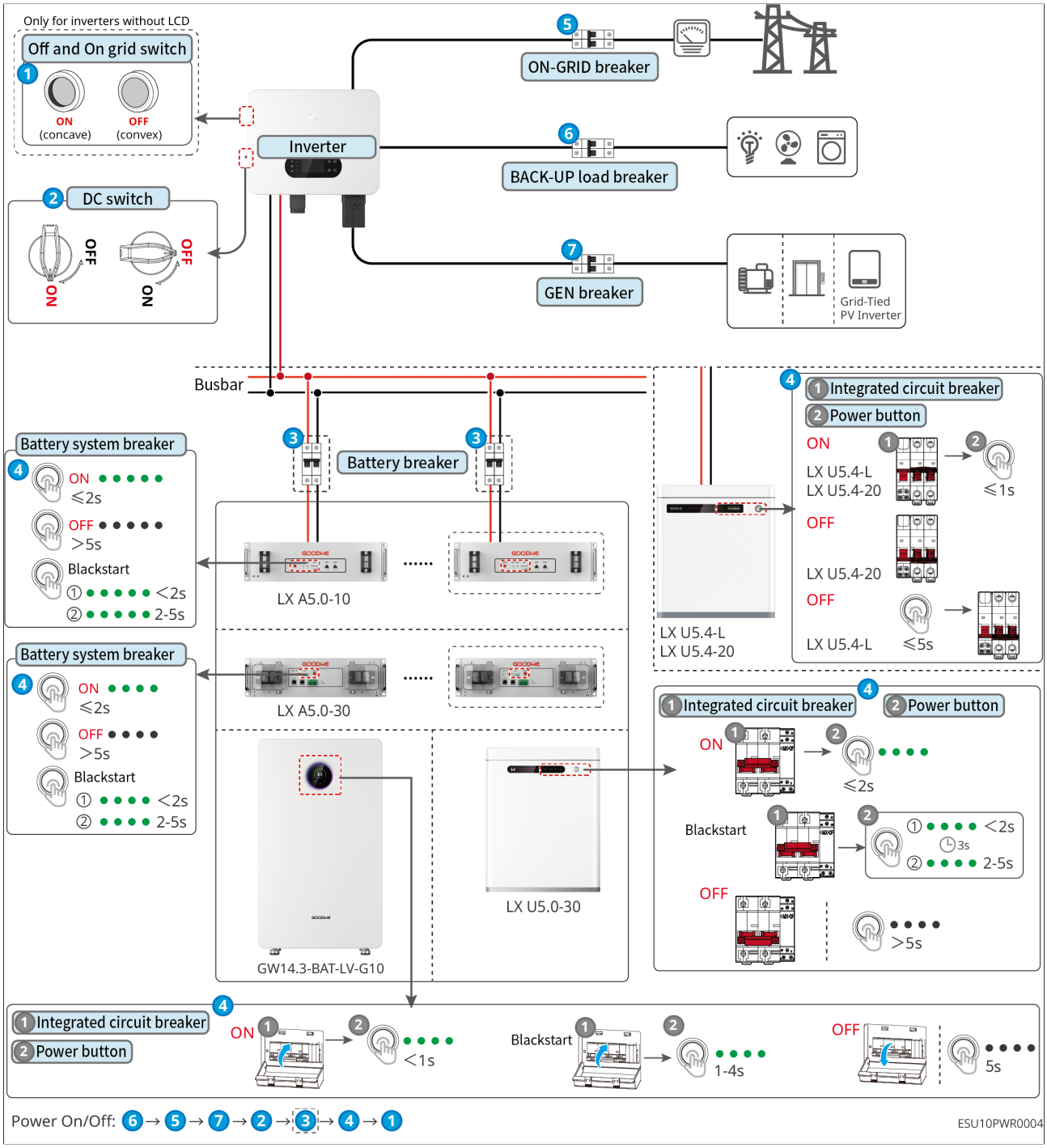
⚠WARNING

- When there are multiple inverters in the system, please ensure that all slave inverter AC sides are powered on within one minute after the master inverter AC side is powered on.
- Battery black start scenarios:
  - The inverter needs to be activated by battery.
  - When there is no inverter and you need to charge and discharge the battery, etc..
- After the battery system is started, please ensure that the communication between the inverter and the battery system is normal within 15 minutes. If the inverter cannot communicate with the battery system, the battery system breaker will be disconnected automatically, and the battery system will be powered off.
- When multiple batteries are connected in parallel in the system, starting any one battery will start all batteries.
  - GW14.3-BAT-LV-G10: After the battery is powered off and then powered on again, each battery must be restarted individually, or any battery can be started after waiting 15 minutes, and all batteries will start.

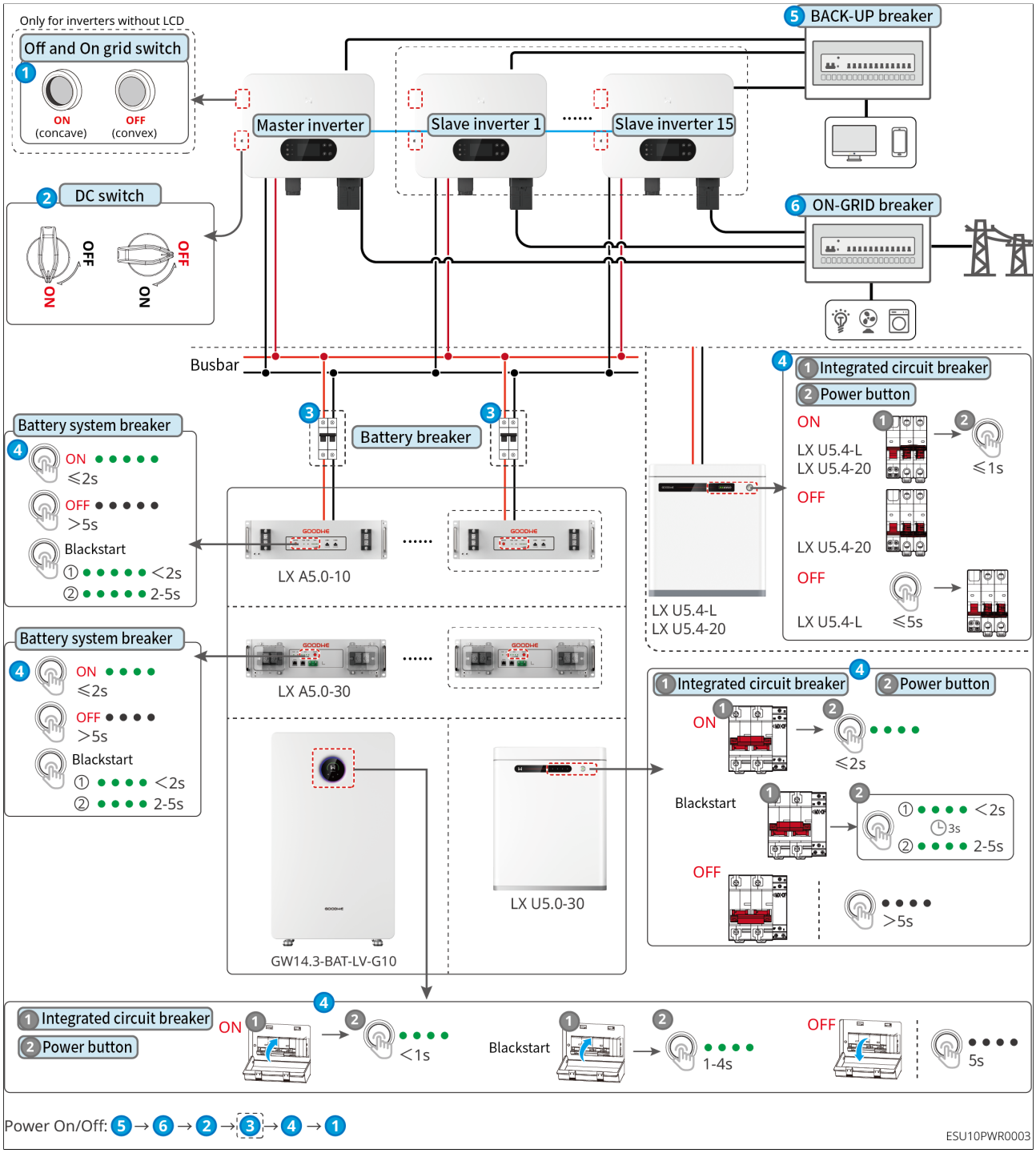
Power on process

1. Turn on the BACK-UP circuit breaker.
2. Turn on the ON-GRID 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. Turn on the DC switch of the inverter.
6. (Selected in accordance with local laws and regulations) Turn on the switch between the inverter and the battery.
7. Turn on the battery switch.
8. Turn on the battery system switch (LX A5.0-10, LX A5.0-30). Turn on the battery system integration circuit breaker (LX U5.4-L, LX U5.4-20, LX U5.0-30, GW14.3-BAT-LV-G10)
9. (Only LX U5.4-L, LX U5.4-20, LX U5.0-30, GW14.3-BAT-LV-G10) Press the battery system button.
10. (Screenless model only) Turn on the off and on grid switch of the inverter.

Single Inverter System

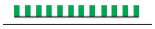


Parallel System



7.3 Indicators

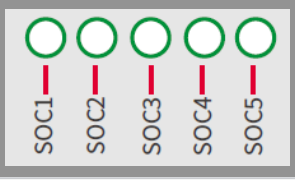
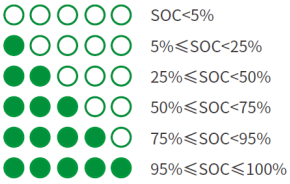
7.3.1 Inverter Indicators

Indicator	Status	Description
		The inverter is starting up and in the self-check mode.
		The inverter is powered on and in the standby mode.
		BACK-UP output overload.
		System failure.
		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.
		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.
		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 A5.0-10

Normal status

SOC Indicator 	RUN light 	Battery system status
The SOC indicator represents the battery system's usable energy. 	Green light flashes 1 time/s.	The battery system is in the standby mode.
	Green light flashes 2 time/s.	The battery system is in an idle state.
	Green light is on.	The battery system is in the charging state.
The last SOC indicator flashes 1 time/s. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 95% ≤ SOC < 100%, SOC5 flashes.	Green light is on.	The battery system is in discharging status.

Abnormal status

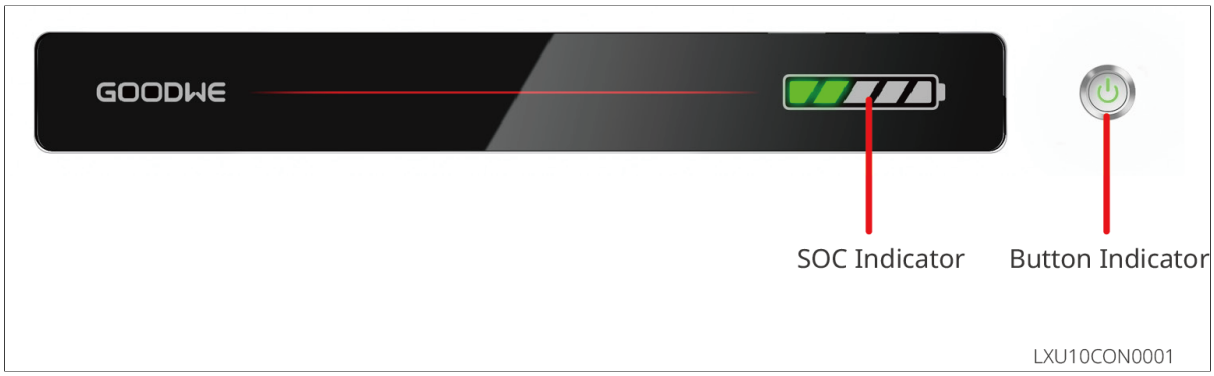
ALM Light 	Battery system status	Description
Red light blinks 1 time/s.	Battery system alarms.	Once an alarm occurs, the battery system will perform a self-check. After the self-checking is complete, the battery system enters into an operation or fault mode.

ALM Light	Battery system status	Description
Red light is on.	The battery system has malfunctioned.	Check the SOC indicator status to identify the fault type and handle the problem as recommended in the Troubleshooting section.

7.3.2.2 LX A5.0-30, LX U5.0-30

Indicator		System Status
○○○○	No SOC indicator shows green.	SOC=0%
●○○○	The first SOC indicator shows green.	0% < SOC≤25%
●●○○	The first two SOC indicators are green.	0% < SOC≤25%
●●●○	The first three SOC indicators are green.	0% < SOC≤25%
●●●●	All SOC indicators are green.	0% < SOC≤25%
RUN light	Green light is on.	The battery system is working normally.
	Green light flashes 1 time/s.	The battery system is in the standby mode.
	Green light flashes 3 time/s.	The PCS communication is lost.
	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.

7.3.2.3 LX U5.4-L

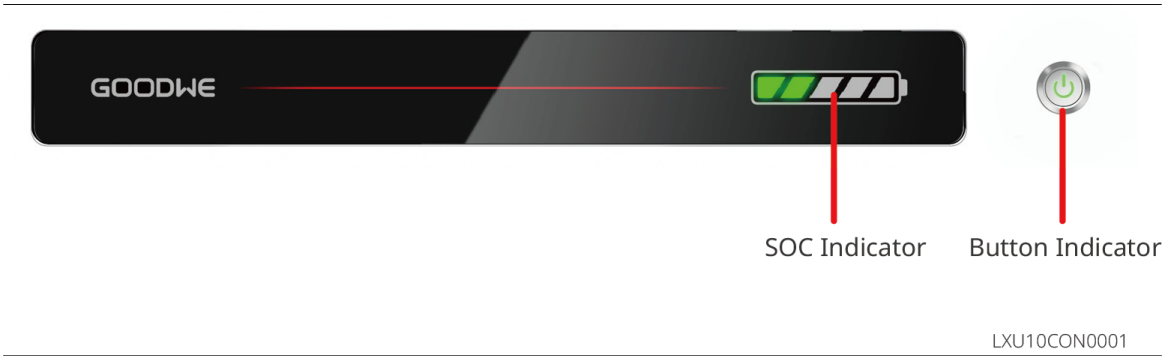


Normal status

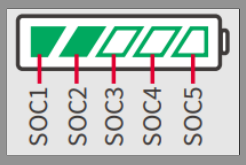
SOC Indicator	Button Indicator	Battery system status
The SOC indicator represents the battery system's usable energy. SOC<5% 5%≤SOC<25% 25%≤SOC<50% 50%≤SOC<75% 75%≤SOC<95% 95%≤SOC≤100%	Green light flashes 1 time/s.	The battery system is in the standby mode.

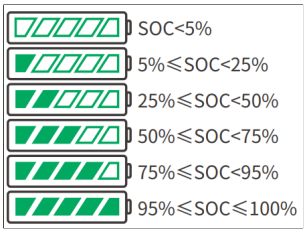
Maximum SOC indicator flashes 1 time/s, other green lights always on. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 95% ≤ SOC < 100%, SOC5 flashes.	Green light is on.	The battery system is working normally.

7.3.2.4 LX U5.4-20



Normal status

SOC Indicator	Button Indicator	Battery System Status
		

The SOC indicator represents the battery system's usable energy.  	Green light flashes 1 time/s.	The battery system is in the standby mode.
Maximum SOC indicator flashes 1 time/s, other green lights always on. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 95% ≤ SOC < 100%, SOC5 flashes.	Green light is on.	The battery system is working normally.

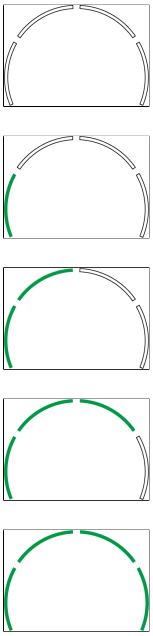
Abnormal status

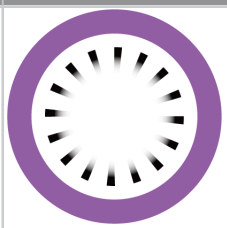
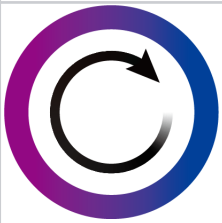
Button Indicator 	Battery System Status	Description
Red light flashes 1 time/s.	Battery system alarms.	Check the SOC indicator status to identify the fault type and handle the problem as recommended in the Troubleshooting section.

Red light is on.	The battery system has malfunctioned.	Check the SOC indicator status to identify the fault type and handle the problem as recommended in the Troubleshooting section.

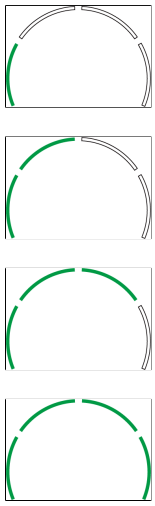
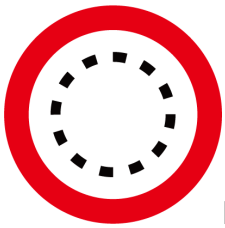
7.3.2.5 GW14.3-BAT-LV-G10

Normal status

Indicator name	Indicator status		Corresponding to other light statuses	System Status
SOC Indicator		SOC indicator green and steady on.	/	SOC=0% 0% < SOC≤25% 25% < SOC≤50% 50% < SOC≤75% 75% < SOC≤100%
		SOC indicator flashing green.		The battery system is in discharging status.

Indicator name	Indicator status		Corresponding to other light statuses	System Status
Operation indicator light + touch button		White light is on.	 Blue-purple breathing light	The system is working normally.
		White light flashes.	 Blue-purple marquee	The system is preparing.
Communication Light		White light is on.	/	PCS communication normal

Abnormal status

Indicator name	Indicator status		Corresponding to other light statuses	System Status
SOC Indicator		SOC indicator shows green.	 Red light flashes.  Power Off  Red light is on.	Check the SOC indicator status to identify the fault type and handle the problem as recommended in the Troubleshooting section.
Communication Light		Power Off	/	The PCS communication is lost.
System alarm light		White light is on.	/	System alarms. Undervoltage faults 2, 3, and 4

7.3.3 Smart Meter Indicator

7.3.3.1 GMK110

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

7.3.3.2 GM330

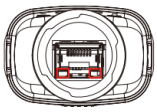
Type	Status	Description
Power light	On	Power on, no RS485 communication.
	Blinks.	Power on, RS485 communication works properly.
	Off	The smart meter has been powered off.
Communication indicator	Off	Reserved.
	Blinks.	Press the Reset button for more than 5 seconds, power light, buying or selling electricity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

7.3.4 Smart Dongle Indicator

7.3.4.1 WiFi/LAN Kit-20

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

Indicator	Status	Description
		Blinks 6 times: The smart dongle is recognizing the connected device.
		Off: The software of the smart dongle is resetting or is not powered on.

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

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

7.3.4.2 4G Kit-CN-G20 & 4G Kit-CN-G21

Indicator	Status	Description
Power light		On: The smart dongle has been powered on.
		Power Off: The smart dongle is not powered on.
		On: The smart dongle is communicating normally with the server.
		Blinks 2 times: Smart dongle is not connected to the base station.

Indicator	Status	Description
Communication indicator		Blinks 4 times: The smart dongle is connected to the base station, but has not been connected to the server.
		Blinks 6 times: The smart dongle is disconnected from the inverter.
		Off: The software of the smart dongle is resetting or is not powered on.

Button	Description
Reload	Short press for 0.5 to 3 seconds to restart the smart dongle.
	Press and hold for 6 to 20 seconds to restore the Smart Dongle to factory settings.

7.3.4.3 Ezlink3000

Indicator / Silkscreen	Color	Status	Description
Power light	Blue		Blink = The smart dongle is working properly.
			OFF = The smart dongle is powered off.
Communication indicator	Green		ON = The smart dongle is connected to the server.
			Blink 2 = The smart dongle is not connected to the router.
			Blink 4 = The smart dongle is connected to the router, but not connected to the server.
RELOAD	-	-	• Short press for 3 seconds to restart the smart dongle. • Long press for 3 to -10 seconds to restore factory settings.

8 Rapid System Configuration

8.1 Downloading the App

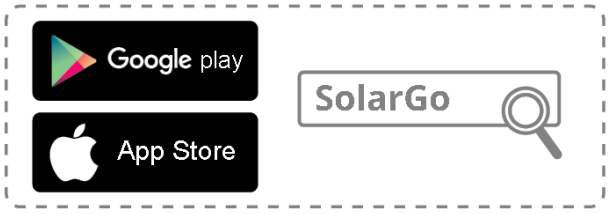
8.1.1 Downloading SolarGo App

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.



SolarGo App

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

SolarGo App

8.1.2 Downloading SEMS Portal App

Make sure that the mobile phone meets the following requirements:

- Mobile phone operating system: Android 4.3 or later, iOS 9.0 or later.
- The mobile phone can access the Internet.
- The mobile phone supports WLAN or Bluetooth.

Method 1: Search SEMS Portal 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.

8.1.3 Downloading SEMS+ APP

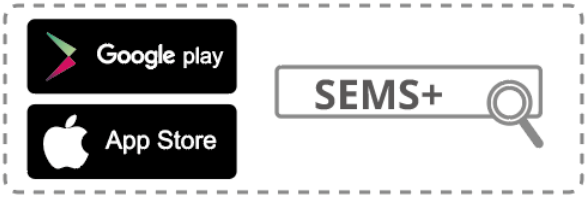
Make sure that the mobile phone meets the following requirements:

- 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.



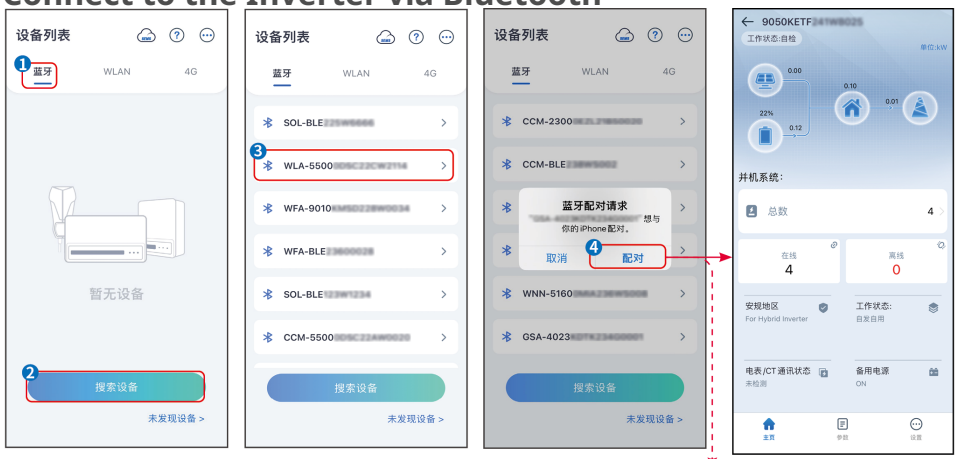
Method 2:

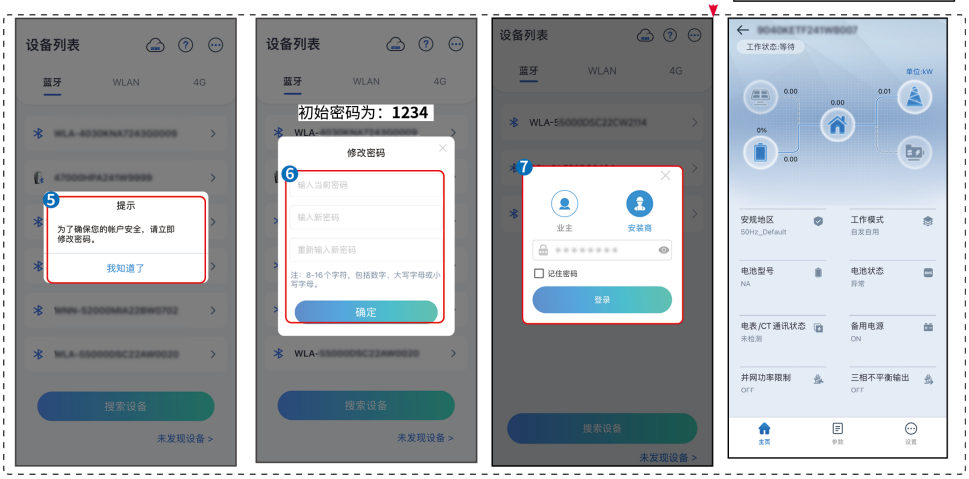
Scan the QR code below to download and install the App.

8.2 Connecting the Inverter via SolarGo

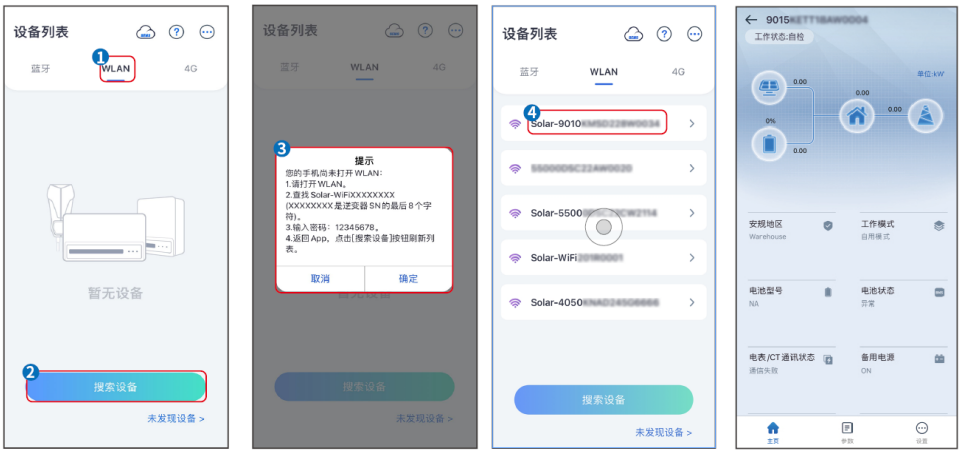
NOTICE
The device name varies depending on the inverter model or smart dongle type: • Wi-Fi Kit: Solar-WiFi*** • Bluetooth Module: Solar-BLE*** • WiFi/LAN Kit-20: WLA-*** • Ezlink3000: CCM-BLE***; CCM-***; ***

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.

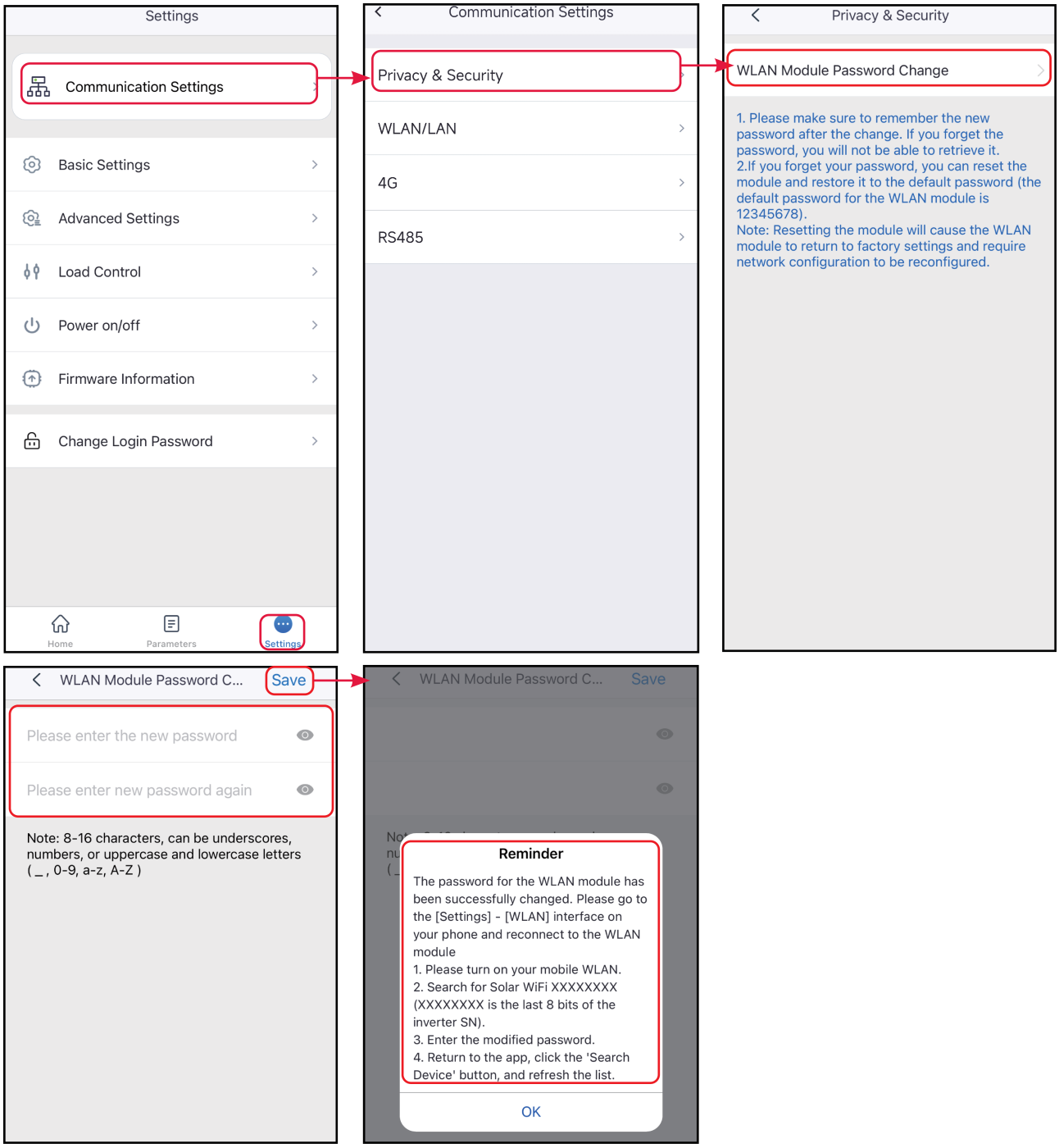
8.3.1 Setting Privacy and Security

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**.

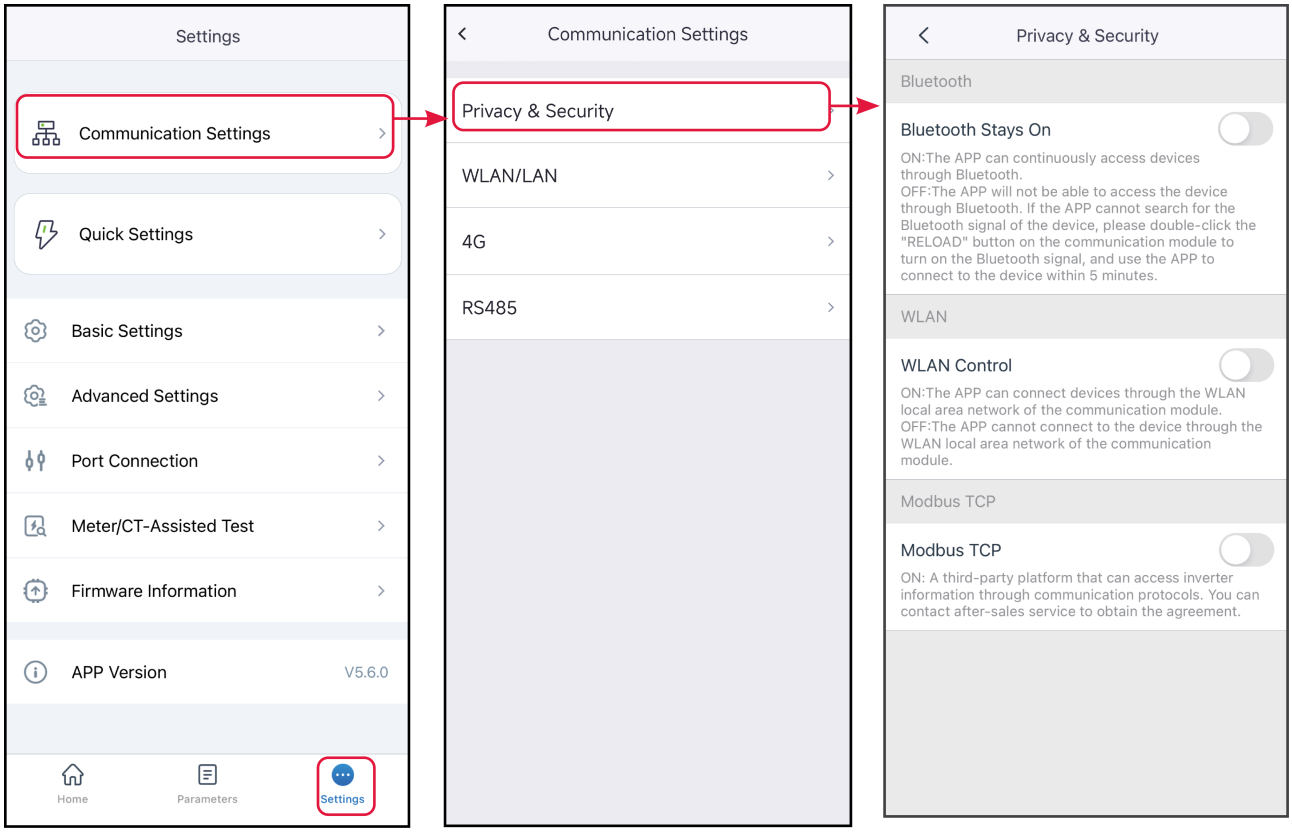
Step 3 Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi***) with the new password.



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.



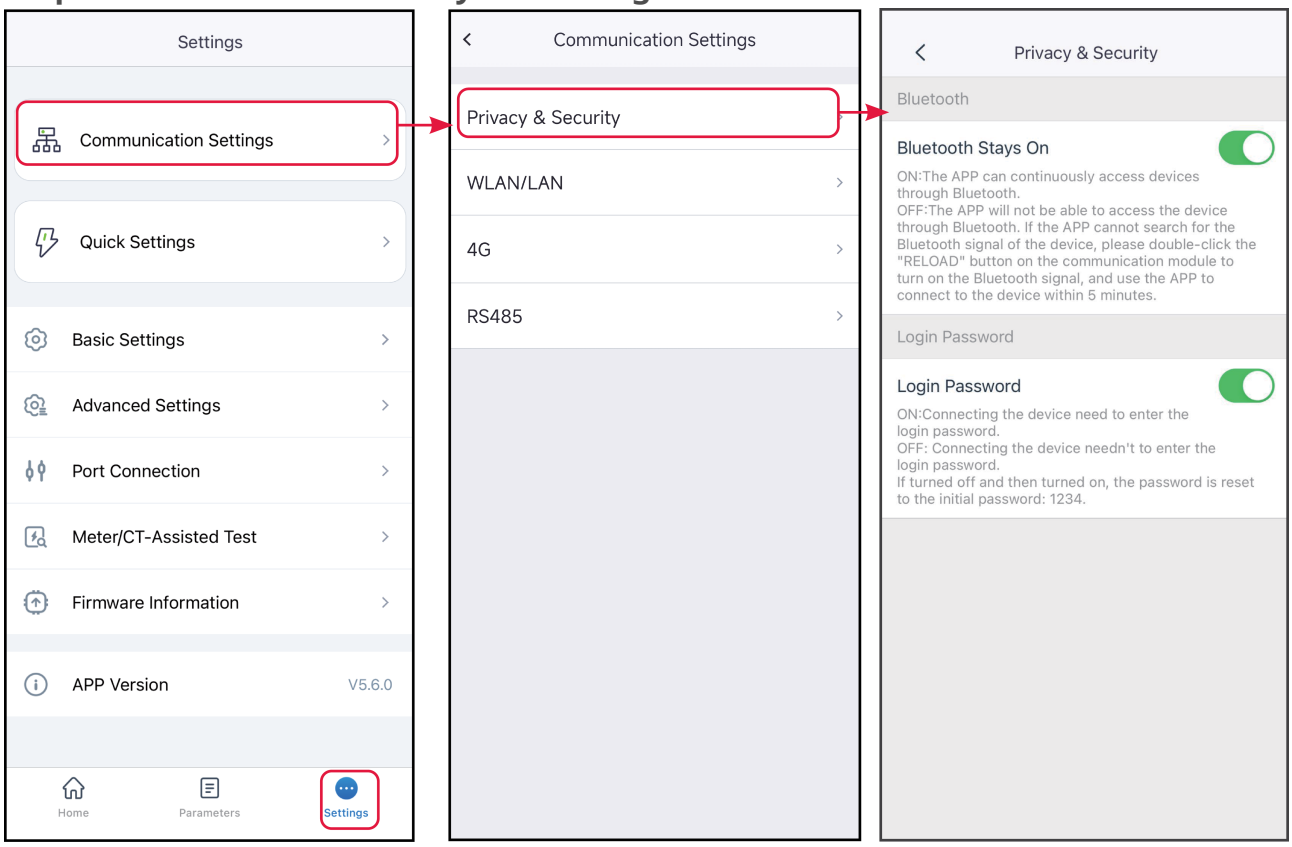
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default. 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.



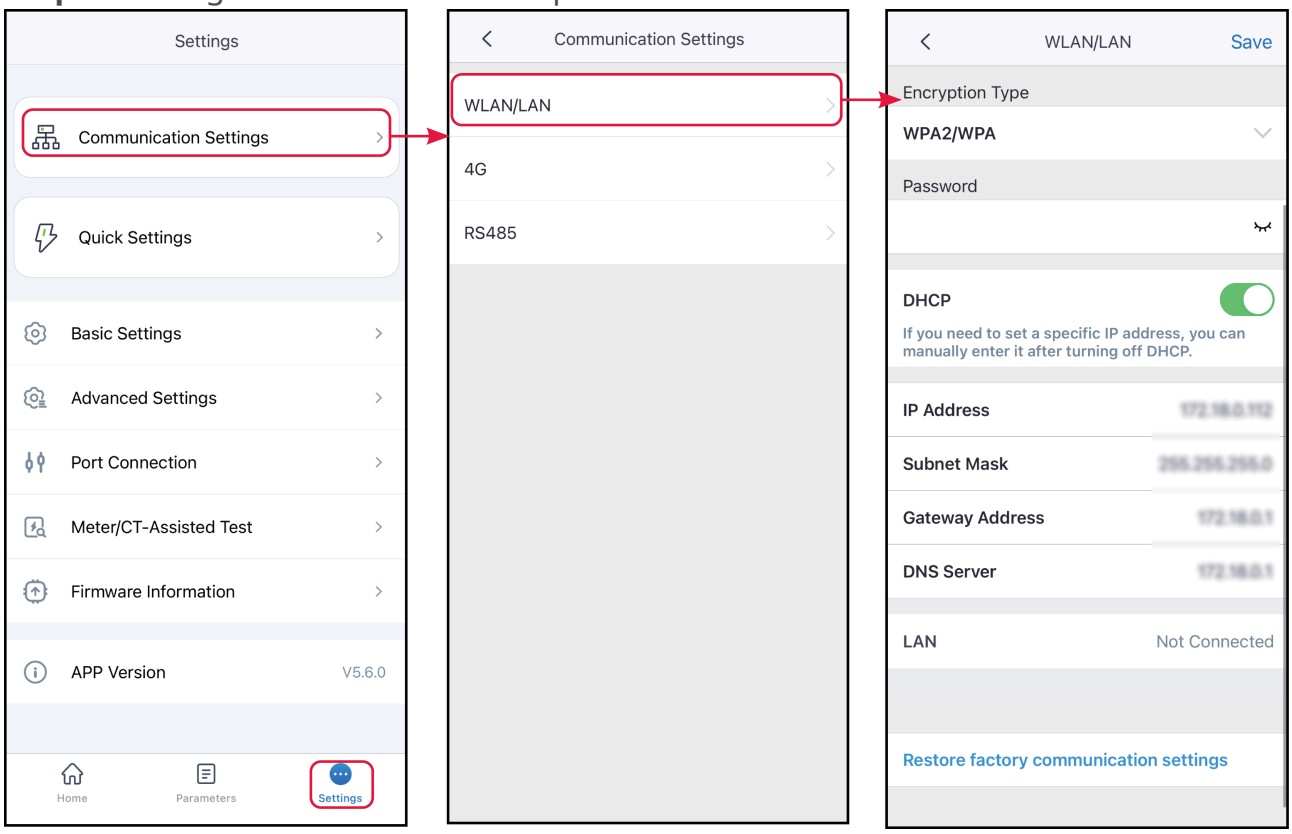
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	Login Password	Disabled by 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.

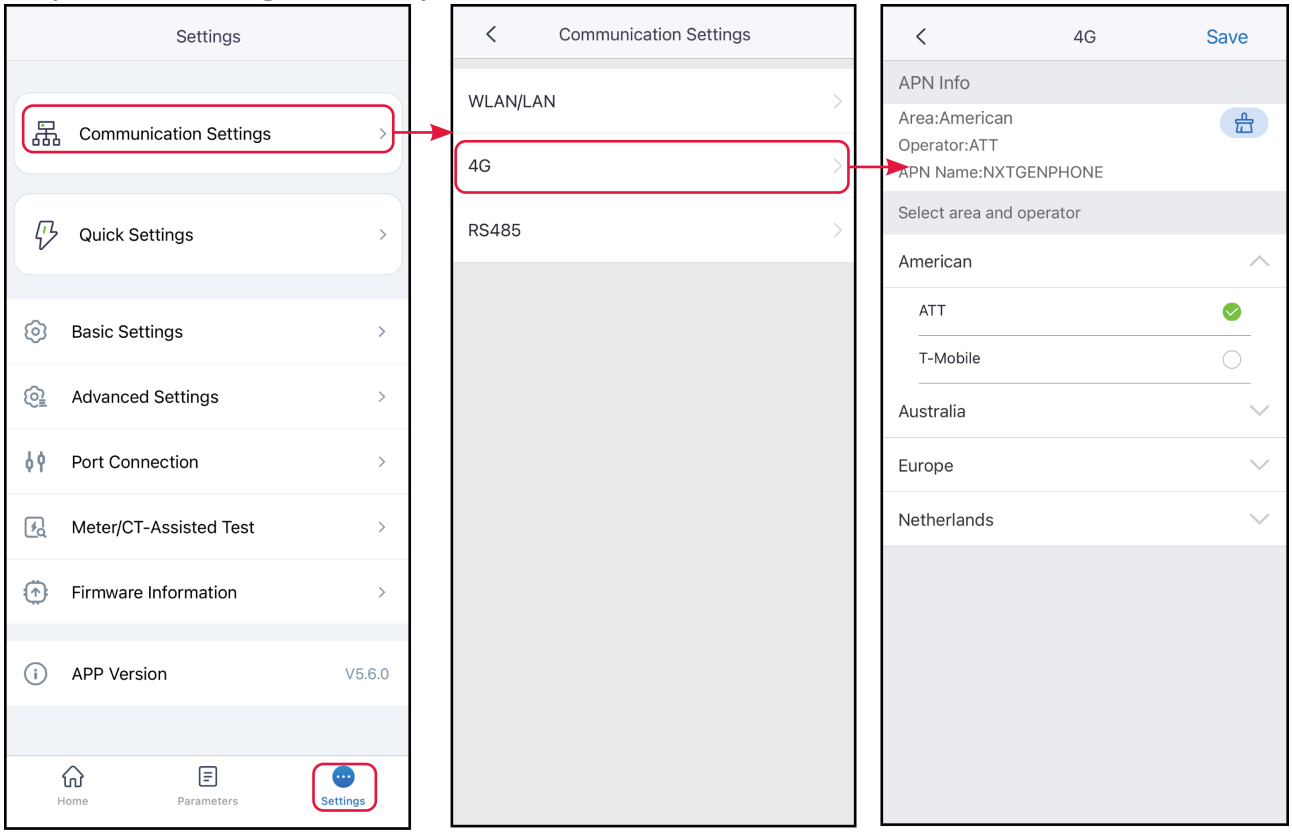
No.	Parameters	Description
4	IP Address	Do not configure the parameters when DHCP is enabled. Configure the parameters according to the router or switch information when DHCP is disabled.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

8.3.3 Configuring APN Parameters

NOTICE

- Configure the SIM card information of 4G communication device.
- Configure the APN parameters through the Bluetooth module or WiFi module first before using a 4G module 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.

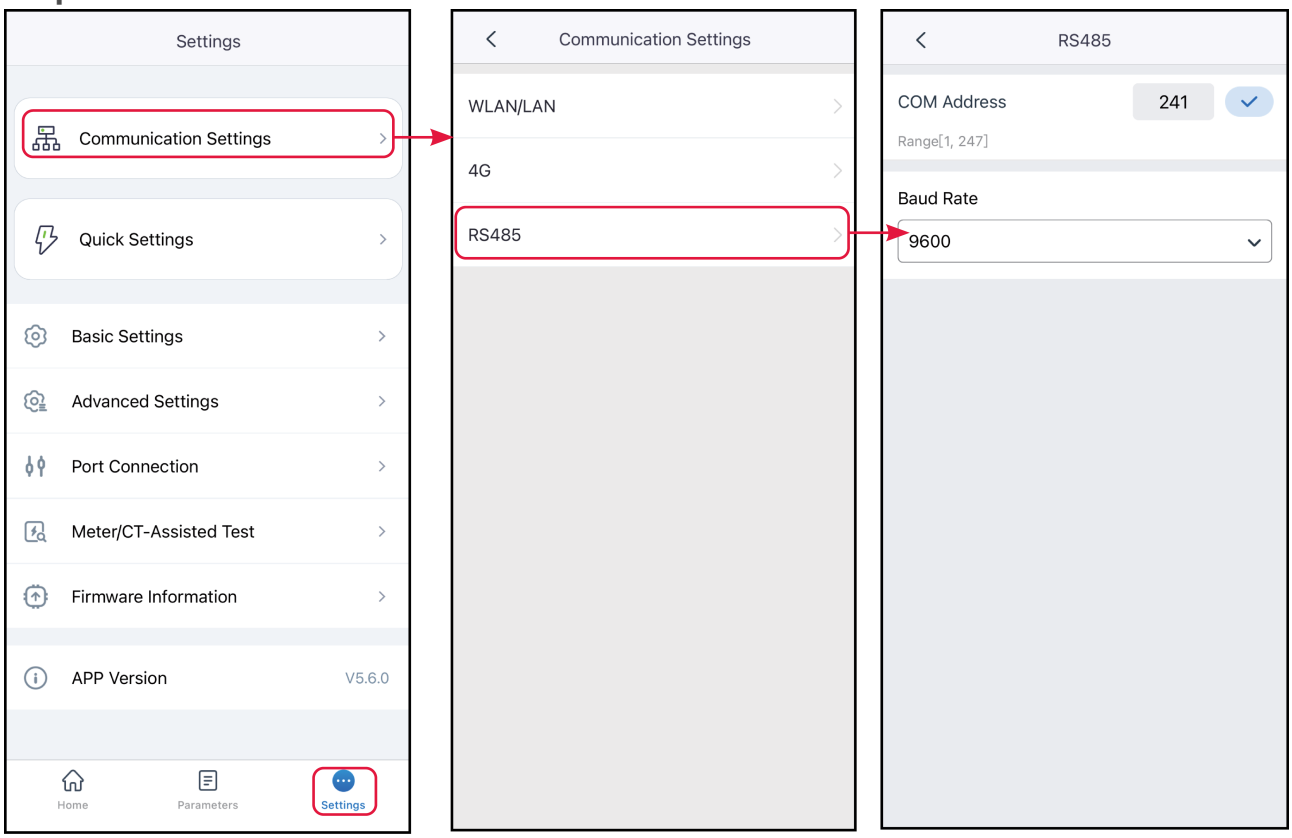


8.3.4 Setting RS485 Parameters

NOTICE
Set the communication address of the inverter. For a single inverter, the address is set based on actual needs. For multi connected inverters, the address of each inverter should be different while cannot be 247.

Step 1: Tap **Home > Settings > Communication Settings > RS485** to set the parameters.

Step 2 : Set the Modbus Address and Baud Rate base on actual situation.



8.4 Quick Setting the Basic Information

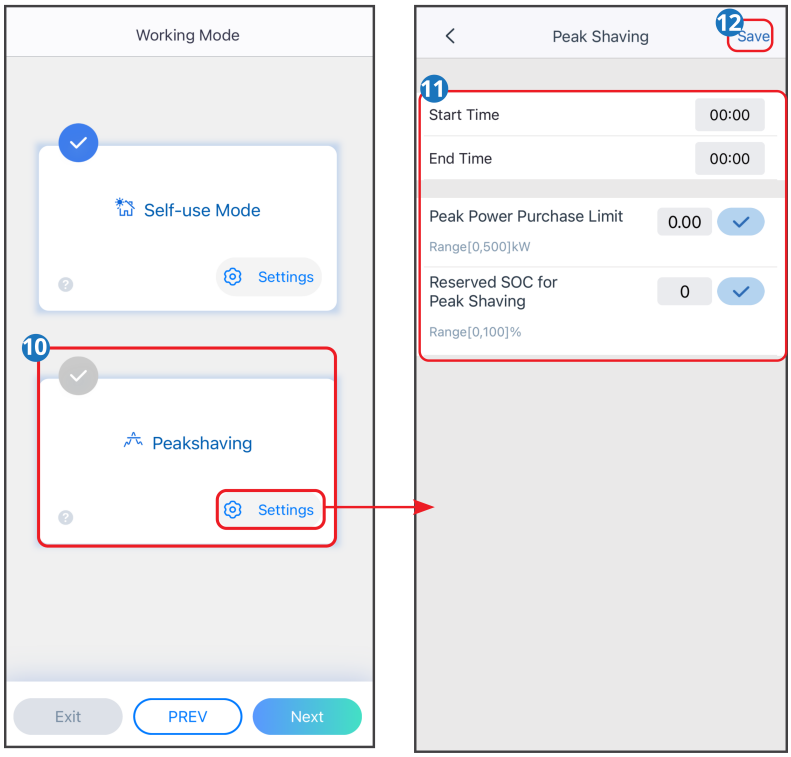
NOTICE

- 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.

8.4.1 Quick Setting the Basic Information(Type III)

Step 1: Tap **Home > Settings > Quick Settings** to set the parameters.
Step 2 : Enter the password for quick settings. Password: goodwe2010 or 1111.
Step 3: Select safety country accordingly. Tap **Next** to set the Battery Connect Mode.
Step 4 : Select the actual mode in which the battery is connected to the inverter. The basic settings are completed if there is no battery connected in the system. Tap **Next** to set the Battery Model if there is any battery connected in the system.
Step 5: Select the actual battery model. Tap **Next** to set the Working Mode.
Step 6:Set the working mode based on actual needs. Tap **Next** to conduct System Self-Test.

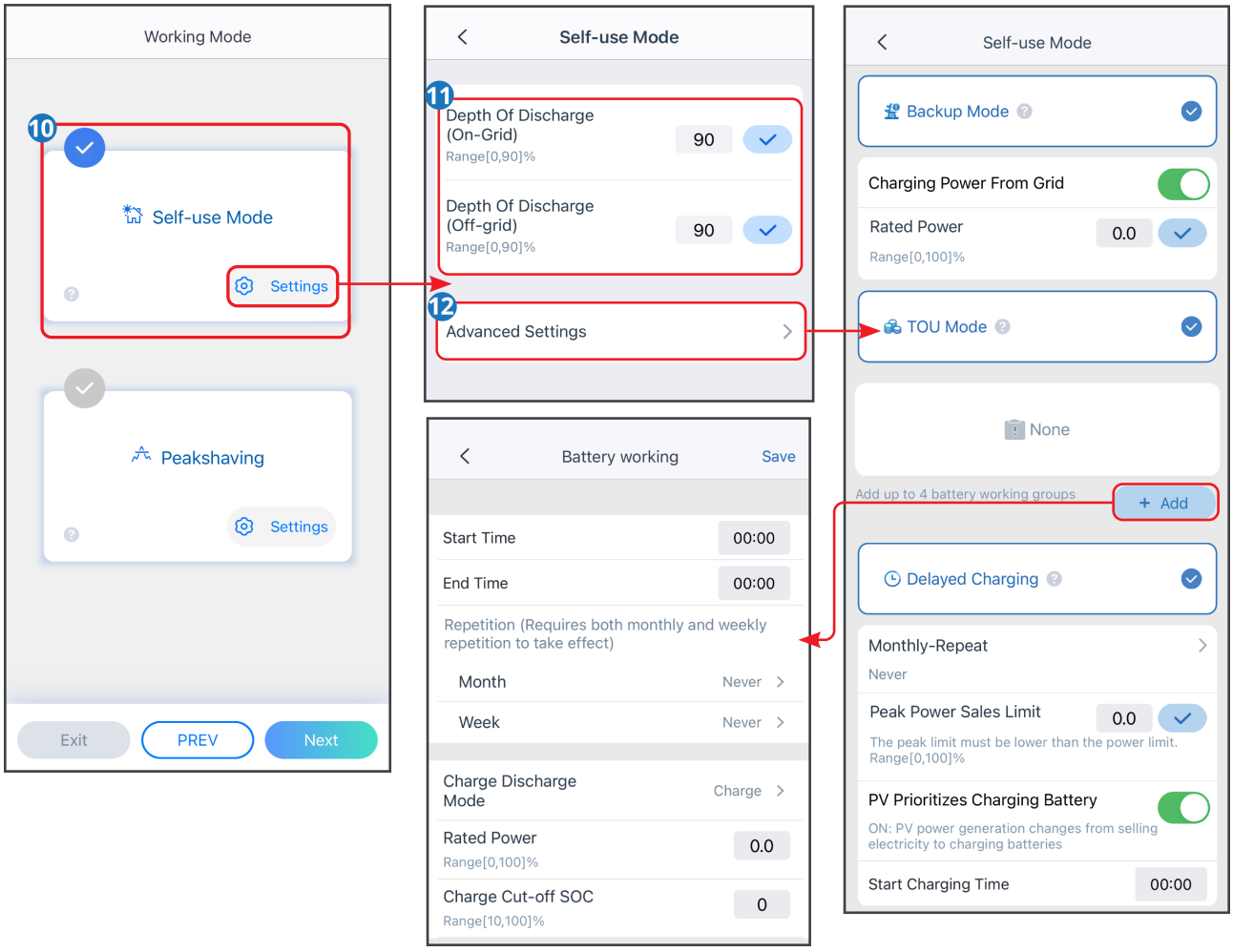
- If Peakshaving mode is selected, tap Settings to set the parameters.
-



No.	Parameters	Description
Peakshaving		
1	Start Time	

No.	Parameters	Description
2	End Time	The utility grid will charge the battery between Start Time and End Time if the load power consumption do not exceed the power quota. Otherwise, only PV power can be used to charge the battery.
3	Peak Power Purchase Limit	Set the maximum power limit allowed to purchase from the grid. When the loads consume power exceed the sum of the power generated in the PV system and Peak Power Purchase Limit, the excess power will be made up by the battery.
4	Reserved SOC For Peakshaving	In Peak Shaving mode, the battery SOC should be lower than Reserved SOC For Peakshaving. Once the battery SOC is higher than Reserved SOC For Peakshaving, the peak shaving mode fails.

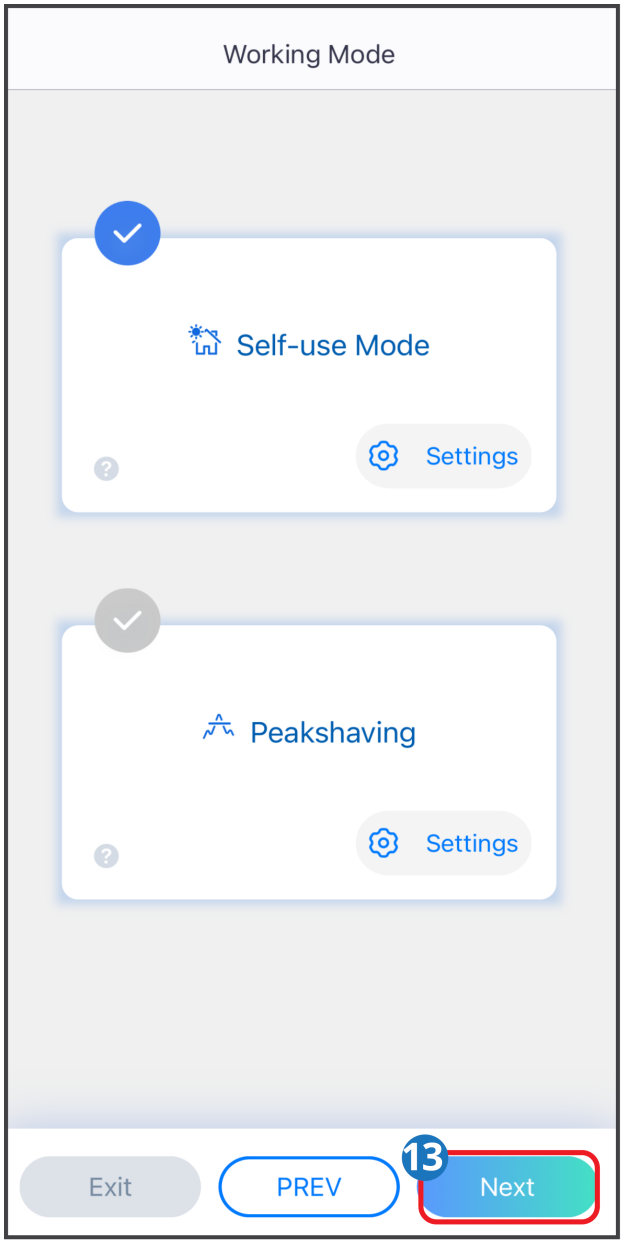
- When Self-Use Mode is selected, tap Settings to set the Depth Of Discharge(On-Grid)and Depth Of Discharge(Off-Grid). And tap Advanced Settings to set Back-Up Mode, Economic Mode or Smart Charging based on actual needs. If Economic Mode is selected, tap Add to set the working time and working mode of the battery group.

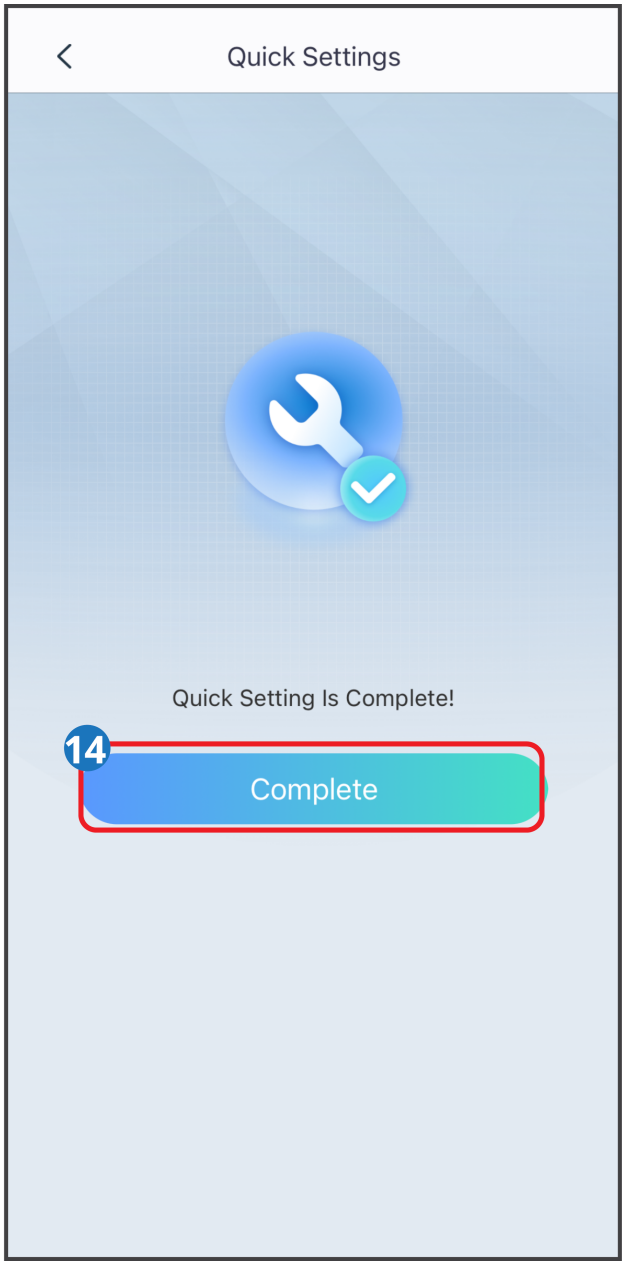


No.	Parameters	Description
Self-use mode		
1	Depth Of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
2	Depth Of Discharge (Off-grid)	The maximum depth of discharge of the battery when the system is working off-grid.
Back-up mode		
3	Charging Power From Grid	Enable Charging Power From Grid to allow power purchasing from the utility grid.
4	Rated Power	The percentage of the purchasing power to the rated power of the inverter.

No.	Parameters	Description
TOU mode		
5	Start Time	Within the Start Time and End Time, the battery is charged or discharged according to the set Battery Mode as well as the Rated Power.
6	End Time	
7	Charge Discharge Mode	Charge or discharge according to actual needs.
8	Rated Power	The percentage of the charging/discharging power to the rated power of the inverter.
9	Charge Cut-off SOC	The battery stop charging/discharging once the battery SOC reaches Charge Cut-off SOC.
Smart charging		
10	Monthly-Repeat	Set the smart charging months. More than one month can be set.
11	Peak Power Sales Limit	Set the Peak Power Sales Limit in compliance with local laws and regulations. The Peak Limiting Power shall be lower then the output power limit specified by local requirements.
12	PV Prioritizes Charing Battery	During charging time, the PV power will first charge the battery.
13	Start Charging Time	

Step 7: Execute device self-check or skip it based on actual needs.
Step 8 : Tap **Recheck** or **Next** to complete the test based on your actual needs. Tap Export to export the test reports if needed.
Step 9 : Tap **Complete** to complete the quick settings.



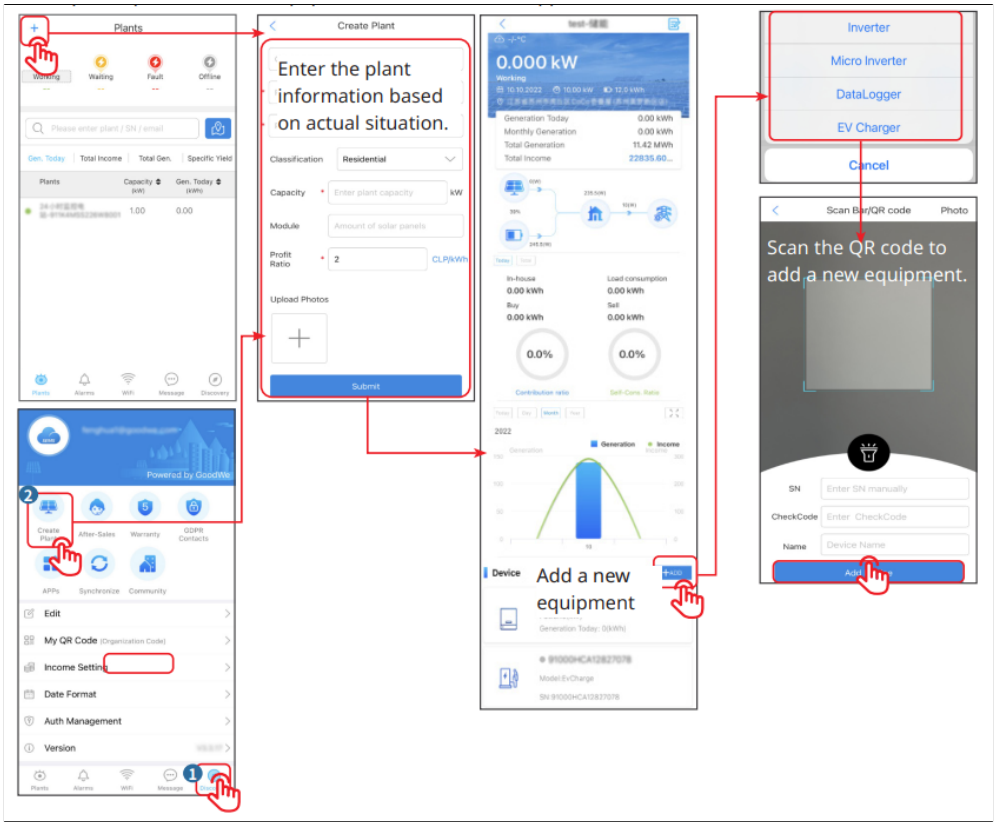


8.5 Power Plant Creation

NOTICE
Login to the SEMS Portal app using the account and password before creating power plants. If you have any questions, refer to the Plant Monitoring section.

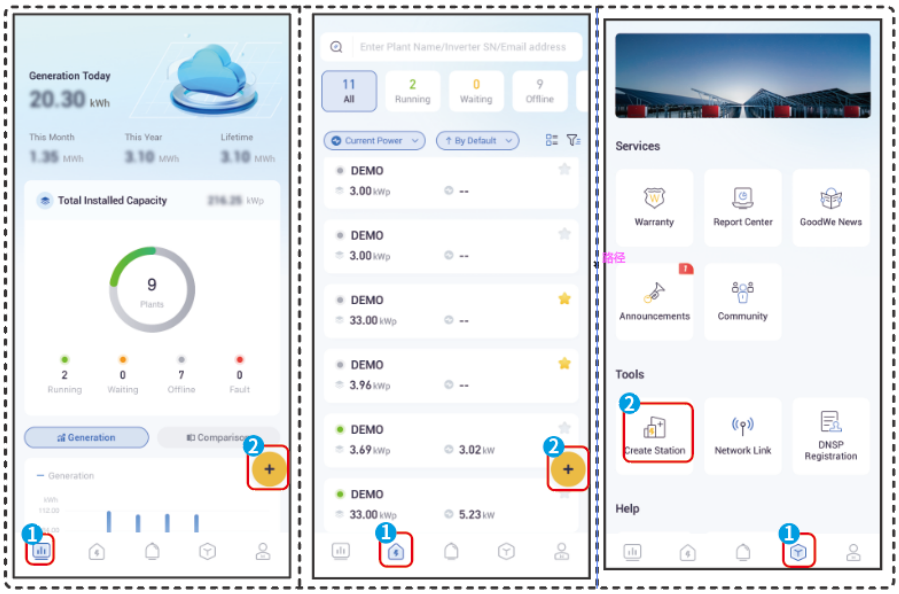
1. Enter the interface for creating a power plant.
2. Carefully read the prompts on the interface and fill in the power plant information based on actual conditions. (* refers to the mandatory items)

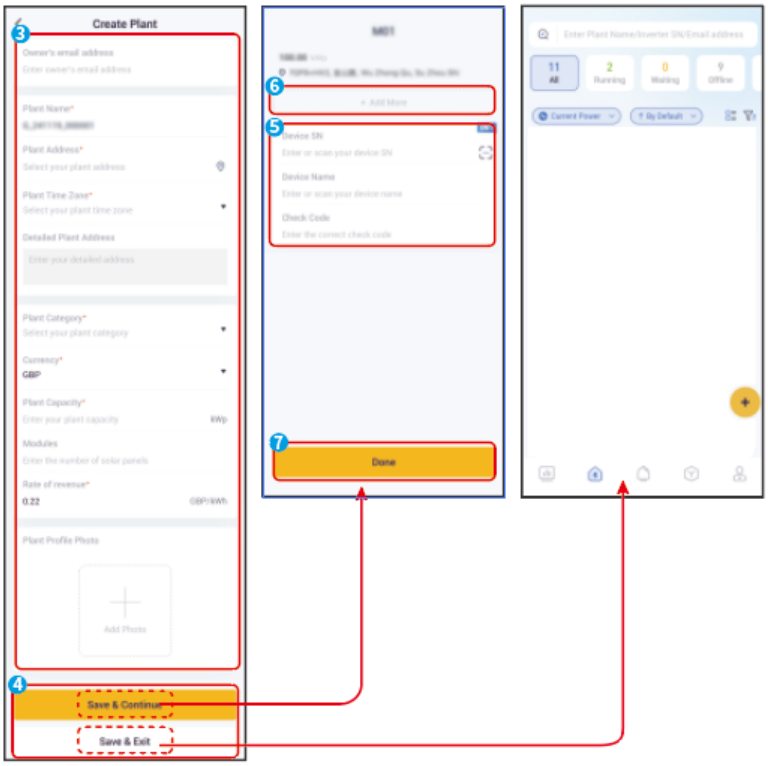
3. Add devices according to the interface prompts to complete the creation of the power plant.



8.6 Power Plant Creation

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


Generation Today
20.30 kWh
This Month
This Year
Lifetime
Total Installed Capacity
Generation
Comparison
Enter Plant Name/Inverter SN/Email address
Current Power
By Default
DEMO
Services
Warranty
Report Center
GoodWe News
Announcements
Community
Tools
Create Station
Network Link
DNSP Registration
Help


Create Plant
Plant Name*
Plant Address*
Plant Time Zone*
Detailed Plant Address
Plant Category*
Currency*
Plant Capacity*
Modules
Rate of revenue*
Plant Profile Photo
Add Photo
Save & Continue
Save & Exit
Device SN
Device Name
Check Code
Done

9 System Commissioning

9.1 Commissioning Method Overview

The inverter without LCD screen only supports setting the inverter through the SolarGo APP.
The inverter with LCD screen supports setting the inverter through LCD screen and the SolarGo APP.

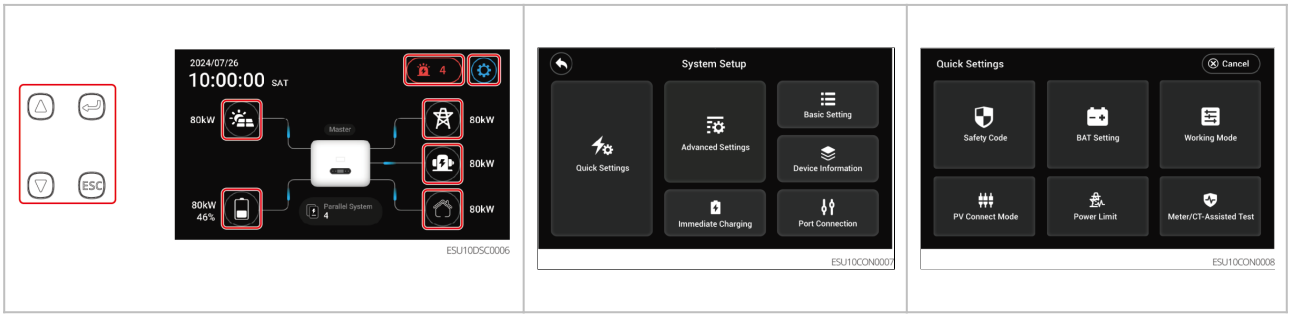
9.2 Configuration via LCD

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.

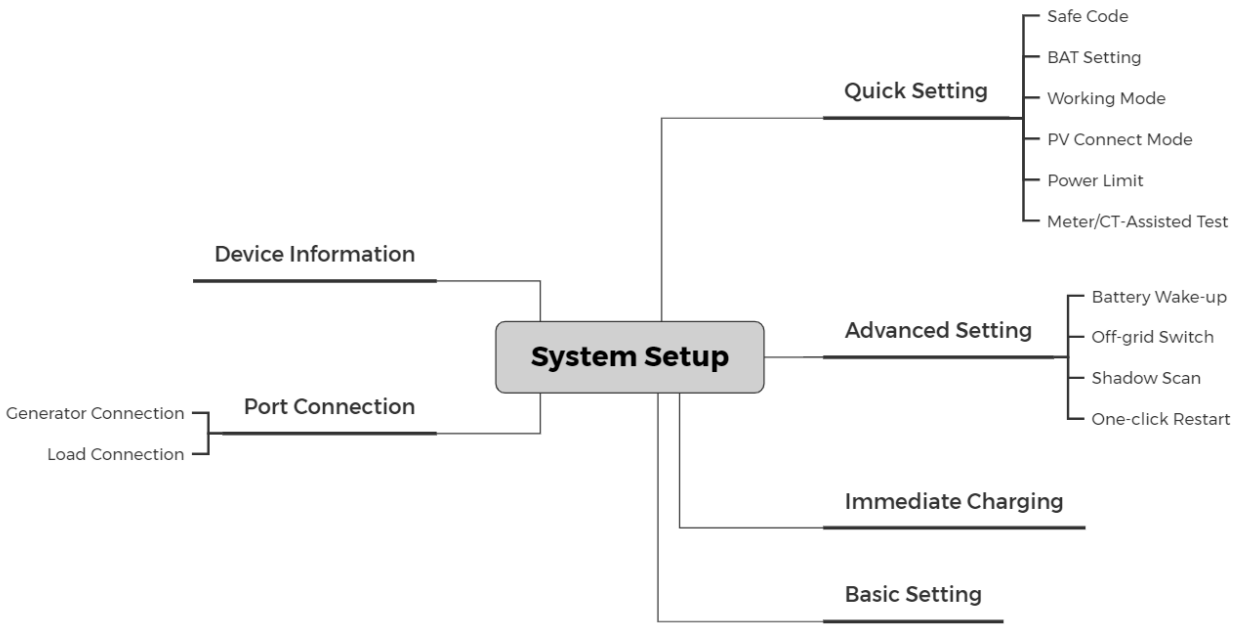
Introduction of LCD interface
LCD supports both touch and keys.



Name/Icon	Description
	Up button.
	Down button.
	Enter button.

Name/Icon	Description
	• 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 and fault information 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.

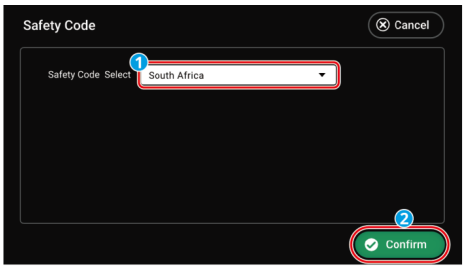
LCD setting interface structure



9.2.2 Quick Settings

Setting safety code

1. Tap Home >Quick Settings > Safe Code 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.



ESU10CON0009

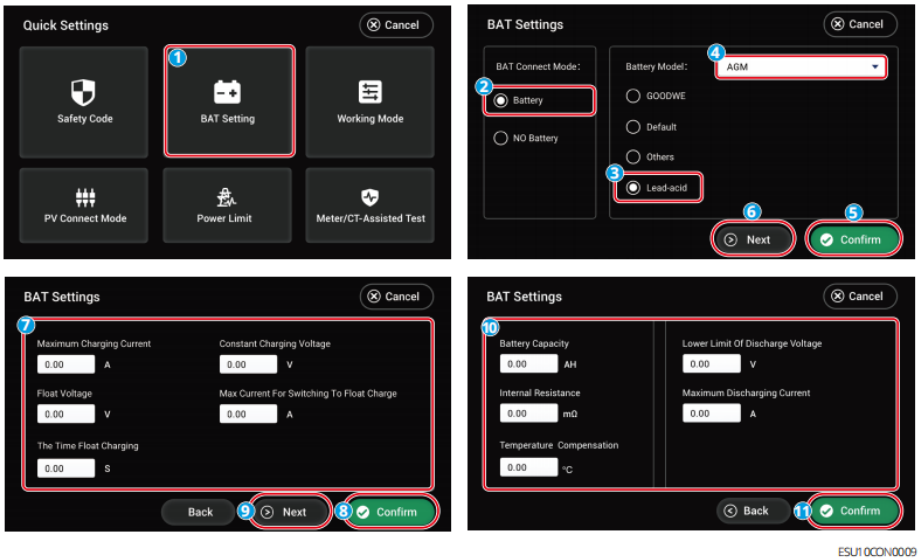
Parameter	Safety Code	Description
Safety Code select	South Africa	Select the corresponding safety code based on the country or region where the equipment is located.
	Pakistan	
	Argentina	
	Philippines	

	60Hz Default	
	60Hz Default	
	50Hz Default	

Set parameters for lithium battery

1. Tap Home > Quick Settings > BAT Setting to enter 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.



Setting Basic Parameter

BAT Connection Mode	Type	Description
Battery	GOODWE	If the system is connected to a GOODWE brand lithium battery, please select GOODWE and choose the correct model.

	Default	If the third-party lithium battery model connected in the system is not in this list, please select it according to the actual situation: • Lithium 50Ah • Lithium 100Ah
	Others	If the third-party lithium battery model connected to the system is in this list, please select the correct model according to the actual situation.
	Lead acid	If a lead-acid battery is connected to the system, select Lead acid and choose the correct type of lead-acid. Only supports: GEL, AGM, Flooded.
NO Battery	There is no battery connected in the system.	
BAT Setting	Set according to the actual connected battery in the system.	

Set parameters for lithium battery

Parameter	Description
SOC Protection	Enable or disable SOC protection.
Depth Of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
Depth Of Discharge (Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
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.

Set parameters for lead-acid battery

Parameter	Description
Maximum Charging Current	

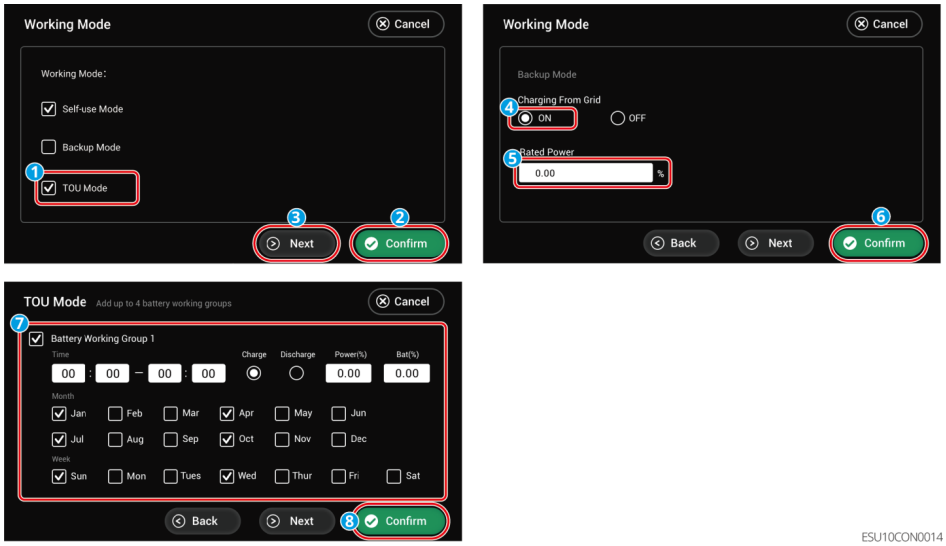
Constant Charging Voltage	The battery charging mode is set to constant voltage charging by default. The maximum charging voltage and current in the constant charge state. Please set them according to the battery technical parameters.
Float Voltage	The battery charging current is less than Maximum Current For Switch To Float Charge and the duration reaches The Time Float Charging, the battery charging status changes from Constant Charge mode to Float Charge mode. When the battery is approaching full charge, it will switch to float charging mode. This value is the upper limit of charging voltage in this mode. Please set it according to the battery technical parameters.
The Time Float Charging	
Maximum Current For Switch To Float Charge	
Battery Capacity	Please set it according to the battery technical parameter.
Internal Resistance	The internal resistance of the battery. Please set it according to the battery technical parameters.
Temperature Compensation	By default, when the temperature is higher than 25℃, the upper limit of charging voltage will decrease by 3mV for every 1℃ increase. The actual settings should be based on the technical parameter of the battery.
Lower Limit Of Discharge Voltage	Please set it according to the battery technical parameters.
Maximum Discharging Current	Please set it according to the battery technical parameters. The greater the discharge current is, the shorter the working time of the battery is.

Setting Working Mode

1. Tap Home >Quick Settings > Working Mode 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.

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.

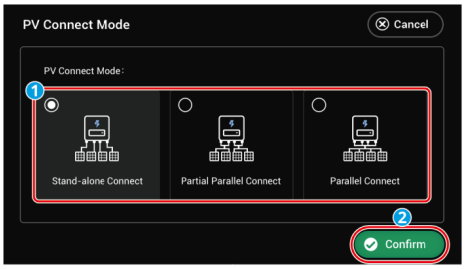


Parameter		Description
Self-use Mode		Based on Self-use Mode, Back-up Mode and TOU Mode can be enabled at the same time, and the inverter will automatically select the working mode. Operation priority: Back-up Mode>TOU Mode >Self-use Mode.
Back-up Mode	Charging From Grid	Enabling this function allows the system to purchase electricity from power grid.
	Rated Power	The percentage of power purchased compare to the rated power of the inverter.
TOU Mode	Time	Within the start and end time, the battery will charge or discharge based on the set charge-discharge mode and rated power.
	Charge/Discharge	Set to charge or discharge based on 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. To set the SOC for stopping the battery discharge, please refer to section 9.2.2.2 on setting battery parameters and set the Depth of Discharge (On Grid) and Depth of Discharge (Off Grid) through the LCD screen.

Setting PV Connect Mode

1. Tap Home >Quick Settings > PV Connect Mode 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.



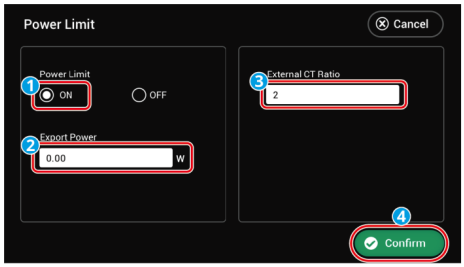
ESU10CON0015

Parameter	Description
Stand-alone Connect	The PV strings are connected to the MPPT terminals one by one.
Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 and MPPT2, another PV string connect to MPPT3.
Parallel Connect	When the external PV string is connected to the inverter side PV input port, the same PV string is connected to multiple PV input ports.

Setting the on-grid power limit

1. Tap Home >Quick Settings > Power Limit 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.

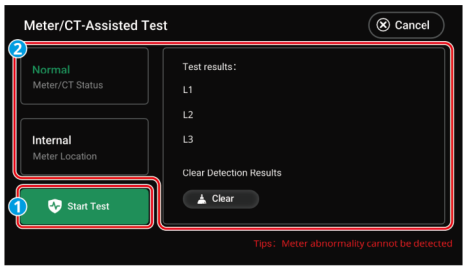


ESU10CON0016

Parameter	Description
Power Limit	Enable Power Limit when power limiting is required by local grid standards and requirements.
Export Power	Set the value based on the actual maximum power feed into the utility grid.
External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT. • Built in electric meter or GMK110: No need to set CT ratio. The default CT ratio is 120A/40mA. • GM330: Supports purchasing from GOODWE or third-party, CT ratio requirement: nA/5A • nA: For the primary input current of CT, n ranges from 200 to -5000. • 5A: CT secondary input current of CT.

Meter/CT Assisted Test

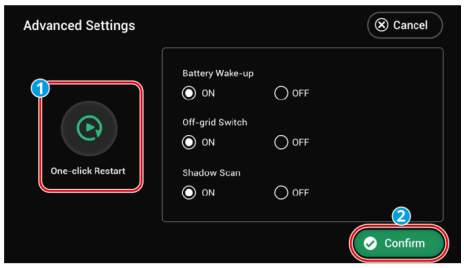
1. Through the main interface, click > Quick Settings > Meter/ CT Assisted Test to enter the parameter setting interface.
2. Click Start Test to begin the test. After the test is completed, judge the test result according to the interface prompts.



ESU10CON0026

9.2.3 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.



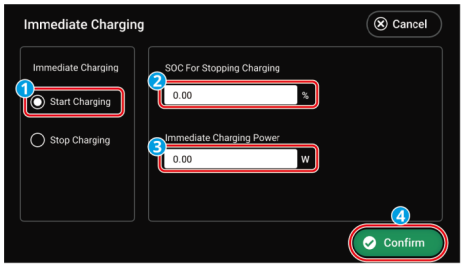
ESU10CON0020

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.

9.2.4 Setting Immediate Charging

1. Tap Home > 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.

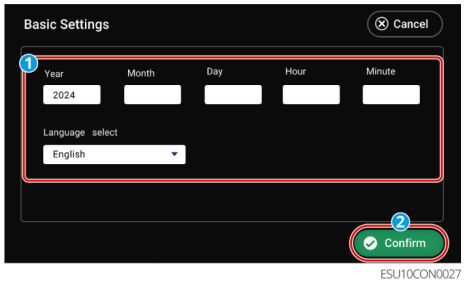


ESU10CON0021

Parameter	Description
Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.
SOC For Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.
Immediate Charging Power	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.

9.2.5 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.

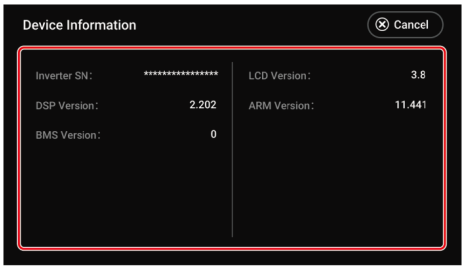


ESU10CON0027

9.2.6 Viewing Device Information

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

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



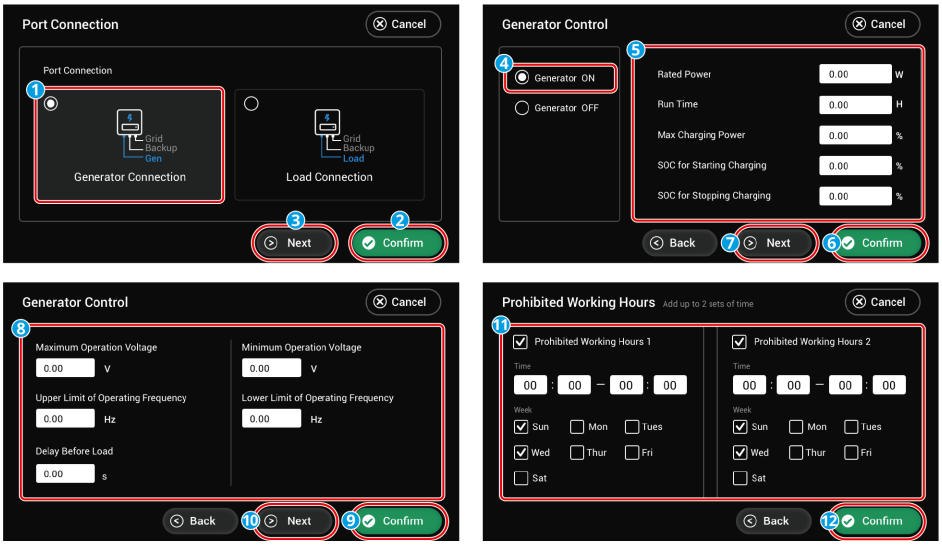
ESU10CON0028

9.2.7 Setting Port Connection

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.



ESU10CON0022

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.

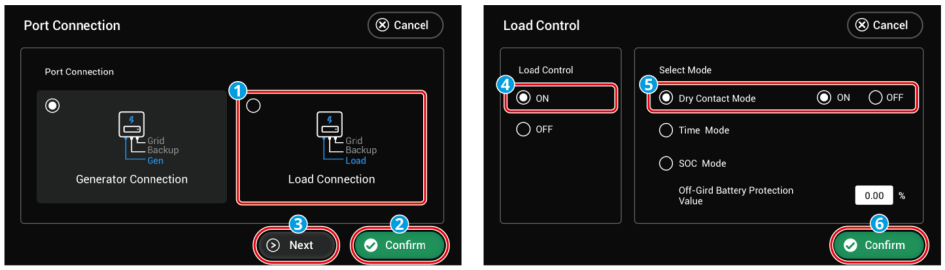
Setting Port Connection Load Control

Dry Contact Mode

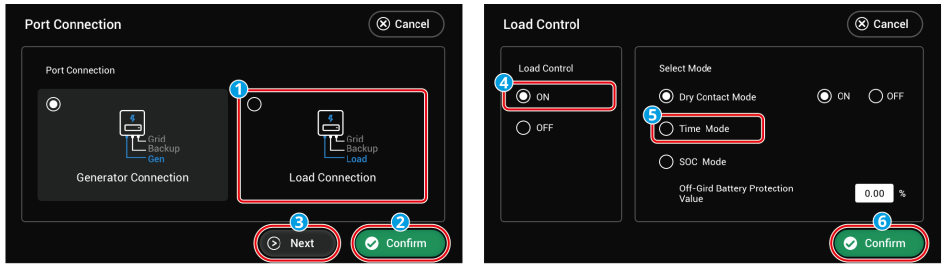
1. After connecting to the SolarGo APP, go to Home > Port Connection, entering the parameter setting interface.
2. Set the parameters based on actual needs.
3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

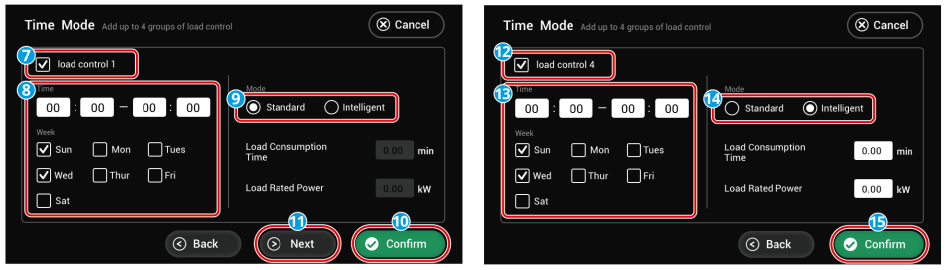
NOTICE

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.

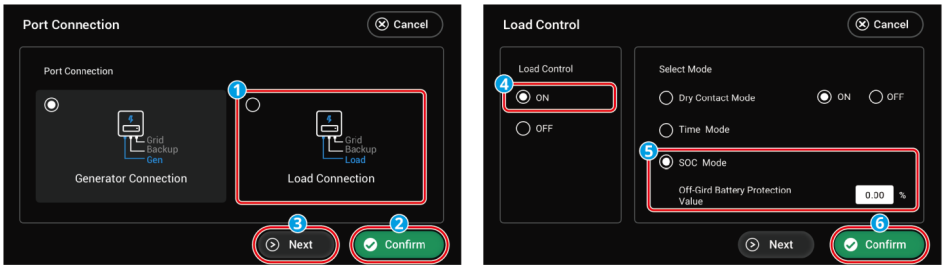


ESU10CON0023





ESU10CON0025



ESU10CON0024

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.
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 V6.4.0.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 or the charger via Bluetooth, WIFi, 4G, or GPRS. Commonly used functions are as follows:

- Check the operating data, software version, alarms, etc.
- Set safety country, grid parameters, power limit, communication parameters, etc.
- Set charging mode of the charger.
- Equipment maintenance.

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.

SolarGo App

SLG00CON0135

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

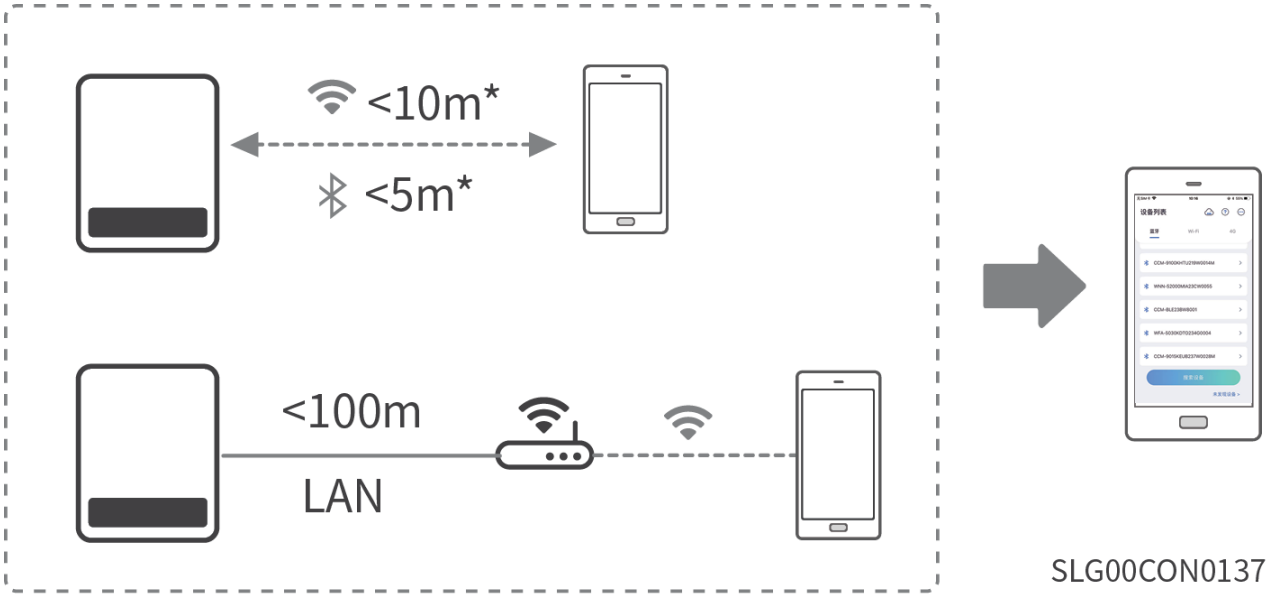
SolarGo App

SLG00CON0136

9.3.1.2 App Connection

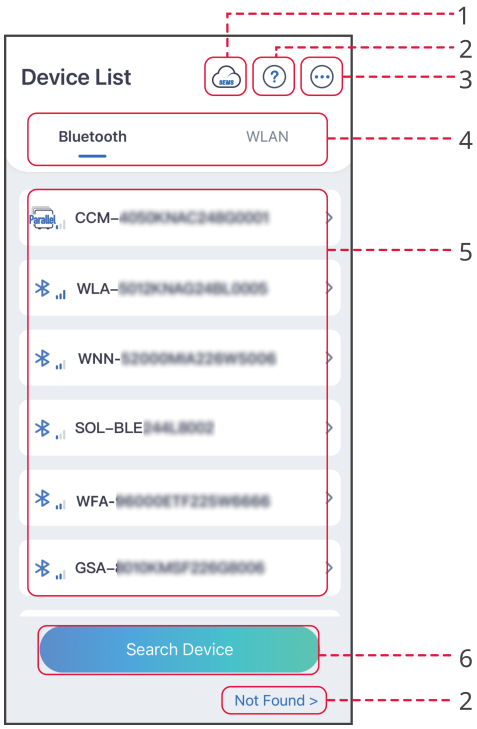
Connect as the following shows after powering on the equipment.

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



SLG00CON0137

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/WiFi/4G	Select based on actual communication method. If you have any problems, tap  or **NOT Found** to read the connection guides.
5	Device List	• The list of all devices. The last digits of the device name are normally the serial number of the device. • Select the device by checking the serial number of the master inverter when multi inverters are parallel connected. • The device name varies depending on the inverter model or smart dongle 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 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.

SLG00CON0078

No.	Parameters	Description
1	Max.charging SOC	Set the upper limit of charging SOC, and stop charging when the upper limit is reached.

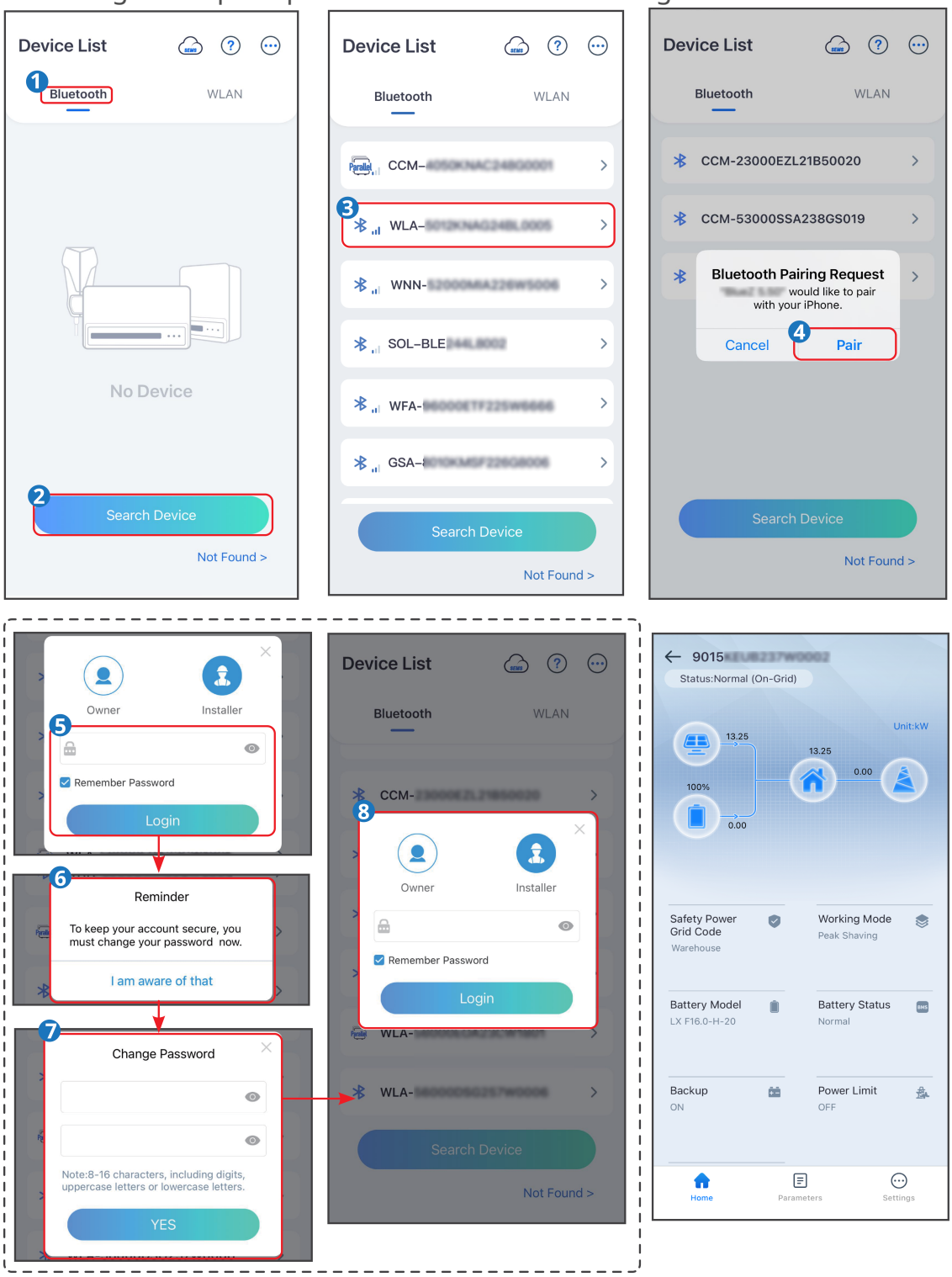
No.	Parameters	Description
2	Manual wake-up	• When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the grid. Click this button to force the energy storage inverter to output voltage to the grid-connected inverter, thereby starting the grid-connected inverter. • Single effect.
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.

9.3.2.1 Connecting the Energy Storage Inverter (Bluetooth)

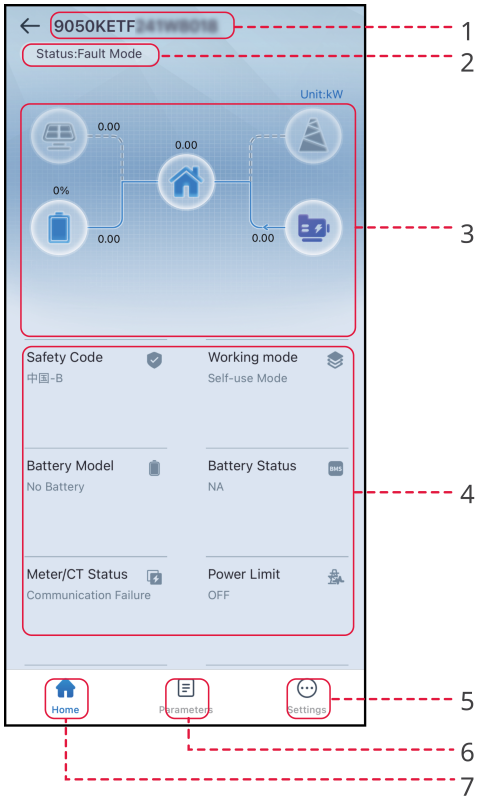
Step 1: Confirm that the inverter is powered on and that both the communication module and the inverter are operating normally.
Step 2: Depending on the type of communication module, select the Bluetooth tab on the SolarGo App home page.
Step 3: Drag down or click Search Device to refresh the device list, confirm the inverter signal name based on the inverter serial number, and click the inverter signal name to enter the login interface. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.
Step 4: When connecting the device via Bluetooth for the first time, a Bluetooth

pairing prompt will appear on the interface. Please click Pair to continue connecting and enter the login interface.

Step 5: Log in to the app using your actual role and change your login password according to the prompts on the interface. Initial Login Password: 1234.



9.3.3 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		Home. Tap Home to check Serial 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 Setup interfaces Initial password: goodwe2010 or 1111.

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.

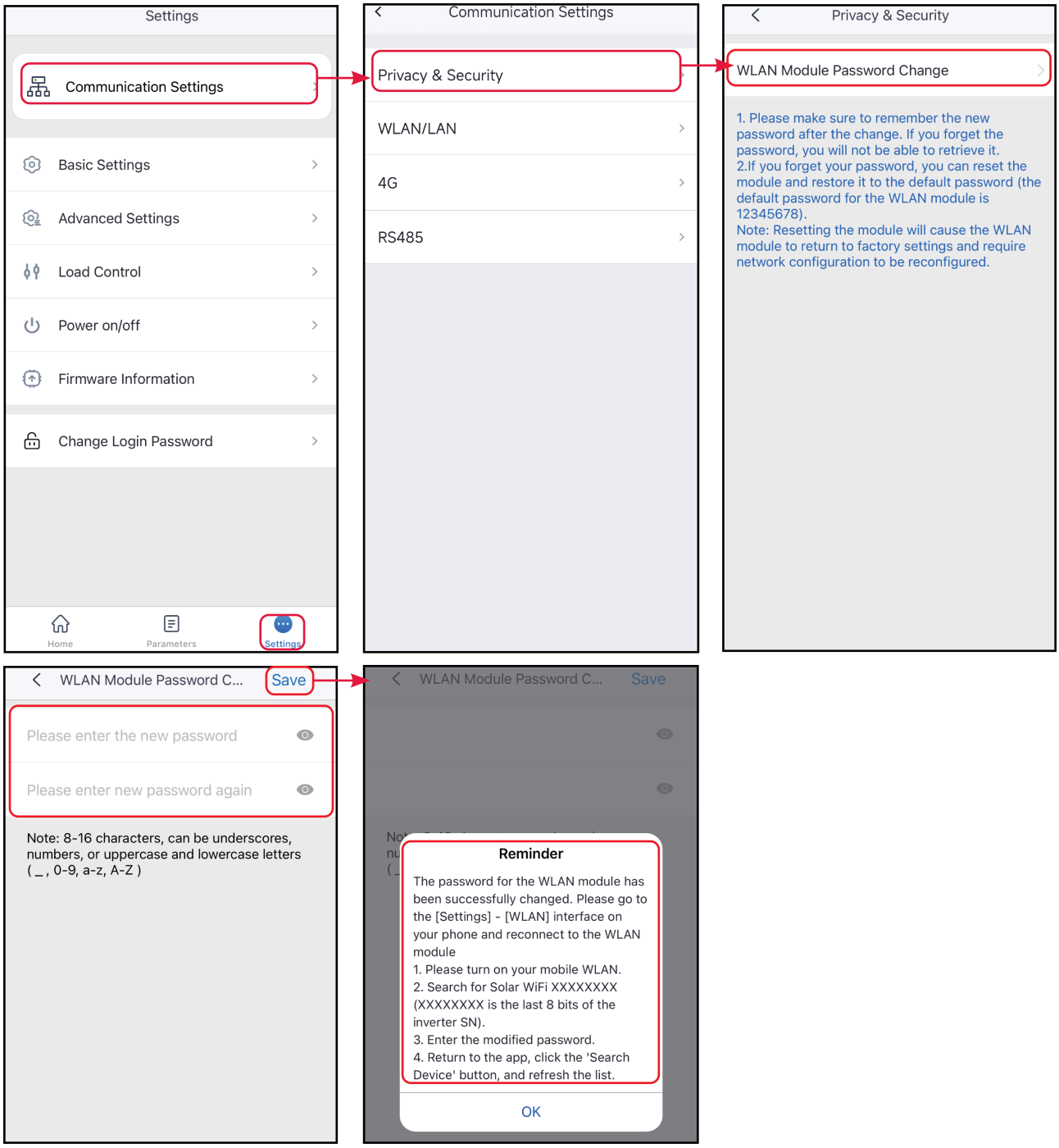
9.3.4.1 Setting Privacy and Security

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**.

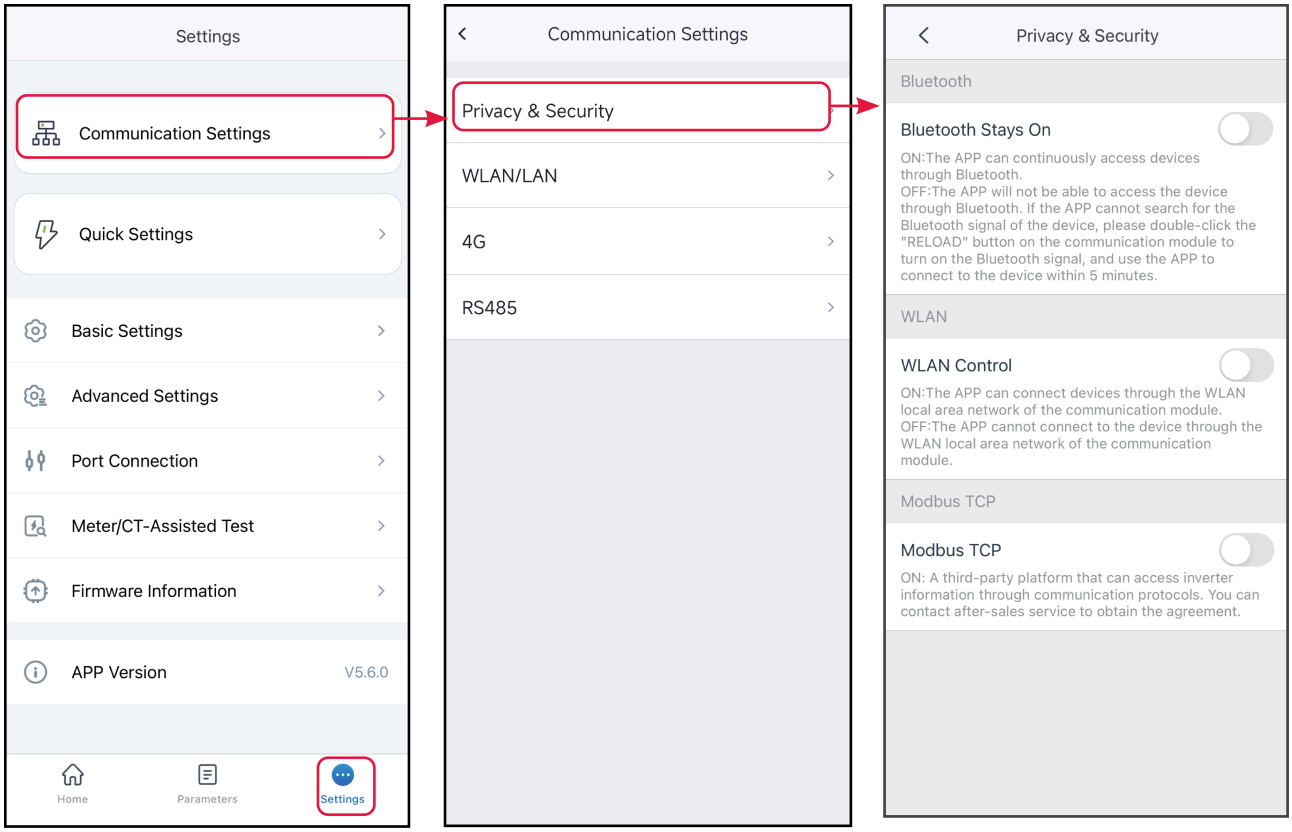
Step 3 Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi***) with the new password.



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.



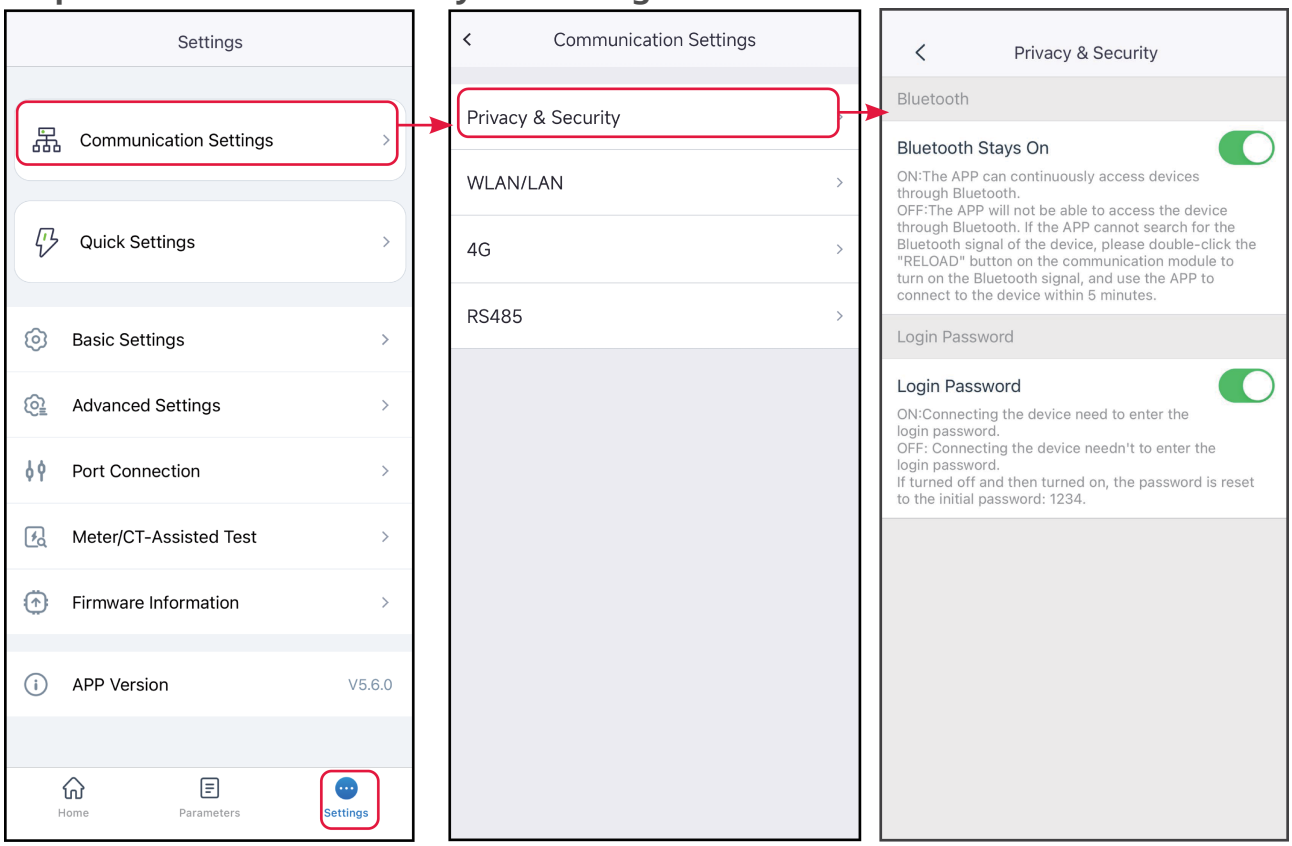
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default. 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.



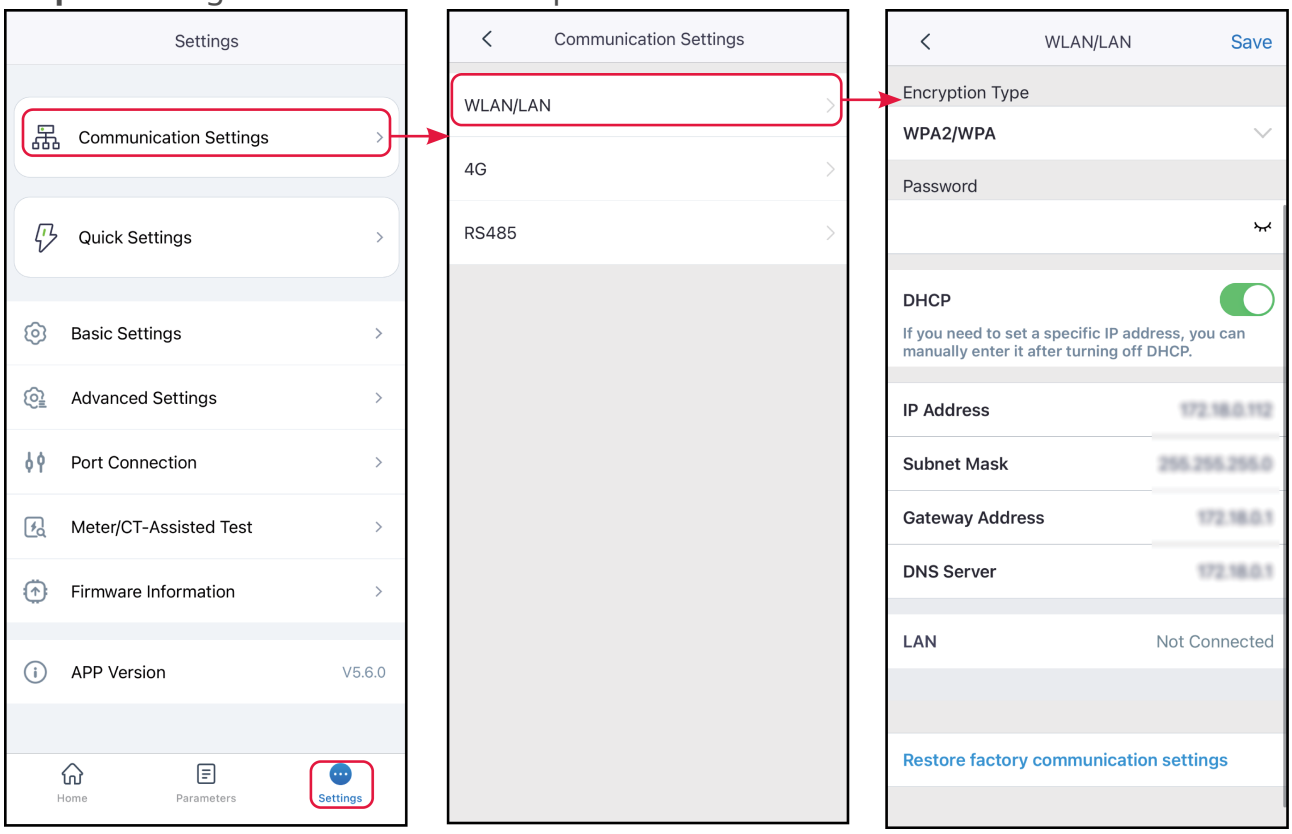
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	Login Password	Disabled by 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.

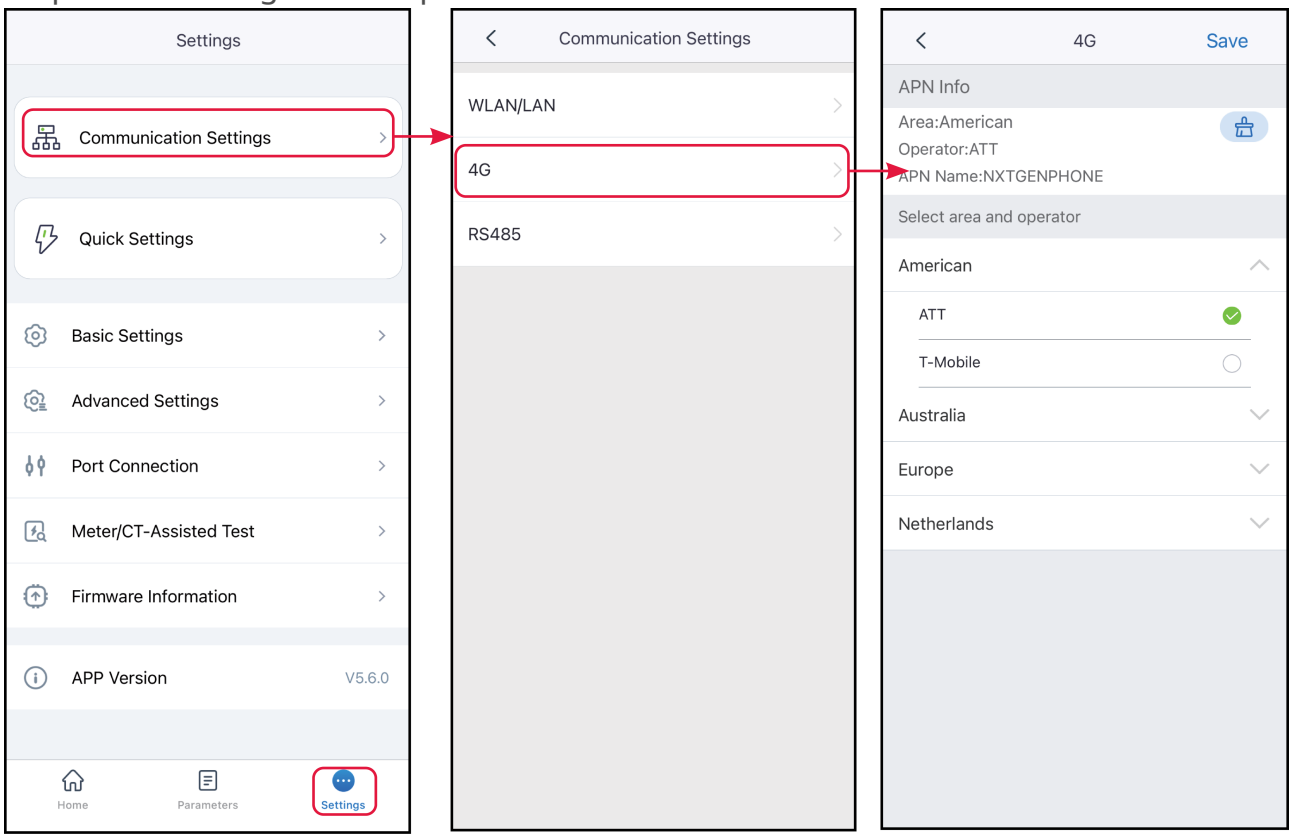
No.	Parameters	Description
4	IP Address	Do not configure the parameters when DHCP is enabled. Configure the parameters according to the router or switch information when DHCP is disabled.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

9.3.4.3 Configuring APN Parameters

NOTICE

- Configure the SIM card information of 4G communication device.
- Configure the APN parameters through the Bluetooth module or WiFi module first before using a 4G module 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.

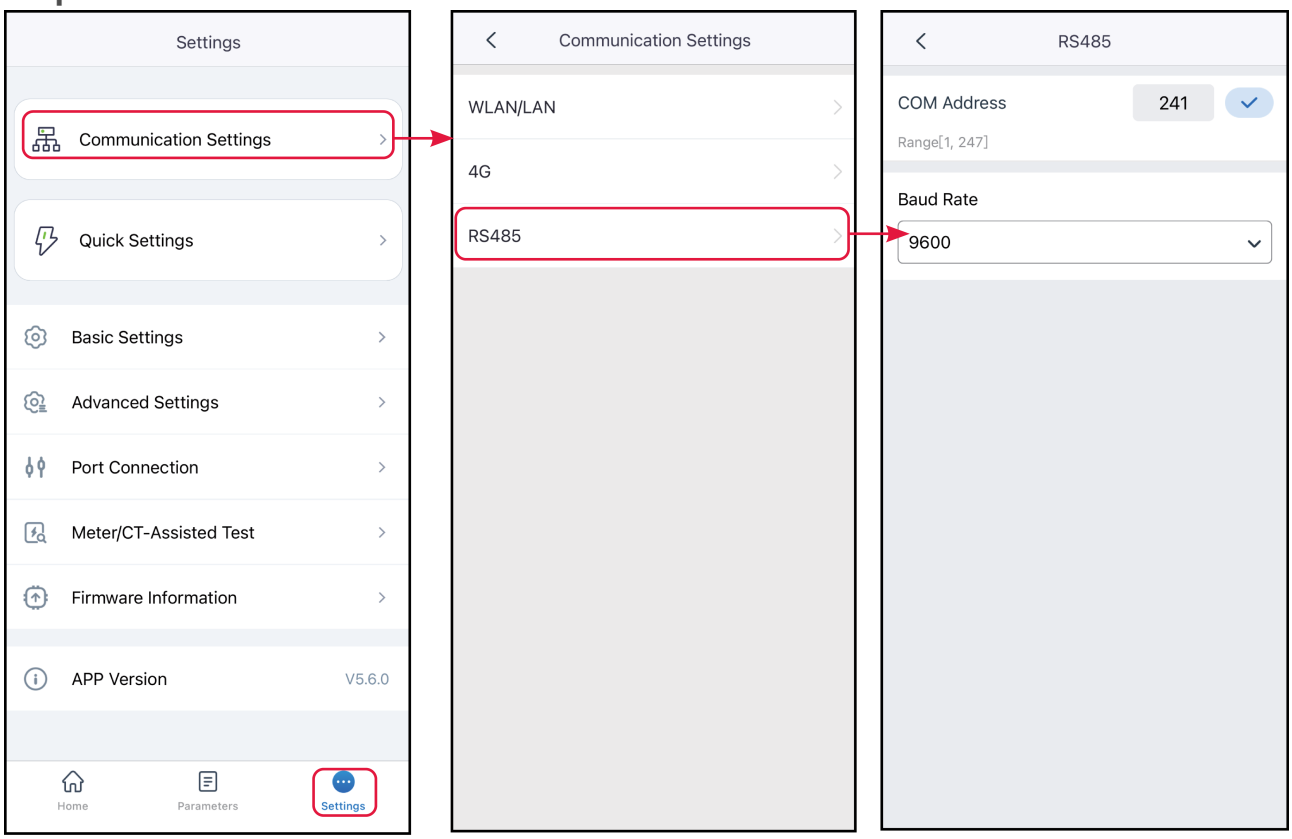


9.3.4.4 Setting RS485 Parameters

NOTICE
Set the communication address of the inverter. For a single inverter, the address is set based on actual needs. For multi connected inverters, the address of each inverter should be different while cannot be 247.

Step 1: Tap **Home > Settings > Communication Settings > RS485** to set the parameters.

Step 2 : Set the Modbus Address and Baud Rate base on actual situation.



9.3.5 Quick Setting the Basic Information

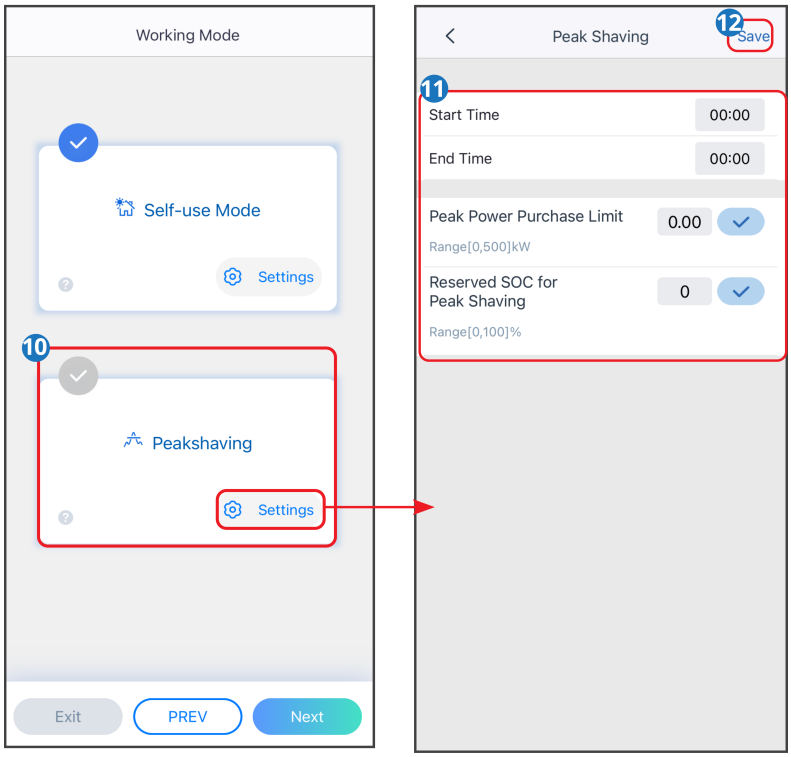
NOTICE

- 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.

9.3.5.1 Quick Setting the Basic Information(Type III)

Step 1: Tap **Home > Settings > Quick Settings** to set the parameters.
Step 2 : Enter the password for quick settings. Password: goodwe2010 or 1111.
Step 3: Select safety country accordingly. Tap **Next** to set the Battery Connect Mode.
Step 4 : Select the actual mode in which the battery is connected to the inverter. The basic settings are completed if there is no battery connected in the system. Tap **Next** to set the Battery Model if there is any battery connected in the system.
Step 5: Select the actual battery model. Tap **Next** to set the Working Mode.
Step 6:Set the working mode based on actual needs. Tap **Next** to conduct System Self-Test.

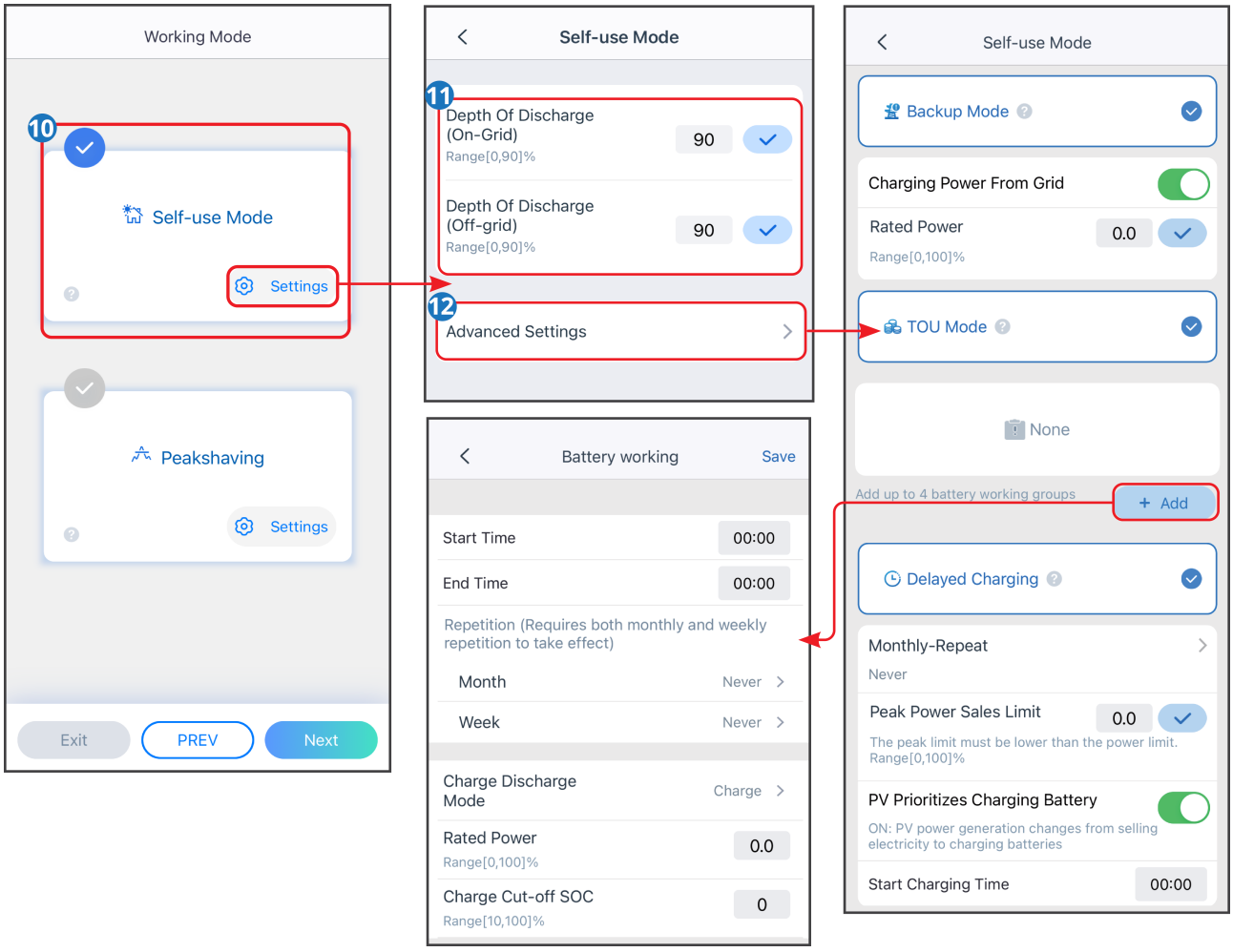
- If Peakshaving mode is selected, tap Settings to set the parameters.
-



No.	Parameters	Description
Peakshaving		
1	Start Time	

No.	Parameters	Description
2	End Time	The utility grid will charge the battery between Start Time and End Time if the load power consumption do not exceed the power quota. Otherwise, only PV power can be used to charge the battery.
3	Peak Power Purchase Limit	Set the maximum power limit allowed to purchase from the grid. When the loads consume power exceed the sum of the power generated in the PV system and Peak Power Purchase Limit, the excess power will be made up by the battery.
4	Reserved SOC For Peakshaving	In Peak Shaving mode, the battery SOC should be lower than Reserved SOC For Peakshaving. Once the battery SOC is higher than Reserved SOC For Peakshaving, the peak shaving mode fails.

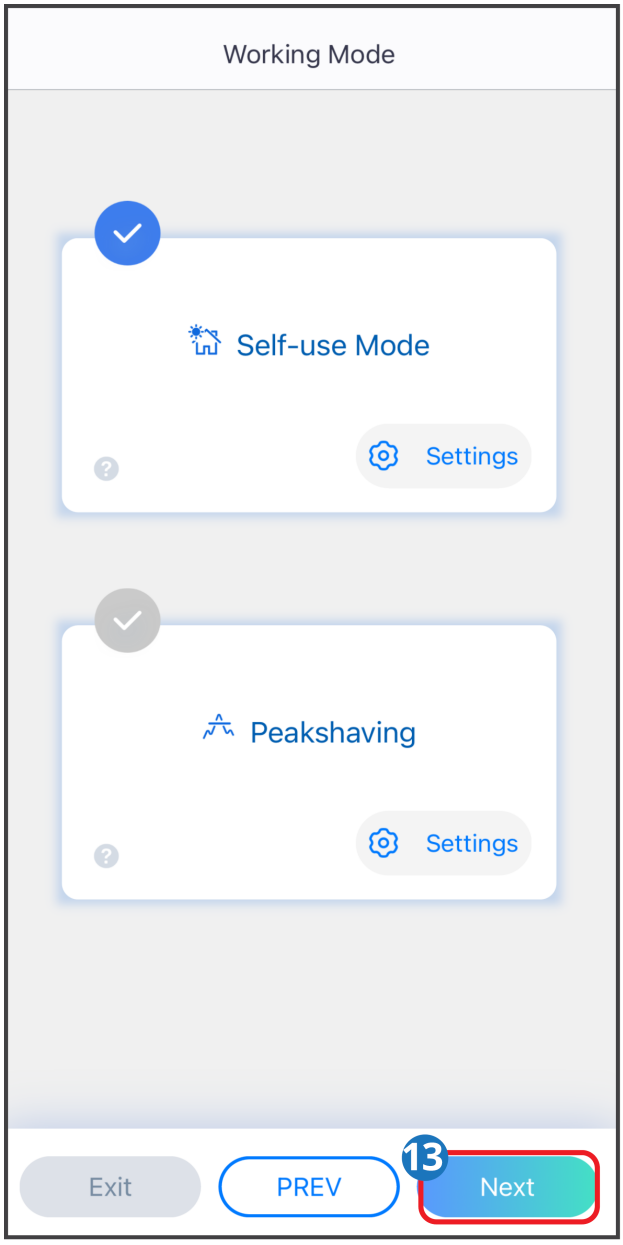
- When Self-Use Mode is selected, tap Settings to set the Depth Of Discharge(On-Grid)and Depth Of Discharge(Off-Grid). And tap Advanced Settings to set Back-Up Mode, Economic Mode or Smart Charging based on actual needs. If Economic Mode is selected, tap Add to set the working time and working mode of the battery group.

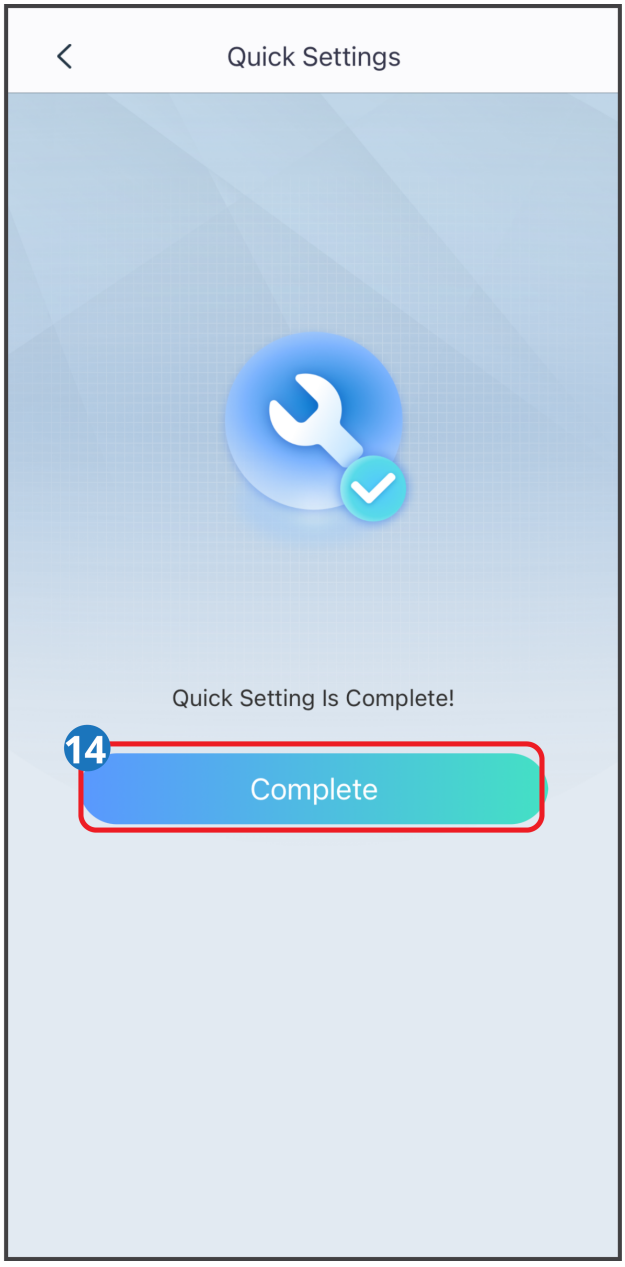


No.	Parameters	Description
Self-use mode		
1	Depth Of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
2	Depth Of Discharge (Off-grid)	The maximum depth of discharge of the battery when the system is working off-grid.
Back-up mode		
3	Charging Power From Grid	Enable Charging Power From Grid to allow power purchasing from the utility grid.
4	Rated Power	The percentage of the purchasing power to the rated power of the inverter.

No.	Parameters	Description
TOU mode		
5	Start Time	Within the Start Time and End Time, the battery is charged or discharged according to the set Battery Mode as well as the Rated Power.
6	End Time	
7	Charge Discharge Mode	Charge or discharge according to actual needs.
8	Rated Power	The percentage of the charging/discharging power to the rated power of the inverter.
9	Charge Cut-off SOC	The battery stop charging/discharging once the battery SOC reaches Charge Cut-off SOC.
Smart charging		
10	Monthly-Repeat	Set the smart charging months. More than one month can be set.
11	Peak Power Sales Limit	Set the Peak Power Sales Limit in compliance with local laws and regulations. The Peak Limiting Power shall be lower then the output power limit specified by local requirements.
12	PV Prioritizes Charing Battery	During charging time, the PV power will first charge the battery.
13	Start Charging Time	

Step 7: Execute device self-check or skip it based on actual needs.
Step 8 : Tap **Recheck** or **Next** to complete the test based on your actual needs. Tap Export to export the test reports if needed.
Step 9 : Tap **Complete** to complete the quick settings.

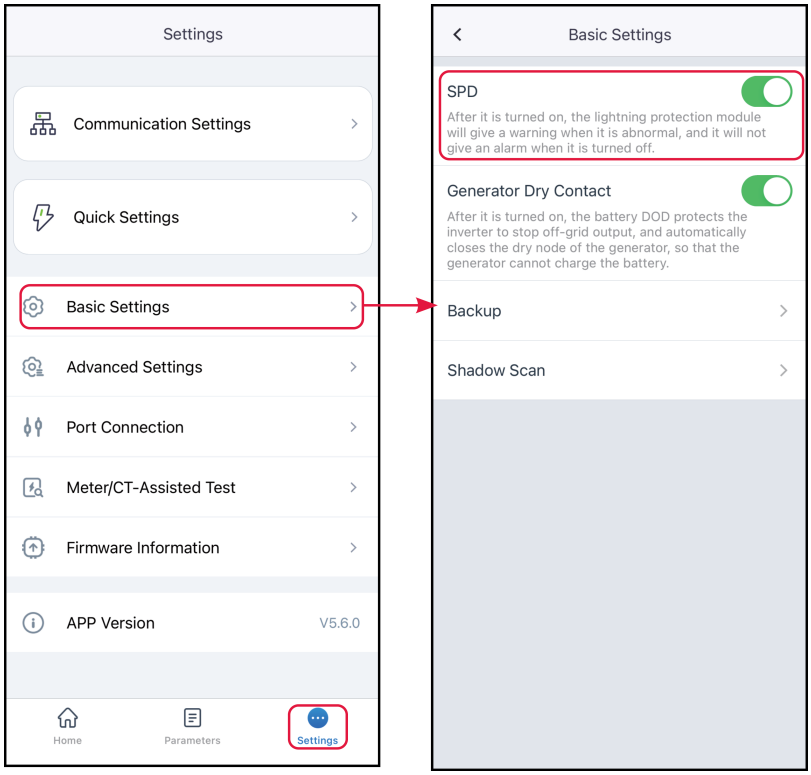




9.3.6 Setting the Basic Information

9.3.6.1 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.
Step 2 : enable or disable the function based on actual needs.

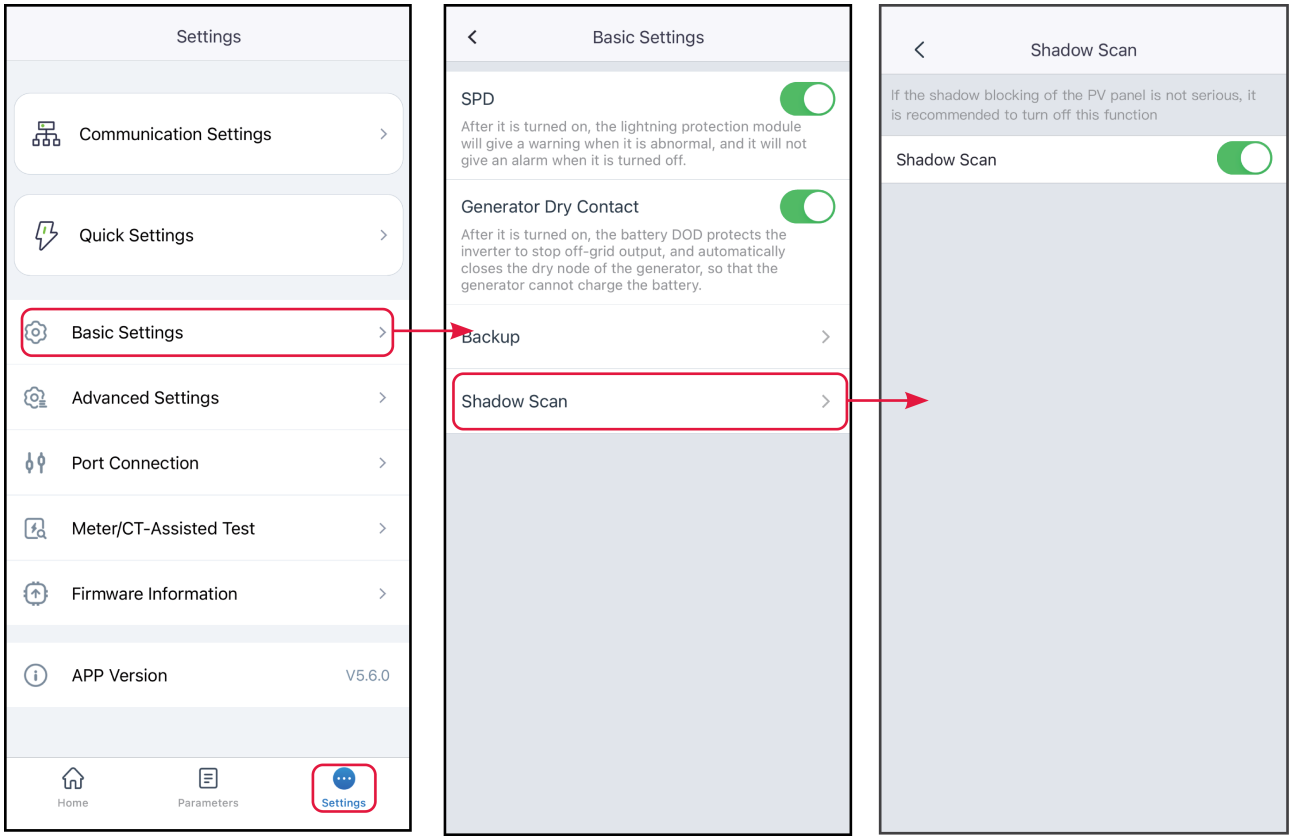


9.3.6.2 Setting the Shadow Scan

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

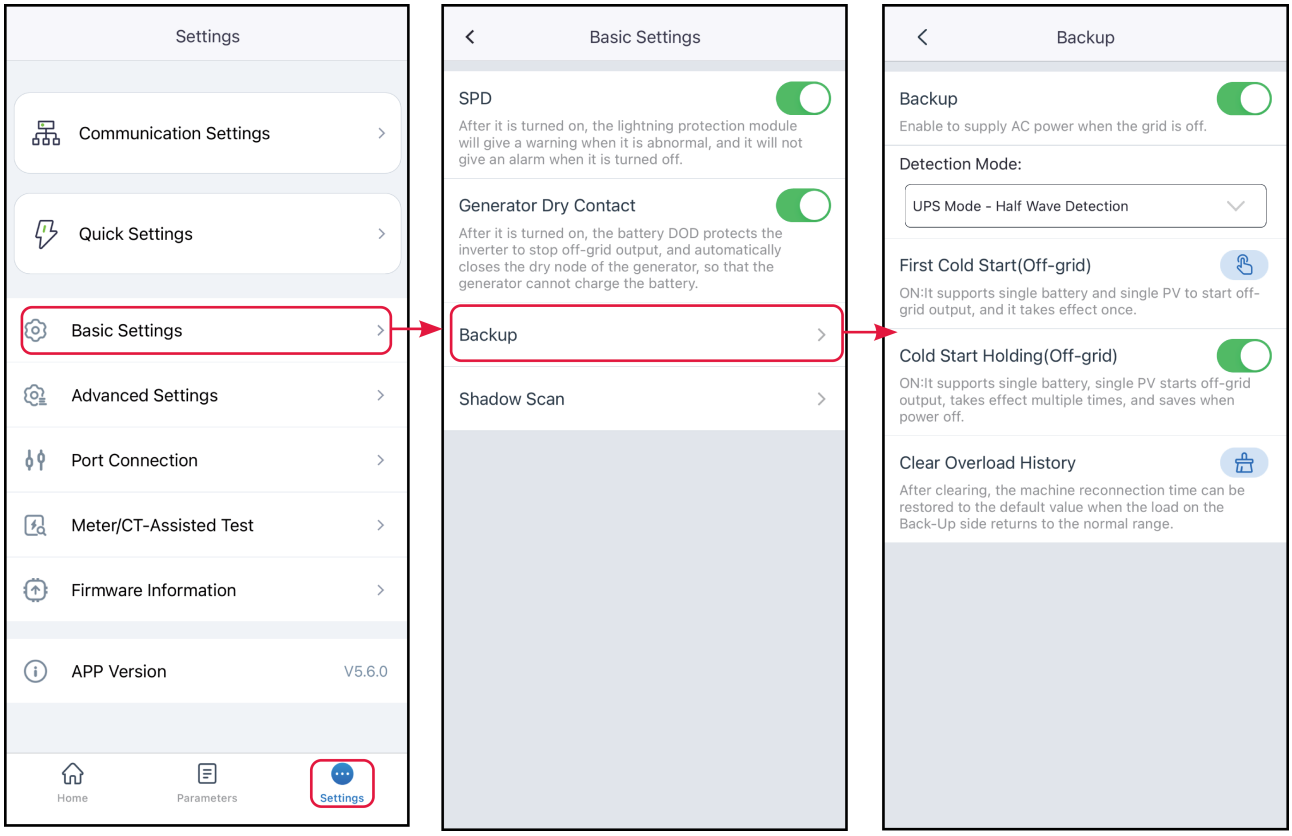
Step 1 : Tap **Home > Settings > Basic Settings> Shadow Scan**, to set the parameters.

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



9.3.6.3 Setting the Back-up

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.

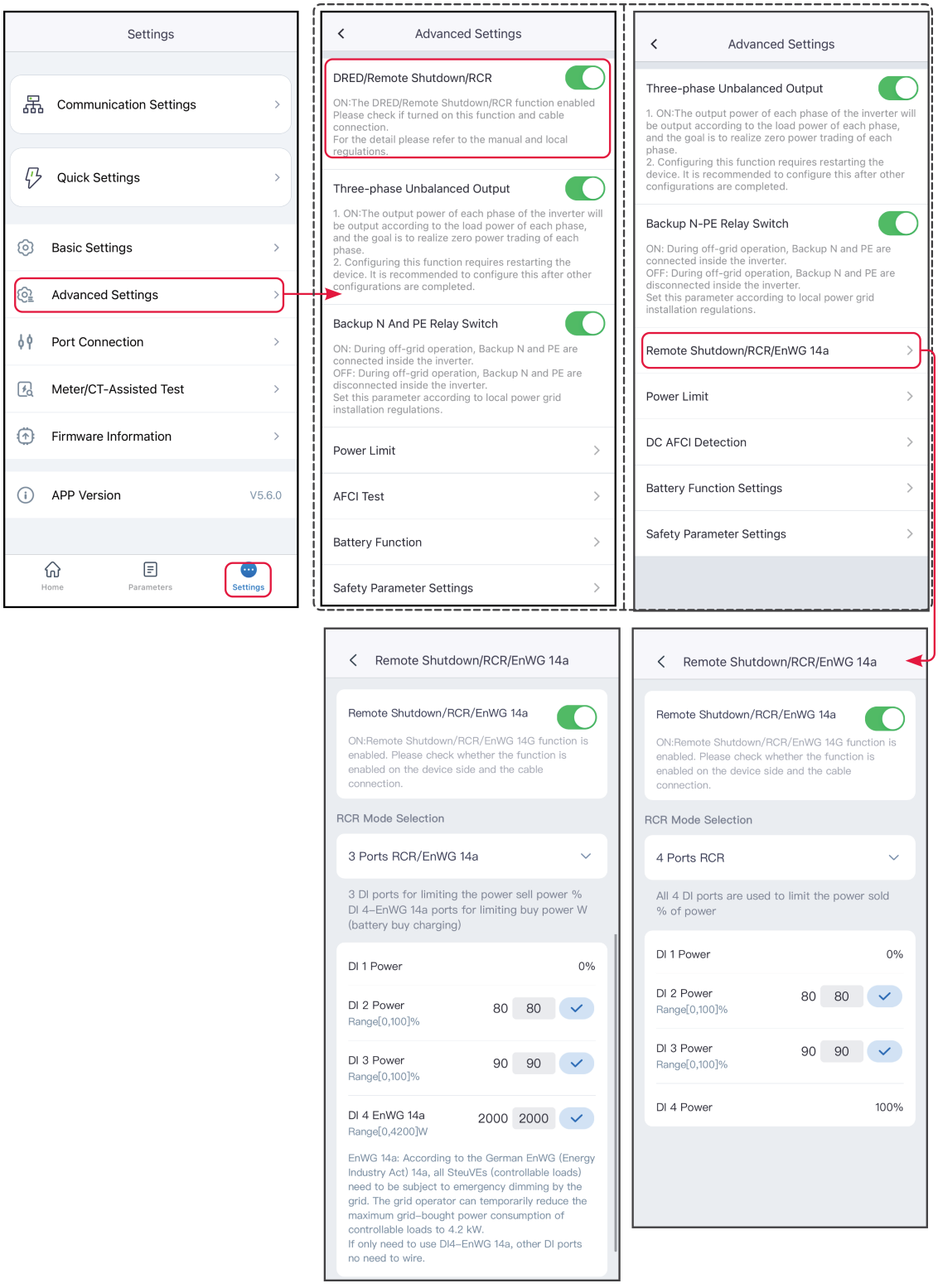
No.	Parameters	Description
6	Clear Overload History	Once the power of loads connected to the inverter BACK-UP ports exceeds the rated load power, the inverter will restart and detect the power again. The inverter will perform restart and detection several times until the overloading problem is solved. 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.

9.3.7 Setting Advanced Parameters

NOTICE
Password for Advanced Settings: goodwe2010 or 1111.

9.3.7.1 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.



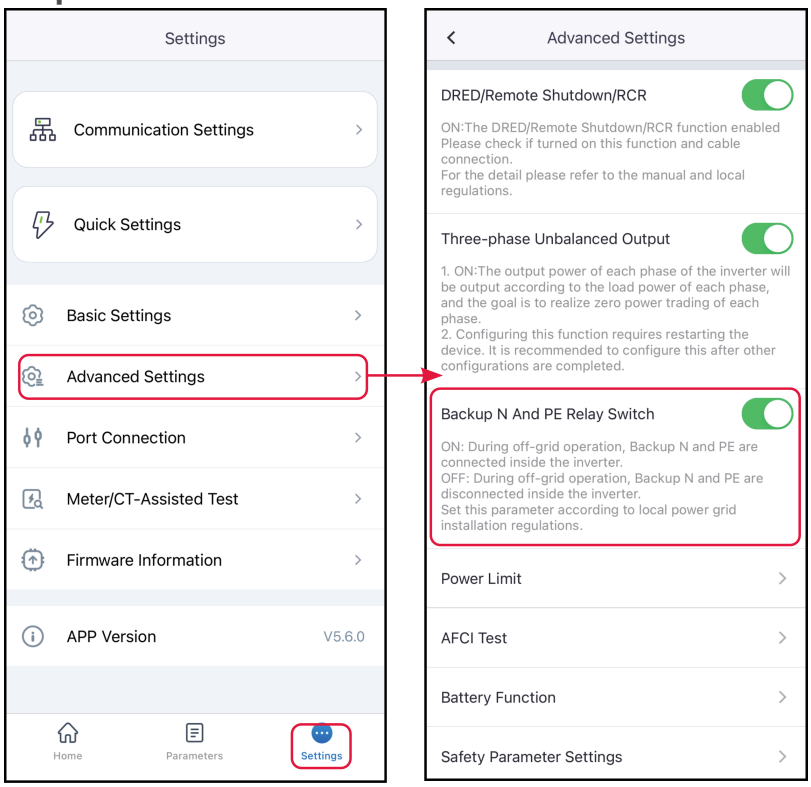
9.3.7.2 Setting the Backup N and PE Relay Switch

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.

Step 2 : Enable or disable the function based on actual needs.



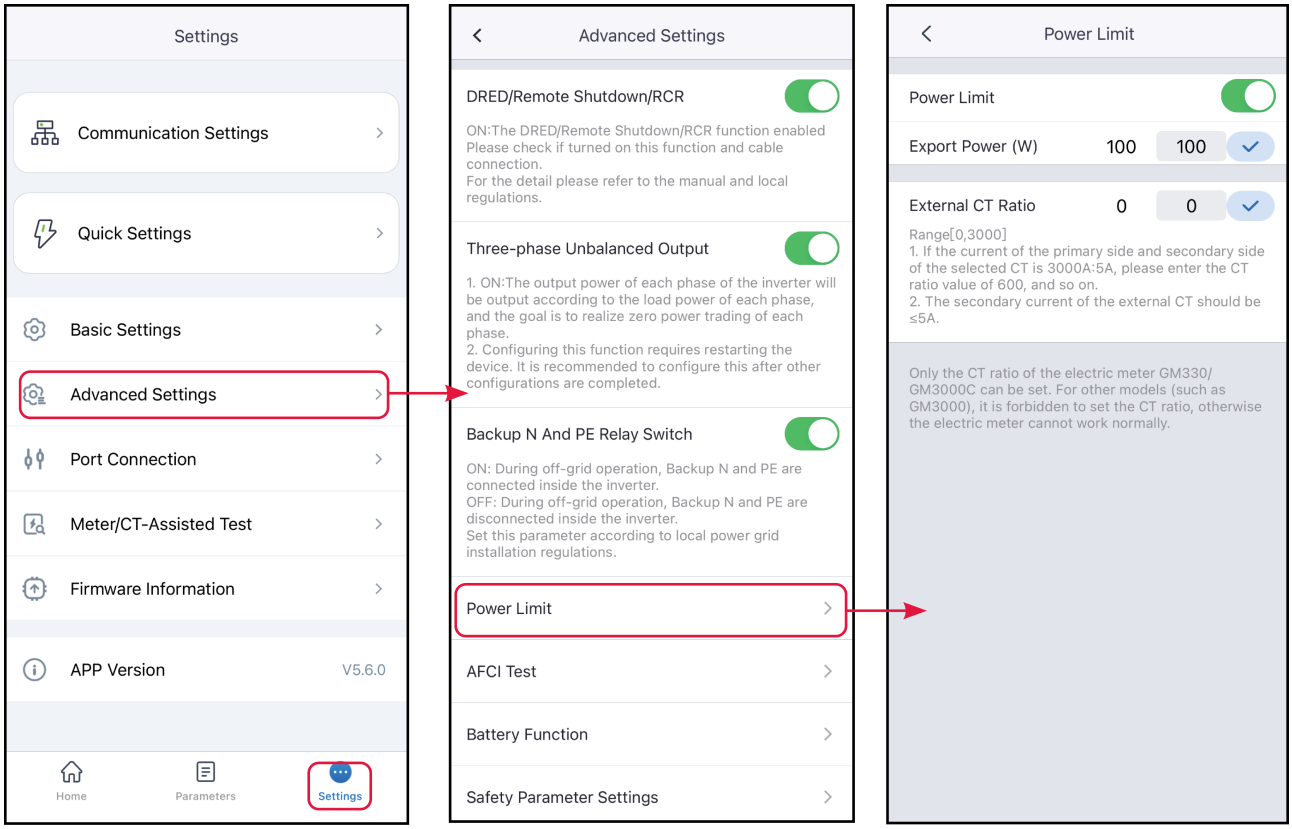
9.3.7.3 Set the Grid-Connected Power Limit Parameters

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

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

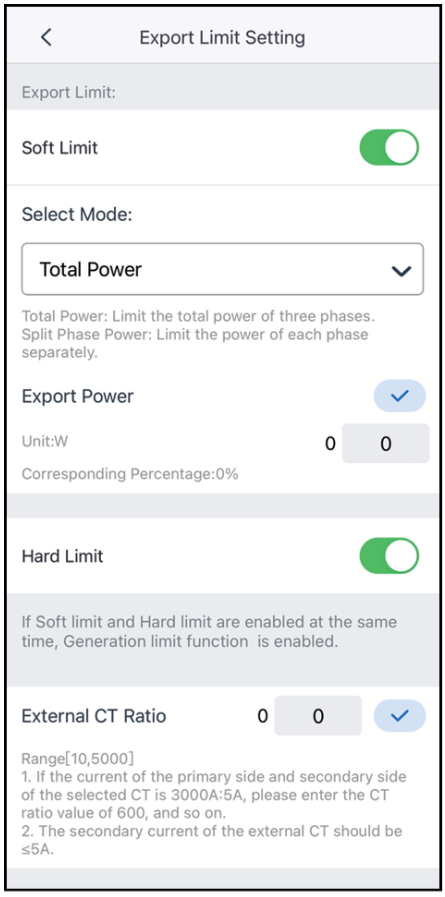
Step 3 : After turning on the anti-backflow function, enter the parameter value according to actual needs and click "√" to successfully set the parameter.

9.3.7.3.1 Set the Grid-Connected Power Limit Parameters (General)



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

9.3.7.3.2 Set Grid-Connected Power Limit Parameters (Australia)



SLG00CON0133

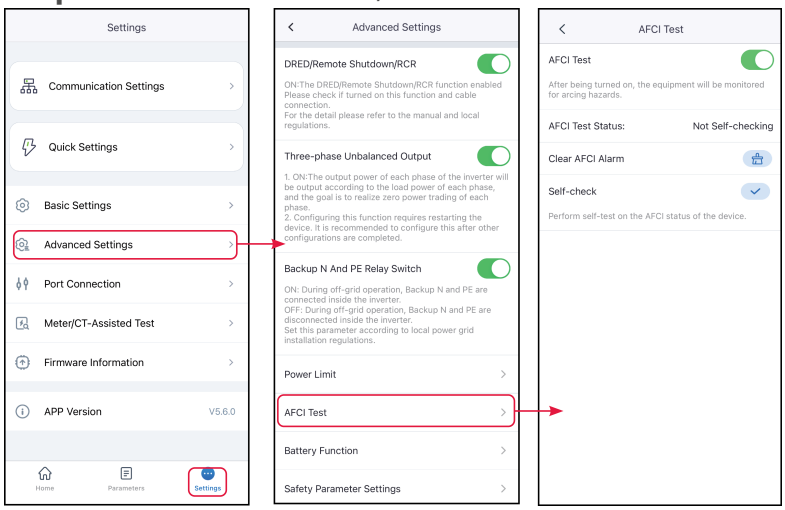
No.	Parameters	Description
1	Soft Limit	When output power needs to be limited according to grid standards in some countries or regions, turn on this function.
2	Select Mode	• Set according to the maximum power that can be actually input to the grid. • Supports setting of fixed power value or percentage. The set percentage is the percentage of the limit power to the rated power of the inverter. • After setting the fixed value, the percentage changes automatically; after setting the percentage, the fixed value changes automatically.

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

9.3.7.4 Set 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.



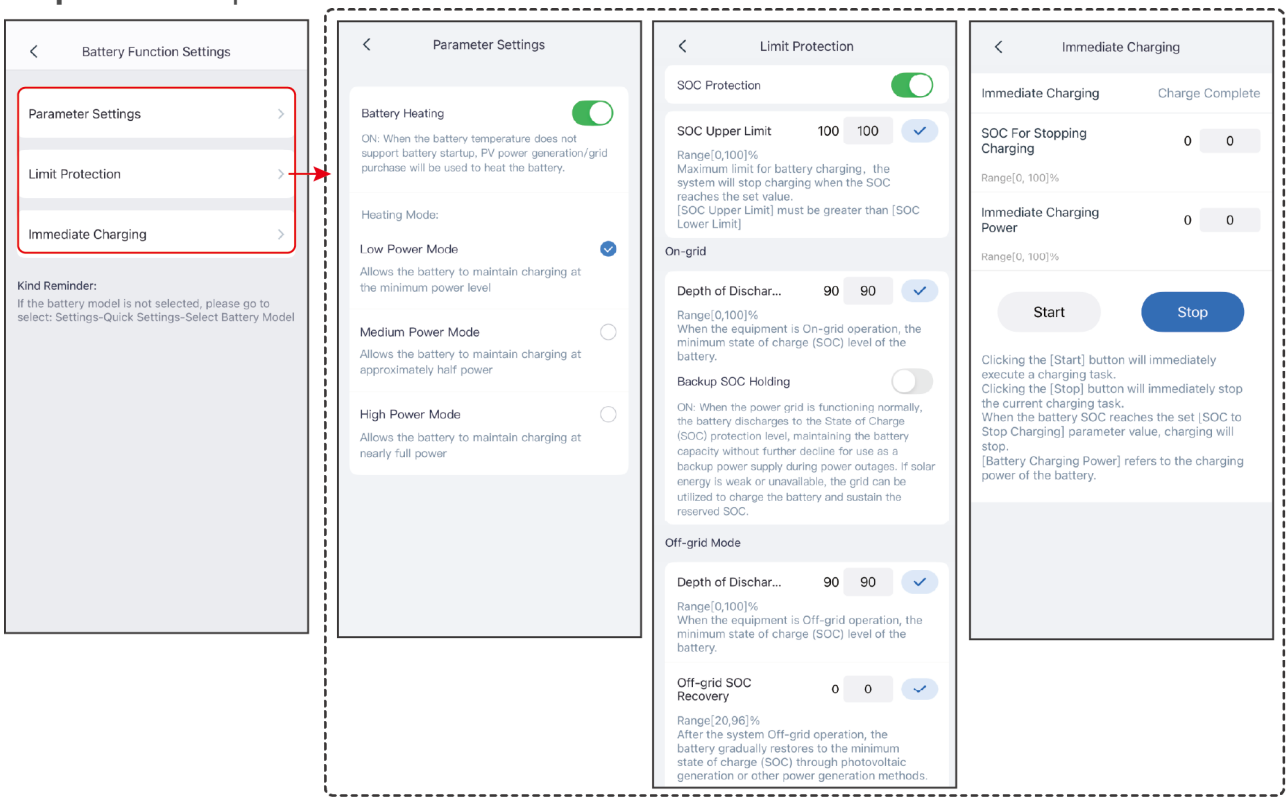
No.	Parameters	Description
1	AFCI Test	Enable or disable AFCI accordingly.
2	AFCI Test Status	The detection status like Not Self-checking.
3	Clear AFCI Alarm	Clear ARC Faulty alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

9.3.7.5 Setting the Battery

9.3.7.5.1 Setting the Lithium Battery

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

Step 2: Set the parameters based on actual needs.



SLG00CON0072

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

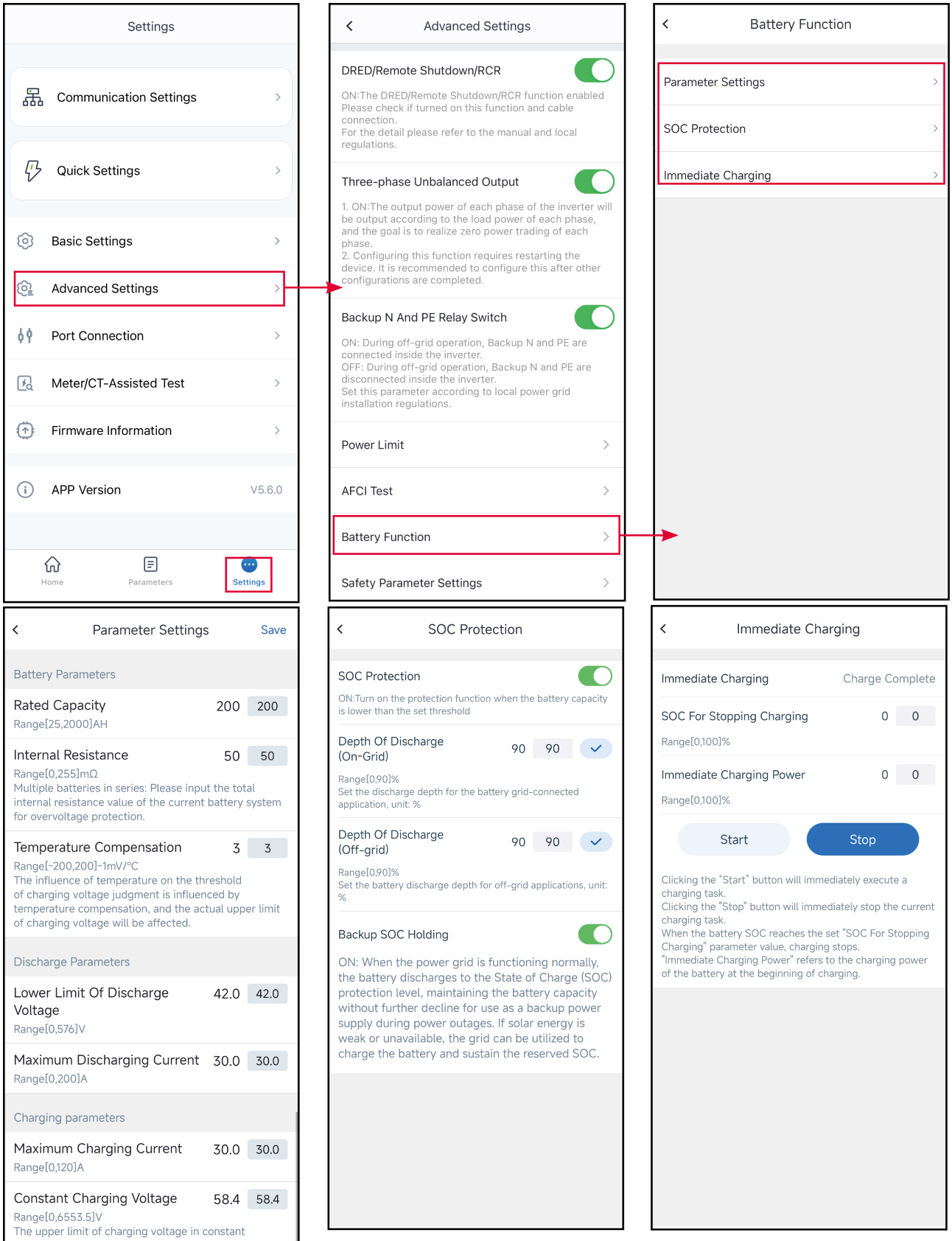
No.	Parameter	Description
3	Battery Heating	Optional. This option is displayed on the interface when a battery that supports heating is connected. After the battery heating function is turned on, when the temperature is below the value that starts up the battery, PV power or electricity from the grid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

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 Protection		
5	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
6	SOC Upper Limit	The upper limit value for battery charging. Charging stops when the battery SOC reaches the SOC upper limit.
7	Depth of Discharge	The maximum discharge value allowed for the battery when the inverter is in the on-grid scenario.
8	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.
9	Depth of Discharge	The maximum discharge value allowed for the battery when the inverter is in the off-grid scenario.
10	Off-grid SOC Recovery	When the inverter is operating off-grid, if the battery SOC drops below the lower limit, the inverter stops outputting power and only charges the battery until the battery SOC returns to the off-grid recovery SOC value. If the SOC lower limit value is higher than the off-grid recovery SOC value, charge to SOC lower limit +10%.
Immediate Charging		
11	Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.

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.

9.3.7.5.2 Setting Lead-acid Battery Parameter

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


Settings
Communication Settings
Quick Settings
Basic Settings
Advanced Settings
Port Connection
Meter/CT-Assisted Test
Firmware Information
APP Version
V5.6.0
Home
Parameters
Settings
Advanced Settings
DRED/Remote Shutdown/RCR
ON:The DRED/Remote Shutdown/RCR function enabled
Please check if turned on this function and cable connection.
For the detail please refer to the manual and local regulations.
Three-phase Unbalanced Output
1. ON:The output power of each phase of the inverter will be output according to the load power of each phase, and the goal is to realize zero power trading of each phase.
2. Configuring this function requires restarting the device. It is recommended to configure this after other configurations are completed.
Backup N And PE Relay Switch
ON: During off-grid operation, Backup N and PE are connected inside the inverter.
OFF: During off-grid operation, Backup N and PE are disconnected inside the inverter.
Set this parameter according to local power grid installation regulations.
Power Limit
AFCI Test
Battery Function
Safety Parameter Settings
Battery Function
Parameter Settings
SOC Protection
Immediate Charging
Parameter Settings
Save
Battery Parameters
Rated Capacity
200
200
Range[25,2000]AH
Internal Resistance
50
50
Range[0,255]mΩ
Multiple batteries in series: Please input the total internal resistance value of the current battery system for overvoltage protection.
Temperature Compensation
3
3
Range[-200,200]-1mV/°C
The influence of temperature on the threshold of charging voltage judgment is influenced by temperature compensation, and the actual upper limit of charging voltage will be affected.
Discharge Parameters
Lower Limit Of Discharge Voltage
42.0
42.0
Range[0,576]V
Maximum Discharging Current
30.0
30.0
Range[0,200]A
Charging parameters
Maximum Charging Current
30.0
30.0
Range[0,120]A
Constant Charging Voltage
58.4
58.4
Range[0,6553.5]V
The upper limit of charging voltage in constant charging mode
Float Voltage
54.4
54.4
Range[0,6553.5]V
The upper voltage limit of change into float charging
Maximum Current For Switching To Float Charge
3.0
3.0
Range[0,25.5]A
The maximum charging current of change into float charging
The Time Of Float Charging
180
180
Range[0,65535)S
The time of uniform charging/constant charging change into float charging
SOC Protection
SOC Protection
ON:Turn on the protection function when the battery capacity is lower than the set threshold
Depth Of Discharge (On-Grid)
90
90
Range[0,90]%
Set the discharge depth for the battery grid-connected application, unit: %
Depth Of Discharge (Off-grid)
90
90
Range[0,90]%
Set the battery discharge depth for off-grid applications, unit: %
Backup SOC Holding
ON: When the power grid is functioning normally, the battery discharges to the State of Charge (SOC) protection level, maintaining the battery capacity without further decline for use as a backup power supply during power outages. If solar energy is weak or unavailable, the grid can be utilized to charge the battery and sustain the reserved SOC.
Immediate Charging
Immediate Charging
Charge Complete
SOC For Stopping Charging
0
0
Range[0,100]%
Immediate Charging Power
0
0
Range[0,100]%
Start
Stop
Clicking the "Start" button will immediately execute a charging task.
Clicking the "Stop" button will immediately stop the current charging task.
When the battery SOC reaches the set "SOC For Stopping Charging" parameter value, charging stops.
"Immediate Charging Power" refers to the charging power of the battery at the beginning of charging.

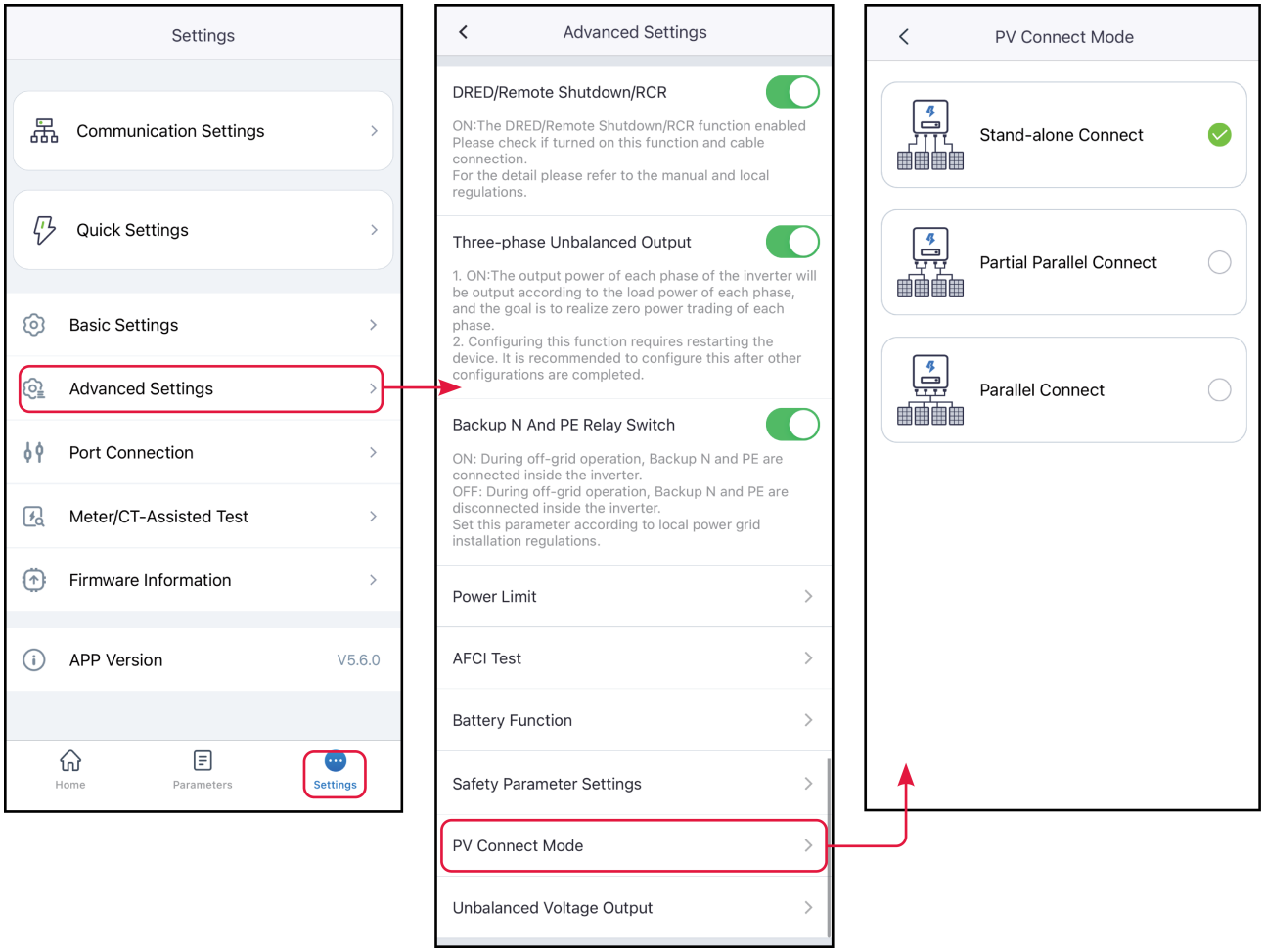
No.	Parameter	Description
1	Nominal Capacity	Set the battery capacity according to the actual parameters.
2	Battery Internal Resistance	Set the battery internal resistance according to the actual parameters.
3	Temperature Compensation	When the battery temperature changes, the battery charging voltage 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.
Restriction 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%.
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.

9.3.7.6 Setting PV Connect Mode

Select the PV access 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 access mode to Independent Access, Partial Parallel Connect or Parallel Connection based on actual connections.

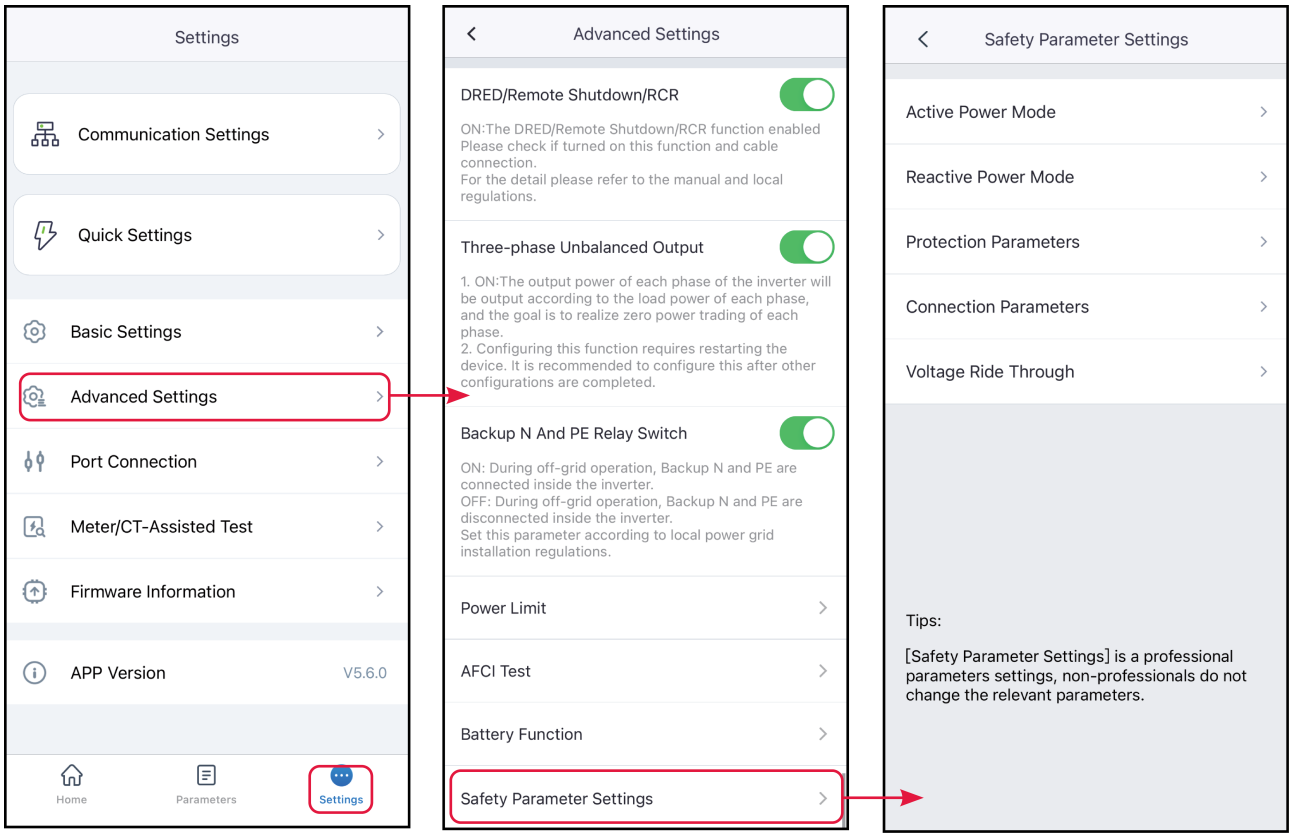


No.	Parameters	Description
1	Stand-alone Connect	The external PV string is connected to multi MPPT terminals of the inverter.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another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

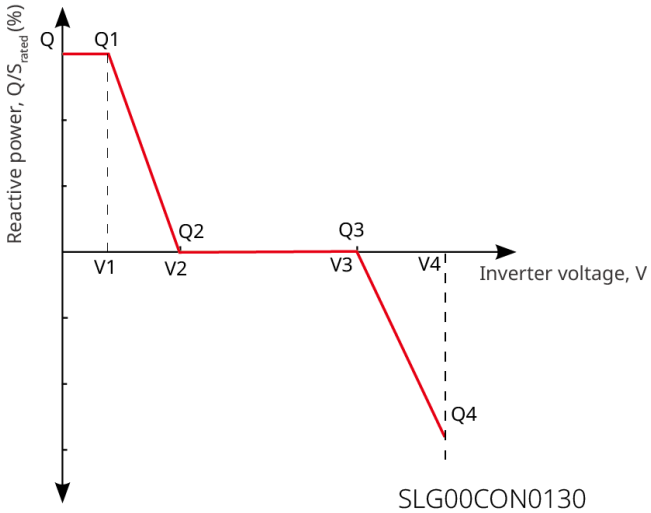


9.3.8.1 Setting the Reactive Curve

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

Step 2 :Set the parameters based on actual needs.

Q(U) Curve



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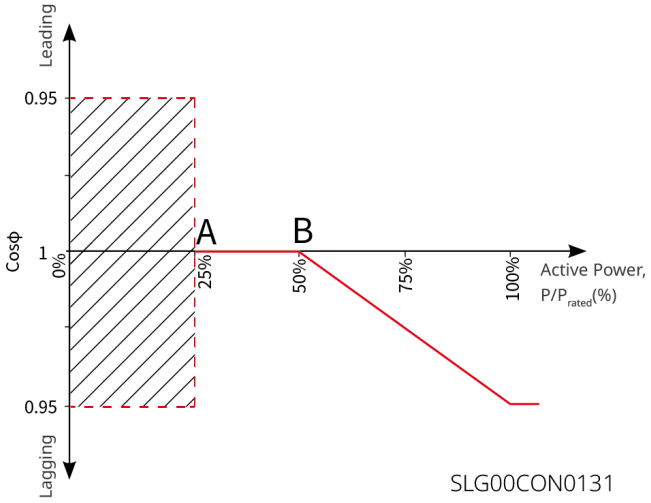
Cosφ Curve



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No.	Parameters	Description
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 needs and local grid standards and requirements.
3	Over-excited	
4	Power Factor	Set the power factor based on actual needs. Range: 0-~-0.8, or +0.8~+1.
Fix Q		

No.	Parameters	Description
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) Curve		
1	Q(U) Curve	Enable Q(U) Curve when it is required by local grid standards and requirements.
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 for reactive power variation during over-voltage conditions.
7	Under-excitation Slope	
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%。

No.	Parameters	Description
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 power ratio is between the Lock-in power and Lock-out power, the ratio meets Q(U) curve requirements.
12	Lock-out Power	
Cosφ(P) Curve		
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, E。
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, configures the power variation slope as either positive or negative.
6	Under-excitation Slope	
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.

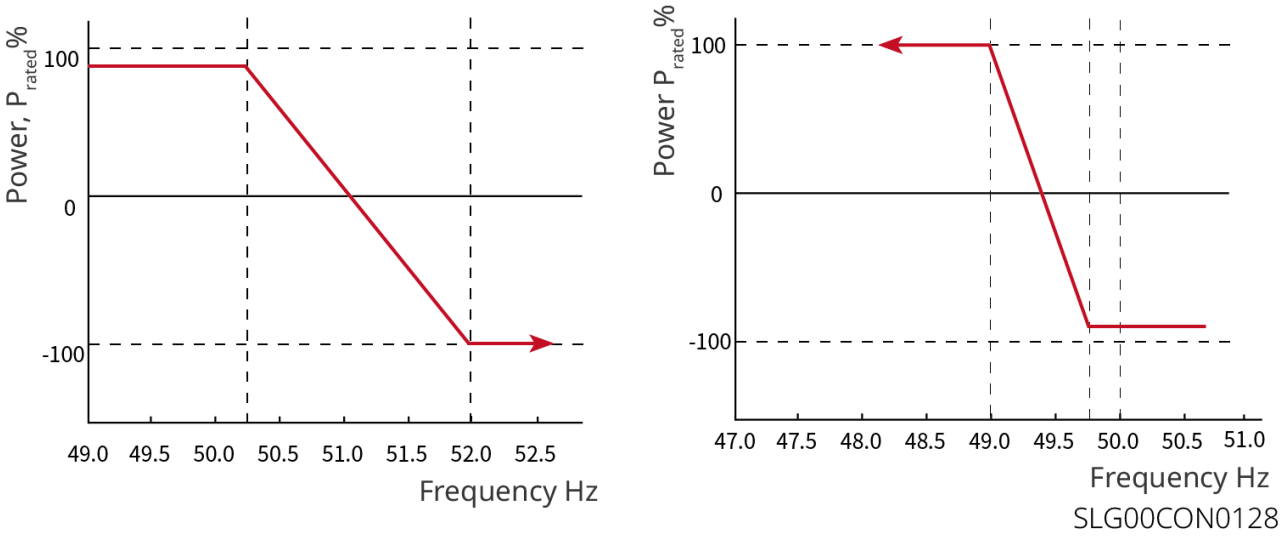
No.	Parameters	Description
11	Lock-in Voltage	When the grid voltage is between Lock-in Voltage and Lock-out Voltage, the voltage meets Cosφ curve requirements.
12	Lock-out Voltage	
Q(P) Curve		
1	Q(P) Curve Function	Enable Q(P) Curve when it is required by local grid standards and requirements.
2	Mode Selection	Set Q(P) curve mode, supporting basic mode and slope mode.
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 the power variation slope as either a positive or negative value.
6	Under-excitation Slope	
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.

9.3.8.2 Setting the Active Curve

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

Step 2 : Set the parameters based on actual needs.

P(F) Curve



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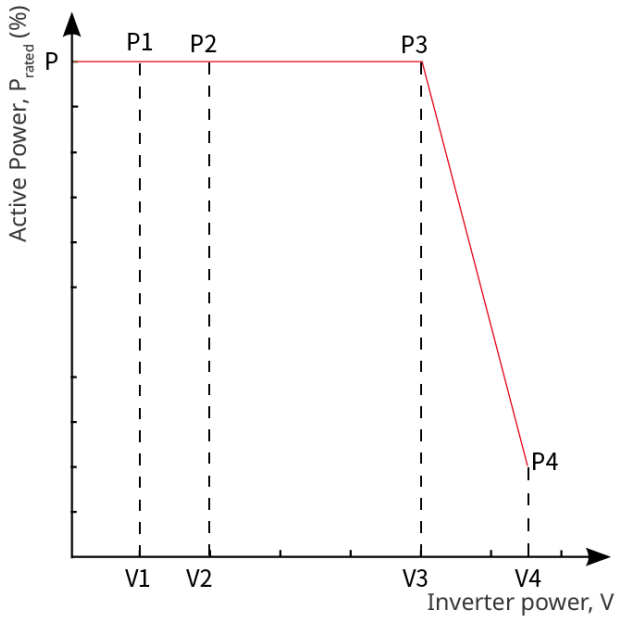
P(U) Curve



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No.	Parameters	Description
1	Output Active Power	Set the inverter output power limit.
2	Power Gradient	Set the change slope when the active output power increases or decreases.
Over frequency Unloading		
1	P(F) Curve	According to the grid standards of some countries or regions, this function is enabled when the P(F) curve needs to be set.
2	Over frequency Unloading mode	Set the Over frequency 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	Overfrequency 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 Over frequency Threshold.
4	Buy and sell power conversion frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Overfrequency 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 thanOver frequency Endpoint.

No.	Parameters	Description
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	Over frequency power slope	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 Over frequency Threshold.
9	Hysteretic Power Recovery Slope	Indicates the variation slope when the power recovers.
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 (△P).

No.	Parameters	Description
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
Underfrequency Loading		
1	P(F) Curve	According to the grid standards of some countries or regions, this function is enabled when the P(F) curve needs to be set.
2	Underfrequency Loading mode	Set the Underfrequency Loading mode according to actual needs. • Slope mode: adjust the power based on the under-frequency point and the loading slope. • Stop mode: adjust the power based on the under-frequency start point and the under-frequency end point.
3	Underfrequency 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	Buy and sell power conversion frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Underfrequency 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**.
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.

No.	Parameters	Description
7	Underfrequency 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 Power Recovery Slope	Indicates the variation slope when the power recovers.
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 (△P).
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 Function	According to the grid standards of some countries or regions, this function needs to be set when the P(U) curve is required.

No.	Parameters	Description
15	Vn Voltage	The ratio of the actual value of the voltage at point Vn to the rated voltage, n=1,2,3,4. For example: when set to 90, it means: V/Vrated%=90%.
16	Vn Active Power	The ratio of the active power output of the inverter at point Vn to the apparent power, 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: First-order low-pass filtering, within the response time constant, output regulation is achieved according to the first-order low-pass curve. Slope scheduling, output regulation is achieved according to the set power change slope.
18	Power Gradient	When the output response mode is set to slope scheduling, active power scheduling is achieved according to the power change gradient.
19	PT-1 Behavior Tau	Set the time constant within which the active power changes based on the first order LPF curve when the **Output Response Mode** is set to be **PT-1 Behavior**.

9.3.8.3 Setting grid protection parameters

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

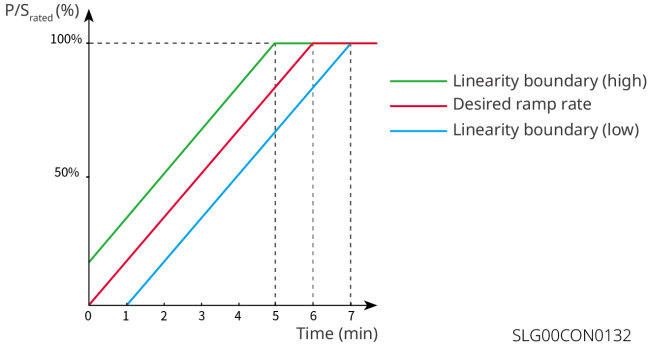
No.	Parameters	Description
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value, n=1,2,3,4.
2	OV Stage n Trip Time	Set the grid overvoltage protection tripping time, n=1,2,3,4.

No.	Parameters	Description
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value, n=1,2,3,4.
4	UV Stage n Trip Time	Set the grid undervoltage protection tripping time.
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.

9.3.8.4 Setting Connection Parameters

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

Step 2: Set the parameters based on actual needs.



No.	Parameters	Description
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		
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**.

No.	Parameters	Description
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.

9.3.8.5 Setting Voltage Ride Through Parameters

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

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

No.	Parameters	Description
3	Enter Into LVRT Threshold	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between Enter Into LVRT Threshold and Exit LVRT Endpoint.
4	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 immediately when the grid voltage is between Enter High Crossing Threshold and Exit High Crossing Threshold.
4	Exit High Crossing Threshold	
5	Slope K2	K-factor for reactive power during HVRT.
6	Zero Current Mode	The system outputs zero current during HVRT.
7	Entry Threshold	Set the entry threshold of zero current mode.

9.3.8.6 Setting Frequency Ride Through Parameters

Step 1 : Tap **Home > Settings > Advanced Settings > Safety Parameters > 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。

9.3.9 Setting Generator/Load Control

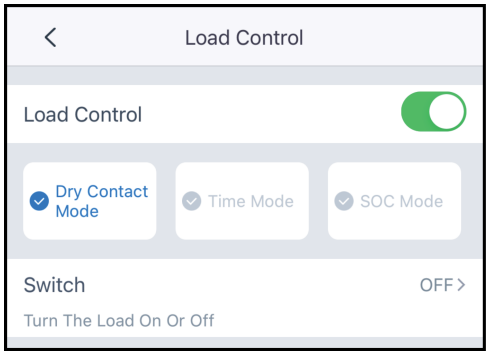
9.3.9.1 Setting Generator/Load Control

NOTICE

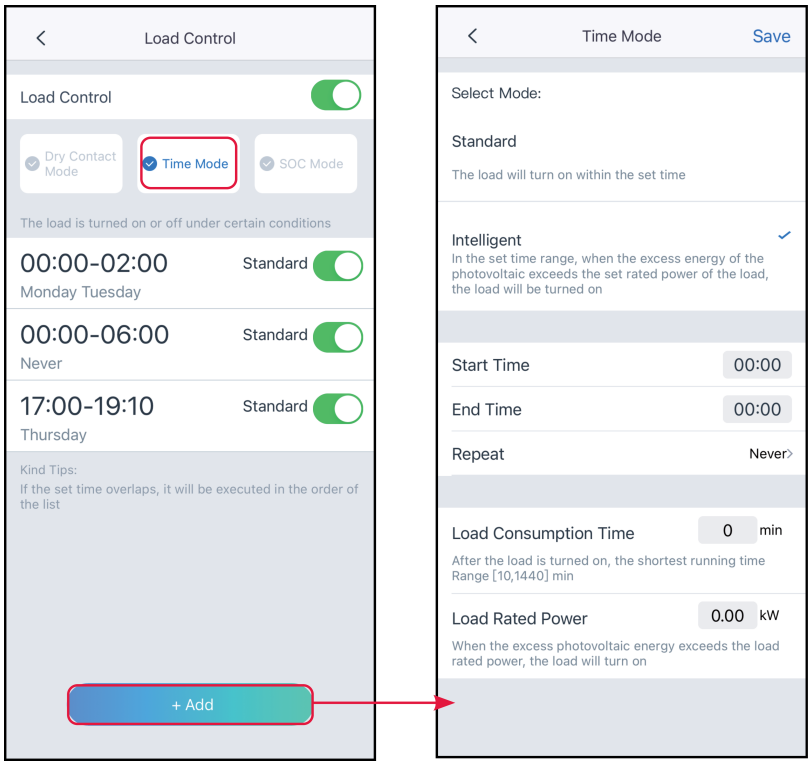
- Loads and generators can be controlled by SolarGo app when the inverter supports load control function.
- For ET40-50kW series inverters, the load control function is supported only when the inverter is used with STS. The inverter supports load control of the GENERATOR port or the BACKUP LOAD port.

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.



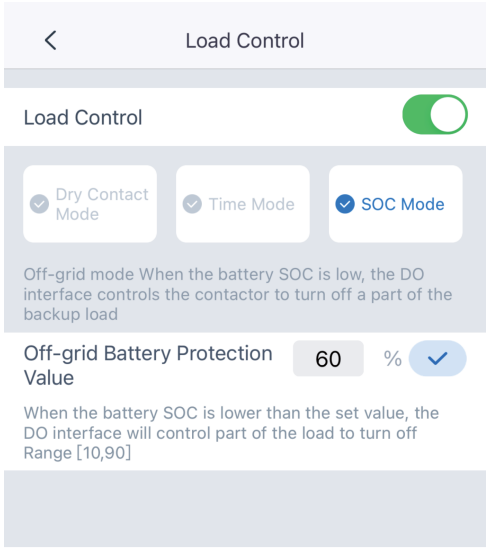
- Time Mode: set the time to enable the load, and the load will be powered automatically within the setting time period. Select standard mode or intelligent mode.



No.	Parameters	Description
1	Standard	The loads will be powered within the setting time period.

No.	Parameters	Description
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.



9.3.9.2 Setting the Generator Control

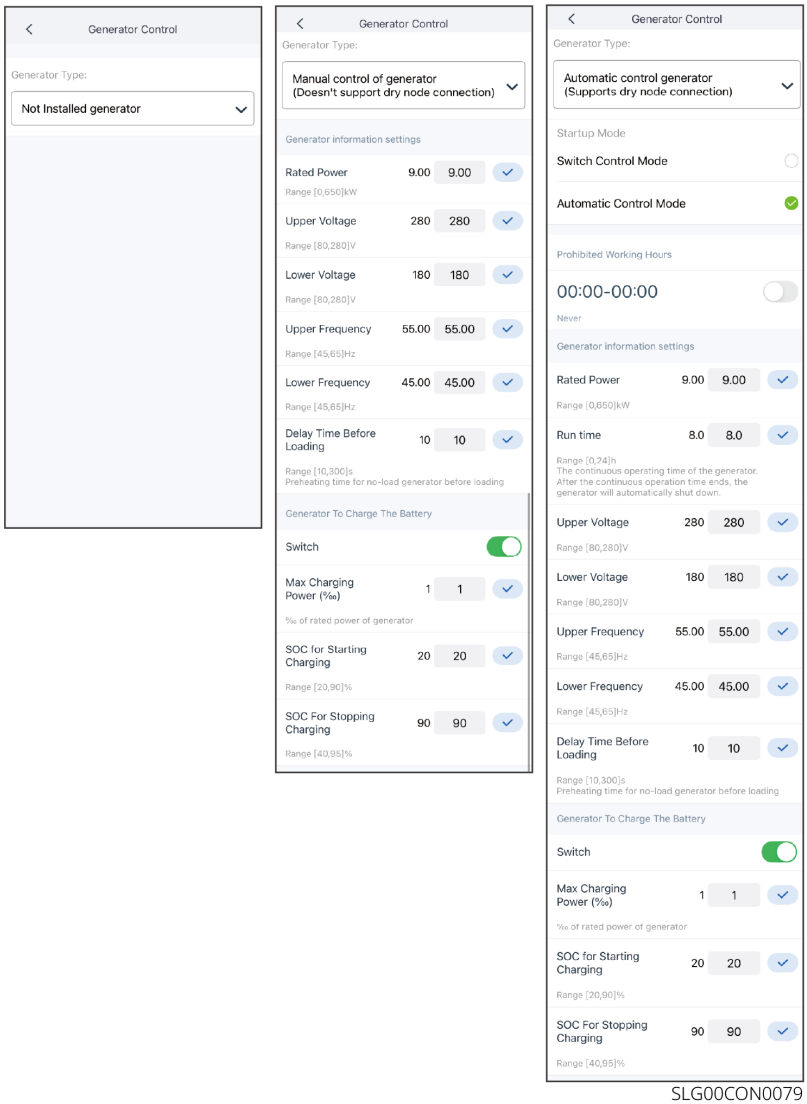
NOTICE

- 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 automaticallly after reaching Run Time.
  - Automatic Control Mode: The generator will work during Run Time, but stop working during Prohibited Working Hours.



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

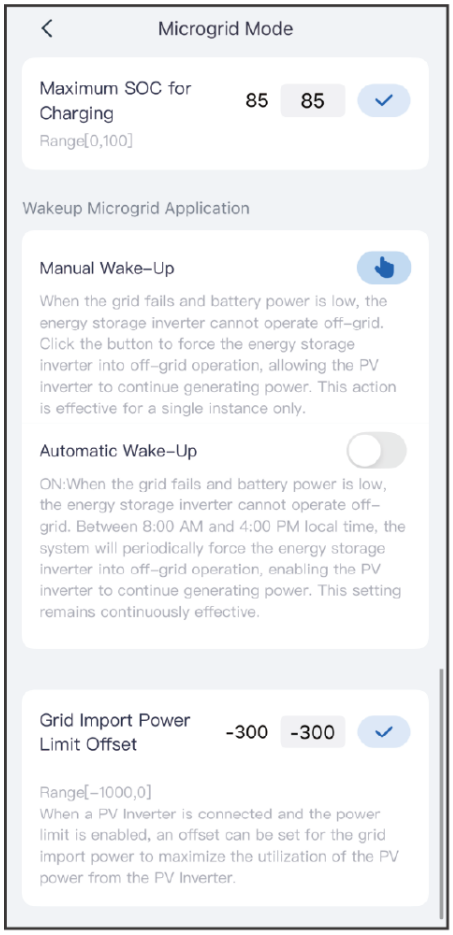
No.	Parameters	Description
Generator Information Settings		
1	Rated Power	Set the rated power of the generator.
2	Run Time	Set the continuous running time of the generator. The generator will be shut down after the continuous running time ends.
3	Upper Voltage	Set the operation voltage range of the generator.
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		

No.	Parameters	Description
8	Switch	Select whether to use the generator to generate electricity to charge the battery.
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.

9.3.9.3 Set 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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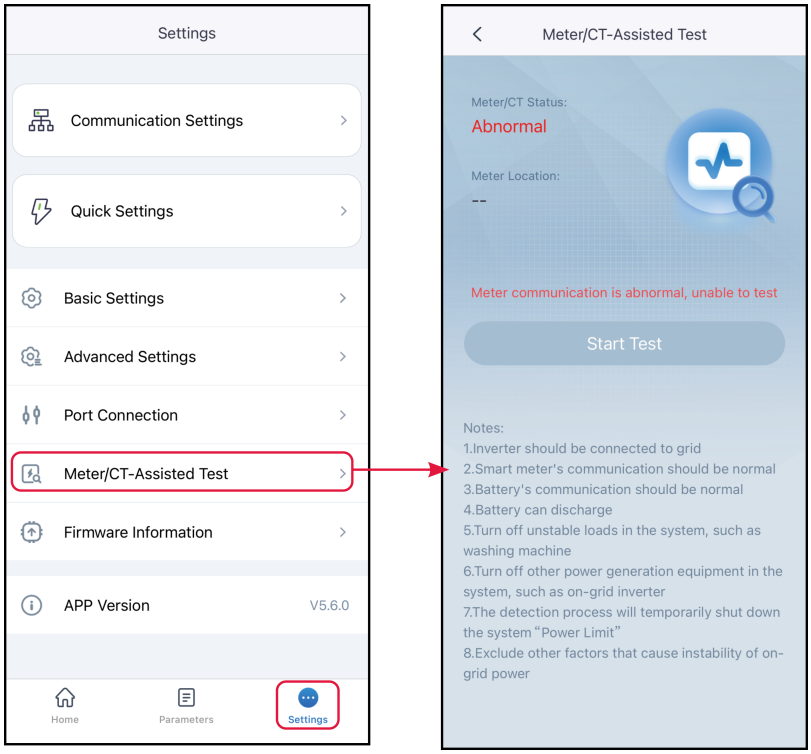
No.	Parameters	Description
1	Max.charging SOC	Set the upper limit of charging SOC, and stop charging when the upper limit is reached.
2	Manual wake-up	• When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the grid. Click this button to force the 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.

9.3.10 Setting the meter parameters

9.3.10.1 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.



9.3.11 Equipment Maintenance

9.3.11.1 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.

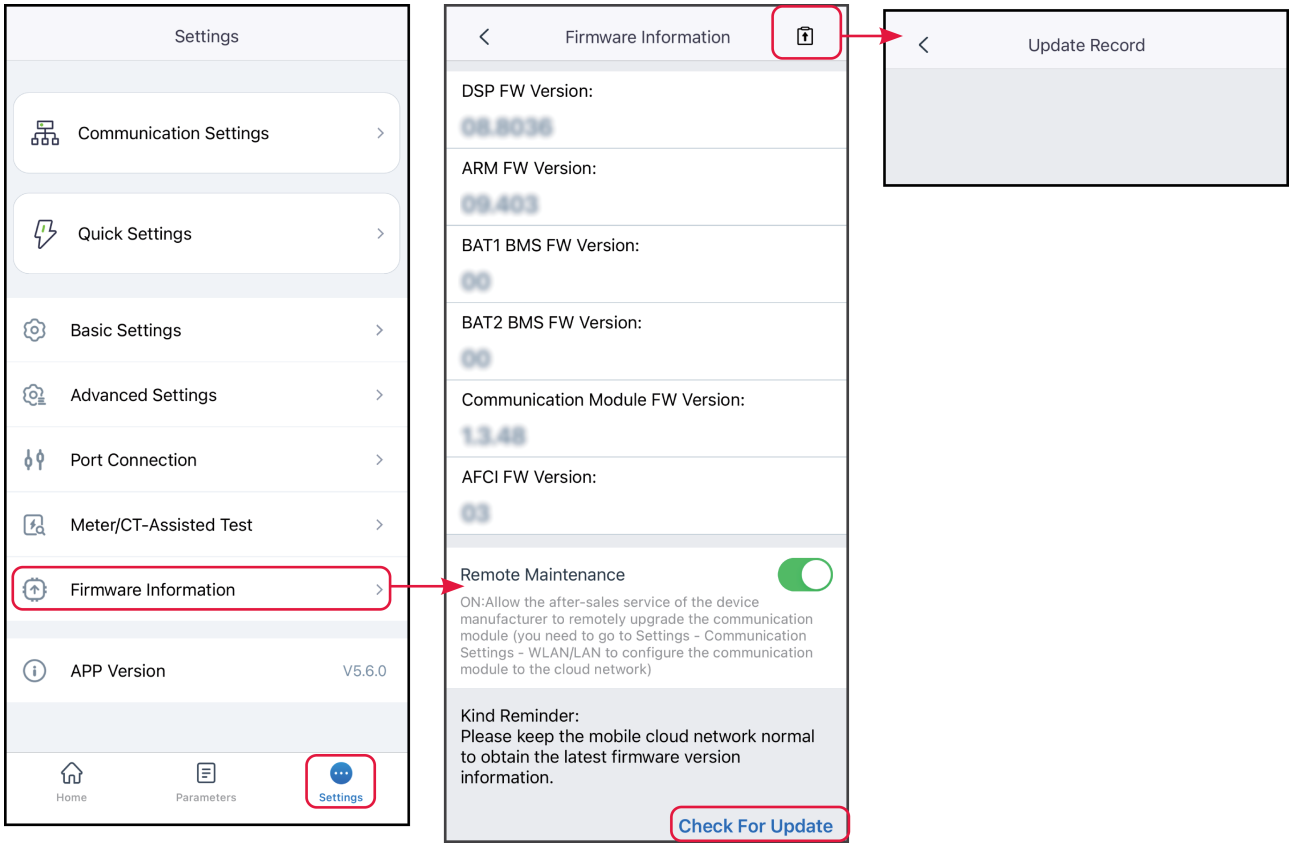
NOTICE
If the Firmware Upgrade dialog box pops up once logging into the app, click Firmware Upgrade to directly go to the firmware information page.

9.3.11.1.1 Upgrade the Firmware

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. Tap **Firmware Upgrade** after the inverter is logged in, if the firmware upgrade dialog box pops up,
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.



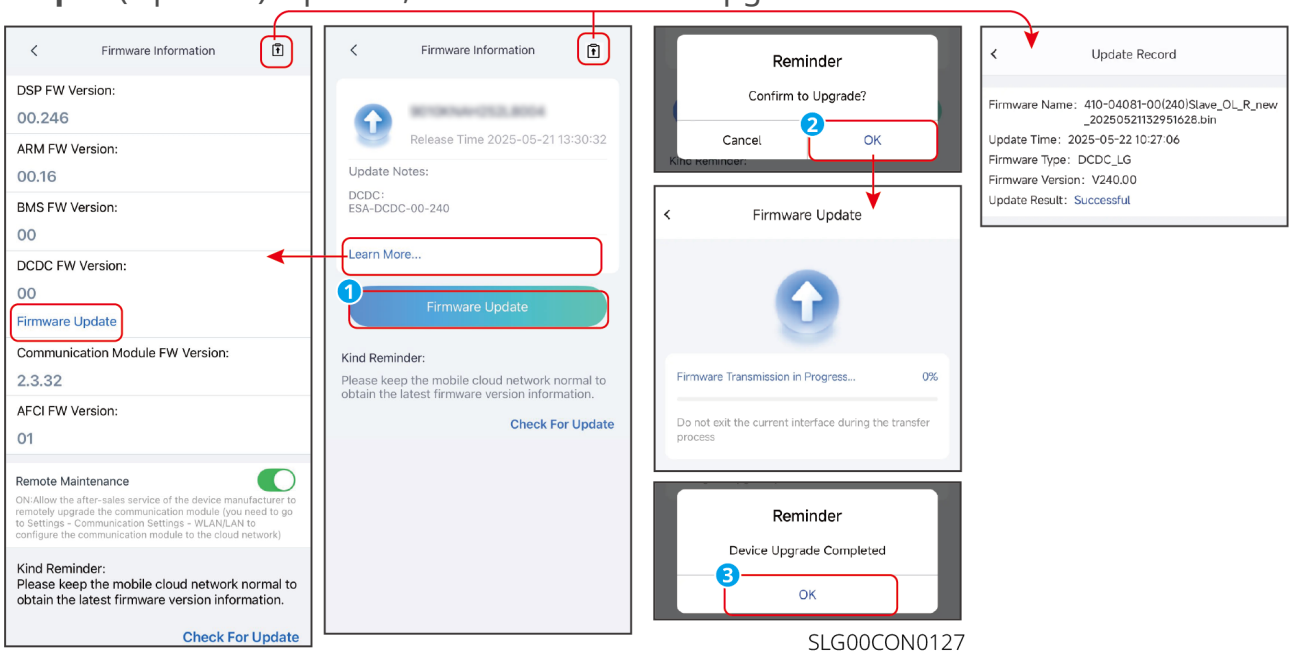
9.3.11.1.2 Upgrade the Firmware

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.



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9.3.11.1.3 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.

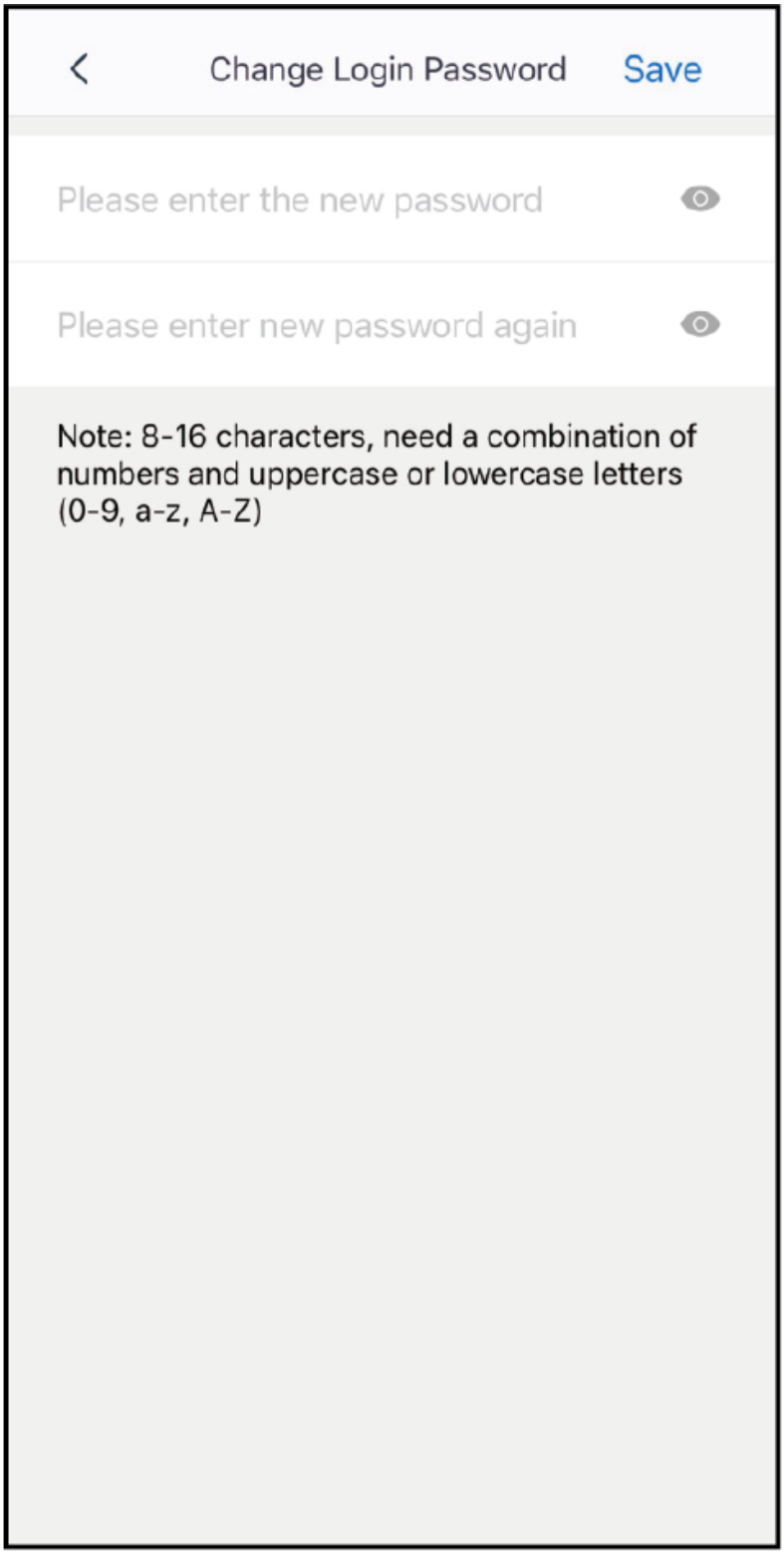
Step 1 : Tap **Home > Settings > Firmware Information**.
Step 2 : Enable or disable the automatic device upgrade function according to actual needs.

9.3.11.2 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.



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10 Power Plant Monitoring

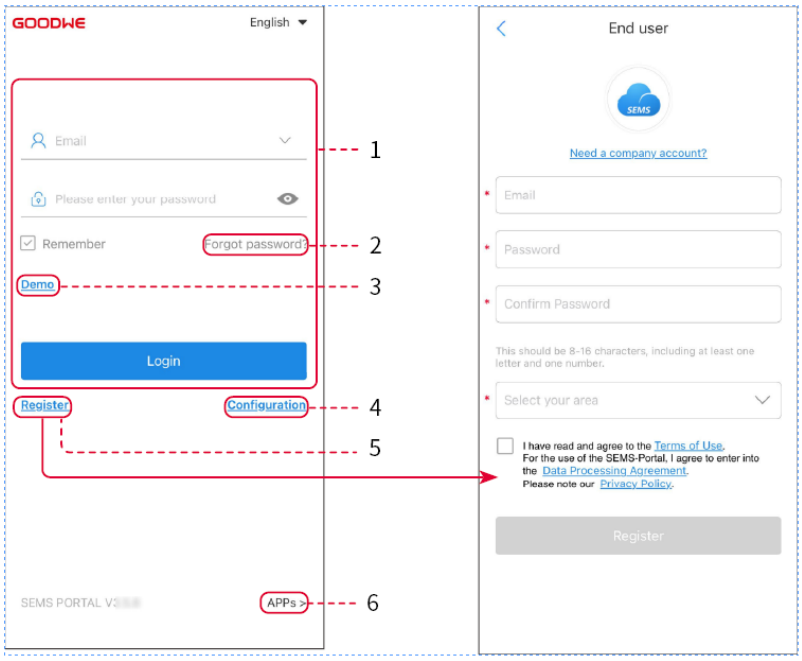
10.1 SEMS Portal

10.1.1 SEMS Portal Overview

SEMS Portal App is a monitoring platform. Commonly used functions are as follows:

1. Manage the organization or user information;
2. Add and monitor the power plant information;
3. Equipment maintenance.

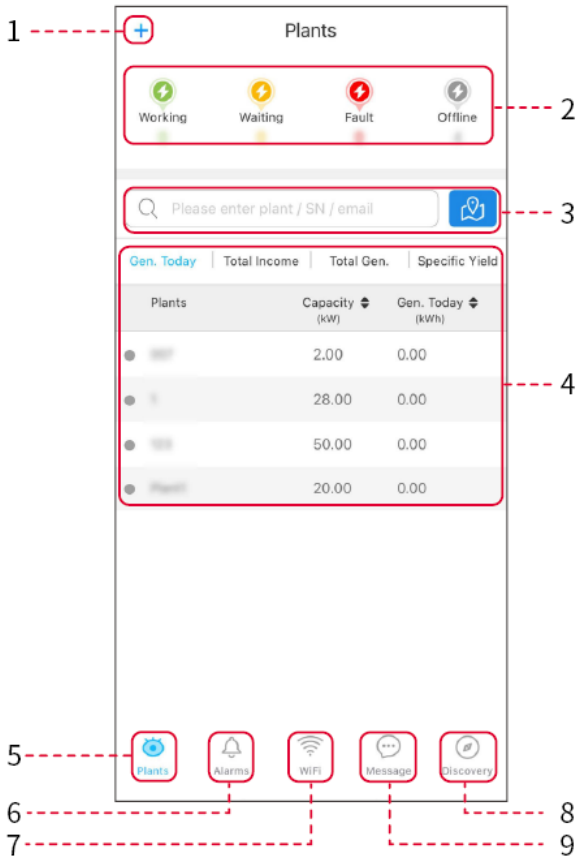
Login Page of SEMS Portal App



No.	Name	Description
1	Login Area	Enter the user name, password to login to the App.
2	Forget Password	Tap to reset the password by verifying the account.
3	Register	Tap to register an end-user account. Contact the manufacturer or the company as prompted if you need a company account.
4	APPs	Tap to download SolarGo App.

5	WiFi Configuration	Configure WiFi parameters to establish communication between the inverter and the server and realize remote monitoring and managing.
6	Demo	Tap to enter the sample plant page. The sample page only displays contents with Visitor account, which is for reference only.

Introduction to the Home Page Interface of SEMS Portal App



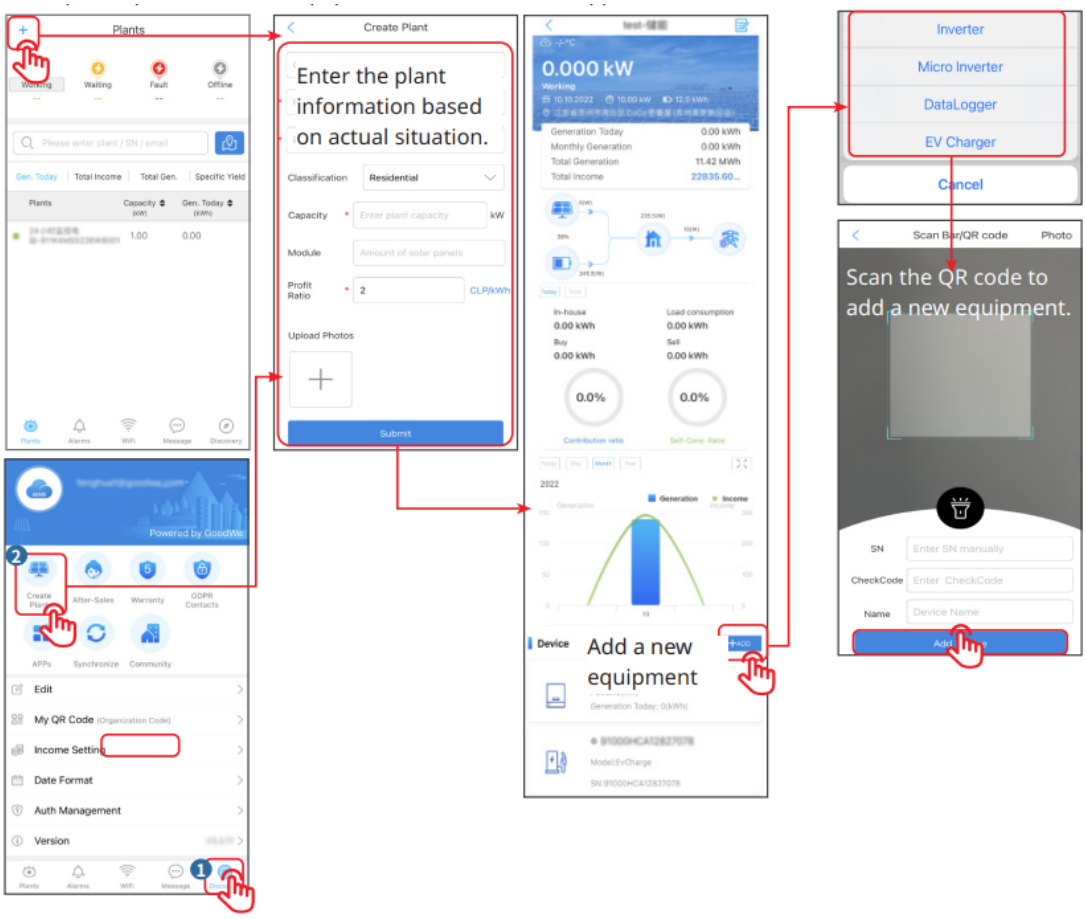
No.	Name	Description
1		Click to view the current weather and weather conditions for the next few days.
2		Used to scan inverter QR codes or barcodes.
3		Click to view system announcements.
4	Power generation statistics	Click to switch between today, this month, total generated power and cumulative earnings.

5	Power plant operation status	Display the current operating status of the power plant.
6	Power generation details	Displays the week's generation as a bar graph. Click on more details for a graphical representation of current month, current year, and calendar year electricity generation.
7	Quick Tools	Click to quickly jump to the corresponding function. Currently supports: new power station, WiFi setting, mobile O&M, power station range, empty power station, warranty inquiry, after-sales information and other functions.
8		Home Used to view basic information about the device and to quickly set up basic functions.
9		Monitoring Used to view detailed monitoring information for power stations.
10		Fault Used to view all faults, unresolved faults, and recovered faults.
11		Message Message Set and check system messages.
12		Mine Used to edit account information, generating my QR code, setting power generation yield, setting weather information, viewing the platform service agreement, and privacy statement.

10.1.2 Manage Power Plant or Equipment

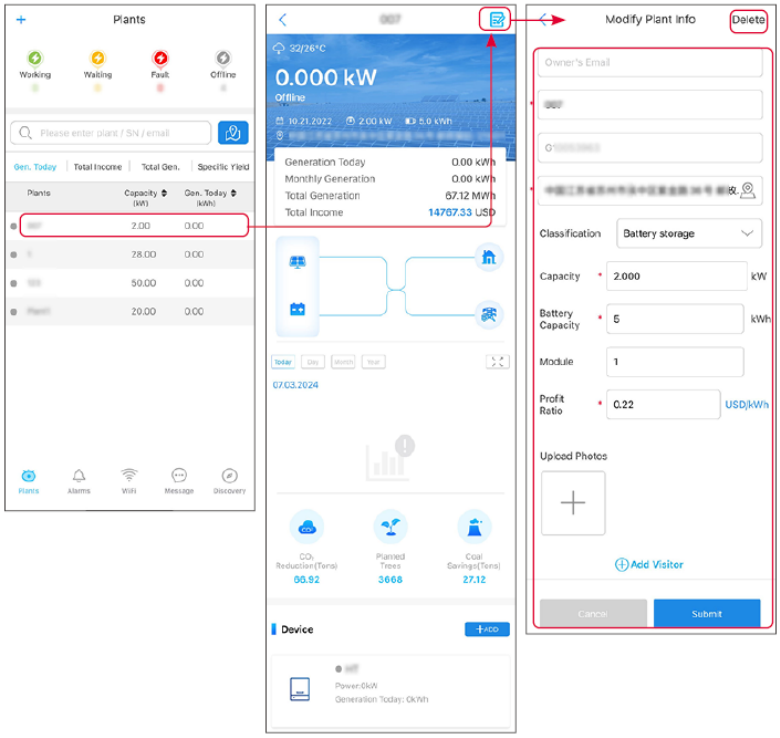
10.1.2.1 Power Plant Creation

Step 1: Enter the interface for creating a power plant.
Step 2: Carefully read the prompts on the interface and fill in the power plant information based on actual conditions. (* refers to the mandatory items)
Step 3: Add devices according to the interface prompts to complete the creation of the power plant.



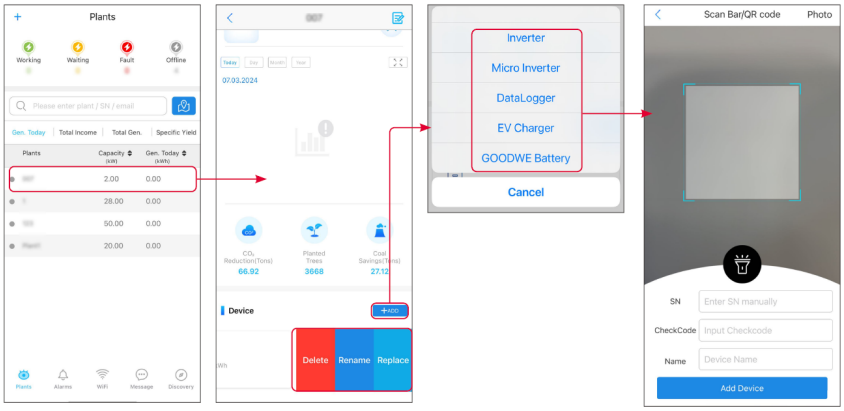
10.1.2.2 Power Plant Management

Step 1: Enter the power plant monitoring page and delete or modify the power plant information based on actual needs.



10.1.2.3 Managing the Equipment in the Power Plant

Step 1: Click on the power plant in the power plant monitoring interface to enter the power plant detailed page.
Step 2: Click the serial number of the device to enter the device detailed page, and add, delete, or replace the device based on actual needs.



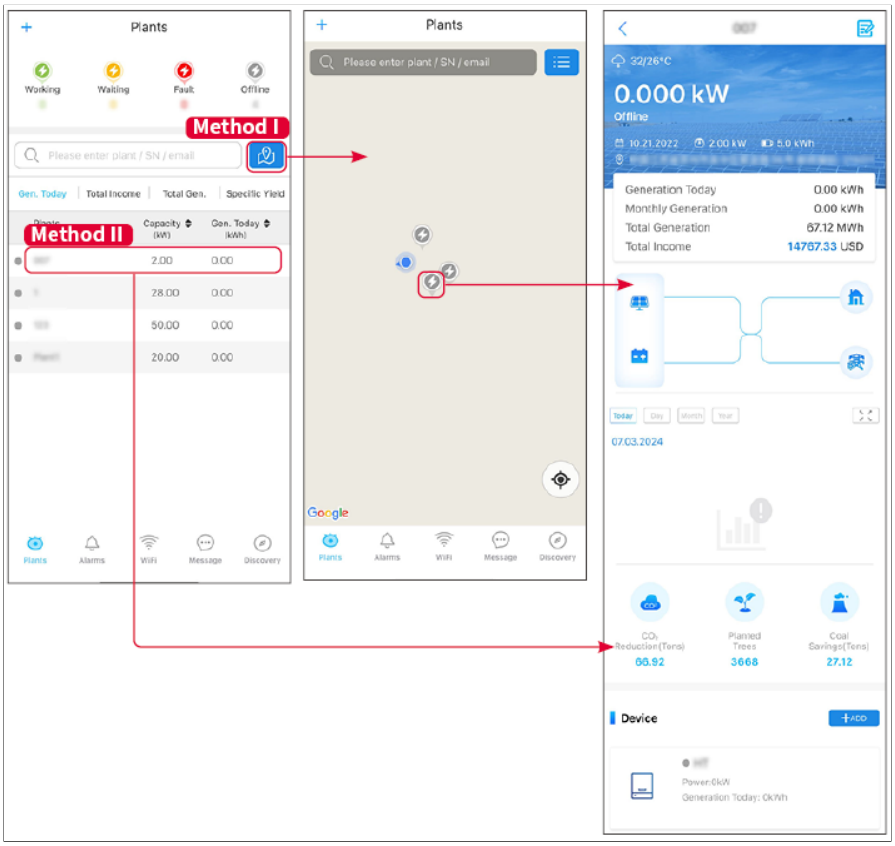
10.1.3 Power Plant Monitoring

10.1.3.1 Viewing Power Plant Information

After logging into SEMS Portal App with the account and password, you will enter the

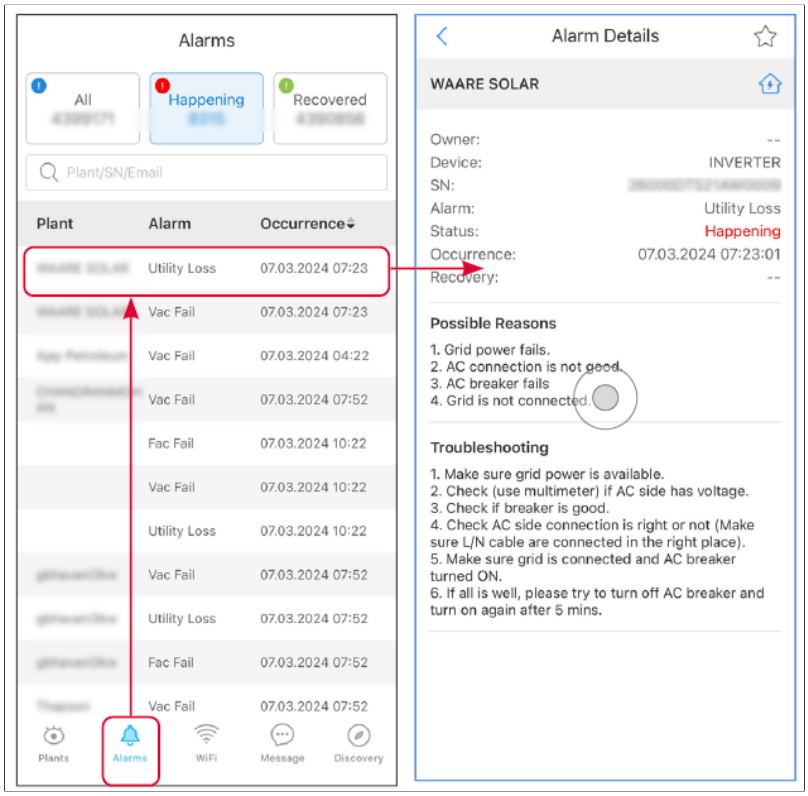
home page of the power plant, where the overall operation status of all power plants under the account will be displayed. Click Monitoring to enter the power plant monitoring interface to view all power plant information.
The displayed content of different interfaces of power plant equipment varies, please refer to the actual situation.

Step 1: (Optional) If there are multiple power plants, you can search for information such as the power plant name, inverter SN number, or the owner's phone number to quickly locate the power plant.
Or click the map sign to search for power plant information and quickly locate the power plant.
Step2: Click on the power plant name in the power plant list or the power plant icon on the map to view the detailed information of the power plant.
Step 3: On the power plant detailed interface, check the power plant information, power generation details, equipment information, faults, and other conditions according to the prompts on the interface.



10.1.3.2 Viewing Alarm Information

Step 1: Click the Fault tab on the power plant detailed page to enter the alarm query page.
Step 2: (Optional) You can search for information such as the power plant name, inverter SN number, or the owner's phone number to quickly locate the power plant.
Step 3: Click on the alarm name to view detailed alarm information.



10.2 SEMS+

10.2.1 APP Introduction

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

10.2.1.1 Complementary Products

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

10.2.1.2 Downloading and Installing the App

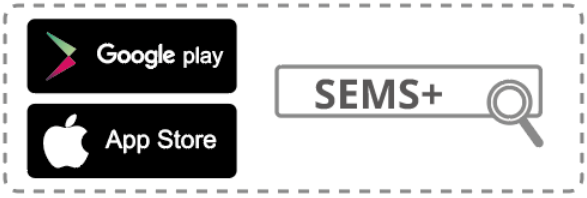
Make sure that the mobile phone meets the following requirements:

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

Download Method:

Method 1:

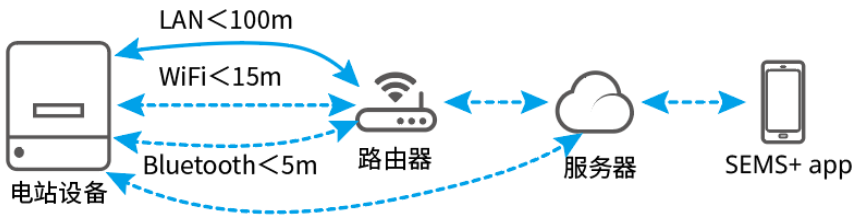
Search SEMS+ in Google Play (Android) or App Store (iOS) to download and install the App.



Method 2:

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

10.2.1.3 Connection Method



10.2.1.4 Setting Language and Server

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

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

10.2.1.5 Setting Communication Parameters

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

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

10.2.2 Account Management

10.2.2.1 Registering

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

10.2.2.2 Login

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

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

10.2.2.3 Switch

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

10.2.2.4 Canceling

Step 1: On the **My** interface, click **Account & Security**.
Step 2: Click **Close Account, enter your account password, and click** Submit.

10.2.2.5 Account Permissions

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

Top-level menu	Secondary menu	Third-level menu	Four-level menu	Five-level menu	Permissions
Login & Register	-	-	-	-	Administrators, installers, marketing personnel, owners, visitors
Overview	Monitoring Information	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Create Station	-	-	-	Administrators, installers, owners,

					visitors
Station	Station List	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Station Details	Monitoring	-	-	Administrators, installers, marketing personnel, owners, visitors
		Device	Add Device	-	Administrators, installers, and owners
			Device List	Search Device	Administrators, installers, marketing personnel, owners, visitors
				Replace Device	Administrators, installers, and owners
				Edit Device	Administrators, installers, and owners
				Delete Device	Administrators, installers, and owners
			Device Details	Device Monitoring Info	Administrators, installers, marketing personnel, owners, visitors
				Device Remote Control	Administrators, installers, and owners
				Device Remote Upgrade	Administrators and installers
		Alarms	-	-	Administrators, installers, marketing personnel, owners, visitors

		Station Configuration	Edit Station	-	Administrators, installers, and owners
			Delete Station	-	Administrators, installers, and owners
			Replacement History	-	Administrators, installers, marketing personnel, owners
			User Information	-	Administrators, installers, and owners
			Home Configuration	-	Administrators, installers, marketing personnel, owners, visitors
	Create Station	-	-	-	Administrators, installers, owners, visitors
Alarm	-	-	-	-	Administrators, installers, marketing personnel
Services	Services	Warranty	-	-	Administrators, installers, marketing personnel, owners, visitors
		Report Center	-	-	Administrators, installers, marketing personnel, owners
		GoodWe News	-	-	Administrators, installers, marketing personnel, owners, visitors
		Announcements	-	-	Administrators, installers, marketing personnel, owners, visitors

		Community	-	-	Administrators, installers, marketing personnel, owners, visitors
	Tools	Create Station	-	-	Administrators, installers, owners, visitors
		Network Link	-	-	Administrators, installers, marketing personnel, owners, visitors
		DNSP	-	-	Administrators, installers, marketing personnel, owners, visitors
	Help	-	-	-	Administrators, installers, marketing personnel, owners, visitors
My	User Profile	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	User Information	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Setting	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Account Security	Email	-	-	Administrators, installers, marketing personnel, owners, visitors

		Password	-	-	Administrators, installers, marketing personnel, owners, visitors
		Secondary Account	-	-	Administrators, installers, marketing personnel
		Close Account	-	-	Administrators, installers, marketing personnel, owners, visitors
	Auth Management	Remote Control Auth	-	-	Administrators, installers, marketing personnel, owners, visitors
		Monitoring Auth	-	-	Owners
	Apps	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	About	-	-	-	Administrators, installers, marketing personnel, owners, visitors
	Logout	Logout	-	-	Administrators, installers, marketing personnel, owners, visitors
		Login anther Account	-	-	Administrators, installers, marketing personnel, owners, visitors

10.2.3 Viewing Power Plant Information

10.2.3.1 View All Power Plant Overview Information

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

No.	Description
1	Display the total power generation of all power plants, including: today's power generation, this month's power generation, this year's power generation, and total power generation. When the number of power plants is greater than or equal to 10, the power generation volume for that year is not displayed.
2	Display total installed capacity and power plant operating status. The operating status of a power station is classified as: Running, Waiting, Offline, or Faulted. The power station status is only Running when all equipment in the power station is operating normally.
3	Display statistical charts showing the power plant's electricity generation for the current month, the current year, or total electricity generation, or statistical charts comparing electricity generation with the previous year. Click to enlarge the statistical chart.
4	Display environmental contribution data such as **CO_2 Reduction**, **Trees Planted Equivalent**, and **Standard Coal Saved**.
5	Power Plant Creation.
6	Search for power stations. Enter the SN, power station name, or email address to quickly search for the corresponding power station.
7	Power plant operation status. Display the current power plant operating status and the number of power plants operating in each status. Click on the operating status to filter power plants with the corresponding operating status.

No.	Description
8	• Set up a list of power plants to display KPI indicators: Current Power, Rev. Today, Rev. Total, Gen. Today, Gen. Total • Set the sorting method for the power station list: By Default, By Capacity • Set the display mode for the power station list: Station Card, Station List • Set the selection method for the power station list: Scope, Category, Capacity
9	Power station. Click on the name of the power station to view detailed information about it. Different types of power stations display different information. Please refer to the actual situation.

10.2.3.2 Viewing Monopower Plant Details

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

10.2.3.2.1 Viewing Power Plant Details (Traditional Mode)

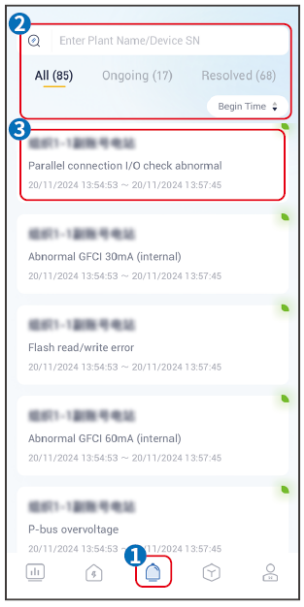
No.	Description
1	Current power plant name.
2	Collect Power Plant.
3	Configure power plant information. Support: Configure basic power plant information, modify user information, add power plant photos, set PV component layout, etc.

No.	Description
4	The chart displays current power plant operation information, such as energy flow diagrams, power generation, load power consumption, AC output, and other information.
5	• Device List. Display equipment currently used in power stations, such as inverters, batteries, data collectors, charging stations, etc. • Click on the device card to view detailed information about the device.
6	Power plant alarm information.

10.2.4 Viewing Alarm Information

10.2.4.1 Viewing Alarm Information for All Power Plants

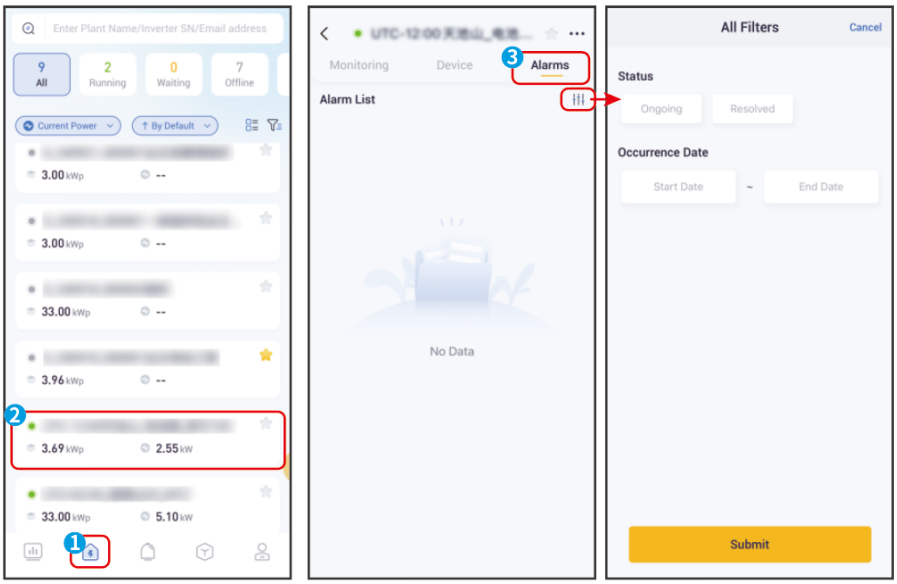
Step 1: Click the Fault tab on the power plant detailed page to enter the alarm query page.
Step 2: (Optional) Enter the power station name or equipment SN number in the search box to quickly locate the power station or equipment you want to view.
Step 3: Click on the alarm name to view detailed alarm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



10.2.4.2 Viewing the current power plant's alarm information

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

Step 1: If there are multiple power plants, click on the power plant name on the power plant list page to enter the power plant details page.
Step 2: **Click** Alarms to go to the alarm page and check out the alarm details. Click to filter alert information according to actual needs.



10.2.4.3 Viewing the Current Device's Alarm Information

Step 1: If there are multiple power plants, click on the power plant name on the power plant list page to enter the power plant details page.
Step 2: Select a device from the device list to enter the device details page. If there are any alerts, you can view the 10 most recent alerts directly on the device details page.

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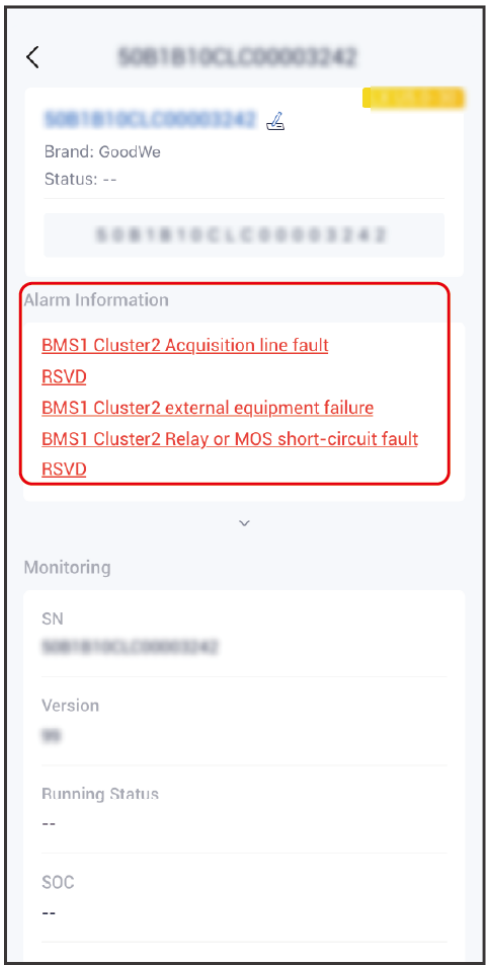


10.2.5 Viewing Power Plant Report Information

Viewing Power Plant Report

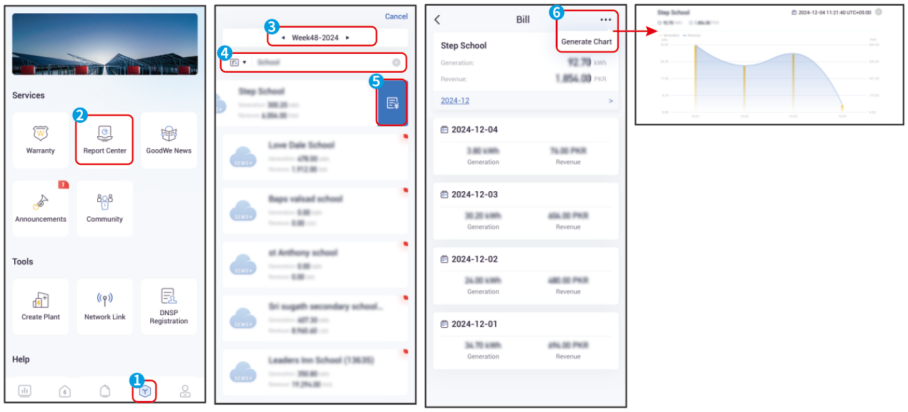
Step 1: Click **Service > Report Center** to enter the report center interface.

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

Viewing Power Plant Bills

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

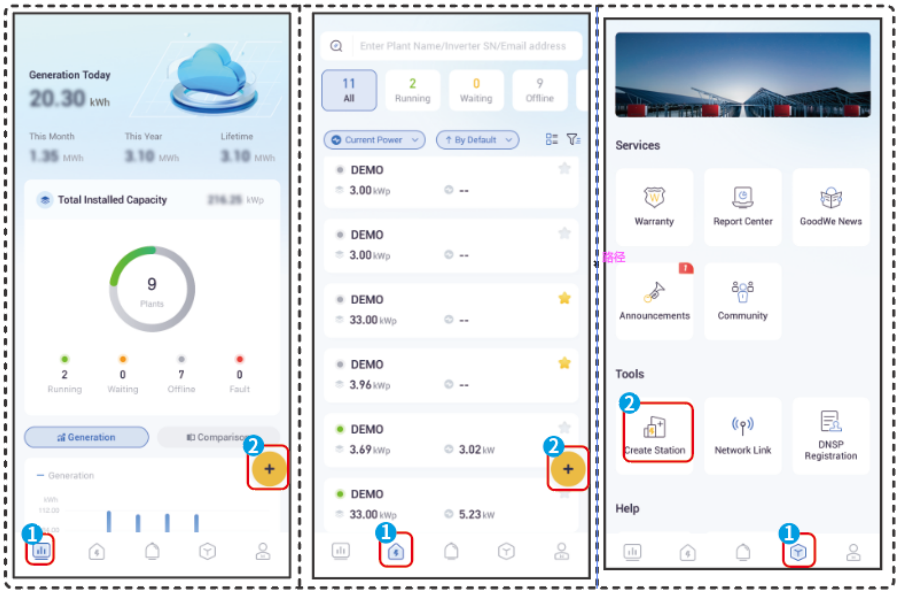
Step 2: Select the time period you want to query, search for the power station you want to query, swipe left and click to enter the Bill interface to view the bill.

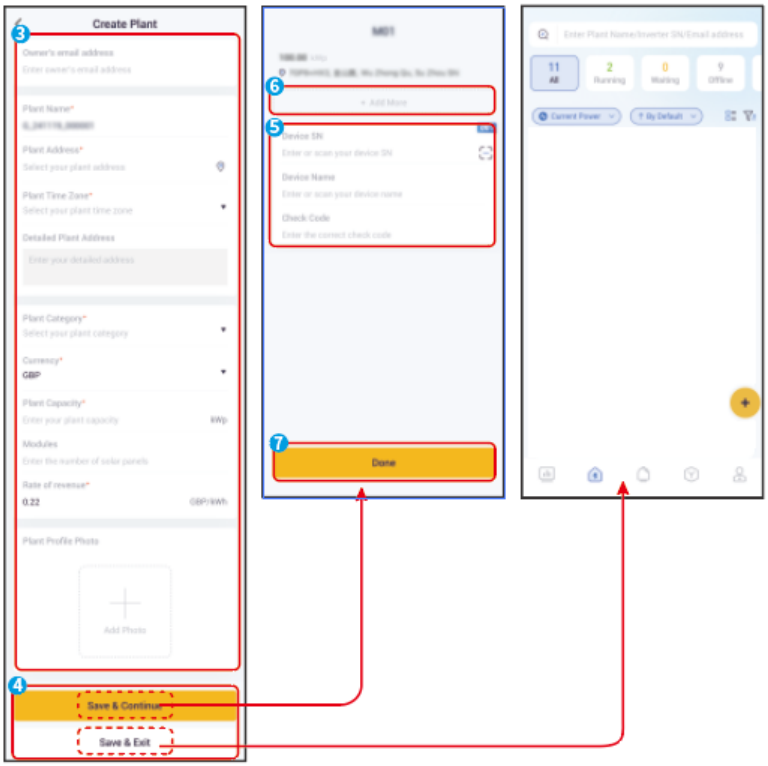


10.2.6 Power Plant Management

10.2.6.1 Power Plant Creation

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





10.2.6.2 Configuring Power Plant Information

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

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

10.2.6.3 Power Plant Visitors Management

Supports adding power plant visitors to view basic power plant information. Visitors to the power station cannot view all interfaces. Please refer to the actual interface.
Step 1: (Optional) If there are multiple power plants, select the power plant you want

to set up in the power plant list interface.
Step 2: In the power station details interface, go to ••• >**User Information**>**Add** to enter the visitor addition interface.
Step 3: After entering the visitor information, click **Confirm** to complete the addition.

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

10.2.6.4 Power Plant Photos Management

Add photos of power plants to quickly identify different power plants.
Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: On the power station details page, click ••• >**Station Photos**>**Add** to enter the power station photo addition interface.
Step 3: Follow the prompts on the screen to add photos by selecting **Take a Photo** or **Choose from Album**.
If you need to delete power plant photos, please refer to the following steps.

10.2.6.5 Setting PV Component Layout

Set the PV Layout Design parameters based on the actual PV module conditions. The information here is for recording PV layout only and will not change the actual PV layout.
Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: Enter the adjustment interface via ••• > **PV Layout Design**.
Step 3: Click **Row/Column** and arrange the components in each row and column according to the actual PV component installation situation.
Step 4: Click **Array Name** to enter **the Array Settings** interface, and set the PV array name, angle, and orientation information according to the actual situation.

10.2.6.6 Adjusting the Information Displayed on the Power Station Details Page

The content displayed on the power plant details page can be adjusted according to actual needs, such as displaying or hiding the Energy Flow Chart, or placing the Energy Flow Chart at the top or bottom of the interface.
Step 1: (Optional) If there are multiple power plants, select the power plant you want

to set up in the power plant list interface.
Step 2: Go to the power plant details page and click ••• > **Home Configuration.**
Step 3: Based on actual needs, refer to the interface prompts to select the information to be displayed, or adjust the display order of each piece of information.

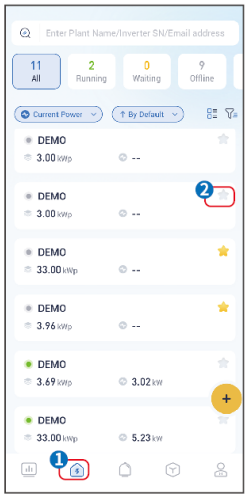
10.2.6.7 Deleting Power Plant

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

Step 1: (Optional) If there are multiple power plants, click on the power plant name to enter the power plant details page.
Step 2: Click ••• on the power plant details interface.
Step 3: Click **Delete**, then click **Confirm** to delete the current power station.

10.2.6.8 Collect Power Plant

If there is a power plant you want to follow, click on the power plant on the right side to bookmark it. Click again to cancel the bookmark.
Click and select **Favorited** in the filter **Scope** to display all your favorite power plants.



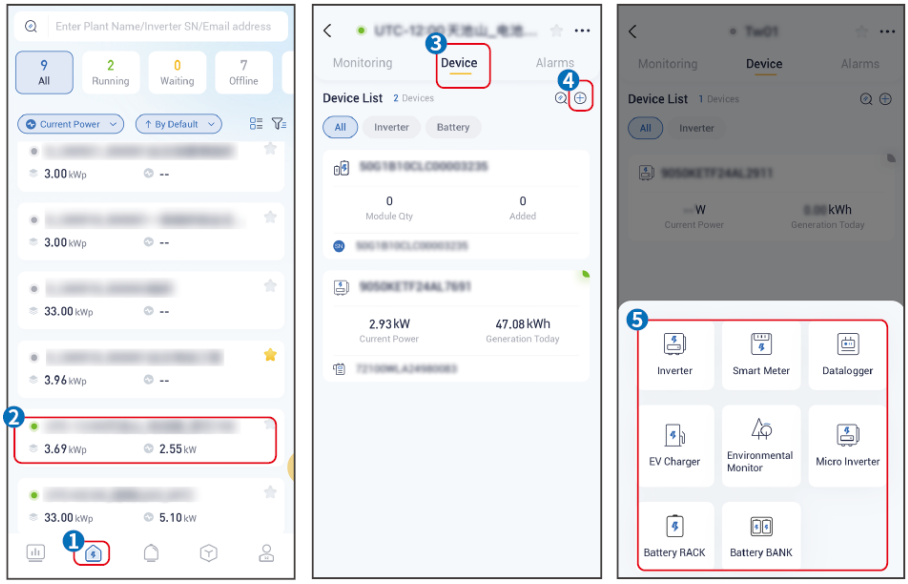
10.2.7 Managing the Equipment in the Power Plant

10.2.7.1 Additional Equipment

NOTICE

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

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



10.2.7.2 Editing Device Information

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

10.2.7.3 Deleting Device

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

10.2.7.4 Upgrading Device Firmware Version

Step 1: (Optional) If there are multiple power plants, select the power plant you want to set up in the power plant list interface.
Step 2: Click **Device** to enter the device information page, and select the device for which you want to upgrade the firmware version.
Step 3: Click on the device serial number in the middle of the page to enter the

Firmware Version page. **If there is an upgrade available, click** Upgrade and follow the instructions on the screen to upgrade your device. Click to view the firmware upgrade history.

10.2.8 Remote Management Device

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

10.2.8.1 Setting Energy Storage Inverter Parameters

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

No.	Parameter	Description
1	Safety	Based on the grid standards of the country/region where the inverter is located, as well as the application scenario settings of the inverter.
Battery		
2	Battery Model	Set the battery type.
3	Depth of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
4	Depth of Discharge (Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
5	Backup SOC Holding	The battery will be charged to preset SOC protection value by utility grid or PV when the system is running on-grid, so that the battery SOC is sufficient to maintain normal working when the system is off-grid.
6	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.

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

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

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

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

11 Maintenance

11.1 Power OFF the System

⚠DANGER

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

NOTICE

- Install the circuit breaker between the inverter and the battery or between the two batteries in compliance with local laws and regulations.
- To ensure effective protection, the cover of the battery system switch should remain closed. The cover can be closed automatically after being opened. Fasten the cover with screws if the switch is not to be used for a long-term period.

Power down process

1. Turn off the BACK-UP circuit breaker.
2. Turn off the ON-GRID 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. Turn off the DC switch of the inverter.
6. (Selected in accordance with local laws and regulations) Turn off the switch between the inverter and the battery.
7. Turn off the battery switch.
8. Turn off the battery system switch (LX A5.0-10, LX A5.0-30). Turn off the battery

system integrated circuit breaker or press and hold the battery system button for ≥5 seconds, and the battery system integrated circuit breaker will automatically turn off(only applicable to LX U5.4-L, LX U5.4-20, LX U5.0-30, and GW14.3-BAT-LV-G10).

9. (Screenless models only) Turn off the Off and On grid 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.

Maintaining Item	Maintaining Method	Maintaining 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.
Sealing	Check whether all the terminals and ports are properly sealed. Reseal the cable hole if it is not sealed or too big.	Once a year	Confirm that the machine seal and waterproof performance are intact.

Maintaining Item	Maintaining Method	Maintaining Period	Maintaining Purpose
Battery maintenance	If the battery is not used for a long time or is not fully charged, it is recommended to charge the battery regularly.	Once/15 days	Protect the battery's lifespan.

11.5 Fault

11.5.1 Viewing Fault/Alarms Information

All detailed information about faults/alarms in the energy storage system is displayed on the **SolarGo App**, **SEMS Portal App**, and LCD display screen. If your product has any abnormalities and no relevant fault information is seen on the **SolarGo App**, **SEMS Portal App**, or LCD display screen, please contact the after-sales service center.

- **Viewing method one: 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**.

- **Viewing Method 3: SEMS Portal App**

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

11.5.2 Fault Information and Troubleshooting

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

problems can be solved quickly.

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

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

No.	Fault	Solutions/measures to address the issue
1	Unable to search for the wireless signal of the smart dongle.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Please ensure that the SolarGo app has been updated to the latest version. 3. Please ensure that the smart dongle is powered on properly, and the blue indicator light is blinking or steady on. 4. Ensure that the smart device is within the communication range of the smart dongle. 5. Refresh the device list in the app. 6. Restart the inverter.
2	Unable to connect to the wireless signal of the smart dongle.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Restart the inverter or smart dongle, and try to reconnect to the wireless signal of the smart dongle again. 3. Ensure successful pairing of Bluetooth.

No.	Fault	Solutions/measures to address the issue
3	 The Ezlink indicator flashes twice.	1. Make sure that the router is powered on. 2. When communicating via LAN, make sure that both LAN cable connection and LAN configuration are proper. Enable or disable DHCP based on actual needs. 3. When communicating via WiFi, make sure that the wireless network connection is OK and the wireless signal strength meets the requirements. Enable or disable DHCP based on actual needs.
4	 The Ezlink indicator flashes four times.	1. Make sure that the smart dongle is connected to the router via WiFi or LAN properly, and the router can access the Internet. 2. If the problem persists, contact the after sales service.
5	 The Ezlink indicator is off.	Make sure that the inverter is powered on. If the problem persists, contact the after sales service. If the problem persists, contact the after sales service.
6	 The Ezlink indicator is off.	Make sure that the inverter is powered on. If the problem persists, contact the after sales service.
7	Cannot find router SSID.	1. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal. 2. Reduce the number of devices connected to router.
8	After completing all configurations, the Smart Dongle fails connecting to the router.	1. Restart the inverter. 2. Check if the SSID, encryption method and password on WiFi configuration page are the same with that of Router. 3. Restart the router. 4. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal.

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

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.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Please ensure that the SolarGo app has been updated to the latest version. 3. Please ensure that the smart dongle is powered on properly, and the blue indicator light is blinking or steady on. 4. Ensure that the smart device is within the communication range of the smart dongle. 5. Refresh the device list in the app. 6. Restart the inverter.
2	Unable to connect to the wireless signal of the smart dongle.	1. Please ensure that no other devices are connected to the smart dongle's wireless signal. 2. Restart the inverter or smart dongle, and try to reconnect to the wireless signal of the smart dongle again. 3. Ensure successful pairing of Bluetooth.

No.	Fault	Solutions/measures to address the issue
3	 The Ezlink indicator flashes twice.	1. Make sure that the router is powered on. 2. When communicating via LAN, make sure that both LAN cable connection and LAN configuration are proper. Enable or disable DHCP based on actual needs. 3. When communicating via WiFi, make sure that the wireless network connection is OK and the wireless signal strength meets the requirements. Enable or disable DHCP based on actual needs.
4	 The Ezlink indicator flashes four times.	1. Make sure that the smart dongle is connected to the router via WiFi or LAN properly, and the router can access the Internet. 2. If the problem persists, contact the after sales service.
5	 The Ezlink indicator is off.	Make sure that the inverter is powered on. If the problem persists, contact the after sales service. If the problem persists, contact the after sales service.
6	 The Ezlink indicator is off.	Make sure that the inverter is powered on. If the problem persists, contact the after sales service.
7	Cannot find router SSID.	1. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal. 2. Reduce the number of devices connected to router.
8	After completing all configurations, the Smart Dongle fails connecting to the router.	1. Restart the inverter. 2. Check if the SSID, encryption method and password on WiFi configuration page are the same with that of Router. 3. Restart the router. 4. Put the router nearer to the Smart Dongle. Or add a WiFi relay device to enhance the WiFi signal.

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

11.5.2.2 Inverter Troubleshooting

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

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

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

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

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

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

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

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

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

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

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

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

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

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

No.	Fault	Cause	Troubleshooting Suggestions
26	Low Insulation Resistance	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor.	1. Check the impedance of the PV string to the ground. If there is a short circuit phenomenon, please check the short circuit point and rectify it. 2. Check whether the PE cable is connected correctly. 3. If it is confirmed that the impedance is indeed lower than the default value in cloudy and rainy days, please reset the "insulation impedance protection value".
27	Grounding Abnormal	1. The PE cable of the inverter is not connected. 2. When the output of PV String is grounded, the output side of Inverter is not connected to an isolation transformer.	1. Please confirm if the PE cable of the inverter is properly connected. 2. In the scenario where the output of PV String is grounded, please confirm whether an isolation transformer is connected on the output side of Inverter.
28	L-PE Short Circuit	Output phase line to PE low impedance or short circuit	Detect output phase line to PE impedance, identify locations with low impedance and repair them.

No.	Fault	Cause	Troubleshooting Suggestions
29	DCV Protection Level 1	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
30	DCV Protection Level 2	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
31	Hard Export Limit Protection	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

No.	Fault	Cause	Troubleshooting Suggestions
32	Internal Comm Loss	Reference specific subcode reasons	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
33	Multiple GFCI Failures	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery	1. Check if the PV String to ground impedance is too low.
34	Multiple AFCI Failures	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
35	External Comm Loss	Inverter external device communication loss, may be peripheral power supply problems, communication protocol mismatch, not configure the appropriate peripheral, etc..	Judgement is based on the actual model and the detection enable bit, some models do not support the peripheral will not be detected.

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

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

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

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

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

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

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

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

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

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

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

No.	Fault	Cause	Troubleshooting Suggestions
75	PV HCT Failure	Abnormal boost current sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
76	1.5V Ref Abnormal	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
77	0.3V Ref Abnormal	The reference circuit is abnormal.	
78	CPLD Version Error	CPLD version identification error	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
79	CPLD Comm Failure	CPLD and DSP communication content error or timeout	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

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

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

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

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

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

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

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

No.	Fault	Cause	Troubleshooting Suggestions
		access mode set by the device.	
114	PV String Reversed (String 33~48)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
115	PV String Loss (String 33~48)	String fuse disconnected (if applicable).	Check if the fuse is blown. As above.
116	PV String Overcurrent (String 33~48)	Causes are possibly as follows: 1. String overcurrent. 2. String current sensor abnormality.	
117	BAT 1 Precharge Failure	Battery 1 precharge circuit failure (burnt precharge resistor, etc.)	Check whether the pre-charging circuit is good, whether the battery voltage and bus voltage are consistent after powering up the battery only, if not, please contact the dealer or GoodWe after-sales service center.

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

No.	Fault	Cause	Troubleshooting Suggestions
124	BAT 2 Reversed	Battery 2 positive and negative are connected reversedly.	Check the battery and machine terminals for positive and negative consistency.
125	BAT Connection Abnormal	Battery abnormal connection	Check whether the battery is working properly.
125	Bat Overtemperature	Battery temperature is too high. Causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature exceeds 60℃. 3. A fault occurs in the internal fan of the inverter.	
127	Ref Voltage Abnormal	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
128	AC SPD Fault	AC side lightning protection device failure.	Replace AC side lightning protection devices.
129	DC SPD Fault	DC side lightning protection device failure.	Replace DC side lightning protection devices.

No.	Fault	Cause	Troubleshooting Suggestions
130	Internal Fan Abnormal	Internal fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply. 2. Mechanical exception (blocking). 3. Fan aging damage.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
131	External Fan Abnormal	External fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply. 2. Mechanical exception (blocking). 3. Fan aging damage.	
132	PID Abnormal	PID hardware failure or high PV voltage PID pause	PID pause warning caused by high PV voltage does not need to be dealt with, PID hardware failure can be cleared by turning the PID switch off and on again to clear the PID fault, replace the PID unit.

No.	Fault	Cause	Troubleshooting Suggestions
133	Trip-Switch Trip Warning	Causes are possibly as follows: 1. An overcurrent or PV reversal has occurred causing the disconnect switch to trip;	Contact the dealer or the after-sales service. The reason for disconnection, for the occurrence of PV short circuit or reverse connection, it is necessary to check whether there is a historical PV short circuit warning or historical PV reverse connection warning, and if there is, it is necessary for the maintenance personnel to check the corresponding PV situation. After checking that there are no faults you can manually close the disconnect switch and clear this warning via the APP interface clear history faults operation.
134	PV IGBT Short Circuit Warning	Causes are possibly as follows: 1. An overcurrent occurs causing the disconnect switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV short circuit warning sub-code to check whether there is any fault in the short-circuited Boost hardware and external strings; after checking there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

No.	Fault	Cause	Troubleshooting Suggestions
135	PV String Reversed Warning (String 1~16)	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
136	PV String Reversed Warning（String 17~32）	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

No.	Fault	Cause	Troubleshooting Suggestions
137	Flash R/W Error Flash R/W Error	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or the after-sales service.
138	Meter Comm Loss	This warning may be reported after enabling the anti-backflow function. Possible causes: 1. Meter not connected; 2. The communication wire connecting the meter to the inverter is wired incorrectly.	Check the wiring of the meter and connect the meter correctly, if the fault still exists after checking, contact the dealer or the after-sales service.
139	PV Type Identification Failure	PV panel recognizes hardware anomaly	Contact the dealer or the after-sales service.
140	PV String Mismatch	PV string mismatches. Two sets of string open-circuit voltages under the same MPPT have different configurations.	Check the open-circuit voltage of the two strings, and configure the strings with the same open-circuit voltage under the same MPPT, as long time string mismatch is a potential safety hazard.
141	CT Loss	CT Loss	Check whether the CT wiring is correct;
142	CT Reversed	CT Reversed	Check whether the CT wiring is correct;
143	PE Loss	Ground wire not connected.	Check the ground wire.

No.	Fault	Cause	Troubleshooting Suggestions
144	PV String Terminal Overtemperature (String 1~8)	37176 Register PV Terminal Temperature Alarm Subcode 1 has a set position.	
145	PV String Terminal Overtemperature (String 9~16)	37177 Register PV Terminal Temperature Alarm Subcode 2 has a set position.	
146	PV String Terminal Overtemperature (String 17~20)	37178 Register PV Terminal Temperature Alarm Subcode 3 has a set position.	
147	PV String Reversed Warning (String 33~48)	Causes are possibly as follows: 1. The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the distributor or after-sales service center; Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
148	Battery 1 low voltage	Battery voltage below set value.	
149	Battery 2 low voltage	Battery voltage below set value.	

No.	Fault	Cause	Troubleshooting Suggestions
150	Low battery supply voltage.	Battery not charging, voltage below shutdown voltage	

11.5.2.3 Battery Fault (LX A5.0-10)

🔴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	○○○○●	Battery Overvoltage	Power off and wait for 2 hours. If the problem persists, please contact the after-sales service.
2	○○○●○	Battery Undervoltage	Contact the after-sales service.
3	○○○●●	High Cell Temperature	Power off and wait for 2 hours. If the problem persists, please contact the after-sales service.
4	○○●○○	Low Charging Temperature	Turn off the device to wait for the temperature to return to normal. If the problem persists after restarting, please contact the after-sales service center.
5	○○●○●	Low Discharging Temperature	Turn off the device to wait for the temperature to return to normal. If the problem persists after restarting, please contact the after-sales service center.
6	○○●●○	Overcurrent Charging	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
7	○○●●●	Overcurrent Discharging	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
8	○●○○○	Low Insulation Resistance	Contact the after-sales service.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
9	○●○○●	Excessive Temperature Difference	Power off and wait for 2 hours. If the problem persists, please contact the after-sales service.
10	○●○●●	Voltage Difference Exception	Leave the battery alone for 12h after restarting. If the problem persists, please contact the after-sales service center.
11	○●●○○	Inconsistency of Battery Cells	Contact the after-sales service.
12	○●●○●	Wire Harness Exception	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
13	○●●●○	MOS Open-Circuit Fault	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
14	○●●●●	MOS Open-Circuit Fault	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
15	●○○○○	Cluster Fault	Please check if the battery model matches. If not, please contact the after-sales service center.
16	●○○○●	Interlock Failure	Check whether the termination resistor is installed properly and restart the battery. Contact the after-sale service if the problem persists.
17	●○○●○	BMU Communication Fault	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
18	●○○●●	MCU Communication Fault	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
19	●○●○○	Open Contact Sticking Fault	Contact the after-sales service.
20	●○●○●	Precharge Failure	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
21	●○●●○	MOS Over-temperature Fault	Power off and wait for 2 hours. If the problem persists, please contact the after-sales service.
22	●○●●●	Current Diverter Over-temperature	Power off and wait for 2 hours. If the problem persists, please contact the after-sales service.
23	●●○○○	Reverse Connection Fault	Contact the after-sales service.
24	●●●●●	Microelectronic Fault	Contact the after sales service.

11.5.2.4 Battery Fault (LX A5.0-30, LX U5.0-30)

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	○○○●	Battery overvoltage protection Battery undervoltage protection	1. 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. 2. Power off and wait for 5 minutes, then restart to confirm if the fault persists. 3. If the fault is not restored, please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
2	○○●●	Overcurrent Protection	1. 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. 2. 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. 3. If the fault is not restored, please contact the after-sales service center.
3	○○●○	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	○●○○	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	●○●●	Precharge Failure	1. Confirm if the battery output terminal is connected in reverse to the inverter. 2. Power off and wait for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
6	○●○●	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	●●○○	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	1. 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	○●●○	Other Protections: MOS cannot be Closed	Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
9	○●●●	Other Protections: MOS Adhesion	
10	●○○○	Other Protections: Cluster Fault	1. Confirm whether the type and installation position of the terminal resistor used are correct. 2. Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. 3. If the fault is not restored, please contact the after-sales service center.
11	○○○○	Other Protections: Communication Loss with Inverter	1. Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. 2. If the fault is not restored, please contact the after-sales service center.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
12	●○○●	Other Protections: BMU Communication Failure	1. Confirm whether the type and installation position of the terminal resistor used are correct. 2. Confirm whether the communication cable between batteries, the cable between batteries and inverters are reliable and the communication is normal. 3. Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
13	●○●○	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	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
15	●●●○	Other Protections: Hardware Overcurrent Fault	
16	●●●●	Other Protections: Microelectronics Fault	
		Heating Film Abnormal	1. Upgrade software 2. Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.

11.5.2.5 Battery Fault (LX U5.4- L)

SOC Indicator	Fault	Solutions/measures to address the issue
	Temperature Anomaly	Shut down and wait for 2 hours. If the problem persists, contact the after sales service.
	Heat	
	Low temperature Discharge	Turn it off, wait for the temperature to rise, and restart the battery. If the problem persists, contact the after sales service.
	Overcurrent Charging	Restart battery. If the problem persists, contact the after sales service.
	Overcurrent Discharging	
	Battery Overvoltage	
	Battery Undervoltage	Where charging conditions exist.charge the battery by pressing the pushbutton switch 5 times in a row within 10 seconds and wait for the voltage to rise and return to normal.
	Low Temperature Charge	Turn it off, wait for the temperature to rise, and restart the battery. If the problem persists, contact the after sales service.
	Excessive Differential Pressure in the Cell Unit	Shut down and waitfor 2 hours and restart battery. If the problem persists, contact the after sales service.

Fault

SOC Indicator	Fault	Solutions/measures to address the issue
	Temperature Sensor Failure	Restart battery. If the problem persists, contact the after sales service.
	MOS Fault	

	Vacuum Switch Disconnection Error	Reclose the air switch. If the problem persists, contact the after sales service.
	Loss of Slave Communication	Turn off the power, check the communication wires, and restart the battery. If the problem persists, contact the after sales service.
	None SN error	Contact the after-sales service.
	Loss of Master Communication	Turn off the power, check the inverter communication cable connections, and restart the battery. If the problem persists, contact the after sales service.
	Inconsistent Software Versions	Contact the after-sales service.
	Multi-Host Error	Turn on all batteries within 30s after shutdown.
	MOS Over-temperature Fault	Shut down and wait for 2 hours. If the problem persists, contact the after sales service.
	Communication with the Inverter Is Interrupted.	Turn off the power, check the communication wires, and restart the battery. If the problem persists, contact the after sales service.

11.5.2.6 Battery Fault (LX U5.4-20)

Alarm state

 When the battery Button indicator turns red and blinks once a second, troubleshoot the issue by referring to the SOC indicator's display status.

No.	SOC Indicator	Description
1		The battery system handles itself. Specific alarm information can be viewed via the SolarGo APP.
2		
3		
4		
5		

6		

Fault

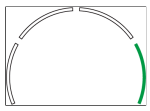
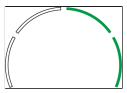
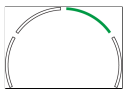
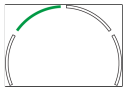
 When the battery Button indicator turns red and is always on, troubleshoot the issue by referring to the SOC indicator's display status.

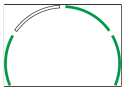
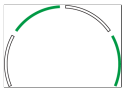
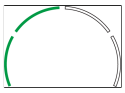
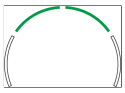
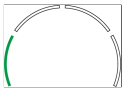
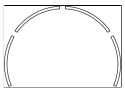
Button Indicator	SOC Indicator	Fault	Solutions/measures to address the issue
Red light is on.		Battery Overvoltage	Turn off the machine and leave it for 2h, restart the battery. If the problem persists, contact the after sales service.
Red light flashes1 time/s.		Battery Undervoltage	Contact the after-sales service.
Red light is on.		High Cell Temperature	Turn off the machine and leave it for 2h, restart the battery. If the problem persists, contact the after sales service.
		Low Charging Temperature	Shut down and wait for the temperature to recover. Restart battery. If the problem persists, contact the after sales service.
		Low Discharging Temperature	
		Overcurrent Charging	Restart battery. If the problem persists, contact the after sales service.
		Overcurrent Discharging	
		Excessive Temperature Difference	Turn off the machine and leave itfor 2h, restart the battery. If the problem persists, contact the after sales service.
		Voltage Difference Exception	Restart the battery and leave itfor 12h, if the problem is not solved, please contact the after-sales service center.

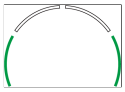
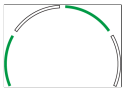
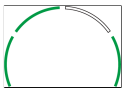
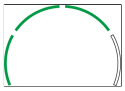
		Wire Harness Exception	Restart battery. If the problem persists, contact the after sales service.
		MOS Open-Circuit Fault	
		MOS Adhesion	
		Cluster Fault	Please check if the battery model matches. If not, please contact the after-sales service center.
		BMU Communication Fault	Restart battery. If the problem persists, contact the after sales service.
		MCU Communication Fault	
		Open Contact Sticking Fault	Contact the after sales service.
		Precharge Failure	Restart battery. If the problem persists, contact the after sales service.
		MOS Over-temperature Fault	Turn off the machine and leave itfor 2h, restart the battery. If the problem persists, contact the after sales service.
		Current Diverter Over-temperature	Turn off the machine and leave it for 2h, restart the battery. If the problem persists, contact the after sales service.
		Microelectronic Fault	Contact the after sales service.

11.5.2.7 Battery Fault (GW14.3-BAT-LV-G10)

When the battery alarm indicator light turns red  , the outer marquee flashes  red, and the operation light turns off, combine the SOC indicator light display status to locate and troubleshoot the fault.

No.	SOC Indicator	Fault	Solutions/measures to address the issue
1		Battery Overvoltage Protection Battery Undervoltage Protection	1. Check whether the inverter charging current limit is 0 via SolarGo. If it is 0, confirm that the communication line between the battery and the inverter is connected reliably and that communication is normal. 2. Shut down and leave for 5 minutes, then restart and confirm whether the fault persists. 3. If the fault is not restored, please contact the after-sales service center.
2		Overcurrent Protection	1. Check the battery model through SolarGo to confirm whether the real-time current of the battery is greater than the charging current limit or discharge current limit value. If so, please contact the after-sales service center. 2. If the current is less than the limit, shut down the battery or upgrade the program, then restart to confirm whether the fault persists. 3. If the fault is not resolved, please contact after-sales service.
3		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		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		Precharge Failure	1. Check whether the battery output terminal is connected to the inverter in reverse. 2. Shut down and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
6		Wire Harness Exception	Check whether the battery circuit breaker is closed. If the battery circuit breaker is closed and the problem persists, please contact the after-sales service center.
7		Relay or MOS over Temperature	Power off and wait for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
		Output Port Overheating	1. Check whether the battery power cord is securely connected. 2. Turn off the device and leave it for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
8		MOS Open-Circuit Fault	Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
9		MOS Adhesion	
10		Cluster Fault	1. Confirm that the type and installation location of the terminal resistor are correct. 2. Confirm that the communication lines between batteries and between batteries and inverters are connected reliably and that communication is normal. 3. If the fault persists, please contact the after-sales service center.
11		Inconsistent Software and Hardware Versions	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.

12		BMU Communication Fault	
13		Open Contact Sticking Fault	Power off and wait for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
14		Software Fault	Restart the battery. If the problem persists after restarting, please contact the after-sales service center.
15		Hardware Overcurrent Fault	
16		Microelectronic Fault	
		Heating Film Abnormal	1. Upgrade the software. 2. Shut down the computer and leave it idle for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.

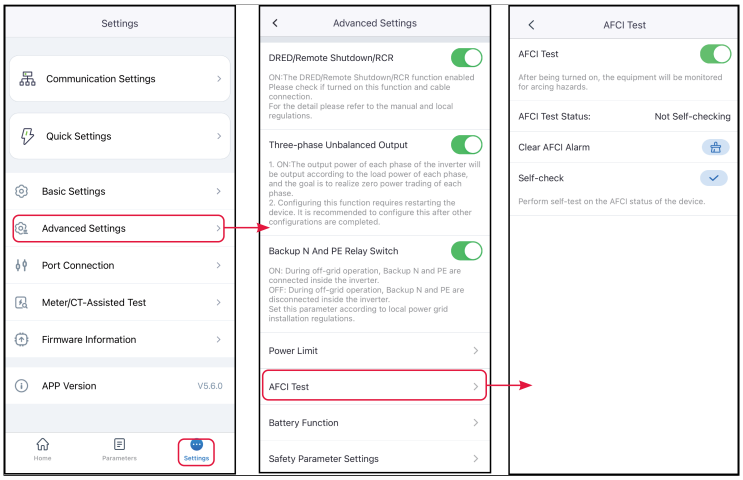
11.5.3 Operation After Fault Clearance

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].**


Settings
Communication Settings
Quick Settings
Basic Settings
Advanced Settings
Port Connection
Meter/CT-Assisted Test
Firmware Information
APP Version
V5.6.0
Home
Parameters
Settings
Advanced Settings
DRED/Remote Shutdown/RCR
ON:The DRED/Remote Shutdown/RCR function enabled Please check if turned on this function and cable connection.
For the detail please refer to the manual and local regulations.
Three-phase Unbalanced Output
1. ON:The output power of each phase of the inverter will be output according to the load power of each phase, and the goal is to realize zero power trading of each phase.
2. Configuring this function requires restarting the device. It is recommended to configure this after other configurations are completed.
Backup N And PE Relay Switch
ON: During off-grid operation, Backup N and PE are connected inside the inverter.
OFF: During off-grid operation, Backup N and PE are disconnected inside the inverter.
Set this parameter according to local power grid installation regulations.
Power Limit
AFCI Test
Battery Function
Safety Parameter Settings
AFCI Test
AFCI Test
After being turned on, the equipment will be monitored for arcing hazards.
AFCI Test Status:
Not Self-checking
Clear AFCI Alarm
Self-check
Perform self-test on the AFCI status of the device.

12 Technical Parameters

12.1 Inverter Parameters

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Battery Input Data			
Battery Type*1	Li-Ion/Lead-acid	Li-Ion/Lead-acid	Li-Ion/Lead-acid
Nominal Battery Voltage (V)	48	48	48
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)	160	200	240
Max. Continuous Discharging Current (A)	160	200	240
Max. Charge Power (kW)	8.0*3	10.0*3	12.0*3
Max. Discharge Power (kW)	8.8*3	11.0*3	13.2*3
PV String Input Data			
Max. Input Power (kW)	16.0	20.0	24.0
Max. Input Voltage (V)*4	600	600	600
MPPT Operating Voltage Range (V)*5	60~550	60~550	60~550
MPPT Voltage Range at Nominal Power (V)	180~500	170~500	200~500

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Start-up Voltage (V)	58	58	58
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)	32/16*6	32/32*6	32/32*6
Max. Short Circuit Current per MPPT (A)	48/24	48/48	48/48
Max. Backfeed Current to The Array (A)	0	0	0
Number of MPPT Trackers	2	2	2
Number of Strings per MPPT	2/1	2/2	2/2
AC Output Data (On-grid)			
Nominal Output Power (kW)	8.0	10.0	12.0
Nominal Apparent Power Output to Utility Grid (VA)	8.0	10.0	12.0
Max. AC Active Power (W)*7*8	8.8	11.0	13.2
Max. Apparent Power Output to Utility Grid (VA)*7*8	8.8	11.0	13.2
Nominal Power at 40℃ (W)	8.0	10.0	12.0
Max. Power at 40℃ (Including AC Overload) (W)*8	8.0	10.0	12.0

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Nominal Apparent Power from Utility Grid (VA)	8.0	10.0	12.0
Max. Apparent Power from Utility Grid (kVA)	16.5	16.5	16.5
Nominal Power at 40℃ (kW)	8.0	10.0	12.0
Max. Power at 40℃ (Including AC Overload) (kW)	8.0	10.0	12.0
Nominal Output Voltage (V)	220/230/240	220/230/240	220/230/240
Output Voltage Range (V)	170~280	170~280	170~280
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
Max. AC Current Output to Utility Grid (A)	40.0	50.0	60.0
Max. AC Current From Utility Grid (A)	75.0	75.0	75.0
Nominal AC Current From Utility Grid (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V
Max. Output Fault Current (Peak and Duration) (A)	105A，3us	145A，3us	145A，3us

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Inrush Current (Peak and Duration) (A)	105A，3us	145A，3us	145A，3us
Nominal Output Current (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)
Max. Total Harmonic Distortion	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	105	145	145
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.
AC Output Data (Back-up)			
Back-up Nominal Apparent Power (kVA)	8.0	10.0	12.0
Max. Output Apparent Power without Grid(kVA)	8.8(16000, 10s)	1.1(20000, 10s)	1.32(24000, 10s)
Max. Output Apparent Power with Grid (kVA)	16.5	16.5	16.5
Nominal Output Current (A)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50.0
Max. Output Current without Grid(A)	40	50	60

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Max. Output Current with Grid(A)	75	75	75
Max. Output Fault Current (Peak and Duration) (A)	105A, 3us	145A, 3us	145A, 3us
Inrush Current (Peak and Duration) (A)	105A, 3us	145A, 3us	145A, 3us
Maximum Output Overcurrent Protection (A)	105	145	145
Nominal Output Voltage (V)	220/230/240	220/230/240	220/230/240
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Output THDv (@Linear Load)	<3%	<3%	<3%
Switching from Grid Connected Mode to Standalone Mode	<10ms	<10ms	<10ms
Switching from standalone mode to Grid connected mode	<10ms	<10ms	<10ms
AC Data (Generator)			
Nominal Apparent Power from AC generator (kVA)	8.0	10.0	12.0
Max. Apparent Power from AC generator (VA)	8.8	11.0	13.2

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Nominal Intput Voltage (V)	220/230/240	220/230/240	220/230/240
Input Voltage Range (V)	170~280	170~280	170~280
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)	50.0	54.5	54.5
Nominal AC Current From AC generator (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V
Efficiency			
Max. Efficiency	97.6%	97.6%	97.6%
European Efficiency	96.2%	96.2%	96.2%
CEC Efficiency	96.2%	96.2%	96.2%
Max. Battery to AC Efficiency	95.5%	95.5%	95.5%
MPPT Efficiency	99.9%	99.9%	99.9%
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

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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 III	Type III	Type III
AC Surge Protection	Type III	Type III	Type III
AFCI	Optional	Optional	Optional
Rapid Shutdown	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (℃)	-35~+60	-35~+60	-35~+60
Operating Environment	Outdoor	Outdoor	Outdoor
Storage Temperature (℃)	-40~+85	-40~+85	-40~+85
Relative Humidity	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	3000	3000	3000
Cooling Method	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling
User Interface	LCD, WLAN+APP	LCD, WLAN+APP	LCD, WLAN+APP
Communication with BMS	CAN	CAN	CAN

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Communication	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth
Communication Protocols	Modbus-RTU、Modbus-TCP	Modbus-RTU、Modbus-TCP	Modbus-RTU、Modbus-TCP
Weight (kg)	27.0	29.0	29.0
Dimension (W×H×D mm)	560*444.5*226	560*444.5*226	560*444.5*226
Noise Emission (dB)	<45	<45	<45
Topology	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP66	IP66	IP66
DC Connector	MC4,OT Terminal	MC4, OT Terminal	MC4, OT Terminal
AC Connector	OT Terminal	OT Terminal	OT Terminal
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
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	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Type of Electrical Supply System	single phase	single phase	single phase
Country of Manufacture	China	China	China
Certification			
Grid Standards	EN 50549-1&-10, NTS TYPE A, UNE 217001, UNE 217002, IEC 61727, IEC 62116, NRS 097-2-1:2017 Ed 2.1, ANRE 208, G99, G100		
Safety Regulation	IEC 62109-1, IEC 62109-2		
EMC	IEC 62920, IEC 61000, EN 300328,EN 301489,EN IEC 62311,EN 62479		

*1：The Li-Ion 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：When the input voltage is 580V-600V, the inverter will enter standby mode, and the voltage returns to 580V to enter the normal operation state.

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

*6: The maximum input current per string is 16A. Or For the MPPT with two strings, the current of each string is 16A.

*7: For Sri Lanka, Max. Output Power (kW) is 8.0kW for GW8000-ES-C10, 10.0kW for GW10K-ES-C10, and 12.0kW for GW12K-ES-C10.

*8: For Brazil and Chile, the max. AC output power is Pn, such as the max. AC output power of GW8000-ES-C10 is 8000W(VA).

12.2 Battery Technical Data

12.2.1 LX A5.0-10

Technical Parameters	LX A5.0-10	2* LX A5.0-10	n*LX A5.0-10
Usable Energy (kWh) *1	5	10	n×5
Battery Module	LX A5.0-10：51.2V 5.0kWh		

Technical Parameters		LX A5.0-10	2* LX A5.0-10	n*LX A5.0-10
Number of Modules		1	2	n
Cell Type		LFP（LiFePO4）		
Nominal Voltage (V)		51.2		
Operating Voltage Range (V)		47.5~57.6		
Nominal Charge/Discharge Current (A) *2		60	120	n×60*3
Nominal Charge/Discharge Power (kW) *2		3	6	n×3*3
Operating Temperature Range (℃)		Range (℃) Charge: 0 ~ +50; Discharge: -10 ~ +50		
Relative Humidity		0~95%		
Max. Operating Altitude (m)		3000		
Communication		CAN		
Weight（kg）		40	80	n×40
Dimension（W×H×D mm）		LX A5.0-10 Module: 442×133×420 (Excluding hanger); 483×133×452 (Including hanger)		
Ingress Protection Rating		IP21		
Storage Temperature（℃）		0 ~ +40 (≤ One year); -20 ~ 0 (≤ One month); -40 ~ 45 (≤ One month)		
Mounting Method		Cabinet/Floor stacked		
Round-trip Efficiency *4		96.7%		
Cycle Life *5		≥5000		
Standard and Certification	Safety	IEC62619, IEC 63056, IEC62040-1, INmetro		
	EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4		
	Transportation	UN38.3, ADR		

Technical Parameters	LX A5.0-10	2* LX A5.0-10	n*LX A5.0-10
*1: Test conditions, 100% DOD, 0.2C charge & discharge at +25±2°C for battery system at beginning life. System Usable Energy may vary with different Inverter. *2: Nominal Dis-/Charge Current and power derating will occur related to Temperature and SOC. *3: Based on Using Battery Combiner Box to parallelize battery modules. *4: Based on 2.5~3.65V voltage rang @25±2°C of Cell under C.2C/0.2C Cell test condition. Round-trip Efficiency is approximately 94%~95. *5: Based on 2.87~3.59V voltage rang @25±2°C of Cell under 0.6C/0.6C test condition and 70% EOL. n: Max. 15.			

12.2.2 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
Max. Charge Current (A) *2*3	90
Nominal Discharge Current (A)*3	100
Max. Discharge Current (A) *2*3	150
Max. Pulse Discharge Current (A)	<200 (30s)
Max. Discharge Power (W) *2 *3	7200
Communication	CAN
Operating Temperature (℃)	Charge: 0 < T≤55℃ Discharge: -20 < T≤55℃

Technical Parameters	LX A5.0-30
Max. Storage Time	12 Months (maintenance-free)
Max. Operating Altitude (m)	4000
Weight (kg)	44
Dimension (W×H×D mm)	442/133* 520 (core part) 483/133* 559 (max. dimensions)
Ingress Protection Rating	IP20
Scalability	Supports up to 30 in parallel connection (150kWh) (Hand-in-hand/Busbar)
Mounting Method	Standard rack/floor mounted, wall-mounted
Round-trip Efficiency *1	≥96%
Cycle Life	> 6000 @25±2℃0.5C 70% SOH 90% DOD
Safety	IEC62619, IEC63056, N140
EMC	EN IEC 61000--6--1, EN IEC 61000--6--2, EN IEC 61000--6--3, EN IEC 61000--6--4
Transportation	UN38.3, ADR
Environment	ROHS
Life (Year)	≥25
*1: Test conditions: 100% DOD, 0.2C charge & discharge at 25°C±2 ℃, at the beginning of life. *2: Max. charge / discharge current may be variant with vary among different inverter models. *3: Recommend/Max. Charging/Discharging Current/ Nominal/Max. Power* derating will occur related to temperature and SOC.	

12.2.3 LX U5.4-L

Technical Parameters	LX U5.4-L	2*LX U5.4-L	3*LX U5.4-L	4*LX U5.4-L	5*LX U5.4-L	6*LX U5.4-L
Nominal Capacity (kWh) *1	5.4	10.8	16.2	21.6	27	32.4
Usable Capacity (kWh) *2	4.8	9.6	14.4	19.2	24	28.8
Cell Type	LFP (LiFePO4)					

Battery Cell Configuration		16S1P	16S2P	16S3P	16S4P	16S4P	16S4P
Nominal Voltage (V)		51.2					
Operating Voltage Range (V)		48~57.6					
Max. Continuous Discharging Current (A) *3		50	100				
Maximum Discharge Power (kW) *3		2.88	5.76				
Short-circuit Current		2.323kA@1.0ms					
Communication		CAN					
Weight（kg）		57	114	171	228	285	342
Dimension (W×H×D mm)		505×570×175 (LX U5.4-L)					
Operating Temperature (℃)		Range (℃) Charge: 0 ~ +50/ Discharge: -10 ~ +50					
Storage Temperature (℃)		-20 to +40 (≤ one month) / 0 to +35 (≤ one year)					
Humidity		0~95%					
Altitude (m)		2000					
Ingress Protection Rating		IP65					
Mounting Method		Wall-mounted or floor-standing installation					
Round-trip Efficiency		93.0%					
Cycle Life *4		≥4000 @0.5/0.5C					
Standard and Certification	Safety	IEC62619, IEC 62040, CEC					
	EMC	CE, RCM					
	Transportation	UN38.3					
Life (Year)		≥25					

*1: Test conditions: cell voltage 2.5–3.65 V, new battery charged and discharged at +25 ± 2 °C at 0.5 C. Usable capacity may vary depending on the inverter.
*2: Test conditions: 0.5C charge and discharge at 90% DOD at a temperature of +25±2°C.
*3: Nominal Dis-/Charge Current and power derating will occur related to Temperature and SOC;
*4: Based on cell 0.5C@25±2C charge and discharge EOL reaching 80%.

12.2.4 LX U5.4-20

Technical Parameters	LX U5.4-20	2* LX U5.4-20	3* LX U5.4-20	4* LX U5.4-20	5* LX U5.4-20	6* LX U5.4-20
Nominal Capacity (kWh) *1	5.4	10.8	16.2	21.6	27	32.4
Cell Type	LFP (LiFePO4)					
Battery Cell Configuration	16S1P	16S2P	16S3P	16S4P	16S5P	16S6P
Nominal Voltage (V)	51.2					
Operating Voltage Range (V)	47.5~57.6					
Max. Continuous Discharging Current (A) *2	50	100				
Maximum Discharge Power (kW) *2	2.56	5.12				
Short-circuit Current	2.323kA@1.0ms					
Communication	CAN, RS485					
Weight (kg)	57	114	171	228	285	342
Dimension (W×H×D mm)	505×570×175 (LX U5.4-20)					
Operating Temperature (℃)	Range (℃) Charge: 0 ~ +50/ Discharge: -10 ~ +50					
Storage Temperature (℃)	-20 to +40 (≤ one month) / 0 to +35 (≤ one year)					

Humidity		0~95%
Altitude (m)		2000
Ingress Protection Rating		IP65
Mounting Method		Wall-mounted or floor-standing installation
Round-trip Efficiency		95.0%
Cycle Life *3		≥4000 @0.5/0.5C
Standard and Certification	Safety	IEC62619, IEC 63056, IEC 62040, CEC
	EMC	CE, RCM
	Transportation	UN38.3
Life (Year)		≥25
*1: Test conditions: cell voltage 2.5–3.65 V, new battery charged and discharged at +25 ± 2 °C at 0.5 C. Usable capacity may vary depending on the inverter. *2: Nominal Dis-/Charge Current and power derating will occur related to Temperature and SOC. *3: Based on cell 0.5C@25±2C charge and discharge EOL reaching 80%.		

12.2.5 LX U5.0-30

Technical Parameters	LX U5.0-30
Nominal Battery Energy (kWh)	5.12
Usable Energy (kWh) *1	5
Cell Type	LiFePO4
Nominal Voltage (V)	51.2
Operating Voltage Range (V)	43.2~58.24
Nominal Charge Current (A)	60
Max. Continuous Charge Current (A)*2*3	90
Nominal Discharge Current (A)	100

Technical Parameters	LX U5.0-30
Max. Continuous Discharging Current (A)*2*3	100
Pulse Discharge Current (A)*2*3	＜ 200A (30S)
Max. Continuous Charge/Discharge Power (kW)	4.95
Communication	CAN
Charging Temperature Range (℃)	0<T≤55
Discharging Temperature Range (℃)	-20<T≤55
Ambient Temperature (℃)	0 < T≤40 (Recommended 10 < T≤30) Optional heating: -20 < T≤40 (Recommend 10 < T≤30)
Relative Humidity	5~95%
Max. Storage Time	12 Months (maintenance-free)
Max. Operating Altitude (m)	4000
Heating	Optional
Fire Suppression	Optional, Aerosol
Unit Weight (kg)	50
Unit Dimension (W×H×D mm)	460*580*160
Enclosure Protection Rating	IP65
Application	On Grid / On Grid + Backup / Off Grid
Scalability	30P
Mounting Method	Wall-/ Grounded- Mounted / Grounded
Round-trip Efficiency	≥96%
Cycle Life	> 6000 @25±2℃ 0.5C 70%SOH 90%DOD
Safety	VDE2510-50, IEC62619, IEC62040, N140, IEC63056
EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4
Transportation	UN38.3, ADR
Environment	ROHS
Life (Year)	≥25

Technical Parameters	LX U5.0-30
*1 Test conditions: 100% DOD, 0.2C charge & discharge at 25°C±2℃, at the beginning of life. *2 The system's working current and power values will be related to temperature and State of Charge (SOC). *3 Max charge / discharge current values may be variant with different inverter models.	

12.2.6 GW14.3-BAT-LV-G10

Technical Parameters	GW14.3-BAT-LV-G10
Nominal Energy (kWh)	14.3
Usable Energy (kWh) *1	≥ 13.8 Kwh
Type	LFP (LiFePO4)
Nominal Voltage (V)	51.2
Max. Continuous Charging Current (A)	224
Max. Continuous Discharging Current (A)	260
Maximum Input Power (System) (kW)*2	12KW
Maximum Output Power (System) (kW)*2	12KW @13.2KW(10min)
Peak Output Power (System) (kW)*2	20KW (15S)
Charging Temperature Range (℃)	0℃ < T≤55℃
Discharging Temperature Range (℃)	-20℃ < T≤55℃
Relative Humidity	5~95%
Max. Operating Altitude (m)	4000
Noise Index (dB)	<45
Communication	CAN RS485
Weight (kg)	125
Dimension (W×H×D mm)	885 x 530 x 246 mm 918.6 mm x 530 x 246 mm (including base)

Technical Parameters	GW14.3-BAT-LV-G10	
Optional Feature Configuration	Heating module, guide wheel	
Ingress Protection Rating	IP20	
Storage Temperature (℃)	-20~+45	
Ambient Temperature	0°C < T ≤ 45°C (Standard configuration supports ambient temperature) 10°C < T ≤ 35°C (Recommended ambient temperature) -20°C < T ≤ 45°C (Optional device system supports ambient temperature)	
Max. Storage Time	-20-35℃ ≤ 12months 35-45℃≤ 6 months	
Scalability	16P	
Mounting Method	Floor-standing, wall-mounted	
Manufacturing Nation	China	
Standard and Certification	Safety	IEC 62619, IEC 63056, IEC 60730-1, N140, RETIE
	EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4
	Transportation	UN38.3, ADR, MSDS
*1: Test conditions: Battery system in early stage of service life, at an ambient temperature of 25±2°C, discharged at a rate of 0.2P to 100% depth of discharge (discharge voltage range: 2.85V to 3.6V). The available energy is determined by its initial design value. However, the actual usable energy may vary due to factors such as charging and discharging rates, environmental conditions (such as temperature changes), and influences during transportation and storage. *2: Maximum input power, maximum output power, and peak output power may be reduced due to temperature changes and state of charge (SOC) effects.		

12.3 Smart Meter Technical Data

12.3.1 GMK110

Technical Parameters			GMK110
	Application		Single phase
Input Data	Voltage	Nominal Voltage (V)	220
		Voltage Range (V)	85~288
		Nominal Voltage Frequency (Hz)	50/60
	Current	CT Ratio	120A/40mA
		CT Quantity	1
Communication			RS485
Communication Distance (m)			1000
User Interface			2LED
Accuracy	Voltage/Current		Class I
	Active Energy		Class I
	Reactive Energy		Class II
Power Consumption (w)			<5
Mechanical Parameters	Dimension (W×H×D mm)		19*85*67
	Weight (g)		50
	Mounting Method		Rail Installation
Environmental Parameters	Ingress Protection Rating		IP20
	Operating Temperature Range (℃)		-30~ 60
	Storage Temperature Range (℃)		-30~ 60
	Relative Humidity (Non-Condensing)		0~95%
	Max. Operating Altitude (m)		3000

12.3.2 GM330

Technical Parameters		GM330
Measuring Range	Support Grid Type	Three-phase, split-phase, single-phase
	Voltage Range L-N (Vac)	172~817
	Voltage Range L-L (Vac)	100~472
	Nominal Frequency (Hz)	50/60
	CT Ratio	nA:5A
	Communication Method	RS485

Technical Parameters		GM330
Communication Parameters	Communication Distance (m/ft)	1000/3280
Precision Accuracy	Voltage/Current	Class 0.5
	Active Energy	Class 0.5
	Reactive Energy	Class 1
General Data	Dimension (WxHxDmm/in)	72x85x72/2.83x3.35×2.83
	Housing	4 modules
	Weight (g/Ib)	240/0.53
	Mounting Method	DIN rail
	User Interface	4 LEDs, Reset Button
	Power Consumption (w)	<5
Environmental Parameters	Ingress Protection Rating	IP20
	Operating Temperature Range (℃/°F)	-30~+70/-22~+158
	Storage Temperature Range (℃/°F)	-30~70/-22~+158
	Relative Humidity (No Condensing)	0~95%
	Max. Operating Altitude (m/ft)	3000/9842
Certification Parameters	Certificate	UL1741/ANSI

12.4 Smart Dongle Technical Data

12.4.1 WiFi/LAN Kit-20

Technical Parameters		WiFi/LAN Kit-20
Output Voltage (V)		5
Power Consumption (W)		<2
Communication Interface		USB
	Ethernet	10M/100Mbps Self-adaption

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

12.4.2 4G Kit-CN-G20, 4G Kit-CN-G21

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

12.4.3 Ezlink3000

Technical Parameters	Ezlink3000
General Data	
Connection Interface	USB
Ethernet Interface (optional)	10/100Mbps self-adaption, communication distance ≤100m
Mounting Method	Plug-and-play
Indicator	LED indicator
Dimension (W×H×D mm)	49*153*32
Weight (g)	130
Ingress Protection Rating	IP65
Power Consumption (W)	≤2W (typical value)
Working Mode	STA
Wireless Parameters	
Bluetooth Communication	Bluetooth 5.1
WiFi Communication	802.11 b/g/n (2.412GHz-2.484GHz)
Environmental Parameters	
Operating Temperature Range (℃)	-30~ +60
Storage Temperature Range (℃)	-30~ +70
Relative Humidity	0-100% (no condensing)
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.

- Method 1:

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

- Method 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 Max. Discharging Current	最大充/放电电流
EC,R	Rated Energy	额定能量
UDCmax	Max.Input Voltage	最大输入电压
UMPP	MPPT Operating Voltage Range	MPPT 电压范围
IDC,max	Max. Input Current per MPPT	每路 MPPT 最大输入电流
ISC PV	Max. Short Circuit Current per MPPT	每路 MPPT 最大短路电流
PAC,r	Nominal Output Power	额定输出功率
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	额定输出电压
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	工商业
SEMS	Smart Energy Management System	智慧能源管理系统
MPPT	Maximum Power Point Tracking	最大功率点跟踪
PID	Potential-Induced Degradation	电位诱发衰减
Voc	Open-Circuit Voltage	开路电压
Anti PID	Anti-PID	防PID
PID Recovery	PID Recovery	PID修复
PLC	Power-line Commucation	电力线载波通信
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol	基于TCP/IP层的modbus
Modbus RTU	Modbus Remote Terminal Unit	基于串行链路的modbus
SCR	Short-Circuit Ratio	短路比
UPS	Uninterruptable Power Supply	不间断电源
ECO mode	Economical Mode	经济模式
TOU	Time of Use	使用时间
ESS	Energy Stroage System	储能系统
PCS	Power Conversion System	电能转换系统
RSD	Rapid shutdown	快速关断
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 II**I:** applies to fixed downstream equipment. The reliability and suitability of the equipment must meet special requirements. For example, switchgear and other equipment in an industrial installation
  - Category **IV**: applies to the upstream equipment in the power supply of the distribution device, including measuring instruments and upstream over-current protection devices.
- **Definition of Types of Damp Places**

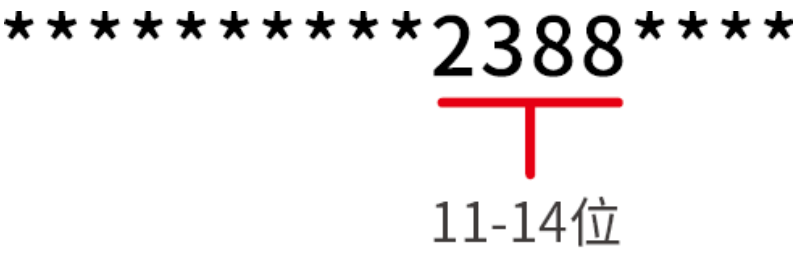
Environmental Parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40℃	-33~+40℃	-33~+40℃
Humidity Range	5% to 85%	15% to 100%	4% to 100%

- **Definition of Environmental Category:**

- **Outdoor Inverter**: The ambient air temperature range is -25 to +60℃, and it is suitable for environments with pollution degree 3.
- **Indoor Type II Inverter:** The ambient air temperature range is -25 to +40℃, and it is suitable for environments with pollution degree 3.
- **Indoor Type I Inverter:** The ambient air temperature range is 0 to +40℃, and it is suitable for environments with pollution degree 2.

- **Definition of Pollution Degree Categories:**
  - **Pollution Degree 1**: No pollution or only dry non-conductive pollution.
  - **Pollution Degree 2:** In general, there is only non-conductive pollution, but the transient conductive pollution caused by occasional condensation must be taken into account.
  - **Pollution Degree 3:** There is conductive pollution, or the non-conductive pollution becomes conductive pollution due to condensation.
  - **Pollution Degree 4:** Persistent conductive pollution, such as pollution caused by conductive dust or rain and snow.

13.4 Meaning of Battery SN Code



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 denoted by 8;
  The details are as follows:

Month	January~September	October	November	December
Month Code	1~ 9	A	B	C

- λThe 14th digit is the date of manufacture, e.g., 8th indicated by 8;

Priority is given to the use of numbers, e.g. 1~9 for days 1~9, A for day 10 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	A	B	C	D	E	F	G	H	J	K	L

Production Date	21	22	23	24	25	26	27	28	29	30	31
Code	M	N	P	Q	R	S	T	U	V	W	X

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