SRNE

# SR-EOT Series

# All-in-one Solar Storage System

# User Manual

# V1.2



SR-EOT03S

SR-EOT05S

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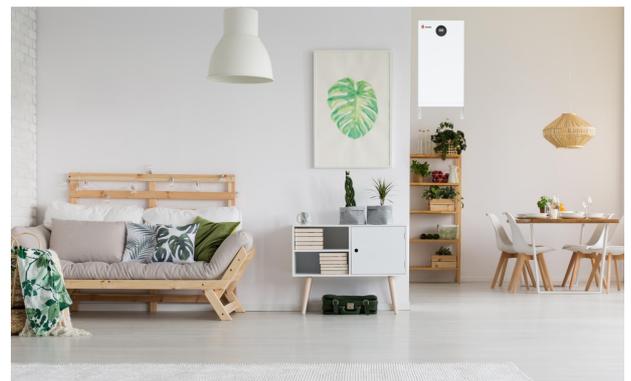
# 1. Instructions

Thank you very much for choosing the EOT series household energy storage system developed and produced by our company. Please read and understand all contents of the Manual carefully before installing and using the product. If you have any suggestions during the use, please do not hesitate to give us feedback.

## 1.1 Range of Application

The installation and user manual of SR-EOT series is applicable to the installation and use of the following products:

| No. | Model | Specifications |
|---|---|---|
| Inverter and battery all in one | | |
| 1 | SR-EOT03S-220 / -110 | 3.5kW+5.12kWh | |
| 2 | SR-EOT05S-220 / -110 | 5.0kW+5.12kWh | Can be parallelized into a 10kW system |
| Extra battery | | |
| 3 | SR-EOV05B | 5.12kWh | |

The product should be used in compliance with local standards, laws and regulations, because any non-compliance with the use may lead to personal injuries and property loss.

The drawings provided in this Manual are used to explain the concepts related to the product, including product information,electrical connection, system debugging, safety information, common problems and maintenance, etc.

The internal parameters of this product have been adjusted before delivery. No internal parameters can be changed without permission. Any unauthorized changes to the settings will invalidate the warranty, and the Company will not be liable for any loss resulting therefrom.

This Manual and other related documents are an integral part of the product and should be kept properly for onsite installation personnel and related technical personnel to consult.

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## 1.2 Meaning of Abbreviations

| AC | Alternating Current |
|---|---|
| DC | Direct Current |
| PV | Photovoltaic |
| BMS | Battery Management System |
| PCS | Power Conversion System |
| RJ45 | Registered Jack 45 |
| SOC | State Of Charge |
| C | Charge C-rate |
| RS485 | RS485 Communication Interface |
| CAN | Controller Area Network |

## 1.3 Symbol Stipulations

There may be following symbols herein, and their meanings are as follows.

| Symbols | Description |
|---|---|
| DANGER! | Indicate a hazard with a high level of risk which, if not avoided, will result in death or serious injuries. |
| CAUTION | Indicate a hazard with a medium level of risk which, if not avoided, could result in death or serious injuries. |
| ATTENTION | Indicate a hazard with a low level of risk which, if not avoided, could result in minor or moderate injuries. |
| NOTICE | Warning information about device or environment safety. If not avoided, equipment damage, data loss, performance degradation or other unanticipated results may be resulted in. The "NOTICE" does not involve any personal injuries. |

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# 2 Safety Precautions

## 2.1 Safety Symbols

This product contains the following symbols, please pay attention to identifying.

| Symbols | Description |
|---|---|
| | Observe enclosed documentation |
| | Danger. Risk of electric shock! |
| | Danger of high voltages. Danger to life due to high voltages in the Energy storage system |
| | Hot surface |
| | CE certification |
| | Do not touch the product in 5mins after shutdown |
| RoHS COMPLIANT | Comply with RoHS standard |
| | The Energy storage system should not be disposed together with the household waste. |

## 2.2 General Safety

### 2.2.1 Important Notice

Before installing, operating and maintaining the device, please read this Manual first and follow the symbols on the device and all the safety precautions in this Manual.

The matters indicated with "DANGER", "CAUTION", "ATTENTION" and "NOTICE" in this Manual do not represent all the safety matters to be observed, but are only the supplements to all the safety precautions. The Company will not be liable for any violation of general safety operating requirements, or any violation of safety standards for the design, production and use of the device. The device must be used in an environment that meets the requirements of the design specifications. Otherwise, the device may fail, and the abnormal device function or component damage, personal safety accident, and property loss arising from this are not covered within the quality assurance scope of the device. When installing, operating, and maintaining the device, the local laws, regulations, and codes shall be followed. The safety precautions in this Manual are only supplements to local laws, regulations, and codes. The Company shall not be liable for any of the following circumstances.

- The device is not run under the conditions of operating described in this Manual.

- The installation and operating environment is beyond the requirements of relevant international or national standards.

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- The product is disassembled or changed, or the software code is modified without authorization.

- The operation instructions and safety warnings related with the product and in the documents are not followed.

- Damage of the device is caused by abnormal natural environment (force majeure, such as earthquake, fire, and storm).

- Transportation damage is caused during customer's own transportation.

- The storage condition does not meet the requirements of the product related documents and causes damage.

## 2.2.2 General Requirements

| | |
|---|---|
| **DANGER!** | Operating when the power is on is strictly prohibited during installation. |
| **DANGER!** | It is strictly prohibited to install, use, and operate any outdoor equipment or cables (including but not limited to transporting equipment, operating equipment and cables, plugging and removing signal ports connected to the outdoor, working at altitude, and outdoor installation) in severe weather, such as thunder, rain, snow, and gale level 6. |
| **DANGER!** | In case of any fire, evacuate the building or equipment area and press the fire alarm bell or dial the fire call. Under any circumstances, re-entry into a burning building is strictly prohibited. |
| **CAUTION** | Under no circumstances should the structure and installation sequence of the device be changed without the manufacturer's permission. |
| **CAUTION** | The battery terminal components shall not be affected during transportation. And, the battery terminal bolts shall not be lifted or transported. |
| **ATTENTION** | It is strictly prohibited to alter, damage or block the marks and nameplates on the device. |
| **ATTENTION** | The composition and working principle of the entire photovoltaic power generation system, as well as the relevant standards of the country/region where the project is located shall be known fully. |
| **NOTICE** | After the device is installed, the empty packing materials, such as cartons, foam, plastics, and cable ties, shall be removed from the device area. |

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## 2.2.3 Personnel Safety

- When operating the device, appropriate personal protective equipment shall be worn. If any fault that may lead to personal injury or damage of the device is found, immediately terminate the operation, report to the responsible person, and take effective protective measures.

- Before using any tools, learn the correct method of using the tool to avoid injuries and damage of the device.

- In order to ensure personal safety and normal use, reliable grounding should be carried out before use.

- Do not open or damage the battery. The electrolyte released is harmful to skin and eyes, so avoid touch it.

- Do not place irrelevant items on the top of the device or insert them into any part of the device.

- Do not place flammable items around the device.

- Never place the battery in the fire to avoid explosion and prevent the personal safety from being endangered.

- Do not short-circuit the battery terminals, because short-circuiting of the battery may cause combustion.

- The battery may pose a risk of causing electric shocks and large short-circuit currents. When using the battery, the following precautions should be paid attention to:

    a) The metal objects, such as watch and rings, shall be removed.

    b) Tools with insulated handles should be used.

    c) Rubber gloves and shoes should be worn.

    d) The charging power supply shall be disconnected before connecting or disconnecting terminals of the battery.

    e) Check whether the battery is accidentally grounded. If the battery is accidentally grounded, remove the power supply from the ground.

- Do not clean the internal and external electrical components of the cabinet with water or detergent.

- Do not stand, lean or sit on the device.

- Do not damage any modules of the device.

## 2.3 Personnel Requirements

- The personnel in charge of installation and maintenance must be strictly trained to understand all safety precautions and master proper operation methods.

- Only qualified professionals or trained personnel are allowed to install, operate and maintain the device.

- The personnel who operate the device, including the operators, trained personnel and professionals, must have special operation qualifications required by the local country, such as high voltage operation, working high above the ground, and special equipment operation qualification.

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- The replacement of device or components (including software) must be carried out by professionals or authorized personnel.

## 2.4 Electrical Safety

### 2.4.1 General Requirements

**DANGER!** Before carrying out electrical connections, ensure that the device is not damaged, or an electric shock or fire may occur.

**DANGER!** Never install or remove any power cables when the power is on. The electric arcs or sparks may be generated at the moment when the power cable contacts with the conductor, which may cause fire or personal injuries.

- All the electrical connections must meet the electrical standards of the country/region where the project is located.

- The cables prepared by users themselves shall comply with local laws and regulations.

- Special insulating tools should be used in high-voltage operations.

- Before connecting the power cord, ensure that the label identification on the power cord is correct.

- Operations on the device are allowed only five minutes after the device is completely powered off.

- The insulation layer of the cable may be aged or damaged when the cable is used in a high temperature environment. Therefore, the distance between the cable and the heat source must be at least 30mm.

- Cables of the same type should be bundled together. Whereas, the cables of different types should be routed at least 30mm apart, and shall not be wrapped together or crossed.

### 2.4.2 Grounding Requirements

- When installing the device to be grounded, the protective grounding wire must be installed first; when removing the device, the protective grounding wire must be removed at last.

- It is forbidden to destroy the grounding conductor.

- It is forbidden to operate the device without a grounding conductor installed.

- The device shall be permanently connected to the protective grounding wire. Before operating the device, electrical connection of the device shall be checked to ensure that the device is reliably grounded.

## 2.4 Installation Environment Requirements

- This product is for indoor use only, and is strictly prohibited to be used in outdoor environment.

- Do not install or use this product in an environment where the temperature is lower than -10℃ or higher than 45℃.

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- It should be installed in a dry and well-ventilated environment to ensure good heat dissipation performance.

- The product can be installed at a maximum altitude of 2,000m.

- The installation position should be away from the fire source.

- The product should be installed and used away from children and animals.

- The installation position should be far away from water sources, such as faucets, sewer pipes, and sprinklers, to avoid entering of water.

- The device should be placed on a firm and flat supporting surface.

- Do not place any inflammable or explosive items around the device.

- When the device is running, do not block the ventilation vent or heat dissipation system to prevent fire caused by high temperature.

**CAUTION** The operation and service life of the energy storage is related to the operating temperature. The energy storage should be installed at a temperature equal to or better than the ambient temperature.

Max+50℃　　Min-10℃　　RH.+5%~+95%
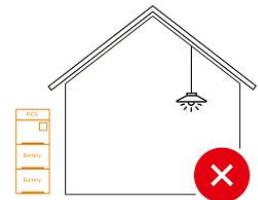
# 3 Product Introduction

## 3.1 Brief Introduction to Product

SR-EOT is a new generation of household energy storage system with two output specifications of 220V and 110V, which can meet the diversified needs of global users. This product is a professional indoor mobile power, compact size, universal wheel design can be easily moved, charging and discharging extremely quiet.

The lithium iron phosphate batteries with high performance and long service life are used in the energy storage module. Meanwhile, the modular structure design is adopted. Each energy storage module is internally integrated with the intelligent BMS system。

The brand new topological circuit design is adopted in the power module, which can realize the energy exchange between photovoltaic, mains, battery and loads, and has the function of photovoltaic and mains charging. The photovoltaic charging module adopts the latest optimized MPPT tracking technology, which can quickly track the maximum power point of the photovoltaic array in any environment, and obtain the maximum energy of the solar panel in real time. In addition, MPPT has a wide voltage range. The advanced control

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algorithm is adopted in the mains charging module to realize the fully-digital double closed-loop control of voltage and current, so the control precision is high and the volume is small. The AC voltage input range is wide, and the input/output protection functions are complete, which can realize the stable and reliable charging and protection of batteries. The inverter module is based on the full-digital intelligent design, adopts the advanced SPWM technology, outputs pure sine wave, converts direct current into alternating current, and is applicable for household appliances, power tools and other AC loads.

The typical topological diagram for application of the system is as follows:
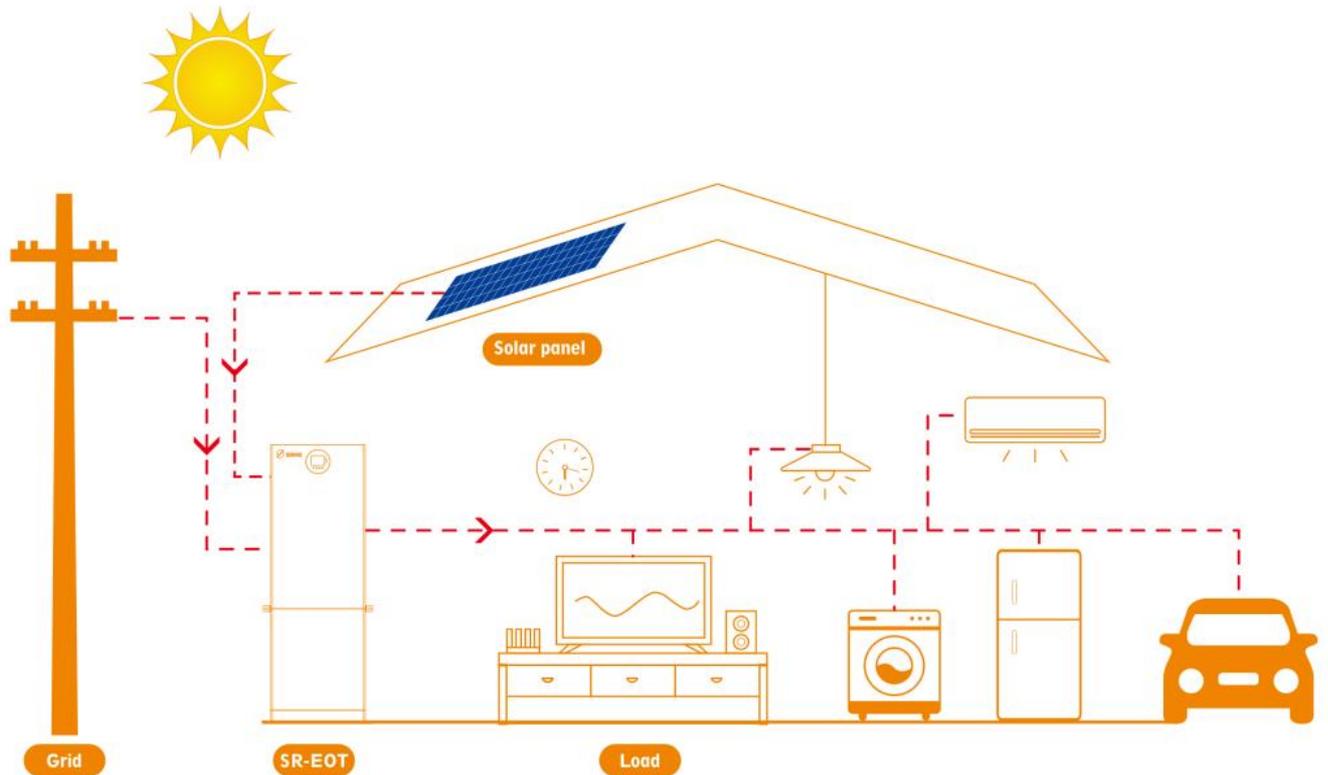


## 3.2 System Specifications

| Product model | All-in-one | | | | | | Extra Battery |
| | Rated Output Power | Rated Output Voltage (Vac) | Frequency | Charge Current | Max. PV Power | Battery | Energy |
|---|---|---|---|---|---|---|---|
| SR-EOT03S-220 | 3500W | 230Vac | 50Hz/60Hz | 0～100A | 3200W | 5.12kWh | 5.12~15.36kWh |
| SR-EOT05S-220 | 5000W | 230Vac | 50Hz/60Hz | 0～100A | 5500W | 5.12kWh | 5.12~15.36kWh |
| SR-EOT05S-110 | 5000W | 120Vac | 50Hz/60Hz | 0～100A | 5500W | 5.12kWh | 5.12~15.36kWh |

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## 3.3 Model Coding

The model coding of the energy storage battery is as follows:

SR-EOT03S-220
① ② ③ ④

| Identifier | Meaning | Value |
|---|---|---|
| ① | Product type | EOH: horizontally-mounted<br>EOV: vertically-mounted<br>EOS: wall-mounted<br>EOC: Stack,Rack<br>EOT: All In One storage system |
| ② | Inverter power level | 01: The inverter power is 1.5kW<br>02: The inverter power is 2.5kW<br>03: The inverter power is 3.5kW<br>05: The inverter power is 5.0kW |
| ③ | Product category | B: Energy storage battery<br>C: Power conversion module<br>S: Energy storage system |
| ④ | Output voltage | 110:Output voltage is 110~120<br>220:Output voltage is 220~230 |

# 3.4 Description of Energy Storage Capacity

SR-EOT series energy storage system supports the capacity expansion with up to four energy storage modules, All-in-one you can choose 3.5kW or 5kW.

5kWh          10kWh          15kWh          20kWh

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# SRNE
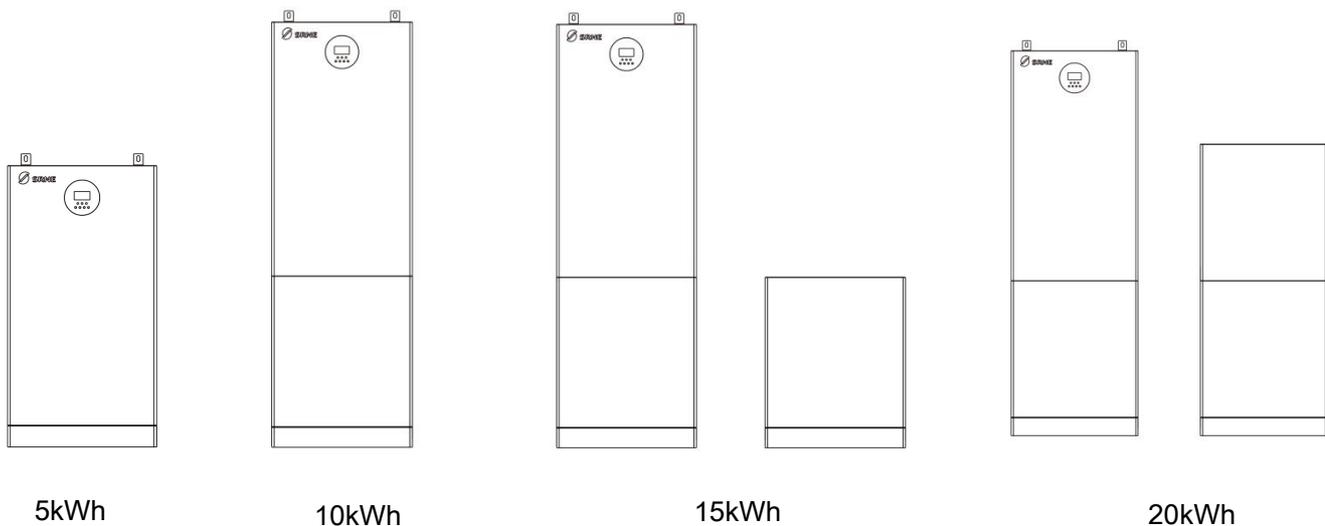
## 3.5 Appearance Description

## 3.5.1 Dimentions
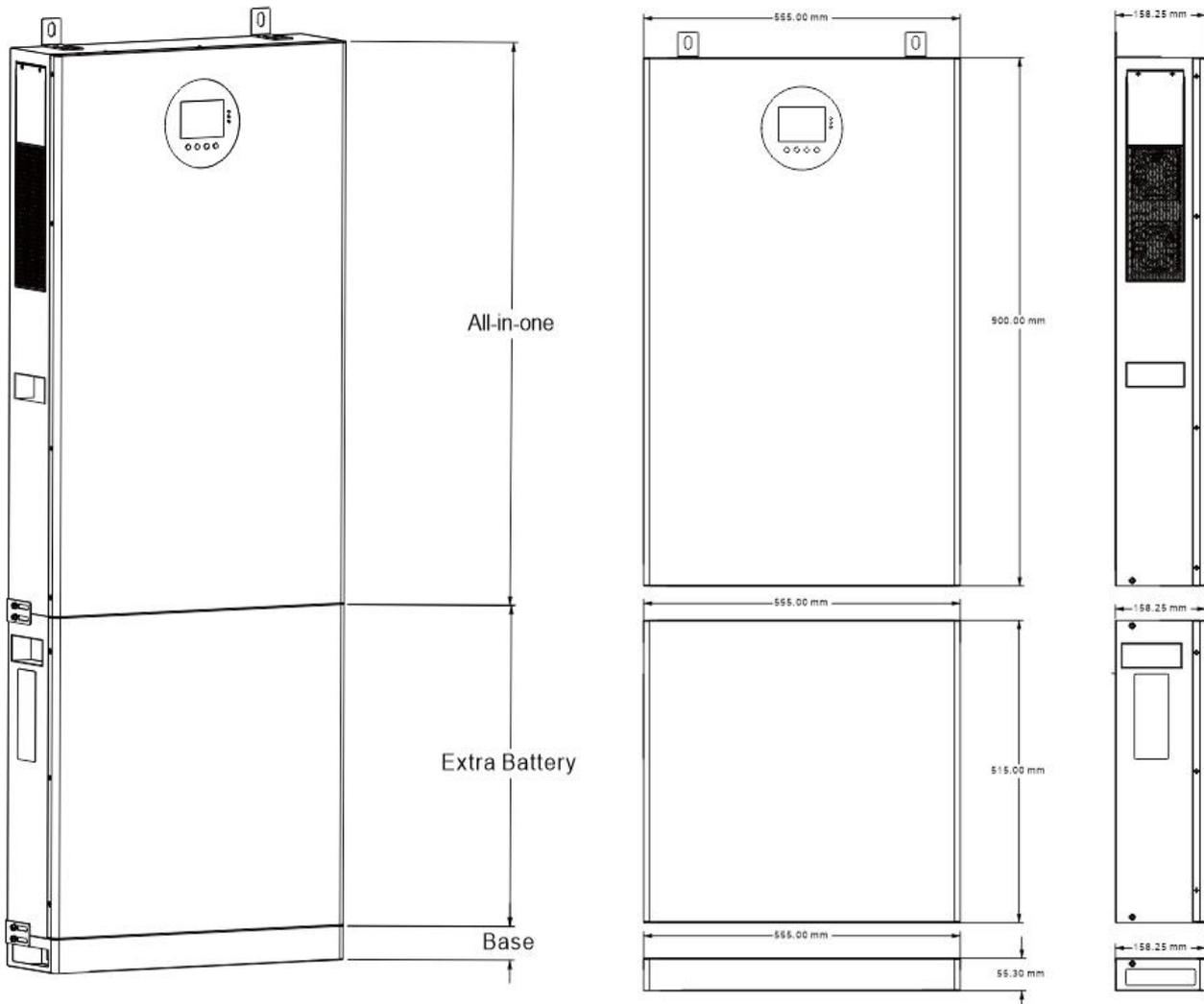
All-in-one dimensions（L*W*H）:555*158*900mm

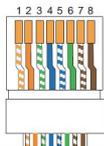Battery dimensions（L*W*H）:555*158*515mm

Base dimensions（L*W*H）:555*158*55mm

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## 3.5.2 ALL-in-one Module

The power of the inverter is 3kW and 5kW.
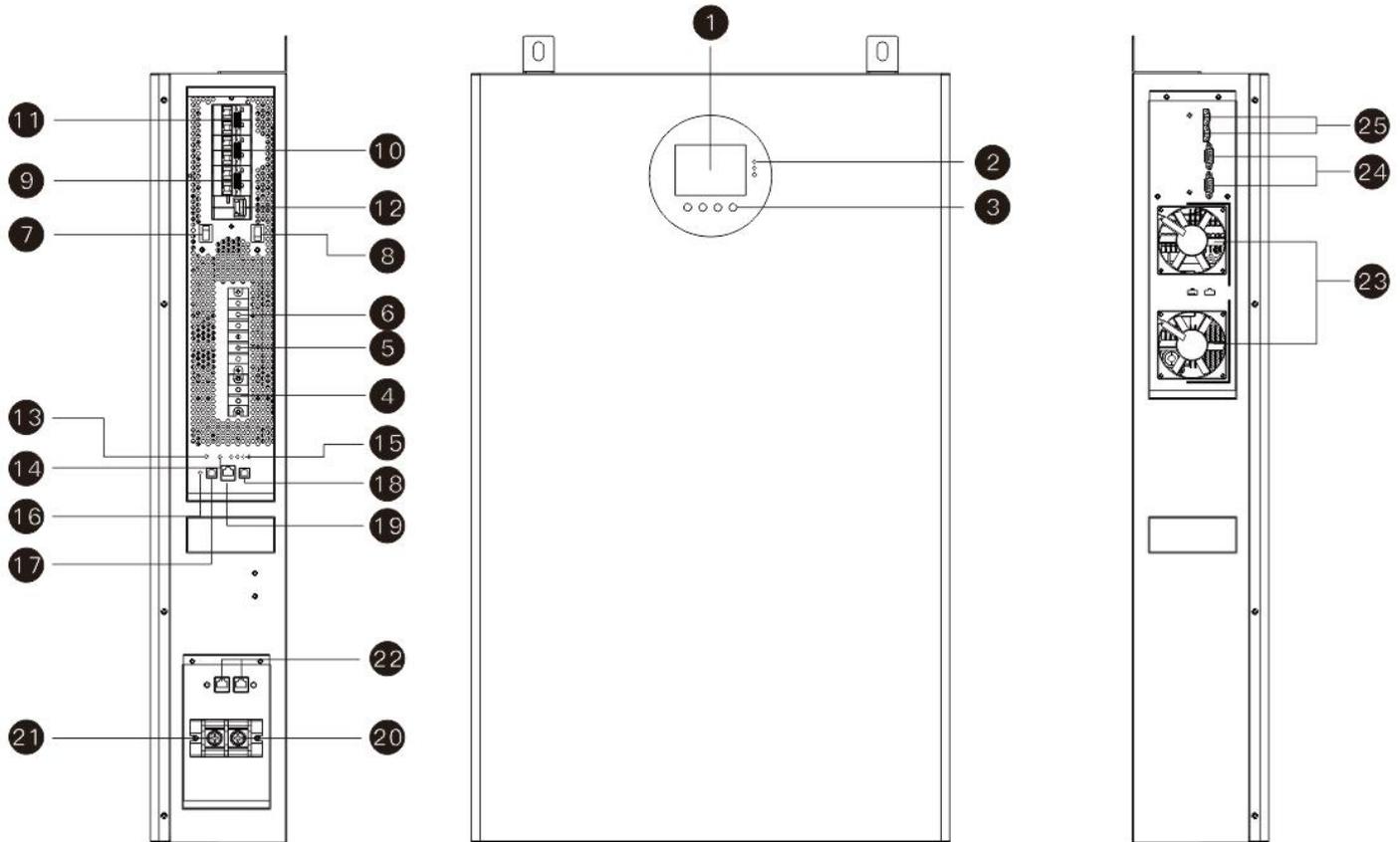


| 1: LCD screen | 2: LED Indicator | 3: Touch keys | 4: PV input port |
|---|---|---|---|
| 5: AC output port | 6: AC input port | 7: AC ON/OFF | 8: DC ON/OFF |
| 9: PV input switch | 10: AC output switch | 11: AC input switch | 12: Battery switch |
| 13: LED (BMS RUN) | 14: LED (BMS ALM) | 15: LED (BMS SOC) | 16: Reset |
| 17: USB BMS communication port (Connect PC) | 18: USB Inverter communication port (Connect PC) | 19: WiFi communication port | 20:Battery Negative |
| 21:Battery Positive | 22: RS485-IN/OUT (Connect extra battery) | 23:Cooling fan | 24:Parallel communication (SR-EOT05S Only) |
| 25:Current sharing detection (SR-EOT05S Only) | | | |

Communication interface definition

| Number | Communication | Function | Interface Type | Picture | instruction |
|---|---|---|---|---|---|
| 22 | RS485-Battery | Connect Battery | RJ45 | 1 2 3 4 5 6 7 8 | 7-RS485-A 8-RS485-B |

| 19 | WIFI | Connect WIFI | RJ45 |  | 1-5V<br>2-GND<br>7-RS485-A<br>8-RS485-B |
|----|------|--------------|------|--------|--------|
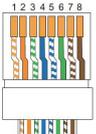
## 3.5.3 Extra Energy Storage Battery Module (SR-EOV05B)
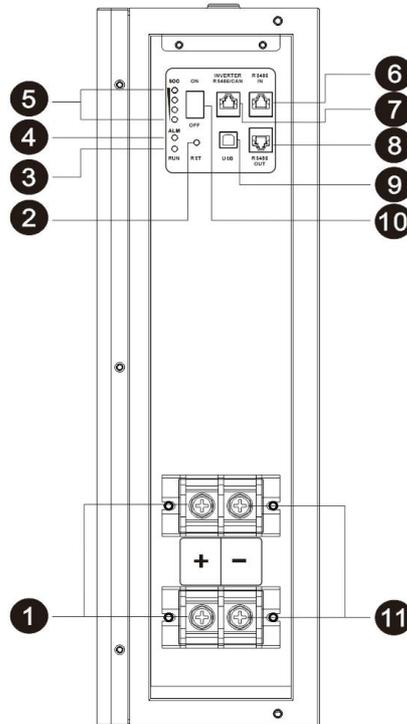


| ① Battery Positive | ② Reset | ③ LED (RUN) | ④ LED (ALM) |
|---|---|---|---|
| ⑤ LED(SOC) | ⑥ RS485 IN | ⑦ RS485/CAN (Connect inverter) | ⑧ RS485 OUT |
| ⑨ USB-B port | ⑩ Battery turn On/Off | ⑪ Battery Negative | |

Communication interface definition

| Number | Communication | Function | Interface Type | Picture | instruction |
|---|---|---|---|---|---|
| 8 | RS485/CAN | Connect<br>Connect inverter<br>(SR-EOV05C) | RJ45 |  | 1-RS485-B<br>2-RS485-A<br>4-CAN-H<br>5-CAN-L |
| 9 10 | RS485-2 | Connect other battery<br>Or<br>All in one<br>(SR-EOT03/05) | RJ45 |  | 1-RS485-B<br>2-RS485-A<br>7-RS485-A<br>8-RS485-B |
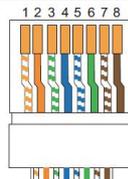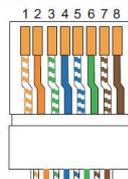
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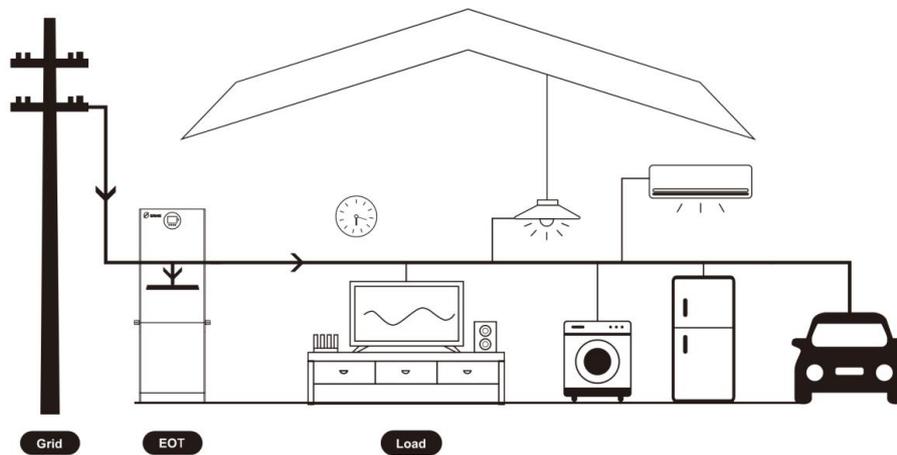
# 4 Application Scenarios

The lithium iron phosphate batteries with high performance and long service life are used in the energy storage module. Meanwhile, the modular structure design is adopted. Each energy storage module is internally integrated with the intelligent BMS system, which can be easily expanded and can be combined into 20kWh battery pack at most.

The battery storage can be combined with SRNE brand inverter to form an off-grid photovoltaic system, which can solve the problem of electricity consumption in areas without electricity.
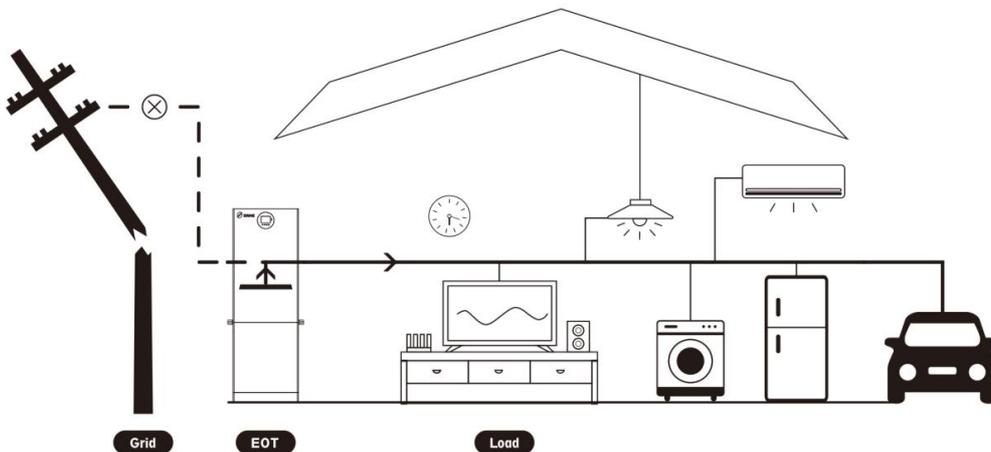
## 4.1 Application Scenarios

## 4.1.1 Application Scenarios with Only Mains Power but No Photovoltaic

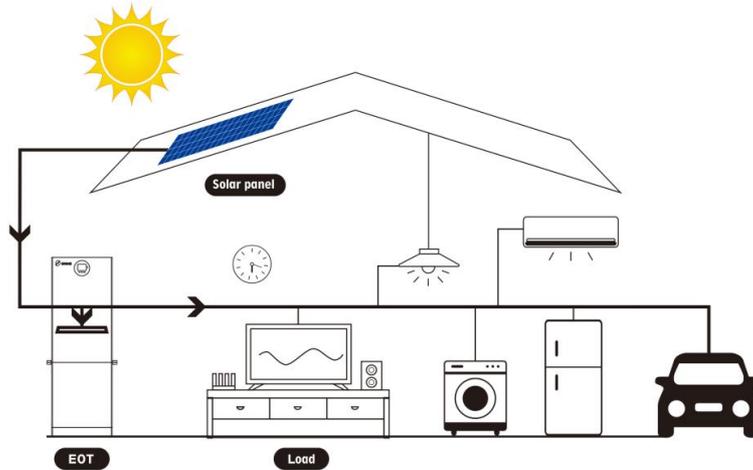When the mains is normal, it charges the battery and supplies power to the loads.



When the mains is disconnected or stops working, the battery supplies power to the load through the power module.



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## 4.1.2 Application Scenarios with Only Photovoltaic but No Mains Power

During the day, the photovoltaic directly supplies power to the loads while charging the battery.
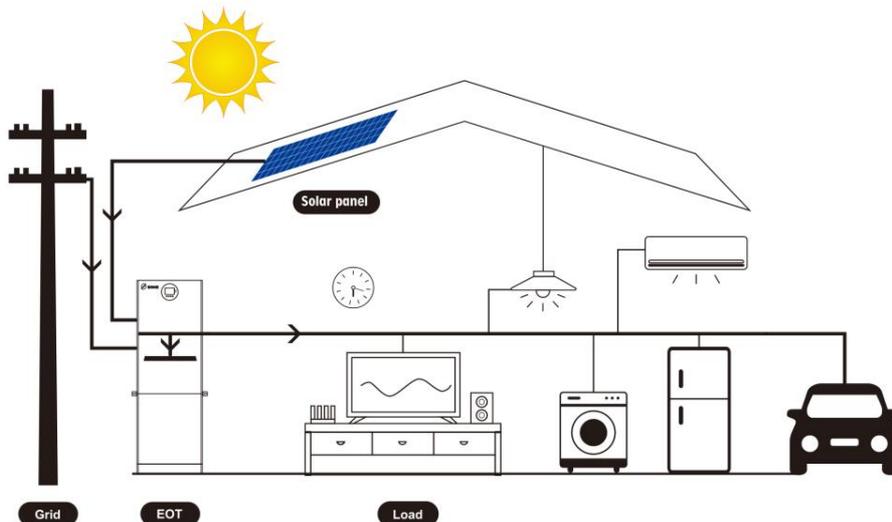


At night, the battery supplies power to the loads through the power module.
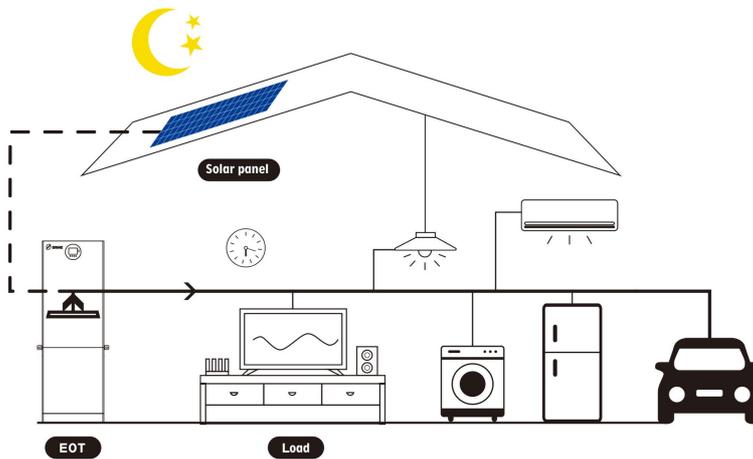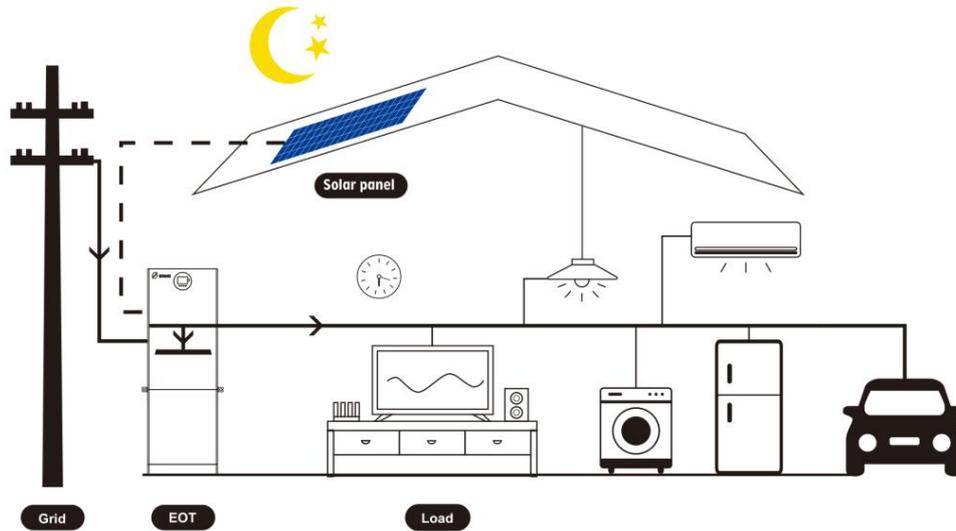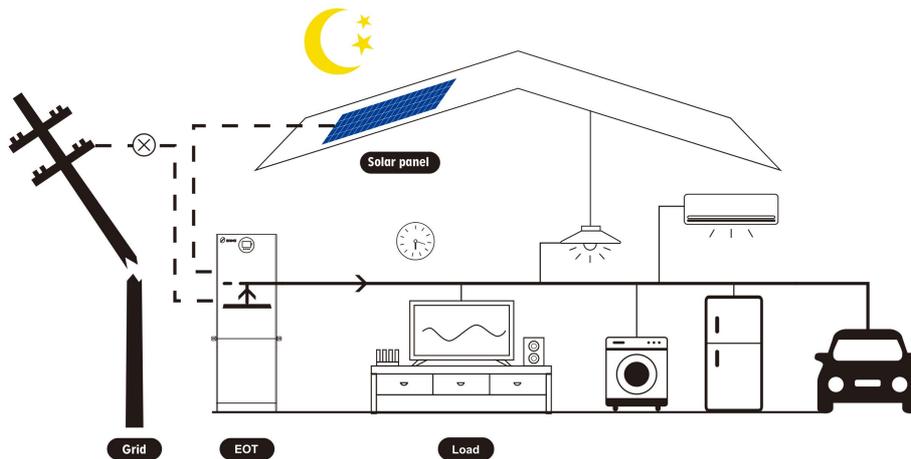


## 4.1.3 Complete Application Scenarios

During the day, the mains and photovoltaic simultaneously charge the battery and supply power to the loads.

At night, the mains supplies power to the loads, and continues to charge the battery, if the battery is not fully charged.



If the mains is disconnected, the battery supplies power to the loads.



# 4.2 Load Working Mode

| Load working mode | Inverter setting | Description |
|---|---|---|
| PV priority mode | PV 1ST (EOT05S)<br>SOL (EOT05S) | switching to the Mains when the PV fails or the battery is lower than the set value of parameter |
| Mains priority mode<br>(Default ) | AC 1ST (EOT05S)<br>UTI (EOT05S) | Mains priority mode, switching to inverter only when the mains fails.When the battery is full, the load power is supplied by the hybrid of PV and the utility. |
| Battery priority mode | BT 1ST (EOT05S)<br>SBU (EOT05S) | switching to the mains only when the battery is under voltage or lower than the set value of parameter |

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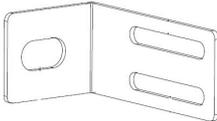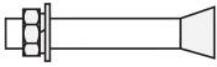F: +86 0755-27325578          W: www.srnesolar.com

# 5 System Installation

## 5.1 Inspections before Installation

### Inspection of outer package

Before opening outer package of the energy storage, check if there is any visible damage on the outer package, such as holes, cracks or other signs of possible internal damage, and check the type of energy storage. If there is any abnormality on the package or model of the energy storage is inconsistent, do not open it and contact us as soon as possible.

### Inspection of deliverables

After opening outer package of the energy storage, check if the deliverable is complete and whether there is any visible external damage. If any items are missing or damaged, please contact us.

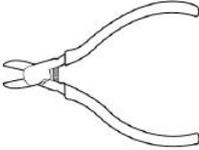| NO. | Picture | Item | Quantity | Specification | Source |
|---|---|---|---|---|---|
| 1 | | All-in-one | 1 | 3.5kW/5.0kWh or 5.0kW/5.0kWh | All-in-one Package |
| 2 | | Base | 1 | 555*158*55mm | All-in-one Package |
| 3 | | Mounting Frame | 2 | 80*44mm | All-in-one Package |
| 4 | | Mounting Frame Screw | 6 | M8*60 expansion bolt | All-in-one Package |
| 5 | | Mounting Frame | 2 | 555*158*55mm | All-in-one Package |
| 6 | | Screw | 8 | M5*12 | All-in-one Package |
| 7 | | Screw | 4 | M6*10 | All-in-one Package |
| N:Number of batteries | | | | | |

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## 5.2 Preparation of Tools and Meters

| Types | Tools and meters | | |
|---|---|---|---|
| Installation tool |  |  |  |
| |  |  |  |
| |  |  |  |
| Personal protective equipment |  |  |  |
| |  | | |

# 5.3 Selection of Installation Location

## 5.3.1 Basic Requirements

- When the energy storage is running, the temperature of the case and the radiator will be high. Therefore, do not install them in a place that is easy to touch.

- Do not install in areas where flammable and explosive materials are stored.

- If the energy storage is installed in areas with salt damage, it will be corroded and may cause fire. Therefore, do not install it outdoors in areas with salt damage. The areas with salt damage are defined as the areas which are not 500m away from shore or will be affected by sea breezes. The areas affected by the sea breezes vary depending on meteorological conditions (e.g. typhoons, monsoons) or topographical conditions (dams, hills).

- Do not install in the place where children can touch.

- The energy storage cannot be installed forwardly, horizontally, inversely, backwardly or sideways.

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- When drilling holes on walls or ground, the goggles and protective gloves shall be worn.

- During drilling, the device should be shielded to prevent debris from falling into the device. After drilling, the debris shall be cleaned up in time.

- When handling any heavy objects, you should be prepared to bear loads to avoid being crushed or sprained.

- When handling the device by hand, wear protective gloves to avoid injury.



| < 18kg | 18kg ~ 32kg | 32kg ~ 55kg | > 55kg |
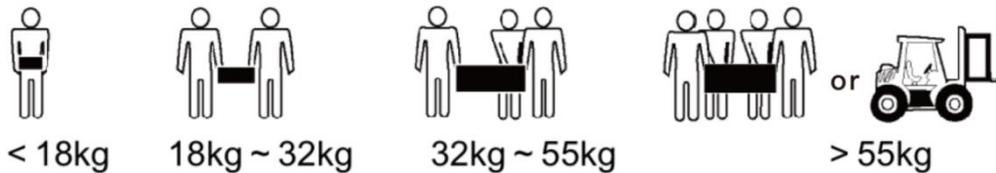
## 5.3.2 Installation Space Requirements

When installing the energy storage, certain space shall be left around it to ensure sufficient space for installation and heat dissipation.

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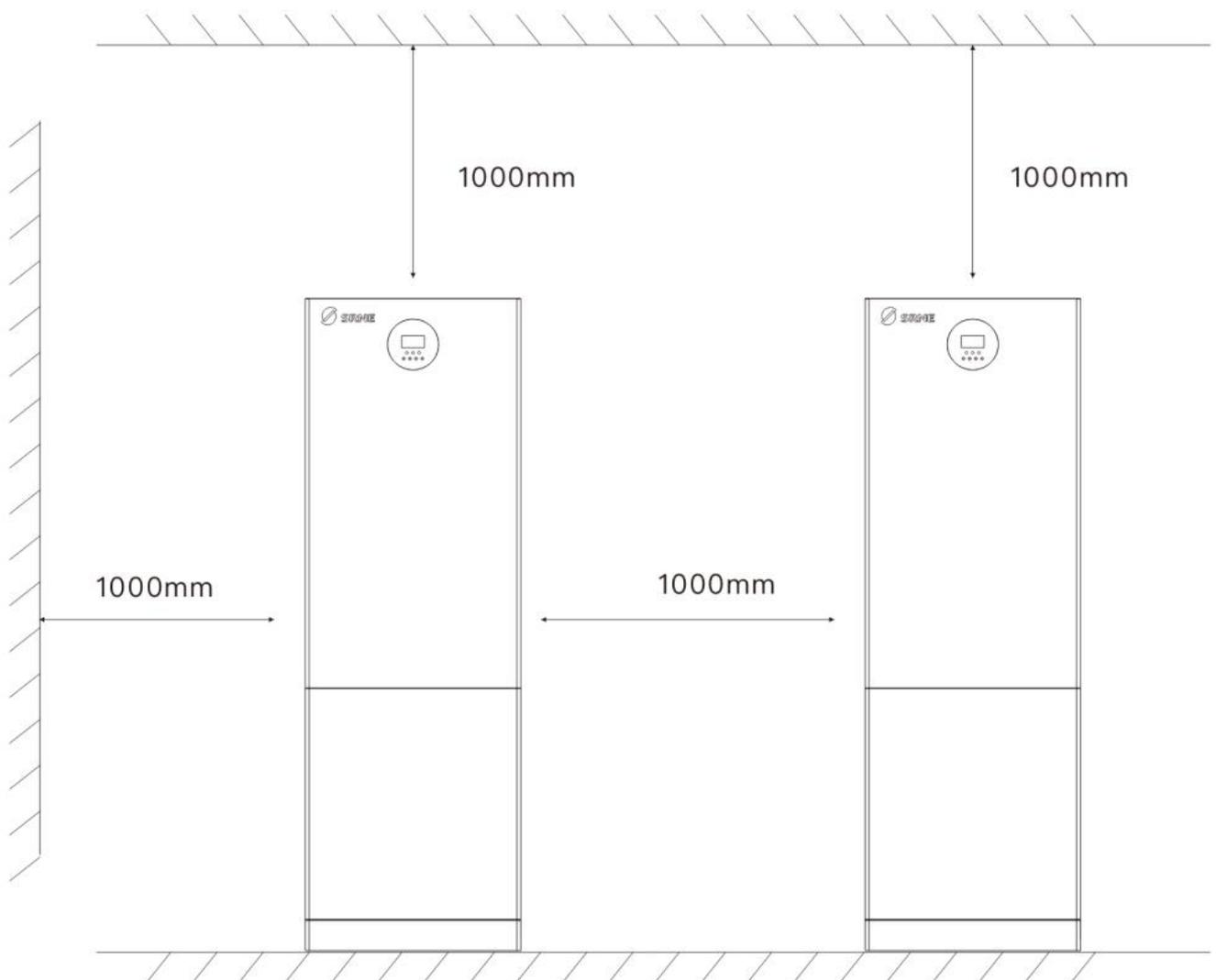
# 5.4 Device Installation

## 5.4.1 Wall mount

## 5.4.1.1 Installation Location Selection

Determine the installation position, Fix the base and bracket with screws (M6*10), and place them in the appropriate position and mark the place where the holes need to be punched.
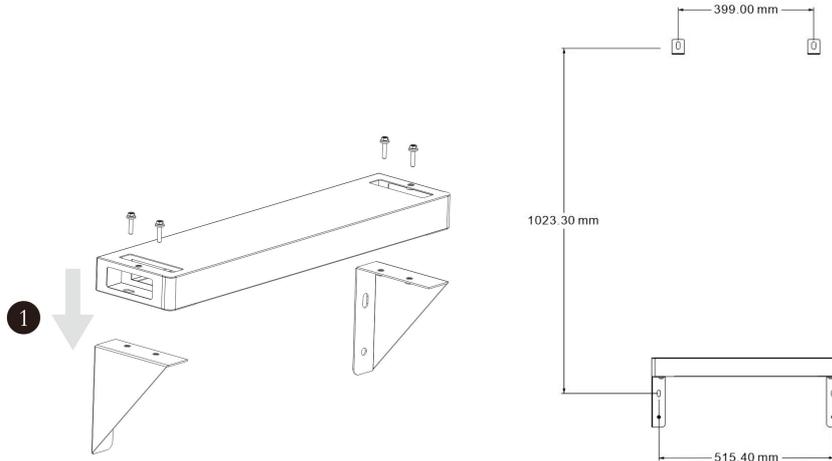


| | In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes. |
|---|---|
| **DANGER!** | |
| **CAUTION** | Choose suitable firm wall with thickness greater than 80mm. |

## 5.4.1.2 Install All-in-one

Drill 6 holes according to the hole position, it is φ6 with depth of 45~50mm.Hammer the M8 screws to the above holes, and screw the nut. Fix the bracket to the wall with screws(M8*60 expansion bolt)



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⚠️ **CAUTION**     **The all-in-one unit is very heavy and requires more than one person to install.**

Place the all-in-one on the support frame and lock the upper section to the sides using screws.
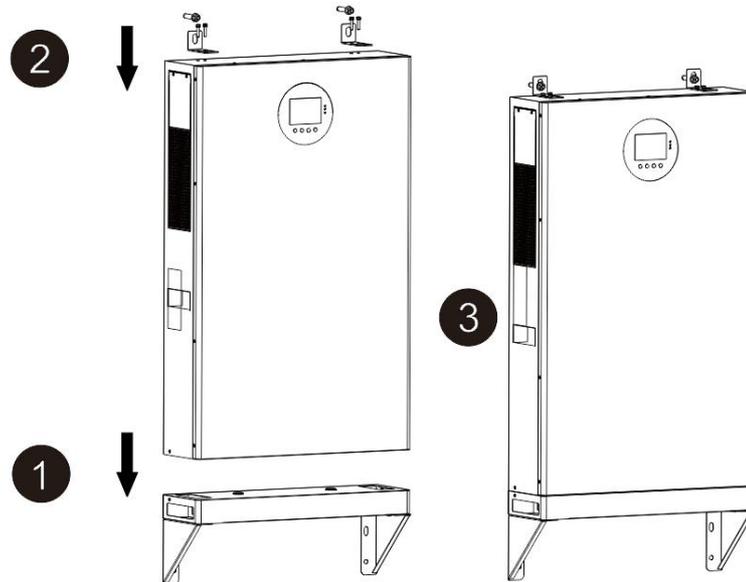


## 5.4.1.3 Install Extra Battery Pack and All-in-one

If you need to add a battery module, place the battery module on the support frame and lock the sides together with screws.
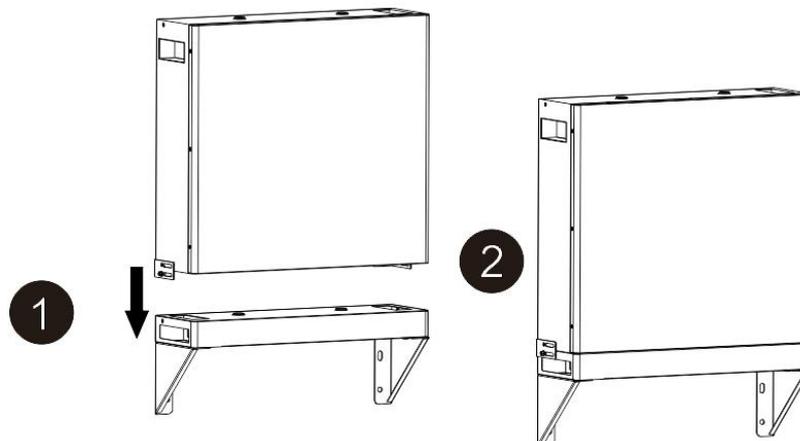
Place the all-in-one unit on the battery module and screw it into the screw holes of the battery module and install the fixing fittings.
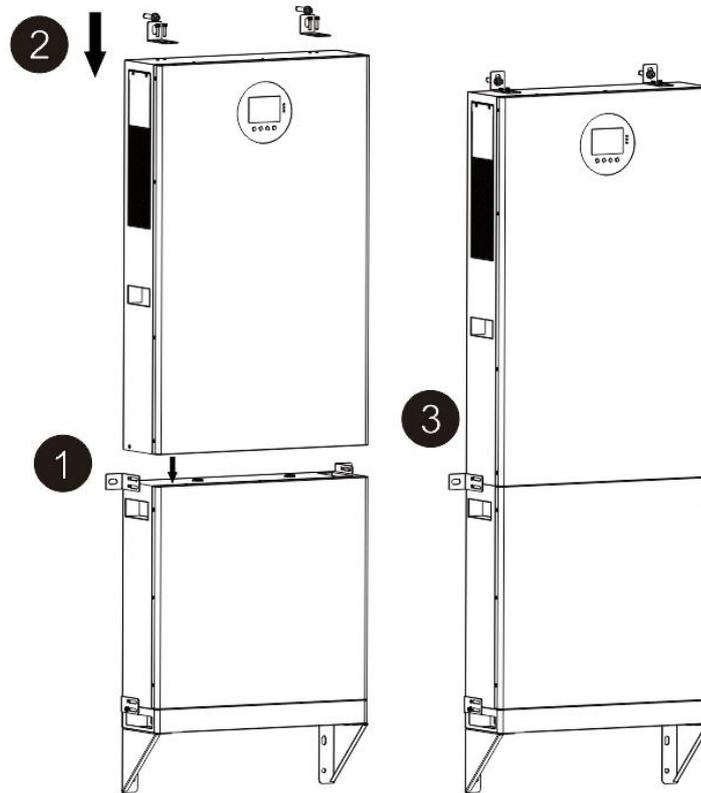
## 5.4.2 Floor mounting

## 5.4.2.1 Installation Location Selection

Determine the installation location, please choose a flat ground and a solid wall as the installation location.

Determine the installation position of the base, the fixed size is 555mm.

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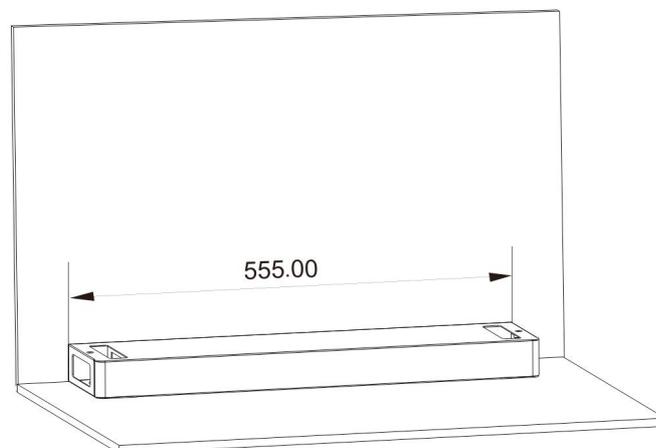
## 5.4.2.2 Install All-in-one

According to the hole position, drill 2 holes on the wall, φ6, depth 45~50mm. Tap the M8 screw into the above hole and screw on the nut.
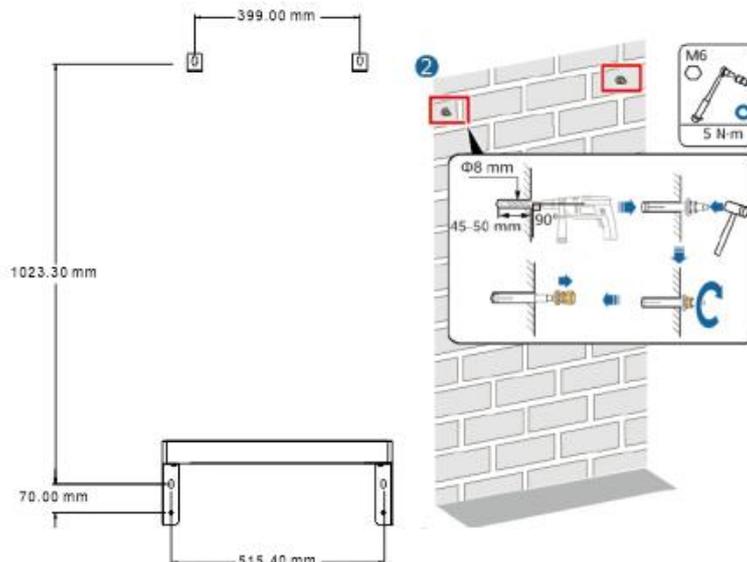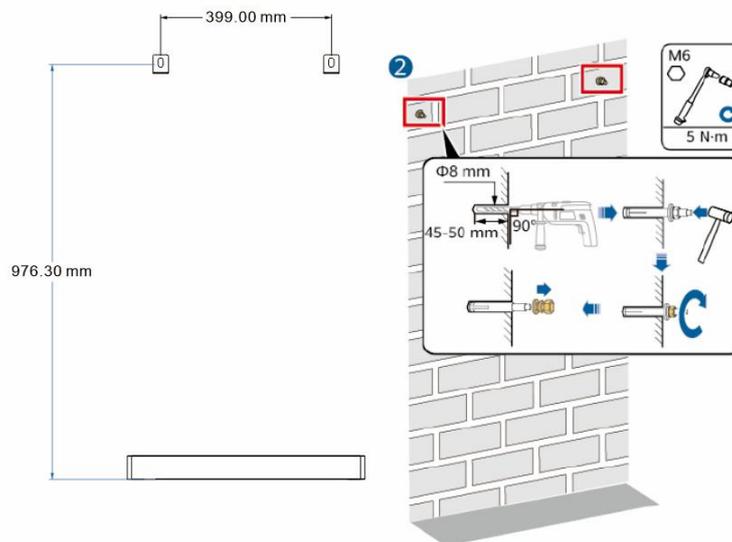


| DANGER! | In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes. |

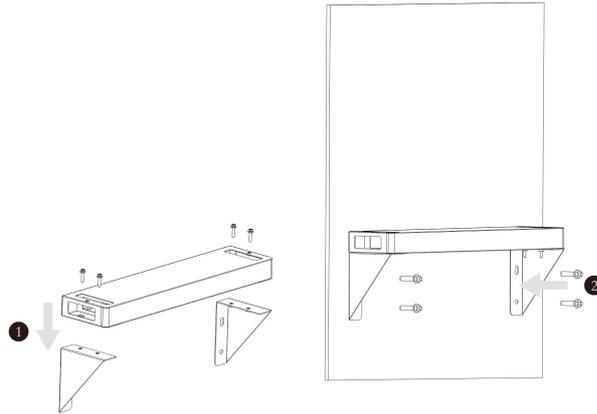| CAUTION | Choose suitable firm wall with thickness greater than 80mm. |

Place the all-in-one on the base and tighten the fixing screws on both sides and Installation of fixing bracket.

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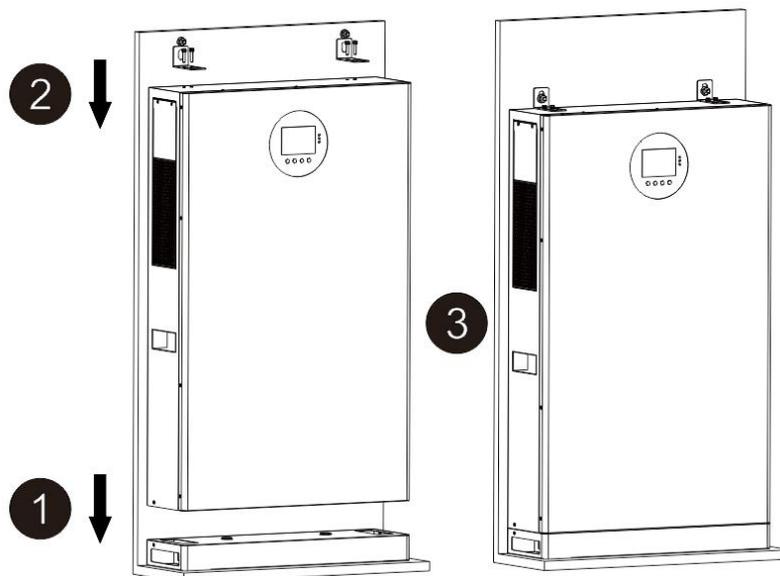
## 5.4.2.3 Install Extra Battery Pack and All-in-one

If you need to add a battery module, place the battery module on the base.

According to the hole position, ground 2 holes on the wall, φ6, depth 45~50mm. Tap the M8 screw into the above hole and screw on the nut.
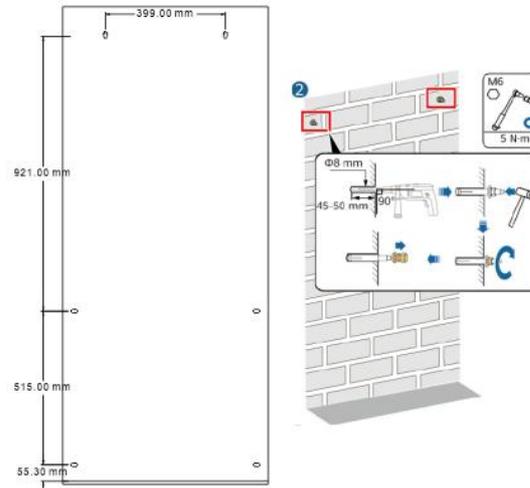
Place the battery on the base, and then tighten the fixing screws on both sides.
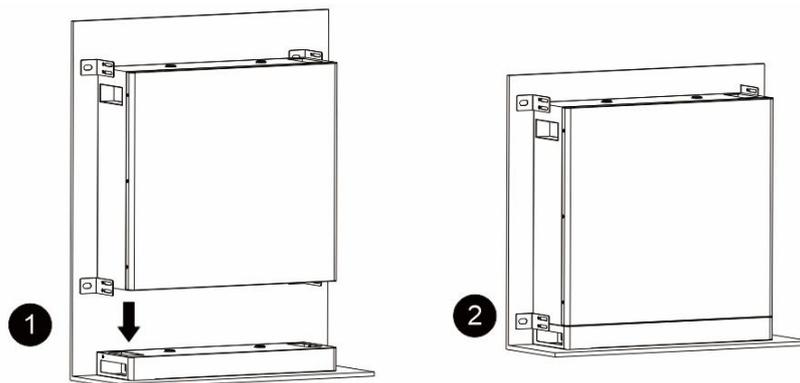
Place the all-in-one on the battery module and install the wall mounting brackets.

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# 6 Electrical Connection

| | |
|---|---|
| **DANGER!** | Before electrical connection, please ensure that the switches of the energy storage are in the "OFF" state. Otherwise, the high voltage of the device may cause electric shock. |
| **CAUTION** | The operations related to electrical connections must be carried out by professional electrical technicians. When carrying out electrical connections, the operator must wear personal protective articles. |

## 6.1 Preparation of Cables

| No. | Cables | Description | Recommended specifications | Source |
|-----|--------|-------------|---------------------------|--------|
| 1 | Wiring ring | Connect wires and terminals | | All-in-one Package |
| 2 | Parallel communication line | Communication cable when multiple inverters are connected in parallel | | All-in-one Package (Optional) |
| 3 | Current sharing detection line | Current sharing line when multiple inverters are connected in parallel | | All-in-one Package(Optional) |
| 4 | Photovoltaic input line | Cable between the photovoltaic panel and power module | Cable diameter $6mm^2$/10AWG | Prepare by the user itself |
| 5 | AC input line | Cable between AC input and power module | Cable diameter $10mm^2$/7AWG | Prepare by the user itself |
| 6 | AC output line | Cable between AC output and power module | Cable diameter $10mm^2$/7AWG | Prepare by the user itself |
| 1 | Power Cable | Power cable between the extra battery and all-in-one,10kwh capacity battery use,450mm | | Battery Package |
| 2 | Signal line | Signal cable between the extra battery and all-in-one,450mm | | Battery Package |
| 7 | Expand Capacity Power Cable | Power cable between the storage battery,15kWh and 20kWh capacity battery use,1.5m | | (Optional) |
| 8 | Expand Capacity Signal line | Power cable between the storage battery,15kWh and 20kWh capacity battery use,2.0m | | (Optional) |
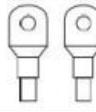
# 6.2 External Electrical Connection of Energy Storage

## 6.2.1 Connecting AC Input

According to the cable sequence and terminal position shown in the figure below, correctly connect the AC input line. Please pay attention to L and N and avoid short-circuit when wiring.
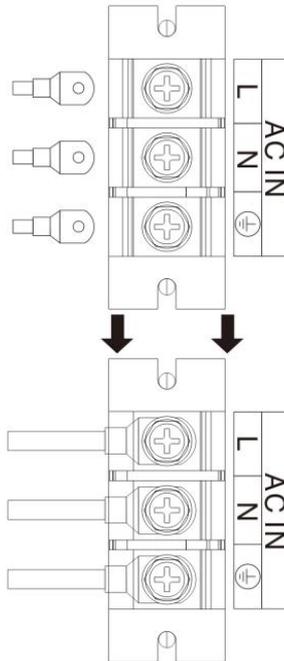
## 6.2.2 Connecting AC Output

According to the cable sequence and terminal position shown in the figure below, correctly connect the AC output cable. When wiring, please pay attention to L and N and avoid short-circuit.

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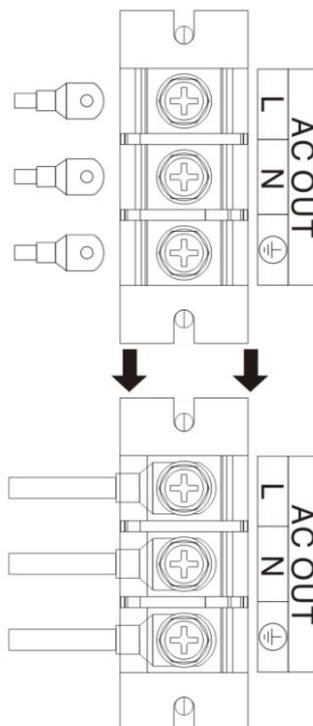
## 6.2.3 Connecting Photovoltaic Input

According to the cable sequence and terminal position shown in the figure below, correctly connect the PV input cable. When wiring, please pay attention to the positive and negative poles and avoid short-circuit.
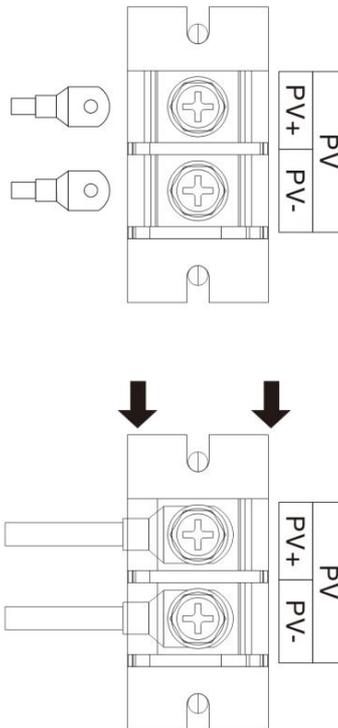


## 6.2.4 Wiring specifications

| Models | Recommended PV wiring diameter | Recommended AC input wiring diameter | Recommended AC output wiring diameter |
|--------|-------------------------------|-------------------------------------|--------------------------------------|
| SR-EOT03S | 6mm$^2$/10AWG | 10mm$^2$/7AWG | 10mm$^2$/7AWG |
| SR-EOT05S | 6mm$^2$/10AWG | 10mm$^2$/7AWG | 10mm$^2$/7AWG |

# 6.3 Electrical Connection of Extra Battery Modules

## 6.3.1 System Connecting Power Cord

Before connecting the energy storage battery module, ensure that the energy storage battery is not working and the indicator lights on the battery are OFF. The power cord delivered with the product together should be used to connect the positive and negative terminals of other batteries or power modules. It shall be noticed that the red cable should be connected to the red terminal (positive battery terminal) and the black cable to the black terminal (negative battery terminal).

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**10kWh Wiring diagram:**

**Battery wire connection**



Power Cable
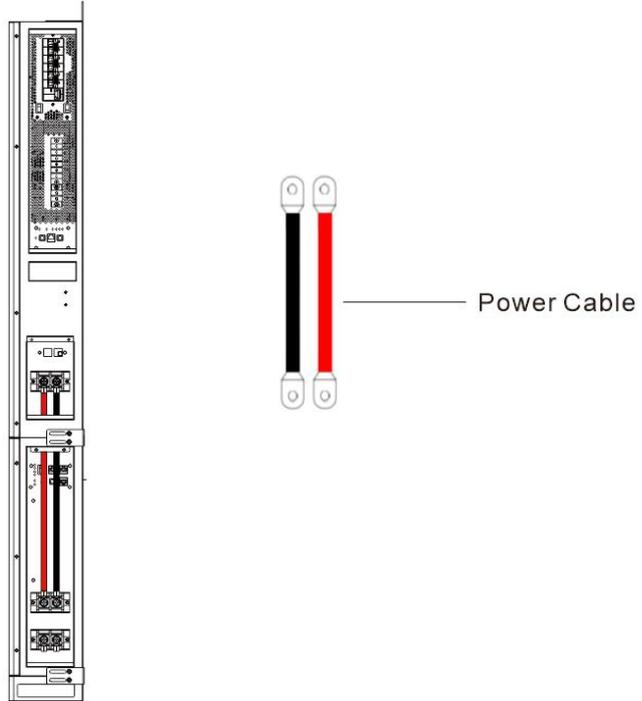
The signal line delivered with the product together shall be used to connect RS485-Battery interface for each battery module.

**10kWh Wiring diagram:**

**Signal line connection**



Signal Cable

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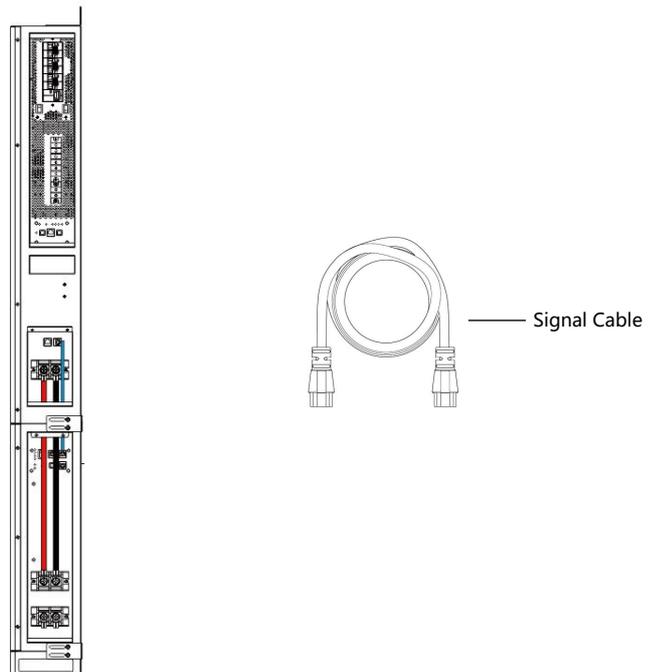
## 6.3.3 15kWh or 20kWh System Connecting

If you need 15kWh or 20kWh batteries, you can choose to connect multiple batteries through parallel power cable and Signal Line.

Expand capacity power cable of battery modules are optional products. If necessary, please contact your local dealer.

### 15kWh Wiring diagram:

### Battery wire connection



### 15kWh Wiring diagram:

### Signal line connection

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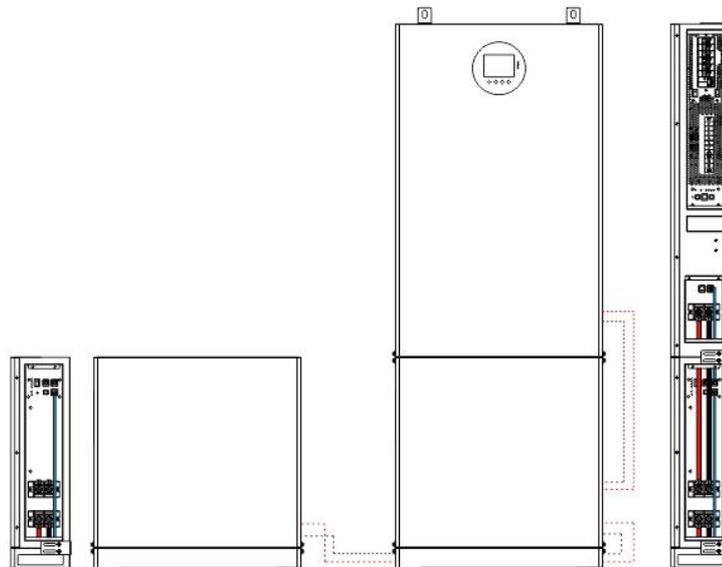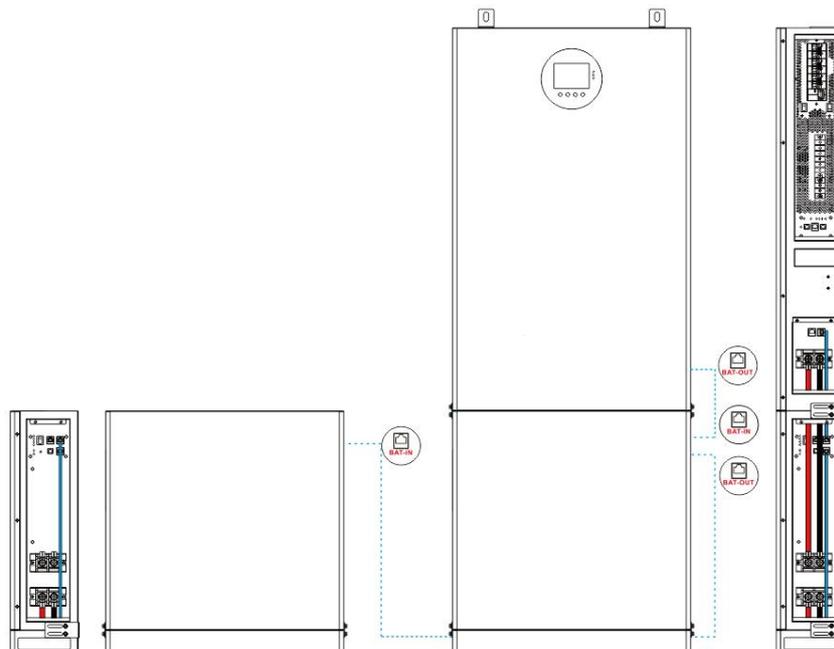
## 20kWh Wiring diagram:

## Battery wire connection



## 20kWh Wiring diagram:

## Signal line connection

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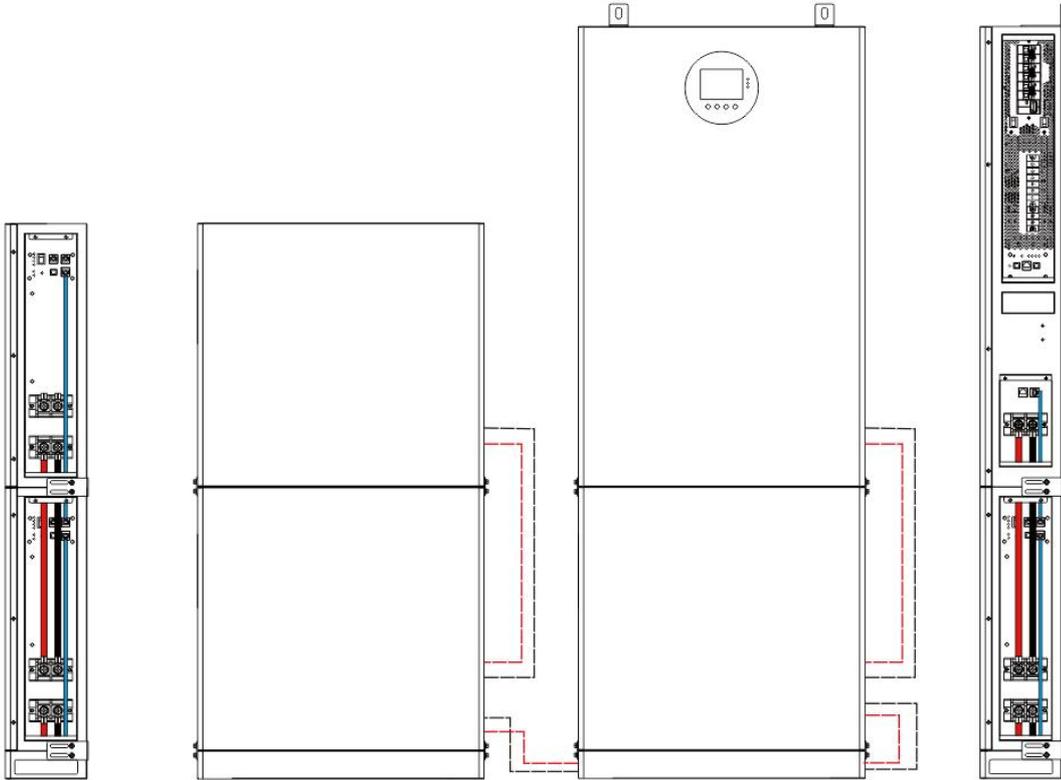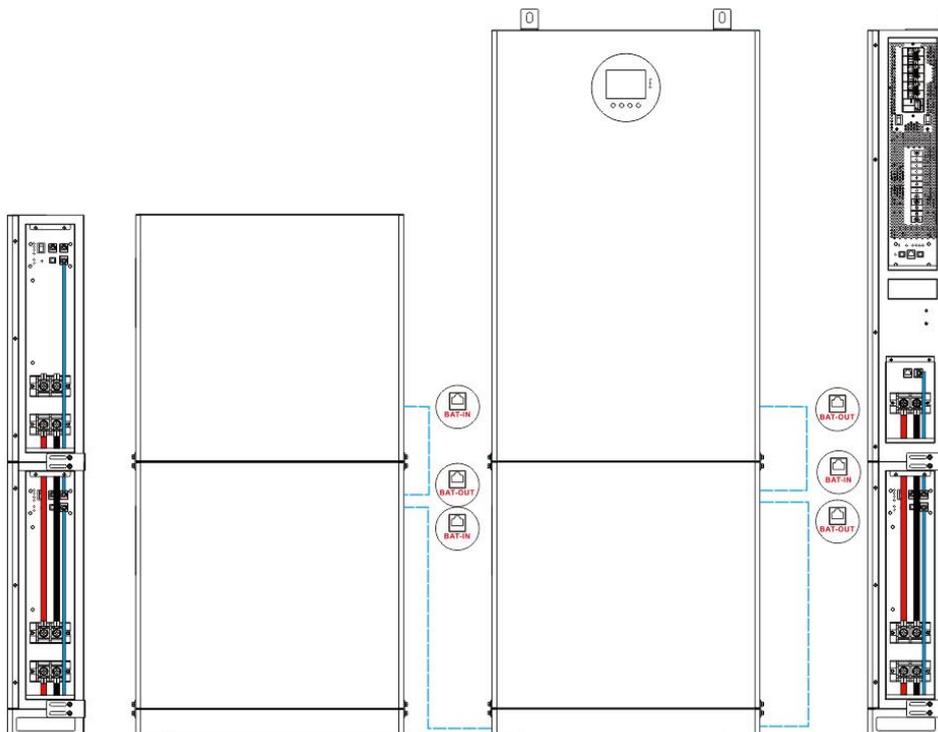
# 6.4 Electrical Connection of Two Systems In Parallel ( SR-EOT05S Only)

## 6.4.1 Connecting Power Cord And Signal Line

You can choose to connect 2 sets of battery systems through a parallel power cable.

Parallel connection cable of battery modules are optional products. If necessary, please contact your local dealer.
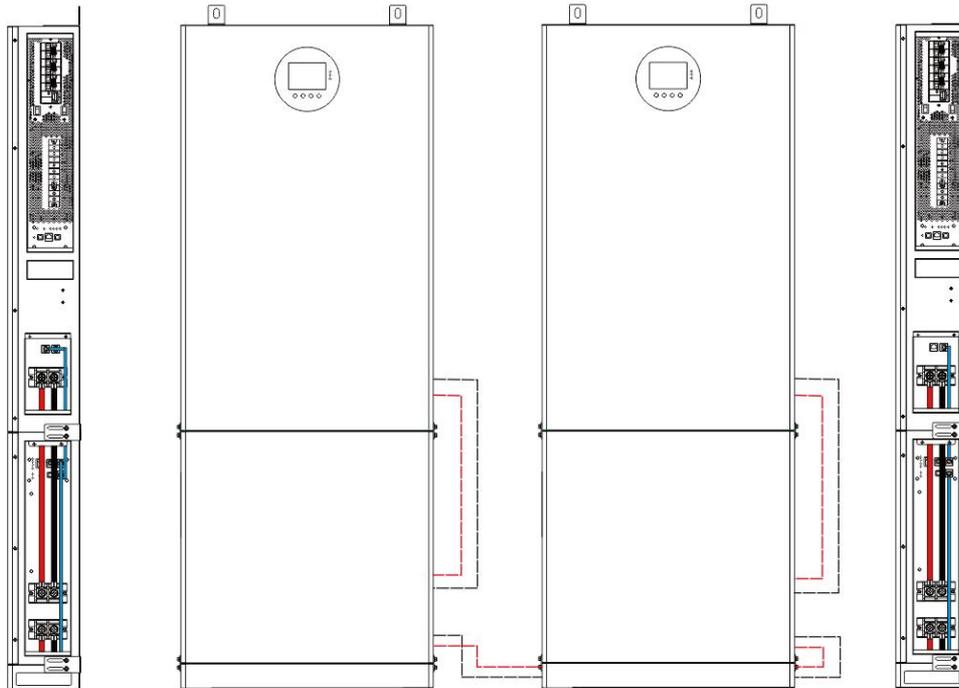


The connection and address settings of the battery signal line are shown in the following figure.

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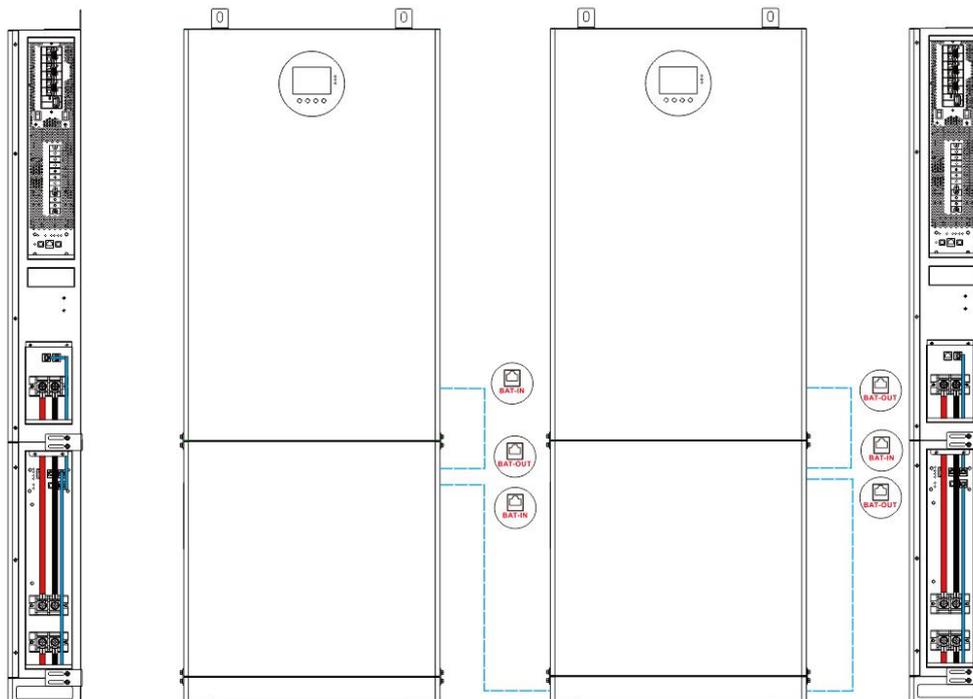
## 6.4.2 AC OUT Wiring& AC IN Wiring

When connected, L must be connected to L, N to N wire, PE to PE, and ensure on.

The connection should be correct and the length and diameter of the connection should be the same before the electric startup, so as to avoid the abnormal work of the output of the parallel system caused by the wrong.
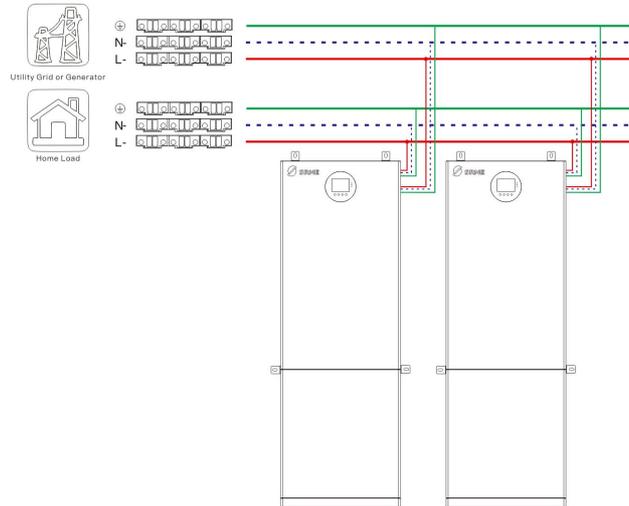


## 6.4.3 Parallel Communication Line Connection

Communication cable and current sharing cable are optional products. If necessary, please contact your local distributor.
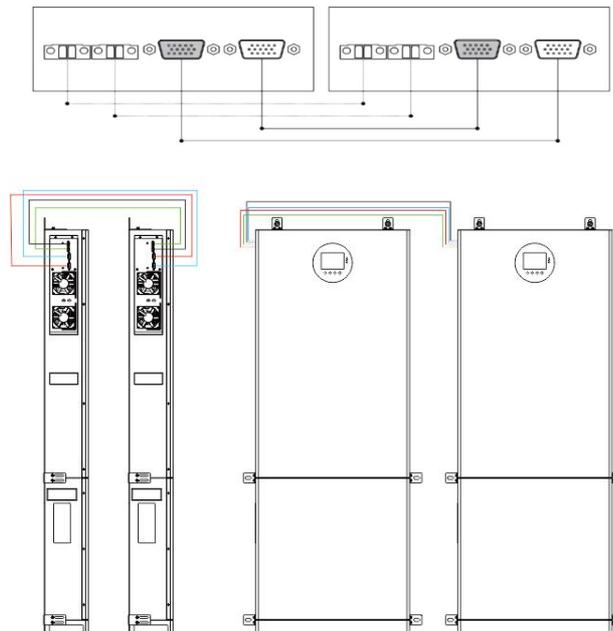


## 6.4.4 Setting the All-in-One Parallel Mode

The 31st setting needs to be set to PAL(SR-EOT05S only).

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# 7 System Debugging

## 7.1 Inspections Before Power-On

| No. | Inspection items | Acceptance criteria | Validation | |
|-----|------------------|---------------------|------------|---|
| 1 | The energy storage is installed in place | The installation is correct, secure and reliable. | ☐Yes | ☐No |
| 2 | The installation environment meets requirements | The installation space is reasonable and the environment is clean and tidy without any construction | ☐Yes | ☐No |
| 3 | The power cord is correctly connected | The positive and negative terminals are connected correctly without any missing. | ☐Yes | ☐No |
| 4 | The signal line is correctly connected | The signal line is connected reliably, and there is no wrong position | ☐Yes | ☐No |
| 5 | The grounding is reliable | The grounding wire is correctly and reliably connected. | ☐Yes | ☐No |
| 6 | The switch of the energy storage battery module is off | All switches connected to the energy storage are in the "OFF" state. | ☐Yes | ☐No |
| 7 | All breaker of the battery module are off | All breaker of the battery module are in the "OFF" state. | ☐Yes | ☐No |

## 7.2 Power-On of System

### 7.2.1 Power On Sequence

First,open the cover and turn on the battery input circuit breaker switch.
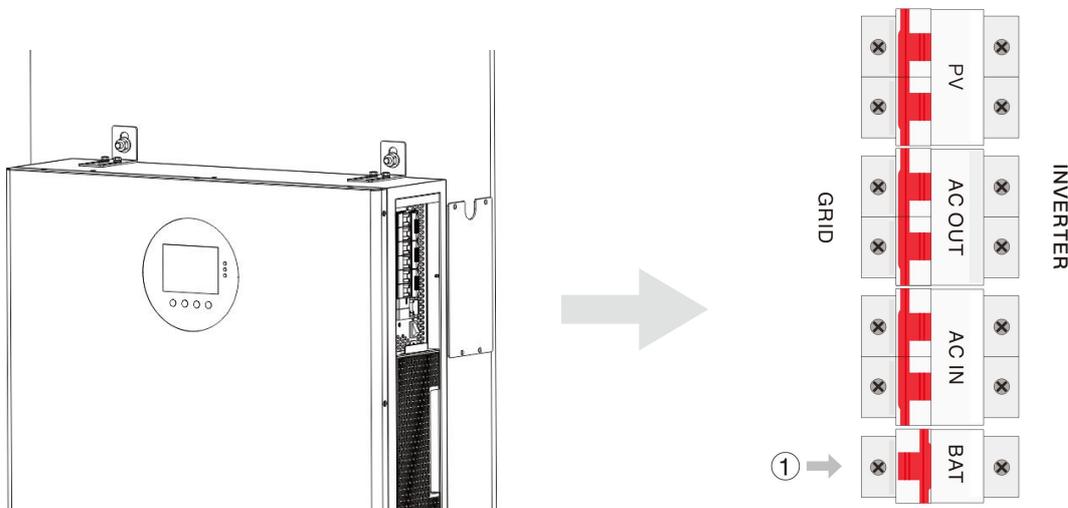


Secondly,turn on the DC switch, If there are multiple extra battery modules, please turn on the power switch one by one according to the address sequence.

After the power switch is turned on, the LED indicator will light up or flash. The meaning of the LED indicator is as follows.

| System Status | Events | RUN | ALM |
|---------------|--------|-----|-----|
| POWER OFF | Power Off | OFF | OFF |
| Steady | Normal | Blinking1 | OFF |

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| | | | |
|---|---|---|---|
| | Alarm | Blinking1 | Blinking3 |
| Charging | Normal | ON | OFF |
| | Alarm | ON | Blinking3 |
| | Over Charge Protection | ON | OFF |
| | High temperature, Over Current | OFF | ON |
| Discharging | Normal | Blinking3 | OFF |
| | Alarm | Blinking3 | Blinking3 |
| | Over Discharge Protection | OFF | OFF |
| | Over Current，Short Current | OFF | ON |

LED blinking description

| Blinking | LED ON | LED OFF |
|---|---|---|
| Blinking1 | 0.25S | 3.75S |
| Blinking2 | 0.5S | 0.5S |
| Blinking3 | 0.5S | 1.5S |

Capacity Indicator

| Capacity indicator LED | SOC |
|---|---|
| 🟢 ⚫ ⚫ ⚫ | 0～25% |
| 🟢 🟢 ⚫ ⚫ | 25～50% |
| 🟢 🟢 🟢 ⚫ | 50～75% |
| 🟢 🟢 🟢 🟢 | 75～100% |
| 🟢 : LED ON　　⚫ :LED OFF | |

Then,turn on the AC switch.If the AC/INV indicator blinks, it indicates that the inverter works properly.

Last,then turn on the PV, AC output and AC input breaker switch.
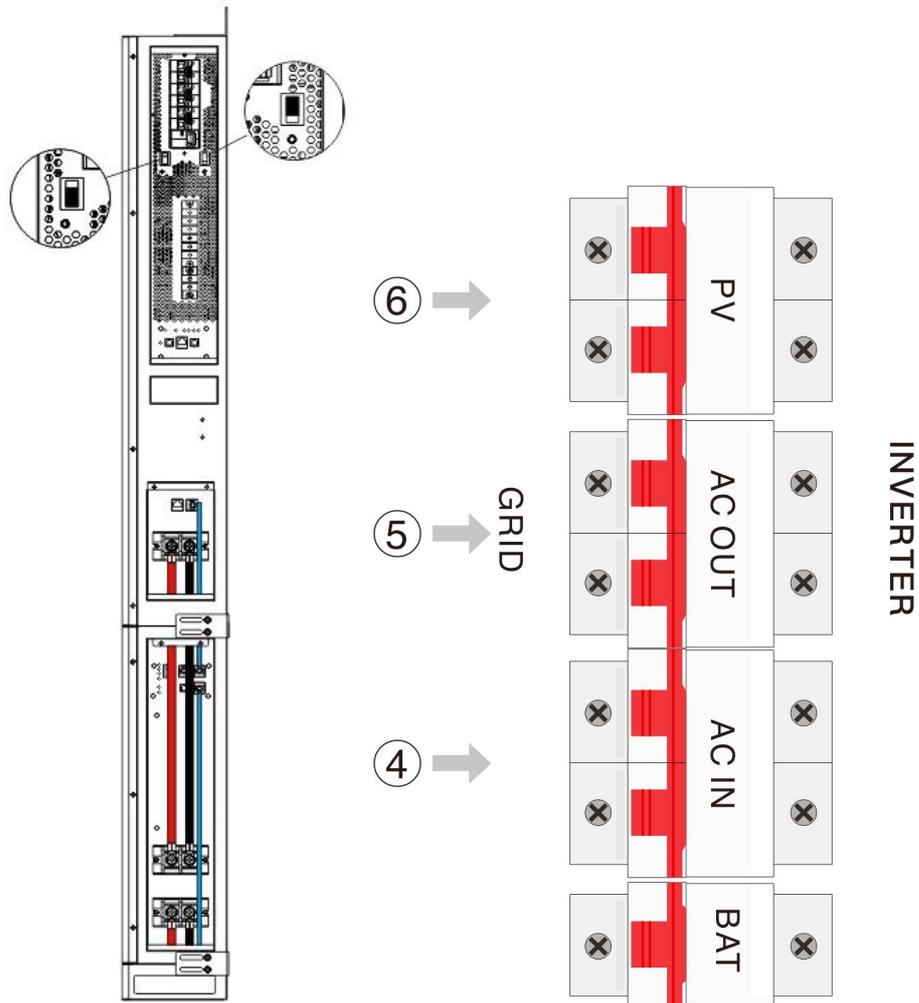


## 7.2.2 Switching On The Bidirectional Toggle Switch

If you choose to use inverter to supply power to the load, you need to flip the switch to the "INVERTER"side. When the gird power is cut off, the inverter can automatically switch to battery power supply. When there is gird power, the inverter automatically switches to bypass load.When there is gird power, if you want to carry a higher power load, you need to manually switch the bidirectional switch to the "GRID".

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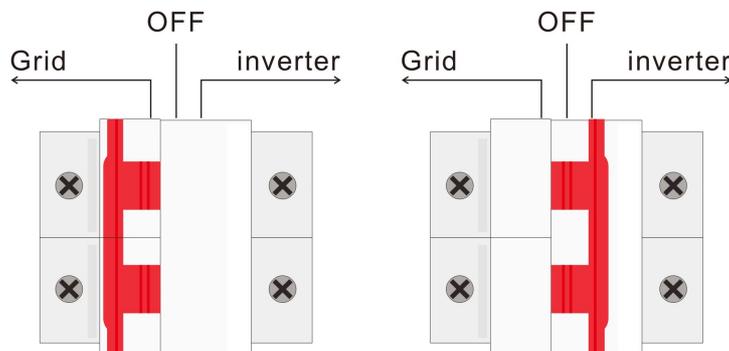
## 7.3 All-in-one LED And Button Function Description

After the power module works normally, the indicator lights are described as follows:
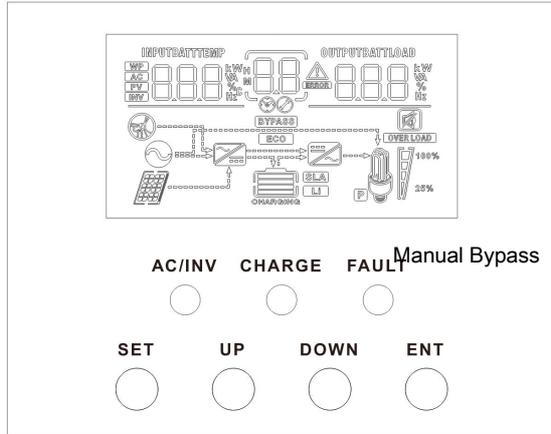


SR-EOT03S
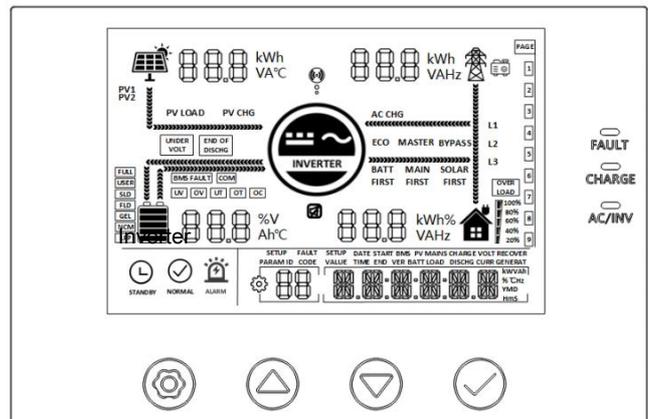


SR-EOT05S

Indicators introduction

| Indicator lights | Color | State | Description |
|---|---|---|---|
| AC/INV | Yellow | Always ON | Mains output |
| | | Blinking | Inverter output |
| CHARGE | Green | Blinking | The battery is being charged |
| | | Always ON | Charging is completed |
| FAULT | Red | Always ON | Fault state |

Operation buttons introduction

| Function buttons | Description |
|---|---|
| SET | Enter/Exit Settings menu |
| UP | Previous choice |
| DOWN | Next choice |
| ENT | Confirm/Enter Options under the settings menu |

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# 7.3.1 Real-time Data Viewing Method(SR-EOT03S )

## 7.3.1.1 Page Introduction
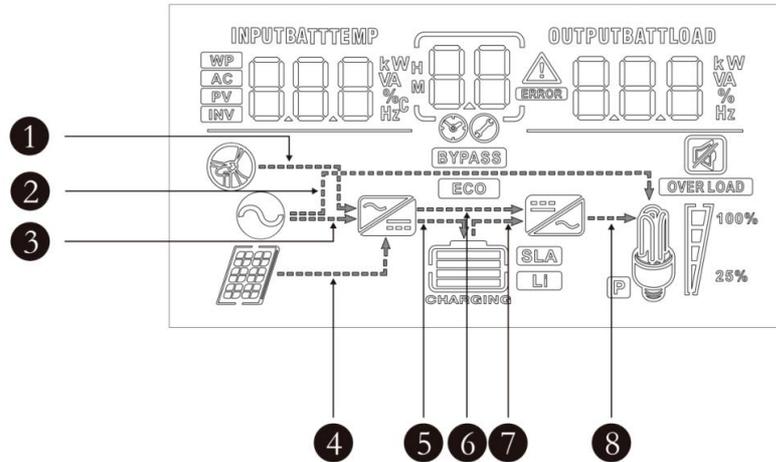


Serial number meaning

| ① The arrow is not displayed | ⑤ Indicates the charging circuit charging the battery terminal |
|---|---|
| ② Indicates the grid supplying power to the load | ⑥ The arrow is not displayed |
| ③ Indicates grid supplying power to the charging circuit | ⑦ Indicates the battery terminal supplying power to the inverter circuit |
| ④ Indicates PV module supplying power to the charging circuit | ⑧ Indicates the inverter circuit supplying power to the load |

Icon Meaning

| Icons | Functions | Icons | Functions |
|---|---|---|---|
| | Indicates that the AC input terminal has been connected to the grid | | Indicates that the inverter circuit is working |
| | Indicates that the AC input mode in APL mode (wide voltage range) | BYPASS | Indicates that the machine is in the Mains Bypass mode |
| | Indicates that the PV input terminal has been connected to the solar panel | OVER LOAD | Indicates that the AC output is in an overload state |
| | indicates that the remaining battery is 0%~24% | | indicates that the load percentage is 0%~24% |
| | indicates that the remaining battery is 25%~49% | | indicates that the load percentage is 25%~49% |

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| | indicates that the remaining battery is 50%~74% | | indicates that the load percentage is 50%~74% |
|---|---|---|---|
| | indicates that the remaining battery is 75%~100% | | indicates that the load percentage is ≥75% |
| Li | Indicates that the battery type of the machine is a lithium battery | | Indicates that the buzzer is not enabled |
| SLA | Indicates that the current battery type of the machine is a lead-acid battery | | Indicates that the machine has an alarm |
| CHARGING | Indicates that the battery is in charging state | ERROR | Indicates that the machine is in a fault condition |
| | Indicates that the AC/PV charging circuit is working | | Indicates that the machine is in setup mode |
| | Indicates that the AC output terminal has an AC voltage output | | The parameters displayed in the middle of the screen: 1. In the non-setup mode, the alarm or fault code is displayed. 2. In the setup mode, the currently set parameter item code is displayed. |

| Parameters display on the left side of the screen: input parameters | |
|---|---|
| AC | Indicates AC input |
| PV | Indicates PV input |
| INV | Indicates inverter circuit |
| WP | This icon is not displayed |
| INPUTBATTTEMP | Display battery voltage, battery charge total current, mains charge power, AC input voltage, AC input frequency, PV input voltage, internal heat sink temperature, software version |

| Parameters display on the right side of the screen: Output parameters | |
|---|---|
| INPUTBATTTEMP | Indicates output voltage, output current, output active power, output apparent power, battery discharge current, software version; in setup mode, displays the set parameters under the currently set parameter item code |
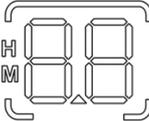
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**Real-time data viewing method**

On the LCD main screen, press the "UP" and "DOWN" buttons to scroll through the real-time data of the machine.

| N0. | Parameters on the left side of the screen | Parameters in the middle of the screen | Parameters on the right side of the screen |
|---|---|---|---|
| 1 | INPUT BATT V (Battery input voltage) | | OUTPUT LOAD V (Output load voltage) |
| 2 | BMS Battery Voltage | | BMS Battery SOC |
| 3 | PV TEMP ℃ (PV charger heatsink temperature) | | PV OUTPUT KW (PV output power) |
| 4 | PV INPUT V (PV input voltage) | | PV OUTPUT A (PV output current) |
| 5 | INPUT BATT A (Input battery current) | | OUTPUT BATT A (Battery output current) |
| 6 | INPUT BATT KW (Battery input power) | | OUTPUT BATT KW (Battery output power) |
| 7 | AC INPUT Hz (AC input frequency) | Fault code | AC OUTPUT LOAD Hz (AC output frequency) |
| 8 | AC INPUT V (AC input voltage) | | AC OUTPUT LOAD A (AC output load current) |
| 9 | INPUT V (For maintain) | | OUTPUT LOAD KVA (Load apparent power) |
| 10 | INV TEMP ℃ (AC charge or battery discharge heatsink temperature) | | INV OUTPUT LOAD KW (Load active power) |
| 11 | APP software version | | Bootloader software version |
| 12 | Model Battery Voltage Rating | | Model Output Power Rating |
| 13 | Model PV Voltage Rating | | Model PV Current Rating |

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## 7.3.1.2 Setup parameters description

Buttons operation instructions: Press the "SET" button to enter the setup menu and exit the setup menu. After entering the setup menu, the parameter number [00] will flash. At this point, press the "UP"and "DOWN" buttons to select the code of parameter item to be set. Then, press the "ENT" button to enter the parameter editing mode, and the value of the parameter is flashing. Adjust the value of the parameter with the "UP" and "DOWN" buttons. Finally, press the "ENT" button to complete the parameter editing and return to the parameter selection state.

| No. | Name | Setting options (Default) | Description |
|---|---|---|---|
| 00 | Exit setting menu | ESC | Exit the setup menu. |
| 01 | Work priority mode | SOL | PV priority mode, switching to mains when PV is ineffective or the battery is below the value set in parameter [04]. |
| | | UTI | Utility priority mode, switching to inverter only when utility power is not available. |
| | | SBU | Inverter priority mode, switching to mains only when the battery is undervoltage or below the value set in parameter [04]. |
| 02 | Output frequency | 50.0 | Bypass Adaptive, when there is mains power, it automatically adapts to the frequency when it is first connected to the mains. When there is no mains power, you can set the output frequency through this menu. 230V machine default 50HZ. |
| | | 60.0 | |
| 03 | AC input voltage range | APL | 230V machine wide range mains input voltage range: 90~280V. |
| | | UPS | 230V machine narrow range mains input voltage range: 170~280V. |
| 04 | Battery to mains | 48V | Parameter [01] = SOL/SBU, the battery voltage is lower than this setting value, the output is switched from inverter to mains, the setting range is 40V~52V. It can not be set higher than the value of [14] setting item. |
| 05 | Mains to battery | 55.2V | Parameter [01] = SOL/SBU, the battery voltage is higher than this setting value, the output is switched from mains to inverter, the setting range is 48V~60V. It cannot be set lower than the value of [04] and [35] setting items. |

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| No. | Name | Setting options (Default) | Description |
|-----|------|---------------------------|-------------|
| 06 | Charging mode | CSO | PV priority, mains charging only when PV is not effective. |
| | | CUB | Utility priority, PV charging only activated when utility power is outaged. |
| | | SNU | Hybrid charging with PV and utility, prioritizing PV charging, and when PV energy is insufficient, utility charging supplements. When the PV energy is sufficient, the utility stops charging. Note: Only when the utility bypass supply power to the load can the PV and utility be charged at the same time, when the inverter is working, only the PV charging can be started. |
| | | OSO | PV charging only, no mains charging. |
| 07 | Max. charging current | 100A | S series: 230V machine setting range 0~120A; |
| 08 | Battery type | USE | User-defined. All battery parameters can be set. |
| | | SLd | Sealed lead-acid battery, constant voltage charging voltage is 57.6V, float charging voltage is 55.2V. |
| | | FLd | Flooded lead-acid battery, constant voltage charging voltage is 58.4V, float charging voltage is 55.2V. |
| | | GEL | Gel lead-acid battery, constant voltage charging voltage is 56.8V, float charging voltage is 55.2V. |
| | | LFP16 | LF14/LF15/LF16 lithium iron phosphate batteries, corresponding to lithium iron phosphate batteries 14-series, 15-series and 16-series. The default constant voltage charging voltage of 14-series is 49.2V. The default constant voltage charging voltage of 15-series is 53.2V. The default constant voltage charging voltage of 16-series is 56.8V. They are all adjustable. |
| | | N13/N14 | Ternary lithium battery |
| 09 | Boost charging voltage | 56.8V | Boost charging voltage setting, setting range 48V~58.4V, step of 0.4V, valid when battery type is user-defined and lithium battery. |

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| No. | Name | Setting options (Default) | Description |
|---|---|---|---|
| 10 | Boost charging maximum time | 120 | Boost charging maximum time setting, refers to the constant voltage charging when the voltage reaches the parameter [09] setting voltage maximum charging time, set the range of 5min~900min, step of 5 minutes, valid when battery type is user-defined and lithium battery. |
| 11 | Float charging voltage | 56.8V | Float charging voltage, setting range: 48V~58.4V, step of 0.4V, valid when battery type is user-defined. |
| 12 | Over-discharge voltage | 46.8V | Over-discharge voltage, the battery voltage is lower than this judgement point, delay the time set by parameter [13], and then shut down the inverter output. Setting range 40V~48V, step of 0.4 V. Valid when battery type is user-defined and lithium battery. |
| 13 | Over-discharge delay time | 5S | Over-discharge delay time, when the battery voltage is lower than the parameter [12], the inverter output will shut down after delaying the time set in this parameter. The setting range is 5S~50S, step of 5S. Valid when battery type is user-defined and lithium battery. |
| 14 | Battery under-voltage alarm point | 48.4V | Battery under-voltage alarm point, when the battery voltage is lower than the judgment point, report under-voltage alarm, the output does not shut down. The setting range is 40V~52V, step of 0.4V. Valid when battery type is user-defined and lithium battery. |
| 15 | Battery discharging limit voltage | 46.4V | Battery discharging limit voltage, battery voltage is lower than this judgment point, the output will shut down immediately. Setting range 40V~52V, step of 0.4V. Valid when battery type is user-defined and lithium battery. |
| 16 | Equalization charging | DIS | Disable equalization charging. |
| | | ENA | Enable equalization charging, only for open lead-acid batteries and sealed lead-acid batteries |
| 17 | Equalize charging voltage | 58.0V | Equalized charging voltage, setting range 48V~58.4V, step 0.4V. Valid when battery type is flooded lead-acid battery and sealed lead-acid battery. |
| 18 | Equalize charging time | 120 | Equalized charging time, setting range 5min~900min, step of 5 minutes. Valid when battery type is flooded lead-acid battery and sealed lead-acid battery. |

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| No. | Name | Setting options (Default) | Description |
|---|---|---|---|
| 19 | Equalize charging delay | 120 | Equalized charging delay, setting range 5min~900min, step of 5 minutes. Valid when battery type is flooded lead-acid battery and sealed lead-acid battery. |
| 20 | Equalize charging derating time | 30 | Equalized charging derating time, 0~30days in 1 day steps, valid when battery type is flooded lead-acid battery and sealed lead-acid battery. |
| 21 | Equalize charging enable | DIS | Stop equalisation charging immediately. |
| | | [21] ENA | Start equalisation charging immediately. |
| 22 | Energy-saving Mode | DIS | Disable energy-saving mode. |
| | | [22] ENA | After enabling the energy-saving mode, if the load is empty or lower than 50W, the inverter output will shut down the output after delaying for a period of time. When the load is higher than 50W, the inverter will start automatically. |
| 23 | Automatic overload restart | [23] DIS | Disable automatic overload restart. If an overload occurs shutting down the output, the machine will no longer power up. |
| | | ENA | Enable automatic overload restart. If overload occurs to shut down the output, the machine delays for 3 minutes and then restarts the output. After accumulating 5 times, it will not restart the machine again. |
| 24 | Automatic over-temperature restart | [24] DIS | Disable automatic restart in case of over-temperature, if over-temperature occurs to shut down the output the machine will no longer switch on the output. |
| | | ENA | Enable automatic over-temperature restart, if over-temperature occurs to shut down the output, it will restart to switch on the output when the temperature drops down. |
| 25 | Buzzer alarm | DIS | Disable alarm. |
| | | [25] ENA | Enable alarm. |
| 26 | Mode change alert | [26] DIS | Disable alarm when the state of the main input source changes. |
| | | ENA | Enable alarm when the state of the main input source changes. |
| 27 | Inverter | [27] DIS | Disable automatic switching to mains when the inverter is overloaded. |

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| No. | Name | Setting options (Default) | Description |
|---|---|---|---|
| | overload to bypass | ENA | Enable automatic switching to mains when inverter is overloaded. |
| 28 | Max. AC charging current | 60A | Max. charging current setting for AC charging: 0~80A. |
| 30 | Machine address settings | 1 | Setting range: 1-254. |
| 32 | RS485 communication | [32] SLA | RS485 port for PC and remote monitoring. |
| | | CAN | CAN port for BMS communication function. |
| 33 | BMS communication protocols | UZE | CAN protocol for CAN communication. |
| 35 | Battery under-voltage recovery point | 52V | When the battery is under-voltage, the battery voltage needs to be greater than this setting to restore the battery inverter AC output. |
| 36 | Max. PV charging current | 60A | Max. PV charging current setting range：0~60A. |
| 37 | Recharge recovery point after battery is full | 52.8V | When the battery is fully charged, the inverter stops charging and resumes charging when the battery voltage falls below this voltage value. |
| 38 | AC output voltage setting (standby mode only) | 230Vac | **S series models：** 200/208/220/230/240Vac can be set, default 230Vac. AC output power = rated power * (setting voltage value/230) |
| 39 | Charge current limiting method (when BMS is enabled) | SET | Max. battery charging current not greater than the value of setting 【07】 |
| | | BMS | Max. battery charging current not greater than the limit value of BMS |
| | | INV | Max. battery charging current not greater than the logic judgements value of the inverter. |
| 57 | Stop charging current | 2A | Charging stops when the default charging current is less than this setting |
| 58 | Discharge alarm SOC | 15% | SOC alarm when capacity is less than this set value (valid when BMS communication is normal) |

| No. | Name | Setting options (Default) | Description |
|---|---|---|---|
| | setting | | |
| 59 | Cut-off discharge SOC Settings | 5% | Stops discharging when the capacity is less than this setting (valid when BMS communication is normal) |
| 60 | Cut-off charge SOC Settings | 100% | Stops charging when capacity is greater than or equal to this setting (valid when BMS communication is normal) |
| 61 | Switch to mains SOC Settings | 10% | Switch to mains when capacity is less than this setting (valid when BMS communication is normal) |
| 62 | Switch to inverter output SOC Settings | 95% | Switches to inverter output mode when capacity is greater than or equal to this setting (valid when BMS communication is normal) |

## 7.3.2 Real-time Data Viewing Method(SR-EOT05S)

## 7.3.2.1 Page Introduction
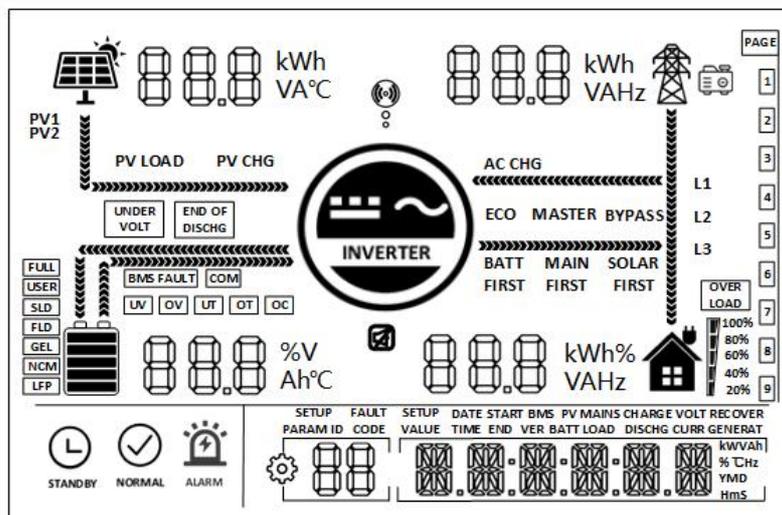


| Icon | function | Icon | function |
|---|---|---|---|
| | Indicates mains power | | Indicates the inverter is working |
| | Indicates generator | | Indicates home appliances |
| | Indicates solar power | OVER LOAD | Indicates AC output is overload |

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| | | | |
|---|---|---|---|
|  | ⬜Battery remaining capacity is below 5%<br>▢Battery remaining capacity is 5%~19%<br>▬Battery remaining capacity is 20%~39%<br>▤Battery remaining capacity is 40%~59%<br>▥Battery remaining capacity is 60%~79%<br>▦Battery remaining capacity is 80%~100% |  | Load percentage is below 5%<br>Load percentage is 5%~19%<br>Load percentage is 20%~39%<br>Load percentage is 40%~59%<br>Load percentage is 60%~79%<br>Load percentage is 80%~100% |
|  | Indicates that the machine is communicating with the Surveillance Equipment |  | Indicates that the buzzer is not enabled |
| FULL | Indicates that the battery is fully charged | USER | Indicates that the current battery type of the machine is user-defined |
| SLD | Indicates that the current battery type of the machine is sealed lead-acid battery | FLD | Indicates that the current battery type of the machine is flooded lead-acid battery |
| GEL | Indicates that the current battery type of the machine is gel battery | NCM | Indicates that the current battery type of the machine is NCM battery |
| LFP | Indicates that the current battery type of the machine is LFP battery | PAGE | Display the page number prompt of the main interface |
| 1 2 3 4 5 6 7 8 9 | | Indicates the data page of the main display interface | |
| STANDBY | Indicates that the machine is currently idle | NORMAL | Indicates that the machine is currently in normal operation |
| ALARM | Indicates that the machine is currently in an alarm or fault state | ⚙ | Indicates that the machine is currently in the parameter setting state |
| PV LOAD | Indicates that the PV is in a direct load state | PV CHG | Indicates that the PV is in a state of charge |
| AC CHG | Indicates that the AC is in a state of charge | BYPASS | Indicate that the Mains Power is in the bypass state |

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| | | | |
|---|---|---|---|
| ECO | Indicates that the system is enabled in the ECO mode | BATT FIRST | Indicates that the output mode is Battery First |
| MAIN FIRST | Indicates that the output mode is Mains Power first | SOLAR FIRST | The indicated output mode is Solar First. |
| UNDER VOLT | Indicates battery under voltage | END OF DISCHG | Indicates battery overvoltage |
| COM | Indicates internal communication failure | UV | Indicates system under voltage |
| OV | Indicates system over voltage | UT | Indicates system low temperature |
| OT | Indicates system over temperature | OC | Indicates system over current |
| BMS FAULT | Indicates BMS communication failure | »»»»»»»» | Indicates the direction of energy flow |
| 88 | When the system is in alarm or fault state, the main interface displays fault code; display setting options when setting | 88.8 | Display parameters of PV, battery, mains power and load |
| SETUP DATE START BMS PV MAINS CHARGE VOLT RECOVER VALUE TIME END VER BATT LOAD DISCHG CURR GENERAT kWVAh %℃Hz YMD HmS | | Main Interface: display real-time time, date, total PV power generation, total load power consumption, RS485 address, version number Setting Interface: display setting contents | |
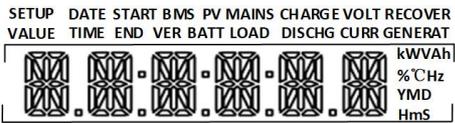
On the LCD main screen, press the "UP" and "DOWN" buttons to scroll through the real-time data of the machine.

| Page | PV side parameters | Battery side parameters | Mains side parameters | Load side parameters | Comprehensive parameters |
|---|---|---|---|---|---|
| 1 | PV Voltage | Battery Voltage | AC Voltage | Load Voltage | Current Time |
| 2 | PV Current | Battery Current | AC Current | Load Current | Current Date |
| 3 | PV Power | BMS Batt SOC | AC Power | Load Power | PV Total kWh |
| 4 | PV Today kWh | BMS Batt Voltage | Reserved | Load Today kWh | Load Total kWh |
| 5 | PV Temperature | INV Temperature | AC Frequency | Load Frequency | RS485 Address |
| 6 | Maintenance Parm | Battery Rated Voltage | Reserved | Load kVA | Soft Version |
| 7 | PV Rated Voltage | Battery Rated Current | Reserved | Load Rated Power | Parallel Mode |

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## 7.3.2.2 Setup Parameters Description

Key Operation Instructions: Enter the setting menu and exit the set ting menu, please press"SET", After entering the setting menu, the parameter number [00] will flash. At this time, you can press the"UP"and "DOWN" key to select the parameter code to be set. Then press"ENT"to enter the parameter editing state, at this time, the value of the parameter flashes, adjust the value of the parameter through the"UP"and "DOWN", and finally press "ENT"to complete the editing of the parameter and return to the parameter selection state.

| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| 00 | Exit | ESC | Menu of Exit Settings |
| 01 | Supply Priority Mode | AC1ST | Mains Power First Mode, switch to the Inverter only when the Mains Power has failed |
| | | BT1ST | Inverter First Mode: switch to Mains Power only when the battery is under-voltage or lower than Parameter [04] Set Value. |
| | | PV1ST | Solar First Mode: switch to Mains Power when PV has failed or battery is lower than Parameter [04] Set Value. |
| 02 | Output Frequency | 50.0 | Bypass self-adaptation; when the mains is connected, it automatically adapts to the mains frequency; when the mains is disconnected, the output frequency can be set through this menu. The default output frequency of the 230V machine is 50HZ, and the 120V machine is 60HZ. |
| | | 60.0 | |
| 03 | AC Input Voltage | UPS | The input mains voltage range of 230V machine is 170~280V. Mains input voltage range of 120V machine: 90~140V |
| | | APL | The input mains voltage range of 230V machine is 90~280V. Mains input voltage range of 120V machine: 90~140V |
| 04 | Battery to Mains | 48.0V | When the Parameter [01] = BT1ST/PV1ST, the battery voltage is lower than the set value, and the output is switched from inverter to Mains Power, and the set range is 40V~52V. |
| 05 | Mains to Battery | 55.2V | When the Parameter [01] = BT1ST/PV1ST, the battery voltage is higher than the set value, and the output is |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| | | | switched from mains to inverter, and the set range is 48V~60V. |
| 06 | Charging mode | Hybrid | Hybrid charging by PV and under utility grid give priority to PV, and use utility grid for supplementary if PV energy is insufficient. When the PV energy is sufficient, the utility grid will stop charging. Note: PV and utility grid are available for charging at the same time only when the bypass output is loaded, and only PV charging can be activated when the inverter is working. |
| | | AC1ST | The Mains Power is charged first, and PV charging is started only when the Mains Power has failed |
| | | PV1ST | Priority shall be given to charging by PV and mains charging will be initiated only when the PV has failed. |
| | | ONLYPV | Only PV charging, no mains charging is enabled. |
| 07 | Maximum Charging Current | 100A | Set Range of 0~100A |
| 08 | Battery type | LFP16 | LFP14/LFP15/LFP16 are corresponding to Battery Series of 14, 15 and 16, and their default constant charge voltages are 49.6V, 53.2V and 56.8V respectively, which can be adjusted. |
| | | NCM13/NCM14 | NCM lithium battery, adjustable |
| 09 | Boost Voltage | 56.8V | Setting of Boost Voltage: Set Range of 48V~58.4V, Step 0.4V, available when the battery type is user-defined and lithium battery. |
| 10 | Maximum Boost Duration | 120 | Setting of Maximum Boost Duration, which is the maximum charging time when the voltage reaches the Parameter [09] when charging at constant voltage, with the Set Range of 5min~900min, and Step of 5mim. It is available when the battery type is user-defined and lithium battery. |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| 11 | Float charge voltage | 56.8V | Floating Charge Voltage, with the Set Range of 48V~58.4 V, Step of 0.4 V, and available when battery type is user-defined. |
| 12 | Over-discharge voltage | 46.4V | Over-discharge Voltage: the battery voltage is lower than such criterion, and the Inverter output is turned off after the time delay parameter is set to [13], with the Set Range of 40V~48V and Step of 0.4V. available when the battery type is user-defined and lithium battery. |
| 13 | Over discharge Delay Time | 5S | Over-discharge Delay Time: when the battery voltage is lower than the Parameter [12], the inverter output is turned off upon delay of time set by this Parameter, with the Set Range of 5S~50S, Step of 5S, available when the battery type is custom and lithium battery. |
| 14 | Battery under voltage alarm point | 49.6V | Battery under-voltage alarm point: when the battery voltage is lower than such criterion, under-voltage alarm will be given, the output will not be shut down, with the Set Range of 40V~52V, Step of 0.4V, available when battery type is user-defined and lithium battery. |
| 15 | Battery Discharge Limit Voltage | 44.8V | Battery Discharge Limit Voltage: the battery voltage is lower than such criterion, output   and shut down immediately. Set Range of 40V~52V, Step of 0.4V, available when the battery type is user-defined and lithium battery. |
| 16 | Equalization charge | DIS | No equalization charging |
| | | ENA | Enable equalization charging, only Flooded lead-acid batteries, sealed lead-acid batteries and user-defined are effective |
| 17 | Equalization Voltage | 58V | Equalization Charging Voltage, with the Set Range of 48V~58V, Step of 0.4V, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined |
| 18 | Equalization Charging Time | 120 | Equalization Charging Time, with the Set Range of min~900min, Step of 5min, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined |
| 19 | Equalized Charging Delay | 120 | Equalization Charging Delay, with the Set Range of min~900min, Step of 5min, available for Flooded lead- |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| | | | acid battery, sealed lead-acid battery and user-defined |
| 20 | Equalization Charge Interval Time | 30 | Equalization Charge Interval Time, 0~30d, Step of 1d, available for Flooded lead-acid battery, sealed lead-acid battery and user-defined |
| 21 | Equalization Charging Start-Stop | ENA | Start equalization charging immediately |
| | | DIS | Stop equalization charging immediately |
| 22 | ECO mode | DIS | NO ECO mode |
| | | ENA | When the ECO mode is enabled, if the load is below 50W, the inverter output is delayed for 5 minutes and then the output is turned off. When the hull switch is pressed to the "OFF" State, and then pressed to the "ON" State, the inverter will resume the output |
| 23 | Overload Automatic Restart | DIS | Overload automatic restart is disabled. If overload occurs, the output will be shut down, and the machine will not be restarted. |
| | | ENA | Enable overload auto restart. If overload occurs, shut down output, delay the machine for 3 min and then restart the output. After 5 times in total, no startup will be resumed. |
| 24 | Auto restart upon over-temperature | DIS | Over-temperature automatic restart is disabled. If over-temperature occurs, the output will be shut down, and the machine will not be restarted for output. |
| | | ENA | Enable automatic restart upon over-temperature. If over-temperature occurs, shut down output, and restart output after the temperature has dropped. |
| 25 | Buzzer Alarm | DIS | No Alarm |
| | | ENA | Enable alarm |
| 26 | Mode Change Reminder | DIS | Alarm is disabled when the status of the main input source has change. |
| | | ENA | Alarm is disabled when the status of the main input source has change. |
| 27 | Inverter Overload to Bypass | DIS | Automatic switch to Mains Power is disabled when the Inverter is overloaded. |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| | | ENA | Automatic switch to Mains Power when the inverter is overloaded. |
| 28 | Current of charging under grid electricity | 60A | AC output 230Vac, with the Set Range of 0~60A |
| | | 40A | AC output 120Vac, with the Set Range of 0~40A |
| 30 | RS485 Address Setting | 1 | RS485 communication address can be set within the range of 1~254 |
| 31 | AC output mode (can be set in the standby mode only) | SIG | Single machine setting （for S & U model） |
| | | PAL | Single-phase parallel connection setting ( for S & U model ) |
| | | [31] 2P0/2P1/2P2 | Split-phase parallel connection setting ( for U model ) |
| | | When the parameter [38] setting item=120 for U series model. All connected P1-phase inverters are set to "2P0" : 1) If all connected P2-phase inverters are set to "2P1", AC output line voltage difference is 120 degrees (L1-L2), line voltage is 120*1.732= 208Vac; Phase voltage is 120Vac (L1-N; L2-N). 2) If all connected P2-phase inverters are set to "2P2", AC output line voltage difference is 180 degrees (L1-L2), line voltage is 120*2= 240Vac; Phase voltage is 120Vac (L1-N; L2-N). | |
| | | [31] 3P1/3P2/3P3 | Three-phase parallel connection setting ( for S & U model ) |
| | | All machines in phase 1 must be set as 【3P1】 All machines in phase 2 must be set as 【3P2】 All machines in phase 3 must be set as 【3P3】 1.When the output voltage set in the setting 【38】 is 120 Vac (U model) At present the line voltage between L1 in phase 1 and L2 in phase 2 is 120*1.732 = 208 Vac, similarly the line voltage between L1-L3, L2-L3 is 208 Vac; the single phase voltage between L1-N, L2-N, L3-N is 120 Vac. 2.When the output voltage set in the setting 【38】 is 230Vac (S model) At present the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is 230*1.732 = 398Vac, and similarly the line voltage | |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| | | | between L1-L3, L2-L3 is 398Vac; the single phase voltage between L1-N, L2-N, L3-N is 230Vac. |
| 32 | Communication function | SLA | RS485-2 port for PC or telecommunication control. |
| | | 485 | RS485-2 port for 485-BMS communication. |
| 33 | BMS communication protocol | When [32] enables BMS communication, the corresponding lithium battery manufacturer brand should be selected for communication | |
| | | PAC=PACE，RDA=Ritar，AOG=ALLGRAND，OLT=OLITER，HWD=SUNWODA, DAQ=Dyness, WOW=SRNE, PYL=PYLONTECH，UOL=WEILAN | |
| 34 | PV grid-connected power generation function | DIS | Disable this Function |
| | | TOGRID | In the utility bypass state, when no battery is connected or when the battery is full, the surplus PV energy is fed back to the grid. |
| | | TOLOAD | In the utility bypass state, when no battery is connected or when the battery is full, the load power is supplied by the hybrid of PV and the utility. |
| 35 | Battery Under-voltage Recovery Point | 52V | When the battery is under-voltage, the battery voltage should be greater than this set value to restore the inverter AC output of the battery, and the set range is 44V~54.4V. |
| 36 | Max PV charger current | 100A | Max PV charger current. Setting range: 0~100A |
| 37 | Battery Recharge Recovery Point | 52.8V | After the battery is fully charged, the inverter will stop charging, and when the battery voltage is lower than this Value, the Inverter will resume charging again. And the set range is 44V~54V. |
| 38 | AC Output Rated Voltage | 230Vac | You can set: 200/208/220/240Vac |
| | | 120Vac | You can set: 100/105/110/120Vac |
| 39 | Charge current limiting method (when BMS is enabled) | LC SET | Max. battery charging current not greater than the value of setting 【07】 |
| | | LC BMS | Max. battery charging current not greater than the limit value of BMS |
| | | LC INV | Max. battery charging current not greater than the logic judgements value of the inverter. |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| 40 | 1-section start charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 41 | 1-section end charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 42 | 2-section start charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 43 | 2-section end charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 44 | 3-section start charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 45 | 3-section end charging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 46 | Sectional charging function | DIS | Disable this Function |
| | | [46] ENA | After the sectioned charging function is enabled, the power supply mode will change to BT1ST, and system will enable the mains power charging only in the set charging period or battery over discharge; If the sectioned discharge function is enabled at the same time, the power supply mode of the system will change to AC1ST, which only enable the mains charging in the set charging period, and switch to the battery inverter power supply mode in the set discharge period or when the mains power is off |
| 47 | 1-section start discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 48 | 1-section end discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 49 | 2-section start discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 50 | 2-section end discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 51 | 3-section start discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |
| 52 | 3-section end discharging time | 00:00:00 | Set Range: 00: 00-23: 59: 00 |

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| Parameter Number | Parameter Name | Setting options (Default) | Description |
|---|---|---|---|
| 53 | Sectional discharge function | DIS | Disable this Function |
|  |  | ENA | After the sectioned discharge function is enabled, the power supply mode will change to AC1ST and the system will switch to battery inverter power supply only during the set discharge period or when the mains power is off |
| 54 | Current date setting | 00:00:00 | Set Range: 00:01: 01-99:12:31 |
| 55 | Current time setting | 00:00:00 | Set Range: 00:00: 00-23:59: 59 |
| 56 | Leakage protection function | DIS | Disable this Function |
|  |  | ENA | Enable leakage protection function |
| 57 | Stop charging current | 2A | Charging stops when the default charging current is less than this setting |
| 58 | Discharge alarm SOC setting | 15% | SOC alarm when capacity is less than this set value (valid when BMS communication is normal) |
| 59 | Cut-off discharge SOC Settings | 5% | Stops discharging when the capacity is less than this setting (valid when BMS communication is normal) |
| 60 | Cut-off charge SOC Settings | 100% | Stops charging when capacity is greater than or equal to this setting (valid when BMS communication is normal) |
| 61 | Switch to mains SOC Settings | 10% | Switch to mains when capacity is less than this setting (valid when BMS communication is normal) |
| 62 | Switch to inverter output SOC Settings | 95% | Switches to inverter output mode when capacity is greater than or equal to this setting (valid when BMS communication is normal) |

## 7.3.2.2 Time-slot Charging/Discharging Function (SR-EOT05S only)

The series is equipped with a time-slot charging and discharging function, which allows users to set different charging and discharging periods according to the local peak and valley tariffs, so that the utility power and PV energy can be used rationally.

When mains electricity is expensive, the battery inverter is used to carry the load; when the mains electricity is cheap, the mains electricity is used to carry the load and charge, which can help customers to save electricity costs to the greatest extent.

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The user can turn on/off the time-slot charging/discharging function in setup menu parameter 46 and 53.and set charging and discharging slot in parameter 40-45, 47-52. Below are examples for users to understand the function.

⚠️ **CAUTION**  Before using this function for the first time, please set the local time in parameter items 54, 55, then the user can set the corresponding time slot according to the local peak and valley tariff charges.



Peak–Valley Electricity Tariff
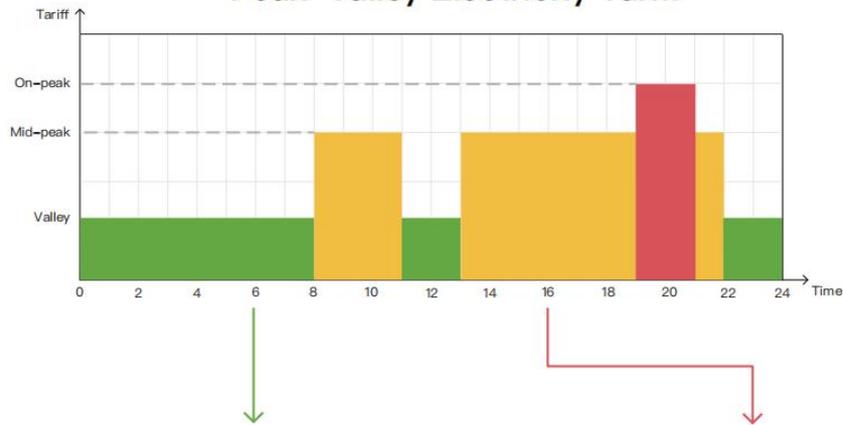
**Time–slot Utility Charging/Carrying Function**

With 3 definable periods, the user can freely set the mains charging/carrying time within the range of 00:00 to 23:59. During the time period set by the user, if PV energy is available, PV energy will be used first, and if PV energy is not available or insufficient, utility energy will be used as a supplement.

**Time-slot Battery Disacharging Function**

With 3 definable time periods, users can freely set the battery discharge time within the range of 00:00 to 23:59. During the time period set by the user, the inverter will give priority to the battery inverter to carry the load, and if the battery power is insufficient, the inverter will automatically switch to mains power to ensure stable operation of the load.

## 7.4 Protective Function

| No. | Protections | Description |
|---|---|---|
| 1 | PV current/power limiting protection | When charging current or power of the PV array configured exceeds the PV rated, it will charge at the rated. |
| 2 | PV night reverse-current protection | At night, the battery is prevented from discharging through the PV module because the battery voltage is greater than the voltage of PV module. |
| 3 | Mains input over voltage protection | When the mains voltage exceeds 280V (230V model) , the mains charging will be stopped and switched to the inverter mode. |

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| 4 | Mains input under voltage protection | When the mains voltage is lower than 170V (230V model / UPS mode), the mains charging will be stopped and switched to the inverter mode. |
|---|---|---|
| 5 | Battery over voltage protection | When the battery voltage reaches the overvoltage disconnection point, the PV and the mains will be automatically stopped to charge the battery to prevent the battery from being overcharged and damaged. |
| 6 | Battery low voltage protection | When the battery voltage reaches the low voltage disconnection point, the battery discharging will be automatically stopped to prevent the battery from being over-discharged and damaged. |
| 7 | Load output short circuit protection | When a short-circuit fault occurs at the load output terminal, the AC output is immediately turned off and turned on again after 1 second. |
| 8 | Heat sink over temperature protection | When the internal temperature is too high, the machine will stop charging and discharging; when the temperature returns to normal, charging and discharging will resume. |
| 9 | Overload protection | Output again 3 minutes after an overload protection, and turn the output off after 5 consecutive times of overload protection until the machine is re-powered. For the specific overload level and duration, refer to the technical parameters table in the manual. |
| 10 | PV reverse polarity protection | When the PV polarity is reversed, the machine will not be damaged. |
| 11 | AC reverse protection | Prevent battery inverter AC current from being reversely input to bypass. |
| 12 | Bypass over current protection | Built-in AC input overcurrent protection circuit breaker. |
| 13 | Battery input over current protection | When the discharge output current of the battery is greater than the maximum value and lasts for 1 minute, the AC input would switched to load. |
| 14 | Battery input protection | When the battery is reversely connected or the inverter is short-circuited, the battery input fuse in the inverter will blow out to prevent the battery from being damaged or causing a fire. |
| 15 | Charge short-circuit protection | When the external battery port is short-circuited in the PV or AC charging state, the inverter will protect and stop the output current. |

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## 7.5 Install The Cover Plate

When all wiring is complete and the system is operating normally, close the side cover.
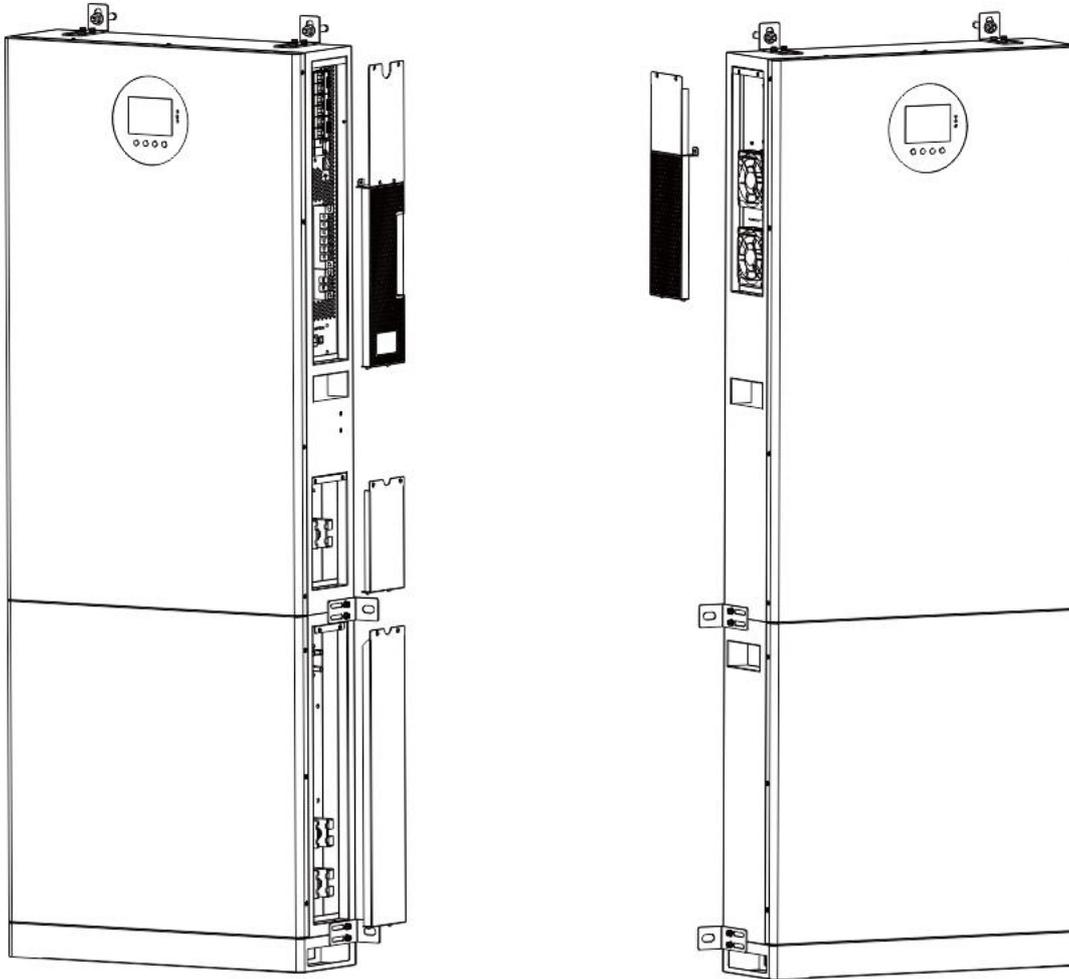


# 8 System Maintenance

## 8.1 System Power-Off

⚠️ **CAUTION** After the system is powered off, the case still has residual power and heat, which may cause electric shocks or burns. Therefore, protective gloves should be worn before operating the energy storage 5 minutes after the system is powered off. Maintenance operations on energy storage should be performed only after ensuring that all indicator lights of the energy storage are off.

Power-off operation steps of the system:

Step 1 Turn off the breaker switch between the inverter and AC output (If installed).

Step 2 Turn off the breaker switch between the inverter unit and AC input(If installed).

Step 3 Turn off the breaker switch between the inverter unit and the PV string(If installed).

Step 4 Turn off the battery breaker switch, all LED indicators are off.

Step 5 Turn off button on all storage battery modules, the energy storage is powered off successfully.

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## 8.2 Routine Maintenance

To ensure the long-term and good operation of the energy storage system, it is recommended to perform the routine maintenance as described in this section.

| Items | Methods | Maintenance interval |
|---|---|---|
| System cleanliness | Check if the radiator is covered or dirt on a regular basis. | Once every six months to one year. |
| Running status of system | • Observe whether the energy storage appearance is damaged or deformed.<br>• Listen to whether the energy storage has any abnormal sound during running.<br>• When the energy storage is running, check whether the indicator of the energy storage battery is correct. | Once every six months. |
| Electrical connection | • Check if any cable connection is off or loose.<br>• Check if any cable is damaged, and especially if there are cuts on the sheath where the cable contacts with the metal surface.<br>• Check if the unused DC input terminals, energy storage terminals, COM ports, and covers are locked. | Half a year after first debugging and testing, and once every six months to one year thereafter. |
| Grounding reliability | Check if the grounding cable is grounded reliably. | Half a year after first debugging and testing, and once every six months to one year thereafter. |

## 8.3 Troubleshooting

### 8.3.1 Fault Code and Handling Methods

| Fault code | Fault name | Whether it affects the output or not | Description |
|---|---|---|---|
| 【01】 | BatVoltLow | No | Battery undervoltage alarm |
| 【02】 | BatOverCurrSw | Yes | Battery discharge average current overcurrent software protection |
| 【03】 | BatOpen | Yes | Battery not-connected alarm |
| 【04】 | BatLowEod | Yes | Battery undervoltage stop discharge alarm |
| 【05】 | BatOverCurrHw | Yes | Battery overcurrent hardware protection |
| 【06】 | BatOverVolt | Yes | Charging overvoltage protection |
| 【07】 | BusOverVoltHw | Yes | Bus overvoltage hardware protection |
| 【08】 | BusOverVoltSw | Yes | Bus overvoltage software protection |

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| 【09】 | PvVoltHigh | No | PV overvoltage protection |
|---|---|---|---|
| 【10】 | PvBuckOCSw | No | Buck overcurrent software protection |
| 【11】 | PvBuckOCHw | No | Buck overcurrent hardware protection |
| 【12】 | bLineLoss | No | Mains power down |
| 【13】 | OverloadBypass | Yes | Bypass overload protection |
| 【14】 | OverloadInverter | Yes | Inverter overload protection |
| 【15】 | AcOverCurrHw | Yes | Inverter overcurrent hardware protection |
| 【17】 | InvShort | Yes | Inverter short circuit protection |
| 【19】 | OverTemperMppt | No | Buck heat sink over temperature protection |
| 【20】 | OverTemperInv | Yes | Inverter heat sink over temperature protection |
| 【21】 | FanFail | Yes | Fan failure |
| 【22】 | EEPROM | Yes | Memory failure |
| 【23】 | ModelNumErr | Yes | Model setting error |
| 【26】 | RlyShort | Yes | Inverted AC Output Backfills to Bypass AC Input |
| 【29】 | BusVoltLow | Yes | Internal battery boost circuit failure |
| 【30】 | BatSocLow1 | No | Battery Soc < 10% |
| 【31】 | BatSocLow2 | No | Battery Soc < 5% |
| 【32】 | BatSocLowStop | Yes | Battery Soc < 1%,Turn off the inverter |
| 【44】 | Serial number error | Yes | If the serial number is not set by omission in production, please contact the manufacturer to set it |
| 【58】 | BMS communication error | No | Check whether the communication line is connected correctly and whether [33] is set to the corresponding lithium battery communication protocol |
| 【59】 | BMS alarm | No | Check the BMS fault type and troubleshoot battery problems |
| 【60】 | BmsBatTempLow | No | Battery low temperature warning |
| 【61】 | BmsBatTempHigh | No | Battery high temperature warning |
| 【62】 | BmsBatOverCurr | No | Battery over current warning |
| 【63】 | BmsBatVoltLow | No | Battery low voltage warning |
| 【64】 | BmsBatFullCharge | No | The battery is fully charged, and if the fault indicator lights up at the same time, the battery overvoltage warning. |

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## 8.3.2 Common Faults and Handling Methods

| Fault code | Fault | Measures |
|---|---|---|
| Display | No display on the screen | Check if the battery air switch or the PV air switch has been closed; if the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode. |
| 【06】 | Battery overvoltage protection | Measure if the battery voltage exceeds rated, and turn off the PV array air switch and mains air switch. |
| 【01】 【04】 | Battery undervoltage protection | Charge the battery until it returns to the low voltage disconnection recovery voltage. |
| 【30】 【31】 【32】 【63】 | Battery low capacity alarm | Charge the battery until it returns to the recovery capacity. |
| 【21】 | Fan failure | Check if the fan is not turning or blocked by foreign object. |
| 【19】 【20】 | Heat sink over temperature protection | When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed. |
| 【13】 【14】 | Bypass overload protection, Inverter overload protection | ① Reduce the use of power equipment; ② Restart the unit to resume load output. |
| 【17】 | Inverter short-circuit protection | ① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output. |
| 【09】 | PV over-voltage | Use a multimeter to check if the PV input voltage exceeds the maximum allowable input voltage rated. |
| 【03】 | Battery disconnected alarm | Check if the battery is not connected or if the battery circuit-breaker is not closed. |
| 【26】 | Inverted AC output backfills to bypass AC input | Disconnect the AC input, PV input and battery input. After the screen is off, only connect the battery and start up. If fault 26 is reported, it indicates that the AC input relay switch is short-circuited, and you need to contact the manufacturer to replace it. |

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# 8.4 Battery Storage and Maintenance

## 8.4.1 Battery Storage Requirements



Do not put the battery into fire. The battery may explode.

Do not open or damage the battery. The electrolyte flowing out from the battery is harmful to the skin and eyes. The electrolyte may also be toxic;

1. When being stored, the batteries shall be placed correctly in accordance with the marks on the packing case. Do not put them upside down or on the side.

2. When stacking up the battery packing cases, the stacking requirements on the outer package shall be met.

3. The batteries should be handled with care, and damage to batteries should be strictly prohibited.

4. Requirements for the storage environment:

– Ambient temperature: -10℃ to 55 ℃, recommended storage temperature: 20℃ to 30℃.

– Relative humidity: 5%RH-80%RH.

– Dry, well ventilated, and clean.

– The corrosive organic solvents, gases and other substances shall be kept away.

– Exposing to direct sunlight shall be avoided.

– The distance from the heat source should not be less than two meters.

5. When being stored, the battery shall be disconnected from the external connection. If there is an indicator light on the battery panel, the indicator light shall be off.

6. When the stored batteries are going to be delivered, the first-in first-out principle should be followed.

7. After the battery is produced and tested, it shall be recharged to at least 50% SOC before being stored. If the device will not be used for a long period of time, discharge the battery to 45% to 60% of the battery capacity and disconnect the battery output to avoid the battery runs out;

8. Do not touch the battery pack with wet hands.

9. Do not squeeze, drop, or pierce the battery.

10. The battery should always be disposed in accordance with local safety regulations.

11. The battery should be stored and recharged in accordance with this User's Manual.

12. Do not reverse polarity of the battery when storing or transporting the batteries, the batteries shall not be stacked up without protective packaging, and the number of stacked packed batteries should not exceed the number specified on the packaging.

13. All operators of the energy storage system shall comply with the user manual, installation and service manual, and quality assurance requirements. Any damage to the device resulting from neglecting or misreading of the user's manual, installation and service manual, and the quality assurance requirements will invalidate the product warranty.

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## 8.4.2 Requirements for Charging of Battery

The batteries to be stored for a long period of time (unused, for more than 3 months) must be kept in a dry and cool place. The storage voltage is 51V-53V. The batteries should be stored in a clean environment of 23± 2℃ and humidity of 45%-75%. If the battery will be shelved and not used for a long period of time, it should be recharged every 3 months to ensure that the battery voltage is within the above range.
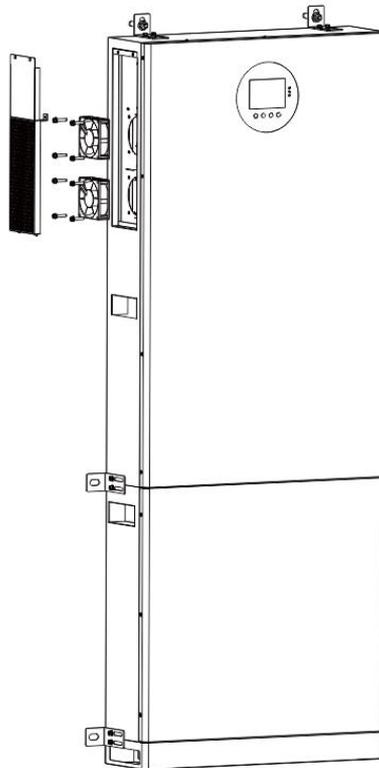
As for batteries and long-term storage, routine maintenance is required. Please charge the battery to 40% SOC at a current of 0.2C according to the requirements in the table below.

| Ambient temperature for storage | Relative humidity for storage environment | Storage Time | SOC |
|---|---|---|---|
| <-10℃ | / | Prohibited | / |
| -10~25℃ | 5%~70% | ≤12 months | 30%≤SOC≤60% |
| 25~35℃ | | ≤6 months | |
| 35~45℃ | | ≤3 months | |
| >45℃ | / | Prohibited | / |

# 8.5 Device Cleaning

It is recommended to clean and maintain the product from time to time. When cleaning, the dust and stains on the product shall be removed with a piece of soft dry cloth or vacuum cleaner, especially when cleaning the heat dissipation and air vents on both sides of the product. The product shall not be cleaned with organic solvents, corrosive liquids and other cleaning products.

If the fan fails, it can be replaced by a professional.

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# 9 Technical Data

## 9.1 All-in-one Module Data

| Product model | SR-EOT03S-220 | SR-EOT05S-220 | SR-EOT05S-110 |
|---|---|---|---|
| **Inverter Output** | | | |
| Rated Output Power | 3,500W | 5,000W | |
| Max.Peak Power | 6,000VA | 10,000VA | |
| Load Capacity of Motor | 2HP | 4HP | |
| Rated Output Voltage | 230Vac | | 120Vac |
| Waveform | Pure Sine Wave | | |
| Power Factor | 1 | | |
| Frequency | 50/60Hz | | |
| Auto Switch Period | < 10ms（typical） | | |
| THD | 3% | | |
| **Battery** | | | |
| Battery Type | LiFePO4 | | |
| Battery Energy | 5.12kWh | | |
| Battery Capacity | 100AH | | |
| Battery Rated Voltage | 51.2V | | |
| Battery Working Voltage Range | 44.8～57.6V | | |
| Standard Charge/Discharge current | 50A | | |
| Max. Charge/Discharge Current | 100A | | |
| Cycling Lifespan | 6000 (80%DOD,0.5C,25°C) | | |
| Max. Parallel Capacity | / | 2 units （up to 10kW） | |
| **PV Charge** | | | |
| Solar Charge Type | MPPT | | |
| Max. Output Power | 3,200W | 5,500W | |
| Max. input Current | 40A | 22A | |
| Max. MPPT Charging Current | 60A | 100A | |
| Max. Voltage of Open Circuit | 145V | 500V | |
| MPPT Voltage Range | 60~115Vdc | 120~450Vdc | |
| **AC Charge** | | | |
| Max. AC Charge Power | 3,150W | | 2100W |

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| Max. AC Charging Current | 60A | | 40A |
|---|---|---|---|
| Rated Input Voltage | 220/230Vac | | 110/120Vac |
| Input Voltage Range | 90～280Vac | | 90～140Vac |
| **GRID/GENERATOR INPUT** | | | |
| Input Voltage Range | 90～280Vac | | 90～140Vac |
| Bypass Overload Current | 30A | 40A | 63A |
| **Efficiency** | | | |
| MPPT Tracking Efficiency | 99.9% | | |
| **General** | | | |
| Protection Degree | IP20，Indoor Only | | |
| Charging temperature range | 0℃~45℃ | | |
| Noise | ≤60dB | | |
| Storage time / temperature | 6 months @25℃;3 months @35℃;1 months @45℃ | | |
| Dimensions | 972*555*130mm | | |
| Weight | 63.5Kg | | |
| Cooling Method | Forced Air Cooling | | |
| **Certification** | | | |
| Safety | MSDS,UN38.3,IEC61000-6:2019,NRS097,RoHS | | |

# 9.2 Extra Battery Module Data

| Product model | SR-EOV05B |
|---|---|
| Battery Type | LiFePO4 |
| Battery Energy | 5.12kWh |
| Battery Capacity | 100AH |
| Battery Rated Voltage | 51.2V |
| Battery Working Voltage Range | 44.8 ～ 57.6V |
| Standard charge current | 50A |
| Standard discharge current | 50A |
| Maximum Charging Current | 100A |
| Maximum Discharging Current | 100A |
| DOD | 80% |
| Parallel Quantity | 3 units （up to 15.36kWh） |
| Designed Life-span | 6000 (80%DOD,0.5C,25°C) |

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| Operating Temperature | Charge : 0 ~ 45℃ |
| --- | --- |
| | Discharge : -10 ~ 45℃ |
| Operation Humidity | 5% ~ 85% |
| Nominal Operation Altitude | < 3000m |
| Ingress Protection Rating | IP20 |
| Recommended Operation Environment | Indoor |
| Installation Method | Vertical |
| Gross Weight | 50kg |
| Dimension | 600*555*130mm |

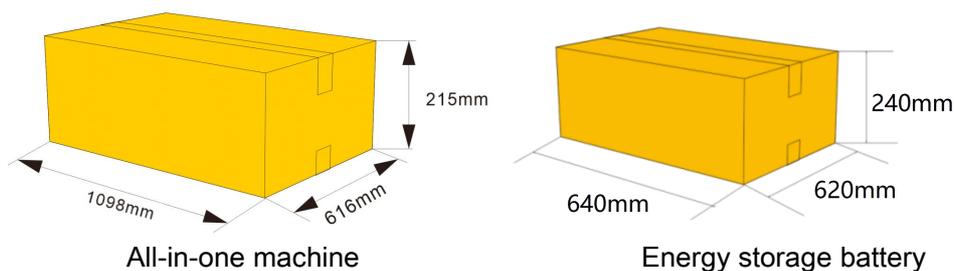# 10 Product Dimensions and Packaging

## 10.1 Product Dimensions

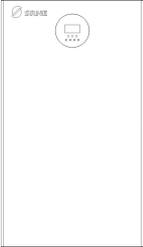The external dimensions of the AII-in-one module is 900*555*158mm,the external dimensions of the energy storage battery module is 515*555*158mm,the external dimensions of the base module is 55.3*555*158mm.
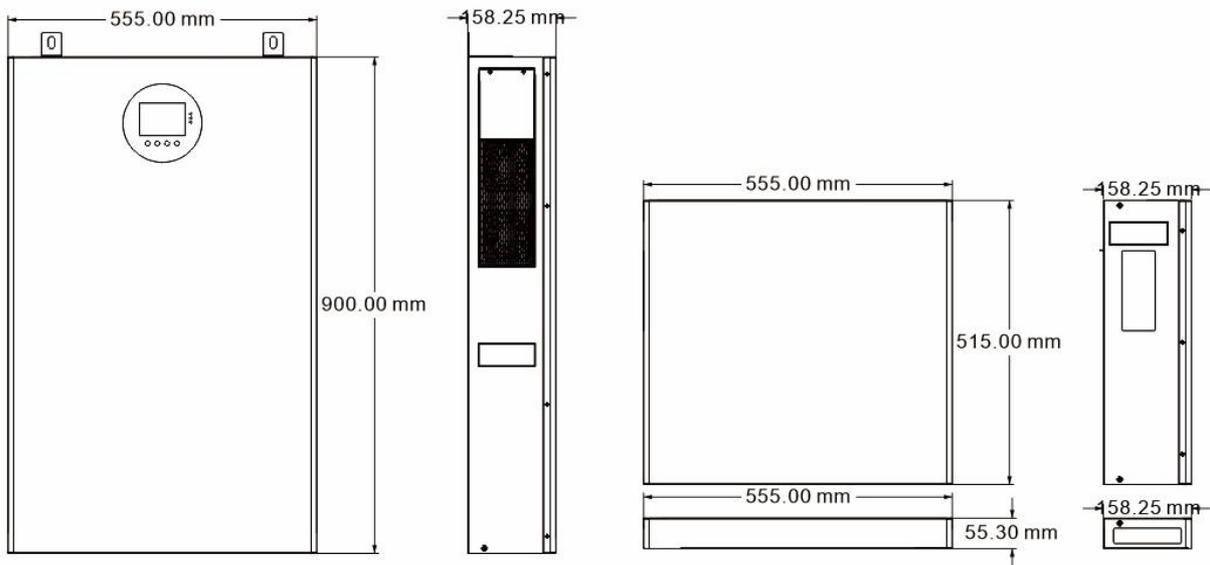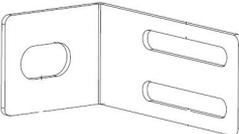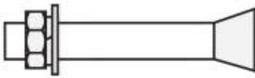


## 10.2 Package Dimensions
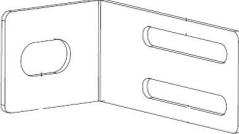
The package size of a single energy storage battery module is 644*698*199mm.

The package size of the All-in-one unit is 1054*644*190 mm.



All-in-one machine

Energy storage battery

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# 10.3 Packaging List

| NO. | Picture | Item | Quantity | Specification | Source |
|---|---|---|---|---|---|
| 1 |  | All-in-one | 1 | 3.5kW/5.0kWh or 5.0kW/5.0kWh | All-in-one Package |
| 2 |  | Base | 1 | 41*555*130mm | All-in-one Package |
| 3 |  | Mounting Frame | 2 | 80*44mm | All-in-one Package |
| 4 |  | Mounting Frame Screw | 6 | M8*60 expansion bolt | All-in-one Package |
| 5 |  | Mounting Frame | 2 | 50*128*40mm | All-in-one Package |
| 6 |  | Screw | 4 | M5*12 | All-in-one Package |
| 7 |  | Screw | 4 | M6*10 | All-in-one Package |
| 8 |  | Fixing screw | 2 | M6*35 | All-in-one Package |
| 9 |  | Battery | 1 | 5.12kWh/51.2V | Battery Package |
| 10 |  | Mounting Frame | 2 | 80*44mm | Battery Package |

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| 11 |  | Mounting Frame Screw | 2 | M8*60 expansion bolt | Battery Package |
|---|---|---|---|---|---|
| 12 |  | Screw | 4 | M5*12 | Battery Package |
| 13 |  | Fixing screw | 2 | M6*35 | Battery Package |
| 14 |  | Power cable | 1 | 560mm,4AWG | Battery Package |
| 15 |  | Signal cable | 1 | 700mm | Battery Package |
| 16 |  | Expand Capacity Power cable | 1 | 1.5m,4AWG | (Optional) |
| 17 |  | Expand Capacity Signal cable | 1 | 2.0m | (Optional) |
| 18 |  | Parallel communication line | 1 | 1.2m | All-in-one Package (Optional) |
| 19 |  | Current sharing detection line | 1 | 1.2m | All-in-one Package (Optional) |
| 20 |  | User Manual | 1 | | All-in-one Package |

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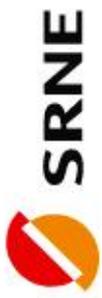
## Wiring diagram and circuit breaker



LOAD

Inverter

Grid

AC Output
Breaker

Inverter

BAT

Battery
Breaker

AC Input
Breaker

PV
Breaker

Grid

PV