

V1.3-2025-11-20

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

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

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

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1 About This Manual

1.1 Overview

This document describes the product information, installation, electrical connection, commissioning, troubleshooting, and maintenance of the inverter. Read through this manual before installing and operating the products to understand product safety information and familiarize yourself with functions and features of the product. This manual is subject to update without notice. For more product details and latest documents, visit <https://www.goodwe.com>.

1.2 Applicable Model

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

Product Model	Nominal Output Power	Nominal Output Voltage	Usable energy (kWh)
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

1.3 Symbol Definition

DANGER

A situation with high potential danger, which will result in death or serious injury if not avoided.

WARNING

A situation with moderate potential danger, which may result in death or serious injury if not avoided.

 CAUTION

A situation with low potential danger, which may result in moderate or minor injury to personnel if not avoided.

NOTICE

Highlights key information and supplements the texts. Or some skills and methods to solve product-related problems to save time.

2 Safety Precautions

Please strictly follow these safety instructions in the user manual during the operation.

WARNING

The products are designed and tested strictly to comply with related safety rules. Follow all the safety instructions and cautions before any operations. Improper operation might cause personal injury or property damage as the products are electrical equipment.

2.1 General Safety

NOTICE

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

2.2 Personal Requirements

NOTICE

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

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

2.3 System Safety

 DANGER

- Disconnect the upstream and downstream switches to power off the equipment before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Install a breaker at the voltage input side of the equipment to prevent personal injury or equipment damage caused by energized electrical work.
- When transporting and handling the equipment, comply with local laws, regulations and industry standards. Rough handling may cause short circuits or damage to the battery packs in the system, which could lead to electrolyte leakage, fire, explosion, etc.
- The energy storage system consists of heavy equipment. Please use appropriate tools and take protective measures when installing and maintaining the system. Improper operations will cause personal injuries or equipment damage.
- There is lethal high voltage inside the equipment, posing an electric shock hazard. Do not touch it at will.
- Non-professionals are not allowed to open the cabinet door and touch internal components without permission; otherwise, there may be a risk of electric shock.
- When the equipment is damaged or faulty, there may be risks of electric shock and fire. Ensure the equipment is undamaged and fault-free before operation.
- When the equipment triggers a ground fault alarm, it may have lethal high voltage, posing an electric shock hazard.
- Before operating the equipment, ensure the system is reliably grounded and relevant protective measures are taken. Do not work with power on. Otherwise an electric shock may occur.
- During the operation of the equipment, do not open the cabinet door or touch any wiring terminals or components. Otherwise, there is a risk of electric shock.
- Before installation, wiring or maintenance, ensure all switches of the equipment are disconnected.
- Do not disassemble or modify any part of the equipment without official authorization from the equipment manufacturer. The manufacturer shall not be liable for equipment damage if other connectors are used.

WARNING

- Do not impact, pull, drag or step on the equipment, pierce the equipment shell with sharp objects, or put irrelevant items into any part of the cabinet.
- When the temperature inside the equipment exceeds 160°C, the battery is at risk of fire, which will trigger the automatic fire fighting system.
- The equipment is equipped with an automatic fire fighting system. Do not trigger the fire switch at will in non-emergency situations.
- Please select cables that meet the requirements of local laws and regulations.
- Ensure that the voltage and frequency of the grid-connected access point comply with the grid-connected specifications of the energy storage system.
- Additional protective devices like circuit breakers or fuses are recommended on the AC side.
- Do not place the equipment in a high-temperature environment and ensure there are no heat sources near the equipment.

2.3.1 Battery Safety

WARNING

- There is high voltage inside the battery. Before operating the equipment in the system, ensure the equipment is powered off to avoid electric shock hazards.
- Do not subject the battery to vibration, impact, pulling or extrusion; otherwise, it may cause battery damage or fire risk.
- When storing the battery for a long time, please charge the battery pack regularly; otherwise, it may cause capacity loss or irreversible damage to the battery pack.
- Do not charge or discharge the battery with current exceeding the rated charge-discharge current.
- Do not use the battery or high-voltage control box if there are obvious defects, cracks, damage or other abnormalities. Otherwise, it may cause personal danger.
- Battery current may be affected by some factors, such as temperature, humidity, weather conditions, etc., which may lead to battery current limitation and affect load-carrying capacity.
- If the battery needs to be replaced, please contact the after-sales service center.
- If the battery fails to start, please contact the after-sales service center as soon as possible; otherwise, the battery may be permanently damaged.

2.3.2 Emergency Measures

WARNING

If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive. It will cause skin irritation or chemical burn to the operator. Anyone contact the leaked substance accidentally has to do as following:

- Breath in the leaked substance: Evacuate from the polluted area, and seek immediate medical assistance.
- Eye contact: Rinse your eyes for at least 15 minutes with clean water and seek immediate medical assistance.
- Skin contact: Thoroughly wash the touch area with soap and clean water, and seek immediate medical assistance.
- Ingestion: Induce vomiting, and seek immediate medical assistance.

2.3.3 Fire Extinguishing

WARNING

- The battery may explode when the ambient temperature exceeds Poisonous and hazardous gas may be released if the battery is on fire.
- In case of fire: Call fire emergency number immediately, notify fire personnel, and provide product info.
- Fire outbreak: Disconnect upper/lower-level switches promptly (ensure personnel safety first).
- The fire cannot be put out by ABC dry powder extinguisher. Firefighters are required to wear full protective clothing and self-contained breathing apparatus.

2.4 Safety Symbols and Certification Marks

DANGER

- All labels and warning marks should be visible after the installation. Do not cover, scrawl, or damage any label on the equipment.
- The following cabinet warning label descriptions are for reference only. Please refer to the actual label on the device for usage instructions.

No.	Symbol	Description
1		Potential risks exist during the operation of the devices. Wear proper PPE during operations.
2		High voltage hazard. High voltage exist during the operation of the devices. Disconnect all incoming power and turn off the product before working on it.
3		High-temperature hazard. Do not touch the product under operation to avoid being burnt.
4		Operate the equipment properly to avoid explosion.
5		Batteries contain flammable materials, beware of fire.
6		The equipment contains corrosive electrolytes. In case of a leak in the equipment, avoid contact the leaked liquid or gas.
7		Delayed discharge. Wait 5 minutes after power off until the components are completely discharged.
8		Install the equipment away from fire sources.
9		Keep away from children.
10		Do not lift the equipment.
11		Never disassemble this battery unit.
12		Read through the user manual before any operations.

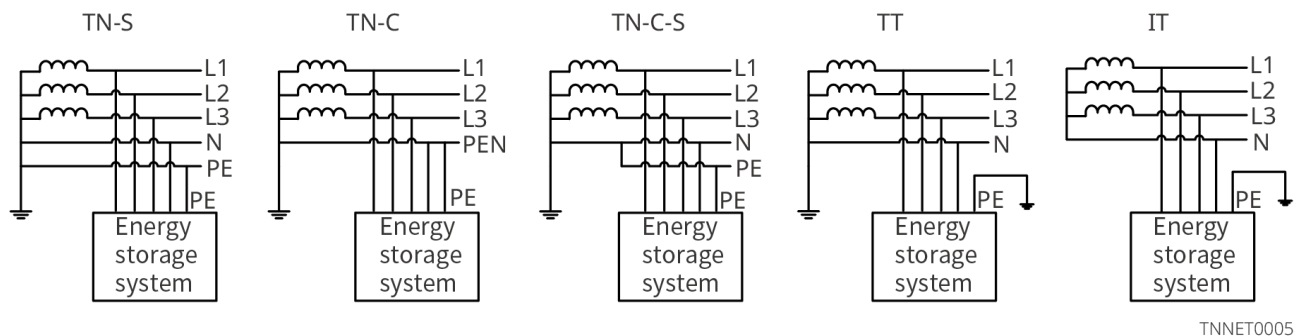
No.	Symbol	Description
		
13		Wear PPE during installation, operation and maintaining.
14		Do not power off under load, as it may cause dangers such as electric shock/fire.
15		Do not dispose of the System as household waste. Deal with it in compliance with local laws and regulations, or send it back to the manufacturer.
16		Do not step on.
17		Grounding point of PE cables.
18		Recycle regeneration mark. The equipment shall be placed in the correct location and recycled in accordance with local environmental regulations.
19		CE Mark.

3 Product Introduction

3.1 Product Overview

The ESA Series 125kW/215kWh commercial and industrial energy storage system is a full-stack self-developed product, featuring high energy density, high power density, and high-level 3S integration. This energy storage system integrates a 314Ah liquid-cooled PACK and a 125kW intelligent air-cooled PCS. It is equipped with dual fire protection (PACK-level and system-level) and supports connection with STS to realize grid-connected/off-grid switching.

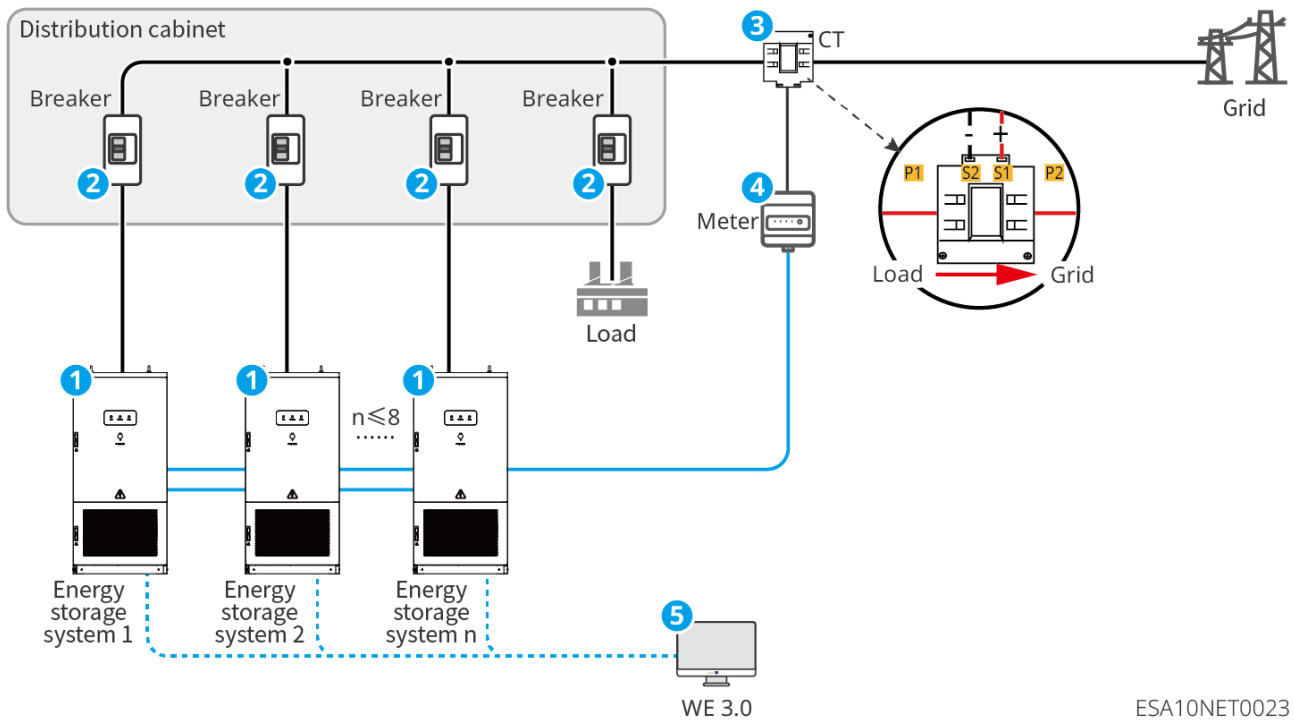
Support Grid Type



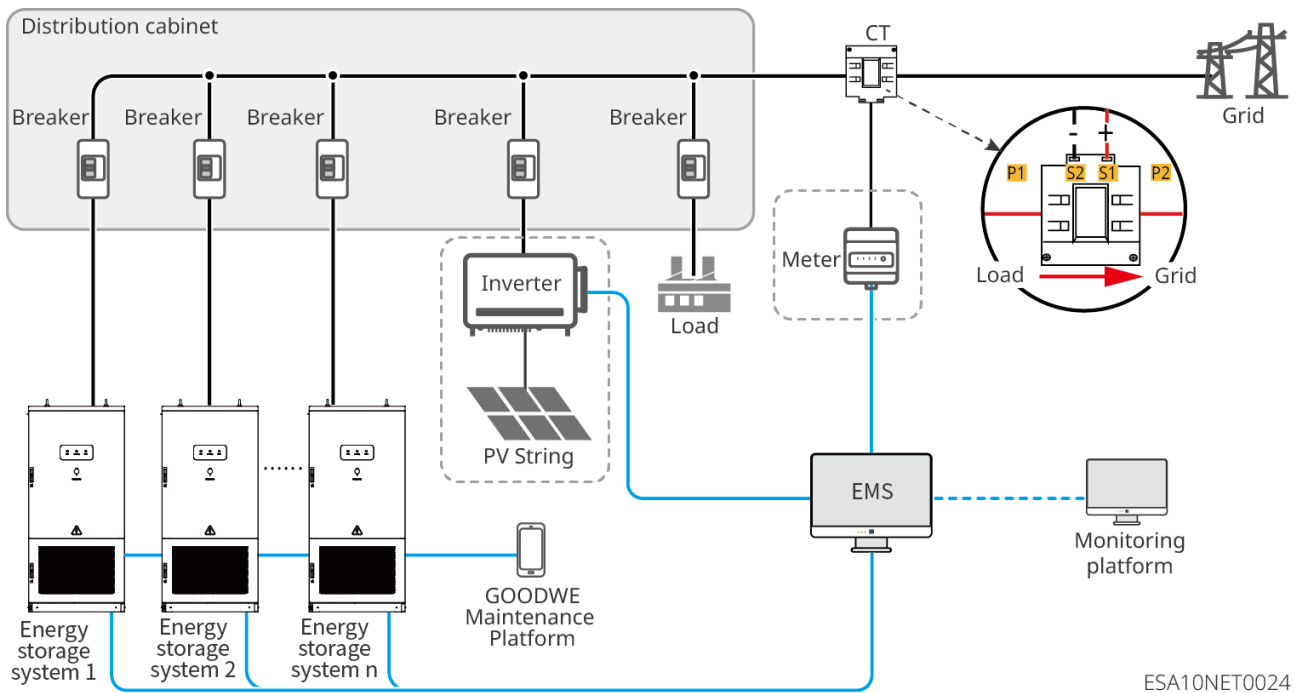
3.2 Application Scenario

3.2.1 On-grid Scenarios

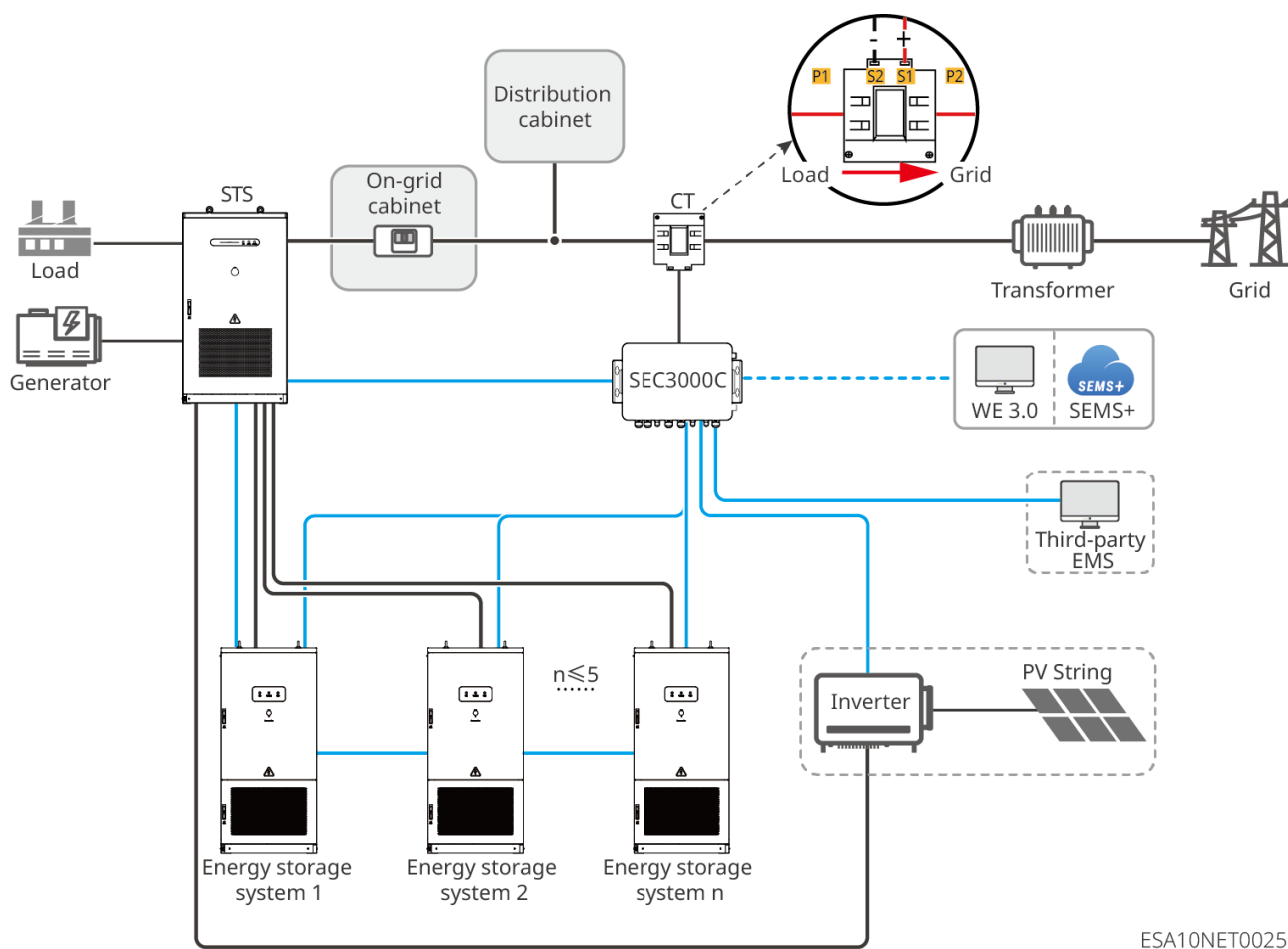
- Master-Slave Parallel Operation(Only for China)



• Parallel Operation via EMS

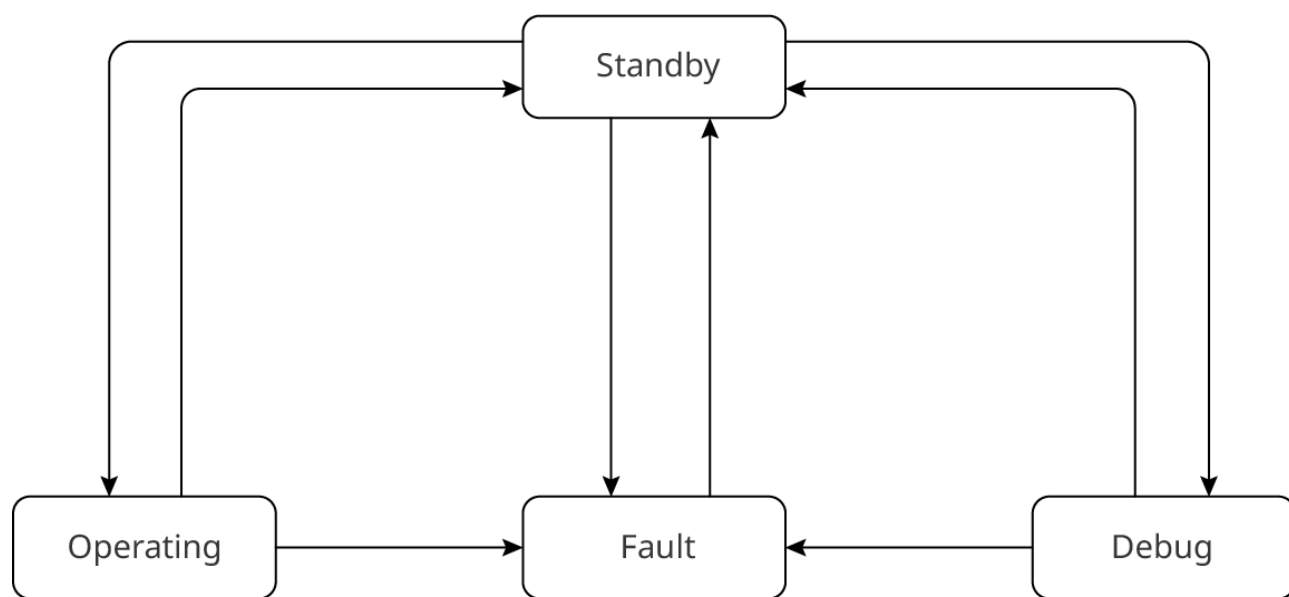


3.2.2 On/Off-grid Switching Scenario



ESA10NET0025

3.3 System Operation Status

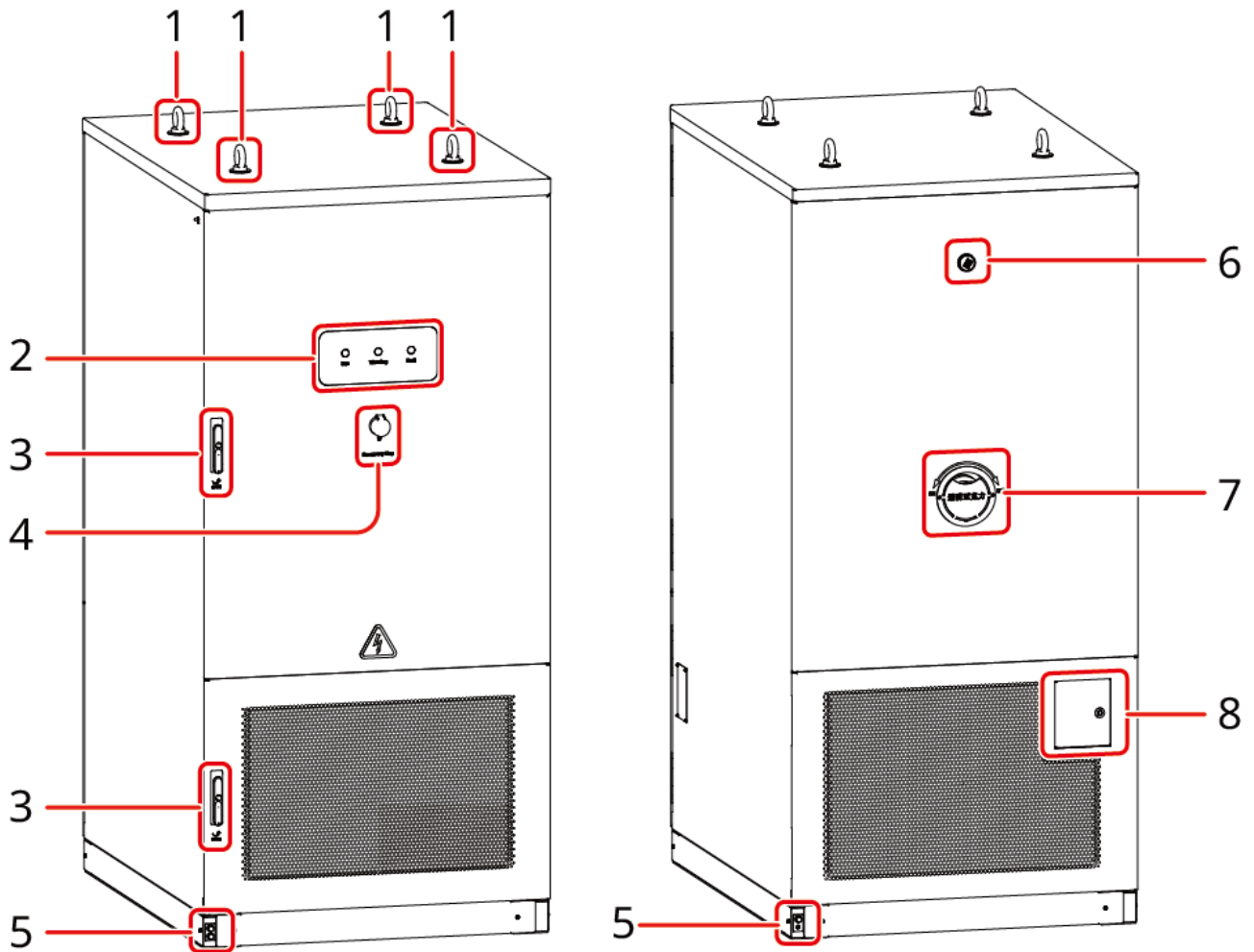


ESA10DSC0007

No.	Name	Description
1	Standby status	After energy storage system is started, it performs self-check and enters the initialized state. • If the operation status is manually enabled, energy storage system starts running. • If the self-check is abnormal, it will enter the fault state. • If debugging is enabled, it will enter the debugging state.
2	Operating status	Energy storage system normal operation. • If the device operation status is manually shut down, it will enter the Standby state. • If a fault alarm is detected, the system enters the fault state.
3	Fault status	If fault is detected, energy storage system enters the fault state. Once fault is cleared, it transitions to the Standby state.
4	Debug statusStatus	Energy storage system is in the debug state and not operating normally. • If the debug status is turned off, it will enter the Standby status. • If a fault alarm is detected, the system enters the fault state.

3.4 Appearance Description

3.4.1 Appearance Introduction

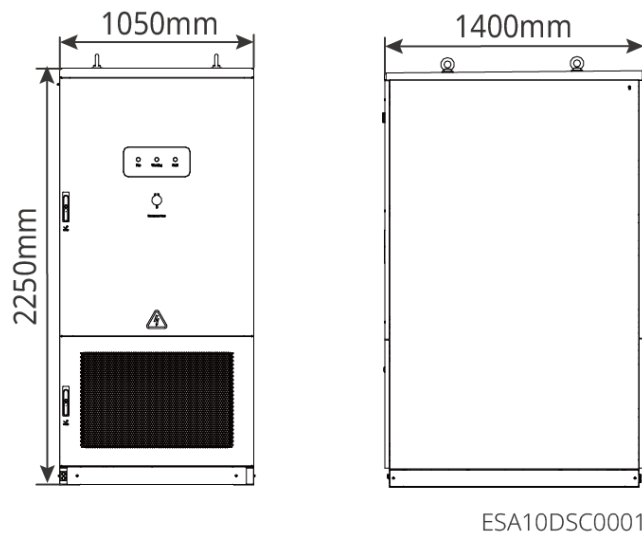


ESA10DSC0003

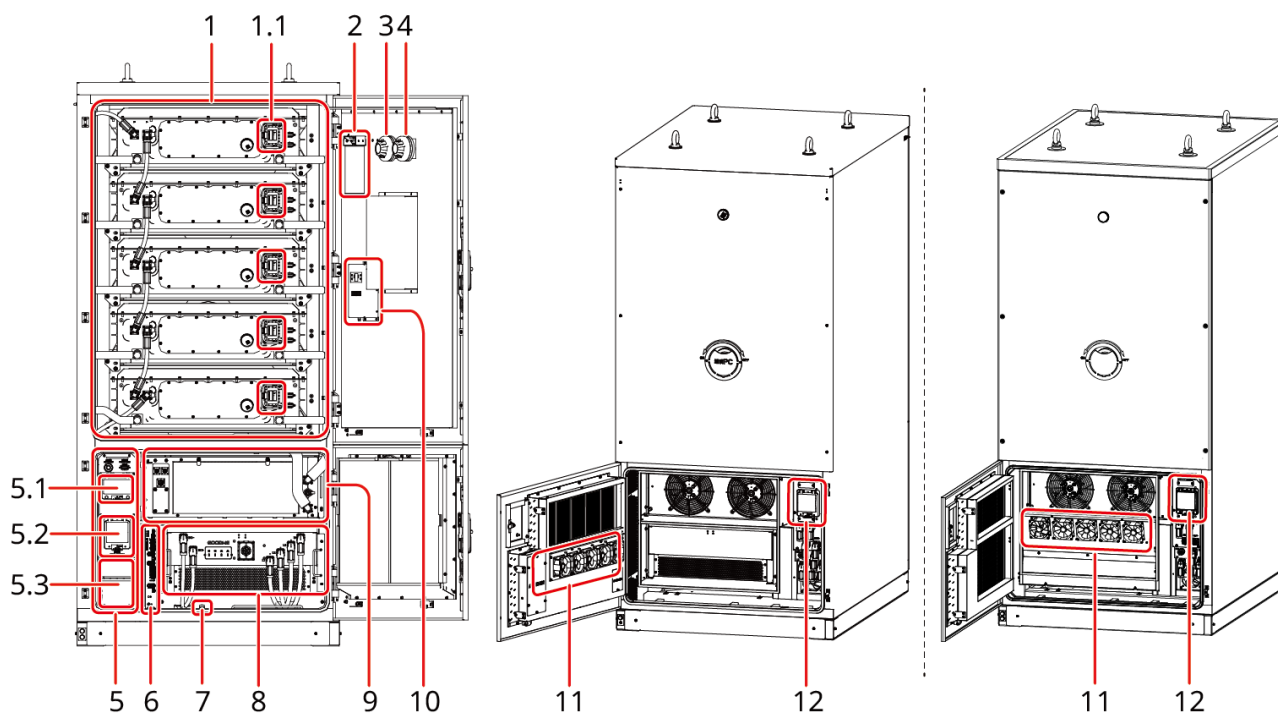
No.	Name	Function
1	Suspension Ring	Use Lifting lugs to hoist the energy storage system.
2	Indicator	Indicates the operating status of the energy storage system.
3	Back door lock	Please use the key to open the cabinet door lock; close and lock the cabinet door when no operation inside the equipment is required.
4	Emergency stop button	In case of an emergency with the energy storage system, this button can be used to stop the system operation.

No.	Name	Function
5	Grounding Terminal	Connect system enclosure protective ground wire.
6	Explosion-Proof Valve	Automatically releases excessive pressure on abnormal rise to prevent explosion.
7	Water Fire-Fighting Interface	Connect fire hydrant here for thermal runaway fire extinguishing.
8	DC Circuit Breaker Operation Compartment	Contains DC circuit breaker for controlling DC power output.

3.4.2 Dimension Description



3.4.3 Component Introduction



ESA10DSC0004

No.	Name	Function
1	Battery system	Store and release electrical energy
1.1	MSD Switch	Disconnect or close the high-voltage circuit of the battery pack.
2	Aerosol fire extinguishing device	Monitoring the fire signal in the cabinet, implement fire extinguishing and feed back the signal to the local controller via DI signal.
3	Smoke Detector	

No.	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, which shuts down the system and notifies personnel for timely handling. After the smoke detector alarm is triggered, if the fire spreads, the heat detector detects high temperature and outputs an electrical signal to activate the fire extinguishing device for fire extinguishing. It simultaneously sends a feedback signal to the local controller, prompting the system to shut down and notifying personnel for timely handling.
5	Power Distribution Module	Wiring area, including auxiliary power circuit breaker and molded case circuit breaker.
5.1	Auxiliary Power Circuit Breaker	Manually disconnect or close the auxiliary power supply of the energy storage system.
5.2	Molded Case Circuit Breaker	Control the on-off of the circuit between the integrated energy storage cabinet and the power grid/load.
5.3	AC Wiring Port	Connecting the on-grid AC cables.
6	Local Control Module	Responsible for energy management in the energy storage system and information interaction with the outside world.
7	Power Access Control Switch	It is opened automatically after the door is opened to ensure that the energy storage system is powered off..
8	Power Conversion System (PCS)	Realize the power conversion between the power grid and the battery.
9	Liquid Cooling Unit	Used to maintain the temperature of the battery system within an appropriate range.

No.	Name	Function
10	Dehumidifier	Used for dehumidifying the interior of the equipment.
11	Fan	Used for heat dissipation of the PCS.
12	DC Circuit Breaker	Used to control the DC power output of the energy storage system.

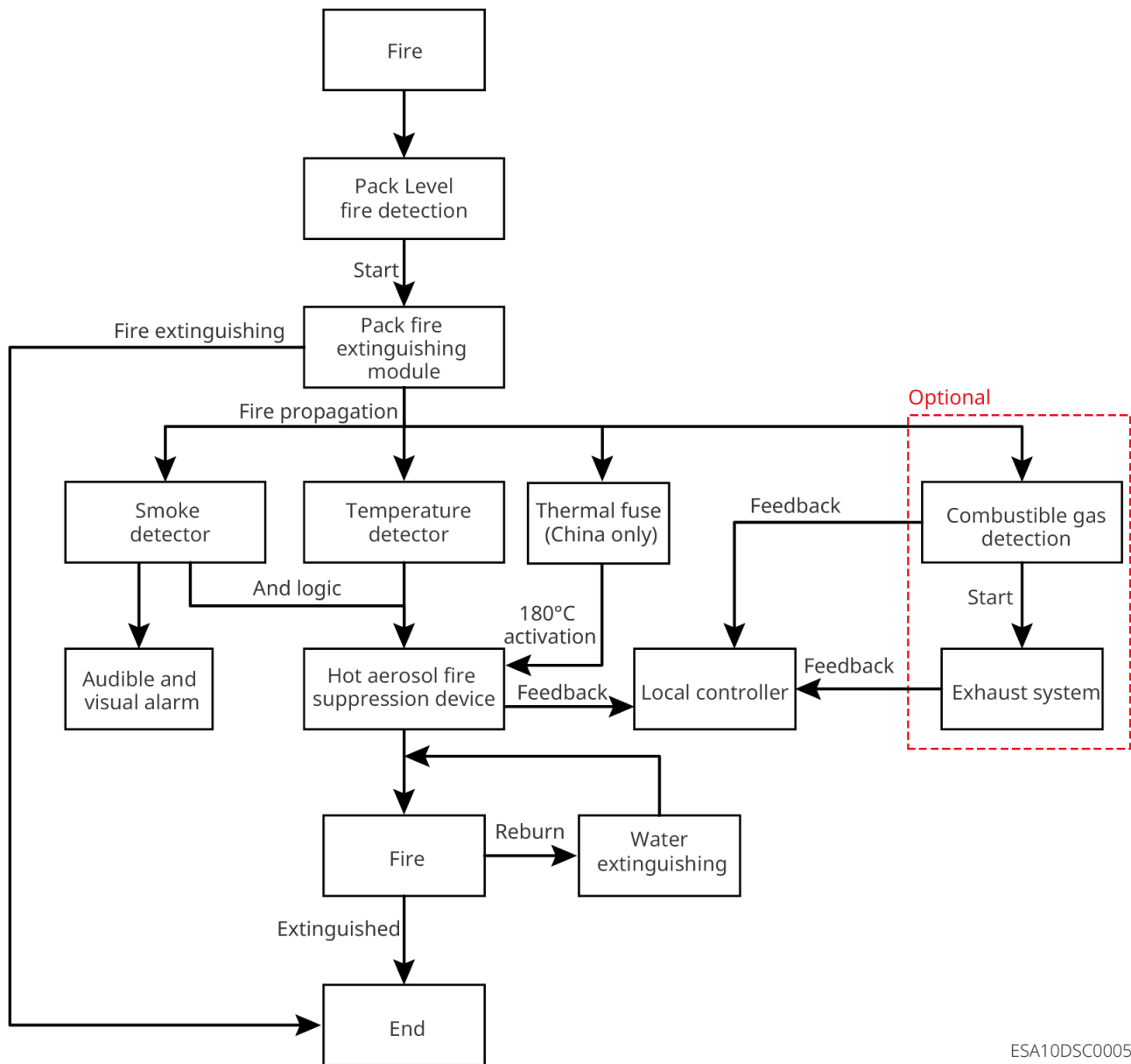
3.4.4 Indicators Introduction

Indicators	Description
 Run	White light steady on: Equipment is energized and in shutdown/self-test status.
	White light off: Device is not power on.
	Green light steady on: The device is in on-grid state.
 Warning	Steady On: The device has an alarm.
	Off: The equipment is operating normally without any alarms, or the equipment is not power on.
 Fault	Steady on with buzzing sound: Severe fault in the equipment.
	Off without buzzing sound: The device is normal, or not power on.

3.5 Fire Protection System

When a fire occurs due to thermal runaway of battery cells, the PACK-level protection can quickly detect the fire via the thermal sensing wire, activate the fire-fighting module, and implement primary fire suppression. If the fire spreads from the PACK, the cluster-level protection can detect the fire through the smoke detector to trigger a smoke alarm. As the temperature rises rapidly, the temperature sensor will detect the fire, activate the fire suppression device, and implement secondary fire suppression. Meanwhile, it will synchronously output a feedback signal to the local controller to notify personnel for timely handling. If the automatic fire suppression system fails to prevent the fire from rekindling, emergency fire-fighting water can be connected for emergency disposal to avoid serious consequences such as

deflagration and fire escalation.



ESA10DSC0005

4 Check and Storage

4.1 Check Before Receiving

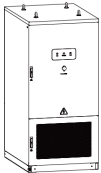
Check the following items before accept:

- Check the outer packing box for damage, such as deformation, holes, cracks, and other signs that may cause damage to the equipment inside the package. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
- Check the inverter model of the energy storage system. If the inverter model is not what you requested, do not unpack the product and contact the supplier.

4.2 Deliverables

WARNING

Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damage is found.

Component	Description	Component	Description
	Energy Storage System× 1		Expansion bolt × 4
	Fireproofing mud × 3		• Domestic Version: Antennas × 2 (4G & WiFi) • Overseas Version: Antenna × 1 (WiFi)

Component	Description	Component	Description
	PIN terminal × 10		DC Circuit Breaker Operation Compartment Key × 1
	MSD Switches × 5 (Equipped only on GW125/261-ESA-LCN-G10)		Battery Power Cables × 2 (Equipped only on GW125/261-ESA-LCN-G11)
 SC70-8	Power Cable Terminals × 4	 LYF35-8	Neutral (N)/Protective Earth (PE) Wire Terminals × 2
	Product Documents × 1		

4.3 Storage

If the equipment is not to be installed or used immediately, please ensure that the storage environment meets the following requirements:

1. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and no condensation.
2. If the equipment has been stored for a long time, it needs to be checked and confirmed by professionals before being put into use.
3. The equipment shall be packaged in a packing box, with desiccants placed inside before sealing the box.
4. If installation is not carried out within 3 days after unpacking, it is recommended to store the equipment in the packing box.
5. If the battery module is expected to be stored for more than 30 days, the SOC should be adjusted to 30%~45% and a full charge and discharge should be performed every three months.

6. Storage temperature range: 0~35°C for no more than one year; -20~45°C for no more than one month.
7. Humidity range: 10~95% without condensation. Installation is not allowed when there is moisture or condensation on the interface.
8. Place the equipment in a cool place where away from direct sunlight.
9. Keep the equipment away from flammable, explosive, and corrosive matters.
10. Ensure the energy storage system is not damaged during transportation and storage.
11. It is strictly prohibited to put the battery into fire; otherwise, there is a risk of explosion.
12. When the ambient temperature is too high, the battery system is at risk of fire.

5 Installation

5.1 Installation Requirements

Installation Environment Requirements

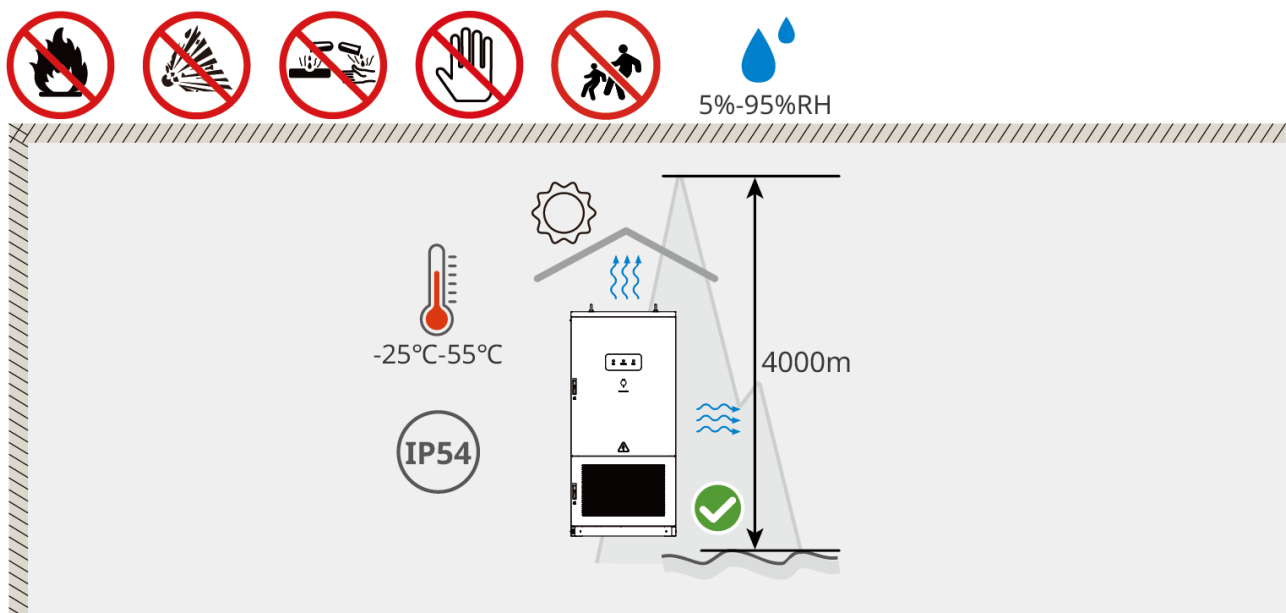
1. Do not install the equipment in a place near flammable, explosive, or corrosive materials.
2. The temperature and humidity at the installation site should be kept within the appropriate range.
3. The installation site should be out of the reach of children and away from areas that are easily accessible.
4. Do not touch the running equipment to avoid being hurt as its temperature may exceed 60°C.
5. Install the equipment in a sheltered place to avoid direct sunlight, rain, and snow. Build a sunshade if it is needed. (The sunshade can prevent the equipment from direct sunlight and heat accumulation, which would cause the internal temperature of the cabinet to exceed the ambient temperature and trigger load reduction.)
6. The installation space must meet the device's ventilation and heat dissipation, s the operating space requirements.
7. Check the protection rating of the equipment and ensure that the installation environment meets the requirements. The inverter, battery system, and smart dongle can be installed both indoors and outdoors. But the smart meter can only be installed indoors.
8. Install the equipment at a height that is convenient for operation and maintenance, ensure that the device indicators, all labels are easy to view, and the terminal blocks are easy to operate.
9. The altitude to install the equipment shall be lower than the maximum working altitude.
10. Consult the manufacturer before installing the equipment outdoors in salt affected areas. A salt affected area refers to the region within 500 meters offshore. The affected area is related to sea breezes, precipitation, topography and other factors.
11. Do not install the energy storage system in noise-sensitive areas (such as residential areas, office areas, schools, etc.), otherwise it may cause resident

complaints. If installation in the above areas is unavoidable, the installation location shall be at least 40 meters away from the noise-sensitive areas.

12. If the equipment is installed in public places other than work and living areas (such as parking lots, stations, workshops, etc.), please install a protective net outside the equipment and erect safety warning signs for isolation. Unauthorized personnel are prohibited from approaching the energy storage system to avoid personal injury or property loss caused by accidental contact by non-professionals or other reasons during the operation of the equipment.

13. Install the equipment away from electromagnetic interference. If there is any radio or wireless communication equipment below 30MHz near the equipment, you have to:

- Energy Storage System: add a multi-turn winding ferrite core at the AC output cable of the inverter, or add a low-pass EMI filter; or the distance between the inverter and the wireless electromagnetic interference device exceeds 30m
- Other equipment: the distance between the equipment and the wireless EMI equipment should be more than 30m.

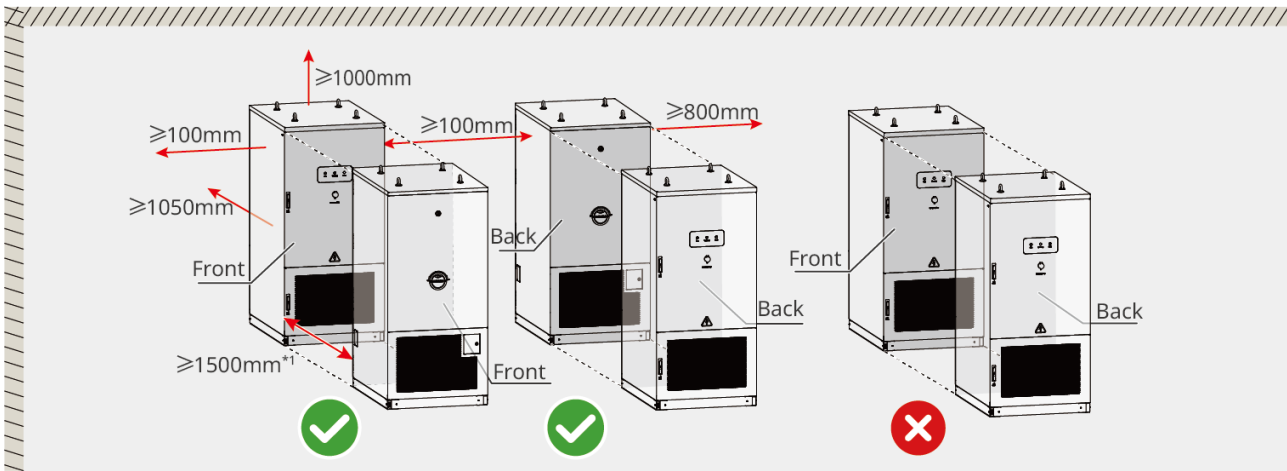


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Installation Space Requirements

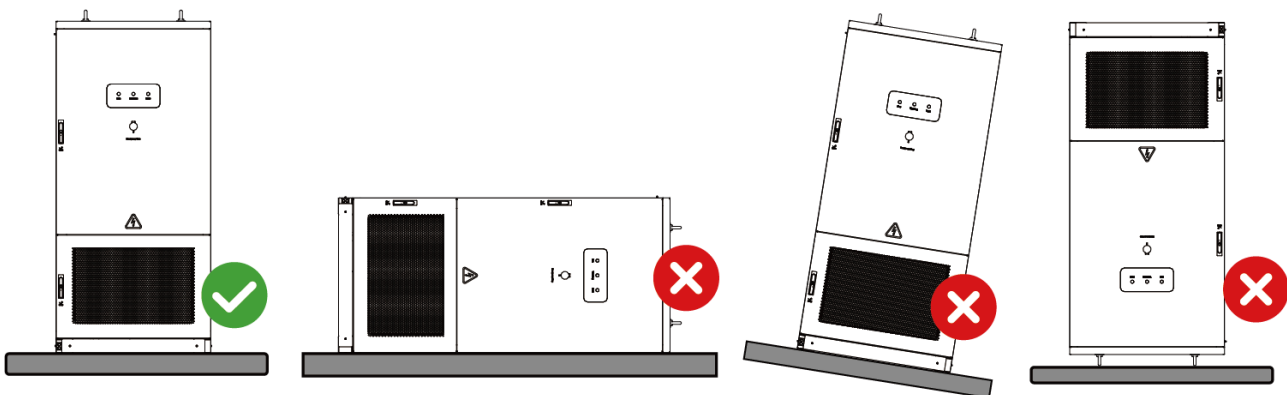
NOTICE

When using a forklift, the front and rear spacing of the energy storage system must be greater than or equal to 2.5 meters.



ESA10INT0009

Installation Angle Requirements



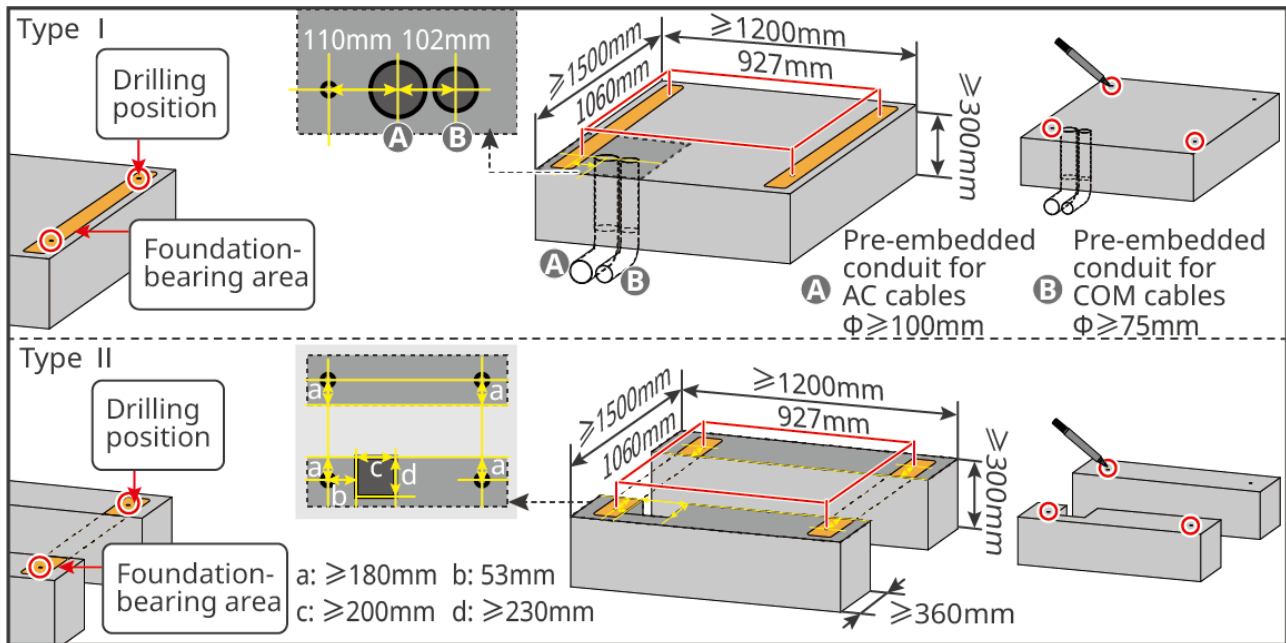
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Installation Foundation Requirements

- The equipment must be installed on a concrete or other non-combustible surface base.
- The equipment must be installed on concrete or other non-combustible surfaces, ensuring that the foundation is level, firm, flat, dry, has sufficient load-bearing capacity, and no dents or tilts are allowed.
- Cable trenches or outlet holes must be reserved on the base to facilitate

equipment wiring.

- If the cable enters to the equipment from bottom, the trench must have dust-proof and rodent proof design to prevent foreign objects from entering.
- There must be waterproof and moisture-proof design in the trench to prevent cable aging and short circuit, which may affect the normal operation of equipment.
- Due to the thickness of the equipment cables, the trench design needs to fully reserve cable positions to ensure smooth connection and prevent wear and tear.



ESA10INT0010

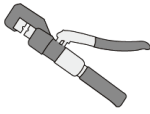
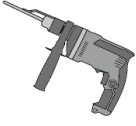
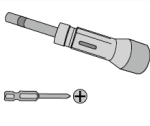
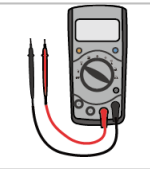
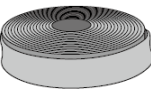
5.2 Tool Requirements

NOTICE

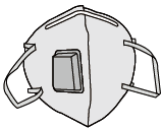
The following tools are recommended when installing the equipment. Use other auxiliary tools on site if necessary.

Installation Tools

Tool Type	Description	Tool Type	Description
	Diagonal pliers		RJ45 crimping tool

Tool Type	Description	Tool Type	Description
	Wire stripper		YQK-70 hydraulic pliers
	Adjustable wrench		PV connector tool PV-CZM-61100
	Impact drill (drill bits Φ8mm)		Torque wrench
	Rubber hammer		Socket wrench set
	Marker		Multimeter Range≤1100V
	Heat shrink tube		Heat gun
	Cable tie		Vacuum cleaner

Personal Protective Equipment

Tool Type	Description	Tool Type	Description
	Insulating gloves, protective gloves		Dust mask
	Goggles		Safety shoes

5.3 Transportation Requirements

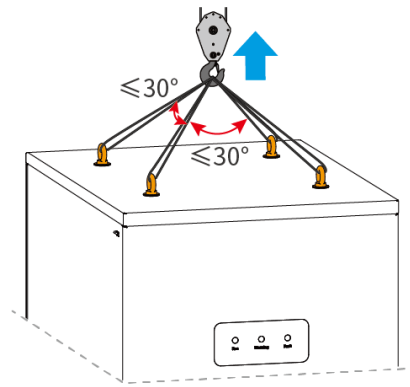
CAUTION

1. Name Operations such as transportation, turnover, installing and so on must meet the requirements of local laws and regulations.
2. To protect the equipment and components from damage during transportation, ensure that the transportation personnel are professionally trained. All operations during the transportation have to be recorded. The equipment shall be kept in balance, thus avoiding falling down.
3. Move the inverter to the site before installation. Follow the instructions below to avoid personal injury or equipment damage:
 - Consider the weight of the equipment before moving it. Assign enough personnel to move the equipment to avoid personal injury.
 - Keep the equipment in balance to avoid its falling down during moving.
 - Please ensure that the cabinet door is locked during the equipment handling process.

NOTICE

- The energy storage system can be transported to the installation site by lifting or forklift.
- When using lifting methods to transport equipment, please choose flexible slings or straps, and the load-bearing capacity of a single strap should be $\geq 5t$.
- When using forklift to transport equipment, the load-bearing capacity should be $\geq 5t$.
- The antenna and door panel stickers are vulnerable parts during installation and transportation; please handle with care.

- **Hoisting the equipment**

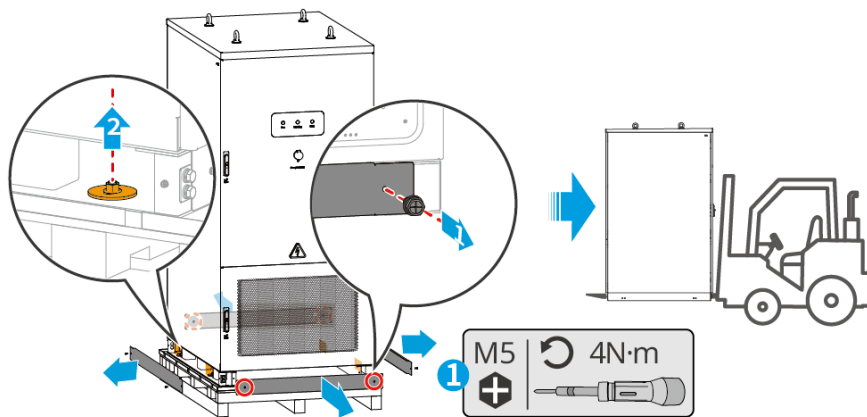


ESA10INT0011

Step 1: Use a lifting sling with hooks or U-hooks to lifting the energy storage system.

Step 2: Use lifting equipment to hoist and transport the energy storage system.

• Forklift Handling Equipment



ESA10INT0012

Step 1: Remove the front and rear baffles of the energy storage system.

Step 2: Use forklift to transport the energy storage system, ensuring that the equipment's center of gravity is at the center of the forklift foot.

5.4 Installation Energy Storage System

NOTICE

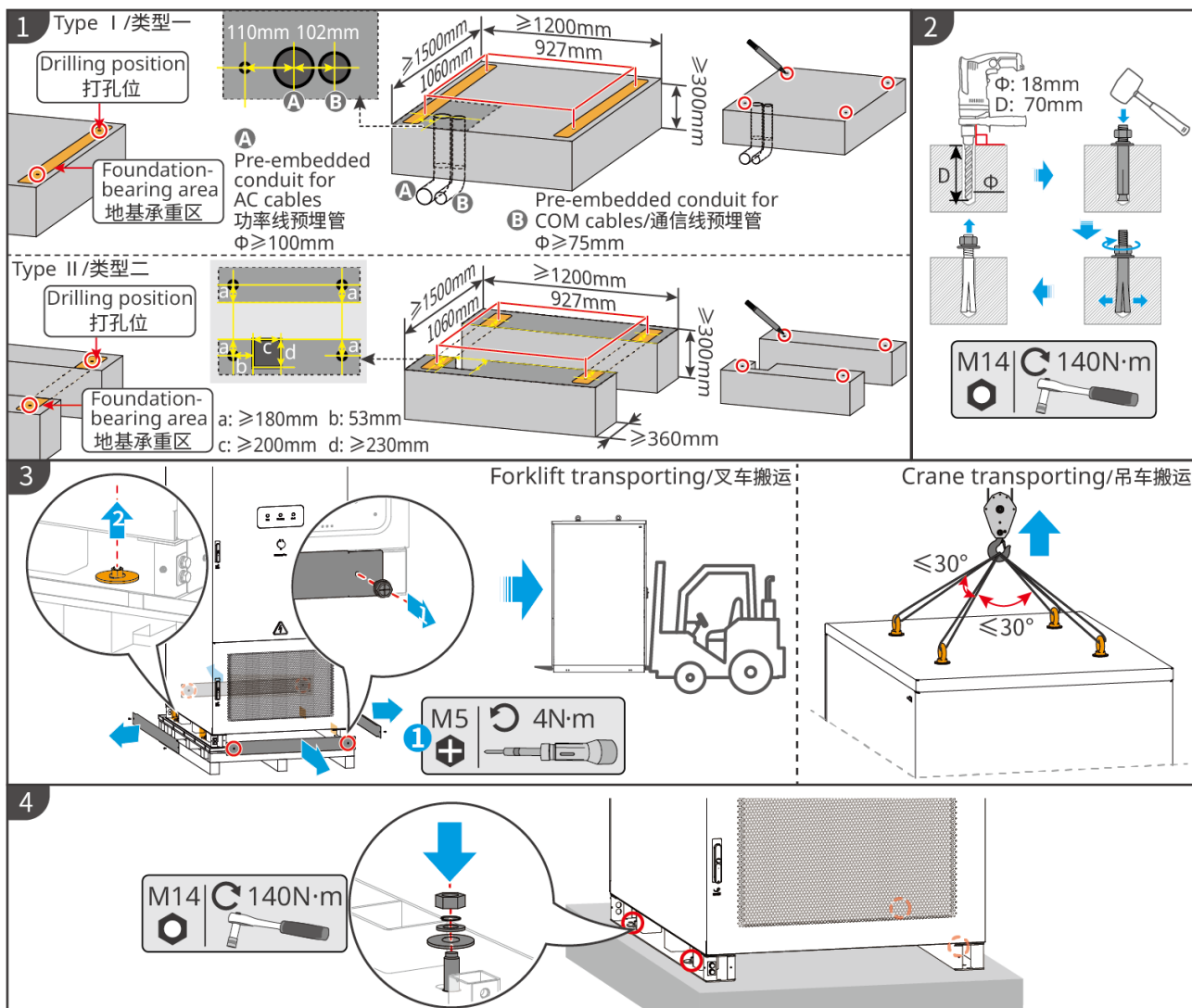
- Ensure the energy storage system is vertically attached to the ground without the risk of tipping over.
- Make sure the inverter is firmly installed in case of falling down.
- The antenna and door panel stickers are vulnerable parts during installation and transportation; please handle with care.

Step1: Use a marker to mark the drilling position on the horizontal ground.

Step2: Use an impact drill to drill holes and install expansion bolts.

Step 3: Move the energy storage system to the foundation and remove the surrounding baffles.

Step 4: Fasten the energy storage system to the foundation.



ESA10INT0003

6 Electrical Connections

DANGER

- All operations, cables and parts specification during the electrical connection shall be in compliance with local laws and regulations.
- Disconnect the upstream and downstream switches to power off the equipment before any electrical connections.
- Disconnect the DC switch and the AC output switch of the inverter to power off the inverter before any electrical connections. Do not work with power on. Otherwise, an electric shock may occur.
- Tie the same type cables together, and place them separately from cables of different types. Do not place the cables entangled or crossed.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to the inverter cable port.
- When crimping the cable terminal, ensure that the cable conductor is in full contact with the terminal. Do not crimp the cable insulation together with the cable terminal. Otherwise, it may cause the equipment to fail to operate, or result in damage to the inverter terminal block due to issues such as overheating caused by unreliable connections during operation.
- Place the cables at least 30mm away from the heating components or heat sources, otherwise the insulation layer of the cables may be aging or broken due to high temperature.

NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- All electrical connections should be performed by qualified professionals.
- Please keep the cabinet door keys properly.
- Cable colors in this document are for reference only, the cable specifications shall meet local laws and regulations.

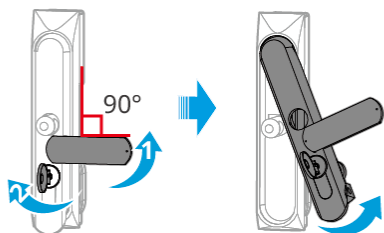
6.1 Preparing before Wiring

Preparing Cables

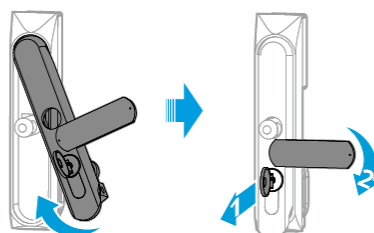
No.	Cable	Type	Specification	Description
1	PE Cable	Hot-Dip Galvanized Flat Steel	Must comply with the local grounding design specifications for AC electrical installations	Prepared by customers.
2	AC Cable	The 5-core outdoor copper core cables are recommended.	Conductor cross-sectional area: • N/PE: 35mm², compatible with LYF35-8 terminals • N/L1/L2/L3: 70mm², compatible with SC70-8 terminals	Prepared by customers.
3	RS485 Communication cable	Outdoor Shielded Twisted-Pair Cable Meeting Local Standards	Conductor cross-sectional area: 0.5mm ²	Prepared by customers.
4	CAN communication cable			Supplied by user, for master-slave parallel operation only.
5	LAN communication cable	Standard network cable of CAT 5E or higher grade with RJ45 connectors		Prepared by customers.

Cabinet door operation

Open the front cabinet door/打开前柜门

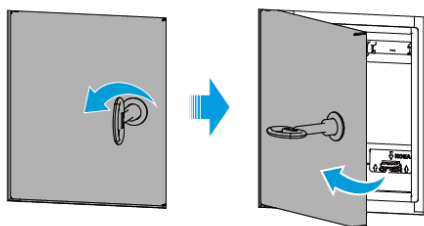


Close the front cabinet door/关闭前柜门

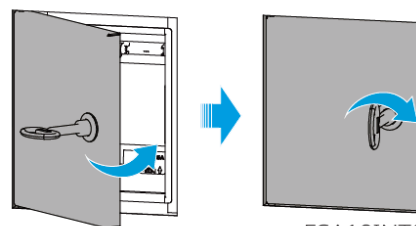


ESA10INT0004

Open the operation cabin door of the DC circuit breaker/打开直流断路器操作舱门

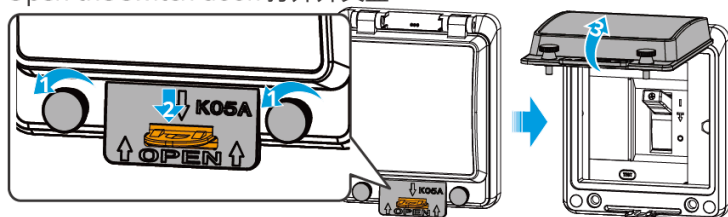


Close the operation cabin door of the DC circuit breaker/关闭直流断路器操作舱门

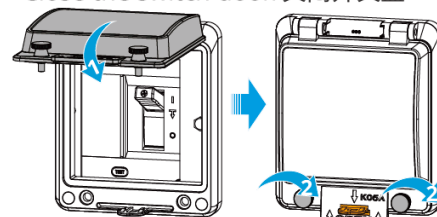


ESA10INT0005

Open the switch door/打开开关盖

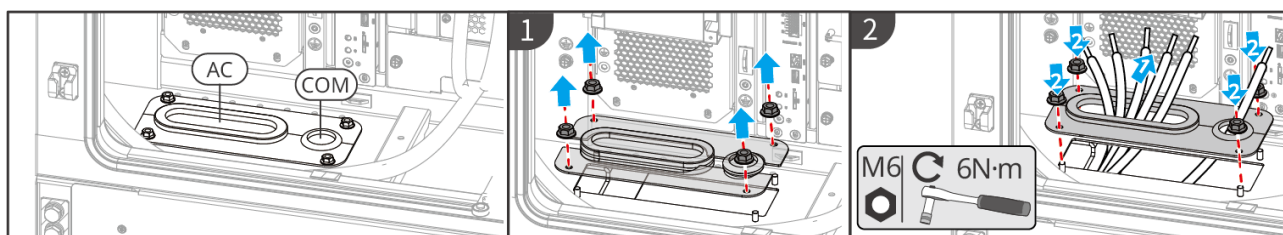


Close the switch door/关闭开关盖



ESA10INT0006

Operation of Wiring Ports and Cable Guards

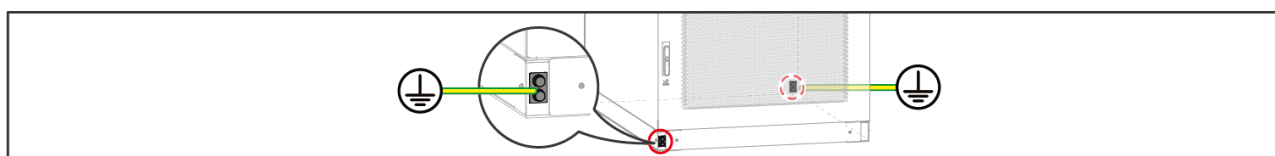


ESA10ELC0008

6.2 Connecting the PE Cable

WARNING

- Before operating the equipment, ensure that the system is reliably grounded and relevant protective measures are taken. Do not work with power on. Otherwise an electric shock may occur.
- To improve the corrosion resistance of the terminals, it is recommended to fix them with M10 bolts at the grounding point in the lower left corner of the cabinet; after the connection and installation are completed, apply silica gel or paint on the outside of the grounding terminals for protection.
- Please prepare the flat steel protective grounding cable that meets local requirements by yourself.



ESA10ELC0001

6.3 Connecting the AC Cable

! DANGER

When the energy storage system is powered on, the AC wiring ports are live. For maintenance, ensure that the upstream and downstream circuit breakers are disconnected or the energy storage system is powered off; otherwise, electric shock may occur.

! WARNING

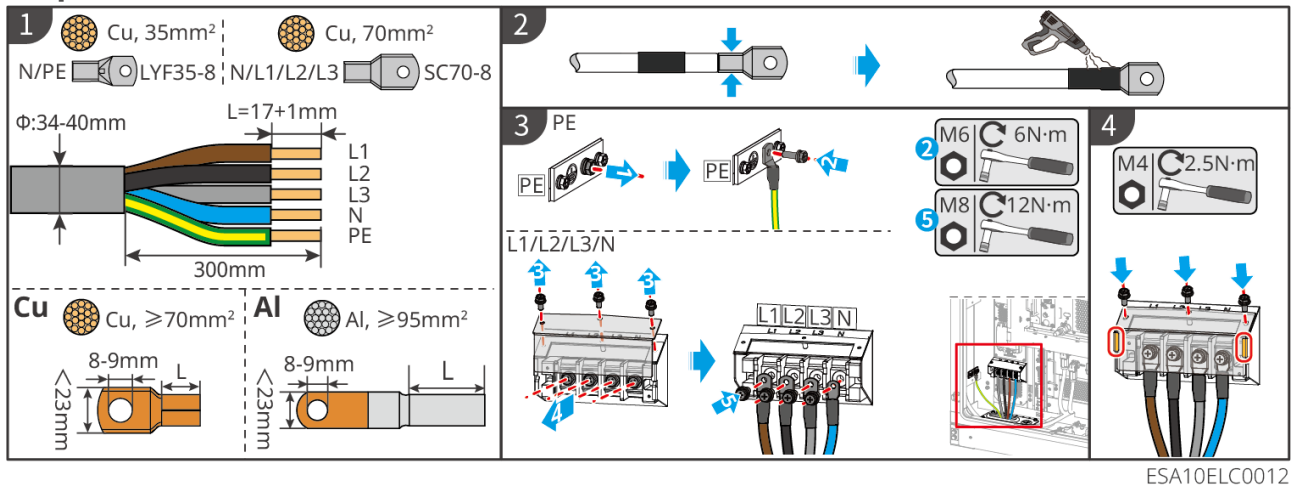
- Connect the AC cables to the corresponding terminals such as “L1”, “L2”, “L3”, “N” ports correctly. Otherwise it will cause damage to the inverter.
- Ensure that the whole cable cores are inserted into the terminal holes, and no part of the cable core can be exposed.
- Ensure that the cables are connected securely. Otherwise it will cause damage to the inverter due to overheat during its operation.
- Make sure that the equipment is powered off.

Step 1: Prepare the required cables (terminals are provided in the accessories. If the user intends to prepare terminals by themselves, please purchase them according to the recommended dimensions of copper terminals/copper-aluminum terminals).

Step 2: Make the AC cables.

Step 3: Connect the AC Cable.

Step 4: Install the Protective Cover.

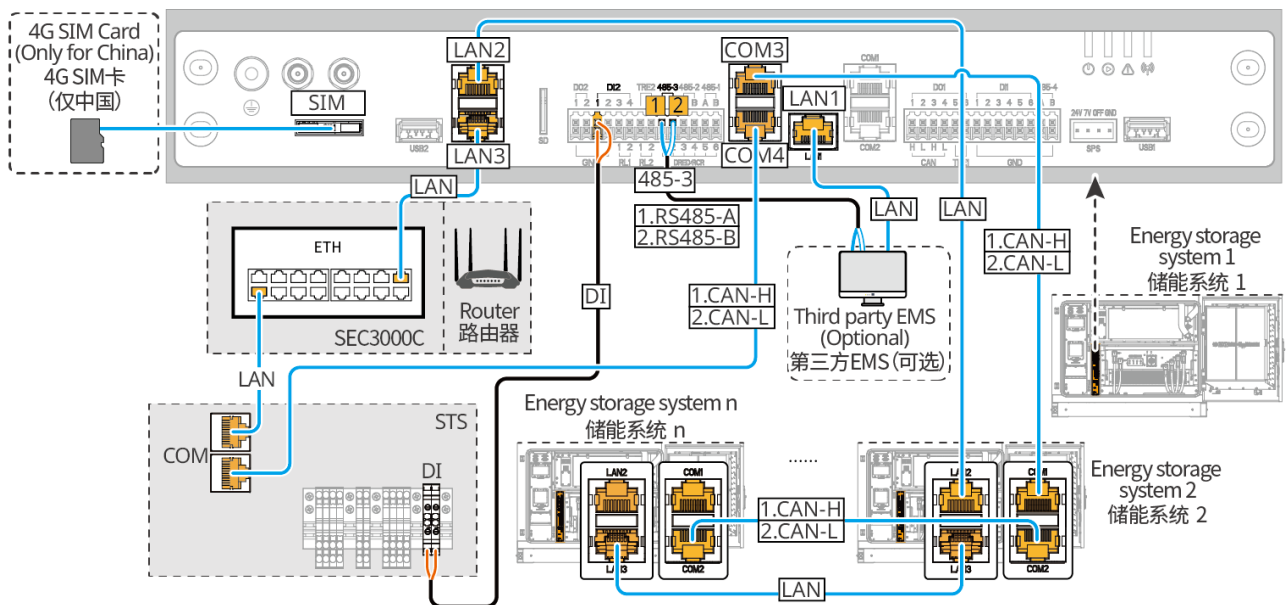


6.4 Connecting the Communication Cable

NOTICE

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

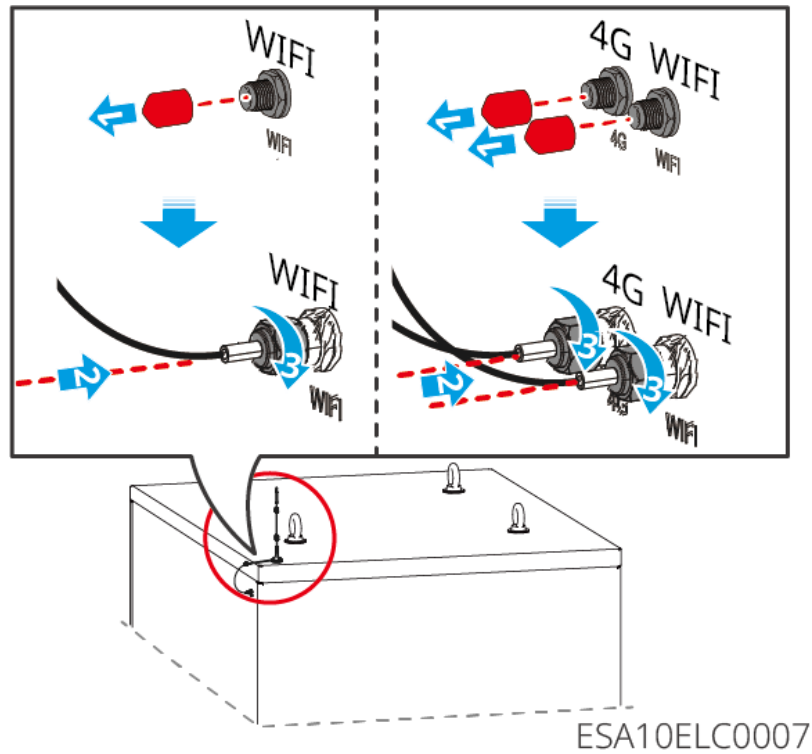
Communication Port



Connection steps

ESA10ELC0010

Installation



6.4.1 On-grid Scenarios

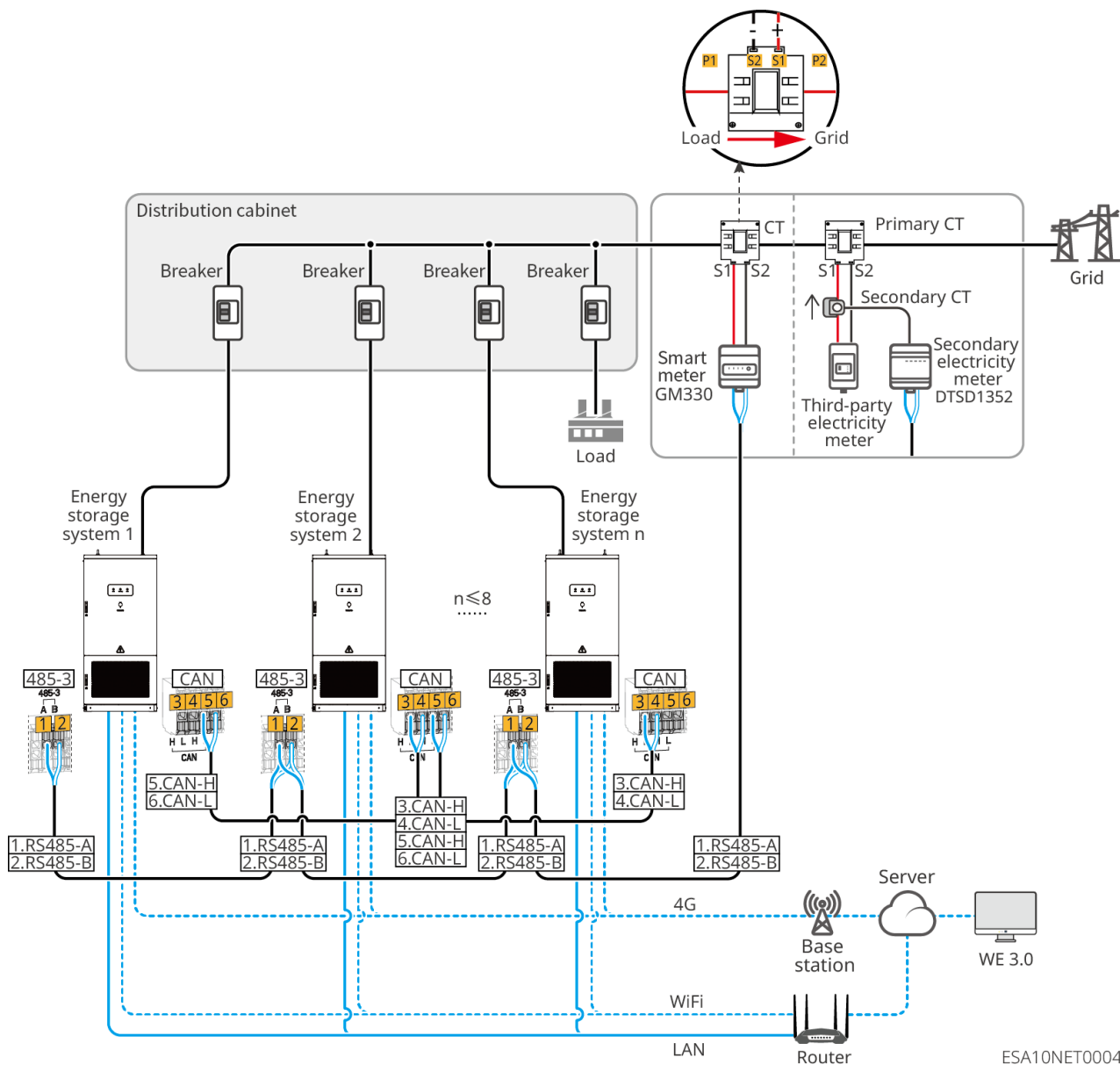
NOTICE

A current transformer (CT) and an meter must be configured at the grid connection point to realize the anti-reverse power flow function. Please select a suitable solution based on on-site actual conditions:

- If power outage operation is permitted on-site, a primary CT can be installed at the grid connection point and connected to the GM330 smart meter.
- If power outage is not permitted on-site, a secondary CT should be installed on the existing primary CT and connected to the DTSD1352 secondary smart meter.

6.4.1 Master-Slave Parallel Operation (Only for China)

The ESA261 energy storage system supports master-slave parallel operation. It does not support connection to photovoltaic inverters and can support up to 8 devices in parallel.



Name	Description
Energy Storage System	To be purchased from GoodWe. For the same project, the models and specifications of the energy storage systems must be consistent; mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11

Name	Description
Circuit breaker	Used for circuit protection. Recommended specification: 250A. Purchased by the customer independently.
CT	Used with the supporting GM330 smart energy meter; CT ratio: nA/5A. • nA: CT primary side input current. Depending on the specifications of the busbar or cable at the on-site PCC (Point of Common Coupling), the value of n shall be subject to the actual situation. • 5A: CT Secondary side output voltage. Purchased by the customer independently.
GM330 Smart Meter	The On-Grid Power Limit. Purchase from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352; CT transformation ratio. Purchase from GoodWe.
Secondary Smart Meter DTSD1352	The On-grid Power Limit. Purchase from GoodWe.
WE 3.0	Remotely monitors the operating data of the energy storage system and configures system parameters. Purchase from GoodWe.

6.4.1 Parallel Operation via EMS

The ESA261 energy storage system supports parallel operation via SEC3000C or third-party EMS, and it can connect to PV inverters.

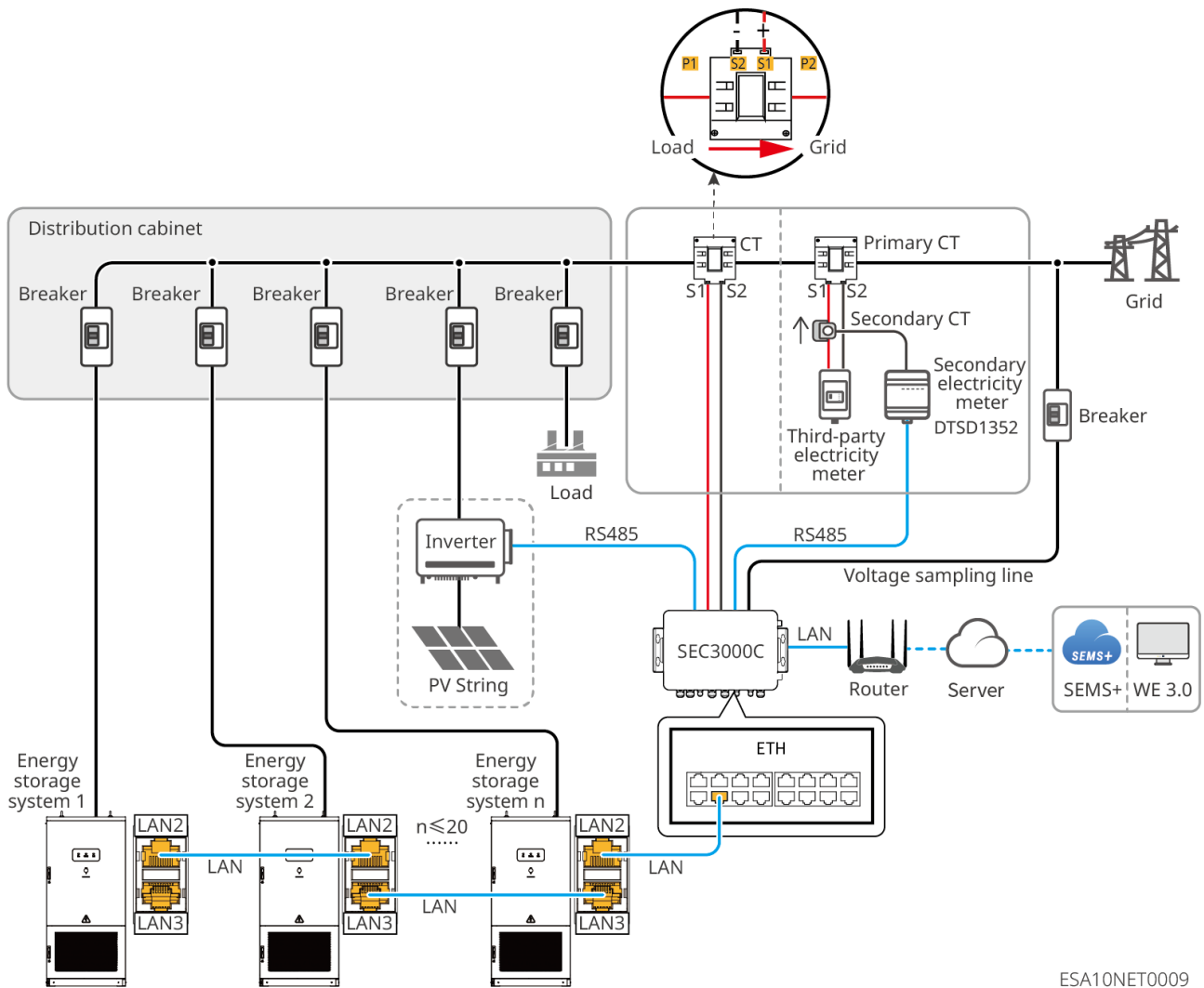
When connected to SEC3000C, it supports a maximum of 20 devices in parallel.

When connected to a third-party EMS, the number of parallel devices supported is determined by the third-party EMS.

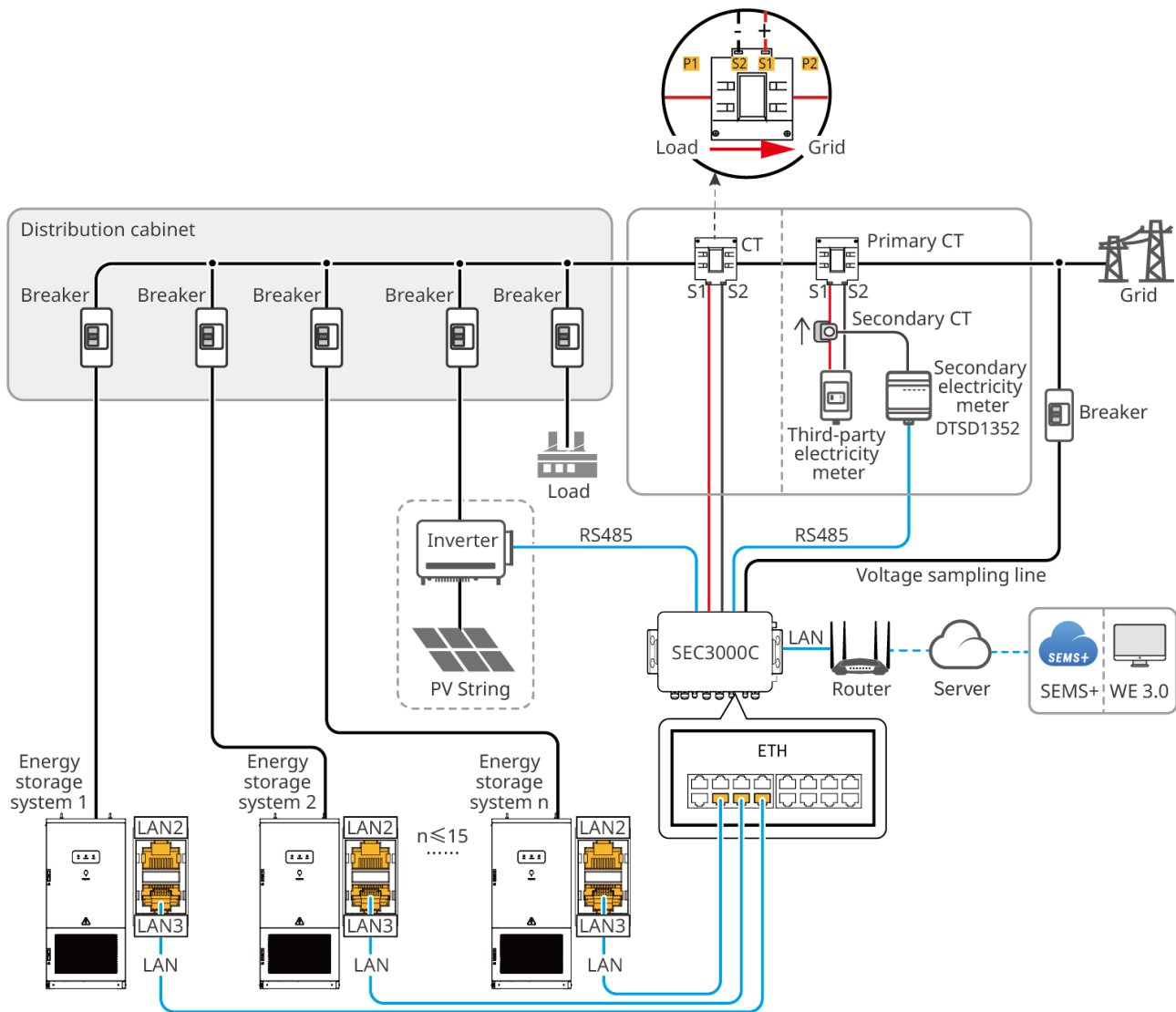
Matching Equipment	Communication Method	Connection Method	Maximum Parallel Operation Quantity	Monitoring Platform
SEC3000C	LAN	Daisy Chain / Daisy Chain-Star Hybrid	20	WE 3.0 (Domestic Version)
	LAN	Star Topology	15	SEMS+ (Overseas Version)
Third-Party EMS	LAN/RS485	Daisy Chain	N	Third-Party Monitoring Platform

- **Parallel Operation via SEC3000C**

- **Daisy Chain Connection**



- **Star Topology Connection**



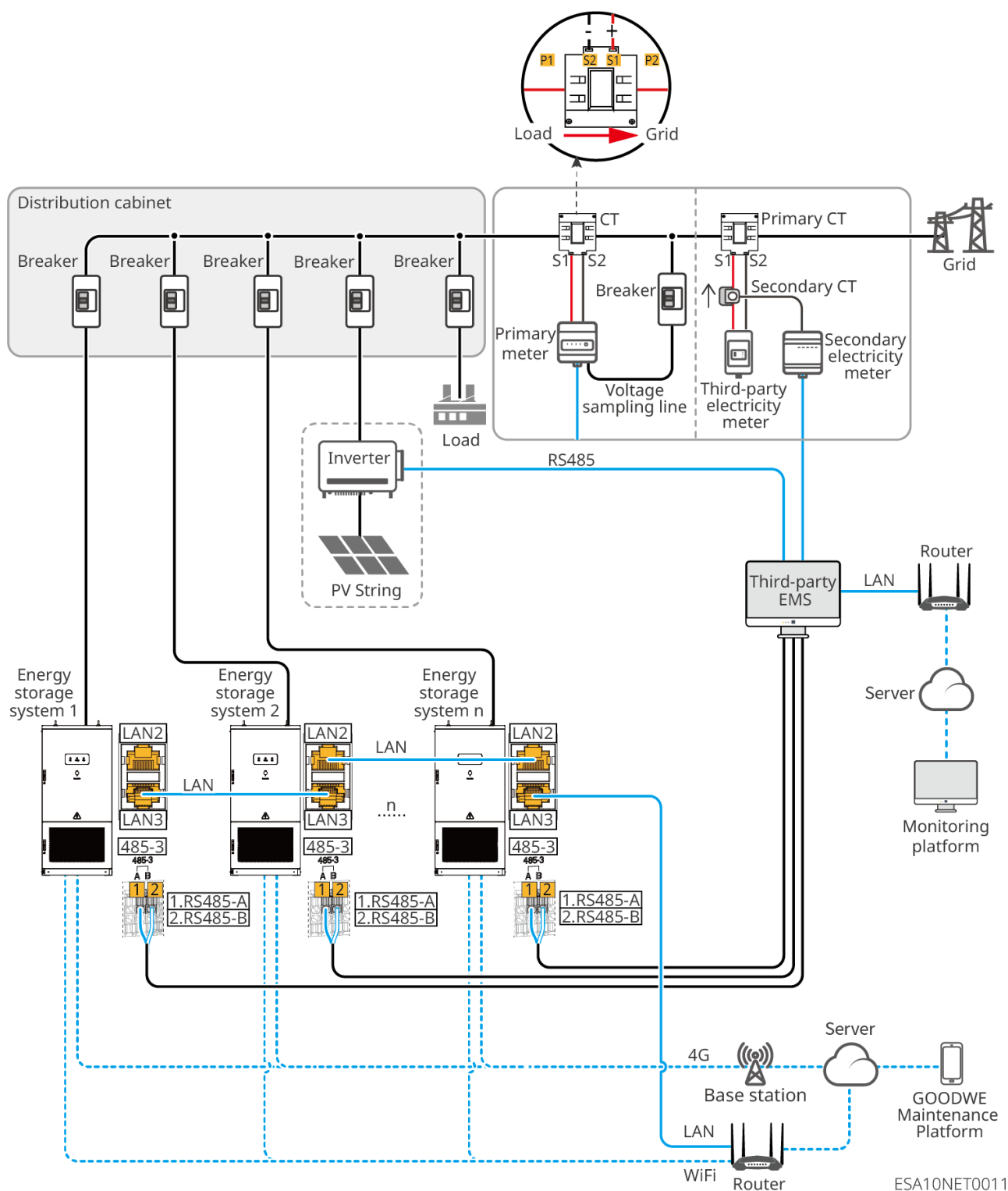
ESA10NET0010

Name	Description
Energy Storage System	To be purchased from GoodWe. For the same project, the models and specifications of the energy storage systems must be consistent; mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
Circuit breaker	Used for circuit protection. Recommended specification: 250A. Purchased by the customer independently.

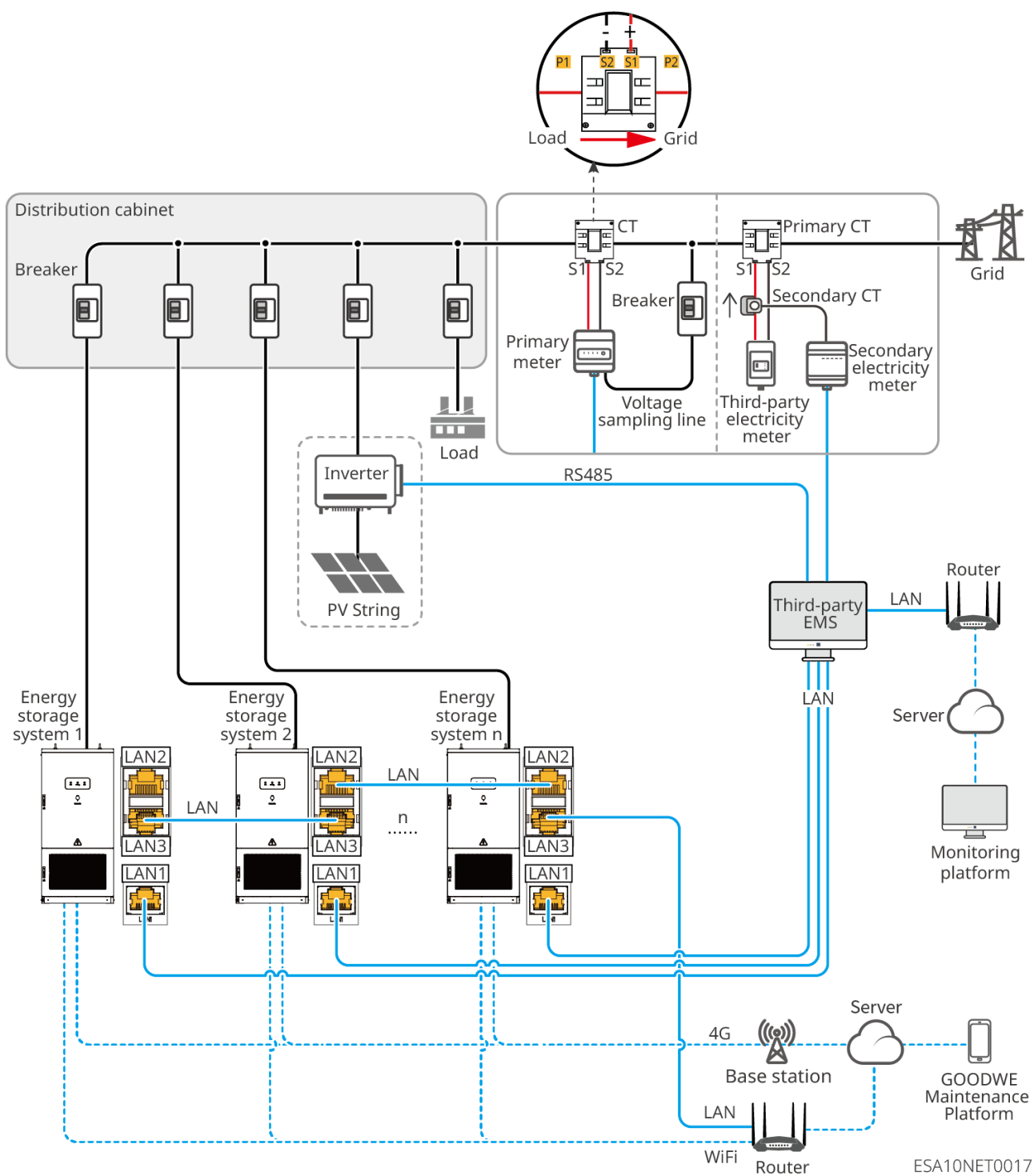
Name	Description
ON-Grid PV Inverter	Converts PV DC power to AC power.
CT	Used with the supporting GM330 smart energy meter; CT ratio: nA/5A. • nA: CT primary side input current. Depending on the specifications of the busbar or cable at the on-site PCC (Point of Common Coupling), the value of n shall be subject to the actual situation. • 5A: CT Secondary side output voltage. Purchased by the customer independently.
GM330 Smart Meter	The On-Grid Power Limit. Purchase from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352; CT transformation ratio. Purchase from GoodWe.
Secondary Smart Meter DTSD1352	The On-grid Power Limit. Purchase from GoodWe.
SEC3000C	Collects system data and transmits it to WE 3.0/SEMS+, enabling centralized monitoring, operation, and maintenance of the system. Purchase from GoodWe.
SEMS+/WE 3.0	Remotely monitors the operating data of the energy storage system and configures system parameters. Purchase from GoodWe.

- **Parallel Operation via Third-Party EMS**

- **Connection via RS485 Cable**



- **Connection via LAN Cable**



Name	Description
Energy Storage System	To be purchased from GoodWe. For the same project, the models and specifications of the energy storage systems must be consistent; mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
Circuit breaker	Used for circuit protection. Recommended specification: 250A. Purchased by the customer independently.
ON-Grid PV Inverter	Converts PV DC power to AC power.
CT	Used with the primary smart meter (purchased independently by the customer).
Primary Smart Meter	The On-Grid Power Limit. To be purchased independently by the customer based on the compatibility with the third-party EMS.
Secondary CT	Used with the secondary smart meter (purchased independently by the customer).
Secondary Electric Meter	The On-Grid Power Limit. To be purchased independently by the customer based on the compatibility with the third-party EMS.
Third-Party EMS	It can be used to collect data from equipment in the photovoltaic power generation system (such as on-grid inverters, energy storage inverters, smart meters, etc.), store logs, and send data to the monitoring and management platform, realizing centralized monitoring, operation and maintenance of the photovoltaic system. Purchased by the customer independently.
Third-Party Monitoring Platform	Remotely monitors the operating data of the energy storage system, configures system parameters, etc. Purchased by the customer independently.

6.4.2 On/Off-grid Switching Scenario

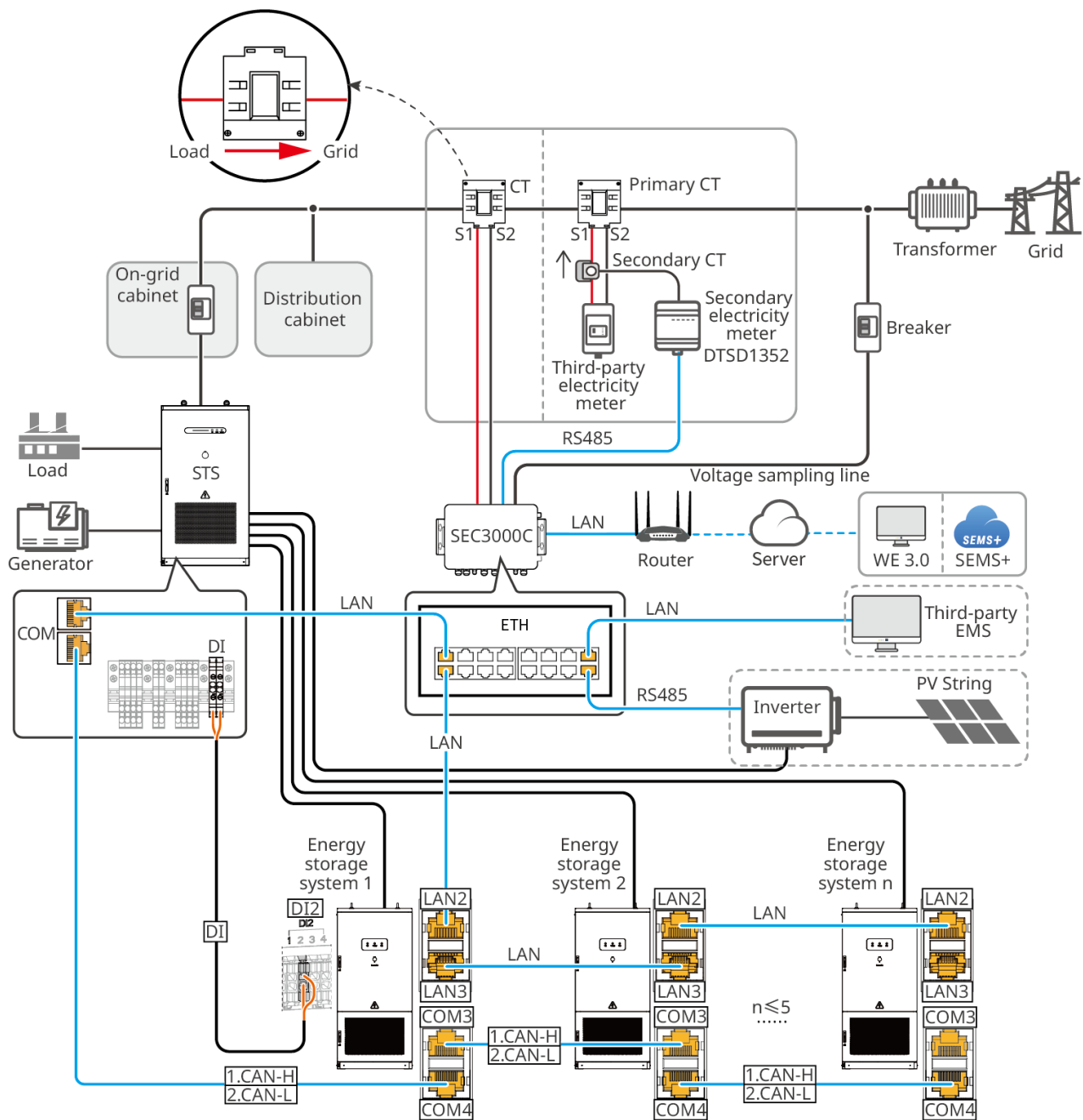
NOTICE

A current transformer (CT) and an meter must be configured at the grid connection point to realize the anti-reverse power flow function. Please select a suitable solution based on on-site actual conditions:

- If power outage operation is permitted on-site, a primary CT can be installed at the grid connection point and connected to the GM330 smart meter.
- If power outage is not permitted on-site, a secondary CT should be installed on the existing primary CT and connected to the DTSD1352 secondary electric energy meter.

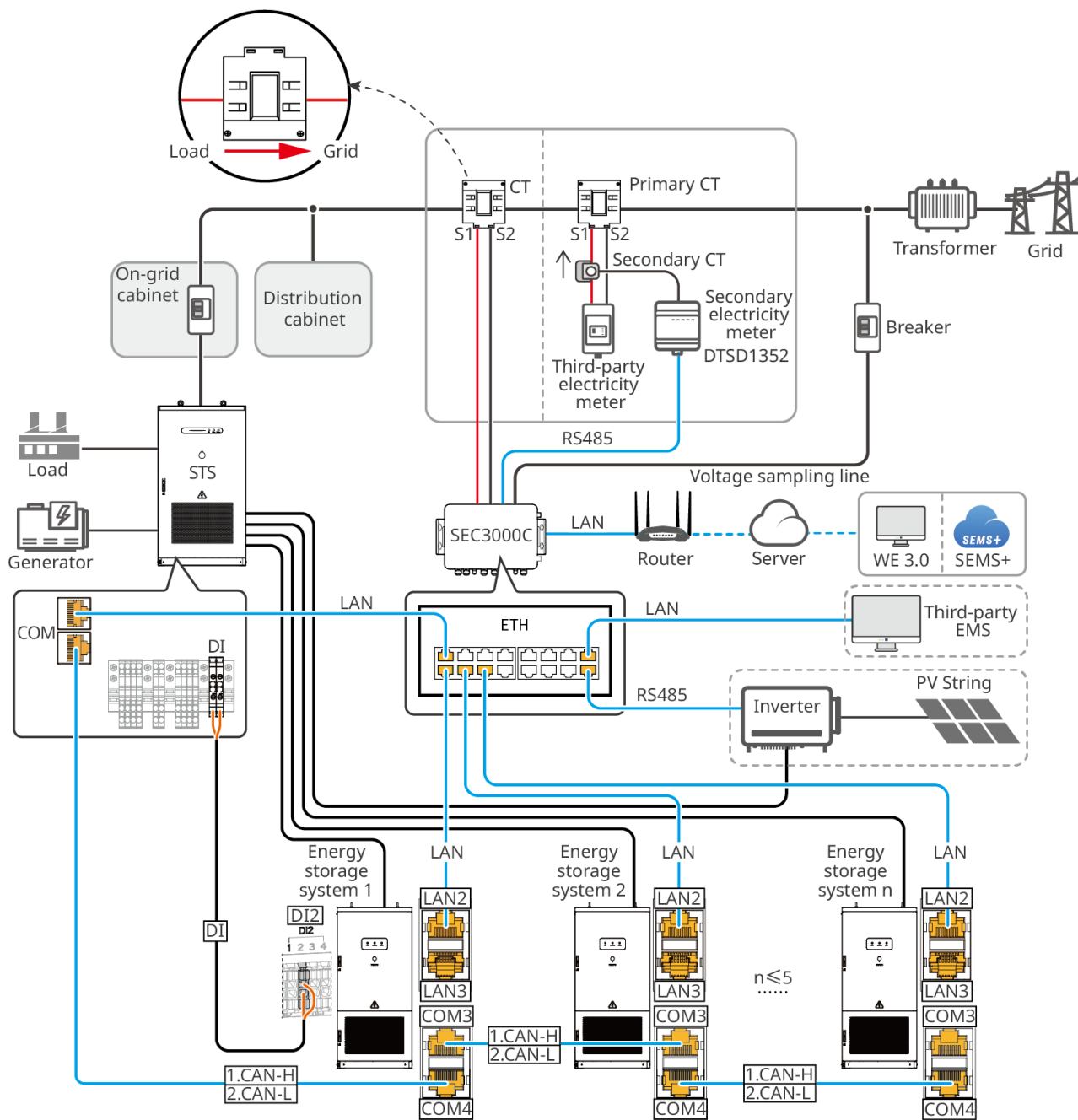
The ESA261 energy storage system can realize grid-connected and off-grid switching by matching with the STS grid-connected/off-grid switching cabinet.

Approach 1:



ESA10NET0018

Approach 2:



ESA10NET0019

Name	Description
Energy Storage System	To be purchased from GoodWe. For the same project, the models and specifications of the energy storage systems must be consistent; mixing different products is not recommended. • GW125/261-ESA-LCN-G10 • GW125/261-ESA-LCN-G11
On-Grid Inverter	Convert PV DC power to AC power.
STS	On/Off-grid Switching Scenario.
CT	Used with the supporting GM330 smart energy meter; CT ratio: nA/5A. • nA: CT primary side input current. Depending on the specifications of the busbar or cable at the on-site PCC (Point of Common Coupling), the value of n shall be subject to the actual situation. • 5A: CT Secondary side output voltage. Purchased by the customer independently.
GM330 Smart Meter	The On-Grid Power Limit. Purchase from GoodWe.
Secondary CT	Used with the secondary smart meter DTSD1352. CT ratio: 5A/2mA. Purchase from GoodWe.
Secondary Smart Meter DTSD1352	The On-grid Power Limit. Purchase from GoodWe.
SEC3000C	Collects system data and transmits it to WE 3.0/SEMS+, enabling centralized monitoring, operation, and maintenance of the system. Purchase from GoodWe.

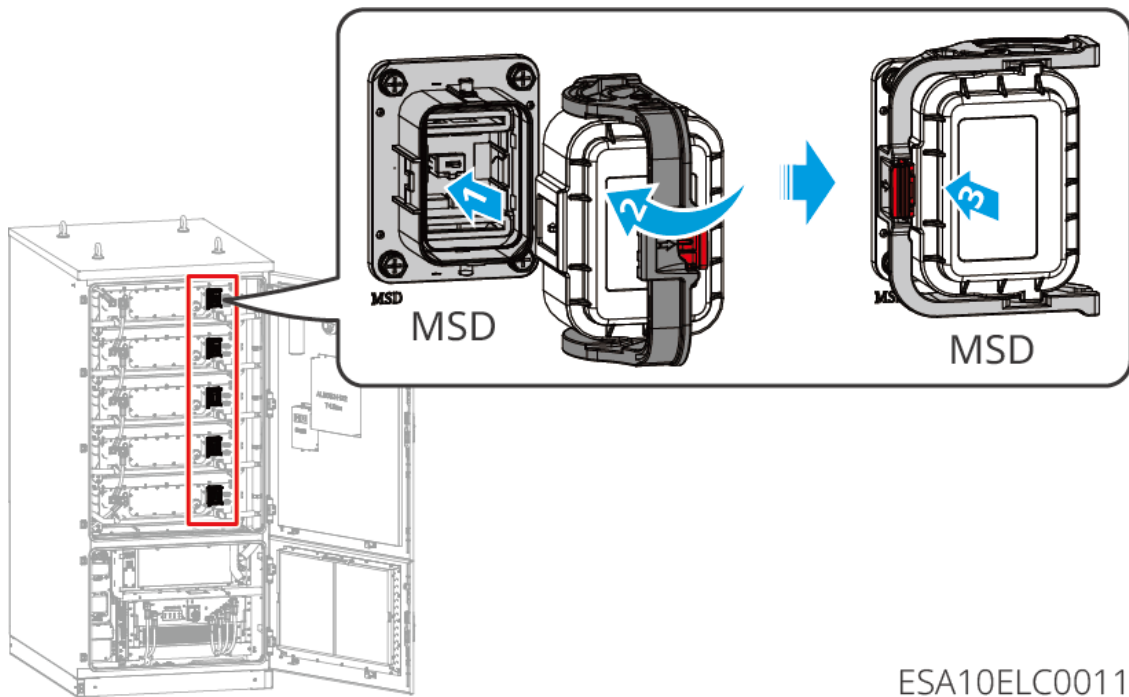
Name	Description
Third-Party EMS	It can be used to collect data from equipment in the photovoltaic power generation system (such as on-grid inverters, energy storage inverters, smart meters, etc.), store logs, and send data to the monitoring and management platform, realizing centralized monitoring, operation and maintenance of the photovoltaic system. Prepared by customers..
SEMS+/WE 3.0	Remotely monitors the operating data of the energy storage system and configures system parameters. Purchase from GoodWe.

6.5 Install the MSD switch / battery power cable

NOTICE

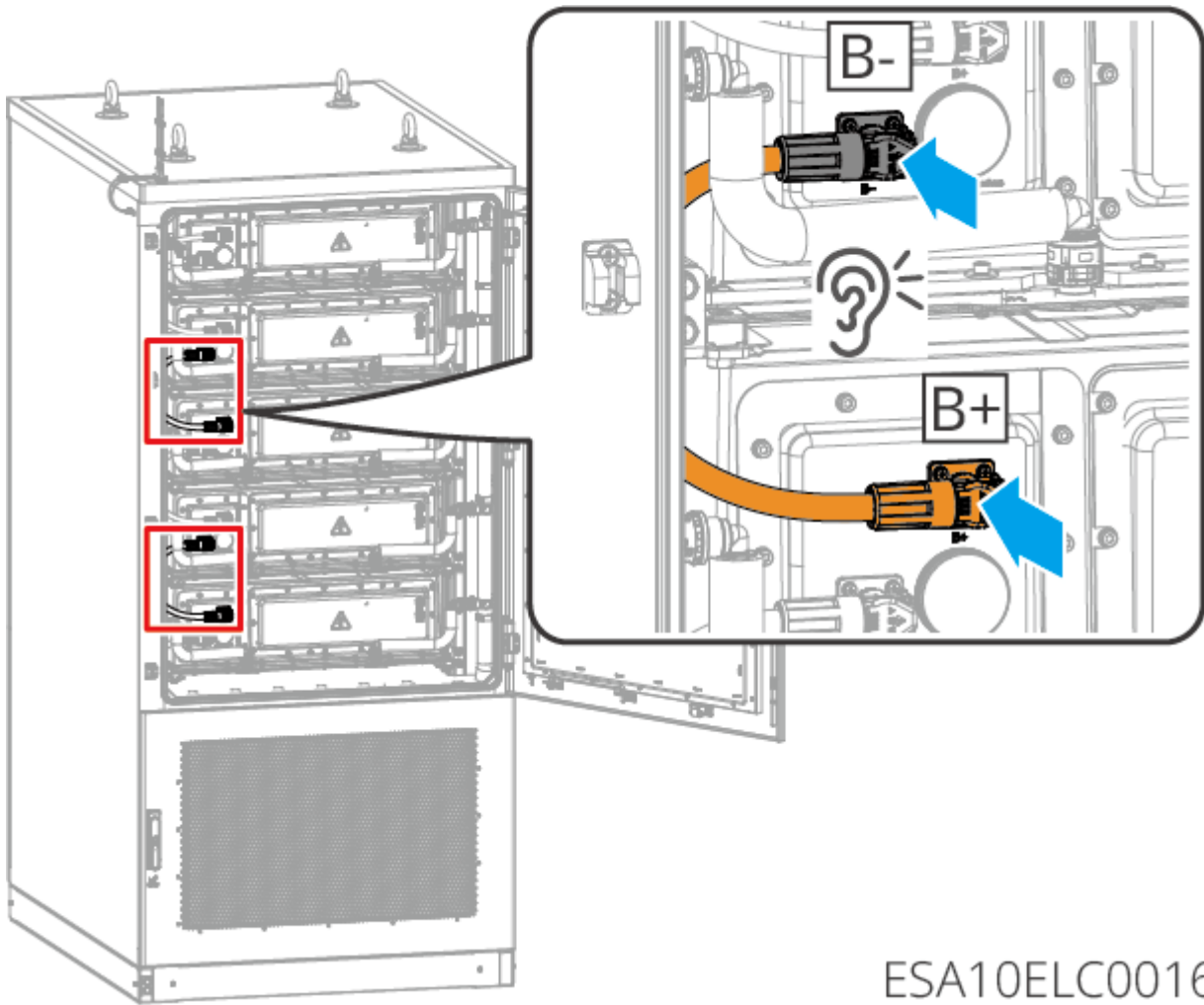
- Only GW125/261-ESA-LCN-G10 requires the installation of the MSD switch.
- Only GW125/261-ESA-LCN-G11 requires the installation of the power cable.

Install the MSD switch / battery power cable



ESA10ELC0011

Install the battery power cable

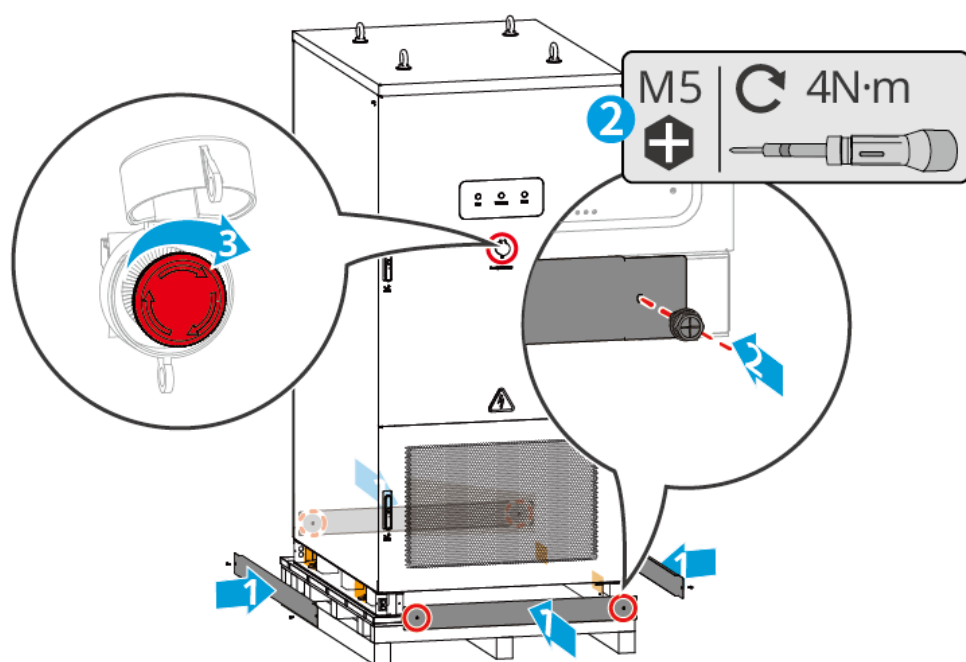


ESA10ELC0016

6.6 Operation after wiring

Step 1: Install the bottom baffle of the energy storage system

Step 2: Release the emergency stop switch.



ESA10INT0007

7 Equipment Commissioning

7.1 Check Before Power On

No.	Check Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The PE cables, Battery power cables, AC output cables, communication cables are connected correctly and securely.
3	The cable binding shall comply with routing requirements, with reasonable distribution and no damage.
4	Unused ports and terminals are sealed.
5	The voltage and frequency at the connection point meet the inverter grid connection requirements.

7.2 Power On

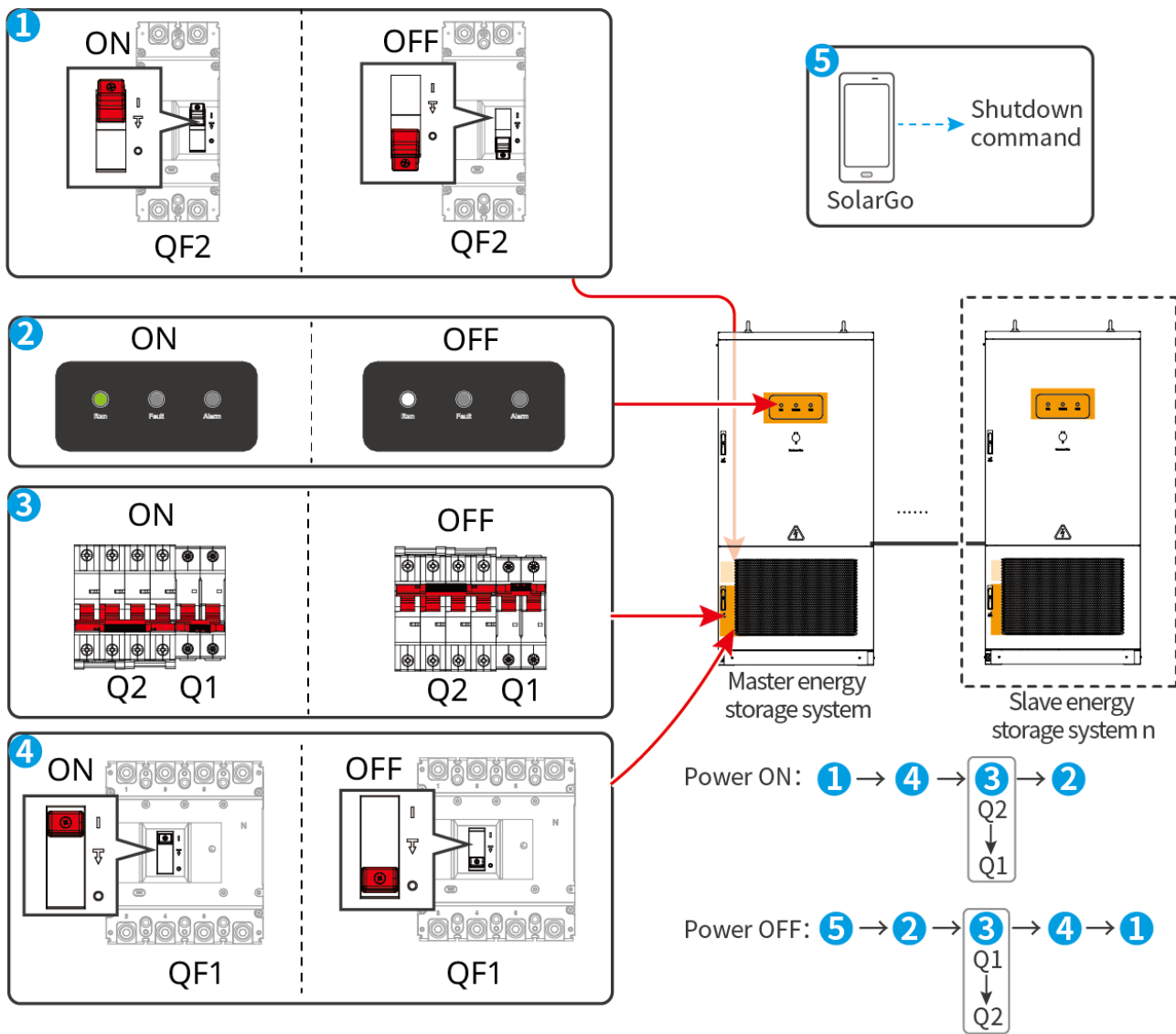
Step 1: Disconnect Q1 (AC Auxiliary Switch).

Step 2: Disconnect QF1 (AC Molded Case Circuit Breaker).

Step 3: Disconnect Q2 (DC Auxiliary Switch).

Step 4: Disconnect Q1 (AC Auxiliary Switch).

Step 5: Close the front door. After the RUN indicator light changes from white to green, the system completes grid connection.



ESA10PWR0001

8 System Commissioning

8.1 Setting the Device Parameters via Solargo APP

SolarGo app is a mobile application that communicates with the inverter via Bluetooth module module or inverter. Commonly used functions are as follows:

- Check the operating data, software version, alarms, etc.
- Set the grid parameters, communication parameters, safety regulation regions and anti-backflow of the inverter.
- Equipment maintenance.

For more details, refer to the SolarGo App User Manual. Get the user manual from the official site or by scanning the QR code below.



SolarGo App



SolarGo App User Manual

8.2 Setting Inverter Parameters via SEC3000C Embedded Web

SEC3000C Intelligent Energy Control Box is a dedicated device for the monitoring and management platform of photovoltaic power generation systems. It can be used to collect data from equipment in the photovoltaic power generation system (such as on-grid inverters, energy storage inverters, smart meters, etc.), store logs, and send data to the monitoring and management platform, realizing centralized monitoring, operation and maintenance of the photovoltaic system.

For more details, refer to the

9 Monitoring the power station via SEMS+ Portal

SEMS Portal is a monitoring platform that can communicate with devices via WiFi, LAN/4G. Commonly used functions are as follows:

- Managing Organizations or user information
- Adding and monitoring information of power station
- Equipment maintenance.

For more details, refer to the [SMES User Manual](#).

10 System Maintenance

10.1 Equipment Power Off



- Power off the equipment before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
- After the equipment is powered off, the internal components require some time to discharge. Please wait until the equipment is fully discharged in accordance with the time specified on the label.

Step 1: Issue a shutdown command to the energy storage system via SolarGo.

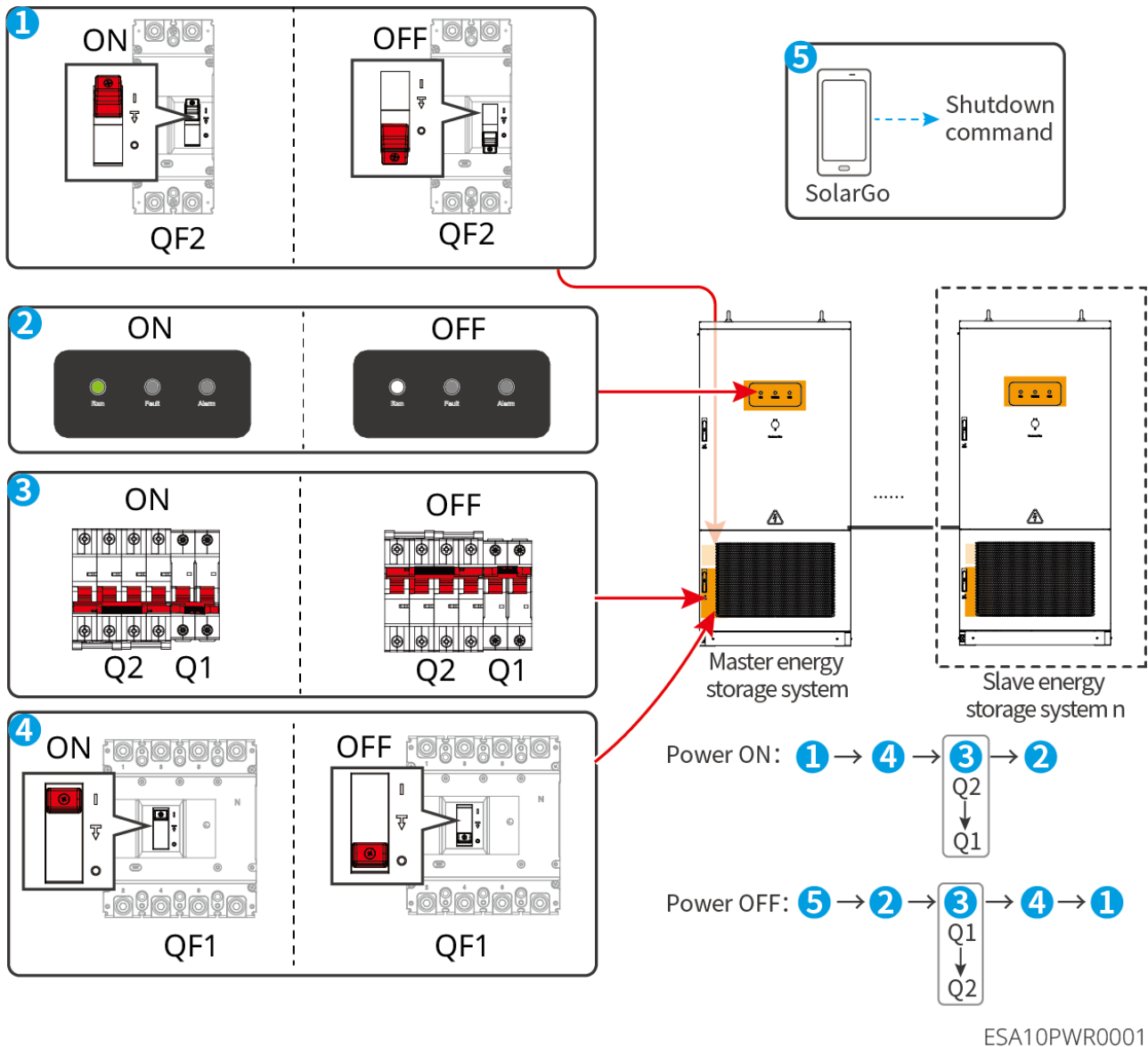
Step 2: Observe that the RUN indicator light remains steadily white.

Step 3: Disconnect Q1 (AC Auxiliary Switch).

Step 4: Turn off the DC switch of the inverter.

Step 5: Disconnect QF1 (AC Molded Case Circuit Breaker).

Step 6: Turn off the DC switch of the inverter.



10.2 Equipments Removing

⚠ WARNING

- Before removing the equipment, ensure the energy storage system is powered off
- Please wear personal protective equipment (PPE)

Step 1: Open the cabinet door.

Step 2: Disconnect all the cables, including: AC cables, communication cables, MSD

switches, the battery power cables, and PE cables.

Step 3: Unscrew the fixing screws on the base of the energy storage system

Step 4: Move the energy storage system away by hoisting or forklift

Step 5: Store the inverter properly. If the inverter needs to be used later, ensure that the storage conditions meet the requirements.

10.3 Equipments Disposing

If the equipment cannot work anymore, dispose of it according to the local disposal requirements for electrical equipment waste. The equipment cannot be disposed of together with household waste.

10.4 Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.

When contacting the after-sales service center, please collect the following information to facilitate the quick resolution of the problem.

1. Product information, like serial number, software version, installation date, fault time, fault frequency, etc.
2. Installation environment, including weather conditions etc. It is recommended to provide some photos and videos to assist in analyzing the problem.
3. Grid situation

Fault Type	Fault Prompt	Troubleshooting
BMS Fault	BMU Hardware Fault	Contact the dealer or the after-sales service
	BCU Hardware Fault	Contact the dealer or the after-sales service
	Air Switch Sticking Fault	Shut down the energy storage system, power it on again after 5 minutes; if the fault persists, please contact the distributor/our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	BMU Communication Fault	1. Check if the connector of the battery pack's communication port is connected properly or abnormal. 2. If the wiring is correct and fault persists, please contact the dealer or GoodWe Customer Service Center.
	Current Sensor Fault	Shut down the energy storage system, power it on again after 5 minutes; if the fault persists, please contact the distributor/our company's customer service center.
	Insulation Monitoring Device Fault	Shut down the energy storage system, power it on again after 5 minutes; if the fault persists, please contact the distributor/our company's customer service center.
	Total Voltage Overvoltage Level 1 Alarm	Check if the total voltage exceeds the protection threshold when the system is charging; if it does, please contact the distributor/our company's customer service center.
	Total Voltage Undervoltage Level 1 Alarm	Check if the total system voltage is lower than the protection threshold; if it is, please contact the distributor/our company's 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 protection threshold during charging, please contact the distributor/our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Cell Undervoltage Level 1 Alarm	Check if the system cell voltage is lower than the protection threshold; if it is, please contact the distributor/our company's customer service center.
	Discharge Current Overload Level 1 Alarm	Check if the discharge current exceeds the protection threshold during system operation; if the discharge current exceeds the protection threshold during discharging, please contact the distributor/our company's customer service center.
	Charge Current Overload Level 1 Alarm	Check if the charging current exceeds the protection threshold during system operation; if the charging current exceeds the protection threshold during charging, please contact the distributor/our company's customer service center.
	Discharging Battery Overtemperature Level 1 Alarm	1. Check if the liquid cooling unit is operating normally for refrigeration. 2. Check if the battery temperature exceeds the protection threshold during system operation; if it does, please contact the distributor/our company's customer service center.
	Discharging Battery Undertemperature Level 1 Alarm	1. Check if the liquid cooling unit is operating normally for refrigeration. 2. Check if the battery temperature exceeds the protection threshold during system operation; if it does, please contact the distributor/our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Charging Battery Overtemperature Level 1 Alarm	1. Check if the liquid cooling unit is operating normally for refrigeration. 2. Check if the battery temperature exceeds the protection threshold during system operation; if it does, please contact the distributor/our company's customer service center.
	Charging Battery Undertemperature Level 1 Alarm	1. Check if the heating function of the liquid cooling unit is operating normally. 2. Check if the battery temperature is lower than the protection threshold during system operation; if it is, please contact the distributor/our company's customer service center.
	Insulation Resistance Too Low Level 1 Alarm	Shut down the energy storage system, power it on again after 5 minutes; if the fault persists, please contact the distributor/our company's 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 distributor/our company's customer service center.
	Cell Voltage Difference Too High Level 1 Alarm	Check if the cell voltage difference exceeds the protection threshold during system operation; if it does, please contact the distributor/our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Cell Temperature Difference Too High 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 distributor/our company's customer service center.
	SOC Low Level 1 Alarm	Charge the system; if the alarm cannot be cleared when the total voltage is greater than 732V, please contact the distributor/our company's customer service center.
	Grid Voltage Abnormality	1. If the power grid returns to normal, perform manual recovery or the energy storage system will automatically recover according to the set recovery mode (manual recovery by default). 2. Ensure the grid voltage and frequency comply with the specifications. 3. Confirm that the N wire and PE wire connections are in good condition.
	Grid Frequency Abnormality	1. If the power grid returns to normal, perform manual recovery or the energy storage system will automatically recover according to the set recovery mode (manual recovery by default).
	Grid Loss Fault	2. Ensure the grid voltage and frequency comply with the specifications.

Fault Type	Fault Prompt	Troubleshooting
PCS Fault	Grid Overvoltage Protection	1. If it occurs occasionally, 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, check whether the grid voltage is within the allowable range. If not, please contact the local power operator. If yes, the grid overvoltage protection point also needs to be modified with the consent of the local power operator. 3. If normal operation cannot be restored for a long time, check whether the AC-side circuit breaker and output cables are connected properly.
	Grid Undervoltage Protection	1. If it occurs occasionally, 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, check whether the grid voltage is within the allowable range. If not, please contact the local power operator. If yes, the grid undervoltage protection point also needs to be modified with the consent of the local power operator. 3. If normal operation cannot be restored for a long time, check whether the AC-side circuit breaker and output cables are connected properly.

Fault Type	Fault Prompt	Troubleshooting
	Grid Overfrequency Protection	1. If it occurs occasionally, 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, check whether the grid frequency is within the allowable range; If not, please contact the local power operator. If the grid voltage is within the allowable range, please modify the Grid Underfrequency protection value with the consent of the local power operator.
	Grid Underfrequency Protection	1. If it occurs occasionally, 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, check whether the grid frequency is within the allowable range; If not, please contact the local power operator. If the grid voltage is within the allowable range, please modify the Grid Underfrequency protection value with the consent of the local power operator.
	Grid Frequency Shift Protection	1. If it occurs occasionally, 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, check whether the grid frequency is within the allowable range; If not, please contact the local power operator.
	Grid Phase Shift Protection	

Fault Type	Fault Prompt	Troubleshooting
	VRT Undervoltage Fault	1. If it occurs occasionally, 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, check whether the grid voltage and frequency are within the allowable range. If not, please contact the local power operator.
	VRT Overvoltage Fault	
	Voltage Waveform Detection Fault	
	Grid Phase Loss Protection	
	Grid Voltage Unbalance	
	Grid Phase Sequence Fault	1. Check whether the wiring between the inverter and the grid is in positive sequence. The fault will automatically disappear after the wiring is corrected (e.g., swap any two live wires). 2. If the fault persists despite correct wiring, please contact the distributor/our company's customer service center.
	Low Insulation Resistance	1. Check the impedance of the battery cluster to the protective ground. If the impedance is low, disconnect the MSD of each battery pack and inspect whether the DC connectors of the system are abnormal. 2. If the impedance is still low, please contact the distributor/our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Anti Reverse Power Failure	1. If the abnormality is caused by an external fault, the inverter will automatically resume normal operation after the fault disappears, and no manual intervention is required. 2. If this alarm occurs frequently and affects the normal power generation of the power station, please contact the distributor/our company's customer service center.
	Internal Comm Loss	Turn off the AC output side switch and DC input side switch. After 5 minutes, turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or our company's customer service center.
	AC HCT Check Abnormality	
	AC Current Sensor Fault	
	Relay Check Abnormality	
	Relay Fault	
	Cavity Overtemperature	1. Check whether 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 poor ventilation or the ambient temperature is too high, please improve the ventilation and heat dissipation conditions. 3. If both ventilation and ambient temperature are normal, please contact the distributor/our company's customer service center.
	INV Module Over-temperature	
	Boost Module Over-temperature	
	Output Filter Capacitor Over-temperature	
	BUS Overvoltage	
	P-BUS Overvoltage	

Fault Type	Fault Prompt	Troubleshooting
	N-BUS Overvoltage	Turn off the AC output side switch and DC input side switch. After 5 minutes, turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or our company's customer service center.
	BUS Overvoltage (Secondary CPU1)	
	PBUS Overvoltage (Secondary CPU1)	
	NBUS Overvoltage (Secondary CPU1)	
	BUS Overvoltage (Secondary CPU2)	
	PBUS Overvoltage (Secondary CPU2)	
	NBUS Overvoltage (Secondary CPU2)	
	PBUS Overvoltage (CPLD)	
	NBUS Overvoltage (CPLD)	
	MOS Continuous Overvoltage	
	BUS Short-Circuit Fault	Please contact the distributor/our company's customer service center.
	BUS Sampling Fault	Turn off the AC output side switch and DC input side switch. After 5 minutes, turn on the AC output side switch and DC input side switch. If the fault still exists, please contact the dealer or our company's customer service center.

Fault Type	Fault Prompt	Troubleshooting
	Battery 1 Pre-charging Fault	Check if the pre-charging circuit is in good condition and whether the battery voltage is consistent with the bus voltage only after the battery is powered on. If inconsistent, please contact the distributor/our company's customer service center.
	Battery 1 Relay Fault	After the battery is powered on, check if the battery relay is working and if a closing sound is heard. If it does not operate, please contact the distributor/our company's customer service center.
	Inverter Software Overcurrent	Occasional occurrence requires no handling; if this alarm occurs frequently, please contact the distributor/our company's customer service center.
	R Phase Inverter Hardware Overcurrent	
	S Phase Inverter Hardware Overcurrent	
	T Phase Inverter Hardware Overcurrent	
	R Phase Inverter Hardware Overcurrent	
	S Phase Inverter Hardware Overcurrent	
	T Phase Inverter Hardware Overcurrent	

Fault Type	Fault Prompt	Troubleshooting
	AC Side SPD Fault	Please contact the distributor/our company's customer service center.
Liquid Cooling Unit	High Outlet Water Temperature	Check if the compressor of the liquid cooling unit is operating normally. If normal, please contact the distributor/our company's customer service center.
	Low Outlet Water Temperature	Check if the PTC of the liquid cooling unit is operating normally. If normal, please contact the distributor/our company's customer service center.
	Outlet Water Temperature Sensor Fault	Turn off the AC air switch, reclose it after 1 minute. If the fault is still not cleared, please contact the distributor/our company's customer service center.
	Inverter Communication Fault	
	System High Voltage Lockout	If it occurs occasionally, it may be a short-term grid abnormality; restart the system after powering off and on again. 2. If it occurs frequently, check whether the grid voltage is within the allowable range. If not, please contact the local power operator. If yes, it is also necessary to modify the grid high-voltage protection point with the consent of the local power operator.

Fault Type	Fault Prompt	Troubleshooting
	System Low Voltage Lockout	If it occurs occasionally, it may be a short-term grid abnormality; restart the system after powering off and on again. 2. If it occurs frequently, check whether the grid voltage is within the allowable range. If not, please contact the local power operator. If yes, it is also necessary to modify the grid low-voltage protection point with the consent of the local power operator.
	Discharge Temperature Overhigh Lockout	1. If it occurs occasionally, it may be a short-term machine abnormality; restart the system after powering off and on again. 2. If it occurs frequently, please contact the distributor/our company's customer service center.
	Inverter Overcurrent Lockout	
	Inverter Overtemperature Lockout	
	Inverter Overvoltage Lockout	
	Inverter Undervoltage Lockout	
	Inverter Phase Loss Lockout	
	Water Replenishment Alarm	Please replenish the cooling liquid.
	System High Pressure Alarm	

Fault Type	Fault Prompt	Troubleshooting
	High Outlet Water Pressure Alarm	1. If it occurs occasionally, it may be a short-term machine abnormality; restart the system after powering off and on again. 2. If it occurs frequently, please contact the distributor/our company's customer service center.
EMS	CT Not Connected	Check the CT wiring.
	CT Reverse Connection	
	Smoke Alarm	1. If it occurs occasionally, it may be a short-term sensor abnormality; restart the system after powering off and on again. 2. If it occurs frequently, please contact the distributor/our company's customer service center.
	Water Immersion Alarm	Power off and check if there is water immersion inside the cabinet. If not, please contact the distributor/our company's customer service center.
	PACK Fire Alarm	Prepare for fire suppression and contact the distributor/our company's customer service center.
	Cluster-Level Fire Alarm	Prepare for fire suppression and contact the distributor/our company's customer service center.

10.5 Routine Maintenance

 DANGER

- Power off the equipment before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
- If exposed copper wires inside the conductive cable are found do not touch them. High voltage hazard. Please contact after-sales personnel and do not disassemble without authorization.

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	Check whether the air inlets/ outlets are free of foreign objects and dust, and the indicator is on.	Once every 6 months to once a year
WiFi Antenna (ANT)	Check if the antenna is loose, with normal appearance and proper function.	Once every 6 months to once a year
Dust Filter Cotton of Cabinet Liquid Cooling Unit	Clean with purified water	Once every 6 months to once a year
MSD Switch, Molded Case Switch, Auxiliary Power Switch, Emergency Stop Switch	Turn the DC switch on and off three consecutive times to make sure that it is working properly.	Once a year
Electrical Connections	Check whether electrical connections are loose, and whether the cable appearance is damaged or has exposed copper.	Once every 6 months to once a year

Maintenance Content	Maintenance Method	Maintenance Cycle
Liquid Cooling System	Check whether the sealing of the equipment's cable entry holes meets the requirements; if there are excessively large gaps or unblocked areas, re-seal them.	Once a year
Fire Protection System (Hot Aerosol)	Conduct comprehensive inspection and maintenance on the hot aerosol temperature-sensing automatic activation fire extinguishing device 1. Check the aerosol fire extinguishing device for physical damage 2. Observe the operation indicators of smoke detectors and temperature detectors; check if the sensors are operating normally 3. Check the mounting brackets and related hardware for loose, damaged or broken components	Once a year
PCS Testing	Charge-Discharge Test, Off-Grid Operation Test, Initialization Test, System Shutdown Test, Remote Test	After initial installation or maintenance, as required
Local EMS Testing	Indicator Light Test	After initial installation or maintenance, as required
Air Inlet/Outlet Dust Removal Maintenance	Check whether the heat sinks and air inlets/outlets are free of foreign objects and dust.	Once every 6 months

11 Technical Data

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G10
Battery Data		
Cell Type	LFP (LiFePO ₄)	
Cell Capacity (Ah)	314	
Module Nominal Energy (kWh)	52.25	
Number of Packs	5	
Pack 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)		
Nominal Output Power (kW)	125	
Max. Output Power(kW)	137.5@ 400V AC 130.6@ 380V AC	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G10
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	
Max. AC Current per MPPT (A)	198.5	
Nominal Output Current (A)	180.4@ 400V AC 189.9@ 380V AC	
Power Factor	~1 (0.8lag to 0.8lead)	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G10
Output (@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	
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	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G10
Max. AC Current Output to Grid (A)	198.5	
Max. AC Current per MPPT (A)	198.5	
Nominal Output Current (A)	180.4@ 400V AC 189.9@ 380V AC	
Power Factor	~1 (0.8lag to 0.8lead)	
Output (@Linear Load)	<3%	
Efficiency		
Max. PCS Efficiency	0.986	
Max.System Efficiency*1	0.92	
Protection		
Battery Reverse Polarity Protection	Intergrate	
Anti-islanding Protection	Intergrate	
AC Overcurrent Protection	Intergrate	
AC Short Circuit Protection	Intergrate	
AC Surge Protection	Type II	
General Data		
Operation temperature range (°C)	-25~+55	
Derating temperature (°C)	45	
Storage Temperature (°C)	-20~+45(One Month) 0~+35(One Year)	
Relative Humidity	10~95%	

Technical Data	GW125/261-ESA-LCN-G10	GW125/261-ESA-LCN-G10
Max. Operating Altitude (m)	4000(2000 derating)	
Cooling Method	Pack: Liquid Cooling PCS: Smart Fan Cooling	
User Interface	LED, WLAN+APP	
Communication Protocols	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	