

Residential Smart Inverter

ES 3.0-6.0kW G2

SBP 3.6-6.0kW G2

- LX A5.0-10
- LX A5.0-30
- LX U5.4-L
- LX U5.4-20
- LX U5.0-30

Solutions Manual

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NOTICE

The information in this user manual is subject to change due to product updates or other reasons.

This manual cannot replace the product safety labels unless otherwise specified. All descriptions in the manual are for guidance only.

About This Manual

Overview

This document primarily introduces the product information, Installation wiring, configuration of Commissioning, fault troubleshooting, and maintenance content in the energy storage system composed of Inverter, Battery system, and Smart Meter. Before Installation or using the product, please read this manual carefully to understand the product safety information and familiarize yourself with the product's functions and features. The document may be updated periodically; please obtain the latest version and more product information from the official website.

Applicable Model

The energy storage system includes the following products:

Product Type	Product Information	Description
Inverter	GW3000-ES-20 GW3600-ES-20 GW3600M-ES-20 GW5000-ES-20 GW5000M-ES-20 GW6000-ES-20 GW6000M-ES-20 GW3600-SBP-20 GW5000-SBP-20 GW6000-SBP-20 GW3500L-ES-BR20 GW3600-ES-BR20 GW6000-ES-BR20	Nominal output power: 3.0kW-6.0kW
Battery system	LX A5.0-10	Rated capacity 5.0kWh, maximum support for 15 parallel clusters
	LX A5.0-30	Rated capacity 5.12kWh, maximum support for 30 parallel clusters

Product Type	Product Information	Description
	LX U5.4-L	Rated capacity 5.4kWh, maximum support for 6 parallel clusters
	LX U5.4-20	Rated capacity 5.12kWh, maximum support for 30 parallel clusters
	LX U5.0-30	
Meter	GM1000	Monitoring module in the energy storage system, capable of detecting operating voltage, current, and other information in the system
	GMK110	
	GM3000	
	GM1000D	
	GMK110D	
smart dongle	Wi-Fi Kit、WiFi/LAN Kit-20	In standalone scenarios, system operating information can be uploaded to the monitoring platform via WiFi or LAN signals
	LS4G Kit-CN、4G Kit-CN	Only applicable in China, for standalone scenarios use
	4G Kit-CN-G20、4G Kit-CN-G21	
	Ezlink3000	In parallel scenarios, connected to the main inverter, system operating information is uploaded to the monitoring platform via WiFi or LAN signals

Symbol Definition

 DANGER

Indicates a highly potential DANGER, which, if not avoided, will result in death or serious injury.

 WARNING

Indicates a moderate potential for DANGER, which, if not avoided, could result in death or serious injury.

 CAUTION

Indicates a low potential for DANGER, which, if not avoided, could result in moderate or minor injury to personnel.

NOTICE

Emphasis and supplementation of content may also provide tips or tricks for optimizing product use, helping you solve a problem or save time.

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1 Safety Precautions

The Safety Precautions information contained in this document must always be followed when operating the equipment.

WARNING

The equipment has been strictly designed in accordance with safety regulations and has passed all required tests. However, as electrical apparatus, all operations must comply with relevant safety instructions prior to any intervention. Improper operation may result in severe personal injury or property damage.

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 of the entire process, including equipment transportation, installation, wiring, operation, and maintenance, the work must be performed by professionals or qualified personnel.

1. Qualified personnel or professionals include:
 - Personnel who have mastered the equipment's working principles, system structure, knowledge of risks and hazards, and have received professional operational training or possess extensive practical experience.
 - Personnel who have received relevant technical and safety training, possess certain operational experience, are aware of the potential DANGER that specific tasks may pose to themselves, and can take protective measures to minimize risks to themselves and others.
 - Qualified electrical technician compliant with the regulations of the respective country/region.
 - Hold a degree in Electrical Engineering/Advanced Diploma in Electrical Discipline or equivalent/Professional qualification in the electrical field, with at least 2/3/4 years of experience in testing and regulatory work using electrical equipment safety standards.
2. Personnel involved in special tasks such as electrical work, work at heights, and operation of special equipment must hold valid qualification certificates as required by the equipment location.
3. Operation of medium-voltage equipment must be performed by certified high-voltage electricians.
4. Equipment and component replacement shall only be performed by authorized personnel.

1.3 System Safety



- Before performing electrical connections, disconnect all upstream switch of the equipment and ensure the device is POWER OFF. Live operation is strictly prohibited to avoid potential hazards such as electric shock or other DANGER.
- To prevent personal DANGER or equipment damage caused by live operations, a breaker must be added to the input side of the equipment voltage.
- During transportation, storage, installation, operation, use, maintenance, and all other operations, applicable laws, regulations, standards, and specification requirements must be complied with.
- The specifications of cables and components used for electrical connections shall comply with local laws, regulations, standards, and code requirements.
- Please use the cable connectors provided in the package to connect the equipment cables. If other model connectors are used, any resulting equipment damage will not be covered by the manufacturer's warranty.
- Ensure all cables of the equipment are correctly connected, securely fastened, and free from looseness. Improper wiring may cause poor contact or damage the equipment.
- The PE cable of the equipment must be securely connected.
- To ensure that Protection equipment and its components are not damaged during transportation, please ensure that the transport personnel are professionally trained. Record the operational steps during transportation and maintain the balance of the equipment to prevent it from falling.
- The equipment is heavy. Please assign personnel according to the equipment's Weight to prevent it from exceeding the human Weight lifting capacity and causing injury.
- Ensure the equipment is placed securely and not tilted, as tipping may cause equipment damage and personal injury.

 WARNING

- During the Installation process of the equipment, avoid subjecting the wiring terminal to load-bearing, as this may result in terminal damage.
- 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 equipment terminal port.
- Cables of the same type should be bundled together, while different types of cables must be spaced at least 30mm apart during installation. Intertwining or cross-laying of cables is strictly prohibited.
- The use of cables in high-temperature environments may cause insulation aging and damage. The distance between the cables and heat-generating components or the periphery of heat source areas should be at least 30mm.

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 the voltage is within the allowable range.
- Use a multimeter to measure the DC cable, ensuring correct polarity and no reverse connection. The voltage should be lower than the maximum DC input voltage. Damage caused by reverse connection or over-voltage is not covered by 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 ($R = \text{Max.Input Voltage (V)} / 30\text{mA}$).
- Do not connect the same PV string to multiple Inverter, as this may cause damage to the Inverter.
- The PV modules used in conjunction with Inverter must comply with IEC 61730 Class A standards.
- 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 specifications of the Protection device should be greater than 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 °C, it will cause fire.
- Do not use the battery or the power control unit if it is defective, broken, or damaged. Damaged battery may leak electrolyte.
- Do not move the battery system while it is working. Contact after-sales service if the battery shall be replaced or added.
- A short circuit in the battery may cause personal injury. The instantaneous high current caused by a short circuit can release a large amount of energy and may cause a fire.
- 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°C. Poisonous and hazardous gas may be released if the battery is on fire.
- In the event of a fire, please make sure that the carbon dioxide extinguisher or Novec1230 or FM-200 is nearby.
- The fire cannot be put out by ABC dry powder extinguisher. Firefighters are required to wear full protective clothing and self-contained breathing apparatus.

- **Battery triggers fire protection**

For batteries with fire protection functions, perform the following operations after the fire protection function is triggered:

- Immediately cut off the main power switch to ensure that no current passes through the battery system.
- Conduct a preliminary inspection of the appearance of the battery to determine if there is any damage, deformation, leakage, or odor. Check the battery casing, connectors, and cables.
- Use temperature sensors to detect the temperature of the battery and its environment, ensuring there is no risk of overheating.
- Isolate and label damaged batteries, and handle them properly in accordance with local regulations.

1.3.4 Smart Meter Safety






WARNING











If the Utility grid 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.


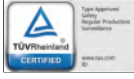

1.4 Safety Symbols and Certification Marks

DANGER

- After Installation of the equipment, the labels and warning signs on the enclosure must remain clearly visible. Obscuring, 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 necessary protective measures when operating the device.
2		High voltage DANGER. High voltage is present during equipment operation. Ensure the equipment is POWER OFF before performing any operations.
3		Inverter surface 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 vapor.
7		delayed discharge. After the equipment is power off, please wait for 5 minutes until the device is completely 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 the equipment in accordance with local laws and regulations or return it to the manufacturer.
14		grounding point.
15		Recycling symbol.

No.	Symbol	Meaning
16		CE Marking.
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 that can be sold in the European market meets the following directive requirements:

- 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 No Equipment with Wireless Communication Modules (except Battery)

Can be sold in the European market without Equipment with Wireless Communication Modules meeting the following directive requirements:

- 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

Batteries that can be sold in the European market meet 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)^{*1}
- Regulation (EU) 2023/1542 Article 12 - Safety of stationary battery energy storage systems
- Regulation (EU) 2023/1542 Article 10 - Performance and durability requirements for rechargeable industrial batteries, LMT batteries and electric vehicle batteries
- Regulation (EU) 2023/1542 Article 14 - Information on the state of health and expected lifetime of batteries
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

*1: Our company's battery products meet the hazardous substance limit requirements stipulated by this regulation.

For more EU declarations of conformity, please visit the [official website](#).

2 System Introduction

2.1 System Overview

The Residential Smart Inverter Solution integrates inverters, batteries, Smart Meters, smart communication sticks, and other devices. In a photovoltaic system, it converts solar energy into electrical energy to meet household electricity demand. The energy IoT devices in the system control the electrical equipment by identifying the overall power situation, thereby achieving intelligent management of power for load use, storage to batteries, or output to the grid.

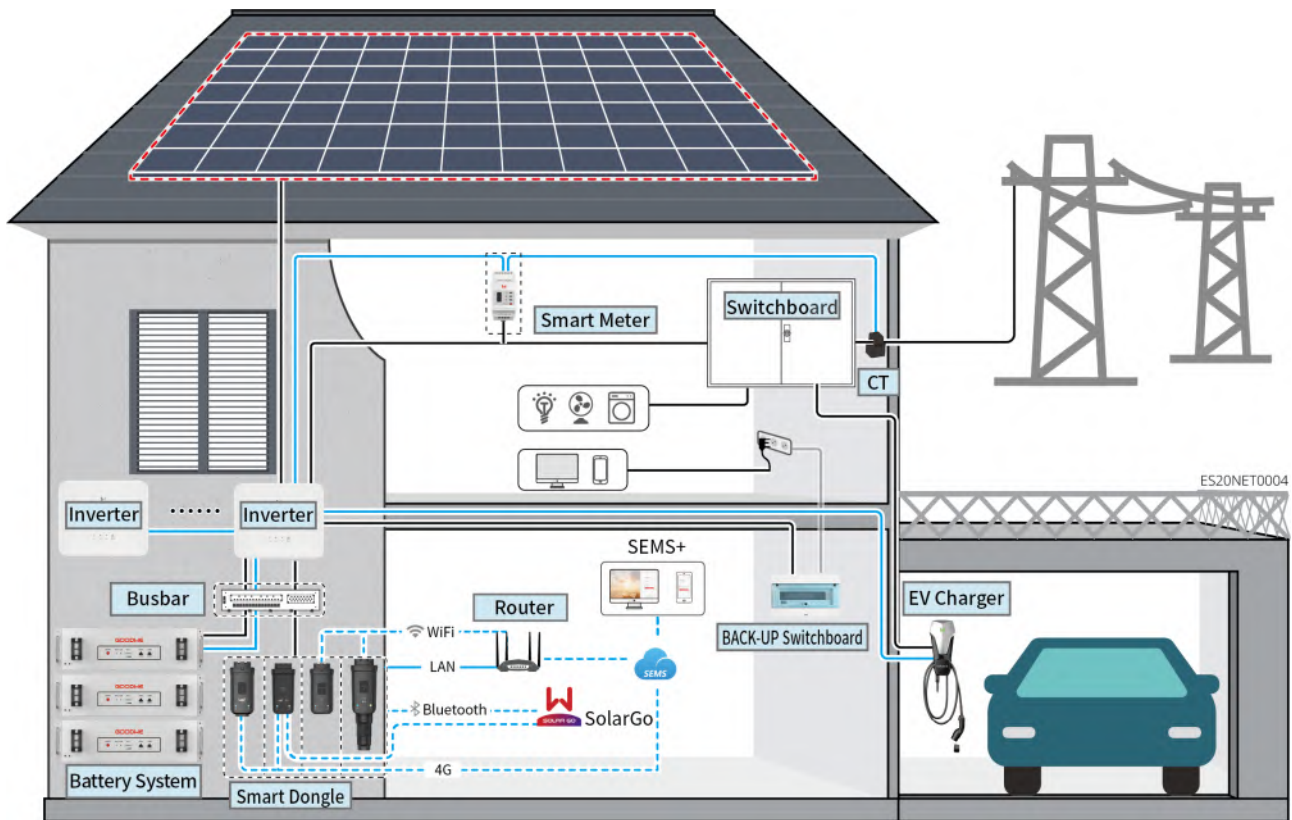
WARNING

- Select the battery model according to the inverter and battery compatibility list. For requirements regarding batteries used in the same system, such as whether different models can be mixed or if capacities must be consistent, please refer to the user manual of the corresponding battery 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](https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Battery%20Compatibility%20Overview-EN.pdf)
- Due to product version upgrades or other reasons, document content is updated periodically. For the compatibility between inverters and IoT products, please refer to: https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Compatibility-list-of-GoodWe-inverters-and-IoT-products-EN.pdf
- In parallel systems, connecting third-party EMS monitoring devices is not supported.
- When the number of parallel inverters in the system is ≤ 3 , UPS function is supported; when the number of parallel inverters in the system is > 3 , UPS function is not supported.
- The complexity of the parallel system increases with the number of parallel inverters. When the number of parallel inverters in the system is ≥ 6 , please contact the after-sales service center to confirm the inverter installation application environment to ensure stable system operation.
- When the system grid-connected power limit is required to be 0W, the combination of AC-coupled inverters and grid-tied PV inverters is not supported. When using this scenario, please ensure the system grid-connected power limit

 **WARNING**

is greater than 5% of the rated power of the grid-tied PV inverter.

- For detailed networking and wiring schemes for each scenario, please refer to: [5.2.Detailed System Wiring Diagram\(Page 0\)](#)
- In a system where the inverter operates completely off-grid, if the battery is in low sunlight or rainy weather for an extended period and cannot be replenished in time, it may lead to over-discharge, causing battery performance degradation or damage. To ensure long-term stable system operation, avoid completely depleting the battery. Recommended measures are as follows:
 1. During off-grid operation, set the minimum SOC protection threshold. It is recommended to set the off-grid battery 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, promptly replenish the battery using an external energy source (such as a generator or grid-assisted charging).
 4. Regularly check the battery status to ensure it is within the safe operating range.
 5. It is recommended to fully charge and discharge the battery once every six months to calibrate SOC accuracy.



Device Type	model	Description
Inverter	GW3000-ES-20 GW3600-ES-20 GW3600M-ES-20 GW5000-ES-20 GW5000M-ES-20 GW6000-ES-20 GW6000M-ES-20 GW3600-SBP-20 GW5000-SBP-20 GW6000-SBP-20 GW3500L-ES-BR20 GW3600-ES-BR20 GW6000-ES-BR20	<ul style="list-style-type: none"> • When multiple inverters are used in the system, connecting a generator is not supported; a maximum of 16 inverters can form a parallel system. • When the number of parallel inverters in the system is ≤ 3, the UPS function is supported; when the number of parallel inverters in the system is > 3, the UPS function is not supported. • The complexity of the parallel system increases with the number of parallel inverters. When the number of parallel inverters in the system is ≥ 6, please contact the after-sales service center to confirm the inverter installation application environment to ensure stable system operation. • GW3600M-ES-20, GW5000M-ES-20, GW6000M-ES-20, GW3600-SBP-20, GW5000-

Device Type	model	Description
		<p>SBP-20, GW6000-SBP-20: Do not support lead-acid batteries.</p> <ul style="list-style-type: none"> • For GW3000-ES-20, GW3600-ES-20, GW5000-ES-20, GW6000-ES-20 model inverters, lead-acid battery connection is not supported in some regions. Please refer to the specification sheet for details. • GW3600-SBP-20, GW5000-SBP-20, GW6000-SBP-20: <ul style="list-style-type: none"> ◦ Only supports parallel operation of the same model inverter. ◦ For parallel operation, the inverter DSP software version must be 01 or above. ◦ When connected to a grid-tied inverter to form a coupling scenario, parallel operation is not supported. • GW3000-ES-20, GW3500L-ES-BR20, GW3600-ES-BR20, GW3600-ES-20, GW3600M-ES-20, GW5000-ES-20, GW5000M-ES-20, GW6000-ES-20, GW6000M-ES-20, GW6000-ES-BR20 must meet the following version requirements when forming a parallel network: <ul style="list-style-type: none"> ◦ All inverter software versions in the parallel system must be consistent. ◦ Inverter ARM software version must be 08(418) or above. ◦ Inverter DSP software version must be 08(8808) or above. • In a coupling scenario, GW3000-ES-20, GW3500L-ES-BR20, GW3600-ES-BR20, GW3600-ES-20, GW3600M-ES-20, GW5000-ES-20, GW5000M-ES-20, GW6000-ES-20, GW6000M-ES-20, GW6000-ES-BR20 can use dual meters to simultaneously monitor grid-

Device Type	model	Description
		<p>tied inverter power generation and load power consumption. This solution requires the inverter software version to support dual meter data input. The inverter software must meet the following version requirements:</p> <ul style="list-style-type: none"> ◦ Inverter ARM software version must be 12.440 or above.
Battery system	LX A5.0-10	<ul style="list-style-type: none"> • Battery systems of different models cannot be mixed. Parallel cluster expansion between different models is not currently supported. For the same model, parallel cluster expansion is allowed within one year of customer purchase and use; it is not allowed after one year. • LX A5.0-10: Supports a maximum of 15 parallel clusters in the same system. • LX A5.0-30: Supports a maximum of 30 parallel clusters in the same system.
	LX A5.0-30	
	LX U5.4-L	<ul style="list-style-type: none"> • Supports a maximum of 6 parallel clusters in the same system. • Battery system does not support expansion.
	LX U5.4-20	
LX U5.0-30	<ul style="list-style-type: none"> • Supports a maximum of 30 parallel clusters in the same system. • Parallel cluster expansion between different models is not currently supported. For the same model, parallel cluster expansion is allowed within one year of customer purchase and use; it is not allowed after one year. 	

Device Type	model	Description
	Lead-acid battery	<ul style="list-style-type: none"> • Supports connection of AGM, GEL, and Flooded type lead-acid batteries. • Calculate the number of batteries that can be connected in series based on the lead-acid battery voltage. The total voltage of the series-connected batteries must not exceed 60V.
Busbar	BCB-11-WW-0 BCB-22-WW-0 BCB-32-WW-0 BCB-33-WW-0 (Purchased from GoodWe)	<ul style="list-style-type: none"> • When a single inverter is used in the system and the charge/discharge current between the battery and the inverter is <120A, it is supported to not connect a busbar. For example: when GW3000-ES-20 is used with LX A5.0-30, it is supported to not connect a busbar. For detailed battery connection methods, please refer to 6.6 Connecting the Battery Cable • When multiple inverters are used in the system, a busbar must be connected. If using batteries from other brands, please consult the corresponding manufacturer for the battery and busbar connection method. • When the charge/discharge current between the battery and the inverter is $\geq 120A$, a busbar or busbar box must be used to connect to the inverter. (current $\geq M \times I_{Bat}$ rated. (M: Number of battery parallel clusters in the system, I_{Bat} rated: Rated current of the battery). <ul style="list-style-type: none"> ◦ BCB-11-WW-0: <ul style="list-style-type: none"> ▪ When used with LX A5.0-10, the battery system supports a maximum working current of 360A, working power of 18kW, maximum connection of 3 inverters, and 6 batteries. ◦ BCB-22-WW-0:

Device Type	model	Description
		<ul style="list-style-type: none"> ▪ When used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 12 batteries. ▪ When used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 6 batteries. ◦ BCB-32-WW-0: <ul style="list-style-type: none"> ▪ When used with LX A5.0-10, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 15 batteries. ▪ When used with LX A5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 15 batteries. ▪ When used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 8 batteries. ◦ BCB-33-WW-0: <ul style="list-style-type: none"> ▪ When used with LX U5.0-30, the battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 15 batteries. When the number of batteries exceeds 8, two fuses with a rating of 600A need to be connected in parallel. ◦ Others: Please configure according to the

Device Type	model	Description
		system power and current.
Smart Meter	<ul style="list-style-type: none"> • GMK110 • GMK110D • GM1000 • GM1000D • GM3000 	<p>CT cannot be replaced; CT ratio is 120A/40mA. In parallel scenarios, the smart meter must be connected to the master inverter.</p> <ul style="list-style-type: none"> • GMK110, GM1000: CT x 1; standard-equipped with GMK110 or GM1000 meter. • GM1000D, GMK110D: CT x 2; used for AC coupling inverters; purchased separately. • GM3000: CT x 3; When three-phase loads are used in the system and output power control is required, the GM3000 meter must be used; purchased separately.
Communication Stick	<ul style="list-style-type: none"> • LS4G Kit-CN • 4G Kit-CN • 4G Kit-CN-G20 • 4G Kit-CN-G21 • Wi-Fi Kit • WiFi/LAN Kit-20 (standard-equipped) • Ezlink3000 (Purchased from GoodWe) 	<ul style="list-style-type: none"> • LS4G Kit-CN, 4G Kit-CN, 4G Kit-CN-G20, or 4G Kit-CN-G21 are only applicable in China, for single-unit scenarios. • In a single-unit system, when using the Wi-Fi Kit or WiFi/LAN Kit-20 module, the firmware version must be 04 or above; if the WiFi/LAN Kit-20 module is a network security version, the firmware version must be 01 or above. • In parallel operation, only the master inverter needs to be connected to Ezlink3000; slave inverters do not need communication modules. Ezlink3000 firmware version must be 04 or above. • Only one Ezlink3000 and one smart meter need to be installed in the same system. The inverter connected to the Ezlink module and the meter is the master inverter by default, and other inverters are slave inverters. The master inverter can send commands to slave inverters via the parallel communication line.

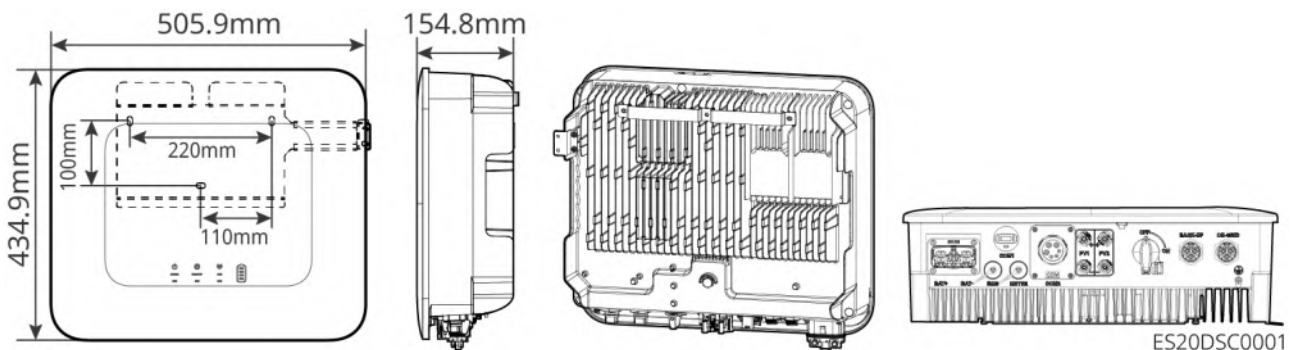
2.2 Product Overview

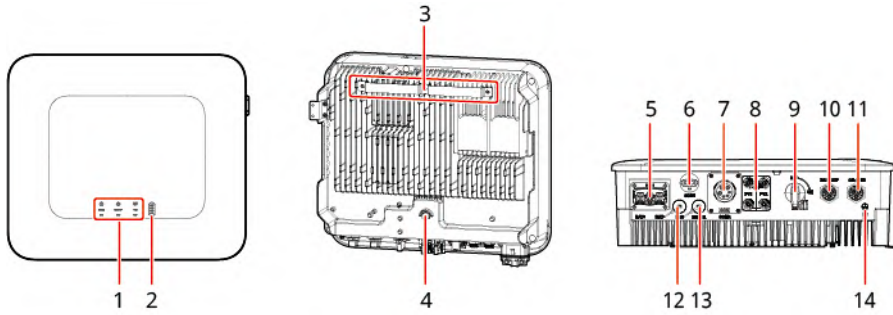
2.2.1 Inverter

In a photovoltaic system, the Inverter controls and optimizes the energy flow through an integrated energy management system. It can supply the electricity generated in the PV system for use by loads, store it in batteries, or feed it into the grid.

No.	Series	model	Nominal output power	Nominal output voltage
1	ES G2 Series	GW3000-ES-20	3kW	220/230/240V
2		GW3600-ES-20	3.68kW	220/230/240V
3		GW3600M-ES-20	3.68kW	220/230/240V
4		GW5000-ES-20	5kW*1	220/230/240V
5		GW5000M-ES-20	5kW*1	220/230/240V
6		GW6000-ES-20	6kW*1	220/230/240V
7		GW6000M-ES-20	6kW*1	220/230/240V
8		GW6000-ES-BR20	6kW	220V
9		GW3500L-ES-BR20	3.5kW	127V
10		GW3600-ES-BR20	3.68kW	220V
11	SBP Series	GW3600-SBP-20	3.68kW	220/230/240V
12		GW5000-SBP-20	5kW	220/230/240V
13		GW6000-SBP-20	6kW	220/230/240V

*1: 4600 for VDE-AR-N4105 & NRS 097-2-1.





ES20DSC0002

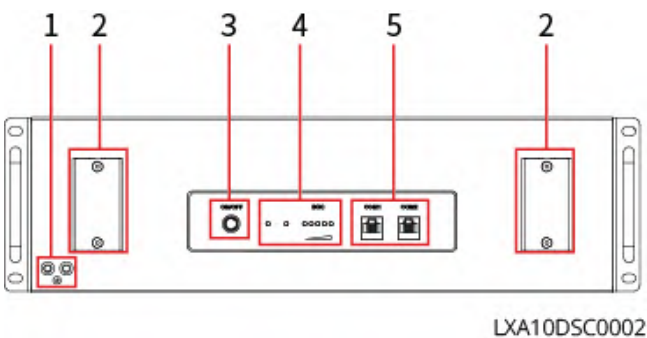
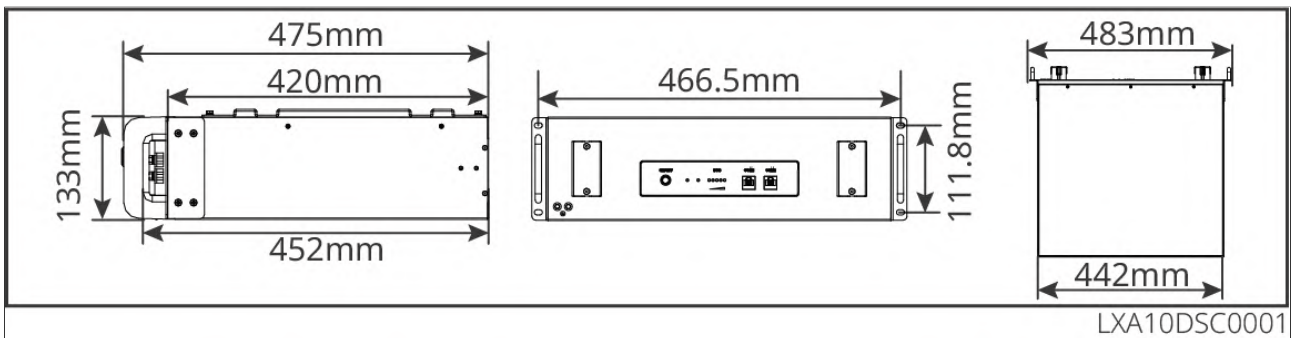
No.	Component/Silks creen	Description
1	Inverter Indicators	Indicates the working status of the inverter.
2	Battery Indicators	Indicates the battery level.
3	Mounting bracket	Can mount the inverter.
4	Ventilation valve	Balances internal and external air pressure, prevents explosion.
5	Battery input terminals	Can connect the battery DC input cables.
6	Communication module port	Can connect a communication module. Please select the module type according to actual requirements.
7	Communication Port	Can connect communication cables for load control, CT, RS485, Remote Shutdown/Rapid Shutdown, DRED (Australia)/RCR (Europe), etc.
8	PV input terminals	Can connect PV module DC input cables. For ES series models only.
9	DC switch	Controls the connection or disconnection of DC input. For ES series models only.
10	AC BACK-UP port	Can connect AC cables to connect the inverter to the grid.
11	AC ON-GRID port	Can connect AC cables to connect the inverter to the grid.
12	EMS communication port	Can connect communication cables to the EMS.

No.	Component/Silks screen	Description
13	METER communication port	Can connect communication cables to the meter.
14	Grounding terminal	Connecting the PE cable.

2.2.2 Battery

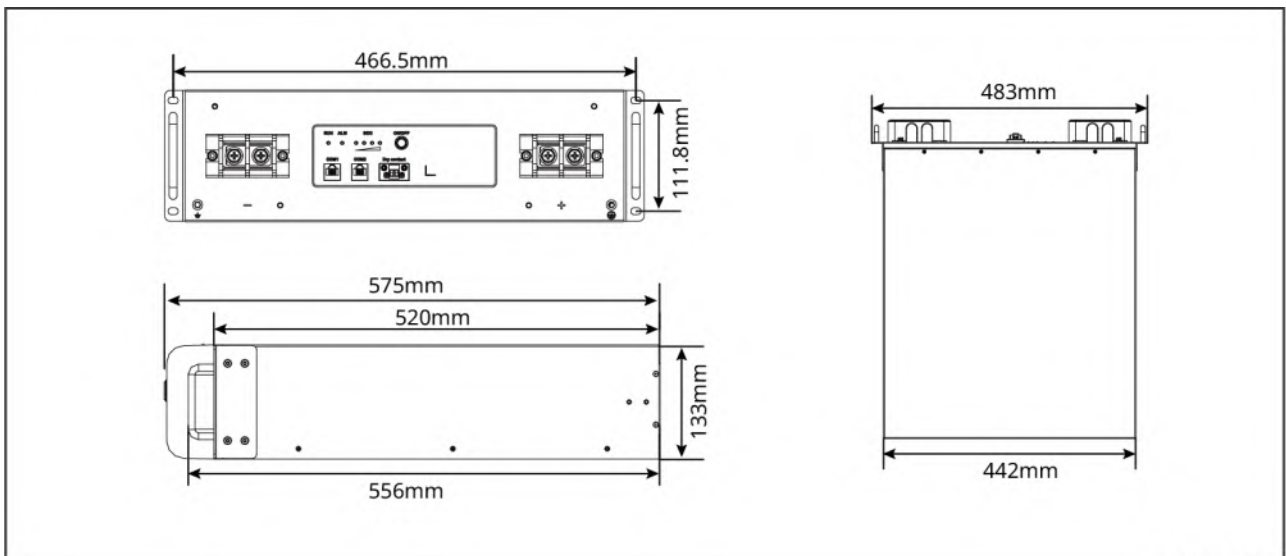
Battery system can store and release electrical energy according to the requirements of the photovoltaic energy storage system. The input and output ports of this energy storage system are high-voltage direct current. The inverter supports the use with lead-acid Batteries. For related product information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

2.2.2.1 LX A5.0-10

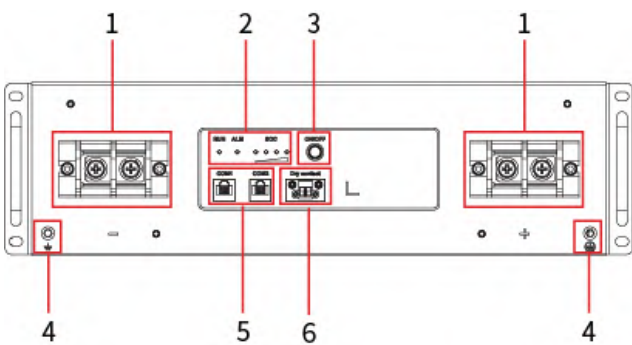


No.	Part/Silkscreen	Description
1	Grounding terminal	Connect the chassis ground wire.
2	Battery DC port	Connect the battery DC input cable.
3	Battery system button	Used for battery power on/off and black start.
4	indicator	Indicates the working status of the battery.
5	Communication Port	Connect the battery communication cable.

2.2.2.2 LX A5.0-30



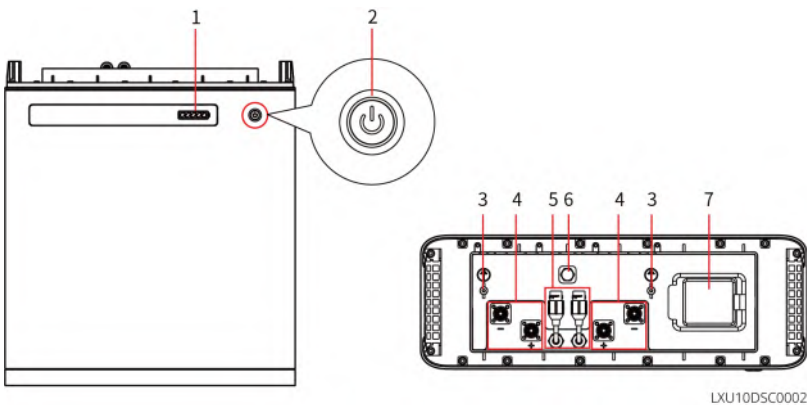
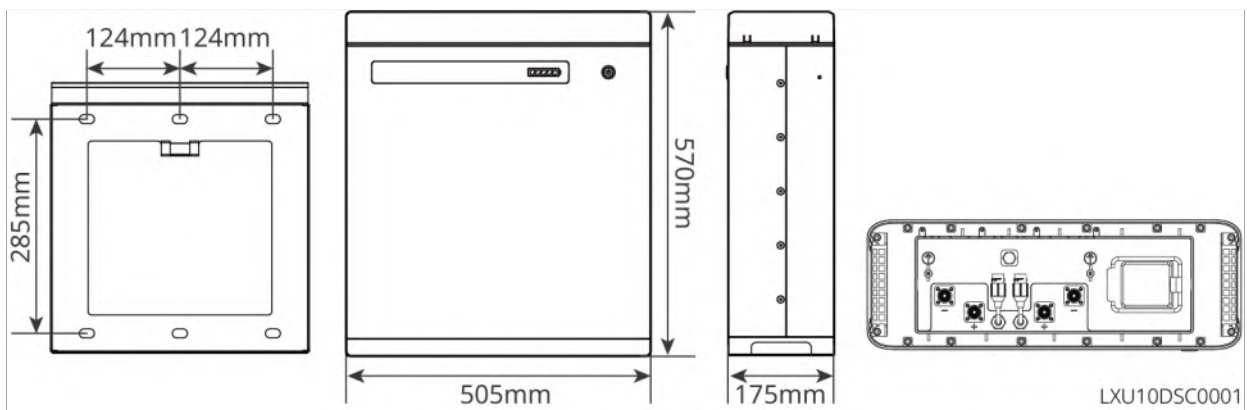
LXA30DSC0001



LXA30DSC0002

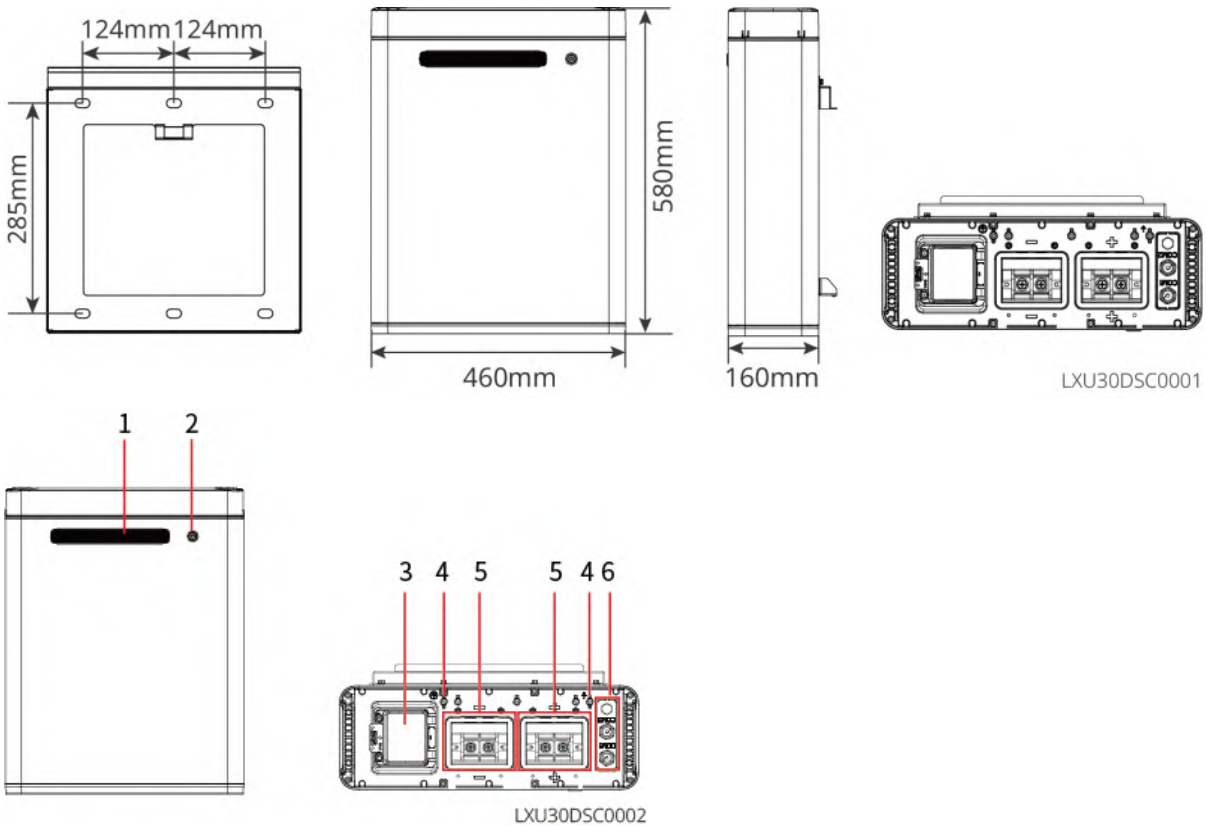
No.	Component/Silk screen	Description
1	Battery DC Port	Connect battery DC input cable.
2	indicator	Indicates the operating status of the battery.
3	Battery System Button	Used for battery power on/off and black start.
4	Grounding terminal	Connect the chassis protective grounding wire.
5	Communication Port	Connect battery communication cable.
6	Dry Contact	Reserved.

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



No.	Component/Silk screen	Description
1	indicator	Indicates the operating status of the battery.
2	Battery System Button	Used for battery power on/off and black start.
3	Grounding terminal	Connect the protective ground wire for the enclosure.
4	Battery DC Port	Connect the battery DC input cable.
5	Communication Port	Connect the battery communication cable.
6	Explosion-proof Vent Valve	The explosion-proof vent valve balances internal and external air pressure and provides explosion protection.
7	Battery Circuit Breaker	Used for battery power on/off.

2.2.2.4 LX U5.0-30

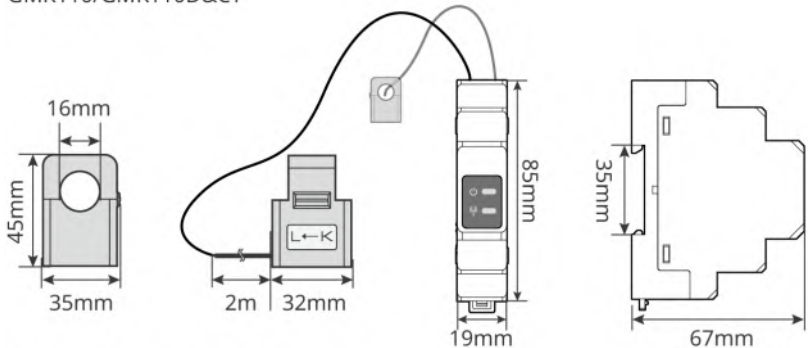


No.	Component/Silk Screen	Description
1	indicator	Indicates the operating status of the battery.
2	Battery System Button	Used for battery power on/off and black start.
3	Battery Circuit Breaker	Used for battery power on/off.
4	Grounding terminal	Connect the protective ground wire to the enclosure.
5	Battery DC Port	Connect the battery DC input cable.
6	Communication Port	Connect the battery communication cable.

2.2.3 Smart Meter

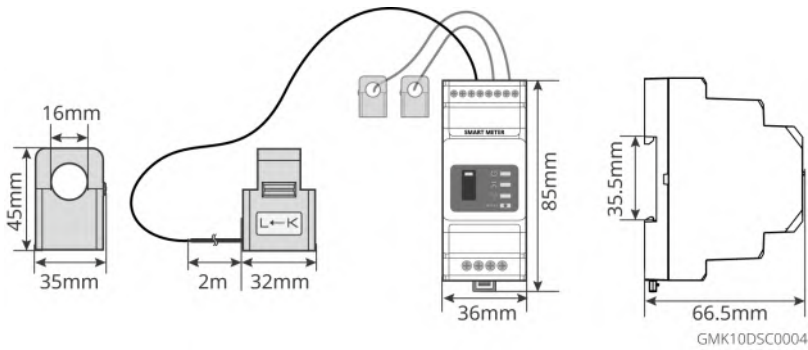
The Smart Meter can measure and monitor power data in the photovoltaic energy storage system, such as: voltage, current, Frequency, Power Factor, power, etc.

GMK110/GMK110D&CT



GMK110: CT x 1 ; GMK110D: CT x 2

GMK10DSC0006



GMK10DSC0004

model	Applicable Scenarios
GM1000 GMK110 GM3000 GM1000D GM110D	<p>CT does not support replacement, CT ratio 120A/40mA</p> <ul style="list-style-type: none"> • GMK110, GM1000: CT x 1; standard-equipped GMK110 or GM1000 meter • GM1000D, GM110D: CT x 2; for AC-coupled inverter; purchased separately • GM3000: CT x 3; when three-phase loads are used in the system and output power control is required, requires the use of GM3000 meter; purchased separately

2.2.4 Smart Dongle

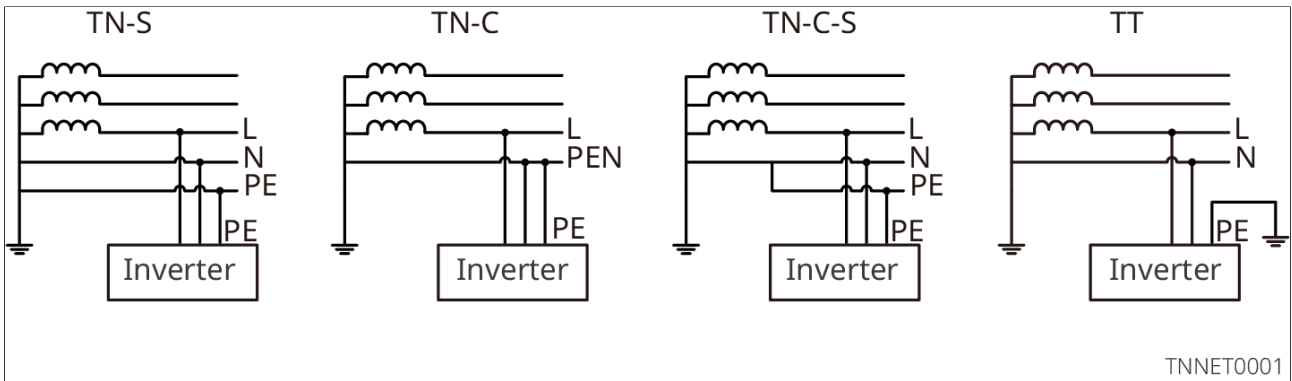
The Smart Dongle is primarily used to transmit various inverter power generation data in real-time to the SEMS Portal remote monitoring platform, and to connect to the Smart Dongle via the SolarGo APP for local device commissioning and debugging.



No.	model	Signal Type	Applicable Scenario
1	LS4G Kit-CN 4G Kit-CN	4G	For single inverter scenarios
2	4G Kit-CN-G20	Bluetooth、4G	
	4G Kit-CN-G21	4G、Bluetooth、GNSS	
3	Wi-Fi Kit	WiFi	
4	WiFi/LAN Kit-20	Bluetooth、WiFi、LAN	

No.	model	Signal Type	Applicable Scenario
5	Ezlink3000	Bluetooth、WiFi、LAN	Master unit in multi-inverter scenarios

2.3 Supported Grid Types



2.4 System Working Mode

Self-Use Mode

- The fundamental operating mode of the system.
- PV-generated power is prioritized for supplying loads, excess power charges the battery, and any remaining power 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.

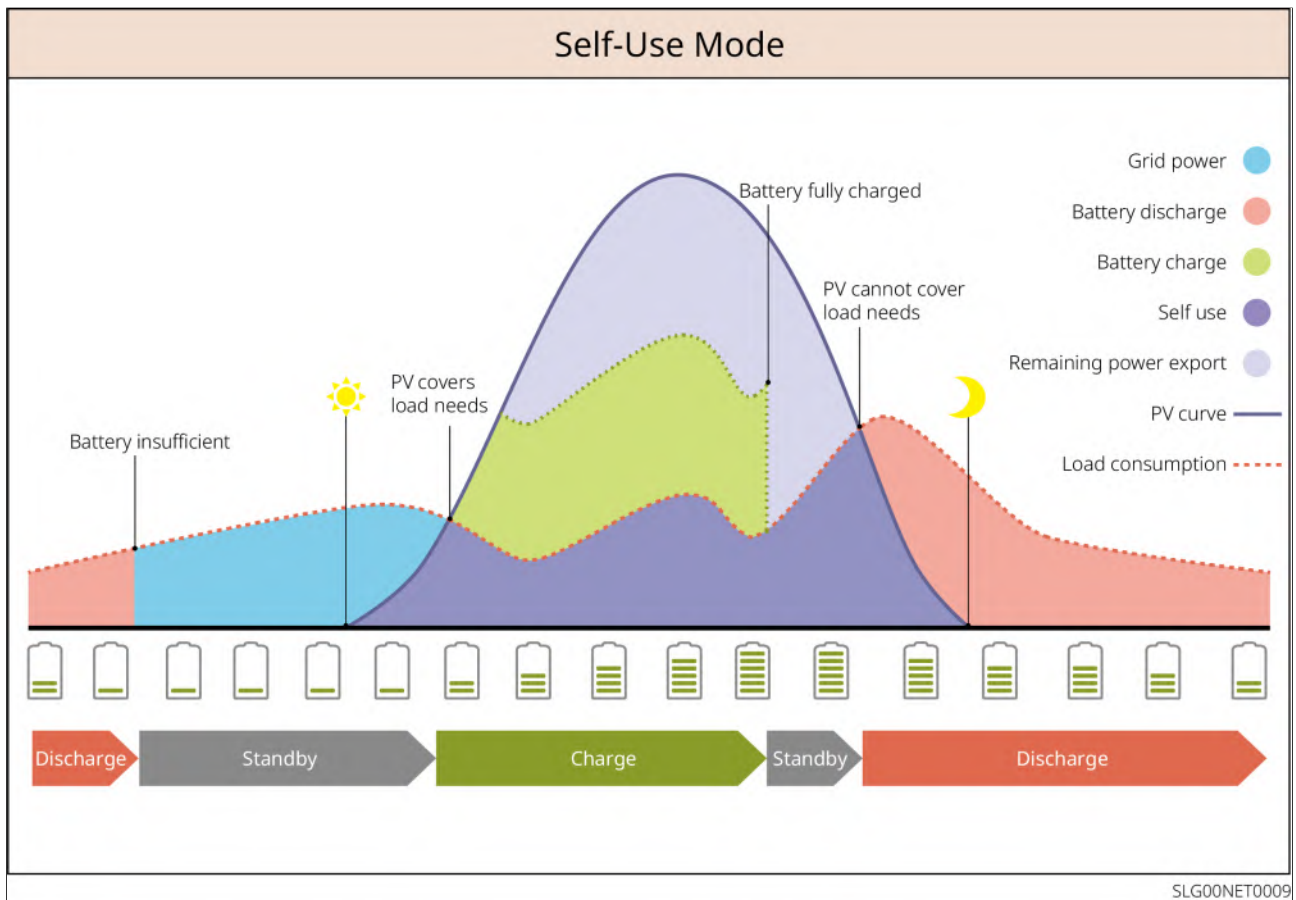


Figure1 Self-Use Mode

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 BACK-UP Loads. When the grid is restored, the inverter switches its operation mode back to grid-tied.
- To ensure the battery State of Charge (SOC) is sufficient for normal system operation during off-grid periods, the system will charge the battery using PV or by purchasing power from the grid to the Backup Power SOC when operating in grid-tied mode. To charge the battery by purchasing power from the grid, please ensure it complies with local grid laws and regulations.

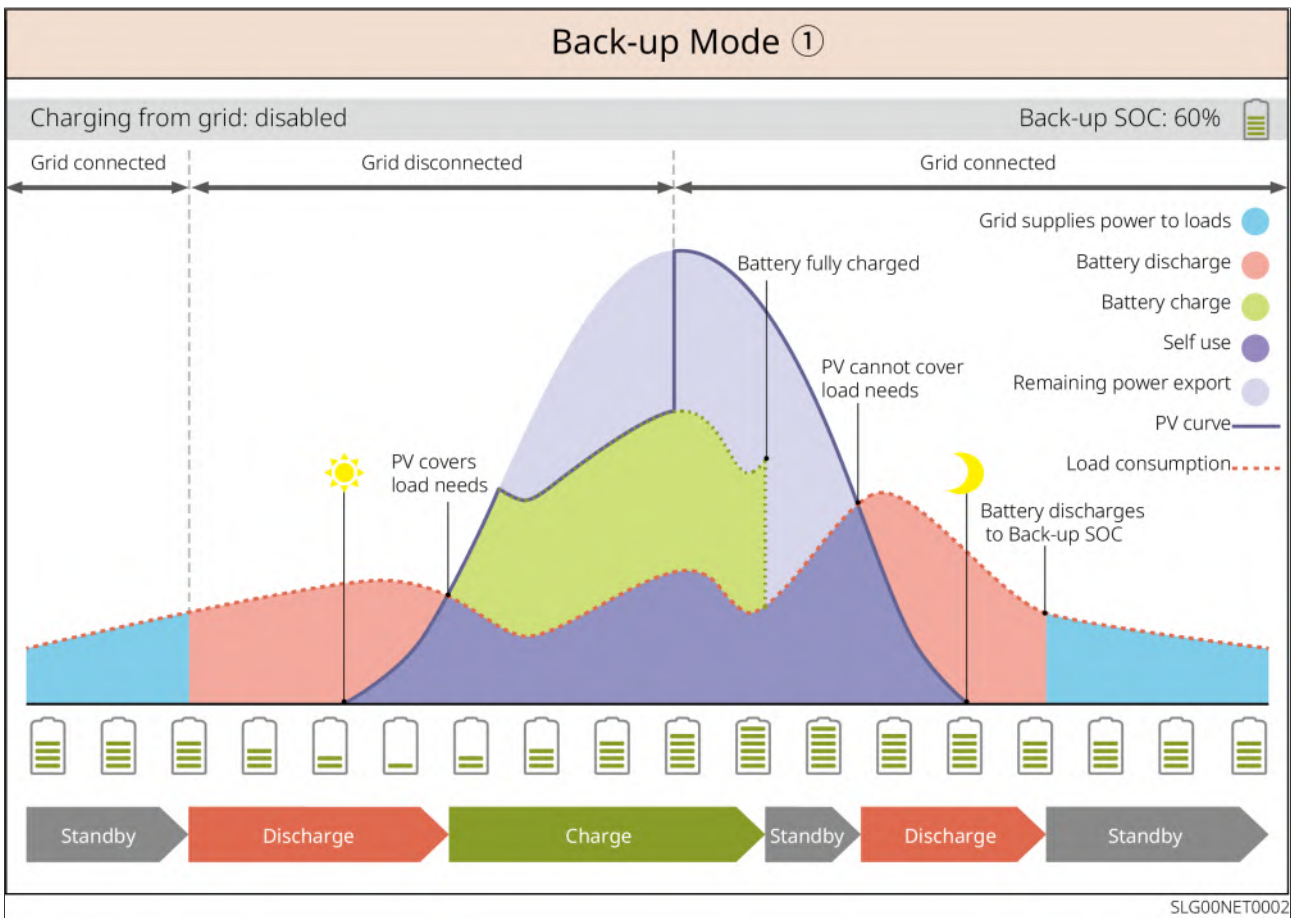


Figure2 Backup Mode

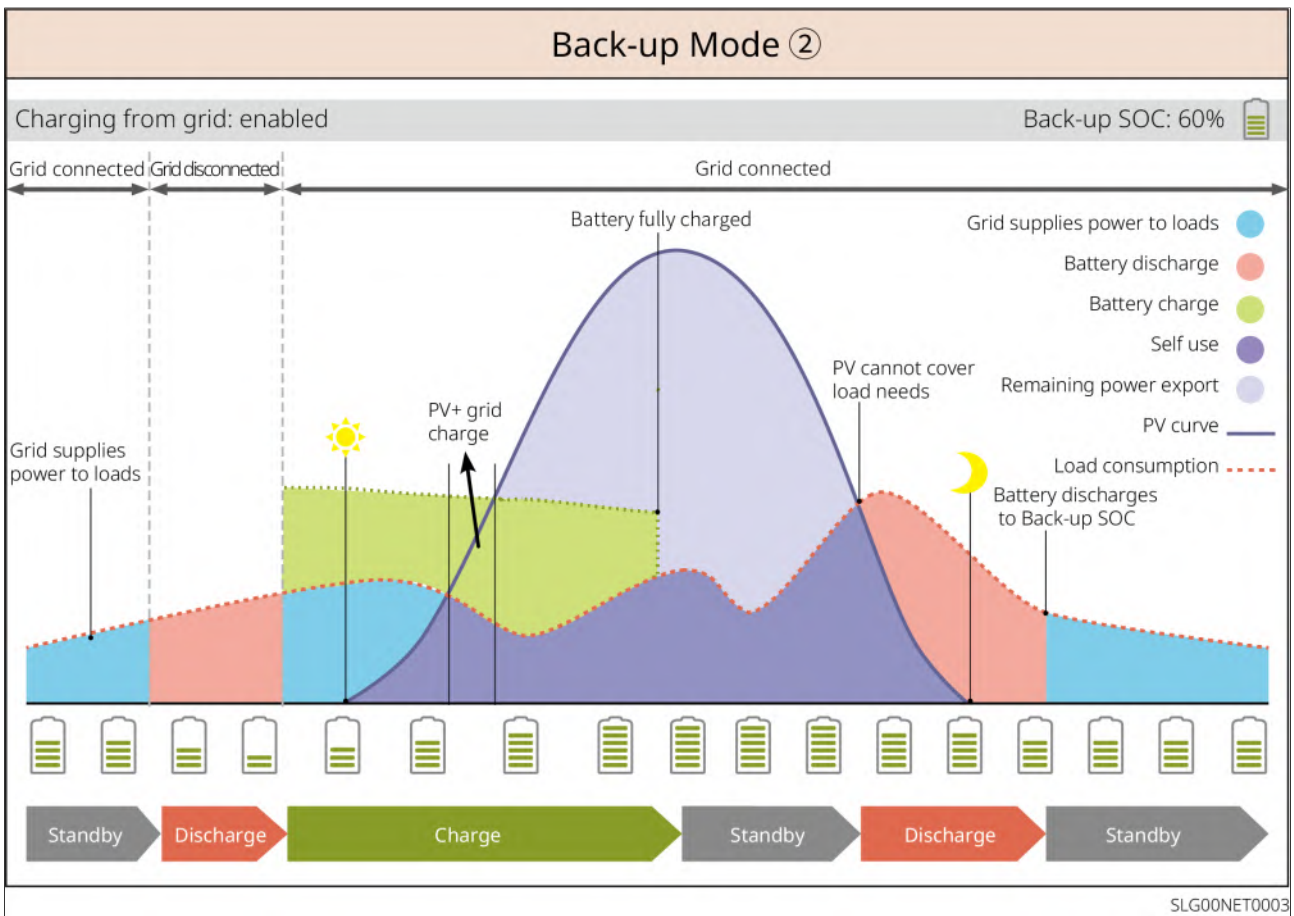


Figure3 Backup Mode

TOU Mode

Subject to compliance with local laws and regulations, buy and sell electricity during different time periods based on the difference between peak and off-peak grid electricity prices.

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

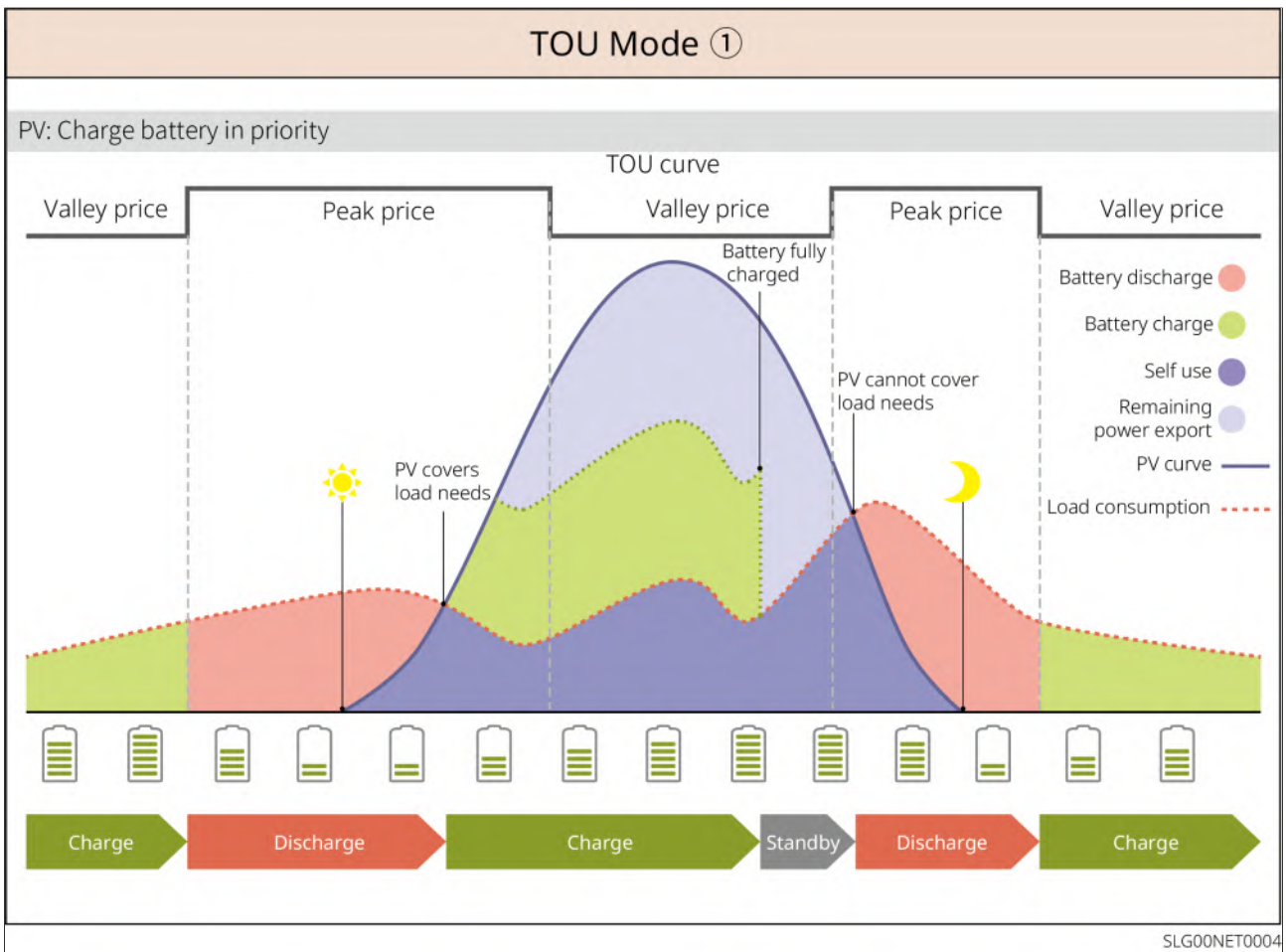


Figure4 TOU Mode

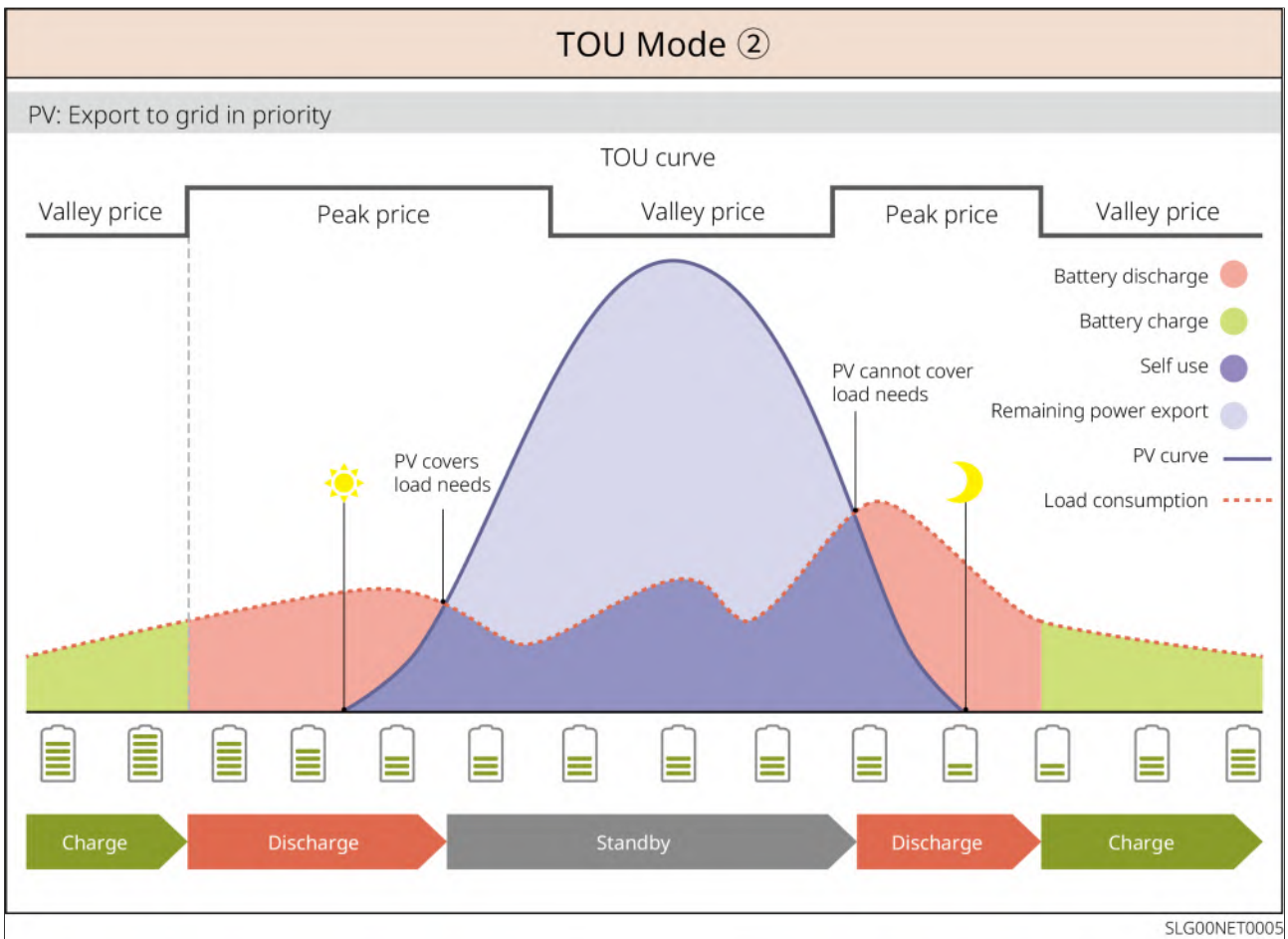


Figure5 TOU Mode

Delayed Charging Mode

- Suitable for areas with grid-connected power output limitations.
- Setting a peak power limit allows PV generation exceeding the grid-connection limit to be used for charging the battery. Alternatively, setting a PV charging time period allows PV generation during that period to charge the battery.

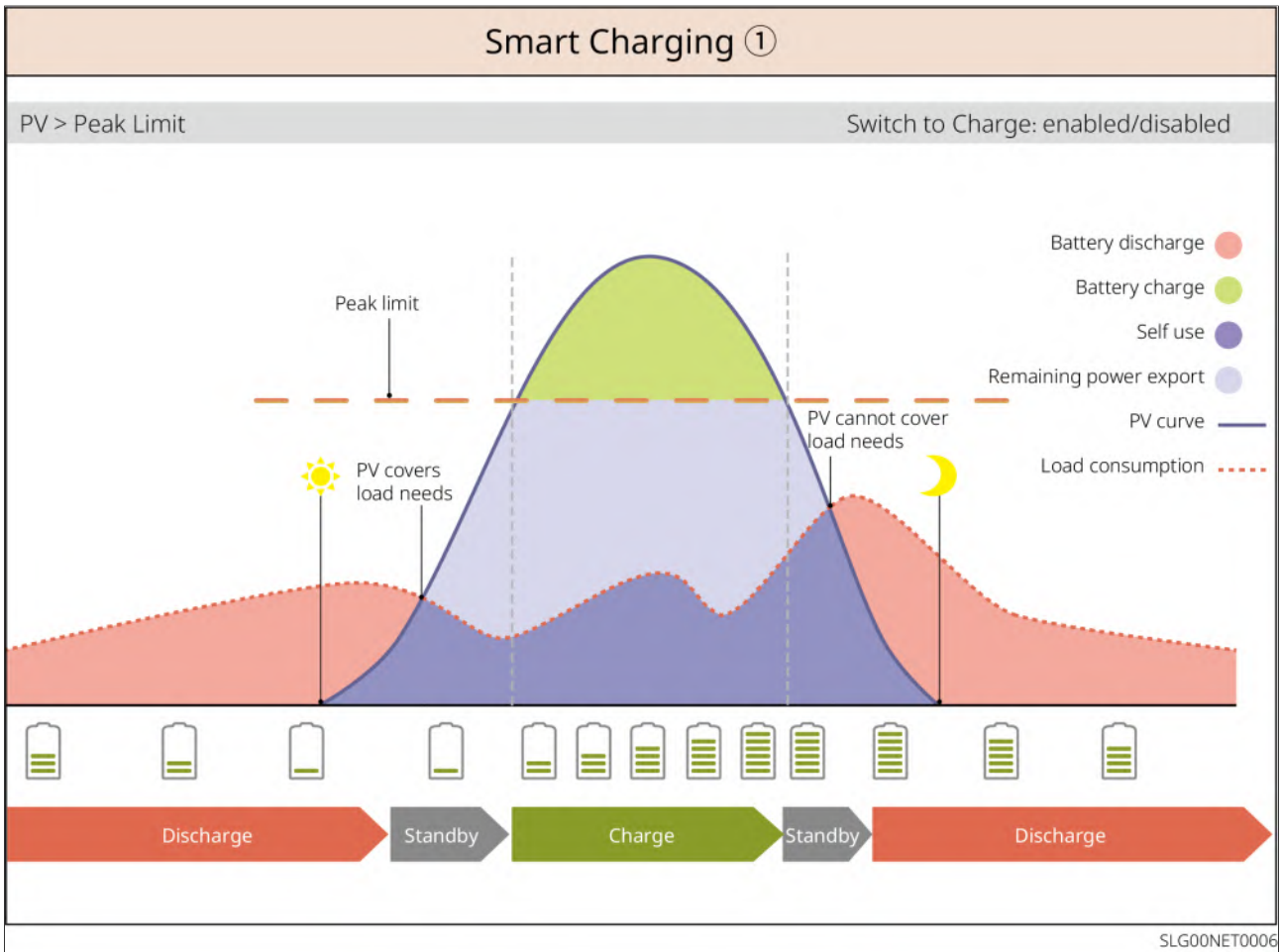


Figure6 Delayed Charging Mode

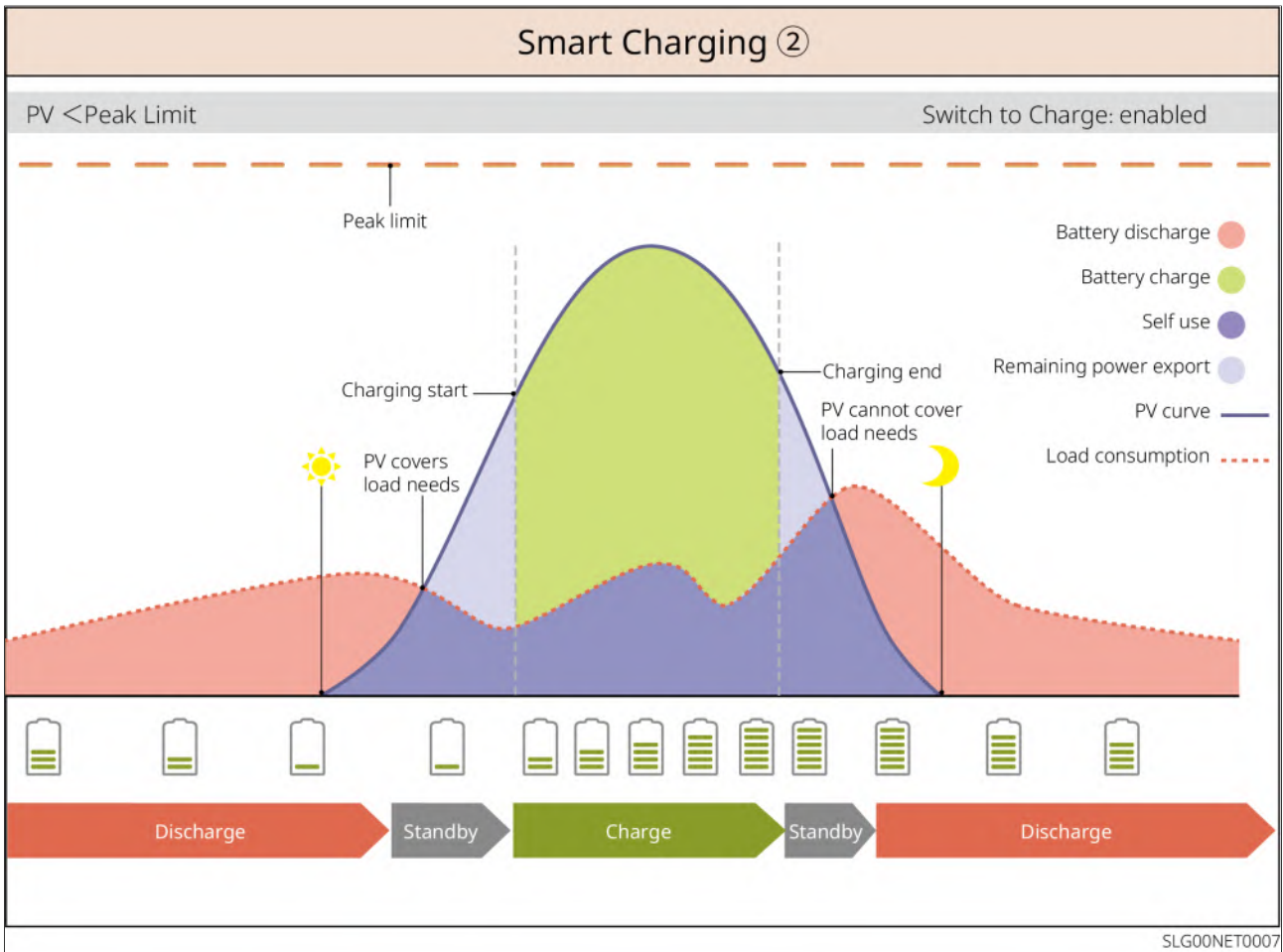


Figure7 Delayed Charging Mode

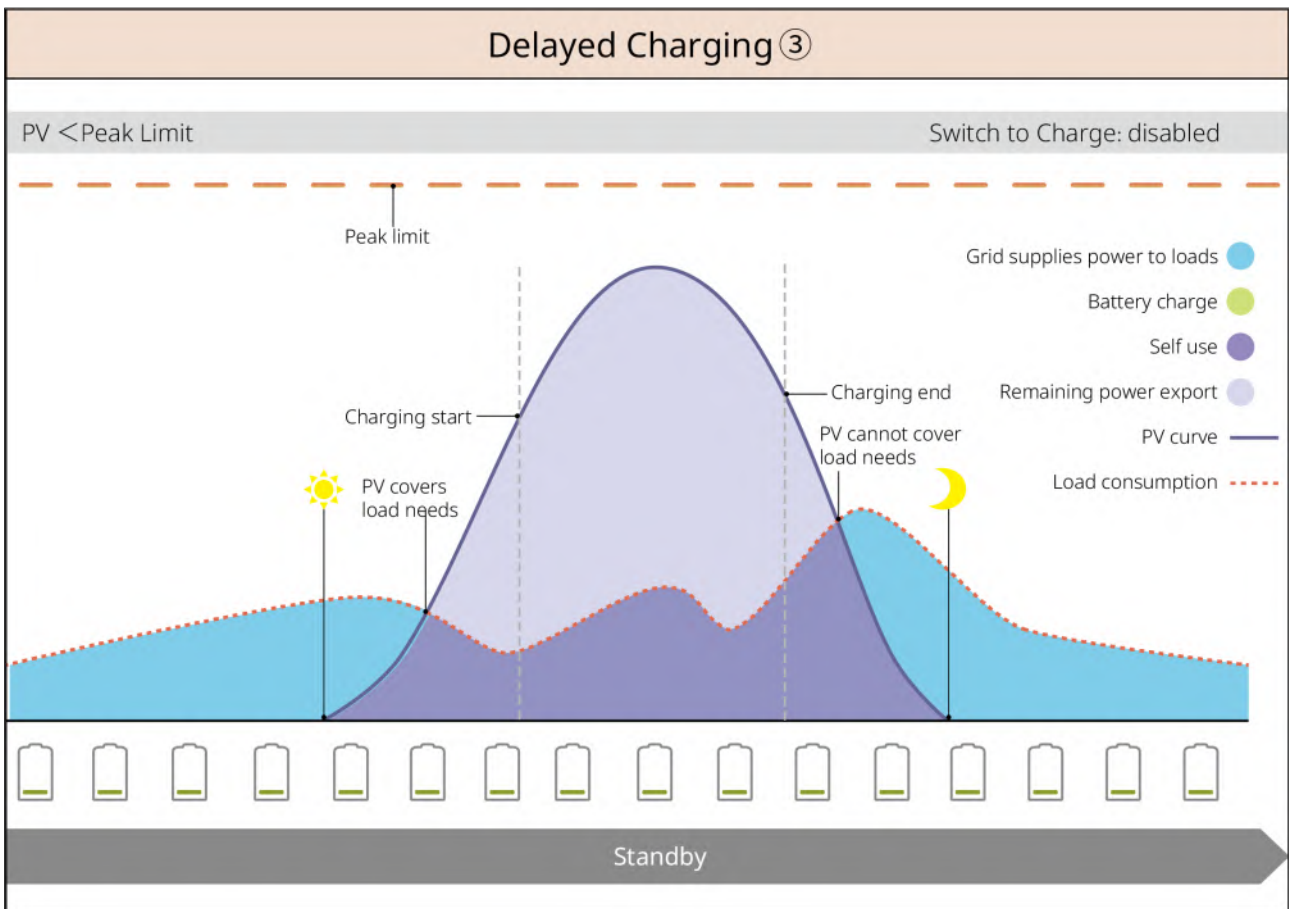


Figure8 Delayed Charging Mode

Demand Control Mode

- Primarily applicable to commercial and industrial scenarios.
- When the total load power consumption briefly exceeds the electricity quota, battery discharge can be used to reduce the portion of consumption exceeding the quota.
- When the battery SOC is lower than the reserved SOC for demand control, the system purchases power from the grid based on the time period, load power consumption, and the peak power purchase limit.

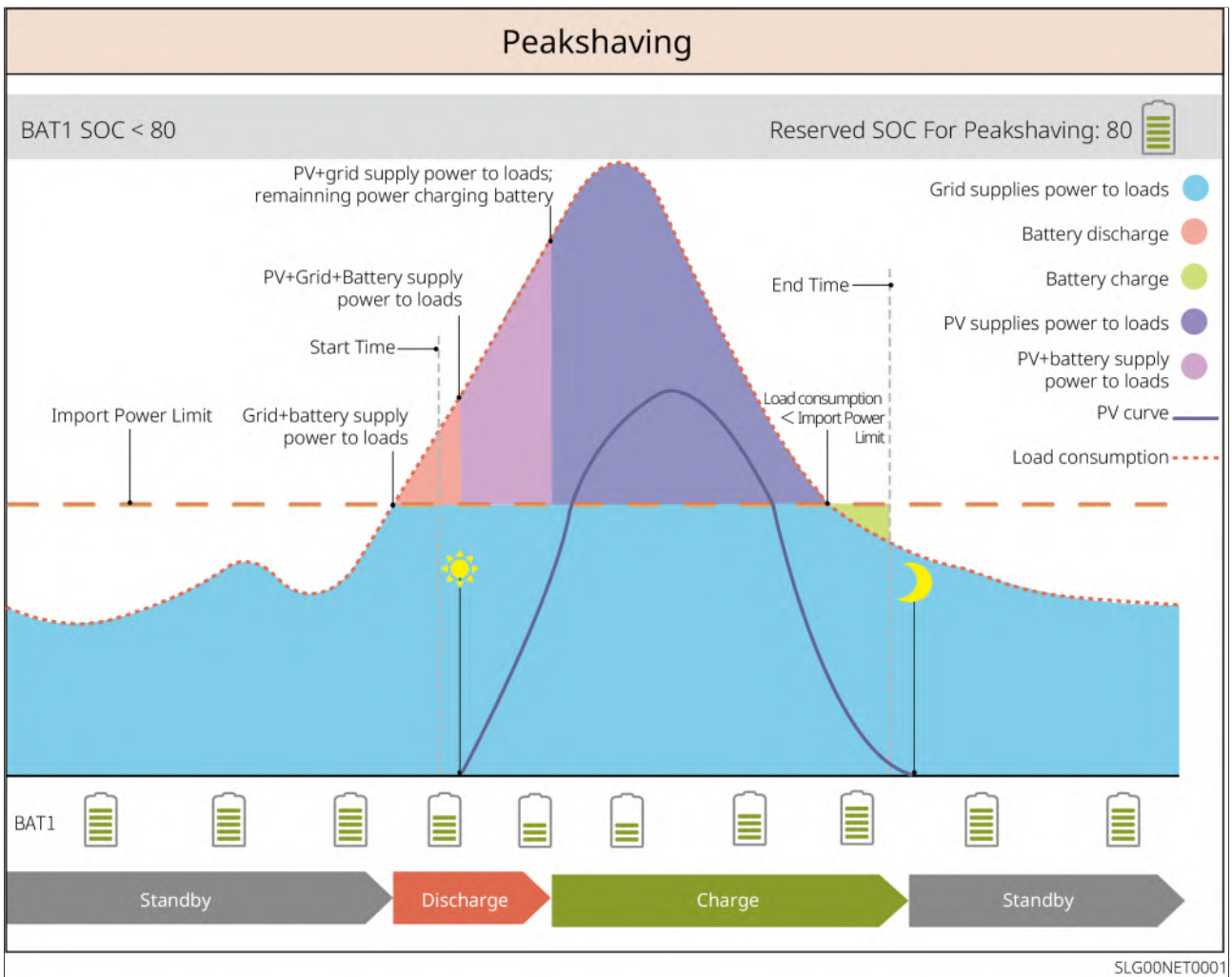


Figure9 Demand Control Mode

2.5 Features

AFCI

The inverter integrates an AFCI circuit protection device to detect arc faults and quickly cut off the circuit when detected, thereby preventing electrical fires.

Causes of arc faults:

- Damage to connector connections in the PV system.
- Incorrect or damaged cable connections.
- Aging of connectors or cables.

Fault handling methods:

1. When the inverter detects an arc fault, the fault type can be viewed on the inverter display or App.
2. If the inverter triggers a fault <5 times within 24 hours, it will automatically restore grid connection after a 5-minute wait. After the 5th arc fault, the fault must be cleared before the inverter can resume normal operation. For specific operations, please refer to the "SolarGo APP User Manual".

load control

The inverter dry contact control port supports connection to an additional contactor for controlling load turn-on or turn-off. Supports household loads, heat pumps, etc. Load control methods are 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 turn on; when set to OFF, the load will turn off.
- BACK-UP Loads control: The inverter has a built-in relay dry contact control port, which can control whether the load is turned off via the relay. In off-grid mode, if an overload on the BACK-UP port is detected and the battery SOC value is below the off-grid protection setting, the load connected to the relay port can be turned off.

3 Check and Storage

3.1 Check Before Receiving

Before receiving the product, please carefully check the following:

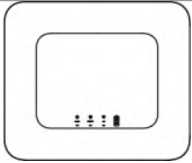
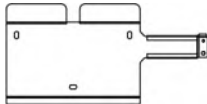


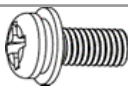

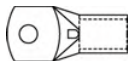
1. Check if the outer packaging is damaged, such as deformation, holes, cracks, or other signs that could cause damage to the equipment inside the packaging. If damaged, do not open the packaging and contact your dealer.
2. Check if the device model is correct. If it does not match, do not open the packaging and contact your dealer.

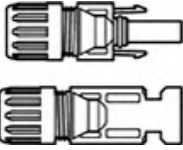


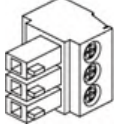
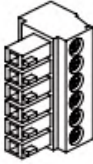
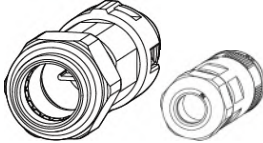
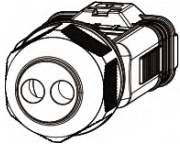
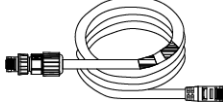
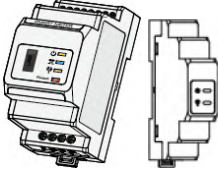




3.2 deliverables

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.




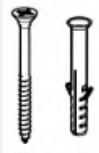
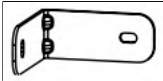

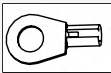

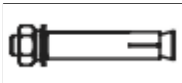
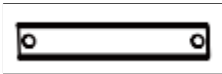
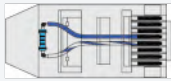

3.2.1 Inverter Deliverables

Component	Description	Component	Description
	Inverter x1		mounting plate x 1
 	Expansion screw x3		screw x N
	Grounding terminal x 1		Battery power connection terminal x 2



	<p>PV DC wiring terminal SBP series Inverter: x 0 GW3000-ES-20: x 1 Others: x 2</p>		<p>smart dongle x1</p>
	<p>2PIN communication terminal x 3</p>		<p>3PIN communication terminal x 1</p>
	<p>6PIN communication terminal x 1</p>		<p>AC wiring terminal x 2</p>
	<p>Battery wiring terminal x 1</p>		<p>BMS Communication cable & Meter Communication cable x 1</p>
	<p>Smart Meter x 1</p>		<p>Product documentation x 1</p>
	<p>Lead-acid battery temperature sensor cable x 1 Included with inverters that support lead-acid battery connection.</p>		<p>Flathead screwdriver x 1</p>
	<p>Lead-acid battery temperature sensor cable adhesive patch x 2</p>		

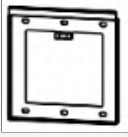
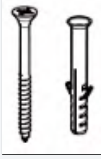
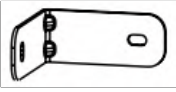
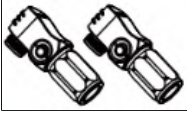
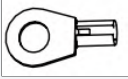
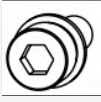
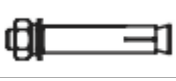
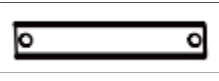
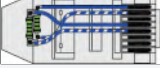

3.2.2 Batteries Deliverables

3.2.2.1 Batteries Deliverables(LX U5.4-L)


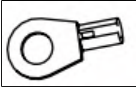


Component	Description	Component	Description
	Battery x 1		Plastic cover x 1
	Wall mounting bracket x 1		Expansion screw x 2
	locking bracket x 2		Connector x 2
	Grounding terminal x 4		M5 x 8
	M10 x 6		Wire harness fixing plate x 2
	Terminal resistor x 1		Product Documentation x 1

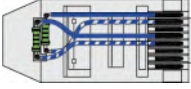



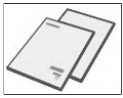

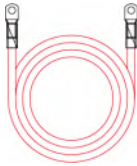




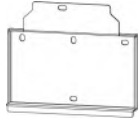


3.2.2.2 Batteries Deliverables(LX U5.4-20)

Component	Description	Component	Description
	Battery x 1		Plastic cover x 1


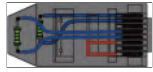
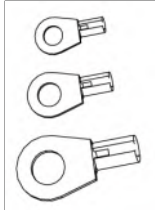



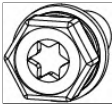
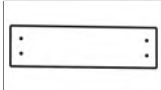


	Wall-mounted bracket x 1		Expansion screw x 2
	locking bracket x 2		Connector x 2
	Grounding terminal x 4		M5 x 8
	M10 x 6		Wire harness fixing plate x 2
	Terminal resistor x 1		Product Documentation x 1







3.2.2.3 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



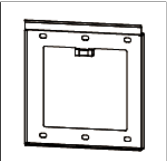

Component	Description	Component	Description
	Terminal resistor x 1		Electrical Label x 1
	M4*8 screw x 8 (optional) Select the bracket Mounting method for distribution		Battery Bracket x 2 (Optional) Select the bracket Mounting method for distribution
	Product Documentation x 1		Negative power cable (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

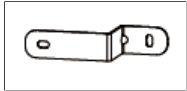
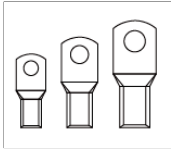
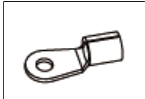

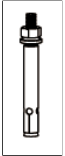
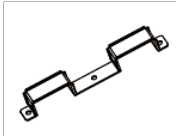
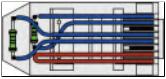

3.2.2.4 LX A5.0-30

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.
	<ul style="list-style-type: none"> • M5 OT terminal x 2: Recommended connection 10mm² cable • M8 OT terminal x 4: Recommended connection 50mm² cable • M10 OT terminal x 2: Recommended connection 70mm² 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

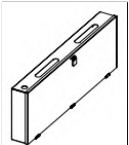

3.2.2.5 Batteries Deliverables(LX U5.0-30)

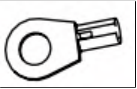
Component	Description	Component	Description
	Battery x 1		Plastic cover x 1
	Wall-mounted x 1		Expansion screw x 2

Component	Description	Component	Description
	locking bracket x 2		<ul style="list-style-type: none"> • 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
	14-5 Grounding terminal x 2		M5 x 7
	M10 x 6		Wire harness fixing plate x 1
	Terminal resistor x 1		Product Documentation x 1

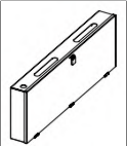

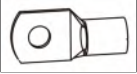
3.2.3 Busbar Deliverables

3.2.3.1 BCB-11-WW-0 (Optional)

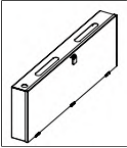
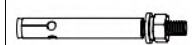
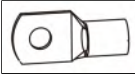
Part	Description	Part	Description
	BCB-11-WW-0 junction box x 1		M6 expansion bolt x 4

Part	Description	Part	Description
	(25-8) OT terminal x 18 (70-10) OT terminal x 2	-	-

3.2.3.2 BCB-22-WW-0

Part	Description	Part	Description
	BCB-22-WW-0 bus bar box x 1		M6 expansion bolt x 4
	(25-8) OT terminal x 36 (70-10) OT terminal x 6	-	-

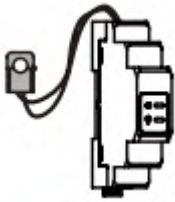





3.2.3.3 BCB-32-WW-0, BCB-33-WW-0 (optional)

Component	Description	Component	Description
	720A Combiner Box x 1		M6Expansion bolt x 4
	(50-8) OT terminal x 30 (70-10) OT terminal x 6	-	-

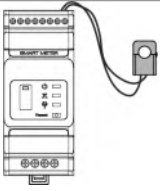




3.2.4 Smart Meter Deliverables

3.2.4.1 Smart Meter Deliverables (GMK110, GMK110D)

Component	Description	Component	Description
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	Smart Meter x 1 GMK110: CT x 1 GMK110D: CT x 2		RS485 communication terminal x 1
	Voltage input side wiring terminal x 1		PIN terminal x 4
	screwdriver x1		Product documentation x 1



3.2.4.2 Smart Meter Deliverables (GM1000, GM1000D, GM3000)

Component	Description	Component	Description
	Smart Meter x 1 GM1000: CT x 1 GM1000D: CT x 2 GM3000: CT x 3		screwdriver x1
	USB port plug x 1		PIN terminal x N GM1000 x 4 GM1000D x 8 GM3000 x 6
	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

component	Description	component	Description
	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 equipment is not put into use immediately, store it according to the following requirements. After long-term storage, the equipment must be inspected and confirmed by qualified personnel before it can be used again.

1. If the inverter is stored for more than two years or remains non-operational for more than 6 months after installation, it is recommended to have it inspected and tested by qualified personnel 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 6 months during storage. If it has not been powered on for more than 6 months, it is recommended to have it inspected and tested by qualified personnel before use.
3. To ensure 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 decay, or even complete failure. Timely use is advised. If the battery requires long-term storage, 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	30%~40%	0~35°C	-20~0°C, ≤1 month	
n*LX A5.0-10			0~35°C, ≤6 months	
LX A5.0-30	30%~40%	0~35°C	-20~45°C, ≤6 months	

LX U5.4-L	30%~40%	0~35°C	-20~0°C, ≤1 month	Please consult the dealer or after-sales service center for maintenance methods.
LX U5.4-20			0~35°C, ≤6 months	
n*LX U5.4-20			35~40°C, ≤1 month	
LX U5.0-30	30%~40%	0~35°C	-20~35°C, ≤12 months	
			35~45°C, ≤6 months	

NOTICE

[1] The storage time is calculated starting from the SN date on the battery's outer packaging. Charge-discharge maintenance is required after the storage period expires. (Battery maintenance time = SN date + charge-discharge maintenance cycle). For the method to view the SN date, refer to: [SN Code Meaning](#).

[2] After passing the charge-discharge maintenance, if a Maintaining Label is attached to the outer box, 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 keeping.

Packaging Requirements:

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

Environmental Requirements:

1. Ensure the equipment is stored in a cool place, avoiding direct sunlight.
2. Ensure the storage environment is clean, with appropriate temperature and humidity ranges, and free from condensation. If condensation is present on the equipment ports, do not install the equipment.
3. Ensure the equipment is stored away from flammable, explosive, corrosive, and other hazardous materials.

Stacking Requirements:

1. Ensure the stacking height and orientation of the inverter are arranged according to the instructions on the packaging box label.

2. Ensure there is no risk of the inverter stack tipping over after stacking.

4 Installation



Please use the deliverables included in the shipment for equipment Installation and electrical connections. Damage caused by not using the provided components will not be covered under warranty.

4.1 System Installation and Commissioning Procedure



When performing device installation and electrical connections, please use the delivery items shipped with the box. Otherwise, damage caused to the device is not covered by the warranty.

Steps	1 Installation	2 PE	3 PV	4 Battery	5 AC	6 COM	7 Communication module
Inverter			Optional (E5 series) 		BACK-UP ON-GRID OR ON-GRID 		BMS/METER WIFI/LAN Kit-20 Wi-Fi Kit Ezlink3000
Tools	D: 50mm φ: 8mm M5 1.2-2N-m	M5 1.5-2N-m	Recommend: PV-CZM-61100 	M8 7-9N-m	M3 0.8N-m	M3 0.6N-m	4G KIT-CN LS4G KIT-CN 4G KIT-CN-G20 4G KIT-CN-G21
Steps	1 Installation				2 PE	3 Battery	4 COM
Battery	LX AS 0-10 	LX AS 0-30 	LX US-4-LX US-4-20 	LX US 0-30 	LX AS 0-10/LX AS 0-30 LX US-4-LX US-4-20 LX US 0-30 	LX AS 0-10 LX AS 0-30 LX US-4-LX US-4-20 LX US 0-30 	LX US 0-10 LX US 0-30
Tools	M4 1.4N-m	M6 6N-m	M4 1.4N-m	M6 6N-m	M5 6N-m M5 2N-m	M6 6N-m M8 12N-m	Recommend: PV-CZM-61100
	1 D: 50mm φ: 8mm M5 1.2-2N-m M4 1.4N-m 2 M6 6N-m 3 M5 1.2-2N-m				1 D: 50mm φ: 8mm ST5.5(φ10N-m *7D M10 10N-m M5 2N-m		
Steps	1 Installation		2 Cable Connections		3 Power	4 Commissioning	
Smart meter	GMK110/GMK110D 	GM1000/GM3000/GM1000D 	GMK110/GMK110D 	GM1000/GM3000/GM1000D 	AC breaker 	 SolarGo APP or SEMS+ APP or SEMS+ WEB	
	GMK110:CT1+CT1- GMK110D:CT1+CT1- CT2+CT2-		0.3-0.5N-m			E520N7000	

Figure10 System Installation and Commissioning Procedure

4.2 Installation Requirements

4.2.1 Installation Environment Requirements

NOTICE

If installed in an environment below 0°C, the battery may become unable to recharge and recover energy after being depleted, resulting in battery undervoltage protection.

- LX A5.0-30, LX U5.0-30: Charging temperature range: $0 < T \leq 55^{\circ}\text{C}$; Discharging temperature range: $-20 < T \leq 55^{\circ}\text{C}$
- LX A5.0-10, LX U5.4-L, LX U5.4-20: Charging temperature range: $0 < T \leq 50^{\circ}\text{C}$; Discharging temperature range: $-10 < T \leq 50^{\circ}\text{C}$

1. The equipment must not be installed in flammable, explosive, corrosive, or similar environments.
2. The temperature and humidity of the equipment installation environment must be within a suitable range.
3. The installation location must be out of reach of children and avoid easily accessible positions.
4. The enclosure temperature of the Inverter may exceed 60°C during operation. Do not touch the enclosure before it cools down to prevent burns.
5. The equipment must be installed away from direct sunlight, rain, snow accumulation, and similar conditions. It is recommended to install in a sheltered location; a sunshade can be constructed if necessary.
6. The installation space must meet the equipment's ventilation, heat dissipation, and operational space requirements.
7. The installation environment must satisfy the equipment's protection rating. The Inverter, battery, and smart communication stick are suitable for indoor and outdoor installation; the meter is suitable for indoor installation.
8. The equipment installation height should facilitate operation and maintenance, ensuring the equipment indicator lights, all labels are easily visible, and the wiring terminals are easy to operate.
9. The equipment installation altitude must be lower than the maximum operating altitude.
10. For outdoor installation of equipment in salt damage areas, please consult the equipment manufacturer. Salt damage areas mainly refer to areas within 500m of

the coast. The affected area is related to sea wind, precipitation, terrain, and other conditions.

11. Keep away from strong magnetic field environments to avoid electromagnetic interference. If there is a radio station or wireless communication equipment operating below 30MHz near the installation location, please install the equipment according to the following requirements:
 - a. Inverter: Add a multi-turn ferrite core on the Inverter's DC input lines or AC output lines, or add a low-pass EMI filter; or ensure the distance between the Inverter and the wireless electromagnetic interference equipment exceeds 30m.
 - b. Other equipment: Ensure the distance between the equipment and the wireless electromagnetic interference equipment exceeds 30m.
12. The length of the DC cable and communication cable between the battery and the Inverter must be less than 3m. Please ensure the installation distance between the Inverter and the battery meets the cable length requirement.

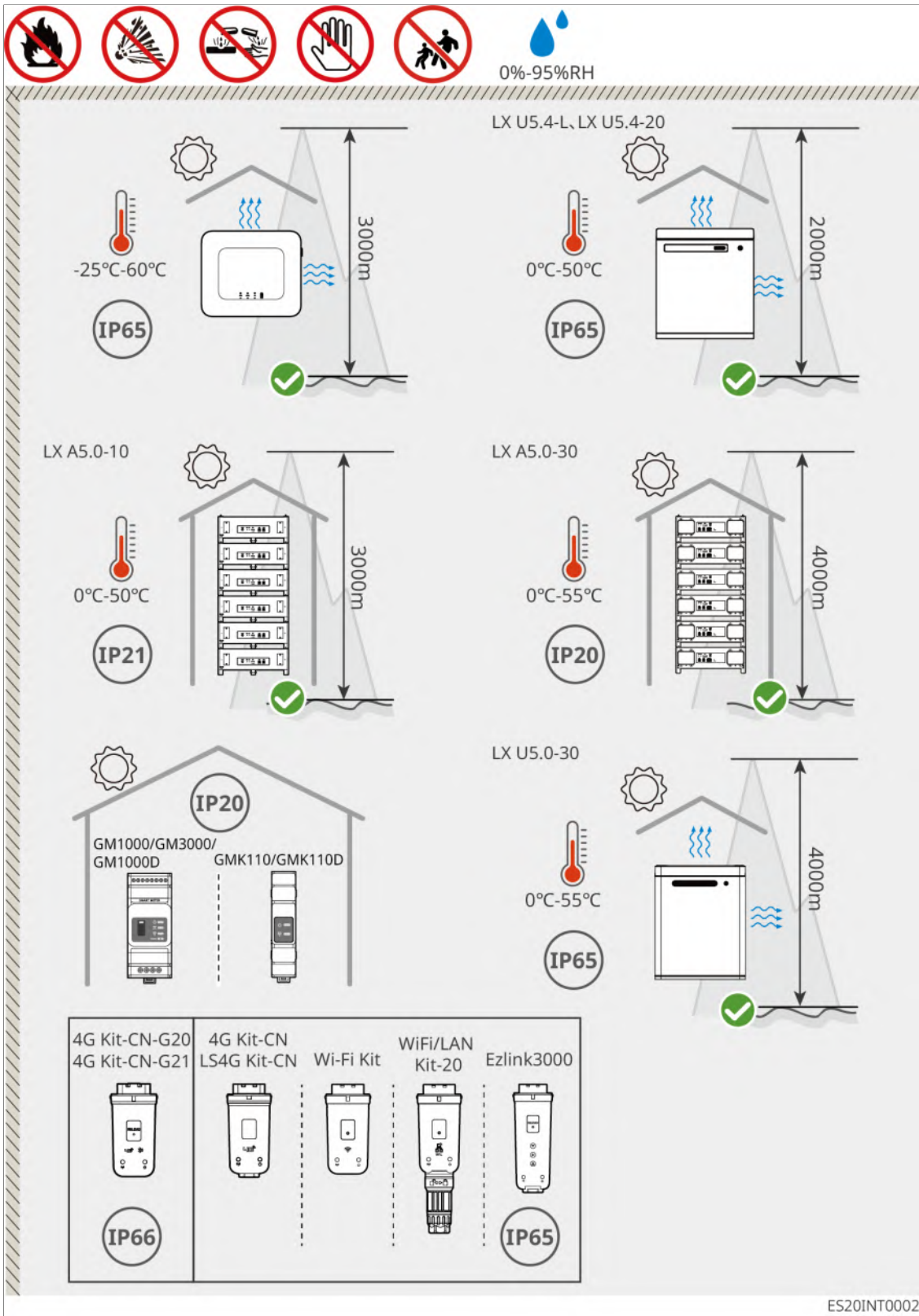


Figure11 Installation Environment Requirements

4.2.2 Installation Space Requirements

When installing devices in the system, sufficient space should be reserved around the devices to ensure adequate installation and heat dissipation space.

- When using CAT7E communication cables between inverters, the cable distance should not exceed 10 meters; when using CAT5E or CAT6E communication cables, the cable distance should not exceed 5 meters. Do not exceed 10m for communication cables, otherwise it may cause communication abnormalities.
- For CT installation, use CAT5E or above shielded network cables, and the cable distance should not exceed 30 meters.
- For RS485 twisted-pair shielded cables used for communication between inverters and meters, the cable distance should not exceed 100 meters.

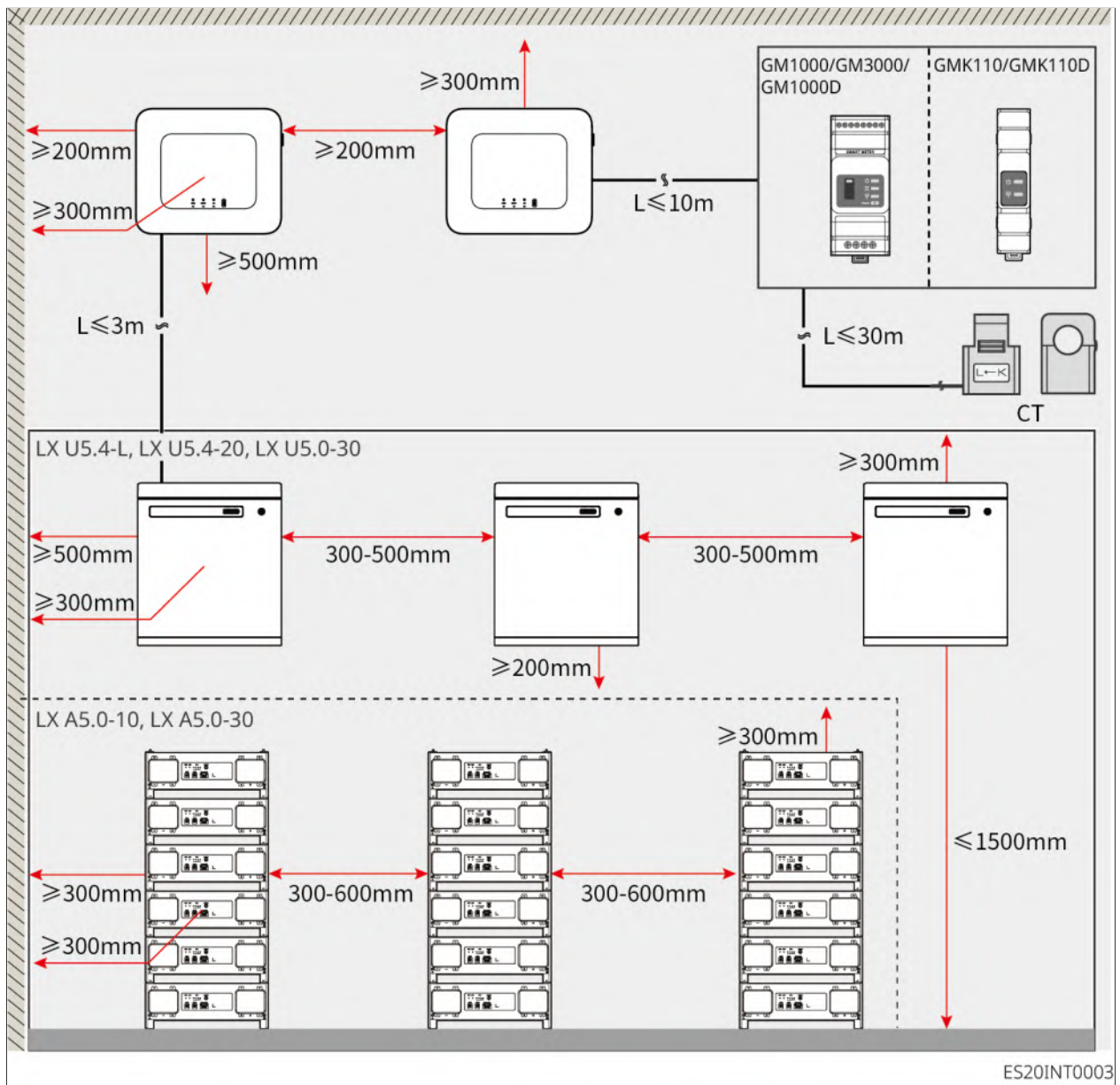


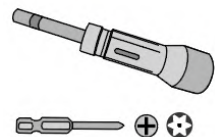

Figure12 Installation Space Requirements

4.2.3 Tool Requirements


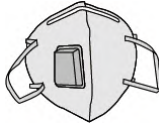


NOTICE

During installation, it is recommended to use the following installation tools. If necessary, other auxiliary tools can be used on site.

Installation Tools

Tool Type	Description	Tool Type	Description
	diagonal plier		RJ45 connector crimping tool
	wire stripper		YQK-70 hydraulic pliers
	open-end wrench		PV terminal crimping tool PV-CZM-61100
	hammer drill (drill bits Φ 8mm, 10mm)		torque wrench M4, M5, M6, M8, M10
	rubber hammer		socket wrench
	Marker pen		multimeter Range \leq 600V
	Heat shrink tubing		Hot air gun
	cable tie		Vacuum cleaner
	Level bar	-	-

personal protective equipment

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

4.3 Equipment Handling

 CAUTION

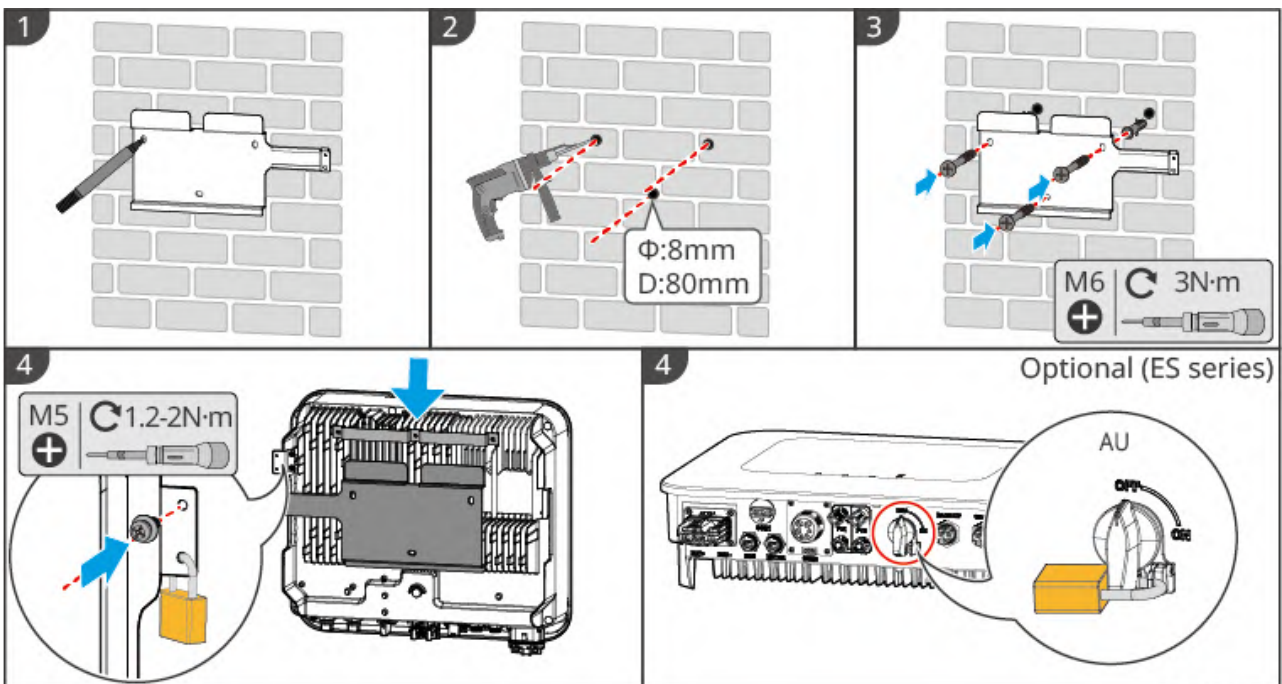
- During operations such as transportation, handling, and installation, all applicable laws, regulations, and relevant standards of the country or region must be complied with.
- Before installation, the equipment must be moved to the installation site. To avoid personal injury or equipment damage during the moving process, please note the following:
 1. Based on the equipment weight, ensure an adequate number of personnel are assigned for moving to prevent the equipment from exceeding the safe manual handling weight limit and causing injury.
 2. Wear safety gloves to prevent injury.
 3. Ensure the equipment remains balanced during movement to avoid dropping.

4.4 Installing the Inverter

 CAUTION

- When drilling, ensure the drilling location avoids water pipes, cables, etc. inside the wall to prevent danger.
- When drilling, please wear safety goggles and a dust mask to avoid inhaling dust into the respiratory tract or getting it into the eyes.
- Ensure the inverter is installed securely to prevent it from falling and injuring people.

1. Place the back mounting plate horizontally on the wall, and use a marker pen to mark the drilling positions.
2. Use an impact drill to drill the holes.
3. Fix the inverter back mounting plate bracket to the wall using expansion screws.
4. Hang the inverter on the back plate. After hanging, use screws to secure the back plate and the inverter, ensuring the inverter is installed stably.



ES20INT0004

4.5 Installing the Battery System

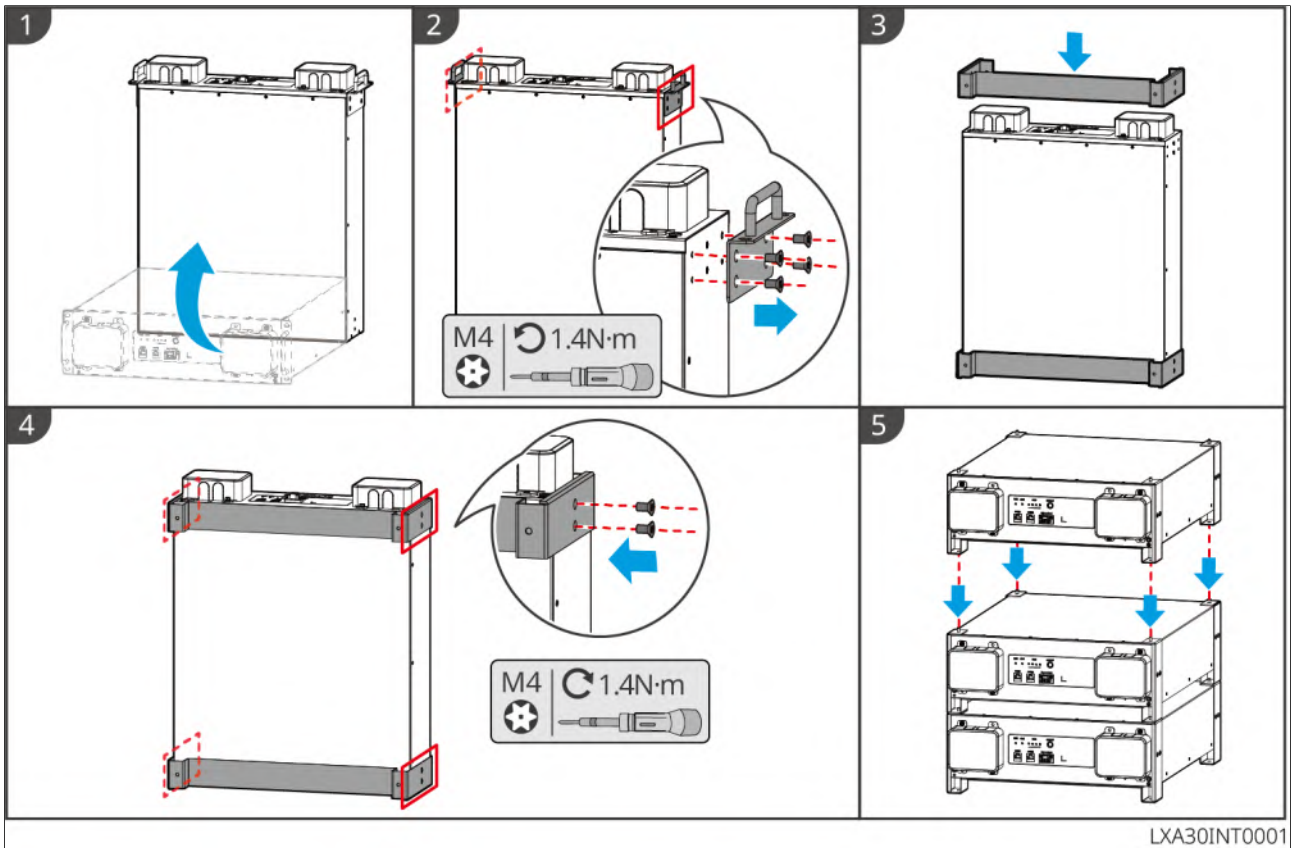
4.5.1 LX A5.0-30

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.

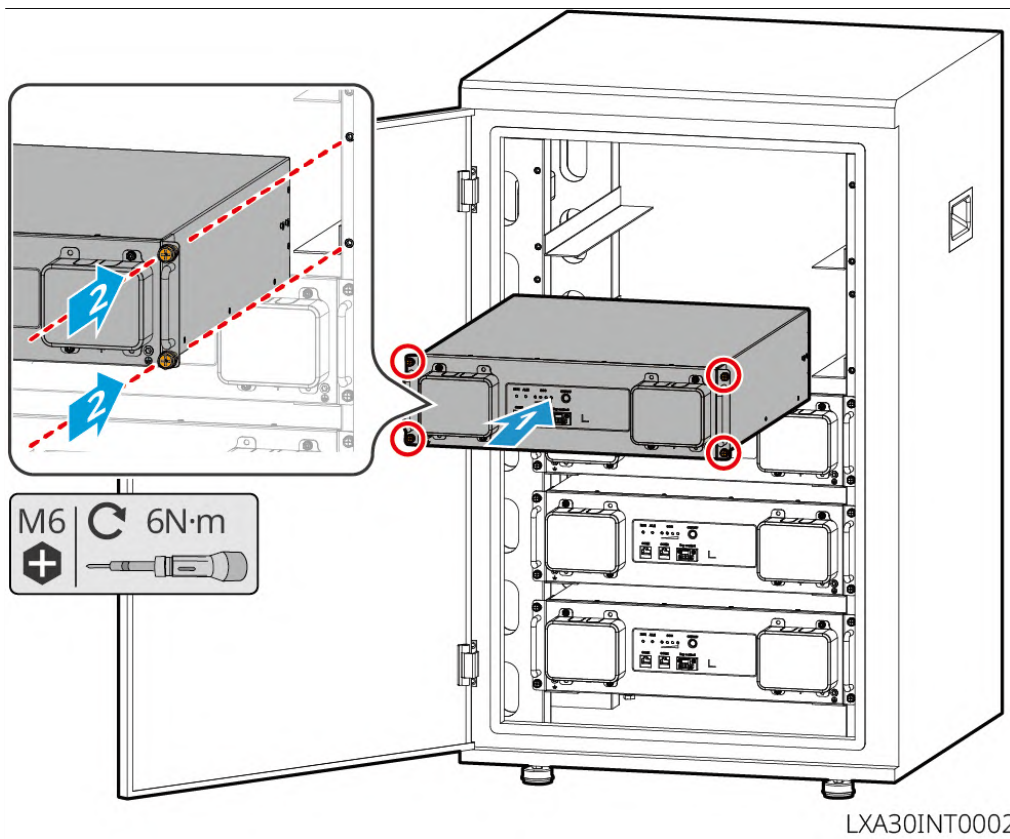


LX A5.0-30: Cabinet Installation

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).

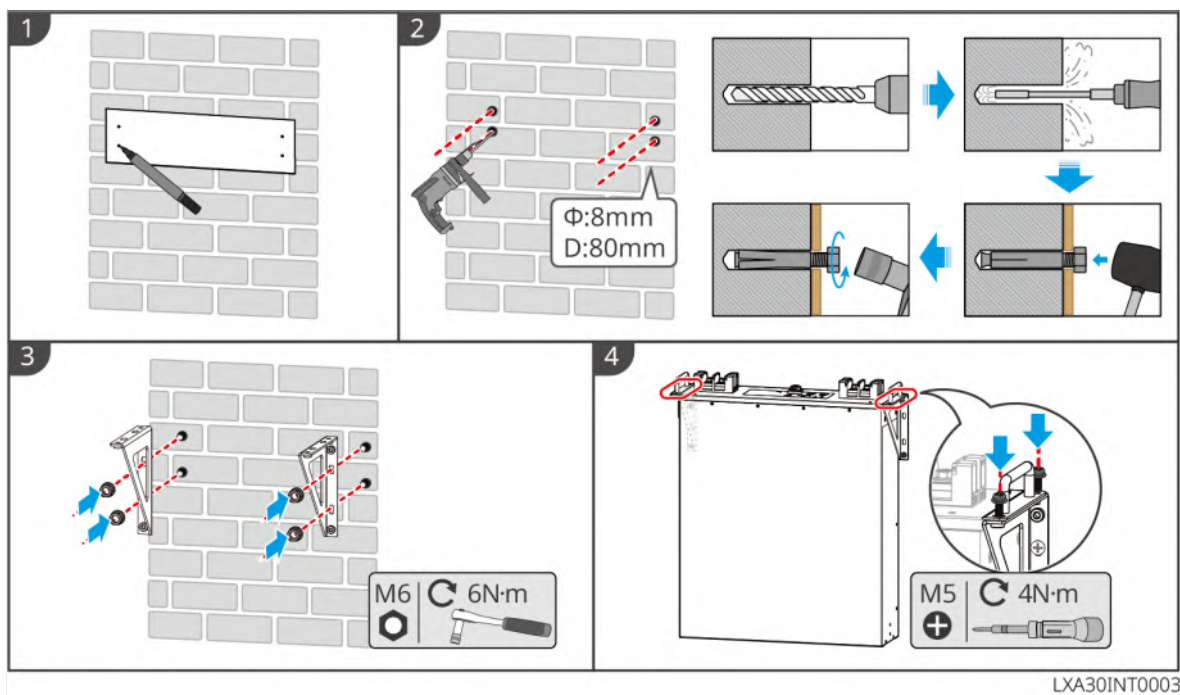
1. Place the Battery onto the guide rails of the cabinet, and use the screw to fasten the Battery to the cabinet from the Handle.



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.



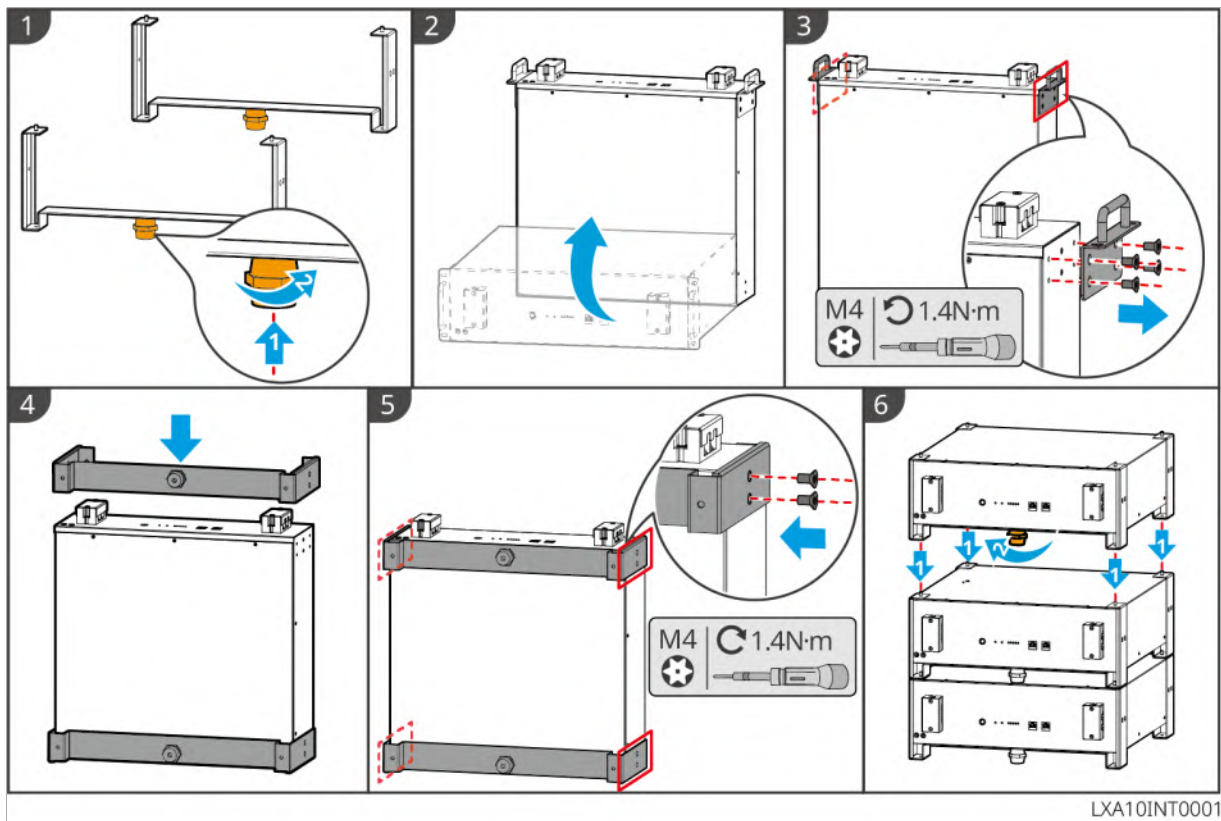
4.5.2 LX A5.0-10

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.

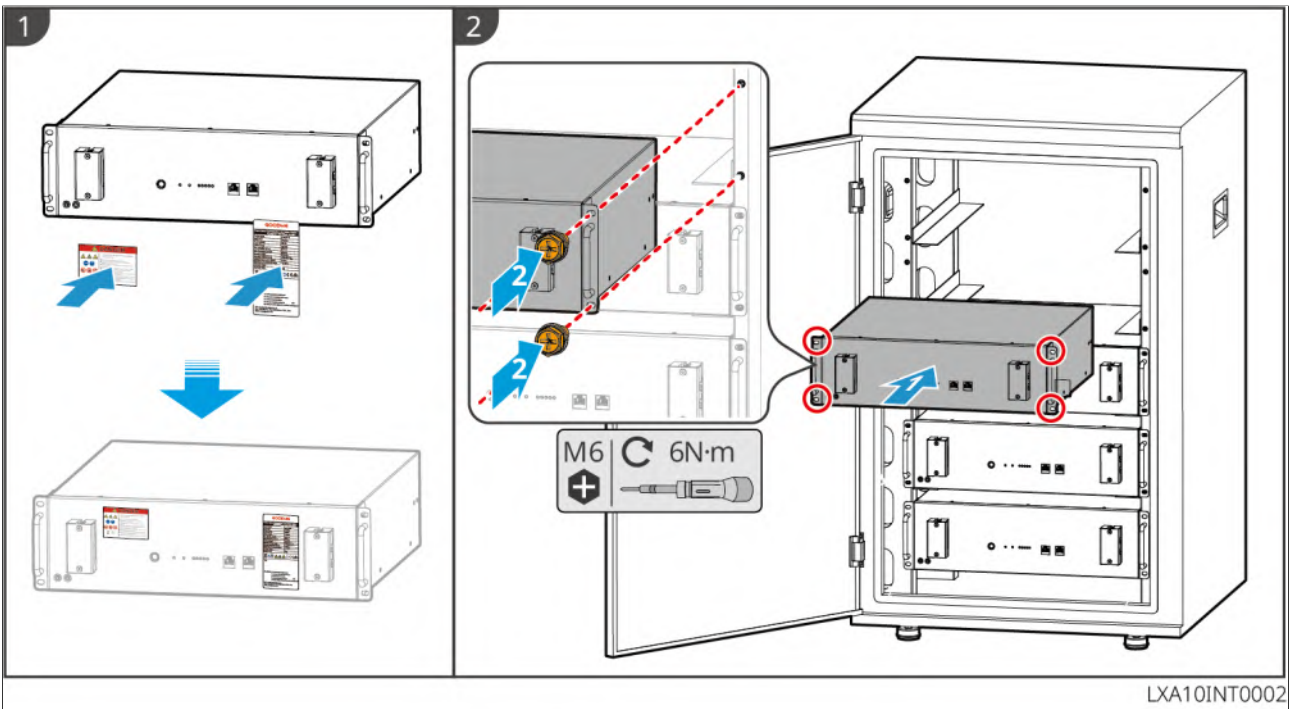


LX A5.0-10: Cabinet Installation

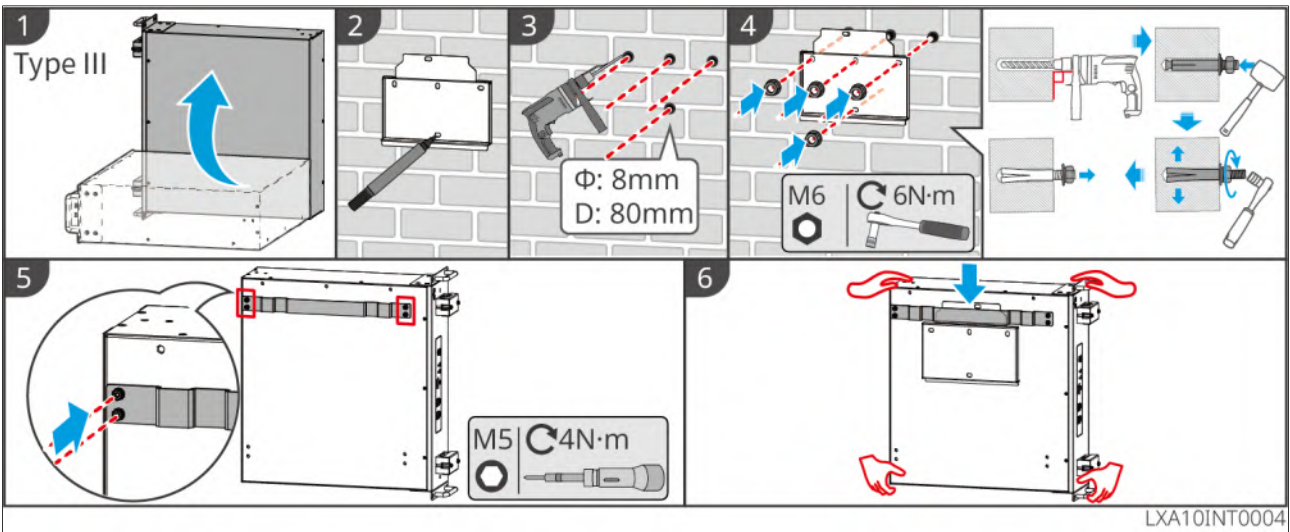
NOTICE

- 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

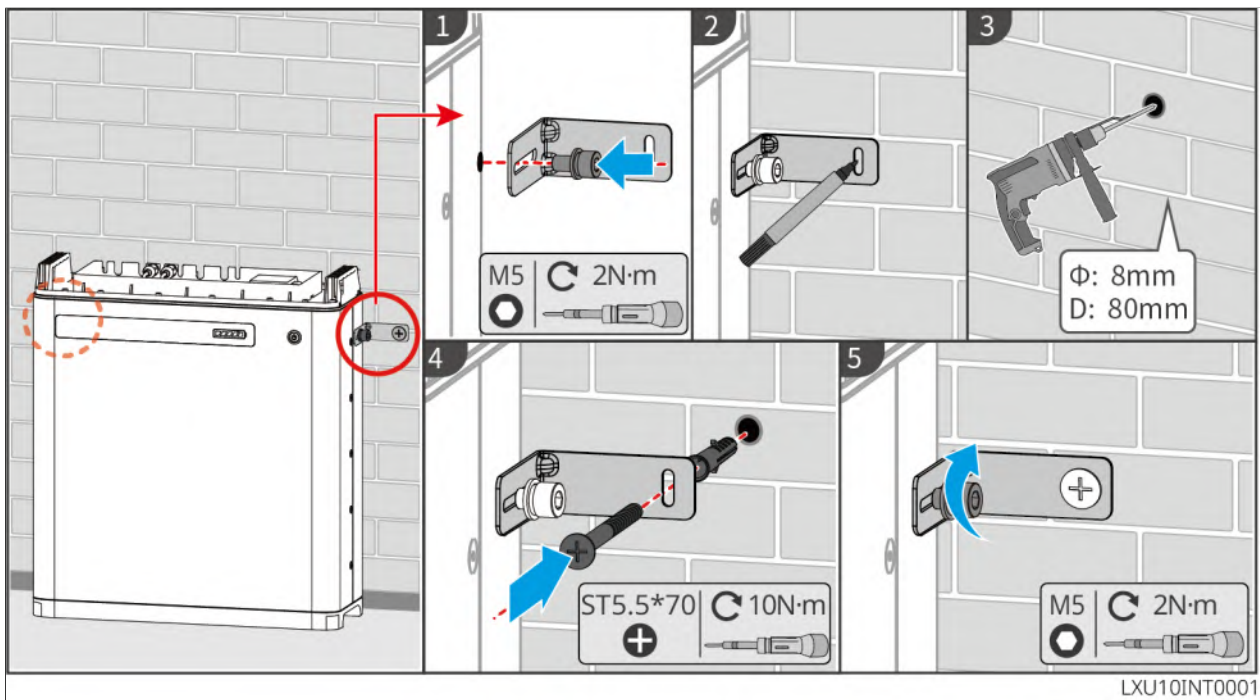
If parallel operation is required, check and select Battery with similar production dates and identical gear numbers for use together.

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

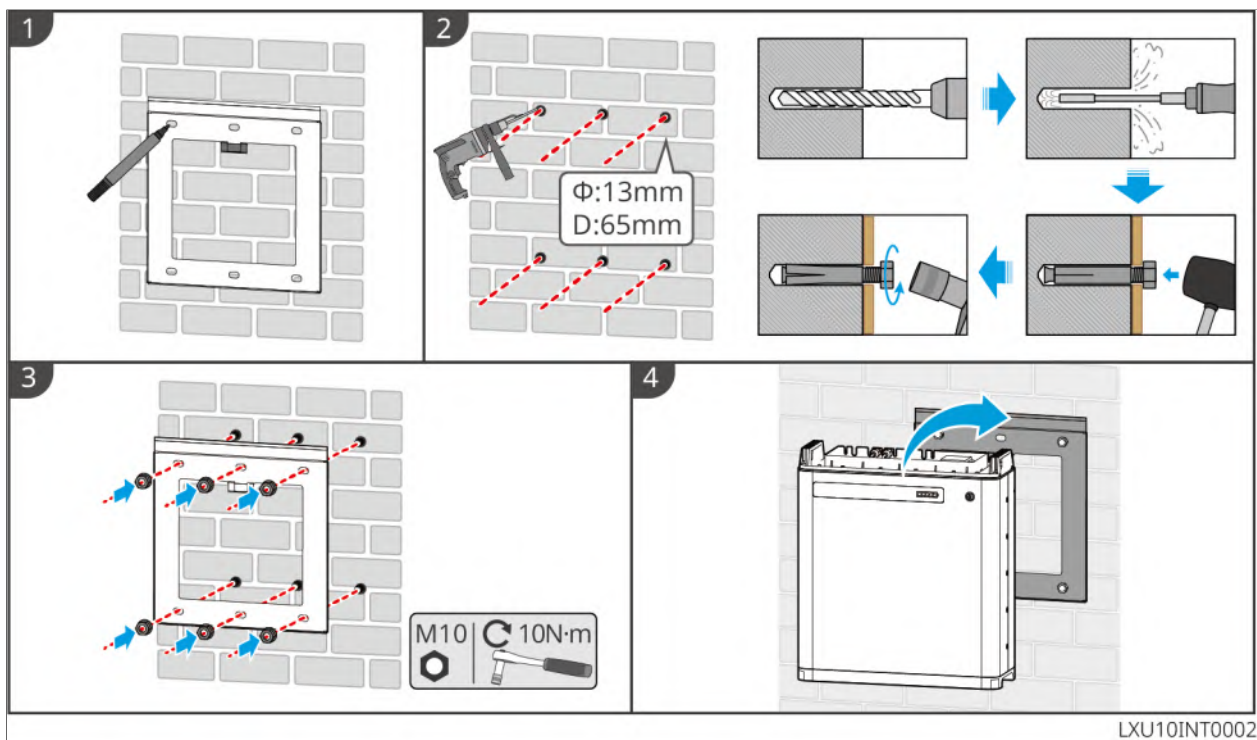
Wall-mounted installation requires two people.

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

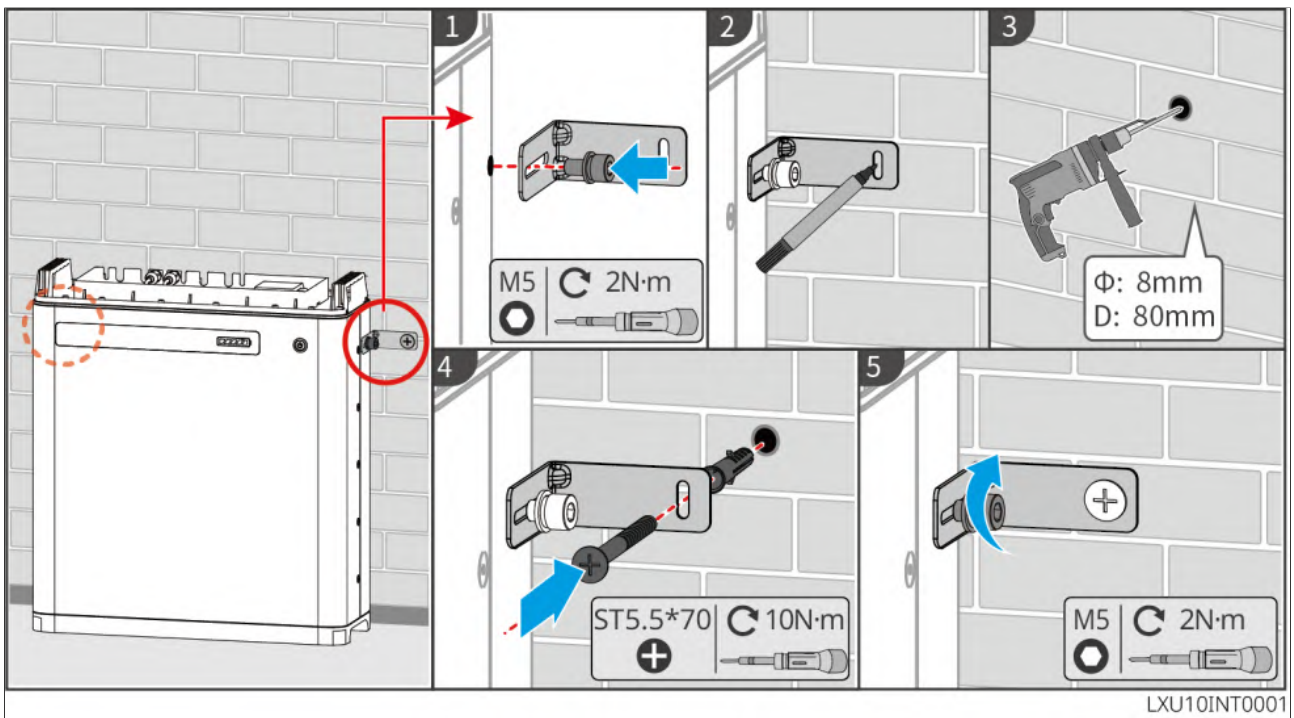
If parallel operation is required, check and select Battery with similar production dates and the same gear number for use together.

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

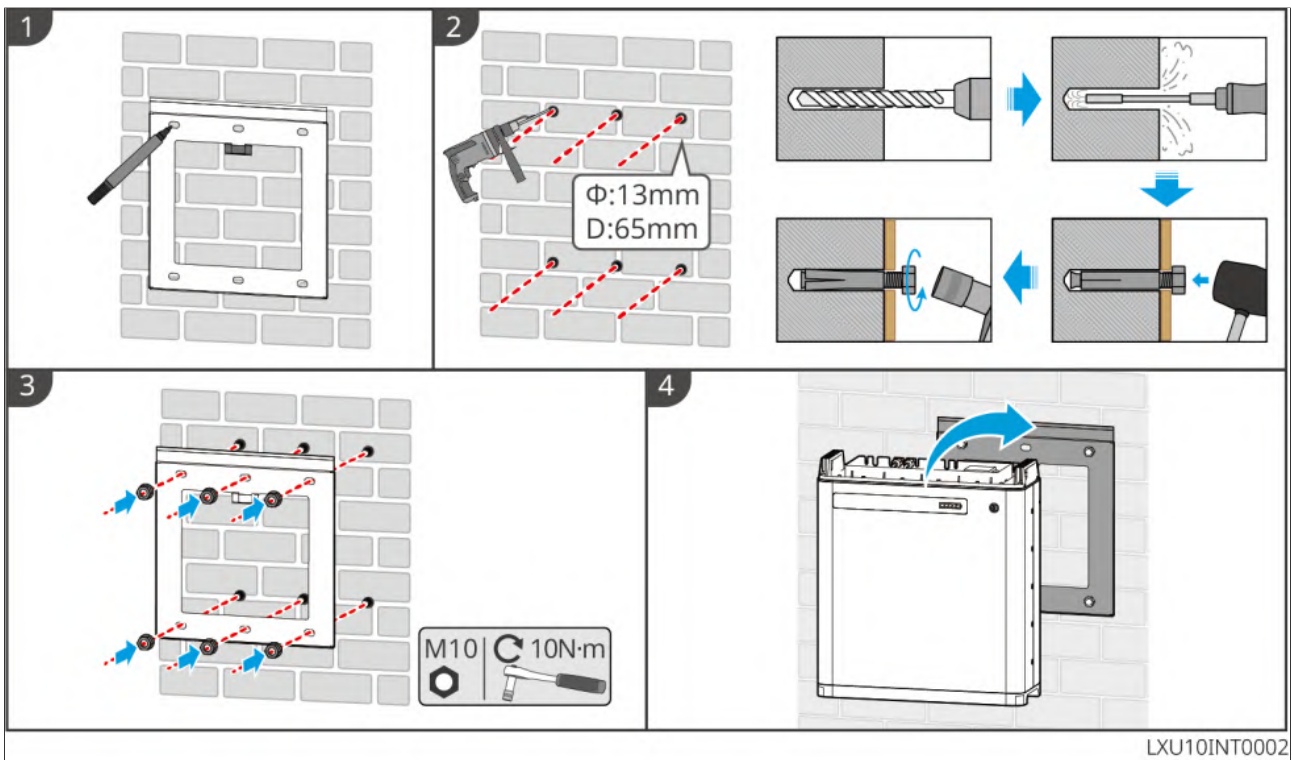
Wall-mounted installation requires two people.

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.

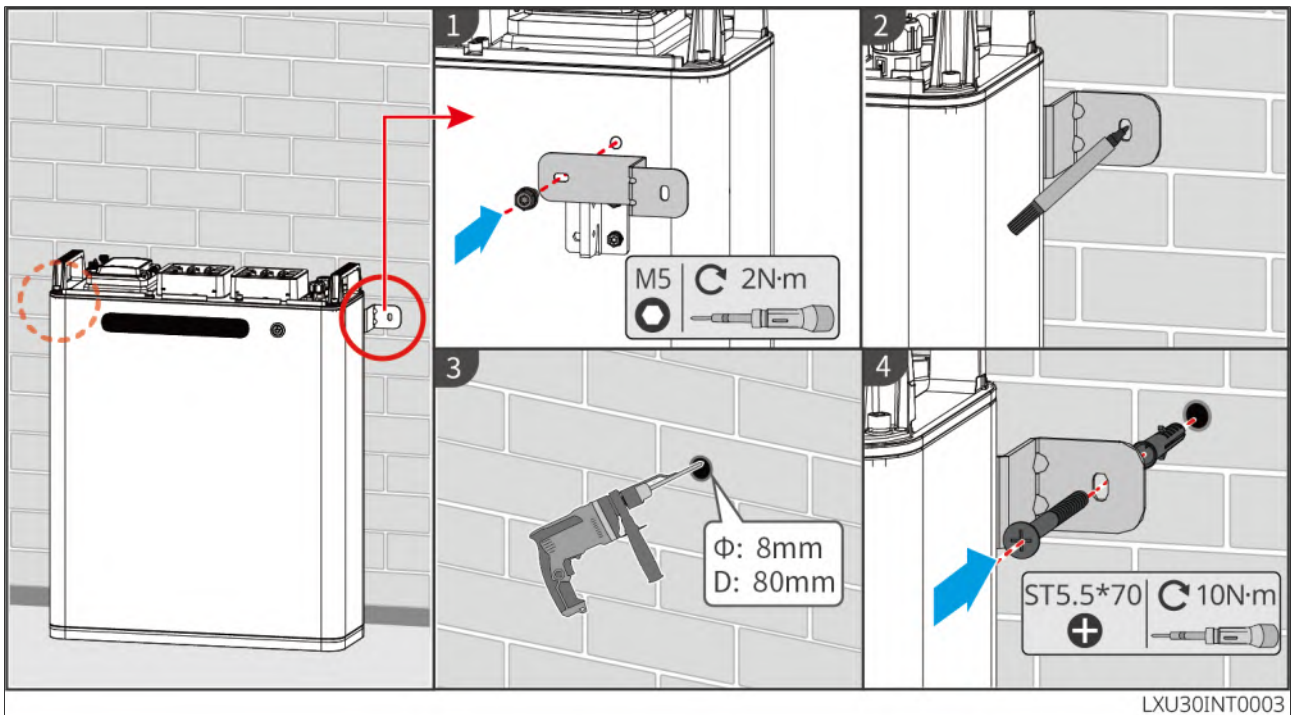
Step 3: Tighten the mounting plate.

Step 4: Connect the Battery Installation to the mounting plate.

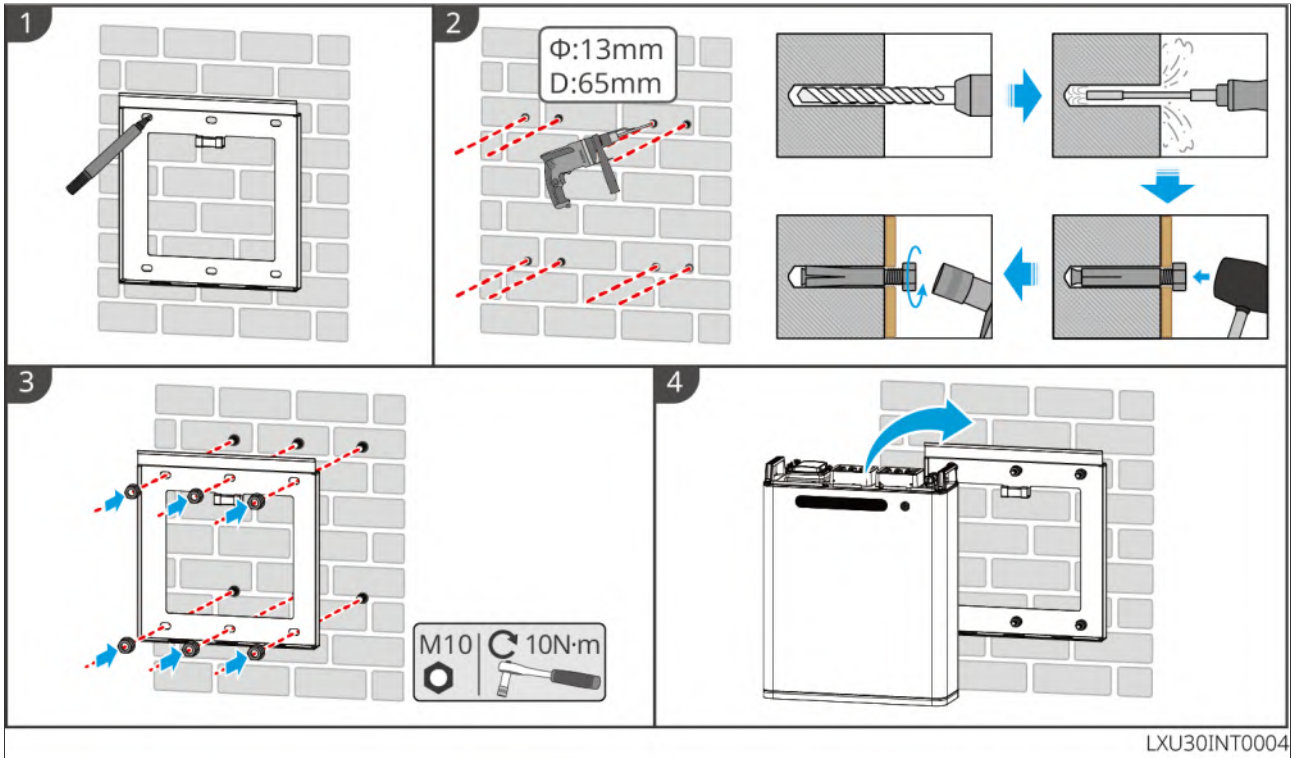


4.5.5 LX U5.0-30

LX U5.0-30: Floor-mounted Installation



LX U5.0-30: Wall-mounted Installation



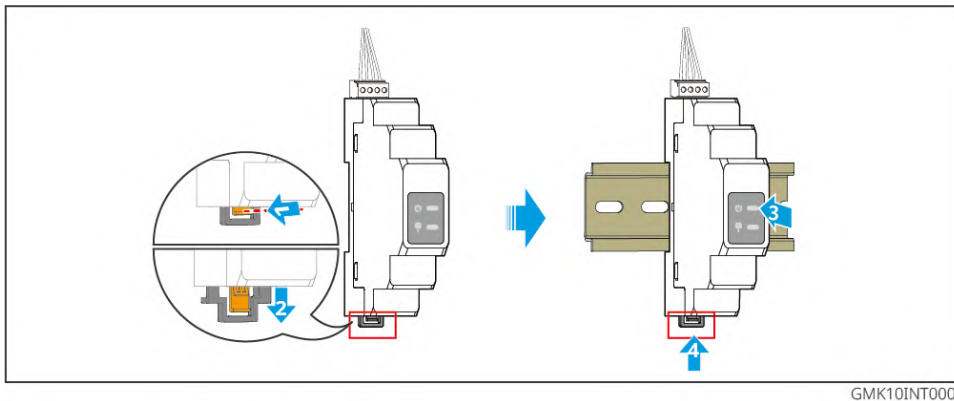
4.6 Installing the Smart Meter



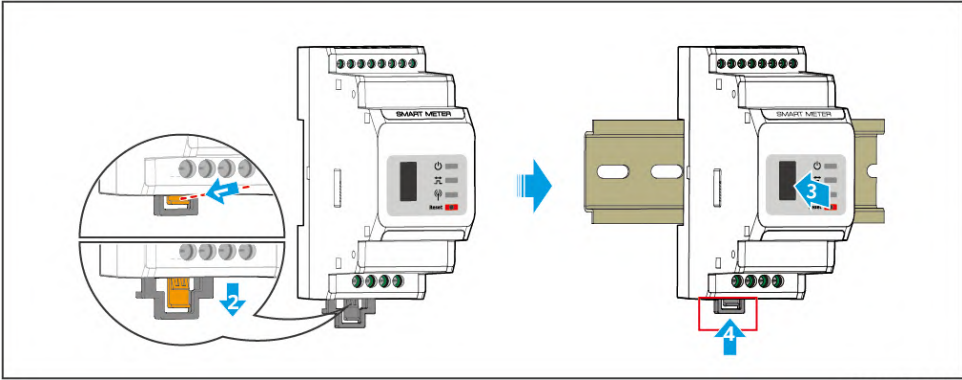
WARNING

In areas with lightning hazard, if the meter cable length exceeds 10m and the cable is not routed using grounded metal conduit, it is recommended to install external lightning protection devices.

GMK110,GMK110D



GM1000,GM1000D,GM3000



GMK10INT0002

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 makes full contact with the wiring terminal. Do not crimp the cable insulation together with the wiring terminal, as this may cause the equipment to fail to operate or result in unreliable connections leading to overheating, which could damage 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 Safety Precautions corresponding to the relevant products in the system.

5.1 System Wiring Electrical Block Diagram

NOTICE

- Depending on regional regulatory requirements, the wiring methods for the N and PE lines of the inverter's ON-GRID and BACK-UP ports differ. Please follow local regulations.
- The inverter's ON-GRID AC port has a built-in relay. When the inverter is in off-grid mode, the built-in ON-GRID relay is open; when the inverter is in grid-tied operation mode, the built-in ON-GRID relay is closed.
- After the inverter is powered on, the BACK-UP AC port is live. If maintenance on the BACK-UP Loads is required, please power down the inverter to avoid the risk of electric shock.

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

NOTICE

- To maintain neutral integrity, the neutral wires of the grid-connected side and off-grid side must be connected together; otherwise, the off-grid function cannot operate properly.
- For grid systems in regions such as Australia and New Zealand:

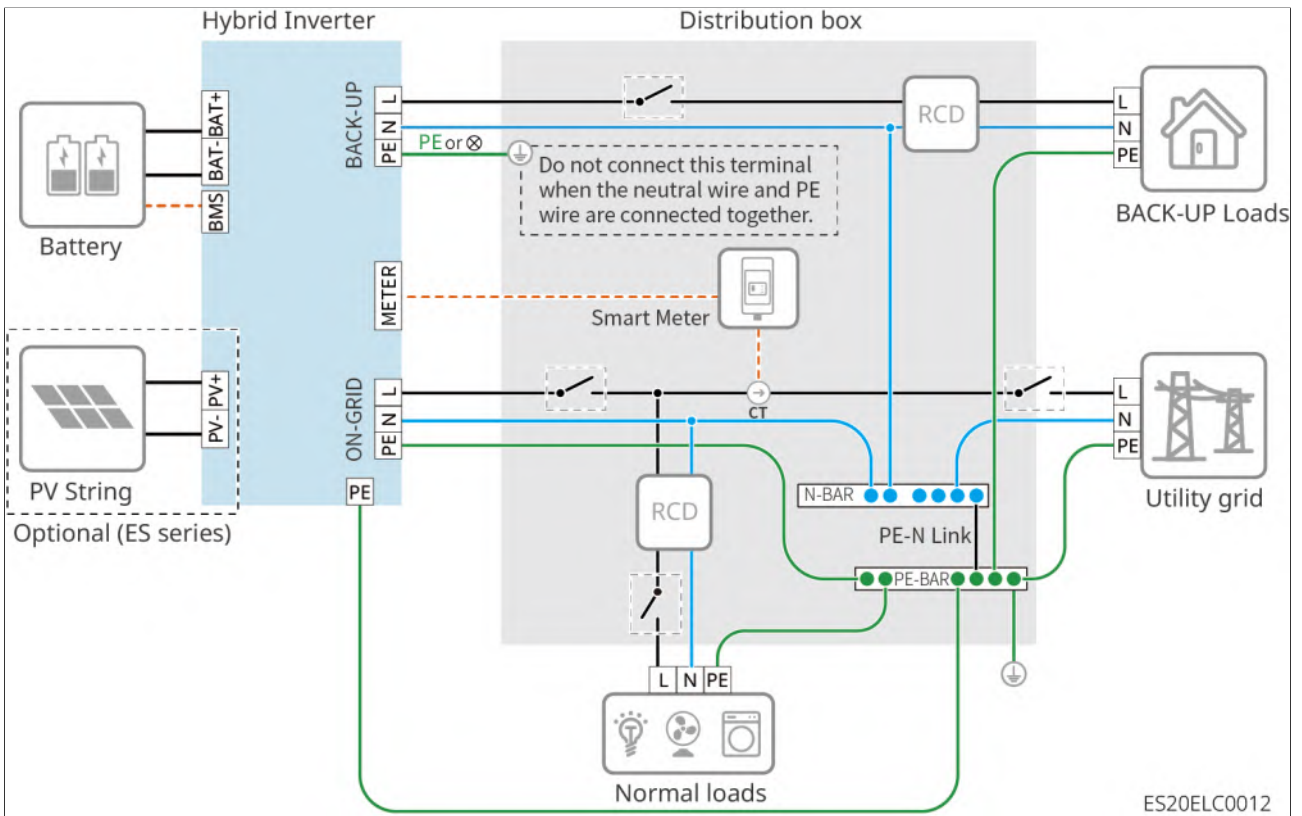


Figure13 Regions such as Australia and New Zealand

N and PE wires are wired separately in the distribution box.

NOTICE

- Please ensure that the protective ground wire of BACK-UP is connected correctly and securely, otherwise the BACK-UP function may become abnormal when a grid fault occurs.
- Other regions except Australia, New Zealand, etc. are applicable to the following wiring methods:

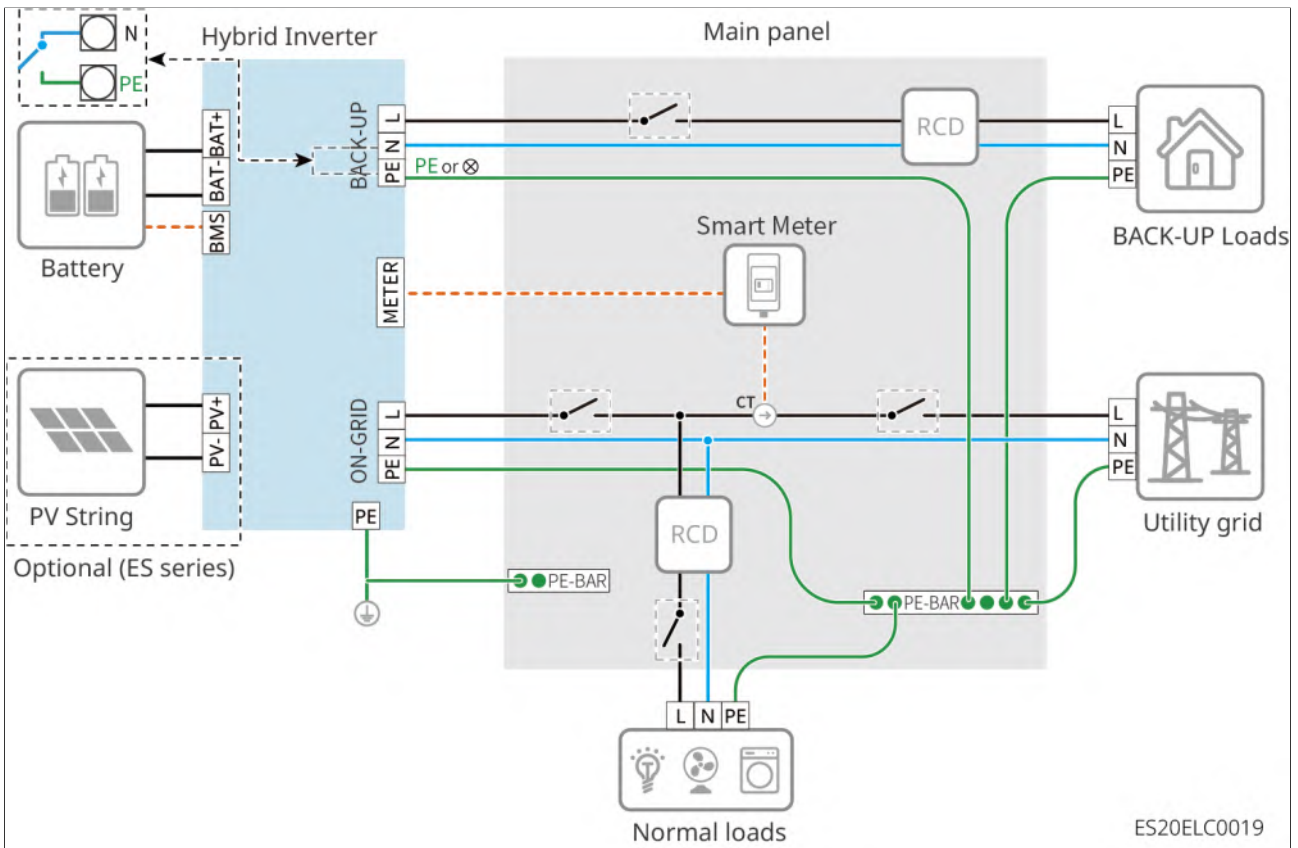


Figure14 Other regions except for areas like Australia and New Zealand

5.2 Detailed System Wiring Diagram

5.2.1 Detailed System Wiring Diagram for Single Inverter

General Scenario

In single-inverter scenarios, other meters such as GM330 that meet the requirements can also be used. Here, only the recommended types are displayed.

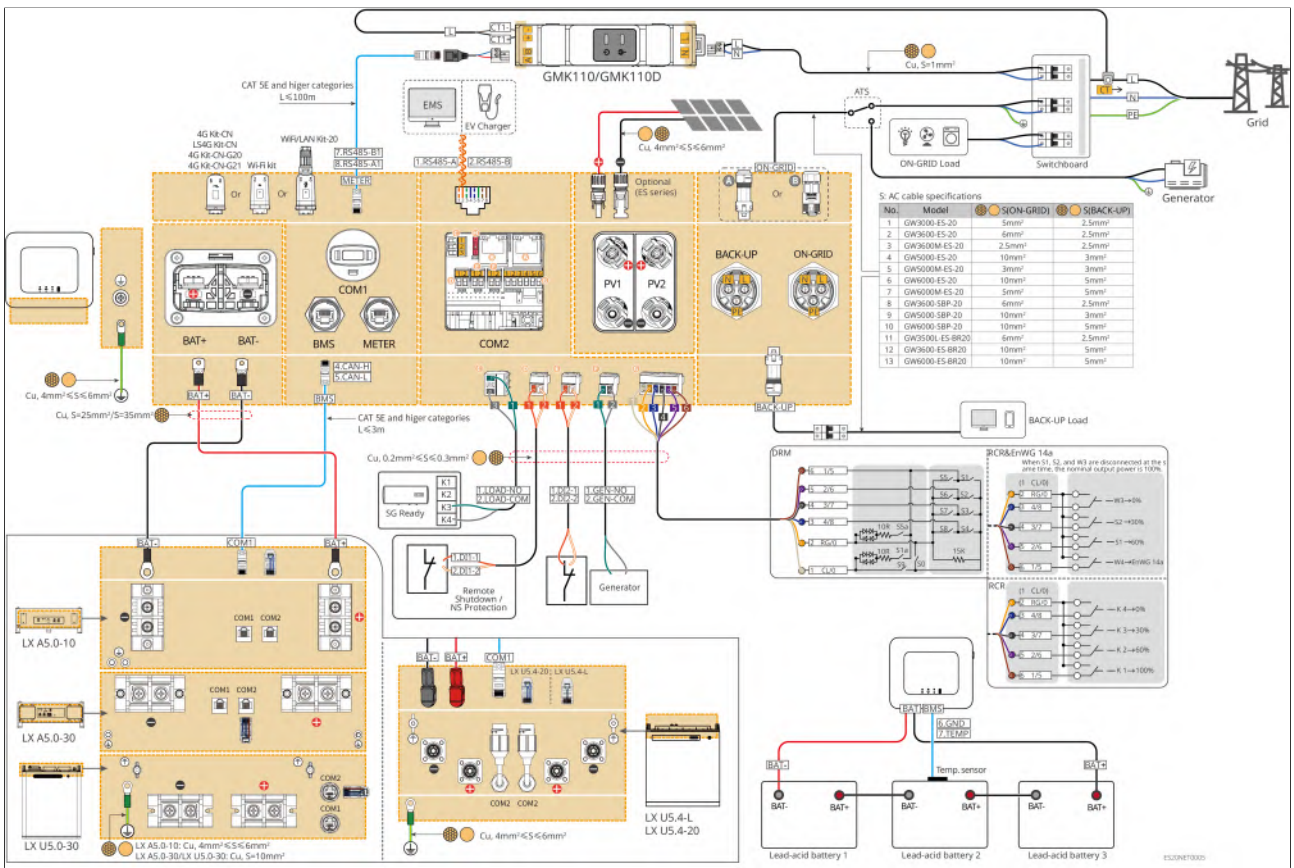


Figure15 Scenario with GMK110/GMK110D Meter

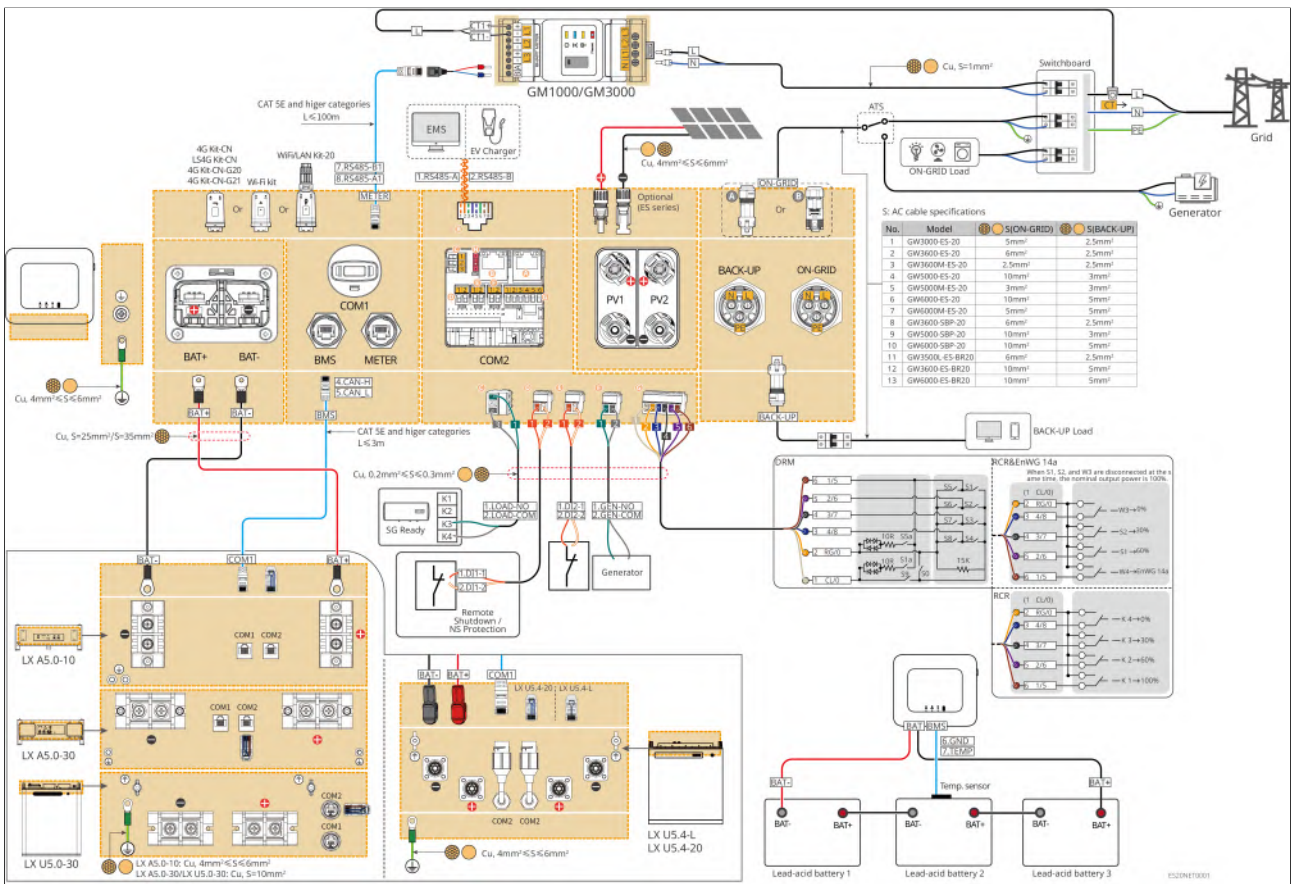


Figure16 Scenario with GM1000/GM3000 Meter

Coupling Scenario Load Monitoring and Grid-tied Inverter Power Generation Monitoring Networking Solution

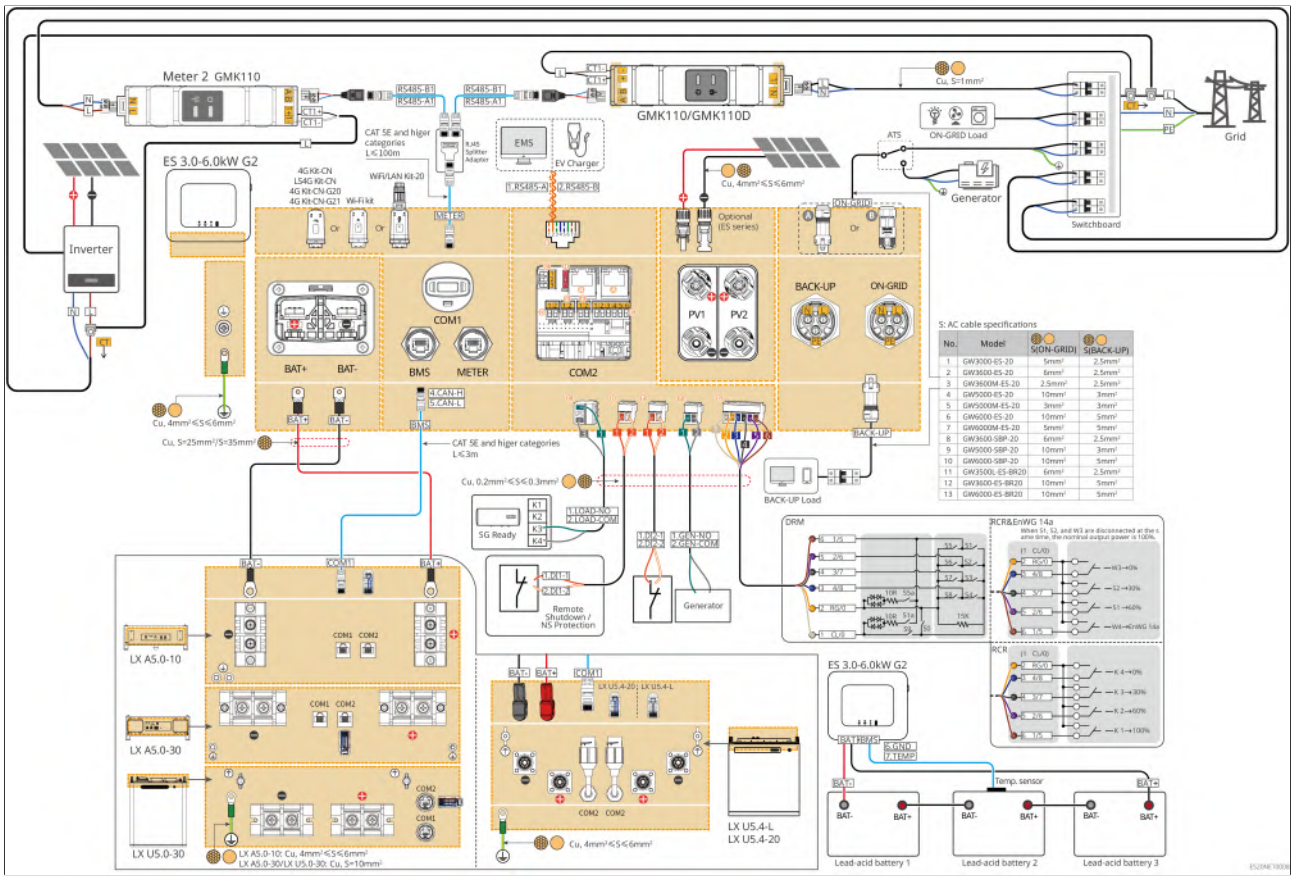


Figure17 GMK110/GMK110D + GMK110 Scenario

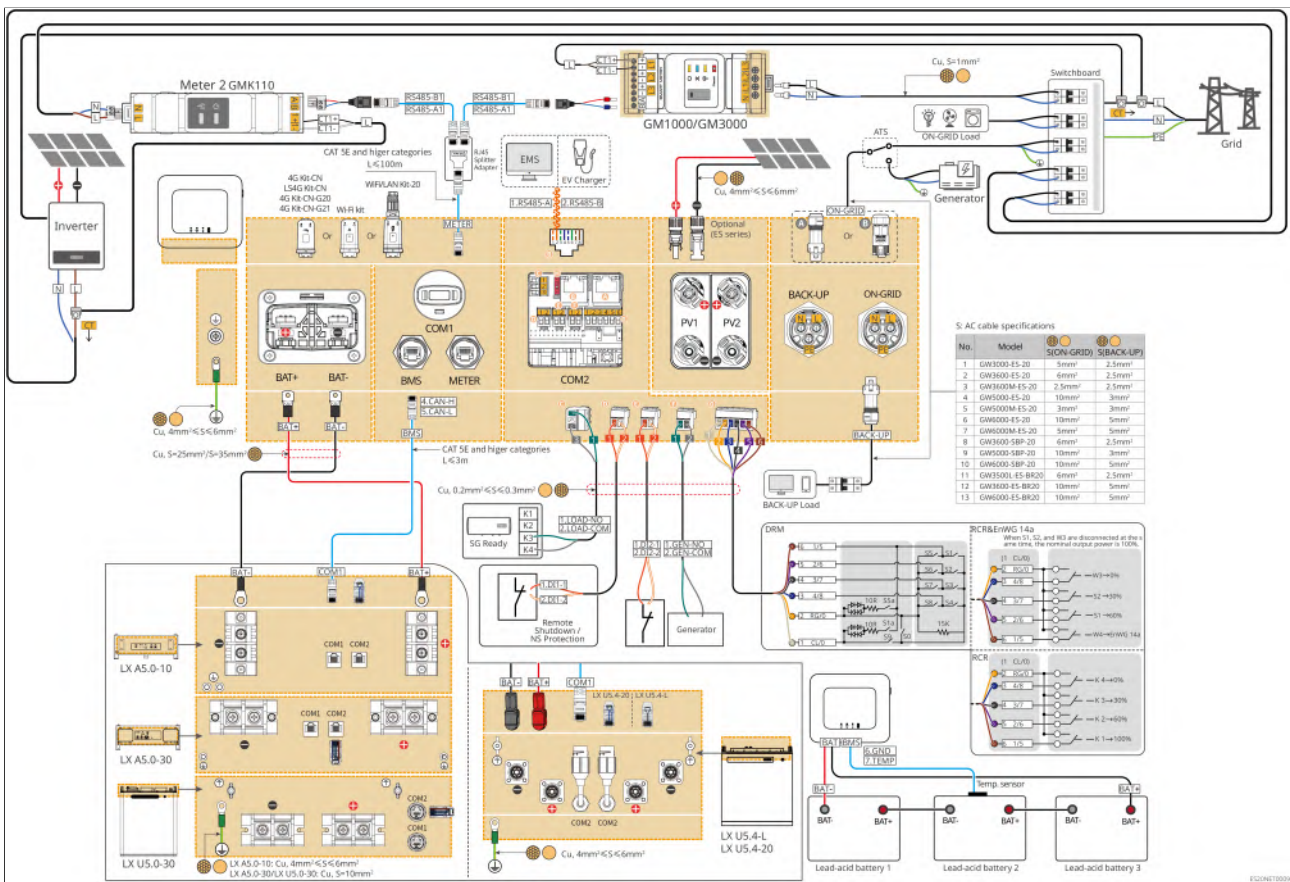


Figure18 GM1000/GM3000 + GMK110 Scenario

5.2.2 Detailed System Wiring Diagram for Parallel System

- In a parallel system, the inverter connected to the Ezlink smart communication stick and the meter is the master inverter, while the others are slave inverters. Do not connect the smart communication stick to slave inverters in the system.
- The parallel system does not support connection to a generator.
- The following diagrams focus on the wiring related to the parallel system. For requirements on other port connections, please refer to the single-unit system.

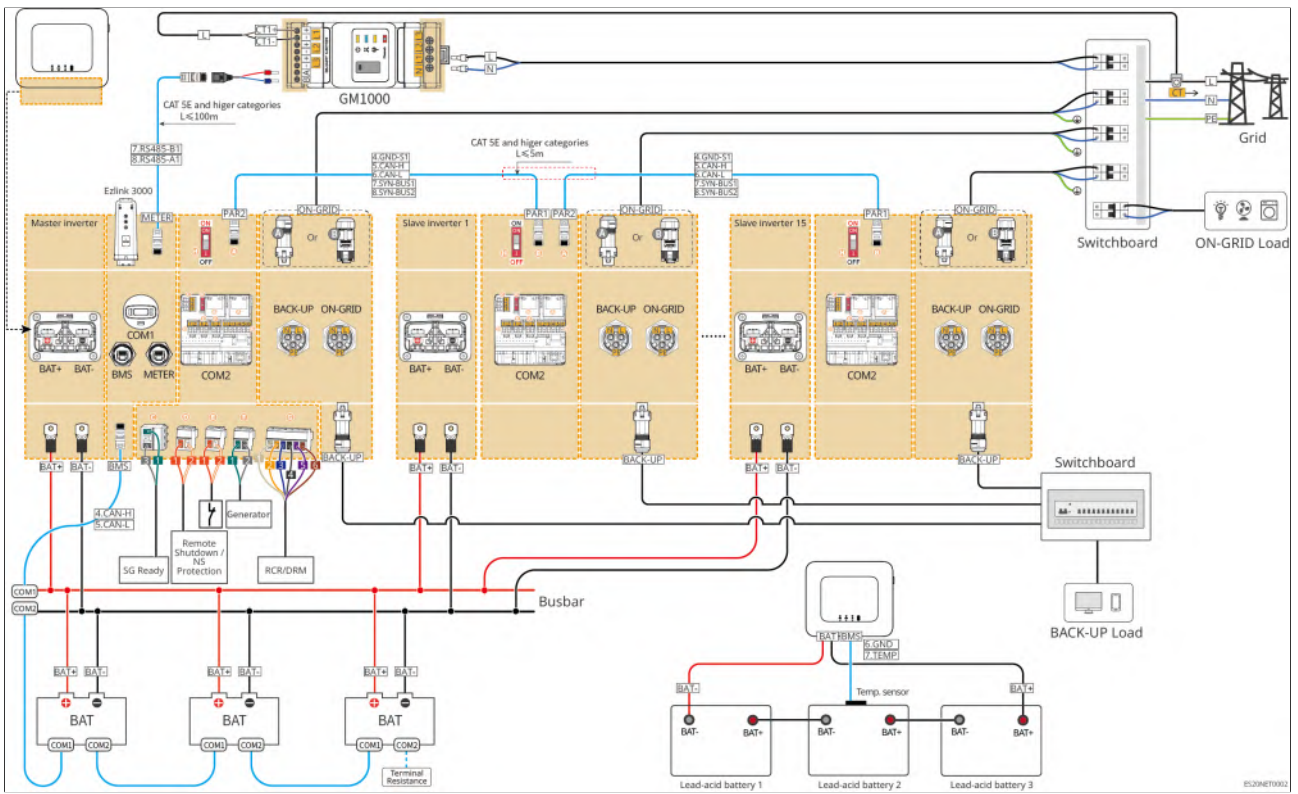
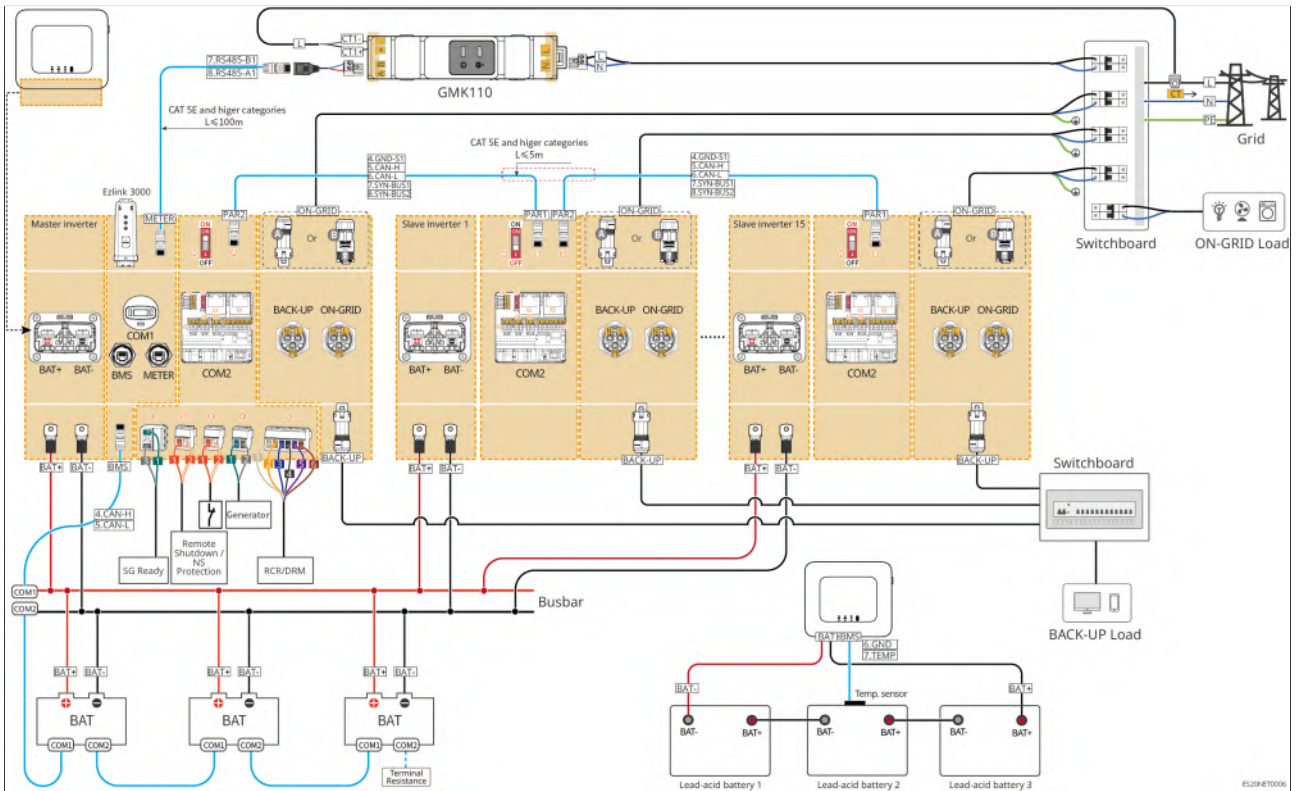


Figure19 Scenario with GM1000



5.3 Preparing Materials

WARNING

- It is prohibited to connect loads between the inverter and the AC switch directly connected to the inverter.
- Each inverter must be equipped with an AC output circuit breaker. Multiple inverters must not be connected to a single AC circuit breaker simultaneously.
- To ensure the inverter can safely disconnect from the grid in case of an abnormality, please install an AC circuit breaker on the AC side of the inverter. Select a suitable AC circuit breaker according to local regulations.
- When the inverter is powered on, the BACK-UP AC ports are live. If maintenance on the BACK-UP Loads is required, please power down the inverter; otherwise, electric shock may occur.
- For cables used within the same system, it is recommended that the following be consistent: conductor material, cross-sectional area, length, etc.
 - BACK-UP AC cable for each inverter
 - ON-GRID AC cable for each inverter
 - Power cable between the inverter and the battery
 - Power cable between batteries
 - Power cable between the inverter and the busbar
 - Power cable between the battery and the busbar
- The system only supports connecting to a generator via an ATS switch in a single-unit scenario to achieve switching between grid and generator power supply. The ATS switch is by default connected to the grid.

5.3.1 Preparing Breakers

No.	breaker	Recommended Specifications	Remarks
1	ON-GRID breaker BACK-UP Loads breaker	<p>For the same model, the BACK-UP breaker and ON-GRID breaker have the same specifications. Specification requirements:</p> <ul style="list-style-type: none"> • GW3600M-ES-20: Rated Current $\geq 20A$, Nominal Voltage $\geq 230V$ • GW3000-ES-20, GW5000M-ES-20, GW6000M-ES-20: Rated Current $\geq 35A$, Nominal Voltage $\geq 230V$ • GW3600-ES-20, GW3600-ES-BR20: Rated Current $\geq 40A$, Nominal Voltage $\geq 230V$ • GW3500L-ES-BR20, GW5000-ES-20, GW6000-ES-20, GW6000-ESBR20: Rated Current $\geq 63A$, Nominal Voltage $\geq 230V$ 	Self - provided
2	ATS switch	<p>For the same model, the ATS switch and ON-GRID breaker have the same specifications. Specification requirements (recommended):</p> <ul style="list-style-type: none"> • GW3600M-ES-20: Rated Current $\geq 20A$ • GW3000-ES-20, GW5000M-ES-20, GW6000M-ES-20: Rated Current $\geq 35A$ • GW3600-ES-20, GW3600-ES-BR20: Rated Current $\geq 40A$ <p>GW3500L-ES-BR20, GW5000-ES-20, GW6000-ES-20, GW6000-ESBR20: Rated Current $\geq 63A$</p>	Self - provided
3	Battery switch	<p>Select according to local laws and regulations.</p> <ul style="list-style-type: none"> • GW3000-ES-20, GW3600M-ES-20, GW5000M-ES-20, GW6000M-ES-20: Rated Current $\geq 75A$, Nominal Voltage $\geq 60V$. • GW3600-ES-20, GW3500L-ES-BR20, GW3600-ES-BR20: Rated Current $\geq 100A$, Nominal Voltage $\geq 60V$. • GW5000-ES-20, GW6000-ES-20, GW6000-ES-BR20: Rated Current $\geq 150A$, Nominal Voltage $\geq 60V$. 	Self - provided

No.	breaker	Recommended Specifications	Remarks
4	RCD	<p>Select according to local laws and regulations.</p> <ul style="list-style-type: none"> • Type A • ON-GRID side: 300mA • BACK-UP side: 30mA 	Self-provided

5.3.2 Preparing Cables

No.	Cable	Recommended Specifications	Acquisition Method
1	Inverter Protection Ground Wire	<ul style="list-style-type: none"> • Single-core outdoor copper cable • Conductor cross-sectional area: 4-6mm² 	Self-provided
2	Battery Protection Ground Wire	<ul style="list-style-type: none"> • Single-core outdoor copper cable • Conductor cross-sectional area: <ul style="list-style-type: none"> ◦ LX A5.0-10, LX U5.4-L, LX U5.4-20: 4mm²-6mm² ◦ LX A5.0-30, LX U5.0-30: 10mm² 	Self-provided LX A5.0-30, LX U5.0-30: Available for purchase from GoodWe
3	PV DC Cable	<ul style="list-style-type: none"> • Industry-standard outdoor photovoltaic cable • Conductor cross-sectional area: 4mm²-6mm² • Cable outer diameter: 5.9mm-8.8mm 	Self-provided

No.	Cable	Recommended Specifications	Acquisition Method
4	Battery DC Cable	<ul style="list-style-type: none"> • Single-core outdoor copper cable • Inverter battery port connection requirements: <ul style="list-style-type: none"> ◦ Conductor cross-sectional area: 25mm²-35mm² ◦ Cable outer diameter: 15.7mm-16.7mm • Cable requirements between battery and busbar: <ul style="list-style-type: none"> ◦ LX A5.0-30, conductor cross-sectional area: 50mm² ◦ LX A5.0-10, LX U5.4-L, LX U5.4-20, LX U5.0-30, conductor cross-sectional area: 25mm² • Cable requirements between batteries: <ul style="list-style-type: none"> ◦ LX A5.0-30, conductor cross-sectional area: 50mm² ◦ LX A5.0-10, LX U5.4-L, LX U5.4-20, LX U5.0-30, conductor cross-sectional area: 25mm² (NOTICE: When LX U5.0-30 is not connected to the busbar, the recommended conductor cross-sectional area is 35mm²) 	<p>Self-provided LX A5.0-30, LX U5.0-30: Available for purchase from GoodWe</p>
5	BACK-UP, ON-GRID AC Cable	Multi-core or single-core outdoor copper cable, specific specifications please refer to the table below	Self-provided
6	Smart Meter Power Cable	<ul style="list-style-type: none"> • Outdoor copper cable • Conductor cross-sectional area: 1mm² 	Self-provided

No.	Cable	Recommended Specifications	Acquisition Method
7	Communication cable	<p>CAT 5E or above standard shielded network cable and RJ45 shielded connector</p> <p>Applicable to the following cables:</p> <ul style="list-style-type: none"> • Communication cable between batteries • Meter RS485 communication cable • Inverter parallel communication cable • EMS communication cable • Charging pile communication cable 	Self-provided LX A5.0-30, LX U5.0-30 battery communication cable: Available for purchase from GoodWe
8		<p>Copper twisted pair, conductor cross-sectional area: 0.2mm²-0.3mm²</p> <p>Applicable to the following cables:</p> <ul style="list-style-type: none"> • Load control communication cable • Generator control communication cable • Remote shutdown communication cable • NS Protection communication cable • RCR/DRED communication cable 	Self-provided

※S: AC cable specifications / AC cable specification requirements:

No.	model	S (ON-GRID)	S (BACK-UP)
1	GW3000-ES-20	5mm ²	2.5mm ²
2	GW3600-ES-20	6mm ²	2.5mm ²
3	GW3600M-ES-20	2.5mm ²	2.5mm ²
4	GW5000-ES-20	10mm ²	3mm ²
5	GW5000M-ES-20	3mm ²	3mm ²
6	GW6000-ES-20	10mm ²	5mm ²

No.	model	S (ON-GRID)	S (BACK-UP)
7	GW6000M-ES-20	5mm ²	5mm ²
8	GW3600-SBP-20	6mm ²	2.5mm ²
9	GW5000-SBP-20	10mm ²	3mm ²
10	GW6000-SBP-20	10mm ²	5mm ²
11	GW3500L-ES-BR20	6mm ²	2.5mm ²
12	GW3600-ES-BR20	10mm ²	5mm ²
13	GW6000-ES-BR20	10mm ²	5mm ²

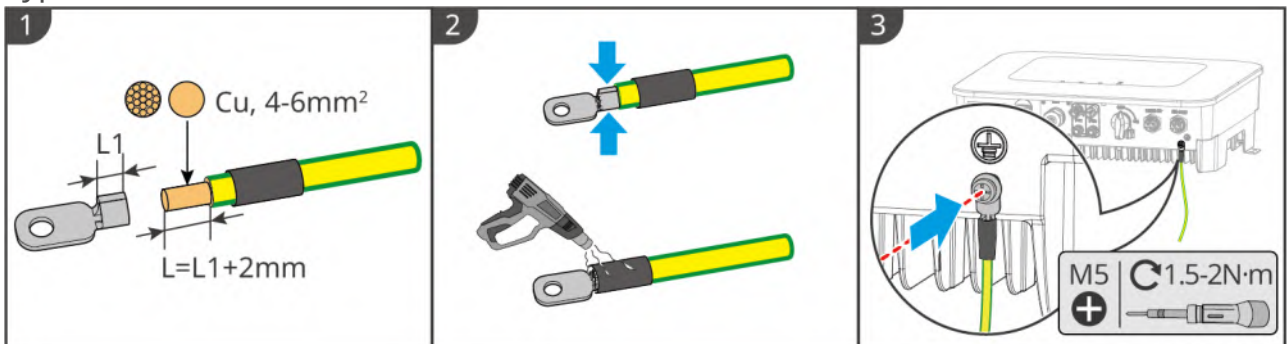
5.4 Connecting the PE cable

⚠ WARNING

- The protective grounding of the chassis cannot replace the protective ground wire of the AC output port. When wiring, ensure that the protective ground wires at both locations are reliably connected.
- For multiple devices, ensure that the protective grounding points of all device chassis are equipotentially connected.
- To improve the corrosion resistance of the terminals, it is recommended to apply silicone or paint on the exterior of the grounding terminals for protection after the protective ground wire connection is installed.
- When installing the device, the protective ground wire must be installed first; when removing the device, the protective ground wire must be removed last.

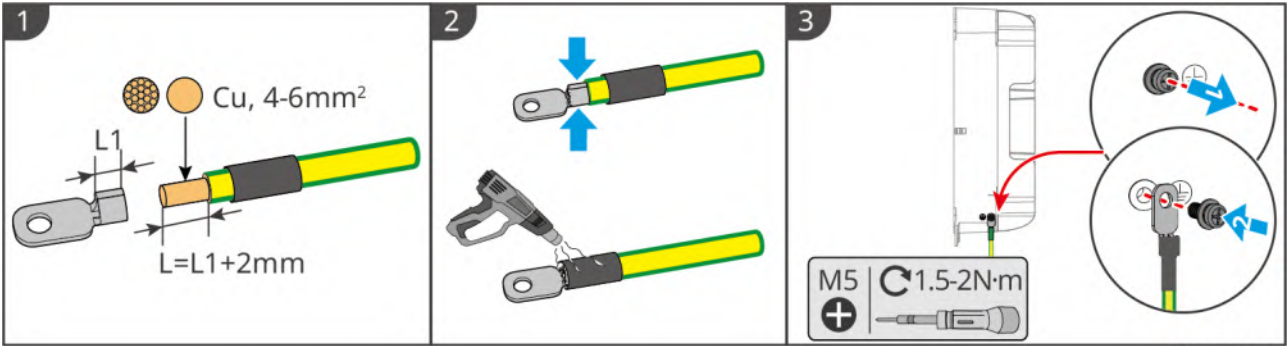
Inverter

Type one



ES20ELC0001

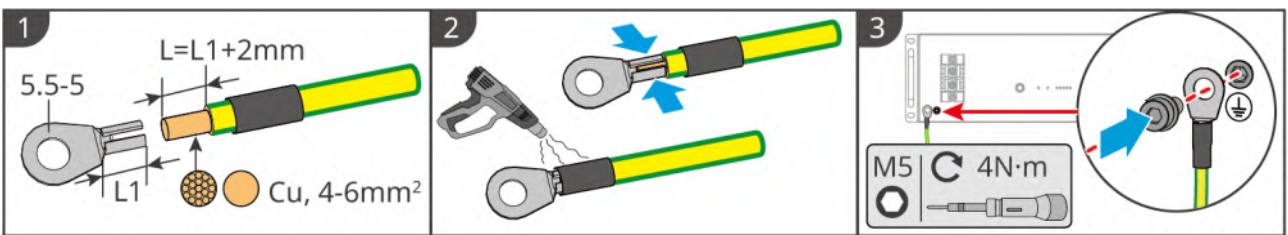
Type two



ES20ELC003

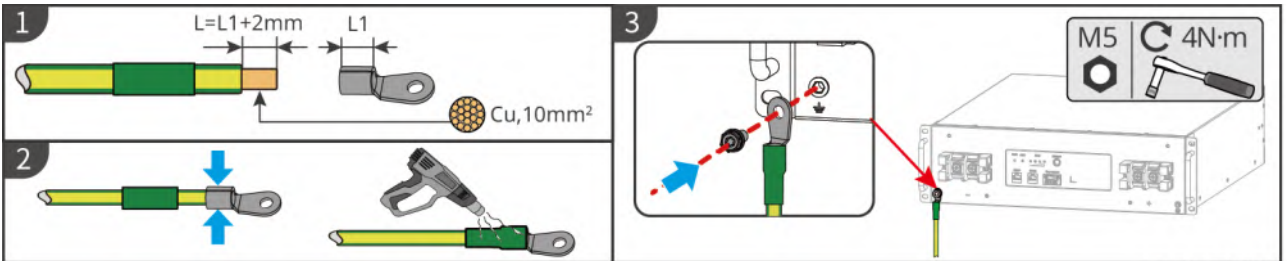
Battery

LX A5.0-10



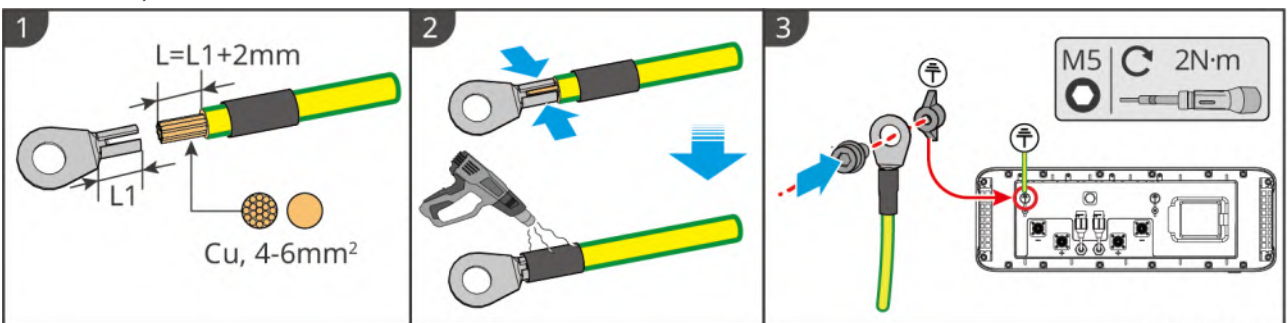
LXA10ELC003

LX A5.0-30



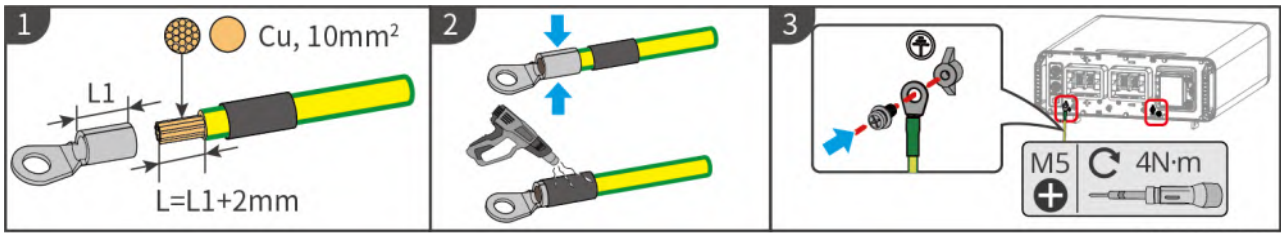
LXA30ELC001

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



LXU10ELC005

LX U5.0-30



LXU30ELC001

5.5 Connecting the PV Cable

DANGER

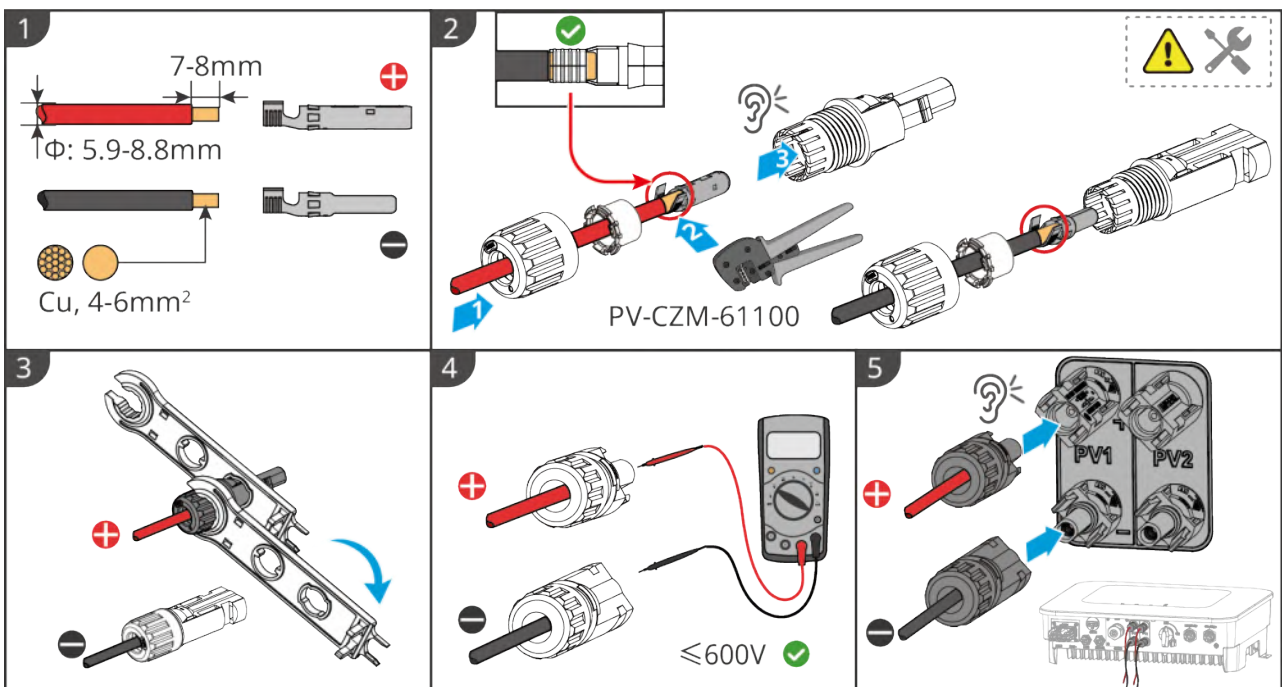
- Do not connect the same PV string to multiple Inverter, as this may cause damage to the Inverter.
- Before connecting the PV string to the Inverter, please verify the following information. Failure to do so may result in permanent damage to the Inverter, and in severe cases, may lead to fire, causing personal injury and property damage.
 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 ($R = \text{Max. Input Voltage} / 30\text{mA}$).
- After connecting DC cable, ensure the cable connection is secure and free from looseness.
- Use a multimeter to measure the positive and negative terminals 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, and the same tilt and azimuth angles to ensure the maximization of Efficiency.
- Connecting the PV Cable Only applicable to ES series models; SBP series models do not have PV connection port.
- The DC switch and PV terminal terminations of the SBP series machines have been sealed and blocked. Installation personnel and users are advised not to remove the accompanying termination plugs.



ES20ELC0002

5.6 Connecting the Battery Cable

! DANGER

- In a single-unit system, do not connect the same battery pack to multiple inverters, as this may cause inverter damage.
- Do NOT connect any load between the inverter and the battery.
- When connecting battery cables, use insulated tools to prevent accidental electric shock or battery short circuits.
- Ensure the battery open-circuit voltage is within the inverter's allowable range.
- Choose whether to install a DC switch between the inverter and the battery according to local laws and regulations.

Battery System Wiring Diagram

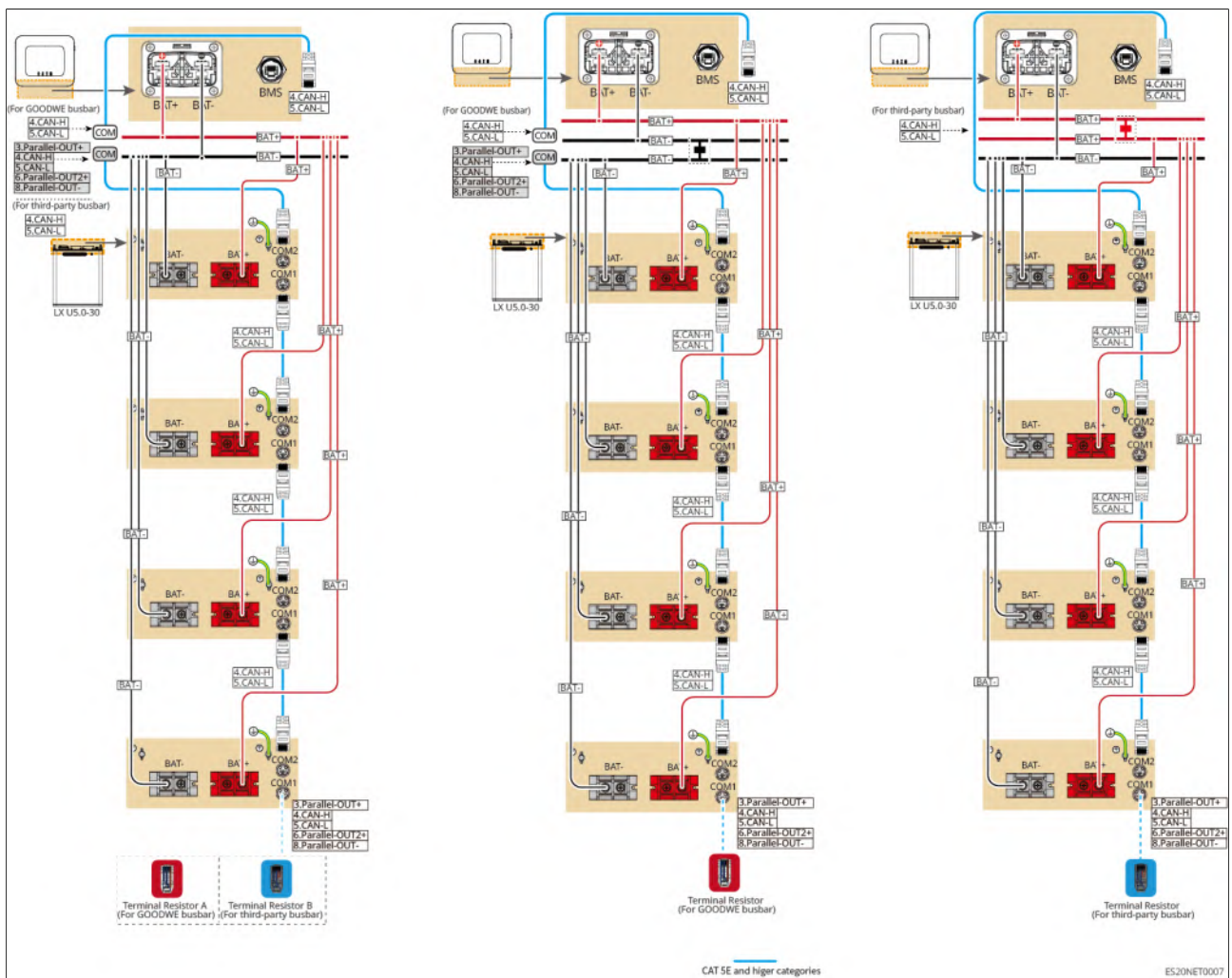


Figure21 Battery System Wiring Diagram

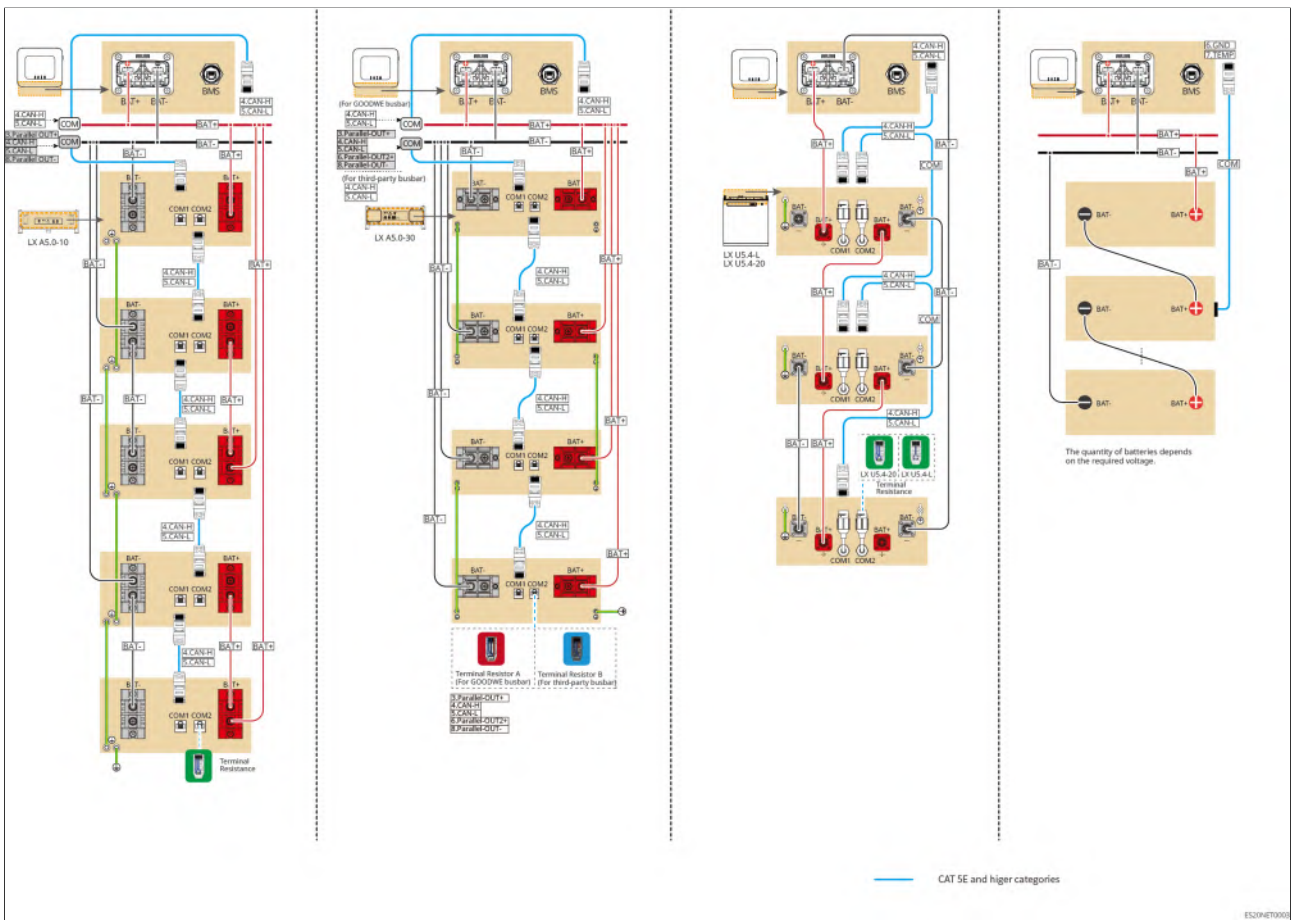


Figure 22 Battery System Wiring Diagram

LX A5.0-30: Daisy-chain Connection

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

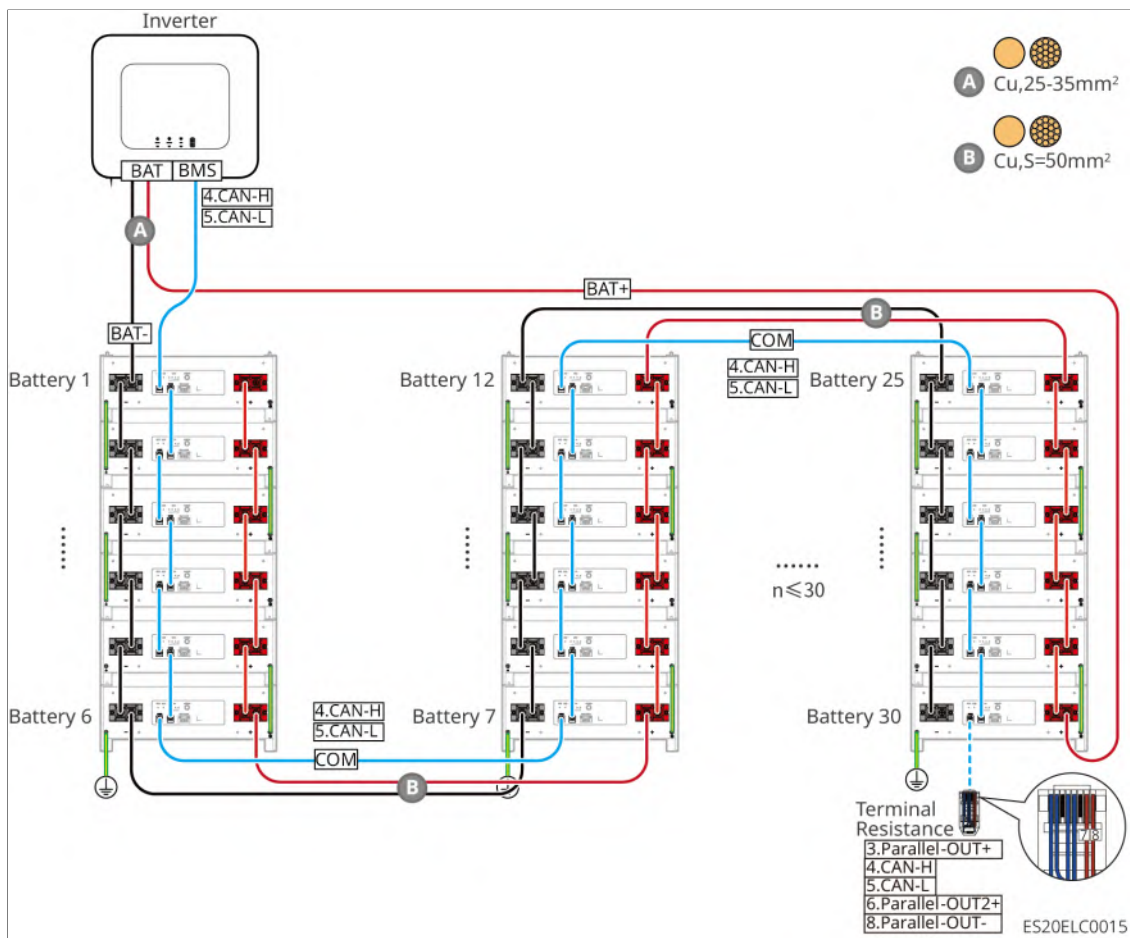


Figure23 LX A5.0-30: Daisy-chain Connection

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

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

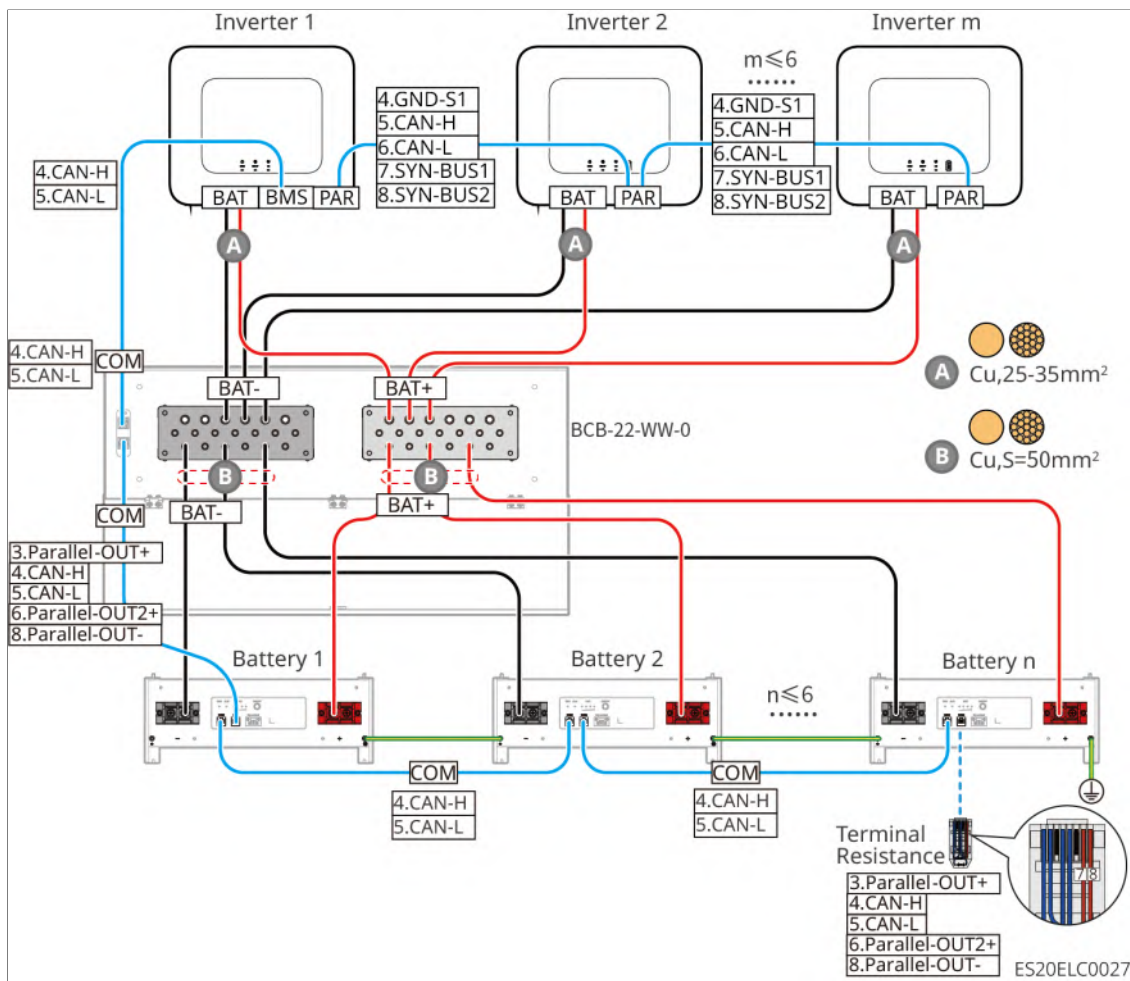


Figure24 LX A5.0-30: Connection with Busbar BCB-22-WW-0

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

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

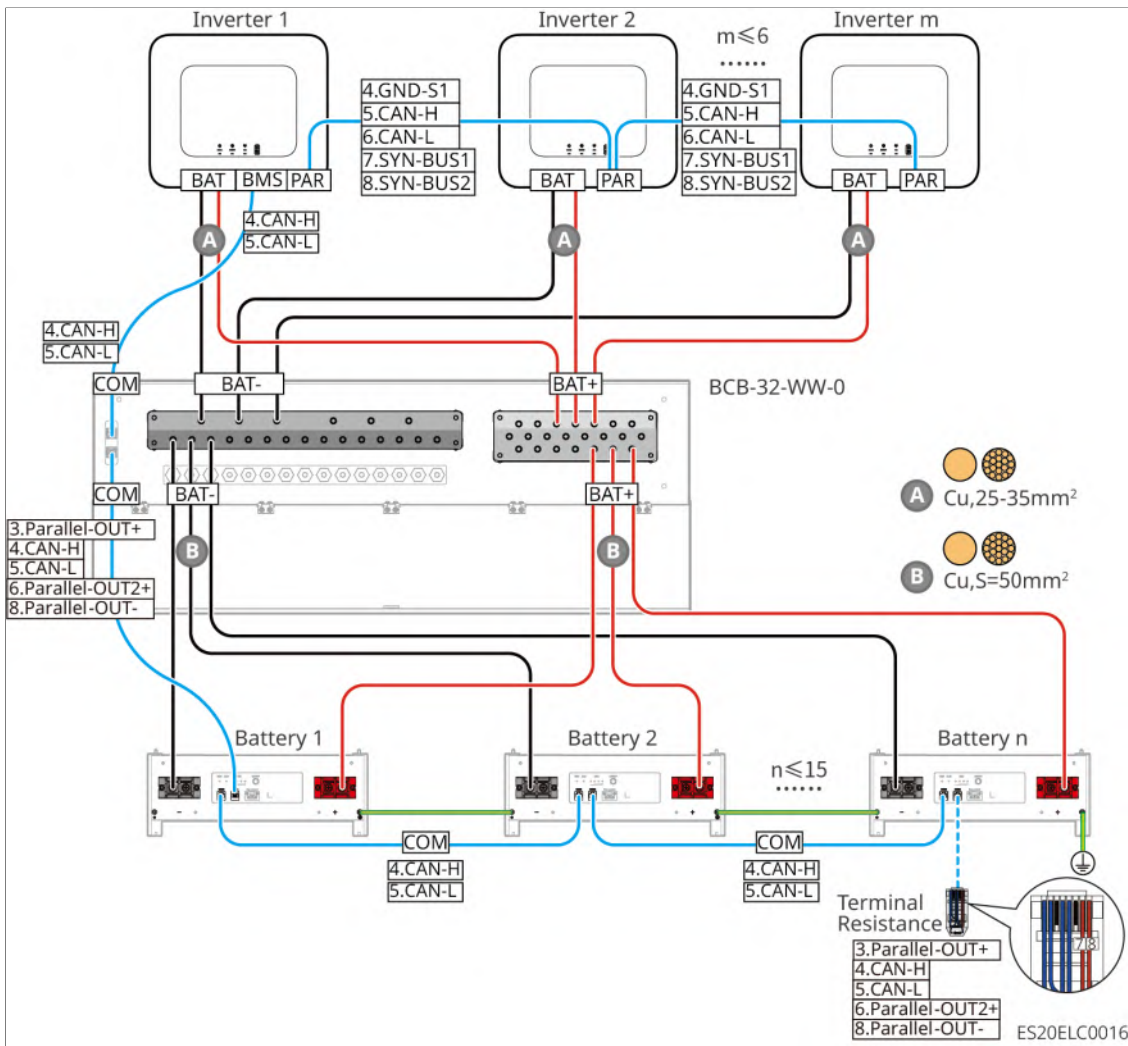


Figure25 LX A5.0-30: Connection with Busbar BCB-32-WW-0

LX A5.0-30: Connection with Third-party Busbar

- The single battery rated charging current is 60A; rated discharging current is 100A; maximum charging current is 90A; maximum discharging current is 150A, supporting a maximum of 30 units in parallel in the same system.

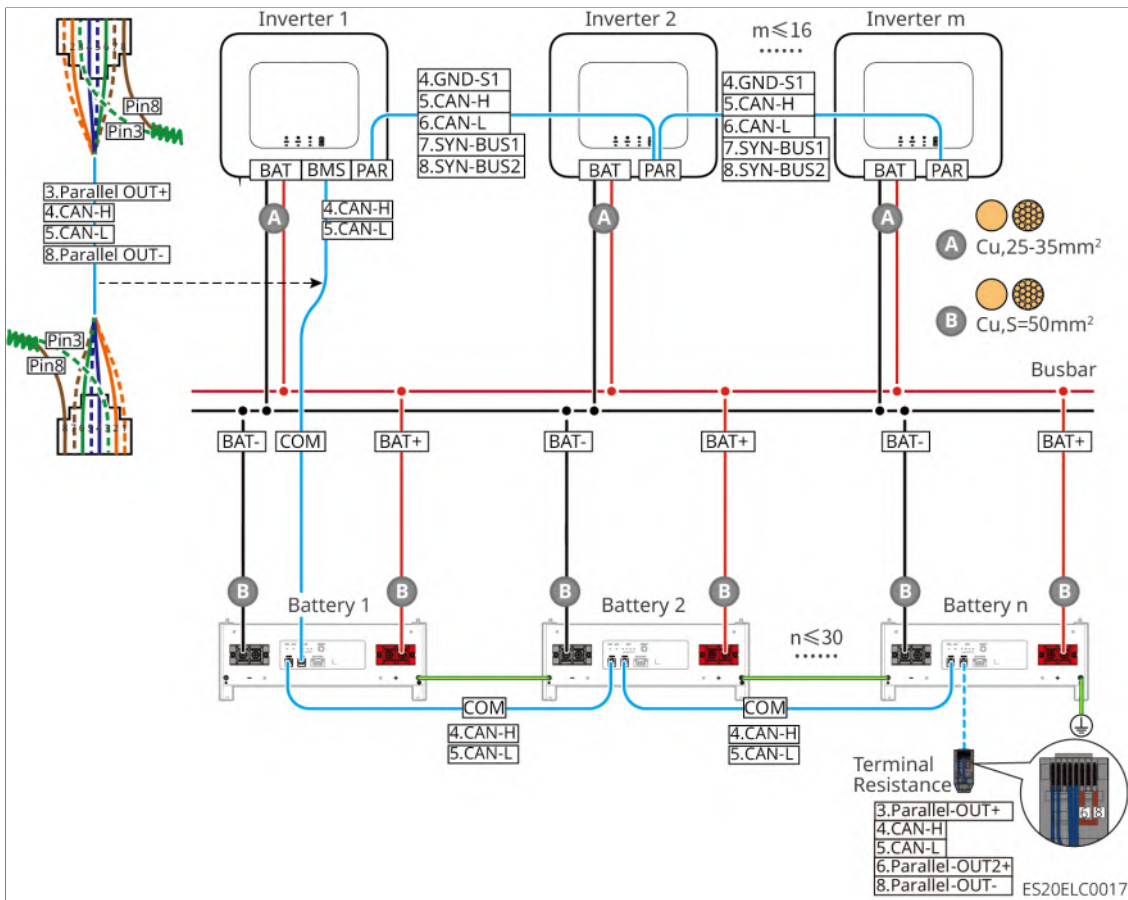


Figure26 LX A5.0-30: Connection with Third-party Busbar

LX A5.0-10: Daisy-chain Connection

- The single battery rated charge/discharge current is 60A.
- The battery system supports a maximum working current of 120A, working power of 6kW, maximum connection of 1 inverter, and 2 batteries.

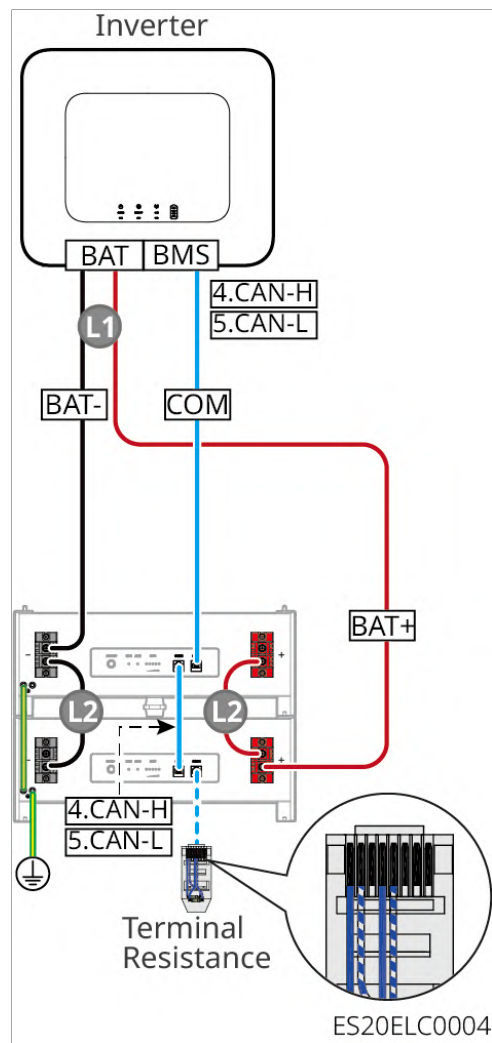


Figure27 LX A5.0-10: Daisy-chain Connection

LX A5.0-10: Battery Connection with Busbar BCB-11-WW-0

- The single battery rated charge/discharge current is 60A.
- The battery system supports a maximum working current of 360A, working power of 18kW, maximum connection of 3 inverters, and 6 batteries.

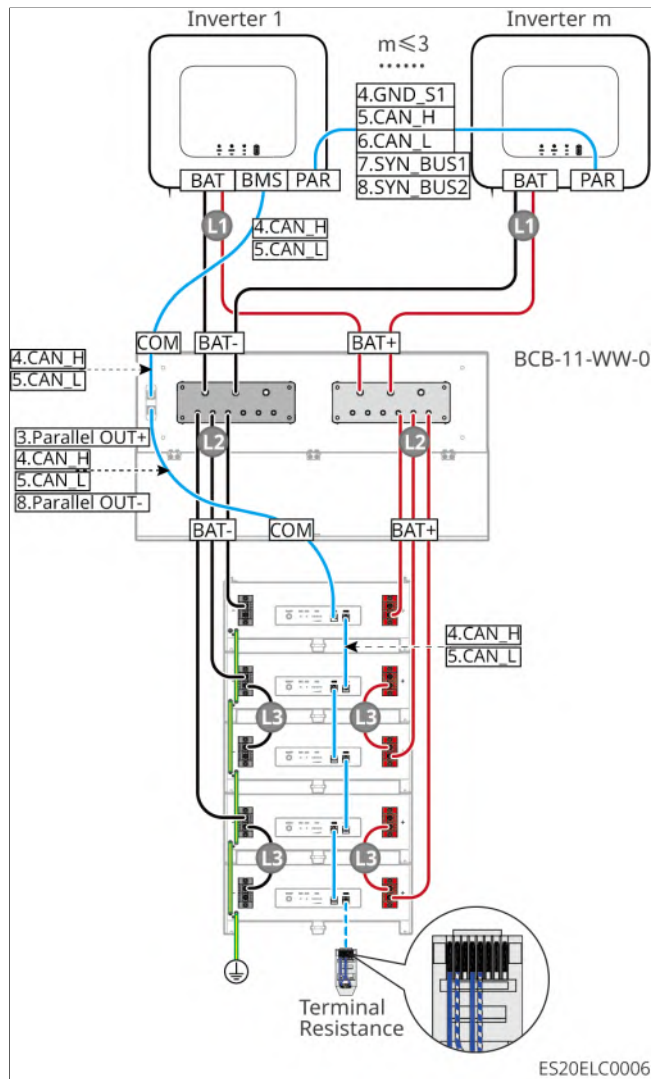


Figure28 LX A5.0-10: Battery Connection with Busbar BCB-11-WW-0

LX A5.0-10: Battery Connection with Busbar BCB-22-WW-0

- The single battery rated charge/discharge current is 60A.
- The battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 12 batteries.

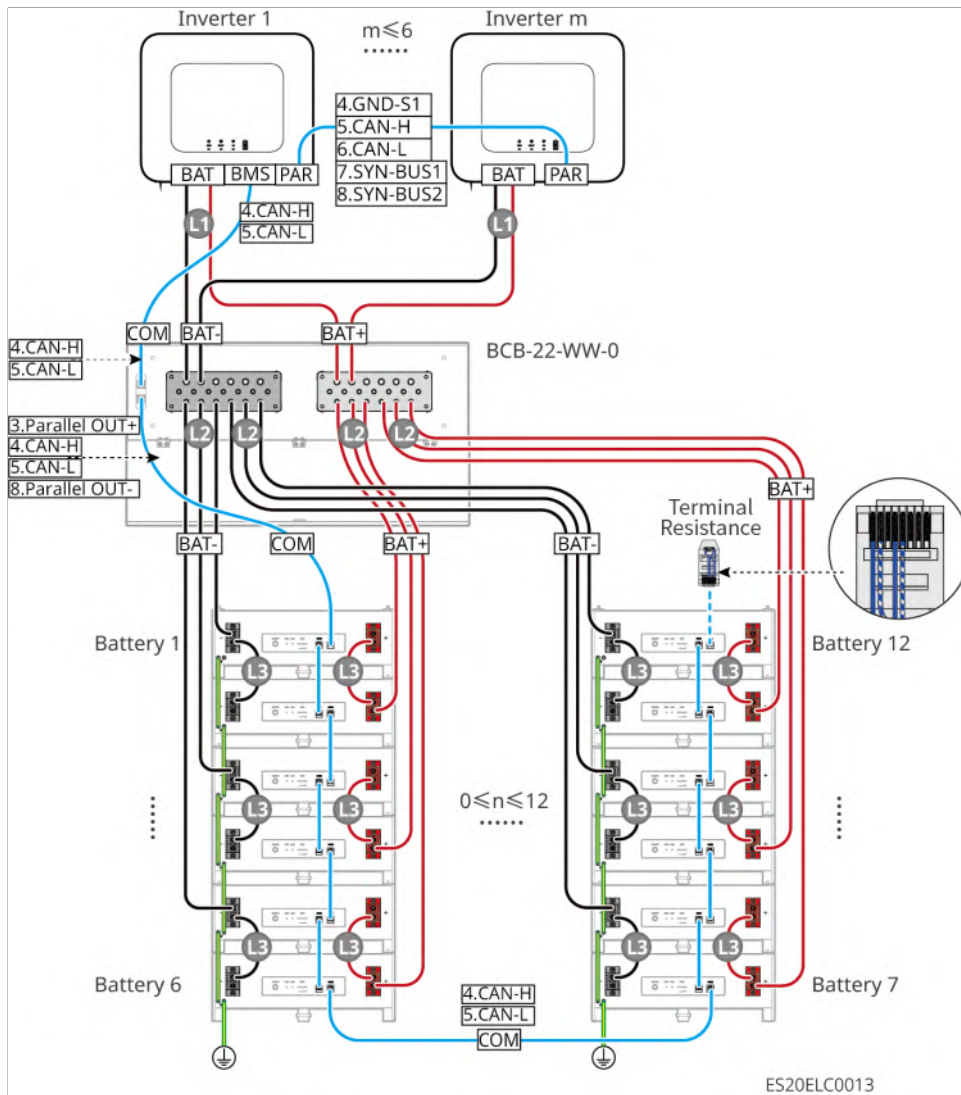


Figure29 LX A5.0-10: Battery Connection with Busbar BCB-22-WW-0

LX A5.0-10: Battery Connection with Busbar BCB-32-WW-0

- The single battery rated charge/discharge current is 60A.
- The battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 12 batteries.

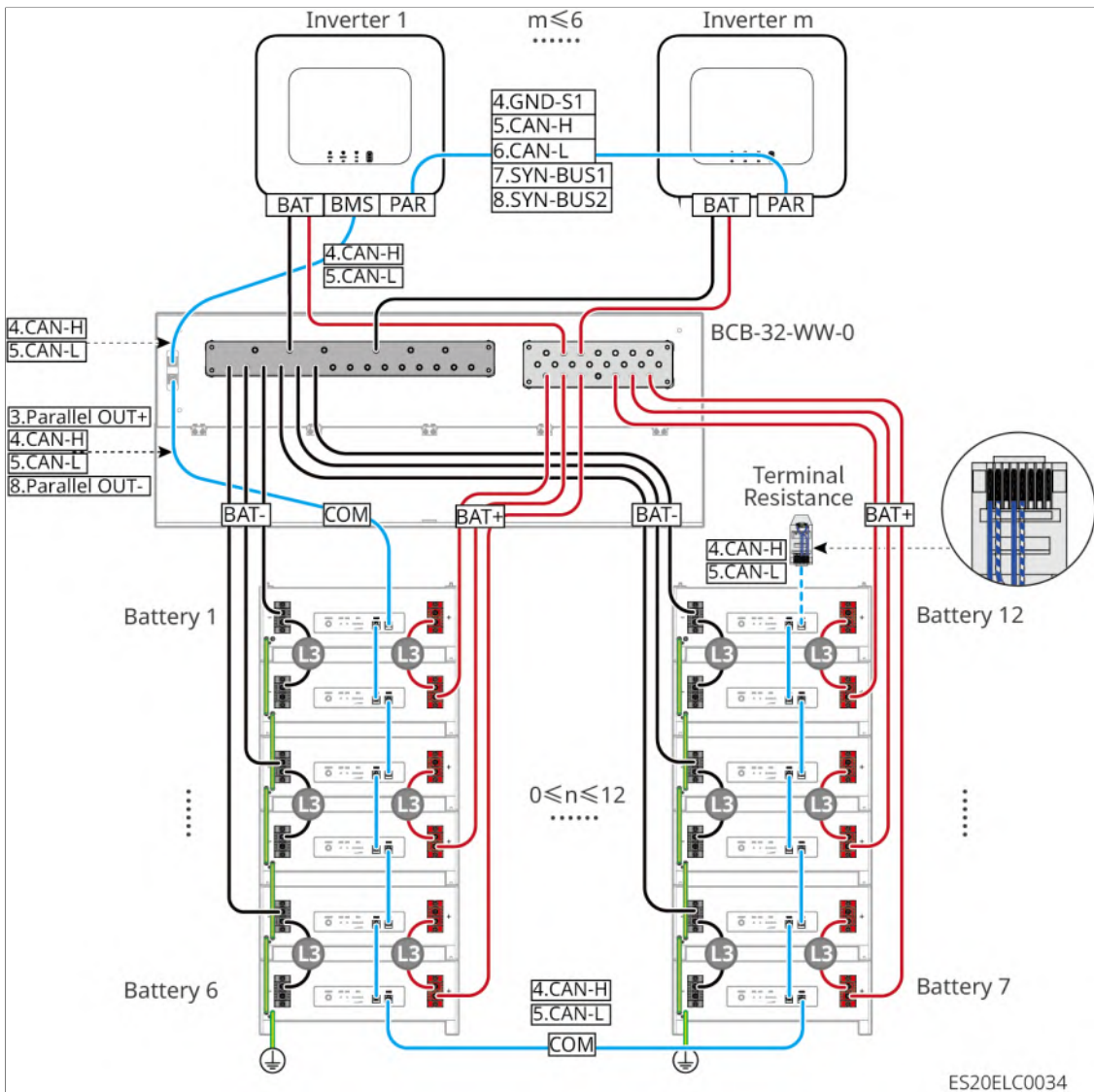


Figure30 LX A5.0-10: Battery Connection with Busbar BCB-32-WW-0

LX A5.0-10: Battery Connection with Third-party Busbar

- The single battery rated charge/discharge current is 60A.
- The complexity of the parallel inverter system increases with the number of parallel inverters. When the number of parallel inverters in the system is ≥ 6 , please contact the after-sales service center to confirm the inverter installation application environment to ensure stable system operation.
- The battery system supports a maximum working current of 900A, working power of 45kW, and 15 batteries.

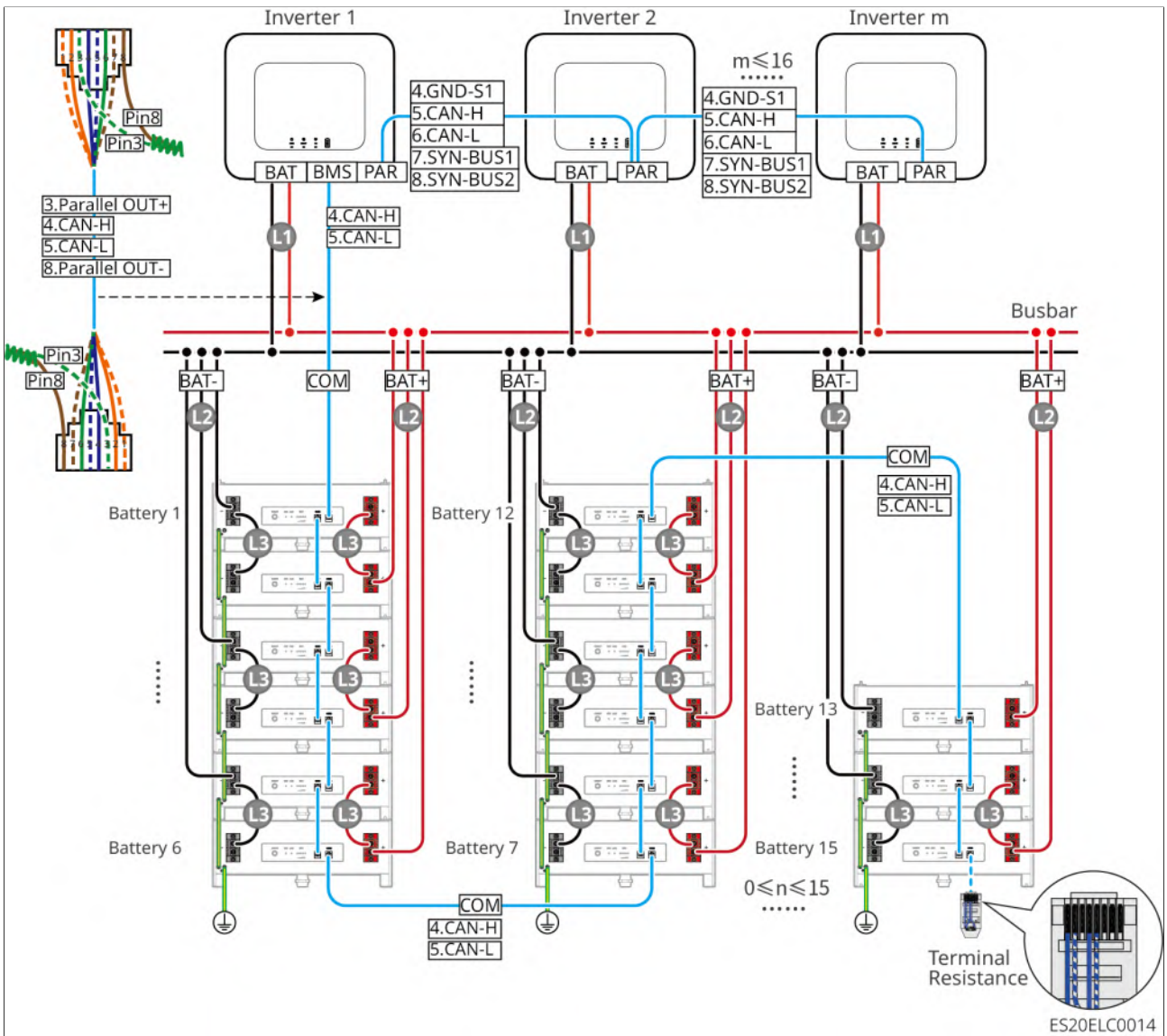


Figure31 LX A5.0-10: Battery Connection with Third-party Busbar

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

- The single battery rated charge/discharge current is 50A.
- The battery system supports a maximum working current of 100A, working power of 5kW, maximum connection of 1 inverter, and 6 batteries.
- It is recommended that the power cable between the inverter and the battery, and the power cable between batteries, have consistent conductor material, conductor cross-sectional area, conductor length, etc.

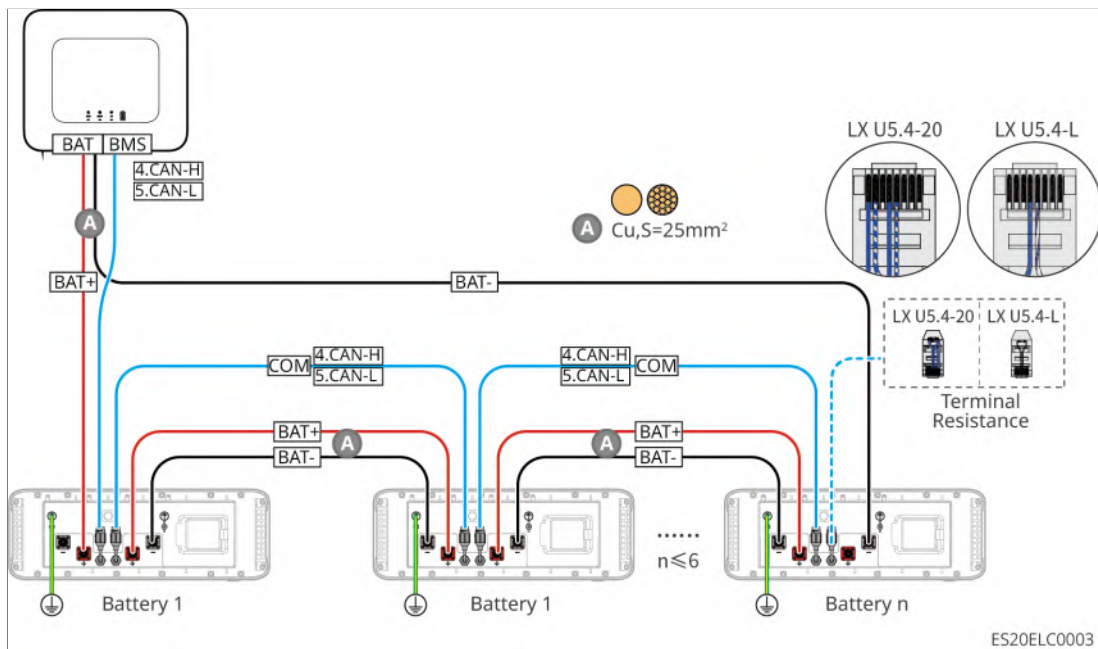


Figure32 LX U5.4-L, LX U5.4-20

LX U5.0-30: Daisy-chain Connection

- The single battery rated charging current is 60A; rated discharging current is 100A; maximum charging current is 90A; maximum discharging current is 100A, supporting a maximum of 30 units in the same system.
- The battery system supports a maximum working current of 160A, working power of 8kW, maximum connection of 1 inverter, and 30 batteries.

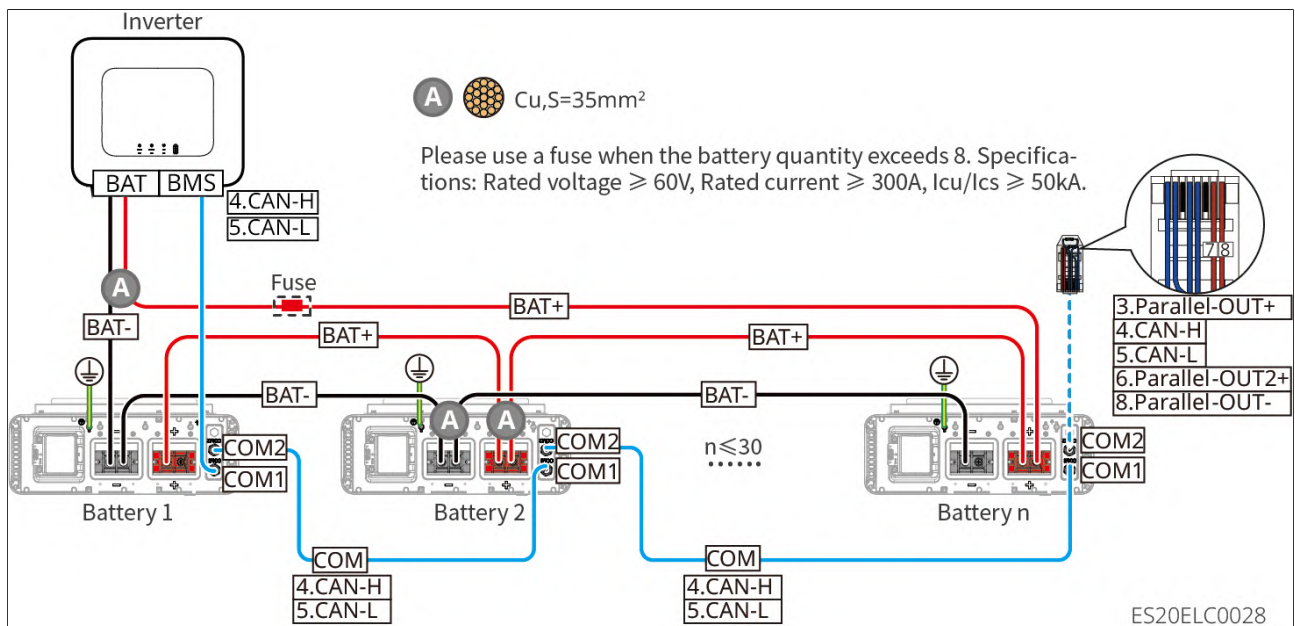


Figure33 LX U5.0-30: Daisy-chain Connection

LX U5.0-30: Battery Connection with Busbar BCB-22-WW-0

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

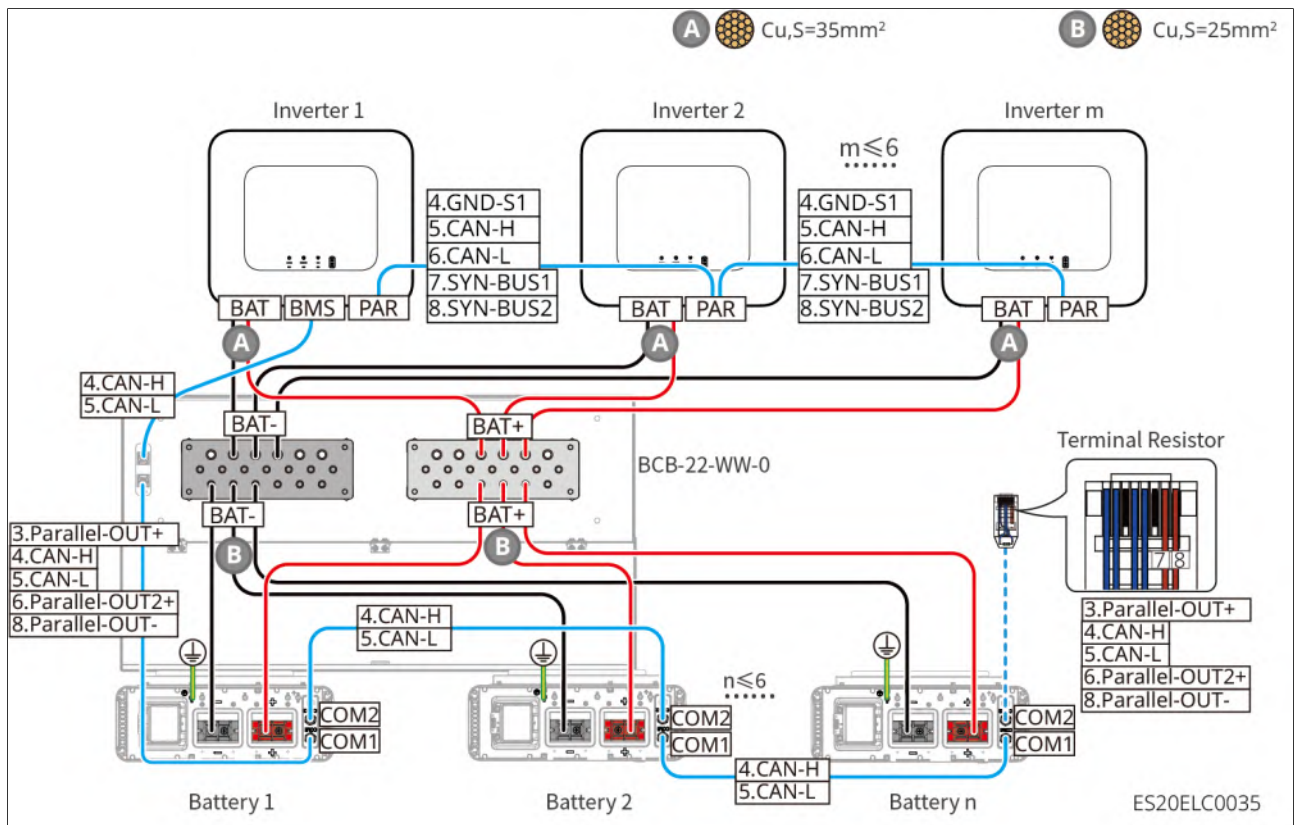


Figure34 LX U5.0-30: Battery Connection with Busbar BCB-22-WW-0

LX U5.0-30: Battery Connection with Busbar BCB-32-WW-0

- The battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 8 batteries.

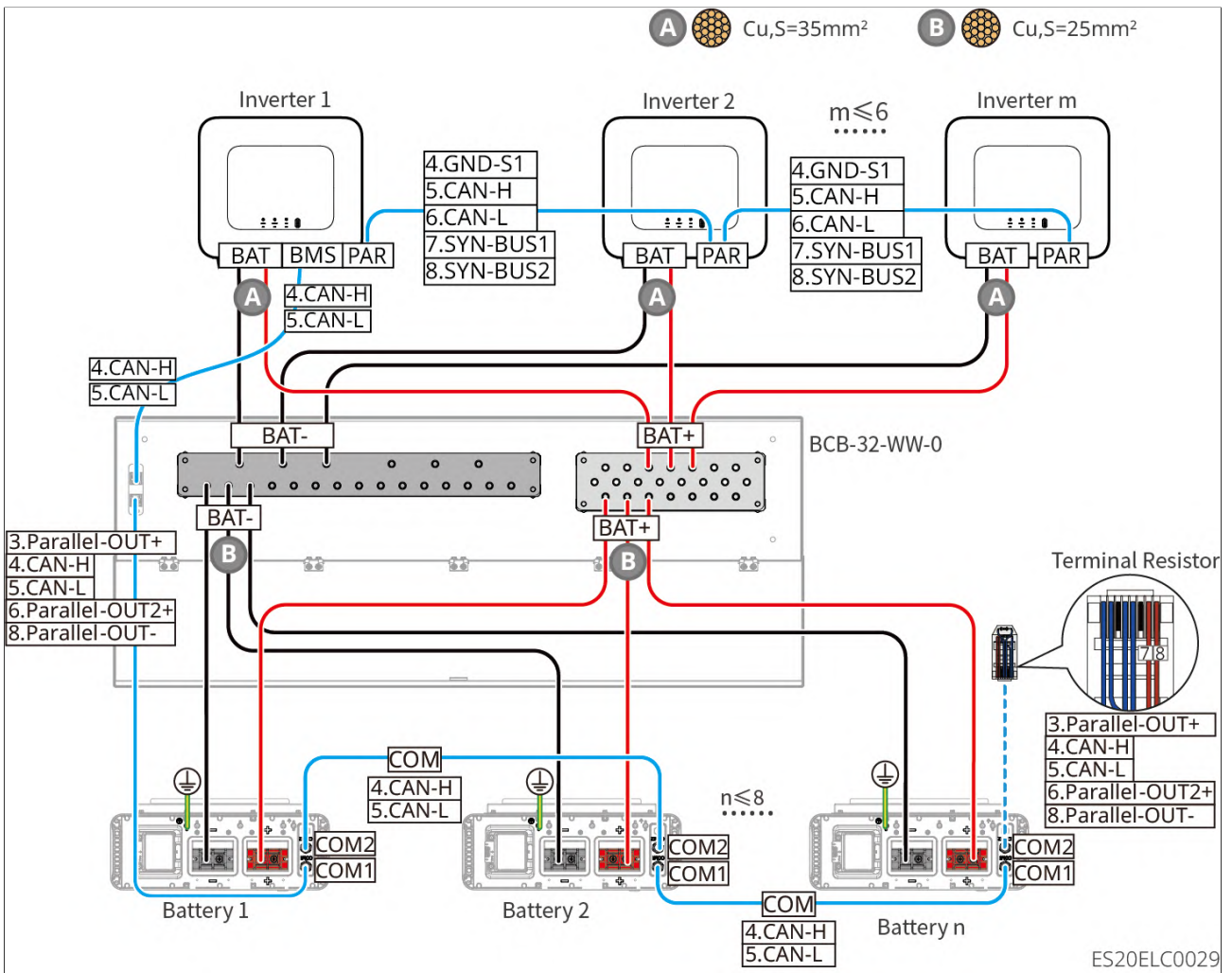


Figure35 LX U5.0-30: Battery Connection with Busbar BCB-32-WW-0

LX U5.0-30: Battery Connection with Busbar BCB-33-WW-0

- The battery system supports a maximum working current of 720A, working power of 36kW, maximum connection of 6 inverters, and 15 batteries. When Battery Qty exceeds 8 units, two fuses with a specification of 600A need to be connected in parallel.

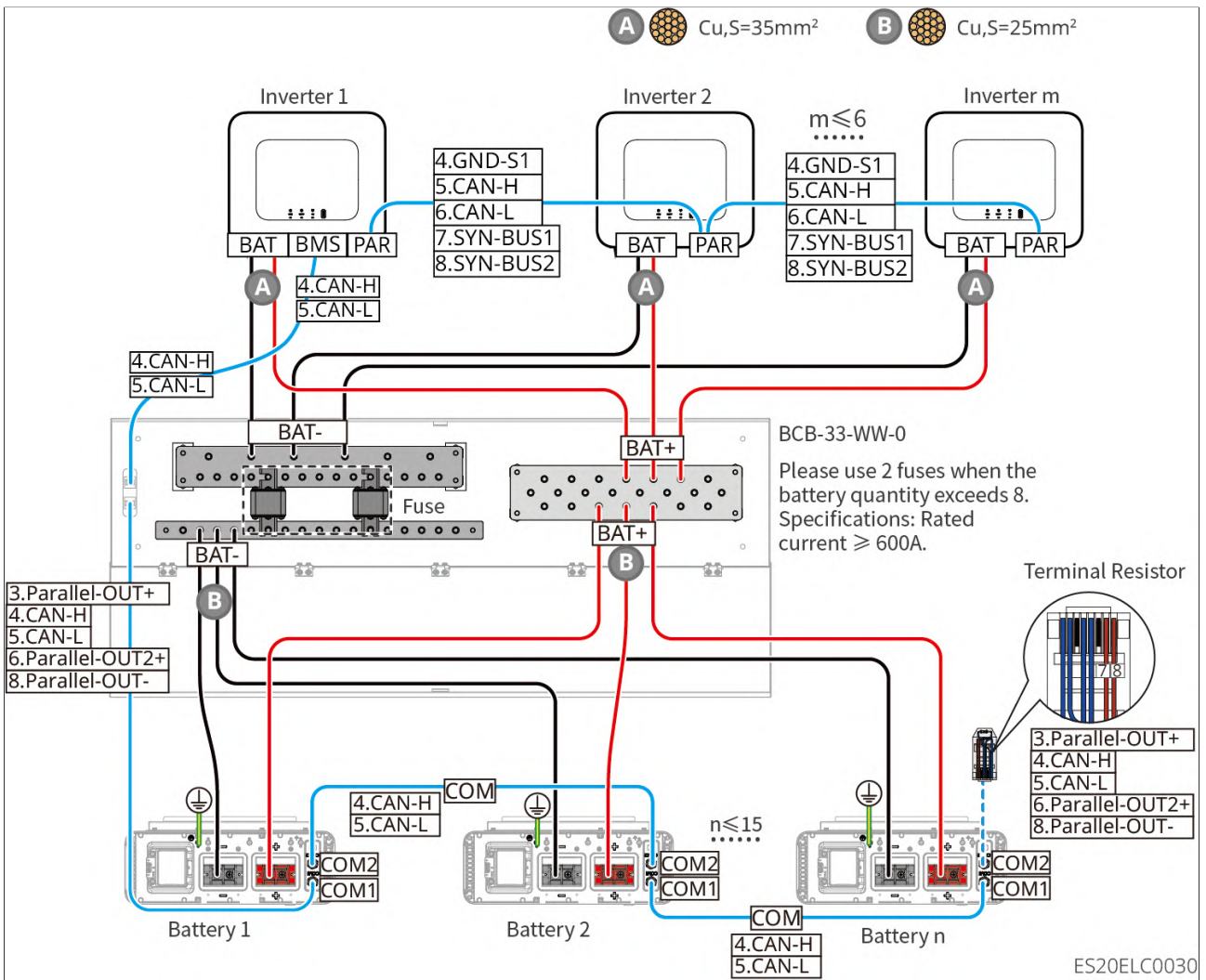


Figure36 LX U5.0-30: Battery Connection with Busbar BCB-33-WW-0

LX U5.0-30: Battery Connection with Third-party Busbar

- When Battery Qty ≤ 8, the battery supports direct connection to the busbar.

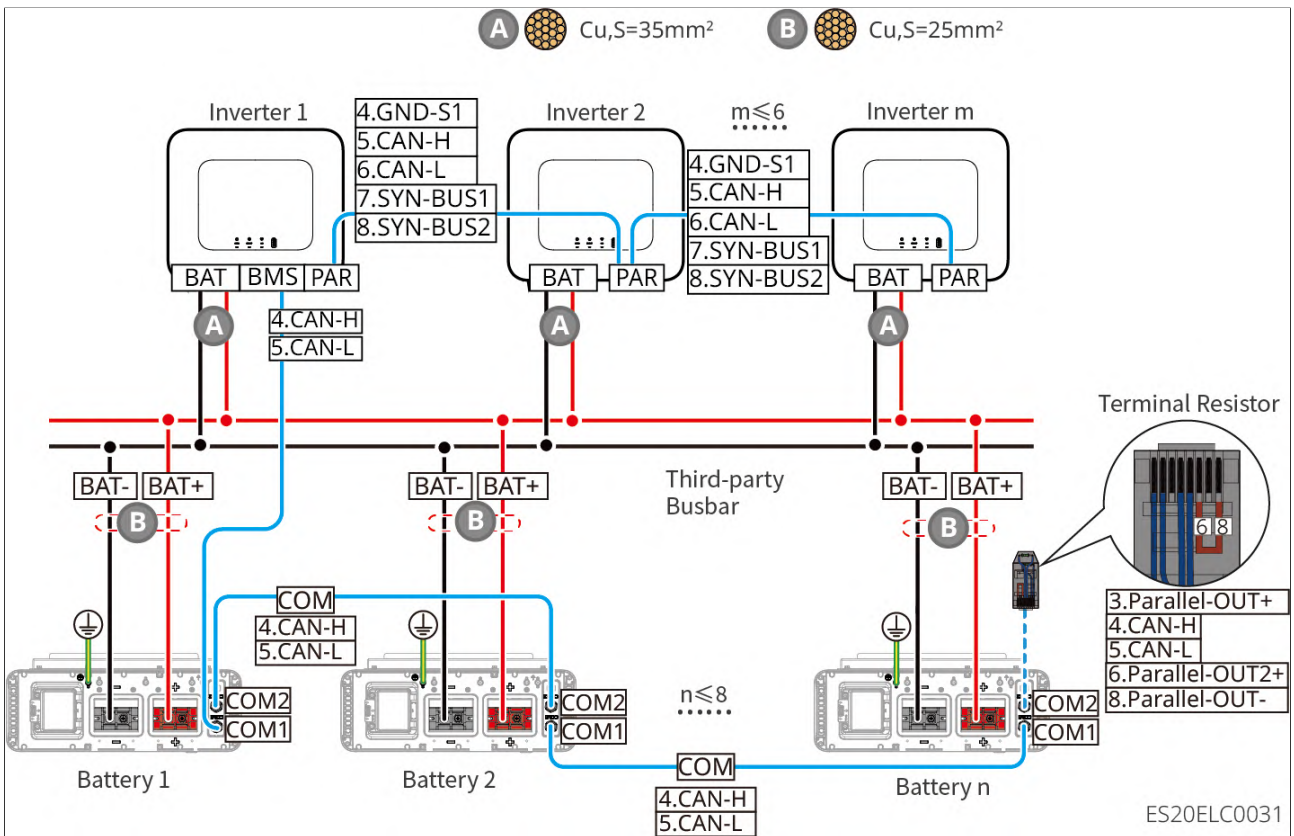


Figure37 LX U5.0-30: Battery Connection with Third-party Busbar

- When $8 < \text{Battery Qty} \leq 30$, a fuse needs to be connected between the busbar and the inverter. Recommended specification: Nominal Voltage $>80\text{V}$, Rated Current ≥ 1.6 times the system rated current, ultimate/operational breaking capacity $\geq 50\text{kA}$.

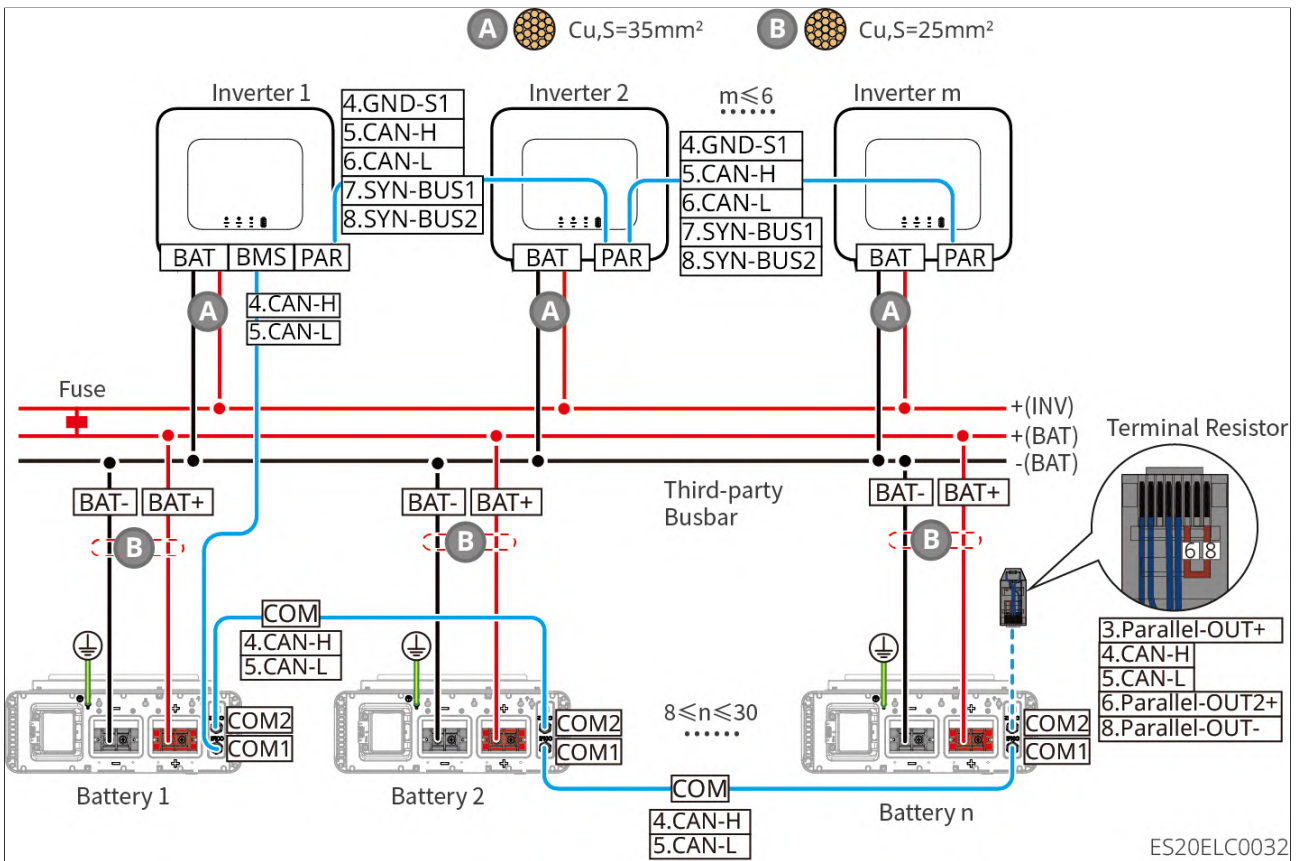


Figure38 LX U5.0-30: Battery Connection with Third-party Busbar

LX A5.0-30 Communication Port Definition

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

LX A5.0-10 Communication Port Definition

PIN	COM1	COM2	Description
1	-	-	Reserved
2	-	-	
3	Parallel OUT+	Parallel OUT+	Parallel Communication Port
4	CAN_1H	CAN_1H	Connect to inverter communication or battery parallel cluster communication port
5	CAN_1L	CAN_1L	
6	-	-	Reserved
7	-	-	
8	Parallel OUT-	Parallel OUT-	Parallel Communication Port

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 Communication Port
4	CAN_L	CAN_L	Connects to inverter communication or battery cluster communication port
5	-	-	Reserved
6	-	-	Reserved
7	-	-	Reserved
8	-	-	Reserved

LX U5.0-30 Communication Port Definition

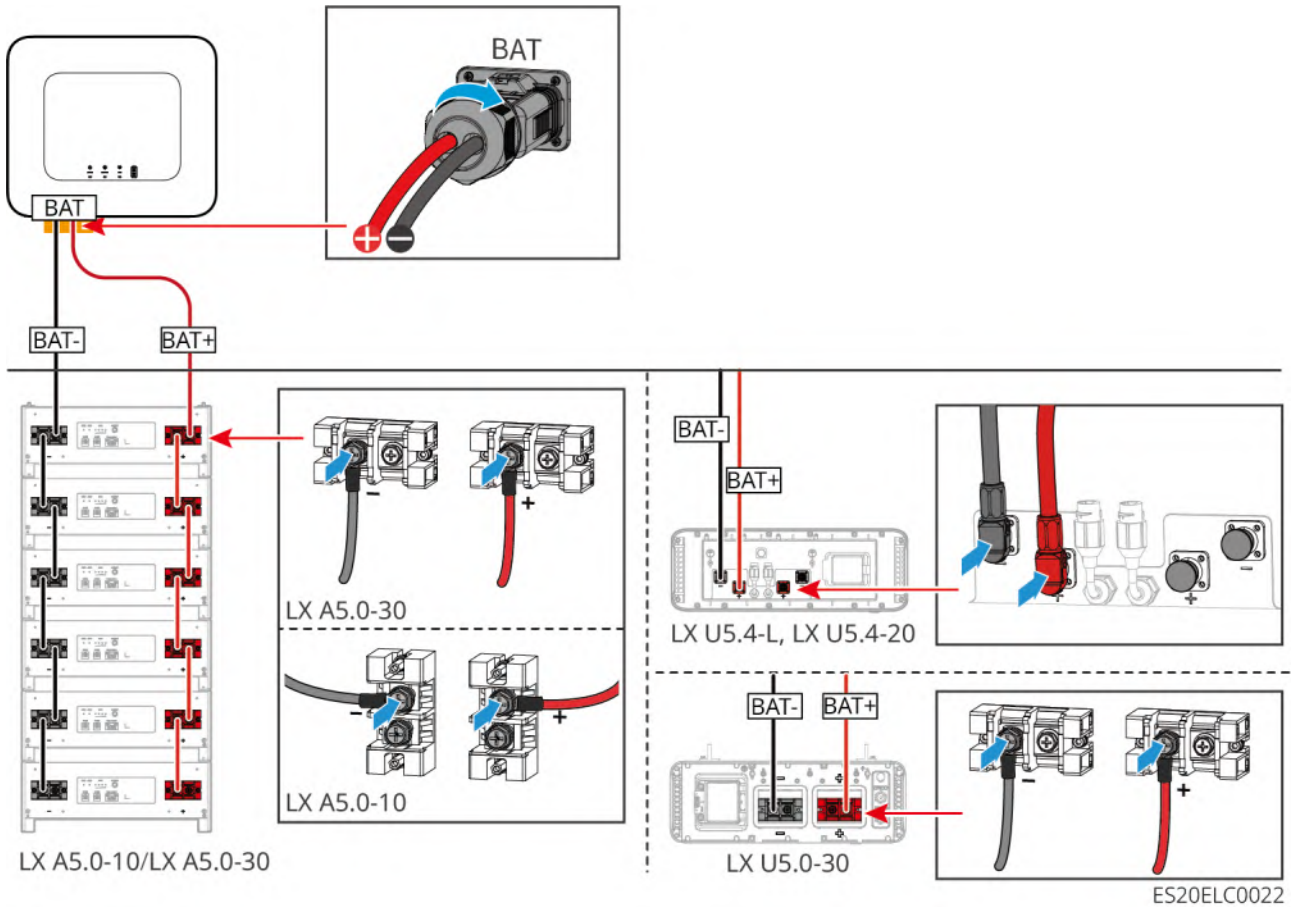
PIN	COM1	COM2	Description
1	RS485A	RS485A	Reserved
2	RS485B-	RS485B-	
3	Parallel OUT+	Parallel OUT+	Parallel Communication Port
4	CAN_H	CAN_H	Connect to inverter communication or battery cluster parallel communication port
5	CAN_L	CAN_L	
6	Parallel OUT2+	Parallel OUT2+	Parallel Communication Port
7	-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

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 to ensure correct polarity, no reverse connection; and the voltage is within the allowable range.
- When wiring, ensure that the battery cables match the battery terminals "BAT+", "BAT-", and ground port completely. If the cables are connected incorrectly, it will cause equipment damage.
- Ensure that the wire cores are fully inserted into the terminal connection holes without exposure.
- Ensure that the cable connections are tight, otherwise, during equipment operation, it may cause terminal overheating and equipment damage.
- Do not connect the same battery bank to multiple inverters, otherwise it may cause inverter damage.

Overview of the Inverter and Battery Power Cable



Inverter-Side Cable Assembly

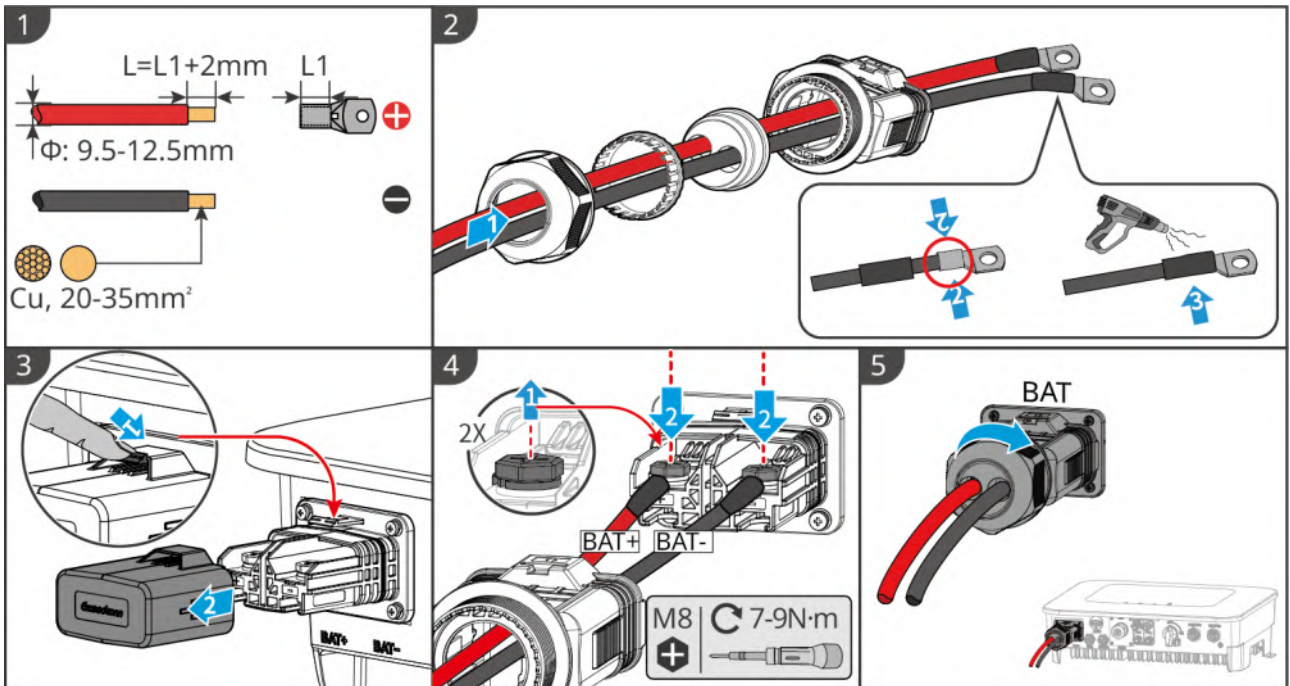
Step 1: Prepare the battery power cable.

Step 2: Disassemble the battery connector. Crimp the DC terminal, and assemble the battery connector.

Step 3: Pry open the latch of the battery waterproof cover. Pull the battery waterproof cover outward to remove it.

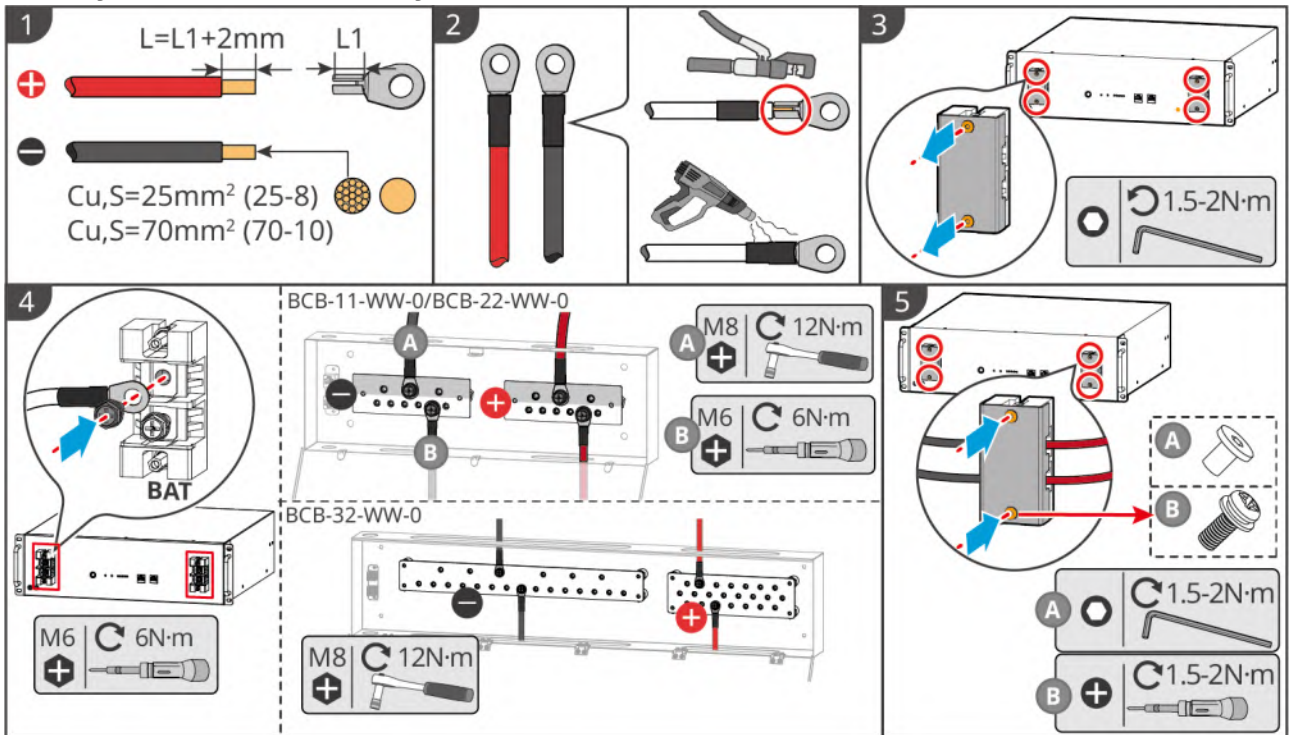
Step 4: Remove the battery screw from the battery terminal, place the battery cable onto the battery terminal, and secure it with the screw.

Step 5: Connect the battery connector to the inverter battery terminal.



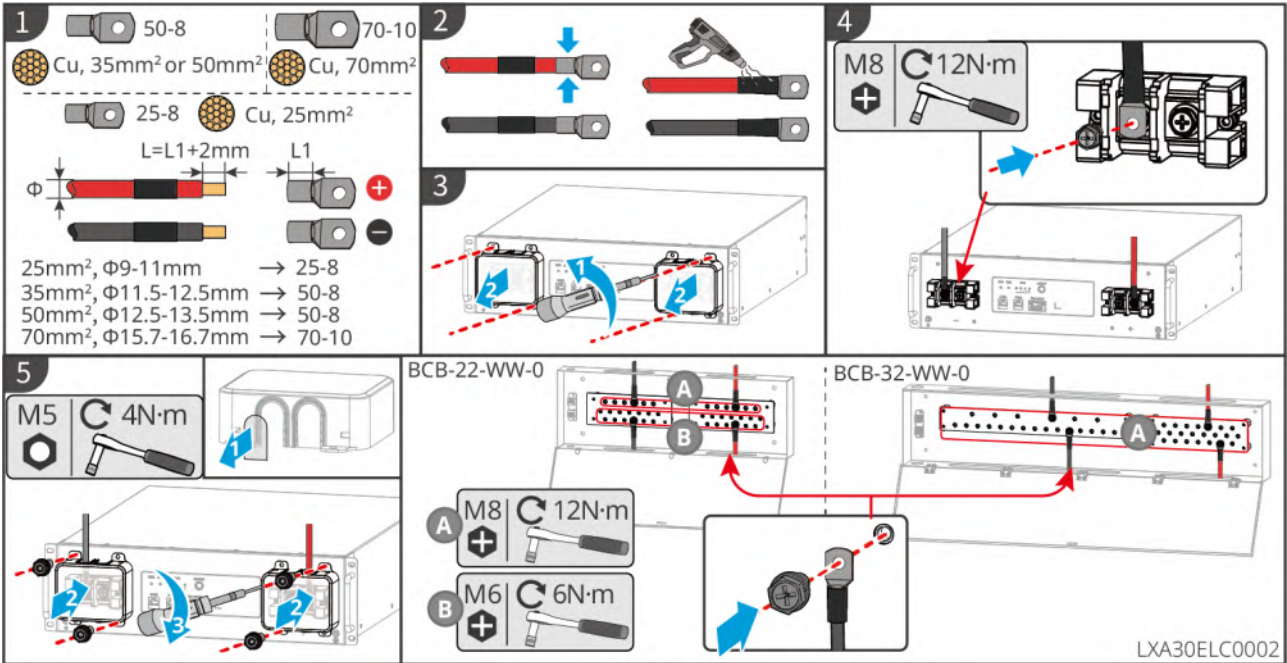
ES20ELC0005

Battery-Side Cable Assembly Method (LX A5.0-10)

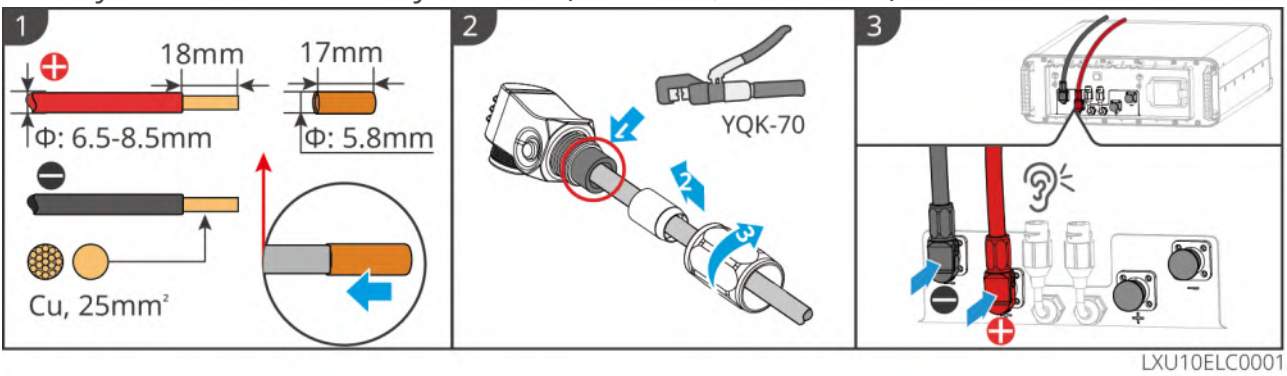


LXA10ELC0004

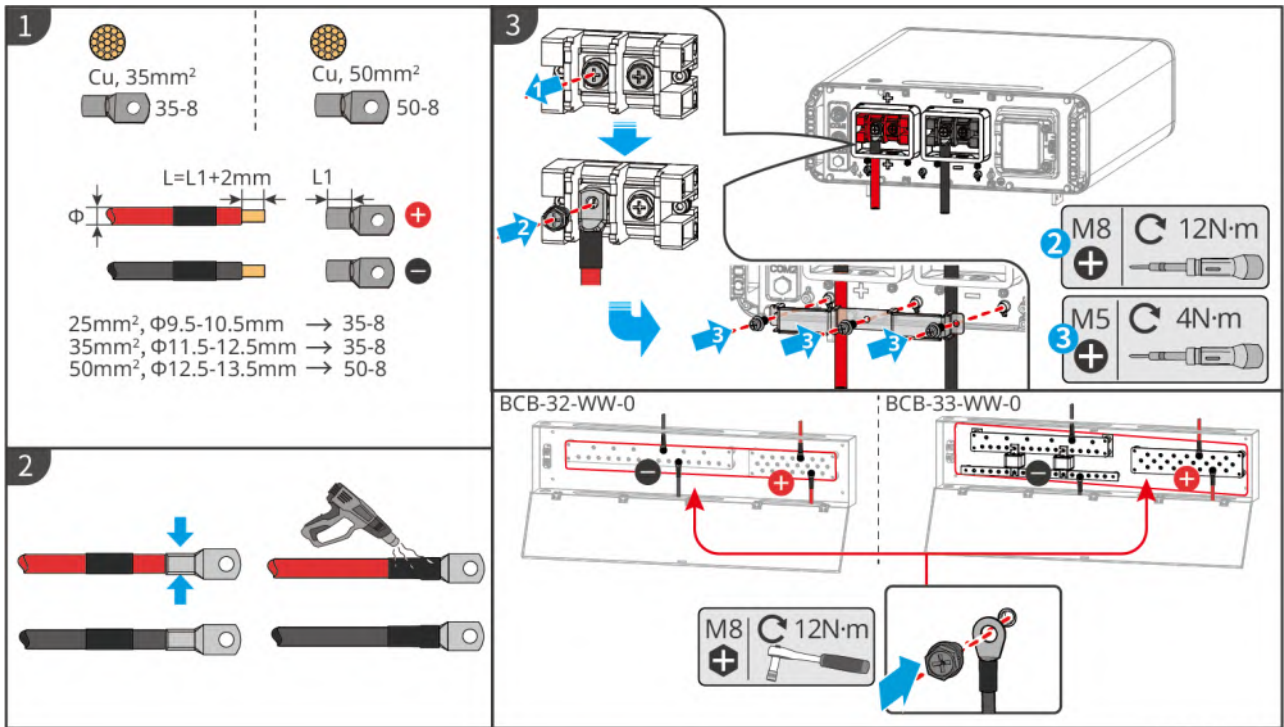
Battery-Side Cable Assembly Method (LX A5.0-30)



Battery-Side Cable Assembly Method (LX U5.4-L, LX U5.4-20)



Battery-Side Cable Assembly Method (LX U 5.0-30)



LXU30ELC0004

5.6.2 Connecting the Communication Cable between the Inverter and Battery

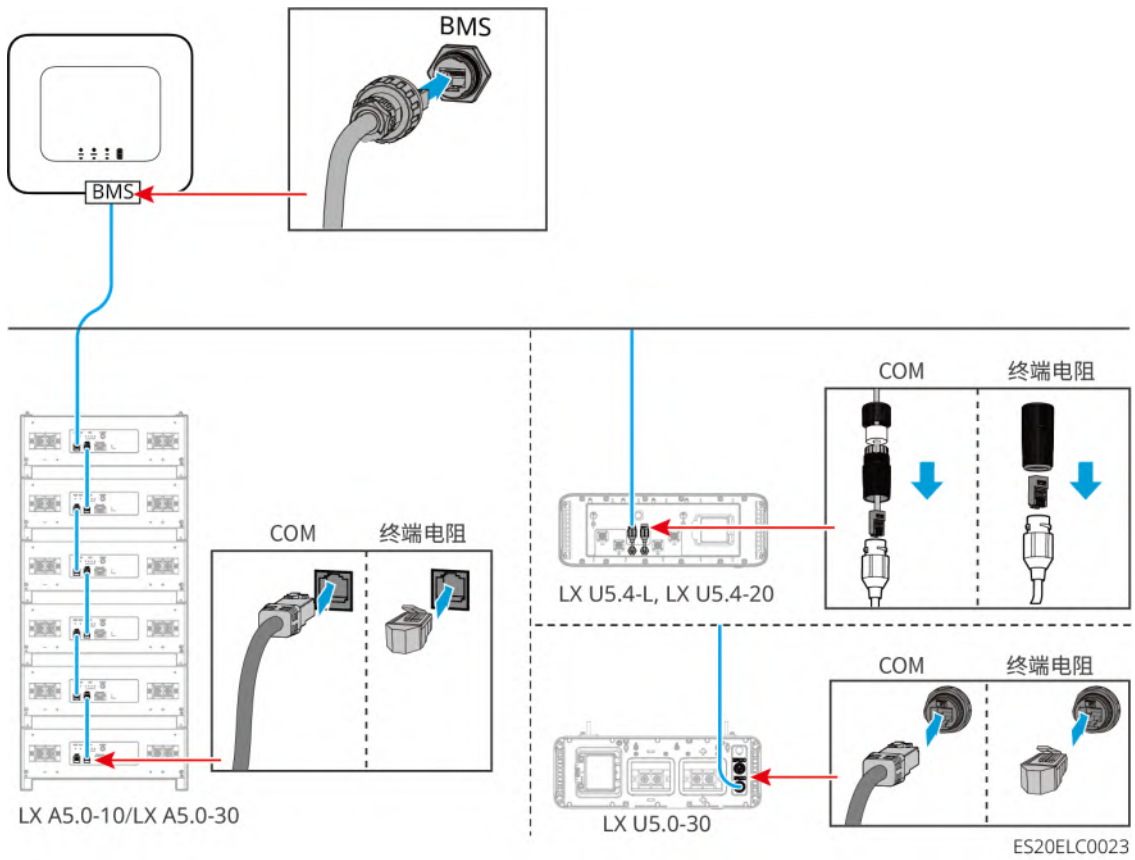
NOTICE

The inverter comes with a BMS battery communication cable in the box. It is recommended to use the BMS battery communication cable provided in the box. If the provided communication cable does not meet the requirements, please prepare your own shielded network cable and shielded RJ45 connector. When crimping, only connect pins 4 and 5 of the connector; otherwise, it may cause communication failure.

Instructions for BMS communication connection between the inverter and the battery:

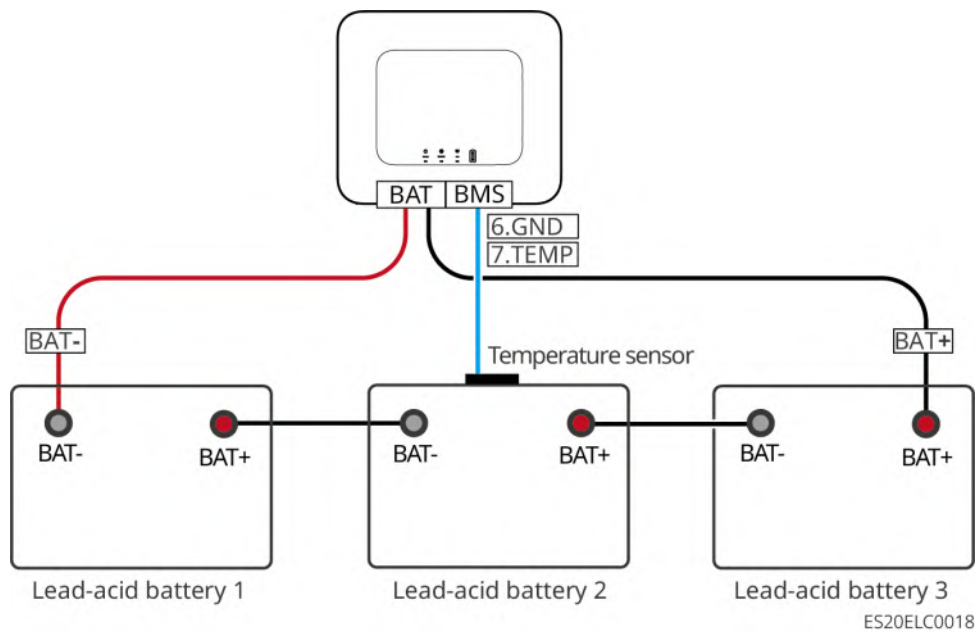
Inverter Port	Connected to Battery Port	Port Definition	Description
---------------	---------------------------	-----------------	-------------

BMS(CAN)	COM1	4: CAN_H 5: CAN_L	<ul style="list-style-type: none"> The inverter and battery communicate via CAN. If the provided communication cable does not meet requirements, when making a custom cable, only crimp PIN4 and PIN5 of the RJ45 connector. Otherwise, communication may fail.
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NOTICE

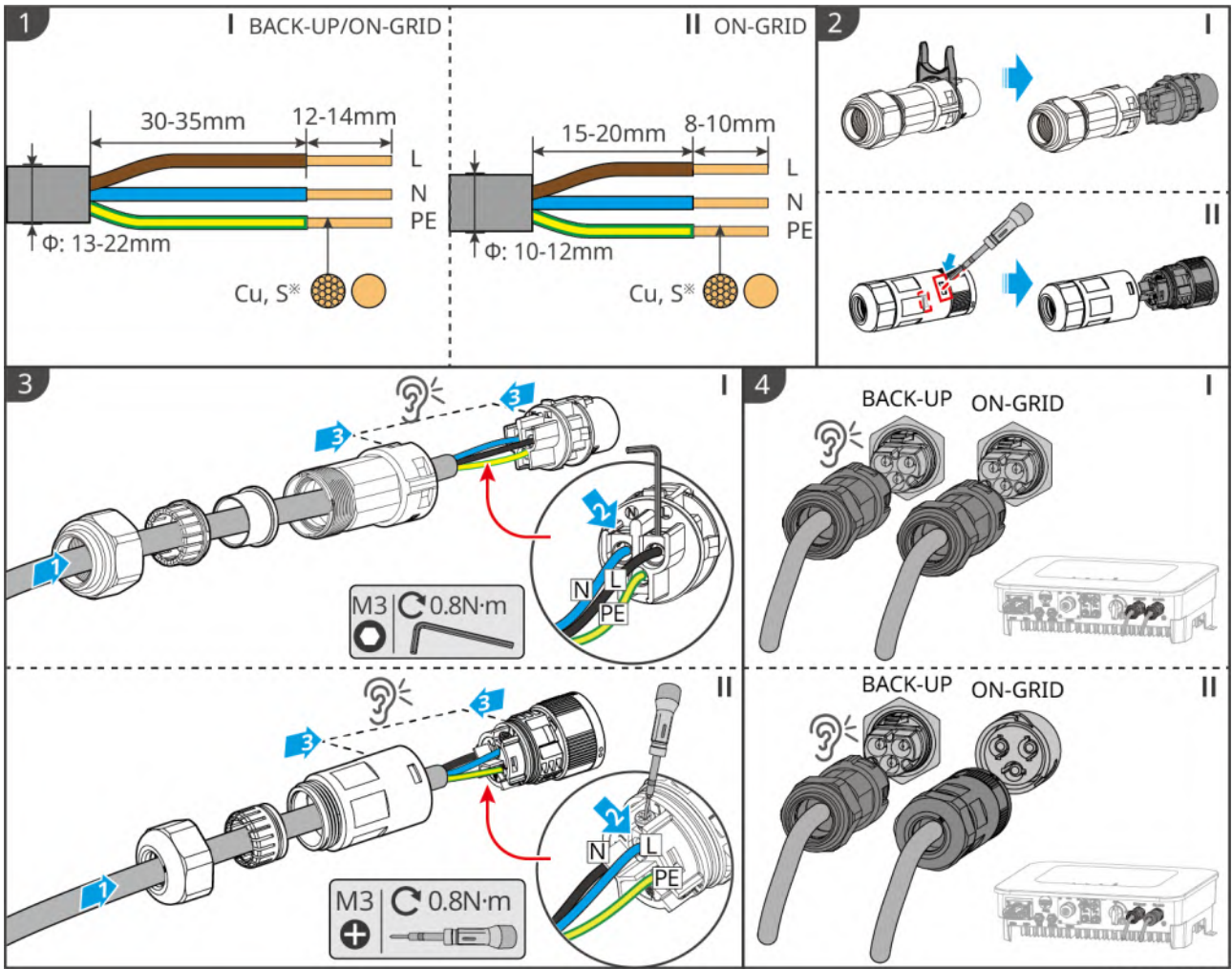
- When connecting the lead-acid battery temperature sensor cable, it is recommended to connect the temperature sensor cable to a location with poor heat dissipation. For example: when lead-acid batteries are placed side by side, fix the sensor on the lead-acid battery in the middle.
- To better protect the battery cells, the temperature sampling line must be installed, and it is recommended to place the battery in an environment with good heat dissipation.



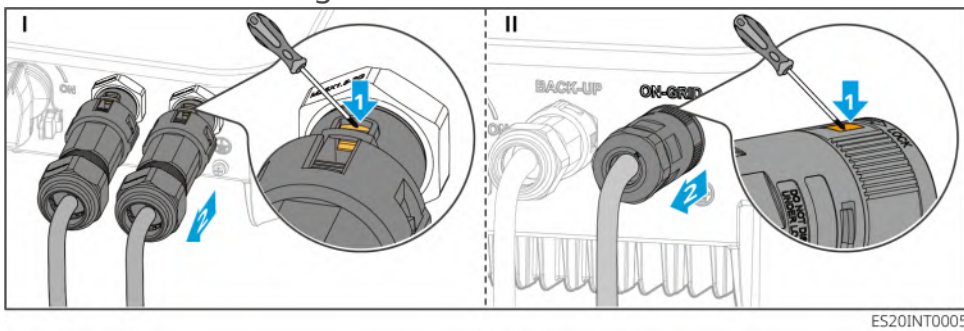
5.7 Connecting the AC Cable

! 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 allowable value, it will quickly disconnect from the grid.
- When wiring, ensure that the AC lines completely match the "BACK-UP", "ON-GRID", and grounding ports of the AC terminals. Incorrect cable connections may cause equipment damage.
- Ensure that the wire cores are fully inserted into the terminal connection holes with no exposure.
- Ensure that the insulation plates at the AC terminals are tightly secured with no looseness.
- Ensure that cable connections are tight; otherwise, during equipment operation, terminal overheating may occur, leading to equipment damage.
- When performing operation and maintenance on devices in the system, please power off the devices. Operating devices while energized may cause inverter damage or electric shock hazards.
- In parallel systems, only support connecting inverters to the same phase line. Do not connect three single-phase inverters to the three phases of the grid to form a three-phase system, as this may cause system errors or equipment damage.
 - Incorrect case: Master inverter connected to L1, slave inverter 1 connected to L2, slave inverter 2 connected to L3 to form a three-phase system.
 - Correct case: Master inverter connected to L1, slave inverter connected to L1.
- Ensure that the cable connection sequence is consistent. Do not reverse the L and N sequence for the ON-GRID port; do not reverse the L and N sequence for the BACK-UP port. In the system, the N cables of the BACK-UP ports of each inverter are connected in parallel, and the L cables are connected in parallel.
- In the same system, ensure that the conductor material, conductor cross-sectional area, conductor length, etc., are consistent for the BACK-UP AC cables between the master and slave units, the ON-GRID AC cables between the master and slave units, and the DC cables between the battery and the inverter.
- When the usage scenario does not require connecting AC cables, install connectors for ON-GRID and BACK-UP to ensure that the ports are protected and there is no risk of electric shock.



Method for Removing the Inverter AC Cover



5.8 Connecting the Meter Cable

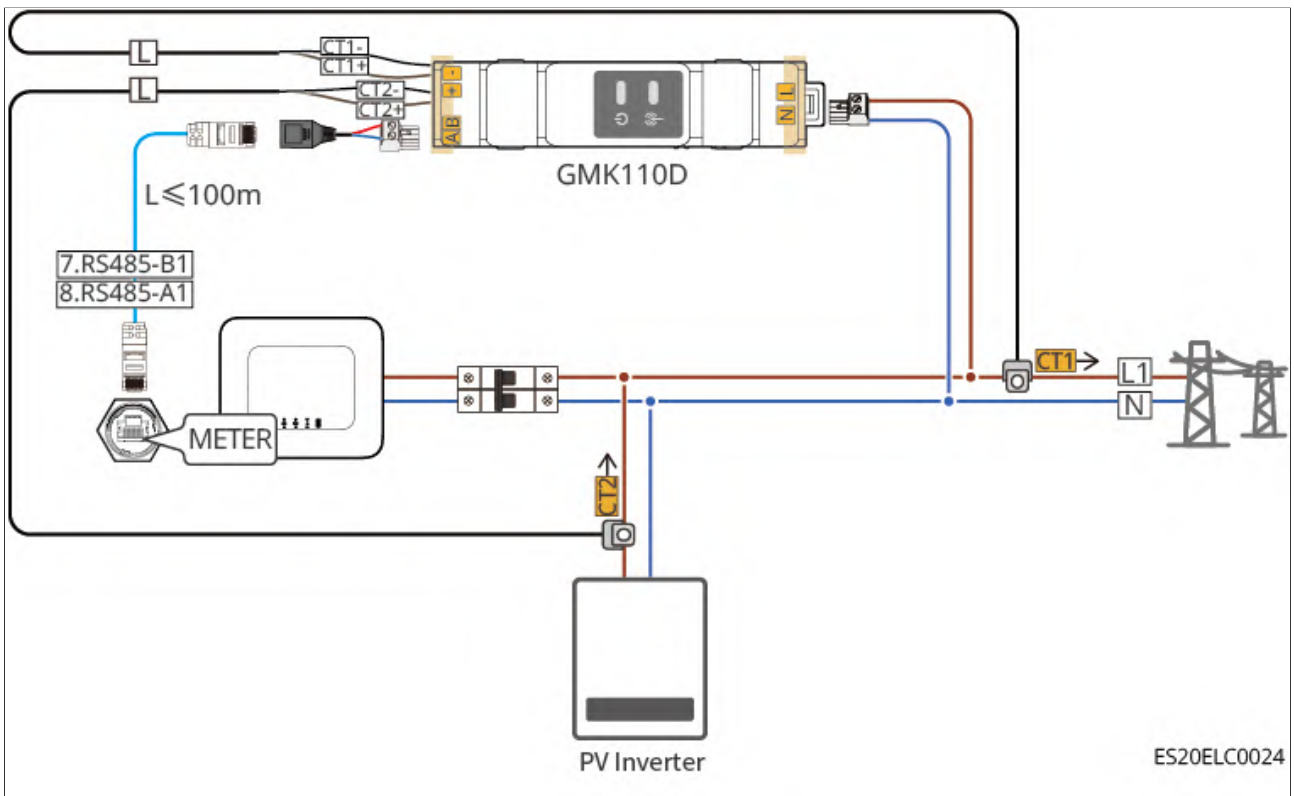
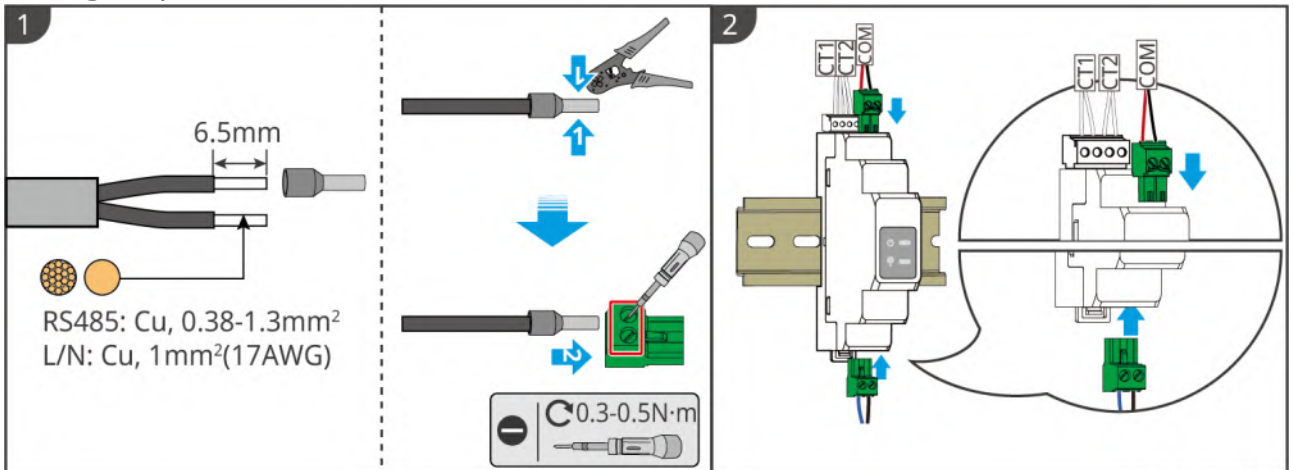


Figure40 GMK110D

Wiring Steps



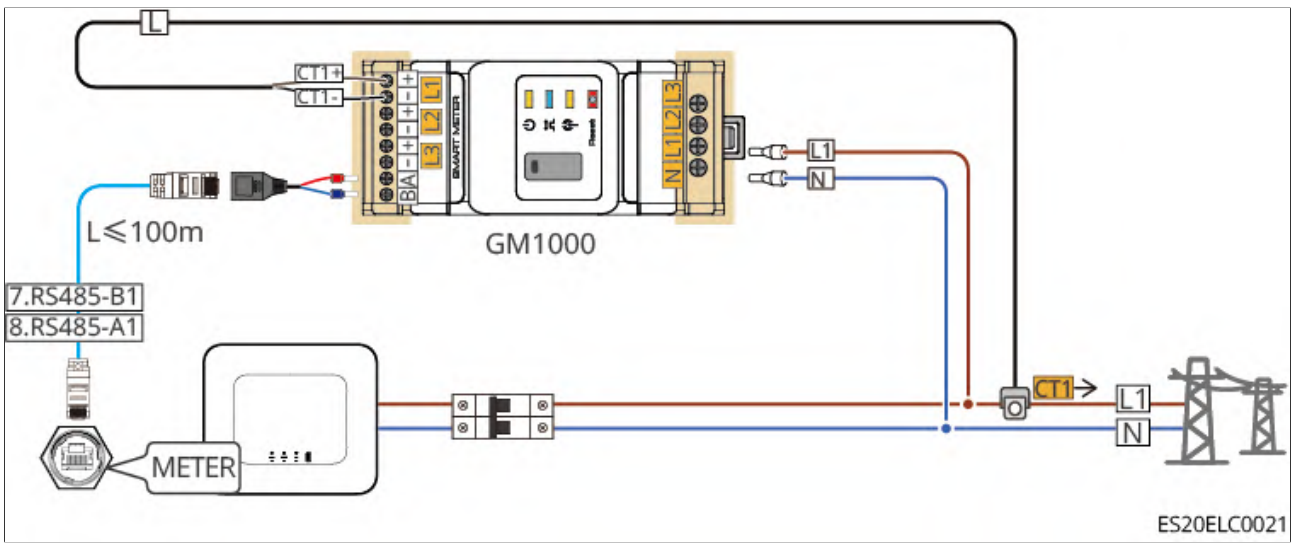


Figure41 GM1000

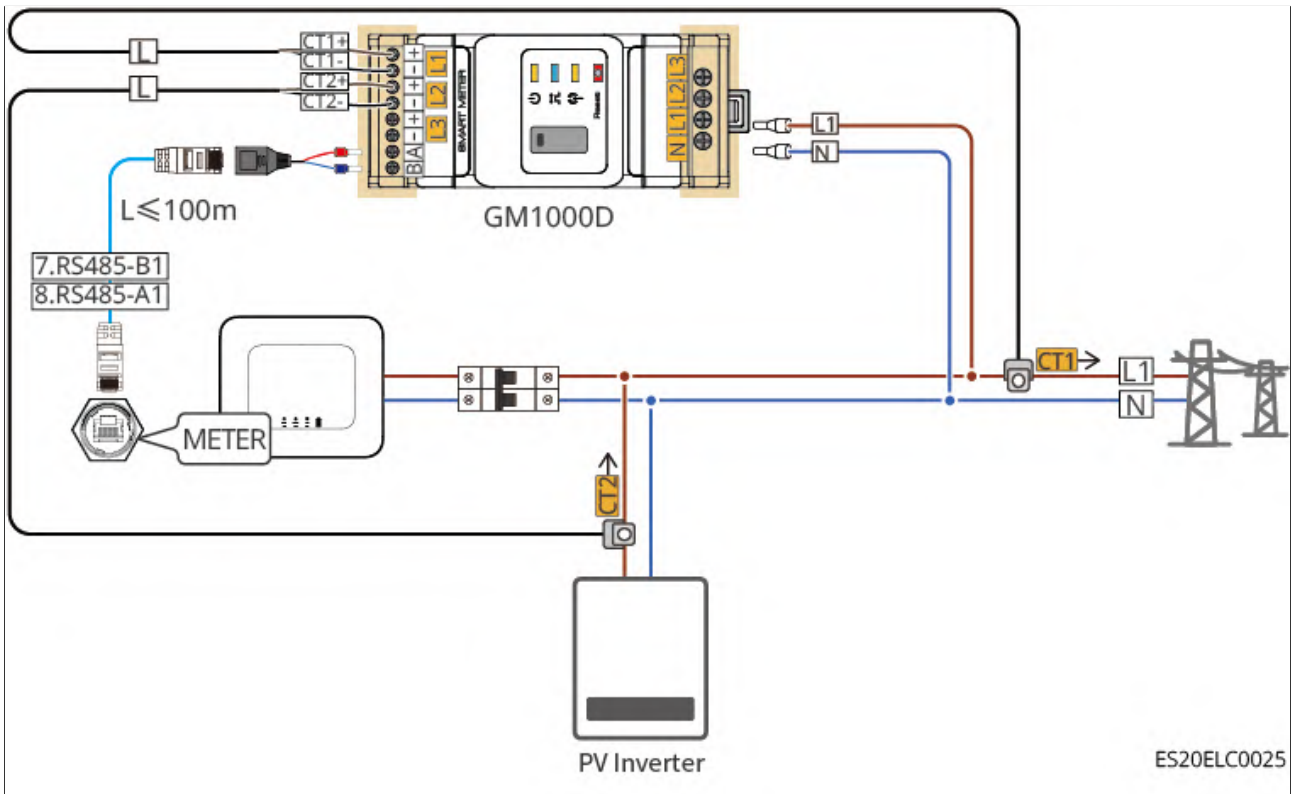


Figure42 GM1000D

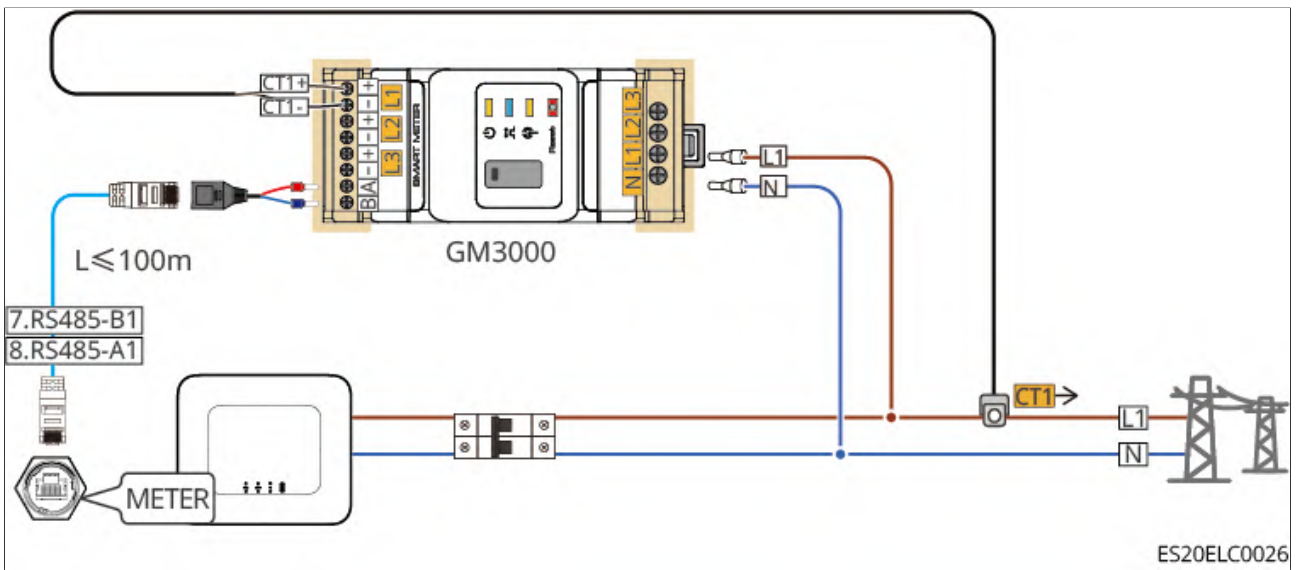
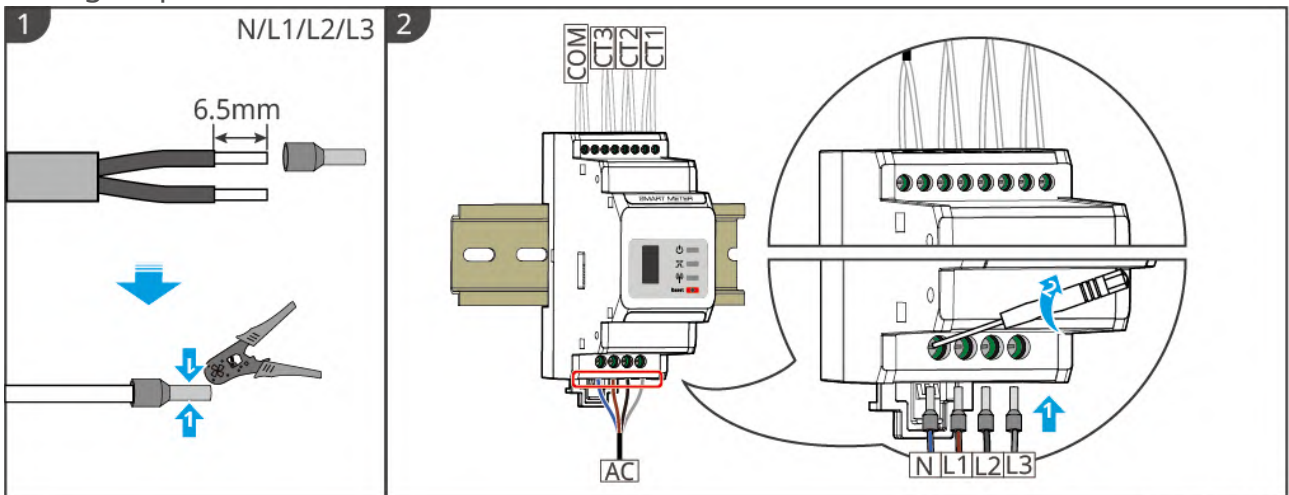
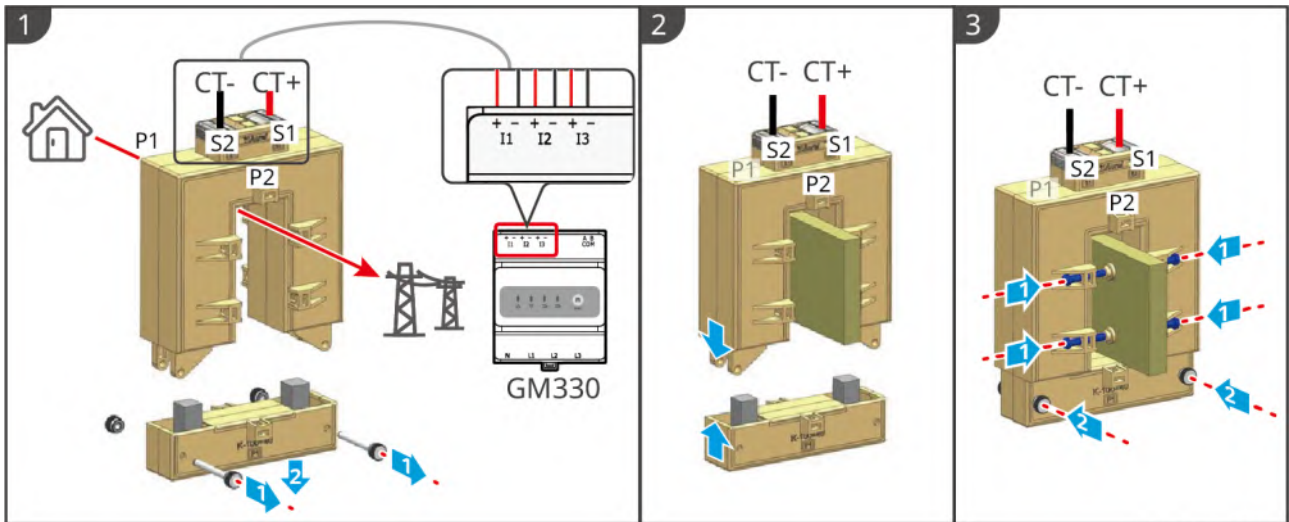


Figure43 GM3000

Wiring Steps

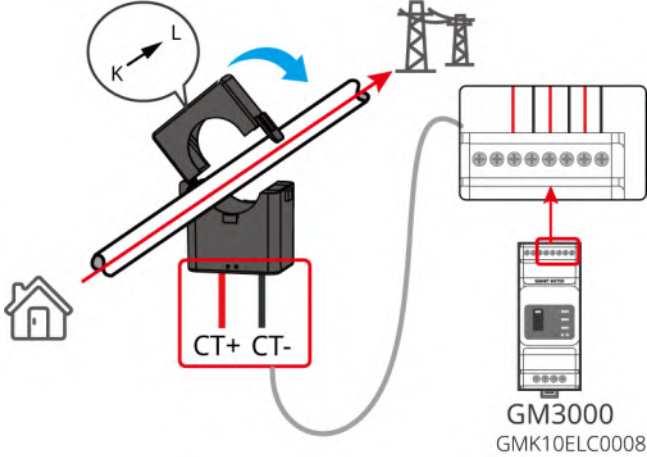


Installing the CT (Type One)



GMK10ELC0006

Installing the CT (Type Two)



GMK10ELC0008

5.9 Connecting the Inverter Communication Cable

NOTICE

- The inverter communication function is optional; please select it based on actual usage scenarios.
- If you need to use the remote shutdown function, please enable it in the SolarGo App after wiring is completed.
- Do not enable this function in the SolarGo App if the inverter is not connected to a remote shutdown device, otherwise the inverter will not be able to operate grid-connected.
- In a parallel system, to achieve the remote shutdown function, connect the

NOTICE

communication cable to the master inverter, otherwise the function will not work. To use the EnWG 14a function, ensure the ARM software version is 11.429 or above, and the SolarGo version is 6.0.0 or above.

- The inverter supports connecting to a phone or WEB interface via Bluetooth, 4G, WiFi, or LAN smart communication sticks to set device parameters, view device operation information and error messages, and stay informed of system status.
- When the system contains multiple inverters in a parallel network, the master inverter requires installation of an Ezlink3000 smart communication stick for networking. For an energy storage system with only one inverter, you can use a WiFi-Kit, WiFi/LAN Kit-20, or 4G smart communication stick.
- When using WiFi communication to connect the inverter to a router, you can install a WiFi-Kit, WiFi/LAN Kit-20, or Ezlink3000 smart communication stick.
- When using LAN communication to connect the inverter to a router, you can install a WiFi/LAN Kit-20 or Ezlink3000 smart communication stick.
- When using 4G communication to upload energy storage system operation information to the monitoring platform, you can install LS4G Kit-CN, 4G Kit-CN, 4G Kit-CN-G20, or 4G Kit-CN-G21 communication modules. When using LS4G Kit-CN or 4G Kit-CN, use the smart communication stick shipped with the inverter to configure the energy storage system parameters, then replace it with the LS4G Kit-CN or 4G Kit-CN for data transmission. When using 4G Kit-CN-G20 or 4G Kit-CN-G21, use the Bluetooth signal emitted by the module for local device configuration.
- The 4G module is an LTE single-antenna device, suitable for application scenarios with lower data transmission rate requirements.
- The built-in SIM card in the 4G module is a China Mobile communication card; please confirm whether the device is installed in an area covered by China Mobile's 4G signal.
- The 4G Kit-CN-G20 or 4G Kit-CN-G21 communication modules support replacement of the carrier SIM card. If local China Mobile signal is not covered, please contact the after-sales service center to replace it with another carrier's SIM card.
- After installing the 4G Kit-CN-G20 or 4G Kit-CN-G21 communication stick, please contact the after-sales service center to bind the inverter with the communication stick. After binding, if you need to install the communication stick on another inverter, please contact the after-sales service center to unbind it first.

NOTICE

- To ensure 4G signal communication quality, do not install the device indoors or in areas with metal interference.
If you need to use dual energy meters to achieve grid-connected generator power monitoring and load power consumption monitoring, use an RJ45 splitter for connection. The RJ45 splitter is to be provided by the user or purchased from GoodWe.

Communication Function Description

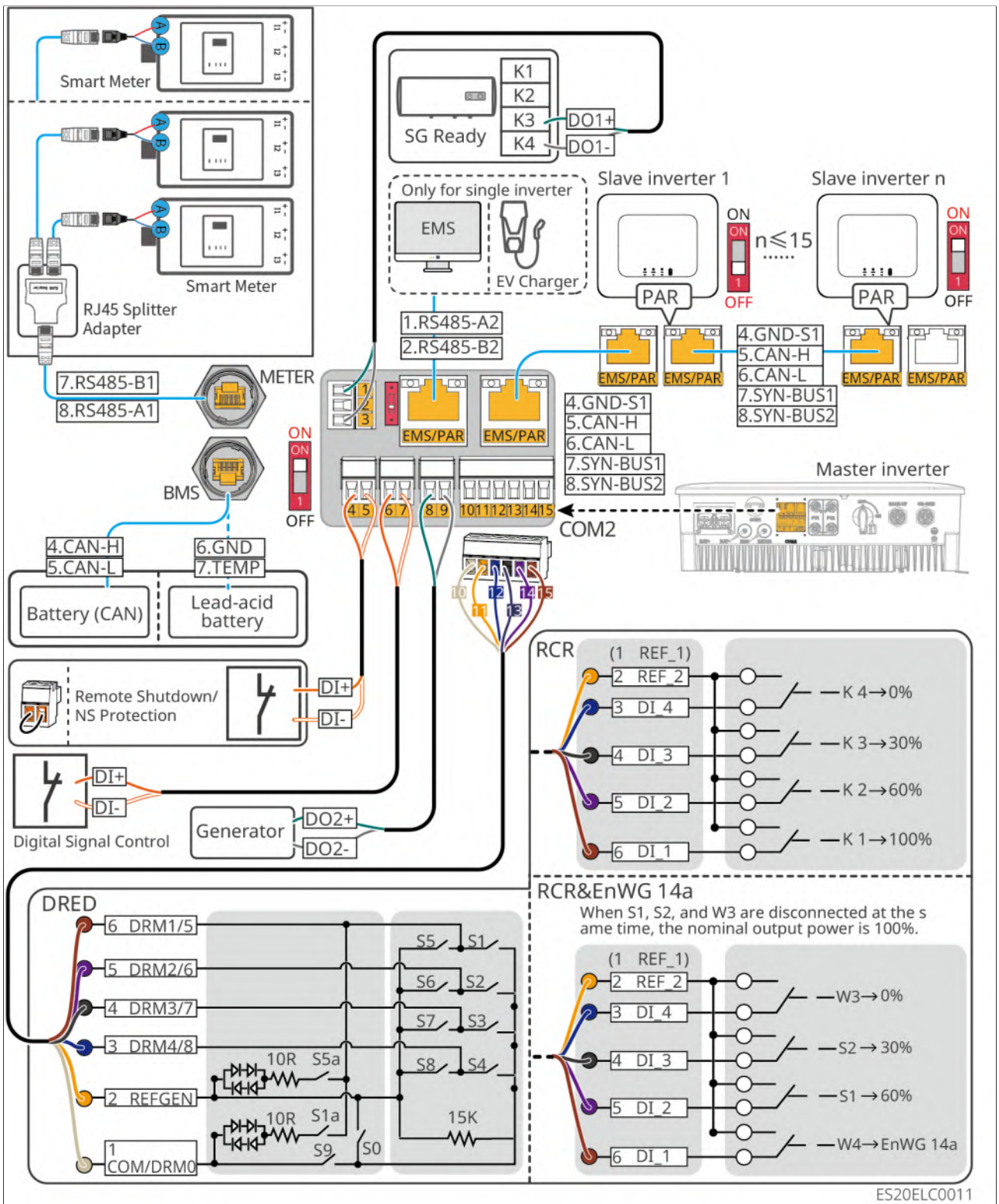
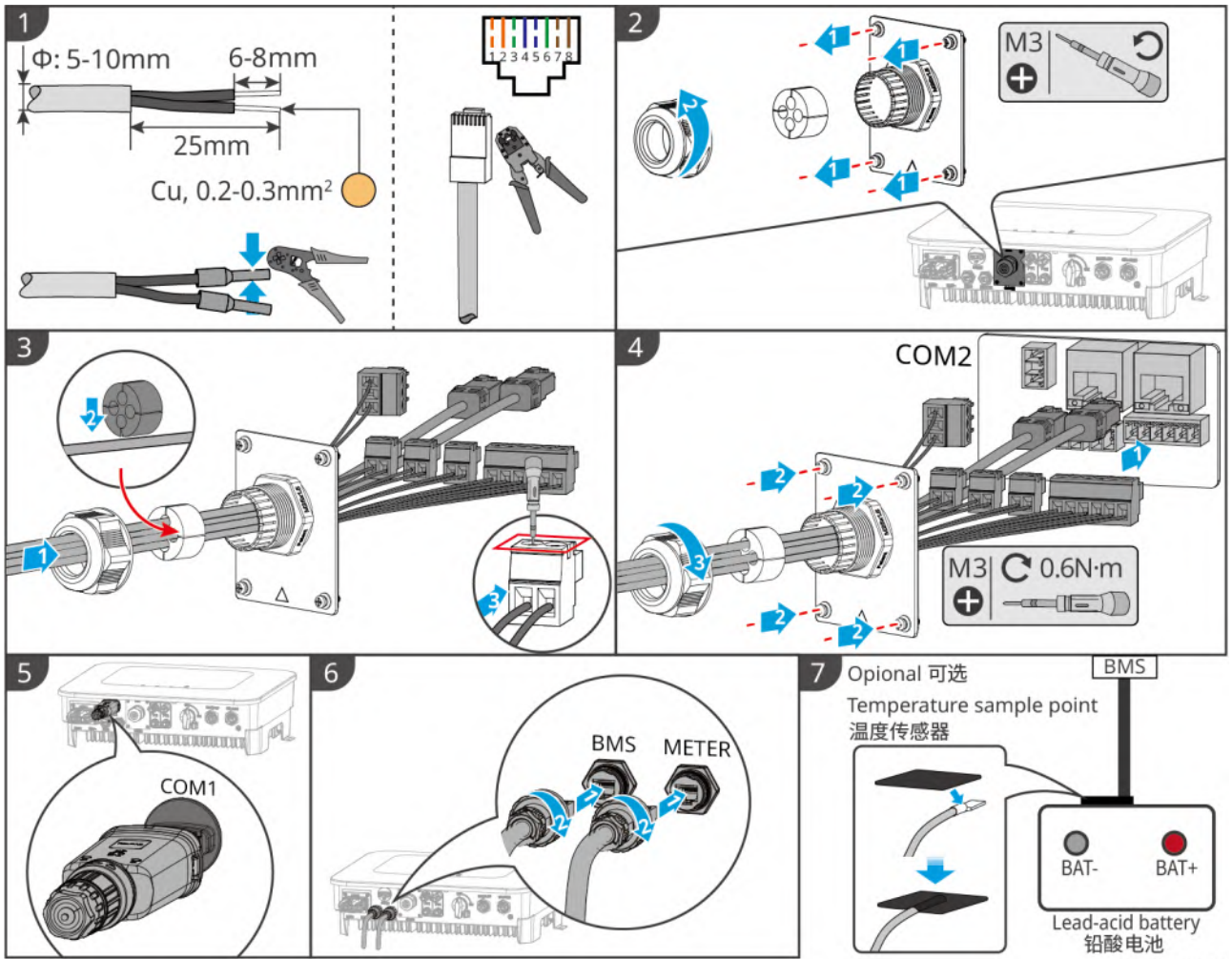


Figure44 Communication Function Description

port	Function	Description
1, 3	load control	<ul style="list-style-type: none"> • Supports connection to dry contact signals to achieve functions such as load control. DO contact capacity is 12V DC@1A, NO/COM normally open contacts. • Supports SG Ready heat pump connection, controlling the heat pump via dry contact signals. • Supported operating modes: <ul style="list-style-type: none"> ◦ Operating Mode 2 (Signal: 0:0): Energy-saving Mode. In this mode, the heat pump operates in energy-saving mode. ◦ Operating Mode 3 (Signal: 0:1): Start Recommendation. In this mode, the heat pump increases hot water storage to store heat while maintaining current operation.
4-5	Remote Shutdown/ NS Protection	<p>Provides signal control ports for remote shutdown of the device or to implement NS Protection function.</p> <p>Remote Shutdown function:</p> <ul style="list-style-type: none"> • Can control the device to stop working in case of an unexpected event. • The remote shutdown device must be a normally closed switch. • When the inverter uses RCR or DRED functions, ensure the remote shutdown device is connected, or the remote shutdown port is short-circuited.
6-7	Digital Signal Control	Normally closed switch. The inverter supports receiving remote commands, alarms, and other DI signals via the DI port.
8-9	Generator Start/Stop Control Port	Supports connection to generator control signals. Do not connect generator power lines to the inverter AC port.

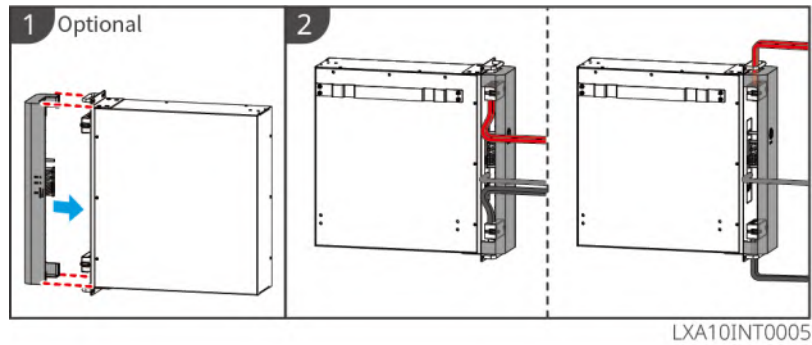
port	Function	Description
10-15	DRED, RCR, or EnWG 14a Function Connection Port (DRED/RCR/ EnWG 14a)	<ul style="list-style-type: none"> • RCR (Ripple Control Receiver): Provides RCR signal control port to meet grid dispatch requirements in regions such as Germany. • DRED (Demand Response Enabling Device): Provides DRED signal control port to meet DERD certification requirements in regions such as Australia. • EnWG (Energy Industry Act) 14a: All controllable loads must accept grid emergency dimming. Grid operators can temporarily reduce the maximum grid power purchase of controllable loads to 4.2 kW.
EMS/PARR	<ul style="list-style-type: none"> • EMS communication or EV charger communication port • Parallel communication port 	<ul style="list-style-type: none"> • CAN and BUS ports: Parallel communication ports. CAN communication is used to connect to other inverters in a parallel system network; the BUS is used to control the grid-tied/off-grid status of each inverter in the parallel system. • RS485 port: Used to connect to third-party EMS devices and EV chargers. Connection to third-party EMS devices and EV chargers is not supported in parallel system scenarios.
BMS	Battery BMS Communication	<ul style="list-style-type: none"> • When connecting lead-acid batteries, used to connect the temperature sensor cable for lead-acid temperature measurement. • When connecting lithium-ion batteries, used to connect the battery system BMS communication cable, supports CAN signal communication.
METER	Meter Communication	Supports connecting to an external smart meter using RS485 communication.

Method for Connecting the Communication Cable

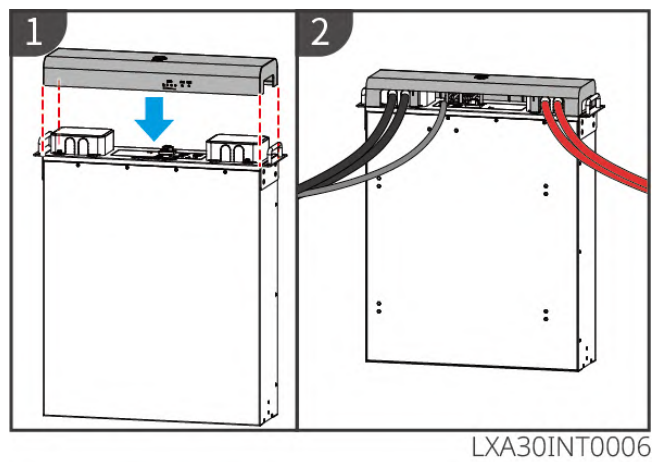


6 Installing the Battery System Protection Cover

6.1 LX A5.0-10

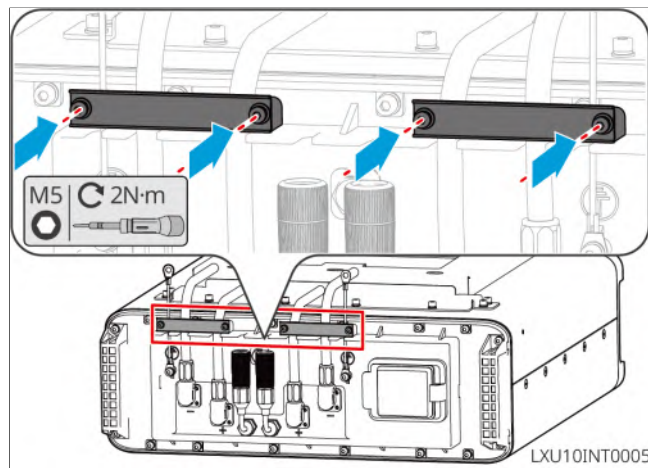


6.2 LX A5.0-30

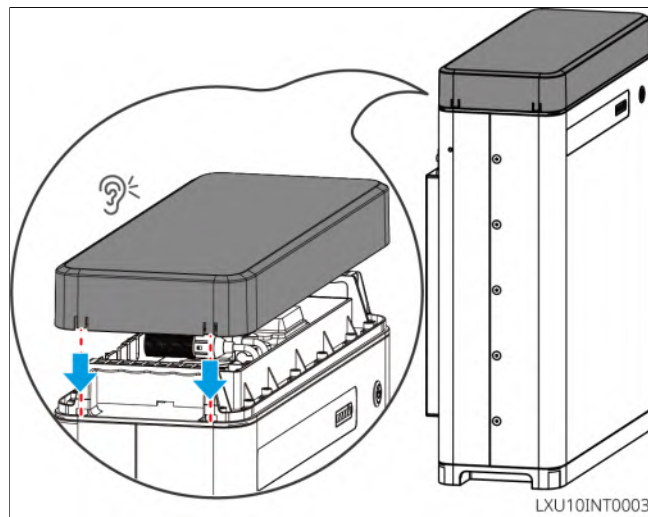


6.3 LX U5.4-L、 LX U5.4-20

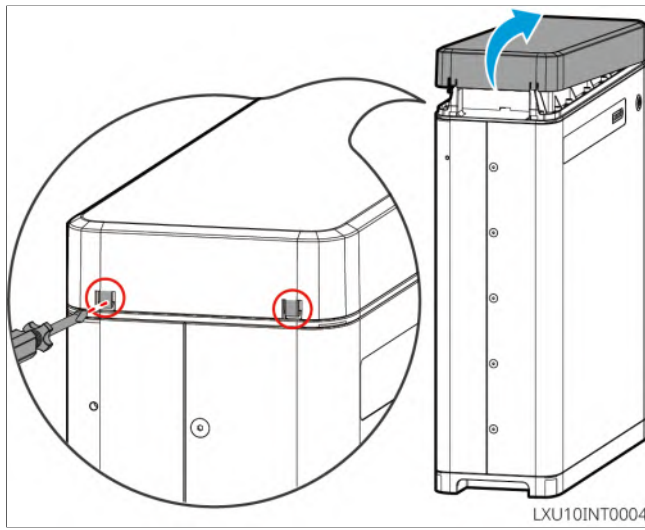
Step 1: Installation wiring harness fixing plate



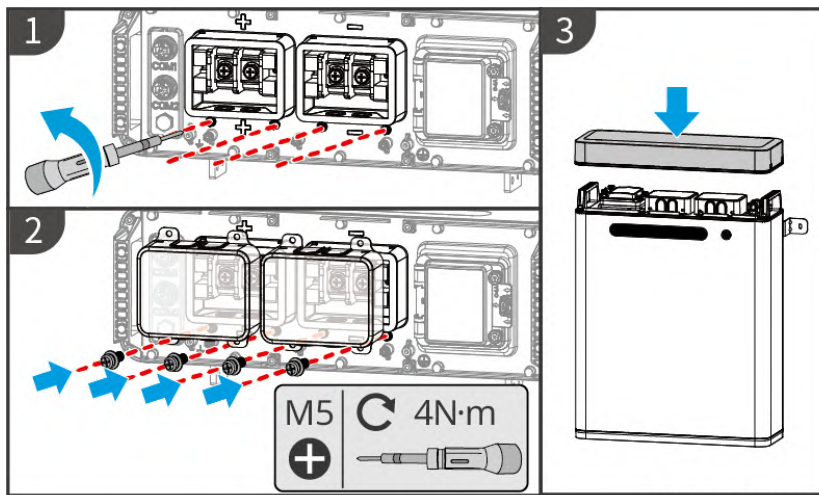
Step 2: Installation Plastic Upper Cover



- 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.



6.4 LX U5.0-30



7 System Commissioning

7.1 Check Before Power ON

No.	Inspection Item
1	The equipment is securely installed, positioned for easy operation and maintenance, with adequate space for ventilation and heat dissipation, and the installation environment is clean and tidy.
2	The PE cable, DC cables, AC cables, Communication cable, and terminal resistors are connected correctly and securely.
3	Cable routing and bundling comply with requirements, are reasonably distributed, and show no damage.
4	For unused cable entry holes and ports, ensure they are reliably connected and sealed using the terminal blocks provided in the accessories.
5	Ensure all used cable entry holes have been properly sealed.
6	The voltage and frequency at the inverter grid connection point meet the grid connection requirements.

7.2 Power ON



- When there are multiple inverters in the system, ensure that all slave inverters are powered on at the AC side within one minute after the master inverter is powered on at the AC side.
- Battery black start usage scenarios:
 - Requires activating the inverter using the battery.
 - Necessitates battery charge/discharge management when no inverter is present.
- After the battery system starts, ensure normal communication between the inverter and the battery system within 15 minutes. If communication fails, the battery system switch will automatically open, powering down the battery system.
- When there are multiple batteries in the system, starting any one battery will start all batteries.

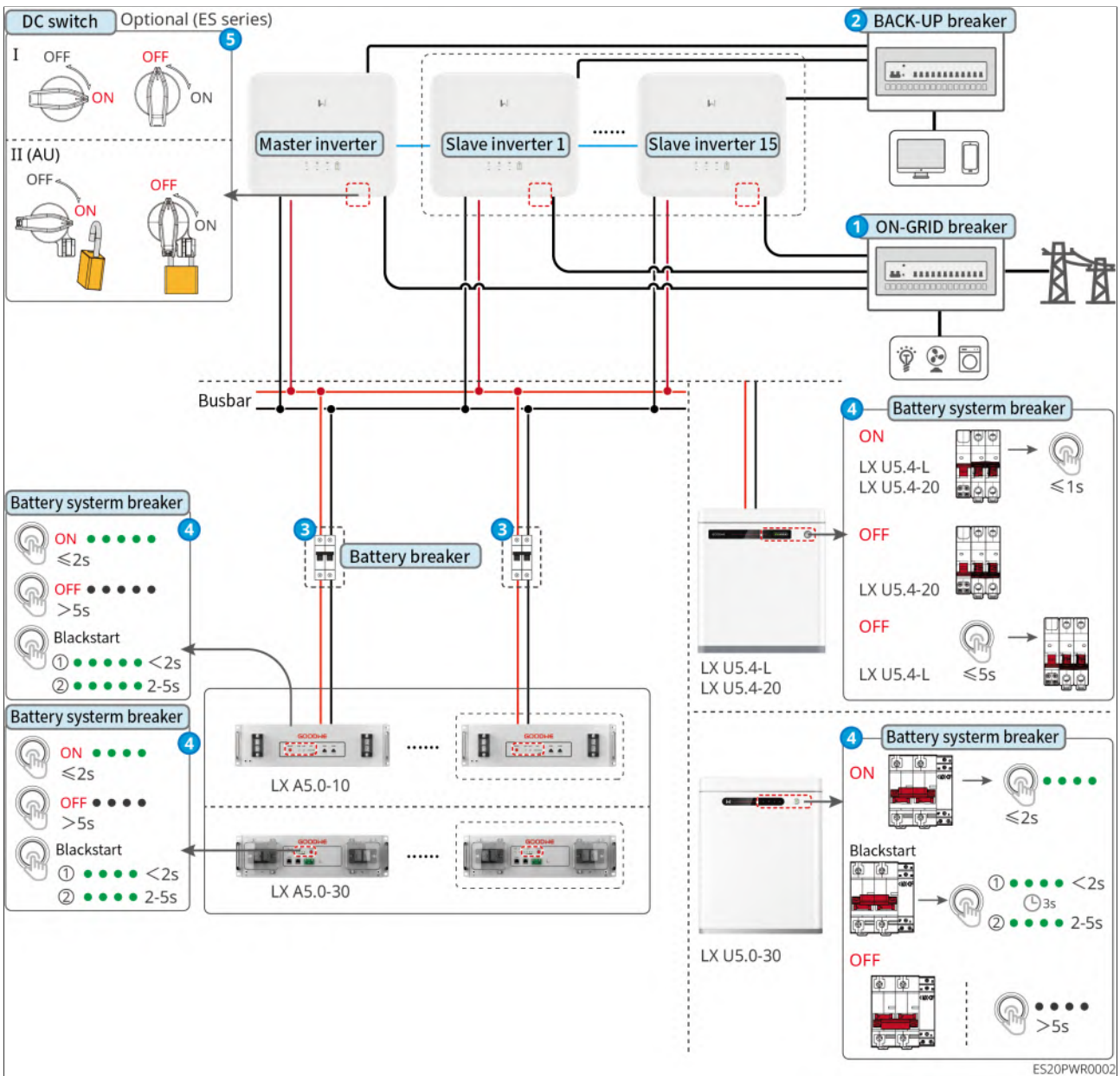


Figure45 Power-on Procedure


















Power-on steps:

① → ② → ③ → ④ → ⑤

③: Optional based on local laws and regulations.

7.3 Indicators

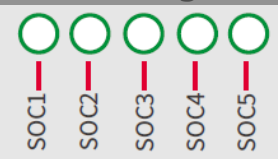

7.3.1 Inverter Indicators

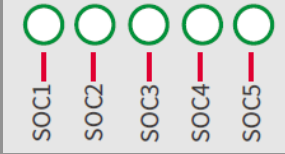

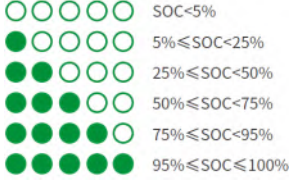
indicator	Status	Description
		The inverter is powered on and in standby mode.
		The inverter is starting up and in self-test mode.
		The inverter is operating normally in grid-tied power generation or off-grid mode.
		BACK-UP output overload
		System fault
		The inverter is powered off.
		Grid abnormal, inverter BACK-UP port power supply normal.
		Grid normal, inverter BACK-UP port power supply normal.
		BACK-UP port no power supply.
		Inverter monitoring module resetting.
		Inverter and communication terminal not connected.
		Communication terminal and cloud server communication fault.
		Inverter monitoring normal.
		Inverter monitoring module not started.

7.3.2 Battery Indicators


7.3.2.1 LX A5.0-10


Normal state

State of Charge (SOC)	RUN light	Battery system status
		
	Green flashing once per second	Battery system is in the Standby state








State of Charge (SOC) 	RUN light 	Battery system status
<p>SOC represents the remaining battery capacity.</p> <p>  </p>	<p>Green flashing at 2 times/s</p>	<p>Battery system is in idle state</p>
<p>Maximum SOC indicator flashes once per second</p> <ul style="list-style-type: none"> • When $5\% \leq \text{SOC} < 25\%$, SOC1 flashes. • When $25\% \leq \text{SOC} < 50\%$, SOC2 flashes. • When $50\% \leq \text{SOC} < 75\%$, SOC3 flashes. • When $75\% \leq \text{SOC} < 95\%$, SOC4 flashes. • When $95\% \leq \text{SOC} \leq 100\%$, SOC5 flashes. 	<p>Green steady on</p>	<p>Battery system is in the Charge state</p>
	<p>Green steady on</p>	<p>Battery system is in Discharge state</p>

abnormal state

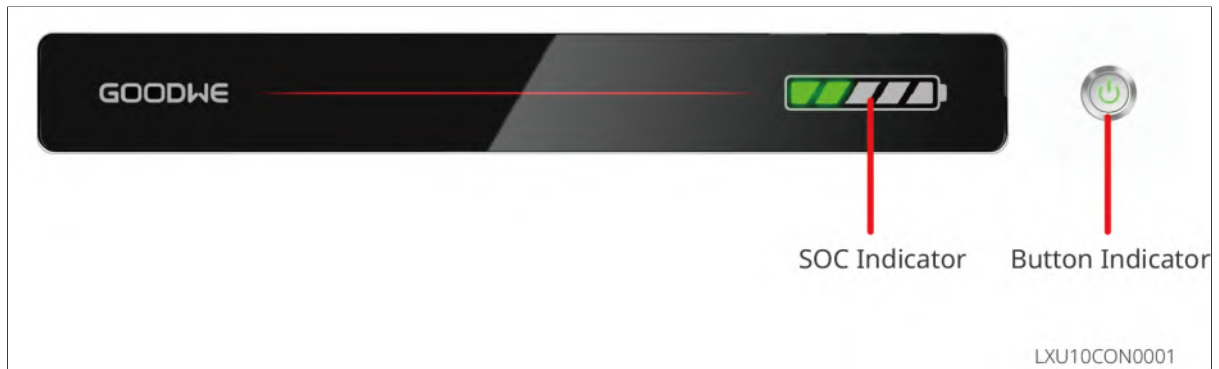
ALM light 	Battery system status	Description
<p>Red flashes once per second</p>	<p>Battery system alarm occurred</p>	<p>After the Battery system alarm occurs, the Battery system will perform a self-check. Wait for the Battery system self-check to complete, and the Battery system will enter normal operation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

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.

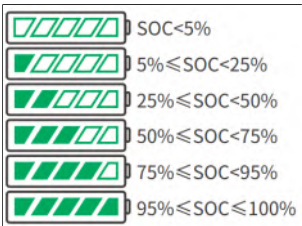

7.3.2.2 LX A5.0-30、LX U5.0-30

indicator	System Status
	SOCindicator no green display SOC=0%
	The first SOC indicator is displayed in green. $0% < SOC \leq 25%$
	The second SOCindicator is displayed in green. $25% < SOC \leq 50%$
	The third SOC indicator displays green. $50% < SOC \leq 75%$
	The fourth SOC indicator is displayed in green. $75% < SOC \leq 100%$
 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.

7.3.2.3 LX U5.4-L

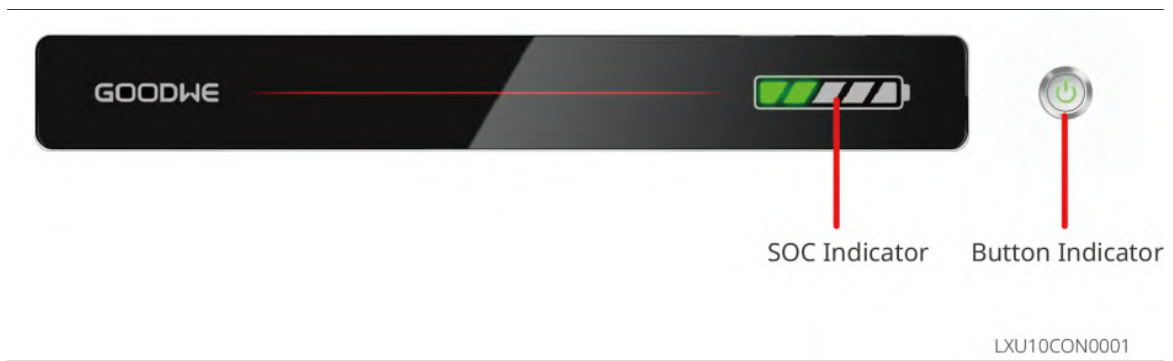


Normal state

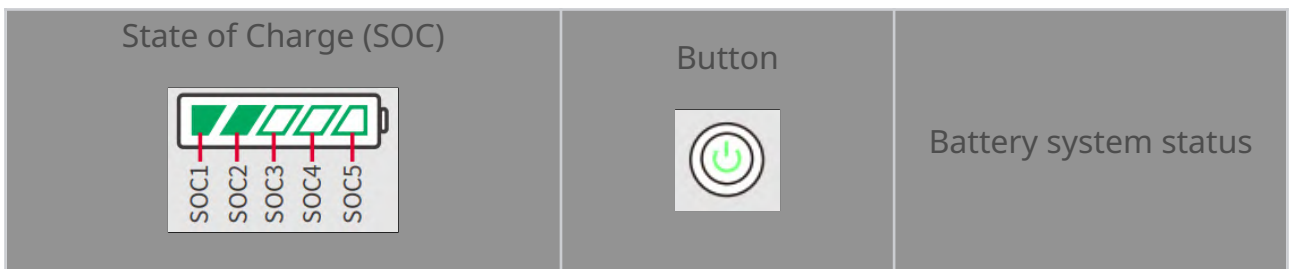
State of Charge (SOC)	Button	Battery system status
<p>SOC represents the state of charge.</p> 	 <p>Green flashing once per second</p>	<p>Battery system is in the Standby state</p>

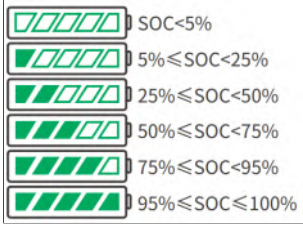
<p>Maximum SOC indicator flashes once per second, other green lights remain steady on.</p> <ul style="list-style-type: none"> • When $5\% \leq \text{SOC} < 25\%$, SOC1 flashes. • When $25\% \leq \text{SOC} < 50\%$, SOC2 flashes. • When $50\% \leq \text{SOC} < 75\%$, SOC3 flashes. • When $75\% \leq \text{SOC} < 95\%$, SOC4 flashes. • When $95\% \leq \text{SOC} \leq 100\%$, SOC5 flashes. 	<p>Green steady on</p>	<p>Battery system operating normally</p>
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7.3.2.4 LX U5.4-20




Normal state



<p>SOC represents the state of charge.</p> 	<p>Green flashing once per second</p>	<p>Battery system is in the Standby state</p>
<p>Maximum SOC indicator flashes once per second, other green lights remain steady on.</p> <ul style="list-style-type: none"> • When $5\% \leq \text{SOC} < 25\%$, SOC1 flashes. • When $25\% \leq \text{SOC} < 50\%$, SOC2 flashes. • When $50\% \leq \text{SOC} < 75\%$, SOC3 flashes. • When $75\% \leq \text{SOC} < 95\%$, SOC4 flashes. • When $95\% \leq \text{SOC} \leq 100\%$, SOC5 flashes. 	<p>Green steady on</p>	<p>Battery system operating normally</p>



abnormal state

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



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

7.3.3.1 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

7.3.3.2 GMK110D

Type	Status	Description
Power Light 	Constantly lit	The electricity meter is powered on.
	Off	The electricity meter is powered off.
Communication Light 	Flashing	The electricity meter communication is normal.
	Off	The electricity meter communication is abnormal or not communicating.










7.3.3.3 GM1000D & GM3000 & GM1000

Type	Status	Description
	Steady on	The meter is powered on

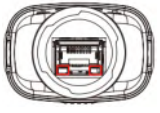
Power light 	Off	The meter is powered off
Buy/Sell light 	Steady on	buy power from the grid
	Flashing	Sell power to the grid
Communication light 	Flashing	Communication normal
	Flashing 5 times continuously	Press Reset button <3s: Meter reset Press Reset button 5s: Meter parameters restored to factory defaults Press Reset button >10s: Meter parameters restored to factory defaults, energy data cleared
	Off	No communication from the meter

7.3.4 Smart Dongle Indicator

7.3.4.1 WiFi/LAN Kit-20


indicator	Status	Description
Power LED 		Constant Light: Smart dongle has been power on.
		Extinguish: Smart dongle Not power on
Communi cation light 		Always On: WiFi mode or LAN mode communication is normal.
		Single flash: Smart dongle Bluetooth signal is on, waiting to connect to the App.
		Double flash: Smart dongle not connected to Router.
		Four flashes: Smart dongle communicates normally with Router, but fails to connect to Server
		Six flashes: Smart dongle is identifying connected devices.


indicator	Status	Description
	_____	Extinguished: Smart dongle Software reset in progress or not power on.

indicator	color	Status	Description
LAN communication indicator 	green	Always On	100Mbps wired network connection is normal.
		Extinguish	<ul style="list-style-type: none"> • Network cable not connected. • 100Mbps wired network connection anomaly. • 10Mbps wired network connection is normal.
	Yellow	Always On	10/100Mbps wired network connection is normal, with no communication data transmission or reception.
		flicker	Communication data transmitting/receiving.
		Extinguish	Network cable not connected.



Button	Description
Reload	Press and hold for 0.5~3 seconds, Smart dongle will be reset. Hold for 6~20 seconds, Smart dongle will restore factory settings.

7.3.4.2 Wi-Fi Kit

indicator	Color	Status	Description
Power indicator 	Green	On	Wi-Fi Kit is powered on
		Off	Wi-Fi Kit is not powered on or restarting
	Blue	On	WiFi AP hotspot is connected










Communicati on indicator 		Off	<ul style="list-style-type: none"> • Wi-Fi Kit communication abnormal • Wi-Fi Kit restarting
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7.3.4.3 LS4G Kit-CN, 4G Kit-CN

indicator	color	status	description
power indicator 	green	on	the module is fastened and powered on
		off	the module is not fastened or not powered on
communicati on indicator 	blue	slow blinking (0.2s on, 1.8s off)	<ul style="list-style-type: none"> • Inverter communication indicator blinks 2 times: dialing, searching for network • Inverter communication indicator blinks 4 times: failed to connect to cloud due to no data flow
		slow blinking (1.8s on, 0.2s off)	<ul style="list-style-type: none"> • Inverter communication indicator blinks 2 times: dialing successful • Inverter communication indicator stays on: cloud connection successful • Inverter communication indicator blinks 4 times: failed to connect to cloud due to no data flow
		fast blinking (0.125s on, 0.125s off)	Inverter is communicating with cloud through module








		0.2s on, 8s off	SIM card not installed or poor contact
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7.3.4.4 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.
		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.

7.3.4.5 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 is not connected to Router.
			Four flashes = Communication stick is connected to Router, but not connected to Server.

indicator /screen printing	color	Status	Description
RELOAD	-	-	<ul style="list-style-type: none"> • Press and hold for 1-3 seconds to restart the communication stick. • Press and hold for 6-10 seconds to restore factory settings. <p>Quick double-click to activate Bluetooth signal (maintained for 5 minutes only).</p>

8 System Commissioning

8.1 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.

8.1.1 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

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

NOTICE

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

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



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

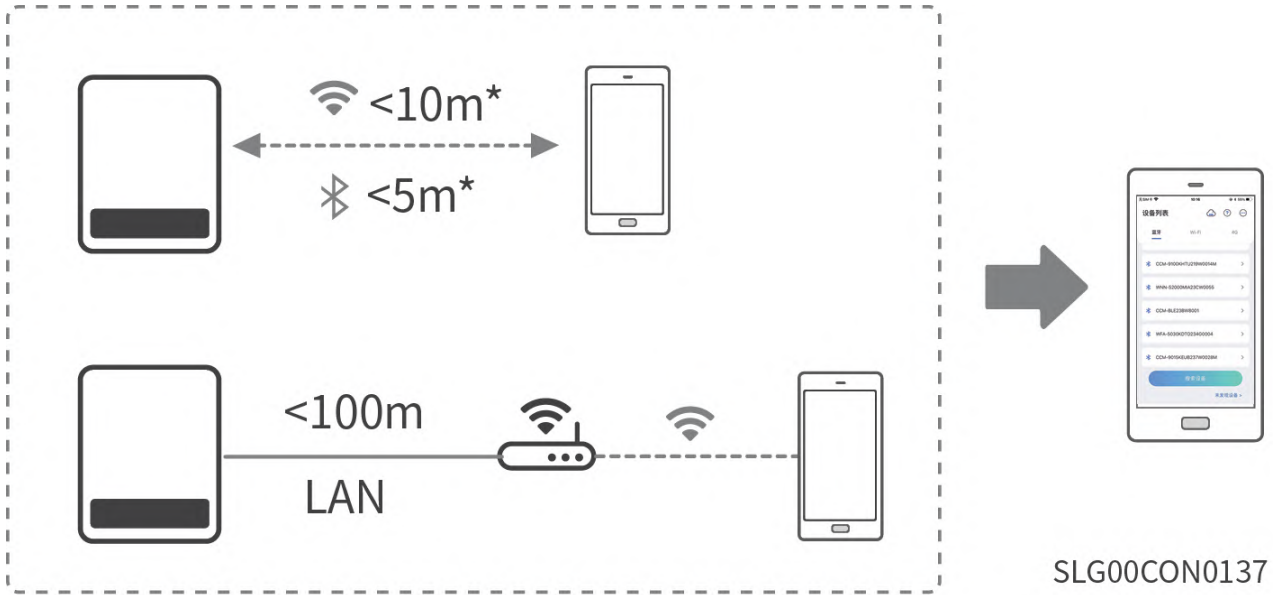


8.1.2 App Connection

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.



8.1.3 GUI Introductions to Login Page



No.	Name/Icon	Description
1		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		<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ◦ Wi-Fi/LAN Kit, Wi-Fi Kit, Wi-Fi Box: Solar-WiFi*** ◦ External or integrated bluetooth module: 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.

8.2 Connecting the Hybrid Inverter

8.2.1 Connecting the Hybrid Inverter (Bluetooth)

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

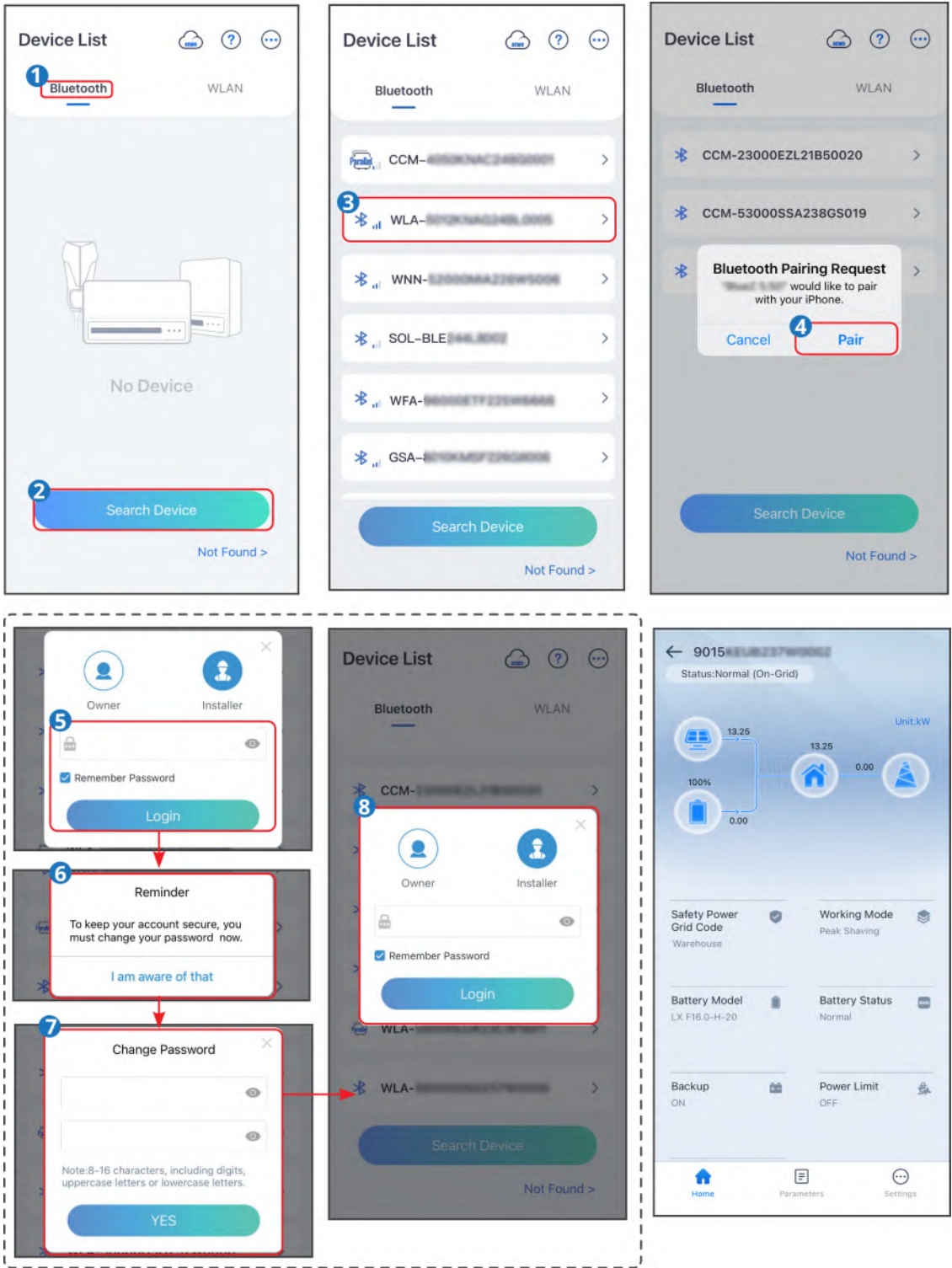
Step 2 Select **Bluetooth** tab on the SolarGo app homepage.

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.

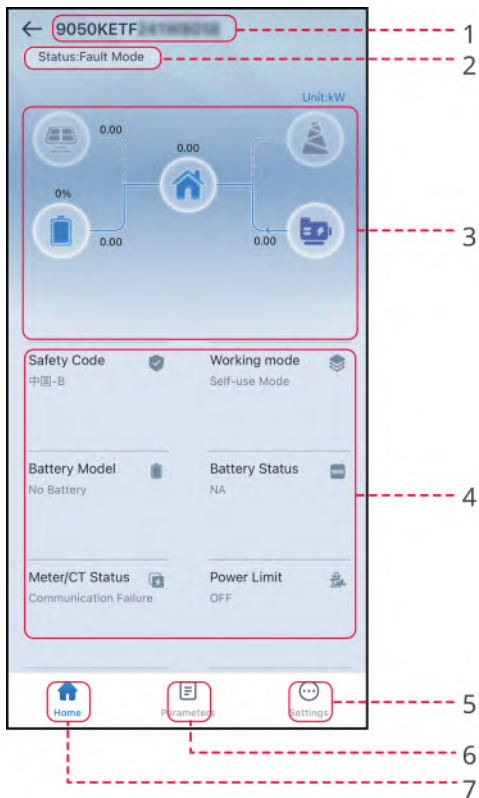
Step 4 For first connection with the equipment via Bluetooth, there will be a Bluetooth pairing prompt, tap **Pair** to continue the connection.



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.



8.3 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 check Serial Number, Device Status, Energy Flow Chart, System Status, etc.
6		Parameters. Tap Parameters to check the inverter Data.

No.	Name/Icon	Description
7		<ul style="list-style-type: none"> • 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.

8.4 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.

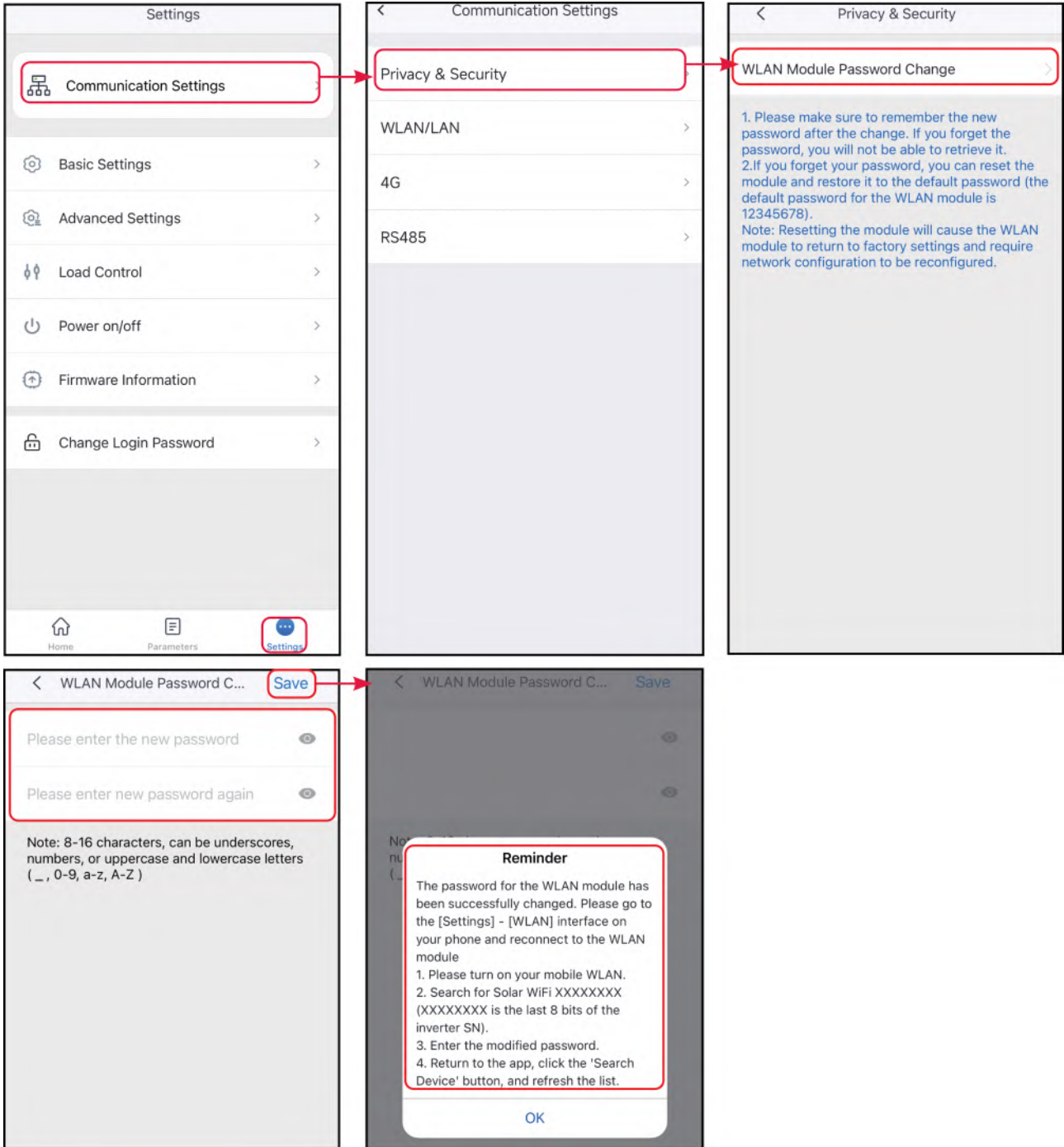
8.4.1 Setting Privacy and Security Parameters

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**.

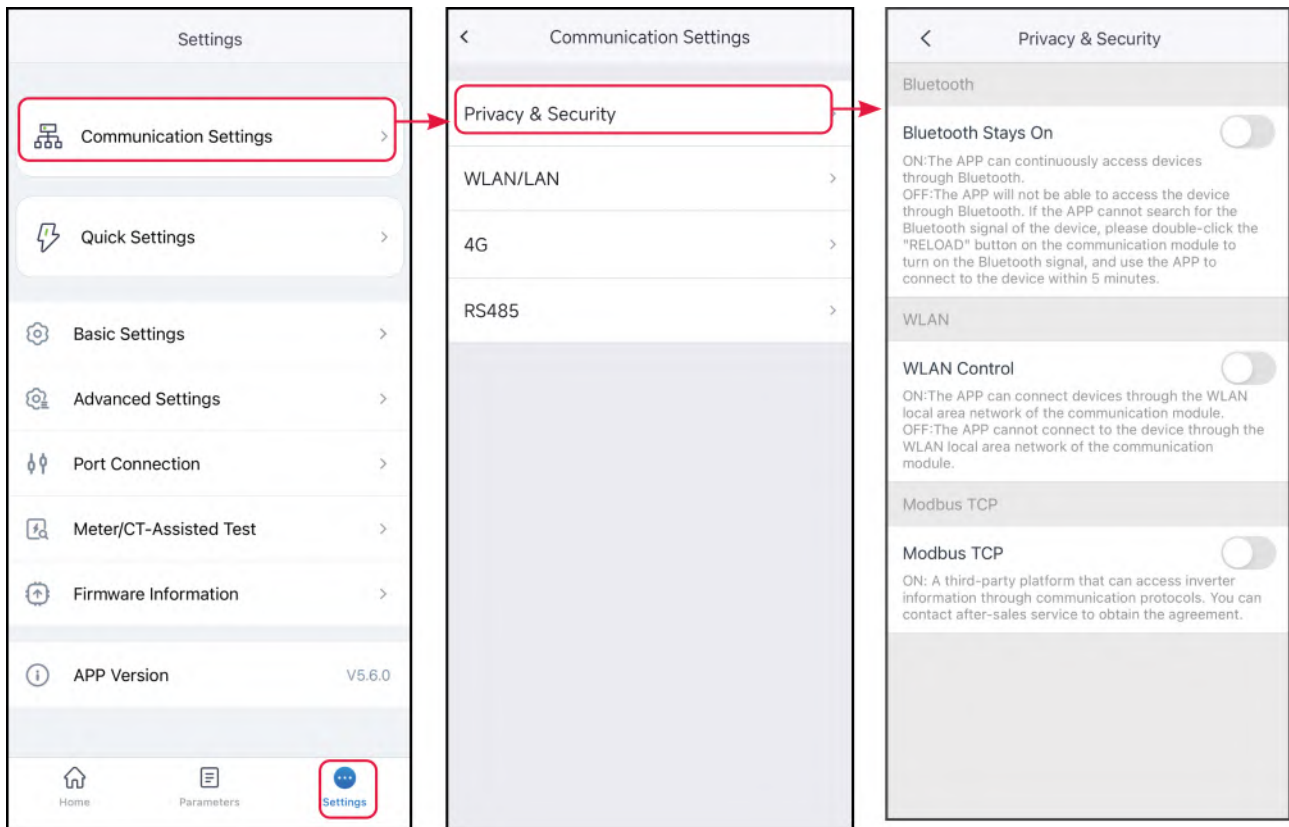
Step 3 Open the WiFi settings of your phone and connect to the inverter's WiFi signal (Solar WiFi**) with the new password.



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.



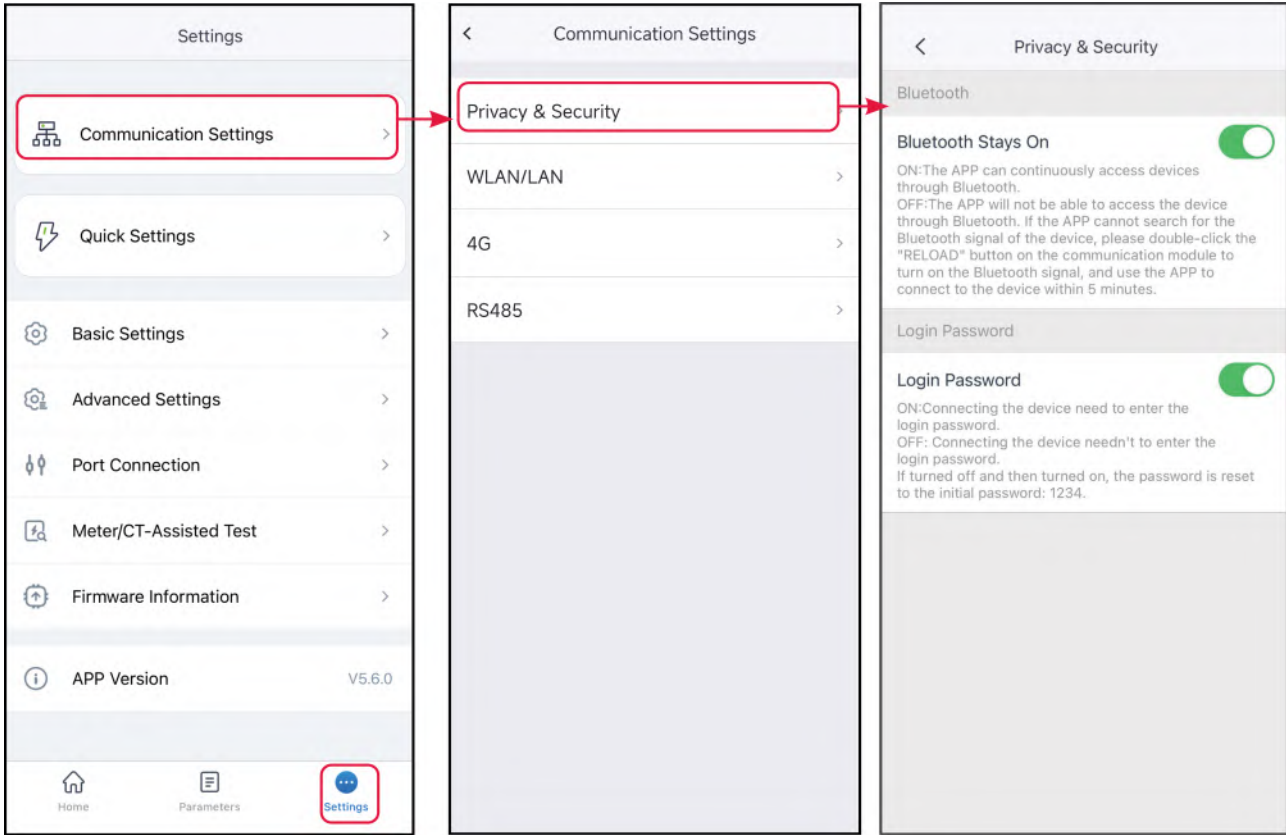
No.	Parameters	Description
1	Bluetooth Stays On	Disabled by default. Enable the function, the bluetooth of the device will be contentious on to keep connected to SolarGo. Otherwise, the bluetooth will be off in 5 minutes, and the device will be disconnected from SolarGo.
2	WLAN Control	Disabled by default.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

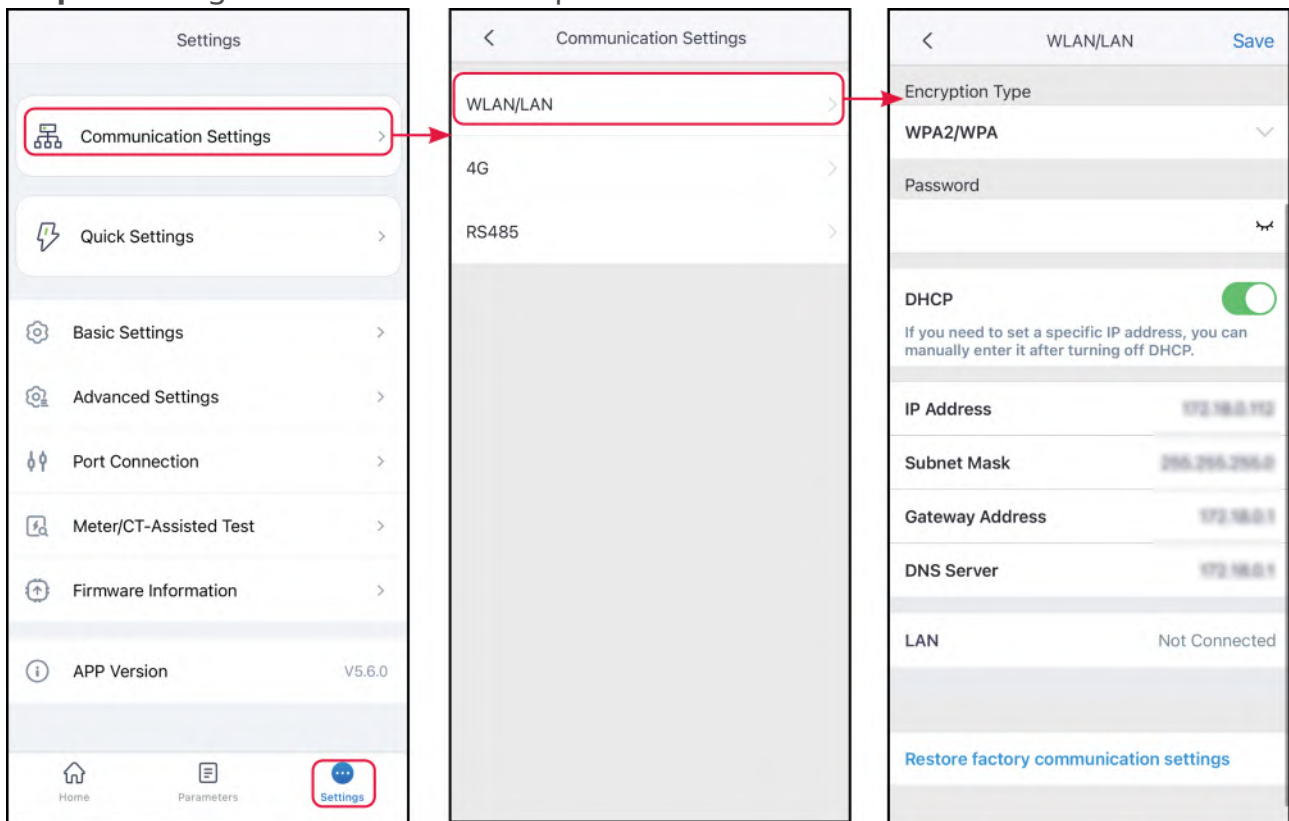
8.4.2 Setting WLAN/LAN Parameters

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	

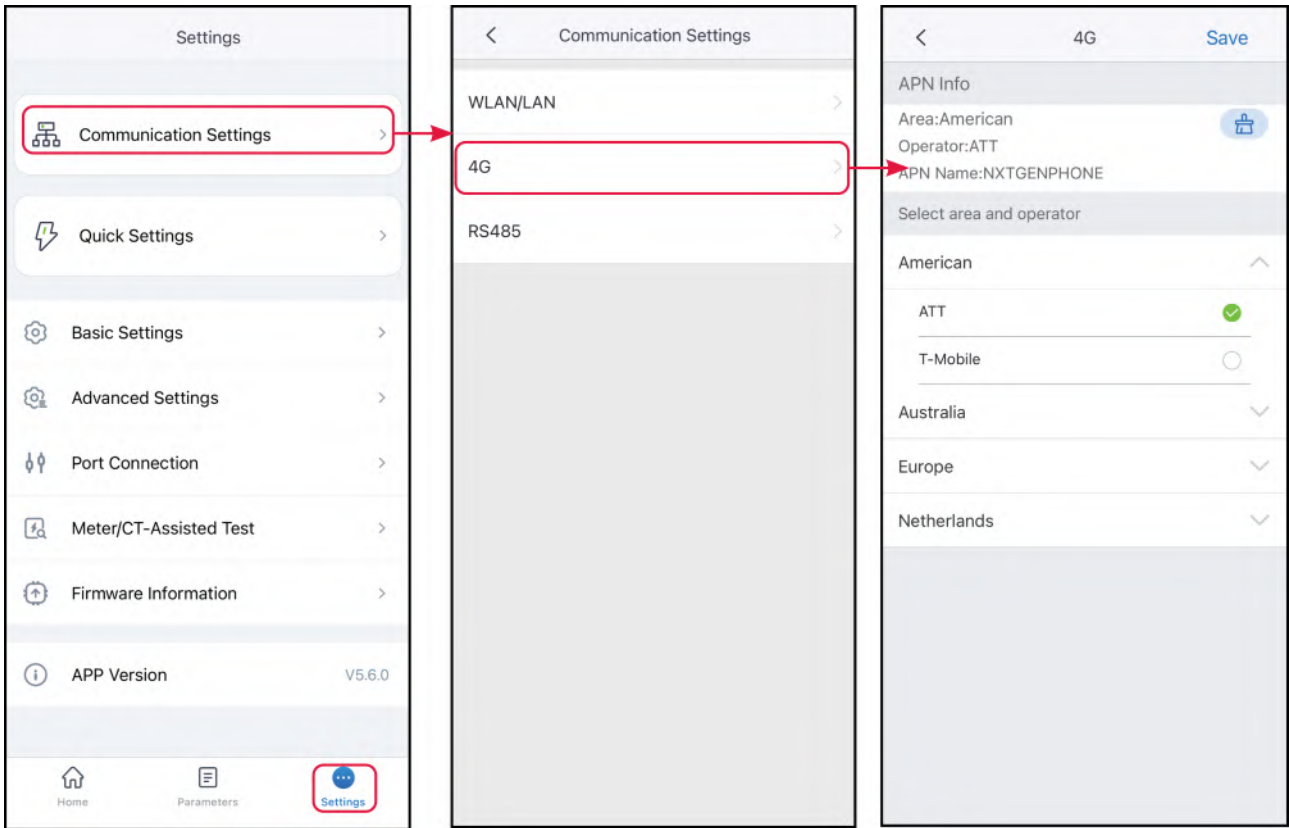
8.4.3 Configuring APN Parameters

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.



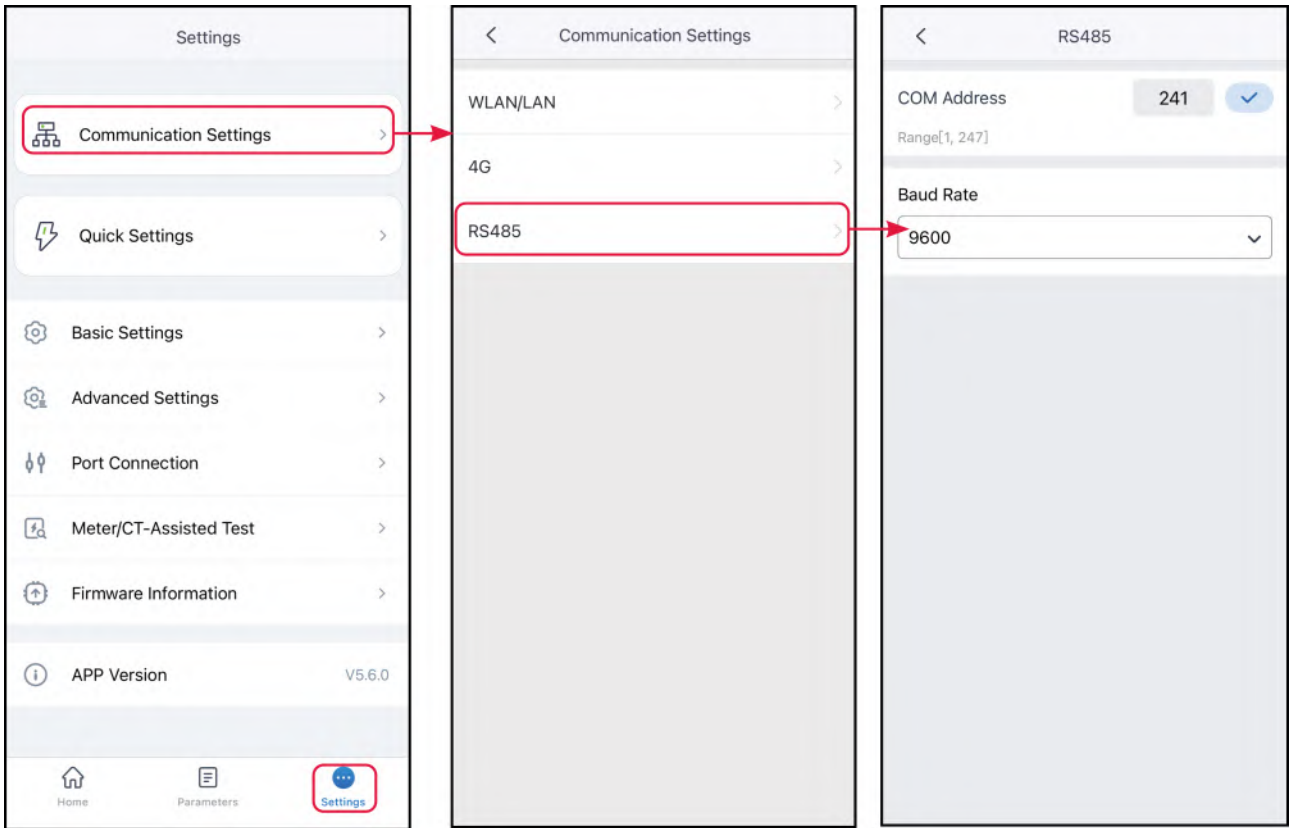
8.4.4 Configuring RS485 Parameters

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.



8.5 Quick Setting the Basic Information

NOTICE

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

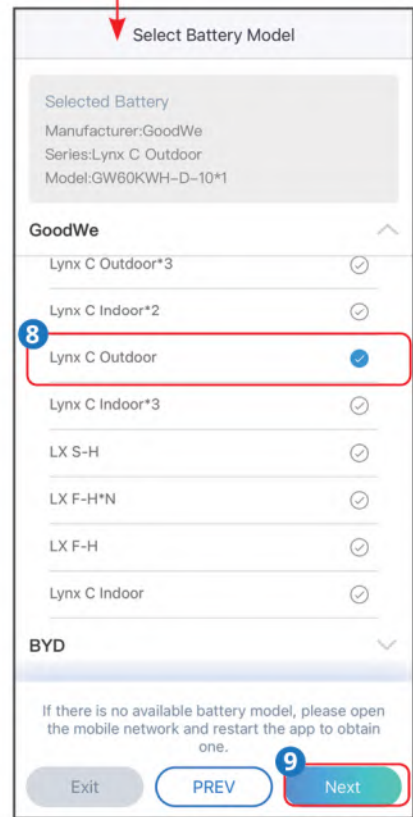
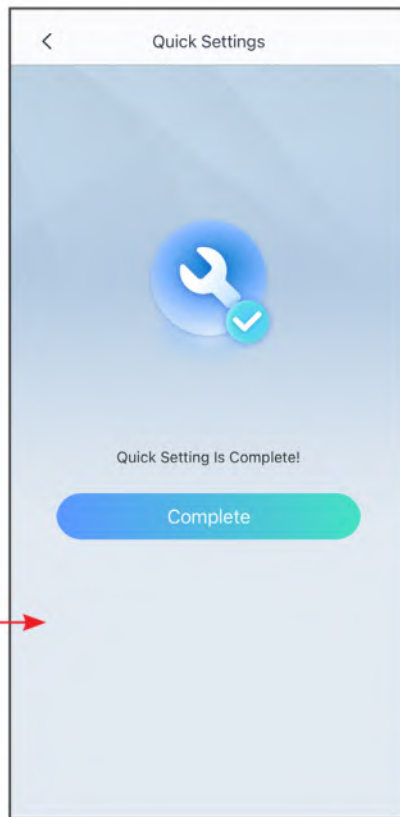
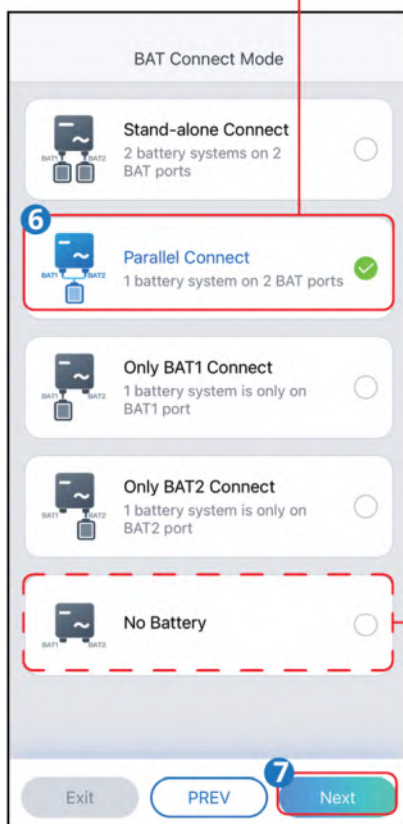
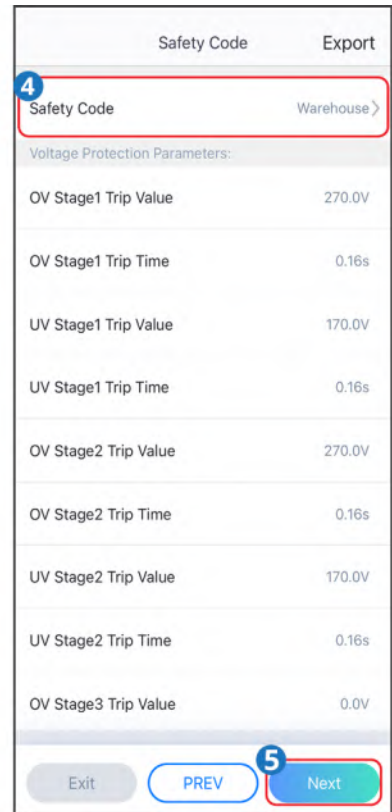
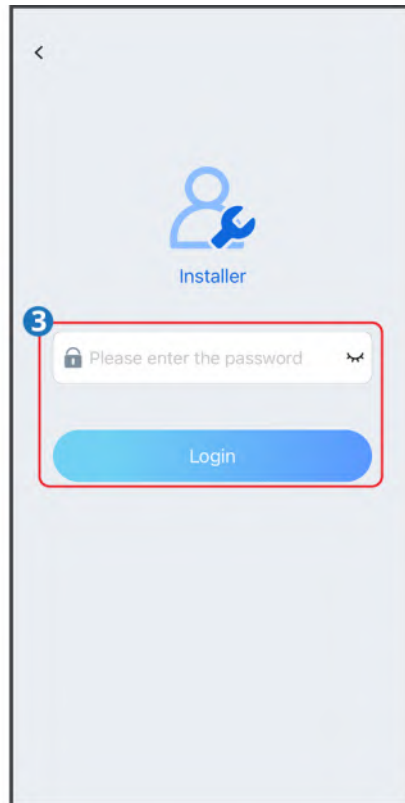
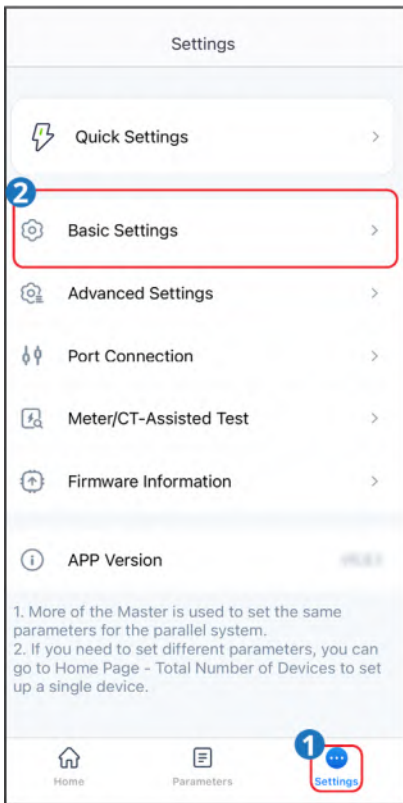
8.5.1 Quick System Setup (Type III)

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.

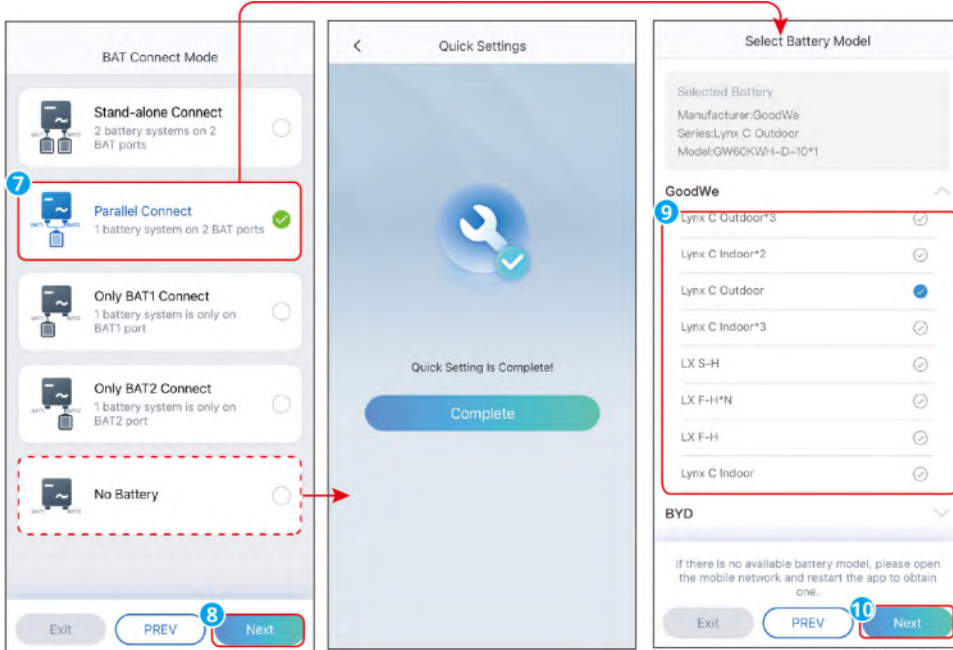
Step 4: Only for parallel scenarios. Setting On-grid Inverter Parameters. After completing the settings, click **Next** to set the battery connection mode.



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

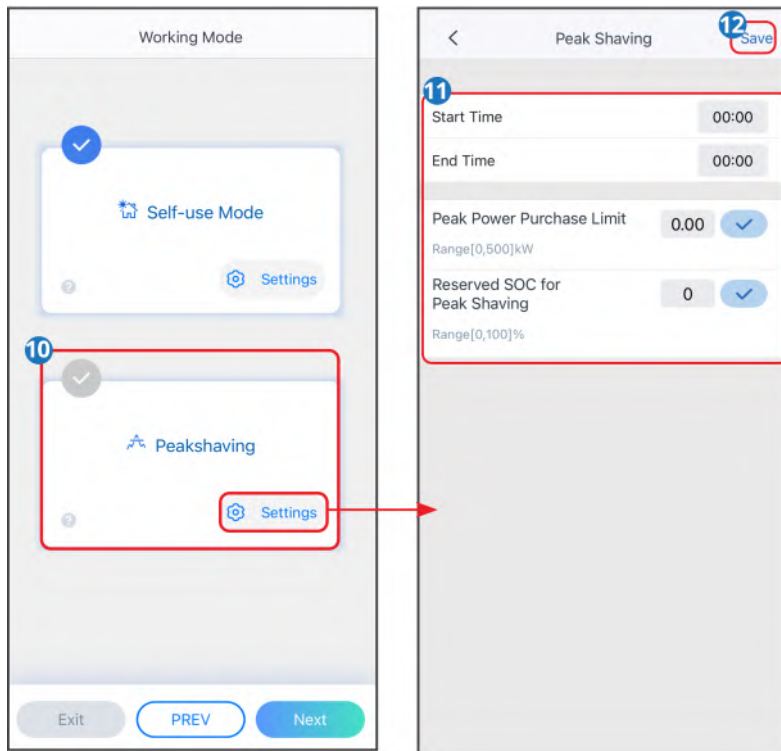
situation. If no battery is connected, the basic parameter settings are complete. If a battery is connected, click **Next** after completing the settings to set the battery type. **Step 6:** Select the battery model based on the actual battery connection. After completing the settings click **Next**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



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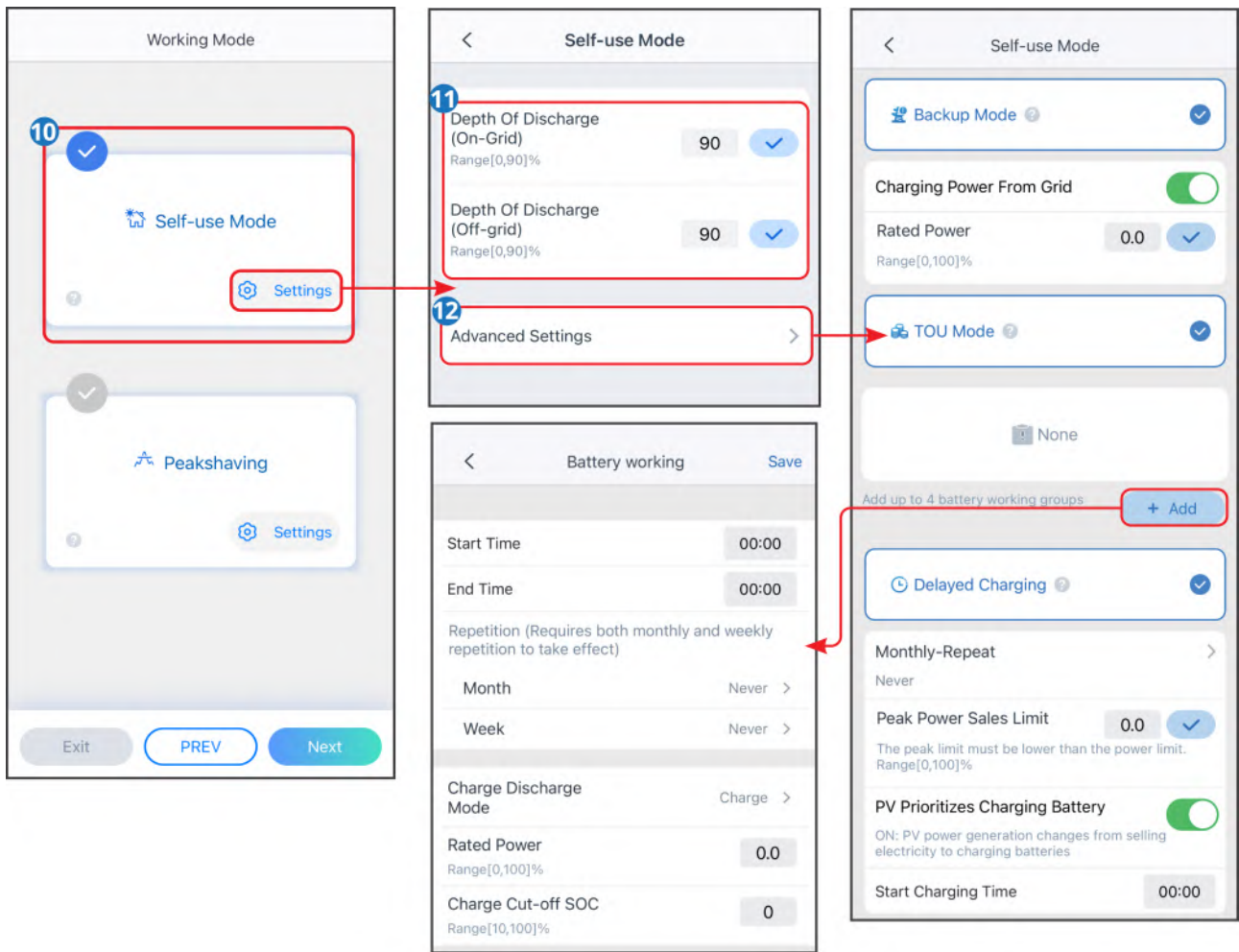
Step 7: Set the working mode according to actual needs. After completing the settings click **Next** to set the working mode.

- 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.

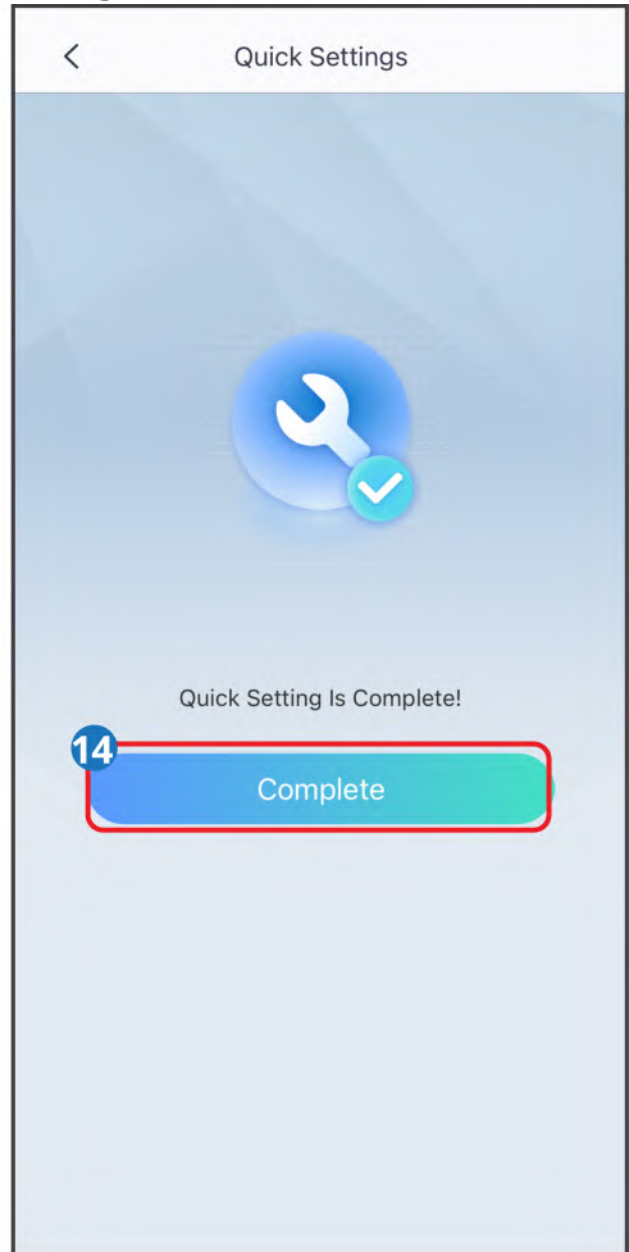
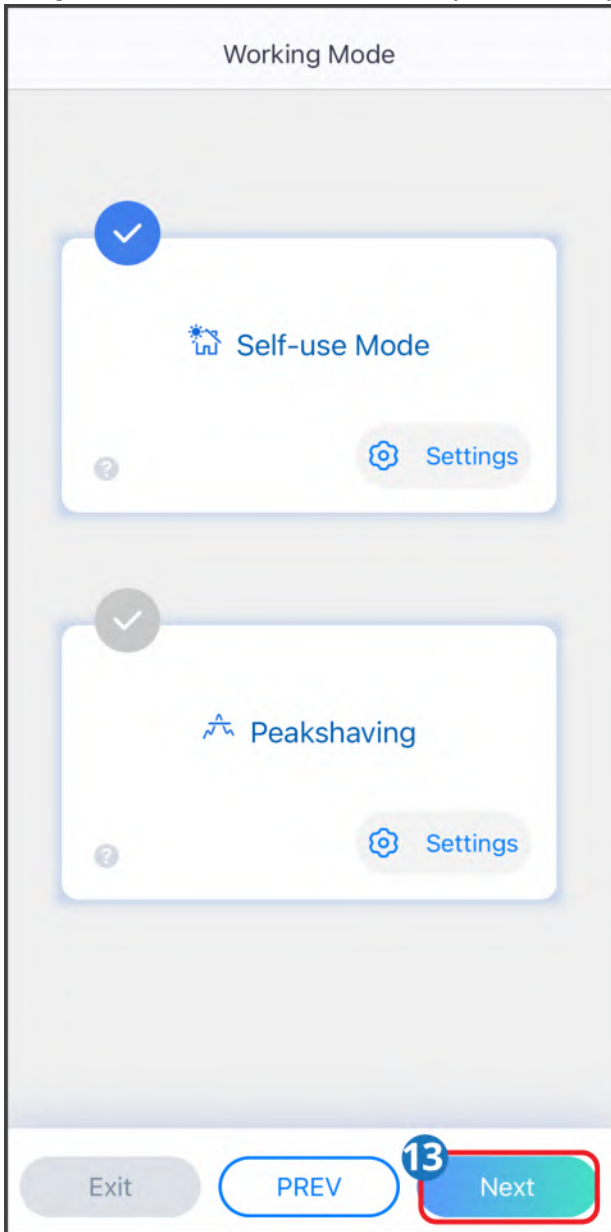
No.	Parameters	Description
2	Depth of Discharge (Off-Grid)	The maximum depth of discharge of the battery when the system is working off-grid.
Back-up Mode		
3	Charging from Grid	Use this function, enable the system to purchase power from the utility grid.
4	Nominal Power	The percentage of power purchased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



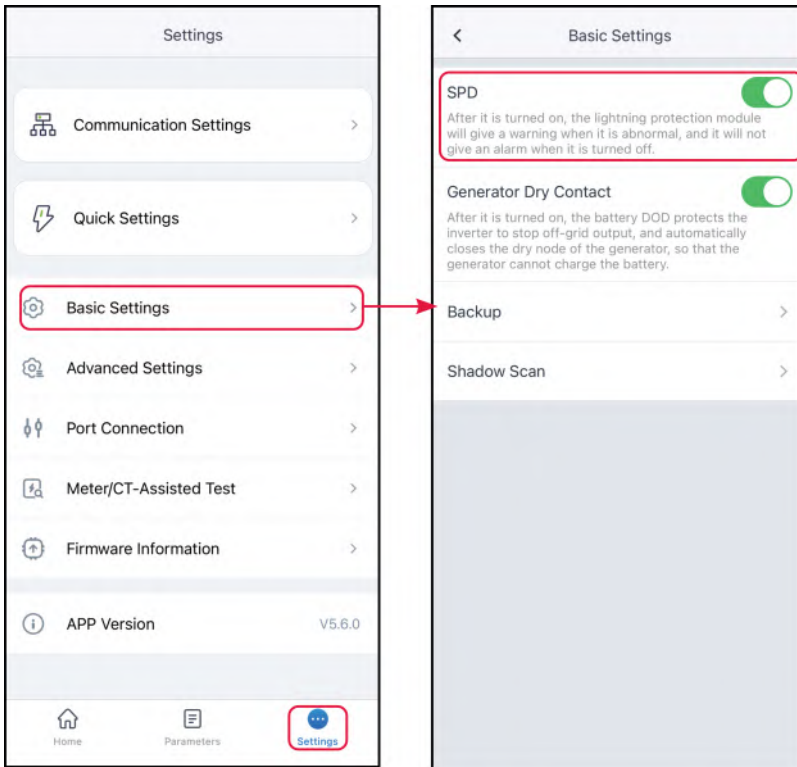
8.6 Setting the Basic Information

8.6.1 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.

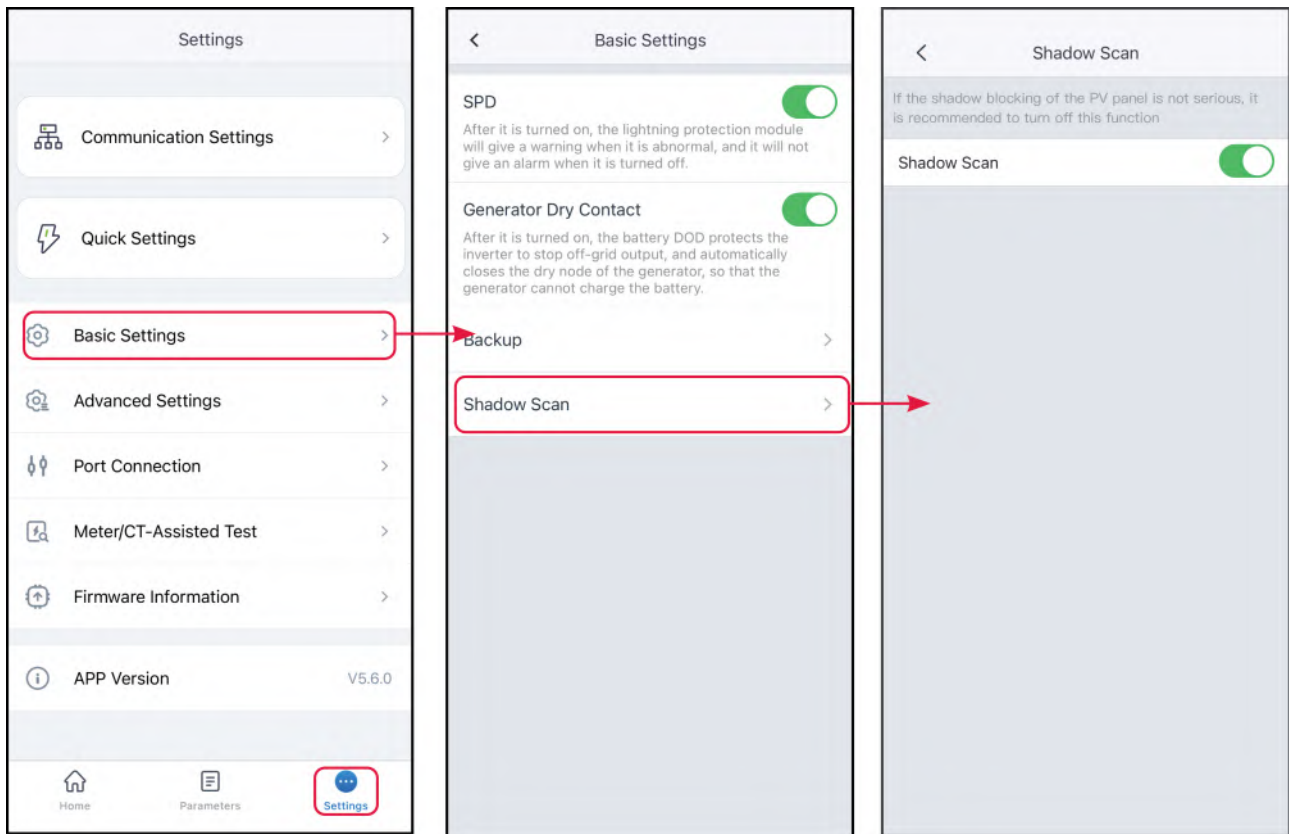


8.6.2 Setting the Shadow Scan

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.

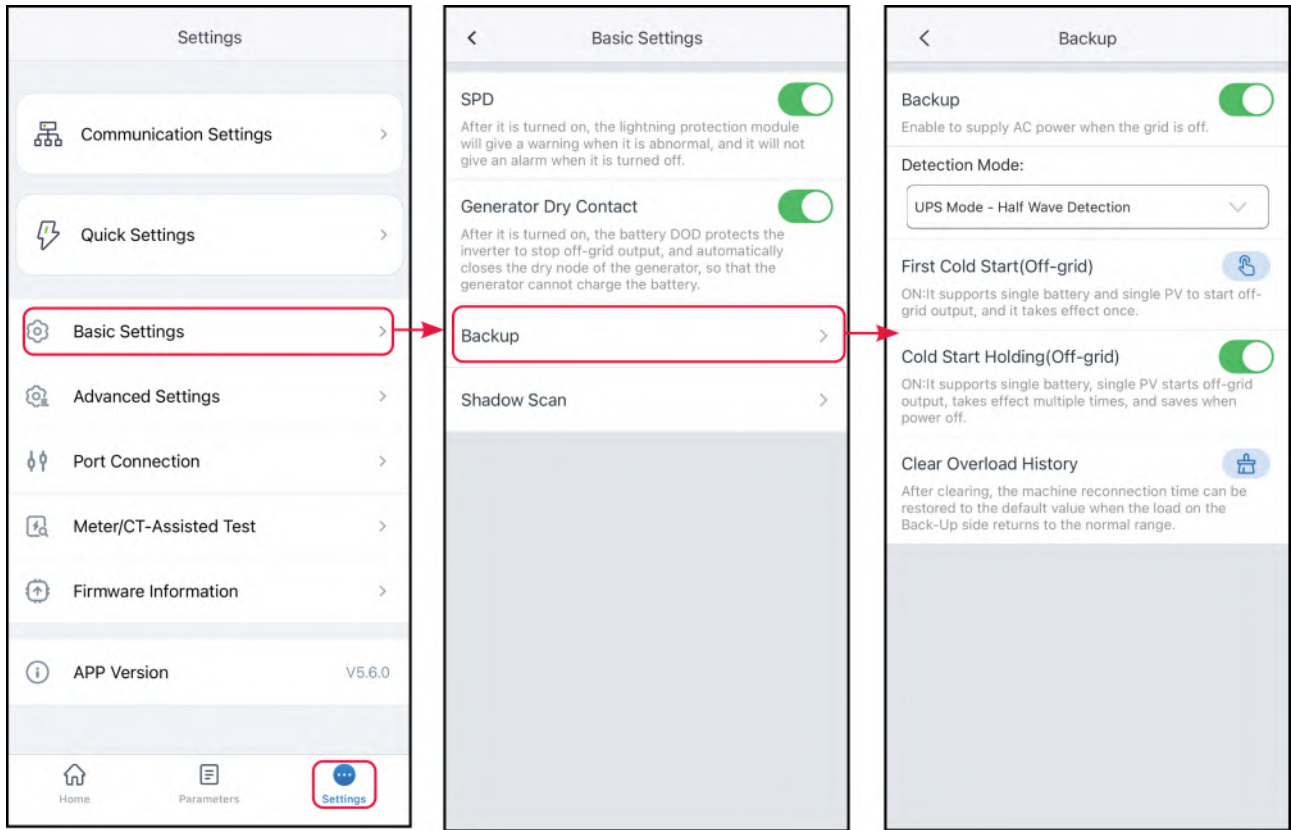


8.6.3 Setting the Back-up Power Parameters

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.

8.7 Setting Advanced Parameters

NOTICE

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

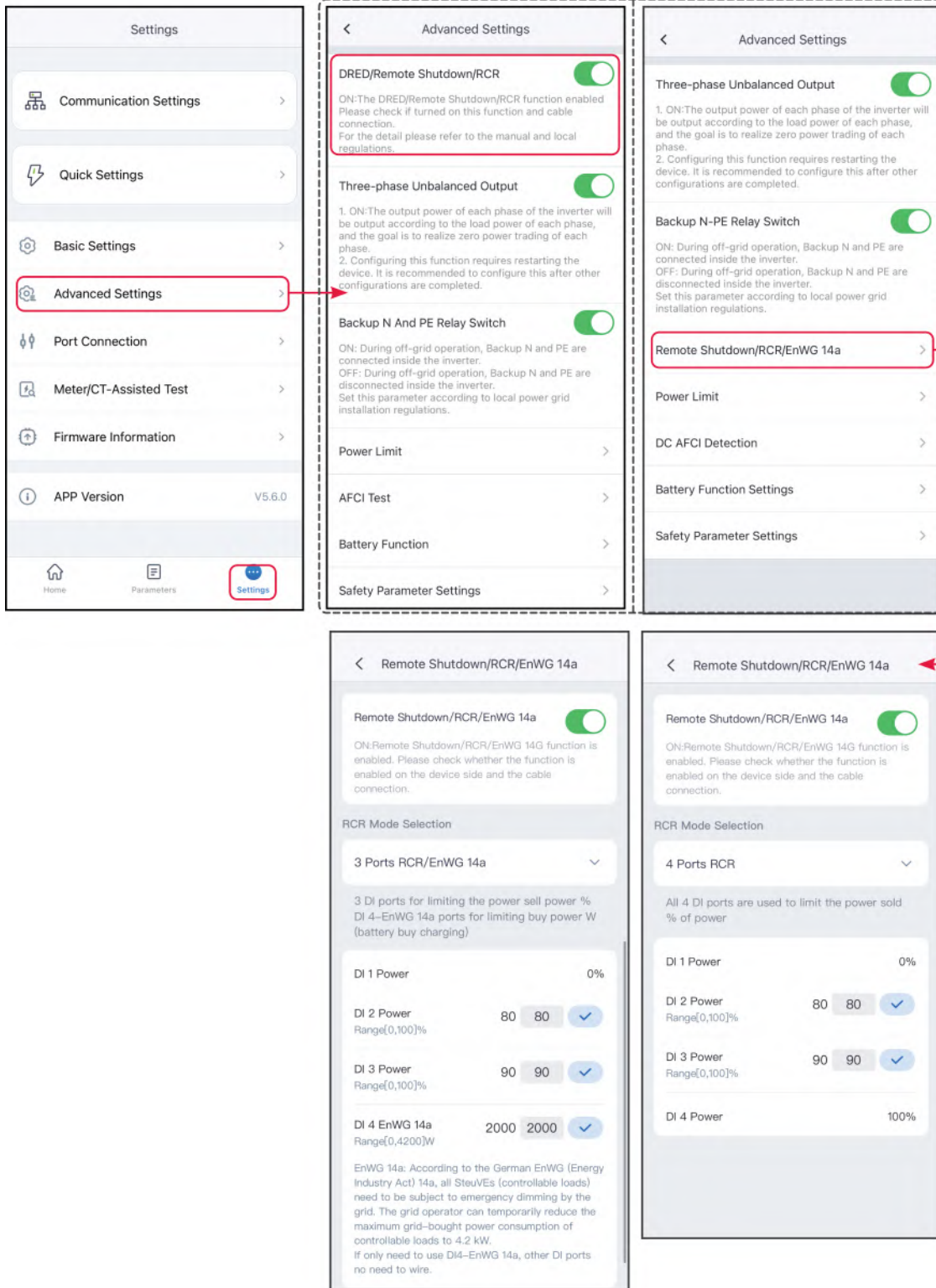
8.7.1 Setting DRED/Remote Shutdown/RCR/EnWG 14a

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.



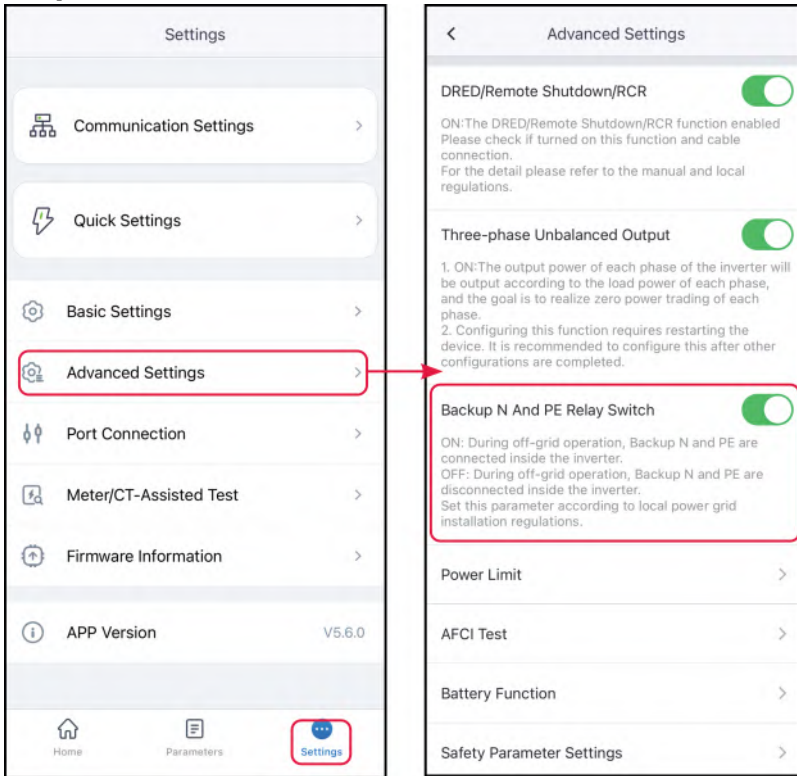
8.7.2 Setting the Backup N and PE Relay Switch

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.



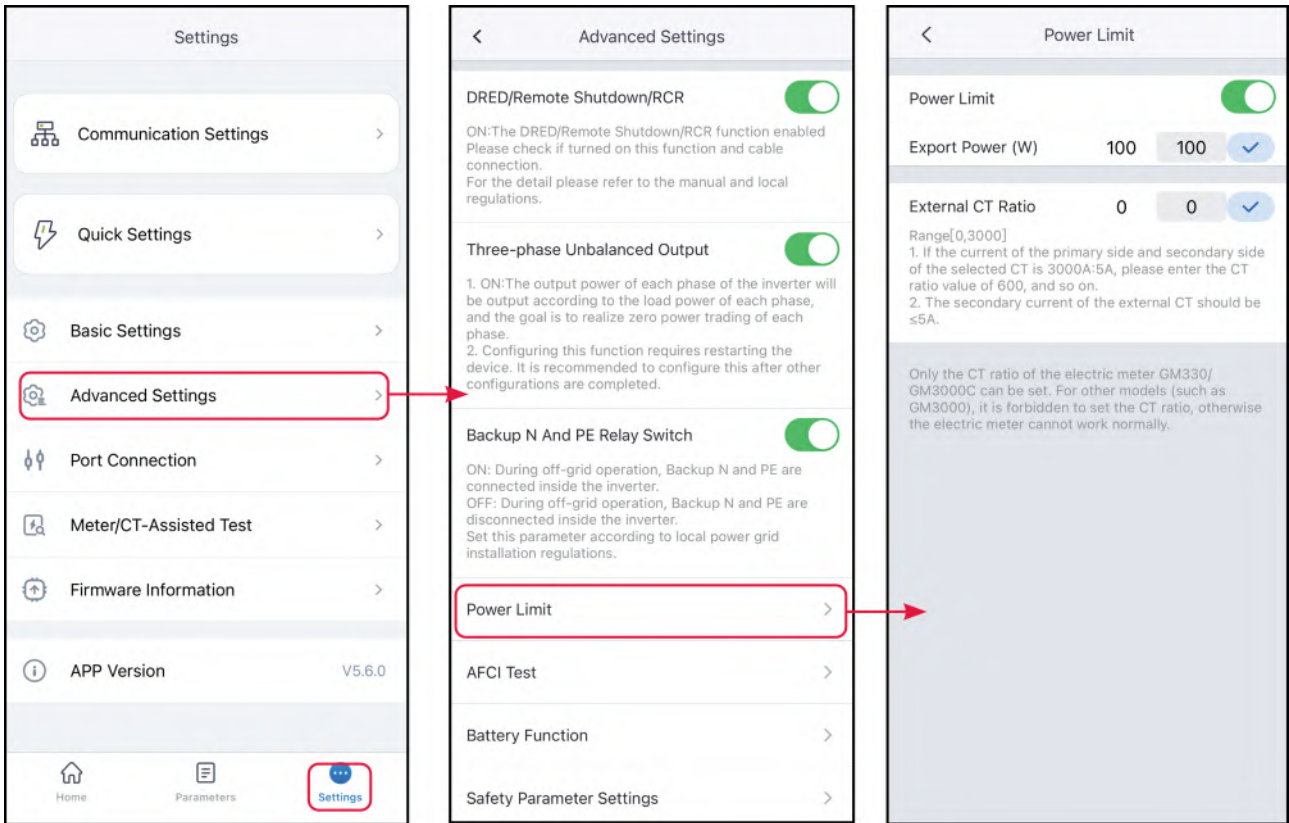
8.7.3 Setting the Power Limit Parameters

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 "v" to successfully set the parameter.

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

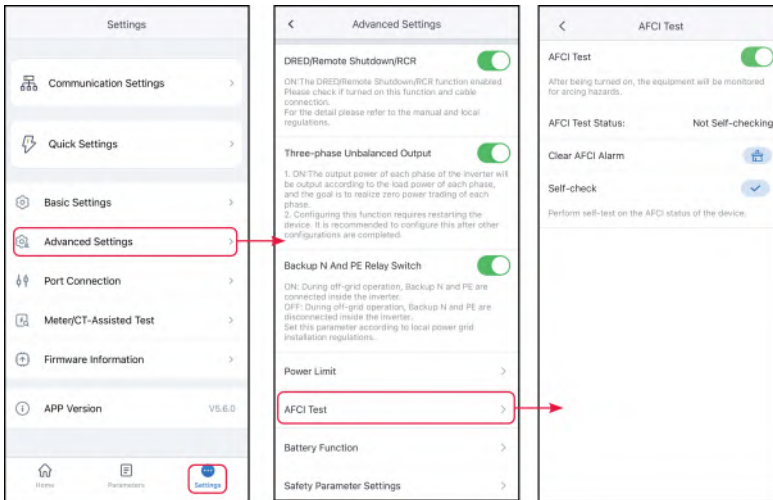


No.	Parameters	Description
1	Power Limit	Turn on this function when output power needs to be limited according to the grid standards of some countries or regions.
2	Export Power	Set according to the maximum power that can be input to the grid.
3	External Meter CT ratio	Set the ratio of the primary current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

8.7.4 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.



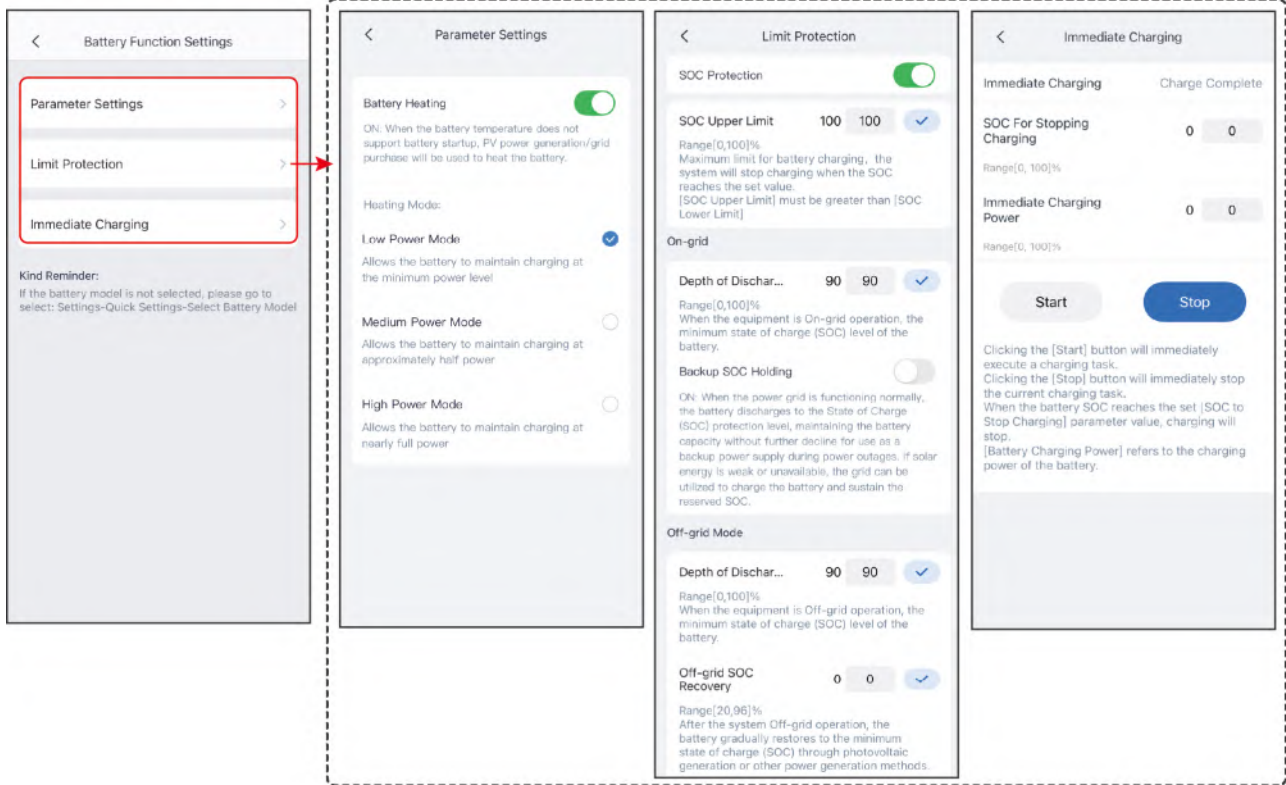
No.	Parameters	Description
1	AFCI Test	Enable or disable AFCI accordingly.
2	AFCI Test Status	The detection status like Not Self-checking.
3	Clear AFCI Alarm	Clear ARC Faulty alarm records.
4	Self-check	Tap to check whether the AFCI function works normally.

8.7.5 Setting the Battery

8.7.5.1 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	<p>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.</p> <p>Heating Mode:</p> <ul style="list-style-type: none"> • GW5.1-BAT-D-G20/GW8.3-BAT-D-G20 <ul style="list-style-type: none"> ◦ Low Power Mode: Maintains minimum battery power input capacity, turns on when the temperature is below -9°C, and turns off when the temperature is above or equal to -7°C. ◦ Medium Power Mode: to maintain the moderate power input capacity of the battery. It will be turned on when the temperature is less than 6°C, and turned off when it is greater than or equal to 8°C. ◦ High Power Mode: to maintain the higher power input capacity of the battery. It will be turned on when the temperature is less than 11°C, and turned off when it is greater than or equal to 13°C. • GW14.3-BAT-LV-G10 <ul style="list-style-type: none"> ◦ Low Power Mode: Maintains minimum battery power input capacity, turns on when the temperature is below 5°C, and turns off when the temperature is above or equal to 7°C. ◦ Medium Power Mode: to maintain the moderate power input capacity of the battery. It will be turned on when the temperature is less than 10°C, and turned off when it is greater than or equal to 12°C. ◦ High Power Mode: to maintain the higher power input capacity of the battery. It will be turned on when the temperature is less than 20°C, and turned off when it is greater than or equal to 22°C.

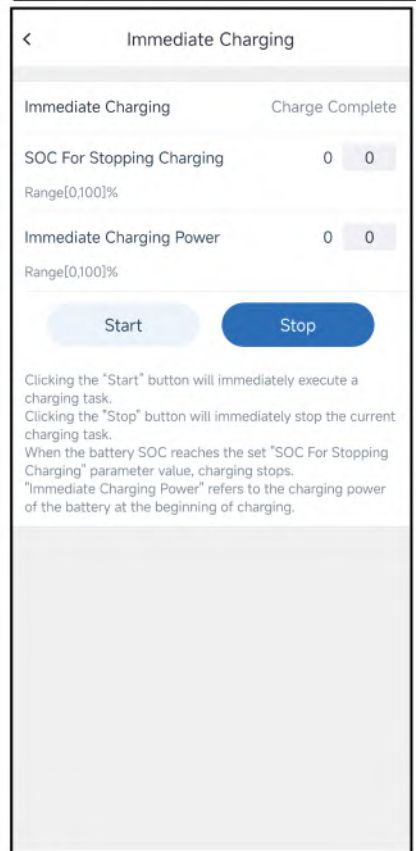
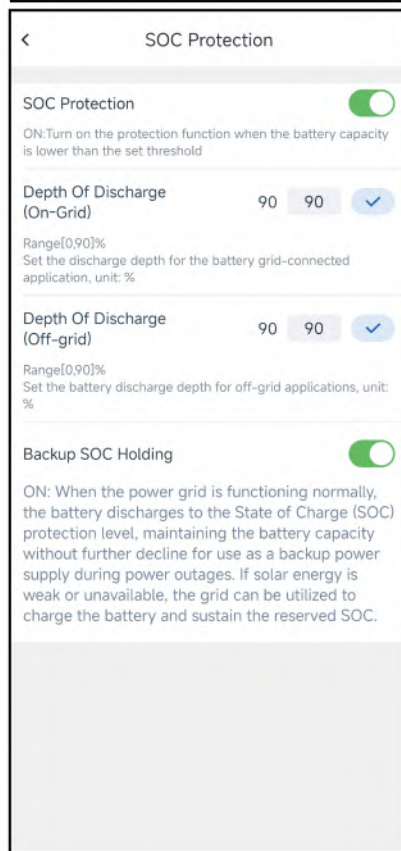
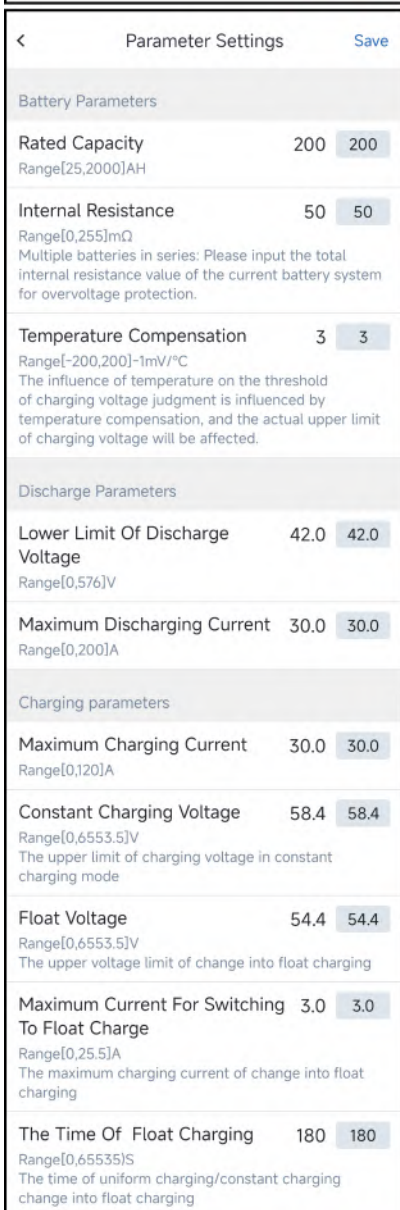
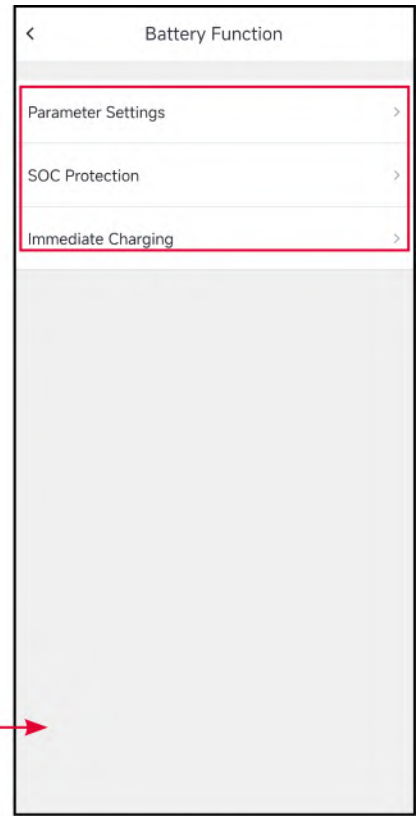
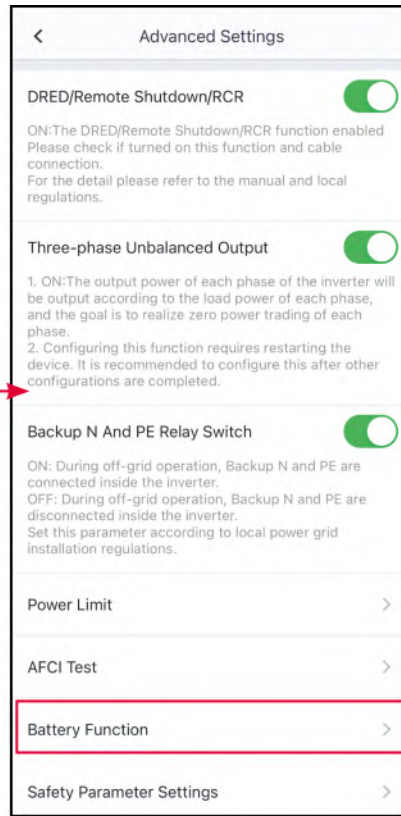
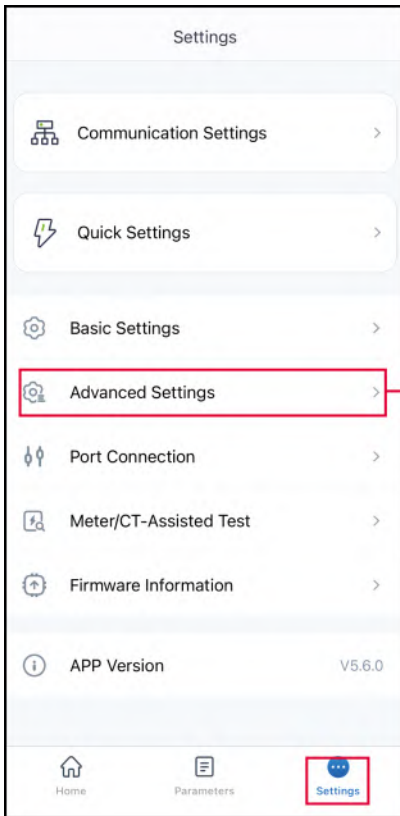
No.	Parameter	Description
4	Battery Wake-up	<ul style="list-style-type: none"> After being turned on, the battery can be awakened when it shuts down due to undervoltage protection. Only applicable to lithium batteries without circuit breakers. After being turned on, the output voltage of the battery 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.

8.7.5.2 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.



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	<p>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.</p> <p>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.</p>
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.

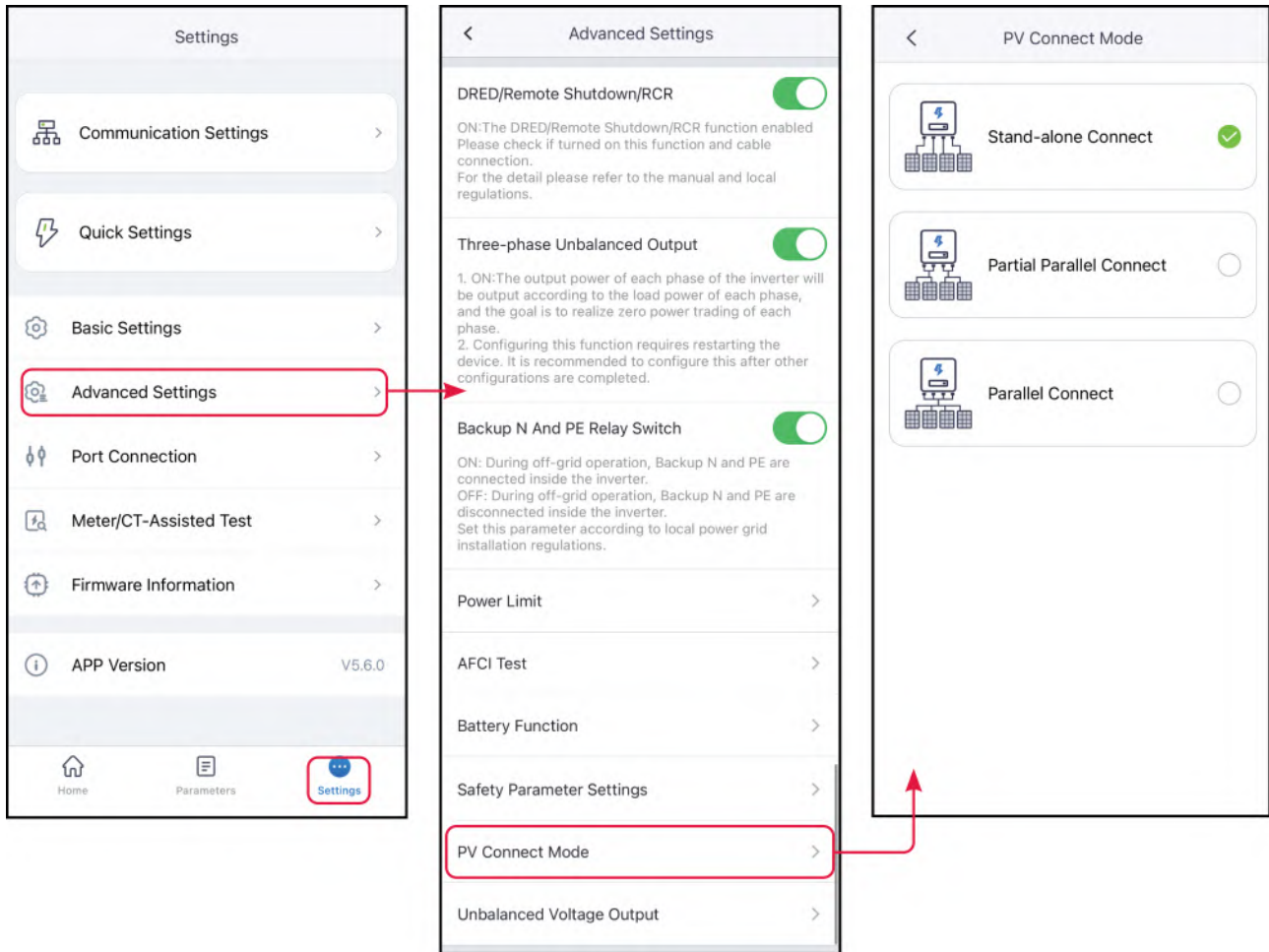
No.	Parameter	Description
18	Immediate Charging Power	Indicates the percentage of the charging power to the inverter rated power when enabling Immediate Charging. For example, for an inverter with a rated power of 10kW, when set to 60, the charging power is 6kW.
19	Start	Start charging immediately.
20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

8.7.6 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.

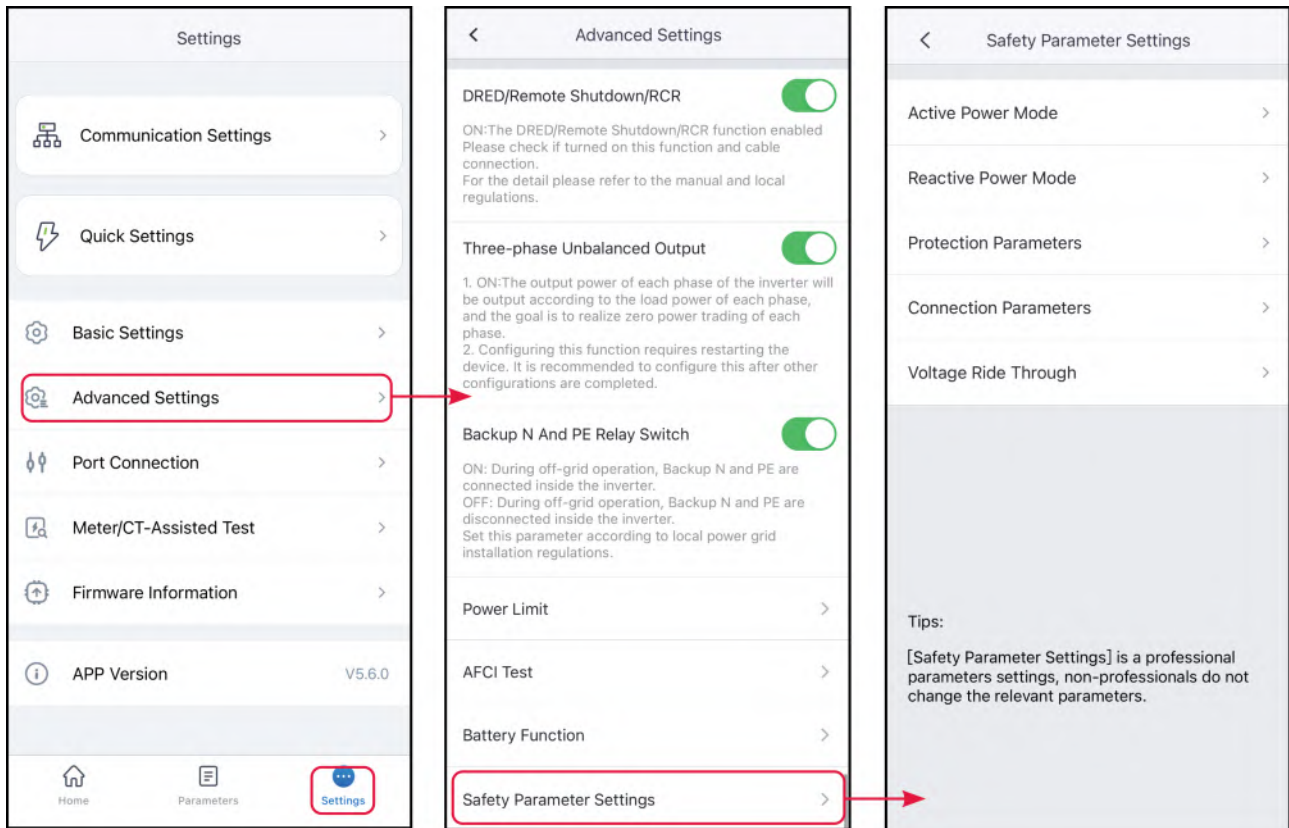


No.	Parameters	Description
1	Stand-alone Connect	The external PV string is connected to multi MPPT terminals of the inverter.
2	Partial Parallel Connect	The PV strings are connected to the inverter in both stand-alone and parallel connection. For example, one PV string connect to MPPT1 ad MPPT2, another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

8.8 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.

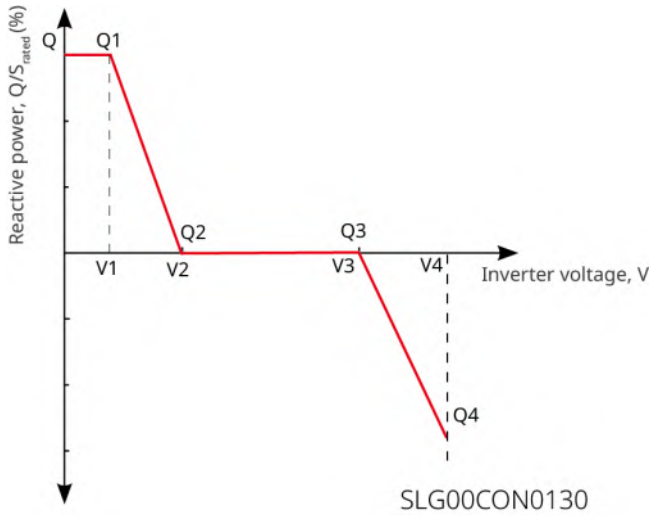


8.8.1 Setting the Reactive Power Mode

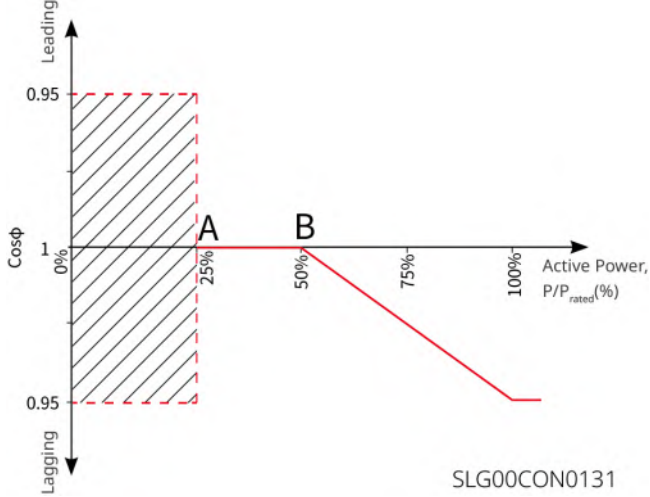
Step 1 : Tap **Home > Settings > Advanced Settings > Safety Parameter Setting > Reactive Power Mode Settings** to set the parameters.

Step 2 : Set the parameters based on actual needs.

Q(U) Curve



Cosφ Curve



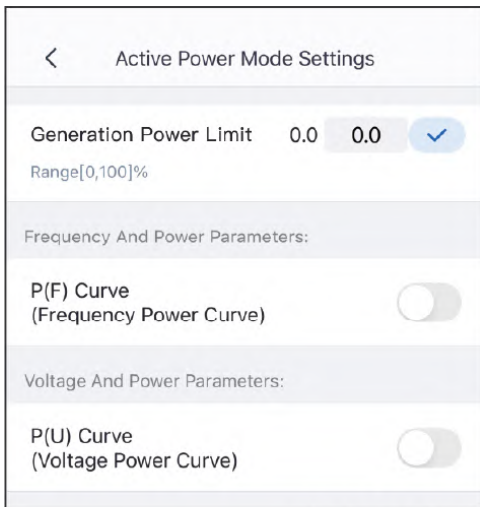
No.	Parameters	Description
Fix PF		
1	Fix PF	Enable Fix PF when it is required by local grid standards and requirements. After the parameters are set successfully, the power factor remains unchanged during the operation of the inverter.
2	Under-excited	Set the power factor as lagging or leading based 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: $V/V_{rated}\% = 90\%$.
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 $Q/S_{rated}\%=48.5\%$.
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 $Q/S_{rated}\%=48.5\%$.

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 $Q/P_{rated}\%=90\%$.
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: $P/P_{rated}\% = 90\%$.
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 $Q/P_{rated}\%=90\%$.
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: $P/P_{rated}\% = 90\%$.
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.

8.8.2 Setting the Active Power Mode

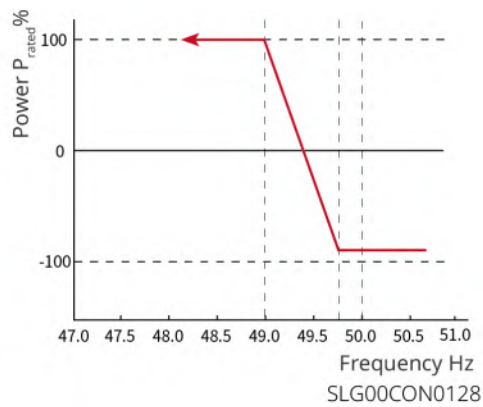
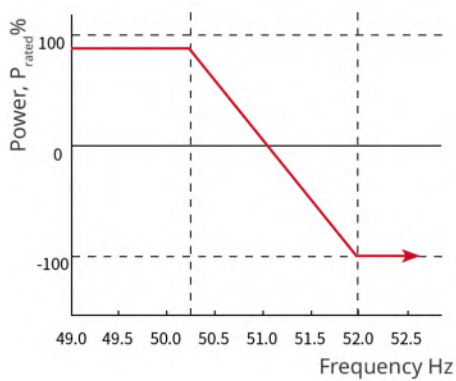


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Step 1: Tap **Home > Settings > Advanced Settings > Safety Parameter Settings > Active Power Mode Settings** to set the parameters.

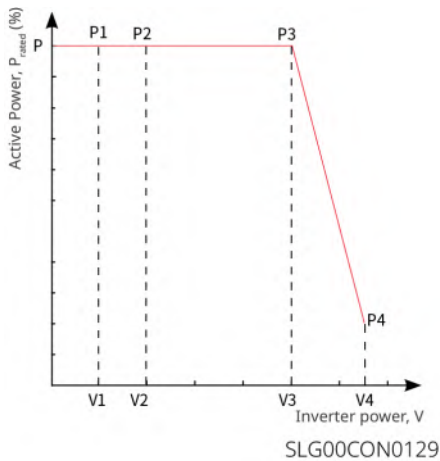
Step 2: Set the parameters based on actual needs.

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. <ul style="list-style-type: none"> • 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	Intentional Delay T_a	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: P _n rated power, P _s apparent power, P _m current power, P _{max} maximum power, power difference (ΔP).
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. <ul style="list-style-type: none"> • 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 T_a	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: P _n rated power, P _s apparent power, P _m current power, P _{max} maximum power, power difference (ΔP).
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	V _n Voltage	The percentage of actual voltage to the rated voltage at V _n point, n= 1, 2, 3, 4. For example, setting V _n Voltage to 90 means V/V _{rated} %=90%.
16	V _n Active Power	The percentage of the output active power to the apparent power at V _n point, (n= 1, 2, 3, 4). For example, setting V_n Reactive Power to 48.5 means P/P _{rated} %=48.5%.
17	Output Response Mode	Set the active power output response mode. Supports: <ul style="list-style-type: none"> • 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.

8.8.3 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.

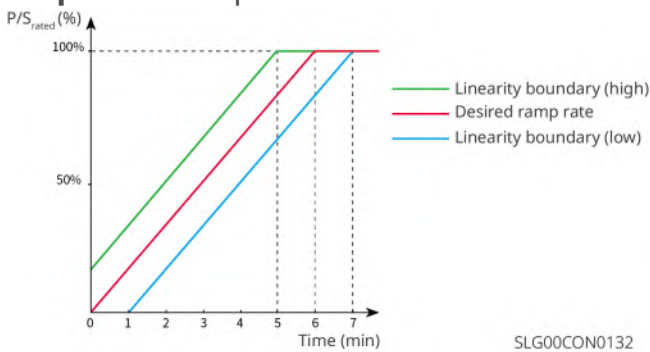
No.	Parameters	Description
1	OV Stage n Trip Value	Set the grid overvoltage protection threshold value, n=1,2,3,4.
2	OV Stage n Trip Time	Set the grid overvoltage protection tripping time, n=1,2,3,4.
3	UV Stage n Trip Value	Set the grid undervoltage protection threshold value, n=1,2,3,4.
4	UV Stage n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

8.8.4 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.

8.8.5 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.

8.8.6 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。

8.9 Setting Generator/Load Control

8.9.1 Setting Load Control

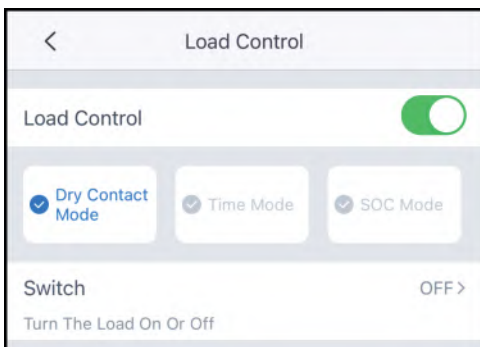
NOTICE

- 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.

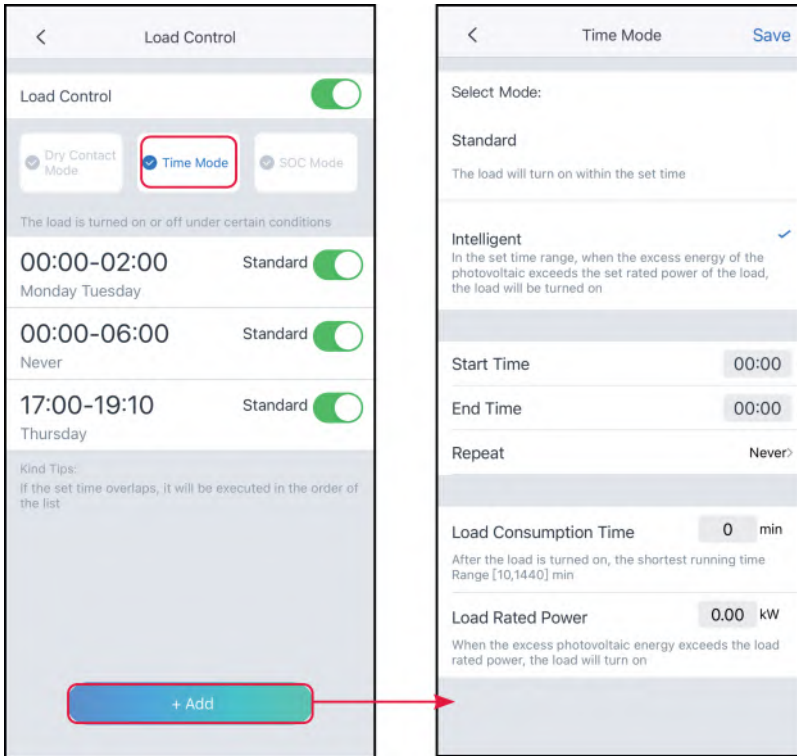
Step 1: Tap **Home > Settings > Port Connection** to set the parameters.

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.



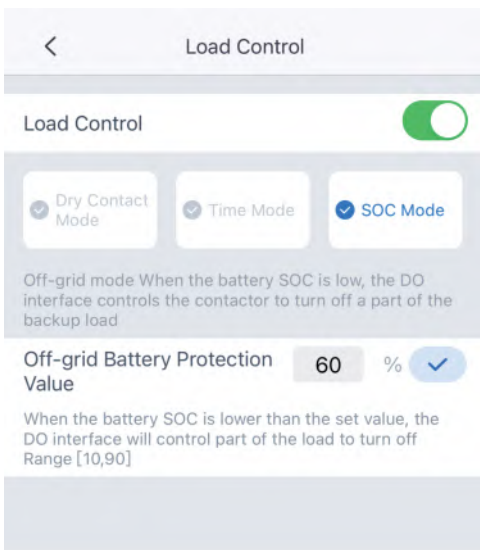
- Time Mode: set the time to enable the load, and the load will be powered automatically within the setting time period. Select standard mode or intelligent mode.



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.



8.9.2 Setting the Generator Parameters

NOTICE

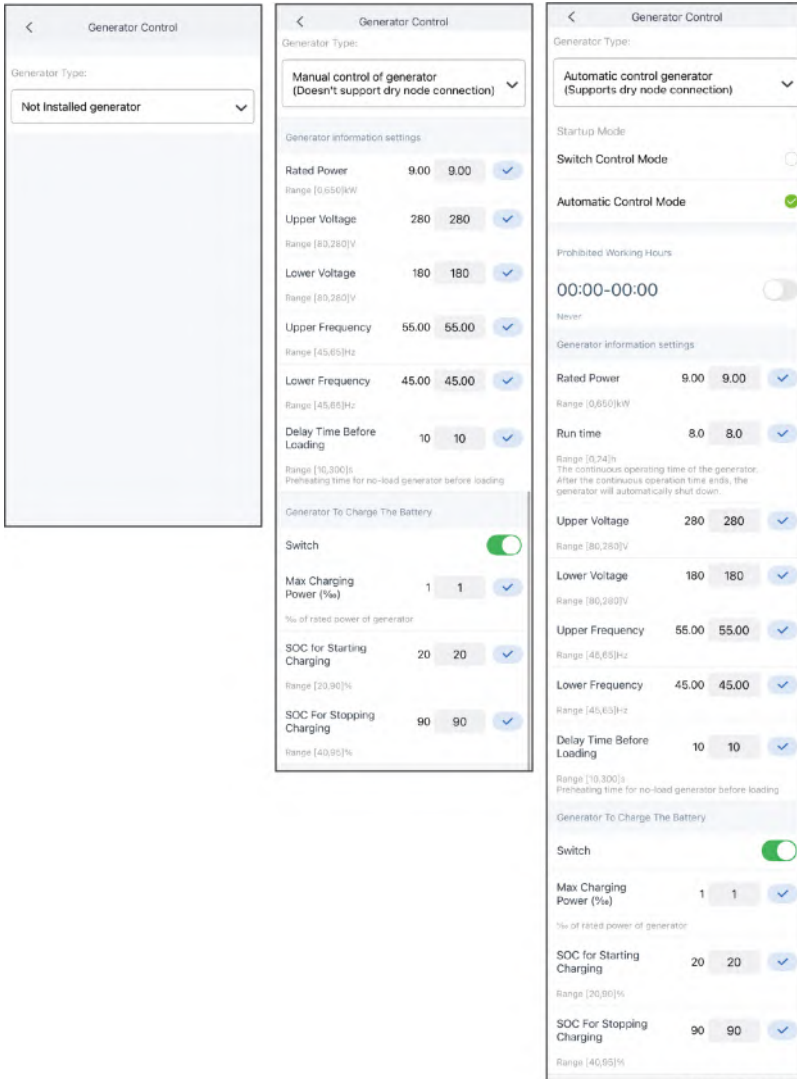
- When the inverter supports the generator control function, the generator can be controlled through the SolarGo App.
- For ET40-50kW series inverters, the generator can be connected and controlled only when the inverter is used with STS.

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 automatically 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.

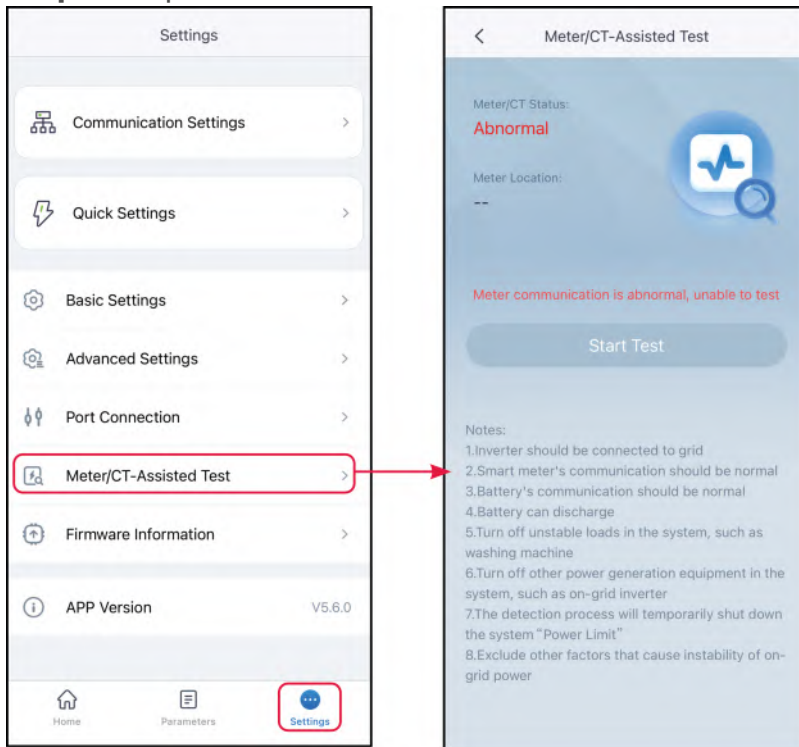
8.10 Setting the Meter Parameters

8.10.1 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.



8.11 Equipment Maintenance

8.11.1 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.

8.11.1.1 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.

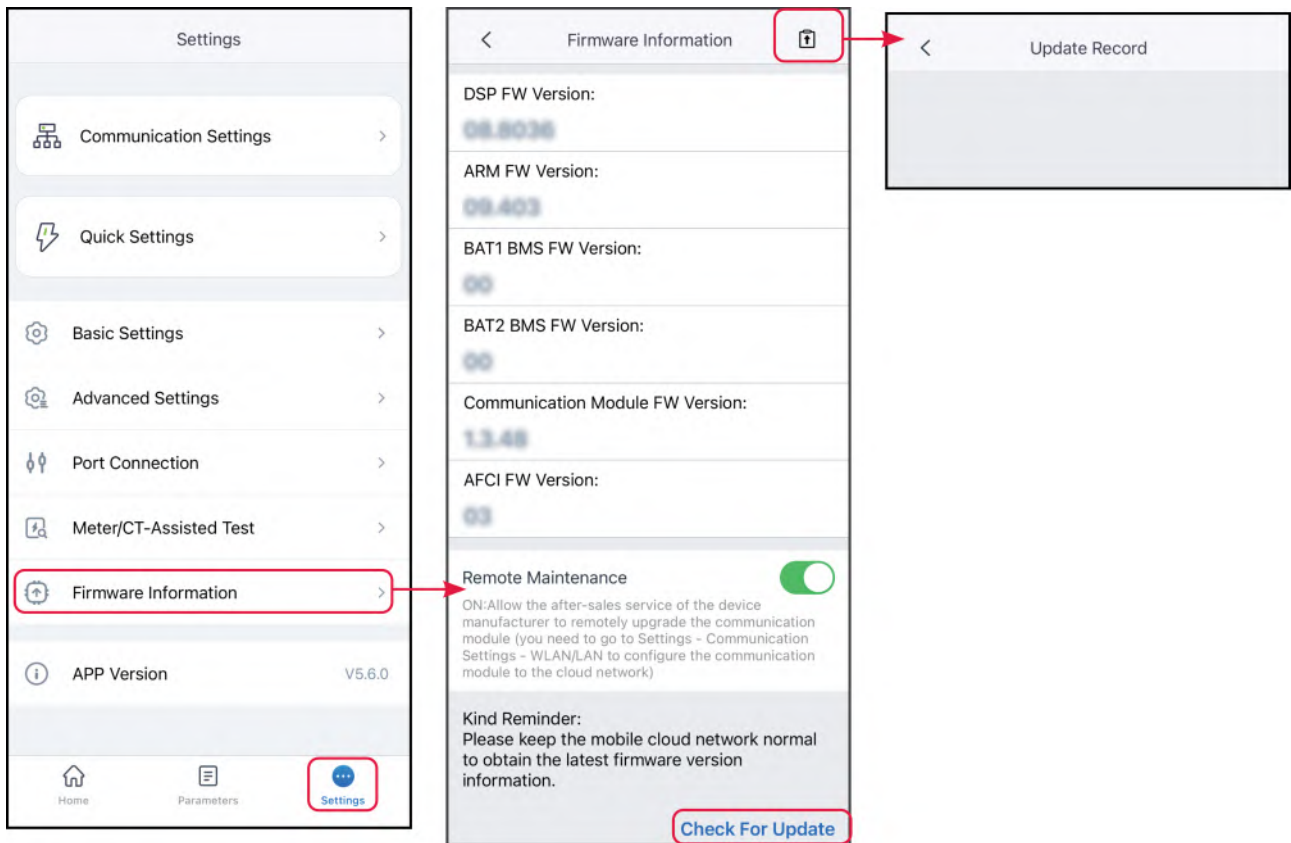
Step 1 : Tap **Home** > **Settings** > **Firmware Information** to check the firmware version. If the firmware upgrade dialog box pops up, tap **Firmware Upgrade** and turn to the upgrade interface.

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.



8.11.1.2 One-click Upgrade

NOTICE

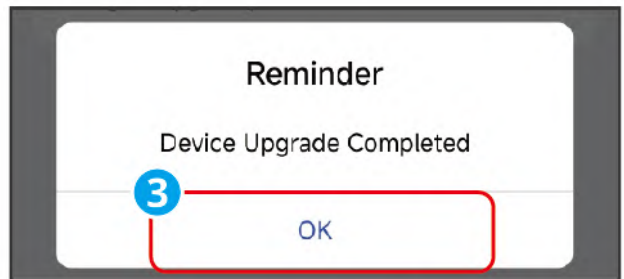
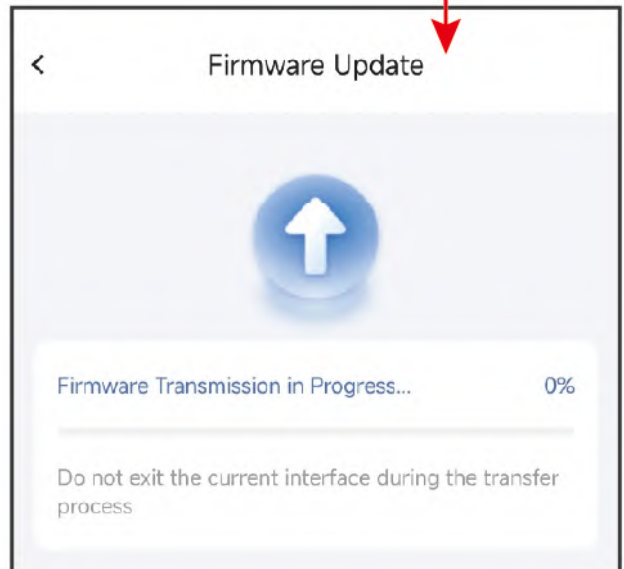
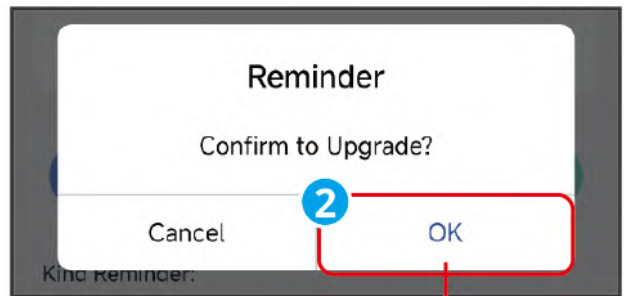
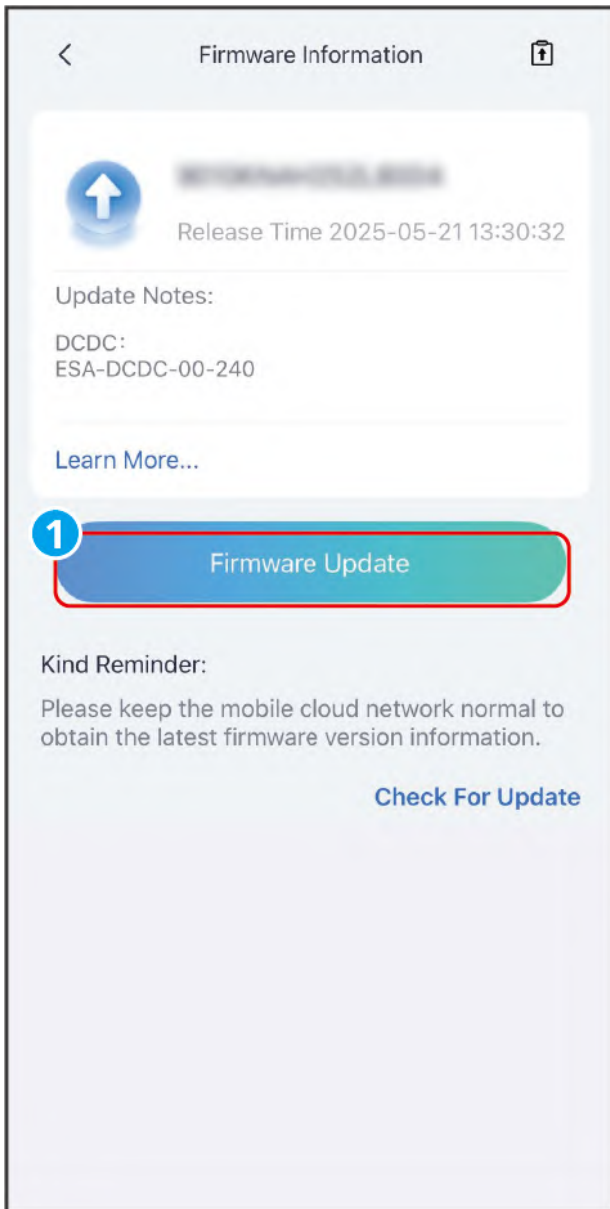
- When there is a red dot on the right side of the firmware information, please click to view the firmware update information.
- During the upgrade process, please ensure that the network is stable and the device is connected to SolarGo, otherwise the upgrade may fail.

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.



SLG00CON0127

8.11.1.3 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.

8.11.2 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.

< Change Login Password Save

Please enter the new password 

Please enter new password again 

Note: 8-16 characters, need a combination of numbers and uppercase or lowercase letters (0-9, a-z, A-Z)

SLG00CON0088

9 System Commissioning and Power Plant Monitoring

9.1 Setting Inverter Parameters via App

SEMS+ App is a software used for remote power station monitoring or local device debugging. It supports installers or owners:

- Remotely monitor the operation of the power station and set parameters for the station and equipment.
- Locally connect to devices, view device operation status, and set device parameters.

For detailed functions, please refer to the [SEMS+ App User Manual](#). The user manual can be obtained from the official website or by scanning the QR code below.



SEMS+ App User Manual

9.1.1 Download and Install SEMS+ App

Phone Requirements:

- Operating System: Android 7.0 or above, iOS 15.1 or above.
- Phone must have a web browser and be connected to the Internet.
- Phone must support WLAN/Bluetooth functionality.

Download Methods:

Method 1:

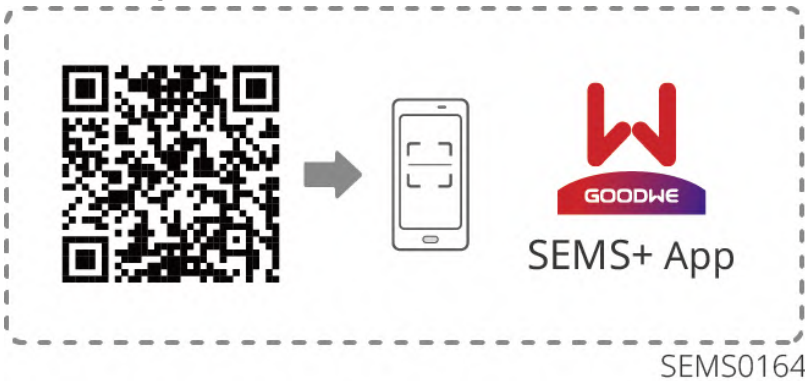
Search for "SEMS+" in Google Play, App Store, Huawei, Honor, Xiaomi, OPPO, or vivo

app stores to download and install.



Method 2:

Scan the QR code below to download and install.



9.2 Power Plant Monitoring via SEMS+ WEB

SEMS+ WEB is a monitoring platform that communicates via WiFi or LAN. The following are the common functions of SEMS+ WEB:

1. Manage organization or user information, etc.
2. Add and monitor power plant information, etc.
3. Maintain equipment.

For detailed functions, please refer to the ["SEMS+ WEB User Manual"](#).



"SEMS+ WEB User Manual"

10 Maintenance

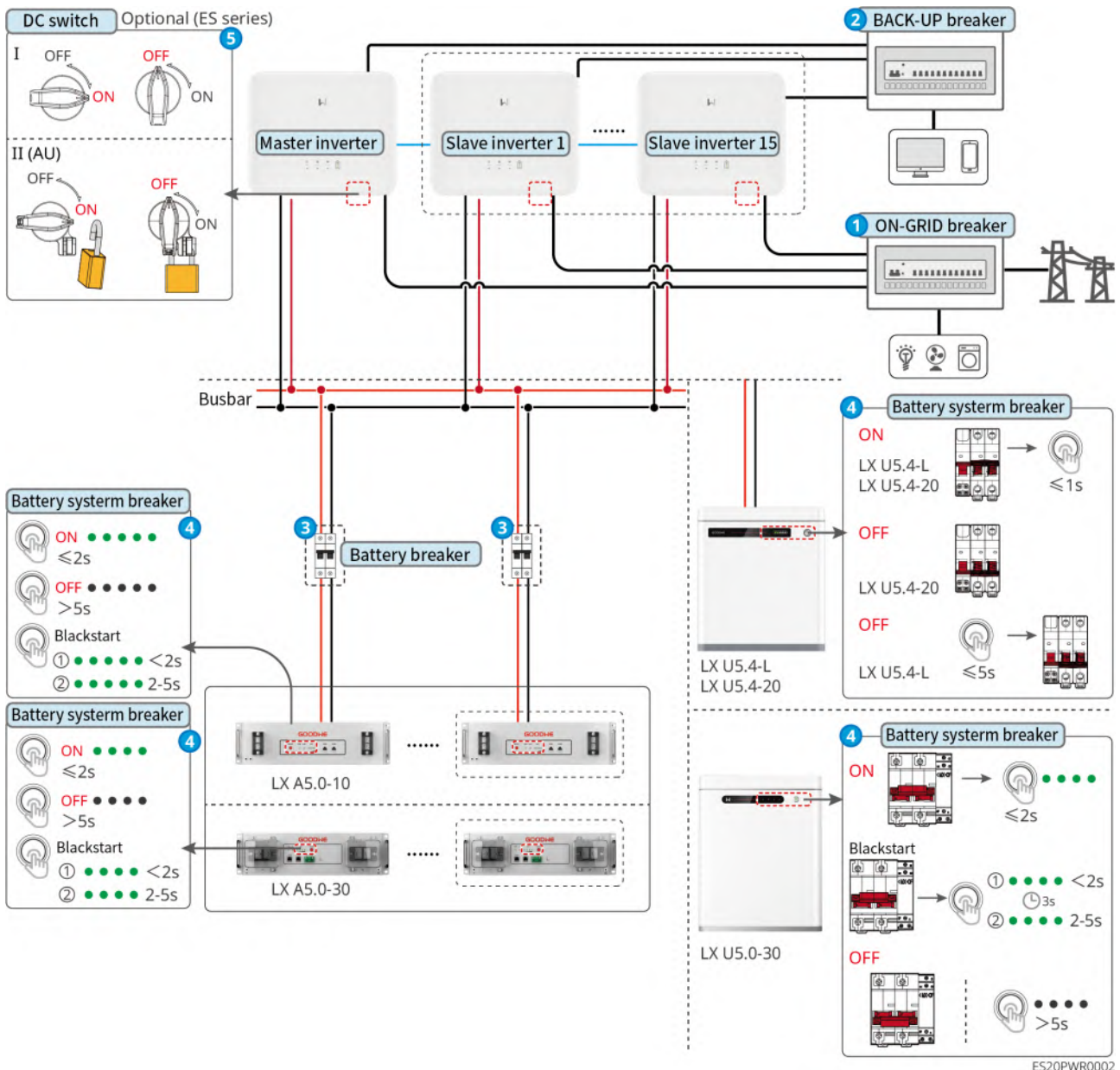
10.1 Power OFF the System

DANGER

- When performing operation and maintenance on equipment within the system, please power off the system. Operating equipment while energized may cause equipment damage or pose a risk of electric shock.
- After powering off the equipment, internal components require a certain amount of time to discharge. Please wait according to the time specified on the label until the equipment is completely discharged.
- Restarting the battery should be performed using the air switch power-on method.
- When shutting down the battery system, strictly adhere to the battery system power-off requirements to prevent damage to the battery system.
- When there are multiple batteries in the system, powering off any one battery will power off all batteries.

NOTICE

- Circuit breakers between the inverter and battery, and between battery systems must be installed in accordance with local laws and regulations.
- To ensure effective protection of the battery system, the cover plate of the battery system switch should remain closed, and the protective cover should automatically close after being opened. If the battery system switch is not used for an extended period, it must be secured with screws.



Power-off steps:

① → ② → ③ → ④ → ⑤

③: Configure according to local laws and regulations.

10.2 Removing the Equipment



- 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 the 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 again, ensure that the storage conditions meet the requirements.

10.3 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.

10.4 Routine Maintenance



- If any issues are found that may affect the Battery or hybrid inverter system, please contact after-sales personnel. Unauthorized disassembly is strictly 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. Follow their instructions for operation 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 in the heat sink, fan, and air inlet/outlet. Check if the Installation space meets the requirements, and inspect whether there is debris accumulation around the equipment.	Once every six months	Prevent heat dissipation.
System Installation	Check whether the equipment Installation is secure and whether the fasteners screw are loose. Check the equipment for any damage or deformation on the exterior.	Once every six months to once a year	Verify the stability of the equipment Installation.
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.
Sealing	Check whether the cable entry hole Sealing of the equipment meets the requirements. If the gap is too large or unsealed, reseal it.	Once per year	Confirm that the machine's sealing and waterproof performance are intact.


Maintenance content	Maintenance Method	Maintenance cycle	Maintenance purpose
Battery maintenance	If the Battery has not been used or fully charged for an extended period, it is recommended to perform regular Charge on the Battery.	Once/15 days	Protection Battery service life.

11 fault

11.1 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 station fault information.
3. Click on the specific fault name to view the detailed occurrence time, possible causes, and solutions of the fault.

11.2 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.

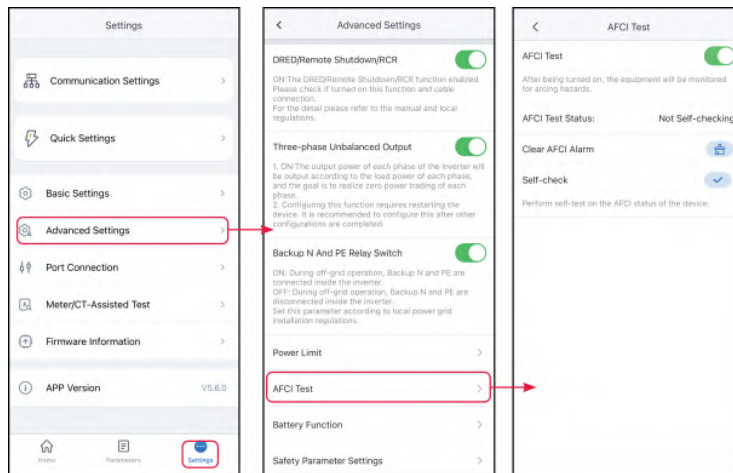
11.2.1 Clear AFCI fault WARNING

[Software Used]: SolarGo App

[Clearance method]:

1. Through **[Home]** > **[Settings]** > **[Advanced Settings]** > **[DC Arc Detection]**.

2. Click[Clear AFCIfault Alarm]Button.



12 fault

12.1 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 files to assist in problem analysis.
3. Utility grid situation.

12.1.1 System fault

If the system encounters an issue not listed, or if following the instructions fails to prevent 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	<ol style="list-style-type: none">1. Please ensure that no other devices are connected to the smart dongle wireless signal.2. Please ensure the App is updated to the latest version.3. Ensure the intelligent communication stick is powered 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	<ol style="list-style-type: none"> 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	 Ezlinkindicator flashes twice	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Please ensure that 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 persists, 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	<ol style="list-style-type: none"> 1. Place the Router close to the Smart dongle, or add WiFi repeater devices 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, Smart dongle fails to connect with Router.	<ol style="list-style-type: none"> 1. Restart Inverter. 2. Check if 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 closer to the Smart dongle, or add WiFi repeater devices to enhance the WiFi signal.
9	After all configurations are completed, the Smart dongle fails to connect with the Server.	Restart Router and Inverter.

12.1.2 Inverterfault

fault code	fault name	fault cause	Troubleshooting recommendation
F01	Grid Power Outage	<ol style="list-style-type: none"> 1. Power outage. 2. AC line or AC Switch disconnected. 	<ol style="list-style-type: none"> 1. The alarm automatically disappears after Grid connected recovery. 2. Check whether the AC line or AC Switch is disconnected.
F02	Grid Overvoltage Protection	Utility gridvoltage exceeds the allowable range, or the high voltage Duration surpasses the high voltage ride-through setting value.	1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is normal, without requiring manual intervention.

fault code	fault name	fault cause	Troubleshooting recommendation
			<p>2. If it occurs frequently, check whether Utility grid and voltage are within the allowable range.</p> <ul style="list-style-type: none"> • If Utility grid voltage exceeds the permissible range, please contact the local power operator. • If the Utility grid voltage is within the allowable range, it is necessary to modify the InverterGrid Overvoltage Protection point after obtaining consent from the local power operator. HVRTEnable or disable the Grid Overvoltage Protection function. <p>3. If the issue persists for an extended period, please check whether the breaker on the AC side and the output cables are properly connected.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F03	Grid Undervoltage Protection	Utility gridvoltage is below the allowable range, or the low-voltage Duration exceeds the Low Voltage ride-through setting.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether the Utility grid voltage is within the allowable range.</p> <ul style="list-style-type: none"> • If the Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterGrid Undervoltage Protection point after obtaining consent from the local power operator.LVRTEnable or disable the Grid Undervoltage Protection function. <p>3. If the issue persists for an extended period, please check whether the</p>

fault code	fault name	fault cause	Troubleshooting recommendation
			AC-side breaker and output cables are properly connected.
F04	Grid Rapid Overvoltage Protection	Utility gridvoltage detection shows abnormality or ultra-high voltage triggers fault.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in the Utility grid. The Inverter will resume normal operation after detecting that the Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether Utility grid and voltage are within the allowable range.</p> <ul style="list-style-type: none"> • If the Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If the Utility gridvoltage is within the allowable range, it is necessary to modify the InverterGrid Undervoltage Protection point after obtaining consent from the local power operator.LVRTEnable or disable the Grid Undervoltage Protection

fault code	fault name	fault cause	Troubleshooting recommendation
			<p>function.</p> <p>3. If the issue persists for an extended period, please check whether the AC-side breaker and output cables are properly connected.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F05	10minOvervoltage Protection	In10minThe sliding average of Utility gridvoltage exceeds the safety regulation limits.	<ol style="list-style-type: none"> 1. If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention. 2. Check if Utility grid voltage is operating at a consistently high voltage. If this occurs frequently, verify whether Utility grid voltage is within the permissible range. <ul style="list-style-type: none"> • If Utility gridvoltage exceeds the permissible range, please contact the local power operator. • If Utility gridvoltage is within the allowable range, it is necessary to obtain the consent of the local power operator before modifying Utility grid.10minOvervoltage Protection point.

fault code	fault name	fault cause	Troubleshooting recommendation
F06	Grid Overfrequency	Utility grid anomaly: Utility grid actual Frequency exceeds local Utility grid standard requirements.	<p>1. If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. Inverter will resume normal operation upon detecting that Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, please check whether Utility grid Frequency is within the allowable range.</p> <ul style="list-style-type: none"> • If the Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, the Grid Overfrequency point needs to be modified after obtaining consent from the local power operator.

fault code	fault name	fault cause	Troubleshooting recommendation
F07	Grid Underfrequency	Utility grid anomaly: Utility grid actual Frequency is lower than the local Utility grid standard requirement.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether Utility gridFrequency is within the allowable range.</p> <ul style="list-style-type: none"> • If Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, the Grid Overfrequency point needs to be modified after obtaining consent from the local power operator.

fault code	fault name	fault cause	Troubleshooting recommendation
F08	Grid Frequency Instability	Utility grid anomaly: Utility grid actual Frequency variation rate does not comply with local Utility grid standard.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is normal, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range.</p> <ul style="list-style-type: none"> • If Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If Utility gridFrequency is within the allowable range, please contact your dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F163	Grid Phase Instability	Utility grid anomaly: Utility grid voltage phase variation rate does not comply with local Utility grid standard.	<p>1. If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range.</p> <ul style="list-style-type: none"> • If Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, please contact your dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F09	Anti-islanding Protection	<p>Utility grid has been disconnected. Due to the presence of load, Utility grid voltage is maintained. According to safety regulation Protection, on-grid is stopped.</p>	<p>1. If it occurs occasionally, it may be due to a temporary anomaly in Utility grid. Inverter will resume normal operation after detecting that Utility grid is functioning properly, without requiring manual intervention.</p> <p>2. If it occurs frequently, check whether Utility grid and Frequency are within the allowable range.</p> <ul style="list-style-type: none"> • If Utility gridFrequency exceeds the permissible range, please contact the local power operator. • If the Utility gridFrequency is within the allowable range, please contact your dealer or after-sales service center.
F10	undervoltage ride-through	<p>Utility grid anomaly: Grid Voltage Abnormal duration exceeds the specified high-low transition time.</p>	

fault code	fault name	fault cause	Troubleshooting recommendation
F11	HVRT Overvoltage	Utility grid anomaly: Grid Voltage Abnormal duration exceeds the specified high-low crossing time.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is normal, without requiring manual intervention.</p> <p>2. If this occurs frequently, please check whether the Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.</p>
F43	Grid Waveform Abnormal	Utility grid anomaly: Utility gridvoltage detection triggered fault due to abnormality.	
F44	Grid Phase Loss	Utility grid anomaly: Utility gridvoltage has a single-phase voltage dip.	

fault code	fault name	fault cause	Troubleshooting recommendation
F45	Grid Voltage Imbalance	Utility grid phase voltage difference is too large.	<p>1. If it occurs occasionally, it may be due to a temporary abnormality in Utility grid. Inverter will resume normal operation after detecting that Utility grid is normal, without requiring manual intervention.</p> <p>2. If this occurs frequently, please check whether the Utility grid, voltage, and Frequency are within the allowable range and stable. If not, contact the local power operator; if yes, contact your dealer or after-sales service center.</p>
F46	Grid Phase Sequence Failure	Inverter and Utility grid wiring abnormality: wiring is not in positive sequence	<p>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 live wires), fault will automatically disappear.</p> <p>2. If the fault persists despite correct wiring, please contact the dealer or after-sales service center.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F47	Grid Rapid Shutdown Protection	Quickly shut down the output upon detecting the Grid Power Outage operating condition.	1. Grid connected automatically disappears after fault is restored
F48	Grid Neutral Wire Loss	Phase Separation Grid Neutral Wire Loss	1. The alarm automatically disappears after Grid connected recovery. 2. Check whether the AC line or AC Switch is disconnected.
F160	EMS/Forced off-grid	EMSIssue forced off-grid command, but the off-grid function is not enabled.	Enable off-grid function
F161	Passive Anti-islanding Protection	-	-
F162	Grid Type Fault	Actual Type of Electrical Supply System (two-phase or split-phase) does not match the set safety regulations.	Switch the corresponding safety regulations according to the actual Type of Electrical Supply System.

fault code	fault name	fault cause	Troubleshooting recommendation
F12	30mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	<p>1. If it occurs occasionally, it may be caused by temporary external line abnormalities. It will resume normal operation after the fault is cleared, without requiring manual intervention.</p> <p>2. If the issue occurs frequently or persists for an extended period, check whether the PV String ground impedance is too low.</p>
F13	60mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	<p>1. If it occurs occasionally, it may be caused by temporary external line abnormalities. The system will resume normal operation after fault is cleared, without requiring manual intervention.</p> <p>2. If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F14	150mAGfciProtection	During operation, the input-to-ground insulation resistance becomes low.	<p>1. If it occurs occasionally, it may be caused by temporary abnormalities in the external circuit. It will return to normal operation after fault is cleared, without requiring manual intervention.</p> <p>2. If the issue occurs frequently or cannot be resolved for an extended period, please check whether the PV String ground impedance is too low.</p>
F15	Gfcigradual change Protection	During operation, the input-to-ground insulation resistance becomes low.	<p>1. If it occurs occasionally, it may be caused by temporary abnormalities in the external circuit. The system will resume normal operation after fault is cleared, without requiring manual intervention.</p> <p>2. If the issue occurs frequently or persists for an extended period, please check whether the PV String ground impedance is too low.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F16	DCIPrimary Protection	The current of the inverter output is outside the safety regulations or the default permissible range of the machine.	<p>1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention.</p> <p>2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.</p>
F17	DCISecondary Protection	The High DC Component of the inverter output current exceeds the safety regulations or the default permissible range of the machine.	<p>1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention.</p> <p>2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F18	Low Insulation Resistance	<p>1. PV String is short-circuited to ground for Protection.</p> <p>2. The environment of PV String Installation is consistently humid, and the line-to-ground insulation is poor.</p> <p>3. Batteryport line-to-ground Low Insulation Resistance.</p>	<p>1. Check the impedance between PV String/Batteryport and ground Protection. A resistance greater than 80kΩ is normal. If the measured resistance is less than 80kΩ, locate and rectify the short-circuit point.</p> <p>2. Check whether the PE cable of the Inverter is properly connected.</p> <p>3. If it is confirmed that the impedance is indeed lower than the default value in rainy weather, please reset the "Inverter insulation resistance Protection point" via the App.</p> <p>Australia and New Zealand markets Inverter, when insulation resistance fault occurs, can also issue alarms through the following methods:</p> <p>1. Inverter is equipped with a buzzer, which will sound continuously for 1 minute when a fault occurs; if the fault is not resolved, the buzzer will sound again every 30</p>

fault code	fault name	fault cause	Troubleshooting recommendation
			<p>minutes.</p> <p>2. If Inverter is added to the monitoring platform and the alarm notification method is configured, alarm information can be sent to customers via email.</p>
F19	Grounding Abnormal	<p>1. Inverter's PE cable Not Connected.</p> <p>2. When the output of PV String is grounded, the output side of Inverter is not connected to an isolation transformer.</p>	<p>1. Please confirm whether the Inverter of PE cable is Not Connected normal.</p> <p>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.</p>
F49	L-PE Short Circuit	Output phase line toPELow impedance or short circuit	Detect output phase line toPEImpedance, identify Locations with low impedance and repair them.

fault code	fault name	fault cause	Troubleshooting recommendation
F50	DCVPrimary Protection	Abnormal load fluctuation	<p>1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention.</p> <p>2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.</p>
F51	DCVsecondary Protection	Abnormal load fluctuation	<p>1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention.</p> <p>2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F20	Hardware Export Limit Protection	Abnormal load fluctuation	<p>1. If the abnormality is caused by an external fault, the Inverter will automatically resume normal operation after the fault disappears, without requiring manual intervention.</p> <p>2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.</p>
F21	Internal Comm Loss	Reference specific subcode reason	<p>Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault still persists, please contact the dealer or after-sales service center.</p>
F52	Leakage currentGFCIMultiple fault shutdowns	North American safety regulations require that after multiple fault, the system must not recover automatically and requires manual intervention or waiting.24hPost-recovery	<p>1. Please check if the PV String ground impedance is too low.</p>

fault code	fault name	fault cause	Troubleshooting recommendation
F53	DC Arc Failure AFCI Multiple fault shutdowns	North American safety regulations require that after multiple fault, the system must not automatically recover and requires manual intervention or waiting. 24h post-recovery	<ol style="list-style-type: none"> 1. After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2. Check if the DC-side terminal is securely connected.
F54	External communication link failure	Inverter external device communication lost, possibly due to peripheral power supply issue, Communication Protocols mismatch, or unconfigured corresponding peripheral.	Judgment is made based on the actual model and detection enable bits. Peripherals not supported by certain models will not be detected.
F55	Back-upport Overload fault	1. Prevent Inverter from continuous Overload output.	1. Disconnect some off-grid loads to reduce the off-grid output Power of the Inverter.

fault code	fault name	fault cause	Troubleshooting recommendation
F56	Back-upport overvoltage fault	2. Prevent damage to the load caused by overvoltage in the Inverter output.	1. If it occurs occasionally, it may be caused by load switching and does not require manual intervention. 2. If this occurs frequently, please contact the dealer or after-sales service center.
F107	On-grid PWM Sync Failure	Abnormal occurrence in carrier synchronization on-grid	1Check if the synchronization line connection is normal. 2Check if the master-slave setting is normal. 3Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F57	External connectionBoxfault	Waiting during Switch On-Grid to Off-GridBoxExcessive relay switching time	1. InspectionBoxIs it functioning properly; 2. InspectionBoxIs the communication wiring correct?
-	Generator Failure		

fault code	fault name	fault cause	Troubleshooting recommendation
F22	Generator waveform detection fault	<p>1. In the case of a Not Connected generator, this fault will always be displayed.</p> <p>2. During generator operation, failure to meet generator safety regulations will trigger this fault.</p>	<p>1. When the generator is not connected, ignore this fault;</p> <p>2. This fault is normal when the generator experiences fault. After the generator recovers, wait for a period of time, and the fault will clear automatically.</p> <p>3. The fault will not affect the normal operation of the off-grid mode.</p> <p>4. The generator and Utility grid are connected simultaneously and meet safety requirements. Utility grid takes priority for on-grid and will operate in the Utility grid on-grid state.</p>
F23	Abnormal generator connection		
F24	Generator voltage low		
F25	Generator voltage high		
F26	Generator Frequency low		
F27	Generator Frequency high		
F109	External connectionSTSfault	andSTSA abnormal connection cable	Check Inverter andSTSI the wiring sequence of the harness connections one-to-one and sequentially corresponding?
F58	CTMissing fault	CTConnection line disconnected (Japanese safety standard requirement)	InspectionCTIs the wiring correct.

fault code	fault name	fault cause	Troubleshooting recommendation
F110	Export Limit Protection	1. Inverter fault trip-off 2. meterUnstable communication 3. Reverse power flow condition	1. Check if there are any other error messages in Inverter. If present, perform targeted troubleshooting. 2. InspectionmeterIs the connection reliable? 3. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the dealer or after-sales service center.
F111	BypassOverload	-	-
F112	Black Start Failure	-	-
F28	Parallel operationIOSelf-test anomaly	Parallel communication line is not securely connected or parallel operation is not functioning.IOChip damage	Check if the parallel communication cable is securely connected, and then recheck.IOCheck if the chip is damaged, and if so, replace it.IOChip.
F59	Parallel operationCANComm unication anomaly	Parallel communication cable is not securely connected or some units are offline.	Check whether all machines are power on and ensure the parallel communication cables are securely connected.

fault code	fault name	fault cause	Troubleshooting recommendation
F29	Paralell Grid Line Reversed	Some machines have the Utility grid line reversed with other connections.	Reconnect the Utility grid wire.
F60	Parallel operationBack-upreverse connection	Partial machinesbackupLine reversed with other connections	reconnectionbackupLine.
F61	Inverter Soft Start Failure	Off-grid cold start Inverter Soft Start Failure	Check whether the inverter module of the machine is damaged.
F113	Offgrid AC Ins Volt High	-	-
F30	AC HCT check Abnormal	AC sensor sampling anomaly detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F62	AC HCT Failure	HCTSensor anomaly detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F31	GFCI HCT Check Abnormal	Leakage current sensor sampling anomaly detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F63	GFCI HCT Failure	Leakage current sensor abnormality detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F32	Relay Check Abnormal	Relay abnormality, cause: 1Relay abnormality (relay short circuit) 2Relay sampling circuit abnormal. 3Abnormal AC side wiring (possible loose connection or short circuit phenomenon)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F64	Relay Failure	1Relay abnormality (relay short circuit) 2Relay sampling circuit abnormality. 3Abnormal AC side wiring (possible loose connection or short circuit phenomenon)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F164	String (array)17~32)	1DC side connection terminal loose; 2DC side connection terminal poor contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC-side terminal is securely connected.
F165	DC Arcing Failure (string)33~48)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC side terminal is securely connected.
F33	FlashRead/Write Error	Possible causes: flashContent has been changed; flashEnd of life	1. Upgrade to the latest version of the program 2. Contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F42	String (array)1~16)	1DC side connection terminal loose; 2DC side connection terminal loose contact; 3Core damage and poor contact	1After the machine is re-on-grid, check whether the voltage current of each circuit is abnormally reduced to zero. 2Check if the DC-side terminal is securely connected.
F34	AFCI Check Failure	During the Arc Failure self-check process, the Arc Failure module failed to detect the Arc Failure.	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F65	AC Terminal Overtemperature	AC Terminal Overtemperature, Possible causes: 1InverterInstallation Location non-ventilated. 2Ambient Overtemperature 3Internal fan operation abnormal.	

fault code	fault name	fault cause	Troubleshooting recommendation
F35	Cabinet Overtemperature	Cabinet Overtemperature, Possible causes: 1 Inverter Installation Location is not ventilated. 2 Ambient Overtemperature 3 Internal fan operation abnormal.	1 Check whether the ventilation of Inverter Installation Location is adequate and whether the ambient temperature exceeds the maximum allowable range. 2 If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions.
F66	INV Module temperature too high	Inverter module temperature too high, possible causes: 1 Inverter Installation Location not ventilated. 2 Ambient Overtemperature 3 Internal fan operation abnormal.	3 If ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F67	BoostModule temperature too high	BoostModule temperature too high, possible causes: 1 Inverter Installation Location not ventilated. 2 Ambient Overtemperature 3 Internal fan operation abnormal.	
F68	AC Capacitor Overtemperature	Output filter capacitor temperature is too high, possible causes: 1 Inverter Installation Location not ventilated. 2 Ambient Overtemperature 3 Internal fan operation abnormal.	

fault code	fault name	fault cause	Troubleshooting recommendation
F114	Relay Failure2	Relay abnormality, cause: 1Relay abnormality (relay short circuit) 2Relay sampling circuit abnormality. 3Abnormal AC side wiring (possible loose connection or short circuit phenomenon)	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F69	PV IGBT short circuit	Possible causes: 1. IGBTshort circuit 2Inverter sampling circuit abnormality	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F70	PV IGBTopen circuit	1. Software issue causing no wave transmission 2. Drive circuit abnormality: 3. IGBTOpen Circuit	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F71	NTCAbnormal	NTCTemperature sensor abnormality detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F72	PWM Abnormal	PWMAbnormal waveform detected	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F73	CPUInterruption anomaly	CPUInterruption anomaly occurred	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F74	Microelectronics fault	Function Safety detected an anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F75	PV HCTfault	boostcurrent sensor anomaly	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F76	1.5VBaseline anomaly	Reference Circuit fault	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F77	0.3VBaseline anomaly	Reference circuit	
F78	CPLDVersion identification error	CPLDVersion identification error	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F79	CPLDCommunication fault	CPLDandDSPCommunication content error or timeout	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F80	Model Identification fault	fault of Model Recognition Error	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F115	SVGPrecharge Disabled	SVGPrecharge hardware failure	Contact the dealer or after-sales service center.
F116	NightSVG PIDPrevention of fault	PIDPrevent hardware anomalies	Contact the dealer or after-sales service center.
F117	DSPVersion identification error	DSPSoftware version identification error	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F36	Bus Overvoltage		Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F81	P-Bus Overvoltage		
F82	N-Bus Overvoltage		
F83	DeputyCPU1)		
F84	DeputyCPU1)		

fault code	fault name	fault cause	Troubleshooting recommendation
F85	DeputyCPU1)	BUSOvervoltage, possible causes: 1. PVvoltage too high 2InverterBUSSampling anomaly 3The rear-end double splitting has poor isolation effect, causing mutual interference between the two Inverter on-grid. One of them reports DC overvoltage when Inverter on-grid.	
F86	DeputyCPU2)		
F87	DeputyCPU2)		
F88	DeputyCPU2)		
F89	P-Bus Overvoltage(CPLD)		
F90	Complex Programmable Logic Device (CPLD)		
F118	MOSContinuous overvoltage	1. Software issue causes the inverter drive to shut down earlier than the flyback drive. 2. Inverter drive circuit abnormality prevents turn-on. 3. PVvoltage too high 4. MosSampling anomaly	Disconnect the AC output side switch and DC input side switch, ⁵ After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F119	Busbar short circuit	1. Hardware damage	In case of occurrence BUS After a fault short circuit, the Inverter remains in an off-grid state. Please contact the dealer or after-sales service center.
F120	Busbar sampling abnormality	1. Bus Sampling hardware	Disconnect the AC output side switch and DC input side switch, 5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F121	DC Lateral sampling abnormality	1. Bus sampling hardware 2. Battery Voltage Sampling Hardware fault 3. Dcrly Relay Failure	Disconnect the AC output side switch and DC input side switch, 5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F37	PVInput overvoltage	PVvoltage input is too high, possible causes: PV array configuration error, the number of PV Battery panels connected in series is excessive, causing the open-circuit voltage of the string to exceed the maximum operating voltage of the Inverter.	Check the series configuration of the corresponding PV array string to ensure that the open-circuit voltage of the string does not exceed the maximum working voltage of Inverter. Once the PV array is correctly configured, the Inverter alarm will automatically disappear.
F38	PVContinuous Hardware Overcurrent	1. Unreasonable module configuration 2. Hardware damage	Disconnect the AC output side switch and DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F39	PVContinuous software overcurrent	1. Unreasonable module configuration 2. Hardware damage	
F91	FlyCap Software Overvoltage	Flying capacitor overvoltage, possible causes: 1. PVvoltage too high 2Flying capacitor sampling anomaly	

fault code	fault name	fault cause	Troubleshooting recommendation
F92	FlyCap Hardware Overvoltage	Flying capacitor overvoltage, possible causes: 1. PVvoltage too high 2Inverter flying capacitor voltage sampling anomaly;	Disconnect the AC output side switch and DC input side switch,5After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F93	FlyCap Undervoltage	FlyCap Undervoltage, Possible causes: 1. PVEnergy deficit; 2Inverter flying capacitor voltage sampling anomaly;	
F94	FlyCap Precharge Failure	FlyCap Precharge Failure, Possible causes: 1. PVEnergy deficiency; 2Inverter flying capacitor voltage sampling anomaly;	
F95	FlyCap Precharge Abnormal	1. Unreasonable control loop parameters 2. Hardware damage	
F96	String overcurrent(String1 ~16)		

fault code	fault name	fault cause	Troubleshooting recommendation
F97	String overcurrent(String17~32)	Possible causes: 1. String Overcurrent 2. String current sensor anomaly	
F40	String reverse connection(String1~16)	PVString reverse connection	Check if the string is reverse connected.
F98	String reverse connection(String17~32)	PVString reverse connection	Check if the string is reverse connected.
F99	String loss(String1~16)	String fuse disconnected (if applicable)	Check if the fuse is blown.
F100	String loss(String17~32)	String fuse disconnected (if applicable)	Check if the fuse is blown.

fault code	fault name	fault cause	Troubleshooting recommendation
F122	PVAccess Mode setting error	<p>PVAccess Mode has three modes, with four channels. MPPT For example:</p> <ol style="list-style-type: none"> 1. Parallel mode: that is AAAA Mode (homologous mode), PV1-PV4 homologous, 4 Road PV Connect the same photovoltaic panel 2. Partial Parallel Mode: That is AACC Mode, PV1 and PV2 homologous connection, PV3 and PV4 homologous connection 3. Stand-alone mode: i.e. ABCD Mode (non-homologous), PV1、PV2、PV3、PV4 Independent connection, 4 Road PV Each connected to a photovoltaic panel <p>If PV Actual Access Mode versus equipment</p>	<p>Inspection PVIs Access Mode correctly set (ABCD、AACC、AAAA), reset in the correct manner PVAccess Mode</p> <ol style="list-style-type: none"> 1. Confirm the actual connection of each circuit PVIs the connection correct. 2. If PV Correctly connected, passed App Or check the current settings on the screen PVAccess Mode" corresponds to the actual Access Mode. 3. If the currently set PVAccess Mode" does not match the actual Access Mode, and needs to be adjusted through App or the screen will PVAccess Mode" is set to a mode consistent with the actual situation. After the setup is completed, PV and AC Power supply disconnection and restart. 4. After the setup is completed, if the current PVAccess Mode matches the actual Access Mode, but this fault is still reported. Please contact

fault code	fault name	fault cause	Troubleshooting recommendation
		settingsPVAccess Mode does not match, this fault will be reported.	the dealer or after-sales service center.
-	String reverse connection(String33~48)	PVString reverse connection	Check if the string is reverse connected.
-	String loss(String33~48)	String fuse disconnected (if applicable)	Check if the fuse is blown.
-	String overcurrent(String33~48)	Possible causes: 1. String Overcurrent 2. String current sensor anomaly	

fault code	fault name	fault cause	Troubleshooting recommendation
F123	Multi-channel PV phase error	Incorrect PV input mode setting	<p>Check if the PVAccess Mode is correctly set (ABCD, AACC, AAAA) and reset the PVAccess Mode in the correct manner.</p> <ol style="list-style-type: none"> 1. Verify that each connected PV string is correctly wired. 2. If the PV is correctly connected, check via the App or screen whether the currently set "PVAccess Mode" corresponds to the actual Access Mode. 3. If the currently set "PV Access Mode" does not match the actual Access Mode, it is necessary to use the App or screen to set the "PV Access Mode" to the mode consistent with the actual situation. After completing the settings, disconnect the PV and AC power supply and restart. 4. After the setup is completed, if the current "PV string" matches the actual string but this alarm still occurs, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F101	Battery1Precharge resistor	Battery1Pre-circuit fault (e.g., pre-resistance burnout, etc.)	Check whether the pre-Charge circuit is in good condition, and verify that the Battery power on after Battery Voltage matches the busbar voltage. If they do not match, please contact the distributor or after-sales service center.
F102	Battery1Relay Failure	Battery1The relay fails to operate properly.	After Battery power on, check if the Battery relay operates and if a closing sound is heard. If it does not function, please contact the distributor or after-sales service center.
F103	Battery1overvoltage at connection point	Battery1The voltage input exceeds the rated range of the machine.	Verify whether Battery Voltage is within the machine's rated range.
F104	Battery2Precharge fault	Battery2Pre-Charge circuit fault (such as pre-Charge resistor burnout, etc.)	Check whether the pre-Charge circuit is in good condition, and verify that the Battery power on after Battery Voltage matches the busbar voltage. If they do not match, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F105	Battery2Relay Failure	Battery2The relay fails to operate normally.	After Battery power on, check whether the Battery relay operates and if the closing sound is heard. If it does not function, please contact the dealer or after-sales service center.
F106	Battery2overvoltage at connection point	Battery2The input voltage exceeds the rated range of the machine.	Verify if Battery Voltage is within the machine's rated range.
F124	Battery1Reverse polarity fault	Battery1Reverse polarity of positive and negative terminals	Check whether the polarity of Battery and the machine terminals is consistent.
F125	Battery2Reverse connection	Battery2Reverse polarity of positive and negative terminals	Check whether the polarity of Battery and the machine terminal is consistent.
F126	Abnormal connection of Battery	Abnormal Access of Battery	Check if the Battery is functioning properly.
-	BMS Status Bit Error	BMS Module fault	Disconnect the AC output side switch and DC input side switch, then close the AC output side switch and DC input side switch after 5 minutes. If fault persists, please contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F127	BAT Overtemperature	Battery temperature is too high, possible causes: 1 Inverter Installation Location not ventilated. 2 Ambient Overtemperature 3 Internal fan operation abnormal.	
F128	Ref Voltage Abnormal	Reference Circuit fault	Disconnect the AC output side switch and DC input side switch, 5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F129	Cabinet Under Temperature	Cabinet Under Temperature, Possible causes: 1. The ambient temperature is too low.	
F130	ACsideSPDfault	AC Failure of lateral lightning protection device	Replacement AC Side lightning protection device.
F131	DCsideSPDfault	DC Failure of lateral lightning protection device	Replacement DC Side lightning protection device.

fault code	fault name	fault cause	Troubleshooting recommendation
F132	Internal Fan Abnormal	Internal Fan Abnormal, possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 3Fan aging and damage.	Disconnect the AC output side switch and DC input side switch,5 After a few minutes, close the AC output side switch and the DC input side switch. If fault persists, please contact the dealer or after-sales service center.
F133	External Fan Abnormal	External Fan Abnormal, Possible causes: 1Abnormal fan power supply; 2Mechanical fault(Locked rotor); 3Fan aging and damage.	
F134	PIDDiagnosis anomaly	PIDHardware fault orPVvoltage too highPIDSuspend	PVOvoltage caused by voltagePIDPause WARNING No processing required,PIDHardware fault can be turned off.PIDSwitch Reclose ClearPIDfault, replacementPIDinstallatio n

fault code	fault name	fault cause	Troubleshooting recommendation
F135	Trip-Switch Trip Warning	Possible causes: Overcurrent or PVReverse connection causes the trip switch to trip.	Please contact the dealer or after-sales service center. The reason for disconnection is due to occurrence.PVShort circuit or reverse connection, need to check for any historical issues.PVShort circuit WARNING or historyPVReverse connection WARNING. If present, maintenance personnel should inspect the corresponding issue.PVSituation. After confirming there is no fault, the trip switch can be manually closed, and then pass through.AppInterface clear history fault operation clears this WARNING.

fault code	fault name	fault cause	Troubleshooting recommendation
F136	HistoryPV IGBT short circuit	Possible causes: Overcurrent caused the trip switch to open.	Please contact the dealer or after-sales service center. Maintenance personnel must follow the historicalPVShort-circuit WARNING subcode, check for short-circuit occurrenceBoostCheck if there is any fault in the hardware and external string; After confirming there is no fault, it can proceed.AppInterface clear history operation clears the WARNING.
F137	HistoryPVReverse connection WARNING(String1~16)	Possible causes: OccurrencePVReverse connection causes the trip switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel should follow the historicalPVReverse connection WARNING subcode, check whether the corresponding string has a reverse connection, inspectPVIIs there a voltage difference in the panel configuration? After checking, it can be passed if there is no fault.AppInterface Clear History fault Operation Clears This WARNING.

fault code	fault name	fault cause	Troubleshooting recommendation
F138	historyPVReverse connection WARNING(String17~32)	Possible causes: OccurrencePVReverse connection causes the trip switch to trip.	Contact the dealer or after-sales service center. Maintenance personnel should follow the historicalPVReverse connection WARNING subcode, check whether the corresponding string has a reverse connection, inspectPVIIs there a voltage difference in the panel configuration? After checking and confirming no fault, it can be passed.AppInterface Clear History fault Operation Clears This WARNING.
F139	FlashRead/Write Error	Possible causes: flashContent has been changed;flashEnd of life	<ol style="list-style-type: none"> 1. Upgrade to the latest version of the program. 2. Contact the dealer or after-sales service center.

fault code	fault name	fault cause	Troubleshooting recommendation
F140	Meter Comm Loss	This WARNING may only be reported after enabling the Power Limit function. Possible causes: 1. Meter not connected; 2. The communication line connection between the meter and Inverter is incorrect.	Check the meter wiring and ensure the meter is correctly connected. If fault persists after inspection, please contact the dealer or after-sales service center.
F141	PVPanel type identification failed	PVPanel identification hardware anomaly	Contact the dealer or after-sales service center.
F142	PV String Mismatch	PVPV String Mismatch, same circuitMPPTThe configurations of the next two strings are different.	Check the two strings open-circuit voltage, and configure the strings with the same open-circuit voltage to the same circuit.MPPTProlonged PV String Mismatch poses safety hazards.
F143	CTNot connected	CTNot connected	InspectionCTWiring.
F144	CTReverse connection	CTReverse connection	InspectionCTWiring.
F145	PE Loss/PE Loss	Ground wire not connected	Check the ground wire.

fault code	fault name	fault cause	Troubleshooting recommendation
F146	String terminal temperature high(String1~8)	37176RegisterPVterminal temperature alarm subcode1Set position	-
F147	String terminal temperature high(String9~16)	37177RegisterPVterminal temperature alarm subcode2Set	-
F148	String terminal temperature high(String17~20)	37178RegisterPVterminal temperature alarm subcode3Set position	-
F149	HistoryPVReverse connection WARNING(String33~48)	Possible causes: OccurrencePVReverse connection causes the trip switch to trip.	Please contact the dealer or after-sales service center; maintenance personnel should follow the historicalPVReverse polarity WARNING subcode, check if the corresponding string has reversed polarity, inspectPVIIs there a voltage difference in the panel configuration? After the inspection is completed and no fault is found, it can be passed.AppInterface clear history operation clears the WARNING.
F150	Battery1voltage low	Battery Voltage is below the set value	-
F151	Battery2voltage low	Battery Voltage is below the set value	-

fault code	fault name	fault cause	Troubleshooting recommendation
F152	Low Voltage of Battery Power	Non-Charge mode, voltage below shutdown voltage	-
F153	BAT1 Voltage High	-	-
F154	2voltage high	-	-
F155	Online Low Insulation Resistance	PV String is short-circuited to Protection ground. 2. The environment of PV String Installation is consistently humid, and the line-to-ground insulation is poor.	1. Check the impedance of PV String to Protection ground. If a short circuit is found, rectify the short circuit point. 2. Check whether the PE cable of the Inverter is properly connected. 3. If it is confirmed that the impedance is indeed lower than the default value under rainy conditions, please reconfigure the "insulation resistance Protection point".
F156	Micro-grid Overload Warning	Backup terminal input current exceeds limit	Occasional occurrences require no action; if this alarm appears frequently, please contact the dealer or after-sales service center.
F157	Manual Reset	-	-

fault code	fault name	fault cause	Troubleshooting recommendation
F158	Generator Phase Sequence Abnormal	-	-
F159	Multiplexed Port Configuration Abnormal	Reuse (Generator) port configured as a microgrid or large load, but actually connected to a generator.	Use the App to change the reuse (generator) port configuration.
F41	Generator Port Overload	<ol style="list-style-type: none"> 1. Off-grid side output exceeds the requirements specified in the specification. 2. Off-grid side short circuit 3. Off-grid terminal voltage too low 4. When acting as a large load port, the large load exceeds the requirements specified in the specification. 	By verifying the data, confirm the output parameters such as voltage, current, and Power on the off-grid side to identify the cause of the issue.
F108	DSP Communication Failure	-	-

fault name	fault cause	Troubleshooting recommendation
Parallel Comm Timeout Shutdown	In parallel operation, if the slave exceeds 400ms No communication from the host within seconds	Check whether the parallel communication harness is securely connected and verify that there are no duplicate slave addresses.
One-touch shutdown and stop	Check if the one-touch shutdown function is enabled via the App.	Deactivate one-touch shutdown.
Offline shutdown	-	-
Remote shutdown	-	-
Child Node Communication Failure	Internal Comm Abnormal	Restart the machine and observe whether fault is eliminated.
DG Communication Failure	Abnormal communication link between the control board and the diesel generator	<ol style="list-style-type: none"> 1. Check the link communication harness to observe whether fault is eliminated; 2. Attempt to restart the machine and observe whether the fault is eliminated; 3. If the fault persists after restarting, please contact the after-sales service center.
Battery Over Voltage	<ol style="list-style-type: none"> 1. The voltage of a single cell is too high. 2. Abnormal voltage collection line 	

fault name	fault cause	Troubleshooting recommendation
	1. Battery total pressure too high 2. Abnormal voltage collection line	Record the fault phenomenon, restart the Battery, wait for a few minutes, and confirm whether the fault disappears. If the problem persists after restarting, please contact the after-sales service center.
Battery Undervoltage	1. Single cell voltage too low 2. Abnormal voltage collection line	
	1. Battery Total pressure too low 2. Abnormal voltage collection line	
Battery Overcurrent	1. Charging Current is too large, Battery current limiting is abnormal: temperature and voltage value suddenly change 2. Inverter response anomaly	
	Battery discharge current too large	
Battery Overtemperature	1. Ambient Overtemperature 2. Temperature sensor abnormality	
	1. Ambient Overtemperature 2. Temperature sensor abnormality	
Battery Undertemperature	1. Ambient temperature is too low 2. Temperature sensor abnormality	
	1. Ambient temperature is too low 2. Temperature sensor abnormality	
Battery Terminal Overtemperature	Pole temperature too high	

fault name	fault cause	Troubleshooting recommendation
Battery Imbalance	<ol style="list-style-type: none"> 1. Excessive temperature difference at different stages. The Battery will impose restrictions on the BatteryPower, specifically limiting the charging Dischargecurrent. Therefore, this issue is generally unlikely to occur. 2. The capacity of the battery cell degrades, leading to excessive internal resistance, resulting in significant temperature rise and large temperature differences during Overcurrent. 3. Poor welding of battery cell tabs, leading to excessive temperature rise in the Overcurrent cell. 4. Temperature sampling issue; 5. power cable connection loose 	
	<ol style="list-style-type: none"> 1. Inconsistent aging levels of battery cells 2. Issues with the board chips can also lead to excessive voltage differences in the battery cells. 3. Imbalanced board issues can also lead to excessive voltage differences between cells. 4. Harness issue causing 	
	<ol style="list-style-type: none"> 1. Inconsistent aging levels of battery cells 2. Issues with the cell chips can also lead to excessive voltage differences between cells. 3. Imbalance issues in the battery pack can also lead to excessive voltage differences between cells. 4. Harness issue causing 	

fault name	fault cause	Troubleshooting recommendation
Insulation Resistance	Insulation resistance failure	Check if the ground wire is properly connected, restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
Pre-charging Failure fault	Pre-charging Failure	It indicates that during the precharge process, the voltage across the precharge MOS consistently exceeds the specified threshold. After restarting the system, observe whether this fault persists, and check whether the wiring is correct and whether the precharge MOS is damaged.
Harvesting line fault	Collection line Battery is disconnected or broken	Check the wiring and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Single voltage collection line poor contact or disconnected	
	Single temperature acquisition line poor contact or disconnected	

fault name	fault cause	Troubleshooting recommendation
	Dual-channel current comparison error is too large, or current acquisition line circuit is abnormal.	Check the wiring and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Dual-channel voltage comparison error is too large, or the comparison error between MCU and AFE voltage is too large, or the voltage acquisition line loop is abnormal.	
	Temperature acquisition line circuit abnormal or poor contact, disconnected	
	Overvoltage level 5 or overtemperature level 5, fuse the three-terminal fuse	To replace the three-section fuse, please contact the after-sales service center to replace the main control board.
Relay or MOSFET overtemperature	Relay or MOSFET overtemperature	The fault indicates that the MOSFET temperature has exceeded the specified threshold. Power off and let it stand for 2 hours to allow temperature recovery.
Shunt Over-temperature	Shunt Over-temperature	The fault indicates that the shunt tube temperature has exceeded the specified threshold. Power off and let it stand for 2 hours to allow the temperature to recover.

fault name	fault cause	Troubleshooting recommendation
BMS1 Other fault1 (Residential Storage Category)	Relay or MOSFET open circuit	<ol style="list-style-type: none"> 1. Upgrade the software, power off and let it sit for 5 minutes, then check if fault persists after restarting. 2. If the problem persists, replace the Battery package.
	Relay or MOSFET short circuit	<ol style="list-style-type: none"> 1. Upgrade the software, power off and let it sit for 5 minutes, then check if fault persists after restarting. 2. If the issue persists, replace the Battery package.
	Communication abnormality between the master cluster and slave cluster, or inconsistency of battery cells among clusters.	<ol style="list-style-type: none"> 1. Check the Battery information and software version of the slave unit, as well as whether the communication line connection with the master unit is normal. 2. Upgrade the software
	Abnormal circuit harness in Battery system, resulting in no loop formation in interlocking signal	Check if Terminal resistor Installation is correct

fault name	fault cause	Troubleshooting recommendation
	Abnormal communication between BMS and PCS	1. Verify that the communication line interface definition between Inverter and Battery is correct. 2. Please contact the after-sales service center to check the background data and verify whether the Inverter and Battery software are correctly matched.
	Abnormal communication harness between BMS master and slave control	Check the wiring and restart the Battery.
	Communication loss between main and auxiliary chips	2. Upgrade the Battery. If the issue persists after restarting, please contact the after-sales service center.
	Circuit breaker, shunt trip abnormality	Let the system stand powered off for 5 minutes, then restart to check if fault persists. 2. Check whether the blind mating at the bottom of the PACK and PCU, as well as the communication pins, are loose or misaligned.

fault name	fault cause	Troubleshooting recommendation
	MCU self-test failed	Upgrade the software and restart the Battery. If the issue persists after restarting, please contact the after-sales service center.
	<ol style="list-style-type: none"> 1. The software version is too low or the BMS board is damaged. 2. A large number of Inverter parallel units, Battery experiences excessive impact during pre-charging. 	<ol style="list-style-type: none"> 1. Upgrade the software and observe whether fault persists. 2. In the case of parallel operation, perform a black start on Battery first, then start Inverter.
	Internal fault of MCU	Upgrade the software and restart the Battery. Typically, this issue is caused by a damaged MCU or external component. If the problem persists after restarting, please contact the after-sales service center.
	Total control current exceeds the specified threshold	<ol style="list-style-type: none"> 1. Let the system stand and shut down for 5 minutes, then restart to check if fault persists. 2. Check if the Inverter is set with an excessively large Power, causing the bus load to be exceeded.

fault name	fault cause	Troubleshooting recommendation
	Cell inconsistency in parallel clusters	Confirm whether the cells in the cluster Battery are consistent.
	Reverse polarity connection of PV string positive and negative terminals	Check whether the positive and negative poles of the string combiner box are reversed.
	Severe overheating or overvoltage triggering the fire protection system	Contact the after-sales service center.
Air Conditioner Failure	Air conditioning abnormal failure	Try restarting the system. If fault persists, please contact the after-sales service center.
	Cabinet door not closed	Check whether the cabinet door is properly closed.
	Power supply voltage too high	Verify that the power supply voltage value meets the air conditioning input voltage requirements, and proceed with re-power on only after confirmation.
	Insufficient power supply	
	No voltage input	
	Unstable power supply	
	Compressor voltage instability	Try restarting the system. If fault persists, please contact the after-sales service center.
	Sensor poor contact or damaged	
Abnormal air conditioning fan		
	There is an abnormality in the voltage or current inside the DCDC.	Please refer to the specific DC Failure content for details.

fault name	fault cause	Troubleshooting recommendation
BMS1 Other fault2 (Residential Storage Category)	DCDCOverload or heat sink temperature too high	
	Abnormal cell acquisition or inconsistent aging levels	Please contact the after-sales service center.
	Fan operation not executed properly	Please contact the after-sales service center.
	Output port screw loose or poor contact	<ol style="list-style-type: none"> 1. Battery Shut down, check wiring and output port screw status 2. After confirmation, restart the Battery and observe whether the fault persists. If it does, please contact the after-sales service center.
	Battery has been used for too long or the battery cell is severely damaged.	Please contact the after-sales service center to replace the pack.
	<ol style="list-style-type: none"> 1. The software version is too low or the BMS board is damaged. 2. The number of Inverter parallel units is large, and the impact during pre-charging of Battery is excessive. 	<ol style="list-style-type: none"> 1. Upgrade the software and observe whether fault persists. 2. In the case of parallel operation, perform a black start on Battery before starting Inverter.
	Heating film damaged	Please contact the after-sales service center.
	The heating film's three-terminal fuse is blown, rendering the heating function unusable.	Please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Software model, Cell Type, and hardware model mismatch.	Check whether the software model, serial number (SN), Cell Type, and hardware model are consistent. If they are inconsistent, please contact the after-sales service center.
	Thermal management board communication disconnection	Let the system stand powered off for 5 minutes, then restart to check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
	Thermal management board communication disconnection	Let the system stand powered off for 5 minutes, then restart to check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
	Thermal management board communication disconnection	Let the system stand powered off for 5 minutes, then restart to check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.

fault name	fault cause	Troubleshooting recommendation
	Pack fan fault signal trigger	Let the system stand powered off for 5 minutes, then restart to check if fault persists. 2. If the fault is not restored, contact after-sales service to replace the pack.
DC combiner box	Output portvoltage too high	Check the output portvoltage. If the output portvoltage is normal and the fault still cannot be resolved after restarting Battery, please contact the after-sales service center.
	The DCDC module detected that Battery Voltage exceeded the maximum Charge voltage.	Stop Charge and Discharge when SOC drops below 90% or remains idle for 2 hours. If the issue persists and restarting fault does not resolve it, please contact the after-sales service center.
	Radiator temperature too high	Let the Battery stand for 1 hour until the radiator temperature drops. If the issue persists and restarting the fault does not resolve it, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Battery discharge current too large	Check if the load exceeds the Battery's Discharge capability. Turn off the load or stop the PCS for 60 seconds. If the issue persists after restarting the fault, please contact the after-sales service center.
	Output port power harness positive and negative poles are reversed with the combiner box Battery or PCS.	Turn off the Battery manual switch, check if the output port wiring is correct, and restart the Battery.
	The output Power relay cannot close.	Check whether the output port wiring is correct and if there is a short circuit. If the issue persists after restarting fault, please contact the after-sales service center.
	Power device temperature too high	Let the Battery stand for 1 hour to allow the temperature of internal Power components to decrease. If the issue persists and restarting the fault does not resolve it, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	Relay sticking	Restart fault still exists. Please contact the after-sales service center.
Battery Rack Circulating Current Failure	<ol style="list-style-type: none"> 1. Cell imbalance 2. First power on incomplete charge correction 	-
BMS1 Other fault3 (Large Storage Category)	Communication exception with Linux module	<ol style="list-style-type: none"> 1. Check if the communication link is functioning properly. 2. Upgrade the software, restart the Battery, and observe whether the fault persists. If it does, please contact the after-sales service center.
	Excessive temperature rise in battery cells	Cell abnormality, contact after-sales service to replace the pack.
	SOC below 10%	Perform Charge on Battery.
	SN writing does not comply with the rules	Check if the SN digits are normal. If abnormal, please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
	1. Battery Intra-cluster daisy chain communication anomaly 2. Inconsistent aging levels of battery cells between Battery clusters	1. Check the contact condition of the single cluster Battery pack. 2. Verify the usage of each cluster, such as cumulative charge/discharge capacity and cycle count. 3. Please contact the after-sales service center.
	High Humidity within the pack	-
	Fuse tripped	Contact after-sales service to replace the pack.
	Low battery level	Perform Charge on Battery.
BMS1 Other fault4 (Large Storage Category)	Circuit Breaker Abnormality	Contact after-sales service to replace the pack.
	External device abnormality	Contact after-sales service to replace the pack.
Contactor Failure 1	-	-
Contactor Failure 2	-	-
Jinggui (Jinggui)	Continuous Overload (exceeding 690kVA) for 10s	Please contact the after-sales service center.

fault name	fault cause	Troubleshooting recommendation
OverloadProtection(Smart port)	Continuous Overload (exceeding 690kVA) for 10s	Please contact the after-sales service center.
Master AC On Meter Comm Error	<ol style="list-style-type: none"> 1. The meter may not be connected to the host. 2. The meter communication cable may be loose. 	<ol style="list-style-type: none"> 1. Check if the meter is connected to the main unit. 2. Check if the meter communication cable is loose.
Parallel Slave Meter Error	The meter is connected to the slave unit.	Set the meter connection machine as the master.
Slave AC On Timeout with Master	<ol style="list-style-type: none"> 1. Incorrect slave address setting 2. Slave communication line is loose 	<ol style="list-style-type: none"> 1. Check whether the slave address is duplicated. 2. Check if the parallel communication cable is loose.

12.1.3 Batteryfault(LX A5.0-10)

● When the BatteryALIndicator 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.

No.	State of Charge (SOC)	fault name	Solution measures
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.
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.






No.	State of Charge (SOC)	fault name	Solution measures
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.
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.





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

Alarm Status

● When the battery ALM indicator shows red, locate and troubleshoot the fault based on the status indicated by the SOC light.

No.	SOC Indicator	Fault Name	Resolution
1	○○○●	Battery Over Voltage Battery Undervoltage	<ol style="list-style-type: none"> 1. Check via the APP whether the inverter's charging current limit is 0. If it is 0, confirm whether the communication cable connection between the battery and the inverter is reliable and communication is normal. 2. Power off and leave it idle for 5 minutes. After restarting, confirm if the fault persists. 3. If the fault is not resolved, please contact the after-sales service center.
2	○○●●	Battery Overcurrent	<ol style="list-style-type: none"> 1. Check via the APP whether the battery model is correct. Confirm if the real-time battery current is greater than the charging current limit or discharge current limit. If so, please contact the after-sales service center. 2. If it is less, power off the battery or upgrade the software. After restarting, confirm if the fault persists. 3. If the fault is not resolved, please contact after-sales.

No.	SOC Indicator	Fault Name	Resolution
3		Battery Overtemperature Battery Undertemperature Battery Terminal Overtemperature	Power off and leave it idle for 60 minutes, waiting for the temperature to recover. If the problem still exists after restarting, please contact the after-sales service center.
4		Battery Imbalance SOH Too Low Fault	Power off and leave it idle for 30 minutes. If the problem still exists after restarting, please contact the after-sales service center.
5		Pre-charge Failure Fault	1. Confirm whether the battery output terminals and the inverter are connected reversely. 2. Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.
6		Acquisition Line Fault	Confirm whether the battery switch is closed. If the battery switch is closed and the problem still exists, please contact the after-sales service center.
7		Relay or MOS Overtemperature Shunt Overtemperature	Power off and leave it idle for 30 minutes. If the problem still exists after restarting, please contact the after-sales service center.

No.	SOC Indicator	Fault Name	Resolution
		BMS Other Faults: Output Port Overtemperature Fault	<p>1. Check if the battery power cables are tightened.</p> <p>Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.</p>
8		Other Protection: MOS Unable to Close	<p>Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.</p>
9		Other Protection: MOS Sticking	
10		Other Protection: Parallel Cluster Fault	<p>1. Confirm whether the type of terminal resistor used and its installation position are correct.</p> <p>2. Confirm whether the communication cable connections between batteries and between the battery and inverter are reliable and communication is normal.</p> <p>3. If the fault is not resolved, please contact the after-sales service center.</p>
11		Other Protection: Communication Loss with Inverter	<p>1. Confirm whether the communication cable connections between batteries and between the battery and inverter are reliable and communication is normal.</p> <p>2. If the fault is not resolved, please contact the after-sales service center.</p>

No.	SOC Indicator	Fault Name	Resolution
12	●○○●	Other Protection: BMU Communication Fault	<ol style="list-style-type: none"> 1. Confirm whether the type of terminal resistor used and its installation position are correct. 2. Confirm whether the communication cable connections between batteries and between the battery and inverter are reliable and communication is normal. 3. Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.
13	●○●○	Other Protection: Breaker Sticking Fault	Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.
14	●●○●	Other Protection: Software Failure	Restart the battery. If the problem still exists after restarting, please contact the after-sales service center.
15	●●●○	Other Protection: Hardware Overcurrent Fault	
16	●●●●	Other Protection: Microelectronics Fault	
		Heating Film Three-Terminal Abnormality	<ol style="list-style-type: none"> 1. Upgrade the software. 2. Power off and leave it idle for 5 minutes. If the problem still exists after restarting, please contact the after-sales service center.











12.1.5 Batteryfault(LX U5.4-L)



State of Charge (SOC)	fault name	Solution measures
	Temperature difference anomaly	Shutdown waiting 2 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 waiting 2 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.





12.1.6 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 flashing 1 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 stand 12h, 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 Standby 2h, restart Battery. If the issue persists, please contact the after-sales service center.
	Shunt Over-temperature fault	Shutdown and Standby 2h, restart Battery. If the issue persists, please contact the after-sales service center.
	Microelectronics	Please contact the after-sales service center.

13 Technical Parameters

13.1 Inverter Parameters

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Battery Input Data				
Battery Type*1	Li-Ion/Lead-acid	Li-Ion/Lead-acid	Li-Ion	Li-Ion/Lead-acid
Nominal Battery Voltage (V)	48	48	48	48
Battery Voltage Range (V)	40~60	40~60	40~60	40~60
Start-up Voltage (V)	47	47	47	47
Number of Battery Input	1	1	1	1
Max. Continuous Charging Current (A)*2	60	75	60	120
Max. Continuous Discharging Current (A)*2	60	75	60	120
Max. Charge Power (W)*2*3	3,000	3,600	3,000	5,000

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Max. Discharge Power (W) ^{*2*3}	3,200	3,900	3,200	5,300
PV String Input Data				
Max. Input Power (W) ^{*4}	4,500	5,400	5,400	7,500
Max. Input Voltage (V) ^{*5}	600	600	600	600
MPPT Operating Voltage Range (V)	60~550	60~550	60~550	60~550
MPPT Voltage Range at Nominal Power (V)	220~500	150~500	150~500	200~500
Start-up Voltage (V)	58	58	58	58
Nominal Input Voltage (V)	360	360	360	360
Max. Input Current per MPPT (A)	16	16	16	16
Max. Short Circuit Current per MPPT (A)	23	23	23	23

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Max. Backfeed Current to The Array (A)	0	0	0	0
Number of MPP Trackers	1	2	2	2
Number of Strings per MPPT	1	1	1	1
AC Output Data (On-grid)				
Nominal Output Power (W)	3,000	3,680	3,680	5,000
Nominal Apparent Power Output to Utility Grid (VA)	3,000	3,680	3,680	5,000*6
Max. Apparent Power Output to Utility Grid (VA)	3,000	3,680	3,680	5,000*6
Nominal Power at 40°C (W)	3,000	3,680	3,680	5,000
Max. Power at 40°C (Including AC Overload) (W)	3,000	3,680	3,680	5,000

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Nominal Apparent Power from Utility Grid (VA)	3,000	3,680	3,680	5,000
Max. Apparent Power from Utility Grid (VA)	6,000	7,360	3,680	10,000
Nominal Output Voltage (V) ^{*7}	220/230/240	220/230/240	220/230/240	220/230/240
Output Voltage Range (V)	170~280	170~280	170~280	170~280
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60	50/60
AC Grid Frequency Range (Hz)	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65	45~55 / 55~65
Max. AC Current Output to Utility Grid (A)	13.6	16.7	16.7	22.7
Max. AC Current From Utility Grid (A)	27.3	33.5	16.7	43.5
Nominal AC Current From Utility Grid (A)	13	16	16	21.7

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs	96A@3μs
Nominal Output Current (A)	13	16	16	21.7
Power Factor	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)	~1 (Adjustable from 0.8 leading to 0.8 lagging)
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	60	60	60	80
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.	a.c.
AC Output Data (Back-up)				

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Back-up Nominal Apparent Power (VA)	3,000	3,680	3,680	5,000
Max. Output Apparent Power with Grid (VA)	3,000(6,000@10sec)	3,680(7,360@10sec)	3,680	5,000(10,000@10sec)
Max. Output Apparent Power without Grid (VA)	3,000(6,000@10sec)	3,680(7,360@10sec)	3,680	5,000(10,000@10sec)
Max. Output Apparent Power (VA)	3,000(6,000@10sec)	3,680(7,360@10sec)	3,680	5,000(10,000@10sec)
Nominal Output Current (A)	13	16	16	21.7
Max. Output Current (A)	13.6	16.7	16.7	22.7
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs	96A@3μs

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Maximum Output Overcurrent Protection (A)	60	60	60	80
Nominal Output Voltage (V) ^{*7}	220/230/240	220/230/240	220/230/240	220/230/240
Nominal Output Frequency (Hz)	50/60	50/60	50/60	50/60
Output THDv (@Linear Load)	<3%	<3%	<3%	<3%
Efficiency				
Max. Efficiency	97.60%	97.60%	97.60%	97.60%
European Efficiency	96.70%	96.70%	96.70%	96.70%
CEC Efficiency	96.90%	96.90%	96.90%	96.90%
Max. Battery to AC Efficiency	95.50%	95.50%	95.50%	95.50%
MPPT Efficiency	99.90%	99.90%	99.90%	99.90%
Protection				
PV String Current Monitoring	Integrated	Integrated	Integrated	Integrated

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
PV Insulation Resistance Detection	Integrated	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated	Integrated
DC Switch	Integrated	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II	Type II
AFCI	Optional	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated	Integrated
General Data				
Operating Temperature Range (°C)	-25~+60	-25~+60	-25~+60	-25~+60

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Relative Humidity	0~95%	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	3000 (>2000 derating)	3000 (>2000 derating)	3000 (>2000 derating)	3000 (>2000 derating)
Cooling Method	Natural Convection	Natural Convection	Natural Convection	Natural Convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485	RS485
Communication with Portal	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G
Weight (kg)	19.6	20.8	20	21.5
Dimension (W×H×D mm)	505.9×434.9×154.8	505.9×434.9×154.8	505.9×434.9×154.8	505.9×434.9×154.8
Noise Emission (dB)	<30	<30	<30	<30
Topology	Non-isolated	Non-isolated	Non-isolated	Non-isolated

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Self-consumption at Night (W)	<10	<10	<10	<10
Ingress Protection Rating	IP65	IP65	IP65	IP65
DC Connector	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal
AC Connector	VACONN Terminal	VACONN Terminal	VACONN Terminal	VACONN Terminal
Environmental Category	4K4H	4K4H	4K4H	4K4H
Pollution Degree	III	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I	I
Storage Temperature (°C)	-40~+85	-40~+85	-40~+85	-40~+85
The Decisive Voltage Class (DVC)	Battery: A	Battery: A	Battery: A	Battery: A
	PV: C	PV: C	PV: C	PV: C
	AC: C	AC: C	AC: C	AC: C
	Com: A	Com: A	Com: A	Com: A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted	Wall Mounted

Technical Parameters	GW3000-ES-20	GW3600-ES-20	GW3600M-ES-20	GW5000-ES-20
Active Anti-islanding Method* ⁸	SMS(Slip-mode frequency) +AFD	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	single phase
Country of Manufacture	China	China	China	China
Certification * ⁹				
Grid Standards	AS4777.2-2020; NRS 097-2-1; CEI 0-21			
Safety Regulation	IEC62109-1&2			
EMC	IEC 61000-6-1/2/3/4; IEC61000-4-16/18/29; IEC 61000-2-2,CISPR 11; EN300328; EN301489; EN IEC 62311			

*1: For EU and ANZ, Lead-acid battery is not available

*2: The actual charge and discharge current/power also depends on the battery.

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

*4: The max power is the actual power of PV. Besides, in Australia, for most of the PV module, the max. Input power can achieve 2*P_n, such as the max. input power of GW3000-ES-20 can achieve 6000W.

*5: When the input voltage is greater than 560V the inverter will enter standby mode. When the voltage returns to below 550V the inverter will return to normal operation state.

*6: 4600 for VDE-AR-N4105 & NRS 097-2-1.

*7: In South America, back-up output does not support relative phase (F-F) connections and 110-127V loads; Only supports relative neutral wire (F-N) 208-240V connection and 208-240V load

*8: SMS and AFD are both frequency shift.

*9: Not all certifications & standards listed, check the official website for details.

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Battery Input Data			
Battery Type* ¹	Li-Ion	Li-Ion/Lead-acid	Li-Ion
Nominal Battery Voltage (V)	48	48	48
Battery Voltage Range (V)	40~60	40~60	40~60
Start-up Voltage (V)	47	47	47
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)* ²	60	120	60
Max. Continuous Discharging Current (A)* ²	60	120	60
Max. Charge Power (W)* ^{2*3}	3,000	6,000	3,000
Max. Discharge Power (W)* ³	3,200	6,300	3,200
PV String Input Data			
Max. Input Power (W)* ⁴	7,500	9,000	9,000

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Max. Input Voltage (V) ^{*5}	600	600	600
MPPT Operating Voltage Range (V)	60~550	60~550	60~550
MPPT Voltage Range at Nominal Power (V)	200~500	220~500	200~500
Start-up Voltage (V)	58	58	58
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)	16	16	16
Max. Short Circuit Current per MPPT (A)	23	23	23
Max. Backfeed Current to The Array (A)	0	0	0
Number of MPP Trackers	2	2	2
Number of Strings per MPPT	1	1	1
AC Output Data (On-grid)			

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Nominal Output Power (W)	5,000	6,000	6,000
Nominal Apparent Power Output to Utility Grid (VA)	5,000*6	6,000*6	6,000*6
Max. Apparent Power Output to Utility Grid (VA)	5,000*6	6,000*6	6,000*6
Nominal Power at 40°C (W)	5,000	6,000	6,000
Max. Power at 40°C (Including AC Overload) (W)	5,000	6,000	6,000
Nominal Apparent Power from Utility Grid (VA)	5,000	6,000	6,000
Max. Apparent Power from Utility Grid (VA)	5,000	10,000	6,000
Nominal Output Voltage (V) ^{*7}	220/230/240	220/230/240	220/230/240

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
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)	22.7	27.3	27.3
Max. AC Current From Utility Grid (A)	22.7	43.5	27.3
Nominal AC Current From Utility Grid (A)	21.7	26.1	26.1
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Nominal Output Current (A)	21.7	26.1	26.1

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
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)	60	80	60
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.
AC Output Data (Back-up)			
Back-up Nominal Apparent Power (VA)	5,000	6,000	6,000
Max. Output Apparent Power with Grid (VA)	5,000	6,000(10,000@10 sec)	6,000
Max. Output Apparent Power without Grid (VA)	5,000	6,000(10,000@10 sec)	6,000
Max. Output Apparent Power (VA)	5,000	6,000(10,000@10 sec)	6,000
Nominal Output Current (A)	21.7	26.1	26.1

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Max. Output Current (A)	22.7	27.3	27.3
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Maximum Output Overcurrent Protection (A)	60	80	60
Nominal Output Voltage (V) ^{*7}	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%
Efficiency			
Max. Efficiency	97.60%	97.60%	97.60%
European Efficiency	96.70%	96.70%	96.70%
CEC Efficiency	96.90%	96.90%	96.90%

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Max. Battery to AC Efficiency	95.50%	95.50%	95.50%
MPPT Efficiency	99.90%	99.90%	99.90%
Protection			
PV String Current Monitoring	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated
Anti-islanding Protection	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Switch	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II
AC Surge Protection	Type II	Type II	Type II
AFCI	Optional	Optional	Optional

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-25~+60	-25~+60	-25~+60
Relative Humidity	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	3000 (>2000 derating)	3000 (>2000 derating)	3000 (>2000 derating)
Cooling Method	Natural Convection	Natural Convection	Natural Convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485
Communication with Portal	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G
Weight (kg)	20	21.5	20
Dimension (W×H×D mm)	505.9×434.9×154.8	505.9×434.9×154.8	505.9×434.9×154.8
Noise Emission (dB)	<30	<30	<30
Topology	Non-isolated	Non-isolated	Non-isolated

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP65	IP65	IP65
DC Connector	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal
AC Connector	VACONN Terminal	VACONN Terminal	VACONN Terminal
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Protective Class	I	I	I
Storage Temperature (°C)	-40~+85	-40~+85	-40~+85
The Decisive Voltage Class (DVC)	Battery: A	Battery: A	Battery: A
	PV: C	PV: C	PV: C
	AC: C	AC: C	AC: C
	Com: A	Com: A	Com: A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted
Active Anti-islanding Method ^{*8}	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD	SMS(Slip-mode frequency) +AFD

Technical Parameters	GW5000M-ES-20	GW6000-ES-20	GW6000M-ES-20
Type of Electrical Supply System	single phase	single phase	single phase
Country of Manufacture	China	China	China
Certification ^{*9}			
Grid Standards	AS4777.2-2020; NRS 097-2-1; CEI 0-21		
Safety Regulation	IEC62109-1&2		
EMC	IEC 61000-6-1/2/3/4; IEC61000-4-16/18/29; IEC 61000-2-2,CISPR 11; EN300328; EN301489; EN IEC 62311		

*1: For EU and ANZ, Lead-acid battery is not available

*2: The actual charge and discharge current/power also depends on the battery.

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

*4: The max power is the actual power of PV. Besides, in Australia, for most of the PV module, the max. Input power can achieve $2 \times P_n$, such as the max. input power of GW3000-ES-20 can achieve 6000W.

*5: When the input voltage is greater than 560V the inverter will enter standby mode. When the voltage returns to below 550V the inverter will return to normal operation state.

*6: 4600 for VDE-AR-N4105 & NRS 097-2-1.

*7: In South America, back-up output does not support relative phase (F-F) connections and 110-127V loads; Only supports relative neutral wire (F-N) 208-240V connection and 208-240V load

*8: SMS and AFD are both frequency shift.

*9: Not all certifications & standards listed, check the official website for details.

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
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)	40	40	40
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)	120	75	75
Max. Continuous Discharging Current (A)	120	75	75
Max. Charge Power (W)	6000	3500	3600
Max. Discharge Power (W)	6300	3800	3900
PV String Input Data			
Max. Input Power (W) *2	10800	6300	6480
Max. Input Voltage (V)	600	600	600
MPPT Operating Voltage Range (V)	60~550	60~550	60~550

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
MPPT Voltage Range at Nominal Power (V)	220~500	150~500	150~500
Start-up Voltage (V)	58	58	58
Nominal Input Voltage (V)	360	360	360
Max. Input Current per MPPT (A)	16	16	16
Max. Short Circuit Current per MPPT (A)	23	23	23
Max. Backfeed Current to The Array (A)	0	0	0
Number of MPP Trackers	2	2	2
Number of Strings per MPPT	1	1	1
AC Output Data (On-grid)			
Nominal Output Power (W)	6000	3500	3680
Max. Output Power (W)	6000	3500	3680

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
Nominal Apparent Power Output to Utility Grid (VA)	6000	3500	3680
Max. Apparent Power Output to Utility Grid (VA)	6000	3500	3680
Nominal Power at 40°C (W) ^{*3}	6000	3500	3680
Max. Power at 40°C (Including AC Overload) (W) ^{*3}	6000	3500	3680
Nominal Apparent Power from Utility Grid (VA)	6000	3500	3680
Max. Apparent Power from Utility Grid (VA)	10000	5500	7360
Nominal Output Voltage (V)	220	127	220
Output Voltage Range (V)	165~280	95~165	165~280
Nominal AC Grid Frequency (Hz)	60	60	60
AC Grid Frequency Range (Hz)	45~55 / 55~65	55~65	45~55 / 55~65

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
Max. AC Current Output to Utility Grid (A)	27.3	27.6	16.7
Max. AC Current From Utility Grid (A)	43.5	43.5	33.5
Max. Output Fault Current (Peak and Duration) (A)	96A@3 μ s	96A@3 μ s	96A@3 μ s
Inrush Current (Peak and Duration) (A)	96A@3 μ s	96A@3 μ s	96A@2 μ s
Nominal Output Current (A)	27.3	27.6	16.7
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)	80	80	80
AC Output Data (Back-up)			
Back-up Nominal Apparent Power (VA)	6000	3500	3680

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
Max. Output Apparent Power without Grid (VA)	6000(10000@10s)	3500(5800@10s)	3680(7360@10s)
Max. Output Apparent Power with Grid (VA)	6000	3500	3680
Nominal Output Current (A)	27.3	27.6	16.7
Max. Output Current (A)	27.3	27.6	16.7
Max. Output Fault Current (Peak and Duration) (A)	96A@3 μ s	96A@3 μ s	96A@3 μ s
Inrush Current (Peak and Duration) (A)	96A@3 μ s	96A@3 μ s	96A@3 μ s
Maximum Output Overcurrent Protection (A)	80	80	80
Nominal Output Voltage (V)	220	127	220
Nominal Output Frequency (Hz)	60	60	60
Output THDv (@Linear Load)	<3%	<3%	<3%
Switching from Grid Connected Mode to Standalone Mode	<10ms	<10ms	<10ms

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
Switching from standalone mode to network connected mode	<10ms	<10ms	<10ms
Efficiency			
Max. Efficiency	0.976	0.96	0.976
European Efficiency	0.967	0.956	0.967
Max. Battery to AC Efficiency	0.957	0.94	0.955
MPPT Efficiency	0.999	0.999	0.999
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

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
AC Short Circuit Protection	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated
DC Switch	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II
AC Surge Protection	Type III	Type III	Type III
AFCI	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-25~+60	-25~+60	-25~+60
Max. Operating Altitude (m)	3000 (>2000 derating)	3000 (>2000 derating)	3000 (>2000 derating)
Cooling Method	Natural Convection	Natural Convection	Natural Convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485
Communication with Portal	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
Weight (kg)	21.5	21.5	20.8
Dimension (W×H×D mm)	505.9×434.9×154.8	505.9×434.9×154.8	505.9×434.9×154.8
Noise Emission (dB)	<30	<30	<30
Topology	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP65	IP65	IP65
DC Connector	MC4, VACONN Terminal	MC4, VACONN Terminal	MC4, VACONN Terminal
AC Connector	VACONN Terminal	VACONN Terminal	VACONN Terminal
Protective class	I	I	I
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III
Storage Temperature (°C)	-40~+85	-40~+85	-40~+85
The Decisive Voltage Class (DVC)	Battery: A	Battery: A	Battery: A
	PV: C	PV: C	PV: C
	AC: C	AC: C	AC: C

Technical Data	GW6000-ES-BR20	GW3500L-ES-BR20	GW3600-ES-BR20
	Com: A	Com: A	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*4			
Grid Standards	N140		
Safety Regulation	IEC62109-1&2		
EMC	IEC 61000-6-1/2/3/4; IEC61000-4-16/18/29; IEC 61000-2-2,CISPR 11; EN300328; EN301489; EN IEC 62311		

*1: The actual charge and discharge current/power also depends on the battery.

*2:For most of the PV module, the max. Input power can achieve 2P_n, Such as the max. input power of GW6000-ES-BR20 can achieve 12000W

*3 The nominal Power at 40°C and Max. Power at 40°C are only for Brazil.

*4: Not all certifications & standards listed, check the official website for details.

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Battery Input Data			
Battery Type*1	Li-Ion	Li-Ion	Li-Ion
Nominal Battery Voltage (V)	48	48	48

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Battery Voltage Range (V)	40~60	40~60	40~60
Start-up Voltage (V)	48	48	48
Number of Battery Input	1	1	1
Max. Continuous Charging Current (A)*1	75	120	120
Max. Continuous Discharging Current (A)*1	75	120	120
Max. Charging Power (W)*1	3600	5000	6000
Max. Discharging Power (W)	3900	5300	6300
AC Output Data (On-grid)			
Nominal Output Power (W)	3680	5000	6000
Max. Output Power (W)	3680	5000	6000
Nominal Apparent Power Output to Utility Grid (VA)	3680	5,000*2	6,000*2
Max. Apparent Power Output to Utility Grid (VA)	3680	5,000*2	6,000*2

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Nominal Apparent Power from Utility Grid (VA)	3680	5000	6000
Max. Apparent Power from Utility Grid (VA)	7360	10000	10000
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)	16.7	22.7	27.3
Max. AC Current From Utility Grid (A)	33.5	43.5	43.5
Nominal AC Current From Utility Grid (A)	16	21.7	26.1
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Nominal Output Current (A)	16.7	22.7	27.3
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)	60	80	80
Type of Voltage (a.c. or d.c.)	a.c.	a.c.	a.c.
AC Output Data (Back-up)			
Back-up Nominal Apparent Power (VA)	3680	5000	6000
Max. Output Apparent Power without Grid (VA)	3,680(7,360at10sec)	5,000(10,000at10sec)	6,000(10,000at10sec)
Max. Output Apparent Power with Grid (VA)	3680	5000	6000
Nominal Output Current (A)	16	21.7	26.1
Max. Output Current (A)	16.7	22.7	27.3

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Max. Output Fault Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Inrush Current (Peak and Duration) (A)	96A@3μs	96A@3μs	96A@3μs
Maximum Output Overcurrent Protection (A)	60	80	80
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 network connected mode	<10ms	<10ms	<10ms
Efficiency			
Max. Battery to AC Efficiency	0.955	0.955	0.955
Protection			

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Residual Current Monitoring	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
AC Surge Protection	Type III	Type III	Type III
Remote Shutdown	Integrated	Integrated	Integrated
General Data			
Operating Temperature Range (°C)	-25~+60	-25~+60	-25~+60
Relative Humidity	0~95%	0~95%	0~95%
Max. Operating Altitude (m)	3000 (>2000 derating)	3000 (>2000 derating)	3000 (>2000 derating)
Cooling Method	Natural Convection	Natural Convection	Natural Convection
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Communication with BMS	CAN	CAN	CAN
Communication with Meter	RS485	RS485	RS485
Communication with Portal	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G	WiFi / WiFi +LAN / 4G
Weight (kg)	19.2	19.5	19.5
Dimension (W × H × D mm)	505.9 × 434.9 × 154.8	505.9 × 434.9 × 154.8	505.9 × 434.9 × 154.8
Noise Emission (dB)	<30	<30	<30
Topology	Isolated	Isolated	Isolated
Self-consumption at Night (W)	<10	<10	<10
Ingress Protection Rating	IP65	IP65	IP65
DC Connector	MC4, VACONN	MC4, VACONN	MC4, VACONN
	Terminal	Terminal	Terminal
AC Connector	VACONN	VACONN	VACONN
Environmental Category	4K4H	4K4H	4K4H
Pollution Degree	III	III	III
Overvoltage Category	AC III	AC III	AC III
Protective Class	I	I	I

Technical Data	GW3600-SBP-20	GW5000-SBP-20	GW6000-SBP-20
Storage Temperature (°C)	-40~+85	-40~+85	-40~+85
The Decisive Voltage Class (DVC)	Battery: A	Battery: A	Battery: A
	AC: C	AC: C	AC: C
	Com: A	Com: A	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*3			
Grid Standards	AS4777.2-2020; NRS 097-2-1; CEI 0-21; EN50549-1; VDE-AR-N4105:2018; PPDS 2021; EIFS 2018:2; NA/EEA-CH; ESB; SEC;		
Safety Regulation	IEC62109-1&2		
EMC	IEC 61000-6-1/2/3/4; IEC61000-4-16/18/29; IEC 61000-2-2, CISPR 11; EN300328;EN301489;EN IEC 62311		

*1: The actual charge and discharge current/power also depends on the battery.

*2: 4600 for VDE-AR-N4105 & NRS 097-2-1.

*3: Not all certifications & standards listed, check the official website for details.

13.2 Battery Technical Data

13.2.1 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	
	EMC	EN IEC61000-6-1, EN IEC61000-6-2, EN IEC61000-6-3, EN IEC61000-6-4	

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

13.2.2 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
Rated Capacity (Ah)	100
Nominal Charge Current (A) *2	60

Technical Parameters	LX A5.0-30
Max. Continuous Charge Current (A) *2*3	90
Nominal Discharge Current (A) *2	100
Max. Continuous Discharge Current (A) *2*3	150
Max. Pulse Discharge Current (A)*2*3	<200A (30s)
Max. Continuous Discharge Power (W)	7200
Communication	CAN
Operating Temperature Range (°C)	Charge: $0 < T \leq 55$ Discharge: $-20 < T \leq 55$
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	$\geq 96\%$
Safety	IEC62619、IEC63056、N140

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

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

*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.

13.2.3 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	
<p>*1: Test conditions, cell voltage 2.5~3.65V, new battery charged and discharged at +25±2 °C, 0.5C, performance may vary due to different battery models.</p> <p>*2: Test conditions, 0.5C charge/discharge at 90% DOD under +25±2 °C temperature;</p> <p>*3: The nominal charging and discharging current and Power are affected by temperature and SOC state;</p> <p>*4: Based on 0.5C@25±2°C charge/discharge of the cell, EOL reaches 80%.</p>		

13.2.4 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 °C, 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°C charge/discharge of the cell, EOL reaches 80%.

13.2.5 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°C 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
<p>*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.</p> <p>*2: The system's operating current and Power values are related to temperature and SOC.</p> <p>*3: The maximum charge/discharge current value may vary depending on the specifications of different battery models.</p>	

13.3 Smart Meter Technical Data

- GMK110

technical parameter			GMK110
	Application		Single-phase
Input Parameter	voltage	Nominal Voltage (V)	220
		Voltage Range (V)	85~288
		Nominal 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 Parameter	Dimensions (W x H x D mm)		19*85*67
	Weight (g)		50
	Mounting Method		DIN rail mounting
Environmental Parameter	IP Rating		IP20
	Operating Temperature Range (°C)		-30 ~ 60
	Storage Temperature Range (°C)		-30 ~ 60
	Relative Humidity (non-condensing)		0~95%
	Max. Operating Altitude(m)		3000

- GM330

technical parameter			GM330
Input Parameters	Type of Electrical Supply System		Three-phase
	voltage	Rated voltage L-N (V)	220/230
		Rated voltage L-L (V)	380/400
		Voltage Range	0.88Un-1.1Un

technical parameter		GM330
	Rated voltage frequency (Hz)	50/60
	current CT ratio	nA:5A
Communication		RS485
Communication distance (m)		1000
User Interface		4 LEDs, Reset button
Accuracy	voltage/current	Class 0.5
	Active energy	Class 0.5
	Reactive energy	Class 1
Power consumption (w)		<5
Mechanical Parameters	Dimensions (W*H*D)	72*85*72
	Weight (g)	240
	Mounting Method	DIN rail mounting
Environmental Parameters	IP rating	IP20
	Operating Temperature Range (°C)	-30~70
	Storage temperature range (°C)	-30~70
	Relative Humidity (non- condensing)	0~95%
	Max. Operating Altitude (m)	3000

13.3.1 GMK110

model	GMK110
Measurement Range	
Supported Grid Type	1P2W
Operating voltage (Vac)	85-288
Frequency (Hz)	50/60
CT ratio	120A: 40mA
Number of CTs	1
Accuracy Parameters	
voltage/current	Class 1

model	GMK110
Active Energy	Class 1
Reactive Energy	Class 2
Communication Parameters	
Communication Method	RS485
Communication Distance (m)	1000
General Parameters	
Dimensions (W*H*D mm)	19*85*67
Housing	1模
Weight (g)	50
Mounting Method	DIN Rail
User Interface	2 LED
Power Consumption (W)	≤5
Environmental Parameters	
IP Rating	IP20
Operating Temperature Range (°C)	-30-+60
Storage Temperature Range (°C)	-30-+70
Relative Humidity (Non-condensing)	0-95%
Max. Operating Altitude (m)	3000

13.3.2 GMK110D

model	GMK110D
Measurement Range	
Supported Grid Type	1P2W

model	GMK110D
Operating voltage (Vac)	85-288
Frequency (Hz)	50/60
CT ratio	120A: 40mA
Number of CTs	2
Accuracy Parameters	
voltage/current	Class 1
Active Energy	Class 1
Reactive Energy	Class 2
Communication Parameters	
Communication Method	RS485
Communication Distance (m)	1000
General Parameters	
Dimensions (W*H*D mm)	19*85*67
Housing	1 module
Weight (g)	50
Mounting Method	DIN rail
User Interface	2 LEDs
Power Consumption (W)	≤5
Environmental Parameters	
IP Rating	IP20
Operating Temperature Range (°C)	-30-+60
Storage Temperature Range (°C)	-30-+70
Relative Humidity (non-condensing)	0-95%

model	GMK110D
Max. Operating Altitude (m)	3000

13.3.3 GM330

technical parameter		GM330
Measurement Range	Supported Grid Type	Three-phase, split-phase, single-phase
	Voltage Range L-L (Vac)	172~817
	Voltage Range L-N (Vac)	100~472
	Nominal Frequency (Hz)	50/60
	CT ratio	nA:5A
Communication Parameters	Communication Method	RS485
	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)	72x85x72/2.83x3.35x2.83
	Housing	4-module
	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 (°C/°F)	-30~+70/-22~+158
	Storage Temperature Range (°C/°F)	-30~70/-22~+158
	Relative Humidity (no condensation)	0~95%
	Max. Operating Altitude (m/ft)	3000/9842

technical parameter		GM330
Certification Parameters	Certificates	UL1741/ANSI

13.3.4 GM1000

model		GM1000	
Input Parameters	Type of Electrical Supply System	Single-phase	
	voltage	Nominal Voltage L-N (V)	110/230
		Voltage Range	0.88Un-1.1Un
		Nominal Voltage Frequency (Hz)	50/60
	current	CT ratio	120A:40mA
		Number of CTs	1
Communication		RS485	
Communication Distance (m)		1000	
User Interface		3 LEDs, Reset Button	
Accuracy	voltage/current	Class 1	
	Active Energy	Class 1	
	Reactive Energy	Class 2	
Power Consumption (W)		<3	
Mechanical Parameters	Dimensions (W*H*D mm)	36*85*66.5	
	Weight (g)	250	
	Mounting Method	DIN Rail Mounting	
IP Rating		IP20	

model		GM1000
Environmental Parameters	Operating Temperature Range (°C)	-25-+60
	Storage Temperature Range (°C)	-30-+70
	Relative Humidity (non-condensing)	0-95%
	Max. Operating Altitude (m)	2000

13.3.5 GM1000D

model		GM1000D	
Input Parameters	Type of Electrical Supply System	Single-phase	
	voltage	Nominal Voltage L-N (V)	110/230
		Voltage Range	0.88Un-1.1Un
		Nominal Voltage Frequency (Hz)	50/60
	current	CT ratio	120A:40mA
		Number of CTs	2
Communication		RS485	
Communication Distance (m)		1000	
User Interface		3 LEDs, Reset Button	
Accuracy	voltage/current	Class 1	
	Active Energy	Class 1	
	Reactive Energy	Class 2	
Power Consumption (W)		<3	
Dimensions (W*H*D mm)		36*85*66.5	

model		GM1000D
Mechanical Parameters	Weight (g)	360
	Mounting Method	DIN Rail Mounting
Environmental Parameters	IP Rating	IP20
	Operating Temperature Range (°C)	-25-+60
	Storage Temperature Range (°C)	-30-+70
	Relative Humidity (non-condensing)	0-95%
	Max. Operating Altitude (m)	2000

13.3.6 GM3000

model		GM3000	
Input Parameters	Type of Electrical Supply System	Three-phase	
	voltage	Nominal Voltage L-N (V)	110/230
		Nominal Voltage L-L (V)	230/400
		Voltage Range	0.88Un-1.1Un
		Nominal Voltage Frequency (Hz)	50/60
	current	CT ratio	120A:40mA
		Number of CTs	3
Communication		RS485	
Communication Distance (m)		1000	

model		GM3000
User Interface		3 LEDs, Reset Button
Accuracy	voltage/current	Class 1
	Active Energy	Class 1
	Reactive Energy	Class 2
Power Consumption (W)		<3
Mechanical Parameters	Dimensions (W*H*D mm)	36*85*66.5
	Weight (g)	450
	Mounting Method	DIN Rail Mounting
Environmental Parameters	IP Rating	IP20
	Operating Temperature Range (°C)	-25 - +60
	Storage Temperature Range (°C)	-30 - +70
	Relative Humidity (non-condensing)	0-95%
	Max. Operating Altitude (m)	2000

13.4 Smart Dongle Technical Data

- 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
	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE Standard

technical parameter		WiFi/LAN Kit-20
Mechanical Parameters	Dimensions (W×H×D mm)	48.3*159.5*32.1
	Weight (g)	82
	Ingress Protection Rating	IP65
	Mounting Method	USB Port Plug-in
Operating Temperature Range (°C)		-30~+60
Storage Temperature Range (°C)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

- 4G Kit-CN-G20、4G Kit-CN-G21

technical parameter	4G Kit-CN-G20	4G Kit-CN-G21
General Data		
Max. Supported Inverter Quantity	1	1
Interface Type	USB	USB
Mounting Method	Plug and Play	Plug and Play
indicator	LED indicator	LED indicator
Dimensions (W×H×D mm)	48.3*95.5*32.1	48.3*95.5*32.1
SIM Card Dimensions (mm)	15*12	15*12
IP Rating	IP66	IP66
Weight (g)	87g	87g
Power Consumption (W)	<4	<4
Operating Temperature (°C)	-30~+65°C	-30~+65°C
Storage Temperature (°C)	-40~+70°C	-40~+70°C
Relative Humidity	0-100%	0-100%
Max. Operating Altitude (m)	4000	4000
Wireless Parameters		
LTE-FDD	B1/B3/B5/B8	B1/B3/B5/B8

technical parameter	4G Kit-CN-G20	4G Kit-CN-G21
LTE-TDD	B34/B39/B40/B41	B34/B39/B40/B41
GNSS Positioning	/	BeiDou, GPS
Safe Service Life (years)	5.0	5.0

- Ezlink3000

technical parameter	Ezlink3000
General Parameters	
Connection Interface	USB
Ethernet Interface (Optional)	10/100Mbps adaptive, communication distance ≤100m
Mounting Method	Plug and Play
indicator	LED indicator
Dimensions (Width * Height * Thickness mm)	49*153*32
Weight (grams)	130
Ingress Protection Rating	IP65
Power Consumption (W)	≤2W (typical value)
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

13.4.1 WiFi/LAN Kit-20

technical parameter	WiFi/LAN Kit-20
Output voltage (V)	5

technical parameter		WiFi/LAN Kit-20
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 pull
Operating Temperature Range (°C)		-30~+60
Storage Temperature Range (°C)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

13.4.2 Wi-Fi Kit

technical parameter		Wi-Fi Kit
General Parameters		
Maximum number of inverters supported	1	
Connection interface	USB	
Mounting Method	Plug and play	
indicator	LED indicator	
Dimensions (W * H * D mm)	49*96*32	
Weight (g)	59	
Ingress Protection Rating	IP65	
Power consumption (W)	2	
Operating Temperature Range (°C)	-30~60°C	
Storage temperature range (°C)	-40~70°C	
Relative Humidity	0-100% (non-condensing)	
Maximum operating altitude (m)	4000	
Wireless Parameters		
Standard and Frequency	802.11b/g/n(2.412G-2.472G)	
Operating Mode	AP/STA/AP+STA	

Safe service life (years)	≥25
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13.4.3 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 (°C)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

13.4.4 4G Kit-CN, LS4G Kit-CN

technical parameter	4G Kit-CN	LS4G Kit-CN
General Data		
Maximum number of inverters supported	1	
Interface type	USB	
Mounting Method	Plug and play	
indicator	LED indicator	
Dimensions (Width × Height × Thickness mm)	49*96*32	
SIM card size (mm)	15*12	
IP rating	IP65	
Power consumption (W)	<4	

Operating environment temperature (°C)	-30~60°C
Storage environment temperature (°C)	-40~70°C
Relative Humidity	0-100% (no condensation)
Max. Operating Altitude (m)	4000
Wireless parameters	
LTE-FDD	B1/B3/B5/B8
LTE-TDD	B34/B38/B39/B40/B41
GNSS positioning	B3/B8
Safe service life (years)	≥25

13.4.5 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 driver
Dimensions (Width * Height * Thickness mm)	49*153*32
gram (g)	130
Ingress Protection Rating	IP65
Power Consumption (W)	≤2W (typical value)
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

technical parameter	Ezlink3000
Storage Temperature Range (°C)	-30 ~ +70
Relative Humidity	0-100% (No condensation)
Maximum operating altitude (m)	4000

14 Appendix

14.1 FAQ


14.1.1 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.

14.1.2 How to Upgrade the Device Version

Through the firmware information, you can view or upgrade the DSP version, ARM version, BMS version, and 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.

14.2 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 grid Max. 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 Frequency	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	Input voltage range/AC input
UAC,r	Power Supply/Input Voltage Range	AC input range
Toperating	Operating Temperature Range	Operating Temperature Range
Pmax	Max Output Power	Maximum Power
PRF	TX Power	emitter 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 (SCR)
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 Disconnecter
RCMU	Residual Current Monitoring Unit	Residual Current Monitoring Device
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	safe state
DOD	Depth of discharge	depth of discharge

14.3 Explanation of Terms

- **Over voltage category interpretation**
 - **Category I overvoltage** Equipment connected to circuits with measures to limit transient overvoltage to a relatively low level.
 - **Category II overvoltage** Energy-consuming equipment powered by fixed electrical distribution installations. Such equipment includes appliances, portable tools, and other household and similar loads. If special requirements for reliability and suitability apply to such equipment, then voltage Category III is adopted.
 - **Overvoltage category III** 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.

• **Definition of Wet Location Categories**

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

• **Explanation of Environmental Categories:**

- **Outdoor type 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 is present, or non-conductive contamination becomes conductive due to condensation.
- **Pollution Degree4**Persistent conductive contamination, such as that caused by conductive dust or rain and snow.

14.4 BatterySN code meaning



The 11th-14th digits

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 represented as 23;
- The 13th digit represents the production month, e.g., August is denoted as 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 as the priority representation, such as 1~9 for the 1st to 9th day, and A for the 10th day, and so on. Among them, the letters I and O are not used to avoid confusion. The 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 h	17th h	18th h	19th h	20th h
code	A	B	C	D	E	F	G	H	J	K	L

Production Day	21st	22nd	23rd	24th	25th	26th h	27th h	28th h	29th h	30th h	31st
Code	M	N	P	Q	R	S	T	U	V	W	X

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