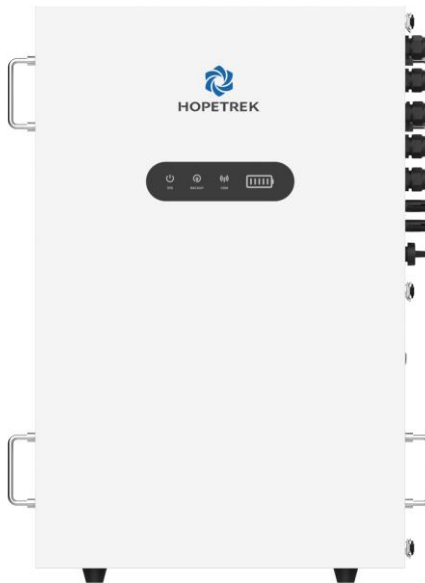




HOPETREK

All-in-One Energy Storage System AIO-SL-HP6KB5-A1 User Manual



Please visit <https://www.hopetrek.com/pages/download-document> to download the user manual in additional languages.

Contents

1 Disclaimer and Safety Warnings	1
1.1 Disclaimer	1
1.2 Safety Warnings	2
1.2.1 General Safety Requirements	2
1.2.2 Operator Requirements	2
1.2.3 Electrical Safety	2
1.2.4 Emergency Measures	3
1.2.5 Battery Recycling	3
1.2.6 Warning Labels and Signs	4
2 Product Introduction	5
2.1 Product Introduction	5
2.2 System Framework	6
2.3 Product Overview	7
2.3.1 Structure and Ports	7
2.3.2 Dimensions	10
2.3.3 Indicator LEDs	10
3 Device Inspection and Storage	11
3.1 Delivery Inspection	11
3.2 Packing List	12
3.3 Device Storage	12
4 Installation	13
4.1 Preparation	13
4.2 Device Installation	14
5 Electrical Connection	17
5.1 System Wiring	17
5.1.1 N Line and PE Line Connected	18
5.1.2 N Line and PE Line Not Connected	19
5.2 Grounding Connection	20

5.3 PV Cable Connection	21
5.4 Power Cable Connection	23
5.4.1 AC Cable Connection	26
5.4.2 Expansion Battery Cable Connection (Optional)	28
5.5 COM1 Connection	29
5.5.1 Monitoring Device Installation	29
5.5.2 Network Connection Methods	29
5.6 COM2 Cable Connection	31
5.6.1 Meter&CT Cable Connection	32
5.6.2 BMS Cable Connection	35
5.6.3 PAR and 3RD Cable Connection	35
6 System Commissioning	36
6.1 Check Before Power-On	36
6.2 System Power-On	36
6.3 System Power-Off	36
7 System Configuration	37
7.1 APP Download	37
7.2 How to Use the Monitoring Device	37
7.2.1 Button	38
7.2.2 Indicators	38
7.3 Wi-Fi Connection for Monitoring Device	38
7.4 Parameter Settings	40
7.4.1 Quick Setup	40
7.4.2 Quick Configuration (Including Working Mode)	42
7.4.3 Working Mode	45
7.5 Device Functions	49
7.5.1 Feed-in Limitation Function	49
7.5.2 On-Grid and Off-Grid Switching Function	49
7.5.3 Arc Fault Circuit Interrupter (AFCI) Function (Optional)	49
8 System Maintenance	50
8.1 Routine Maintenance	50
8.2 Device Disposal	51

8.3 Error Codes and Troubleshooting	51
8.3.1 Inverter Errors	51
8.3.2 Battery Errors	57
8.3.3 Monitoring Device Errors	62
9 Technical Specifications	63
10 Warranty Overview	66
11 Appendix	67
11.1 Opening the Cabinet Door	67
11.2 Closing the Cabinet Door	68
12 Acronym and Abbreviations	68

1 Disclaimer and Safety Warnings

1.1 Disclaimer

Copyright Statement

No part of this manual may be copied, reproduced, translated or distributed in any form or by any means without prior consent in writing from our company (referred to as us hereafter).

About This Manual

- This manual is intended for multiple product models, and the photos, illustrations, descriptions, etc., in this manual may be different from the actual appearances, functions, features, etc., of the product.
- Despite our best efforts, technical or typographical errors may exist in this manual. Our company cannot be held responsible for any such errors and reserves the right to change the manual without prior notice.
- Users are fully responsible for the damages and losses that arise due to improper operation.
- Our company reserves the right to change any information in this manual without any prior notice or indication. Due to such reasons as product version upgrade or regulatory requirement of relevant regions, this manual will be periodically updated.

Disclaimer of Liability

- Before installing, operating, or maintaining the device, please read the manual and follow all safety precautions indicated on the device and in the manual.
- This device should be used in an environment that meets the design specifications; otherwise, it may cause malfunctions, leading to device failure, personal injury, or property damage, which are not covered under the product warranty.
- Our company does not warrant that its software is free from defects or that customers will not encounter any issues or interruptions when using the software.
- Our company, as well as its partners or suppliers, shall not be liable under the warranty terms for any data loss and any direct or indirect financial losses caused by the product's inability to function or business interruptions.
- Under no circumstances (including where explicitly agreed upon through contracts or other forms), shall the maximum compensation payable by our company and its partners or suppliers for losses incurred by the customer due to their liability exceed the amount paid by the customer for the purchase of the product.
- Our company has the final authority to interpret the warranty policy and can make necessary changes to the warranty information, product performance, or policy specifications without notifying the customers.

European LV/EMC/RE/RoHS Directive



This product complies with Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU, RE Directive 2014/53/EU and RoHS Directive 2011/65/EU and (EU) 2015/863.

WEEE Directive-2012/19/EU



The product this manual refers to is covered by the Waste Electrical & Electronic Equipment (WEEE) Directive and must be disposed of in a responsible manner.

Battery Regulation- (EU) 2023/1542



Battery in the product complies with the European Battery Regulation (EU) 2023/1542. For proper recycling, return the battery to your supplier or to a designated collection point.

Hereby, HopeTrek Innovations Co., Ltd. declares that this device (refer to the label) is in compliance with Directive 2014/53/EU. The EU declaration of conformity is available at the following internet address: <https://www.hopetrek.com/pages/download-document>

1.2 Safety Warnings

1.2.1 General Safety Requirements

- When transporting, installing, or maintaining the device, comply with the laws, regulations, and relevant standards of the region.
- Any signs of damage found during transportation, installation, or use should be repaired promptly; do not leave the damaged part exposed to the outdoor environment for an extended period.
- Follow the warning labels on the device and implement appropriate protective measures. Do not alter, cover, or damage the labels and markers on the device.
- Avoid outdoor installation or operation during severe weather conditions such as thunderstorms, rain, snow, or high winds.
- Keep the battery away from children and animals.
- Use tools properly to avoid personal injury and device damage. Use proper personal protective equipment during the installation.
- Measure the voltage at contact points before touching any conductors or terminals; do not perform installation, wiring, or maintenance operations while the device is powered.
- Obtain the necessary electrical permits from the local authority before connecting the device to the grid.
- After completing installation, clean the installation area and dispose of the packaging materials properly. It is forbidden to place flammable and explosive materials near the device.
- Ensure that the device is properly grounded and that all cables are securely connected before using it.
- Do not touch the casing during operation or malfunction. The high temperature of the casing may cause burns.
- Do not disassemble, modify the product, or alter the software code without authorization from the manufacturer.
- Do not clean the device with water.
- In case of fire, evacuate the area immediately and contact the fire department.

1.2.2 Operator Requirements

- Operators responsible for the installation and maintenance of this device must undergo rigorous training and master the correct operating methods.
- Operators should be thoroughly familiar with the entire photovoltaic grid-connected power generation system, its working principles, and relevant standards in the region.
- When operating the device, operators must use insulated tools and wear personal protective equipment to ensure safety. When handling electronic components, operators should wear anti-static gloves, anti-static wristbands, and anti-static clothing to protect the device from static damage.

1.2.3 Electrical Safety

Grounding Safety Requirements

- When wiring the device, complete the grounding operation first; when disconnecting, remove the ground wire last.
- The device must maintain its grounding status after installation, regardless of whether it is powered on.
- Before operating the device, check the reliability of the grounding.

Inverter Safety Requirements

- Inverters are high-voltage products and must be handled with caution.
- Use special insulated tools during cable connections.
- Pay attention to and follow the warning labels on the product, and strictly adhere to the safety instructions.
- Rigorously follow all safety instructions listed in this manual and other related documents.

Photovoltaic Safety Requirements

- Operators must wear appropriate personal protective equipment during electrical connections.
- Before installing the device, carefully read the documentation for the PV strings to understand the product and precautions, and strictly follow all safety instructions.
- Ensure that the module frames and mounting system are properly grounded.
- Use the PV connectors included in the packaging. Using different models of PV connectors may lead to severe consequences; any resulting damage to the device is not the manufacturer's responsibility.
- Use a multimeter to measure the DC cable's positive and negative terminals, ensuring correct polarity and that the voltage is within the inverter's allowable range.

Battery Safety Requirements

- Batteries used with the inverter must pass the compatibility test conducted by the inverter manufacturer.
- Before installing the device, carefully read the battery's user manual to understand the product and precautions, and strictly follow all safety instructions.
- Operators must wear appropriate personal protective equipment during electrical connections.
- Disconnect the battery from all power sources and ensure it is turned off before performing any operations on it.
- Use a multimeter to measure the DC cable's positive and negative terminals, ensuring correct polarity and that the voltage is within the inverter's allowable range.
- Avoid impacts, tilting, standing, or sitting on the battery.
- If a battery short-circuits, the instantaneous current can become extremely high, releasing a large amount of energy that may cause fires and personal injury.
- There is a lethal voltage at the battery terminals and the connections to the inverter. Check the cable insulation and connections to prevent exposure to metal parts, which could lead to severe injuries or death.
- If the battery fails to start, contact the after-sales service center as soon as possible, otherwise, it may become permanently damaged.

1.2.4 Emergency Measures

Battery electrolyte leakage

- Inhalation of gas: Evacuate the contaminated area and seek immediate medical assistance.
- Eye contact: Rinse with clean water for at least 15 minutes and seek immediate medical assistance.
- Skin contact: Thoroughly wash the affected area with soap and clean water and seek immediate medical assistance.
- Ingestion: Induce vomiting and seek immediate medical assistance.

Fire

Improper operations such as short-circuiting the positive and negative terminals of the battery may result in overheating, fire, toxic and harmful gases.

- Carbon dioxide fire extinguishers should be equipped near the device in case of fire.
- Do not use dry powder fire extinguishers.

1.2.5 Battery Recycling

- Do not dispose of the batteries as household waste. You have a legal obligation to return old batteries.
- Waste batteries may contain pollutants. Improper storage or disposal can cause environmental and health hazards.
- Batteries contain important raw materials such as iron and lithium, which can be recycled and reused.

1.2.6 Warning Labels and Signs

Labels and Signs	Description
	Disconnect the inverter from all external power sources before starting maintenance!
	The equipment surface temperature may exceed 60°C, and there is a risk of burning.
	High voltage can be life-threatening! Only the trained personnel is allowed to operate and maintain the inverter.
	Do not touch live parts within 5 minutes after disconnecting from the power source.
	Please read the user manual before starting maintenance!
	CE mark
	Do not dispose of the equipment as household waste; please handle it according to local laws and regulations, or return it to the manufacturer.

2 Product Introduction

2.1 Product Introduction

Introduction

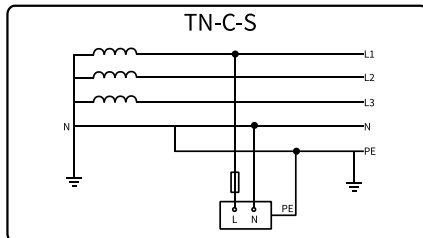
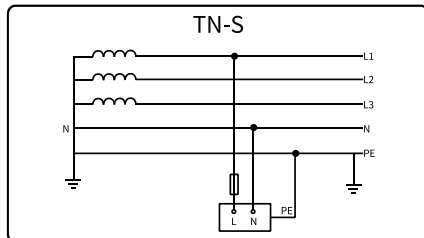
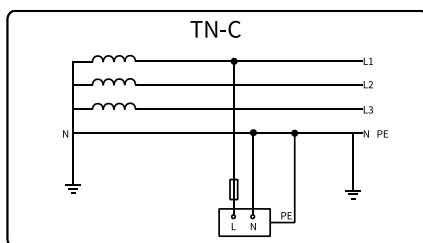
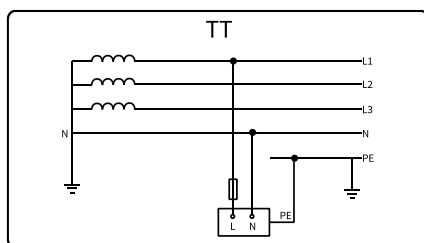
This product is a single-phase all-in-one energy storage system (referred to as the device hereafter), capable of smart power dispatch and storage. It supports multiple working modes to meet diverse user needs, providing stable, efficient, and eco-friendly solutions.

Applicable Models

This document applies to AIO-SL-HP6KB5-A1

Grid Compatibility

This product supports the following grid types: TT, TN-C, TN-S, and TN-C-S.



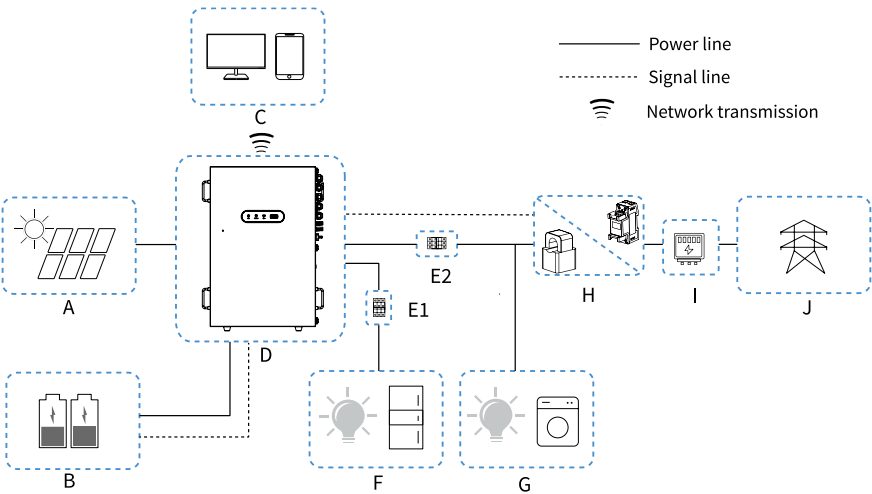
2.2 System Framework

The device works with other devices to form an energy storage system. The following contents are for your reference. For further details or additional power needs, please consult with after-sales personnel.



CAUTION!

The PV system is not suitable for connecting devices that rely on stable power supply, such as life-support medical equipment. Ensure that system power outages do not pose a risk of personal injury.



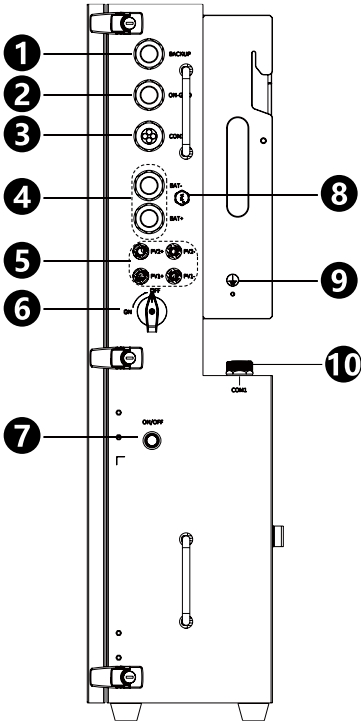
No.	Parts	Description
A	PV string	A series of PV modules connected in series.
B	Expansion battery	Connect as needed. Choose a model compatible with the device.
C	Monitoring device	Transfers device information.
D	Inverter	Supports SUN-SL series inverters.
E1	AC circuit breaker	Backup Port: Please choose the AC circuit breaker according to the device model. Rated current $\geq 40\text{A}$, rated voltage $\geq 230\text{V}$
E2	AC circuit breaker	On-Grid Port: Please choose the AC circuit breaker according to the device model. Rated current $\geq 63\text{A}$, rated voltage $\geq 230\text{V}$

No.	Parts	Description
F	Backup load	Load connected to Backup.
G	On-Grid load	Load connected to On-Grid.
H	CT/Smart meter	Monitors the system.
I	Energy meter	Household meter.
J	Grid	-

2.3 Product Overview

2.3.1 Structure and Ports

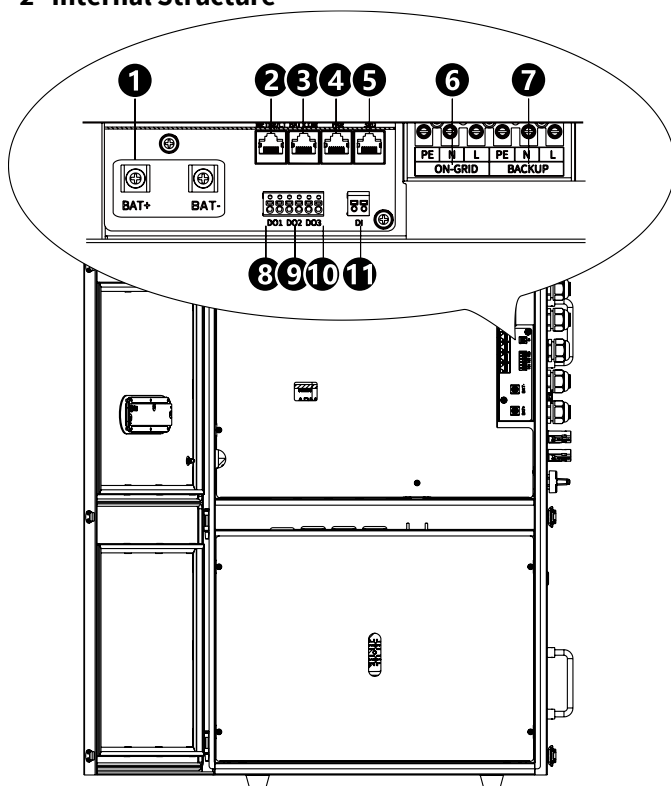
1 External Structure



No.	Name	Description
1	BACKUP	BACKUP cable hole
2	ON-GRID	ON-GRID cable hole

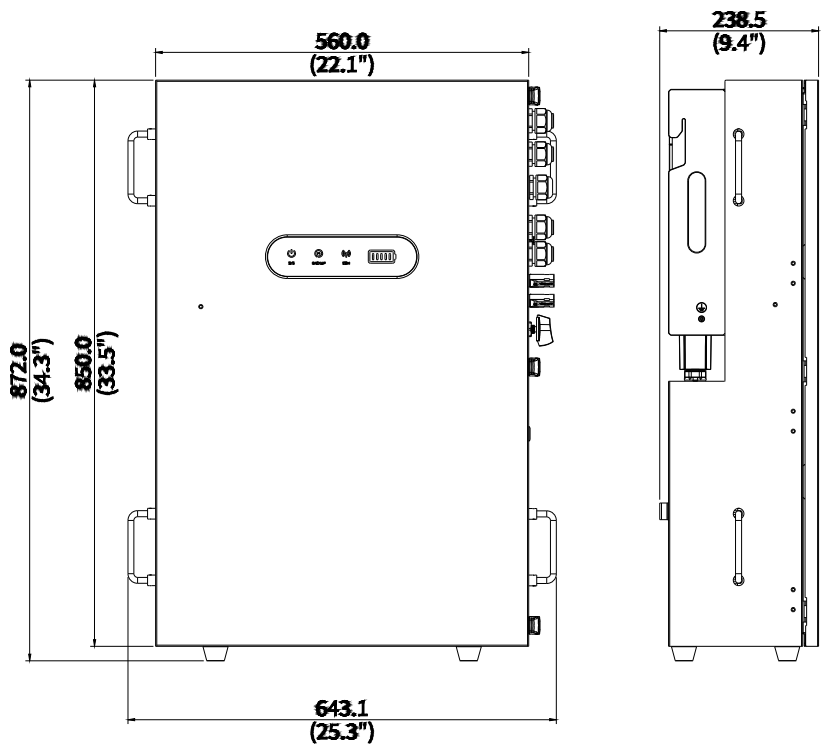
No.	Name	Description
③	COM2	Multi-function cable hole
④	BAT	Power cable hole for expansion battery
⑤	PV1、PV2	PV input port.
⑥	DC switch	PV input switch.
⑦	Battery switch	Controls the start/stop of the internal battery in the device.
⑧	Waterproof vent valve	Improves device security and reliability.
⑨	Grounding	Protects people and device safety. There is one grounding port on each side of the device.
⑩	COM1	For communication with the monitoring device.

2 Internal Structure

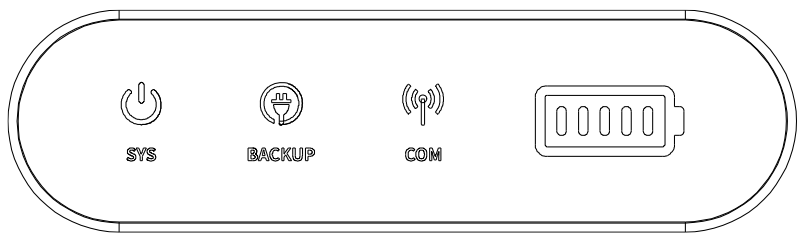


No.	Name	Description
①	BAT	Positive and negative terminals for the expansion battery.
②	METER/CT	For communication with the meter or CT.
③	BMS	For communication with the battery.
④	PAR	Connect standard RJ45 network cables.
⑤	3RD	For communication with the third-party system or device.
⑥	ON-GRID	Grid connection port.
⑦	BACKUP	BACKUP connection port.
⑧	DO1	• Switch mode: The trigger and deactivation of DO1 is set manually. Once triggered, it cannot be automatically turned off when the system is operating. • Time mode: DO1 is triggered during the set time period and automatically turned off during other periods.
⑨	DO2	Can be used to control diesel generators.
⑩	DO3	Can be used for external ATS switching or for shorting N and PE in an external distribution box.
⑪	DI	Receives switch signals from dry contacts to control the remote shutdown of the device.

2.3.2 Dimensions



2.3.3 Indicator LEDs



Name	Status	Description
SYS	Steady blue	The device is normal.
	Breathing blue	The device is standby.
	Steady red	An alarm has occurred, or the device is faulty.
	Off	The device is powered off.

Name	Status	Description
BACKUP	Steady blue	The device is operating in on-grid mode, and the BACKUP port has output.
	Breathing blue	The device is operating in off-grid mode, and the BACKUP port has output.
	Off	The BACKUP port has no output.
COM	Steady blue	The device is connected with the cloud server.
	Breathing blue	The device's Bluetooth is connected.
	Off	No mobile phone is connected to the device's Bluetooth, and the device is not connected to the cloud server.
BATTERY (Power increases from left to right)	Steady blue	Battery is discharging or standby, each bar represents 20% power.
	The last blue light is breathing.	Battery is charging, each bar represents 20% power.
	Steady red	Battery is low.
	Off	No battery or no communication with BMS.

3 Device Inspection and Storage

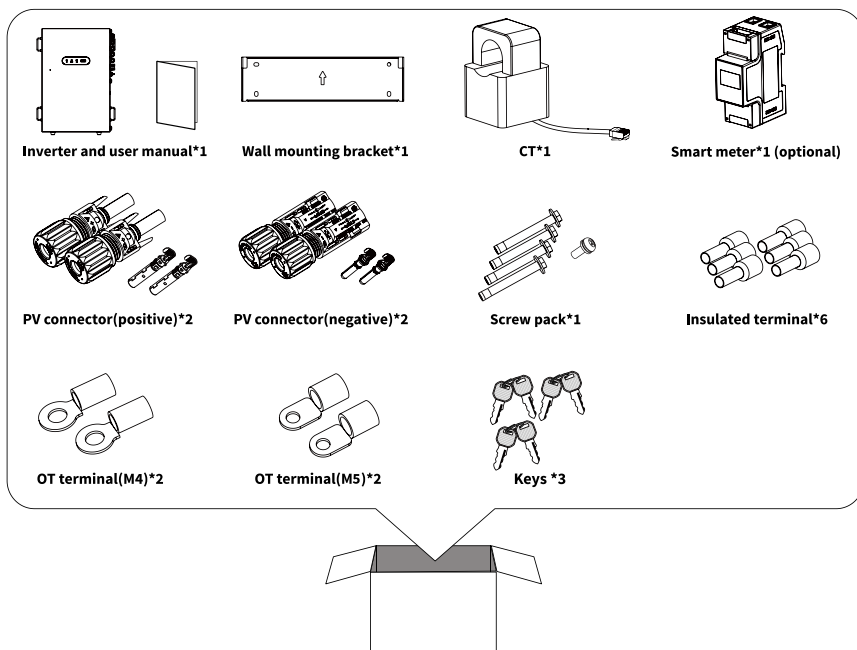
3.1 Delivery Inspection

After receiving the product, please carefully check the following items. If any issues are found, please contact customer service in a timely manner:

- Check the outer packaging of the product for any damage, including compression, deformation, cracks, holes, etc., as these could potentially affect the device inside.
- Ensure that the product model matches the order model. If there is a discrepancy, do not open the packaging.
- Check if the types and quantities of accessories inside the packaging match the contents listed on the packing list, and check for any damage.

3.2 Packing List

The package contents may vary with device model and version.



NOTE!

- CT and smart meter are optional accessories, and only one is included.
- If a smart meter is purchased, two RJ45 waterproof connectors will be provided in the packaging box.
- The product is heavy, handle with care when removing it from the packaging.
- The key is used for the cabinet door lock of the device.

3.3 Device Storage



WARNING!

Ensure the system is powered off and the battery switch is turned off before storage.

If the device will not be used immediately or will be stored for a long time, follow these requirements for storage:

- The storage environment should meet the specifications of the technical parameters.
 - Storage temperature: -25°C to 60°C
 - Relative humidity: 0% to 95% (noncondensing)

- The storage environment should be dry, clean, and well-ventilated, avoiding direct sunlight and rainwater erosion.
- Keep the device away from flammable or explosive materials.
- The storage environment must comply with local regulatory requirements.
- Ensure that the desiccant included in the packaging is not lost.
- When moving and stacking devices, handle with care to avoid damage to the device.
- If the device has been stored for a long time, it must be inspected by a trained professional to ensure safety before use.
- Do not invert or place the device arbitrarily.
- If the device will not be used for an extended period, recharge the battery to 50% every six months.

4 Installation

4.1 Preparation

Environmental Requirements

- The recommended ambient temperature is in the range of -25°C to 60°C to ensure optimal operation of the device.
- The recommended relative humidity is below 95% (noncondensing).
- The recommended altitude is not higher than 3,000 meters.
- Protect the inverter from direct sunlight, rain, and snow; it is recommended to build a shading structure above the device.
- Do not install or place any other electronic devices around the device.
- Do not place flammable or explosive materials around the inverter. Equip it with an independent fire alarm device.
- The inverter should be installed out of reach of children and should not be operated by non-professionals to prevent burns.
- The inverter should be mounted on a vertical wall that has sufficient load-bearing capacity.
- There should be adequate space around the inverter for heat dissipation and cable installation.
- The inverter should be installed in a location that is easily accessible for operation and maintenance, with indicator light status and label content clearly visible.
- Do not expose the device to direct sunlight or install it near a heat source.
- The device should be installed on a surface with sufficient load-bearing capacity and levelness; it must not be tilted, laid horizontally, or inverted.

Tools



Safety gloves



Safety goggles



Safety shoes



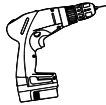
Dust mask



Tape measure



Level



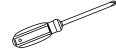
Hammer drill



Electric wrench



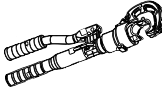
Flathead screwdriver



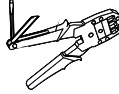
Phillips screwdriver



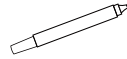
Wire stripper



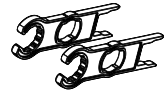
Hydraulic pliers



RJ45 connector
crimping tool



Marker



MC4 wrench



Multimeter



Insulating tape

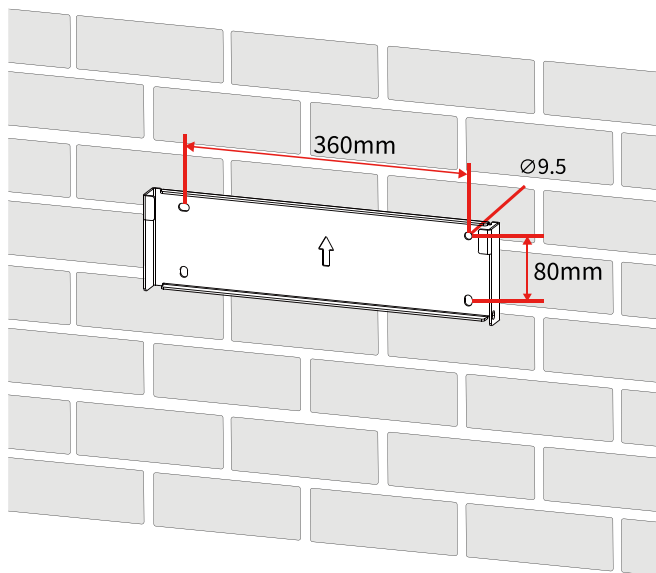
4.2 Device Installation



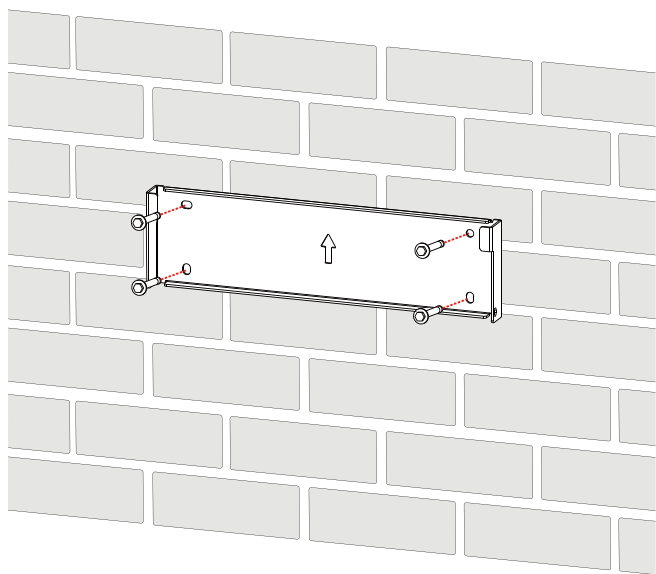
CAUTION!

- The device is heavy and requires two people during handling and installation.
- The device can be placed directly on the floor; choose whether wall mount is necessary based on actual requirements.
- Before drilling, ensure there are no water pipes or cables inside the wall where the hole will be drilled.
- Wear safety goggles and a dust mask before drilling.
- After installation, check that the device is securely mounted.

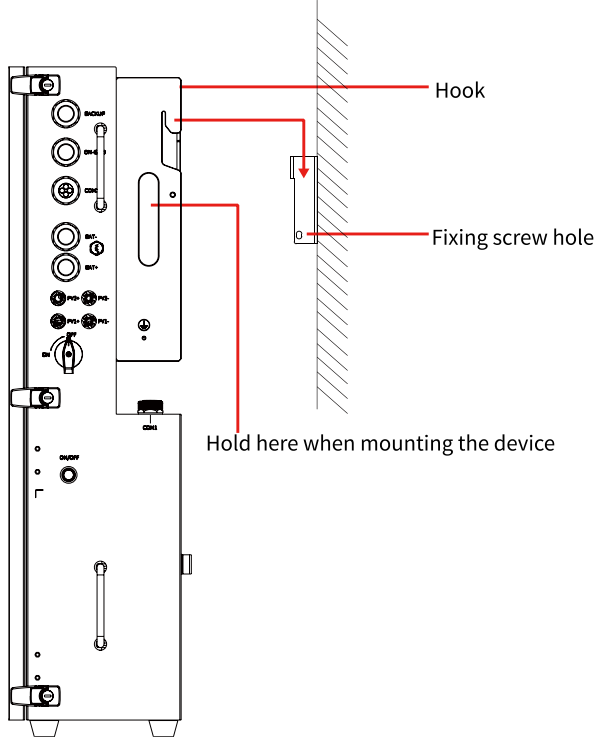
1. Determine hole positions for the wall mounting bracket. Use a marker to mark the hole positions on the wall, then drill holes at the marked spots using a hammer drill.



2. Install the wall mounting bracket. Tighten the M6 expansion bolts with a wrench to secure it in place.



3. Align the hook with the wall mounting bracket and lock it in place.



4. Secure the right side of the bracket with an M6 machine screw to complete the installation.

5 Electrical Connection



WARNING!

- Before making electrical connections, ensure that the device is not damaged; otherwise, it may pose a risk of danger.
- Before making electrical connections, ensure that the device switch and all switches connected to the device are set to "OFF" to prevent the risk of electrical shock.
- Do not close the AC circuit breaker before completing the electrical connections.
- All operations for electrical connections and the specifications of the cables used must comply with local laws and regulations.
- Improper actions during the wiring process can cause fatal injury to the operator or irreversible damage to the device. Contact a professional for wiring operations.
- When crimping the terminal connectors, ensure that the conductor part of the cable is in full contact with the terminal connector. Do not crimp the cable insulation layer with the terminal connector, as this may lead to the device being unable to operate or, after operation, cause the device terminal block to be damaged due to unreliable connections, heat generation, or other issues.
- Do not pull cables with excessive force; it may result in poor wiring. When connecting, leave a certain length of cable before connecting it to the device terminal port.
- Cables of the same type should be tied together; cables of different types should be arranged separately and not be intertwined or crossed.

5.1 System Wiring



CAUTION!

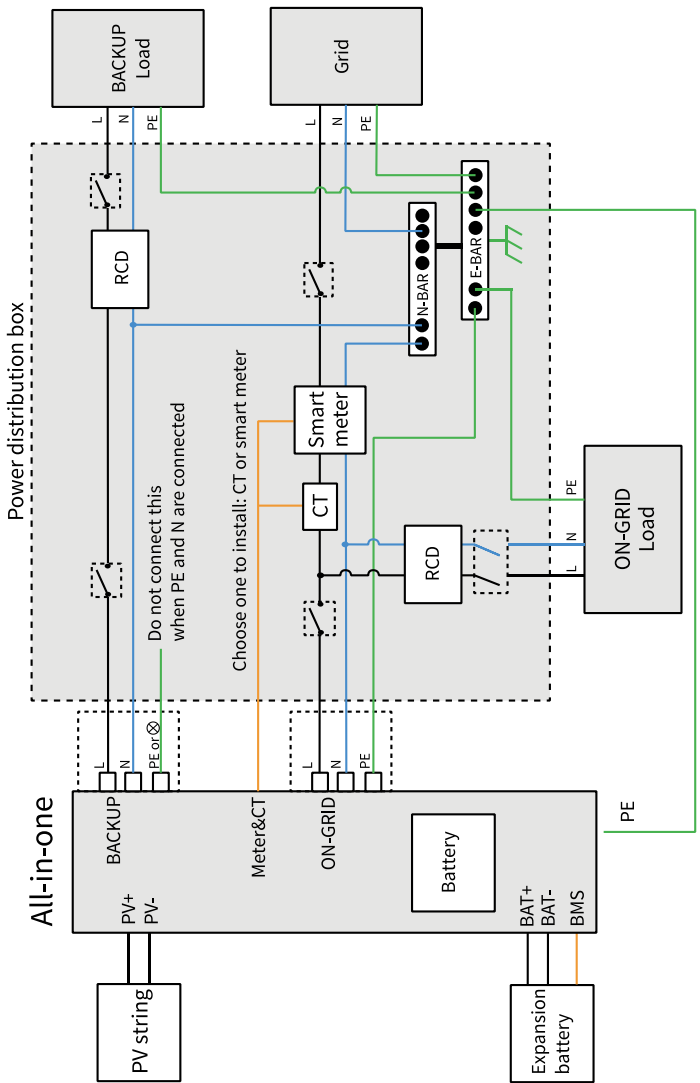
- The wiring methods for the N and PE lines at the ON-GRID and BACKUP ports may vary depending on the specific local regulations of the region where the device is located.
- The ON-GRID and BACKUP ports are equipped with internal relays. When the device is in off-grid mode, the internal relay of the ON-GRID port is open; when the device is in on-grid mode, the internal relay of the ON-GRID port is closed.

5.1.1 N Line and PE Line Connected



CAUTION!

The wiring method below is applicable in regions such as Australia, New Zealand, and South Africa.



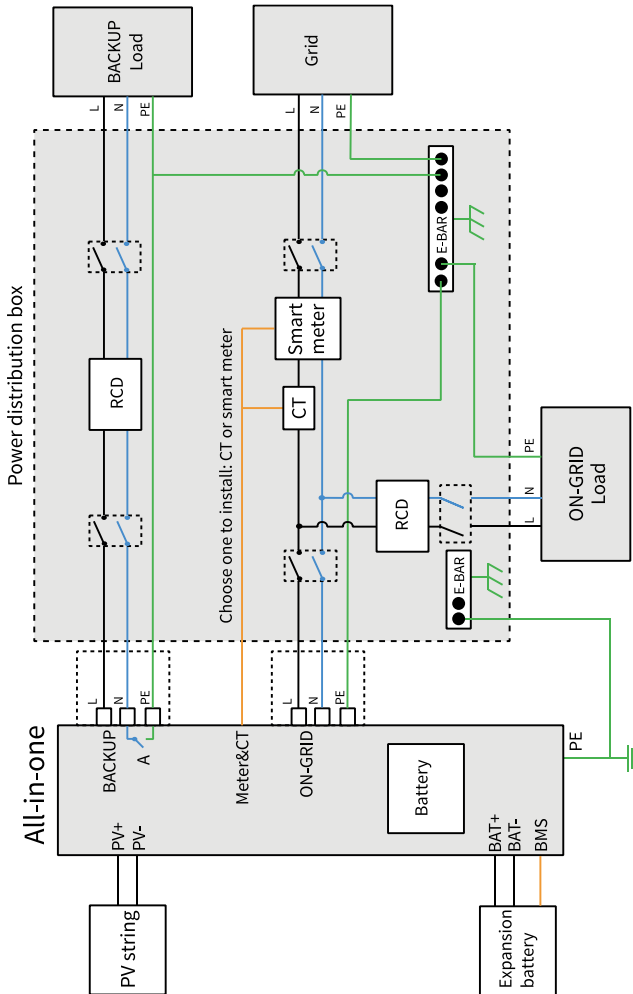
5.1.2 N Line and PE Line Not Connected



CAUTION!

The wiring method below is applicable in regions other than Australia, New Zealand, and South Africa.

- In Germany, in off-grid mode, the internal relay A will connect the BACKUP port side N line and PE line within 100ms; in on-grid mode, the internal relay A will be open.
- In regions other than Germany, the internal relay A will remain open at all times.



5.2 Grounding Connection



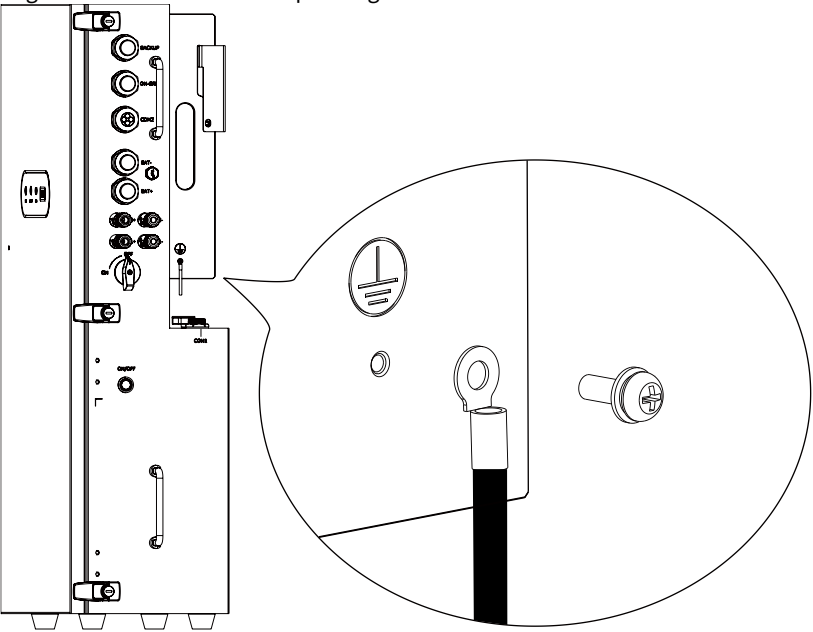
WARNING!

- Verify that the protective ground wire is reliably connected. Failure to connect or a loose connection may result in the risk of electric shock.
- It is recommended to apply silicone or paint on the exterior of the grounding terminal after the protective ground wire is installed for protection.

1. Choose the appropriate cable. Refer to the table below for specifications. Use a wire stripper to remove the insulation layer from the cable.

Cable Type	Cable Specification	Stripping Length
Copper cable	Cross-sectional area: 4.0 mm ² to 6.0 mm ² / 12 AWG to 10 AWG	7mm~8mm

2. Place the core of the cable into the crimping area of the M4 OT terminal, and crimp it using hydraulic pliers.
3. Both sides of the device are equipped with a grounding terminal. Install using the side that facilitates easier cable routing. Use a screw to crimp the OT terminal of the ground wire into the corresponding hole.



5.3 PV Cable Connection



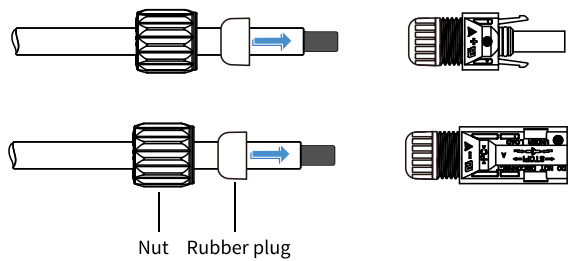
WARNING!

- Before connecting the PV cables to the device, ensure that the open-circuit voltage of the PV strings in the system does not exceed the device 's allowed range.
- During the installation and operation of the device, ensure that the positive or negative terminals of the PV strings are not short-circuited to the ground. Otherwise, an AC or DC short circuit may occur and damage the device. The resulting damage is not covered under the warranty.
- After the cable connections are completed, ensure that the connections are tight and secure.
- Do not connect the same PV string to multiple device s, as this may damage the device.

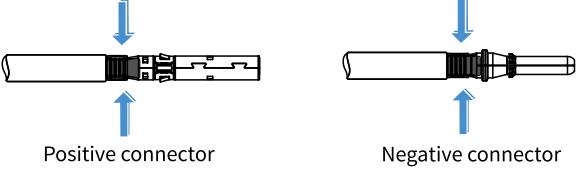
1. Choose the appropriate cable. Refer to the table below for specifications. Use a wire stripper to remove the insulation layer from the cable.

Cable Type	Cable Specification	Stripping Length
Industry generic PV cable	Cross-sectional area: 4.0 mm ² to 6.0 mm ² / 12 AWG to 10 AWG	7mm-8mm

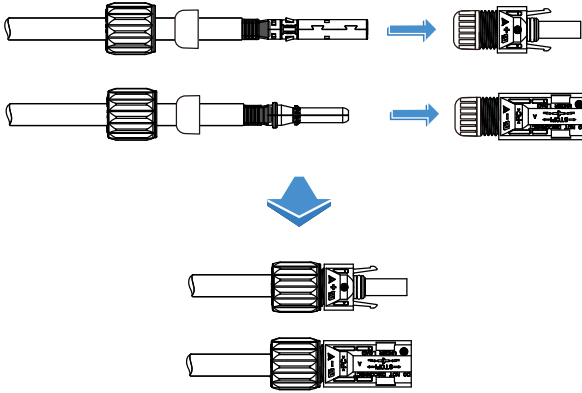
2. Take out the DC connector from the packing accessories, use an MC4 wrench to turn and remove the plastic nut, and then remove the waterproof gasket. Lead the cable from step 1 through the nut and the waterproof rubber plug.



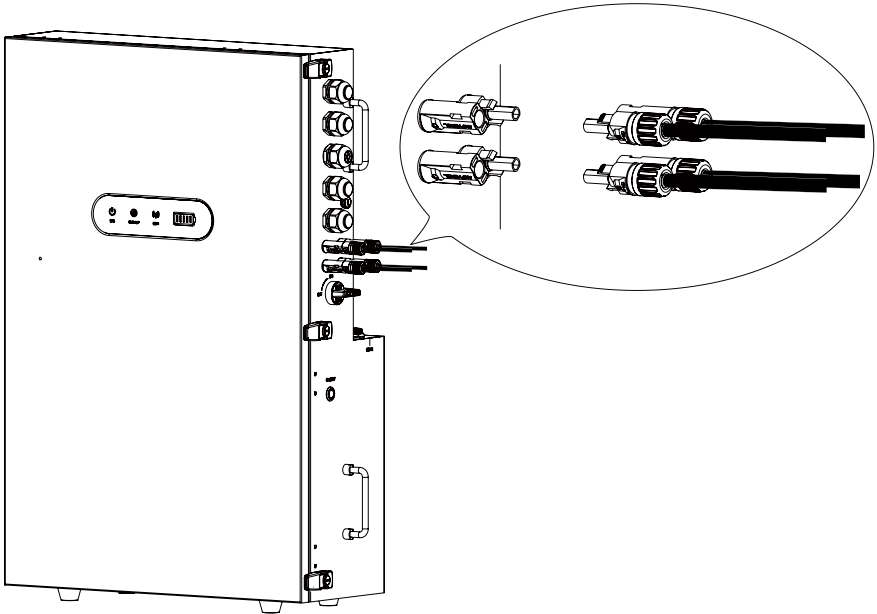
3. Place the core of the cable into the press-fit area of the DC metal terminal, and crimp it using hydraulic pliers.



4. Insert the crimped cable into the DC connector with a "click" sound, then put the waterproof rubber ring back onto the DC connector and tighten the nut with an MC4 wrench.



5. Use a multimeter to measure the voltage of the PV DC input to verify the polarity of the DC input cable.
6. Distinguish between the male and female connectors, connect the completed DC terminal to the device with a "click" sound.





NOTE!

If necessary, install a DC BOX between the PV string and the device. It contains protective devices (fuses, circuit breakers, etc.) and can enhance the system safety.

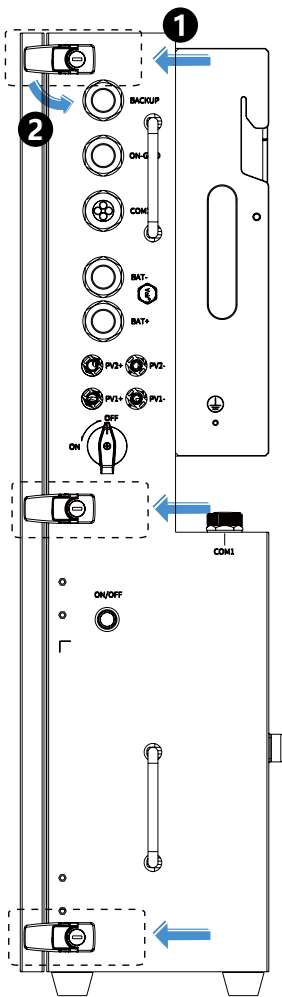
5.4 Power Cable Connection

The routing method for AC cables and battery cables is the same. The following uses BACKUP cable installation as an example. For specific cable connection precautions, please refer to the corresponding section.

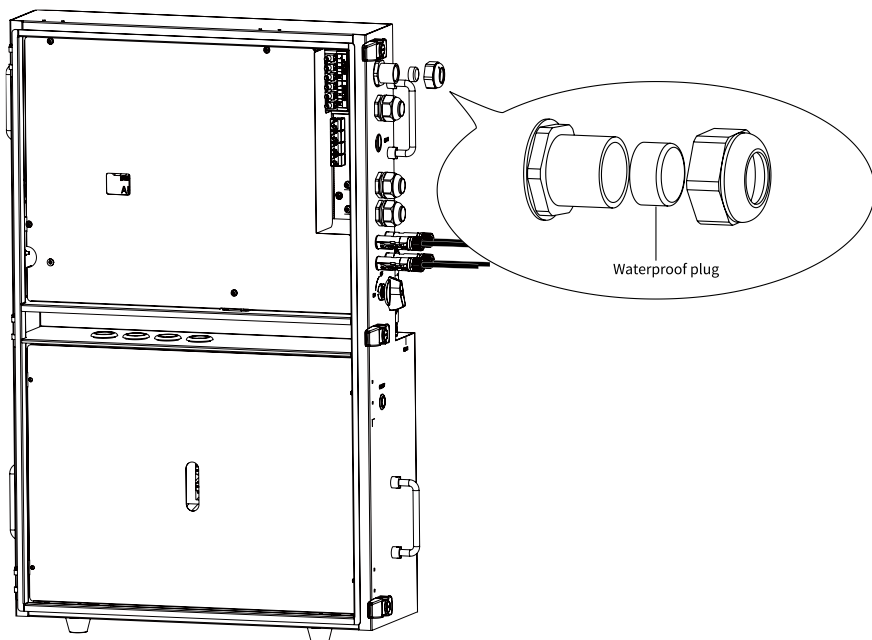
1. There are three locks on the right side of the device. Unlock them in sequence, then open the front panel.
 - Pull open the long metal sheet outward.
 - Remove the buckle from the groove.

(1)

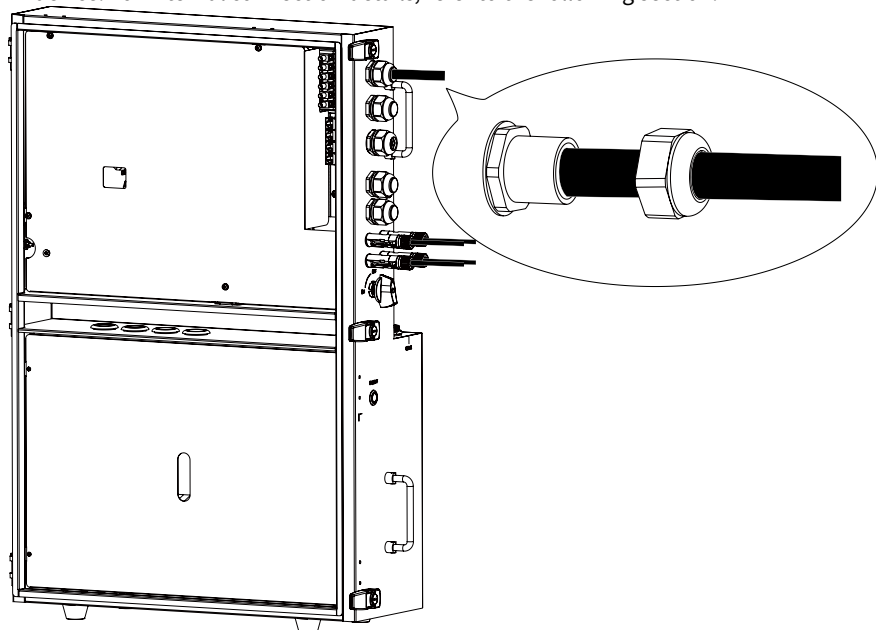
(2)



2. Unscrew the waterproof connector nut and remove the waterproof plug.



3. Pass the corresponding power cable through the waterproof connector nut into the device. For internal connection details, refer to the following section.



4. After completing the cable installation, close the front panel.

5.4.1 AC Cable Connection



WARNING!

- It is forbidden to connect any load between the device and the AC switch directly connected to the device.
- The ON-GRID and BACKUP ports are equipped with internal relays. When the device is in off-grid mode, the internal relay of the ON-GRID port is open; when the device is in on-grid mode, the internal relay of the ON-GRID port is closed.
- Once the device is powered on, the ON-GRID and BACKUP ports will be electrified. Before starting maintenance, be sure to power off the device; otherwise, it may cause electric shock.
- During wiring, ensure that the AC cable is correctly connected to the AC terminal: the live wire is connected to the L terminal, the neutral wire is connected to the N terminal, and the earth wire is connected to the PE terminal. Incorrect connection will cause device damage.
- Make sure that the exposed cable cores are completely inserted into the terminal wiring holes.
- Ensure that the cable connections are tight and secure; otherwise, the terminal connectors may overheat and cause equipment damage during operation.

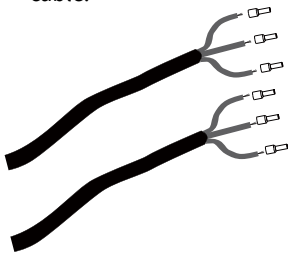
Choose whether to install an RCD (Residual Current Device) in accordance with your local laws and regulations. The device can be equipped with a Type A RCD for protection when the DC component of the leakage current exceeds the limit. The RCD specifications below are for reference.

RCD Specifications (ON-GRID)	RCD Specifications (BACKUP)
300mA	30mA

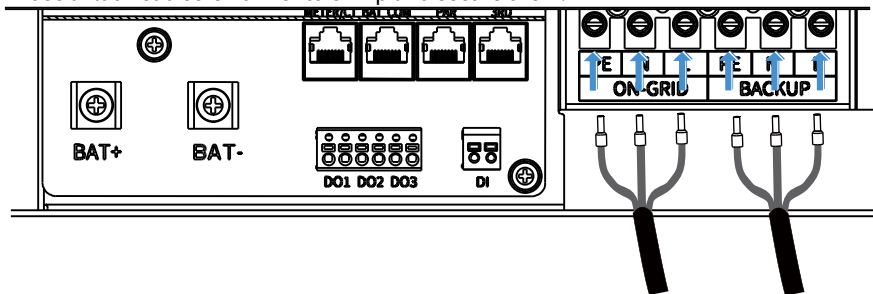
1. Choose the appropriate cable. Refer to the table below for specifications. Use a wire stripper to remove the insulation layer from the cable.

Ports	Cable Type	Cable Specification	Stripping Length
ON-GRID	3-core	• Outer diameter: 11mm~16mm • Cross-sectional area: 6.0 mm² to 10.0 mm² / 10 AWG to 8 AWG	Inner insulation 9mm Outer insulation 15mm
BACKUP	3-core	• Outer diameter: 11mm~16mm • Cross-sectional area: 4.0 mm² to 6.0 mm² / 12 AWG to 10 AWG	Inner insulation 9mm Outer insulation 15mm

2. Pass the cable through the cable hole and use an insulation terminal to crimp the AC cable.



3. Distinguish between ON-GRID and BACKUP according to the silkscreen. Accurately place their neutral wire, ground wire, and live wire into the corresponding holes, and use a flat-head screwdriver to crimp and secure them.



5.4.2 Expansion Battery Cable Connection (Optional)

This product supports expansion battery packs. Please decide whether to install based on actual requirements. This section describes the power cable connection. For communication cable connection, refer to the COM2 cable connection section.



WARNING!

- Batteries used with the device must be approved by the device manufacturer.
- When connecting battery cables, please use insulated tools to prevent electric shock or causing a battery short circuit.
- Do not connect any loads between the device and the battery.
- The total battery voltage range must be within the allowable range of the device, and the battery voltage must not exceed the device's maximum allowable DC input voltage.
- Battery current may be affected by certain factors, such as temperature, humidity, and weather conditions, which could lead to battery current limiting and affect current-carrying capacity.
- When the device is operating, it is prohibited to connect or disconnect battery cables. Violating this could result in the risk of electric shock.
- After the cable connections are completed, ensure that the connections are tight and secure.
- Do not connect the same battery pack to multiple device s, as this may damage the device.

1. Take out the power cables included in the battery pack. Use a wire stripper to remove the insulation layer from the cables.

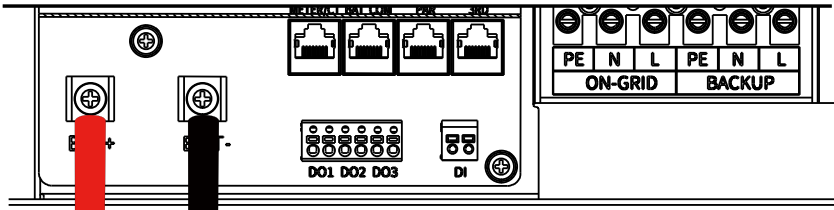
Cable Type	Cable Specification	Stripping Length
Copper cable	• Outer diameter: 12mm~14mm • Cross-sectional area: Min. 35mm²/ 2 AWG	18mm

2. Through the cable hole, place the core of the cable into the crimping area of the M5 OT terminal, and crimp it using hydraulic pliers.
3. Crimp the prepared OT terminal to the corresponding BAT port.



CAUTION!

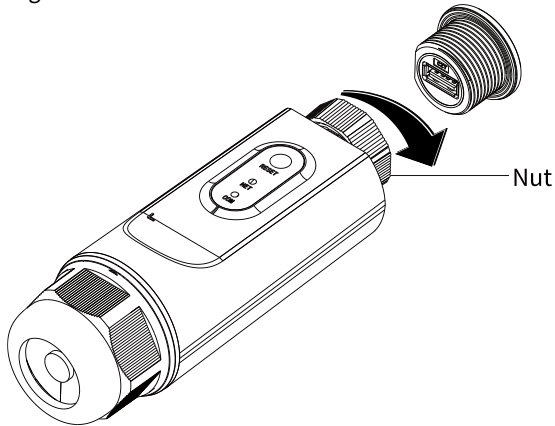
Check that the positive terminal of the battery is connected to BAT+, and the negative terminal is connected to BAT-.



5.5 COM1 Connection

5.5.1 Monitoring Device Installation

Connect the monitoring device to the COM1 port on the device and secure it with the nut by turning it clockwise.



5.5.2 Network Connection Methods

Two methods are available for connecting the monitoring device to the network. Choose one as needed.

- Option 1: Wi-Fi connection

After the monitoring device is installed, refer to Wi-Fi Connection for Monitoring Device for detailed operations.

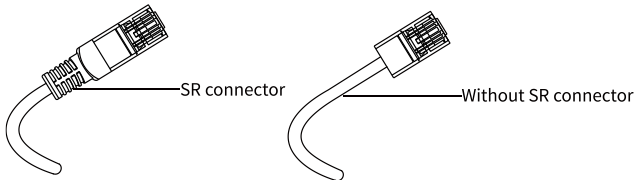
- Option 2: LAN connection

If Wi-Fi connection is unavailable due to weak wireless signals of the router or other reasons, you can connect the device to network with a network cable.

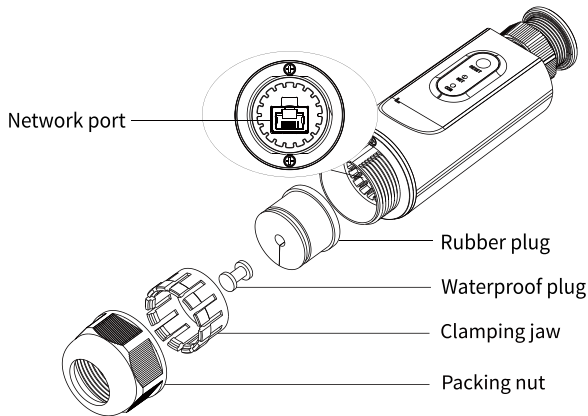


NOTE!

Using a network cable will automatically disconnect the Wi-Fi hotspot. Please prepare a network cable without SR connector.



1. Disassemble the waterproof components at the bottom of the monitoring device.



2. Lead the network cable through the waterproof components and connect it to the router. Steps for installing the waterproof components:

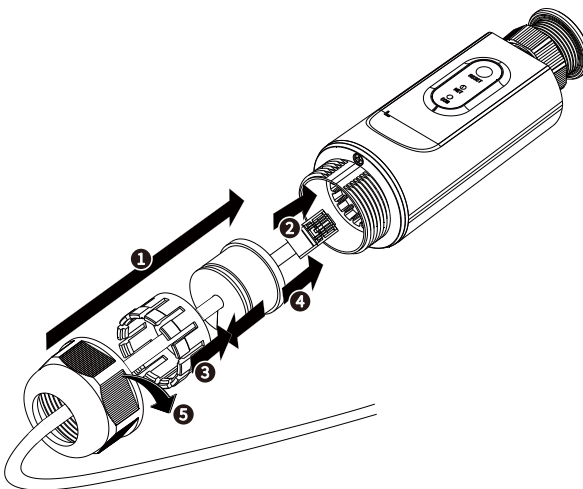
Thread the network cable through the packing nut, clamping jaw, and rubber plug in sequence.

- (1) Connect the network cable to the network port on the router.
- (2) Slide the clamping jaw over the rubber plug.
- (3) Insert the clamping jaw with the rubber plug into the bottom of the monitoring device.
- (4) Insert the clamping jaw with the rubber plug into the bottom of the monitoring device.
- (5) Install the packing nut and tighten it clockwise.



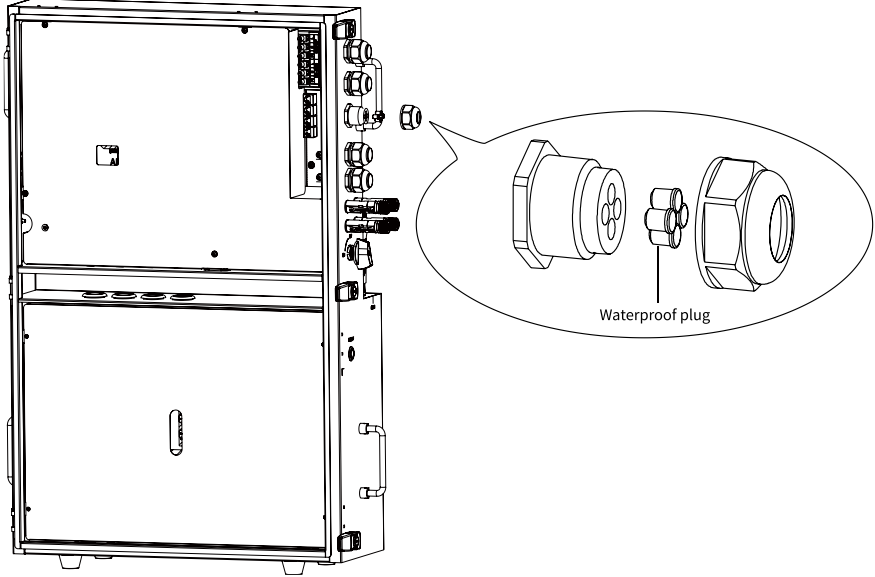
NOTE!

The waterproof plug will not be used for the network cable connection.

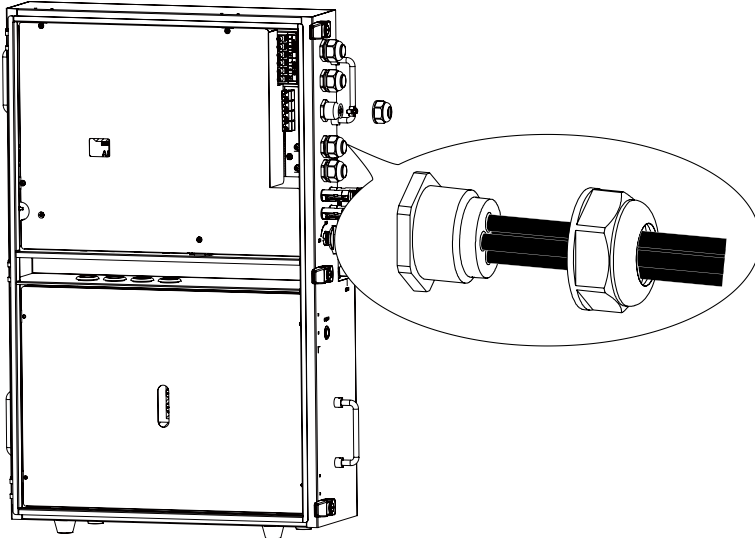


5.6 COM2 Cable Connection

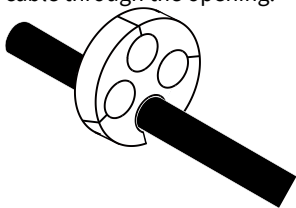
1. Open the front panel of the device. For detailed steps, refer to the Power Cable Connection section.
2. Unscrew the waterproof connector nut and remove the waterproof plug.



3. Pass the corresponding communication cable through the waterproof connector nut and the waterproof grommet into the device interior. For internal connection details, see the instructions below.



- If using a cable with a pre-integrated RJ45 connector, remove the waterproof grommet, create an opening in the grommet (by cutting or slicing), and insert the cable through the opening.



- If the cable does not require or does not have a pre-integrated RJ45 connector, pass it directly through the waterproof grommet.

5.6.1 Meter&CT Cable Connection

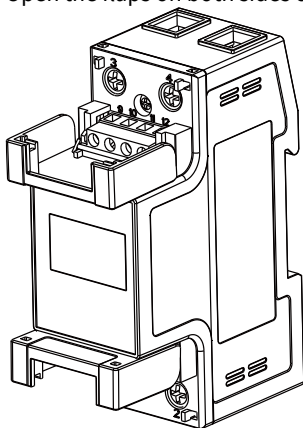
Choose to install a smart meter or CT according to your actual needs.

Smart Meter Installation

CAUTION!

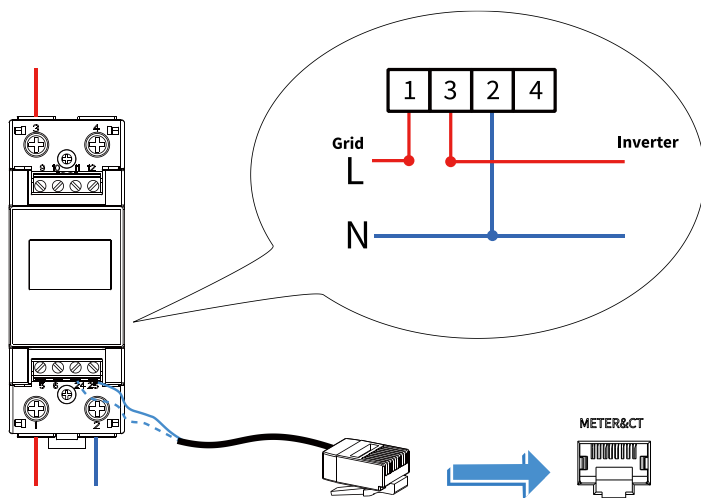
- Smart meters: It is recommended to use CAT5/CAT5E or higher twisted pair cables. The allowed distance between the smart meter and the device can be up to 100 meters.
 - The smart meter needs to be certified and approved by our company. Installation of third-party smart meters is not supported.
-

1. Open the flaps on both sides of the smart meter.



Model: DDSU666-Q

2. Connect the wires as shown below.
 - Connect RS485_A to terminal 24
 - Connect RS485_B to terminal 25



3. The pin definitions for the METER&CT port are as shown below.

Pin	Color	Description
1	Orange/white	CT1+
2	Orange	CT1-
3	Green/white	-
4	Blue	METER_RS485_B
5	Blue/white	METER_RS485_A
6	Green	-
7	Brown/white	-
8	Brown	-



NOTE!

It is recommended to use a matching resistor when installing the smart meter.

CT Installation

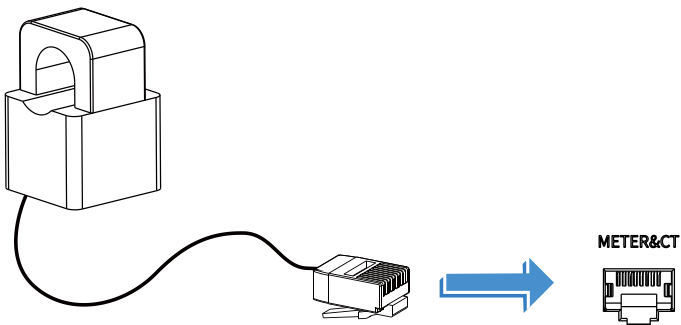


CAUTION!

The standard CT cable length is 5 meters and supports extension. If the distance between the CT and the device exceeds 30 meters, it is recommended to switch to the installation solution of a smart meter.

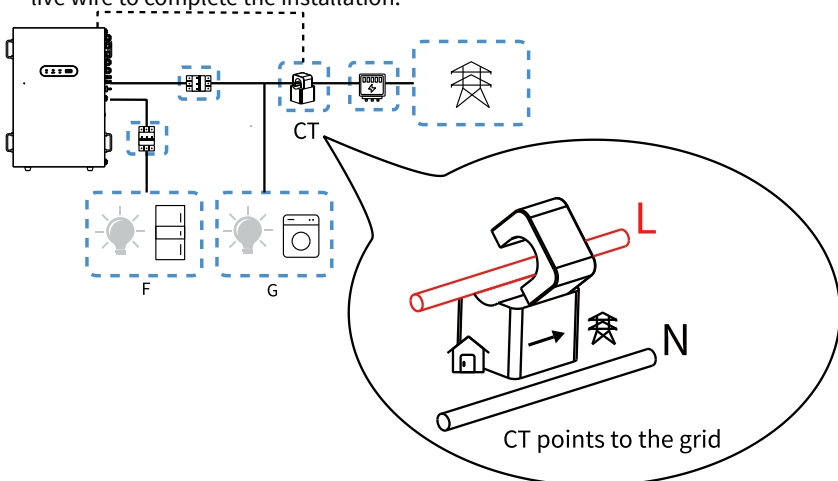
The CT is used to monitor the AC interacting with the power grid and diagnose faults.

1. Take out the CT from the packing box, connect its RJ45 to the METER&CT port in the device, and secure with a nut.



Pin	Color	Description
1	Orange/white	CT1+
2	Orange	CT1-
3	Green/white	-
4	Blue	METER_RS485_B
5	Blue/white	METER_RS485_A
6	Green	-
7	Brown/white	-
8	Brown	-

2. Clamp the CT body onto the AC cable connected to the power grid, only encircling the live wire to complete the installation.



CAUTION!

The CT installation direction must be correct; otherwise, the system will not function properly.

5.6.2 BMS Cable Connection

The expansion battery needs to be connected to the BMS for communication. Before connecting, ensure the communication pin sequence of the device matches that of the battery. If they do not match, cut the communication cable and remake the RJ45 connector. Insert the correctly sequenced RJ45 connector into the COM2 port of the device and connect it to the BAT_COM port.

Pin	Color	Description
1	Orange/white	-
2	Orange	-
3	Green/white	-
4	Blue	CAN_H
5	Blue/white	CAN_L
6	Green	GND_CAN
7	Brown/white	-
8	Brown	-

5.6.3 PAR and 3RD Cable Connection

Before connecting, ensure the communication pin sequence of the device matches that of the corresponding cable. If they do not match, cut the communication cable and remake the RJ45 connector. Insert the correctly sequenced RJ45 connector into the COM2 port of the device according to the silkscreen marking, and connect it to the corresponding port.

Port	Pin	Color	Description
RAR	1	Orange/white	PAR_SYNC
	2	Orange	PAR_GND
	3	Green/white	-
	4	Blue	PAR_CAN_H
	5	Blue/white	PAR_CAN_L
	6	Green	GND_RS485
	7	Brown/white	PAR_RS485_A
	8	Brown	PAR_RS485_B
3RD	1	Orange/white	-
	2	Orange	-
	3	Green/white	-
	4	Blue	3rd_RS485_B
	5	Blue/white	3rd_RS485_A
	6	Green	-

Port	Pin	Color	Description
	7	Brown/white	EV_RS485_B
	8	Brown	EV_RS485_A

6 System Commissioning

6.1 Check Before Power-On

- Check that the device is securely installed, with no looseness or wobbling.
- Check that all cable connections are tightly secured and waterproofed.
- Check that all cable routing meets the requirements, and all cables are intact.
- Check that all system components have adequate ventilation space.
- Check that warning signs or labels have been affixed to the system equipment.
- Use a multimeter to test the polarity of each circuit.
- Make sure that the device and all connected components are not generating power.

6.2 System Power-On

Follow the steps to power on the system:

1. Turn on the battery switch of the device.
2. Turn on the DC switch of the device.
3. Close the AC circuit breaker for the grid and load.
4. Check the device's LED indicator to ensure the system is operating normally.

6.3 System Power-Off



WARNING!

- Before starting maintenance operation on the device, be sure to power it off. Operating the device while it is energized may cause device damage and electric shock.
- After the device powers off, it will take some time for the internal components to discharge. Please wait until the device is fully discharged.

Follow the steps to power off the system:

1. Turn off the battery switch.
2. Disconnect the AC circuit breaker for the grid and load.
3. Turn off the device's DC switch.
4. Wait until the LED screen turns off.

7 System Configuration

7.1 APP Download

Scan the corresponding QR code according to your mobile phone's system to download the Hopetrek Link app.

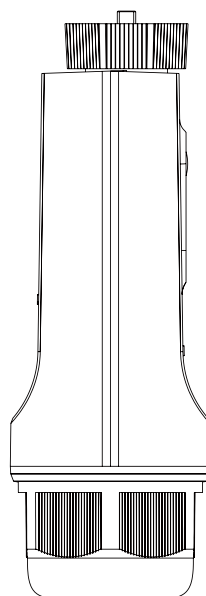
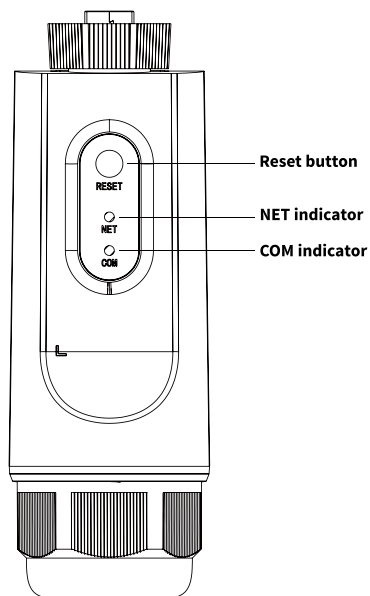
- iOS



- Android



7.2 How to Use the Monitoring Device



7.2.1 Button

Button	Action	Description
Reset button	Short press (< 3s)	Upload the collected information to the cloud server
	Press and hold (> 3s)	Restore factory defaults

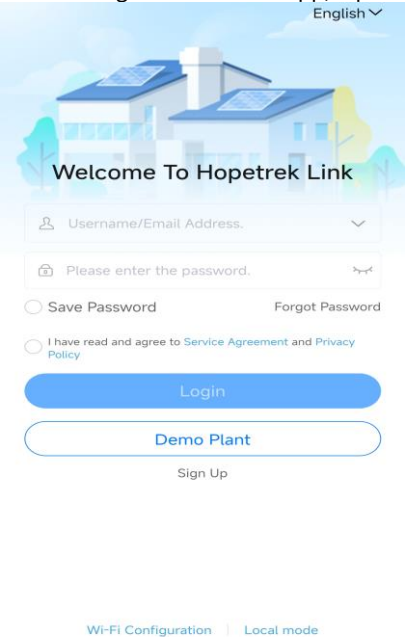
7.2.2 Indicators

Indicator	Status	Description
NET	Blinking blue	Connected to the router but disconnected from the cloud server
	Steady blue	Connected to the router and cloud server
	Steady red	Disconnected from the router
COM	Steady blue	Connected to the device
	Steady red	Disconnected from the device

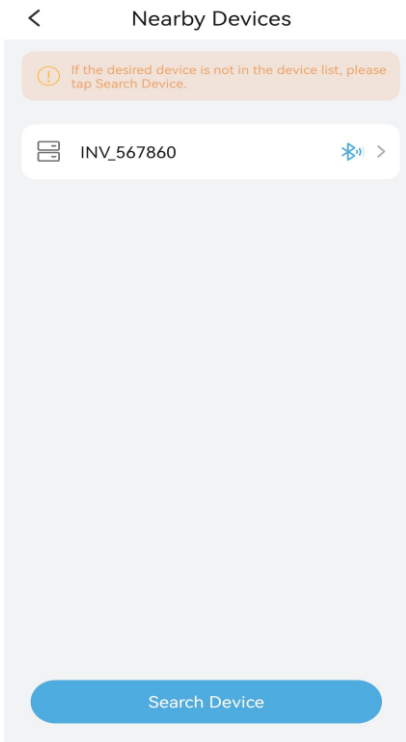
7.3 Wi-Fi Connection for Monitoring Device

Configure the network parameters of the monitoring device on the Hopetrek Link app. Please follow the on-screen instructions as the app may update.

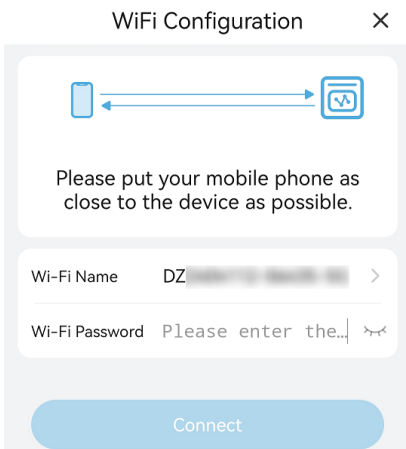
1. On the login screen of the app, tap **Wi-Fi Configuration**.



2. The system will automatically search the Bluetooth of the monitoring device. Choose the Bluetooth, and enter the password to connect the app to it.

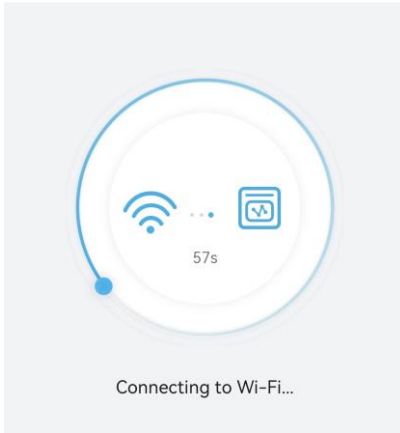


- On the **Wi-Fi Configuration** screen, the Wi-Fi is automatically recognized. You can tap **Wi-Fi Name** to choose a Wi-Fi, enter the Wi-Fi password, and tap **Connect**.



4. Wait until the monitoring device is connected to the Wi-Fi successfully.

WiFi Configuration X

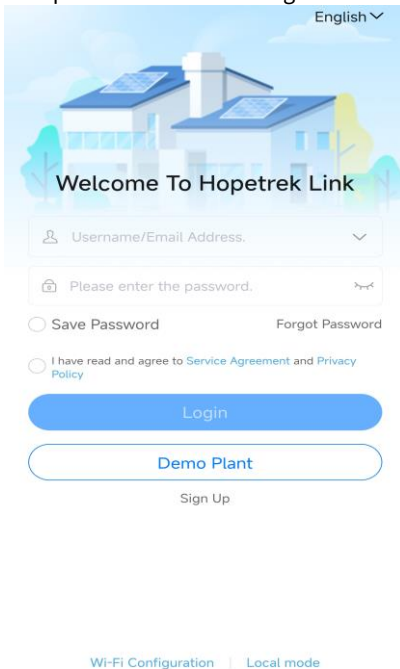


7.4 Parameter Settings

For the proper use of the device, please follow the steps below to complete the quick setup of the Hopetrek Link app.

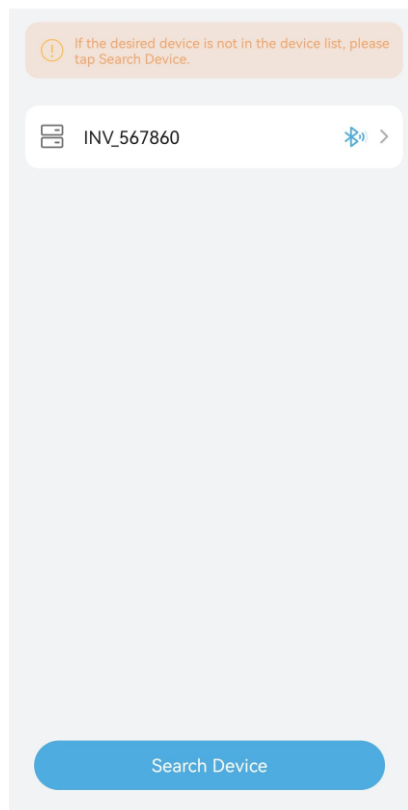
7.4.1 Quick Setup

1. Tap **Local Mode** on the login screen.

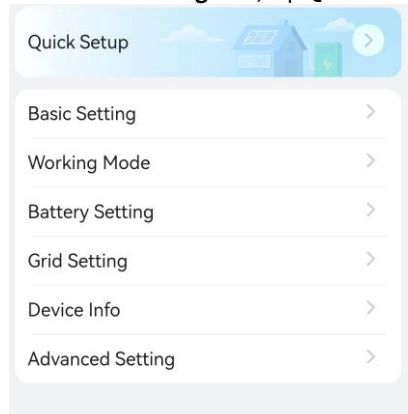


2. Search for the Bluetooth of a nearby device and connect to it.

< Nearby Devices



3. Go to the **Settings** tab, tap **Quick Setup**.



7.4.2 Quick Configuration (Including Working Mode)

The quick configuration function can complete the basic setup of the system, including the working mode.

1. Set time.

Module	Description
Time Setting	• Time Sync: Sync time with the mobile phone. • Manual: Set time manually.
DST Setting	To set DST, enable DST, and then set the start time, end time, and DST bias.

<Quick Setup×

Time Setting

Time Sync

Manual

Set Manually

2024-01-01 00:00:00 >

DST Setting

DST

Start Time

End Time

DST Bias

Jan 1st Mon 00:00 >

Jan 1st Mon 00:00 >

30min >

Next

2. Choose the battery type.

<Quick Setup×

Battery Type

Lithium Battery

No Battery

Next

3. Choose the meter type, and tap **Test** to test the meter status.



CAUTION!

- The device should be connected to grid.
- Smart meter's communication should be normal.
- Battery's communication should be normal.
- Battery can discharge.
- Turn off unstable loads in the system, such as washing machine.
- Turn off other power generation equipment in the system.
- Turn off the system's Power Limit function before the test.
- Exclude other factors that cause instability of on-grid power.

<

Quick Setup

×

Select Meter/CT

CT

☒

Meter

☐

Meter Test

Test

Next

4. Choose the correct safety code according to your local requirements.

<

Quick Setup

×

Select Safety Code

Safety Code

EN50549-1

Next

5. Choose a working mode.

Working Mode

Self-use

Backup

Peak Shaving

Self-define

Default Rule
Rule: >

Save

6. A message appears indicating the quick setup is complete.



NOTE!

On the **Setting** screen, you can tap **Working Mode** to set the working mode.

Quick Setup >

Basic Setting >

Working Mode >

Battery Setting >

Grid Setting >

Device Info >

Advanced Setting >

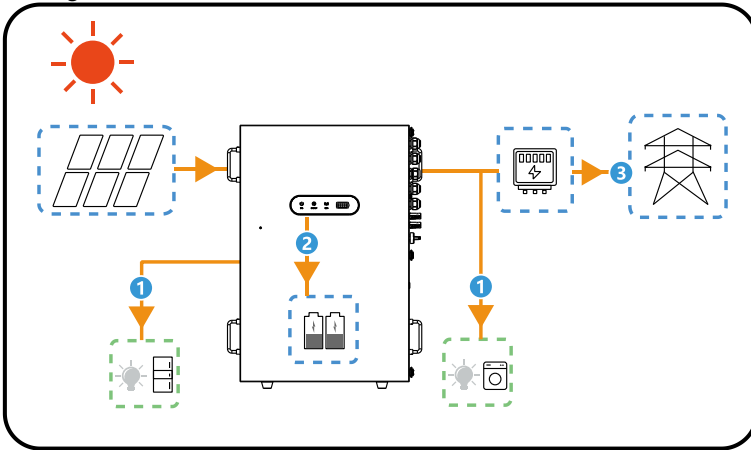
7.4.3 Working Mode

Self-use Mode

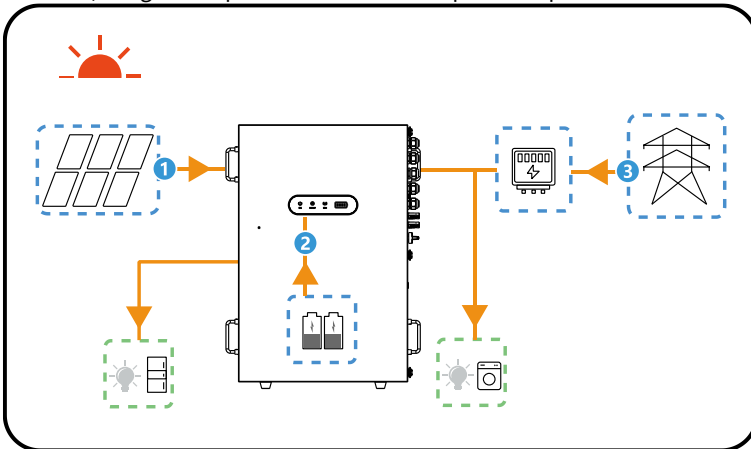
Suitable for areas with high electricity prices, where solar power generation feed-in tariffs are low or non-existent.

- Daytime:

- When the PV system generates sufficient energy, it prioritizes supplying power to the load, with excess energy used to charge the battery, and surplus energy can be sold to the grid.

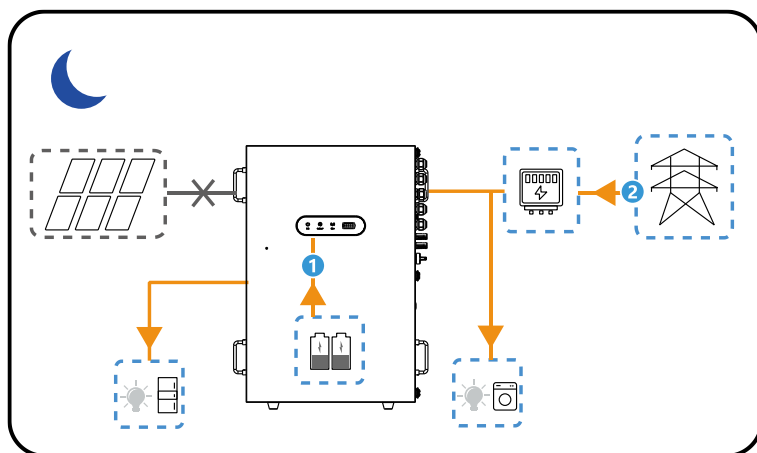


- If the energy produced by the PV system is not enough to meet the load's demand, the energy from the battery is used to supplement. Should the battery's energy still fall short, the grid will provide the additional power required.



- Nighttime:

- If the battery has sufficient energy, it will supply power; if the battery's energy is insufficient, the grid will provide the necessary power.



Backup Mode

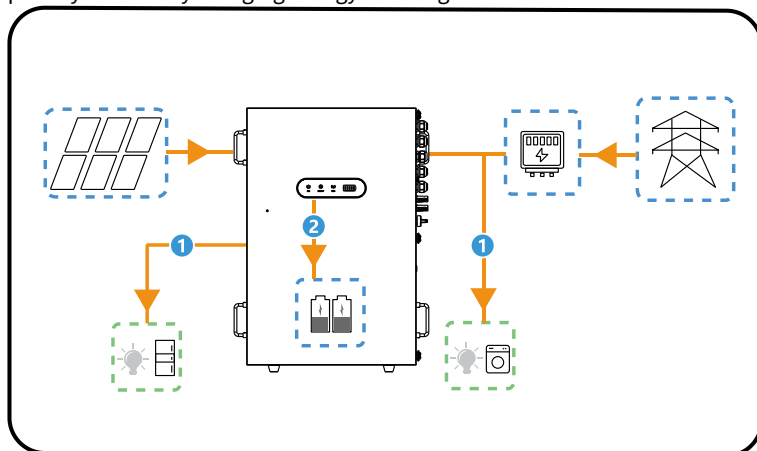
Suitable for areas with power shortages and unstable power grids.



NOTE!

When the battery discharges to a certain State of Charge (SOC), it will no longer discharge and must be recharged to a certain level before it can supply power to the load again.

- When the actual SOC of the battery is less than the set SOC value, after meeting the energy demand of the load, the battery charges at the maximum charging power. The priority for battery charging energy is: PV > grid.



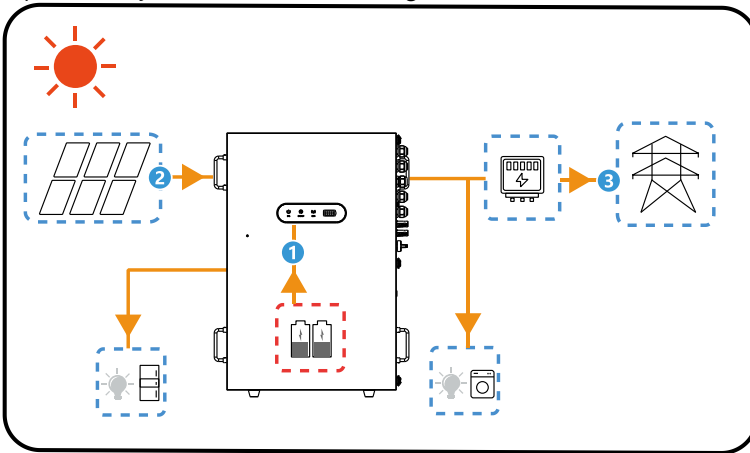
- When the actual SOC of the battery is greater than the set SOC value, the system operates in self-use mode.

Self-define Mode

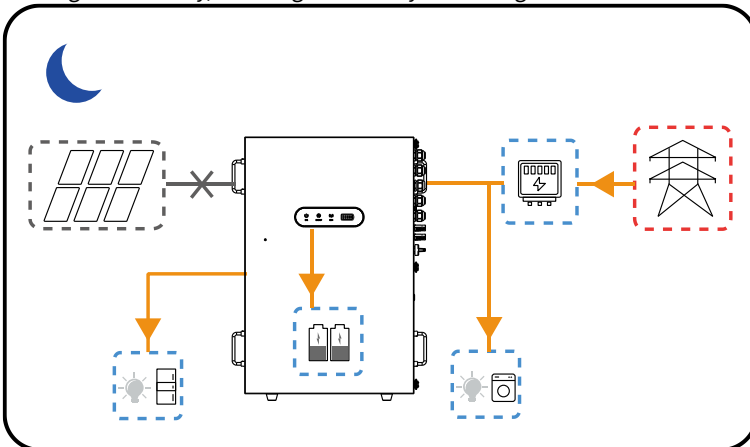
For regions with significant differences in peak and off-peak electricity prices, it is possible to pre-set charging and discharging periods, purchasing electricity when prices are low and selling electricity back to the grid when prices are high.

CAUTION!

- Selecting this mode requires compliance with local laws and regulations.
 - During other periods, the system operates in self-use mode.
- During the day: When electricity costs are at their peak, priority is given to using the battery to supply power to the load. If the battery has insufficient energy, electricity is obtained through PV; if the battery is sufficiently charged, any surplus electricity produced by the PV can be sold to the grid.



- At night: When electricity costs are at their off-peak, you can set a time for the grid to charge the battery, allowing the battery to recharge.



Peak Shaving Mode

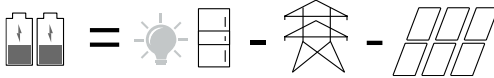
The Peak Shaving mode restricts the power the device can draw from the grid during certain time periods, ensuring that the power input from the grid does not exceed a preset limit. This function relies on the battery's ability to discharge power. To ensure this function to operate effectively, it is necessary to maintain a certain minimum state of charge (SOC) in the battery.

If the battery's power level drops below the required SOC or reaches a protective discharge threshold (the minimum SOC at which the battery should not discharge further to prevent damage), the device switches to the self-use mode.

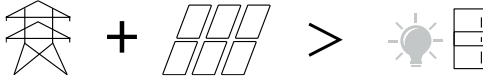
- During the period when the Peak Shaving function is active, if the combined power supply from the grid and PV is insufficient to meet the load demand (the threshold of grid input power + the power provided by PV < the power required by the load):



Battery discharge power required = Power required by the load - Threshold of grid input power - Power provided by PV. If the battery's current available power is greater than the required discharge power, the battery discharges according to the remaining load demand till it reaches the set cut-off SOC.



- During the period when the Peak Shaving function is active, if the combined power supply from the grid and PV is sufficient to meet the load demand (the threshold of grid input power + the power provided by PV > the power required by the load):



- If the actual SOC of the battery is less than the set charging SOC, the battery will be in charging state.
- If the actual SOC of the battery is greater than the set charging SOC, the battery will be in standby state.
- If the actual energy demand and supply within the system cannot meet the demand defined by the system, the device will switch to self-use mode.

7.5 Device Functions

7.5.1 Feed-in Limitation Function

The Feed-in Limitation function restricts the flow of electrical energy generated by the device into the grid. With this function, the device can maximize the utilization of local electricity.

- To use this feature, a Current Transformer (CT) is required. An external CT will detect the electricity flowing back to the grid. By reducing the power of the device, it limits the power fed into the grid.
- With this feature in use, even when photovoltaic resources are abundant, the device will not sell electricity back to the grid.

7.5.2 On-Grid and Off-Grid Switching Function

When the grid experiences a fault or power outage, switching to off-grid mode ensures that critical loads continue to receive power supply.

7.5.3 Arc Fault Circuit Interrupter (AFCI) Function (Optional)

The device is equipped with a current sensor that has arc detection capabilities. It determines whether an arc has occurred by detecting high-frequency current signals. When an arc occurs, the device disconnects the PV modules to protect the system from fire hazard.

8 System Maintenance



WARNING!

- Before starting maintenance, be sure to disconnect the device from power.
- During maintenance, protective equipment must be used to prevent static electricity or burns.
- Even when turned off, the device can still be very hot and cause burns. Please wait till the device has cooled down before starting maintenance.
- After the device has been powered down for 5 minutes, measure the voltage and current with professional instruments. Operators wearing the proper protective equipment may start operation and maintenance only when there is no voltage and current.

8.1 Routine Maintenance



NOTE!

It is recommended to fully charge the battery at least once a month.

- Clean the heat sink (once a year)

To ensure the normal function and long lifetime of the device, it is essential to keep adequate airflow space around the heat sink at the back of the device. Any objects that obstructs airflow, such as dust or snow, must be removed from around the heat sink. Use an electric air blower, soft cloth, or soft brush to clean the heat sink. Do not use water, corrosive chemicals, cleaning agents, or strong detergents to clean the heat sink.

- Check cables (once a year)

Check that the electrical connections are secure and that the cables show no signs of damage. If any damage is found, please repair it promptly.

- Sealing check (once a year)

Inspect whether the waterproof covers and components of the equipment meet the sealing requirements. If there are issues such as large gaps, please repair them in a timely manner.

- Battery check (cycle: once every 6 months)

- Check if there are any obstructions, dust, dirt, or debris on the battery pack. If found, clean immediately.
- Use a dry cloth for cleaning and avoid exposing the battery pack to moisture.
- Check if the battery pack is loosely installed.
- Check the appearance of the battery pack for any deformation or damage.
- During battery pack operation, listen for any abnormal noises.
- Check whether all parameters for the battery pack operation are set correctly.
- Check if all ports are securely locked.
- Check exposed wires for wear.
- Verify that the grounding is reliably connected.

8.2 Device Disposal

When the device is not functional and needs to be decommissioned, be sure to dispose of it according to the electrical waste regulations of the country or region where the inverter is located. Do not dispose of it as regular household waste.

8.3 Error Codes and Troubleshooting



CAUTION!

- Only after eliminating faults that affect safety can the device be restarted.
- The device does not contain any user-serviceable components. Never open the casing to replace any internal components.
- To avoid the risk of electric shock, do not perform any maintenance operations other than those described in this manual.

8.3.1 Inverter Errors

If an error type not mentioned in the manual occurs, please restart the device. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0101	Error type: PV1 overvoltage
	Possible cause: The total voltage of the PV modules connected to PV1 exceeds the maximum PV input voltage of the device.
	Solution: 1. Check whether the input voltage of the PV modules connected to PV1 is within the operating voltage range of the device. 2. Low temperatures can cause an increase in the voltage of PV modules. Adjust the number of PV modules so that the module voltage falls within the operating voltage range of the device. 3. If the error persists, contact the dealer or after-sales service.
0102	Error type: PV2 overvoltage
	Possible cause: The total voltage of the PV modules connected to PV2 exceeds the maximum PV input voltage of the device.
	Solution: 1. Check whether the input voltage of the PV modules connected to PV2 is within the operating voltage range of the device. 2. Check whether the input voltage of PV2 is within the operating voltage range of the device. 3. Check if the light intensity is within the normal range.
0104	Error type: PV1 overcurrent
	Possible cause: The current of the PV modules exceeds the maximum operating current of PV1.

Error Code	Description
	Solution: 1. Check PV module specifications to determine whether the short-circuit current exceeds the device's maximum input current. 2. Check for any damage to the PV panels and connecting cables. 3. Ensure that the PV panels are correctly configured, with no erroneous connections or short-circuit phenomena. 4. If the error persists, contact the dealer or after-sales service.
0105	Error type: PV2 overcurrent
	Possible cause: The current of the PV modules exceeds the maximum operating current of PV2.
	Solution: 1. Check PV module specifications to determine whether the short-circuit current exceeds the device's maximum input current. 2. Check for any damage to the PV panels and connecting cables. 3. Ensure that the PV panels are correctly configured, with no erroneous connections or short-circuit phenomena. 4. If the error persists, contact the dealer or after-sales service.
0107	Error type: PV1 reverse connection
	Possible cause: The PV string is connected in reverse polarity.
	Solution: 1. Check whether the positive and negative terminals of PV1 are correctly connected. 2. If the positive and negative terminals are reversed, reconnect them correctly, and then use a multimeter to measure the polarity of the PV panel's terminals. 3. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0108	Error type: PV2 reverse connection
	Possible cause: The PV string is connected in reverse polarity.
	Solution:
	1. Check whether the positive and negative terminals of PV2 are correctly connected. 2. If the positive and negative terminals are reversed, reconnect them correctly, and then use a multimeter to measure the polarity of the PV panel's terminals. 3. If the error persists, contact the dealer or after-sales service.
0110	Error type: PV side insulation resistance low
	Possible cause: Cable insulation of PV modules damaged, poor contact at connections.
	Solution:
	1. Check PV cables for damage, ensure connections are secure. 2. Check line resistance and continuity, confirm no open circuit or short circuit. 3. Check environment, avoid damp and high temperature conditions 4. If the error persists, contact the dealer or after-sales service.
0312	Error type: Generator fault
	Possible cause: Generator malfunction or connection abnormality
	Solution:
	1. Check if the generator responds to the start command from the device. 2. If the generator starts normally, check if the ATS has switched to the generator. 3. If the error persists, contact the dealer or after-sales service.
0401	Error type: Load power is too high
	Possible cause: The load power exceeds the device's output capacity.
	Solution:
	1. Check whether the load exceeds the device's output capacity. Temporarily or permanently remove unnecessary devices. 2. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0402	Error type: Load-side short circuit
	Possible cause: Incorrect connection of line sequence on the load side.
	Solution: 1. Check whether the L/N/PE wires of the Backup port are properly connected, and whether the connections are firm and secure. 2. Check for the above wires for any damage or wear. 3. If the error persists, contact the dealer or after-sales service.
0403	Error type: EPS and GRID reverse connection
	Possible cause: Incorrect wiring sequence on the load side
	Solution: 1. Check if the L/N/GND cables of the Back-up port are correctly connected. 2. If the error persists, contact the dealer or after-sales service.
0501	Error type: Abnormal grounding
	Possible cause: Device's protective ground not connected
	Solution: 1. Check whether the device's protective ground is properly connected. 2. Check whether the grounding conductor is damaged. 3. If the error persists, contact the dealer or after-sales service.
0503	Error type: GFCI protection (leakage)
	Possible cause: Equipment not properly grounded
	Solution: 1. Recheck the equipment grounding. 2. If the error persists, contact the dealer or after-sales service.
0505	Error type: L_N reverse connection
	Possible cause: L and N wires of the grid port are reversed
	Solution: 1. Check if the L and N wire connections at the grid port are normal. 2. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0506	Error type: Reverse CT installation direction
	Possible cause: Reverse CT installation direction
	Solution: 1. Check whether the CT is correctly installed on the cable. 2. If the error persists, contact the dealer or after-sales service.
0511	Error type: Internal temperature abnormality (threshold differentiated)
	Possible cause: Internal temperature of the device is too high or too low
	Solution: 1. Stop using the device until the temperature returns to the normal range. 2. If it does not recover after a period of time, check if the equipment fan status is abnormal. 3. If the error persists, contact the dealer or after-sales service.
0516	Error type: Inverter current DC component abnormality
	Possible cause: DC component of the equipment output current is higher than the standard range.
	Solution: 1. Short-term grid fluctuation, the device will resume normal grid-connected operation after recovery. 2. If it does not recover for a long time, contact the dealer or after-sales service.
0525	Error type: Insufficient power supply
	Possible cause: Battery power insufficient or PV power supply insufficient
	Solution: 1. Check battery power and PV status, appropriately reduce load power. 2. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0608	Error type: AFCI error
	Possible cause: Damaged cable insulation and poor connections in the PV modules.
	Solution: 1. Check that the PV cables are intact, and the cable connections are firm and secure. 2. Check the resistance and continuity of the circuit to make sure there are no short circuits or open circuits. 3. Check the environment to avoid dampness and high temperatures. 4. If the error persists, contact the dealer or after-sales service.
0612	Error type: Grid-side meter communication error (reported only when meter is enabled)
	Possible cause: The communication cable between the device and the meter is in poor contact.
	Solution: 1. Check that the communication cable connection between the device and the meter is secure. 2. Restart the inverter and the meter and check whether the communication is normal. 3. Check the surroundings for the presence of electromagnetic interference sources. 4. Replace the communication cables between the device and the meter. 5. If the error persists, contact the dealer or after-sales service.
0613	Error type: Generator-side meter communication error (reported only when generator is enabled)
	Possible cause: The communication cable between the device and the meter is in poor contact.
	Solution: 1. Check that the communication cable connection between the device and the meter is secure. 2. Restart the device and the meter and check whether the communication is normal. 3. Check the surroundings for the presence of electromagnetic interference sources. 4. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0614	Error type: AC coupling side meter communication fault
	Possible cause: Poor contact in the communication line between the device and the meter
	Solution: 1. Check if the communication line connection between the device and the meter is secure. 2. Restart the device and the meter, check if normal communication resumes. 3. Check if there are sources of electromagnetic interference nearby. 4. Try replacing the communication cable between the device and the meter system. 5. If the error persists, contact the dealer or after-sales service.
0706	Error type: Battery reverse connection
	Possible cause: Battery positive and negative terminals reversed
	Solution: 1. Check if the battery positive and negative terminals are correctly connected to the device. 2. If the error persists, contact the dealer or after-sales service.

8.3.2 Battery Errors

If an error type not mentioned in the manual occurs, stop charging and discharging. If the error persists, contact the dealer or after-sales service.

Error Code	Description
0207	Error type: Battery system communication error
	Possible cause: The communication cables between the batteries are in poor contact.
	Solution: 1. Check that the communication cables between the batteries are securely connected. 2. Replace the communication cables between the batteries. 3. If the error persists, contact the dealer or after-sales service.

0209	Error type: Battery undervoltage
	Possible cause: Battery system or cell voltage is too Low.
	Solution: 1. Charge as soon as possible till the alarm is cleared. 2. Ensure that the ambient temperature meets the device's operating requirements and is not too low. 3. If the error persists, contact the dealer or after-sales service.
0210	Error type: Battery over-temperature protection
	Possible cause: Battery system or cell voltage too high
	Solution: 1. Check if the overvoltage protection threshold setting of the device is reasonable. 2. Ensure the ambient temperature where the battery is located meets the device operating requirements, avoid overheating. 3. If the error persists, contact the dealer or after-sales service.
0211	Error type: Battery undertemperature
	Possible cause: Battery system or cell temperature is too low.
	Solution: 1. Stop charge/discharge until the temperature returns to the normal range. 2. Ensure that the ambient temperature meets the device's operating requirements and is not too low. 3. If the error persists, contact the dealer or after-sales service.
0214	Error type: Low battery level
	Possible cause: Battery system's power is too low.
	Solution: 1. Charge as soon as possible till the alarm is cleared. 2. If the error persists, contact the dealer or after-sales service.

0215	Error type: BMS communication error
	Possible cause: 1. Poor contact in the communication cable between the device and the battery system. 2. Mismatched communication protocol between the device and the battery system.
	Solution: 1. Check that the communication cables between the device and the battery system are securely connected. 2. Set the correct battery system protocol. 3. Restart the device and the battery and check whether the communication is normal. 4. Check whether the firmware versions of the device and the BMS match. 5. Check the surroundings for the presence of electromagnetic interference sources. 6. Replace the communication cables between the device and the battery system. 7. If the error persists, contact the dealer or after-sales service.
0216	Error type: Excessive cell voltage difference
	Possible cause: Abnormal battery cell or sampling abnormality
	Solution: 1. Check if the battery cell voltage sampling lines are secure. 2. If the error persists, contact the dealer or after-sales service.
0217	Error type: Excessive cell temperature difference
	Possible cause: Abnormal battery cell or sampling abnormality
	Solution: 1. Check if the battery cell temperature sampling lines are secure. 2. If the error persists, contact the dealer or after-sales service.
0218	Error type: Insulation error
	Possible cause: Battery system ground cable insulation damaged, poor contact at connections
	Solution: 1. Check if the battery grounding is secure and if there is any damage. 2. If the error persists, contact the dealer or after-sales service.
0222	Error type: Cell temperature error
	Possible cause: Abnormal battery cell or sampling abnormality

	Solution: 1. Check if the battery cell temperature sampling lines are secure. 2. If the error persists after restart, contact the dealer or after-sales service.
0225	Error type: Cell voltage error
	Possible cause: Abnormal battery cell or sampling abnormality
	Solution: 1. Check if the battery cell voltage sampling lines are secure. 2. If the error persists after restart, contact the dealer or after-sales service.
0228	Error type: MOS temperature too high
	Possible cause: Charging/discharging current too high
	Solution: 1. Reduce the charging/discharging current setting on the device until the temperature returns to the normal operating range. 2. If the error persists, contact the dealer or after-sales service.
0229	Error type: Overcurrent lock
	Possible cause: Charging/discharging current too high
	Solution: 1. Reduce the charging/discharging current setting on the device until the alarm recovers. 2. If the error persists after restart, contact the dealer or after-sales service.
0230	Error type: Voltage sampling wire break
	Possible cause: Voltage sampling wire broken
	Solution: 1. Check if the battery cell voltage sampling lines are secure. 2. If the error persists after restart, contact the dealer or after-sales service.

0231	Error type: Cluster parallel communication error
	Possible cause: Inter-cluster communication abnormality, poor contact in communication cable
	Solution: 1. Check if the inter-cluster communication cable is securely connected. 2. If the error persists after restart, contact the dealer or after-sales service.
0236	Error type: MOS temperature fault
	Possible cause: Charging/discharging current too high or MOS temperature sampling abnormality
	Solution: 1. Check if the MOS temperature sampling lines are secure. 2. Reduce the charging/discharging current setting on the device until the temperature returns to the normal operating range. 3. If the error persists after restart, contact the dealer or after-sales service.
0237	Error type: Reverse connection fault
	Possible cause: Battery output positive and negative terminals reversed
	Solution: 1. Check if the positive and negative power cables from the battery to the device are reversed. 2. If the error persists after restart, contact the dealer or after-sales service.
0239	Error type: Ambient temperature too high
	Possible cause: Ambient temperature too high
	Solution: 1. Stop charging and discharging until the temperature returns to the normal operating range. 2. If the error persists after restart, contact the dealer or after-sales service.
0240	Error type: Ambient temperature too low
	Possible cause: Ambient temperature too low
	Solution: 1. Stop charging and discharging until the temperature returns to the normal operating range. 2. If the error persists after restart, contact the dealer or after-sales service.

0241	Error type: Relay temperature too high
	Possible cause: Charging/discharging current too high or relay temperature sampling abnormality
	Solution: 1. Check if the relay temperature sampling lines are secure. 2. Reduce the charging/discharging current setting on the device until the temperature returns to the normal operating range.
0248	Error type: Light panel communication error
	Possible cause: Communication abnormality between light panel and BMS
	Solution: 1. Check if the communication cable between the BMS and the light panel is secure. 2. If the error persists after restart, contact the dealer or after-sales service.

8.3.3 Monitoring Device Errors

The common problems and resolutions are as follows. If the problem cannot be solved or other errors occur, please contact our technical support.

NET	COM	Possible Cause	Suggestion
Off	Off	Abnormal power supply	Check whether the connection between the monitoring device and the device is loose or in poor contact.
Steady red	-	Disconnected from the router	• Check whether the Wi-Fi configuration is the same as the router configuration. • Check whether the router is connected to the network. • Check the router settings to see if the connection is limited. • Enhance the router's Wi-Fi signal strength. • Check whether the network cable connection is loose if a network cable is being used.
-	Steady red	Disconnected from the device	Reinsert the monitoring device into the device, or restart the device

9 Technical Specifications

Model	AIO-SL-HP6KB5-A1
PV String Input Data	
Max. PV Input Power (W)	9000
Max. PV Input Voltage(V)	600
Rated PV Input Voltage(V)	360
Start-up Voltage(V)	120
MPPT Voltage Range(V)	100~550
Max. PV Input Current (A)	16/16
Max. DC Short Circuit Current (A)	20/20
No. of MPP Trackers	2
No. of Strings per MPP Tracker	1/1
Battery Input Data	
Battery Type	Li-ion
Battery Voltage Range (V)	40~60
Max. Charge/Discharge Current (A)	120/120 Note: A single device supports a maximum charge/discharge current of 100 A. When battery packs are connected in parallel, the maximum charge/discharge current increases to 120 A.
Max Charge / Discharge Power (W)	6000/6000 Note: A single device supports a maximum charge/discharge current of 100 A. When battery packs are connected in parallel, the maximum charge/discharge current increases to 120 A.
Communication	CAN
AC Input/Output Data(ON-GRID)	
Rated AC Output Power(W)	6000
Max.AC Output Apparent Power(VA)	6600
Peak Output Apparent Power (VA)	7200@60s、9000@10s
Rated AC Voltage (V)	220V/230V/240V, L/N/PE
Rated AC Frequency (Hz)	50/60
AC Frequency Range (Hz)	50/45~55, 60/55~65
Rated AC Output current (A)	26.1
Max.AC Output Current(A)	28.7
Power Factor	0.8 leading ~ 0.8 lagging

Model	AIO-SL-HP6KB5-A1
THDi (@Rated Power)	<3%
Max. AC Power From Grid(VA)	10000
Max. Current From Grid (A)	45.5/43.5/41.7
AC Output Data (BACKUP)	
Rated Output Power (W)	6000
Max. Output Apparent Power (VA)	6600
Peak Output Apparent Power (VA)	7200@60s 9000@10s
Rated Output Voltage (V)	230V, L/N/PE
Rated Output Frequency (Hz)	50/60
Rated Output Current (A)	26.1
Max Output Current (A)	28.7
Switch Time (ms)	10ms
THDv (@Linear Load)	<3%
Working efficiency	
Max. efficiency	97.23%
Euro efficiency	96.59%
MPPT efficiency	>99%
Protection	
Anti-islanding Protection	Integrated
PV Input Reverse Polarity Protection	Integrated
Insulation Resistor Detection	Integrated
Ground Fault Monitoring	Integrated
Residual Current Monitoring(GFCI)	Integrated
AC Overcurrent Protection	Integrated
AC Short Circuit Protection	Integrated
AC Overvoltage Protection	Integrated
DC Switch (Solar)	Integrated
AFCI	Optional
Remote Shutdown	Integrated
Thermal Protection	Integrated
DC Surge Protection	DC Type II
AC Surge Protection	AC Type III
General Data	
User Interface	LED & APP

Model	AIO-SL-HP6KB5-A1
Communication With BMS	CAN
Communication With Meter	RS485
Communication With Portal	BT+WIFI+LAN
Dimension (W×D×H mm)	
Self-consumption At Night	<20W
Weight (kg)	
RF Operating Frequency Band (MHz)	BLE 1M: 2400-2483.5 (TX/RX)
Maximum Output Power (dBm)	7
Operating conditions	
Operating Temperature Range (°C)	Charging: 0~50 Discharging: -20~50
Storage Temperature (°C)	-25 to 60
Operation Relative Humidity	≤95%, RH
Max. Operation Altitude(m)	3000m
Ingress Protection	IP65
Cooling Concept	Natural cooling
Installation Style	Wall-mounted/floor standing
Noise Emission (dB)	<30

10 Warranty Overview

Should you require warranty services, please contact our after-sales personnel. The content of this document only serves as a brief summary of our warranty policy.

Warranty Period

The warranty for this product begins from the installation date or six months after the shipping date (whichever comes first). The duration of the free warranty service is based on the terms specified in the contract.

Warranty Applicable Limitations

- Must be used with our company brand batteries. If you wish to use batteries from other brands, please confirm compatibility with our company in advance.
- Not suitable for powering life-sustaining medical equipment or automotive applications.
- Normal discoloration, wear, and consumption that occur during the use of the product.
- Any defects that appear after the warranty period has ended (excluding any additional extended warranty agreements).
- Product installation must be performed by trained installers. If it is proven that the issue is caused by installation errors, such faults or damages are not covered under our company's limited warranty.
- Faults or damages caused by not adhering to the maintenance and storage requirements specified in the product manual or user guide.
- Faults or damages resulting from unauthorized installers incorrectly installing or operating, maintaining the product.
- Damage caused by the end user's intentional or deliberate actions.
- Disassembly, repair, or modification by third-party companies/individuals not authorized by our company. Battery system modifications, design changes, or part replacements not approved by our company.
- Failures or damages caused by unforeseen circumstances, human factors, or force majeure, including but not limited to stormy weather, floods, overvoltage, pests, improper handling, misuse, negligence, fire, water, lightning, or other natural disasters.
- Intentional vandalism, engraving labels, irreversible markings, or contamination or theft.
- Any rusting of the equipment casing caused by harsh environmental conditions, accidents, and external influences. Failures or damages caused by exposure to coastal/saltwater or other corrosive atmospheric or environmental conditions before installation without written confirmation/approval from our company.
- Damages caused during transportation, improper product installation, disassembly, use beyond temperature range, and improper use.
- The end user fails to provide the correct product serial number or the product serial number is illegible or modified without our company's permission.
- Product defects caused by updates to laws and regulations in the country or region where the product is located.

- Failure to report product failures to our company's after-sales service within four weeks.

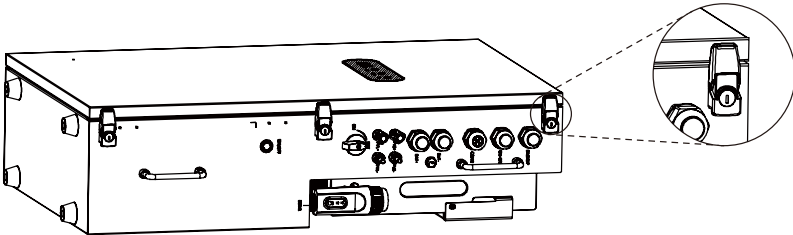
Disclaimer and Indemnification

- Our company does not warrant that its software is free from defects or that customers will not encounter any issues or interruptions when using the software.
- Our company, its partners, or suppliers shall not be liable for the following under this warranty clause: any direct or indirect economic losses caused by the customer's data loss due to the product being unusable or business interruptions.
- Under no circumstances (including where explicitly agreed upon through contracts or other forms), shall the maximum compensation payable by our company and its partners or suppliers for losses incurred by the customer due to their liability exceed the amount paid by the customer for the purchase of the product.
- Our company reserves the final right of interpretation for this warranty policy. our company has the right to make necessary changes to all warranty information, product performance, and policy specifications, without prior notice to the customer.

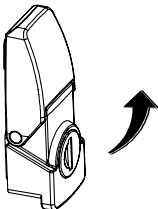
11 Appendix

11.1 Opening the Cabinet Door

1. Take the key from the accessory kit and locate the three latch locks on the side of the device.
2. Insert the key and turn it clockwise. The keys are universal for all latches and are not distinguished.



3. Lift the latch lock upward from the bottom to separate the lock body from the latch bolt.



4. Open the cabinet door outward. The door hinge is located on the left side of the device.

11.2 Closing the Cabinet Door

- 1. Close the cabinet door until it is fully shut.
- 2. Fasten the side latches to engage the lock body with the latch mechanism.
- 3. Insert the key and turn it counterclockwise to lock the door securely.

12 Acronym and Abbreviations

BMS	Battery Management System
DC	Direct Current
AC	Alternating Current
PV	Photovoltaic
RCD	Residual Current Monitoring
DRED	Demand Response Enabling Device
RCR	Ripple Control Receiver

Company: Zhejiang Uniview Technologies Co., Ltd.

Manufacturing Company: HopeTrek Innovations Co., Ltd.

Add: Room 57,3/F, Block A, East Sun Industrial Centre, 16 Shing Yip Street, Kwun Tong,
Kowloon, Hong Kong.

TEL: +086(571) 85309090

Email: info@hopetrek.com

WEB: www.hopetrek.com