V2.2 2026-09-15

Residential Smart Inverter

ET Series 12-30kW

· Lynx Home F G2
· Lynx Home F
· Lynx Home F Plus+
· Lynx Home D
· Lynx D G2

Solutions Manual

GOODWE

Copyright Statement

Copyright Statement

All Rights Reserved©GoodWe 2026. All Rights Reserved.

Without authorization from GoodWe Technologies Co., Ltd., no part of this manual may be reproduced, distributed, or uploaded to public networks or other third-party platforms in any form.

Trademark Authorization

GOODWEand other trademarks used in this manualGOODWEtrademarks belong to GoodWe Technologies Co., Ltd. All other trademarks or registered trademarks mentioned in this manual belong to their respective owners.

ATTENTION

The document content will be updated irregularly due to product version upgrades or other reasons. Unless otherwise agreed, the document content shall not replace the safety precautions on the product label. All descriptions in the document are for guidance only.

Foreword

Overview

This document mainly introduces the product information, installation and wiring, configuration and commissioning, troubleshooting and maintenance content of the energy storage system composed of inverters, battery systems, and smart meters. Please carefully read this manual before installing and using the product, understand the product safety information, and be familiar with the product's functions and features. The document may be updated from time to time, please obtain the latest version of the materials and more product information from the official website.

Applicable Products

The energy storage system includes the following products:

Product Types	Product Information	Note
Inverter	ET 12-30kW	Rated output power12kWto30kW。
Battery System	Lynx Home F G2	Single cluster energy storage capacity6.4kWhto28.8kWh。 Maximum parallel cluster energy storage capacity up to230.4kWh
	Lynx Home F、Lynx Home F Plus+	Single cluster energy storage capacity6.6kWhto16.38kWh。 Maximum parallel cluster energy storage capacity up to131.04kWh。
	Lynx Home D	Single cluster energy storage capacity5kWh。 Maximum parallel cluster energy storage capacity up to40kWh。

Product Types	Product Information	Note
	Lynx D G2	Single cluster energy storage capacity: 5.12-9kWh. Maximum parallel cluster energy storage capacity up to108kWh。
Smart Meter	GM3000	The monitoring module in the energy storage system can detect information such as operating voltage and current in the system.
	GM330	
	GMK330	
Communication Module	WiFi/LAN Kit-20	Can upload system operation information to the monitoring platform viaWiFiorLANsignals
	LS4G Kit-CN、4G Kit-CN、4G Kit-CN-G20or4G Kit-CN-G21(China only)	Can upload system operation information to the monitoring platform via4Gsignals
	Wi-Fi Kit	Can upload system operation information to the monitoring platform viaWiFisignals
	Ezlink3000	In parallel operation scenarios, it is connected to the master inverter. Can upload system operation information to the monitoring platform viaWiFiorLANsignals

Symbol Definition

⚠DANGER
Indicates a high potential hazard that, if not avoided, will result in death or serious injury.
⚠WARNING
Indicates a moderate potential hazard; failure to avoid may result in death or serious injury.
⚠CAUTION

Indicates a low potential hazard; failure to avoid may result in moderate or minor injury.
ATTENTION
Emphasis and supplements to the content may also provide tips or tricks for optimized product use, helping you solve a problem or save time.

Table of Contents

1 Safety Precautions 12
1.1 General Safety 12
1.2 Personnel Requirements 13
1.3 System Safety 14
1.3.1 PV String Safety 16
1.3.2 Inverter Safety 17
1.3.3 Battery Safety 18
1.3.4 Electricity Meter Safety 21
1.4 EU Declaration of Conformity 21
1.4.1 Devices with Wireless Communication Functions 21
1.4.2 Devices Without Wireless Communication Functions 21
1.5 EU Declaration of Conformity (Battery) 22
1.6 Explanation of Safety Symbols and Certification Marks 22
2 System Introduction 25
2.1 System Overview 25
2.2 Product Introduction 33
2.2.1 Inverter 33
2.2.2 Battery 36
2.2.2.1 Lynx Home F、Lynx Home F Plus+ 36
2.2.2.2 Lynx Home F G2 37
2.2.2.3 Lynx Home D 37

2.2.2.4 Lynx D G2 41
2.2.3 Smart Meter 44
2.2.4 Smart Communication Stick 45
2.3 Supported Grid Types 46
2.4 System Mode 46
2.5 Functional Features 57
3 Equipment Inspection and Storage 61
3.1 Equipment Inspection 61
3.2 Delivery Items 61
3.2.1 Inverter Delivery Items 61
3.2.2 Battery Deliverables 65
3.2.2.1 Lynx Home F 、Lynx Home F Plus+ 65
3.2.2.2 Lynx Home F G2 66
3.2.2.3 Battery Delivery Items (Lynx Home D) 67
3.2.2.4 Battery Deliverables (Lynx D G2) 71
3.2.2.4.1 Base Deliverables 72
3.2.2.4.2 Battery Rack Deliverables 73
3.2.2.4.3 Wall-Mount Bracket Deliverables 73
3.2.3 Smart Meter Deliverables (GM3000) 74
3.2.4 Smart Meter Deliverables GM330 & GMK330 74
3.2.4.1 Accessory List 74
3.2.5 Smart Communication Stick Deliverables 75

3.3 Equipment Storage 77
4 Installation 80
4.1 System Installation and Commissioning Process 80
4.2 Installation Requirements 81
4.2.1 Installation Environment Requirements 81
4.2.2 Installation Space Requirements 84
4.2.3 Tool Requirements 86
4.3 Equipment Handling 88
4.4 Install the Inverter 90
4.5 Install the Battery 93
4.5.1 Install the Lynx Home F Series 93
4.5.1.1 Install Lynx Home F 94
4.5.1.2 Install Lynx Home F Plus+ 95
4.5.1.3 Install Lynx Home F G2 97
4.5.2 Install Lynx Home D 100
4.5.3 Install Lynx D G2 104
4.6 Install the Electricity Meter 109
5 System Wiring 111
5.1 System Wiring Electrical Block Diagram 112
5.2 System Wiring Diagram 114
5.2.1 Single System Wiring Diagram 115
5.2.2 Parallel System Wiring Diagram 121

5.3 Material Preparation 126
5.3.1 Switch Preparation 127
5.3.2 Cable Preparation 131
5.4 Connect Protection Ground 134
5.4.1 Inverter Grounding 135
5.4.2 Battery System Grounding 135
5.5 Connect PV Cables 137
5.6 Connect AC Cables 139
5.7 Connect Battery Cables 141
5.7.1 Connect Inverter and Battery Power Cables 148
5.7.2 Connect Inverter and Battery Communication Cables 155
5.7.3 Connect the Inter-Battery Power Cables of Lynx Home D 158
5.7.4 Connect the Battery Communication Cable and the Terminal Resistor 160
5.7.5 Install the Battery Protective Cover 162
5.8 Connect Meter Cables 164
5.9 Connect Inverter Communication Cables 169
5.10 Connect the Smart Communication Stick 176
6 System Trial Run 179
6.1 Pre-System Power-on Inspection 179
6.2 System Power-On 179
6.3 Indicator Introduction 183
6.3.1 Inverter Indicator Light 183

6.3.2 Battery Indicator Light 184
6.3.2.1 Lynx Home F Series 184
6.3.2.2 Lynx Home D 186
6.3.2.3 Lynx D G2 188
6.3.3 Smart Meter Indicator Light 188
6.3.4 Smart Communication Stick Indicator Light 189
7 System Commissioning and Power Station Monitoring 195
7.1 Use SEMS+ App for Device Debugging and Power Station Monitoring 195
7.2 Use SEMS+ WEB for Device Commissioning and Power Station Monitoring 196
8 System Maintenance 198
8.1 System Power-Off 198
8.2 Equipment Removal 200
8.3 Equipment Scrapping 201
8.4 Periodic Maintenance 201
8.5 Fault 202
8.5.1 View Detailed Information on Faults/Alerts 203
8.5.2 Fault Information and Handling Methods 203
8.5.2.1 System Fault 204
8.5.2.2 Inverter Fault 205
8.5.2.2.1 Fault Handling (Fault Codes F01-F40) 205
8.5.2.2.2 Fault Handling (Fault Codes F41-F80) 222
8.5.2.2.3 Fault Handling (Fault Codes F81-F121) 231

8.5.2.2.4 Fault Handling (Fault Codes F122-F163) 240
8.5.2.2.5 Fault Phenomenon Handling 251
8.5.3 Lynx Home D Battery Fault 271
9 Technical Parameters 275
9.1 Inverter Parameters 275
9.2 Battery Parameters 290
9.2.1 Lynx home F 290
9.2.2 Lynx home F Plus+ 292
9.2.3 Lynx home F G2 293
9.2.4 Lynx home D 295
9.2.5 Lynx D G2 296
9.3 Smart Meter Technical Parameters 300
9.3.1 GM330 300
9.3.2 GM3000 301
9.3.3 GMK330 302
9.4 Smart Communication Stick Technical Parameters 304
9.4.1 4G Kit-CN-G21 304
9.4.2 4G Kit-CN-G20 305
9.4.3 WiFi/LAN Kit-20 306
10 Appendix 307
10.1 FAQ 307
10.1.1 How to Perform Meter/CT Auxiliary Detection? 307

10.1.2 How to Upgrade the Device Version 307
10.2 Abbreviation 308
10.3 Terminology Explanation 311
10.4 Meaning of Battery SN Code 312
10.5 Safety Standards Countries 313
10.6 Australia Safety Regulations 320
11 Contact Details 326

1 Safety Precautions

The safety precaution 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 passed testing. However, as an electrical device, relevant safety instructions must be followed before any operation on the equipment; improper operation may result in serious injury or property damage.

1.1 General Safety

ATTENTION

- The document content will be updated irregularly due to product version upgrades or other reasons. Unless otherwise agreed, the document content shall not replace the safety precautions on the product label. All descriptions in the document are for guidance only.
- Please read this document carefully before installing the equipment to understand the product and precautions.
- All operations on the equipment must be performed by professional, qualified electrical technicians who are familiar with the relevant standards and safety codes of the project location.
- When operating the equipment, use insulated tools and wear personal protective equipment to ensure personal safety. When contacting electronic devices, wear anti-static gloves, anti-static wristbands, anti-static clothing, etc., for Protection of the equipment from electrostatic damage.
- Unauthorized disassembly or modification may cause equipment damage, which is not covered by the warranty.
- Equipment damage or personal injury caused by installing, using, or configuring the equipment in violation of the requirements of this document or the corresponding user manual is not within the liability scope of the equipment manufacturer.
- For more product warranty information, please visit the official website:https://www.goodwe.com/warrantyrelated.html。

1.2 Personnel Requirements

ATTENTION

To ensure the safety, compliance, and efficiency of the entire process of equipment transportation, installation, wiring, operation, and maintenance, the work must be performed by professional or qualified personnel.

1. Professional or qualified personnel include:
   - Personnel who have mastered the working principle, system structure, risk and hazard-related knowledge of the equipment, and have received professional operation training or possess rich practical experience.
   - Personnel who have received relevant technical and safety training, possess certain operational experience, can recognize the potential risks of specific operations to themselves, and can take protective measures to minimize risks to themselves and others.
   - Qualified electrical technicians who meet the regulatory requirements of the country/region.
   - Possess an electrical engineering degree/higher diploma in electrical engineering or equivalent qualification/professional practice qualification in the electrical field, and have at least 2/3/4 years of experience in testing and supervision work using electrical equipment safety standards.
2. Personnel involved in special tasks such as electrical work, high-altitude work, and special equipment operation must hold valid qualification certificates required by the location of the equipment.
3. Medium-voltage equipment operation must be performed by licensed high-voltage electricians.
4. Equipment and component replacement are only allowed to be performed by authorized personnel.

1.3 System Safety

⚠DANGER

- Before making electrical connections, disconnect all upstream switches of the equipment to ensure the equipment is powered off. Live operation is strictly prohibited, otherwise, risks such as electric shock may occur.
- This device supports PV string access. The PV input has low impulse current withstand capability. It is strictly prohibited to directly power on via the PV port using a DC voltage source. If powering on via the PV port is required, follow the steps below. If the device is damaged due to non-compliant operation, it is considered human-induced damage and not covered under product warranty.
  1. First, limit the output current of the DC voltage source within the Max. Current from Grid allowed by the PV port
  2. Then close the DC Switch of the inverter
  3. Finally, slowly increase the output voltage of the DC source from zero to the target value at a rate of ≤50 V/s
- To prevent personal injury or equipment damage caused by live operations, a circuit breaker must be added to the voltage input side of the equipment
- All operations such as transportation, storage, installation, operation, use, and maintenance shall comply with applicable laws, regulations, standards, and specifications
- The specifications of cables and components used for electrical connections shall comply with local laws, regulations, standards, and specifications
- Please use the cable connectors supplied with the package to connect the equipment cables. If other models of connectors are used, the equipment damage caused thereby is not within the liability scope of the equipment manufacturer
- Ensure that all cables of the equipment are connected correctly, tightly, and without looseness. Improper wiring may lead to poor contact or equipment damage
- The Protective Earth (PE) conductor of the equipment must be connected firmly
- To protect the equipment and its components from damage during transportation, ensure that transport personnel are professionally trained. Record the operation steps during transportation, maintain the equipment balance, and prevent the equipment from falling
- The equipment is heavy; please assign appropriate personnel based on the equipment Weight to prevent the equipment from exceeding the weight range that can be manually carried, which may cause personnel injury
- Ensure that the equipment is placed stably and not tilted; equipment tipping may lead to equipment damage and personal injury

⚠WARNING

- During equipment installation, avoid applying load to the wiring terminals; otherwise, it will cause terminal damage
- Avoid applying excessive tension to the cables, otherwise it may lead to poor wiring. Reserve an appropriate length of cable during wiring to avoid the cables being in a taut state
- Properly fix and support the cables to avoid the long-term application of cable self-weight, tension, bending force, torsion, or other external mechanical stresses on the terminals or connectors
- Ensure the Protective Earth (PE) conductor is connected reliably and reserve an appropriate margin. When subjected to external mechanical stresses such as accidental tension, ensure that the Protective Earth (PE) conductor does not disconnect prior to other conductors
- Cables of the same type shall be bundled together; cables of different types shall be laid with a separation of at least 30 mm, and shall not be intertwined or crossed
- Using cables in high-temperature environments may cause aging or damage to the insulation layer; the distance between the cables and the periphery of heat-generating devices or heat source areas shall be at least 30 mm

1.3.1 PV String Safety

⚠WARNING

- Ensure that the module frame and bracket system are grounded properly
- After DC cable connection is completed, ensure that the cables are connected tightly and without looseness. Improper wiring may lead to poor contact or high impedance, and damage the inverter
- Use a multimeter to measure the positive and negative poles of the DC cables, ensure that the polarity is correct (no reverse connection), and the voltage is within the allowable range
- Use a multimeter to measure the DC cables, ensure that the polarity is correct (no reverse connection); the voltage shall be lower than the Max. DC Input Voltage. Damage caused by reverse connection and Overvoltage is not within the liability scope of the equipment manufacturer
- PV string output does not support grounding. Before connecting the PV string to the inverter, ensure that the minimum insulation resistance to ground of the PV string meets the minimum insulation impedance requirement (R = Max. Input Voltage (V) / 30 mA)
- Do not connect the same PV string to multiple inverters, otherwise it may cause inverter damage
- The photovoltaic modules used in conjunction with the inverter must comply with IEC 61730 Class A standard
- When the input voltage of the PV string is high or the input current is high, it may cause the inverter output power to derate

1.3.2 Inverter Safety

⚠WARNING

- Ensure that the voltage and frequency of the grid connection point comply with the inverter grid connection specifications
- It is recommended to add Protection devices such as circuit breakers or fuses on the AC side of the inverter; the specifications of the Protection devices shall be greater than 1.25 times the Max. AC Output Current of the inverter
- If the inverter triggers Arc Failure alarms less than 5 times within 24 hours, it can automatically clear the alarm. After the 5th Arc Failure alarm, the inverter will shut down for Protection; the inverter can only resume normal operation after the fault is cleared
- If the photovoltaic system is not equipped with a battery, it is not recommended to use the BACK-UP function, otherwise it may cause a risk of system power outage
- When grid voltage and frequency change, it may cause the inverter to derate its output power.

1.3.3 Battery Safety

⚠DANGER

- Before operating any equipment in the system, ensure the equipment is powered off to avoid electric shock hazards. During equipment operation, strictly comply with all safety precautions in this manual and the safety labels on the equipment.
- Without official authorization from the equipment manufacturer, do not disassemble, modify, or repair the battery or control box; otherwise, electric shock hazards or equipment damage may occur, and the resulting losses are not within the responsibility scope of the equipment manufacturer.
- Do not impact, pull, drag, squeeze, or step on the equipment, nor place the battery in fire, otherwise there is a risk of battery explosion.
- Do not place the battery in a high-temperature environment; ensure there are no heat sources near the battery and it is not exposed to direct sunlight. If the ambient temperature exceeds 60℃, a fire may occur.
- If the battery or control box has obvious defects, cracks, damage, or other conditions, do not use it. Battery damage may cause electrolyte leakage.
- Do not move the battery system while the battery is operating. If battery replacement or addition is needed, contact the after-sales service center.
- Battery Short Circuit may cause personal injury; the instantaneous large current caused by the short circuit can release a large amount of energy, which may lead to a fire.
- The battery DC circuit breaker shall comply with the requirements of AS/NZS 5139 standard.
- The same battery is only allowed to connect to one energy storage inverter. It is forbidden to directly connect the same battery to multiple energy storage inverters. Multiple inverters sharing one battery may cause abnormal return current or circulating current, resulting in GFCI leakage Protection and battery overcurrent, which may seriously cause damage to the battery and inverters.

⚠WARNING

- Battery Current may be affected by some factors, such as temperature, humidity, weather conditions, etc., which may lead to battery current limiting and affect load capacity.
- If the battery cannot start, contact the after-sales service center as soon as possible; otherwise, the battery may be permanently damaged.
- Please perform regular inspection and maintenance on the battery according to the battery maintenance requirements.

Emergency Response Measures

- Battery Electrolyte Leakage
  If the battery module leaks electrolyte, avoid contact with the leaked liquid or gas. The electrolyte is corrosive; contact may cause skin irritation and chemical burns. If accidentally exposed to the leaked substance, perform the following actions:
  - Inhalation: Evacuate from the contaminated area and seek medical help immediately.
  - Eye Contact: Rinse with clean water for at least 15 minutes and seek medical help immediately.
  - Skin Contact: Thoroughly wash the affected area with soap and clean water and seek medical help immediately.
  - Ingestion: Induce vomiting and seek medical assistance immediately.
- Fire
  - When the battery temperature exceeds 150℃, there is a risk of battery fire; after the battery catches fire, toxic and harmful gases may be released.
  - To avoid fire, ensure that carbon dioxide, Novec1230, or FM-200 fire extinguishers are available near the equipment.
  - When extinguishing a fire, do not use ABC dry powder fire extinguishers. Firefighters must wear protective clothing and self-contained breathing apparatus.
- Battery Triggers Fire Protection Function
  For batteries with optional fire protection function, perform the following actions after the fire protection function is triggered:
  - Immediately turn off the main power switch to ensure no current flows through the battery system.

- Conduct a preliminary visual inspection of the battery for damage, deformation, leakage, or abnormal odor; inspect the battery housing, connectors, and cables.
- Use temperature sensors to detect the temperature of the battery and its environment to ensure no overheating risk.
- Isolate and mark the damaged battery, and dispose of it properly in accordance with local regulations.

1.3.4 Electricity Meter Safety

⚠WARNING
If grid voltage fluctuation exceeds 265V, long-term overvoltage operation may cause damage to the electricity meter. It is recommended to add a fuse with Rated Current of 0.5A on the voltage input side of the electricity meter for Protection of the electricity meter.

1.4 EU Declaration of Conformity

viahttps://en.goodwe.com/download > Select Product > Certificate > Select Country to obtain the EU Declaration of Conformity.

1.4.1 Devices with Wireless Communication Function

GoodWe Technologies Co., Ltd. hereby declares that the devices with wireless communication function that can be sold in the European market comply with 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)

1.4.2 Devices Without Wireless Communication Function

GoodWe Technologies Co., Ltd. hereby declares that the devices without wireless communication function that can be sold in the European market comply with 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 EU Declaration of Conformity (Battery)

GoodWe Technologies Co., Ltd. hereby declares that the batteries that can be sold in the European market comply with 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)*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 battery products meet the hazardous substance limit requirements specified in this regulation.

1.6 Explanation of Safety Symbols and Certification Marks

⚠DANGER

- After equipment installation, the labels and warning signs on the enclosure must be clearly visible; they must not be blocked, altered, or damaged.
- The following explanations of enclosure warning labels are for reference only; please refer to the actual labels on the equipment.

Serial Number	Symbol	Meaning
1		Potential danger exists during equipment operation. Please take protective measures when operating the equipment.
2		High voltage danger. High voltage exists during equipment operation; please ensure the equipment is powered off before operating it.
3		The surface of the inverter is at high temperature; do not touch it during equipment operation, as it may cause burns.
4		Please use the equipment properly; use in extreme conditions poses an explosion risk.
5		Batteries contain flammable materials; beware of fire.
6		The equipment contains corrosive electrolyte. Please avoid contact with leaked electrolyte or volatile gases.
7		Delayed discharge. After the equipment is powered off, please wait 5 minutes for it to fully discharge.
8		The equipment should be kept away from open flames or ignition sources.
9		The equipment should be kept away from areas accessible to children.
10		Please use the equipment properly; use in extreme conditions poses an explosion risk.

Serial Number	Symbol	Meaning
11		Batteries contain flammable materials; beware of fire.
12		Do not lift the equipment after the battery system is wired or while the battery system is in operation.
13		Do not extinguish with water.
14		Before operating the equipment, please read the product manual carefully.
15		Personal protective equipment must be worn during installation, operation, and maintenance.
16		The equipment must not be disposed of as household waste; please dispose of it in accordance with local laws and regulations, or return it to the equipment manufacturer.
17		Do not directly disconnect or plug/unplug DC terminals while the equipment is operating.
18		Protection Grounding Terminal
19		Recycling Symbol
20		CE Certification Mark
21		TUV Mark
22		RCM Mark

2 System Introduction

2.1 System Overview

Residential smart inverter solution integrates devices such as inverters, batteries, smart meters, and smart communication sticks. In a photovoltaic system, it converts solar energy into electrical power to meet household electricity demand. The energy IoT devices in the system control electrical equipment by identifying the overall power status of the system, thereby realizing intelligent management of power for load use, storage in batteries, or output to the grid, etc.

⚠WARNING

- Battery models should be selected according to the inverter-battery matching list. For requirements on batteries used in the same system, such as whether models can be mixed or whether capacities are consistent, please refer to the user manual of the corresponding battery model or contact the battery manufacturer for relevant requirements. Inverter-battery compatibility list:https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Battery%20Compatibility%20Overview-EN.pdf。
- Due to product version upgrades or other reasons, the document content will be updated irregularly. 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。
- Photovoltaic systems are not suitable for connecting devices that rely on stable power supply, such as life-sustaining medical equipment, etc. Please ensure that the system power outage will not cause personal injury.
- If the photovoltaic system is not equipped with a battery, it is not recommended to use the BACK-UP function, otherwise it may cause a risk of system power outage
- BACK-UP ports do not support connection to autotransformers or isolation transformers.
- Battery Current may be affected by some factors, such as temperature, humidity, weather conditions, etc., which may lead to battery current limiting and affect

⚠WARNING

load capacity.

- The inverter has UPS function with a switching time <10ms. Please ensure that the BACK-UP load capacity is less than the inverter's Rated Power. Otherwise, it may cause the UPS function to fail during Grid Power Outage.
- If the photovoltaic system is not equipped with a battery, it is not recommended to use the BACK-UP function, otherwise it may cause a risk of system power outage
- For detailed networking and wiring schemes of each scenario, please refer to: System Wiring Diagram.
- When the inverter is in off-grid state, it can supply normal household loads. However, the following loads need to be restricted, such as:
  - inductive load: The power of an inductive load is less than 0.4 times the inverter's rated output power.
  - capacitive load: Total power ≤ 0.66 × the inverter's rated output power.
  - When connecting three-phase loads to the BACK-UP port, only three-phase loads with an N line are supported. Loads without an N line are not supported, otherwise it will cause abnormal operation of the load or damage to the load.
  - The inverter does not support half-wave loads. Half-wave loads: Some old home appliances that do not meet EMC standards (such as hair dryers and small heaters using half-wave rectification, etc.) may not work properly.
- In a system where the inverter operates in full off-grid mode, if the battery is in low light or rainy weather for a long time and fails to be charged timely, it may lead to over-discharge, resulting in battery performance degradation or damage. To ensure long-term stable operation of the system, the battery should be prevented from being fully discharged. The recommended measures are as follows:
  - When operating off-grid, set the minimumSOCProtection threshold. It is recommended to set the lower limit of the off-grid batterySOCto30%。
  - WhenSOCapproaches the Protection threshold, the system will automatically enter load limiting or Protection mode.
  - If there is insufficient sunlight for consecutive days and the batterySOCis too low, timely replenish power to the battery through external energy (such as a generator or grid auxiliary charging).
  - Regularly check the battery status to ensure it is within the safe operating range.

⚠WARNING

- It is recommended to fully charge and discharge the battery once every six months to calibrateSOCaccuracy.

- For detailed networking and wiring schemes of each scenario, please refer to:5.2.System Wiring Diagram(Page 114)。

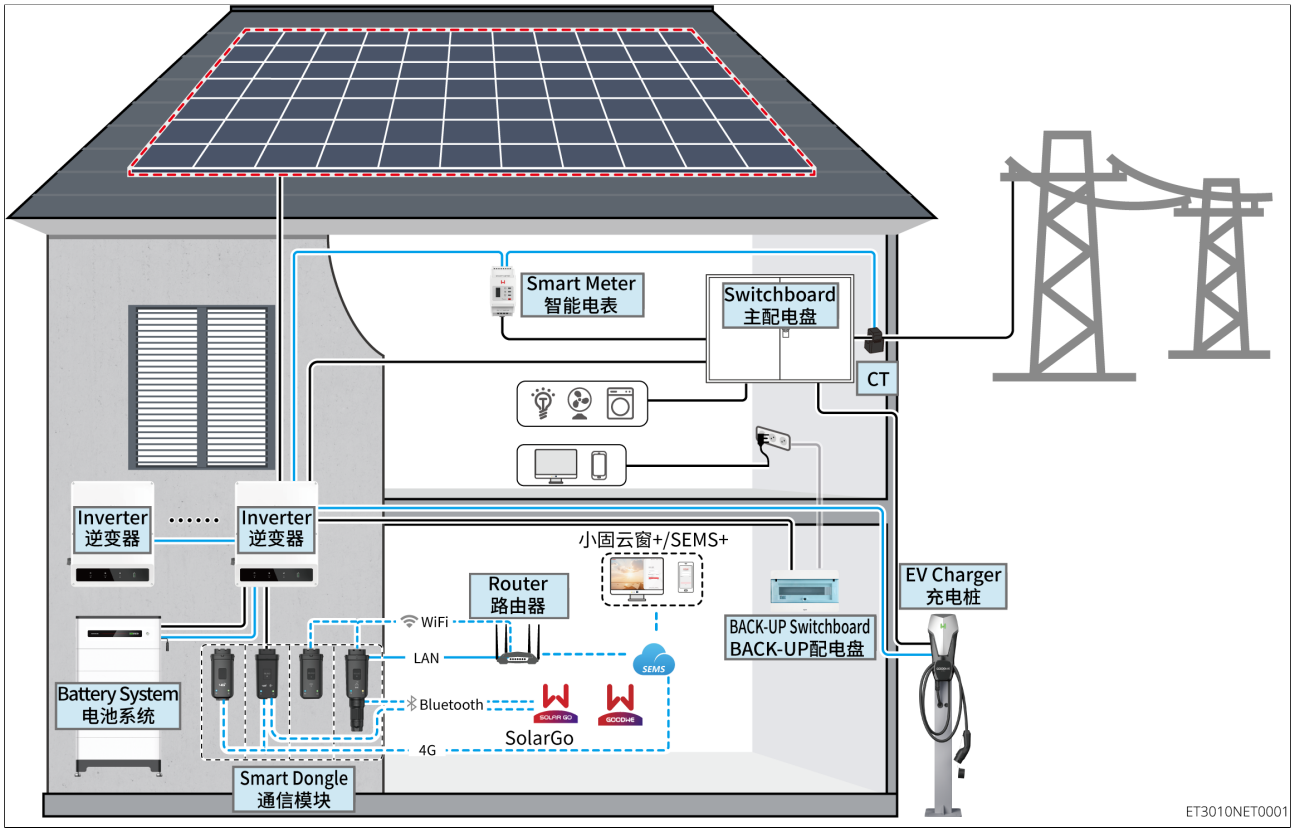


Figure1 System Networking Diagram

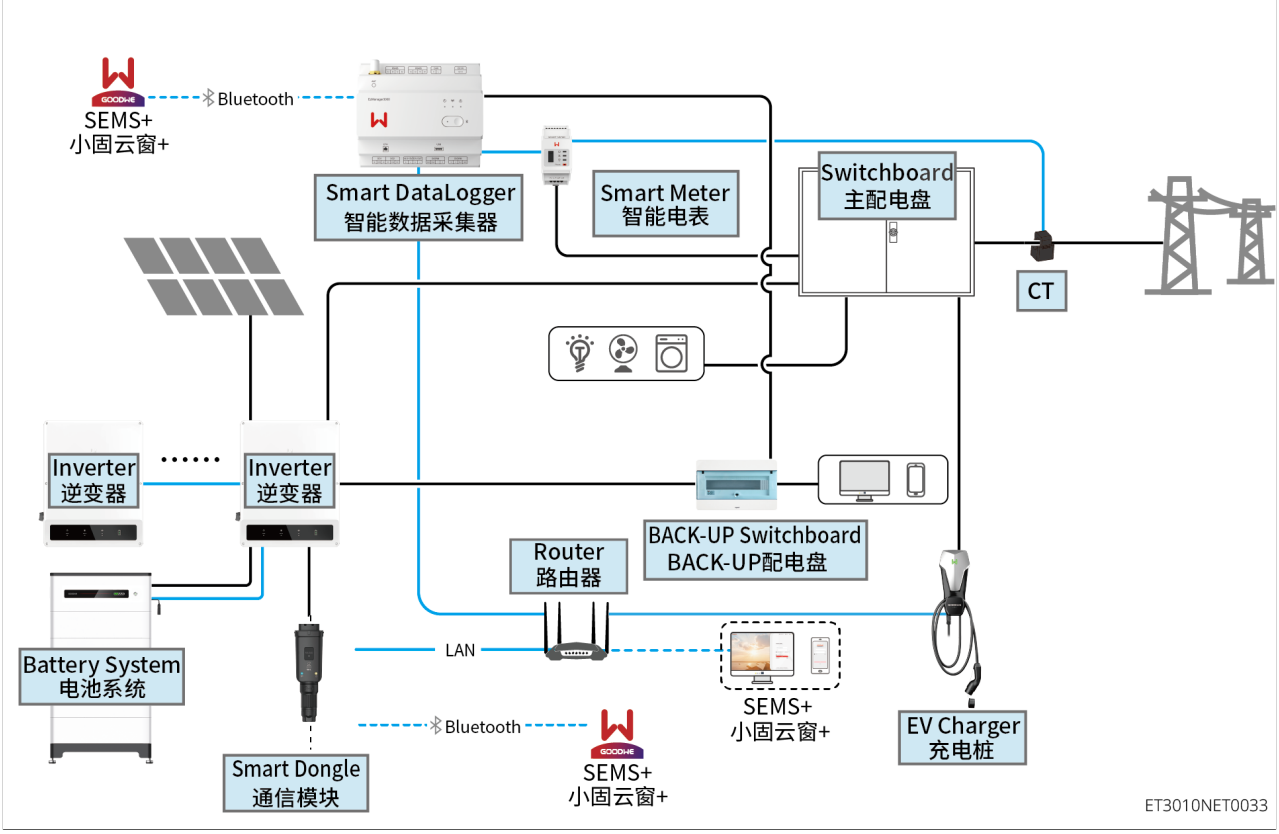


Figure2 Dynamic Power Limit Networking Diagram

Device Type	Model	Note
Inverter	GW12KL-ET GW18KL-ET GW15K-ET GW20K-ET GW25K-ET GW29.9K-ET GW30K-ET	• Supports up to 4 inverters to form a parallel system • Battery ready models do not support forming a parallel system when the battery function is not activated • Only supports machines with the same AC output voltage to form a parallel system • In coupling scenarios, using dual meters can simultaneously monitor the power generation of the grid-tied inverter and the power consumption of loads. The following version requirements must be met: ◦ Inverter ARM software version 15.441 or above. ◦ Inverter DSP software version 11.11060 or above. ◦ SolarGo version 6.9.0 or above. ◦ Inverter compatibility with Lynx D G2 battery software version requirements: ▪ Inverter ARM software version 18.455 or above. ▪ InverterDSP software version 14.14014 or above.
Battery System	**Lynx Home F G2** LX F6.4-H-20 LX F9.6-H-20 LX F12.8-H-20 LX F16.0-H-20 LX F19.2-H-20 LX F22.4-H-20 LX F25.6-H-20 LX F28.8-H-20	

Device Type	Model	Note
	Lynx Home F、Lynx Home Plus+ LX F6.6-H LX F9.8-H LX F13.1-H LX F16.4-H	• Lynx Home F battery system does not support cluster parallel operation. • This system supports a maximum of 8 battery system clusters in parallel operation • Battery systems of different versions cannot be mixed and used in parallel clustering • The GW12KL-ET and GW18KL-ET inverters are only compatible with Lynx Home F G2 series battery systems; other series of batteries are not supported • The LXF6.4-H-20 and LXF9.6-H-20 model batteries are only compatible with GW12KL-ET and GW18KL-ET inverters; other inverters are not supported • Lynx Home D batteries support usable capacity expansion, with a maximum of 2 sets (each set can stack up to 4 battery modules) totaling 8 battery modules to expand usable capacity. If there is a need for capacity expansion, contact the distributor to purchase batteries
	Lynx Home D LX D5.0-10	

Device Type	Model	Note
	Lynx D G2 GW5.1-BAT-D-G20 GW5.1-BAT-D-G21 GW8.3-BAT-D-G20 GW8.3-BAT-D-G21 GW6.0-BAT-D-G20 GW9.0-BAT-D-G20	• Battery modules of different models can be mixed and used • This system supports5-108kWhto meet the matching requirements of different power and energy levels • Battery heating film is optional. Only models equipped with heating film can enable the "Battery Heating" function. Batteries not equipped with heating film should not be used in low-temperature environments, otherwise it may cause the device to fail to operate • GW5.1-BAT-D-G20, GW8.3-BAT-D-G20, GW5.1-BAT-D-G21, GW8.3-BAT-D-G21, GW6.0-BAT-D-G20 , GW9.0-BAT-D-G20 the battery heating function is not available when mixed and used • If the system has requirements for battery mixing and split-type capacity expansion, please ensure that the BMS software version is V06 or above and the DCDC version is V06 or above • Only when the battery BMS software version is 07 or above and the DCDC version is 08 or above can it be compatible with this series of inverters

Device Type	Model	Note
Smart Data Collector	EzManager3000	For information on EzManager3000 related requirements, installation, wiring, commissioning, etc., please refer to https://www.goodwe.com/Ftp/user manual/EzManager.pdf Software version requirements: • When the inverter is standalone: EzManager3000 software version is V00 or above above. • When the inverter is parallel-connected: EzManager3000 software version is V04 or above above.
Smart Meter	• GM3000 • GM330 • GMK330	• GM3000: Supplied with the inverter, CT is not replaceable, CT ratio: 120A: 40mA • GM330: CT can be supported from GoodWe or purchased by oneself. CT transformation ratio requirement: nA: 5A ◦ nA: CT primary side input current, n ranges from 200 to 5000 ◦ 5A: CT secondary side output current • GMK330: CT is shipped with the meter. CT transformation ratio: ◦ 120A: 40mA ◦ 200A: 50mA (Brazil only)

Device Type	Model	Note
Communication Module	• WiFi/LAN Kit-20 • Wi-Fi Kit • LS4G Kit-CN, 4G Kit-CN, 4G Kit-CN-G20 or 4G Kit-CN-G21 (China only) • Ezlink3000	• When standalone, please use WiFi/LAN Kit-20, Wi-Fi Kit, LS4G Kit-CN, 4G Kit-CN, 4G Kit-CN-G20 or 4G Kit-CN-G21 modules. If using WiFi/LAN Kit-20 to replace Wi-Fi Kit, please upgrade the inverter's ARM firmware version to 08.401 or above before replacing it with WiFi/LAN Kit-20 • When using EzManager3000 for networking, WiFi/LAN Kit-20 software version is 05 or above • When the GW12KL-ET and GW18KL-ET model inverters are standalone, only the WiFi/LAN Kit-20 module is supported • When parallel-connected, only the master inverter needs to connect to Ezlink3000; slave inverters do not need to connect to communication modules • Ezlink3000 firmware version is 05 or above

2.2 Product Introduction

2.2.1 Inverter

Inverters control and optimize energy flow through the integrated energy management system in photovoltaic systems. They can supply the electricity generated by the photovoltaic system to loads, store it in batteries, output it to the grid, etc.

ATTENTION
Inverters of different power ranges have different appearances; please refer to the actual product

Serial Number	Model	Rated output power	Rated Output Voltage	Number of Battery Ports
1	GW12KL-ET	12kW	220V, 3L/N/PE	1
2	GW18KL-ET	18kW		2
3	GW15K-ET	15kW	380/400V，3L/N/PE	1
4	GW20K-ET	20kW		1
5	GW25K-ET	25kW		2
6	GW29.9K-ET	29.9kW		2
7	GW30K-ET	30kW		2

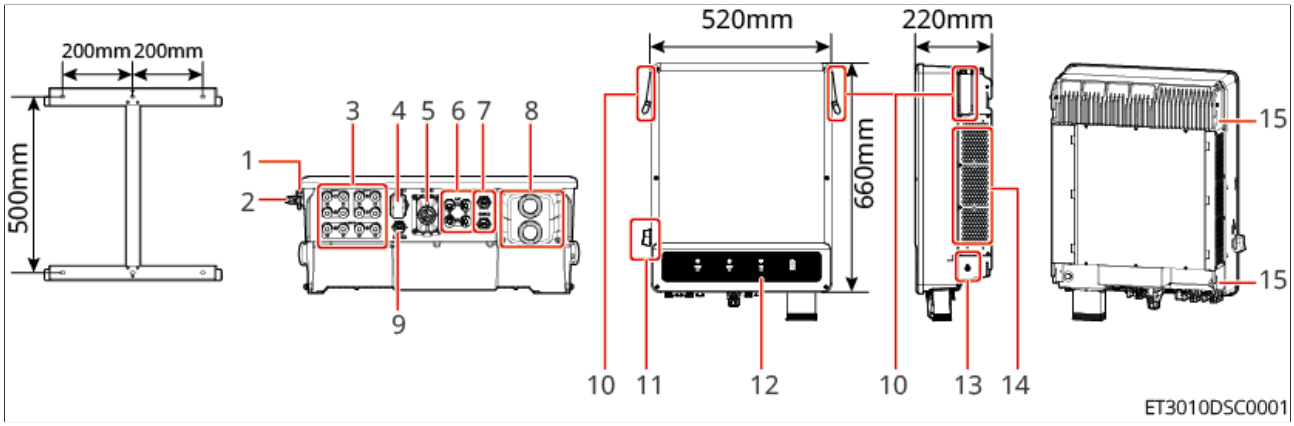


Figure3 Component Introduction

Component Introduction

Serial Number	Component/Silkscreen	Note
1	DC Switch Lock Hole	Only for Australia.
2	DC Switch	Controls DC input connection or disconnection.

3	PVInput Terminal	Can connectPVmodule DC input cable. • GW15K-ET，GW20K-ET，GW12KL-ET x 2 • GW25K-ET，GW29.9K-ET，GW30K-ET，GW18KL-ET x 3
4	Communication Module Port	Can connect communication modules, supports connection to 4G, Wi-Fi/LAN modules
5	Communication Port	Connect communication cable, supports communication with DRED, Remote Shutdown, Rapid Shutdown, RCR, EMS and generator.
6	Battery Connection Port	Connect battery DC cable. • GW15K-ET，GW20K-ET，GW12KL-ET x 1 • GW25K-ET，GW29.9K-ET，GW30K-ET，GW18KL-ET x 2
7	BMS Communication Port	Connect battery communication cable. • GW15K-ET，GW20K-ET，GW12KL-ET x 1 • GW25K-ET，GW29.9K-ET，GW30K-ET，GW18KL-ET x 2
8	AC Port	Connect AC cable, ON-GRID and BACK-UP ports.
9	METER Communication Port	Connect smart meter.
10	Handle	Carry the inverter.
11	Indicator Light	Indicates the operating status of the inverter.
12	Protection Ground Terminal	Connect the enclosure protection ground wire.
13	Fan	Inverter cooling
14	Inverter mounting slot	Mount and lock the inverter.

Australian junction box dimensions

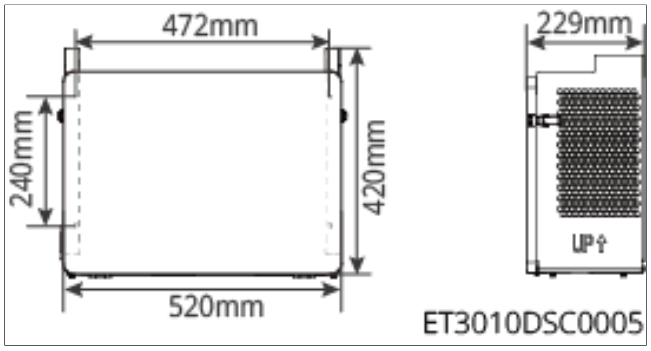


Figure4 Australian junction box dimensions

2.2.2 Battery

The battery system can store and release power according to the requirements of the photovoltaic energy storage system. The input and output ports of this energy storage system are both high-voltage direct current.

2.2.2.1 Lynx Home F、Lynx Home F Plus+

Lynx Home Fseries battery system consists of a control box and battery modules. The battery system can store and release power according to the requirements of the photovoltaic energy storage system. The input and output ports of this energy storage system are all high-voltage direct current.

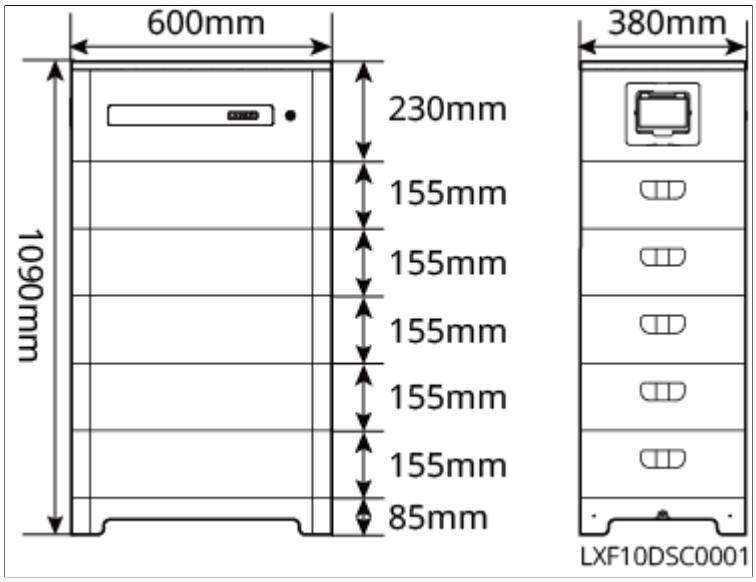


Figure5 Battery dimensions

Serial Number	Model	Number of battery modules	Available capacity (kWh)
1	LX F6.6-H	2	6.55kWh
2	LX F9.8-H	3	9.83kWh
3	LX F13.1-H	4	13.1kWh
4	LX F16.4-H	5	16.38kWh

2.2.2.2 Lynx Home F G2

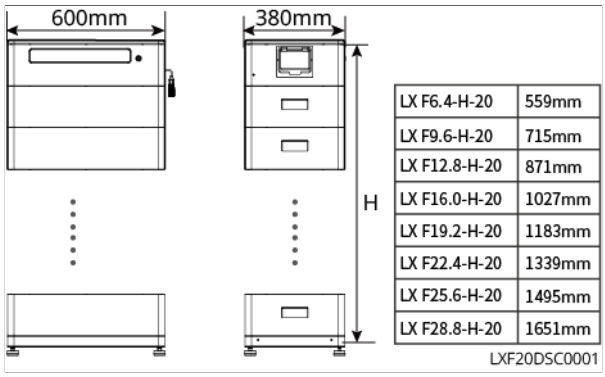


Figure6 Battery dimensions

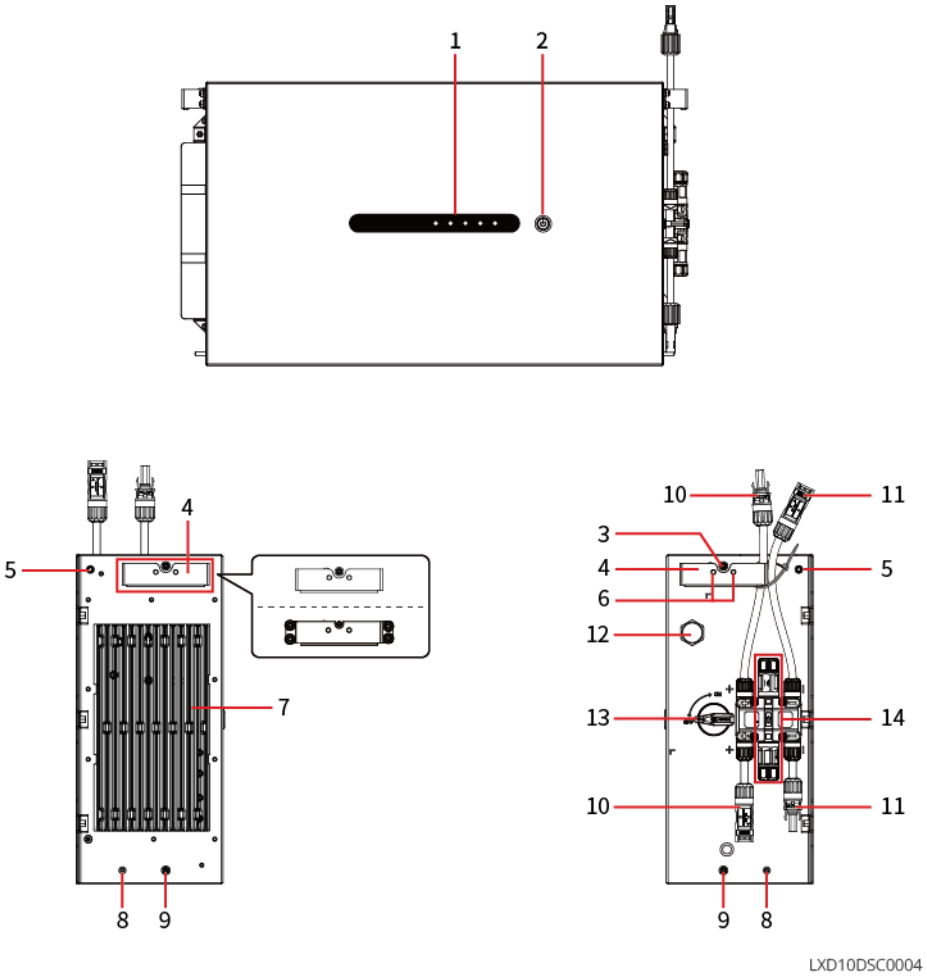
Serial Number	Model	Number of battery modules	Available capacity (kWh)
1	LX F6.4-H-20	2	6.4kWh
2	LX F9.6-H-20	3	9.6kWh
3	LX F12.8-H-20	4	12.8kWh
4	LX F16.0-H-20	5	16.0kWh
5	LX F19.2-H-20	6	19.2kWh
6	LX F22.4-H-20	7	22.4kWh
7	LX F25.6-H-20	8	25.6kWh
8	LX F28.8-H-20	9	28.8kWh

2.2.2.3 Lynx Home D

In the Lynx Home D battery system, the BMS and battery modules are integrated into one unit.

ATTENTION
Optional installation via base or mounting bracket.

Appearance description:

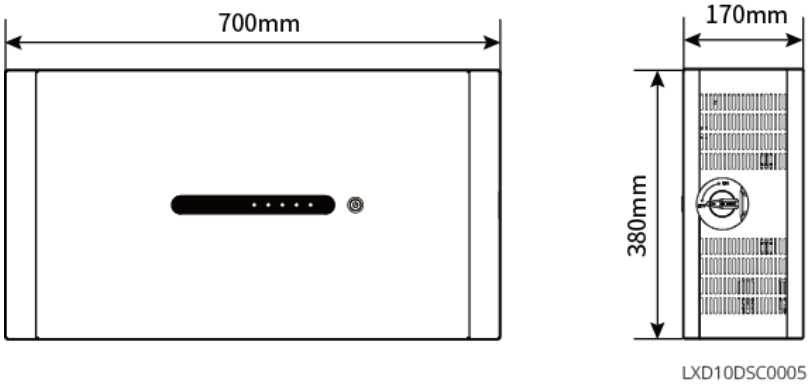


Serial Number	Component	Note
1	Battery SOC indicator light	

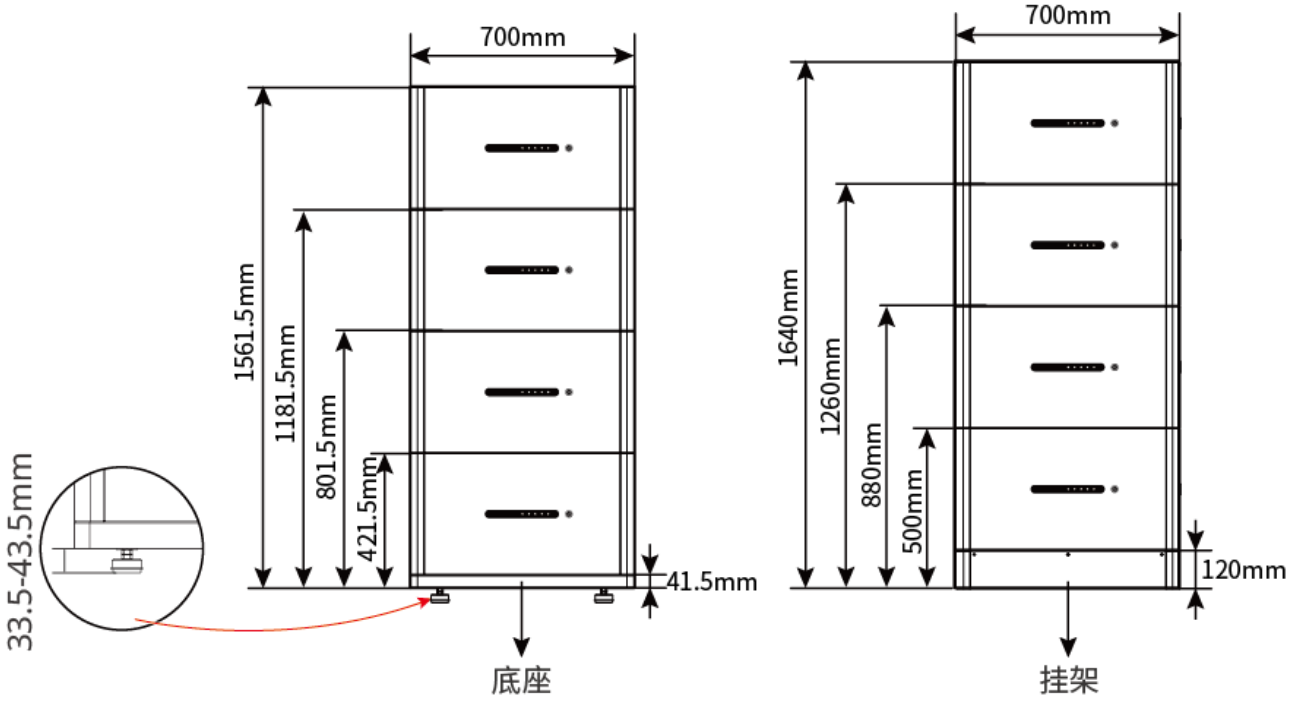
Serial Number	Component	Note
2	Multi-function button indicator light	• SOC indicator light: Displays the battery SOC status. • Multi-function Button Indication ◦ Battery black start function: When there is no power generated by PV in the photovoltaic system and the grid is abnormal, if the inverter cannot operate normally, press and hold the multi-function button for 2 seconds to start the battery system, activate the inverter, which can operate in off-grid mode, and supply power to the load from the battery. ◦ Press and hold the multi-function button for more than 5 seconds to power off the battery system. • When the SOC indicator light and multi-function button indicator light are displayed in combination, they can show the operating status, alarm status, and fault status of the battery system.
3	Inter-battery fixing hole or grounding port	Used for fixing between two batteries or connecting the ground wire.
4	Handle	Used for carrying batteries.
5	Battery-to-wall fixing hole	Used for fixing between the battery and the wall.
6	Side protective cover fixing hole	Used for installing the side protective cover.
7	Heat sink	Used for heat dissipation of the battery system.
8	Side protective cover fixing hole	Used for installing the side protective cover.

Serial Number	Component	Note
9	Inter-battery fixing hole	Used for fixing between two batteries.
10	Battery positive connection terminal	Connect the positive terminal of the battery or inverter.
11	Battery negative connection terminal	Connect the negative terminal of the battery or inverter.
12	Breather valve	Used to balance the internal and external pressure of the battery.
13	Battery power switch	Battery power input/output switch.
14	Communication connection port	Connect communication cables or terminal resistors between the battery and the inverter, or between batteries.

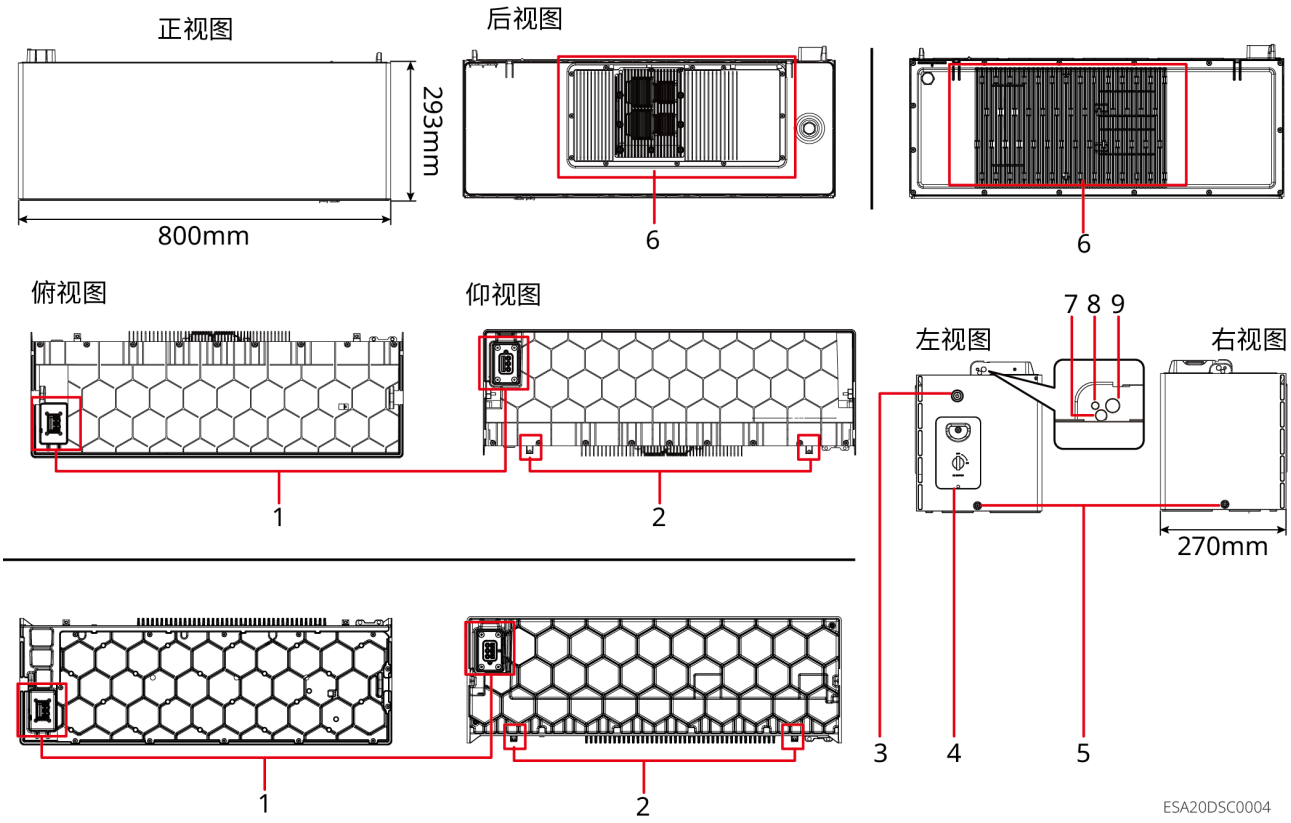
Introduction to the dimensions of a single battery:

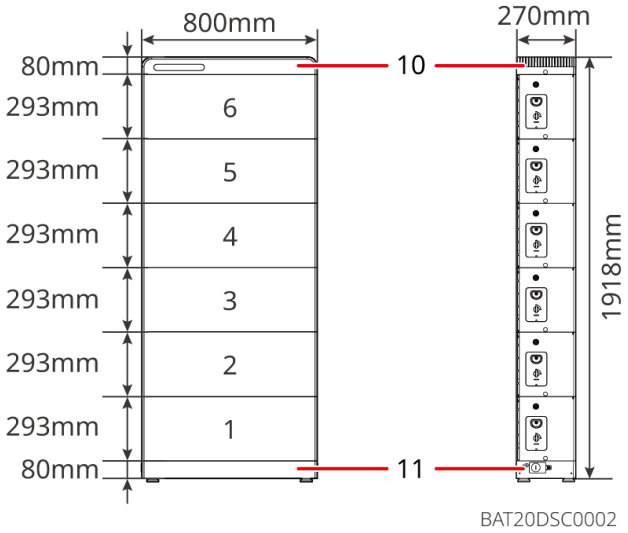


Introduction to the dimensions of the Battery BANK:



2.2.2.4 Lynx D G2





BAT20DSC0002

Serial Number	Component	Note
1	connector	Power and communication ports for connecting batteries to batteries, and batteries to inverters.
2	Anti-tilt bracket fixing holes	Used for fixing batteries to the wall.
3	Multi-function button indicator light	• Indicates the working status of the battery. • Battery black start function: When there is no power generated by PV in the photovoltaic system and the grid is abnormal, the inverter cannot operate normally. At this time, press and hold the multi-function button for 2 seconds to start the battery system, activate the inverter, put the inverter into off-grid mode operation, and the battery discharges to supply power to the load. • Battery power-off function: Press and hold the multi-function button for more than 5 seconds to power off the battery system.
4	Battery disconnect switch	Battery power input/output switch.

Serial Number	Component	Note
5	Inter-battery fixing hole	Used for fixing between two batteries.
6	Heat sink	Battery heat dissipation
7	Battery lifting holes	Used for lifting batteries. When stacking more than three batteries, lifting tools must be used for installation.
8	Battery or inverter fixing holes	Used for fixing between batteries or between inverters and batteries.
9	handle bar mounting hole	for installing the handle bar. Used for manual battery handling.
10	battery decorative cover	-
11	Base	-

The energy storage system supports battery capacity expansion. The total battery capacity is determined by the number and specifications of the battery modules. When configuring, the restrictions specified in this chapter must be strictly followed.
Overall system configuration description:
A：GW5.1-BAT-D-G20，GW5.1-BAT-D-G21，GW6.0-BAT-D-G20
B：GW8.3-BAT-D-G20，GW8.3-BAT-D-G21，GW9.0-BAT-D-G20

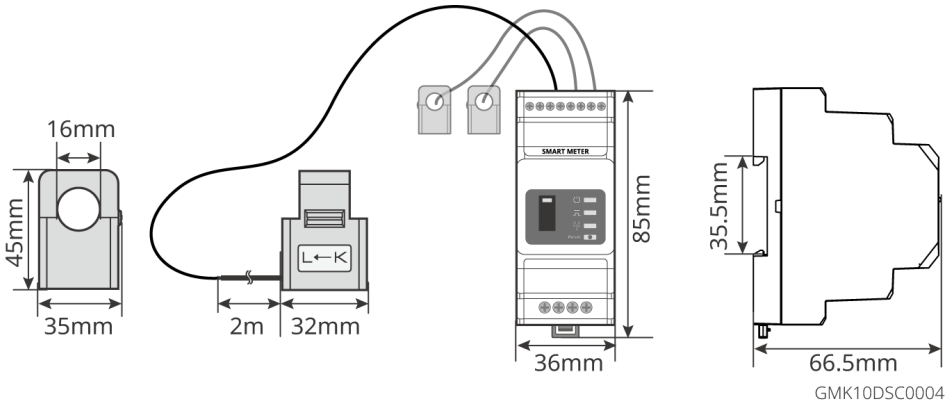
Mounting Method	number of expansion groups	single group stacking	total number of batteries
Floor Mounting	≤3groups	≤6units	≤12units
Wall-mounted installation （**A**）	≤3groups	≤3units	≤9units
Wall-mountedinstallation (**A/B/A+B**)	≤3groups	≤2units	≤6units

Mounting Method	number of expansion groups	single group stacking	total number of batteries
Note: Number of expansion groups × Single group stacking quantity ≤ Total number of system batteries			

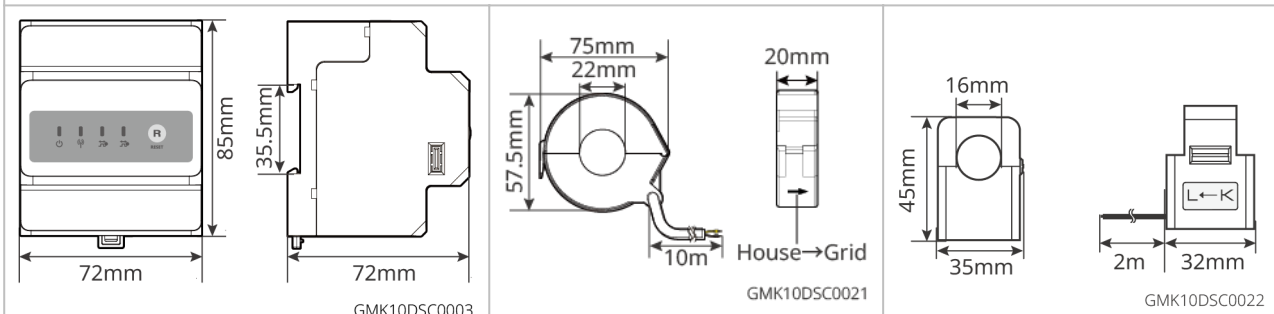
2.2.3 Smart Meter

Smart meters can measure parameters such as grid voltage, current, power, frequency, and electrical energy, and transmit the information to the inverter to control the input and output power of the energy storage system.

GM3000&CT



GM330&GMK330&CT

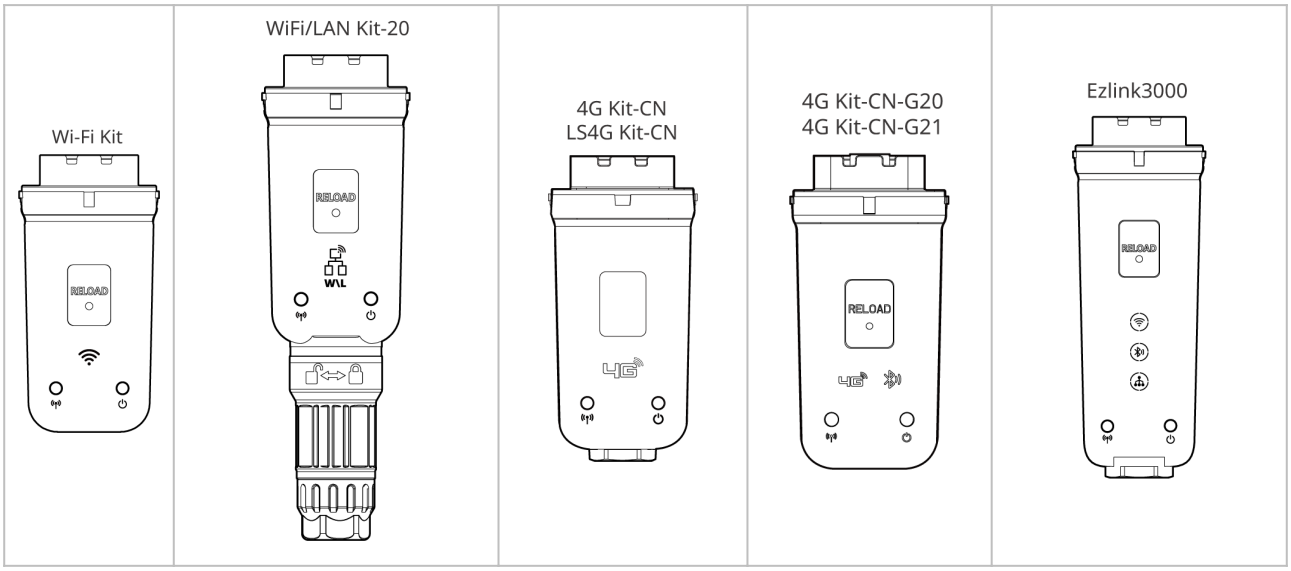


Serial Number	Model	Applicable scenarios
1	GM3000	CT Not replaceable,CT Turns ratio:120A: 40mA

Serial Number	Model	Applicable scenarios
2	GM330	CT Supported to be purchased from GoodWe or by yourself,CT Turns ratio requirement:nA: 5A • nA: CT Primary side input current,n ranges from 200-5000 • 5A: CT Secondary side output current
3	GMK330	CT Shipped with the electricity meter,CT Turns ratio: • 120A: 40mA • 200A: 50mA(Brazil only)

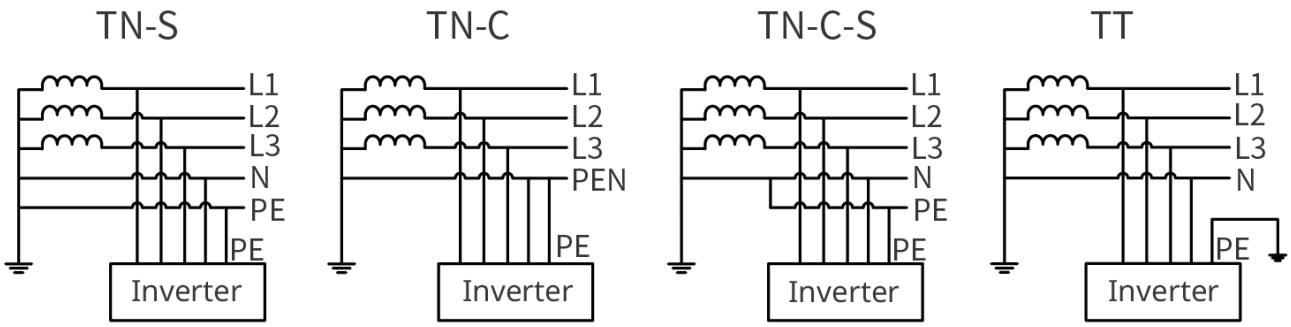
2.2.4 Smart Communication Stick

The smart communication stick is mainly used to transmit various power generation data of the inverter toSEMS Portalremote monitoring platform in real time, and connect to the smart communication stick viaSolarGo APPfor on-site device debugging.



Serial Number	Model	Signal type	Applicable scenarios
1	Wi-Fi Kit	WiFi	Inverter single-unit scenario
2	WiFi/LAN Kit-20	WiFi、LAN, Bluetooth	
3	LS4G Kit-CN 4G Kit-CN	4G	
4	4G Kit-CN-G20	4G, Bluetooth	
	4G Kit-CN-G21	4G, Bluetooth,CNSS	
5	Ezlink3000	WiFi、LAN, Bluetooth	Master unit in inverter multi-unit scenario

2.3 Supported Grid Types



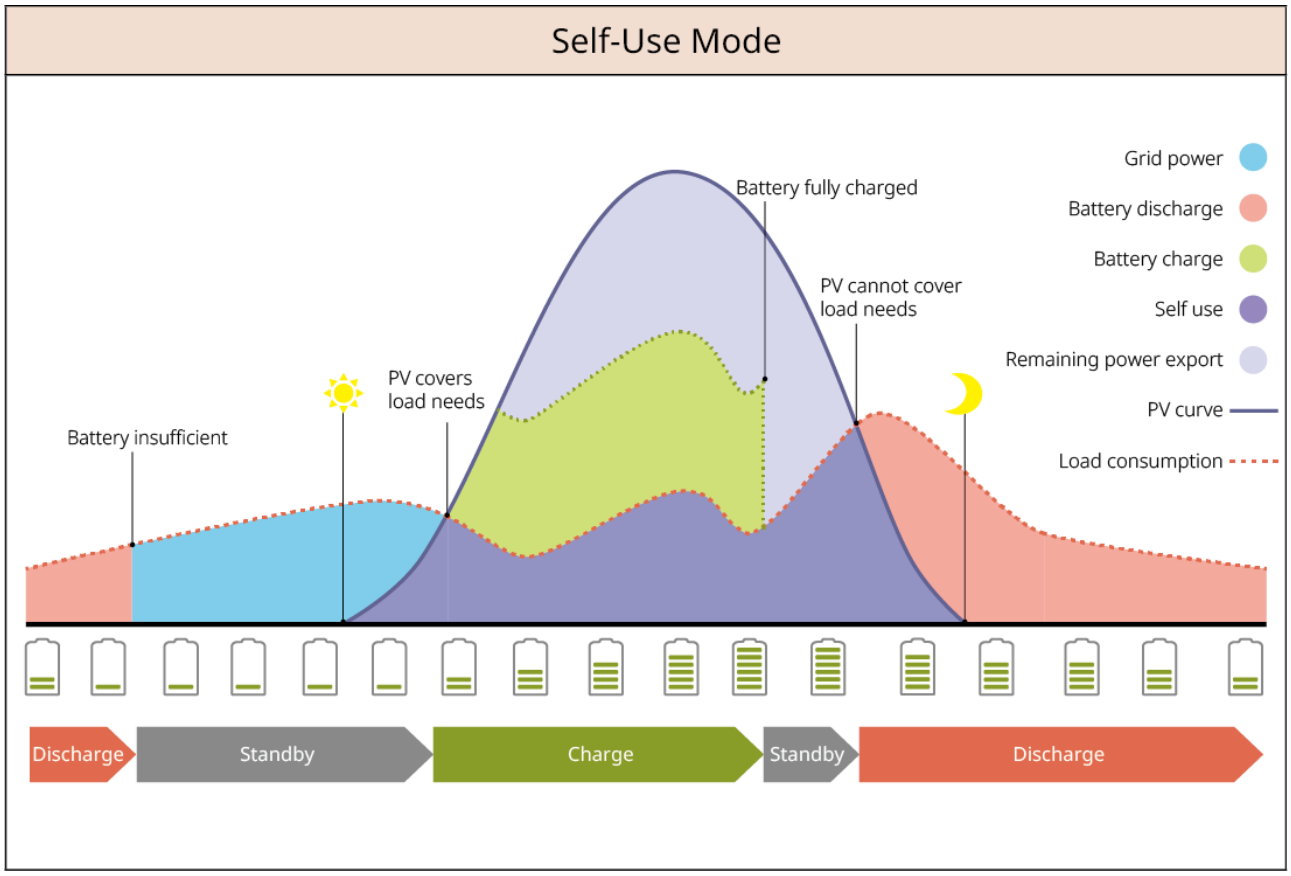
2.4 System Mode

ATTENTION
After the GW14.3-BAT-LV-G10, GW16.1-BAT-LV-G10, GW5.0-BAT-LVI-G10 and GW10.0-BAT-LV-G10 battery systems undergo First-time Installation, they will automatically perform a full battery charge once, and switch to the set working mode after completion.

Self-consumption mode

- Basic mode of system operation.

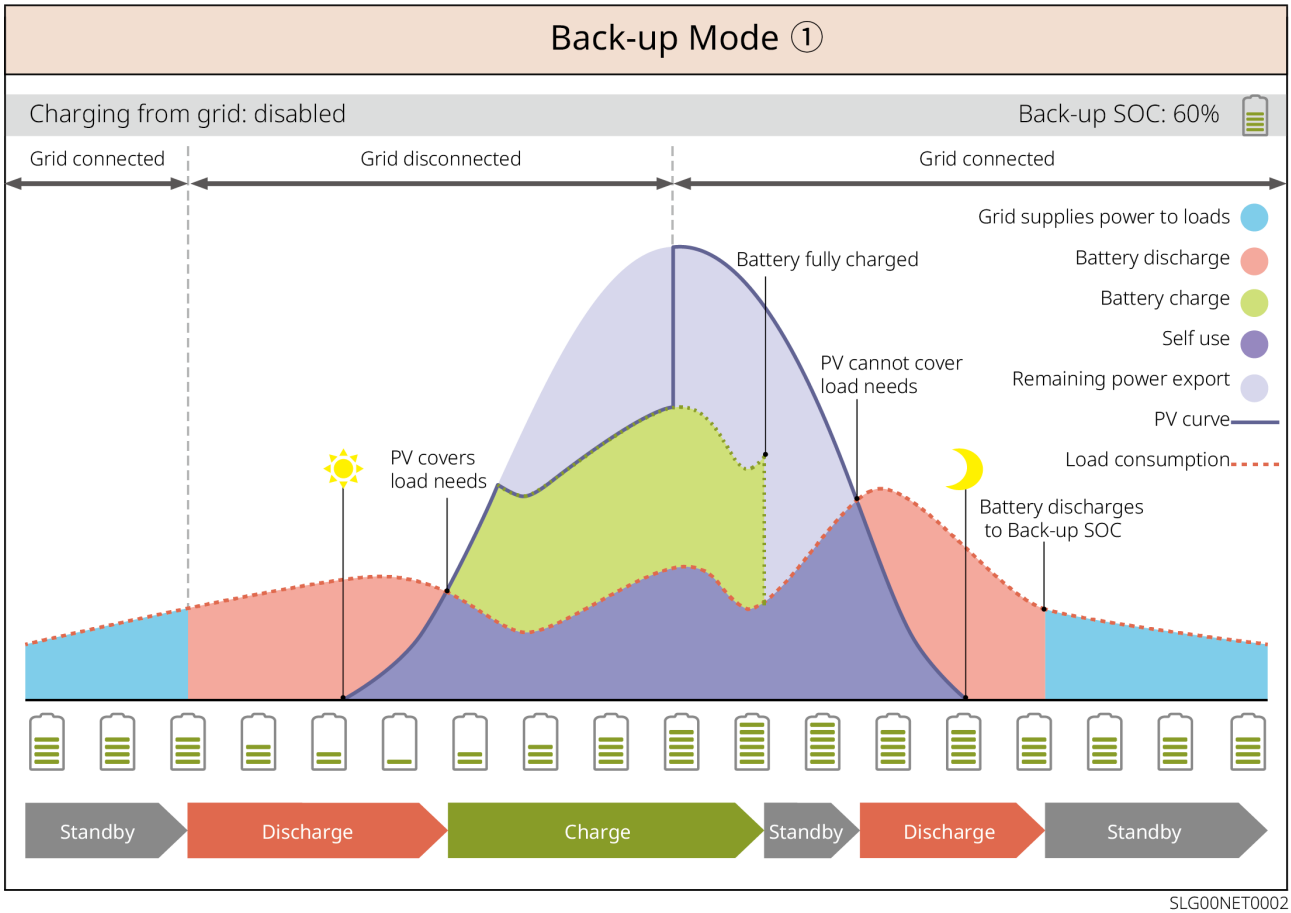
- PV power generation prioritizes powering the load, and the excess power is used to charge the battery; the remaining power is sold to the grid. When PV power generation does not meet the load power demand, the battery powers the load; when the battery power also does not meet the load power demand, the grid powers the load.



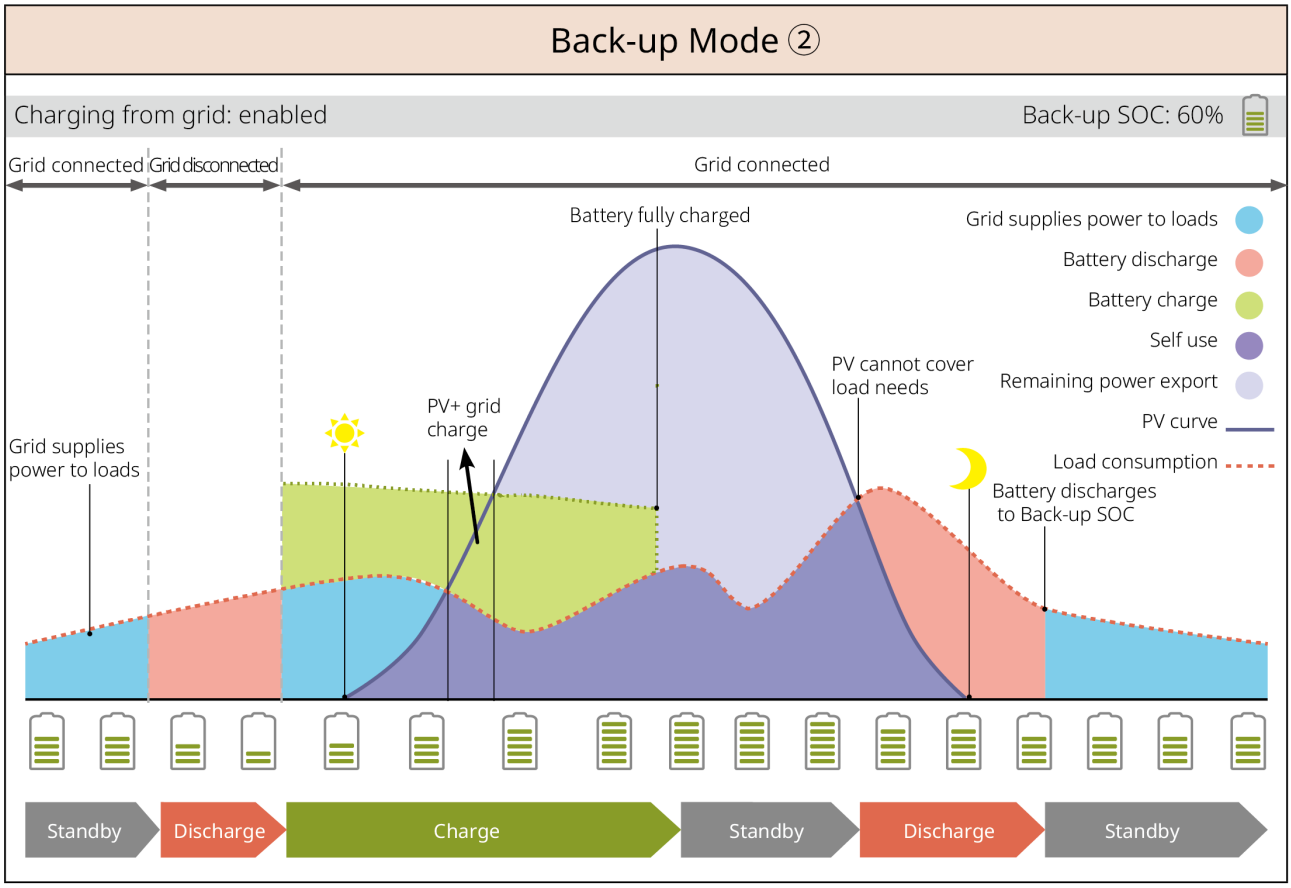
SLG00NET0009

Backup Mode

- Recommended for use in areas with unstable power grids.
- When a Grid Power Outage occurs, the inverter switches to off-grid operation mode, and the battery discharges to power the load to ensure the BACK-UP load remains powered; when the grid is restored, the inverter switches its operation mode to grid-connected operation.
- To ensure the battery SOC is sufficient to maintain normal system operation when off-grid, during grid-connected operation, the battery will charge using PV or grid-purchased electricity to the backup power SOC. If you need to charge the battery via grid-purchased electricity, please confirm compliance with local grid laws and regulations.



SLG00NET0002



SLG00NET0003

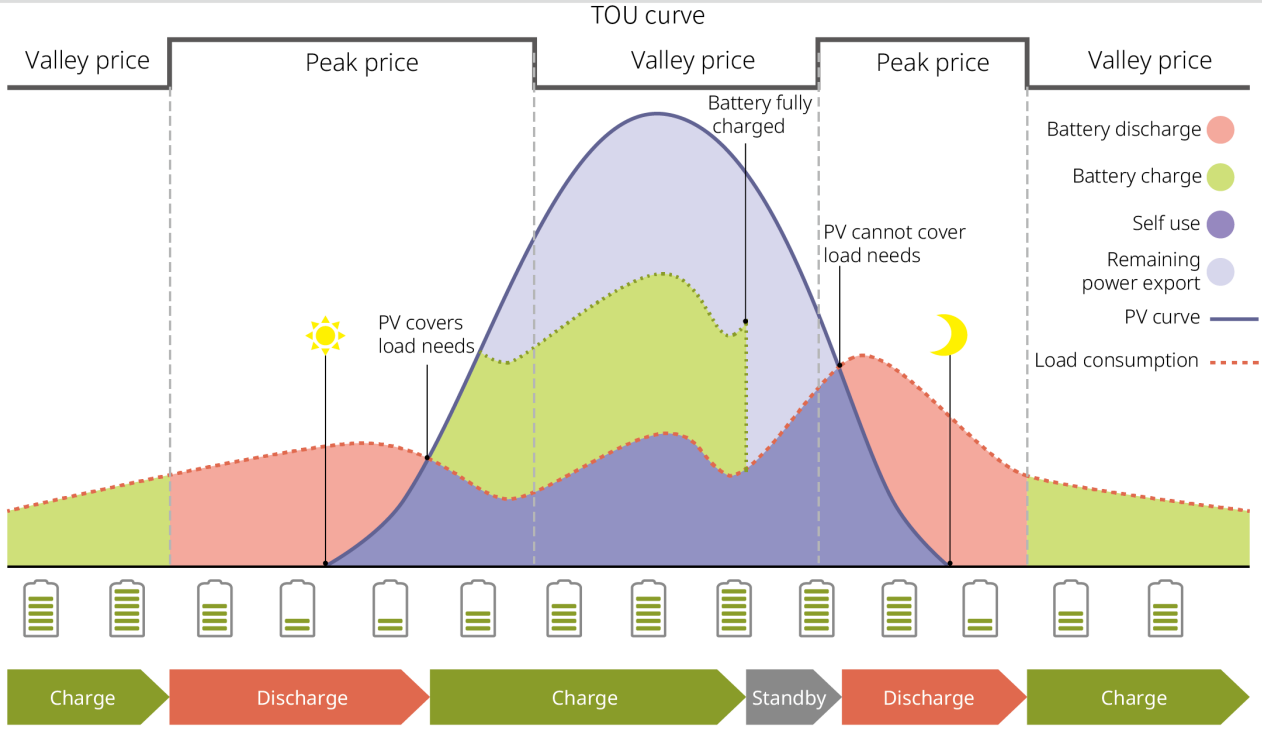
TOU Mode

In compliance with local laws and regulations, set different time periods for electricity purchase and Export Energy based on the difference between grid peak and off-peak Tariffs.

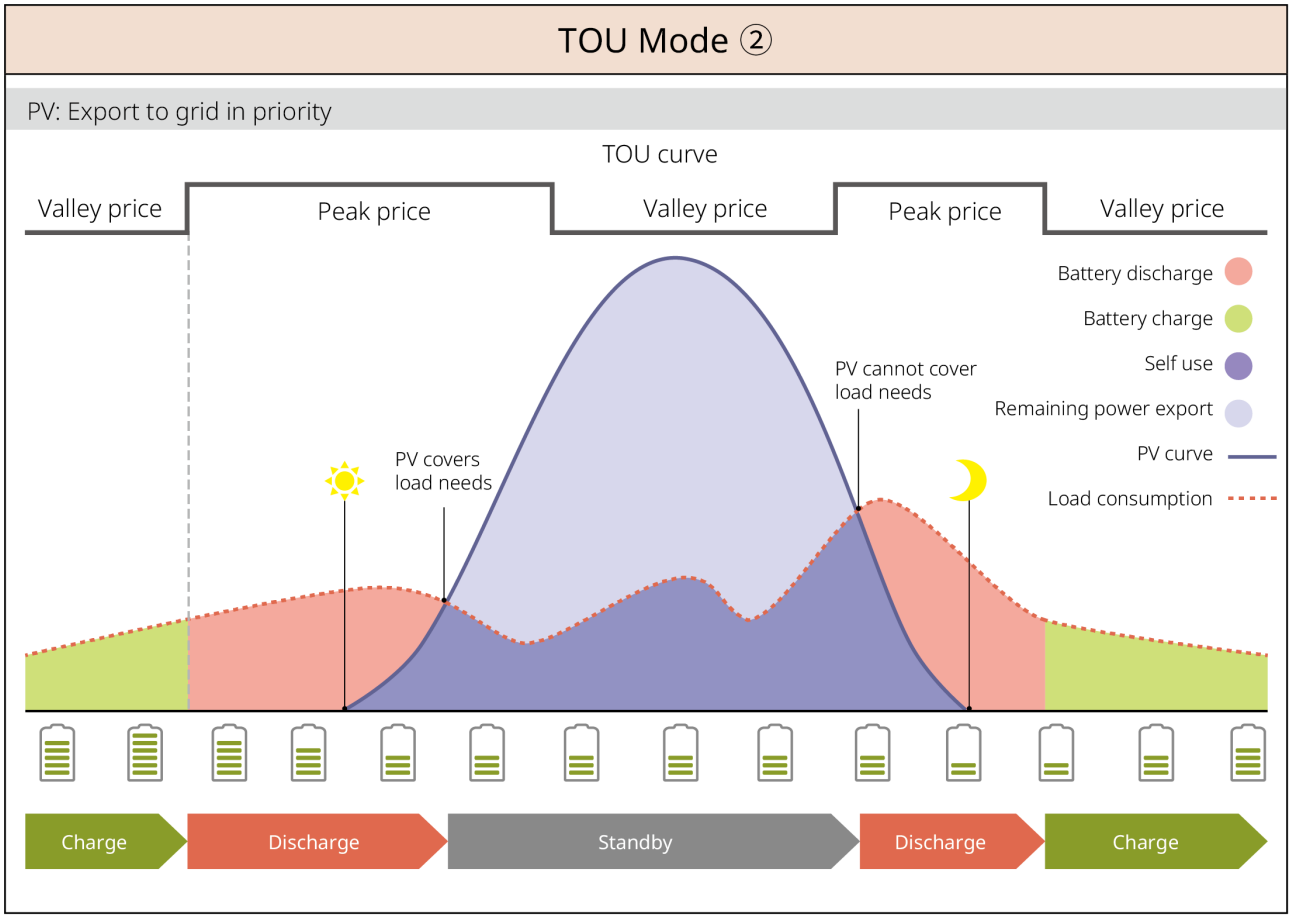
For example: during off-peak Tariff periods, set the battery to charging mode and charge with grid-purchased electricity; during peak Tariff periods, set the battery to discharging mode to power the load via the battery.

TOU Mode ①

PV: Charge battery in priority



SLG00NET0004



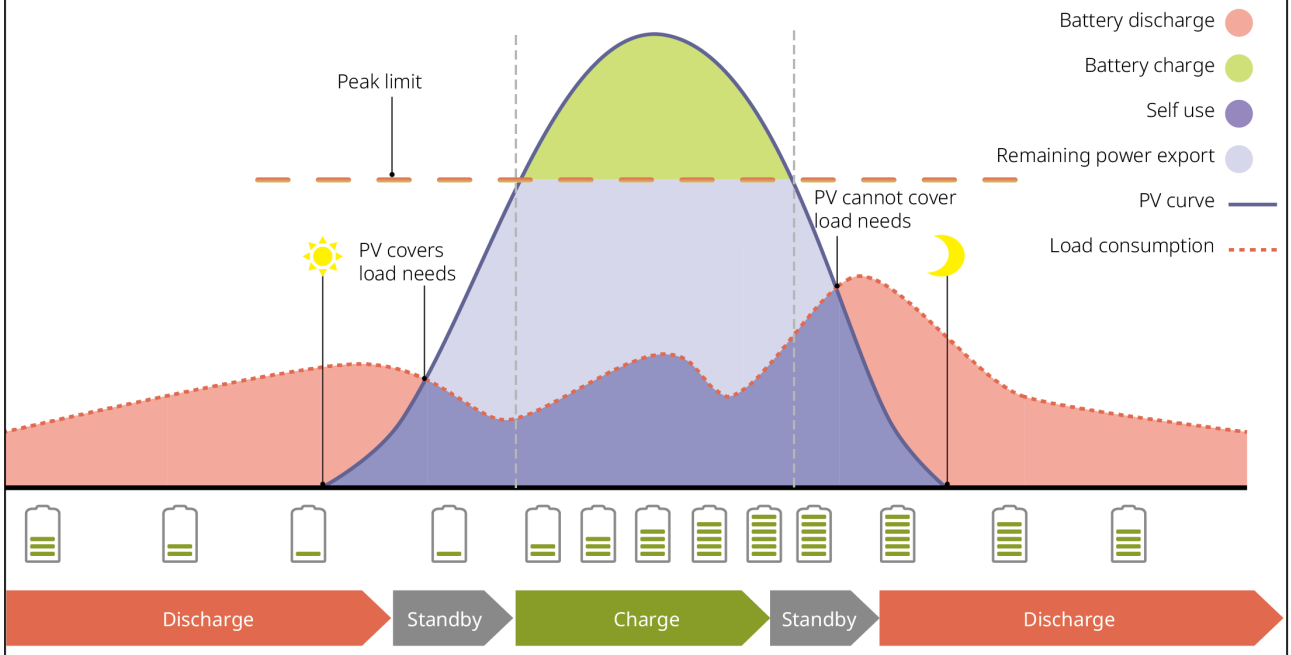
SLG00NET0005

Smart Charging (Delayed Charging) Mode

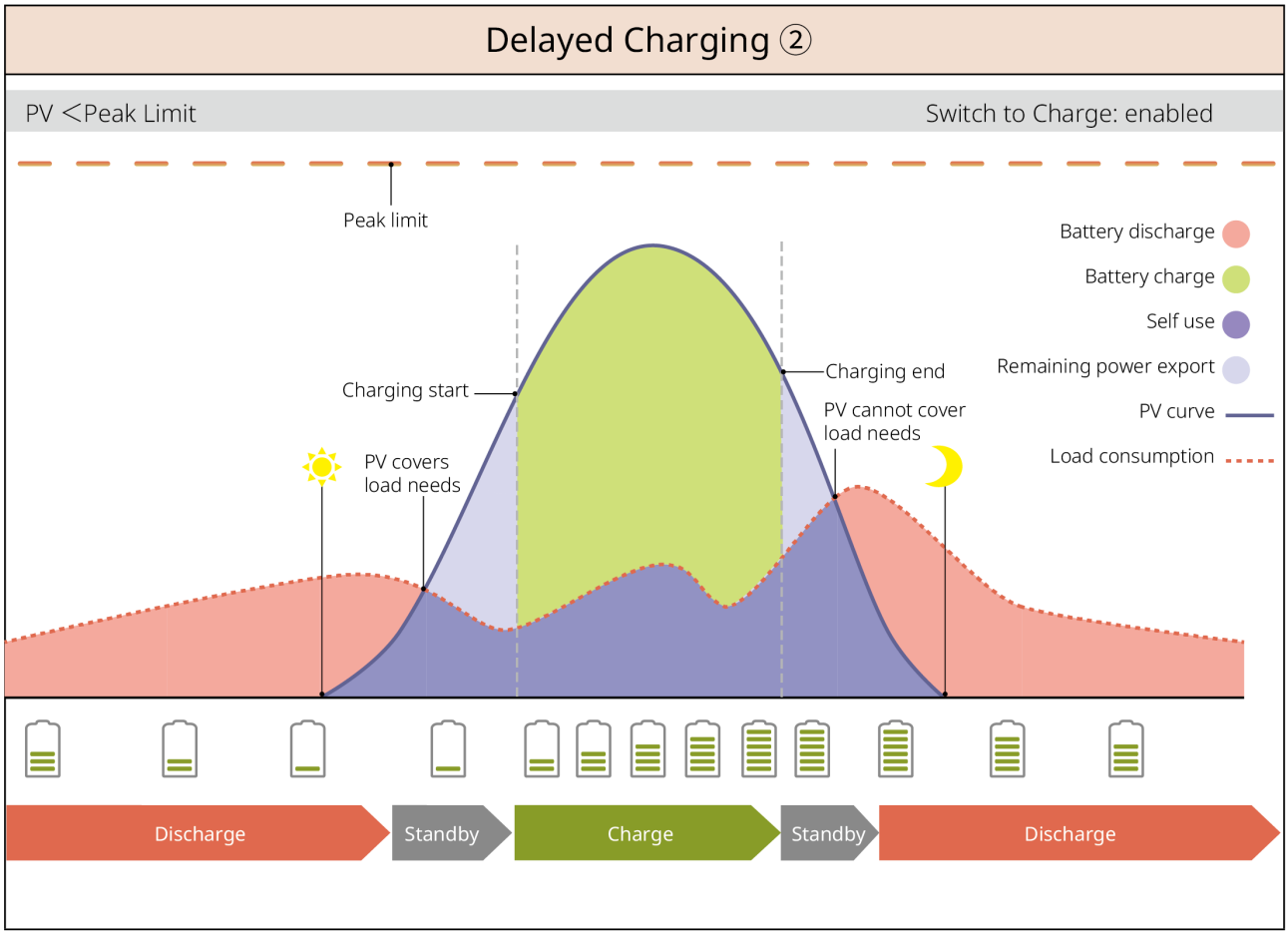
- Suitable for areas with grid-connected power output limits.
- Setting a peak power limit allows using photovoltaic power exceeding the grid-connected limit to charge the battery; or set PV charging periods, during which photovoltaic power is used to charge the battery.

Delayed Charging ①

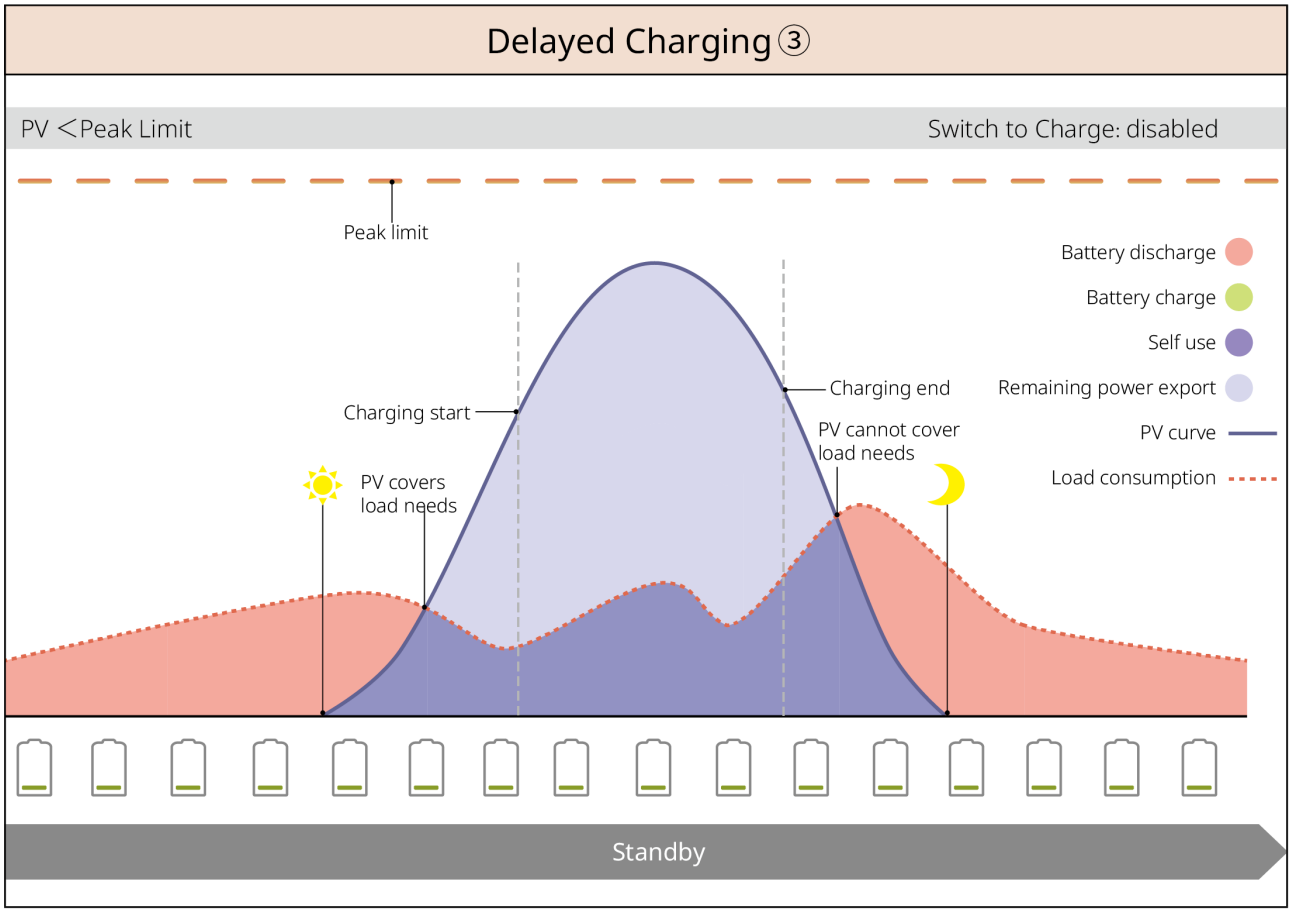
PV > Peak Limit | Switch to Charge: enabled/disabled



SLG00NET0006



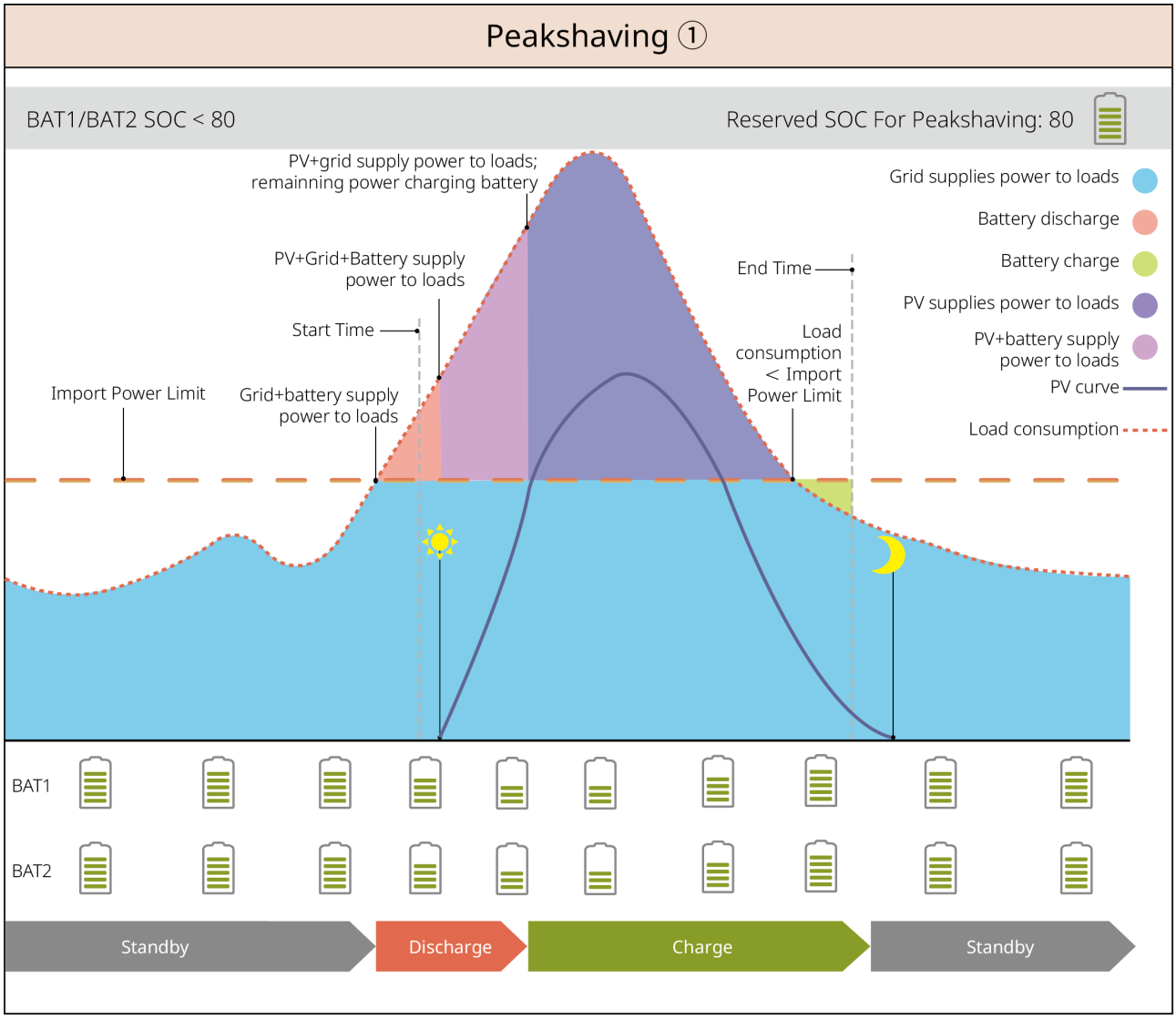
SLG00NET0007



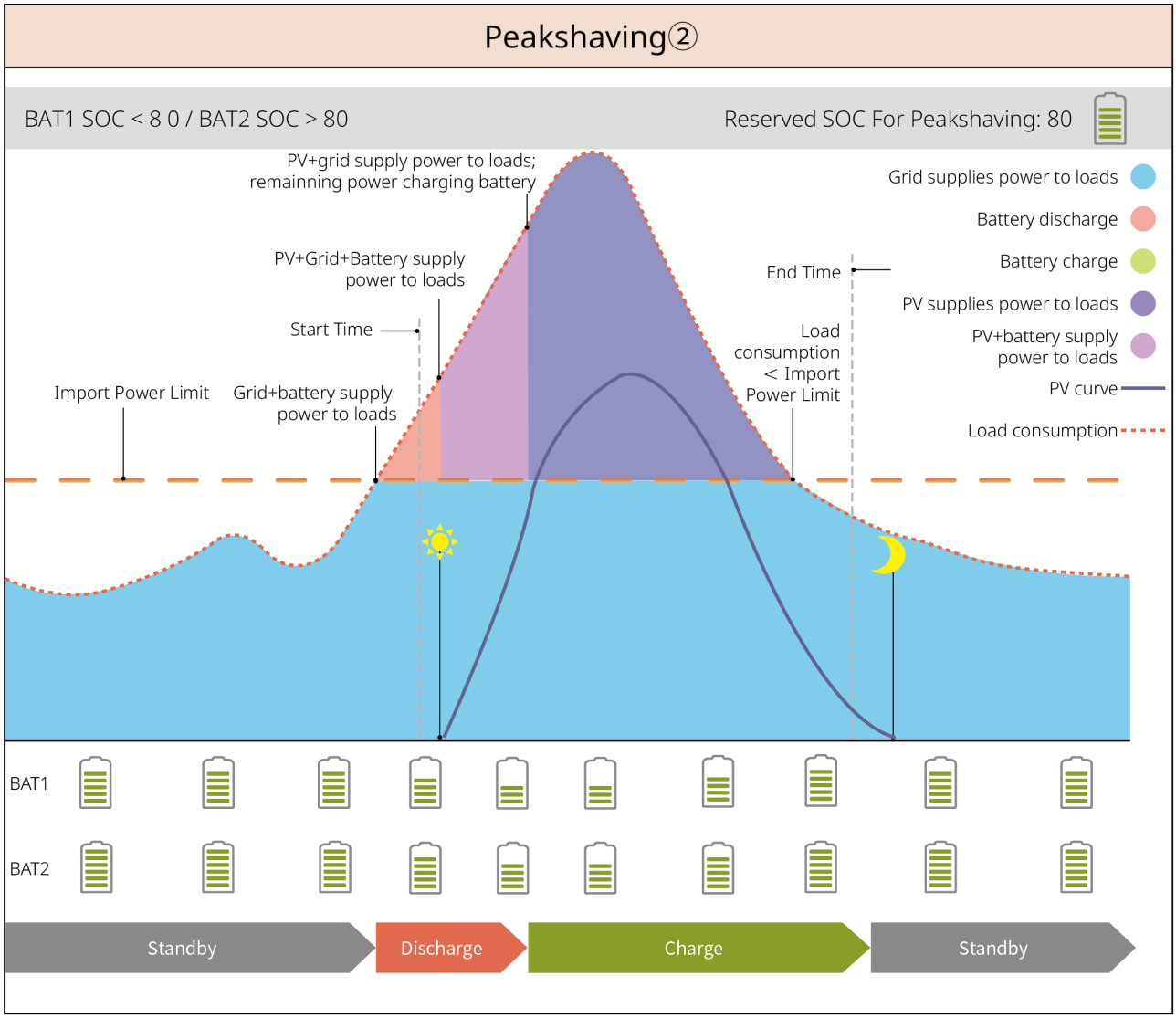
SLG00NET0008

Demand Control Mode

- Mainly applicable to industrial and commercial scenarios.
- When the total load power exceeds the power quota within a short period, the battery can be discharged to reduce the electricity consumption of the excess portion.
- When the two battery packs of the inverterSOCare both lower than the reservedSOCfor demand control, the system purchases electricity from the grid based on the time period, load power consumption, and peak electricity purchase limit; when only one battery pack of the inverterSOCare both lower than the reservedSOCfor demand control, the system purchases electricity from the grid based on the load power consumption and peak electricity purchase limit.



SLG00NET0010



SLG00NET0011

Off-grid Mode

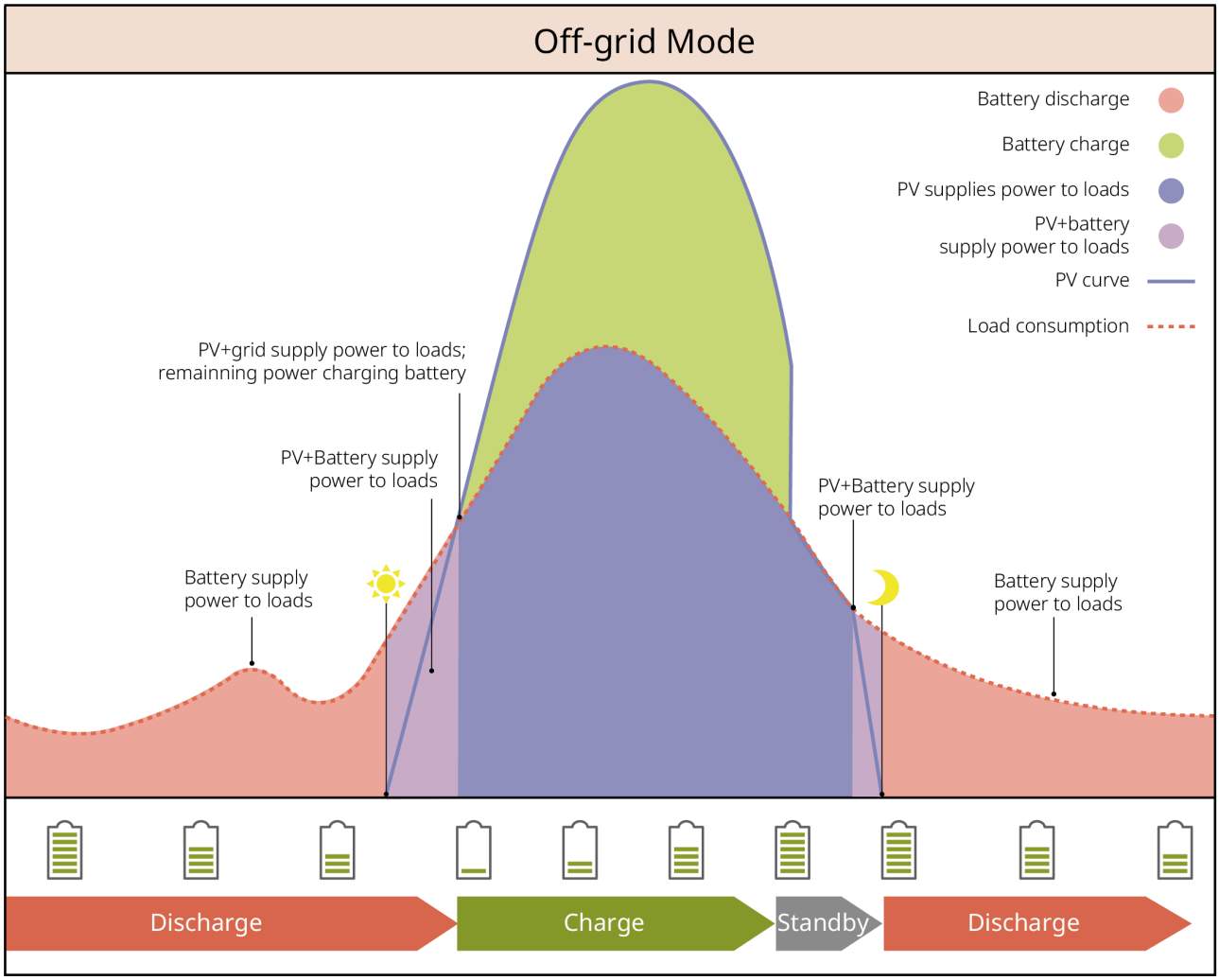
ATTENTION

Do not run the pure off-grid mode when the inverter is Not Connected to the battery system.

When a Grid Power Outage occurs, the inverter switches to off-grid operation mode.

- During the day, PV power generation prioritizes powering the load, and the excess power is used to charge the battery.
- At night, the battery discharges to power the load to ensure the BACK-UP load remains powered.
- Off-grid SOC Recovery: After the system operates off-grid, the battery gradually

recovers to the SOC of the minimum power level via photovoltaic power generation or other power generation methods.



SLG00NET0012

2.5 Functional Features

ATTENTION
The specific functional features shall be subject to the actual product configuration.

AFCI

The inverter integrates an AFCI circuit Protection device, which is used to detect Arc Fault (arc fault) and quickly cut off the circuit upon detection, thereby preventing electrical fires.

Causes of Arc Generation:

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

Arc Detection Method

- The inverter integratesAFCIfunction, which meets the IEC 63027standard.
- When the inverter detects an arc occurrence, it can display the fault time and fault phenomenon viaApp.
- Inverter triggeringAFCIUpon alarm, it will shut down for Protection. After the alarm is cleared, the inverter will automatically re-connect to the grid and resume operation.
  - Auto Reconnection: If the inverter triggers an24-hourAFCIalarm <5times, it can automatically clear the alarm after five minutes, and the inverter resumes grid-connected operation.

Manual reconnection: If the inverter24hours of triggering the5 thAFCIalarm, the alarm must be manually cleared before the inverter can reconnect to the grid and operate.

Model	Label	Note
GW12KL-ET	F-I-AFPE-1-2/2-2	F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2/2: 2/2 input ports per channel 2: 2 monitored channels
GW15K-ET		
GW20K-ET		
GW18KL-ET	F-I-AFPE-1-2/4-2	F: Full coverage I: Integrated AFPE: Detection and interruption capability provided 1: 1 monitored string per input port 2/4: 2/4 input ports per channel 2: 2 monitored channels
GW25K-ET		
GW29.9K-ET		
GW30K-ET		

Unbalanced three-phase output

The grid-connected end of the inverter andBACK-UPend both support unbalanced three-phase output, each phase can connect loads of different power. The maximum output power per phase for different models is shown in the table below:

Serial Number	Model	Maximum output power per phase
1	GW12KL-ET	4kW
2	GW18KL-ET	6kW
3	GW15K-ET	5kW
4	GW20K-ET	6.7kW
5	GW25K-ET	8.3kW
6	GW29.9K-ET	10kW
7	GW30K-ET	10kW

Load control

The inverter's dry contact control port supports connecting additional contactors to control the on/off of loads. It supports household loads, heat pumps, etc.
Load control methods are as follows:

- Time control: Set the time to control the load on/off, and the load will automatically turn on or off during 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 Load 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 is detected at the BACK-UP end and the battery SOC is lower than the set value for battery off-grid Protection, the load connected to the relay port can be turned off.

Rapid Shutdown (RSD)

In the Rapid Shutdown system, the Rapid Shutdown transmitter and receiver work together to achieve system rapid shutdown. The receiver maintains module output by receiving signals from the transmitter. The transmitter can be external or built into the inverter. In case of emergency, enabling the external trigger device can stop the transmitter, thereby shutting down the modules.

- When the inverter cannot connect to an external synchronization signal and there

is a need for parallel operation of multiple inverters, ensure that the PV cables of different inverters use separate cable trays, and the cable trays maintain a distance of at least 20cm between them.

- When the inverter can connect to an external synchronization signal, ensure that a maximum of 5 transmitters are connected in the same synchronization group.

- External transmitter
  - Transmitter models: GTP-F2L-20, GTP-F2M-20
    https://www.goodwe.com/Ftp/Installation-instructions/RSD2.0-transmitter.pdf
  - Receiver models: GR-B1F-20, GR-B2F-20
    https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf
- Internal transmitter
  - External trigger device: External switch
  - Receiver models: GR-B1F-20, GR-B2F-20
    https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_RSD-20_Quick-Installation-Guide-POLY.pdf

3 Equipment Inspection and Storage

3.1 Equipment Inspection

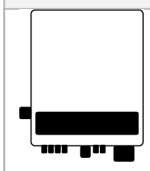
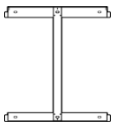
Before signing for the product, please carefully check the following:

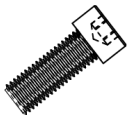
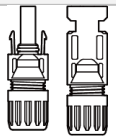
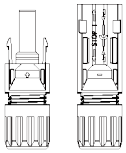
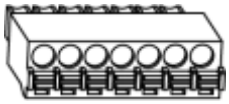
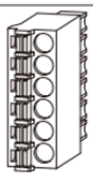
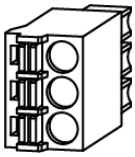
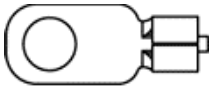
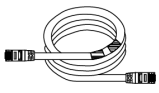
1. Check if the outer packaging is damaged, such as deformation, holes, cracks, or other signs that may cause damage to the equipment inside the package. If damaged, do not open the package and contact your dealer or after-sales service center.
2. Check if the equipment model is correct. If not, do not open the package and contact your dealer or after-sales service center.
3. Check if the type and quantity of the delivery items are correct, and if the appearance is damaged. If damaged, contact your dealer or after-sales service center.

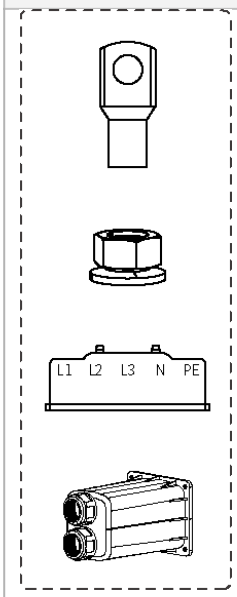
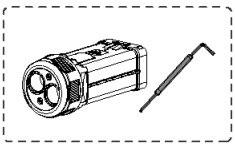
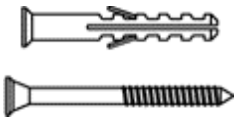
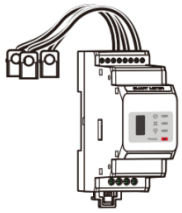
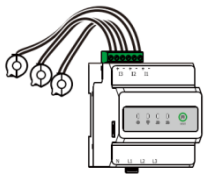
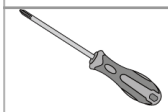
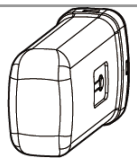
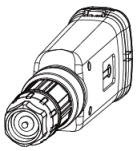
3.2 Delivery Items

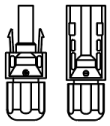
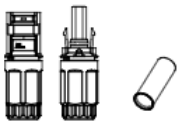
⚠WARNING
Check if the type and quantity of the delivery items are correct, and if the appearance is damaged. If damaged, contact your dealer. After taking the delivery items out of the package, do not place them on rough, uneven, or sharp places to avoid paint chipping.

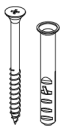
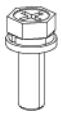
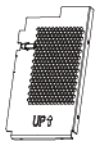
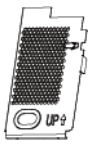
3.2.1 Inverter Delivery Items

Component	Note	Component	Note
	Inverter x 1		Backsheet x 1

Component	Note	Component	Note
	Back mounting fastening screw x 2	 or 	PVconnector GW12KL-ET、GW15K-ET、GW20K-ET：4 GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ET：6
 or 	PVwiring tool x 1		7PINcommunication terminal x 1
	6PINcommunication terminal x 1		3PINcommunication terminal x 1
	Protection grounding screw x 1		Tubular terminal x N Depending on the inverter configuration, the tubular terminals included with the package may vary; please refer to the actual product
	Protection Ground Terminal x 1		BMS/Metercommunication cable GW12KL-ET、GW15K-ET、GW20K-ET：2 GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ET：3

Component	Note	Component	Note
 or  or 	Please refer to the actual shipment • OTterminal x 12 • AC terminal flange nut x 20 • AC terminal insulation board x 1 • AC terminal Protection cover x 1 • Hex key wrench or T-handle wrenchx 1		Expansion screw x 6
		 or 	Smart meter and accessories x 1 Please refer to the actual shipment
	Screwdriver x 1	 or 	Communication Module x 1
	Product documentation x 1		

Component	Note	Component	Note
 wiring tool  Battery connector	(Optional) wiring tool x 1 Battery connector: GW12KL-ET、GW15K-ET、GW20K-ET：1 GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ET：2		
 wiring tool  Hex screwdriver  Battery connector	(Optional) wiring tool x 2 Hex screwdriverx 1 Battery connector: GW12KL-ET、GW15K-ET、GW20K-ET：1 GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ET：2		

Component	Note	Component	Note
	Cable tie x 10		Expansion screw x 4
	M5 hex screw x 10		M5 nut x 5
	Protection cover right side panel x 1		Protection cover left side panel x 1

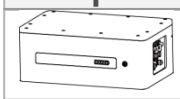
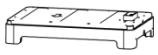
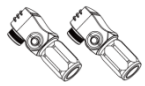
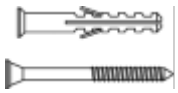
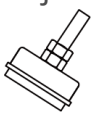
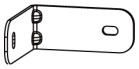
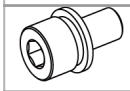
Component	Note	Component	Note
	Protection cover bottom panel x 1		Protection cover front cover x 1

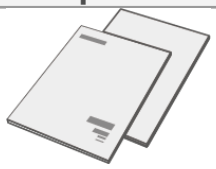
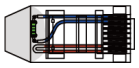
Table37 **Protection cover accessories (Australia only)**

3.2.2 Battery Deliverables

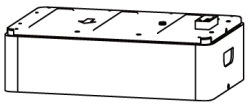
3.2.2.1 Lynx Home F 、Lynx Home F Plus+

- control box

Component	Quantity	Component	Quantity
	main control box x 1		Base x 1
	DC Connector • Lynx Home F x1 • Lynx Home F Plus+ x 2		expansion bolt x 4
adjustable foot 	• adjustable footLynx home F Plus+series equipped • If Adjustable Feet are Selected, Quantity Provided: ◦ adjustable foot:4pcs ◦ foot anti-tip bracket:2pcs ◦ standard anti-tip bracket:2pcs • If Adjustable Feet are Not Selected, Quantity Provided: ◦ standard anti-tip bracket:4pcs		
foot anti-tip bracket 			
standard anti-tip bracket 			
	M5*12screw x 4		M5Torx screw x 2
	M6nut x 2		Protection Ground Terminal x 2

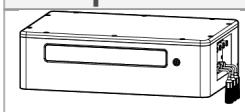
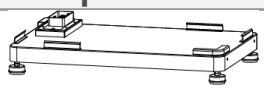
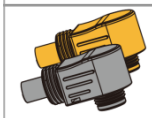
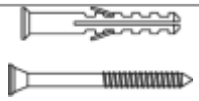
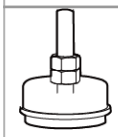
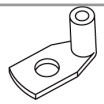
Component	Quantity	Component	Quantity
	protective cover x 1		Product documentation x 1
	Terminal resistor x 1	-	-

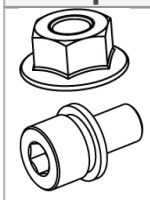
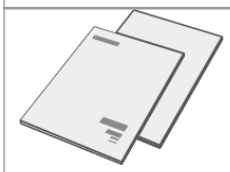
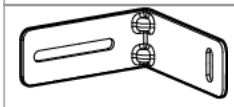
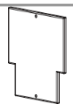
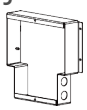
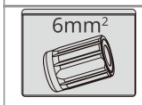
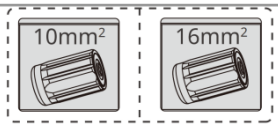
- battery module pack

Component	Quantity
	battery module x 1

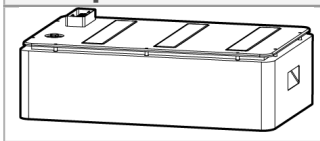
3.2.2.2 Lynx Home F G2

- main control box

Component	Quantity	Component	Quantity
	main control box x 1		Base x 1
	DC Connector Positive pole:x 2 Negative pole:x 2		expansion bolt x 8
	adjustable foot x 4		Protection Ground Terminal x 2

Component	Quantity	Component	Quantity
	• M5*12 screw x N • M6 nut x N N: Quantity depends on product configuration: • M5*12 screws x 8, M6 nuts x 2; • M5*12 screws x10, M6 nuts x 2; • M5*12 screws x 11, M6 nuts x 2; • M5*12 screws x 13, M6 nuts x 0; • M5*12 screws x 12, M6 nuts x 0;		
	Product documentation x 1	 Protection cover	（Optional） Protection cover x 1
	Lbracket x 8	 Junction box cover  Junction box	（Optional） Junction box x 1， Junction box cover x 1，
	DC Connector waterproofing Plug x 4		DC Connector waterproofing Plug x 4

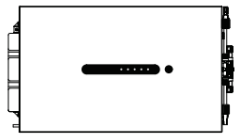
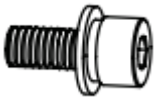
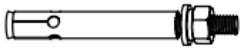
- battery module pack

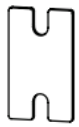
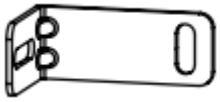
Component	Quantity
	battery module x 1

3.2.2.3 Battery Delivery Items (Lynx Home D)

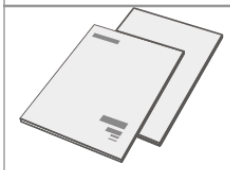
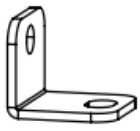
ATTENTION
The battery system must be installed on a base or a mounting bracket. Please select a base or mounting bracket according to the installation conditions; the specific delivery content shall be subject to the actual selection.

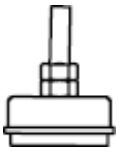
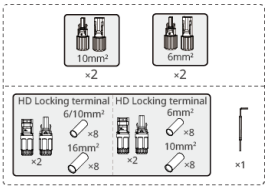
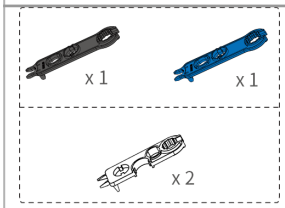
- Battery

Component	Quantity	Component	Quantity
	Battery x 1		Left-side battery protection Cover x 1
	M6screw x 2		Battery right side protection Cover x 1
	M5screw • When shipping inter-battery fixing bracket accessories,M5screw quantity is4。 • When shipping with inter-battery fixing bracket installed on the machine;M5screw quantity is2。		M6expansion bolt x 2

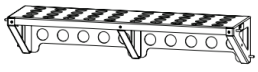
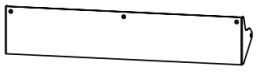
Component	Quantity	Component	Quantity
	Inter-battery fixing bracket • When shipping inter-battery fixing bracket accessories, the shipping quantity is2。 • When shipping with inter-battery fixing bracket installed on the machine, the shipping quantity is0。		Inter-battery communication line x 1
	Anti-tip bracket x 2	-	-

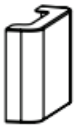
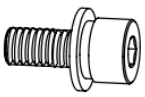
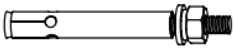
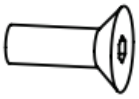
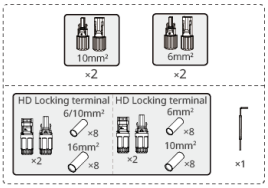
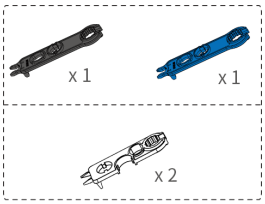
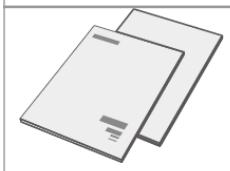
- (Optional) Base

Component	Quantity	Component	Quantity
	Base x 1		M5screwx 2
	Product documentation x 1		Base and battery fixing bracket x 2

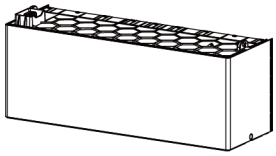
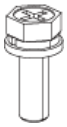
Component	Quantity	Component	Quantity
	Grounding terminalx 1		Adjustable foot x N The quantity of adjustable feet is subject to the actual shipment. If adjustable feet are not included in the actual delivery and needed, please contact the distributor or after-sales service to obtain them.
	Power connection terminal (Optional) Hex socket screwdriver x 1 The hex socket screwdriver is shipped together with the battery DC terminal that hasHD Locking terminallabel attached on the self-sealing bag		Terminal resistor x 1
	Power connection terminal tightening tool	-	-

(Optional) Mounting bracket

Component	Quantity	Component	Quantity
	Mounting bracket x 1		Front protective cover x 1

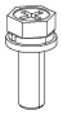
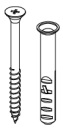
Component	Quantity	Component	Quantity
	Left protective cover x 1		Right protective cover x 1
	Mounting bracket and battery fixing bracket x 2		M5screw x 2
	M12expansion bolt x 4		M4screw x 5
	Grounding terminalx 1		Terminal resistor x 1
	Power connection terminal (Optional) Hex socket screwdriver x 1 The hex socket screwdriver is shipped together with the battery DC terminal that hasHD Locking terminallabel attached on the self-sealing bag		Power connection terminal tightening tool
	Product documentation x 1	-	-

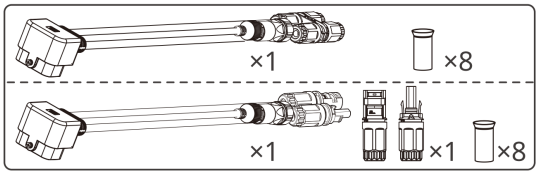
3.2.2.4 Battery Deliverables (Lynx D G2)

Component	Note	Component	Note
	Battery x 1		M5*16 screw x 2
	Silicone cap x 2	-	-

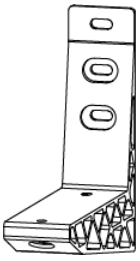
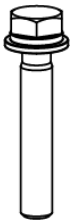
3.2.2.4.1 Base Deliverables

ATTENTION
The system supports 5-108kWh. A single row can stack up to 6 batteries. For scenarios requiring capacity expansion, such as higher energy demand or reducing the stack height of a single row due to installation conditions, please contact GoodWe or the distributor to purchase a battery expansion kit.

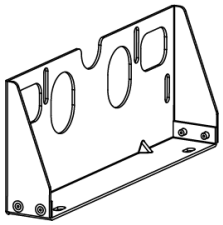
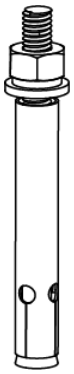
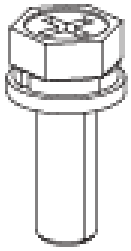
Component	Note	Component	Note
	Base x 1		Anti-tip bracket x 4
	M5 screw x 7		M6 Expansion Screw x 4
	Adjustable foot x 4		OT grounding terminal x 1
	Terminal resistor x 1		Battery decorative cover x 1
	Drilling marking paper x 2		Hexagon socket wrench x 1

Component	Note	Component	Note
			Battery cluster expansion harness x 1
	Unlocking tool x N		3m battery cluster expansion positive connection harness x 1
	3m battery cluster expansion negative connection harness x 1		Battery cluster expansion network cable x 1
	Silicone cap x 2		Handle x 2
	Product documentation x 1	-	-

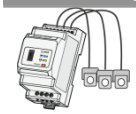
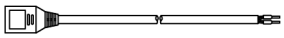
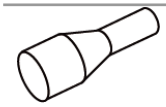
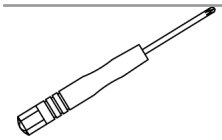
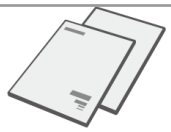
3.2.2.4.2 Battery Rack Deliverables (Optional)

Component	Note	Component	Note
	Mounting bracket x 2		M10 expansion bolt x 6
	M10 screw x 4	-	-

3.2.2.4.3 Wall-Mount Bracket Deliverables (Optional)

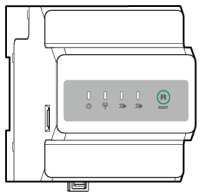
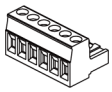
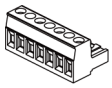
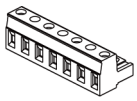
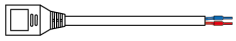
Component	Note	Component	Note
	Wall-Mount Bracket x 2		M6 Expansion Screw x 4
	M5 Fixing Screw x 4	-	-

3.2.3 Smart Meter Deliverables (GM3000)

Component	Quantity	Component	Quantity
	Smart Meter andCT x 1		2PINterminal andRJ45terminal adapter cable x 1
	Tubular terminal x 3		USBPlug x 1
	Screwdriver x 1		Product documentation x 1

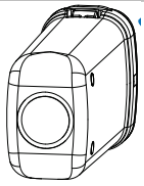
3.2.4 Smart Meter Deliverables GM330 & GMK330

3.2.4.1 Accessory List

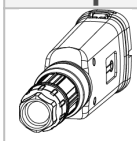
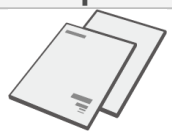
Component	Note	Component	Note
	Smart Meter x1 GMK330:CT×3; GMK360: CT×6; GM330: CT x 0。		2PIN Communication Terminal x1 Applicable to GM330.
	6PIN Communication Terminal x1 Applicable to GM330.		7PIN Communication Terminal x1 Applicable to GM330.
	Meter communication terminal Suitable for GMK330/GMK360.		RS485 communication terminal x 1
	2PINterminal andRJ45terminal adapter cable x 1		Screwdriver x1
	Tubular terminal GMK330/GMK360: x 5 ; GM330: x 6。		Product documentation x 1

3.2.5 Smart Communication Stick Deliverables

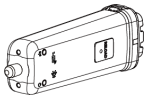
LS4G Kit-CN&4G Kit-CN

Component	Note	Component	Note
	4GCommunication Module x1	-	-

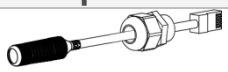
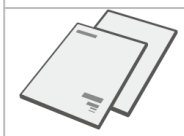
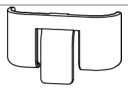
WiFi/LAN Kit-20

Component	Note	Component	Note
	Communication Module x1		Product documentation x 1

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

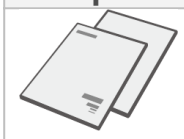
Component	Note	Component	Note
	4G Smart Communication Stick x1		Product Documentation x1

Ezlink3000

Component	Note	Component	Note
	Communication Module x1		LANWired Connection Port x1
	Product documentation x1		Unlocking Tool x1 Some modules require tools for disassembly; if not provided, unlocking can be done via the button on the module body.

Wi-Fi Kit

Component	Note	Component	Note
	Communication Module x1		Unlocking Tool x1 Some modules require tools for disassembly; if not provided, unlocking can be done via the button on the module body.

Component	Note	Component	Note
	Product documentation x1	-	-

3.3 Equipment Storage

ATTENTION
[1] Storage time is calculated from the SN date on the battery outer packaging; after exceeding the storage cycle, charge-discharge maintenance is required. (Battery maintenance time = SN date + charge-discharge maintenance cycle). For how to check the SN date, refer to:10.4.SN code meaning(Page 312)。 [2] After passing charge-discharge maintenance, if the outer carton has a Maintaining Label, please update the maintenance information on the Maintaining Label; if there is no Maintaining Label, please record the maintenance time and battery SOC by yourself and keep the data properly for easy maintenance record keeping.

If the equipment is not put into use immediately, please store it according to the following requirements. After long-term storage of the equipment, it can only be put into use again after being inspected and confirmed by professional personnel.

1. If the storage time of the inverter exceeds two years, or the non-operating time after installation exceeds six months, it is recommended to conduct inspection and testing by professional 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 on once every 6 months during storage. If it has not been powered on for more than 6 months, it is recommended to conduct inspection and testing by professional personnel before putting it into use.
3. To ensure the battery performance and service life, it is recommended to avoid long-term idle storage. Long-term storage may cause deep discharge of the battery, leading to irreversible chemical loss, resulting in capacity degradation or even complete failure. It is recommended to use it in time. If the battery needs long-term storage, please perform maintenance according to the following requirements:

Battery model	Initial SOC range for battery storage	Storage Temperature	Charge-discharge maintenance cycle[1]	Battery maintenance method[2]
LX F6.6-H	30%~50%	0~35℃	-20~0℃，≤1month 0~35℃，≤6month 35~45℃，≤1month	For maintenance methods, please consult the dealer or after-sales service center.
LX F9.8-H				
LX F13.1-H				
LX F16.4-H				
LX F6.4-H-20	30%~40%	0~35℃	-20~0℃，≤1month 0~35℃，≤6month 35~45℃，≤1month	
LX F9.6-H-20				
LX F12.8-H-20				
LX F16.0-H-20				
LX F19.2-H-20				
LX F22.4-H-20				
LX F25.6-H-20				
LX F28.8-H-20				
LX D5.0-10	30%~40%	0~35℃	-20~35℃，≤12month 35~+45℃，≤6month	
GW5.1-BAT-D-G20	30~40%	0~35℃	-20~35℃, 12 months 35~45℃, 6 months	For maintenance methods, please consult the dealer or after-sales service center.
GW8.3-BAT-D-G20				
GW5.1-BAT-D-G21				
GW8.3-BAT-D-G21				
GW6.0-BAT-D-G20	30~40%	0~35℃	-20~35℃, 12 months 35~45℃, 6 months 45~55℃, 1 month	
GW9.0-BAT-D-G20				

Packaging Requirements:

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

Environmental Requirements:

1. Ensure the equipment is stored in a cool place and avoid direct sunlight.
2. Ensure the storage environment is clean, with appropriate temperature and humidity ranges, and no condensation. If there is condensation on the equipment ports, the equipment must not be installed.
3. Ensure the equipment is stored away from flammable, explosive, and corrosive items.

Stacking Requirements:

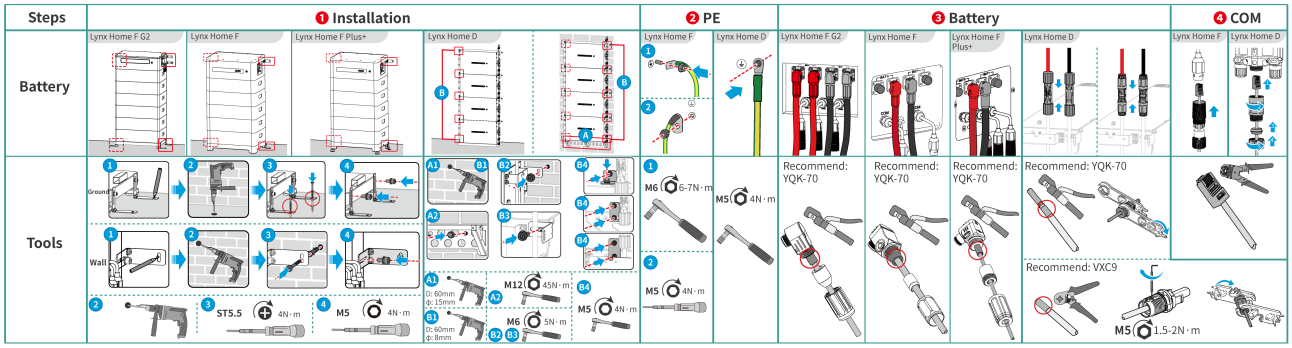
1. Ensure the stacking height and direction of the inverter are placed in accordance with the requirements indicated on the label of the packaging carton.
2. Ensure there is no risk of the inverter toppling after stacking.

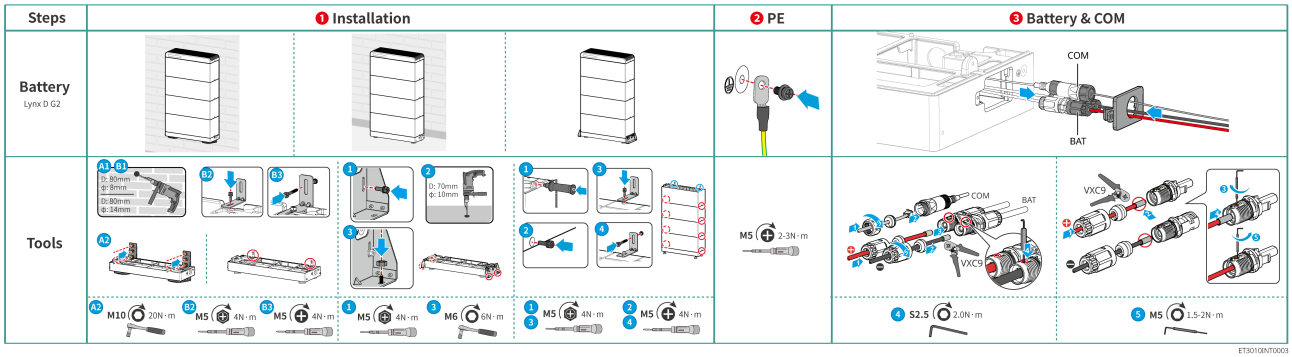
4 Installation

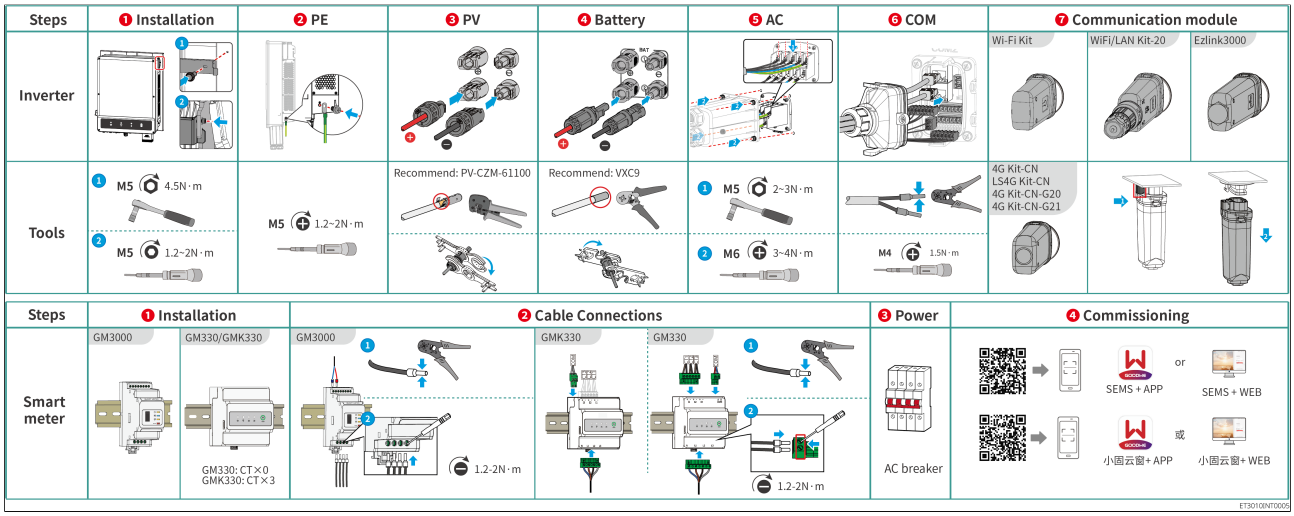
DANGER

When performing equipment installation and electrical connections, please use the deliverables shipped with the carton; otherwise, the resulting equipment damage is not covered by the warranty.

4.1 System Installation and Commissioning Process







4.2 Installation Requirements

4.2.1 Installation Environment Requirements

ATTENTION

Lynx home D:

- The sound source during battery operation mainly comes from the active cooling system, specifically the axial flow cooling fan designed with fluid dynamics optimization.
- When the battery produces a regular airflow sound of ≤35dB(A): This phenomenon indicates that the cooling system is in normal working condition, and will not have any impact on the equipment's electrical performance, structural safety, and service life. If you are sensitive to Noise Emission, please reasonably select the installation location.

1. The equipment must not be installed in flammable, explosive, or corrosive environments.
2. The temperature and humidity of the equipment installation environment must be within the appropriate range.
3. The installation location must be out of reach of children, and avoid being installed in easily accessible positions.
4. The inverter cabinet temperature may exceed 60℃ during operation; do not touch the cabinet before it cools down to prevent burns.
5. It is recommended to install the equipment in a sheltered location, avoiding

environments such as direct sunlight, rain, and snow accumulation. If site conditions restrict complete sheltering, it must be ensured that conditions such as ambient temperature and humidity are always within the allowable range specified in the equipment datasheet, and necessary protective measures must be taken.

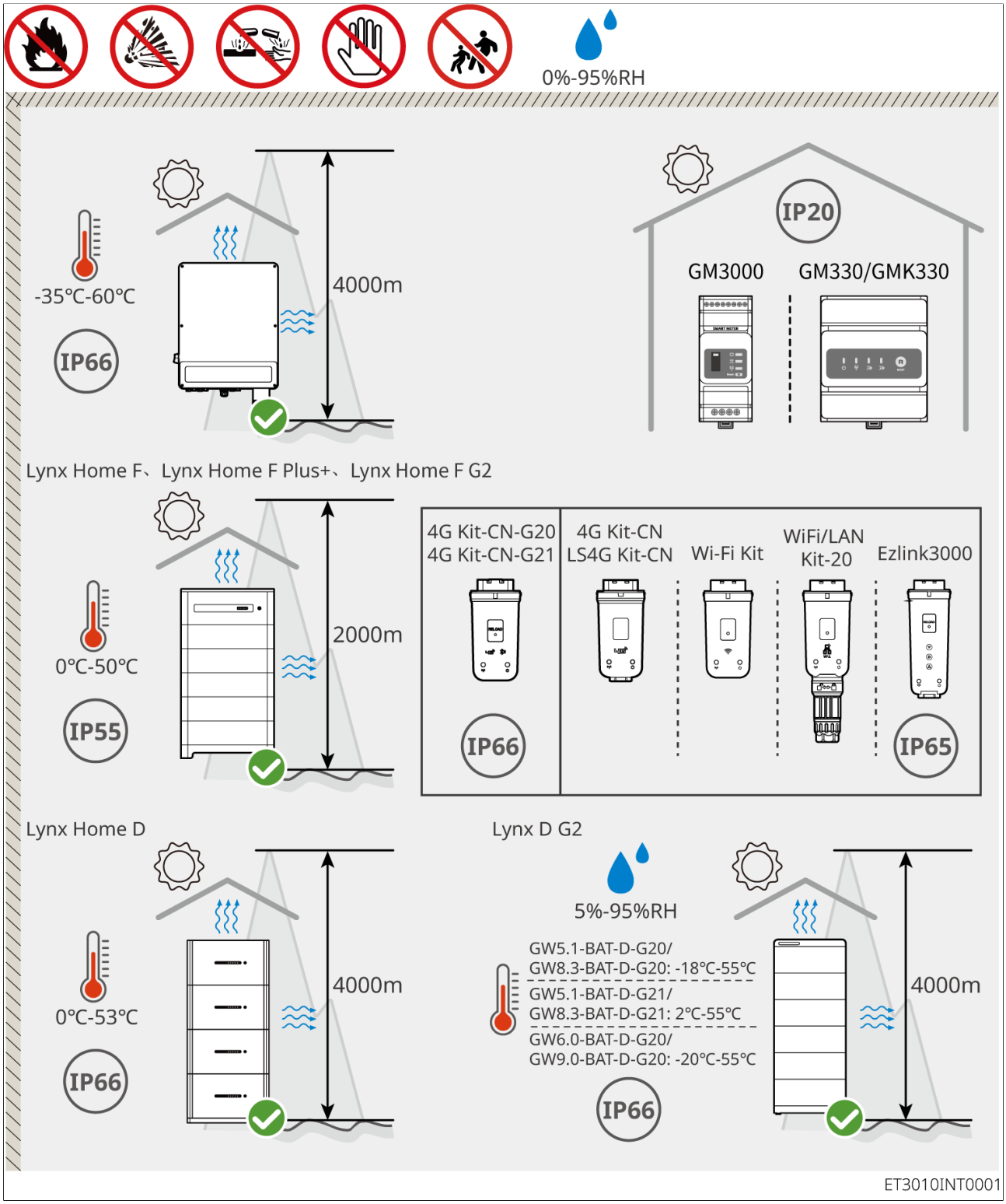
6. Adverse environmental conditions such as direct sunlight and high temperature may cause the inverter's output power to derate. When selecting the installation site, full consideration should be given to heat dissipation conditions to avoid direct sunlight on the equipment body.
7. The equipment installation and storage site selection should avoid areas where cold air directly blows, such as air conditioning outlets. Excessive local temperature difference may cause condensation inside the equipment, which may further lead to equipment damage.
8. The installation space must meet the equipment's ventilation and heat dissipation requirements, as well as operation space requirements.
9. The installation environment must meet the equipment's Ingress Protection Rating. Inverters, batteries, and smart communication sticks are suitable for indoor and outdoor installation; electricity meters are suitable for indoor installation.
10. The equipment installation height must facilitate operation and maintenance, ensuring that the equipment indicators and all labels are easily visible, and the terminals are easy to operate.
11. The installation altitude of the equipment is lower than the Max. Operating Altitude
12. Before installing equipment outdoors in salt-fog areas, please consult the equipment manufacturer. Salt-fog areas mainly refer to regions within 500m from the coast. The affected area is related to factors such as sea breeze, precipitation, and terrain
13. The length of DC cables and communication cables between the battery and the inverter must be less than 3m. Please ensure that the installation distance between the inverter and the battery meets the cable length requirements
14. Keep away from strong magnetic field environments to avoid electromagnetic interference. If there are radio stations or wireless communication devices below 30MHz near the installation location, please install the equipment in accordance with the following requirements

- Inverter: Add a multi-turn wound ferrite core at the DC input line or AC output line of the inverter, or add a low-pass EMI filter; or the distance between the inverter and the wireless electromagnetic interference device exceeds 30m
- Other equipment: The distance between the equipment and the wireless electromagnetic interference device exceeds 30m

ATTENTION

If installed in an environment below0℃, the battery will be unable to continue charging and restore energy after being fully discharged, resulting in Battery Undervoltage

- Lynx home F、Lynx home F Plus+、Lynx home F G2: Charging temperature range:0<T<50°C; Discharging temperature range:-20<T<50°C
- Lynx home D: Charging temperature range:0<T<53°C; Discharging temperature range:-20<T<53°C
- GW5.1-BAT-D-G20 、GW8.3-BAT-D-G20: Charging temperature range: -18°C-55°C; Discharging temperature range:-20℃-55°C. If installed in an environment below-18℃, the battery will be unable to continue charging and restore energy after being fully discharged, resulting in Battery Undervoltage
- GW5.1-BAT-D-G21 、GW8.3-BAT-D-G21: Charging temperature range: 2°C-55°C; Discharging temperature range:-20℃-55°C. If installed in an environment below2℃, the battery will be unable to continue charging and restore energy after being fully discharged, resulting in Battery Undervoltage
- GW6.0-BAT-D-G20、GW9.0-BAT-D-G20: Charging temperature range: -20°C-55°C; Discharging temperature range:-20℃-55°C. If installed in an environment below20℃, the battery will be unable to continue charging and restore energy after being fully discharged, resulting in Battery Undervoltage

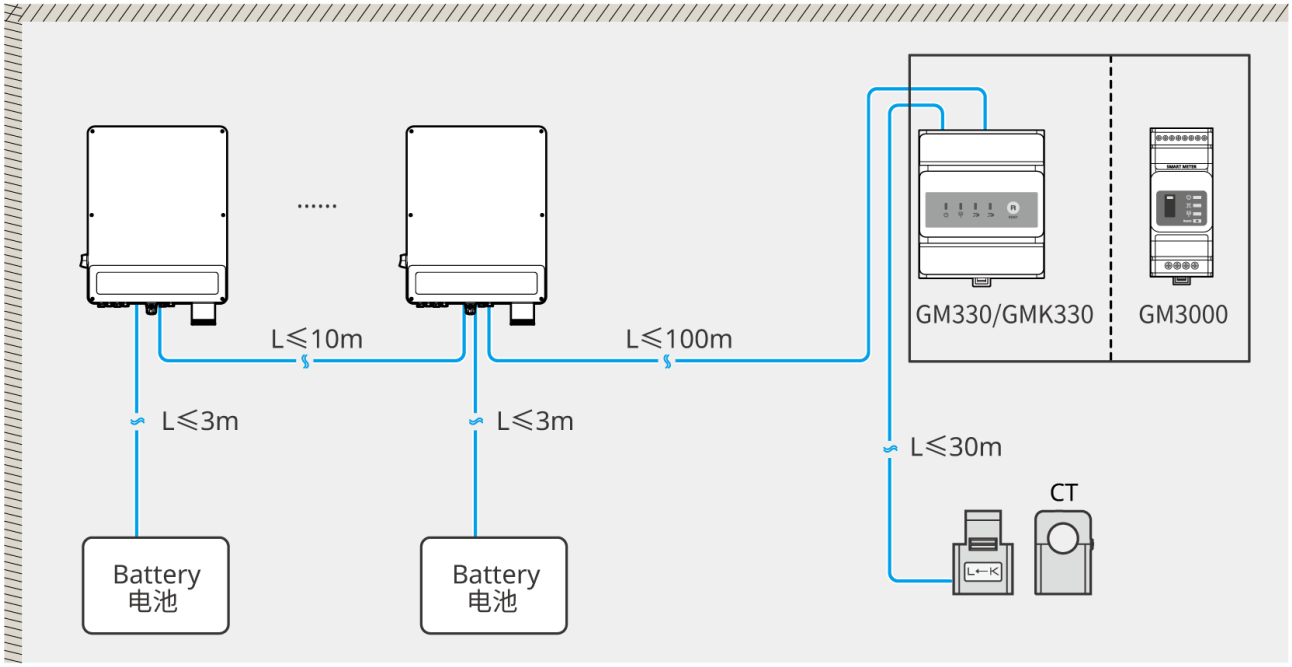


4.2.2 Installation Space Requirements

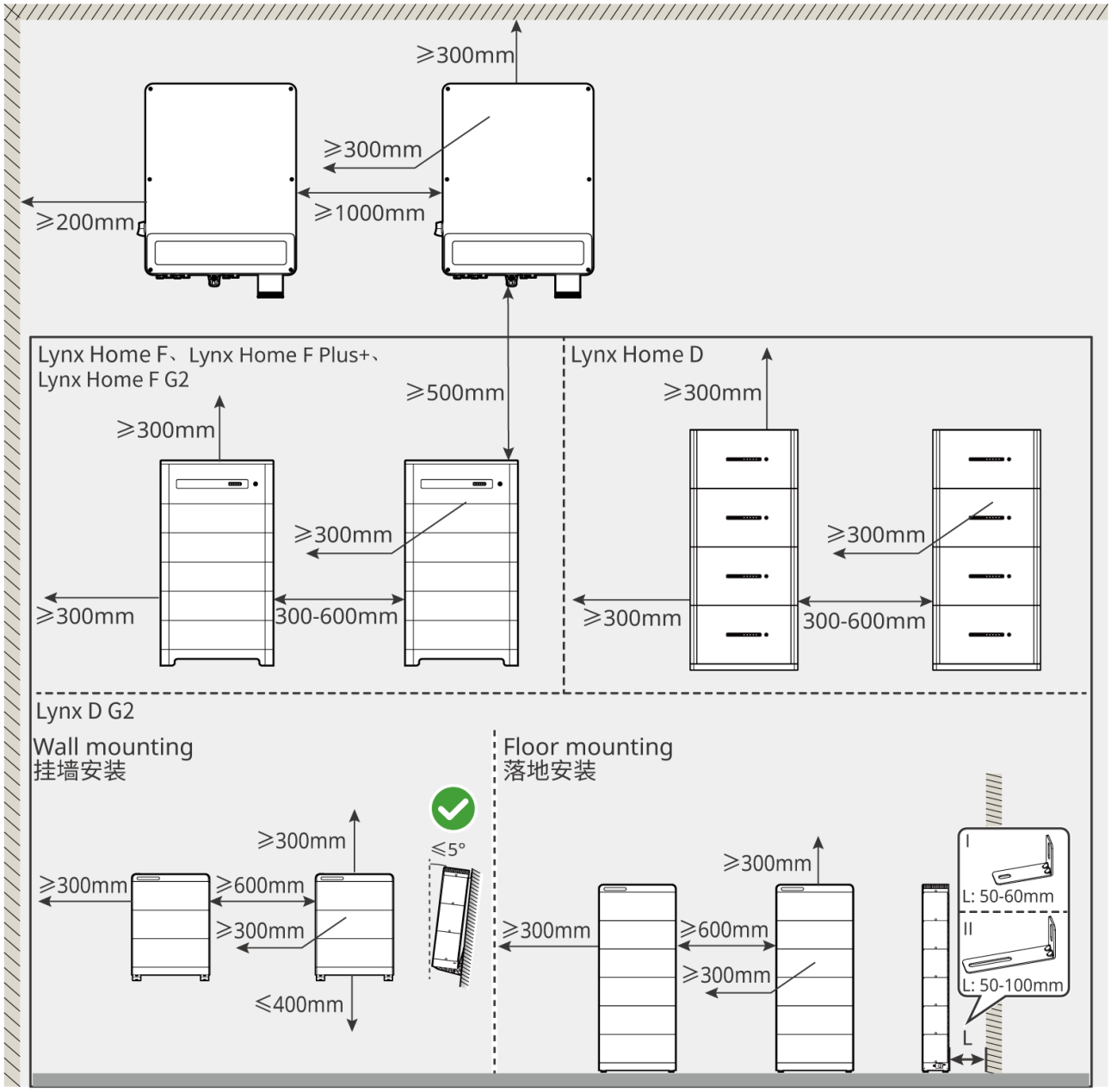
When installing equipment in the system, a certain amount of space should be

reserved around the equipment to ensure sufficient installation and heat dissipation space

- When using CAT 7E communication cables between inverters, the cable length shall not exceed 10 meters; when using CAT 5E or CAT 6E communication cables, the cable length shall not exceed 5 meters. Do not exceed 10m for communication cables, otherwise communication anomalies may occur
- For CT installation, use CAT 5E or higher shielded network cables, and the cable length shall not exceed 30 meters
- The RS485 twisted pair shielded cable for communication between the inverter and the electricity meter shall have a length not exceeding 100 meters



ET3010DSC0007

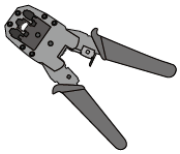
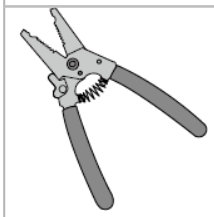
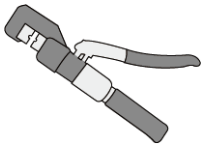
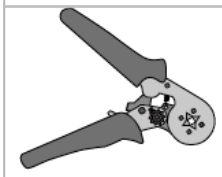
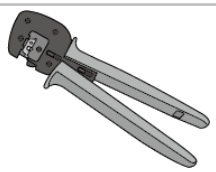
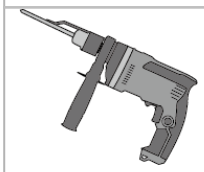
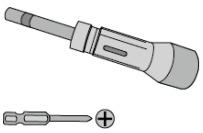
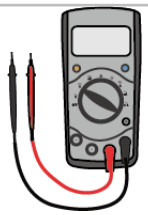
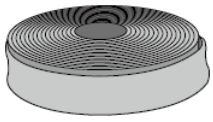
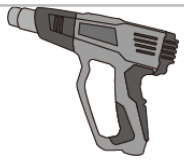


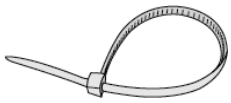
ET3010DSC0002

4.2.3 Tool Requirements

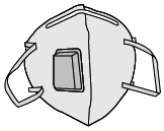
ATTENTION
During installation, it is recommended to use the following installation tools. If necessary, other auxiliary tools can be used on site

Installation Tools

Tool Types	Note	Tool Types	Note
	Diagonal Cutting Pliers		RJ45Crystal Crimping Pliers
	Wire Strippers		YQK-70Hydraulic Pliers
	VXC9Hydraulic Pliers		Spirit Level
	Open-end Wrench		PVTerminal Crimping Tool PV-CZM-61100
	Impact Drill (Drill BitΦ8mm)		Torque wrench M5、M6、M8
	Rubber mallet		Socket wrench set
	Marker pen		Multimeter Range≤1100V
	Heat-shrink tubing		Heat gun

Tool Types	Note	Tool Types	Note
	Cable tie		Vacuum cleaner

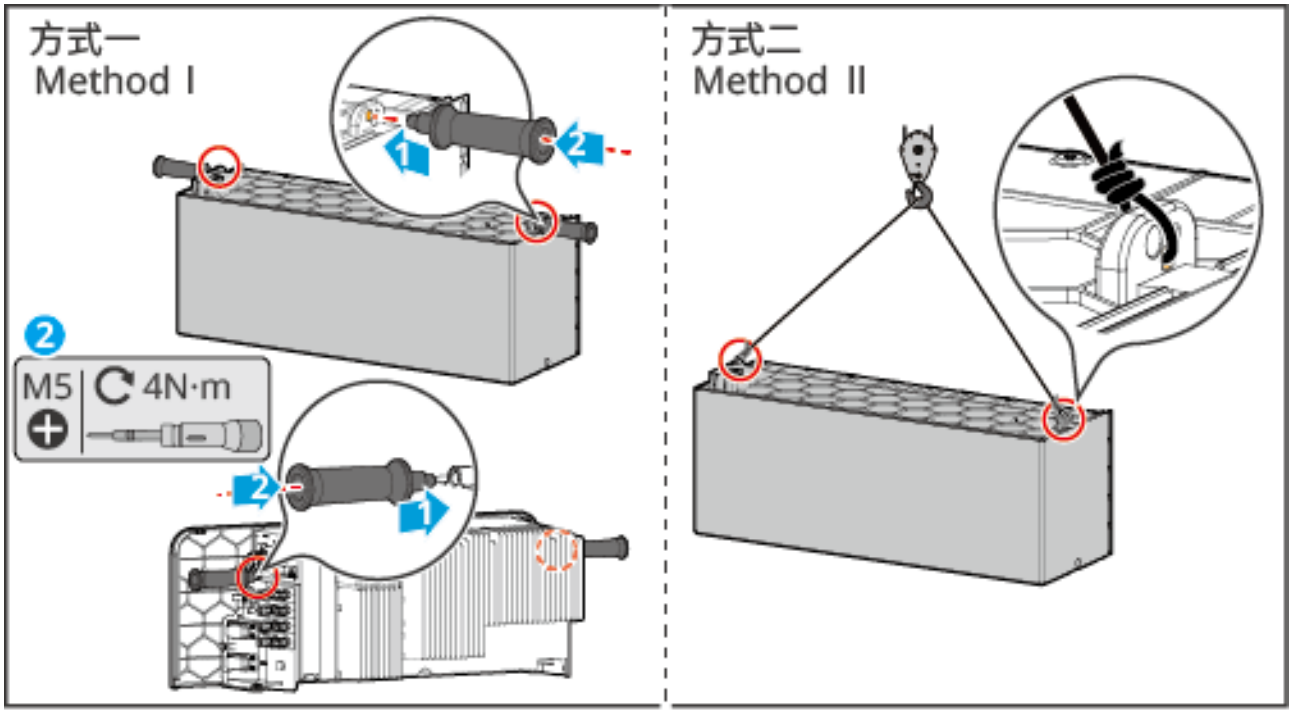
Personal Protective Equipment

Tool Types	Note	Tool Types	Note
	Insulating gloves, protective gloves		Dust mask
	Safety goggles		Safety shoes

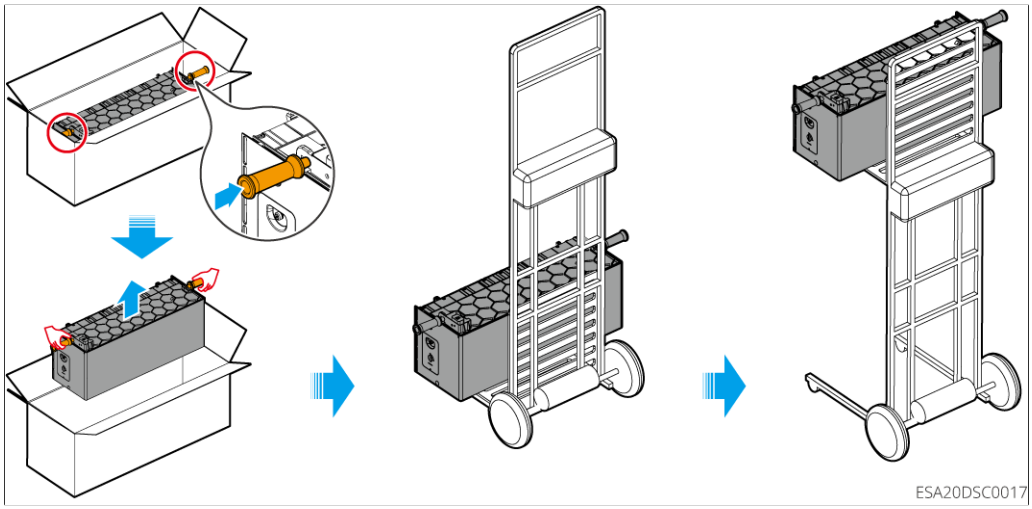
4.3 Equipment Handling

⚠CAUTION

- When performing operations such as transportation, handling, and installation, compliance with the laws, regulations, and relevant standards of the country and region where the operations are conducted shall be ensured.
- Before installation, the equipment needs to be transported to the installation site. During handling, to avoid personal injury or equipment damage, please note the following:
  1. Please allocate appropriate personnel according to the equipment's Weight, so as to prevent the equipment from exceeding the weight range that can be manually handled, thus avoiding personnel being injured by being struck by falling equipment.
  2. Please wear safety gloves to avoid injury.
  3. Please ensure the equipment remains balanced during handling to prevent falling.
  4. The battery system can be transported to the installation site via hoisting as an option.
  5. When using lifting methods to transport equipment, please use flexible slings or straps. The load-bearing capacity of a single strap meets the following requirements:
     - GW5.1-BAT-D-G20，GW5.1-BAT-D-G21，GW6.0-BAT-D-G20 ⩾185KG
     - GW8.3-BAT-D-G20，GW8.3-BAT-D-G21，GW9.0-BAT-D-G20 ⩾240KG



ESA20INT0010

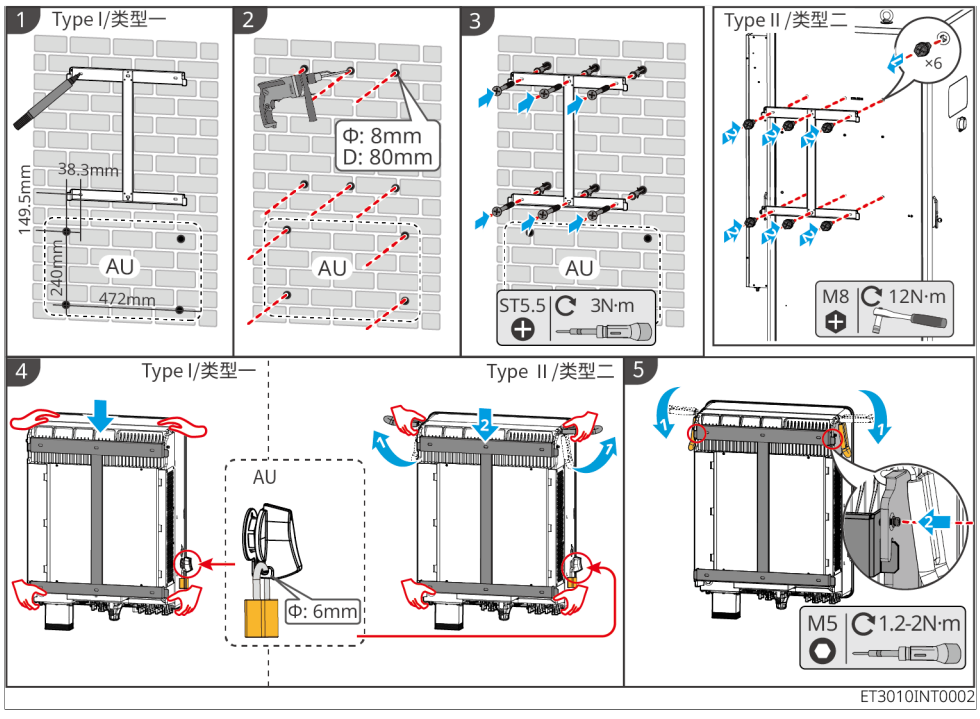


4.4 Install the Inverter

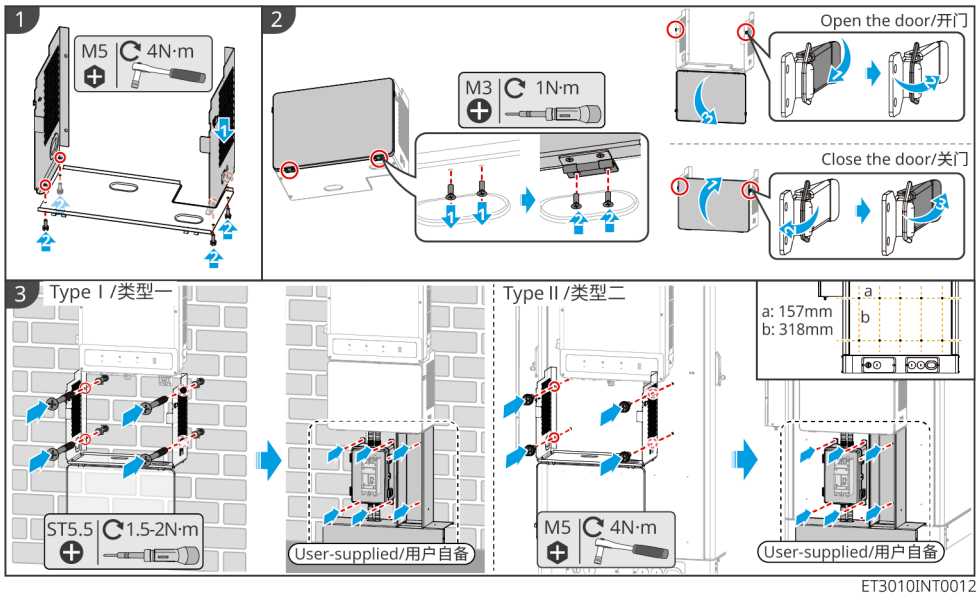
⚠CAUTION

- When drilling, ensure the drilling position avoids water pipes, cables, etc., inside the wall to prevent hazards.
- When drilling, please wear safety goggles and a dust mask to prevent dust from being inhaled into the respiratory tract or entering the eyes.
- Ensure the inverter is installed securely to prevent it from falling and injuring personnel.

1. Place the back mounting plate horizontally on the wall, and use a marker pen to mark the drilling positions.
2. Use a hammer drill for drilling.
3. Use expansion screws to fix the inverter back mounting plate bracket to the wall.
4. Use the DC Switch lock to lock the DC Switch in“OFF”state, then mount the inverter on the back plate. (Optional) Only applicable to Australia: the DC Switch lock is user-provided, please ensure the aperture of the DC Switch lock meets the requirements.
5. (Optional) Put down the handle.
6. Tighten the screws on both sides to secure the back panel and inverter, ensuring the inverter is installed firmly.



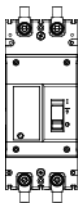
Install the Protection Cover (Australia Only)

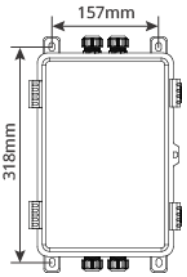
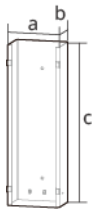


Step1： Assemble the Protection cover.

Step2： Install the front cover.

Step3： Secure the Protection cover to the wall/side of the battery cabinet, and install the circuit breaker, waterproof box and cable tray in accordance with local regulatory requirements. For specific requirements, please refer to the table below.

Equipment		Recommended model/specification	Note
Circuit breaker		Select according to local laws and regulations • 2P DC Switch • Rated Current ≥63A • Nominal Voltage ≥1000V	User-provided.

Equipment		Recommended model/specification	Note
Water proof box		Protection level > IP65 Hole spacing requirement: • Left-right hole spacing: 157mm • Top-bottom hole spacing: 318mm Style and dimensions are for reference only	User-provided. If the hole spacing of the waterproof box does not meet the requirements and cannot be fixed on the battery cabinet, please prepare the mounting plate yourself. First, drill holes in the mounting plate as required and fix it on the battery cabinet, then fix the waterproof box on the mounting plate.
Cable tray		a: 250mm b: 150mm c: 510mm Style is for reference only	User-provided.

4.5 Install the Battery

4.5.1 Install the Lynx Home F Series

WARNING

- Ensure the control box is installed above the battery; do not install the battery above the control box.
- When installing the battery system, ensure the installation is level and secure. When placing the battery base, battery or control box, confirm that the hole positions of upper and lower layers are aligned; the anti-tip bracket shall be vertically and closely attached to the ground, wall or the surface of the battery system.
- When drilling with a hammer drill, cover the battery system with a shielding object such as cardboard to prevent foreign matter from entering the interior of the device and causing device damage.
- Before installing the battery system, remove the Protection plate from the wiring port of the battery module.
- After marking the drilling positions with a marker pen, lower the control box to avoid device damage caused by the hammer drill being too close to the control box when drilling.

4.5.1.1 Install Lynx Home F

1. Install the anti-tip bracket to the base.
2. Place the base against the wall, mark the drilling positions with a marker, and remove the base.
3. Use a hammer drill for drilling.
4. Secure the base with expansion screws, ensuring the base is oriented correctly.
5. Remove the battery connection terminal cover.
6. Install the battery to the base, ensuring the battery is oriented consistently with the base; and install the remaining battery modules and control box according to the actual selected battery system type.
7. Pre-install the control box anti-tip bracket to the control box.
8. Install the control box above the battery, ensure it is placed securely, mark the drilling positions with a marker, and remove the control box.
9. Use a hammer drill for drilling.
10. Secure the control box anti-tip bracket to the wall.
11. Secure the anti-tip bracket to the control box.

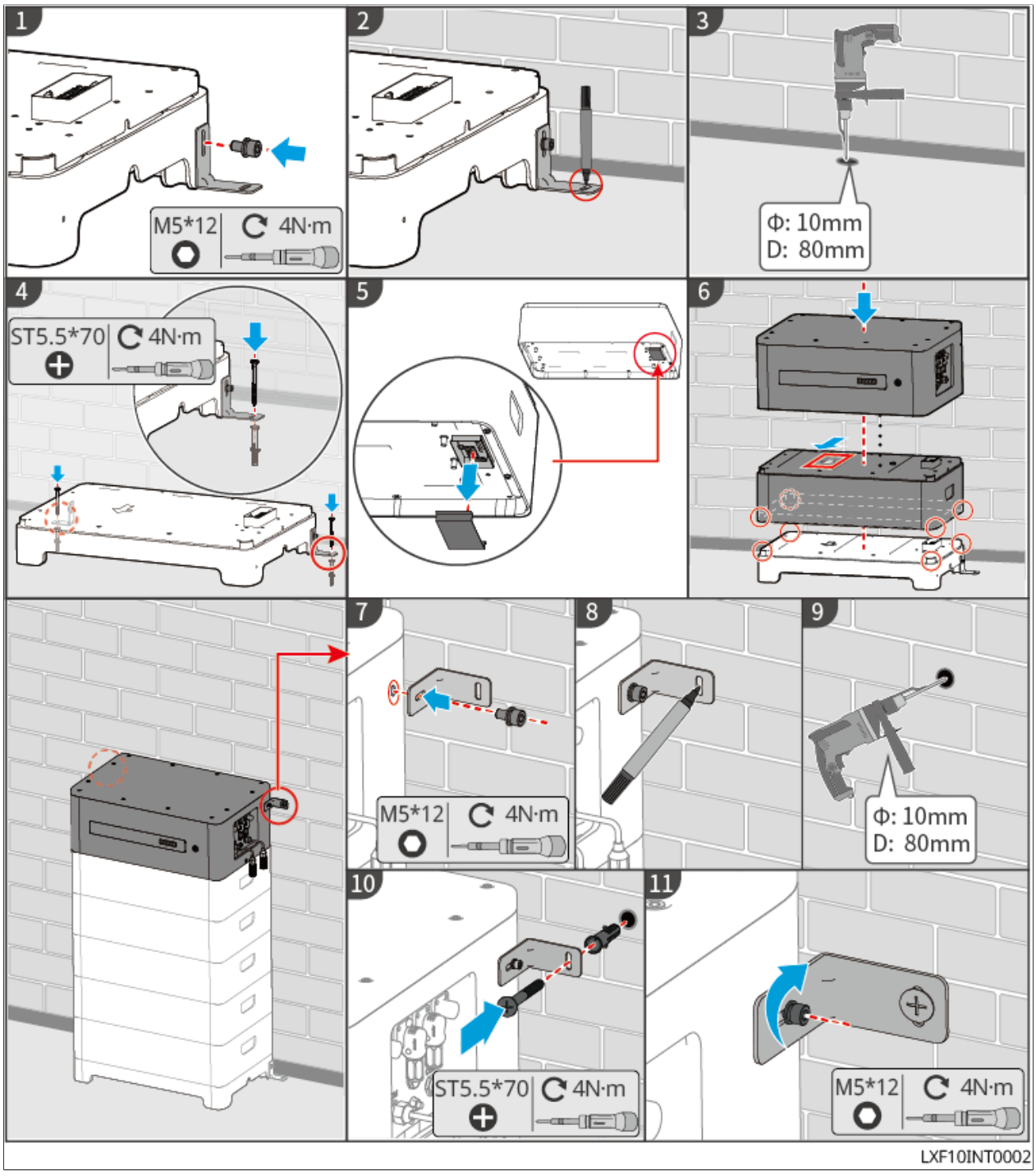


Figure7 Battery installation

4.5.1.2 Install Lynx Home F Plus+

1. (Optional) Install the adjustable feet to the battery base.
2. Install the anti-tip bracket to the base.
3. Place the base against the wall, mark the drilling positions with a marker, and remove the base.
4. Use a hammer drill for drilling.
5. Secure the base with expansion screws, ensuring the base is oriented correctly.
6. Remove the battery connection terminal cover.
7. Install the battery to the base, ensuring the battery is oriented consistently with the base; and install the remaining battery modules and control box according to the actual selected battery system type.
8. Pre-install the control box anti-tip bracket to the control box.
9. Install the control box above the battery, ensure it is placed securely, mark the drilling positions with a marker, and remove the control box.
10. Use a hammer drill for drilling.
11. Secure the control box anti-tip bracket to the wall.
12. Secure the anti-tip bracket to the control box.
13. (Optional) After completing the battery system installation, check if it is level and secure; if there is tilting or shaking, adjust the battery system installation status by rotating the adjustable feet.

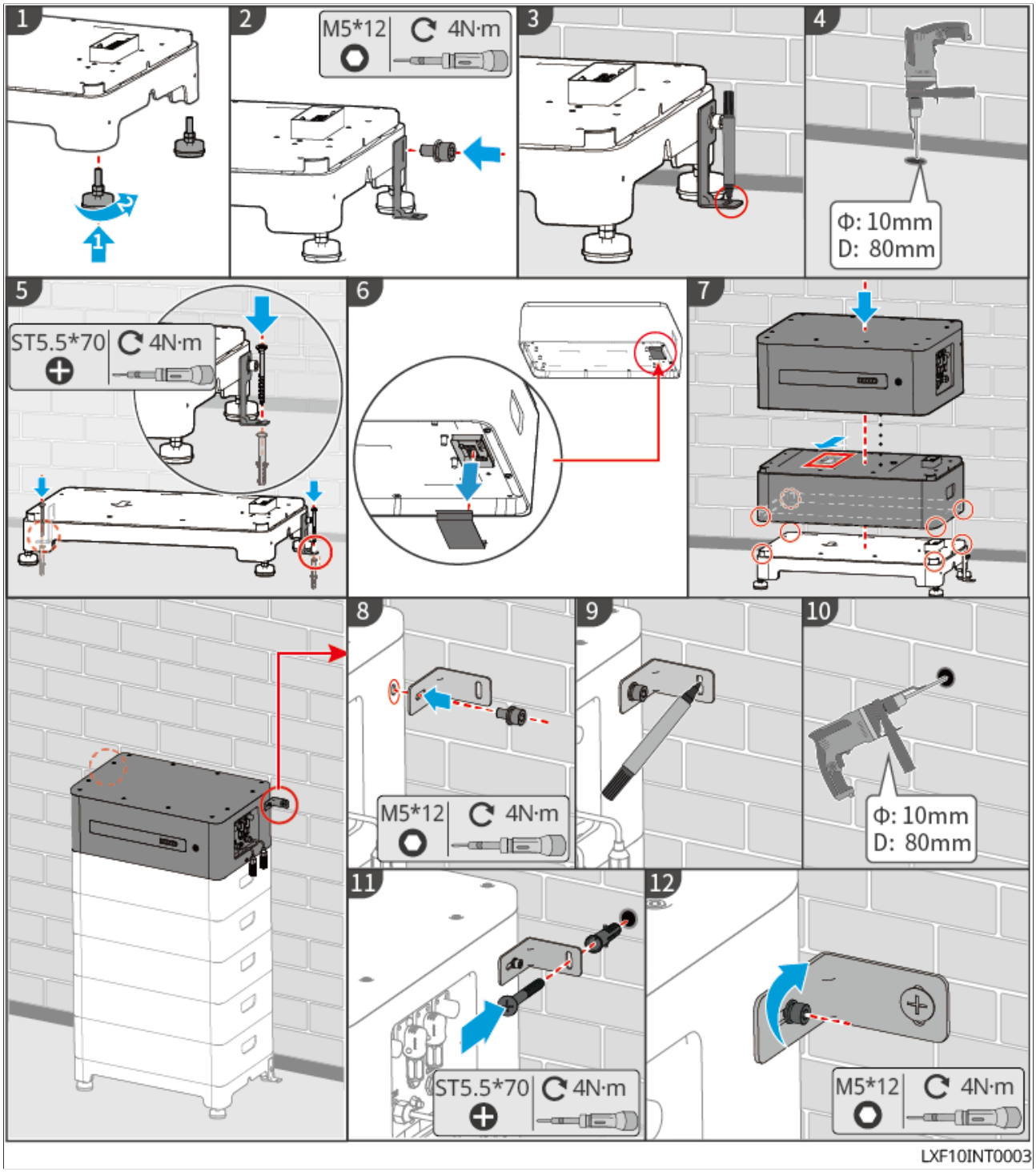


Figure8 Battery installation

4.5.1.3 Install Lynx Home F G2

1. (Optional) Install the adjustable feet to the battery base.

2. Install the anti-tip bracket to the base.
3. Place the base against the wall, mark the drilling positions with a marker, and remove the base.
4. Use a hammer drill for drilling.
5. Secure the base with expansion screws, ensuring the base is oriented correctly.
6. Install the battery to the base, ensuring the battery is oriented consistently with the base; and install the remaining battery modules and control box according to the actual selected battery system type.
7. Install the anti-tip bracket for the control box.
8. Install the control box above the battery, ensure it is placed securely, mark the drilling positions with a marker, and remove the control box.
9. Use a hammer drill for drilling.
10. Tighten the anti-tip bracket for the control box.
11. Install the anti-tip device and junction box

    - (Optional) Secure the anti-tip bracket for the control box.
    - (Optional) Install the junction box.

12. (Optional) After completing the battery system installation, check if it is level and secure; if there is tilting or shaking, adjust the battery system installation status by rotating the adjustable feet.

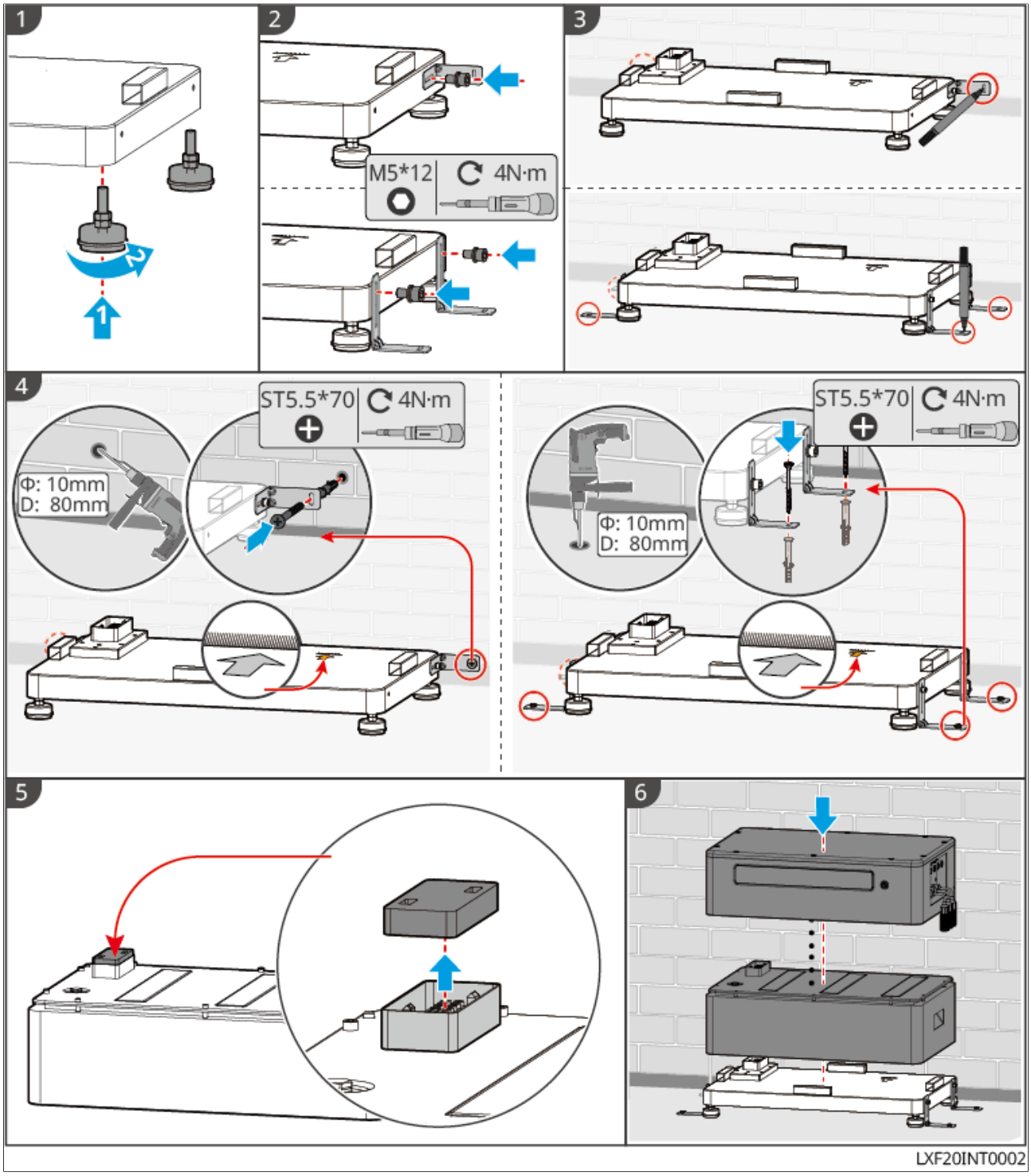


Figure9 Install the base and battery

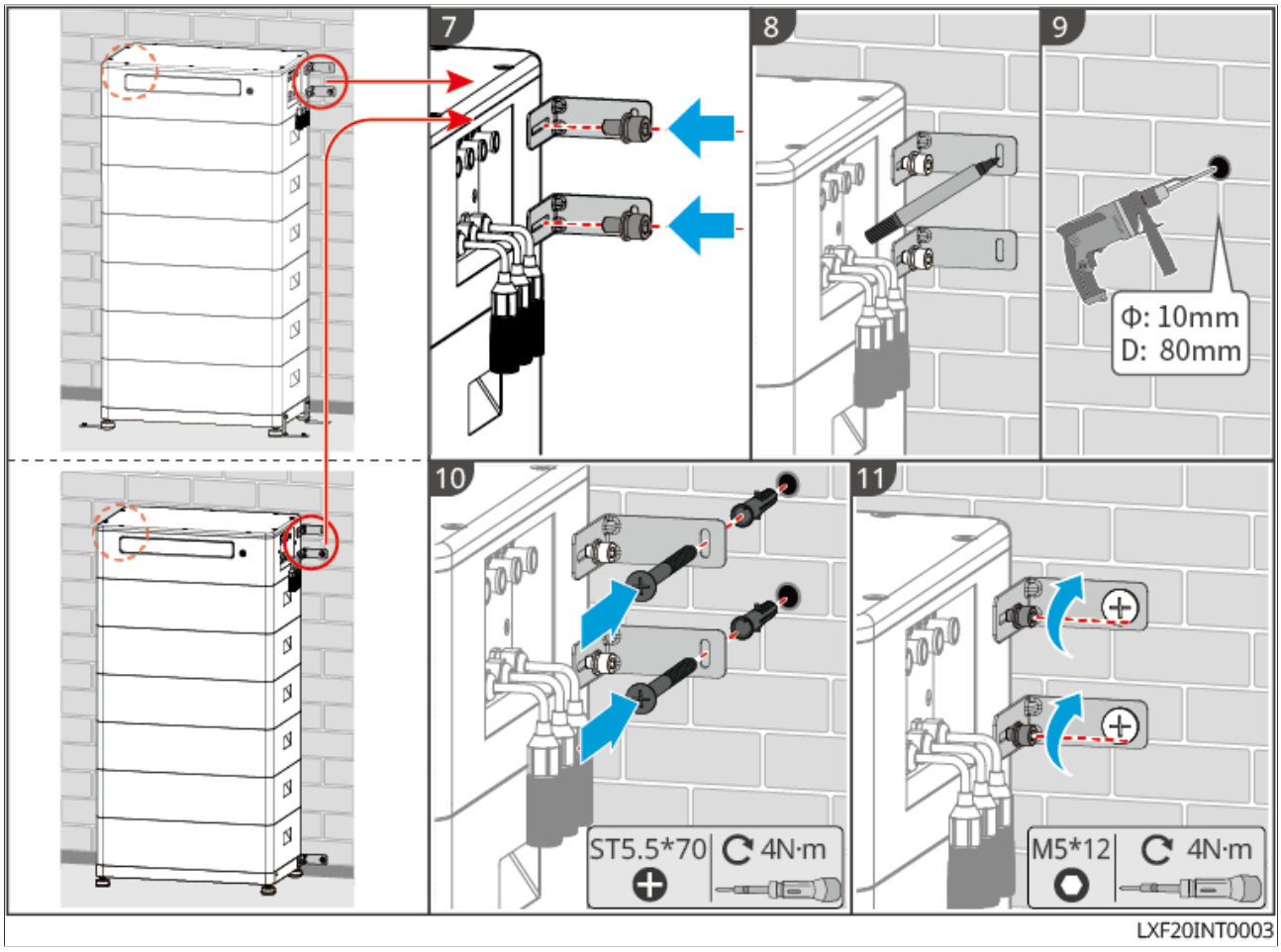


Figure10 Secure the battery system

4.5.2 Install Lynx Home D

ATTENTION

- The battery system must be installed on the base or the wall mount.
- When stacking batteries, use auxiliary tools for installation.
- When a single battery stack exceeds3units, it is recommended to use the base for installation.
- Stack the batteries according to the recommended stacking method.

Battery stacking method		
Total number of batteries (units)	First stack (units)	Second stack (units)
8	4	4
7	4	3
6	3	3
5	3	2
4	2	2
3	3	-
2	2	-
1	1	-

Install the wall mount (optional)

1. Press the wall mount tightly against the wall. Ensure the wall mount is firmly placed, and use a level to check if it is horizontal.
2. After adjusting the position and level of the wall mount, mark the drilling positions with a marker. Once marked, remove the wall mount.
3. Drill holes and install expansion screws.
   a. Use a hammer drill for drilling.
   b. Clean the holes.
   c. Install the expansion screws into the holes using a rubber mallet.
   d. Tighten the nut clockwise with an Allen wrench to expand the screw.
   e. Rotate and remove the nut counterclockwise.
4. Use an Allen wrench to secure the wall mount to the wall.

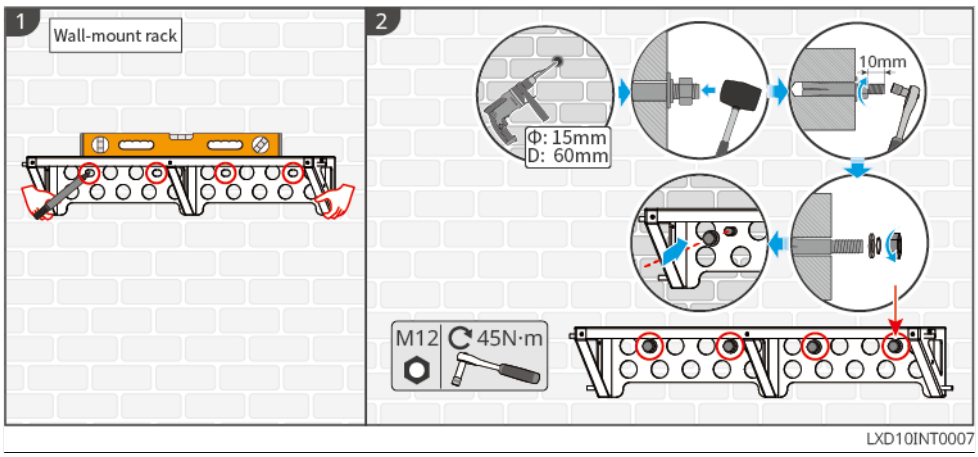


Figure11 Install the wall mount

Install the base (optional)

ATTENTION
Check if the adjustable feet are included in the accessory package. If not and needed, contact the dealer or after-sales service to obtain them.

1. Install the adjustable feet on the bottom of the base.
2. Place the base at a distance of15-20mmfrom the wall, keep it parallel to the wall and ensure the ground is level.
3. When installing the battery using the base, ensure the left side of the battery is aligned with the limit block of the base.

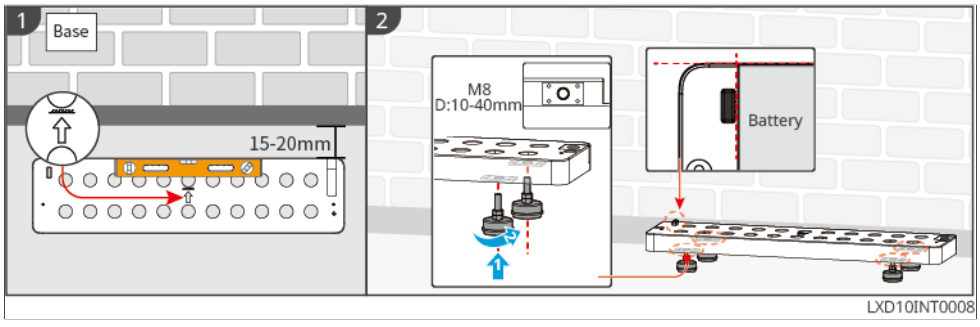


Figure12 Install the base

Install the Battery

ATTENTION

- For floor installation, two base and battery fixing brackets are included with the package. To prevent the battery from loosening or shifting, install one fixing bracket on one side of the battery positioning block and keep the other fixing bracket as a spare.
- For wall-mounted installation, to prevent the battery from loosening or shifting, use the fixing brackets shipped with the package to fix the battery and the wall mount on both sides respectively.

1. Pre-tighten and fix the anti-tip bracket to the battery.
2. Place the battery on the installed wall mount or base. Make the anti-tip bracket fit closely against the wall, mark the positions for drilling, after marking, remove the battery; or use a level to mark the drilling positions.
3. Install expansion screws and secure the battery.
   a. Use a hammer drill for drilling.
   b. Clean the holes.
   c. Install the expansion screws into the holes using a rubber mallet.
   d. Tighten the nut clockwise with an Allen wrench to expand the screw.
   e. Rotate and remove the nut counterclockwise.
   f. Reinstall the battery on the base or wall mount, and adjust the battery position so that the battery is15-20mm。
   g. Use an external hex wrench to fix the battery to the wall, and use a torque screwdriver to tighten the anti-tip bracket to the battery.
4. Install and tighten the inter-battery fixing bracket.
   If you need to install multiple batteries, repeat steps1to4to complete all battery installations. The number of batteries in a single stack shall not exceed4units.
5. Install and tighten the fixing bracket between the battery and the base or wall mount.

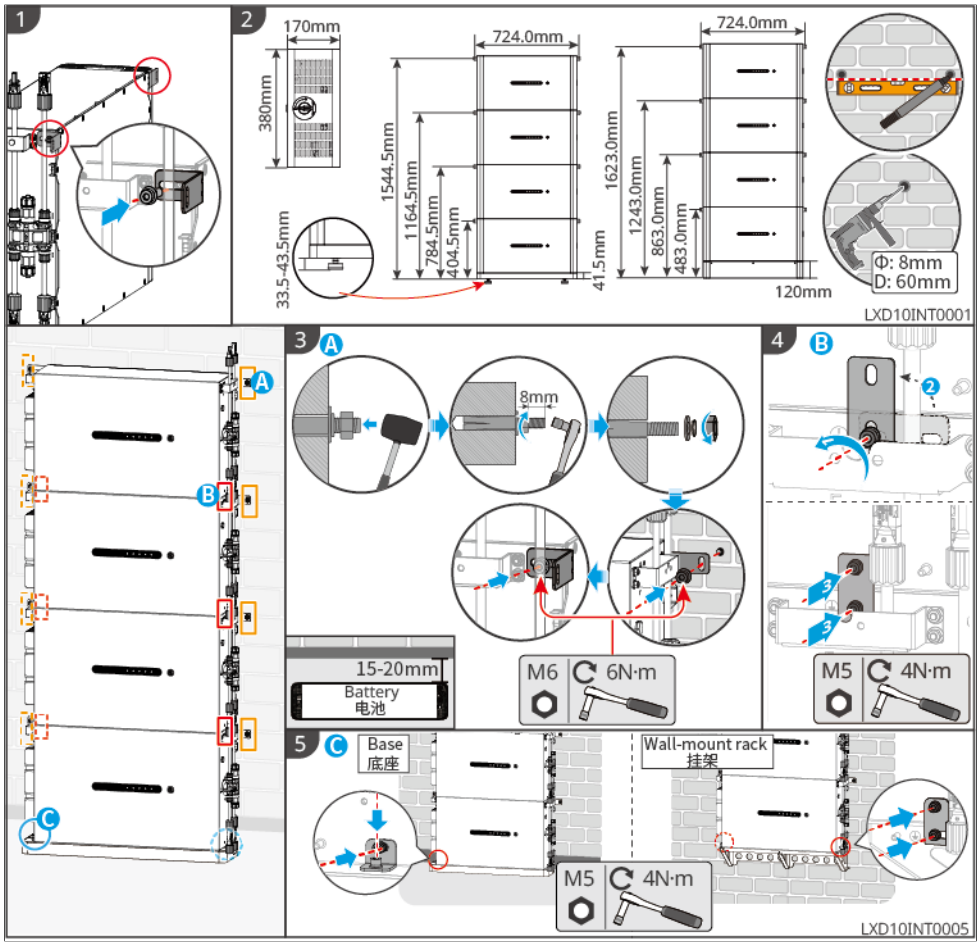


Figure13 Install the Battery

4.5.3 Install Lynx D G2

⚠CAUTION

- When drilling, ensure the drilling position avoids water pipes, cables, etc., inside the wall to prevent hazards.
- When drilling, please wear safety goggles and a dust mask to prevent dust from being inhaled into the respiratory tract or entering the eyes.
- When installing the battery system, ensure the installation is level and secure. When placing the battery base and batteries, confirm that the holes of upper and lower layers are aligned; the anti-tilt bracket should be vertically attached to the ground, wall or the surface of the battery system.
- When drilling with a hammer drill, cover the battery system with a shielding object such as cardboard to prevent foreign matter from entering the interior of the device and causing device damage.
- When wall-mounted, to ensure the safety of your life and property, you must evaluate the load-bearing capacity of the wall.

ATTENTION

- The battery needs to be installed on a base, which can be floor-mounted or installed on a wall bracket.
- When floor-mounted, the maximum number of batteries that can be stacked away from the wall is 4; when against the wall, the maximum is 6.
- The maximum stacking quantity when using a mounting bracket is as follows:
  - Same energy stacking:
    - GW5.1-BAT-D-G20，GW5.1-BAT-D-G21: maximum 3 units.
    - GW8.3-BAT-D-G20，GW8.3-BAT-D-G21: maximum 2 units.
    - GW6.0-BAT-D-G20: Up to 3 units.
    - GW9.0-BAT-D-G20: Up to 2 units.
  - Different energy aliasing:
    - When GW5.1-BAT-D-G20, GW5.1-BAT-D-G21 and GW6.0-BAT-D-G20 are stacked in a mixed configuration, a single system supports up to 3 units
    - GW8.3-BAT-D-G20, GW8.3-BAT-D-G21, GW9.0-BAT-D-G20 and models stacked in mixed configuration with them, a single system supports up to 2 units.
- The base, mounting bracket and the topmost battery shall be fixed to the wall with anti-tip brackets.
- When marking the drilling positions for the mounting bracket, one person shall hold the base steady while another uses a marker to mark the drilling positions.
- When installing the battery, remove the protective cover on the blind-mate connector before stacking.

Wall-mounted base installation

Step 1: Install the base on the mounting bracket.

Step 2: The mounting bracket shall be flush against the wall. Ensure the bracket is placed firmly, and check the level bubble in the center of the base.

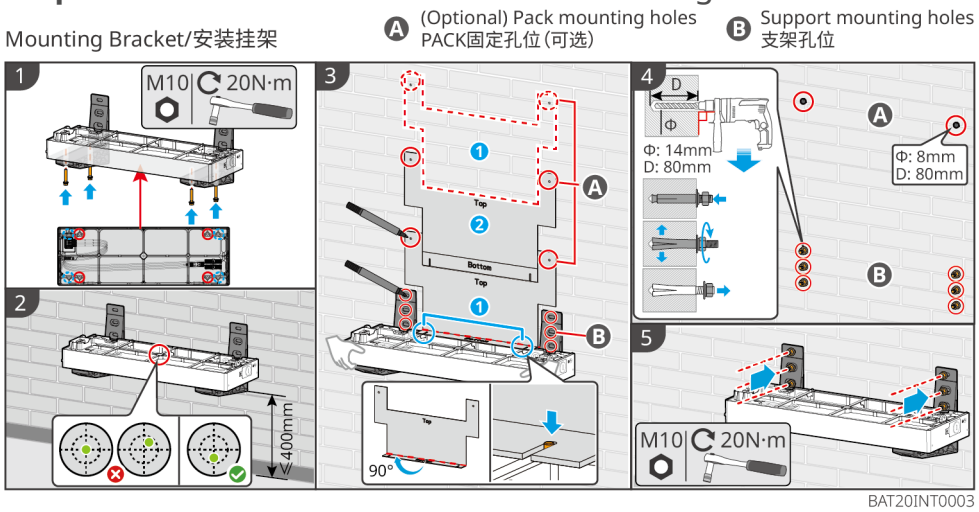
Step 3: After adjusting the position and levelness of the mounting bracket, use a marker to mark the drilling positions. Once marked, remove the mounting bracket. (A: PACK fixing holes; B: bracket fixing holes.)

Step 4: Drill holes and install expansion screws.

1. Use a hammer drill for drilling.
2. Clean the holes.
3. Install the expansion screws into the holes using a rubber mallet.

4. Tighten the nut clockwise with an Allen wrench to expand the screw.
5. Rotate and remove the nut counterclockwise.
6. Use a torque screwdriver to fasten the anti-tip brackets to the wall.

Step 5: Use an Allen wrench to fix the mounting bracket to the wall.



Wall-adjacent base installation

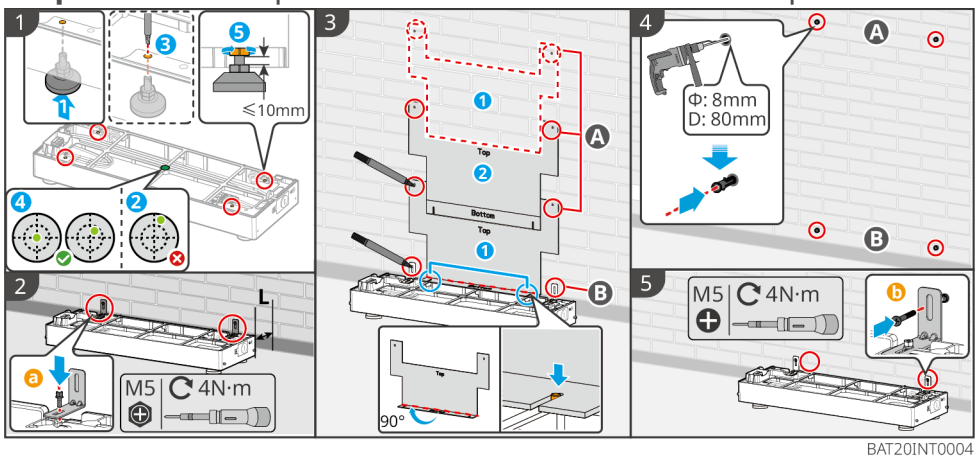
Step 1: Install the adjustable feet on the bottom of the base, and fix the anti-tip brackets to the base.

Step 2: Place the base at a distance of 50-60mmfrom the wall, keeping it parallel to the wall. Check the level bubble in the center of the base; if it is not centered, use the adjustable feet to level the base.

Step 3: After adjusting the position and levelness of the base, use the drilling marking paper to mark the drilling positions. Once marked, remove the base. (A: PACK fixing holes; B: bracket fixing holes.)

Step 4: Use a hammer drill to drill holes and clean the holes.

Step 5: Use a Phillips screwdriver to fasten the anti-tip brackets to the wall.



Wall-separated base installation

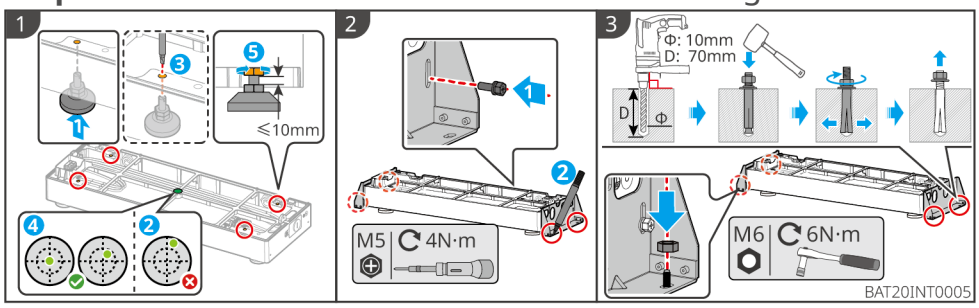
Step 1: Install the adjustable feet on the bottom of the base. Check the level bubble in the center of the base; if it is not centered, use the adjustable feet to level the base.

Step 2: After adjusting the position and levelness of the base, fix the wall-separated brackets to the base. Select appropriate positions to mark the drilling locations, and once marked, remove the base.

Step 3: Drill holes and install expansion screws.

1. Use a hammer drill for drilling.
2. Clean the holes.
3. Install the expansion screws into the holes using a rubber mallet.
4. Tighten the nut clockwise with an Allen wrench to expand the screw.
5. Rotate and remove the nut counterclockwise.
6. Use a torque screwdriver to fasten the wall-separated brackets to the ground.

Step 4: Use an Allen wrench to fix the base to the ground.



Battery and battery shield installation

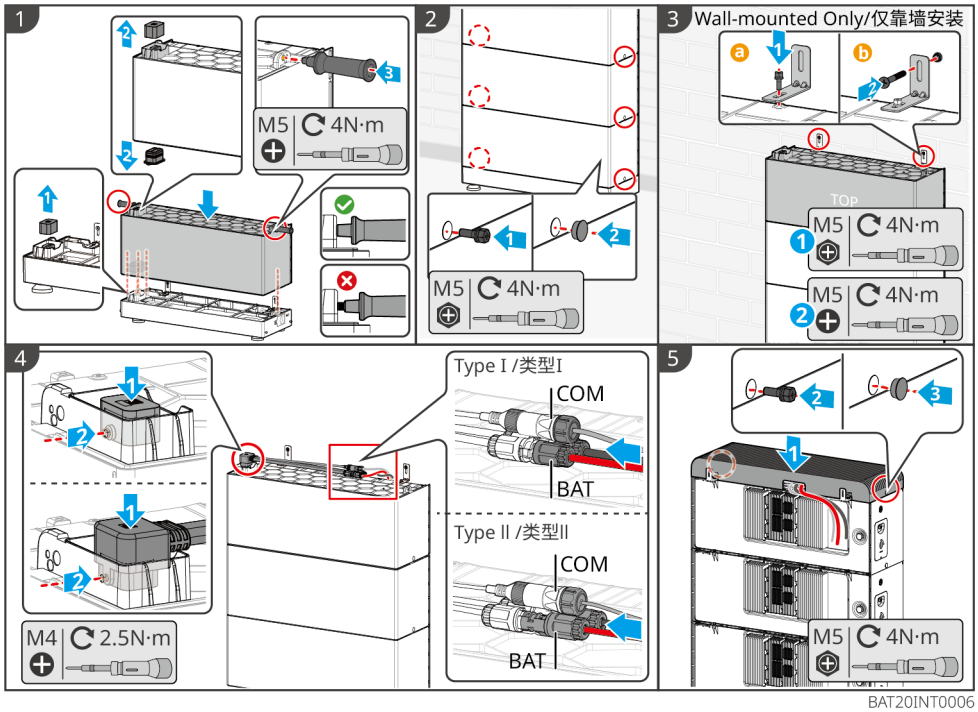
Step 1: Remove the protective cover on the blind-mate connector at the bottom of the battery, install the handle (optional), and stack the battery onto the base.
If installing more than 3 batteries, use a lifting tool.

Step 2: Tighten the screws between the battery and the base, or between batteries.
If you need to install multiple batteries, repeat**Step1**、**Step2**to complete all battery installation.

Step 3 (optional): Secure the topmost battery to the wall using an anti-tip bracket。

Step 4: Install the blind-mate connector or the terminal resistor.

Step 5: Install the battery protective cover and tighten the side screws.



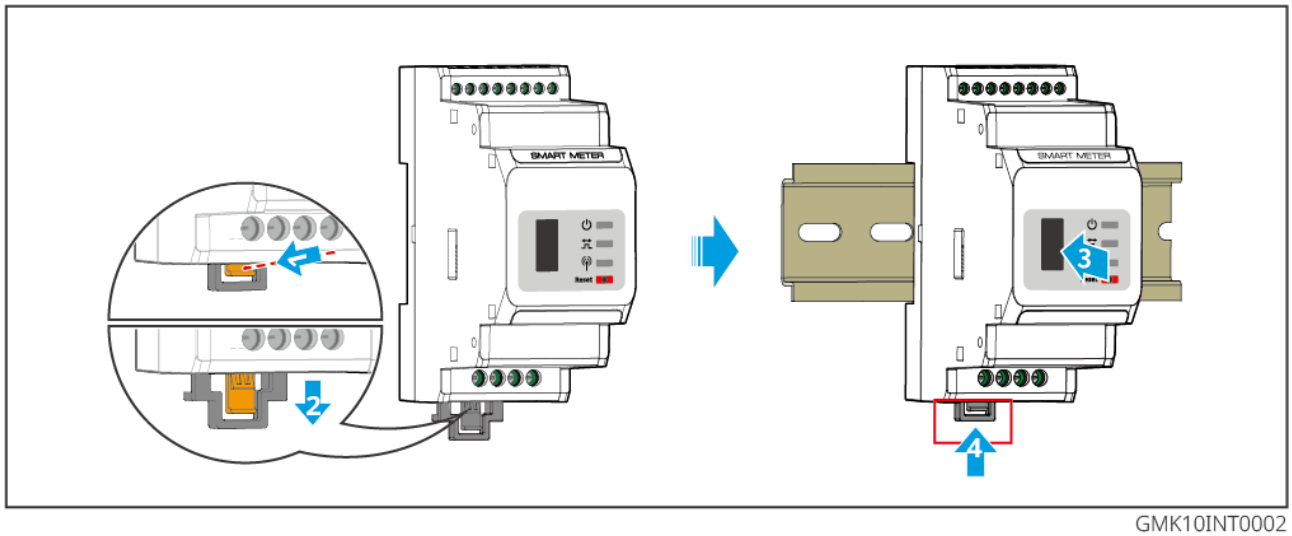
BAT20INT0006

4.6 Install the Electricity Meter

⚠WARNING

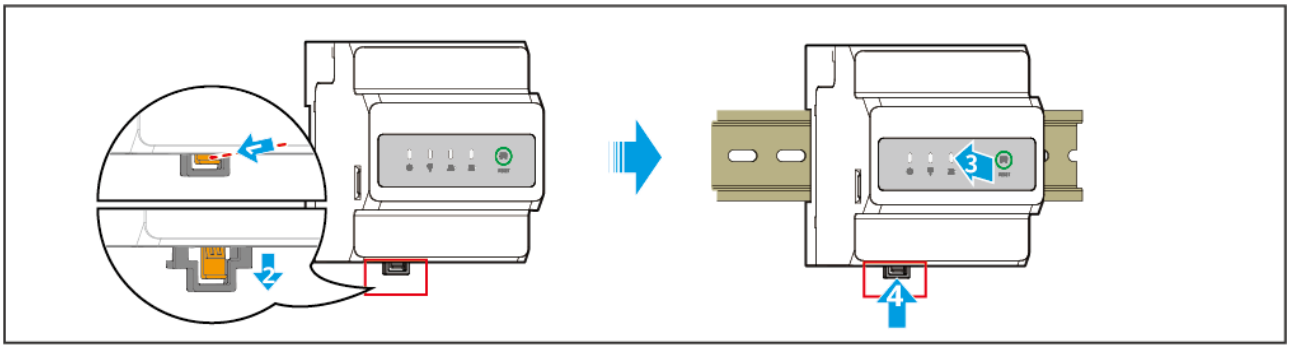
In areas with lightning risk, if the length of the electricity meter cable exceeds 10m and the cable is not routed using grounded metal conduits, it is recommended to install an external lightning protection device.

GM3000



GMK10INT0002

GM330&GMK330



GMK10INT0003

5 System Wiring

⚠DANGER

- The laying, routing, connection, etc. of cables must comply with local laws, regulations and standard requirements.
- All operations during the electrical connection process, and the specifications of the cables and components used must comply with local laws and regulations.
- Before performing electrical connection, please disconnect the DC Switch and AC output switch of the device to ensure the device is powered off. Live operation is strictly prohibited, otherwise risks such as electric shock may occur.
- Cables of the same type shall be bundled together, and arranged separately from cables of different types; mutual winding or cross arrangement is prohibited.
- If the cable is subjected to excessive tension, it may lead to poor connection. When wiring, reserve a certain length of the cable before connecting it to the inverter's wiring terminal.
- When crimping wiring terminals, ensure that the cable conductor is in full contact with the terminal. Do not crimp the cable insulation together with the terminal, otherwise it may cause the device to fail to operate, or after operation, due to unreliable connection, overheating may lead to damage to the inverter terminal block.
- Unused cable entry holes and ports (including communication ports) shall be reliably sealed using dedicated terminals or plugs from the box accessories. Otherwise, the following risks may arise:
  - Electric Shock Hazard: Open electrical ports may result in direct contact with live parts, causing electric shock accidents.
  - Protection Failure: Open ports allow dust, moisture or foreign objects to enter, which may lead to short circuits, fires or equipment failures.

ATTENTION

- When performing electrical connections, please wear personal protective equipment such as safety shoes, protective gloves, insulating gloves as required.
- Only professionals are allowed to perform operations related to electrical connections.
- The cable colors in the diagrams of this document are for reference only; the specific cable specifications must comply with local regulatory requirements.
- For parallel systems, please comply with the safety precautions in the user manuals corresponding to the relevant products in the system.

5.1 System Wiring Electrical Block Diagram

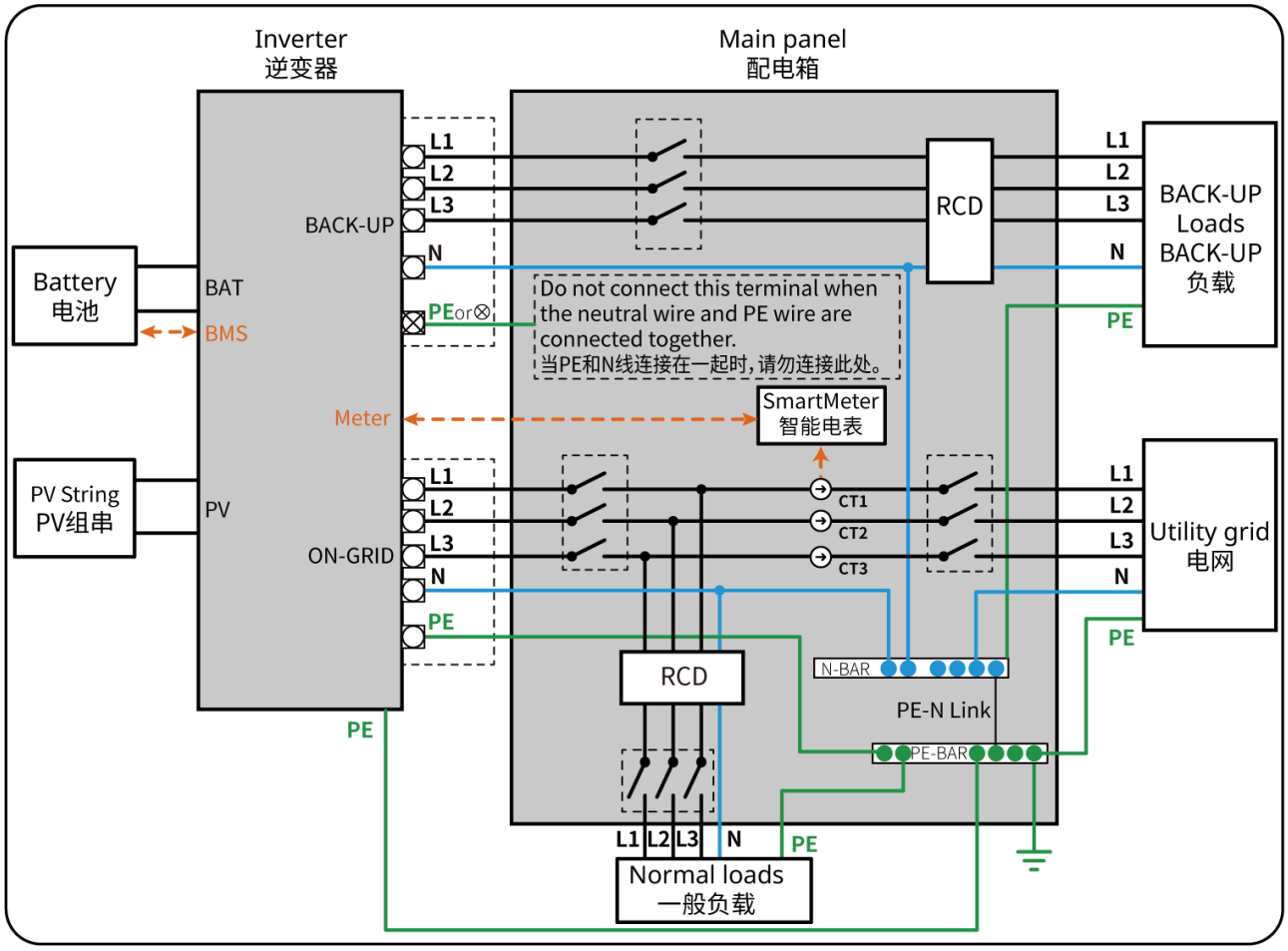
ATTENTION

- According to regulatory requirements in different regions, the wiring methods for the N line and PE line of the inverter's ON-GRID and BACK-UP ports are different; please refer to local regulatory requirements for specifics.
- 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 in the open state; when the inverter is in grid-tied operation mode, the built-in ON-GRID relay is in the closed state.
- After the inverter is powered on, the BACK-UP AC port is live. If maintenance is required for BACK-UP loads, please power off the inverter; otherwise, it may cause electric shock.

N and PE lines are connected together in the distribution box for wiring.

ATTENTION

- To maintain neutral integrity, the neutral wires on the grid-tied side and off-grid side must be connected together; otherwise, the off-grid function cannot operate normally.
- The following diagram is a schematic of the power grid system for regions such as Australia and New Zealand:

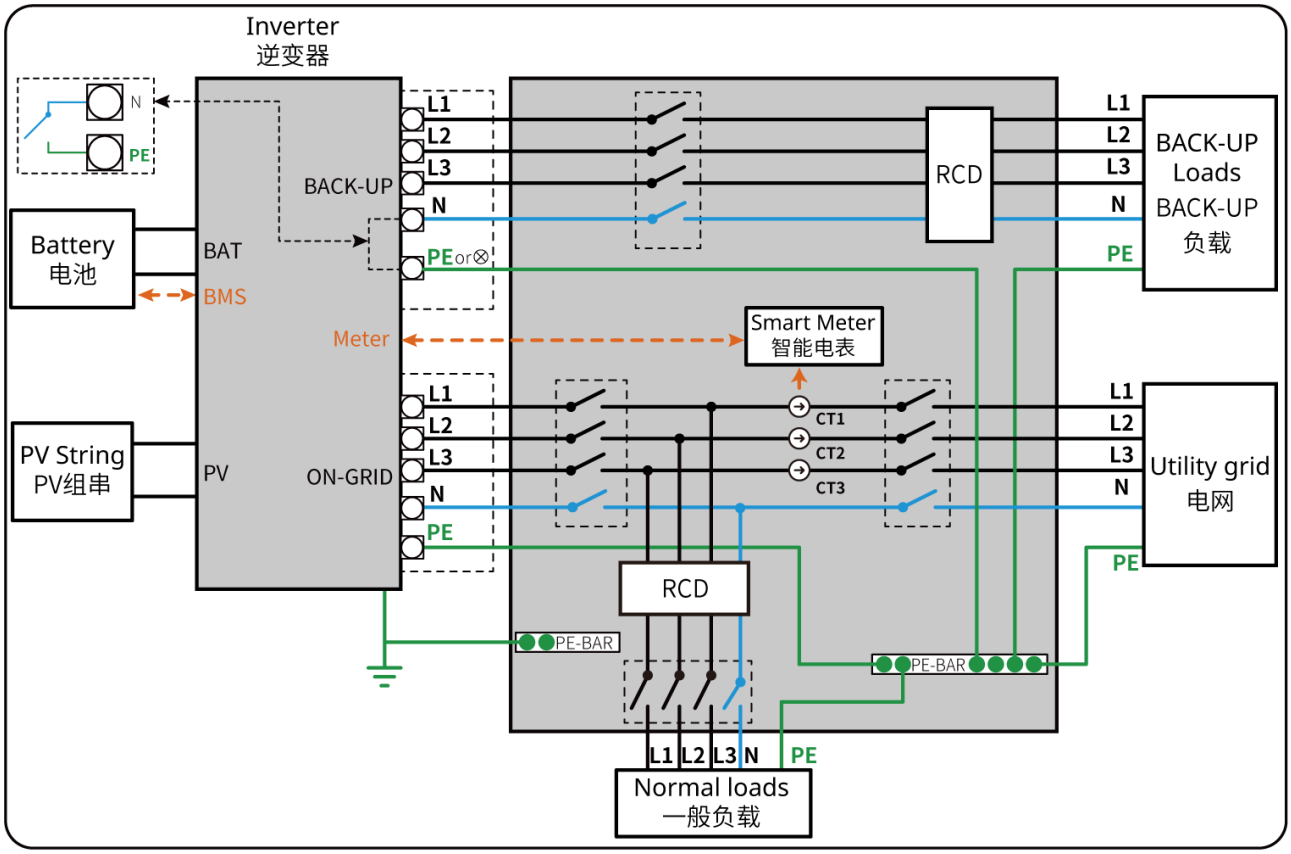


ET3010NET0015

NandPElines are wired separately in the distribution box

ATTENTION

- Please ensure that the Protection ground wire of the BACK-UP is connected correctly and tightened; otherwise, the BACK-UP function may be abnormal in case of a grid fault.
- For regions other than Australia, New Zealand and other areas, the following wiring methods apply:



ET3010NET0016

5.2 System Wiring Diagram

When all loads in the PV system cannot consume the electricity generated by the system, the surplus electricity will be fed into the grid. At this time, you can pair with a smart meter or CT monitoring system for Energy Generation monitoring, to control the Energy Generation fed into the grid.

- Connecting a smart meter enables output power limitation and load monitoring functions.
- After connecting the smart meter, please enable the "Grid-Tied Power Limitation" function via the App.

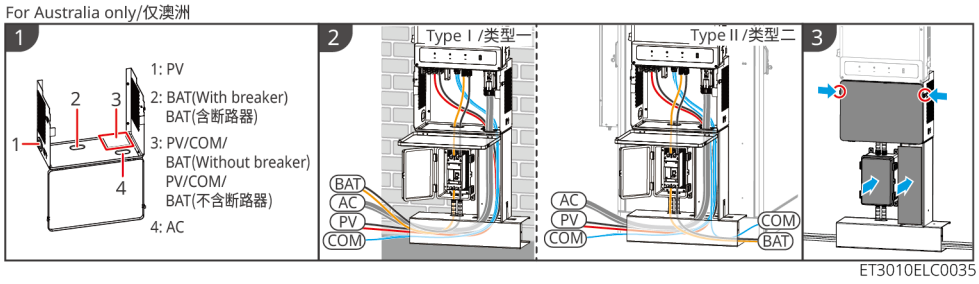
The system wiring detailed diagram only uses some models of equipment for wiring demonstration; please refer to the corresponding wiring guidance chapter for wiring based on the actual equipment used.

ATTENTION

- In coupling scenarios, if grid-tied inverter power generation monitoring and load monitoring functions are required, a dual-meter network is needed.
  - Smart Meter1is used to monitor the system's grid-tied power.
  - Smart Meter2is used to monitor the power generation status of the grid-tied inverter.
  - By integrating the data of meter1and meter2, the monitoring platform can achieve real-time monitoring of load power consumption.
- If the grid-tied inverter needs to perform output power limitation, connect a separate meter orCTand other devices.

Dual-Meter Matching Scenario	
Smart Meter1(Grid Side)	Smart Meter2(Grid-Tied Inverter AC Side)
GM3000	GM3000
GM3000	GM330
GM3000	GMK330
GM330	GM330
GM330	GM3000
GM330	GMK330
GMK330	GMK330
GMK330	GM3000
GMK330	GM330

Wiring Diagram with Protection Cover (Australia Only)



5.2.1 Single System Wiring Diagram

General Scenarios

Scenarios with GM3000

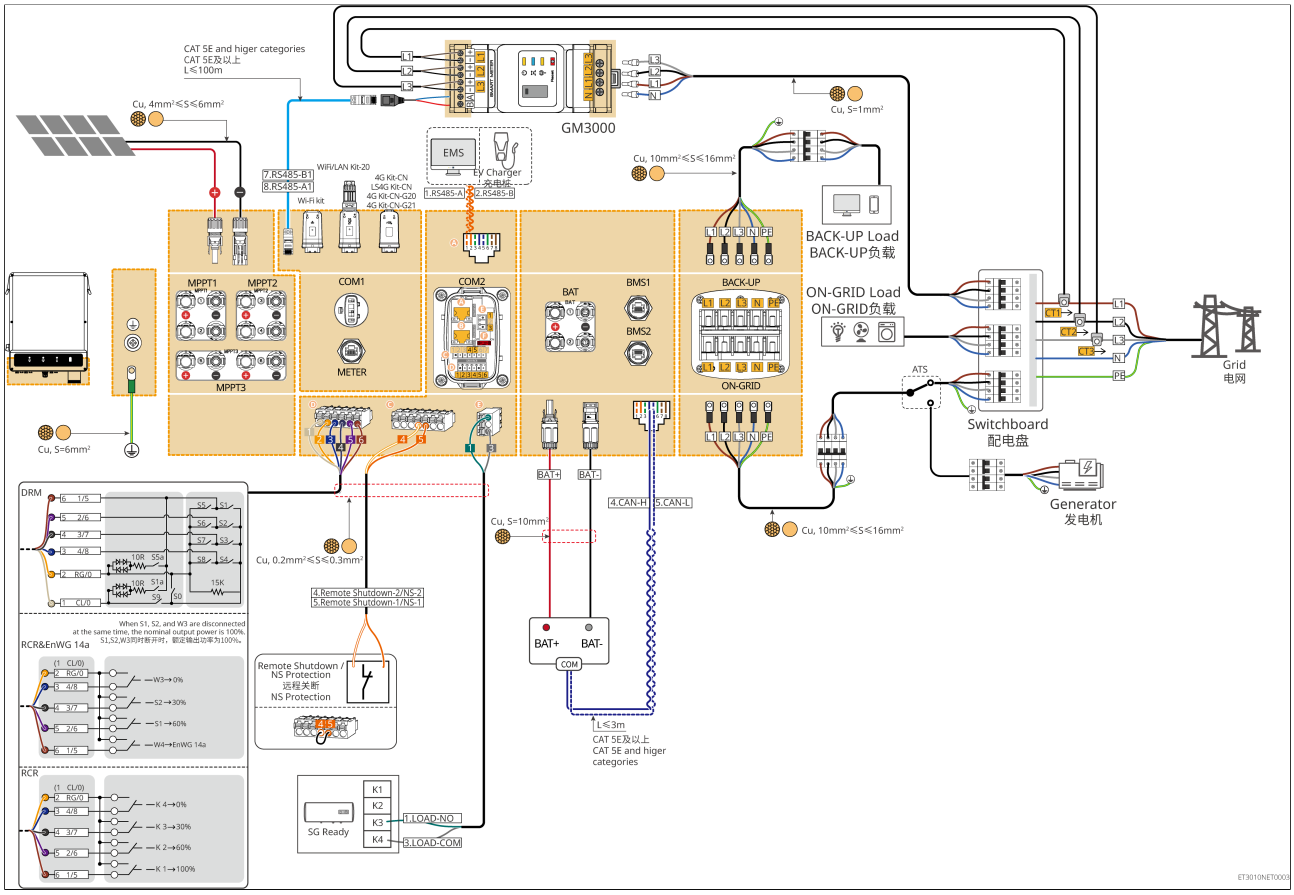


Figure14 Scenarios with GM3000

Scenarios with GM330

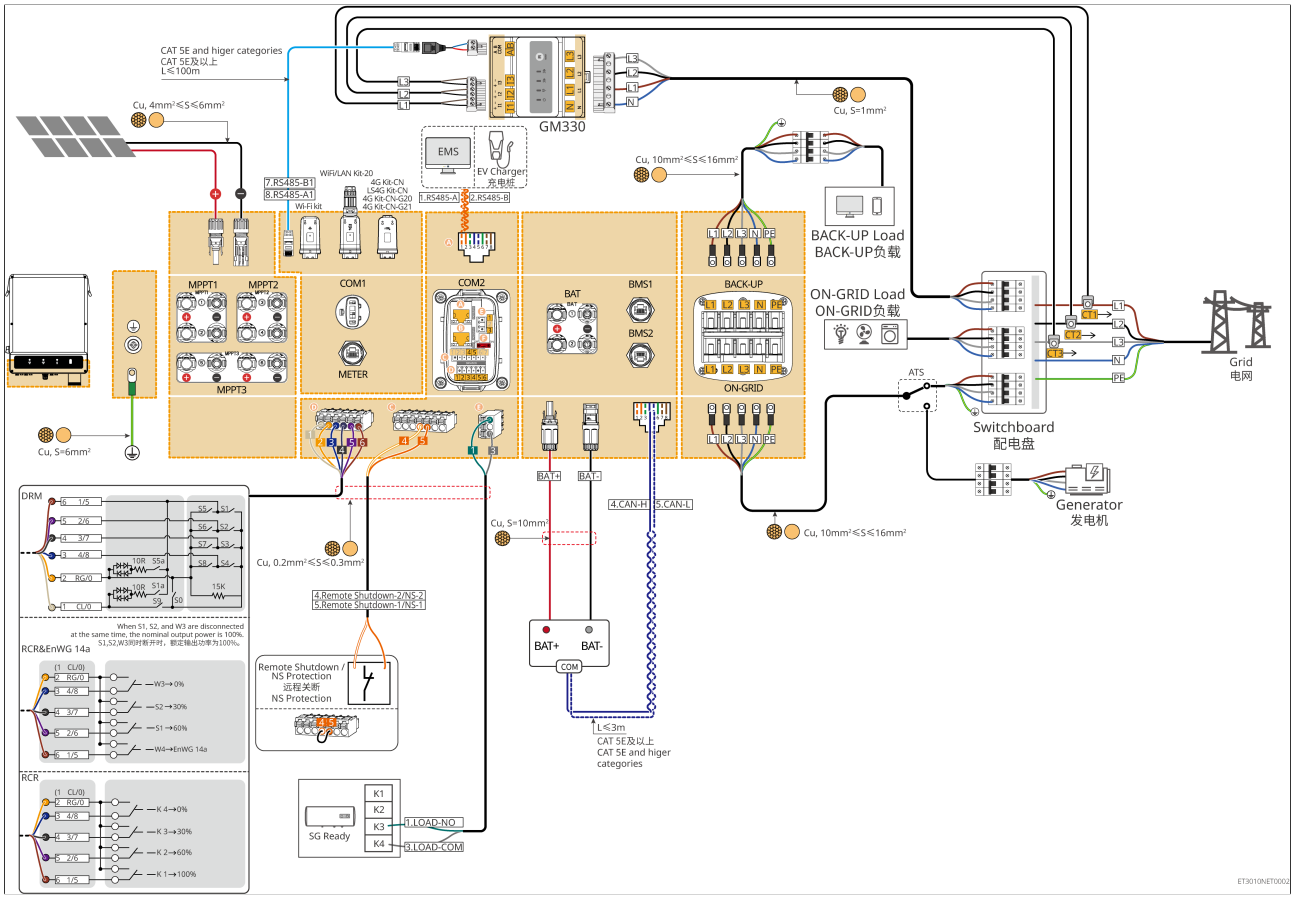


Figure15 Scenarios with GM330

Scenarios with GMK330

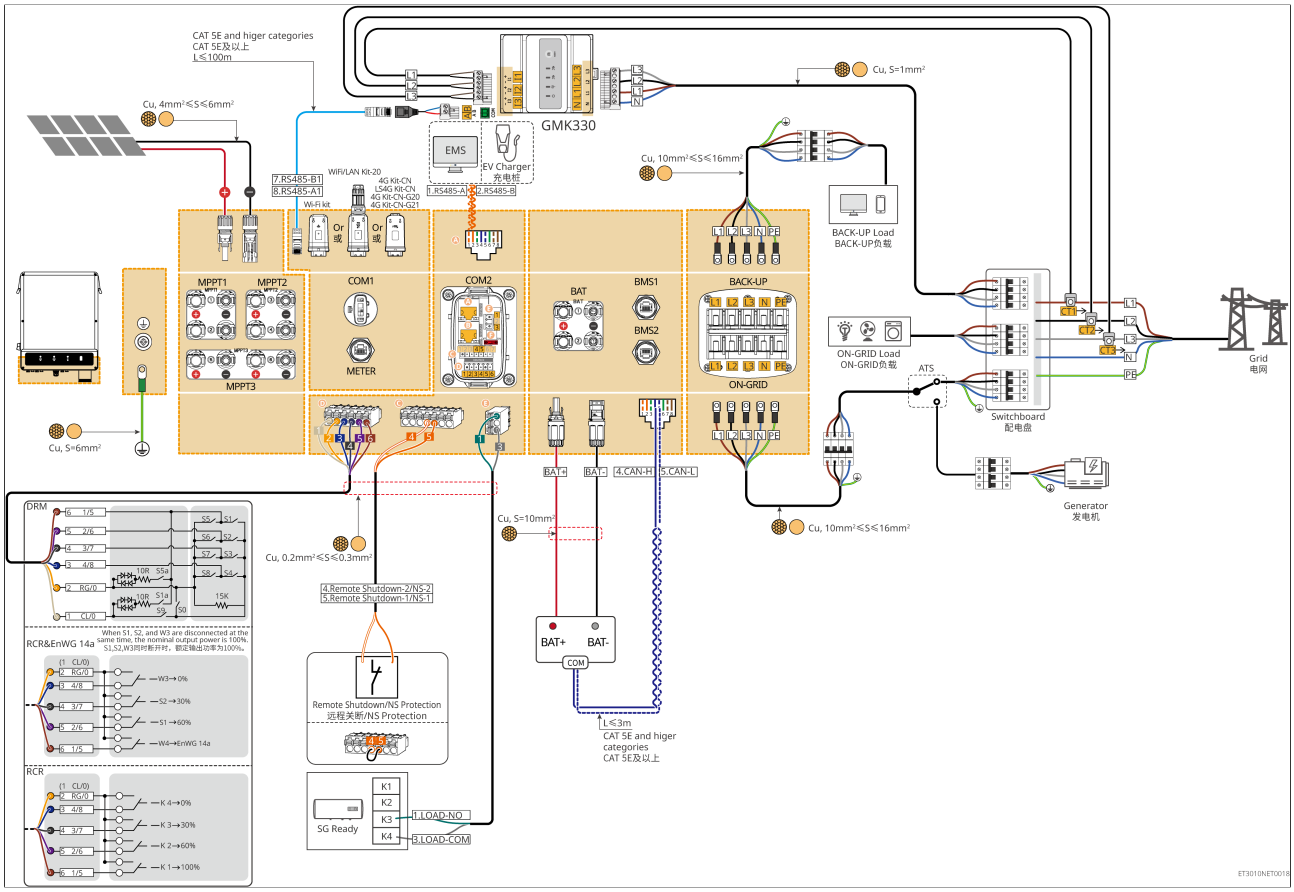


Figure16 Scenarios with GMK330

Coupling Scenario Load Monitoring and Grid-Connected Inverter Power Generation Monitoring Networking Scheme

For coupling scenarios, if the grid-connected inverter requires output power limitation, please connect devices such as electricity meters or CTs separately.
GM330Smart Meter+GM330Smart Meter

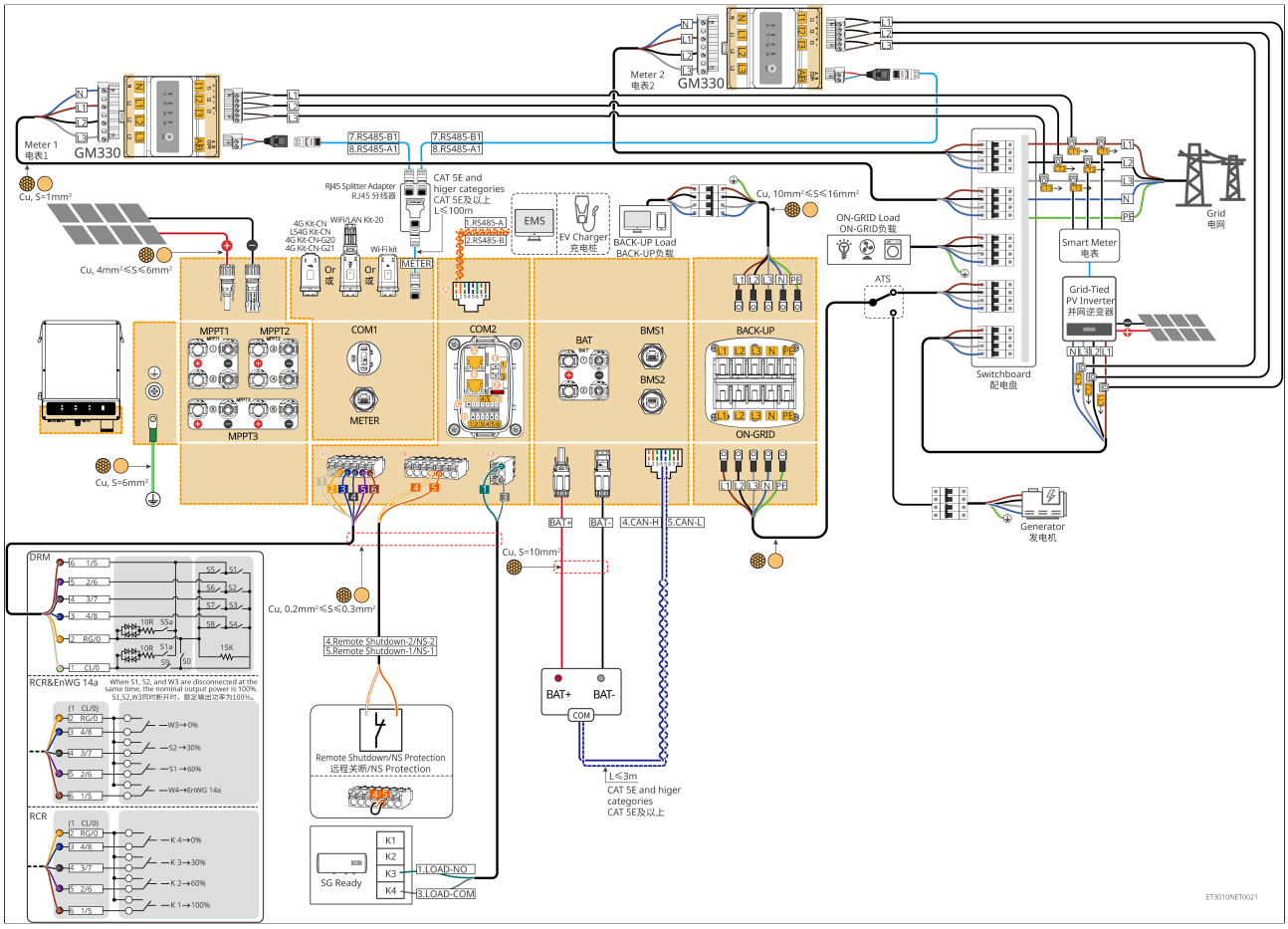


Figure17 GM330Smart Meter+GM330Smart Meter

GMK330Smart Meter+GMK330Smart Meter

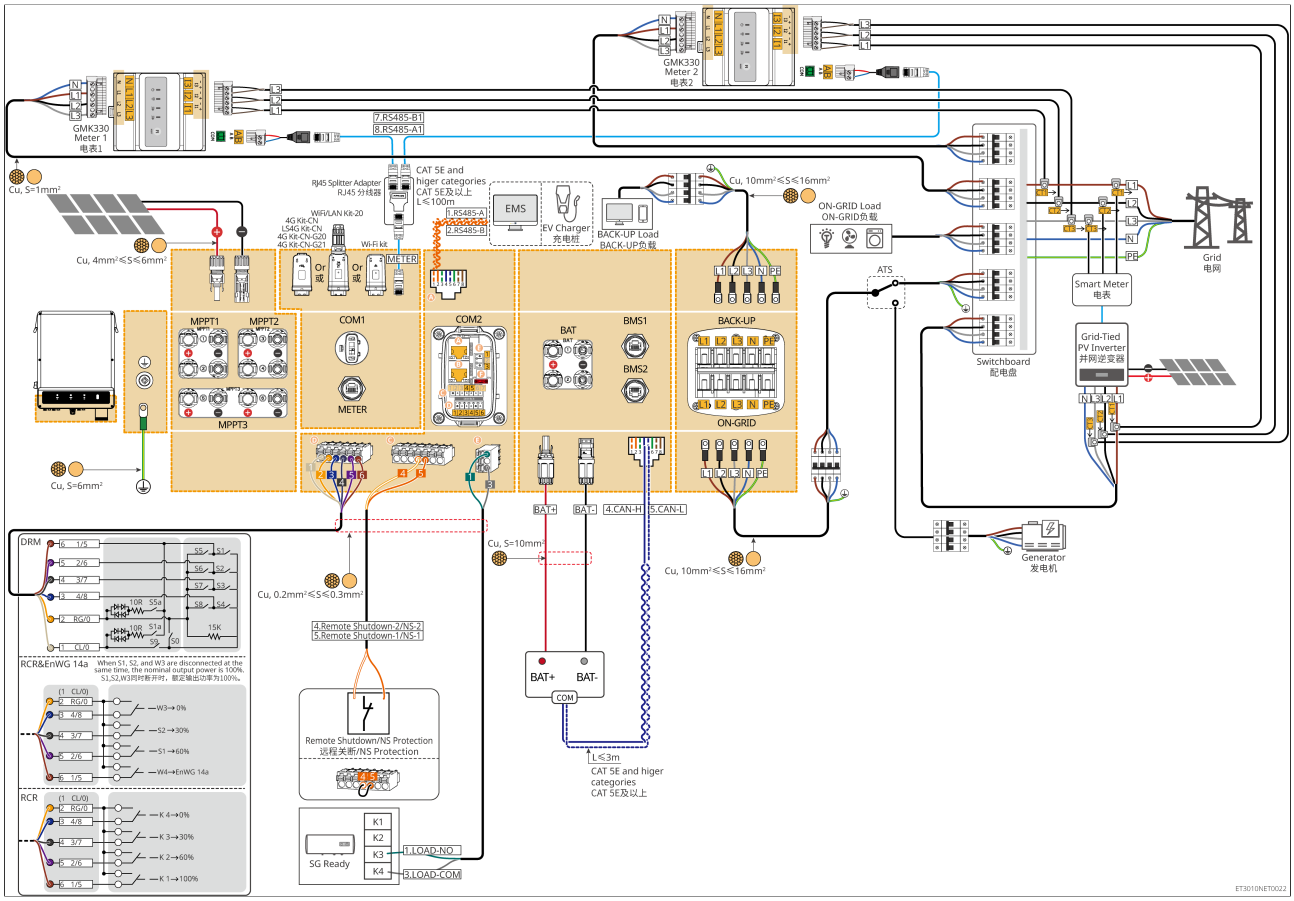


Figure18 GMK330Smart Meter+GMK330Smart Meter

Dynamic Power Limitnetworking scheme

with EzManager3000+GM330 or GMK330networking

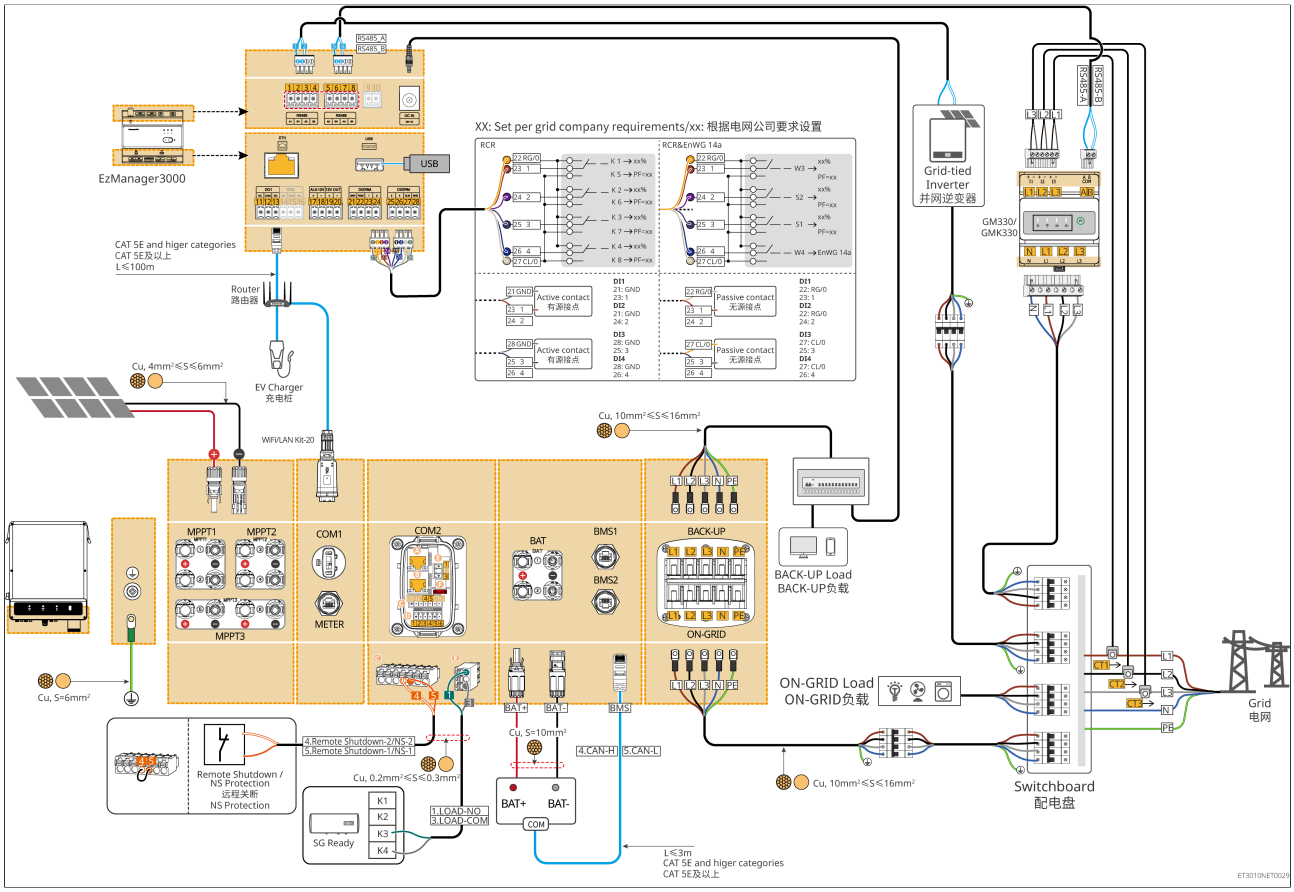


Figure19 with EzManager3000

5.2.2 Parallel System Wiring Diagram

- In parallel operation scenarios, the inverter connected toEzlink3000intelligent communication stick and the electricity meter is the master inverter, while others are slave inverters. Do not connect the intelligent communication stick to slave inverters in the system.
- Using EzManager3000 Parallel Scenario:
  - Each inverter must use the WiFi/LAN Kit-20 to connect to the router, which is then connected to EzManager3000.
  - If you need to connectRCRdevices, connect them to EzManager3000; Remote Shutdown devices,NS Protection、SG Readyheat pumps must be connected to each inverter.
- The following diagrams focus on parallel-related wiring; for other port wiring requirements, refer to the standalone system.

withGM3000scenario

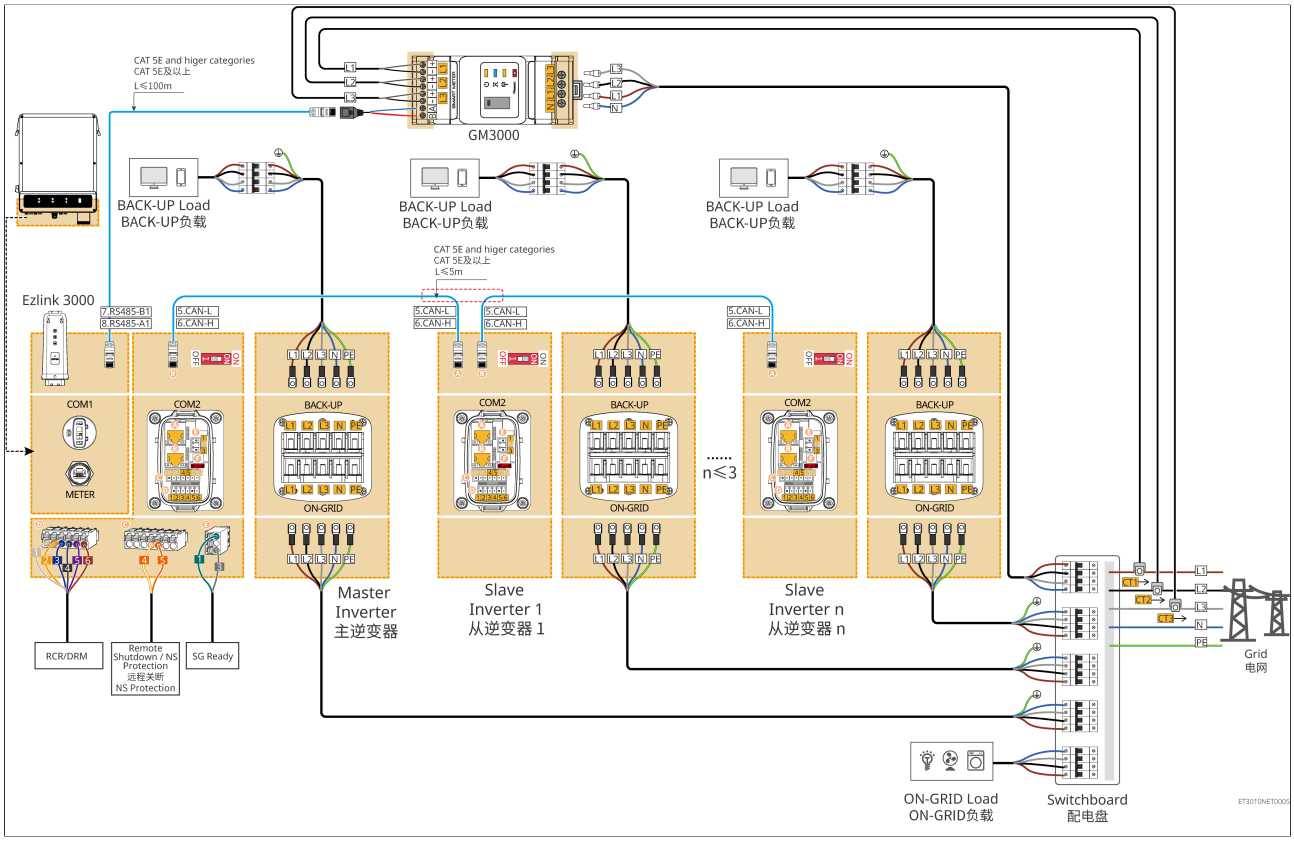


Figure20 parallel operation withGM3000

withGM330scenario

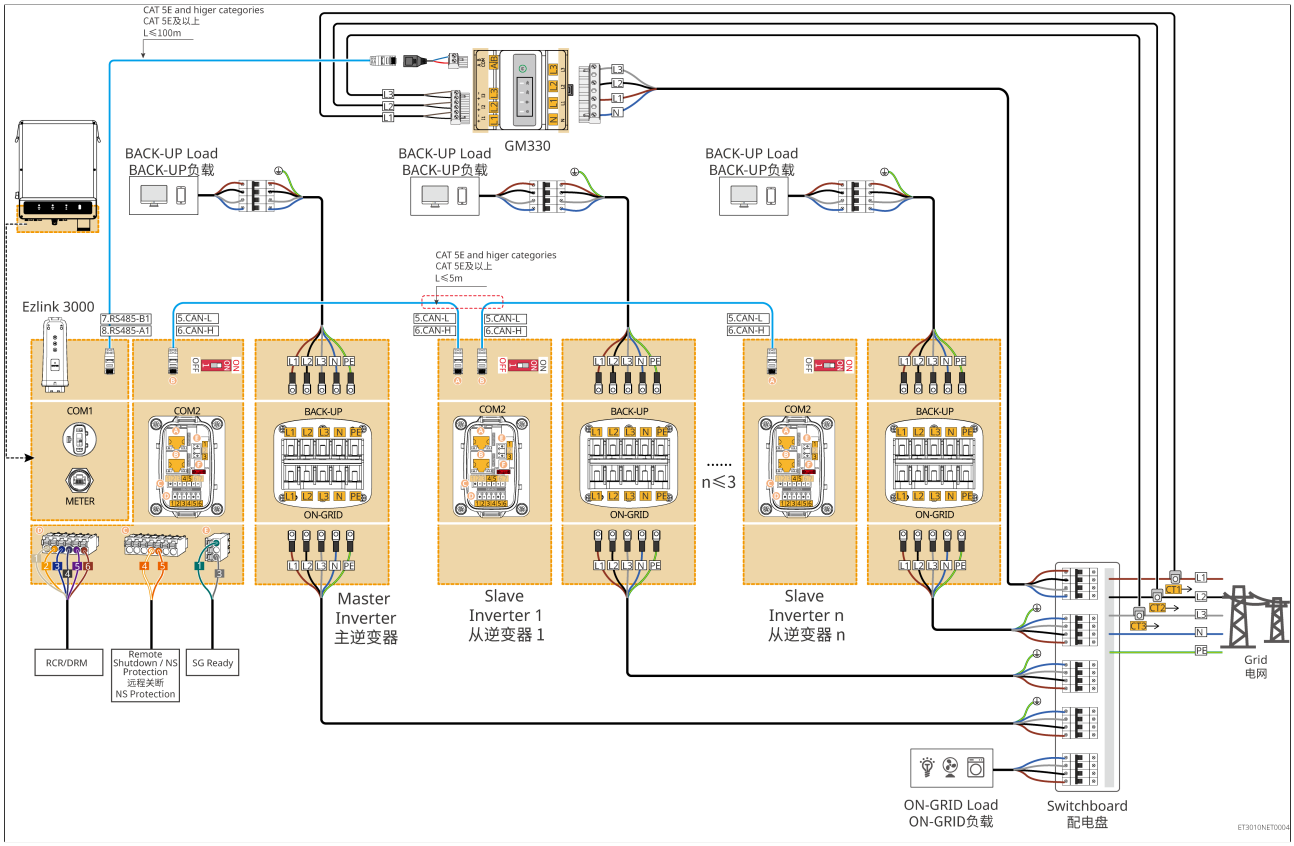


Figure21 parallel operation withGM330

withGMK330scenario

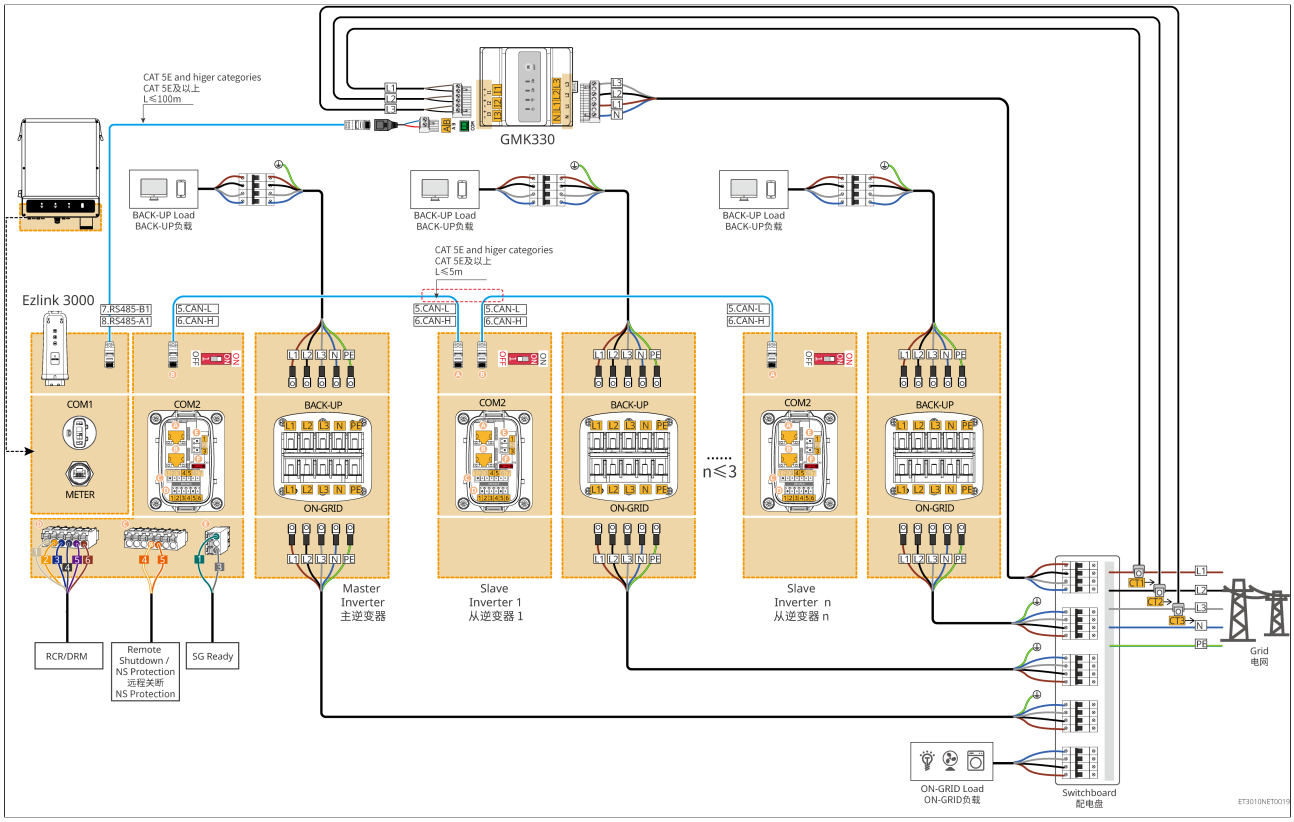


Figure22 parallel operation withGMK330

Coupling Scenario Load Monitoring and Grid-Connected Inverter Power Generation Monitoring Networking Scheme

GMK330Smart Meter+GMK330Smart Meter

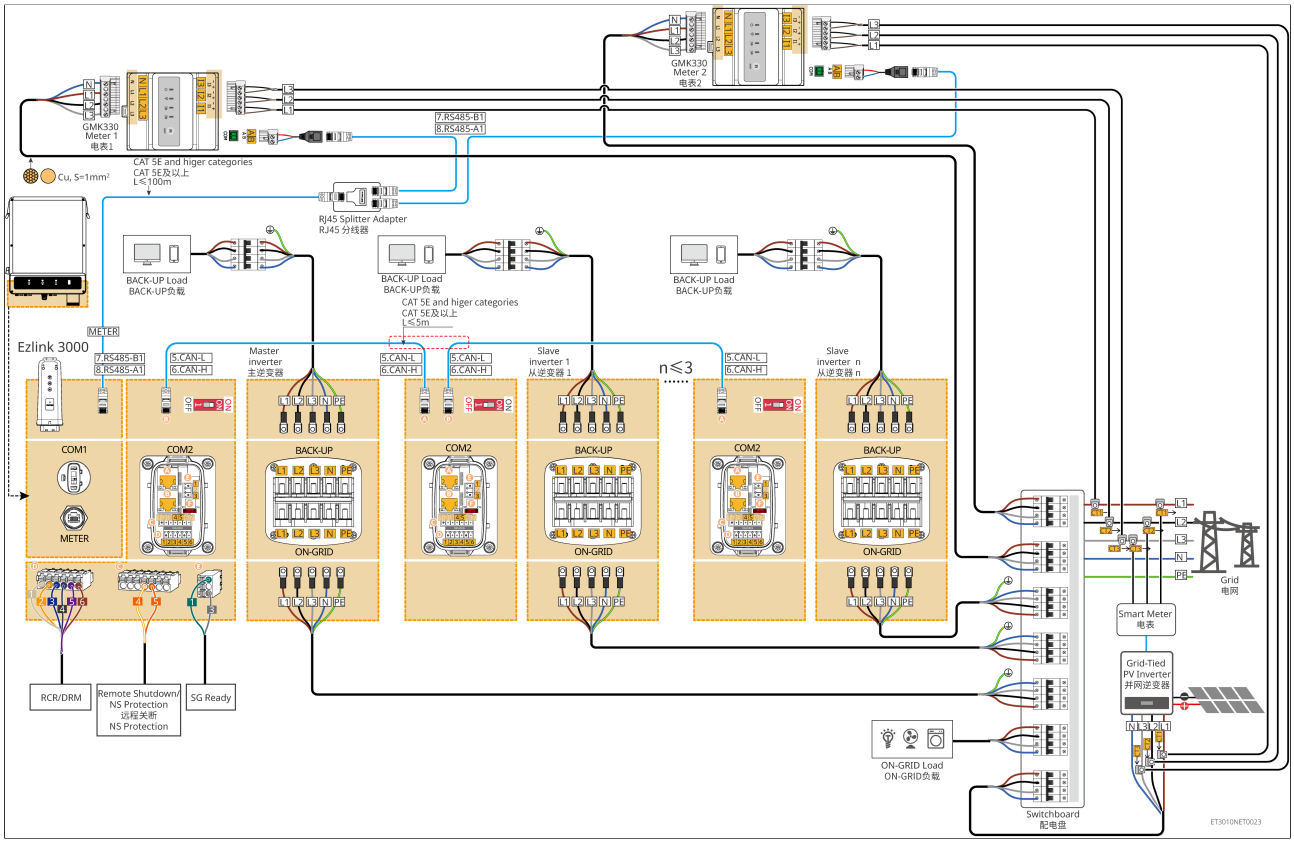


Figure23 parallel operation with GMK330Smart Meter+GMK330Smart Meter

Dynamic Power Limitnetworking scheme

with EzManager3000+GM330 or GMK330networking

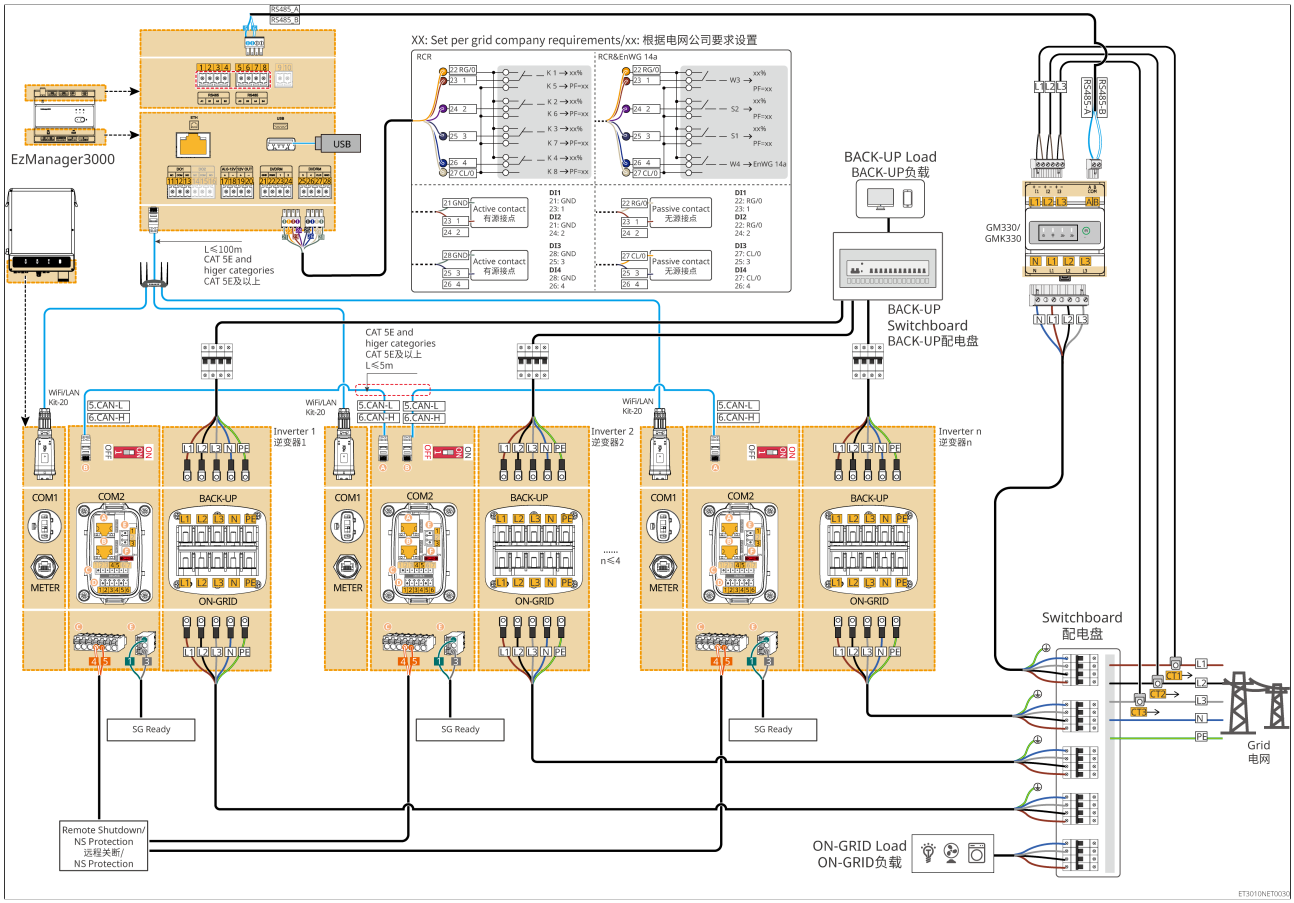


Figure24 parallel operation with EzManager3000

5.3 Material Preparation

⚠WARNING

- Do not connect loads between the inverter and the AC Switch directly connected to the inverter.
- Each inverter shall be equipped with one AC output circuit breaker; multiple inverters shall not be connected to one AC circuit breaker simultaneously.
- To ensure the inverter can safely disconnect from the grid in case of abnormal conditions, install an AC circuit breaker on the AC side of the inverter. Select the appropriate AC circuit breaker in accordance with local regulations.
- After the inverter is powered on, the BACK-UP AC port is live. If maintenance is required for BACK-UP loads, please power off the inverter; otherwise, it may cause electric shock.
- For cables used in the same system, it is recommended that the conductor material, cross-sectional area, length, etc., of the cables are consistent.
  - BACK-UP AC Line of Each Inverter
  - ON-GRID AC Line of Each Inverter
  - Power Cable Between Inverter and Battery
  - Power Cable Between Batteries
- The system only supports connecting the generator via ATS switch to achieve switching between grid and generator power supply.ATS switch is connected to the grid by default

5.3.1 Switch Preparation

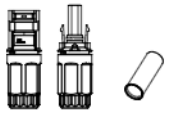
Serial Number	Circuit breaker	Recommended Specifications	Acquisition Method	Remarks
1	ON-GRIDCircuit breaker	BACK-UPWhen the port is unloaded, the Rated Current requirements are as follows: • GW15K-ET: Rated Current≥32A; Nominal Voltage≥400V • GW20K-ET: Rated Current≥40A; Nominal Voltage≥400V • GW25K-ET: Rated Current≥50A; Nominal Voltage≥400V • GW29.9K-ET、GW30K-ET: Rated Current≥63A; Nominal Voltage≥400V • GW12KL-ET: Rated Current≥50A; Nominal Voltage≥230V • GW18KL-ET: Rated Current≥63A; Nominal Voltage≥230V	Self-provided	If the inverter BACK-UPport is not used, select the appropriate circuit breaker based on theACMax. Current to Grid
		BACK-UPWhen the port is loaded, the Rated Current requirements are as follows: • GW15K-ET: Rated Current≥50A; Nominal Voltage≥400V • GW20K-ET、GW25K-ET、GW29.9K-ET、GW30K-ET: Rated Current≥63A; Nominal Voltage≥400V • GW12KL-ET、GW18KL-ET: Rated Current≥63A; Nominal Voltage≥230V		

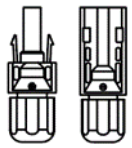
Serial Number	Circuit breaker	Recommended Specifications	Acquisition Method	Remarks
2	BACK-UPCircuit breaker	Nominal Voltage≥400V, the Rated Current requirements are as follows: • GW15K-ET: Rated Current≥32A; Nominal Voltage≥400V • GW20K-ET: Rated Current≥40A; Nominal Voltage≥400V • GW25K-ET: Rated Current≥50A; Nominal Voltage≥400V • GW29.9K-ET、GW30K-ET: Rated Current≥63A; Nominal Voltage≥400V • GW12KL-ET: Rated Current≥40A; Nominal Voltage≥230V • GW18KL-ET: Rated Current≥63A; Nominal Voltage≥230V	Self-provided	-

Serial Number	Circuit breaker	Recommended Specifications	Acquisition Method	Remarks
3	ATS Switch	For the same model ATS switch and ON-GRID circuit breaker have the same specifications. Specification requirements (recommended): • GW15K-ET: Rated Current≥32A; • GW20K-ET: Rated Current≥40A; • GW25K-ET: Rated Current≥50A; • GW29.9K-ET、GW30K-ET: Rated Current≥63A; • GW12KL-ET: Rated Current≥40A; • GW18KL-ET: Rated Current≥63A;	Self-provided	When selecting, you can also choose a circuit breaker that meets local installation regulations based on the actual operating current.
4	Battery Switch	Select according to local laws and regulations • 2PDC Switch • Rated Current≥63A • Nominal Voltage≥1000V	Self-provided	-

Serial Number	Circuit breaker	Recommended Specifications	Acquisition Method	Remarks
5	Leakage Current Protector	Select according to local laws and regulations • Type Atype • ON-GRIDside*1：300mA • BACK-UPside:30mA	Self-provided	-
6	Meter Switch	• Nominal Voltage:380V/400V • Rated Current:0.5A	Self-provided	-
*1: Built-in general current-sensing residual current monitoring unit of the inverter. Once leakage current exceeding the limit is detected, the inverter will immediately disconnect from the utility grid. However, if regulations mandate the installation of an external residual current Protection (RCD), it is recommended to select a Type A RCD with an operating residual current of not less than 300 mA (for Apparent Power less than 30 kVA, 300 mA is recommended; for Apparent Power greater than 30 kVA, select according to 10 mA/kVA). You may also select an RCD with a residual operating current that meets the requirements according to local regulations. For example, in Chile, local regulations require the installation of an RCD with a residual operating current not exceeding 30 mA between inverters of 5 kVA and below and the grid. However, it should be noted that due to PV panels, RCDs with smaller residual operating currents are more prone to false tripping in harsh environments such as rainy weather.				

5.3.2 Cable Preparation

Serial Number	Cable	Recommended Specifications	Acquisition Method
1	Inverter Protection Ground Wire	• Single-core outdoor copper cable • Conductor cross-sectional area:S=6mm²	Self-provided
2	Battery Protection Ground Wire	• Single-core outdoor copper cable • Conductor cross-sectional area:6mm²	Self-provided
3	PVDC cable	• industry-standard outdoor photovoltaic cables • Conductor cross-sectional area:4mm²-6mm² • Cable outer diameter:5.9mm-8.8mm	Self-provided
4	Battery DC cable	Terminal typeI  • Single-core outdoor copper cable • Conductor cross-sectional area:10mm² • Cable outer diameter:6.0mm-9.5mm	Self-provided or purchased from distributor

Serial Number	Cable	Recommended Specifications	Acquisition Method
		Terminal type II  • Single-core outdoor copper cable • Conductor cross-sectional area:10mm² • Cable outer diameter:5mm-8.5mm	
5	AC cable	• Multi-core outdoor copper core cable • Conductor cross-sectional area:10mm²-16mm² • Cable outer diameter:21mm-26mm	Self-provided
6	Smart meter power cable	Outdoor copper core cable Conductor cross-sectional area:1mm²	Self-provided
7	BatteryBMScommunication cable	Custom communication cable, default length is3m If self-provided, recommended:CAT 5Estandard network cable of specification and above, andRJ45crystal head	Distributed with inverter
8	Smart MeterRS485communication cable	Standard network cable:CAT 5Estandard network cable of specification and above, andRJ45crystal head	RJ45-2PINTerminal adapter cable and standard network cable: distributed with the box

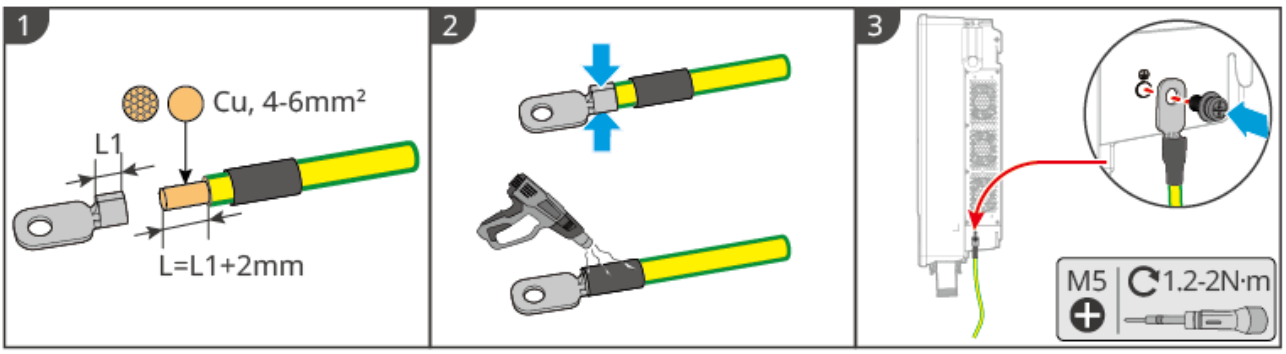
Serial Number	Cable	Recommended Specifications	Acquisition Method
9	Battery parallel cluster communication cable	CAT 5Estandard network cable of specification and above, andRJ45crystal head	Self-provided
10	Load controlDOcommunication cable	• Shielded cable meeting local standards • Conductor cross-sectional area:0.2mm²-0.3mm² • Cable outer diameter:5mm-8mm	Self-provided
11	Remote Shutdown communication line		Self-provided
12	RCR/DREDsignal line		Self-provided
13	inverter parallel communication line	CAT 5Estandard network cable of specification and above, andRJ45crystal head	Self-provided
14	EMScommunication cable/charging pile communication line	CAT 5Estandard network cable of specification and above, andRJ45crystal head	Self-provided
15	12Vexternal power supply	• Outdoor copper core cable • Conductor cross-sectional area:0.2mm²-0.3mm² • Cable outer diameter:5mm-8mm	Self-provided

5.4 Connect Protection Ground

⚠WARNING

- The Protection Ground of the chassis enclosure cannot replace the Protection Ground of the AC output port. When wiring, ensure reliable connection of the Protection Grounds at both locations.
- To enhance the corrosion resistance of the terminal, it is recommended to apply silicone or paint on the exterior of the grounding terminal for protection after the Protection Ground connection and installation are completed.
- When installing the equipment, the Protection Ground must be installed first; when dismantling the equipment, the Protection Ground must be removed last.

5.4.1 Inverter Grounding



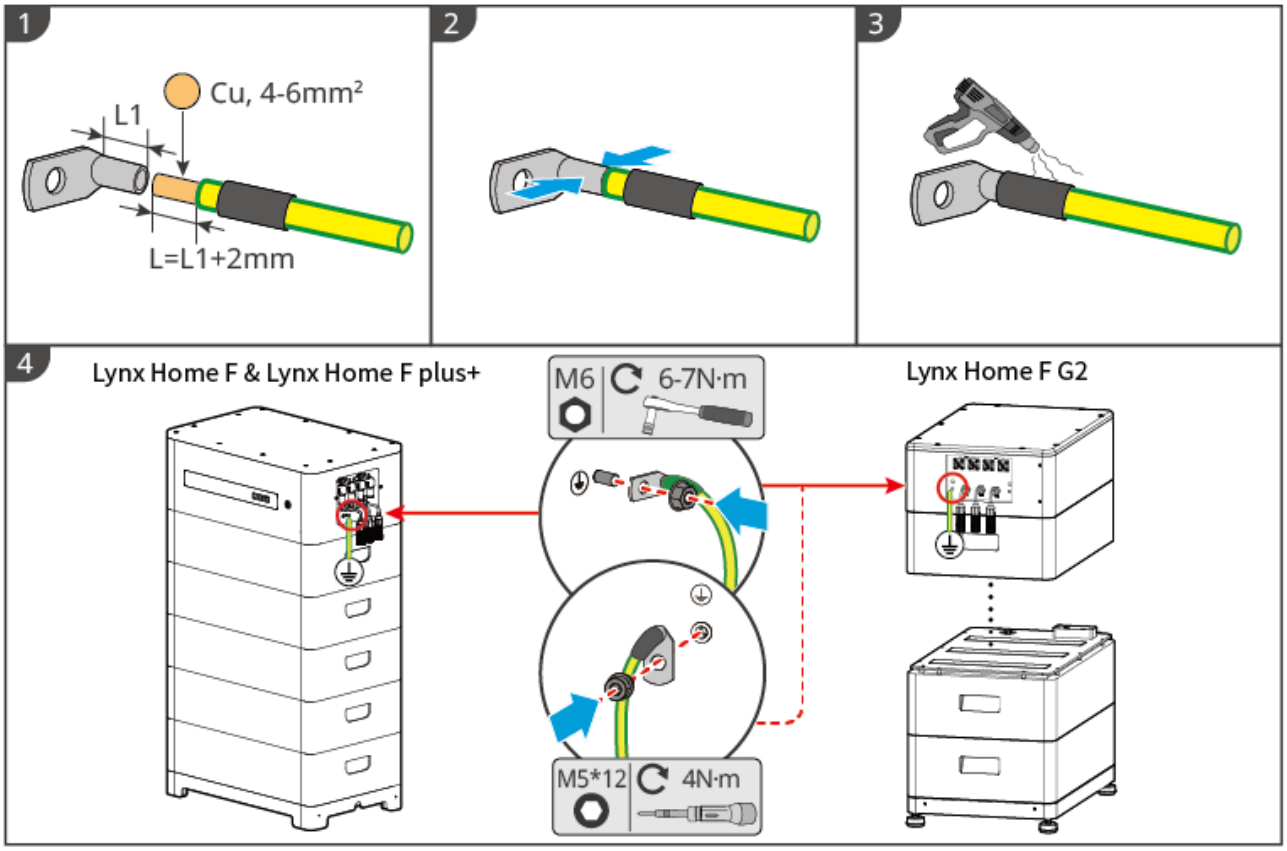
ET3010ELC0001

5.4.2 Battery System Grounding

ATTENTION

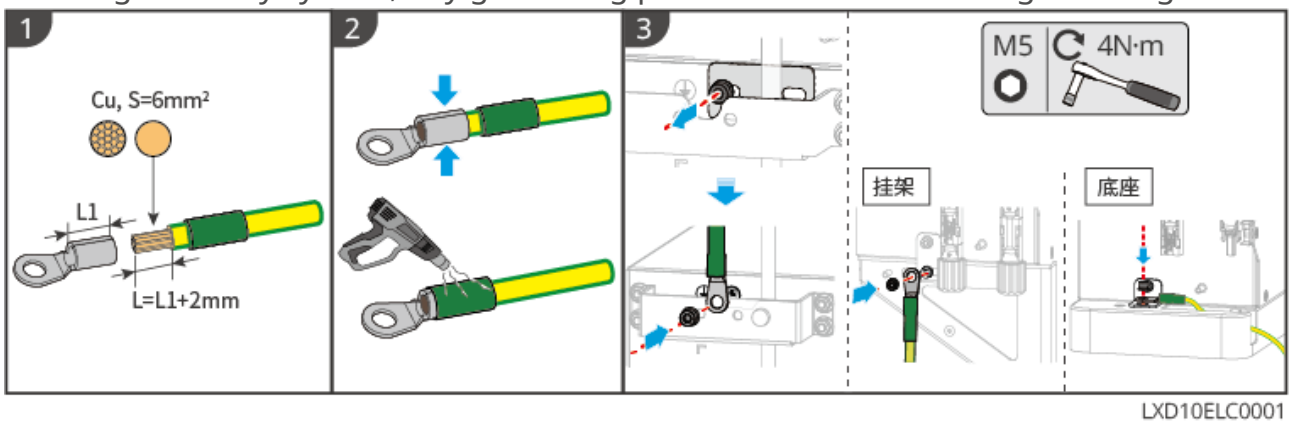
The pull-out force after crimping shall be greater than400N。

Lynx Home Fseries

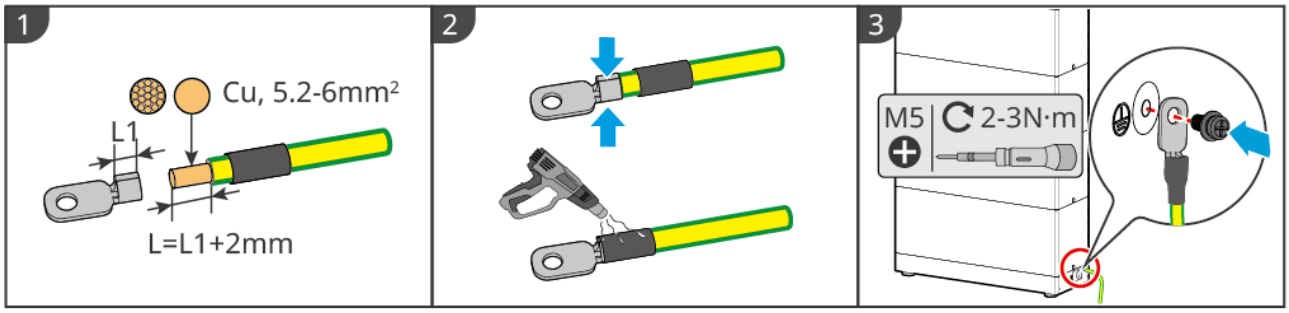


Lynx Home D

In a single battery system, any grounding point can be selected for grounding.



Lynx D G2



BAT20ELC0003

5.5 Connect PV Cables

⚠DANGER

- Do not connect the same PV string to multiple inverters, otherwise it may cause inverter damage
- Before connecting the PV string to the inverter, confirm the following information; otherwise, it may cause permanent damage to the inverter, and in severe cases, it may cause a fire leading to personal injury and property loss.
  1. Please ensure that the Max. MPPT Short Circuit Current and Max. Input Voltage of each MPPT channel are within the allowable range of the inverter.
  2. Please ensure that the positive pole of the PV string is connected to PV+ of the inverter, and the negative pole of the PV string is connected to PV- of the inverter.

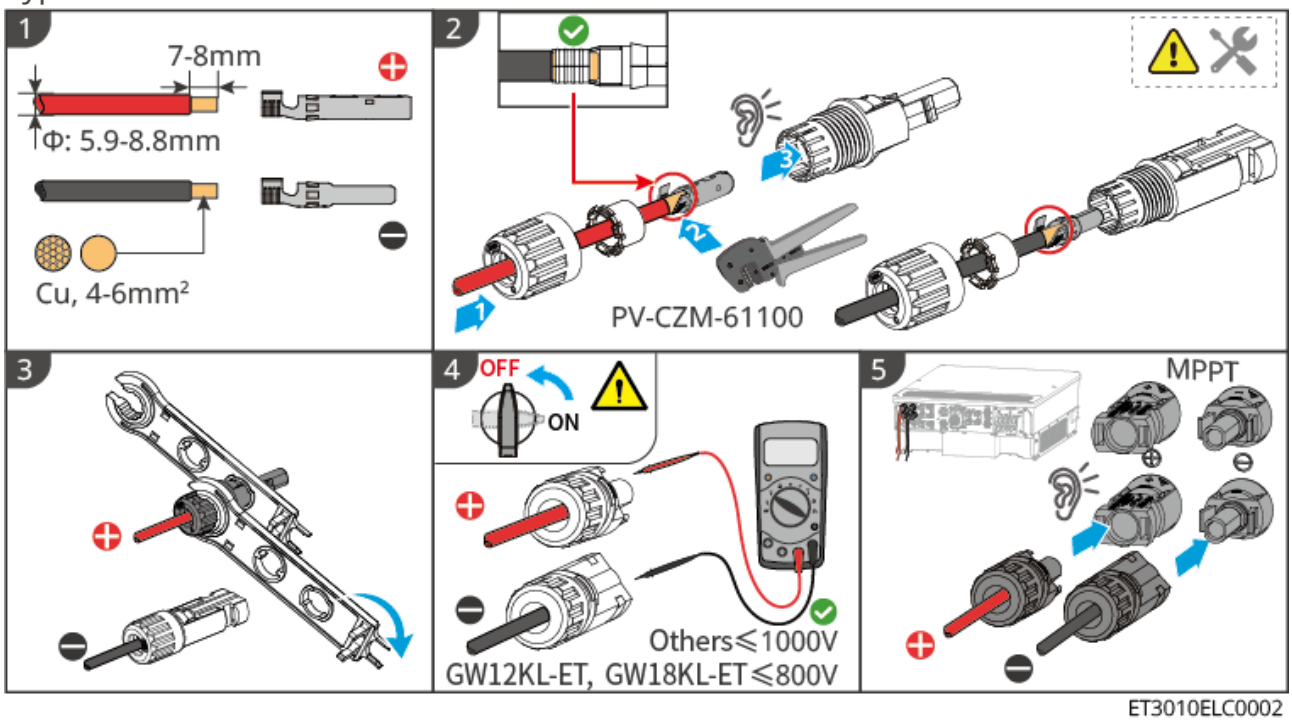
⚠WARNING

- The PV string output does not support grounding. Before connecting the PV string to the inverter, please ensure that the minimum insulation resistance to ground of the PV string meets the minimum insulation impedance requirement (R = Max. Input Voltage / 30mA).
- After DC cable connection is completed, please ensure that the cables are tightly connected and not loose.
- Use a multimeter to measure the positive and negative poles of the DC cables, ensure that the polarity is correct (no reverse connection), and the voltage is within the allowable range

ATTENTION

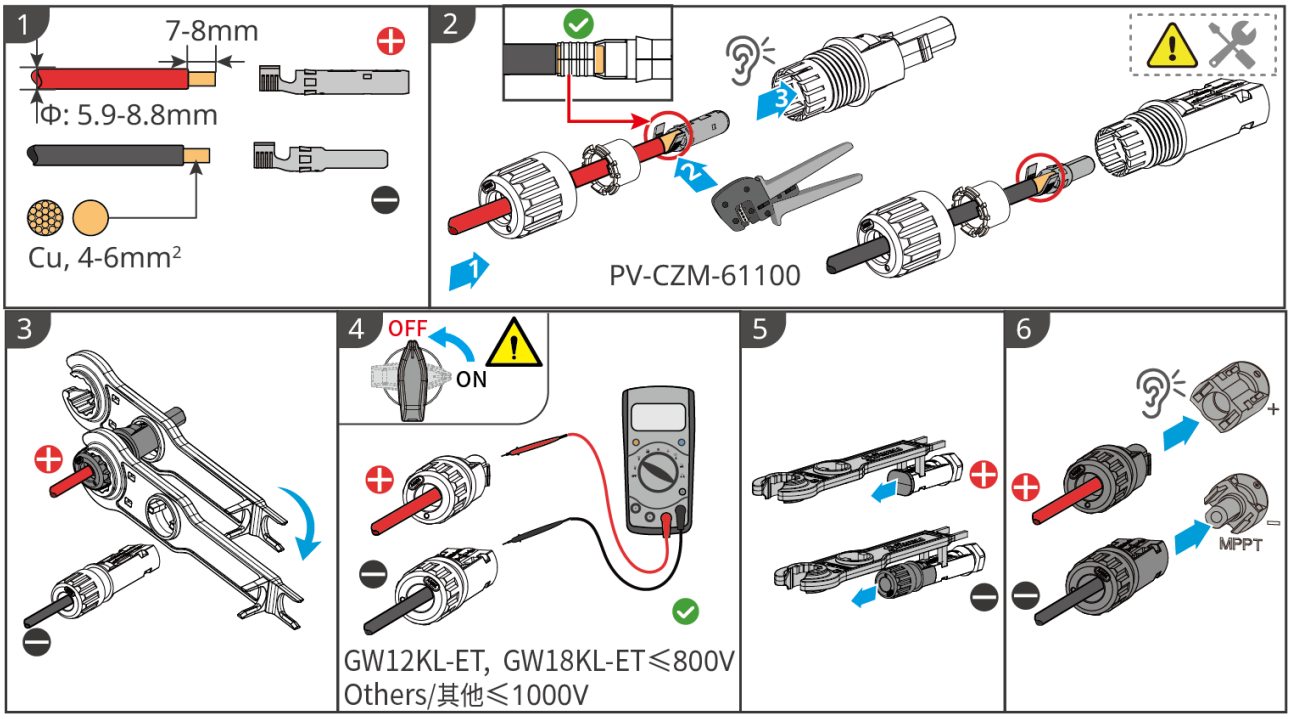
The two PV strings in each MPPT channel must use the same model, same number of panels, same tilt angle and azimuth angle to ensure maximum efficiency.

Type 1:



ET3010ELC0002

Type 2:



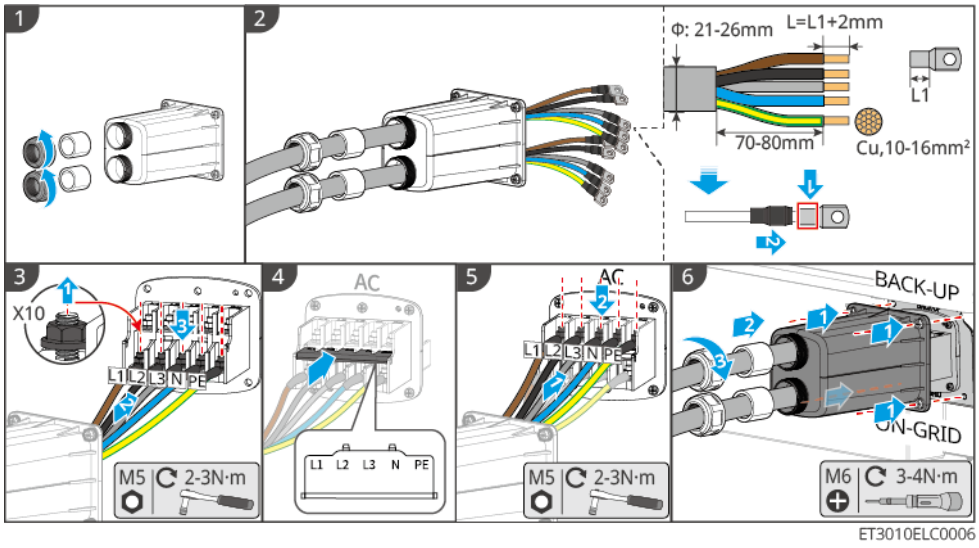
ET3010ELC0041

5.6 Connect AC Cables

WARNING

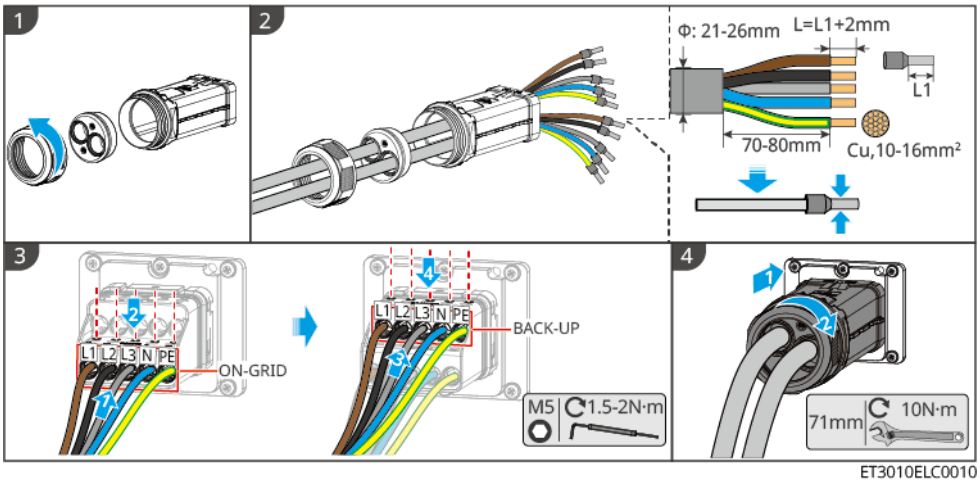
- The inverter integrates a Residual Current Monitoring unit (RCMU), preventing residual current from exceeding the specified value. When the inverter detects a leakage current greater than the allowable value, it will quickly disconnect from the grid or generator.
- Each inverter shall be equipped with one AC output circuit breaker; multiple inverters shall not be connected to one AC circuit breaker simultaneously.
- To ensure the inverter can safely disconnect from the grid in case of abnormal conditions, install an AC circuit breaker on the AC side of the inverter. Select the appropriate AC circuit breaker in accordance with local regulations.
- After the inverter is powered on,BACK-UPAC port is live. If maintenance is required forBACK-UPloads, please power off the inverter; otherwise, electric shock may occur.
- When wiring, the AC cables must fully match the AC terminals'"L1"、"L2"、"L3"、"N"、"PE"ports. If the cables are connected incorrectly, it will cause equipment damage.
- Please ensure the wire cores are fully inserted into the terminal wiring holes and have no exposed parts.
- Please ensure the insulating plates at the AC terminals are tightened and not loose.
- Ensure the cables are connected tightly; otherwise, the terminals may overheat during equipment operation, leading to equipment damage.
- According to local regulations, anAtypeRCDcan be externally connected to the inverter. Recommended specifications:ON-GRIDside:300mA, BACK-UPside:30mA。
- The inverter standalone operation scenario supports connecting a generator. During a Grid Power Outage, it can power the energy storage system via theON-GRIDport.

Type 1:



ET3010ELC0006

Type 2:



ET3010ELC0010

5.7 Connect Battery Cables

⚠DANGER

- Do not connect the same Battery BANK to multiple inverters, otherwise it may cause inverter damage.
- Do not connect loads between the inverter and the battery.
- When connecting battery cables, please use insulated tools to prevent electric shock or Battery Short Circuit.
- Please ensure that the battery open-circuit voltage is within the allowable range of the inverter.
- Between the inverter and the battery, please choose whether to configure a DC Switch according to local laws and regulations.

ATTENTION

When usingLynx Home Dbatteries:

- Please select appropriate cable crimp terminals according to the actually connected equipment.
- Please use the appropriate hydraulic pliers according to the DC Connector model. Recommended specifications are:
  - For crimping tools for battery DC terminals where the self-sealing bag in the crimping delivery package does not have theHD Locking terminallabel, it is recommended to useYQK-70hydraulic pliers.
  - For crimping tools for battery DC terminals where the self-sealing bag in the crimping delivery package has theHD Locking terminallabel, it is recommended to useVXC9hydraulic pliers.
  - If hydraulic pliers cannot be purchased，please select crimping tools by yourself according to the terminal crimping size，to ensure that the terminal crimping meets the usage requirements.
- Please use the DC Connector and terminals supplied with the box to connect the power cables:
  - If the black power line of the battery system has a label with the wordHDor a white wire number tube, please mate it with the connector that has theHD Locking terminallabel on the self-sealing bag in the delivery package.
  - If the black power line of the battery system does not have a label with the wordHDor a white wire number tube, please check whether the self-sealing bag containing the power connector in the delivery package has theHD Locking terminallabel. If not, mate the male and female connectors with each other; if there is aHD Locking terminallabel, please contact the dealer or after-sales service.

GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ETmodel inverters have two battery input ports. When battery systems are connected to the inverter via parallel clustering, the number of battery systems connected to each port is as follows:

number of battery systems	BAT1 number of connected battery systems	BAT2 number of connected battery systems
1	1	0
2	1	1

number of battery systems	BAT1 number of connected battery systems	BAT2 number of connected battery systems
3	2	1
4	2	2
.....	.....	.....
15	8	7
16	8	8

Inverter andLynx Home Fseries batteriesBMScommunication connection description:

inverter port	connected to battery port	port definition	Note
BMS1 / BMS2	COM1/COM2/COM	4：CAN_H 5：CAN_L	• Inverter andCANcommunication • InverterBMS1port connects to batteryCOM1port • If the battery charge/discharge current >50A, it is recommended to connect to batteryBAT1andBAT2ports, the inverterBMS1port connects to batteryCOM1port

Lynx Home F communication port definition:

PIN	COM	Note
4	CAN_H	Connect the inverterBMScommunication port to communicate with the inverter; or a terminal resistor.
5	CAN_L	
1、2、3、6、7、8	-	-

Lynx Home F Plus+battery parallel clustering communication connection description:

PIN	COM1	COM2	COM3	Note
1	CAN_H	CAN_H	CAN_H	of battery system parallel clusteringBMScommunication
2	CAN_L	CAN_L	CAN_L	
3	-	-	-	reserved
4	CAN_H	-	-	• COM1: Connect to the inverterBMScommunication port to communicate with the inverter • COM2，COM3: reserved
5	CAN_L	-	-	
6	GND	GND	GND	groundingPINpin
7	HVIL_IN	HVIL_IN	-	• COM1，COM2: parallel clustering interlock function • COM3: reserved
8	HVIL_OUT	HVIL_OUT	-	

Lynx Home F G2battery parallel clustering communication connection description:

PIN	COM1	COM2	COM3	Note
1	RS485_A1	RS485_A1	reserved	Connect externalRS485communication device
2	RS485_B1	RS485_B1		
3	-	-		reserved
4	CAN_H	CAN_H		Connect inverter communication or battery parallel clustering communication port
5	CAN_L	CAN_L		
6	DI7H-	DI7H-		battery parallel clustering signal detection function
7	DI7H+	DI7H+		
8	-	PWM		Send parallel clusteringPWMsignal

Inverter andLynx Home Dbetween batteriesBMScommunication connection description

inverter port	connected to battery port	port definition	Note
BMS1	COM	4：CAN_H 5：CAN_L	• Inverter andCANcommunication • InverterBMS1port connects to battery communication port

Lynx Home Dbattery parallel clustering communication connection description:

PIN	battery port	Note
1	RS485_A1	reserved
2	RS485_B1	
4	CAN_H	Connect inverter communication or battery parallel clustering communication port
5	CAN_L	
3、6、7、8	-	-

Inverter andLynx D G2between batteriesBMScommunication connection description

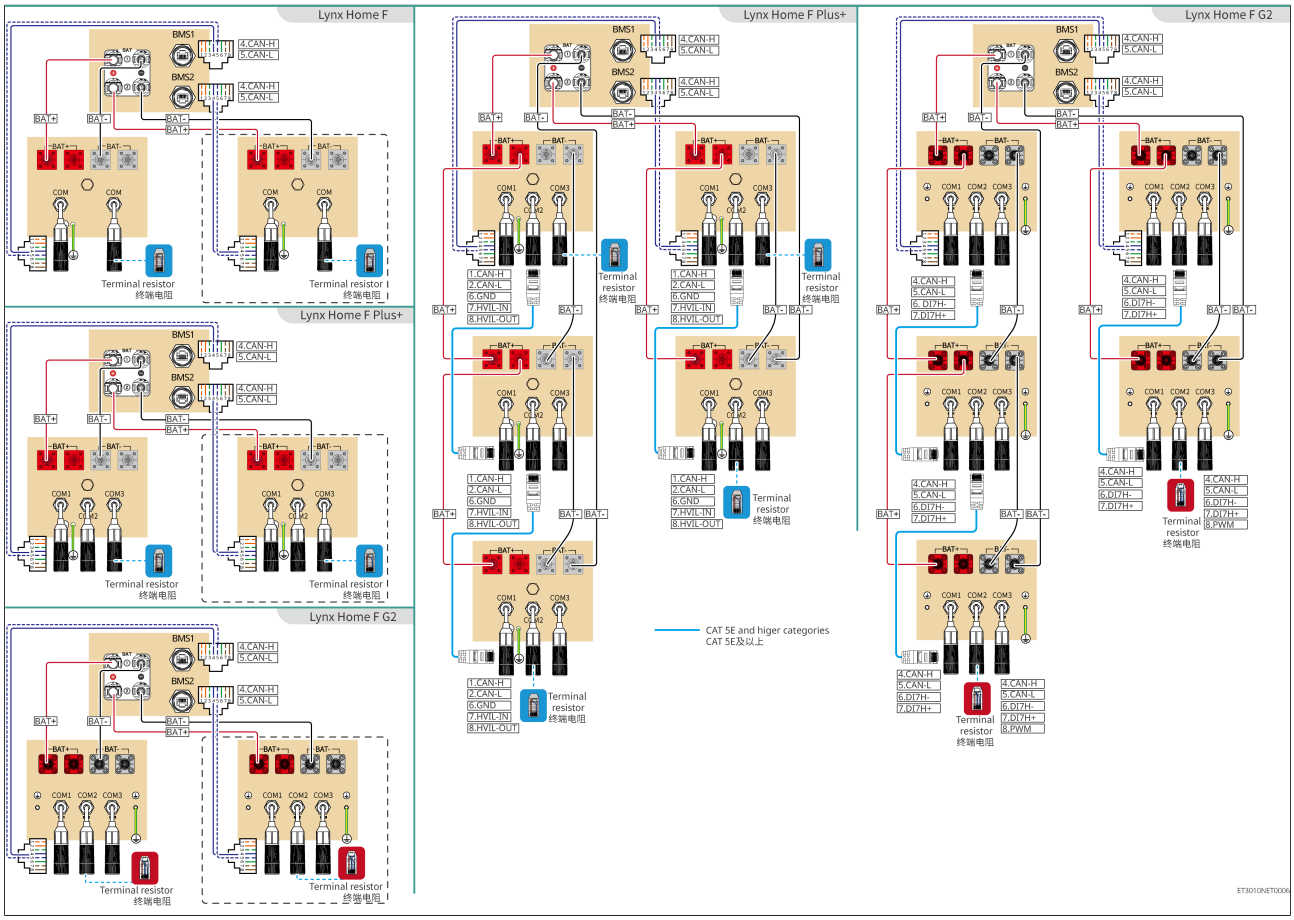
inverter port	connected to battery port	port definition	Note
BMS1/BMS2	COM	4：CAN_H 5：CAN_L	• Inverter andCANcommunication • InverterBMS1/BMS2port connects to battery communication port

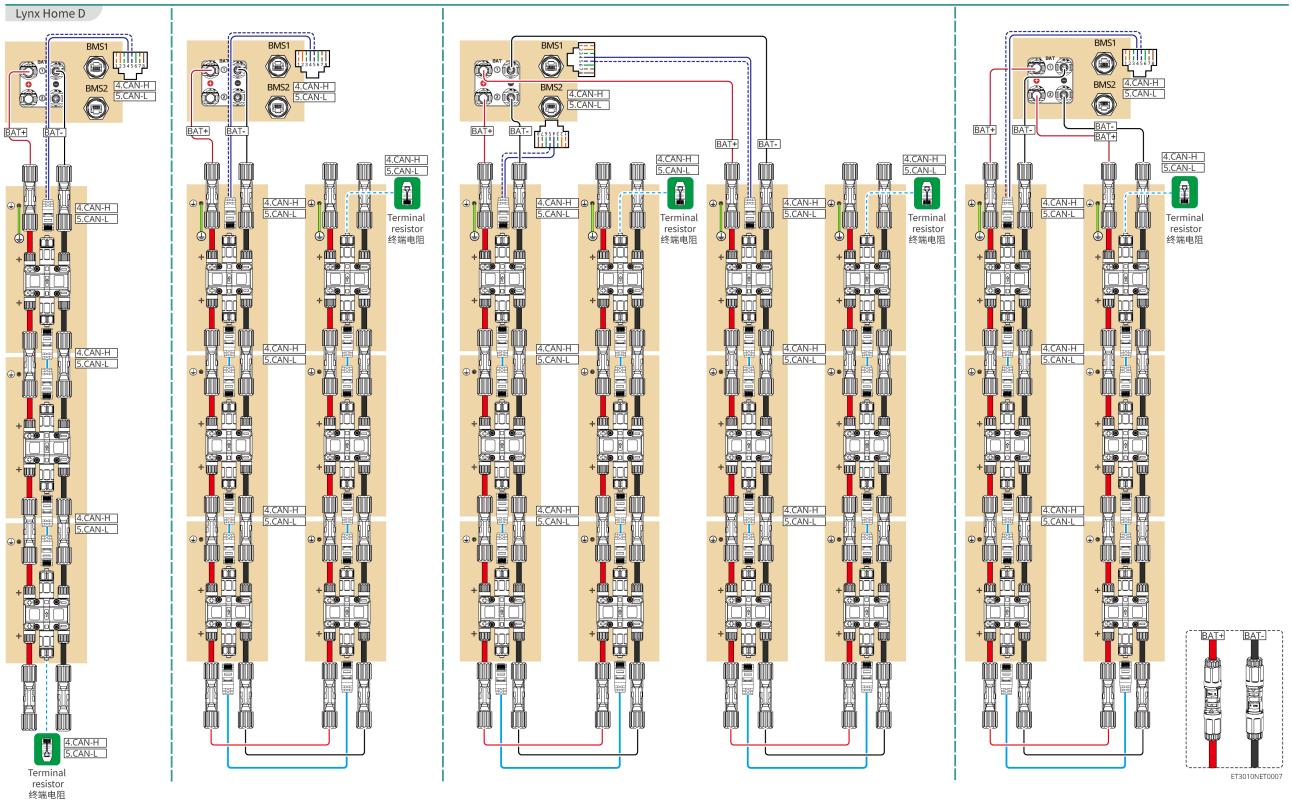
Lynx D G2 Battery Parallel Cluster Communication Connection Instructions

PIN	battery port	Note
1	RS485_A1	reserved
2	RS485_B1	
3	12V	Wake-up Signal from Inverter to Battery
4	CAN_H	Connect inverter communication or battery parallel clustering communication port
5	CAN_L	

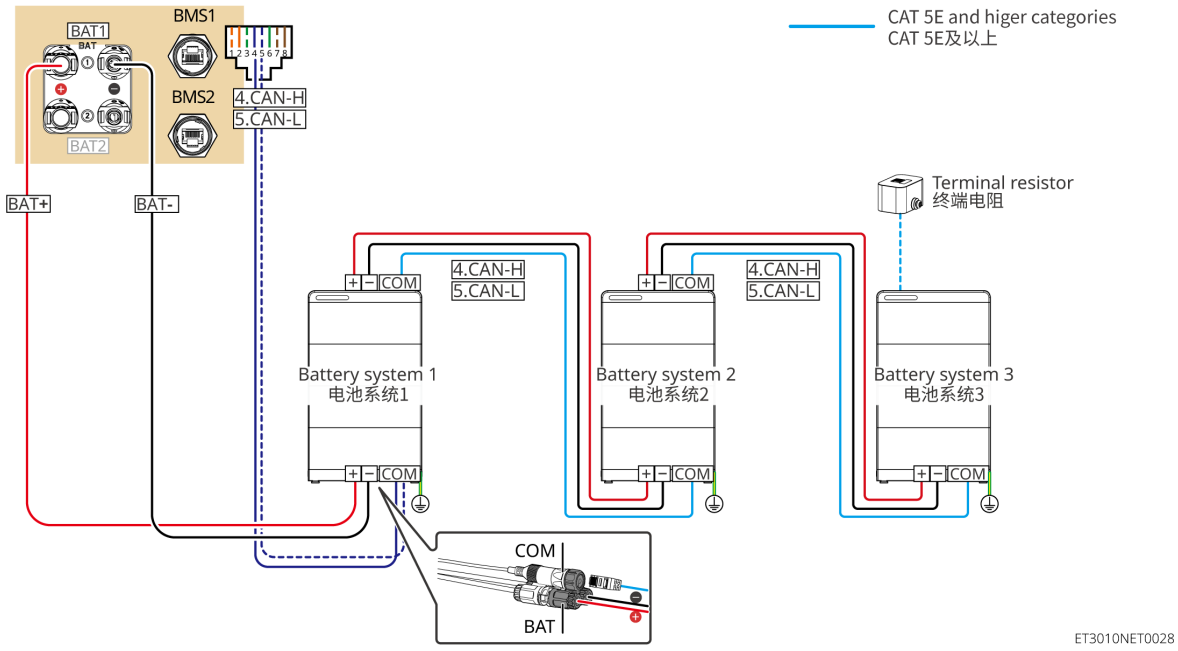
PIN	battery port	Note
6	GND	Wake-up Signal from Inverter to Battery
7	CAN_H	DCDC CAN Communication Port
8	CAN_L	

Battery System Wiring Diagram





Lynx D G2



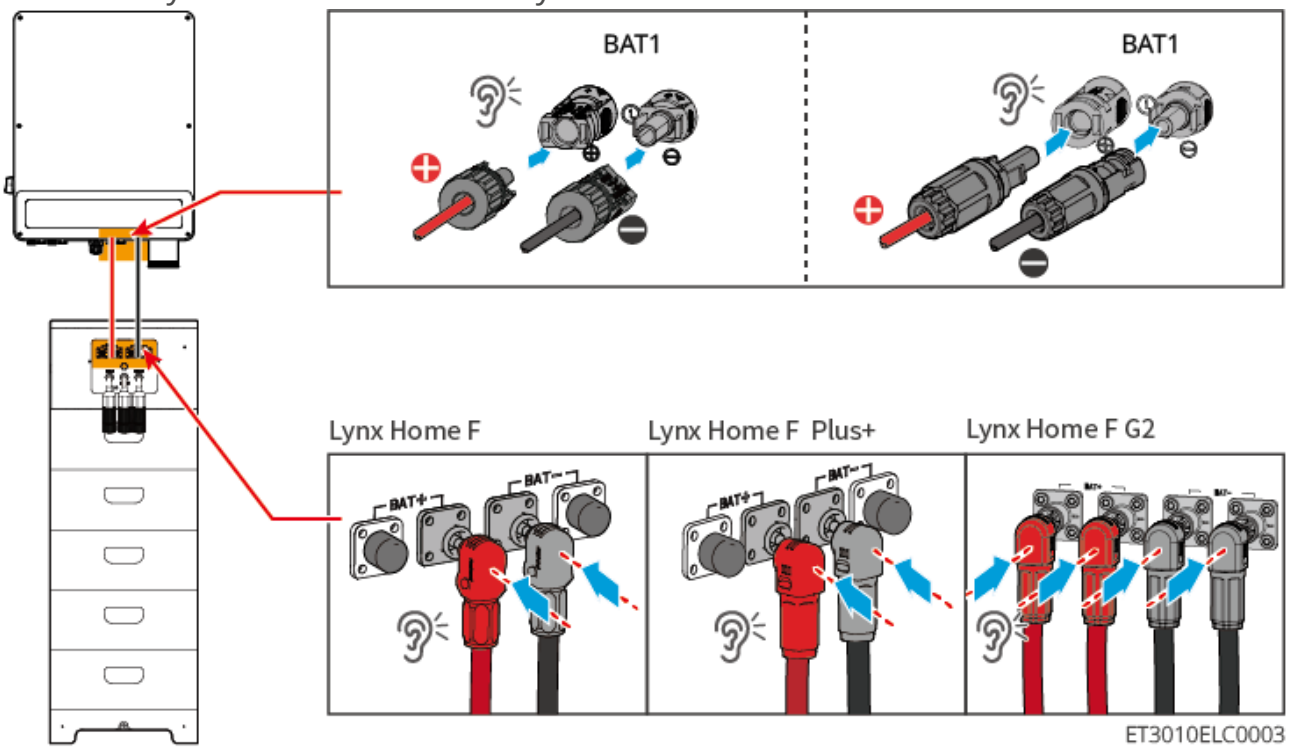
5.7.1 Connect Inverter and Battery Power Cables

⚠WARNING

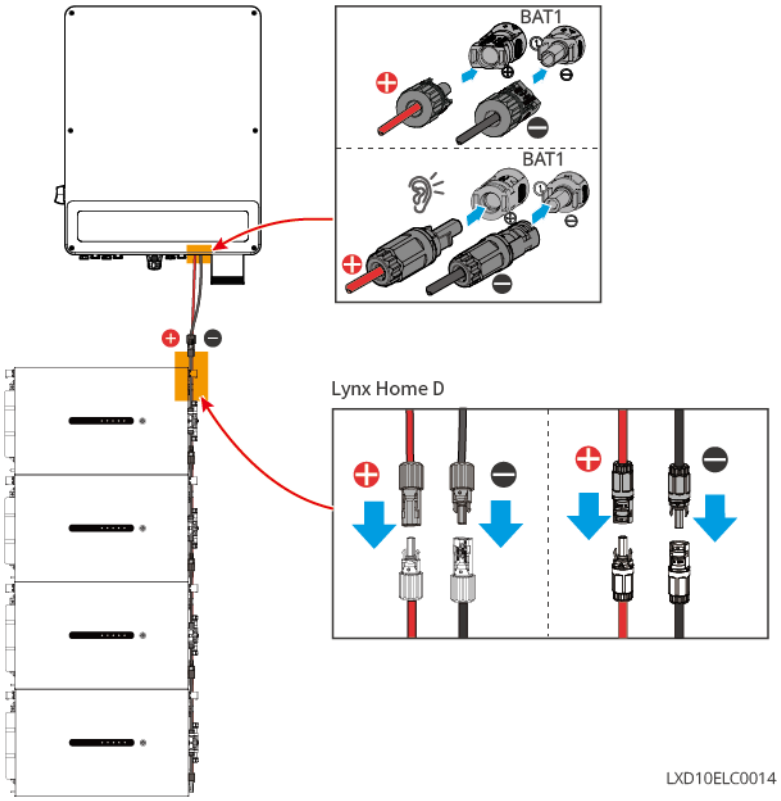
- Use a multimeter to measure the positive and negative poles of the DC cables, ensure that the polarity is correct (no reverse connection), and the voltage is within the allowable range
- When wiring, the battery cables must fully match the 'BAT+', 'BAT-', and ground terminals of the battery. Incorrect cable connection will cause equipment damage.
- Please ensure that the wire core is fully inserted into the terminal wiring hole with no exposed parts.
- Please ensure that the cables are connected tightly; otherwise, the terminals may overheat during equipment operation, leading to equipment damage.
- Do not connect the same Battery BANK to multiple inverters, otherwise it may cause inverter damage.

Overview of Inverter and Battery Power Cables

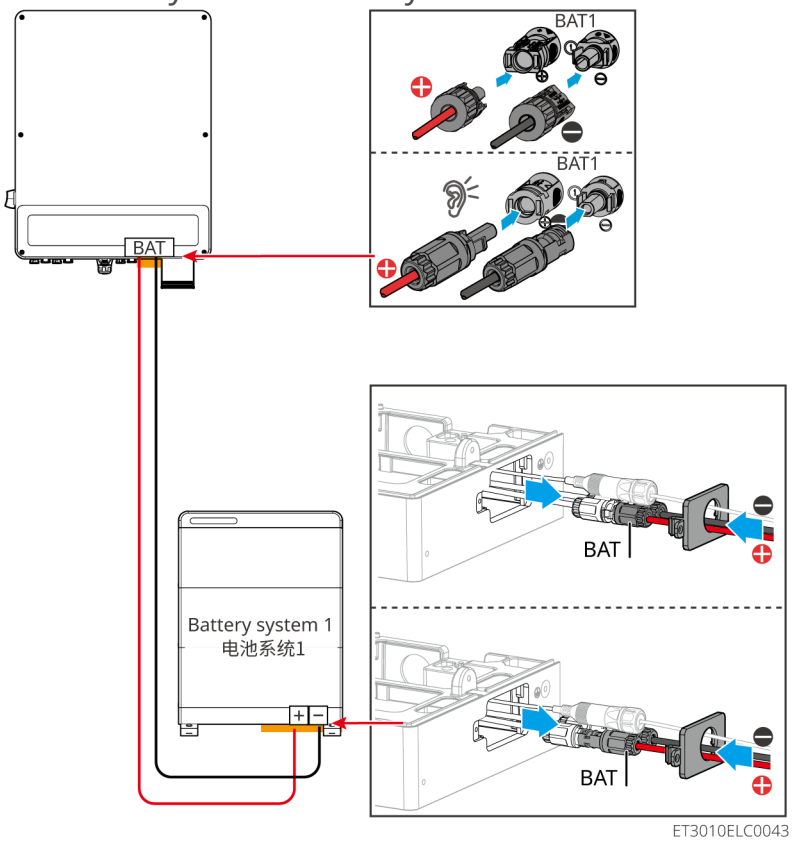
Inverter+ Lynx Home FSeries Battery



Inverter+ Lynx Home DBattery

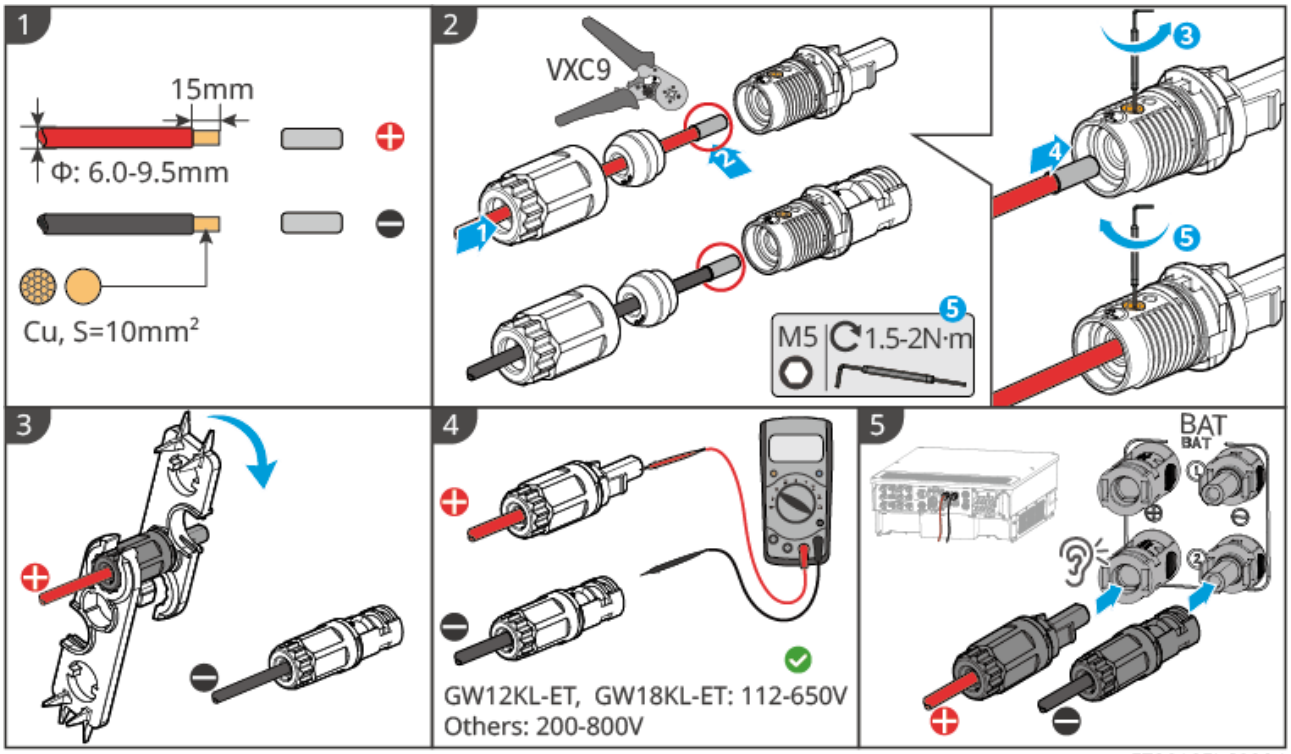


Inverter+ Lynx D G2Battery



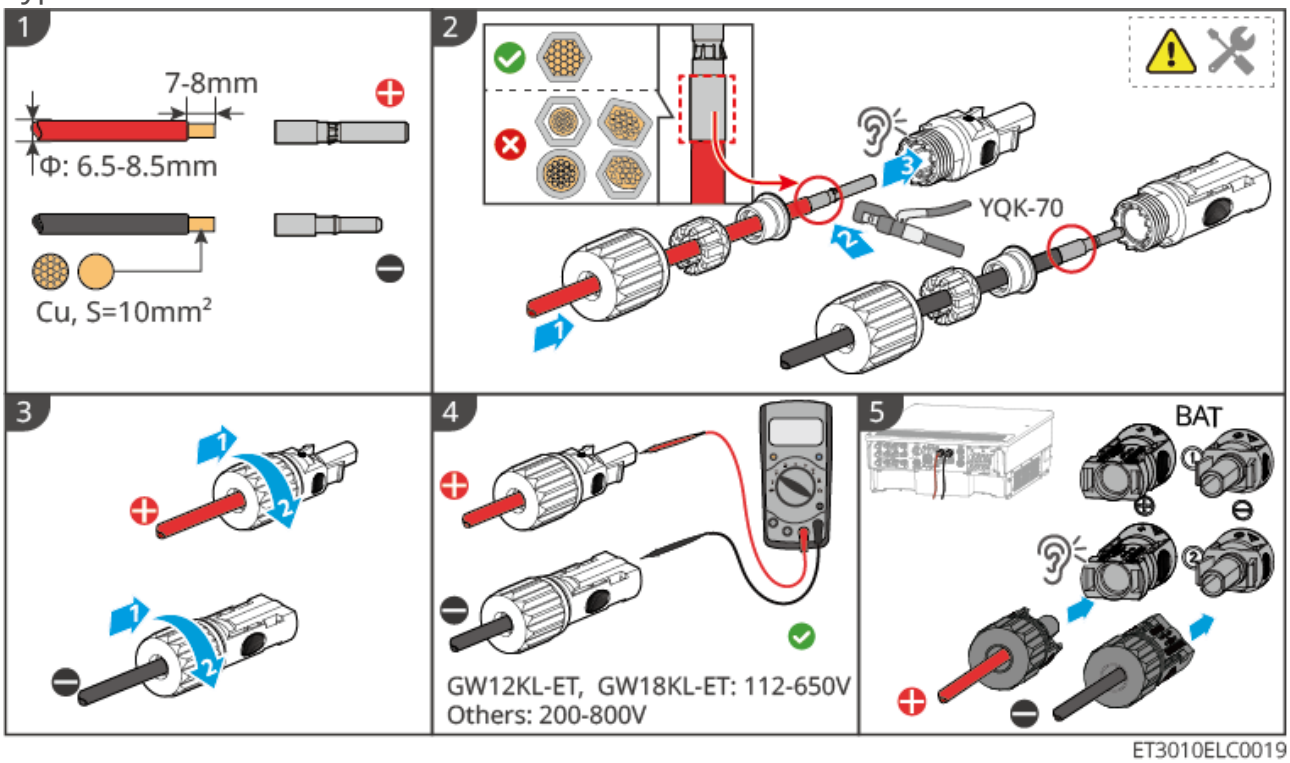
Inverter-side Cable Preparation

Type 1:



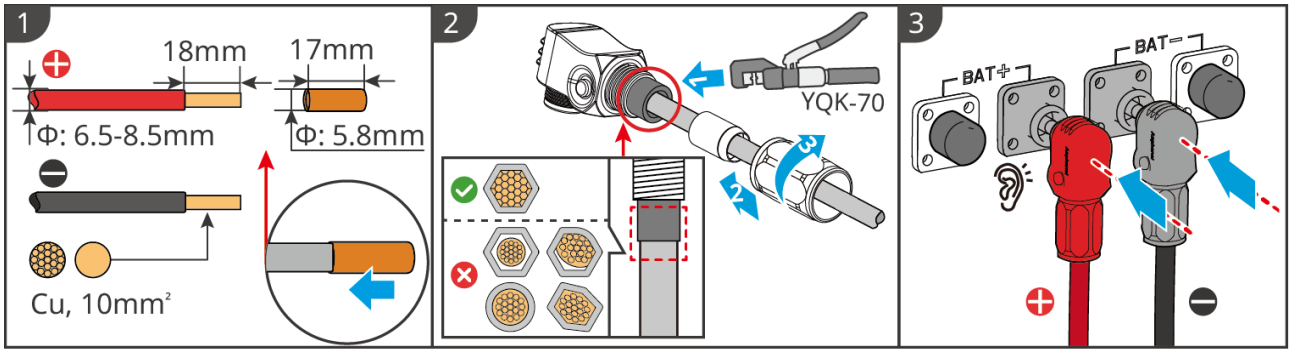
ET3010ELC0004

Type 2:



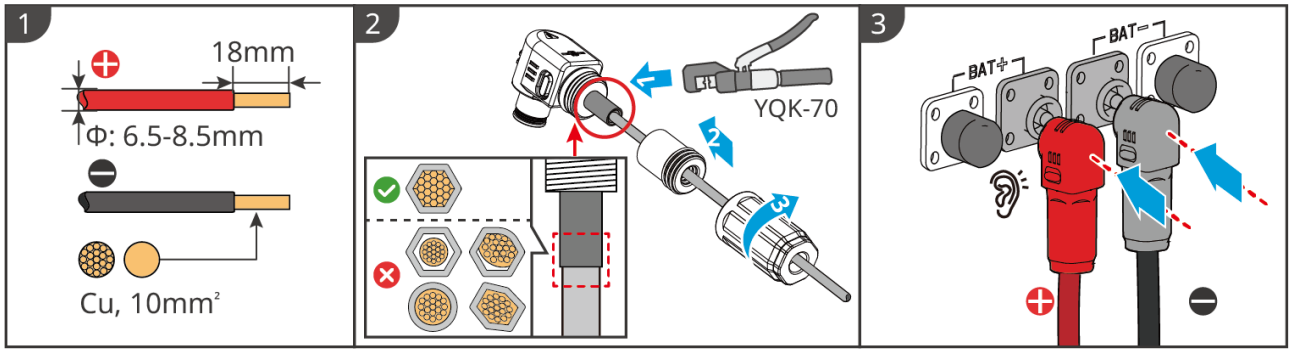
ET3010ELC0019

Battery-side Cable Preparation Method (Lynx Home F)



LXF10ELC0006

Battery-side Cable Preparation Method (Lynx Home F Plus+)

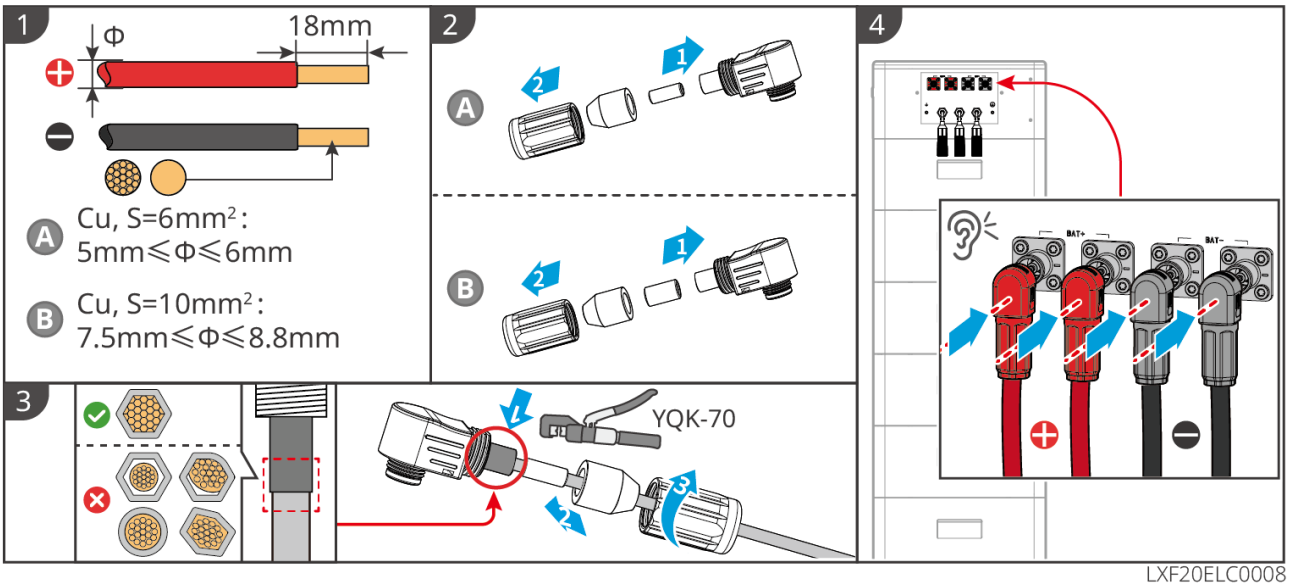


LXF10ELC0007

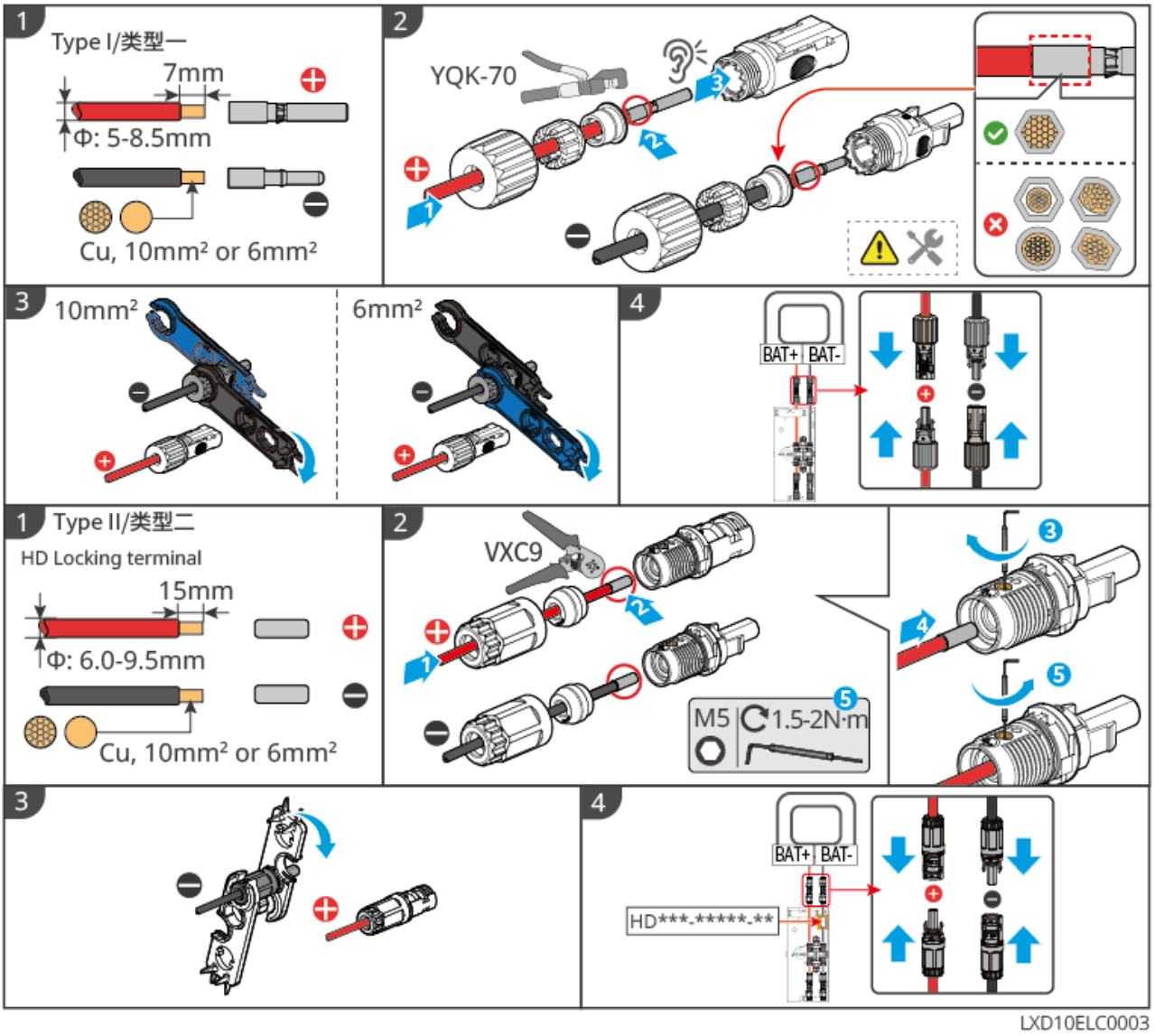
Battery-side Cable Preparation Method (Lynx Home F G2)

WARNING

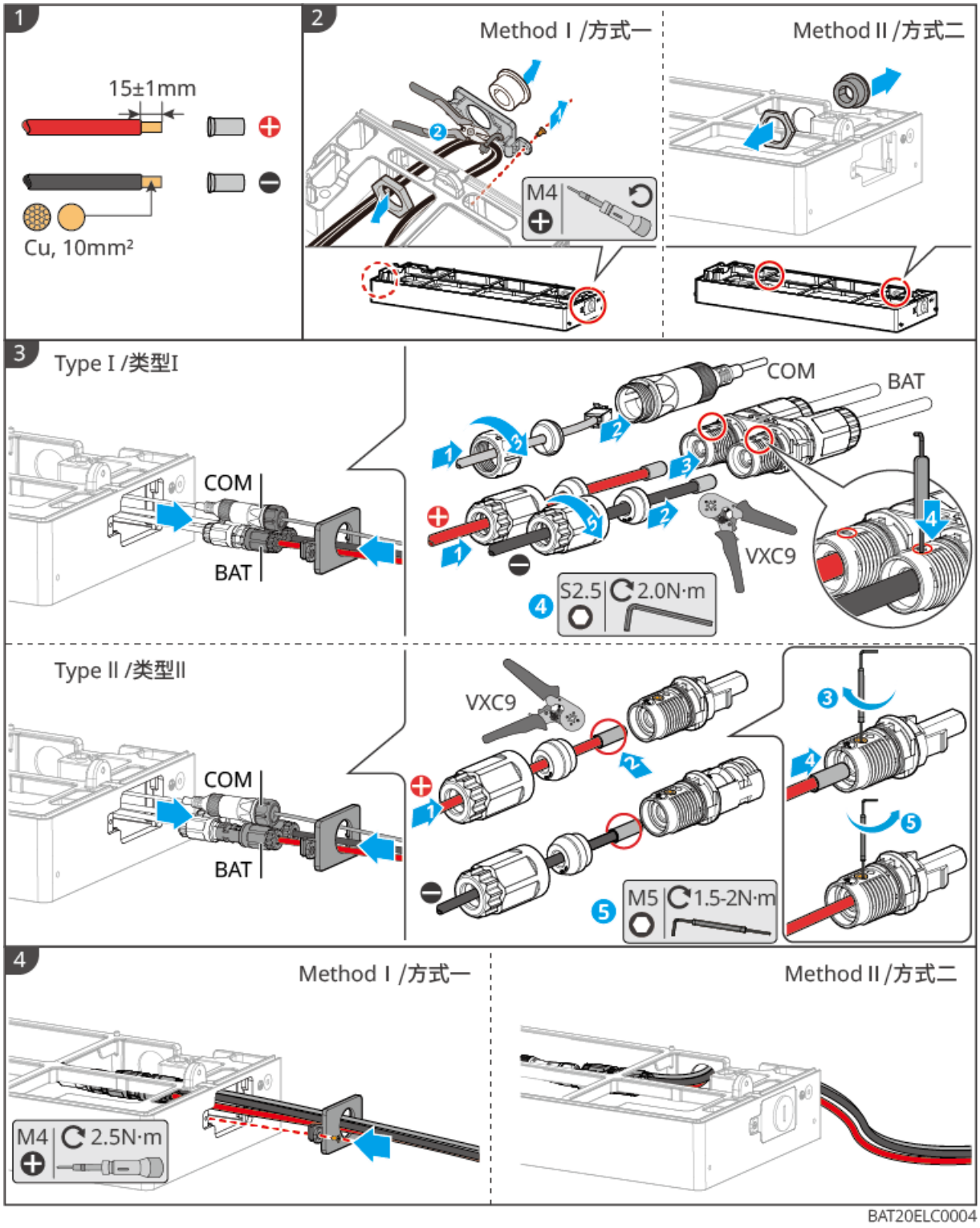
- Please prepare the DC input cable yourself. Recommended specifications:
  - Type: Outdoor Single-core Copper Wire
  - Conductor Cross-sectional AreaS：6mm^{2}or10mm^2
- When conductor cross-sectional areaSis6mm^2, please use the DC Connector marked with6mm^{2}in the packaging bag, and the pull-out force after cable crimping is >450N. When using this specification of DC cable, it only supports connecting a single battery system; do not parallel cluster the battery system, otherwise it may cause equipment damage.
- When using cable cross-sectional areaSis10mm^2, please use the DC Connector marked with10mm^{2}in the packaging bag, and the pull-out force after cable crimping is >500N。
- It is recommended to use YQK-70 type hydraulic pliers for crimping the battery DC terminals: when the conductor cross-sectional area is 6mm^2, select the crimping die marked "6"; when the conductor cross-sectional area is 10mm^{2}10" crimping die.
- The tool for crimping battery DC terminals shall be selected according to actual needs; the tool in the diagram is for illustration only.
- If the DC port does not need to connect a cable, do not remove the protective cover of the DC port; otherwise, it may affect the equipment's Ingress Protection Rating.



Battery-side Cable Preparation Method (Lynx Home D)



Battery-side Cable Preparation Method (Lynx D G2)

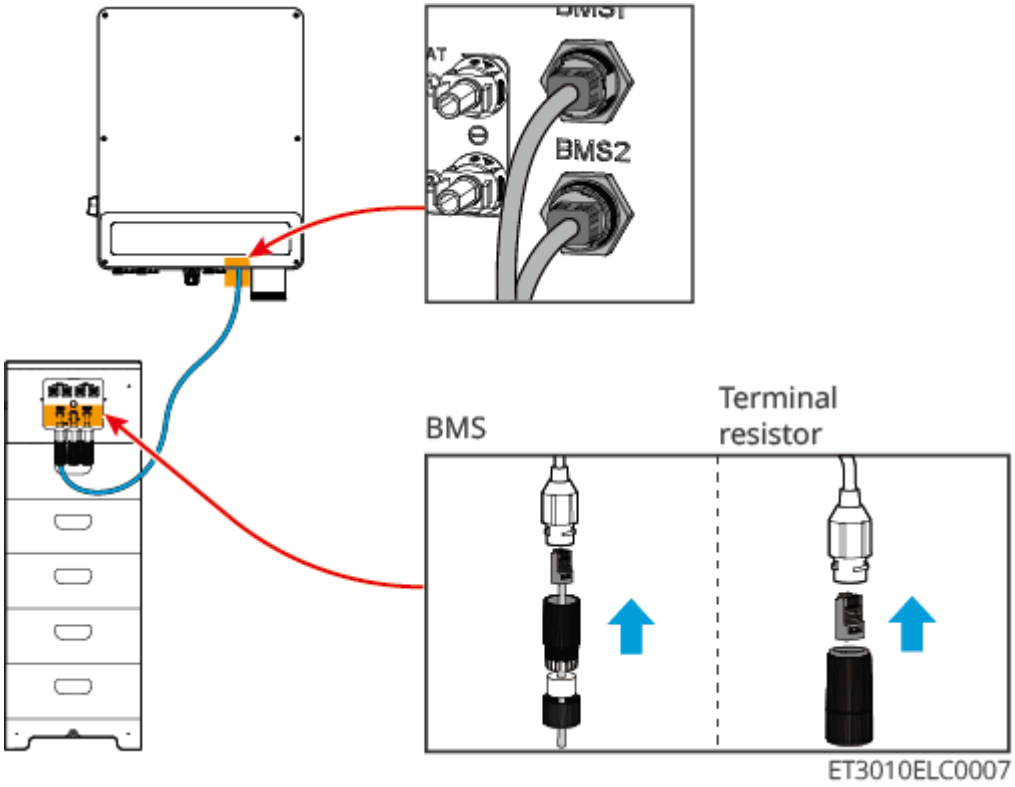


5.7.2 Connect Inverter and Battery Communication Cables

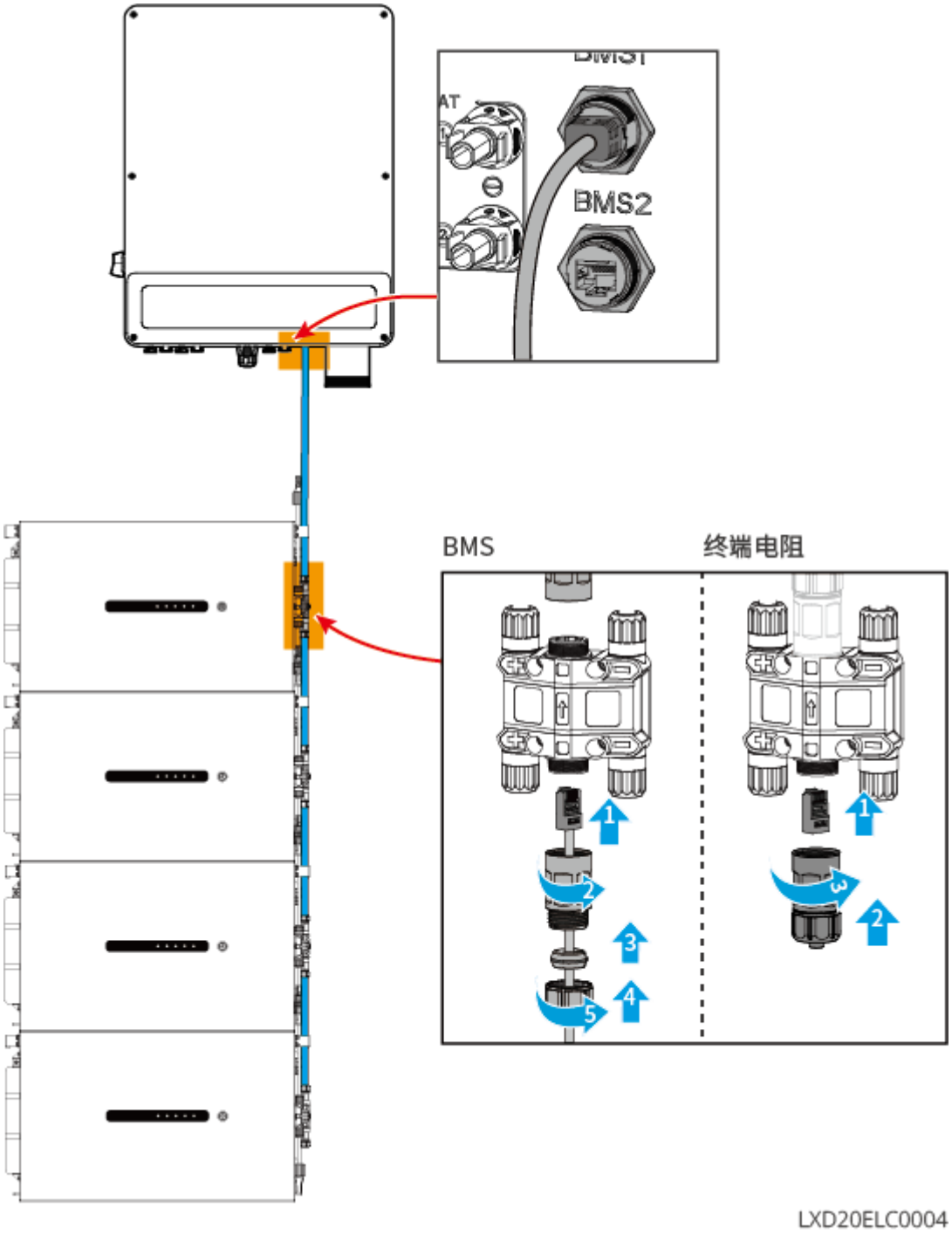
ATTENTION

The inverter is shipped with a BMS battery communication cable; it is recommended to use the BMS battery communication cable shipped with the unit. If the shipped communication cable does not meet the requirements, please prepare a shielded network cable and a shielded RJ45 crystal head yourself. When crimping, only crimp PIN4 and PIN5 of the crystal head; otherwise, communication failure may occur.

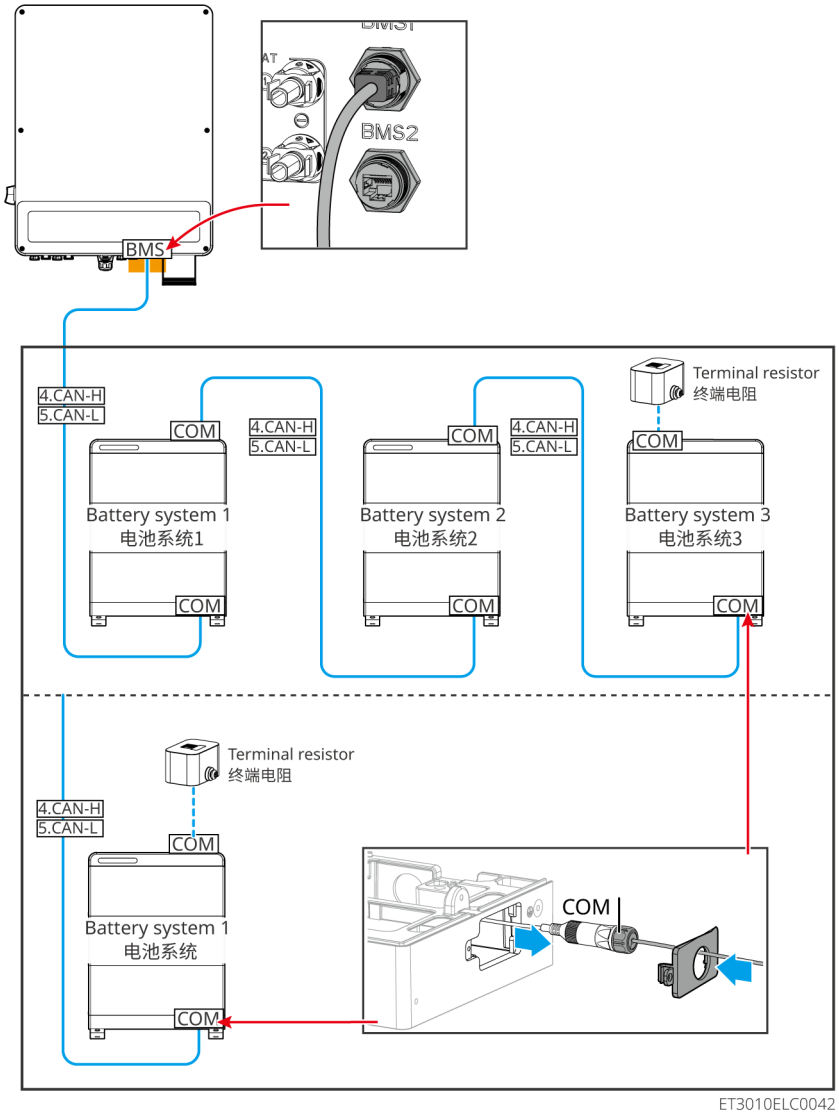
Inverter+ Lynx Home FSeries Battery



Inverter+ Lynx Home DBattery



Inverter+ Lynx D G2Battery



5.7.3 Connect the Inter-Battery Power Cables of Lynx Home D

Crimp the power cables

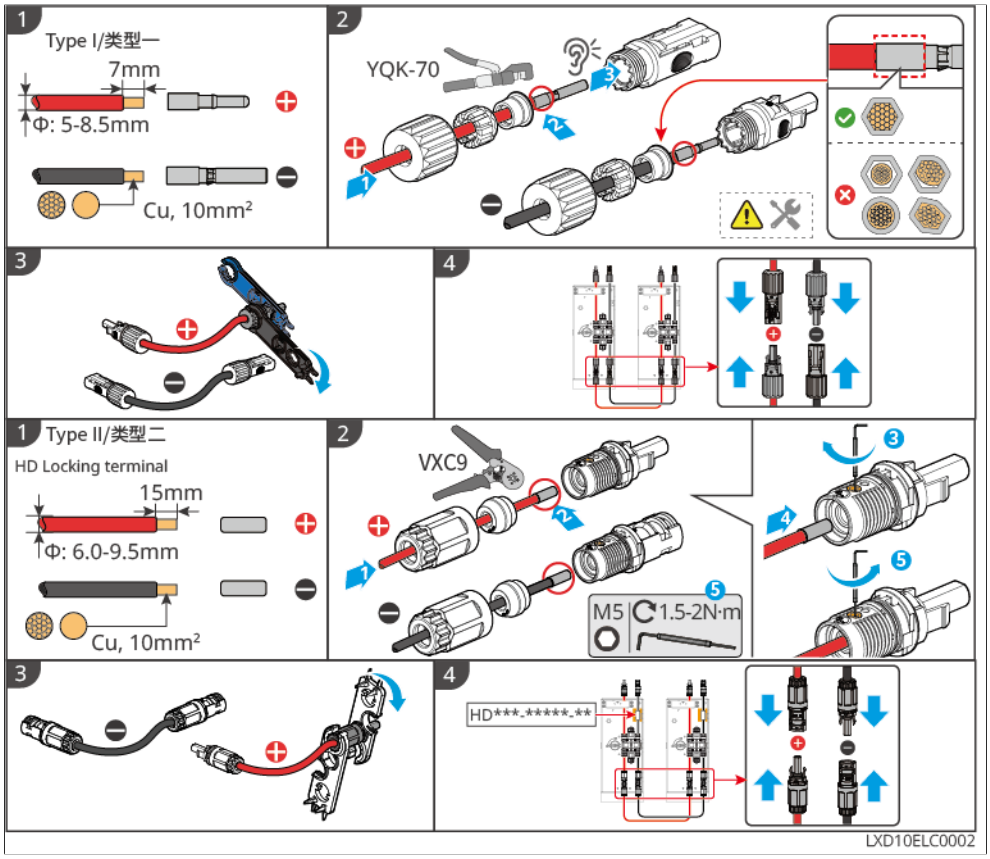


Figure25 Crimp the power cables

Connect the power cables

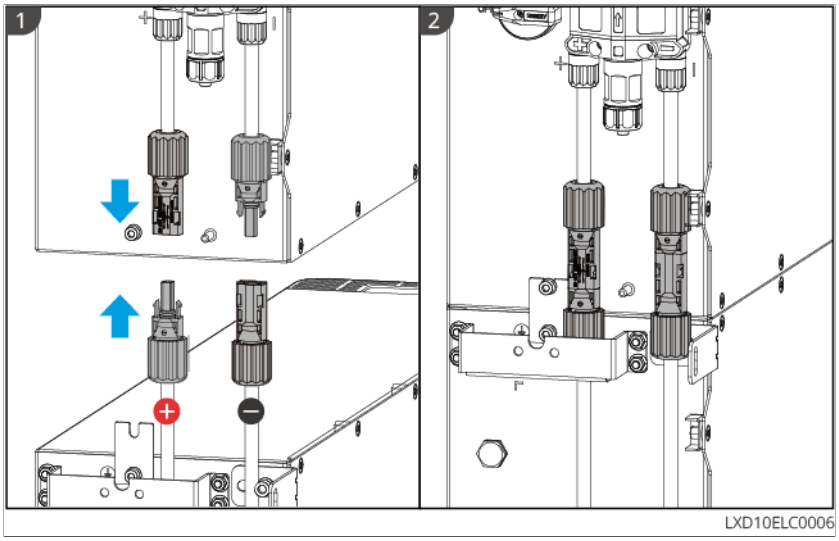


Figure26 Type 1

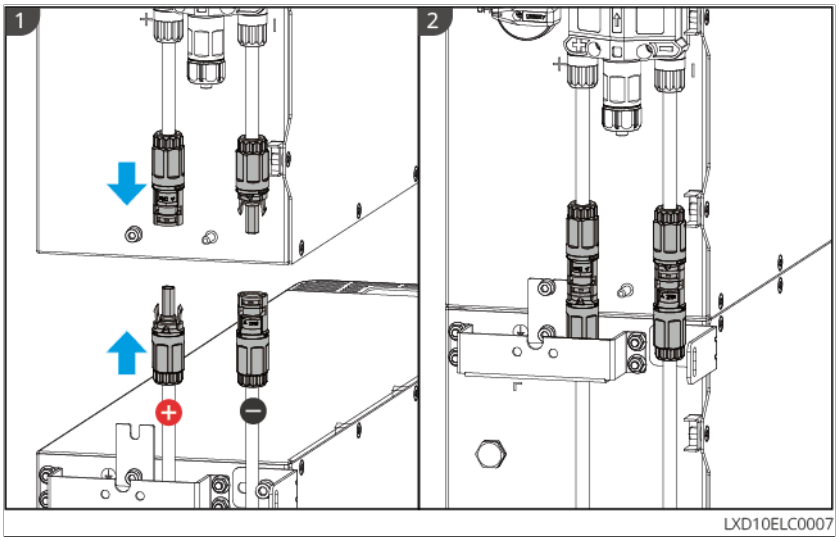


Figure27 Type 2

To remove the power connector, please refer to the following steps and use the tools shipped with the package for removal.

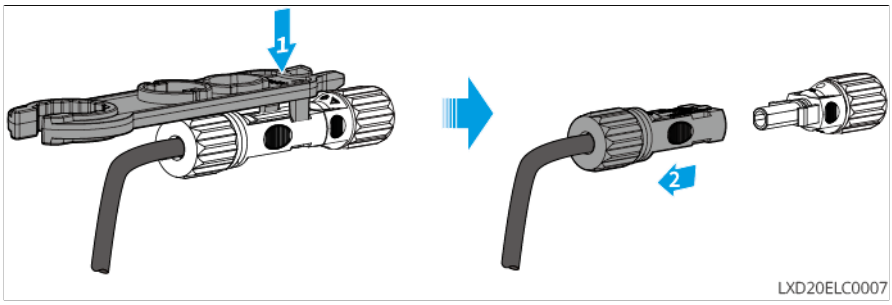


Figure28 Type 1

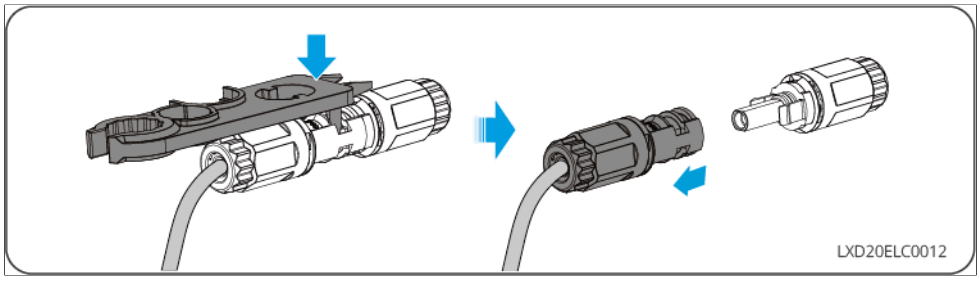


Figure29 Type 2

5.7.4 Connect the Battery Communication Cable and the Terminal

Resistor

Please use the inter-battery communication cable and terminal resistor shipped with the package.

WARNING

- Do not omit installing the terminal resistor for the battery system, otherwise the battery system will fail to operate normally.
- During installation, do not remove the waterproof plug.

Lynx Home DBattery

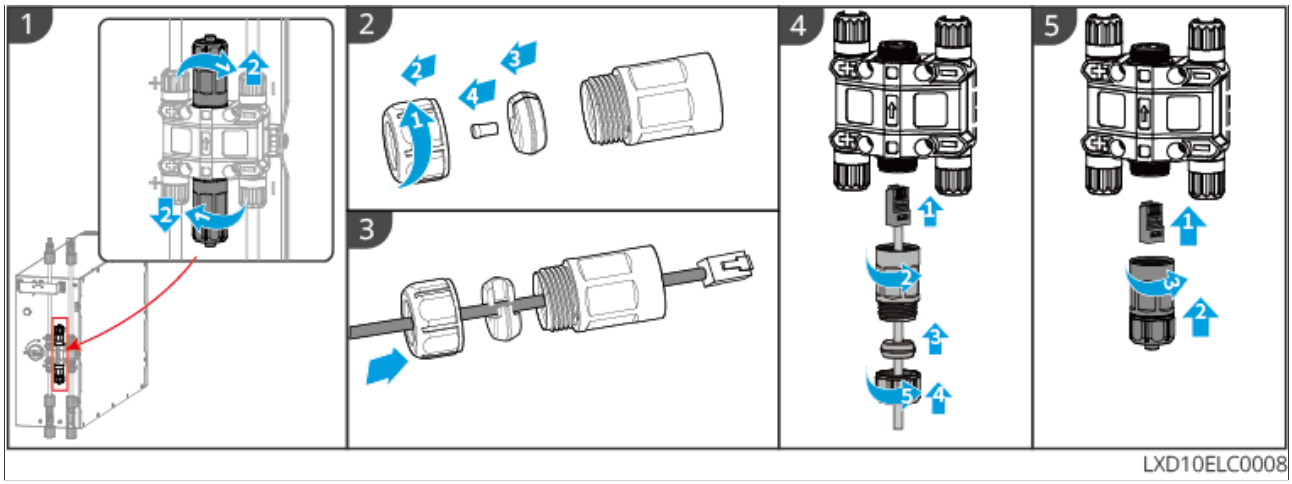


Figure30 Connect the communication cable and the terminal resistor

Lynx Home F G2

1. Remove the waterproof component.
2. Pass the communication cable through the waterproof component.
3. Connect the communication cable to the battery, or install the terminal resistor. Tighten the waterproof component.

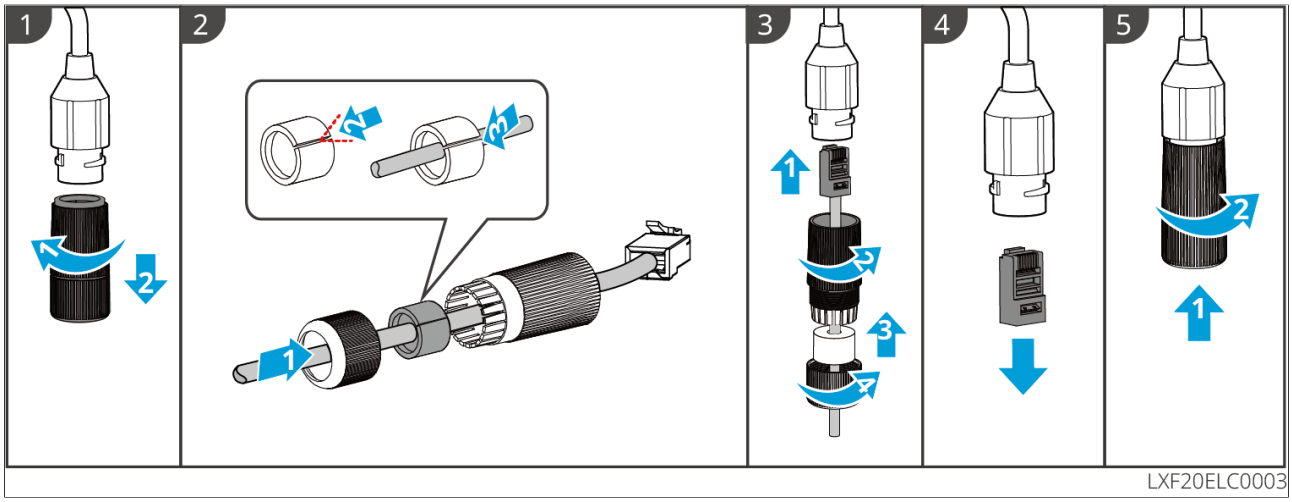


Figure31 Connect the communication cable and the terminal resistor

5.7.5 Install the Battery Protective Cover

ATTENTION
Before installing the front protective cover of the mounting bracket, please tear off the release paper on the back of the protective cover.

Lynx Home DBattery

Step1: (Optional) For base-only installation scenarios, if there is no need for wiring at the bottom, please install the base outlet hole plug.

Step2: Install the Battery Side baffle.

Step3: (Optional) For mounting bracket-only installation scenarios, install the mounting bracket baffle.

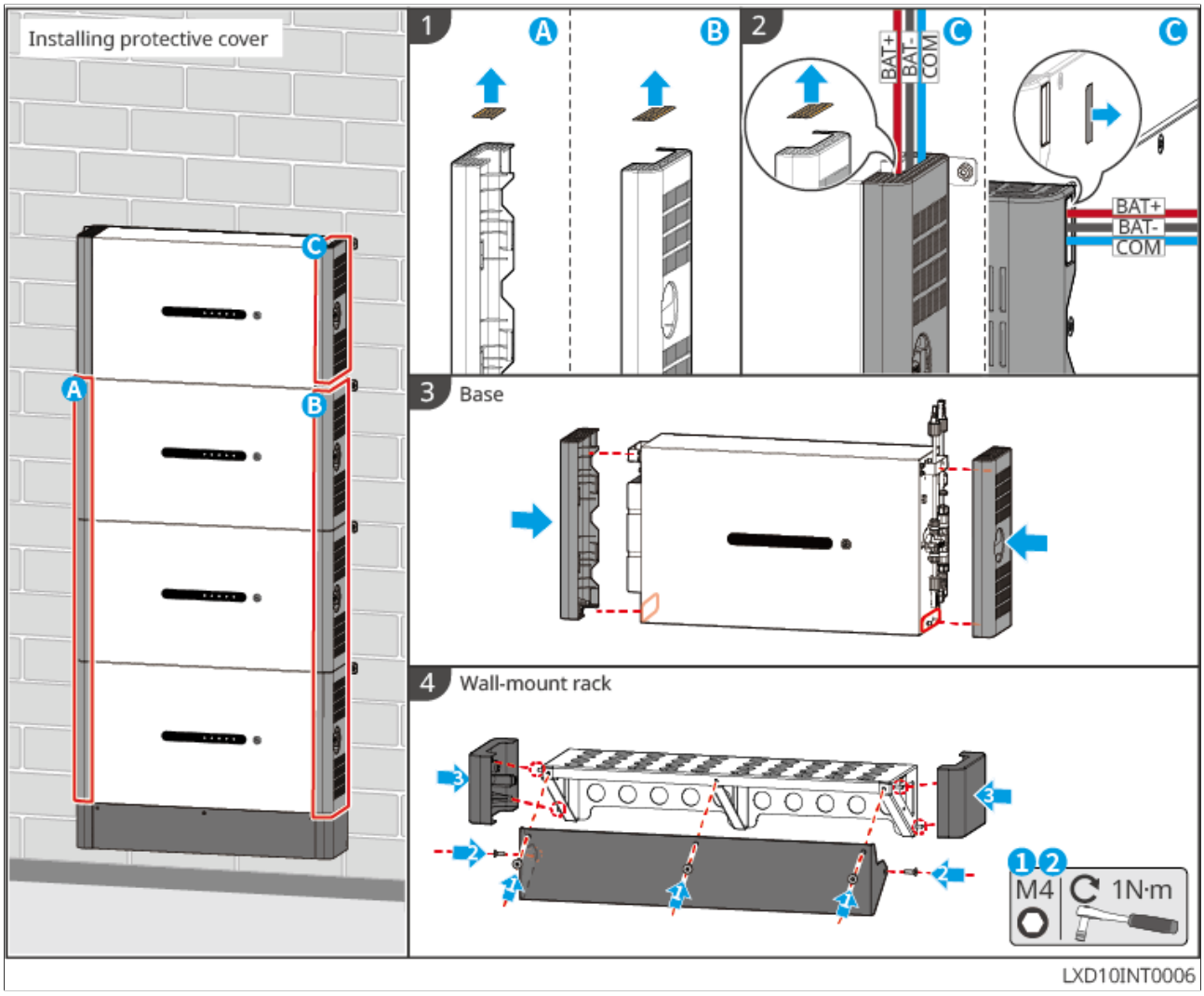


Figure32 Install the Battery Protective Cover

Lynx D G2Battery

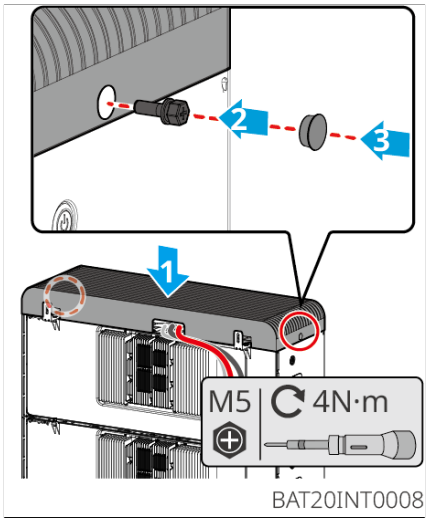


Figure33 Install the Battery Protective Cover

Lynx Home F G2Battery

(Optional) This step is only for some batteries with protective cover mounting holes or junction boxes. The cover can be installed only after wiring is completed.

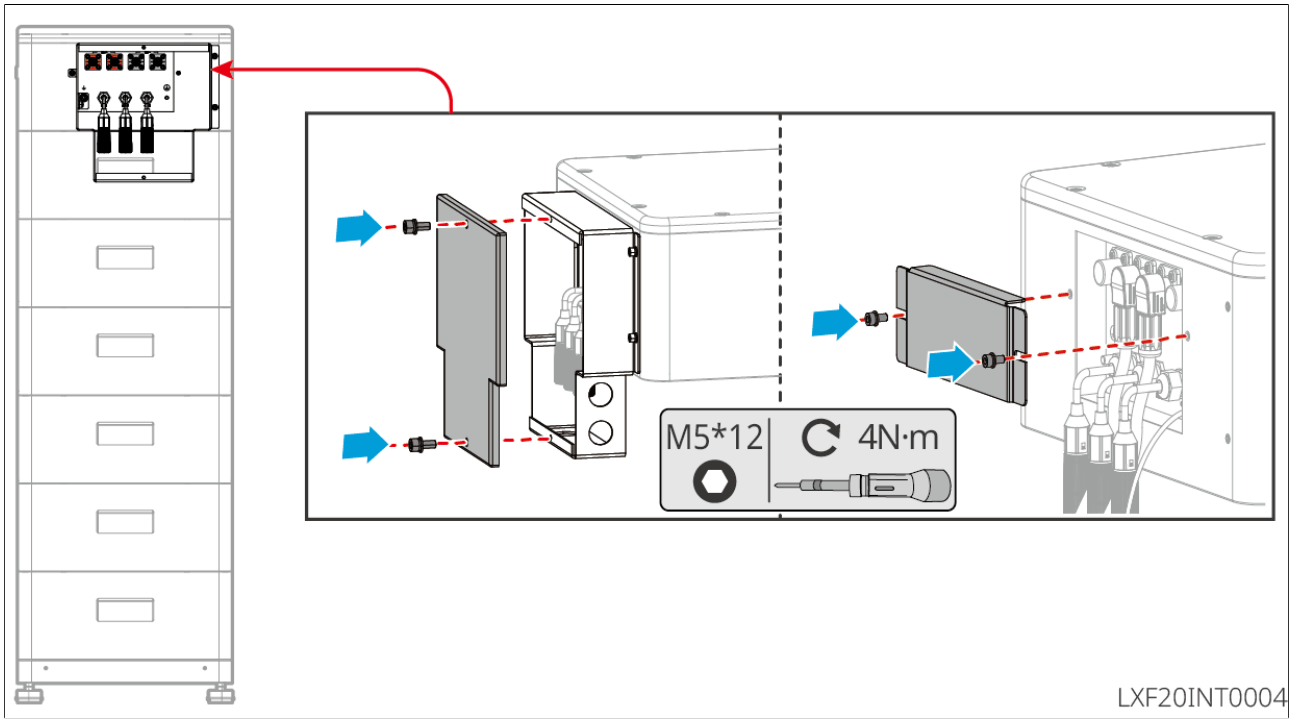


Figure34 Install the cover plate

5.8 Connect Meter Cables

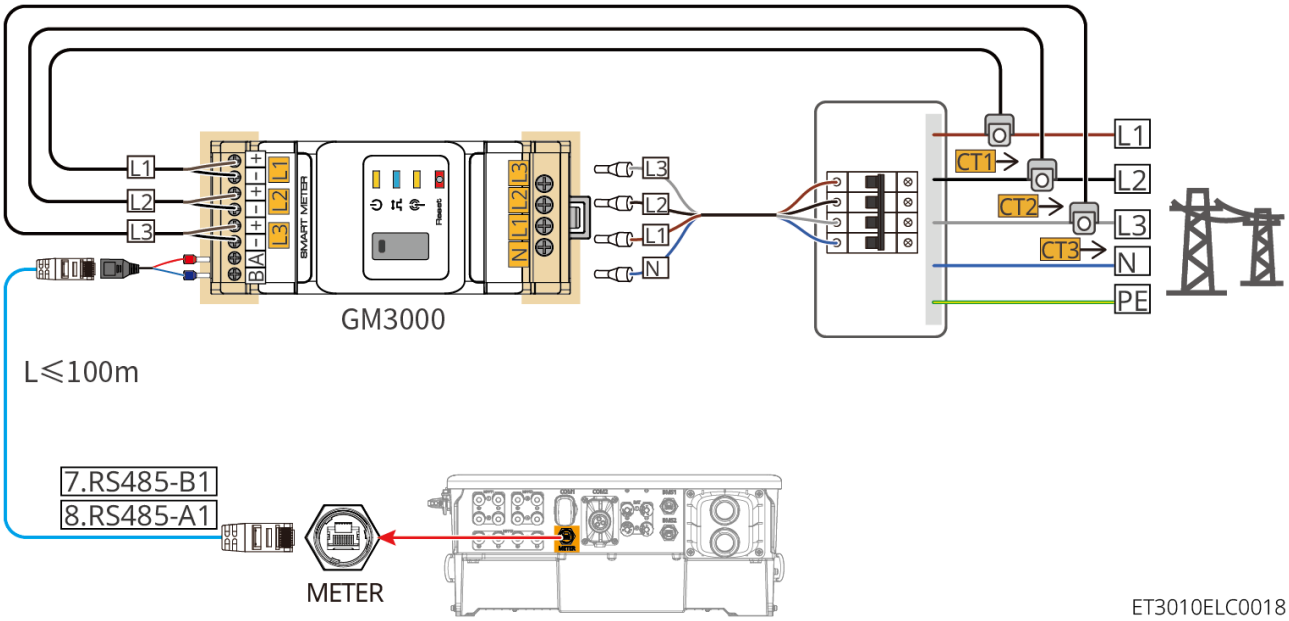
ATTENTION

- The meter shipped with the package is for use with only one inverter. Do not connect one meter to multiple inverters. If there is a need for multiple inverters, please consult the manufacturer to purchase additional meters separately.
- Please ensure theCTis connected in the correct direction and phase sequence; otherwise, the monitoring data may be incorrect.
- Ensure all cables are connected correctly, tightly, and without looseness. Improper wiring may lead to poor contact or damage to the meter.
- In areas with lightning risk, if the meter cable length exceeds10mand the cable is not routed using a grounded metal conduit, it is recommended to install an external lightning protection device.

GM3000Meter Wiring

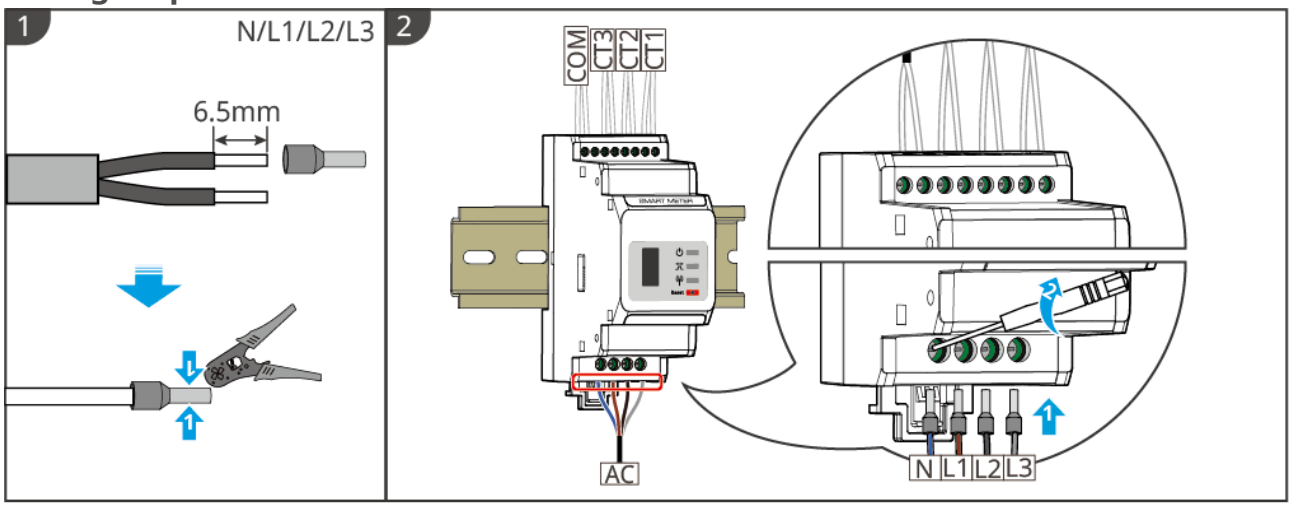
ATTENTION

- The outer diameter of the AC power cable must be smaller than the aperture of theCT, ensuring the AC power cable can pass through theCT。
- To ensure the current detection accuracy of theCT, the cable length of theCTis recommended not to exceed30m。
- Do not use network cables asCTcables; otherwise, excessive current may cause damage to the meter.
- TheCTprovided by the equipment manufacturer has slight differences in size and appearance depending on the model, but the installation and wiring methods are consistent.



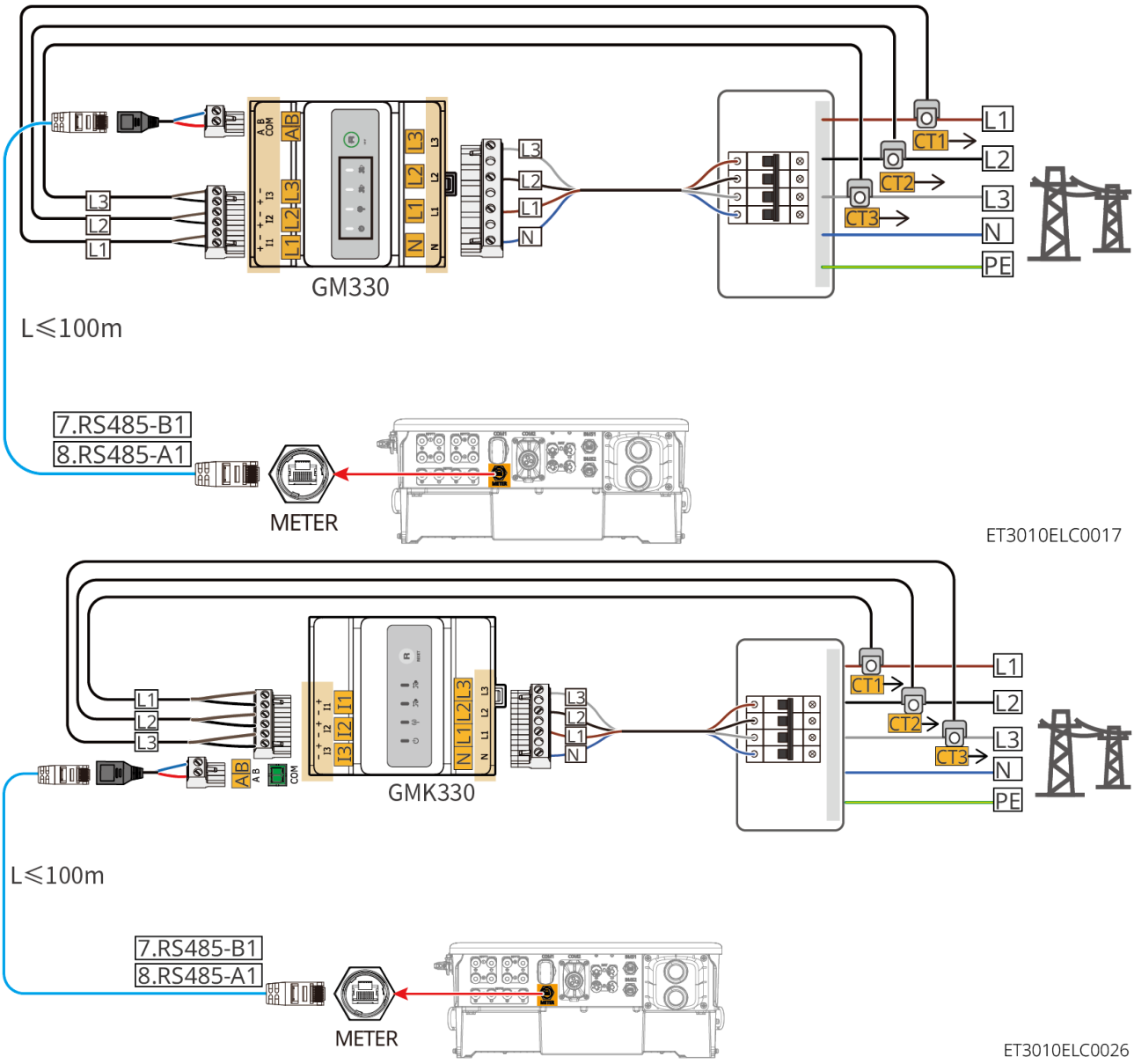
ET3010ELC0018

Wiring Steps

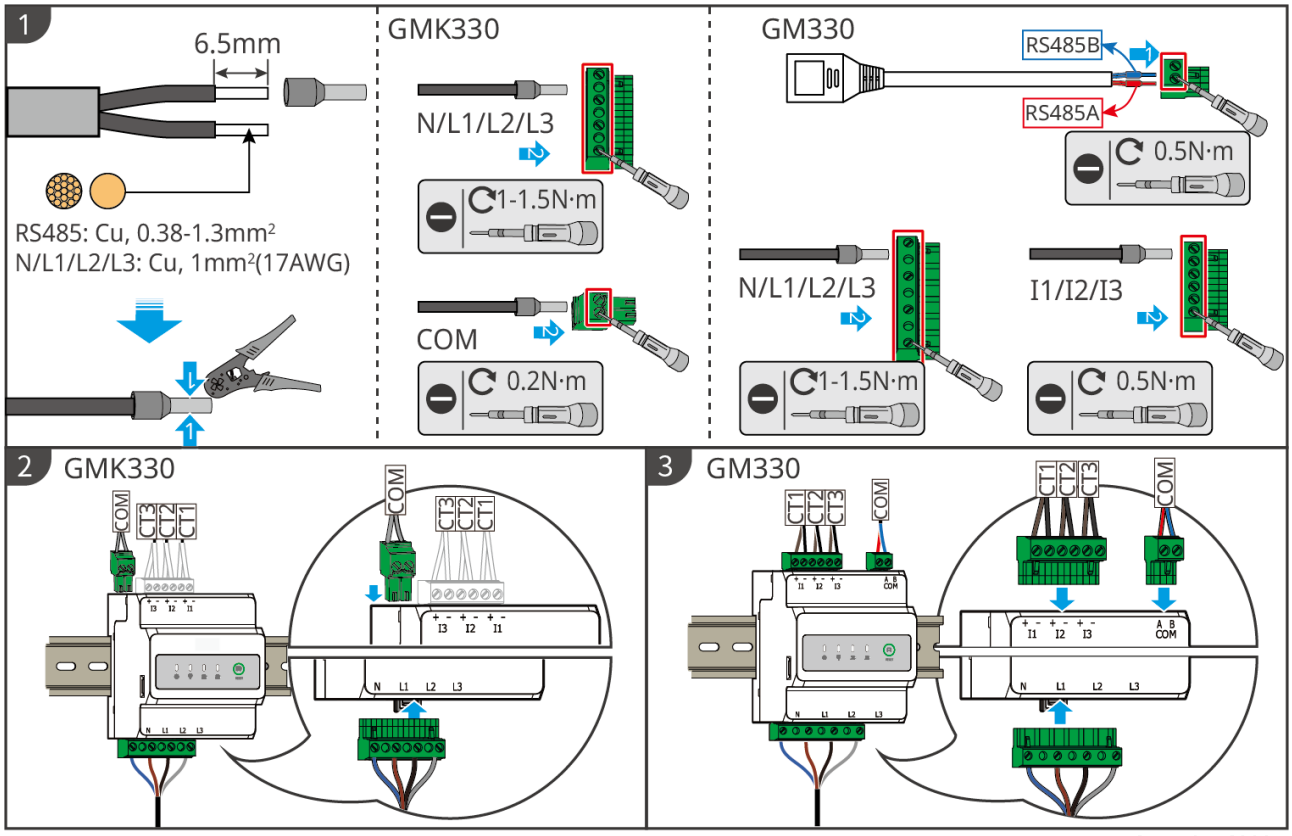


GMK10ELC0003

GM330&GMK330 Meter Wiring

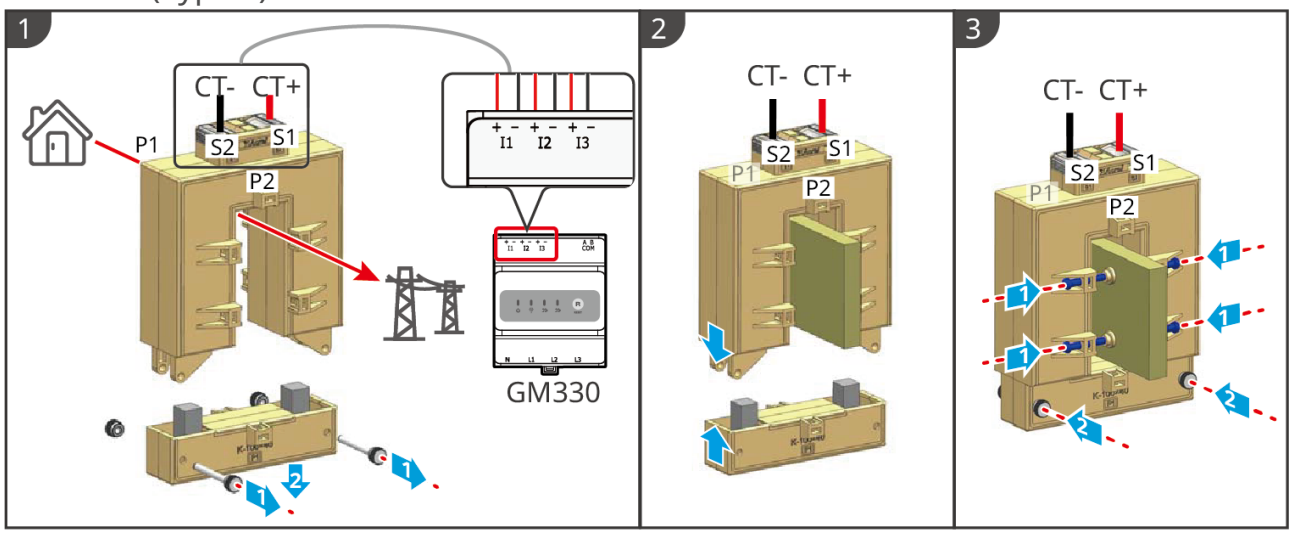


Wiring Steps



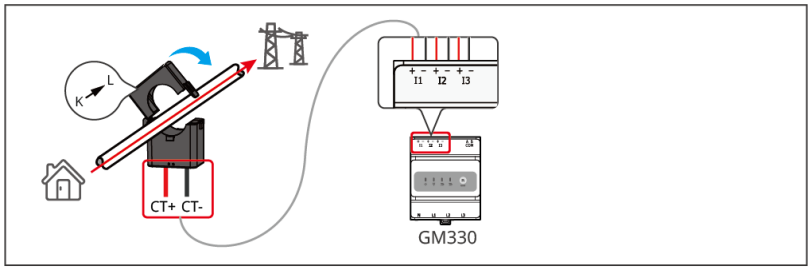
GMK10ELC0027

Install CT (Type 1)



GMK10ELC0006

Install CT (Type 2)



GMK10ELC0007

5.9 Connect Inverter Communication Cables

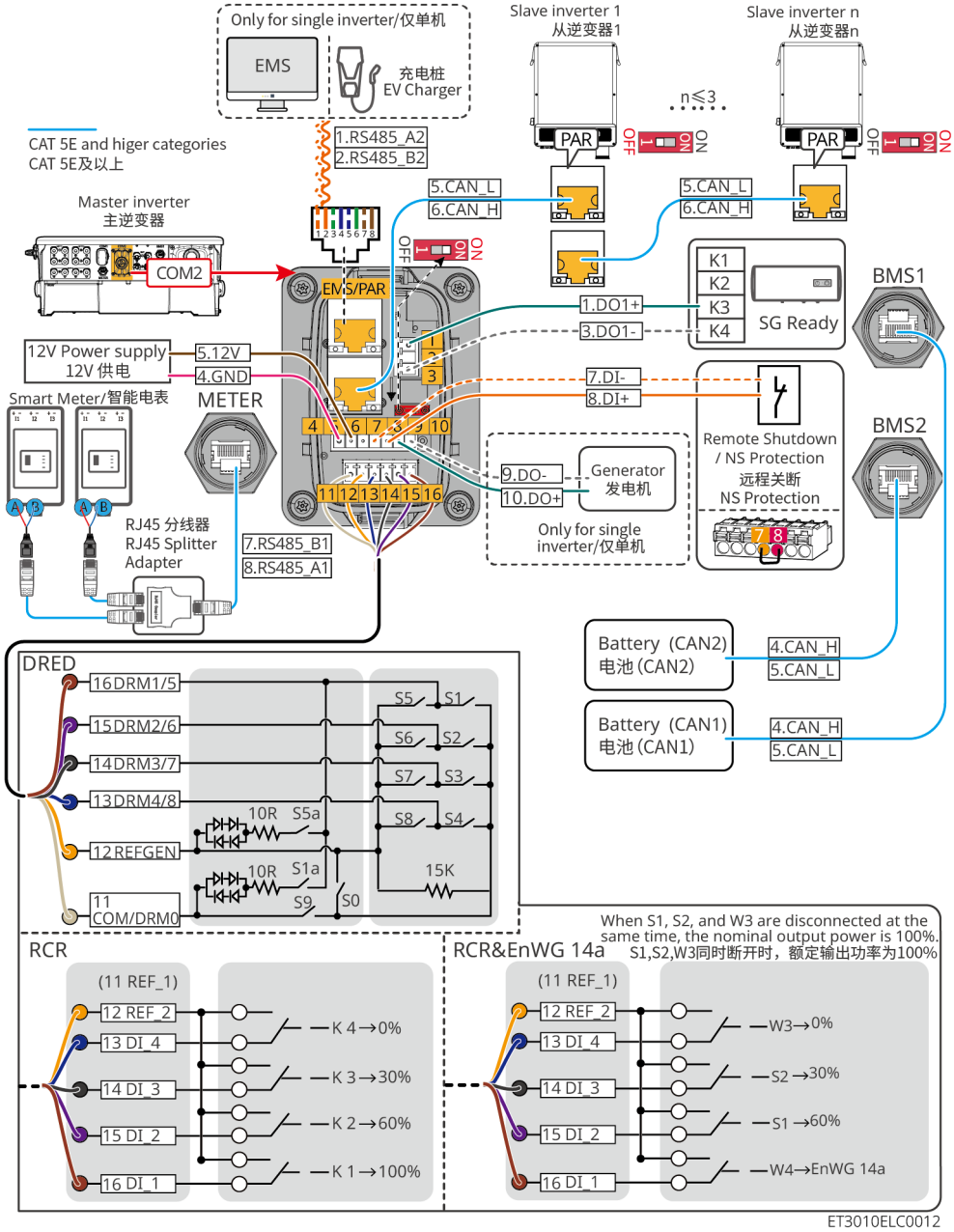
ATTENTION

- To ensure the normal operation of the meter and CT, please confirm the following items:
  - Please ensure the CT is connected in phase matching: CT1 connects to L1, CT2 connects to L2, CT3 connects to L3.
  - Please connect according to the CT's direction; otherwise, it may cause CT reverse fault.
  - When replacing or maintaining the CT later, please use the "Meter/CT - Auxiliary Detection Function" in the SolarGo App to make the inverter re-adapt to the CT sampling current direction.
- To use theDRED、RCR, or Remote Shutdown function, please enable this function in theSolarGo Appafter wiring is completed.
- If the inverter is Not Connected toDREDdevices or Remote Shutdown devices, do not enable this function in theSolarGo App; otherwise, the inverter cannot operate in grid-connected mode.
- In parallel system, to implement DRED and RCR functions, only connect the DRED and RCR communication cables to the master inverter.
- InverterDOsignal communication port, which can connect to dry contact signals. Specification parameters:Max≤24Vdc，1A。
- The inverter supports connecting to a mobile phone or WEB interface via 4G, Bluetooth, WiFi, or LAN to set device-related parameters, view device operation information and error messages, and promptly understand the system status.
- In stand-alone systems, it supports installation of WiFi/LAN Kit-20 or 4G Kit-CN-G20 smart communication sticks.
- In parallel systems, both master and slave inverters need to install WiFi/LAN Kit-20 smart communication sticks for networking.
- When using 4G Kit-CN-G20:

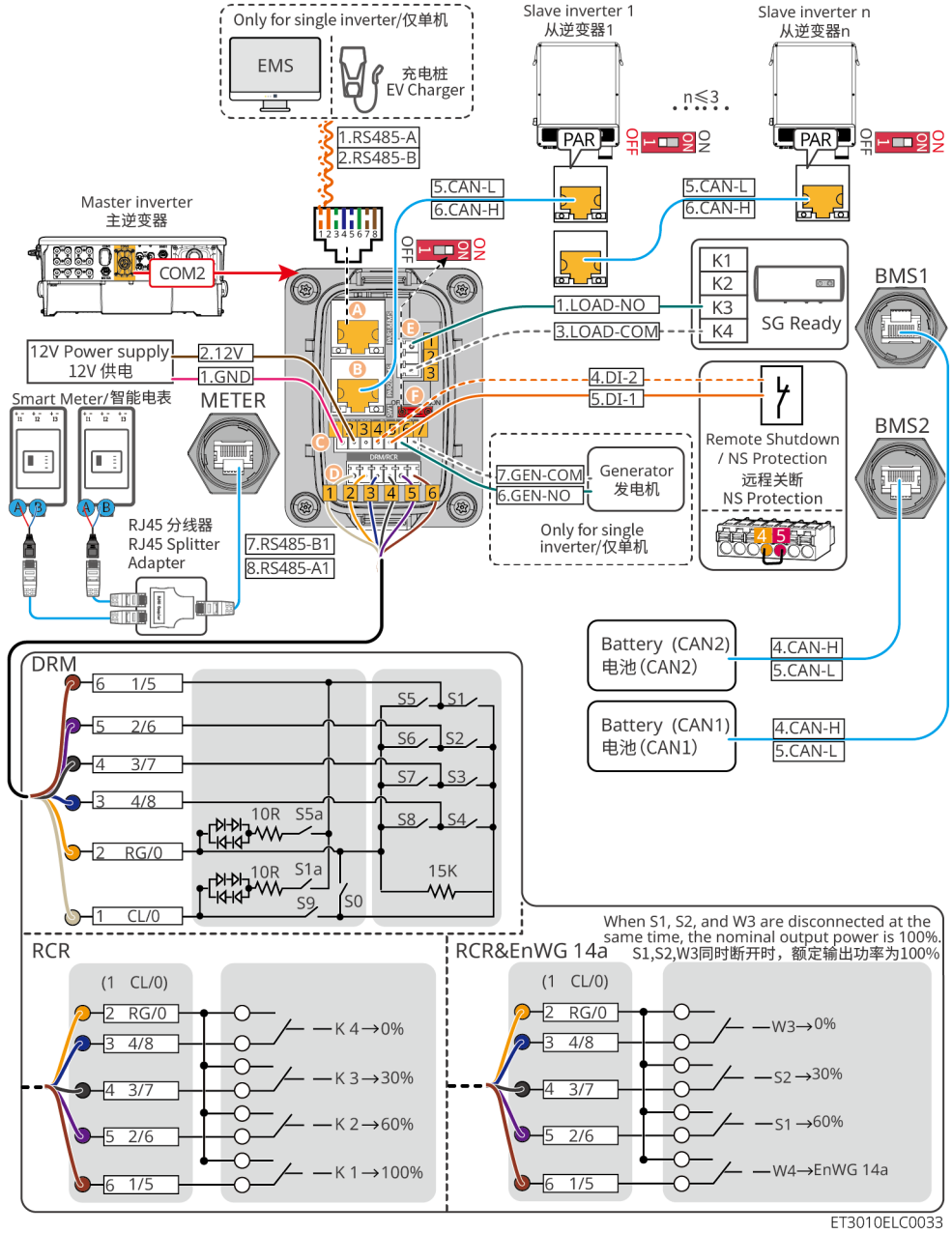
ATTENTION

  - For Parallel Networking, please contact GoodWe to purchase WiFi/LAN Kit-20.
  - Micro-SIM card is standard in China, with the operator being China Mobile. Please confirm that the device is installed in an area covered by the operator's signal. If local mobile signal is not covered, please contact the operator to optimize the signal.
  - Supports connection to third-party monitoring platforms via the MQTT communication protocol.
- The 4G Kit-CN-G20 is an LTE single-antenna device, suitable for application scenarios with low requirements for data transmission rate.
- If you need to pair with dual electricity meters to achieve grid-connected power generation monitoring and load power consumption monitoring, please use RJ45 splitter for adaptation.RJ45 splitter is self-provided or contact GoodWe to purchase.
- To ensure the inverter's IP rating, do not remove the waterproof plugs of unused communication ports on the inverter.
- The inverter's communication function is optional, please select according to the actual application scenario.

Type 1


Only for single inverter/仅单机
EMS
充电桩
EV Charger
Slave inverter 1
从逆变器1
Slave inverter n
从逆变器n
n≤3
PAR
OFF
ON
CAT 5E and higer categories
CAT 5E及以上
1.RS485_A2
2.RS485_B2
5.CAN_L
6.CAN_H
Master inverter
主逆变器
COM2
EMS/PAR
1.DO1+
3.DO1-
K1
K2
K3
K4
SG Ready
BMS1
BMS2
12V Power supply
12V 供电
5.12V
4.GND
Smart Meter/智能电表
METER
7.DI-
8.DI+
Remote Shutdown
/ NS Protection
远程关断
NS Protection
9.DO-
10.DO+
Generator
发电机
Only for single
inverter/仅单机
RJ45 分线器
RJ45 Splitter
Adapter
7.RS485_B1
8.RS485_A1
Battery (CAN2)
电池(CAN2)
4.CAN_H
5.CAN_L
Battery (CAN1)
电池(CAN1)
DRED
16 DRM1/5
15 DRM2/6
14 DRM3/7
13 DRM4/8
12 REFGEN
11
COM/DRM0
10R
S5a
S1a
S9
S0
15K
S5
S1
S6
S2
S7
S3
S8
S4
When S1, S2, and W3 are disconnected at the same time, the nominal output power is 100%.
S1,S2,W3同时断开时，额定输出功率为100%
RCR
RCR&EnWG 14a
(11 REF_1)
12 REF_2
13 DI_4
14 DI_3
15 DI_2
16 DI_1
K 4→0%
K 3→30%
K 2→60%
K 1→100%
W3→0%
S2→30%
S1→60%
W4→EnWG 14a
ET3010ELC0012

Type 2

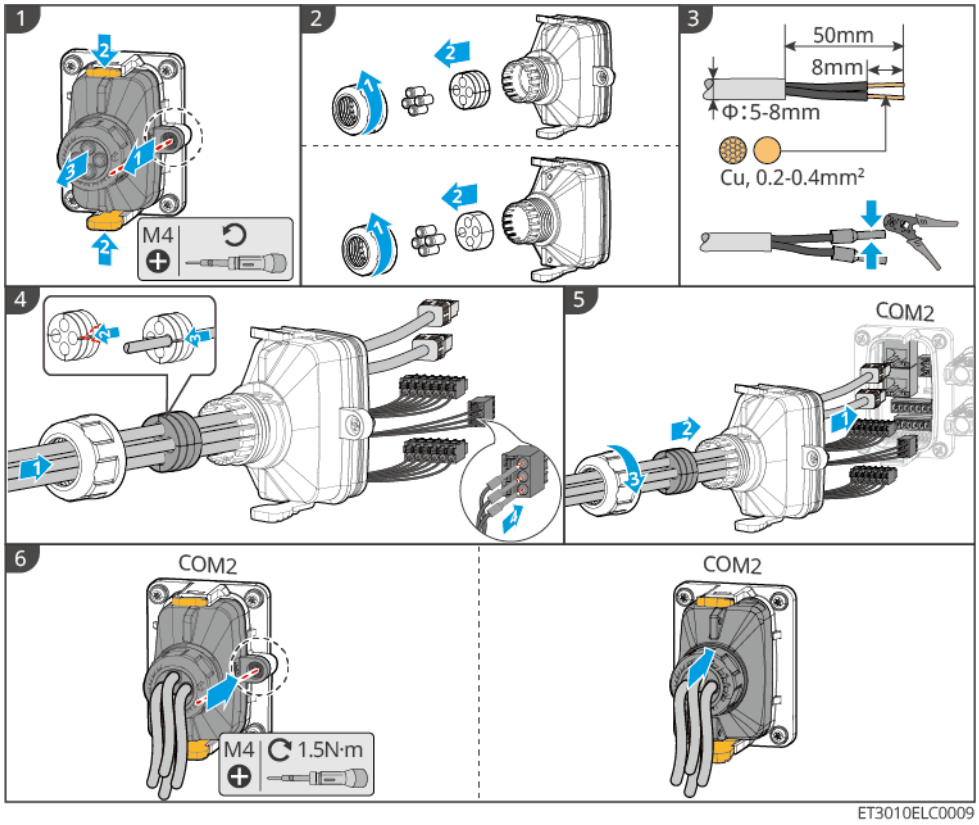

Only for single inverter/仅单机
EMS
充电桩
EV Charger
1.RS485-A
2.RS485-B
Slave inverter 1
从逆变器1
Slave inverter n
从逆变器n
n≤3
PAR
OFF
ON
5.CAN-L
6.CAN-H
Master inverter
主逆变器
COM2
K1
K2
K3
K4
SG Ready
BMS1
BMS2
1.LOAD-NO
3.LOAD-COM
12V Power supply
12V 供电
2.12V
1.GND
Smart Meter/智能电表
METER
4.DI-2
5.DI-1
Remote Shutdown
/ NS Protection
远程关断
NS Protection
7.GEN-COM
6.GEN-NO
Generator
发电机
Only for single
inverter/仅单机
RJ45 分线器
RJ45 Splitter
Adapter
7.RS485-B1
8.RS485-A1
Battery (CAN2)
电池(CAN2)
4.CAN-H
5.CAN-L
Battery (CAN1)
电池(CAN1)
DRM
6 1/5
5 2/6
4 3/7
3 4/8
2 RG/0
1 CL/0
10R S5a
10R S1a
S9
S0
15K
S5 S1
S6 S2
S7 S3
S8 S4
When S1, S2, and W3 are disconnected at the same time, the nominal output power is 100%.
S1,S2,W3同时断开时，额定输出功率为100%
RCR
(1 CL/0)
K 4→0%
K 3→30%
K 2→60%
K 1→100%
RCR&EnWG 14a
W3→0%
S2→30%
S1→60%
W4→EnWG 14a
ET3010ELC0033

Silkscreen	Function	Description
DO / LOAD	Load Control (SG Ready)	• Supports connection to dry contact signals to achieve functions such as load control.DOcontact capacity is 24V DC@1A, NO/COMnormally open contact. • SupportsSG Readyheat pump access, and controls the heat pump via dry contact signals. • Supported operating modes: ◦ Working Mode2(Signal:0:0）：Energy-saving Mode, in this mode, the heat pump operates in energy-saving mode. ◦ Working Mode3(Signal:0:1）：Start Recommendation, in this mode, the heat pump maintains its current operation while increasing hot water storage to store heat.
GND 12V RSD	12VPower Supply	The inverter provides12VPower Supply Port, which supports connection of5Wdevices at maximum. This port has short-circuit Protection Function.
DI	Remote Shutdown/NSProtection	Provides a signal control port to control the device's Remote Shutdown or realizeNSProtection Function. Remote Shutdown Function: • When an accident occurs, the device can be controlled to stop working. • The Remote Shutdown device must be a normally closed switch. • When the inverter usesRCRorDREDfunctions, please ensure that the Remote Shutdown device is connected, or the Remote Shutdown port is short-circuited.

Silkscreen	Function	Description
DO2 / GEN	Generator Start/Stop Control Port	• Only the standalone inverter scenario supports access to Diesel Generator Control signals. • Diesel Generator Control Mode is disabled by default, and the dry contact signal is open; when Control Mode is enabled, the dry contact signal becomes short-circuited.
DRM&RCR /	RCR、DREDorEnWG 14afunction connection port	• RCR （Ripple Control Receiver): ProvidesRCRsignal control port to meet grid dispatching requirements in regions such as Germany • DRED （Demand Response Enabling Device): ProvidesDREDsignal control port to meetDERDCertification requirements • EnWG（Energy Industry Act）14a: All controllable loads must accept emergency dimming from the grid. Grid operators can temporarily reduce the maximum grid power purchase of controllable loads to 4.2kW。
EMS/PAR/PAR-1/PAR1&EMS	• EMScommunication or charging pile communication port • Parallel communication port	• CANandBUSports: Parallel communication ports. In Parallel Networking,CANis used to communicate with other inverters; useBUSbus to control the On/Off-grid status of each inverter in parallel operation • RS485port: Used to connect third-partyEMSdevices and charging piles. Parallel operation scenarios do not support connecting third-partyEMSdevices and charging piles

Silkscreen	Function	Description
EMS/PAR / PAR1&EMS / PAR2&EMS	Parallel communication port	• CANandBUSports: Parallel communication ports. In Parallel Networking,CANis used to communicate with other inverters; useBUSbus to control the On/Off-grid status of each inverter in parallel operation
S1	Parallel operation DIP switch	Inverter parallel operation DIP switch, default is set toONposition In multi-inverter parallel scenarios, set the parallel operation DIP switches of the first and last inverters toONposition, and set other inverters to1position
METER	Smart meter connection port	Connect to smart meter to realize functions such as output Power Control and load monitoring
BMS1 / BMS2	Battery communication connection port	Connect to batteries using CAN communication GW12KL-ET、GW15K-ET、GW20K-ET：1 GW18KL-ET、GW25K-ET、GW29.9K-ET、GW30K-ET：2

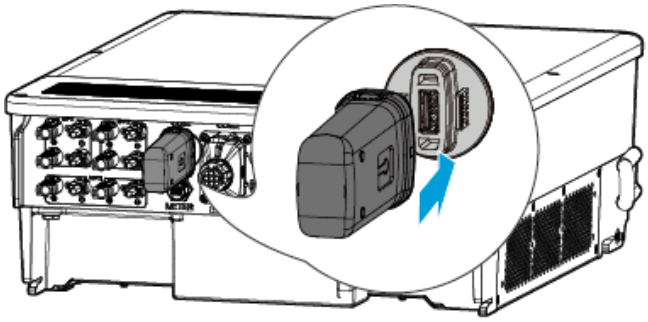
Method for connecting communication cables



5.10 Connect the Smart Communication Stick

ATTENTION

- The inverter supports Bluetooth,4G、WiFi、LANsmart communication stick to connect to a mobile phone orWEBset device-related parameters via the interface, view device operation information and error messages, and promptly understand the system status.
- When the system contains multiple inverters for Parallel Networking, the master inverter needs to install theEzlink3000smart communication stick for networking.
- When the energy storage system has only one inverter, you can use theWiFi-Kit、WiFi/LAN Kit-20or4Gsmart communication stick.
- When selecting theWiFicommunication method to connect the inverter to the router, you can install theWiFi-Kit、WiFi/LAN Kit-20orEzlink3000smart communication stick.
- When selecting theLANcommunication method to connect the inverter to the router, you can install theWiFi/LAN Kit-20orEzlink3000smart communication stick.
- When selecting the4Gcommunication method to upload the energy storage system operation information to the monitoring platform, you can install theLS4G Kit-CN、4G Kit-CN、4G Kit-CN-G20or4G Kit-CN-G21communication module. When selecting theLS4G Kit-CNor4G Kit-CN, you need to use the smart communication stick shipped with the inverter to configure parameters for the energy storage system. After configuration is complete, replace it with theLS4G Kit-CNor4G Kit-CNfor data transmission. When selecting the4G Kit-CN-G20or4G Kit-CN-G21, please use the Bluetooth signal emitted by the module for local device configuration.
- 4G module is aLTEsingle-antenna device，suitable for application scenarios with low requirements for data transmission rate.
- 4G module has a built-inSIMcard which is a mobile communication card. Please confirm whether the device is installed in an area covered by mobile4Gsignals;
- 4G Kit-CN-G20or4G Kit-CN-G21communication stick, please contact the after-sales service center to bind the inverter and the communication stick. After binding, if you need to install the communication stick on another inverter, please first contact the after-sales service center to unbind.
- To ensure the current detection accuracy of the4Gsignal communication quality, do not install the device indoors or in areas with metal signal interference.



ET3010ELC0034

6 System Trial Run

6.1 Pre-System Power-on Inspection

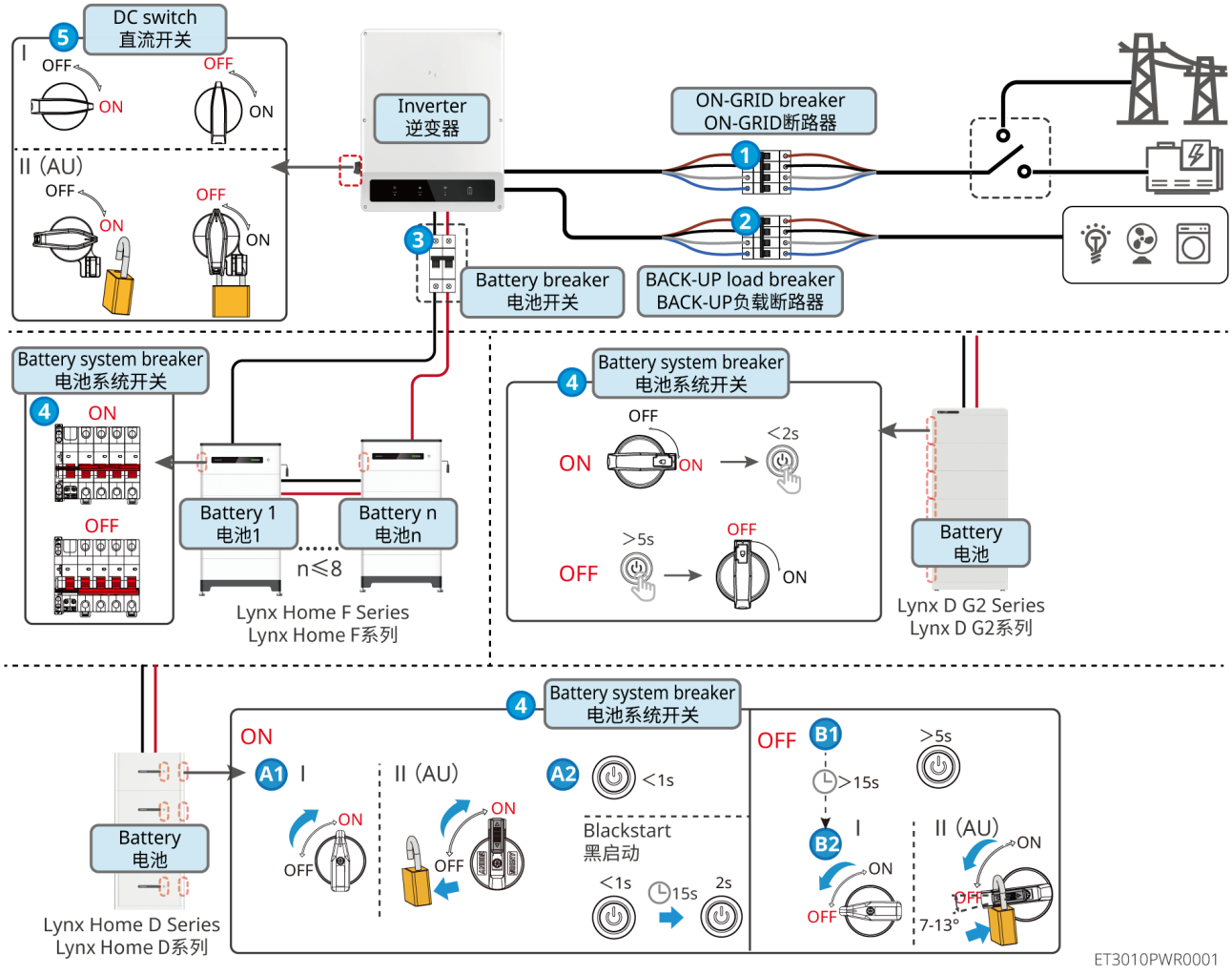
Serial Number	Inspection items
1	The equipment is installed firmly, the installation location is convenient for operation and maintenance, the installation space is convenient for ventilation and heat dissipation, and the installation environment is clean and tidy
2	Protection ground wire, DC wire, AC wire, communication wire, and terminal resistor are connected correctly and firmly
3	Cable binding meets routing requirements, is reasonably distributed, and has no damage
4	For unused cable holes and ports, be sure to use the supporting terminals to connect reliably and seal them
5	Ensure that the used cable holes are sealed
6	The voltage and frequency at the inverter grid connection point meet the grid connection requirements

6.2 System Power-On

⚠WARNING

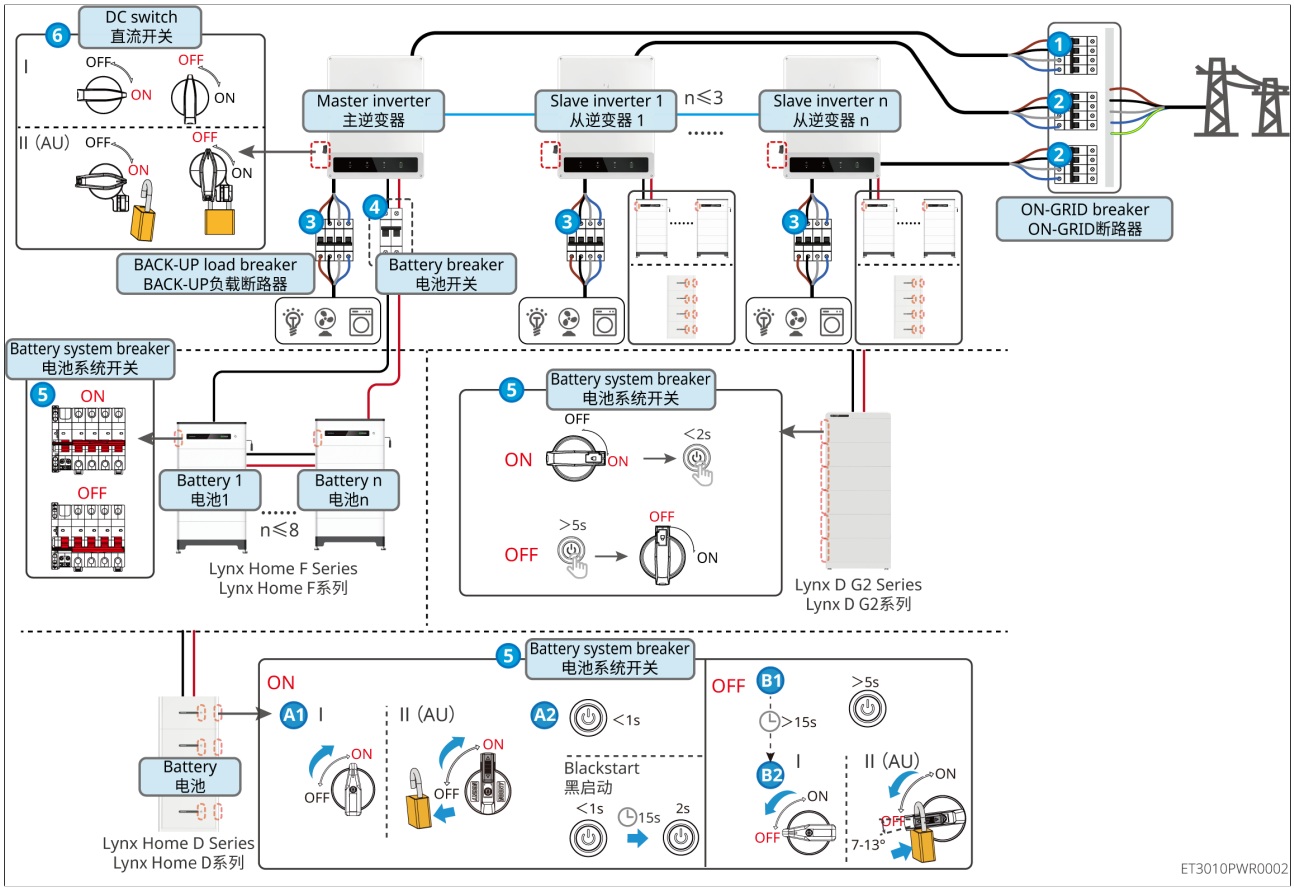
- Battery black start function: When there is no power generated by PV in the photovoltaic system and the grid is abnormal, if the inverter cannot work normally, the battery black start function can be used to force the battery to discharge to start the inverter, and the inverter can enter off-grid mode to operate, supplying power to the load from the battery
- After the battery system starts up, ensure that the communication between the inverter and the battery system is normal within 15 minutes. If the communication between the inverter and the battery system is abnormal, the battery system switch will automatically disconnect, and the battery system will be powered off.

Stand-alone scenario



1. (Selected in accordance with local regulations) Close the switch between the inverter and the battery.
2. Start the battery system.
   - Normal battery startup
     - Lynx Home F series: Close the battery system switch.
     - Lynx Home D: Turn the battery power switch to the ON position and short-press the battery multi-function button. Each battery needs to be powered on separately.
     - Lynx D G2: Close the battery power switch and short-press the battery's multi-function button. When there are multiple batteries in the system, close the power switches of all batteries. Short-pressing the multi-function button of any one battery will start all batteries.
   - Battery black start
     - Lynx Home F series: Close the battery system switch, long-press the control box multi-function button for 5s-10s to start the battery system. If it is a parallel cluster system, long-press the multi-function buttons of all battery systems in sequence.
     - Lynx Home D: Turn the battery power switch to the ON position and short-press the battery multi-function button; each battery needs to be powered on separately; after all batteries are powered on separately, wait for 15 seconds, then press the battery multi-function button for 2s on any one battery.
     - Lynx D G2: When there are multiple batteries in the system, close the power switches of all batteries. After all batteries are powered on separately, wait for 15 seconds, press the multi-function button of any one battery for 2 seconds, and the battery will force-discharge to activate the inverter.
3. Close the DC Switch of the inverter.
4. Close the inverter's ON-GRID circuit breaker.
5. Close the BACK-UP circuit breaker.

Parallel operation scenario



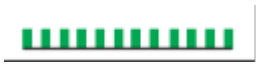
1. (Selected in accordance with local regulations) Close the switch between the inverter and the battery.
2. Start the battery system.
   - Normal battery startup
     - Lynx Home F series: Close the battery system switch.
     - Lynx Home D: Turn the battery power switch to the ON position and short-press the battery multi-function button. Each battery needs to be powered on separately.
     - Lynx D G2: Close the battery power switch and short-press the battery's multi-function button. When there are multiple batteries in the system, close the power switches of all batteries. Short-pressing the multi-function button of any one battery will start all batteries.
   - Battery black start
     - Lynx Home F series: Close the battery system switch, long-press the control box multi-function button for 5s-10s to start the battery system. If it is a parallel cluster system, long-press the multi-function buttons of all battery systems in sequence.

- Lynx Home D: Turn the battery power switch to the ON position and short-press the battery multi-function button; each battery needs to be powered on separately; after all batteries are powered on separately, wait for 15 seconds, then press the battery multi-function button for 2s on any one battery.
- Lynx D G2: When there are multiple batteries in the system, close the power switches of all batteries. Short-press the multi-function button of any one battery to start the battery, wait for 15 seconds after each battery is powered on separately, press the multi-function button of any one battery for 2 seconds, and the battery will force-discharge to activate the inverter

3. Close the DC Switch of the inverter.
4. Close the ON-GRID circuit breaker of the master inverter.
5. Close the ON-GRID circuit breaker of the slave inverter
6. Close the BACK-UP circuit breaker.

6.3 Indicator Introduction

6.3.1 Inverter Indicator Light

Indicator Light	Status	Note
		The inverter has been powered on and is in standby mode
		The inverter is starting up and in self-check mode
		The inverter is operating in normal grid-connected power generation or off-grid mode
		BACK-UP output Overload
		System Fault
		The inverter has been powered off
		Abnormal grid, the inverter's BACK-UP port has normal power supply
		Normal grid, the inverter's BACK-UP port has normal power supply
		BACK-UP port has no power supply
		Inverter monitoring module is resetting

Indicator Light	Status	Note
		The inverter has not established a connection with the communication terminal
		Communication fault between communication terminal and cloud server
		Inverter monitoring is normal
		Inverter monitoring module not started

6.3.2 Battery Indicator Light

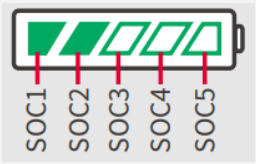
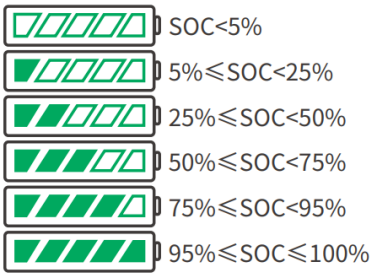
6.3.2.1 Lynx Home F Series



LXU10CON0001

Normal status

SOCIndicator Light	Button indicator light	Battery system status
	Green flashes1th/s	Battery system is in standby mode
	Green flashes2th/s	Battery system is in idle state

SOCIndicator Light 	Button indicator light 	Battery system status
SOCindicator light indicates the battery system's state of charge 	Green is constantly on	Battery system is in charging state Note: When the batterySOCreaches the charge cutoffSOC, charging of the battery will stop.
MaximumSOCindicator light flashes1th/s • When5%≤SOC<25%whenSOC1Flashing • When25%≤SOC<50%whenSOC2Flashing • When50%≤SOC<75%whenSOC3Flashing • When75%≤SOC<95%whenSOC4Flashing • When95%≤SOC≤100%whenSOC5Flashing	Green is constantly on	Battery system is in discharging state Note: When the system does not need to power the load or the battery SOCis lower than the set depth of discharge, the battery will stop discharging.

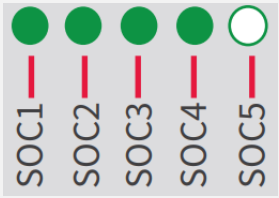
Abnormal status

Button indicator light	Battery system status	Note
Red flashes1th/s	Battery system has an alarm	After the battery system generates an alarm, it will perform a self-check. Wait for the self-check to complete, then the battery system will enter normal operation status or fault status.
Red is constantly on	Battery system has a fault	CombineSOCthe display form of the indicator light to determine the fault type, and handle it according to the methods recommended in the fault handling chapter.

6.3.2.2 Lynx Home D

Normal status

SOCIndicator Light	Button indicator light	Battery system status
SOCindicator light indicates the battery system's state of charge SOC<5% 5%≤SOC<25% 25%≤SOC<50% 50%≤SOC<75% 75%≤SOC<95% 95%≤SOC≤100%	Green flashes	Battery system is in standby mode
	Green is constantly on	Battery system is in charging state Note: When the batterySOCreaches the charge cutoffSOC, charging of the battery will stop.

SOCIndicator Light 	Button indicator light 	Battery system status
MaximumSOCindicator light flashes1th/s • When5%≤SOC<25%whenSOC1Flashing • When25%≤SOC<50%whenSOC2Flashing • When50%≤SOC<75%whenSOC3Flashing • When75%≤SOC<95%whenSOC4Flashing • When95%≤SOC≤100%whenSOC5Flashing	Green is constantly on	Battery system is in discharging state Note: When the system does not need to power the load or the battery SOCis lower than the set depth of discharge, the battery will stop discharging.

Abnormal status

Button indicator light 	Battery system status	Note
Red flashes	Battery system has an alarm	After the battery system generates an alarm, it will perform a self-check. Wait for the self-check to complete, then the battery system will enter normal operation status or fault status. Can upload system operation information to the monitoring platform viaAppview alarm information.

Button indicator light 	Battery system status	Note
Red is constantly on	Battery system has a fault	Can be combined withSOCindicator light display form to determine the type of fault that has occurred or viaAppview fault information, and handle it according to the methods recommended in the fault handling chapter.

6.3.2.3 Lynx D G2

Serial Number	 Green light	 Red light	Battery system status	Note
1	Steady on	--	System is operating normally	Run
2	Flashing1th/S		System is ready	Standby
	Flashing3th/S	--	PCSPCS Comm Loss	--
3	Flashing1th/2S	--	System alarm	Includes2level faults, where under-voltage faults are at2、3、4levels
4	--	Steady on	System Fault	Includes3level and above faults in the fault list (under-voltage faults are always lit at5level)

6.3.3 Smart Meter Indicator Light

GM330&GMK330

type	Status	Note
	Steady on	Meter powered on, no RS485 communication

type	Status	Note
Power indicator light 	Flashing	Meter powered on, RS485 communication normal
	Off	Meter powered off
Communication indicator light 	Off	reserved
	Flashing	Press and hold the Reset button for ≥5s, power indicator light and Import/Export Energy indicator light flash: Meter reset
Import/Export Energy indicator light 	Steady on	Import energy from grid
	Flashing	Export energy to grid
	Off	No energy import, no energy export
	reserved	

GM3000

type	Status	Note
Power indicator light 	Steady on	Meter powered on
	Off	Meter powered off
Import/Export Energy indicator light 	Steady on	Import energy from grid
	Flashing	Export energy to grid
Communication indicator light 	Flashing	Communication normal
	Continuous flashing5th	• PressResetbutton<3s: Meter reset • PressResetbutton5s: Restore meter parameters to factory settings • PressResetbutton>10s: Restore meter parameters to factory settings, clear energy data
	Off	No communication with the meter

6.3.4 Smart Communication Stick Indicator Light

- **Wi-Fi Kit**

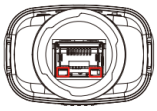
Indicator Light	Color	Status	Note
Power indicator light 	Green	On	Wi-Fi Kitis powered on.
		Off	Wi-Fi Kitis not powered on or is restarting.
Communication indicator light 	Blue	On	WiFi APhotspot is connected.
		Off	• Wi-Fi Kitcommunication is abnormal. • Wi-Fi Kitis restarting.

- **WiFi/LAN Kit-20**

ATTENTION
• Double-click the Reload button to enable Bluetooth, then the communication indicator light will switch to a single-flashing state. Please connect to the SolarGo app within 5 minutes, otherwise Bluetooth will turn off automatically. • The single-flashing state of the communication indicator light only appears after double-clicking the Reload button to enable Bluetooth.

Indicator Light	Status	Note
Power indicator light 		Constantly on: Smart Communication Stick is powered on.
		Off: Smart Communication Stick is not powered on

Indicator Light	Status	Note
Communication indicator light		Constantly on: Communication is normal in WiFi mode or LAN mode.
		Single-flashing: Smart Communication Stick's Bluetooth signal is enabled, waiting to connect to the SolarGo app.
		Double-flashing: Smart Communication Stick is Not Connected to the router.
		Four-flashing: Smart Communication Stick communicates normally with the router, but is Not Connected to the server
		Six-flashing: Smart Communication Stick is identifying connected devices.
		Off: Smart Communication Stick is undergoing software reset or not powered on.

Indicator Light	Color	Status	Note
LAN Port Communication Indicator Light 	Green	Steady on	100Mbps Wired Network Connection is Normal.
		Off	• Network cable is Not Connected. • 100Mbps Wired Network Connection is Abnormal. • 10Mbps Wired Network Connection is Normal.
	Yellow	Steady on	10/100Mbps Wired Network Connection is Normal, no communication data transmission/reception.
		Flashing	Communication data is being transmitted and received.
		Off	Network cable is Not Connected.

button	Note
Reload	Press and hold for 0.5~3 seconds, the Smart Communication Stick will reset.
	Press and hold for 6~20 seconds, the Smart Communication Stick will restore factory settings.

button	Note
	Quick double-click to enable Bluetooth signal (only lasts for 5 minutes).

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

Indicator Light	Status	Note
		Constantly on: Smart Communication Stick is powered on.
		Off: Smart communication stick not powered on.
		Steady on: Smart communication stick connected to server, communication normal.
		Double flash: Smart communication stick Not Connected to communication base station.
		Four flashes: Smart communication stick connected to communication base station, Not Connected to server.
		Six flashes: Communication between smart communication stick and inverter is disconnected.
		Off: Smart Communication Stick is undergoing software reset or not powered on.

button	Description
RELOAD	Press and hold for 0.5~3 seconds, the smart communication stick will restart.
	Press and hold for 6~20 seconds, the Smart Communication Stick will restore factory settings.

- **LS4G Kit-CN、4G Kit-CN**

Indicator Light	Color	Status	Note
Power indicator light 	Green	On	Module is fastened and powered on
		Off	Module not fastened or not powered on

Communication indicator light	Blue	Slow flash (0.2on,1.8soff)	• Inverter communication light2flashes: Dialing, network searching state • Inverter communication light4flashes: Cloud connection failed due to no traffic
		Slow flash (1.8son,0.2soff)	• Inverter communication light2flashes: Dialing succeeded • Inverter communication light steady on: Cloud connection succeeded • Inverter communication light4flashes: Cloud connection failed due to no traffic
		Fast flash (0.125son,0.125soff)	Inverter is communicating with cloud via module
		0.2son,8sOff	Not installedSIMcard orSIMcard poor contact

- **Ezlink3000**

Indicator Light/Silkscreen	Color	Status	Note
Power indicator light	Blue		Flashing: Communication stick is working normally.
			Off: Communication stick is powered down.
Communication indicator light	Green		Steady on: Communication stick connected to server.
			Double flash: Communication stick Not Connected to router.
			Four flashes: Communication stick connected to router, Not Connected to server.

RELOAD	-	-	Short press1-3seconds to restart communication stick. Long press6-10seconds to restore factory settings. Quick double-click to enable Bluetooth signal (only lasts5minutes).

7 System Commissioning and Power Station Monitoring

7.1 Use SEMS+ App for Device Debugging and Power Station Monitoring

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

- Remotely monitor the power station operation status and set the operation parameters of the power station and devices.
- Connect to devices locally, view the device operation status and set device parameters.

Download and install SEMS+ App

Mobile phone requirements:

- Mobile operating system requirements: Android 7.0 and above, iOS 15.1 and above.
- The mobile phone supports a web browser to connect to the Internet.
- This phone supports WLAN/Bluetooth functions.

Download method:

Method 1:

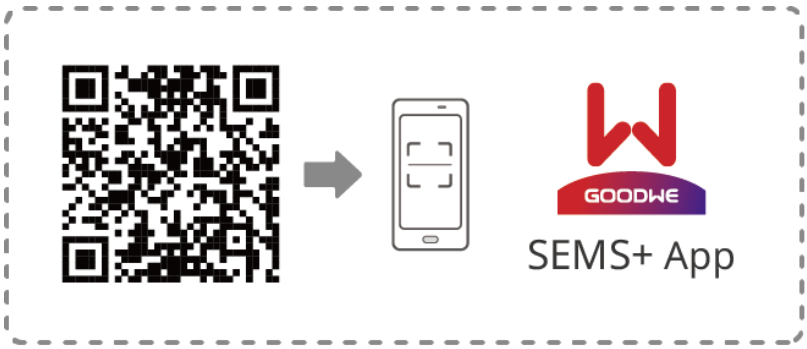
Search for SEMS+ in Google Play, App Store, Huawei, Honor, Xiaomi, OPPO, and vivo app stores, then download and install it.



SEMS0163

Method 2:

Scan the following QR code to download and install.



SEMS0164

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 following QR code.

《SEMS+ App User Manual》

7.2 Use SEMS+ WEB for Device Commissioning and Power Station Monitoring

SEMS+ WEB is a monitoring platform that can communicate 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 station information, etc.
3. Maintain devices.

For detailed functions, please refer to《SEMS+ WEB User Manual》。

《SEMS+ WEB User Manual》

8 System Maintenance

8.1 System Power-Off

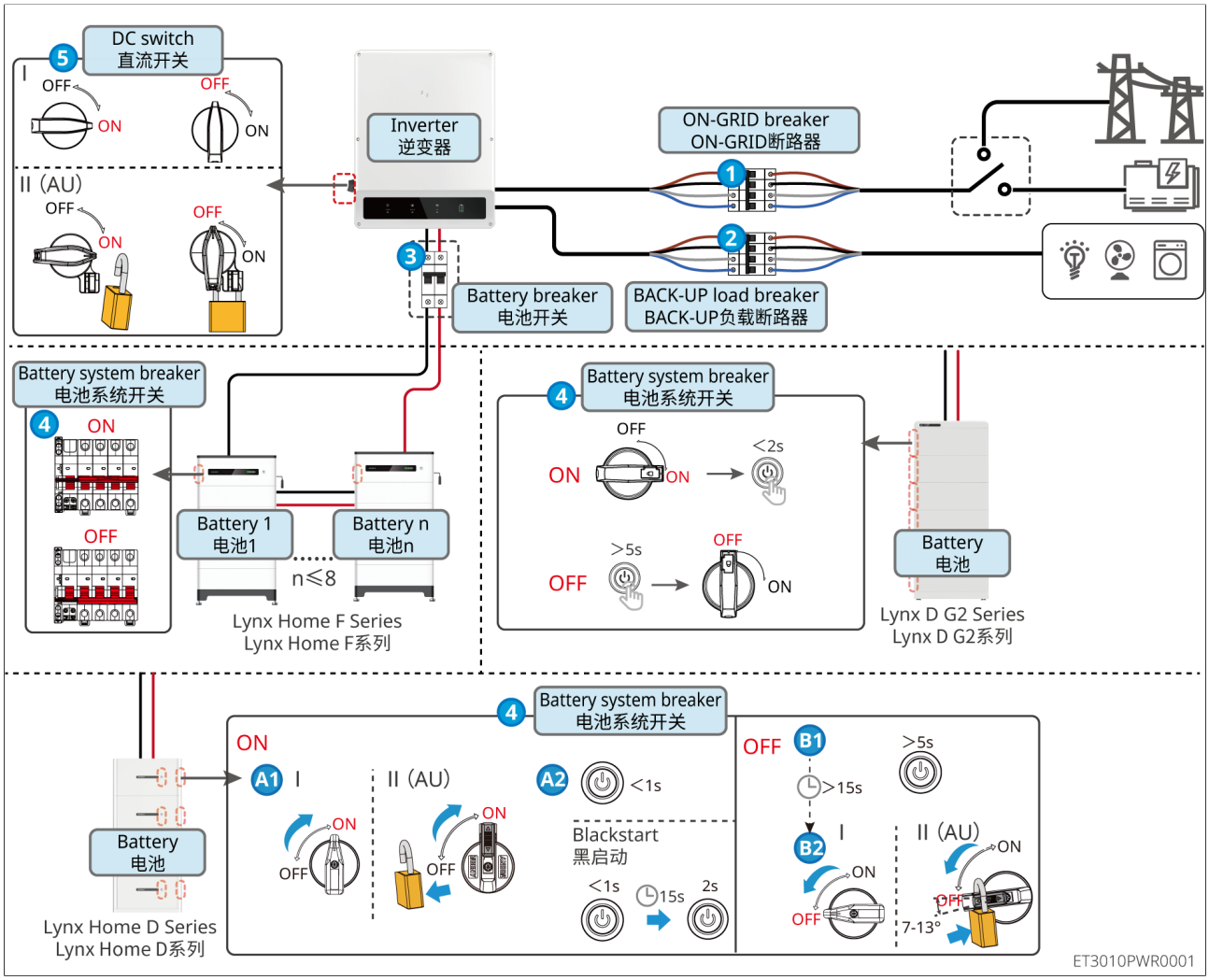
⚠DANGER

- When operating and maintaining equipment in the system, please perform system power-off. Live operation of equipment may cause equipment damage or electric shock hazard.
- After equipment power-off, internal components require a certain time to discharge. Please wait until the equipment is fully discharged according to the time requirements on the label.
- To restart the battery, use the air switch power-on method for restart.
- When shutting down the battery system, strictly comply with 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.

ATTENTION

- The circuit breakers between the inverter and the battery, and between battery systems shall be installed in accordance with local laws and regulations.
- To ensure effective protection of the battery system, the cover of the battery system switch shall remain closed; the protective cover will automatically close after being opened. If the battery system switch is not used for a long time, it shall be fastened with screws.

Stand-alone scenario

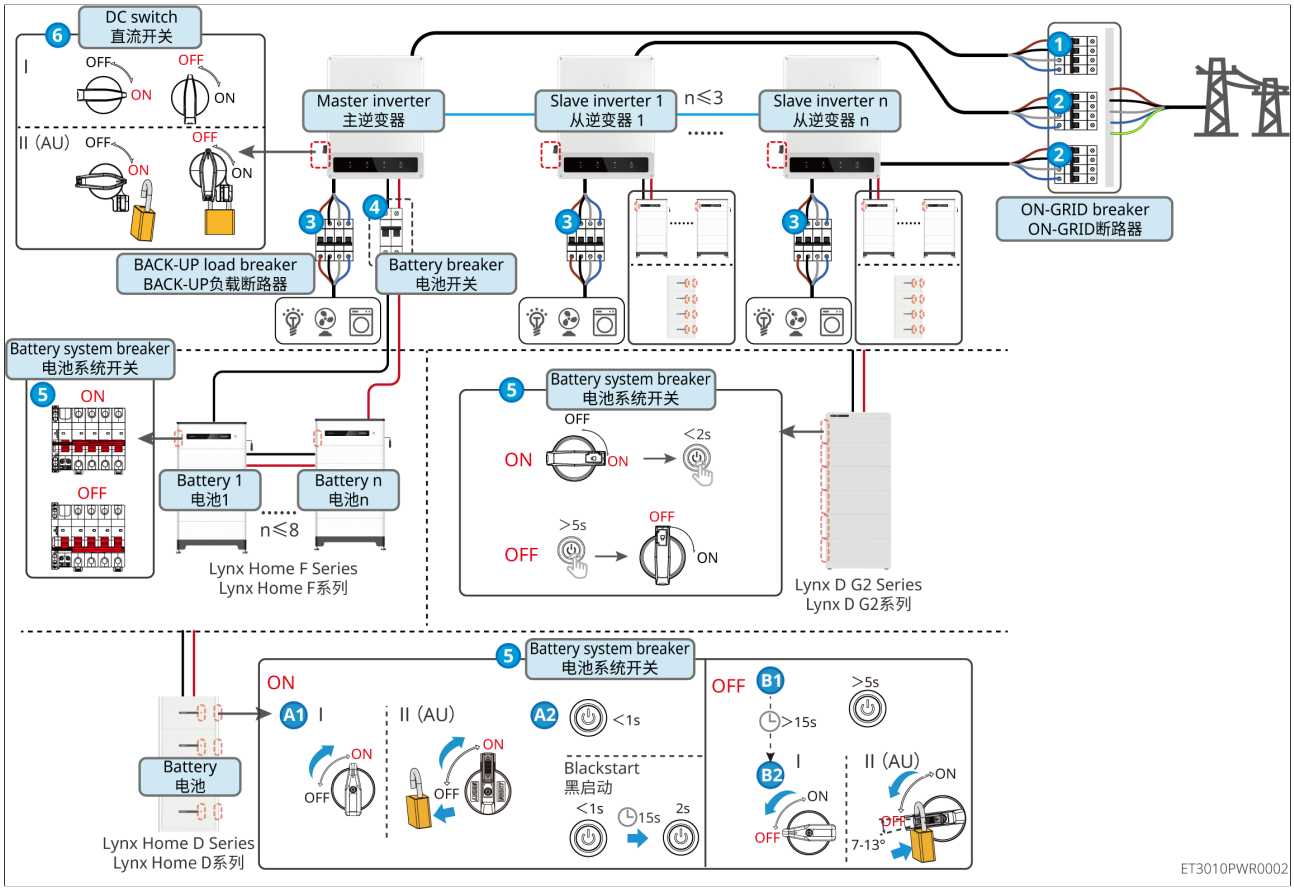


Power-off steps:

❷→❶→❸→❹→❺

❸ : Optional according to local laws and regulations.

Parallel operation scenario



Power-off steps:

❸→❶→❷→❹→❺→❻

❹ : Optional according to local laws and regulations.

8.2 Equipment Removal

DANGER

- Ensure the equipment is powered off.
- When operating equipment, please wear personal protective equipment.
- When removing terminals, use standard disassembly tools to avoid damaging the terminals or equipment.
- Unless otherwise specified, the equipment disassembly method is the reverse of the installation method, which will not be repeated in this document.

1. Perform system power-off.
2. Use labels to mark the types of cables connected in the system.
3. Disconnect the connecting cables of the inverter, battery, and smart meter in the system, such as: DC cables, AC cables, communication cables, Protection ground wires.
4. Remove devices such as smart communication sticks, inverters, batteries, and smart meters.
5. Store the equipment properly; if it needs to be put into use later, ensure the storage conditions meet the requirements.

8.3 Equipment Scrapping

When the equipment cannot be used anymore and needs to be scrapped, dispose of it in accordance with the electrical waste disposal requirements of the laws and regulations of the country/region where the equipment is located; do not treat the equipment as household waste.

8.4 Periodic Maintenance

⚠WARNING

- If any problem that may affect the battery or energy storage inverter system is found, contact after-sales personnel; do not disassemble it without permission.
- If copper wires inside the conductive cable are exposed, do not touch it (high voltage hazard); contact after-sales personnel and do not disassemble it without permission.
- If other emergencies occur, contact after-sales personnel immediately, operate under their guidance, or wait for their on-site operation.

Maintenance content	Maintenance method	Maintenance cycle	Maintenance purpose
System Cleaning	Check if there are foreign objects or dust on the heat sinks, fans, air inlets/outlets. Check if the installation space meets the requirements, and check if there is debris accumulation around the equipment.	Once every six months	Prevent heat dissipation failures.
System Installation	Check if the equipment installation is stable, and if the fastening screws are loose Check if the equipment appearance has damage or deformation.	Once every six months to once a year	Confirm the stability of the equipment installation.
Electrical Connection	Check if the electrical connections are loose, if the cables have damaged appearance, and if there is copper exposure.	Once every six months to once a year	Confirm the reliability of the electrical connections.
Sealing Performance	Check if the sealing performance of the equipment's cable entry holes meets the requirements; if the gap is too large or not sealed, re-seal it.	Once a year	Confirm that the equipment's sealing and waterproof performance are intact.
Battery Maintenance	If the battery has not been used or fully charged for a long time, it is recommended to charge the battery regularly.	Once every 15 days	Protect the service life of the battery.

8.5 Fault

ATTENTION
The fault content in the manual is updated irregularly; faults may vary slightly among different models, please refer to the real-time display of the equipment for details.

8.5.1 View Detailed Information on Faults/Alerts

All detailed fault and alert information of the energy storage system is displayed on [SEMS+ App] and [SEMS+ WEB]. If your product is abnormal and you do not see the relevant fault information on [SEMS+ App] and [SEMS+ WEB], please contact the after-sales service center.

- SEMS+ App

1. Open SEMS+ App and log in with any account.
2. Go to [Power Station] > [Alerts] to view all power station fault information.
3. Click on the specific fault name to view the time when the fault occurred, possible causes, and solutions.

- SEMS+ WEB

1. Open SEMS+ WEB and log in with any account.
2. On the power station details interface, click [Alarm] to view all alarm information of the current power station.

8.5.2 Fault Information and Handling Methods

Please perform fault troubleshooting according to the following methods. If the troubleshooting methods do not help you, please contact the after-sales service center.
When contacting the after-sales service center, please collect the following information to facilitate quick problem resolution.

1. Product information, such as: serial number, software version, device installation time, fault occurrence time, fault occurrence frequency, etc.
2. Device installation environment, such as: weather conditions, whether the components are blocked or shaded, etc. It is recommended to provide photos, videos, and other files to assist in analyzing the problem.

3. Grid conditions.

8.5.2.1 System Fault

If an unlisted problem occurs in the system, or the problem or abnormality still cannot be prevented by following the instructions, please stop the system operation immediately and contact your dealer immediately.

Serial Number	Fault	Solution
1	Cannot search for the wireless signal of the smart communication stick	1. Please ensure no other devices are connected to the wireless signal of the smart communication stick 2. Please ensure the App has been upgraded to the latest version 3. Ensure the smart communication stick is powered normally, and the blue indicator light is in flashing or steady-on state 4. Ensure the smart device is within the communication range of the smart communication stick 5. Refresh the App device list 6. Restart the inverter
2	Cannot connect to the wireless signal of the smart communication stick	1. Please ensure no other devices are connected to the wireless signal of the smart communication stick 2. Restart the inverter or communication stick, and try to connect to the wireless signal of the smart communication stick again 3. Ensure Bluetooth has been successfully encrypted and paired
3	Cannot find the router SSID	1. Place the router closer to the smart communication stick, or add a WiFi relay device to enhance the WiFi signal 2. Reduce the number of devices connected to the router

Serial Number	Fault	Solution
4	After all configurations are completed, the smart communication stick fails to connect to the router	1. Restart the inverter 2. Check if the network name, encryption method, and password in the WiFi configuration are the same as those of the router 3. Restart the router 4. Place the router closer to the smart communication stick, or add a WiFi relay device to enhance the WiFi signal
5	After all configurations are completed, the smart communication stick fails to connect to the server	Restart the router and inverter

8.5.2.2 Inverter Fault

8.5.2.2.1 Fault Handling (Fault Codes F01-F40)

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F01	Grid Power Outage	1. Grid Power Outage. 2. AC line or AC Switch is disconnected.	1. The alarm will automatically disappear after grid power supply is restored. 2. Check whether the AC line or AC Switch is disconnected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F02	Grid Overvoltage Protection	Grid voltage exceeds the allowable range, or the Duration of overvoltage exceeds the set value for High Voltage Ride Through.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If it occurs frequently, please check whether the grid voltage is within the allowable range; if not, please contact the local power operator. If yes, you also need to modify the Grid Overvoltage Protection point after obtaining the consent of the local power operator. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected normally.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F03	Grid Undervoltage Protection	Grid voltage is lower than the allowable range, or the Duration of Low Voltage exceeds the set value for Low Voltage Ride Through.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, also modify the grid undervoltage protection point after obtaining the consent of the local power operator. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected normally.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F04	Grid Rapid Overvoltage Protection	Grid voltage detection is abnormal or an overvoltage triggers a fault.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, also modify the grid undervoltage protection point after obtaining the consent of the local power operator. 3. If it cannot be recovered for a long time, please check whether the AC side circuit breaker and output cable are connected normally.
F05	10minGrid 10min Overvoltage	In the10minperiod, the moving average of the grid voltage exceeds the range specified by safety standards.	Check if the grid voltage has been operating at a high voltage for a long time. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator. If yes, also modify the grid10minprotection point.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F06	Grid Overfrequency	Grid abnormality: The actual grid frequency is higher than the local grid standard requirement.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator. If yes, also modify the grid overfrequency protection point after obtaining the consent of the local power operator.
F07	Grid Underfrequency	Grid abnormality: The actual grid frequency is lower than the local grid standard requirement.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator. If yes, also modify the grid underfrequency protection point after obtaining the consent of the local power operator.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F08	Grid Frequency Instability	Grid abnormality: The actual grid frequency change rate does not comply with the local grid standard.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator.
F09	Anti-islanding Protection	The grid has been disconnected, the grid voltage is maintained due to the presence of loads, and grid connection is stopped in accordance with safety protection requirements.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator.
F10	Voltage Ride-Through Undervoltage Fault	Grid abnormality: The duration of grid voltage abnormality exceeds the time specified by Low-Voltage Ride-Through (LVRT) and High-Voltage Ride-Through (HVRT).	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F11	HVRT Overvoltage	Grid abnormality: The duration of grid voltage abnormality exceeds the time specified by Low-Voltage Ride-Through (LVRT) and High-Voltage Ride-Through (HVRT).	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator.
F12	30mAGfciProtection	During inverter operation, the input-to-ground insulation impedance decreases.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line. It will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, check if the ground impedance of the PV string is too low.
F13	60mAGfciProtection	During inverter operation, the input-to-ground insulation impedance decreases.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line. It will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, check if the ground impedance of the PV string is too low.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F14	150mAGfciProtection	During inverter operation, the input-to-ground insulation impedance decreases.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line. It will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, check if the ground impedance of the PV string is too low.
F15	GfciSlow Variation Protection	During inverter operation, the input-to-ground insulation impedance decreases.	1. If it occurs accidentally, it may be caused by an occasional abnormality in the external line. It will return to normal operation after the fault is cleared, and no manual intervention is required. 2. If it occurs frequently or cannot be recovered for a long time, check if the ground impedance of the PV string is too low.
F16	DCIProtection Level1	The DC component of the inverter output current exceeds the allowable range specified by safety standards or the machine's default setting.	1. If the anomaly is caused by an external fault, the inverter will automatically resume normal operation after the fault is eliminated, without manual intervention. 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.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F17	DCIProtection Level2	The DC component of the inverter output current exceeds the allowable range specified by safety standards or the machine's default setting.	1. If the anomaly is caused by an external fault, the inverter will automatically resume normal operation after the fault is eliminated, without manual intervention. 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.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F18	Low Insulation Resistance	1. The PV string is short-circuited to the protection ground. 2. The environment where the PV string is installed is relatively humid for a long time, and the line has poor insulation to ground. 3. The insulation impedance of the battery port line to ground is low.	1. Check the impedance of the PV string/battery port to the protection ground. If a short circuit occurs, locate the short circuit point and rectify it. 2. Check whether the protection ground wire of the inverter is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy weather, please use the Appto reset the inverter's“Insulation Resistance Protection Point”。 Inverters for Australia and New Zealand markets，When an insulation resistance fault occurs, alarms can also be generated in the following ways: 1. The inverter is equipped with a buzzer, which sounds continuously for1minute when a fault occurs; if the fault is not resolved, the buzzer will sound again every30minutes. 2. If the inverter is added to the monitoring platform and the alarm notification method is set, the alarm information can be sent to the customer via email.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F19	Grounding Abnormal	1. The protection ground wire of the inverter is Not Connected. 2. When the output of the PV string is grounded, the inverter's output side is not connected to an isolation transformer.	1. Please confirm whether the protection ground wire of the inverter is Not Connected properly. 2. If the output of the PV string is grounded, please confirm whether the inverter's output side is connected to an isolation transformer
F20	Hard Power Limit Protection	Load Abnormal Fluctuation	1. If the anomaly is caused by an external fault, the inverter will automatically resume normal operation after the fault is eliminated, without manual intervention. 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.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F21	Internal Comm Loss	SlaveDSP1Communication Timeout-MasterDSP, SlaveDSP2Communication Timeout-MasterDSP, SlaveDSP2Communication Timeout-SlaveDSP1, MasterDSPCommunication Timeout-SlaveDSP1, MasterDSPCommunication Timeout-SlaveDSP2or SlaveDSP1Communication Timeout-SlaveDSP2: 1. The chip is not powered on 2. The chip program version is incorrect	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
		MasterDSPcanmodule error, SlaveDSP1canmodule error, or SlaveDSP2canmodule error: 1. Frame format error 2. Parity check error 3. can busOffline 4. HardwareCRCcheck error 5. Control bit is Receive (Send) during sending (receiving) 6. Transmission to unauthorized unit	
F22	Generator waveform detection fault	1. This fault will always be displayed when the generator is Not Connected; 2. When the generator is operating, this fault will be triggered if the generator does not meet safety standards.	
F23	Abnormal generator connection		
F24	Low generator voltage		
F25	High generator voltage		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F26	Low generator frequency		1. Ignore this fault when the generator is not connected; 2. It is normal for this fault to appear when the generator has a fault. After the generator recovers, wait for a period of time, the fault will be automatically cleared; 3. This fault will not affect the normal operation of the off-grid mode 4. When the generator and grid are connected simultaneously and meet safety standards, the grid will prioritize grid connection, and the system will operate in grid-connected state.
F27	High generator frequency		
F28	Parallel operationI/O self-check abnormal	Parallel operation communication line is not securely connected or parallel operationIOchip damage	Check if the parallel operation communication line is securely connected, then check if theIOchip is damaged. If yes, replace theIOchip
F29	Paralell Grid Line Reversed	Some units have grid lines reversed with others	Reconnect the grid lines
F30	AC HCT check Abnormal	AC sensor has sampling abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F31	GFCI HCT Check Abnormal	GFCI sensor has sampling abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F32	Inverter Internal Failure	Inverter has a fault	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F33	FlashFlash R/W Abnormal	Possible causes: flashcontent changed;flashlifetime exhausted;	1. Upgrade to the latest version of the program 2. Contact the dealer or after-sales service center
F34	AFCI Check Failure	During the arc self-test process, the arc module did not detect an Arc Failure	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F35	Cabinet Overtemperature	Cabinet Overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
F36	Bus Overvoltage	BUSovervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the inverter rear end is poor, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F37	PVInput Overvoltage	PVinput overvoltage, possible causes: Incorrect PV array configuration, the number of PV panels connected in series in the string is too large, resulting in the open-circuit voltage of the string being higher than the maximum operating voltage of the inverter	Check the series configuration of the corresponding PV array string, ensure that the open-circuit voltage of the string is not higher than the maximum operating voltage of the inverter. After the PV array is correctly configured, the inverter alarm will automatically disappear.
F38	PVContinuous Hardware Overcurrent	1. Component configuration is unreasonable 2. Hardware damage	Disconnect the AC output side switch and DC input side switch,5minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F39	PVContinuous Software Overcurrent	1. Component configuration is unreasonable 2. Hardware damage	Disconnect the AC output side switch and DC input side switch,5minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F40, F98	String reverse connection （String1-n) n:Judged based on the actual Number of Strings of the inverter	PVString reverse connection	Check if the string is reversely connected.

8.5.2.2.2 Fault Handling (Fault Codes F41-F80)

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F41	Generator Port Overload	1. Off-grid side output exceeds the requirements specified in the datasheet 2. Off-grid side short circuit 3. Off-grid terminal voltage is too low 4. When acting as a high-load port, the high load exceeds the requirements specified in the datasheet	Confirm the cause of the problem by checking data such as off-grid side output voltage, current, power, etc.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F42，F164,F165	DC Arcing Failure（String1-n) n:Judged based on the actual Number of Strings of the inverter	1. DC side connection terminal is loose; 2. DC side connection terminal is poorly connected; 3. DC cable core is damaged and poorly connected	1. After the machine is reconnected to the grid, check whether the voltage and current of each channel abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.
F43	Grid Waveform Abnormal	Grid abnormality: Grid voltage detection abnormality triggers a fault.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator.
F44	Grid Phase Loss	Grid abnormality: Single-phase voltage drop in the grid.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F45	Grid Voltage Imbalance	Grid phase voltage difference is too large.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid voltage and frequency are within the allowable range and stable. If not, contact the local power operator.
F46	Grid Phase Sequence Failure	Inverter and grid wiring abnormality: Wiring is not in positive sequence	1. Check whether the inverter and grid wiring are in positive sequence; if the wiring is normal (e.g., swap any two live wires), the fault will automatically disappear. 2. If the fault still exists after correct wiring, please contact the dealer or after-sales service center.
F47	Grid Rapid Shutdown Protection	Quickly shut down output when grid power outage condition is detected	The fault automatically disappears after grid power supply is restored.
F48	Grid Neutral Wire Loss (SplitGrid)	Split-phase grid neutral wire loss	1. The alarm will automatically disappear after grid power supply is restored. 2. Check whether the AC line or AC Switch is disconnected.
F49	L-PE Short Circuit	Output phase line toPEhas low impedance or is short-circuited	Detect the impedance of the output phase line toPEto find out Locate the position with low impedance and repair it.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F50	DCVProtection Level1	Load Abnormal Fluctuation	1. If the anomaly is caused by an external fault, the inverter will automatically resume normal operation after the fault is eliminated, without manual intervention. 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.
F51	DCVProtection Level2	Load Abnormal Fluctuation	
F52	Leakage current (GFCI) multiple fault shutdowns	North American safety standards require that after multiple faults, it cannot automatically recover; manual intervention or waiting for24hto recover	Please check if the ground impedance of the PV string is too low.
F53	DC arc failure (AFCI) multiple fault shutdowns	North American safety standards require that after multiple faults, it cannot automatically recover; manual intervention or waiting for24hto recover	1. After the machine is reconnected to the grid, check whether the voltage and current of each channel abnormally decrease to zero; 2. Check whether the DC side terminals are firmly connected.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F54	External communication link loss	Communication loss of the inverter's external device may be due to external device power supply issues, mismatched Communication Protocols, or failure to configure the corresponding external device, etc.	Judge based on the actual model and detection enable bit; external devices not supported by some models will not be detected.
F55	Back-upBack-up Output Overload	Prevent the inverter from continuous overload output.	Turn off part of the off-grid loads to reduce the inverter's off-grid output power.
F56	Back-upBack-up Output Overvoltage	Prevent load damage caused by inverter output overvoltage.	1. If it occurs accidentally, it may be caused by load switching, no manual intervention is required. 2. If it occurs frequently, please contact the dealer or after-sales service center.
F57	ExternalBox Fault	When switching from Switch On-Grid to Off-Grid, the waiting time for theBoxrelay switching is too long	1. Check if theBoxis working normally; 2. Check if theBoxcommunication wiring is correct;
F58	CTCT Loss	CTconnection line is disconnected (per Japanese safety standards)	Check if theCTwiring is correct;
F59	Parallel operationCANParalell CAN Comm Abnormal	The parallel communication line is not securely connected, or some units are offline	Check if all units are powered on and the parallel communication line is securely connected

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F60	Parallel operationBack-upParalell Back-up Line Reversed	Some units'backuplines are reversed with others	Reconnect thebackupline.
F61	Inverter Soft Start Failure	Inverter Soft Start Failure during off-grid cold start	Check if the inverter module of the machine is damaged.
F62	AC HCT Failure	HCTsensor is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F63	GFCI HCT Failure	Leakage current sensor is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F64	Inverter Internal Failure	Inverter has a fault	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F65	AC Terminal Overtemperature	AC Terminal Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
F66	INVModule Overtemperature	Inverter Module Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F67	BoostModule Overtemperature	BoostModule Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
F68	AC Capacitor Overtemperature	AC Capacitor Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
F69	PV IGBT short circuit fault	Possible causes: 1. IGBTshort circuit 2. Inverter sampling circuit is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F70	PV IGBTOpen Circuit	1. Software problem leading to no PWM output: 2. Drive circuit is abnormal: 3. IGBTopen circuit	
F71	NTCAbnormal	NTCtemperature sensor is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F72	PWM Abnormal	PWMhas abnormal waveform	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F73	CPUInterrupt Abnormal	CPUinterrupt is abnormal	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F74	Microelectronic fault	Function Safety detects abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F75	PV HCTFault	boostcurrent sensor abnormality	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F76	1.5VRef Abnormal	Reference Circuit Failure	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F77	0.3VRef Abnormal	Reference Circuit Failure	
F78	CPLDVersion Error	CPLDVersion Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F79	CPLDComm Failure	CPLDwithDSPcommunication content error or timeout	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F80	Model Recognition Failure	Fault related to Model Recognition Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

8.5.2.2.3 Fault Handling (Fault Codes F81-F121)

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F81	P-Bus Overvoltage	BUSovervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the inverter rear end is poor, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F82	N-Bus Overvoltage		
F83	Bus Overvoltage (SlaveCPU1)		Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F84	P-Bus Overvoltage (SlaveCPU1)		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F85	N-Bus Overvoltage (SlaveCPU1)	BUSovervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the inverter rear end is poor, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	
F86	Bus Overvoltage (SlaveCPU2)		Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F87	P-Bus Overvoltage (SlaveCPU2)		

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F88	N-Bus Overvoltage (SlaveCPU2)	BUSovervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the inverter rear end is poor, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	
F89	P-Bus Overvoltage(CPLD)		Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F90	N-Bus Overvoltage(CPLD)	BUSovervoltage, possible causes: 1. PVovervoltage; 2. InverterBUSvoltage sampling abnormality; 3. The isolation effect of the split transformer at the inverter rear end is poor, leading to mutual influence when two inverters are grid-connected, and one inverter reports DC overvoltage when grid-connected;	
F91	FlyCap Software Overvoltage	FlyCap Overvoltage, Possible Causes: 1. PVovervoltage; 2. Inverter FlyCap Voltage Sampling Abnormality;	Disconnect the AC output side switch and DC input side switch,5minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F92	FlyCap Hardware Overvoltage		
F93	FlyCap Undervoltage	FlyCap Undervoltage, Possible Causes: 1. PVInsufficient Energy; 2. Inverter FlyCap Voltage Sampling Abnormality;	Disconnect the AC output side switch and DC input side switch,5minutes later close the AC output side switch and DC input side switch, if the fault still exists, please contact the dealer or after-sales service center

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F94	FlyCap Precharge Failure	FlyCap Precharge Failure, possible causes: 1. PVInsufficient Energy; 2. Inverter FlyCap Voltage Sampling Abnormality;	Disconnect the AC output side switch and DC input side switch,5minutes later close the AC output side switch and DC input side switch, if the fault still exists, please contact the dealer or after-sales service center
F95	FlyCap Precharge Abnormal	1. Control loop parameters are unreasonable 2. Hardware damage	Disconnect the AC output side switch and DC input side switch,5minutes later close the AC output side switch and DC input side switch, if the fault still exists, please contact the dealer or after-sales service center
F96, F97	String overcurrent（String1-n) n:Judged based on the actual Number of Strings of the inverter	Possible causes: 1. String overcurrent; 2. String current sensor abnormal	Disconnect the AC output side switch and DC input side switch,5minutes later close the AC output side switch and DC input side switch, if the fault still exists, please contact the dealer or after-sales service center
F99, F100	String missing（String1-n) n:Judged based on the actual Number of Strings of the inverter	String fuse blown (if applicable)	Check if the fuse is blown.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F101	Battery1BAT1 Precharge Failure	Battery1precharge circuit fault (e.g., precharge resistor burned out)	Check if the precharge circuit is in good condition. After the battery is powered on, verify if the Battery Voltage matches the DC bus voltage. If not, please contact the dealer or after-sales service center.
F102	Battery1Relay Failure	Battery1relay cannot operate normally	After the battery is powered on, check if the battery relay is working and if the closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F103	Battery1BAT1 Overvoltage	Battery1connection voltage exceeds the machine's rated range	Confirm if the Battery Voltage is within the machine's rated range.
F104	Battery2BAT1 Precharge Failure	Battery2precharge circuit fault (e.g., precharge resistor burned out)	Check if the precharge circuit is in good condition. After the battery is powered on, verify if the Battery Voltage matches the DC bus voltage. If not, please contact the dealer or after-sales service center.
F105	Battery2Relay Failure	Battery2relay cannot operate normally	After the battery is powered on, check if the battery relay is working and if the closing sound is heard. If it does not operate, please contact the dealer or after-sales service center.
F106	Battery2BAT1 Overvoltage	Battery2connection voltage exceeds the machine's rated range	Confirm if the Battery Voltage is within the machine's rated range.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F107	On-grid PWM Sync Failure	Abnormality occurs during carrier synchronization for grid connection	1. Check if the synchronization line connection is normal 2. Check if the master-slave settings are normal; 3. Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F108	DSPDSP Communication Failure	-	-
F109	ExternalSTSFault	Inverter andSTSConnection Cable Abnormality	Check if the wire harness connection sequence between the inverter andSTScorresponds one by one in order.
F110	Export Limit Protection	1. Inverter error: off-grid 2. meterCommunication instability 3. Reverse power flow condition occurs	1. Check if there are other error messages in the inverter. If yes, perform targeted processing; 2. Check if themeterconnection reliability; 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	-	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F113	Offgrid AC Ins Volt High	-	-
F114	Relay Failure2	Relay abnormality, cause: 1. Relay abnormality (relay short circuit) 2. Relay sampling circuit abnormality. 3. AC side wiring abnormality (possible loose connection or short circuit)	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F115	SVGPrecharge Disabled	SVGPrecharge hardware failure	Contact the dealer or after-sales service center.
F116	SVG ModeSVG PIDPrevention Failure	PIDAnti-PID hardware abnormality	
F117	DSPVersion Error	DSPSoftware Version Error	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F118	MOSContinuous Overvoltage	1. Software issue causes the inverter drive to shut down earlier than the flyback drive: 2. Inverter drive circuit abnormality leads to inability to turn on: 3. PVovervoltage; 4. Mosvoltage sampling abnormality;	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F119	Busbar Short Circuit Fault	Hardware damage	In case ofBUSshort circuit fault, if the inverter remains in off-grid state, please contact the distributor or after-sales service center.
F120	Busbar Sampling Abnormality	1. BUSVoltage Sampling Hardware Fault	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F121	DCDC Sample Abnormal	1. BUSVoltage Sampling Hardware Fault 2. Battery Voltage Sampling Hardware Fault 3. DcrlyRelay Failure	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

8.5.2.2.4 Fault Handling (Fault Codes F122-F171)

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F122	PVPV Input Mode Error	PVAccess Mode has three modes, taking four-channelMPPTas an example: 1. Parallel Mode: namelyAAAAMode（Homologous Mode），PV1-PV4are homologous,4channelsPVconnect to the same photovoltaic panel 2. Partial Parallel Mode: namelyAACCMode,PV1withPV2are connected homologously,PV3withPV4are connected homologously 3. Independent Mode: namelyABCDMode（Non-homologous），PV1、PV2、PV3、PV4are connected independently,4channelsPVeach connect to one photovoltaic panel	Check if thePVAccess Mode is set correctly (ABCD、AACC、AAAA), re-setPVAccess Mode 1. Confirm whether each actual connectedPVis connected correctly; 2. IfPVis correctly connected, useAPPor the screen to check whether the currently set "PVAccess Mode" corresponds to the actual Access Mode; 3. If the currently set "PVAccess Mode" does not match the actual Access Mode, it is necessary to useAPPor the screen to set "PVAccess Mode" to a mode consistent with the actual situation. After setting, disconnect thePVwithACpower supply and restart; 4. After setting, if the current "PVAccess Mode" is consistent with the actual Access Mode, but this fault is still reported, please contact the distributor or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
		IfPVactual Access Mode does not match the device-setPVAccess Mode, this fault will be reported	
F123	Multi-channelPVPhase Error	PVInput Mode Setting Error	Check if thePVAccess Mode is set correctly (ABCD、AACC、AAAA), re-setPVAccess Mode 1. Confirm whether each actual connectedPVis connected correctly; 2. IfPVis correctly connected, useAPPor the screen to check whether the currently set "PVAccess Mode" corresponds to the actual Access Mode; 3. If the currently set "PVAccess Mode" does not match the actual Access Mode, it is necessary to useAPPor the screen to set "PVAccess Mode" to a mode consistent with the actual situation. After setting, disconnect thePVwithACpower supply and restart; 4. After setting, if the current "PVAccess Mode" is consistent with the actual Access Mode, but this fault is still reported, please contact the distributor or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F124	Battery1BAT 1 Reversed	Battery1Positive and Negative Poles Reversed	Check whether the positive and negative terminals of the battery and the device's wiring terminals are consistent.
F125	Battery2BAT 1 Reversed	Battery2Positive and Negative Poles Reversed	Check whether the positive and negative terminals of the battery and the device's wiring terminals are consistent.
F126	Abnormal Battery Connection	Abnormal Battery Connection	Check whether the battery is working normally.
F127	BAT Overtemperature	Battery overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F128	Ref Voltage Abnormal	Reference Circuit Failure	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F129	Cabinet Under Temperature	Cabinet Under Temperature, possible cause: Ambient temperature is too low.	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F130	ACsideSPDFault	ACside surge protection device failure	ReplaceACside surge protection device.
F131	DCsideSPDFault	DCside surge protection device failure	ReplaceDCside surge protection device.
F132	Internal Fan Abnormal	Internal Fan Abnormal, possible causes: 1. Fan power supply abnormal; 2. Mechanical fault（stall）; 3. Fan aging and damage.	Disconnect the AC output side switch and DC input side switch,5 minutes later, close the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or after-sales service center.
F133	External Fan Abnormal	External Fan Abnormal, possible causes: 1. Fan power supply abnormal; 2. Mechanical fault（stall）; 3. Fan aging and damage.	
F134	PIDAbnormal	PIDhardware fault orPVovervoltagePID suspend	PVovervoltage-inducedPIDsuspend warning does not need handling,PIDhardware fault can be cleared by turning offPIDswitch then turning onPIDfault, replacePIDdevice.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F135	Trip-Switch Trip Warning	Possible causes: Overcurrent orPVreverse connection causes trip switch to open;	Contact the distributor or after-sales service center; the trip cause isPVshort circuit or reverse connection, need to check if there are historicalPVshort circuit warnings or historicalPVreverse connection warnings, if present, maintenance personnel need to check the correspondingPVsituation. After checking and no faults, you can manually close the trip switch, and clear this warning via theAPPinterface's clear historical fault operation.
F136	HistoricalPV IGBT short circuit warning	Possible causes: Overcurrent causes trip switch to open;	Contact the distributor or after-sales service center; maintenance personnel need to refer to the historicalPVshort circuit warning sub-code, check theBoosthardware and external strings for faults; after checking and no faults, you can clear this warning via theAPPinterface's clear historical fault operation.
F137, F138	HistoricalPVreverse connection warning（String1-n)（n:Judged based on the actual number of strings of the inverter)	Possible causes: Occurrence ofPVreverse connection causes trip switch to open;	Contact the distributor or after-sales service center; maintenance personnel need to refer to the historicalPVreverse connection warning sub-code, check whether the corresponding string has reverse connection, checkPVpanel configuration for voltage difference; after confirming no faults, you can clear this warning via theAPPinterface's clear historical fault operation.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F139	FlashFlash R/W Error	Possible causes: 1. Flashcontent changed; 2. Flashlifetime exhausted;	1. upgrade to the latest version of the program; 2. Contact the dealer or after-sales service center.
F140	Meter Comm Loss	This warning may only be reported after enabling the Power Limit function. Possible reasons: 1. Meter not connected; 2. Incorrect wiring of the communication line connecting the meter and the inverter.	Check the meter wiring, connect the meter correctly. If the fault still exists after checking, please contact the distributor or after-sales service center.
F141	PVPV Type Identification Failure	PVPV panel identification hardware fault	Contact the dealer or after-sales service center.
F142	PV String Mismatch	PVPV String Mismatch, two strings under the sameMPPThave different open-circuit voltage configurations	Check the open-circuit voltages of the two strings, configure strings with the same open-circuit voltage to the sameMPPTpath. Long-term PV String Mismatch poses a safety hazard.
F143	CTnot connected	CTnot connected	Check if theCTwiring.
F144	CTCT Reversed	CTCT Reversed	Check if theCTwiring.
F145	PE Loss	PE not connected	Check the PE.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F146	PV String Terminal Overtemperature（String1~8)	37176registerPVterminal temperature alarm sub-code1is set	-
F147	PV String Terminal Overtemperature（String9~16)	37177registerPVterminal temperature alarm sub-code2is set	-
F148	PV String Terminal Overtemperature（String17~20)	37178registerPVterminal temperature alarm sub-code3is set	-
F149	HistoricalPVreverse connection warning（String33~48)	Possible causes: Occurrence ofPVreverse connection causes trip switch to open;	Contact the distributor or after-sales service center; maintenance personnel need to refer to the historicalPVreverse connection warning sub-code, check whether the corresponding string has reverse connection, checkPVpanel configuration for voltage difference; after confirming no faults, you can clear this warning via theAPPinterface's clear historical fault operation.
F150	Battery1Voltage Low	Battery Voltage is lower than the set value	-
F151	Battery2Voltage Low	Battery Voltage is lower than the set value	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F152	Low Voltage of Battery Power	Battery is in non-charging mode, voltage is lower than the shutdown voltage	-
F153	Battery1Voltage High	-	-
F154	Battery2Voltage High	-	-
F155	Online Low Insulation Resistance	1. The PV string is short-circuited to the protection ground. 2. The environment where the PV string is installed is relatively humid for a long time, and the line has poor insulation to ground.	1. Check the impedance between the PV string and Protection Ground; if a short circuit occurs, rectify the short circuit point. 2. Check whether the protection ground wire of the inverter is correctly connected. 3. If it is confirmed that the impedance is indeed lower than the default value in rainy and cloudy environments, please re-set the "Insulation Resistance Protection Point".
F156	Micro-grid Overload Warning	backupterminal input current is too high	Occasional occurrence requires no handling; if this alarm appears frequently, please contact the dealer or after-sales service center.
F157	Manual Reset	-	-
F158	Generator Phase Sequence Abnormal	-	-

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F159	Multiplexed Port Configuration Abnormal	Multiplexing（Generator）Port is configured as micro-grid or large load, but a generator is actually connected	When usingAPPto change the multiplexing（Generator）port configuration.
F160	EMSForced Off-grid	EMSissues forced off-grid, but the off-grid function is not enabled	Enable the 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 standard	Switch the corresponding safety standard according to the actual Type of Electrical Supply System.
F163	Grid Phase Instability	Grid abnormality: The rate of change of grid voltage phase does not comply with local grid standards.	1. If it occurs accidentally, it may be a short-term grid abnormality; the inverter will resume normal operation after detecting that the grid is normal, and no manual intervention is required. 2. If this occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator.

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F166	PV Terminal Overtemperature	PV Terminal Overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	1. Check if the ventilation at the inverter installation location is good, and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If there is no ventilation or Ambient Overtemperature, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center..
F167	AC Terminal Overtemperature Warning	AC Terminal Overtemperature, possible reasons: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. The internal fan is operating abnormally.	
F168	Bat Terminal Overtemperature	Bat Terminal Overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature.	

Fault Code	Fault Name	Fault Cause	Fault Handling Suggestions
F169	Bat Terminal High Temperature Alarm	Bat Terminal Overtemperature, possible causes: 1. The inverter installation location is not ventilated. 2. Ambient Overtemperature.	
F170	STS Overtemperature	STS Overtemperature, possible causes: 1. STS installation location is not ventilated. 2. Ambient Overtemperature.	
F171	Inverter and Battery Wiring Abnormality	Power Line Connection Abnormality between Battery and Inverter	Check if the power line connection between the battery and inverter is normal.

8.5.2.2.5 Fault Phenomenon Handling

Fault Name	Fault Cause	Fault Handling Suggestions
Generator Failure	1. When the generator is Not Connected, this fault will always be displayed 2. When the generator is operating, if it does not meet the generator safety regulations, this fault will be triggered	1. When the generator is not connected, ignore this fault; 2. When the generator fails, this fault appearing is normal; after the generator recovers, wait for a period of time, the fault will be automatically cleared; 3. This fault will not affect the normal operation of the off-grid mode 4. When both the generator and grid are connected and meet the safety regulations, the grid will prioritize grid connection, and it will operate in the grid-connected state.
BMS Status Bit Error	BMS Module Failure	Disconnect the AC output side switch and DC input side switch, close the AC output side switch and DC input side switch after 5 minutes. If the fault still exists, please contact the dealer or after-sales service center.
Ambient Overtemperature	1. Poor ventilation of the machine 2. Hot air flows back to the ambient temperature sampling point	Disconnect the AC output side switch and DC input side switch, close the AC output side switch and DC input side switch after 5 minutes. If the fault still exists, please contact the dealer or after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
PV Terminal Overtemperature	PV Terminal Overtemperature, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan malfunction.	1. Check whether the ventilation of the inverter installation location is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If the ventilation is poor or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
Bat Terminal Overtemperature	Bat Terminal Overtemperature, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature.	1. Check whether the ventilation of the inverter installation location is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If the ventilation is poor or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
AC Terminal Overtemperature Warning	AC Terminal Overtemperature, possible reasons: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature. 3. Internal fan malfunction.	

Fault Name	Fault Cause	Fault Handling Suggestions
Bat Terminal High Temperature Alarm	Bat Terminal Overtemperature, possible causes: 1. Inverter installation location is not ventilated. 2. Ambient Overtemperature.	1. Check whether the ventilation of the inverter installation location is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range. 2. If the ventilation is poor or the ambient temperature is too high, please improve its ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer or after-sales service center.
Three-phase on-grid fault	Three-phase external wiring error	Rewiring.
External STS Failure	Inverter and STS connection cable abnormality	Check whether the wire harness connection sequence between the inverter and STS corresponds one by one in order.

Fault Name	Fault Cause	Fault Handling Suggestions
Parallel Comm Timeout Shutdown	In parallel operation, if the slave exceeds400seconds without communicating with the master	Check if the parallel communication wiring harness is connected reliably, and check if the slave addresses are duplicated.
Three-phase off-grid phase loss fault	Three-phase system phase loss	1. Check if all inverters are powered on; 2. Check if each phase of the three-phase system is connected to an inverter;

Fault Name	Fault Cause	Fault Handling Suggestions
EPO	External hardware EPO button trigger or remote EPO command trigger	1. If it is an active trigger of Remote Shutdown, it can be ignored; 2. If there is no active trigger,please contact the dealer or after-sales service center.
High combustible gas concentration	Automatically triggers when combustible gas equipment detects a concentration of 20% LEL or higher	1. After the fault occurs, the machine will automatically open the air valve to exhaust and reduce the concentration; when the concentration drops below 5% LEL and lasts for 15 minutes, the fault will automatically clear. 2. If a cluster-level Fire Fighting Failure is triggered after the fault occurs, the air valve will be automatically closed, and the air valve status will be confirmed within 30s to ensure that the cluster-level fire protection performs Protection in an enclosed space. 3. Please contact the dealer or after-sales service center.
Inconsistency between the air valve opening command and feedback signal of the combustible gas device	Inconsistency between the control signal and feedback signal of the air valve opening	1. Check that the wiring harness signal connection is normal. 2. Please contact the dealer or after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
One-click shutdown	Check via App whether the one-click shutdown function is enabled	Disable the one-click shutdown.
Offline shutdown	-	-
Remote shutdown	-	-
On-Grid SPD Fault	-	1. Try restarting the machine and observe if the fault is cleared; 2. If the fault cannot be cleared after restarting, please contact the dealer or after-sales service center.
Off-Grid SPD Fault	-	1. Try restarting the machine and observe if the fault is cleared; 2. If the fault cannot be cleared after restarting, please contact the dealer or after-sales service center.
Child Node Communication Failure	Internal Comm Abnormal	1. Try restarting the machine and observe if the fault is cleared; 2. If the fault cannot be cleared after restarting, please contact the dealer or after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
Dehumidifier Communication Failure	Communication link abnormality between dehumidifier and LC control box	1. Check the link communication harness, observe whether the fault is eliminated; 2. Try restarting the machine and observe if the fault is cleared; 3. If the fault cannot be eliminated after restarting, please contact the dealer or after-sales service center.
Combustible Gas Detection Device Communication Failure	1. The combustible gas device was not properly configured with 485 address as 2 before leaving the factory. 2. Communication link abnormality between combustible gas device and LC control box	1. Check the link communication harness, observe whether the fault is eliminated; 2. Try restarting the machine and observe if the fault is cleared; 3. Use the method provided by the combustible gas manufacturer to check whether the address of the combustible gas device is 2; if not, modify it; 4. If the fault cannot be eliminated after restarting, please contact the dealer or after-sales service center.
DG Communication Failure	Communication link abnormality between control board and DG	1. Check the link communication harness, observe whether the fault is eliminated; 2. Try restarting the machine, observe whether the fault is eliminated; 3. If the fault cannot be eliminated after restarting, please contact the dealer or after-sales service center.
Battery Over Voltage	1. Single cell overvoltage 2. Voltage acquisition line abnormality	

Fault Name	Fault Cause	Fault Handling Suggestions
	1. Total battery overvoltage 2. Voltage acquisition line abnormality	Record the fault phenomenon, restart the battery, wait for a few minutes, confirm whether the fault disappears; if the problem still exists after restarting, please contact the after-sales service center.
Battery Undervoltage	1. Single cell undervoltage 2. Voltage acquisition line abnormality	
	1. Total battery undervoltage 2. Voltage acquisition line abnormality	
Battery Overcurrent	1. Charging Current is too large, battery current limiting abnormality: temperature and voltage values mutate 2. Inverter response abnormality	
	Battery Discharge Current is too large	
Battery Overtemperature	1. Ambient Overtemperature 2. Temperature sensor abnormality	

Fault Name	Fault Cause	Fault Handling Suggestions
Battery Undertemperature	1. Ambient undertemperature 2. Temperature sensor abnormality	
Battery Terminal Overtemperature	Terminal overtemperature	

Fault Name	Fault Cause	Fault Handling Suggestions
Battery Imbalance	1. In different stages of excessive temperature difference, the battery will limit its power, that is, limit the charge-discharge current. So this problem is generally unlikely to occur. 2. Cell capacity depletion leads to excessive internal resistance, and when Overcurrent occurs, the temperature rise is large, so the temperature difference becomes large. 3. Poor welding of cell tabs leads to excessive temperature rise of the cell during Overcurrent. 4. Temperature sampling issue; 5. Loose power line connection	

Fault Name	Fault Cause	Fault Handling Suggestions
	1. Inconsistent degree of cell aging 2. Slave board chip issues can also lead to excessive cell voltage difference; 3. Slave board balancing issues can also lead to excessive cell voltage difference 4. Caused by wiring harness issues	
Insulation Resistance	Insulation Resistance Damage	Check if the ground wire is properly connected, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.
Pre-charging Failure Fault	Pre-charging Failure	This indicates that during the pre-charging process, the voltage across the pre-charging MOS always exceeds the specified threshold. After shutting down and restarting, observe whether the fault persists, and check if the wiring is correct and whether the pre-charging MOS is damaged.
Sampling line fault	Battery sampling line has poor contact or is disconnected	Check the wiring, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.
	Cell voltage sampling line has poor contact or is disconnected	Check the wiring, restart the battery. If the problem still exists after restarting, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Cell temperature sampling line has poor contact or is disconnected	
	Excessive error in dual-channel current comparison, or abnormal current sampling line circuit	
	Excessive error in dual-channel voltage comparison or excessive error in MCU and AFE voltage comparison, or abnormal voltage sampling line circuit	
	Abnormal temperature sampling line circuit, or poor contact, or disconnection	
	Overvoltage level 5 or overtemperature level 5, blow the three-terminal fuse	Blow the three-section fuse, please contact the after-sales service center to replace the main control board.
Relay or MOS overtemperature	Relay or MOS overtemperature	This fault indicates that the MOSFET temperature exceeds the specified threshold. Shut down and leave it for 2 hours to wait for the temperature to recover.

Fault Name	Fault Cause	Fault Handling Suggestions
Shunt overtemperature	Shunt overtemperature	This fault indicates that the shunt temperature exceeds the specified threshold. Shut down and leave it for 2 hours to wait for the temperature to recover.
BMS1 Other Fault 1 (Residential Energy Storage Type)	Relay or MOS open circuit	1. Upgrade the software, shut down and leave it for 5 minutes, after restarting, check if the fault persists; 2. If it persists, replace the battery pack
	Relay or MOS short circuit	1. Upgrade the software, shut down and leave it for 5 minutes, after restarting, check if the fault persists; 2. If it persists, replace the battery pack
	Abnormal communication between master cluster and slave cluster, or inconsistent cells between clusters	1. Check the battery information and software version of the slave, and whether the communication line connection with the master is normal 2. Upgrade the software
	Abnormality in the battery system loop harness, causing the interlock signal not to form a loop	Check if the terminal resistor is installed correctly

Fault Name	Fault Cause	Fault Handling Suggestions
	Abnormality in communication between BMS and PCS	1. Confirm whether the interface definition of the communication line between the battery connected to the inverter is correct; 2. Please contact the after-sales service center, check the background data, and observe whether the software of the inverter and the battery is matched correctly.
	Abnormality in the communication harness between BMS master control and slave control	1. Check the wiring and restart the battery; 2. Upgrade the battery; if the problem still exists after restarting, please contact the after-sales service center.
	Communication loss between main negative chips	
	Abnormality of circuit breaker and shunt trip	1. Let it stand and shut down for 5 minutes; after restarting, check if the fault persists; 2. Observe the blind insertion at the bottom of PACK and PCU, check if the communication pins are loose or skewed;
	MCU self-check failure	Upgrade the software, restart the battery; if the problem still exists after restarting, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Software version is too low or BMS board is damaged 2. Large number of parallel inverters, leading to excessive inrush on the battery during pre-charging	Upgrade the software and observe if the fault persists 2. If it is a parallel operation case, perform a black start of the battery before starting the inverter
	MCU internal fault	Upgrade the software, restart the battery; generally, it is detected that the MCU or external components are damaged. If the problem still exists after restarting, please contact the after-sales service center.
	Main control current exceeds the specified threshold	1. Let it stand and shut down for 5 minutes; after restarting, check if the fault persists; 2. Check if the inverter is set to excessive power, resulting in exceeding the bus load;
	Inconsistency of battery cells in parallel clusters	Confirm whether the battery cells in parallel clusters are consistent
	Reverse connection of positive and negative poles of parallel cluster batteries	Check whether the positive and negative poles of parallel cluster batteries are reversely connected
	Severe over-temperature, over-voltage, etc., triggering the fire protection system	Contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
Air Conditioner Failure	Abnormal failure of the air conditioner	Try restarting the system; if the fault is not resolved, please contact the after-sales service center.
	Cabinet door not closed	Check if the cabinet door is properly closed
	Supply voltage too high	Confirm if the supply voltage value meets the air conditioner's input voltage requirements; after confirmation, power on again
	Supply voltage insufficient	
	No voltage input	
	Supply voltage unstable	
	Compressor voltage unstable	Try restarting the system; if the fault is not resolved, please contact the after-sales service center.
	Sensor poor contact or damaged	
	Air conditioner fan abnormal	
BMS1 Other Fault 2 (Residential Energy Storage)	Abnormal voltage or current inside DCDC	Refer to specific DC Failure details
	DCDC Overload or radiator overheating, etc	
	Cell acquisition abnormal or inconsistent aging degree	Please contact the after-sales service center
	Fan operation not executed normally	Please contact the after-sales service center

Fault Name	Fault Cause	Fault Handling Suggestions
	Output port screw loose or poor contact	1. Power off the battery, check the wiring and output port screw condition 2. After confirmation, restart the battery, observe if the fault persists; if it does, contact the after-sales service center
	Battery used for too long or cells severely damaged	Please contact the after-sales service center to replace the pack
	Software version is too low or BMS board is damaged 2. Large number of parallel inverters, leading to excessive inrush on the battery during pre-charging	1. Upgrade the software, observe if the fault persists 2. If in parallel operation, perform a black start of the battery before starting the inverter
	Heating film damaged	Please contact the after-sales service center
	Heating film three-terminal fuse blown, heating function unavailable	Please contact the after-sales service center
	Software model, cell type, hardware model mismatch	Check if software model, SN number, cell type, hardware model are consistent; if not, contact the after-sales service center
	Thermal management board communication broken	1. Let it stand and shut down for 5 minutes; after restarting, check if the fault persists; 2. If the fault is not recovered, contact after-sales to replace the pack
	Pack fan fault signal triggered	

Fault Name	Fault Cause	Fault Handling Suggestions
DC-DC Failure	Output Port Overvoltage	Check the output port voltage. If the output port voltage is normal and the fault still does not resolve automatically after restarting the battery, please contact the after-sales service center.
	DC-DC module detects that the Battery Voltage exceeds the maximum charging voltage	Stop charging, discharge to below 90% SOC or leave it stationary for 2 hours. If ineffective and the fault still exists after restarting, please contact the after-sales service center.
	Radiator Over Temperature	Leave the battery stationary for 1 hour until the radiator temperature drops. If ineffective and the fault still exists after restarting, please contact the after-sales service center.
	Battery Discharge Current is too large	Check if the load exceeds the battery's discharge capability. Turn off the load or stop the PCS for 60 seconds. If ineffective and the fault still exists after restarting, please contact the after-sales service center.
	The positive and negative terminals of the output port power harness are reversed with the parallel cluster battery or PCS	Turn off the battery manual switch, check if the output port wiring is correct, and restart the battery.
	Output Power Relay Cannot Close	Check if the output port wiring is correct and if there is a short circuit. If ineffective and the fault still exists after restarting, please contact the after-sales service center.

Fault Name	Fault Cause	Fault Handling Suggestions
	Power Device Over Temperature	Leave the battery stationary for 1 hour until the internal power device temperature drops. If ineffective and the fault still exists after restarting, please contact the after-sales service center.
	Relay Sticking	If the fault still exists after restarting, please contact the after-sales service center.
Battery Rack Circulating Current Failure	1. Cell Imbalance 2. First power-on incomplete full charge calibration	Record the fault phenomenon, restart the battery, wait for a few minutes, confirm whether the fault disappears; if the problem still exists after restarting, please contact the after-sales service center.
BMS1 Other Fault 3 (Large Energy Storage Type)	Communication anomaly with Linux module	1. Check if the communication link is normal 2. Upgrade the software, restart the battery and observe if the fault persists. If it exists, please contact the after-sales service center.
	Cell Temperature Rise Too Fast	Cell abnormality, contact after-sales to replace the pack.
	SOC below 10%	Charge the battery.
	SN writing does not comply with the rules	Check if the number of SN digits is normal. If abnormal, please contact the after-sales service center.
	1. Daisy chain communication anomaly within the battery cluster 2. Inconsistent aging degree of cells between battery clusters	1. Check the contact status of the single cluster battery pack 2. Confirm the usage status of each cluster battery, such as cumulative charge-discharge capacity, cycle times, etc. 3. Please contact the after-sales service center.
	High humidity in pack	-

Fault Name	Fault Cause	Fault Handling Suggestions
	Fuse Disconnected	Contact after-sales service to replace the pack.
	Low battery level	Charge the battery.
BMS1 Other Fault 4 (Large Energy Storage Type)	Circuit Breaker Fault	Contact after-sales service to replace the pack.
	External Device Fault	Contact after-sales service to replace the pack.
Contactor Failure 1	-	-
Contactor Failure 2	-	-
Overload Protection (Ksic)	Continuous Overload (Exceeding 690KVA) 10s	Please contact the after-sales service center
Overload Protection (Smart Port	Continuous Overload (Exceeding 690KVA) 10s	Please contact the after-sales service center
Overcurrent Protection (Ksic)	-	-
Overcurrent Protection (Smart Port)	-	-
Master AC On Meter Comm Error	1. The meter may not be connected to the host 2. The meter communication line may be loose	1. Check if the meter is connected to the host 2. Check if the meter communication line is loose

Fault Name	Fault Cause	Fault Handling Suggestions
Parallel Slave Meter Error	Meter connected to slave	The machine connected to the meter is set as the host
Slave AC On Timeout with Master	1. Slave address setting error 2. Slave communication line is loose	1. Check if slave addresses are duplicated 2. Check if the parallel communication line is loose

8.5.3 Lynx Home D Battery Fault

When a fault occurs in the battery system, it may cause the battery system to shut down automatically or partial functions to be abnormal. Please perform troubleshooting according to the following methods. If the troubleshooting methods do not help you, please contact the after-sales service center. When contacting the after-sales service center, please collect the following information to facilitate quick problem resolution.

1. Battery information, such as: serial number, software version, device installation time, fault occurrence time, fault occurrence frequency, etc.
2. Device installation environment, such as: weather conditions, etc. It is recommended to provide photos, videos, and other files to assist in problem analysis.
3. When an alarm or fault occurs, only the multi-function button indicator of the main battery flashes or stays on.
4. In a multi-battery system, the battery with the smaller SN number is the default main battery. The installation order of the batteries does not affect the master-slave relationship.

Multi-function Button Indication	SOC indicator light	Fault category	Solution
 Steady on	○○○○●	Battery overvoltage	Power off and leave for 2 hours; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○○○●○	Battery undervoltage	Please contact the after-sales service center
 Steady on	○○○●●	Cell over-temperature	Power off and leave for 2 hours; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○○●○○	Low temperature during charging	Power off and wait for temperature recovery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○○●○●	Low temperature during discharging	Power off and wait for temperature recovery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○○●●○	Overcurrent during charging	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.

Multi-function Button Indication	SOC indicator light	Fault category	Solution
 Steady on	○○●●●	Overcurrent during discharging	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○●○○●	Excessive temperature difference	Power off and leave for 2 hours; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○●○●●	Excessive cell voltage difference	Restart the battery and leave it for 12 hours; if the problem persists, please contact the after-sales service center.
 Steady on	○●●○●	Harness abnormality	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○●●●○	MOS cannot be turned on	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	○●●●●	MOS adhesion	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.

Multi-function Button Indication	SOC indicator light	Fault category	Solution
 Steady on	●○○○○	Parallel cluster fault	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.
 Steady on	●○○●○	BMU communication fault	Restart the battery; if the problem persists after restarting, please contact the after-sales service center.

9 Technical Parameters

9.1 Inverter Parameters

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Battery Input Data					
Battery Type	Li-Ion	Li-Ion	Li-Ion	Li-Ion	Li-Ion
Nominal Battery Voltage (V)	500	500	500	500	500
Battery voltage range (V)	200~800	200~800	200~800	200~800	200~800
Start-up Voltage (V)	200	200	200	200	200
Number of Battery Input	1	1	2	2	2
Max. Continuous Charging Current (A)	50	50	50×2	50×2	50×2
Max. Continuous Discharging Current (A)	50	50	50×2	50×2	50×2
Max Charge Power (W)	15000	20000	25000	30000	30000
Max Discharge Power (W)	15000	20000	25000	30000	30000
PV String Input Data					
Max. Input Power (W)*1	22500	30000	37500	45000	45000
Max. Input Voltage (V)*2	1000	1000	1000	1000	1000
MPPT Operating Voltage Range (V)	200~850	200~850	200~850	200~850	200~850
MPPT Voltage Range at Nominal Power (V)	400~850	400~850	450~850	450~850	450~850
Start-up Voltage (V)	200	200	200	200	200

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Nominal Input Voltage (V)	620	620	620	620	620
Max. Input Current per MPPT (A)	30	30	30	30	30
Max. Short Circuit Current per MPPT (A)	38	38	38	38	38
Max. Backfeed Current to The Array (A)	0	0	0	0	0
Number of MPPT	2	2	3	3	3
Number of Strings per MPPT	2/2	2/2	2/2/2	2/2/2	2/2/2
AC Output Data (On-grid)					
Nominal Output Power (W)	15000	20000	25000	29900	30000
Max. Output Power (W)	15000	20000	25000	29900	30000
Nominal Output Power at 40 ℃(W) *14	15000	20000	25000	29900	30000
Max. Output Power at 40 ℃ (W)*14	15000	20000	25000	29900	30000
Nominal Apparent Power Output to Utility Grid (VA)	15000	20000	25000	29900	30000
Max. Apparent Power Output to Utility Grid (VA)*3 *15	16500	22000	27500	29900	33000
Nominal Apparent Power from Utility Grid(VA)	15000	20000	25000	30000	30000
Max. Apparent Power from Utility Grid (VA) *12	15000	20000	25000	30000	30000

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Nominal Output Voltage (V)	380/400, 3L/N/PE	380/400, 3L/N/PE	380/400, 3L/N/PE	380/400, 3L/N/PE	380/400, 3L/N/PE
Output Voltage Range (V)*4	0~300	0~300	0~300	0~300	0~300
Nominal AC Grid Frequency (Hz)	50/60	50/60	50/60	50/60	50/60
AC Grid Frequency Range (Hz)	45~65	45~65	45~65	45~65	45~65
Max. AC Current Output to Utility Grid (A) *11	23.9	31.9	39.9	43.3	47.8
Max. AC Current From Utility Grid (A) *13	22.7	30.3	37.9	45.3	45.5
Nominal AC Current From Utility Grid (A)	21.7 @230V 22.7 @220V	29.0 @230V 30.3 @220V	36.2 @230V 37.9 @220V	43.3 @230V 45.3 @220V	43.5 @230V 45.5 @220V
Max. Output Fault Current (Peak and Duration) (A)	241.5A@126ms	241.5A@126ms	241.5A@126ms	241.5A@126ms	241.5A@126ms
Inrush Current (Peak and Duration) (A)	264A@53us	264A@53us	264A@53us	264A@53us	264A@53us
Nominal Output Current (A)*5	21.7	29	36.2	43.3	43.5

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Power Factor	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)
Max. Total Harmonic Distortion	≤3.05%	≤3.05%	≤3.05%	≤3.05%	≤3.05%
Maximum Output Overcurrent Protection (A)	94	94	94	94	94
AC Output Data (Back-up)					
Back-up Nominal Apparent Power (VA)	15000	20000	25000	29900	30000
Max. Output Apparent Power without Grid(VA)*6	15,000(18,000@60s , 24,000@3s)	20,000(24,000@60s , 32,000@3s)	25,000(30,000@60s)	30,000(36,000@60s)	30,000(36,000@60s)
Max. Output Apparent Power with Grid (VA)	15000	20000	25000	29900	30000
Nominal Output Current (A)	22.7	30.3	37.9	45.5	45.5
Max. Output Current (A)	22.7(27.3@60s, 36.4@3s)	30.3(36.4@60s, 48.5@3s)	37.9(45.5@60s)	45.5(54.5@60s)	45.5(54.5@60s)
Max. Output Fault Current (Peak and Duration) (A)	94	94	94	94	94

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Inrush Current (Peak and Duration) (A)	264@53 us	264@53 us	264@53 us	264@53 us	264@53 us
Maximum Output Overcurrent Protection (A)	94	94	94	94	94
Nominal Output Voltage (V)	380/400	380/400	380/400	380/400	380/400
Nominal Output Frequency (Hz)	50/60	50/60	50/60	50/60	50/60
Output THDv (@Linear Load)	<3%	<3%	<3%	<3%	<3%
Efficiency					
Max. Efficiency	98.0%	98.0%	98.0%	98.0%	98.0%
European Efficiency	97.5%	97.5%	97.5%	97.5%	97.5%
Max. Battery to AC Efficiency	97.5%	97.5%	97.5%	97.5%	97.5%
MPPT Efficiency	99.9%	99.9%	99.9%	99.9%	99.9%
Protection					
PV String Current Monitoring	Integrated	Integrated	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated	Integrated
Battery Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated	Integrated

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Anti-islanding Protection	Integrated	Integrated	Integrated	Integrated	Integrated
AC Overcurrent Protection	Integrated	Integrated	Integrated	Integrated	Integrated
AC Short Circuit Protection	Integrated	Integrated	Integrated	Integrated	Integrated
AC Overvoltage Protection	Integrated	Integrated	Integrated	Integrated	Integrated
DC Switch*7	Integrated	Integrated	Integrated	Integrated	Integrated
DC Surge Protection	Type II	Type II	Type II	Type II	Type II
AC Surge Protection	Type III	Type III	Type III	Type III	Type III
AFCI*16	Optional	Optional	Optional	Optional	Optional
Rapid Shutdown	Optional	Optional	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated	Integrated	Integrated
General Data					
Operating Temperature Range (℃)	-35~+60	-35~+60	-35~+60	-35~+60	-35~+60
Operating Environment	Outdoor	Outdoor	Outdoor	Outdoor	Outdoor
Relative Humidity	0 ~ 95%	0 ~ 95%	0 ~ 95%	0 ~ 95%	0 ~ 95%
Max. Operating Altitude (m)	4000	4000	4000	4000	4000
Cooling Method	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Display	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	RS485 / CAN	RS485 / CAN	RS485 / CAN	RS485 / CAN	RS485 / CAN
Communication with Meter	RS485	RS485	RS485	RS485	RS485
Communication with Portal	WiFi+LAN+Bluetooth	WiFi+LAN+Bluetooth	WiFi+LAN+Bluetooth	WiFi+LAN+Bluetooth	WiFi+LAN+Bluetooth
Weight (kg)	48	48	54	54	54
Dimension W×H×D (mm)	520×660×220	520×660×220	520×660×220	520×660×220	520×660×220
Noise Emission (dB)	<45	<45	<45	<60	<60
Topology	Non-isolated	Non-isolated	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W) *8	<15	<15	<15	<15	<15
Ingress Protection Rating	IP66	IP66	IP66	IP66	IP66
DC Connector	Stäubli Electrical Connectors AG	Stäubli Electrical Connectors AG	Stäubli Electrical Connectors AG	Stäubli Electrical Connectors AG	Stäubli Electrical Connectors AG
AC Connector	OT	OT	OT	OT	OT
Environmental Category	4K4H	4K4H	4K4H	4K4H	4K4H
Pollution Degree	III	III	III	III	III
Overvoltage Category	DC II / AC III	DC II / AC III	DC II / AC III	DC II / AC III	DC II / AC III

Technical Data	GW15K-ET	GW20K-ET	GW25K-ET	GW29.9K-ET	GW30K-ET
Protective Class	I	I	I	I	I
Storage Temperature (℃)	-45~+85	-45~+85	-45~+85	-45~+85	-45~+85
The Decisive Voltage Class (DVC)	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted	Wall Mounted	Wall Mounted
Active Anti-islanding Method	AFDPF + AQDPF *9	AFDPF + AQDPF *9	AFDPF + AQDPF *9	AFDPF + AQDPF *9	AFDPF + AQDPF *9
Type of Electrical Supply System	Three phase Grid	Three phase Grid	Three phase Grid	Three phase Grid	Three phase Grid
Country of Manufacture	China	China	China	China	China

*1: In Australia, for most of the PV module, the max.Input power can achieve 2*Pn, Such as the max.input power of GW15K-ET can achieve 30000W. Besides, Max. Input Power, not continuous for 1.5*normal power.
*2: For 1000V system, Maximum operating voltage is 950V.
*3: According to the local grid regulation.
*4: Output Voltage Range: phase voltage.
*5: For 380V grid, the Nominal Output Current is 22.7A for GW15K-ET, 30.3A for GW20K-ET, 37.9A for GW25K-ET, 45.3A GW29.9K-ET, and 45.5A for GW30K-ET.
*6: Can be reached only if PV and battery power is enough.
*7: DC Switch: GHX6-55P (for Australia).
*8: No Back-up Output.
*9: AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.
*10: Not all certifications & standards listed, check the official website for details.

*11: For 380V grid, the Max. AC Current Output to Utility Grid is 25A for GW15K-ET, 33.3A for GW20K-ET, 41.7A for GW25K-ET, 49.8A for GW29.9K-ET, 50A for GW30K-ET.
*12: When the load is connected to the inverter's backup port, the Max. Apparent Power from Utility Grid can reach to 22.5K for GW15K-ET, 30K for GW20k-ET, 33K for GW25K-ET, 33K for GW29.9K-ET,and 33K for GW30K-ET respectively.
*13: When the load is connected to the inverter's backup port, the Max. AC Current From Utility Grid can reach to 34A for GW15K-ET, 45A for GW20k-ET, 50A for GW25K-ET, 50A for GW29.9K-ET,and 50A for GW30K-ET respectively.
*14: Nominal Output Power at 40 ℃(W) and Max. Output Power at 40 ℃ (W) are only for Brazil.
*15: For Austria, Max. Output Power (W) is 15K for GW15K-ET, 20K for GW20K-ET, 25K for GW25K-ET, 29.9K GW29.9K-ET, and 30K for GW30K-ET.
*16: For Brazil, AFCI is integrated.

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Battery Input Data				
Battery Type	Li-Ion	Li-Ion	Li-Ion	Li-Ion
Nominal Battery Voltage (V)	500	500	500	500
Battery Voltage Range (V)	112~650	112~650	200~800	200~800
Start-up Voltage (V)	112	112	180	180
Number of Battery Input	1	2	1	2
Max. Continuous Charging Current (A)	50	50*2	50	50*2
Max. Continuous Discharging Current (A)	50	50*2	50	50*2
Max Charge Power (kW)	12	18	20	30
Max Discharge Power (kW)	12	18	20	30
PV String Input Data				
Max. Input Power (kW)	24	36	30	45

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Max. Input Voltage (V)*1	800	800	1000	1000
MPPT Operating Voltage Range (V)	200~650	200~650	200~850	200~850
MPPT Voltage Range at Nominal Power (V)	260~650	260~650	400~850	450~850
Start-up Voltage (V)	200	200	200	200
Nominal Input Voltage (V)	380	380	620	620
Max. Input Current per MPPT (A)	30	30	30	30
Max. Short Circuit Current per MPPT (A)	38	38	38	38
Max. Backfeed Current to The Array (A)	0	0	0	0
Number of MPPT Trackers	2	3	2	3
Number of Strings per MPPT	2/2	2/2/2	2/2	2/2/2
AC Output Data (On-grid)				
Nominal Output Power (kW)	12	18	20	30
Max. Output Power (kW)	12	18	20	30
Nominal Output Power at 40 ℃(kW) *8	12	18	20	30
Max. Output Power at 40 ℃ (kW)*8	12	18	20	30
Nominal Apparent Power Output to Utility Grid (kVA)	12	18	20	30

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Max. Apparent Power Output to Utility Grid (kVA)	13.2	19.8	22	33
Nominal Apparent Power from Utility Grid(kVA)	12	18	20	30
Max. Apparent Power from Utility Grid (kVA) *6	12	18	20	30
Nominal Output Voltage (V)	220, 3L/N/PE	220, 3L/N/PE	380, 3L/N/PE	380, 3L/N/PE
Output Voltage Range (V)*2	0~165	0~165	0~300	0~300
Nominal AC Grid Frequency (Hz)	60	60	60	60
AC Grid Frequency Range (Hz)	55~65	55~65	45~65	45~65
Max. AC Current Output to Utility Grid (A)	34.6	52	33.3	50
Max. AC Current From Utility Grid (A) *7	31.5	47	30.3	45.5
Nominal AC Current From Utility Grid (A)	31.5	47	30.3	45.5
Max. Output Fault Current (Peak and Duration) (A)	241.5A@126 ms	241.5A@126 ms	241.5A@126 ms	241.5A@126 ms
Inrush Current (Peak and Duration) (A)	264A@53us	264A@53us	264A@53us	264A@53us
Nominal Output Current (A)	31.5	47	30.3	45.5

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Power Factor	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)	~1 (Adjustable from0.8 leading~0.8 lagging)
Max. Total Harmonic Distortion	<3%	<3%	<3%	<3%
Maximum Output Overcurrent Protection (A)	94	94	94	94
AC Output Data (Back-up)				
Back-up Nominal Apparent Power (kVA)	12	18	20	30
Max. Output Apparent Power without Grid(kVA)*3	12.0(14.4@60s , 19.2@3s)	18.0(21.6@60s)	20.0(24.0@60s , 32.0@3s)	30.0(36.0@60s)
Max. Output Apparent Power with Grid (kVA)	12	18	20	30
Nominal Output Current (A)	31.5	47	30.3	45.5
Max. Output Current (A)	31.5(37.8@60s, 50.4@3s)	47(56.4@60s)	30.3(36.4@60s, 48.5@3s)	45.5(54.5@60s)
Max. Output Fault Current (Peak and Duration) (A)	94	94	94	94
Inrush Current (Peak and Duration) (A)	264@53us	264@53us	264@53us	264@53us
Maximum Output Overcurrent Protection (A)	94	94	94	94

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Nominal Output Voltage (V)	220, 3L/N/PE	220, 3L/N/PE	380, 3L/N/PE	380, 3L/N/PE
Nominal Output Frequency (Hz)	60	60	60	60
Output THDv (@Linear Load)	<3%	<3%	<3%	<3%
Switching from Grid Connected Mode to Standalone Mode	20ms	20ms	20ms	20ms
Switching from standalone mode to Grid connected mode	20ms	20ms	20ms	20ms
Efficiency				
Max. Efficiency	98.0%	98.0%	98.0%	98.0%
European Efficiency	97.5%	97.5%	97.5%	97.5%
Max. Battery to AC Efficiency	97.5%	97.5%	97.5%	97.5%
Protection				
PV String Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Insulation Resistance Detection	Integrated	Integrated	Integrated	Integrated
Residual Current Monitoring	Integrated	Integrated	Integrated	Integrated
PV Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated
Battery Reverse Polarity Protection	Integrated	Integrated	Integrated	Integrated

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
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 III	Type III	Type III	Type III
AFCI	Integrated	Integrated	Integrated	Integrated
Rapid Shutdown	Optional	Optional	Optional	Optional
Remote Shutdown	Integrated	Integrated	Integrated	Integrated
General Data				
Operating Temperature Range (℃)	-35~+60	-35~+60	-35~+60	-35~+60
Storage Temperature (℃)	-45~+85	-45~+85	-45~+85	-45~+85
Relative Humidity	0 ~ 95%	0 ~ 95%	0 ~ 95%	0 ~ 95%
Max. Operating Altitude (m)	4000	4000	4000	4000
Cooling Method	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling	Smart Fan Cooling
User Interface	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP	LED, WLAN+APP
Communication with BMS	RS485 / CAN	RS485 / CAN	RS485 / CAN	RS485 / CAN

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
Communication	RS485, WiFi+LAN+Bluetooth, 4G+Bluetooth(Optional)	RS485, WiFi+LAN+Bluetooth, 4G+Bluetooth(Optional)	RS485, WiFi+LAN+Bluetooth, 4G+Bluetooth(Optional)	RS485, WiFi+LAN+Bluetooth, 4G+Bluetooth(Optional)
Communication Protocols	Modbus-RTU (SunSpec Compliant), Modbus-TCP	Modbus-RTU (SunSpec Compliant), Modbus-TCP	Modbus-RTU (SunSpec Compliant), Modbus-TCP	Modbus-RTU (SunSpec Compliant), Modbus-TCP
Weight (kg)	48	54	48	54
Dimension W×H×D (mm)	520×660×220	520×660×220	520×660×220	520×660×220
Noise Emission (dB)	<45	<60	<45	<60
Topology	Non-isolated	Non-isolated	Non-isolated	Non-isolated
Self-consumption at Night (W) *4	<15	<15	<15	<15
Ingress Protection Rating	IP66	IP66	IP66	IP66
Anti-corrosion Class	C4	C4	C4	C4
DC Connector	MC4	MC4	MC4	MC4
AC Connector	OT	OT	OT	OT
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

Technical Data	GW12KL-ET	GW18KL-ET	GW20K-ET	GW30K-ET
The Decisive Voltage Class (DVC)	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A	Battery：C PV：C AC：C Com：A
Mounting Method	Wall Mounted	Wall Mounted	Wall Mounted	Wall Mounted
Active Anti-islanding Method	FDPF + AQDPF *5	FDPF + AQDPF *5	AFDPF + AQDPF *5	AFDPF + AQDPF *5
Type of Electrical Supply System	Three phase Grid	Three phase Grid	Three phase Grid	Three phase Grid
Country of Manufacture	China	China	China	China

*1: For 1000V system，Maximum operating voltage is 950V.
*2: Output Voltage Range: phase voltage.
*3: Can be reached only if PV and battery power is enough.
*4: No Back-up Output.
*5: AFDPF: Active Frequency Drift with Positive Feedback, AQDPF: Active Q Drift with Positive Feedback.
*6: When the load is connected to the inverter’s backup port, the Max. Apparent Power from Utility Grid can reach to 18kVA for GW12KL-ET, 19.8kVA for GW18KL-ET, 30kVA for GW20k-ET and 33kVA for GW30K-ET respectively.
*7: When the load is connected to the inverter’s backup port, the Max. AC Current From Utility Grid can reach 47.2 A for GW12KL-ET and 52A for GW18KL-ET; And can reach 45A for GW20k-ET and 50A for GW30K-ET respectively.
*8: Nominal Output Power at 40 ℃(W) and Max. Output Power at 40 ℃ (W) are only for Brazil.

9.2 Battery Parameters

9.2.1 Lynx home F

Technical parameters	LX F6.6-H	LX F9.8-H	LX F13.1-H	LX F16.4-H
Usable Energy(kWh)*1	6.55	9.83	13.1	16.38
Battery Module	LX F3.3-H: 38.4V 3.27kWh			
Number of Modules	2	3	4	5
Cell Type	LFP（$LiFePO_4$）			
Cell Configuration	64S1P	96S1P	128S1P	160S1P
Nominal Voltage (V)	204.8	307.2	409.6	512
Operating Voltage Range (V)	182.4~230.4	273.6~345.6	364.8~460.8	456~576
Nominal Dis-/Charge Current(A)*2	25			
Nominal Power (kW)*2	5.12	7.68	10.24	12.8
Operating Temperature (℃)	Charge: 0 ~ +50; Discharge: -20 ~ +50			
Relative Humidity	0~95%			
Max. Operating Altitude (m)	2000			
Communication	CAN			
Weight (kg)	115	158	201	244
Dimensions (W×H×D mm)	600*625*380	600*780*380	600*935*380	600*1090*380
Enclosure Type	IP55			
Installation Location	Grounded			

Technical parameters		LX F6.6-H	LX F9.8-H	LX F13.1-H	LX F16.4-H
Standard and Certification	Safety	IEC62619, IEC62040, CEC			
	EMC	CE，RCM			
	Transportation	UN38.3			
*1: Test conditions, 100% DOD, 0.2℃ charge & discharge at +25±2 °C for battery system at beginning life. System Usable Energy may vary with different Inverter. *2: Nominal Dis-/Charge Current and power derating will occur related to Temperature and SOC.					

9.2.2 Lynx home F Plus+

Technical parameters	LX F6.6-H	LX F9.8-H	LX F13.1-H	LX F16.4-H
Usable Energy(kWh)*1	6.55	9.83	13.10	16.38
Battery Module	LX F3.3-H: 38.4V 3.27kWh			
Number of Modules	2	3	4	5
Cell Type	LFP（$LiFePO_4$）			
Cell Configuration	64S1P	96S1P	128S1P	160S1P
Nominal Voltage (V)	204.8	307.2	409.6	512
Operating Voltage Range (V)	182.4~230.4	273.6~345.6	364.8~460.8	456~576
Nominal Dis-/Charge Current (A)*2	25			
Nominal Power (kW)*2	5.12	7.68	10.24	12.8

Technical parameters		LX F6.6-H	LX F9.8-H	LX F13.1-H	LX F16.4-H
Operating Temperature (℃)		Charge: 0 ~ +50; Discharge: -20 ~ +50			
Relative Humidity		0~95%			
Max. Operating Altitude (m)		2000			
Communication		CAN			
Weight (kg)		115	158	201	244
Dimensions (W×H×D mm)		600*610*380	600*765*380	600*920*380	600*1075*380
Enclosure Type		IP55			
Storage Temperature (°C)		-20 ~ +45 (≤ One Month); 0 ~ +35 (< One Year)			
Mounting Method		Grounded			
Round-trip Efficiency		96.4%			
Cycle Life		≥ 3500 @1C/1C			
Standard and Certification	Safety	IEC62619, IEC 62040, VDE2510-50, CEC			
	EMC	CE，RCM			
	Transportation	UN38.3			
*1 : Test conditions , 100% DOD, 0.2C charge & discharge at+25+2 °C for battery system at beginning life. System Usable Energy may vary with different Inverter. *2 : Nominal Dis-/Charge Current and power derating will occurrelated to Temperature and SOC. *3 : Based on 2.5~3.65V voltage rang @25+2°C of Cell under 11C/1C test condition and 80% EOL.					

9.2.3 Lynx home F G2

Technical Data	LX F6.4-H-20	LX F9.6-H-20	LX F12.8-H-20	LX F16.0-H-20	LX F19.2-H-20	LX F22.4-H-20	LX F25.6-H-20	LX F28.8-H-20
Usable Energy (kWh)*1	6.4	9.6	12.8	16.0	19.2*2	22.4*2	25.6	28.8
Battery Module	LX F3.2-20：64V 3.2kWh							
Number of Modules	2	3	4	5	6	7	8	9
Cell Type	LFP ($LiFePO_4$)							
Cell Configuration	(20S)2 S1P	(20S)3 S1P	(20S)4 S1P	(20S)5 S1P	(20S)6 S1P	(20S)7 S1P	(20S)8 S1P	(20S)9 S1P
Nominal Voltage (V)	128	192	256	320	384	448	512	576
Operating Voltage Range (V)	114.8 ~144. 4	172.2 ~216. 6	229.6~ 288.8	287~3 61	344.4~ 433.2	401.8~ 505.4	459.2~ 577.6	516.6~ 649.8
Nominal Dis-/Charge Current (A)*3	35							
Max. Continuous Dis-/Charge Current (A)	35							
Nominal Power (kW)*3	4.48	6.72	8.96	11.2	13.44	15.68	17.92	20.16
Operating Temperature Range (℃)*4	-20~+50							

Technical Data		LX F6.4-H-20	LX F9.6-H-20	LX F12.8-H-20	LX F16.0-H-20	LX F19.2-H-20	LX F22.4-H-20	LX F25.6-H-20	LX F28.8-H-20
Relative Humidity		0 ~ 95%							
Max. Operating Altitude (m)		3000							
Communication		CAN							
Weight (kg)		86	120	154	188	222	256	290	324
Dimensions (W×H×D mm)		600×559×380	600×715×380	600×871×380	600×1027×380	600×1183×380	600×1339×380	600×1495×380	600×1651×380
Ingress Protection Rating		IP55							
Storage Temperature (℃)		-20~+45(≤One Month) ; 0~+35(≤One Year)							
Mounting Method		Grounded							
Round-trip Efficiency		94%							
Cycle Life*5		> 4000							
Standard and Certification	Safety	IEC62619、IEC62040-1、IEC63056、VDE2510、 CE							
	EMC	CE, RCM							
	Transportation	UN38.3							

9.2.4 Lynx home D

Technical parameters		LX D5.0-10
Usable energy (kWh)*1		5
Cell Type		LFP (LiFePO4)
Cell Configuration		16S1P
Nominal Voltage (V)		Charge: 435V; Discharge: 380V
Operating Voltage Range (V)		320~480V
Nominal Charge/Discharge Power (kW)		3
Peak Power		5KW, 10s
Operating Temperature Range (℃)		Charge: 0~+53; Discharge: -20~+53
Relative Humidity		0~95%
Max. Operating Altitude (m)		4000
Communication		CAN
Weight (kg)		52
Dimension (W×H×D mm)		700×380×170
Ingress Protection Rating		IP66
Storage Temperature (℃)		-20~0 (≤ One Months), 0~+35 (≤ One Year)
Mounting Method		Floor stacked, Wall Mounted
Cycle Life *2		4500
Standard and Certification	Safety	IEC62619、IEC60730、VDE2510-50、 CE 、CEC
	EMC	CE, RCM
	Transportation	UN38.3
*1: Test conditions, 100% DOD, 0.2C charge & discharge at +25±3 °C for battery system at beginning life. Usable energy may vary with different inverter. *2: Based on 2.87~3.59V voltage rang @25+2 °C of Cell under 0.6C/0.6C test condition and 80% EOL		

9.2.5 Lynx D G2

Technical Data	GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Rated Energy (kWh)	5.12	8.32	5.12	8.32
Usable Energy (kWh)*1	5	8	5	8
Battery Type	LFP ($LiFePO_4$)			
Operating Voltage Range (V) (single phase system)	350~550			
Operating Voltage Range (V) (three phase system)	700~950			
Max. Input Current (System) (A)	12	19	12	19
Max. Output Current (System) (A)	13.2	21	13.2	21
Max. Input Power (System) (kW)*2	5	8	5	8
Max. Output Power (System) (kW)*2	5	8	5	8
Peak.Output Power (System) (kW)*2	7.5 @10s	12 @10s	7.5 @10s	12 @10s
Charging Temperature Range (°C)	-18~55		2~55	
Discharging Temperature Range (°C)	-20~55		-20~55	
Relative Humidity	5-95%			
Max. Operating Altitude (m)	4000			
Noise Emission (dB)	≤29			
Communication	CAN			

Technical Data		GW5.1-BAT-D-G20	GW8.3-BAT-D-G20	GW5.1-BAT-D-G21	GW8.3-BAT-D-G21
Weight (kg)		57.5±1	79±1	57.5±1	79±1
Dimensions (W×H×D mm)		800*326*270			
Optional Function Configuration		heating		/	
Ingress Protection		IP66			
Storage Temperature (℃)		-20 ~55			
Max. Storage time		12 months (-20℃~35℃)			
		6 months (35℃~45℃)			
Scalability		6 pcs			
Mounting Method		Floor stacked / Wall-mounted			
Cycle Life		≥6000 (25±2℃, 0.5C, 90%DOD, 70%EOL)			
Country of Manufacture		China			
Standard and Certification	Safety	IEC62619, IEC60730, EN62477，IEC63056，IEC62040，CE, CEC, VDE2510			
	EMC	CE, RCM			
	Transportation	UN38.3 ADR			

Technical Data	GW6.0-BAT-D-G20	GW9.0-BAT-D-G20
Battery Type	LFP (LiFePO4)	
Rated Capacity (Ah)	314Ah	
Rated Energy (kWh)	6	9
Usable Energy (kWh)*1	5.9	8.85
Nominal Voltage(V) (Battery)	19.2	28.8

Technical Data	GW6.0-BAT-D-G20	GW9.0-BAT-D-G20
Voltage Range(V) (Battery)	16.2~21.9	24.3~32.8
Operating Voltage Range (V) (single phase system)	350~550	
Operating Voltage Range (V) (three phase system)	700~950	
Max. Input Current (System) (A)	7.1	10.7
Max. Output Current (System) (A)	7.9	11.8
Max. Input Power (System) (kW)*2	3	4.5
Max. Output Power (System) (kW)*2	3	4.5
Peak Output Power (System) (kW)*2	4.5 (10s)	6.75 (10s)
Charging Temperature Range(℃)	-20~55	
Discharging Temperature Range (℃)	-20~55	
Relative Humidity	4-100%	
Max. Operating Altitude (m)	4000	
Noise Emission (dB)	≤27	
Communication	CAN&485	
Weight (kg)	61±1kg	77±1kg
Useable Extinguishing Agent	CO2, H2O	
Crucial Material	LiFePO4, C, Cu, LiPF6, Al, (C3H6)n	
Ingress Protection	IP66	
Protective Class	Ⅰ	
Dimensions (W×H×D mm)	800*326*270	
Function Configuration	Heating (Integrated); Aerosol fire extinguishing (Integrated)	
Storage Temperature (℃)	-20 ~55	

Technical Data		GW6.0-BAT-D-G20	GW9.0-BAT-D-G20
Max. Storage time		12 months (-20℃~35℃) 6 months (35℃~45℃)	
Scalability*3		12P	
Mounting Method		Floor stacked / Wall-mounted / Grounded	
Cycle Life		≥6000 （25±2℃ 0.5C 90%DOD 70%EOL）	
Country of Manufacture		China	
Standard and Certification	Safety	IEC62619, IEC60730, EN62477, IEC63056, IEC62040, CE, CEC, Regulation 2023/1542 , VDE2510-50	
	EMC	CE, RCM	
	Transportation	UN38.3 ADR	

*1: Test conditions, 100% DOD (cell 2.85~3.6V voltage range), 0.2P charge & discharge at 25±2 °C for battery system at the beginning of life. Usable energy is defined by its initial design value. Actual available energy may vary depending on charge/discharge rate, environmental conditions (e.g. temperature), transport and storage factors.
*2: Max. Input Power /Max. Output Power/Peak.Output Power derating will occur related to Temperature and SOC.
*3 For single-column stacked installations, the maximum number of parallel units is 6.

9.3 Smart Meter Technical Parameters

9.3.1 GM330

Technical Parameters		GM330
Measurement Range	Supported Type of Electrical Supply System	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

Technical Parameters		GM330
	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)	72x85x72/2.83x3.35×2.83
	Housing	4 modules
	Weight (g/lb)	240/0.53
	Mounting Method	DIN rail
	User Interface	4 LEDs, reset button
	Power consumption (W)	≤5
Environmental Parameters	IP rating	IP20
	Operating Temperature Range (℃/°F)	-30~+70/-22~+158
	Storage Temperature Range (℃/°F)	-30~70/-22~+158
	Relative Humidity (non-condensing)	0~95%
	Max. Operating Altitude (m/ft)	3000/9842
Certification parameters	Certificates	UL1741/ANSI

9.3.2 GM3000

Technical Parameters		GM3000
Application		Three-phase
Voltage	Nominal Voltage	3L+N/400V
	Voltage Range	100V~240V
	Frequency	50Hz/60Hz

Current	Rated Current	CT in: 120A/40mA;
	Current Range	0.48A~120A
Power Consumption		<3W
Data Detection		Voltage/Current/Active Power/Reactive Power/Power Factor/Frequency
Energy Calculation		Active/Reactive Power
Accuracy	Voltage/Current	Class I
	Active	Class I
	Reactive Power	Class II
communication		RS485 (maximum rate9600/ModBusprotocol/maximum length of communication cable100m)
Display		LED、USB、Resetbutton
Equipment	Dimensions （Length x Width x Heightmm)	36 x 85 x 66.5
	Weight(g）	450
	Ingress Protection Rating	IP20(Indoor）
	Mounting Method	Back mounting plate installation
Operating Temperature		-25 ~ +60° C
Storage Temperature		-25 ~ +60° C
Humidity		<95% Non-condensing
Operating Altitude(m)		< 2000m
Safe Service Life (years)		≥25

9.3.3 GMK330

型号	**GMK330**
测量范围	
支持电网类型	1P2W/3P3W/3P4W
工作电压（Vac）*	3P4W：90~264 L-N 3P3W：90~264 L-L
频率（Hz）	50/60

型号	GMK330
CT变比	120A: 40mA 200A: 50mA*
CT数量	3
精度参数	
电压/电流	Class 0.5
有功电能	Class 0.5
无功电能	Class 1
通信参数	
通信方式	RS485
通信距离（m）	1000
通用参数	
尺寸（W*H*D mm）	72*85*72
Housing	4模
重量（g）	240
安装方式	DIN导轨
人机交互	4 LED，重置按钮
功耗（W）	＜5
环境参数	
IP等级	IP20
工作温度范围（℃）	-30-+70
存储温度范围（℃）	-30-+70
相对湿度（无凝露）	0-95%
最高工作海拔（m）	3000

*支持1.1倍电压接入。

9.4 Smart Communication Stick Technical Parameters

9.4.1 4G Kit-CN-G21

Product Model	4G Kit-CN-G21
Device Management	
Maximum Number of Supported Inverters	1
Power Parameters	
Input Voltage (V)	5
Power Consumption (W)	≤4
Interface Type	USB
Communication parameters	
4G/3G/2G	LTE-FDD：B1/B3/B5/B8 LTE-TDD：B34/B39/B40/B41
GNSS Positioning	BeiDou, GPS
Bluetooth	Bluetooth V5.0
Mechanical Parameters	
Dimensions (W×H×D mm)	48.3*95.5*32.1
Weight (g)	87
Indicator Light	LED* 2
Mounting Method	Plug and Play
SIM Card Size	Micro sim, 15mm*12mm
Environmental Parameters	
Operating Temperature Range (℃)	-30~+65
Storage Temperature Range (℃)	-40~+70
Relative Humidity	0-100%
IP rating	IP66

Product Model	4G Kit-CN-G21
Max. Operating Altitude (m)	4000
Applicable Standards	
Certification	SRRC、CTA

9.4.2 4G Kit-CN-G20

Product Model	4G Kit-CN-G20
Device Management	
Maximum Number of Supported Inverters	1
Power Parameters	
Input Voltage (V)	5
Power Consumption (W)	≤4
Interface Type	USB
Communication parameters	
4G/3G/2G	LTE-FDD：B1/B3/B5/B8 LTE-TDD：B34/B39/B40/B41
GNSS Positioning	/
Bluetooth	Bluetooth V5.0
Mechanical Parameters	
Dimensions (W×H×D mm)	48.3*95.5*32.1
Weight (g)	87
Indicator Light	LED* 2
Mounting Method	Plug and Play
SIM Card Size	Micro sim, 15mm*12mm
Environmental Parameters	
Operating Temperature Range (℃)	-30~+65

Product Model	4G Kit-CN-G20
Storage Temperature Range (℃)	-40~+70
Relative Humidity	0-100%
IP rating	IP66
Max. Operating Altitude (m)	4000
Applicable Standards	
Certification	SRRC、CTA

9.4.3 WiFi/LAN Kit-20

Technical Parameters		WiFi/LAN Kit-20
Output voltage (V)		5
Power consumption (W)		≤2
Communication interface		USB
Communication Parameters	Ethernet	10M/100Mbps Auto-Negotiation
	Wireless	IEEE 802.11 b/g/n @2.4 GHz
	Bluetooth	Bluetooth V4.2 BR/EDR and Bluetooth LE Standard
Mechanical Parameters	Dimensions (W×H×D mm)	48.3*159.5*32.1
	Weight (g)	82
	Ingress Protection Rating	IP65
	Mounting Method	USB Port Insertion and Removal
Operating Temperature Range (℃)		-30~+60
Storage Temperature Range (℃)		-40~+70
Relative Humidity		0-95%
Max. Operating Altitude (m)		4000

10 Appendix

10.1 FAQ

10.1.1 How to Perform Meter/CT Auxiliary Detection?

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

- Method 1:

1. Through**[Home]** > **[Settings]** > **[Meter/CT Auxiliary Detection]**,enter the detection page.
2. Click Start Detection, wait for the detection to complete, then view the detection results.

- Method 2:

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

10.1.2 How to Upgrade the Device Version

Through firmware information, you can view or upgrade:
Inverter's DSP version, ARM version, communication module software version, battery's BMS version, DCDC version, etc.

- **Upgrade Prompt:**

When the user opens the App, an upgrade prompt pops up on the homepage, and the user can choose whether to upgrade. If they choose to upgrade, they can complete the upgrade according to the interface prompts.

- **Regular Upgrade:**

Through**[Home]** > **[Settings]** > **[Firmware Information]**, enter the firmware information viewing interface.

Click "Check for Updates", if there is a new version, complete the upgrade according to the interface prompts.

- **Forced Upgrade:**

The App pushes upgrade information, and the user needs to upgrade according to the prompts; otherwise, they cannot use the App. They can complete the upgrade according to the interface prompts.

Inverter Software Version Upgrade

- The inverter supports upgrading software viaUdisk.
- When usingUdisk to upgrade the device, please contact the after-sales service center to obtain the software upgrade package and upgrade method.

10.2 Abbreviation

Abbreviation	English Description	Chinese Description
Ubatt	Battery Voltage Range	Battery Voltage Range
Ubatt,r	Nominal Battery Voltage	Rated Battery Voltage
Ibatt,max (C/D)	Max. Charging Current Max. Discharging Current	Max. 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	Max. Current from Grid per MPPT Channel
ISC PV	Max. Short Circuit Current per MPPT	Max. Short-Circuit Current per MPPT Channel
PAC,r	Nominal Output Power	Rated output power
Sr (to grid)	Nominal Apparent Power Output to Utility Grid	Rated Grid-Connected Output Apparent Power
Smax (to grid)	Max. Apparent Power Output to Utility Grid	Max. Grid-Connected Output Apparent Power
Sr (from grid)	Nominal Apparent Power from Utility Grid	Rated Apparent Power to Grid

Abbreviation	English Description	Chinese Description
Smax (from grid)	Max. Apparent Power from Utility Grid	Max. Apparent Power to Grid
UAC,r	Nominal Output Voltage	Rated Output Voltage
fAC,r	Nominal AC Grid Frequency	Output Voltage Frequency
IAC,max(to grid)	Max. AC Current Output to Utility Grid	Max. Grid-Connected Output Current
IAC,max(from grid)	Max. AC Current From Utility Grid	Max. Current from Grid
P.F.	Power Factor	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. Apparent Power to Grid
IAC,max	Max. Output Current	Max. Current to Grid
UAC,r	Nominal Output Voltage	Max. Output Voltage
fAC,r	Nominal Output Freqency	Rated Output Voltage Frequency
Toperating	Operating Temperature Range	Operating Temperature Range
IDC,max	Max. Input Current	Max. Current from Grid
UDC	Input Voltage	Input 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	Input Voltage Range / AC Input
Toperating	Operating Temperature Range	Operating Temperature Range
Pmax	Max Output Power	Max. Power
PRF	TX Power	Transmit Power
PD	Power Consumption	Power Consumption
PAC,r	Power Consumption	Power Consumption
F (Hz)	Frequency	Frequency
ISC PV	Max. Input Short Circuit Current	Max. Input Short-Circuit Current

Abbreviation	English Description	Chinese Description
Udcmin-Udcmax	Range of input Operating Voltage	Operating Voltage Range
UAC,rang(L-N)	Power Supply Input Voltage	Adapter Input Voltage Range
Usys,max	Max System Voltage	Max. System Voltage
Haltitude,max	Max. Operating Altitude	Max. Operating Altitude
PF	Power Factor	Power Factor
THDi	Total Harmonic Distortion of Current	Current Harmonics
THDv	Total Harmonic Distortion of Voltage	Voltage Harmonics
C&I	Commercial & Industrial	Industrial and Commercial
SEMS	Smart Energy Management System	Smart Energy Management System
MPPT	Maximum Power Point Tracking	Maximum Power Point Tracking
PID	Potential-Induced Degradation	Potential Induced Degradation
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 Communication
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol	Modbus over TCP/IP Layer
Modbus RTU	Modbus Remote Terminal Unit	Modbus over Serial Link
SCR	Short-Circuit Ratio	Short Circuit Ratio
UPS	Uninterruptable Power Supply	Uninterruptible Power Supply
ECO mode	Economical Mode	Economy 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 Power Off
SPD	Surge Protection Device	Lightning Protection
ARC	zero injection/zero export Power Limit / Export Power Limit	Power Limit

Abbreviation	English Description	Chinese Description
DRED	Demand Response Enabling Device	Command Response Device
RCR	Ripple Control Receiver	-
AFCI	AFCI	AFCI
GFCI	Ground Fault Circuit Interrupter	Grounding Failure Circuit Breaker
RCMU	Residual Current Monitioring Unit	Residual Current Monitoring Device
FRT	Fault Ride Through	Fault Ride-Through
HVRT	High Voltage Ride Through	High Voltage Ride-Through
LVRT	Low Voltage Ride Through	Low Voltage Ride-Through
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
SOH	State of Health	State of Health
SOE	State Of Energy	Remaining Battery Energy
SOP	State Of Power	Battery Charge-Discharge Capability
SOF	State Of Function	Functional State of Battery
SOS	State Of Safety	Safety State
DOD	Depth of discharge	Depth of Discharge

10.3 Terminology Explanation

- **Explanation of Overvoltage Categories**
  - **Overvoltage Category I**:Equipment connected to circuits with measures to limit transient overvoltages to a fairly low level.
  - **Overvoltage Category II**:Energy-consuming equipment supplied by fixed distribution devices. Such equipment includes appliances, portable tools, and other household and similar loads. If special requirements for reliability and applicability of such equipment exist, Overvoltage Category III shall be adopted.
  - **Overvoltage Category III**:Equipment in fixed distribution devices, whose reliability and applicability must meet special requirements. Includes switching devices in fixed distribution devices and industrial equipment permanently connected to fixed distribution devices.

- **Overvoltage Category Ⅳ**:Equipment at the source side of distribution devices, including measuring instruments and pre-overcurrent protection equipment, etc.

- **Explanation of Wet Location Categories**

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

- **Explanation of Environmental Categories:**
  - **Outdoor Inverter**:Ambient air temperature range is -25 to +60°C, suitable for Pollution Degree 3 environments;
  - **Indoor Type Ⅱ Inverter**:Ambient air temperature range is -25 to +40°C, suitable for Pollution Degree 3 environments;
  - **Indoor Type Ⅰ Inverter**:Ambient air temperature range is 0 to +40°C, suitable for Pollution Degree 2 environments;
- **Explanation of Pollution Degree Categories**
  - **Pollution Degree 1**:No pollution or only dry non-conductive pollution;
  - **Pollution Degree 2**:Under normal conditions, only non-conductive pollution exists, but temporary conductive pollution due to condensation must be considered;
  - **Pollution Degree 3**:There is conductive pollution, or non-conductive pollution becomes conductive due to condensation;
  - **Pollution Degree 4**:Persistent conductive pollution, such as pollution caused by conductive dust, rain or snow.

10.4 Meaning of Battery SN Code



LXD10DSC0002

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

- The 11th and 12th digits are the last two digits of the production year, e.g., 2023 is represented as 23;
- The 13th digit is the production month, e.g., August is represented as 8; Details are as follows:

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

- The 14th digit is the production date; for example, the 8th is represented by 8; Numbers are preferred, e.g., 1~9 represent the 1st to 9th days, A represents the 10th day, and so on. The letters I and O are not used to avoid confusion. Details are as follows:

Production Date	1	2	3	4	5	6	7	8	9
Code	1	2	3	4	5	6	7	8	9

Production Date	10	11	12	13	14	15	16	17	18
Code	A	B	C	D	E	F	G	H	J

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

10.5 Safety Standards Countries

Serial Number	Safety regulation name	Serial Number	Safety regulation name
Europe			
1	IT-CEI 0-21	56	IE-LV-72A

Serial Number	Safety regulation name	Serial Number	Safety regulation name
2	IT-CEI 0-16	57	IE-ESB-C&D(< 110kV)
3	DE LV with PV	58	IE-EirGrid-110kV
4	DE LV without PV	59	PT-D
5	DE-MV	60	EE
6	ES-A	61	NO
7	ES-B	62	FI-A
8	ES-C	63	FI-B
9	ES-D	64	FI-C
10	ES-island	65	FI-D
11	BE	66	UA-A1
12	FR-LV	67	UA-A2
13	FR-island-50Hz	68	EN 50549-1
14	FR-island-60Hz	69	EN 50549-2
15	type A-PL_V.1.1	70	DK-West-B-MVHV
16	type B-LV-PL_V.1.1	71	DK-East-B-MVHV
17	type C-PL_V.1.1	72	DK-West-C-MVHV
18	type D-PL_V.1.1	73	DK-East-C-MVHV
19	NL-16/20A	74	DK-West-D-MVHV
20	NL-A	75	DK-East-D-MVHV
21	NL-B	76	FR-Reunion
22	NL-C	77	BE-LV（>30kVA）

Serial Number	Safety regulation name	Serial Number	Safety regulation name
23	NL-D	78	BE-HV
24	SE-A	79	CH-B
25	SE MV	80	NI-G99-A
26	SK-A	81	NI-G99-B
27	SK-B	82	NI-G99-C
28	SK-C	83	NI-G99-D
29	HU	84	IE-LV-170kVA
30	CH-A	85	IE-MV&HV-200kVA
31	CY	86	DE-HV
32	GR	87	FR-MV
33	DK-West-A	88	CZ-A1/A2-09
34	DK-East-A	89	DE-EHV
35	DK-West-B	90	IE-EirGrid-400KV
36	DK-East-B	91	IE-EirGrid-220KV
37	AT < 1kV	92	IE-EirGrid-66KV
38	AT > 1kV	93	IE-ESB-B
39	BG	94	IE-ESB-D(≥110kV)
40	Czech	95	type B-MV-PL_V.1.1
41	CZ-A1-09	96	GB-G99-A HV
42	CZ-A2-09	97	GB-G99-B LV
43	CZ-B1/B2-09	98	GB-G99-C LV

Serial Number	Safety regulation name	Serial Number	Safety regulation name
44	CZ-C	99	UA-B
45	CZ-D	100	UA-C
46	RO-A	101	UA-D
47	RO-B	102	UK-G98
48	RO-D	103	UK-G99-A LV
49	GB-G98	104	UK-G99-B LV
50	GB-G99-A LV	105	UK-G99-C LV
51	GB-G99-B HV	106	CZ-A1
52	GB-G99-C HV	107	UK-A-MV
53	GB-G99-D	108	UK-B-MV
54	NI-G98	109	UK-C-MV
55	IE-LV-16/25A	-	-
Global			
1	60Hz-Default	6	IEC 61727-60Hz
2	50Hz-Default	7	Warehouse
3	127Vac-60Hz-Default	8	IEC61727-480Vac-60Hz
4	127Vac-50Hz-Default	9	IEC61727-480Vac-50Hz
5	IEC 61727-50Hz		
Americas			
1	Argentina-220V-LV	38	LUMAPR-2024-220Vac-3P
2	US-208Vac	39	LUMAPR-2024-240Vac-3P
3	US-240Vac	40	Cayman

Serial Number	Safety regulation name	Serial Number	Safety regulation name
4	Mexico-220Vac	41	Brazil-220Vac
5	Mexico-440Vac	42	Brazil-208Vac
6	US-480Vac	43	Brazil-230Vac
7	US-208Vac-3P	44	Brazil-240Vac
8	US-220Vac-3P	45	Brazil-254Vac
9	US-240Vac-3P	46	Brazil-127Vac
10	US-CA-208Vac	47	Brazil-ONS
11	US-CA-240Vac	48	Barbados
12	US-CA-480Vac	49	Chile-BT
13	US-CA-208Vac-3P	50	Chile-MT-A
14	US-CA-220Vac-3P	51	Chile MT-B
15	US-CA-240Vac-3P	52	Colombia
16	US-HI-208Vac	53	Colombia<0.25MW-208Vac-1P
17	US-HI-240Vac	54	Colombia<0.25MW-120Vac-3P
18	US-HI-480Vac	55	IEEE 1547-208Vac
19	US-HI-208Vac-3P	56	IEEE 1547-220Vac
20	US-HI-220Vac-3P	57	IEEE 1547-240Vac
21	US-HI-240Vac-3P	58	IEEE 1547-230Vac
22	US-Kauai-208Vac	59	Colombia<0.25MW-127Vac-3P
23	US-Kauai-240Vac	60	Colombia>5MW
24	US-Kauai-480Vac	61	Mexico-127V

Serial Number	Safety regulation name	Serial Number	Safety regulation name
25	US-Kauai-208Vac-3P	62	Mexico-240V
26	US-Kauai-220Vac-3P	63	US-O&R-208Vac
27	US-Kauai-240Vac-3P	64	US-O&R-240Vac
28	US-ISO-NE-208Vac	65	US-O&R-480Vac
29	US-ISO-NE-240Vac	66	US-O&R-208Vac-3P
30	US-ISO-NE-480Vac	67	US-O&R-220Vac-3P
31	US-ISO-NE-208Vac-3P	68	US-O&R-240Vac-3P
32	US-ISO-NE-220Vac-3P	69	Brazil-277Vac
33	US-ISO-NE-240Vac-3P	70	Chile-BT ≤9MW
34	LUMAPR-2024-208Vac	71	Chile-MT ≤9MW
35	LUMAPR-2024-240Vac	72	Chile > 9MW
36	LUMAPR-2024-480Vac	73	Mexico-277Vac
37	LUMAPR-2024-208Vac-3P		
Oceania			
1	Australia-A	4	Newzealand
2	Australia-B	5	Newzealand:2015
3	Australia-C	6	NZ-GreenGrid
Asia			
1	China A	33	Israel-MV
2	China B	34	Israel-HV
3	China medium-high voltage	35	Vietnam
4	China highest voltage	36	Malaysia-LV

Serial Number	Safety regulation name	Serial Number	Safety regulation name
5	China power station	37	Malaysia-MV
6	China Shandong	38	DEWA-LV
7	China Hebei	39	DEWA-MV
8	China PCS	40	Saudi Arabia-220V-LV
9	Taiwan, China	41	JP-690Vac-50Hz
10	Hong Kong, China	42	JP-690Vac-60Hz
11	Northeast China	43	Srilanka-MV/HV
12	Thailand-MEA	44	IEC 61727-127Vac-50Hz
13	Thailand-PEA	45	IEC 61727-127Vac-60Hz
14	Mauritius	46	JP-550Vac-50Hz
15	Korea	47	JP-550Vac-60Hz
16	India	48	India-Higher
17	India-CEA	49	JP-220Vac-50Hz
18	Pakistan	50	JP-220Vac-60Hz
19	Philippines	51	Saudi Arabia-127V-LV
20	Philippines-127Vac	52	Srilanka-LV >1MW
21	JP-200Vac-50Hz	53	China-YN
22	JP-200Vac-60Hz	54	GB/T 29319-LV
23	JP-440Vac-50Hz	55	GB/T 29319-MV
24	JP-440Vac-60Hz	56	Philippines-277Vac
25	JP-420Vac-50Hz	57	JP-360Vac-50Hz

Serial Number	Safety regulation name	Serial Number	Safety regulation name
26	JP-420Vac-60Hz	58	JP-360Vac-60Hz
27	JP-480Vac-50Hz	59	JP-320Vac-50Hz
28	JP-480Vac-60Hz	60	JP-320Vac-60Hz
29	Srilanka-LV<1MW	61	JP-340Vac-50Hz
30	Singapore	62	JP-340Vac-60Hz
31	Israel-OG	63	JP-380Vac-50Hz
32	Israel-LV	64	JP-380Vac-60Hz
Africa			
1	Mauritius	5	Ghana-LV
2	South Africa-LV	6	Ghana-HV
3	South Africa-B-MV	7	South Africa-A3-LV
4	South Africa-C-MV	8	Nigeria

10.6 Australia Safety Regulations

For the Australian market, to comply with AS/NZS 4777.2:2020, please select from Australia A, Australia B, Australia C, or New Zealand. Please contact your local electricity grid operator on which Region to select.
Selecting a Region B should then automatically load all region B setpoints for volt-watt, volt-var, underfrequency, overfrequency, etc.

Volt–var response set-point values

Region	Default value	U1	U2	U3	U4
Australia A	Voltage	207V	220V	240V	258V

Region	Default value	U1	U2	U3	U4
	Inverter reactive power level (Q) % of S_{rated}	44 % supplying	0%	0%	60 % absorbing
Australia B	Voltage	205V	220V	235V	255V
	Inverter reactive power level (Q) % of S_{rated}	30 % supplying	0%	0%	40 % absorbing
Australia C	Voltage	215V	230V	240V	255V
	Inverter reactive power level (Q) % of S_{rated}	44 % supplying	0%	0%	60 % absorbing
New Zealand	Voltage	207V	220V	235V	244 V
	Inverter reactive power level (Q) % of S_{rated}	60 % supplying	0%	0%	60 % absorbing
Allowed range	Voltage	180 to 230 V	180 to 230 V	230 to 265 V	230 to 265 V
	Inverter reactive power level (Q) % of S_{rated}	30 to 60 % supplying	0%	0%	30 to 60 % absorbing

NOTE 1: Inverters may operate at a reactive power level with a range up to 100 % supplying or absorbing.
NOTE 2: Australia C parameter set is intended for application in isolated or remote power systems.

Volt–watt response default set-point values

Region	Default value	U3	U4
Australia A	Voltage	253V	260V

Region	Default value	U3	U4
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia B	Voltage	250V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Australia C	Voltage	253V	260V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
New Zealand	Voltage	242 V	250V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%
Allowed range	Voltage	235 to 255 V	240 to 265 V
	Inverter maximum active power output level (P) % of S_{rated}	100%	20%

NOTE: Australia C parameter set is intended for application in isolated or remote power systems.

Passive anti-islanding voltage limit values

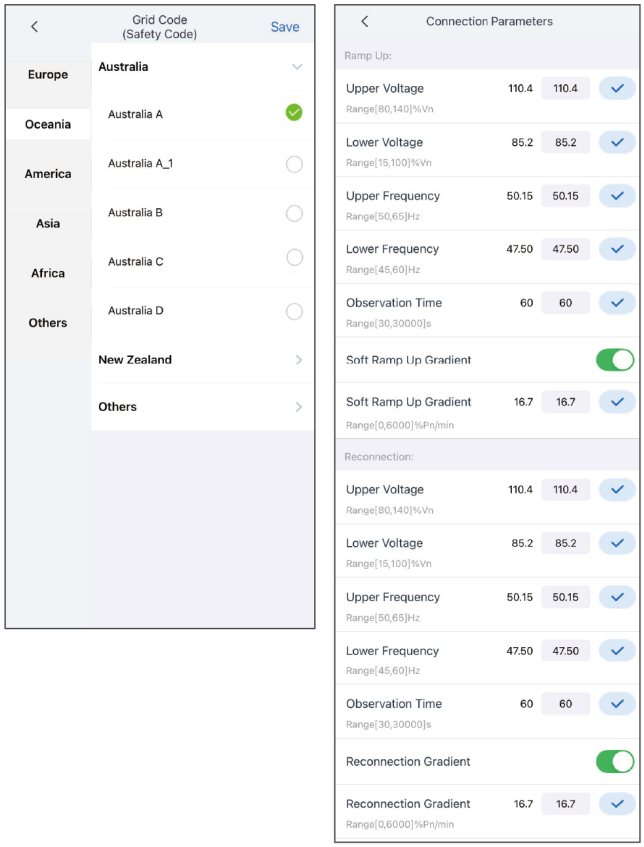
Protective function	Protective function limit	Trip delay time	Maximum disconnection time
Undervoltage 2 (V < <)	70 V	1 s	2 s
Undervoltage 1 (V <)	180 V	10 s	11 s
Overvoltage 1 (V >)	265 V	1 s	2 s

Protective function	Protective function limit	Trip delay time	Maximum disconnection time
Overvoltage 2 (V > >)	275V	-	0.2 s

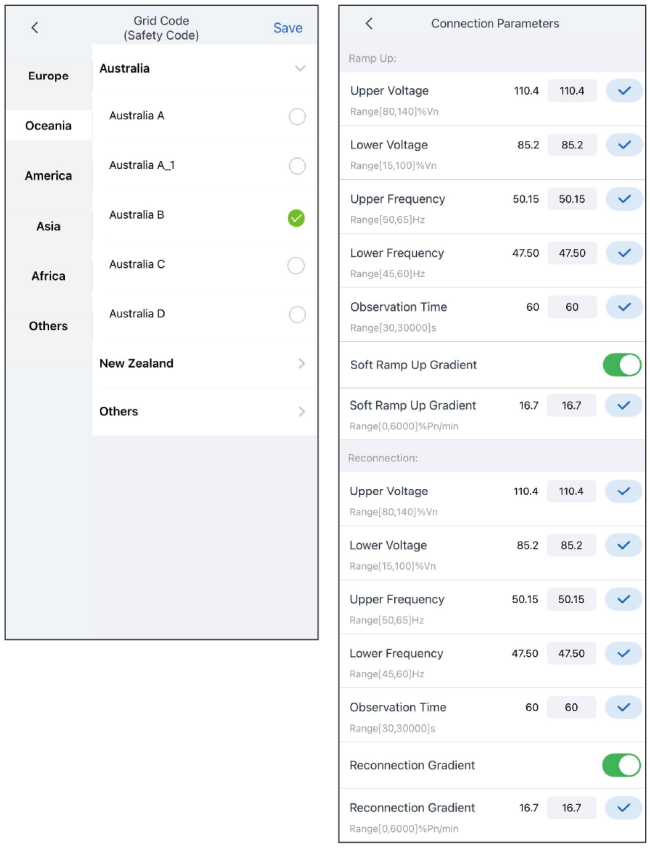
Upper connection and reconnection frequency (f_{URF})

Region	f_{URF}
Australia A	50.15 Hz
Australia B	50.15 Hz
Australia C	50.50 Hz
New Zealand	50.15 Hz

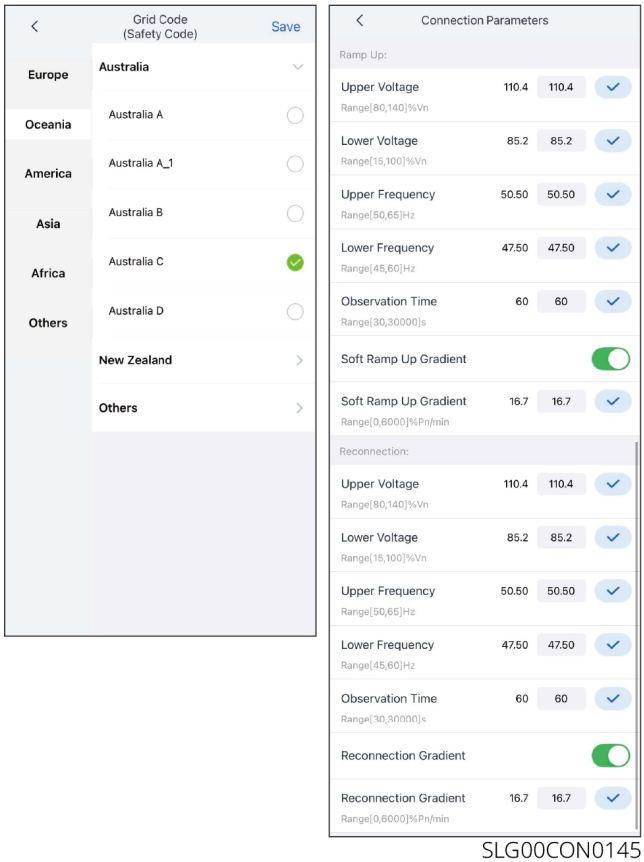
Setting steps:
Step 1: Set the safety code to Australia A/B/C/New Zealand on Quick Settigs page based on actual needs.
Step 2: Set the frequency parameters accordingly.



SLG00CON0144



SLG00CON0146



SLG00CON0145

11 Contact Details

GoodWe Technologies Co., Ltd.
No. 90 Zijin Rd., New District, Suzhou, China
en.goodwe.com
service@goodwe.com