

# 1. Usage Safety Instructions

Please keep this manual properly for future reference. It details the installation and operation standards for the solar product pack. Before installation or use, be sure to read all instructions and precautions carefully.

## 1.1 Safety Warnings

There are non-safe voltages inside the solar product pack, and it is strictly prohibited for users to disassemble it privately. In case of equipment failure and need for maintenance, please contact professional maintenance personnel in time.

## 1.2 Precautions for Use

1. Avoid immersion of the product in water or exposure to moisture.
2. Prohibit charging the product near fire sources and in high-temperature environments, and avoid using or storing the product near heat sources such as heaters.
3. If leakage or abnormal odor is detected, immediately transfer the product to a safe, open area.
4. Use the designated charging cable; if replacement is needed, ensure it matches the original wire gauge.
5. Pay attention to the correct polarity during installation; do not connect in reverse.
6. Do not connect the product directly to wall sockets or car cigarette lighter sockets.
7. Do not place the product in a fire or heat it.
8. Avoid using wires or other metal objects to short-circuit the product terminals. Do not transport or store the product along with necklaces, hairpins, or other metal objects.
9. Do not pierce the product with nails or sharp objects, and do not strike or step on the product.
10. Avoid impacts, throwing, or other mechanical shocks.
11. Do not weld directly onto the product terminals.
12. Do not disassemble the product by any method.
13. Do not mix this product with original products (such as dry cells), or with different capacities, models, or types.
14. If the product has been left unused in storage for more than 3 months, perform recharging.

## 1.3 Abnormal Situations

1. If leakage or odor is detected, immediately move the product to an open and safe area. If the electrolyte comes into contact with your eyes, do not rub, flush with plenty of water and seek medical attention immediately.
2. If the product is hot, deformed, discolored or has other abnormalities, please stop using it, and if it is charging/discharging, remove the product immediately.
3. If the product smokes or catches fire, please ensure your own safety and quickly move the product to a fireproof and open place (e.g., sand, metal container).

## 1.4 Environmental Tips

Discharged batteries should be recycled according to local regulations. Do not dispose of them at will.

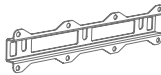
# 2 Installation Instructions

## 2.1 Unpacking and inspection

Inspect the unit before installation. Make sure there is no damage in the package. You should receive the following items in the package:



Solar Battery Pack



Mounting Bracket x1



Short Screws x3



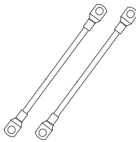
Short Screws x2



Expansion Screws x8



User Manual x1



Positive and Negative Leads



Communication Cable x1



Host Computer  
Communication Cable x1

## 2.2 Preparator work (installation in the of state, it is recommended that the installation of equipment to find a professional electrician installation)

Wall-mounted Before selecting a mounting location, consider the following points:

- ① . Do not install the all-in-one on fammable building materials.
- ② . Do not install the product in a harsh environment.
- ③ . Mounted on a sturdy surace.
- ④ . Install the All-in-One at eye level so that the LCD display can be read at all times.
- ⑤ . The ambient temperature should be between 0°C and 55°C to ensure optimal operation.

- ⑥ . Verical mounting on the wall is recommended.
- ⑦ . Be sure to retain the other objects and suraces shown at right to allow for adequate heat dissipation and enough room to remove the wires.
- ⑧ . Before connecting all wiring, remove the bottom cover by unscrewing the two screws as shown below.



### **WARNING !**

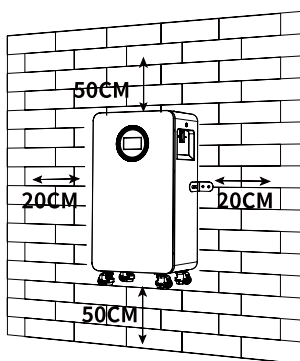
Requires the product to be installed with the power off and disconnected.

## **2.3 Installation Steps**

Wall-mounted Before selecting a mounting location, consider the following points:

- ① . Check that all wires are wired as specified.
- ② . Before using the product, it must be used in accordance with the requirements of the parameters within the manual.

**Note:** that the air switch is in the "ON" state, then press the key to turn on the product, the product can be used normally.

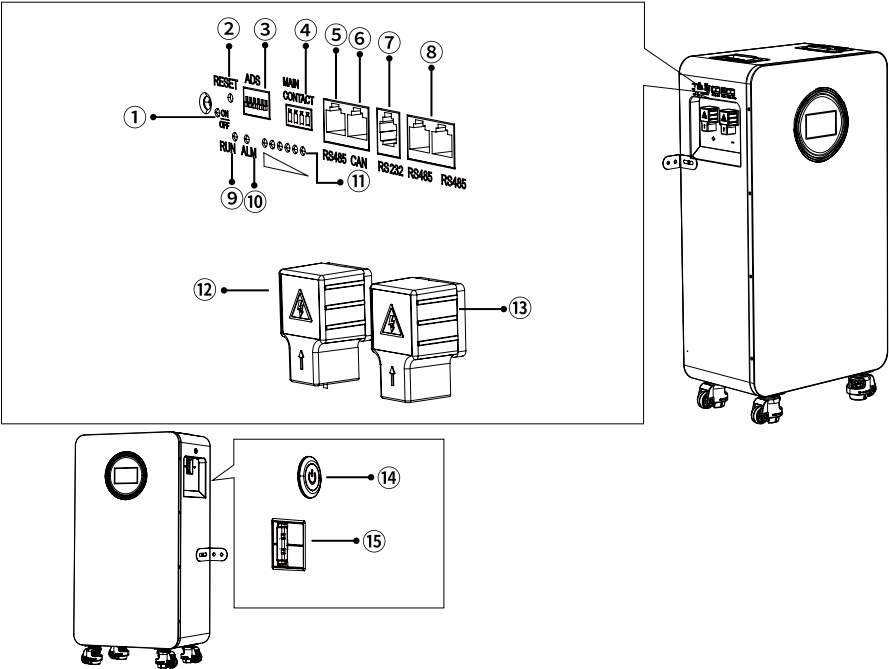


- Requires the product to be installed with the power off and disconnected.
- All wiring work must be carried out by qualified personnel.

### 3. Specification

|                                       |                                                         |
|---------------------------------------|---------------------------------------------------------|
| Total Energy                          | 16.07 KWh                                               |
| Internal Resistance                   | ≤13.9mΩ                                                 |
| Single Battery Capacity               | 314Ah                                                   |
| Nominal Operating Voltage             | 51.2V                                                   |
| Standard Input Current                | 210A                                                    |
| Standard Output Current               | 157A (210A Max )                                        |
| Overpressure Protection               | 58.4V                                                   |
| Overcharge Protection Recovery        | 54.0V                                                   |
| Over-discharge Protection             | 43.2V                                                   |
| Over-discharge Protection Recovery    | 46.4V                                                   |
| High-temperature Charging Protection  | 55°C                                                    |
| High-temperature Charging Recovery    | 50°C                                                    |
| Low-temperature Charging Protection   | 0°C                                                     |
| Low-temperature Charging Recovery     | 5°C                                                     |
| High-temperature Discharge Protection | 55°C                                                    |
| High-temperature Discharge Recovery   | 50°C                                                    |
| Low-temperature Discharge Protection  | -20°C                                                   |
| Low-temperature Discharge Recovery    | -15°C                                                   |
| Overcurrent Protection (Charging)     | 215A                                                    |
| Overcurrent Protection (Discharging)  | 215A                                                    |
| Short Circuit Protection              | Yes, method via "load removal and charge disconnection" |
| Power Delivery Rate                   | 40% to 60%                                              |
| Equalization                          | Passive balancing                                       |
| Power Consumption when Off            | ≤300μA                                                  |
| Cycle Life                            | ≥8000 Cycle , 70% SOH 25°C                              |
|                                       | ≥3000 Cycle , 70% SOH 45°C                              |
| Protection Level                      | IP20                                                    |
| Communication Protocols               | RS232, RS485, CAN                                       |
| Dimensions (L×W×H)                    | 453×260×879 mm                                          |
| Weight                                | 113 kg                                                  |

# 4. Function Introduction



| Number | Functionality           | Descriptive                                          |
|--------|-------------------------|------------------------------------------------------|
| ①      | Switch Indicator Lights | Switch Status                                        |
| ②      | Reset switch            | Reboot or shutdown when pressed                      |
| ③      | DIP Address             | Parallel or communication address selection          |
| ④      | Dry contact             | Normally open or normally closed signal driven relay |
| ⑤      | RS485                   | External communications                              |
| ⑥      | CAN                     | External communications                              |
| ⑦      | RS232                   | Alternate communications port                        |
| ⑧      | RS485-1&RS485-2         | Internal communication or battery parallel use       |
| ⑨      | Operation Indicator     | Operational status                                   |
| ⑩      | Alarm Indicator         | Alarms                                               |
| ⑪      | Battery indicator       | Battery level indication                             |
| ⑫      | Battery Positive        | Battery Positive                                     |
| ⑬      | Battery Negative        | Battery negative                                     |
| ⑭      | Mains Switch            | Control switch                                       |
| ⑮      | Air switch              | Disconnect input and output                          |

4.1 Table 1 LED Indicator Description

Table 1 LED Indicator Description

| Status       | Item                                                           | ON/OFF<br>LED9 | RUN<br>(LED8) | ALARM<br>(LED7) | SOC(LED6~1)      | Description                           |
|--------------|----------------------------------------------------------------|----------------|---------------|-----------------|------------------|---------------------------------------|
|              |                                                                |                |               |                 |                  |                                       |
| Power Off    | Sleep Mode                                                     | OFF            | OFF           | OFF             | OFF              | All LEDs off                          |
| Static state | Normal                                                         | ON             | Flash 1       | OFF             |                  | /                                     |
|              | Alarm                                                          | ON             | Flash 1       | Flash 3         |                  |                                       |
| Charging     | Normal                                                         | OFF            | OFF           | OFF             | Refer to Table 2 | Over-voltage<br>alarm, no<br>blinking |
|              | Alarm                                                          | ON             | ON            | Flash 3         |                  |                                       |
|              | OV protect                                                     | ON             | ON            | OFF             | ON               |                                       |
|              | Temperature,<br>Over-current,<br>fail-safe)                    | ON             | OFF           | ON              | OFF              |                                       |
|              |                                                                |                |               |                 |                  |                                       |
| Discharging  | Normal                                                         | ON             | Flash 3       | OFF             | Refer to Table 2 | /                                     |
|              | Alarm                                                          | ON             | Flash 3       | Flash 3         |                  |                                       |
|              | UV Protection                                                  | OFF            | Flash 2       | OFF             | OFF              |                                       |
|              | Overcurrent,<br>Short Circuit,<br>Temperature,<br>Fault Safety | ON             | OFF           | ON              | OFF              |                                       |

Table 2 SOC Indicator Description

| State   |            | Charging |         |         |         |         |         | Discharging |      |      |      |      |      |
|---------|------------|----------|---------|---------|---------|---------|---------|-------------|------|------|------|------|------|
| LED     |            | ED6      | LED5    | LED4    | LED3    | LED2    | LED1    | LED6        | LED5 | LED4 | LED3 | LED2 | LED1 |
|         |            |          |         |         |         |         |         |             |      |      |      |      |      |
| SOC(%)  | 0~16.6%    | OFF      | OFF     | OFF     | OFF     | OFF     | Flash 2 | OFF         | OFF  | OFF  | OFF  | OFF  | ON   |
|         | 16.6~33.2% | OFF      | OFF     | OFF     | OFF     | Flash 2 | ON      | OFF         | OFF  | OFF  | OFF  | ON   | ON   |
|         | 33.2~49.8% | OFF      | OFF     | OFF     | Flash 2 | ON      | ON      | OFF         | OFF  | OFF  | ON   | ON   | ON   |
|         | 49.8~66.4% | OFF      | OFF     | Flash 2 | ON      | ON      | ON      | OFF         | OFF  | ON   | ON   | ON   | ON   |
|         | 66.4~83.0% | OFF      | Flash 2 | ON      | ON      | ON      | ON      | OFF         | ON   | ON   | ON   | ON   | ON   |
|         | 83.0~100%  | Flash 2  | ON      | ON      | ON      | ON      | ON      | ON          | ON   | ON   | ON   | ON   | ON   |
| RUN LED |            | ON       |         |         |         |         |         | Blinks 3    |      |      |      |      |      |

Table 3 LED Indicator Description

| Mode    | ON    | OFF   |
|---------|-------|-------|
| Flash 1 | 0.25S | 3.75S |
| Flash 2 | 0.5S  | 0.5S  |
| Flash 3 | 0.5S  | 1.5S  |

4.2 Description of Buzzer Action

- ① . When a fault occurs, a 0.25S signal is emitted every 1 second.
- ② . During protection, a 0.25S horn is emitted every 2 seconds (except for overpressure and underpressure protection).
- ③ . When an alarm is issued, a 0.25S alarm is emitted every 3 seconds (except for overpressure or underpressure alarms).

4.3 Reset Switch Description

Corresponding icon:



- ① . When the BMS is in sleep mode, press the switch (1S) to turn it off, and the protection board is activated. The LED indicator will light up for 0.5 seconds.
- ② . When the BMS is active, press the switch (3 to 6 seconds), and the LED indicator will light up from the minimum power indicator to maximum power indicator for 0.5 seconds. After turning off, the system will enter sleep mode.
- ③ . When the BMS is active, press the button (6-10 seconds) and release to reset the board. The LED indicator will reflect the current power display.

4.4 Mains Switch Instructions

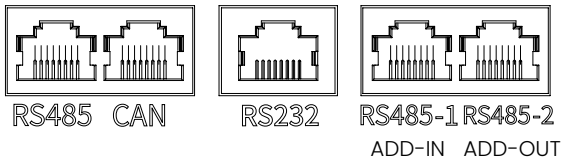
Corresponding icon:



- ① . When the BMS is in hibernation state, after turning off the main switch, the protection board is energized, and the LEDs are lit sequentially starting from “LED1” for 0.5 seconds.
- ② . When BMS is active, turn off the main switch and wait for 1S~3S, then the system will enter the power-off state.

# 4.5 Communication Functions

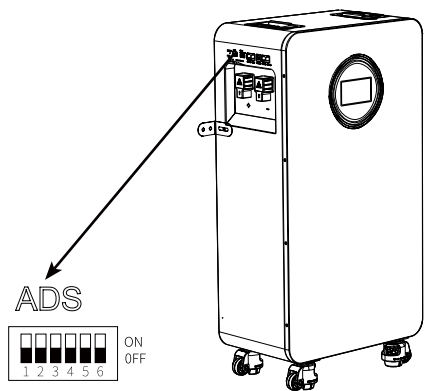
Interface Description:



| Interface              | RS485-1                                 |              | CAN1                                    |              | RS232                  |              | RS485                  |              |
|------------------------|-----------------------------------------|--------------|-----------------------------------------|--------------|------------------------|--------------|------------------------|--------------|
| Functional Description | Connection to host computer or inverter |              | Connection to host computer or inverter |              | Parallel communication |              | Parallel communication |              |
| Pin Descriptions       | Pin                                     | Descriptions | Pin                                     | Descriptions | Pin                    | Descriptions | Pin                    | Descriptions |
|                        | 1、 8                                    | RS485-B1     | 1、 8                                    | NC           | 1、 2、 6                | NC           | 1、 8                   | RS485-B2     |
|                        | 2、 7                                    | RS485-A1     | 2、 7                                    | NC           | 3                      | TX           | 2、 7                   | RS485-A2     |
|                        | 4                                       | NC           | 4                                       | CANH1        | 4                      | RX           | 4                      | NC           |
|                        | 5                                       | NC           | 5                                       | CANL1        | 5                      | GND          | 5                      | NC(L)/OUT(R) |
|                        | 3、 6                                    | GND          | 3、 6                                    | GND          |                        |              | 3、 6                   | GND          |



## 4.6 Dip Switch

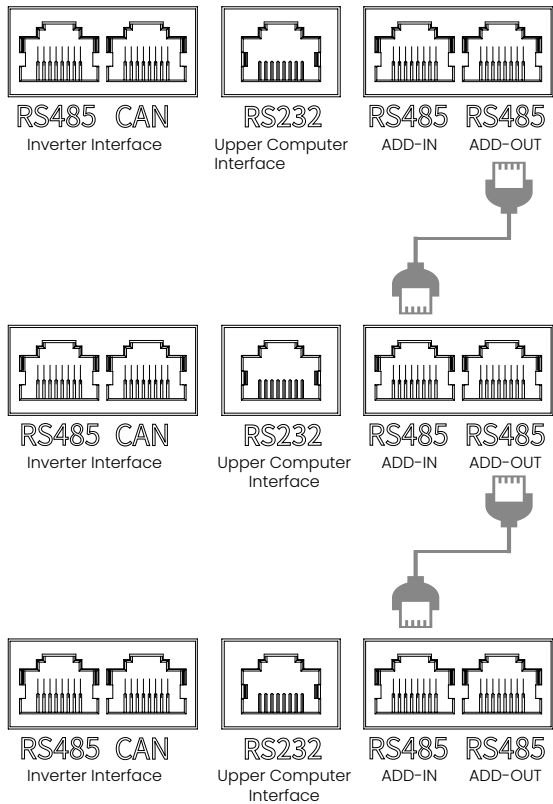


When connecting battery packs in parallel, use the DIP switch on the BMS to set the address to distinguish different data packets. The maximum number of parallel units is 15, of which 5 and 6 are reserved and have no function.

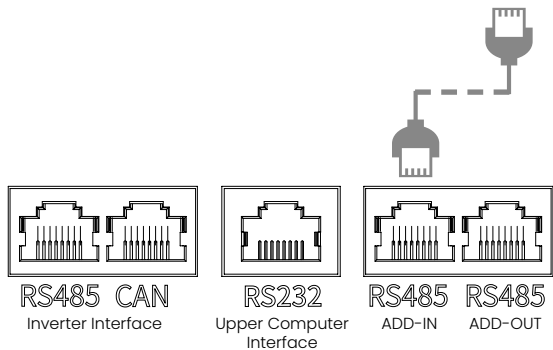
| Address bit<br>(binary) | Explain |     |     |     |                                                  |
|-------------------------|---------|-----|-----|-----|--------------------------------------------------|
|                         | 4       | 3   | 2   | 1   |                                                  |
| 0001(1)                 | OFF     | OFF | OFF | ON  | Set PACK1 to be used by a host or single machine |
| 0010(2)                 | OFF     | OFF | ON  | OFF | Set PACK2                                        |
| 0011(3)                 | OFF     | OFF | ON  | ON  | Set PACK3                                        |
| 0100(4)                 | OFF     | ON  | OFF | OFF | Set PACK4                                        |
| 0101(5)                 | OFF     | ON  | OFF | ON  | Set PACK5                                        |
| 0110(6)                 | OFF     | ON  | ON  | OFF | Set PACK6                                        |
| 0111(7)                 | OFF     | ON  | ON  | ON  | Set PACK7                                        |
| 1000(8)                 | ON      | OFF | OFF | OFF | Set PACK8                                        |
| 1001(9)                 | ON      | OFF | OFF | ON  | Set PACK9                                        |
| 1010(10)                | ON      | OFF | ON  | OFF | Set PACK10                                       |
| 1011(11)                | ON      | OFF | ON  | ON  | Set PACK11                                       |
| 1100(12)                | ON      | ON  | OFF | OFF | Set PACK12                                       |
| 1101(13)                | ON      | ON  | OFF | ON  | Set PACK13                                       |
| 1110(14)                | ON      | ON  | ON  | OFF | Set PACK14                                       |
| 1111(15)                | ON      | ON  | ON  | ON  | Set PACK15                                       |

# 4.7 Parallel Wiring Instructions

Interface Illustration:



15 parallel groups



# 5. Display Description

## 5.1 Starting Screen



## 5.2 Main Screen

The main page displays parallel statistics such as average SOC, maximum and minimum battery voltage, maximum and minimum battery temperature, average battery voltage and total system current, average remaining system power, operating power, MOS charging and discharging status, and language switching functions.



## 5.3 Language

The system supports switching between English and Chinese, and the switching button is located at the top right corner of the homepage.

## 6.4 Slave

After switching to the Slave Device page, the upper part displays the version selection, the middle part visualizes the battery level and SOH data, the middle part displays the battery voltage and current, the charge/discharge status and the fault indication status, and the lower part displays the battery level and temperature data of the Slave Device as well as the ambient temperature and MOS temperature data.

Slave address description background color: blue indicates the selected slave controller, green indicates the online slave controller, and white indicates the offline slave controller.



## 6.5 Parameter Setting

In the parameter setting page, you can set the battery voltage and undervoltage parameter, total voltage and undervoltage parameter, ambient high temperature and low temperature parameter, overvoltage differential parameter, charging overcurrent parameter, discharging overcurrent parameter, MOS high temperature parameter, charging high temperature and low temperature parameter, discharging high temperature and low temperature parameter, and SOC high temperature parameter.



## 6.6 Protocol Setting

**CANprotocolselection:** Supportplyon、growatt、goodwe、sofarsolar、victron、voltronic、lpx、deye、ginlong、sma.

**RS485 protocolselection:** Supportplyon、growatt、Voltronic、lpx、deye、invent、srna.



## 5.7 System Setting



## 6. Warranty Description

**Please read the instructions carefully and keep them in a safe place.**

1. This product will be repaired if it malfunctions during the warranty period for normal use in accordance with the operating instructions. The parts replaced during the warranty period are the property of our company.
2. For replacement or warranty, please send this warranty card together with the product.
3. No free repairs will be made during the warranty period if any of the following conditions apply.
  - ① . Damage caused by failure to comply with the requirements of the instruction manual for use, maintenance and repair, or the use of non-original parts.
  - ② . Failure or damage caused by improper storage and custody (product battery failure due to not recharging the product for a long period of time);
  - ③ . Failure or damage caused by the use of power supply equipment and load rated equipment not within the specified voltage range.
  - ④ . Failure or damage caused by private repair, dismantling or modification.
  - ⑤ . Damage to the surface coating and exterior is not covered by the warranty.
  - ⑥ . Product outer packaging and product accessories are not covered by the warranty.
  - ⑦ . Torn, altered or unrecognizable product labels, seals and serial numbers (SN).
4. Failure or damage due to force majeure (force majeure refers to an objective event that cannot be foreseen, avoided or overcome.  
This includes natural disasters such as floods, fires, explosions, lightning, earthquakes and storms, as well as social events such as wars and disturbances).
5. This manual is for use only in (this sales area), the final interpretation right belongs to the company.
6. Please keep this manual in a safe place as it will not be distributed separately to users.
7. If the name of the distributor is not written or stamped, ask the distributor from whom you purchased the product for proof of the date of purchase and the name of the distributor, and issue a receipt to the distributor. If you do not have such proof, please contact your dealer or the company from which you purchased the product. If you purchased the product from our online store, please be sure to provide proof of the date of purchase, such as an invoice, order number, or a screen shot of your order history.

## 7. Reimbursable Service Warranty

Because the product does not meet the warranty conditions need to be charged, the company will be based on parts and labor costs to calculate the appropriate repair costs, and put forward a repair quote to you, after obtaining your consent and payment of the cost to provide repair services for your product.

| PRODUCT WARRANTY CARD                                                            |  |
|----------------------------------------------------------------------------------|--|
| This card is a product warranty certificate, please be sure to keep it properly. |  |
| Product Name                                                                     |  |
| Manufacturing Number                                                             |  |
| Purchasing Date                                                                  |  |
| Dealer Name                                                                      |  |
| Dealer Address                                                                   |  |
| Customer Name                                                                    |  |
| Customer Address                                                                 |  |
| Customer Phone Number                                                            |  |
| Customer Email                                                                   |  |