V1.5 2025-5-26

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

Solutions Manual

GOODWE

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.

Table of Contents

1 About This Manual

1.1 Overview

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

1.2 Applicable Model

The energy storage system consists the following products:

Product type	Product information	Description
Inverter	ES Uniq Series	Nominal output power: 8kW- 12kW
Battery system	LX A5.0-10	Usable energy of 5.0kWh, supports a maximum of 15 batteries connected in parallel.
	LX A5.0-30	Usable energy of 5.12kWh, supports a maximum of 30 batteries connected in parallel.
	LX U5.4-L	Usable energy of 5.4kWh, supports a maximum of 6 batteries connected in parallel.
	LX U5.4-20	Usable energy of 5.12kWh, supports a maximum of 30 batteries connected in parallel.
	LX U5.0-30	
Installing the Smart Meter	GMK110	It is a monitoring module in the energy storage system which can detect information such as operating voltage, current, and other data in the system.
	GM330	
Smart Dongle	WiFi/LAN Kit-20	In the single inverter scenario, the system operation information can be uploaded to a monitoring platform through WiFi or LAN signals.

Product type	Product information	Description
	4G Kit-CN-G20, 4G Kit-CN-G21	In the single inverter scenario, 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 visithttps://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.
4		Operate the equipment properly to avoid explosion.

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

No.	Symbol	Descriptions
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

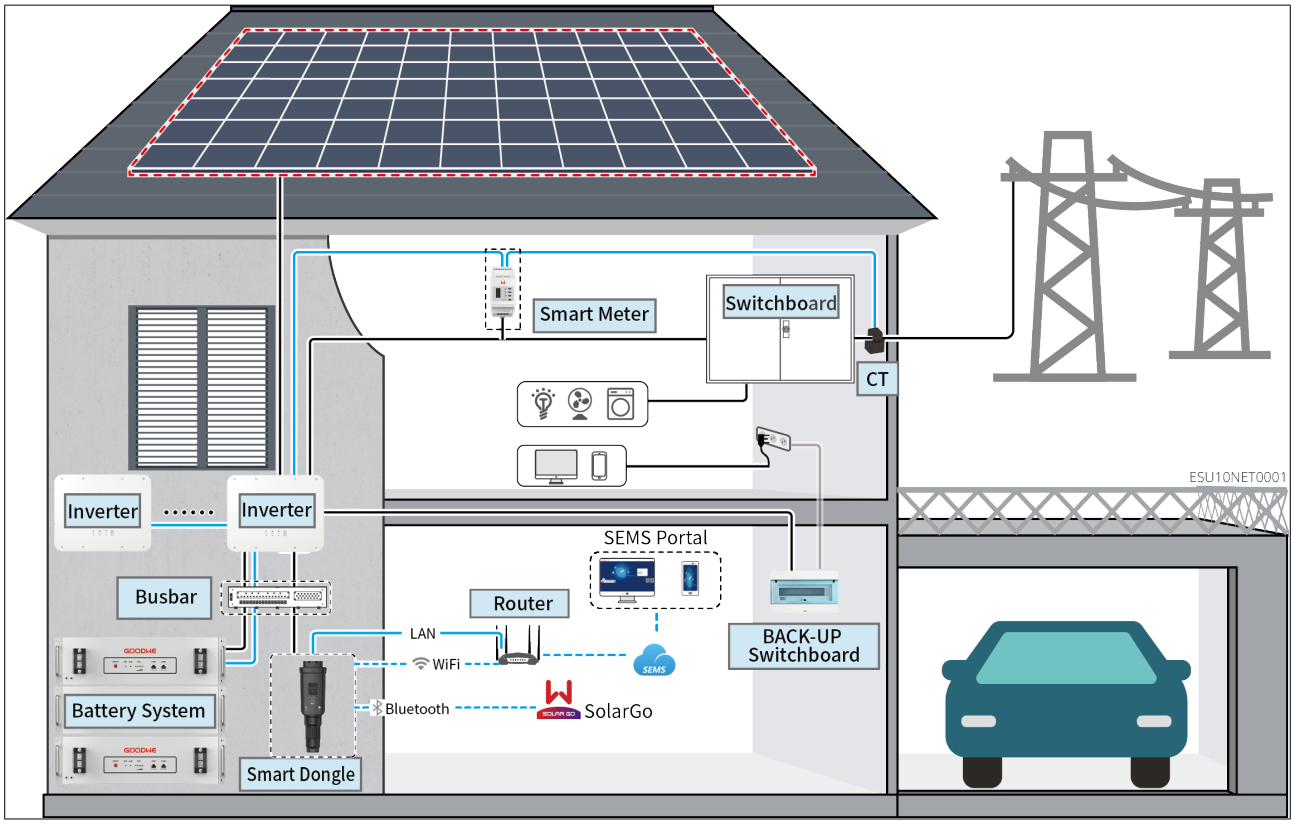
The residential smart inverter solution consists of inverter, battery system, smart meter, smart dongle, etc.. In the PV system, solar energy can be converted to electric energy for household needs. The IoT devices in the system manage the electrical equipment and energy consumption in a smart way by 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-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

Product Type	Model	Description
Inverter	GW8000-ES-C10 GW10K-ES-C10 GW12K-ES-C10	• 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.
Battery system	LX A5.0-10	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 A5.0-30	
	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	

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.
	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. • 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.

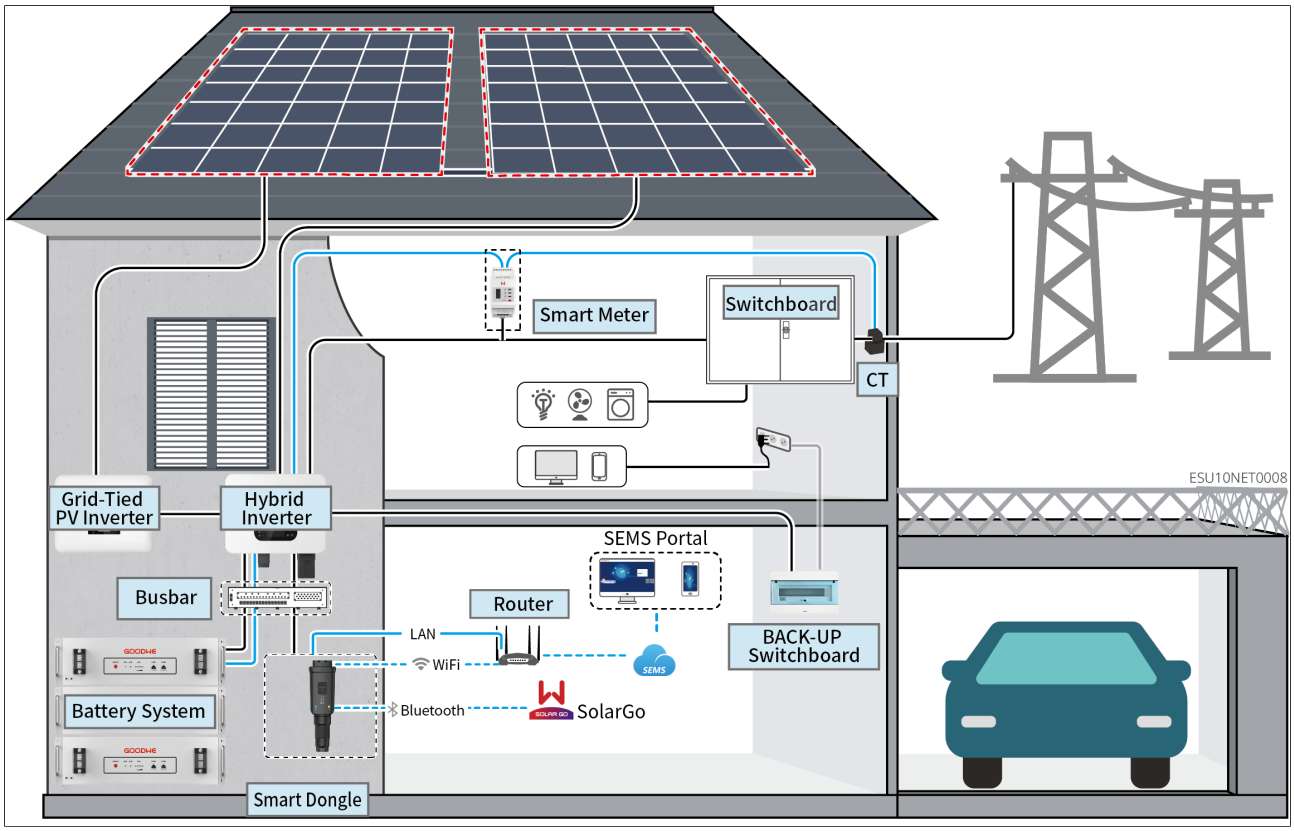
Product Type	Model	Description
		◦ used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 15 batteries. ◦ used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 8 batteries. • 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） • 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)
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 grid-tied PV inverter is the same as that of the hybrid inverter.
- Make sure that the overfrequency derating curve of the grid-tied 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. ◦ Only With LCD-V3 version series inverters support microgrid function.
Battery system	LX A5.0-10	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 A5.0-30	
	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.

Product Type	Model	Description
	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. • 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

Product Type	Model	Description
		a maximum working current of 720A, working power of 36kW, and can be connected to a maximum of 6 inverters, and 8 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.
Grid-Tied PV Inverter	-	• It's recommended to use grid-tied PV inverter sold in GOODWE, and is supported to use the third-party grid-tied PV inverter. • In microgrid systems, make sure that the rated output power of the grid-tied PV inverter ≤ the rated output power of the hybrid inverter. • When the microgrid system is in parallel, if power limitation is required, make sure: ◦ the hybrid inverter should be set in the grid-tied power limitation interface of the SolarGo APP, and the grid-tied inverter should be set according to the actual tools used. ◦ In order to ensure that the grid-tied 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 grid-tied inverters varies. Please set the grid-tied power limit control parameter value according to the actual situation.

3.2 Product Overview

3.2.1 Inverter

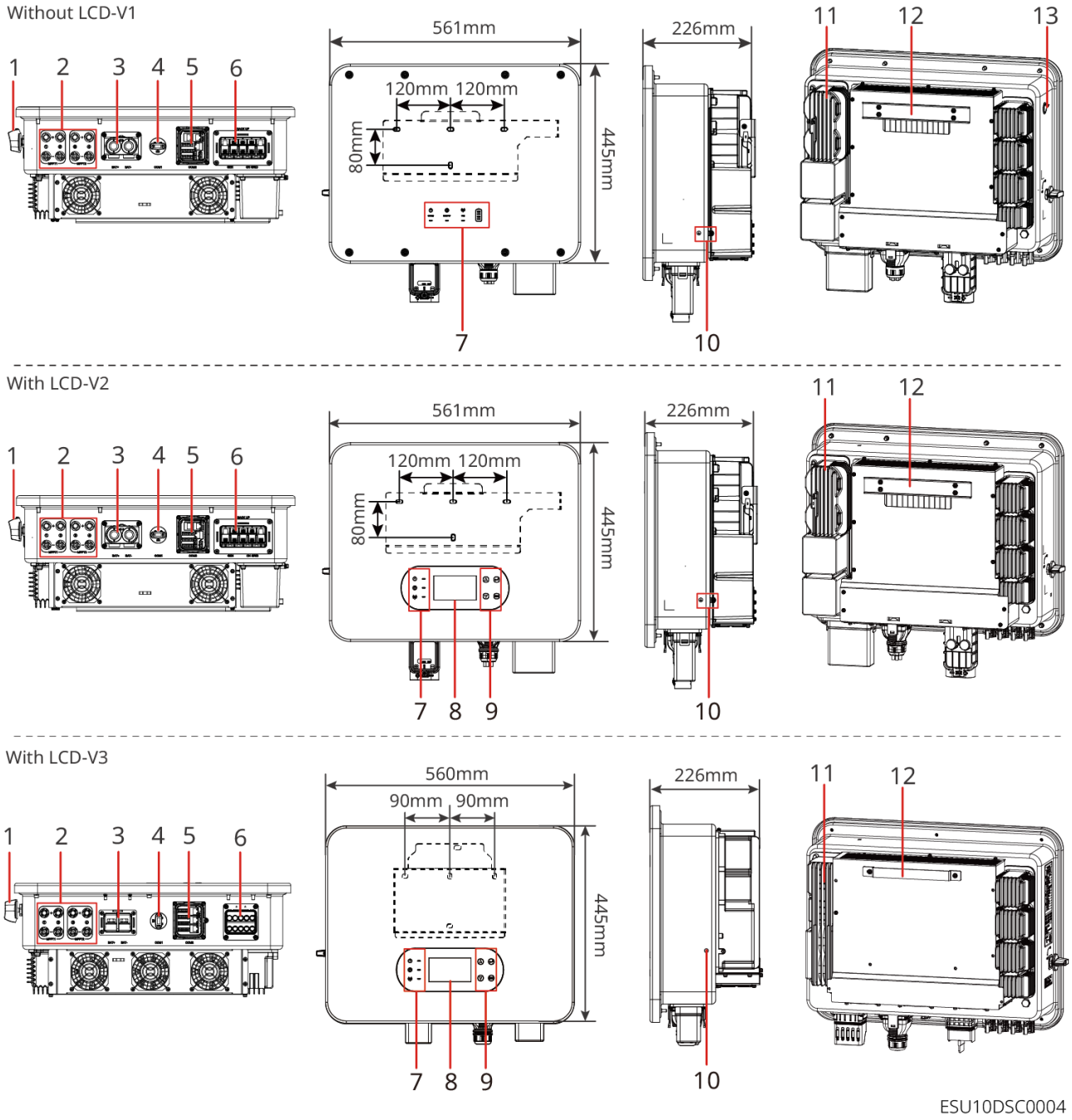
Inverters control and optimize the power in PV systems through an integrated energy management system. The power generated in the PV system can be used by

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

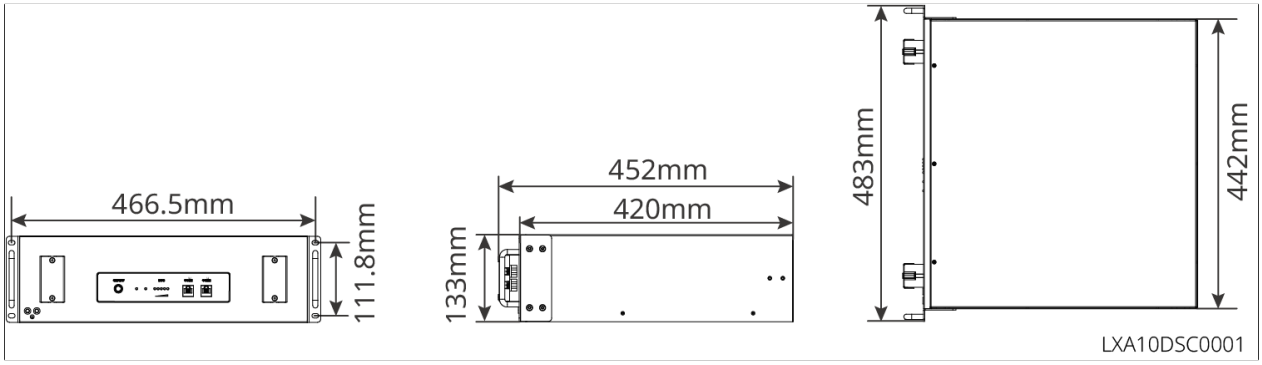
No.	Components / Silk Screen Printing	Description
1	DC Switch	Start or stop DC input.
2	PV Input Terminal	Used to connect the PV module DC input cables.
3	Battery Input Terminal	Battery DC input cable can be connected..

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/emergency 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-grid control 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.

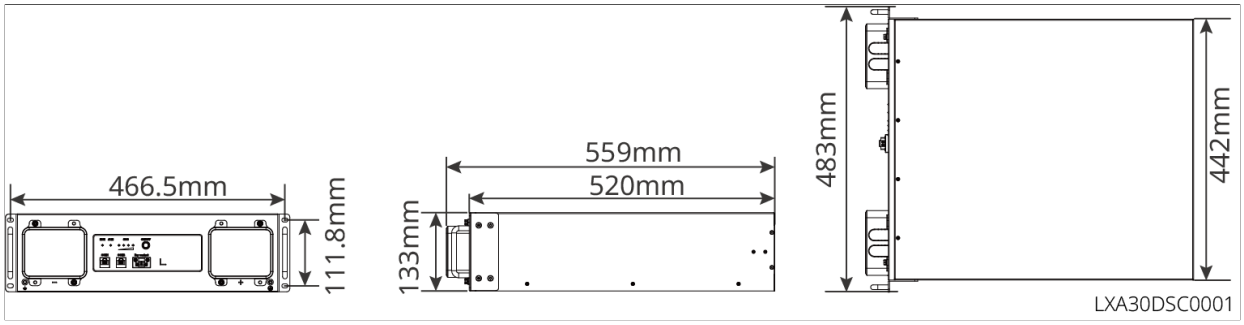
3.2.2 Battery

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.

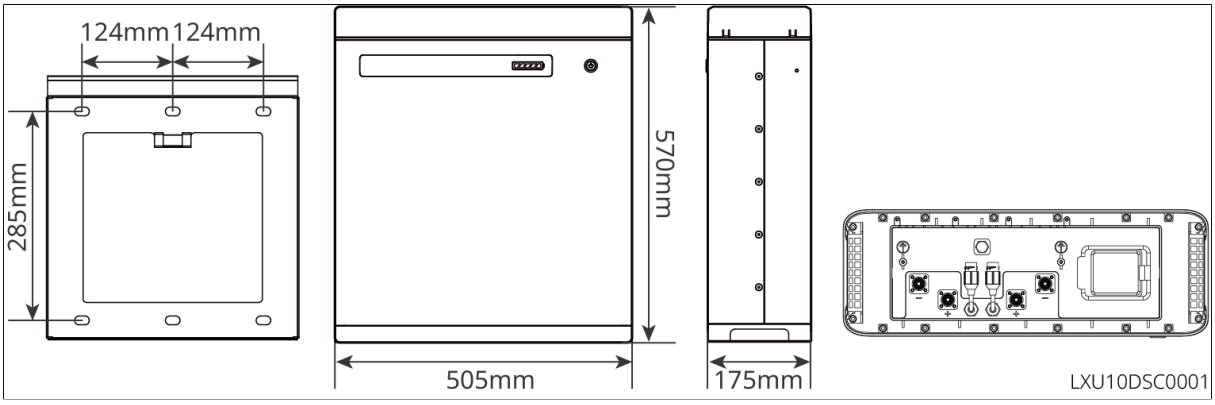
- LX A5.0-10



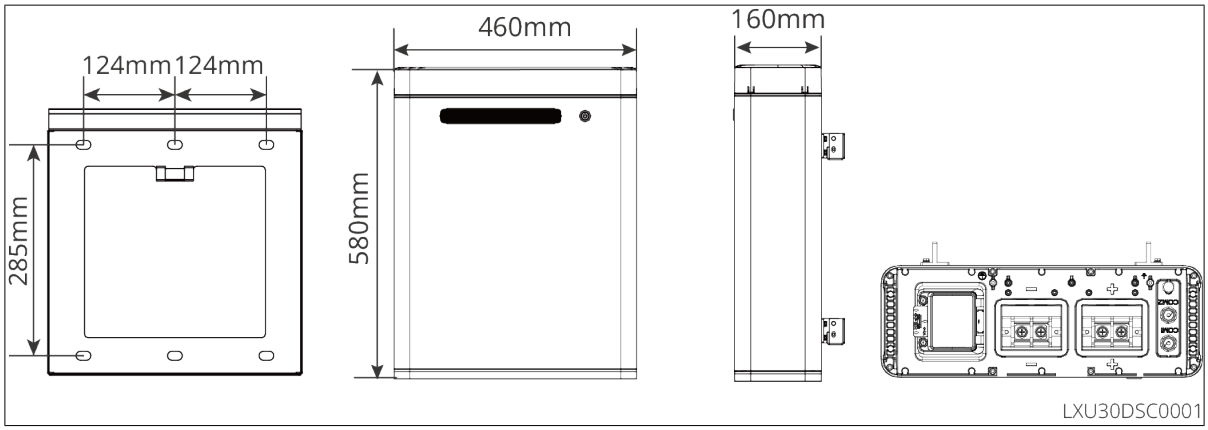
- LX A5.0-30



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

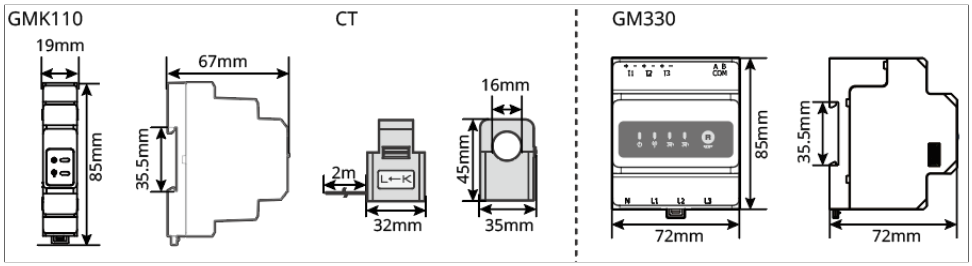


- LX U5.0-30



3.2.3 Smart Meter

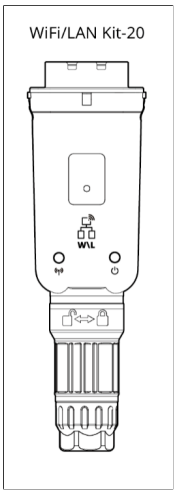
The smart meter can measure and monitor the data in the photovoltaic energy storage system, such as voltage, current, frequency, power factor, and power, etc..

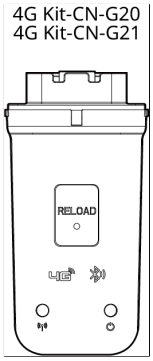


No.	Model	Applicable scenarios
1	GMK110	CT is not supported for changing to other type, CT ratio: 120A:. 40mA
2	GM330	Order the CT for GM330 from GoodWe or other suppliers. CT ratio: nA: 5A • nA: For the primary input current of CT, n ranges from 200 to 5000 • 5A: CT secondary input current.

3.2.4 Smart Dongle

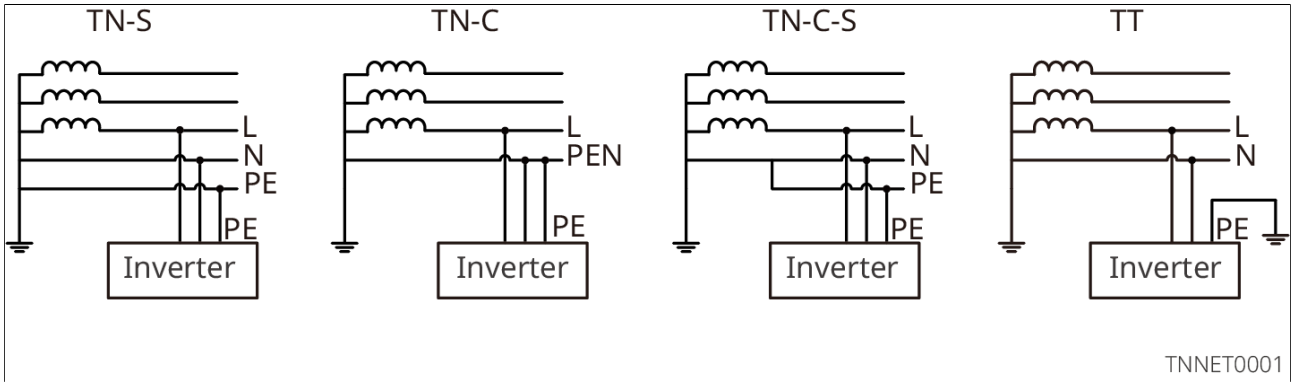
The smart dongle can transmit various power generation data to SEMS Portal, the remote monitoring platform, in real time, and can communicate with the SolarGo App to complete the near-end equipment commissioning.





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

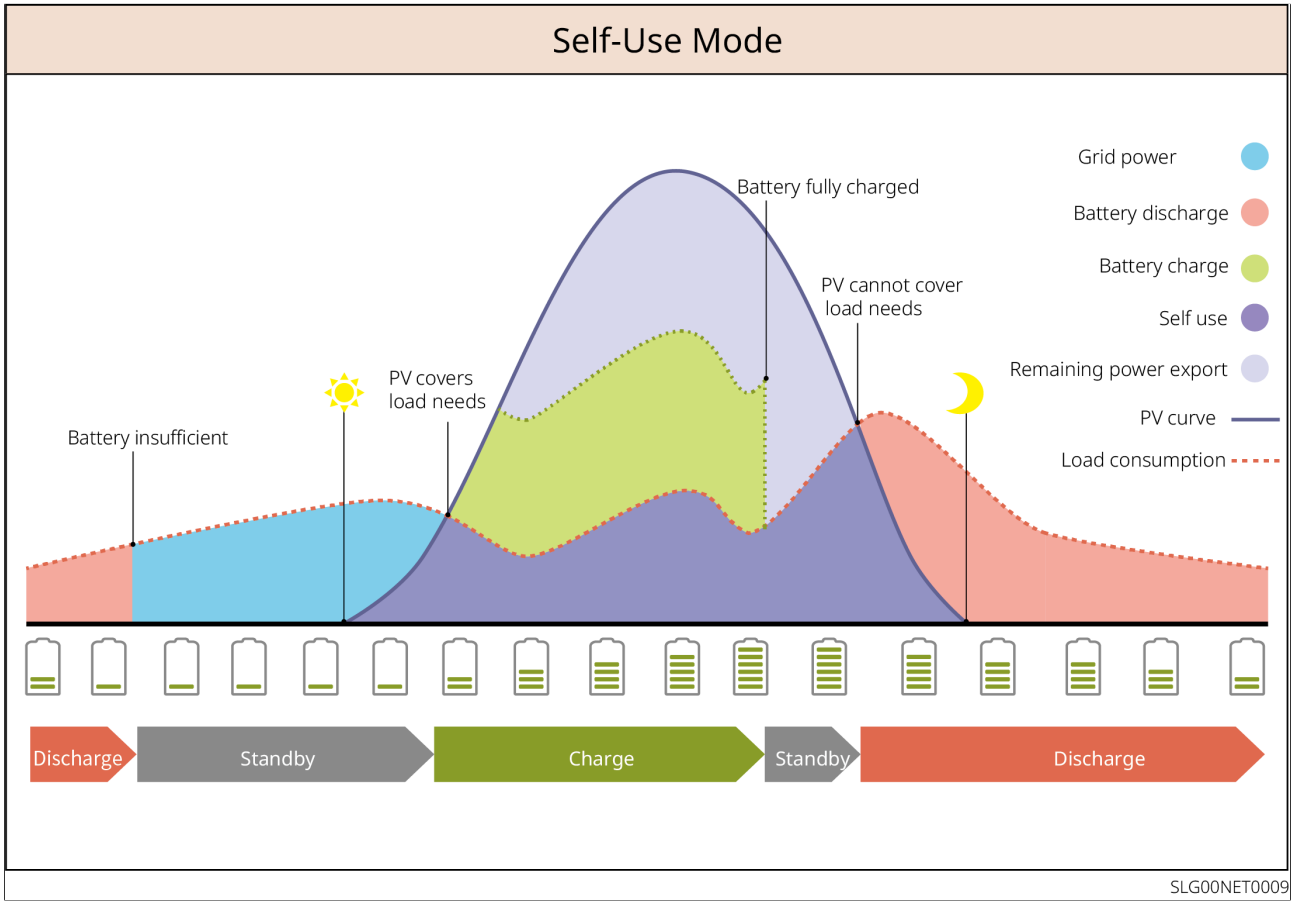


3.4 System Working Mode

Self-Use Mode

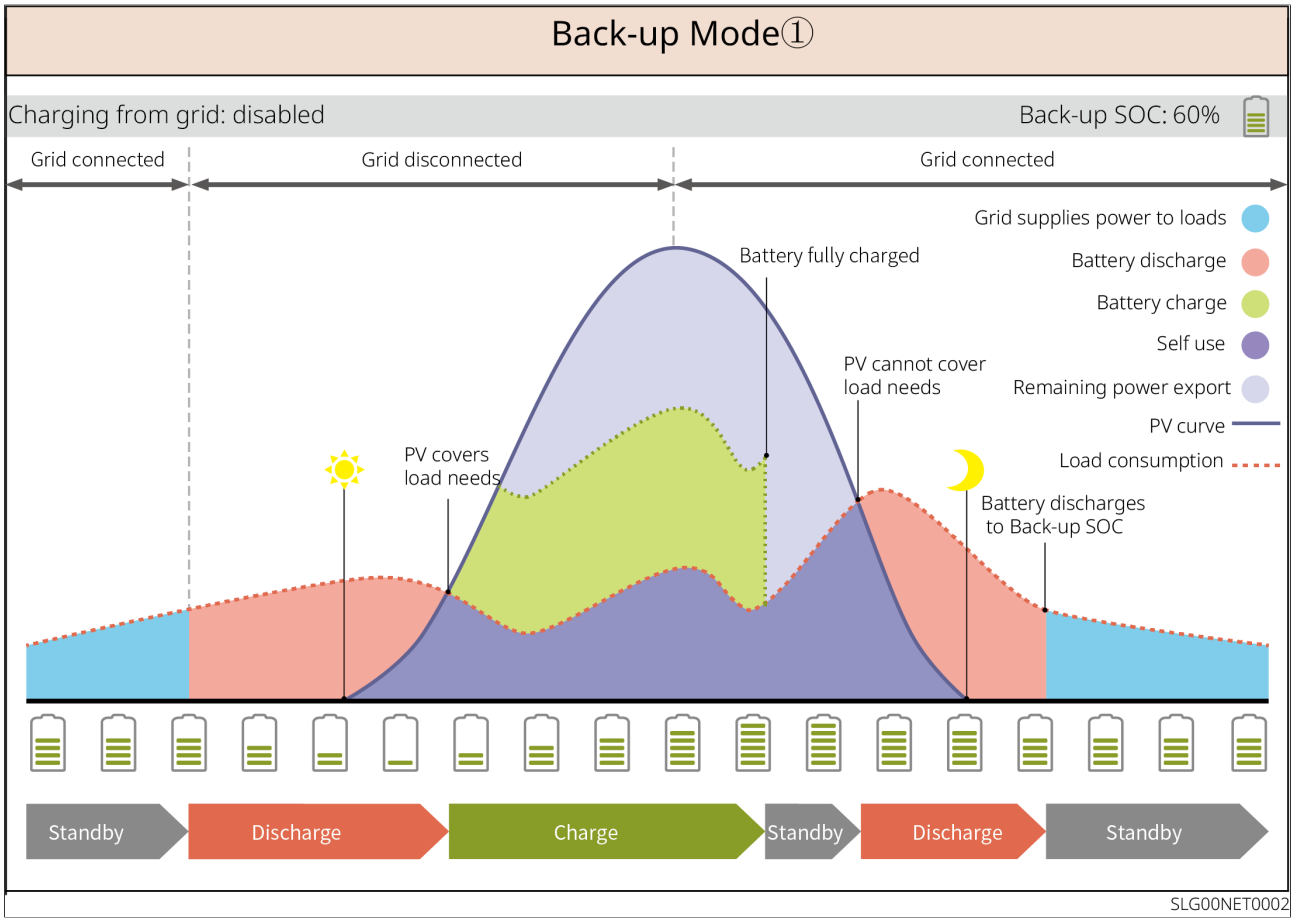
- Self-use mode is the basic working mode of the system.

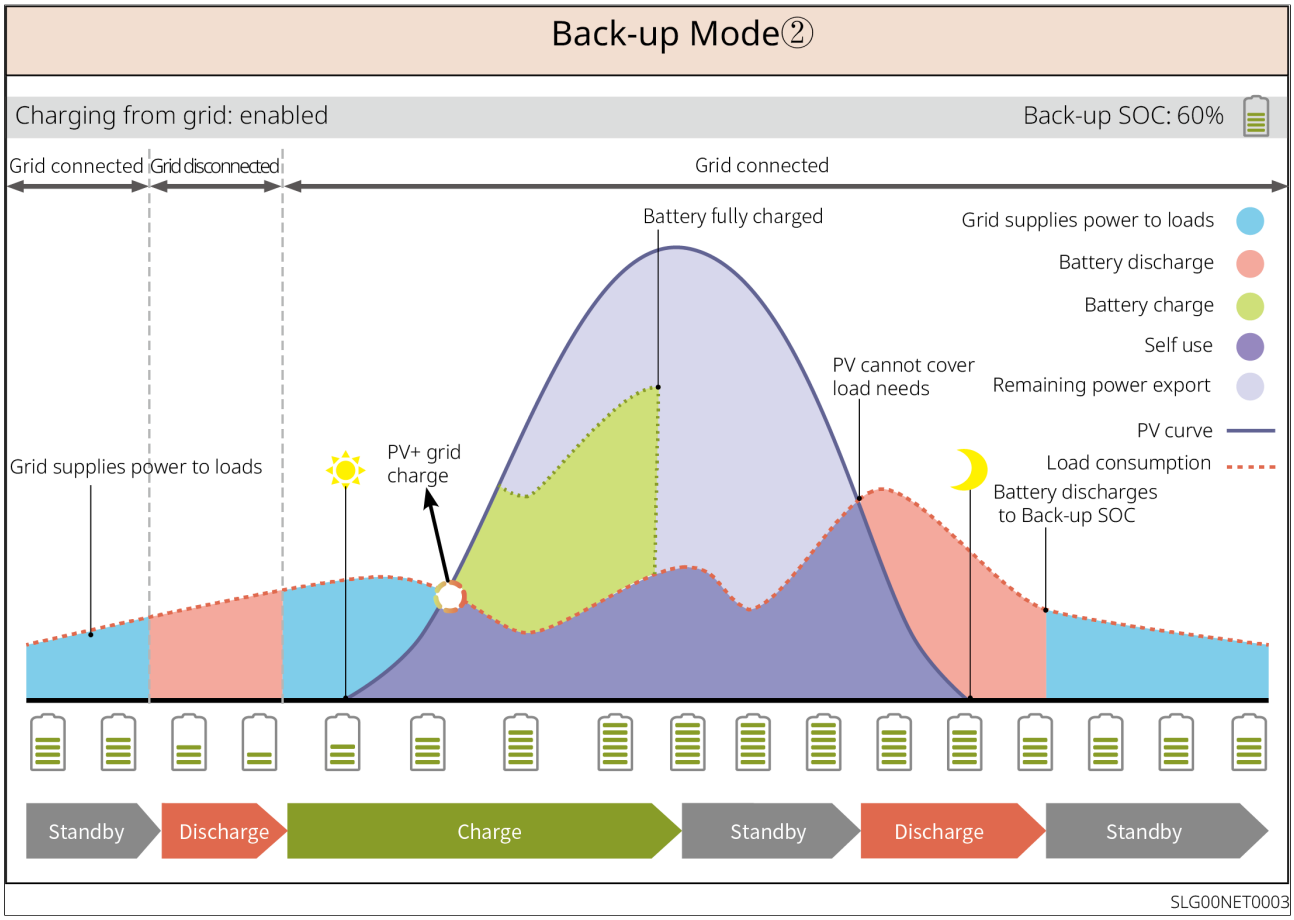
- The power generated by the PV system supply the loads in priority; the excess power will charge the batteries, and then the remaining power will be sold to the utility grid. When the power generated in the PV system is insufficient, the battery will supply the loads in priority. If the battery power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



BACK-UP Mode

- The BACK-UP mode is mainly applied to the scenario where the grid is unstable.
- When the grid is disconnected, the inverter turns to off-grid mode and the battery will supply power to the BACK-UP loads; when the grid is restored, the inverter switches to grid-tied 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 grid connected operation. If you need to purchase electricity from the power grid to charge the battery, please confirm compliance with local power grid laws and regulations.


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

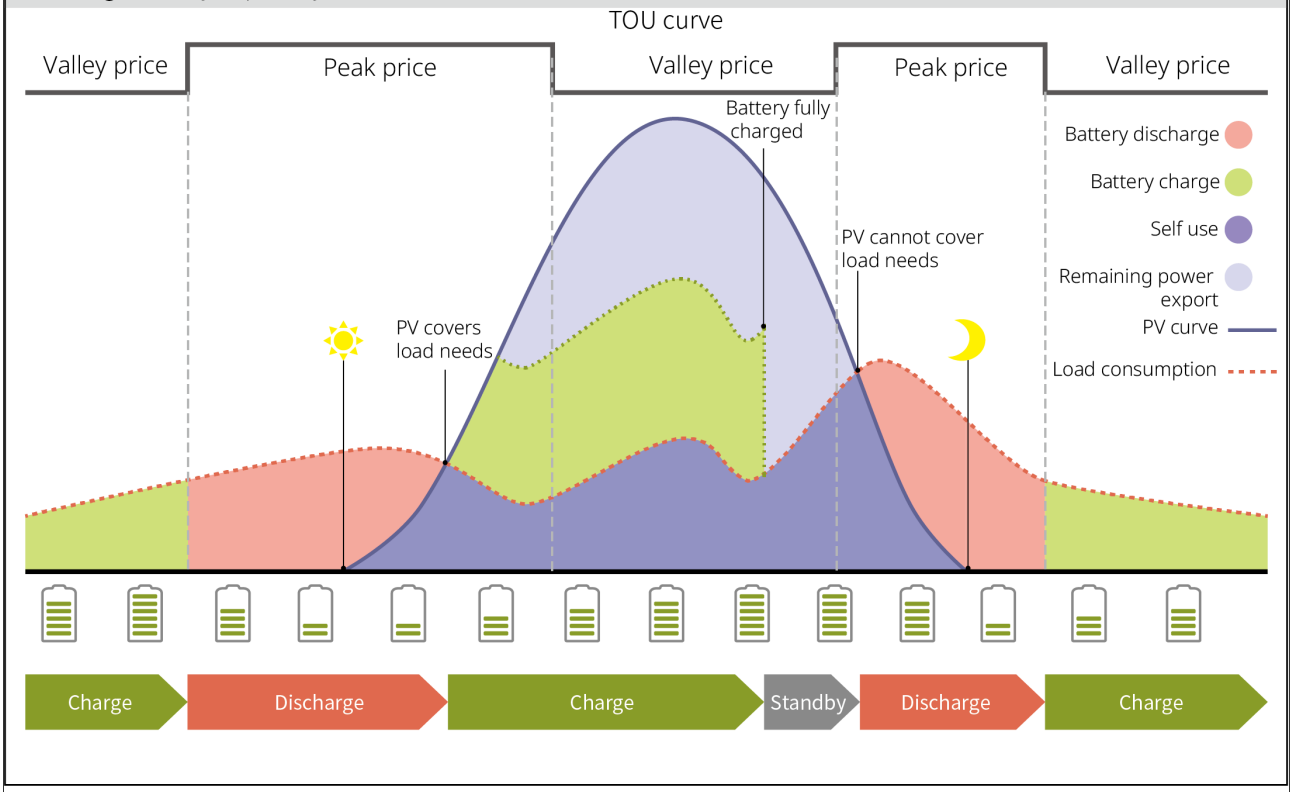


TOU Mode

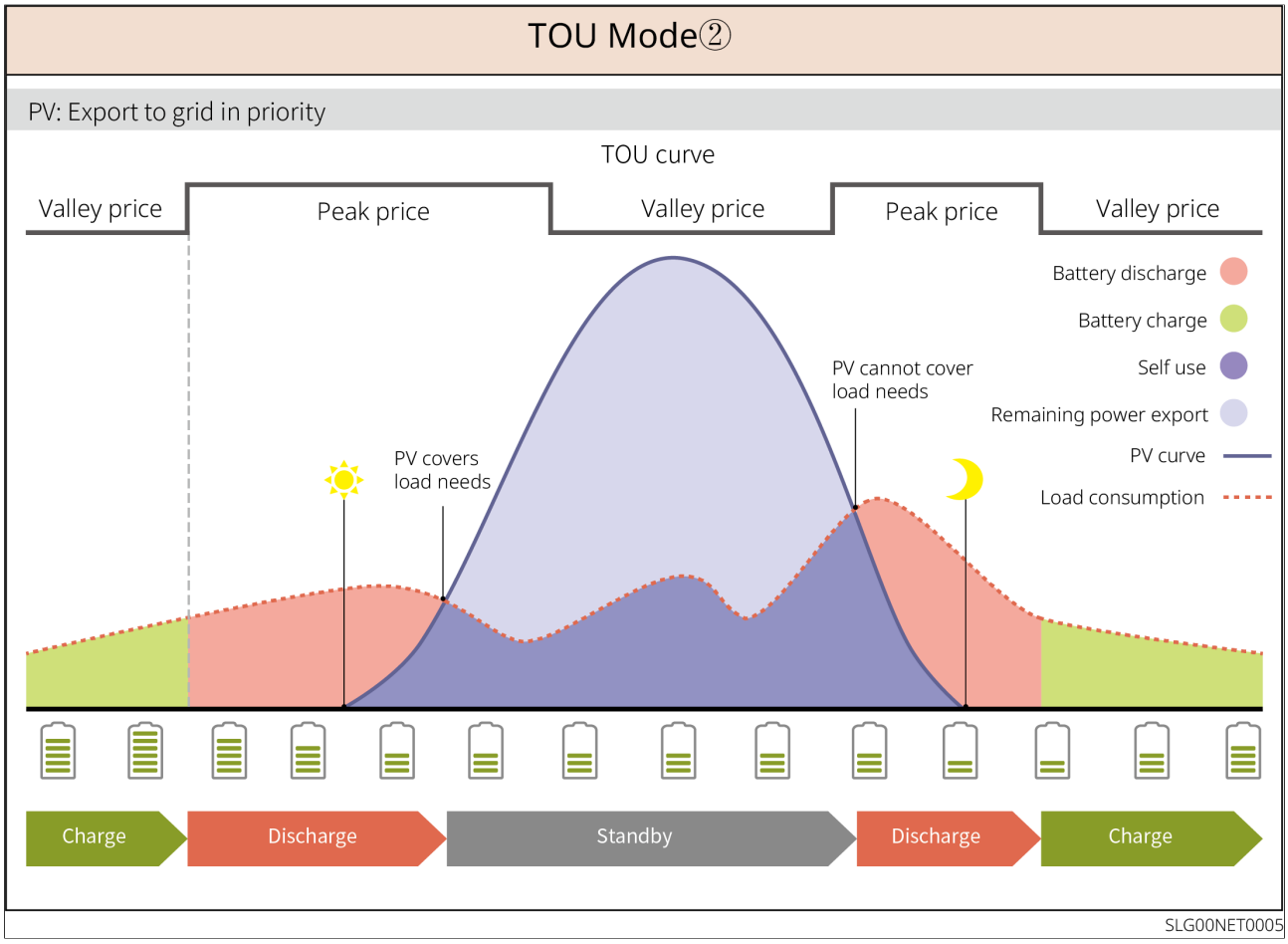
It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. For example, set the battery to charge mode during Valley period to charge battery with grid power. And set the battery to discharge mode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

TOU Mode①

PV: Charge battery in priority



SLG00NET0004



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

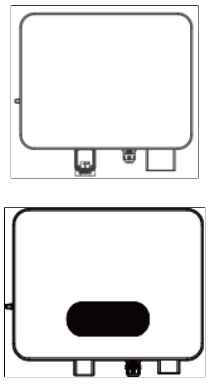
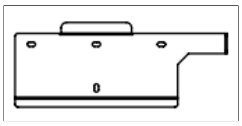
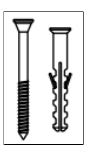
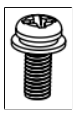
Check the following items before accept.

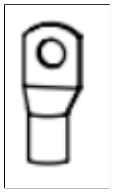
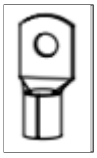
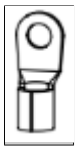
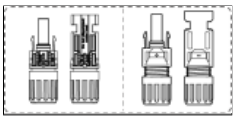
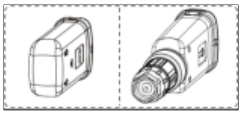
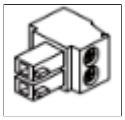
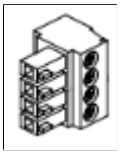
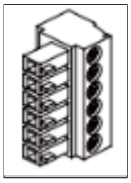
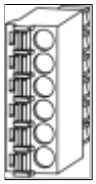
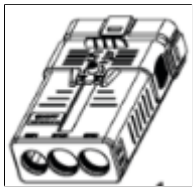
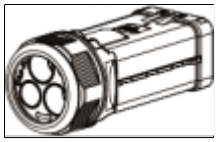
1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the product model. If the product model is not what you requested, do not unpack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

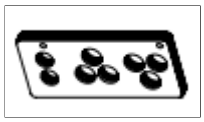
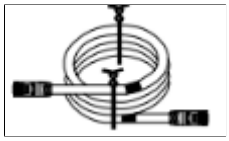
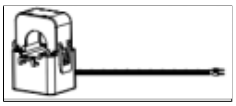
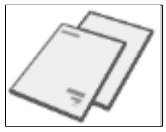
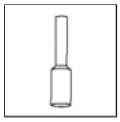
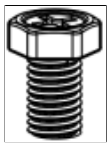
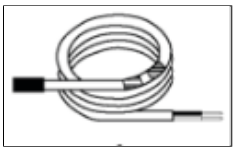
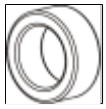
4.2 Deliverables

⚠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

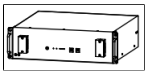
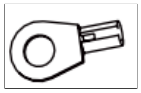
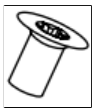
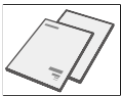
Component	Description	Component	Description
	Inverter x 1 Provided on an actual basis.		Mounting plate x 1 Provided on an actual basis.
	Expansion screws x 4		Screw driver x 1 For some models

Component	Description	Component	Description
	Nut x 8 For some models		Battery power connection terminal x 2 For some 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 For some models according to the hardware board communication port		4PIN terminal x 1 For some models according to the hardware board communication port
 	6PIN terminal: 2 or 3 4 Provided on an actual basis.	 	AC Protective Cover x 1 Provided on an actual basis.

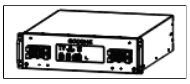
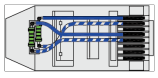
Component	Description	Component	Description
	Battery Connector x 1 For some models		AC Unlock tool x1 For some models
	Waperproof Gasket x 1 For some models		BMS communication cable x 1
	CT x 1		Documents x 1
	PIN communication terminal: 14 or 18 24 Provided on an actual basis.		AC Pinhole Terminal x 10 For some models
	Battery module x1 For some models		Magnet x 1 For some models
	Lead-acid battery temperature sensor cable x 1		CT x 1 For some models
	Lead-acid battery temperature sensor cable fixing sticker x 2		Magnetic Ring Fixing Tie x 2 Issued for models with magnetic rings

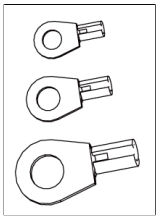
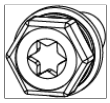
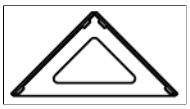
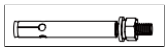
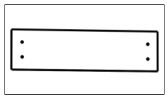
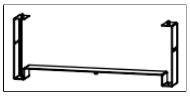
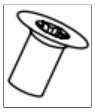
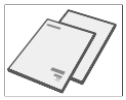
4.2.2 Batteries Deliverables

4.2.2.1 LX A5.0-10

Compone	Description	Compone	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
	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	-	-

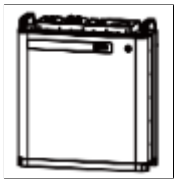
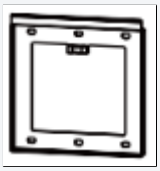
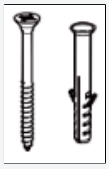
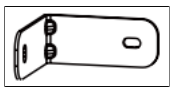
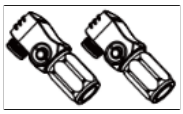
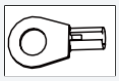
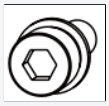
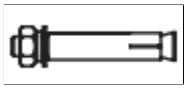
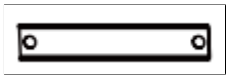
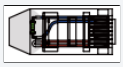
4.2.2.2 LX A5.0-30

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.

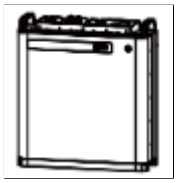
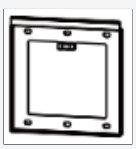
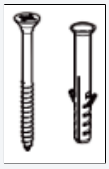
Component	Description	Component	Description
	• M5 OT terminal x 2: Recommended for connecting 10mm^2 cable • M8 OT terminal x 4: Recommended for connecting 50mm^2 cable • M10 OT terminal x 2: Recommended for connecting 70mm^2 cable		M5*12 grounding screw x 2
	Bracket x 2 For wall-mounted installation		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	-	-

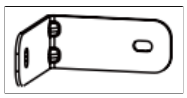
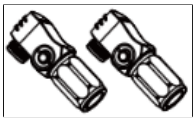
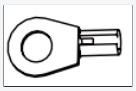
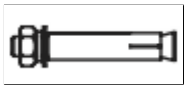
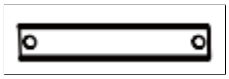
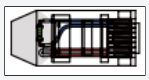
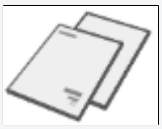
4.2.2.3 Battery Deliverables (LX U5.4-L)

Component	Description	Component	Description

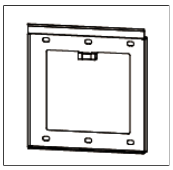
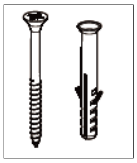
	Battery module x1		Cover x 1
	Mounting plate x 1		Expansion bolt x 2
	Locking bracket x 2		Power connection terminal x 2
	Grounding terminal x 4		M5 Screw x 8
	M10 Expansion bolt x 6		Cable harness fixing plate x 2
	Terminal resistor x 1		Documents x 1

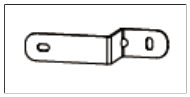
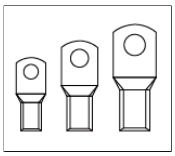
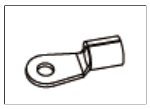
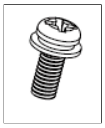
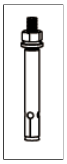
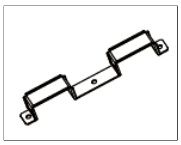
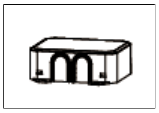
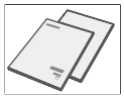
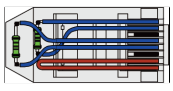
4.2.2.4 Battery Deliverables (LX U5.4-20)

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

	Locking bracket x 2		Power connection terminal x 2
	Grounding terminal x 4		M5 Screw x 8
	M10 Expansion bolt x 6		Cable harness fixing plate x 2
	Terminal resistor x 1		Documents x 1

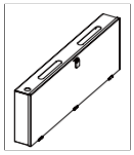
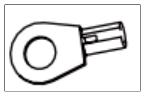
4.2.2.5 LX U5.0-30

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

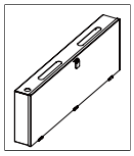
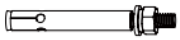
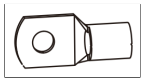
Component	Description	Component	Description
	Locking bracket x 2		• 35- 8 OT terminal x 4: Recommended for connecting 25mm^2 or 35mm^{2}cable • 50- 8 OT terminal x 4: Recommended for connecting 50mm^2 cable • 70- 10 OT terminal x 2: Recommended for connecting 70mm^2 cable
	14-5 Grounding terminal x 2		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	-	-

4.2.3 Busbar Deliverables

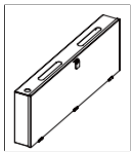
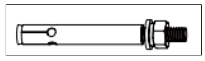
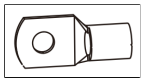
4.2.3.1 BCB-11-WW-0 (Optional)

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)

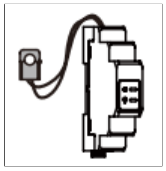
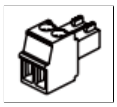
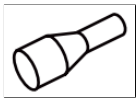
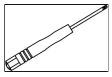
Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolt x 4
	(25-8) OT terminal x 36 (70-10) OT terminal x 6	-	-

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

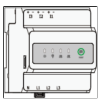
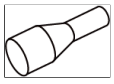
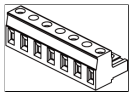
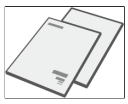
Component	Description	Component	Description
	720A Manifold box x 1		M6 Expansion bolt x 4
	(50-8) OT terminal x 30 (70-10) OT terminal x 6	-	-

4.2.4 Smart Meter Deliverables

4.2.4.1 GMK110

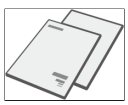
Component	Description	Component	Description
	Smart Meter and CT x 1		RS485 communication terminals x 1
	Voltage input side terminal x 1		PIN terminal x 4
	Screw driver x 1		Documents x 1

4.2.4.2 GM330

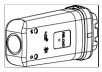
Component	Description	Component	Description
	Smart meter and CT x1		2PIN terminal x1
	PIN terminal x 6		7PIN terminal x1
	Screw driver x 1		Documents x 1

4.2.5 Smart dongle

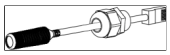
4.2.5.1 WiFi/LAN Kit-20

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	Recommend Storage Temperature	Charge and Discharge Maintaining Period[1]	Battery Maintenance Method [2]
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.
n*LX A5.0-10				
LX A5.0-30	30%~ 40%	0~35℃	-20~35℃, ≤12 months 35~45℃, ≤6 months	
LX U5.4-L	30%~ 40%	0~35℃	-20~0℃, ≤1 month 0~35℃, ≤6 months 35~40℃, ≤1 month	
LX U5.4-20				
n*LX U5.4-20				
LX U5.0-30				

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:

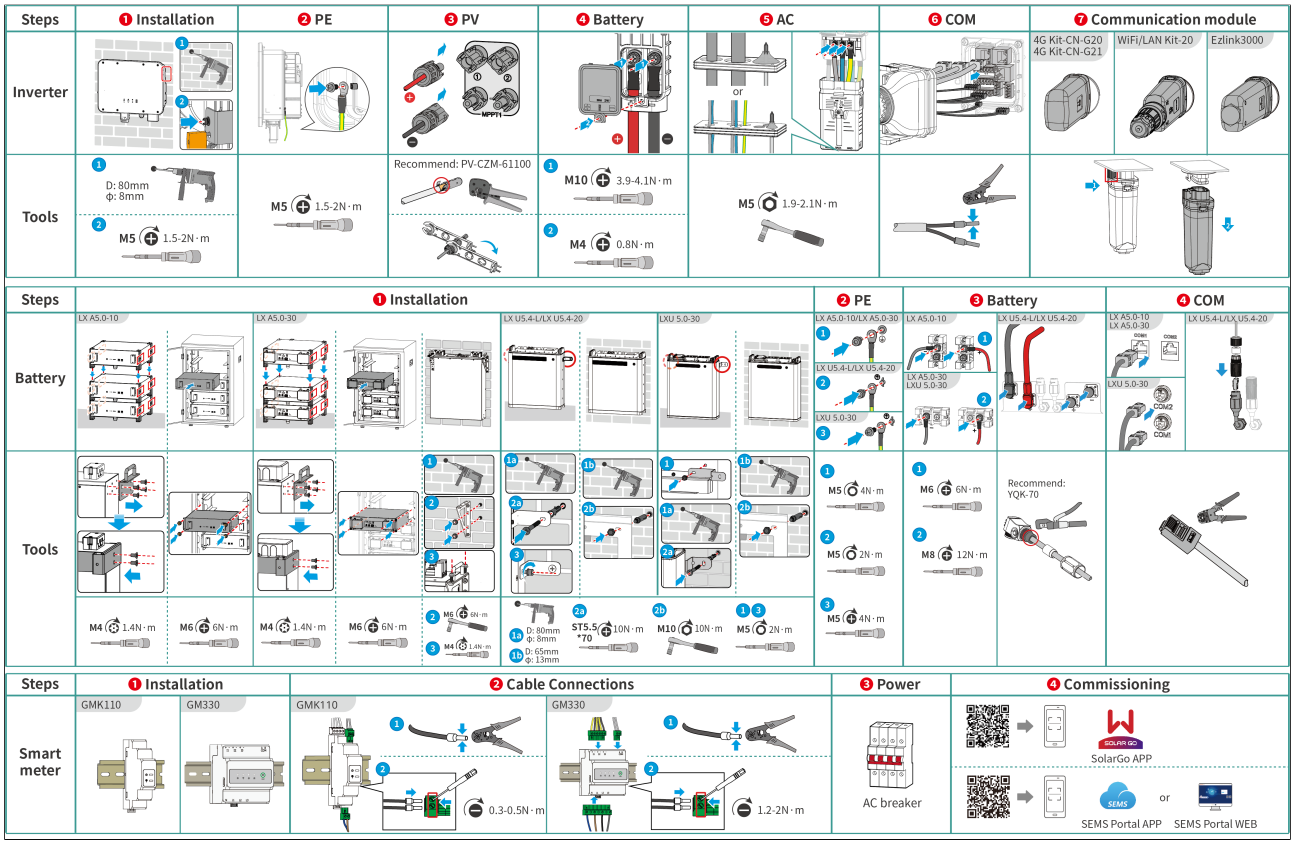
1. The height and direction of the stacking inverter should follow the instructions on the packing box.
2. The inverter must be stacked with caution to prevent them from falling.

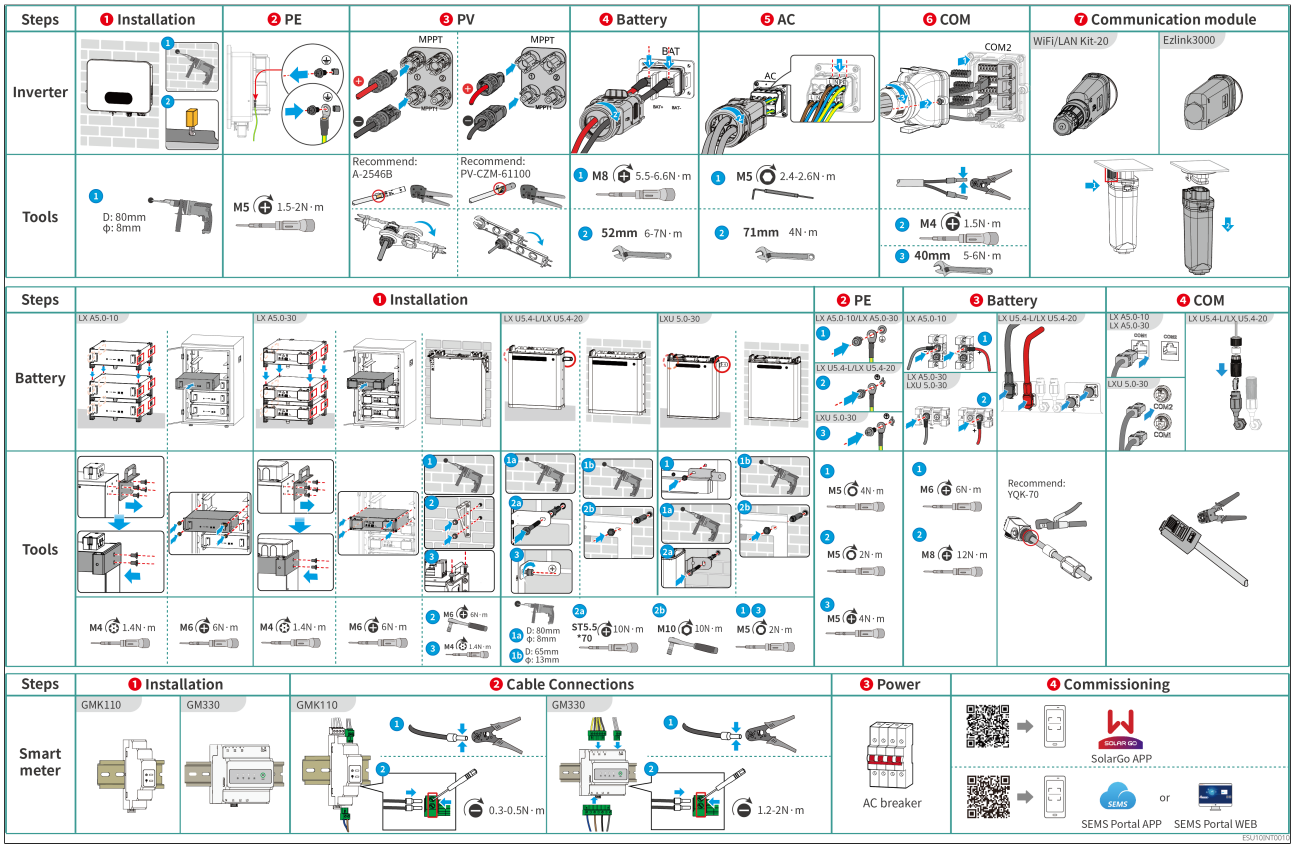
5 Installation

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 ℃. 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.

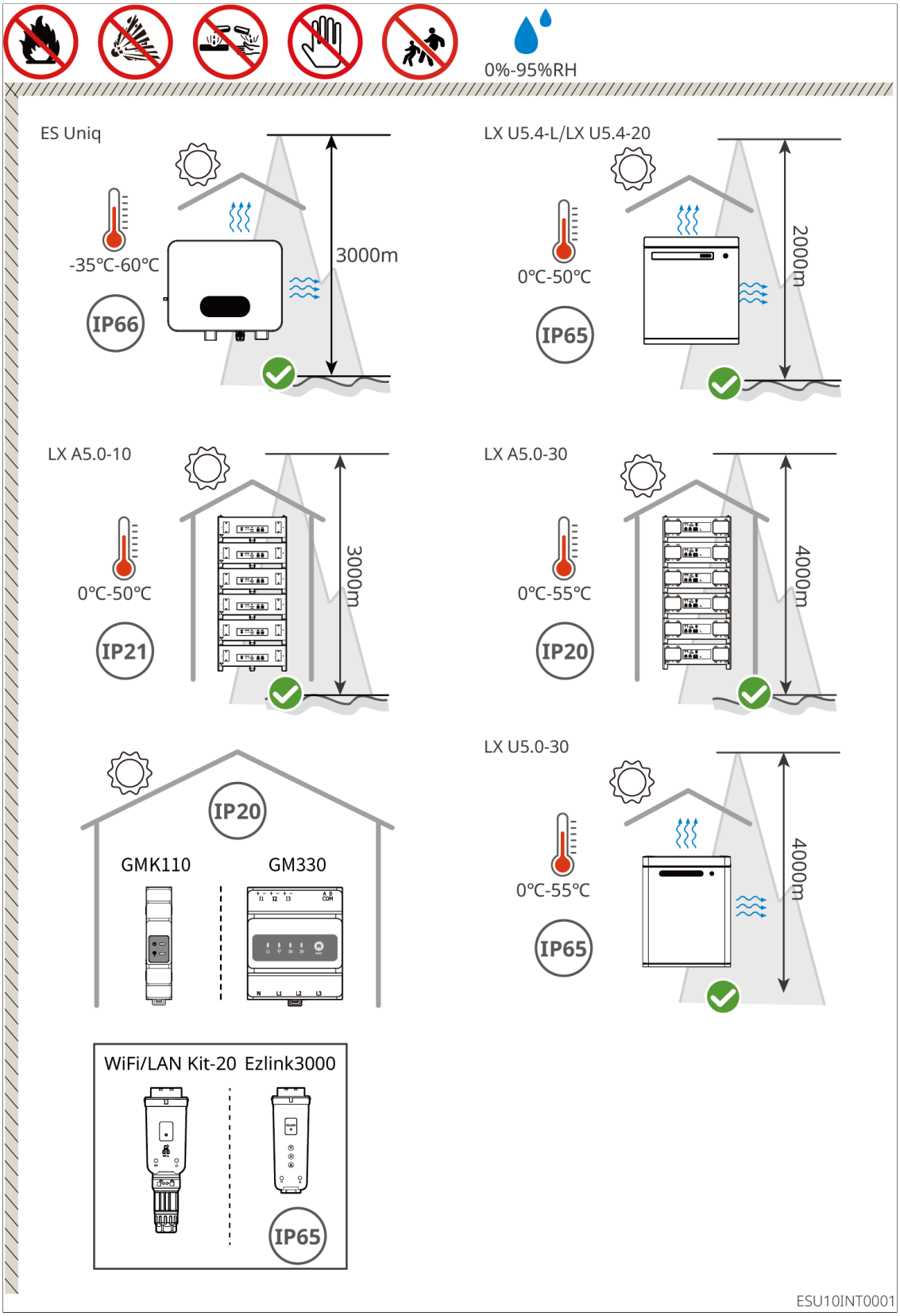
8. Install the equipment at a height that is convenient for operation and maintenance, electrical connections, and checking indicators and labels.
9. The altitude to install the inverter shall be lower than the maximum working altitude of the system.
10. Consult the manufacturer before installing the 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.

NOTICE

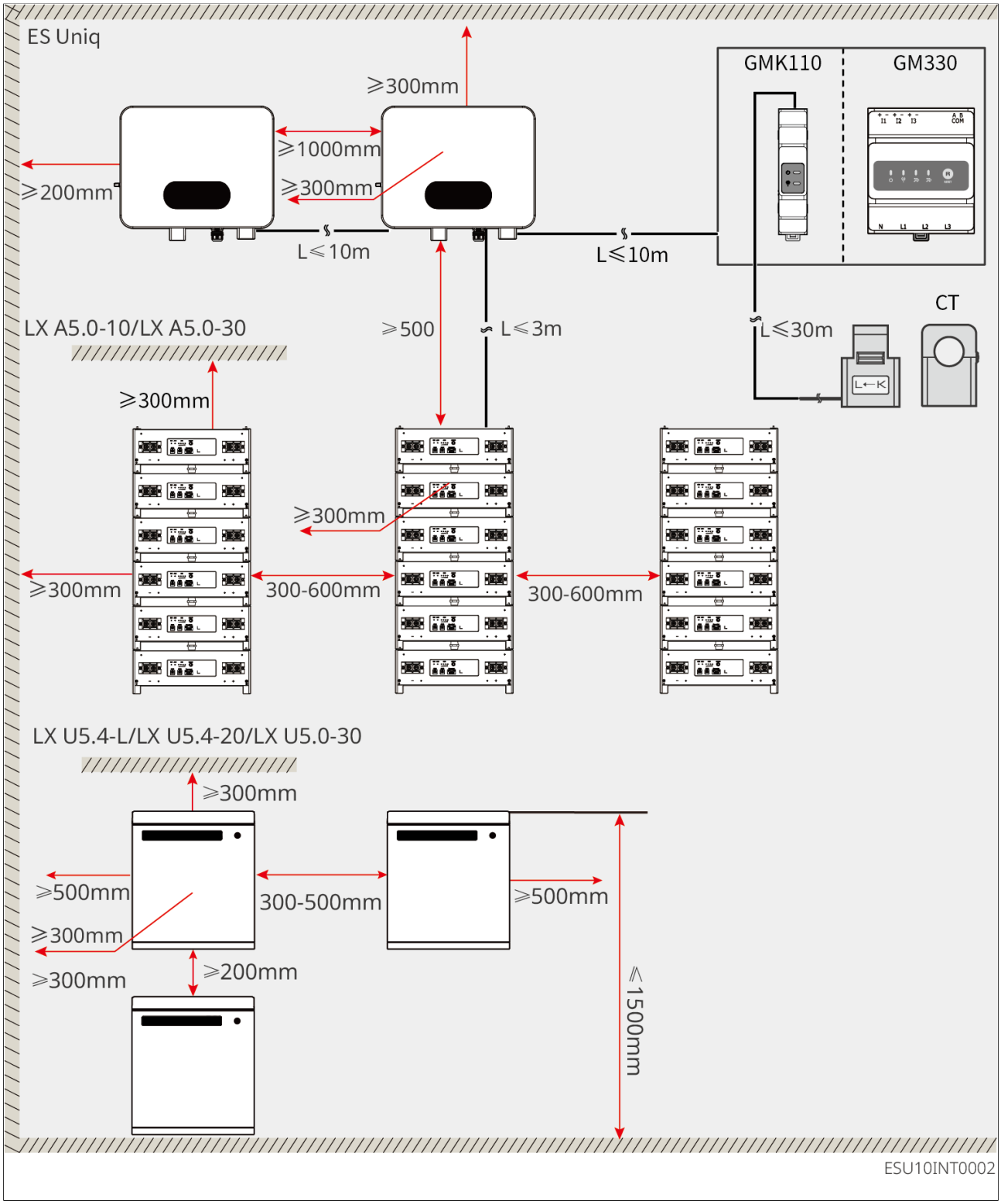
If installed in an environment below 0°C, the battery will not be able to continue charging to restore energy after being discharged, resulting in undervoltage protection.

- LX A5.0-30, LX U5.0-30: Charging temperature range: 0 < T≤55℃; Discharging temperature range: -20 < T≤55℃
- LX A5.0-10, LX U5.4-L, LX U5.4-20: Charging temperature range: 0<T≤50℃; Discharging temperature range: -10<T≤50℃



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.

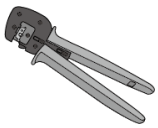
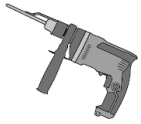
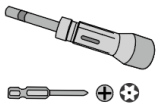
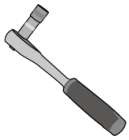
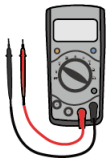
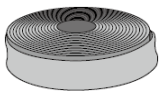
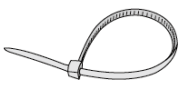


5.2.3 Tool Requirements

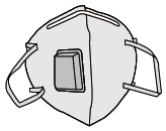
NOTICE

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

Installation Tools

Tool	Description	Tool	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, M8
	Rubber hammer		Socket wrench set
	Marker		Multimeter Range≤600V
	Heat shrink tube		Heat gun
	Cable tie		Vacuum cleaner

Personal Protective Equipment

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

5.3 Equipment Handling

CAUTION

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

1. Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.
2. Wear safety gloves to avoid personal injury.
3. Keep balance to avoid falling down when moving the equipment.

5.4 Installing the Inverter

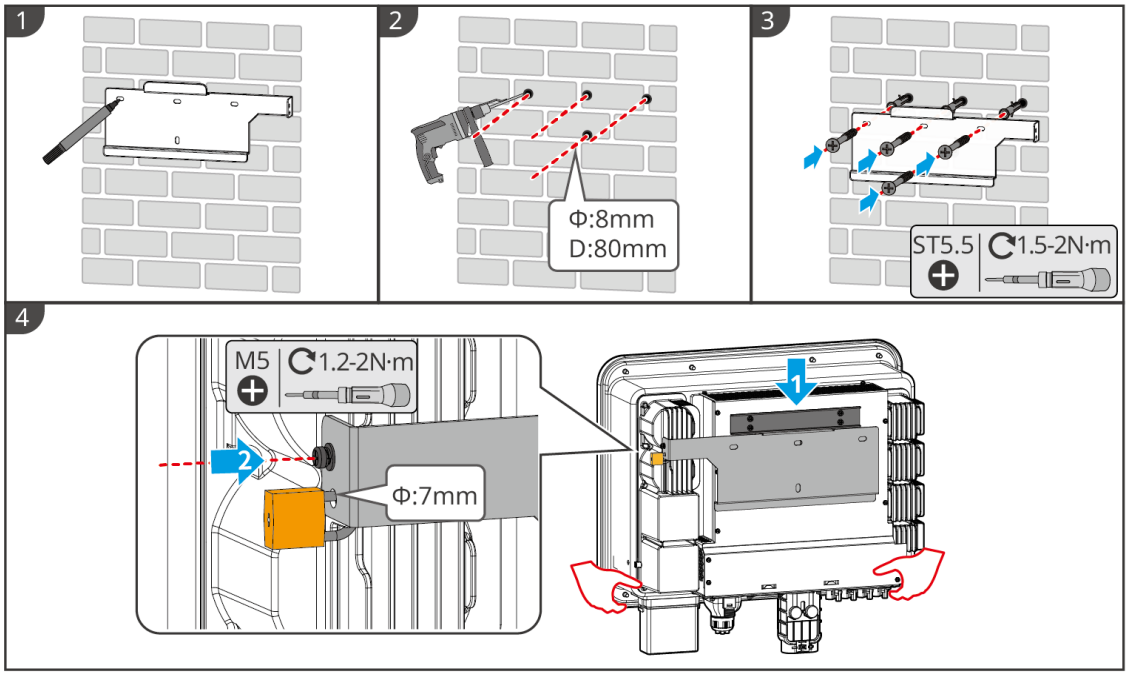
CAUTION

- 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.

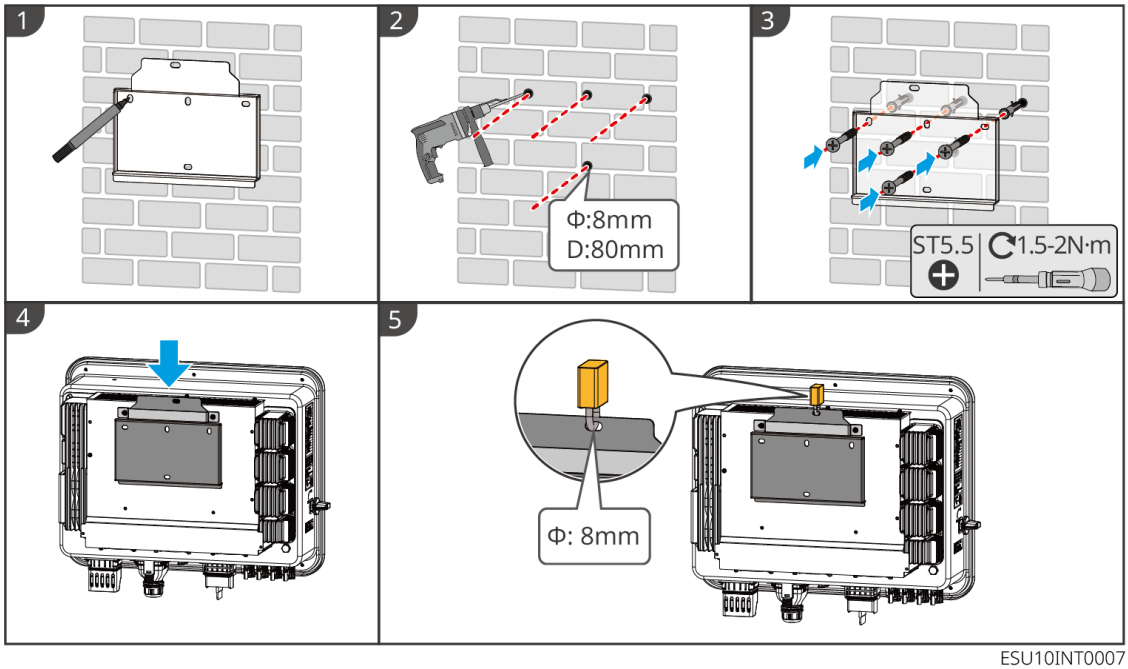
1. Put the mounting plate on the wall horizontally and mark positions for drilling

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.



ESU10INT0005



ESU10INT0007

5.5 Installing the Battery System

⚠WARNING

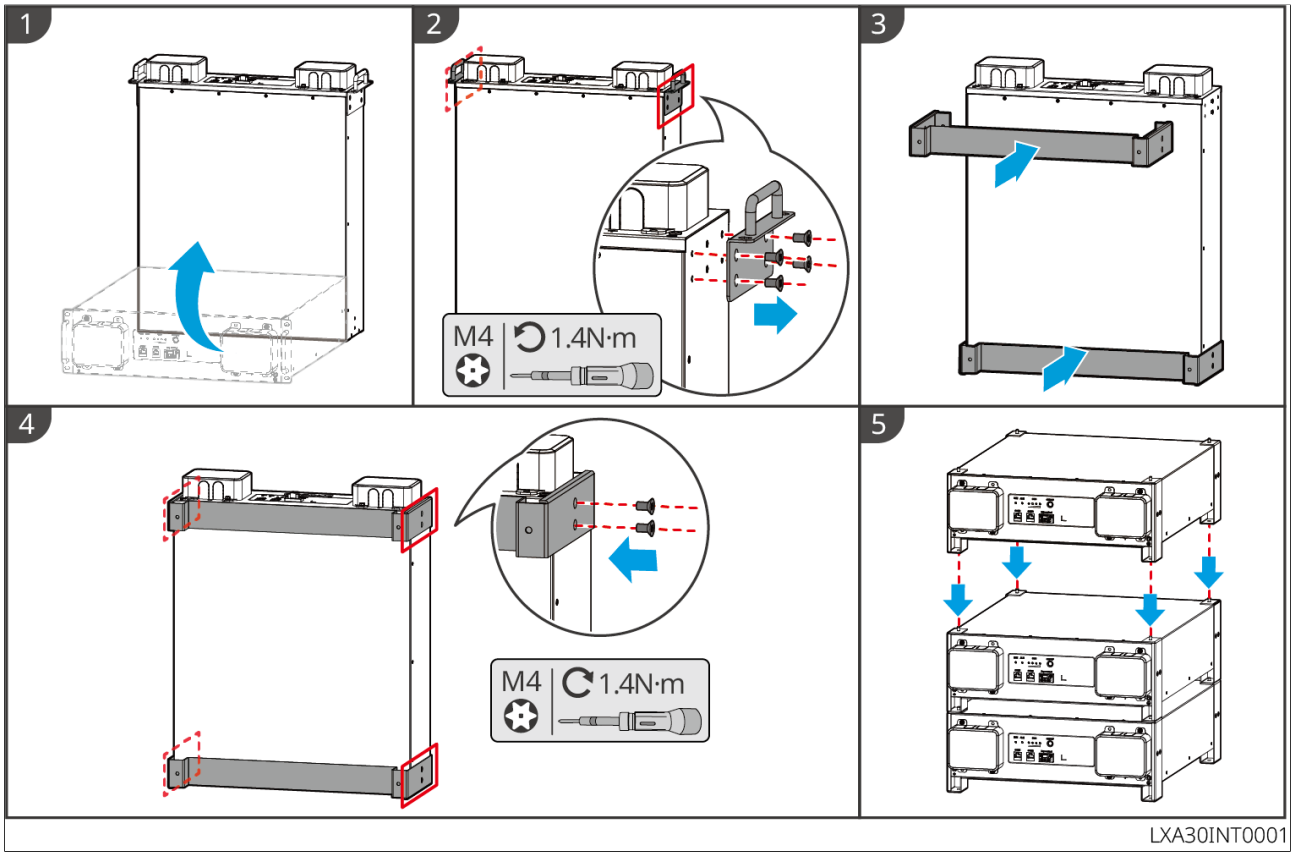
- Ensure that the battery system is installed vertically and securely. When using the locking bracket, the bracket should be vertically attached to the wall and the surface of the battery system.
- Cover the equipment with a cardboard to prevent foreign matters when drilling holes. Otherwise, the system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

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.

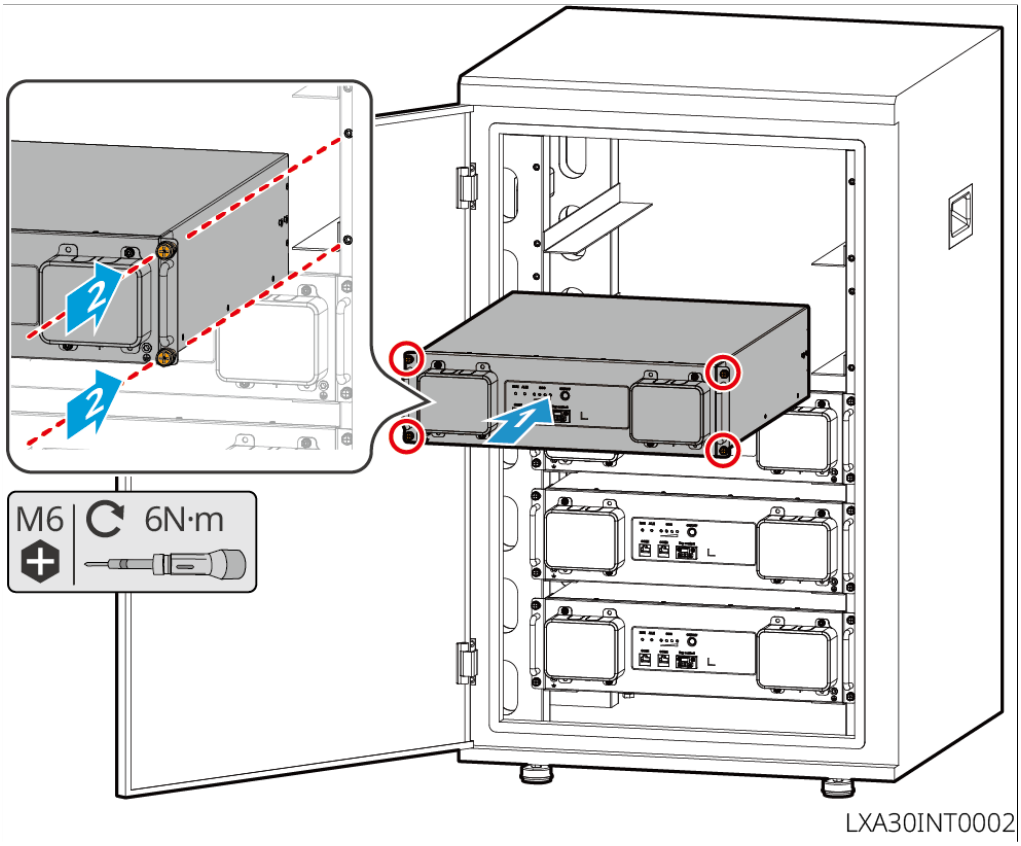


LX A5.0-30: Cabinet Installation

NOTICE

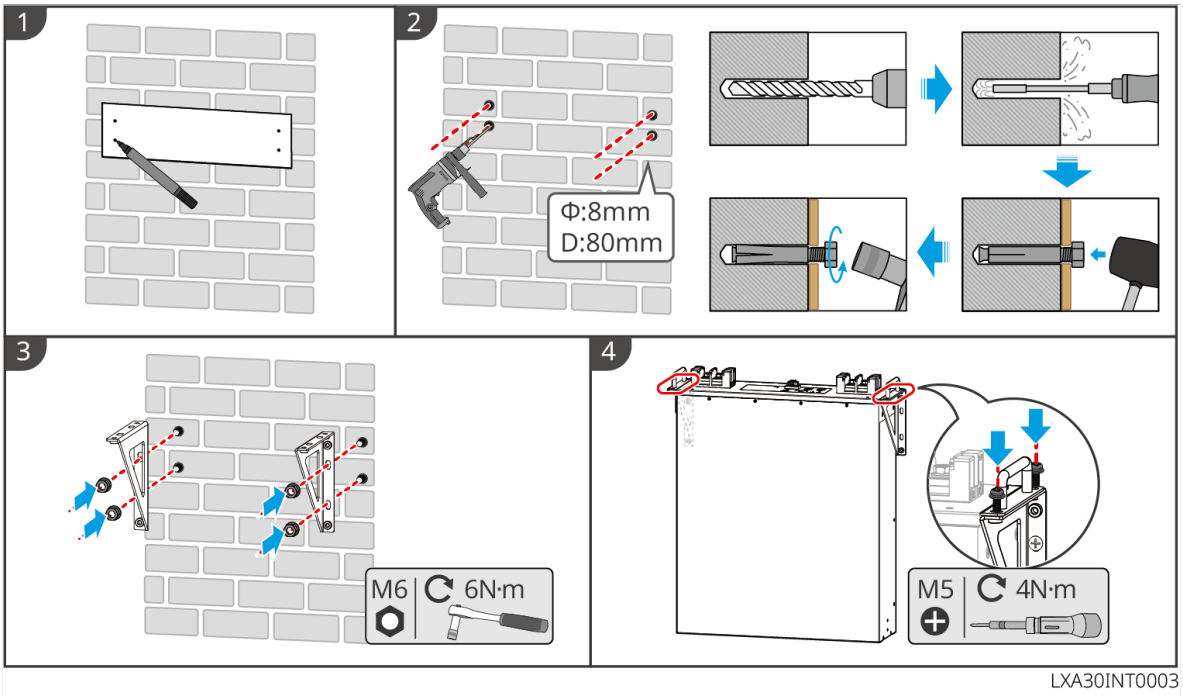
- It is recommended to install it in a 19-inch standard cabinet with a length * width of 600*800mm and above, and the height should be determined based on the thickness of the battery (133mm) and above.
- For cabinet installation, electrical labels and warning labels need to be attached to any position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

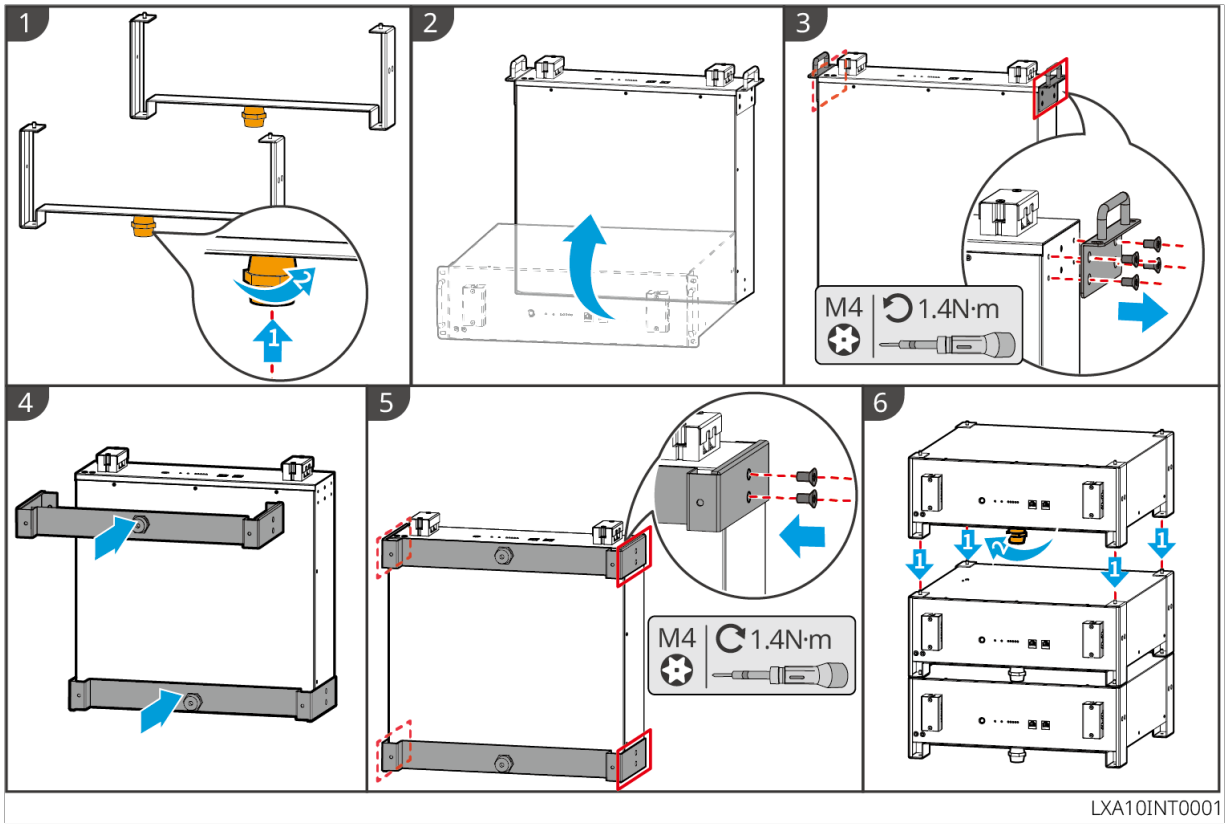
1. Determine the drilling position with installation positioning cardboard and marker pen.
2. Use an impact drill to drill holes.
3. Install the battery brackets.
4. Install the battery on the brackets and use screws to secure the battery.



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.

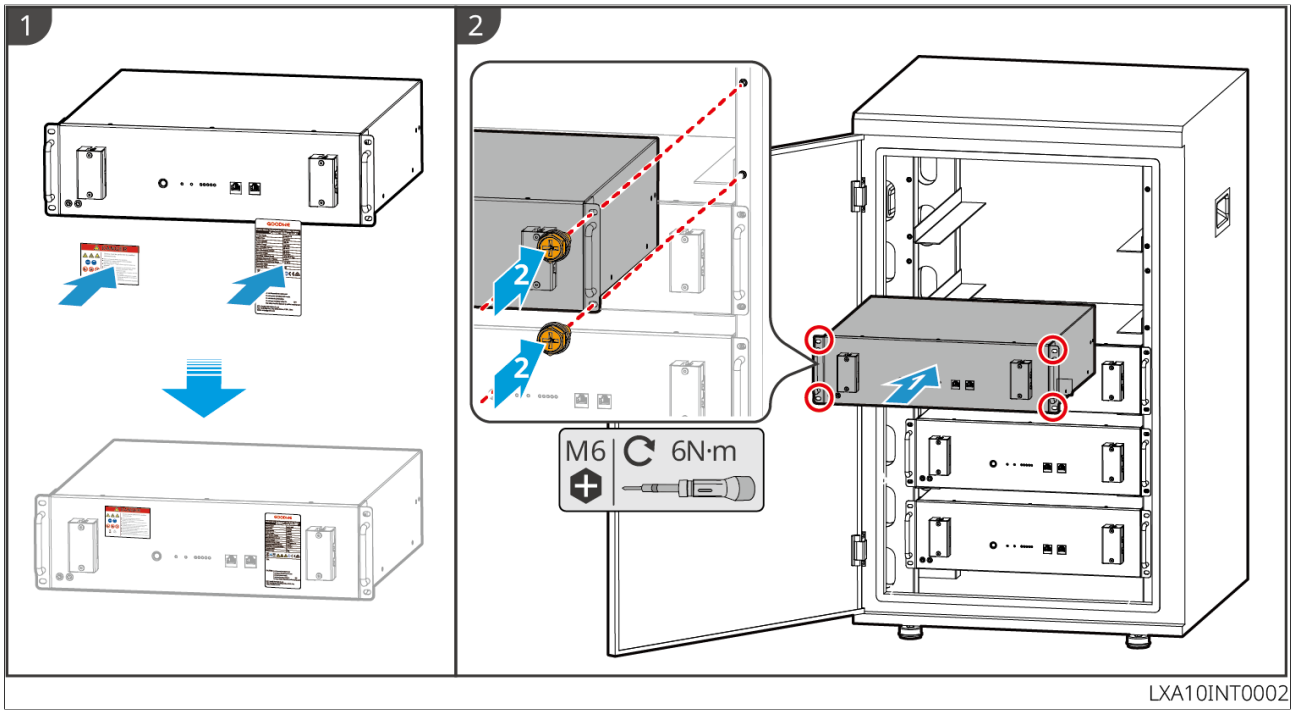


LX A5.0-10: Cabinet Installation

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).

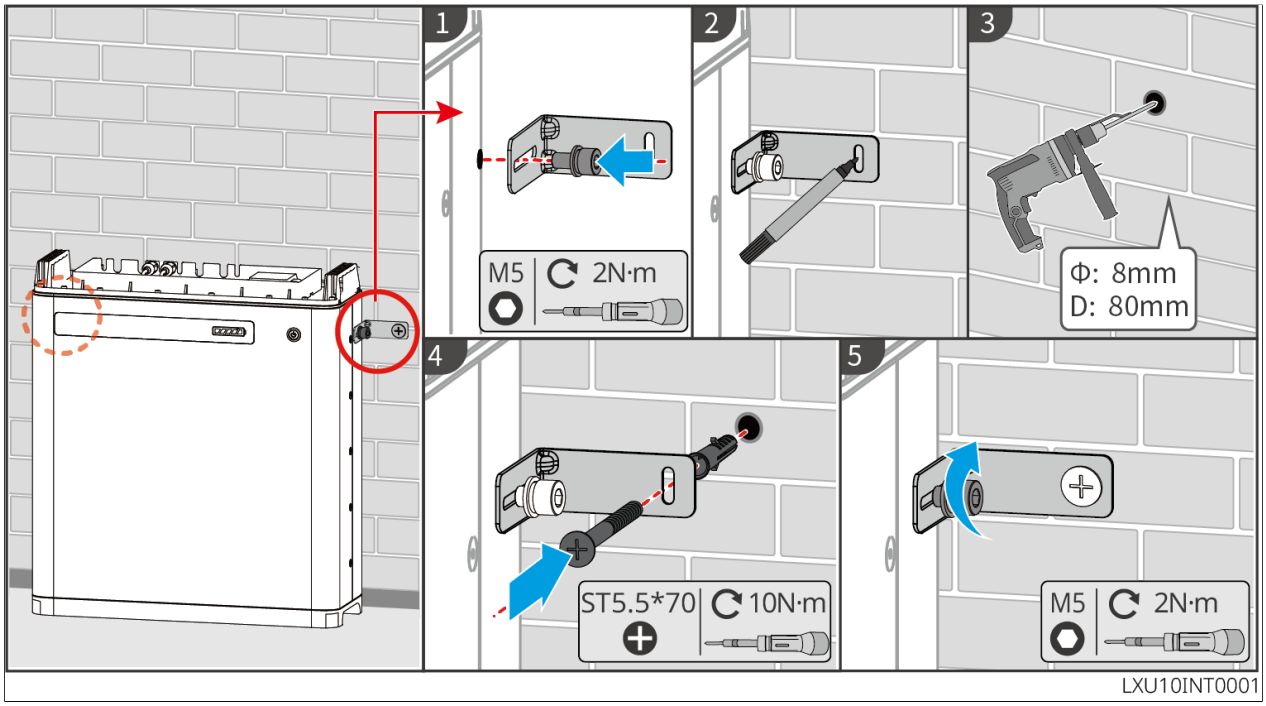
1. Stick the electrical label and warning label to the position of the front panel of any battery.
2. Place the battery on the guide rail of the rack and secure the battery to the rack with screws from the handle.



LX U5.4-L: Floor-mounted Installation

NOTICE
If parallel operation is required, check and select batteries with similar production dates and identical voltage levels for use together.

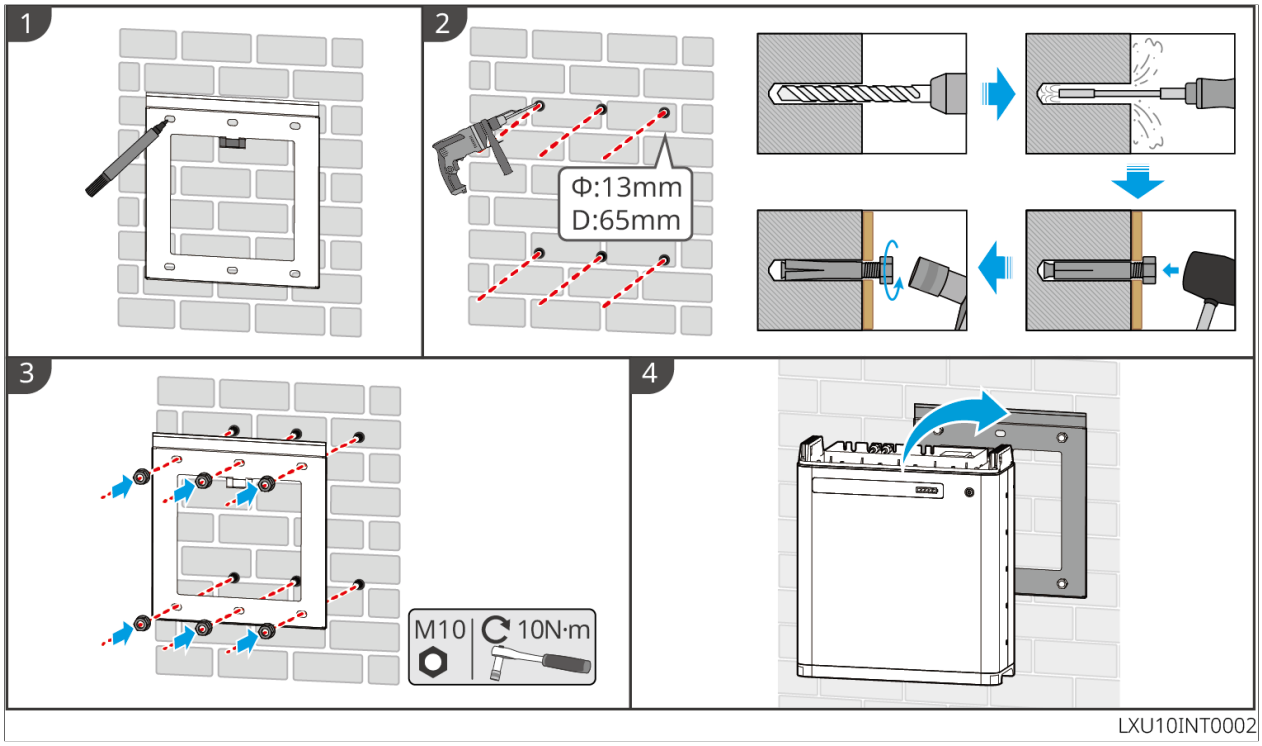
Step 1: Secure the anti-tipping bracket to the battery.
Step 2: Keep the battery parallel to the wall, ensuring the anti-tipping bracket is flush against the wall. Verify secure placement, mark the drilling positions with a marker, and then remove the battery.
Step 3: Use an impact drill to make holes in the wall (hole diameter: 10mm, depth: 80mm).
Step 4: Tighten the expansion screws with a torque requirement of 10N·m.



LX U5.4-L: Wall Mounted Installation

NOTICE
Wall-mounted installation requires two people.

Step 1: Press the wall-mounted bracket firmly against the wall. Ensure it is securely positioned, mark the drilling locations with a marker, then remove the wall-mounted bracket.
Step 2: Use an impact drill to bore holes in the wall (hole diameter: 13mm, depth: 65mm).
Step 3: Tighten the M10 expansion bolts with a torque requirement of 10 N·m.
Step 4: Install the battery onto the back mounting plate.

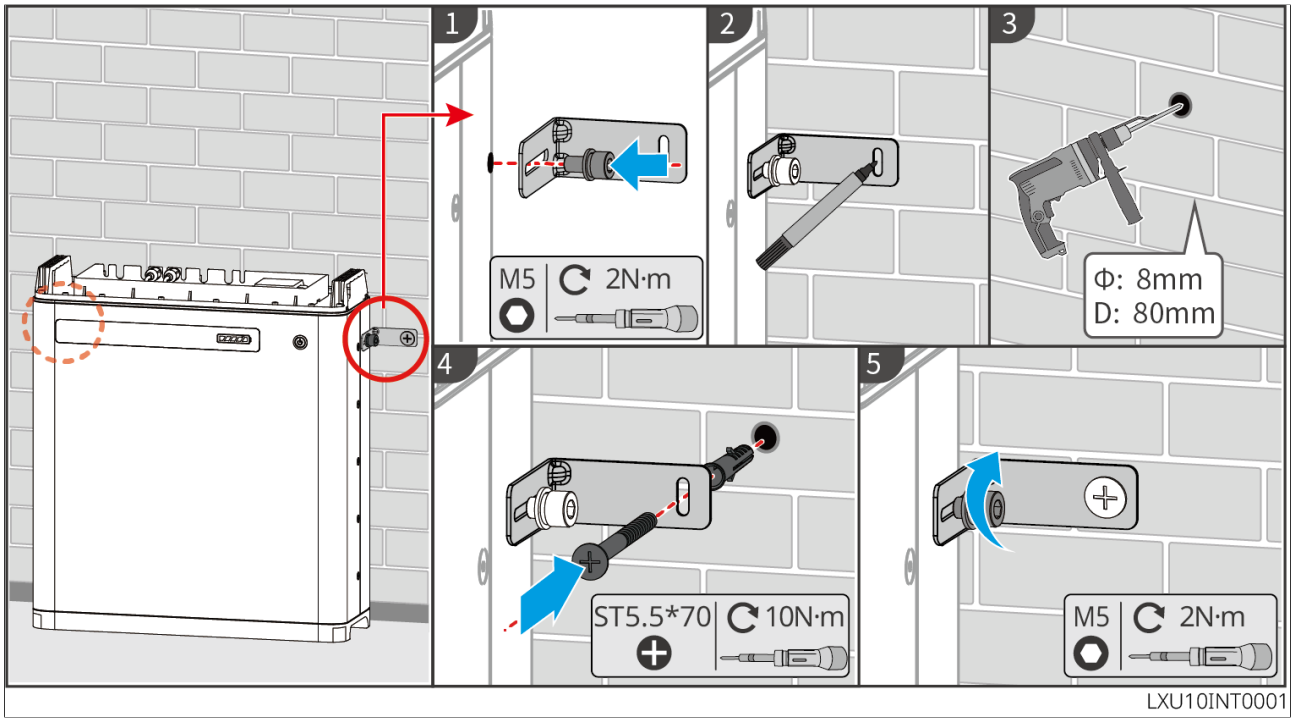


LX U5.4-20: Floor-mounted Installation

NOTICE

If parallel operation is required, check and select batteries with similar production dates and identical voltage levels for use together.

Step 1: Secure the anti-tipping bracket to the battery.
Step 2: Keep the battery parallel to the wall, ensuring the anti-tipping bracket is flush against the wall. Verify secure placement, mark the drilling positions with a marker, and then remove the battery.
Step 3: Use an impact drill to drill holes.
Step 4: Tighten the expansion screws.



LX U5.4-20: Wall-mounted Installation

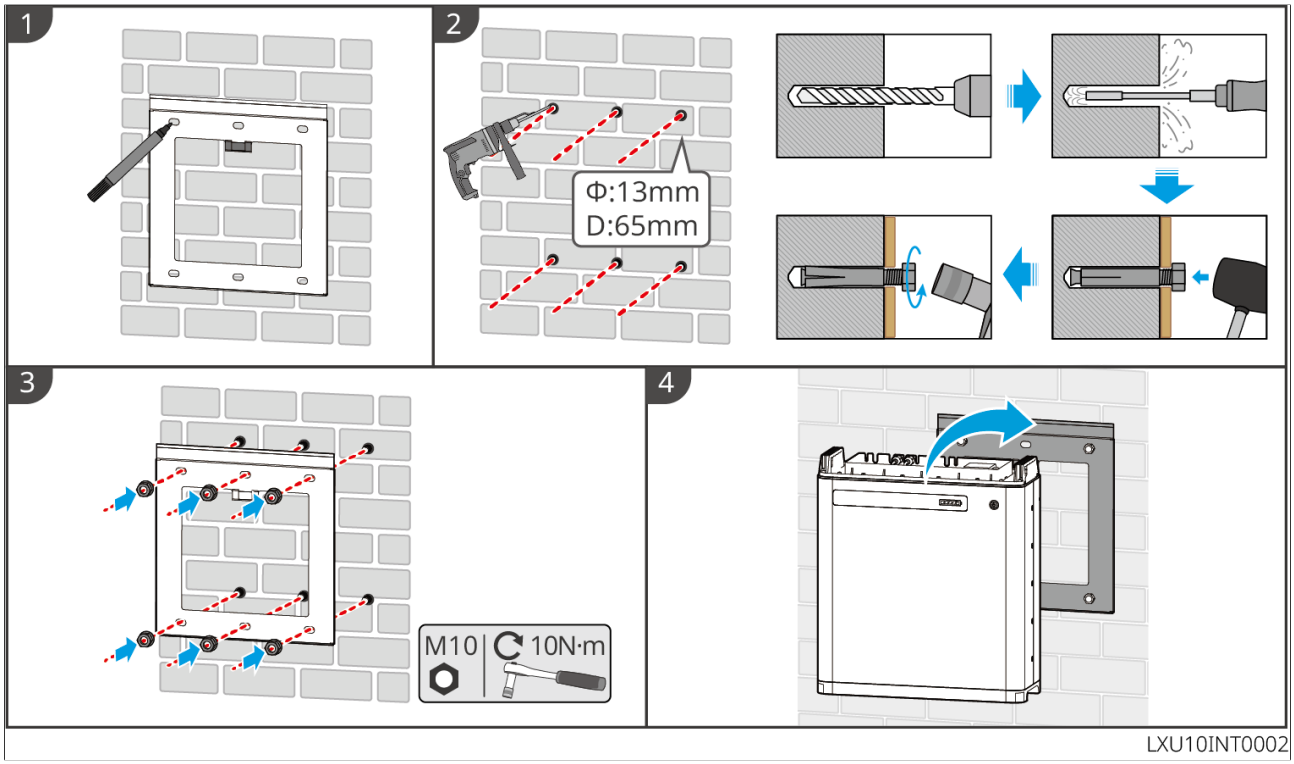
NOTICE
Wall-mounted installation requires two people.

Step 1 Put the mounting plate on the wall horizontally and mark positions for drilling holes.

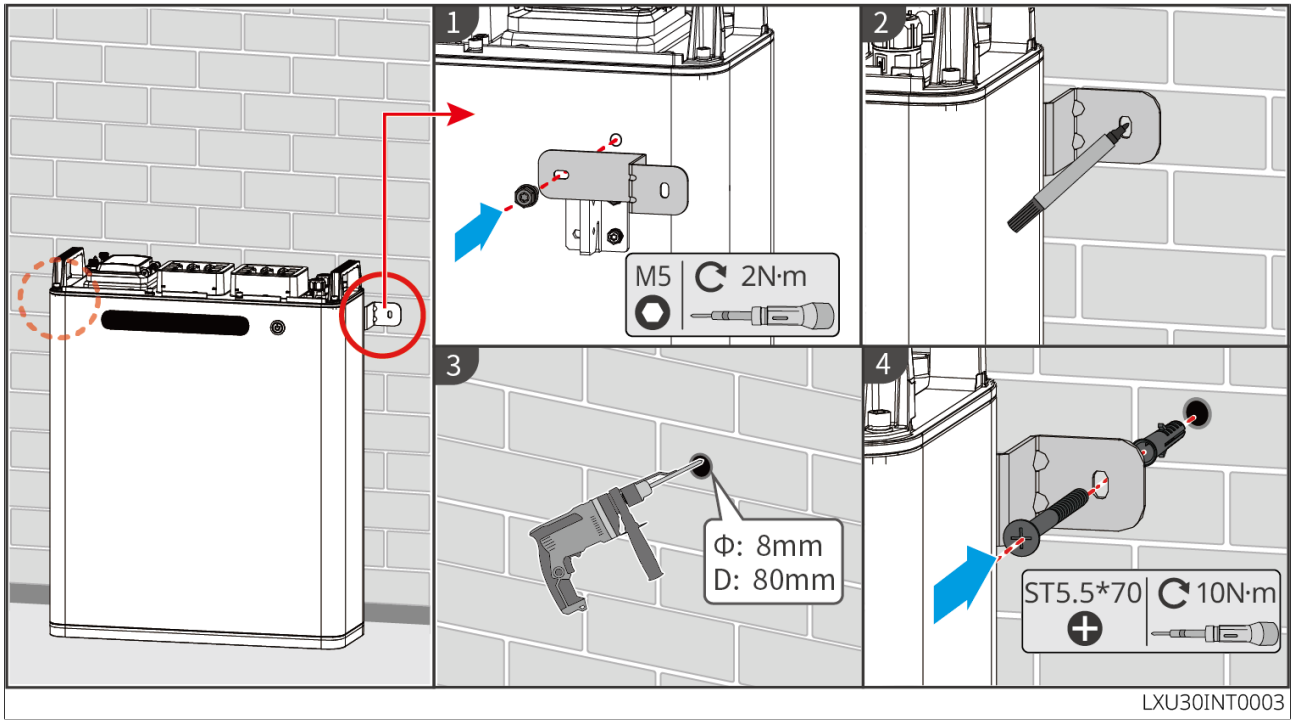
Step2: Use an impact drill to drill holes.

Step 3 Tighten the bracket.

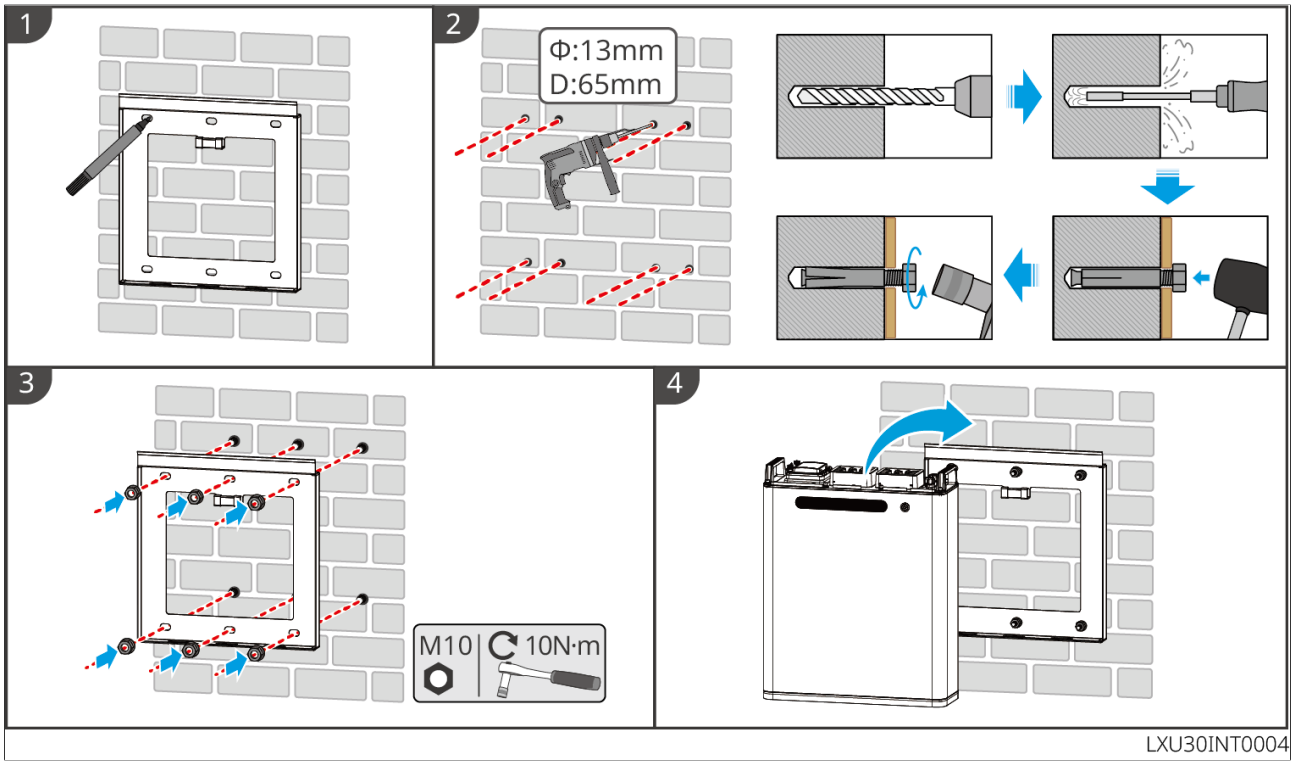
Step 4 Install the battery onto the back mounting plate.



LXU 5.0-30: Floor-mounted Installation



LXU 5.0-30: Wall-mounted Installation

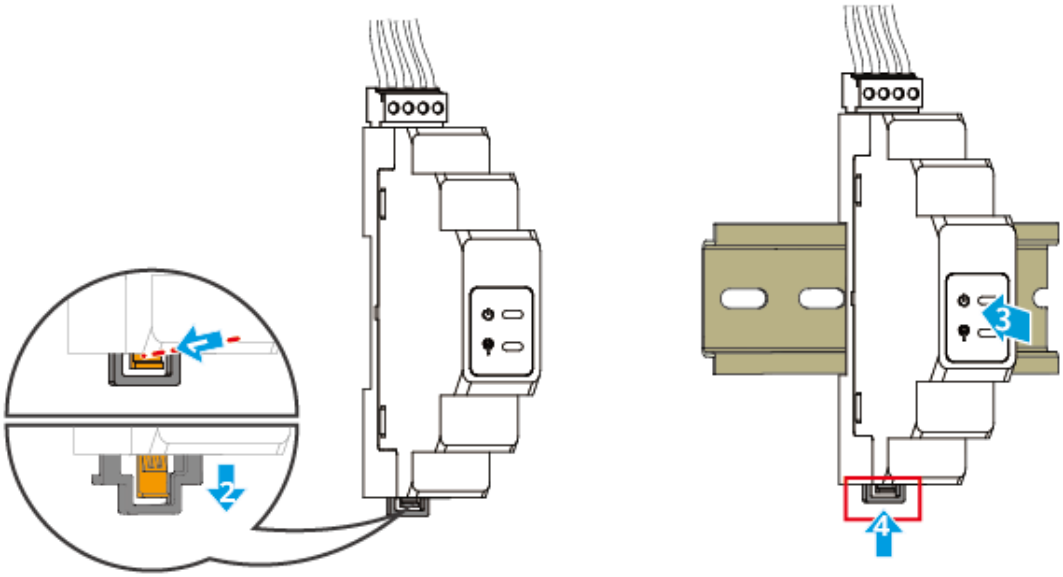


5.6 Installing the Smart Meter

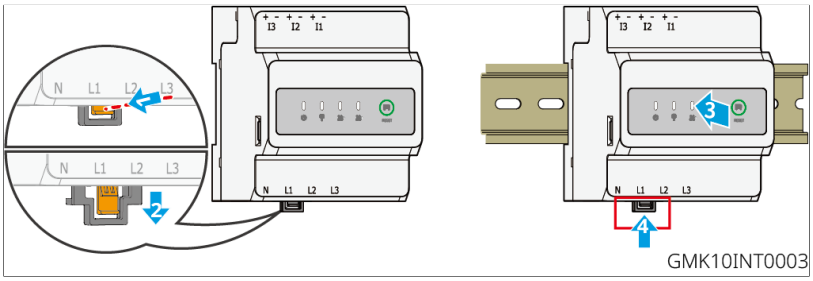
⚠WARNING

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

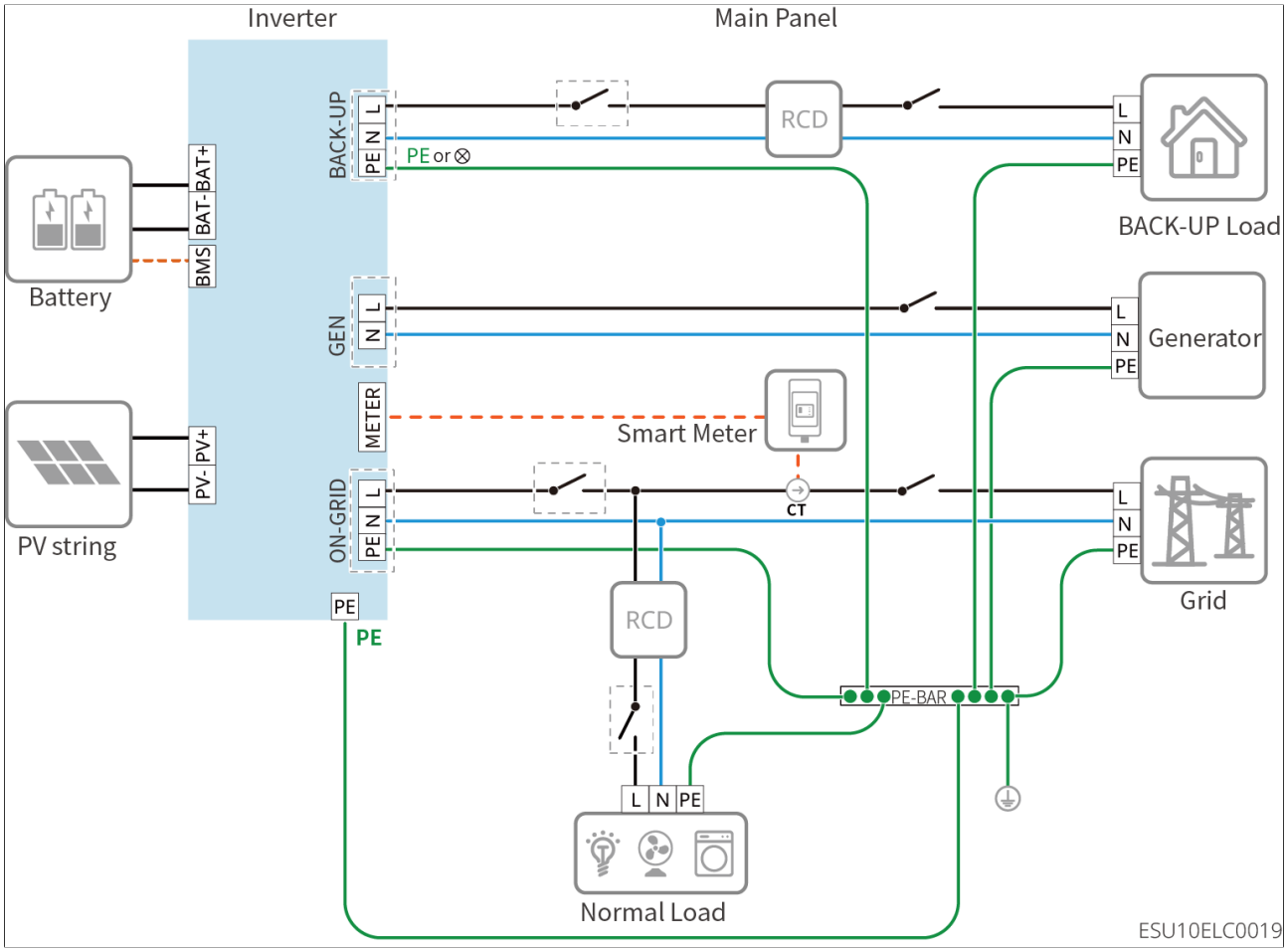
- N and PE wiring of ON-GRID and BACK-UP ports of the inverter are different according to the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- The inverter features built-in relays for the ON_GRID and BACK_UP AC ports. When the inverter is in off-grid 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

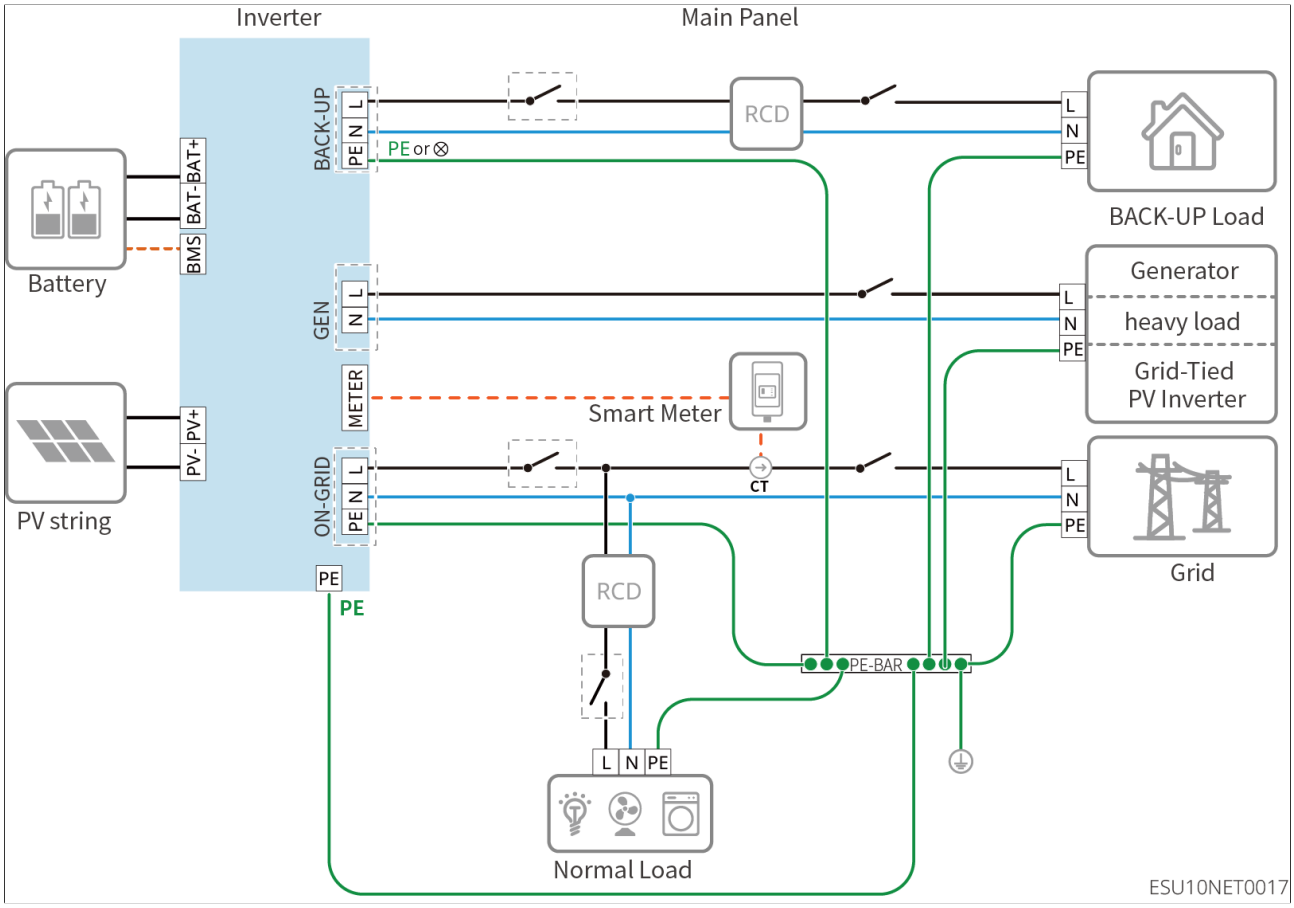
NOTICE

- 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



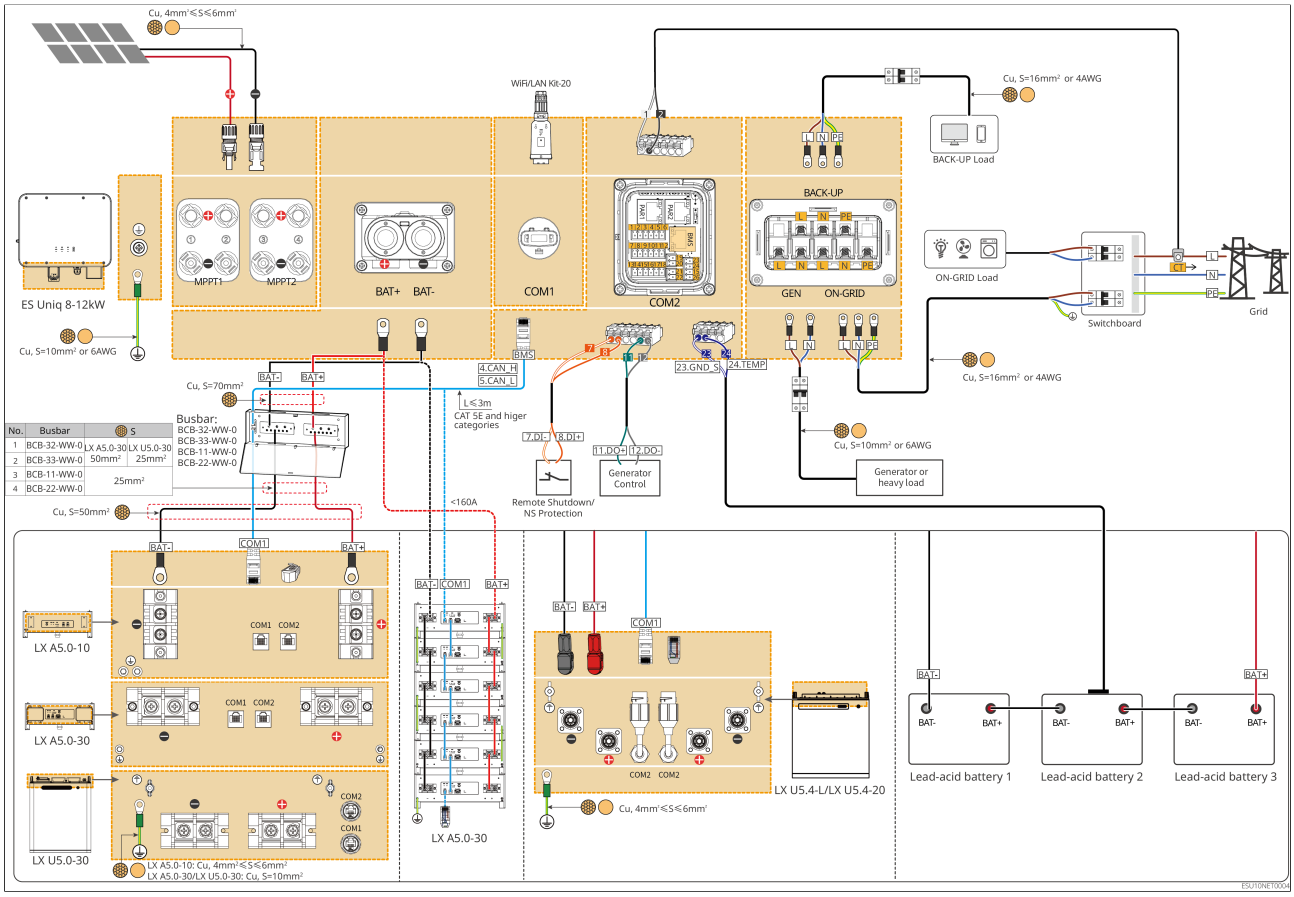
Microgrid Scenario



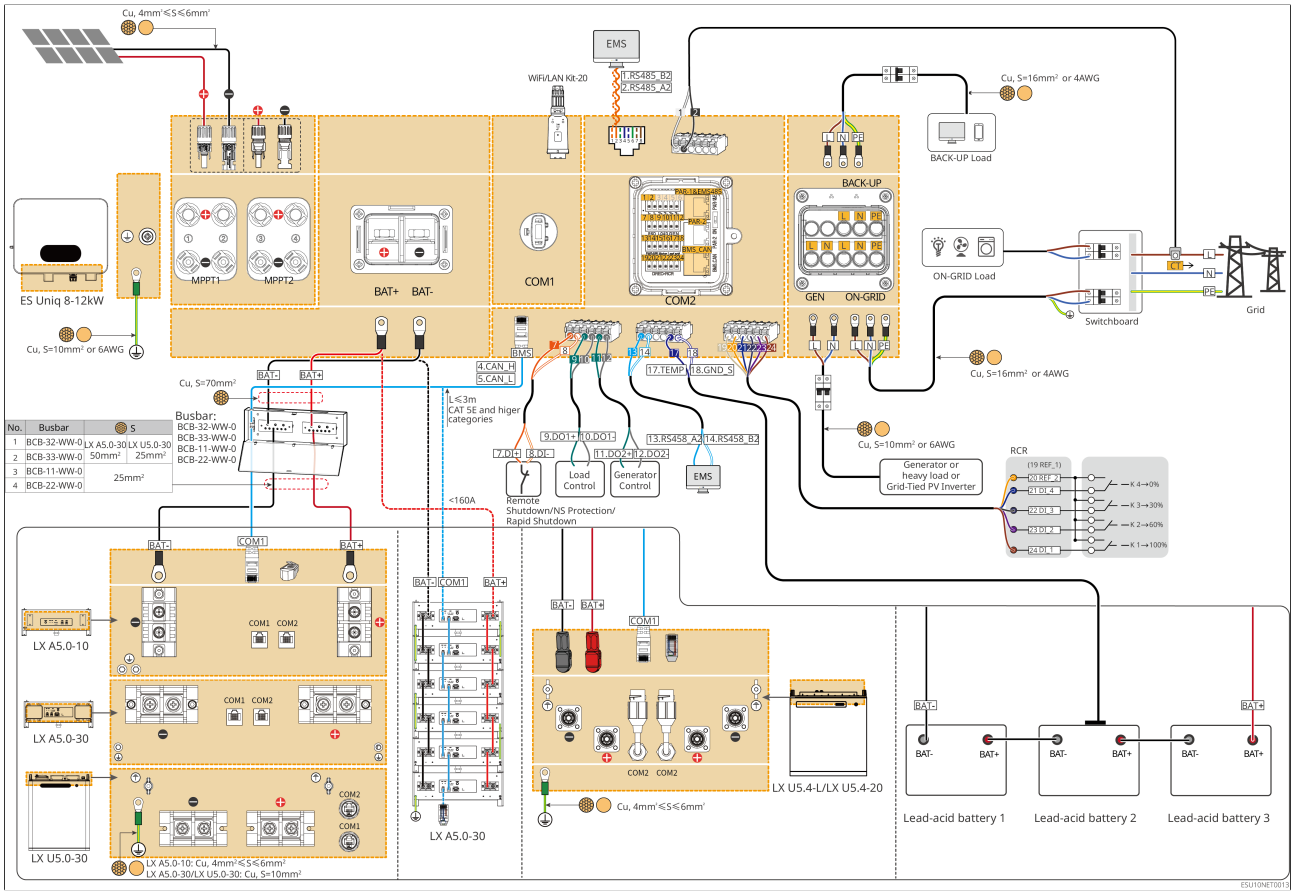
6.2 Detailed System Wiring Diagram

6.2.1 Detailed System Wiring Diagram for Single Inverter

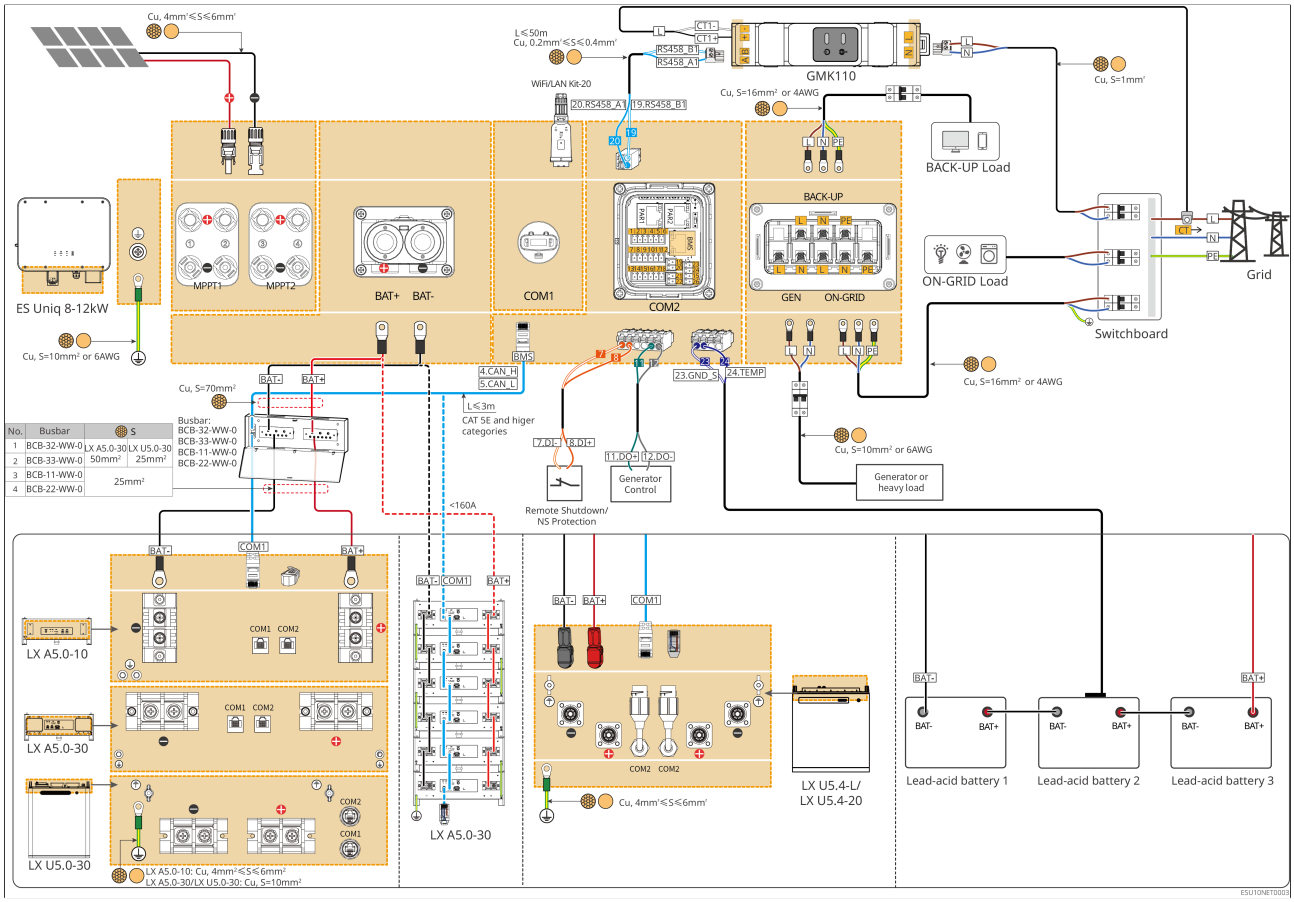
GM330 and other meters that meet the requirements can also be used in single inverter scenarios. Only the recommended types are shown here:
With built-in smart meter



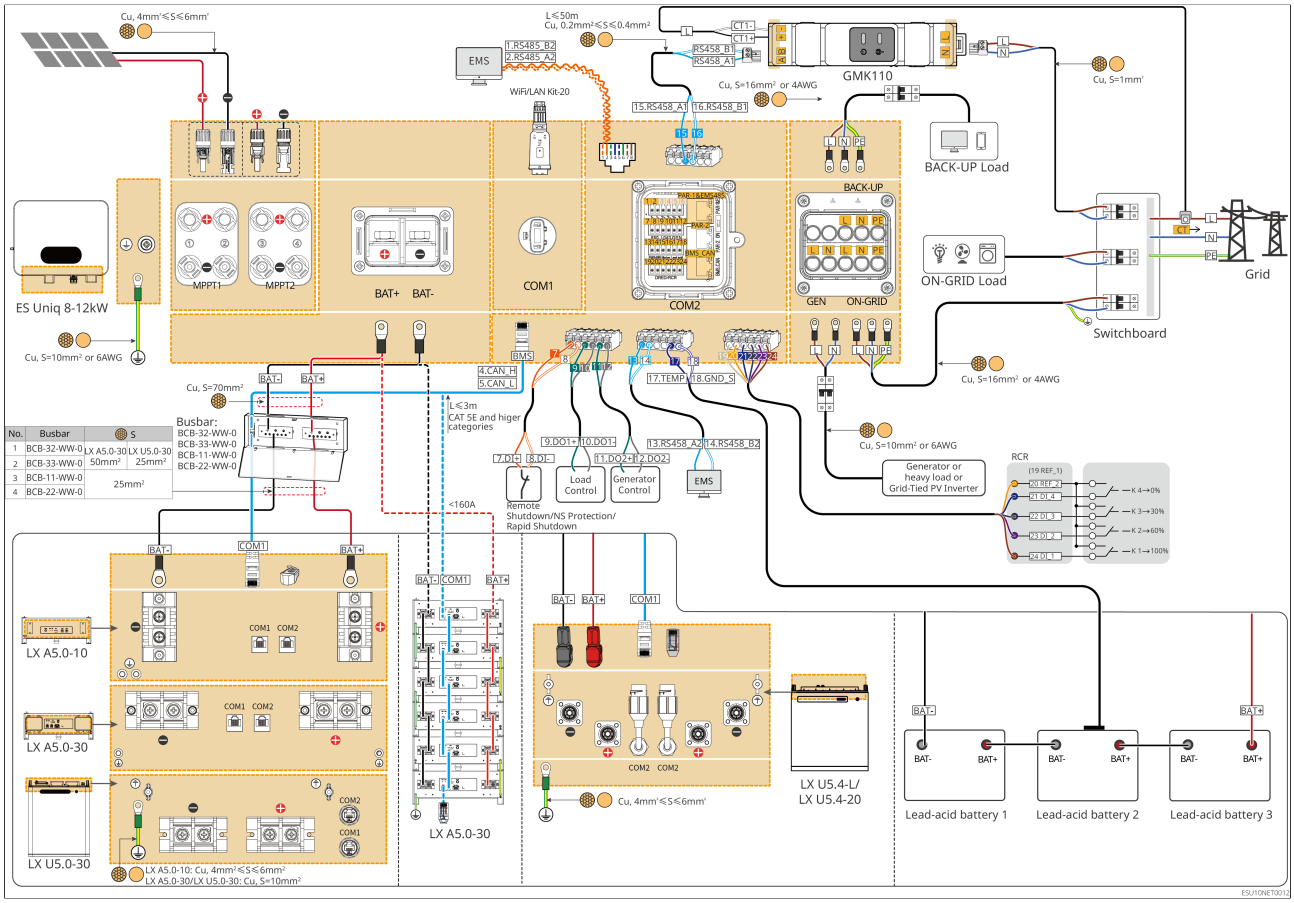
No.	Busbar	S	
1	BCB-32-WW-0	LX A5.0-30 50mm²	LX U5.0-30 25mm²
2	BCB-33-WW-0		
3	BCB-11-WW-0	25mm²	
4	BCB-22-WW-0		



Use GMK110 in the system



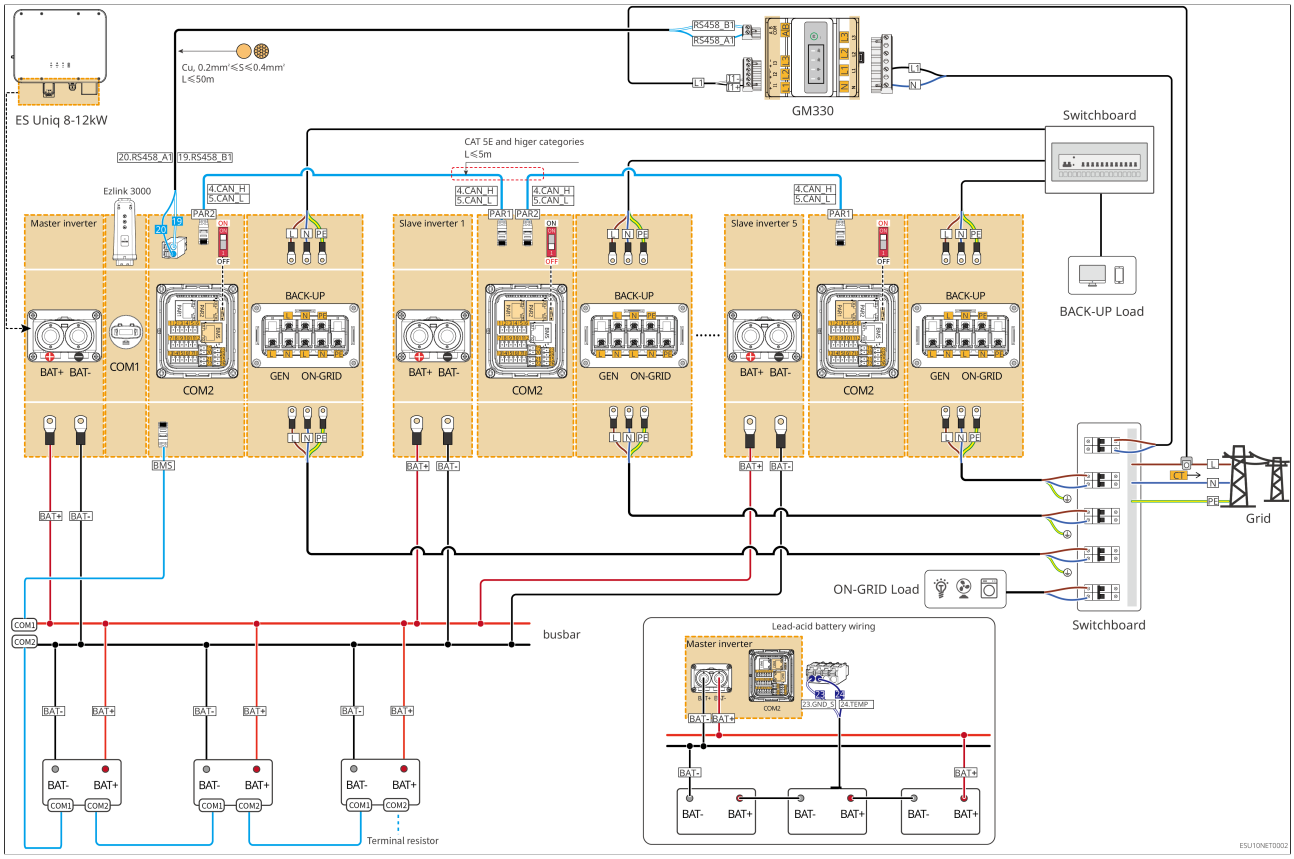
No.	Busbar	S	
1	BCB-32-WW-0	LX A5.0-30 50mm²	LX U5.0-30 25mm²
2	BCB-33-WW-0		
3	BCB-11-WW-0	25mm²	
4	BCB-22-WW-0		

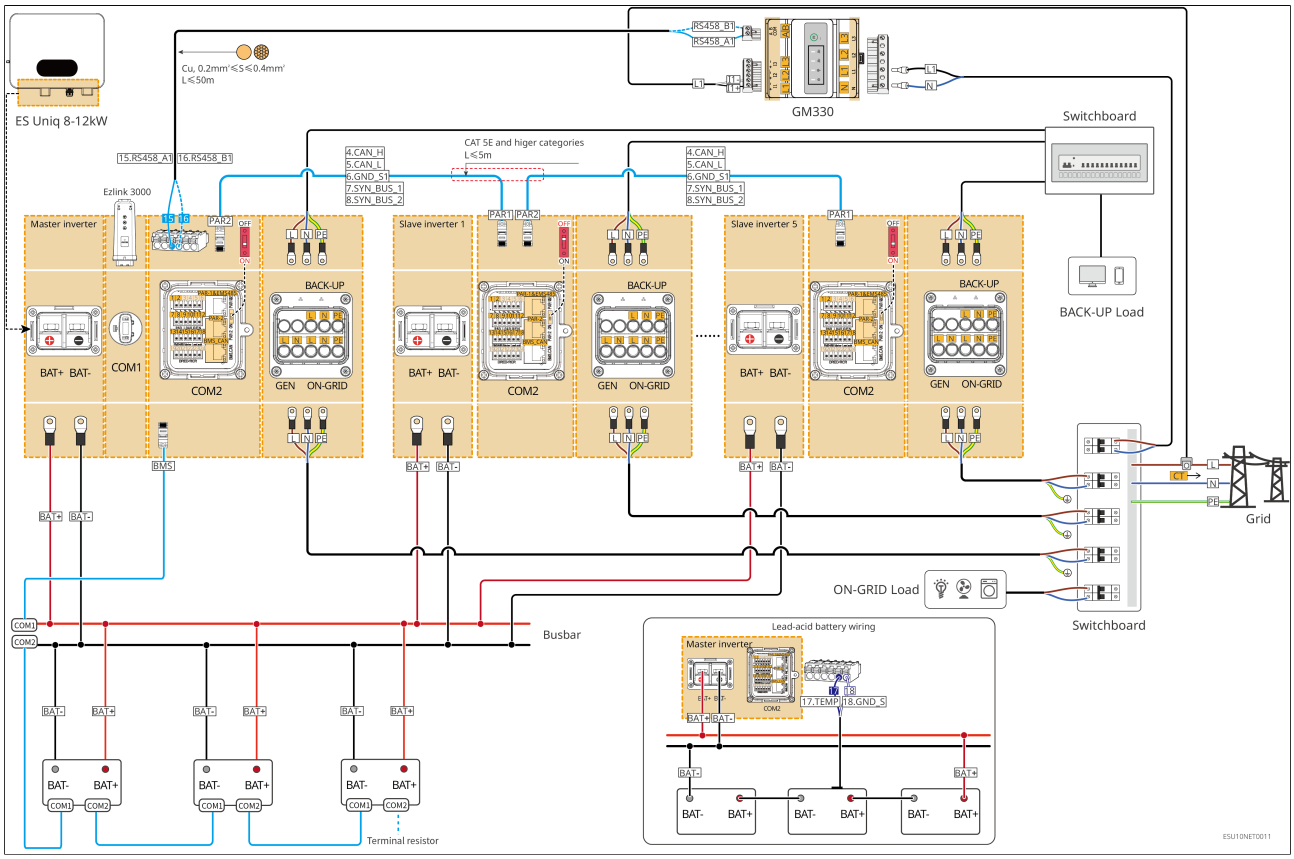


6.2.2 Detailed System Wiring Diagram for Parallel System

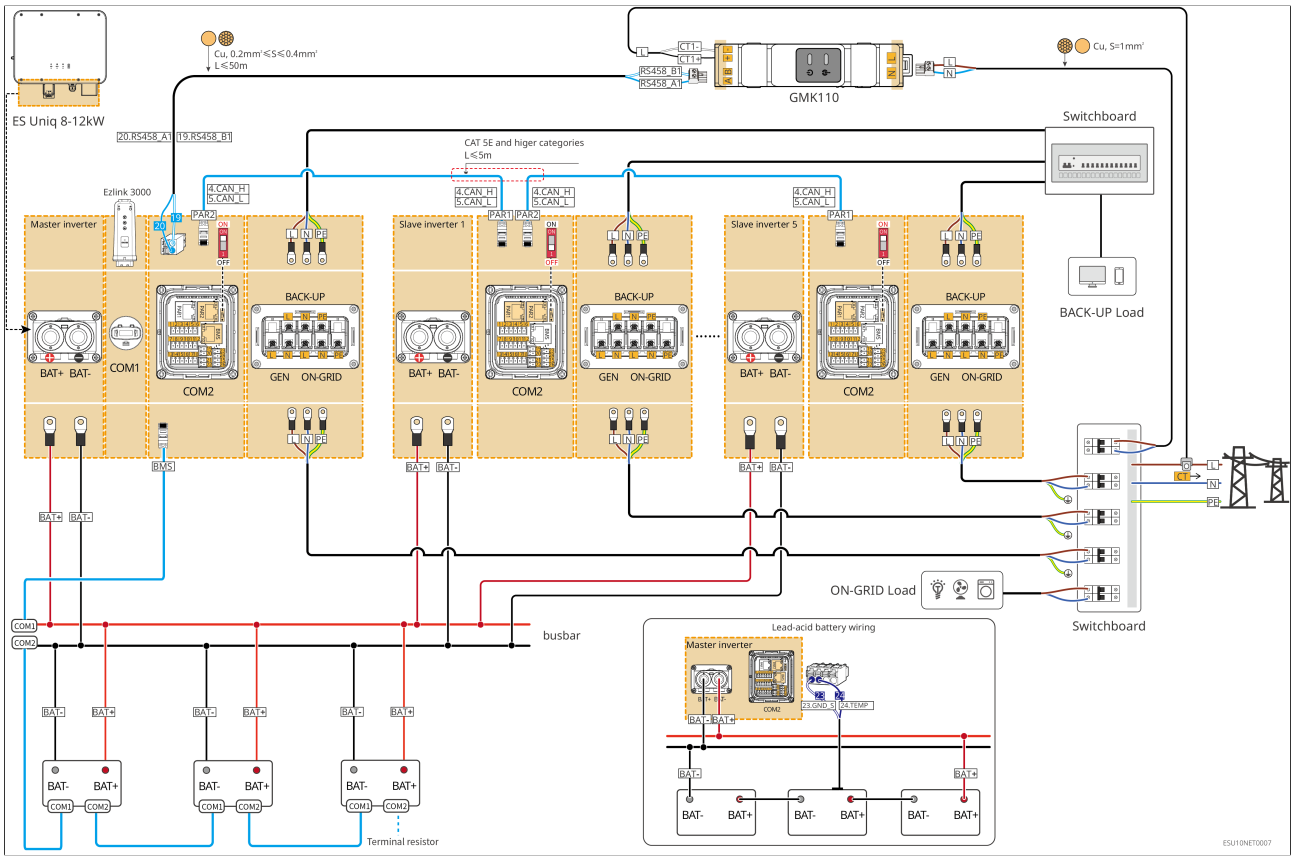
- In parallel scenarios, the inverter connected to the Ezlink and smart meter is considered as the master inverter, while all the others are slave inverters. Do not connect any smart dongle to the slave inverters.
- Generator, large loads and grid-tied PV inverter are not supported in parallel system.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

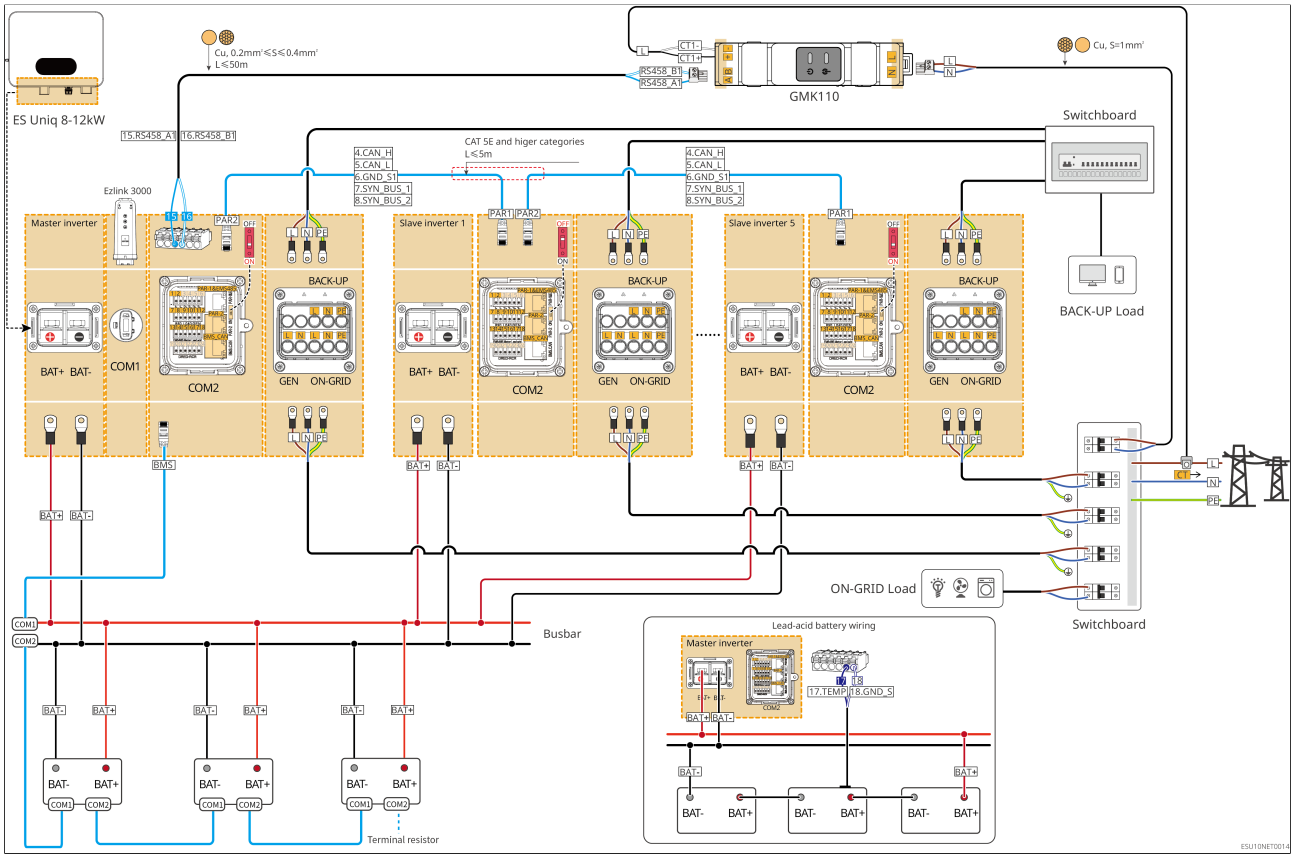
Use GM330 in the system


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
Ezlink 3000
4.CAN_H
5.CAN_L
Master inverter
Slave inverter 1
Slave inverter 5
PAR1
PAR2
BACK-UP
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
BACK-UP Load
Grid
ON-GRID Load
Switchboard
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
Ezlink 3000
4.CAN_H
5.CAN_L
6.GND_S1
7.SYN_BUS_1
8.SYN_BUS_2
Master inverter
Slave inverter 1
Slave inverter 5
PAR1
PAR2
BACK-UP
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
BACK-UP Load
Grid
ON-GRID Load
Switchboard
Busbar
Lead-acid battery wiring
17.TEMP
18.GND_S
Terminal resistor
ESU10NET0011

Use GMK110 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	Obtain method
1	Inverter PE cable	• Single-core outdoor copper cable • Conductor cross-sectional area: 10mm^2	Prepared by customers.

No.	Cable	Recommended specifications	Obtain 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	Prepared by customers. LX U5.0-30: Supports purchase from GoodWe
3	PV DC cable	• Commonly used outdoor photovoltaic cable • Conductor cross-sectional area: 4mm²-6mm² • Outer diameter: 5.9mm-8.8mm	Prepared by customers.
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 • 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, cross sectional area of conductor: 25mm²	Prepared by customers. LX A5.0-30, LX U5.0-30: Supports purchase from GoodWe

No.	Cable	Recommended specifications	Obtain method
5	AC cable	• AC input and output cables of inverter (BACKUP/GRID): ◦ Conductor cross-sectional area: 16mm² or 4AWG ◦ 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: 10mm² or 6AWG ◦ 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: 1mm²	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 U5.0-30: Supports purchase from GoodWe
8	Smart meter RS485 communication cable	• Shielded twisted pair cable • Conductor cross-sectional area: 0.2mm²-0.4mm²	Prepared by customers.

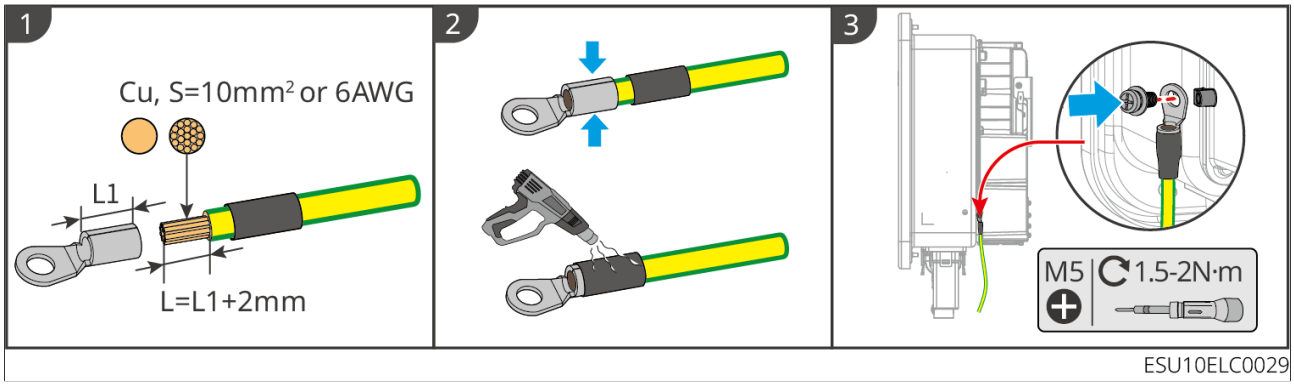
No.	Cable	Recommended specifications	Obtain method
9	Communication cable for parallel connected inverters	CAT 5E and above standard shielded network cable and RJ45 shielded connector	Prepared by customers.
10	Remote shutdown communication line and NS Protection communication line	• Copper core twisted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

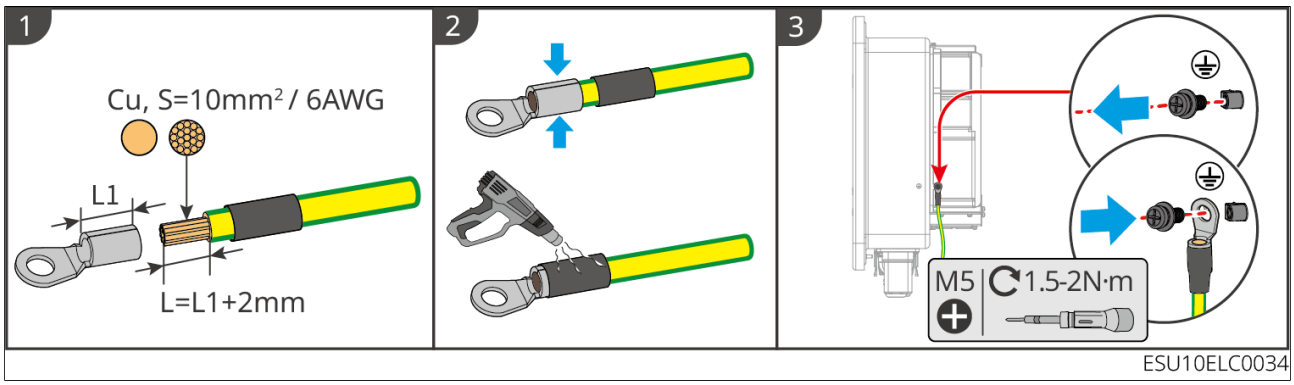
6.4 Connecting the PE cable

⚠WARNING

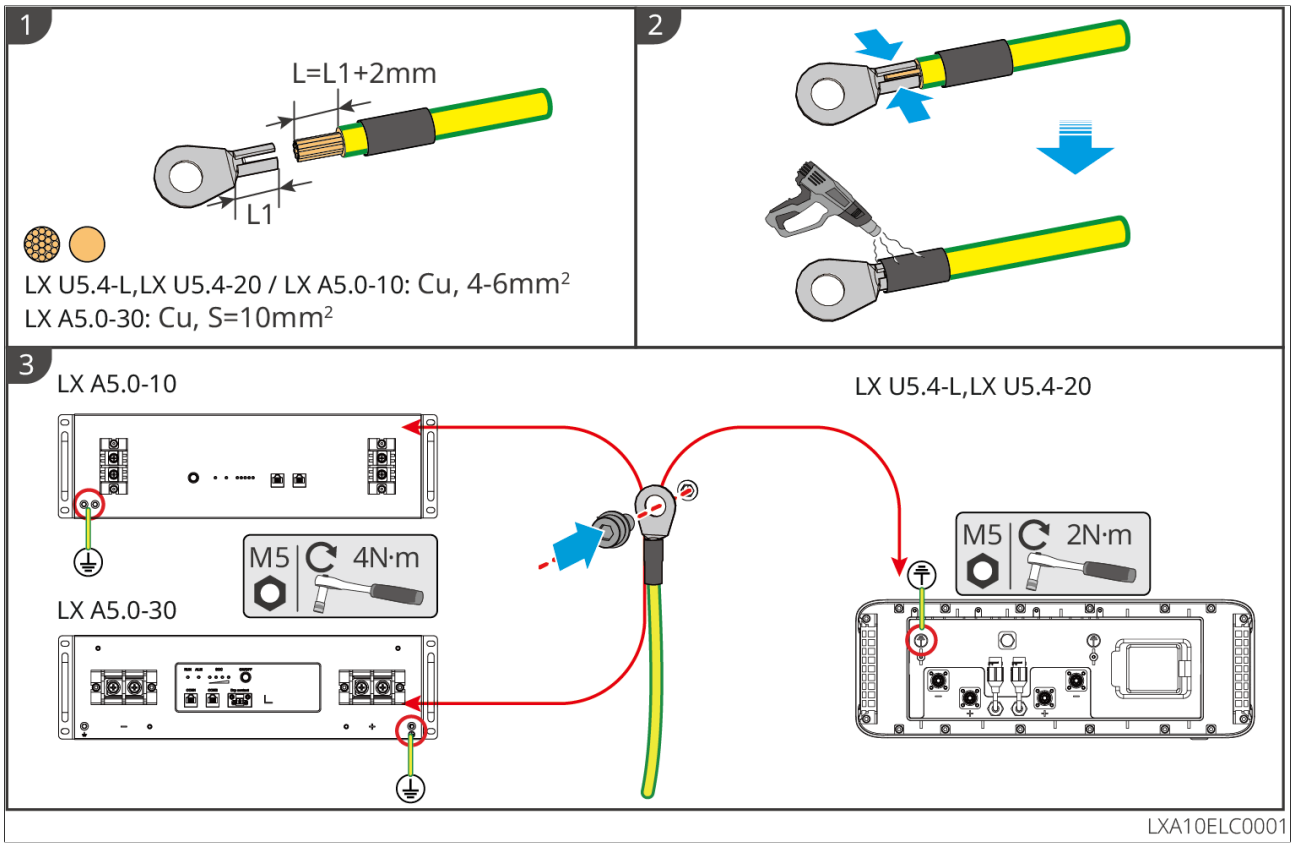
- The PE cable connected to the enclosure of the inverter cannot replace the PE cable connected to the AC output port. Make sure that both of the two PE cables are securely connected.
- Make sure that all the grounding points on the enclosures are equipotentially connected when there are multiple inverters.
- 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


1
Cu, S=10mm² or 6AWG
L1
L=L1+2mm
2
3
M5
1.5-2N·m
ESU10ELC0029


1
Cu, S=10mm² / 6AWG
L1
L=L1+2mm
2
3
M5
1.5-2N·m
ESU10ELC0034

Battery


1
L=L1+2mm
L1
LX U5.4-L,LX U5.4-20 / LX A5.0-10: Cu, 4-6mm²
LX A5.0-30: Cu, S=10mm²
2
3
LX A5.0-10
LX U5.4-L,LX U5.4-20
M5
4N·m
LX A5.0-30
M5
2N·m
LXA10ELC0001

6.5 Connecting the PV Cable

DANGER

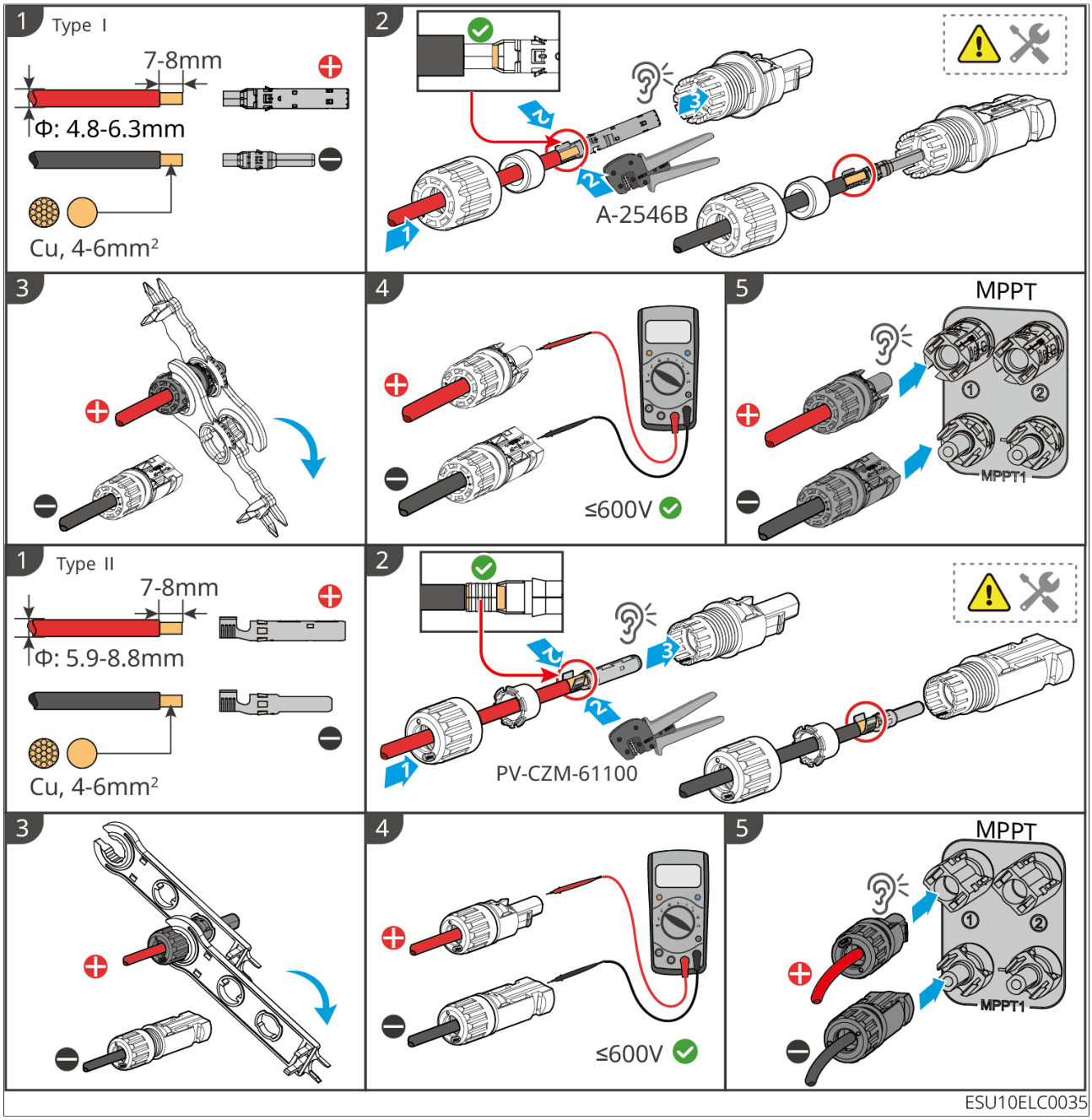
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- Confirm the following information before connecting the PV string to the inverter. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property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

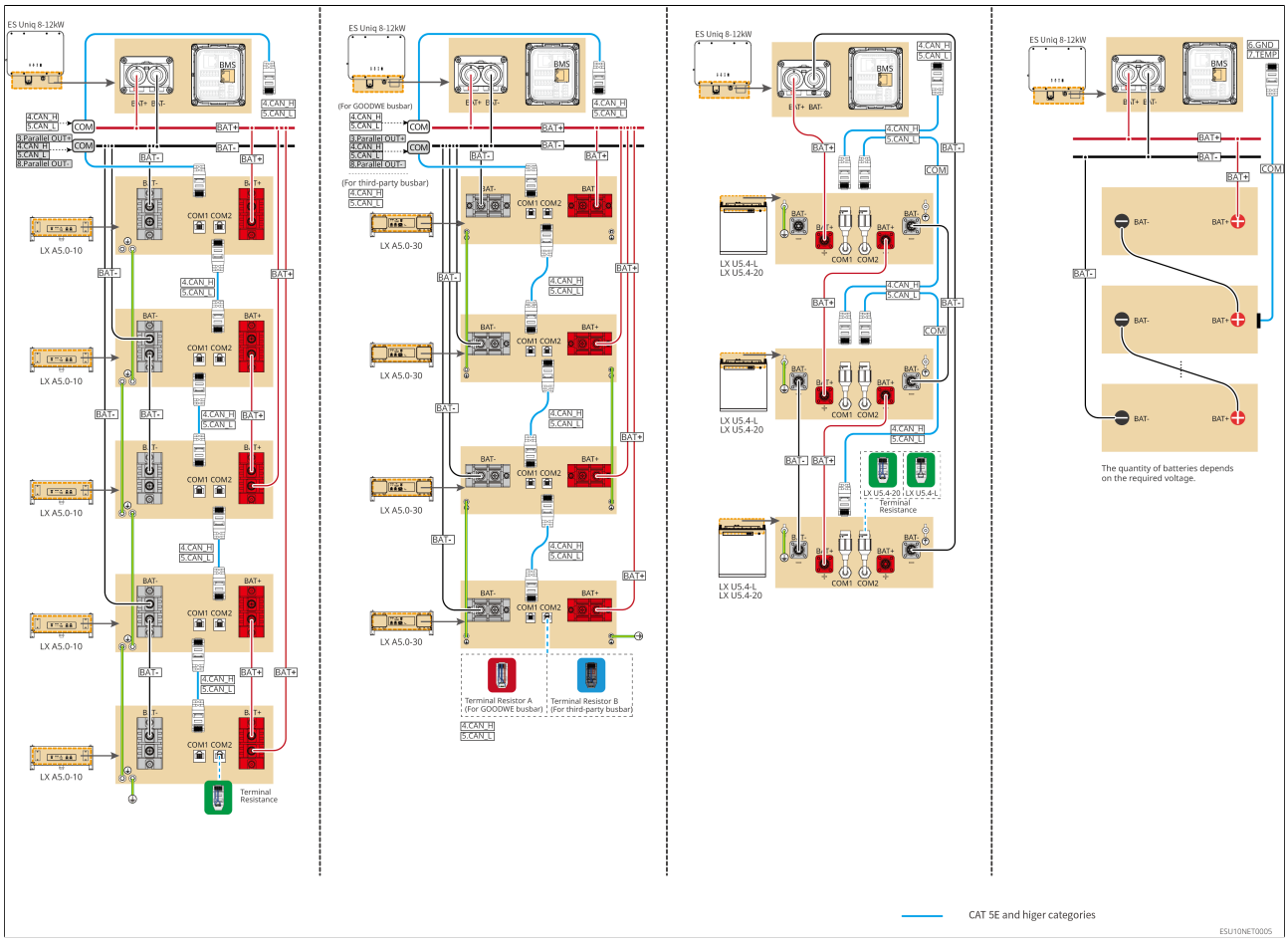


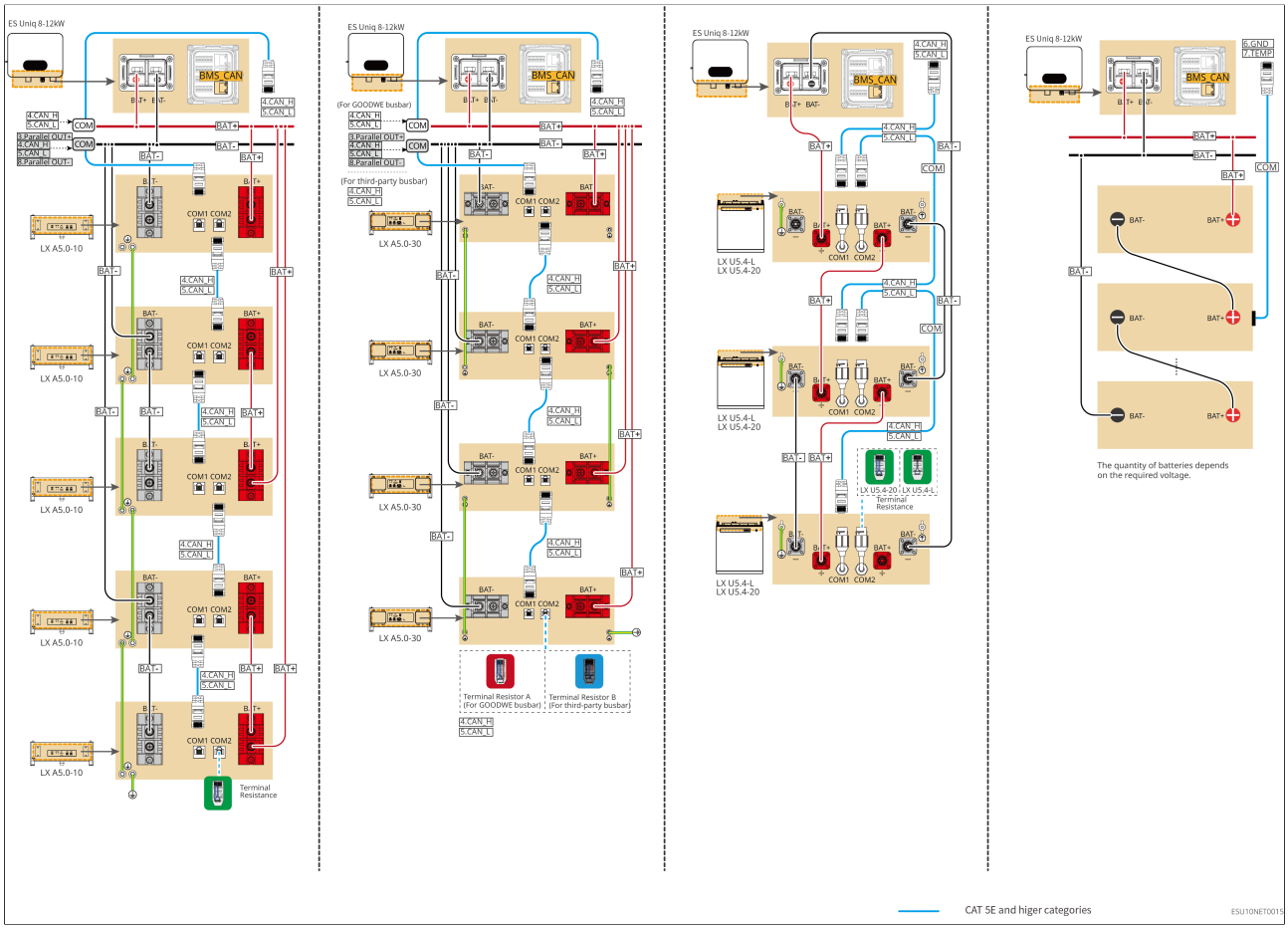
6.6 Connecting the Battery Cable

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.

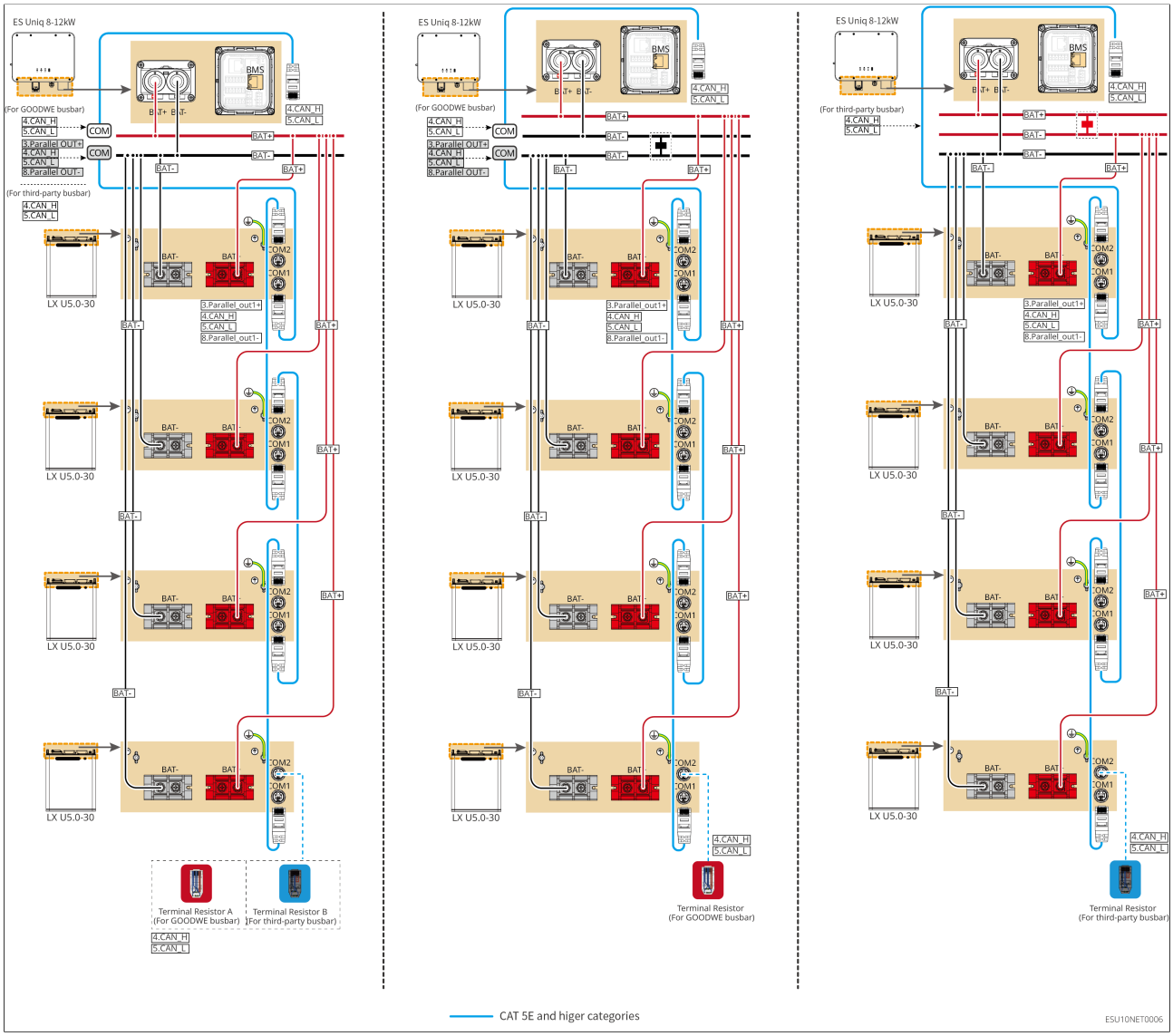
Battery system wiring diagram

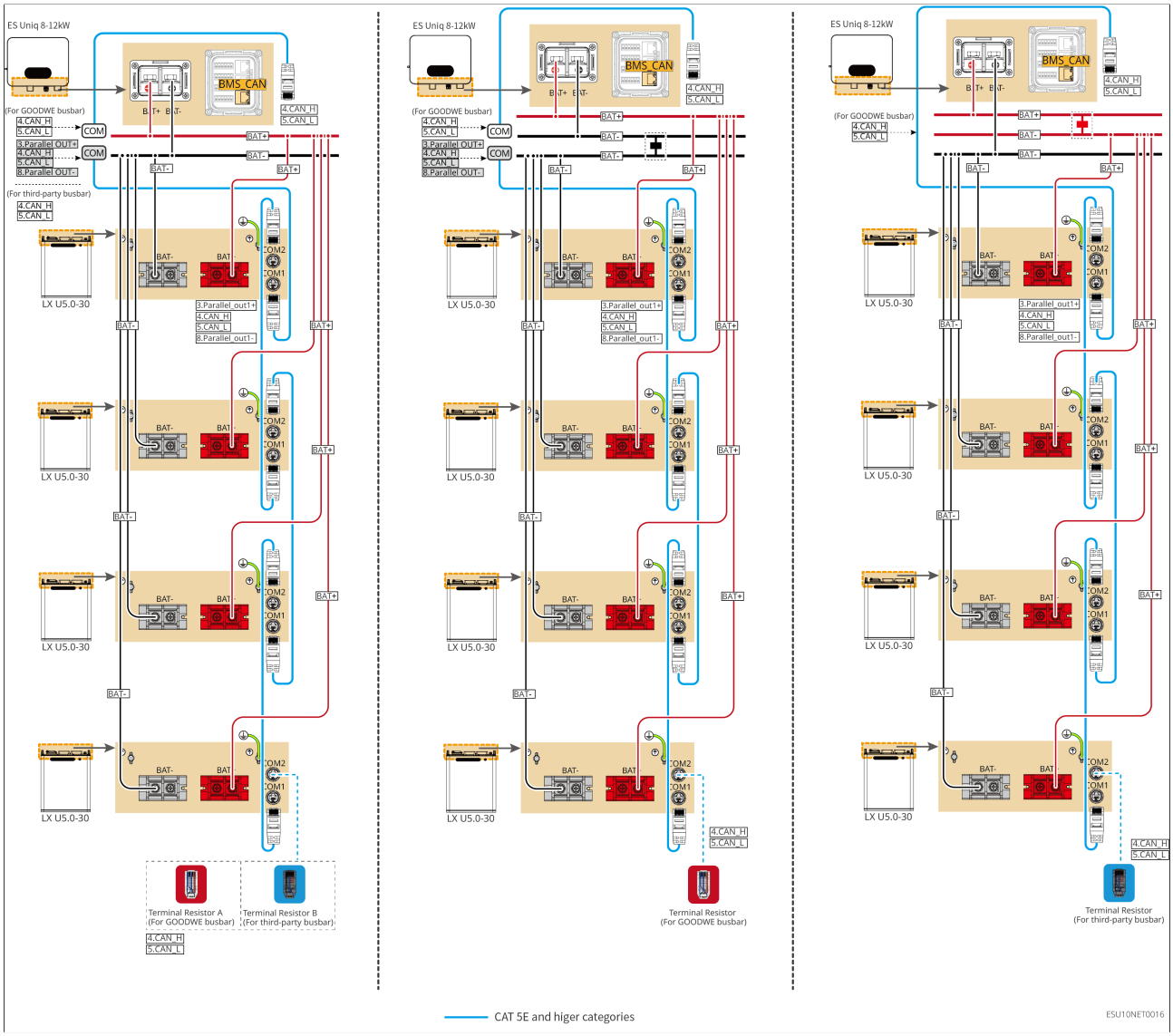




LXA5.0-30: Hand-to-hand connection

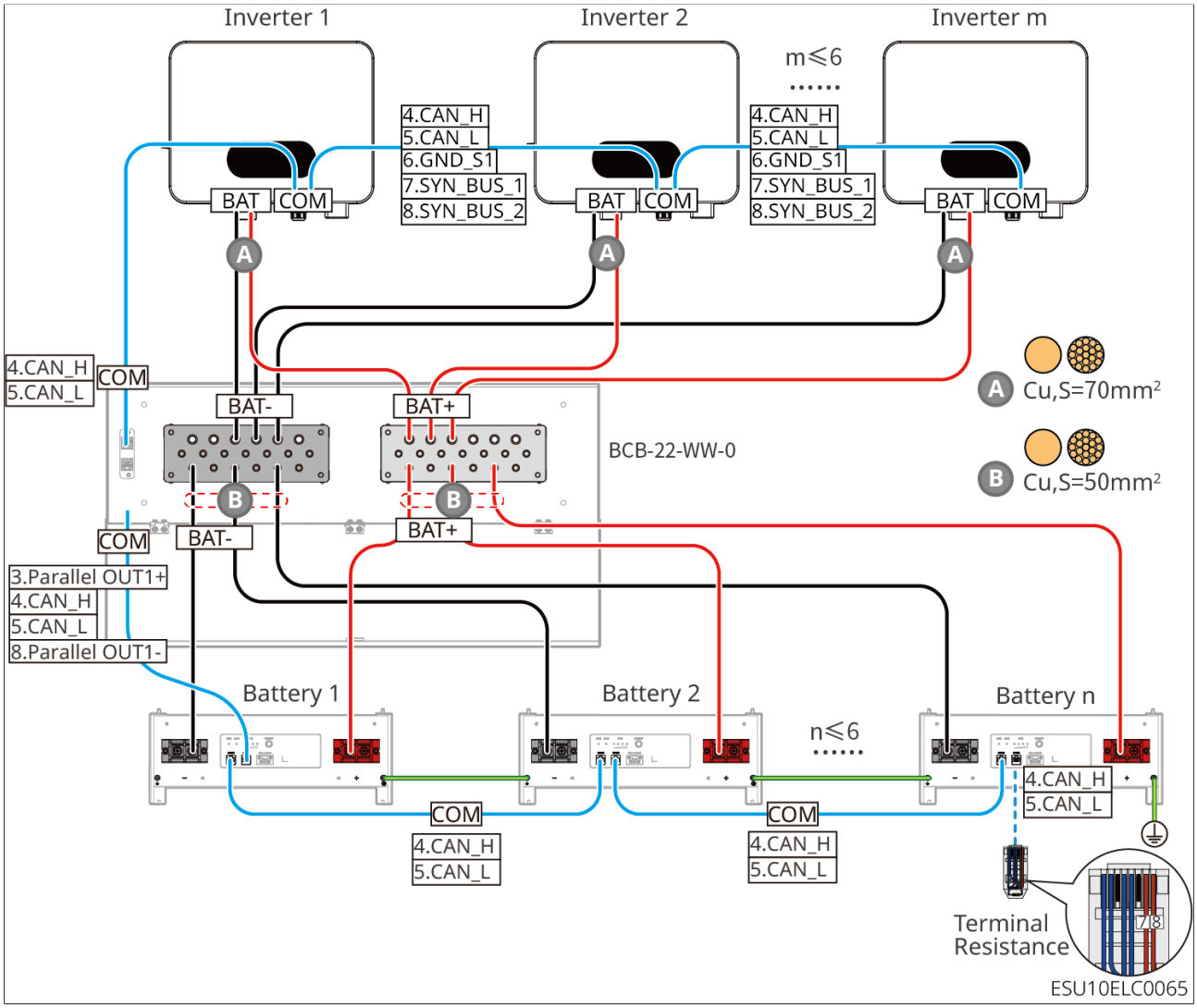
- The battery system supports a maximum working current of 160A, working power of 8kW, and it consists of a maximum of 1 inverter, and 30 batteries.


ES Uniq 8-12kW
(For GOODWE busbar)
4.CAN_H
5.CAN_L
COM
3.Parallel_OUT+
4.CAN_H
5.CAN_L
8.Parallel_OUT-
(For third-party busbar)
4.CAN_H
5.CAN_L
BMS
B+ B-
BAT+
BAT-
LX U5.0-30
3.Parallel_out1+
4.CAN_H
5.CAN_L
8.Parallel_out1-
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



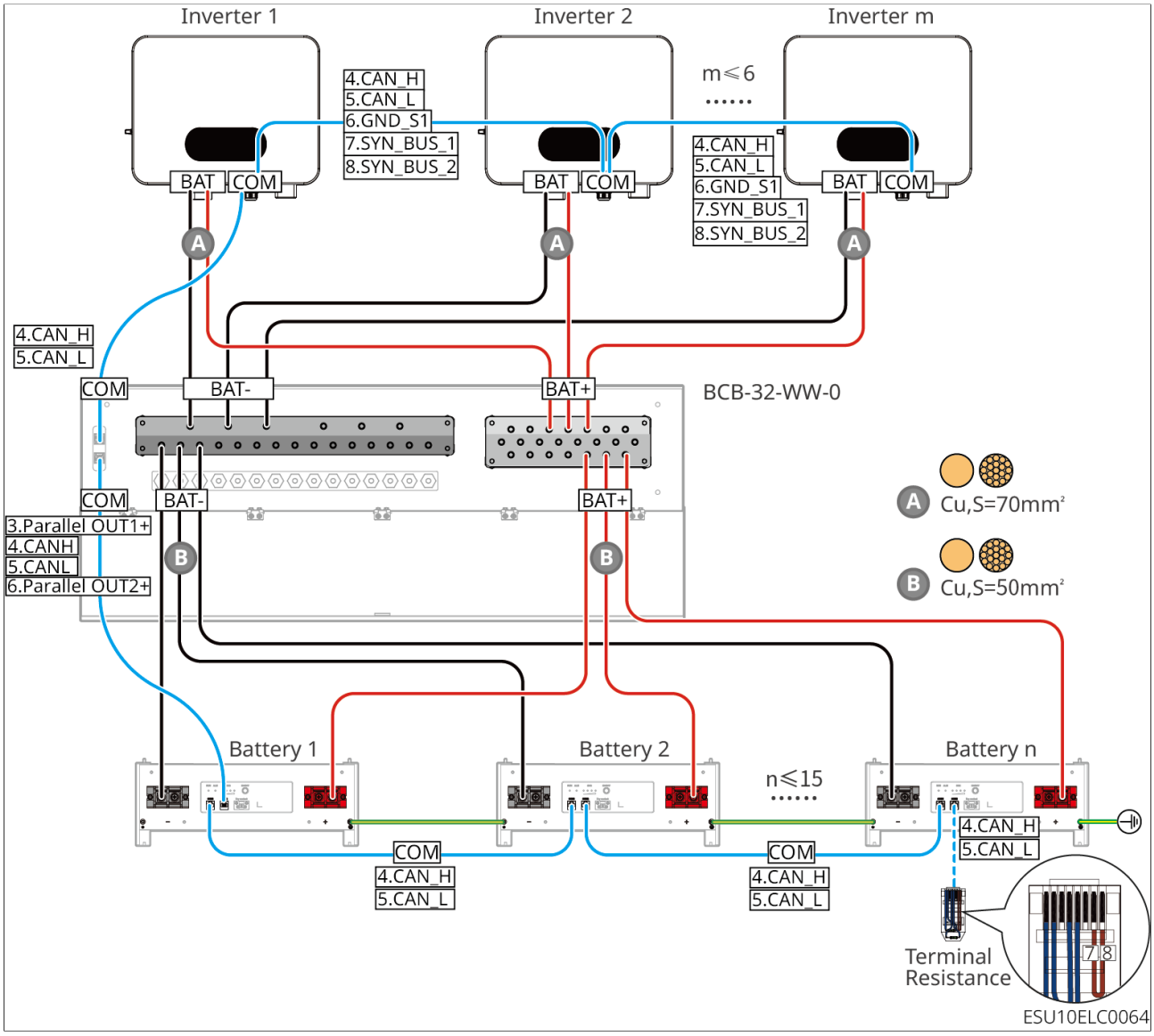
LXA5.0-30: Using with busbar BCB-22-WW-0

- 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.



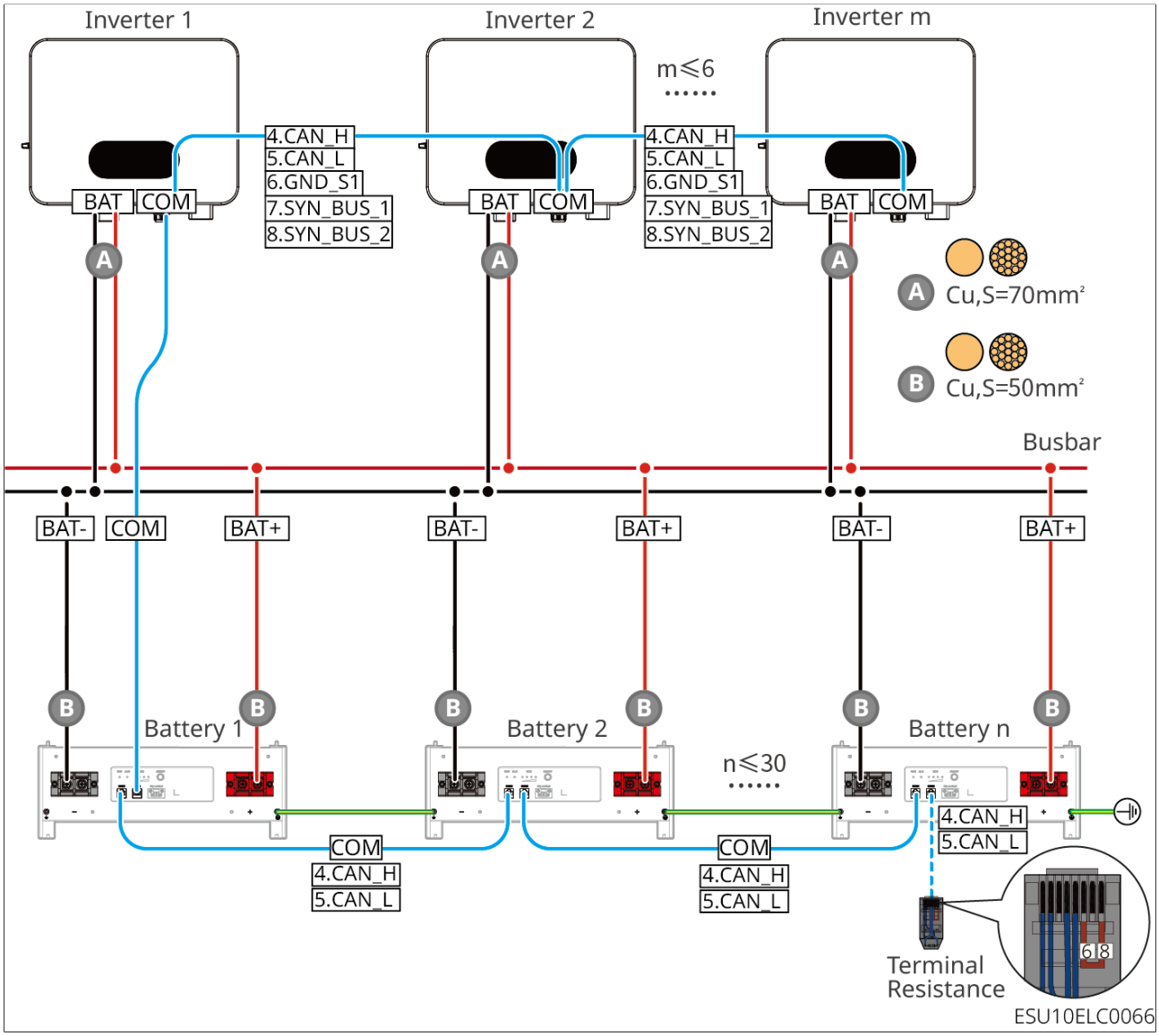
LXA5.0-30: Using with busbar BCB-32-WW-0

- 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.



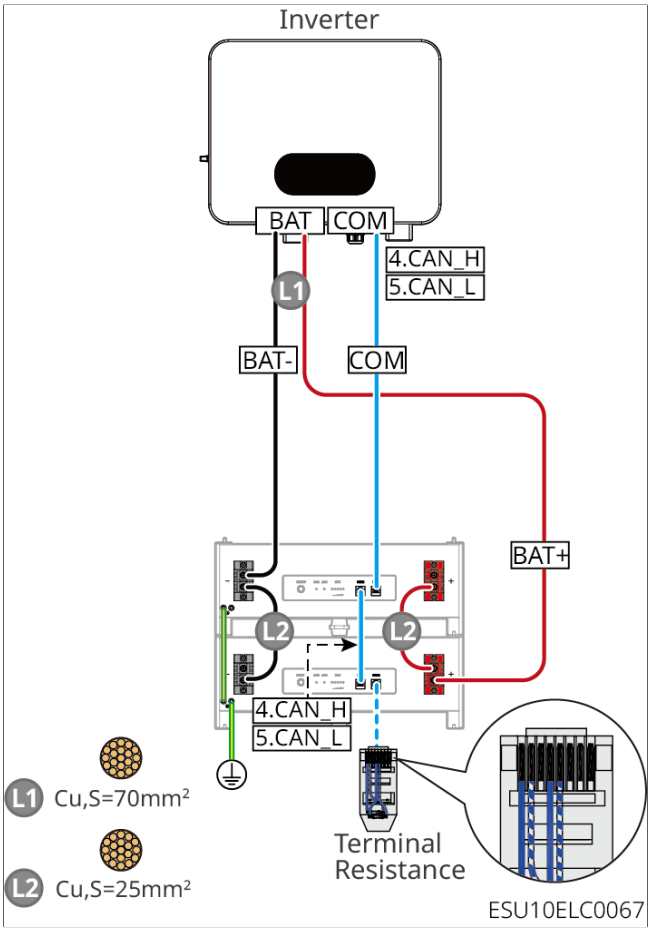
LXA5.0-30: Using with third-party busbar

- 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.



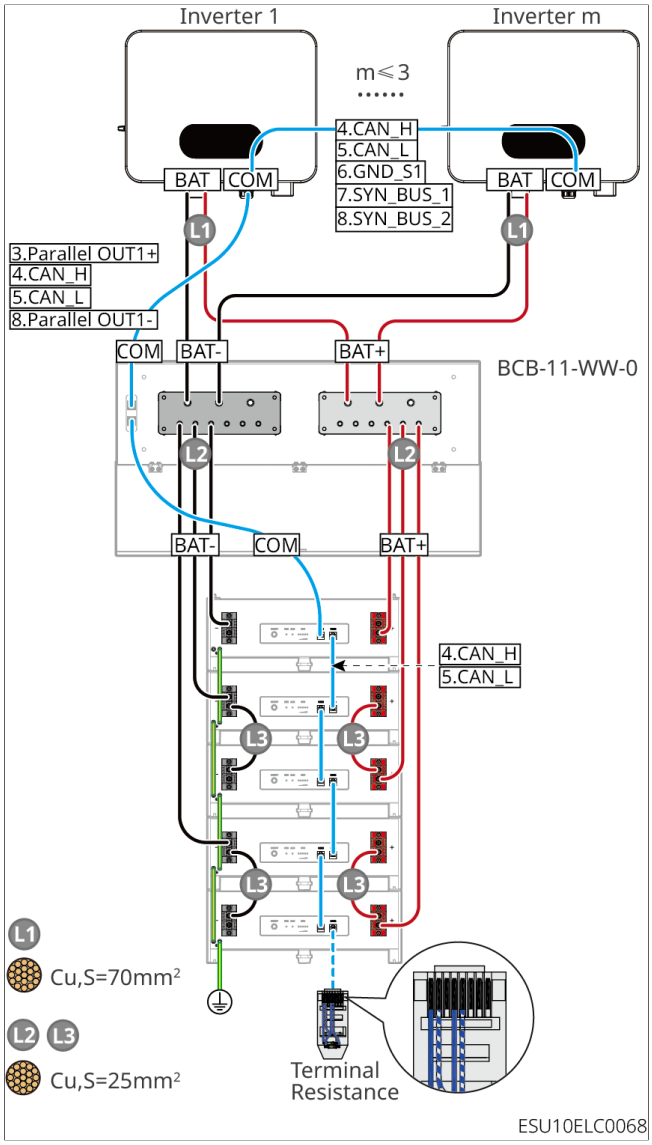
LX A5.0-10: Hand-to-Hand Connection

- 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.



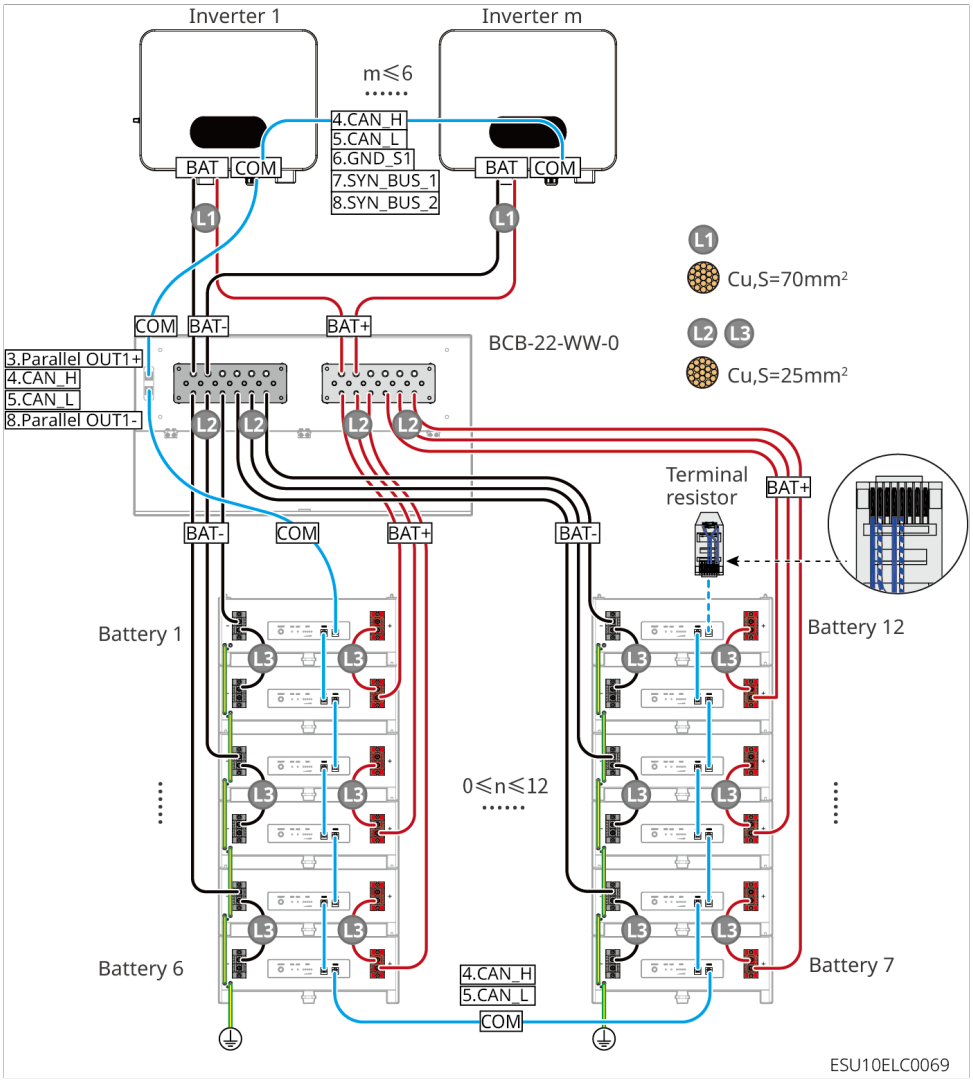
LX A5.0-10: Using with busbar BCB-11-WW-0

- 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.



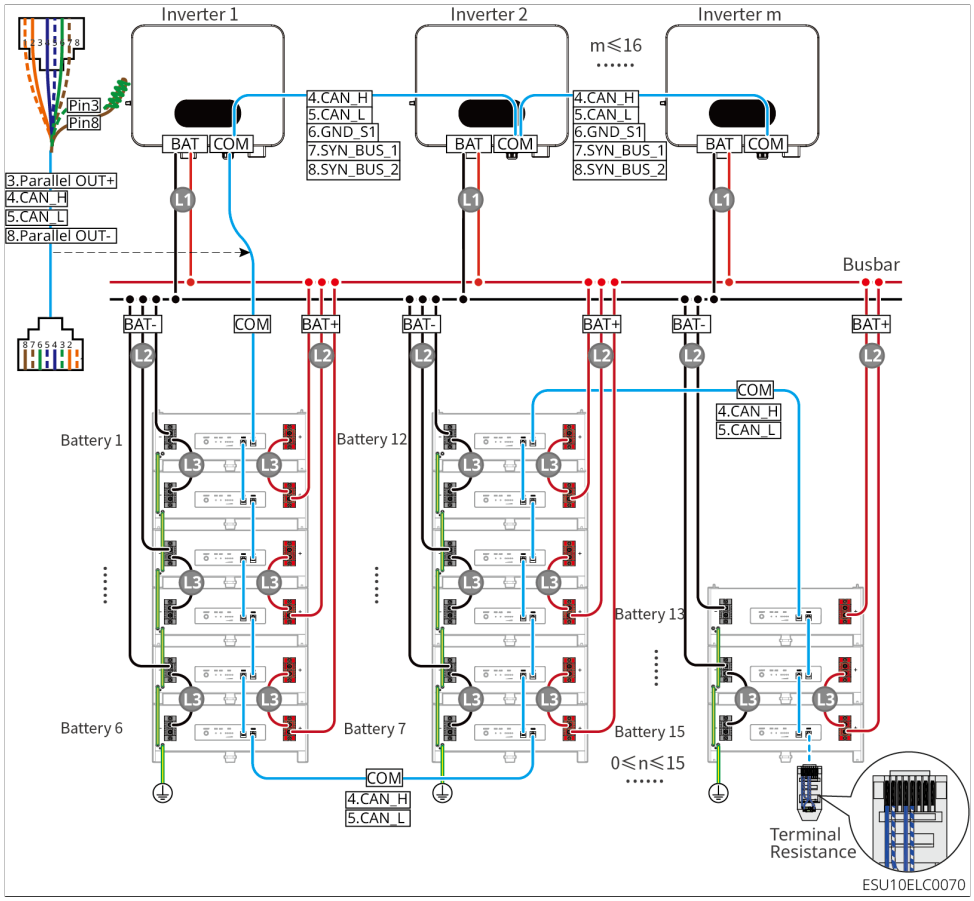
LX A5.0-10: Using with busbar BCB-22-WW-0

- 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.

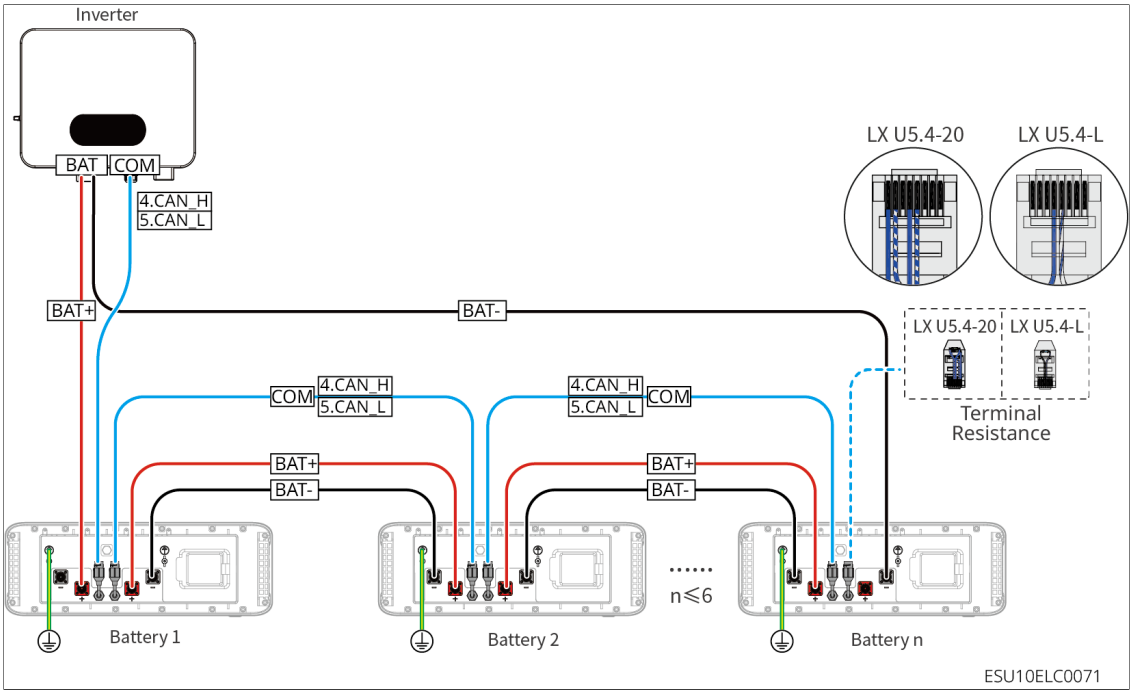


LX A5.0-10: Using with third-party busbar

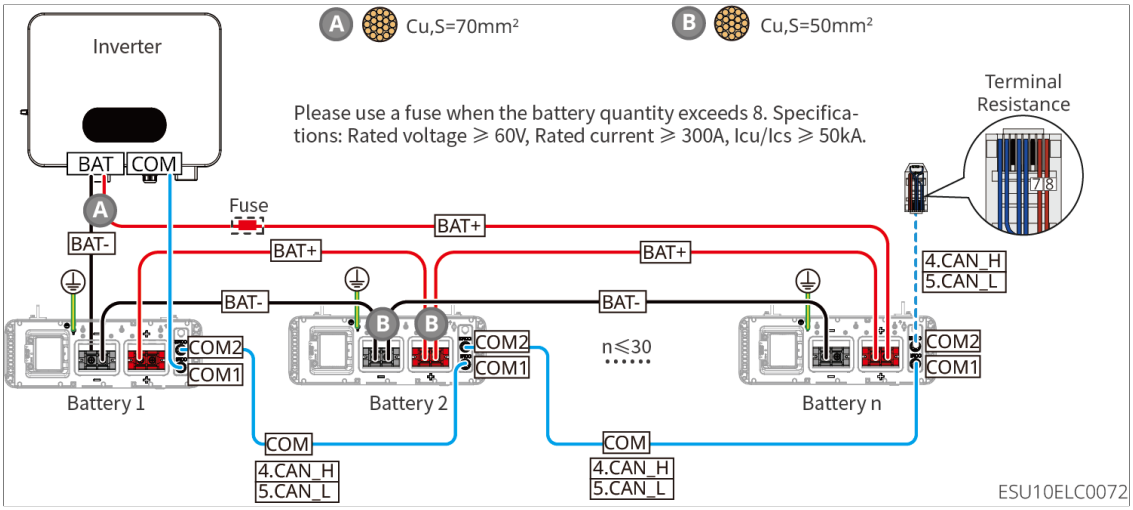
- The nominal charging and discharging current of a single battery is 60A.
- The complexity of the parallel system increases with the number of inverters connected in parallel. When the number of inverters in the system is ≥6, please contact the after-sales service center to confirm the installation 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.



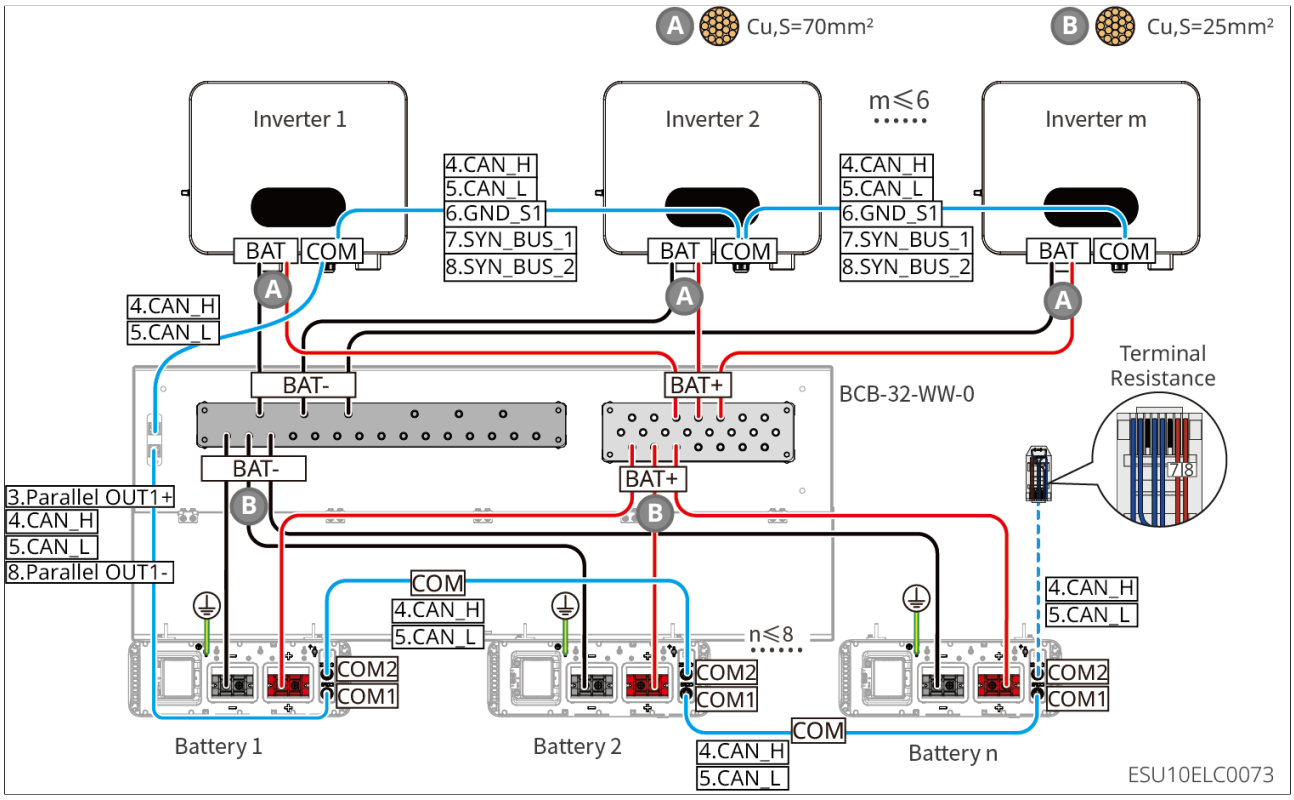
LX U5.4-20: Hand-to-Hand Connection



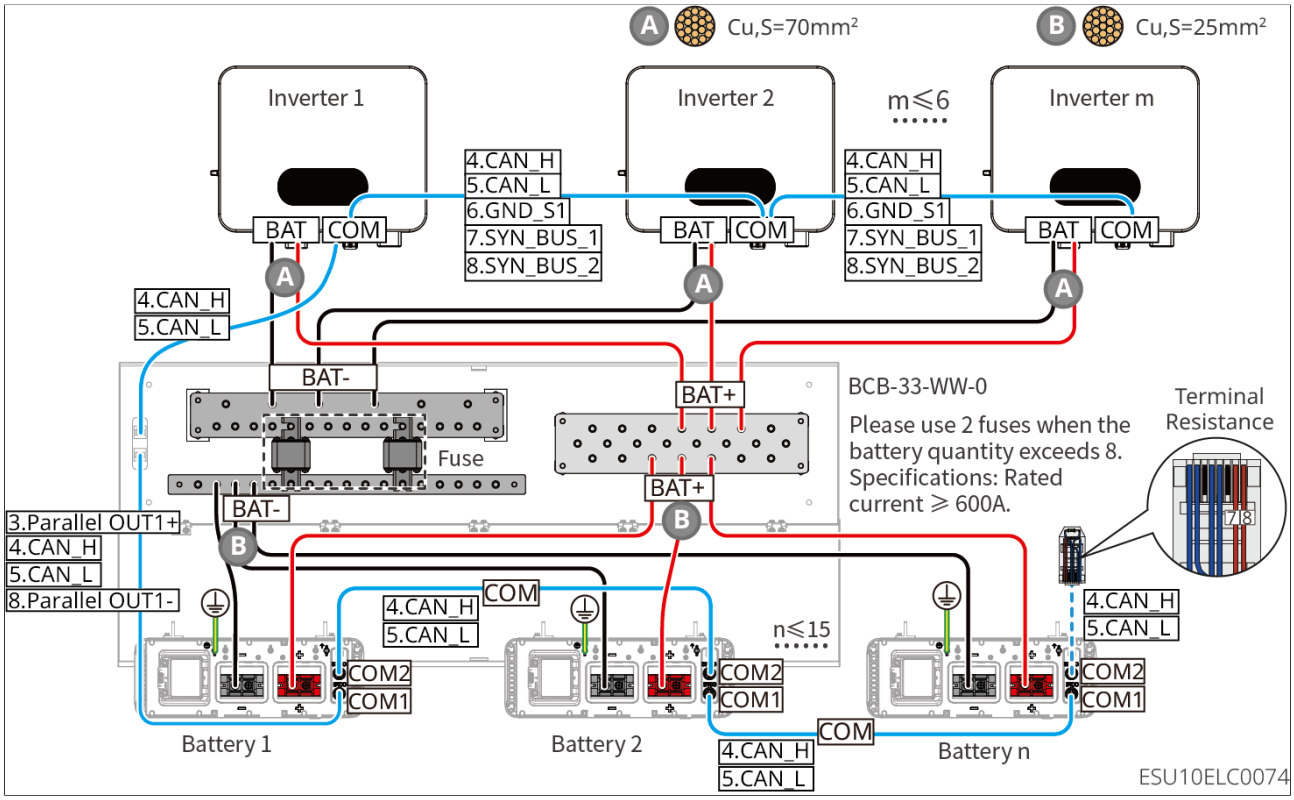
LX U5.0-30: Hand-to-Hand Connection



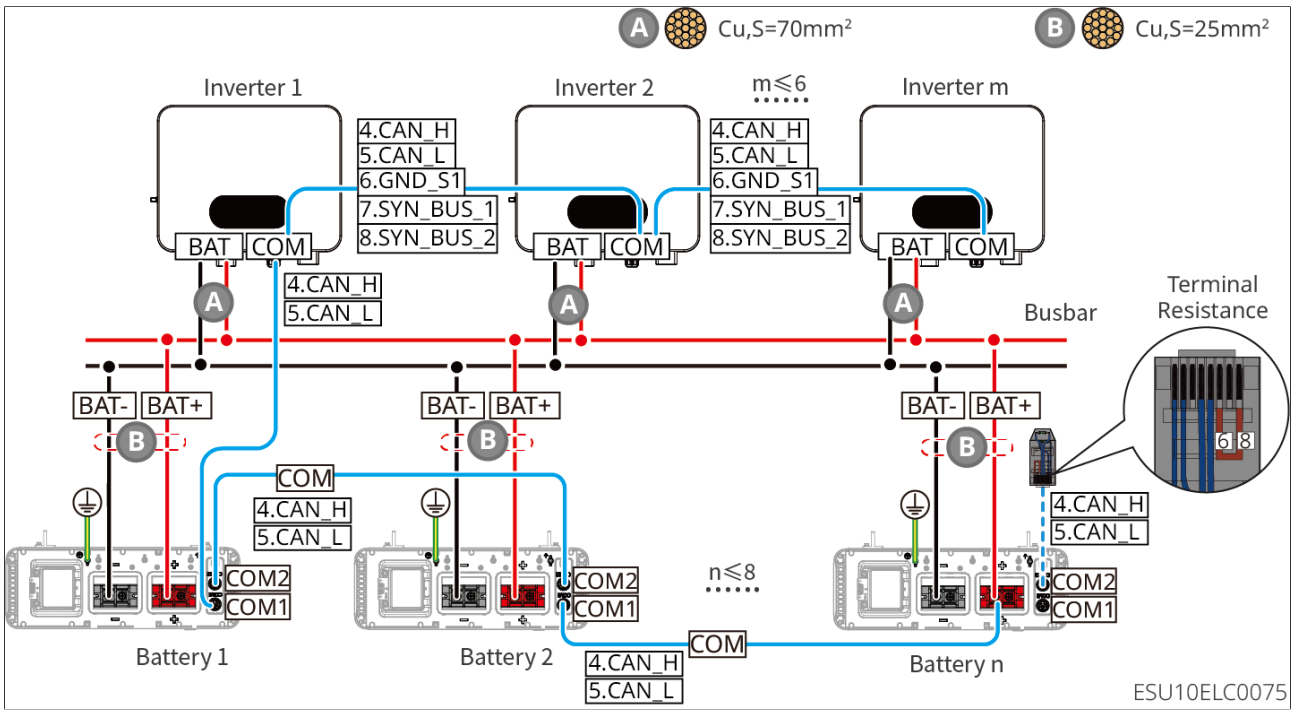
LX U5.0-30: When the battery quantity is less than or equal to 8, and the busbar BCB-32-WW-0 is used, the wiring diagram is as follows:



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:

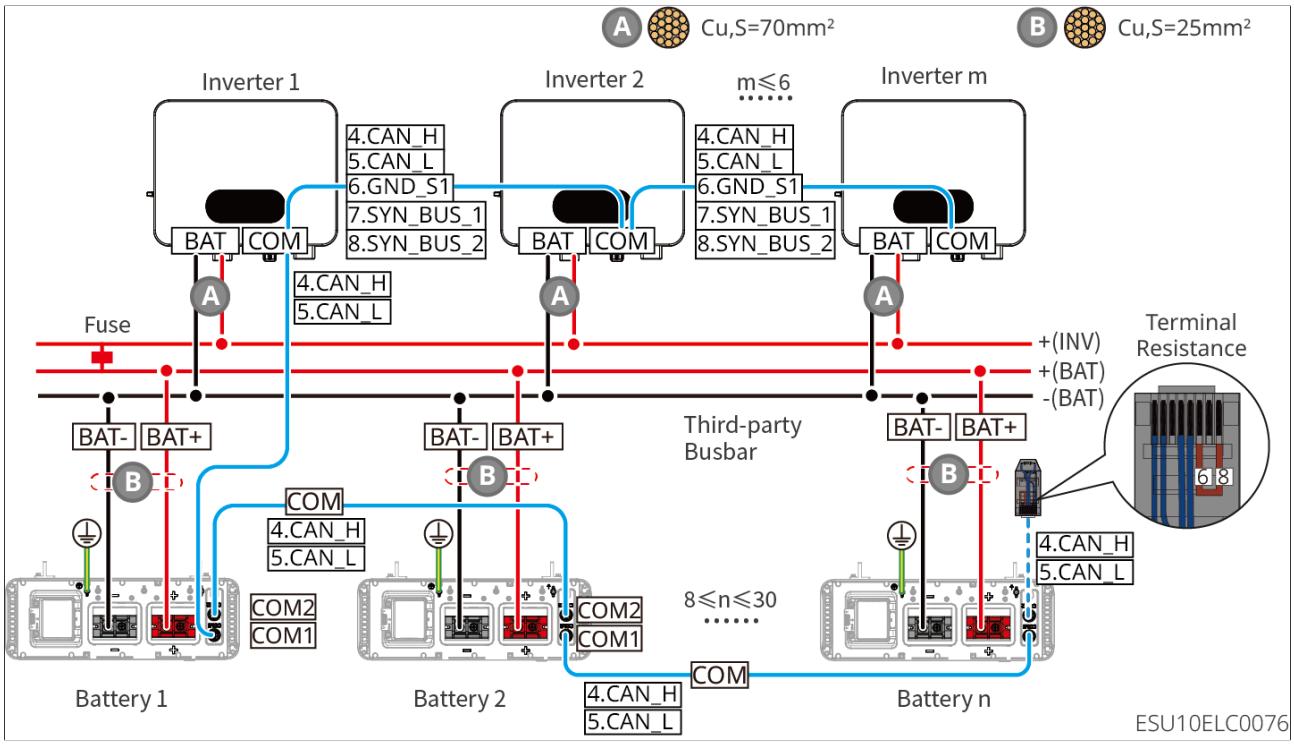


LX U5.0-30: When the battery quantity is less than or equal to 8, and a third-party busbar is used, the wiring diagram is as follows:



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:



LX A5.0-30 Communication Port Definition

PIN	COM1	COM2	Description
1	-	-	Reserved
2	-	-	
3	Parallel OUT+	Parallel OUT+	Parallel operation 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 operation 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, LX U5.4-20 Communication Port Definition

PIN	COM1	COM2	Description
1	RS485A	RS485A	Smart meter RS485 communication cable
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

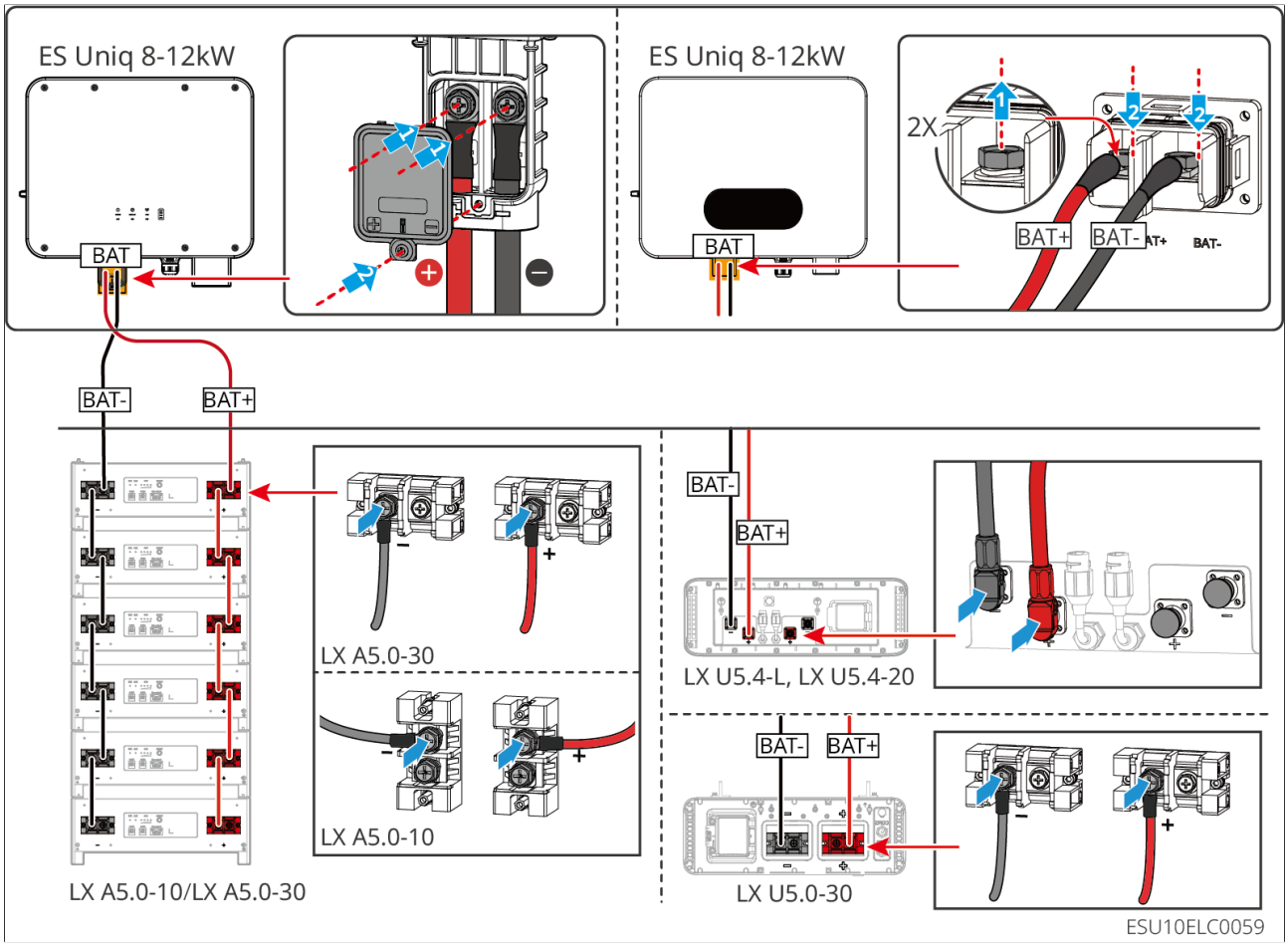
PIN	COM1	COM2	Description
1	RS485A	RS485A	Reserved
2	RS485B-	RS485B-	
3	Parallel OUT+	Parallel OUT+	Parallel operation communication port
4	CAN_H	CAN_H	Connect the inverter communication port or battery parallel communication port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel operation communication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

6.6.1 Connecting the Power Cable between the Inverter and Battery

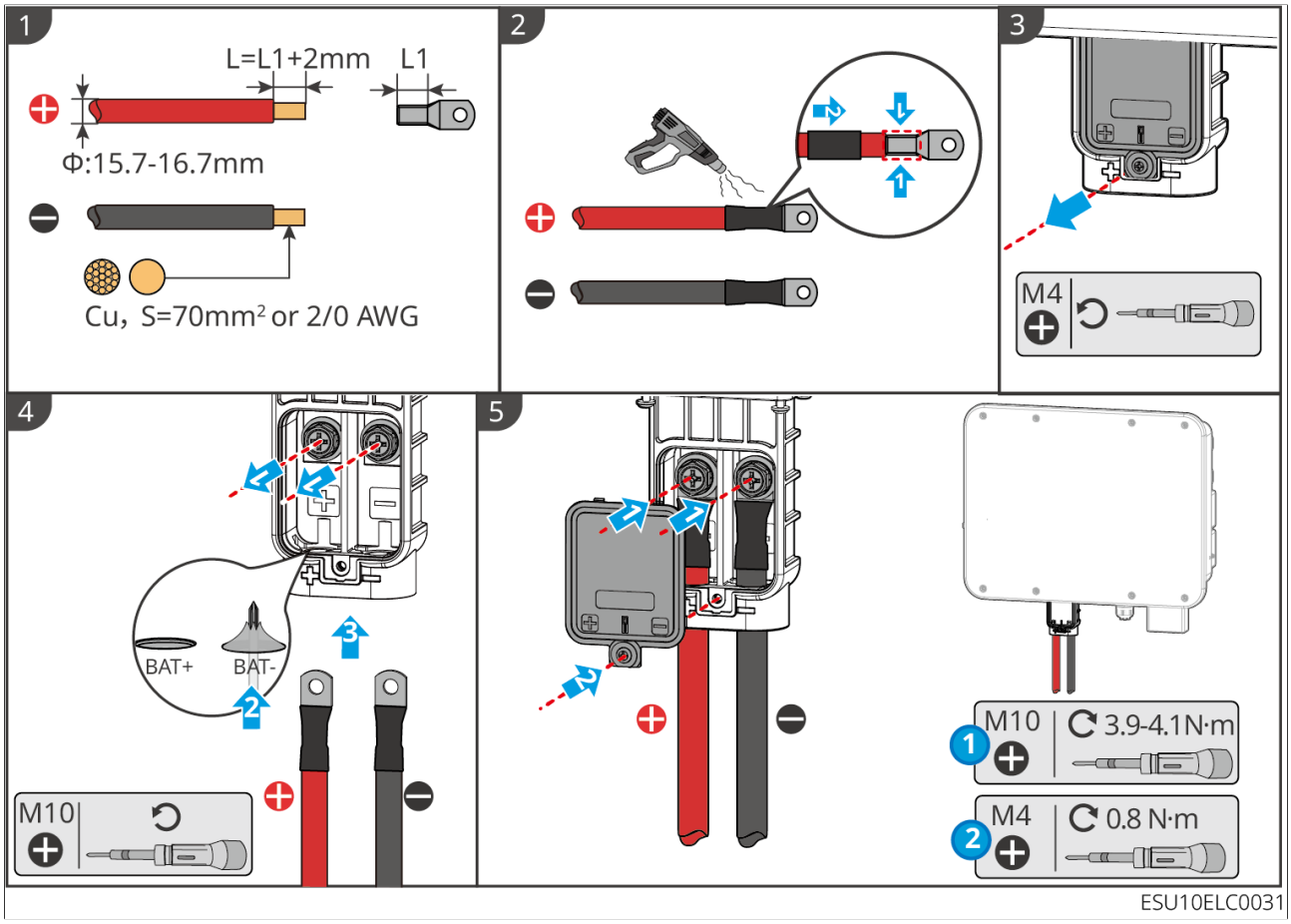
⚠WARNING

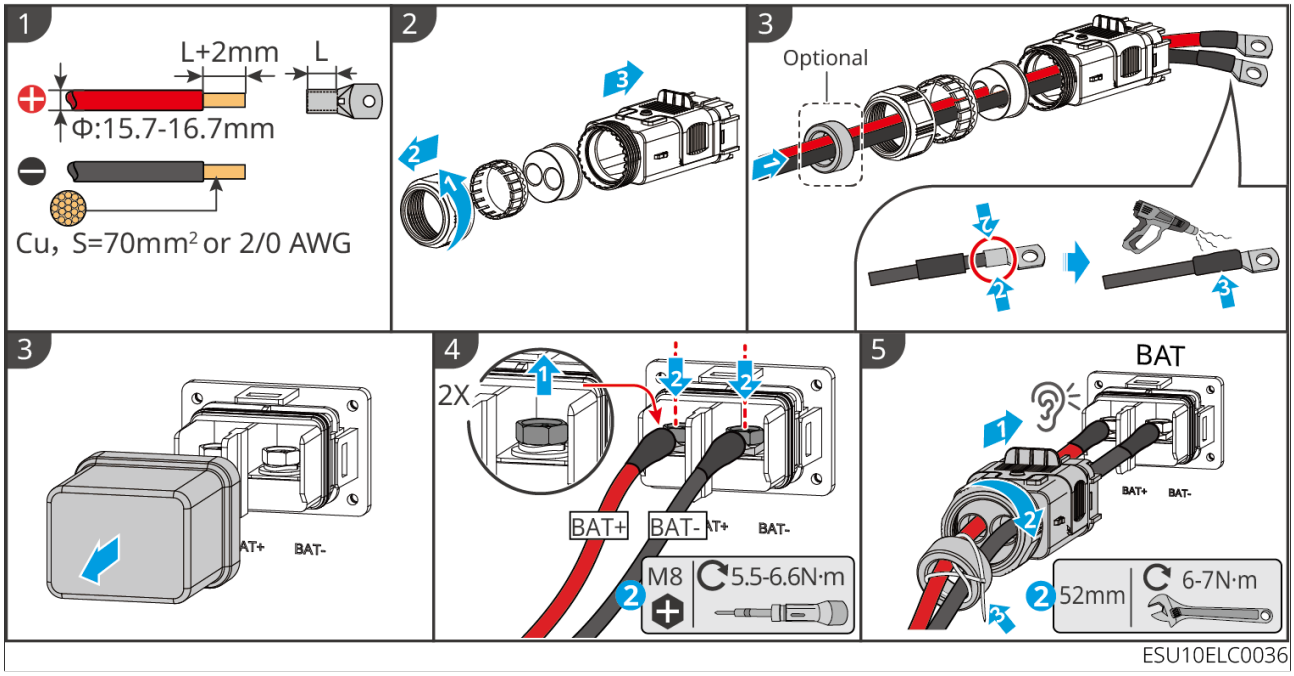
- Measure the positive and negative terminals of the DC cable using a multimeter to avoid reverse polarity connection. Also, the voltage should be within the permissible range.
- Connect the battery cables to the corresponding terminals such BAT+, BAT- and grounding ports correctly. Otherwise it will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



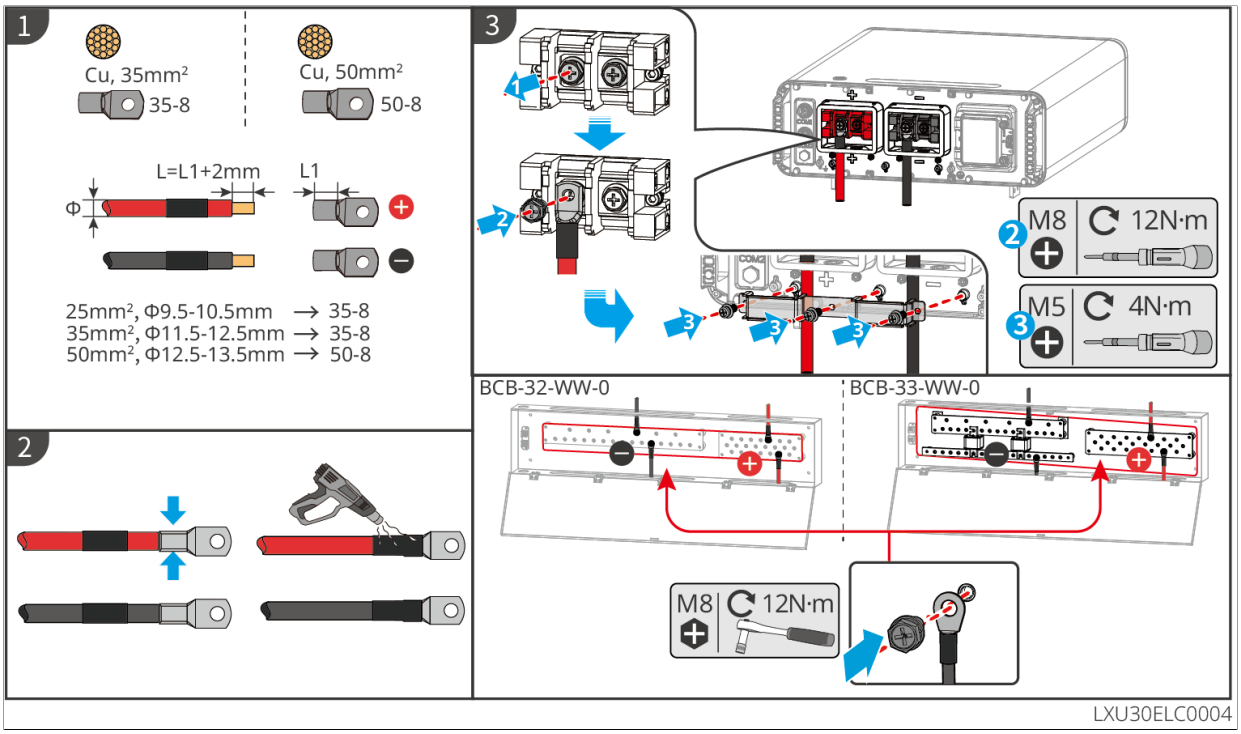
Make the inverter power cable



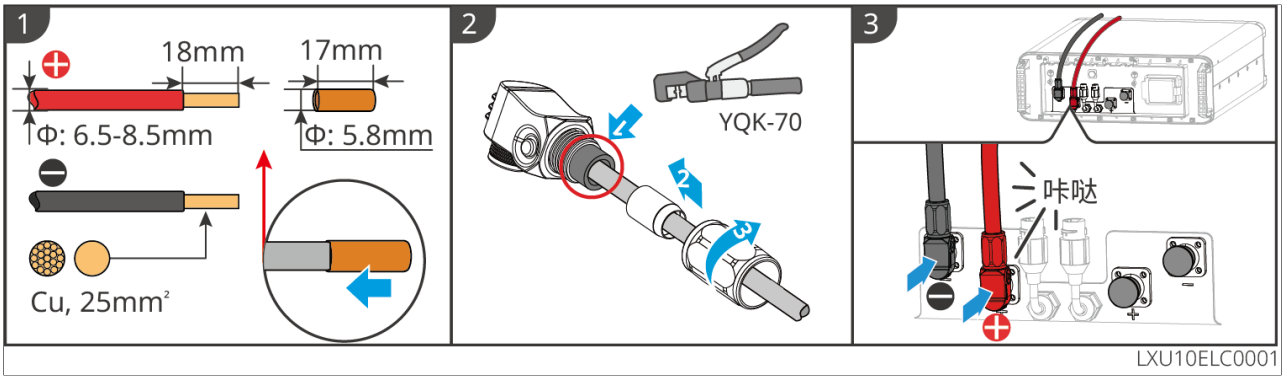


Inverter battery cover disassembly (optional)

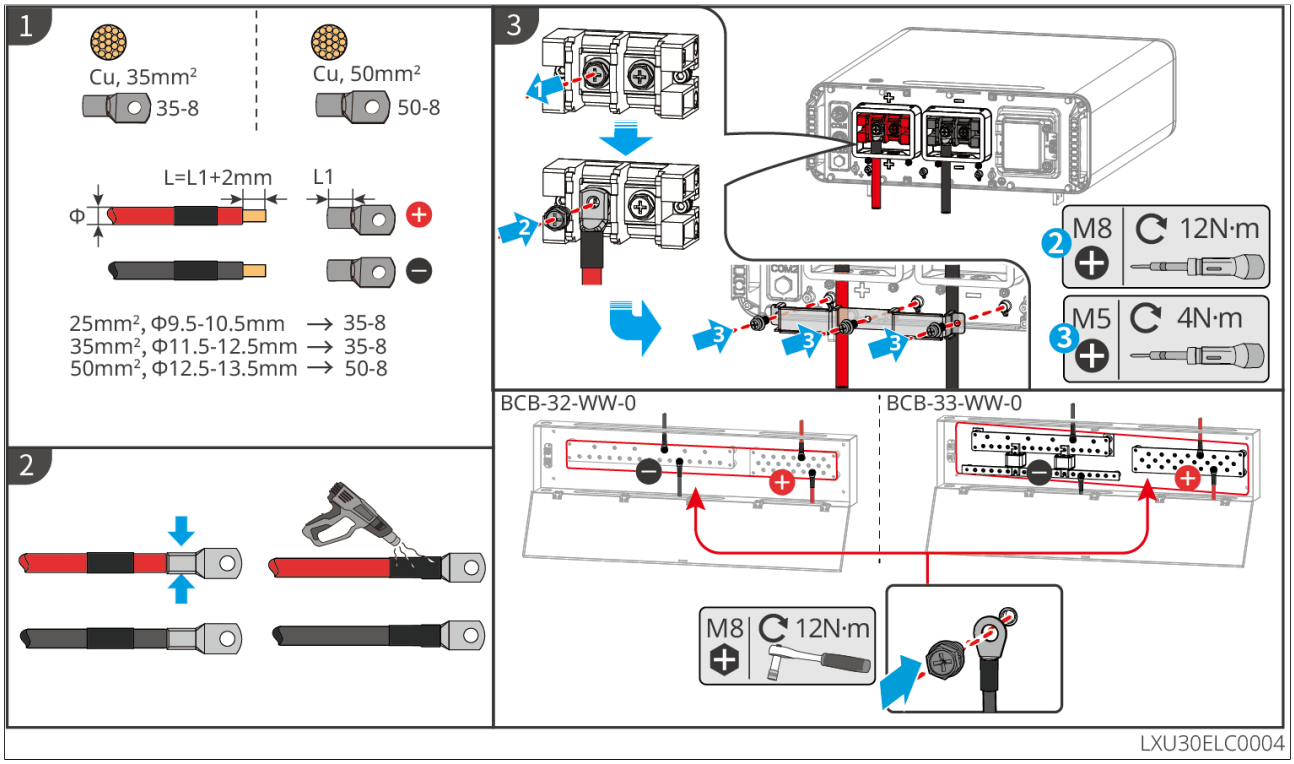
Battery power cable manufacturing (LX A5.0-10 and LX A5.0-30)



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



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



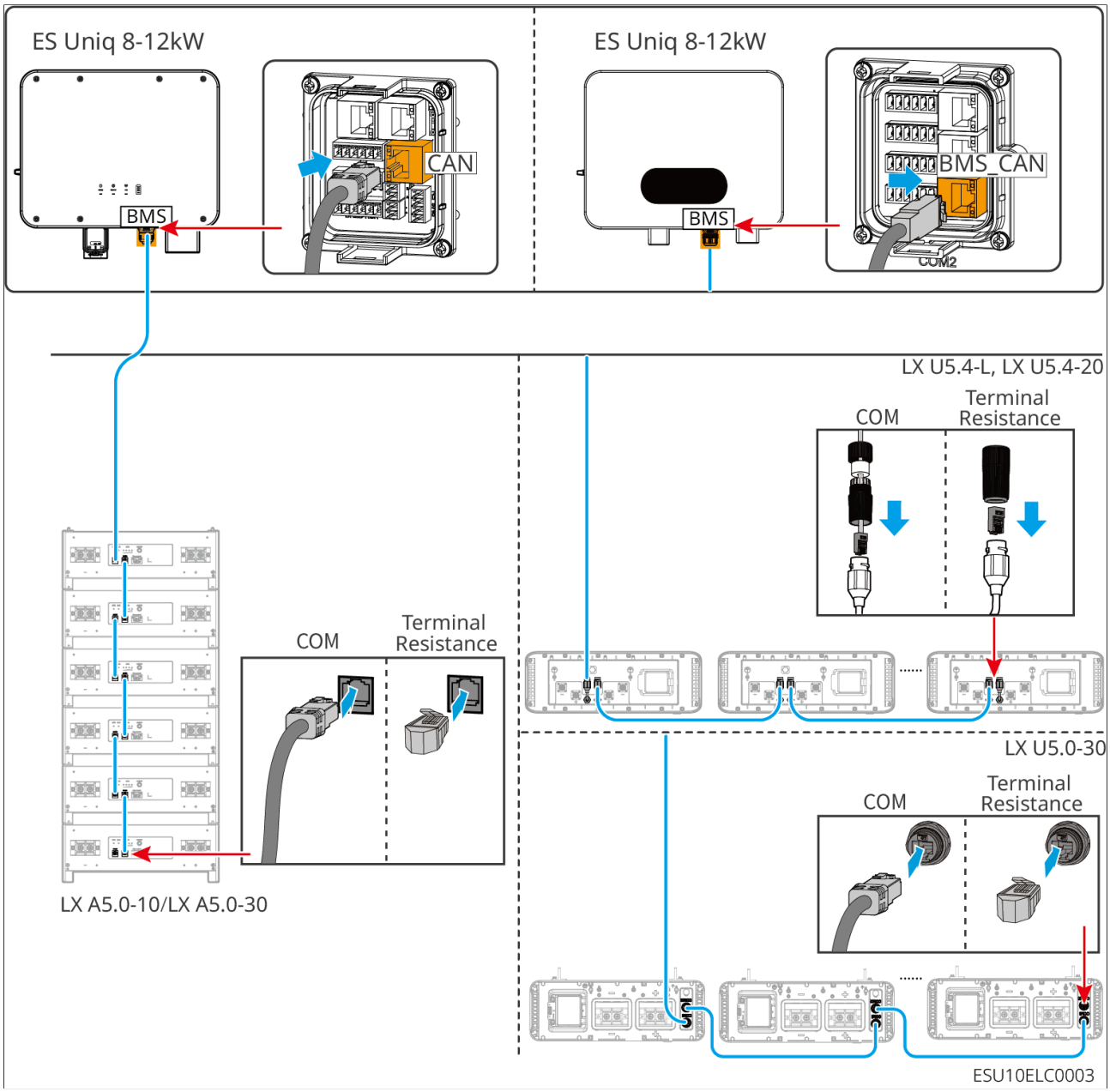
6.6.2 Connecting the Communication Cable between the Inverter and Battery

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

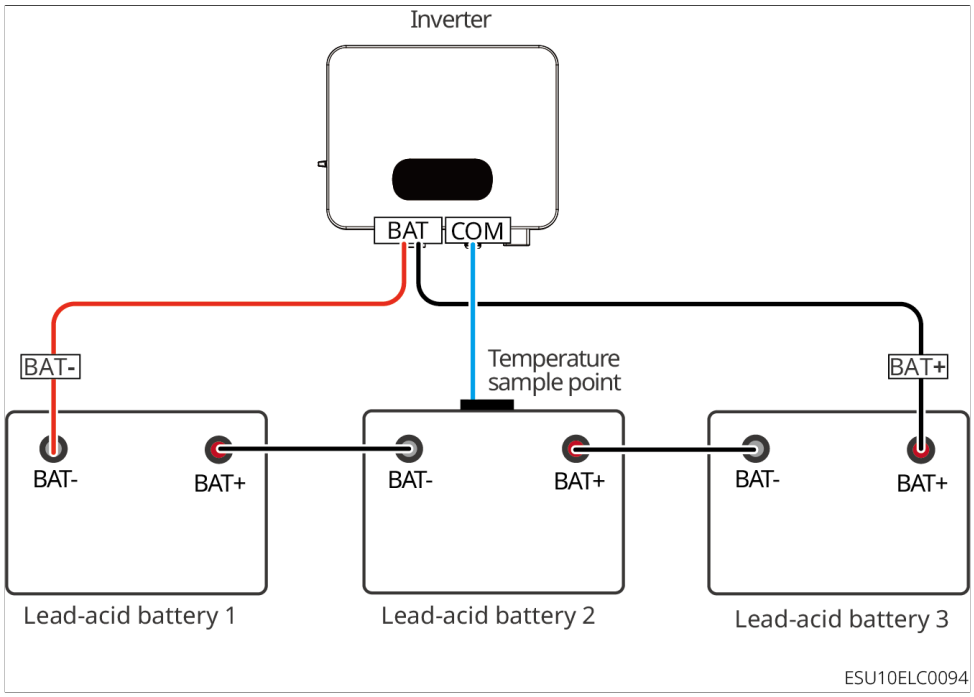
Inverter port	Connected to the battery port	Port definition	Description

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

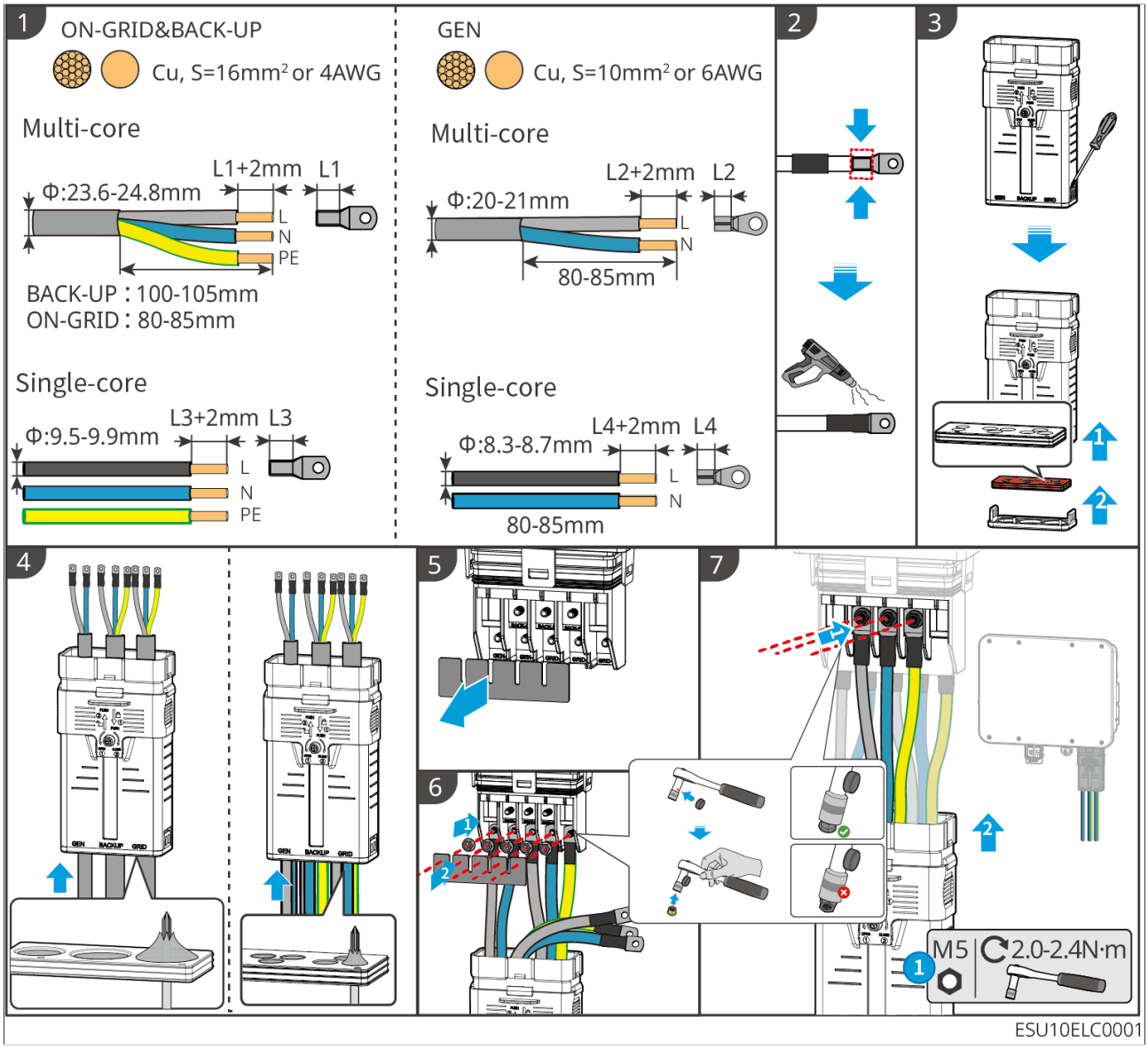
- When connecting the lead-acid battery temperature sensor cable, it is recommended to connect the temperature sensor cable at a location with poor heat dissipation. For example, when lead-acid batteries are placed side by side, the sensor should be fixed on the lead-acid battery located in the middle.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

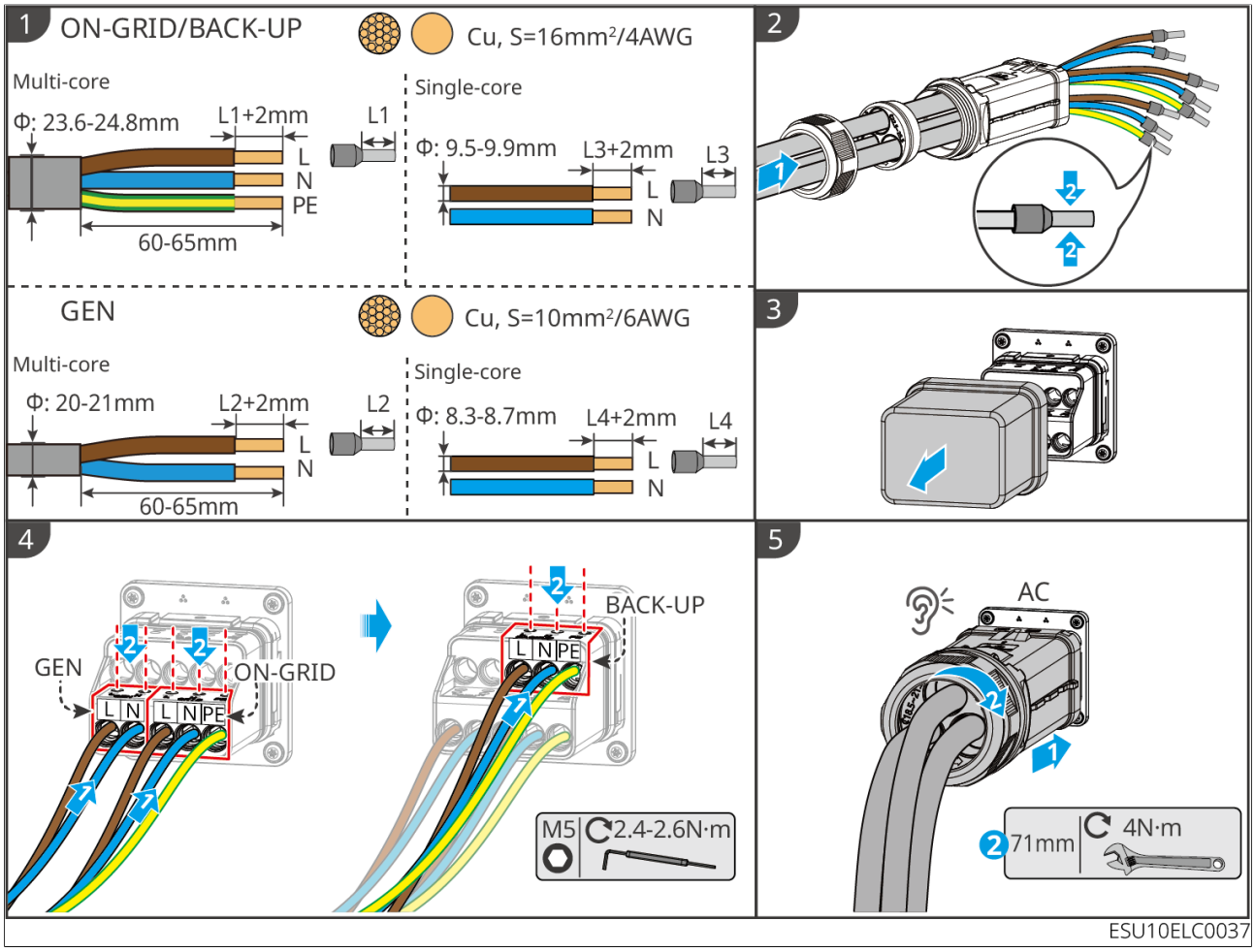


6.7 Connecting the AC Cable

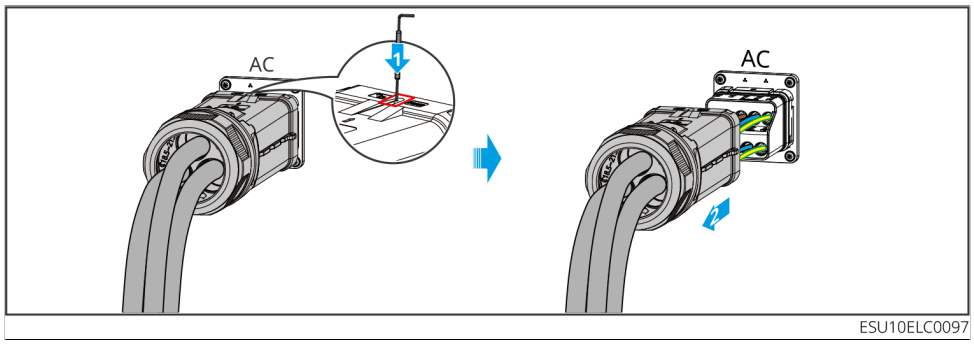
WARNING

- 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

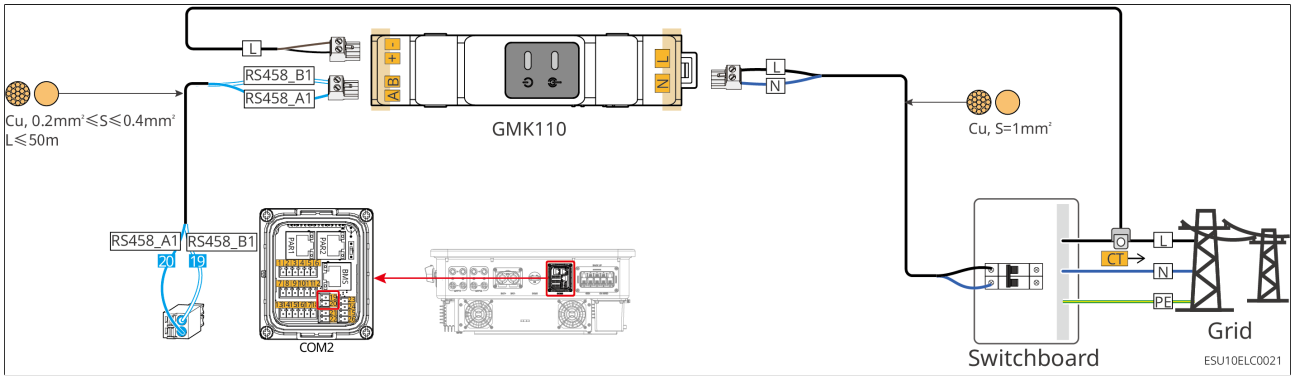
NOTICE

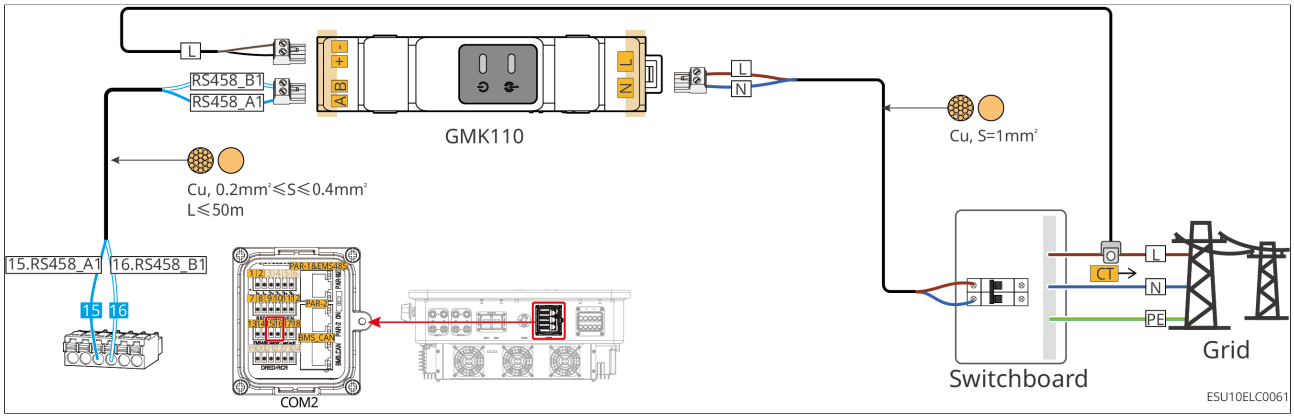
- Contact the manufacturer for additional smart meters if multiple inverters are connected.
- Ensure that the CT is connected in the correct direction and phase sequences, otherwise the monitoring data will be incorrect.
- Ensure all cables are connected correctly, tightly, and securely. Inappropriate 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

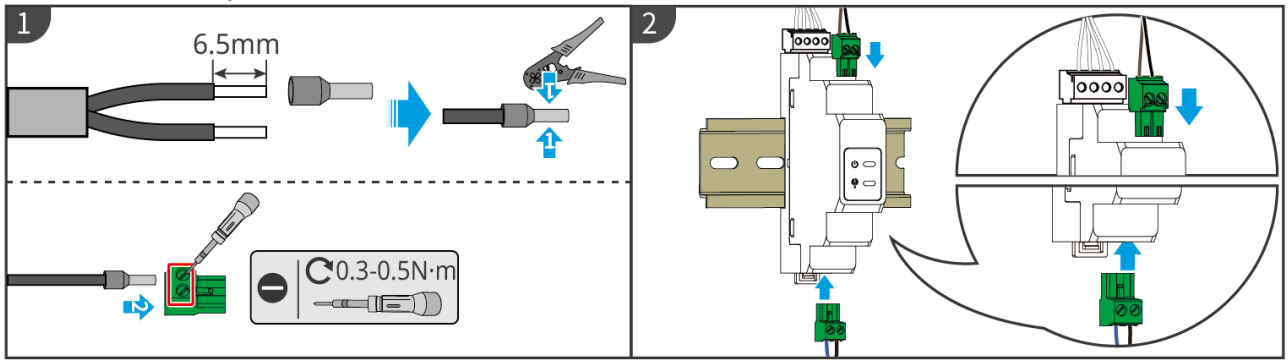
NOTICE

- 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.





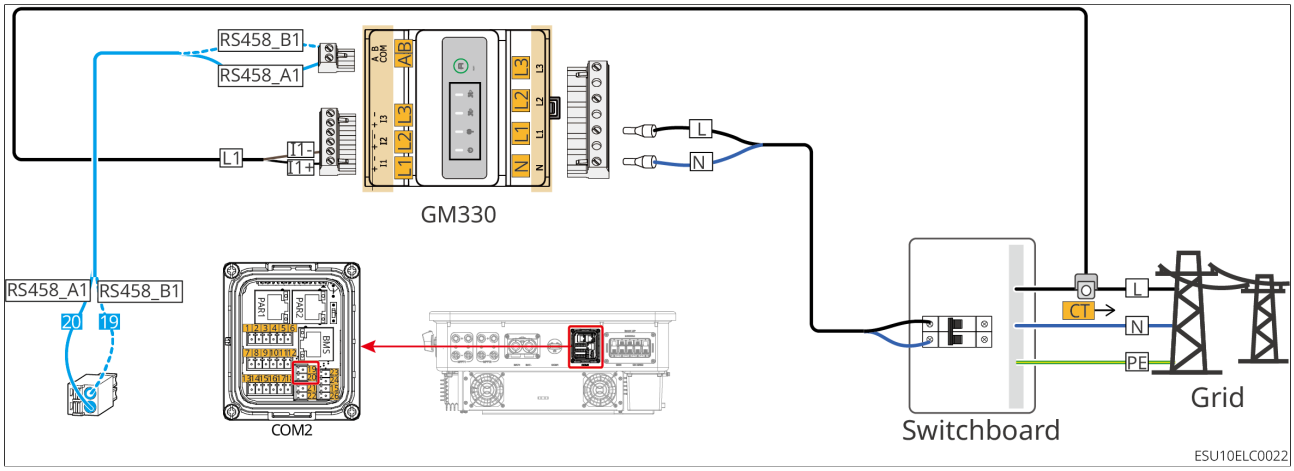
Connection steps

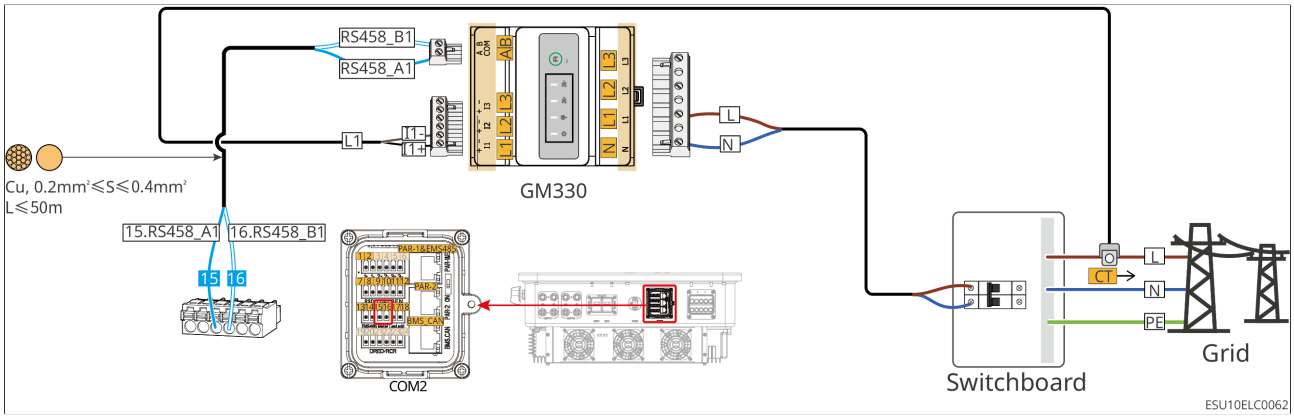


▶ GMK110: CT x 1; GMK110D: CT x 2

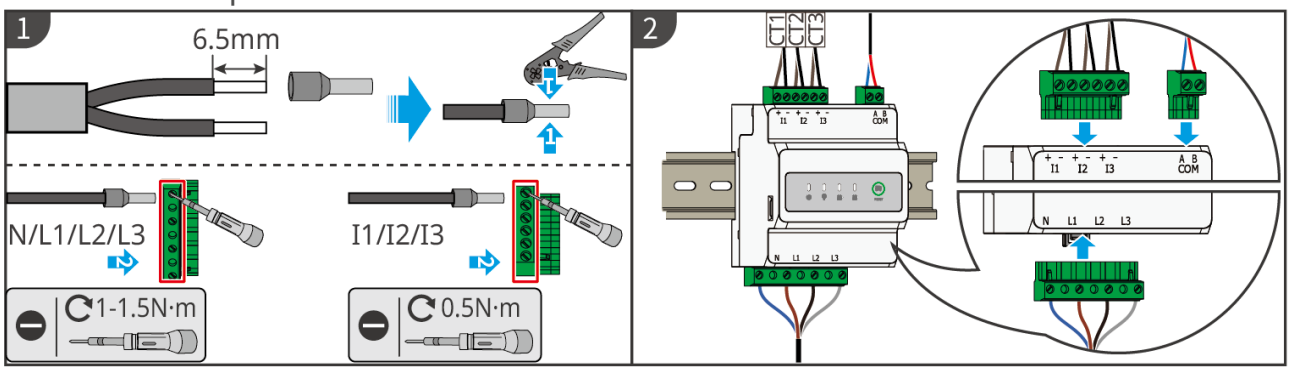
GMK10ELC0002

Wiring of GMK110



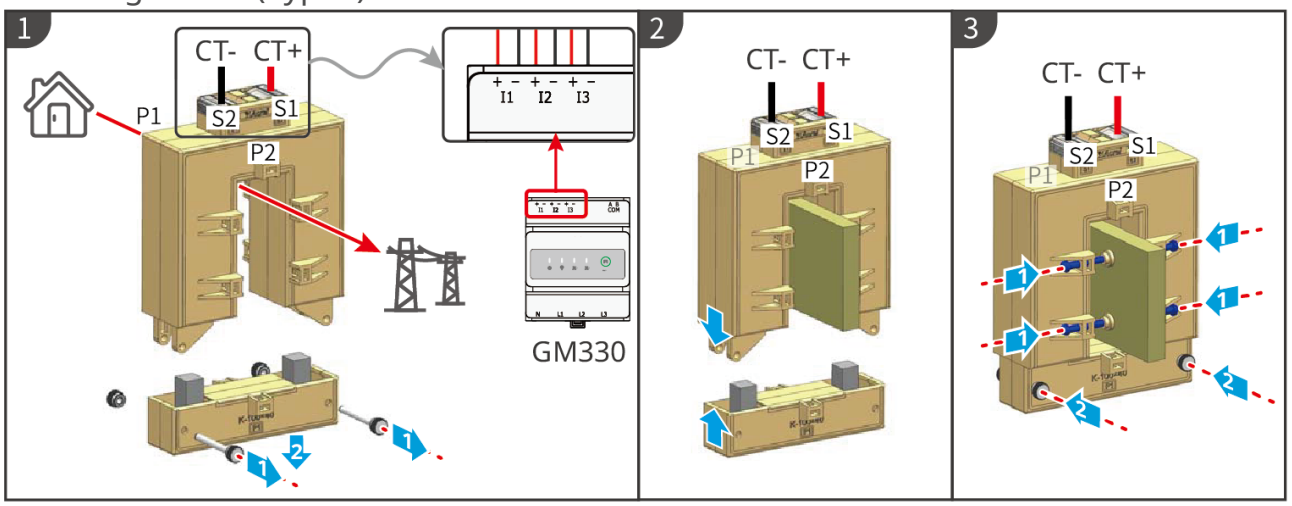


Connection steps



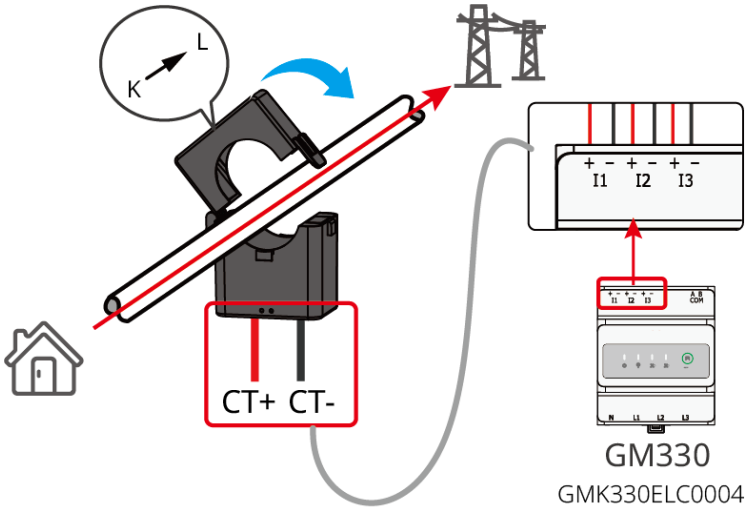
GMK330ELC0002

Installing the CT (Type I)



GMK330ELC0003

Installing the CT (Type II)

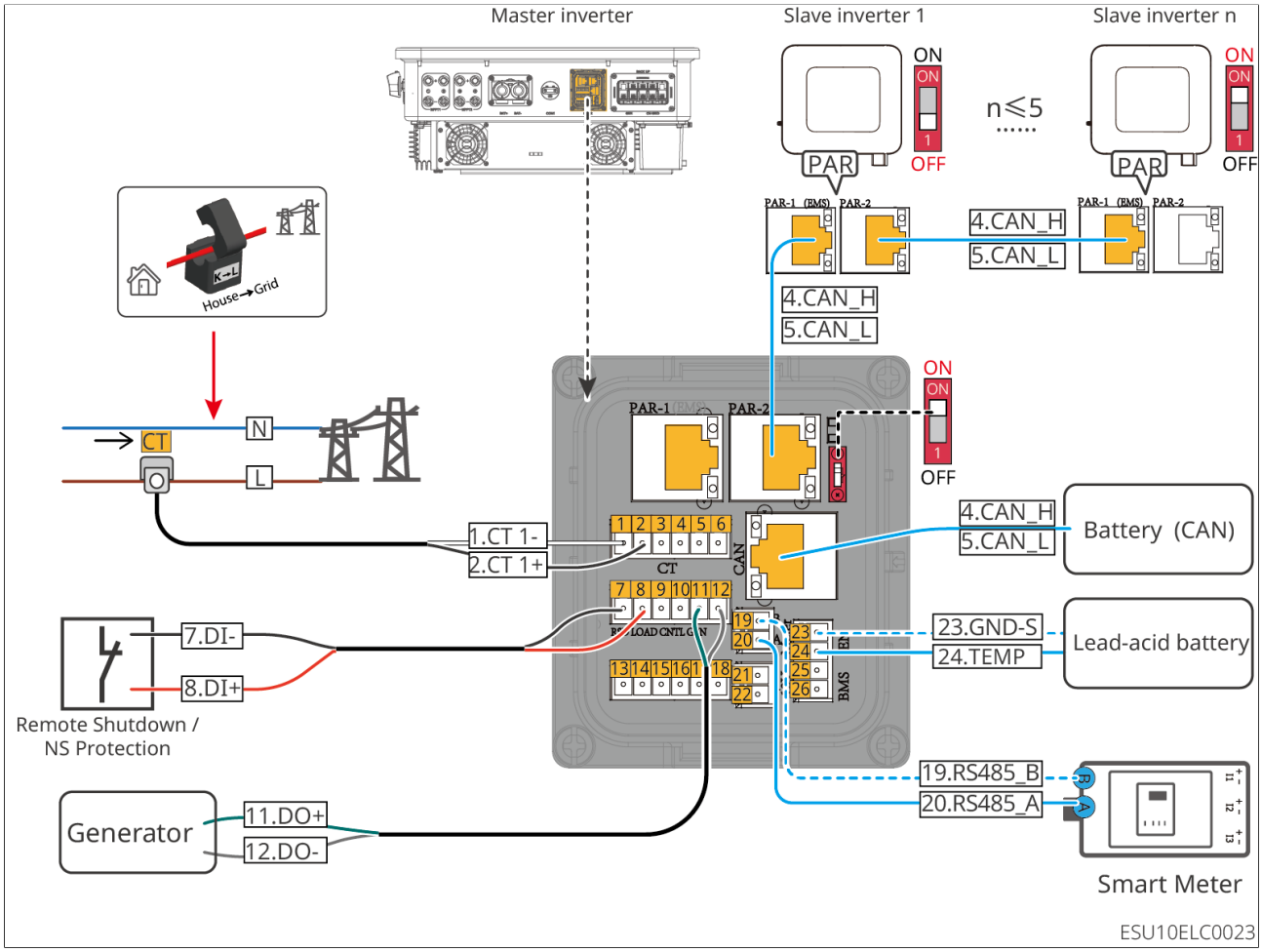


6.9 Connecting the Inverter Communication Cable

NOTICE

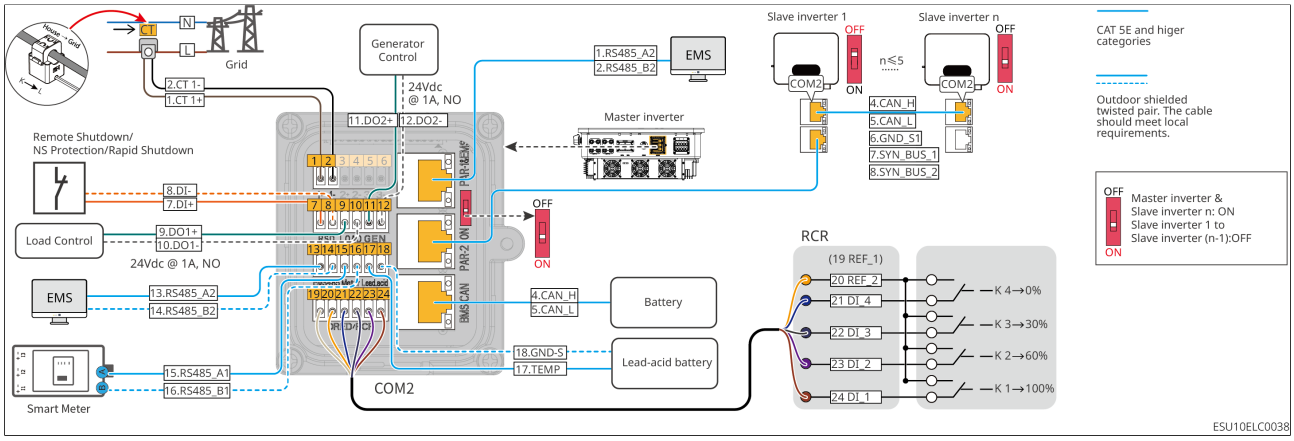
- The communication functions are optional. Connect the cables based on actual needs.
- The inverter supports parameter setting via Bluetooth nearby. It also supports connecting to mobile phones or WEB interfaces through communication modules such as WiFi, LAN and 4G to set device-related parameters, 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.

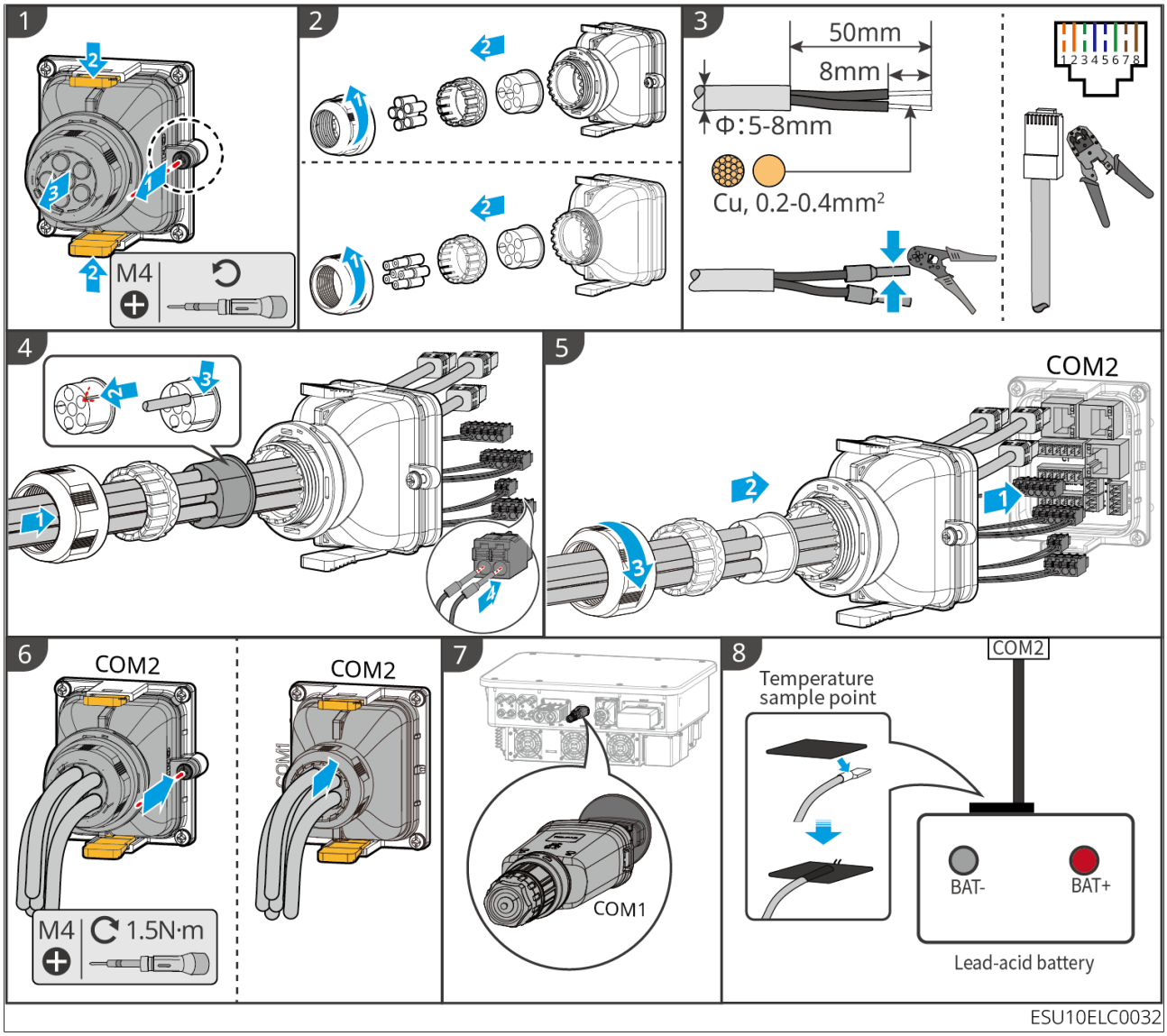
Port	Function	Description
9-10	Load Control	• It supports connection with dry contact signals to achieve functions such as load control. The capacity of the DO contact is 12V DC@1A. NO/COM is a Normally Open contact. • It supports the connection of SG Ready heat pumps and controls the heat pumps through 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 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	Reserved	-

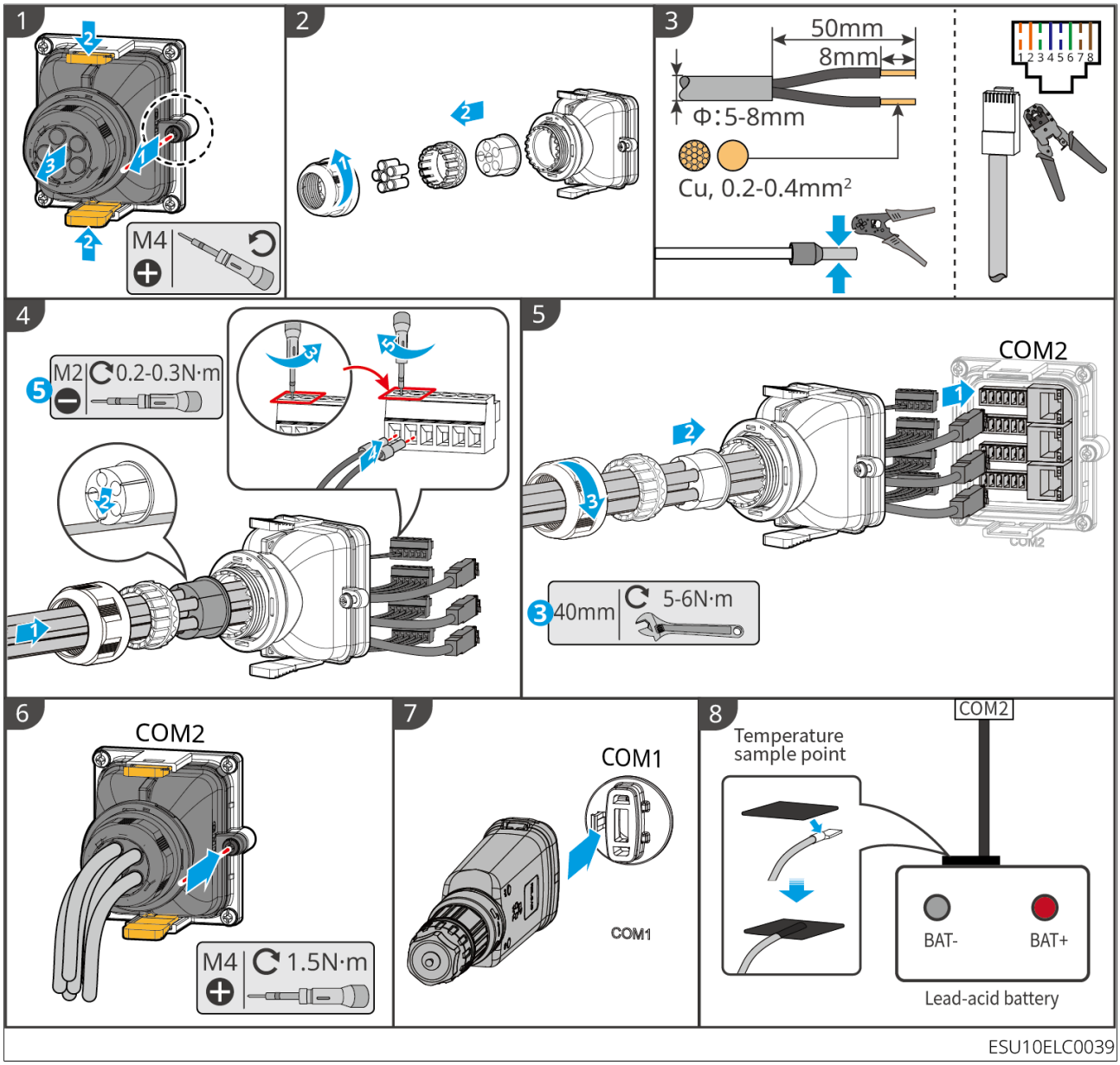
Port	Function	Description
PAR-1 &EMS	Parallel Communication Port 1 EMS Communication Port (PAR-1& EMS)	• CAN and BUS: parallel communication ports, using CAN communication to connect other inverters in the parallel network; using BUS to control the parallel inverters in the on-grid and off-grid status. • 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
Temperature sample point
COM2
BAT-
BAT+
Lead-acid battery
ESU10ELC0032



6.10 Install Protect Cover

LX U5.0-30:

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	The PE, DC input, AC output, communication cables, and terminal resistors 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

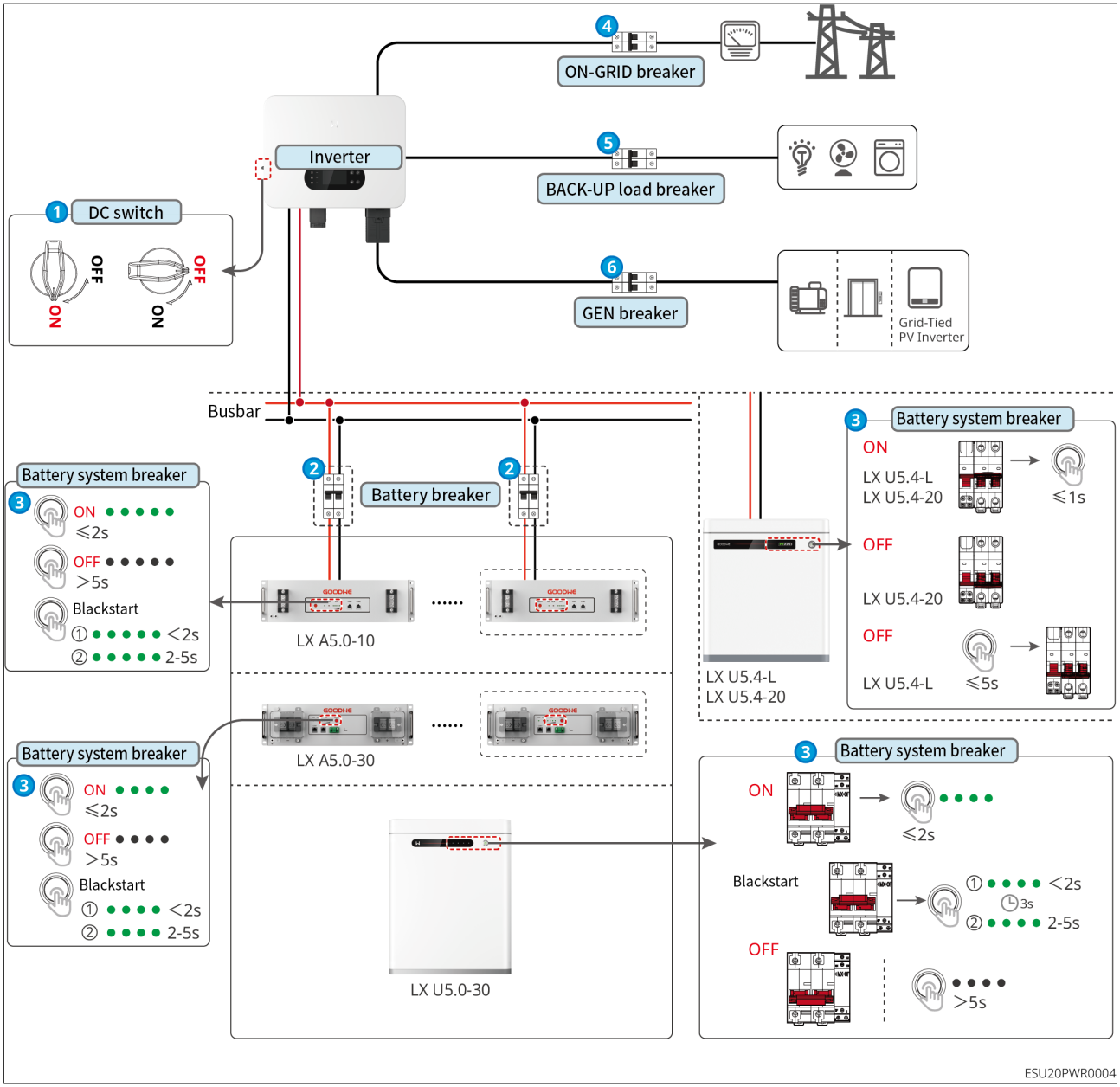
⚠WARNING

- 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 there are multiple batteries in the system, starting any one of them can start all the batteries.

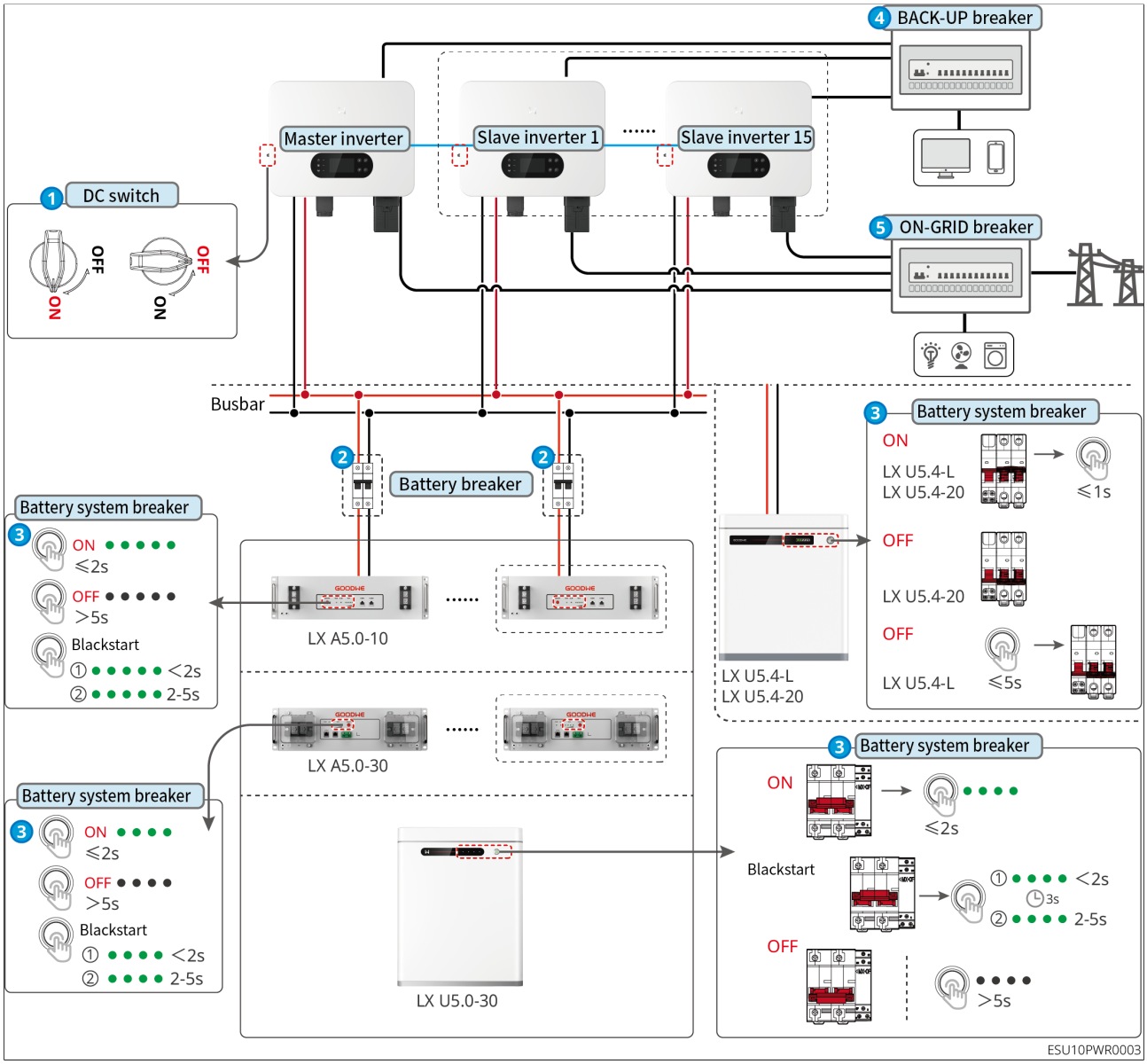
Power on process

1. Turn on the BACK-UP circuit breaker.
2. Turn on the BACK-UP circuit breaker.
3. (Optional) Turn on the GEN circuit breaker.
4. (Selected in accordance with local laws and regulations) Turn on the circuit breaker between the PV module and the inverter.
5. 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 system switch.
8. (Only applicable to screenless models)Turn on the Off and On grid switch of the inverter.

Single Inverter System


4
ON-GRID breaker
Inverter
5
BACK-UP load breaker
1
DC switch
OFF
ON
OFF
ON
6
GEN breaker
Grid-Tied
PV Inverter
Busbar
3
Battery system breaker
ON
LX U5.4-L
LX U5.4-20
≤1s
OFF
LX U5.4-20
OFF
LX U5.4-L
≤5s
2
Battery breaker
2
Battery system breaker
3
ON
≤2s
OFF
>5s
Blackstart
① <2s
② 2-5s
LX A5.0-10
LX U5.4-L
LX U5.4-20
Battery system breaker
3
ON
≤2s
OFF
>5s
Blackstart
① <2s
② 2-5s
LX A5.0-30
LX U5.0-30
3
Battery system breaker
ON
≤2s
Blackstart
① <2s
3s
② 2-5s
OFF
>5s
ESU20PWR0004

Parallel



7.3 Indicators

7.3.1 Inverter Indicators

Indicato	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.

Indicato	Status	Description
		LCD ON: The inverter is powered on and in the standby mode. LCD OFF: The inverter is powered off.
		The grid is abnormal, and the power supply to the BACK-UP port of the inverter is normal.
		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

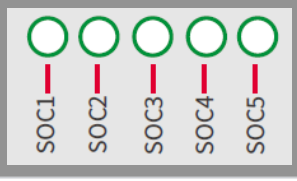
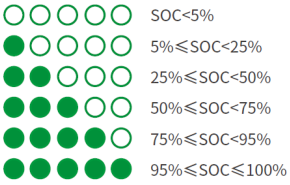
LX A5.0-30, LX U5.0-30

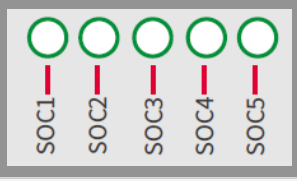
Indicator		System Status
○○○○	No SOC indicator shows green.	SOC=0%
●○○○	The first SOC indicator shows green.	0% < SOC≤25%
●●○○	The first two SOC indicators are green.	0% < SOC≤25%
●●●○	The first three SOC indicators are green.	0% < SOC≤25%

Indicator		System Status
	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.

LX A5.0-10

Normal status

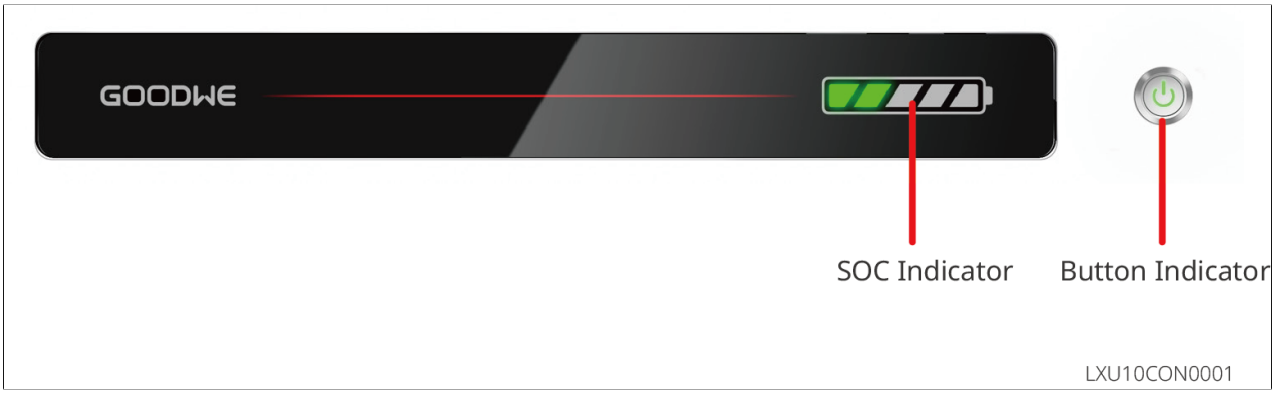
SOC indicator 	RUN light 	Battery system status
The SOC indicator represents the battery system's usable energy. 	Green light flashes 1 time/s.	The battery system is in the standby mode.
	Green light flashes 2 time/s.	The battery system is in an idle state.
	Green light is on.	The battery system is in the charging state.

SOC indicator 	RUN light 	Battery system status
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.
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.

LX U5.4-L

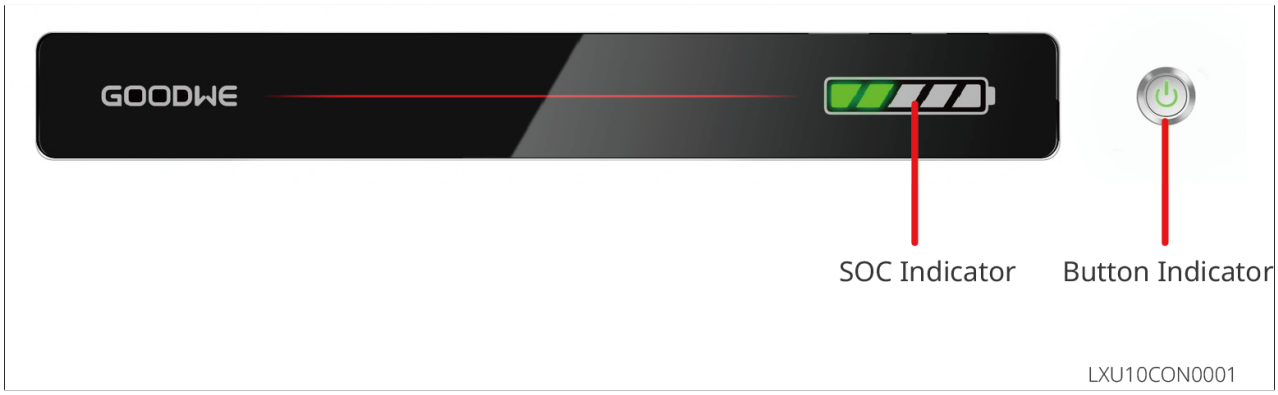


Normal status

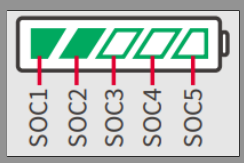
SOC indicator	Button Indicator	Battery system status
The SOC indicator represents the battery system's usable energy. SOC<5% 5%≤SOC<25% 25%≤SOC<50% 50%≤SOC<75% 75%≤SOC<95% 95%≤SOC≤100%	Green light flashes 1 time/s.	The battery system is in the standby mode.

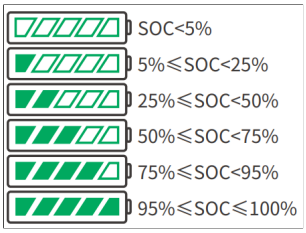
Maximum SOC indicator flashes 1 time/s, other green lights always on. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 95% ≤ SOC < 100%, SOC5 flashes.	Green light is on.	The battery system is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

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.

7.3.3 Smart Meter Indicator

GMK110

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

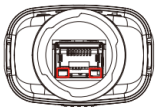
GM330

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

- 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.
		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.

- 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.
Communication indicator		On: The smart dongle is communicating normally with the server.
		Blinks 2 times: Smart dongle is not connected to the base station.
		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.

- Ezlink3000

Indicator/ Silkscreen	Color	Status	Description
Power light	Blue		Blink = The smart dongle is working properly.
			OFF = The smart dongle is powered off.
	Green		ON = The smart dongle is connected to the server.

Indicator/ Silkscreen	Color	Status	Description
Communication indicator			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 Quick System Commissioning (via SolarGo App)

8.1 Downloading the App

Make sure that the mobile phone meets the following requirements before downloading SolarGo or the SEMS Portal app:

- Mobile phone operation 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 SolarGo or the SEMS Portal app 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.

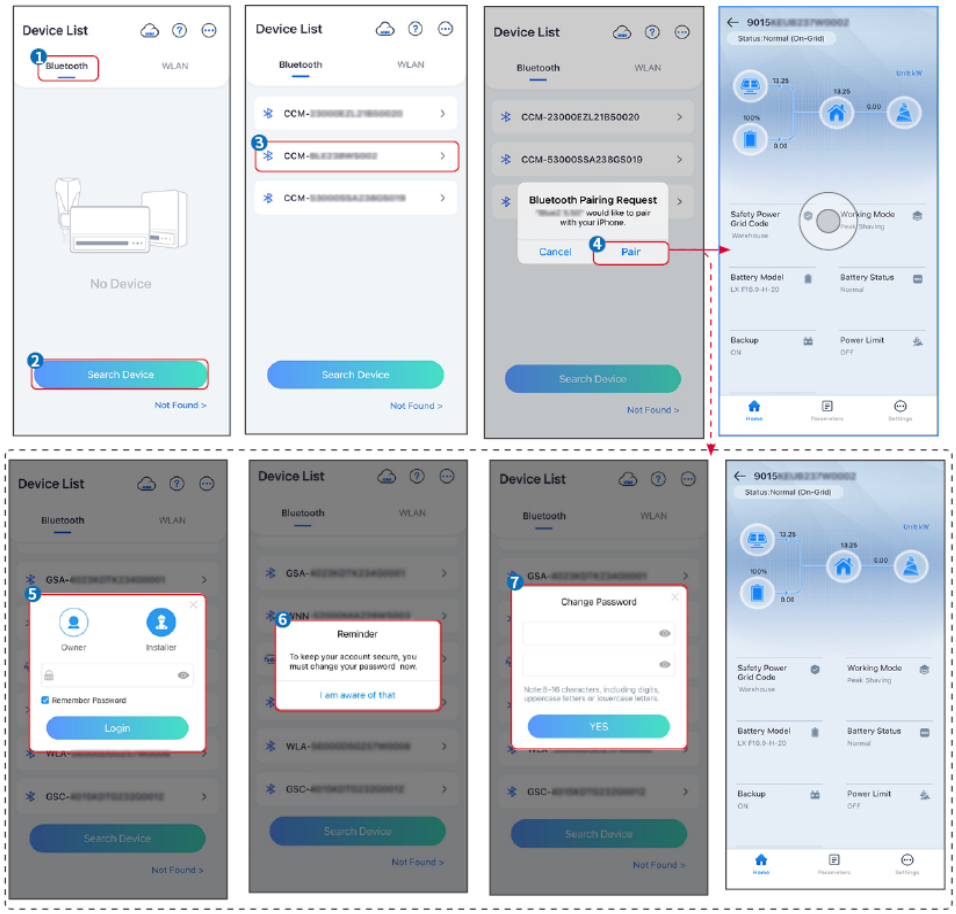
8.2 Connecting the inverter via SolarGo

NOTICE

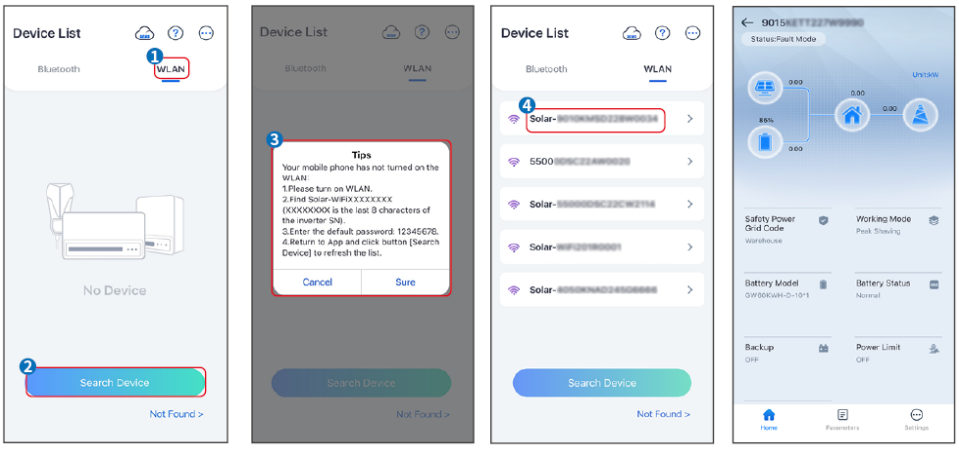
The device name varies depending on the inverter model or smart dongle type:

- 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



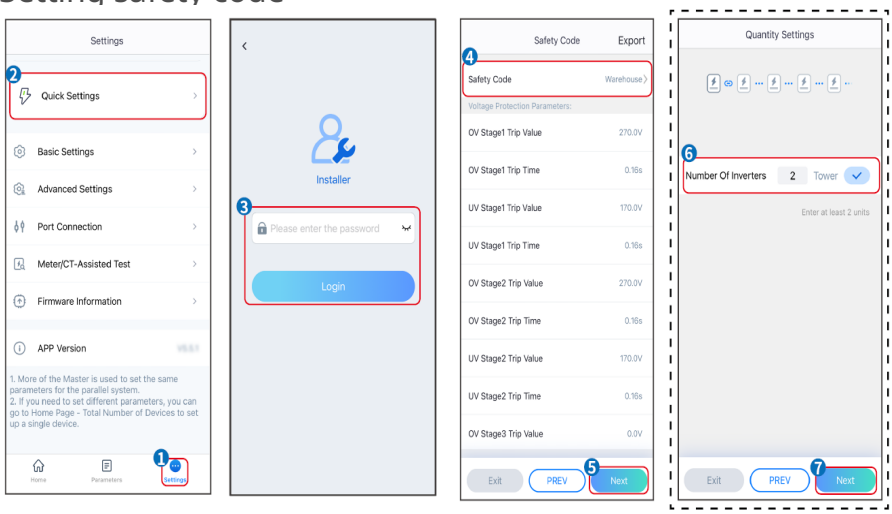
8.3 SolarGo App Quick Settings

NOTICE
• When selecting the safety code country/region, the system will automatically configure the overvoltage and undervoltage protection, overfrequency and underfrequency protection, inverter on-grid voltage/frequency, connection

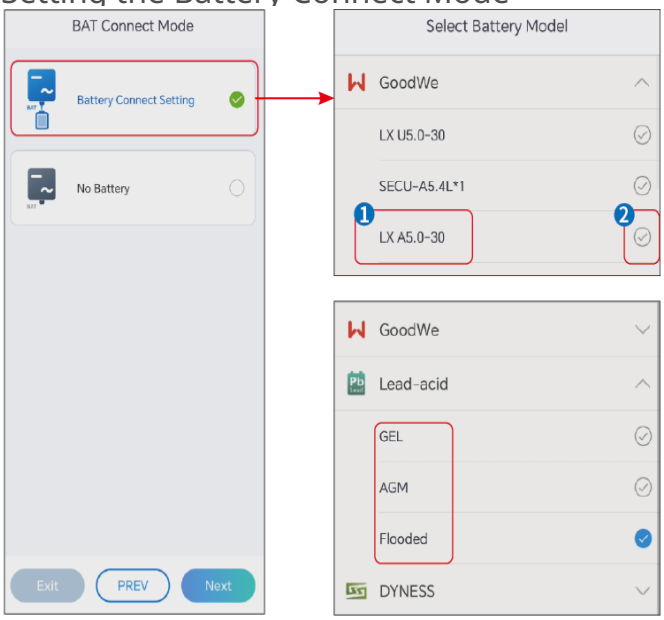
slope, Cosφ curve, Q(U) curve, P(U) curve, FP curve, high and low voltage ride-through, etc. according to the safety regulation requirements of different regions.

- The generation efficiency of inverter differs in different working modes. Please set according to the local actual electricity consumption.

Setting safety code



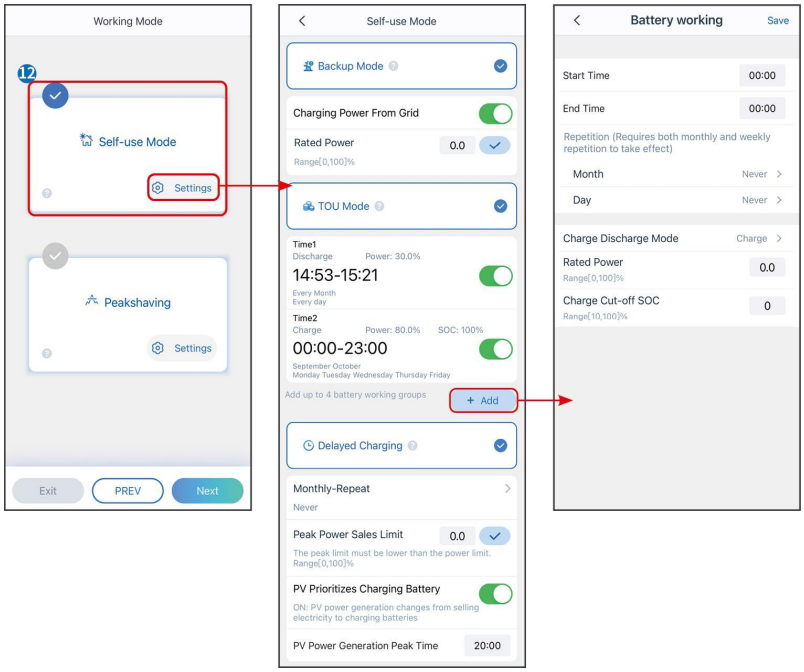
Setting the Battery Connect Mode



Parameter	Description
Safety Code	Select the corresponding safety code based on the country or region where the equipment is located.
BAT Connect Mode	Select the actual mode for connecting the battery to the inverter. If there is no battery connected in the system, it is unnecessary to configure the battery model and working mode, and the equipment will operate in the

	self-using mode by default
Select Battery Model	Select the battery type and model based on actual situation. The lead acid battery type: AGM/GEL/Wet Battery (Flooded).
Working Mode	Set the working mode of the device during operation. Supports: Peakshaving mode and Self-use mode.

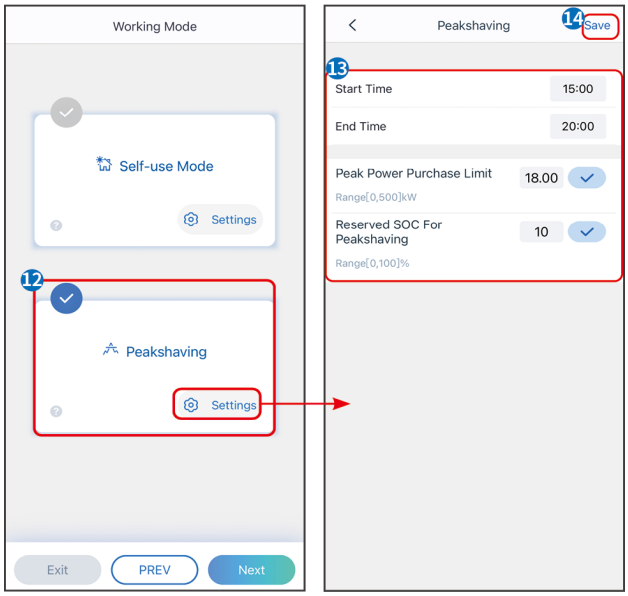
When the self-use mode is selected, the interface will be displayed as follows. You need to enter the advanced mode to choose the specific working mode and set the corresponding parameter values.



Parameter	Description
Self-use mode: based on the self-use mode, Back-up mode, TOU mode, and Smart charging can be enabled at the same time, and the inverter will automatically select the working mode. Working priority: Back-up mode> TOU mode >Smart charging 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	
Start Time	Within the start and end time, the battery will charge or discharge based on the set charge-discharge mode and rated power.
End Time	
Charge and discharge	Set to charge or discharge based on actual needs.

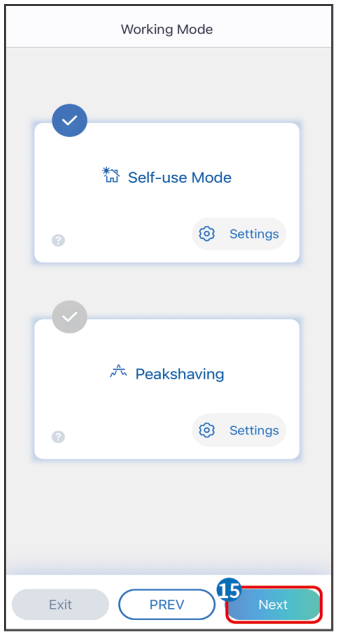
mode	
Rated Power	The percentage of power during charging or discharging compared to the rated power of the inverter.
Charge/Discharge Cut-off SOC	The battery stop charging/ discharging once the battery SOC reaches Charge Cut-off SOC.

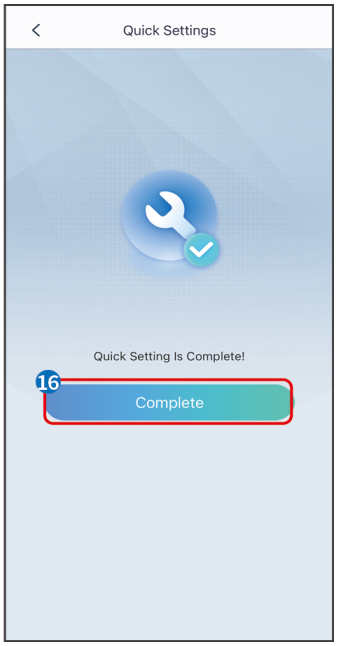
The App interface is as following when Peakshaving mode is selected. (Peakshaving mode can only be set via SolarGo App)



Parameter	Description
Peakshaving	
Start 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.
End Time	
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.
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.

After setting the parameters, click Start or Skip to skip self-check.





8.4 Communication Setting

Communication settings can only be set through the SolarGo APP.

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

1. Enter the setting page through **Home > Settings > Communication Configuration > Network Settings.**
2. Configure the WLAN or LAN network based on the actual situation.

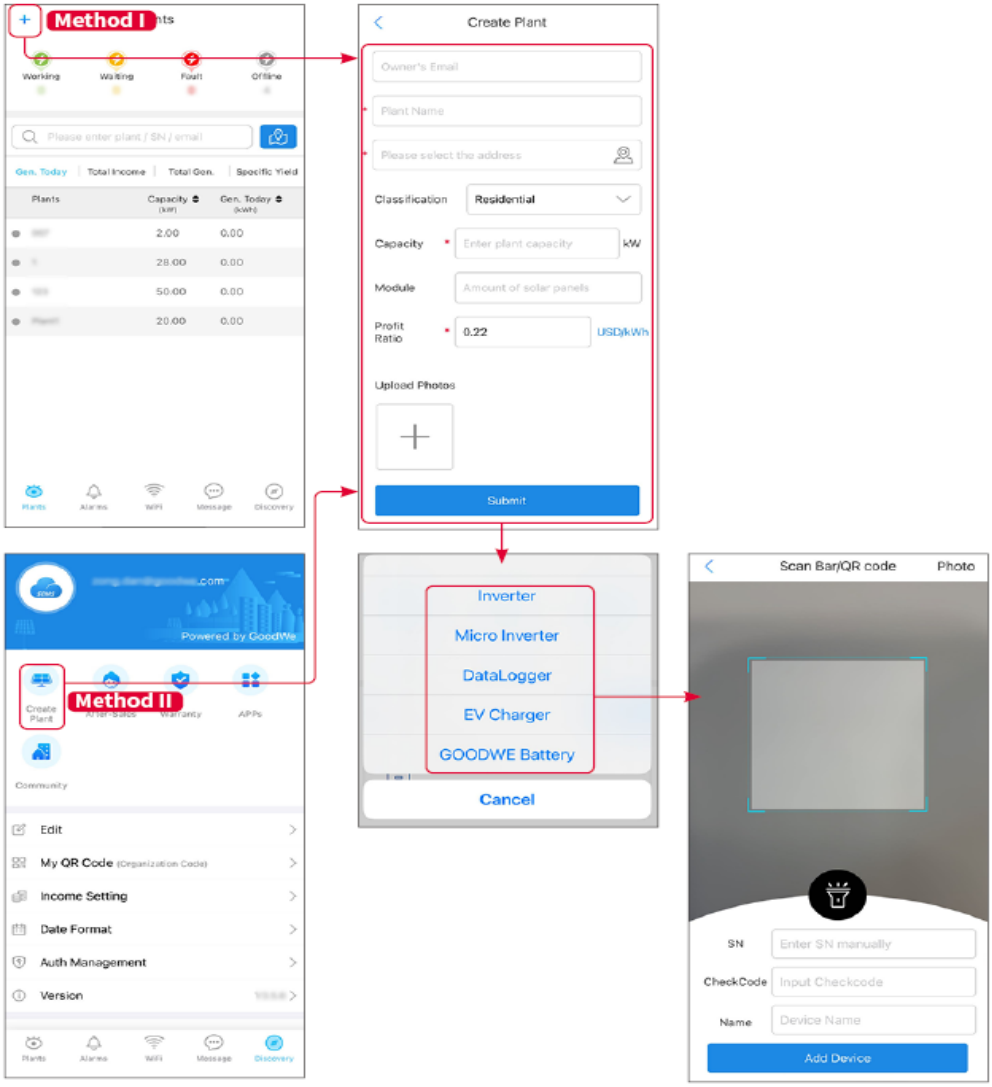
No.	Name/Icon	Description
1	Network Name	Applicable to WLAN. Please select the corresponding network based on your actual situation and communicate the device with the router or switch.
2	Password	Applicable to WLAN. Enter the password for the network you actually selected.

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

8.5 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.


Method I
Working
Waiting
Fault
Offline
Please enter plant / SN / email
Gen. Today
Total Income
Total Gen.
Specific Yield
Plants
Capacity (kW)
Gen. Today (kWh)
2.00
0.00
28.00
0.00
50.00
0.00
20.00
0.00
Plants
Alarms
WiFi
Message
Discovery
Create Plant
Owner's Email
Plant Name
Please select the address
Classification
Residential
Capacity
Enter plant capacity
kW
Module
Amount of solar panels
Profit Ratio
0.22
USD/kWh
Upload Photos
Submit
Powered by GoodWe
Create Plant
After-Sales
Warranty
APPs
Community
Method II
Edit
My QR Code (Organization Code)
Income Setting
Date Format
Auth Management
Version
Inverter
Micro Inverter
DataLogger
EV Charger
GOODWE Battery
Cancel
Scan Bar/QR code
Photo
SN
Enter SN manually
CheckCode
Input Checkcode
Name
Device Name
Add Device

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.

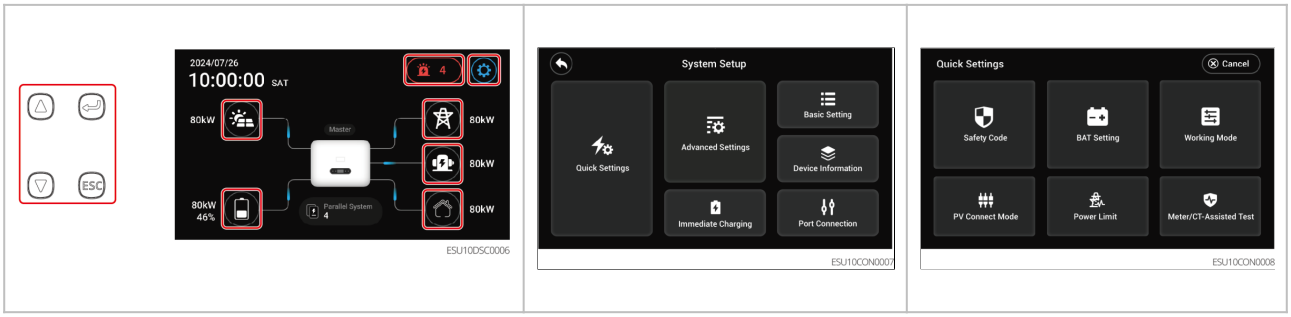
9.2 Configuration via LCD

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.

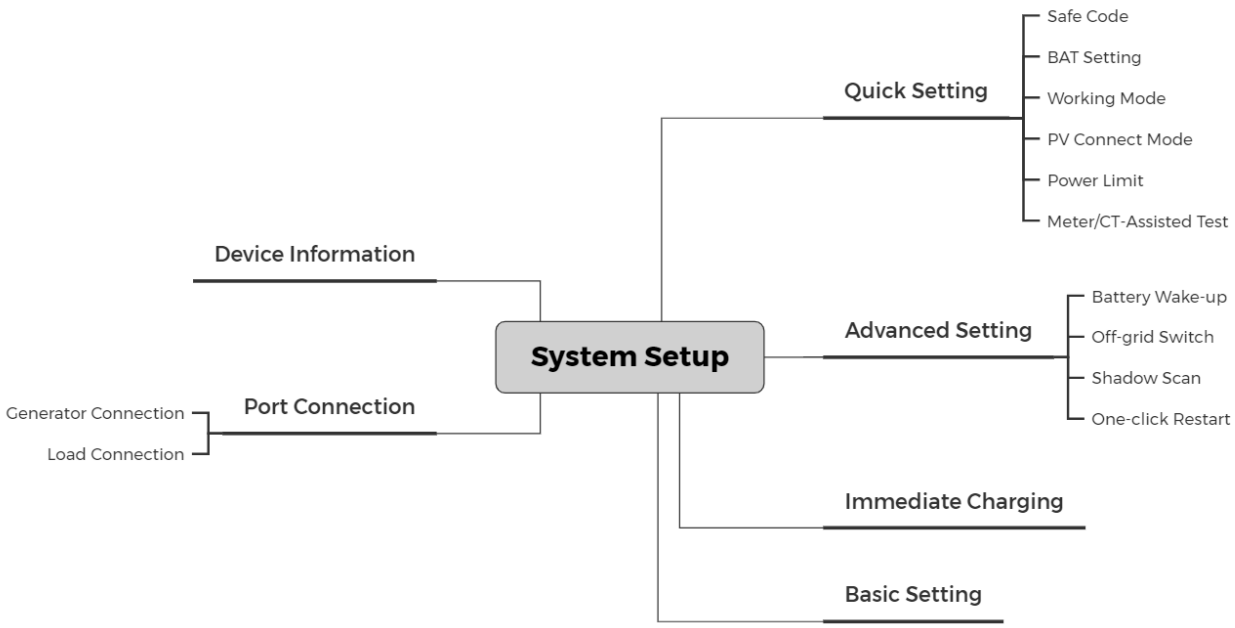
Introduction of LCD interface
LCD supports both touch and keys.



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.

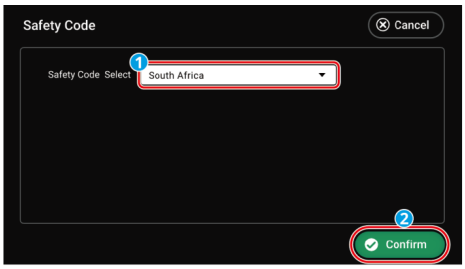
LCD setting interface structure



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	

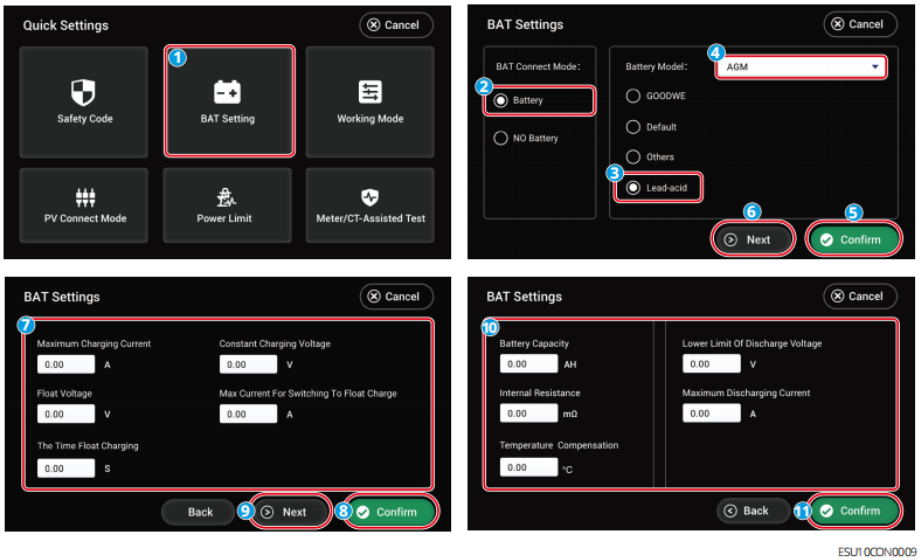
	60Hz Default	
	60Hz Default	
	50Hz Default	

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	

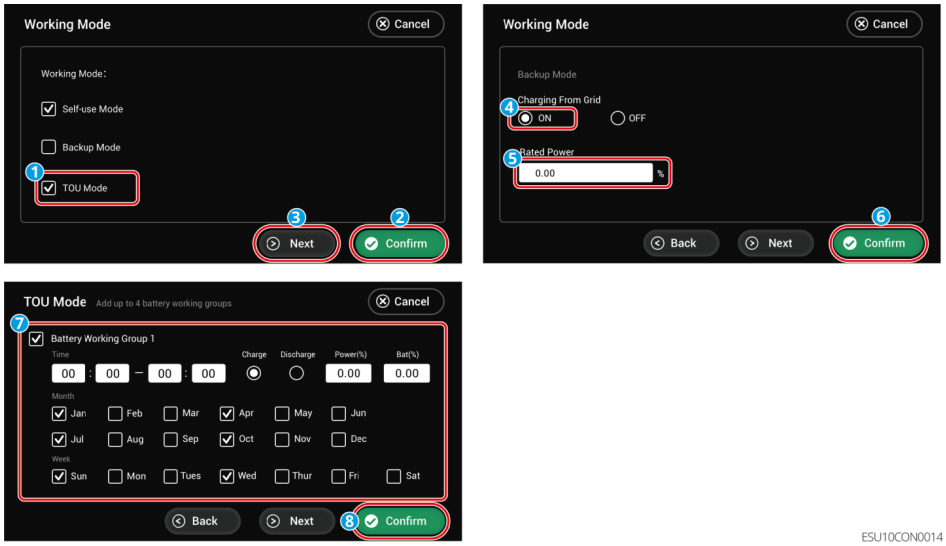
Constant Charging Voltage	The battery charging mode is set to constant voltage charging by default. The maximum charging voltage and current in the constant charge state. Please set them according to the battery technical parameters.
Float Voltage	The battery charging current is less than Maximum Current 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.

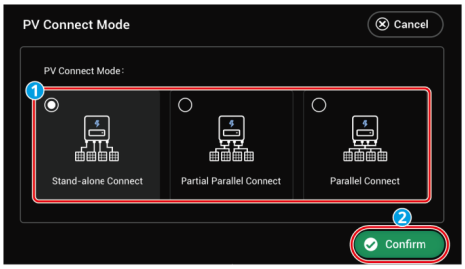


Parameter		Description
Self-use Mode		Based on Self-use Mode, Back-up Mode and TOU Mode can be enabled at the same time, and the inverter will automatically select the working mode. Operation priority: Back-up Mode>TOU Mode >Self-use Mode.
Back-up Mode	Charging From Grid	Enabling this function allows 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/Discharg	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.



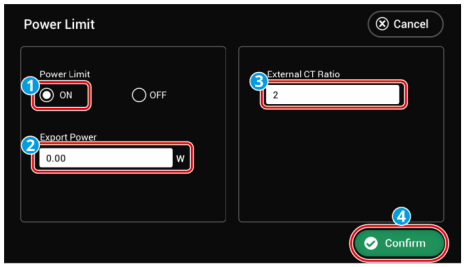
ESU10CON0015

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.

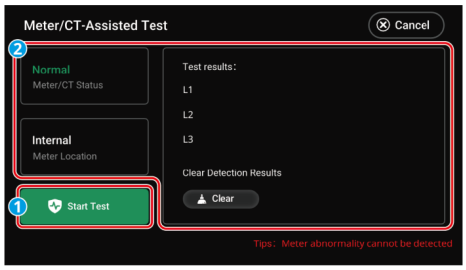


ESU10CON0016

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

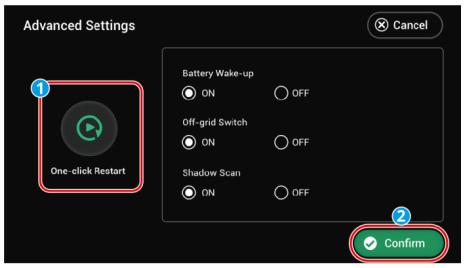
1. Through the main interface, click > Quick Settings > Meter/ CT Assisted Test to enter the parameter setting interface.
2. Click Start Test to begin the test. After the test is completed, judge the test result according to the interface prompts.



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.



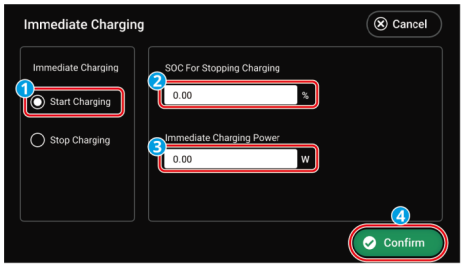
ESU10CON0020

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.

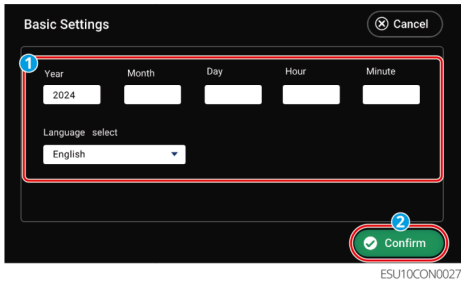


ESU10CON0021

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.

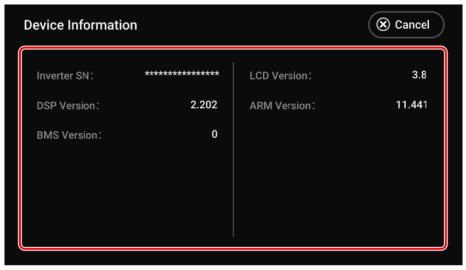


ESU10CON0027

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.



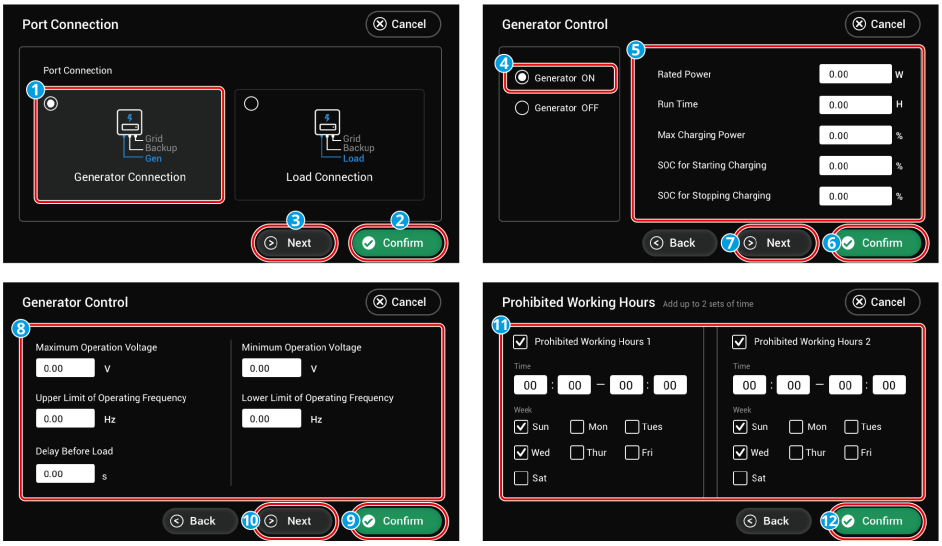
ESU10CON0028

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.

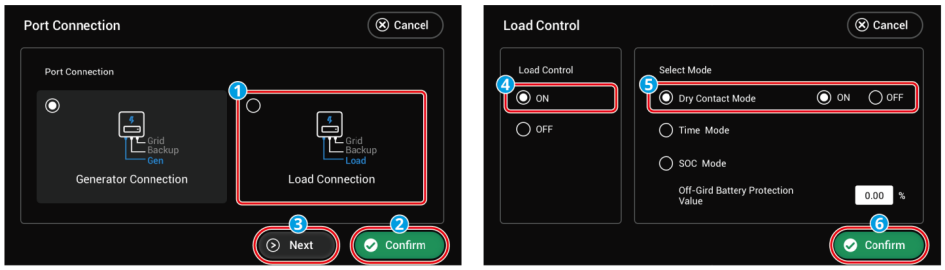
Setting Port Connection Load Control

Dry Contact Mode

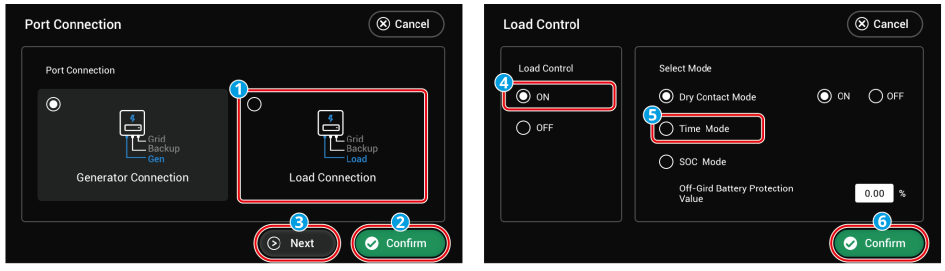
1. After connecting to the SolarGo APP, go to Home > Port Connection, entering the parameter setting interface.
2. Set the parameters based on actual needs.
3. After the setting is completed, please click Confirm. After the interface prompts Confirm OK, the parameters are set successfully.

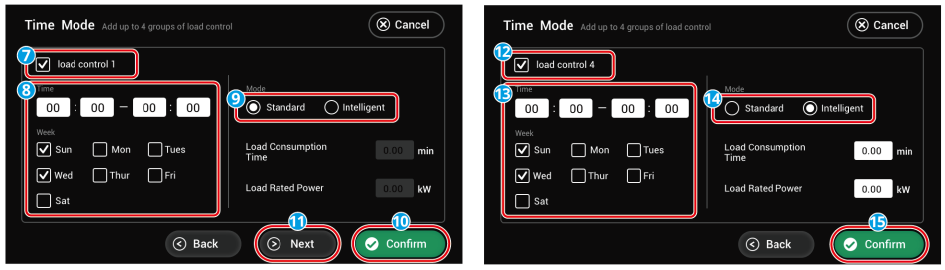
NOTICE

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.

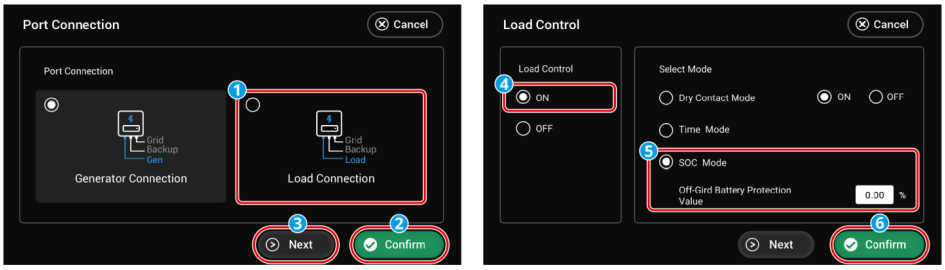


ESU10CON0023





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 SolarGo APP

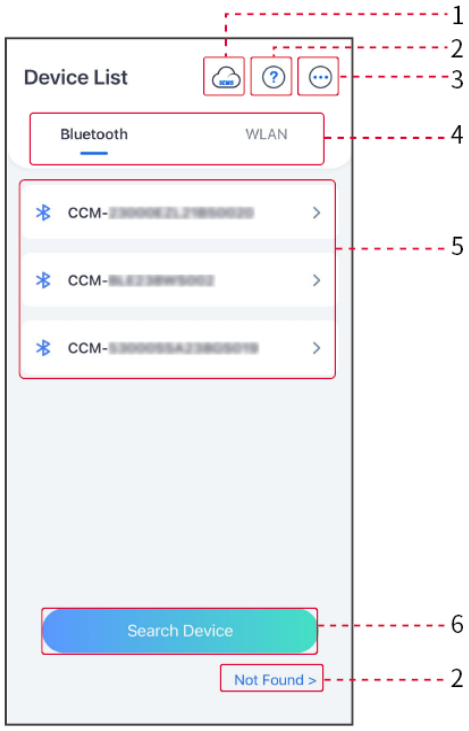
9.3.1 SolarGo APP Introduction

SolarGo App is a mobile application that communicates with the inverter through Bluetooth or WiFi modules. Commonly used functions are as follows:

1. Check the operating data, software version, alarms, etc.
2. Set grid parameters, communication parameters, safety countries, power limitation, etc.
3. Equipment maintenance.
4. Upgrade the firmware version of the equipment.

App Interface Structure

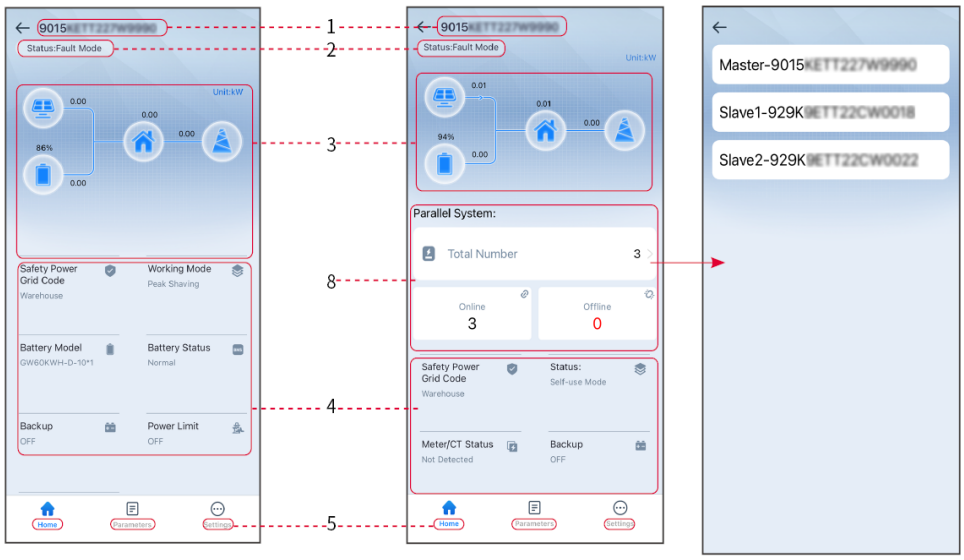
Introduction to the SolarGo App Login Interface



No.	Name/Icon	Description
1	SEMS	Tap the icon to open the page downloading the SEMS Portal app.
2	? Not found	Tap to read the connection guide.
3	•••	• Check information such as app version, local contacts, etc. • Other settings, such as update date, switching language, set temperature unit, etc.
4	Bluetooth/WiFi/4G	Select based on actual communication method. If you have any problems, tap or NOT Found to read the connection guides.
5	Device List	• The list of all devices. The last digits of the device name are normally the serial number of the device. • Select the device by checking the serial number of the master inverter when multi inverters are parallel connected. • The device name varies among different inverter models or smart dongle module.
6	Search Device	Tap Search Device if the device is not found.

Introduction to the Main Interface of SolarGo App

Single inverter and multiple inverter



No.	Name/Icon	Description
1	Serial Number	Serial number of the connected inverter or serial number of the master inverter in the parallel system.
2	Device Status	Indicates the status of the inverter, such as Working, Fault, etc.
3	En Chart	Indicates the energy flow chart of the PV system. The actual interface may differ.
4	System Status	Indicates the system status, such as Safety Code, Working Mode, Battery Model, Battery Status, Power Limit, Three-Phase Unbalanced Output, etc.
5	Home	Home. Tap Home to check Serial Number, Device Status, Energy Flow Chart, System Status, etc.
6		Parameters. Tap Parameters to check the running parameters of the system.
7		Setting. Log in before entering Quick Settings and Advanced Settings. Initial password: goodwe2010 or 1111.
8	Parallel	Tap Total Number to check serial number of all inverters. Tap the serial number to enter the setting page.

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-***; ***

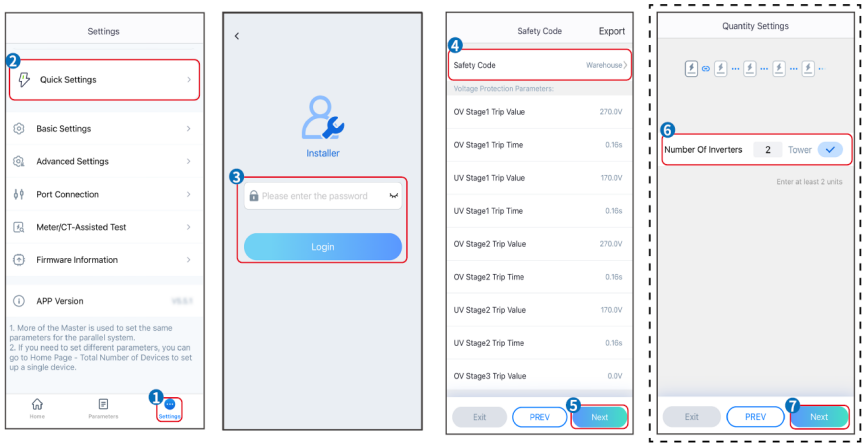
Connect to the inverter via Bluetooth

9.3.2 Quick Settings

NOTICE

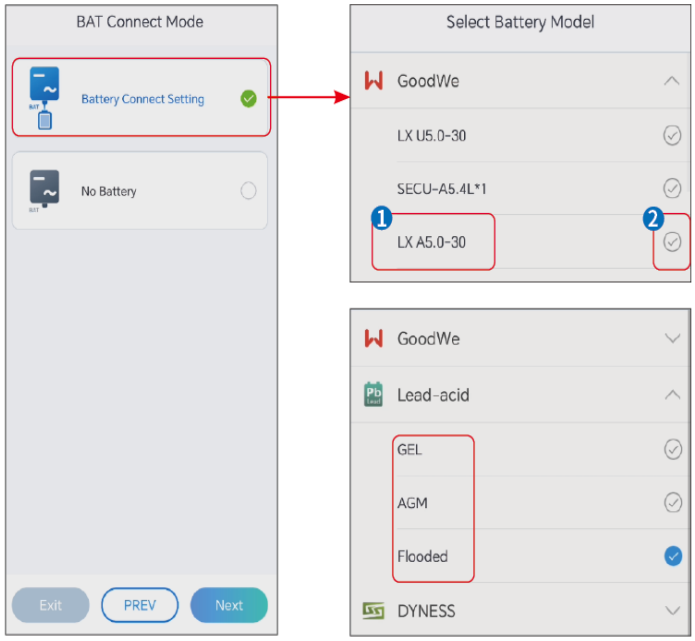
- When selecting the safety code country/region, the system will automatically configure the overvoltage and undervoltage protection, overfrequency and underfrequency protection, inverter on-grid voltage/frequency, connection slope, Cosφ curve, Q(U) curve, P(U) curve, FP curve, high and low voltage ride-through, etc. according to the safety regulation requirements of different regions.
- The generation efficiency of inverter differs in different working modes. Please set according to the local actual electricity consumption.

Setting safety code

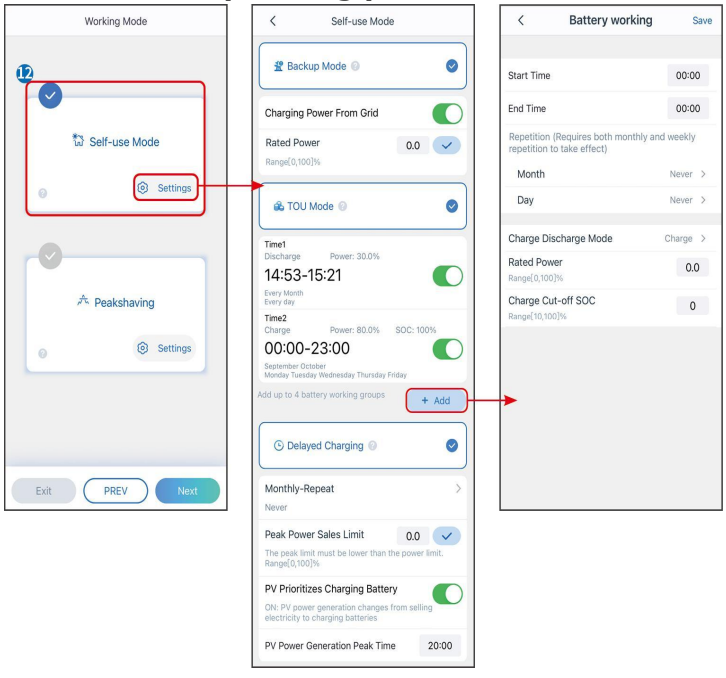


Parameter	Description
Safety Code	Select the corresponding safety code based on the country or region where the equipment is located.
BAT Connect Mode	Select the actual mode for connecting the battery to the inverter. If there is no battery connected in the system, it is unnecessary to configure the battery model and working mode, and the equipment will operate in the self-using mode by default
Select Battery Model	Select the battery model based on actual situation. The lead acid battery type: AGM/GEL/Wet Battery (Flooded).
Working Mode	Set the working mode of the device during operation. Supports: Peakshaving mode and Self-use mode.

Set parameters for lithium battery



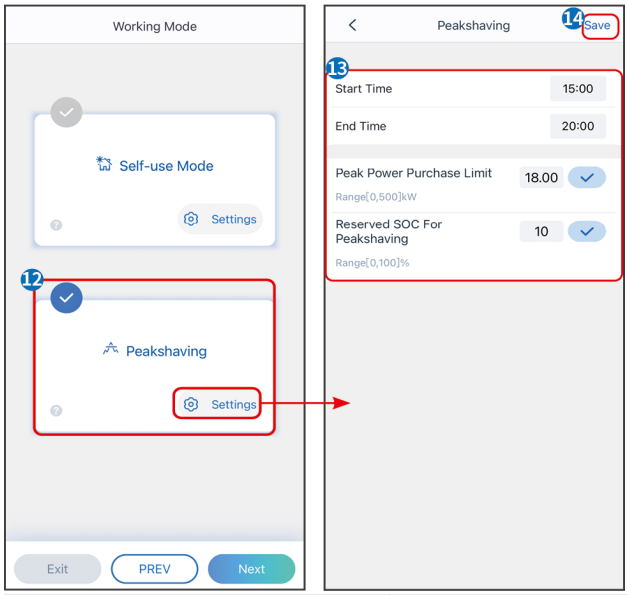
When the self-use mode is selected, the interface will be displayed as follows. You need to enter the advanced mode to choose the specific working mode and set the corresponding parameter values.



Parameter	Description
Self-use mode: based on the self-use mode, Back-up mode, TOU mode, and Smart charging can be enabled at the same time, and the inverter will automatically select the working mode. Working priority: Back-up mode> TOU mode >Smart charging 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	
Start Time	Within the start and end time, the battery will charge or discharge based on the set charge-discharge mode and rated power.
End Time	
Charge and discharge mode	Set to charge or discharge based on actual needs.
Rated Power	The percentage of power during charging or discharging compared to the rated power of the inverter.
Charge/Discharge Cut-off SOC	The battery stop charging once the battery SOC reaches Charge Cut-off SOC.

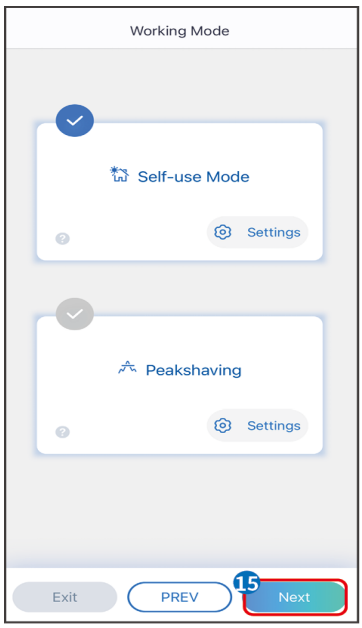
The App interface is as following when Peakshaving mode is selected. (Peakshaving mode can only be set via SolarGo App)

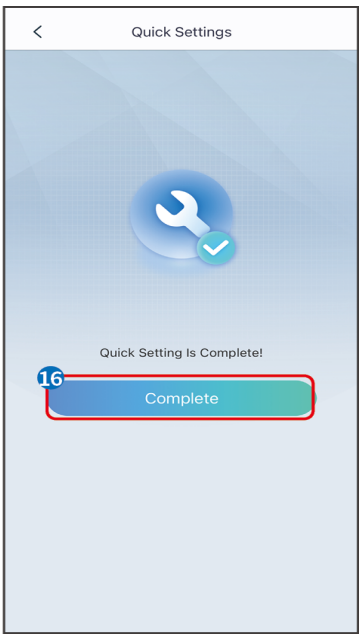


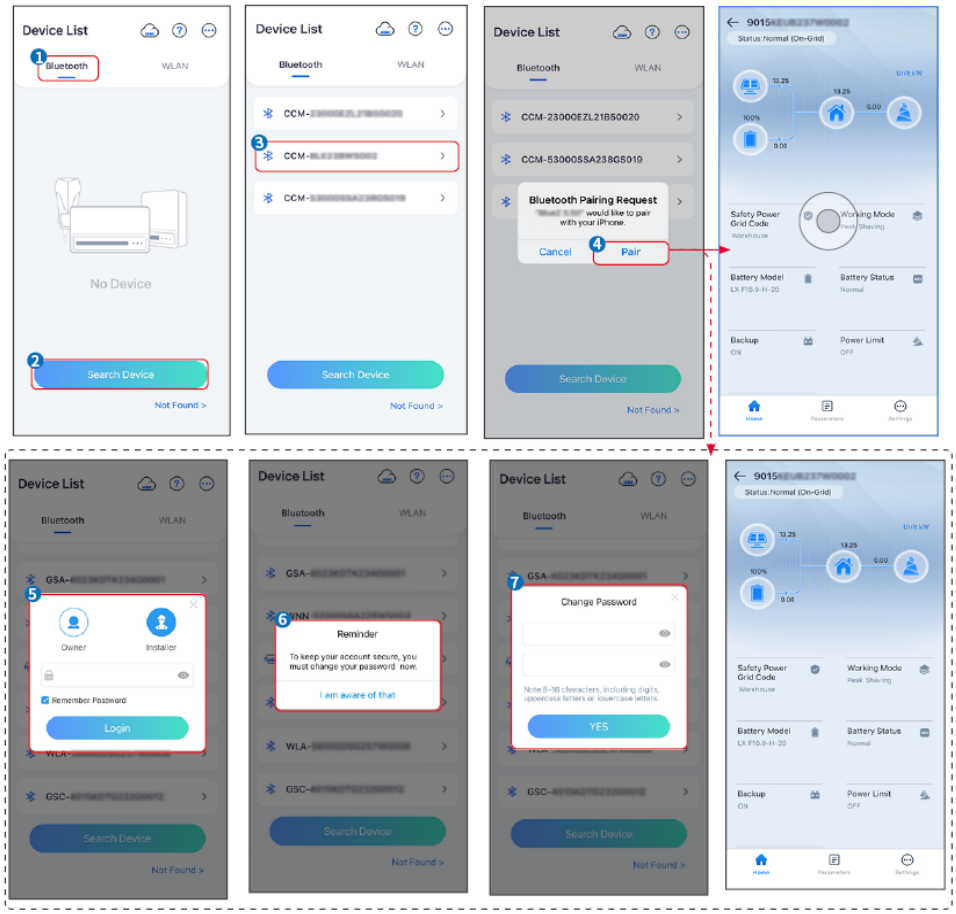
Parameter	Description
Peakshaving	
Start Time	The utility grid will charge the battery between Start Time and End Time if the load power consumption do not exceed the power quota. Otherwise, only PV power can be used to charge the battery.
End Time	
Peak Power Purchase Limit	Set the maximum power limit 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.
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.

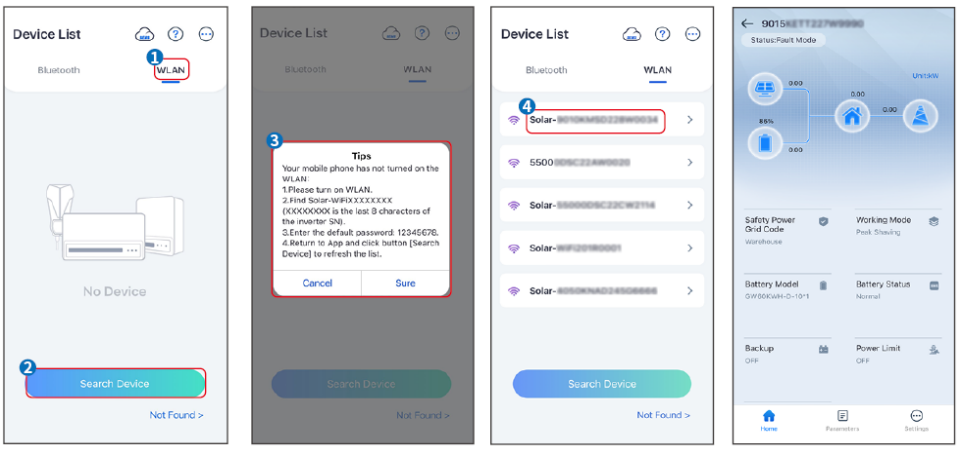
After setting the parameters, click Start or Skip to skip self-check.







Connect to the inverter via WiFi



9.3.3 Communication Setting

Communication settings can only be set through the SolarGo APP.

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

Step1: Enter the setting page through **Home > Settings > Communication Configuration > Network Settings**, entering the setting page.
Step2: Configure the WLAN or LAN network based on the actual situation.

No.	Name/Icon	Description
1	Network Name	Applicable to WLAN. Please select the corresponding network based on your actual situation and communicate the device with the router or switch.
2	Password	Applicable to WLAN. Enter the password for the network you actually selected.
3	DHCP	• When the router is using the dynamic IP mode, turn on the DHCP function. • When using the router in static IP mode or using a switch, turn off the DHCP function.
4	IP Address	• When DHCP is enabled, there is no need to configure this parameter. • When DHCP is turned off, please configure this parameter according to the information of the router or switch.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

9.3.4 Setting the Basic Information

Setting the Basic Information

Shadow Scan
Step1: Tap **Home> Settings > Basic Settings**, to set the parameters.
Step2: Set the function based on actual needs.

No.	Parameter	Description
1	Shadow Scan	Enable Shadow Scan when the PV panels are severely shadowed to optimize the power generation efficiency.

SPD Secondary Lightning Protection Alarm
Step1: Tap **Home> Settings > Basic Settings**, to set the parameters.
Step2: Set the function based on actual needs.

No.	Parameter	Description
1	SPD Secondary Lightning Protection Alarm	After enabling SPD secondary lightning protection alarm, when the lightning protection module is abnormal, there will be

		SPD module abnormal alarm prompt.

Backup Function

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.
Step1: Tap **Home> Settings > Basic Settings**, to set the parameters.
Step2: Set the function based on actual needs.

No.	Parameter	Description
1	UPS Mode - Full Wave Detection	Check whether the utility grid voltage is too high or too low.
2	UPS Mode - Half Wave Detection	Check whether the utility grid voltage is too low.
3	EPS Mode - Supports LVRT	Stop detecting utility grid voltage.
4	Clear Overload History	Once the power of loads connected to the inverter BACK-UP ports exceeds the nominal load power, the inverter will restart and detect the power again. The inverter will perform restart and detection several times until the overloading problem is solved. Time increases between each reboot. Tap Clear Overload History to reset the restart time interval after the power of the loads connected to the BACK-UP ports meets the requirements. The inverter will restart immediately.

Setting Advanced Parameters

AFCI Test

Step1: Tap **Home > Settings > Advanced Settings** to set the parameters.
Step2: Set the parameters based on actual needs. Enter the parameters and tap √ or SAVE. The parameters are set successfully.

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

PV Connect Mode

Step1: Tap **Home > Settings > Advanced Settings** to set the parameters.
Step2: Set the parameters based on actual needs. Enter the parameters and tap √ or SAVE. The parameters are set successfully.

No.	Parameter		Description
1	PV Connect Mode	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

Step1: Tap **Home > Settings> Advanced Settings > Power Limit** to set the parameters.

Step2: Enable or disable the power limit function based on actual needs.

Step3: Enter the parameters and tap √. The parameters are set successfully.

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

Set parameters for lithium battery

Set parameters for lithium battery

Step1: Tap **Home > Settings> Advanced Settings > Battery Function Settings** to set the parameters.

Step2: Enter the parameters and tap √. The parameters are set successfully.

No.	Parameter	Description
1	Max. Charging Current	Set the maximum charging current based on actual needs.
2	Max. Discharging Current	Set the maximum discharging current based on actual needs.
3	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
4	Depth of discharge(on-	Indicates the depth of discharge of the battery when the inverter is on-grid or off-grid.

	grid)	
5	Depth of discharge(off-grid)	
6	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.
7	Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.
8	SOC For Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.
9	Immediate Charging Power	Indicates the percentage of the charging power to the inverter nominal 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.
10	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: • TOU mode: to maintain the minimum power input capacity of the battery. It will be turned on when the temperature is less than 5℃, and turned off when it is greater than or equal to 7℃. • Standard 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℃. • Efficient 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℃. This function can only be set through the APP.
11	Battery Wake-up	After turned on, the battery can be awakened when it shuts down due to undervoltage protection. Only applicable to lithium batteries without circuit breakers. After turned on, the output voltage of the battery port is about 60V.

Setting Lead-acid Battery Parameter

NOTICE

1. Before setting the parameters of lead-acid batteries, it is necessary to read the user manual, technical parameters and other related materials of lead-acid batteries. To ensure the safety of batteries, please strictly follow the relevant materials of lead-acid battery manufacturers to set the battery parameters. Otherwise, the risks caused thereby shall not be within the scope of the responsibility of the inverter.
2. The voltage range of lead-acid batteries needs to match the inverter, and the recommended voltage of lead-acid batteries connected to the inverter is ≤60V, otherwise the inverter may not operate properly.
3. The SOC of lead-acid batteries is calculated by the inverter BMS, not the actual battery capacity, which may result in SOC value deviation or jump. SOC is only used as a reference for battery capacity. Performing SOC value calibration after the battery is fully charged can improve the accuracy of the SOC value.

Step1: Enter the parameter settings interface through **Home > Settings > Advanced Settings > Battery Function**.

Step2: Enter the parameters and tap √. The parameters are set successfully.

No.	Parameter	Description
1	Battery Capacity	Please set it according to the battery technical parameters.
2	Float Voltage	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.
3	Constant Charging Voltage	The battery charging mode is set to constant voltage charging by default; this value is the upper limit of charging voltage in this mode. Please set it according to the battery technical parameters.
4	Minimum Discharge Voltage	Please set it according to the battery technical parameters. To protect the battery performance and life, this parameter should not be set too low.
5	Maximum Charging Current	The maximum current during charging, used to limit the charging current. Please set it according to the battery technical parameters.
6	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.
7	Maximum Float Charge Current	The maximum charging current in the float charge state. Please set it according to the battery technical parameters. When the battery is nearly fully charged, it will enter the float charge state. Please refer to the technical parameters of the corresponding battery model for specific definitions.
8	Battery Internal Resistance	The internal resistance of the battery. Please set it according to the battery technical parameters.
9	Time to Switch to Float Charging Mode	When the battery charging status changes from constant charging to float charging, and the duration reaches the set value, the battery charging mode will switch to float charging mode. The default duration is 180s.
10	Charge	By default, when the temperature is higher than 25℃, the

	Temperature Compensation	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.

Setting Generator Parameters

Step1: After connecting to the SolarGo APP, go to **Home > Settings > Port Connection > Generator Connection**. After selecting the generator type, enter the parameter setting interface.

Step2: Enter the parameters and tap √. The parameters are set successfully.

Manual control of a generator (Does not support dry contact connection): this type of generator only supports manual start and stop.

Automatic control of a generator (Supporting dry contact connection): this type of generator supports automatic start and stop.

No.	Parameter	Description
1	Startup Mode	Set the switch control mode and automatic control mode. In the switch control mode, the start and stop of the generator can be remotely controlled. In automatic control mode, the generator automatically starts and stops based on preset parameters. This feature only applies to generators that support dry contact connection.
2	Prohibited Working Hours	Set a prohibited working time. During this period, the generator will stop working. This feature only applies to generators that support dry contact connection.
3	nominal Power	nominal power of the generator.
4	Running 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.
5	Upper Voltage	Set the upper limit of operating voltage for the generator.
6	Lower Voltage	The time mode will be on between the Start Time and End Time. Set the upper limit of operating voltage for the generator.
7	Upper Frequency	Set the upper limit of operating frequency for the generator.
8	Lower Frequency	Set the lower limit of the generator's operating frequency.
9	Delay Time Before Loading	The no-load preheating time before the generator is loaded.
10	Switch	Turn on or off the function of the generator to charge the battery. This function supports settings through the SolarGo APP only.
11	Maximum	Set the maximum charge power for the generator battery.

	Charging Power	
12	Starting Voltage	Set the start voltage for generator to charge battery. When the voltage of the battery is lower than the set value, the generator will charge the battery.
13	Stop Voltage	Set the stop voltage for generator to charge battery. When the voltage of the battery is higher than the set value, the generator will stop charging the battery.

Setting Load Control

Step1: After connecting to the SolarGo APP, enter the parameter setting interface through **Home > Settings > Port Connection > Load Control**.

Step2: Enter the parameters and tap √. The parameters are set successfully.

No.	Parameter	Description
1	Dry Contact Mode	The loads will be powered within the setting time period. When the switch is ON, the loads will be powered; when the switch is OFF, the power will be cut off. Turn the switch on or off based on actual needs.
2	Time Mode	Set the time to enable the load, and the load will be powered automatically within the setting time period.
3	SOC Mode	The inverter has an integnominal relay controlling port, which can control whether to power the loads or not. 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.

9.3.5 Setting Safety Parameters

Setting the Basic Parameters

NOTICE
The grid standards of some countries/regions require that inverters shall be equipped with functions that meet local requirements.

Step1: Tap **Home > Settings > Advanced Settings**, to set the parameters.

No.	Parameter	Description
1	DRED/Remote Shutdown/RCR	Enable DRED/Remote Shutdown/RCR before connecting the third party DRED, remote shutdown, or RCR device to comply with local laws and regulations.
2	Three-phase Unbalanced Output	Enable Three-phase Unbalanced Output when the utility grid company adopts phase separate billing.

3	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.
4	AutoTest	Enable AUTO TEST to set auto test for grid tying in compliance with local grid standards and requirements.

Setting Customized Safety Parameters

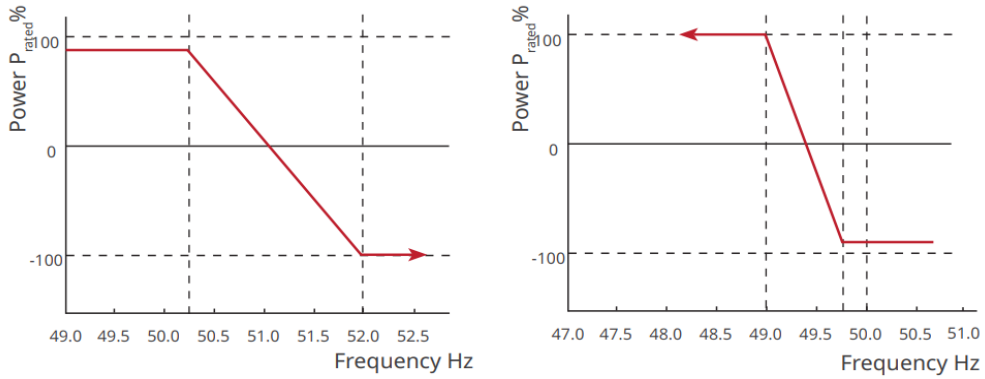
NOTICE
Set the custom safety parameters in compliance with local requirements. Do not change the parameters without the prior consent of the grid company

Setting the Active Power Mode

Setting the P(F) Curve

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Power Mode Settings** to set the parameters.

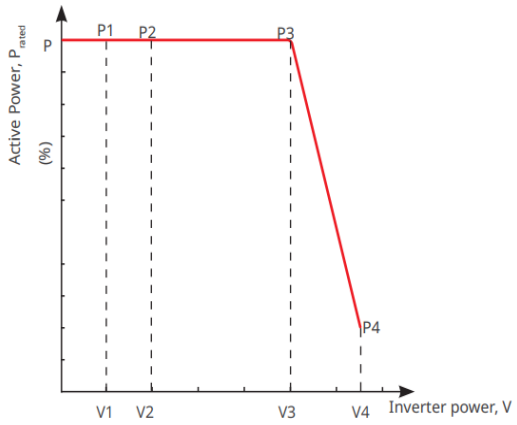
Step2: Set the parameters based on actual needs.



Setting the P(U) Curve

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Active Power Mode Settings** to set the parameters.

Step2: Enter the parameters. The inverter will adjust the active output power to the apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.



Setting the Reactive Power Mode

Setting the Fix PF

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Reactive Power Mode** to set the parameters.

Step2: Set the parameter based on actual needs. The power factor remains fixed during the inverter working process.

No.	Parameter	Description
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements.
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	PF	Set the power factor based on actual needs. Range: 0-~-0.8, or +0.8~+1.

Setting the Fix Q

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Reactive Power Mode** to set the parameters.

Step2: Set the parameter based on actual needs. The output reactive power remains fixed during the inverter working process.

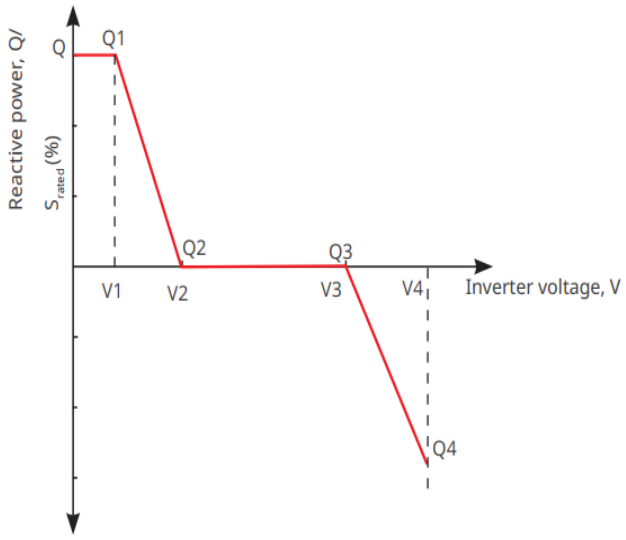
No.	Parameter	Description
1	Fix Q	Enable Fix Q when it is required by local grid standards and requirements.
2	Under-excited	Set the reactive power as inductive or capacitive reactive power based on local grid standards and requirements, and actual needs.
3	Over-excited	
4	PF	The percentage of reactive output power to apparent power.

Setting the Q(U) Curve

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Reactive Power Mode** to set the parameters.

Step2: Enter the parameters. The inverter will adjust the reactive power to the

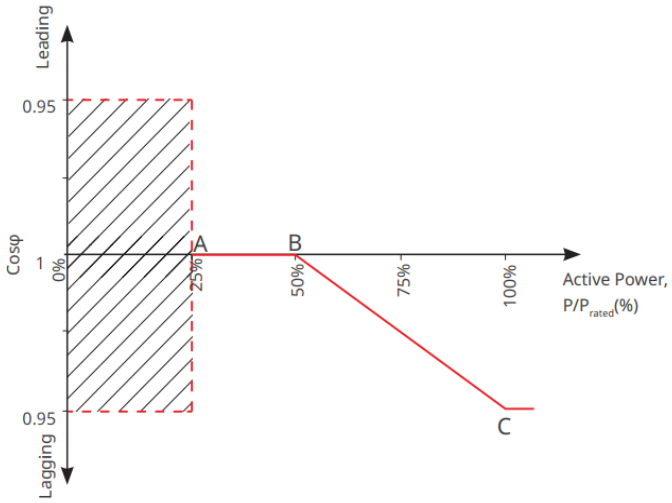
apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.



Setting the Cosφ Curve

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Reactive Power Mode** to set the parameters.

Step2: Enter the parameters. The inverter will adjust the active output power to the apparent power ratio in real-time according to the actual grid voltage to the rated voltage ratio.



Setting Protection Parameters

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Protection Parameters** to set the parameters.

Step2: Set the parameters based on actual needs.

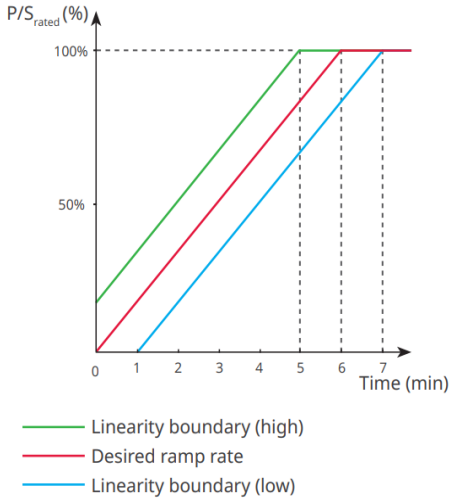
No.	Parameter	Description
Voltage Protection Parameters		
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value, n = 1, 2, 3.

2	OV Stage n Trip Time	Set the grid overvoltage protection tripping time, n = 1, 2, 3.
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value, n= 1, 2, 3.
4	UV Stage n Trip Time	Set the grid undervoltage protection tripping time, n = 1, 2, 3.
5	Grid 10min Overvoltage	Set the 10min overvoltage protection threshold value.
Frequency Protection Parameter		
6	OF Stage n Trip Value	Set the grid overfrequency protection threshold value, n = 1, 2, 3.
7	OF Stage n Trip Time	Set the grid overfrequency protection tripping time, n = 1, 2.
8	UF Stage n Trip Value	Set the grid underfrequency protection threshold value, n = 1, 2.
9	UF Stage n Trip Time	Set the grid underfrequency protection tripping time, n = 1, 2.

Setting Connection Parameters

Step1: Tap **Home > Settings > Advanced Settings > Safety Parameters > Grid Connection Parameters** to set the parameters.

Step2: Set the parameters based on actual needs.



Setting Voltage Ride through Parameters

Step1: Enter the parameter setting page through **Home > Settings > Advanced Settings > Safety Parameter Settings > Voltage Fault Ride-Through.**

Step2: Set the parameters based on actual needs.

No.	Parameter	Description
LVRT		
1	Ride Through Voltage Start Point	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between Ride Through Voltage Start Point and Ride Through Voltage End Point.

2	Ride Through Voltage End Point	
3	Ride Through Time Start Point	Indicates the longest duration the inverter can remain connected to the grid when the grid voltage is at the Ride Through Voltage Start Point.
4	Ride Through Time End Point	Indicates the longest duration the inverter can remain connected to the grid when the grid voltage is at the Ride Through Voltage End Point.
5	Ride Through Trip Threshold	LVRT is allowed when the grid voltage is lower than Ride Through Trip Threshold.
HVRT		
6	Ride Through Voltage Start Point	The inverter will not be disconnected from the utility grid immediately when the grid voltage is between Ride Through Voltage Start Point and Ride Through Voltage End Point.
7	Ride Through Voltage End Point	
8	Ride Through Time Start Point	Indicates the longest duration the inverter can remain connected to the grid when the grid voltage is at the Ride Through Voltage Start Point.
9	Ride Through Time End Point	Indicates the longest duration the inverter can remain connected to the grid when the grid voltage is at the Ride Through Voltage End Point.
10	Ride Through Trip Threshold	HVRT is allowed when the grid voltage is higher than Ride Through Trip Threshold.

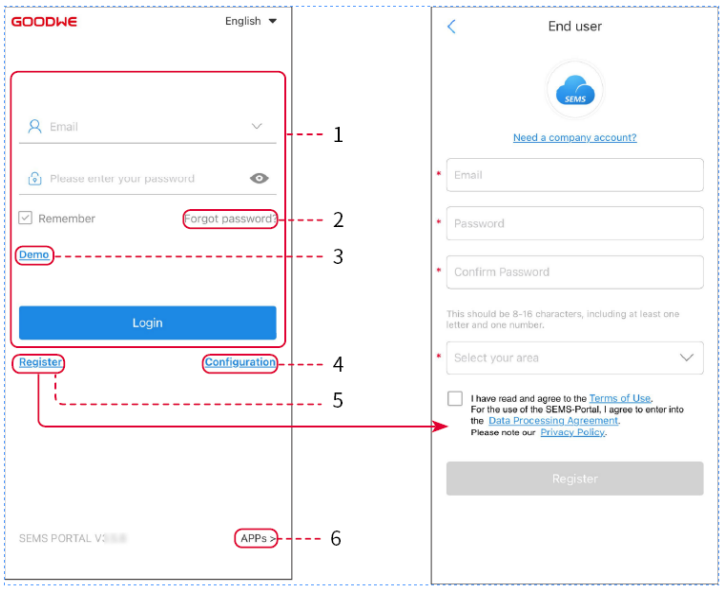
10 Power Plant Monitoring

10.1 SEMS Portal Overview

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

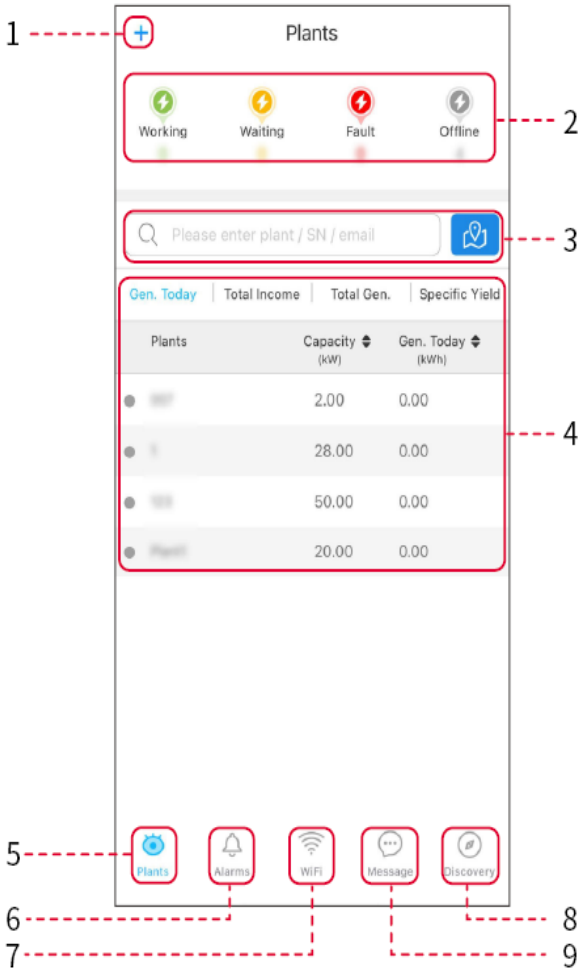
1. Manage the organization or user information;
2. Add and monitor the power plant information;
3. Equipment maintenance.

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



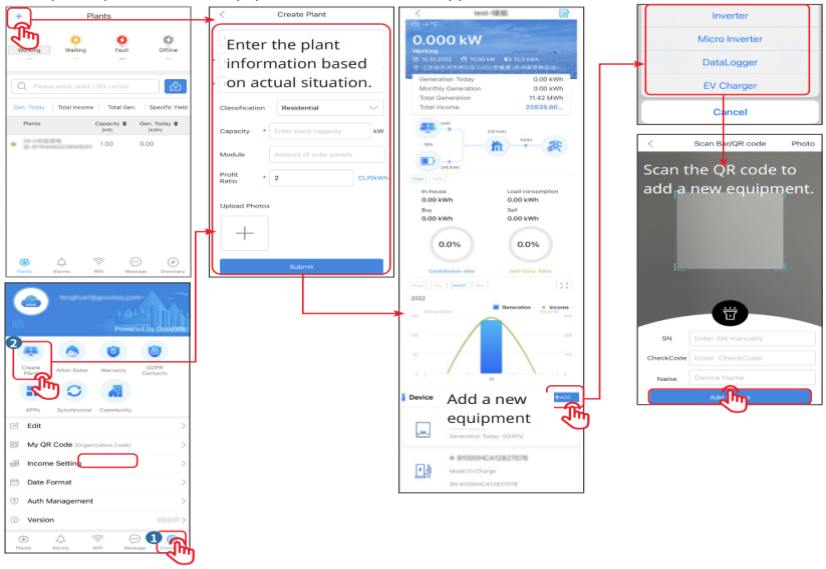
No.	Name	Description
1		Click to view the current weather and weather conditions for the next few days.
2		Used to scan inverter QR codes or barcodes.
3		Click to view system announcements.
4	Power generation statistics	Click to switch between today, this month, total generated power and cumulative earnings.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

10.2 Manage Power Plant or Equipment

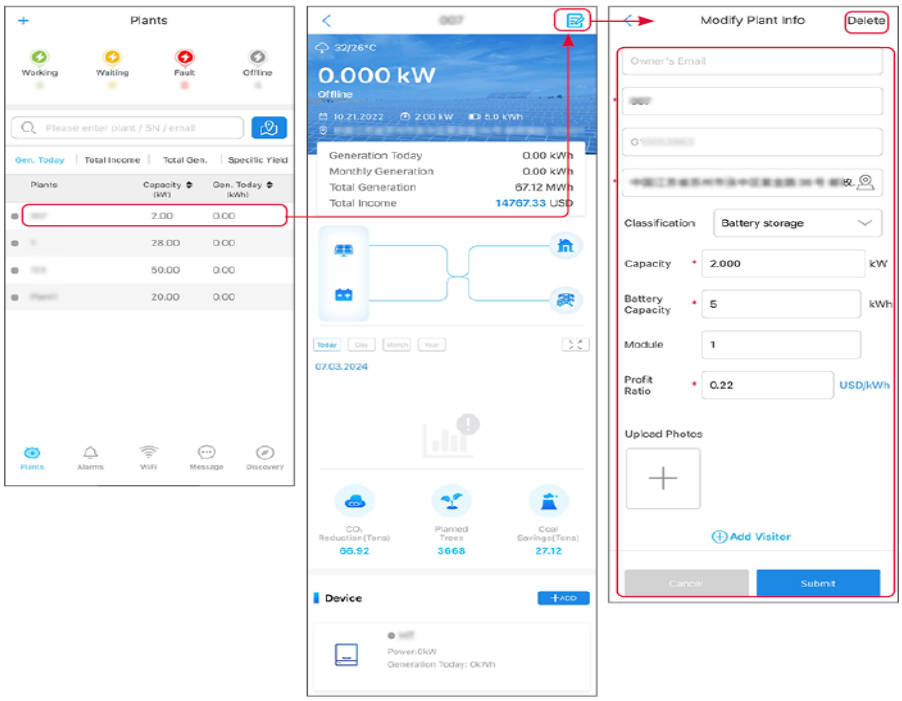
10.2.1 Power Plant Creation

Step1: Enter the interface for creating a power plant.
Step2: Carefully read the prompts on the interface and fill in the power plant information based on actual conditions. (* refers to the mandatory items)
Step3: Add devices according to the interface prompts to complete the creation of the power plant.



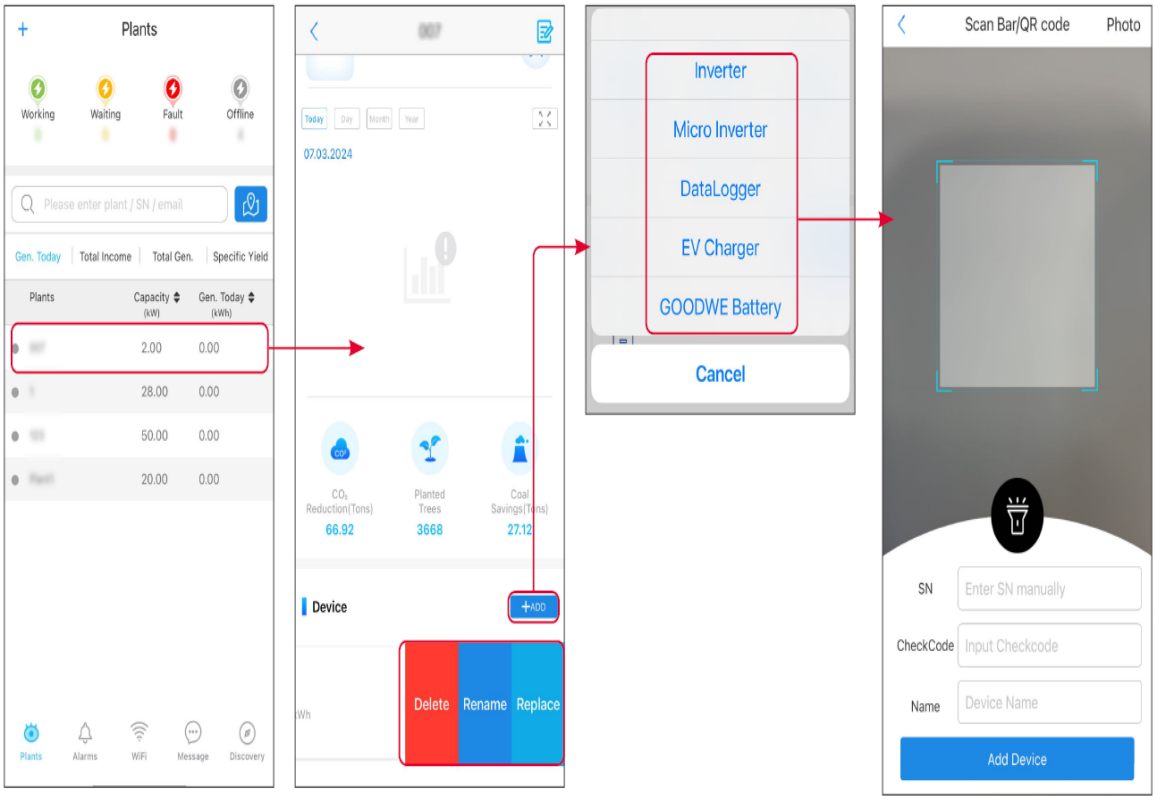
10.2.2 Power Plant Management

Step1: Enter the power plant monitoring page and delete or modify the power plant information based on actual needs.



10.2.3 管理电站设备

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.



10.3 Power Plant Monitoring

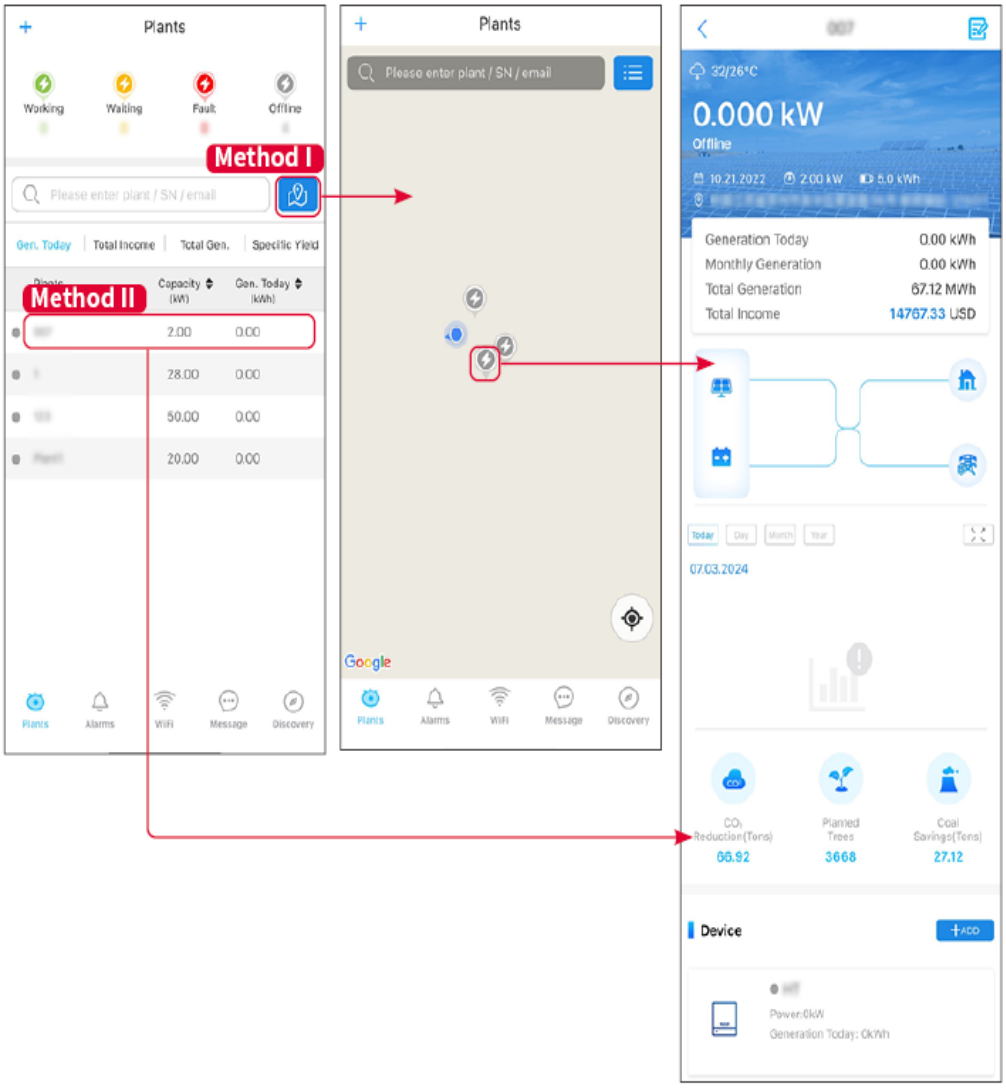
10.3.1 Viewing Power Plant Information

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.

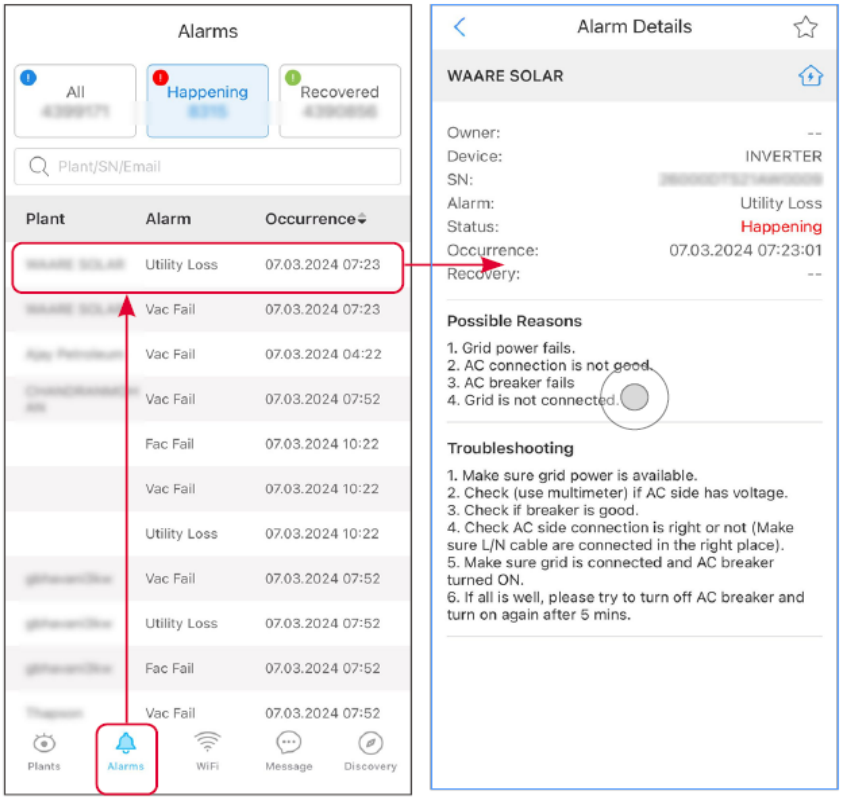
Step 1: (Optional) If there are multiple power plants, you can search for information such as the power plant name, inverter SN number, or the owner's phone number to quickly locate the power plant.

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.
Step3: 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.



10.3.2 Viewing Alarm Information

Approach 1
Step1: 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.
Step3: Click on the alarm name to view detailed alarm information.



Approach 2

Step1: Click the Fault tab on the power plant detailed page to enter the alarm query page.
Step2: Click on the alarm name to view detailed alarm information.

11 App Introduction

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

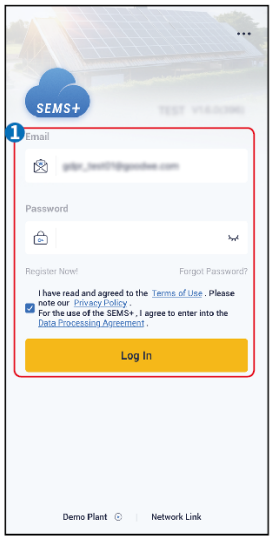
11.1 Managing the Account

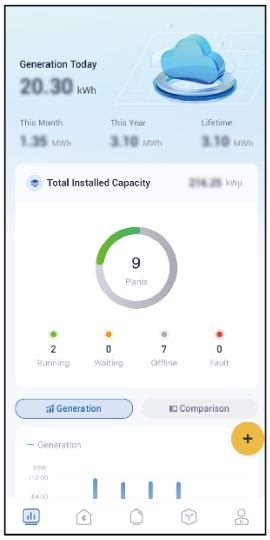
11.1.1 Account Login

NOTICE

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

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





11.2 Power Plant Management

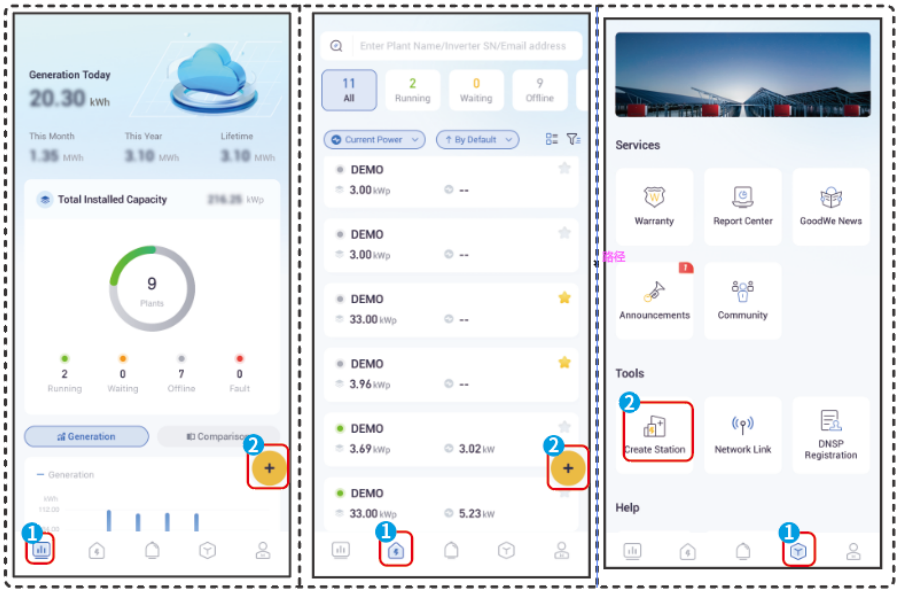
11.2.1 Power Plant Creation

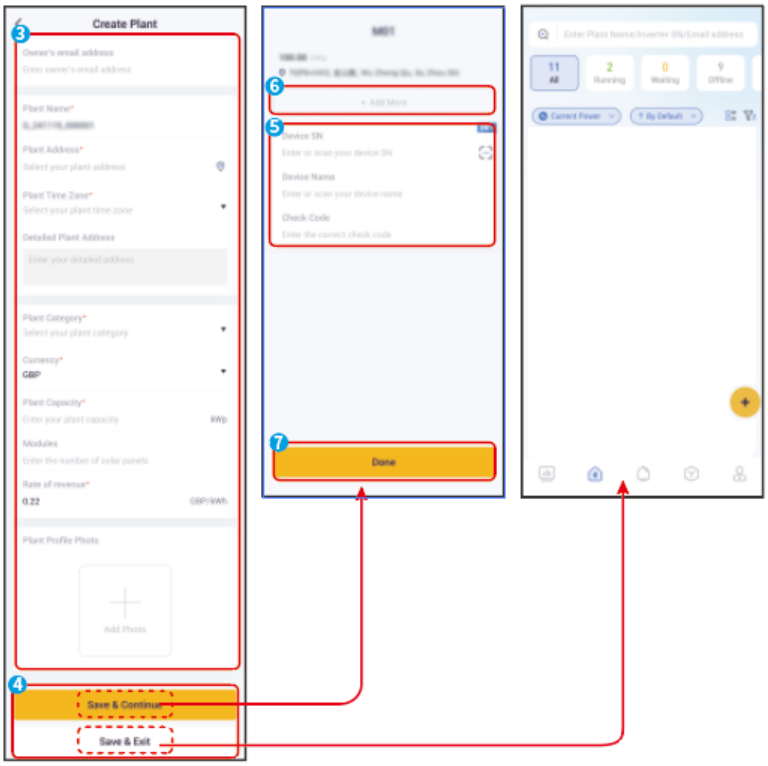
Step 1: Click Create Station from the home page or station list page, **or through the account page**.

Step 2: According to the actual situation, **fill in** the information about the power station in the Create Station interface.

Step 3: **Click Save&Exit** to complete the creation of the power station. At this time,

no equipment is added to the power station; or click **Save&Continue** to enter the interface to add equipment. According to the actual situation, enter the relevant information about the equipment, support for adding multiple devices.





11.2.2 Configuring Power Plant Information

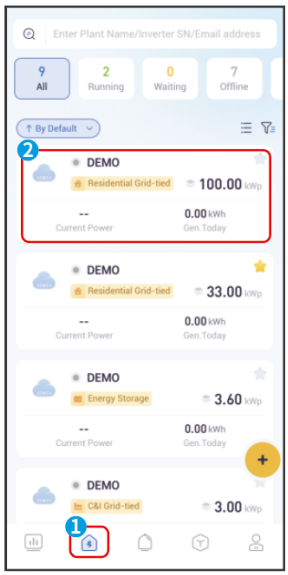
NOTICE
After creating the power station, the station configuration information can be updated according to actual requirements. If the filled configuration

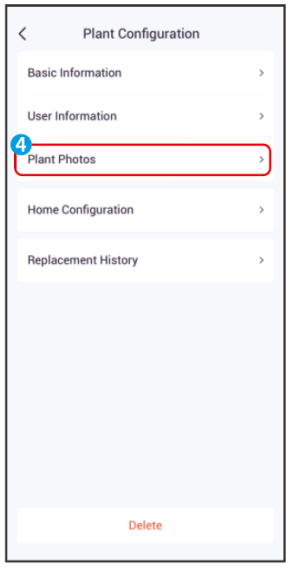
information is contrary to the actual situation of the power station, the actual situation of the power station shall prevail, and the basic information here is for reference only.

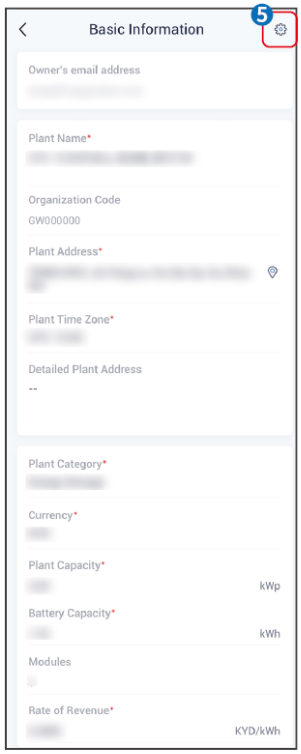
Step 1: Select the station that needs to modify the configuration in the station list interface.

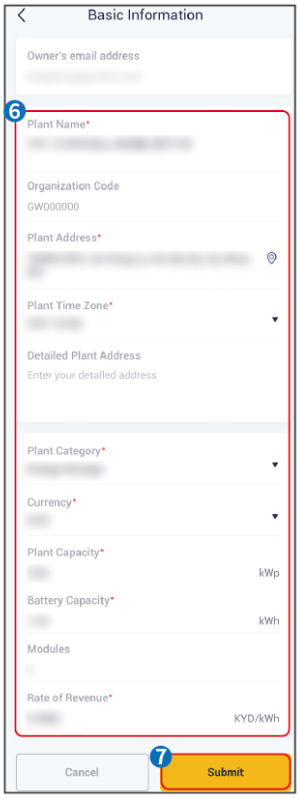
Step 2: ••• Enter the information view screen through > **Basic Information**.

Step 3: Click ⚙ to enter the information modification interface, modify the information according to the actual needs, click **Submit** to save the changes.









11.2.3 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 a power station to view the data collected by Environmental Monitor.

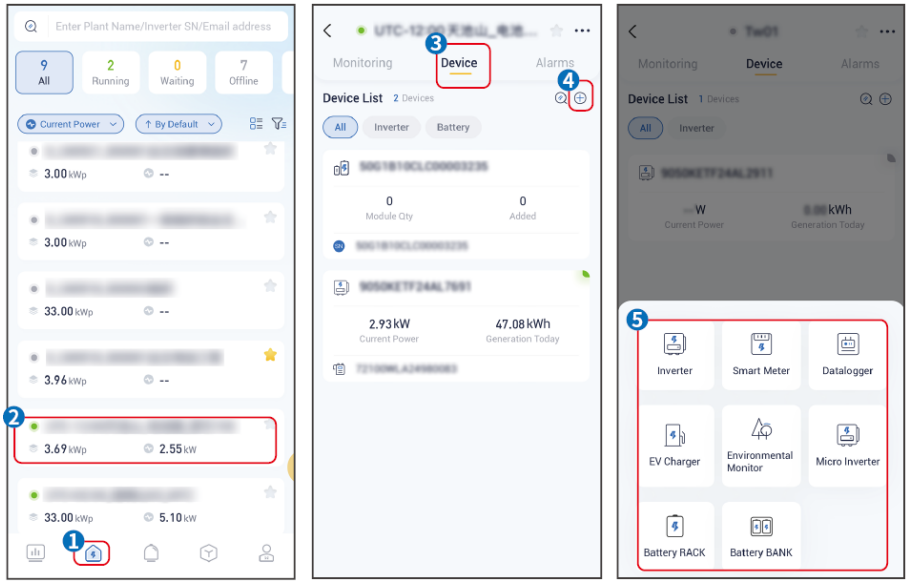
Step 1: Click the name of the power station on the power station list page to enter the power station details page.

Step 2: Click **Device** >⊕ to enter the Add Device interface.

Step 3: Select added device 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 devices by scanning the 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.

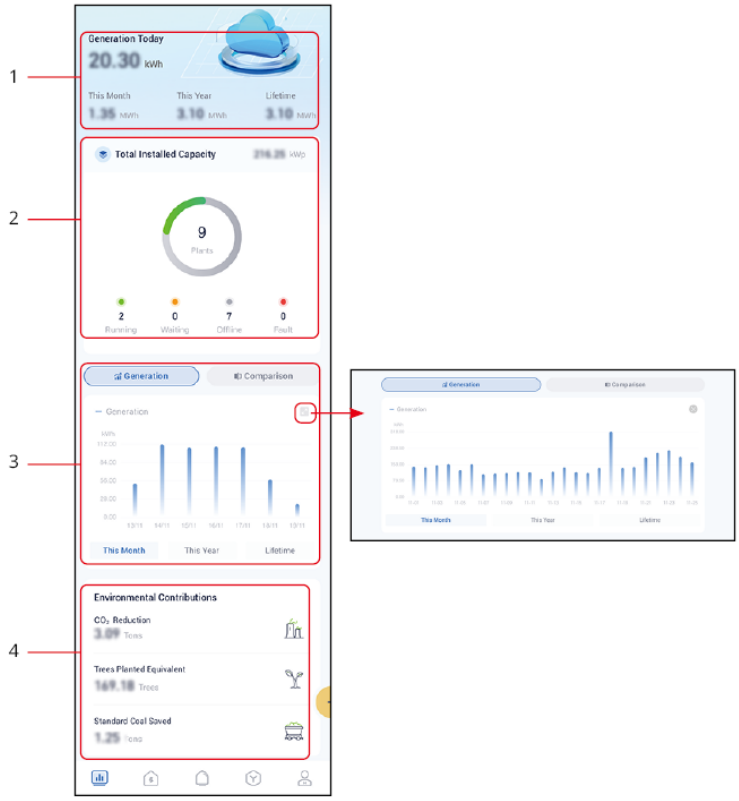
Step 5: When adding devices manually, if there is a need to add more than one device, return to the Power Station Details page and repeat steps 3 and 4.



11.3 Viewing Power Plant Information

11.3.1 Checking Station Information

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

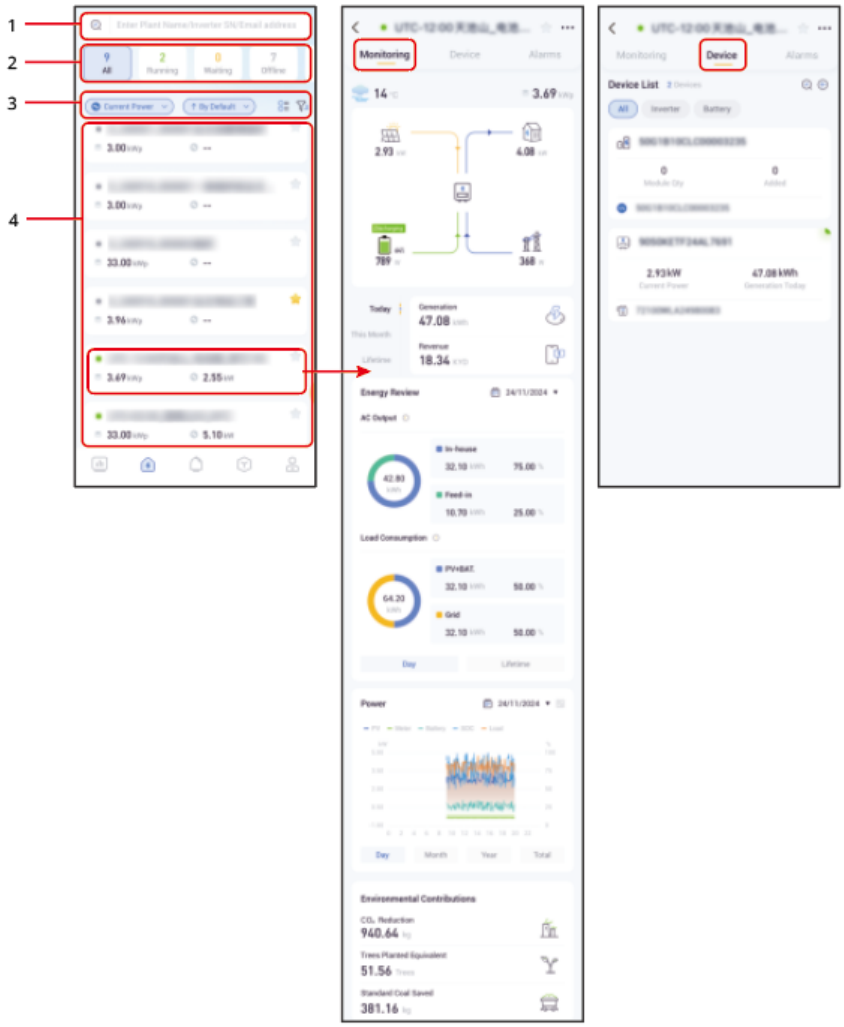


No.	Description

1	Displays the overall generation information of all stations, including: Generation Today, Generation This Month, Generation This Year, and Generation Lifetime. Generation This Year will not be displayed if the station amount exceeds 10.
2	Displays the total installed capacity and the working status of the stations. Working status: Running, Waiting, Offline, and Fault. The stations status is Running only when all the devices of the station are working properly.
3	Displays statistical chart of Generation Today, This Year, and Lifetime. Or displays comparison chart comparing current and past generation. Tap to expand the chart.
4	Displays environmental contributions like**CO_2 Reduction**、**Trees Stationed Equivalent** and **Standard Coal Saved**.

11.3.2 Checking Detailed Information of Single Station

Tap Station, and use sorting or filtering options to arrange the station list. Select a station from the list to view its detailed information
Select the device to find the specific information of the device. Support: inverter, battery, AC charger, smart logger, and more



No.	Description
1	Search for a specific station. Enter device SN, station name or email address to find the station.
2	Station working status. Displays the station working status and number of station under different status. Tap status to filter the stations under the status.
3	• Set the **KPI** of the device list: **Current Power, Rev. Today, Rev. Total, Gen. Today, Gen. Total** • Sort the station list by: **By Default**, **By Capacity** • Display the stations as **Station Card, Station List** • Filter the station list by: **Scope**, **Category**, **Capacity**
4	Station list. Tap the station name to view the detailed information of the station. The displayed content varies depending on the station type. The actual interface takes precedence.

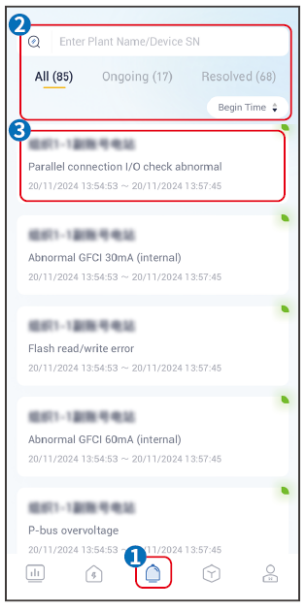
11.3.3 Checking Alarm Information

Method 1: Alarms for all stations under the account.

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

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

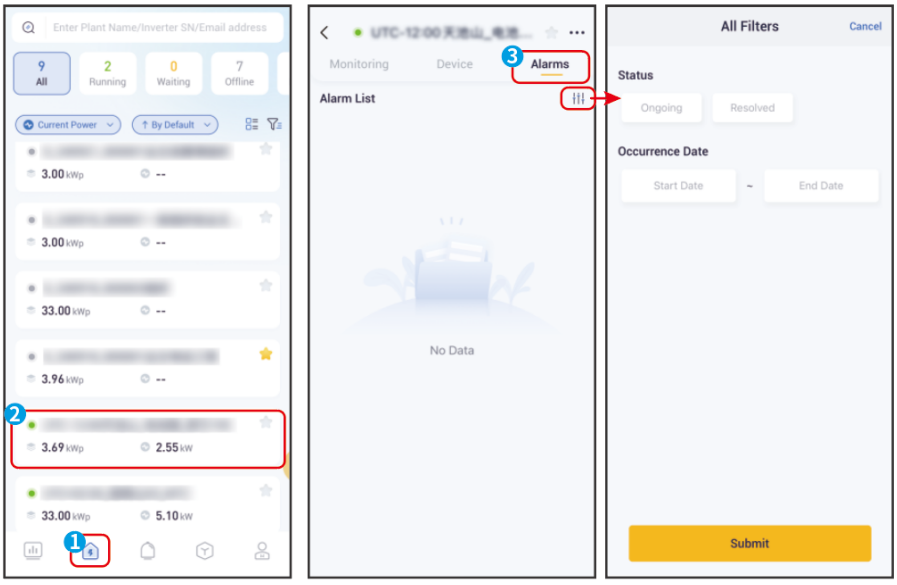
Step 3: Select an alarm to view detailed information.



Method 2: Alarms of a specific station.

Step 1 : Select a station from the station list.

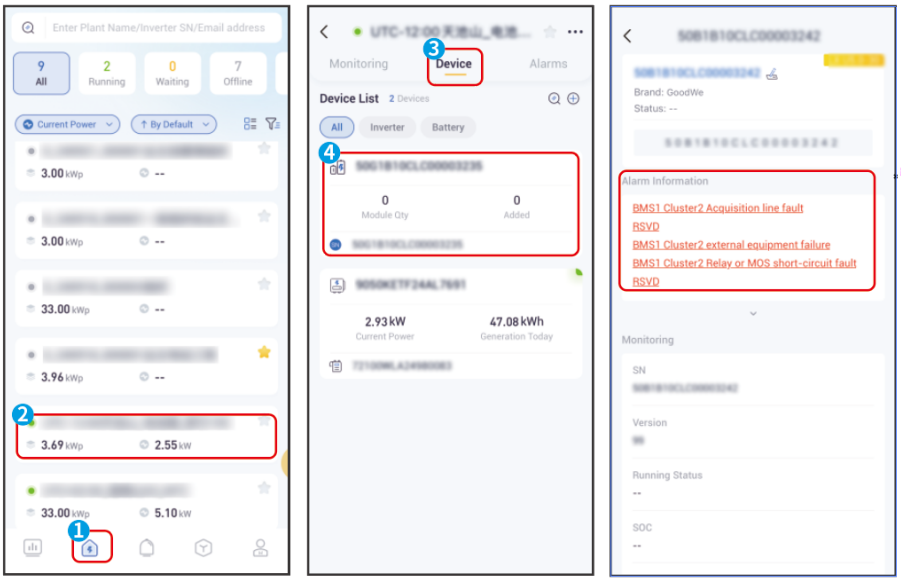
Step 2: Tap **Alarms**and select an alarm to view detailed information. Tap to filter the alarms as needed.



Method 3: Alarms of a specific device

Step 1: Select a station from the station list.

Step 2: Tap**Device**, and select a device to enter the device page. If alarms exist, the latest 10 active alarms will be displayed.



12 Maintenance

12.1 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 off 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 system switch.
8. (Only applicable to screenless models)Turn off the Off and On grid switch of the

inverter.

12.2 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.

12.3 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.

12.4 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.

12.5 Fault

12.5.1 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].

12.5.2 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.

12.5.2.1 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.

12.5.2.2 Inverter fault

No.	fault name	fault cause	Troubleshooting recommendation
1	Grid disconnected/Grid Power Outage	1.Power outage. 2.AC line or AC Switch is disconnected.	1.The alarm automatically disappears after Grid connected recovery. 2.Check if the AC line or AC Switch is disconnected.

No.	fault name	fault cause	Troubleshooting recommendation
2	Utility grid overvoltage Protection/Grid Overvoltage	Utility gridvoltage exceeds the allowable range, or the duration of high voltage surpasses the high voltage ride-through setting.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. The Inverter will resume normal operation once it detects that Utility grid is functioning normally, without requiring manual intervention. 2.If it occurs frequently, check whether the Utility grid and voltage are within the allowable range. • If the Utility gridvoltage exceeds the allowable range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid overvoltage Protection point after obtaining consent from the local power operator.HVRTEnable or disable the Utility grid overvoltage Protection function. 3.If the issue persists for an extended period, please check whether the AC-side breaker and output cables are properly connected.

No.	fault name	fault cause	Troubleshooting recommendation
3	Utility gridUnder-voltageProtection/Grid Undervoltage	Utility gridvoltage is below the allowable range, or the duration of low voltage exceeds the low voltage ride-through setting value.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. The Inverter will resume normal operation upon detecting that Utility grid has returned to normal, without requiring manual intervention. 2.If it occurs frequently, check whether Utility gridvoltage is within the allowable range. • If the Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid undervoltage Protection point after obtaining consent from the local power operator.LVRTEnable or disable the Utility grid undervoltage Protection function. 3.If the issue persists for an extended period, please check whether the AC side breaker and output cables are properly connected.

No.	fault name	fault cause	Troubleshooting recommendation
4	Utility grid overvoltage rapid Protection/Grid Rapid Overvoltage	Utility grid voltage detection shows abnormality or excessively high voltage triggers fault.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation upon detecting that Utility grid has returned to normal, without requiring manual intervention. 2.If it occurs frequently, check whether the Utility grid and voltage are within the allowable range. • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterUtility grid undervoltage Protection point after obtaining consent from the local power operator.LVRTor disable the Utility grid undervoltage Protection function. 3.If the issue persists for an extended period, please check whether the AC side breaker and output cables are properly connected.

No.	fault name	fault cause	Troubleshooting recommendation
5	10minOvervoltage/Grid 10min Overvoltage	In10minThe sliding average of Utility gridvoltage exceeds the safety regulation limits.	1. If it occurs occasionally, it may be due to a temporary abnormality in the Utility grid. The Inverter will resume normal operation upon detecting that the Utility grid has returned to normal, without requiring manual intervention. 2. Check whether the Utility gridvoltage has been operating at a high voltage for an extended period. If this occurs frequently, verify whether the Utility gridvoltage is within the allowable range. • If the Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to obtain consent from the local power operator before modifying the Utility grid.10minOvervoltage Protection point.

No.	fault name	fault cause	Troubleshooting recommendation
6	Utility grid overfrequency Protection/Grid Overfrequency	Utility grid anomaly: The actual Frequency exceeds the local Utility grid standard requirement.	1.If it occurs occasionally, it may be due to a temporary abnormality in the Utility grid. The Inverter will resume normal operation once it detects that the Utility grid is functioning normally, without requiring manual intervention. 2.If it occurs frequently, check whether Utility gridFrequency is within the allowable range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility grid Frequency is within the allowable range, it is necessary to modify the Utility grid over-frequency Protection point after obtaining consent from the local power operator.

No.	fault name	fault cause	Troubleshooting recommendation
7	Utility grid underfrequency Protection/Grid Underfrequency	Utility grid anomaly: The actual Frequency is below the local Utility grid standard requirement.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation upon detecting that Utility grid is functioning properly, without requiring manual intervention. 2.If it occurs frequently, check whether the Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the allowable range, please contact the local power operator. If the Utility grid Frequency is within the allowable range, the Utility grid over-frequency Protection point needs to be modified after obtaining consent from the local power operator.

No.	fault name	fault cause	Troubleshooting recommendation
8	frequency shift/Grid Frequency Unstable	Utility grid anomaly: The actual Frequency rate of change does not comply with the local Utility grid standard.	1.If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. The Inverter will resume normal operation once it detects that Utility grid is functioning properly, without requiring manual intervention. 2.If it occurs frequently, check whether the Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility grid Frequency is within the allowable range, please contact your dealer or after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
9	Utility grid phase shift Protection/Grid Phase Unstable	Utility grid anomaly: Utility grid voltage phase change rate does not comply with local Utility grid standards.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid has returned to normal, without requiring manual intervention. 2.If it occurs frequently, check whether Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the allowable range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, please contact your dealer or after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
10	Islanding Protection/Anti-islanding Protection	Utility grid has been disconnected, maintaining Utility grid voltage due to the presence of load. According to safety regulation Protection, on-grid has been stopped.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. The Inverter will resume normal operation upon detecting that Utility grid has returned to normal, without requiring manual intervention. 2.If it occurs frequently, check whether the Utility grid and Frequency are within the allowable range. • If the Utility gridFrequency exceeds the allowable range, please contact the local power operator. • If the Utility grid Frequency is within the allowable range, please contact your dealer or after-sales service center.
11	Undervoltage ride-through/LVRT Undervoltage	Utility grid anomaly: The duration of Utility grid voltage anomaly exceeds the specified time limit for high-low transitions.	

No.	fault name	fault cause	Troubleshooting recommendation
12	voltage overvoltage ride-through fault/HVRT Overvoltage	Utility grid anomaly: Utility gridvoltage anomaly duration exceeds the specified time for high-low crossover.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. The Inverter will resume normal operation upon detecting that Utility grid is functioning normally, without requiring manual intervention. 2.If this occurs frequently, please check whether the Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
13	Waveform detection abnormality/Grid Waveform Abnormal	Utility grid anomaly: Utility grid voltage detection triggered fault due to abnormality.	
14	Utility grid phase loss Protection Grid Phase Loss	Utility grid anomaly: Utility grid voltage has a single-phase dip.	

No.	fault name	fault cause	Troubleshooting recommendation
15	Utility gridvoltage imbalance/Grid Voltage Imbalance	Utility grid phase voltage difference is too large.	1.If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. The Inverter will resume normal operation once it detects that Utility grid is functioning properly, without requiring manual intervention. 2.If it occurs frequently, please check whether the Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.
16	Utility grid phase fault/Grid Phase Sequence Abnormal	Inverter and Utility grid wiring abnormality: wiring is not in positive sequence	1.Check whether the wiring of Inverter and Utility grid is in positive sequence. The fault will automatically disappear after the wiring is corrected (e.g., by swapping any two live wires). 2.If the fault persists after correct wiring, please contact the dealer or GoodWe Customer Service Center.

No.	fault name	fault cause	Troubleshooting recommendation
17	Grid disconnected rapid Protection/Grid Rapid Shutdown Protection	Quickly shut down the output upon detecting the Grid disconnected operating condition.	1.Grid connected automatically disappears after fault is restored
18	Utility grid Neutral line lossSplitUtility grid/Neutral Line Loss（Split Grid）	Phase separation Utility grid neutral line loss	1.The alarm automatically disappears after Grid connected recovery. 2.Check if the AC line or AC Switch is disconnected.
19	EMS/Forced off-grid	EMSIssue forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
20	30mAGfciProtection/GFCI Protection (30mA)	During the operation of Inverter, the input-to-ground insulation resistance becomes low.	1.If it occurs occasionally, it may be caused by temporary abnormalities in the external circuit. It will resume normal operation after fault is cleared without manual intervention. 2.If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.

No.	fault name	fault cause	Troubleshooting recommendation
21	60mAGfciProtection/GFCI Protection (60mA)	During the operation of Inverter, the input-to-ground insulation resistance becomes lower.	1.If it occurs occasionally, it may be caused by temporary abnormalities in the external circuit. The fault will clear automatically and resume normal operation without manual intervention. 2.If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.
22	150mAGfciProtection/GFCI Protection (150mA)	During the operation of Inverter, the input-to-ground insulation resistance becomes lower.	1.If it occurs occasionally, it may be caused by temporary external line abnormalities. After the fault is cleared, normal operation will resume without manual intervention. 2.If it occurs frequently or cannot be restored for a long time, please check whether the PV String to ground impedance is too low.

No.	fault name	fault cause	Troubleshooting recommendation
23	Gfcigradual Protection/GFCI Protection (300mA)	During the operation of Inverter, the input-to-ground insulation resistance becomes low.	1.If it occurs occasionally, it may be caused by temporary external line abnormalities. It will return to normal operation after the fault is cleared, without requiring manual intervention. 2.If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.
24	DCIPrimary DC combiner box/DCI Protection Level 1	The DC component of the inverter output exceeds the safety regulations or the default allowable range of the machine.	1.If the abnormality is caused by an external fault, the Inverter will automatically return to normal operation after the fault disappears, without requiring manual intervention. 2.If this alarm occurs frequently and affects the normal power generation of the power station, please contact the distributor or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
25	DCISecondary Protection/DCI Protection Level 2	The DC component of the inverter output current exceeds the safety regulations or the default allowable range of the machine.	1.If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 2.If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or GoodWe after-sales service center.
26	insulation resistance low/Low Insulation Resistance	1.PV String is short-circuited to ground for Protection. 2.The environment of PV StringInstallation is consistently humid with poor line-to-ground insulation.	1.Check the impedance between PV String and Protection ground. If a short circuit is detected, rectify the short circuit point. 2.Check if the PE cable of Inverter is properly connected. 3.If it is confirmed that the impedance is indeed lower than the default value under rainy or overcast conditions, please reconfigure the "insulation resistanceProtection point."

No.	fault name	fault cause	Troubleshooting recommendation
27	System grounding abnormality/Grounding Abnormal	1.The PE cable of 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 whether the Inverter of PE cable is not 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	Live wire to ground short circuit/L-PE Short Circuit	Output phase line pairPELow impedance or short circuit	Detect output phase line toPEImpedance, identify Locations with low impedance and repair them.
29	DCVPrimary Protection/DCV Protection Level 1	Abnormal load fluctuation	1.If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 2.If this alarm occurs frequently and affects the normal power generation of power station, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
30	DCVSecondary Protection/DCV Protection Level 2	Abnormal load fluctuation	1.If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 2.If this alarm occurs frequently and affects the normal power generation of the power station, please contact the distributor or GoodWe after-sales service center.
31	Hardware power limit Protection/Hard Export Limit Protection	Abnormal load fluctuation	1.If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention. 2.If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
32	Internal communication link failure/Internal Comm Loss	Reference specific subcode reason	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.
33	Leakage currentGFCI）Multiple fault shutdowns/Multiple GFCI Failures	North American safety standards require that after multiple fault, the system must not automatically recover and requires manual intervention or waiting.24hpost-recovery	1.Please check if the PV String to ground impedance is too low.
34	DC combiner boxAFCI）Multiple fault shutdowns/Multiple AFCI Failures	North American safety regulations require that after multiple fault, it cannot automatically recover and must be manually reset or wait.24hPost-recovery	1.After the machine is reconnected, check whether the voltage and current of each circuit are abnormally reduced to zero. 2.Check whether the DC side terminal is securely connected.

No.	fault name	fault cause	Troubleshooting recommendation
35	External communication link failure/External Comm Loss	Inverter external device communication lost, possibly due to peripheral power supply issues, Communication Protocols mismatch, or unconfigured corresponding peripherals.	Judgment is made based on the actual model and detection enable bits; peripherals not supported by certain models will not be detected.
36	Back-upoverload/Back-up Output Overload	1.Prevent Inverter from continuous overload output.	1.Disconnect some off-grid loads to reduce the Inverter off-grid output Power.
37	Back-upport overvoltage fault/Back-up Output Overvoltage	2.Prevent damage to the load caused by overvoltage in the Inverter output.	1.If it occurs occasionally, it may be caused by load switching and does not require manual intervention. 2.If this occurs frequently, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
38	Synchronization timeout in on-grid On-grid PWM Sync Fault	Abnormal occurrence in carrier synchronization on-grid	1Check whether the synchronization line connection is normal. 21. Check whether the master-slave settings are normal. 31. Disconnect the AC output side switch and the DC input side switch.5Close the AC output side switch and DC input side switch after a few minutes. If fault persists, please contact the dealer or GoodWe after-sales service center.
39	External connectionBoxfault/ExtBox Failure	on-grid grid disconnection waiting timeBoxExcessive relay switching time	1.InspectionBoxIs it functioning properly; 2.InspectionBoxIs the communication wiring correct;

No.	fault name	fault cause	Troubleshooting recommendation
40	Generator fault/Generator Failure	1.This fault will always be displayed when the generator is not connected. 2.During generator operation, failure to comply with generator safety regulations will trigger this fault.	1.When the generator is not connected, ignore this fault; 2.The occurrence of fault in the generator is a normal situation. After the generator is restored, wait for a period of time, and the fault will be automatically cleared. 3.The fault will not affect the normal operation of the off-grid mode. 4.The generator and Utility grid are connected simultaneously while meeting safety regulations, with Utility grid having priority for on-grid, and will operate in the Utility grid on-grid state.
41	External connectionSTSfault/External STS Failure	Inverter andSTSAbnormal connection cable	Check Inverter andSTSIs the wiring sequence of the harness connections one-to-one corresponding in order.
42	CTLost fault/CT Loss	CTConnection line disconnected (Japanese safety regulation requirement)	1.InspectionCTIs the wiring correct;

No.	fault name	fault cause	Troubleshooting recommendation
43	power limit fault/Export Limit Protection	1Grid disconnection due to Inverter alarm 2 meterUnstable communication 3Reverse power flow condition occurs	1Check if there are any other error messages in Inverter. If present, perform targeted troubleshooting. 2InspectionmeterIs the connection reliable? 3.If this alarm occurs frequently and affects the normal power generation of power station, please contact the dealer or GoodWe after-sales service center.
44	BypassOverload/Bypass Over Load		
45	Black start		
46	Parallel operationIOSelf-check abnormality/Paralell I/O Check Abnormal	Parallel communication cable is not securely connected or parallel operation issue.IOChip damage	Check if the parallel communication cable is securely connected, and then inspect again.IOIs the chip damaged? If yes, replace it.IOchip
47	Parallel operationCANCommunication anomaly/Paralell CAN Comm Abnormal	The parallel communication cable is not securely connected or some units are offline.	Check whether all machines are power on and whether the parallel communication cables are securely connected.
48	Parallel connection Utility grid reversed polarity /Paralell Grid Line Reversed	Some machines have the Utility grid line reversed with other connections.	Reconnect the Utility grid wire

No.	fault name	fault cause	Troubleshooting recommendation
49	Parallel operationBack-upreverse connection/Paralell Back-up Line Reversed	Partial machinesbackupLine connected incorrectly with others	reconnectionbackupwire
50	Inverter soft start failure/Inverter Soft Start Failure	Inverter soft start failure during off-grid cold start	Check whether the inverter module of the machine is damaged.
51	Off-grid output instantaneous overvoltage fault/Off grid AC Ins Volt High		
52	AC sensor self-check abnormality/AC HCT Check Abnormal	AC sensor sampling anomaly	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the distributor or GoodWe after-sales service center.
53	AC Sensor/AC HCT Failure	HCTSensor abnormality detected	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
54	Leakage current sensor self-check abnormal/GFCI HCT Check Abnormal	Leakage current sensor sampling anomaly detected	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
55	Leakage current sensor/GFCI HCT Failure	Leakage current sensor abnormality detected	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.
56	Relay self-check abnormality/Relay Check Abnormal	Relay abnormality, reason: 1Relay abnormality (relay short circuit) 21. Abnormal relay sampling circuit. 3Abnormal AC side wiring (possible loose connection or short circuit)	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
57	Relay fault/Relay Failure	1Relay abnormality (relay short circuit) 21. Abnormal relay sampling circuit. 3Abnormal AC side wiring (possible loose connection or short circuit)	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
58	DC combiner box (string)17~32）/AFCI Failure (String 17~32)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3DC cable wire core damage and poor contact	1After the machine is reconnected, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check whether the DC side terminal is securely connected.
59	DC arc fault (string)33~48）/AFCI Failure (String 33~48)	11. Loose connection on the DC side terminal; 2DC side connection terminal loose connection; 3DC cable conductor core damage with poor contact	1After the machine is restarted, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check whether the DC-side terminal is securely connected.
60	FlashRead/Write Error/Flash R/W Abnormal	Possible causes: flashContent has been modified;flashEnd of life;	1.Upgrade to the latest version of the program 2.Contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
61	DC combiner box (string)1~16）/AFCI Failure (String 1~16)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3DC cable wire core damage and poor contact	1After the machine is reconnected, check whether the voltage current of each circuit is abnormally reduced to zero; 2Check whether the DC-side terminal is securely connected.
62	DC combiner box self-test/AFCI Check Failure	During the arc self-test process, the arc module failed to detect the arc fault.	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.
63	AC terminal temperature too high/AC Terminal Overtemperature	AC terminal temperature is too high, possible causes: 1InverterInstallation Location is not ventilated. 21. The ambient temperature is too high. 31. Internal fan operation is abnormal.	

No.	fault name	fault cause	Troubleshooting recommendation
64	Cavity temperature too high/Cabinet Overtemperature	Cavity temperature too high, possible causes: 1Inverter Installation Location is not ventilated. 21. The ambient temperature is too high. 31. Abnormal operation of internal fan.	1Check whether the ventilation of the Inverter Installation Location is adequate and whether the ambient temperature exceeds the maximum allowable range. 2If there is no ventilation or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. 3If ventilation and ambient temperature are normal, please contact the dealer or GoodWe after-sales service center.
65	INVModule temperature too high/Inv Module Overtemperature	Inverter module temperature too high, possible causes: 1Inverter Installation Location is not ventilated. 21. The ambient temperature is too high. 31. Abnormal operation of internal fan.	

No.	fault name	fault cause	Troubleshooting recommendation
66	BoostModule temperature too high/Boost Module Overtemperature	BoostModule temperature is too high, possible causes: 1Inverter Installation Location is not ventilated. 21. Ambient temperature is too high. 31. Internal fan operation is abnormal.	
67	Output filter capacitor overtemperature/AC Capacitor Overtemperature	Output filter capacitor temperature is too high, possible causes: 1Inverter Installation Location is not ventilated. 21. Ambient temperature is too high. 31. Abnormal operation of internal fan.	

No.	fault name	fault cause	Troubleshooting recommendation
68	Relay2/Relay Failure 2	Relay abnormality, reason: 1Relay abnormality (relay short circuit) 21. Abnormal relay sampling circuit. 3Abnormal AC side wiring (possible loose connection or short circuit phenomenon)	Disconnect the AC output side switch and the DC input side switch,5After a few 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 IGBTShort Circuit/PV IGBT Short Circuit	Possible causes: 1、IGBTShort circuit 21. Inverter Sampling circuit abnormality	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.
70	PV IGBTopen-circuit voltage/PV IGBT Open Circuit	1.Software issue caused no wave transmission. 2.Drive circuit abnormality: 3.IGBTOpen circuit	Disconnect the AC output side switch and the DC input side switch.5After a few 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 name	fault cause	Troubleshooting recommendation
71	NTCAbnormal/NTC Abnormal	NTCTemperature sensor abnormality detected.	Disconnect the AC output side switch and the DC input side switch.5After a few 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	Wave emission anomaly fault/PWM Abnormal	PWMAbnormal waveform detected	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.
73	CPUInterruption anomaly/CPU Interrupt Abnormal	CPUAbnormal interruption occurred	Disconnect the AC output side switch and the DC input side switch.5After a few 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	Microelectronics/Microelectronic Failure	Functional safety detects an abnormality	Disconnect the AC output side switch and the DC input side switch.5After a few 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 name	fault cause	Troubleshooting recommendation
75	PV HCTfault/PV HCT Failure	boostcurrent sensor abnormality	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.
76	1.5VBenchmark anomaly/1.5V Ref Abnormal	Reference circuit	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or GoodWe after-sales service center.
77	0.3VBenchmark anomaly/0.3V Ref Abnormal	Reference circuit	
78	CPLDVersion identification error/CPLD Version Error	CPLDVersion identification error	Disconnect the AC output side switch and the DC input side switch,5After a few 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	CPLDCommunication fault/CPLD Comm Failure	CPLDandDSPCommunication content error or timeout	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
80	Model Identification fault/Model Type Error	Regarding the model identification error of fault	Disconnect the AC output side switch and the DC input side switch.5After a few 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	SVGPrecharge failureSVG Precharge Failure	SVGPrecharge hardware failure	Contact the distributor or GoodWe after-sales service center.
82	nighttimeSVG PIDPrevent fault/SVG Mode PID Prevention Failure	PIDPrevent hardware anomalies	Contact the distributor or GoodWe after-sales service center.
83	DSPVersion identification error/DSP Version Error	DSPSoftware version identification error	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.
84	Busbar overvoltage/BUS Overvoltage		
85	Upper busbar overvoltage/P-BUS Overvoltage		
86	Lower busbar overvoltage/N-BUS Overvoltage		

No.	fault name	fault cause	Troubleshooting recommendation
87	BUSOvervoltage (auxiliary)CPU1）BUS/Overvoltage(Slave CPU 1)	BUSOvervoltage, possible causes: 1、PVvoltage too high; 2InverterBUSSampling anomaly; 3The isolation effect of the rear-end double-split Inverter is poor, causing mutual interference between the two Inverter on-grid units. One of the Inverter on-grid units reports a DC overvoltage.	Disconnect the AC output side switch and the DC input side switch.5Close the AC output side switch and DC input side switch after a few minutes. If fault persists, please contact the dealer or GoodWe after-sales service center.
88	PBUSOvervoltage (auxiliary)CPU1）/P-BUS Overvoltage(Slave CPU 1)		
89	NBUSOvervoltage (auxiliary)CPU1）/N-BUS Overvoltage(Slave CPU 1)		
90	BUSOvervoltage (auxiliary)CPU2）/BUS Overvoltage(Slave CPU 2)		
91	PBUSOvervoltage (auxiliary)CPU2）/P-BUS Overvoltage(Slave CPU 2)		
92	NBUSOvervoltage (auxiliary)CPU2）/N-BUS Overvoltage(Slave CPU 2)		
93	PBUSOvervoltage(CPLD)/P-BUS Overvoltage(CPLD)		
94	NBUSOvervoltage(CPLD)/N-BUS Overvoltage(CPLD)		

No.	fault name	fault cause	Troubleshooting recommendation
95	MOSContinuous overvoltage/MOS Continuous Overvoltage	1.Software issue causes inverter drive to shut down earlier than flyback drive. 2.Inverter drive circuit abnormality prevents turn-on. 3.PVvoltage too high; 4.Mosvoltage sampling anomaly;	Disconnect the AC output side switch and the DC input side switch.5After a few 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.
96	BUSShort Circuit/Bus Short Circuit	1.Hardware damage	In case of occurrenceBUSAfter a short circuit fault, the Inverter remains in an off-grid state. Please contact the dealer or GoodWe after-sales service center.
97	BUSSampling anomaly/Bus Sample Abnormal	1.BusSampling hardware	Disconnect the AC output side switch and the DC input side switch.5After a few 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	DCLateral sampling anomaly/DC Sample Abnormal	1.Bussampling hardware 2.Batteryvoltage sampling hardware fault 3.Dcrlyrelay	Disconnect the AC output side switch and the DC input side switch.5After a few minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
99	PVInput overvoltage/PV Input Overvoltage	PVvoltage input too high, possible causes: PV array configuration error: excessive number of PV modules connected in series within the string, causing the string's open-circuit voltage to exceed the maximum operating voltage of the Inverter.	Check the series configuration of the corresponding PV array strings to ensure that the open-circuit voltage of the strings does not exceed the maximum working voltage of the Inverter. Once the PV array is correctly configured, the Inverter alarm will automatically disappear.
100	PVContinuous hardware overcurrent/PV Continuous Hardware Overcurrent	1.Unreasonable module configuration 2.Hardware damage	Disconnect the AC output side switch and the DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the distributor or GoodWe after-sales service center.
101	PVContinuous software overcurrent/PV Continuous Software Overcurrent	1.Unreasonable module configuration 2.Hardware damage	
102	Flying capacitor software overvoltage/FlyCap Software Overvoltage	Flying capacitor overvoltage, possible causes: 1、PVvoltage too high; 2Inverter flying capacitor voltage sampling anomaly;	

No.	fault name	fault cause	Troubleshooting recommendation
103	Flying capacitor hardware overvoltage/FlyCap Hardware Overvoltage	Flying capacitor overvoltage, possible causes: 1、PVvoltage too high; 2Inverter flying capacitor voltage sampling anomaly;	Disconnect the AC output side switch and the DC input side switch,5Close the AC output side switch and DC input side switch after a few minutes. If fault persists, please contact the dealer or GoodWe after-sales service center.
104	Flying capacitor undervoltage/FlyCap Undervoltage	Flying capacitor undervoltage, possible causes: 1、PVEnergy deficit; 2Inverter flying capacitor voltage sampling anomaly;	
105	Flying capacitor precharge failure/FlyCap Precharge Failure	Flying capacitor precharge failure, possible causes: 1、PVEnergy deficit; 2Inverter flying capacitor voltage sampling anomaly;	
106	The flying capacitor cannot be precharged./FlyCap Precharge Abnormal	1.Unreasonable control loop parameters 2.Hardware damage	
107	String overcurrent(String1~16)/PV String Overcurrent（String 1~16）	Possible causes: 1.String overcurrent; 2.String current sensor anomaly	

No.	fault name	fault cause	Troubleshooting recommendation
108	String overcurrent(String17~32)/PV String Overcurrent（String 17~32）	Same as above	
109	String reverse connection(String1~16)/PV String Reversed（String 1~16）	PVString reverse connection	Check if the strings are reversed.
110	String reverse connection(String17~32)/PV String Reversed（String 17~32）	PVString reverse connection	Check whether the strings are reversed.
111	String loss(String1~16)/PV String Loss（String 1~16）	String fuse disconnected (if applicable)	Check if the fuse is blown.
112	String loss(String17~32)/PV String Loss（String 17~32）	String fuse open (if present)	Check if the fuse is blown

No.	fault name	fault cause	Troubleshooting recommendation
113	PVIncorrect access mode setting/PV Input Mode Error	PVThere are three access modes in total, with four channels.MPPTFor example: 1.Parallel mode: i.e.AAAAMode(Homologous mode)，PV1-PV4Homologous,4RoadPVConnect the same photovoltaic panel 2.Partial Parallel Mode: That isAACCMode,PV1andPV2Homologous connection,PV3andPV4homologous connection 3.Stand-alone mode: i.e.ABCDMode(non-homologous)，PV1、PV2、PV3、PV4Independent connection,4RoadPVEach connected to a photovoltaic panel. IfPVThe actual connection mode and equipment configurationPVThis fault will be reported if the access mode does not match.	InspectionPVIs the access mode correctly set (ABCD、AACC、AAAA), reset in the correct manner.PVConnection mode. 1.Confirm the actual connected circuitsPVIs the connection correct. 2.IfPVConnection is properly established and verified.APPOr check the current settings on the screen.PVDoes the "connection mode" correspond to the actual connection mode? 3.If the currently setPVThe "connection mode" does not match the actual connection mode and needs to be adjusted.APPOr the screen willPVSet the "Access Mode" to the mode consistent with the actual situation. After completing the settings,PVandACPower supply disconnection and restart. 4.After the setup is completed, if the current "PVThe "Connection Mode" matches the actual

No.	fault name	fault cause	Troubleshooting recommendation
			connection mode, but this fault error still occurs. Please contact the dealer or GoodWe after-sales service center.
114	String reverse connection(String33~48)/PV String Reversed（String 33~48）	PVString reverse connection	Check if the string is reverse connected
115	String loss(String33~48)/PV String Loss（String 33~48）	String fuse disconnected (if applicable)	Check if the fuse is blown. Same as above
116	String overcurrent(String33~48)/PV String Overcurrent（String 33~48）	Possible causes: 1.String Overcurrent; 2.Stringcurrent sensor anomaly	
117	Battery1Precharge fault/BAT 1 Precharge Failure	Battery1Pre-Charge circuit fault (such as pre-Charge resistor burnout, etc.)	Check whether the pre-circuit is in good condition, and verify that the voltage after the inverter matches the bus voltage. If they do not match, please contact the dealer or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
118	Battery1relay/BAT 1 Relay Failure	Battery1The relay fails to operate normally.	After Battery power on, check whether the Battery relay is functioning and if the closing sound is heard. If it does not operate, please contact the dealer or GoodWe after-sales service center.
119	Battery1Grid Overvoltage/BAT 1 Overvoltage	Battery1The voltage connection exceeds the rated range of the machine.	Verify whether Batteryvoltage is within the machine's rated range
120	Battery2Precharge fault/BAT 2 Precharge Failure	Battery2Pre-Charge circuit fault (pre-Charge resistance burn-out, etc.)	Check if the pre-Charge circuit is functioning properly. Ensure that only the Batterypower on after Batteryvoltage matches the busbar voltage. If they do not match, please contact the distributor or GoodWe after-sales service center.
121	Battery2relay/BAT 2 Relay Failure	Battery2Relay fails to operate normally	After Battery power on, check whether the Battery relay is functioning and if the closing sound is heard. If it does not operate, please contact the dealer or GoodWe after-sales service center.
122	Battery2Grid overvoltage/BAT 2 Overvoltage	Battery2The voltage connection exceeds the rated range of the machine.	Confirm whether Batteryvoltage is within the machine's rated range.
123	Battery1reverse connection fault/BAT 1 Reversed	Battery1Reverse polarity of positive and negative terminals	Check whether the polarity of the Battery and the machine terminals is consistent.

No.	fault name	fault cause	Troubleshooting recommendation
124	Battery2Reverse polarity fault/BAT 2 Reversed	Battery2Reverse polarity of positive and negative terminals	Check whether the polarity of the Battery and the machine terminals is consistent.
125	Abnormal connection of Battery/BAT Connection Abnormal	Abnormal connection of Battery	Check if the Battery is functioning properly
125	Battery radiator temperature too high/Bat Overtemperature	Battery temperature is too high, possible causes: 1Inverter Installation Location is not ventilated. 21. Ambient temperature is too high. 31. Internal fan operation is abnormal.	
127	Reference voltage anomaly/Ref Voltage Abnormal	Reference circuit	Disconnect the AC output side switch and the DC input side switch,5After a few 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	ACsideSPDfault/AC SPD Fault	ACFailure of lateral lightning protection device	ReplacementACLateral lightning protection device
129	DCSideSPDfault/DC SPD Fault	DCLateral lightning protection device failure	ReplacementDCLateral lightning protection device

No.	fault name	fault cause	Troubleshooting recommendation
130	Internal fan anomaly/Internal Fan Abnormal	Internal fan abnormality, possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 3Fan aging and damage.	Disconnect the AC output side switch and the DC input side switch.5After a few 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 abnormality/External Fan Abnormal	External fan abnormality, possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 31. Aging and damage of the fan.	
132	PIDDiagnose abnormalities/PID Abnormal	PIDHardware fault orPVvoltage too highPIDPause	PVOvervoltage caused by voltagePIDPause WARNING requires no action.PIDHardware fault can be turned offPIDSwitch reclosure clearingPIDfault, replacementPIDinstallation

No.	fault name	fault cause	Troubleshooting recommendation
133	Trip switch tripping/Trip-Switch Trip Warning	Possible causes: 1Overcurrent occurredPVReverse connection causes the trip switch to trip;	Please contact the dealer or GoodWe after-sales service center. The reason for disconnection is due to occurrence.PVShort circuit or reverse connection, need to check for any historical issues.PVShort-circuit current or historyPVReverse connection WARNING. If present, maintenance personnel should inspect the corresponding issue.PVSituation. After checking and confirming there is no fault, the trip switch can be manually closed, and then passed through.APPInterface Clear History operation clears this WARNING.
134	HistoryPV IGBTShort-circuit current/PV IGBT Short Circuit Warning	Possible causes: 1Overcurrent caused the trip switch to open;	Please contact the dealer or GoodWe after-sales service center. Maintenance personnel should follow the historicalPVShort-circuit WARNING subcode, check for short-circuit occurrenceBoostCheck whether there is any fault in the hardware and external string; proceed if no fault is found after inspection.APPClear history operation clears this WARNING.

No.	fault name	fault cause	Troubleshooting recommendation
135	historyPVReverse polarity WARNING(String1~16)/PV String Reversed Warning（String 1~16）	Possible causes: 1occurrencePVReverse connection causes the trip switch to trip;	Contact the distributor or GoodWe after-sales service center. The maintenance personnel must follow the historicalPVReverse the WARNING subcode, check whether the corresponding string is reversed, and inspect.PVIs there a voltage difference in the panel configuration; After checking and confirming no fault, it can proceed.APPInterface Clear History fault Operation clears this WARNING.
136	historyPVReverse connection WARNING(String17~32)/PV String Reversed Warning（String 17~32）	Possible causes: 1OccurrencePVReverse connection causes the trip switch to trip open;	Contact the distributor or GoodWe after-sales service center. Maintenance personnel must follow the historicalPVReverse the WARNING subcode to check whether the corresponding string is reversed, and inspect.PVCheck if there is a pressure difference in the panel configuration; proceed if no fault is found after inspection.APPInterface Clear History fault operation clears this WARNING.
137	FlashRead/Write Error WARNING Flash R/W Error	Possible causes: flashContent has been modified;flashEnd of life;	1.Upgrade to the latest version of the program. 2.Contact the distributor or GoodWe after-sales service center.

No.	fault name	fault cause	Troubleshooting recommendation
138	Electric meter communication anomaly alarm/Meter Comm Loss	This WARNING may only be reported after enabling the power limit function. Possible causes: 1Meter not connected; 2The communication line connection between the meter and the Inverter is incorrect.	Check the meter wiring and ensure it is correctly connected. If fault persists after inspection, please contact the distributor or GoodWe after-sales service center.
139	PVPanel type identification failed/PV Type Identification Failure	PVPanel identification hardware anomaly	Contact the distributor or GoodWe after-sales service center.
140	String mismatch/PV String Mismatch	PVString mismatch, same circuitMPPTThe configurations of the next two strings are different.	Check the two strings of open-circuit voltage, and configure the strings with the same open-circuit voltage to the same circuit.MPPTUnder prolonged string mismatch, there are potential safety hazards.
141	CTUnconnected/CT Loss	CTNot connected	InspectionCTWiring
142	CTReverse connection/CT Reversed	CTReverse connection	InspectionCTWiring
143	Ground wire missing/PE Loss	Ground wire not connected	Check ground wire

No.	fault name	fault cause	Troubleshooting recommendation
144	String temperature high(String1~8)/PV String Terminal Overtemperature（String 1~8）	37176RegisterPVterminal temperature alarm subcode1Set position	
145	String temperature high(String9~16)/PV String Terminal Overtemperature（String 9~16）	37177registerPVterminal temperature alarm subcode2Set position	
146	String terminal temperature high(String17~20)/PV String Terminal Overtemperature（String 17~20）	37178RegisterPVterminal temperature alarm subcode3Set position	
147	historyPVReverse connection WARNING(String33~48)/PV String Reversed Warning（String 33~48）	Possible causes: 1OccurrencePVReverse connection causes the trip switch to trip;	Please contact the distributor or GoodWe after-sales service center; maintenance personnel should follow the historicalPVReverse the WARNING code and check whether the corresponding string is reversed. CheckPVIs there a voltage difference in the panel configuration? After checking and confirming no fault, it can proceed.APPInterface Clear History fault Operation Clears This WARNING.
148	Battery1voltage low	Batteryvoltage is below the set value	
149	Battery2voltage low	Batteryvoltage is below the set value	

No.	fault name	fault cause	Troubleshooting recommendation
150	Battery power supply voltage low	Battery non-Charge mode, voltage below shutdown voltage	

12.5.2.3 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.

12.5.2.4 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.

12.5.2.5 Battery Fault (LX U5.4- L)

When the battery button indicator light displays green, combine with the SOC indicator light to locate and troubleshoot the alarm.

SOC indicator	Fault	Solutions/measures to address the issue
	Temperature Anomaly	Shut down and waitfor 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, waitfor 2 hours and restart battery. If the problem persists, contact the after sales service

Fault

 When the battery button indicator light displays red and flashes for 3 seconds, locate and troubleshoot the fault based on the SOC indicator light display status.

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
	NoneSN error	Please contact the after-sales service center

	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	Please contact the after-sales service center
	Multi-Host Error	Turn on all batteries within 30s after shutdown
	MOS over-temperature fault	Shut down and waitfor 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

12.5.2.6 Battery Fault (LX U5.4-20)

Alarm state

 When the battery Button indicator turns red and blinks once a second, troubleshootthe 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 byreferring 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 flashes 1 time/s.		Battery Undervoltage	Contact the after-sales service.
Red light is on.		High Cell Temperature	Turn off the machine and leave itfor 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 it for 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 communicati fault	Restart battery. If the problem persists, contact the after sales service
		MCU Communicati 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 itfor 2h, restart the battery. If the problem persists, contact the after sales service
		Microelectror Fault	Contact the after sales service.

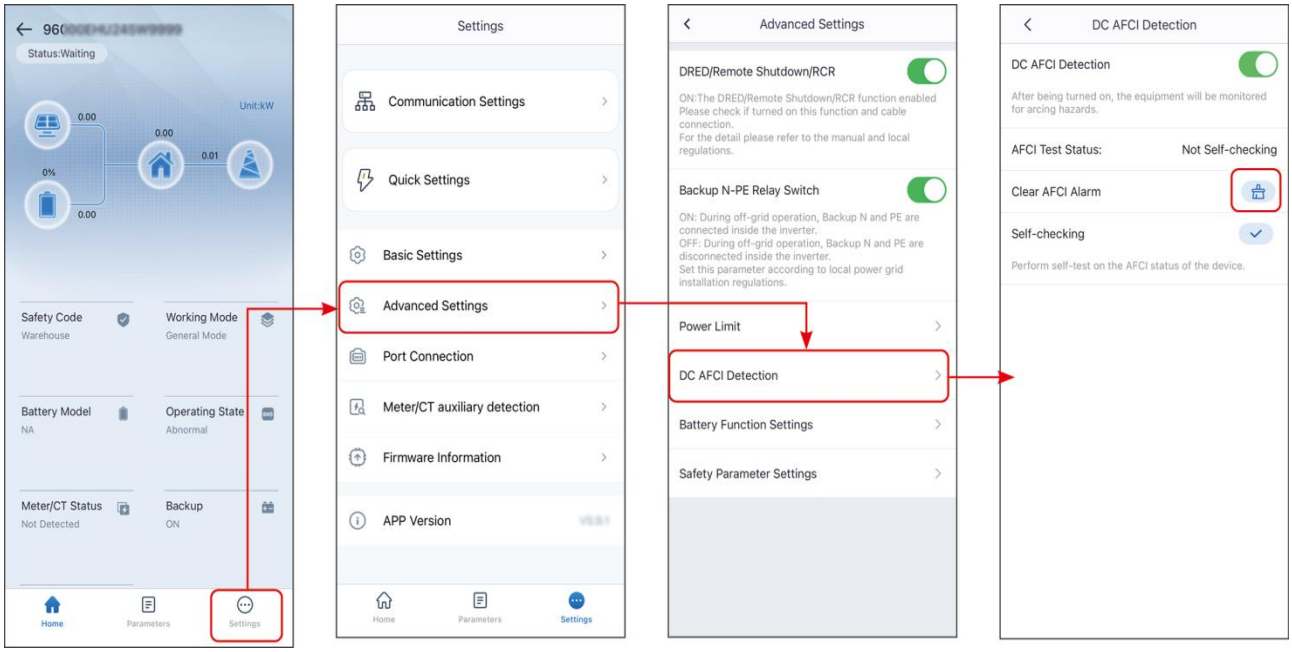
12.5.3 Operation After Fault Clearance

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

12.5.3.1 Clear AFCI Alarm

[Software]: SolarGo App
[Clearance method]

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


Status:Waiting
Unit:kW
0.00
0.00
0.01
0%
0.00
Safety Code
Warehouse
Working Mode
General Mode
Battery Model
NA
Operating State
Abnormal
Meter/CT Status
Not Detected
Backup
ON
Home
Parameters
Settings
Settings
Communication Settings
Quick Settings
Basic Settings
Advanced Settings
Port Connection
Meter/CT auxiliary detection
Firmware Information
APP Version
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.
Backup N-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
DC AFCI Detection
Battery Function Settings
Safety Parameter Settings
DC AFCI Detection
DC AFCI Detection
After being turned on, the equipment will be monitored for arcing hazards.
AFCI Test Status:
Not Self-checking
Clear AFCI Alarm
Self-checking
Perform self-test on the AFCI status of the device.

13 Technical Parameters

13.1 Inverter Parameters

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Battery Input Data			
Battery Type	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
Max. Continuous Charging Current (A)	160	200	240
Max. Continuous Discharging Current (A)*1	160（176 at 10min）	200（220 at 10min）	240（264 at 10min）
Max. Charge Power (W)*5	8,000	10,000	12,000
Max. Discharge Power (W)*5	8,800	11,000	13200
PV String Input Data			
Max. Input Power (W)	16,000	20,000	24000
Max. Input Voltage (V)*4	600	600	600
MPPT Operating Voltage Range (V)	60~550	60~550	60~550
MPPT Voltage Range at Nominal Power (V)	180~500	170~500	200~500
Start-up Voltage (V)	58	58	58
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)*2	32/16	32/32	32/32

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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 MPP Trackers	2	2	2
Number of Strings per MPPT	2/1	2/2	2/2
AC Output Data (On-grid)			
Nominal Output Power (W)	8000	10000	12000
Nominal Apparent Power Output to Utility Grid (VA)	8000	10000	12000
Max. AC Active Power (W)*3	8800	11000	13200
Max. Apparent Power Output to Utility Grid (VA)*3	8800	11000	13200
Nominal Power at 40℃ (W)	8000	10000	12000
Max. Power at 40℃ (Including AC Overload) (W)*3	8000	10000	12000
Nominal Apparent Power from Utility Grid (VA)	8000	10000	12000
Max. Apparent Power from Utility Grid (VA)	16500	16500	16500
Nominal Output Voltage (V)	220/230/240	220/230/240	220/230/240

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50
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
Nominal Output Current (A)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50
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)	105A	145A	145A
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.
AC Output Data (Back-up)			

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Back-up Nominal Apparent Power (VA)	8,000	10,000	12,000
Max. Output Apparent Power (VA)	8800(16000 at 10s)	11000(20000 at 10s)	13,200 (24,000 at 10s)
Nominal Output Current (A)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50
Max. Output Current (A)	40.0	50.0	60.0
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)	105A	145A	145A
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%
AC Data (Generator)			
Nominal Apparent Power from AC generator (VA)	8,000	10,000	12,000
Max. Apparent Power from AC generator (VA)	11,000	12,000	12,000
Nominal Intput Voltage (V)	220/230/240	220/230/240	220/230/240
Input Voltage Range (V)	170~280	170~280	170~280

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50.0
Efficiency		Efficiency	
Max. Efficiency	97.6%	Max. Efficiency	97.6%
European Efficiency	96.2%	European Efficiency	96.2%
CEC Efficiency	96.2%	CEC Efficiency	96.2%
Max. Battery to AC Efficiency	95.5%	Max. Battery to AC Efficiency	95.5%
MPPT Efficiency	99.9%	MPPT Efficiency	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
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (℃)	-35~+60	-35~+60	-35~+60
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	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485
Communication with Portal	LAN / WiFi	LAN / WiFi	LAN / WiFi
Weight (kg)	27kg	29kg	29kg
Dimension (W×H×D mm)	560*444.5*226	560*444.5*226	560*444.5*226
Noise Emission (dB)	<50	<55	<55
Topology	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP66	IP66	IP66

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
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
Storage Temperature (℃)	-40~+85	-40~+85	-40~+85
The Decisive Voltage Class (DVC)	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD
Type of Electrical Supply System	single phase	single phase	single phase
Country of Manufacture	China	China	China
Certification			
Grid Standards	IEC61683, IEC61727&IEC62116,IEC62109, NRS 097-2-1:2017 Ed.2.1		
Safety Regulation	IEC62109-1&2		
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4		

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
*1. The maximum continuous discharging current is especially based on the off-gird scenario. *2. The maximum input current per string is 16A. Or For the MPPT with two strings, the current of each string is 16A. *3. 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). *4: When the input voltage is 550V-600V, the inverter will enter standby mode. The inverter will return to normal operation state when the voltage returns to the MPPT working voltage range. *5: When the PV input voltage is higher than 490V, the battery charging and discharging power will be gradually limited, resulting in charging and discharging cannot be done; the power limitation will be lifted after the input voltage is lowered.			

13.2 Battery Technical Data

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		
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		

Technical Parameters		LX A5.0-10	2* LX A5.0-10	n*LX A5.0-10
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		95%		
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		
*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.				

LX A5.0-30

Technical Parameters	LX A5.0-30
Nominal Capacity (kWh)	5.12
Usable energy (kWh) *1	5

Technical Parameters	LX A5.0-30
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℃
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

Technical Parameters	LX A5.0-30
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.	

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 energy (kWh)* 1	5.4	10.8	16.2	21.6	27	32.4
Usable energy (kWh) *2	4.8	9.6	14.4	19.2	24	28.8
Cell Type	LFP（LiFePO4）					
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×D×H mm)	505×570×175 (LX U5.4-L)					

Operating Temperature (℃)		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-mounted 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 2.5~3.65V, new battery charged and discharged at +25±2 ℃ with 0.5C rate. Usable capacity may vary depending on the inverter.
*2: Test conditions, 0.5C charge/discharge at +25±2°C with 90% DOD;
*3: The rated charge/discharge current and power are affected by temperature and SOC status;
*4: Based on the cell's 0.5C@25±2°C charge/discharge, the EOL reaches 80%.

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 energy (kWh)* 1	5.4	10.8	16.2	21.6	27	32.4
Cell Type	LFP (LiFePO4)					
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×D×H mm)		505×570×175 (LX U5.4-20)					
Operating Temperature (℃)		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-mounted installation					
Round-trip Efficiency		95.0%					
Cycle Life *3		≥4000 @0.5/0.5C					
Standard and Certificat	Safety	IEC62619，IEC 63056，IEC 62040，CEC					
	EMC	CE, RCM					
	Transpor	UN38.3					
Life (Year)		≥25					

*1: Test conditions: cell voltage 2.5~3.65V, new battery charged and discharged at +25±2 ℃ with 0.5C rate. Usable capacity may vary depending on the inverter.
*2: The rated charge/discharge current and power are affected by temperature and SOC status;
*3: Based on the cell's 0.5C@25±2°C charge/discharge, the EOL reaches 80%.

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
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

Technical Parameters	LX U5.0-30
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
*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.	

13.3 Smart Meter

- GMK110

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

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

- GM330

Technical Parameters			GM330
Input Data	Type of Electrical Supply System		Three-phase
	Voltage	Nominal Voltage L-N (V)	220/ 230
		Nominal Voltage L-L (V)	380/ 400
		Voltage Range	0.88Un-1.1Un
		Nominal Voltage Frequency (Hz)	50/ 60
	Current	CT Ratio	nA:5A
Communication			RS485
Communication distance (m)			1000
User Interface			4 LEDs, Reset Button
Accuracy	Voltage/Current		Class 0.5
	Active Energy		Class 0.5
	Reactive Energy		Class 1
Power Consumption (w)			<5
Mechanical Parameters	Dimension（W×H×D）		72*85*72
	Weight (g)		240
	Mounting Method		Rail Installation
	Ingress Protection Rating		IP20

Technical Parameters		GM330
Environmental Parameters	Operating Temperature Range (℃)	-30~ 70
	Storage Temperature Range (℃)	-30~ 70
	Relative Humidity (No Condensing)	0~95%
	Max. Working Altitude (m)	3000

13.4 Smart Dongle Technical Data

- WiFi/LAN Kit-20

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

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

Technical Parameters	4G Kit-CN-G20	4G Kit-CN-G21
General Data		
Maximum number of supported inverters	1	1

Technical Parameters	4G Kit-CN-G20	4G Kit-CN-G21
Interface form	USB	USB
Mounting Method	Plug-and-play	Plug-and-play
Indicator	LED indicator	LED indicator
Dimension (W×H×D mm)	48.3*95.5*32.1	48.3*95.5*32.1
SIM card size (mm)	15*12	15*12
Ingress Protection Rating	IP66	IP66
Weight（g）	87g	87g
Power Consumption (W)	<4	<4
Ambient temperature (℃)	-30~+65℃	-30~+65℃
Storage Temperature (℃)	-40~+70℃	-40~+70℃
Relative Humidity	0- 100%	0- 100%
Max. Working Altitude (m)	4000	4000
Wireless Parameters		
LTE-FDD	B1/B3/B5/B8	B1/B3/B5/B8
LTE-TDD	B34/B39/B40/B41	B34/B39/B40/B41
GNSS positioning	/	Beidou, GPS
Life (Year)	5.0	5.0

- 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

Technical Parameters	Ezlink3000
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

14 Appendix

14.1 FAQ

14.1.1 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.

14.1.2 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.

14.2 Abbreviations

Abbreviation	English Description
Ubatt	Battery Voltage Range
Ubatt,r	Nominal Battery Voltage
Ibatt,max (C/D)	Max. Charging Current Max. Discharging Current
EC,R	Rated Energy
UDCmax	Max.Input Voltage
UMPP	MPPT Operating Voltage Range
IDC,max	Max. Input Current per MPPT
ISC PV	Max. Short Circuit Current per MPPT
PAC,r	Nominal Output Power
Sr (to grid)	Nominal Apparent Power Output to Utility Grid
Smax (to grid)	Max. Apparent Power Output to Utility Grid
Sr (from grid)	Nominal Apparent Power from Utility Grid
Smax (from grid)	Max. Apparent Power from Utility Grid
UAC,r	Nominal Output Voltage
fAC,r	Nominal AC Grid Frequency
IAC,max(to grid)	Max. AC Current Output to Utility Grid
IAC,max(from grid)	Max. AC Current From Utility Grid
P.F.	Power Factor

Abbreviation	English Description
Sr	Back-up Nominal apparent power
Smax	Max. Output Apparent Power (VA) Max. Output Apparent Power without Grid
IAC,max	Max. Output Current
UAC,r	Nominal Output Voltage
fAC,r	Nominal Output Freqency
Toperating	Operating Temperature Range
IDC,max	Max. Input Current
UDC	Input Voltage
UDC,r	DC Power Supply
UAC	Power Supply/AC Power Supply
UAC,r	Power Supply/Input Voltage Range
Toperating	Operating Temperature Range
Pmax	Max Output Power
PRF	TX Power
PD	Power Consumption
PAC,r	Power Consumption
F (Hz)	Frequency
ISC PV	Max. Input Short Circuit Current
Udcmin-Udcmax	Range of input Operating Voltage
UAC,rang(L-N)	Power Supply Input Voltage
Usys,max	Max System Voltage
Haltitude,max	Max. Operating Altitude
PF	Power Factor
THDi	Total Harmonic Distortion of Current
THDv	Total Harmonic Distortion of Voltage

Abbreviation	English Description
C&I	Commercial & Industrial
SEMS	Smart Energy Management System
MPPT	Maximum Power Point Tracking
PID	Potential-Induced Degradation
Voc	Open-Circuit Voltage
Anti PID	Anti-PID
PID Recovery	PID Recovery
PLC	Power-line Commucation
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol
Modbus RTU	Modbus Remote Terminal Unit
SCR	Short-Circuit Ratio
UPS	Uninterruptable Power Supply
ECO mode	Economical Mode
TOU	Time of Use
ESS	Energy Stroage System
PCS	Power Conversion System
RSD	Rapid shutdown
EPO	Emergency Power Off
SPD	Surge Protection Device
ARC	zero injection/zero export Power Limit / Export Power Limit
DRED	Demand Response Enabling Device
RCR	Ripple Control Receiver
AFCI	AFCI
GFCI	Ground Fault Circuit Interrupter
RCMU	Residual Current Monitioring Unit
FRT	Fault Ride Through
HVRT	High Voltage Ride Through

Abbreviation	English Description
LVRT	Low Voltage Ride Through
EMS	Energy Management System
BMS	Battery Management System
BMU	Battery Measure Unit
BCU	Battery Control Unit
SOC	State of Charge
SOH	State of Health
SOE	State Of Energy
SOP	State Of Power
SOF	State Of Function
SOS	State Of Safety
DOD	Depth of discharge

14.3 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**

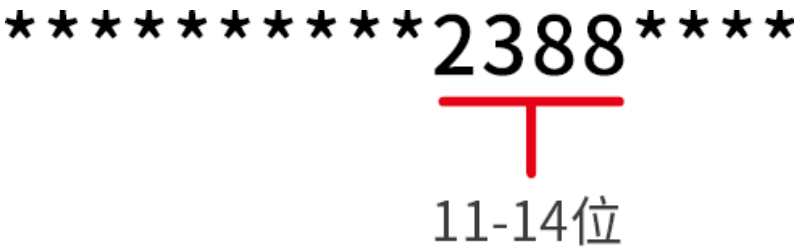
Environmental Parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0~+40℃	-33~+40℃	-33~+40℃
Humidity Range	5% to 85%	15% to 100%	4% to 100%

- **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.

14.4 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