Product Manual

Risen Stack1 Series

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Contents

About This Manual

This product comes with two manuals. This one is about product information and usage instructions. For installation requirements, please refer to the installation manual.This manual provides instructions for the installation, operation, and maintenance of the Risen Stack1 Series products. The Risen Stack1 Series includes seven models: SU48E24LM , SU60E30LM , SU72E36LM , SU84E42LM , SU96E48LM , SU108E54LM , and SU120E60LM . Before attempting to install the product, please read this manual and follow the instructions throughout the installation process. If you are uncertain about any requirements, recommendations, or safety procedures described in this manual, immediately contact the after-sales service personnel for advice and clarification. The information contained in this manual is accurate at the time of publication. However, our company reserves the right to make changes to the product design and technical specifications at any time without prior notice. Additionally, the illustrations in this manual are intended to help explain system configuration concepts and installation procedures. The items shown in the illustrations may differ from the actual items at the installation site.

1 Safety Precautions

Risen Stack1 series are designed and tested in strict compliance with relevant international safety standards. As an electrical and electronic device, all applicable safety regulations must be strictly followed during installation, operation, and maintenance. Improper use or misuse may result in:

- Injury or endangerment to the operator or other individuals.
- Damage to the equipment or other property owned by the operator or others.
- This section primarily outlines warning symbols in the manual, providing safety instructions for the installation, operation, maintenance, and usage of the Risen Stack1 series.

Disclaimer

Our company shall not be held liable for any consequences arising from the following events.

- Damage caused during transportation.
- Damage due to storage conditions not meeting manual requirements.
- Improper storage, installation, or use of the product.
- Installation or operation by untrained personnel.
- Failure to adhere to operational instructions or safety precautions in this manual.
- Operation in extreme environments not covered by this manual.
- Exceeding the operational parameters specified in the technical specifications.
- Unauthorized disassembly, modification, or tampering with software code.
- Equipment damage caused by natural disasters (force majeure, e.g., lightning, earthquakes, fires, storms, etc.).
- Expired warranty with no extended warranty service.
- Installation or use in environments not specified by relevant international standards.

1.1 Warning Symbols

Warning symbols are used to alert you to conditions that may result in serious injury or equipment damage. They instruct you to exercise caution to prevent hazards. The table below describes the warning symbols used in this manual.

Symbol	Description
	Hazardous voltage – risk of electric shock or burns. Operation permitted only by authorized personnel.
	Ensure the energy module is correctly positioned and connected.

	Keep the energy module away from open flames or ignition sources.
	Store the equipment in a location inaccessible to children, pets, or animals.
	Read this manual thoroughly before installing or operating the energy module.
	The energy module is heavy enough to cause serious injury.
	The energy module may contain corrosive substances.
	Explosion hazard.
	Rechargeable batteries must not be disposed of with household waste.
	Handle batteries with care – improper handling may pose safety hazards.

1.2 Safety Instructions

	Upon receiving the product, first verify that the packaging is intact. If you have any concerns, immediately contact the logistics provider or local distributor. Installation and operation of the equipment must be performed by professionally trained technicians who are fully familiar with all contents of this manual and the safety requirements of electrical systems. When power is connected, do not perform connection/disconnection, unpacking inspection, or unit replacement operations. Before wiring or inspection, users must confirm that both DC and AC circuit breakers of the Risen Stack1 series are disconnected, and wait for at least 10 minutes.
	Ensure there is no strong electromagnetic interference from other electronic or electrical equipment around the installation site. Do not modify the equipment without authorization. All electrical installations must comply with local and national electrical standards. Proper process grounding must be implemented before operation.

	Do not open the equipment's surface cover without authorization. Internal electronic components are electrostatic sensitive. When authorized operations are performed, appropriate anti-static measures must be taken.
	Do not touch the equipment or heat sink casings to avoid burns, as they may become hot during operation.
	The equipment must be reliably grounded.
	Ensure DC and AC circuit breakers are disconnected and wait at least 10 minutes before performing wiring or inspection.
	For lifting operations, establish proper installation work signage.

Note: Technicians qualified to install, wire, commission, maintain, troubleshoot, or replace the Risen Stack1 must meet the following requirements：

Operators must have received professional training.

Operators must thoroughly read this manual and understand all relevant safety precautions.

Operators must be familiar with applicable electrical system safety regulations.

Operators must have comprehensive knowledge of the entire energy storage system's configuration, operating principles, and relevant standards in the project's country/region.

Operators must wear appropriate personal protective equipment.

1.3 General Safety Precautions

	Failure to comply with the precautions outlined in this section may result in serious personal injury or property damage. Strictly adhere to all relevant precautions.

1.3.1 Explosion Hazards

- Do not subject the energy module to strong impacts.
- Do not crush or puncture the energy module.
- Do not handle the energy module in fire.

1.3.2 Fire Risks

- Do not expose the energy module to temperatures exceeding 60°C.
- Do not place the energy module near heat sources such as open flames.
- Do not expose the energy module to direct sunlight.
- Do not allow energy module terminals to contact conductive objects like wires.

1.3.3 Electric Shock Hazards

- Do not disassemble the energy module.
- Do not touch the energy module with wet hands.
- Do not expose the energy module to moisture or contaminants.
- Keep children and animals away from the energy module.

1.3.4 Risk of Module Damage

- Do not allow the energy module to contact iodides.
- Do not subject the energy module to high pressure.
- Do not place objects on top of the energy module.

1.3.5 Energy Module Handling Guidelines

- Use only manufacturer-specified dedicated energy modules as instructed.
- Do not use the energy module if defective, cracked, damaged, or compromised.
- Do not attempt to open, disassemble, repair, tamper with, or modify the module.
- Handle with care to protect the module and its components from damage.
- Do not impact, drag, or step on the energy module.
- Do not apply excessive force to the module.
- Do not insert foreign objects into any part of the energy module.
- Do not open the cover of the Energy Block.

1.3.6 Battery Pack Leakage

If the energy module leaks electrolyte, avoid contact with the liquid. The electrolyte is corrosive and may cause skin irritation and chemical burns.

1.3.7 Fire Emergency

Carbon dioxide (CO_2) fire extinguishers must be available. In case of fire near the energy modules, follow these procedures:

- Extinguish the fire before it reaches the energy modules.
- If extinguishing is impossible, relocate the modules to a safe area before ignition.
- If modules catch fire, DO NOT attempt to extinguish - evacuate immediately.
- Burning modules release toxic gases. Maintain safe distance.
- Do not touch modules that are wet or submerged. Contact technical support for assistance.
- For damaged modules, place them in original containers and return to Risen Energy's designated department.

1.4 Transportation and Installation

- During storage and transportation, keep the packaging and unit intact, dry, and clean.
- This equipment is heavy. At least two people are required for handling and installation.
- To ensure safe and proper operation of the energy storage system and prevent personal injury, use appropriate handling and installation tools, and implement mechanical protection measures (e.g., safety shoes, workwear).
- Only professionally trained electricians may install this equipment.
- Do not install the machine on or near flammable or explosive materials.
- Do not install the machine in areas easily accessible to children or unauthorized personnel.
- To avoid electric shock, remove rings, bracelets, and other metal jewelry before installation and electrical connections.
- Solar panels exposed to sunlight may generate hazardous voltage. Before making electrical connections, cover the PV modules completely with opaque material.
- The input voltage must not exceed the maximum rated input voltage, or damage may occur.
- This machine is not compatible with positive- or negative-grounded solar PV systems.
- Ensure proper grounding of the Risen Stack1 series.
- Verify that all installation and electrical connections are secure.

2 System Introduction

The Risen Stack1 series products are an LFP lithium battery-based commercial and industrial energy storage product designed with intelligent air-cooling technology (Integrated with Battery Management System), which provides battery energy storage units to meet application requirements such as peak shaving, valley filling and backup power supply. The integrated system adopts a hostless architecture supporting parallel multi-unit connection, with internal components including energy controller, battery modules, air conditioning system, fire protection system and power distribution system. The control cabinet features multiple communication protocols (CAN, RS485, Ethernet) and comprehensive protection functions including over-voltage, over-current and over-temperature protection. With advantages of high energy density, and reliable safety performance, it is a trustworthy green energy product.

The appearance of the Risen Stack1 is shown in Figure 2-1:

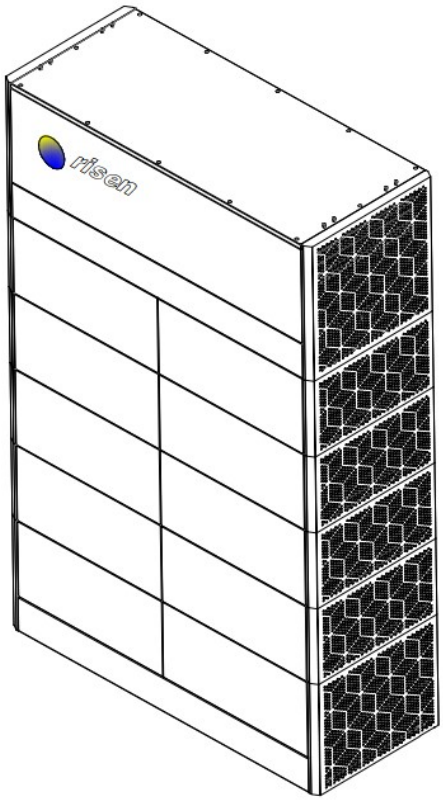
Figure 2-1 Exterior view of the Risen Stack1 SU120E60LM

2.1 Key Features

- Intelligent power management
- User-friendly controls with power data logging and programmable functions
- High safety performance
- Long cycle life
- High energy density
- Advanced BMS with active balancing
- Scalable configuration (4-10 battery modules)

- Integrated AC/DC hybrid control system

2.2 Physical Dimensions



Length:1200 mm	**Height:**1880 mm
Depth:500 mm	**Weight:**＜1200 kg

2.3 Technical Documentation

2.3.1 System Technical Specifications

Energy Configuration Parameters

Inverter information							
Model	SU48E24LM	SU60E30LM	SU72E36LM	SU84E42LM	SU96E48LM	SU108E54LM	SU120E60LM
Rated Power	24kW	30 kW	36 kW	42 kW	48 kW	54 kW	60 kW
Rated and max apparent power	24kVA	30kVA	36kVA	42kVA	48kVA	54kVA	60kVA
Rated Voltage	3W+N+PE, 230/400V						
Rated output Current	35A	43A	52A	61A	69A	78A	86A
Rated Frequency	50Hz						
Total Harmonic Distortion (THD)	< 3%						
Connection Configuration	3P4L						
Power Factor	~ 1(-0.8leading ...0.8lagging)						

Max Efficiency	98.50%						
Unbalanced Load	100%						
Inverter Weight	100±5kg						
Inverter Dimensions (W x H x D)	1200*500*340mm						
Battery Information							
Rated Capacity	48kWh	60 kWh	72 kWh	84 kWh	96 kWh	108 kWh	120 kWh
Rated Voltage	153.6V	192V	230.4V	268.8V	307.2V	345.6V	384V
Voltage Range	134.4~172.8V	168~216V	201.6~259.2V	235.2~302.4V	268.8~345.6V	302.4~388.8V	336~432V
usable capacity	48kWh	60 kWh	72 kWh	84 kWh	96 kWh	108 kWh	120 kWh
Number of Battery Packs	4	5	6	7	8	9	10
Capacity Per Pack	12 kWh						
Cell	LFP-314Ah						
DoD	100%DOD (2.8-3.6V，25°C)　98%DOD (2.5~3.65V，25°C)						
C- Rate	0.5P						
Battery max charge/discharge current	179A						
Cycle Life	7000 cycles, 70% SOH						
Battery Pack Weight	90±5kg						
Battery Pack Dimensions (W x H x D)	568*500*260mm						
System Information							
Number of Battery Packs per PCS	4 ~ 10 (scalable based on system design)						
Max Number of Parrellel Units	Off-grid mode: Supports parallel connection of up to 4 units.　Grid-connected mode: Allows virtually unlimited parallel expansion.						
General Information							
Total Weight	510 kg	620 kg	690 kg	800 kg	870 kg	980 kg	1050 kg
Overall Dimensions (W x H x D)	1200x1110x500mm	1200x1370x500mm	1200x1370x500mm	1200x1630x500mm	1200x1630x500mm	1200x1890x500mm	1200x1890x500mm
Safety Protection Feature	Class I						
Over voltage category Mains	CAT III						
Over voltage category Battery	CAT II						
Pollution Degree	3						
Input start up voltage	150 V						
Protection Level	IP55 System-level （ IP65 Energy Block ）						
Cooling Method	Natural Air Cooling、Forced Air Cooling、Air Conditioning Cooling（Optional）						
Fire Extinguishing System	Areosol						

Corrosion Resistance Level	C4
Operating Temperature Range	-25~55℃（>45℃ Derating）
Maximum Operating Altitude	2000m
Relative Humidity Range	0%~95%
Noise Level	≤75dB
Installation Method	Floor-standing
Communication Protocol	Modbus-TCP / Modbus-RTU
Communication Interface	4G / LAN / RS485
Standard	IEC61000, IEC62619, IEC62477, IEC63056, IEC62040, AS/NZS4777.2, CE, CEC
Country of manufacture	China

2.4 Exterior Design

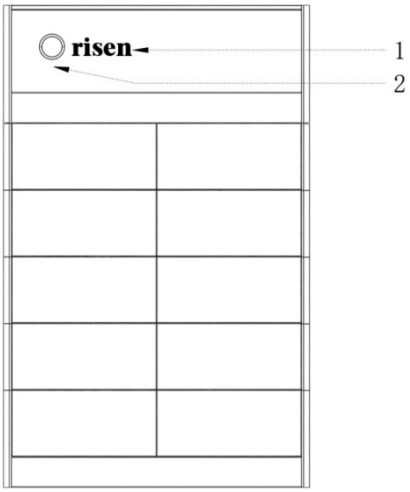


Figure 2-4-1: View

No.	Component	Remarks
1	Brand Logo	/
2	Display Panel	/

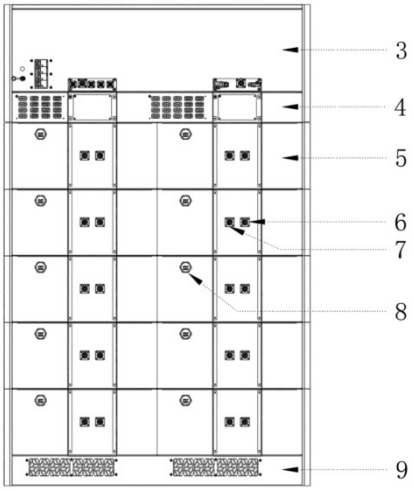


Figure 2-4-2: View

No.	Component	Remarks
3	Energy Router	/
4	Air Duct	/
5	Battery Module	Stackable (4-10 units) Odd numbers will have an empty module placed.
6	Module Negative Terminal	Quantity-dependent
7	Module Positive Terminal	Quantity-dependent
8	Pressure Relief Valve	Quantity-dependent
9	Base Frame	/

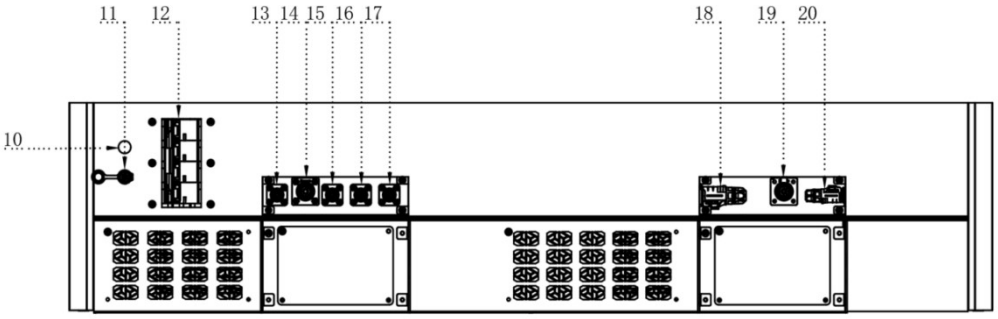


Figure 2-4-3: View

No.	Component	Remarks
10	Black Start Button	/
11	BMS Debug Port	/
12	Circuit Breaker	/
13	AC Phase A	/
14	Module Positive Bus	/
15	AC Phase B	/
16	AC Phase C	/
17	AC Neutral	/
18	EMS Debug Port	Connect DRED
19	Module Negative Bus	/

20	Meter Connection	/

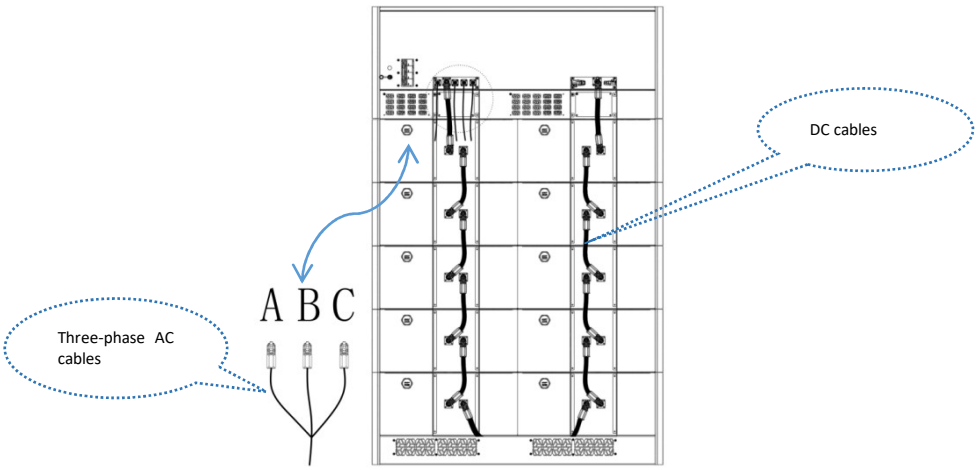
3 Operation of Risen Stack1 Series Products

3.1 Equipment Status Confirmation

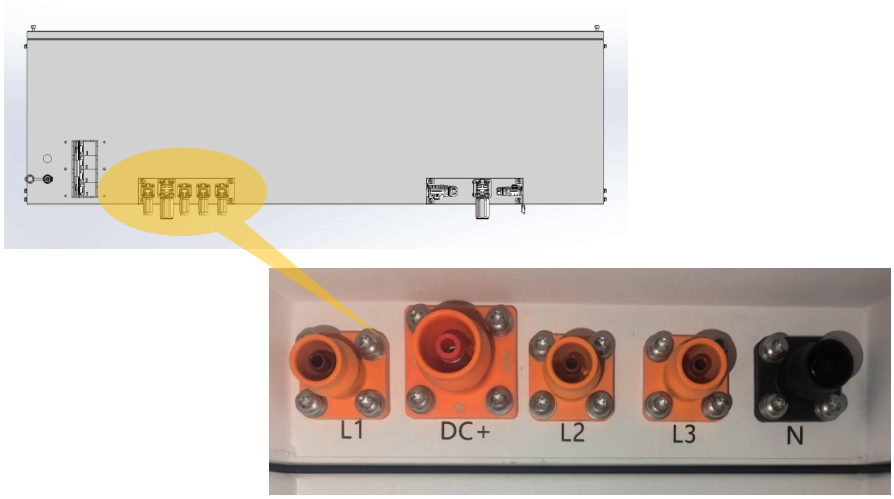
Before operating the equipment, it is necessary to ensure that it is properly assembled and wired in accordance with the installation manual.

3.2 Cable Connection Verification

- Before powering on, inspect all system cables to ensure secure connections without aging, breakage, or insulation damage.
- Verify correct polarity of DC power cables.
- Confirm proper AC power supply wiring(Important point, refer to Figure 2).
- Check all communication cables and terminals for tight and reliable connections.

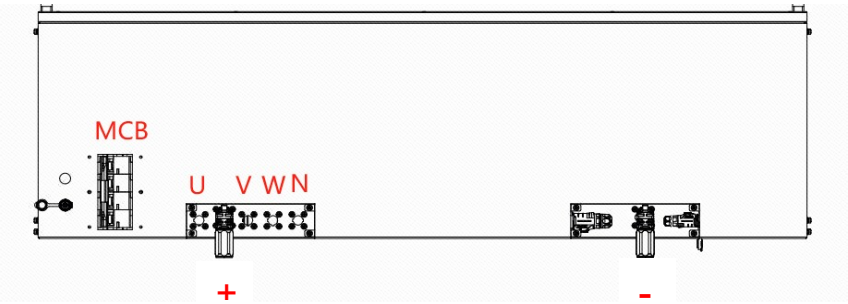


Picture 1



Picture 2

3.3 Equipment Switch Status Check



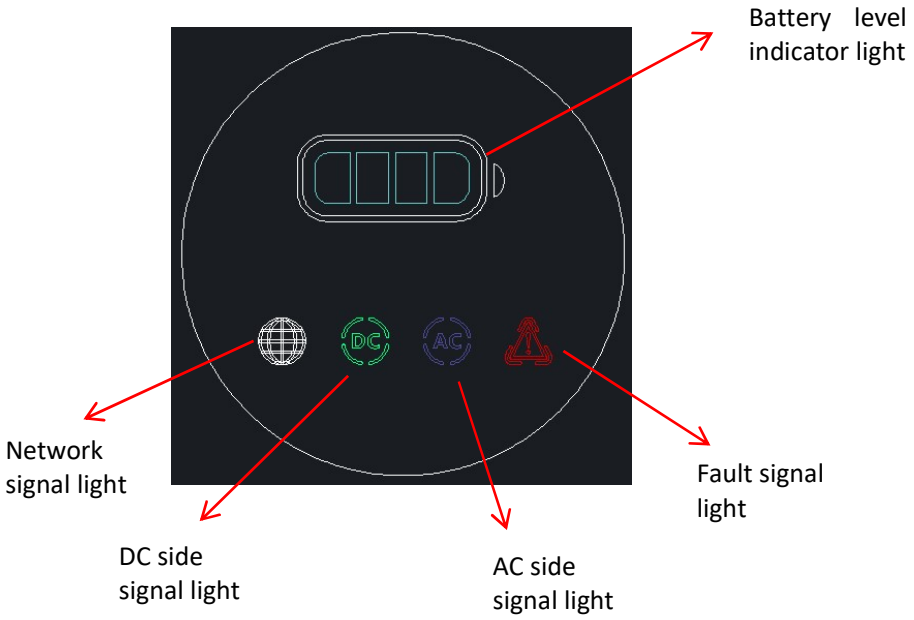
Note: Close the main MCB circuit breaker of the unit.

3.4 System Power-On

- After activating the main MCB, the system will be powered.
  After power-up, the EMS will enter self-test mode to check PCS, DCDC, and BMS for faults. If no faults are detected, the system will enter standby mode.

  Note: If faults prevent high-voltage contactor engagement, contact the manufacturer for troubleshooting.

3.5 Risen Stack1 Signal Light



Signal Light Note		
Number	Signal Light	Note
1	DC side signal light-Red	Fault occurred, red light is flashing
2	DC side signal light-Blue	Power on is normal and the display is constantly lit
3	DC side signal light-Green	The operation light is on and flashing
4	AC side signal light-Red	The fault light came on and began to flash
5	AC side signal light-Blue	Power-on is normal and lights up, constantly on

6	AC side signal light-Green	The operation light is on and flashing
7	Fault signal light-Red	The fault indicator lights up and flashes
8	Network signal light-Red	The fault indicator lights up and flashes
9	Network signal light-Blue	The communication is normal and is constantly illuminated
10	SOC 25%	0＜SOC≤25%
11	SOC 50%	25%＜SOC≤50%
12	SOC 75%	50%＜SOC≤75%
13	SOC 100%	75%＜SOC≤100%

3.6 Charging Process

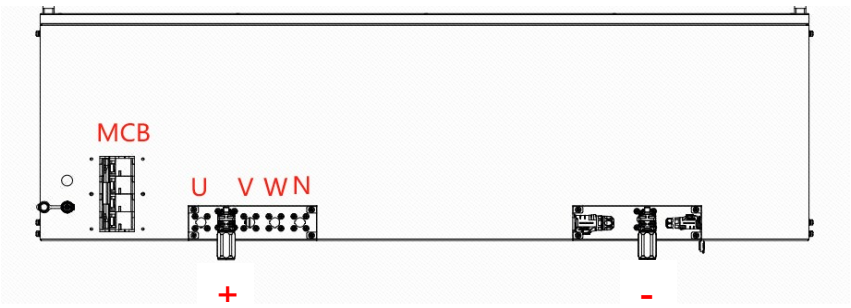
The system receives charging dispatch commands from the superior system. The EMS then controls the PCS to charge the Risen Stack1. The PCS compares the dispatched power from the superior system with the BMS-allowed charging power, and through software-based comparison, outputs the appropriate power to charge the battery system. During this process, the EMS, BMS, PCS, and DCDC continuously exchange information to ensure safe and effective charging management.

3.7 Discharging Process

Upon receiving discharge dispatch commands from the superior system, the EMS controls the PCS to discharge the Risen Stack1. The PCS compares the dispatched power with the BMS-permitted discharge power, then determines and delivers the appropriate discharge power to the battery system through software-based evaluation. Throughout this process, the EMS, BMS, PCS and DCDC maintain real-time data exchange to ensure safe and effective discharge management.

3.8 SYSTEM POWER OFF

Reference 《Risen Cloud APP Distributor Installation,Operation & Maintenance Manual》 3.3 Section: Perform remote power-off operation, and the customer is responsible for manually turning off the MCB.



3.9 SYSTEM MAINTENANCE

If module replacement or system maintenance is required, the circuit breakers in the distribution box at the substation should be disconnected first, followed by the main circuit breaker MCB. The system will then be powered by the UPS for 5 minutes. After that, the system will be completely powered off and left to stand still for 10 minutes before the maintenance can be carried out.

4 RISEN CLOUD APP

4.1 Download and Install the App

Steps

Method 1: Download and install via app stores.

1) Domestic Android users: Search for "Risen Cloud" in Tencent App Store.
2) Overseas Android users: The overseas version is currently in the process of being listed. Stay tuned.
3) iPhone users: Search for "Risen Cloud" in the App Store.

Method 2: Scan the QR code to download and install.
If Android users see a warning message such as "This app is from a non-official app store..." during installation, click "Continue Installation".

iOS

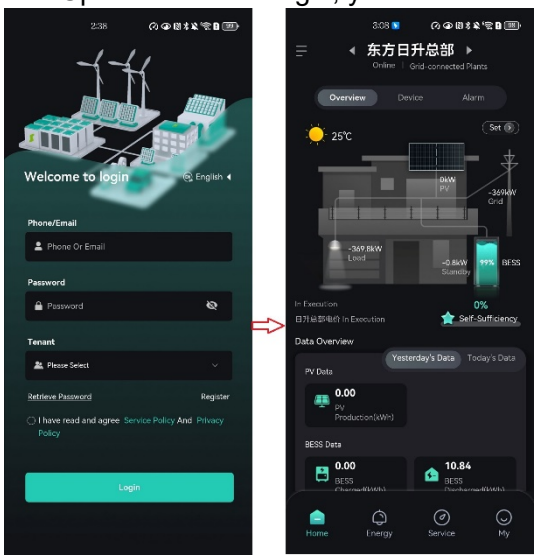
Android

4.2 Login and Logout

For users who have obtained an account and password assigned by a channel partner. If you have not received them, please contact your channel partner.

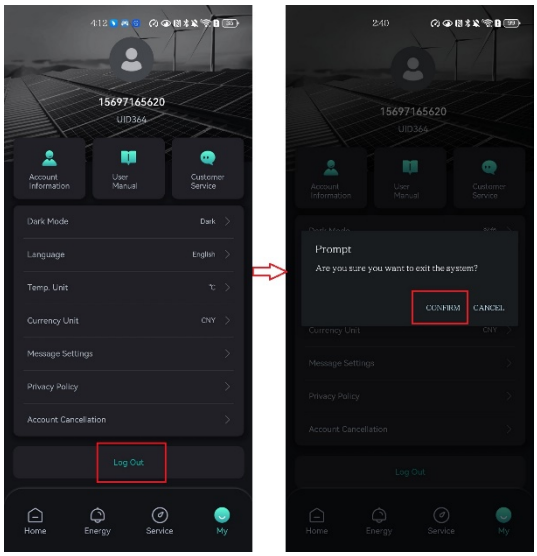
4.2.1 User Login

1. Open the "Risen Cloud" app, navigate to the login interface, enter your assigned account and password, select your tenant, and proceed to log in.
2. Upon successful login, you will be directed to the 【Home】 page.



4.2.2 User Logout

1. After logging in, switch to the 【My】page, tap Log Out, and confirm to exit the current account.



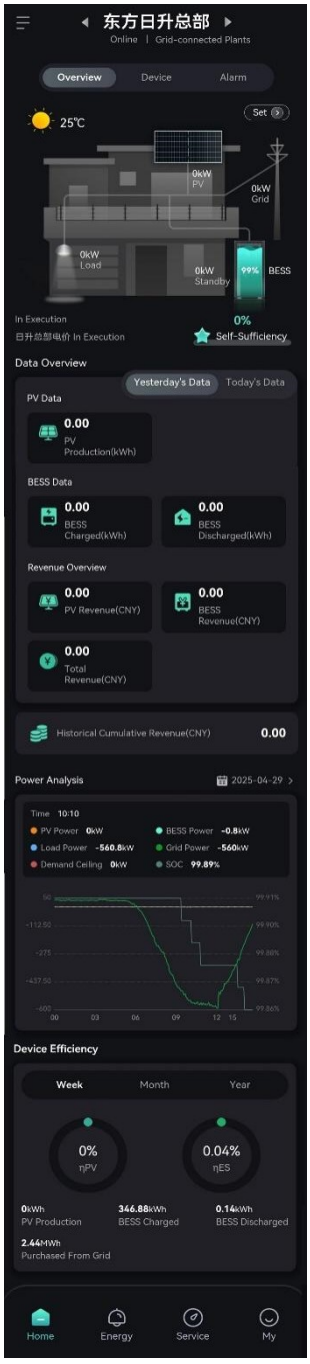
4.3 Data Viewing

For users with existing power stations and devices.

4.3.1 Power Station Homepage

4.3.1.1 Station - Overview

Upon successful login, you will be redirected to the Station - Overview page on the homepage. The interface displays: energy flow diagram, data overview, power analysis, device efficiency, and other information. The following shows all data content. In actual operation, scroll up and down to view.

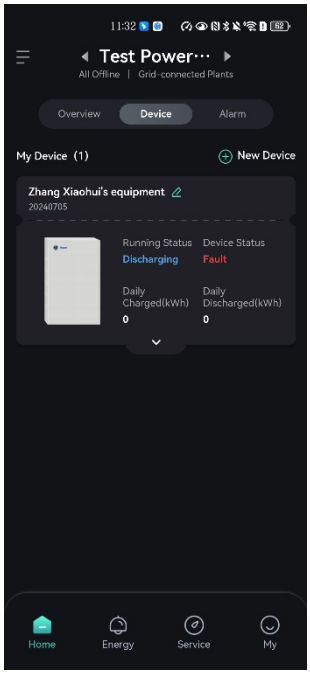


4.3.1.2 Station - Devices

There are two ways to access the device section:
Method 1: Tap the energy storage device in the 【Station - Overview】 energy flow diagram

Method 2: Switch to the 【Station - Device】 tab.

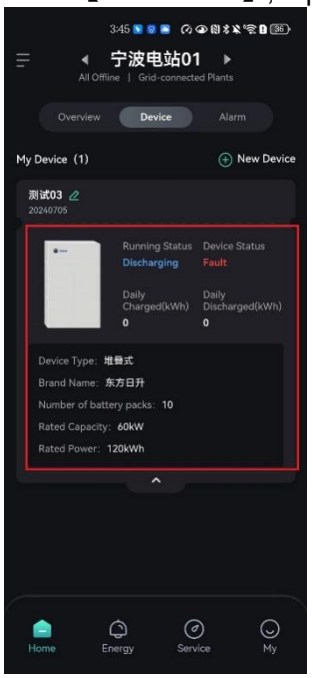
After entering the device list, the interface displays: all devices under the station, device name, device type, operational status, daily charged, and basic device information. The following shows all data content. In actual operation, scroll up and down to view.



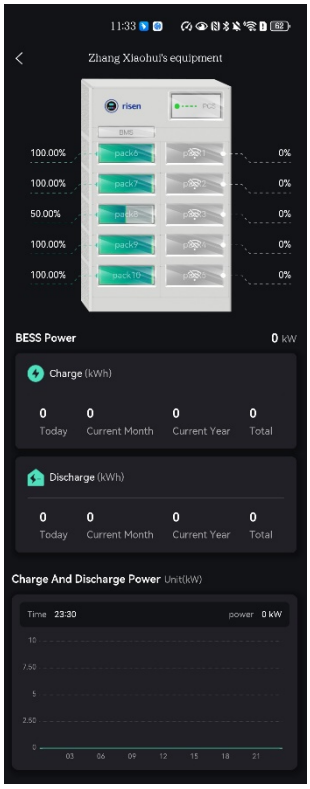
4.3.2 Stacked Energy Storage Devices

4.3.2.1 Overview Data

In the【Device List】, tap the stacked energy storage device you wish to view.

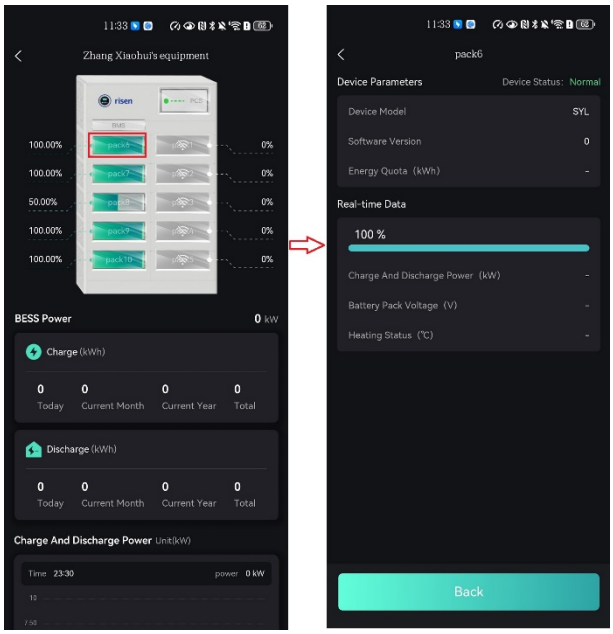


View the device's overview data, including battery cabinets, charge/discharge capacity, charge and discharge power, real-time SOC, auxiliary devices, and more. The following shows all data content. In actual operation, scroll up and down to view.



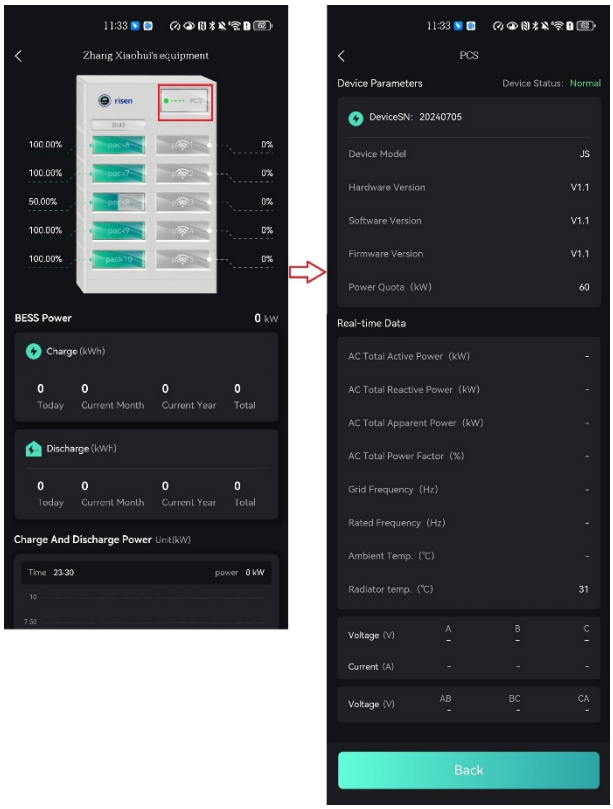
4.3.2.2 Pack Modules

On the 【Device - Overview Data】 page, tap "PACK" to view details of an individual PACK module.



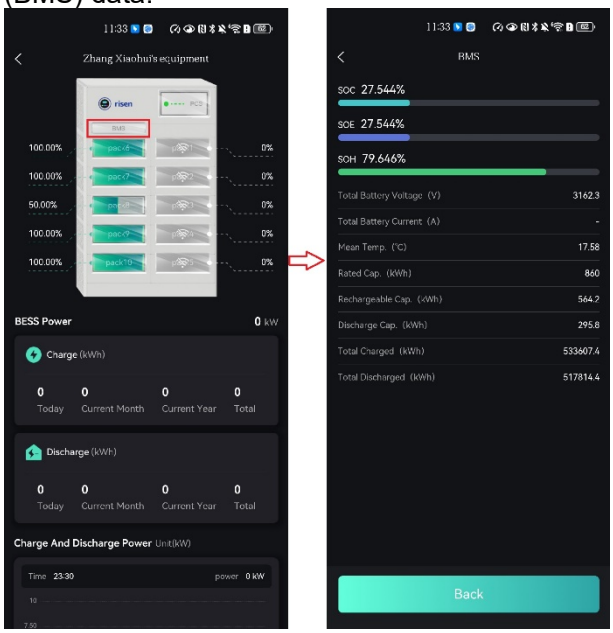
4.3.2.3 PCS

On the 【Device - Overview Data】 page, tap "PCS" to view Power Conversion System (PCS) data.



4.3.2.4 BMS

On the 【Device - Overview Data】 page, tap "BMS" to view Battery Management System (BMS) data.



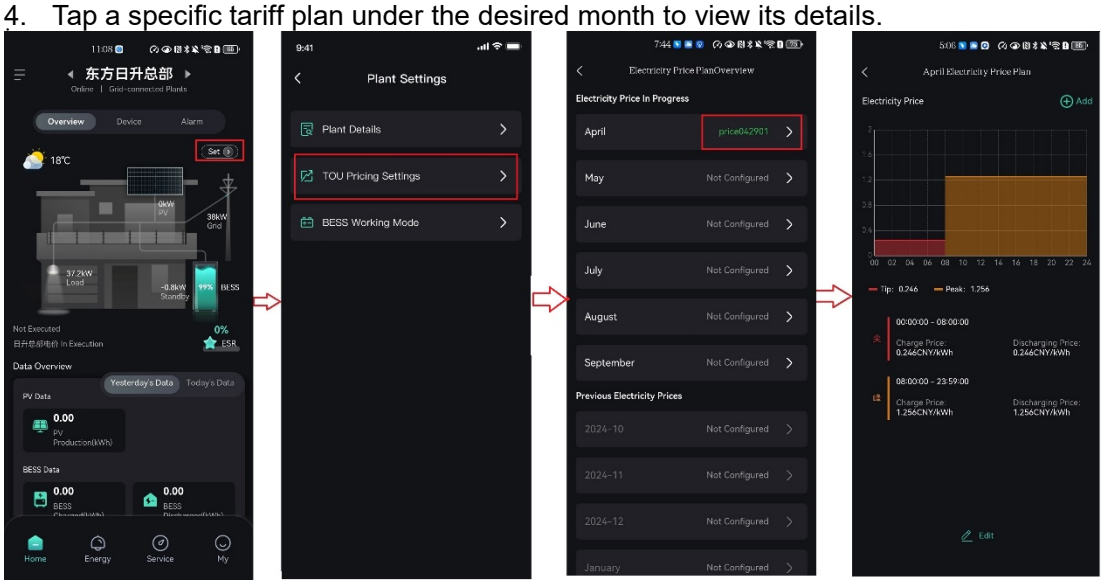
4.4 Power Station Settings

For users with existing power stations and devices.

4.4.1 Tariff Plan

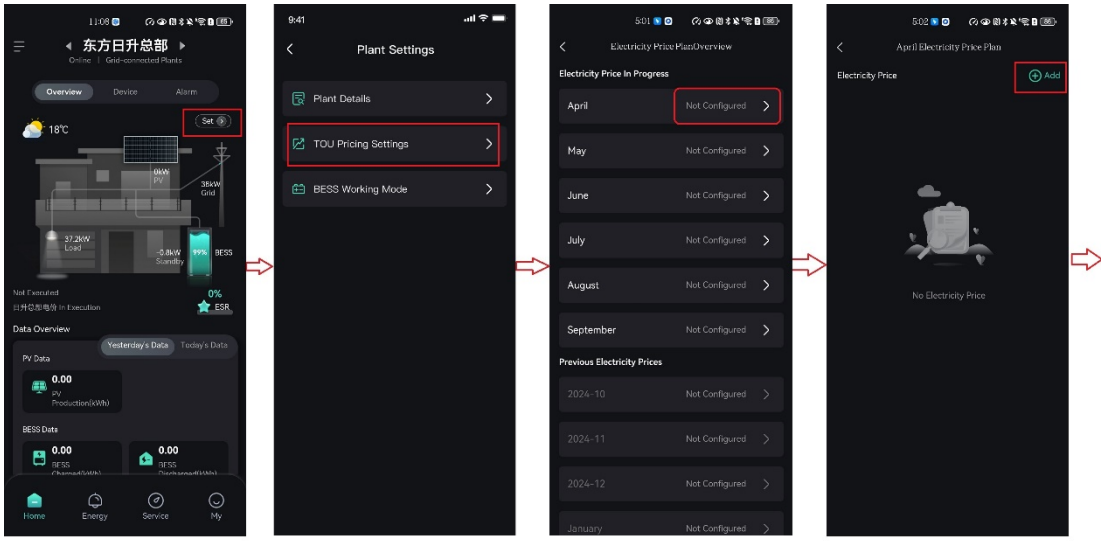
4.4.1.1 View

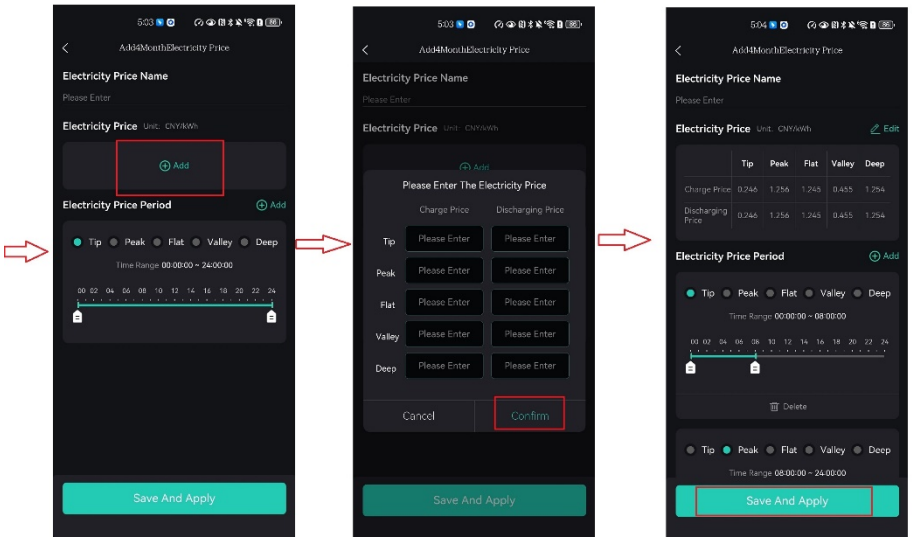
1. On the 【Station - Overview】 page, tap the icon in the upper-right corner of the energy flow diagram to access the station settings.
2. Tap "TOU Pricing Settings" to view details.
3. The list displays data by month, showing the configuration status and assigned tariff plan names.
4. Tap a specific tariff plan under the desired month to view its details.



4.4.1.2 Add New

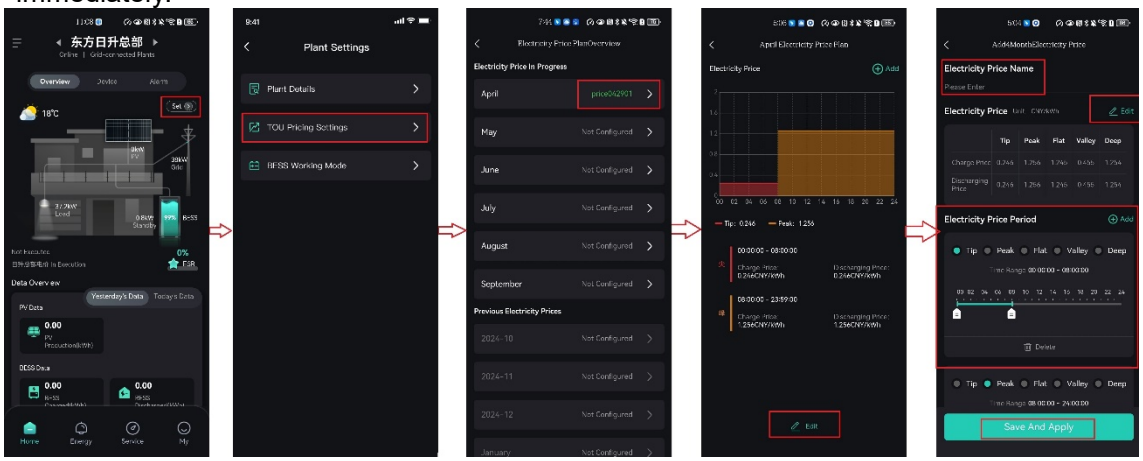
1. In the 【Tariff Plan Settings】 interface for a selected month, tap the "Add Plan" icon in the upper right corner.
2. Enter the "Tariff Name", tap "Add Tariff" to set different charge/discharge prices for different time periods.
3. After configuring tariffs, tap "Confirm" to return to the setup interface and select time periods.
4. Tap "Save and Apply" to complete the setup. The tariff plan will take effect for the selected month.





4.4.1.3 Modify

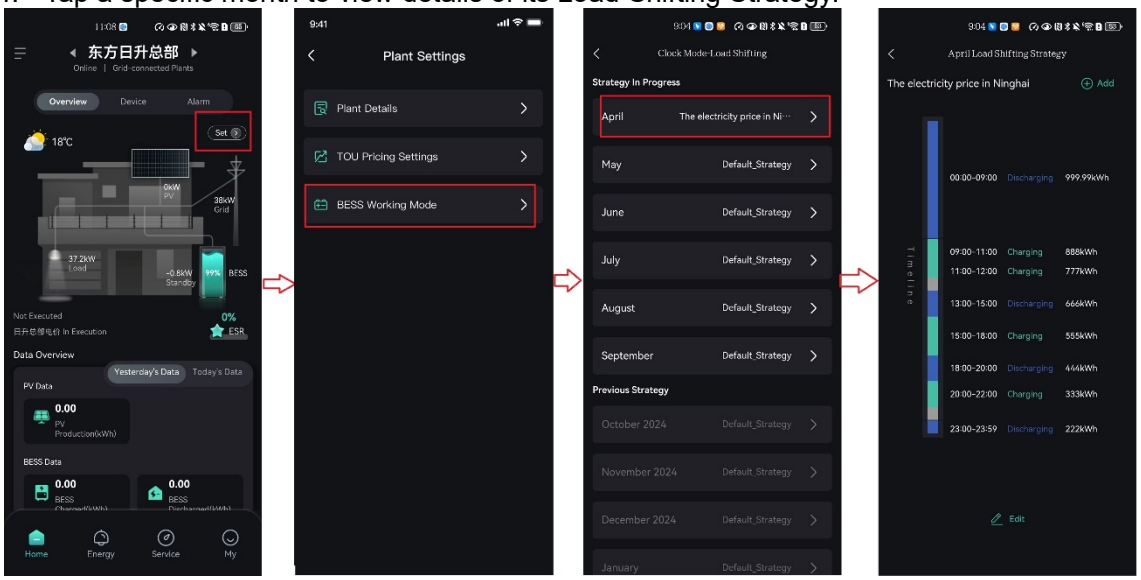
1. In the 【Tariff Plan Settings】 interface, tap the "Edit Strategy" button for the plan you wish to modify.
2. Edit the plan name, tariffs, time periods, or delete existing periods.
3. Tap "Save and Apply" to confirm changes. The updated tariff plan will take effect immediately.



4.4.2 Energy Usage Strategy

4.4.2.1 View

1. On the 【Station - Overview】page, tap the icon in the upper-right corner of the energy flow diagram to access the settings.
2. Tap "BESS Working Mode - TOU Mode" to view the strategy list.
3. The list displays strategies by month, labeled with their names. If unconfigured, the default strategy "Default_Strategy" is shown.
4. Tap a specific month to view details of its Load Shifting Strategy.

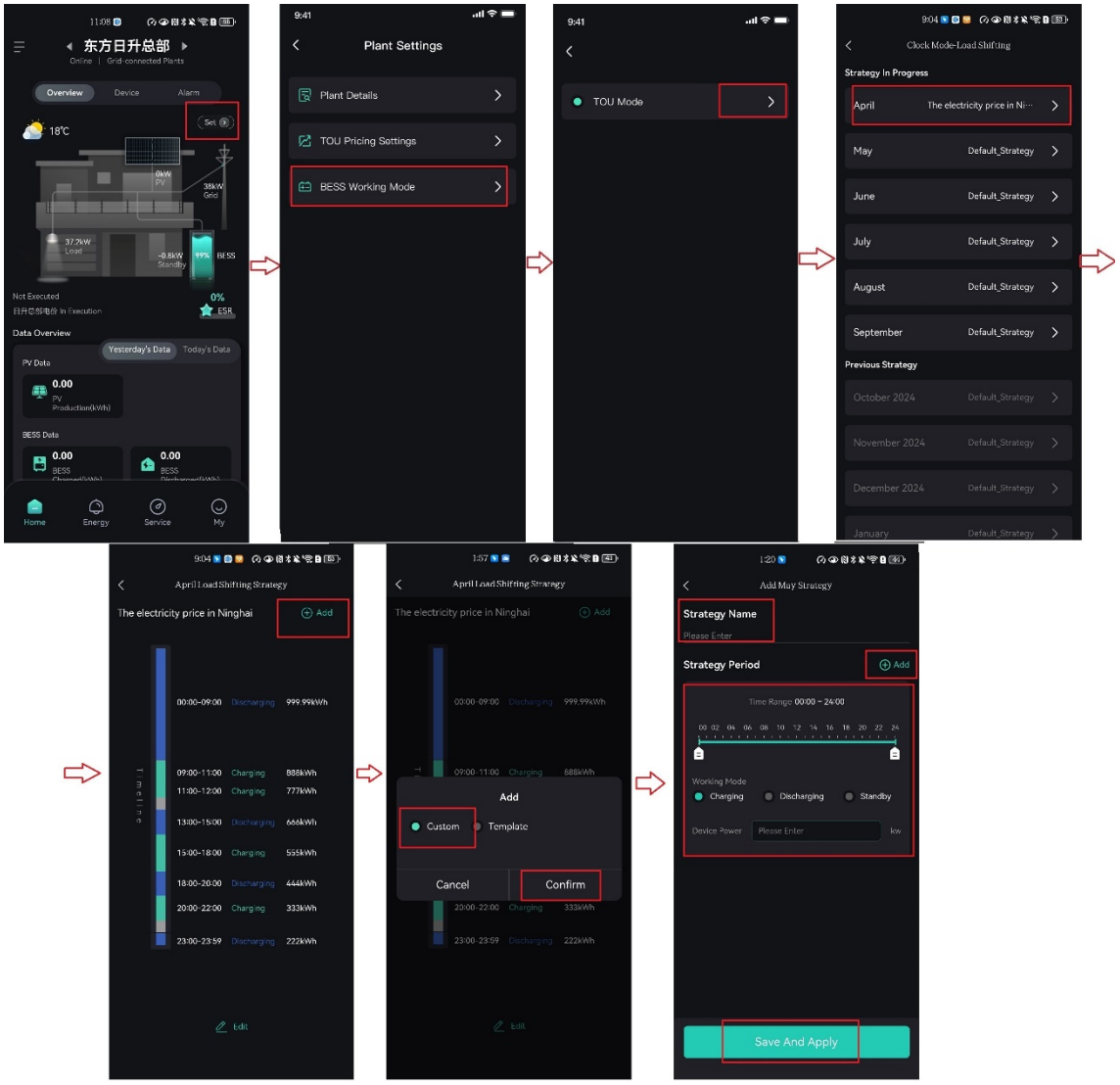


4.4.2.2 Add New

In the 【Load Shifting Strategy】interface for a selected month, tap "Add" in the upper right. A dialog will prompt you to choose "Template" or "Custom".

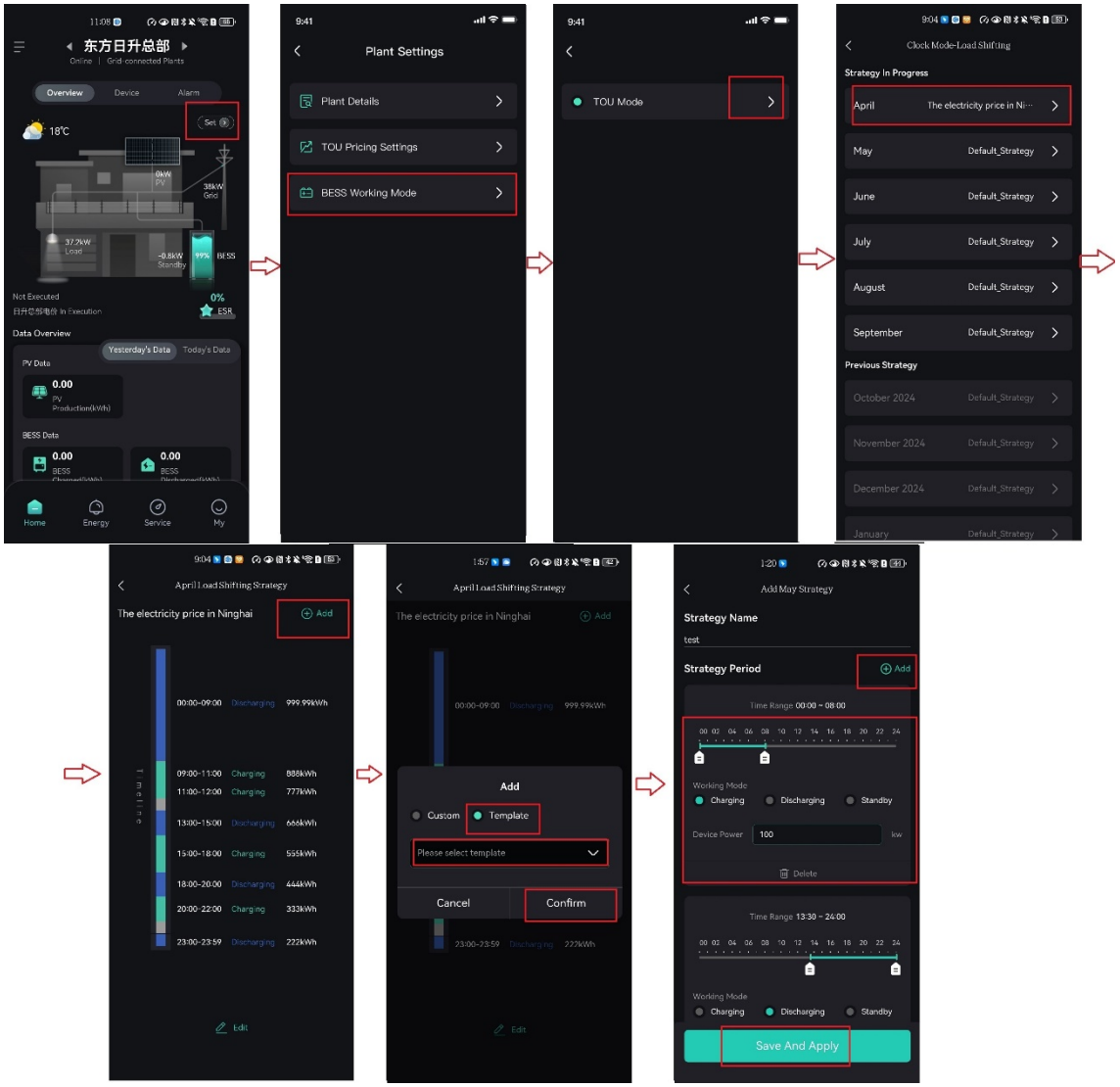
If selecting "Custom":

1. You will be directed to the setup interface.
2. Enter a "Strategy Name", tap "Add" to configure "Strategy Period", "Working Mode", "Device Power", etc.
3. After completing the edits, click "Save And Apply" to finalize the creation of the strategy, and the Load Shifting operations for the month will be activated and executed according to this strategy.
4. After completion, a pop-up dialog will prompt: "Sync to Template Library" Select "Sync" to add the strategy to the template library, or select "Do Not Sync" to skip adding it.



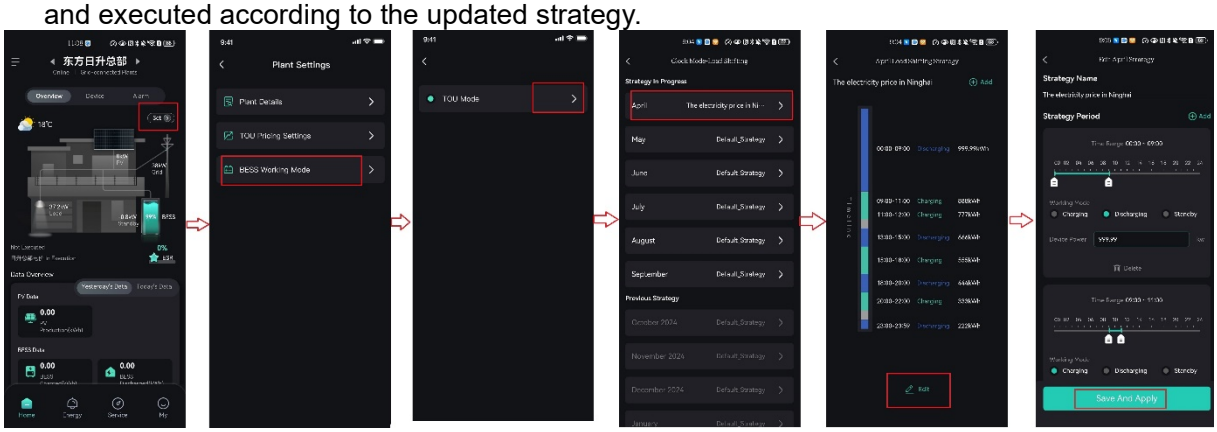
If selecting "Use Template":

1. Select a template from the dropdown list and tap "Confirm" to proceed.
2. After redirection, the interface will auto-populate with the template content. To adjust, modify the fields directly.
3. After reviewing the content, click "Save And Apply" to finalize the strategy creation. The Load Shifting operations for the month will be activated and executed according to this strategy.
4. Upon completion, a pop-up dialog will prompt: "Sync to Template Library" Select "Sync" to add the template to the Template Library, or select "Do Not Sync" to skip adding it.



4.4.2.3 Modify

1. Navigate to the 【Load Shifting Strategy Settings】interface, tap the "Edit" icon for the target energy usage strategy to access the modification interface.
2. Modify the content, then tap "Save And Apply" to confirm the changes. The modification is successful, and the Load Shifting operations for the month will be immediately activated and executed according to the updated strategy.

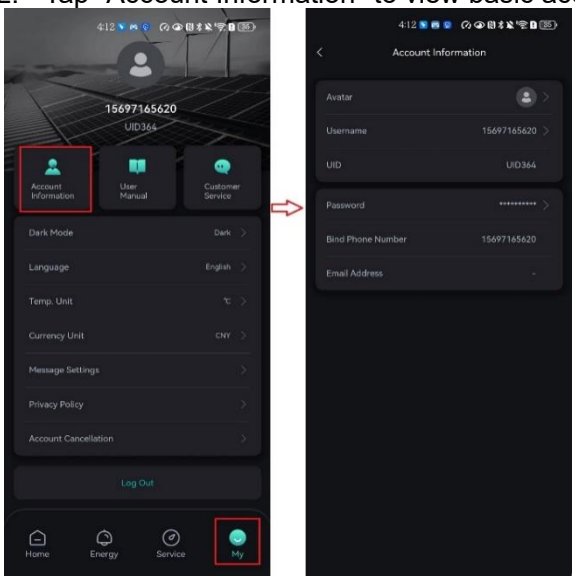


4.5 Account Information Management

For users who have successfully logged into the App and own power stations and devices.

4.5.1 View Account Information

1. After logging in, tap "My" to access the "My" page.
2. Tap "Account Information" to view basic account details.

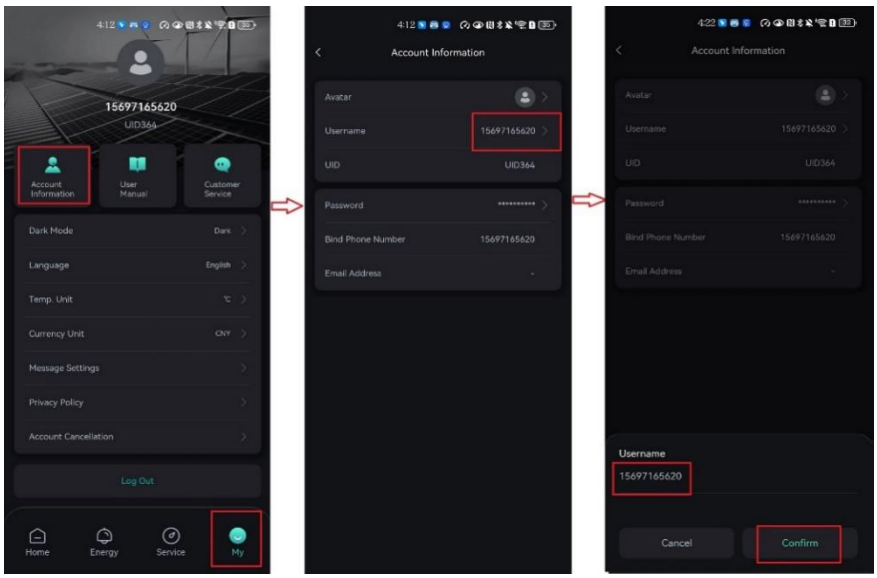


4.5.2 Modify Account Information

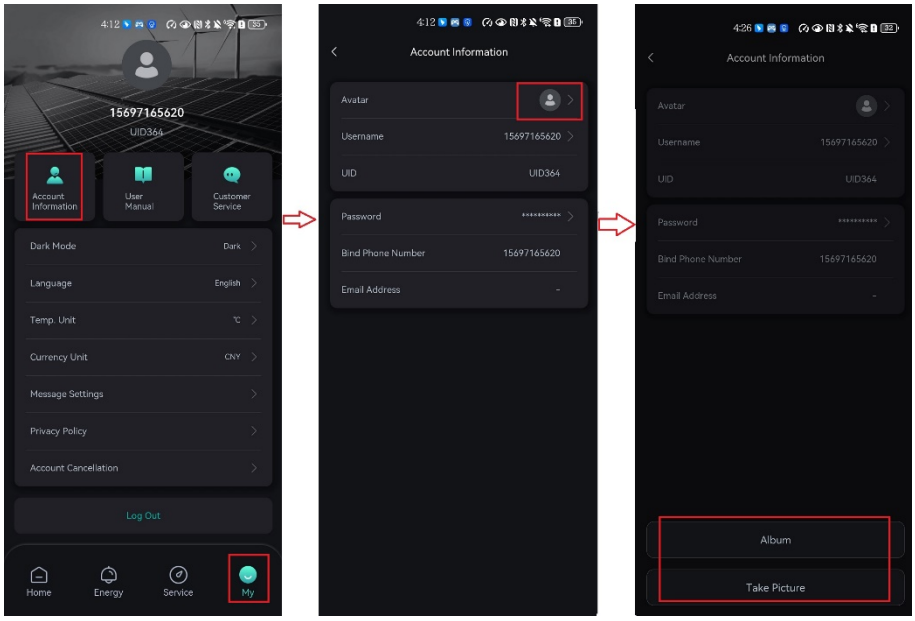
4.5.2.1 Modify Basic Information

In the 【Account Information】 interface, you can edit basic details such as profile photo and username.

Edit Username：

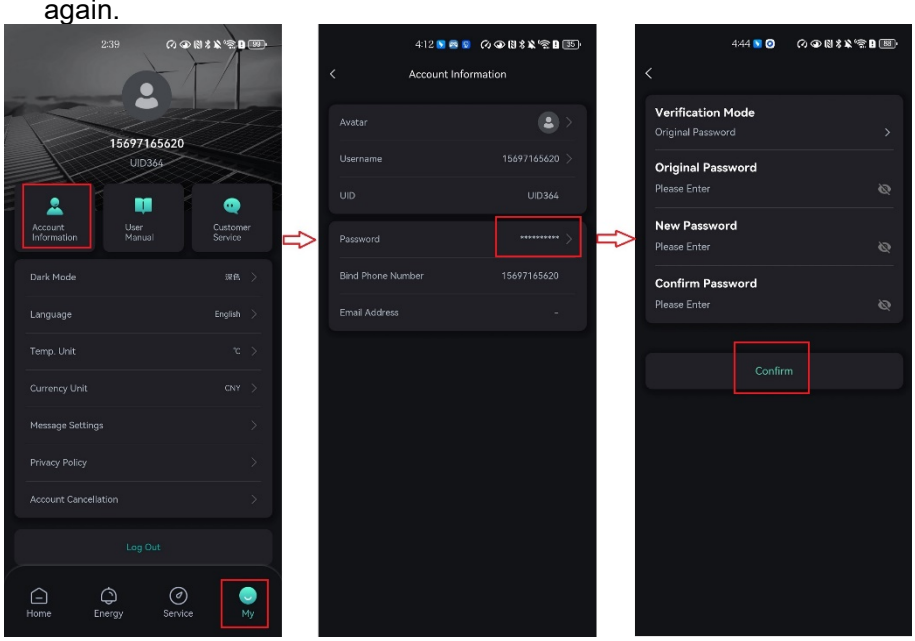


Edit Avatar：



4.5.2.2 Change Password

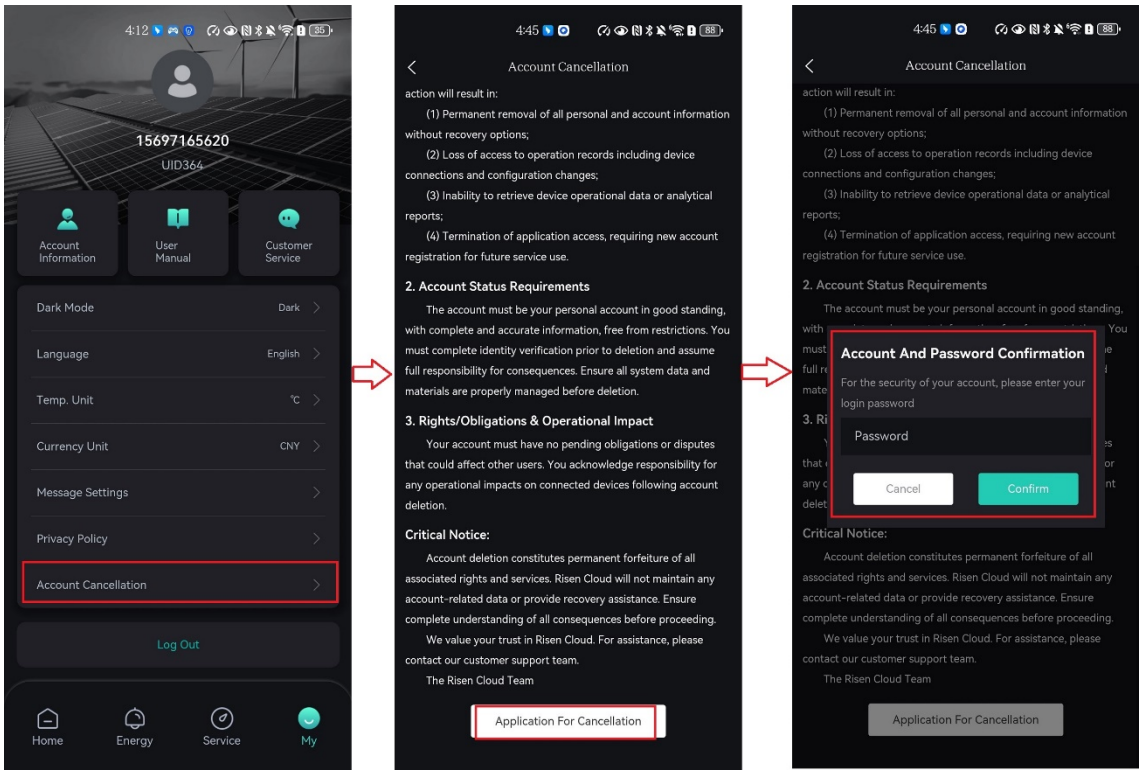
1. In the 【Account Information】 interface, tap "Password" to reset it.
2. After successful modification, you will be redirected to the login interface and must log in again.



4.5.3 Account Cancellation

Note: Data cannot be recovered after account deletion. Proceed with caution.

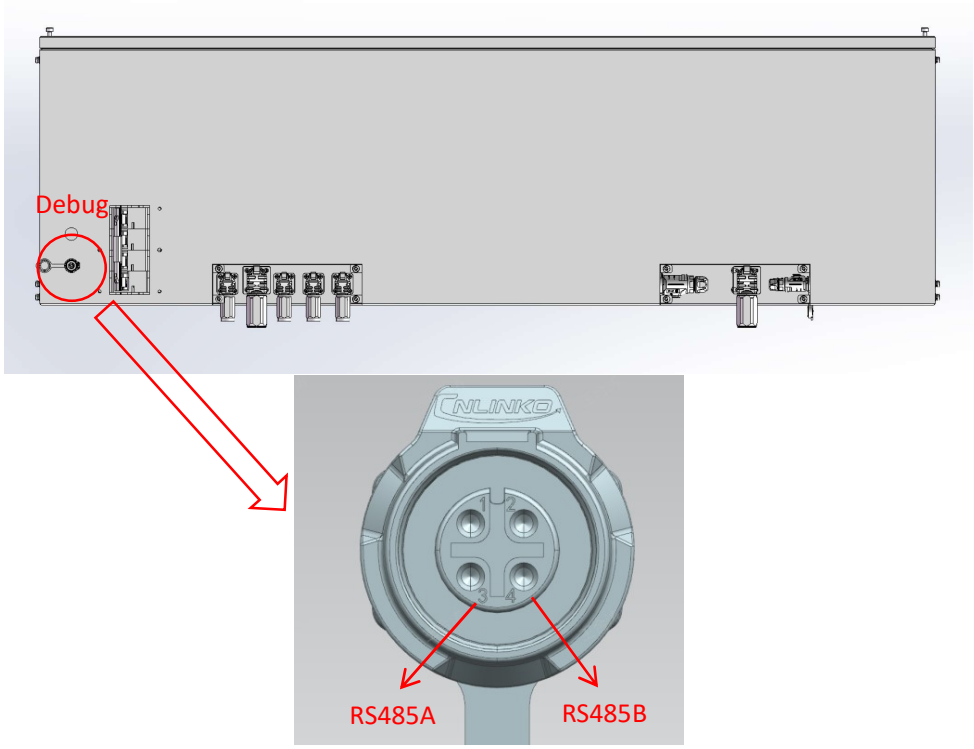
1. Tap "My", then tap "Account Cancellation" to initiate the process.
2. Tap "Application For Cancellation", enter your password, and verification success will trigger permanent deletion.
3. Upon success, you will return to the login interface, and this account will no longer be accessible.



5 PCSCommissioning Guide（Only for Australia）

5.1 RS485 Communication

1.During the commissioning stage, parameters can be set for the product, and after commissioning, relevant parameters can be viewed by connecting to the debugging port. Connect the RS485 to USB module, RS485 is terminated with the 4-pin connector, the 3rd pin and the 4th pin are inserted according to the position shown, and the other end of the USB interface is connected to the computer.



2. After confirming that the cable connection is normal, power on the module, and open the software when the product indicator lights up.

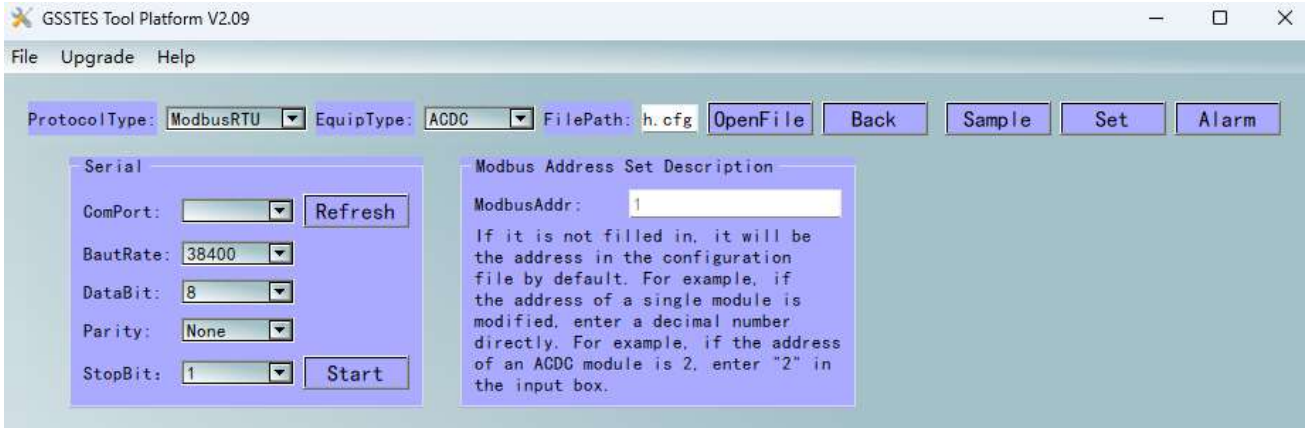
3. Open the software< GSSTESToolPlatform.exe > （Please contact the customer service to download the software.)

4. Configure the software

1) Protocol Type: Modbus RTU 2) EquipType: ACDC 3) File Path: XXXXXXXX-ACDC.cfg

4) Com Port: ComX 5) BautRate: 38400 6) DataBit: 8 7) Parity: None

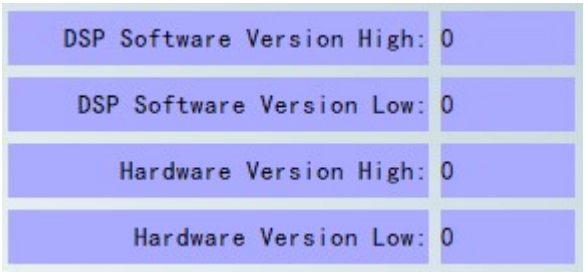
8) Parity: None 9) StopBit: 1 10) ModbusAddr: 1



5. Click: Start

5.2 Software Version

The software version can be checked in the following area of HostApp.



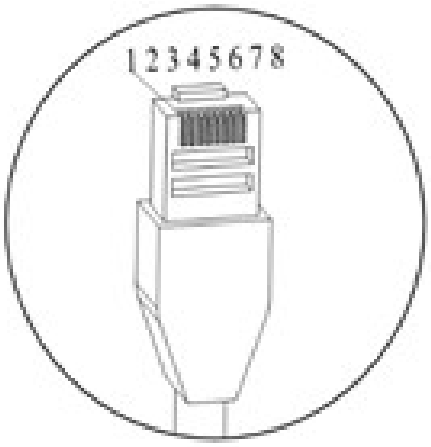
5.3 DRM

This application meets the requirements of the local Australian grid code (AS/NZS 4777.2), which, among specific requirements for the connection. calls for compatibility with Demand Response Enabling Devices (DRED), The DRED is under the control of a local network operator and allows to put the inverter in one of the Demand Response Modes (DRMs) defined by the standard:

· DRM 0 Operate the disconnection device

It is mandatory to respond to DRM0, which allows the network manager to remotely decouple the installation from the distribution network.

The RJ45 socket pin assignments for DRED:



DRED		
PIN	Signal Name	Cable Color
1	N/A	Orange-white
2	N/A	Orange
3	N/A	Green-white
4	N/A	Blue
5	N/A	Blue-white
6	Com/DRM0	Green
7	N/A	Brown-white
8	N/A	Brown

Click: Set DRE (Default prohibition)

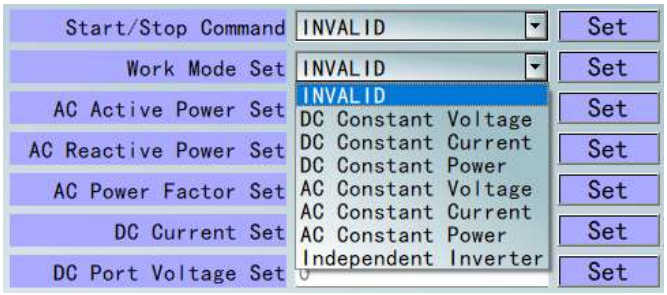
5.4 Grid Code Settings

For compliance with AS/NZS 4777.2:2020, please select from Australia A/B/C/ or New Zealand. Please contact your local grid operator to select the region according to the grid code list.

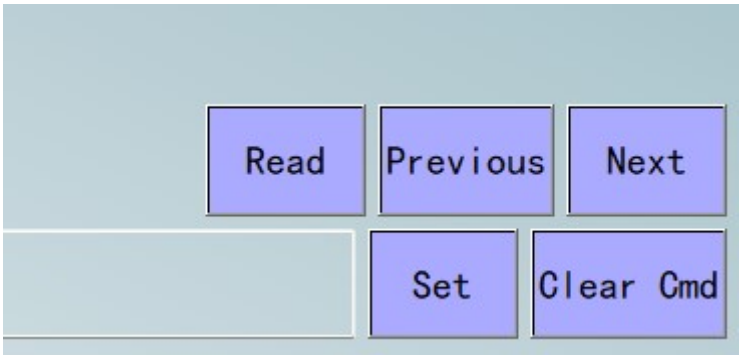
1. Grid Code Set: Australia A/B/C、NewZealand

According to the selection of power grid codes in different regions, the software adapts to the corresponding voltage, frequency, and other protection ranges.

2. Select the Work Mode you want to switch



3.Click: Read



4. The setting succeeds if the Work Mode Set does not change.

5.5 Grid Protection_Set

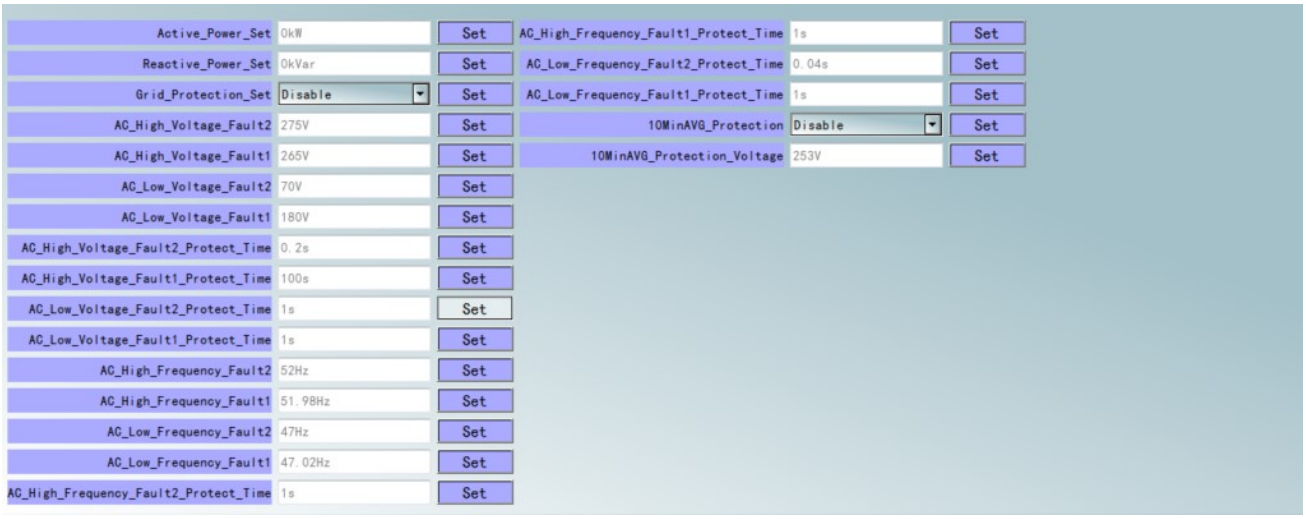
For compliance with AS/NZS 4777.2:2020, please Open the power grid protection settings and set the parameters for Over voltage , Under voltage , Over frequency and 10MinAVGprotection.

1、Set Over voltage，Under voltage，Over frequency protection

1)Click:Grid Protection_Set (Default prohibition)

2)Click:enable

3)Set：Over voltage、Under voltage、Over frequency Parameter

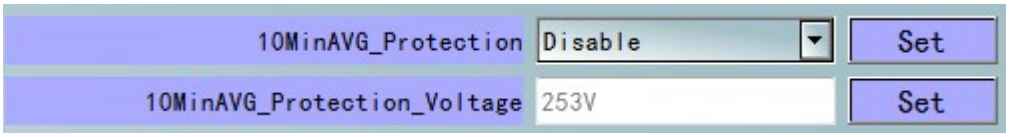


2、Set 10MinAVGprotection

1)Click:Set 10MinAVGprotection (Default prohibition)

2)Click:enable

3)Set：Set 10MinAVGprotection_Voltage Parameter



5.6 Grid Reconnection

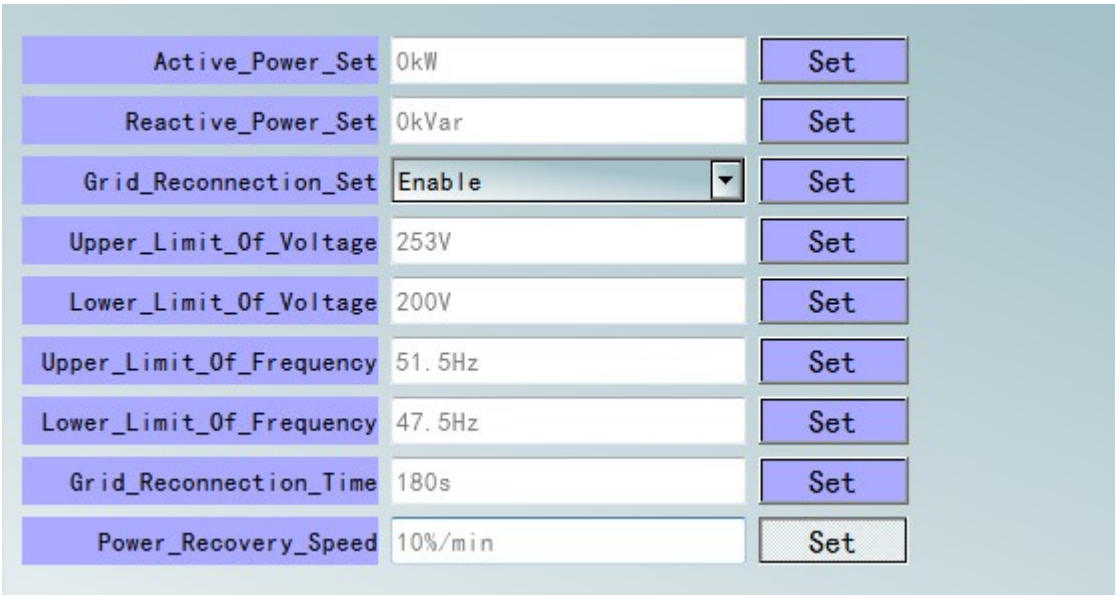
For compliance with AS/NZS 4777.2:2020, please Open the Grid Reconnection settings and

set the Reconnect parameters.

1)Click:Grid Reconnection_set

2)Click:enable

3)Set:Set Reconnect parameters

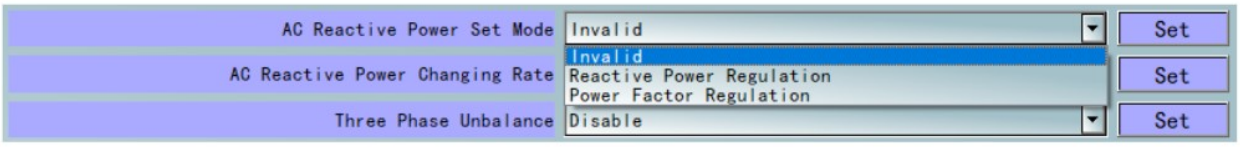


5.7 Power quality response

1、Power Quality Response Mode

Power Quality Response Mode → Fixed power factor mode： 0.8 lagging to 0.8 leading

Power Quality Response Mode → Fixed reactive power mode： Reactive power fixed at<100% rating

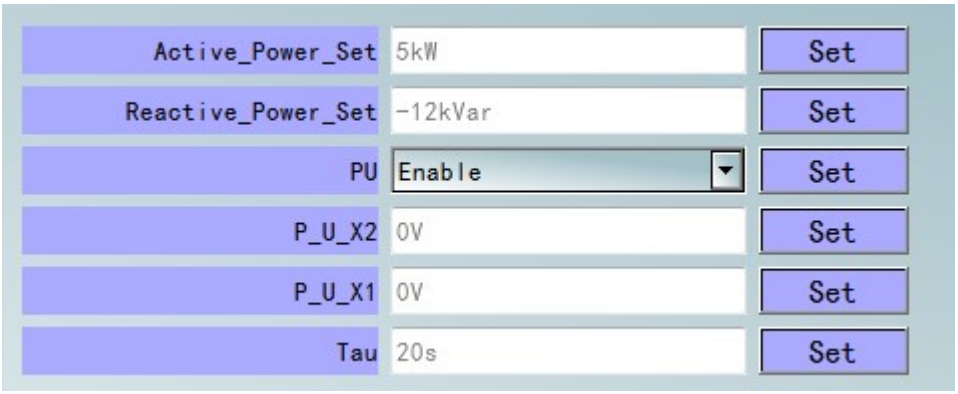


2、PU_Curve

1)Click:PU (Default prohibition)

2)Click:enable

3)Set:Set PU_Curve

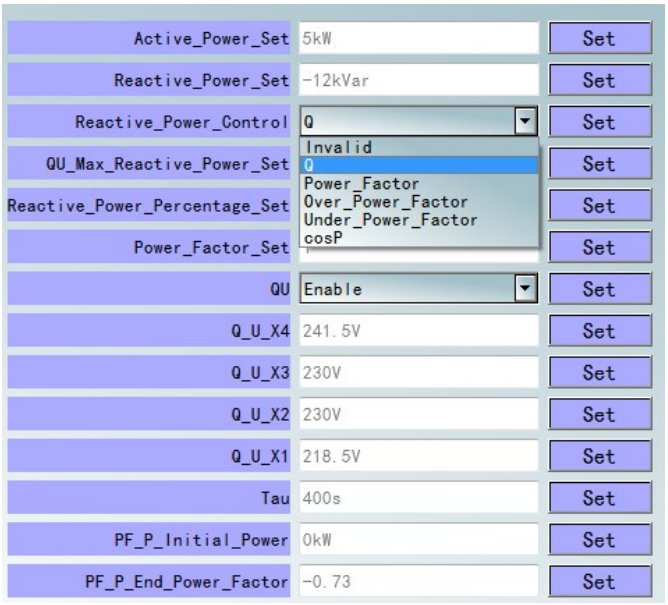


3、QU/Power Factor/Over Power Factor/Under Power Factor/cosP

1)Click:QU_Curve

2)Click:QU/Power Factor/Over Power Factor/Under Power Factor/cosP (Default Invalid)

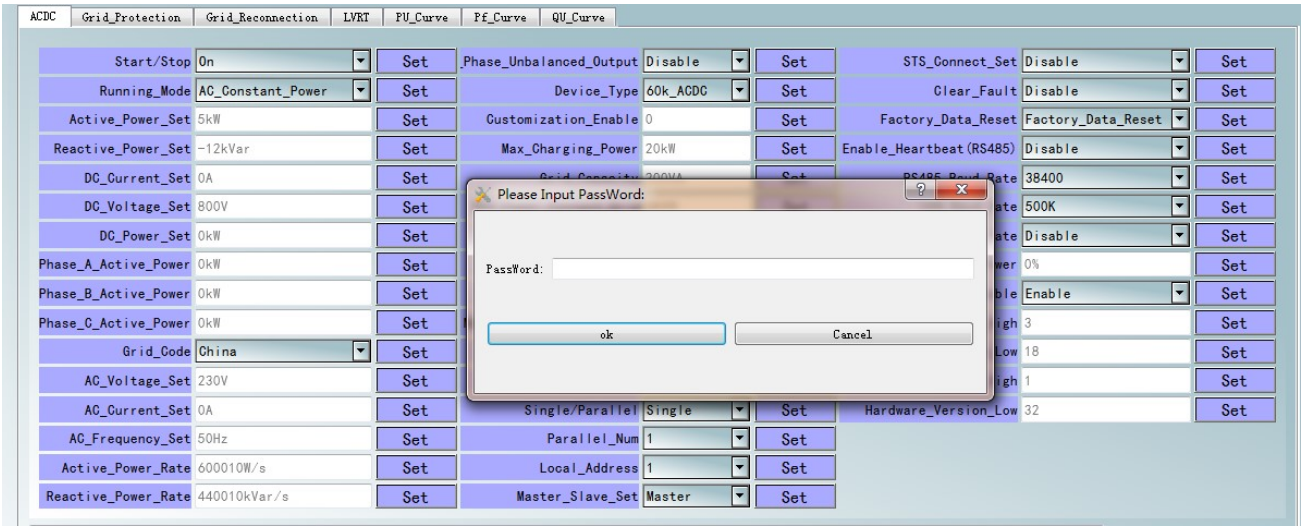
3)Set:Set parameters



5.8 Password protection

Parameter setting password protection function. To modify device protection parameters and other information, a password must be entered and unlocked before setting.

The login password is shared with the local operator for installation, parameter setting, and debugging work.

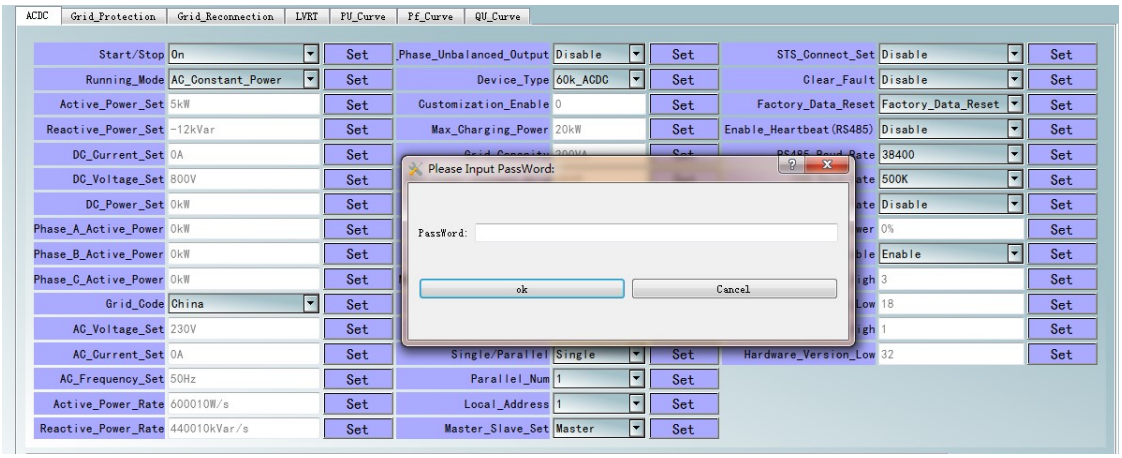


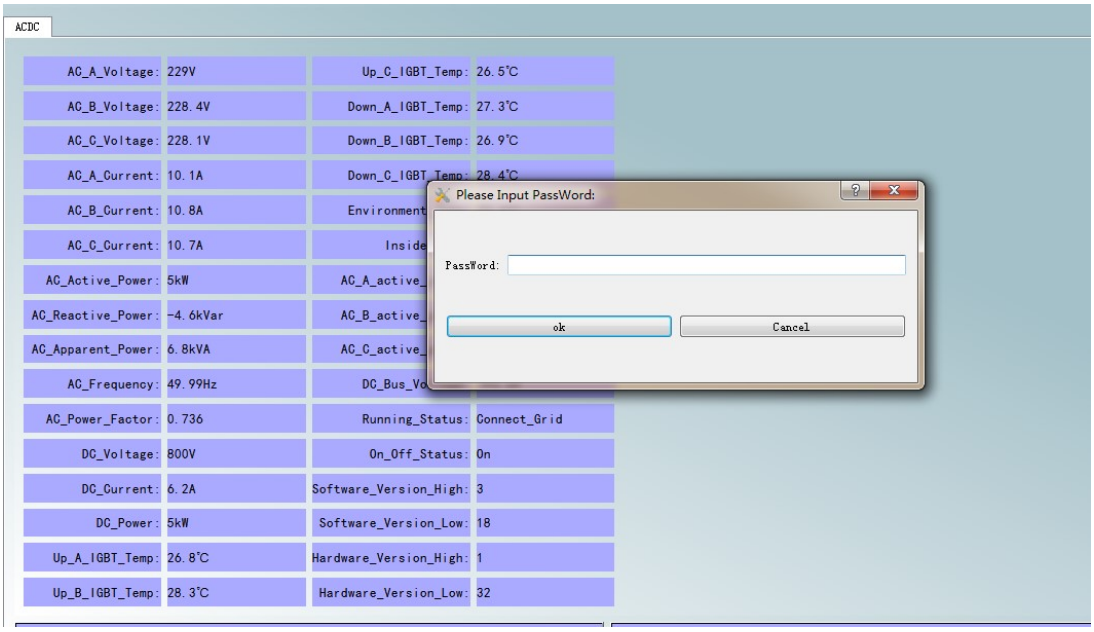
5.9 Parameter setting query and password protection

The device parameter setting, query, and password protection functions enable parameter modification or data query when specific device operating parameters need to

be modified or queried. After entering the password and unlocking it, parameter modification or data query can be performed

The he login password is shared with the local operator for installation, parameter setting, and debugging work.





6 Maintenance of Risen Stack1 Series Products

6.1 Terminology

- Normal Operation: System operates in fault-free condition.
- Intermittent Operation: System operates with irregular frequency.
- Long-term Storage: Battery modules remain inactive for over 3 months (Pre-use requirement: Charge to 40% SOC).

6.2 Requirements for Normal Operation

- Conduct system inspection annually (see Appendix 1) and document findings.

6.3 Requirements for Intermittent Operation

- Same requirements as normal operation.

6.4 Requirements for Long-term Storage

- The recommended SOC storage range for battery modules is 30% to 50%. Prolonged storage below 15% SOC must be strictly avoided, and all power-consuming devices should be disconnected when the modules remain unused for extended periods.
- Perform quarterly system inspections (Appendix 1) with proper documentation.
- Before initial use after long-term storage, a complete full charge cycle must be performed to activate the battery module system and restore its performance to optimal condition.

6.5 Main Circuit Breaker Function

- The main circuit breaker (MCB) serves as an electrical component that enables manual control of system power on/off operations, disconnects the power supply line between the grid and equipment, and provides critical safety protection functions.
- Maintenance personnel must first open (turn off) the main circuit breaker before conducting any system maintenance work, and shall close (turn on) it only after completing all maintenance operations.

6.6 Battery Module Maintenance Procedures

To ensure long-term safe and reliable operation of your energy storage system, please carefully read and comply with the following instructions:

Maintenance Procedures:

Option 1: Recommended for Low SOC Conditions (Energy-saving Mode).

- Discharge the battery module system to cutoff conditions (average cell voltage <3.1V or minimum cell voltage <2.8V), then stop discharging and let stand for 1 hour.
- Perform automatic full charge (maximum cell voltage >3.64V), then let stand for 1 hour after charging.
- Discharge the system to 40% SOC and stop.

Option 2: Recommended for High SOC Conditions (Energy-saving Mode).

- Perform automatic full charge (maximum cell voltage >3.62V), then let stand for 1 hour after charging.
- Discharge the battery module system to cutoff conditions (average cell voltage <3.1V or minimum cell voltage <2.8V), then stop discharging and let stand for 1 hour.

- Charge the system to 40% SOC and stop.

IMPORTANT

1、Before performing maintenance operations, it is mandatory to verify and ensure environmental safety, system safety, and confirm there are no active alarms or faults.

2、After completing battery maintenance for the energy storage system, you may notify our after-sales service personnel for complimentary data analysis.

6.7 System Efficiency Explanation:

If the system efficiency is low, the following possibilities should be considered:

- Check the system's charging/discharging status and the power consumption condition at the load end.
- Verify whether the air conditioning system is operating normally.
- Inspect whether the distance between the energy storage system and the power grid is too long.

6.8 Fire Protection System Maintenance

- The service life of the aerosol fire suppressant is approximately 10 years, requiring maintenance replacement every decade.

7 Common Fault Diagnosis

7.1 System Alarms

The system classifies alarms into three levels (Minor, General, Critical) with corresponding protective actions:

Table 7-1 Alarm Items and Protection

Item	Minor Alarm	General Alarm	Critical Alarm
Cell OV/UV	Report to EMS for power reduction	Report to EMS for power reduction	Disconnect contactor
Pack OV/UV	No action	Report to EMS for power reduction	Disconnect contactor
Cell voltage difference	No action	Module isolation strategy	Module isolation strategy
Pack voltage difference	No action	Module isolation strategy	Module isolation strategy
Charge/Discharge Temperature Over/Under Limit	No action	Report to EMS for power reduction	Disconnect contactor
Power Connector Temperature	No action	No action	No action
Cell Temperature Difference	No action	No action	No action
Charge Current Overload	No action	Report to EMS for power reduction to zero	Disconnect contactor
Discharge Current Overload	No action	Report to EMS for power reduction to zero	Disconnect contactor

7.2 System Alarm Handling Procedures

Upon commissioning the Risen Stack1, if abnormal operation occurs, refrain from immediately concluding system failure. Please refer to Table 7-2 for potential root causes while verifying whether external environmental factors - including non-compliant temperature/humidity conditions or load overcurrent - may be contributing. For any component repair or replacement requirements, strictly adhere to the authorized after-sales manual procedures, as unauthorized disassembly or installation operations are expressly prohibited.

This section provides basic fault diagnosis procedures only. Should the diagnostic results prove inconclusive or the obtained information be insufficient for problem resolution, please contact Risen for technical support.

Table 7-2 Troubleshooting Table

No.	Fault/Alarm Phenomenon	Possible Causes	Solution
1	No display after power-on	1.Poor wiring connection	Check display wiring
		2.EMS failure	Replace EMS

		3.Indicator light failure	Replace indicator light
2	Relay fails to close	1.Poor main relay wiring	Check wiring connection
		2.Main relay failure	Replace main relay
		3.BMS failure	Replace BMS
3	Relay sticking	Relay damage	Replace main relay
4	Abnormal cell voltage detection	1.Poor voltage detection wiring	Check CCS wiring
		2.Sampling chip failure	Replace BMU
5	Abnormal cell temperature detection	1.Poor temperature detection wiring	Check CCS wiring
		2.Temperature sensor failure	Replace temperature sensor
		3.Sampling chip failure	Replace BMU
6	BCU-BMU Communication Error	Internal CAN Bus Connection Issue	Check and reseat CAN bus connectors
7	BCU-EMS Communication Error	Internal CAN Bus Connection Issue	Check and reseat CAN bus connectors
8	PCS-EMS Communication Error	Ethernet Communication Line Fault	Inspect and reconnect Ethernet cable
9	BCU-AC Communication Error	Loose terminals at AC communication port	Check and secure communication terminals
10	Temperature Limit Exceeded	Cell temperature beyond normal range	Stop charge/discharge immediately
11	Voltage Limit Exceeded	Cell voltage beyond allowed threshold	Stop charge/discharge immediately
12	Cell Overvoltage Alarm	1.Balancing malfunction	Stop charging, perform standby balancing
		2.System overcharge	Immediately stop charging
13	Cell Undervoltage Alarm	1.Balancing malfunction	Stop discharging, perform standby balancing
		2.System over-discharge	Immediately stop discharging
14	Cell Overtemperature Alarm	1.Excessive cell temperature	Verify AC system operation
		2.Overcurrent charge/discharge	Check actual vs. permitted current ratings
15	Cell Low-temperature Alarm	1.Cell temperature too low	Verify heater operation
		2.Ambient temperature violation	Prohibit charging
16	Module Overvoltage Alarm	1.System overcharge condition	Immediately stop charging
17	Module Undervoltage Alarm	1.System over-discharge condition	Immediately stop discharging
18	Module Overtemperature Alarm	1.Excessive module temperature	Verify AC system operation
		2.Temperature sensor failure	Replace temperature sensor
19	Module Low-temperature Alarm	1.Module temperature too low	Activate heating system
		2.Ambient temperature violation	Prohibit charging
20	Charge Overcurrent Alarm	1.Excessive charge current	Reduce charge power output
21	Discharge Overcurrent Alarm	1.Excessive discharge current	Reduce system load demand

7.3 Emergency Handling Procedures

(Scenario 1) Fire Emergency

Step 1: Immediately evacuate all personnel to a safe zone, establish a safety isolation perimeter, and call emergency services based on the situation.

Step 2: If conditions permit while ensuring personal safety, perform the following operations:

1) For wiring smoke/fire: Use CO_2 or dry powder fire extinguishers.
2) For battery module fires: Use high-pressure water jets from a safe distance.
3) If smoke inhalation occurs: Evacuate immediately and seek medical attention.

Tips

For fires caused by charging/discharging abnormalities: FIRST disconnect power supply before executing firefighting actions.

(Scenario 2) Flooding

Step 1: Immediately evacuate all personnel to a safe zone and establish an isolation perimeter, regardless of system power status.

Step 2: Notify the system supplier for post-flood inspection after water recedes.

Step 3: DO NOT restart the system before obtaining safety certification from the manufacturer.

8 After-Sales Service

Risen Energy Co., Ltd. provides comprehensive technical support and after-sales service to customers. The free warranty period shall be subject to the contract terms.

The following circumstances are not covered under our free warranty service:

- System damage or malfunction caused by failure to follow the user manual.
- Damage or failure resulting from non-compliant wiring/power supply or harsh environmental conditions.
- Unauthorized modifications by customers leading to system damage.
- Damage caused by force majeure events (typhoons, earthquakes, floods, fires) or extreme environments (high/low temperatures, humidity, acid rain, etc.).
- Cases where customers alter the initial failure state without notifying the manufacturer, preventing proper fault diagnosis.

Appendix 1

Inspection Item	Method	Yes-√ No-× N/A-O	Abnormal Findings
Integrity of cooling system	Visual inspection		
Blockage in cooling ducts	Visual inspection		
Deformation of stacked unit	Visual inspection		
Rust/damage on stacked unit	Visual inspection		
Loose/damaged HV cables	Visual inspection		
Cable-structural interference	Visual inspection		
HV connection arcing	Visual inspection		
Loose/missing structural bolts	Visual inspection		
Unusual odors from unit	Smell test		
Burnt smell at HV connections	Smell test		
Complete summary data	Monitoring system		
Complete cell voltage data	Monitoring system		
Complete cell temperature data	Monitoring system		
Abnormal alarms	Monitoring system		
Note: All abnormalities found during inspection must be reported immediately. Contact authorized personnel for troubleshooting.			