2025-07-20

Residential All-In-One Energy Storage System

GW0.8/1.9-ESA-PS-G10

GW1.9-BAT-LVD-G10(Expansion Battery)

User Manual

GOODWE

Copyright Statement

Copyright©GoodWe Technologies Co., Ltd. 2025. All rights reserved.

No part of this manual can be reproduced or transmitted to the public platform in any form or by any means without the prior written authorization of GoodWe Technologies Co., Ltd.

Trademarks

GOODWE and other GOODWE trademarks are trademarks of GoodWe Technologies Co.,Ltd. All other trademarks or registered trademarks mentioned in this brochure are the property of their respective owners.

NOTICE

The information in this user manual is subject to change due to product updates or other reasons. This manual cannot replace the product safety labels unless otherwise specified. All descriptions in the manual are for guidance only.

Table of Contents

1 About This Manual 5
1.1 Overview 5
1.2 Applicable Model 5
1.3 Symbol Definition 6
2 Safety Precautions 7
2.1 General Safety 7
2.2 Personal Requirements 7
2.3 System Safety 8
2.3.1 PV String Safety 9
2.3.2 Residential All-In-One Energy Storage System Safety 9
2.3.3 Battery Safety 10
2.4 Safety Symbols and Certification Marks 11
2.5 EU Declaration of Conformity 12
2.5.1 Equipment with Wireless Communication Modules 12
2.5.2 Battery 13
3 System Introduction 14
3.1 System Overview 14
3.2 Supported Grid Types 15
3.3 Appearance Description 15
3.4 Measurement 18
3.5 Indicator Description 19

3.6 System Working Mode 20
4 Check and Storage 22
4.1 Check Before Receiving 22
4.2 Deliverables 22
4.3 Storage 23
5 Installation 26
5.1 Installation Requirements 26
5.2 Equipment Handling 28
5.3 Equipment Installation 28
6 System Wirings 31
7 System Commissioning 34
7.1 Check Before Power ON 34
7.2 Power ON 34
7.3 Indicator Description 34
8 System Commissioning 37
8.1 SEMS+APP Introduction 37
8.2 Downloading and Installing the App 39
8.3 Managing the Account 39
8.3.1 Registering 39
8.3.2 Account Login 40
8.4 Quickly configure Residential All-In-One Energy Storage System（Balcony） 41
8.5 Set Parameters for Residential All-In-One Energy Storage 44

System（Balcony）
8.6 Viewing Power Plant Information 48
8.6.1 View All Power Plant Overview Information 48
8.6.2 Viewing Power Plant Details (Green Electricity Mode) 50
8.6.3 Viewing Alarm Information for the Current Power Plant (Green Electricity Mode) 52
9 Maintenance 54
9.1 Power Off the System 54
9.2 Removing the Equipment 54
9.3 Disposing of the Equipment 55
9.4 Routine Maintenance 55
9.5 Troubleshooting 57
10 Technical Parameters 73
10.1 All-In-One Energy Storage System Technical Parameters 73
10.2 Battery Technical Data 77
11 Appendix 80
11.1 FAQs 80
11.1.1 How to Take An All-In-One Energy Storage System Outdoors for Use 80
11.1.2 How to Access the User Manual of the SEMS+ App 81
11.2 Abbreviations 81
11.3 Explanation of Terms 85
11.4 Battery SN Code Meaning 86

1 About This Manual

1.1 Overview

The energy storage system consists of residential all-in-one energy storage system, expansion battery, and smart meter. This manual describes the product information, installation, electrical connection, commissioning, troubleshooting and maintenance of the system. Before installing and using the product, please carefully read this manual about the product safety information and familiarize yourself with the product's functions and features. This manual will be updated without a fixed schedule, please obtain the latest version and product information from the official website.

1.2 Applicable Model

The energy storage system consists the following products:

Product Type	Product Information	Description
Residential All-In-One Energy Storage System	GW0.8/1.9-ESA-PS-G10	• Nominal capacity: 100Ah • Nominal Energy: 1.92kWh
Extended Battery	GW1.9-BAT-LVD-G10	Nominal Energy: 1.92kWh

1.3 Symbol Definition

DANGER
Indicates a high-level hazard that, if not avoided, will result in death or serious injury.
WARNING
Indicates a medium-level hazard that, if not avoided, could result in death or serious injury.
CAUTION
Indicates a low-level hazard that, if not avoided, could result in minor or moderate injury.
NOTICE
Highlights key information and supplements the texts, or some skills and methods to solve product-related problems to save time.

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 manual cannot replace the product safety labels unless otherwise specified. All descriptions in the manual are for guidance only.
- Before installations, read through the user manual to learn about the product and the precautions.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, wrist strips, and cloths when touching electronic devices to protect the equipment from damage.
- Unauthorized dismantling or modification may damage the equipment, and the damage is not covered under the warranty.
- Strictly follow the installation, operation, and configuration instructions in this manual or the user manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions. For more warranty details, please visit https://en.goodwe.com/warranty.

2.2 Personal Requirements

NOTICE

- Personnel who install or maintain the equipment must undergo strict training to learn about safety precautions and correct operations.
- Only qualified professionals or trained personnel are allowed to install, operate, maintain, and replace the equipment or parts.

2.3 System Safety

DANGER

- Make sure that the equipment is powered off before any electrical connections. Do not work with power on, otherwise, an electric shock may occur.
- All operations such as transportation, storage, installation, use and maintenance shall comply with applicable laws, regulations, standards and specifications.
- Perform electrical connections in compliance with local laws, regulations, standards and specifications, including cables and component specifications.
- Use the connectors included in the package to connect cables. The manufacturer shall not be liable for the equipment damage if connectors of other models are used.
- Ensure all cables are connected correctly, tightly, and securely. Inappropriate wiring may cause poor connection and damage the equipment.
- To protect the equipment and components from damage during transportation, please ensure that the transportation personnel are professionally trained. All operations during the transportation have to be recorded. The equipment shall be kept in balance to avoid falling down.
- The equipment is heavy. Please equip the corresponding personnel according to its weight so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.
- Keep the equipment stable to avoid dumping, which can result in equipment damage and personal injuries.

WARNING

- Do not apply mechanical load to terminals, otherwise the terminals may be damaged.
- If the cable bears too much tension, the connection may be poor. Reserve a certain length of the cable before connecting it to corresponding ports.
- Tie the cables of the same type together, and place cables of different types at least 30mm apart. Do not place the cables entangled or crossed.
- Place the cables at least 30mm away from the heating components or heat sources, otherwise the insulation layer of the cables may be aging or broken due to high temperature.

2.3.1 PV String Safety

WARNING

- Ensure the PV module frames and the bracket system are securely grounded.
- Ensure the DC cables are connected tightly, securely and correctly. Inappropriate wiring may cause poor contacts or high impedances, and damage the inverter.
- Avoid reverse polarity connection. Also, the voltage should be under the max DC input voltage. The manufacturer shall not be liable for the damage caused by reverse connection and extremely high voltage.
- The PV strings cannot be grounded. Ensure the minimum insulation resistance of PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter (R=maximum input voltage (V)/30mA).
- Do not connect the same PV string to multiple inverters at the same time. Otherwise, the inverters may be damaged.
- PV modules used with inverters must comply with IEC 61730 Class A standard.

2.3.2 Residential All-In-One Energy Storage System Safety

WARNING

Ensure that the voltage and frequency at the grid connection point comply with the specifications for grid connection of the inverter.

2.3.3 Battery Safety

DANGER

- Ensure that the equipment has been powered off to avoid the risk of electric shock before operating the device in the system. Strictly follow all safety precautions outlined in this manual and safety labels on the equipment during the operation.
- Do not disassemble, modify, or replace any part without official authorization from the manufacturer. Otherwise, it will cause electrical shock or damages to the equipment, which shall not be borne by the manufacturer.
- Do not hit, pull, drag, squeeze or step on the equipment or put the battery into fire. Otherwise, the battery may explode.
- Do not place the battery in a high temperature environment. Make sure that there is no direct sunlight and no heat source near the battery. When the ambient temperature exceeds 60 ℃, it may cause fire.
- Do not use the battery if it is defective, broken, or damaged. Damaged battery may leak electrolyte.
- Do not move the battery when it is working.
- A short circuit in the battery may cause personal injury. The instantaneous high current caused by a short circuit can release a large amount of energy and may cause a fire.

WARNING

- Factors such as temperature, humidity, weather conditions, etc. may limit the battery's current and affect its load.
- Contact after-sale service immediately if the battery is notable to be started. Otherwise, the battery might be damaged permanently.
- Inspect and maintain the battery regularly according to the maintenance requirements of the battery.

Emergency Measures

- Battery Electrolyte Leakage
  If the battery module leaks electrolyte, avoid contact with the leaking liquid or gas. The electrolyte is corrosive. It will cause skin irritation or chemical burn to the operator. Anyone contact the leaked substance accidentally has to act as following:
  - Breath in the leaked substance: Evacuate from the polluted area, and seek immediate medical assistance.
  - Eye contact: Rinse your eyes for at least 15 minutes with clean water and seek immediate medical assistance.
  - Skin contact: Thoroughly wash the touch area with soap and clean water, and seek immediate medical assistance.
  - Ingestion: Induce vomiting, and seek immediate medical assistance.
- Fire
  - The battery may burn when the ambient temperature exceeds 150℃. Poisonous and hazard gas may be released if the battery is on fire.
  - In the event of a fire, please make sure that the carbon dioxide extinguisher or Novec1230 or FM-200 is nearby.
  - The fire cannot be put out by water or 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 descriptions are for reference only. Please refer to the actual labeling of the equipment.

No.	Symbol	Descriptions
1		Potential risks exist. Take necessary protective measures when operating the equipment.
2		High voltage hazard. 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 contacting 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 the equipment away from children.
10		Do not pour with water.
11		Read through the user manual before any operations.
12		Wear PPE during installation, operation and maintaining.
13		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.
14		Grounding point.
15		CE Mark.
16		Double insulation or reinforced insulation.

2.5 EU Declaration of Conformity

2.5.1 Equipment with Wireless Communication Modules

The equipment with wireless communication modules sold in the European market meets the requirements of the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

2.5.2 Battery

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

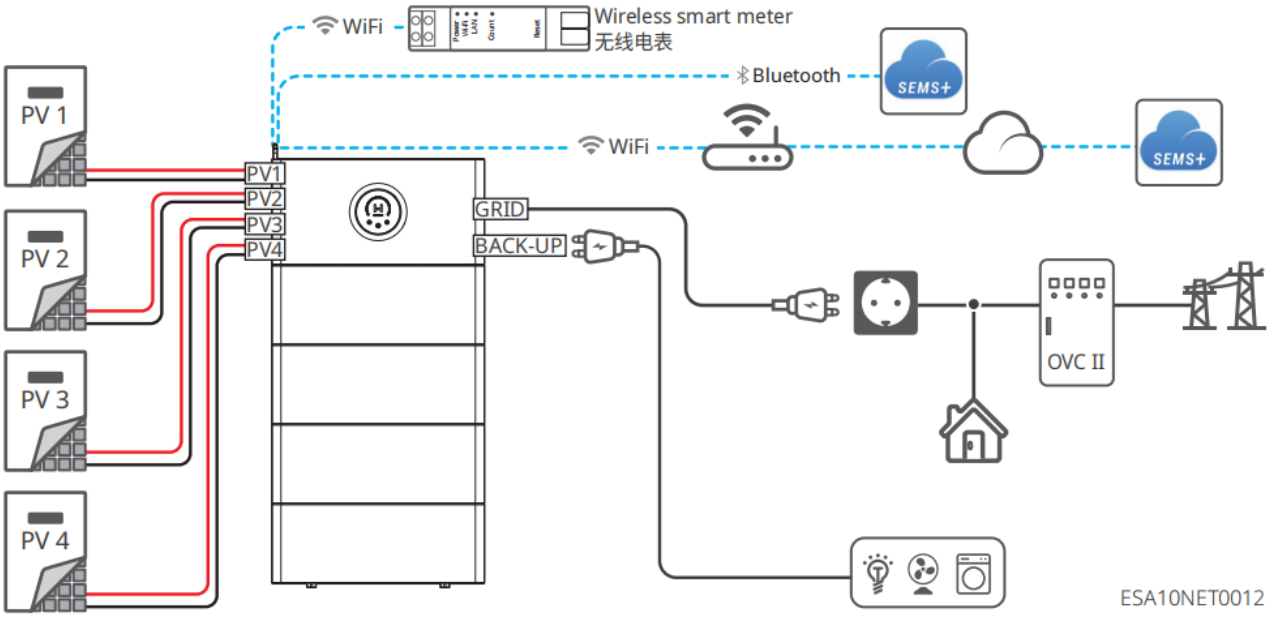
- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Battery Directive 2006/66/EC and Amending Directive 2013/56/EU
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

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

3 System Introduction

3.1 System Overview

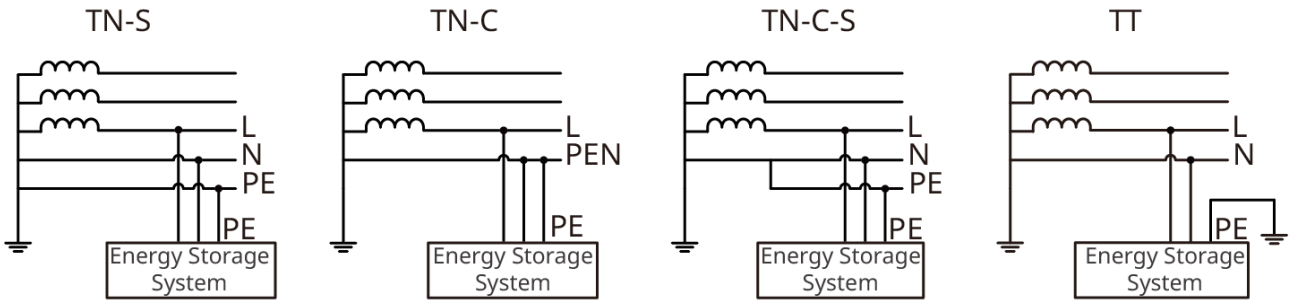
Residential all-in-one energy storage system solution consists of inverter and battery. In the PV system, solar energy can be converted to electric energy then directly used by household loads or stored in the battery.



- Residential all-in-one energy storage system is suitable for use in home balcony scenarios or outdoor scenarios.
- When used on balconies, the system supports installation of expansion batteries according to needs, with a maximum of 4 connectable units.
- Please prepare your own wireless smart meter. Connect the wireless meter via WiFi to achieve functions such as self-generation and self-consumption, and power limit. The installation method and precautions for the wireless meter can refer to the corresponding wireless meter manual. Currently supported wireless meter model : Shelly Pro 3EM.
- The all-in-one energy storage system supports connecting to SEMS+ App via Bluetooth for remote configuration of router information, and then it can achieve remote monitoring of system devices through WiFi connection with the SEMS+ App.
- Please ensure you have obtained local grid permission beofre connecting to the grid.
- Please ensure that the open-circuit voltage of the PV DC input does not exceed

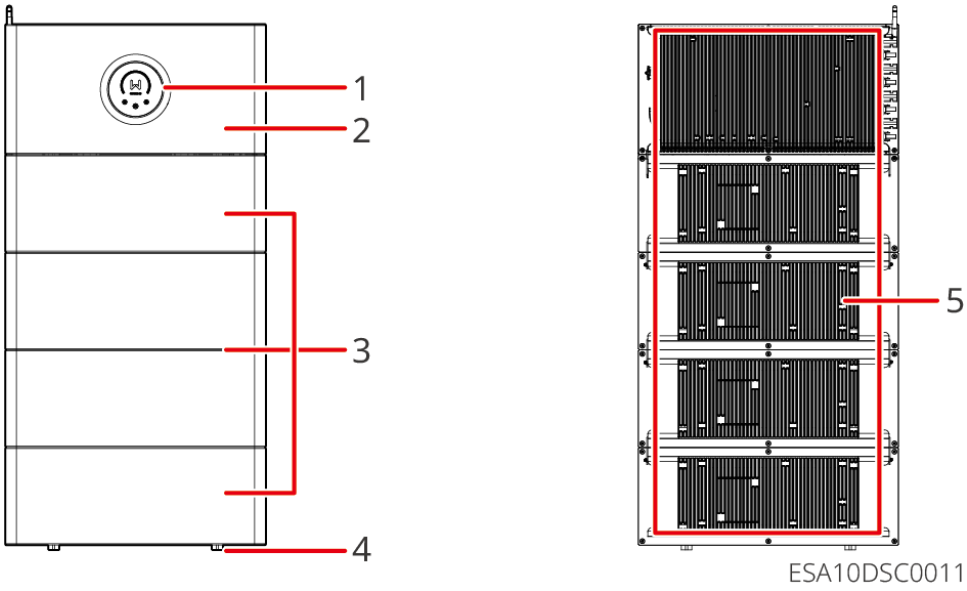
60V.

3.2 Supported Grid Types



TNNET0006

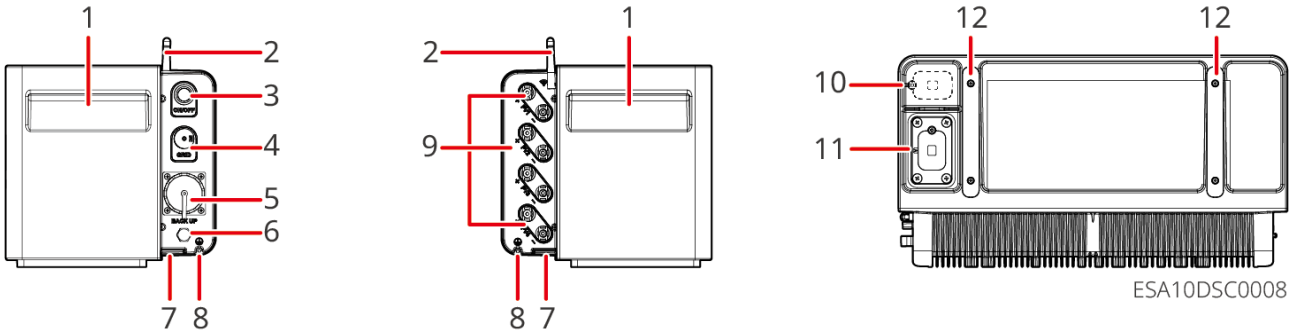
3.3 Appearance Description



ESA10DSC0011

No.	Component	No.	Component
1	Indicator	2	Residential All-In-One Energy Storage System
3	Battery	4	Foot pad
5	Heat Sink	-	-

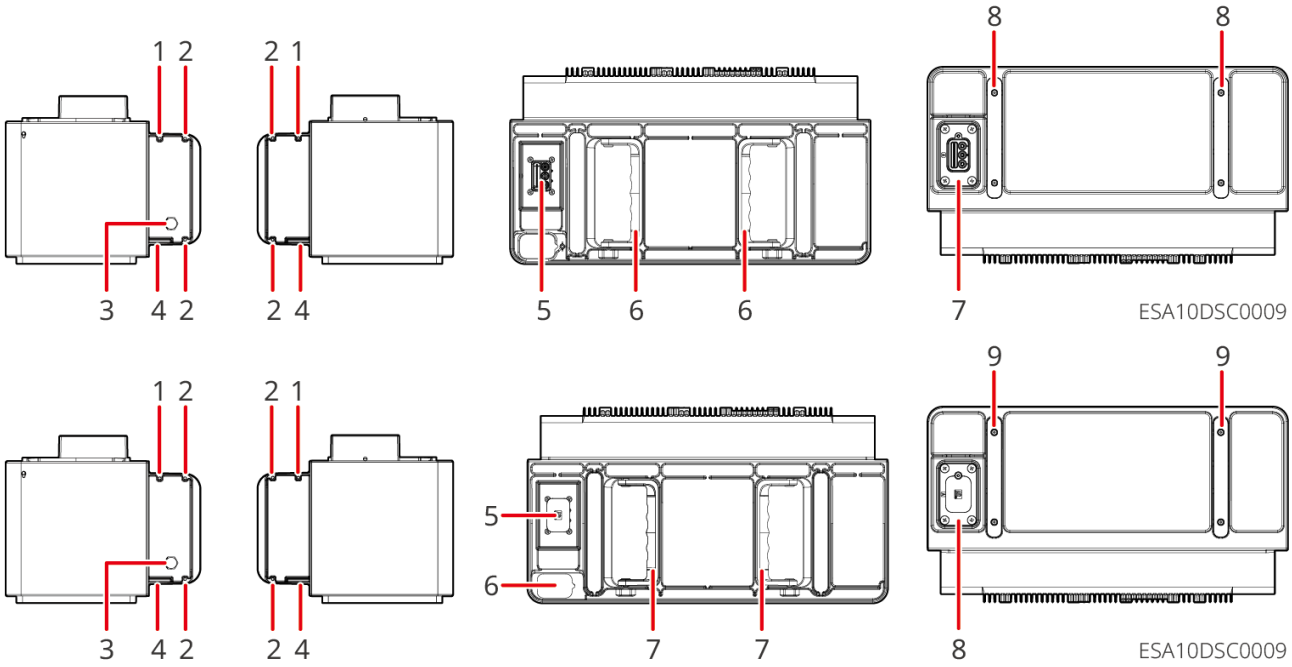
Residential All-In-One Energy Storage System



No.	Components / Silkscreen	Description
1	Lifting Handle	Used for transporting equipment.
2	Antenna	For wireless communication, it currently supports WiFi and Bluetooth signals.
3	ON/OFF switch	Control the start and stop of the equipment.
4	GRID Port	Connect the AC cable and connect equipments to the grid.
5	BACK-UP Port	Connect the AC cable and supply power to the important loads.
6	Ventilation Valve	-
7	Series Connection Mounting Holes	Install the series string support to fix the all-in-one system and the expansion battery.
8	Protective Grounding Terminal	Reserve port, used for connecting the PE cable.
9	PV Input Terminal	Connect PV module DC cable.
10	Battery Connection Port Protection Cover Fixing Base	• The protective cover for the battery connection port. • When using the battery blind mate port, install the protective cover on the fixed base; when the battery blind mate port is not in use, install the protective cover on the blind mate port.

No.	Components / Silkscreen	Description
11	Battery Connection Blind Mate Port	Connect residential all-in-one energy storage system and expansion battery.
12	Foot pad	-

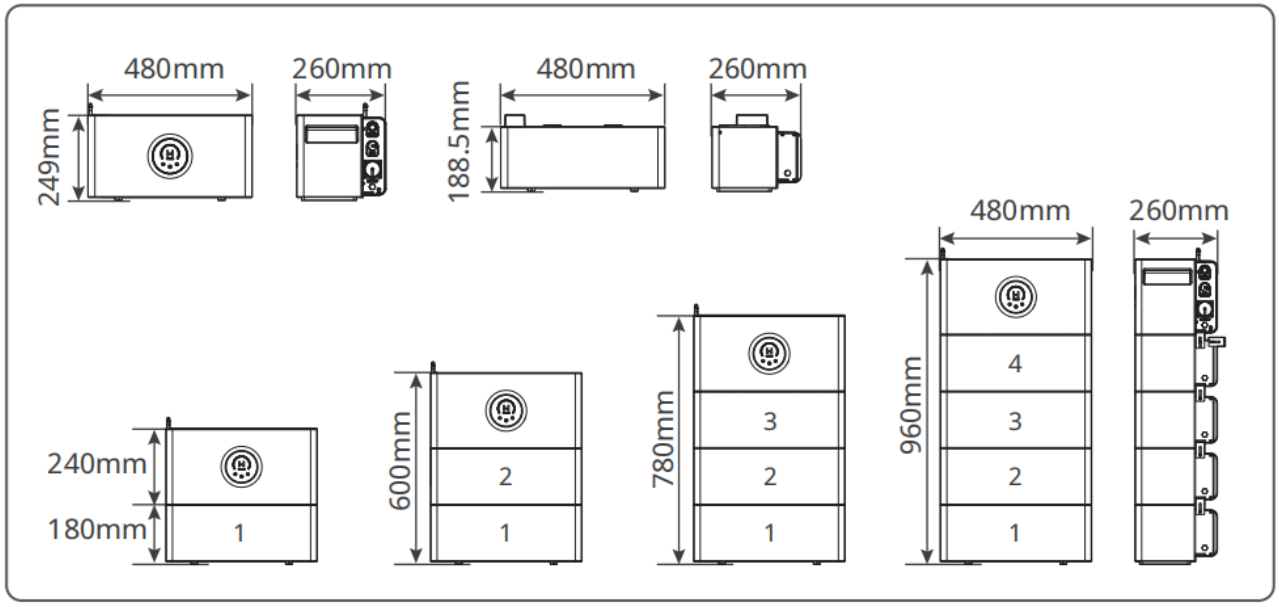
Battery



No.	Components / Silkscreen	Description
1	Series Connection Mounting Holes	Install the series string support to fix the all-in-one system and the expansion battery or stationary battery and battery.
2	Anti-tip Bracket Fixing Hole	Used for fixing anti-tip Bracket.
3	Ventilation Valve	-

No.	Components / Silkscreen	Description
4	Series Connection Mounting Holes	Install the series string support to fix the all-in-one system and the expansion battery or stationary battery and battery.
5	Upper Battery Blind Mate Connector Port	The connection ports between the all-in-one system and the battery, as well as between the battery themselves.
6	Battery Connection Port Protection Cover Fixing Base	When the battery is not in use, it is installed in the blind mate port on the battery connection.
7	Lifting Handle	Used for transporting equipment.
8	Lower Battery Blind-Mating Connector Port	• The connection ports between batteries. • When stacking the batteries, a terminal resistor needs to be installed at the lower blind-mating connector port of the bottom battery.
9	Foot pad	-

3.4 Dimension



ESA10DSC0010

3.5 Indicator Description

Indicator	Indicator Status	Dynamic Indicator Status	Description
	Blinking white	Flowing blue-purple	The system is preparing.
	Steady white	Breathing blue-purple	The system is working normally.
	Off	Blinking red	System fault
	Off	Off	System power off.
【2】 【4】	Steady white	/	The system is in balcony mode.
	Off		The system is in outdoor mode.
【3】 【4】	Steady white		Bluetooth broadcasting is on.
	Off		Bluetooth broadcasting is off.

Indicator	Indicator Status	Dynamic Indicator Status	Description
	Steady green		• Battery charging. • Segmented lighting, each segment = 10% SOC. 
	Blinking green		• Battery discharging. • Segmented lighting, each segment = 10% SOC. 
	Off		The battery has no power or system powered off.

【1】The duration for which the dynamic indicator light is on can be adjusted according to actual requirements, through SEMS+ App adjustment.

【2】Hold the indicator for 1-2s to switch system operation mode.

【3】Hold the indicator for 1-2s to turn on Bluetooth broadcasting. To reset Bluetooth/WiFi configurations, repeat this action (hold for 1-2s, release) three times within 10s.

【4】The touch function unlocks when holding + for 3s and auto-locks after 30s.

3.6 System Working Mode

- **Self-use Mode**
  - The basic mode of the system.
  - When the smart meter is not installed in the system, the self-use mode cannot be operated.
  - The power generated by the PV system supply the loads in priority; the excess power will charge the batteries, and then the remaining power will be sold to the utility grid. When the PV power generation fails to meet the load's electricity demand, the battery will supply power to the load; when the battery's power also fails to meet the load's electricity demand, the power will be supplied by the grid.
- **TOU Mode**

It is recommended to use TOU mode in scenarios when the peak-valley electricity price varies a lot. Select TOU mode only when it meets the local laws and regulations. During off-peak hours, the battery can be set to charging mode to purchase electricity from the grid for charging; during peak hours, the battery can be set to discharge mode to supply power to the load through the battery.

4 Check and Storage

4.1 Check Before Receiving

Check the following items before accept.

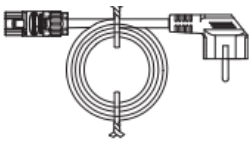
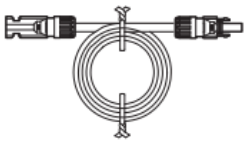
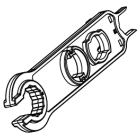
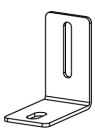
1. Check the outer packing box for damage, such as holes, cracks, deformation, and other signs of equipment damage. Do not unpack the package and contact the supplier as soon as possible if any damage is found.
2. Check the product model. If the product model is not what you requested, do not unpack the product and contact the supplier.

4.2 Deliverables

WARNING

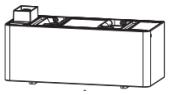
Check the deliverables for correct model, complete contents, and intact appearance. Contact the supplier as soon as possible if any damages found.

Residential All-In-One Energy Storage System Deliverables

Component	Description	Component	Description
	Residential All-In-One Energy Storage System x1		Expansion bolts x2
	AC connection cable x1 AC connection cable length：5m		PV extension cable x8 Extension cable length：2.9 m
	PV connector removal tool		Locking bracket x2

Component	Description	Component	Description
	M4*10 bolts x2		PV tamper-proof cover x8
	Documents x1	-	-

Batteries Deliverables

Component	Description	Component	Description
	Battery x1		String Connection x2
	M4*10 bolts x2	-	-

4.3 Storage

- If the Residential All-In-One Energy Storage System has been stored for more than two years or has not been in operation for more than six months after installation, it is recommended to be inspected and tested by professionals before being put into use.
- To ensure good electrical performance of the internal electronic components of the Residential All-In-One Energy Storage System, it is recommended to power it on every 6 months during storage. If it has not been powered on for more than 6 months, it is recommended to be inspected and tested by professionals before being put into use.
- In order to protect the performance and service life of the battery, it is recommended to avoid unused storage for a long period of time. Prolonged storage may cause deep discharging of the battery, resulting in irreversible chemical loss, leading to capacity degradation or even complete failure, timely use

is recommended. If the battery needs to be stored for a long period of time, please maintain it according to the following requirements:

NOTICE

The storage time starts from the SN date on the outer packaging of the battery and requires charging and discharging maintenance after the storage cycle is exceeded. (Battery maintenance time = SN date + charge/discharge maintenance cycle). For SN date, refer to11.4.Battery SN Code Meaning

Product Model	Initial SOC Range for Battery Storage	Recommended Storage Temperature (℃)	Charge and Discharge Maintaining Period[1]	Battery Maintenance Method
GW0.8/1.9-ESA-PS-G10	35~45%	0~35℃	-20~35℃, 12months 35~45℃, 6months	Contact the dealer or the after-sales service for maintenance method.
GW1.9-BAT-LVD-G10				

Packing requirements:

Do not unpack the outer package or throw the desiccant away.

Installation environment requirements:

1. Place the equipment in a cool place where away from direct sunlight.
2. Store the equipment in a clean place. Make sure the temperature and humidity are appropriate and there is no condensation. Do not install the equipment if the ports or terminals are condensed.
3. Keep the equipment away from flammable, explosive, and corrosive matters.

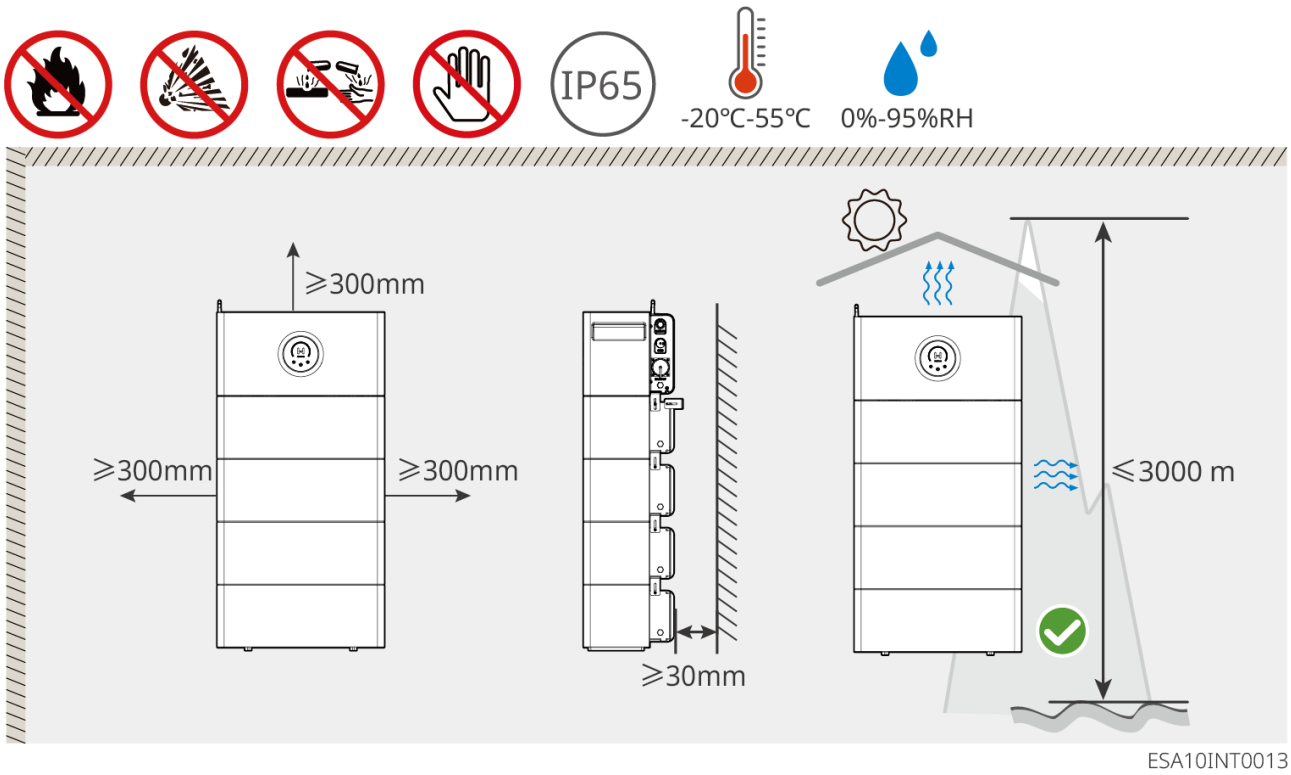
Stacking requirements:

1. The height and direction of the stacking inverter should follow the instructions on the packing box.
2. The inverter must be stacked with caution to prevent them from falling.

5 Installation

DANGER
Install and connect the equipment with the deliverables included in the package. Otherwise, the manufacturer shall not be liable for the damage.

5.1 Installation Requirements



ESA10INT0013

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. Do not install the equipment in a place that is easy to children's reach.
4. Reserve enough space for operations and heat dissipation when installing the system.
5. The temperature inside the box is relatively high when the inverter is running, do not touch the box before it cools down to avoid getting burned.
6. Install the equipment in a sheltered place to avoid direct sunlight, rain and snow.

7. The place to install the equipment shall be well-ventilated for heat radiation and large enough for operations.
8. The installation height should be convenient for operation and maintenance, ensuring that the equipment indicator lights, all labels and the connection terminals are easy to view.
9. The altitude to install the equipment shall be lower than the maximum working altitude.

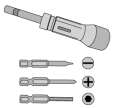
NOTICE

Charging temperature range: -20<T< 55°C; Discharging temperature range:-20<T< 55°C.
If installed in an environment below-20°C, the battery will not be able to continue charging to restore energy after being discharged, resulting in undervoltage protection.

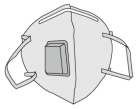
Tool Requirements

NOTICE

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

Tool Types	Description	Tool Types	Description
	Diagonal pliers		Spirit level
	Impact drill (drill bits Φ8mm)		Torque wrench M4, M5, M8
	Rubber hammer		Marker
	Cable tie		Vacuum cleaner

Personal Protective Equipment

Tool Types	Description	Tool Types	Description
	Insulating gloves and safety gloves		Dust mask
	Goggles		Safety shoes

5.2 Equipment Handling

CAUTION

- Operations such as transportation, turnover, installation and so on must meet the requirements of the laws and regulations of the country or region where inverters are installed.
- Move the equipment to the site before installation. Follow the instructions below to avoid personal injury or equipment damage.
  - Please equip the corresponding personnel according to its weight, so that the equipment does not exceed the maximum weight that the personnel can carry to avoid personnel injuries.
  - Wear safety gloves to avoid personal injury.
  - Keep balance to avoid falling down when moving the equipment.

5.3 Equipment Installation

⚠CAUTION

- When drilling holes, make sure to avoid the pipes, cables, etc. inside the wall at the drilling site to prevent any potential dangers.
- When drilling holes, please wear safety goggles and a dust mask to prevent dust from entering your respiratory system or getting into your eyes.
- The all-in-one system should be installed above the expansion battery. Do not install the expansion battery above it.
- When installing, it is necessary to ensure that it is level and firmly fixed. When placing the all-in-one system and the expansion battery, make sure the upper and lower holes are aligned; the anti-tip stand should be vertically attached to the wall or the surface of the battery.
- When using an impact drill to drill holes, paperboard or other shielding materials should be used to cover the equipment to prevent foreign matter from entering the equipment interior and causing damage to it.

The following are applicable to scenarios where an expansion battery is used. If the expansion battery is not required, simply place the all-in-one system in the appropriate installation location according to the actual needs.

Step 1: Use a marker pen to mark the drilling locations. When the number of installed expansion battery is different, the hole positions will also vary. Please refer to the illustration for details.

Step 2: Use an impact drill to make the holes, and install the expansion screw sleeves in advance inside the holes. Aperture: 8mm, Hole depth: 45mm.

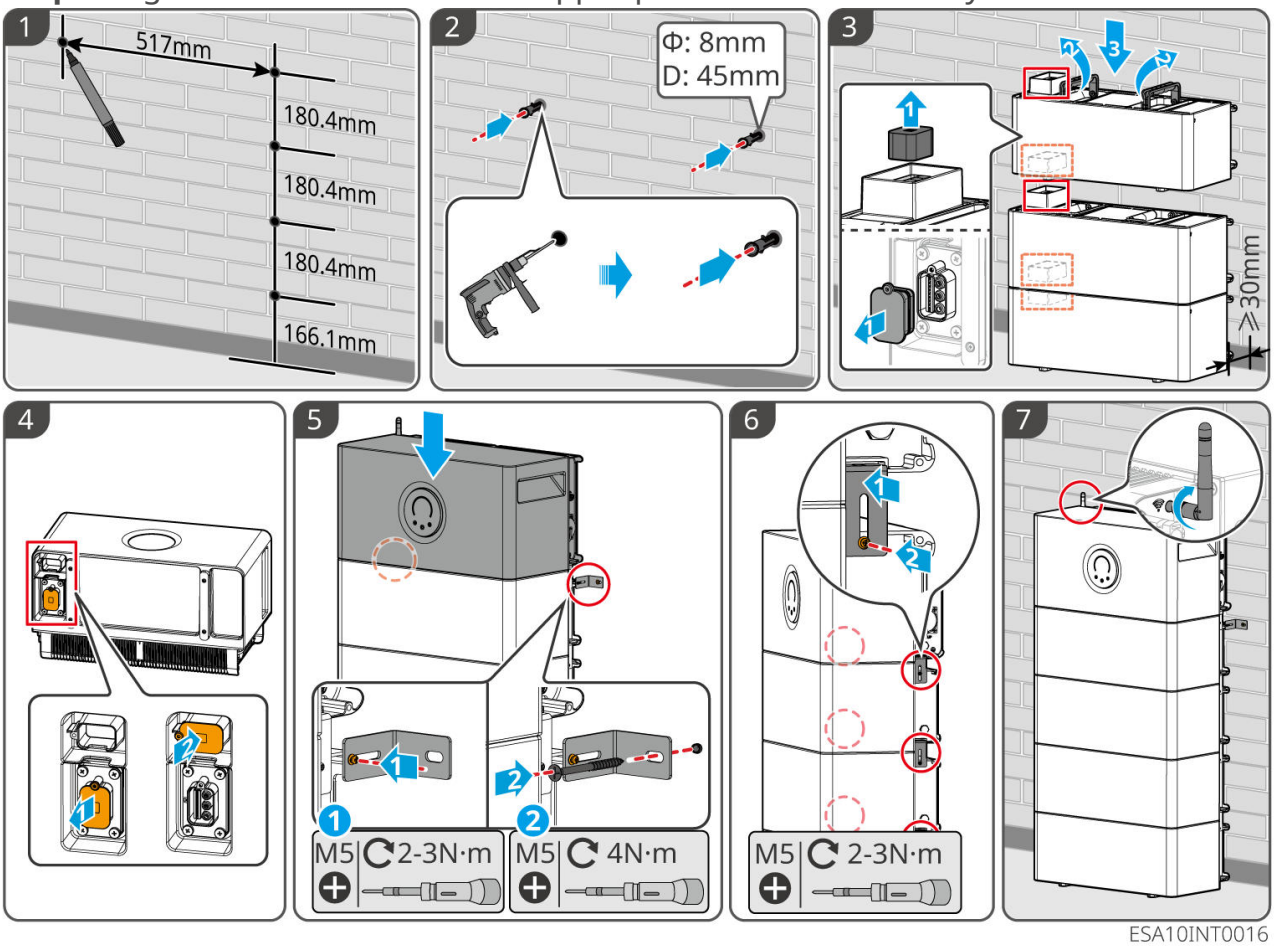
Step 3: Except for the battery placed at the bottom which needs to retain the blind mate port cover, the blind mate port covers of the other batteries should all be removed. After removing the protective cover, stack the batteries and install them. Place them 30mm away from the wall, keeping them parallel to the wall.

Step 4: Remove the protective cover for the plug-in port of the all-in-one system and install it on the fixed base of the adjacent protective cover to prevent it from being lost.

Step 5: Stack the all-in-one system for installation. When installing, align the blind mate ports for the batteries to ensure a stable installation. Fix one side of the anti-tilt bracket to the first battery on the underside of the all-in-one system , and secure it with screws. The other side is fixed to the wall and is securely fastened with the pre-installed expansion screws.

Step 6: Insert the series of brackets into the bracket installation holes of the all-in-one system and the battery one by one, and then tighten them with screws to complete the fixation between the all-in-one system and the battery, as well as between the batteries.

Step 7: Tighten the antenna on the upper part of the all-in-one system.



6 System Wirings

DANGER

- The erection, routing, and connection of cables must be in compliance with local laws and regulations.
- Perform electrical connections in compliance with local laws and regulations, including operations, cables, and component specifications.
- Make sure that the equipment is powered off 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 ports.

NOTICE

- Wear personal protective equipment like safety shoes, safety gloves, and insulating gloves during electrical connections.
- Cable colors in this document are for reference only. The cable specifications shall meet local laws and regulations.

Connecting the PV Cable

DANGER

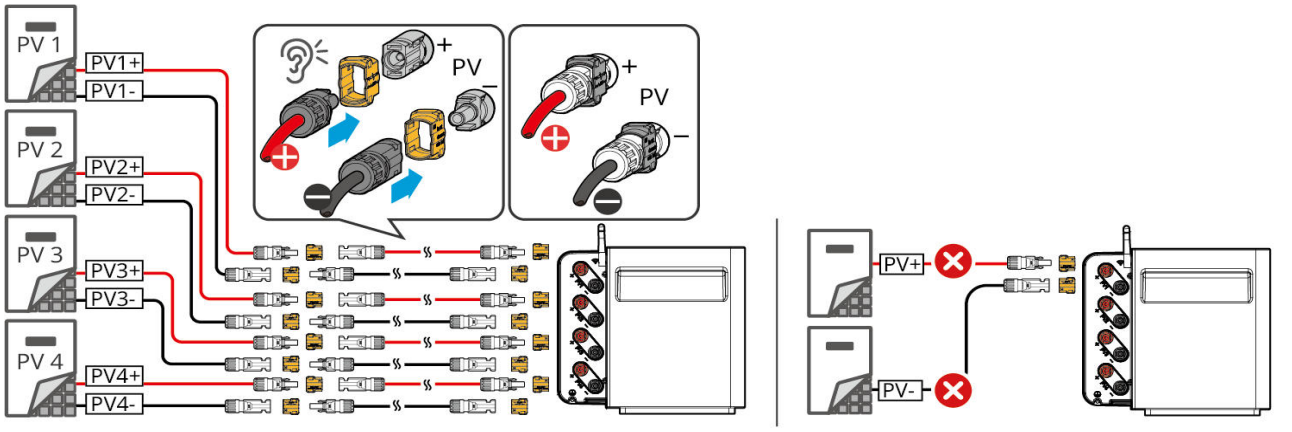
Confirm the following information before connecting the PV string to the equipment. Otherwise, the inverter may be damaged permanently or even cause fire and cause personal and property losses.

1. Make sure that the max short circuit current and the maximum input voltage per MPPT are within the permissible range.
2. Make sure that the positive pole of the PV string connects to the PV+ of the all-in-one system. And the negative pole of the PV string connects to the PV- of the all-in-one system.

WARNING

- The PV strings cannot be grounded. Ensure the minimum insulation resistance of PV string to the ground meets the minimum insulation resistance requirements before connecting the PV string to the inverter (R=maximum input voltage/30mA).
- Ensure the DC cables are connected tightly, securely and correctly.
- Make sure the positive and negative terminals of the DC cable are correctly connected without any reverse connection. Also, the voltage should be under the max DC input voltage.
- To prevent the PV cable from coming off, please install a tamper-proof cover. Tamper-proof cover is only applicable to MC4 PV connectors.
- Please ensure that the connection length of the PV cable does not exceed 3m. It is recommended to use the PV extension cable that comes with the product.

Step 1: Take out the PV tamper-proof cover shipped with the package, and install it onto the PV connector on the side of the all-in-one system and the PV connector on the module side.
Step 2: Take out the PV extension cable that comes with the package, and connect it to the all-in-one system and the components respectively.



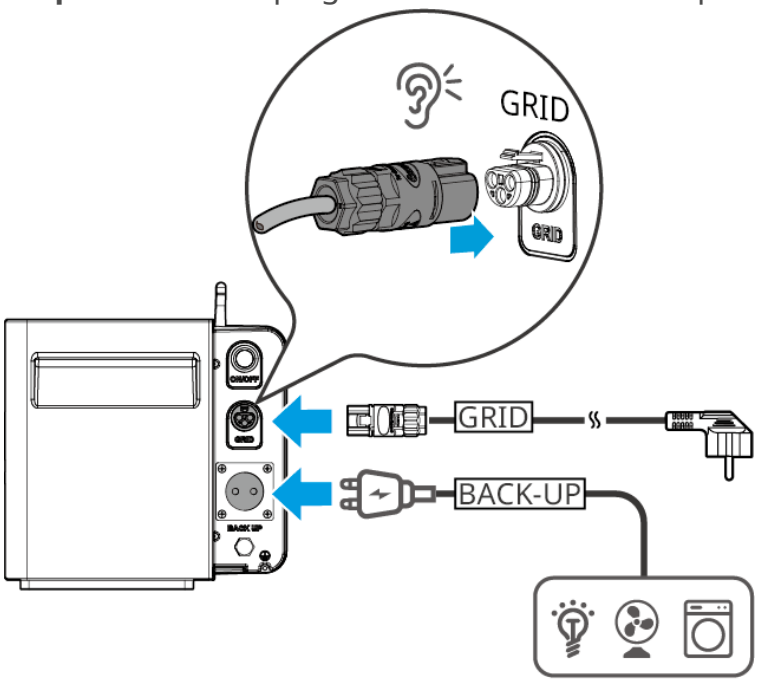
ESA10ELC0014

Connecting the AC Cable

DANGER

Please ensure that the specifications of the AC plug and socket are compatible.

Step 1: Take out the AC power cable shipped with the product and connect it to the GRID AC connection port on the side of the all-in-one system.
Step 2: If you need to connect the BACK UP load, you can plug the load connector into the BACK UP port on the side of the all-in-one system.
Step 3: Insert the plug at the other end of the power cord into the household socket.



ESA10ELC0015

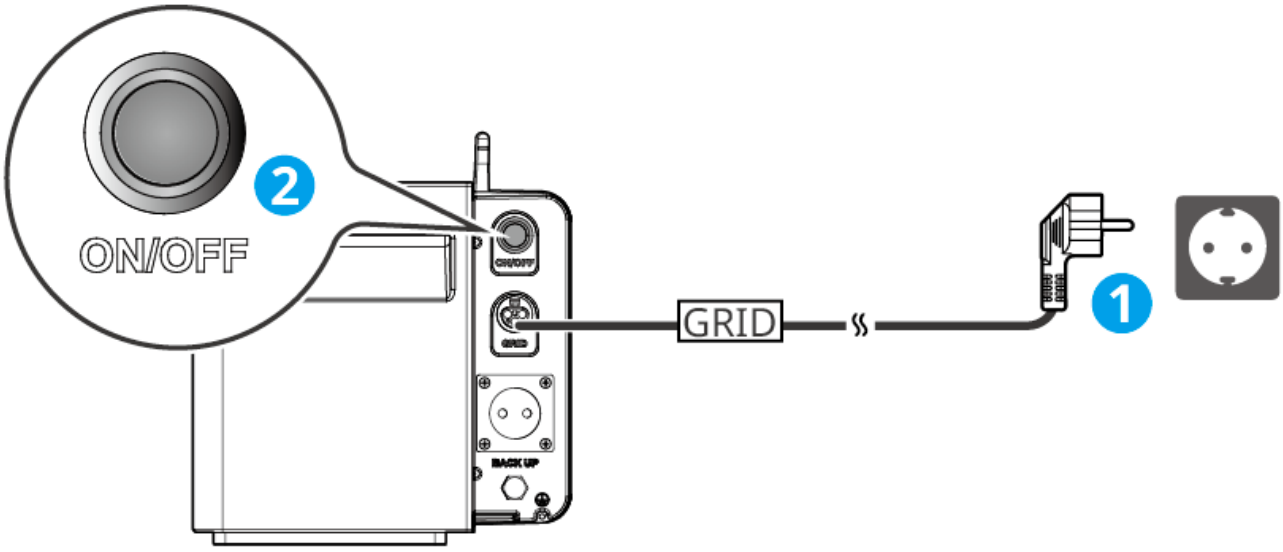
7 System Commissioning

7.1 Check Before Power ON

No.	Checking Item
1	The inverter is firmly installed in a clean place where is well-ventilated and easy to operate.
2	The DC and AC cables are connected correctly and securely.
3	Cable ties are intact, routed properly and evenly.
4	The voltage and frequency at the connection point meet the inverter grid connection requirements.

7.2 Power ON

Step 1: Plug the AC cable into the socket.
Step 2: Press the ON/OFF switch of the device to start it.



ESA10PWR0002

7.3 Indicator Description

Indicator	Indicator Status	Dynamic Indicator Status	Description
	Blinking white	Flowing blue-purple	The system is preparing.
	Steady white	Breathing blue-purple	The system is working normally.
	Off	Blinking red	System fault
	Off	Off	System power off.
 【2】【4】	Steady white	/	The system is in balcony mode.
	Off		The system is in outdoor mode.
 【3】【4】	Steady white		Bluetooth broadcasting is on.
	Off		Bluetooth broadcasting is off.
	Steady green		• Battery charging. • Segmented lighting, each segment = 10% SOC. 
	Blinking green		• Battery discharging. • Segmented lighting, each segment = 10% SOC. 
	Off		The battery has no power or system powered off.

【1】The duration for which the dynamic indicator light is on can be adjusted according to actual requirements, through

SEMS+ App adjustment.

【2】Hold the indicator for 1-2s to switch system operation mode.

【3】Hold the indicator for 1-2s to turn on Bluetooth broadcasting. To reset Bluetooth/WiFi configurations, repeat this action (hold for 1-2s, release) three times within 10s.

【4】The touch function unlocks when holding  +  for 3s and auto-locks after 30s.

8 System Commissioning

8.1 SEMS+APP Introduction

NOTICE

The corresponding App software version for the interface images in this article is V1.9. The pictures are for reference only. The actual display may differ.

SEMS Portal App is a monitoring platform. Commonly used functions are as follows:

1. Management of organization or user information.
2. Addition and monitoring of power station information.
3. Equipment maintenance.

The interface architecture of the App is as follows:

Top-level menu	Secondary menu	Third-level menu	Four-level menu	Five-level menu
Login & Register	-	-	-	-
Overview	Monitoring Information	-	-	-
	Create Station	-	-	-
Station	Station List	-	-	-
	Station Details	Remote/Local Access	-	-
		Monitoring Info		
		Working Mode		
		Device List	Device Details	Device Monitoring Info
		Station Configuration	Basic Information	-
			User Information	-

Top-level menu	Secondary menu	Third-level menu	Four-level menu	Five-level menu
			Station Photos	-
			PV Layout Design	-
		Alarms	-	-
		Settings	Start/Stop	-
			Lamp Ring Control	-
			Preparation for Trip	-
			Advanced Settings	Safety Settings
				Grid Settings
				Battery Settings
			Restore Factory Settings	-
	Create Station	-	-	-
Services	Services	Warranty	-	-
		Report Cter	-	-
		GoodWe News	-	-
		Announcemts	-	-
		Community	-	-
	Tools	Create Station	-	-
		Network Link	-	-
	Help	-	-	-
My	User Profile	-	-	-
	User Information	-	-	-
	Setting	-	-	-
		Email	-	-

Top-level menu	Secondary menu	Third-level menu	Four-level menu	Five-level menu
	Account Security	Password	-	-
		Close Account	-	-
	Auth Managemt	Remote Control Auth	-	-
		Monitoring Auth	-	-
	Apps	-	-	-
	About	-	-	-
	Logout	Logout	-	-
		Login anther Account	-	-

8.2 Downloading and Installing the App

Make sure that the mobile phone meets the following requirements:

- Mobile operating system requirements: Android 6.0 or above, iOS 13.0 or above.
- The mobile phone supports a web browser and is capable of connecting to the Internet.
- The mobile phone is equipped with WLAN/Bluetooth functions.

Download Method:

Method 1:

Search SEMS+ in Google Play (Android) or App Store (iOS) to download and install the App.

Method 2:

Scan the QR code below to download and install the App.



SEMS0002

8.3 Account Management

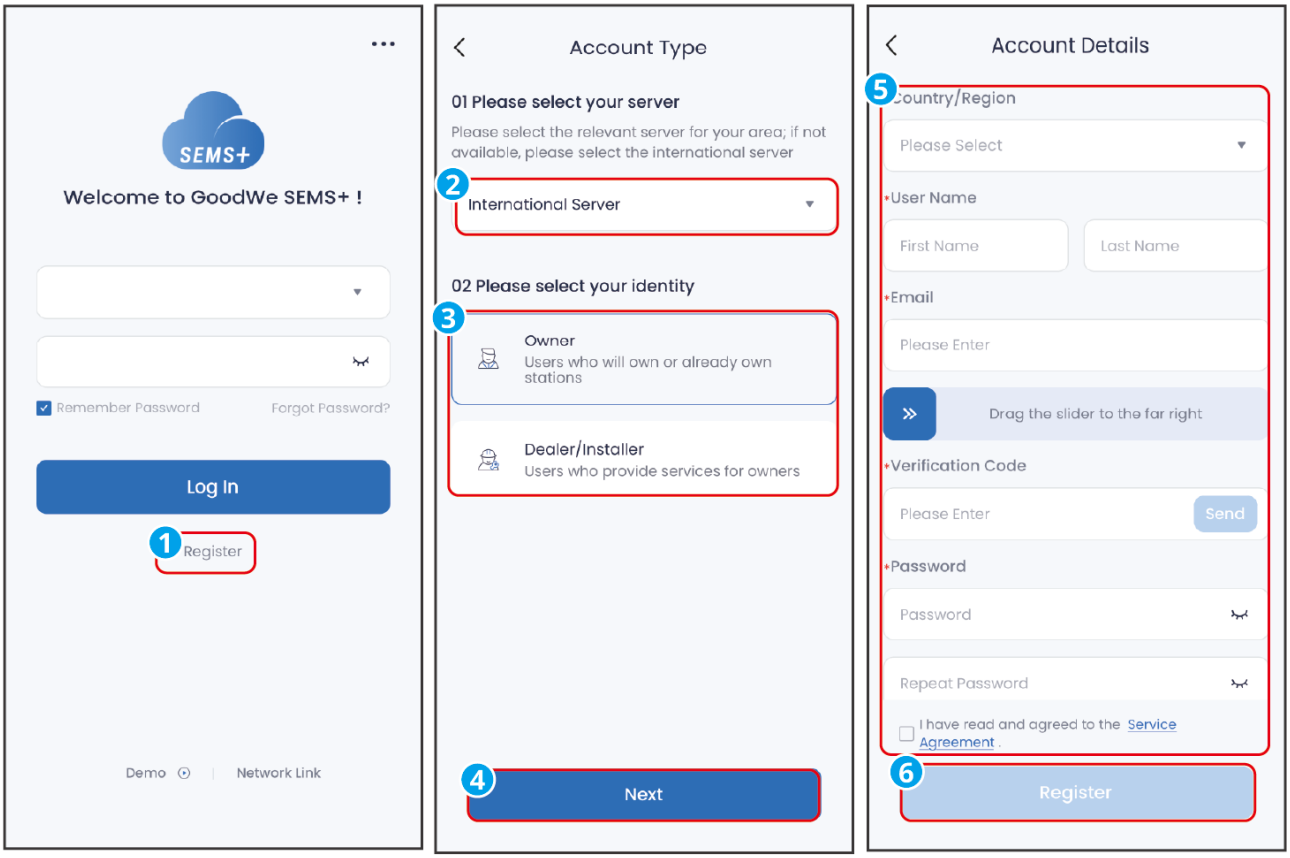
8.3.1 Registering

Step 1: Click **Register** on the app's home page to enter the account registration interface.

Step 2: Select the account type based on your actual needs, then click **Next**.

Step 3: Enter your account information according to the actual situation, and click **Register** to complete the registration.

SEMS0005



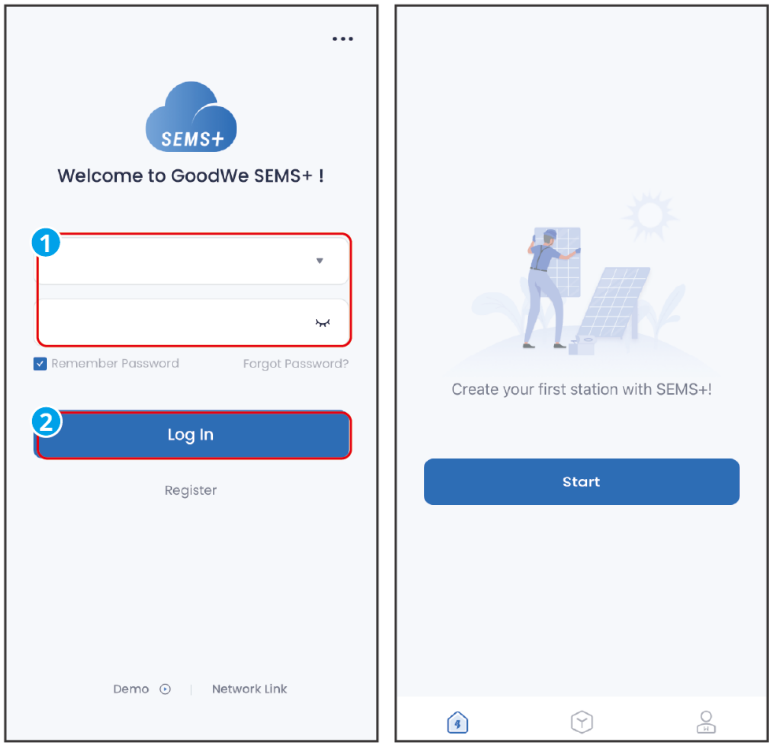
8.3.2 Login

NOTICE

- Before logging into the App, please register first or obtain the account and password through the dealer.
- After logging in with your account, you can view or manage the power station information. For the specific interface, please refer to the actual version.

Step 1: Enter your account number and password, read and check the login agreement, and click **Log In**.

SEMS0006



8.4 Quickly configure Residential All-In-One Energy Storage System（Balcony）

Step 1: Log in to the SEMS+ App using your account and password.

Step 2: Click > **Start**, enter the interface for creating the power station.

Step 3: Set the relevant information of the power station according to the actual situation. Click **Save&Continue** to enter the interface for adding power station equipment.

Step 4: Scan the SN barcode on the device label to automatically fill in the device-related information, or manually input the device information. After adding the device information, click **Done** to enter the**Search Devices** interface.

Step 5: Click Search Device, and the App will automatically start searching for nearby devices. After finding the device to be connected, click on the device name (WFA-***, where *** represents the 16-digit serial number of the device). Enter the login interface.

Step 6: Log in as the **User** with the account (initial password: 1234). After logging in, you will enter the **Device Configuration** interface.

Step 7: Turn on or off **Bluetooth Stays ON** according to actual needs. After enabling this feature, the device's Bluetooth will remain on and stay connected to App.

Otherwise, the device's Bluetooth will turn off after 5 minutes, disconnecting from App.

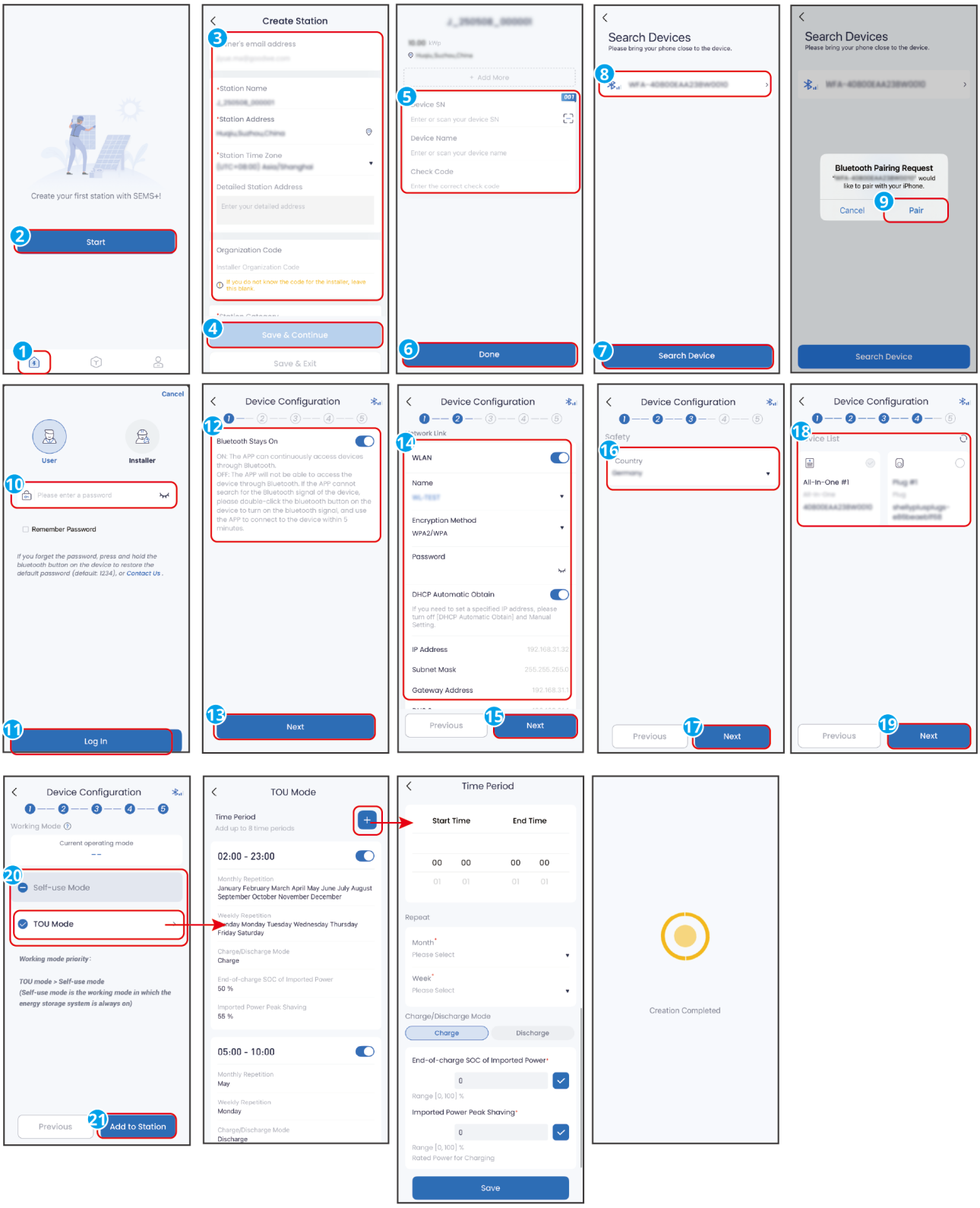
Step 8: Select the router for device connection based on actual needs. After the device is connected to the router, you can view the power station or device information through the App. When choosing a router, please ensure that the all-in-one system and other devices that need to be connected to the network are all connected to the same router. Make sure the router signal is strong and can establish a stable connection with the devices. After the settings are completed, click **Next** to start checking whether the WLAN connection is successful.

Step 9: Select the safety regulation region or country based on actual needs. After the settings are completed, click **Next**.

Step 10: Device List will display the devices that have been connected to the energy storage system. Select the required devices according to your actual needs. Click **Next**.

Step 11: Set the working mode of the equipment according to actual needs. Decide whether to enable the TOU mode. If enabled, please set the operating time period, charging and discharging mode, and charging and discharging power. Self-use Mode is the default basic working mode and does not require any selection. Click **Add to Station** to complete the creation of the power station and the addition of equipment.

SEMS0048



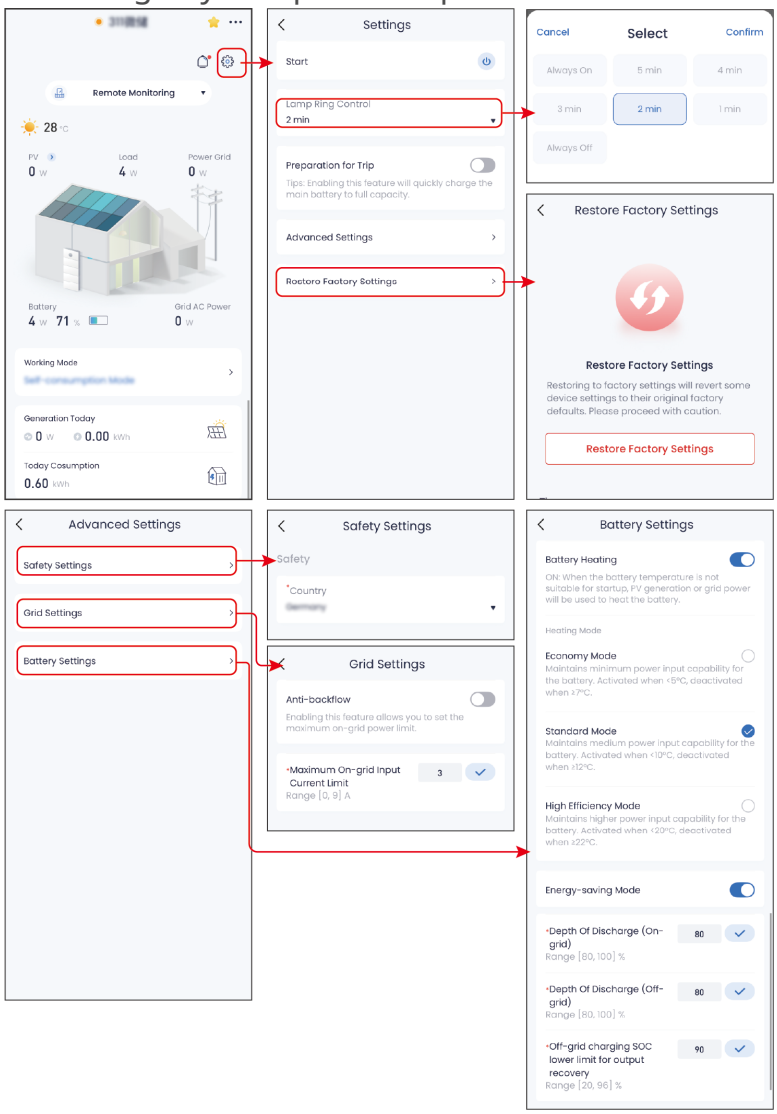
No.	Parameters	Description
Create Station		

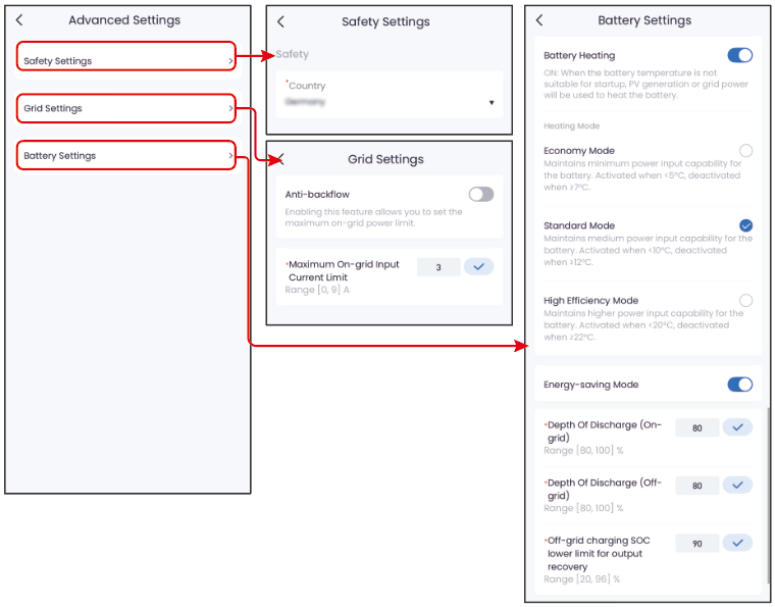
No.	Parameters	Description
1	Station Name	Set power plant name.
2	Station Address	Set the power station address according to the actual situation.
3	Station Category	Select the power station type. It is recommended to set it as Residential Storage.
4	Currency	Select the currency type.
5	Station Capacity	Set the capacity of the power station based on the power output of the PV modules.
6	Modules	Set the number of PV modules in the power station.
7	Rate of Revenue	Set the power station yield rate.
8	Station Profile Photo	Add the power station photos and you can set them as the cover image of the power station.
TOU mode: Subject to local laws and regulations, based on the differences in peak and off-peak electricity prices of the power grid, different time periods are set for electricity trading. Based on actual needs, during off-peak hours, the battery can be set to charging mode to purchase electricity from the grid for charging; during peak hours, the battery can be set to discharge mode to supply power to the load through the battery.		
9	Start Time	During the start and end times, the battery charges or discharges according to the set charging and discharging mode and the rated power.
10	End Time	
11	Repeat	
12	Charge/Discharge Mode	Set it to charge or discharge based on actual needs.
13	Rated Power for Charging	The percentage of charging power relative to the rated power of the all-in-one system.
14	Battery Discharge Power	The percentage of discharging power relative to the rated power of the all-in-one system.
15	Charge Cut-off SOC	The battery stop charging once the battery SOC reaches Charge Cut-off SOC.

8.5 Set Parameters for Residential All-In-One Energy Storage System（Balcony）

Step 1: Tap  on the power station details page and configure the parameters

according to your specific requirements.





No.	Parameters	Description
1	Start/Stop	Control the start and stop of the equipment.
2	Lamp Ring Control	Set the duration of the breathing light's flashing after the all-in-one system is running normally. For example: If the duration is set to 2 minutes, the system will operate normally. The breathing light will remain in a constant blue state for 2 minutes before turning off.
3	Preparation for Trip	After enabling this function, the battery of the home storage integrated machine (excluding the expansion battery) can be fully charged at the maximum charging speed.
4	Restore Factory Settings	• Reset Settings Only restore the user-defined setting parameters. • After resetting the device to factory settings, it enters a standby mode.
Advanced Settings		
5	Safety Settings	Select the safety standard country based on the country or region where the inverter is located.

No.	Parameters	Description
Grid Settings		
6	Anti-backflow	• If the electricity meter device is not detected in the system, this function cannot be enabled. • Enable Power Limit when power limiting is required by local grid standards and requirements.
7	Maximum On-grid Input Current Limit	Set the value based on the actual maximum current to the utility grid.
Battery Settings		
8	Battery Heating	Wen the temperature is below the value that starts up the battery, PV power or electricity from the grid will be used to heat the battery. Heating Mode: • Economic mode: Maintain the minimum power input capacity of the battery. It will be activated when the temperature is less than 3℃ and deactivated when the temperature is greater than or equal to 8℃. • Standard mode: Maintain the battery's moderate power input capacity. It is enabled when the temperature is below 10℃ and disabled when the temperature is 15℃ or above. • High-efficiency mode: Maintains the battery's high power input capability. It is activated when the temperature is below 17℃ and deactivated when the temperature is 22℃ or above.

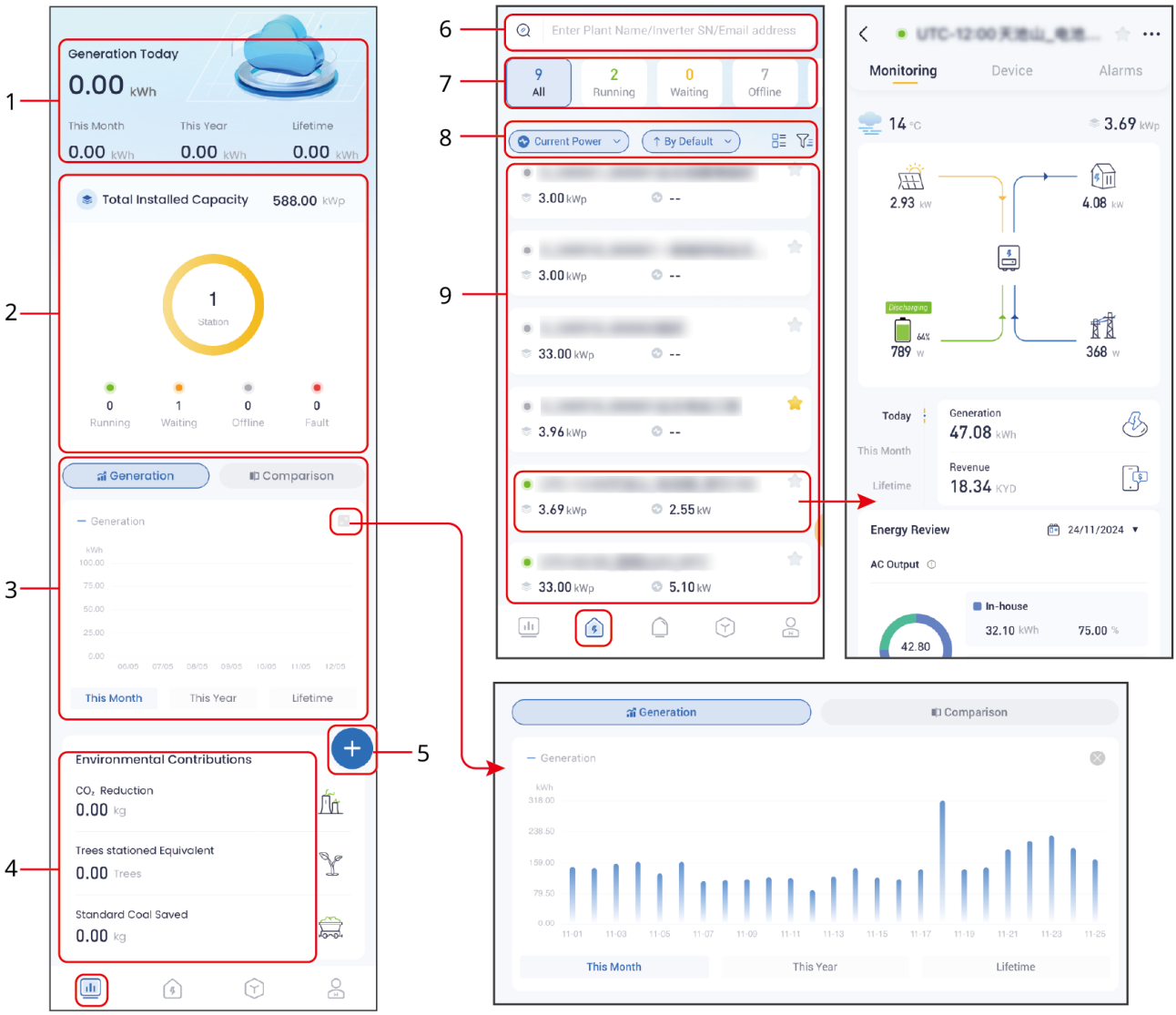
No.	Parameters	Description
9	Energy-saving Mode	• To save battery power, once the battery voltage drops to the lower limit of the SOC, the device enters standby mode, the screen goes dark, and the App cannot monitor it. Once the PV supply is sufficient, the device will automatically activate. • The energy-saving mode is set to be enabled by default at factory. If the battery's SOC is lower than the SOC limit, the device will shut down and this will prevent the backup device from being used.
10	Depth of Discharge (On-Grid)	The minimum amount of electricity that the battery needs to maintain when the inverter is in the on-grid scenario.
11	Depth of Discharge (Off-Grid)	The minimum amount of electricity that the battery needs to maintain when the inverter is in the off-grid scenario.
12	Off-grid charging SOC lower limit for output recovery	When the inverter is operating off-grid, if the battery SOC drops below the lower limit, the inverter stops outputting power and only charges the battery until the battery SOC returns to the off-grid recovery SOC value. If the SOC lower limit value is higher than the off-grid recovery SOC value, charge to SOC lower limit +10%.

8.6 Viewing Power Plant Information

8.6.1 View All Power Plant Overview Information

After logging into the SEMS+ App with your account password, you can view an overview of the power generation status of all power plants in your current account on the monitoring page.
Or, on the power plant page, arrange all power plant lists by different sorting and filtering conditions to view detailed information about the power plants.

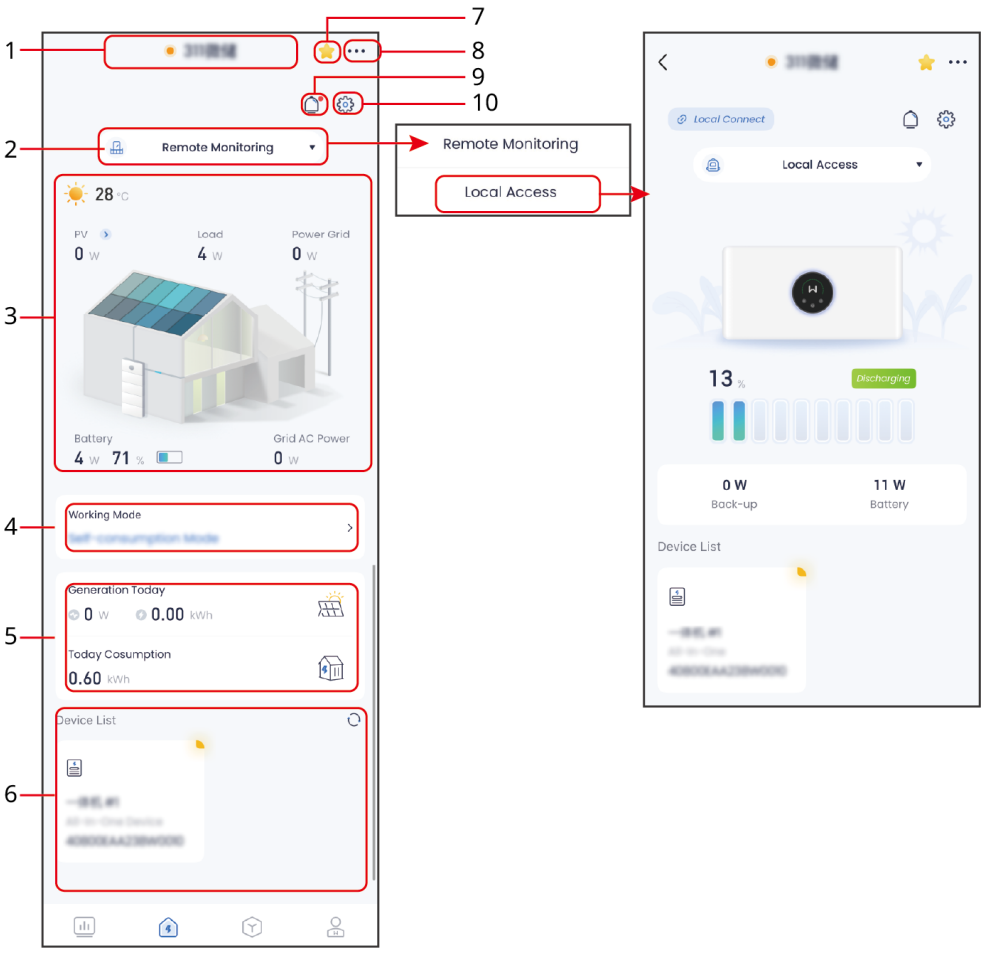
SEMS0018



No.	Description
1	Display the total power generation of all power plants, including: today's power generation, this month's power generation, this year's power generation, and total power generation. When the number of power plants is greater than or equal to 10, the power generation volume for that year is not displayed.
2	Display total installed capacity and power plant operating status. The operating status of a power station is classified as: Running, Waiting, Offline, or Faulted. The power station status is only Running when all equipment in the power station is operating normally.
3	Display statistical charts showing the power plant's electricity generation for the current month, the current year, or total electricity generation, or statistical charts comparing electricity generation with the previous year. Click to enlarge the statistical chart.

No.	Description
4	Display environmental contribution data such as **CO_2 Reduction**, **Trees Planted Equivalent**, and **Standard Coal Saved**.
5	Power Plant Creation.
6	Search for power stations. Enter the SN, power station name, or email address to quickly search for the corresponding power station.
7	Power plant operation status. Display the current power plant operating status and the number of power plants operating in each status. Click on the operating status to filter power plants with the corresponding operating status.
8	• Set up a list of power plants to display KPI indicators: Current Power, Rev. Today, Rev. Total, Gen. Today, Gen. Total • Set the sorting method for the power station list: By Default, By Capacity • Set the display mode for the power station list: Station Card, Station List • Set the selection method for the power station list: Scope, Category, Capacity
9	Power station. Click on the name of the power station to view detailed information about it. Different types of power stations display different information. Please refer to the actual situation.

8.6.2 Viewing Power Plant Details (Green Electricity Mode)



No.	Description
1	Current power plant name.
2	• Current device connection mode. Click to switch between display modes. Supported: Remote Monitoring, Local Access. ◦ Remote Monitoring: By connecting the device via WiFi, system data can be uploaded to the cloud. ◦ Local Access: Connects devices via Bluetooth for close-range communication. • The device connection mode cannot be automatically switched. Please manually modify it according to the actual connection scenario. • Only applicable to the ESA balcony all-in-one energy storage system.

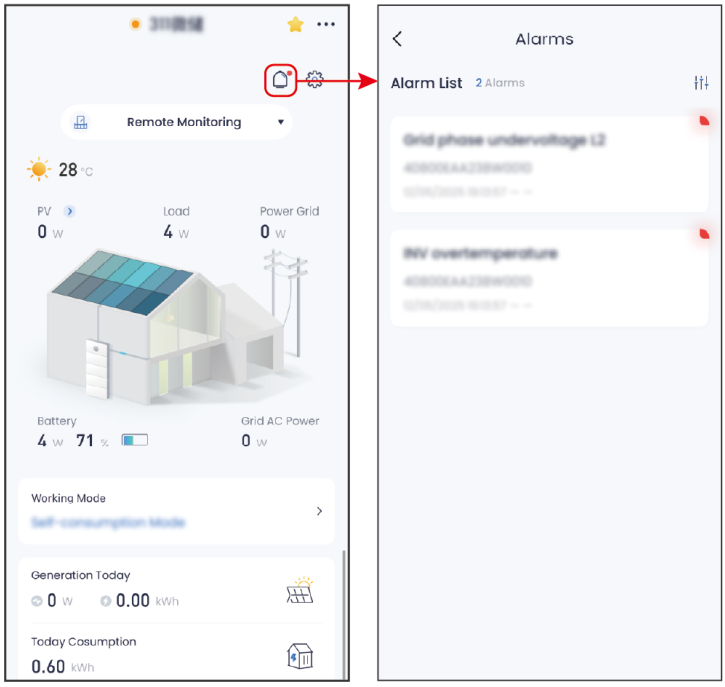
No.	Description
3	• Display the current operation information of the power station, such as PV input power, load power, grid power, battery power, and battery SOC, etc. • Click on Photovoltaic to view the PV module layout diagram..
4	Power station operation mode. Click to set specific working modes.
5	Display today's photovoltaic power generation and electricity consumption.
6	• Device List. Display residential all-in-one energy storage system, smart devices, etc. in the current power station. • The right upper corner of the equipment card displays the operating status of the equipment. • Click on the device card to view detailed information about the device.
7	Collect Power Plant.
8	Configure power plant information. Support: Configure basic power plant information, modify user information, add power plant photos, set PV component layout, etc.
9	Alert information. Click to view detailed alarm information.
10	Set Device Information. Supports: Power on/off, safety settings, battery settings, anti-reverse flow settings, factory reset, etc.

8.6.3 Viewing Alarm Information for the Current Power Plant (Green Electricity Mode)

Step 1: If there are multiple power plants, click on the power plant name on the power plant list page to enter the power plant details page.

Step 2: Click  to go to the alarm page and check out the alarm details. Click to filter alert information according to actual needs.

SEMS0053


Remote Monitoring
28 °C
PV
0 W
Load
4 W
Power Grid
0 W
Battery
4 W 71 %
Grid AC Power
0 W
Working Mode
Generation Today
0 W 0.00 kWh
Today Cosumption
0.60 kWh
Alarms
Alarm List 2 Alarms

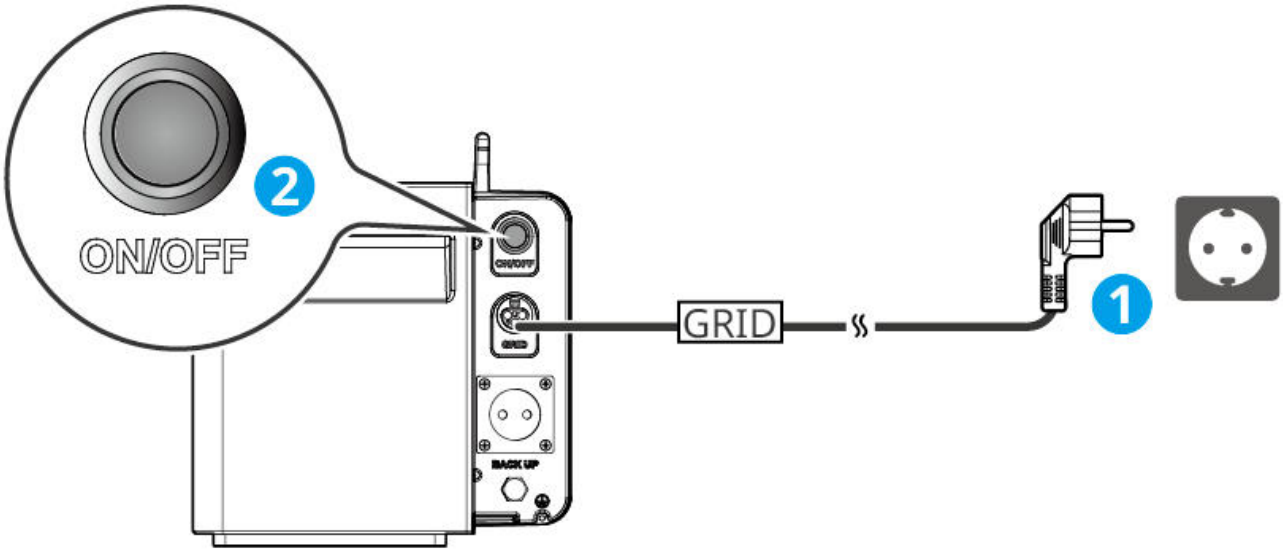
9 Maintenance

9.1 Power Off the System

DANGER

- Power off the equipment before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
- Delayed discharge. Wait until the components are discharged after power off.

Step 1: Press the ON/OFF switch of the device to turn it off.
Step 2: Remove the plug of the AC cable.



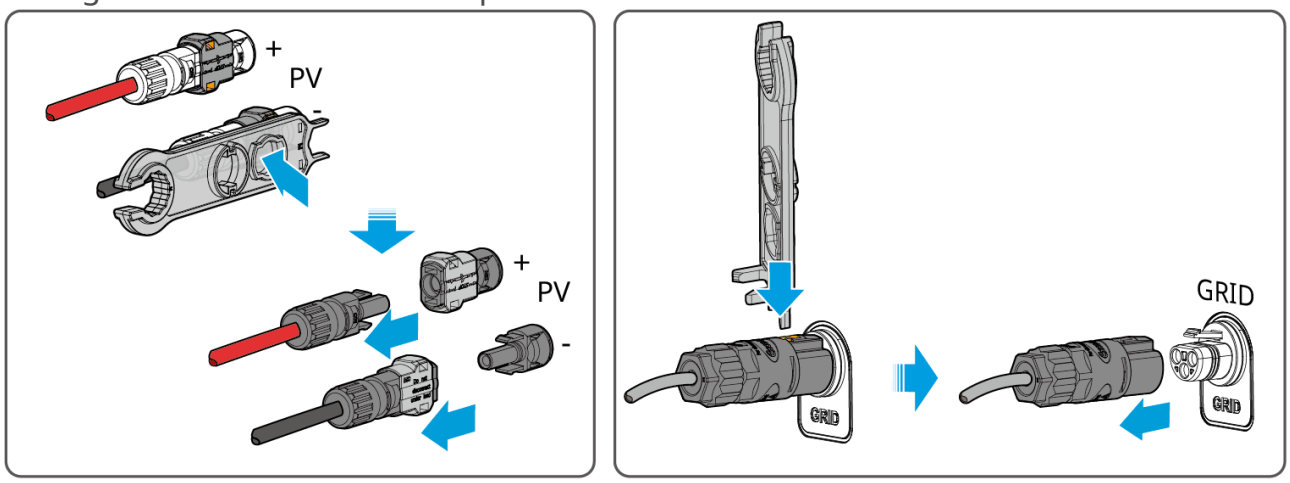
ESA10PWR0002

9.2 Removing the Equipment

DANGER

- Make sure that the equipment is powered off.
- Wear proper PPE during operations.
- Please use standard disassembly tools when removing wiring terminals to avoid damaging the terminals or equipment.
- Unless otherwise specified, the dismantling process of the equipment is in reverse order to the installation process, and it will not be further elaborated in this document.

Step 1: Power Off the System.
Step 2: Label the cables connected in the system with tags indicating the cable type.
Step 3: Disconnect all electrical connections of the equipment, including the PV and AC cables, as shown in the following picture.
Step 4: Remove all-in-one system and battery.
Step 5: Store the equipment properly. If it needs to be used later, ensure that the storage conditions meet the requirements.



ESA10MTN0001

9.3 Disposing of the Equipment

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.

9.4 Routine Maintenance

DANGER

- Before conducting equipment maintenance, please make sure to wear the necessary safety protection equipment to prevent electric shock.
- During the maintenance, please make sure that the upper and lower switches of the equipment have been disconnected.
- During the maintenance, please strictly follow the correct operating procedures.

WARNING

- Contact the after-sales service for help if you find any problems that may influence the battery or the hybrid inverter. Disassemble without permission is strictly forbidden.
- Contact after-sale service for help if the copper conductor is exposed. Do not touch or disassemble privately because the high voltage danger exists.
- In case of other emergencies, contact the after-sales service as soon as possible. Operate following the instructions or wait for the after-sales service personnel.

Maintaining Item	Maintaining Method	Maintaining Period	Maintaining Purpose
System Cleaning	Check whether the installation space meets requirements and whether there is any debris around the device.	Once 6 months	Prevent heat dissipation failures.

System Installation	• Check whether the equipment are installed securely and whether the screws are installed tightly. • Check whether the equipment is damaged or deformed.	Once 6-12 months	Ensure that the equipment is installed securely.
Electrical Connection	Check whether the cables are securely connected. Check whether the cables are broken, or whether there is any exposed copper core.	Once 6-12 months	Confirm the reliability of electrical connections.
Battery Maintenance	If the battery is not used for a long time or is not fully charged, it is recommended to charge the battery regularly.	Once/15 days	Protect the battery's lifespan.

9.5 Troubleshooting

Perform troubleshooting according to the following methods. Contact the after-sales service if these methods do not work.
Collect the information below before contacting the after-sales service, so that the problems can be solved quickly.

1. Product information like serial number, software version, installation date, fault time, fault frequency, etc.
2. Equipment installation environment, such as weather conditions, whether components are blocked or have shadows, etc. It is recommended that the installation environment can provide photos, videos and other files to assist in

analyzing problems.
3. Utility grid situation.

If unlisted problems occur in the system, or if following the instructions does not stop the problem or abnormality, stop operating the system immediately and contact your dealer immediately.

No.	Fault	Cause	Solutions
1	Grid Overvoltage	The grid voltage exceeds the allowed range, or the duration exceeds the set value of HVRT duration.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range. • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid voltage is within the allowable range, please modify the Grid, HVRT or Overvoltage protection value with the consent of the local power operator. 3. If it does not restore for a long time, please check whether the AC side circuit breaker or output cables are connected properly.

No.	Fault	Cause	Solutions
2	Grid Undervoltage	The grid voltage is below the allowed range, or the duration exceeds the set value of LVRT duration.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range. • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid voltage is within the allowable range, please modify the Grid, HVRT or Overvoltage protection value with the consent of the local power operator. 3. If it does not restore for a long time, please check whether the AC side circuit breaker or output cables are connected properly.
3	Grid Rapid Overvoltage	The grid voltage tested abnormal or the ultra-high voltage triggers the fault.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range. • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid voltage is within the allowable range, please modify the Grid, HVRT or Overvoltage protection value with the consent of the local power operator. 3. If it does not restore for a long time, please check whether the AC side circuit breaker or output cables are connected properly.

No.	Fault	Cause	Solutions
4	Grid 10min Overvoltage	The average value of the grid voltage within 10 minutes exceeds the range specified by safety regulations.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. If it occurs frequently, please check whether the grid voltage is within the allowed range. • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid voltage is within the allowable range, please modify the inverter grid overvoltage protection value with the consent of the local power operator.
5	Grid Overfrequcy	The frequency of the grid exceeds the local grid standard range.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid frequency is within the allowable range, please modify the inverter grid overfrequency protection value with the consent of the local power operator.

No.	Fault	Cause	Solutions
6	Grid Underfrequcy	The frequency of the grid is below the local grid standard range.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid frequency is within the allowable range, please modify the inverter grid overfrequency protection value with the consent of the local power operator.
7	Grid Frequcy Unstable	The frequency of the grid does not conform to the local grid standard range.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range. • If the grid voltage exceeds the allowable range, please contact local power operator. • If the grid voltage within the allowable range, contact the dealer or the after-sales service.
8	LVRT Undervoltage	Abnormal grid: The abnormal duration exceeds the specified value of local high voltage safety regulation.	1. If occurs occasionally, it may be caused a short term grid abnormality. The inverter will recover automatically after the grid is normal. 2. If it occurs frequently, please check whether the grid voltage is within the allowed range. If not, contact the local power company. If yes, contact the dealer or the after-sales service.
9	HVRT Overvoltage	Abnormal grid: The abnormal duration exceeds the specified value of local high voltage safety regulation.	

No.	Fault	Cause	Solutions
10	DCI Protection Level 1	The DC component of the inverter output current exceeds the local safety regulations or the inverter's default allowable range.	1. If caused by an external fault, the inverter will resume normal operation automatically after the fault is cleared. 2. If the alarm occurs frequently or affects the normal power generation, please contact dealer or GoodWe after-sales service center.
11	DCI Protection Level 2	The DC component of the inverter output current exceeds the local safety regulations or the inverter's default allowable range.	
12	Low Insulation Resistance	1. The PV string is short-circuited to PE. 2. The installation environment of PV strings is relatively humid for a long time and the insulation of PE cable is poor.	1. Check the impedance of the PV string to the ground. If there is a short circuit phenomenon, please check the short circuit point and rectify it. 2. Check whether the PE cable is connected correctly. 3. If it is confirmed that the impedance is indeed lower than the default value in cloudy and rainy days, please reset the "insulation impedance protection value".
13	Grounding Abnormal	The PE cable is not connected.	Please confirm if the PE cable of the inverter is not connected properly.
14	Internal Comm Loss	Refer to the specific sub-code reasons	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
15	Back-up Output Overload	Prevent the inverter from continuously overloading its output.	Shut down some off-grid loads and reduce the off-grid output power of the inverter.
16	Back-up Output Overvoltage	Prevent the inverter from outputting excessive voltage to avoid damage to the load.	1. If it occurs accidentally, it might be caused by load switching, and no manual intervention is required. 2. If the problem occurs frequently, contact the dealer or GoodWe after-sales service.

No.	Fault	Cause	Solutions
17	AC HCT Check Abnormal	Abnormal sampling of AC HCT	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
18	Relay Check Abnormal	Reasons for relay malfunction: 1. The relay is abnormal or short-circuited. 2. The relay sampling circuit is abnormal. 3. The AC cable connection is abnormal, like a virtual connection or short circuit.	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
19	Cabinet Overtemperature	Cavity temperature is too high, causes are possibly as follows: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	1. Check the ventilation and the ambient temperature at the installation point. 2. If the ventilation is poor or the ambient temperature is too high, please improve the ventilation and heat dissipation. 3. Contact the dealer or GoodWe after-sales service if both the ventilation and the ambient temperature are proper.

No.	Fault	Cause	Solutions
20	Inv Module Overtemperature	Possible causes for the excessive temperature of the inverter module: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	
21	Boost Module Overtemperature	Possible causes for the excessive temperature of the Boost module: 1. The inverter is installed in a place with poor ventilation. 2. The ambient temperature is too high. 3. A fault occurs in the internal fan of the inverter.	
22	1.5V Ref Abnormal	Fault of the Ref circuit	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
23	Model Type Error	Regarding the malfunction of incorrect model identification	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Solutions
24	BUS Overvoltage	Causes of BUS overvoltage: 1. The PV voltage is too high; 2. The sampling of the inverter BUS voltage is abnormal;	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
25	N-BUS Overvoltage		
26	PV Input Overvoltage	Possible reasons for excessive input voltage of PV system: Excessive PV modules are connected in the series, and the open-circuit voltage is higher than the operating voltage, resulting in the open-circuit voltage of the string being higher than the maximum working voltage of the inverter.	Check whether the PV string open-circuit voltage meets the maximum input voltage requirements. After the PV array was properly configured, the inverter alarm automatically disappeared.
27	PV Continuous Hardware Overcurrt	1. Improper PV panels configuration. 2. The hardware is damaged.	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.

No.	Fault	Cause	Solutions
28	FlyCap Software Overvoltage	Causes of FlyCap overvoltage: 1.PV voltage is too high.; 2. The sampling of the inverter BUS voltage is abnormal;	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
29	PV String Reversed（String 1~16）	PV String Reversed	Check if the circuit strings are connected in reverse order.
30	Internal Fan Abnormal	Internal Fan abnormal 1. The fan power supply is abnormal; 2. Mechanical exception or clogging; 3. The fan is aging and damaged.	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
31	Flash R/W Error	Flash content has changed; flash life is exhausted;	1. Upgrade the latest version of the program. 2. Contact the dealer or GoodWe after-sales service.
32	PV IGBT short circuit fault	1.PVBoost - Mos short circuit 2. Inverter sampling circuit malfunction	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.
33	String mismatch	1. The string power exceeds 600W 2. Inverter sampling circuit malfunction	Disconnect the AC output side switch, disconnect the PV string, set the equipment switch to the OFF position. After 5 minutes, close the AC output side switch, connect the PV string, and press the equipment switch to the ON position. If fault persists, please contact the dealer or GoodWe after-sales service center.

Battery Failure

No.	Fault	Cause	Solutions
1	BMS1 RACK nTotal voltage is too high fault	1. Battery system voltage too high 2. Voltage collection line abnormal	1. Discharge the battery and leave it to see if the fault persists; 2. If the fault persists, please contact the GoodWe After-Sales Service Center.
2	BMS1 RACK n Total voltage is too low fault	1. Battery system voltage too low 2. Voltage collection line abnormal	1.Charge the battery and leave it to see if the fault persists; 2.Determine the working condition of the inverter. Check if the battery is not being charged due to issues such as the working mode. Try to charge the battery through the inverter and observe if the fault is resolved. 3. If the fault is not restored, please contact GoodWe after-sales service center.
3	BMS1 RACK n Cell voltage is too high fault	1. Individual cell voltage is too high 2. Voltage collection line is abnormal	1. Discharge the battery and leave it to see if the fault persists; 2. If the fault persists, please contact the GoodWe After-Sales Service Center.
4	BMS1 RACK n Cell voltage is too low fault	1. Individual cell voltage is too low 2. Voltage collection line is abnormal	1.Charge the battery and leave it to see if the fault persists; 2.Determine the working condition of the inverter. Check if the battery is not being charged due to issues such as the working mode. Try to charge the battery through the inverter and observe if the fault is resolved. 3. If the fault is not restored, please contact GoodWe after-sales service center.
5	BMS1 RACK n Charging temperature is too high fault	1. Environment temperature too high 2. Temperature sensor malfunction	1. Place the battery in a cool place, turn off the device, and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the Solid State Technology after-sales service center.
6	BMS1 RACK n Discharging temperature is too high fault	1. Environment temperature too high 2. Temperature sensor malfunction	1. Place the battery in a cool place, turn off the device, and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the Solid State Technology after-sales service center.

No.	Fault	Cause	Solutions
7	BMS1 RACK n Charging temperature is too low fault	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. If the temperature is lower than -20°C, turn off the battery and place it in a warm environment. Wait until the cell temperature rises again before using it. 3. If none of the above methods work, please contact the GoodWe after-sales service center.
8	BMS1 RACK n Discharging temperature is too low fault	1. Environment temperature too low 2. Temperature sensor malfunction	1. Check the cell temperature in the background. If the lowest temperature is higher than -20°C, set the battery to discharge to raise the cell temperature. If the temperature is lower than -20°C, turn off the battery and place it in a warm environment. Wait until the cell temperature rises again before using it. 3. If none of the above methods work, please contact the GoodWe after-sales service center.
9	BMS1 RACK n Charge overcurrent fault	1. Excessive charging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Turn off and leave it for 5 minutes, restart the device and check if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.
10	BMS1 RACK n Discharge overcurrt fault	1. Excessive charging current, abnormal battery current limiting: sudden changes in temperature and voltage values 2. Abnormal inverter response	1. Turn off and leave it for 5 minutes, restart the device and check if the fault persists; 2. Check whether the inverter is set to excessive power, causing it to exceed the rated working current of the battery; 3. If the overcurrent persists, contact the GoodWe after-sales service center.

No.	Fault	Cause	Solutions
11	BMS1 RACK n Cell excessive temperature differentials fault	1. When the temperature difference is too large at different stages, the battery will limit the battery power, i.e., limit the charging and discharging current. So this kind of problem is generally unlikely to occur. 2. The capacity of the battery cell has depleted, resulting in excessive internal resistance. During overcurrent operation, the temperature rise is significant, and thus the temperature difference becomes large. 3. The welding of the cell electrode leads was not done properly, which led to the overcurrent causing the cell to heat up too quickly. 4. Temperature sampling issue; 5. Power cord connection is loose.	Turn off the device, recharge the battery, and wait for 2 hours. If the problem remains unsolved, please contact the GoodWe after-sales service center.
12	BMS1 RACK n Post temperature is too high fault	Excessive pole temperature	1. Turn off the device, and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.

No.	Fault	Cause	Solutions
13	BMS1 RACK n Cell excessive voltage differentials fault	1. Inconsistent battery cell aging 2. Board chip issues can also cause excessive battery cell pressure differences; 3. Board balancing issues can also cause excessive battery cell pressure differences; 4. Wiring harness issues cause.	Turn off the device, recharge the battery, and wait for 2 hours. If the problem remains unsolved, please contact the GoodWe after-sales service center.
14	BMS1 RACK n Relay or MOS short-circuit fault	MOS short-circuit	1. Upgrade the software, turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
15	BMS1 RACK n Relay or MOS op-circuit fault	MOS open-circuit	1. Upgrade the software, turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
16	BMS1 RACK n The precharge failed fault	Pre-charge failed and abnormal pre-charging circuit	1. Upgrade the software, turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
17	BMS1 RACK n Acquisition line fault	Poor contact or disconnection of battery collection line.	Shut down the device,check the wiring, restart the batteries, and restart the device. If the problem persists, please contact GoodWe after-sales service center.
18	BMS1 RACK n Relay or MOS temperature is too high fault	Relay or MOS over temperature	1. Upgrade the software, turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.

No.	Fault	Cause	Solutions
19	BMS1 RACK n Diverter temperature is too high fault	Diverter over temperature	1. Upgrade the software, turn off the device and leave it for 30 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
20	BMS1 RACK n BMU communication fault	BMS internal communication abnormal	1. Restart the battery. 2. Upgrade the battery. If the problem persists after restarting. please contact the GoodWe After-Sales Service Center.
21	BMS1 RACK n Micro-electronics fault	Internal MCU failure	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the GoodWe after-sales service center.
22	BMS1 RACK n Hardware overcurrent fault	1. Software version is too low or BMS board is damaged. 2. There are too many inverters connected in parallel, causing excessive impact on the battery during pre-charging.	1. Upgrade the software and observe whether the fault persists. 2. If multiple units are connected in parallel, start the battery first, then start the inverter.
23	BMS1 RACK n Application software fault	MCU self-test failed	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the GoodWe after-sales service center.
24	BMS1 RACK n Parallel RACK fault	Communication abnormalities between the master cluster and slave cluster, or inconsistencies between the cells of different clusters.	1. Check the battery information and software version of the slave machine, and whether the communication line connection with the host machine is normal. 2. Upgrade the software.
25	BMS1 RACK n DCDC fault	DCDC overload or excessive heat sink temperature, etc.	Upgrade the software, restart the battery, and if the problem persists after restarting, please contact the GoodWe after-sales service center.
26	BMS1 RACK n Inconsistent cell fault	1. Battery cell identification error 2. Stacking of different types of battery cells	Check the cell type

No.	Fault	Cause	Solutions
27	BMS1 RACK n The output port over temperature fault	Loose screws or poor contact at the output port.	1. Turn off the battery, check the wiring and output port screws. 2. After confirmation, restart the battery and observe whether the fault persists. If it does, contact the GoodWe after-sales service center.
28	BMS1 RACK n SOH too low fault	The battery has been used for too long or the battery cell is severely damaged.	Change the battery
29	BMS1 RACK n Heating film Three-terminal fault	Heating film mos damaged	Please contact the GoodWe after-sales service.
30	BMS1 RACK n Heating film MOS open-circuit	Heating mos malfunction	1. Turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
31	BMS1 RACK n Heating film MOS Adhesion	Heating mos malfunction	1. Turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.
32	BMS1 RACK n DCDC fault	Overcurrent, overvoltage and short-circuit faults	1. Turn off the device and leave it for 5 minutes. Restart the device and check if the fault persists. 2. If the fault persists, please contact the GoodWe after-sales service center.

10 Technical Parameters

10.1 All-In-One Energy Storage System Technical Parameters

Technical Data	GW0.8/1.9-ESA-PS-G10
Battery Data	
Battery Type	LFP (LiFePO4)
Rated Capacity (Ah)	100
Rated Energy (kWh)	1.92
Nominal Voltage (V)	19.2
Operating Voltage Range (V)	52...56
Max. Input/ Output Currt (A)-Basic Unit	30/30
Max. Input/ Output Power (kW)-Basic Unit	1.6/1.6
Max. Input/ Output Currt (A)-With Expandable Battery	45/30
Max. Input/ Output Power (kW)-With Expandable Battery	2.4/1.6
Cycle Life	> 6000 （25±2℃ 0.5P 100%DOD 70%EOL ）
Depth of Discharge	100%
PV String Input Data	
Max.MPPT Input Power (kW)	2.4
Max.Input Voltage (V)	60
Operating Voltage Range(V)	13...60
MPPT Voltage Range (V)	13...48

Technical Data	GW0.8/1.9-ESA-PS-G10
MPPT Voltage Range at Nominal Power (V)	33.3...48
Start-up Voltage (V)	15
Nominal Input Voltage (V)	40
Max.MPPT Currt(A)	18/18/18/18
Max.MPPT Short Circuit Currt(A)	20/20/20/20
Number of MPPT Trackers	4
Number of Strings per MPPT	1
Max.Inverter Backfeed Currt(A)	0
AC Output Data (On-grid)	
Nominal Power (kW)	0.8
Max. Output Power (kW)	0.8
Nominal Appart Power to Grid(kVA)	0.8
Max. Currt to Grid(A)	3.6@220V 3.5@230V 3.3A@240V
Nominal Appart Power from Grid (kVA)	1.5
Max.Appart Power from Grid(kVA)	1.5
Max.Currt from Grid(A)	8.8
Nominal Voltage (V)	220/230/240, L/N/PE
Output Voltage Range (V)	170-280
Nominal Frequcy (Hz)	50/60

Technical Data	GW0.8/1.9-ESA-PS-G10
AC Grid Frequcy Range (Hz)	45~55 / 55~65
Power Factor	~1 (0.8lagging...0.8leading)
THDi	3%
Inrush Currt(A)	20
Max. Output Fault Currt(A)	20
Maximum Output Overcurrt Protection(A)	15
AC Output Data (Back-up)	
Nominal Output Appart Power(kVA)	1.5
Max.Output Appart Power(kVA)	1.5
Max. Output Currt (A)	6.8
Nominal Output Voltage (V)	220/230/240, L/N/PE
Nominal Output Frequcy (Hz)	50/60
THDu	<3%
Switching from Grid Connected Mode to Standalone Mode(ms)	<10
Efficicy	
Max. Efficicy	92%
MPPT Efficicy	99.80%
Protection	
PV Insulation Resistance Detection	Integrated
Anti-islanding Protection	Integrated
AC Overcurrt Protection	Integrated

Technical Data	GW0.8/1.9-ESA-PS-G10
AC Short Circuit Protection	Integrated
AC Overvoltage Protection	Integrated
AC Surge Protection	Type III
Fast AC Discharge	Integrated
Fire Safety Equipmt	Optional(Aerosol)
Geral Data	
Operating Temperature Range (℃)	-20℃-+55℃ (With Heating)
Storage Temperature (℃)	-20℃-35℃（1 year） 35℃-45℃（6 month）
Relative Humidity	0-95%
Max.Operating Altitude (m)	3000
Cooling Method	Natural Convection
User Interface	LED、APP
Communication Interface	Bluetooth、Wi-Fi
Weight (kg)	26
Dimsion (W×H×D mm)	480×249×260
Noise Emission (dB)	23
Topology	Isolated
Ingress Protection	IP65
Pollution Degree	PD3 (External) PD2 (Internal)
Overvoltage Category	OVCII (DC) OVCII (AC)

Technical Data	GW0.8/1.9-ESA-PS-G10
Anti-Corrosion Class	C4
Protection Class	Class II
Mounting Method	Floor stacked
Warranty（year）	10 Years
Certification	
Grid Standards	VDE 4105:2018；EN50549-1/-10；C10/11 CEI 0-21
Safety Regulation	IEC62109-1/-2；EN18031；IEC 62619；IEC 63056；IEC60730；UN38.3
EMC	IEC/EN 61000-1/-2/-3/-4；IEC/EN 62920；CISPR 11；EN 55011；EN 301489-1/-17

10.2 Battery Technical Data

Technical Data	GW01.9-BAT-LVD-G10
Battery Data	
Battery Type	LFP (LiFePO4)
Rated Capacity (Ah)	100
Rated Energy (kWh)	1.92
Nominal Voltage (V)	19.2
Operating Voltage Range (V)	52...56
Max. Input/Output Current (A)	30/30
Max. Charge/ Discharge power (kW)	1.6/1.6

Technical Data	GW01.9-BAT-LVD-G10
Cycle Life	> 6000 （25±2℃ 0.5P 100%DOD 70%EOL ）
Depth of Discharge	100%
General Data	
Operating Temperature Range (℃)	-20℃~+55℃ (With Heating)
Storage Temperature (℃)	-20℃~35℃（1 year） 35℃~45℃（6 month）
Relative Humidity	0 ~ 95%
Max.Operating Altitude (m)	3000
Cooling Method	Natural Convection
Weight (kg)	21
Dimension (W×H×D mm)	480×180×260
Ingress Protection	IP65
Pollution Degree	PD3 (External) PD2 (Internal)
Overvoltage Category	OVCII (DC)
Anti-Corrosion Class	C4
Protection Class	Class II
Mounting Method	Floor stacked
Fire Safety Equipment	Aerosol(Optional)
Warranty（year）	10 Years
Certification	
Grid Standards	/

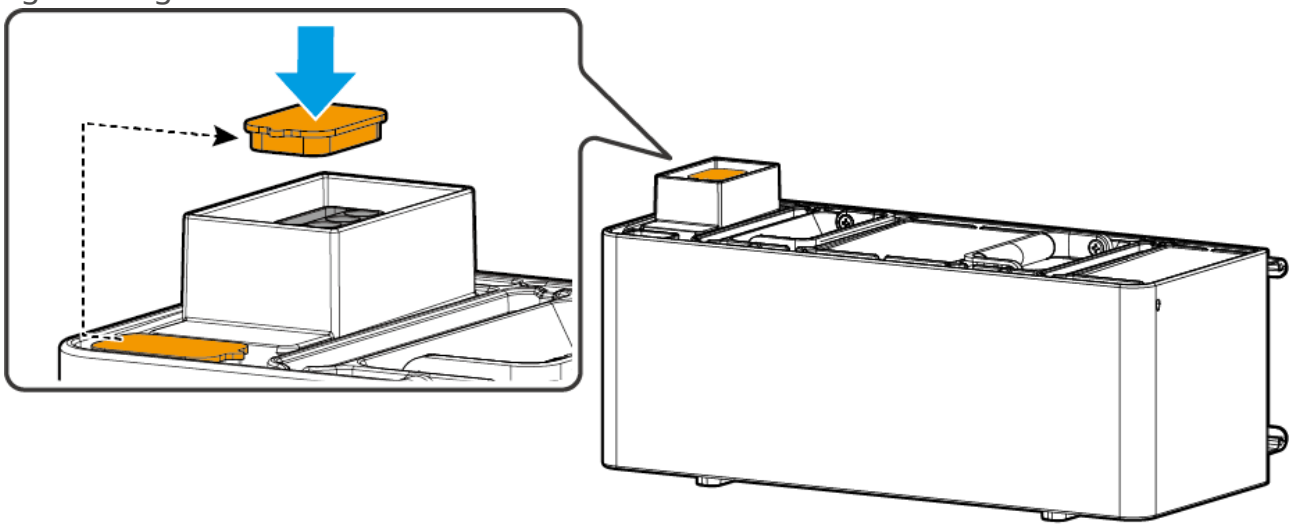
Technical Data	GW01.9-BAT-LVD-G10
Safety Regulation	IEC 62619；IEC 63056；IEC60730；UN38.3

11 Appendix

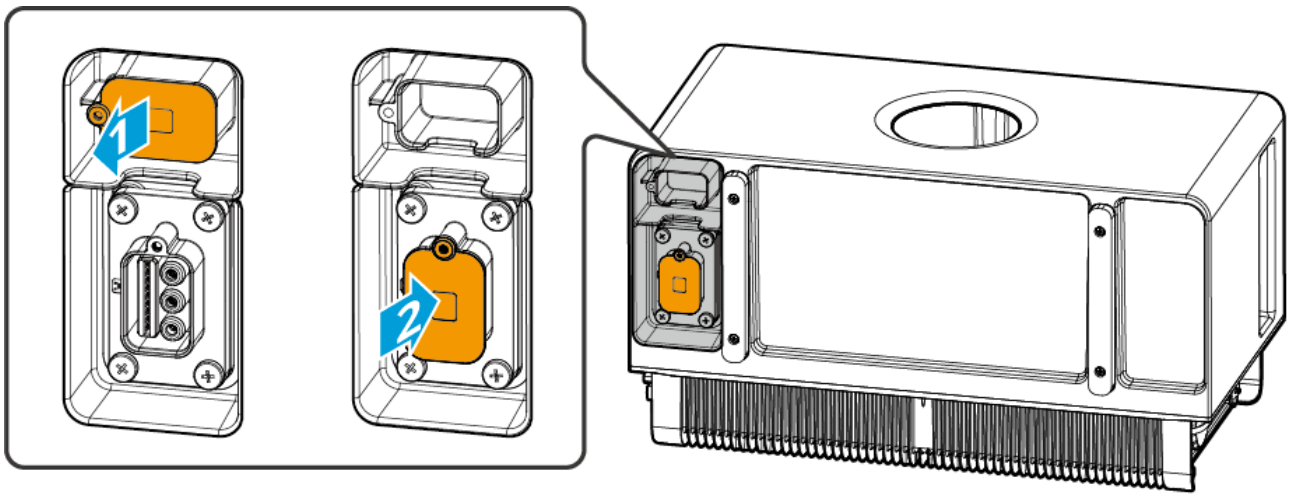
11.1 FAQs

11.1.1 How to Take An All-In-One Energy Storage System Outdoors for Use

Step 1: Press the ON/OFF button to shut down the device.
Step 2: Remove the connections of the equipment, including the BACKUP cables, GRID cables, and PV cables.
Step 3: If there is a battery, the series string support between the all-in-one system and the battery needs to be removed.
Step 4: Install the battery connection port protection cover onto the battery connection blind mate port of the all-in-one system, and install the battery port protection cover onto the blind mate port of the battery. As illustrated below
Step 5: After arriving outdoors, press the ON/OFF button to turn on the device, and click the scene switch button to change to the outdoor scene. At this point, the scene lights will go out.



ESA10INT0017

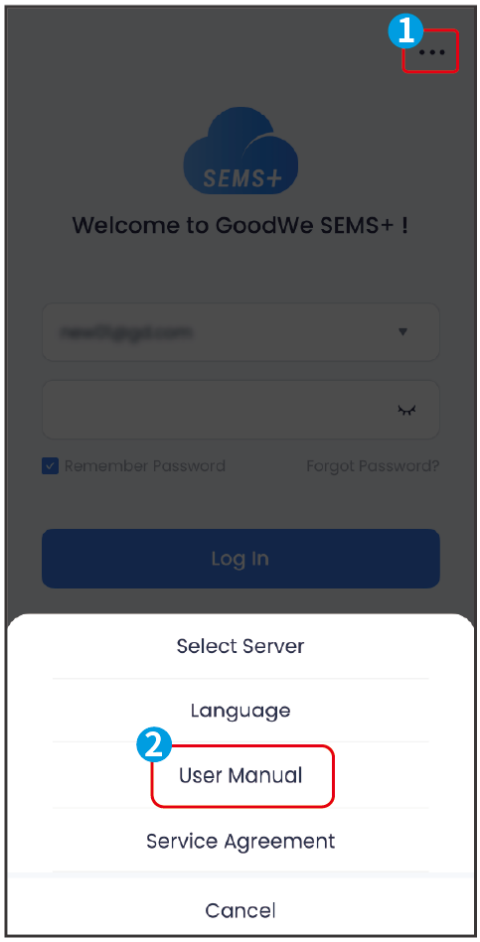


ESA10INT0018

11.1.2 How to Access the User Manual of the SEMS+ App

Step 1: On the App login screen, click ••• > User Manual.

SEMS0049



11.2 Abbreviations

Abbreviation	English Description	Chinese Description
Ubatt	Battery Voltage Range	电池电压范围
Ubatt,r	Nominal Battery Voltage	额定电池电压
Ibatt,max (C/D)	Max. Charging Current (A) Max. Discharging Current (A)	最大充/放电电流
EC,R	Rated Energy	额定能量
UDCmax	Max.Input Voltage	最大输入电压
UMPP	MPPT Operating Voltage Range	MPPT 电压范围
IDC,max	Max. Input Currt per MPPT	每路 MPPT 最大输入电流
ISC PV	Max. Short Circuit Currt per MPPT	每路 MPPT 最大短路电流
PAC,r	Nominal Output Power	额定输出功率
Sr (to grid)	Nominal Appart Power Output to Utility Grid	额定并网输出视在功率
Smax (to grid)	Max. Appart Power Output to Utility Grid	最大并网输出视在功率
Sr (from grid)	Nominal Appart Power from Utility Grid	从电网买电额定输出视在功率
Smax (from grid)	Max. Appart Power from Utility Grid	从电网买电最大输出视在功率
UAC,r	Nominal Output Voltage	额定输出电压
fAC,r	Nominal AC Grid Frequcy	输出电压频率
IAC,max(to grid)	Max. AC Currt Output to Utility Grid	最大并网输出电流
IAC,max(from grid)	Max. AC Currt From Utility Grid	最大输入电流
P.F.	Power Factor	功率因数
Sr	Back-up Nominal appart power	离网额定视在功率
Smax	Max. Output Appart Power (VA) Max. Output Appart Power without Grid	最大输出视在功率
IAC,max	Max. Output Currt	最大输出电流

Abbreviation	English Description	Chinese Description
UAC,r	Nominal Output Voltage	最大输出电压
fAC,r	Nominal Output Freqcy	额定输出电压频率
Toperating	Operating Temperature Range	工作温度范围
IDC,max	Max. Input Currt	最大输入电流
UDC	Input Voltage	输入电压
UDC,r	DC Power Supply	直流输入
UAC	Power Supply/AC Power Supply	输入电压范围/交流输入
UAC,r	Power Supply/Input Voltage Range	输入电压范围/交流输入
Toperating	Operating Temperature Range	工作温度范围
Pmax	Max Output Power	最大功率
PRF	TX Power	发射功率
PD	Power Consumption	功耗
PAC,r	Power Consumption	功耗
F (Hz)	Frequcy	频率
ISC PV	Max. Input Short Circuit Currt	最大输入短路电流
Udcmin-Udcmax	Range of input Operating Voltage	工作电压范围
UAC,rang(L-N)	Power Supply Input Voltage	适配器输入电压范围
Usys,max	Max System Voltage	最大系统电压
Haltitude,max	Max. Operating Altitude	最高工作海拔高度
PF	Power Factor	功率因数
THDi	Total Harmonic Distortion of Currt	电流谐波
THDv	Total Harmonic Distortion of Voltage	电压谐波
C&I	Commercial & Industrial	工商业
SEMS	Smart Energy Managemt System	智慧能源管理系统
MPPT	Maximum Power Point Tracking	最大功率点跟踪
PID	Pottial-Induced Degradation	电位诱发衰减
Voc	Op-Circuit Voltage	开路电压
Anti PID	Anti-PID	防PID

Abbreviation	English Description	Chinese Description
PID Recovery	PID Recovery	PID修复
PLC	Power-line Commucation	电力线载波通信
Modbus TCP/IP	Modbus Transmission Control / Internet Protocol	基于TCP/IP层的modbus
Modbus RTU	Modbus Remote Terminal Unit	基于串行链路的modbus
SCR	Short-Circuit Ratio	短路比
UPS	Uninterruptable Power Supply	不间断电源
ECO mode	Economical Mode	经济模式
TOU	Time of Use	使用时间
ESS	Energy Stroage System	储能系统
PCS	Power Conversion System	电能转换系统
RSD	Rapid shutdown	快速关断
EPO	Emergcy Power Off	紧急关断
SPD	Surge Protection Device	防雷保护
ARC	zero injection/zero export Power Limit / Export Power Limit	防逆流
DRED	Demand Response Enabling Device	命令响应设备
RCR	Ripple Control Receiver	-
AFCI	AFCI	AFCI直流拉弧保护
GFCI	Ground Fault Circuit Interrupter	接地故障分断器
RCMU	Residual Currt Monitioring Unit	残余电流监控装置
FRT	Fault Ride Through	故障穿越
HVRT	High Voltage Ride Through	高电压穿越
LVRT	Low Voltage Ride Through	低电压穿越
EMS	Energy Managemt System	能量管理系统
BMS	Battery Managemt System	电池管理系统
BMU	Battery Measure Unit	电池采集单元
BCU	Battery Control Unit	电池控制单元
SOC	State of Charge	电池的荷电状态
SOH	State of Health	电池健康度
SOE	State Of Energy	电池剩余能量
SOP	State Of Power	电池充放电能力

Abbreviation	English Description	Chinese Description
SOF	State Of Function	电池的功能状态
SOS	State Of Safety	安全状态
DOD	Depth of discharge	放电深度

11.3 Explanation of Terms

- **Overvoltage Category Definition**
  - **Category I**: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.
  - **Category II**: applies to fixed downstream equipment. For example, appliances portable tools and other plug-connected equipment; Voltage category III is used if there are special requirements for the reliability and suitability of such equipment.
  - **Category III**: applies to fixed downstream equipment, including the main distribution board. For example, switchgear and other equipment in an industrial installation.
  - **Category IV**: applies to the upstream equipment in the power supply of the distribution device, including measuring instruments and upstream over-current protection devices.
- **Definition of Types of Damp Places:**

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

- **Definition of Environmental Category:**
  - **Outdoor Inverter**: The ambient air temperature range is-25 to +60°C, and it suitable for environments with pollution degree 3.
  - **Indoor Type II Inverter**: The ambient air temperature range is-25 to +40°C, and it suitable for environments with pollution degree 3.
  - **Indoor Type I Inverter**: The ambient air temperature range is0 to +40°C, and it suitable for environments with pollution degree 2.
- **Definition of Pollution Degree Categories:**
  - **Pollution Degree 1**: No pollution or only dry non-conductive pollution.
  - **Pollution Degree 2**: In general, there is only non-conductive pollution, but the

transient conductive pollution caused by occasional condensation must be taken into account.

- **Pollution Degree 3**: There is conductive pollution, or the non-conductive pollution becomes conductive pollution due to condensation
- **Pollution Degree 4**: Persistent conductive pollution, such as pollution caused by conductive dust or rain and snow.

11.4 Battery SN Code Meaning

Bits 11- 14 of the product SN code are the production time code.
The the above picture has a production date of 2023-08-08.

- The11_{th}、12_{th} are the last two digits of the year of production, e.g., 2023 is represented by 23;
- The 13_{th} digit is the month of production, e.g. August is denoted by 8;
  The details are as follows:

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

- The 14_{th} digit is the date of manufacture, e.g., 8_{th} indicated by 8;
  Priority is given to the use of numbers, e.g.,1~9 for days 1~9, A for day 10 and so on. Among them, the letters I and O are not used to avoid confusion. As follows:

Production Date	1_{st}	2_{nd}	3_{nd}	4_{th}	5_{th}	6_{th}	7_{th}	8_{th}	9_{th}
Code	1	2	3	4	5	6	7	8	9

Production Date	10_{th}	11_{th}	12_{th}	13_{th}	14_{th}	15_{th}	16_{th}	17_{th}	18_{th}	19_{th}	20_{th}
Code	A	B	C	D	E	F	G	H	J	K	L

Production Date	21_{st}	22_{nd}	23_{nd}	24_{th}	25_{th}	26_{th}	27_{th}	28_{th}	29_{th}	30_{th}	31_{st}

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