V2.4 2026-01-26

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
- GW14.3-BAT-LV-G10

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.

About This Manual

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/.

Applicable Model

energy storage system includes the following products:

Product Type	Product Information	Description
Inverter	ES Uniq Series	Nominal output power: 8kW-12kW
Battery system	LX A5.0-10	Rated capacity 5.0kWh, supports up to 15 clusters in parallel
	LX A5.0-30	Rated capacity 5.12kWh, supports up to 30 clusters in parallel
	LX U5.4-L	Rated capacity 5.4kWh, supports up to 6 parallel clusters
	LX U5.4-20	Rated capacity 5.12kWh, supports up to 30 clusters in parallel
	LX U5.0-30	
	GW14.3-BAT-LV-G10	Rated capacity 14.3kWh, supports up to 30 parallel clusters
electricity meter	GMK110	The monitoring module in energy storage system can detect information such as voltage and current during system operation.
	GM330	

Product Type	Product Information	Description
smart dongle	WiFi/LAN Kit-20	In a standalone scenario, the system operation information can be uploaded to the monitoring platform via WiFi or LAN signals.
	4G Kit-CN-G20、4G Kit-CN-G21	The system operation information can be uploaded to the monitoring platform via 4G signal.
	Ezlink3000	When parallel system, it is connected to Master inverter and uploads system operation information to the monitoring platform via WiFi or LAN signals.

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.

Table of Contents

1 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.

1.1 General Safety

NOTICE

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

1.2 personnel requirements

NOTICE

To ensure the safety, compliance, and efficiency throughout the transportation, installation, wiring, operation, and maintenance of the equipment, the work must be carried out by professionals or qualified personnel.

1. Professionals or qualified personnel include:
   - Personnel who have mastered the equipment's working principles, system structure, and knowledge of relevant risks and hazards, and have received professional operation training or possess rich practical experience.
   - Personnel who have received relevant technical and safety training, have certain operational experience, can be aware of potential dangers that specific operations may pose to themselves, and are able to take protective measures to minimize risks to themselves and others.
   - Qualified electrical technicians who meet the regulatory requirements of the country/region where they are located.
   - Personnel who hold a degree in electrical engineering/an advanced diploma in an electrical discipline or equivalent qualification/a professional qualification in the electrical field, and have at least 2/3/4 years of experience in testing and supervising in accordance with electrical equipment safety standards.
2. Personnel engaged in special tasks such as electrical operations, working at heights, and operation of special equipment must hold valid qualification certificates as required by the location of the equipment.
3. Operation of medium-voltage equipment must be performed by certified high-voltage electricians.
4. Replacement of the equipment and its components is only permitted to be carried out by authorized personnel.

1.3 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.

1.3.1 PV String Safety

⚠WARNING

- Ensure the module frame and mounting system are properly grounded.
- After the connection is completed, ensure that the cables are securely fastened and free from looseness. Improper wiring may result in poor contact or high impedance, and damage the Inverter.
- Use a multimeter to measure the positive and negative poles of the DC cable, ensuring correct polarity without reverse connection; and confirm that the voltage is within the allowable range.
- Use a multimeter to measure the DC cable, ensuring the positive and negative poles are correctly connected without reverse polarity. The voltage should be lower than the maximum DC input voltage. Damage caused by reverse polarity or over-voltage is not covered under the manufacturer's warranty.
- The PV string output does not support grounding. Before connecting the PV string to Inverter, ensure that the the minimum insulation resistance of the PV string meets the minimum insulation resistance requirement (R=Max.Input Voltage (V)/30mA).
- Do not connect the same PV string to multiple Inverter, as this may cause damage to the Inverter.
- The photovoltaic modules used in conjunction with Inverter must comply with the IEC 61730 Class A standard.
- When the input PV String value is high or the input current value is high, it may cause Inverter output derating.

1.3.2 Inverter Safety

⚠WARNING

- Ensure the voltage and Frequency at the on-grid access point comply with Inverter on-grid requirements.
- It is recommended to add breaker or fuses as Protection devices on the AC side. The rating of the Protection device should be at least 1.25 times the maximum current of the AC output of Inverter.
- If the arc alarm is triggered less than 5 times within 24 hours, it can be automatically cleared. After the 5th arc alarm, the Inverter will shut down Protection, and the Inverter can only resume normal operation after the fault is cleared.
- In photovoltaic systems, if a Battery is not configured, it is not recommended to use the BACK-UP function, as it may lead to system POWER OFF risks.
- When Utility grid, voltage, and Frequency change, it may lead to Inverter output derating.

1.3.3 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.
- The DC breaker for battery shall meet the requirements according to AS/NZS 5139.

⚠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.

1.3.4 Smart Meter Safety

⚠WARNING

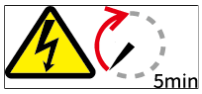
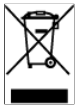
If the Utility gridvoltage voltage fluctuation exceeds 265V, prolonged overvoltage operation may damage the meter. It is recommended to install a fuse with a rated current of 0.5A on the voltage input side of the meter to Protection it.

1.4 Safety Symbols and Certification Marks

⚠DANGER

- After the equipment Installation, the labels and warning signs on the enclosure must remain clearly visible. Blocking, altering, or damaging them is prohibited.
- The following warning labels on the enclosure are for reference only. Please refer to the actual labels on the equipment.

No.	Symbol	Meaning
1		Potential DANGER exists during equipment operation. Please take protective measures when operating the equipment.
2		High voltage DANGER. High voltage is present during equipment operation. Ensure the equipment is POWER OFF before performing any operations.
3		The surface of Inverter is at high temperature. Do not touch during operation to avoid burns.
4		Please use the equipment properly. In extreme conditions, there is a risk of explosion.
5		Battery contains flammable materials, beware of fire.

No.	Symbol	Meaning
6		The equipment contains corrosive electrolyte. Avoid contact with leaked electrolyte or vaporized gases.
7		After the equipment is power off, please wait for 5 minutes until it is fully Discharge.
8		The equipment should be kept away from open flames or ignition sources.
9		The equipment shall be Keep away from children accessible areas.
10		Do not extinguish with water.
11		Before operating the equipment, please read the product manual carefully.
12		Wear personal protective equipment during Installation, operation, and maintenance.
13		The equipment must not be disposed of as household waste. Please handle it in accordance with local laws and regulations or return it to the equipment manufacturer.
14		grounding point
15		Recycling symbol.
16		CE marking

No.	Symbol	Meaning
17		TUV Mark.
18		RCM mark.

1.5 EU Declaration of Conformity

1.5.1 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)

1.5.2 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)

1.5.3 Battery

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

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

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

2 System Introduction

2.1 System Overview

Residential smart Inverter solution integrates Inverter, Battery, Smart Meter, and smart dongle devices. In the photovoltaic system, solar energy is converted into electricity to meet household power demands. Energy IoT devices in the system manage electrical appliances by monitoring the overall power status, enabling intelligent control of electricity for loads, storage in Battery, or export to Utility grid.

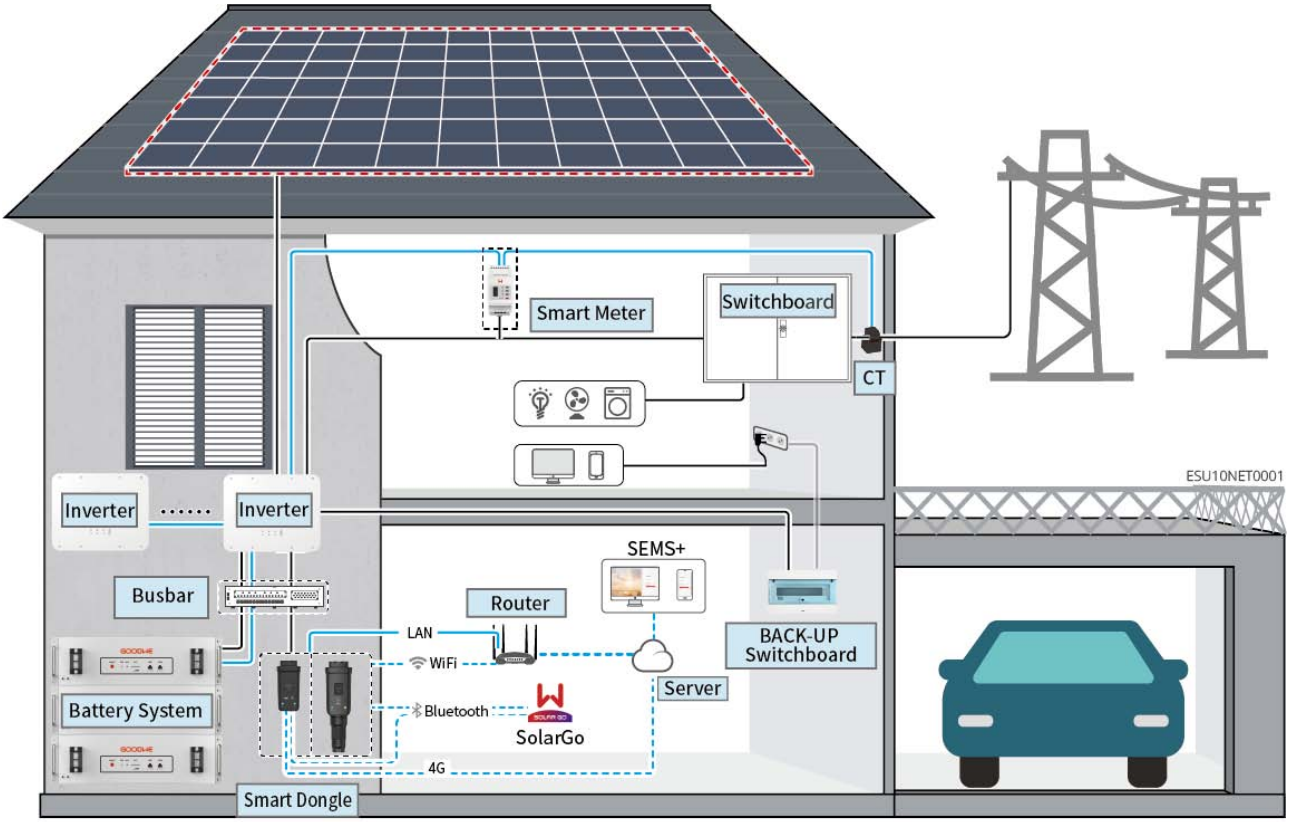
WARNING

- Battery and model shall be selected according to the matching list of Inverter and Battery. For requirements regarding the use of Battery in the same system, such as whether model can be mixed or whether capacities need to be consistent, please refer to the corresponding Battery user manual of the model or contact the Battery manufacturer for relevant requirements.Inverter and Battery compatibility list:https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Battery%20Compatibility%20Overview-EN.pdf
- Due to product version upgrades or other reasons, the document content will be updated periodically. The matching relationship between Inverter and IoT products can be referenced as follows:https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf
- For detailed networking and wiring schemes of each scenario, please refer to:5.2.Detailed System Wiring Diagram(Page 96)
- In a fully off-grid Inverter system, if the Battery experiences prolonged periods of low sunlight or rainy weather and fails to replenish Charge in time, it may lead to excessive Discharge, resulting in performance degradation or damage to the Battery. To ensure long-term stable operation of the system, avoid allowing the Battery to be completely discharged. Recommended measures are as follows:
  1. During off-grid operation, set the minimum SOC threshold. It is recommended to set the off-grid SOC lower limit to 30%.
  2. When the SOC approaches the Protection threshold, the system will automatically enter load limiting or Protection mode.
  3. If there is insufficient sunlight for several consecutive days and the Battery SOC is too low, external energy sources (such as a generator or Utility grid auxiliary Charge) should be used promptly to replenish the Battery.
  4. Regularly check the Battery status to ensure it operates within safe working parameters.
  5. It is recommended to perform a full charge and discharge every six months to calibrate the SOC accuracy.

energy storage system operates in off-grid mode and can normally power the following loads:

Off-grid load capacity description	
Inverter model	GW8000-ES-C10 GW10K-ES-C10 GW12K-ES-C10
Single motor load Nominal power (kVA)	2.2
Total Motor Load Nominal power (kVA)	0.75*Pn
Capacitive Load (kVA)	0.33*Pn
Half-wave load (kVA)	0.5Pn
Note: • Pn: InverterNominal output power. • If the load Nominal power of a single motor is greater than or equal to the nominal value in the table above, a VFD/VSD must be configured. • For 2 or more units in parallel operation, the permissible total motor load Nominal power = single motor load Nominal power * number of parallel units * 80%.	

General scenario


Smart Meter
Switchboard
CT
ESU10NET0001
Inverter
Inverter
SEMS+
Busbar
Router
LAN
WiFi
BACK-UP
Switchboard
Server
Battery System
Bluetooth
SolarGo
4G
Smart Dongle

Equipment Type	model	Description
Inverter	GW8000-ES-C10 GW10K-ES-C10 GW12K-ES-C10	• When only one Inverter is used in the system, it supports the connection of generators or large loads. • When multiple Inverter units are used in the system, connecting generators or large loads is not supported. A maximum of 6 Inverter units can form a parallel system, and Ezlink3000 is required for parallel operation. • When connecting to the grid in parallel, the following version requirements must be met: ◦ All Inverter software versions in the parallel system are consistent. ◦ Inverter ARM software version is 15.493 or above ◦ The DSP software version is 05.13 or above. ◦ All Invertermodel in the parallel system are consistent, with uniform appearance and ports.
Battery system	LX A5.0-10	Different model Battery system cannot be mixed and matched for use. • LX A5.0-10: Single Battery The nominal charging and discharging current rated at 60A; supports up to 15 parallel clusters in the same system. • LX A5.0-30: The rated Charge current of a single Battery is 60A; the rated Discharge current is 100A; the maximum Charge current is 90A; the maximum Discharge current is 150A. A maximum of 30 units can be paralleled in the same system.
	LX A5.0-30	
	LX U5.4-L	The maximum Discharge current of a single Battery is 50A; a maximum of 6 units can be clustered in parallel within the same system.
	LX U5.4-20	

Equipment Type	model	Description
	LX U5.0-30	The rated Battery current current of a single unit is 60A, and the rated Discharge current current is 100A; the maximum Charge current current is 90A, and the maximum Discharge current current is 100A; a maximum of 30 units can be clustered in parallel within the same system.
	GW14.3-BAT-LV-G10	• The single Battery The nominal charging and discharging current is 140A; the maximum Charge current is 224A, and the maximum Discharge current is 260A. • Supports a maximum of 30 clusters in parallel within the same system. ◦ Products with SN codes 25C and later default to supporting 30 units in a cluster. ◦ For products before 25C that need to support 30 units in a cluster, please contact GoodWe Customer Service Center to upgrade the firmware version. ◦ View product SN code12.4.SN code meaning(Page 391).
	lead-acid battery	• Supports connection to AGM, GEL, and Flooded types of lead-acid Battery • Calculate the number of can be connected in seriesBattery based on the lead-acid Batteryvoltage. The total voltage of the series-connected Battery must not exceed 60V.
Busbar	BCB-11-WW-0 BCB-22-WW-0 BCB-32-WW-0 BCB-33-WW-0 (Purchased from GoodWe)	Please select the busbar based on the system's Inverter charging Discharge capacity, load size, and Battery charging Discharge capacity. • BCB-11-WW-0： ◦ Compatible with LX A5.0-10, Battery system

Equipment Type	model	Description
		supports a maximum working current of 360A, working Power of 18kW, with a maximum connection of 3 Inverter and 6 Battery. • BCB-22-WW-0: ◦ When paired with the LX A5.0-10, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 12 Battery units. ◦ When paired with the LX A5.0-30, Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter and 6 Battery. ◦ When paired with the LX U5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 6 Battery units. • BCB-32-WW-0: ◦ When paired with the LX A5.0-10, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. ◦ When paired with the LX A5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. ◦ When paired with the LX U5.0-30, Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 8 Battery units. ◦ When paired with the GW14.3-BAT-LV-G10, the Battery system supports a maximum operating current of 720A, an operating Power of 36kW, and can connect up to 6 Inverter units and 30 Battery units. • BCB-33-WW-0:

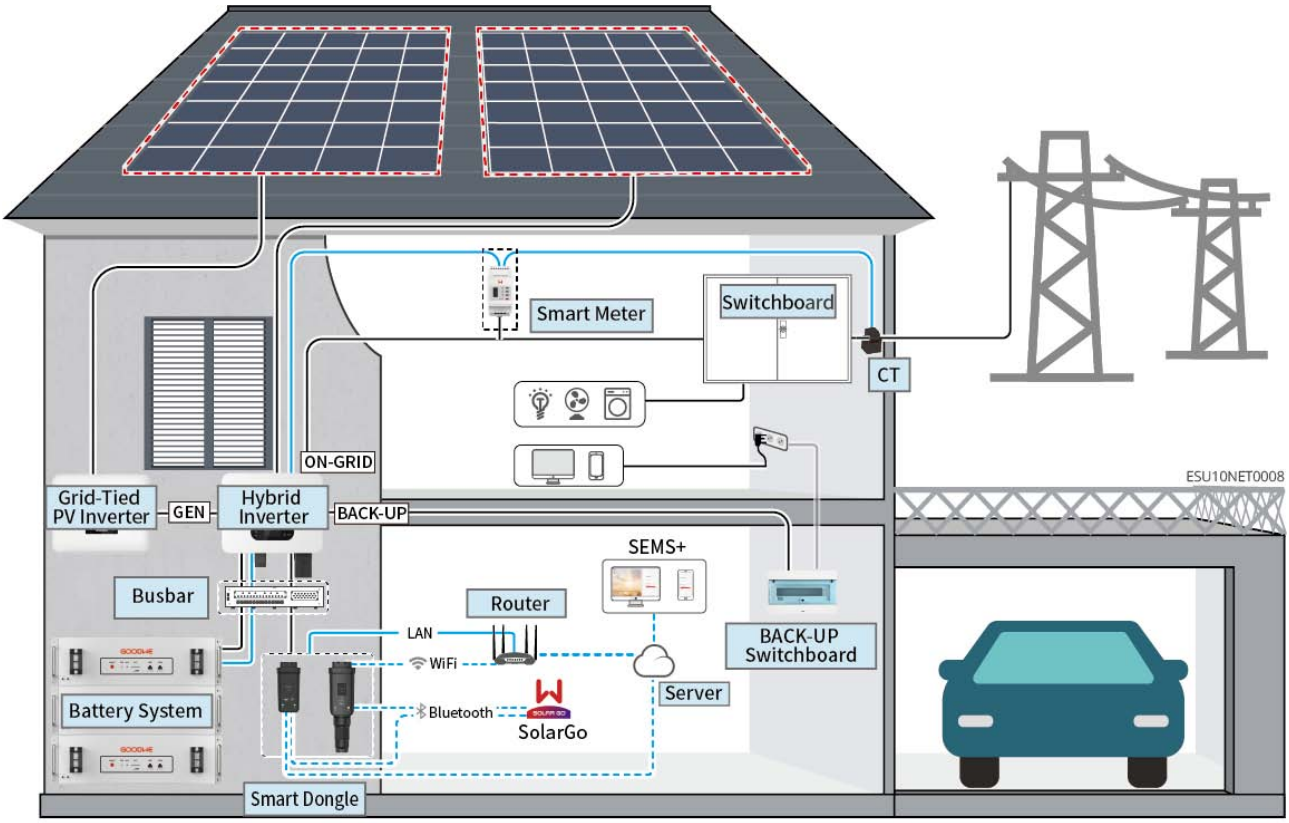
Equipment Type	model	Description
		◦ Compatible with LX U5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. When the number of Battery units exceeds 8, two fuses with a rating of 600A must be connected in parallel. • Others: Please configure according to system Power and current independently.
Smart Meter	• Built-in energy meter (standard-equipped) • GMK110 (purchased from GoodWe) • GM330 (purchased from GoodWe)	• Built-in meter: When the number of Inverter parallel units is ≤2 and the CT cable length is ≤10 meters, the built-in meter can be used. The built-in meter uses a 10-meter CT cable, with a default CT ratio of 120A/40mA. • GMK110: When the built-in CT cable length of Inverter is insufficient to connect to Main panel, it can be extended using an external GMK110 meter. CT replacement is not supported, and the CT ratio is 120A/40mA. • GM330: CT can be purchased from GoodWe or self-procured, with CT ratio requirement: nA/5A. • nA: CT primary side input current, range of n is 200-5000 • 5A: CT secondary side output current

Equipment Type	model	Description
smart dongle	• WiFi/LAN Kit-20 (standard-equipped) • 4G Kit-CN-G20 (China Only) • 4G Kit-CN-G21 (China Only) • Ezlink3000 (purchased from GoodWe)	• For single unit operation, please use the WiFi/LAN Kit-20, 4G Kit-CN-G20, or 4G Kit-CN-G21 module. • During parallel operation, only Master inverter needs to be connected to Ezlink3000, while Slave inverter does not require connection to smart dongle. The firmware version of Ezlink3000 should be 05 or above.
heavy load	-	Supports SG Ready, high load capacity requirements: 1. Total large load Power <GENport Maximum output Power 2. Large Load Power + BACK-UP Power < AC Max.Input Power (Utility grid)
Generator	-	Generator rated voltage meets Inverter GEN port rated voltage

Microgrid scenario

⚠WARNING

- In microgrid scenarios, the PV Hybrid Inverter open-circuit voltage is not recommended to be ≥500V to avoid excessive system voltage under harsh operating conditions, which could trigger overvoltage Protection.
- In microgrid systems, Inverter does not support parallel operation, and only one Inverter is allowed in the system.
- When the system is in a high-temperature condition or under BMS current limiting, it may result in restricted Battery chargePower, leading to excessive system voltage that triggers overvoltage Protection.
- In the microgrid scenario, ensure that the over-frequency load shedding point of grid-tied PV inverter matches that of Hybrid Inverter.
- Please ensure that the over-frequency load shedding curve of grid-tied PV inverter is configured as follows:
  - end power is set to 0%Pn
  - Tentional Delay Ta is set to 0
  - Set the Power response mode to off.



Equipment Type	model	Description
Hybrid Inverter	GW8000-ES-C10 GW10K-ES-C10 GW12K-ES-C10	• In the microgrid system, Inverter does not support parallel operation, and only one Inverter is allowed in the system. • Inverter version requirements: ◦ Inverter ARM software version is 15.493 or above ◦ The DSP software version is 05.13 or above. ◦ Some models do not support microgrid functionality.
Battery system	LX A5.0-10	Different model Battery system cannot be mixed and matched for use. • LX A5.0-10: Single Battery The nominal charging and discharging current rated at 60A; supports up to 15 parallel clusters in the same system. • LX A5.0-30: The rated Charge current of a single Battery is 60A; the rated Discharge current is 100A; the maximum Charge current is 90A; the maximum Discharge current is 150A. A maximum of 30 units can be paralleled in the same system.
	LX A5.0-30	
	LX U5.4-L	The maximum Discharge current of a single Battery is 50A; a maximum of 6 units can be clustered in parallel within the same system.
	LX U5.4-20	
	LX U5.0-30	The rated Battery current current is 60A; the rated Discharge current current is 100A; the maximum Charge current current is 90A; the maximum Discharge current current is 100A, supporting a maximum of 30 units in parallel in the same system.

Equipment Type	model	Description
	GW14.3-BAT-LV-G10	• The single Battery The nominal charging and discharging current is 140A; the maximum Charge current is 224A, and the maximum Discharge current is 260A. • Supports a maximum of 30 clusters in parallel within the same system. ◦ Products with SN codes 25C and later default to supporting 30 units in a cluster. ◦ For products before 25C that need to support 30 units in a cluster, please contact GoodWe Customer Service Center to upgrade the firmware version. ◦ View product SN code12.4.SN code meaning(Page 391).
	lead-acid battery	• Supports connection to AGM, GEL, and Flooded types of lead-acid Battery • Calculate the number of can be connected in seriesBattery based on the lead-acid Batteryvoltage. The total voltage of the series-connected Battery must not exceed 60V.
Busbar	BCB-11-WW-0 BCB-22-WW-0 BCB-32-WW-0 BCB-33-WW-0 (Purchased from GoodWe)	Please select the busbar based on the system's Inverter charging Discharge capacity, load size, and Battery charging Discharge capacity. • BCB-11-WW-0: ◦ Compatible with LX A5.0-10, Battery system supports a maximum working current of 360A, working Power of 18kW, with a maximum connection of 3 Inverter and 6 Battery. • BCB-22-WW-0: ◦ When paired with the LX A5.0-10, the Battery system supports a maximum working current of

Equipment Type	model	Description
		720A, a working Power of 36kW, and can connect up to 6 Inverter units and 12 Battery units. ◦ When paired with the LX A5.0-30, Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter and 6 Battery. ◦ When paired with the LX U5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 6 Battery units. • BCB-32-WW-0： ◦ When paired with the LX A5.0-10, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. ◦ When paired with the LX A5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. ◦ When paired with the LX U5.0-30, Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 8 Battery units. ◦ When paired with the GW14.3-BAT-LV-G10, the Battery system supports a maximum operating current of 720A, an operating Power of 36kW, and can connect up to 6 Inverter units and 30 Battery units. • BCB-33-WW-0： ◦ Compatible with LX U5.0-30, the Battery system supports a maximum working current of 720A, a working Power of 36kW, and can connect up to 6 Inverter units and 15 Battery units. When the number of Battery units exceeds 8, two fuses with a rating of 600A must be connected in parallel.

Equipment Type	model	Description
		• Others: Please configure according to system Power and current independently.
Smart Meter	• Built-in energy meter (standard-equipped) • GMK110 (purchased from GoodWe) • GM330 (purchased from GoodWe)	• Built-in meter: When the number of Inverter parallel units is ≤2 and the CT cable length is ≤10 meters, the built-in meter can be used. The built-in meter uses a 10-meter CT cable, with a default CT ratio of 120A/40mA. • GMK110: When the built-in CT cable length of Inverter is insufficient to connect to Main panel, it can be extended using an external GMK110 meter. CT replacement is not supported, and the CT ratio is 120A/40mA. • GM330: CT can be purchased from GoodWe or self-procured, with CT ratio requirement: nA/5A. • nA: CT primary side input current, range of n is 200-5000 • 5A: CT secondary side output current
smart dongle	• WiFi/LAN Kit-20 (standard-equipped) • 4G Kit-CN-G20 (China Only) • 4G Kit-CN-G21 (China Only)	For single unit operation, please use the WiFi/LAN Kit-20, 4G Kit-CN-G20, or 4G Kit-CN-G21 module.

Equipment Type	model	Description
grid-tied PV inverter	-	• It is recommended to use GoodWe brand grid-tied PV inverter, and third-party grid-tied PV inverter is supported. • In the microgrid system, ensure that grid-tied PV inverterNominal output power ≤ hybrid InverterNominal output power. • When the microgrid system is in the on-grid state, if Power limitation is required, please ensure: ◦ Hybrid Inverter needs to pass through SolarGo APP**Export power limit**Set in the interface,grid-tied PV inverterplease configure according to the actual tools used. ◦ To ensure the grid-tied PV inverter can operate continuously for power generation, it is necessary to use the SolarGo APP.**Microgrid mode**The interface adjusts the output Power of the hybrid Inverter. • Note: The output Power control accuracy varies with different grid-tied PV inverter. Please set the Export power limit parameter value according to actual conditions.

2.2 Product Overview

2.2.1 Inverter

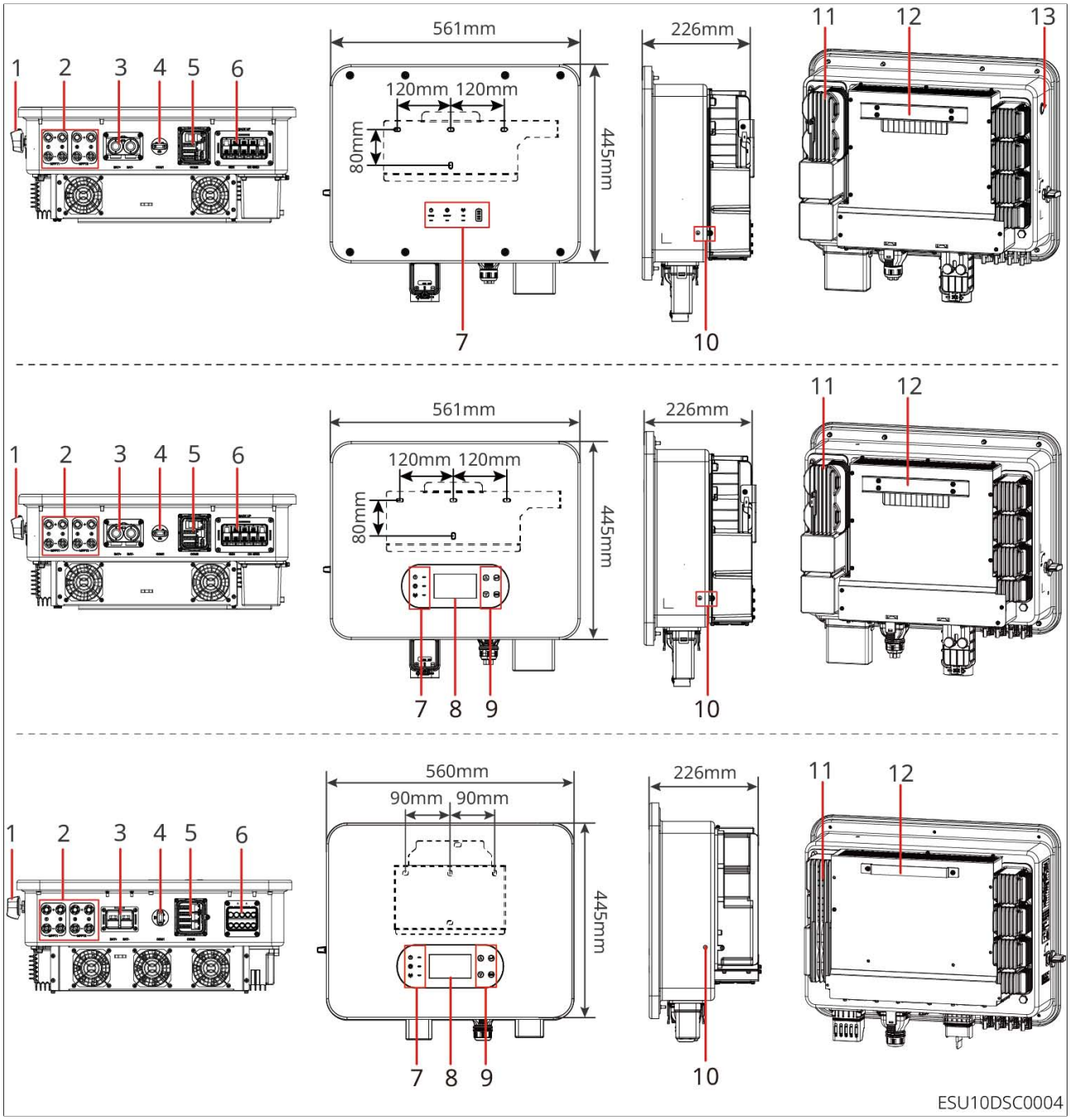
Inverter controls and optimizes power through an integrated energy management system in photovoltaic systems. The electricity generated by the photovoltaic system can be used to power loads, stored in Battery, or exported to Utility grid.

No.	model	Nominal output power	Nominal output voltage
1	GW8000-ES-C10	8kW	220/230/240
2	GW10K-ES-C10	10kW	220/230/240

No.	model	Nominal output power	Nominal output voltage
3	GW12K-ES-C10	12kW	220/230/240

NOTICE

- The ES UNIQ 8-12kW series Inverter comes in different appearance types, with variations in product appearance and components as follows.



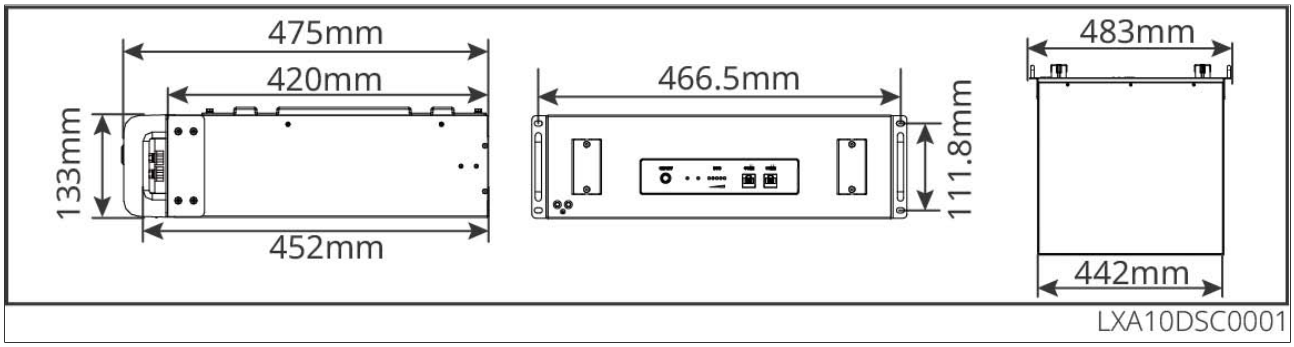
No.	Component/Silkscreen	Description
1	DC switch	Control the connection or disconnection of DC input.
2	PV Input terminal	Can connect DC input lines of PV modules.
3	Battery input terminal	Can connect Battery DC input line.

4	smart dongleport	Can be connected to smart dongle, please select the module type according to actual requirements.
5	Communication Port	Can be connected to load control,CT、RS485remote shutdown/Rapid ShutdownDRED(Australia)/RCR(Europe) etc.
6	AC Output	Connect the AC output cable, connecting Inverter to Utility grid.
7	indicator	Indicates the working status of Inverter.
8	Display (optional)	View data related to Inverter.
9	Button (optional)	Cooperate with the display screen to operate the Inverter.
10	Grounding terminal	Connecting the PE cable.
11	heat sink	Provide heat dissipation for Inverter.
12	Mounting bracket	Can be mounted with Inverter.
13	Off-grid control switch (screenless version only)	Control Inverter whether it supports off-grid operation mode. • Press the switch: Inverter supports off-grid operation mode. • Switch not pressed: Inverter does not support off-grid operation mode.

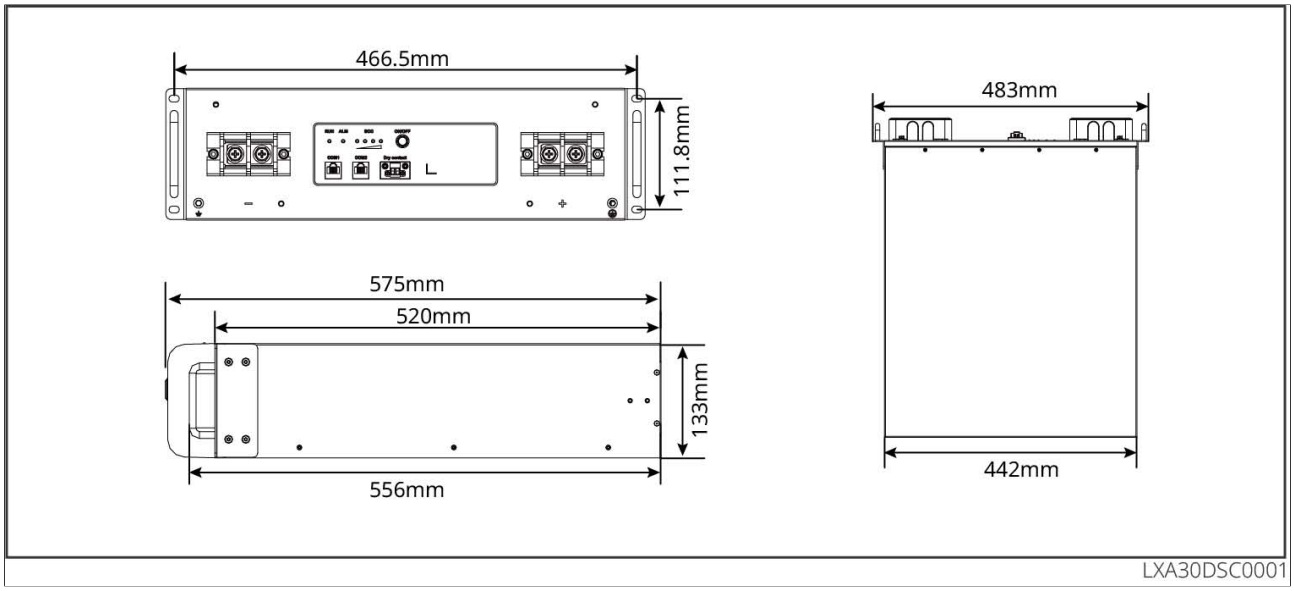
2.2.2 Battery

The battery system can store and release electrical energy according to the requirements of the photovoltaic energy storage system. The input and output ports of this energy storage system are both high-voltage direct current. The inverter supports use with lead-acid batteries. For related product information on lead-acid batteries, please obtain it from the lead-acid battery manufacturer.

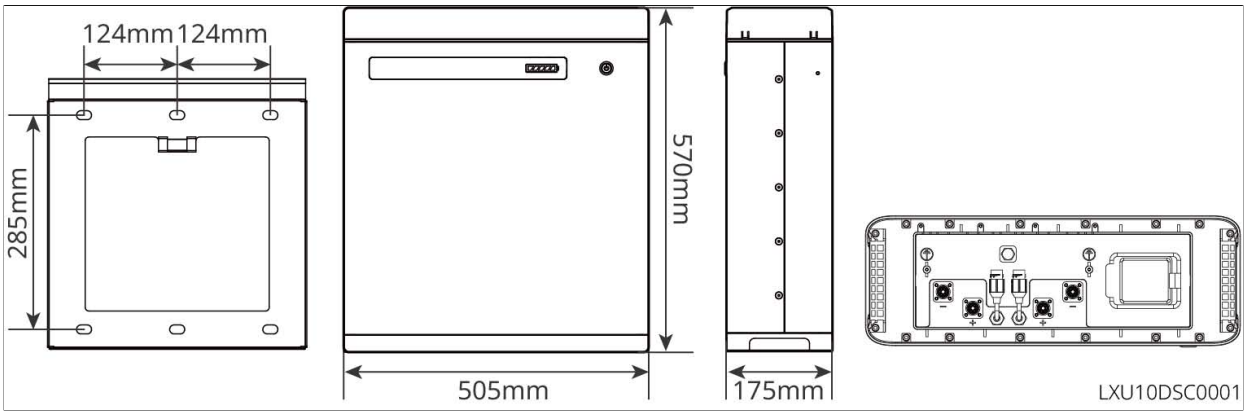
2.2.2.1 LX A5.0-10



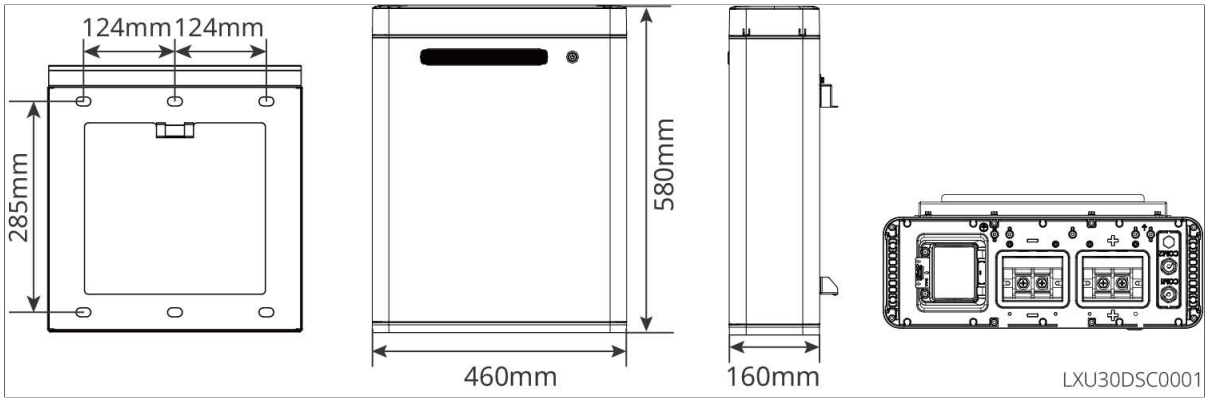
2.2.2.2 LX A5.0-30



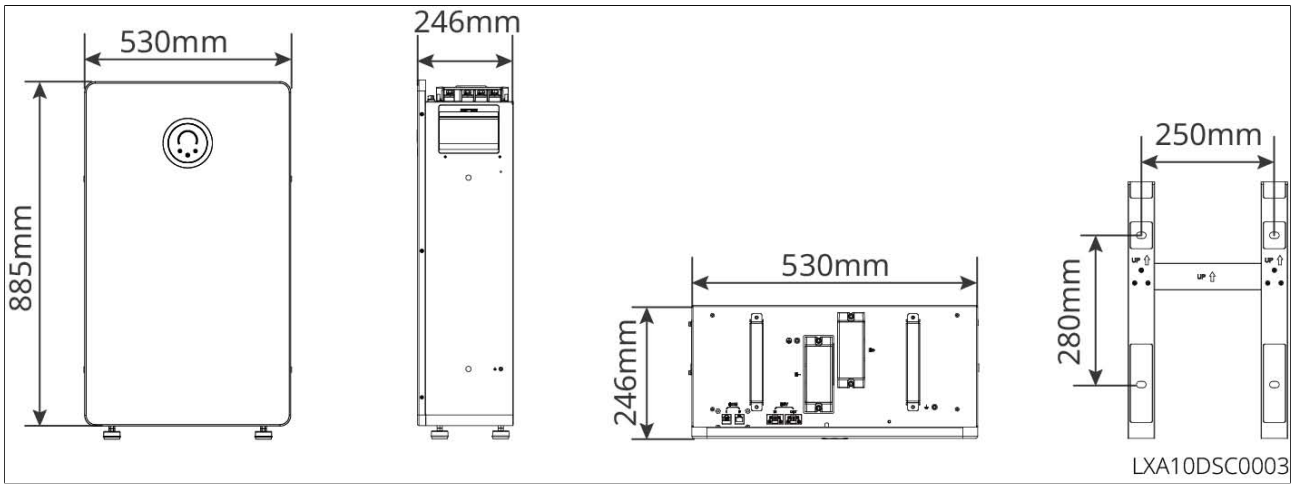
2.2.2.3 LX U5.4-L、LX U5.4-20



2.2.2.4 LX U5.0-30

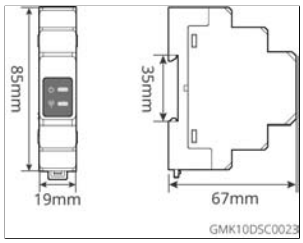
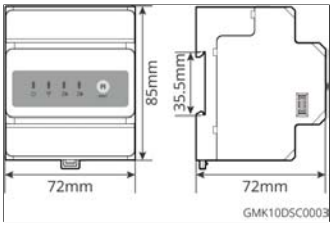
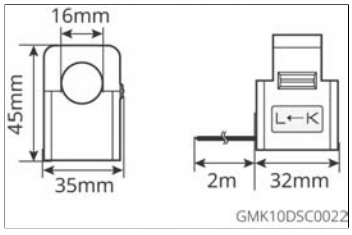


2.2.2.5 GW14.3-BAT-LV-G10



2.2.3 Smart Meter

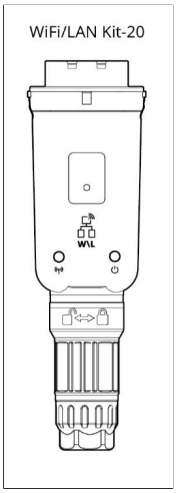
Smart Meter can measure and monitor electrical data in photovoltaic energy storage system, such as: voltage, current, Frequency, Output Power Factor, Power, etc.

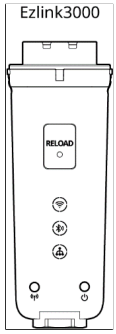
GMK110	GM330	CT
		

No.	model	Application scenarios
1	GMK110	CT replacement is not supported, CT ratio: 120A: 40mA
2	GM330	CT can be purchased from GoodWe or independently. CT ratio requirement: nA: 5A • nA: CT primary side input current, range of n is 200-5000 • 5A: CT secondary side output current

2.2.4 smart dongle

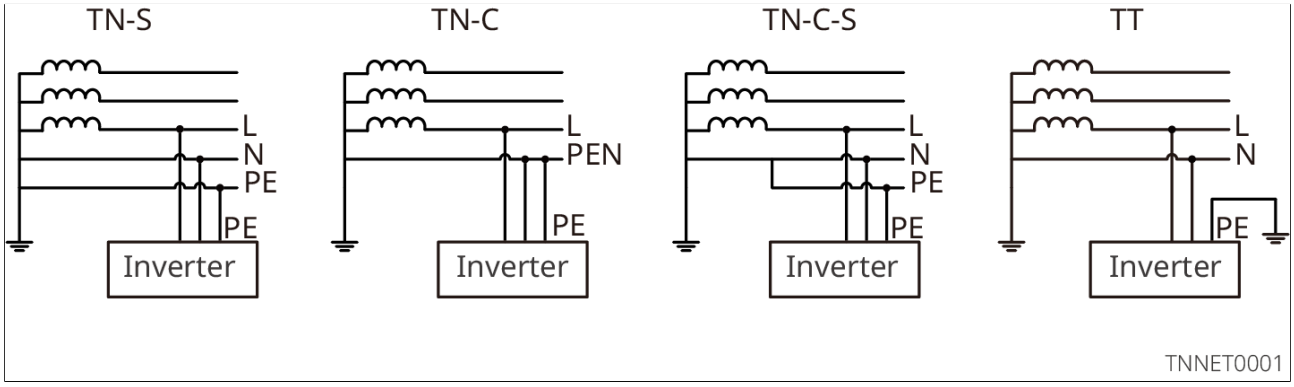
smart dongle is primarily used for real-time transmission of various power generation data from Inverter to the SEMS Portal remote monitoring platform, and for local device Commissioning via SolarGo APP connected to smart dongle.





No.	model	Signal type	Application scenarios
1	WiFi/LAN Kit-20	Bluetooth, WiFi, LAN	Inverter Standalone scenario application
2	4G Kit-CN-G20	Bluetooth, 4G	
3	4G Kit-CN-G21	4G, Bluetooth, GNSS	
4	Ezlink3000	Bluetooth, WiFi, LAN	Host in a parallel system

2.3 Supported Grid Types

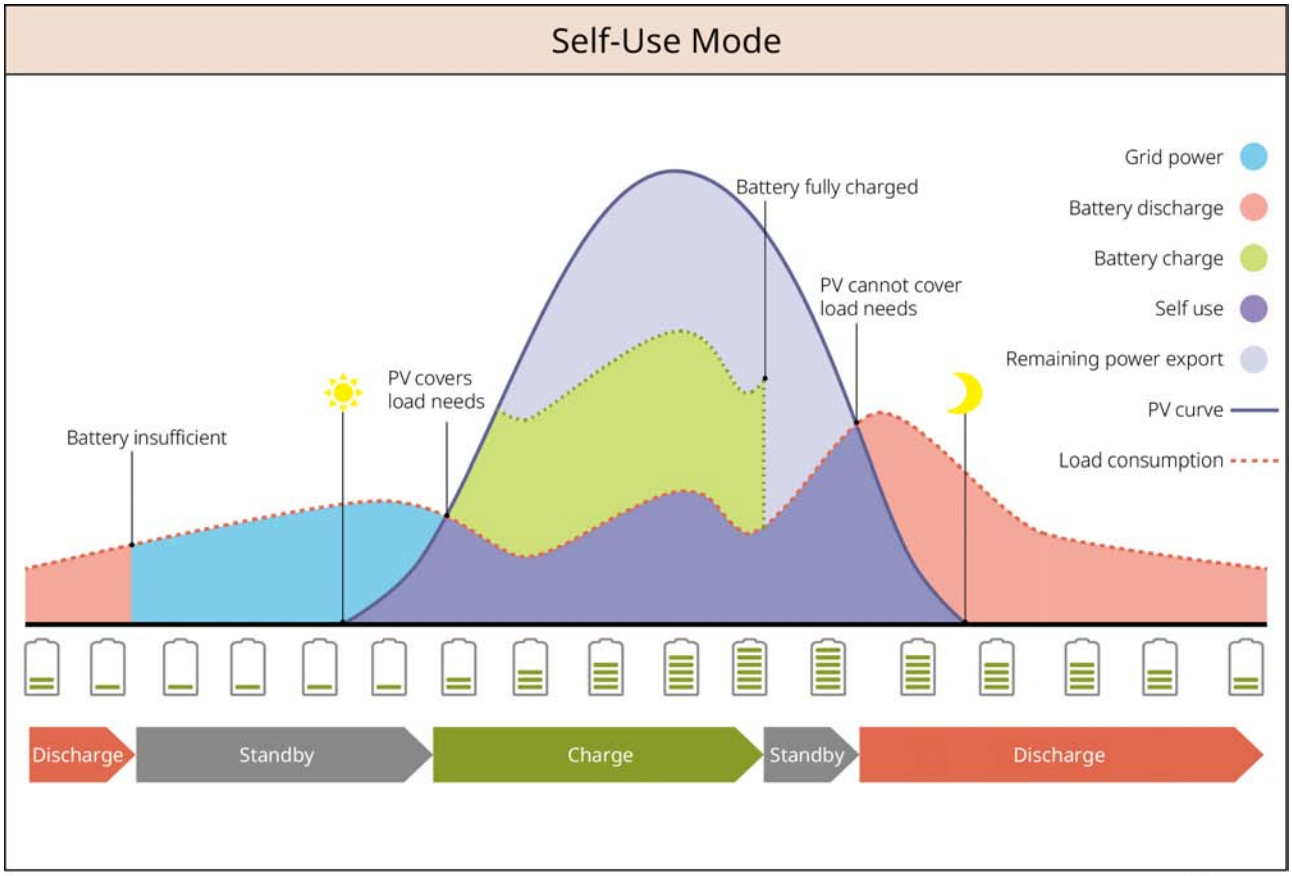


2.4 System Working Mode

NOTICE
After the initial installation of the GW14.3-BAT-LV-G10 battery system, it will automatically perform a full battery charge once, and then switch to operate in the set operating mode upon completion.

Self-Use Mode

- The fundamental operating mode of the system.
- PV generation prioritizes supplying power to loads. Excess electricity charges the battery, and any remaining surplus is sold to the grid. When PV generation cannot meet the load demand, the battery supplies power to the loads. If the battery power is also insufficient to meet the load demand, the grid supplies power to the loads.



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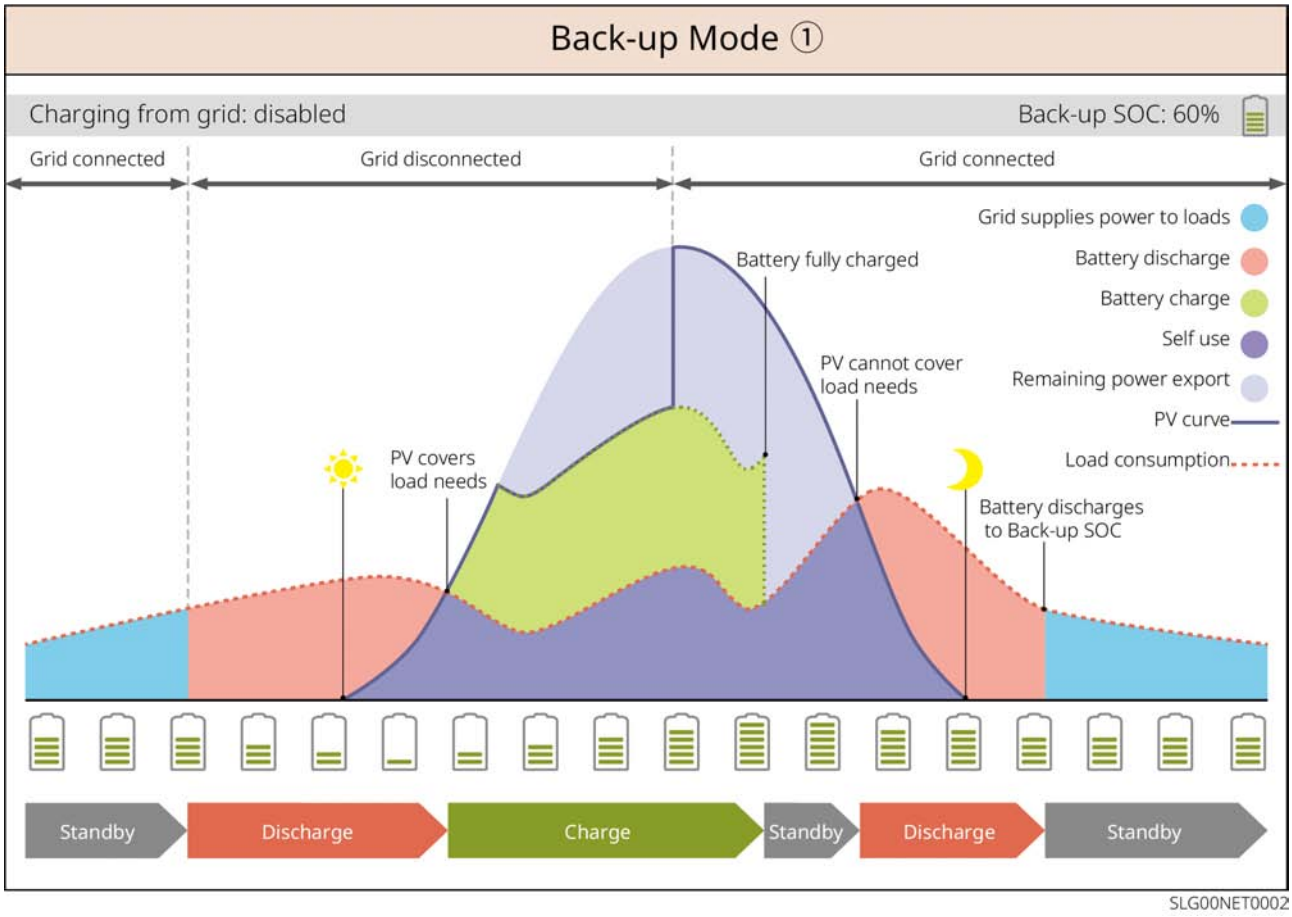
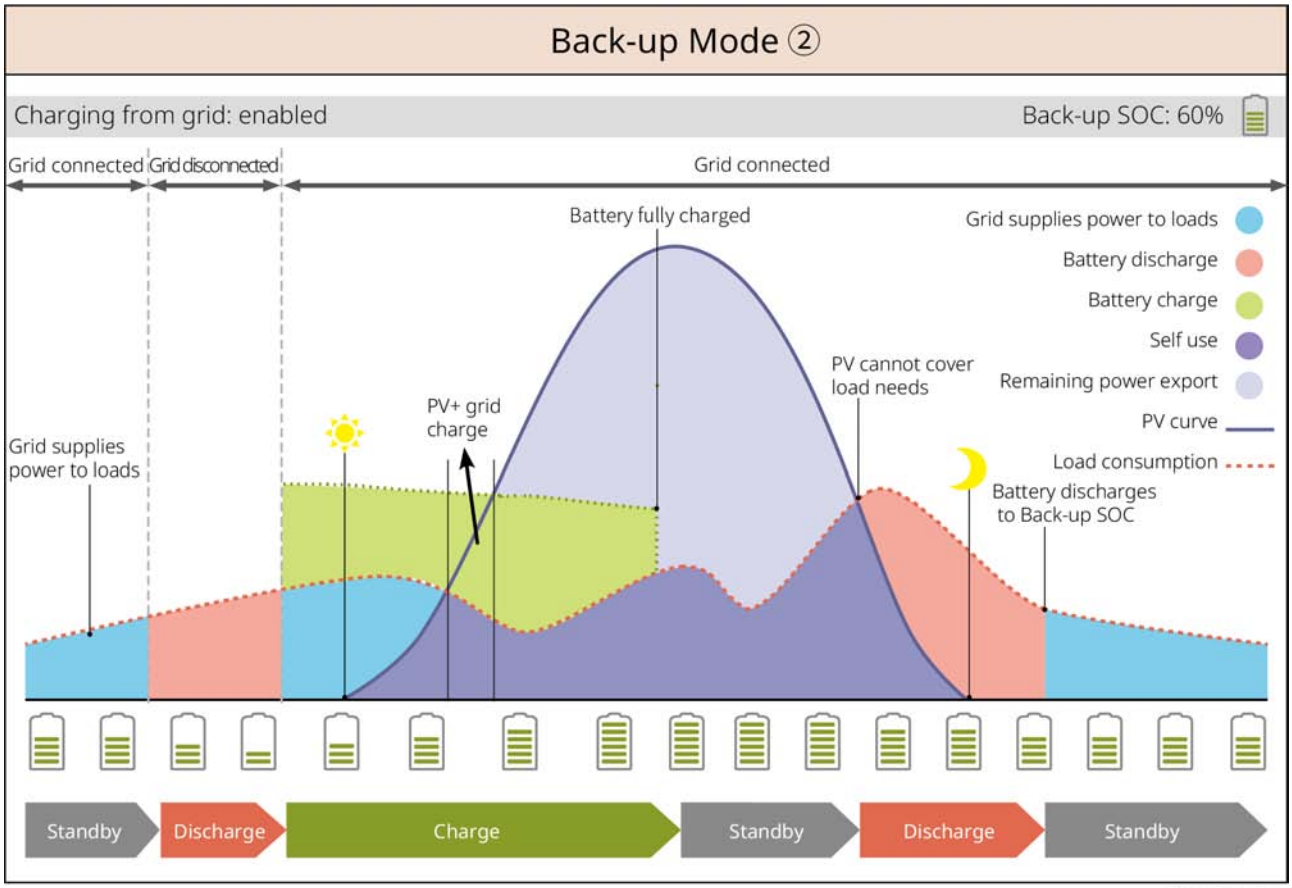
Backup Mode

- Recommended for use in areas with unstable grid power.
- When the grid fails, the inverter switches to off-grid operation mode, and the battery discharges to supply power to the loads, ensuring uninterrupted power for the BACK-UP Loads. When the grid is restored, the inverter switches back to grid-connected operation.
- To ensure the battery SOC is sufficient to maintain normal system operation during off-grid periods, while operating in grid-connected mode, the battery will be charged using PV or by purchasing power from the grid to reach the backup power SOC. If purchasing power from the grid to charge the battery, please ensure it complies with local grid regulations and laws.


Back-up Mode ①
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



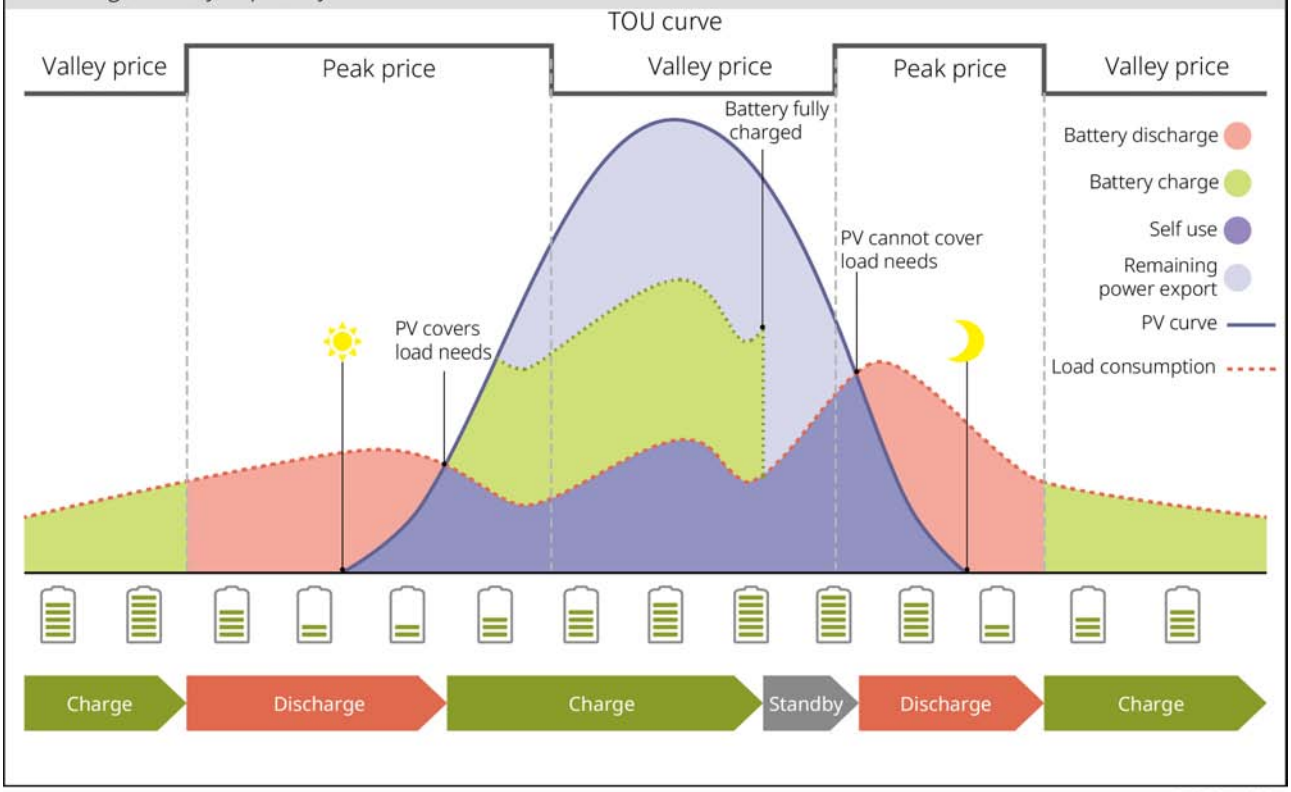
TOU Mode

Subject to compliance with local laws and regulations, set different time periods for buying and selling electricity based on peak and off-peak grid electricity prices.

For example: During off-peak price periods, set the battery to charging mode to purchase electricity from the grid for charging; during peak price periods, set the battery to discharging mode to supply power to loads via the battery.

TOU Mode ①

PV: Charge battery in priority



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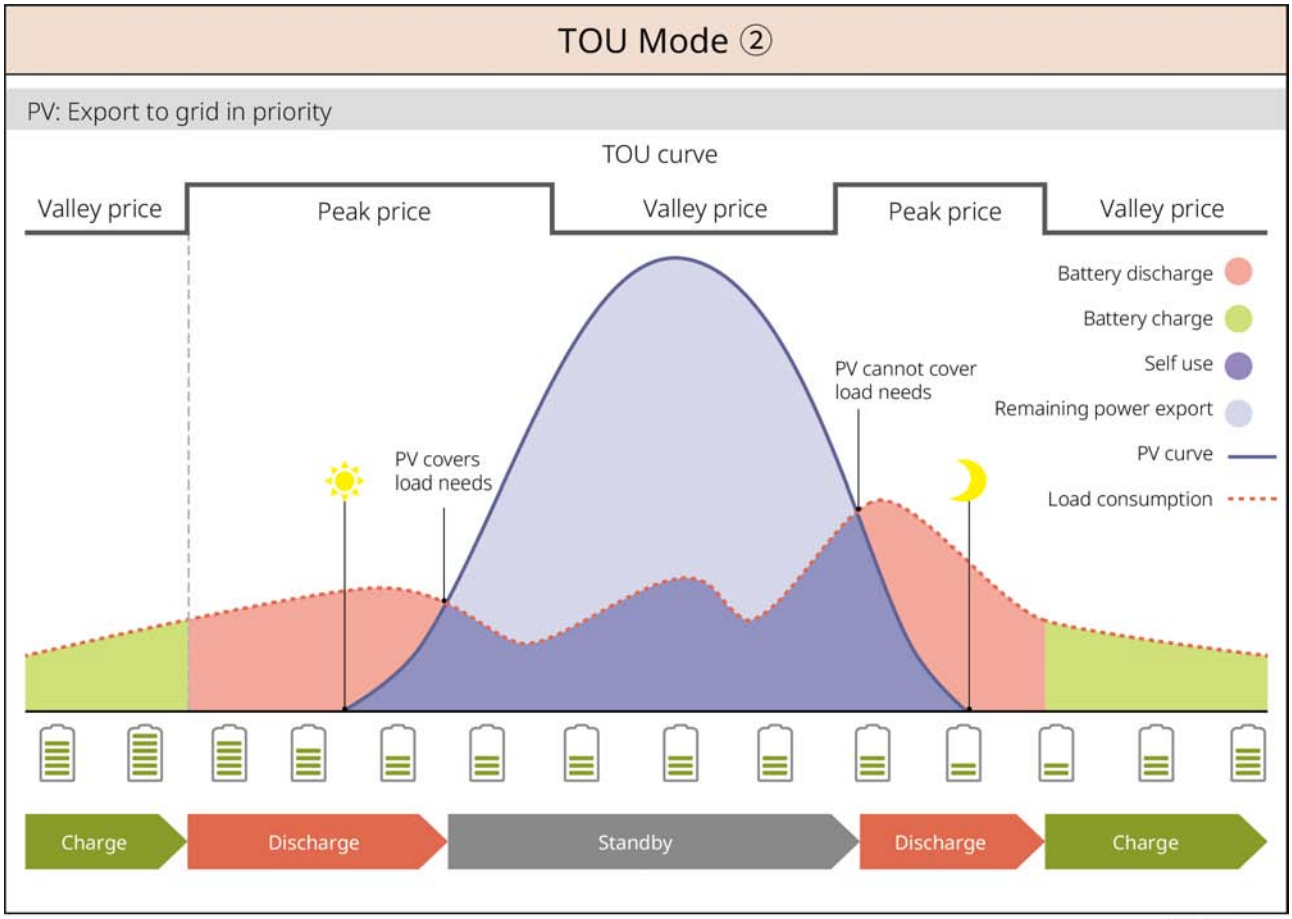

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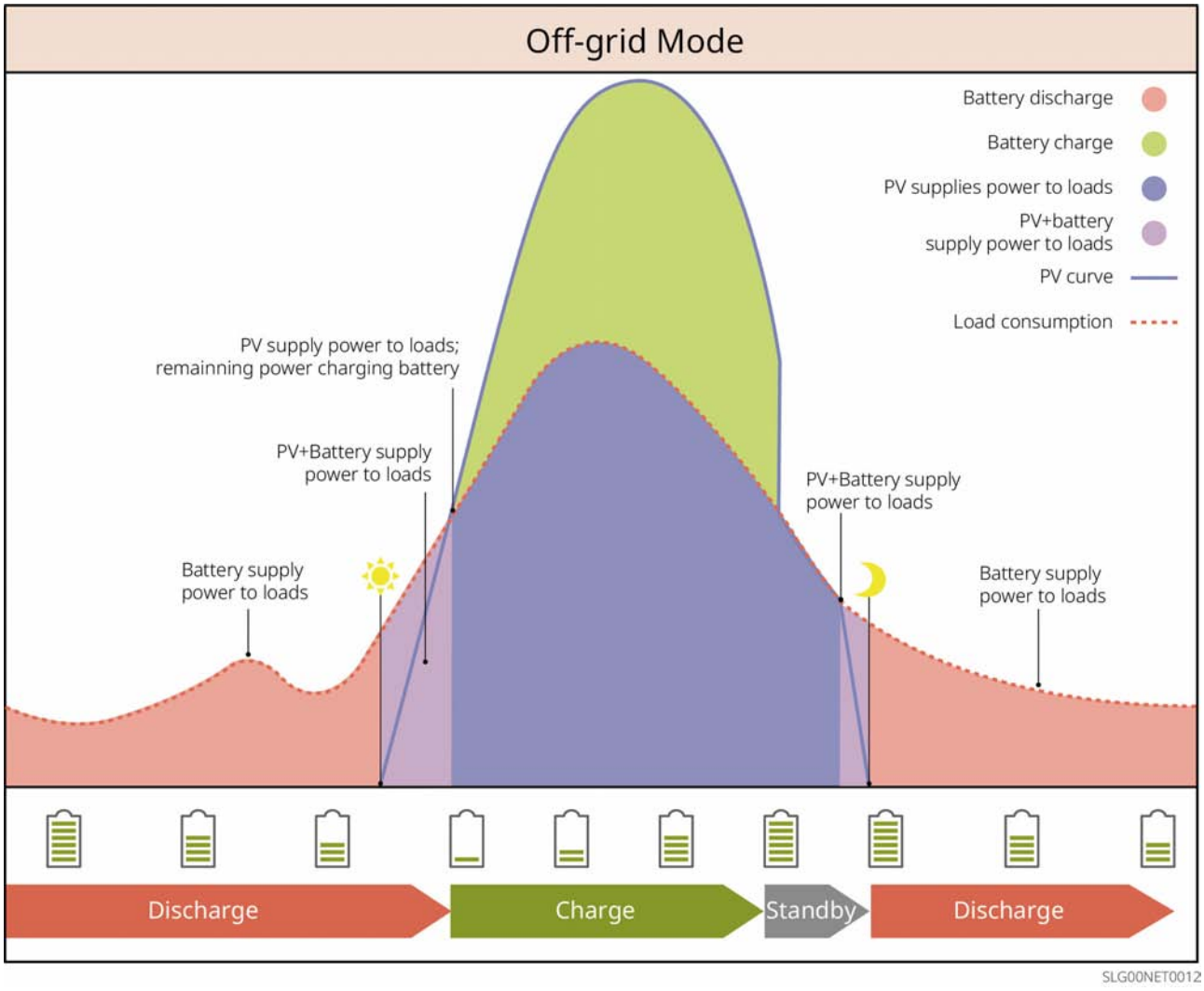
Off-Grid Mode

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

- During the day, PV generation prioritizes supplying power to loads, with excess electricity charging the battery.
- At night, the battery discharges to supply power to loads, ensuring uninterrupted power for the BACK-UP Loads.
- Off-Grid SOC Recovery: After the system operates off-grid, the battery gradually recovers to the minimum SOC through photovoltaic generation or other power generation methods.



2.5 Features

AFCI
Integrated AFCI circuit device, used to detect arc faults and quickly disconnect the circuit when detected, thereby preventing electrical fires.
Causes of arc generation:

- Connectors in the photovoltaic system are damaged.
- Incorrect or damaged cable connection.
- Connector and cable aging.

Troubleshooting method:

1. When an arc is detected by Inverter, the fault type can be viewed on the Inverter

display or via the App.
2. If the fault is triggered less than 5 times within 24 hours, the machine will automatically restore on-grid operation after a 5-minute wait. After the 5th arc fault, the fault must be cleared before the Inverter can resume normal operation. For detailed instructions, please refer to the <SolarGo APP User Manual>.

load control

Inverter Dry contact control port, supports connection of additional contactors for controlling load switching on/off. Compatible with household loads, heat pumps, etc. The load control method is as follows:

- Time Control: Set the time for turning the load on or off. The load will automatically turn on or off within the set time period.
- Switch control: When the control mode is set to ON, the load will be turned on; when the control mode is set to OFF, the load will be turned off.
- BACK-UP Loads Control: Inverter Built-in relay dry contact control port. The relay can be used to control whether the load is turned off. In off-grid mode, if an overload is detected at the BACK-UP terminal Battery and the SOC value is below the Battery off-grid Protection setpoint, the load connected to the relay port can be turned off.

Rapid Shutdown(RSD)快速关断

In a Rapid Shutdown system, the Rapid Shutdown transmitter works in conjunction with the receiver to achieve system Rapid Shutdown. The receiver maintains module output by receiving signals from the transmitter. The transmitter can be externally mounted or integrated into the Inverter. In emergency situations, the transmitter can be deactivated by enabling an external trigger device, thereby shutting down the module.

- External emitter
  - Emitter 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 triggering device: AC side 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

3 Check and Storage

3.1 Check Before Receiving

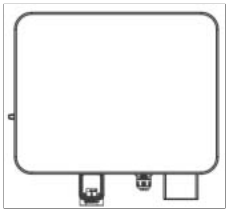
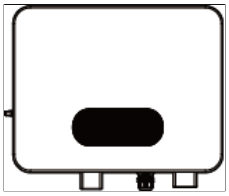
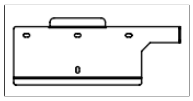
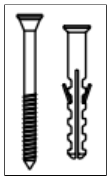
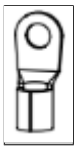
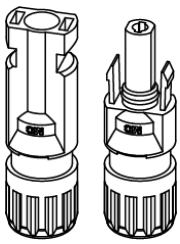
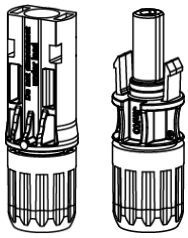
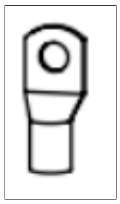
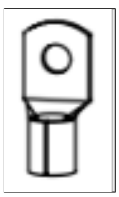
Before signing for the product, please carefully inspect the following:

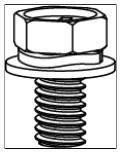
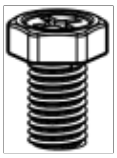
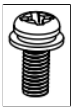
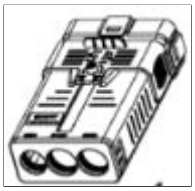
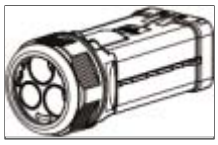
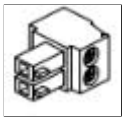
1. Check the outer packaging for any damage, such as deformation, holes, cracks, or other signs that may cause harm to the equipment inside the box. If damage is found, do not open the packaging and contact your distributor.
2. When removing the GW14.3-BAT-LV-G10Battery, ensure the packaging carton remains intact. If accidental damage occurs to the packaging and product quality issues necessitate return or exchange, contact GoodWe after-sales service or authorized dealers to obtain a dedicated replacement carton.
3. Check if the equipment model is correct. If not, do not open the package and contact your distributor.

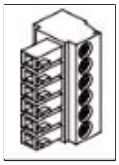
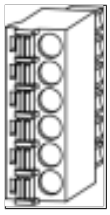
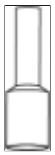
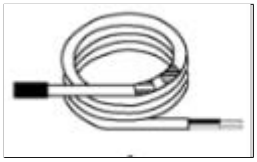
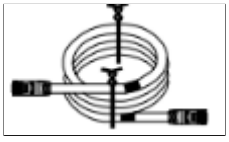
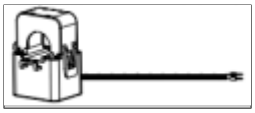
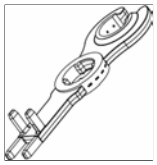
3.2 deliverables

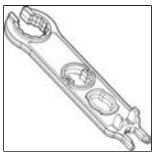
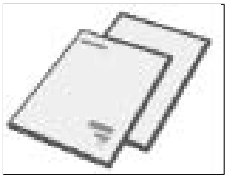
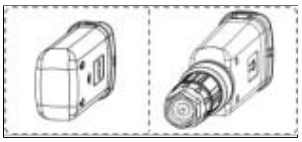
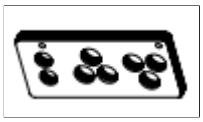
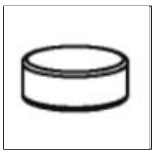
⚠WARNING
Check whether the deliverables type and quantity are correct and whether there is any damage to the appearance. If damaged, please contact your distributor. After removing deliverables from the packaging, do not place it on rough, uneven, or sharp surfaces to avoid paint chipping.

3.2.1 Inverter Deliverables

Component	Description	Component	Description
 	Inverter x1 provided on an actual basis.		mounting plate x1 provided on an actual basis.
	Expansion screw x4		Grounding terminal: 1 or 3 provided on an actual basis.
 or 	PV DC Terminal • GW8000-ES-C10 x 3 • GW10K-ES-C10, GW12K-ES-C10 x 4		MC4 PV Terminal Anti-Tamper Cover (Europe only) x 1
	Battery Power Terminal x 2 Used for some models		AC Terminal: 2 or 6 provided on an actual basis.

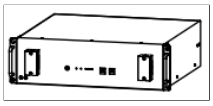
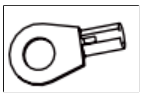
Component	Description	Component	Description
 	Battery Screw x 2 provided on an actual basis.		Grounding Screw x1 Used for some models
	nut x8 Used for some models		Battery connector x1 Used for some models
 	AC Protective Cover x1 provided on an actual basis.		2PIN Communication Terminal x 2 Used for some models, depending on the hardware board communication port

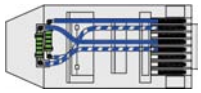
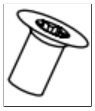
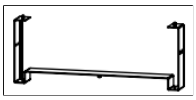
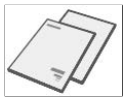
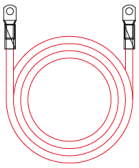
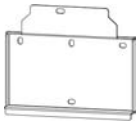
Component	Description	Component	Description
	4PIN Communication Terminal x 1 Used for some models, depending on the hardware board communication port	 	6PIN Communication Terminal: 2 or 3 or 4 provided on an actual basis, depending on the hardware board communication port
	AC Pin Terminal x10 Used for some models		Communication Tubular Terminal: 14 or 18 or 24 provided on an actual basis.
	AC Protective Cover Unlock Tool x1 Used for some models		Lead-Acid Battery Temperature Sensor Cable x 1
	BMS Communication Cable x 1		Lead-Acid Battery Temperature Sensor Cable Adhesive Patch x 2
	CT Connection Cable x 1		PV Terminal Unlock Tool • China x 0 • Europe x 0 • Other Regions x 1

Component	Description	Component	Description
	PV Terminal Unlock Tool (Europe only) x 1		Product Documentation x 1
	smart dongle x1 provided on an actual basis.		Ferrite Clip Strap x 2 Provided for models with ferrite rings
	Ferrite Ring x 1 Used for some models		Waterproof Gasket x 1 Used for some models
	Magnet x 1 Used for some models		

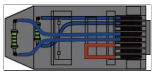
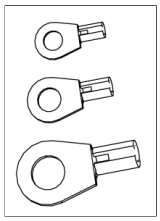
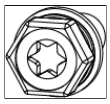
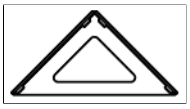
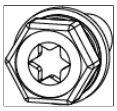
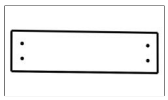
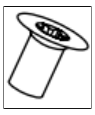
3.2.2 Batteries Deliverables

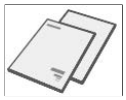
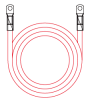
3.2.2.1 LX A5.0-10

Component	Description	Component	Description
	Battery module x 1		(25-8) OT terminal x 4 (5.5-5) OT terminal x 2
	M5PE screw x 2		Warning Label x 1

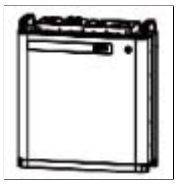
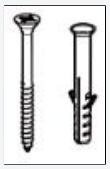
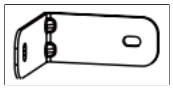
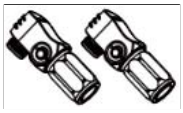
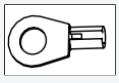
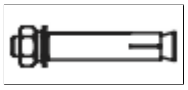
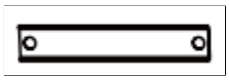
Component	Description	Component	Description
	Terminal resistor x 1		Electrical Label x 1
	M4*8 screw x 8 (optional) Select the bracket Mounting method for distribution		Battery Bracket x 2 (Optional) Select the bracket Mounting method for distribution
	Product Documentation x 1		Negative power cable (optional) x 1
	Positive Pole power cable (Optional) x 1		Grounding wire (optional) x 1
	Communication cable (optional) x 1		Decorative Cover (Optional) x 1
	Rear Mounting Bracket (Optional) x 4		Rear mounting (optional) x 1
	Bracket (optional) x 1		Bracket screw (optional) x 4

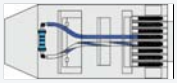
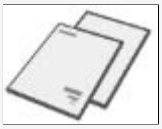
3.2.2.2 LX A5.0-30

Component	Description	Component	Description
	Battery module x 1		Terminal resistor x 1 When connecting to a third-party busbar, Battery must Installation this Terminal resistor.
	• M5 OT terminal x 2: Recommended connection 10mm^{2}cable • M8 OT terminal x 4: Recommended connection 50mm^{2}cable • M10 OT terminal x 2: Recommended connection 70mm^{2}cable		M5*12PE screw x 2
	Bracket x 2 Wall-mounted selection Mounting method with accessories		M6*70Expansion bolt x 4 Wall-mounted selection Mounting method with accessories
	M5*12PE screw x 2 Wall-mounted selection Mounting method with accessories		Marking Template x 1 Wall-mounted selection Mounting method with accessories
	Battery Bracket x 2 (Optional) Select stack Mounting method for distribution		M4*8 screw x 8 Select stack Mounting method for allocation

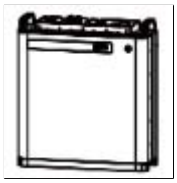
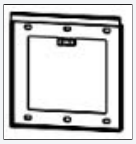
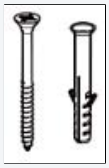
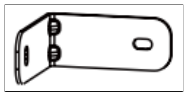
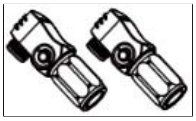
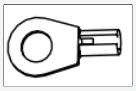
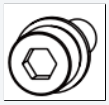
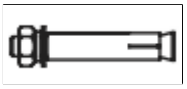
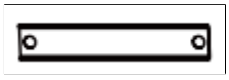
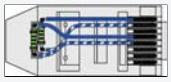
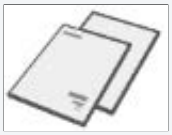
Component	Description	Component	Description
	Product Documentation x 1		Negative power cable (optional) x 1
	Positive terminal (optional) x 1		Grounding wire (optional) x 1
	Communication cable (optional) x 1		Decorative Cover (Optional) x 1

3.2.2.3 Batteries Deliverables(LX U5.4-L)

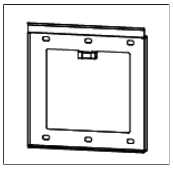
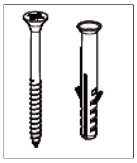
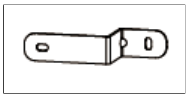
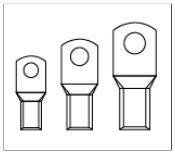
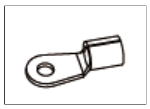
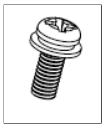
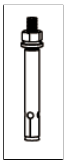
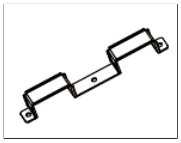
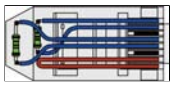
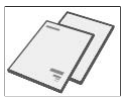
Component	Description	Component	Description
	Battery x 1		Plastic cover x 1
	Wall mounting bracket x 1		Expansion screwx 2
	locking bracket x 2		Connector x 2
	Grounding terminal x 4		M5 x 8
	M10 x 6		Wire harness fixing plate x 2

	Terminal resistor x 1		Product Documentation x 1

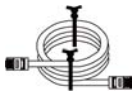
3.2.2.4 Batteries Deliverables(LX U5.4-20)

Component	Description	Component	Description
	Battery x 1		Plastic cover x 1
	Wall-mounted bracket x 1		Expansion screwx 2
	locking bracket x 2		Connector x 2
	Grounding terminal x 4		M5 x 8
	M10 x 6		Wire harness fixing plate x 2
	Terminal resistor x 1		Product Documentation x 1

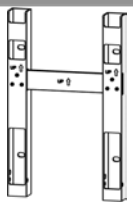
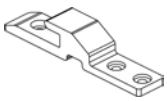
3.2.2.5 Batteries Deliverables(LX U5.0-30)

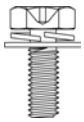
Component	Description	Component	Description
	Battery x 1		Plastic cover x 1
	Wall-mounted x 1		Expansion screwx 2
	locking bracket x 2		• 35-8 OT terminal x 4: Recommended to connect 25mm² or 35mm² cables • 50-8 OT terminal x 4: Recommended to connect 50mm² cable • 70-10 OT terminal x 2: Recommended connection with 70mm² cable
	14-5Grounding terminal x 2		M5 x 7
	M10 x 6		Wire harness fixing plate x 1
	Terminal resistor x 1		Product Documentation x 1

3.2.2.6 Batteries Deliverables (GW14.3-BAT-LV-G10)

Component	Description	Component	Description
	Battery x 1		Wire cover x 1
	Lifting rod x 2 (Shipped with the box after October 2025)		Expansion screw x 2
	M5*16 internal cross external hexagon screw x 7		Wall-mounted anti-tipping bracket x 2
	Terminal resistor x 1		Grounding OT terminal x 1 (Shipped with the box before October 2025)
	DC OT terminal x 6 (Shipped with the box before October 2025)		Grounding wire x 1 (Shipped with the box after October 2025)
	Positive power cable x 1 (Shipped with the box after October 2025)		Negative power cable x 1 (Shipped with the box after October 2025)
	Communication cable x 1		Product documentation x 1

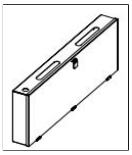
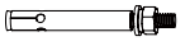
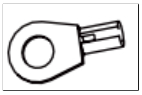
Optional accessories

Component	Description	Component	Description
	Wall Mount Bracket x 1		Hook x 4

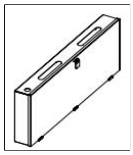
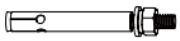
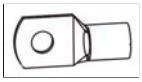
	M5*16 Internal Cross External Hex x 12		M10 Expansion Bolt x 4

3.2.3 Busbar Deliverables

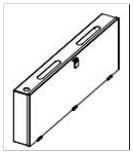
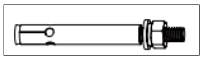
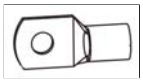
3.2.3.1 BCB-11-WW-0 (optional)

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

3.2.3.2 BCB-22-WW-0 (optional)

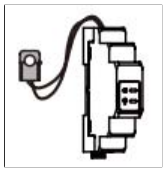
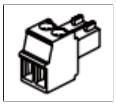
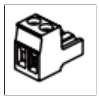
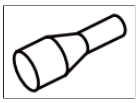
Component	Description	Component	Description
	720A Combiner Box x 1		M6 x 4
	(25-8) OT terminal x 36 (70-10) OT terminal x 6	-	-

3.2.3.3 BCB-32-WW-0, BCB-33-WW-0 (optional)

Component	Description	Component	Description
	720A Combiner Box x 1		M6 x 4
	(50-8) OT terminal x 30 (70-10) OT terminal x 6	-	-

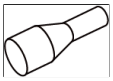
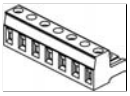
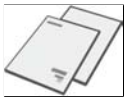
3.2.4 Smart Meter Deliverables

3.2.4.1 GMK110

Component	Description	component	Description
	Smart Meter and CT x 1		RS485communication terminal x 1
	voltage Input side wiring terminal x 1		PIN terminal x 4
	screwdriver x1		Product Documentation x 1

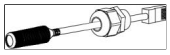
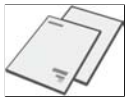
3.2.4.2 GM330

Component	Description	Component	Description
	Smart Meterx1		2PIN connector x1

Component	Description	Component	Description
	PIN terminal x 6		7PIN connector x1
	screwdriver x1		Product Documentation x 1

3.2.5 Smart dongle

3.2.5.1 Ezlink3000

component	Description	component	Description
	smart dongle x1		LAN cable connection port x1
	Product Documentation x1		Unlocking tool x1 Some modules require tools for disassembly. If tools are not provided, they can be unlocked using the buttons on the module body.

3.3 Storage

If the device is not put into use immediately, please store it according to the following requirements. After long-term storage, the device must be inspected and confirmed by professionals before it can be used again.

1. If the inverter is stored for more than two years or not operated for more than six months after installation, it is recommended to have it inspected and tested by professionals before putting it into use.
2. To ensure the good electrical performance of the internal electronic components of the inverter, it is recommended to power it on every six months during storage.

If it has not been powered on for more than six months, it is recommended to have it inspected and tested by professionals before putting it into use.

3. To protect battery performance and service life, it is recommended to avoid long-term idle storage. Prolonged storage may cause deep discharge of the battery, leading to irreversible chemical degradation, capacity衰减, and even complete failure. It is recommended to use it promptly. If the battery needs to be stored for a long time, please maintain it according to the following requirements:

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

NOTICE

[1] The storage time is calculated from the SN date on the battery outer packaging. After exceeding the storage cycle, charge-discharge maintenance is required. (Battery maintenance time = SN date + charge-discharge maintenance cycle). For the method to view the SN date, refer to: 11.4.SN Code Meaning(Page 391).

[2] After passing the charge-discharge maintenance, if the outer box has a Maintaining Label, please update the maintenance information on the Maintaining Label. If there is no Maintaining Label, please record the maintenance time and battery SOC yourself and keep the data properly for easy maintenance record preservation.

Packaging Requirements:

Ensure that the outer packaging box is not removed and the desiccant inside the box is not lost.

Environmental Requirements:

1. Ensure that the device is stored in a cool place, avoiding direct sunlight.
2. Ensure that the storage environment is clean, with appropriate temperature and humidity ranges, and no condensation. If there is condensation on the device ports, do not install the device.
3. Ensure that the device is stored away from flammable, explosive, corrosive, and other hazardous materials.

Stacking Requirements:

1. Ensure that the stacking height and direction of the inverter are arranged according to the instructions on the packaging box label.
2. Ensure that there is no risk of tipping after stacking the inverters.

4 Installation

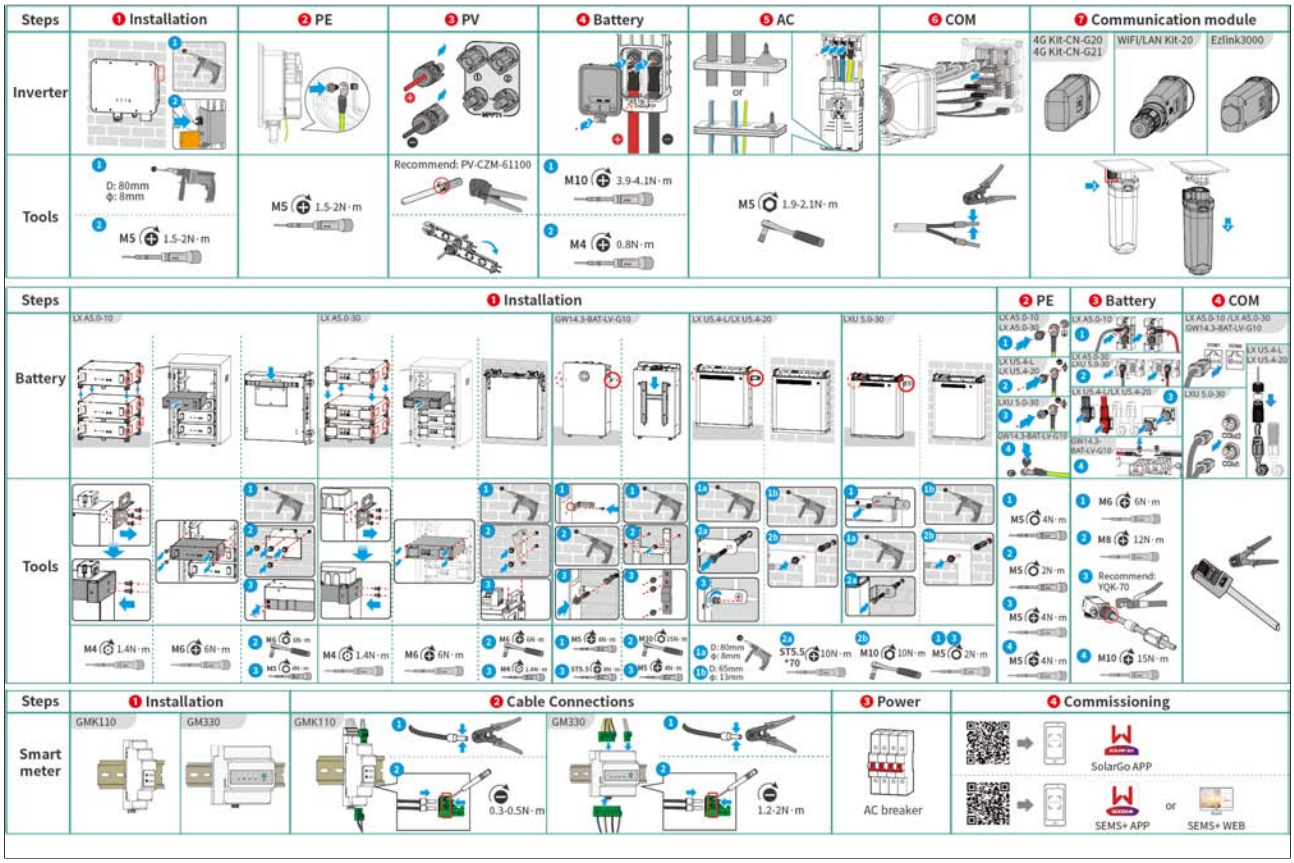
DANGER

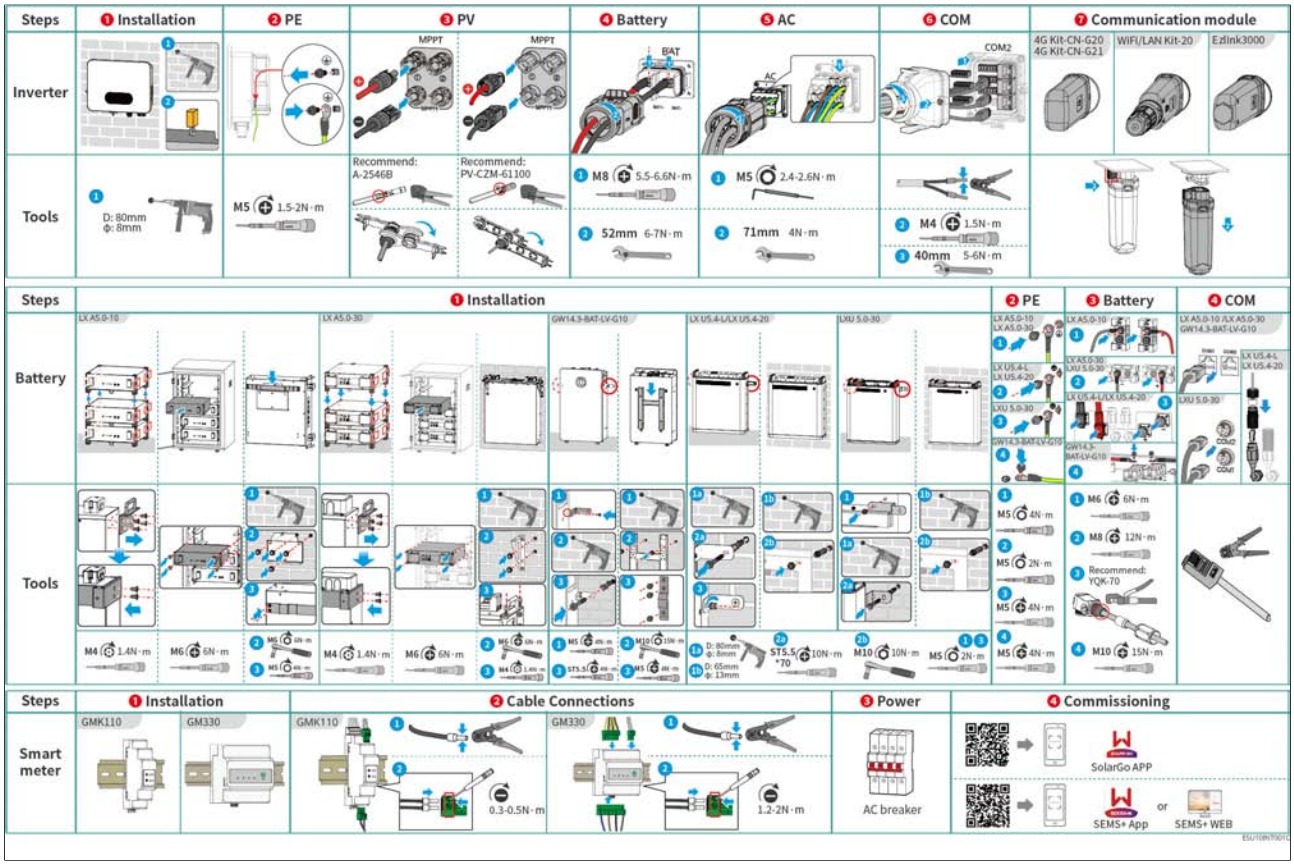
Please use the deliverables included in the shipment for equipment Installation and electrical connections. Otherwise, any resulting equipment damage will not be covered under warranty.

4.1 System Installation and Commissioning Procedure

DANGER

Please use the deliverables included in the package for equipment Installation and electrical connections. Otherwise, any resulting equipment damage will not be covered under warranty.





4.2 Installation Requirements

4.2.1 Installation Environment Requirements

1. The equipment must not be operated in flammable, explosive, or corrosive environments.
2. The ambient temperature of the equipment should be within the appropriate range.
3. Installation Location should be kept out of reach of children, and avoid placing Installation in easily accessible locations.
4. Inverter The enclosure temperature may exceed 60°C during operation. Do not touch the enclosure before it cools down to prevent burns.
5. The equipment should be protected from exposure to sunlight, rain, snow, and other Installation conditions. It is recommended to Installation in a shaded Installation Location. If necessary, a sunshade canopy can be constructed.
6. The space must meet the ventilation and heat dissipation requirements of the equipment as well as the operational space requirements.
7. The environment must meet the equipment's Ingress Protection Rating, Inverter,

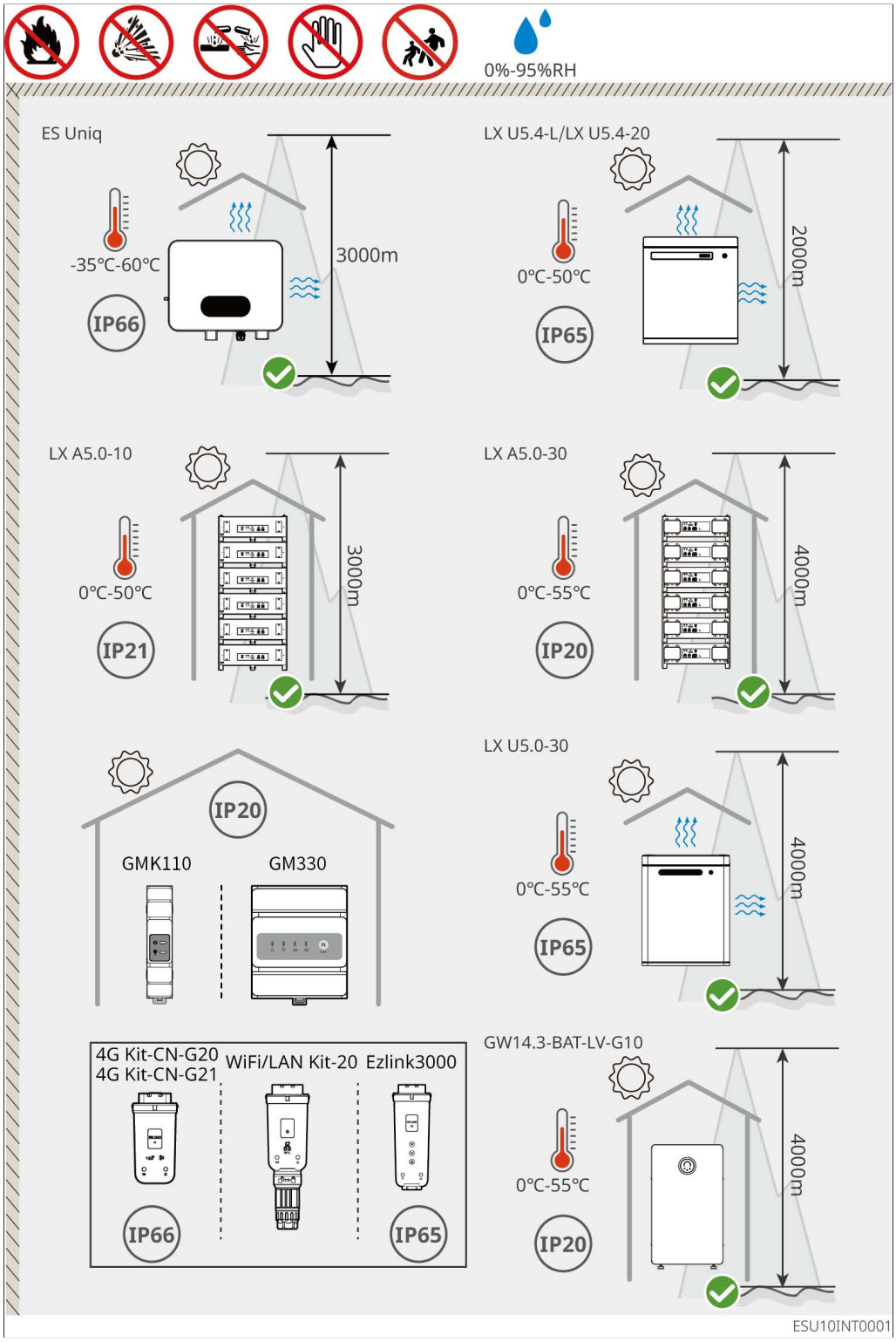
Battery, and smart dongle requirements for both indoor and outdoor Installation; the electric meter must comply with indoor Installation.

8. The height of the equipment Installation should facilitate operation and maintenance, ensuring that the equipment indicator and all labels are easily visible, and the wiring terminal is easy to operate.
9. Equipment Installation Altitude is below Max. Operating Altitude.
10. Before installing salt affected area outdoor Installation equipment, consult the manufacturer. salt affected area mainly refers to areas within 500m of the coast. The affected zone is related to factors such as sea breeze, precipitation, and terrain.
11. Keep away from strong magnetic fields to avoid electromagnetic interference. If there are radio stations or wireless communication devices operating below 30MHz near the Installation Location, please Installation the equipment according to the following requirements:
    - Inverter: Add ferrite cores with multiple turns on the DC input or AC output lines of Inverter, or incorporate low-pass EMI Filter; or ensure the distance between Inverter and wireless electromagnetic interference devices exceeds 30m.
    - Other Equipment: The distance between the equipment and the radio frequency interference device exceeds 30m.
12. The DC line between Battery and Inverter, as well as the Communication cable line length, must be less than 3m. Please ensure that the Installation distance between Inverter and Battery meets the cable length requirement.

NOTICE

If the Installation is in an environment below 0°C, the Battery will be unable to continue Charge energy recovery after being emptied, resulting in Battery undervoltage Protection.

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

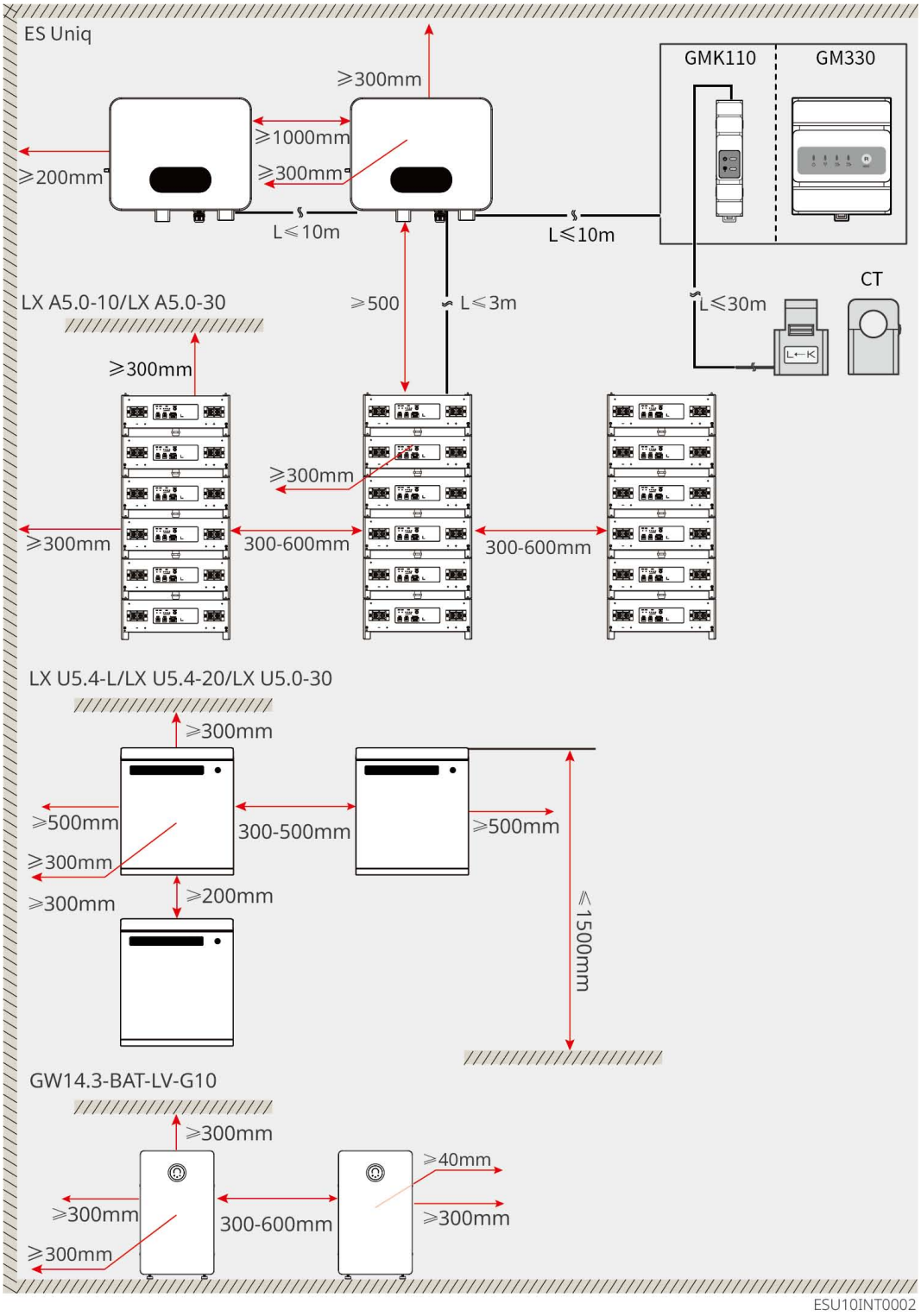


4.2.2 Installation Space Requirements

When working on equipment in the Installation system, sufficient space should be reserved around the equipment to ensure adequate Installation and heat dissipation

space.

- When using CAT7E Communication cable between Inverter, the cable distance should not exceed 10 meters; when using CAT5E or CAT6E Communication cable, the cable distance should not exceed 5 meters. Communication cable should not exceed 10m, otherwise it may cause communication abnormalities.
- Installation CT requires the use of CAT5E or higher shielded network cable, with a cable distance not exceeding 30 meters.
- The RS485 twisted-pair shielded cable for communication between Inverter and the meter should not exceed 100 meters in length.



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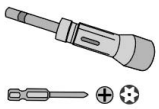
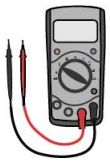
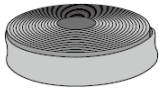
4.2.3 Tool Requirements

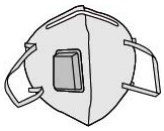
NOTICE

When Installation, it is recommended to use the following Installation tools. If necessary, other auxiliary tools can be used on-site.

Installation tool

Tool Type	Description	Tool type	Description
	diagonal plier		RJ45
	wire stripper		Level bar
	open-end wrench		PVterminalcrimp tool PV-CZM-61100、A-2546B
	hammer drill (Drill bit Φ8mm)		torque wrench M4、M5、M6、M8
	rubber hammer		socket wrench
	Marker pen		multimeter Range ≤600V
	Heat shrink tubing		Hot Air Gun
	cable tie		Vacuum cleaner

personal protective equipment

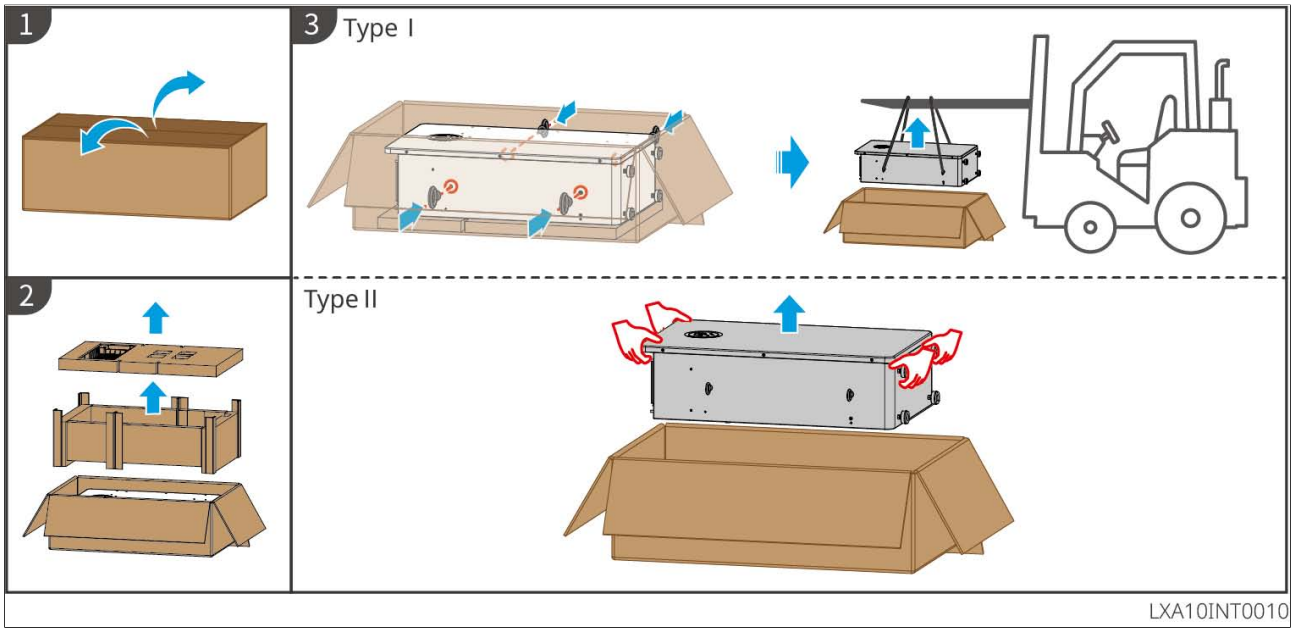
Tool type	Description	Tool type	Description
	Insulated gloves, protective gloves		Dust mask
	goggle		Safety shoes

4.3 Equipment Handling

⚠CAUTION

1. During transportation, handling, and Installation operations, it is necessary to comply with the laws, regulations, and relevant standards of the country or region where the operations are conducted.
2. Before Installation, it is necessary to move Equipment Handling to the Installation location. To prevent personal injury or equipment damage during the handling process, please NOTICE the following matters:
3. Please equip the corresponding personnel according to the device Weight to prevent the device from exceeding the Weight range that the human body can handle, thereby avoiding injury to personnel.
4. Please wear safety gloves to avoid injury.
5. Please ensure the equipment remains balanced during handling to avoid dropping.
6. The Battery system can be removed from the packaging using a crane or hoisting method and transported to the Installation location.
   - Crane requirements (GW14.3-BAT-LV-G10): Load capacity ≥180kg
7. When lifting and moving equipment, please use flexible slings or straps. The lifting lugs and ropes for GW14.3-BAT-LV-G10 must meet the following requirements:
   - Lifting rings: 4 M10 lifting rings, load-bearing capacity ≥260 kg
   - Lifting rope: 1 piece, rope length ≥2.5m, load-bearing capacity ≥600kg

GW14.3-BAT-LV-G10：

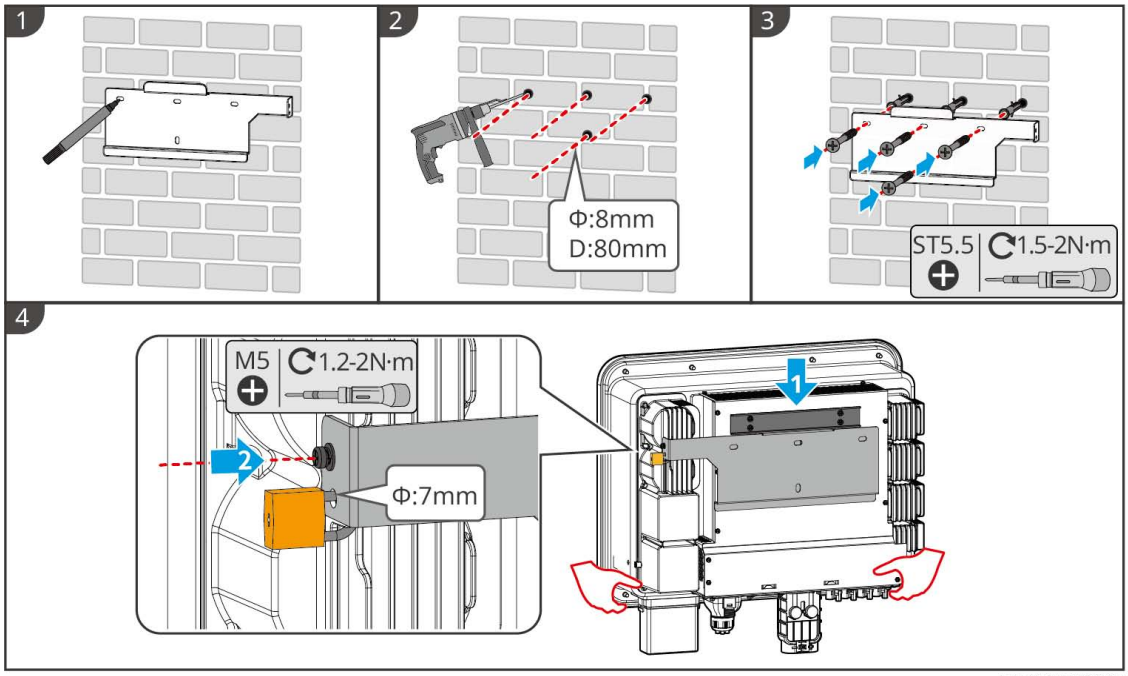


4.4 Installing the Inverter

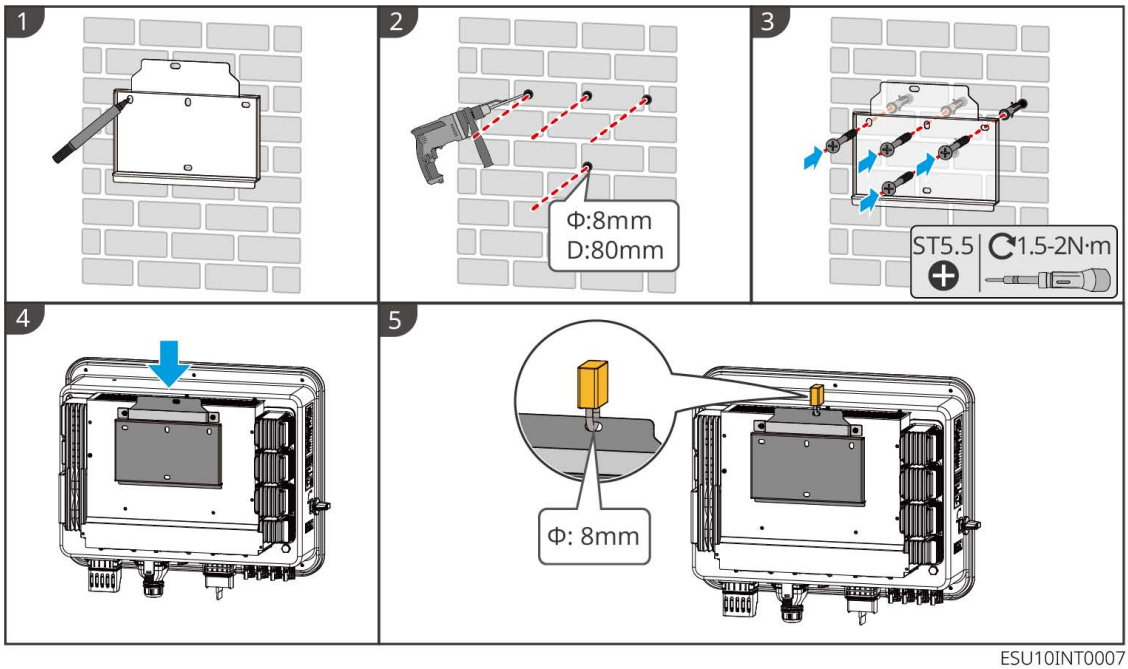
⚠CAUTION

- When drilling, ensure the drilling position avoids water pipes, cables, etc. inside the wall to prevent DANGER.
- When drilling, wear goggle and a dust mask to prevent dust from inhalation entering the respiratory tract or falling into the eyes.
- Ensure that Inverter Installation is securely fastened to prevent falling and injuring personnel.

1. Place the mounting plate horizontally on the wall and use a marker to mark the drilling positions.
2. Use hammer drill for punching.
3. Use expansion bolt to secure the Inverter mounting plate bracket to the wall.
4. Mount the Inverter onto the backplate. After mounting, secure the backplate and Inverter using screw to ensure the Inverter Installation is stable.



ESU10INT0005



ESU10INT0007

4.5 Installing the Battery System

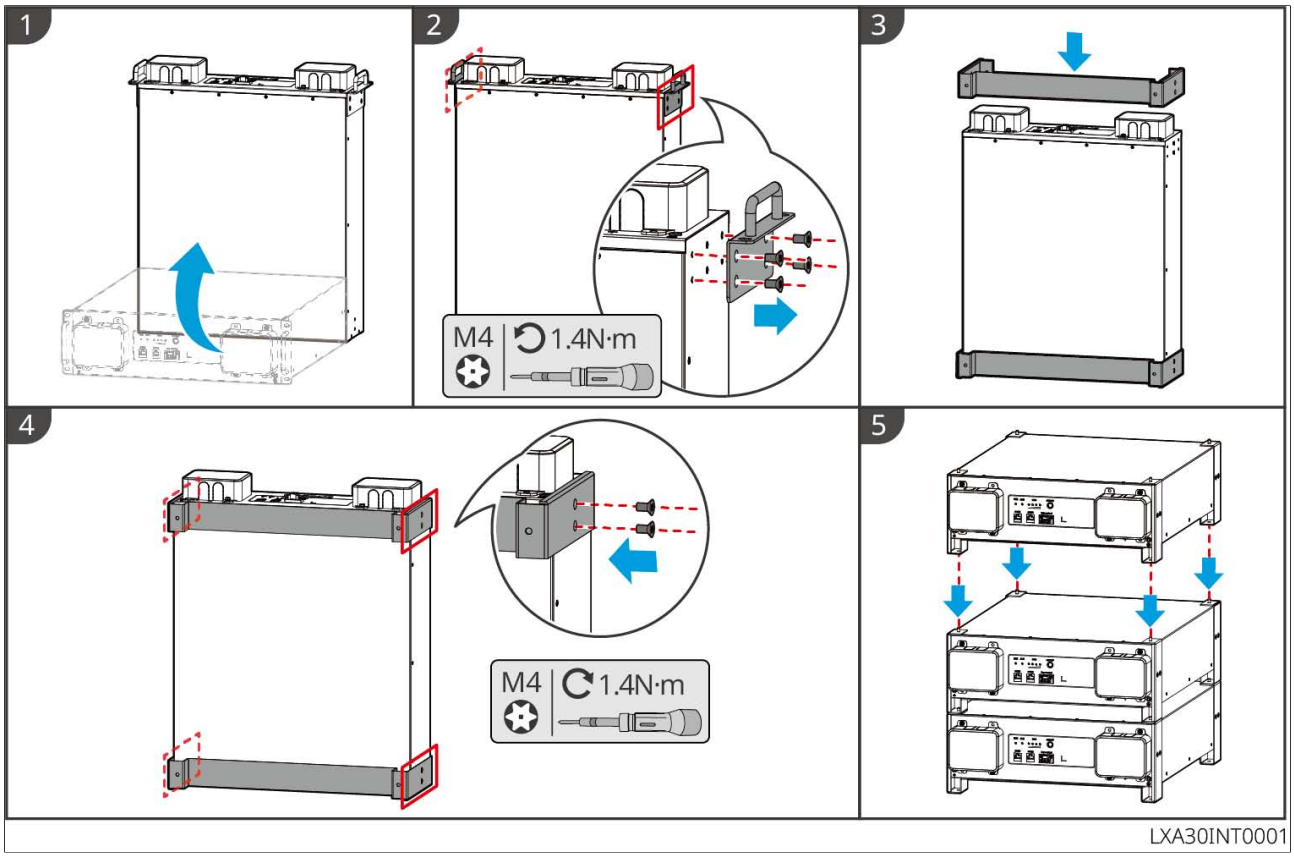
4.5.1 LX A5.0-30

LX A5.0-30: Ground Stacking

NOTICE

The maximum stacking height for floor stacking is 6 Battery units.

1. Place the Battery vertically and remove the Battery Handle.
2. Mount the bracket Installation onto the Battery and secure it with screw.
3. Lay flat Battery, stack multiple Battery Installation. Ensure to insert locating pin into the positioning hole.

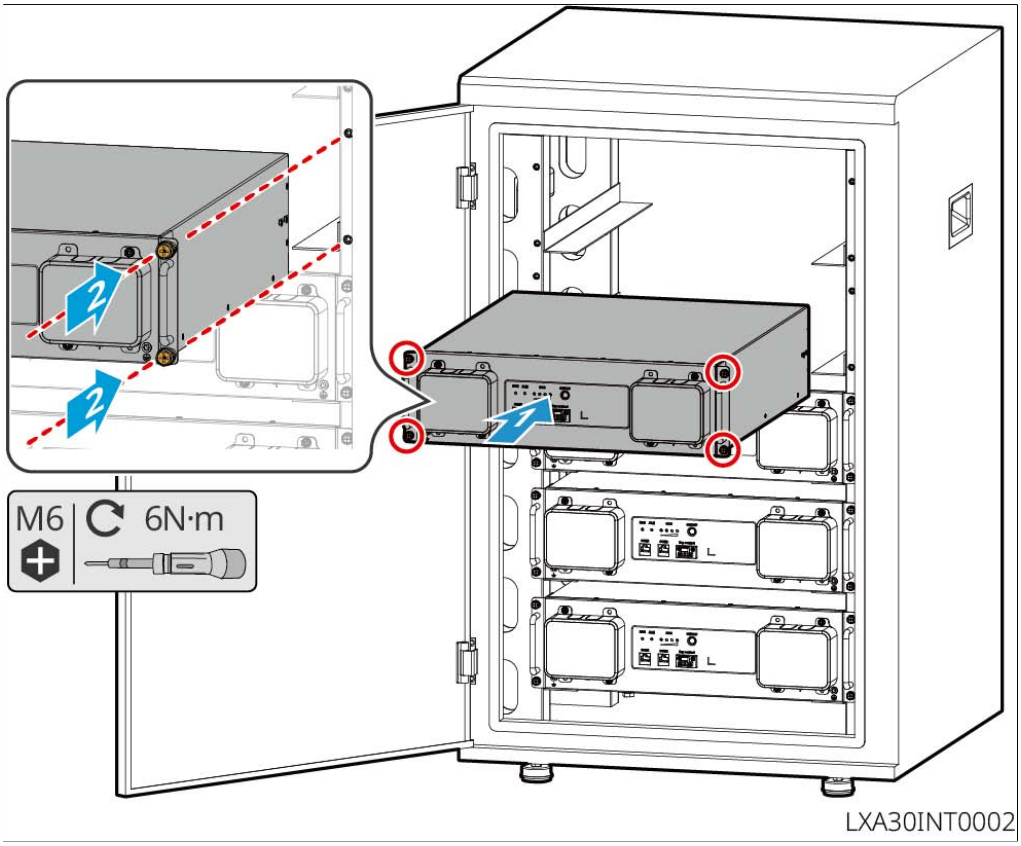


LX A5.0-30: Cabinet Installation

NOTICE

- It is recommended to install Installation in a 19-inch standard cabinet with dimensions of length*width: 600*800mm or larger, and height: selected based on the thickness of Battery (133mm) or greater.
- For cabinet installation, it is necessary to affix electrical labels and warning labels on the front panel of any Battery (these labels are additionally shipped as accessories).

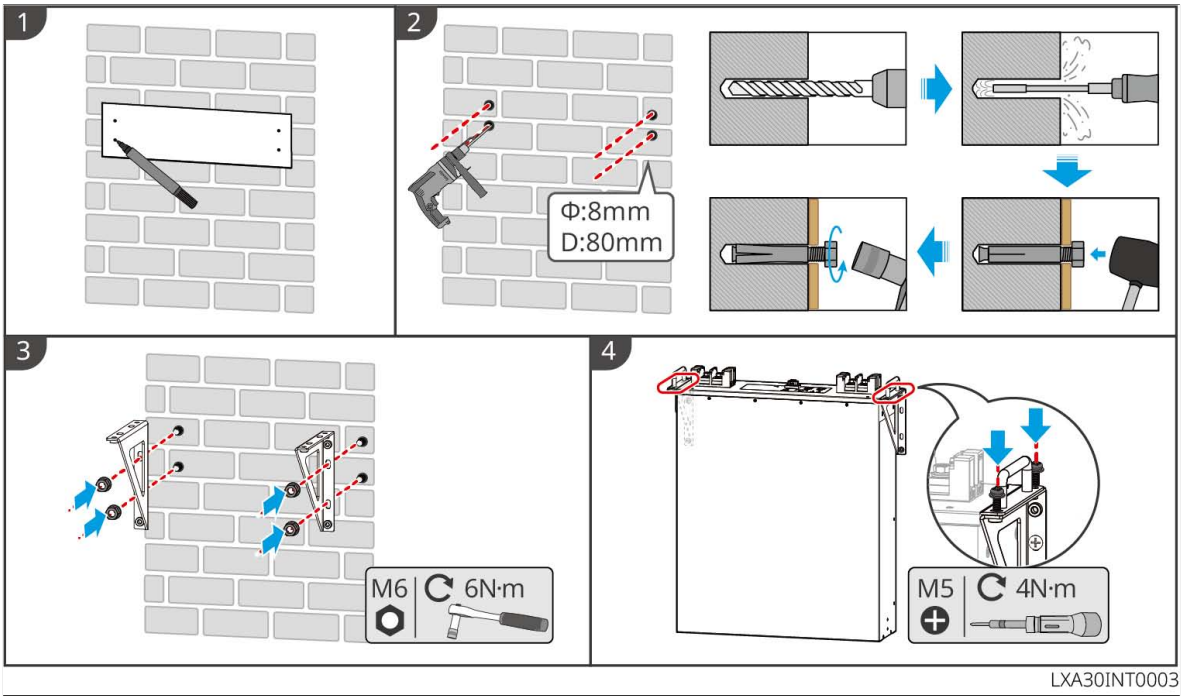
1. Place the Battery onto the guide rails of the cabinet, and use the screw to fasten the Battery to the cabinet from the Handle.



LX A5.0-30: Wall-mounted Installation

1. Determine the punching position according to the marked template, and mark the punching position with a marker pen.
2. Use hammer drill for punching.
3. Installing the Battery System mounting bracket
4. Mount the Battery Installation on the bracket, and secure the Battery to the

bracket using screw.

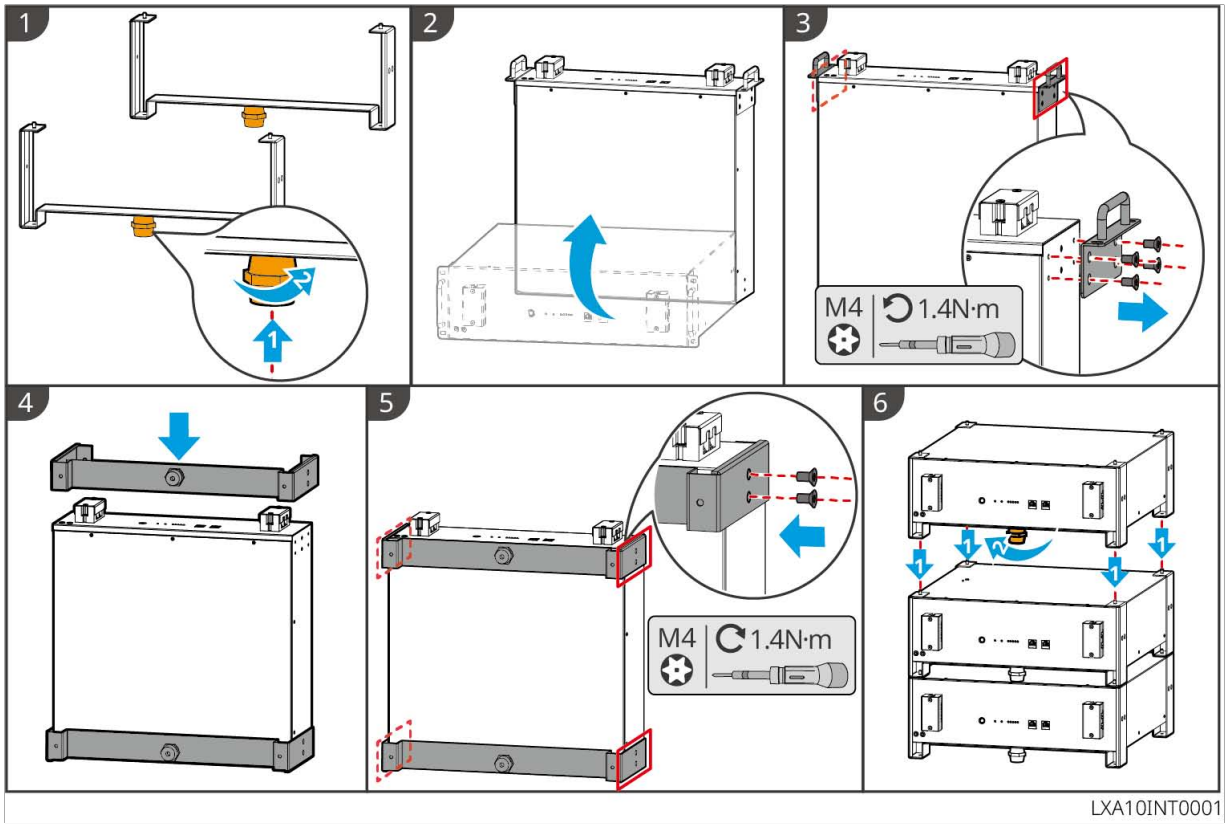


4.5.2 LX A5.0-10

LX A5.0-10: Ground Stacking

NOTICE
A maximum of 6 Battery can be stacked on the ground.

1. Place the Battery vertically.
2. Place the bracket onto the Battery and remove the Handle from the Battery.
3. Place another bracket onto the Battery.
4. Fix the bracket to the Battery using screw, and lay the Battery flat.
5. Stack multiple Battery Installation.
   - Align the locating pin on the lower Battery bracket with the positioning holes on the upper Battery bracket, and insert the locating pin into the positioning holes.

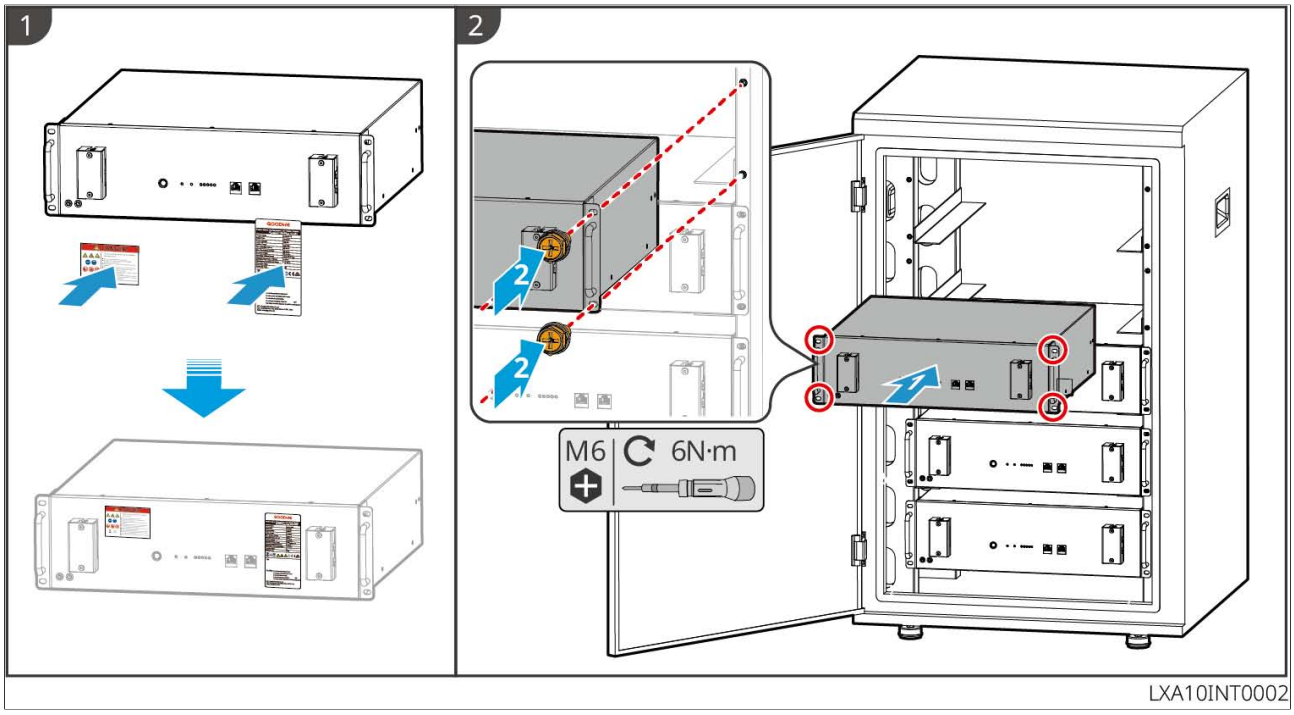


LX A5.0-10: Cabinet Installation

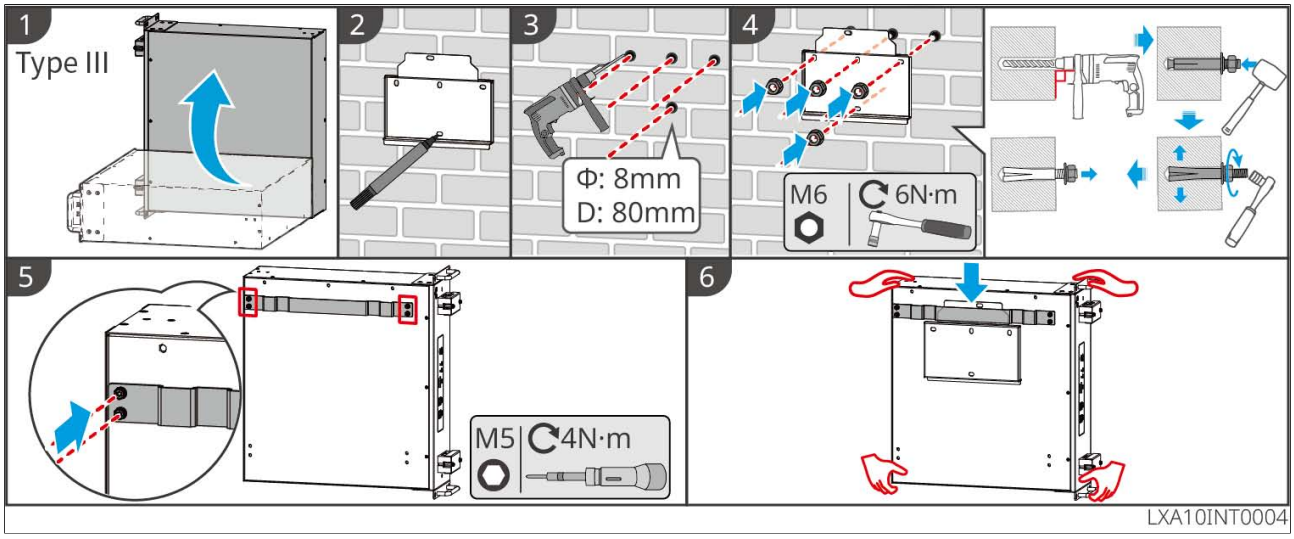
NOTICE

- A standard 19-inch cabinet is recommended, with physical dimensions of 600*800mm or larger in length and width, and height selectable based on the number of Battery connected in parallel.
- For cabinet installation, it is necessary to affix electrical labels and warning labels on the front panel of any Battery (these labels are additionally shipped as accessories).

1. Attach the electrical labels and warning labels to any front panel position of the Battery.
2. Place the Battery onto the guide rails of the cabinet, and use the screw to fasten the Battery to the cabinet from the Handle.



LX A5.0-10: Wall-mounted Installation

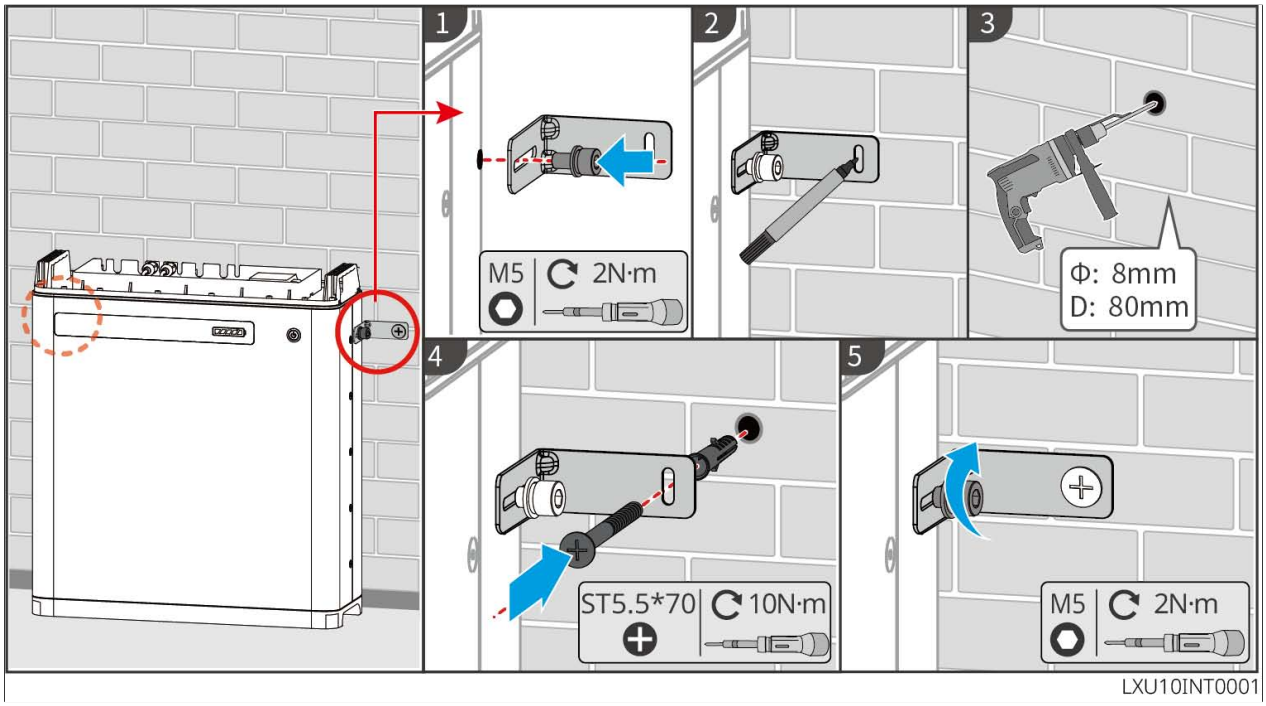


4.5.3 LX U5.4-L

LX U5.4-L: Floor-mounted Installation

NOTICE
If parallel operation is required, check and select Battery with similar production dates and identical gear numbers for use together.

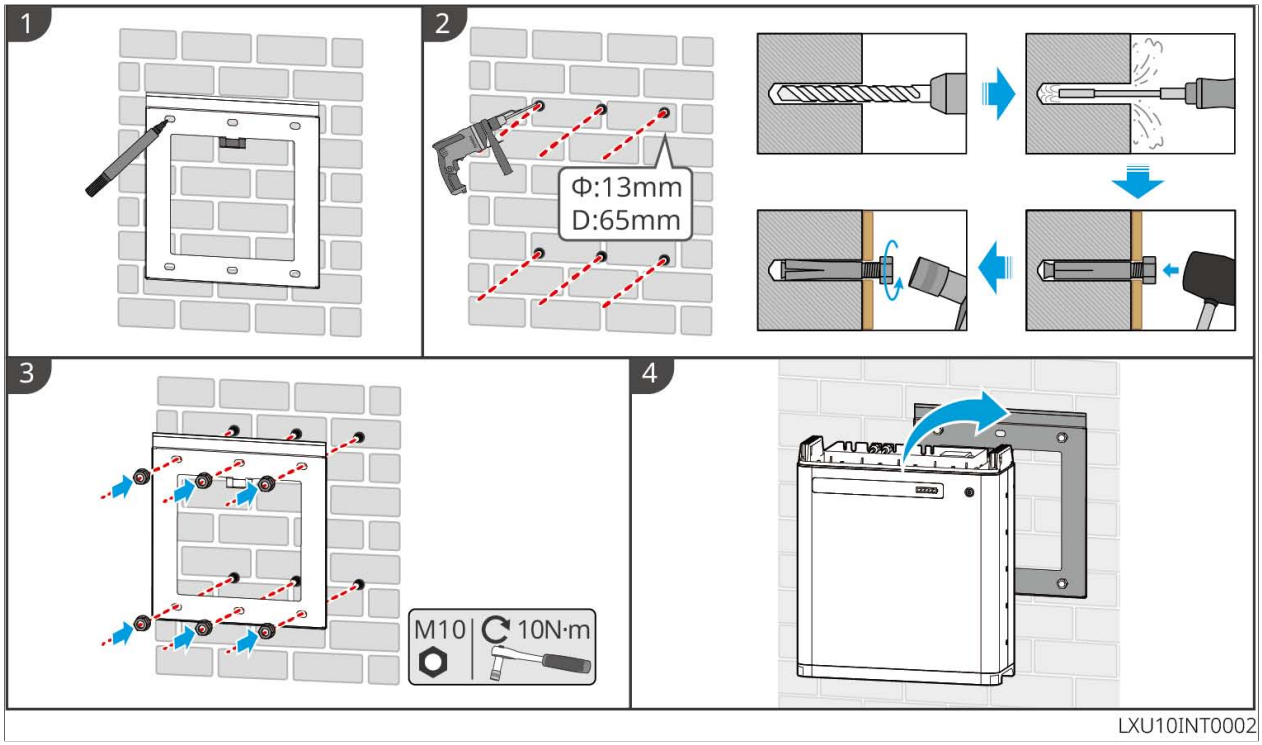
Step 1: Fasten the locking bracket to the Battery.
Step 2: Keep the Battery parallel to the wall, ensuring the locking bracket is flush against the wall. Verify secure placement, mark the drilling positions with a marker, and then remove the Battery.
Step 3: Use hammer drill to drill holes in the wall (aperture: 10mm, depth: 80mm).
Step 4: Tighten the expansion bolt with a torque requirement of 10 N·m.



LX U5.4-L: Wall-mounted Installation

NOTICE
Wall-mounted installation requires two people.

Step 1: Press the wall bracket firmly against the wall. Ensure it is securely positioned, mark the drilling holes with a marker, then remove the wall bracket.
Step 2: Use hammer drill to drill holes in the wall (aperture: 13mm, depth: 65mm).
Step 3: Tighten the M10 Expansion bolt with a torque requirement of 10 N·m.
Step 4: Connect the Battery Installation to the mounting plate.

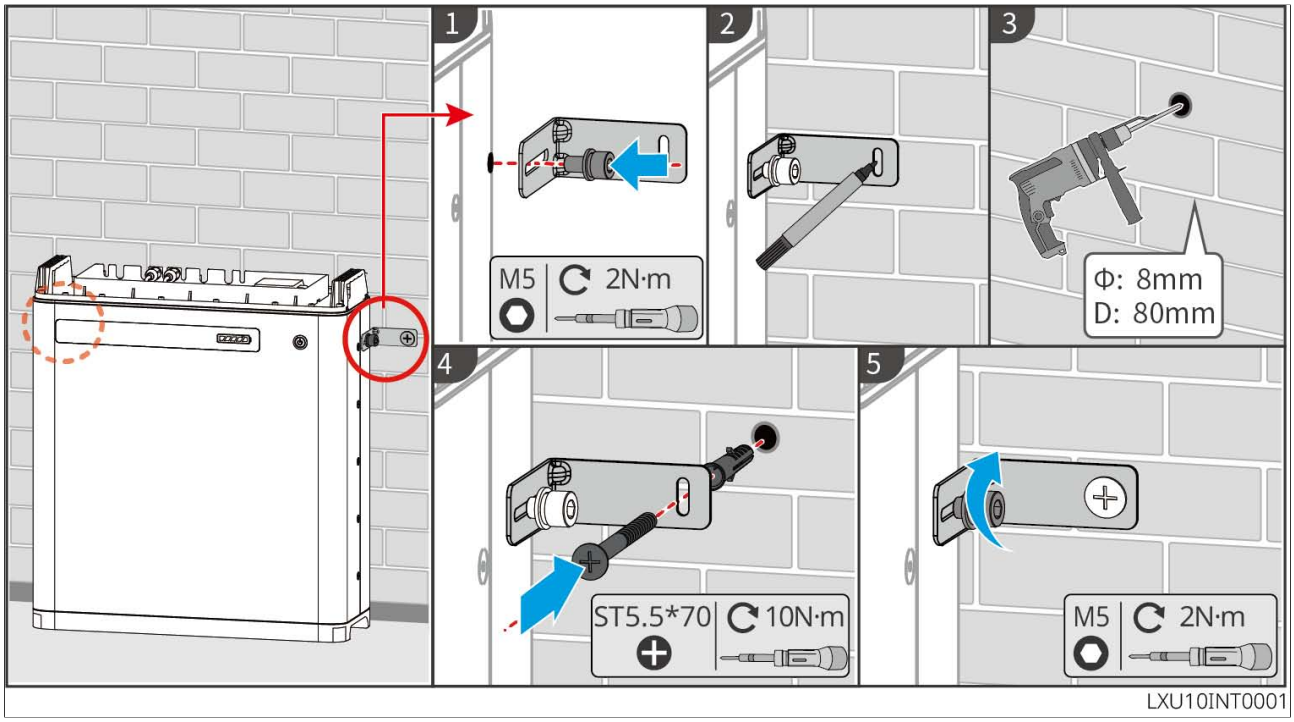


4.5.4 LX U5.4-20

LX U5.4-20: Floor-mounted Installation

NOTICE
If parallel operation is required, check and select Battery with similar production dates and the same gear number for use together.

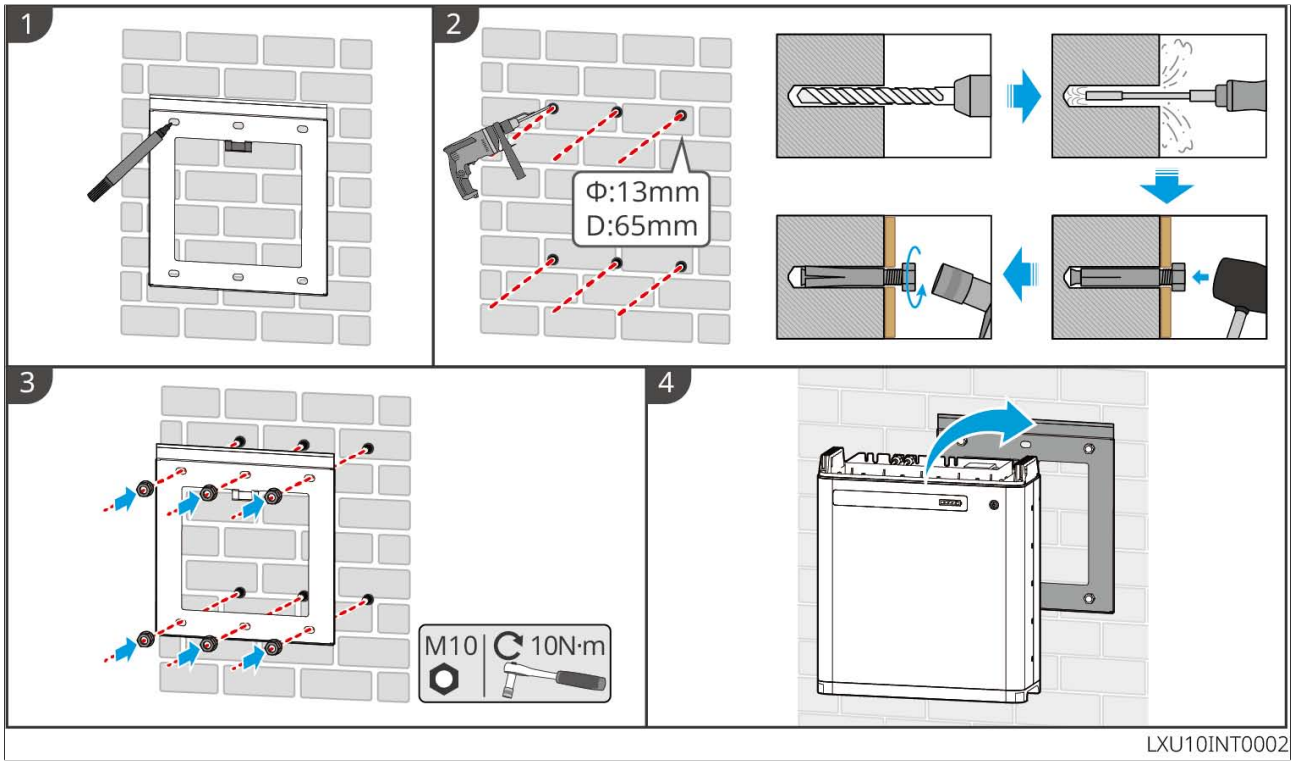
Step 1: Fasten the locking bracket to the Battery.
Step 2: Keep the Battery parallel to the wall, ensuring the locking bracket is flush against the wall. Confirm secure placement, mark the drilling positions with a marker, and then remove the Battery.
Step 3: Drill holes in the wall using hammer drill.
Step 4: Tighten the expansion bolt.



LX U5.4-20: Wall-mounted Installation

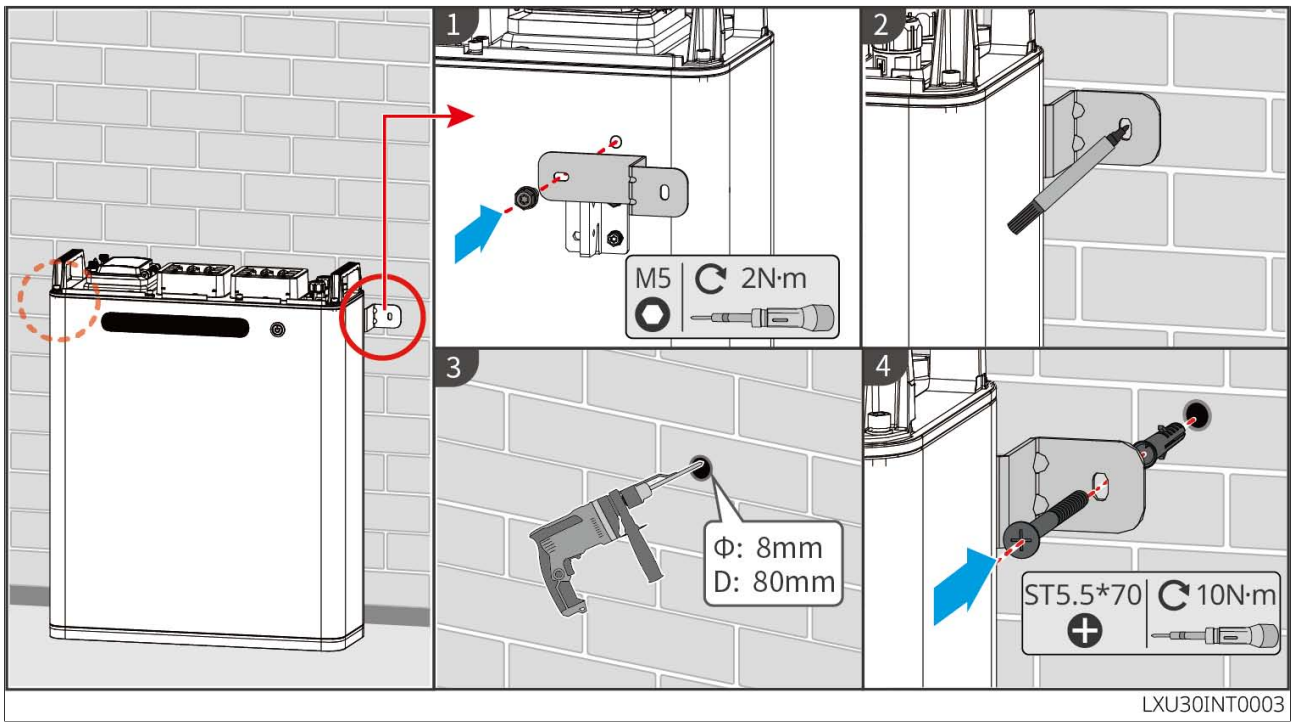
NOTICE
Wall-mounted installation requires two people.

Step 1: Align the wall-mounted bracket flush against the wall surface, then use a marker pen to indicate the drilling positions.
Step 2: Use hammer drill to drill holes in the wall.
Step 3: Tighten the mounting plate.
Step 4: Connect the Battery Installation to the mounting plate.

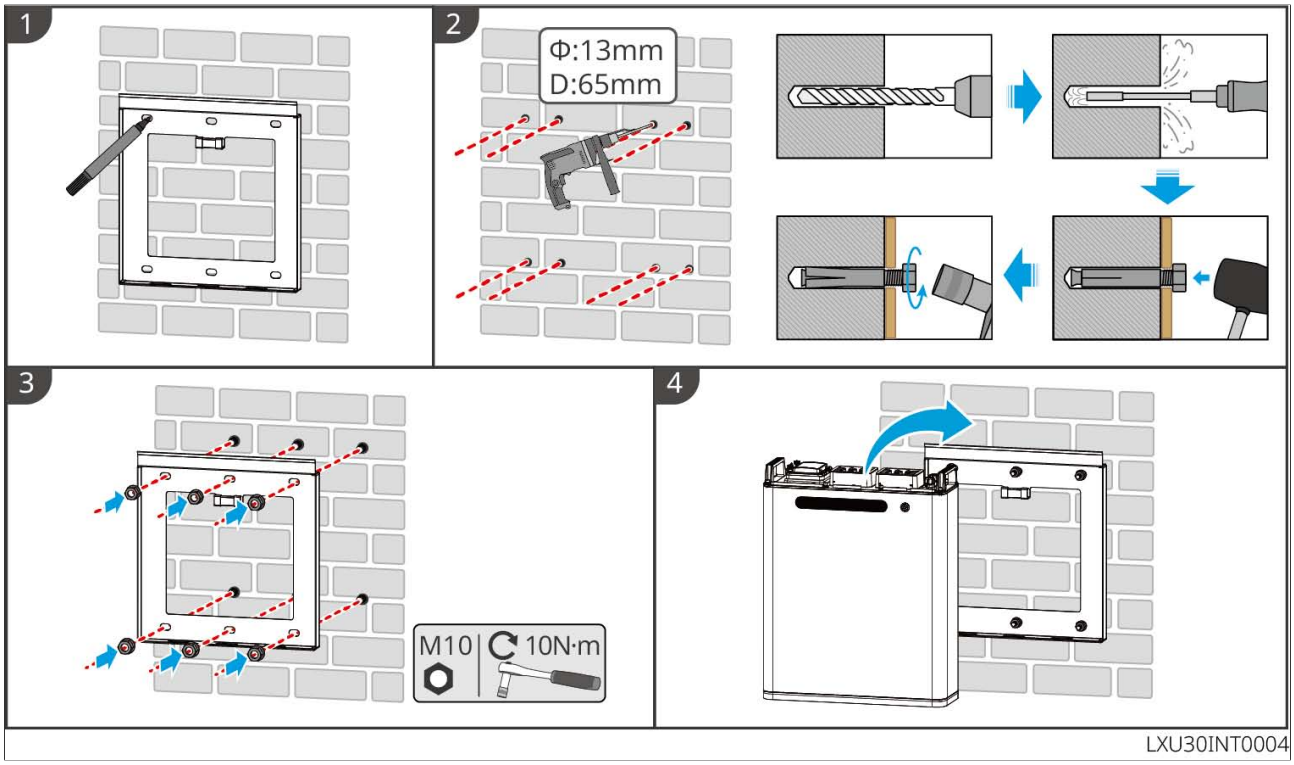


4.5.5 LX U5.0-30

LX U5.0-30: Floor-mounted Installation



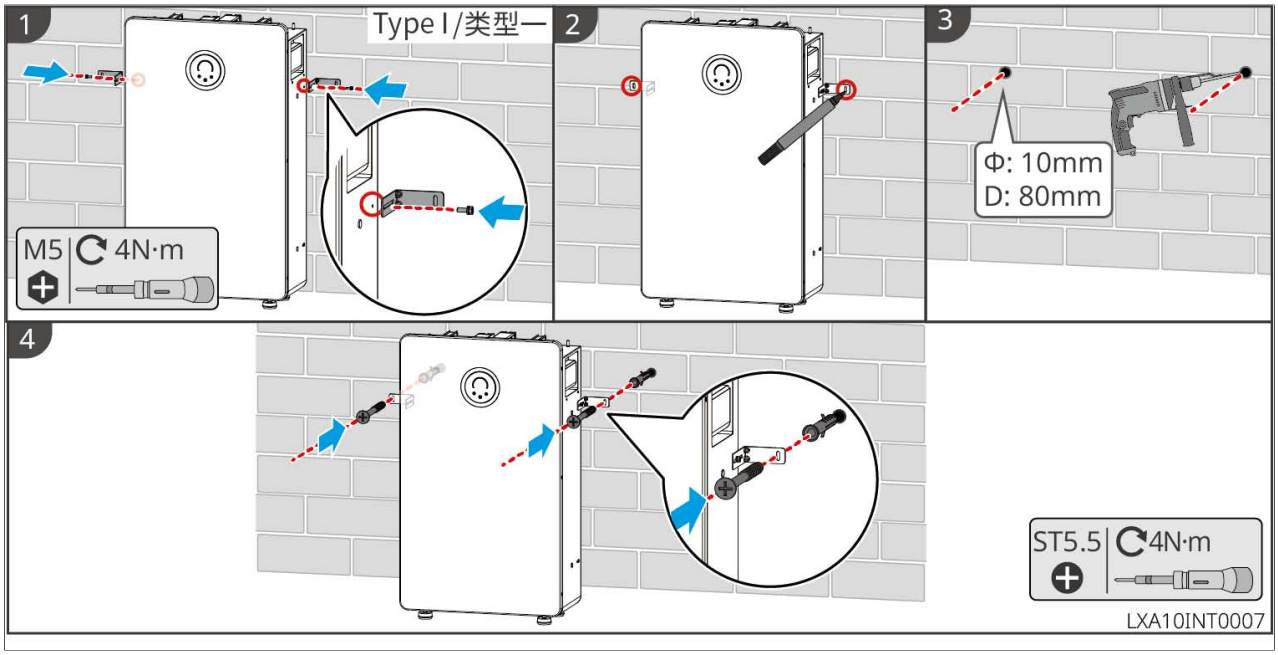
LX U5.0-30: Wall-mounted Installation



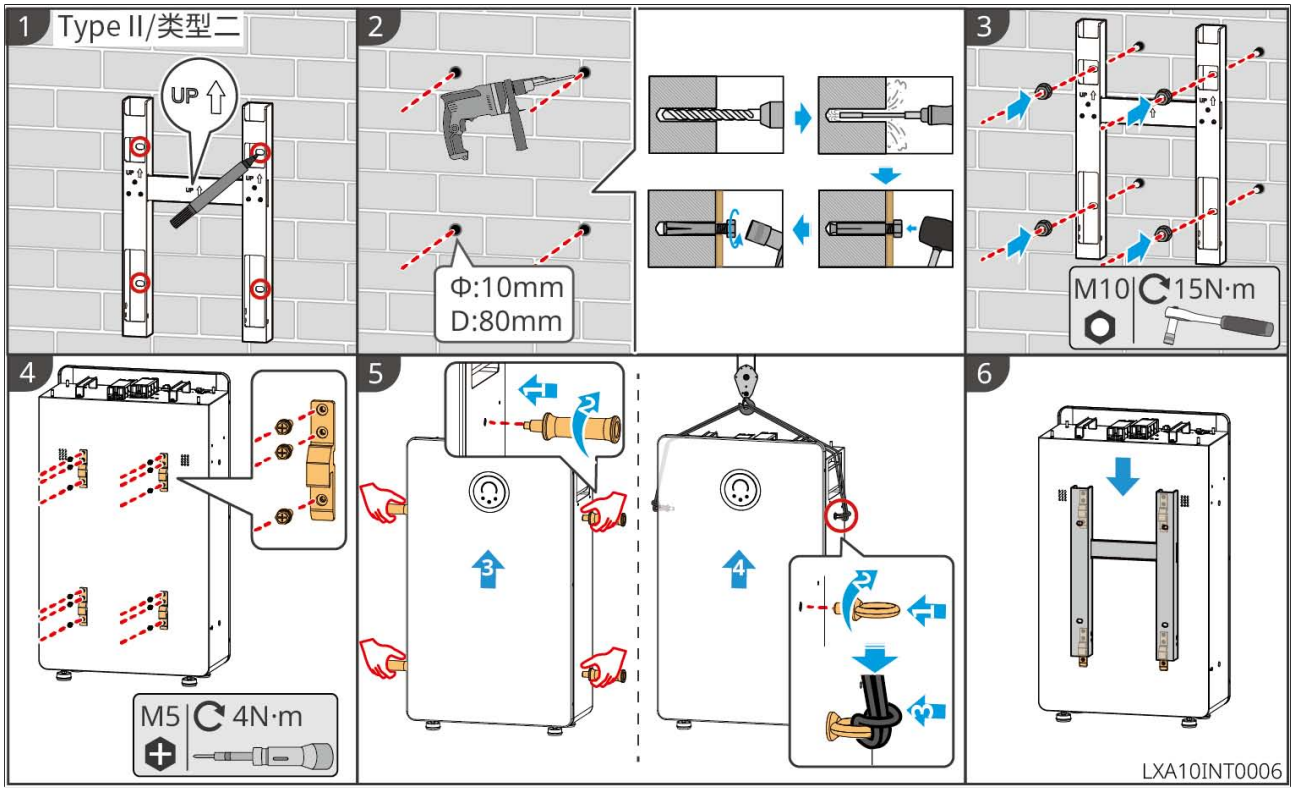
4.5.6 GW14.3-BAT-LV-G10

NOTICE
• Wall mounting requires two people.

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



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

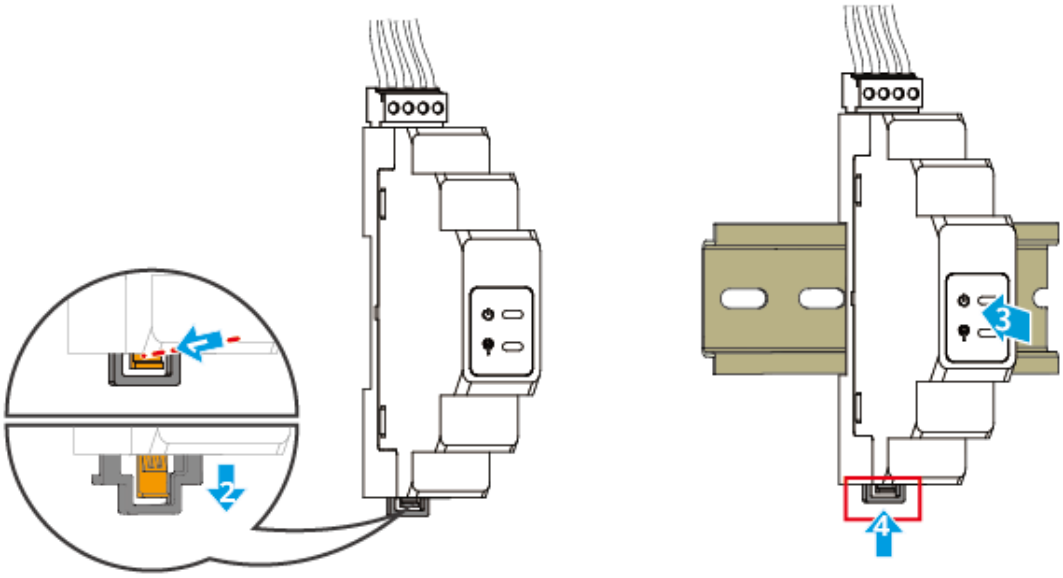


4.6 Installing the Smart Meter

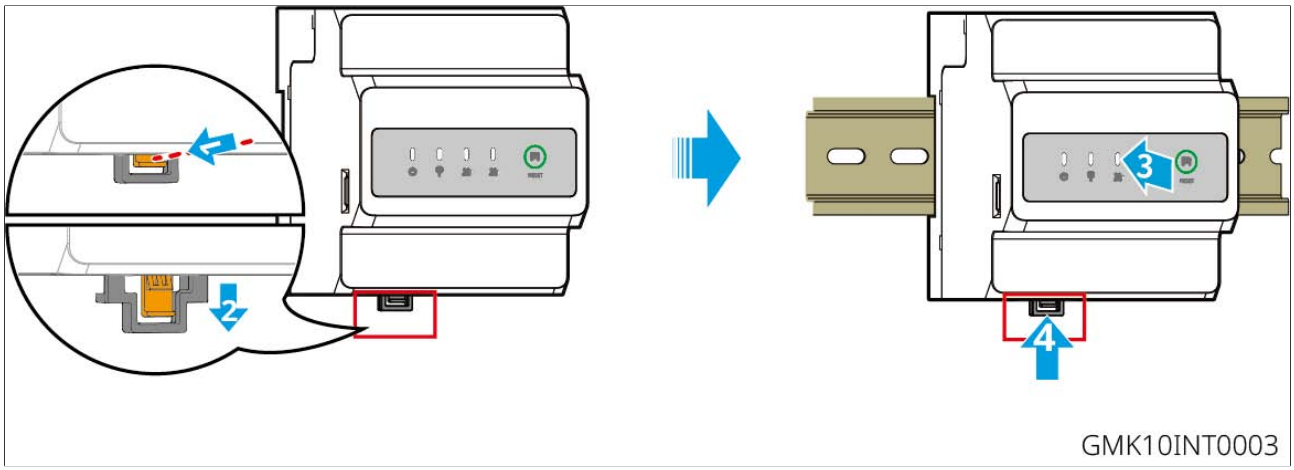
⚠WARNING

In areas with lightning DANGER, if the meter cable length exceeds 10m and the cable is not installed with grounded Steel conduit wiring, it is recommended to install an external lightning protection system.

GMK110



GM330



5 System Wirings

DANGER

- The installation, routing, and connection of cables must comply with local laws, regulations, and standard requirements.
- All operations during the electrical connection process, as well as the specifications of cables and components used, must comply with local laws and regulations.
- Before performing electrical connections, disconnect the DC switch and AC output switch of the equipment to ensure it is POWER OFF. Live operation is strictly prohibited, as it may lead to electric shock or other DANGER.
- Cables of the same type should be bundled together and routed separately from different types of cables. Intertwining or cross-routing is strictly prohibited.
- If the cable is subjected to excessive tension, it may result in poor connections. When wiring, ensure to leave a certain length of slack in the cable before connecting it to the Inverter terminal port.
- When crimp wiring terminal, ensure that the conductor part of the cable is in full contact with the terminal terminal. Do not crimp the cable insulation together with the terminal terminal, as this may cause the equipment to malfunction or lead to unreliable connections, resulting in overheating and subsequent damage to the Inverter terminal busbar.

NOTICE

- When performing electrical connections, wear safety shoes, protective gloves, insulating gloves, etc. as required.
- Only qualified personnel are permitted to perform electrical connection operations.
- The cable colors in the diagrams of this document are for reference only. The actual cable specifications must comply with local regulatory requirements.
- For parallel systems, please NOTICE comply with the user manuals corresponding to the relevant products in the system Safety Precautions.

5.1 System Wiring Electrical Block Diagram

NOTICE

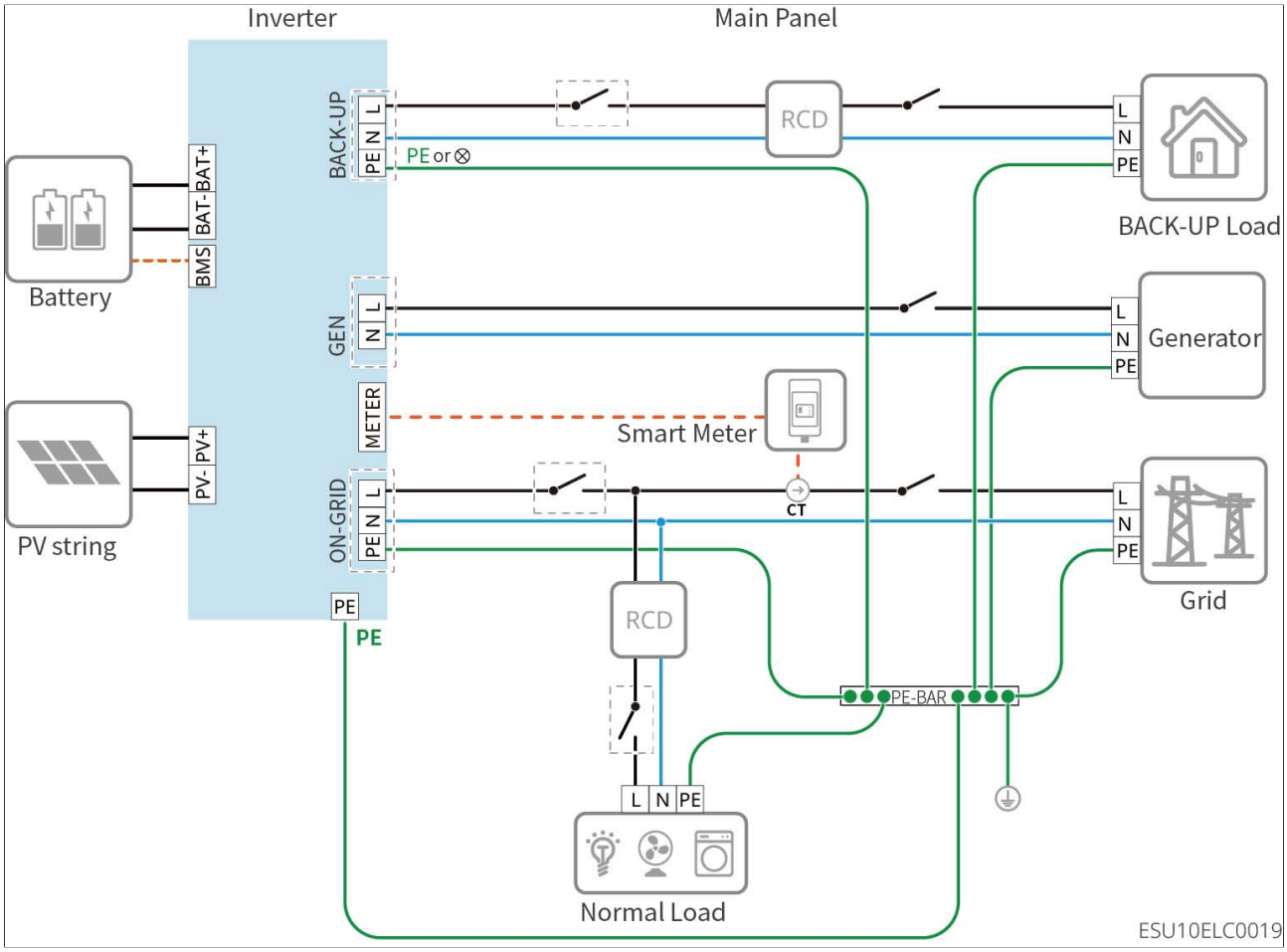
- According to the regulatory requirements of different regions, the wiring methods of the N line and PE line for Inverter ON-GRID and BACK-UP port vary. Specific configurations should comply with local regulations.
- ON-GRID AC built-in relay. When the Inverter is in off-grid mode, the built-in ON-GRID relay is in the open state; when the Inverter is in on-grid operation mode, the built-in ON-GRID relay is in the closed state.
- When the Inverter power on, the BACK-UP AC port is live. If maintenance is required on the BACK-UP Loads, please Inverter the power off to avoid electric shock.

The N and PE wires are separately connected in the distribution box.

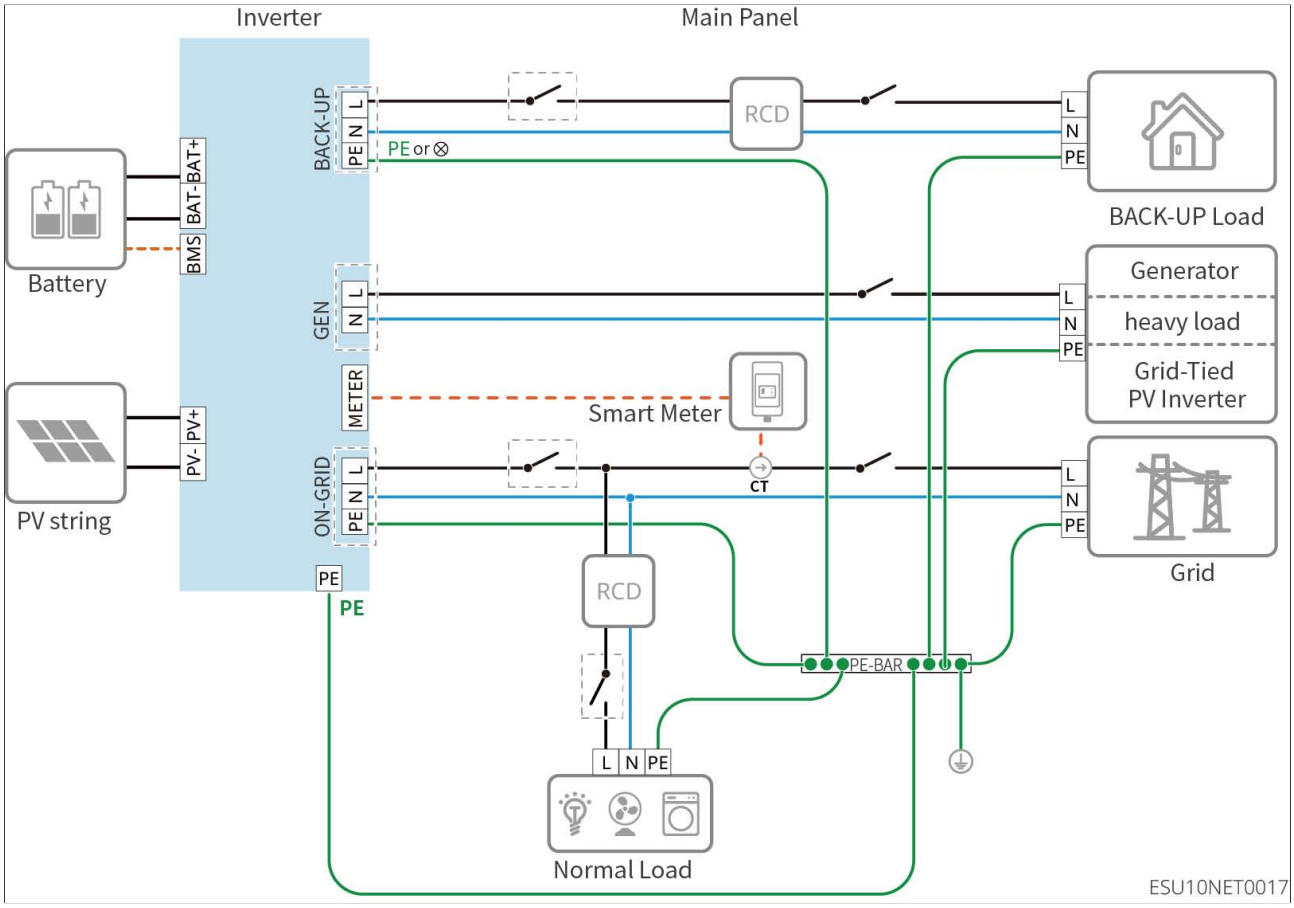
NOTICE

- Please ensure that the PE cable connection of the BACK-UP is correct and secure. Otherwise, the BACK-UP function may malfunction when Utility grid fault occurs.
- The following wiring methods apply to regions other than Australia, New Zealand, etc.:

General scenario



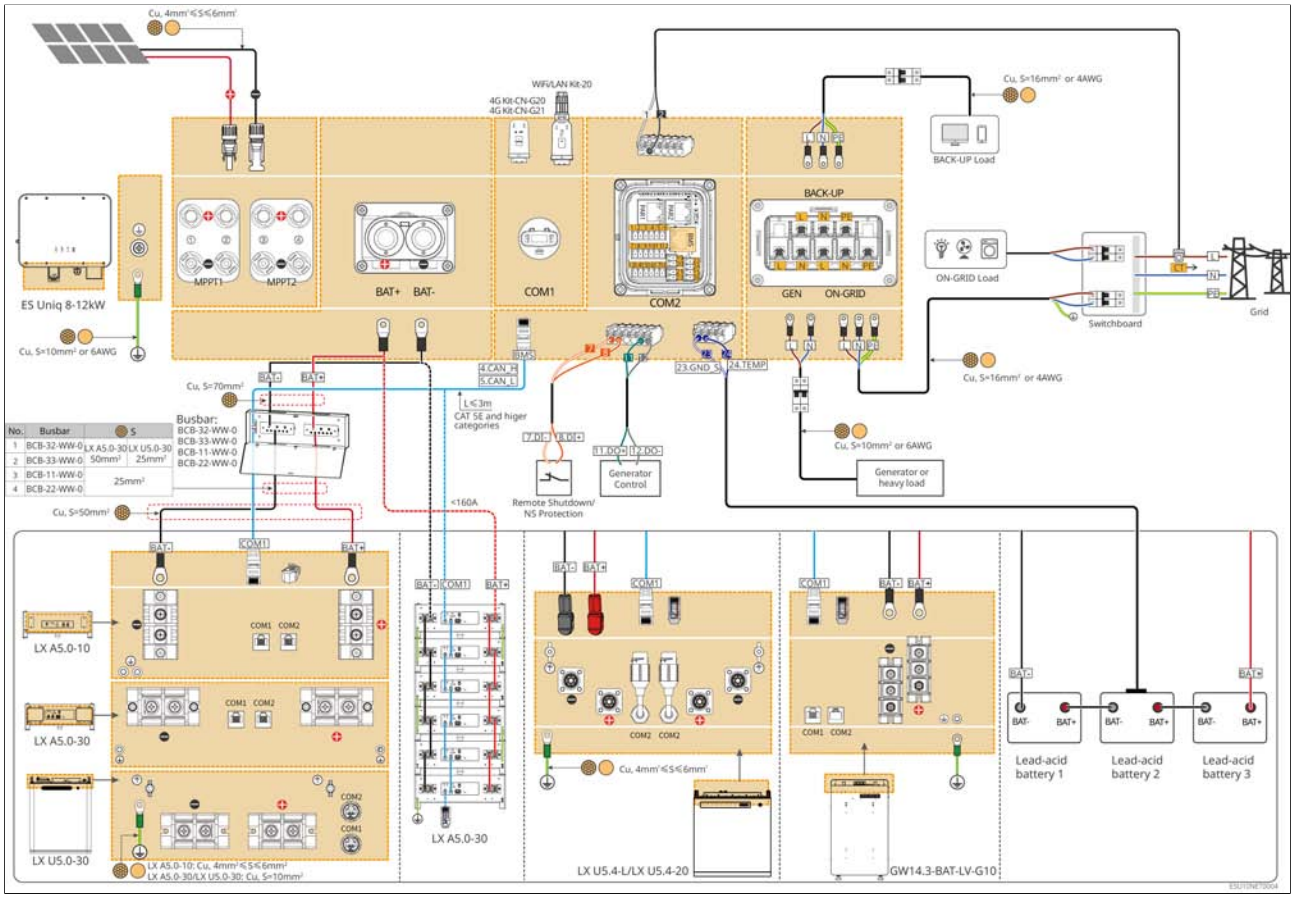
Microgrid scenario

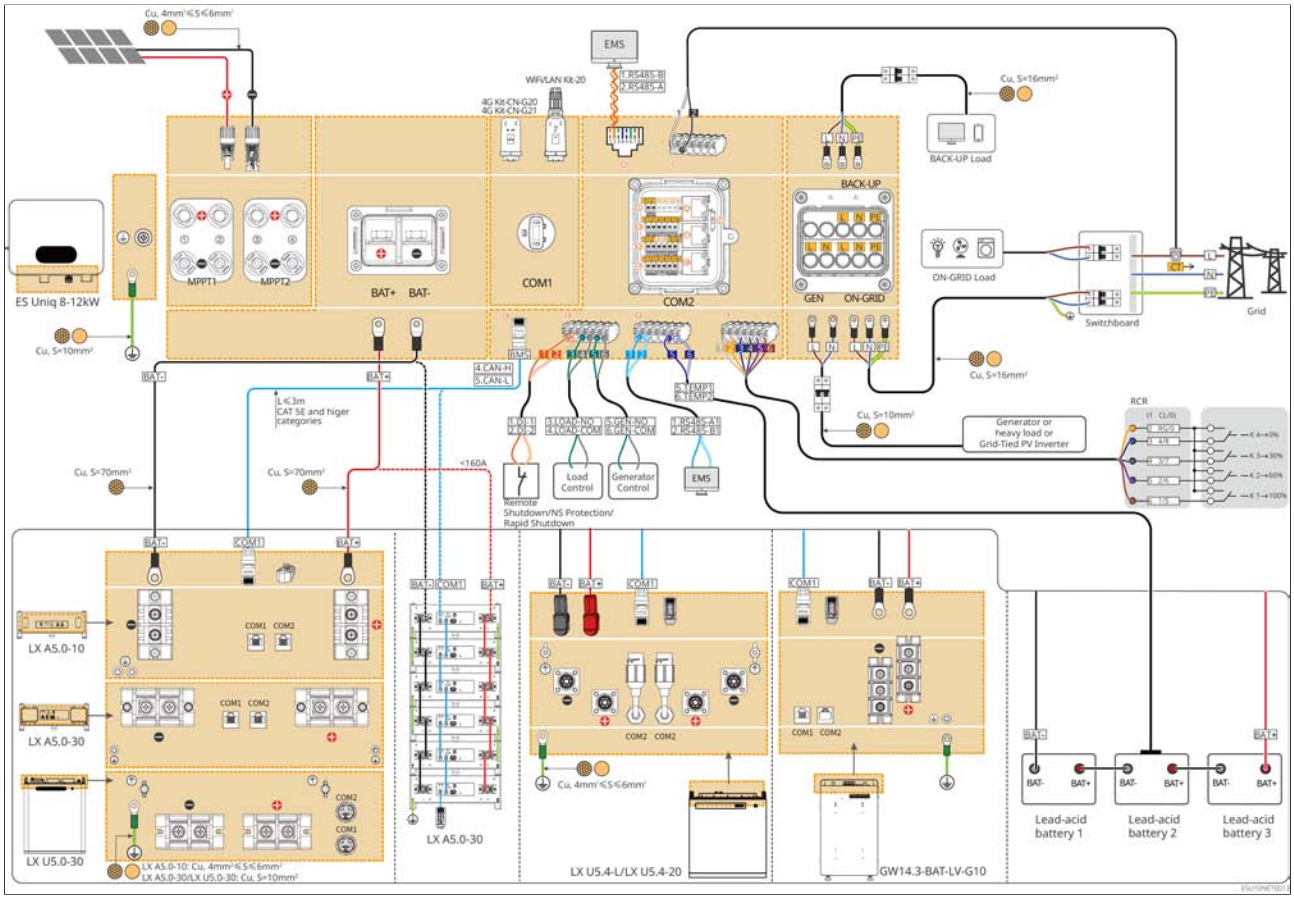


5.2 Detailed System Wiring Diagram

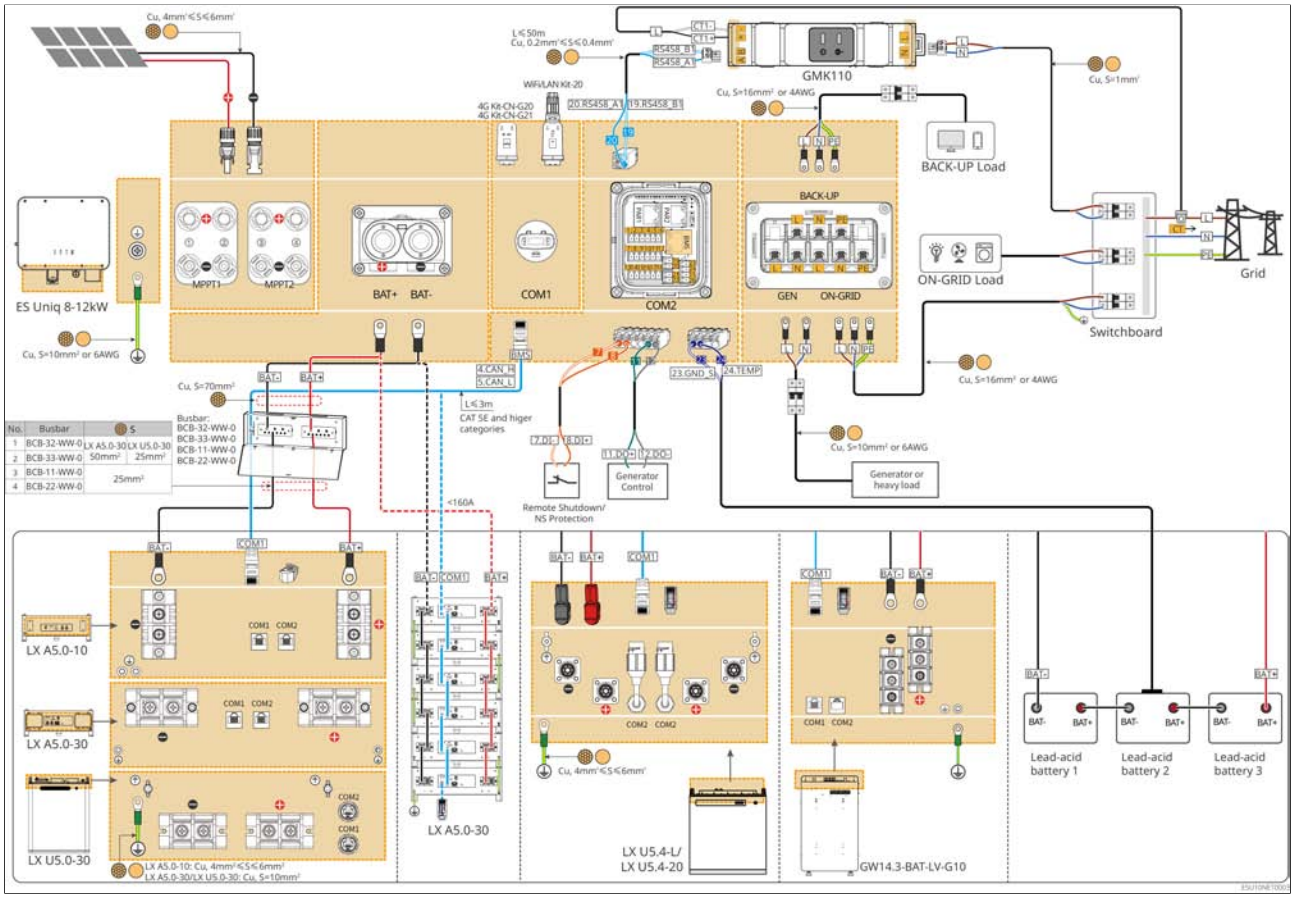
5.2.1 Detailed System Wiring Diagram for Single Inverter

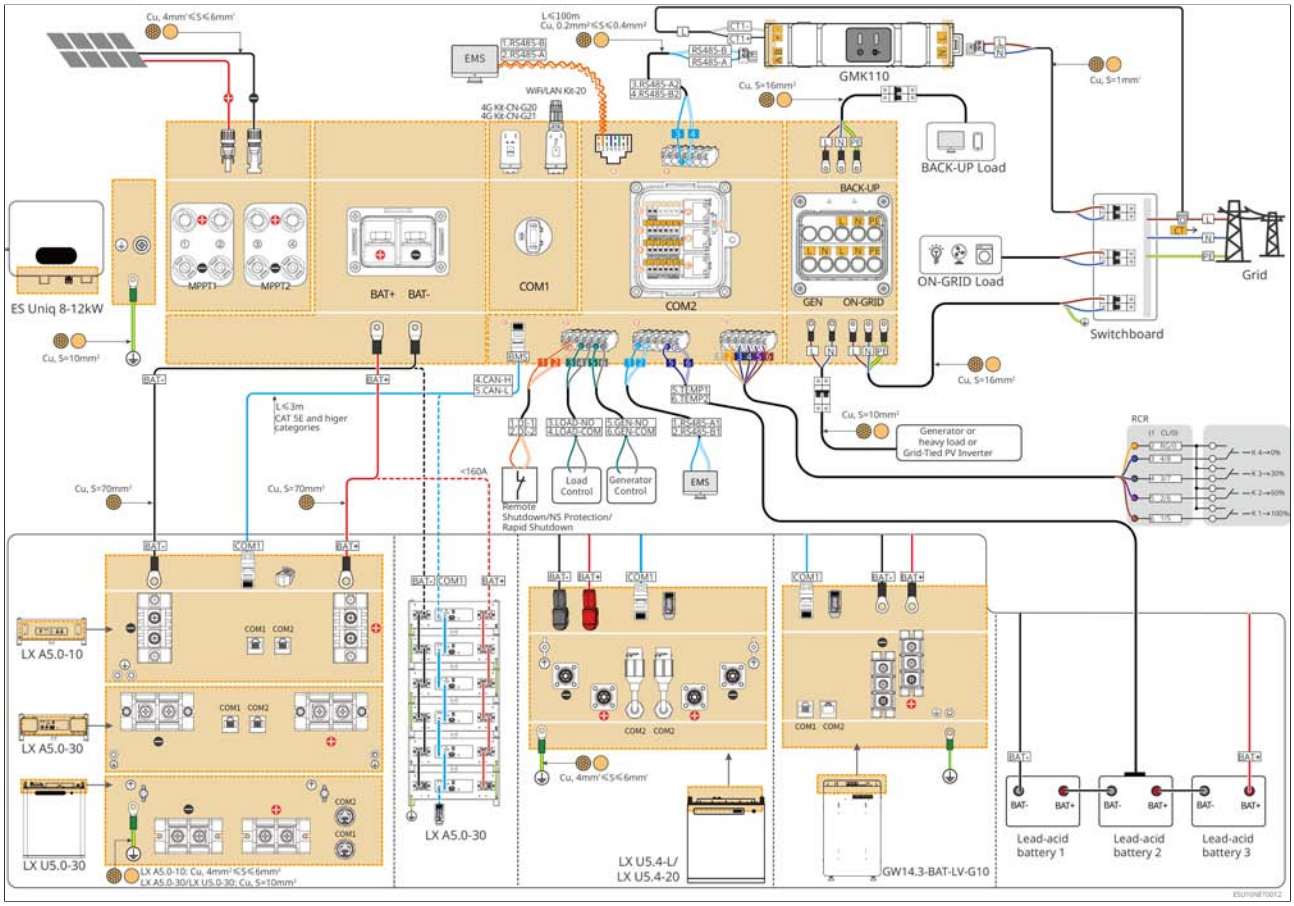
In single-unit scenarios, other specifications such as the GM330 can also be used to meet the requirements. Only the recommended types are displayed here.
Built-in meter matching scenario


Cu, 4mm²≤S≤6mm²
WiFi/LAN Kit-20
4G Kit-CN-G20
4G Kit-CN-G21
Cu, S=16mm² or 4AWG
BACK-UP Load
BACK-UP
ES Uniq 8-12kW
MPPT1
MPPT2
BAT+ BAT-
COM1
COM2
GEN ON-GRID
ON-GRID Load
Switchboard
Grid
Cu, S=10mm² or 6AWG
BMS
4.CAN_H
5.CAN_L
23.GND_S
24.TEMP
Cu, S=16mm² or 4AWG
Cu, S=70mm²
Busbar:
BCB-32-WW-0
BCB-33-WW-0
BCB-11-WW-0
BCB-22-WW-0
L≤3m
CAT 5E and higer categories
7.DI-
8.DI+
11.DO-
12.DO+
Generator Control
Cu, S=10mm² or 6AWG
Generator or heavy load
Remote Shutdown/ NS Protection
Cu, S=50mm²
<160A
LX A5.0-10
LX A5.0-30
LX U5.0-30
LX A5.0-10: Cu, 4mm²≤S≤6mm²
LX A5.0-30/LX U5.0-30: Cu, S=10mm²
LX A5.0-30
Cu, 4mm²≤S≤6mm²
LX U5.4-L/LX U5.4-20
GW14.3-BAT-LV-G10
Lead-acid battery 1
Lead-acid battery 2
Lead-acid battery 3



Matching GMK110 scenario


Cu, 4mm²≤S≤6mm²
L≤50m
Cu, 0.2mm²≤S≤0.4mm²
RS458_B1
RS458_A1
GMK110
Cu, S=1mm²
WiFi/LAN Kit-20
4G Kit-CN-G20
4G Kit-CN-G21
20.RS458_A1
19.RS458_B1
Cu, S=16mm² or 4AWG
BACK-UP Load
BACK-UP
ON-GRID Load
Grid
Switchboard
MPPT1
MPPT2
BAT+
BAT-
COM1
COM2
GEN
ON-GRID
ES Uniq 8-12kW
Cu, S=10mm² or 6AWG
Cu, S=70mm²
4.CAN_H
5.CAN_L
L≤3m
CAT 5E and higer categories
23.GND_S
24.TEMP
Cu, S=16mm² or 4AWG
Cu, S=10mm² or 6AWG
Busbar:
BCB-32-WW-0
BCB-33-WW-0
BCB-11-WW-0
BCB-22-WW-0
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
7.DI- 8.DI+
11.DO- 12.DO+
Generator Control
Generator or heavy load
Remote Shutdown/ NS Protection
<160A
LX A5.0-10
LX A5.0-30
LX U5.0-30
LX A5.0-10: Cu, 4mm²≤S≤6mm²
LX A5.0-30/LX U5.0-30: Cu, S=10mm²
LX A5.0-30
Cu, 4mm²≤S≤6mm²
LX U5.4-L/ LX U5.4-20
GW14.3-BAT-LV-G10
Lead-acid battery 1
Lead-acid battery 2
Lead-acid battery 3

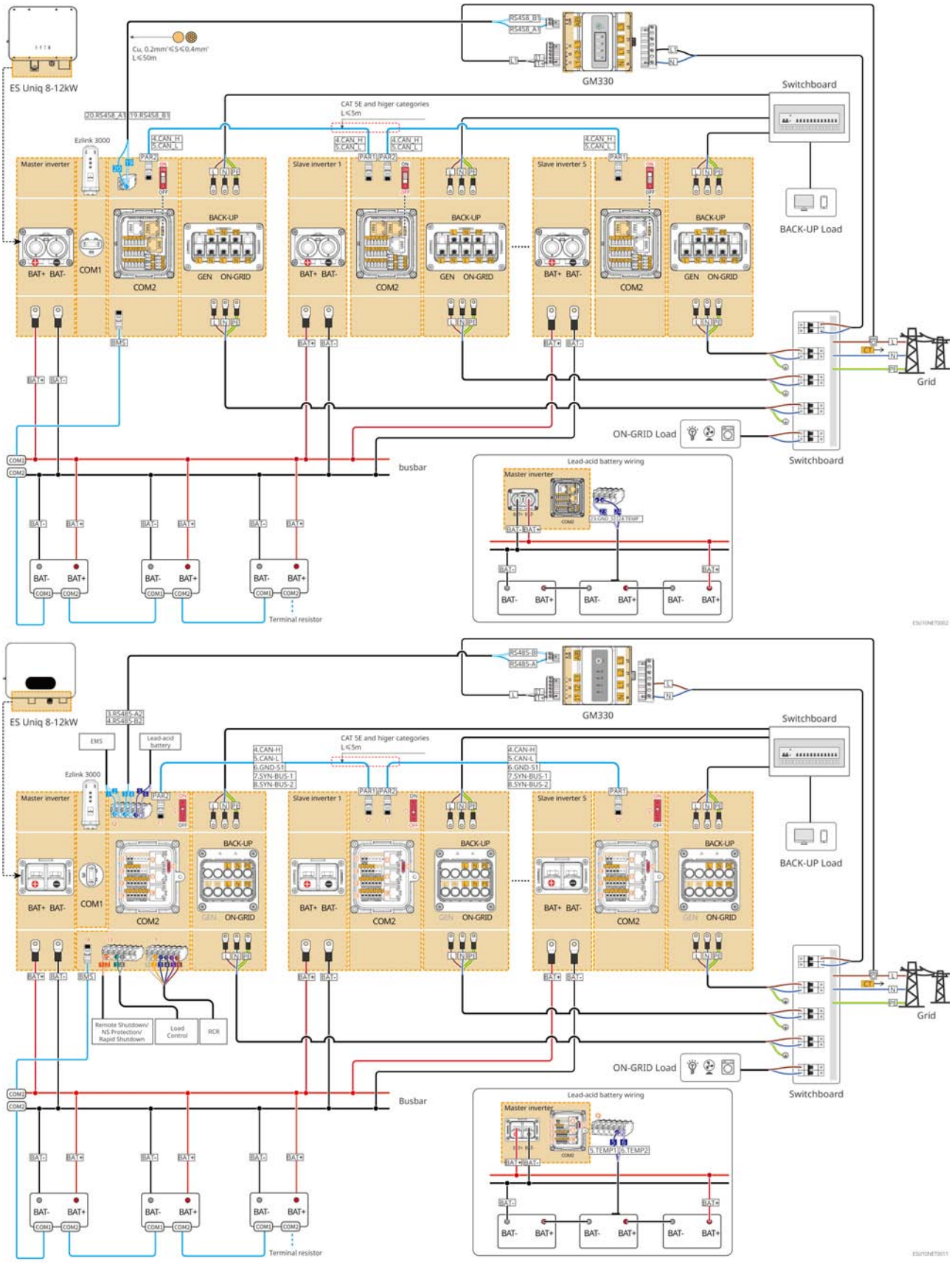


5.2.2 Detailed System Wiring Diagram for Parallel System

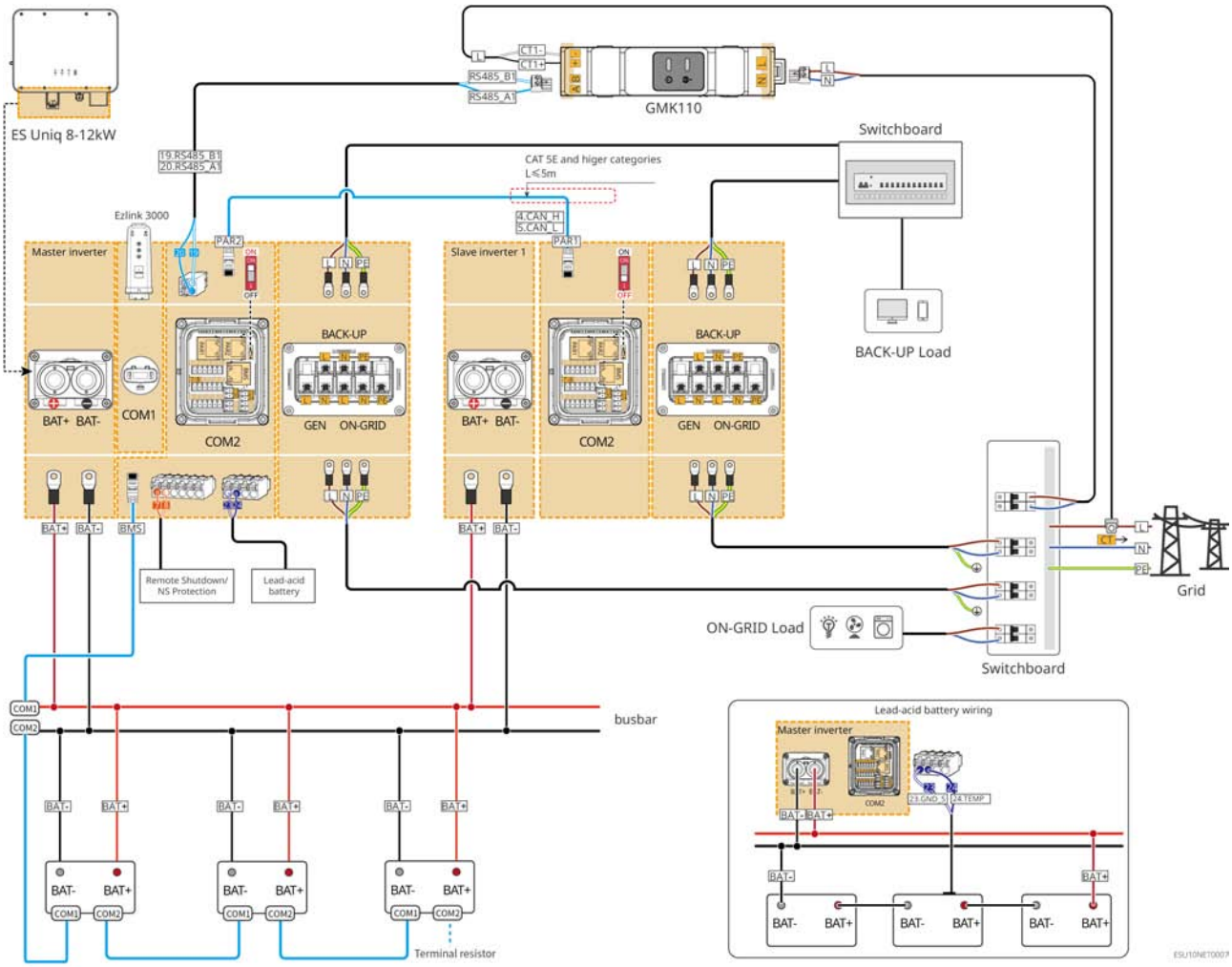
NOTICE

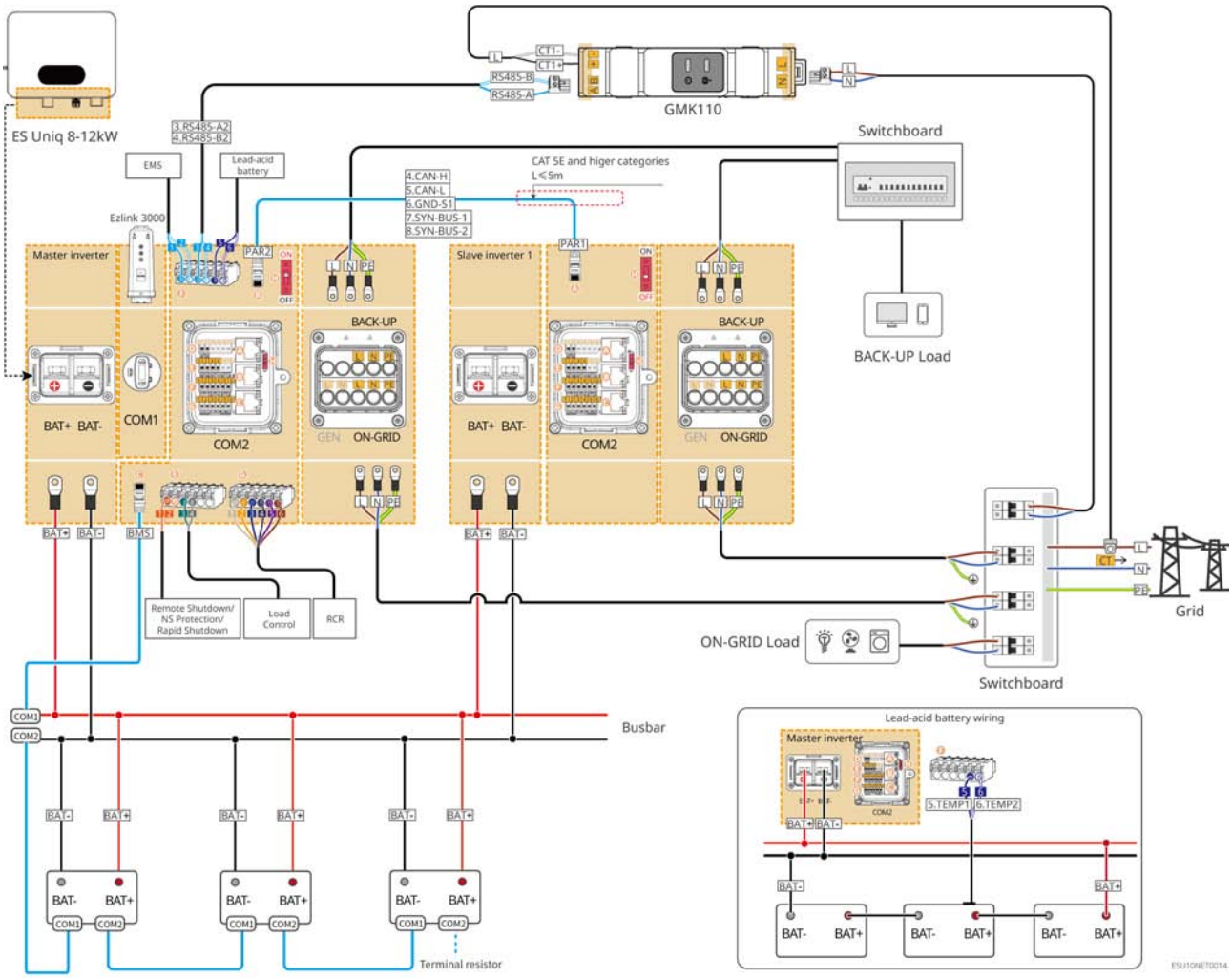
- In the parallel system, the Inverter connecting the Ezlink3000 smart dongle and the meter is Master inverter, while others are Slave inverter. Do not connect smart dongle to the Slave inverter in the system.
- The parallel system does not support the connection of generators, large loads, or grid-tied PV inverter.
- The following diagram highlights the wiring related to parallel operation. For other port wiring requirements, please refer to the single-unit system.
- In parallel system, under the non-convergence mode of Inverter, each Inverter can be connected to Battery from different model. For specific wiring methods, please refer to5.6.Connecting the Battery Cable(Page 119).

During parallel operation, the Battery busbar connection mode is adopted.
Matching GM330 scenario



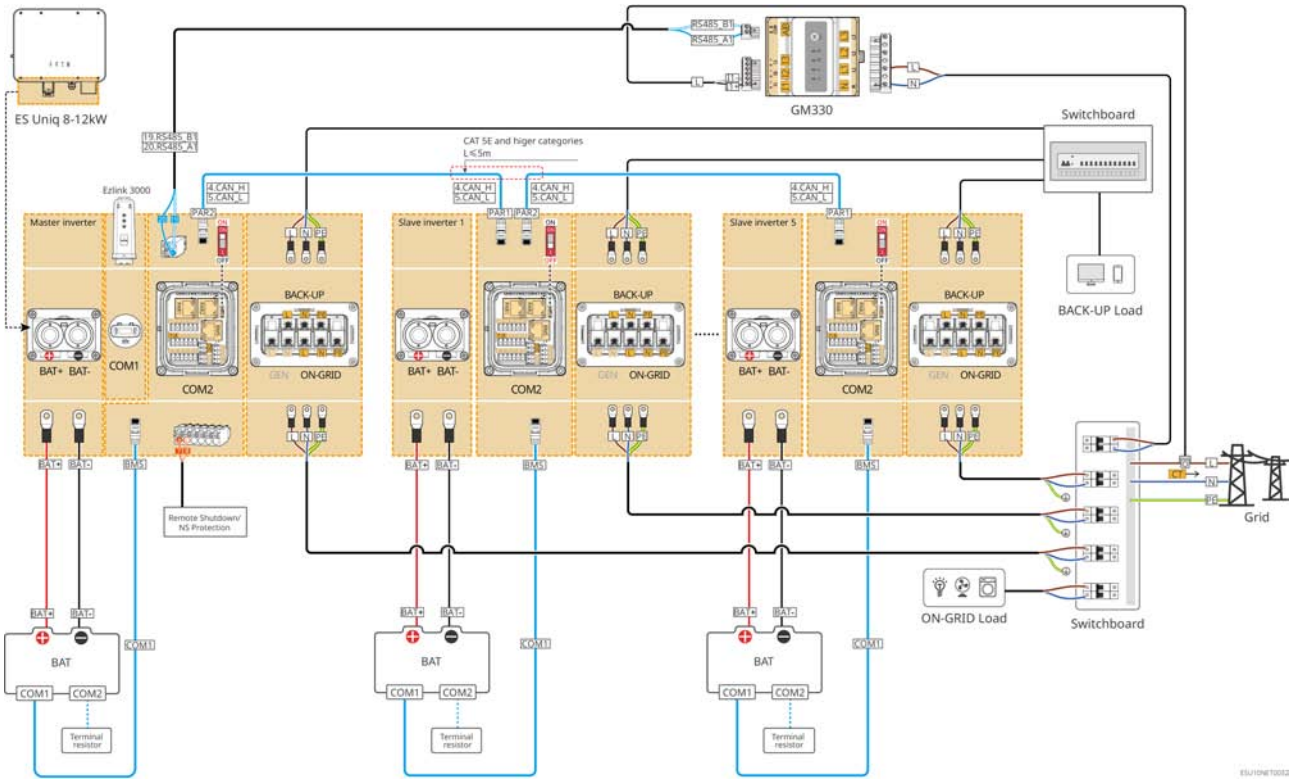
Matching GMK110 scenario

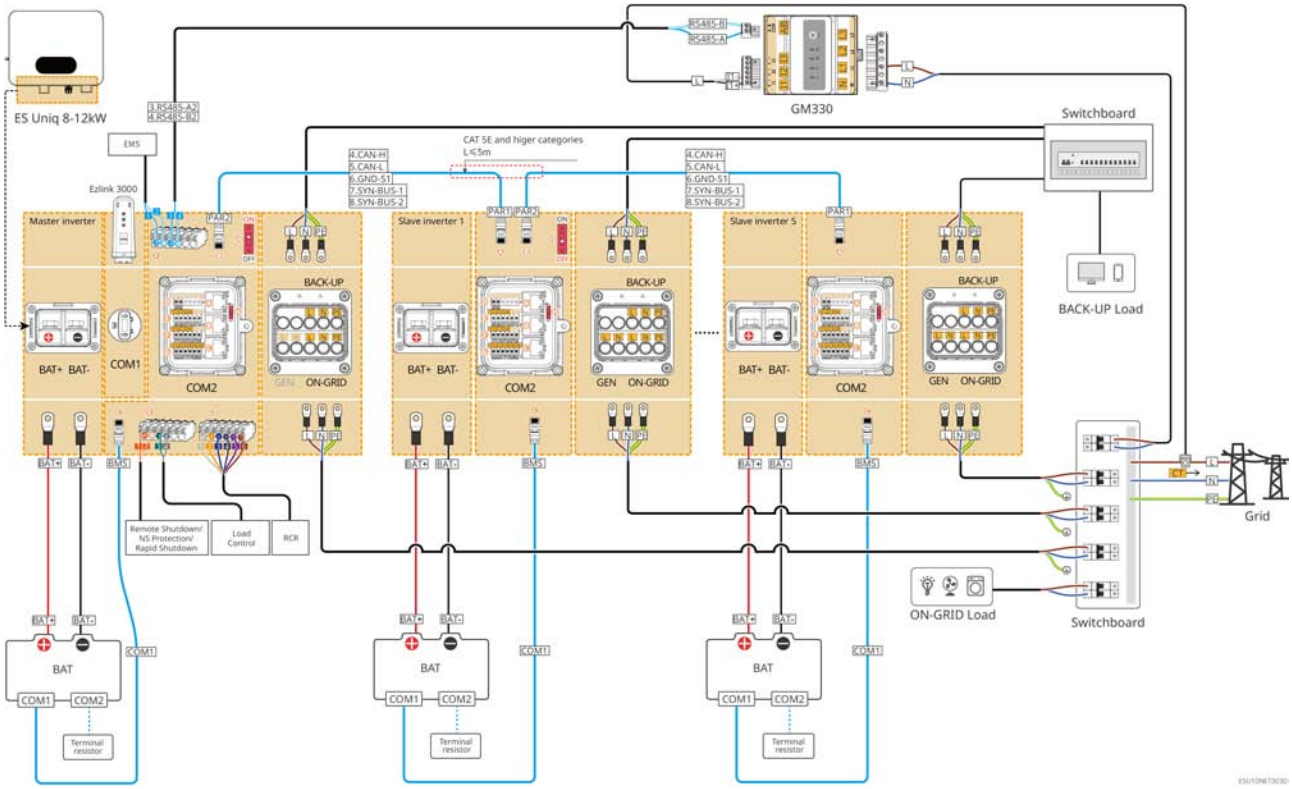

ES Uniq 8-12kW
GMK110
CT1-
CT1+
RS485_B1
RS485_A1
L
N
Switchboard
19.RS485_B1
20.RS485_A1
CAT 5E and higer categories
L≤5m
4.CAN_H
5.CAN_L
Ezlink 3000
PAR2
PAR1
Master inverter
Slave inverter 1
BACK-UP
BACK-UP Load
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
Remote Shutdown/
NS Protection
Lead-acid
battery
ON-GRID Load
Switchboard
Grid
busbar
Terminal resistor
Lead-acid battery wiring
Master inverter
2.GND_S
24.TEMP



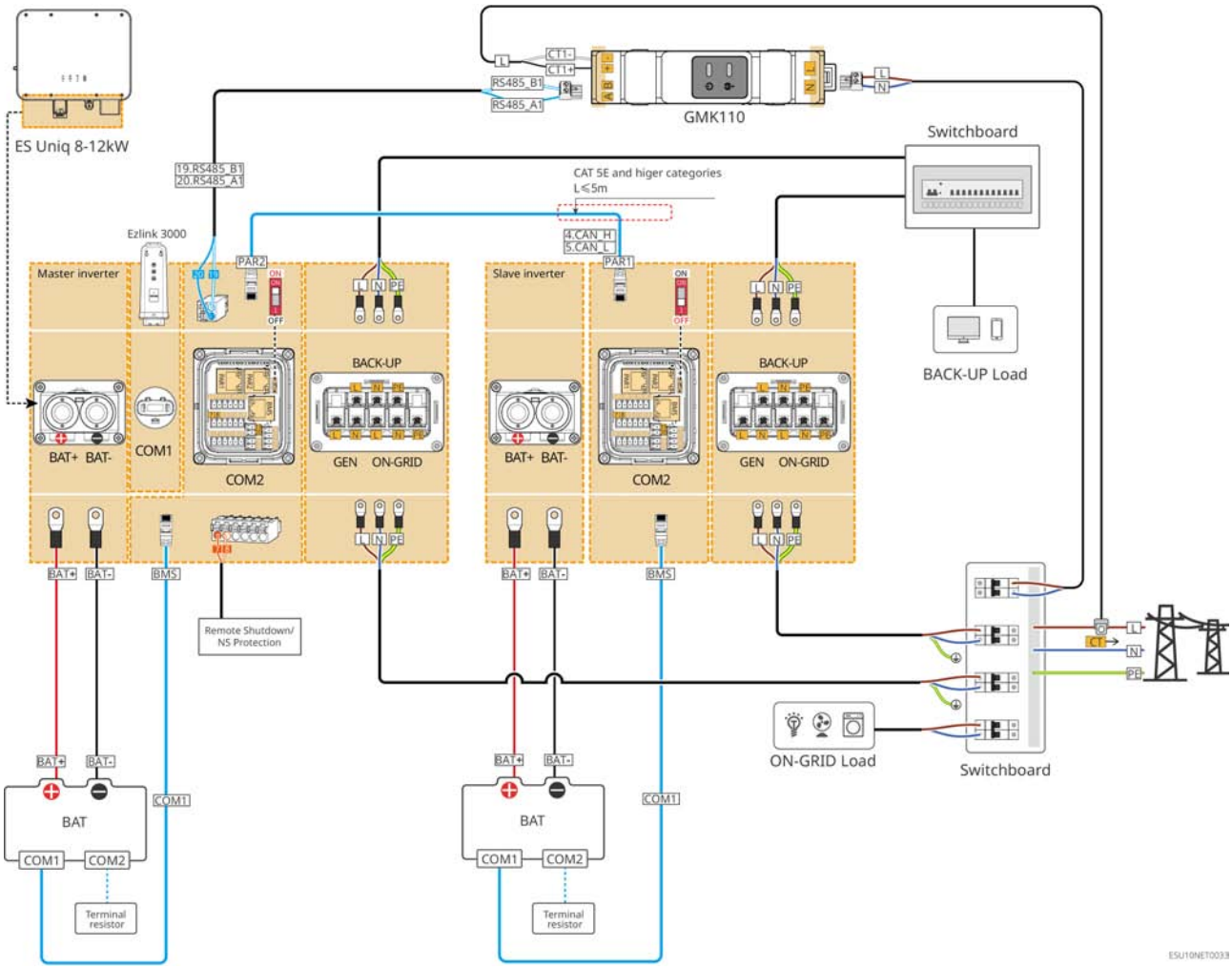
Inverter parallel operation, Battery non-busbar connection mode

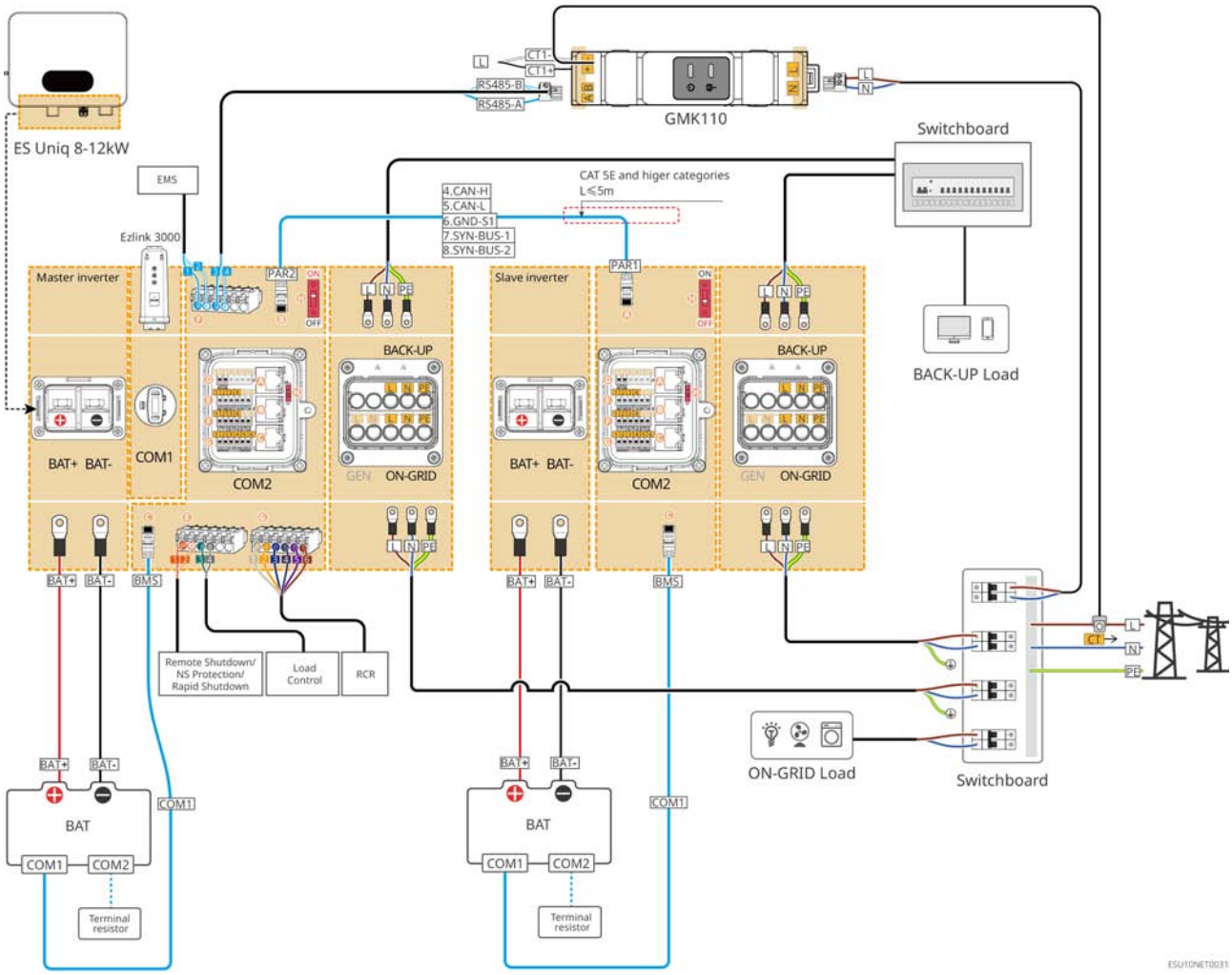
Matching with GM330 scenario





Matching GMK110 scenario


ES Uniq 8-12kW
GMK110
CT1-
CT1+
RS485_B1
RS485_A1
Switchboard
19.RS485_B1
20.RS485_A1
CAT 5E and higer categories
L≤5m
4.CAN_H
5.CAN_L
Ezlink 3000
Master inverter
Slave inverter
PAR2
PAR1
ON
OFF
BACK-UP
BACK-UP Load
BAT+ BAT-
COM1
COM2
GEN ON-GRID
BMS
Remote Shutdown/
NS Protection
BAT
Terminal
resistor
ON-GRID Load
Switchboard
CT
ESU10NET0033



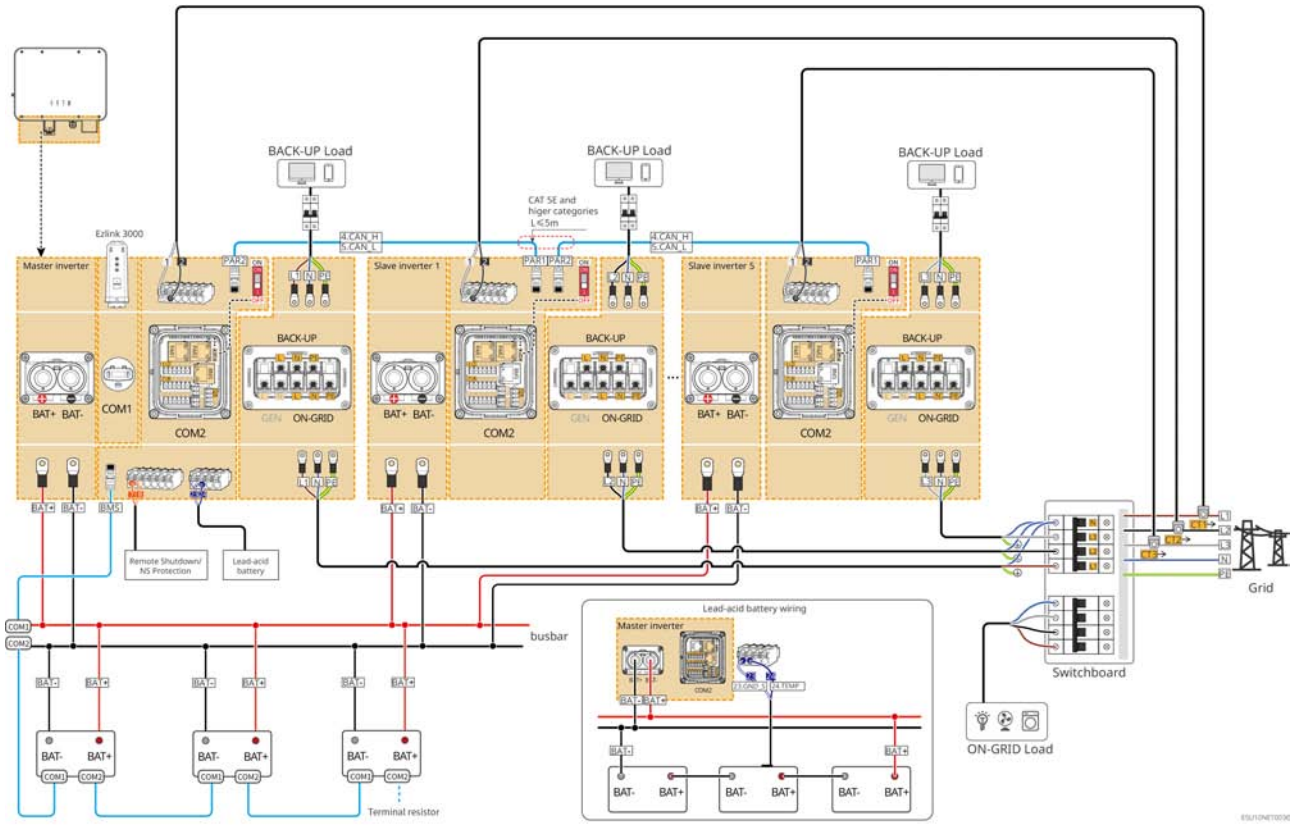
5.2.3 Single-phase to three-phase Detailed System Wiring Diagram

NOTICE

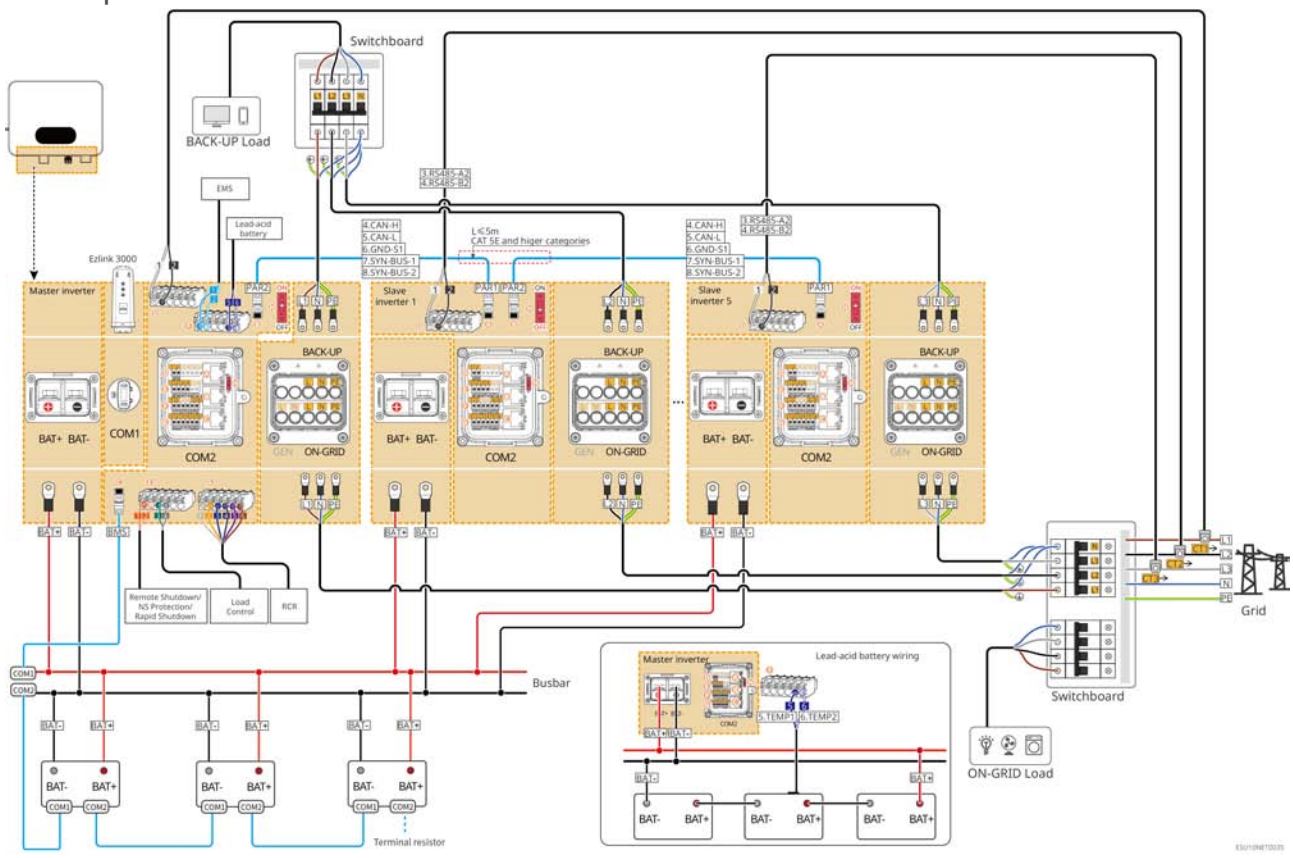
- The ES UNIQ 8-12kW series Inverter comes in various appearance types, all supporting single-phase to three-phase networking with built-in meters or GMK110 meters. Each model is compatible with scenarios where single-phase loads are connected individually or only three-phase loads are connected.
- The following scenario of connecting a built-in energy meter with a single-phase load is illustrated using only one type of machine as an example. For configurations involving the GMK110 or three-phase loads, please refer to other wiring and networking diagrams.

Built-in meter matching scenario

Single-phase load scenario with each phase connected separately

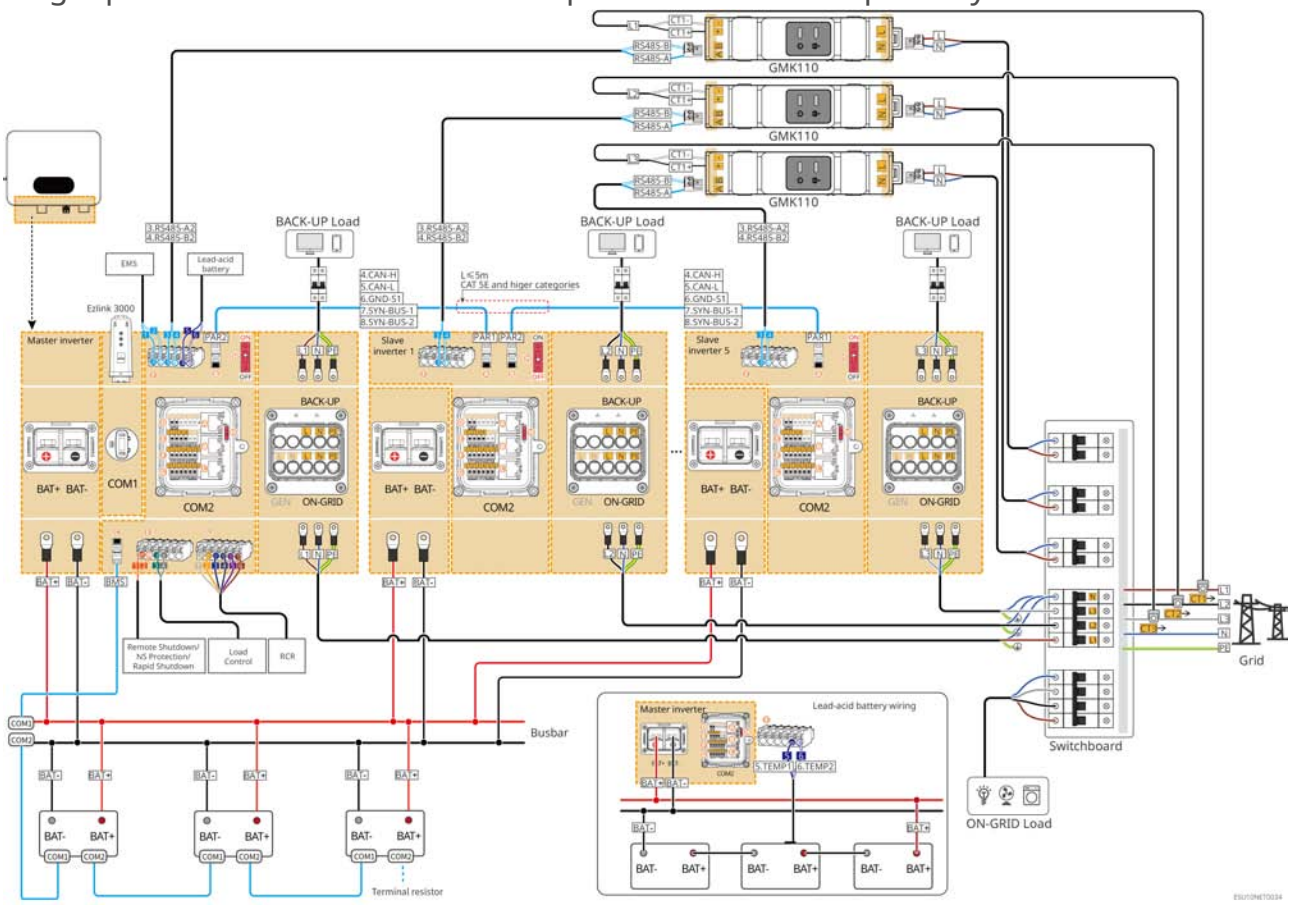


Three-phase load connection scenario

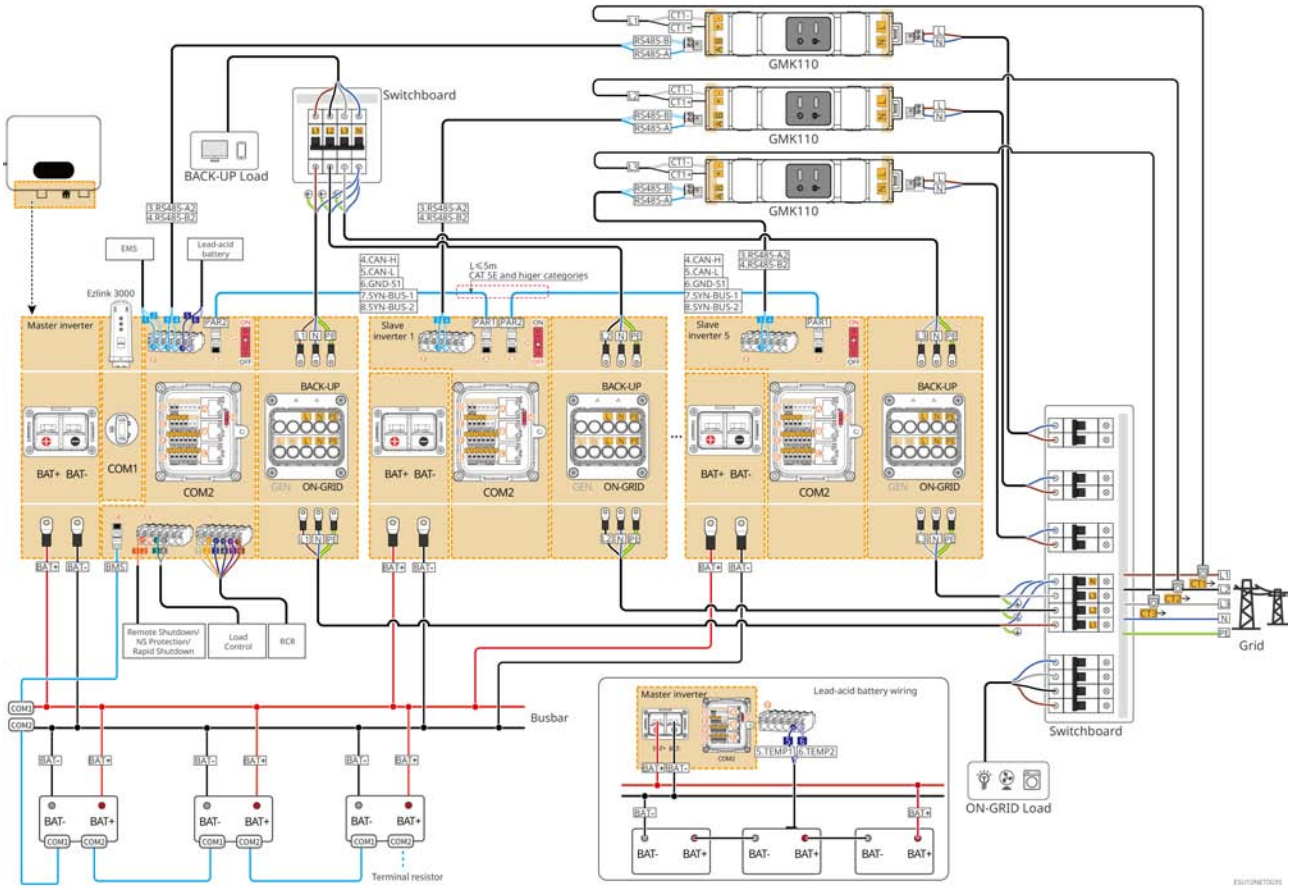


Matching GMK110 scenario

Single-phase load scenario with each phase connected separately



Three-phase load connection scenario



5.3 Preparing Materials

WARNING

- It is prohibited to connect any load between the Inverter and the AC Switch directly connected to the Inverter.
- Each Inverter must be equipped with an AC output breaker. Multiple Inverter units cannot be connected to the same AC breaker simultaneously.
- To ensure the Inverter can safely disconnect from the Utility grid in case of an abnormal situation, connect a AC breaker to the AC side of the Inverter. Select an appropriate AC breaker according to local regulations.
- When the Inverter power on, the BACK-UP AC port is live. If maintenance is required on the BACK-UP Loads, please Inverter the power off to avoid electric shock.
- For cables used in the same system, it is recommended that the conductor material, cross-sectional area, length, etc., be consistent.
  - The BACK-UP AC line of each Inverter
  - The ON-GRID AC line of each Inverter
  - power cable cable between Inverter and Battery
  - power cable cable between Battery and Battery
  - Inverter to busbar power cable cable
  - Battery to busbar power cable cable

5.3.1 Preparing Breakers

No.	breaker	Recommended Specifications	Remarks
1	ON-GRID breaker	Rated Current ≥90A, Nominal Voltage ≥230V	Customer-supplied
2	Battery Switch	Select according to local laws and regulations • GW8000-ES-C10: Rated Current ≥160A, Nominal Voltage ≥60V • GW10K-ES-C10: Rated Current ≥200A, Nominal Voltage ≥60V • GW12K-ES-C10: Rated Current ≥250A, Nominal Voltage ≥60V	Customer-supplied

No.	breaker	Recommended Specifications	Remarks
3	GEN breaker	• GW8000-ES-C10: Rated Current ≥63A, Nominal Voltage ≥230V • GW10K-ES-C10, GW12K-ES-C10: Rated Current ≥75A, Nominal Voltage ≥230V	Customer-supplied
4	BACK-UP Loads breaker	Rated Current ≥90A, Nominal Voltage ≥230V	Customer-supplied
5	RCD	Select according to local laws and regulations • Type A • ON-GRID side: 300mA • BACK-UP side: 30mA	Customer-supplied

5.3.2 Preparing Cables

No.	cable	Recommended Specifications	Acquisition method
1	Inverter PE cable	• single core Outdoor copper cable • conductorcross-sectional area: S=10mm²	Self-supply
2	Battery PE cable	• single core Outdoor copper cable • conductorcross-sectional area: • LX A5.0-10：4mm²-6mm² • LX A5.0-30：10mm² • LX U5.4-L：4mm²-6mm² • LX U5.4-20：4mm²-6mm² • LX U5.0-30：10mm² • GW14.3-BAT-LV-G10：10mm²	• self-supply • LX A5.0-30, LX A5.0-10: Accessory Acquisition (Optional) • GW14.3-BAT-LV-G10: For some machines, the grounding cable is shipped with the Battery accessory.

No.	cable	Recommended Specifications	Acquisition method
3	PV DC line	• Industry-standard outdoor photovoltaic cables • conductorcross-sectional area: 4mm²-6mm² • Cable outer diameter: 5.9mm-8.8mm	Self-supply
4	DC line	• single core Outdoor copper cable • InverterBatteryport Wiring requirements: ◦ conductorcross-sectional area: 70mm² ◦ Cable outer diameter: 15.7mm-16.7mm • The cable requirements between Battery and the busbar: ◦ LX A5.0-30, conductor cross-sectional area: 50mm² ◦ LX A5.0-10, LX U5.0-30, conductor cross-sectional area: 25mm² ◦ GW14.3-BAT-LV-G10, conductor cross-sectional area: 70mm² • Cable requirements between Battery and Battery: ◦ LX A5.0-30, conductorcross-sectional area: 50mm² ◦ LX A5.0-10, LX A5.4-20, LX U5.0-30, conductor cross-sectional area: 25mm² ◦ GW14.3-BAT-LV-G10, conductorcross-sectional area: 70mm²	• Self-supply • LX U5.0-30: Available for purchase from GoodWe • LX A5.0-30, LX A5.0-10: Accessory Acquisition (Optional) • GW14.3-BAT-LV-G10: Some machines, Battery DC cable, are shipped with Battery accessories.

No.	cable	Recommended Specifications	Acquisition method
5	AC line	• AC input/output cable (BACKUP/GRID) ◦ conductorcross-sectional area: 16mm² or 4AWG ◦ multi-core Outdoor copper cable outer diameter: 23.6mm-24.8mm ◦ single core Outdoor copper cable outer diameter: 9.5mm-9.9mm • Generator power cable (GEN): ◦ conductorcross-sectional area: 10mm² or 6AWG ◦ Outdoor copper cable outer diameter: 20mm-21mm ◦ single core Outdoor copper cableouter diameter: 8.3mm-8.7mm	Self-supply
6	Smart Meter power cable	• outdoor copper cable • conductorcross-sectional area:1mm²	Self-supply

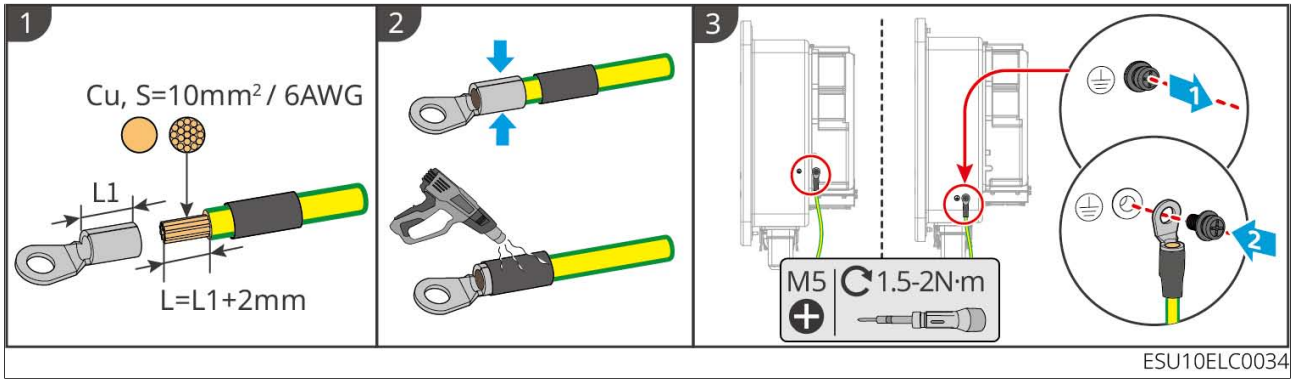
No.	cable	Recommended Specifications	Acquisition method
7	Battery Communication cable	Communication between the combiner box and Battery, as well as between Battery, requires the use of CAT 5E or higher standard shielded network cable and RJ45 shielded RJ45 connector.	• Self-supply • LX A5.0-10, LX A5.0-30: Accessory Acquisition (Optional) • GW14.3-BAT-LV-G10: ◦ Inverter and Battery Communication cable: Partial standard-equipped ◦ Battery Communication cable: Self-provided, cable length ≤2m
8	Electric Meter RS485Communication cable	• Shielded Twisted Pair (STP) • conductorcross-sectional area: 0.2mm²-0.4mm²	Self-supply
9	Parallel operation	CAT 5E and above standard shielded network cables and RJ45 shielded RJ45 connector	Self-supply
10	remote shutdown Pass/NS Protection	• Copper-core twisted pair • conductorcross-sectional area: 0.2mm²-0.4mm²	Self-supply

5.4 Connecting the PE cable

⚠WARNING

- The Protection grounding of the chassis enclosure cannot replace the PE cable of the AC output port. When wiring, ensure that the PE cable at both locations is reliably connected.
- For multiple devices, ensure equipotential bonding of all device chassis enclosures, such as Protection Grounding point.
- To improve the corrosion resistance of terminal, it is recommended to apply silica gel or paint for protection on the exterior of Grounding terminal after completing the connection of Installation to PE cable.
- When Installation equipment, the Installation PE cable must be performed first; when dismantle equipment, the dismantle PE cable must be performed last.

Inverter

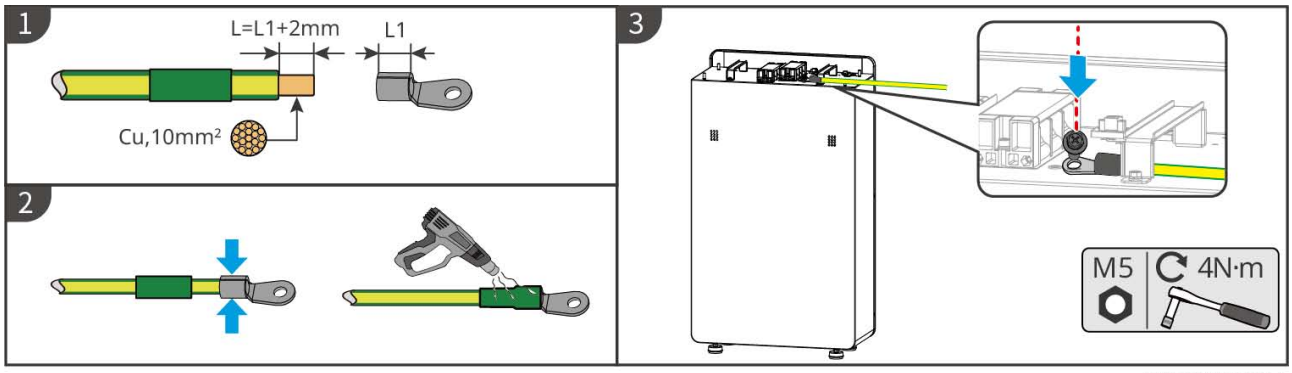


ESU10ELC0034

Battery

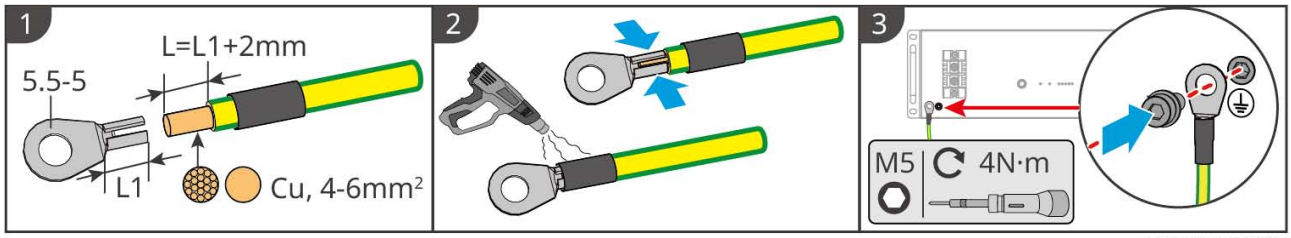
GW14.3-BAT-LV-G10

- GW14.3-BAT-LV-G10: If the grounding cable is shipped with the Battery accessory, please use the shipped cable without performing crimp.



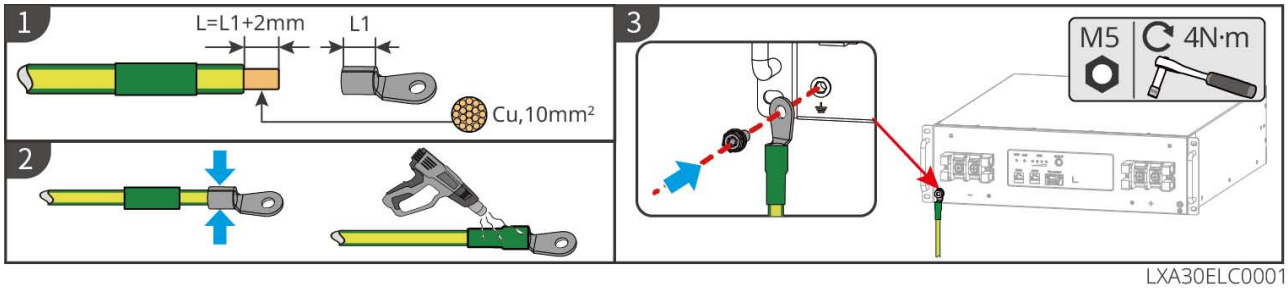
LXA10ELC0014

LX A5.0-10



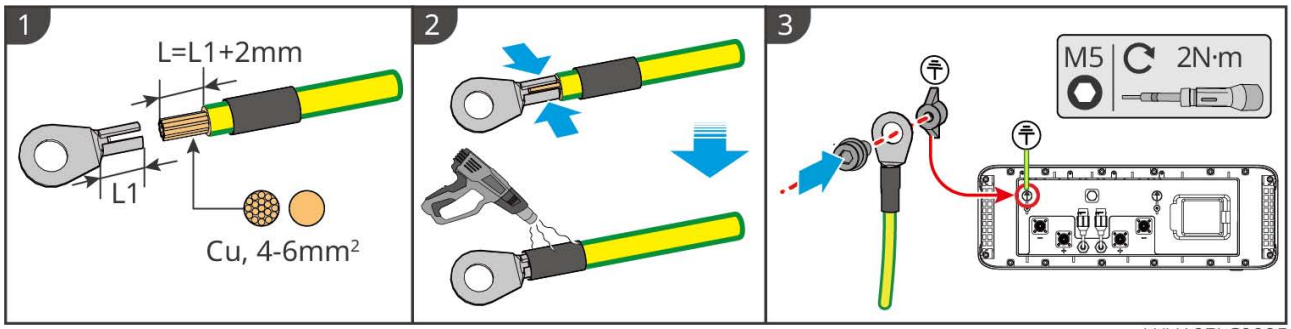
LXA10ELC0003

LX A5.0-30



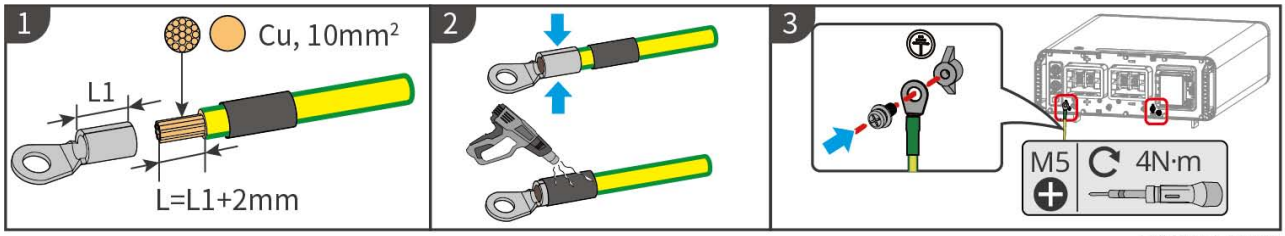
LXA30ELC0001

LX U5.4-L、LX U5.4-20



LXU10ELC0005

LX U5.0-30



LXU30ELC0001

5.5 Connecting the PV Cable

DANGER

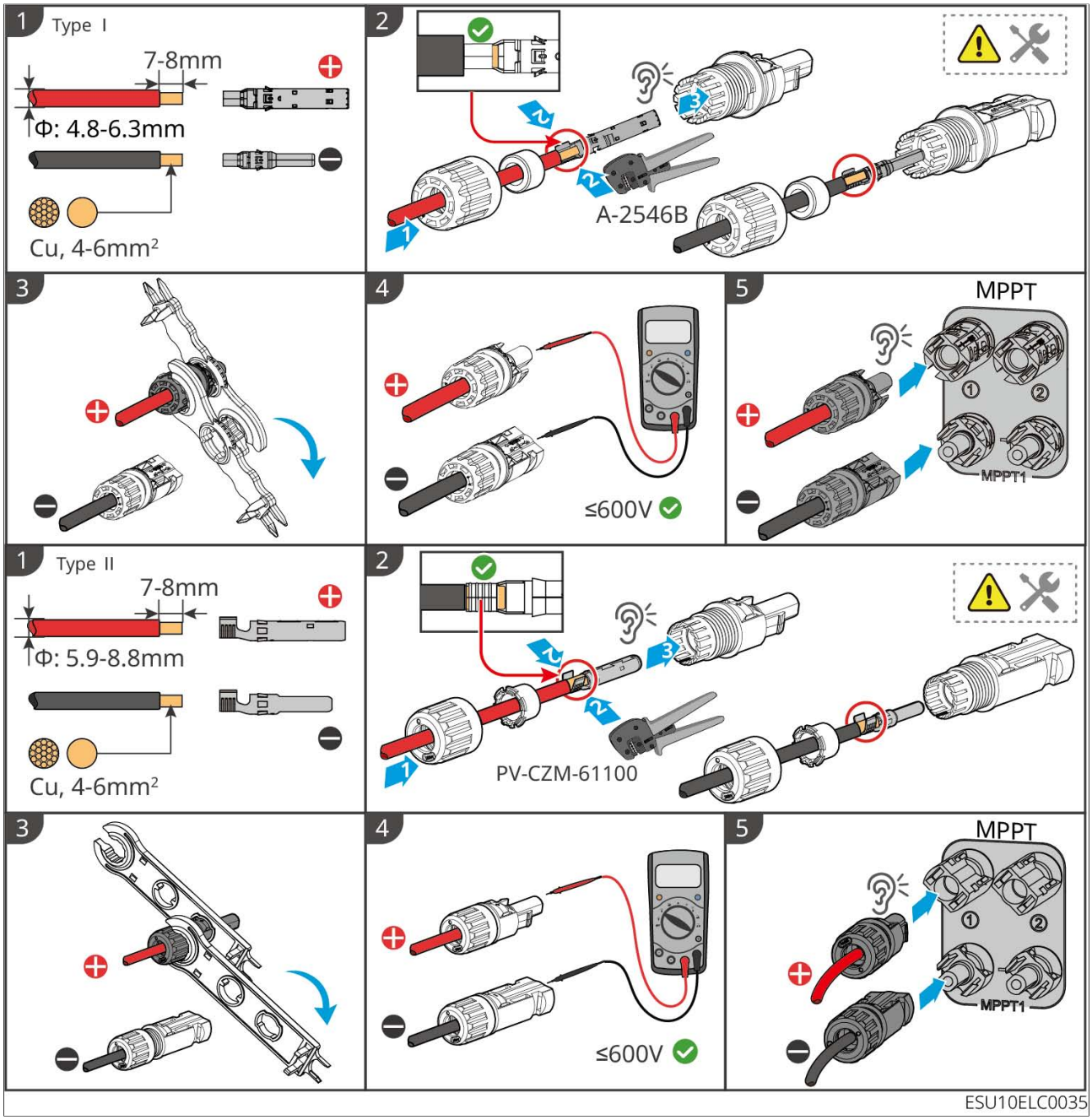
- Do not connect the same PV string to multiple Inverters, as this may cause damage to the Inverter.
- Before connecting the PV string to the Inverter, please confirm the following information. Otherwise, it may cause permanent damage to the Inverter and, in severe cases, lead to fire, resulting in personal injury and property loss.
  1. Please ensure that both Max. Short Circuit Current per MPPT and Max.Input Voltage are within the allowable range of Inverter.
  2. Please ensure that the positive terminal of the PV string is connected to PV+ of Inverter, and the negative terminal of the PV string is connected to PV- of Inverter.

⚠WARNING

- The PV string output does not support grounding. Before connecting the PV string to Inverter, ensure that the the minimum insulation resistance of the PV string meets the minimum insulation resistance requirement (R=Max.Input Voltage/30mA).
- After connecting the DC cable, ensure the cable connection is secure and free from looseness.
- Use a multimeter to measure the positive and negative poles of the DC cable, ensuring correct polarity without reverse connection; and confirm the voltage is within the allowable range.

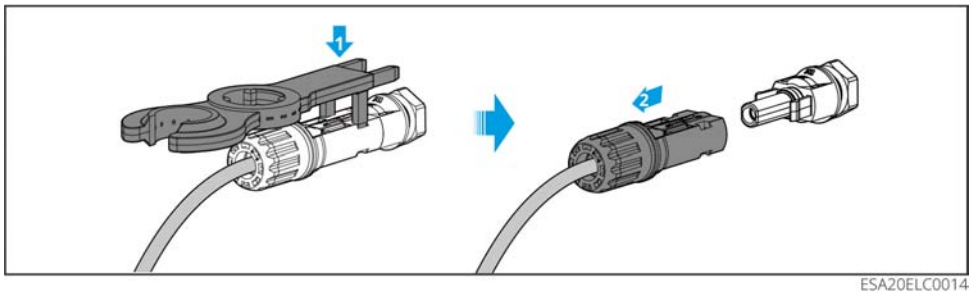
NOTICE

The two sets of PV String in each MPPT channel must adopt the same model, the same number of Battery panels, the same tilt angle, and the same azimuth angle to ensure the maximization of Efficiency.

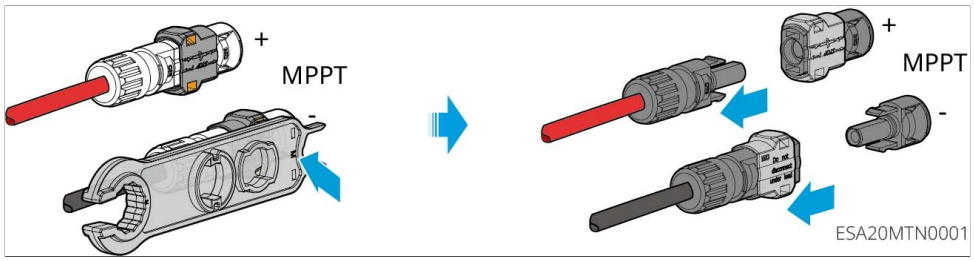


To disassemble the PV module, please follow the steps below:

Type I:



Type II:

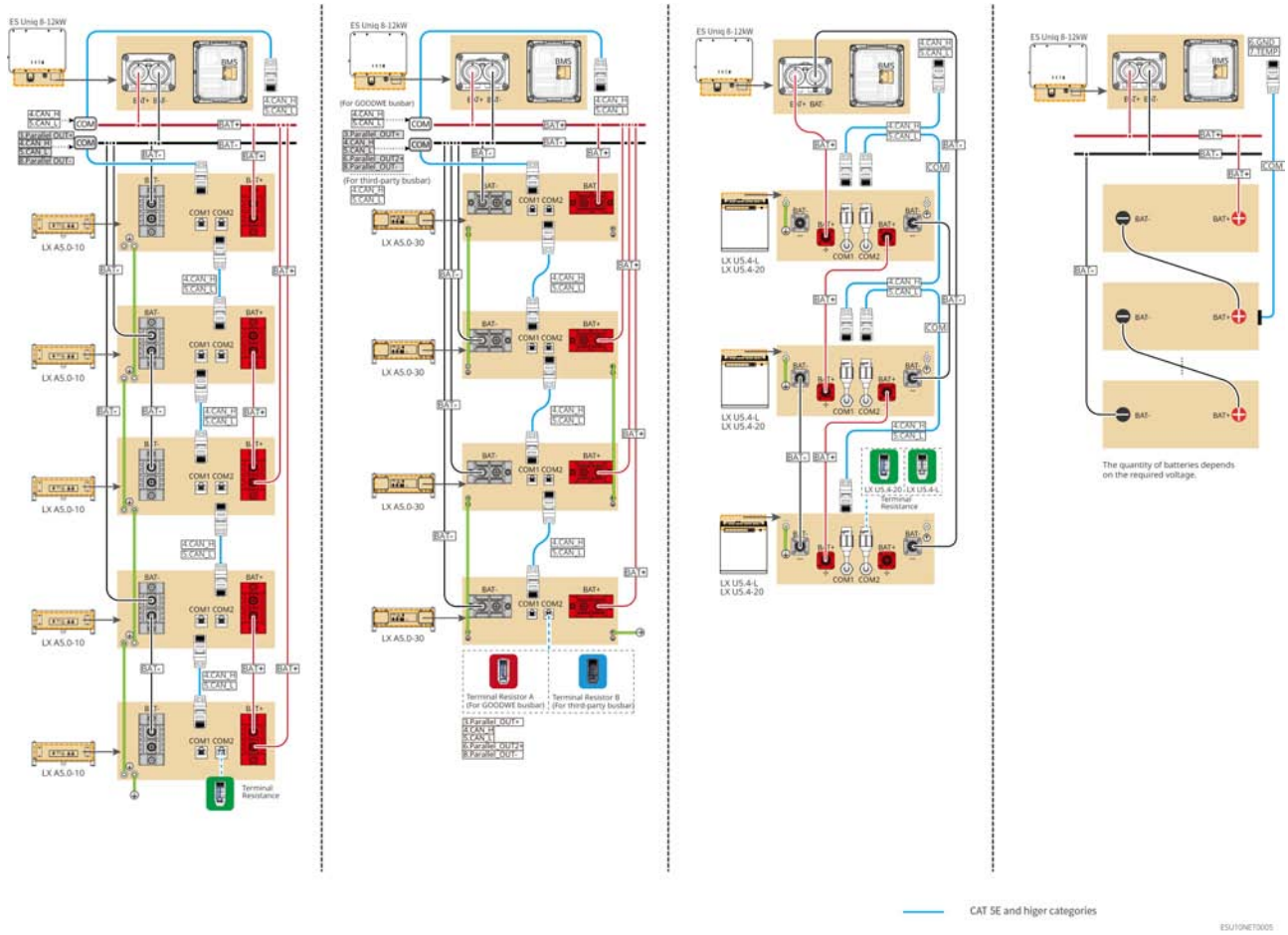


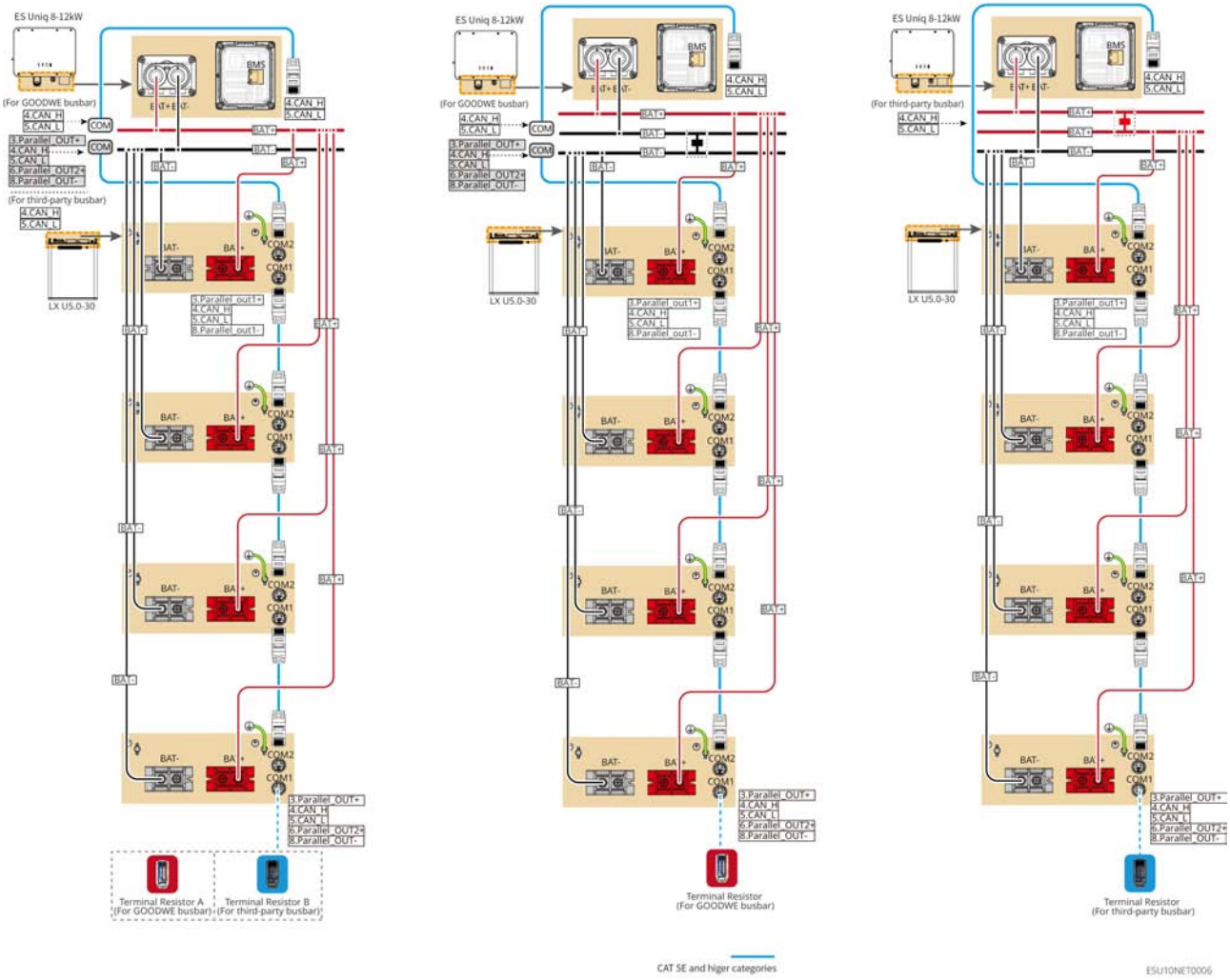
5.6 Connecting the Battery Cable

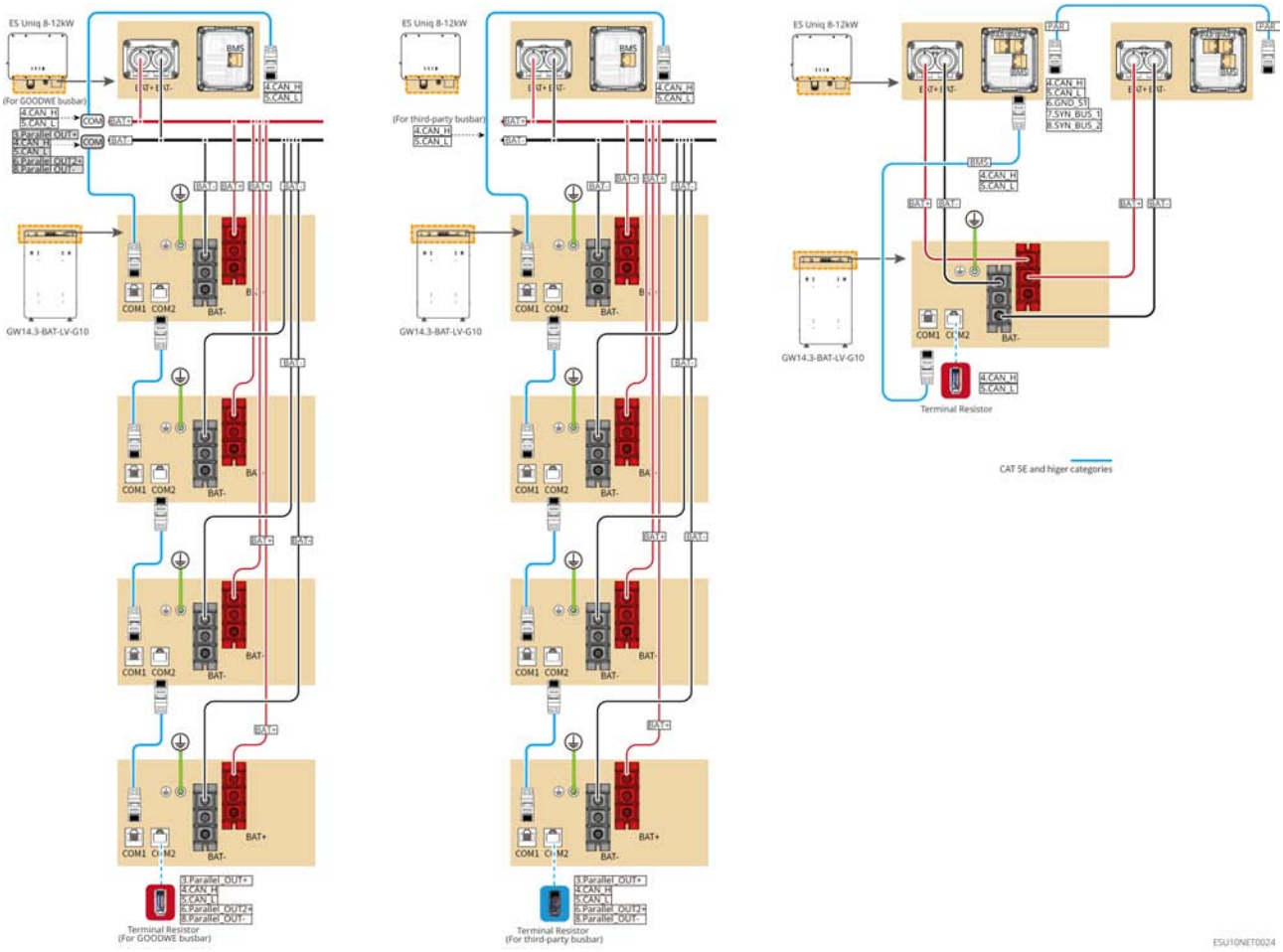
DANGER

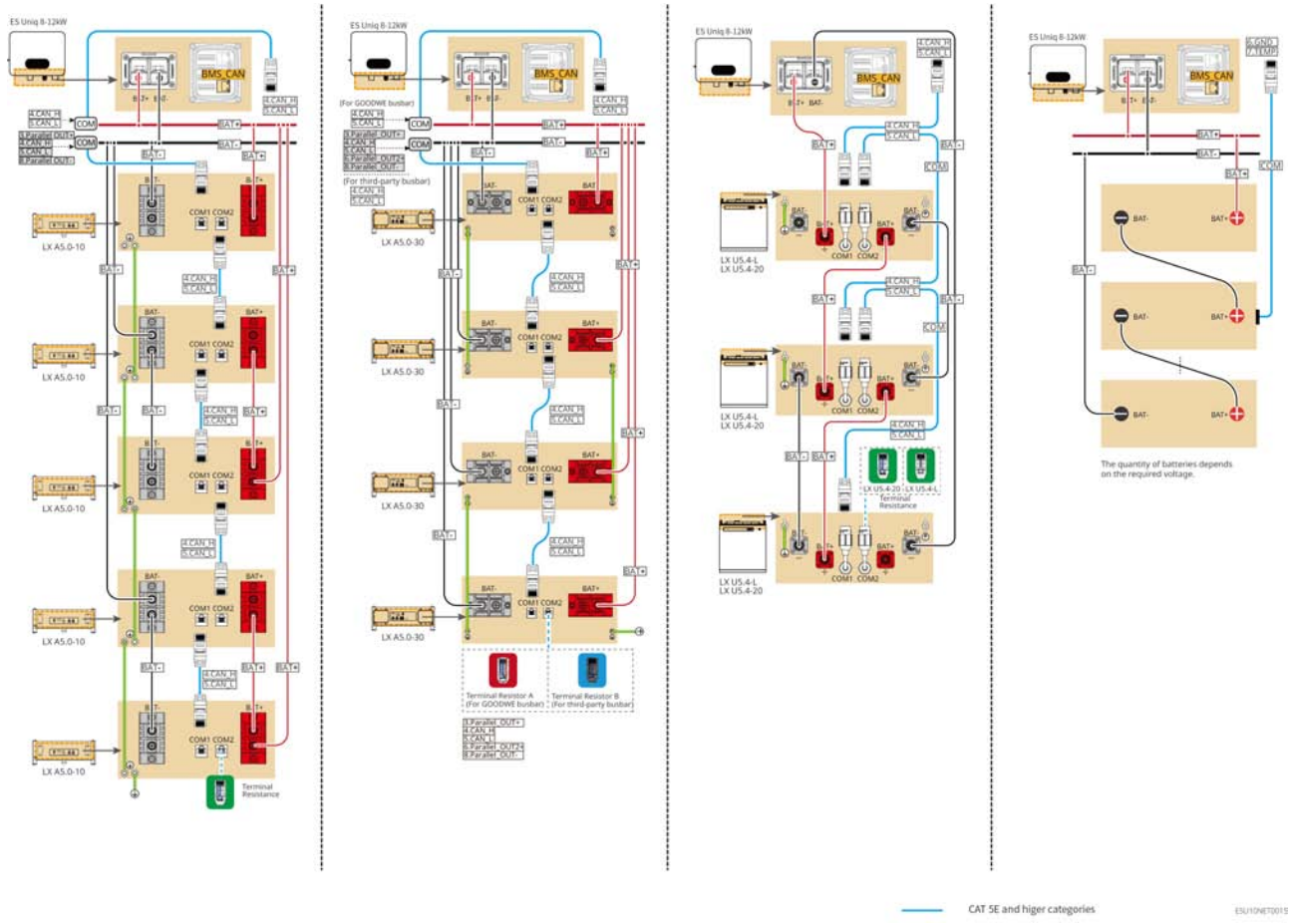
- In a single-unit system, do not connect the same Battery group to multiple Inverters, as this may cause damage to the Inverter.
- Do not connect any load between Inverter and Battery.
- When Connecting the Battery Cable, use insulated tools to prevent accidental electric shock or Battery short circuit.
- Please ensure that Batteryopen-circuit voltage is within the allowable range of Inverter.
- Between Inverter and Battery, please configure DC switch according to local laws and regulations.

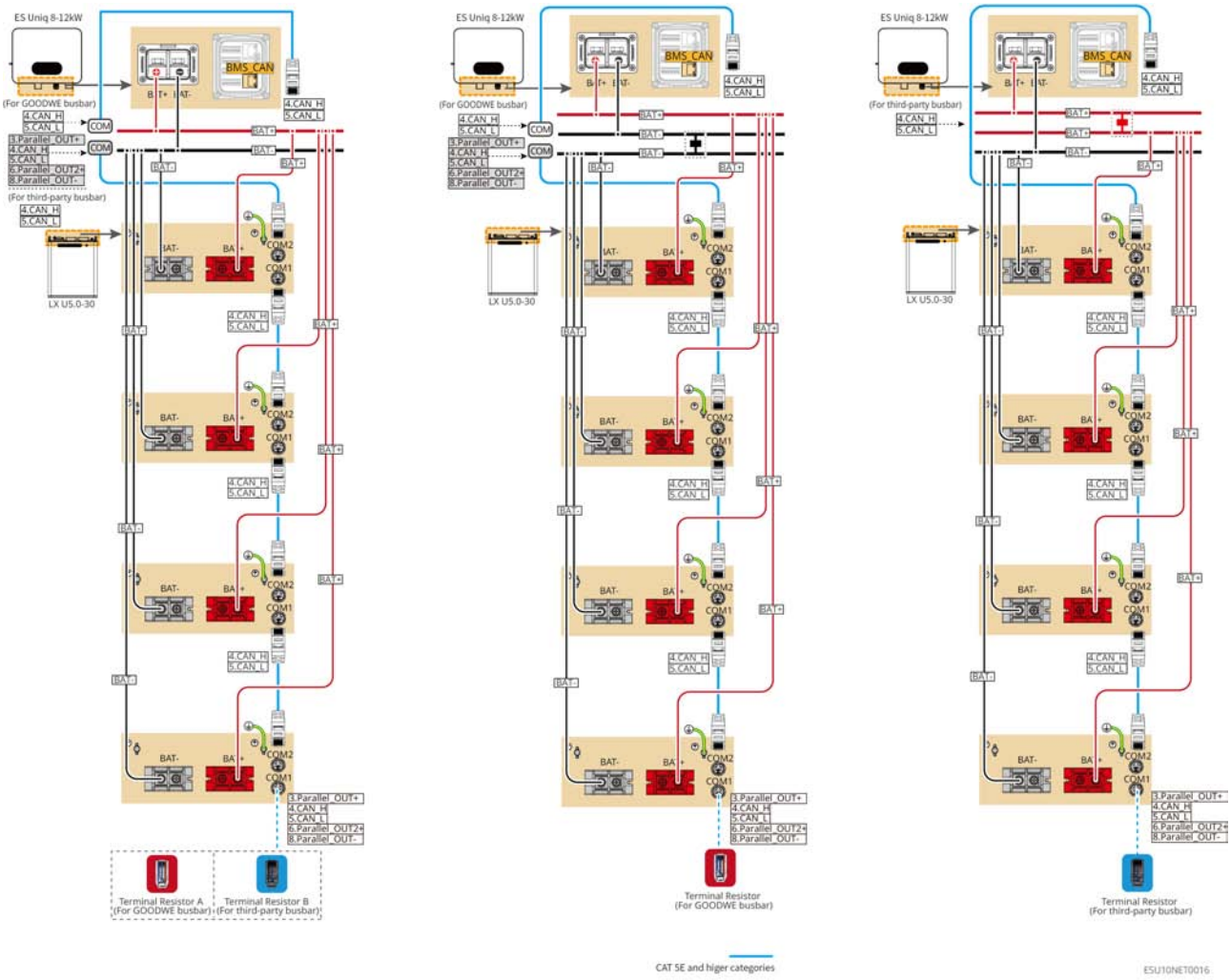
Battery system wiring diagram

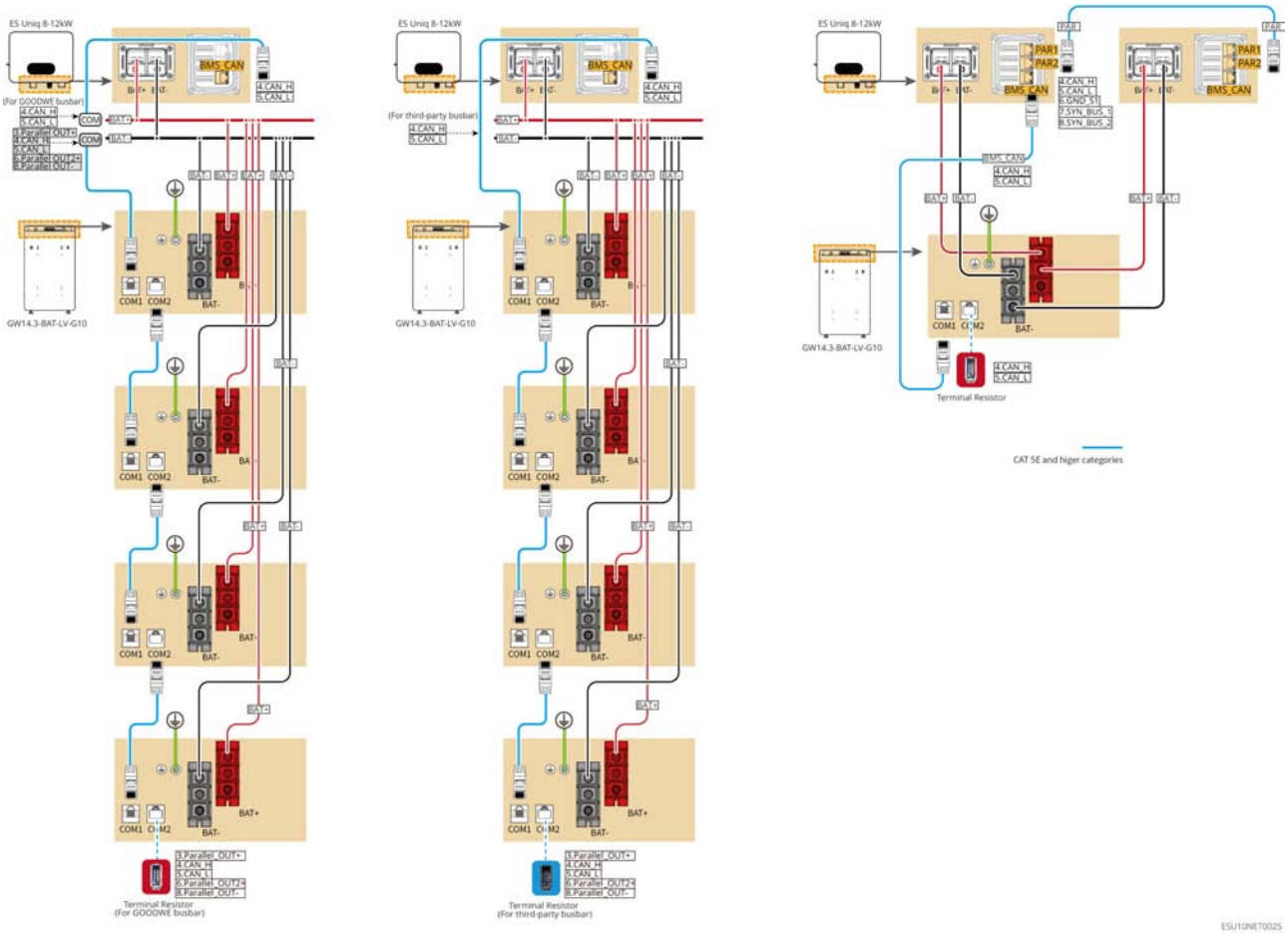

ES Uniq 8-12kW
BMS
LX A5.0-10
LX A5.0-30
(For GOODWE busbar)
(For third-party busbar)
Terminal Resistance
Terminal Resistor A (For GOODWE busbar)
Terminal Resistor B (For third-party busbar)
LX U5.4-L LX U5.4-20
LX U5.4-20 / LX U5.4-L Terminal Resistance
The quantity of batteries depends on the required voltage.
CAT 5E and higer categories
ESU10NET0005


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


ES Uniq 8-12kW
(For GOODWE busbar)
(For third-party busbar)
GW14.3-BAT-LV-G10
Terminal Resistor
(For GOODWE busbar)
(For third-party busbar)
CAT 5E and higer categories
ESU10NET0024

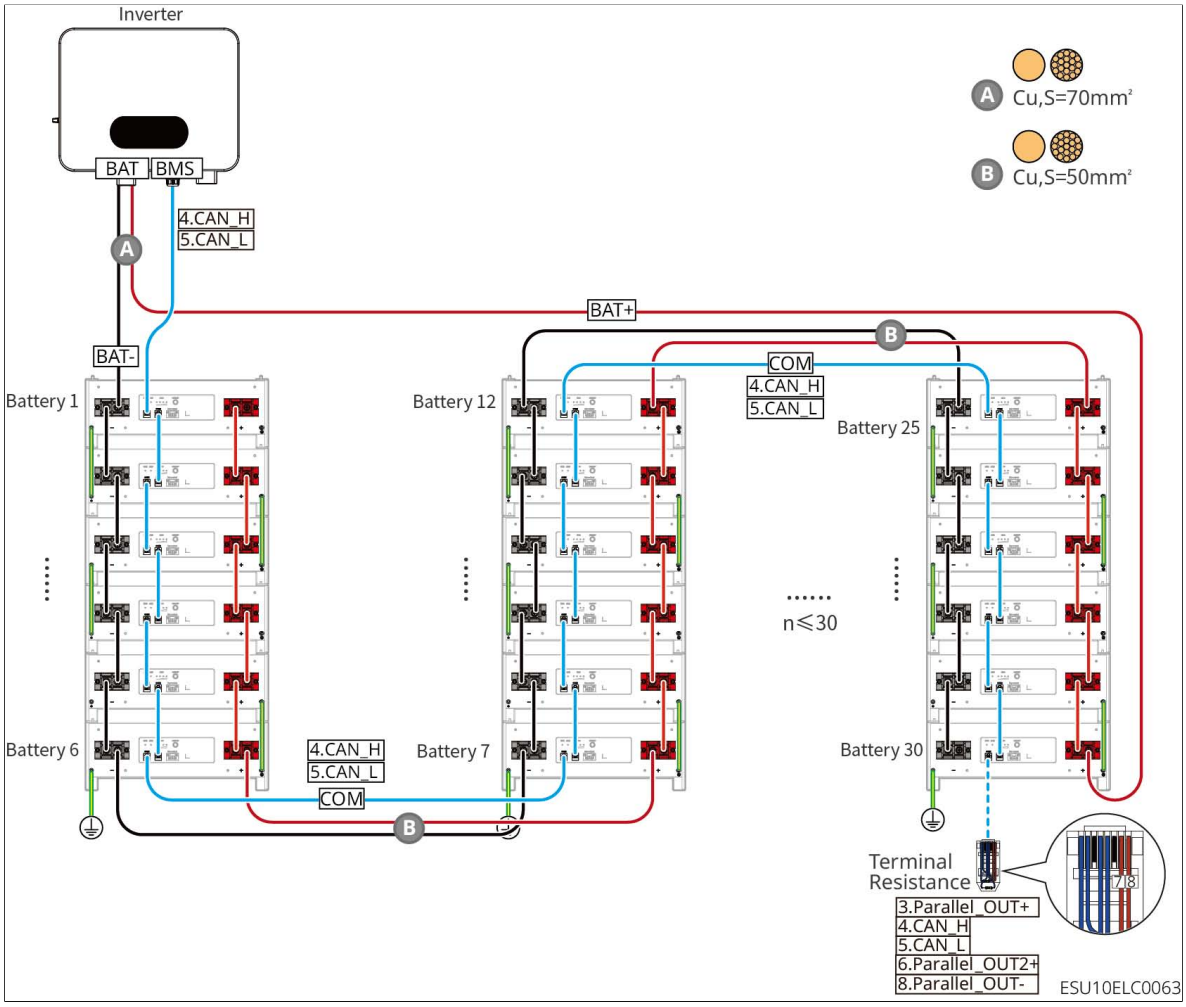

ES Uniq 8-12kW
BMS_CAN
LX A5.0-10
LX A5.0-30
LX U5.4-L
LX U5.4-20
Terminal Resistance
Terminal Resistor A
(For GOODWE busbar)
Terminal Resistor B
(For third-party busbar)
The quantity of batteries depends on the required voltage.
CAT 5E and higer categories
ESUYONET0015


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



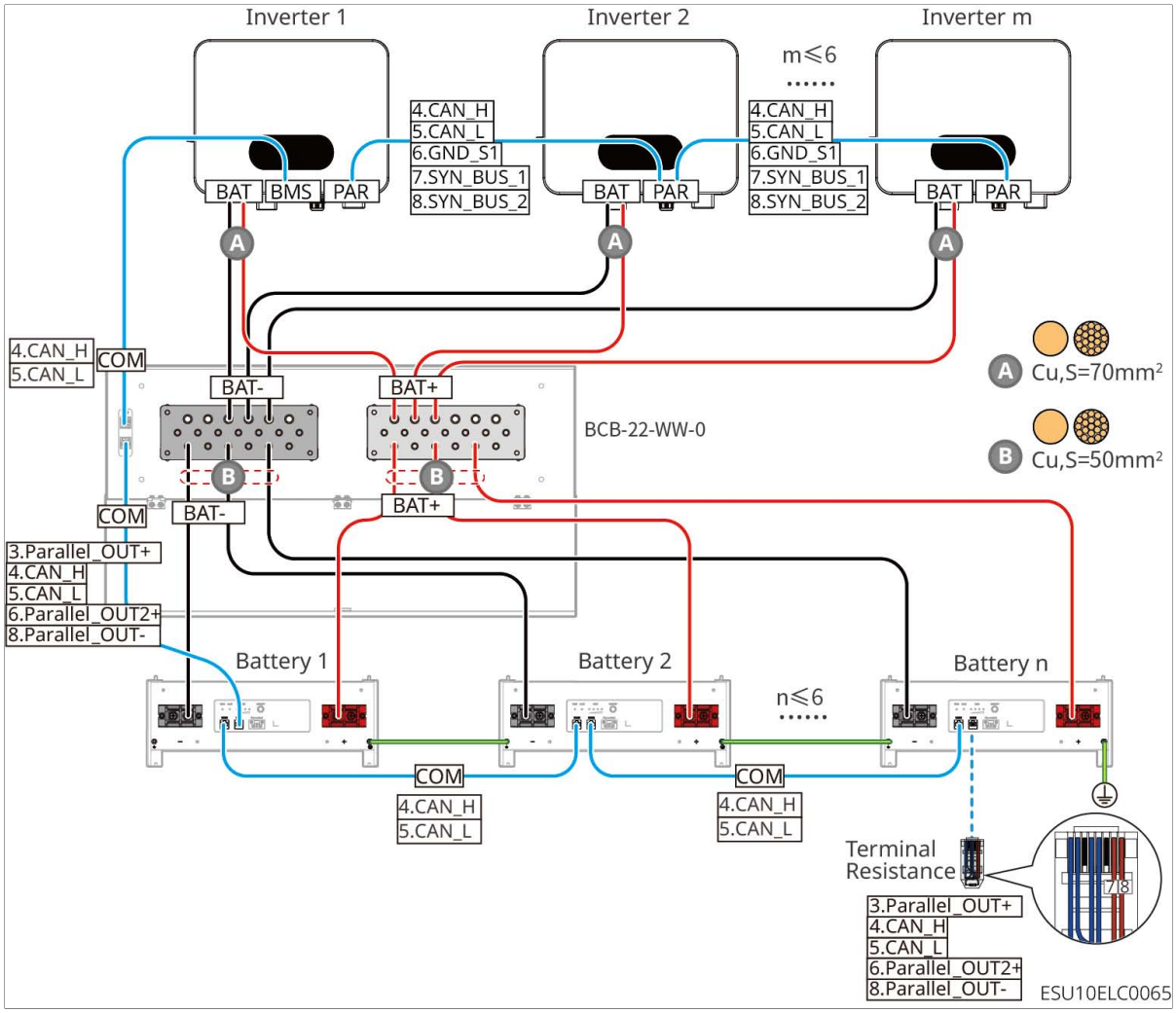
LXA5.0-30: Daisy-chain connection method

- Maximum support for 160A operation current, 8kW operation Power, maximum connection of 1 Inverter, and 30 Battery.



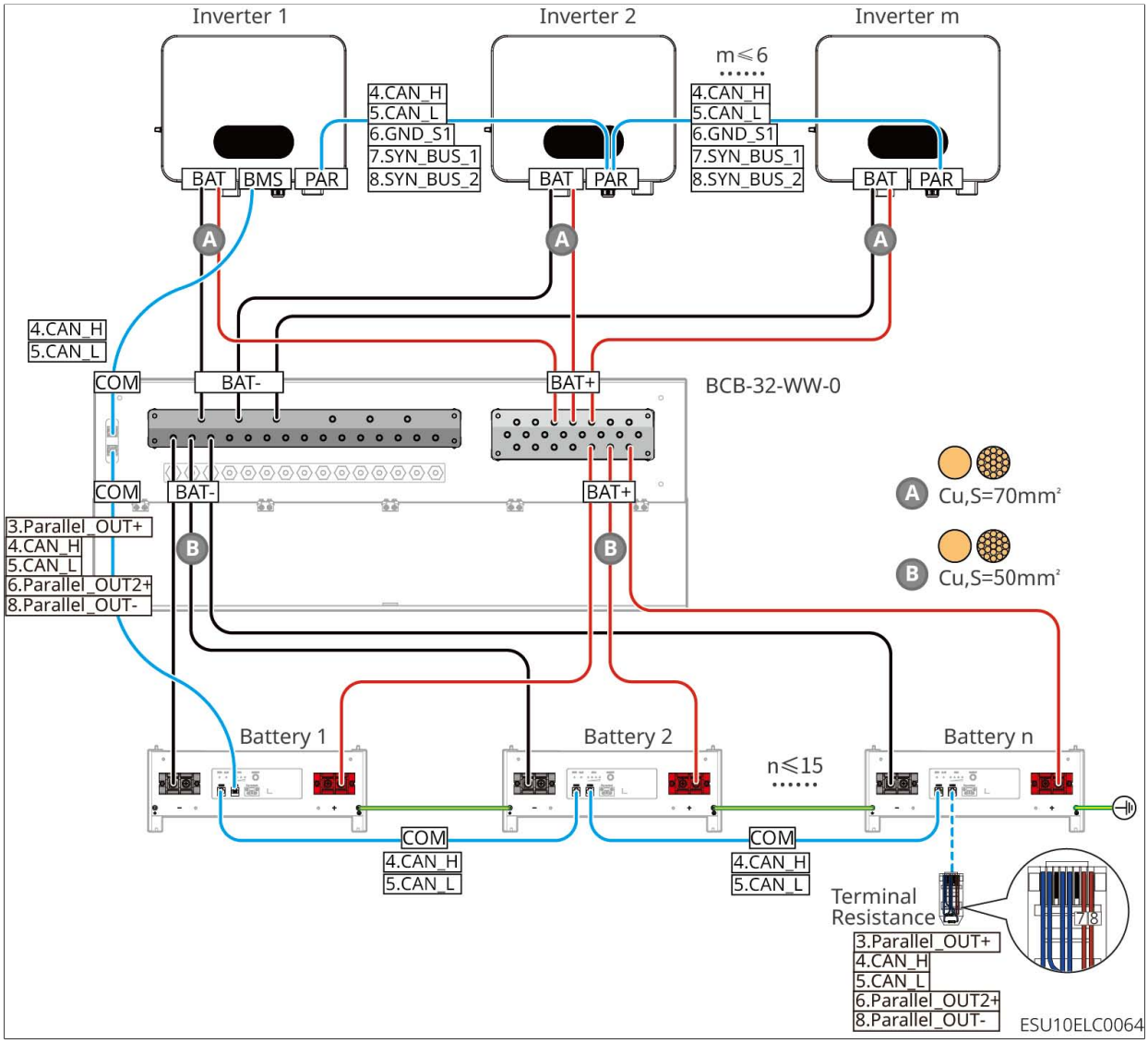
LXA5.0-30: Compatible with busbar BCB-22-WW-0 connection method

- Battery system supports a maximum working current of 720A current, working power of 36kW Power, and can connect up to 6 Inverter and 6 Battery.



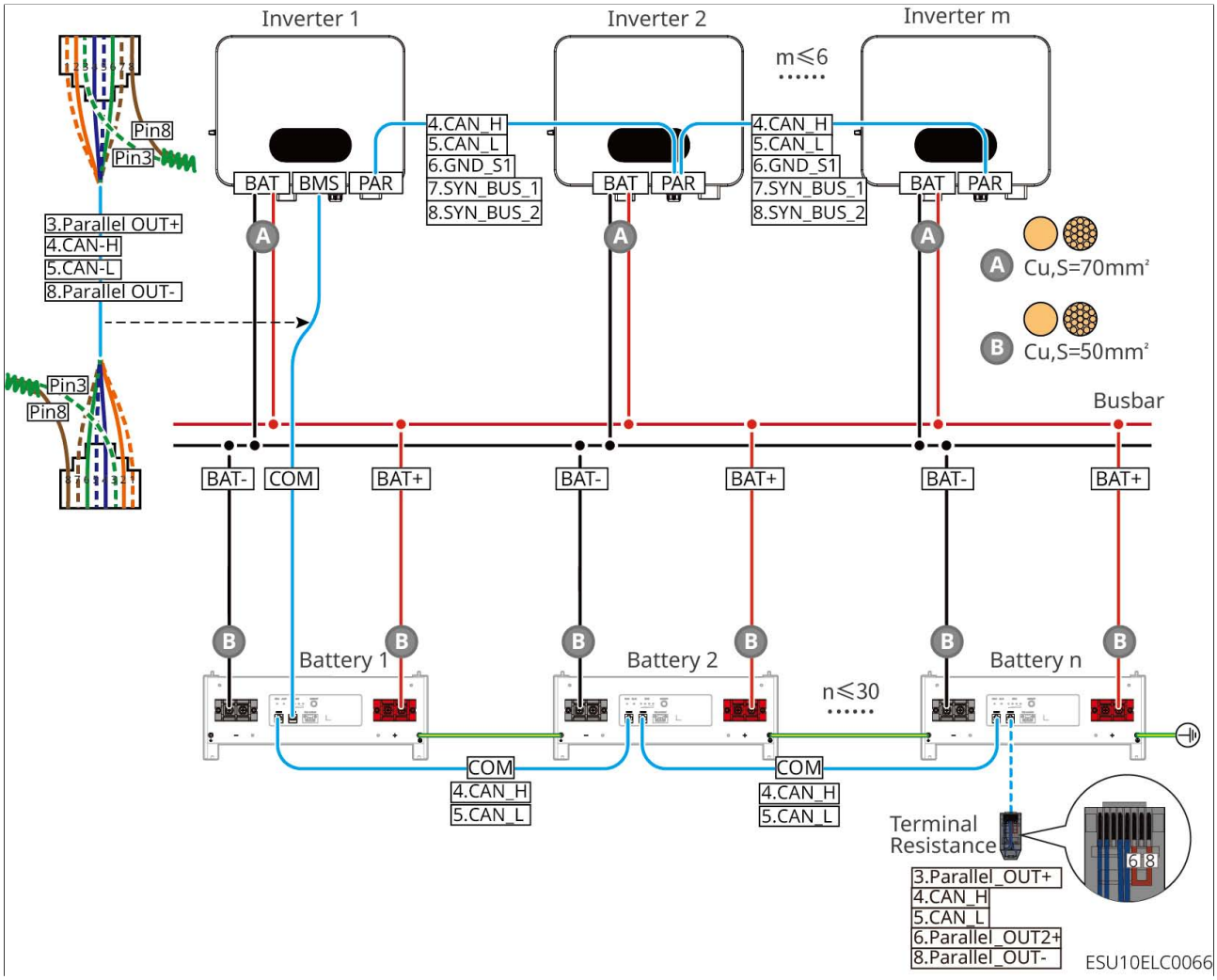
LXA5.0-30: Compatible with busbar BCB-32-WW-0 connection method

- Battery system supports a maximum working current of 720A current, a working power of 36kW Power, with a maximum connection capacity of 6 Inverter units and 15 Battery units.



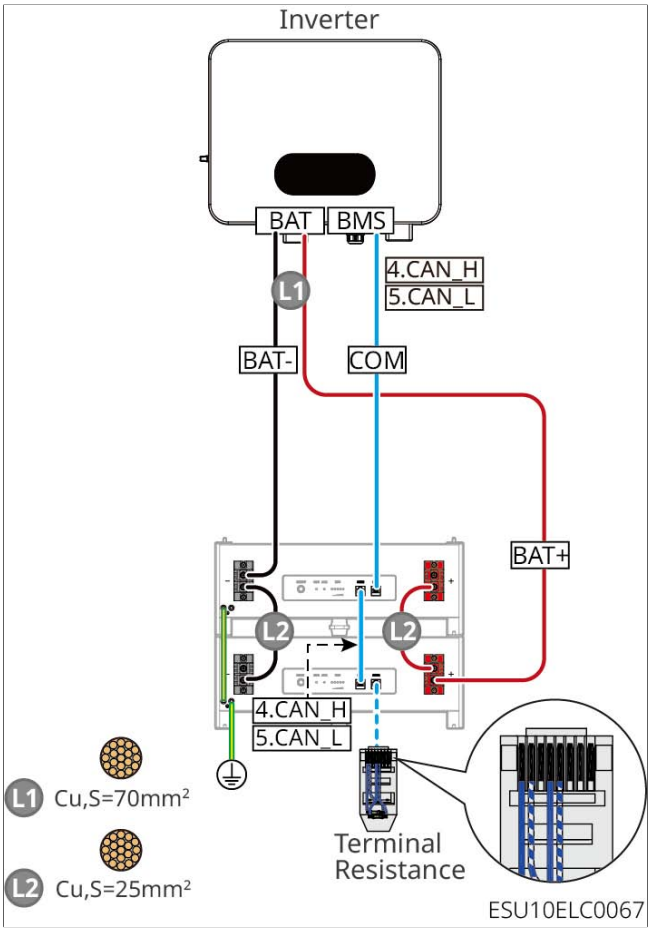
LXA5.0-30: Compatible with third-party busbar connection method

- The rated Charge current of a single Battery is 60A; the rated Discharge current is 100A; the maximum Charge current is 90A; the maximum Discharge current is 150A. A single system supports a maximum of 30 units in parallel.



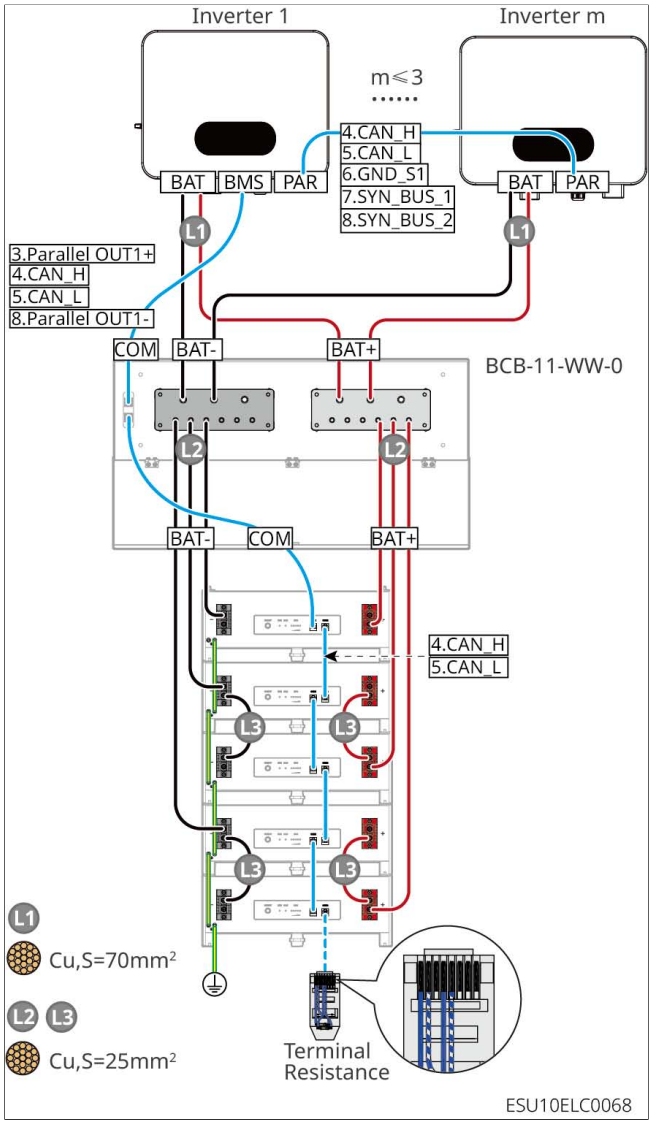
LX A5.0-10: Daisy-chain connection method

- The rated current of a single Battery The nominal charging and discharging current is 60A.
- Maximum support for 120A operation current, 6kW operation Power, maximum connection of 1 Inverter, 2 Battery



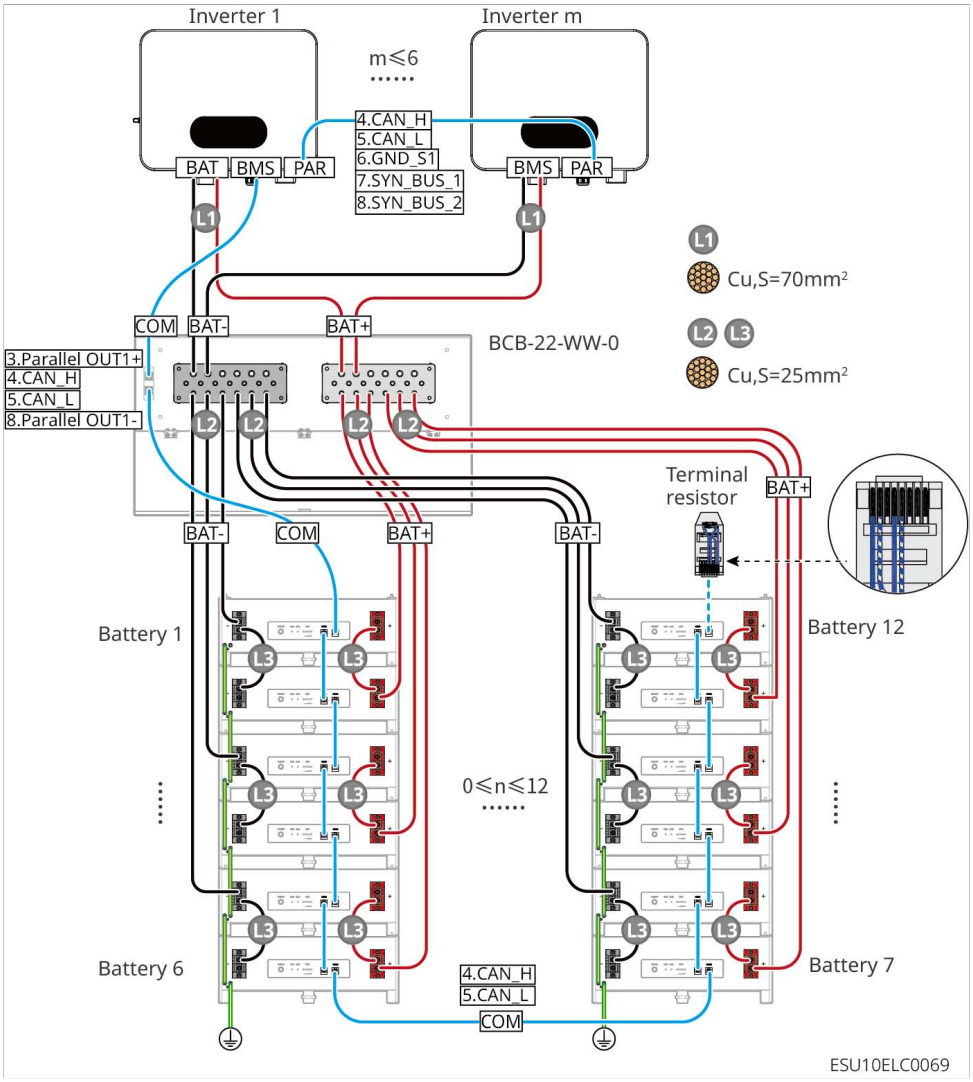
LX A5.0-10: Battery in conjunction with busbar BCB-11-WW-0 connection method

- The rated current of a single Battery The nominal charging and discharging current is 60A.
- Battery system Maximum support Battery system up to 360A operation current, 18kW operation Power, maximum connection of 3 Inverter units, 6 Battery units



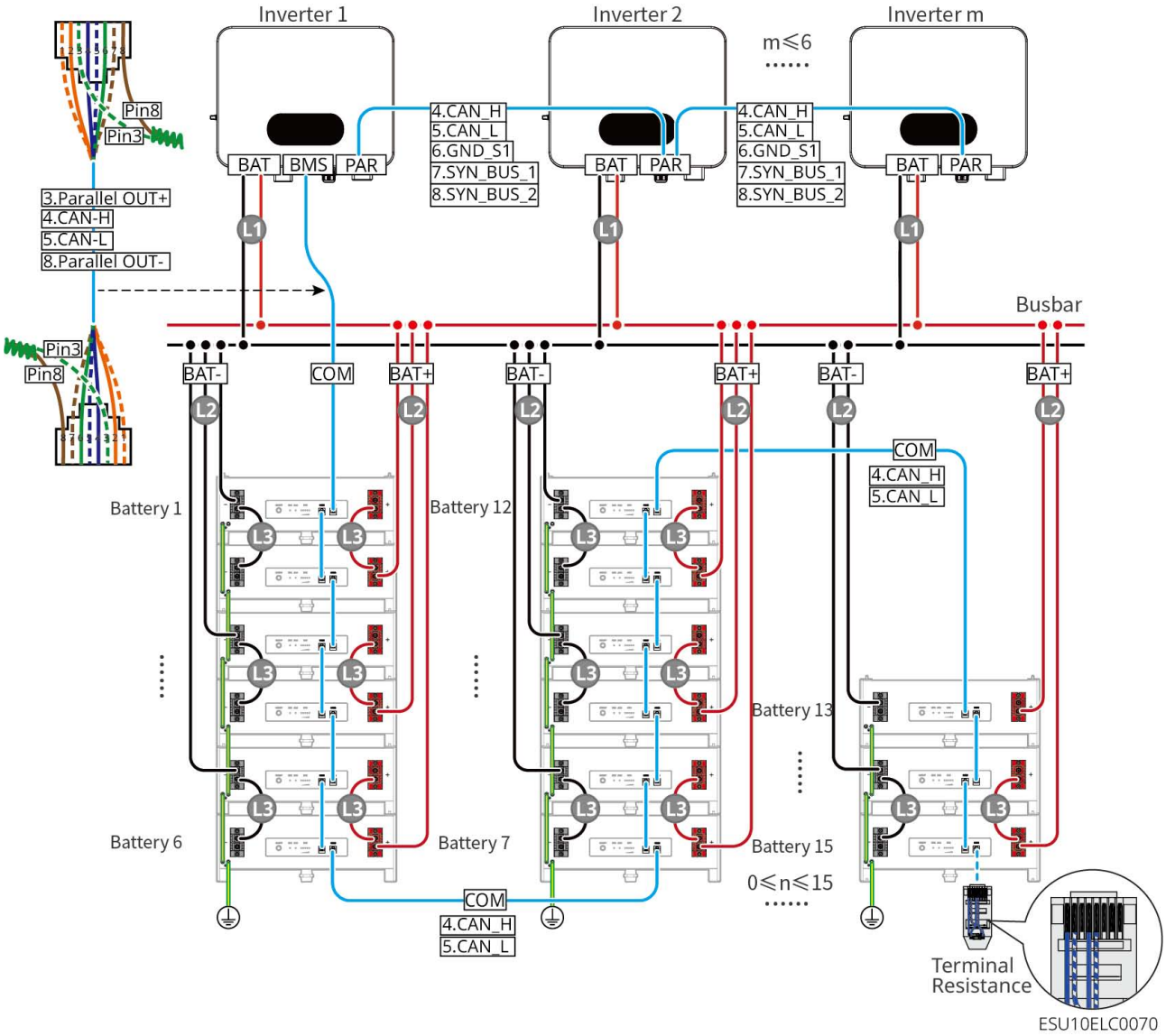
LX A5.0-10: Battery compatible with busbar BCB-22-WW-0 connection method

- The single Battery The nominal charging and discharging current is 60A.
- Battery system supports a maximum working current of 720A current, a working power of 36kW Power, and can connect up to 6 Inverter units and 12 Battery units.

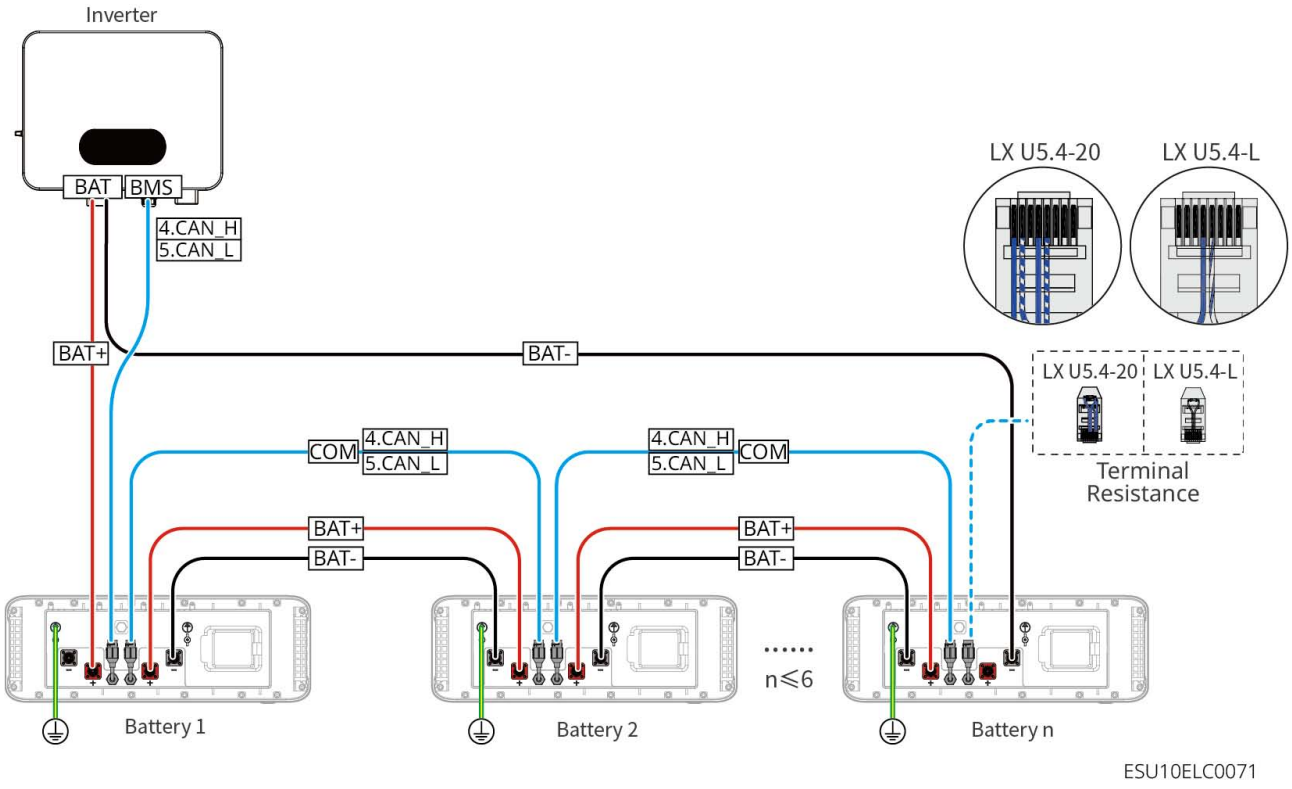


LX A5.0-10: Battery in conjunction with third-party busbar connection method

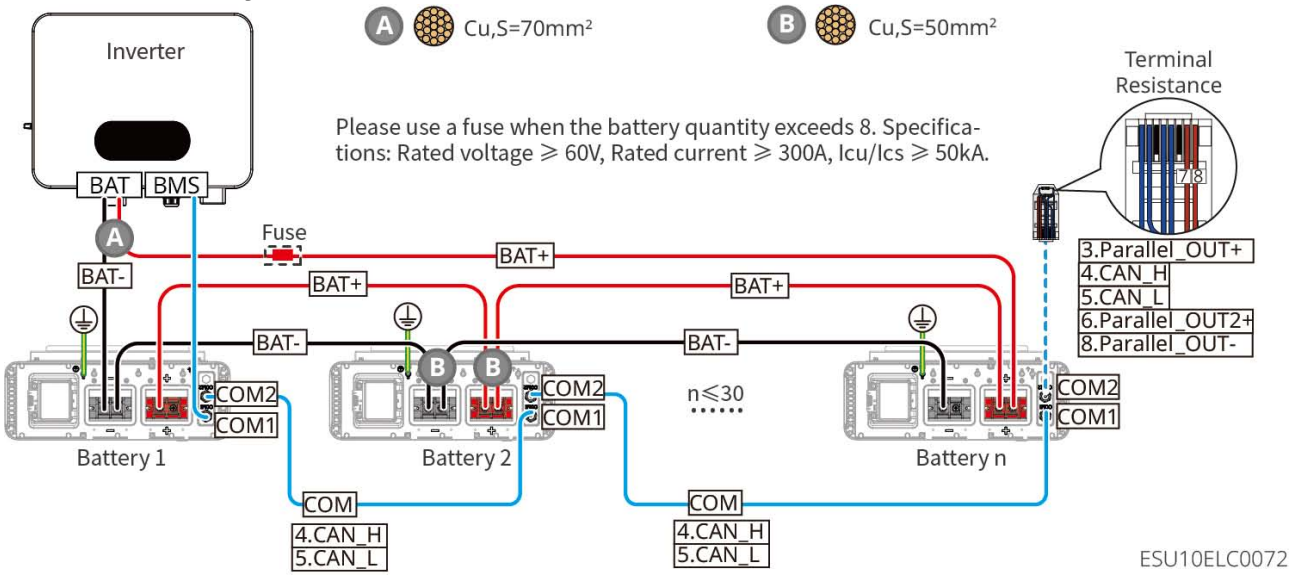
- The rated current of a single Battery The nominal charging and discharging current is 60A.
- The complexity of the parallel system increases with the number of Inverter parallel units. When the number of Inverter parallel units in the system is ≥6, please contact the after-sales service center to confirm the Inverter Installation application environment to ensure stable system operation.
- Maximum support for 900A operation current, 45kW operation Power, and 15 units Battery



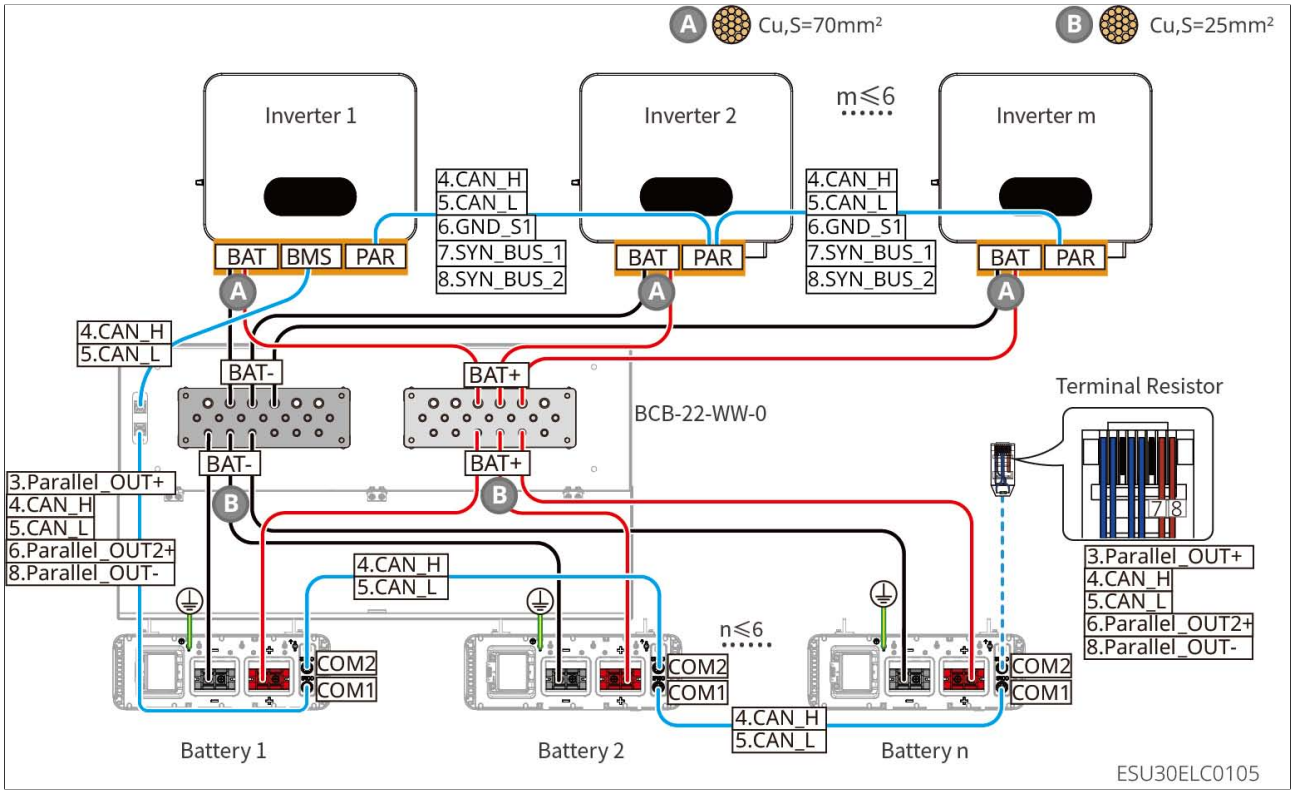
LX U5.4-L, LX U5.4-20: Daisy-chain connection method



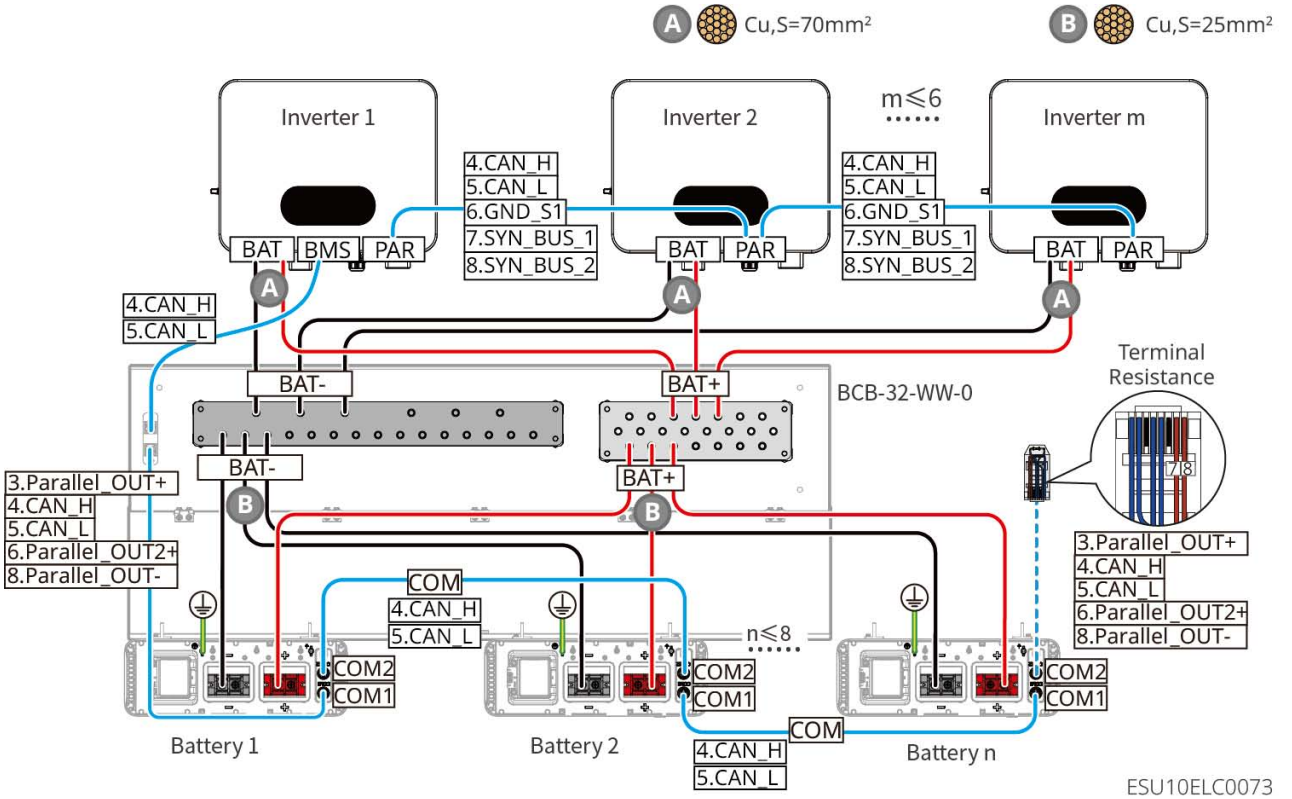
LX U5.0-30: Daisy-chain connection method



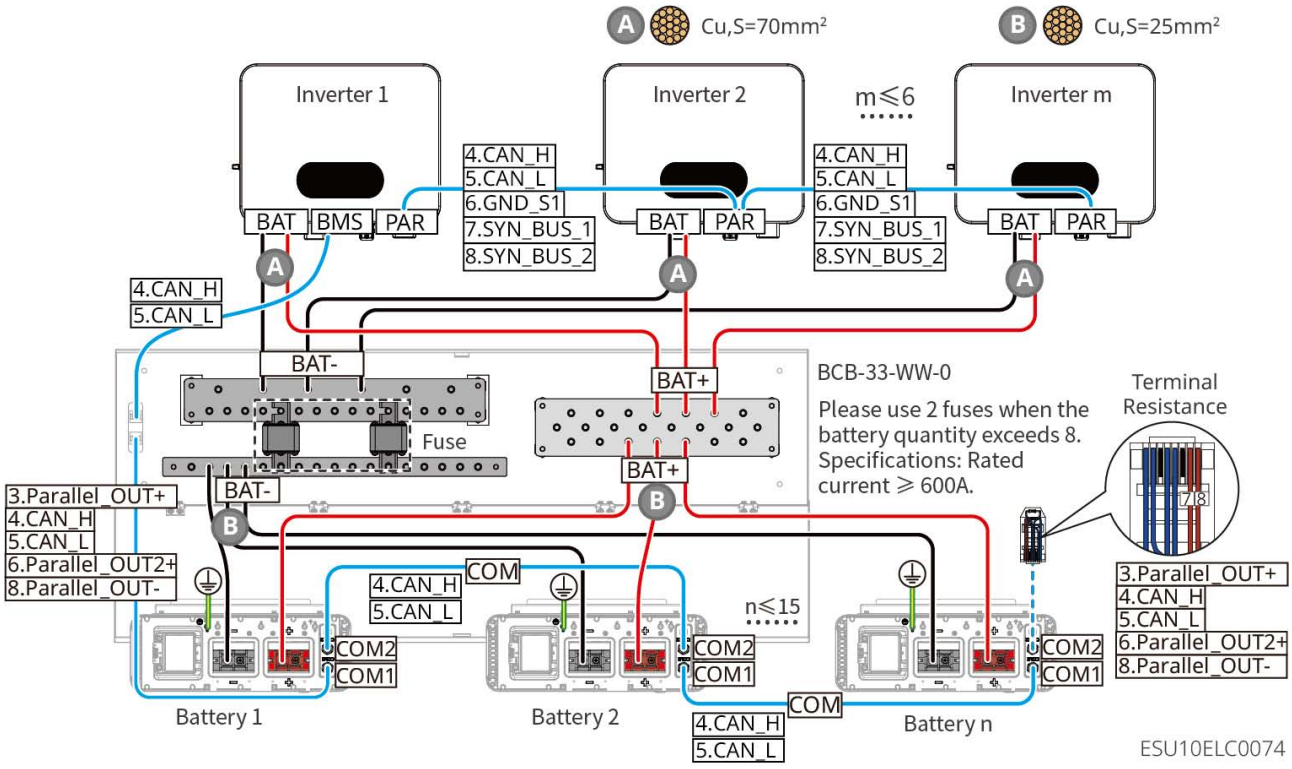
LX U5.0-30: When the number of Battery is ≤6, Battery is paired with the BCB-22-WW-0 connection method.



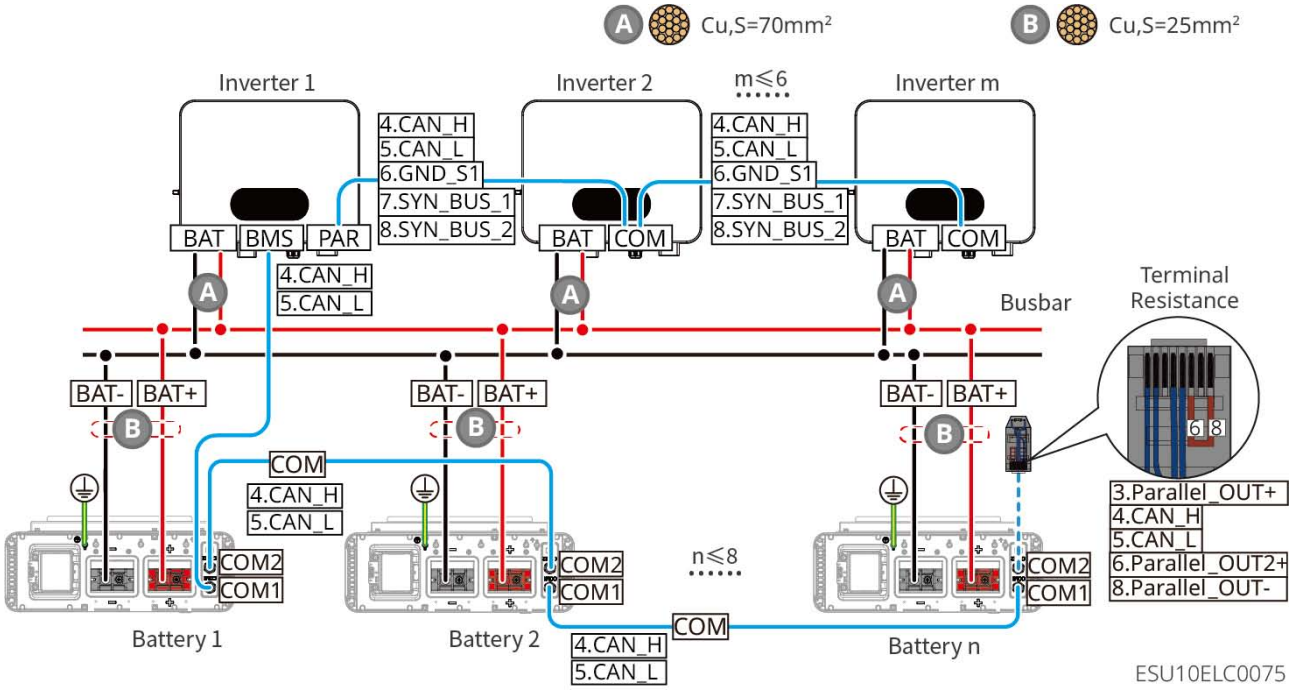
LX U5.0-30: When the number of Battery is ≤8, Battery is paired with BCB-32-WW-0 connection method.



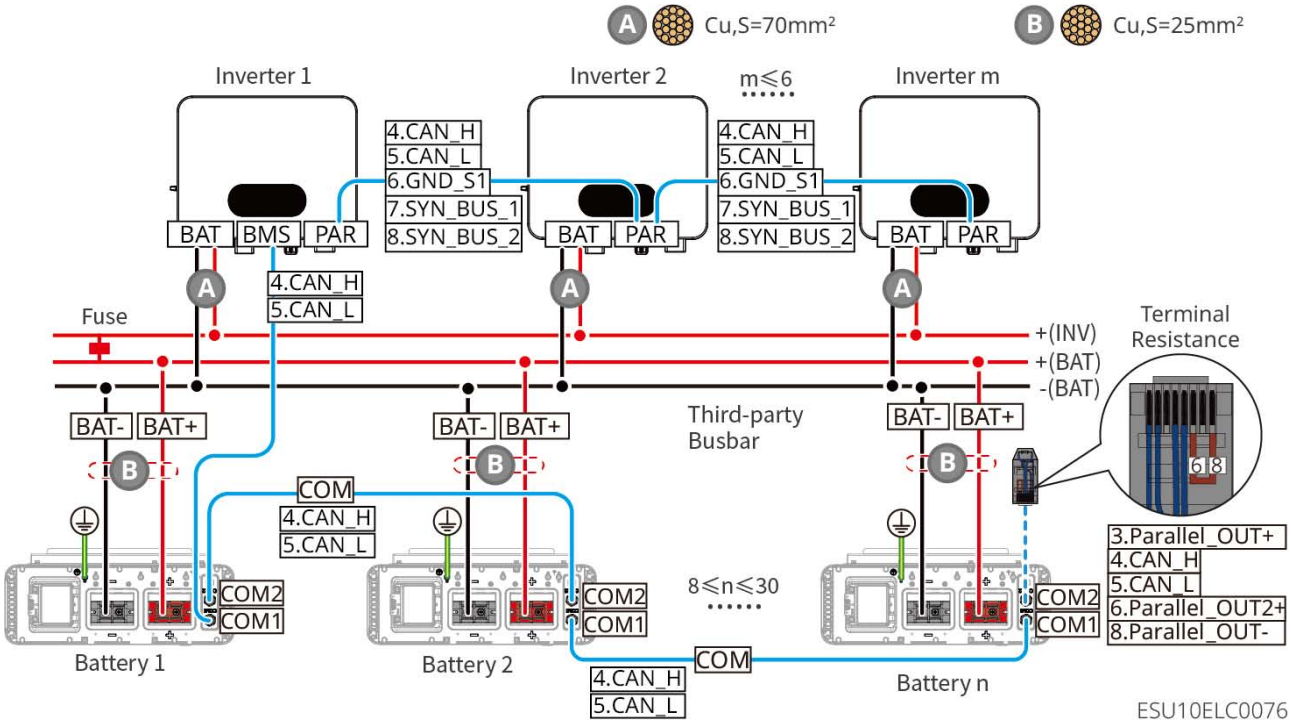
LX U5.0-30: When the number of Battery is ≤15, Battery is connected using the busbar BCB-33-WW-0.



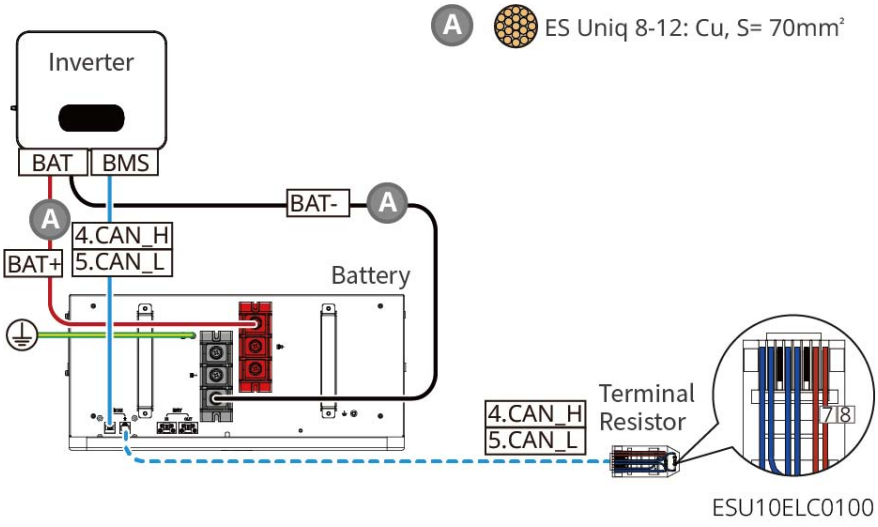
LX U5.0-30: When the number of Battery is ≤8, Battery adopts a third-party combiner box connection method.



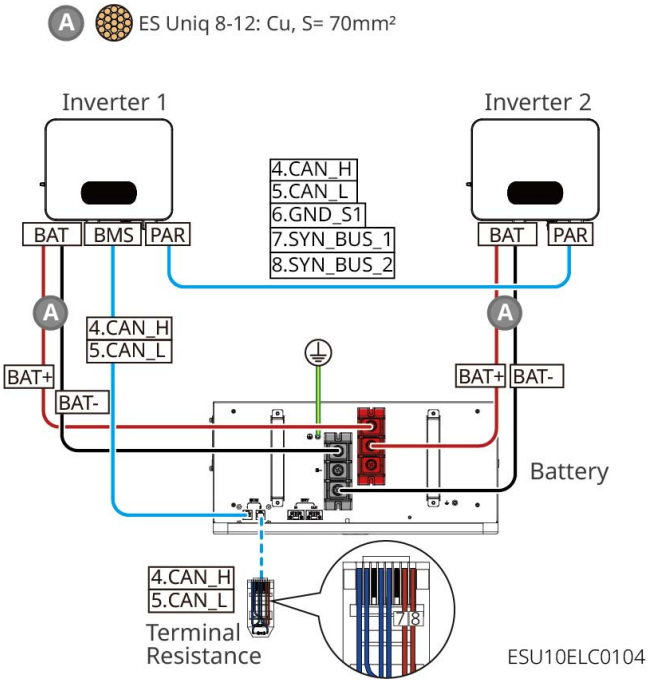
LX U5.0-30: When the number of Battery exceeds 8 units, Battery shall be connected via a third-party busbar.



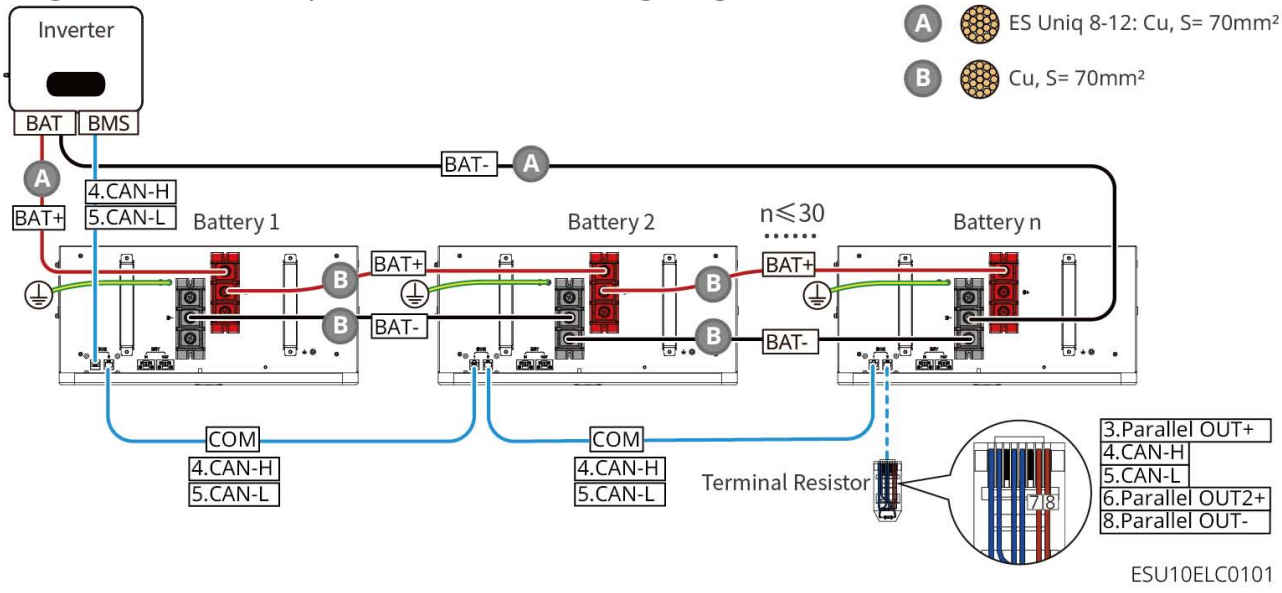
GW14.3-BAT-LV-G10: When Battery is directly connected to a single 1-channel output Inverter, the wiring diagram is as follows:



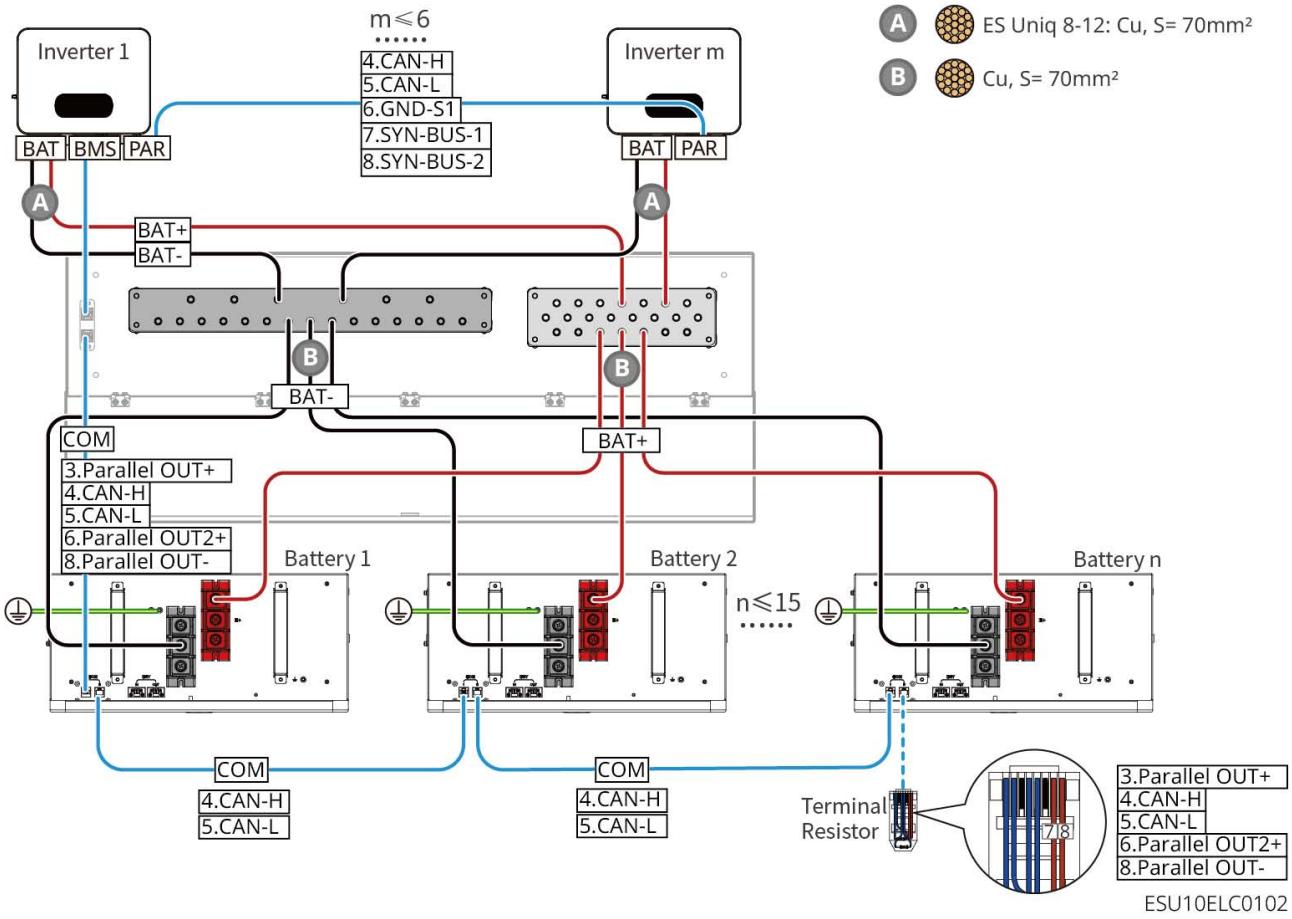
GW14.3-BAT-LV-G10: When Battery is directly connected to two single-output Inverter units, the wiring diagram is as follows:



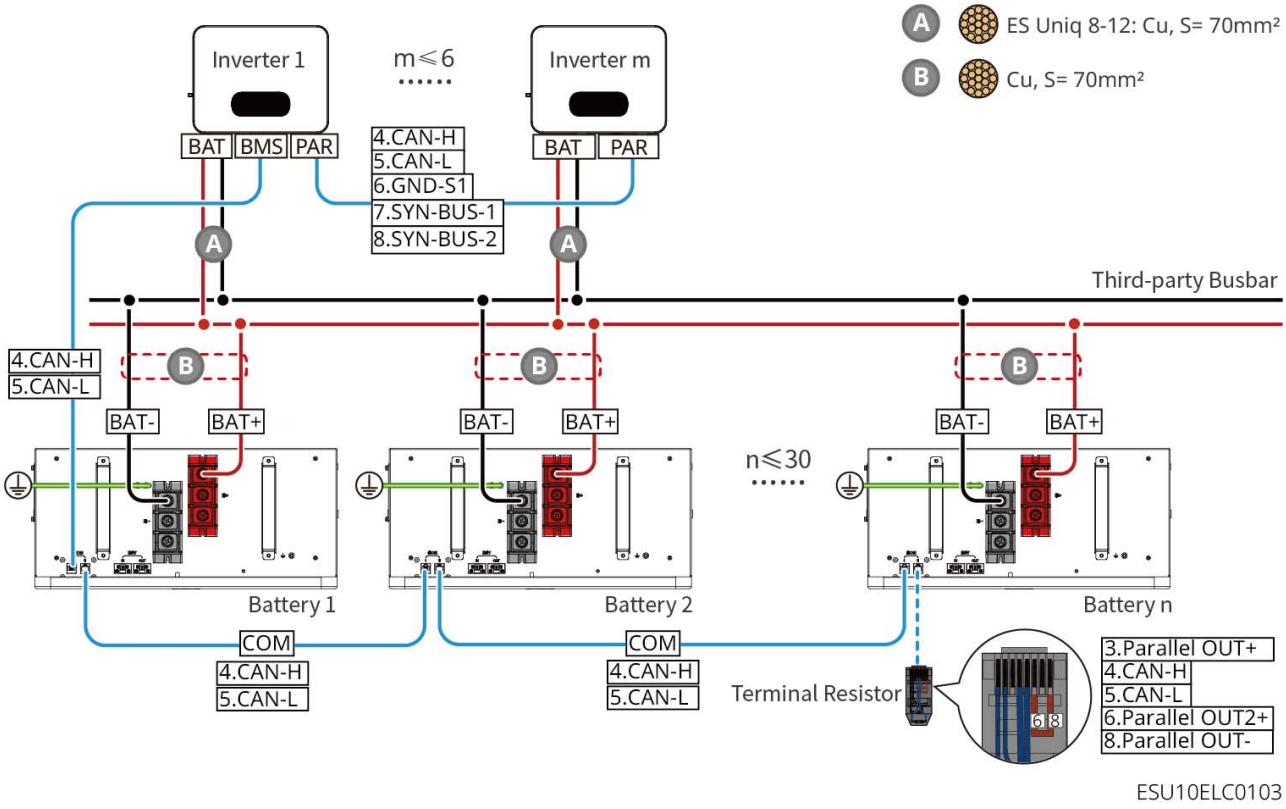
GW14.3-BAT-LV-G10: When Battery is connected in a daisy-chain configuration with a single 1-channel output Inverter, the wiring diagram is as follows:



GW14.3-BAT-LV-G10: When the number of Battery is less than or equal to 15, and a busbar (BCB-32-WW-0, current ≤720A) is used to connect one output Inverter, the wiring diagram is as follows:



GW14.3-BAT-LV-G10: When the quantity of Battery is less than or equal to 30, and a third-party busbar is used to connect one output Inverter, the wiring diagram is as follows:



LX A5.0-30 Communication Port Definition

PIN	COM1	COM2	Description
1	-	-	Reserved
2	-	-	
3	Parallel OUT+	Parallel OUT+	Parallel operation Communication Port
4	CAN_1H	CAN_1H	Connect Inverter communication or Battery and cluster Communication Port
5	CAN_1L	CAN_1L	
6	Parallel OUT2+	Parallel OUT2+	Parallel Interlock
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel operation Communication Port

LX A5.0-10Communication Port Definition

PIN	COM1	COM2	Description
1	-	-	Reserved
2	-	-	
3	Parallel OUT+	Parallel OUT+	Parallel connection Communication Port
4	CAN_1H	CAN_1H	

PIN	COM1	COM2	Description
5	CAN_1L	CAN_1L	Connect Inverter communication or Battery cluster Communication Port
6	-	-	Reserved
7	-	-	
8	Parallel OUT-	Parallel OUT-	Parallel operation

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

PIN	COM1	COM2	Description
1	RS485A	RS485A	RS485 communication
2	RS485B-	RS485B-	
3	CAN_H	CAN_H	Parallel operation
4	CAN_L	CAN_L	Connect Inverter communication or Battery and cluster 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
4	CAN_H	CAN_H	Connect Inverter communication or Battery and cluster Communication Port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel operation
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel operation

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

PIN	COM1	COM2	Description

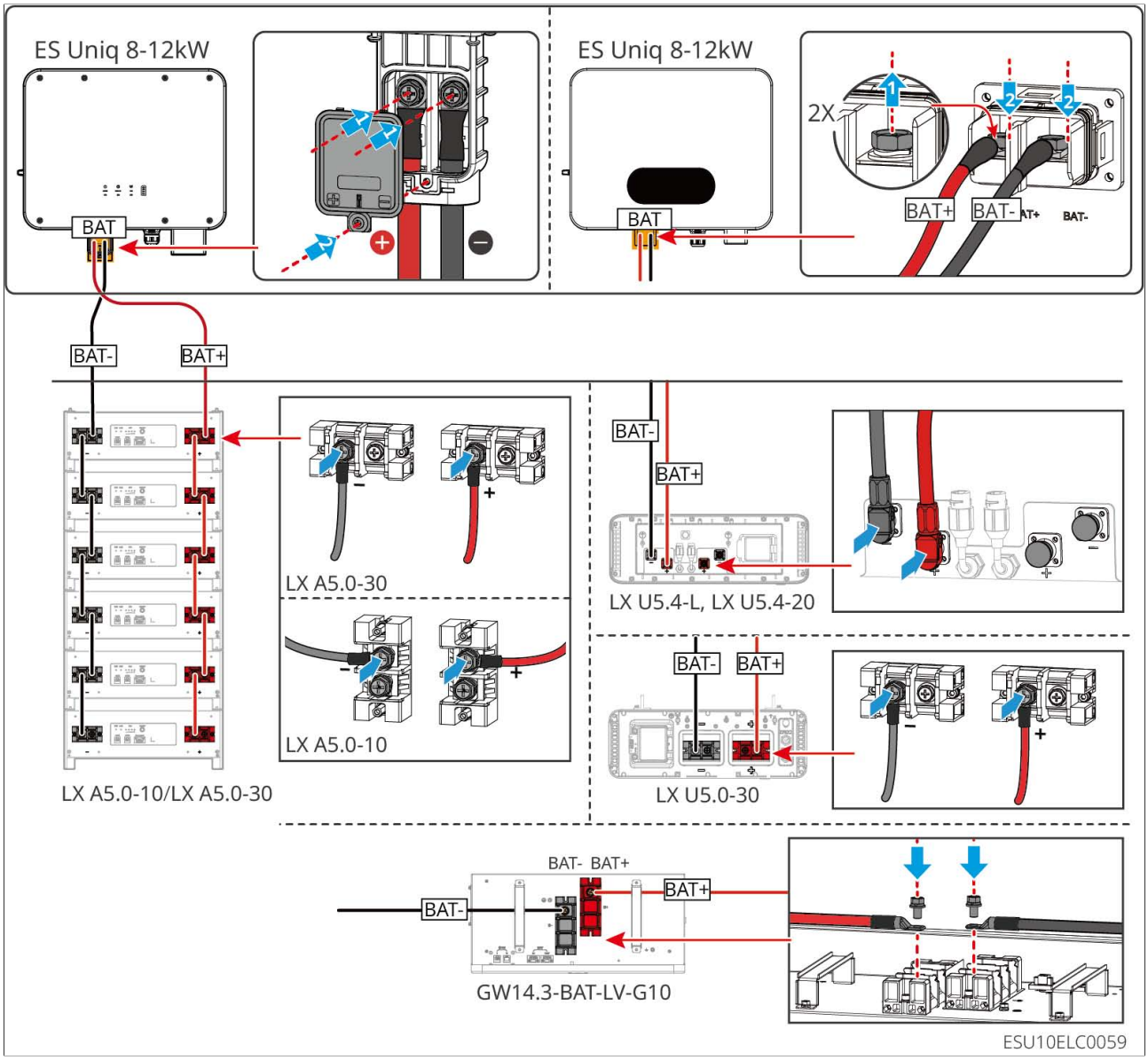
1	RS485A	RS485A	Reserved
2	RS485B-	RS485B-	
3	Parallel OUT+	Parallel OUT+	Parallel operation
4	CAN_H	CAN_H	Connect Inverter communication or Battery and cluster Communication Port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel operation
7	-	-	Reserved
8	Parallel OUT-	Parallel OUT-	Parallel operation

5.6.1 Connecting the Power Cable between the Inverter and Battery

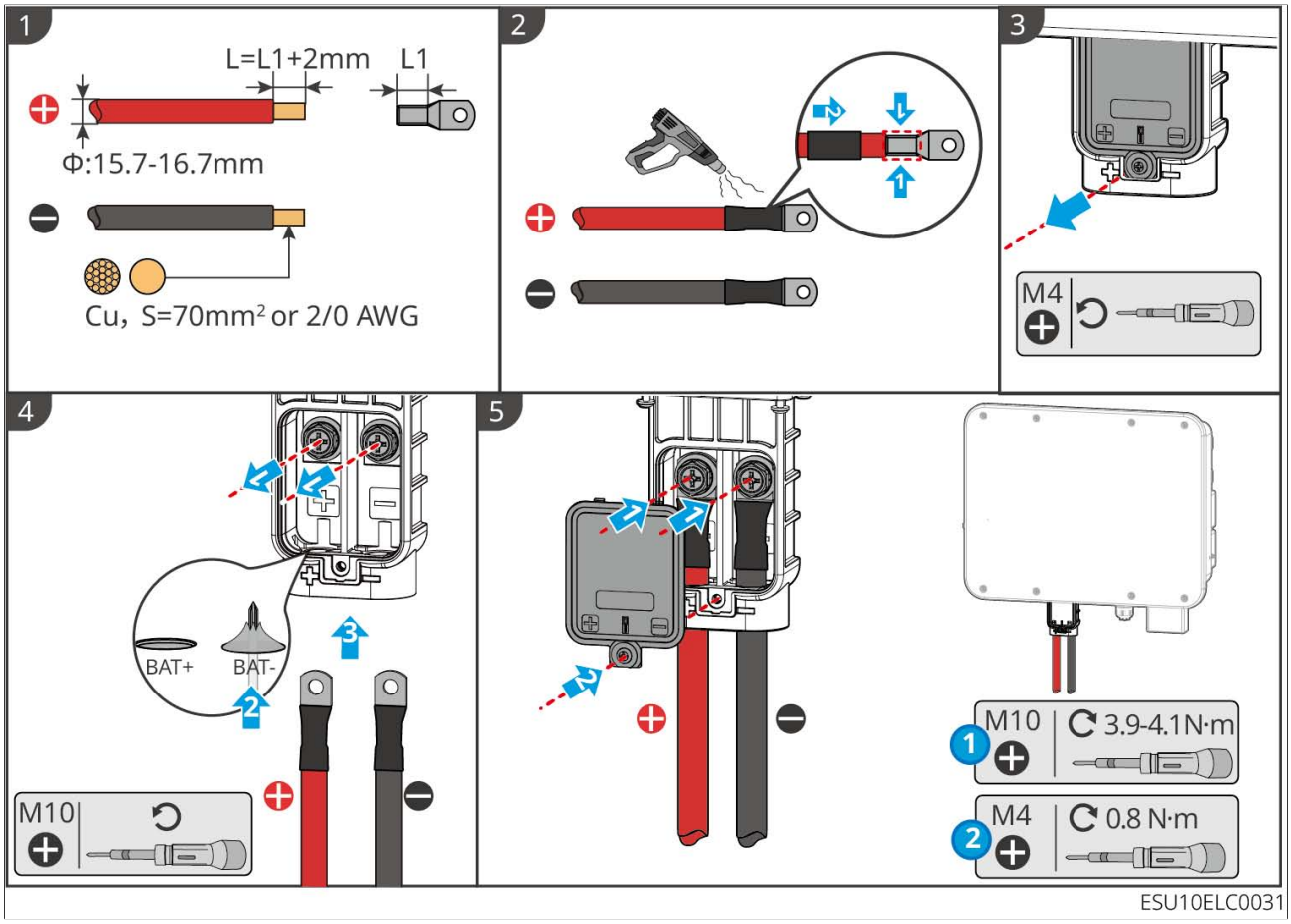
⚠WARNING

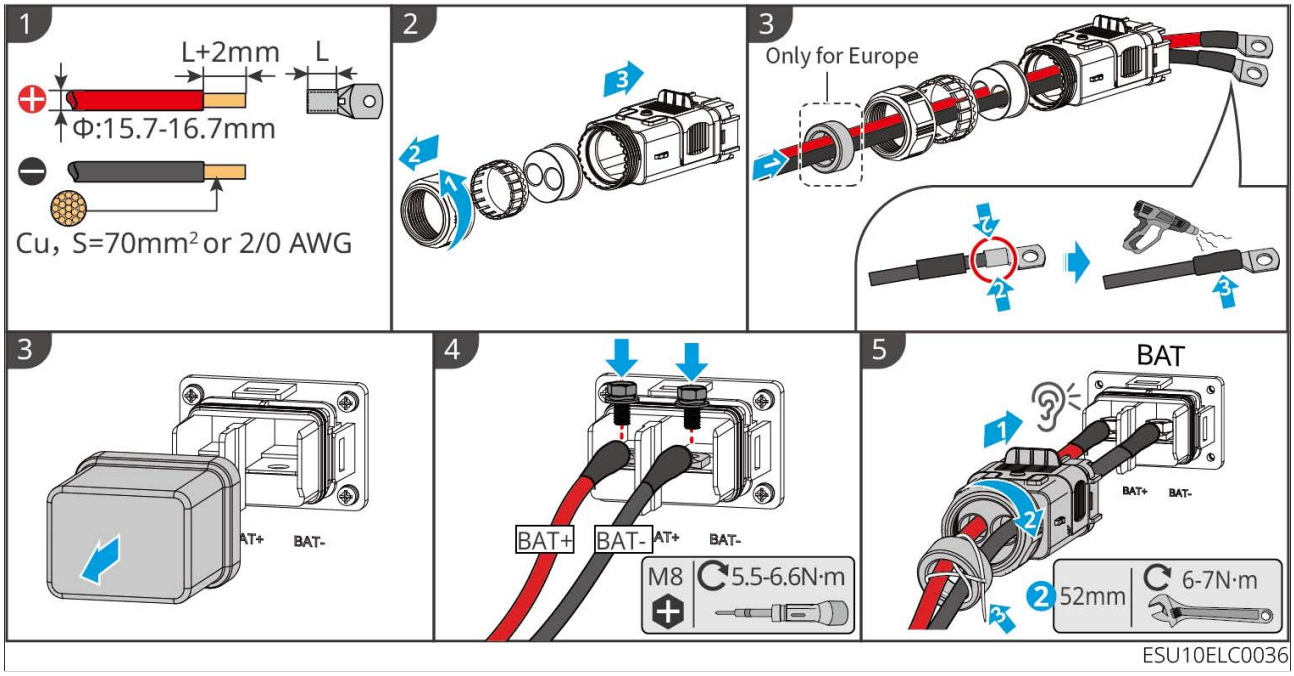
- Use a multimeter to measure the positive and negative poles of the DC cable, ensuring correct polarity without reverse connection; and confirm the voltage is within the allowable range.
- During wiring, ensure that the Battery wire fully matches the "BAT+", "BAT-", and grounding port of the Battery terminal. Incorrect cable connections may result in equipment damage.
- Ensure the conductor is fully inserted into the terminal terminal hole without any exposure.
- Please ensure the cable connections are securely fastened, otherwise loose connections may cause overheating during equipment operation, leading to damage.
- Do not connect the same Battery group to multiple Inverters, as this may cause damage to the Inverter.

Overview of Inverter and Battery power cable



Terminal cable fabrication

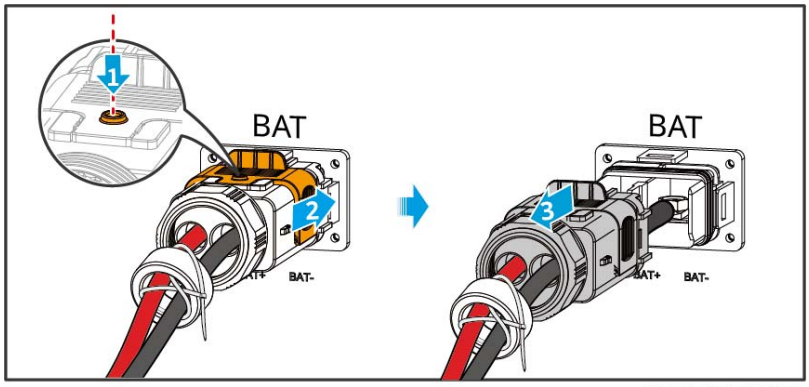




- For some models, the Battery terminal screw is shipped locked to the Battery

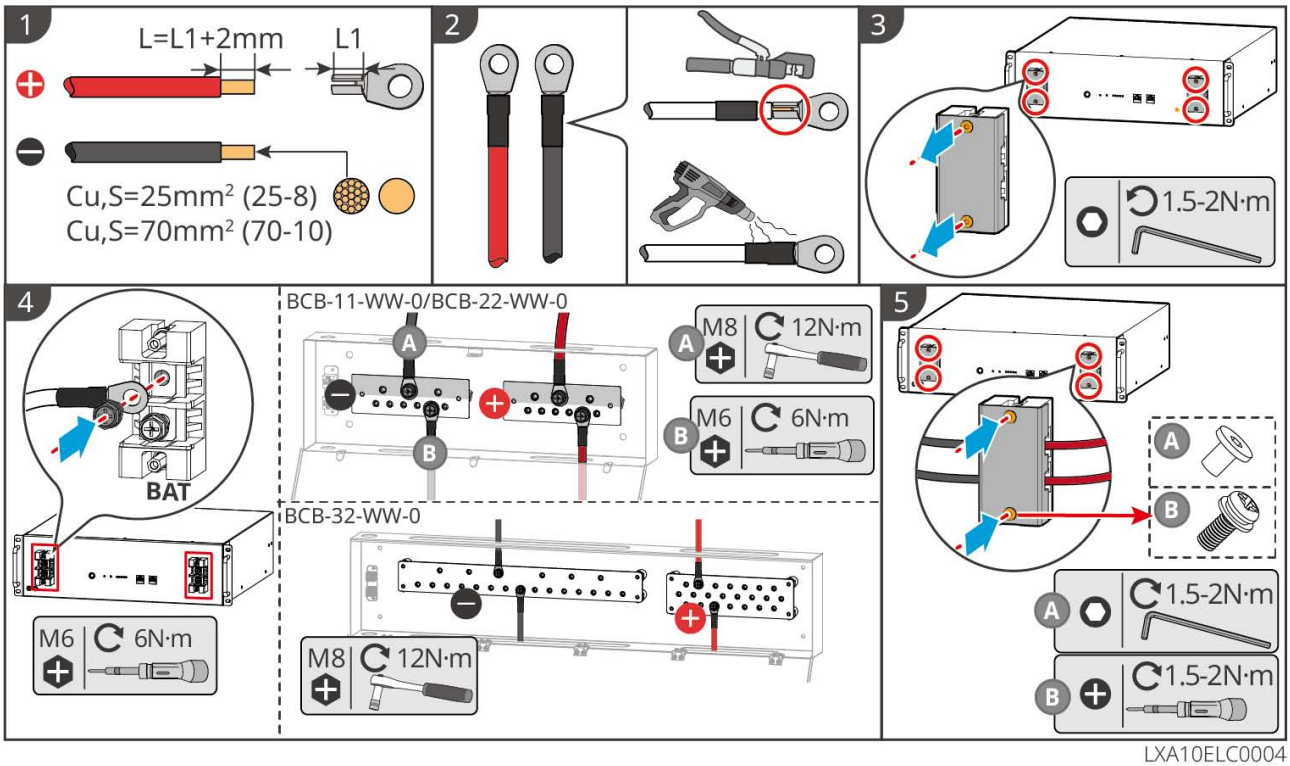
terminal. Please determine whether it is necessary to unscrew the screw based on actual conditions.

InverterBattery Cover Removal Method (Optional)



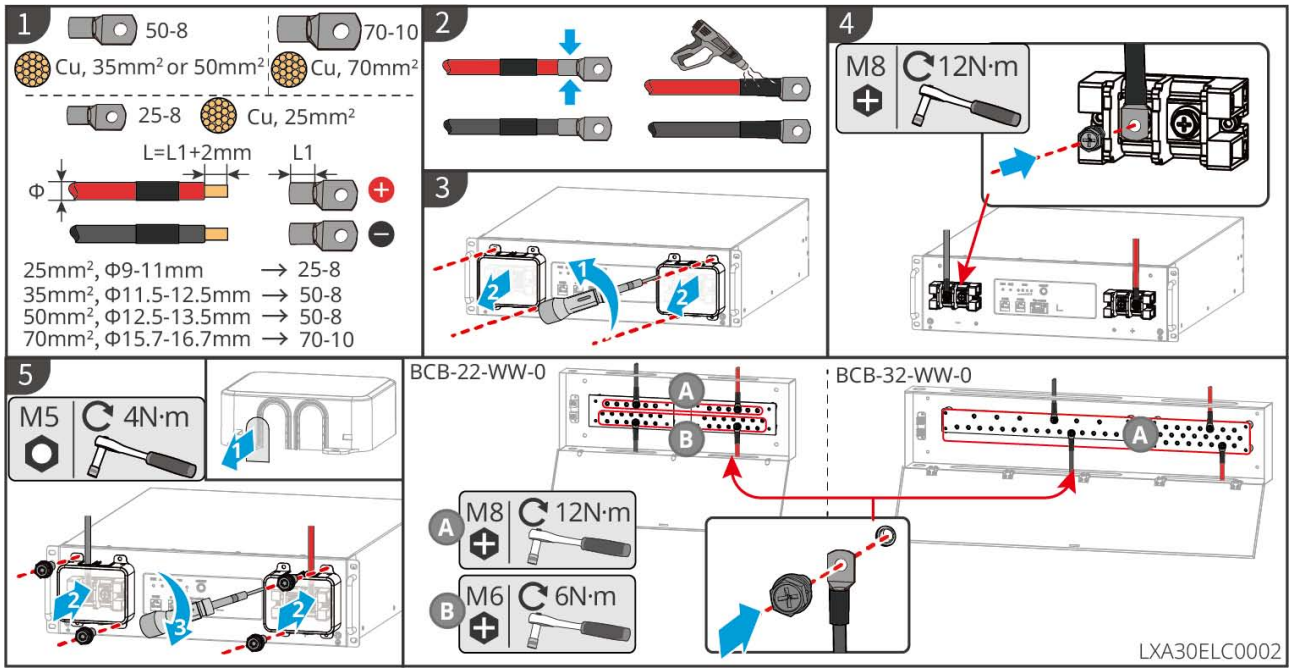
ESU10ELC0098

Terminal cable fabrication method (LX A5.0-10)

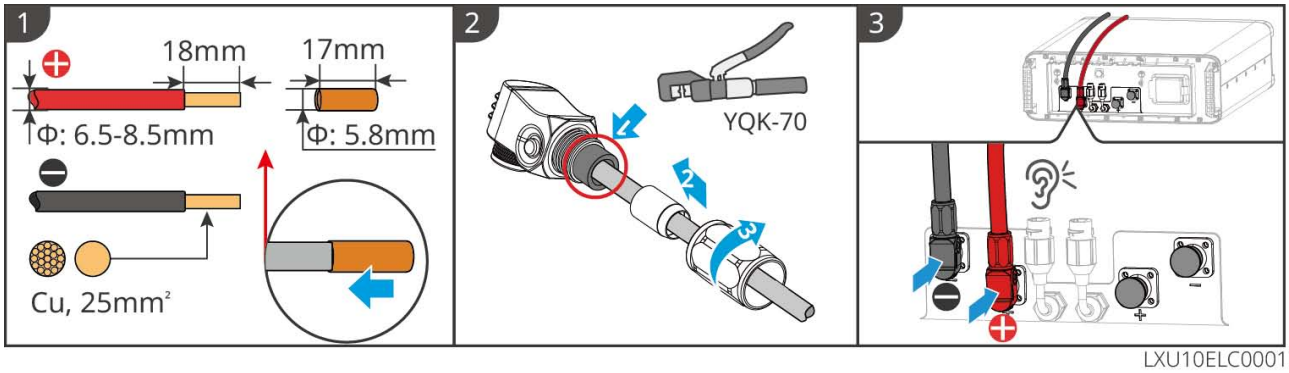


LXA10ELC0004

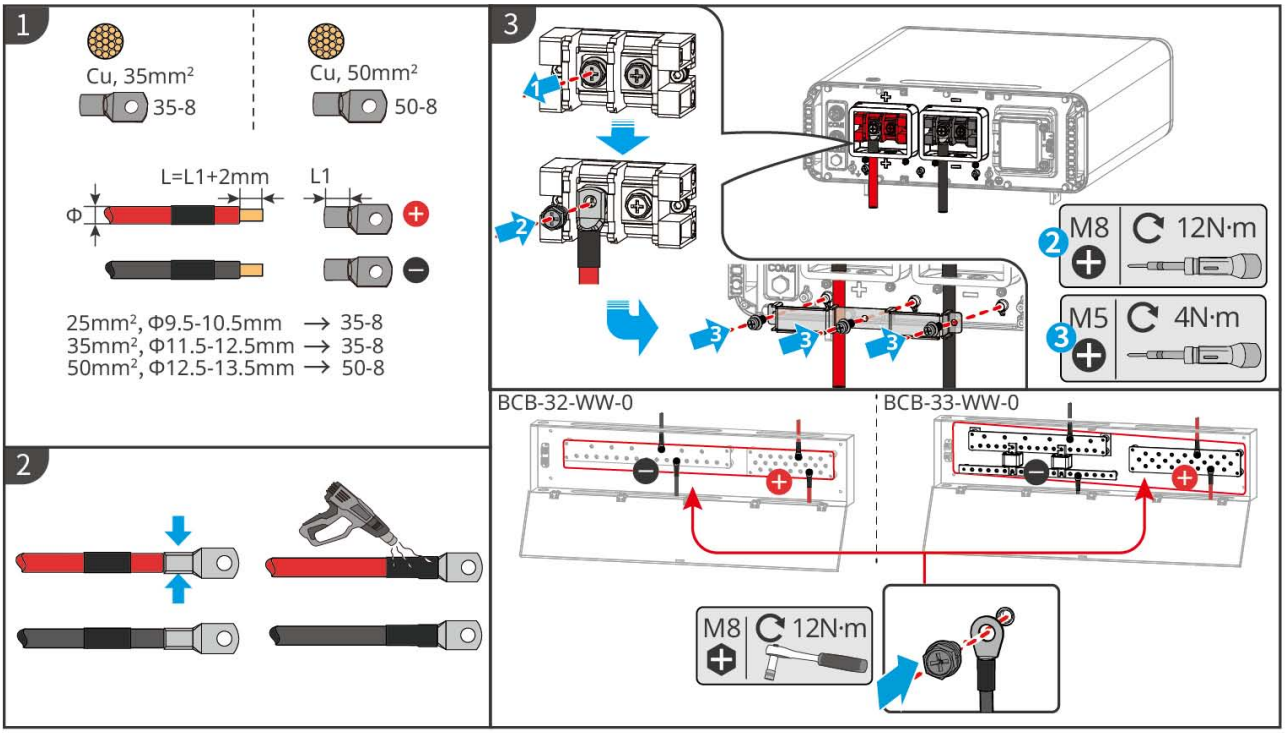
Cable termination method for Battery end (LX A5.0-30)



Terminal cable fabrication method (LX U5.4-L, LX U5.4-20)

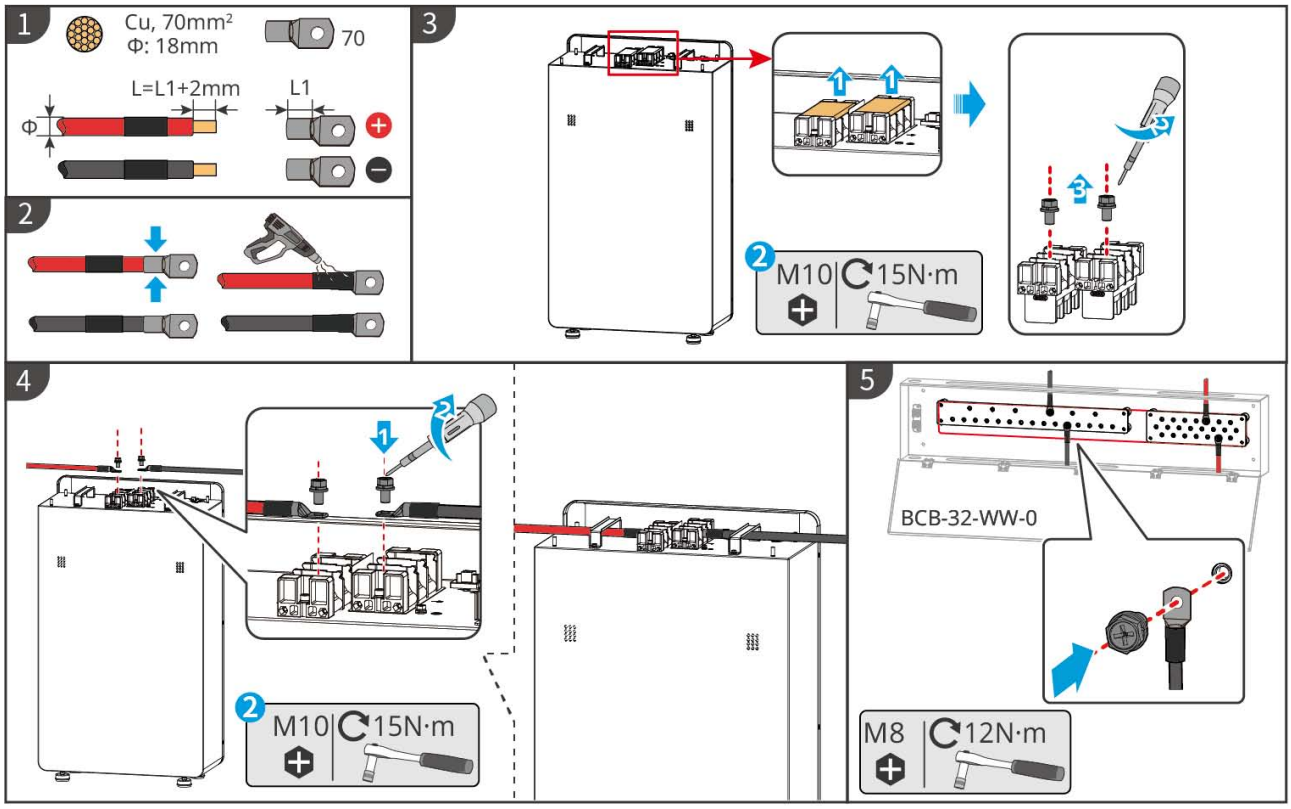


Terminal Cable Fabrication Method (LX U 5.0-30)



Cable termination method for Battery end (GW14.3-BAT-LV-G10)

- GW14.3-BAT-LV-G10: If the power cable cable is shipped with the Battery accessory, please use the shipped cable without crimp.



LXA10ELC0015

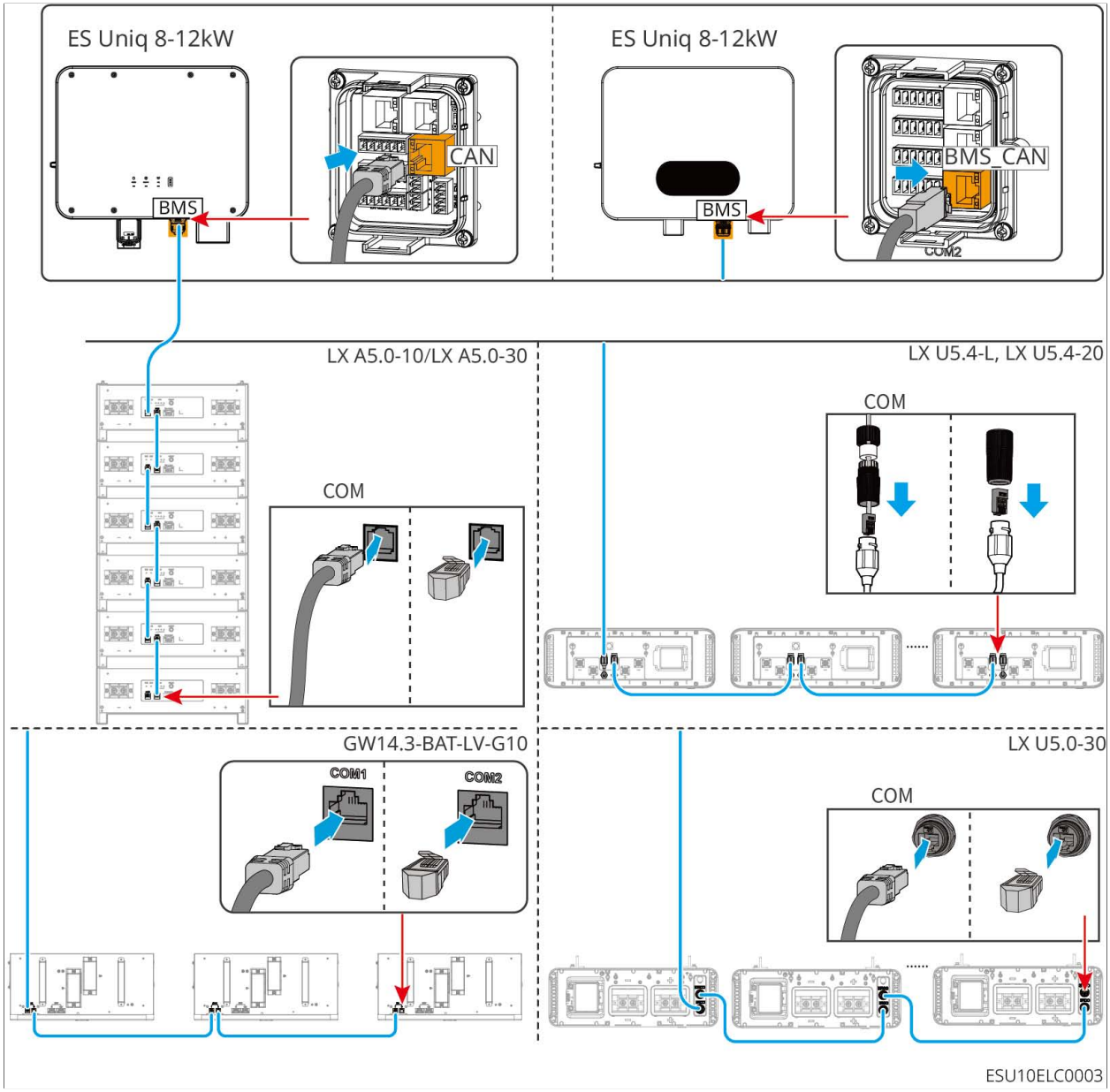
5.6.2 Connecting the Communication Cable between the Inverter and Battery

NOTICE
The BMSBatteryCommunication cable is included in the package. It is recommended to use the BMSBatteryCommunication cable provided with the package. If the included Communication cable does not meet the requirements, please prepare your own shielded network cable and shielded RJ45RJ45 connector. When crimping, only connect PIN4 and PIN5 of crimpRJ45 connector, otherwise communication failure may occur.

Description of BMS Communication Connection Between Inverter and Battery:

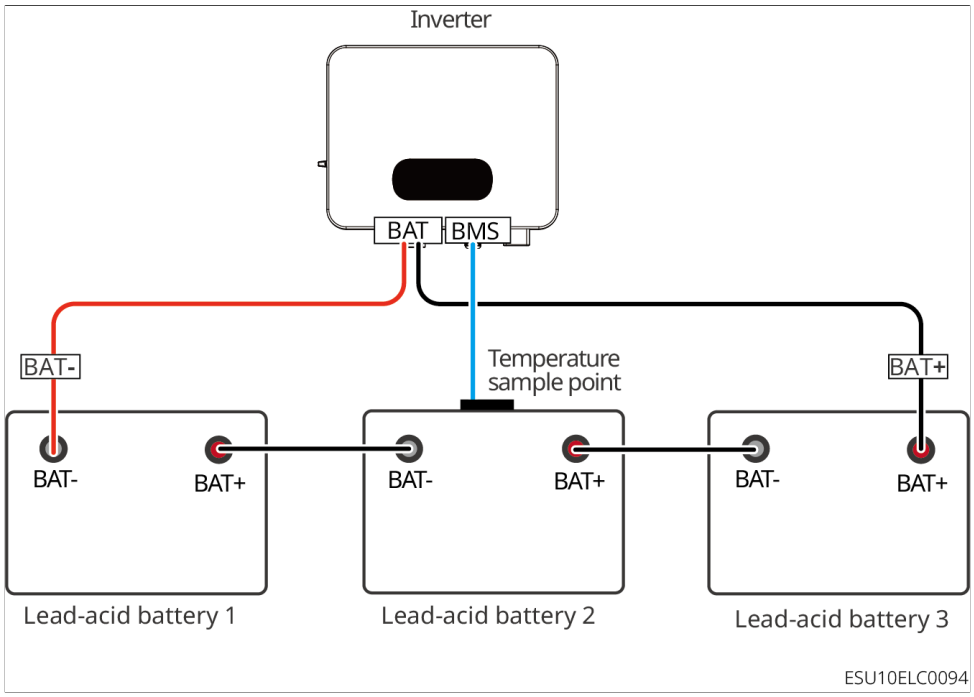
Inverter port	Connected to Battery port	port Definition	Description

BMS(CAN)	COM1	4：CAN_H 5：CAN_L	• Inverter and Battery communicate via CAN bus. • InverterBMSport is connected to BatteryCOM1port



NOTICE

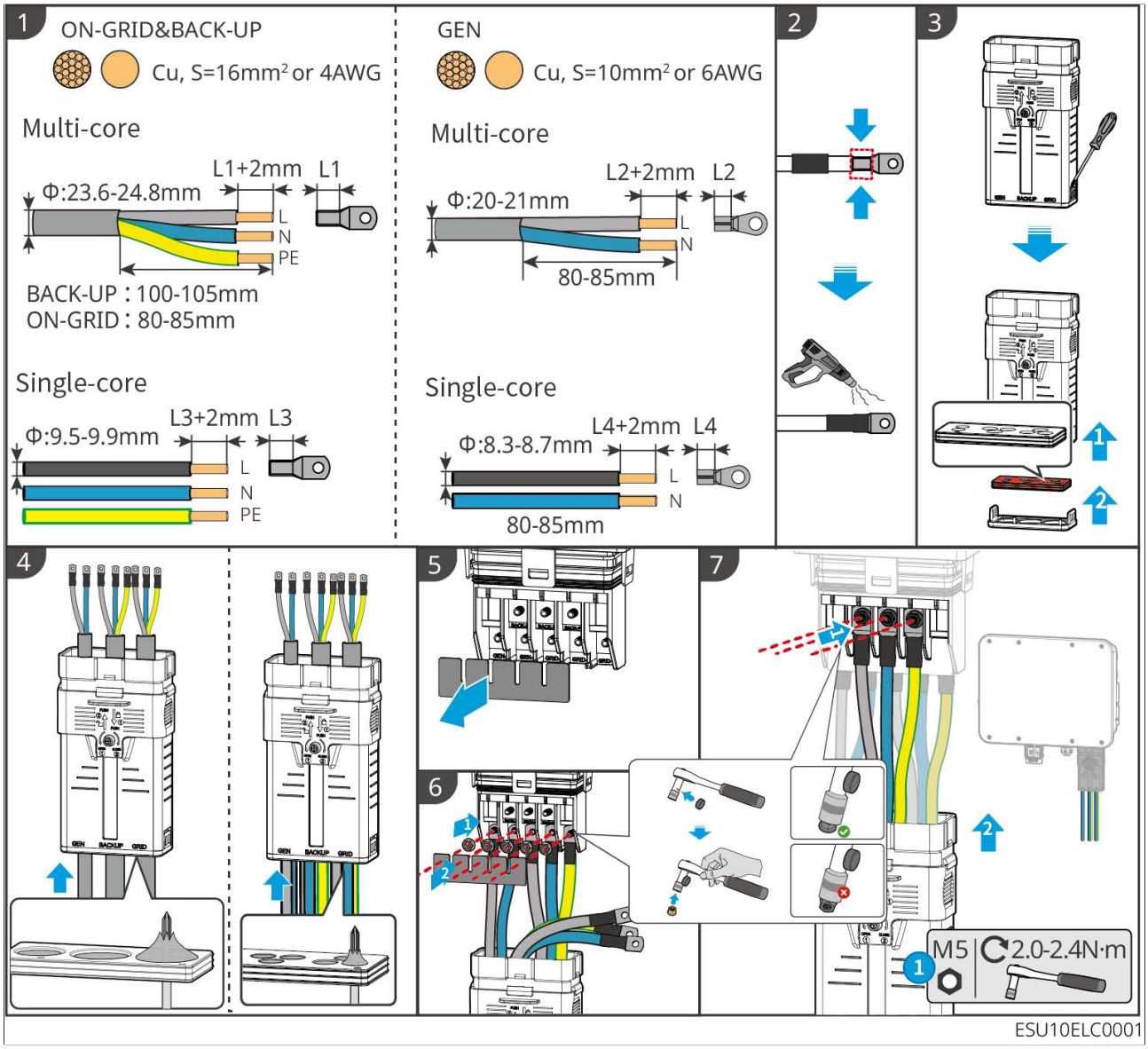
- When connecting the lead-acid battery temperature sensor cable, it is recommended to attach the sensor cable to a location with poor heat dissipation. For example: when lead-acid batteries are placed side by side, fix the sensor on the battery located in the middle.
- To better Protection the battery cell, it is necessary to Installation the temperature sampling line, and it is recommended to place the Battery in an environment with good heat dissipation.

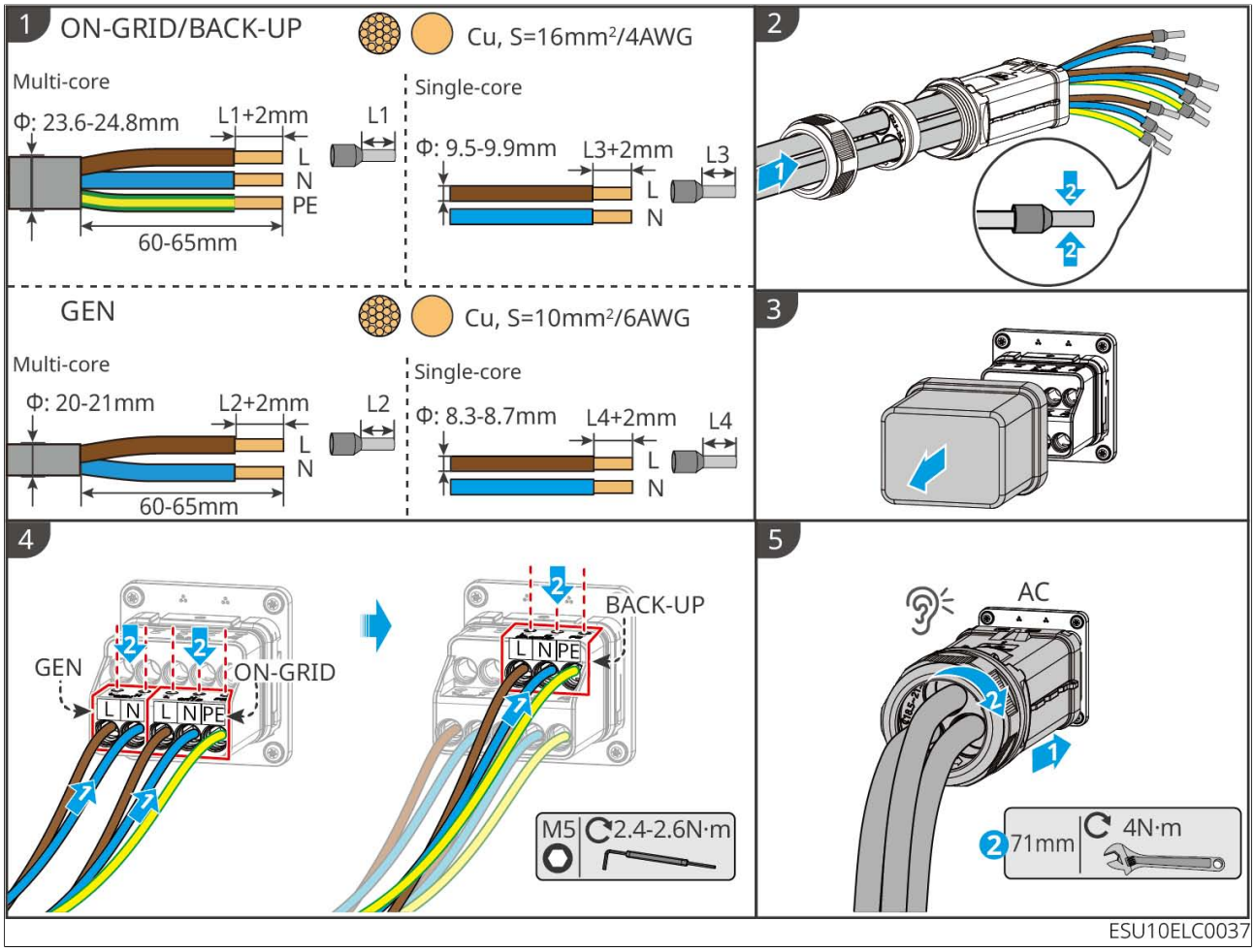


5.7 Connecting the AC Cable

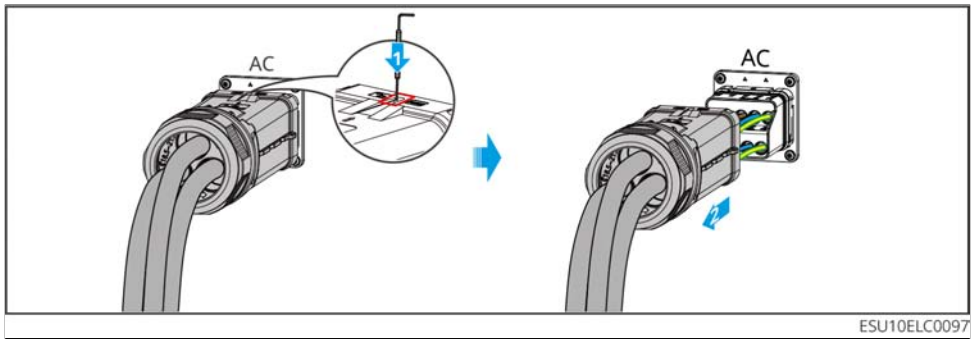
⚠WARNING

- The Inverter internally integrates a residual current monitoring unit (RCMU) to prevent residual current from exceeding the specified value. When the Inverter detects a leakage current greater than the permissible value, it will quickly disconnect from the Utility grid.
- During wiring, ensure the AC cables are correctly matched with the "BACKUP", "ON-GRID", "GEN", and grounding terminals of the AC terminal. Incorrect cable connections may result in equipment damage.
- Ensure the conductor is fully inserted into the terminal terminal hole without any exposure.
- Please ensure that the insulating plate at the AC terminal is securely fastened and free from looseness.
- Ensure the cable connections are securely fastened; otherwise, overheating of the terminal terminals may occur during equipment operation, leading to device damage.


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 Removal Method (Optional)



5.8 Connecting the Meter Cable

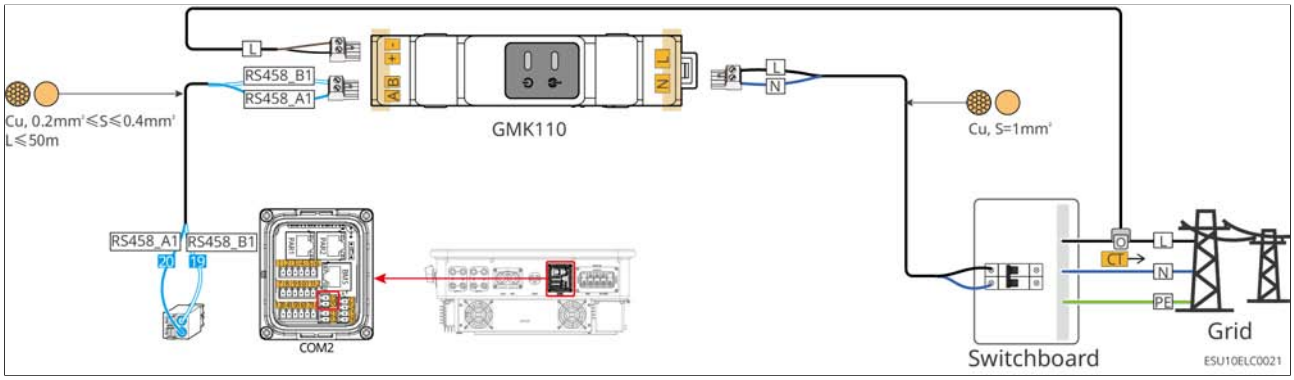
NOTICE

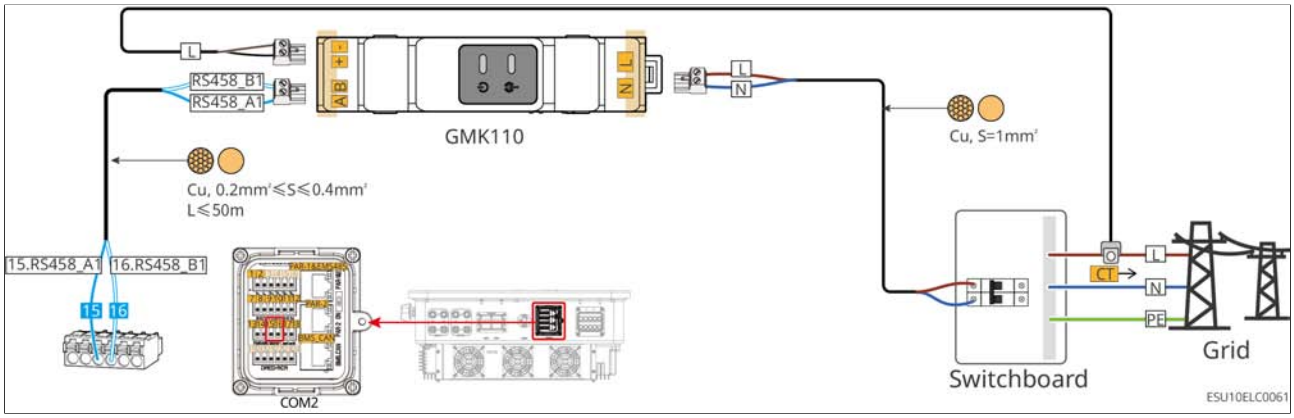
- If multiple Inverter units are required, please consult the manufacturer to purchase additional meters separately.
- Please ensure the CT connection direction is correct and the phase is accurate, otherwise it may lead to incorrect monitoring data.
- Ensure all cable connections are correct, secure, and free from looseness. Improper wiring may cause poor contact or damage to the meter.
- In areas with lightning DANGER, if the meter cable length exceeds 10m and the cable is not installed with grounded Steel conduit wiring, it is recommended to install an external lightning protection system.

GMK110 meter wiring

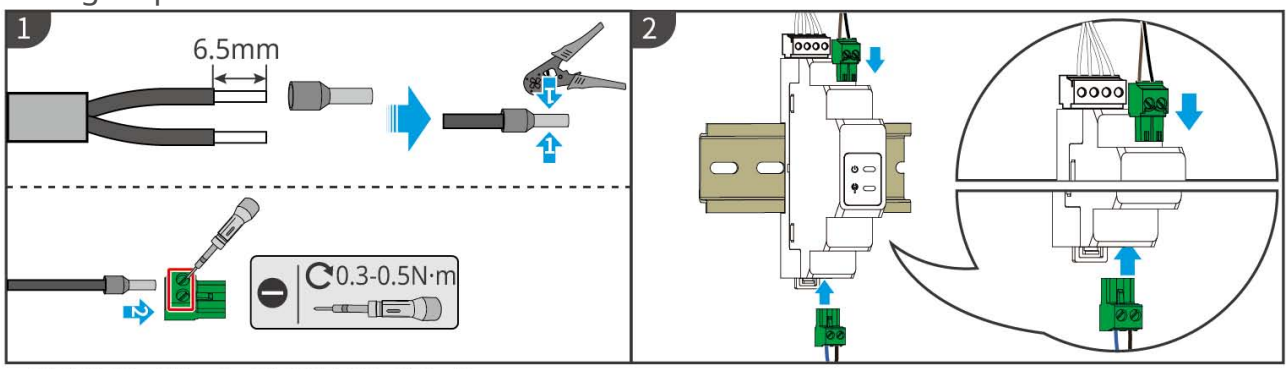
NOTICE

- The outer diameter of the AC power line must be smaller than the aperture of the CT to ensure the AC power line can pass through the CT.
- To ensure the current monitoring accuracy of the CT, the recommended length of the CT cable should not exceed 30m.
- Do not use network cables as CT cables, otherwise the meter may be damaged due to excessive current.
- The CTs provided by equipment manufacturers may vary slightly in size and appearance depending on the model, but the Installation wiring method remains consistent.





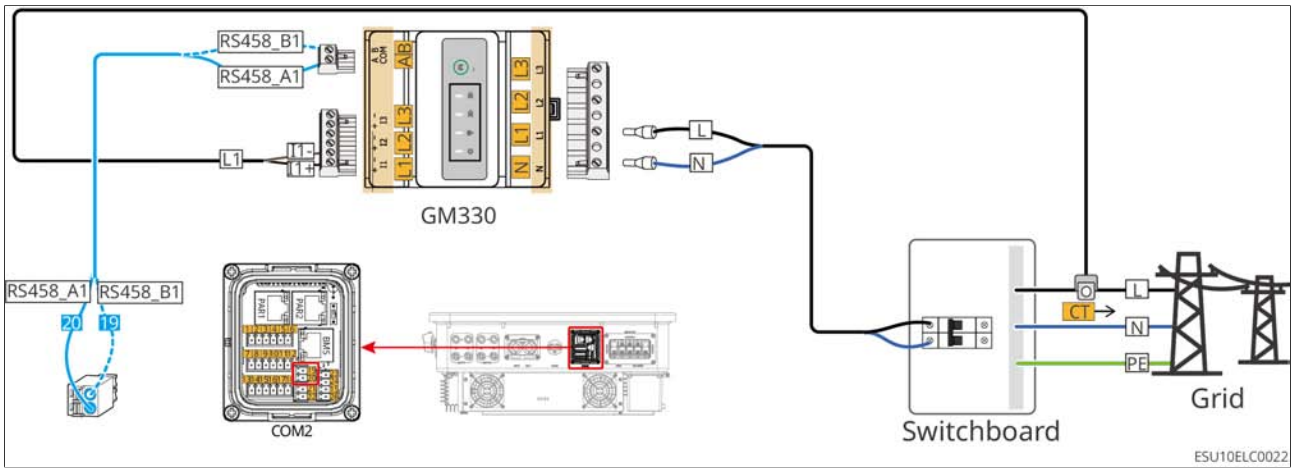
Wiring steps

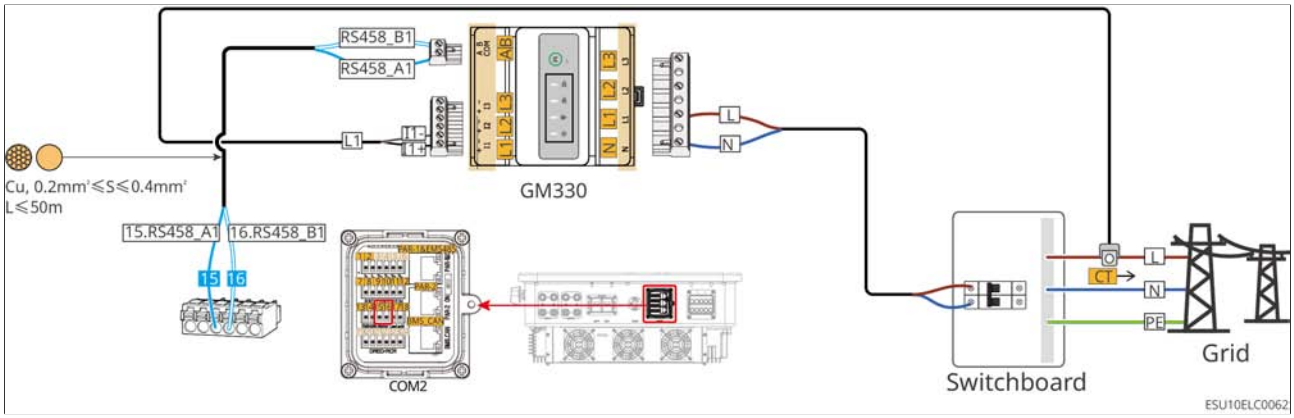


▶ GMK110: CT x 1; GMK110D: CT x 2

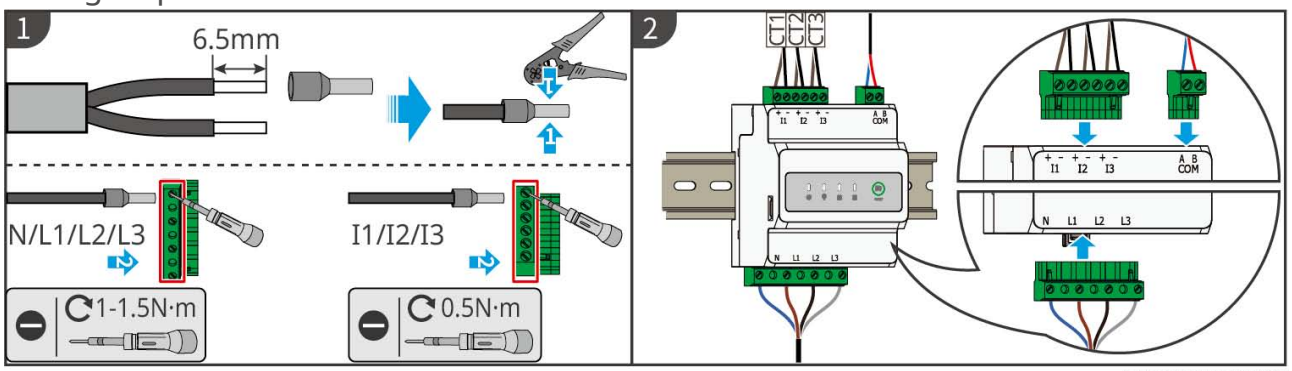
GMK10ELC0002

GM330 meter wiring

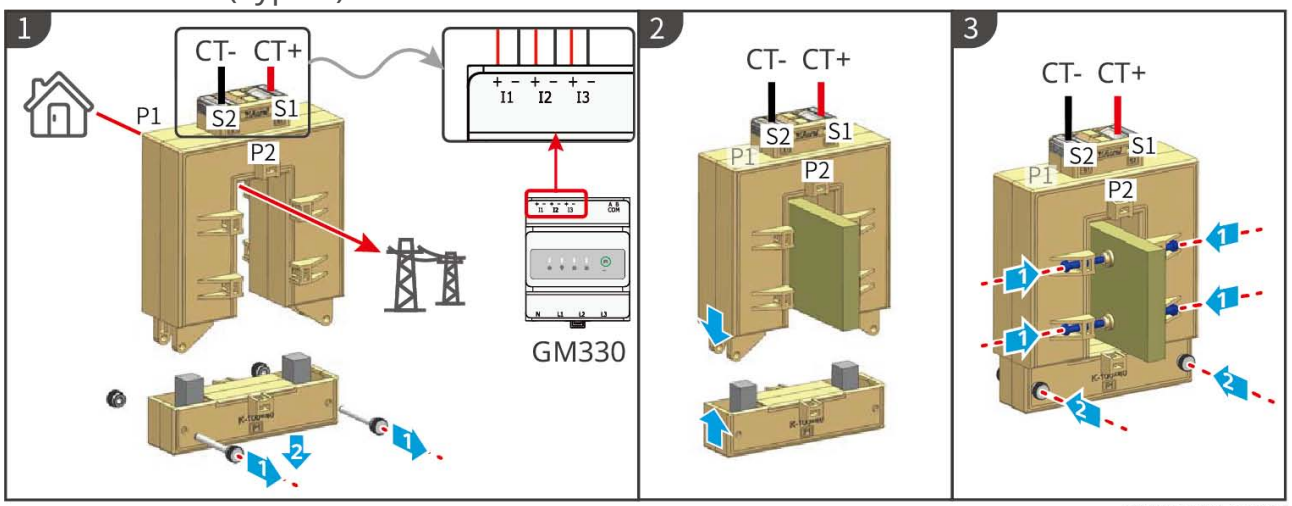




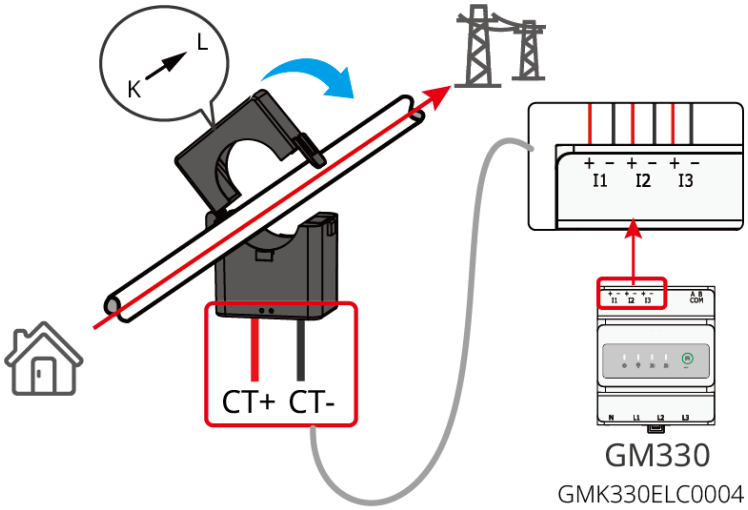
Wiring steps



Installation CT (Type 1)



Installation CT (Type II)



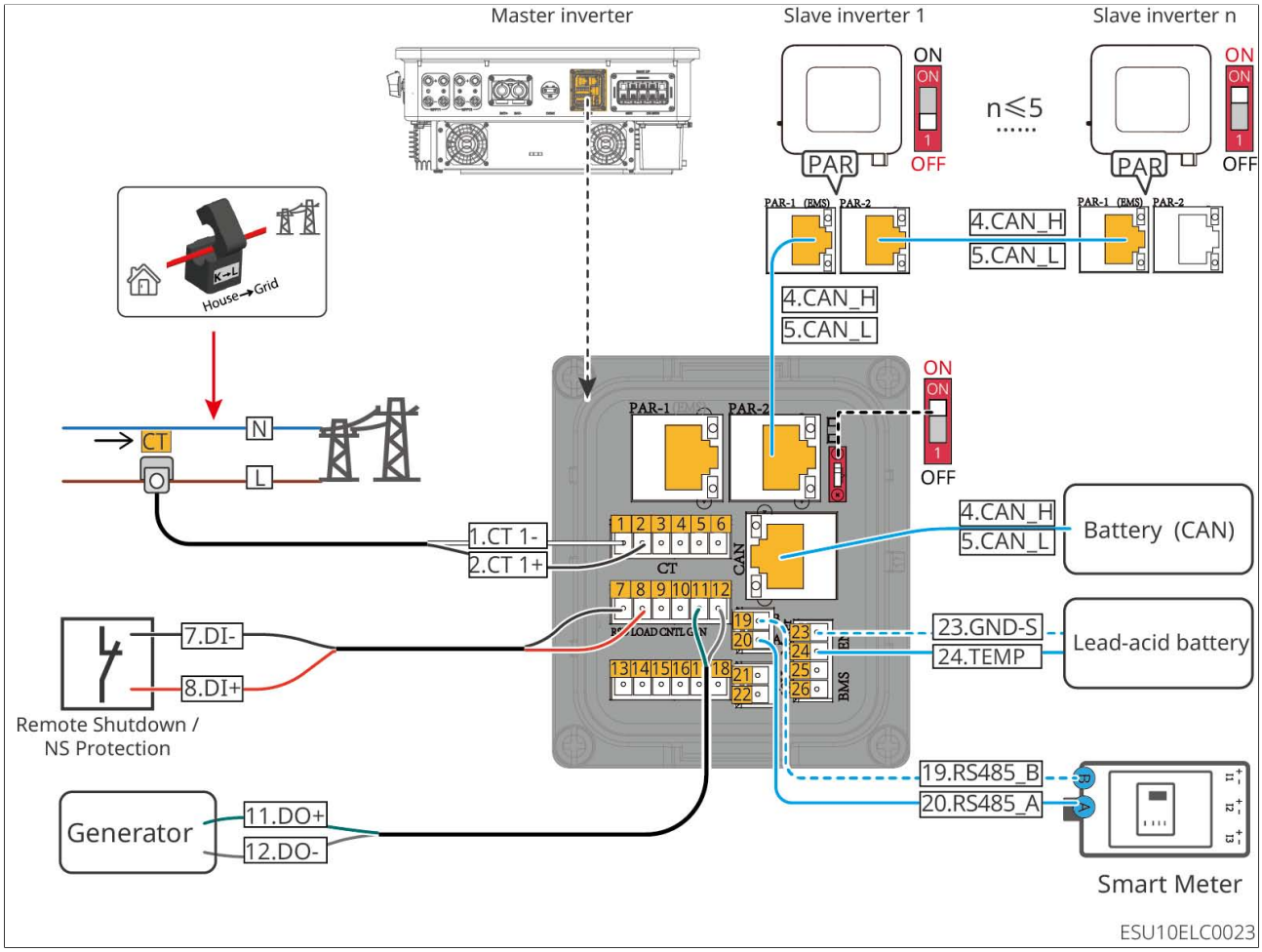
5.9 Connecting the Inverter Communication Cable

NOTICE

- Inverter communication function is optional, please select according to actual usage scenarios.
- Inverter supports connecting to mobile phones or WEB interfaces via Bluetooth, WiFi, LAN, and 4G communication methods to set device parameters, view operational information and error messages, and promptly monitor system status.
- In a single-unit system, Installation WiFi/LAN Kit-20, 4G Kit-CN-G20, and 4G Kit-CN-G21 smart dongle are included. When the system involves multiple Inverter units operating in parallel for networking, Master inverter requires the Installation Ezlink3000 module for networking.
- To use the remote shutdown function, please enable it in the SolarGo App after completing the wiring.
- Do not enable this function in the SolarGo App if the remote shutdown device is not connected, otherwise the Inverter will fail to on-grid operate.
- In a parallel system, to enable the remote shutdown function, connect the Communication cable to the Master inverter; otherwise, the function will not take effect.

Communication Function Description

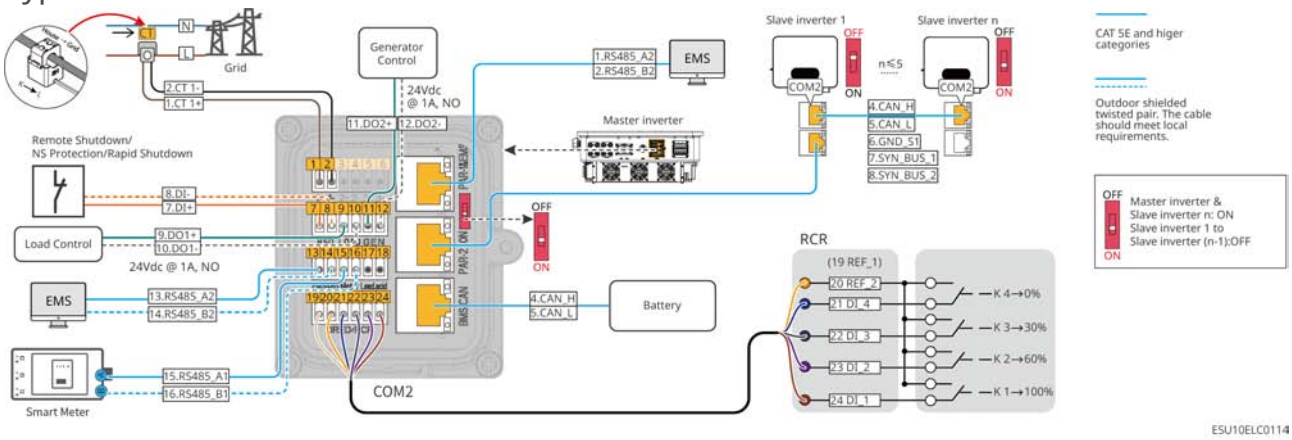
Type I



port	Function	Description
1-2	CT	Connect the CT cable.
7-8	remote shutdown/NS Protection	Provide signal control port, control equipment remote shutdown, or implement NS Protection functionality.
9-10	Reserved	-
11-12	Generator	Used to control the generator. Only applicable in single Inverter scenarios.
13-18	Reserved	-
19-20	Electric meter communication	Supports RS485 communication for external Smart Meter connection
23-24	Lead-acid temperature measurement port	Temperature sensing wire for connecting lead-acid temperature measurement.

port	Function	Description
PAR-1	Parallel Connection Communication Port1	Reserved
PAR-2	Parallel Connection Communication Port 2	When used for parallel communication, it supports the use of CAN communication to connect other Inverter; it uses BUS bus control to manage the grid-connected and off-grid status of each Inverter in parallel operation.
CAN	BMS communication	When connecting lithium-ion Battery, it is used to connect the Battery system BMS Communication cable, supporting communication via CAN signals.

Type II

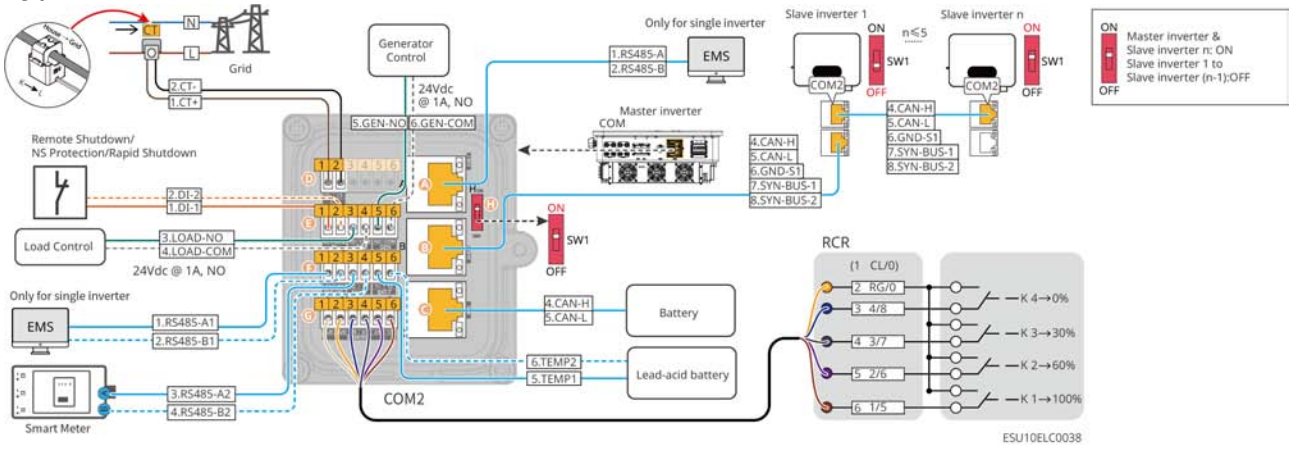


port	Function	Description
1-2	CT connection	Connect the CT cable.
3-6	Reserved	-
7-8	remote shutdown/NS Protection	Provide signal control port, control equipment remote shutdown, or achieve NS Protection remote shutdown function: • In case of an accident, the equipment can be controlled to stop operation. • The remote shutdown equipment must be a normally closed switch.

port	Function	Description
9-10	load control	• Supports dry contact signal connection to enable functions such as load control. The DO contact rating is 24Vdc @1A, with NO/COM normally open contacts. • Supports SG Ready heat pump connection, controls the heat pump via dry contact signals. • Supported operating modes: ◦ Operating Mode 2 (Signal:0:0): Energy-saving mode, where the heat pump operates in an energy-efficient manner. ◦ Operating Mode 3 (Signal: 0:1): Activation Recommendation. In this mode, the heat pump maintains its current operation while increasing hot water storage to accumulate thermal energy.
11-12	Generator start-stop control Manufacturing port	Supports the connection of generator control signals DO contact rating is 24Vdc @1A, NO/COM normally open contact
13-14	Energy Management System (EMS)	When used to connect to third-party EMS devices, it supports RS485 communication, but parallel system does not support connecting to third-party EMS devices. Note: The EMS in PAR-1 & EMS port is on the same line.
15-16	Electric meter communicatio n	Supports RS485 communication for external Smart Meter connection
17-18	Lead-acid temperature measurement port	Temperature sensing wire for connecting lead-acid temperature measurement

port	Function	Description
19-24	RCR	RCR (Ripple Control Receiver): Provides RCR signal control port, meeting the Utility grid dispatching requirements in Europe and other regions.
PAR-1 &EMS	PAR1	Parallel Connection Communication Port1 Energy Management System (EMS) （PAR-1&EMS）
PAR-2	PAR2	Parallel Connection Communication Port 2 （PAR-2）
BMS-CAN	BMS	BMS communication
-	Parallel DIP switch	In a multi-unit parallel scenario, the parallel DIP switches of the first and last Inverter units should be set to the ON position, while the switches of other Inverter units should be set to the OFF position.

Type III



port(Screen Printing)		Function	Description
A	PAR1	Parallel Connection Communication Port1 Energy Management System (EMS) （PAR-1&EMS）	• CAN and BUS: Parallel unit Communication Port, CAN communication is used in parallel unit networking to connect other Inverter; BUS is used to control the grid-connected and off-grid status of each Inverter in the parallel unit. • RS485: When used to connect third-party EMS devices that support RS485 communication. parallel system does not support connecting third-party EMS devices.
B	PAR2	Parallel Connection Communication Port 2 （PAR-2）	When used for parallel communication, it supports the use of CAN communication to connect other Inverter; it uses BUS bus control to manage the grid-connected and off-grid status of each Inverter in parallel operation.
C	BMS	BMS communication	When connecting lithium-ion Battery, it is used to connect the Battery system BMS Communication cable, supporting communication via CAN signals.
D	CT	CT connection	Connect the CT cable.
E	DI	remote shutdown/NS Protection	Provide signal control port, control equipment remote shutdown, or achieve NS Protection remote shutdown function: • In case of an accident, the equipment can be controlled to stop operation. • The remote shutdown equipment must be a normally closed switch.

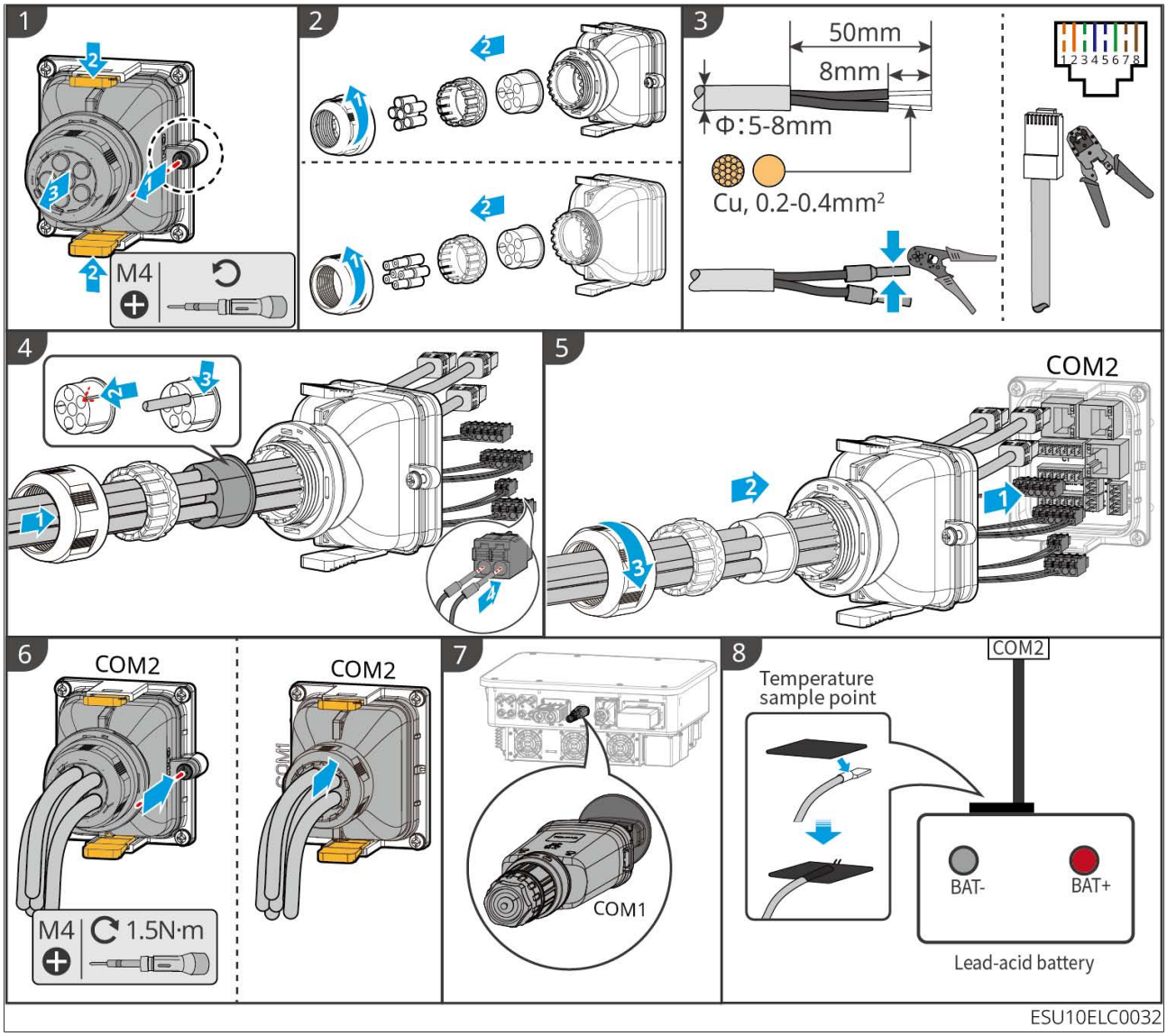
port(Screen Printing)		Function	Description
	LOAD	load control	• Supports dry contact signal connection to enable functions such as load control. The DO contact rating is 24Vdc @1A, with NO/COM normally open contacts. • Supports SG Ready heat pump connection, controls the heat pump via dry contact signals. • Supported operating modes: ◦ Operating Mode 2 (Signal:0:0): Energy-saving mode, where the heat pump operates in an energy-efficient manner. ◦ Operating Mode 3 (Signal: 0:1): Activation Recommendation. In this mode, the heat pump maintains its current operation while increasing hot water storage to accumulate thermal energy.
	GEN	Generator start-stop control Manufacturing port	Supports the connection of generator control signals DO contact rating is 24Vdc @1A, NO/COM normally open contact
F	EMS485	Energy Management System (EMS)	When used to connect to third-party EMS devices, it supports RS485 communication, but parallel system does not support connecting to third-party EMS devices. Note: The EMS in PAR-1 & EMS port is on the same line.
	Meter	Electric meter communication	Supports RS485 communication for external Smart Meter connection
	BAT-T	Lead-acid temperature measurement port	Temperature sensing wire for connecting lead-acid temperature measurement

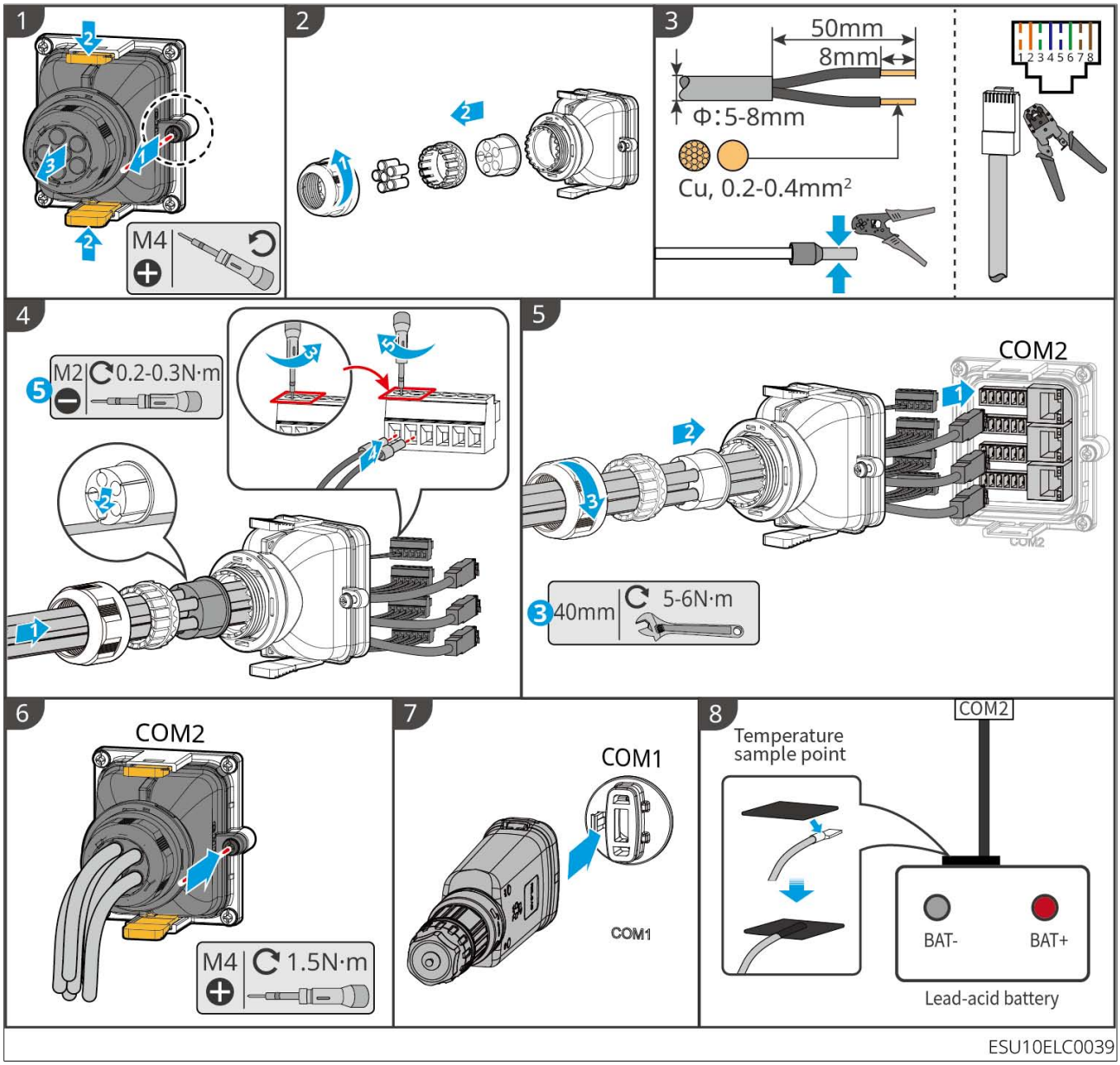
port(Screen Printing)		Function	Description
G	DRM/RCR	RCR	RCR (Ripple Control Receiver): Provides RCR signal control port, meeting the Utility grid dispatching requirements in Europe and other regions.
H	SW1	Parallel DIP switch	In a multi-unit parallel scenario, the parallel DIP switches of the first and last Inverter units should be set to the ON position, while those of the other Inverter units should be set to the OFF position.

Connection method for Communication cable

NOTICE

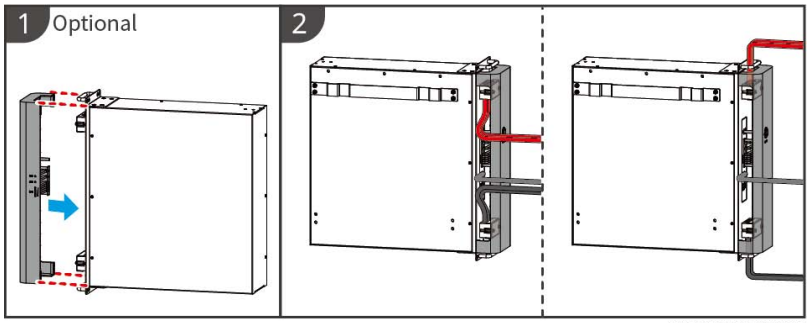
- Inverter supports connecting to mobile phones or WEB interfaces via Bluetooth, WiFi, LAN, or 4Gsmart dongle (China version) to set device-related parameters, view operational information and error messages, and promptly monitor system status.
- In a single-unit system, the WiFi/LAN Kit-20 and 4G Kit-CN-G20 are included. When the system involves multiple units connected in parallel to form a network, the Ezlink3000 module is required for networking.


1
M4
2
3
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

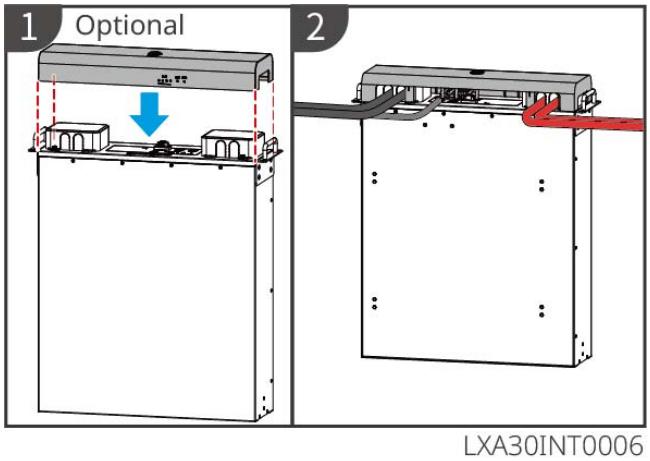


5.10 Installing the Battery SystemProtection Cover

5.10.1 LX A5.0-10

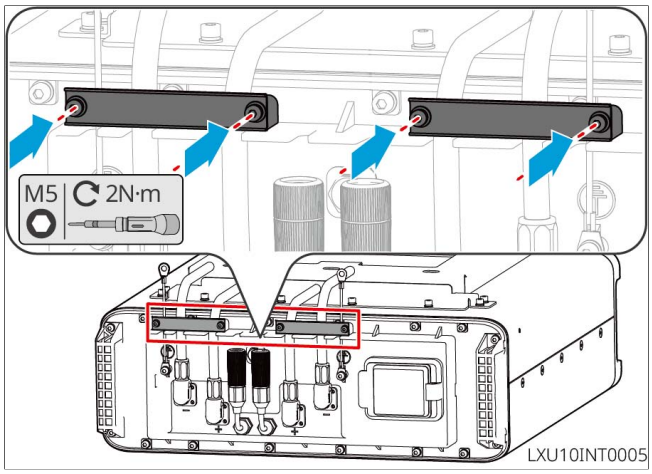


5.10.2 LX A5.0-30

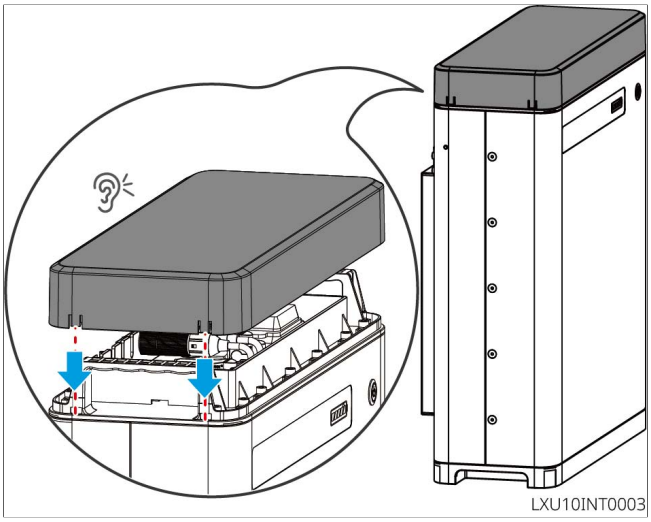


5.10.3 LX U5.4-L、LX U5.4-20

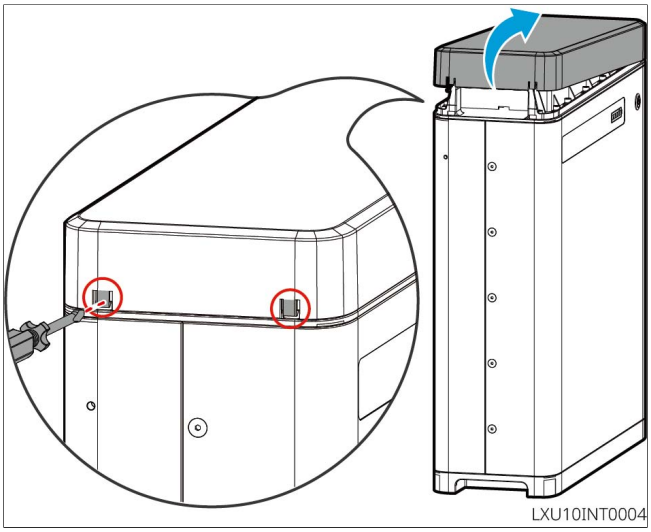
Step 1: Installation wiring harness fixing plate



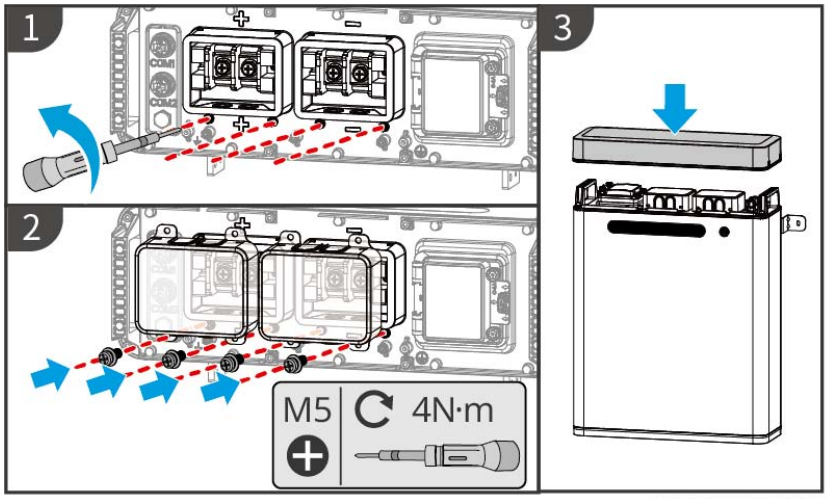
Step 2: Installation Plastic Upper Cover



- To remove the top cover, use a flathead screwdriver to gently pry open the two clips on one side, then detach the plastic top cover.

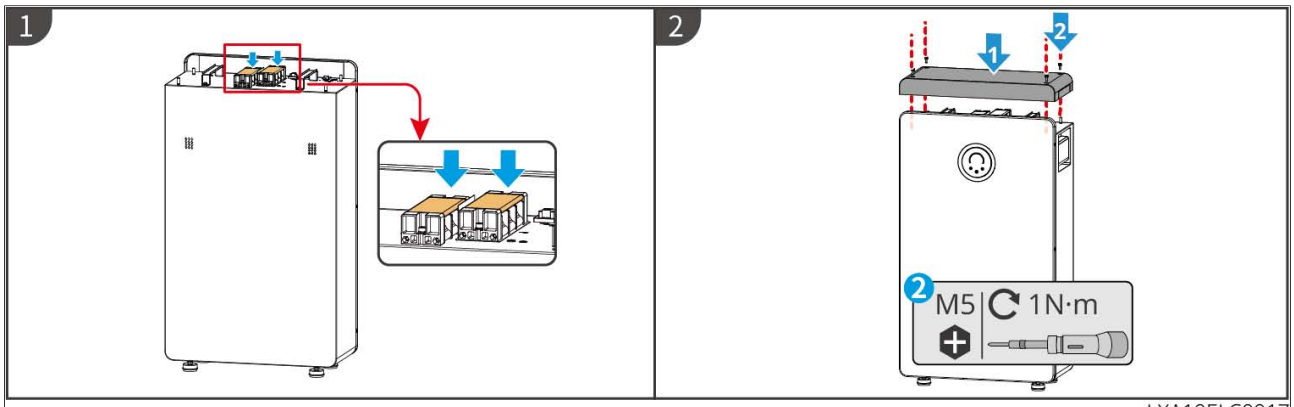


5.10.4 LX U5.0-30



LXU30INT0006

5.10.5 GW14.3-BAT-LV-G10



LXA10ELC0017

6 System Commissioning

6.1 Check Before Power ON

No.	Inspection items
1	The equipment is securely installed, easy to operate and maintain, with sufficient space for ventilation and heat dissipation, and the environment is clean and tidy.
2	DC cables, AC cables, Communication cable, and Terminal resistor are correctly and securely connected.
3	The cable ties meet the wiring requirements, are reasonably distributed, and show no signs of damage.
4	For unused feed-through holes and port, please use the provided terminal for reliable connection, and ensure they are properly sealed.
5	Ensure that all used wire feed-through holes are properly sealed.
6	The Inverter and Frequency of the on-grid access point comply with the on-grid requirements.

6.2 Power ON

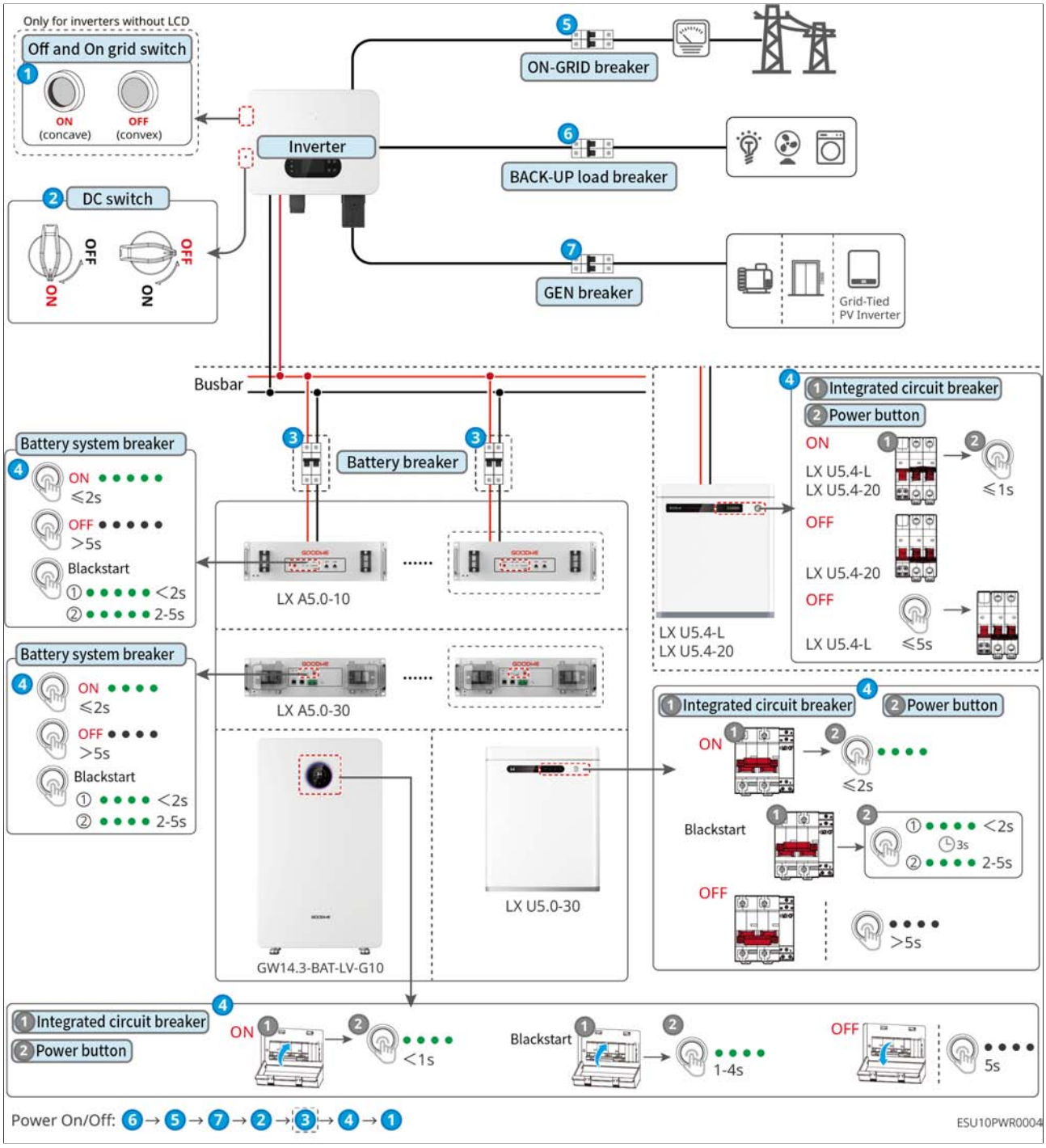
⚠WARNING

- When there are multiple Inverter in the system, ensure that all Slave inverter AC-side power on are completed within one minute after the Master inverter AC-side power on.
- Battery Black start application scenario:
  - Inverter needs to be activated via Battery.
  - In the absence of Inverter, it is necessary to perform Battery charging and Discharge management.
- After Battery system is started, ensure that Inverter and Battery system communicate normally within 15 minutes. If Inverter and Battery system fail to communicate properly, the Battery system switch will automatically disconnect, and Battery system will undergo POWER OFF.
- When multiple Battery are connected in a cluster within the system, starting any single Battery will initiate all Battery.
  - GW14.3-BAT-LV-G10: After Battery and power off, if power on occurs again, it is necessary to restart each Battery individually or wait for 15 minutes before starting any one Battery, which will then enable the activation of all Battery.

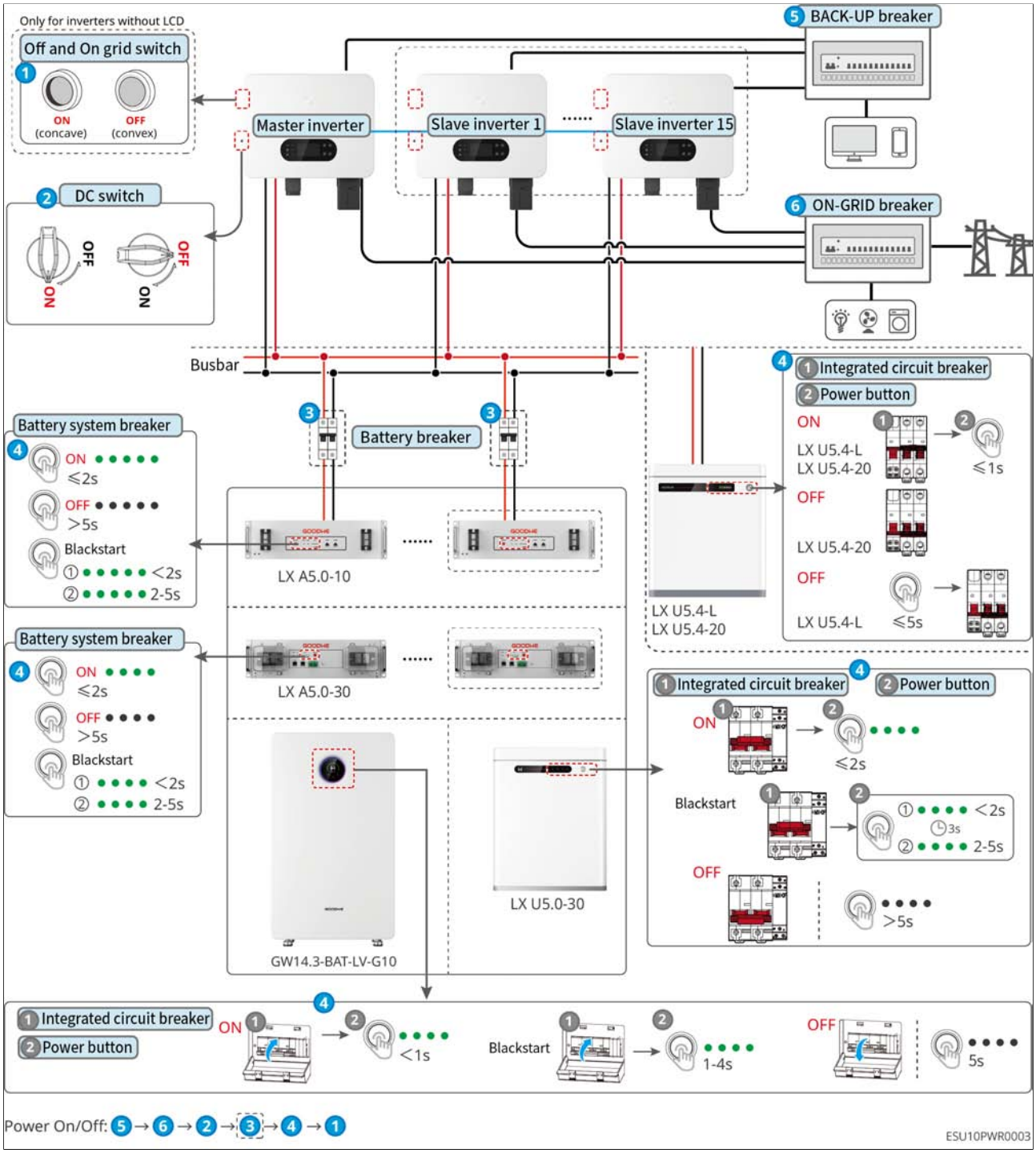
Upper current process

1. Close the BACK-UP breaker.
2. Close the ON-GRID circuit breaker.
3. (Optional) Close GENbreaker.
4. (Select according to local regulations) Close the breaker between the PV modules and the Inverter.
5. Close the DC switch of Inverter.
6. (Select according to local regulations) Close the switch between Inverter and Battery.
7. Close the Battery switch.
8. Close the Battery system switch (LX A5.0-10, LX A5.0-30). Close the Battery system integrated breaker (LX U5.4-L, LX U5.4-20, LX U5.0-30, GW14.3-BAT-LV-G10).
9. (Only for LX U5.4-L, LX U5.4-20, LX U5.0-30, GW14.3-BAT-LV-G10) Press the Battery system button.
10. (Only for screenless models) Close the off-grid control switch of the Inverter.

Stand-alone system

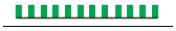


Parallel system



6.3 Indicators

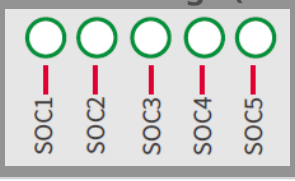
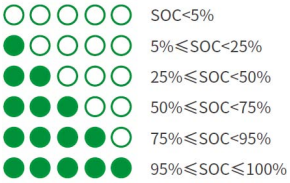
6.3.1 Inverter Indicators

indicator	Status	Description
		Inverter starting up, in self-test mode
		Inverter Normal on-grid power generation or off-grid operation mode
		BACK-UP output overload
		System fault
		LCD ON: Inverter is power on, operating in Standby mode LCD OFF: Inverter has been POWER OFF
		Utility grid abnormal, Inverter BACK-UP port power supply normal
		Utility grid Normal, Inverter BACK-UP port Power Supply Normal
		BACK-UPportNo Power Supply
		Monitoring module reset in progress
		Inverter not connected to communication terminal
		Communication terminal and cloud Server communication fault
		Inverter monitoring normal
		Inverter monitoring module not started

6.3.2 Battery Indicators

6.3.2.1 LX A5.0-10

Normal state

State of Charge (SOC) 	RUN light 	Battery system status
SOC represents the remaining battery capacity. 	Green flashing once per second	Battery system is in the Standby state
	Green flashing at 2 times/s	Battery system is in idle state
	Green steady on	Battery system is in the Charge state
Maximum SOCindicator flashes once per second • When 5% ≤ SOC < 25%, SOC1 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 50% ≤ SOC < 75%, SOC3 flashes. • When 75% ≤ SOC < 95%, SOC4 flashes. • When 95% ≤ SOC ≤ 100%, SOC5 flashes.	Green steady on	Battery system is in Discharge state

abnormal state

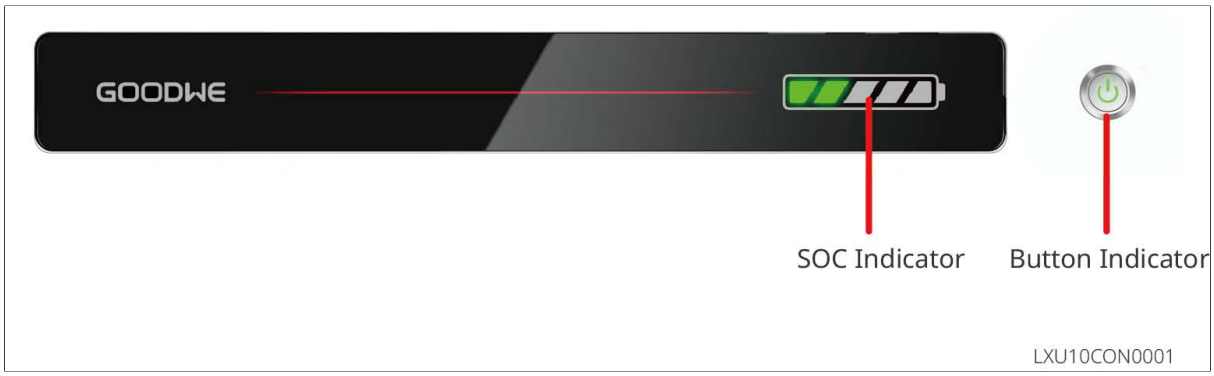
ALM light 	Battery system status	Description
Red flashes once per second	Battery system alarm occurred	After the Battery system alarm occurs, the Battery system will perform a self-check. Wait for the Battery system self-check to complete, and the Battery system will enter normal operation or the fault state.

ALM light	Battery system status	Description
Red steady on	Battery system experiences fault	Determine the type of fault that occurred based on the SOCindicator display format, and handle it according to the recommended methods in the Troubleshooting section.

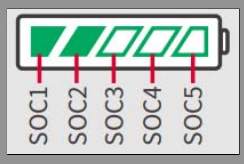
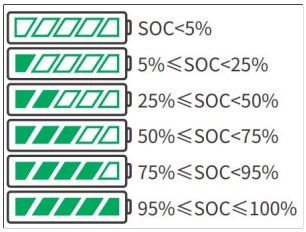
6.3.2.2 LX A5.0-30、LX U5.0-30

indicator		System Status
○○○○	SOCindicator no green display	SOC=0%
●○○○	The first SOC indicator is displayed in green.	0% < SOC≤25%
●●○○	The second SOCindicator is displayed in green.	25% < SOC≤50%
●●●○	The third SOC indicator displays green.	50% < SOC≤75%
●●●●	The fourth SOC indicator is displayed in green.	75% < SOC≤100%
RUN light	Green steady on	Battery system operating normally
	Green flashing once per second	Battery system is in the Standby state
	Green flashes 3 times/s	PCS communication loss
	slow blinking	When Battery system triggers an alarm, it will perform a self-check. After the self-check is completed, it will transition to either normal operation or fault status.
ALM light	Red steady on	Determine the type of fault that occurred based on the SOCindicator display format, and handle it according to the recommended methods in the Troubleshooting section.

6.3.2.3 LX U5.4-L



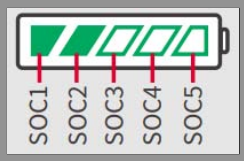
Normal state

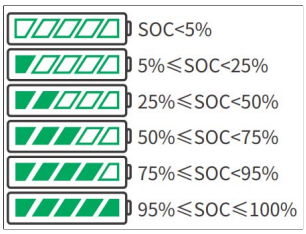
State of Charge (SOC) 	Button 	Battery system status
SOC represents the state of charge. 	Green flashing once per second	Battery system is in the Standby state

Maximum SOCindicator flashes once per second, other green lights remain steady on. • When 5% ≤ SOC < 25%, SOC1 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 50% ≤ SOC < 75%, SOC3 flashes. • When 75% ≤ SOC < 95%, SOC4 flashes. • When 95% ≤ SOC ≤ 100%, SOC5 flashes.	Green steady on	Battery system operating normally

6.3.2.4 LX U5.4-20

Normal state

State of Charge (SOC)	Button	Battery system status
		

SOC represents the state of charge.  	Green flashing once per second	Battery system is in the Standby state
Maximum SOCindicator flashes once per second, other green lights remain steady on. • When 5% ≤ SOC < 25%, SOC1 flashes. • When 25% ≤ SOC < 50%, SOC2 flashes. • When 50% ≤ SOC < 75%, SOC3 flashes. • When 75% ≤ SOC < 95%, SOC4 flashes. • When 95% ≤ SOC ≤ 100%, SOC5 flashes.	Green steady on	Battery system operating normally

abnormal state

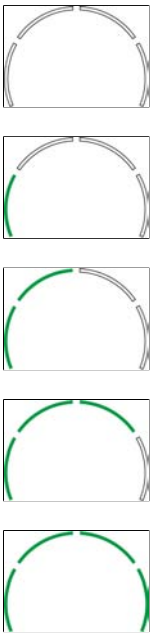
Button 	Battery system status	Description
Red light flashes once per second	Battery system alarm occurred	Determine the type of fault that occurred based on the SOCindicator display format, and handle it according to the recommended methods in the Troubleshooting section.

Red steady on	Battery system experiences fault	Determine the type of fault that occurred based on the SOCindicator display format, and handle it according to the recommended methods in the Troubleshooting section.

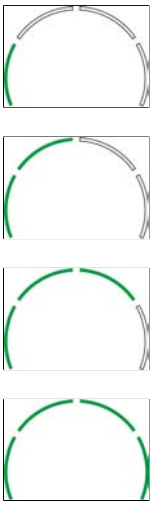
6.3.2.5 GW14.3-BAT-LV-G10

Normal state

indicator name	indicator status		Corresponding to other light status	System Status
State of Charge (SOC)		SOCindicatorGreen steady on	/	SOC=0% 0% < SOC≤25% 25% < SOC≤50% 50% < SOC≤75% 75% < SOC≤100%

indicator name	indicator status		Corresponding to other light status	System Status
		SOCindicator Green Flashing		Battery system is in Discharge state
Operation indicator + Touch Button		White constant light	 Blue-purple breathing light	The system is operating normally.
		white flicker	 Blue-purple running light	System preparing
Communication light		White steady light	/	PCS communication normal

abnormal state

indicator name	indicator status		Corresponding to other light status	System Status
State of Charge (SOC)		SOCindicatorGreen steady on	 Red flashing  extinguish  Red steady on	Determine the type of fault that occurred based on the SOCindicator display format, and handle it according to the recommended methods in the Troubleshooting section.
communication light		extinguish	/	PCS communication loss
System Alarm Light		White constant light	/	System Alarm and under-voltage fault levels 2, 3, 4

6.3.3 Smart Meter Indicator

6.3.3.1 GMK110

Type	Status	Description
Power LED 	Always On	The electricity meter has been power on
	Extinguish	The electricity meter has been power off.
Communication light 	flicker	Meter communication normal
	Extinguish	Meter communication abnormal or no communication

6.3.3.2 GM330

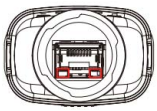
Type	Status	Description
Power LED	Always On	The meter has been power on, with no RS485 communication.
	flicker	The meter has been power on, and RS485 communication is functioning normally.
	Extinguish	The electricity meter has been power off
Communication light	Extinguish	Reserved
	flicker	Press and hold the Reset button for ≥5s, the power light and buy/sell light flash: the meter resets.
Buying and selling electric lights	Always On	buy power from the grid
	flicker	Sell electricity to Utility grid
	Extinguish	No purchase, no sale of electricity
	Reserved	

6.3.4 Smart Dongle Indicator

6.3.4.1 WiFi/LAN Kit-20

Indicator	Status	Description
Power Light		Constantly lit: The smart communication stick is powered on.
		Off: The smart communication stick is not powered on.
Communication Light		Constantly lit: Communication is normal in WiFi mode or LAN mode.
		Single blink: The smart communication stick's Bluetooth signal is enabled, waiting to connect to the App.
		Two blinks: The smart communication stick is not connected to the router.
		Four blinks: The smart communication stick communicates normally with the router but is not connected to the server.

Indicator	Status	Description
		Six blinks: The smart communication stick is identifying connected devices.
		Off: The smart communication stick is undergoing a software reset or is not powered on.

Indicator	Color	Status	Description
LAN port communication indicator 	Green	Steady on	100Mbps wired network connection is normal.
		Off	• Network cable is not connected. • 100Mbps wired network connection is abnormal. • 10Mbps wired network connection is normal.
	Yellow	Steady on	10/100Mbps wired network connection is normal, with no communication data being transmitted or received.
		Flashing	Communication data is being transmitted or received.
		Off	Network cable is not connected.

Button	Description
Reload	Hold for 0.5~3 seconds, the smart communication stick will reset.
	Hold for 6~20 seconds, the smart communication stick will restore factory settings.

6.3.4.2 4G Kit-CN-G20 & 4G Kit-CN-G21

indicator	Status	Description
Power LED		Constant On: Smart dongle has been power on.
		Extinguish: Smart dongle not power on.
Communication light		Constant On: Smart dongle is connected to Server, communication is normal.
		Double flashing: Smart dongle not connected to the base station.

indicator	Status	Description
		Four flashes: Smart dongle is connected to the base station but not connected to Server.
		Six flashes: Smart dongle communication with Inverter is disconnected.
		Extinguished: Smart dongle Software reset in progress or not power on.

Button	Description
Reload	Hold for 0.5~3 seconds, Smart dongle will restart.
	Hold for 6~20 seconds, Smart dongle will restore factory settings.

6.3.4.3 Ezlink3000

indicator /Screen Printing	color	Status	Description
Power LED 	blue		Flicker = Communication stick is operating normally.
			Extinguish = Communication stick has power off.
Communication light 	green		Always On = Communication Stick is connected to Server.
			Double flash = Communication stick not connected to Router.
			Four flashes = Communication stick is connected to Router, but not connected to Server.
RELOAD	-	-	• Press and hold for 1-3 seconds to restart the communication stick. • Press and hold for 6-10 seconds to restore factory settings. Quick double-click to activate Bluetooth signal (maintained for 5 minutes only).

7 System Commissioning

7.1 Commissioning Method Overview

For frameless Inverter, users need to useSoConfigure parameters using the larGo APP.
For the Inverter with a screen, users canSSet parameters via the solarGo APP, or alternatively throughLCD screen setting parameters.

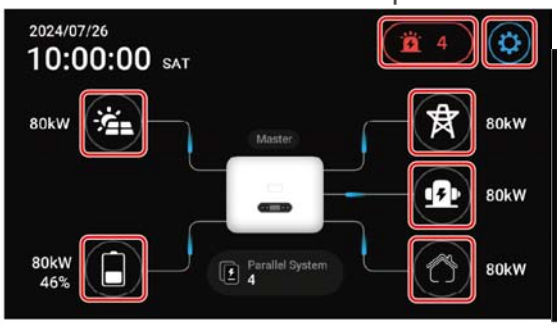
7.2 Configuration via LCD

7.2.1 LCD Overview

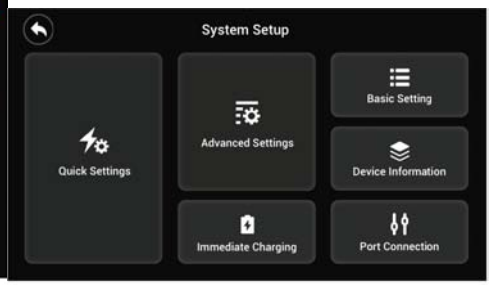
Through the LCD screen, users can:

1. View the device's operational data, software version, alarm information, etc.
2. Set parameters, safety regulation regions, power limit, etc.

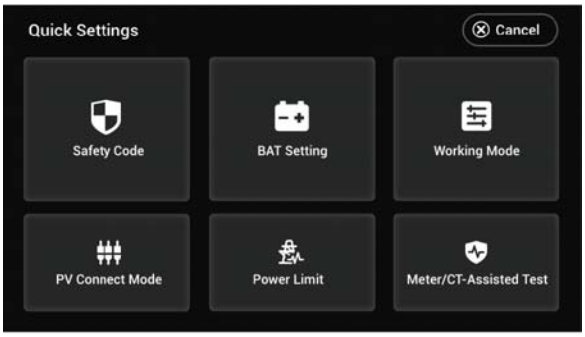
Introduction to LCD Interface
The LCD supports both touch and button operation.



ESU10DSC0006



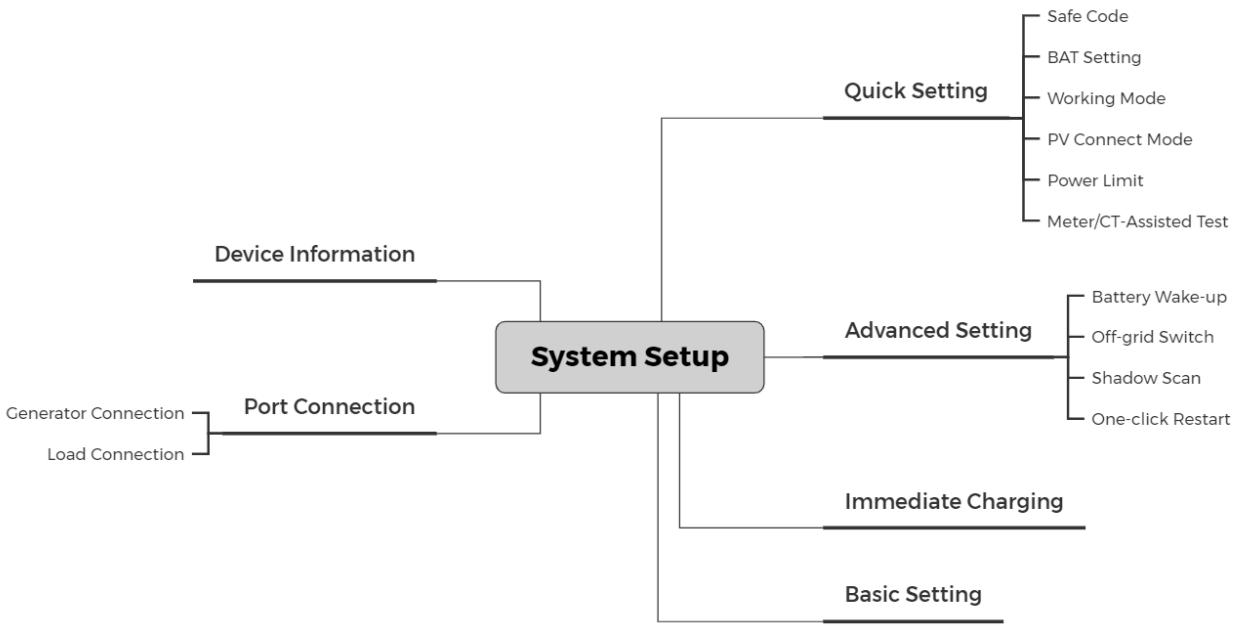
ESU10CON0007



ESU10CON0008

Name/Icon	Description
	Upward
	Downward
	Confirm
	• Short press: Exit page •  and  Press and hold for 5 seconds simultaneously: Restart the device
	Used to view PV current, voltage, and power generation information.
	Used to view Battery model, status, and other information.
	Used to view the alarms and fault information of Inverter.
	Used to access the settings interface of Inverter
	Used to view the status information of Utility grid
	To view the status of the generator
	To view the load information of Inverter
	Return to the main interface
Cancel	Return to the previous menu
Next	Proceed to the next setup page
Back	Return to the previous settings page

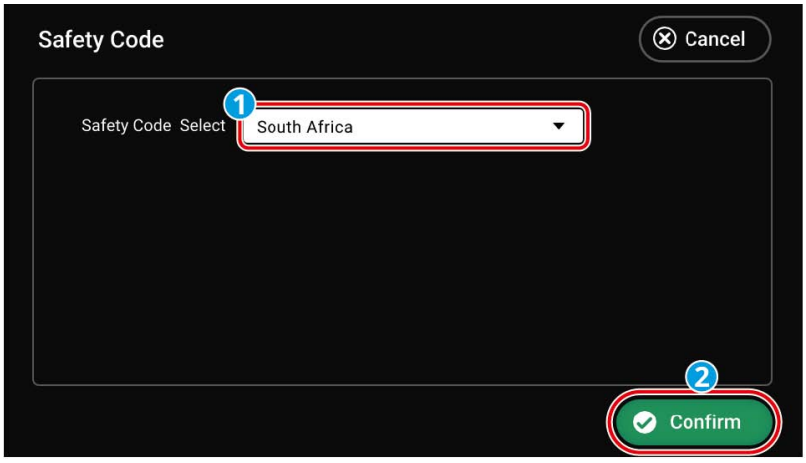
LCD setting interface structure



7.2.2 Quick Settings

Set safety regulations

1. Through the main interface, click> Quick Settings > Safe Code, enter the parameter configuration interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm OK" indicating the parameters have been successfully set.



ESU10CON0009

Parameter Name	safety code	Description

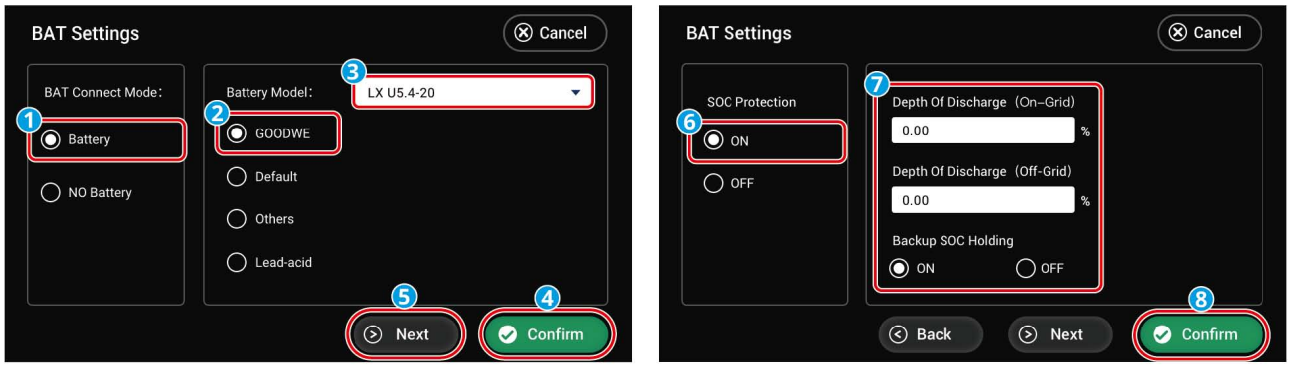
Safety Code select	South Africa	Select the corresponding safety code based on the country or region where the equipment is located.
	Pakistan	
	Argentina	
	Philippines	
	60Hz Default	
	50Hz Default	
	IEC61727 60Hz	

Set Battery parameters

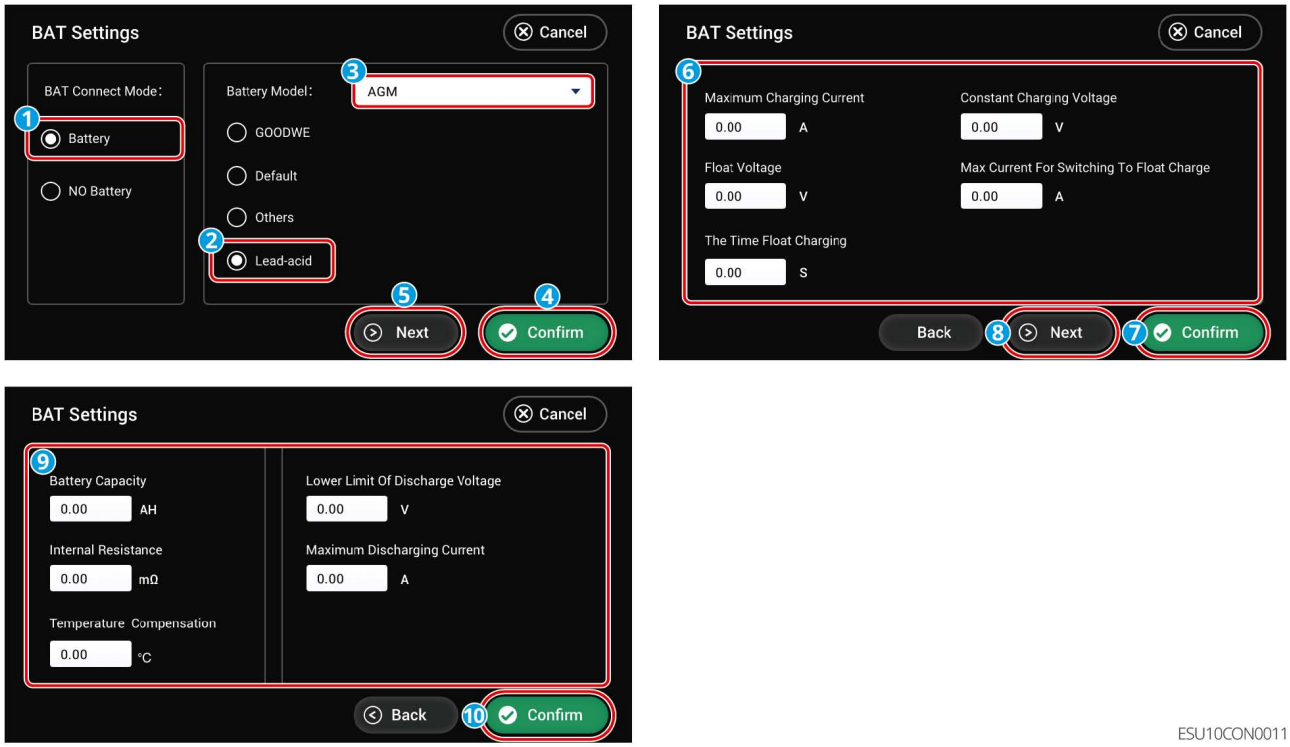
1. Through the main interface, click > Quick Settings > BAT Setting, enter the parameter configuration interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm OK" to indicate successful parameter configuration.

NOTICE

Please ensure to click "Confirm" on each page to validate the parameters; otherwise, the system will operate with default settings.



ESU10CON0010



ESU10CON0011

Basic parameter settings

BAT Connection Mode	Type	Description
Battery	GOODWE	If the system is connected to a GoodWe brand lithium Battery, select GOODWE and choose the correct model.
	Default	If the third-party lithium Batterymodel connected in the system is not listed here, please select based on the actual situation: • Lithium 50Ah • Lithium 100Ah
	Others	If the third-party lithium Batterymodel connected in the system is included in this list, please select the correct model based on the actual situation.
	Lead acid	If the system is connected to a lead-acid Battery, select "Lead acid" and choose the correct lead-acid type. Currently supported types are GEL, AGM, and Flooded.
NO Battery	No Battery is connected to the system	

BAT Setting	Set according to the actual connected Battery in the system.

Lithium Battery parameter settings

Parameter Name	Description
SOC Protection	Enable or disable the SOCProtection function.
Depth Of Discharge (On-Grid)	During Inverter on-grid operation, the maximum depth of discharge Protection point of Battery.
Depth Of Discharge (Off-Grid)	During off-grid operation, the maximum depth of discharge Protection point of Battery.
Backup SOC Holding	To ensure the Battery SOC is sufficient to maintain normal system operation when off-grid, during on-grid operation, the Battery will charge via Utility grid or PV Charge until reaching the preset SOC Protection value.

Lead-acid Battery parameter settings

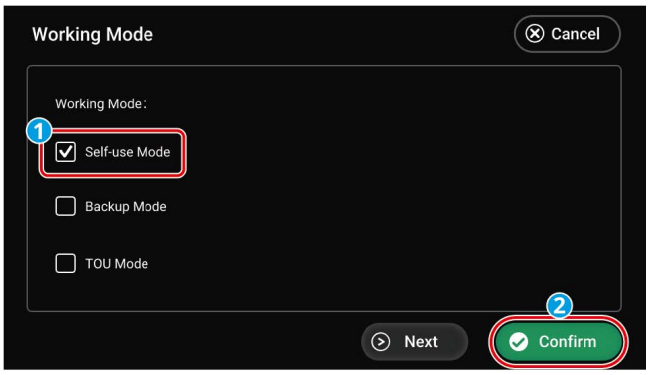
Parameter Name	Description
Maximum Charging Current	Battery charge defaults to constant charging mode; The maximum Charge voltage and maximum Charge current in this mode need to be set; please configure according to Battery Technical Data.
Constant Charging Voltage	
Float Voltage	When Battery charge current is less than the Maximum Current For Switch To Float Charge and the duration reaches The Time Float Charging, the Battery charge status transitions from constant charging mode to float charging mode. Float voltage is the maximum Battery Charge voltage in float charging mode. Please set it according to Battery Technical Data.
The Time Float Charging	
Maximum Current For Switch To Float Charge	
Battery Capacity	Set the Battery capacity according to the actual connected Battery parameters.
Internal Resistance	The internal resistance present in Battery should be set according to Battery Technical Data.

Temperature Compensation	When the default temperature exceeds 25°C, the upper limit of Charge voltage decreases by 3mV for every 1°C increase. Please adjust the settings based on the actual Battery Technical Data.
Lower Limit Of Discharge Voltage	Please set according to Battery Technical Data.
Maximum Discharging Current	Please configure according to Battery Technical Data. The larger the Dischargecurrent, the shorter the working time of Battery.

Set working mode

1. Through the main interface, click > Quick Settings > Working Mode, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm." The interface will display "Confirm OK," indicating that the parameter configuration is successful.

NOTICE
Please ensure to click "Confirm" on each page to validate the parameters; otherwise, the system will operate with default settings.



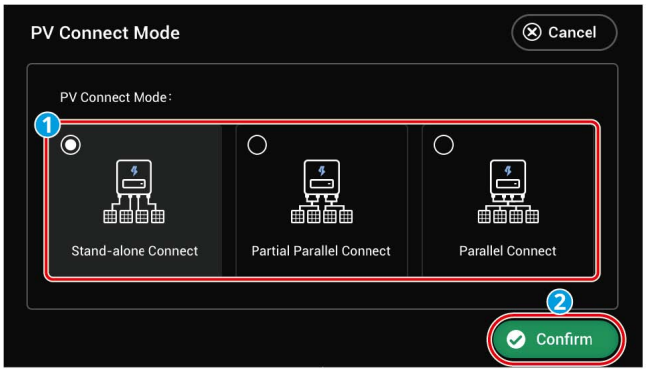
ESU10CON0012

Parameter Name	Description

Self-use Mode		When the working mode is set to Self-use Mode, both Back-up Mode and TOU Mode can be enabled simultaneously. Please select according to actual conditions. The operational priority of working modes is: Back-up Mode > TOU Mode > Self-use Mode.
Back-up Mode	Charging From Grid	Enable this function to allow the system to buy power from the grid.
	Rated Power	The percentage of Power to InverterNominal power when purchasing electricity.
TOU Mode	Time	Within the Start Time and End Time, the Battery performs Charge or Discharge based on the configured charging Discharge mode and Nominal power.
	Charge/Discharge	Set to Charge or Discharge based on actual requirements.
	Power (%)	The percentage of Power to Inverter Nominal power during Charge or Discharge.
	Bat (%)	When the Battery power reaches the set SOC, stop Charge. To set the stop SOC for Battery discharge, please refer to9.2.2.2 Set Battery parametersChapter, set the Depth of Discharge (On-Grid) and Depth of Discharge (Off-Grid) via the LCD screen.

Set PV connection mode

1. Through the main interface, click> Quick Settings > PV Connect Mode, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm." The interface will display "Confirm OK," indicating that the parameter configuration is successful.

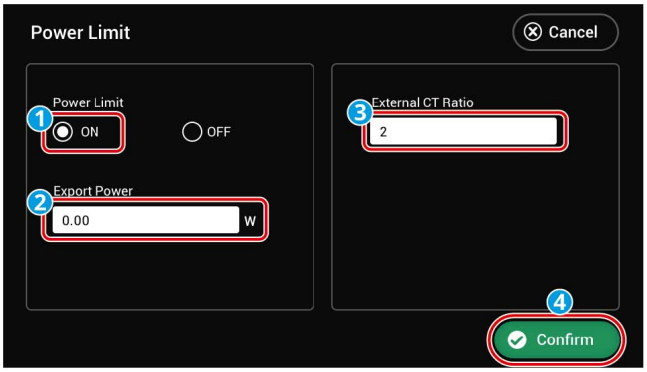


ESU10CON0015

Parameter Name	Description
Stand-alone Connect	The PV String is connected in a one-to-one correspondence with the MPPT port on the Inverter side.
Partial Parallel Connect	When a string of PV String is connected to the multi-channel MPPT port on the Inverter side, other PV modules are simultaneously connected to other MPPT port on the Inverter side.
Parallel Connect	When the external PV String is connected to the Inverter side photovoltaic input port, one PV String is connected to multiple photovoltaic inputs port.

Set Export power limit

1. Through the main interface, click > Quick Settings > Power Limit, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm." The interface will display "Confirm OK," indicating that the parameter configuration is successful.



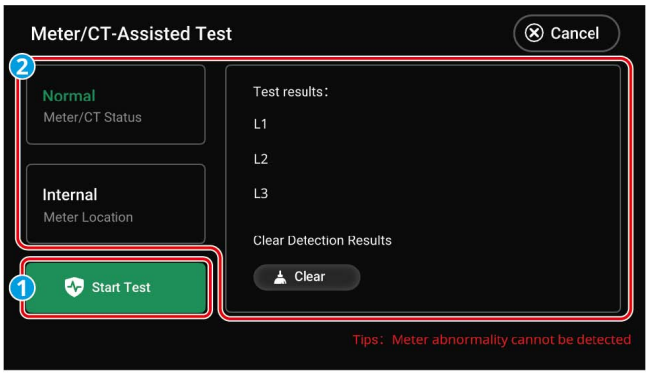
ESU10CON0016

Parameter Name	Description

Power Limit	According to the Utility grid standard requirements of certain countries or regions, this function should be enabled when it is necessary to limit the output Power.
Export Power	Set according to the maximum Power that can actually be input to Utility grid.
External CT Ratio	Set as the ratio of the primary side to the secondary side current of the external CT. • Built-in meter or GMK110: No setup required. Default CT ratio is 120A/40mA. • GM330: CT can be purchased from GoodWe or self-procured, with CT ratio requirement: nA/5A. • nA: CT primary side input current, n ranges from 200-5000. • 5A: CT secondary output current.

Electric Meter/CT Auxiliary Testing

1. Through the main interface, click> Quick Settings > Meter/CT Assisted Test, enter the parameter configuration interface.
2. Click Start Test to begin the detection. After completion, determine the test result based on the interface prompts.

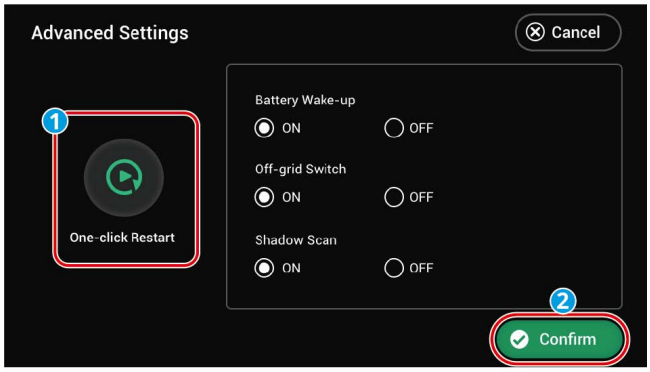


ESU10CON0026

7.2.3 Setting Advanced Parameters

1. Through the main interface, click> Advanced Settings, enter the parameter configuration interface. Input the initial password: 1111.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm

OK" indicating the parameters have been successfully configured.

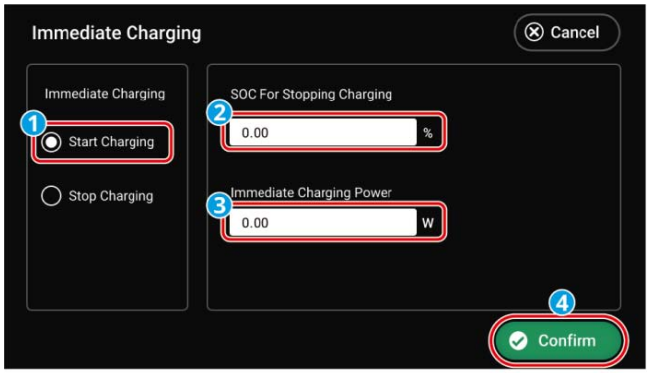


ESU10CON0020

Parameter Name	Description
One-click restart	Using this function, you can quickly restart the Inverter.
Battery Wake-up	When enabled, it can wake up Battery after Battery shuts down due to undervoltage Protection. Only applicable to lithium breaker without Battery. After activation, the output voltage of Battery port is approximately 60V.
Off-grid Switch	In off-grid mode, the off-grid control switch controls the activation and deactivation of the Inverter off-grid function. Under On-grid mode, this function is not effective. The switch is initially in the ON state, enabling the off-grid function. After Inverter power on, Inverter activates the off-grid output function. In the off-grid state, turning the off-grid switch off and then on again clears the off-grid overload time and restarts the off-grid output.
Shadow Scan	When the photovoltaic panels are severely shaded, enabling the shadow scan function can optimize Inverter power generation Efficiency.

7.2.4 Setting Immediate Charging

1. Through the main interface, click Immediate Charging, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm." The interface will display "Confirm OK," indicating that the parameter configuration is successful.

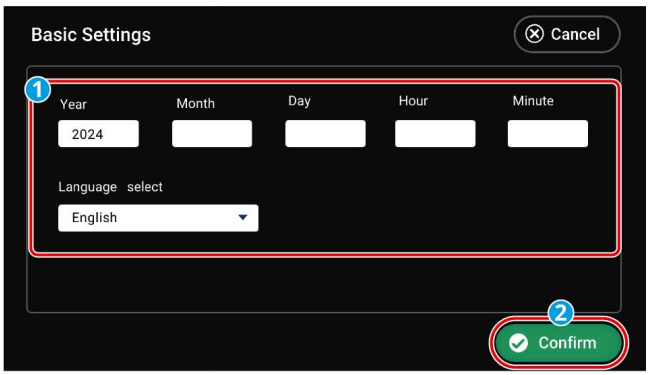


ESU10CON0021

Parameter Name	Description
Immediate Charging	After activation, Utility grid will immediately supply power to Battery charge. This effect is only triggered once. Please enable or disable it as needed.
SOC For Stopping Charging	When Battery (immediate charging) is enabled, charging to Battery charge will stop once the Battery SOC reaches the Charge cutoff SOC.
Immediate Charging Power	When Battery is enabled for charging, the percentage of Charge Power to Inverter Nominal power. For example, for a Nominal power with a capacity of 10kW, when set to 60, the Charge Power is 6kW.

7.2.5 Setting the Basic Information

1. Through the main interface, click > Basic Settings, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm OK" indicating the parameters have been successfully configured.

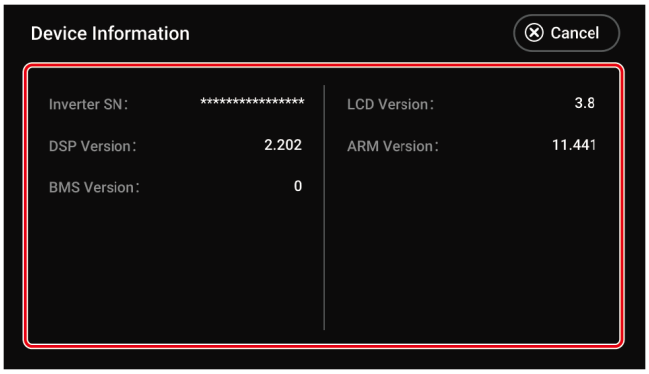


ESU10CON0027

7.2.6 Viewing Device Information

1. Through the main interface, click> Device Information, enter the parameter query interface.

NOTICE
You can query the Inverter, serial number, DSP version, BMS version, LCD version, and ARM version.



ESU10CON0028

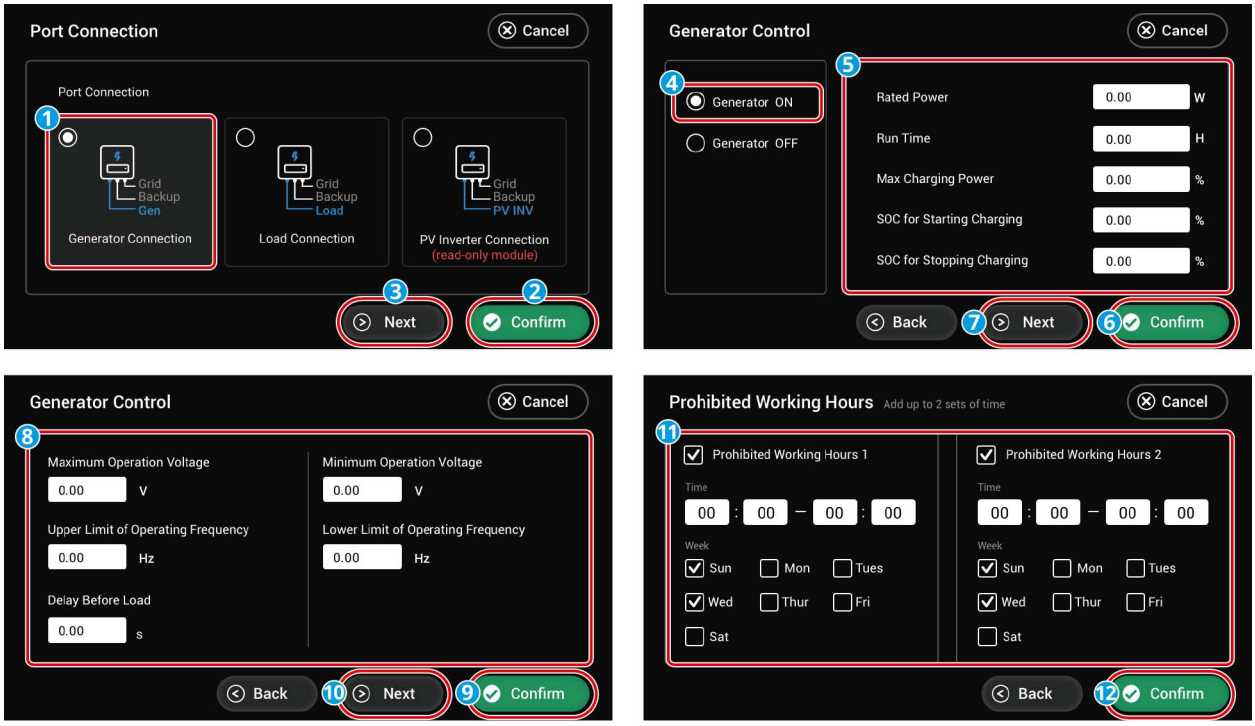
7.2.7 Setting Port Connection

NOTICE
To set the relevant parameters of grid-tied PV inverter in microgrid mode, please connect SolarGo APP for configuration.

Setting Port Connection generator

1. Through the main interface, click> Port Connection, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm OK" to indicate successful parameter configuration.

NOTICE
Please ensure to click "Confirm" on each page to validate the parameters; otherwise, the system will operate with default settings.



ETL10CON0004

No.	Parameter Name	Description
1	Generator ON/OFF	Control the start and stop of the generator. Only applicable to generators supporting dry contacts.
2	Rated Power	Generator's Nominal power.
3	Run Time	The continuous operation time of the generator. After exceeding the set operation time, the generator will automatically shut down. This function is only effective for generators that support dry contact connections.
4	Max Charging Power	Set as Max charge power with generator as Battery charge.
5	SOC for Starting Charging	Set the generator to start at Battery charge SOC. When the SOC of Battery falls below the set value, the generator will charge Battery charge.
6	SOC for Stopping Charging	Set the generator to stop charging Battery charge at the specified SOC. When the SOC of Battery reaches the set value, the generator will cease charging Battery charge.
7	Maximum Operation Voltage	Set the operational voltage upper limit for the generator.

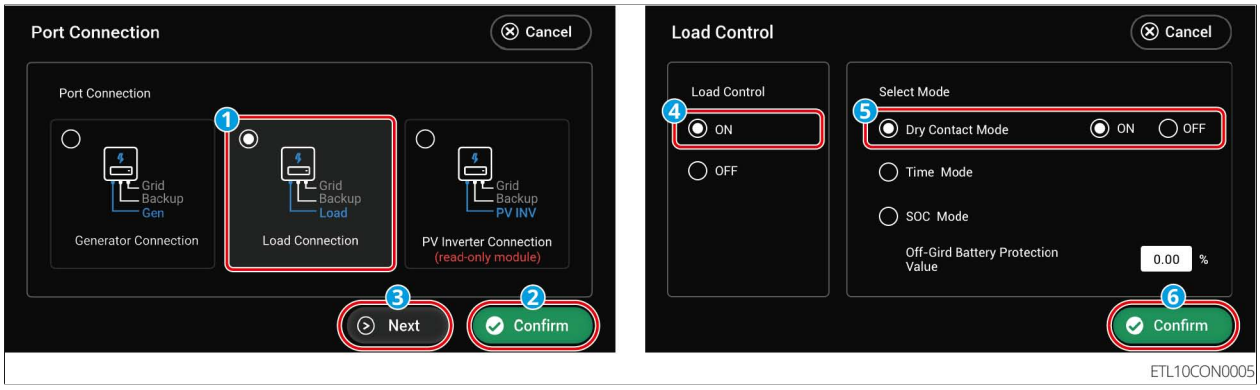
8	Minimum Operation Voltage	Set the lower limit of the generator's operating voltage.
9	Upper Limit Of Operating Frequency	Set the operating Frequency upper limit of the generator.
10	Lower Limit Of Operating Frequency	Set the lower limit of the generator's operating Frequency.
11	Delay Before Load	No-load preheating time of the generator before loading.
12	Prohibited Working Hours	Please set the prohibited operating time of the generator according to the actual situation.

Setting Port Connection load control

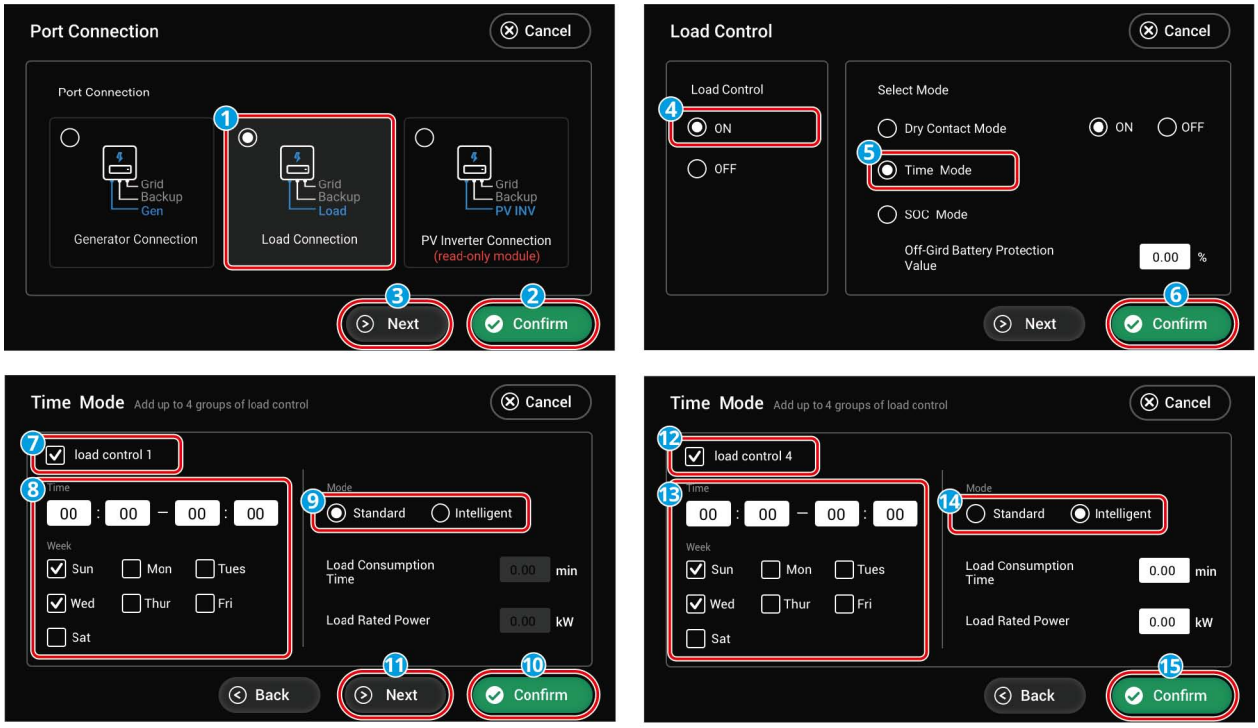
1. Through the main interface, click> Port Connection, enter the parameter setting interface.
2. Please set the parameters according to the actual situation.
3. After completing the settings, click "Confirm". The interface will display "Confirm OK" to indicate successful parameter configuration.

NOTICE
Please ensure to click "Confirm" on each page to validate the parameters; otherwise, the system will operate with default settings.

Dry contact mode

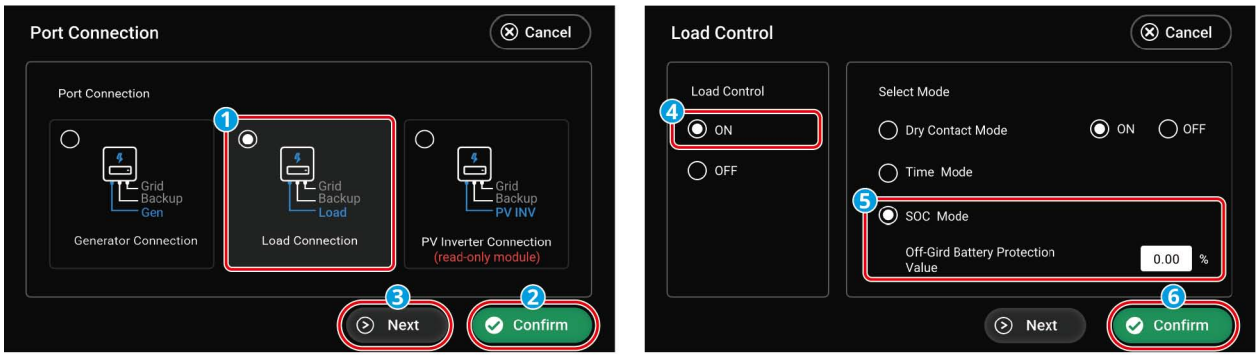


Time mode



ETL10CON0007

SOC mode



ETL10CON0006

No.	Parameter Name	Description
1	Load Control ON/OFF	Enable/disable load control function
2	Dry Contact Mode	ON: When the switch status is set to ON, power supply to the load begins. OFF: When the switch status is set to OFF, power supply to the load is terminated.
3	Time Mode	Within the set time period, the load will automatically supply power to the load or POWER OFF. Standard mode or smart mode can be selected.

4	Load Control 1	Set the 1st group load control time, up to 4 groups can be set.
5	Mode: Standard/Intelligent	Standard mode: Power will be supplied to the load during the set time period. Smart Mode: During the set time period, when the remaining energy generated by photovoltaics exceeds the preset load Nominal power, it starts supplying power to the load.
6	Load Consumption Time	Minimum operating time after load is turned on to prevent frequent switching due to energy fluctuations. Only applicable in smart mode.
7	Load Rated Power	When the surplus energy generated by the PV exceeds this load Nominal power, it starts supplying power to the load. This applies only to smart mode.
8	SOC Mode	Inverter has built-in relay dry contact control port, which can control whether to supply power to the load through the relay.
9	Off-Grid Battery Protection Value	In off-grid mode, if an overload is detected at the BACK-UP terminal or the BatterySOC value falls below the off-grid BatteryProtection setpoint, power supply to the load connected to the relay port can be terminated. Please configure the off-grid BatteryProtection value according to actual requirements.

7.3 Configured via SolarGo APP

7.3.1 Product Introduction

NOTICE

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

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

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

7.3.1.1 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

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

NOTICE

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

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

SolarGo App

SLG00CON0135

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

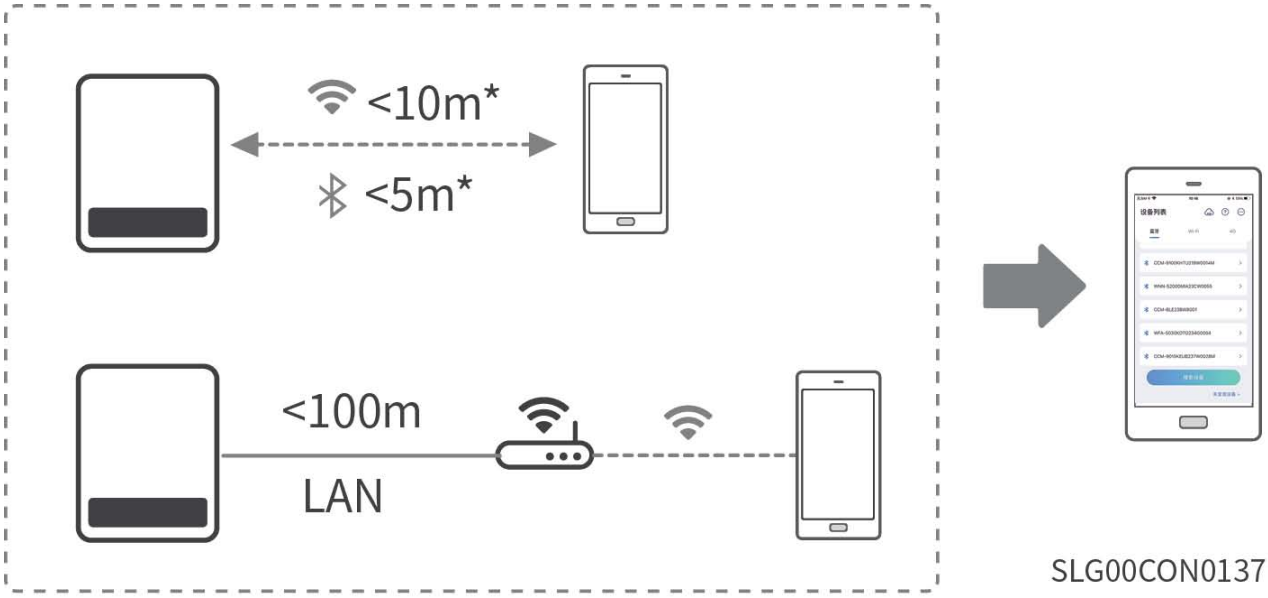
SolarGo App

SLG00CON0136

7.3.1.2 App Connection

Connect as the following shows after powering on the equipment.

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



SLG00CON0137

7.3.1.3 GUI Introductions to Login Page

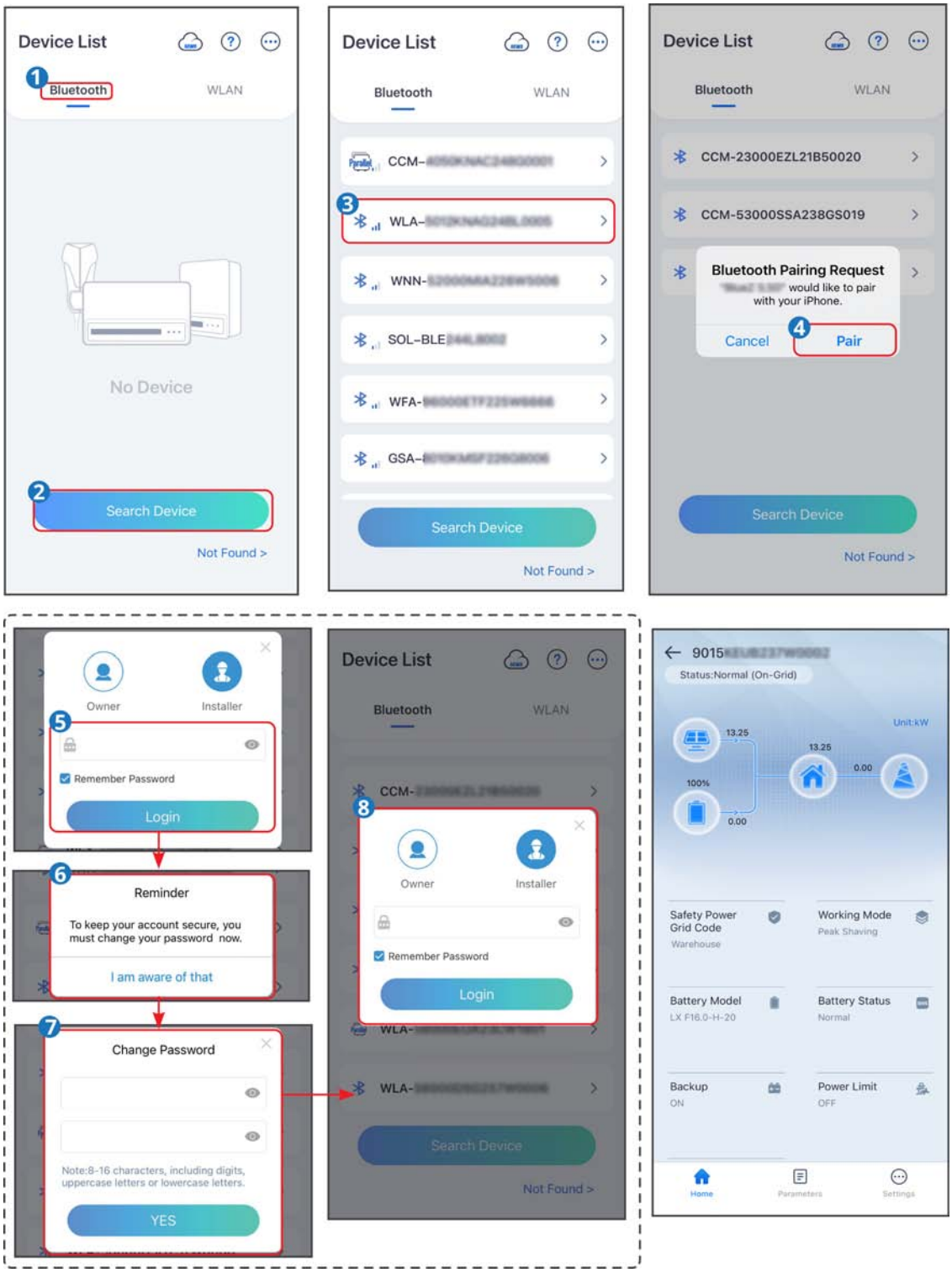
No.	Name/Icon	Description
1	SEMS	Tap the icon to open the page downloading the SEMS Portal app.

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

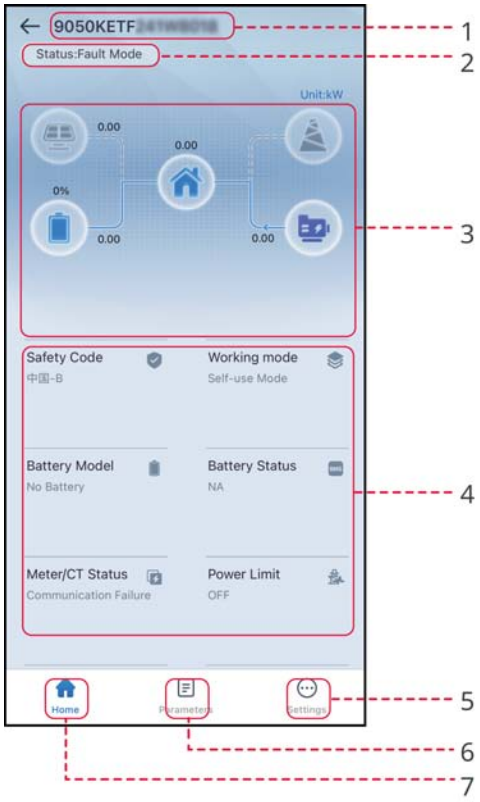
7.3.2 Connecting the Hybrid Inverter

7.3.2.1 Connecting the Hybrid Inverter (Bluetooth)

Step 1 Ensure that the inverter is power on, both the inverter and the communication module are working properly.
Step 2 Select **Bluetooth** tab on the SolarGo app hompage.
Step 3 Pull down or tap **Search Device** to refresh the device list. Find the device by the the inverter serial number. Tap the device name to log into the **Home** page. Select the device by checking the serial number of the master inverter when multi inverters are parallel connected.
Step 4 For first connection with the equipment via Bluetooth, there will be a Bluetooth pairing prompt, tap **Pair** to continue the connection.
Step 5 Log in as an Owner or an Installer. Initial password: 1234. Default password: 1234.
Step 6 (Optional): If connecting via WLA-*** or WFA-***, enable Bluetooth Stays On following the prompts as entering the device details page. Otherwise, the bluetooth signal of the device will be off after disconnection.



7.3.3 GUI Introductions to Hybrid Inverters



No.	Name/Icon	Description
1	Serial Number	Serial number of the connected inverter.
2	Device Status	Indicates the status of the inverter, such as Working,Fault, etc.
3	Energy Flow Chart	Indicates the energy flow chart of the PV system. The actual page prevails.
4	System Status	Indicates the system status, such as Safety Code, Working Mode, Battery Model, Battery Status, Power Limit, Three-Phase Unbalanced Output, etc..
5		Home. Tap Home to checkSerial Number, Device Status, Energy Flow Chart, System Status, etc.
6		Parameters. Tap Parameters to check the inverter Data.

No.	Name/Icon	Description
7		• Settings Tap to perform quick settings, basic settings, advanced settings, etc. on the inverter. • Login required to access Quick Setup and Advanced Setup interfaces Initial password: goodwe2010 or 1111.

7.3.4 Setting Communication Parameters

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

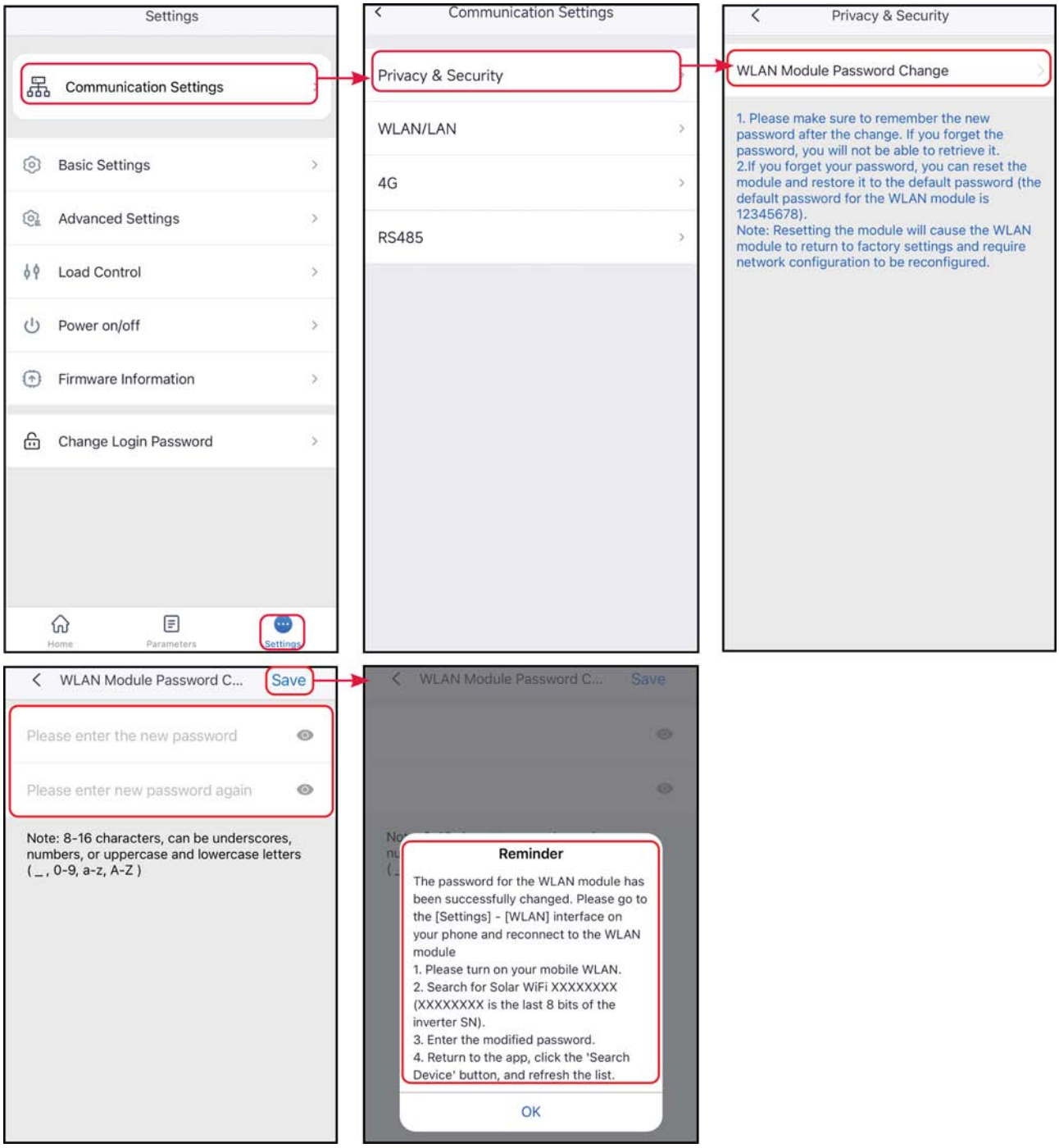
7.3.4.1 Setting Privacy and Security Parameters

Type I

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

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

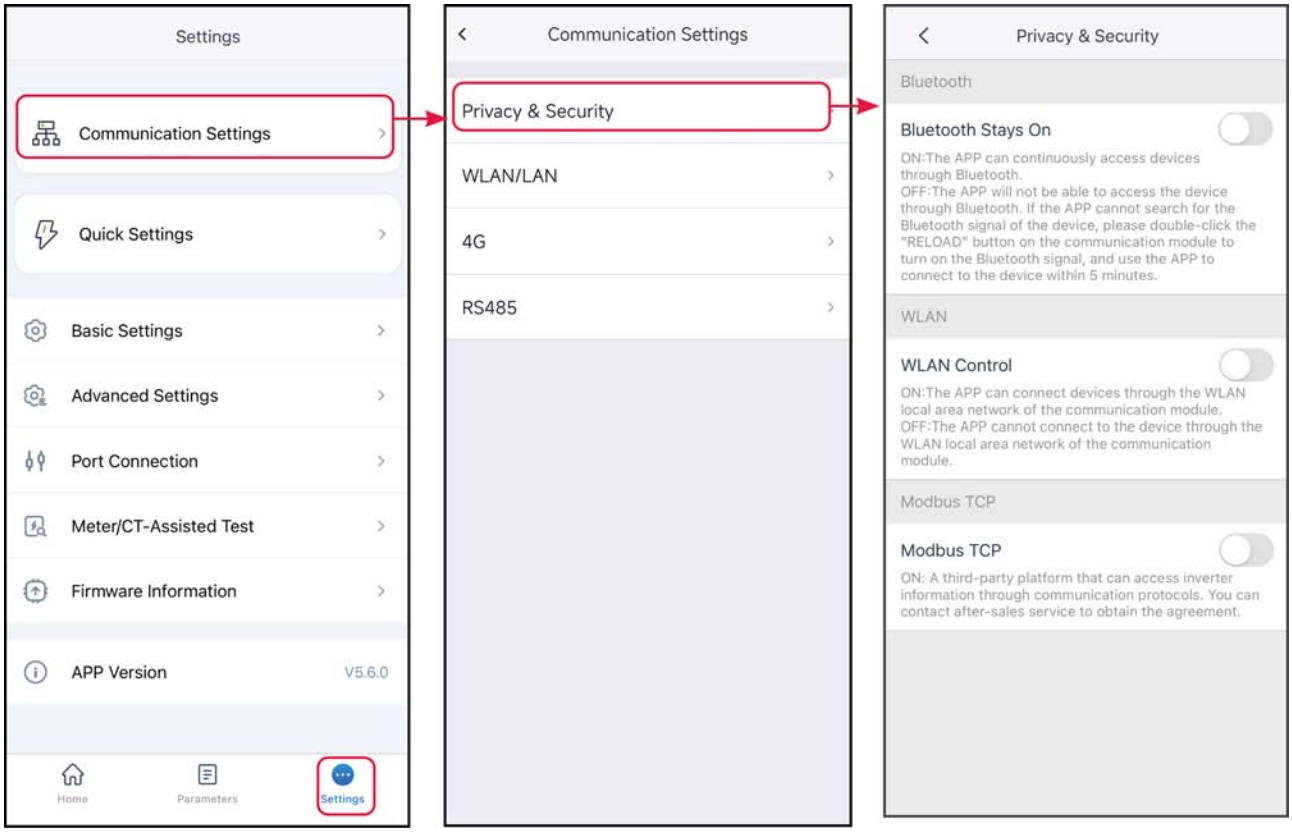
Step 3 Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi***) with the new password.



Type II

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

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



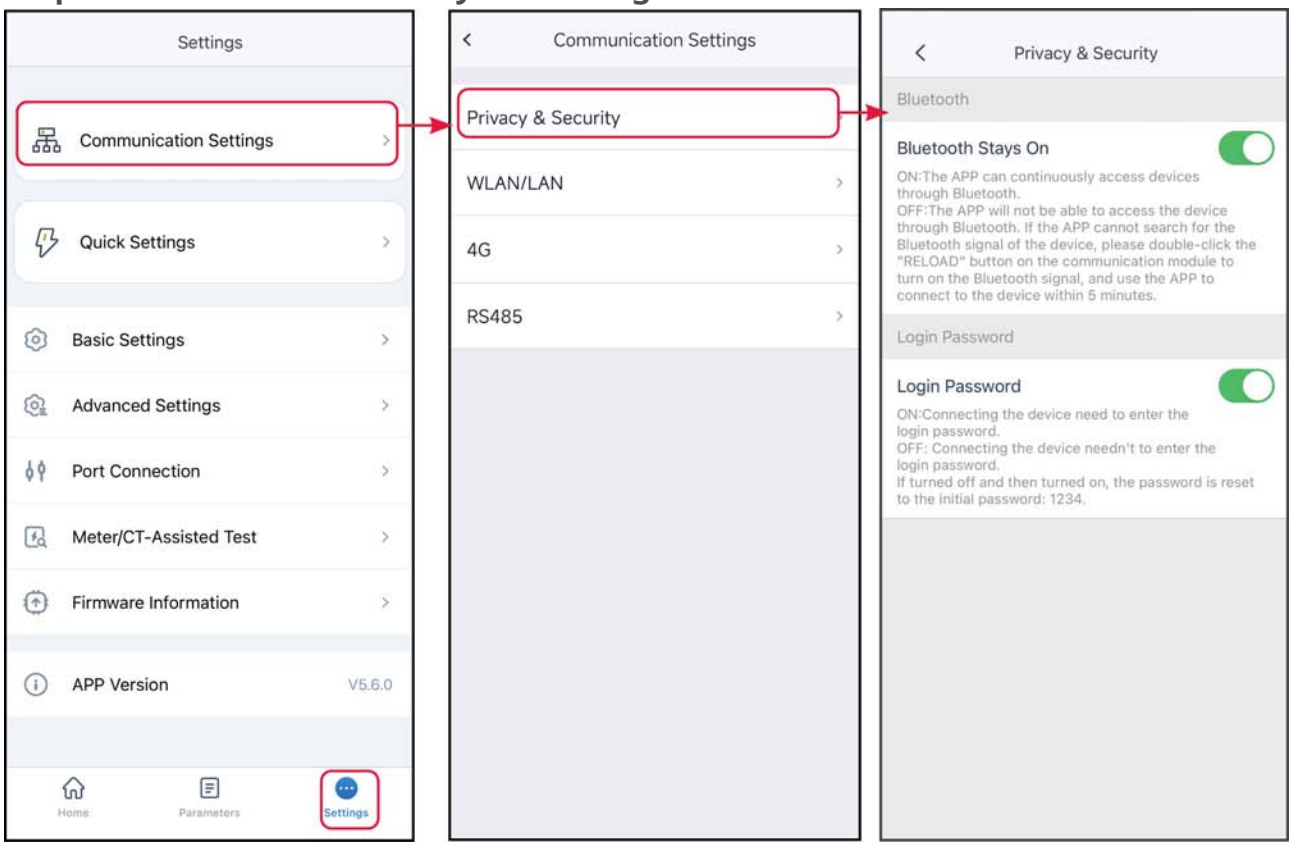
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default.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

Type III

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

the parameters.

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



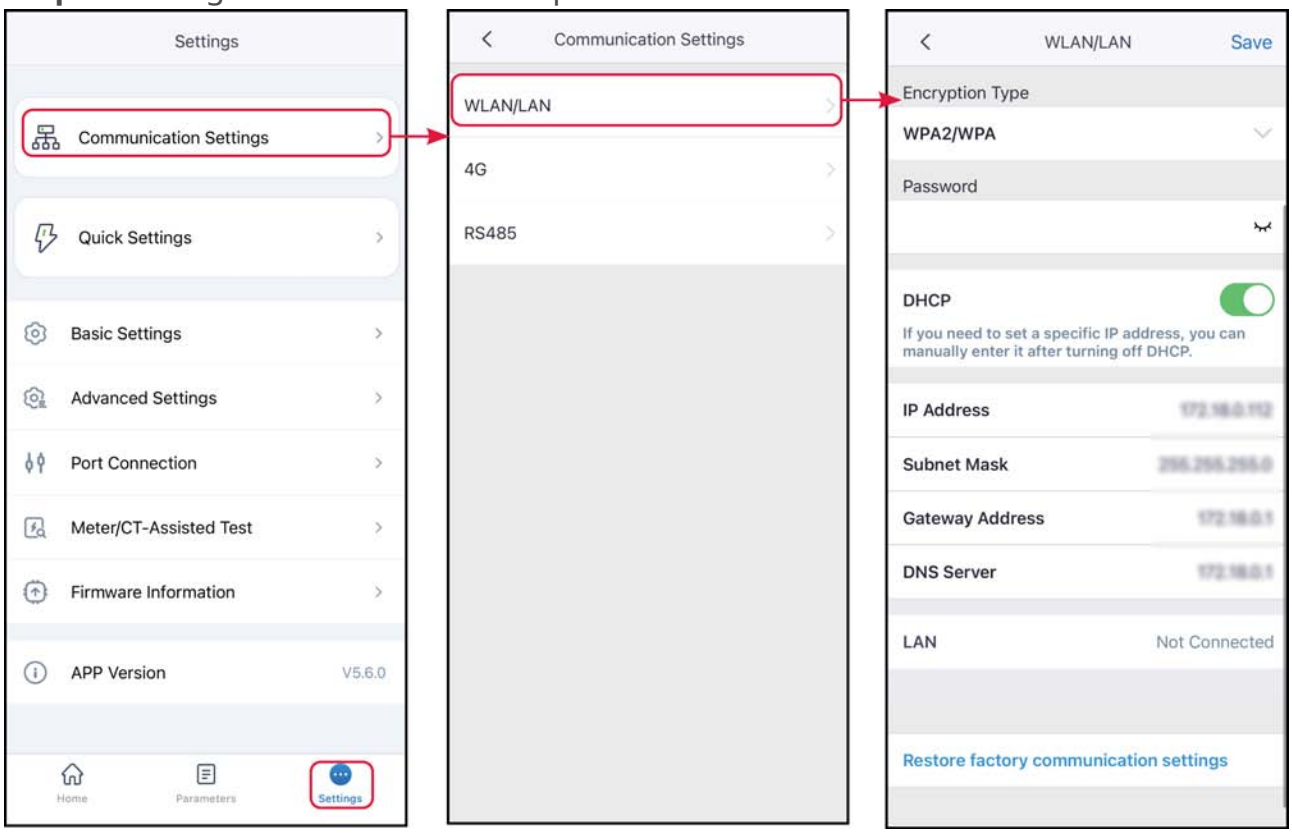
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	Password	Disabled by default.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

7.3.4.2 Setting WLAN/LAN Parameters

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

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

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



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

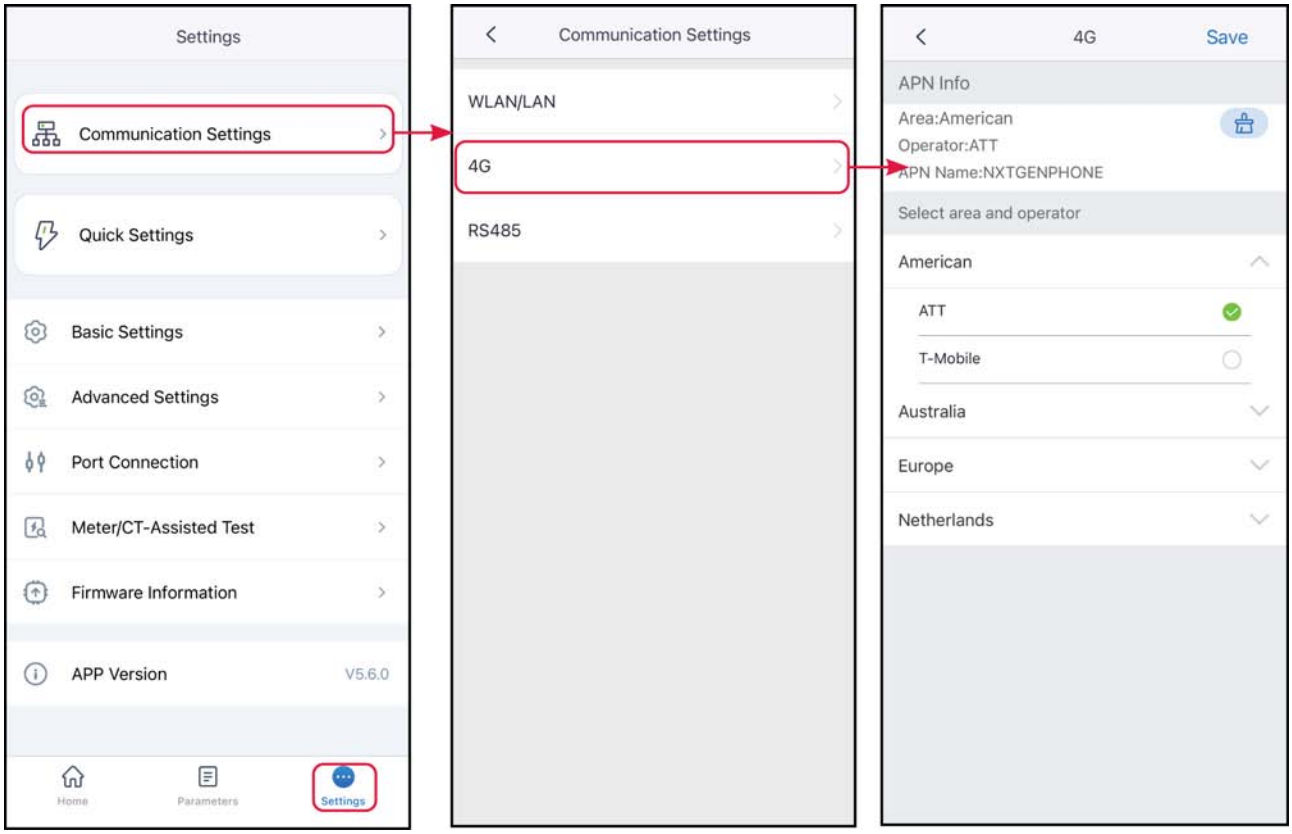
No.	Parameters	Description
4	IP Address	Do not configure the parameters when DHCP is enabled. Configure the parameters according to the router or switch information when DHCP is disabled.
5	Subnet Mask	
6	Gateway Address	
7	DNS Server	

7.3.4.3 Configuring APN Parameters

NOTICE

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

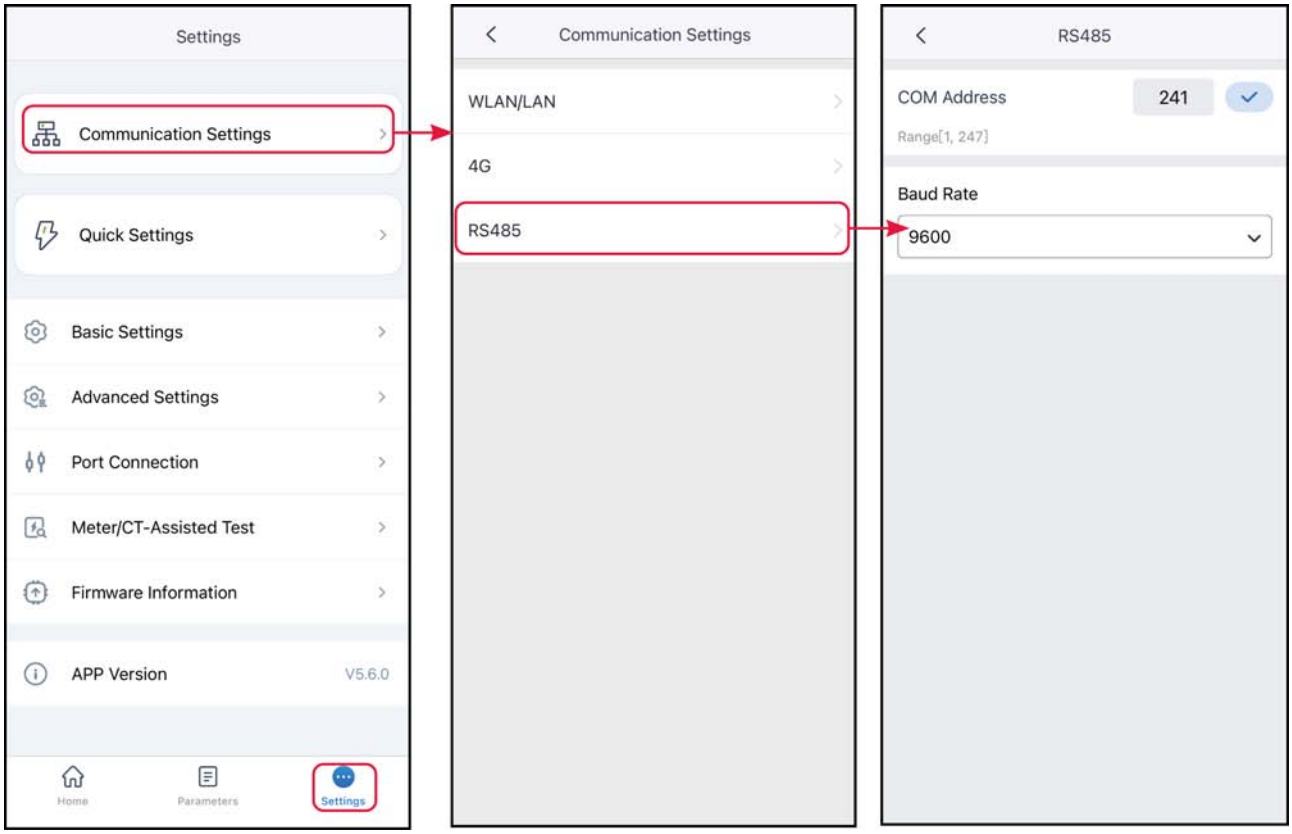
Step 1: Tap **Home > Settings > Communication Settings > 4G** to set the parameters.
Step 2: Set the region and operator based on actual needs.



7.3.4.4 Configuring RS485 Parameters

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

Step 1: Tap **Home > Settings > Communication Settings > RS485** to set the parameters.
Step 2 : Set the Modbus Address And Baud Rate base on actual situation.



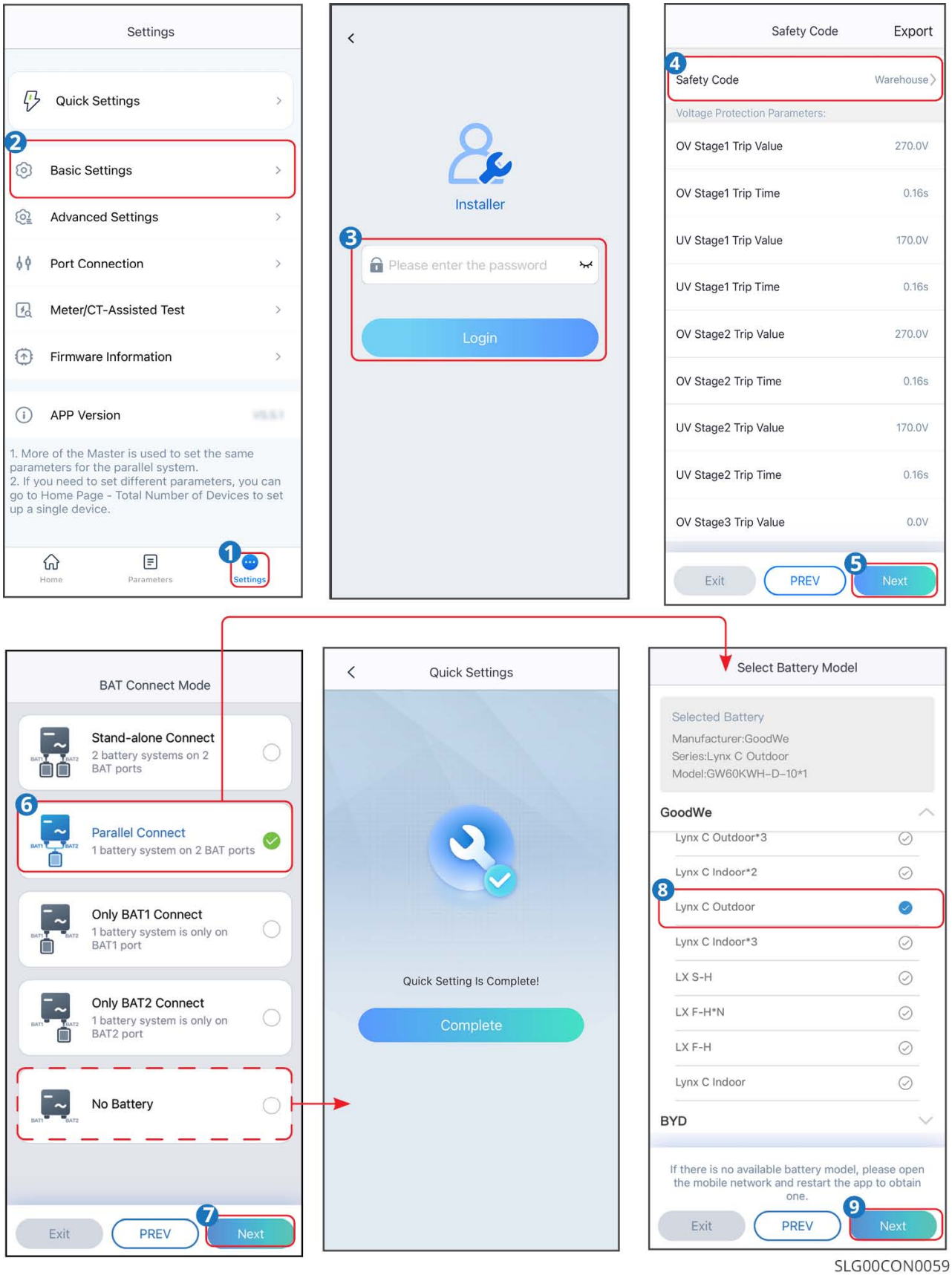
7.3.5 Quick Setting the Basic Information

NOTICE

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

7.3.5.1 Quick System Setup (Type III)

Step 1: Go to the parameter settings page via **Home > Settings > Quick Configuration**.
Step 2: Enter your login password to access the safety settings interface. Contact the dealer or the after-sales service. The password is for professional technicians only.
Step 3: Select the safety standard country based on the country or region where the inverter is located. After completing the settings, click **Next** to set the battery connection mode.
Step 4: Only for parallel scenarios. Setting On-grid Inverter Parameters. After completing the settings, click Next to set the battery connection mode.



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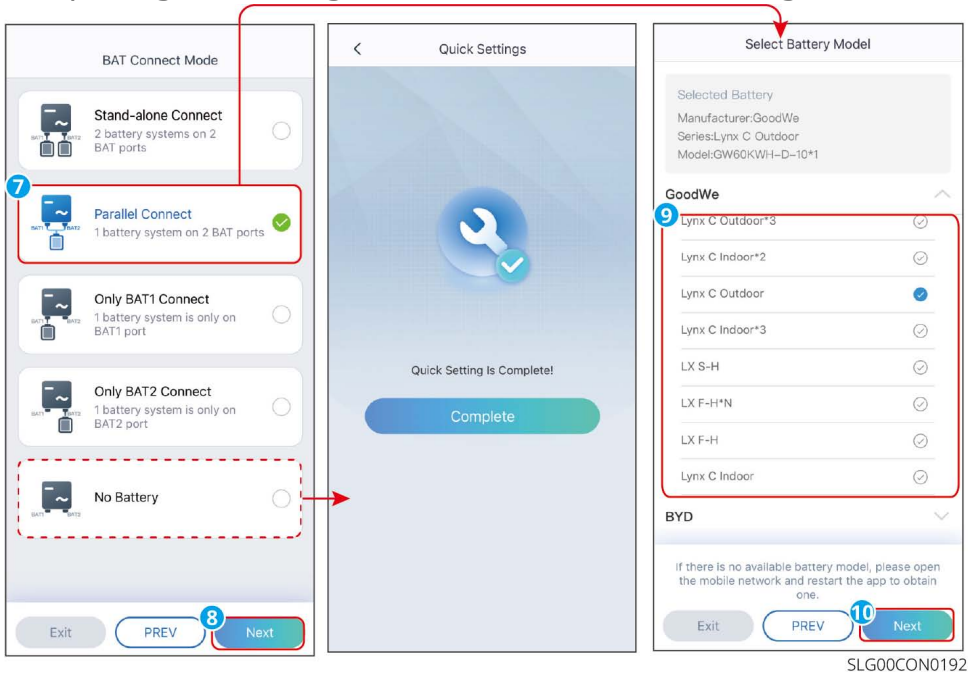
Step 5: Select the battery connection mode based on the actual battery connection

situation. If no battery is connected, the basic parameter settings are complete. If a battery is connected, click **Next** after completing the settings to set the battery type.

Step 6: Select the battery model based on the actual battery connection. After completing the settings click **Next** to set the working mode.



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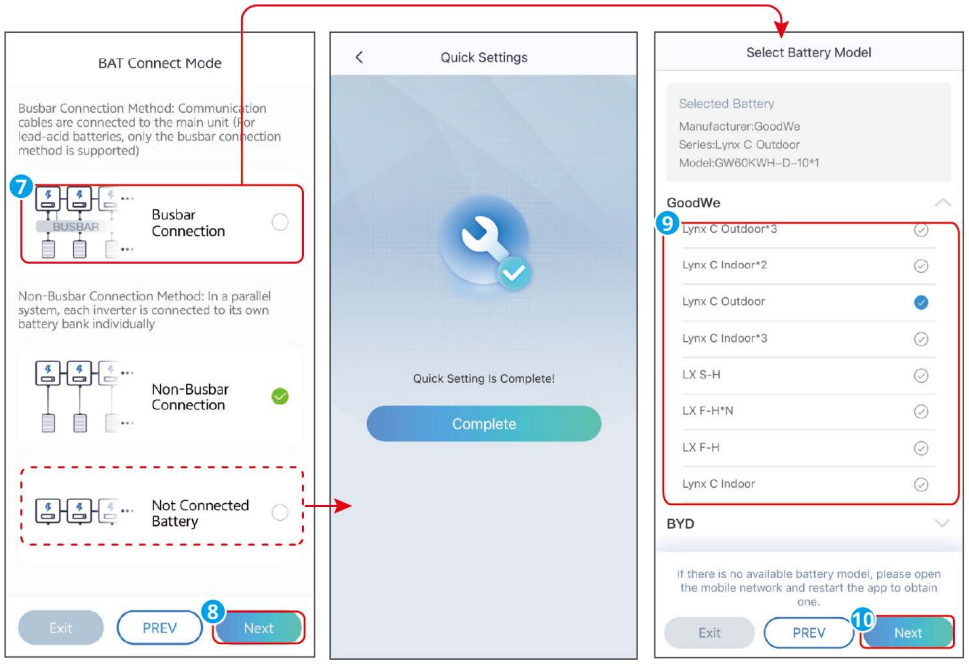
For certain models, when the inverter is paralleled via Ezlink3000, please set the battery connection mode to either busbar mode or non-busbar mode and select the battery model based on actual conditions. After the master unit settings are completed, the slave units will automatically synchronize the battery settings. If the battery connected to a slave unit is inconsistent with that of the master unit, please access the Quick Settings interface via the slave unit's SN on the homepage and set the battery model individually.



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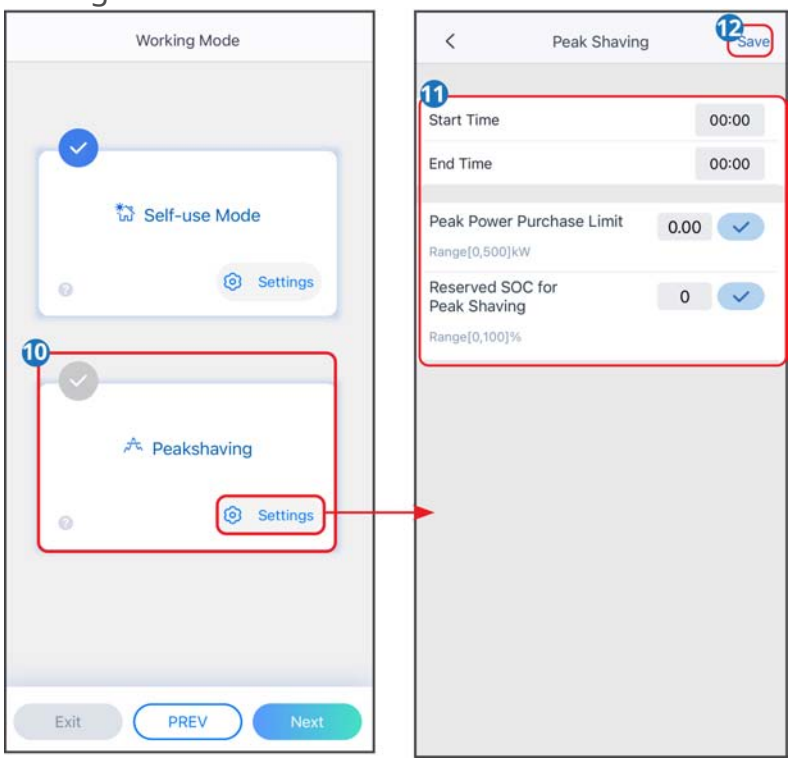
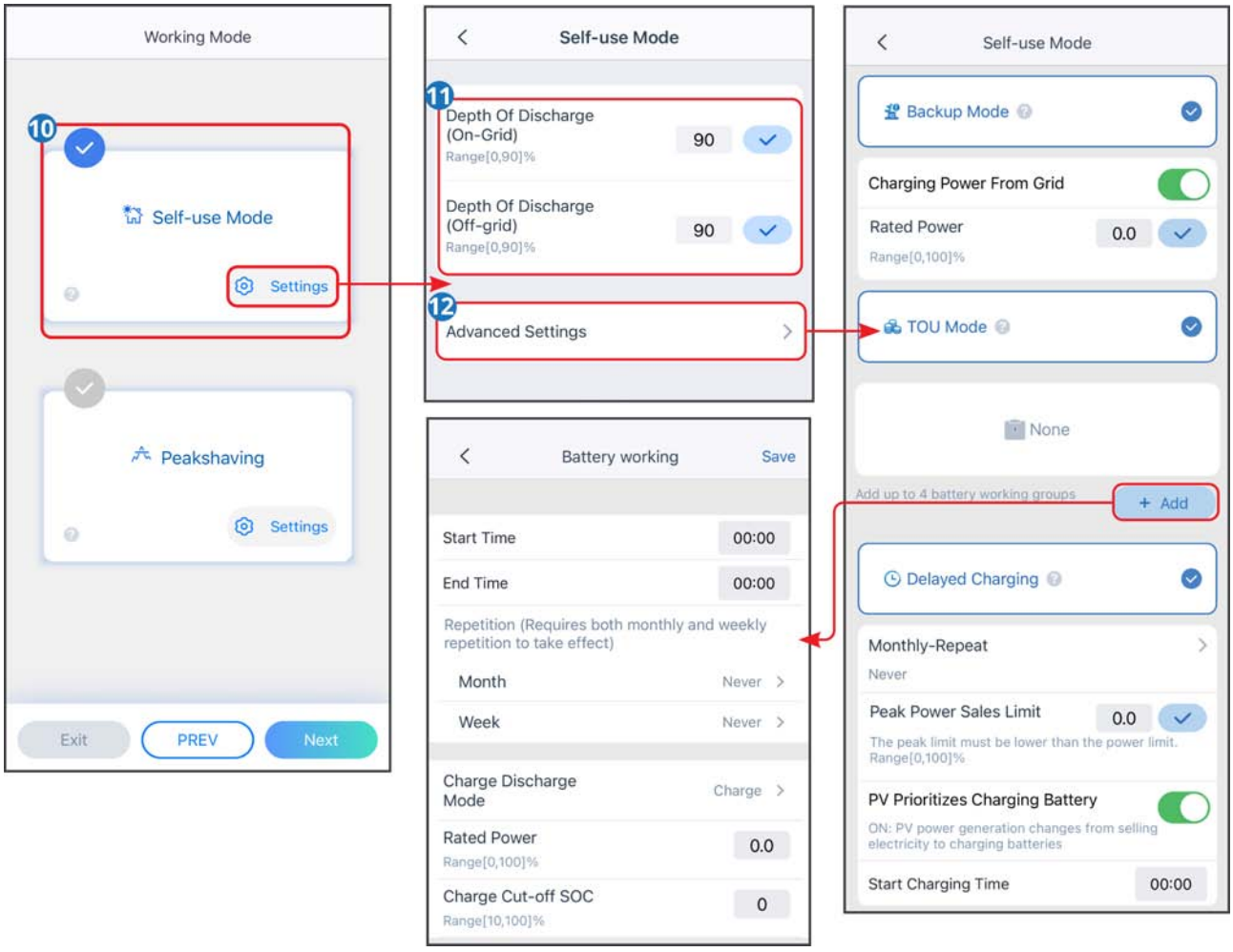
Step 7: Set the working mode according to actual needs. After completing the settings click **Next** to set the working mode.

- When selecting the Peakshaving mode, please click "Settings" to enter the parameter settings interface and configure the parameters related to demand management.



No.	Parameters	Description
Peakshaving		
1	Start Time	During the period when electricity is purchased for charging, if the load power consumption does not exceed the purchased electricity quota, the battery can be charged through the power grid. Otherwise, only PV power can be used to charge the battery.
2	End Time	
3	Peak Power Purchase Limit	Set the maximum power limit allowed for purchasing electricity from the grid. When the power consumed by the load exceeds the sum of the electricity generated by the photovoltaic system and this limit, the excess power will be supplemented by battery discharge.
4	Reserved SOC For Peakshaving	In the Peakshaving mode, when the battery SOC is lower than the reserved SOC for demand management, the function remains active. When the battery SOC is higher than the reserved SOC for demand management, the demand management function becomes invalid.

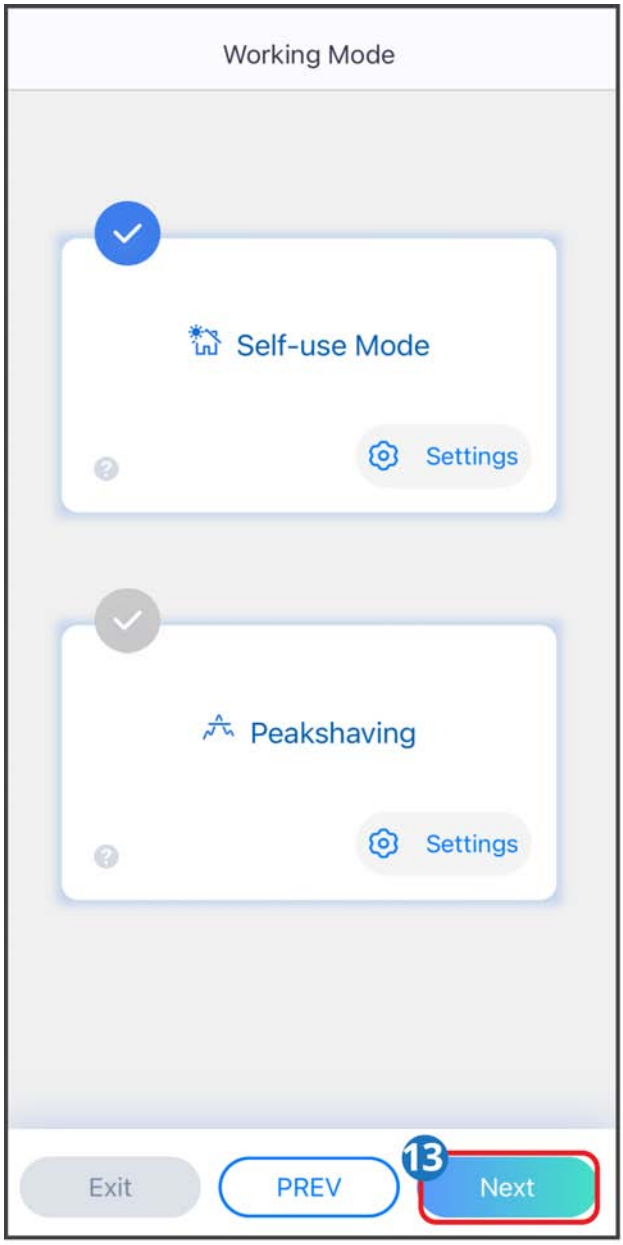
- When selecting the self-use mode, please click "Settings" to enter the self-use mode settings interface, and set the on-grid discharge depth and off-grid discharge depth under the self-use mode. Then click "Advanced Settings" and set the backup mode, TOU mode, or delayed charging according to actual needs. If TOU mode is selected, you need to click "Add" to set the working hours and working mode of the battery workgroup.

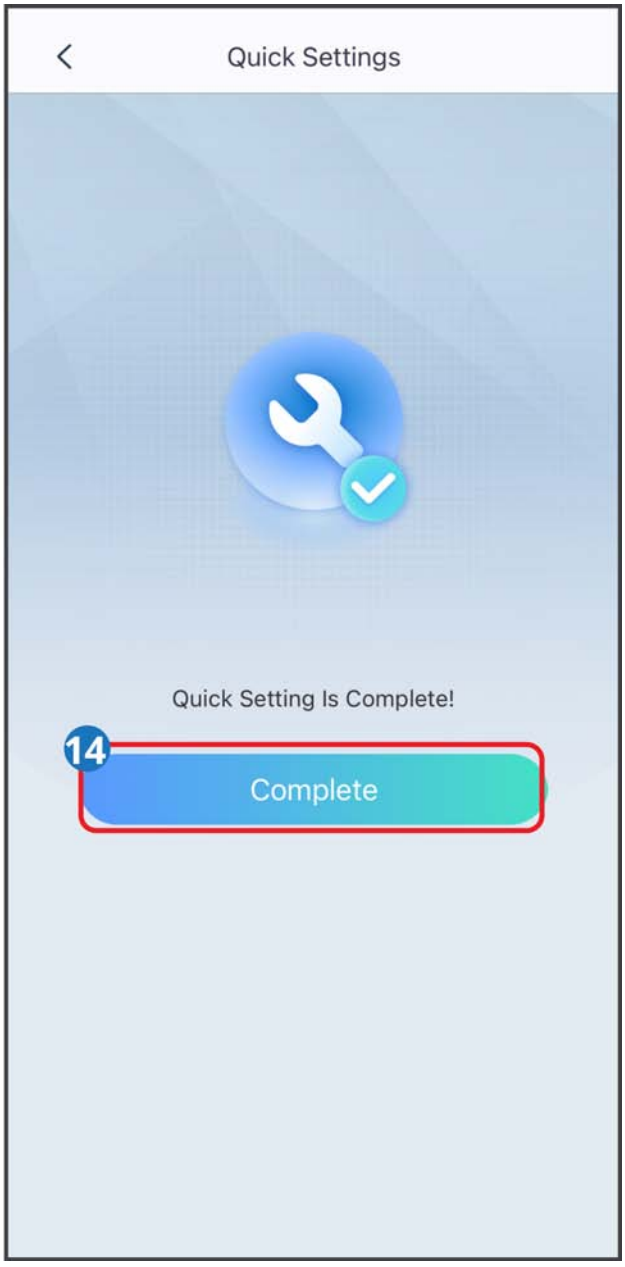


No.	Parameters	Description
Self-use Mode		
1	Depth Of Discharge (On-Grid)	The maximum depth of discharge of the battery when the system is working on-grid.
2	Depth of Discharge (Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
Back-up Mode		
3	Charging from Grid	Use this function, enable the system to purchase power from the utility grid.
4	Nominal Power	The percentage of power purchased compare to the rated power of the inverter.

No.	Parameters	Description
TOU mode		
5	Start Time	During the period between the start time and end time, the battery will charge or discharge in accordance with the set charge-discharge mode and its rated power.
6	End Time	
7	Charge and discharge mode	Set Charge and discharge mode according to actual needs.
8	Nominal Power	The percentage of power during charging or discharging compared to the rated power of the inverter.
9	Charge Cut-off SOC	The battery stop charging once the battery SOC reaches Charge Cut-off SOC.
Delayed Charging Mode		
10	Monthly Repetition	Set the months for delayed charging according to actual needs; multiple months can be selected.
11	Peak Power Selling Limit	Set peak power limits in accordance with grid standards in certain countries or regions. The peak power limit must be lower than the local specified output power limit.
12	PV Prioritizes Battery Charging	Within the charging time range, photovoltaic power generation is prioritized for charging the battery.
13	Charging Time	

Step 8: Perform device self-inspection or skip it as per actual requirements.
Step 9: Click **"Re-detect"** or **"Next"** to complete the inspection based on actual needs. If you need to export the inspection results, click "Export".
Step 10: Click **"Finish"** to complete the quick configuration.

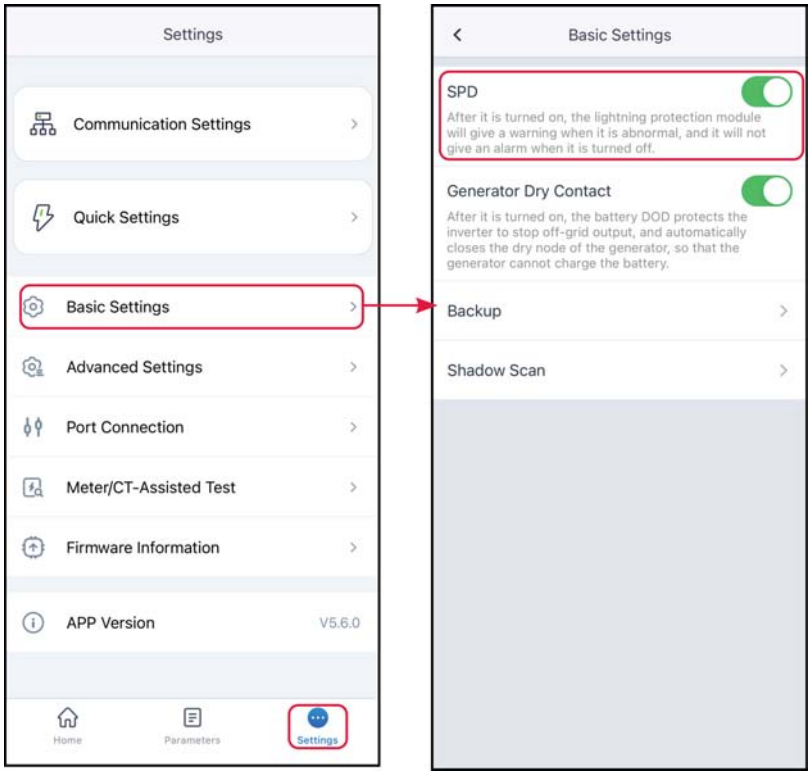




7.3.6 Setting the Basic Information

7.3.6.1 Setting the SPD

After enabling SPD, when the SPD module is abnormal, there will be SPD module abnormal alarm prompt.
Step 1 : Tap **Home > Settings > Basic Settings > SPD**, to set the parameters.
Step 2 : enable or disable the function based on actual needs.

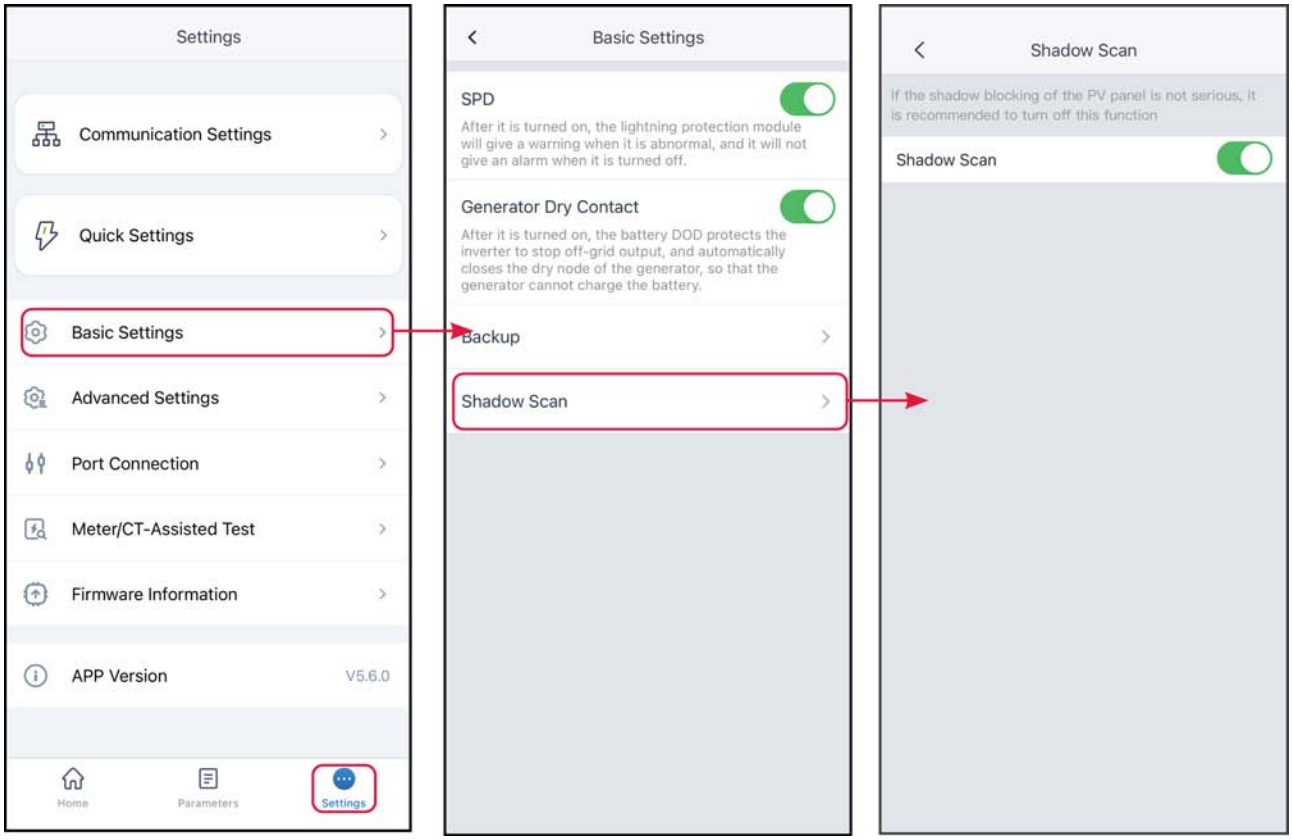


7.3.6.2 Setting the Shadow Scan

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

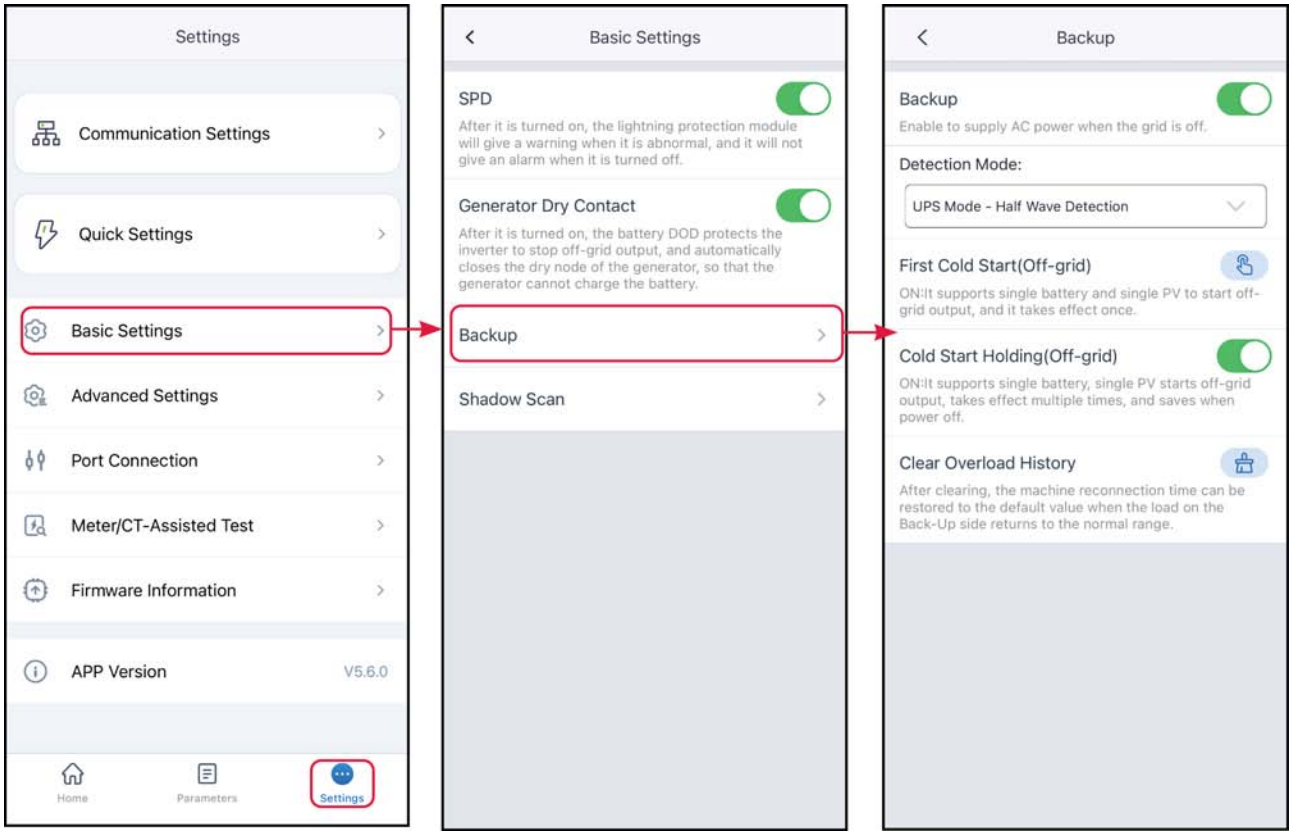
Step 1 : Tap **Home > Settings > Basic Settings> Shadow Scan**, to set the parameters.

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



7.3.6.3 Setting the Back-up Power Parameters

After enabling Backup, the battery will power the load connected to the backup port of the inverter to ensure Uninterrupted Power Supply when the power grid fails.
Step 1 : Tap **Home > Settings > Basic Settings > Backup**, to set the parameters.
Step 2 : Set the backup supply function based on actual needs.



No.	Parameters	Description
1	UPS Mode- Full Wave Detection	Check whether the utility grid voltage is too high or too low.
2	UPS Mode- Half Wave Detection	Check whether the utility grid voltage is too low.
3	EPSmode-with LVRT support.	Stop detecting utility grid voltage.
4	First Cold Start (Off-grid)	It will only take effect once. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.
5	Cold Start Holding (Off-grid)	Take effect multiple times. In off-grid mode, enable First Cold Start (Off-grid) to output backup supply with battery or PV.

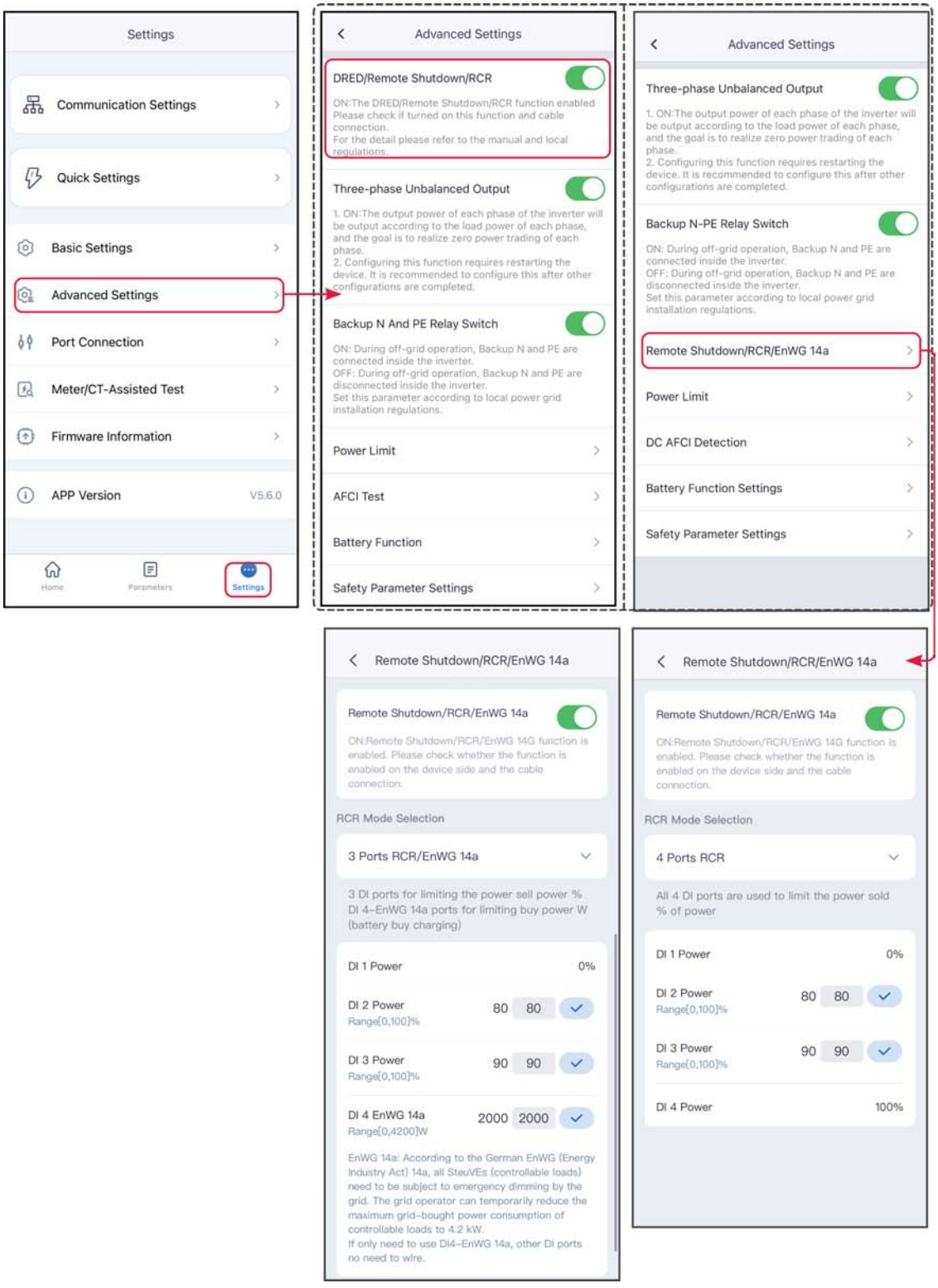
No.	Parameters	Description
6	Clear Overload History	Once the power of loads connected to the inverter BACK-UP ports exceeds the rated load power, the inverter will restart and detect the power again. The inverter will perform restart and detection several times until the overloading problem is solved.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

7.3.7 Setting Advanced Parameters

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

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

Enable DRED/Remote Shutdown/RCR before connecting the third party DRED, remote shutdown, or RCR device to comply with local laws and regulations.
Step 1 : Tap **Home > Settings > Advanced Settings > DRED/Remote Shutdown/RCR** to set the parameters.
Step 2 : Enable or disable the function based on actual needs.
Step 3 : For areas where the EnWG 14a regulation applies, when enabling the RCR function, you need to select the RCR mode according to the actual device type and set the DI port power.



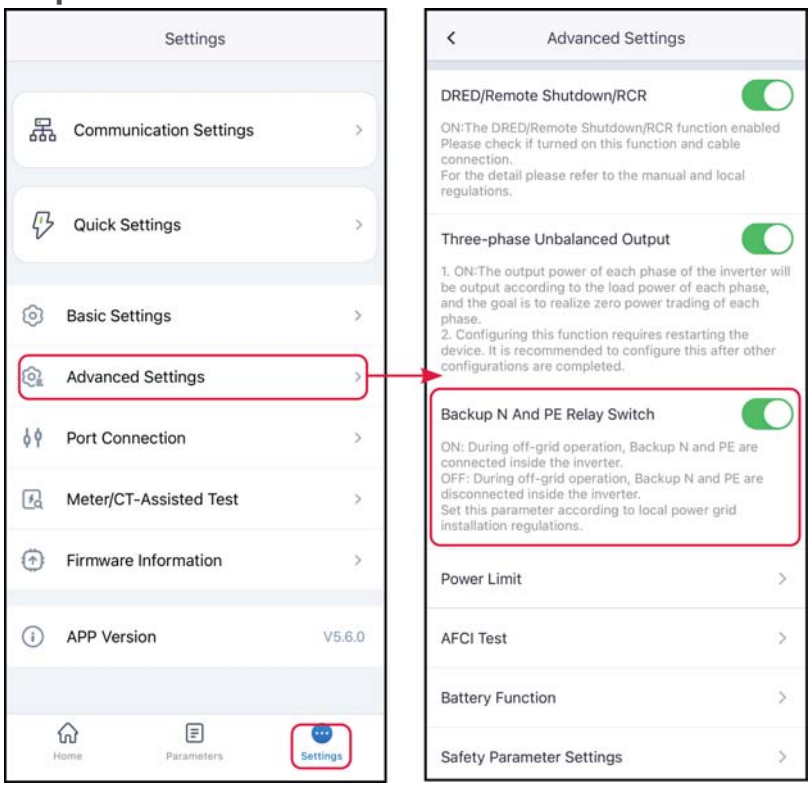
7.3.7.2 Setting the Backup N and PE Relay Switch

To comply with local laws and regulations, ensure that the relay inside the back-up

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

Step 1 : Tap **Home > Settings > Advanced Settings > Backup N and PE Relay Switch** to set the parameters.

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



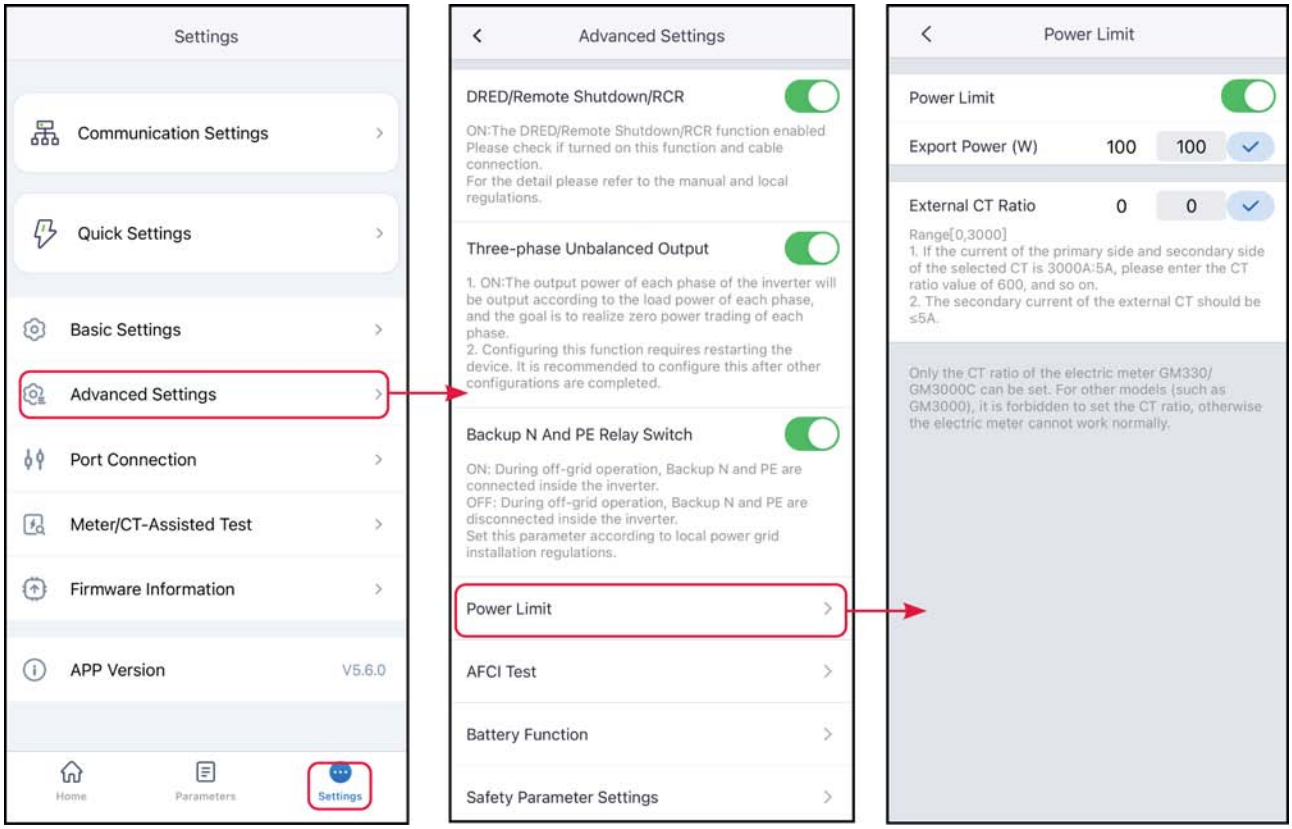
7.3.7.3 Setting the Power Limit Parameters

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

Step 2 : Turn on or off the power limit function according to actual needs.

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

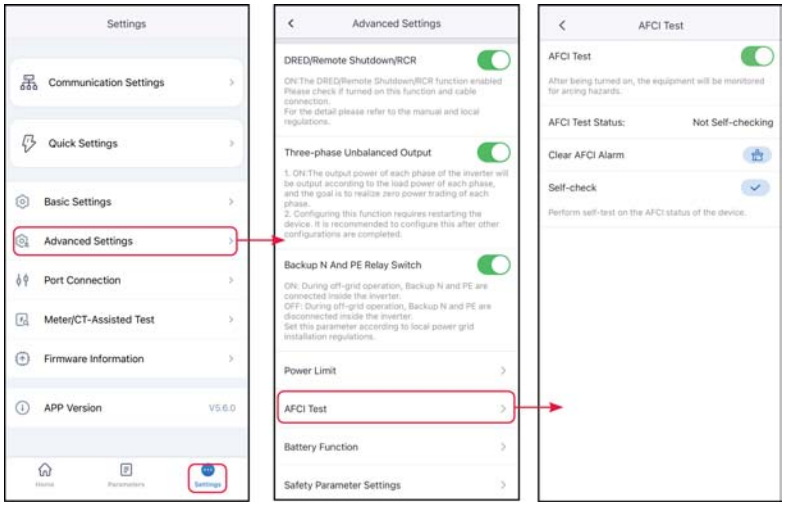
7.3.7.3.1 Set the grid-connected power limit parameters (general)



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

7.3.7.4 Setting the AFCI Detection

Step 1 : Tap **Home > Settings > Advanced Settings > AFCI Test** to set the parameters.
Step 2 : Enable AFCI Test, Clear AFCI Alarm and Self-Check based on actual needs.

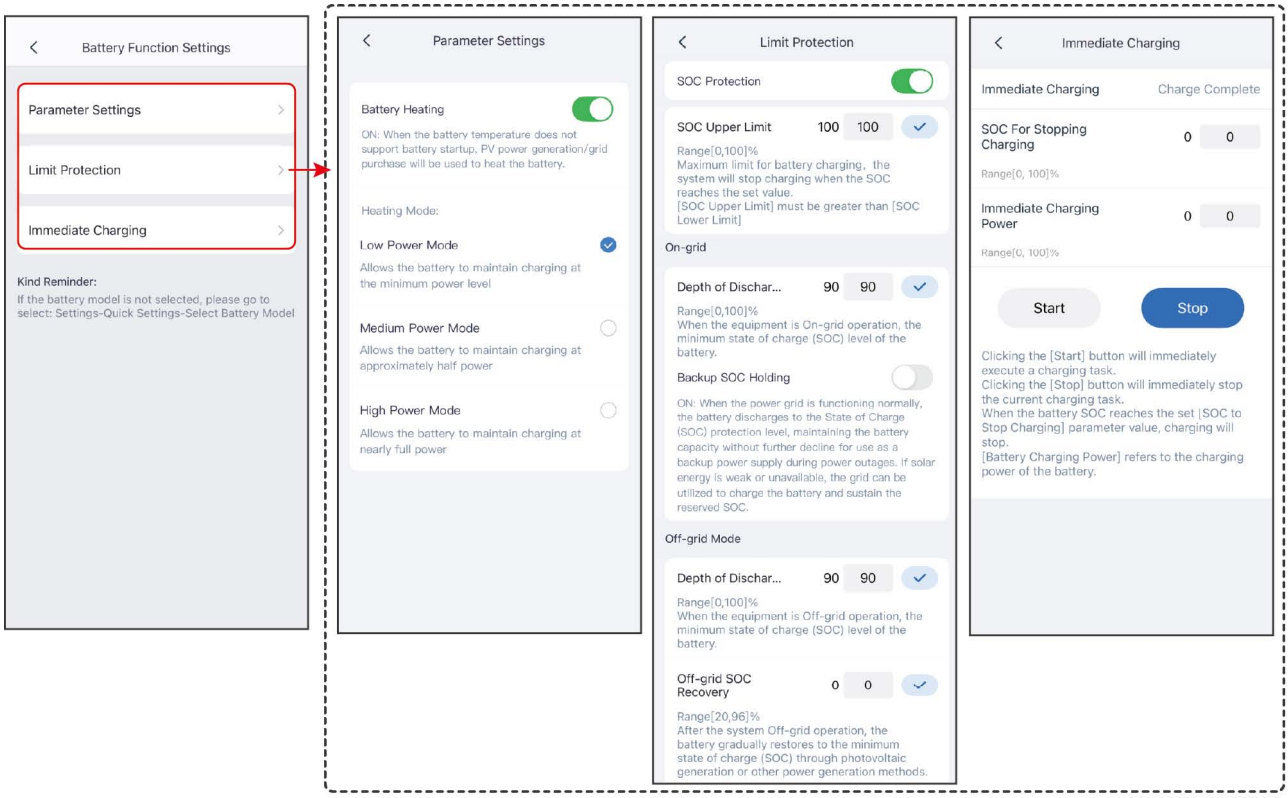


No.	Parameters	Description
1	AFCI Test	Enable or disable AFCI accordingly.
2	AFCI Test Status	The detection status like Not Self-checking.
3	Clear AFCI Alarm	Clear ARC Faulty alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

7.3.7.5 Setting the Battery

7.3.7.5.1 Set Parameters for Lithium Battery

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



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

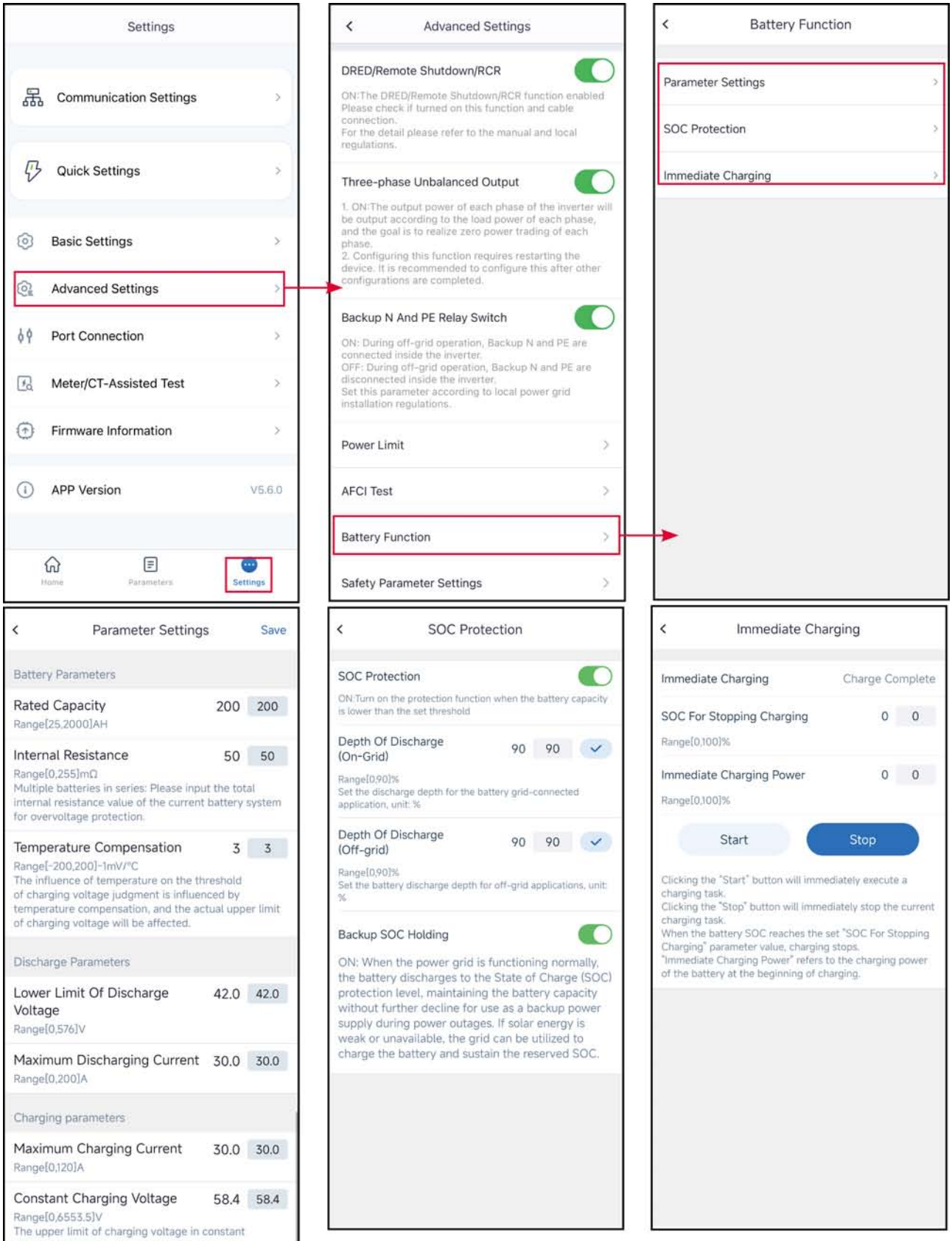
No.	Parameter	Description
3	Battery Heating	Optional. This option is displayed on the interface when a battery that supports heating is connected. After the battery heating function is turned on, when the temperature is below the value that starts up the battery, PV power or electricity from the grid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

No.	Parameter	Description
4	Battery Wake-up	• After being turned on, the battery can be awakened when it shuts down due to undervoltage protection. • Only applicable to lithium batteries without circuit breakers. After being turned on, the output voltage of the battery port is about 60V.
Limit Protection		
5	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
6	SOC Limit	The upper limit value for battery charging. Charging stops when the battery SOC reaches the SOC upper limit.
7	Discharge Depth (On-grid)	The maximum discharge value allowed for the battery when the inverter is in the on-grid scenario.
8	Backup Power SOC Maintenance	To ensure that the battery SOC is sufficient to maintain normal operation when the system is off-grid, the battery will purchase electricity from the grid and charge to the set SOC protection value when the system is connected to the grid.
9	Discharge Depth (Off-grid)	The maximum discharge value allowed for the battery when the inverter is in the off-grid scenario.
10	Off-grid SOC Recovery	When the inverter is operating off-grid, if the battery SOC drops below the lower limit, the inverter stops outputting power and only charges the battery until the battery SOC returns to the off-grid recovery SOC value. If the SOC lower limit value is higher than the off-grid recovery SOC value, charge to SOC lower limit +10%.
Immediate Charging		
11	Immediate Charging	Enable to charge the battery by the grid immediately. This takes effect once. Enable or Disable based on actual needs.

No.	Parameter	Description
12	SOC for Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.
13	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling Immediate Charging. For example, for an inverter with a rated power of 10kW, when set to 60, the charging power is 6kW.
14	Start	Start charging immediately.
15	Stop	Immediately stop the current charging task.

7.3.7.5.2 Setting Lead-acid Battery Parameter

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


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

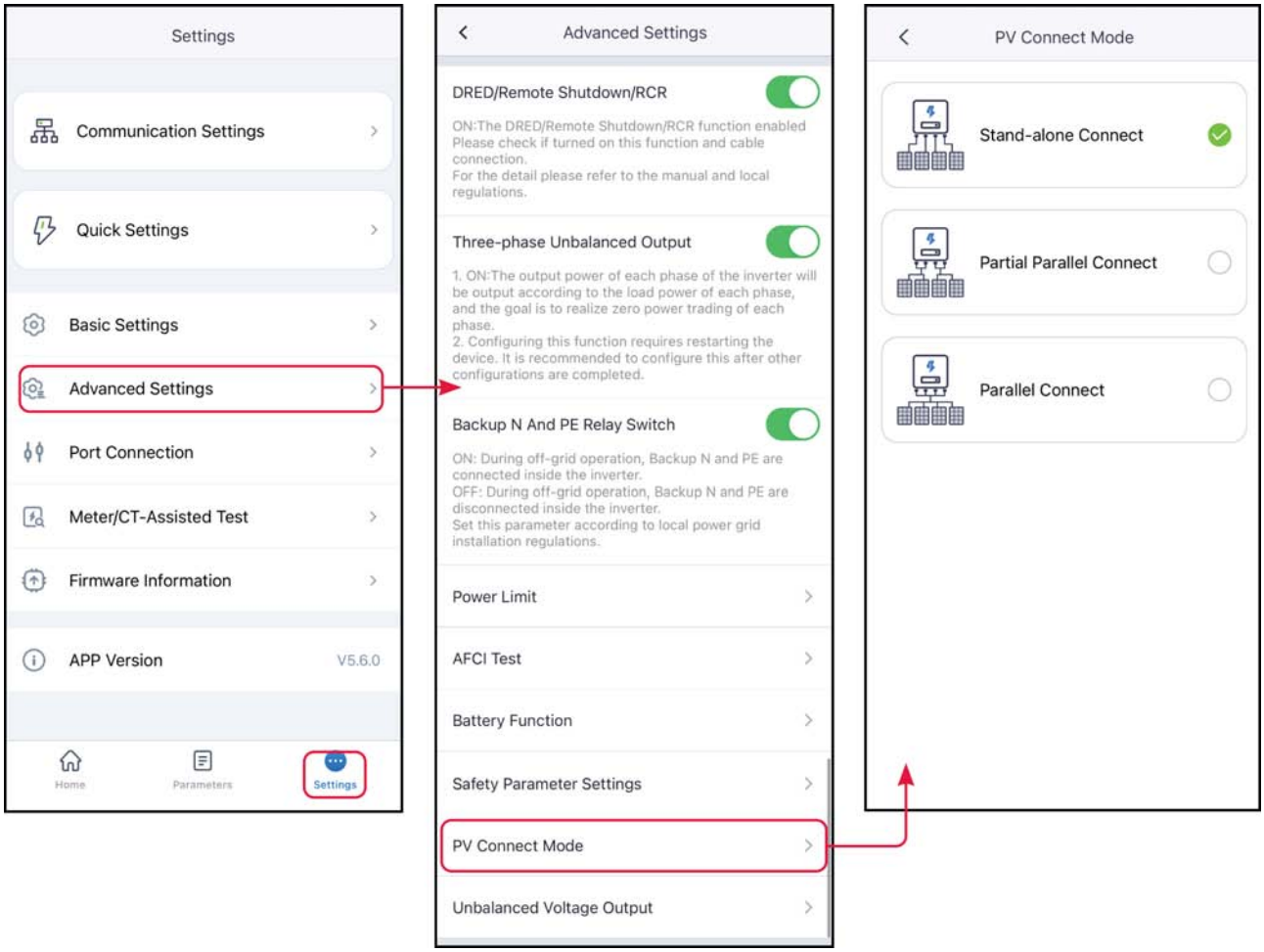
No.	Parameter	Description
1	Nominal Capacity	Set the battery capacity according to the actual parameters.
2	Battery Internal Resistance	Set the battery internal resistance according to the actual parameters.
3	Temperature Compensation	When the battery temperature changes, the battery charging voltage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

No.	Parameter	Description
10	Time to Switch to Float Charging Mode	The time required to switch the battery charging mode from constant charging/equal charging to float charging.
11	Equalization Charging Cycle	Set the interval days for battery equalization charging.
Restriction protection.		
12	SOC Protection	Start battery protection when the battery capacity is lower than the Depth of Discharge.
13	SOC Lower Limit (Grid Connection)	The minimum battery charge that must be maintained when the inverter is connected to the grid.
14	Backup Power SOC Maintenance	To ensure that the battery SOC is sufficient to maintain normal operation when the system is off-grid, the battery will purchase electricity from the grid and charge to the set SOC protection value when the system is connected to the grid.
15	SOC Lower Limit (Off-Grid)	The minimum battery charge that must be maintained when the inverter is operating off-grid.
16	Off-grid SOC Recovery	When the inverter is operating off-grid, if the battery SOC drops below the lower limit, the inverter stops outputting power and only charges the battery until the battery SOC returns to the off-grid recovery SOC value. If the SOC lower limit value is higher than the off-grid recovery SOC value, charge to SOC lower limit +10%.
Immediate Charging		
17	SOC for Stopping Charging	Stop charging the battery once the battery SOC reaches SOC For Stopping Charging.

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

7.3.7.6 Setting PV Connect Mode

Select the PV connect mode based on the actual connections between the PV strings and MPPT ports of the inverter.
Step 1 : Tap **Home > Settings > Advanced Settings > PV Connect Mode** to set the parameters.
Step 2 : Set the connect mode to Independent Access, Partial Parallel Connect or Parallel Connection based on actual connections.

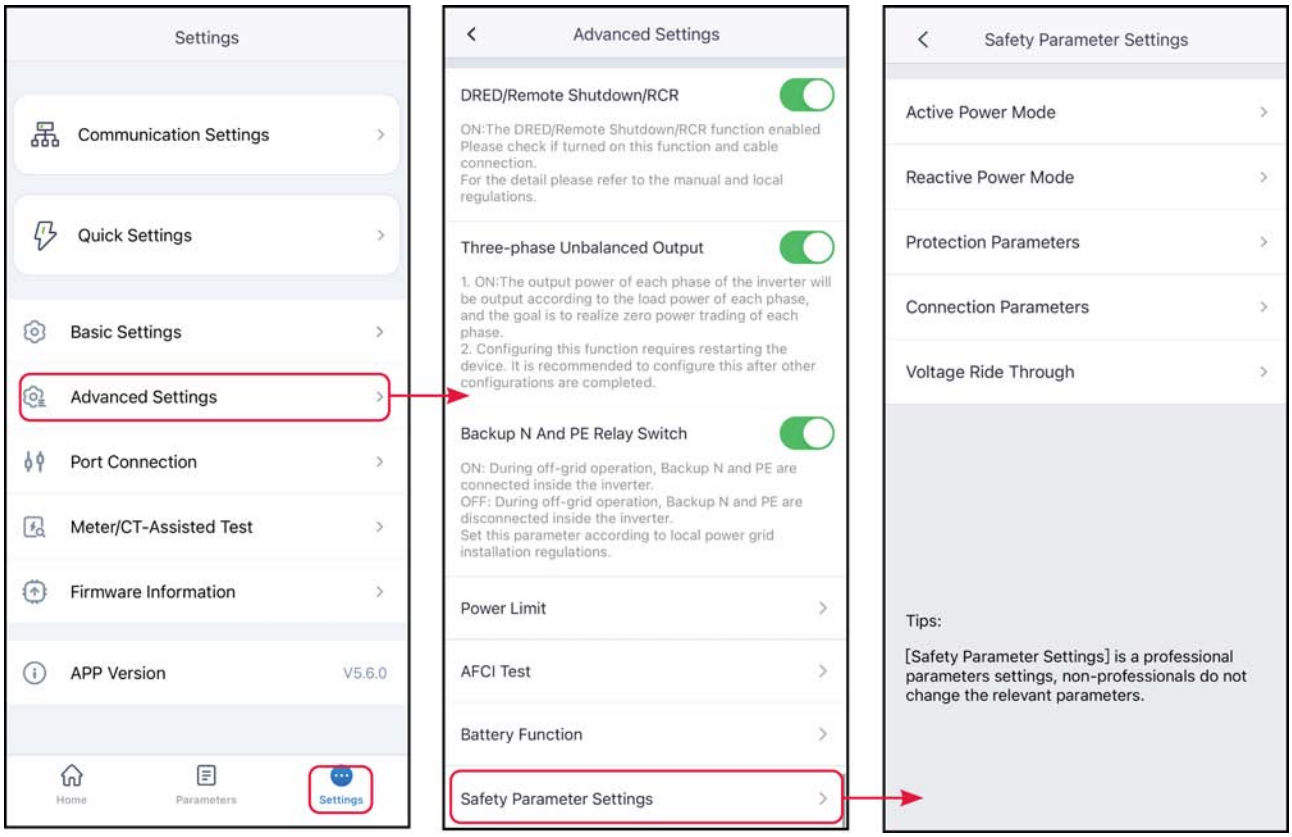


No.	Parameters	Description
1	Stand-alone Connect	The external PV string is connected to multi MPPT terminals of the inverter.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another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

7.3.8 Setting Safety Parameters

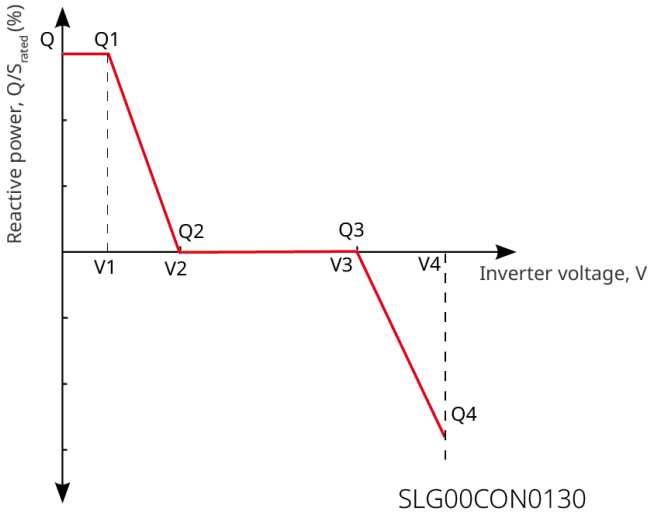
NOTICE

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



7.3.8.1 Setting the Reactive Power Mode

Step 1 : Tap **Home > Settings > Advanced Settings > Safety Parameter Setting > Reactive Power Mode Settings** to set the parameters.
Step 2 :Set the parameters based on actual needs.
Q(U) Curve



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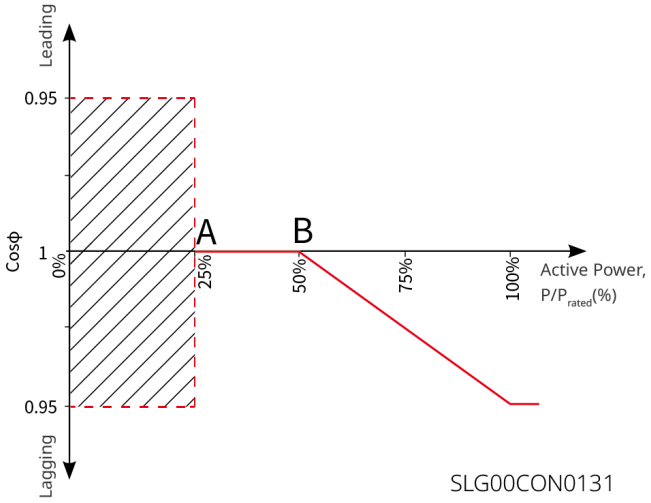
Cosφ Curve



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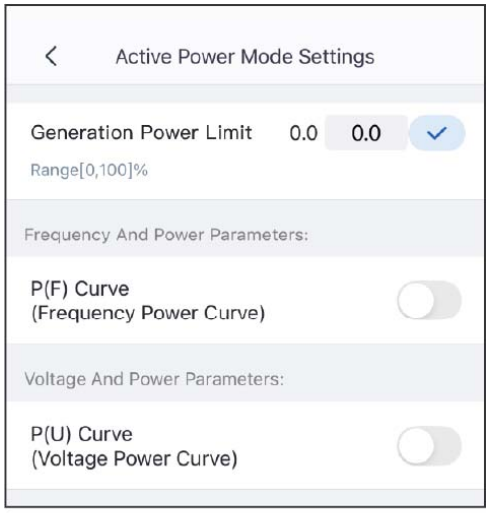
No.	Parameters	Description
Fix PF		
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements. After the parameters are set successfully, the power factor remains unchanged during the operation of the inverter.
2	Under-excited	Set the power factor as lagging or leading based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

No.	Parameters	Description
1	Fix Q	Enable Fix Q when it is required by local grid standards and requirements.
2	Over-excited/Under-excited	Set the reactive power as inductive or capacitive reactive power based on actual needs and local grid standards and requirements.
3	Reactive Power	Set the ratio of reactive power to apparent power.
Q(U) Curve		
1	Q(U) Curve	Enable Q(U) Curve when it is required by local grid standards and requirements.
2	Mode Selection	Set Q(U) curve mode, supporting basic mode and slope mode.
3	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n=1, 2, 3, 4. When set to 90, it means: V/Vrated% = 90%.
4	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting **Vn Reactive Power** to 48.5 means Q/Srated%=48.5%。
5	Voltage Deadband Width	When Q(U) curve mode is set to slope mode, this parameter defines the voltage deadband range where no reactive power output is required.
6	Over-excitation Slope	(In Q(U) slope mode) Sets the positive or negative slope for reactive power variation during over-voltage conditions.
7	Under-excitation Slope	
8	Vn Reactive Power	The percentage of the reactive output power to the apparent power at Vn point, n=1, 2, 3, 4. For example, setting **Vn Reactive Power** to 48.5 means Q/Srated%=48.5%。

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

No.	Parameters	Description
11	Lock-in Voltage	When the grid voltage is between Lock-in Voltage and Lock-out Voltage, the voltage meets Cosφ curve requirements.
12	Lock-out Voltage	
Q(P) Curve		
1	Q(P) Curve Function	Enable Q(P) Curve when it is required by local grid standards and requirements.
2	Mode Selection	Set Q(P) curve mode, supporting basic mode and slope mode.
3	Pn-point Power	The percentage of the output reactive power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, setting to 90 means Q/Prated%=90%.
4	Pn-point Reactive Power	The percentage of the output active power to the rated power at Pn point, n=1, 2, 3, 4, 5, 6. For example, When set to 90, it means: P/Prated% = 90%.
5	Over-excitation Slope	When the Q(P) curve mode is set to slope mode, configure the power variation slope as either a positive or negative value.
6	Under-excitation Slope	
7	Pn-point Power	Ratio of reactive power to rated power at Pn points (n=1, 2, 3). For example, setting to 90 means Q/Prated%=90%.
8	Pn-point Reactive Power	Ratio of active power to rated power at Pn points (n=1, 2, 3). For example, When set to 90, it means: P/Prated% = 90%.
9	Time Constant	The reactive power must reach 95% of the target value within 3 time constants, following a first-order low-pass filter curve.

7.3.8.2 Setting the Active Power Mode



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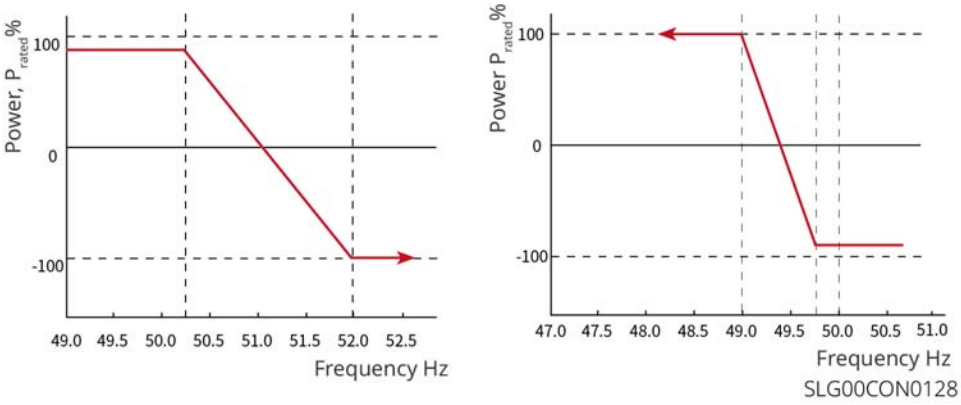
Step 1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Active Power Mode Settings** to set the parameters.

Step 2: Set the parameters based on actual needs.

P(F) Curve



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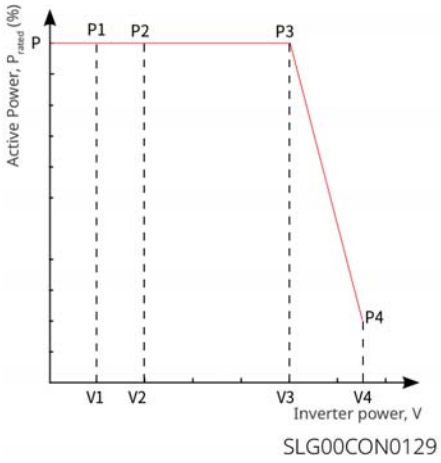
P(U) Curve



No.	Parameters	Explanation
1	Generation Power Limit	Set the change slope when the active output power increases or decreases.
2	Power Gradient	Set the active power change slope.
Overfrequency Unloading		
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Over-Frequency Load Shedding Mode	Set the overfrequency unloading mode based on actual needs. • Slope mode: adjusts power based on the over frequency point and load reduction slope. • Stop mode: adjusts the power based on the over-frequency start point and over-frequency end point.
3	Overfrequency Threshold	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will decrease when the utility grid frequency is higher than **Overfrequency Threshold**.

No.	Parameters	Explanation
4	Import/Export Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.
5	Overfrequency Endpoint	The inverter output active power will decrease when the utility grid frequency is too high. The inverter output power will stop decreasing when the utility grid frequency is higher than **Overfrequency Endpoint**.
6	Over-Frequency Power Slope Reference Power	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.
7	Power response to overfrequency gradient	The inverter output active power will increase when the utility grid frequency is too high. Indicates the slope when the inverter output power decreases.
8	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is higher than the **Overfrequency Threshold**.
9	Hysteretic Function	Enable the hysteretic function.
10	Frequency Hysteresis Point	During over-frequency load reduction, if the frequency decreases, the power output is based on the lowest point of the load reduction power until the frequency is less than the hysteresis point and the power is restored.
11	Hysteresis Waiting Time	For over-frequency load reduction and frequency decrease, when the frequency is less than the hysteresis point, the power recovery waiting time, that is, it takes a certain amount of time to recover the power.

No.	Parameters	Explanation
12	Hysteresis Power Recovery Slope Reference Power	For over-frequency load reduction and frequency decrease, when the frequency is less than the hysteresis point, the power recovery benchmark, that is, the power recovery is based on the recovery slope * the rate of change of the reference power. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (△P).
13	Hysteretic Power Recovery Slope	For over-frequency load reduction and frequency reduction, when the frequency is less than the hysteresis point, the power change slope when the power is restored.
Underfrequency Loading		
1	P(F) Curve	Enable P(F) Curve when it is required by local grid standards and requirements.
2	Underfrequency Load Mode	Set the underfrequency unloading mode based on actual needs. • Slope mode: adjusts power based on the underfrequency point and load increase slope. • Stop mode: adjusts the power based on the underfrequency start point and underfrequency end point.
3	Underfrequency Threshold	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will increase when the utility grid frequency is lower than **Underfrequency Threshold**.
4	Import/Export Electricity Conversion Frequency	When the set frequency value is reached, the system switches from selling electricity to buying electricity.

No.	Parameters	Explanation
5	Underfrequency Endpoint	The inverter output active power will increase when the utility grid frequency is too low. The inverter output power will stop increasing when the utility grid frequency is lower than **Underfrequency Endpoint**.
6	Over-Frequency Power Slope Reference Power	Adjust the inverter output power based on Apparent Active Power, Rated Active Power, Momentary Active Power, Or Max. Active Power.
7	Under-Frequency Power Slope	The inverter output active power will increase when the utility grid frequency is too low. The slope of the inverter output power when it rises.
8	Tentional Delay Ta	Indicates the delayed response time when the inverter output power is lower than the **Underfrequency Threshold**.
9	Hysteretic Function	Enable the hysteretic function.
10	Frequency Hysteresis Point	During underfrequency loading, if the frequency increases, the power is output according to the lowest point of the loaded power until the frequency is higher than the hysteresis point and the power is restored.
11	Hysteresis Waiting Time	For underfrequency loading, the frequency increases, when the frequency is higher than the hysteresis point, the waiting time for power recovery, that is, it takes a certain amount of time to recover the power.

No.	Parameters	Explanation
12	Hysteresis Power Recovery Slope Reference Power	For underfrequency loading, the frequency increases, when the frequency is higher than the hysteresis point, the benchmark for power recovery, that is, the power recovery is carried out according to the recovery slope * the rate of change of the benchmark power. Support: Pn rated power, Ps apparent power, Pm current power, Pmax maximum power, power difference (△P).
13	Hysteretic Power Recovery Slope	For under-frequency loading, frequency increase, when the frequency is higher than the hysteresis point, the power change slope when power is restored.
14	P(U) Curve	Enable P(U) Curve when it is required by local grid standards and requirements.
15	Vn Voltage	The percentage of actual voltage to the rated voltage at Vn point, n= 1, 2, 3, 4. For example, setting Vn Voltage to 90 means V/Vrated%=90%.
16	Vn Active Power	The percentage of the output active power to the apparent power at Vn point, (n= 1, 2, 3, 4). For example, setting **Vn Reactive Power** to 48.5 means P/Prated%=48.5%.
17	Output Response Mode	Set the active power output response mode. Supports: • PT-1 Behavior, realize active scheduling based on the first-order LPF curve within the response time constant. • Gradient Control, realize active scheduling based on the power change slope.
18	Power Gradient	When the output response mode is set to Gradient Control, active power scheduling is achieved according to the power change gradient.

No.	Parameters	Explanation
19	First-order Low-pass Filter Time Parameter	Set the time constant within which the active power changes based on the first order LPF curve when the Output Response Mode is set to be First-order Low-pass Filter Time Parameter.
20	Overload Function Switch	When enabled, the maximum active power output is 1.1 times the rated power; otherwise, the maximum active power output is consistent with the rated power value.

7.3.8.3 Setting Protection Parameters

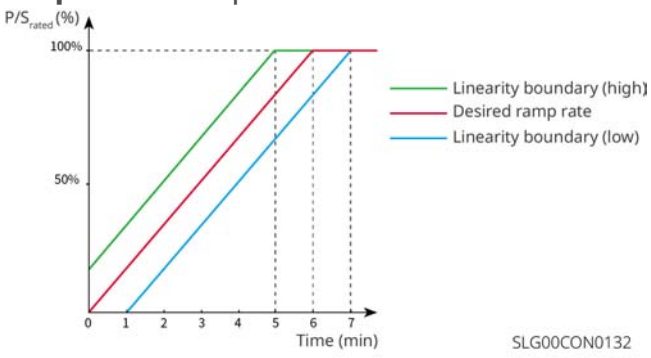
Step 1 : Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Protection Parameters** to set the parameters.
Step 2: Set the parameters based on actual needs.

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

No.	Parameters	Description
9	UF Stage n Trip Value	Set the grid underfrequency triggering n-th order protection point, n=1,2,3,4.
10	UF Stage n Trip Time	Set the grid underfrequency trigger n-th order trip time, n=1,2,3,4.

7.3.8.4 Setting Connection Parameters

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



No.	Parameters	Description
Ramp Up		
1	Upper Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is higher than the **Upper Voltage**.
2	Lower Voltage	The inverter cannot connect to the grid if it is powered on for the first connection and the grid voltage is lower than the **Lower Voltage**.
3	Upper Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is higher than the **Upper Frequency**.

No.	Parameters	Description
4	Lower Frequency	The inverter cannot connect to the grid if it is powered on for the first connection and the grid frequency is lower than the **Lower Frequency**.
5	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is powered on for the first connection. 2. The utility grid voltage and frequency meet certain requirements.
6	Soft Ramp Up Gradient	Enable the start up power slope.
7	Soft Ramp Up Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is powered on for the first time.
Reconnection		
8	Upper Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is higher than the **Upper Voltage**.
9	Lower Voltage	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid voltage is lower than the **Lower Voltage**.
10	Upper Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is higher than the **Upper Frequency**.
11	Lower Frequency	The inverter cannot connect to the grid if it is reconnecting due to a fault and the grid frequency is lower than the **Lower Frequency**.
12	Observation Time	The waiting time for connecting the inverter to the grid when meeting the following requirements. 1. The inverter is reconnecting to the grid due to a fault. 2. The utility grid voltage and frequency meet certain requirements.
13	Reconnection Gradient	Enable the start up power slope.

No.	Parameters	Description
14	Reconnection Gradient	Indicates the percentage of incremental output power per minute based on the local requirements when the inverter is powered on for the first time. For example, setting Reconnection Gradient to 10 means the reconnect slope is 10%P/Srated/min.

7.3.8.5 Setting Voltage Ride Through Parameters

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

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

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

7.3.8.6 Setting Frequency Ride Through Parameters

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

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

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

7.3.9 Setting Generator/Load Control

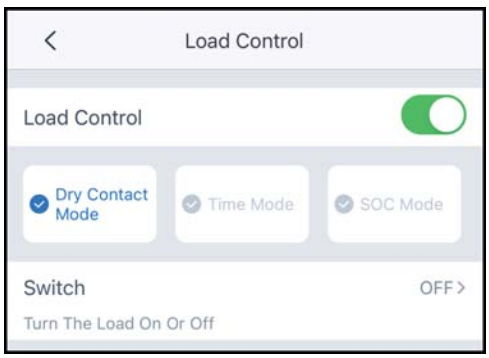
7.3.9.1 Setting Load Control

NOTICE

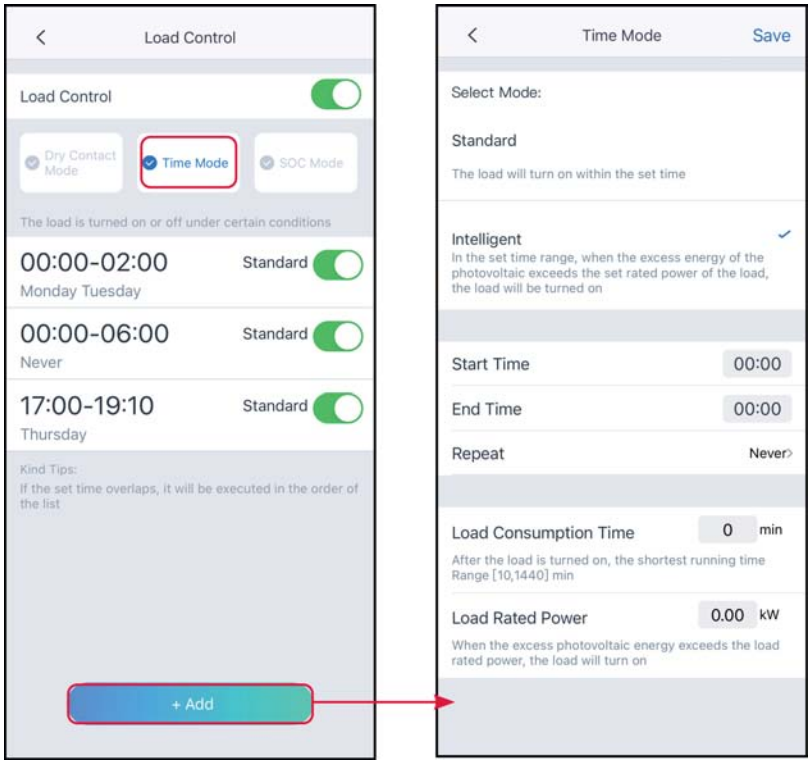
- Loads and generators can be controlled by SolarGo app when the inverter supports load control function.
- For ET40-50kW series inverters, the load control function is supported only when the inverter is used with STS. The inverter supports load control of the GENERATOR port or the BACKUP LOAD port.

Step 1: Tap **Home > Settings > Port Connection** to set the parameters.
Step 2: Select **Generator Control** or **Load Control** based on actual needs.

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



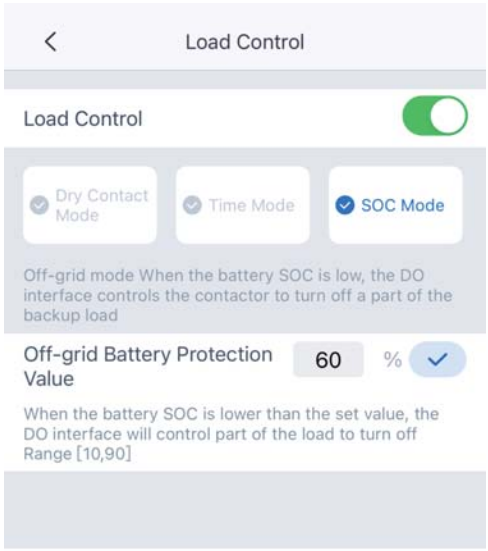
- Time Mode: set the time to enable the load, and the load will be powered automatically within the setting time period. Select standard mode or intelligent mode.



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

No.	Parameters	Description
7	Load Rated Power	The loads will be powered when the excess energy of the photovoltaic exceeds the nominal power of load. Only for Intelligent mode.

- SOC Mode: the inverter has integrated dry contact controlling port, which can control whether the load is powered or not by contactor. In off-grid mode, the load connected to the port will not be powered if the BACKUP overload is detected or the battery SOC value is lower than the Off-grid battery protection value. Set Off-grid Battery Protection Value based on actual needs.



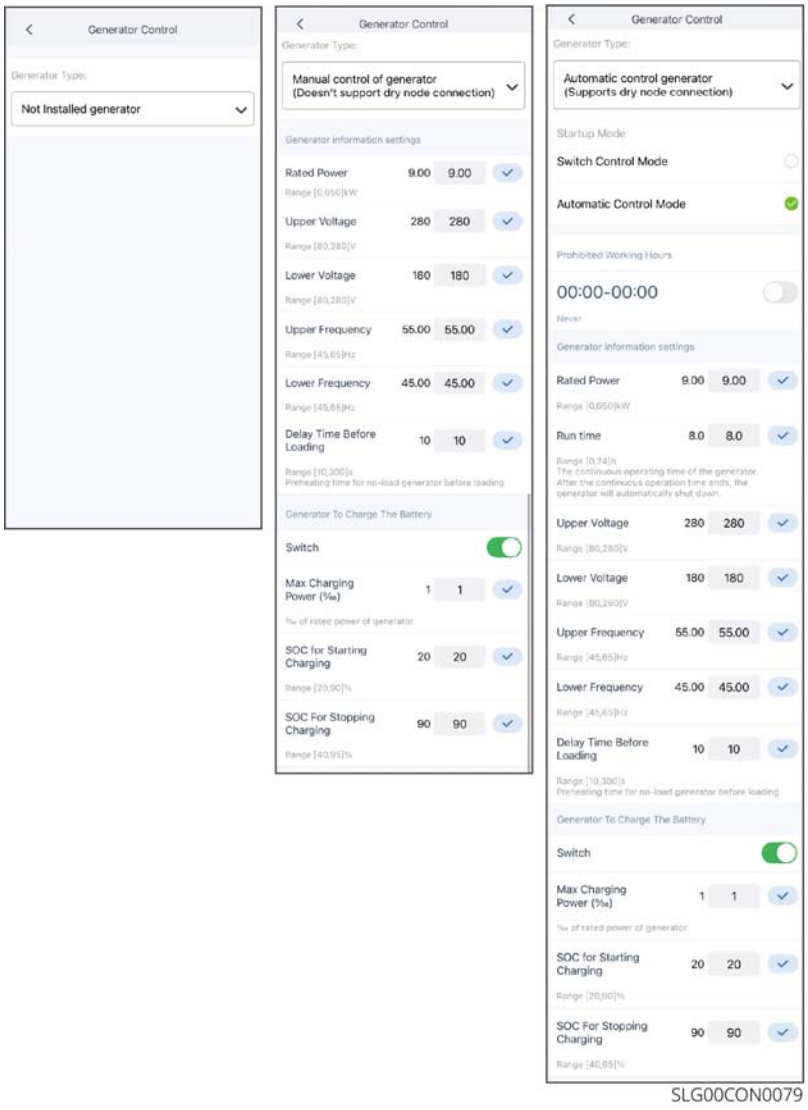
7.3.9.2 Setting the Generator Parameters

NOTICE

- When the inverter supports the generator control function, the generator can be controlled through the SolarGo App.
- For ET40-50kW series inverters, the generator can be connected and controlled only when the inverter is used with STS.

Step 1 : Tap **Home > Settings > Port Connection** to set the parameters.
Step 2: Select Generator Connection or Load Connection based on actual needs.
Step 3 : When setting the generator control function, select the generator type according to the actual access situation. Currently supported:**Not Installed, Manual Control Of Generator** or **Automatic Control Generator.** And set the parameters according to the selected generator type.

- Not Installed: If no generator is connected in the system, select Not Installed.
- Manual Control Of Generator(Doesn’t Support Dry Node Connection): Start or stop the generator manually. The inverter cannot control the generator when Manual Control Of Generator(Doesn’t Support Dry Node Connection) is selected.
- Automatic control generator (Supports dry node connection): If the generator has dry contact port and is connected to the inverter, set the generator control mode to Switch Control Mode or Automatic Control Mode based on actual needs.
  - Switch Control Mode: The generator will start working when the Generator Dry Node Switch is on, and stop automaticallly after reaching Run Time.
  - Automatic Control Mode: The generator will work during Run Time, but stop working during Prohibited Working Hours.



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No.	Parameters	Description
1	Startup Mode	Switch Control Mode/Automatic Control Mode
Switch Control Mode		
2	Generator Dry Node Switch	Only for Switch Control Mode.
3	Run Time	Set the generator's continuous runtime, after which the generator will be turned off.
Automatic Control Mode		
4	Prohibited Working Hours	Set the time period during which the generator cannot work.

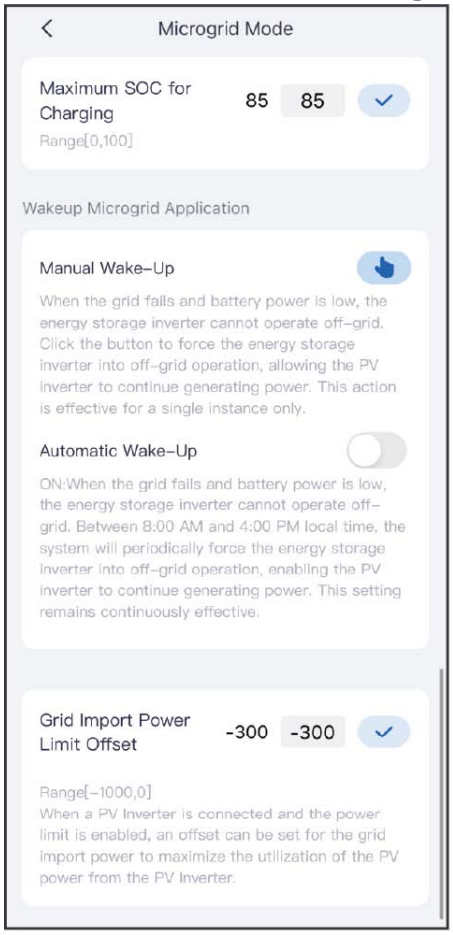
No.	Parameters	Description
5	Run Time	Set the generator’s continuous runtime, after which the generator will be turned off. If the generator start-up operation time includes prohibited working time, the generator will stop running during this time period; after the prohibited working time, the generator will restart running and timing.

No.	Parameters	Description
Generator Information Settings		
1	Rated Power	Set the rated power of the generator.
2	Run Time	Set the continuous running time of the generator. The generator will be shut down after the continuous running time ends.
3	Upper Voltage	Set the operation voltage range of the generator.
4	Lower Voltage	
5	Frequency Cap	Set the operation frequency range of the generator.
6	Lower Frequency	
7	Preheating time	Set the generator no-load preheating time.
Parameter settings for generator charging batteries		
8	Switch	Select whether to use the generator to generate electricity to charge the battery.
9	Max.charging power (‰)	The charging power when the generator generates electricity to charge the battery.
10	Start charging SOC	When the battery SOC is lower than this value, the generator generates electricity to charge the battery.
11	Stop charging SOC	When the battery SOC is higher than this value, stop charging the battery.

7.3.9.3 Setting Microgrid Parameters

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

Step 1 : Tap **Home > Settings > Port Connection** to set the parameters.
Step 2 : According to the actual interface prompts, enter the microgrid control interface and set the microgrid parameters according to actual needs.



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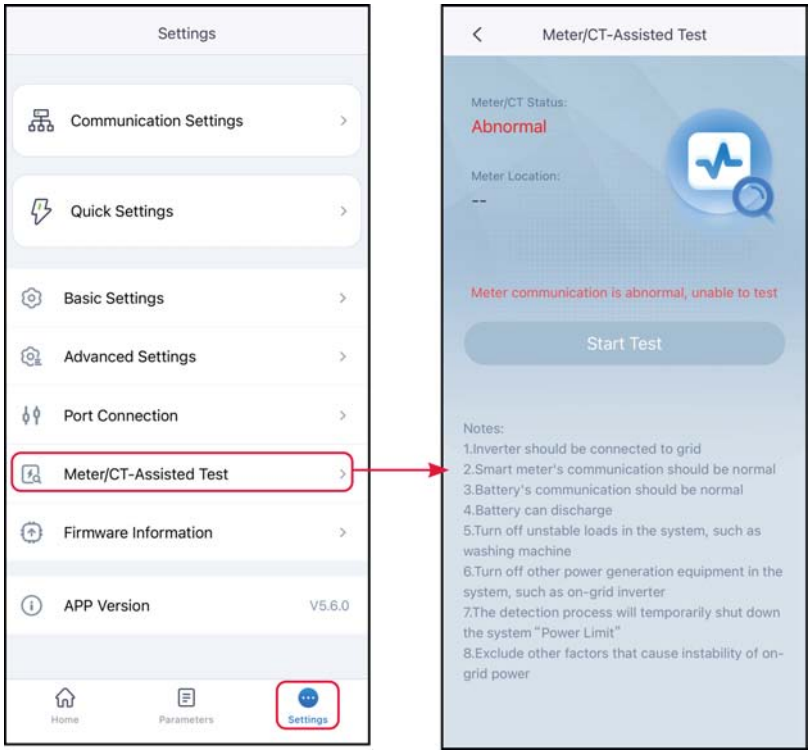
No.	Parameters	Description
1	Maximum SOC for Charging	Set the upper limit of charging SOC, and stop charging when the upper limit is reached.

No.	Parameters	Description
2	Manual wake-up	• When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the grid. Click this button to force the energy storage inverter to output voltage to the grid-connected inverter, thereby starting the grid-connected inverter. • Single effect.
3	Automatic wake-up	• When the grid fails, if the battery power is low, the energy storage inverter cannot be supported to work off the grid. After enabling this function, the system will force the energy storage inverter to output voltage to the grid-connected inverter at a fixed time, thereby starting the grid-connected inverter. • Multiple effect.
4	Grid Import Power Limit Offset	Set the adjustable range of the maximum power that the device can actually buy from the grid.

7.3.10 Setting the Meter Parameters

7.3.10.1 Meter/CT-Assisted Test

Meter/CT-Assisted Test is used to auto-check if the Smart Meter and CT are connected in the right way and their working status.
Step 1 : Tap **Home > Settings > Meter/CT Assisted Test** to set the function.
Step 2 : Tap **Start Test** to start test. Check Test Result after test.



7.3.11 Equipment Maintenance

7.3.11.1 Checking Firmware Information/Upgrading Firmware Version

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

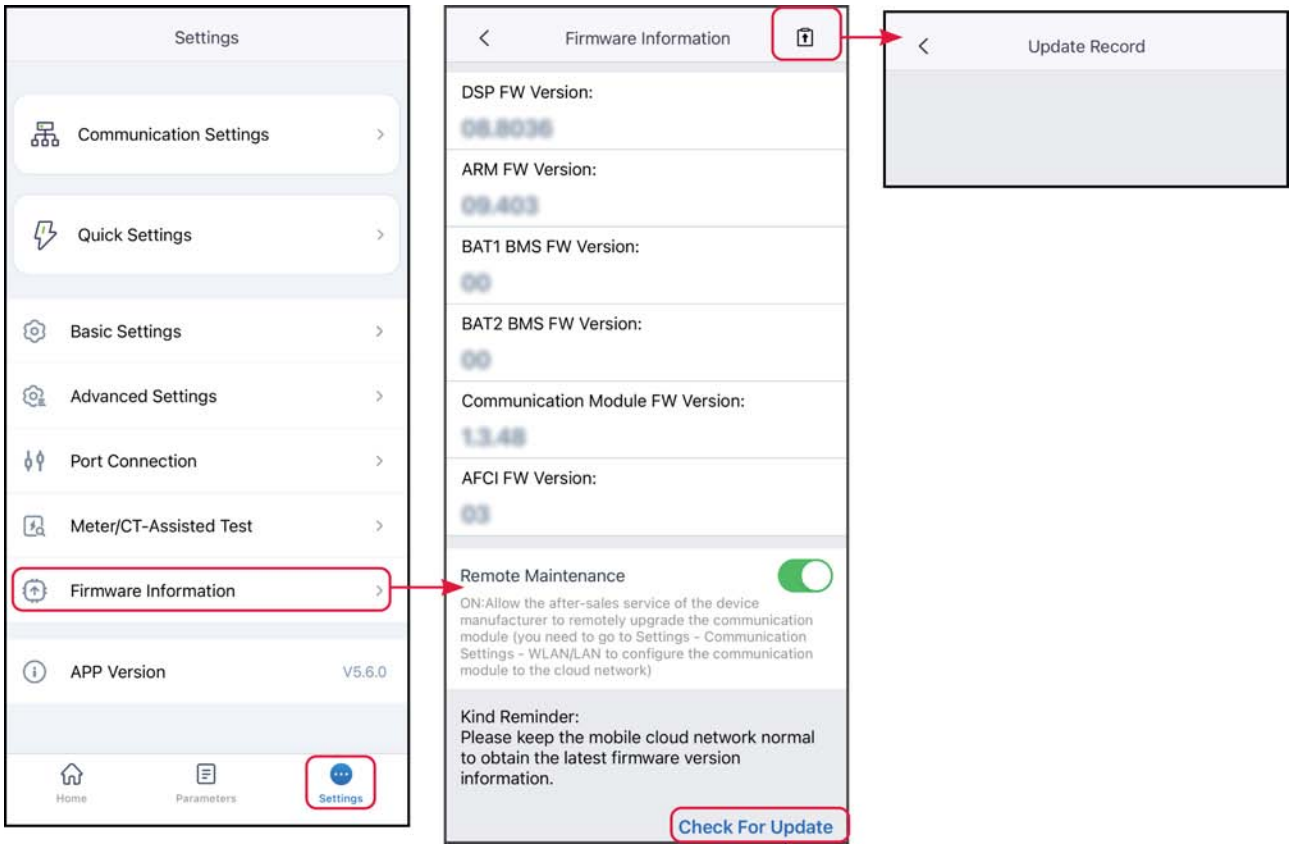
NOTICE
If the Firmware Upgrade dialog box pops up once logging into the app, click Firmware Upgrade to directly go to the firmware information page.

7.3.11.1.1 Regular Upgrade

NOTICE

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

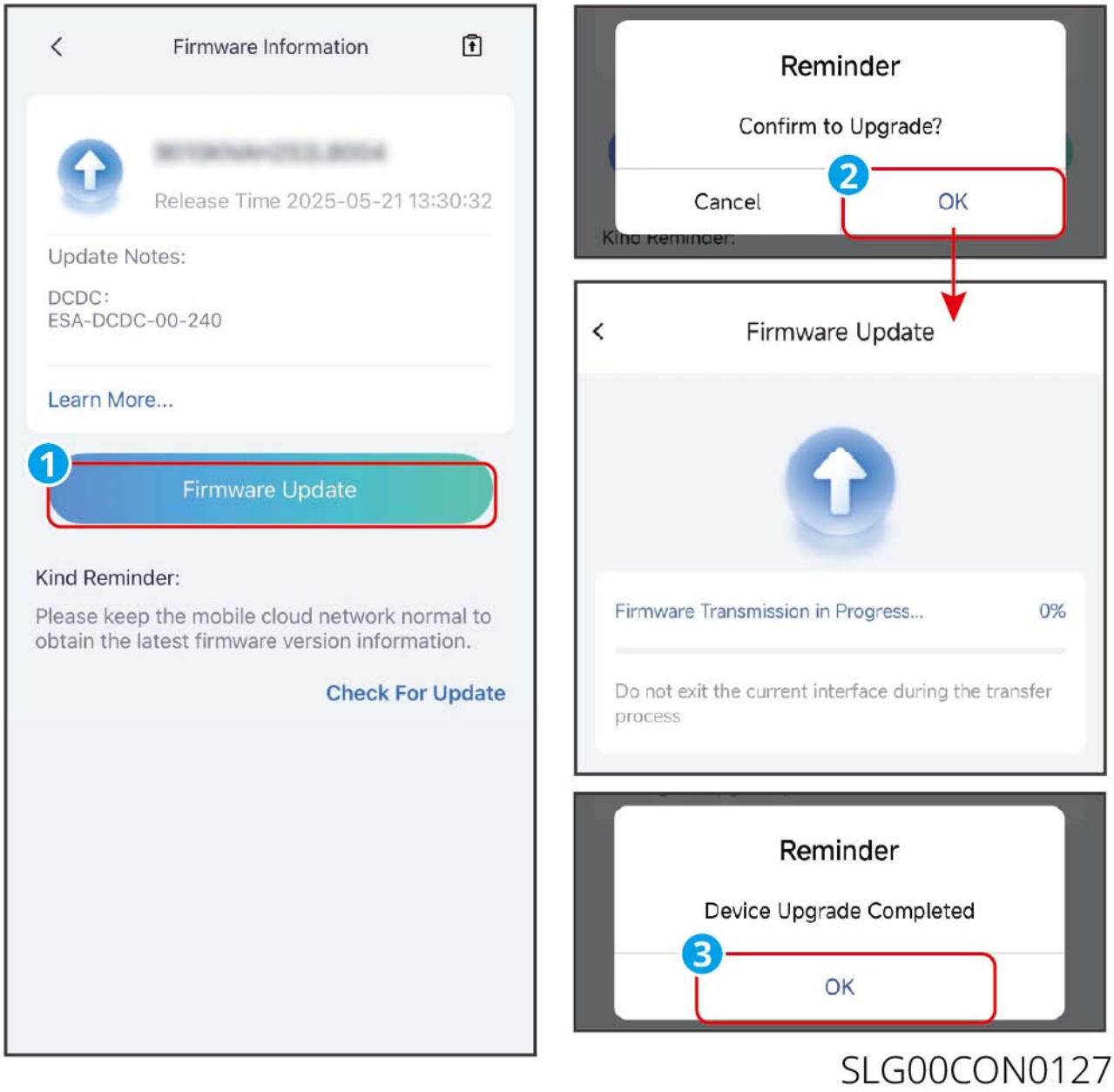
Step 1 : Tap **Home > Settings > Firmware Information** to check the firmware version. If the firmware upgrade dialog box pops up, tap **Firmware Upgrade** and turn to the upgrade interface.
Step 2 : (Optional) Tap **Check For Update** to confirm whether the latest firmware version is available for updating.
Step 3: Tap **Firmware Upgrade** to enter the firmware upgrade interface.
Step 4 : (Optional) Tap **Learn More** to view firmware-related information, such as the current version, the latest version, firmware update records, etc.
Step 5 : Tap **Upgrade** and complete the upgrade according to the prompts on the interface.



7.3.11.1.2 One-click Upgrade

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

Step 1 : Tap **Home > Settings > Firmware Information**. Tap **Firmware Information** as prompted to enter the firmware upgrade page.
Step 2 : Tap **Upgrade** and follow the prompts to complete the upgrading. If you only need to upgrade a specific firmware version, tap **Learn More** to check the firmware related information and tap **Firmware Upgrade** below the firmware version you want to upgrade, and follow the on-screen prompts to complete the operation.
Step 3 : Tap **Learn More** to view all current firmware version information.
Step 4: (Optional)Tap ,to view the version upgrade record.



7.3.11.1.3 Automatic Upgrade

NOTICE

- When using WiFi/LAN Kit-20 or WiFi Kit-20 module communication and the module firmware version is V2.0.1 or above, the device automatic upgrade function can be enabled.
- After the device automatic upgrade function is enabled, if the module version is updated and the device has been connected to the network, the corresponding firmware version can be automatically upgraded.

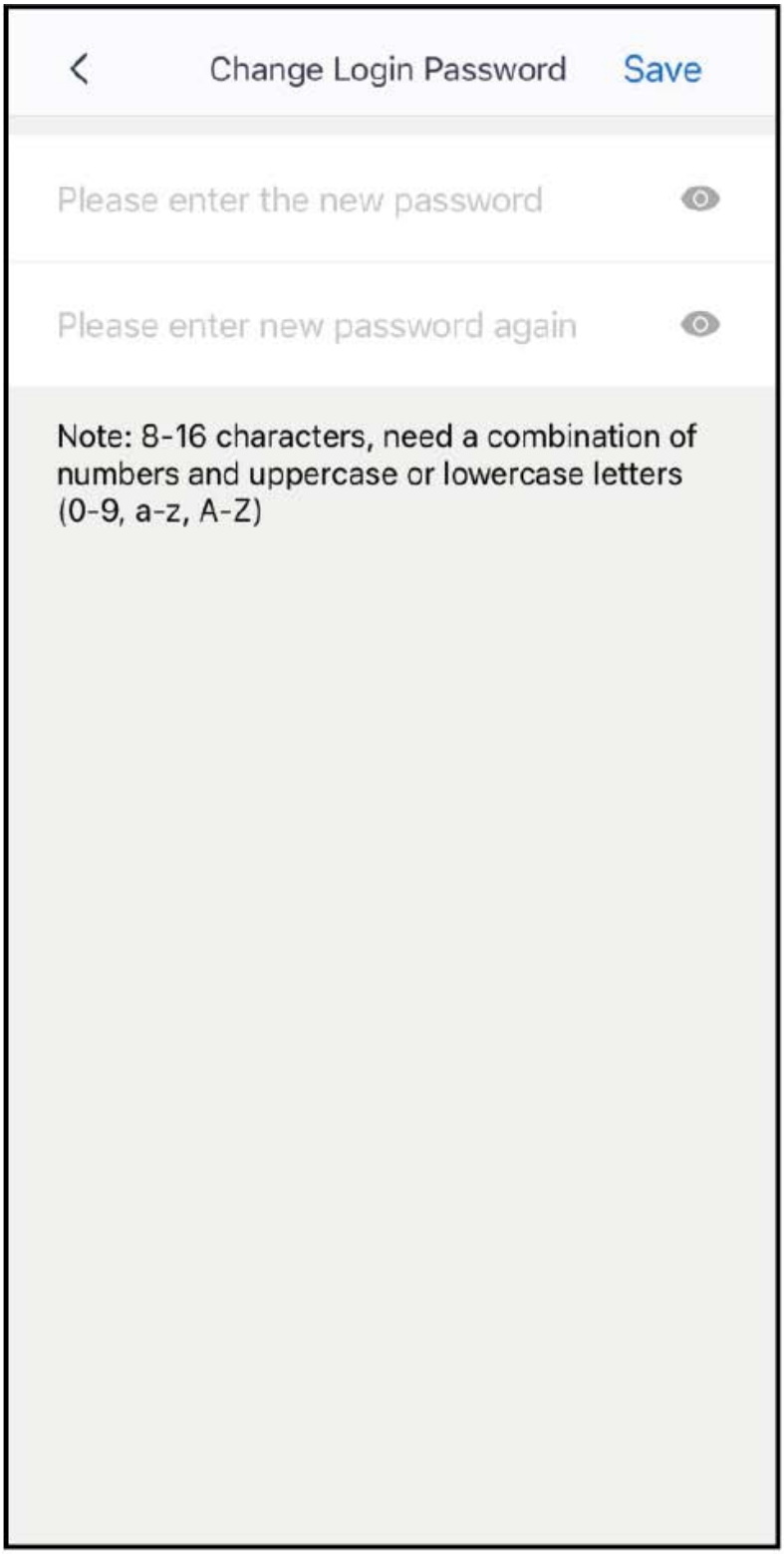
Step 1 : Tap **Home > Settings > Firmware Information**.
Step 2 : Enable or disable the automatic device upgrade function according to actual needs.

7.3.11.2 Change the Login Password

NOTICE

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

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



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9 Maintenance

9.1 Power OFF the System

⚠DANGER

- When performing operation and maintenance on equipment in the system, please ensure the Power OFF the System is properly handled. Operating live equipment may cause equipment damage or electric shock DANGER.
- After the equipment is POWER OFF, the internal components Discharge require a certain amount of time. Please wait until the equipment is fully Discharge according to the time specified on the label.
- Restarting Battery should be performed using the circuit breaker power on method.
- When closing Battery system, strictly adhere to the Battery system power off requirements to prevent damage to Battery system.
- When there are multiple Battery in the system, power off any one Battery can power off all Battery.

NOTICE

- The breaker between Inverter and Battery, and the breaker between Battery system shall be Installation in accordance with local laws and regulations.
- To ensure effective protection of Battery system, the cover plate of the Battery system switch must remain closed, and the Protective coverP should automatically close after being opened. If the Battery system switch is not in use for an extended period, it should be secured with screw.

Next current process

1. Disconnect the BACK-UP breaker.
2. Disconnect the ON-GRID breaker.
3. (Optional) Disconnect the GEN breaker.
4. (Select according to local regulations) Disconnect the breaker between the PV

modules and the Inverter.
5. Disconnect the DC switch of Inverter.
6. (According to local regulations) Disconnect the switch between Inverter and Battery.
7. Disconnect the Battery switch.
8. Disconnect the Battery system switch (LX A5.0-10, LX A5.0-30). Close the Battery system integrated breaker or press and hold the Battery system button for ≥5 seconds, and the Battery system integrated breaker will automatically disconnect (only applicable to LX U5.4-L, LX U5.4-20, LX U5.0-30, GW14.3-BAT-LV-G10).
9. (Only for screenless models) Disconnect the off-grid control switch of the Inverter.

9.2 Removing the Equipment

⚠DANGER

- Ensure the equipment is POWER OFF.
- When operating the equipment, please wear personal protective equipment.
- When connecting dismantle, use standard disassembly tools to avoid damaging terminal or equipment.
- Unless otherwise specified, the disassembly method of the equipment is the reverse sequence of the Installation method, and this document will not elaborate further.

1. Perform power off on the system.
2. Label the connected cables in the system to indicate their types.
3. Disconnect the cables in the system, such as DC cables, AC cables, Communication cable, and PE cable, from Inverter, Battery, and Smart Meter.
4. dismantle, smart dongle, Inverter, Battery, Smart Meter, and other equipment.
5. Store the equipment properly. If it is to be put into use later, ensure that the storage conditions meet the requirements.

9.3 Disposing of the Equipment

When the equipment can no longer be used and requires scrapping, it must be disposed of in accordance with the electrical waste disposal regulations of the country/region where the equipment is located. The equipment must not be treated

as general household waste.

9.4 Routine Maintenance

⚠WARNING

- If any issues that may affect the Battery or hybrid inverter system are detected, please contact after-sales personnel. Unauthorized disassembly is prohibited.
- If exposed copper wires are found inside the conductive line, do not touch them. High voltage DANGER, please contact after-sales personnel. Disassembly by unauthorized personnel is prohibited.
- In case of any other emergencies, please contact the after-sales personnel immediately and follow their instructions, or wait for on-site assistance from the after-sales team.

Maintenance Content	Maintenance method	Maintenance cycle	Maintenance purpose
System cleaning	Check for any foreign objects or dust on the heat sink, fan, and air inlet/outlet. Check if the Installation space meets the requirements, and inspect whether there is any debris accumulation around the equipment.	Once every six months	Prevent heat dissipation.
System Installation	Check if the equipment Installation is secure and whether the fastenings screw are loose. Inspect the equipment for any damage or deformation to the exterior.	Once every six months to once a year	Verify the stability of the Installation equipment.
Electrical connection	Check for loose electrical connections, damaged cable insulation, and exposed copper conductors.	Once every six months to once a year	Verify the reliability of electrical connections.

Maintenance Content	Maintenance method	Maintenance cycle	Maintenance purpose
Sealing	Check whether the cable entry hole Sealing of the equipment meets the requirements. If the gap is too large or unsealed, resealing is required.	Once per year	Verify that the machine's sealing and waterproof performance are intact.
Battery maintenance	If the Battery has not been used or fully charged for a long time, it is recommended to perform regular Charge on the Battery.	Once/15 days	ProtectionBattery service life.

9.5 fault

9.5.1 Viewing Fault/Alarms Information

All energy storage system and alarm details are displayed on**[SolarGo App]**、**[SEMS Portal App]**And in the LCD display, if your product malfunctions and is not covered in**[SolarGo App]**、**[SEMS Portal App]**Or if you see relevant fault information on the LCD display, please contact the after-sales service center.

- **Mode 1: LCD screen**

Click or select the fault information icon on the screen  Check the energy storage system alarm or fault information.

- **Option 2: SolarGo App**

Through**[Home]**>**[Parameter]**> **[Alarm]**View the energy storage system alarm information.

- **Option 3: SEMS Portal App**

1. Open the SEMS Portal App and log in with any account.
2. Through**[power station]** >**[Alarm]**You can view all power stationfault information.
3. Click on the specific fault name to view the detailed occurrence time, possible causes, and solutions of the fault.

9.5.2 Fault Information and Troubleshooting

Please troubleshoot according to the following method for fault. If the troubleshooting method does not help, please contact the after-sales service center. When contacting the after-sales service center, please collect the following information to facilitate a quick resolution.

1. Product information, such as: serial number, software version, device Installation time, fault occurrence time, fault occurrence Frequency, etc.
2. Equipment Installation environment, such as weather conditions, whether the modules are shaded, have shadows, etc. Installation environment recommendations can provide photos, videos, and other documents to assist in problem analysis.
3. Utility grid situation.

9.5.2.1 System fault

If the system encounters an issue not listed, or if following the instructions fails to resolve the problem or abnormality, immediately cease system operation and contact your distributor without delay.

No.	fault	Solution measures
1	Unable to detect the smart dongle wireless signal	1. Please ensure that no other devices are connected to the smart dongle wireless signal. 2. Please ensure the SolarGo app is updated to the latest version. 3. Ensure the intelligent communication stick is powered on normally, with the blue signal light flashing or steadily lit. 4. Ensure the smart device is within the communication range of the smart dongle. 5. Refresh the device list of the App. 6. Restart Inverter

No.	fault	Solution measures
2	Unable to connect to smart dongle wireless signal	1. Please ensure that no other devices are connected to the smart dongle wireless signal. 2. Restart the Inverter or communication stick, and attempt to reconnect to the smart dongle wireless signal. 3. Ensure that Bluetooth is successfully encrypted and paired.
3	 Ezlink indicator flashes twice	1. Please ensure that Router is turned on. 2. When using LAN communication, ensure that the LAN cable is properly connected and the communication configuration is correct. Enable or disable the DHCP function based on actual conditions. 3. When using WiFi communication, ensure that the wireless network connection is stable and the wireless signal strength meets the requirements. Enable or disable the DHCP function based on actual conditions.
4	 Ezlink indicator flashes four times	1. Please ensure the communication stick is properly connected to the Router via WiFi or LAN, and that the Router has normal internet access. 2. If the problem is not resolved, please contact the after-sales service center.
5	 Ezlinkindicator extinguishing	Please ensure that Inverter has been power on. If the issue persists, please contact the after-sales service center.
6	 Ezlinkindicator extinguishing	Please ensure that Inverter has been power on.
7	Unable to find Router SSID	1. Place the Router close to the Smart dongle, or add a WiFi repeater to enhance the WiFi signal. 2. Reduce the number of devices connected to the Router.

No.	fault	Solution measures
8	After all configurations are completed, the Smart dongle fails to connect with the Router.	1. Restart Inverter 2. Check whether the network name, encryption method, and password in the WiFi configuration are the same as those in Router. 3. Restart Router 4. Place the Router close to the Smart dongle, or add WiFi repeater devices to enhance the WiFi signal.
9	After all configurations are completed, Smart dongle fails to connect with Server.	Restart Router and Inverter.

9.5.2.2 Inverter Troubleshooting

Code	Fault	Causes	Troubleshooting Suggestions
F01	Utility Grid Power Off	1. Utility grid power fails. 2. The AC circuit or the AC breaker is disconnected.	1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on.

Code	Fault	Causes	Troubleshooting Suggestions
F02	Grid Overvoltage Protection	The grid voltage is higher than the permissible range or the high voltage duration exceeds the high voltage ride through setting.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the overvoltage protection threshold, HVRT or disable the overvoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

Code	Fault	Causes	Troubleshooting Suggestions
F03	Grid Undervoltage Protection	The grid voltage is lower than the permissible range, or the duration of low voltage exceeds the requirement of LVRT.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the undervoltage protection threshold, LVRT or disable the undervoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

Code	Fault	Causes	Troubleshooting Suggestions
F04	Grid Rapid Overvoltage Protection	The fault is triggered when the grid voltage is detected to be abnormal or ultrahigh.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • Modify the undervoltage protection threshold, LVRT or disable the undervoltage protection function after obtaining the consent of the local power company if the grid frequency is within the permissible range. 3. Check whether the AC breaker and the output cables are connected securely and correctly if the problem persists.

Code	Fault	Causes	Troubleshooting Suggestions
F05	10min Overvoltage Protection	The moving average of grid voltage in 10min exceeds the range of safety requirements.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting the grid is normal. 2. Check if the grid voltage is running at a high voltage for a long time. If it occurs frequently, please check if the grid voltage is within the allowable range. • Contact the local power company if the grid voltage exceeds the permissible range. • If the grid voltage is within the allowable range, please modify the 10min overvoltage protection value with the consent of the local power operator.

Code	Fault	Causes	Troubleshooting Suggestions
F06	Grid Overfrequency Protection	Utility grid exception. The actual grid frequency exceeds the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Modify the grid overfrequency protection threshold after obtaining the consent of the local power company if the grid frequency is within the permissible range.

Code	Fault	Causes	Troubleshooting Suggestions
F07	Grid Underfrequency Protection	Utility grid exception. The actual grid frequency is lower than the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Modify the grid overfrequency protection threshold after obtaining the consent of the local power company if the grid frequency is within the permissible range.

Code	Fault	Causes	Troubleshooting Suggestions
F08	Grid Frequency Shift Protection	Utility grid exception. The actual grid frequency change rate does not meet the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.

Code	Fault	Causes	Troubleshooting Suggestions
F163	Grid Phase Shift Protection	Utility grid exception. Grid voltage phase change rates do not meet local grid standards.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.

Code	Fault	Causes	Troubleshooting Suggestions
F09	Anti-islanding	The utility grid is disconnected. The utility grid is disconnected according to the safety regulations, but the grid voltage is maintained due to the loads.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range. • Contact the local power company if the grid frequency exceeds the permissible range. • Contact the dealer or the after-sales service if the grid frequency is within the permissible range.
F10	VRT Undervoltage Fault	Utility grid exception. The duration of the grid voltage abnormality exceeds the time specified for high and low penetration.	

Code	Fault	Causes	Troubleshooting Suggestions
F11	VRT Overvoltage Fault	Utility grid exception. The duration of the grid voltage abnormality exceeds the time specified for high and low penetration.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the voltage and frequency of the power grid are within the permissible range and stable. If no, contact the local power operator; If yes, please contact the local service center.
F43	Voltage Waveform Detection Fault	Utility grid exception. Abnormal grid voltage detection triggers a fault.	
F44	Grid Phase Loss Protection	Utility grid exception. There is a single phase drop in the grid voltage.	

Code	Fault	Causes	Troubleshooting Suggestions
F45	Grid Voltage Unbalance	Excessive differences in grid phase voltages.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If it occurs frequently, please check whether the voltage and frequency of the power grid are within the permissible range and stable, if not, please contact your local power operator; if yes, please contact your dealer or after-sales service center.
F46	Grid Phase Sequence Fault	Inverter-Grid Connection Abnormality: Incorrect Phase Sequence Wiring	1. Check whether the wiring of Inverter and Utility grid is in positive sequence. After the wiring is corrected (e.g., by swapping any two phase wires), the fault will automatically disappear. 2. If the wiring is correct and fault persists, please contact the dealer or GoodWe Customer Service Center.

Code	Fault	Causes	Troubleshooting Suggestions
F47	Grid Rapid Overvoltage Protection	Quickly shut down the output upon detecting the grid disconnected operating condition.	1. The fault automatically disappears after the grid power supply is restored.
F48	Utility grid neutral line loss	Neutral Loss in Split-Phase Power Grid	1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on.
F160	EMS/Forced Off-Grid	EMSIssue a forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
F161	Passive Anti-islanding	-	-
F162	Grid Type Fault	Actual grid type (two-phase or split-phase) and safety regulations settings do not match.	Switch to the corresponding safety regulations according to the actual power grid type.

Code	Fault	Causes	Troubleshooting Suggestions
F12	30mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
F13	60mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
F14	150mAGfci Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.

Code	Fault	Causes	Troubleshooting Suggestions
F15	Gfci Slow Change Protection	The input insulation impedance to the ground becomes low when the inverter is working.	1. If occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
F16	DCI Protection L1 Protection	The DC component of the output current exceeds the safety range or default range.	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F17	DCI Protection L2 Protection	The DC component of the output current exceeds the safety range or default range.	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

Code	Fault	Causes	Troubleshooting Suggestions
F18	Low Insulation Resistance	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor. 3. The battery port circuit has low insulation resistance to ground.	1. Check whether the resistance of the PV string to PE exceeds 50kΩ. If no, check and rectify the short circuit point. 2. Check whether the PE cable is connected correctly. 3. If you confirm that the impedance is indeed lower than the default value in rainy weather conditions, please reset the inverter's “insulation impedance protection point” via the SolarGo APP. Inverters for the Australian and New Zealand markets can also be alerted in the following ways in the event of insulation impedance failure: 1. The inverter is equipped with the buzzer: the buzzer sounds continuously for 1 minute in case of failure; If the fault is not resolved, the buzzer sounds every 30 minutes. 2. Add the inverter to the monitoring platform, and set the alarm reminder, the alarm information can be sent to the customer by

Code	Fault	Causes	Troubleshooting Suggestions
			emails.
F19	System Grounding Abnormality	1. The PE cable of the inverter is not connected. 2. When the output of the PV string is grounded, the output side of inverter is not connected to an isolation transformer.	1. Please confirm if the PE cable of the inverter is properly connected. 2. In the scenario where the output of PV String is grounded, please confirm whether an isolation transformer is connected on the output side of Inverter.
F49	L-PE Short Circuit	Low resistance or short circuit between the output phase cable and PE.	Detect output phase line to PE impedance, identify locations with low impedance and repair them.
F50	DCV Protection L1 Protection	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.

Code	Fault	Causes	Troubleshooting Suggestions
F51	DCV Protection L2 Protection	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F20	Anti Reverse Power Failure	Abnormal fluctuation of load	1. If the exception is caused by an external fault, the inverter will recover automatically after solving the problem. 2. If this alarm occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F21	Internal Comm Loss	Reference specific subcode reasons	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F52	Multiple Fault Shutdowns Due to Leakage Current (GFCI)	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery.	1. Check if the PV String to ground impedance is too low.
F53	Multiple Fault Shutdowns Due to DC Arc Fault (AFCI)	North American safety regulations require multiple failures can not be automatically recovered, you need to manually or wait for 24h recovery.	1.After the machine is re-on grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2.Check whether the DC side terminal is securely connected.
F54	Extern Comm Loss	Inverter external device communication loss, may be peripheral power supply problems, communication protocol mismatch, not configure the appropriate peripheral, etc.	Judgment is based on the actual model and the detection enable bit, some models do not support the peripheral will not be detected.
F55	Back-up Port Overload Fault	1. Prevent the Inverter from continuous overload output.	1. Disconnect some off-grid loads to reduce the off-grid output power of the inverter.

Code	Fault	Causes	Troubleshooting Suggestions
F56	Back-up Port Overvoltage Fault	2. Prevent damage to the load caused by Inverter output overvoltage.	1. If it occurs occasionally, it may be caused by load switching and does not require manual intervention. 2. If the problem occurs frequently, contact the dealer or the after-sales service.
F107	On-grid PWM Sync Fault	Abnormal occurrence in carrier synchronization on-grid	1. Check if the synchronization line connection is normal. 2. Check whether the master-slave settings are normal; 3. Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F57	External Box Fault	Excessive waiting time for Box cut relay when switching on-grid to off-grid	1. Check whether the Box is working properly; 2. Check whether the Box communication wiring is correct;

Code	Fault	Causes	Troubleshooting Suggestions
-	Generator Fault	1. 1. This fault will always be displayed when the generator is not connected. 2. During generator operation, failure to meet generator safety regulations will trigger this fault.	1. 1. Ignore the fault when the generator is not connected. 2. The occurrence of fault in the generator under fault conditions is normal. After the generator recovers, wait for a period of time, and the fault will automatically clear. 3. The fault will not affect the normal operation of the off-grid mode. 4. The generator and Utility grid are connected simultaneously and meet the safety requirements, with utility grid taking priority for on-grid, operating in the Utility grid on-grid state.
F22	Voltage Waveform Detection Fault		
F23	Generator abnormal connection		
F24	Generator Low Voltage		
F25	Generator High Voltage		
F26	Generator Low Frequency		
F27	Generator		
F109	External STS Failure	Inverter and STS connection cable abnormality	Check that the harness connection wire sequence between the inverter and STScorresponds in one-to one sequence.
F58	CT Loss Fault	CT connecting wire disconnection (required by Japanese safety regulations)	1. Check whether the CT wiring is correct.

Code	Fault	Causes	Troubleshooting Suggestions
F110	Anti Reverse Power Failure	1. Inverter fault reporting and grid disconnection. 2. Meter communication instability 3. Reverse flow conditions occur	1. Check if there are any other error messages in inverter. If so, perform targeted troubleshooting. 2. Check if meter connection is normal. 3. If the problem occurs frequently and the PV station cannot work properly, contact the dealer or the after-sales service.
F111	Bypass Overload	-	-
F112	Black Start Failure	-	-
F28	Parallel IO check fail	The parallel communication cable is not firmly connected or the parallel IO chip is damaged.	Check if the parallel communication cable is firmly connected, then inspect whether the IO chip is damaged; if so, replace the IO chip.
F59	CAN Communication of parallel inverters in error	Parallel communication cable is not securely connected or some units are not online.	Check whether the parallel communication cable is connected correctly and firmly.
F29	Parallel Grid Line Reversed	Some machines have grid wires reversed from others.	Rewire the grid.

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

Code	Fault	Causes	Troubleshooting Suggestions
F31	GFCI HCT Check Abnormality	The sampling of the GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F63	Leakage Current Sensor Fault	GFCI HCT is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F32	Relay Check Abnormality	Relay abnormal, reasons are as follows: 1. Relay abnormality (short-circuited) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F64	Relay Fault	1. Relay abnormality (short-circuited) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F164	DC Arc Fault (String17~32)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
F165	DC Arc Fault (String33~48)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.

Code	Fault	Causes	Troubleshooting Suggestions
F33	Flash Read/Write Fault	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or the after-sales service.
F42	DC Arc Fault (String1~16)	1. The DC side connection terminal is loose; 2. The DC side connection terminals are falsely connected; 3. The DC cable core breakage and false connection.	1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero; 2. Check whether the DC side terminal is securely connected.
F34	AFCI Self-test Fault	The arc-pulling module does not detect an arc-pulling fault during the arc pulling self-test.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

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

Code	Fault	Causes	Troubleshooting Suggestions
F66	INV Module Over-temperature	Inverter module temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	
F67	Boost Module Over-temperature	Boost module temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	

Code	Fault	Causes	Troubleshooting Suggestions
F68	Output Filter Capacitor Over-temperature	Output filter capacitor temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	
F114	Relay Fault 2	Relay abnormal, reasons are as follows: 1. Relay abnormality (short-circuited) 2. The relay sampling circuit is abnormal. 3. The AC cable is connected improperly, like a virtual connection or short circuit.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F69	PV IGBT Short-Circuit Fault	Causes are possibly as follows: 1. IGBT short circuit 2. The inverter sampling circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F70	3.IGBT open circuit Fault	1. A software problem caused the wave not to be sent. 2. The drive circuit is abnormal. 3.IGBT open circuit	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F71	NTC Abnormal l	Abnormal NTC temperature sensor	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

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

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

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

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

Code	Fault	Causes	Troubleshooting Suggestions
F118	MOS Continuous Overvoltage	1. Software issue causes the inverter drive to shut down earlier than the flyback drive; 2. Inverter drive circuit abnormality causes failure to turn on; 3. PV voltage is too high; 4. Mos voltage sampling anomaly.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F119	BUS Short-Circuit Fault	1. The hardware is damaged.	If the inverter continues to be off-grid after a BUS short-circuit fault occurs, please contact your dealer or after-sales service center.
F120	Busbar Sampling Abnormality	1. Bus voltage sampling hardware failure.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F121	DC Side Sampling Abnormality	1. Bus voltage sampling hardware failure 2. Battery voltage sampling hardware failure 3. Dcrly relay failure	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F37	PV Input Overvoltage	The PV input voltage is too high. Causes are possibly as follows: Incorrect photovoltaic array configuration, with too many PV Battery panels connected in series in the string, causing the string's open-circuit voltage to exceed the maximum operating voltage of the Inverter.	Check the serial connection of the PV array. Make sure that the open circuit voltage of the PV string is not higher than the maximum operating voltage of the inverter. The inverter alarm disappears automatically when the PV array is configured correctly.
F38	PV Continuous Hardware Overcurrent	1. The PV configuration is not proper. 2. The hardware is damaged.	

Code	Fault	Causes	Troubleshooting Suggestions
F39	PV Continuous Software Overcurrent	1. The PV configuration is not proper. 2. The hardware is damaged.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F91	FlyCap Software Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high; 2. Inverter BUS Voltage Sampling Abnormality	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F92	FlyCap Hardware Overvoltage	FlyCap overvoltage. Causes are possibly as follows: 1. The PV voltage is too high; 2. Inverter BUS Voltage Sampling Abnormality	
F93	FlyCap undervoltage.	FlyCap undervoltage. Causes are possibly as follows: 1. PV Energy deficit; 2. Inverter BUS Voltage Sampling Abnormality	

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

Code	Fault	Causes	Troubleshooting Suggestions
F98	String Reversed (String 17~ 32)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.
F99	PV String Lost (String 1~ 16)	String fuse disconnected (if applicable).	Check if the fuse is disconnected.
F100	PV String Lost (String 17~ 32)	String fuse disconnected (if applicable).	Check if the fuse is disconnected.
F122	Incorrect PV Access Mode Setting	There are three modes of PV access modes, taking the four-way MPPT as an example: 1. Parallel mode: i.e.AAAAmode(homogenous mode)，PV1-PV4homogenous4 wayPVconnected to the same PV panel. 2. Partial parallel mode: i.e.AACCmode, PV1andPV2are	Check that the PV access mode is set correctly (ABCD, AACC, AAAA) and reset the PV access mode in the correct way. 1. Confirm that the actual access to each PV is properly connected. 2. If the PV has been connected correctly, check whether the currently set “PV Access Mode” corresponds to the actual access mode through APP or screen. 3. If the currently set “PV

Code	Fault	Causes	Troubleshooting Suggestions
		connected in the same source,PV3andPV4 are connected in the same source. 3. Independent mode: i.e.ABCDmode(non homologous)，PV1、PV2、PV3、PV4are connected independently, and each of the four-way PV is connected to a photovoltaic panel. This fault is reported if the actual access mode of the PV does not match the PV access mode set by the device.	access mode” does not match the actual access mode, you need to set the “PV access mode” to a mode that matches the actual situation through APP or screen, and then disconnect the PV and AC power supply and restart after the setup is completed. 4. After the setting is completed, if the current "PV access mode" is consistent with the actual access mode, but this fault is still reported, please contact the dealer or after-sales service center.
-	String Reversed (String 33~ 48)	The PV strings are connected reversely.	Check whether PV strings are connected reversely.

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

Code	Fault	Causes	Troubleshooting Suggestions
F123	Multi-channel PV Phase Error	Incorrect PV Input Mode Setting	Verify that the PV connection mode is correctly set (ABCD, AACC, AAAA), and reconfigure the PV connection mode according to the correct settings. 1. Confirm that all PV connections are properly connected. 2. If the PV connections are correct, use the app or screen to verify that the currently set “PV connection mode” matches the actual connection mode. 3. If the currently set “PV connection mode” does not match the actual connection mode, use the app or screen to set the “PV connection mode” to match the actual situation. After setting, disconnect the PV from AC power and restart. 4. After setting, if the current “PV connection mode” matches the actual connection mode but the fault persists, please contact the dealer or GoodWe After-Sales Service Center.

Code	Fault	Causes	Troubleshooting Suggestions
F101	Battery 1 Pre-charging Fault	Battery 1 precharge circuit failure (burnt precharge resistor, etc.)	Check whether the pre-charging circuit is good, whether the battery voltage and bus voltage are consistent after powering up the battery only, if not, please contact the dealer or GoodWe after-sales service center.
F102	Battery 1 Relay Fault	Battery 1 relay does not operate properly.	After the battery is powered up, check if the battery relay works and if you hear a closing sound, if it does not work, please contact your dealer or GoodWe after sales service center.
F103	Battery1 Connection Overvoltage	Battery 1 access voltage exceeds the rated range of the machine.	Verify that the battery voltage is within the rated range of the machine.
F104	Battery 2 Pre-charging Fault	Battery 2 precharge circuit failure (burnt precharge resistor, etc.)	Check whether the pre-charging circuit is good, whether the battery voltage and bus voltage are consistent after powering up the battery only, if not, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F105	Battery 2 Relay Fault	Battery 2 relay does not operate properly.	After the battery is powered up, check if the battery relay works and if you hear a closing sound, if it does not work, please contact your dealer or GoodWe after sales service center.
F106	Battery2 Connection Overvoltage	Battery 2 access voltage exceeds the rated range of the machine.	Verify that the battery voltage is within the rated range of the machine.
F124	Battery1 Reverse Connection Fault	Battery 1 positive and negative are connected reversely.	Check the battery and machine terminals for positive and negative consistency.
F125	Battery2 Reverse Connection Fault	Battery 2 positive and negative are connected reversely.	Check the battery and machine terminals for positive and negative consistency.
F126	Battery abnormal connection	Battery abnormal connection	Check whether the battery is working properly.
-	BMS Status Bit Fault	BMS Module Fault	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.

Code	Fault	Causes	Troubleshooting Suggestions
F127	Battery Heat Exchanger Overtemperature	Battery temperature is too high. Causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	
F128	Reference Voltage Abnormality	The reference circuit is abnormal.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F129	The cavity temperature is too low.	Cavity temperature is too low, causes are possibly as follows: 1. The ambient temperature is too low.	
F130	AC Side SPD Fault	AC side lightning protection device failure.	Replace AC side lightning protection devices.
F131	DC Side SPD Fault	DC side lightning protection device failure.	Replace DC side lightning protection devices.

Code	Fault	Causes	Troubleshooting Suggestions
F132	Internal Fan Abnormality	Internal fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply; 2. Mechanical Fault (blocking); 3. Fan aging damage.	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, turn on the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or GoodWe after-sales service center.
F133	External Fan Abnormality	External fan abnormality. Causes are possibly as follows: 1. Abnormal fan power supply; 2. Mechanical exception (blocking); 3. Fan aging damage.	
F134	PID Diagnosis Abnormality	PID hardware failure or high PV voltage PID pause	PID pause warning caused by high PV voltage does not need to be dealt with, PID hardware failure can be cleared by turning the PID switch off and on again to clear the PID fault, replace the PID unit.

Code	Fault	Causes	Troubleshooting Suggestions
F135	Trip Switch Tripping Warning	Causes are possibly as follows: An overcurrent or PV reversal has occurred causing the disconnect switch to trip;	Contact the dealer or the after-sales service. The reason for disconnection, for the occurrence of PV short circuit or reverse connection, it is necessary to check whether there is a historical PV short circuit warning or historical PV reverse connection warning, and if there is, it is necessary for the maintenance personnel to check the corresponding PV situation. After checking that there are no faults you can manually close the disconnect switch and clear this warning via the APP interface clear history faults operation.
F136	Historical PV IGBT Short Circuit Warning	Causes are possibly as follows: An overcurrent occurs causing the disconnect switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV short circuit warning sub-code to check whether there is any fault in the short-circuited Boost hardware and external strings; after checking there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

Code	Fault	Causes	Troubleshooting Suggestions
F137	Historical PV Reverse Connection Warning (Strings 1~16)	Causes are possibly as follows: The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.
F138	Historical PV Reverse Connection Warning (Strings 17~32)	Causes are possibly as follows: The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the dealer or the after-sales service. Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

Code	Fault	Causes	Troubleshooting Suggestions
F139	Flash R/W Error	Causes are possibly as follows: Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or the after-sales service.
F140	Meter Communication Normal Alarm.	This warning may be reported after enabling the anti-backflow function. Possible causes: 1. Meter not connected; 2. The communication wire connecting the meter to the inverter is wired incorrectly.	Check the wiring of the meter and connect the meter correctly, if the fault still exists after checking, contact the dealer or the after-sales service.
F141	PV Panel Type Recognition Failure	PV panel recognizes hardware anomaly	Contact the dealer or the after-sales service.
F142	String Mismatch	PV string mismatches. Two sets of string open-circuit voltages under the same MPPT have different configurations.	Check the open-circuit voltage of the two strings, and configure the strings with the same open-circuit voltage under the same MPPT, as long time string mismatch is a potential safety hazard.
F143	CT Loss	CT Loss	Check whether the CT wiring is correct.
F144	CT Reversed	CT Reversed	Check whether the CT wiring is correct.

Code	Fault	Causes	Troubleshooting Suggestions
F145	PE Loss Alarm PE Loss	Ground wire not connected.	Check the ground wire.
F146	String Terminals Overtemperature (String 1~ 8)	37176 Register PV Terminal Temperature Alarm Subcode 1 has a set position.	-
F147	String Terminals Overtemperature (String 9~ 16)	37177 Register PV Terminal Temperature Alarm Subcode 2 has a set position.	-
F148	String Terminals Overtemperature (String 17~ 20)	37178 Register PV Terminal Temperature Alarm Subcode 3 has a set position.	-
F149	Historical PV Reverse Connection Warning (Strings 33~48)	Causes are possibly as follows: The PV reverse connection has occurred causing the disconnecting switch to trip;	Contact the distributor or after-sales service center; Maintenance personnel need to follow the historical PV reverse connection warning subcode to check whether the corresponding string is reverse connected and whether there is pressure difference in the PV panel configuration; after the check is complete and there is no fault, the warning can be cleared by clearing the historical fault operation through the APP interface.

Code	Fault	Causes	Troubleshooting Suggestions
F150	Battery 1 low voltage	Battery voltage below set value.	-
F151	Battery 2 low voltage	Battery voltage below set value.	-
F152	Low battery supply voltage.	Battery not charging, voltage below shutdown voltage	-
F153	Battery 1 High voltage	-	-
F154	Battery 2 High voltage	-	-
F155	On-line Insulation Resistance Low	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor.	1. Check the impedance of the PV string to the ground. If there is a short circuit phenomenon, please check the short circuit point and rectify it. 2. Check whether the PE cable is connected correctly. 3. If it is confirmed that the impedance is indeed lower than the default value in cloudy and rainy days, please reset the "insulation impedance protection value".

Code	Fault	Causes	Troubleshooting Suggestions
F156	Microgrid Overload Warning	Excessive input current at the backup end.	If the problem occurs occasionally, ignore it. If the problem occurs frequently, contact the dealer or the after-sales service.
F157	Manual Reset	-	-
F158	Generator Phase Sequence Abnormality	-	-
F159	Port reuse configuration error	The reuse (generator) port is configured for a microgrid or large load, but is actually connected to a generator.	Use the APP to change the reuse (generator) port configuration..
F41	Generator Port Overload	1. Off-grid Side Output Exceeds Specification Requirements 2. Off-grid Side Short Circuit 3. Off-grid Terminal Undervoltage 4. When used as a Heavy Load Port, the Heavy Load Exceeds Specification Requirements	Confirm the off-grid side output voltage, current, power and other data through data to identify the cause of the problem

Code	Fault	Causes	Troubleshooting Suggestions
F108	DSP Communication Fault	-	-

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

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

Fault	Causes	Troubleshooting Suggestions
Over temperature protection	Excessive pole temperature	-
Battery Unbalancing Fault	When the temperature difference is excessively large at different stages, the battery will limit its power output, i.e., restrict the charging and discharging current. Therefore, this problem is generally difficult to occur. The capacity degradation of battery cores leads to excessively high internal resistance; when an overcurrent occurs, the temperature rise becomes significant, which in turn results in a large temperature difference. Poor welding of the battery core tabs causes the cell to heat up too quickly when an overcurrent passes through. 4. Temperature sampling issue; 5. Loose connection of power cables	-
	1. Inconsistent aging degrees of battery cores 2. Malfunctions of the slave board chip can also lead to excessive voltage difference between cores; 3. Balancing problems of the slave board can also result in excessive voltage difference between cells; 4. Caused by wiring harness issues	

Fault	Causes	Troubleshooting Suggestions
	1. Inconsistent aging degrees of battery cores 2. Malfunctions of the slave board chip can also lead to excessive voltage difference between cores; 3. Balancing problems of the slave board can also result in excessive voltage difference between cells; 4. Caused by wiring harness issues	
Insulation Resistance Protection	Insulation Resistance Damage	Check if the ground wire is properly connected, then restart the battery. If the problem persists after the restart, please contact the GoodWe after-sales service center.
Precharge Failure Fault	PreCharge Failure	It indicates that during the pre-charging process, the voltage across the pre-charging MOS has consistently exceeded the specified threshold. After shutting down and restarting the device, observe whether the fault persists, and check if the wiring is correct and if the pre-charging MOS is damaged.

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

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

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

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

Fault	Causes	Troubleshooting Suggestions
	Internal MCU failure	Upgrade the software and restart the battery. If the problem persists after restarting, please contact the GoodWe after-Sales service center.
	Master Control Current Exceeds the Specified Threshold.	1. Turn off the device and let it stand for 5 minutes, restart to check if the fault persists; 2. Check if the inverter is set to excessive power, resulting in exceeding the battery's rated operating current.
	Batteries Inconsistency of battery cells	Confirm whether the cells of the parallel cluster batteries are consistent.
	Batteries positive and negative are connected reversely.	Batteries positive and negative are connected reversely.
	Severe over-temperature, overvoltage, etc., trigger the fire protection system.	Contact GoodWe After-sales Service Center.
System Air Conditioner Fault	Abnormal failure of the air conditioner.	Try to restart the system. If the fault is not resolved, please contact GoodWe After-sales Service Center.

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

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

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

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

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

Fault	Causes	Troubleshooting Suggestions
	Output Power Relay Failure to Close	Check whether the output port wiring is correct and if there is a short circuit. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Power Device Over Temperature	Let the battery stand for 1 hour to allow the temperature of the internal power devices to drop. If ineffective and the fault persists after restart, please contact GoodWe After-sales Service Center.
	Relay Sticking	If the fault persists after restart, please contact GoodWe After-sales Service Center.
Inter-cluster Circulation Fault	1. Cell Imbalance 2. Incomplete Charging Calibration During First Power-on	-

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

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

Fault	Causes	Troubleshooting Suggestions
Slave Unit with Smart Meter Abnormality in Parallel Operation System	The smart meter is connected to the slave unit.	Set the unit connected to the smart meter as the host.
Communication Timeout Abnormality Between Slave Unit and Host After AC Power-on for More Than 10 Minutes	1. Incorrect slave unit address setting. 2. Loose slave unit communication cable.	1. Check whether the slave unit addresses are duplicated. 2. Check whether the parallel communication cable is loose.

9.5.2.3 Batteryfault(LX A5.0-10)

🔴When the BatteryALMindicator indicator is red, troubleshoot by checking the fault status in conjunction with the SOCindicator display.

No.	State of Charge (SOC)	fault name	Solution measures
1	○○○○●	overvoltage	Power off and let it stand for 2 hours. If the issue persists after restarting, please contact the after-sales service center.
2	○○○●○	Battery undervoltage	Please contact the after-sales service center.
3	○○○●●	High cell temperature	Power off and let it stand for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
4	○○●○○	low temperature	Shutdown and wait for temperature recovery. If the issue persists after restart, please contact the after-sales service center.

No.	State of Charge (SOC)	fault name	Solution measures
5	○○●○●	low temperature	Shutdown and wait for temperature recovery. If the issue persists after restarting, please contact the after-sales service center.
6	○○●●○	overcurrent	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
7	○○●●●	overcurrent	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
8	○●○○○	Insulation resistance too low	Please contact the after-sales service center.
9	○●○○●	Excessive temperature difference	Power off and let it stand for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
10	○●○●●	Excessive single-cell voltage deviation	After restarting the Battery, let it stand for 12 hours. If the issue persists, please contact the after-sales service center.
11	○●●○○	Cell inconsistency	Please contact the after-sales service center.
12	○●●○●	Harness abnormality	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
13	○●●●○	MOS cannot close	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
14	○●●●●	MOS cannot close	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
15	●○○○○	Cluster connection	Please check whether Battery and model match. If they do not match, please contact the after-sales service center.

No.	State of Charge (SOC)	fault name	Solution measures
16	●○○○●	interlocking signal fault	Check if the Terminal resistor Installation is correct. If the problem persists after restarting, please contact the after-sales service center.
17	●○○●○	BMU Communication fault	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
18	●○○●●	MCU internal communication fault	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
19	●○●○○	Circuit breaker sticking	Please contact the after-sales service center.
20	●○●○●	Precharge failure fault	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
21	●○●●○	MOS Overtemperature fault	Power off and let it stand for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
22	●○●●●	Shunt Over-temperature fault	Power off and let it stand for 2 hours. If the problem persists after restarting, please contact the after-sales service center.
23	●●○○○	Reverse connection fault	Please contact the after-sales service center.
24	●●●●●	Microelectronics	Please contact the after-sales service center.

9.5.2.4 Batteryfault(LX A5.0-30, LX U5.0-30)

Alarm status

●When BatteryALMindicator displays in red, locate and troubleshoot the issue by combining the SOCindicator display status.

No.	SOC (State of Charge)	fault name	Solution measures
1	○○○●	overvoltage Undervoltage	1. Check whether the limit of InverterChargecurrent is 0 via SolarGo. If it is 0, please verify whether the Communication cable connection between Battery and Inverter is reliable and the communication is normal. 2. Power off and let it sit for 5 minutes, then restart to confirm if fault persists. 3. If the fault does not recover, please contact the after-sales service center.
2	○○●●	overcurrent	1. Check via SolarGo whether Batterymodel is correct, confirm if the real-time current of Battery exceeds the Chargecurrent limit or the Dischargecurrent limit value, and contact the after-sales service center. 2. When it is less than, shut down the Battery or upgrade the program, and restart to confirm whether the fault persists. 3. If fault does not respond, please contact after-sales service.
3	○○●○	Over-temperature protection Battery low temperature Protection Pole Over-temperature Alarm	Power off and let it stand for 60 minutes to allow the temperature to recover. If the issue persists after restarting, please contact the after-sales service center.
4	○●○○	imbalance Low SOHfault	Power off and let it stand for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.

No.	SOC (State of Charge)	fault name	Solution measures
5	●○●●	Precharge failure fault	1. Verify whether the output terminal of Battery is incorrectly connected to Inverter. 2. Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
6	○●○●	Harvesting line	Check if the Battery switch is closed. If the Battery switch is already closed and the issue persists, please contact the after-sales service center.
7	●●○○	Relay or MOSFET overtemperature Shunt Over-temperature	Power off and let it stand for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
		BMS Other fault: Output port Overtemperature fault	1. Check if the Battery power line is securely fastened. Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
8	○●●○	Other Protection: MOS cannot close	Power off and let it stand for 5 minutes. If the issue persists after restarting, please contact the after-sales service center.
9	○●●●	Other Protection: MOS adhesion	

No.	SOC (State of Charge)	fault name	Solution measures
10	●○○○	Other Protection: Cluster fault	1. Verify the type of Terminal resistor used and whether the Installation Location is correct 2. Verify whether the Communication cable between Battery and Battery, and the Communication cable between Battery and Inverter are reliably connected and communicating properly. 3. If the fault does not recover, please contact the after-sales service center.
11	○○○○	Other Protection: Communication lost with Inverter	1. Verify whether the Communication cable connection between Battery and Battery, and the Communication cable connection between Battery and Inverter are reliable and communicating properly. 2. If the fault does not recover, please contact the after-sales service center.
12	●○○●	Others Protection: BMU Communication fault	1. Verify the type of Terminal resistor used and whether Installation Location is correct 2. Verify whether the Communication cable connection between Battery and Battery, as well as the Communication cable connection between Battery and Inverter, is reliable and communication is normal. 3. Power off and let it stand for 5 minutes. If the issue persists after restarting, please contact the after-sales service center.
13	●○●○	OthersProtection: Circuit Breaker Stickingfault	Power off and let it stand for 5 minutes. If the issue persists after restarting, please contact the after-sales service center.

No.	SOC (State of Charge)	fault name	Solution measures
14	●●○●	OthersProtection: Softwarefault	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
15	●●●○	Other Protection: Hardware Overcurrent fault	
16	●●●●	Other Protection: Microelectronics fault	
		Three-terminal abnormality in heating film	1. Upgrade software 2. Power off and let it stand for 5 minutes. If the issue persists after restarting, please contact the after-sales service center.

9.5.2.5 Batteryfault(LX U5.4-L)

State of Charge (SOC)	fault name	Solution measures
	Temperature difference anomaly	Shutdown waiting2 hours. If the problem is not resolved, please contact the after-sales service center.
	high temperature	
	Low-temperature Discharge	Shutdown, wait for temperature to rise, then restart Battery. If the issue persists, please contact the after-sales service center.
	overcurrent	Restart Battery. If the problem persists, please contact the after-sales service center.
	overcurrent	

	overvoltage	
	Battery undervoltage	Under the condition of Charge,Press the button switch 5 times consecutively within 10 seconds to Battery charge, wait for voltage to rise before returning to normal.
	Low-temperature Charge	Shutdown, wait for temperature to rise, then restart Battery. If the issue persists, please contact the after-sales service center.
	Excessive voltage difference between individual cells	Shutdown waiting2 hours, restart Battery. If the problem persists, please contact the after-sales service center.

fault status

State of Charge (SOC)	fault name	Solution measures
	Temperature sensor failure	Restart Battery. If the problem persists, please contact the after-sales service center.
	MOSFET fault	
	Circuit breaker trip error	Reclose the circuit breaker. If the issue persists, please contact the after-sales service center.
	Slave communication loss	Shut down, check Communication cable, and restart Battery. If the issue persists, please contact the after-sales service center.
	NoneSN error	Please contact the after-sales service center.
	Host communication lost	Power off, check the Inverter Communication cable connection, and restart the Battery. If the issue persists, please contact the after-sales service center.
	Software version mismatch	Please contact the after-sales service center.
	Multi-host error	After shutdownStart all Battery within 30 seconds

	MOS over-temperature error	Shutdown waiting2 hours. If the problem is not resolved, please contact the after-sales service center.
	Communication with Inverter interrupted	Power off, check the Communication cable connection, and restart the Battery. If the issue persists, please contact the after-sales service center.

9.5.2.6 Batteryfault(LX U5.4-20)

Alarm status

 When the Battery button indicator displays red and flashes once per second, combine the SOC indicator display status to locate and troubleshoot the alarm.

No.	State of Charge (SOC)	Description
1		Battery system self-processing. Can be passed throughView specific alarm information.
2		
3		
4		
5		
6		

fault status

 When the Battery button indicator displays a steady red light, locate and troubleshoot fault based on the SOC indicator status.

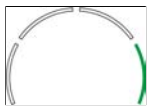
Button	State of Charge (SOC)	fault name	Solution measures
Steady red		overvoltage	Shutdown and Standby2h, restart Battery. If the issue persists, please contact the after-sales service center.

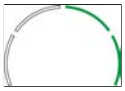
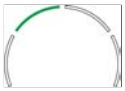
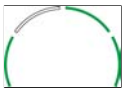
Red light flashing1 second 1 time		Battery undervoltage	Please contact the after-sales service center.
Steady red		High cell temperature	Shutdown and Standby2h, restart Battery. If the issue persists, please contact the after-sales service center.
		low temperature	Shutdown and wait for temperature recovery Restart Battery. If the problem persists, Please contact the after-sales service center.
		low temperature	
		overcurrent	Restart Battery. If the issue persists, please contact the after-sales service center.
		overcurrent	
		Excessive temperature difference	Shutdown and Standby2h, restart Battery. If the issue persists, please contact the after-sales service center.
		Excessive single-cell voltage deviation	Restart Battery and let it stand12h, if the problem is not resolved, please contact the after-sales service center.
		Harness abnormality	Restart Battery. If the issue persists, please contact the after-sales service center.
		MOS cannot close	
		MOSFET adhesion	
		Cluster connection	Please check whether Battery and model match. If they do not match, please contact the after-sales service center.
		BMU Communication fault	Restart Battery. If the problem persists, please contact the after-sales service center.
		MCU internal communication fault	

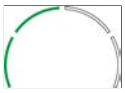
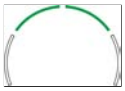
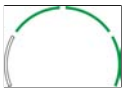
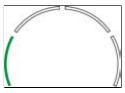
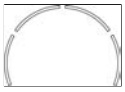
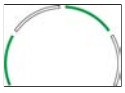
		Circuit breaker sticking	Please contact the after-sales service center.
		Precharge failure fault	Restart Battery. If the problem persists, please contact the after-sales service center.
		MOSFET overtemperature protection	Shutdown and Standby2h, restart Battery. If the issue persists, please contact the after-sales service center.
		Shunt Over-temperature fault	Shutdown and Standby2h, restart Battery. If the issue persists, please contact the after-sales service center.
		Microelectronics	Please contact the after-sales service center.

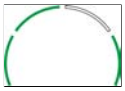
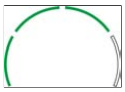
9.5.2.7 Batteryfault(GW14.3-BAT-LV-G10)

When the Battery alarm indicator displays red  The outer ring running light displays a red flashing.  When the operation light is off, locate and troubleshoot based on the SOC display status.

No.	State of Charge (SOC)	fault name	Solution measures
1		overvoltage	1. Check whether the Inverter, Charge, and current limits are 0 via SolarGo. If they are 0, verify that the Communication cable connection between Battery and Inverter is reliable and communication is normal. 2. Power off and let it stand for 5 minutes. After restarting, confirm whether fault persists. 3. If the fault is not restored, please contact the after-sales service center.
		Undervoltage	

2		overcurrent	1. Check whether the Batterymodel is correct via SolarGo, and confirm whether the real-time Batterycurrent exceeds the Chargecurrent limit or the Dischargecurrent limit value. If so, please contact the after-sales service center. 2. If it is less than, shut down Battery or upgrade the program, then restart to confirm whether fault continues to occur. 3. If the fault is not restored, please contact after-sales service.
3		Over-temperature protection Battery low temperature Protection Pole Over-temperature Alarm	Power off and let it stand for 60 minutes to allow the temperature to recover. If the issue persists after restarting, please contact the after-sales service center.
4		imbalance Low SOHfault	Power off and let it stand for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
5		Precharge failure fault	1. Verify whether the output terminal of Battery is incorrectly connected to Inverter. 2. Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
6		Harvesting line	Check if the Battery circuit breaker is closed. If the Battery circuit breaker is already closed and the issue persists, please contact the after-sales service center.

7		Relay or MOSFET overtemperature	Power off and let it stand for 30 minutes. If the problem persists after restarting, please contact the after-sales service center.
		Output port Over-temperature	1. Check if the Battery power line is securely fastened. 2. Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
8		MOS cannot close	Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.
9		MOSFET adhesion	
10		Cluster connection	1. Confirm whether the type of Terminal resistor used and the Installation Location are correct. 2. Verify the reliability of the Communication cable connection between Battery and Battery, and ensure the Communication cable connection between Battery and Inverter is secure with normal communication. 3. If the fault is not restored, please contact the after-sales service center.
11		Inconsistent hardware and software versions	Restart the Battery. If the problem persists after restarting, please contact the after-sales service center.
12		BMU Communication fault	
13		Circuit breaker sticking	Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.

14		Software fault	Restart Battery. If the problem persists after restarting, please contact the after-sales service center.
15		Hardware Overcurrent Protection	
16		Microelectronics	
		Three-terminal abnormality in heating film	1. Upgrade the software 2. Power off and let it stand for 5 minutes. If the problem persists after restarting, please contact the after-sales service center.

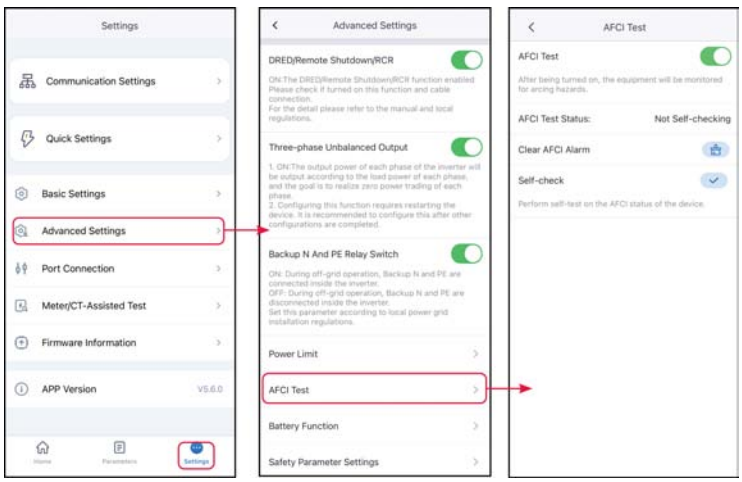
9.5.3 Clear post-processing

In energy storage system, after the completion of certain Troubleshooting, the system needs to be processed before it can resume normal operation.

9.5.3.1 Clear AFCIfaultWARNING

[Software Used]: SolarGo App
[Clearance method]:

1. Through**[Home]** >**[Settings]** >**[Advanced Settings]** >**[DC Arc Detection]**.
2. Click**[Clear AFCIfault Alarm]**Button.



10 technical parameter

10.1 Inverter Parameters

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Battery Input Data			
Battery Type*1	Li-Ion/Lead-acid	Li-Ion/Lead-acid	Li-Ion/Lead-acid
Nominal Battery Voltage (V)	48	48	48
Battery Voltage Range (V)	40~60	40~60	40~60
Start-up Voltage (V)	44.2	44.2	44.2
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)	160	200	240
Max. Continuous Discharging Current (A)	160	200	240
Max. Charge Power (kW)	8.0*3	10.0*3	12.0*3
Max. Discharge Power (kW)	8.8*3	11.0*3	13.2*3
PV String Input Data			
Max. Input Power (kW)	16.0	20.0	24.0
Max. Input Voltage (V)*4	600	600	600
MPPT Operating Voltage Range (V)*5	60~550	60~550	60~550
MPPT Voltage Range at Nominal Power (V)	180~500	170~500	200~500

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

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Max. Apparent Power from Utility Grid (kVA)	16.5	16.5	16.5
Nominal Power at 40℃ (kW)	8.0	10.0	12.0
Max. Power at 40℃ (Including AC Overload) (kW)	8.0	10.0	12.0
Nominal Output Voltage (V)	220/230/240	220/230/240	220/230/240
Output Voltage Range (V)	170~280	170~280	170~280
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60
AC Grid Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. AC Current Output to Utility Grid (A)	40.0	50.0	60.0
Max. AC Current From Utility Grid (A)	75.0	75.0	75.0
Nominal AC Current From Utility Grid (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V
Max. Output Fault Current (Peak and Duration) (A)	105A，3us	145A，3us	145A，3us
Inrush Current (Peak and Duration) (A)	105A，3us	145A，3us	145A，3us
Nominal Output Current (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)
Max. Total Harmonic Distortion	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	105	145	145
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.
AC Output Data (Back-up)			
Back-up Nominal Apparent Power (kVA)	8.0	10.0	12.0
Max. Output Apparent Power without Grid(kVA)	8.8(16000, 10s)	1.1(20000, 10s)	1.32(24000, 10s)
Max. Output Apparent Power with Grid (kVA)	16.5	16.5	16.5
Nominal Output Current (A)	36.4/34.8/33.3	45.5/43.5/41.7	54.5/52.2/50.0
Max. Output Current without Grid(A)	40	50	60
Max. Output Current with Grid(A)	75	75	75
Max. Output Fault Current (Peak and Duration) (A)	105A, 3us	145A, 3us	145A, 3us
Inrush Current (Peak and Duration) (A)	105A, 3us	145A, 3us	145A, 3us

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Maximum Output Overcurrent Protection (A)	105	145	145
Nominal Output Voltage (V)	220/230/240	220/230/240	220/230/240
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Output THDv (@Linear Load)	<3%	<3%	<3%
Switching from Grid Connected Mode to Standalone Mode	<10ms	<10ms	<10ms
Switching from standalone mode to Grid connected mode	<10ms	<10ms	<10ms
AC Data (Generator)			
Nominal Apparent Power from AC generator (kVA)	8.0	10.0	12.0
Max. Apparent Power from AC generator (VA)	8.8	11.0	13.2
Nominal Intput Voltage (V)	220/230/240	220/230/240	220/230/240
Input Voltage Range (V)	170~280	170~280	170~280
Nominal AC generator Frequency (Hz)	50/60	50/60	50/60
AC generator Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. AC Current From AC generator (A)	50.0	54.5	54.5

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Nominal AC Current From AC generator (A)	36.4 at 220V 34.8 at 230V 33.3 at 240V	45.5 at 220V 43.5 at 230V 41.7 at 240V	54.5 at 220V 52.2 at 230V 50.0 at 240V
Efficiency			
Max. Efficiency	97.6%	97.6%	97.6%
European Efficiency	96.2%	96.2%	96.2%
CEC Efficiency	96.2%	96.2%	96.2%
Max. Battery to AC Efficiency	95.5%	95.5%	95.5%
MPPT Efficiency	99.9%	99.9%	99.9%
Protection			
PV String Current Monitoring	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Switch	Integrated	Integrated	Integrated
DC Surge Protection	Type III	Type III	Type III
AC Surge Protection	Type III	Type III	Type III
AFCI	Optional	Optional	Optional
Rapid Shutdown	Optional	Optional	Optional

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (℃)	-35~+60	-35~+60	-35~+60
Operating Environment	Outdoor	Outdoor	Outdoor
Storage Temperature (℃)	-40~+85	-40~+85	-40~+85
Relative Humidity	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	3000	3000	3000
Cooling Method	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling
User Interface	LCD, WLAN+APP	LCD, WLAN+APP	LCD, WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth	RS485, WiFI+LAN+Bluetooth
Communication Protocols	Modbus-RTU、Modbus-TCP	Modbus-RTU、Modbus-TCP	Modbus-RTU、Modbus-TCP
Weight (kg)	27.0	29.0	29.0
Dimension (W×H×D mm)	560*444.5*226	560*444.5*226	560*444.5*226
Noise Emission (dB)	<45	<45	<45
Topology	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP66	IP66	IP66
DC Connector	MC4,OT Terminal	MC4, OT Terminal	MC4, OT Terminal
AC Connector	OT Terminal	OT Terminal	OT Terminal
Environmental Category	4K4H	4K4H	4K4H

Technical Data	GW8000-ES-C10	GW10K-ES-C10	GW12K-ES-C10
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I
The Decisive Voltage Class (DVC)	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A	Battery: A PV: C AC: C Com: A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted
Active Anti-islanding Method	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD
Type of Electrical Supply System	single phase	single phase	single phase
Country of Manufacture	China	China	China
Certification			
Grid Standards	EN 50549-1&-10, NTS TYPE A, UNE 217001, UNE 217002, IEC 61727, IEC 62116, NRS 097-2-1:2017 Ed 2.1, ANRE 208, G99, G100		
Safety Regulation	IEC 62109-1, IEC 62109-2		
EMC	IEC 62920, IEC 61000, EN 300328,EN 301489,EN IEC 62311,EN 62479		

*1: The Li-Ion battery usually contain two mainstream type: LFP battery.

*3: When the PV input voltage is higher than 490V, the battery charging and discharging power will be gradually limited, and the power limitation will be lifted after the input voltage is lowered.

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

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

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

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

*8: For Brazil and Chile, the max. AC output power is Pn, such as the max. AC output

power of GW8000-ES-C10 is 8000W(VA).

10.2 Battery Technical Data

10.2.1 LX A5.0-10

technical parameter	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）		
Rated voltage (V)	51.2		
Operating Voltage range(V)	47.5~57.6		
The nominal charging and discharging current(A)*2	60	120	n×60*3
Rated charging Discharge Power (kW)*2	3	6	n×3*3
Operating Temperature Range(°C)	Charge: 0 ~ +50; Discharge: -10 ~ +50		
Relative Humidity	0~95%		
Max. Operating Altitude (m)	3000		
Communication	CAN		
Weight(kg)	40	80	n×40
Dimensions (W × H × D mm)	Single LX A5.0-10 module: 442×133×420 (excluding Handle); 483×133×452 (including Handle)		
Ingress Protection Rating	IP21		
Storage Temperature(°C)	0 to +40 (≤1 year); -20 to 0 (≤1 month); -40 to 45 (≤1 month)		
Mounting method	Cabinet Installation/Floor Stacking		
round-trip efficiency*4	95%		
Cycle count *5	≥5000		
Safety	IEC62619，IEC 63056，IEC62040-1，INmetro		

technical parameter		LX A5.0-10	2*LX A5.0-10	n*LX A5.0-10
Standards and Certification	EMC	EN IEC61000-6-1，EN IEC61000-6-2，EN IEC61000-6-3，EN IEC61000-6-4		
	Transportation	UN38.3，ADR		
*1: The new Battery is measured under 100% depth of discharge, within a temperature range of 25±2℃, and at a 0.2C charge Discharge condition; usable energy may vary depending on the Inverter. *2: The nominal charging and discharging current and Power are affected by temperature and SOC status. *3: Under the condition of using the combiner box Installation accessory to achieve parallel connection of Battery. *4: New Battery, within the range of 2.5~3.65V, at a temperature range of 25±2℃, under 0.2C/0.2C charge Discharge conditions. The cell achieves 94%~95% under 0.6C/0.6C charge Discharge conditions. *5: Cell, within the range of 2.87~3.59V, at a temperature range of 25±2°C, achieves 70% EOL under 0.6C/0.6C chargeDischarge conditions. n: Maximum 15.				

10.2.2 LX A5.0-30

Technical Parameters	LX A5.0-30
Nominal Capacity (kWh)	5.12
Usable energy (kWh) * 1	5
Cell Type	LFP (LiFePO4)
Operating Voltage Range (V)	43.2~58.24
Nominal Charge Current (A) *2	60
Max. Continuous Charge Current (A) *2*3	90

Technical Parameters	LX A5.0-30
Nominal Discharge Current (A) *2	100
Max. Continuous Discharge Current (A) *2*3	150
Max. Pulse Discharge Current (A)*2*3	<200A（30s）
Max. Continuous Discharge Power (W)	7200
Communication	CAN
Operating Temperature Range (℃)	Charge: 0＜T≤55 Discharge: -20＜T≤55
Maximum Operating Altitude (m)	4000
Weight (Kg)	44
Dimensions (W x H x D mm)	442*133*520 (Excluding hanger) 483*133*559 (Including hanger)
Ingress Protection Rating	IP20
Application Method	On-grid/On-grid + Backup/ off Grid
Scalability	Max. 30 in Parallel (150kWh) (Hand to hand /Combiner box /Busbar)
Mounting Method	19-inch standard rack, Floor-mounted, Wall-Mounted
Round-trip Efficiency*1	≥96%
Safety	IEC62619、IEC63056、N140
EMC	EN IEC61000-6-1、EN IEC61000-6-2、EN IEC61000-6-3、EN IEC61000-6-4

Technical Parameters	LX A5.0-30
Transportation	UN38.3、ADR
Environment	ROHS

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

10.2.3 LX U5.4-L

technical parameter	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
Rated capacity (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
Rated voltage (V)	51.2					
Operating Voltage range(V)	48~57.6					
Max. continuous Discharging Current(A)*3	50	100				
Max discharge power(kW)*3	2.88	5.76				
short circuit	2.323kA@1.0ms					
Communication	CAN					
Weight(kg)	57	114	171	228	285	342

Dimensions (Width × Thickness × Height mm)		505×570×175（LX U5.4-L）
Operating Temperature(°C)		Charge: 0 ~ +50 / Discharge: -10 ~ +50
Storage temperature(°C)		-20~+40 (≤1 month) / 0~+35 (≤1 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 count *4		≥4000 @0.5/0.5C
Standards and Certification	Safety	IEC62619，IEC 62040，CEC
	EMC	CE，RCM
	Transportation	UN38.3
Safe service life (years)		≥25
*1: Test conditions, cell voltage 2.5~3.65V, new battery charged and discharged at +25±2 ℃, 0.5C, performance may vary due to different battery models. *2: Test conditions, 0.5C charge/discharge at 90% DOD under +25±2 ℃ temperature; *3: The nominal charging and discharging current and Power are affected by temperature and SOC state; *4: Based on 0.5C@25±2℃ charge/discharge of the cell, EOL reaches 80%.		

10.2.4 LX U5.4-20

technical parameter	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
Rated capacity (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
Rated voltage (V)		51.2					
Operating Voltage range(V)		47.5~57.6					
Max. continuous Discharging Current(A)*2		50	100				
Max discharge power(kW)*2		2.56	5.12				
short circuit		2.323kA@1.0ms					
Communication		CAN，RS485					
Weight(kg)		57	114	171	228	285	342
Dimensions (Width × Thickness × Height mm)		505×570×175（LX U5.4-20）					
Operating Temperature(°C)		Charge: 0 ~ +50 / Discharge: -10 ~ +50					
Storage temperature(°C)		-20~+40 (≤1 month) / 0~+35 (≤1 year)					
Humidity		0~95%					
Altitude (m)		2000					
Ingress Protection Rating		IP65					
Mounting method		Wall-mounted or floor-standing Installation					
round-trip efficiency		95.0%					
Cycle count *3		≥4000 @0.5/0.5C					
Standards and Certification	Safety	IEC62619，IEC 63056，IEC 62040，CEC					
	EMC	CE，RCM					
	Transportation	UN38.3					
Safe service life (years)		≥25					

*1: Test conditions, cell voltage 2.5~3.65V, new battery at +25±2 ℃, charge and discharge at 0.5C, performance may vary due to different conditions.
*2: The nominal charging and discharging current and Power are affected by temperature and SOC status.
*3: Based on 0.5C@25±2℃ charge/discharge of the cell, EOL reaches 80%.

10.2.5 LX U5.0-30

Technical Data	LX U5.0-30
Rated Battery Energy (kWh)	5.12
Available energy (kWh)*1	5
Cell Type	LiFePO4
Rated voltage (V)	51.2
Operating Voltage range(V)	43.2~58.24
Rated Charge current (A)	60
Maximum Continuous Chargecurrent (A) *2*3	90
Rated Discharge current (A)	100
Maximum continuous Dischargecurrent (A)*2*3	100
Pulse Dischargecurrent(A)*2*3	＜200A（30S）
Maximum Continuous Charge/Discharge Power (kW)	4.95
Communication	CAN
Charge Temperature Range (°C)	0<T≤55
Temperature Range (°C)	-20<T≤55

Technical Data	LX U5.0-30
Ambient temperature (°C)	0 < T ≤ 40 (Recommended: 10 < T ≤ 30) Optional heating: -20 < T ≤ 40 (recommended 10 < T ≤ 30)
Relative Humidity	5~95%
Maximum storage time	12 months (maintenance-free)
Max. Operating Altitude(m)	4000
heating	Optional configuration
Fire protection function	Optional, aerosol
Unit Weight (kg)	50
Unit dimensions (W × H × D mm)	460*580*160
Enclosure	IP65
Application	on-grid / on-grid + Backup Power / Off-Grid
Capacity expansion	30P
Mounting method	Ground-mounted/wall-mounted
round-trip efficiency	≥96%
Cycle count	> 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
Environmental Regulations	ROHS
Safe service life (years)	≥25
*1: Under the factory default state of Battery, the test conditions are 100% DOD, 0.2C, and charging/discharging is performed at 25°C ± 2°C. *2: The system's operating current and Power values are related to temperature and SOC. *3: The maximum charge/discharge current value may vary depending on the specifications of different battery models.	

10.2.6 GW14.3-BAT-LV-G10

Technical Data	GW14.3-BAT-LV-G10
Rated Energy (kWh)	14.3

Technical Data	GW14.3-BAT-LV-G10
Usable Energy (kWh)*1	≥13.8
Battery Type	LFP ($LiFePO_4$)
Nominal Voltage (V)	51.2
Max. Continuous Charging Current (A)	224
Max. Continuous Discharging Current (A)	260
Max. Input Power (System) (kW)*2	12
Max. Output Power (System) (kW)*2	12 (13.2 @10min)
Peak Output Power (System) (kW)*2	20 @15s
Charging Temperature Range (°C)	0~55
Discharging Temperature Range (°C)	-20~55
Relative Humidity	5~85%
Max. Operating Altitude (m)	4000
Noise Emission (dB)	≤35
Communication	CAN, RS485
Weight (kg)	125
Dimensions (W×H×D mm)	530*885*246 (Without the base) 530*918.6*246 (With base included)
Optional Function Configuration	Aerosol
Ingress Protection	IP20
Storage Temperature (℃)	-20~45

Technical Data		GW14.3-BAT-LV-G10
Ambient Temperature (℃)		0~45 (Standard configuration) 10~35 (Recommend) -20~45 (Optional)
Max. Storage time		12 months (-20℃~35℃) 6 months (35℃~45℃)
Scalability		30 pcs
Mounting Method		Floor-Mounted, Wall-Mounted
Cycle Life		≥6500 (25±2℃, 0.5C, 90%DOD, 70%EOL)
Country of Manufacture		China
Standard and Certification	Safety	IEC 62619, IEC 63056, IEC 60730-1
	EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4
	Transportation	UN38.3, ADR, MSDS

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

10.3 Smart Meter Technical Data

10.3.1 GMK110

technical parameter			GMK110
	Application		Single-phase
Input parameters	voltage	Rated voltage (V)	220
		voltage Range (V)	85~288
		Rated voltage Frequency (Hz)	50/60
	current	CT ratio	120A/40mA
		Number of CTs	1
Communication			RS485
Communication distance (m)			1000
User Interface			2LED
Accuracy	voltage/current		Class I
	active energy		Class I
	Reactive energy		Class II
Power Consumption (W)			＜5
Mechanical Parameters	Dimensions (W x H x D mm)		19*85*67
	Weight(g)		50
	Mounting method		Guide rail
Environmental parameters	IP rating		IP20
	Operating Temperature Range(°C)		-30 ~ 60
	Storage Temperature range (°C)		-30 ~ 60
	Relative Humidity (No Condensation)		0~95%
	Max. Operating Altitude(m)		3000

10.3.2 GM330

technical parameter		GM330
Measurement range	Support Grid type	Three-phase, split-phase, single-phase
	voltage range L-L (Vac)	172~817
	Range L-N (Vac)	100~472
	Rated frequency (Hz)	50/60
	CT ratio	nA:5A
Communication parameters	Communication method	RS485

technical parameter		GM330
	Communication distance (m/ft)	1000/3280
Accuracy parameters	voltage/current	Class 0.5
	active energy	Class 0.5
	Reactive energy	Class 1
General Parameters	Dimensions (WxHxD mm/in)	72x85x72/2.83x3.35×2.83
	Housing	4 modules
	Weight (g/lb)	240/0.53
	Mounting method	DIN rail
	User Interface	4 LEDs, reset button
	Power Consumption (W)	≤5
Environmental parameters	IP rating	IP20
	Operating Temperature Range (℃/°F)	-30~+70/-22~+158
	Storage Temperature Range (℃/°F)	-30~70/-22~+158
	Relative Humidity (No Condensation)	0~95%
	Max. Operating Altitude (m/ft)	3000/9842
Certification parameters	Certificate	UL1741/ANSI

10.4 Smart Dongle Technical Data

10.4.1 WiFi/LAN Kit-20

technical parameter		WiFi/LAN Kit-20
Output voltage (V)		5
Power Consumption (W)		≤2
Communication interface		USB
Communication parameters	Ethernet	10M/100Mbps auto-negotiation
	wireless	IEEE 802.11 b/g/n @2.4 GHz

technical parameter		WiFi/LAN Kit-20
	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE standards
Mechanical Parameters	Dimensions (W × H × D mm)	48.3*159.5*32.1
	Weight (g)	82
	Ingress Protection Rating	IP65
	Mounting method	plug and pull
Operating Temperature Range (°C)		-30~+60
Storage Temperature range (℃)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

10.4.2 4G Kit-CN-G20、4G Kit-CN-G21

technical parameter		WiFi/LAN Kit-20
Output voltage (V)		5
Power Consumption (W)		≤2
Communication interface		USB
Communication parameters	Ethernet	10M/100Mbps auto-negotiation
	wireless	IEEE 802.11 b/g/n @2.4 GHz
	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE standards
Mechanical Parameters	Dimensions (W × H × D mm)	48.3*159.5*32.1
	Weight (g)	82
	Ingress Protection Rating	IP65
	Mounting method	plug and unplug
Operating Temperature Range (°C)		-30~+60
Storage Temperature range (℃)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

10.4.3 Ezlink3000

technical parameter	Ezlink3000
General Parameters	
Connection interface	USB
Ethernet interface (optional)	10/100Mbps auto-adaptive, communication distance ≤100m
Mounting method	Plug and Play
indicator	LED indicator
Dimensions (Width * Height * Thickness mm)	49*153*32
gram (g)	130
Ingress Protection Rating	IP65
Power Consumption (W)	≤2W (typical)
Operating 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 (°C)	-30 ~ +60
Storage Temperature range (°C)	-30 ~ +70
Relative Humidity	0-100% (No condensation)
Maximum operating altitude (m)	4000

11 Appendix

11.1 FAQ

11.1.1 How to perform meter/CT auxiliary testing?

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

- Option 1:

1. Through**[Home]**> **[Settings]** > **[Electric meter/CT auxiliary detection]**Enter the detection page.
2. Click to start detection, wait for the detection to complete, and then view the detection results.

- Option 2:

1. Click > **[System Setup]** > **[Quick Setting]** > **[Meter/CT Assisted Test]**Enter the detection page.
2. Click Start Test, wait for the test to complete, and then view the test results.

11.1.2 How to Upgrade the Device Version

Through the firmware information, you can view or upgrade the DSP version, ARM version, BMS version, and communication module software version of the Inverter. Some smart dongle do not support software version upgrades via the SolarGo App; please refer to the actual situation.

- **Prompt Upgrade:**

When the user opens the app, an upgrade prompt pops up on the homepage, allowing the user to choose whether to upgrade. If the user selects to upgrade, they can complete the upgrade by following the on-screen instructions.

- **Routine upgrade**

pass through**[Home]** > **[Settings]** > **[Firmware Information]**Enter the firmware

information viewing interface.
Click to check for updates. If a new version is available, follow the on-screen instructions to complete the upgrade.

- **Forced upgrade:**

The APP pushes upgrade notifications, and users need to follow the prompts to upgrade; otherwise, the APP cannot be used. The upgrade can be completed by following the on-screen instructions.

11.2 Abbreviations

Abbreviation	English description	Chinese description
Ubatt	Battery Voltage Range	Battery voltage range
Ubatt,r	Nominal Battery Voltage	Nominal battery voltage
Ibatt,max (C/D)	Max. Charging Current Max. Discharging Current	Maximum charge/discharge current
EC,R	Rated Energy	Rated energy
UDCmax	Max.Input Voltage	Max.Input Voltage
UMPP	MPPT Operating Voltage Range	MPPT voltage range
IDC,max	Max. Input Current per MPPT	Each MPPT Max. AC Current From Utility Grid
ISC PV	Max. Short Circuit Current per MPPT	Maximum short-circuit current per MPPT
PAC,r	Nominal Output Power	Nominal output power
Sr (to grid)	Nominal Apparent Power Output to Utility Grid	Nominal Apparent Power Output to Utility Grid
Smax (to grid)	Max. Apparent Power Output to Utility Grid	Max. Apparent Power Output to Utility Grid
Sr (from grid)	Nominal Apparent Power from Utility Grid	buy power from the grid Nominal Output Apparent Power
Smax (from grid)	Max. Apparent Power from Utility Grid	buy power from the gridMax. Output Apparent Power
UAC,r	Nominal Output Voltage	Nominal output voltage
fAC,r	Nominal AC Grid Frequency	Nominal AC Grid Frequency

Abbreviation	English description	Chinese description
IAC,max(to grid)	Max. AC Current Output to Utility Grid	Max. AC Current Output to Utility Grid
IAC,max(from grid)	Max. AC Current From Utility Grid	Max. AC Current From Utility Grid
P.F.	Power Factor	Output Power Factor
Sr	Back-up Nominal apparent power	Off-grid rated apparent Power
Smax	Max. Output Apparent Power (VA) Max. Output Apparent Power without Grid	Max. Output Apparent Power
IAC,max	Max. Output Current	Max. Output Current
UAC,r	Nominal Output Voltage	Maximum Output Power
fAC,r	Nominal Output Freqency	Nominal output voltage Frequency
Toperating	Operating Temperature Range	Operating Temperature Range
IDC,max	Max. Input Current	Max. AC Current From Utility Grid
UDC	Input Voltage	voltage
UDC,r	DC Power Supply	DC input
UAC	Power Supply/AC Power Supply	AC input range
UAC,r	Power Supply/Input Voltage Range	Input voltage range/AC input
Toperating	Operating Temperature Range	Operating Temperature Range
Pmax	Max Output Power	Maximum Power
PRF	TX Power	emission Power
PD	Power Consumption	Power consumption
PAC,r	Power Consumption	Power consumption
F (Hz)	Frequency	Frequency
ISC PV	Max. Input Short Circuit Current	Maximum Input Short Circuit Current
Udcmin-Udcmax	Range of input Operating Voltage	Operating Voltage range
UAC,rang(L-N)	Power Supply Input Voltage	Adapter input voltage range

Abbreviation	English description	Chinese description
Usys,max	Max System Voltage	Maximum system voltage
Haltitude,max	Max. Operating Altitude	Max. Operating Altitude height
PF	Power Factor	Output Power Factor
THDi	Total Harmonic Distortion of Current	current harmonic
THDv	Total Harmonic Distortion of Voltage	voltage harmonic
C&I	Commercial & Industrial	Commercial and Industrial
SEMS	Smart Energy Management System	Smart Energy Management System
MPPT	Maximum Power Point Tracking	Maximum Power Point Tracking (MPPT)
PID	Potential-Induced Degradation	Potential Induced Degradation (PID)
Voc	Open-Circuit Voltage	open-circuit voltage
Anti PID	Anti-PID	Anti-PID
PID Recovery	PID Recovery	PID recovery
PLC	Power-line Commucation	Power Line Carrier Communication (PLCC)
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol	Modbus based on TCP/IP layer
Modbus RTU	Modbus Remote Terminal Unit	Modbus based on serial link
SCR	Short-Circuit Ratio	Short-circuit ratio
UPS	Uninterruptable Power Supply	uninterruptible power source
ECO mode	Economical Mode	Economic Mode
TOU	Time of Use	Operating Time
ESS	Energy Stroage System	energy storage system
PCS	Power Conversion System	Power Conversion System
RSD	Rapid shutdown	Rapid Shutdown
EPO	Emergency Power Off	Emergency Poweroff
SPD	Surge Protection Device	Lightning Protection
ARC	zero injection/zero export Power Limit / Export Power Limit	power limit
DRED	Demand Response Enabling Device	Command Response Device

Abbreviation	English description	Chinese description
RCR	Ripple Control Receiver	-
AFCI	AFCI	AFCI (Arc Fault Circuit Interrupter)
GFCI	Ground Fault Circuit Interrupter	Grounding Disconnector
RCMU	Residual Current Monitioring Unit	Residual Current Monitoring Device (RCM)
FRT	Fault Ride Through	ride-through
HVRT	High Voltage Ride Through	High voltage ride-through
LVRT	Low Voltage Ride Through	Low voltage ride-through (LVRT)
EMS	Energy Management System	Energy Management System
BMS	Battery Management System	Battery Management System
BMU	Battery Measure Unit	Battery Acquisition Unit
BCU	Battery Control Unit	Battery control unit
SOC	State of Charge	State of Charge (SOC) of Battery
SOH	State of Health	Battery health status
SOE	State Of Energy	Battery residual energy
SOP	State Of Power	Battery charging Discharge capability
SOF	State Of Function	Functional status of Battery
SOS	State Of Safety	Safety status
DOD	Depth of discharge	depth of discharge

11.3 Explanation of Terms

- **Over voltage category definition**
  - **Overvoltage Category I**Equipment connected to circuits with measures to limit transient overvoltages to a relatively low level.
  - **Overvoltage Category II**Energy-consuming equipment powered by a fixed electrical installation. Such equipment includes appliances, portable tools, and other household and similar loads. If there are special requirements for the reliability and suitability of such equipment, then voltage Category III is adopted.
  - **Category III overvoltage**The equipment in fixed electrical installations must meet special requirements for reliability and suitability. This includes switchgear in fixed electrical installations and industrial equipment permanently connected

to fixed electrical installations.
    - **Overvoltage category IV**The upper equipment used in the power supply of distribution devices includes measuring instruments and prefixed overcurrent protection devices, among others.
- **Definition of Wet Location Categories**

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

- **Explanation of Environmental Categories:**
    - **Outdoor Inverter**The ambient air temperature range is -25 to +60°C, suitable for Pollution Degree3 environments.
    - **Indoor Type II Inverter**The ambient air temperature range is -25 to +40°C, suitable for Pollution Degree3 environments;
    - **Indoor Type I Inverter**The ambient air temperature range is 0 to +40°C, suitable for Pollution Degree2 environments;
- **Pollution Degree category definition**
    - **Pollution Degree1**No pollution or only dry non-conductive pollution;
    - **Pollution Degree2**Generally, there is only non-conductive pollution, but occasional temporary conductive pollution due to condensation must be considered.
    - **Pollution Degree3**Conductive contamination exists, or non-conductive contamination becomes conductive due to condensation;
    - **Pollution Degree4**Persistent conductive contamination, such as that caused by conductive dust or rain/snow.

11.4 Battery SN code meaning

LXD10DSC0002

The 11th to 14th digits of the product SN code represent the production time code. The production date shown in the above image is 2023-08-08.

- The 11th and 12th digits represent the last two digits of the production year, e.g., 2023 is denoted as 23;
- The 13th digit represents the production month, for example, August is represented by 8;
  The details are as follows:

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

- The 14th digit represents the production date, e.g., the 8th is denoted as 8;
  Use numbers for priority representation, such as 1~9 for the 1st~9th day, and A for the 10th day, and so on. The letters I and O are not used to avoid confusion. Details are as follows:

Production Day	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
code	1	2	3	4	5	6	7	8	9

Production Day	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th
code	A	B	C	D	E	F	G	H	J	K	L

Production Day	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st

code	M	N	P	Q	R	S	T	U	V	W	X

12 Contact Details

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