V1.6 2026-04-20

ESA Series 125kW/261kWh

Commercial and Industrial Energy Storage System

- GW125/261-ESA-LCN-G10
- GW125/261-ESA-LCN-G11

User Manual

GOODWE

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NOTICE

Due to product version upgrades or other reasons, the document content is updated periodically. Unless otherwise agreed, the document content cannot replace the safety precautions on the product label. All descriptions in the document are for guidance only.

About This Manual

Overview

This document primarily introduces the product information, installation wiring, configuration tuning, troubleshooting, and maintenance of the energy storage system. Before installing and using this product, please read this manual carefully to understand the product safety information and familiarize yourself with the product's functions and features. The document may be updated periodically. Please obtain the latest version and more product information from the official website: https://www.goodwe.com.

Applicable Model

This document applies to the following models of energy storage systems.

Product Model	Nominal output power	Nominal output voltage	Available Energy
GW125/261-ESA-LCN-G10	125kW	400/380V, 3L/N/PE	261.25kWh
GW125/261-ESA-LCN-G11	125kW	400/380V, 3L/N/PE	261.25kWh

Symbol Definition

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

⚠WARNING

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

⚠CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Provides emphasis or supplementary information on content, may also offer tips or tricks for optimal product use, helping you solve a problem or save time.

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1 Safety Precautions

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

⚠WARNING
The device has been strictly designed and tested in accordance with safety regulations, but as an electrical device, relevant safety instructions must be followed before performing any operations on the device. Improper operation may lead to serious injury or property damage.

1.1 General Safety

NOTICE

- Due to product version upgrades or other reasons, the document content is updated periodically. Unless otherwise agreed, the document content cannot 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 and qualified electrical technicians, who must be familiar with the relevant standards and safety regulations in the project location.
- When operating the equipment, use insulated tools and wear personal protective equipment to ensure personal safety. Wear anti-static gloves, anti-static wrist straps, anti-static clothing, etc., when touching electronic components to protect the equipment from electrostatic damage.
- Unauthorized disassembly or modification may cause equipment damage, and such damage is not covered by the warranty.
- Equipment damage or personal injury caused by failure to install, use, or configure the equipment in accordance with the requirements of this document or the corresponding user manual is beyond the manufacturer's liability. For more product warranty information, please obtain it through the official website: https://www.goodwe.com/warrantyrelated.html.

1.2 personnel requirements

NOTICE

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

1. Professionals or qualified personnel include:
   - Individuals who have mastered the knowledge of equipment working principles, system structure, risks and hazards, and have received professional operational training or possess extensive practical experience.
   - Individuals who have received relevant technical and safety training, possess certain operational experience, are aware of the potential dangers specific tasks may pose 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 where the equipment is located.
   - Individuals with an electrical engineering degree/advanced diploma in electrical disciplines or equivalent qualification/professional practice qualification in the electrical field, and with at least 2/3/4 years of experience in testing and regulatory work using electrical equipment safety standards.
2. Personnel involved in special tasks such as electrical work, work at heights, and operation of special equipment must hold valid qualification certificates required by the location of the equipment.
3. Operation of medium-voltage equipment must be performed by certified high-voltage electricians.
4. Replacement of equipment and components is only permitted to be performed by authorized personnel.

1.3 EU Declaration of Conformity

1.3.1 Equipment with Wireless Communication Modules

Equipment with wireless communication modules that can be sold on the European market must comply with the requirements of the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)

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

1.3.2 Devices without wireless communication functionality

Devices without wireless communication functionality that can be sold in the European market meet 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)

1.4 Safety Symbols and Certification Marks

⚠DANGER

- After the equipment is installed, the labels and warning signs on the cabinet must be clearly visible; do not cover, alter, or damage them.
- The following cabinet warning label descriptions are for reference only; please refer to the actual labels used on the equipment.

No.	Symbol	Description
1		The equipment poses potential hazards during operation. Take necessary protective measures when operating the equipment.
2		High voltage hazard. High voltage is present during equipment operation. Ensure the equipment is powered off before performing any operations.
3		High temperature on equipment surface. Do not touch during operation to avoid burns.

No.	Symbol	Description
4		Use the equipment properly. There is a risk of explosion under extreme conditions.
5		The battery contains flammable materials. Beware of fire.
6		The equipment contains corrosive electrolyte. Avoid contact with leaking electrolyte or vapor.
7		Delayed discharge. After powering off the equipment, wait for 5 minutes until it is completely discharged.
8		Keep the equipment away from open flames or ignition sources.
9		Keep the equipment out of reach of children.
10		Use the equipment properly. There is a risk of explosion under extreme conditions.
11		The battery contains flammable materials. Beware of fire.
12		Do not lift the equipment after the battery system is wired or while the battery system is operating.
13		Do not use water to extinguish fire.
14	 	Read the product manual carefully before operating the equipment.

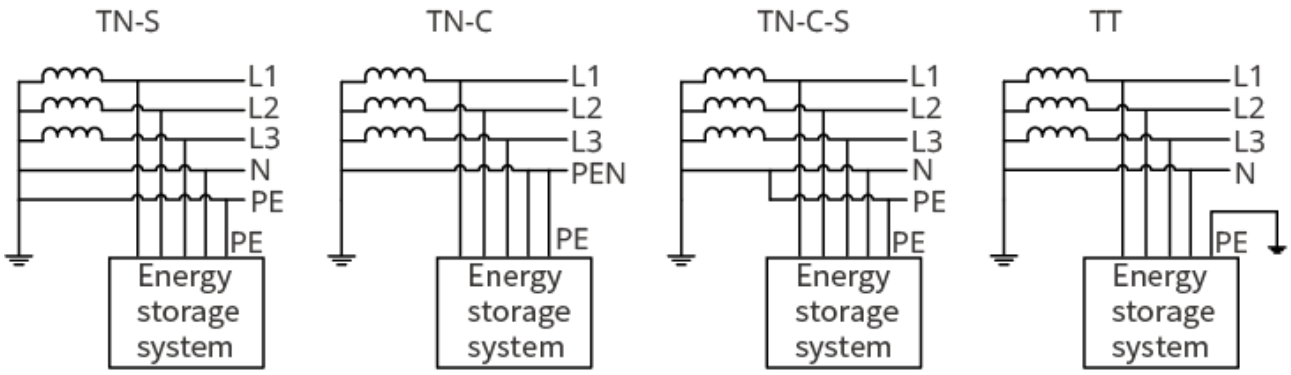
No.	Symbol	Description
15		Personal protective equipment must be worn during installation, operation, and maintenance.
16		Do not dispose of the equipment as household waste. Dispose of the equipment according to local laws and regulations, or return it to the manufacturer.
17		Grounding point.
18		Recycling symbol. The equipment should be placed at the correct location and recycled in accordance with local environmental regulations.
19		CE marking.
20		RCM marking.

2 Product Introduction

2.1 Product Overview

The ESA Series 125kW/261kWh Commercial & Industrial Energy Storage System is a fully self-developed product featuring high energy density, high power density, and deep 3S integration. This storage system integrates a 314Ah liquid-cooled PACK and a 125kW intelligent air-cooled PCS, and is equipped with dual fire protection at both the PACK and system levels. It also supports integration with an STS to enable grid-tied and off-grid switching.

Supported Grid Types



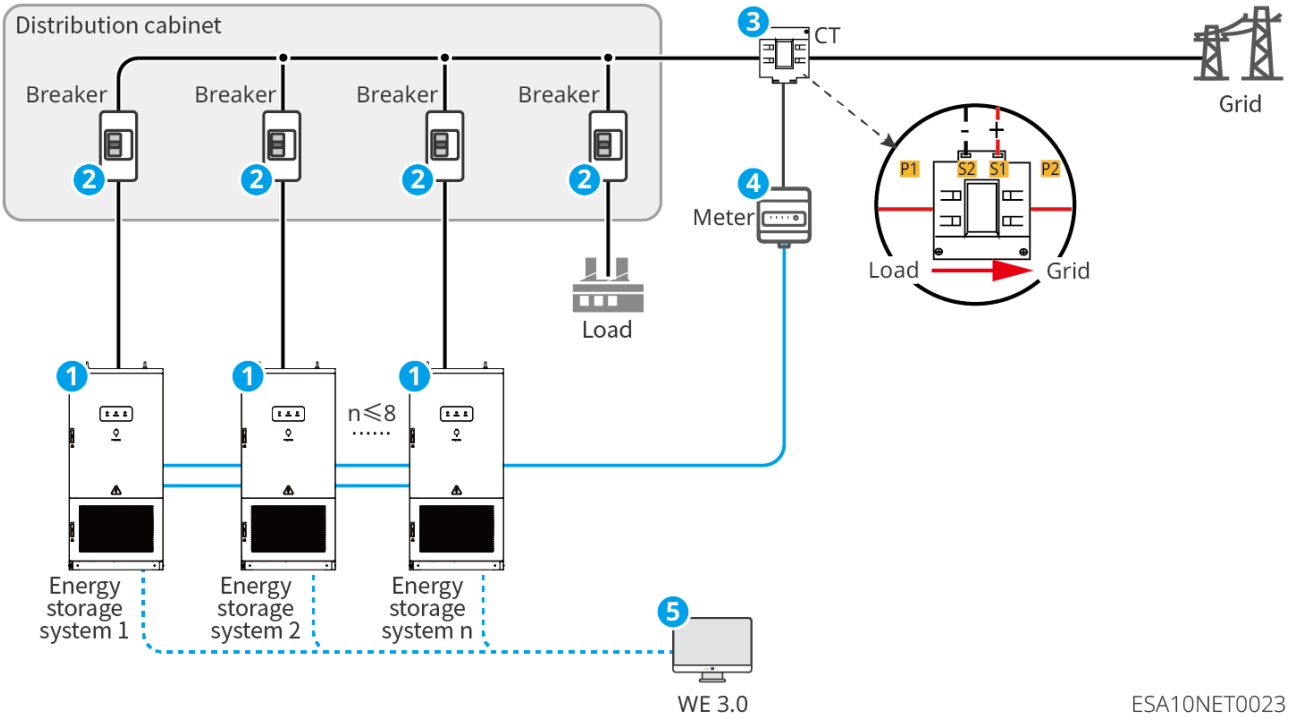
NOTICE

The device does not support direct connection to IT system grids. If the customer needs to connect to an IT system grid, it can be achieved by externally equipping an isolation transformer. The specific wiring method must comply with local power distribution regulations.

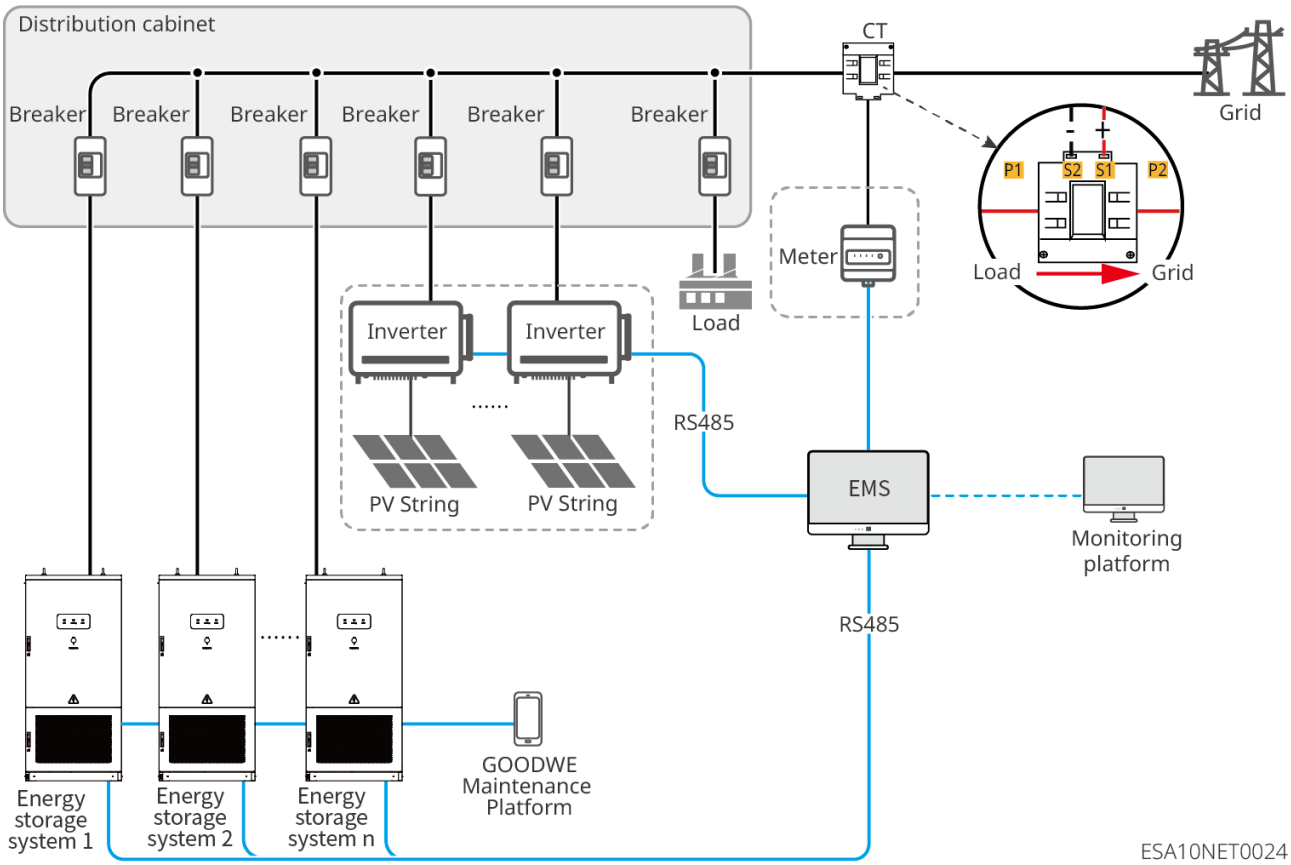
2.2 Application Scenarios

2.2.1 Grid-Connected Scenarios

- **Master-Slave Parallel Operation (China only)**



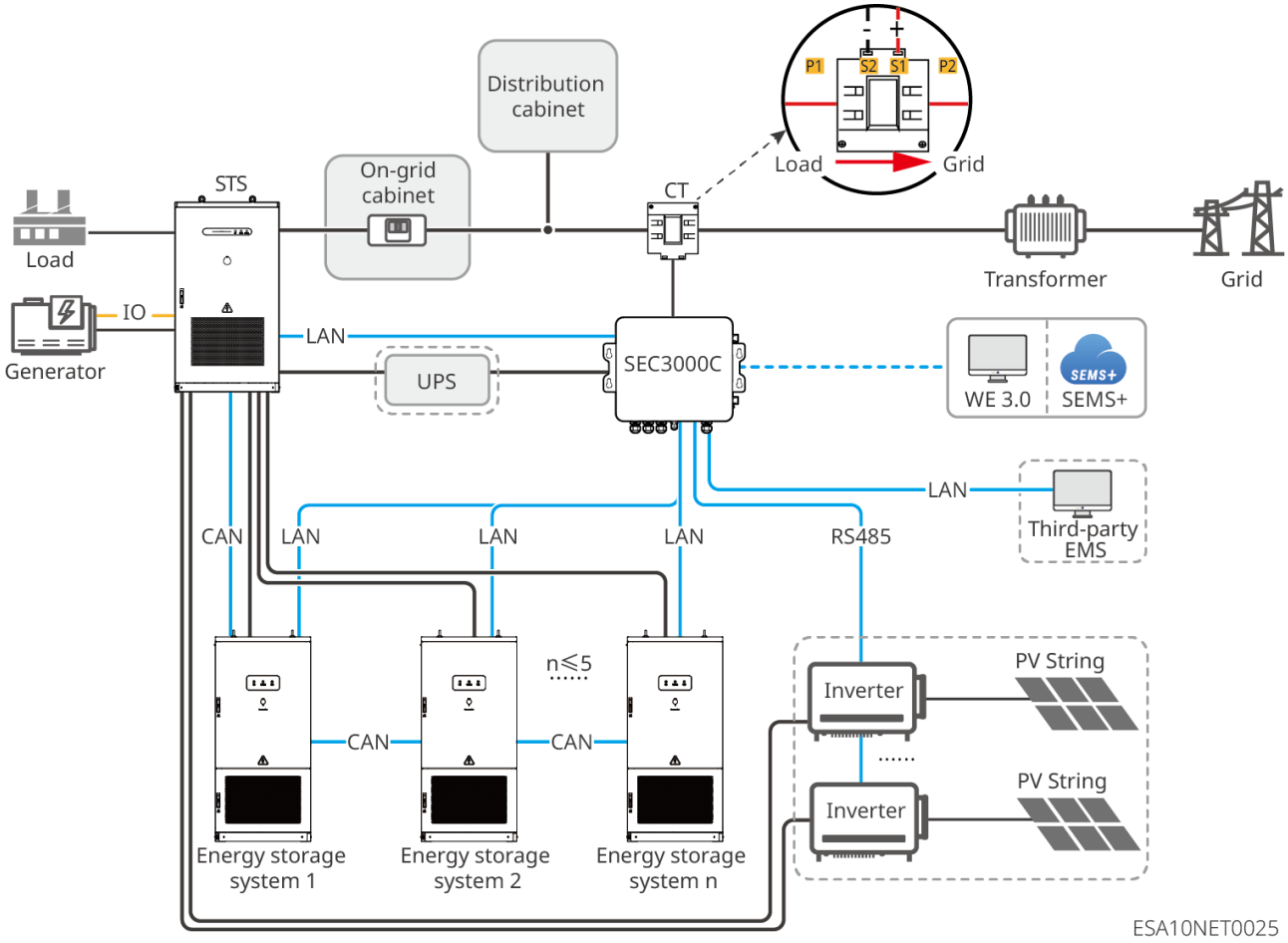
- **Parallel Operation via EMS**



2.2.2 Grid-connected and Off-grid Switching Scenario

NOTICE

When switching between grid-connected and off-grid modes, please set the energy storage system's SOC range to 10%~90%.



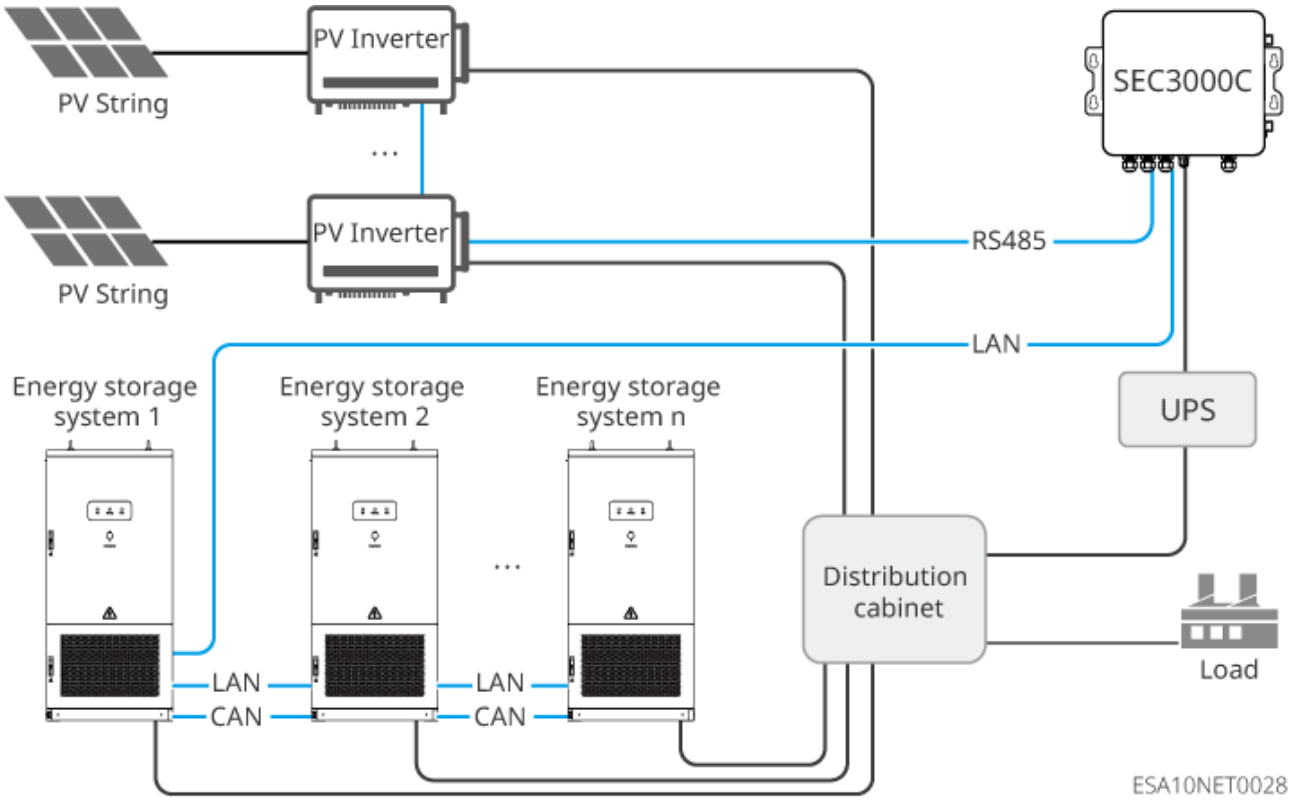
2.2.3 Pure Off-Grid Scenario

NOTICE

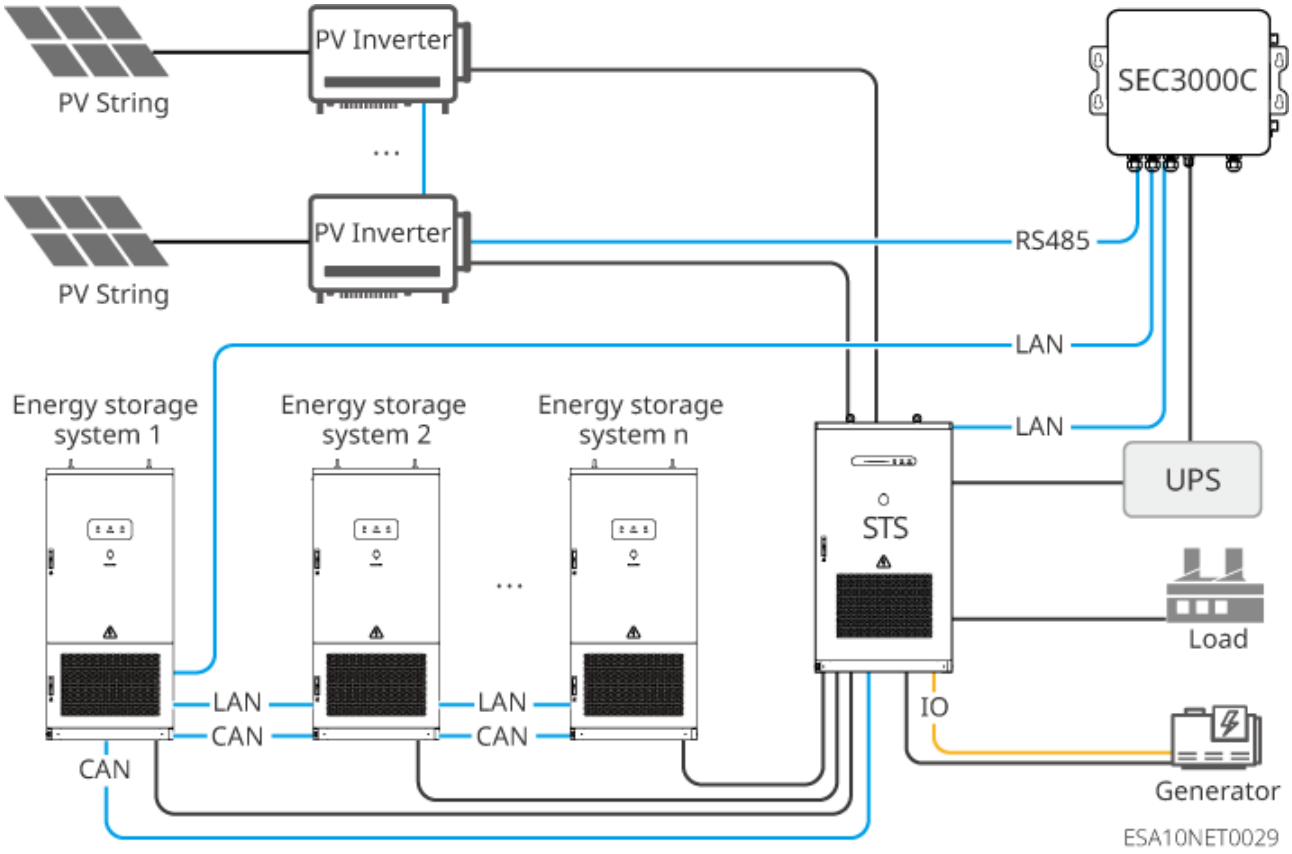
In a pure off-grid scenario, there are two application solutions:

- PV-storage pure off-grid: STS is not required, supports manual normal start/stop.
- PV-storage-diesel pure off-grid: STS configuration is required, the diesel generator is connected to the Smart-port of the STS. The system, based on the pure off-grid strategy, automatically controls the start and stop of the diesel generator according to the SOC, achieving integrated automatic operation of PV, storage, and diesel.

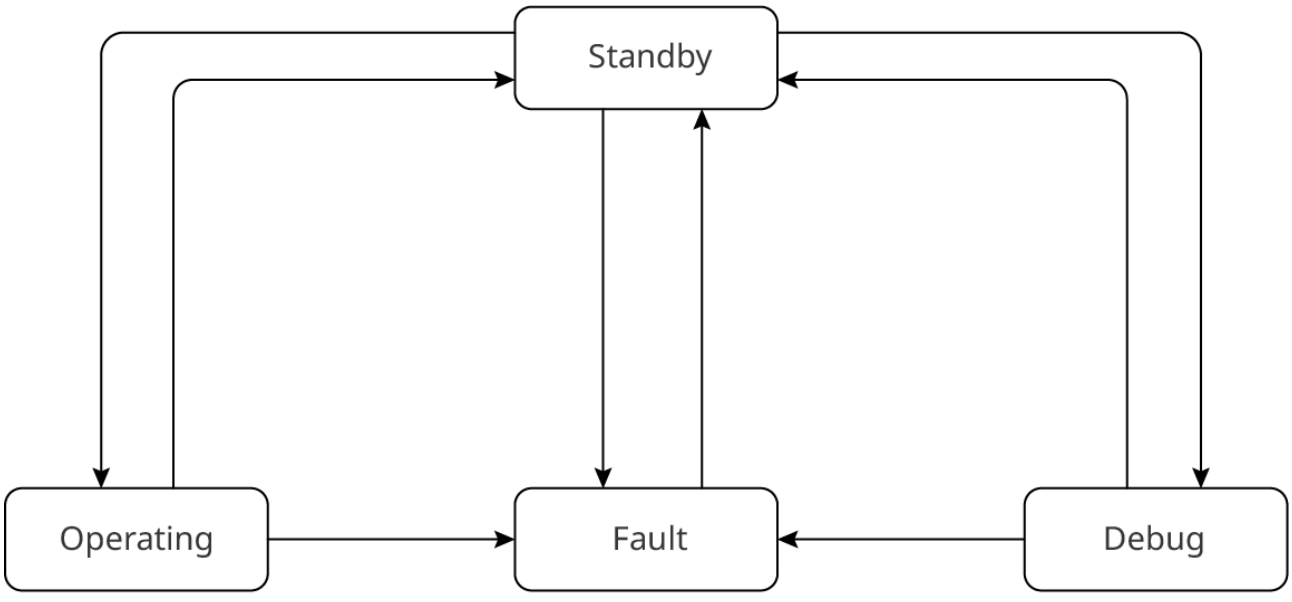
2.2.3.1 PV Storage Pure Off-Grid



2.2.3.2 Solar-Storage-Diesel Pure Off-Grid



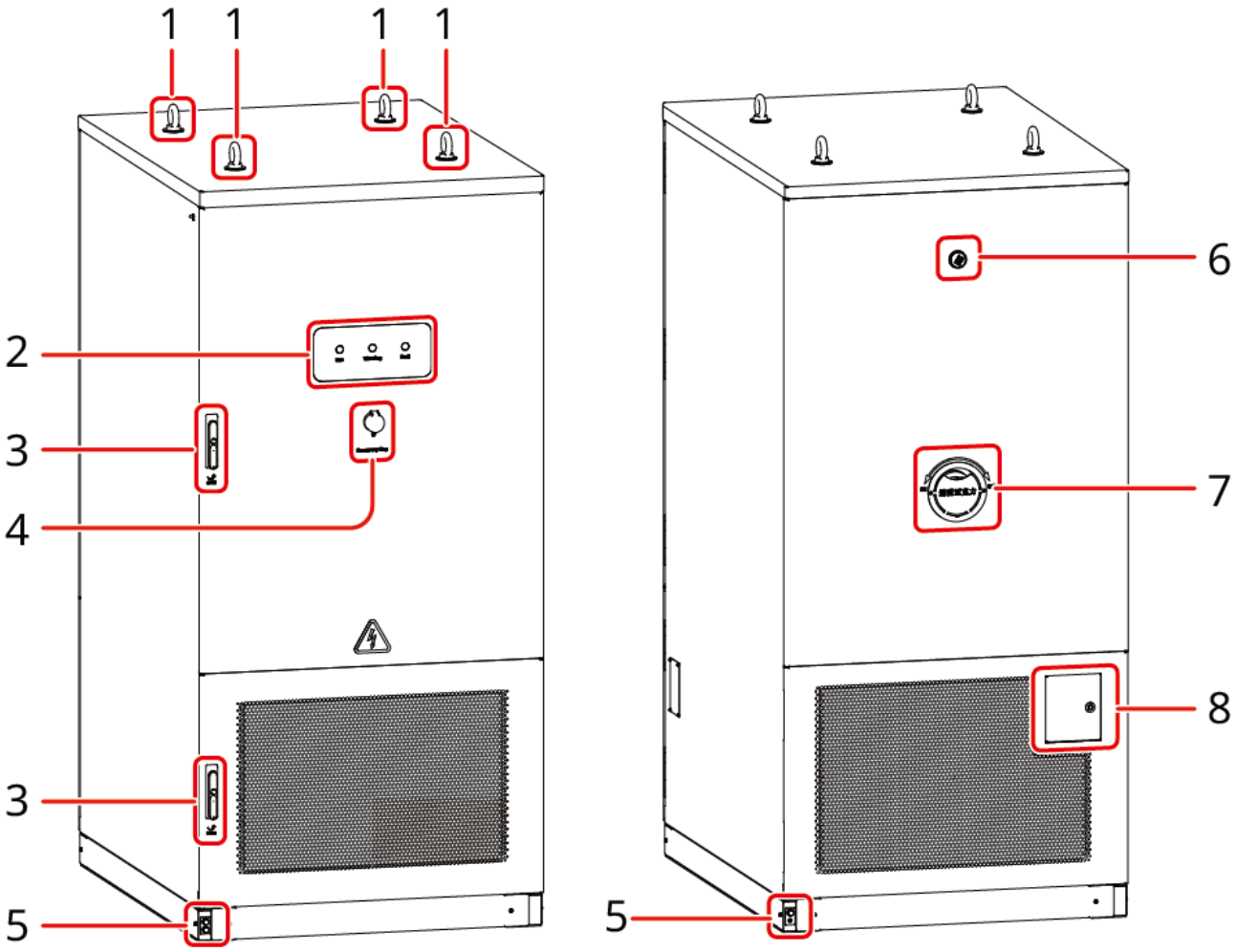
2.3 System Operation Status



No.	Name	Description
1	Standby state	The state after the energy storage system starts up, performs self-check and initialization. • If the running state is manually started, the energy storage system begins operation. • If the self-check is abnormal, it enters the fault state. • If debugging is enabled, it enters the debugging state.
2	Running state	The energy storage system operates normally. • If the device's running state is manually stopped, it enters the Standby state. • If a fault alarm is detected, it enters the fault state.
3	Fault state	If a fault is detected, the energy storage system enters the fault state. After the fault is cleared, it enters the Standby state.
4	Debugging state	The energy storage system is in the debugging state and is not operating normally. • If the debugging state is closed, it enters the Standby state. • If a fault alarm is detected, it enters the fault state.

2.4 Appearance Description

2.4.1 Appearance Introduction

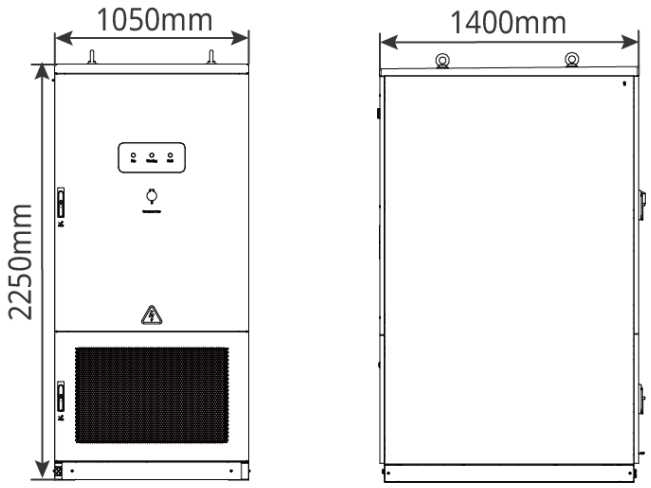


ESA10DSC0003

No.	Name	Function
1	Lifting Eye	Use the lifting eye for hoisting the energy storage system.
2	Indicator	Indicates the operating status of the energy storage system.
3	Door Lock	Use the key to open the cabinet door lock. Close and lock the cabinet door when internal operation is not required.
4	Emergency Stop Button	Use this button to stop the system operation in case of an emergency with the energy storage system.

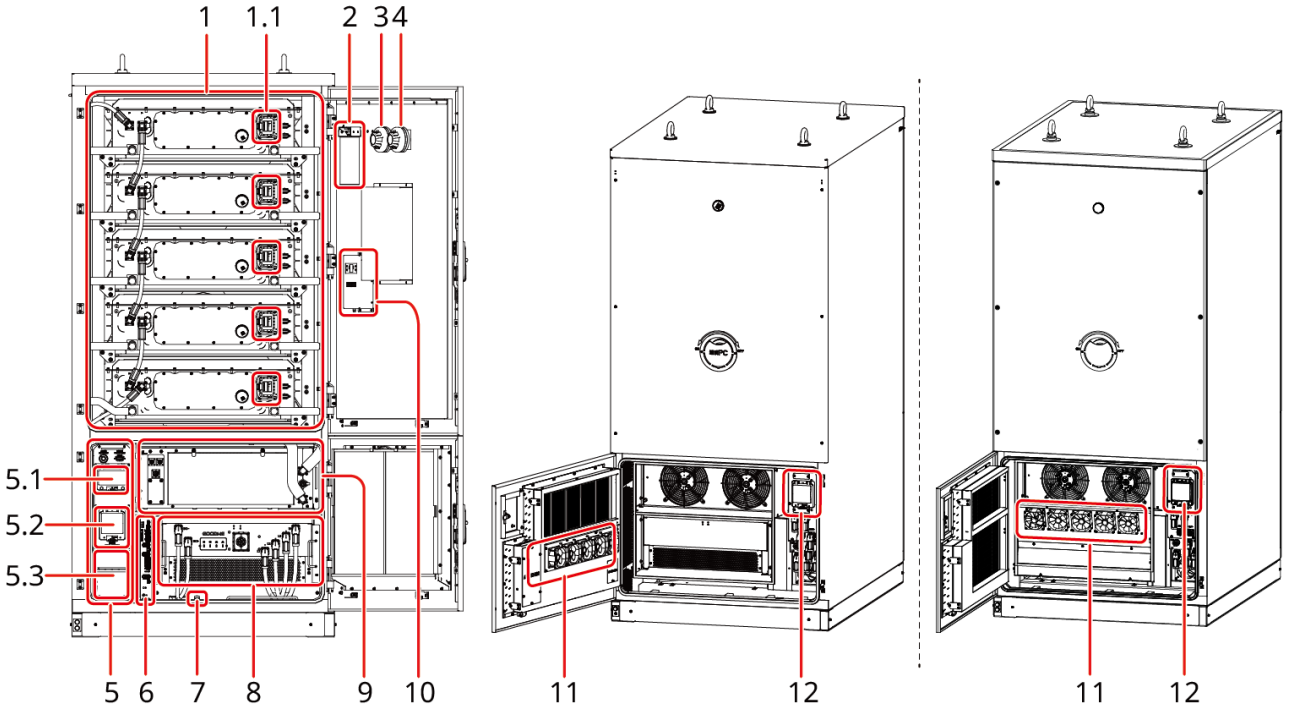
No.	Name	Function
5	Grounding Terminal	Connect the protective ground wire for the energy storage system enclosure.
6	Pressure Relief Valve	Automatically opens to release excessive pressure when abnormal pressure buildup occurs inside the system, preventing risks such as explosion.
7	Water Firefighting Interface	In case of a fire due to thermal runaway, connect a fire hydrant here for fire suppression.
8	DC Circuit Breaker Operation Compartment	Contains the DC circuit breaker, which controls the DC output of the energy storage system.

2.4.2 Size Guide



ESA10DSC0001

2.4.3 Component Introduction



ESA10DSC0004

Number	Name	Function
1	Battery system	Stores and releases electrical energy.
1.1	MSDswitch	Manually disconnects or closes the high-voltage circuit of the battery pack.
2	Hot aerosol fire extinguishing device	Monitors fire signals inside the cabinet, implements fire extinguishing, and feeds back to the local controller via DI signals.
3	Smoke detector	

Number	Name	Function
4	Temperature detector	When a fire occurs in the energy storage system, the smoke detector detects smoke and outputs an electrical signal to the local controller, causing the system to shut down and notifying personnel for timely handling. After the smoke detector alarm is triggered, if the fire spreads, the temperature detector detects high temperature and outputs an electrical signal to activate the fire extinguishing device, implementing fire extinguishing, while simultaneously outputting a feedback signal to the local controller, causing the system to shut down and notifying personnel for timely handling.
5	Power distribution module	Wiring area, includes auxiliary source circuit breaker and molded case circuit breaker.
5.1	Auxiliary source circuit breaker	Manually disconnects or closes the auxiliary source of the energy storage system.
5.2	Molded case circuit breaker	Controls the connection and disconnection between the integrated energy storage cabinet and the grid/load circuit.
5.3	AC connection port	Connects to the grid-connected AC cable.
6	Local control module	Responsible for energy management within the energy storage system and information exchange with the outside world.
7	Door access switch	Automatically pops out when the door is opened, ensuring the energy storage system is powered off.
8	Energy storage converter (PCS)	Achieves electrical energy conversion between the grid and the battery.
9	Liquid cooling unit	Used to maintain the battery system temperature within a suitable range.

Number	Name	Function
10	Dehumidifier	Used to dehumidify the inside of the machine.
11	Fan	Used to dissipate heat for the PCS.
12	DC circuit breaker	Can control the DC output of the energy storage system.

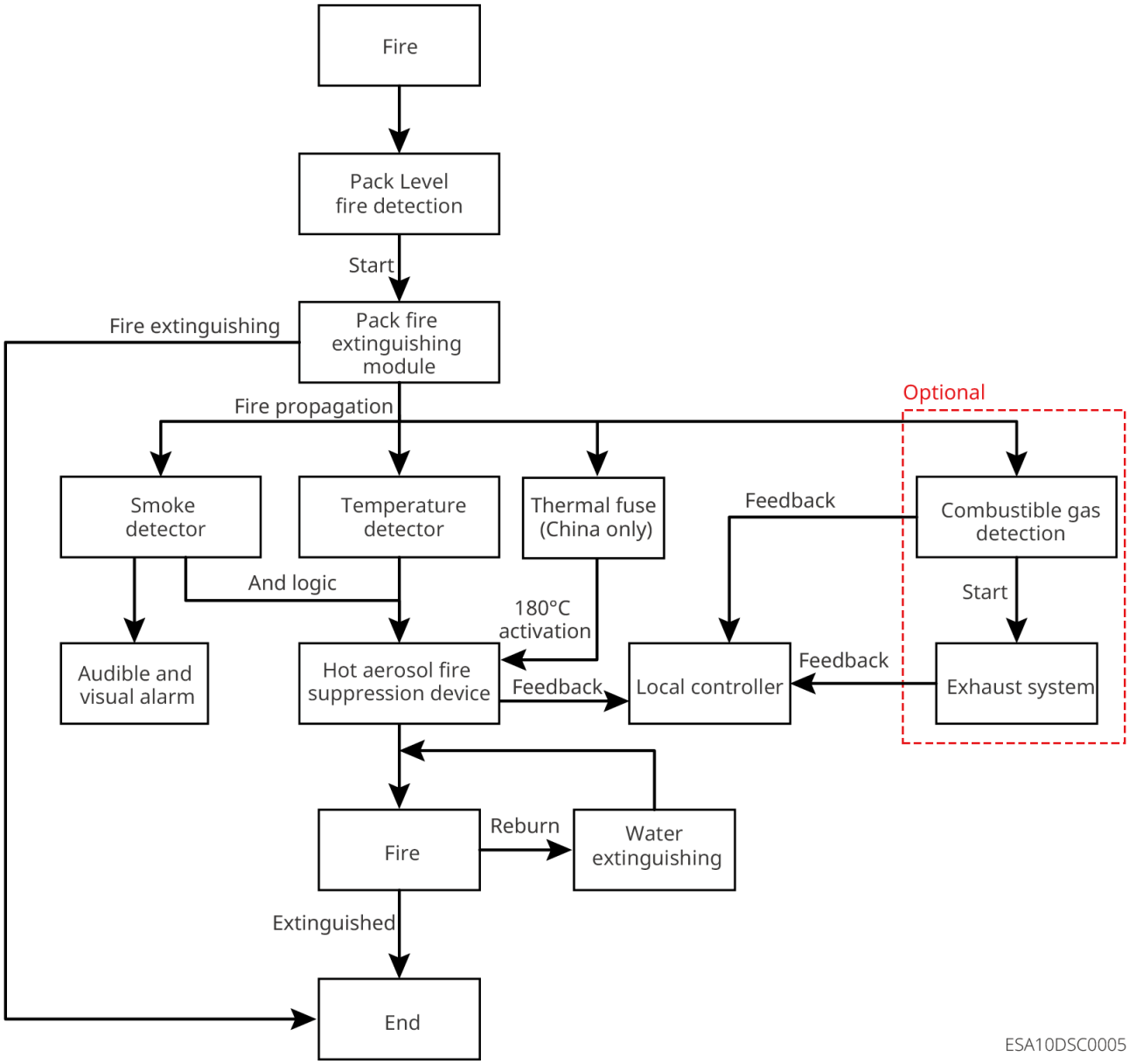
2.4.4 Indicators

Indicator	Description
 Run	Steady white light: The device is powered on and is in a shutdown/self-test state.
	White light off: The device is not powered on.
	Steady green light: The device is in grid-connected state.
 Warning	Steady on: The device has an alarm.
	Off: The device is operating normally without alarms, or the device is not powered on.
 Fault	Steady on with a beep: The device has a serious fault.
	Off, no beep: The device is operating normally or is not powered on.

2.5 Fire Protection System

When a cell thermal runaway triggers a fire, PACK-level protection can rapidly detect the fire through a thermosensitive wire and activate the fire suppression module to implement primary fire extinguishing. If the PACK fire spreads, cluster-level protection can detect the fire via smoke sensors, triggering a smoke alarm. As the temperature rises rapidly, temperature sensors detect the fire and activate the fire extinguishing device to implement secondary fire extinguishing, simultaneously outputting a feedback signal to the local controller to notify personnel for timely intervention. If the automatic fire suppression system cannot control fire re-ignition,

emergency firefighting water can be connected for emergency handling to prevent severe consequences such as deflagration or large-scale fires.



3 Check and Storage

3.1 Check Before Receiving

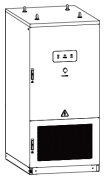
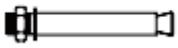
Before receiving the product, please carefully check the following:

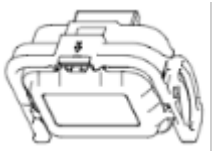
- Check if the outer packaging is damaged, such as deformation, holes, cracks, or other signs that could cause damage to the equipment inside the packaging box. If damaged, do not open the packaging and contact your dealer.
- Check if the energy storage system model is correct. If it does not match,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

3.2 deliverables

⚠WARNING

Check if the type and quantity of deliverables are correct and if there is any external damage. If damaged, please contact your dealer.

Part	Description	Part	Description
	energy storage system ×1		Expansion bolt ×4
	fireproofing mud ×3		• Domestic version: antenna ×2 (4G&WiFi) • Overseas version: antenna ×1 (WiFi)

Part	Description	Part	Description
	PIN terminal ×10		DC circuit breaker compartment door key ×1
	MSD switch ×5 (Included only with GW125/261-ESA-LCN-G10)		Battery power cable ×2 (Included only with GW125/261-ESA-LCN-G11)
	Power line terminal ×4		N line/PE line terminal ×2
	Product documentation ×1		

3.3 Storage

Users must complete device installation within six months from the manufacturing date of the energy storage system. If the device is not installed or used immediately, ensure that the storage environment meets the following requirements:

1. Ensure the storage environment is clean, with appropriate temperature and humidity ranges, and no condensation.
2. After long-term storage, it must be inspected and confirmed by professionals before it can continue to be used.
3. The device should be packaged using the packaging box, and after placing desiccant in the box, seal the packaging box.
4. If installation is not performed within 3 days after unpacking, it is recommended to store the device in the packaging box.
5. If it is expected to store the battery module for more than 30 days, adjust the SOC to 50%~55%, and perform a charge-discharge cycle every 6 months.

6. Storage temperature range: Storage should not exceed one year at 0~35℃, and not exceed one month at -20~45℃.
7. Humidity range: 10~95% without condensation. Installation cannot be performed when there is moisture or condensation on the interfaces.
8. The device should be stored in a cool place, avoiding direct sunlight.
9. Storage should be kept away from flammable, explosive, corrosive, and other such items.
10. Ensure that the energy storage system is not damaged during transportation and storage.
11. It is strictly prohibited to throw the battery into fire, otherwise there is a risk of explosion.
12. When the ambient temperature is too high, the battery system has a risk of fire.

4 Installation

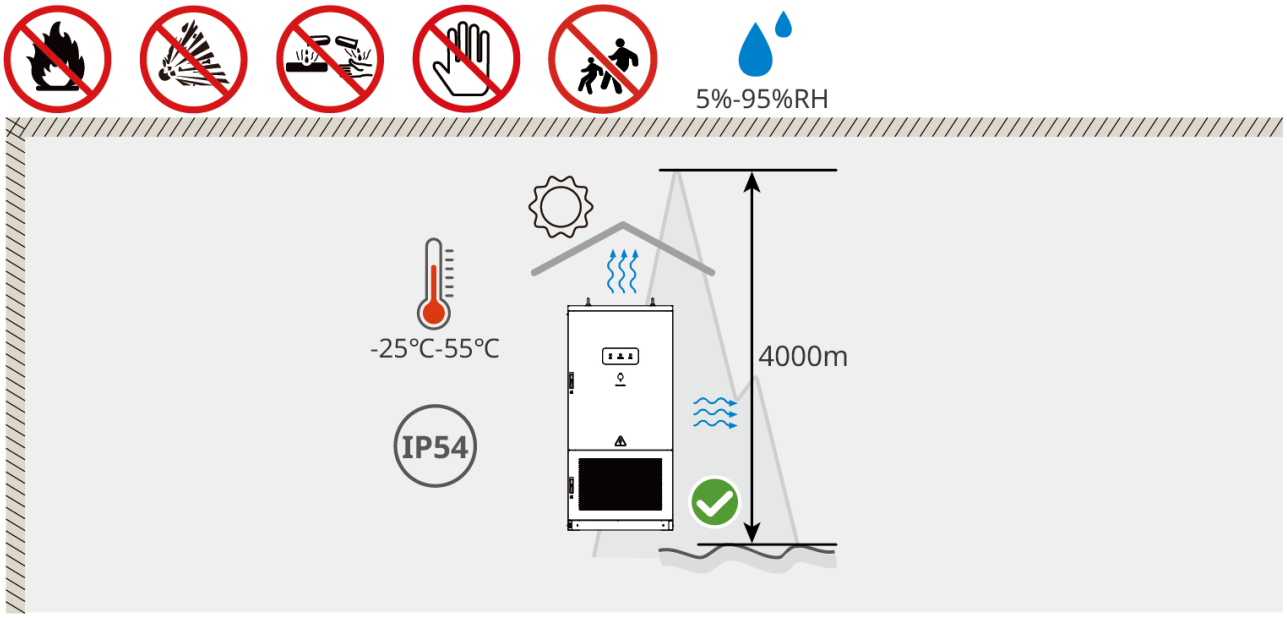
4.1 Installation Requirements

Installation Environment Requirements

1. The equipment must not be installed in flammable, explosive, corrosive, or similar environments.
2. The temperature and humidity of the installation environment must be within a suitable range.
3. The installation location must be out of reach of children and avoid easily accessible positions.
4. The enclosure temperature of the energy storage system may exceed 60°C during operation. Do not touch the enclosure before it cools down to prevent burns.
5. It is recommended to avoid installation environments with direct sunlight, rain, snow accumulation, etc. Installation in a sheltered location is recommended. If necessary, a sunshade can be erected (the sunshade prevents the equipment from absorbing heat from direct sunlight, which could cause the internal cabinet temperature to exceed the ambient temperature and trigger derating).
6. The installation space must meet the ventilation, heat dissipation, and operational space requirements of the equipment.
7. The installation environment must satisfy the equipment's protection rating. The energy storage system, battery, and smart communication stick are suitable for both indoor and outdoor installation; the meter is for indoor installation only.
8. The equipment installation height should facilitate operation and maintenance, ensuring equipment indicator lights, all labels are easily viewable, and wiring terminals are easy to operate.
9. The equipment installation altitude must be below the maximum operating altitude.
10. Before installing equipment outdoors in salt damage areas, consult the equipment manufacturer. Salt damage areas mainly refer to regions within 500m of the coast. The affected area is related to sea wind, precipitation, terrain, and other conditions.

11. Do not install the energy storage system in noise-sensitive areas (such as residential areas, offices, schools, etc.), as this may cause complaints from residents. If installation in such areas is necessary, the installation location must be at least 40m away from the noise-sensitive zone.
12. If the equipment is installed in public places other than work and living areas (such as parking lots, stations, factory buildings, etc.), install protective fencing around the equipment and erect safety warning signs for isolation. Unauthorized personnel are prohibited from approaching the energy storage system to prevent personal injury or property damage caused by accidental contact by non-professionals or other reasons during equipment operation.
13. 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, install the equipment according to the following requirements:

- Energy storage system: Add a ferrite core with multiple windings at the DC input or AC output line of the energy storage system, or add a low-pass EMI filter; or ensure the distance between the energy storage system and the wireless electromagnetic interference device exceeds 30m.
- Other equipment: Ensure the distance between the equipment and the wireless electromagnetic interference device exceeds 30m.

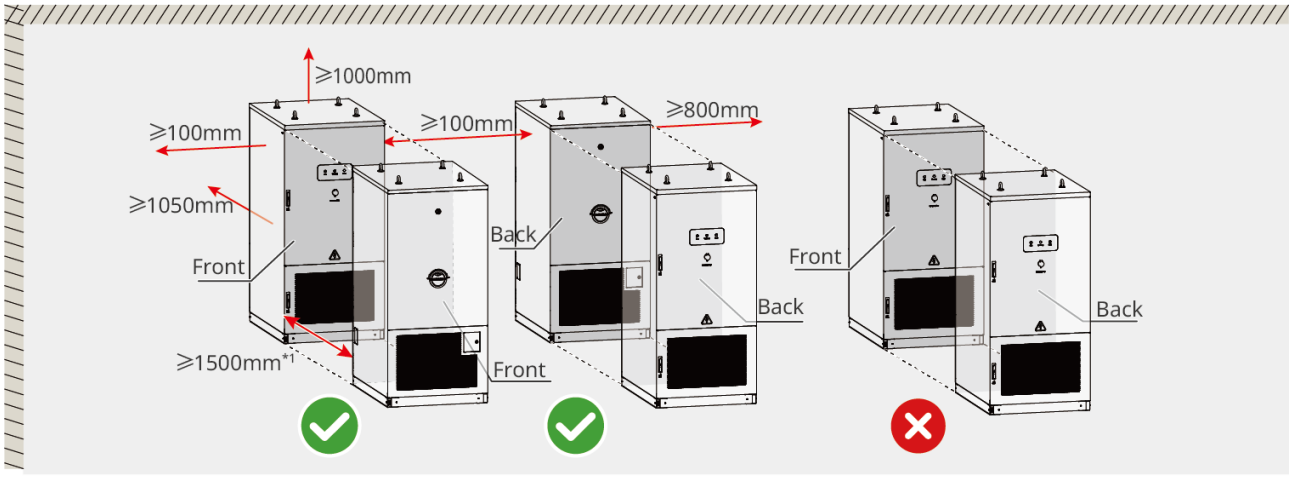


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Installation Space Requirements

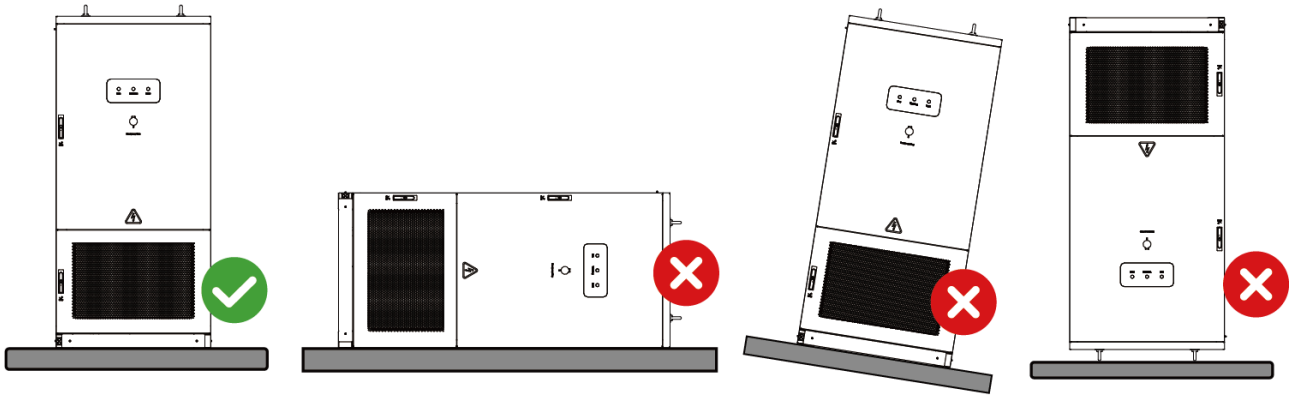
NOTICE

When using a forklift, the front and rear spacing of the energy storage system must be at least 2.5m.



ESA10INT0009

Installation Angle Requirements

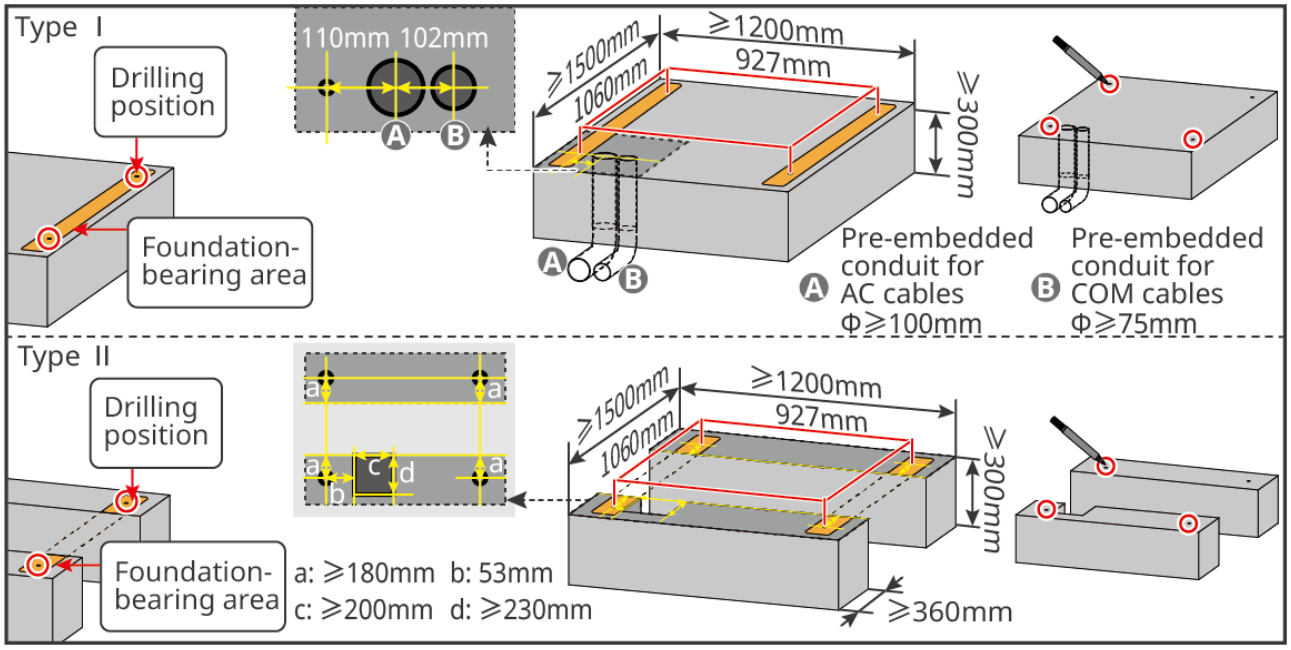


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Installation Foundation Requirements

- The equipment must be installed on a concrete or other non-combustible surface base.
- Before installation, ensure the base is level, firm, flat, dry, and has sufficient load-bearing capacity. Depressions or tilting are prohibited.
- The base must have pre-embedded conduits or reserved cable outlet holes to facilitate equipment cabling.

- The equipment uses bottom cable entry. The foundation must have dust-proof and rodent-proof design to prevent foreign objects from entering.
- The foundation must have a water-proof and moisture-proof design to prevent cable aging and short circuits, which could affect normal equipment operation.
- Due to the thickness of the equipment cables, the pre-embedded conduit/reserved cable outlet must be designed with sufficient space for the cables to ensure smooth, non-abrasive connections.



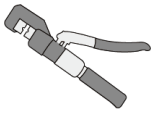
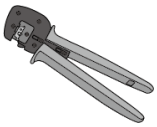
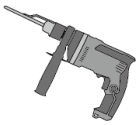
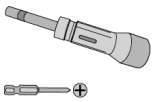
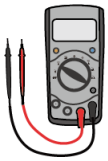
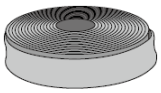
ESA10INT0010

4.2 Tool Requirements

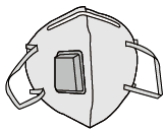
NOTICE

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

Installation Tools

Tool Type	Description	Tool Type	Description
	diagonal plier		RJ45 Connector Crimping Tool
	wire stripper		YQK-70 Hydraulic Crimping Tool
	open-end wrench		PV Terminal Crimping Tool PV-CZM-61100
	hammer drill (bit Φ8mm)		torque wrench
	rubber hammer		socket wrench
	marker pen		multimeter Range ≤1100V
	heat shrink tubing		heat gun
	cable tie		vacuum cleaner

Personal Protective Equipment

Tool Type	Description	Tool Type	Description
	Insulating gloves, Protective gloves		Dust mask
	goggle		Safety shoes

4.3 Handling Requirements

⚠CAUTION

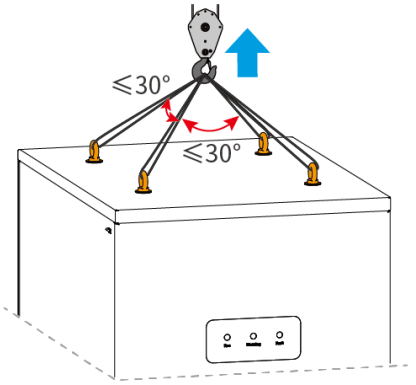
1. During operations such as transportation, handling, and installation, the equipment must comply with the laws, regulations, and relevant standards of the country or region where it is located.
2. To protect the equipment from damage during transportation, ensure that the transport personnel are professionally trained. Record the operation steps during transportation and keep the equipment balanced to prevent it from falling.
3. Before installation, the energy storage system needs to be moved to the installation site. To avoid personal injury or equipment damage during the moving process, please note the following:

- Based on the equipment weight, allocate corresponding personnel and tools to prevent the equipment from exceeding the human lifting capacity and causing injury.
- Ensure the equipment remains balanced during movement to avoid falling.
- Ensure the cabinet doors are securely locked during equipment movement.

NOTICE

- The energy storage system can be transported to the installation site using hoisting or a forklift.
- When hoisting the equipment, use flexible lifting slings or straps, with a single strap load capacity of ≥5t.
- When transporting the equipment with a forklift, the forklift's load capacity must be ≥5t.
- The antenna and door panel surface stickers are vulnerable during installation and transportation; please handle with care.

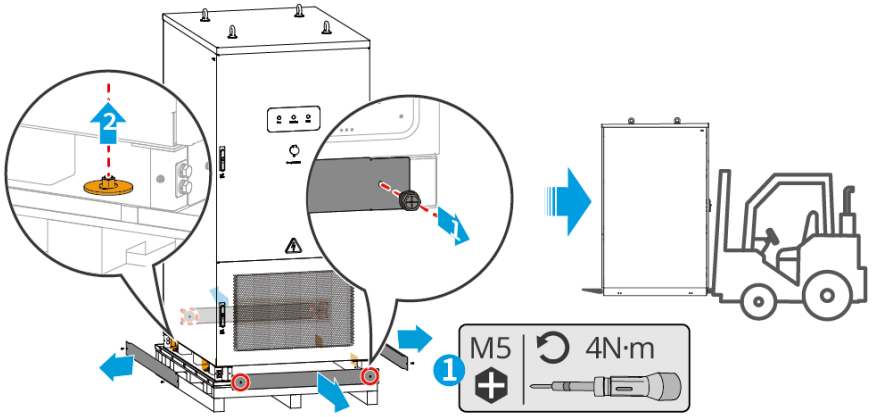
- **Lifting and Handling**



ESA10INT0011

Step 1: Use a lifting belt with hooks or U-hooks to perform lifting operations on the energy storage system.
Step 2: Use a lifting device to hoist and move the energy storage system.

- **Forklift Handling**



ESA10INT0012

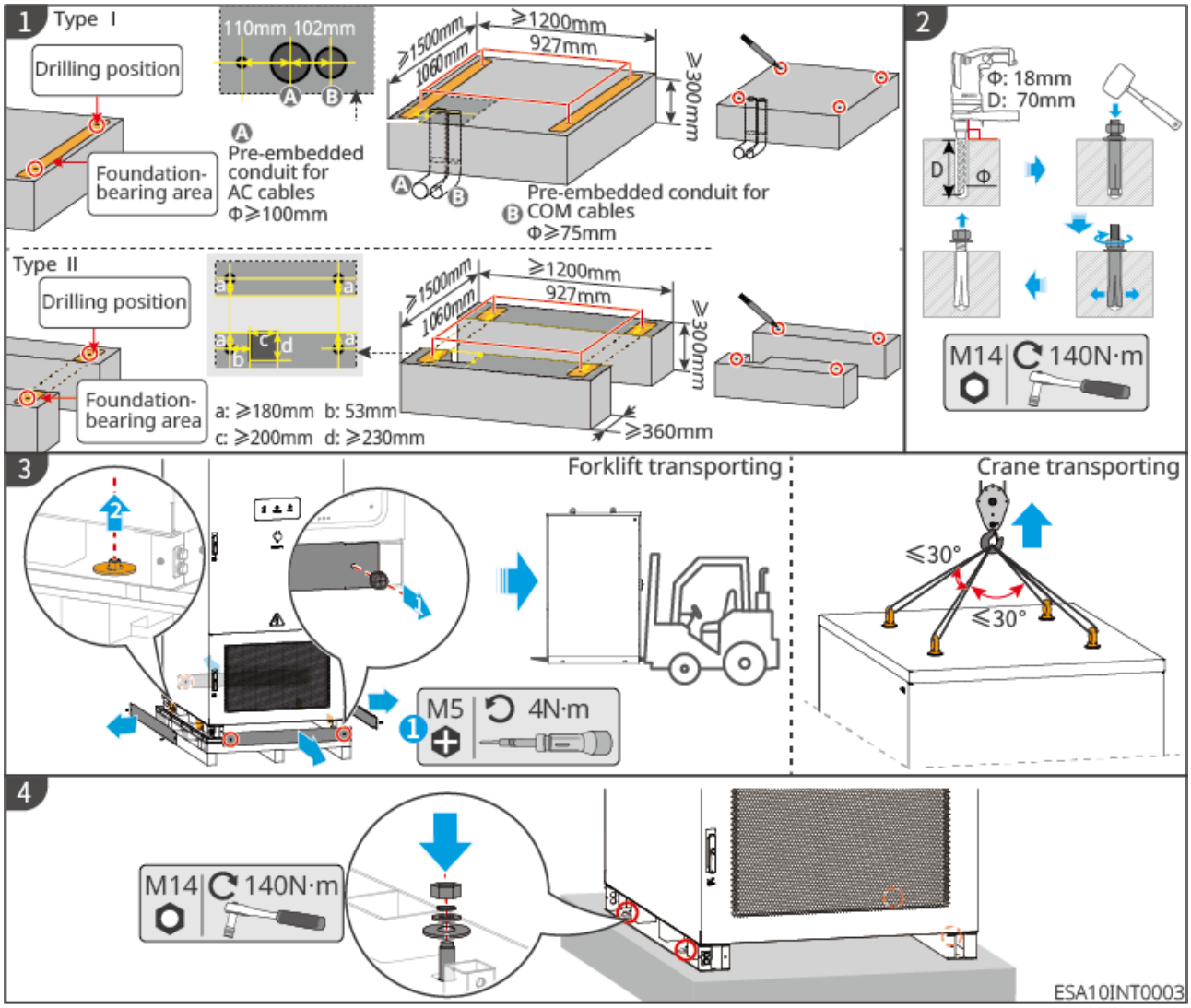
Step 1: Remove the front and rear protective panels of the energy storage system.
Step 2: Use a forklift to move the energy storage system, ensuring the equipment's center of gravity is centered on the forklift tines.

4.4 Installing an Energy Storage System

NOTICE

- Ensure the energy storage system is vertically close to the ground with no risk of tipping over.
- Ensure the energy storage system is installed securely to avoid tipping over and injuring personnel.
- The antenna and door panel stickers are vulnerable positions during installation and transportation, please be careful.

Step 1: Mark the drilling positions on the foundation using a marker pen.
Step 2: Drill holes in the ground using an impact drill and install expansion bolts.
Step 3: Move the energy storage system onto the foundation and remove the surrounding protective panels.
Step 4: Secure the energy storage system to the foundation.


1
Type I
Drilling position
Foundation-bearing area
110mm 102mm
A
B
Pre-embedded conduit for AC cables Φ⩾100mm
⩾1500mm
1060mm
⩾1200mm
927mm
⩾300mm
Pre-embedded conduit for COM cables Φ⩾75mm
Type II
Drilling position
Foundation-bearing area
a: ⩾180mm b: 53mm
c: ⩾200mm d: ⩾230mm
⩾360mm
2
Φ: 18mm
D: 70mm
M14 140N·m
3
Forklift transporting
Crane transporting
⩽30°
⩽30°
M5 4N·m
4
M14 140N·m
ESA10INT0003

5 Electrical Connection

⚠DANGER

- All operations during electrical connection, as well as the specifications of cables and components used, must comply with local laws and regulations.
- Before performing electrical cable connections, ensure all upstream switches of the equipment are turned off.
- Before performing electrical connections, ensure the equipment is completely powered off. Live operation is strictly prohibited, otherwise dangers such as electric shock may occur.
- Cables of the same type should be bundled together and routed separately from different types of cables. Intertwining or cross-routing is prohibited.
- If the cable is subjected to excessive tension, poor connection may result. When connecting, leave a certain length of slack in the cable before connecting it to the equipment's terminal port.
- When crimping terminals, ensure the conductor part of the cable makes full contact with the terminal. Do not crimp the cable insulation together with the terminal, as this may cause the equipment to fail to operate, or after operation, unreliable connections may lead to heating and damage to the equipment's terminal block.
- Using cables in high-temperature environments may cause insulation aging and damage. Maintain a distance of at least 30mm between cables and heat-generating components or the periphery of heat source areas.
- Before operating the equipment, ensure it is reliably grounded and that relevant protective measures are in place. Otherwise, there is a risk of electric shock.

NOTICE

- Before electrical connection, please wear personal protective equipment such as safety shoes, protective gloves, and insulating gloves as required.
- Only trained professionals are permitted to perform electrical connection and related operations.
- Please keep the cabinet door key in a safe place.
- The cable colors in the graphics in this document are for reference only. Specific cable specifications must comply with local regulatory requirements.

5.1 Preparation Before Wiring

Preparing Cables

No.	Cable	Type	Recommended Specification	Description
1	PE cable	Hot-dip galvanized flat steel	Must comply with local AC electrical installation grounding design specifications	User-provided

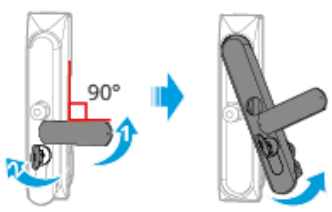
No.	Cable	Type	Recommended Specification	Description
2	AC cable	Five-core outdoor copper cable is recommended	Conductor cross-sectional area: • N/PE: 35mm², compatible with LYF35-8 terminal • N/L1/L2/L3: 70mm², compatible with SC70-8 terminal	User-provided The cable specifications recommended in the table are for reference only. When selecting actual cables, users must comprehensively consider the influence of factors such as installation ambient temperature, laying method, number of parallel conductors, voltage deviation, and thermal stability, and correct the current-carrying capacity using corresponding correction coefficients. The selected cable must meet the following requirements: Cable current-carrying capacity ≥ Overcurrent protection device rated current ≥ Maximum rated current.
3	RS485 communication cable	Outdoor shielded twisted pair cable meeting local standards	Conductor cross-sectional area: 0.5mm²	User-provided
4	CAN communication cable			User-provided, for master-slave parallel connection only
5	LAN communication cable	Standard CAT 5E or above network cable with RJ45 connector		User-provided

AC Circuit Breaker Preparation

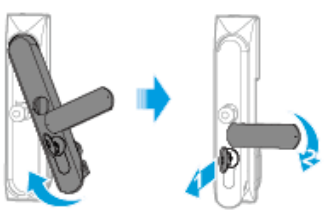
Recommended Specifications	Description	Acquisition Method
Rated Current: 250A (This circuit breaker is dedicated for the upper-level grid-connection cabinet of a single energy storage cabinet and cannot be connected to other loads.)	Recommended specifications are for reference only. The final circuit breaker selection must be comprehensively considered based on actual conditions, including but not limited to: differences in short-circuit breaking capacity and overload capacity among different brands; the impact of environmental factors such as temperature and altitude on performance; and specific functional requirements such as time delay. The final selection must be confirmed by local technical personnel after comprehensive evaluation. • TT systems require additional RCD configuration. It is recommended to configure a 100mA RCD at the upper-level grid-connection circuit breaker for a single energy storage cabinet. • In TN systems, RCD may not be required when the sensitivity of the circuit breaker's short-circuit protection meets the requirements for single-phase ground fault removal.	User-provided

Cabinet Door Operation

Open the front cabinet door

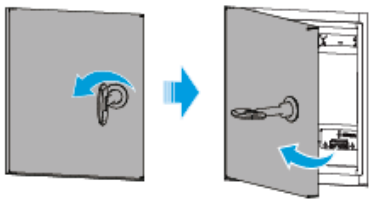


Close the front cabinet door

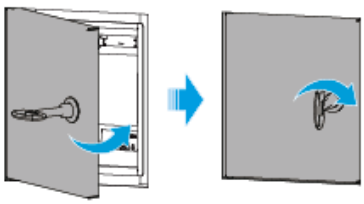


ESA10INT0004

Open the operation cabin door of the DC circuit breaker

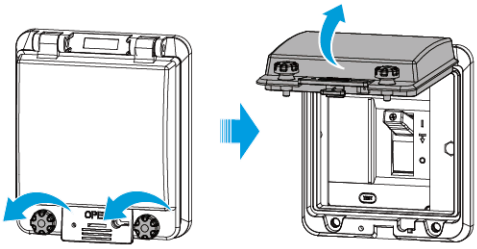


Close the operation cabin door of the DC circuit breaker

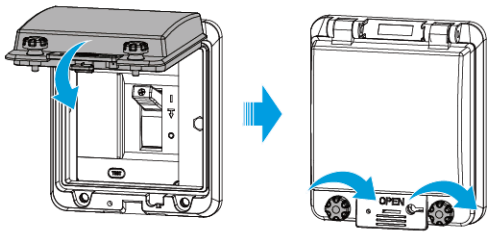


ESA10INT0005

Open the switch door

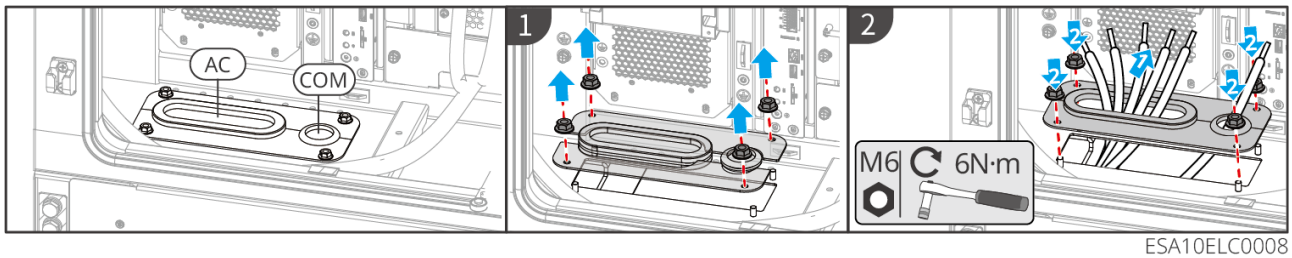


Close the switch door



ESA10INT0006

Wiring Port and Cable Guard Operation

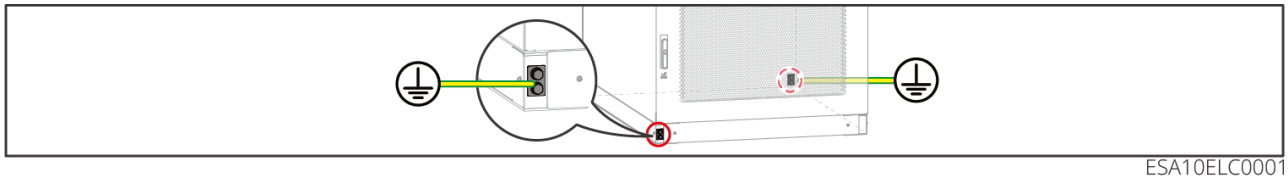


ESA10ELC0008

5.2 Connecting the PE cable

WARNING

- Before operating the device, ensure that the system is reliably grounded and take relevant protective measures. Otherwise, there may be a risk of electric shock.
- To improve the corrosion resistance of the terminals, it is recommended to fix them at the grounding point in the lower left corner of the cabinet using M10 bolts; after connection and installation are completed, apply silicone or paint to the exterior of the grounding terminals for protection.
- Please prepare flat steel protective grounding cables that comply with local requirements.



ESA10ELC0001

5.3 Connecting the AC Cable

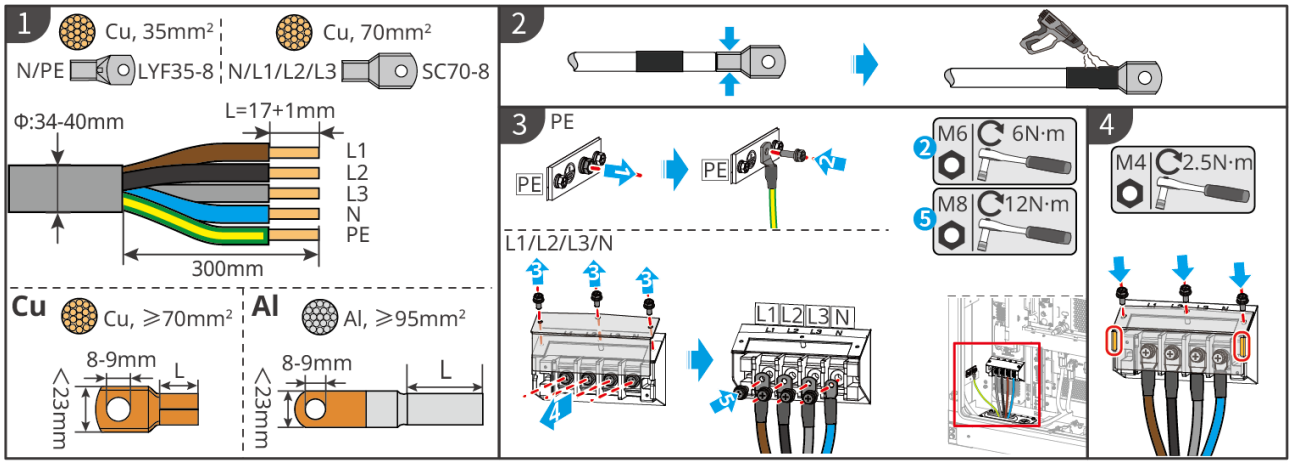
⚠DANGER

When the energy storage system is powered on, the AC wiring terminals are live. For maintenance, ensure the upstream and downstream circuit breakers are disconnected or power down the energy storage system. Failure to do so may result in electric shock.

⚠WARNING

- During wiring, ensure the AC cables correspond correctly to the L1, L2, L3, and N of the AC ports. Incorrect cable connection may cause equipment damage.
- Ensure the wire cores are fully inserted into the terminal connection holes with no exposed parts.
- Ensure the cable connections are tight. Otherwise, loose connections may cause terminal overheating during operation, leading to equipment damage.
- Ensure all switches of the equipment are turned off.

Step 1: Prepare the cable and terminals. Ensure that the cable selection meets the requirements in 5.1.Pre-wiring Preparation(Page 38) (Terminals are provided in the accessories. If users prepare terminals themselves, please purchase according to the recommended dimensions for copper terminals/copper-aluminum terminals).
Step 2: Make the AC cable.
Step 3: Connecting the AC Cable.
Step 4: Install the protective cover.



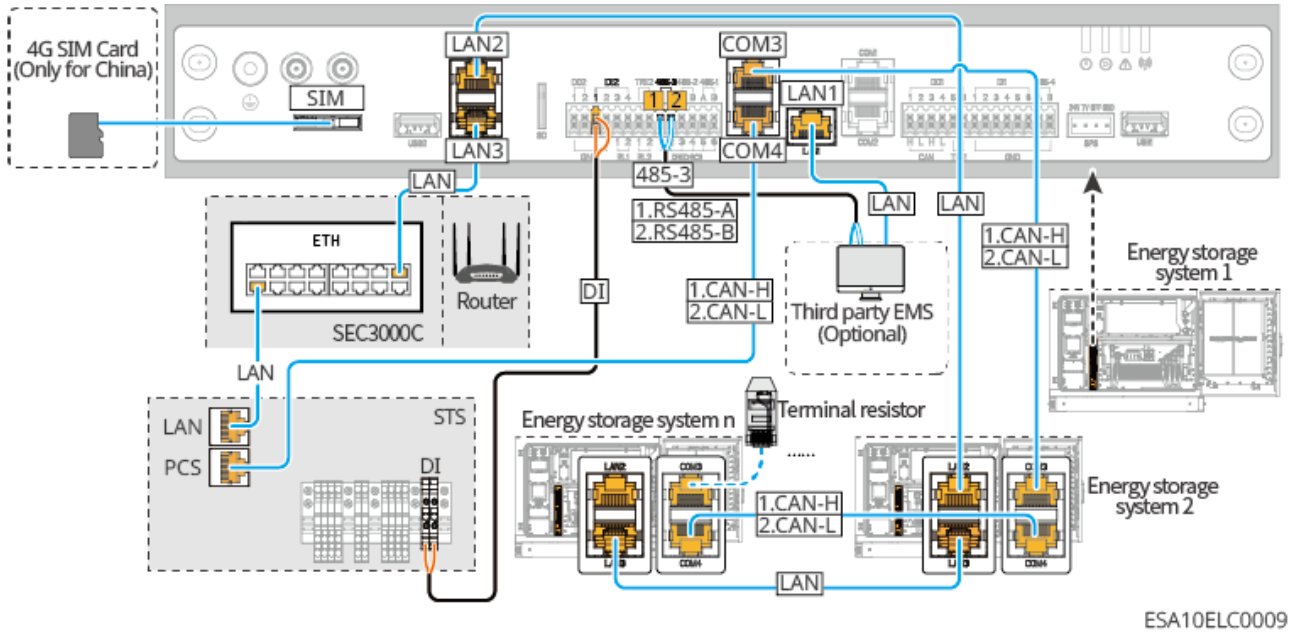
ESA10ELC0012

5.4 Connecting Communication Cables

NOTICE

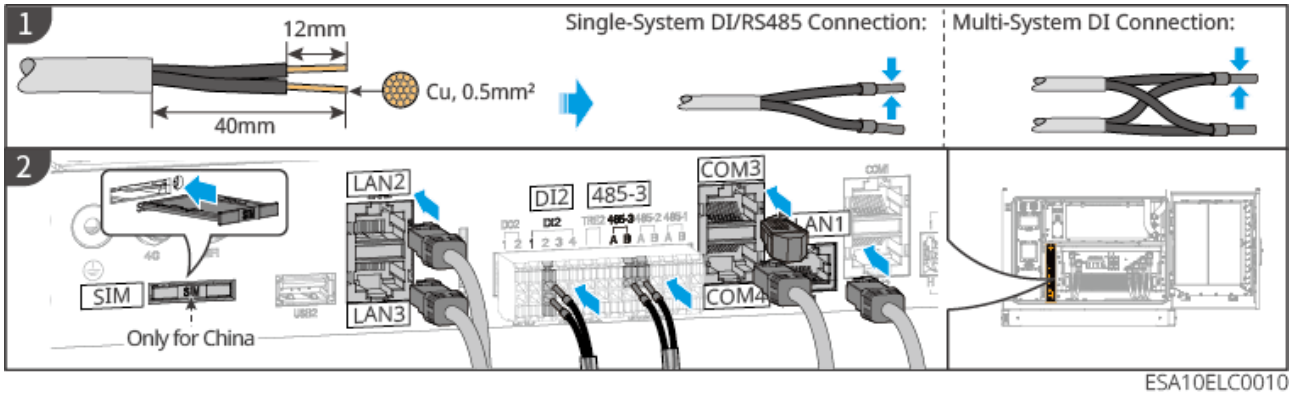
When connecting communication cables, the cable routing path should avoid interference sources, power lines, etc., to prevent affecting signal reception.

Communication Port Introduction



ESA10ELC0009

Cable Connection Steps

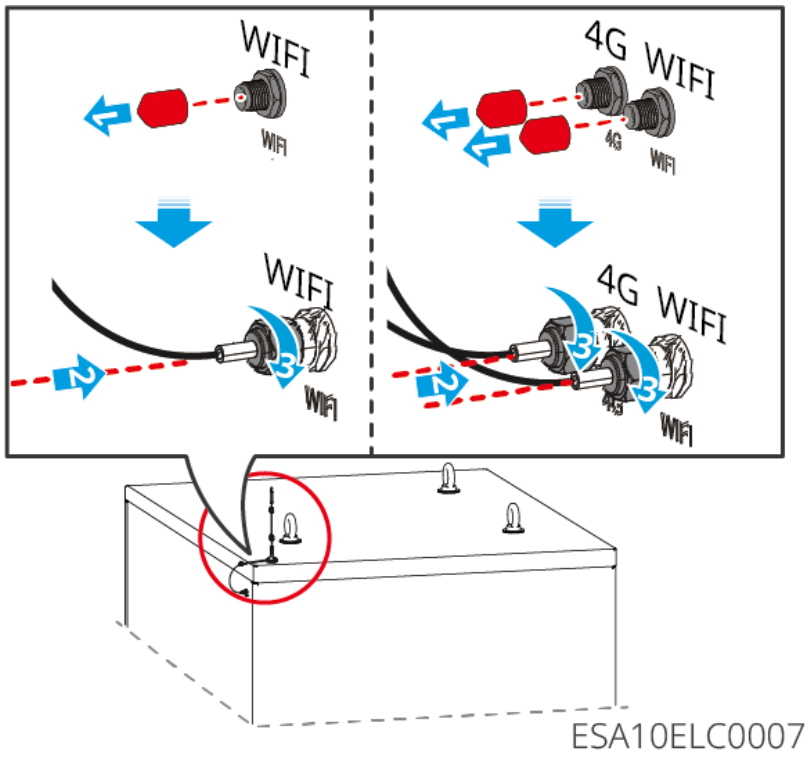


ESA10ELC0010

Installing the Antenna

NOTICE

- The communication cable between the energy storage system's local control module and the WiFi communication port on top of the system cabinet is pre-installed. Only the antenna needs to be installed for use.
- For the overseas version, only the WiFi antenna needs to be installed. The domestic version requires installation of both the 4G antenna and the WiFi antenna.



ESA10ELC0007

5.4.1 Grid-Connected Scenarios

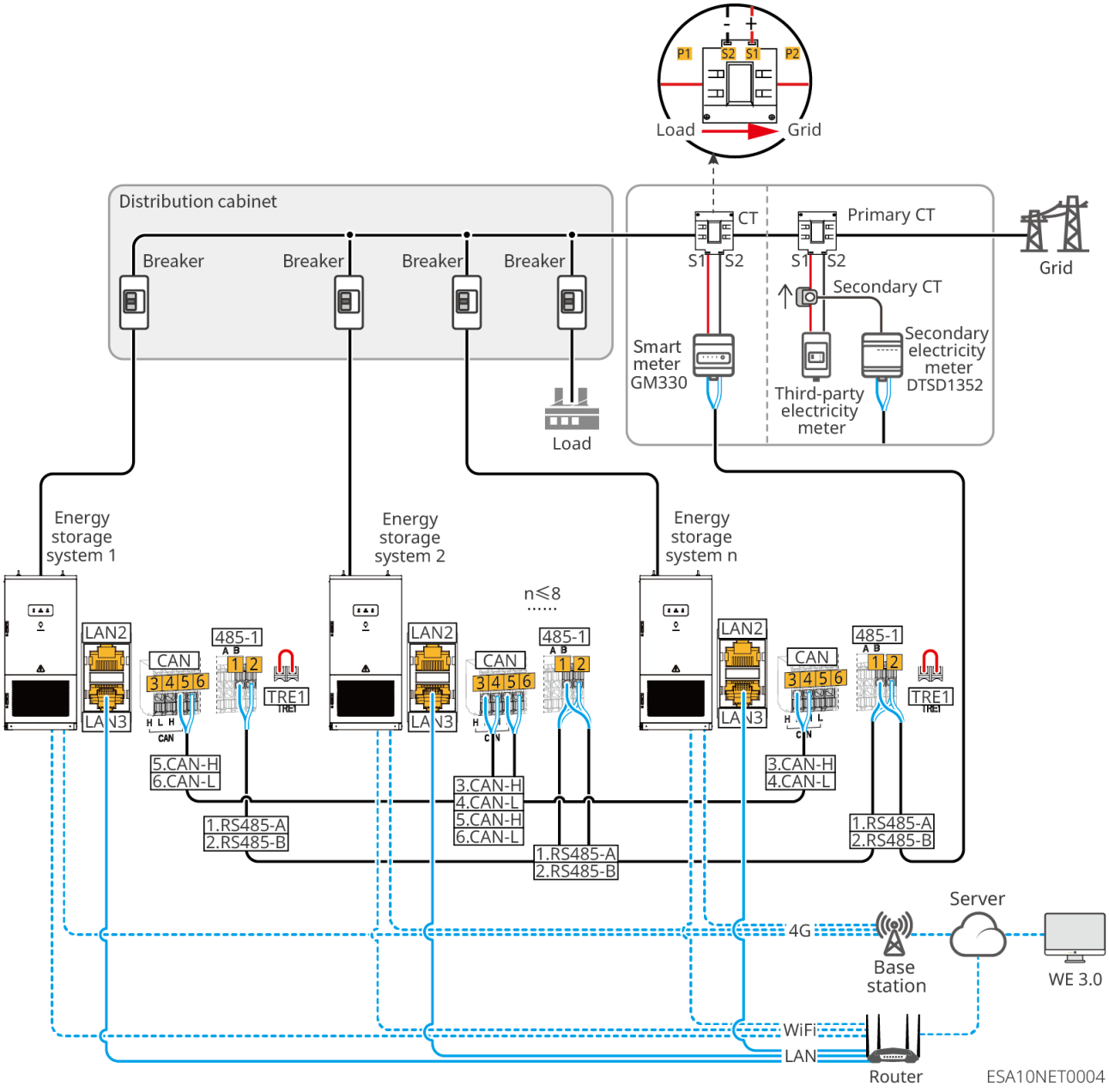
NOTICE

Current transformers (CTs) and meters must be configured at the grid connection point to enable the grid connection power limitation function. Please select the appropriate solution based on the actual on-site conditions:

- If power outage operations are permitted on-site, install a primary CT at the grid connection point and connect it to the GM330/primary meter.
- If power outage is not permitted on-site, install a secondary CT on the existing primary CT and connect it to the DTSD1352/secondary meter.

Master-Slave Parallel Connection

The energy storage system supports master-slave parallel connection. The system does not support connection to a PV inverter, and can support up to 8 units in parallel.



Name	Description
energy storage system	Purchase from GoodWe. For the same project, please keep the model and specifications of the energy storage system consistent. Mixing products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11

Name	Description
breaker	For circuit protection. Recommended specification: 250A. Customer to purchase separately.
CT	Used with the GM330 smart meter. CT ratio is: nA/5A. • nA: CT primary side input current. The value of 'n' depends on the actual specifications of the PCC point's busbar or cable on site. • 5A: CT secondary side output current. Customer to purchase separately.
GM330 Smart Meter	Used for grid-connection power limiting. Purchase from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352. CT ratio is: 5A/2mA. Purchase from GoodWe.
Secondary Smart Meter DTSD1352	Used for grid-connection power limiting. Purchase from GoodWe.
WE 3.0	Remotely monitors the operating data of the energy storage system and sets system parameters. Purchase from GoodWe.

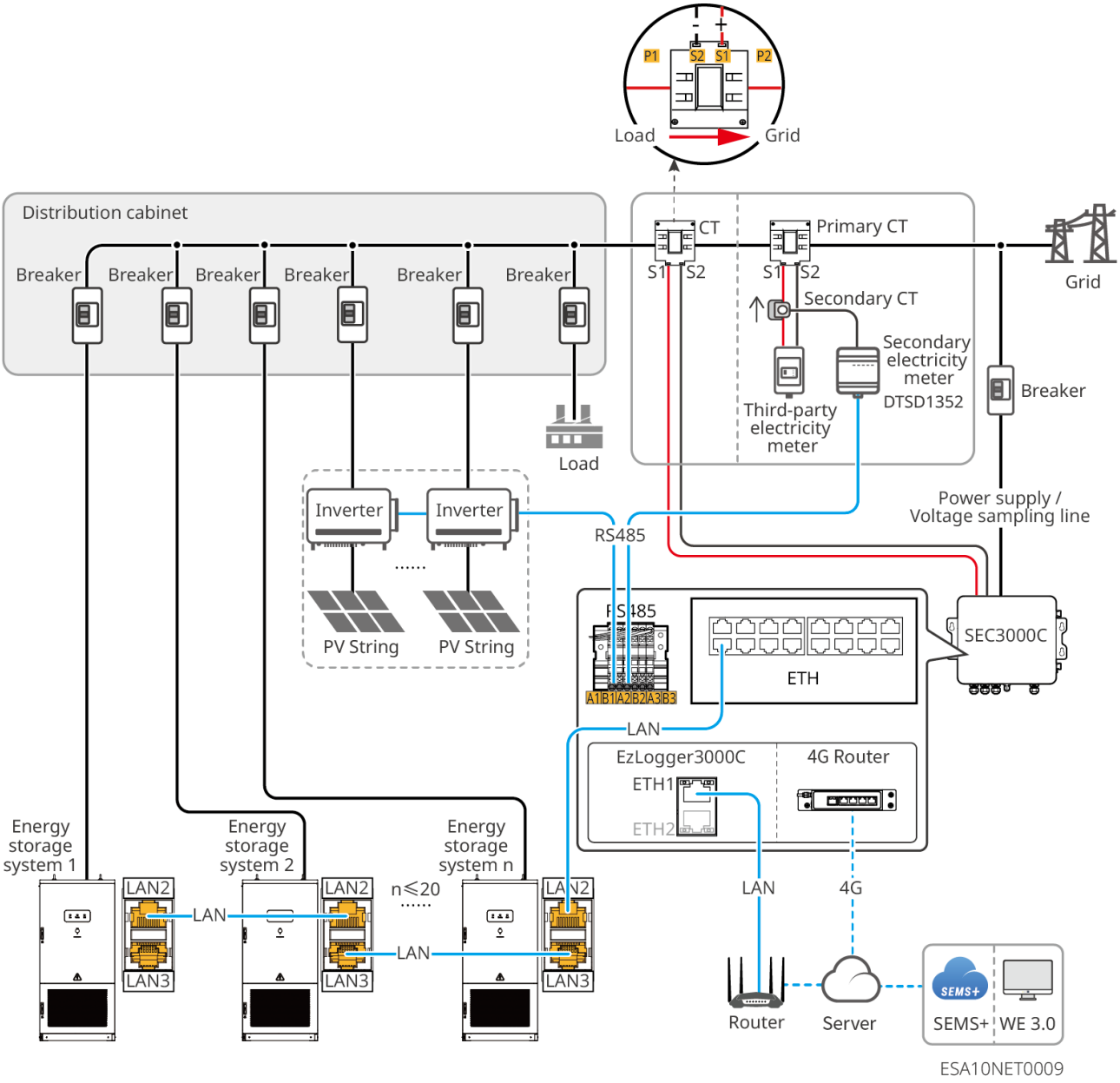
Parallel Connection via EMS

The ESA261 energy storage system supports parallel connection via SEC3000C/third-party EMS, and the system supports connection to PV inverters.
When connected to SEC3000C, up to 20 units can be connected in parallel.
When connected to a third-party EMS, the number of units supported in parallel is determined by the third-party EMS.

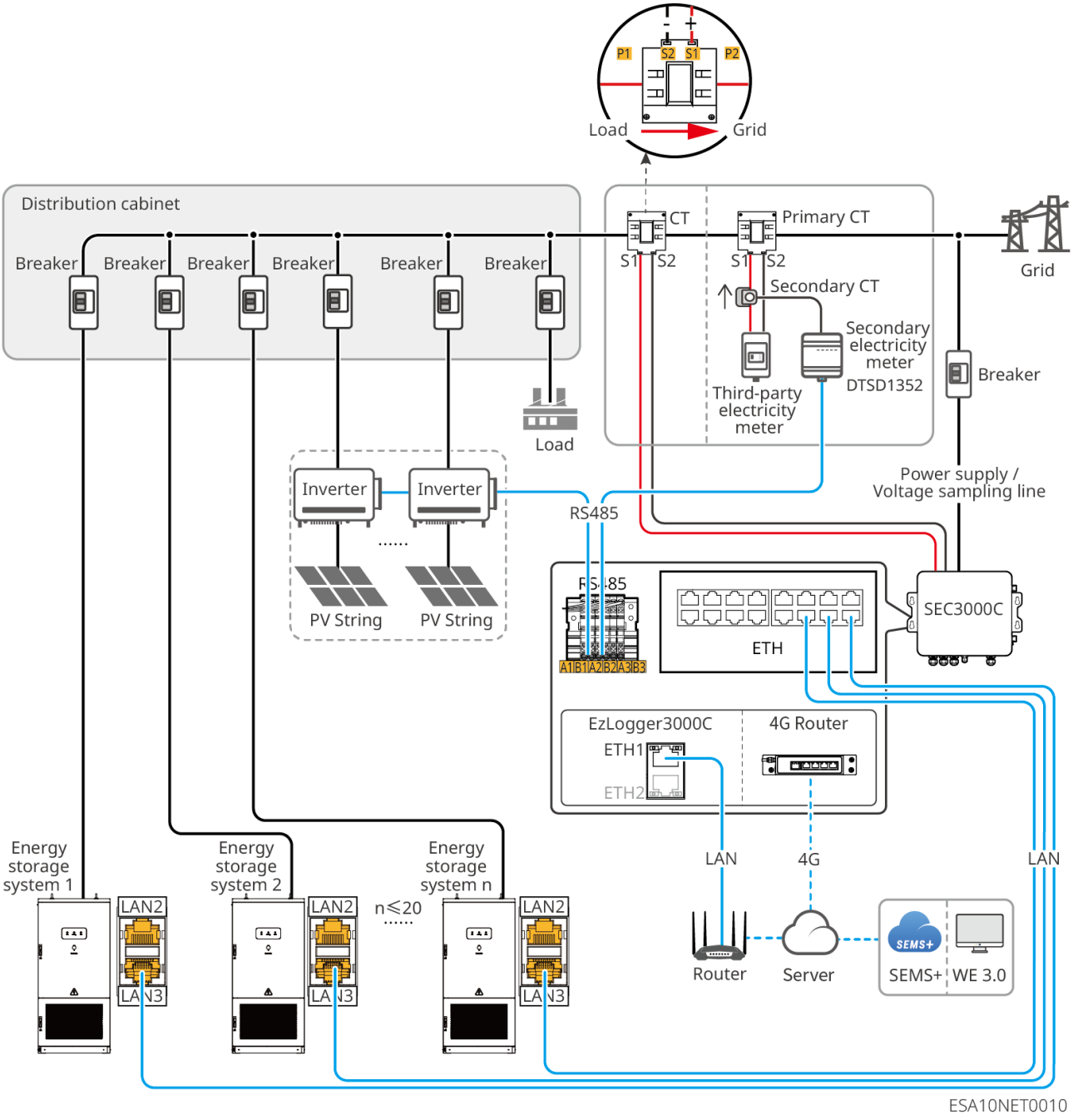
Compatible Device	Communication Method	Connection Topology	Max. Parallel Units	Monitoring Platform
SEC3000C	LAN	Daisy-chain / Hybrid Daisy-chain Star	20	WE 3.0 (Domestic Version) SEMS+ (Overseas Version)
	LAN	Star	15	
Third-party EMS	LAN/RS485	Daisy-chain	N	Third-party Monitoring Platform

- **Parallel Connection via SEC3000C**

- **Daisy-Chain Connection**



- **Star Connection**

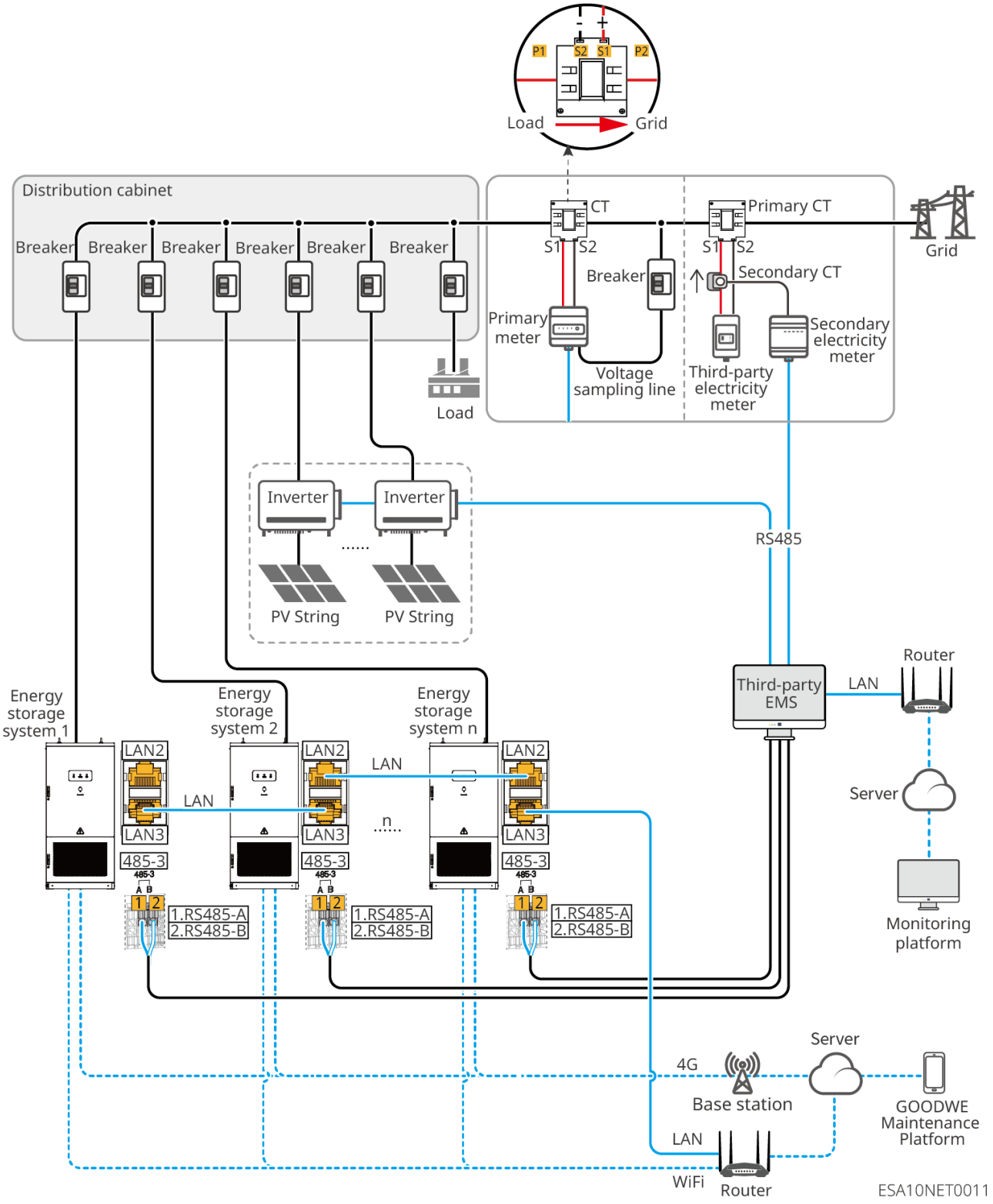

P1
S2
S1
P2
Load
Grid
Distribution cabinet
Breaker
Breaker
Breaker
Breaker
Breaker
Breaker
CT
S1
S2
Primary CT
S1
S2
Secondary CT
Secondary electricity meter
DTSD1352
Third-party electricity meter
Grid
Breaker
Load
Inverter
Inverter
PV String
PV String
RS485
Power supply / Voltage sampling line
RS485
A1B1A2B2A3B3
ETH
SEC3000C
EzLogger3000C
ETH1
ETH2
4G Router
Energy storage system 1
Energy storage system 2
Energy storage system n
n≤20
LAN2
LAN3
LAN
4G
LAN
Router
Server
SEMS+
SEMS+
WE 3.0
ESA10NET0010

Name	Description
energy storage system	Purchased from GoodWe. For the same project, the model and specifications of the energy storage systems should be consistent. Mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
breaker	For circuit protection. Recommended specification: 250A. Customer to purchase separately.
PV Grid-tied Inverter	Converts PV DC power to AC power.
CT	Used with the GM330 smart meter. CT ratio is: nA/5A. • nA: CT primary side input current. The value of 'n' depends on the actual specifications of the PCC point's copper busbar or cable on site. • 5A: CT secondary side output current. Customer to purchase separately.
GM330 Smart Meter	Used for grid power limitation. Purchased from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352. CT ratio is: 5A/2mA. Purchased from GoodWe.
Secondary Smart Meter DTSD1352	Used for grid power limitation. Purchased from GoodWe.
SEC3000C	Collects system data and sends it to WE 3.0/SEMS+ to enable centralized monitoring, operation, and maintenance of the system. Purchased from GoodWe.

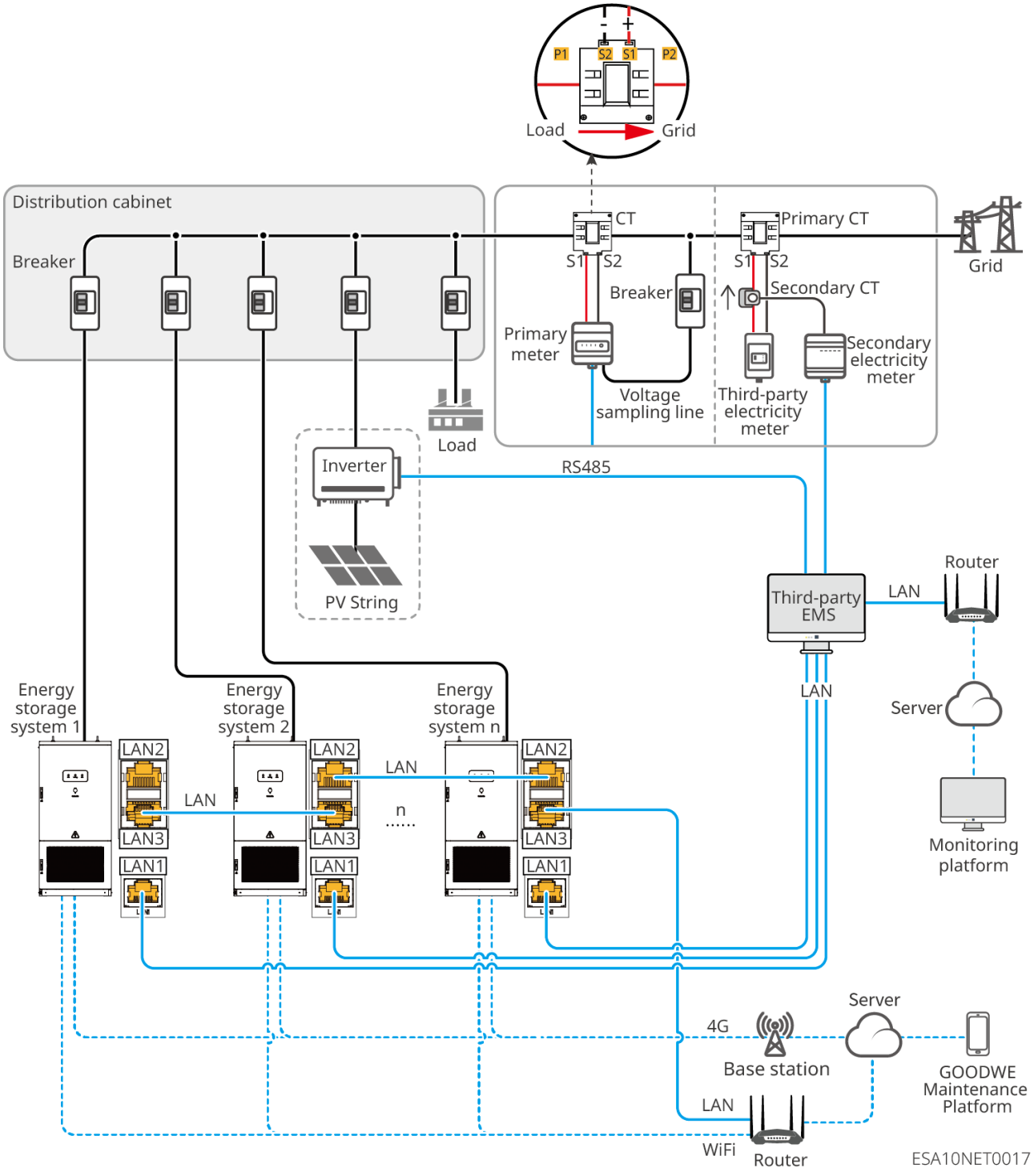
Name	Description
SEMS+/WE 3.0	Remotely monitors the operating data of the energy storage system and sets system parameters. Purchased from GoodWe.

- **Parallel Connection via Third-Party EMS**

- **Connection via RS485 Cable**



- **Connection via LAN Cable**


P1
S2
S1
P2
Load
Grid
Distribution cabinet
Breaker
CT
S1
S2
Primary CT
S1
S2
Grid
Breaker
Secondary CT
Primary meter
Secondary electricity meter
Voltage sampling line
Third-party electricity meter
Load
Inverter
RS485
PV String
Router
Third-party EMS
LAN
LAN
Server
Energy storage system 1
Energy storage system 2
Energy storage system n
LAN2
LAN3
LAN1
LAN
LAN
n
Monitoring platform
Server
4G
Base station
GOODWE Maintenance Platform
LAN
WiFi
Router
ESA10NET0017

Name	Description
energy storage system	Purchased from GoodWe. For the same project, please keep the model and specifications of the energy storage system consistent. Mixing products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
breaker	For circuit protection. Recommended specification: 250A. Customer purchases separately.
PV Grid-tie Inverter	Convert PV DC power to AC power.
CT	Used with the primary meter. Customer purchases separately.
Primary Meter	Used for grid power limitation. Purchase separately based on compatibility with the third-party EMS.
Secondary CT	Used with the secondary meter. Customer purchases separately.
Secondary Meter	Used for grid power limitation. Purchase separately based on compatibility with the third-party EMS.
Third-party EMS	Collects system data and sends it to a third-party monitoring platform, enabling centralized monitoring, operation, and maintenance of the system. Customer purchases separately.
Third-party Monitoring Platform	Remotely monitors the operating data of the energy storage system, sets system parameters, etc. Customer purchases separately.

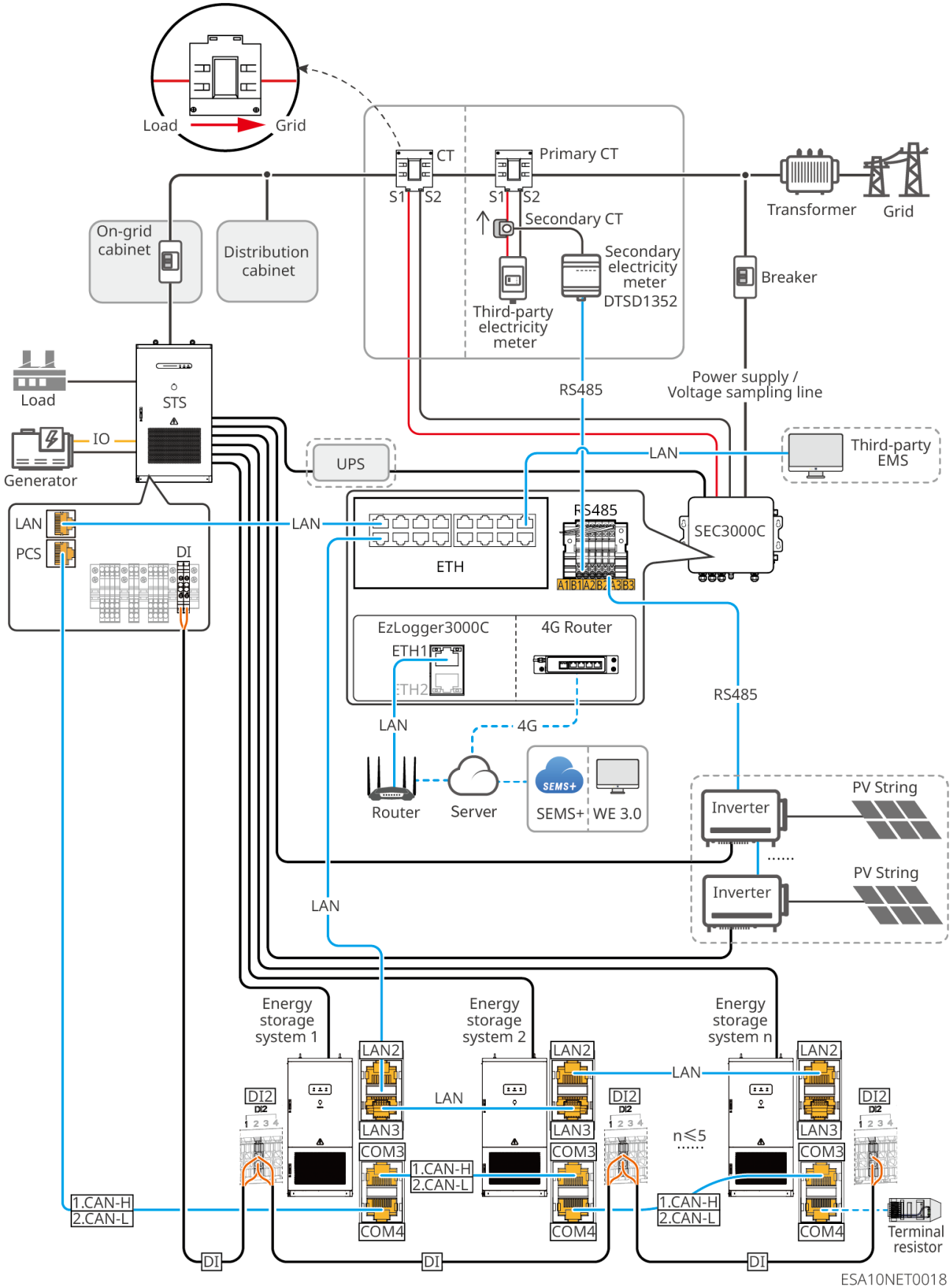
5.4.2 Grid-Connected/Off-Grid Switching Scenario

NOTICE

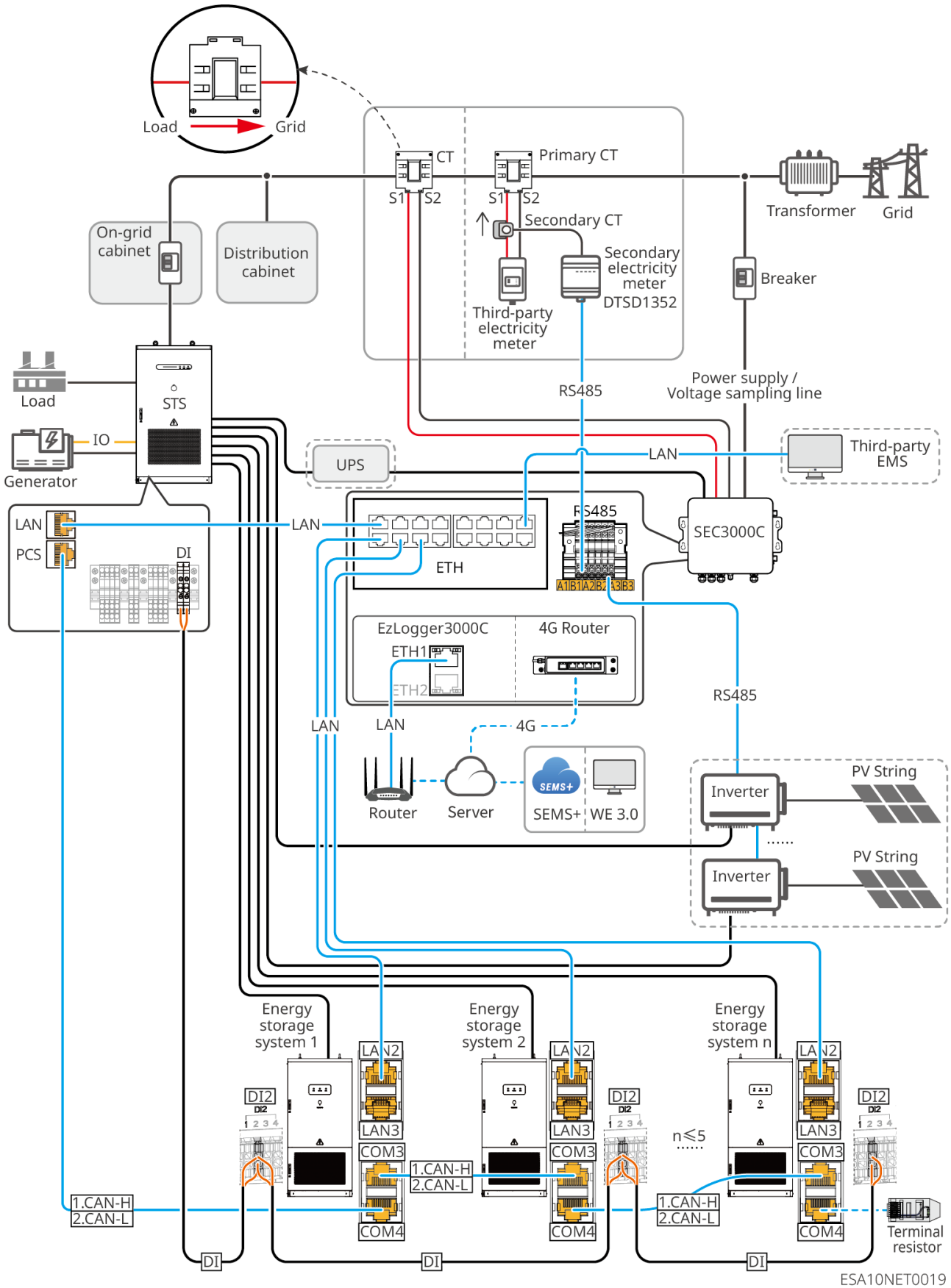
- It is recommended to install a UPS between the STS and the SEC3000C. With a UPS installed, the system can achieve remote black start; without a UPS, remote black start cannot be achieved.
- Current transformers (CTs) and an energy meter must be configured at the grid connection point to enable the anti-reverse power flow function. Please select the appropriate solution based on the actual site conditions:
  - If power outage operations are permitted on-site, primary CTs can be installed at the grid connection point and connected to the GM330 smart meter.
  - If power outages are not permitted on-site, secondary CTs should be installed on the existing primary CTs and connected to the DTSD1352 secondary meter.

The energy storage system can achieve grid-connected/off-grid switching by pairing with an STS switching cabinet. For energy storage systems directly connected to the STS via communication, the distance to the STS must be less than or equal to 45 meters.

Daisy-chain connection:


Load
Grid
CT
S1
S2
Primary CT
S1
S2
Secondary CT
Transformer
Grid
On-grid cabinet
Distribution cabinet
Third-party electricity meter
Secondary electricity meter DTSD1352
Breaker
Load
STS
RS485
Power supply / Voltage sampling line
IO
Generator
UPS
LAN
Third-party EMS
LAN
PCS
DI
LAN
ETH
RS485
A1B1A2B2A3B3
SEC3000C
EzLogger3000C
4G Router
ETH1
ETH2
RS485
LAN
4G
Router
Server
SEMS+
SEMS+
WE 3.0
PV String
Inverter
PV String
Inverter
LAN
Energy storage system 1
Energy storage system 2
Energy storage system n
LAN2
LAN3
COM3
COM4
DI2
LAN
LAN
n≤5
1.CAN-H
2.CAN-L
1.CAN-H
2.CAN-L
1.CAN-H
2.CAN-L
Terminal resistor
DI
DI
DI
ESA10NET0018

Star connection:


Load
Grid
CT
S1
S2
Primary CT
S1
S2
Secondary CT
Transformer
Grid
On-grid cabinet
Distribution cabinet
Third-party electricity meter
Secondary electricity meter DTSD1352
Breaker
Load
STS
RS485
Power supply / Voltage sampling line
IO
Generator
UPS
LAN
Third-party EMS
LAN
PCS
DI
LAN
ETH
RS485
A1 B1 A2 B2 A3 B3
SEC3000C
EzLogger3000C
4G Router
ETH1
ETH2
RS485
LAN
LAN
4G
Router
Server
SEMS+
SEMS+
WE 3.0
Inverter
PV String
Inverter
PV String
Energy storage system 1
Energy storage system 2
Energy storage system n
LAN2
LAN3
COM3
COM4
DI2
n≤5
1.CAN-H
2.CAN-L
Terminal resistor
DI
ESA10NET0019

Name	Description
Energy Storage System	Purchased from GoodWe. For the same project, please keep the model and specifications of the energy storage system consistent. Mixing products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
Photovoltaic Grid-tied Inverter	Converts PV DC power into AC power.
STS	Grid-off-grid switching cabinet.
CT	Used with the GM330 smart meter. The CT ratio is: nA/5A. • nA: CT primary side input current. The value of 'n' is determined by the actual specifications of the PCC point's copper busbar or cable on site. • 5A: CT secondary side output current. Customer purchases separately.
GM330 Smart Meter	Used for grid-connected power limitation. Purchased from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352. The CT ratio is: 5A/2mA. Purchased from GoodWe.
Secondary Smart Meter DTSD1352	Used for grid-connected power limitation. Purchased from GoodWe.
SEC3000C	Collects system data and sends it to WE 3.0/SEMS+ to achieve centralized monitoring, operation, and maintenance of the system. Purchased from GoodWe.

Name	Description
Third-party EMS	Collects system data and sends it to a third-party monitoring platform to achieve centralized monitoring, operation, and maintenance of the system. Customer provides.
SEMS+/WE 3.0	Remotely monitors the operating data of the energy storage system and sets system parameters. Purchased from GoodWe.

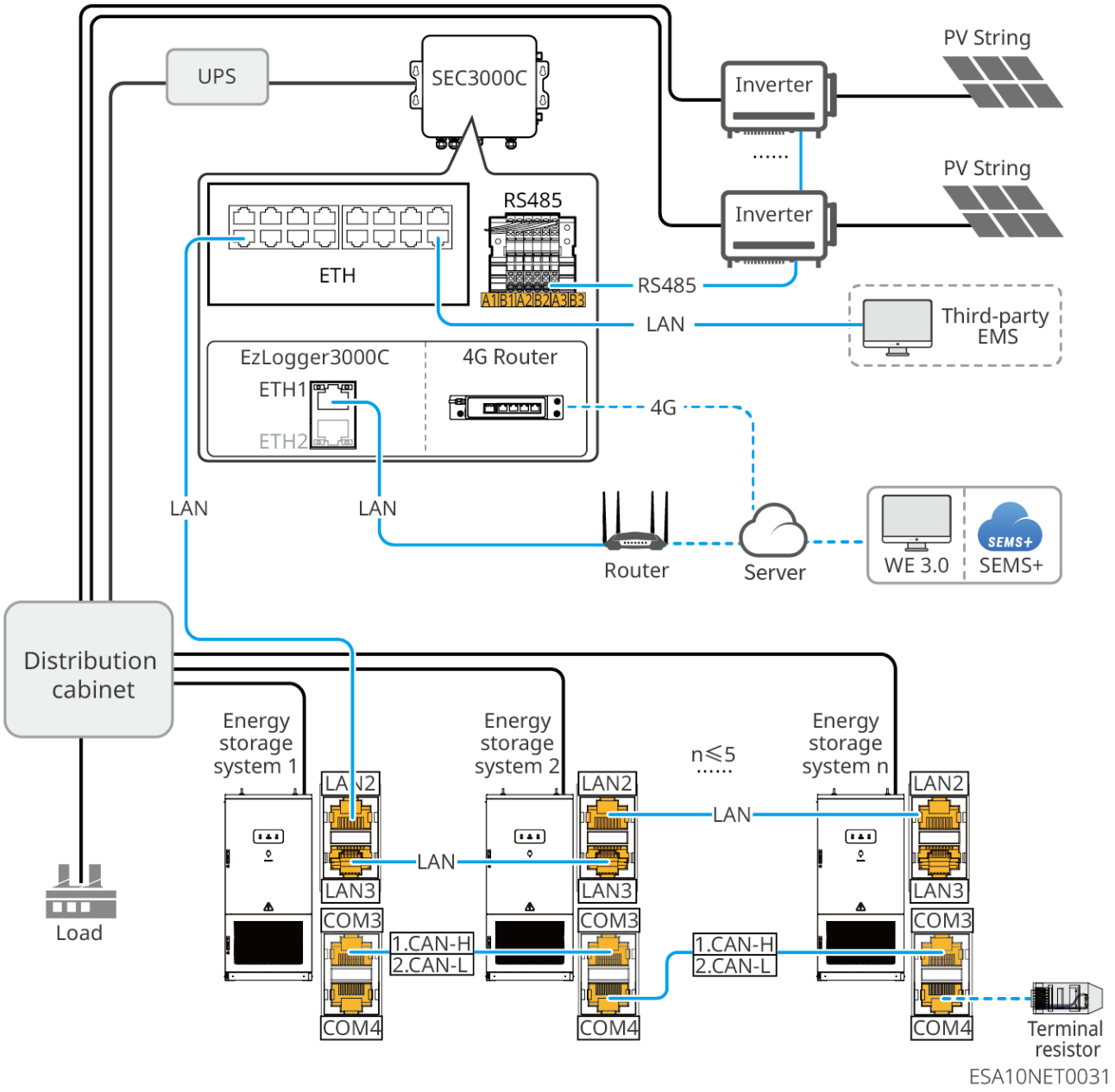
5.4.3 Pure Off-Grid Scenario

NOTICE

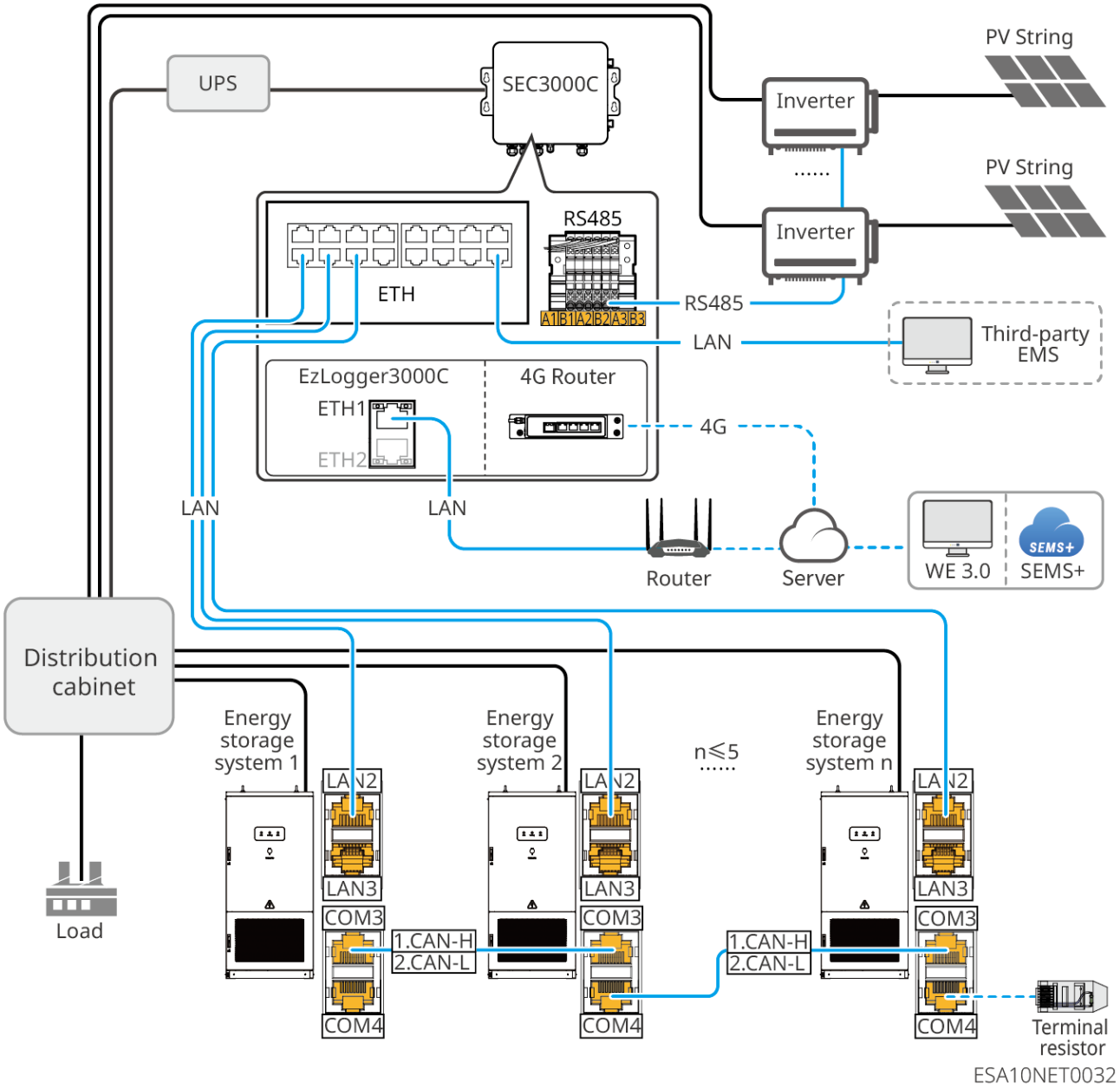
- It is recommended to install a UPS between the STS and the SEC3000C. With a UPS installed, the system can achieve remote black start; without a UPS, remote black start cannot be achieved.
- In a pure off-grid scenario, a voltage source needs to be manually established. There are two methods:
  - Manually operate the black start button on the ESA261 energy storage system to start the unit.
  - Before the system starts up, first start the diesel generator as a voltage source to support system operation, then synchronize the ESA261 energy storage system to operate in parallel with the diesel generator.

5.4.3.1 Solar Storage Pure Off-Grid

- **Daisy-Chain Connection**



- **Star Connection**

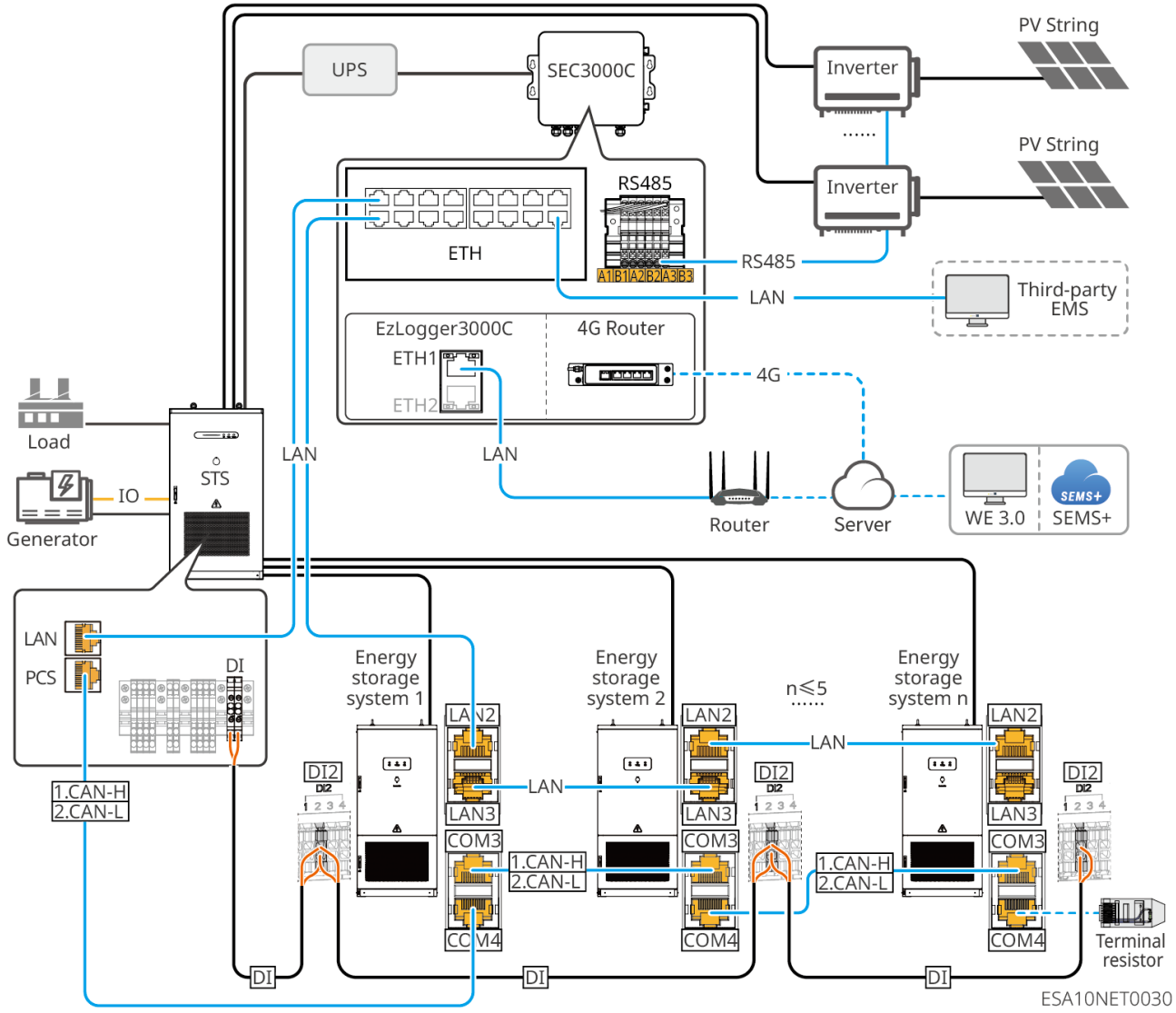


Name	Description
energy storage system	Please keep the model and specifications of the energy storage system consistent for the same project. Mixing products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11 Purchase from GoodWe.

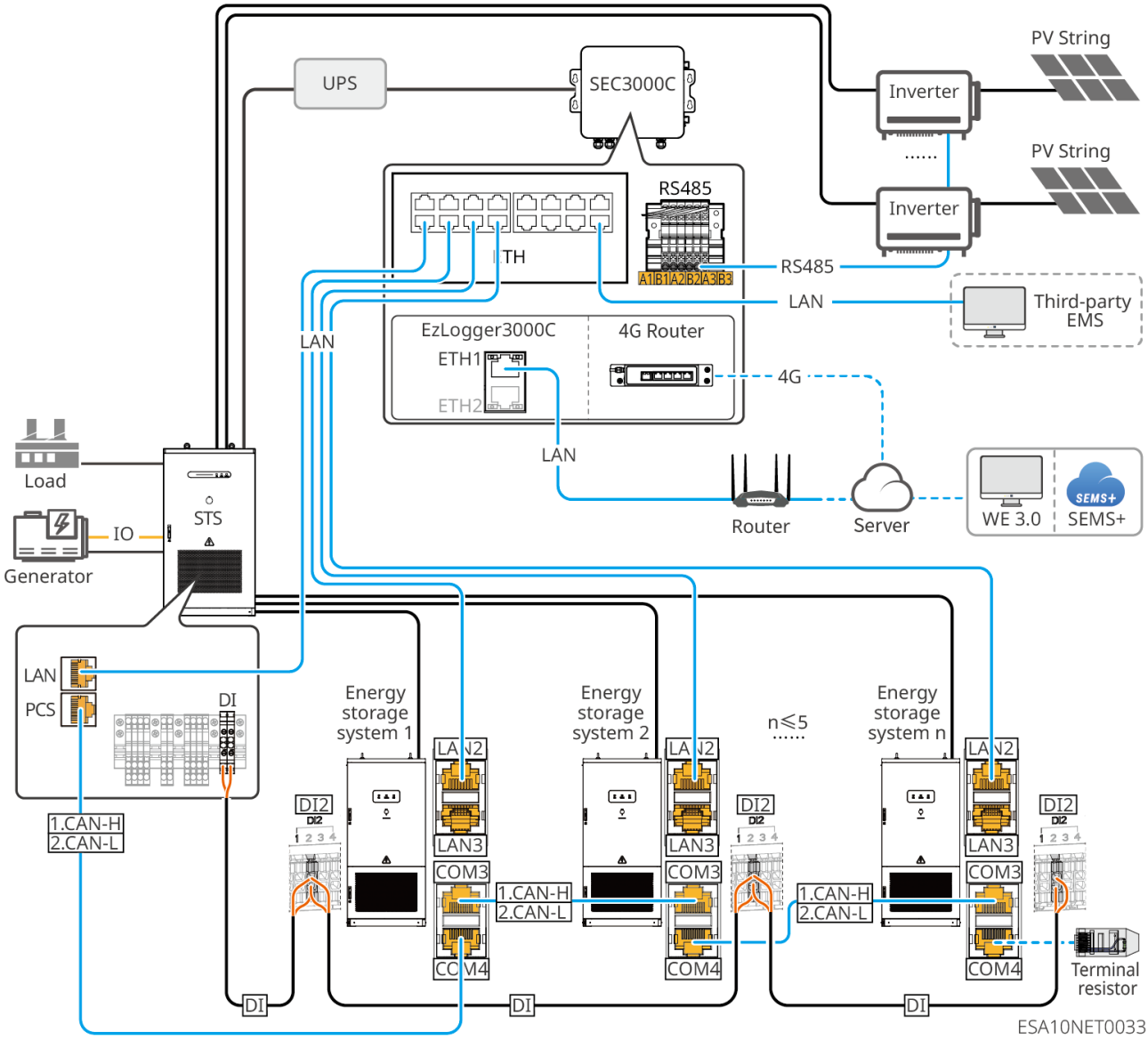
Name	Description
PV Grid-tied Inverter	Converts PV DC power into AC power. Purchase from GoodWe.
SEC3000C	Collects system data and sends it to WE 3.0/SEMS+ to achieve centralized monitoring, operation, and maintenance of the system. Purchase from GoodWe.
Third-party EMS	Collects system data and sends it to a third-party monitoring platform to achieve centralized monitoring, operation, and maintenance of the system. Provided by the customer.
SEMS+/WE 3.0	Remotely monitors the operating data of the energy storage system and sets system parameters. Purchase from GoodWe.

5.4.3.2 PV-Storage-Diesel Pure Off-Grid

- **Hand-in-Hand Connection**



- **Star Connection**



Name	Description
Energy Storage System	For the same project, the model and specifications of the energy storage system should be consistent. Mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11 Purchase from GoodWe.

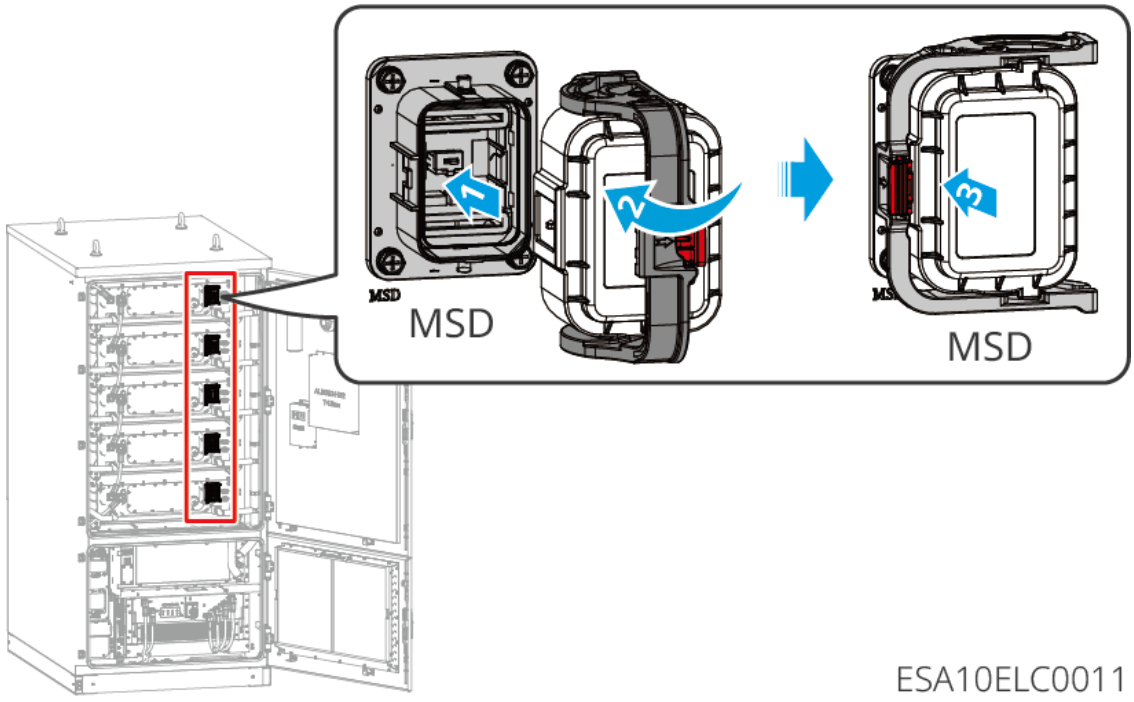
Name	Description
PV Grid-tied Inverter	Converts PV DC power to AC power. Purchase from GoodWe.
Diesel Generator	Serves as a backup power source and voltage source, ensuring stable system operation when the energy storage system cannot start independently or has insufficient charge. User-provided.
STS	Grid-off switching cabinet, model: GW500K-STS-PCS-G10. For the connection capacity of each STS port, please refer to the GW500K-STS-PCS-G10 User Manual. Purchase from GoodWe.
UPS	Used to achieve remote black start. User-provided. For recommended models, please refer to the GW500K-STS-PCS-G10 User Manual.
SEC3000C	Collects system data and sends it to WE 3.0/SEMS+ to enable centralized monitoring, operation, and maintenance of the system. Purchase from GoodWe.
Third-party EMS	Collects system data and sends it to a third-party monitoring platform to enable centralized monitoring, operation, and maintenance of the system. Customer-provided.
SEMS+/WE 3.0	Remotely monitors the operational data of the energy storage system and sets system parameters. Purchase from GoodWe.

5.5 Installing MSD Switch/Battery Power Cable

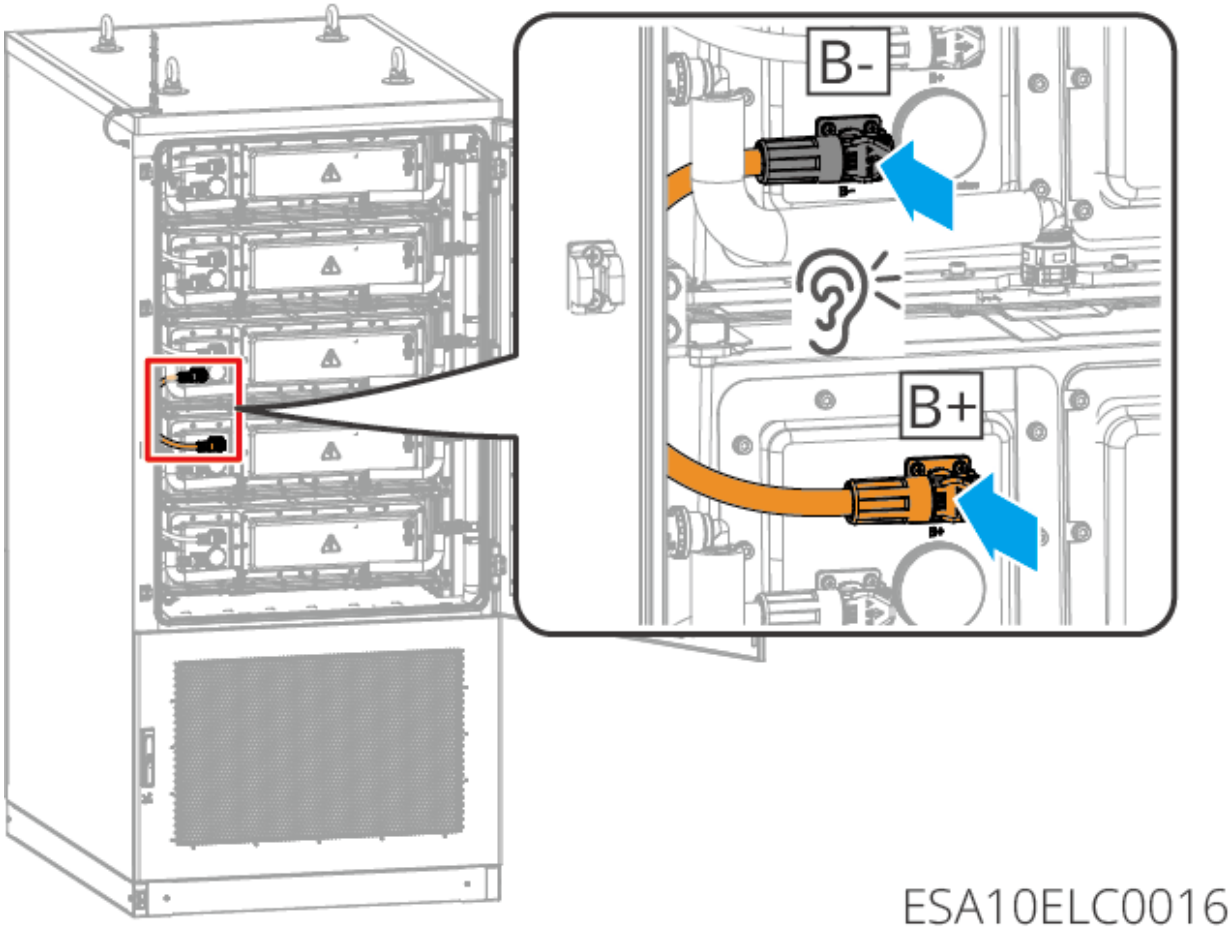
NOTICE

- Only the GW125/261-ESA-LCN-G10 requires installation of the MSD switch.
- Only the GW125/261-ESA-LCN-G11 requires installation of the battery power cable.

Installing the MSD Switch

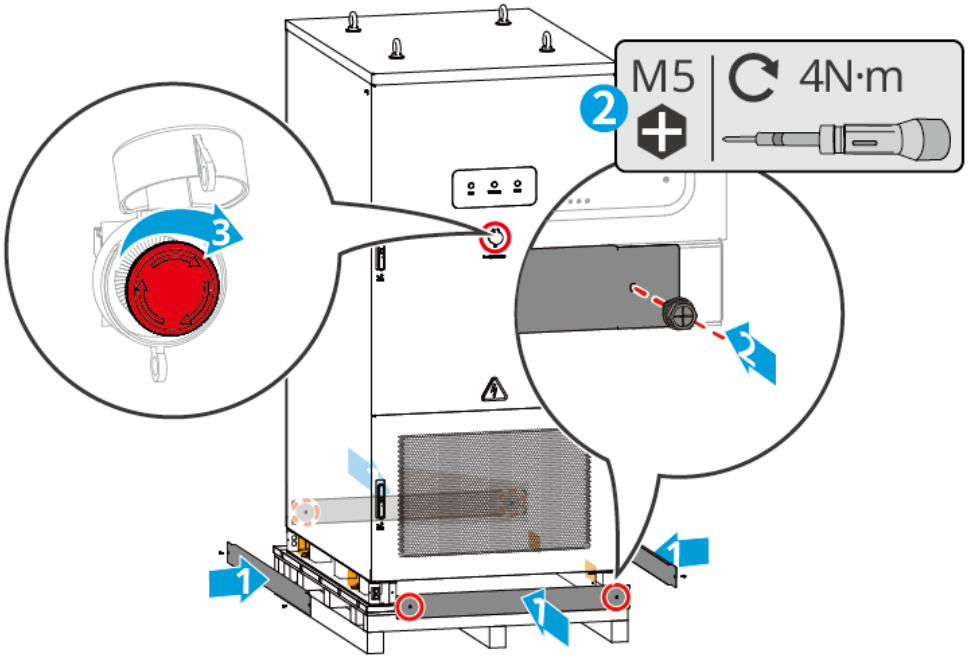


Installing the Battery Power Cable



5.6 Post-Wiring Operations

Step 1: Install the bottom cover of the energy storage system.
Step 2: Release the emergency stop switch.

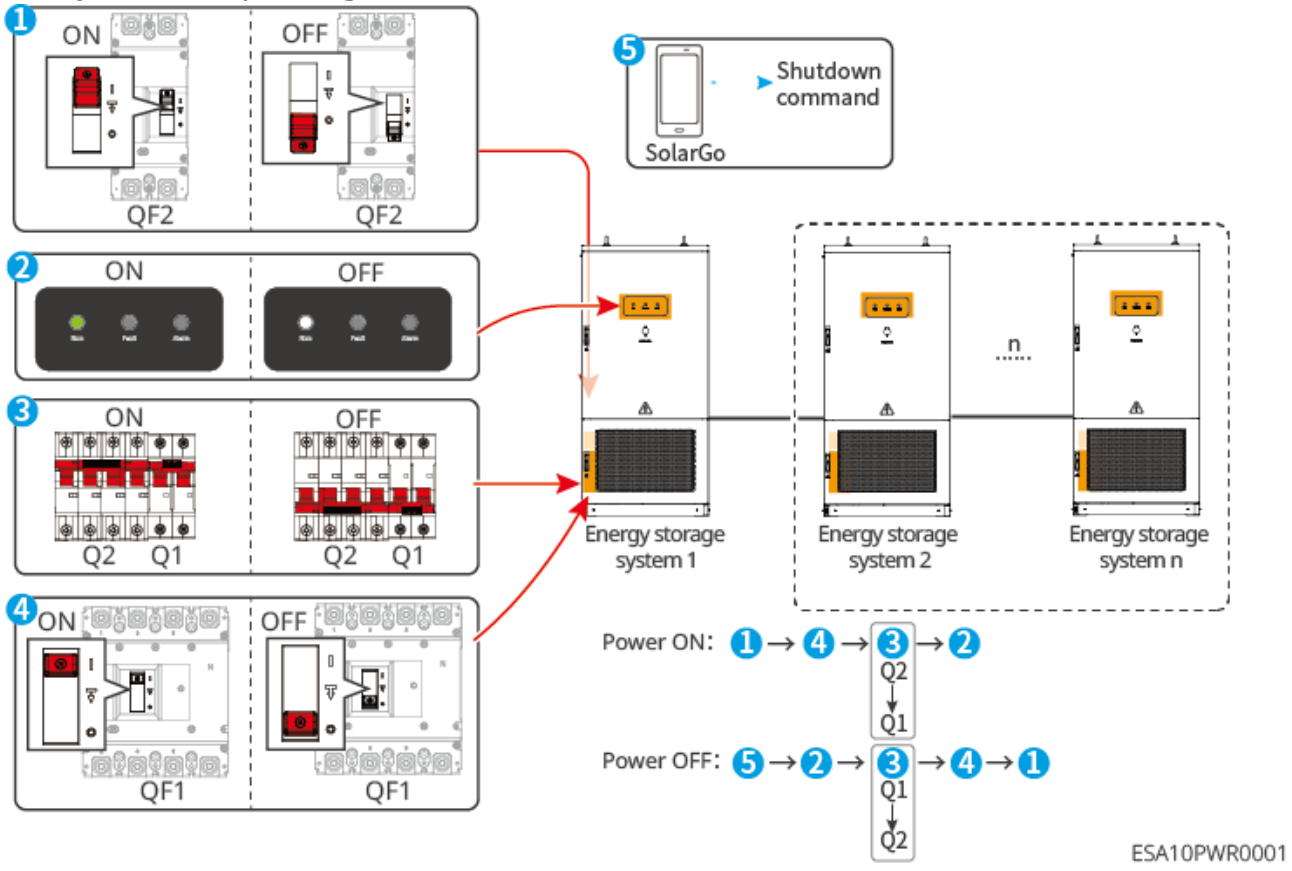


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6 System Commissioning

6.2 Device Power On

Step 1: Close QF2 (DC circuit breaker).
Step 2: Close QF1 (AC molded case circuit breaker).
Step 3: Close Q2 (DC auxiliary switch).
Step 4: Close Q1 (AC auxiliary switch).
Step 5: Close the front door. After the RUN indicator changes from white to green, the system completes grid connection.



7 System Commissioning

7.1 Setting Device Parameters via SolarGo APP

SolarGo APP is a mobile application that can communicate with the energy storage system via Bluetooth. The following are the common functions of SolarGo:

- View device operating data, software version, alarm information, etc.
- Set device grid parameters, communication parameters, safety region, anti-reverse flow, etc.
- Maintain the device.

For detailed functions, please refer to the "SolarGo APP User Manual". The user manual can be obtained from the official website or by scanning the QR code below.

SolarGo APP

SolarGo APP User Manual

7.2 Device Debugging via SEC3000C Embedded Web

The SEC3000C Smart Energy Control Box is a dedicated device for the photovoltaic power generation system monitoring and management platform. It can be used to collect data from devices in the photovoltaic power generation system, such as grid-tied inverters, hybrid inverter, meters, etc., store logs, and send the data to the monitoring and management platform, enabling centralized monitoring, operation, and maintenance of the photovoltaic system.
For detailed functions, please refer to the SEC3000C User Manual.

8 Power Plant Monitoring via SEMS+

SEMS+ is a monitoring platform that can communicate with devices via WiFi/LAN/4G. The following are common functions of SEMS+:

- Manage organization or user information, etc.
- Add and monitor power plant information, etc.
- Maintain equipment.

For detailed functions, please refer to the "SEMS+ User Manual".

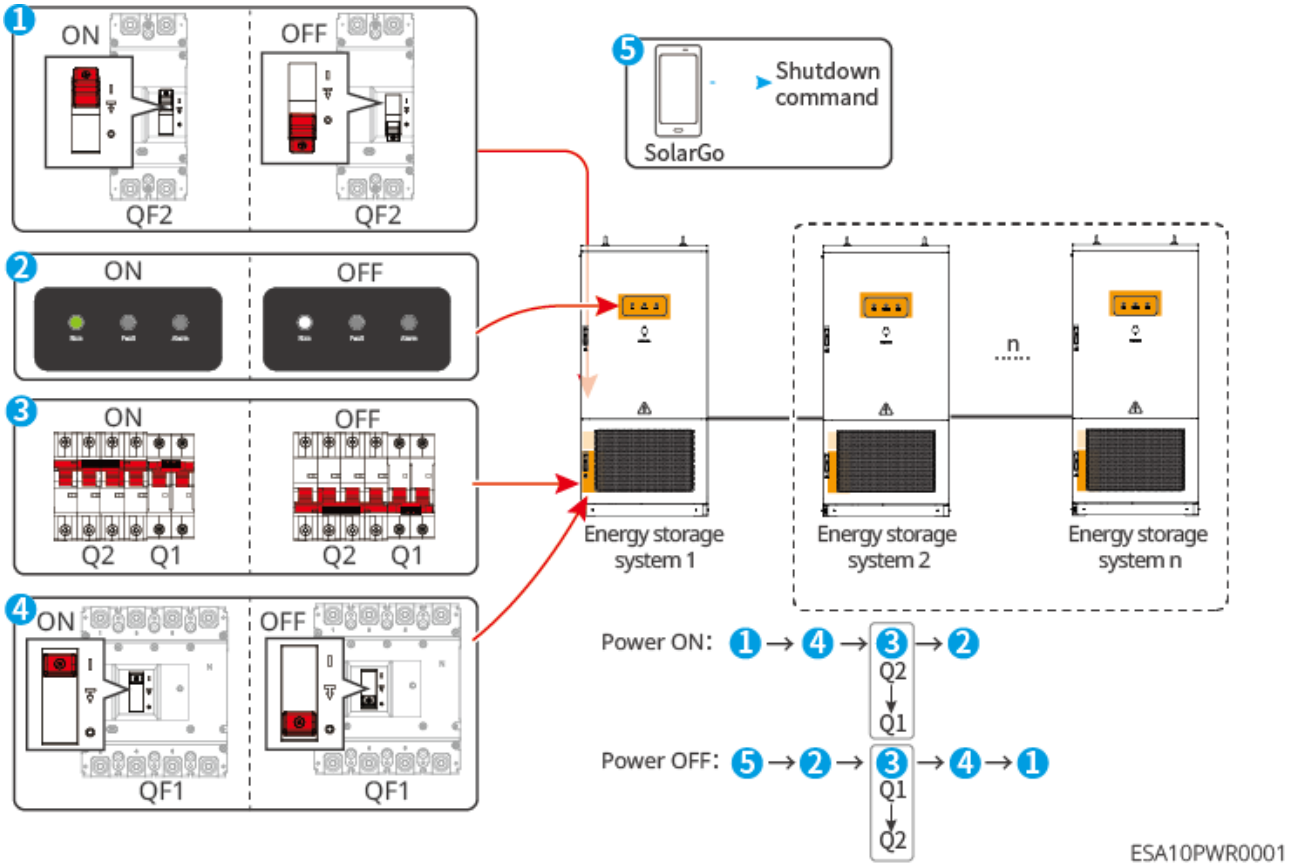
9 Maintenance

9.1 Device Power-Off

⚠DANGER

- When performing operation and maintenance on the energy storage system, please power down the system. Operating the equipment while energized may cause damage to the energy storage system or present an electric shock hazard.
- After the energy storage system is powered off, internal components require a certain amount of time to discharge. Please wait according to the time specified on the label until the equipment is completely discharged.

Step 1: Send a shutdown command to the energy storage system via SolarGo.
Step 2: Observe that the RUN indicator light is solid white.
Step 3: Turn off Q1 (AC auxiliary switch).
Step 4: Turn off Q2 (DC auxiliary switch).
Step 5: Turn off QF1 (AC molded case circuit breaker).
Step 6: Turn off QF2 (DC circuit breaker).



9.2 Removing the Equipment

⚠WARNING

- Before dismantling the equipment, ensure the energy storage system is powered off.
- Wear personal protective equipment.

Step 1: Open the cabinet door.
Step 2: Disconnect all electrical connections of the energy storage system, including: AC cables, Communication cable, MSD switch, battery power cables, and protective ground cables.
Step 3: Unscrew the fixing screws on the base of the energy storage system.
Step 4: Use a hoist or forklift to move and remove the energy storage system from its base.
Step 5: Store the equipment properly. If it will be put into use again later, ensure the storage conditions meet the requirements.

9.3 Disposing of the Equipment

When the equipment can no longer be used and needs to be disposed of, please dispose of the equipment according to the electrical waste disposal requirements of the country/region where the equipment is located. Do not dispose of the equipment as household waste.

9.4 Troubleshooting

Please perform troubleshooting according to the following methods. If the troubleshooting methods cannot help you, please contact the after-sales service center.
When contacting the after-sales service center, please collect the following information to facilitate a quick resolution of the problem.
1. Energy storage system information, such as: serial number, software version, device installation time, fault occurrence time, fault frequency, etc.
2. Device installation environment, such as: weather conditions, etc. It is recommended to provide photos, videos, and other files of the installation environment to assist in problem analysis.
3. Grid conditions.

Fault Type	Fault Prompt	Troubleshooting
BMS Fault	BMU Hardware Failure	Please contact the dealer/our customer service center.
	BCU Hardware Failure	Please contact the dealer/our customer service center.
	Contactor Adhesion Failure	Power down the energy storage system, and power it back on after 5 minutes. If the fault persists, please contact the dealer/our customer service center.

Fault Type	Fault Prompt	Troubleshooting
	BMU Comm Failure	1. Check if the battery pack communication port connector is properly connected or if there is any abnormality. 2. If the fault persists, please contact the dealer/our customer service center.
	Current Sensor Failure	Power down the energy storage system, and power it back on after 5 minutes. If the fault persists, please contact the dealer/our customer service center.
	Insulation Monitoring Device Failure	Power down the energy storage system, and power it back on after 5 minutes. If the fault persists, please contact the dealer/our customer service center.
	Total Voltage Overvoltage Level 1 Alarm	Check if the total voltage exceeds the protection threshold during system charging. If it does, please contact the dealer/our customer service center.
	Total Voltage Undervoltage Level 1 Alarm	Check if the system total voltage is below the protection threshold. If it is, please contact the dealer/our customer service center.
	Cell Overvoltage Level 1 Alarm	Check if the cell voltage exceeds the protection threshold during system operation. If the cell voltage exceeds the threshold during charging, please contact the dealer/our customer service center.
	Cell Undervoltage Level 1 Alarm	Check if the cell voltage is below the protection threshold. If it is, please contact the dealer/our customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Discharge Overcurrent Level 1 Alarm	Check if the discharge current exceeds the protection threshold during system operation. If the discharge current exceeds the threshold during discharging, please contact the dealer/our customer service center.
	Charge Overcurrent Level 1 Alarm	Check if the charge current exceeds the protection threshold during system operation. If the charge current exceeds the threshold during charging, please contact the dealer/our customer service center.
	Discharge Battery Overtemperature Level 1 Alarm	1. Check if the liquid cooling unit refrigeration is operating normally. 2. Check if the battery temperature exceeds the protection threshold during system operation. If it does, please contact the dealer/our customer service center.
	Discharge Battery Undertemperature Level 1 Alarm	1. Check if the liquid cooling unit heating is operating normally. 2. Check if the battery temperature is below the protection threshold during system operation. If it is, please contact the dealer/our customer service center.
	Charge Battery Overtemperature Level 1 Alarm	1. Check if the liquid cooling unit refrigeration is operating normally. 2. Check if the battery temperature exceeds the protection threshold during system operation. If it does, please contact the dealer/our customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Charge Battery Undertemperature Level 1 Alarm	1. Check if the liquid cooling unit heating is operating normally. 2. Check if the battery temperature is below the protection threshold during system operation. If it is, please contact the dealer/our customer service center.
	Low Insulation Resistance Level 1 Alarm	Power down the energy storage system, and power it back on after 5 minutes. If the fault persists, please contact the dealer/our customer service center.
	Terminal Overtemperature Level 1 Alarm	Check if the terminal temperature exceeds the protection threshold during system operation. If it does, please contact the dealer/our customer service center.
	High Cell Voltage Difference Level 1 Alarm	Check if the cell voltage difference exceeds the protection threshold during system operation. If it does, please contact the dealer/our customer service center.
	High Cell Temperature Difference Level 1 Alarm	1. Check if the liquid cooling unit is operating normally. 2. Check if the cell temperature difference exceeds the protection threshold during system operation. If it does, please contact the dealer/our customer service center.
	Low SOC Level 1 Alarm	Charge the system. If the alarm persists when the total voltage is greater than 732V, please contact the dealer/our customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Grid Voltage Abnormal	1. If the grid returns to normal, manually restore the system or let it restore automatically (default is manual) according to the energy storage system's recovery settings. 2. Ensure the grid voltage and frequency match the specifications. 3. Verify that the N-line and PE-line connections are secure.
	Grid Frequency Abnormal	1. If the grid returns to normal, manually restore the system or let it restore automatically (default is manual) according to the energy storage system's recovery settings.
	Grid Loss Fault	2. Ensure the grid voltage and frequency match the specifications.
PCS Fault	Grid Overvoltage Protection	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, modify the grid overvoltage protection point after obtaining consent from the local power operator. 3. If it cannot recover for a long time, check if the AC-side circuit breaker and output cables are properly connected.

Fault Type	Fault Prompt	Troubleshooting
	Grid Undervoltage Protection	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, modify the grid undervoltage protection point after obtaining consent from the local power operator. 3. If it cannot recover for a long time, check if the AC-side circuit breaker and output cables are properly connected.
	Grid Overfrequency	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator. If yes, modify the grid overfrequency protection point after obtaining consent from the local power operator.

Fault Type	Fault Prompt	Troubleshooting
	Grid Underfrequency	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator. If yes, modify the grid underfrequency protection point after obtaining consent from the local power operator.
	Grid Frequency Instability	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid frequency is within the allowable range. If not, contact the local power operator.
	Grid Phase Instability	
	HVRT Undervoltage	1. If it occurs occasionally, it might be due to temporary grid abnormality. The inverter will resume normal operation automatically once the grid is detected normal, no manual intervention is needed. 2. If it occurs frequently, check if the grid voltage and frequency are within the allowable range. If not, contact the local power operator.
	HVRT Overvoltage	
	Voltage Waveform Detection Fault	
	Grid Phase Loss	
	Grid Voltage Imbalance	

Fault Type	Fault Prompt	Troubleshooting
	Grid Phase Sequence Failure	1. Check if the inverter and grid wiring are in positive sequence. The fault will disappear automatically after correct wiring (e.g., swapping any two phase wires). 2. If the fault persists with correct wiring, please contact the dealer/our customer service center.
	Low Insulation Resistance	1. Check the impedance of the battery cluster to protective earth. If the impedance is low, disconnect the MSD of each battery pack and check for abnormalities in the system DC connectors. 2. If the impedance remains low, please contact the dealer/our customer service center.
	Hardware Export Limit Protection	1. If it is caused by an external fault, the inverter will resume normal operation automatically after the fault disappears, no manual intervention is needed. 2. If this alarm occurs frequently, affecting normal power plant operation, please contact the dealer/our customer service center.
	Internal Comm Loss	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer/our customer service center.
	AC HCT check Abnormal	
	AC HCT Failure	
	Relay Check Abnormal	
	Relay Failure	

Fault Type	Fault Prompt	Troubleshooting
	Cabinet Overtemperature	1. Check if the ventilation at the inverter installation location is adequate and if the ambient temperature exceeds the maximum allowable range. 2. If ventilation is poor or ambient temperature is too high, improve the ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the dealer/our customer service center.
	INV Module Overtemperature	
	Boost Module Overtemperature	
	AC Capacitor Overtemperature	
	Bus Overvoltage	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer/our customer service center.
	P-Bus Overvoltage	
	N-Bus Overvoltage	
	BUS Overvoltage (Slave CPU1)	
	PBUS Overvoltage (Slave CPU1)	
	NBUS Overvoltage (Slave CPU1)	
	BUS Overvoltage (Slave CPU2)	
	PBUS Overvoltage (Slave CPU2)	
	NBUS Overvoltage (Slave CPU2)	
	PBUS Overvoltage(CPLD)	

Fault Type	Fault Prompt	Troubleshooting
	NBUS Overvoltage(CPLD)	
	MOS Continuous Overvoltage	
	Bus Short Circuit	Please contact the dealer/our customer service center.
	Bus Sample Abnormal	Disconnect the AC output side switch and the DC input side switch. After 5 minutes, close the AC output side switch and the DC input side switch. If the fault persists, please contact the dealer/our customer service center.
	BAT1 Precharge Failure	Check if the precharge circuit is intact, and if the battery voltage matches the bus voltage immediately after the battery is powered on. If not, please contact the dealer/our customer service center.
	Battery1 Relay Failure	After powering on the battery, check if the battery relay operates and if a closing sound is heard. If it does not operate, please contact the dealer/our customer service center.
	INV Software Overcurrent	Occasional occurrence requires no action; if this alarm occurs frequently, please contact the dealer/our customer service center.
	Phase R INV Hardware Overcurrent	
	phase S INV Hardware Overcurrent	

Fault Type	Fault Prompt	Troubleshooting
	Phase T INV Hardware Overcurrent	
	Phase A Software Overcurrent	
	Phase B Software Overcurrent	
	Phase C Software Overcurrent	
	AC SPD Failure	Please contact the dealer/our customer service center.
Liquid Cooling Unit	Outlet High Temperature	Check if the liquid cooling unit compressor is operating normally. If it is, please contact the dealer/our customer service center.
	Outlet Low Temperature	Check if the liquid cooling unit PTC is operating normally. If it is, please contact the dealer/our customer service center.
	Outlet Temperature Sensor Fault	Disconnect the AC circuit breaker, and re-close it after 1 minute. If the fault is not cleared, please contact the dealer/our customer service center.
	Inverter Communication Fault	
	System High Pressure Lockout	1. If it occurs occasionally, it might be due to temporary grid abnormality. Restart the unit. 2. If it occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, modify the grid high voltage protection point after obtaining consent from the local power operator.

Fault Type	Fault Prompt	Troubleshooting
	System Low Pressure Lockout	1. If it occurs occasionally, it might be due to temporary grid abnormality. Restart the unit. 2. If it occurs frequently, check if the grid voltage is within the allowable range. If not, contact the local power operator. If yes, modify the grid low voltage protection point after obtaining consent from the local power operator.
	Exhaust Over-temperature Lockout	1. If it occurs occasionally, it might be due to temporary unit abnormality. Restart the unit. 2. If it occurs frequently, please contact the dealer/our customer service center.
	Inverter Overcurrent Lockout	
	Inverter Overtemperature Lockout	
	Inverter Overvoltage Lockout	
	Inverter Undervoltage Lockout	
	Inverter Phase Loss Lockout	
	Water Refill Alarm	Please refill the coolant.
	System High Pressure Alarm	1. If it occurs occasionally, it might be due to temporary unit abnormality. Restart the unit. 2. If it occurs frequently, please contact the dealer/our customer service center.
	Outlet High Pressure Alarm	
	CT Not Connected	Check CT wiring

Fault Type	Fault Prompt	Troubleshooting
EMS	CT Reversed	
	Smoke Alarm	1. If it occurs occasionally, it might be due to temporary sensor abnormality. Restart the system. 2. If it occurs frequently, please contact the dealer/our customer service center.
	Water Leakage Alarm	Power down and check if there is water inside the cabinet. If not, please contact the dealer/our customer service center.
	PACK Fire Alarm	Prepare for firefighting and contact the dealer/our customer service center.
	Cluster-level Fire Alarm	Prepare for firefighting and contact the dealer/our customer service center.

9.5 Routine Maintenance

⚠DANGER

- When performing operation and maintenance on the energy storage system, please power it down. Operating live equipment may cause damage to the energy storage system or pose an electric shock hazard.
- If exposed copper wires inside a conductor are found, do not touch them. Please contact after-sales personnel. Disassembly by untrained personnel is prohibited.

NOTICE

For detailed maintenance operations, please refer to the ESA Series 261kWh Commercial and Industrial Energy Storage System Maintenance Manual.

Maintenance Content	Maintenance Method	Maintenance Cycle
System Appearance	Appearance is clean, and indicator lights are on.	Once every six months to once a year
WiFi Antenna	Check if the antenna is detached, appearance is normal, and functionality is normal.	Once every six months to once a year
Liquid Cooling Unit Filter Screen	Observe if there is dust accumulation, foreign object blockage, or damage on the filter screen. If present, rinse with clean water, air dry in a cool place, and reinstall the cleaned filter in its original position.	Once every six months to once a year
MSD Switch, Molded Case Switch, Auxiliary Power Switch, Emergency Stop Switch	Open and close the switch three times consecutively to ensure normal switch function.	Once a year
Electrical Connections	Check for loose electrical connections, damaged cable sheathing, or exposed copper wires.	Once every six months to once a year
Liquid Cooling System	Check if the sealing of the equipment cable entry holes meets requirements. If gaps are too large or unsealed, reseal them.	Once a year

Maintenance Content	Maintenance Method	Maintenance Cycle
Fire Protection System (Aerosol)	Conduct a comprehensive inspection and maintenance of the aerosol temperature-sensitive auto-activation fire extinguishing device: 1. Check the aerosol fire extinguishing device for physical damage. 2. Observe the smoke detector and temperature detector operation indicator lights to check if sensors are functioning normally. 3. Check mounting brackets and related hardware for loose, damaged, or broken components.	Once a year
Air Inlet/Outlet Dust Removal Maintenance	Check the air inlet/outlet for foreign objects and dust.	Once every six months
Battery Charge/Discharge	Perform charge/discharge cycles	Once every six months
Dehumidifier	Check if the temperature and humidity display on the screen is normal. Check if the fan operates normally during dehumidifier operation (there should be sound when the fan is running).	Once a year

Maintenance Content	Maintenance Method	Maintenance Cycle
Liquid Cooling Unit Fan Maintenance	1. Observe the fan for dust; ensure the air vent is not blocked by foreign objects. 2. Check the fan blades for damage; ensure the fan rotates smoothly without abnormal noise.	Once every six months
Liquid Cooling Unit Condenser Maintenance	1. Observe the condenser for dust and foreign object blockage. 2. Check the fins for severe bending or deformation .	Once every six months
Coolant Maintenance	1. Check if the concentration meets requirements. 2. Check if the pH value and electrolyte concentrations meet requirements. 3. Observe for the presence of scale, sediment, algae, etc.	Once every six months
Unit Piping Maintenance	1. Observe the piping exterior for damage, deformation, and corrosion. 2. Check pipe fixtures/connections for looseness. 3. Check valves for failure or damage. If damaged, drain the coolant and replace the corresponding valve.	Once every six months
Coolant Replacement	Refer to the maintenance manual.	Once every 5 years

10 Technical Data

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G11
Battery Data		
Cell Type	LFP ($LiFePO_4$)	
Cell Capacity (Ah)	314	
Module Nominal Energy (kWh)	52.25	
Module Configuration	1P52S	
Module Weight (kg)	348±2	335±8
Number of Packs	5	
Rack Nominal Energy (kWh)	261.25	
Rack Usable Energy (kWh)	261.25	
Nominal Voltage (V)	832	
Operating Voltage Range (V)	676~936	
Max Continuous Charge/Discharge Current（A）	188	
Max. Charge/ Discharge Current (A)	198.5	
Max. Charge/ Discharge Rate	0.5P	
Depth of Discharge	90%~100%（90%Recommended）	
AC Output Data (On-grid)		

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G11
Nominal Output Power (kW)	125	
Max. Output Power (kW)	137.5@400V AC 130.6@380V AC	
Nominal Apparent Power(kVA)	125	
Nominal Output Apparent Power to Grid (kVA)	125	
Nominal Input Apparent Power from Grid (kVA)	125	
Max. Apparent Power (kVA)	137.5@400V AC 130.6@380V AC	
Max. Output Apparent Power to Grid (kVA)	137.5@400V AC 130.6@380V AC	
Max. Input Apparent Power from Grid (kVA)	137.5@400V AC 130.6@380V AC	
Nominal Output Voltage (V)	400/380, 3L/N/PE	
Output Voltage Range (V)	340~440/323~418	
Nominal Output Frequency (Hz)	50/60	
AC Grid Frequency Range (Hz)	47.5~52.5 /57.5~62.5	
Max. AC Output Current (A)	198.5	
Max. AC Current Output to Grid (A)	198.5	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G11
Max. AC Current from Grid (A)	198.5	
Nominal Output Current (A)	180.4@400V AC 189.9@380V AC	
Power Factor	~1 (0.8lag to 0.8lead)	
Output THDi (@Linear Load)	<3%	
AC Output Data (Off-grid)		
Nominal Output Power (kW)	125	
Max. Output Power (kW)	137.5@400V AC 130.6@380V AC	
Nominal Apparent Power(kVA)	125	
Nominal Output Apparent Power to Grid (kVA)	125	
Nominal Input Apparent Power from Grid (kVA)	125	
Max. Apparent Power (kVA)	137.5@400V AC 130.6@380V AC	
Max. Output Apparent Power to Grid (kVA)	137.5@400V AC 130.6@380V AC	
Max. Input Apparent Power from Grid (kVA)	137.5@400V AC 130.6@380V AC	
Nominal Output Voltage (V)	400/380, 3L/N/PE	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G11
Output Voltage Range (V)	340~440/323~418	
Nominal Output Frequency (Hz)	50/60	
AC Grid Frequency Range (Hz)	47.5~52.5 /57.5~62.5	
Max. AC Output Current (A)	198.5	
Max. AC Current Output to Grid (A)	198.5	
Max. AC Current from Grid (A)	198.5	
Nominal Output Current (A)	180.4@400V AC 189.9@380V AC	
Power Factor	~1 (0.8lag to 0.8lead)	
Output THDi (@Linear Load)	<3%	
Efficiency		
Max. PCS Efficiency	0.986	
Max. System Efficiency*1	0.92	
Protection		
Battery Reverse Polarity Protection	Integrated	
Anti-islanding Protection	Integrated	
AC Overcurrent Protection	Integrated	
AC Short Circuit Protection	Integrated	
AC Surge Protection	Type II	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G11
General Data		
Operation temperature range (℃)	-25~+55	
Derating temperature (℃)	45	
Storage Temperature (℃)	-20~+45（One Month） 0~+35（One Year）	
Relative Humidity	10 ~ 95%	
Max. Operating Altitude (m)	4000（2000 derating）	
Cooling Method	Pack : Liquid Cooling PCS : Smart Fan Cooling	
User Interface	LED，WLAN+APP	
Communication Protocol	Modbus TCP，Modbus RTU	
Weight (kg)	2580	
Dimension（W×H×D mm)	1050*2250*1400	
Noise Emission (dB)	≤70	
Topology	Non-isolated	
Ingress Protection Rating	IP54	
Configuration of safety	aerosol+water-based fire suppression，explosion-proof fan+ explosion-proof plates (optional)	
Anti-Corrosion	C4 (C5 option)	
Charge/ Discharge Switching Time	< 60ms	

Contact Details

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