



BATTERY SPECIFICATION & USER INSTURCTION

SUNERGY MASON-314-NP 51.2V 314AH



SUNERGY RENEWABLES PTY LTD

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1. Introduction

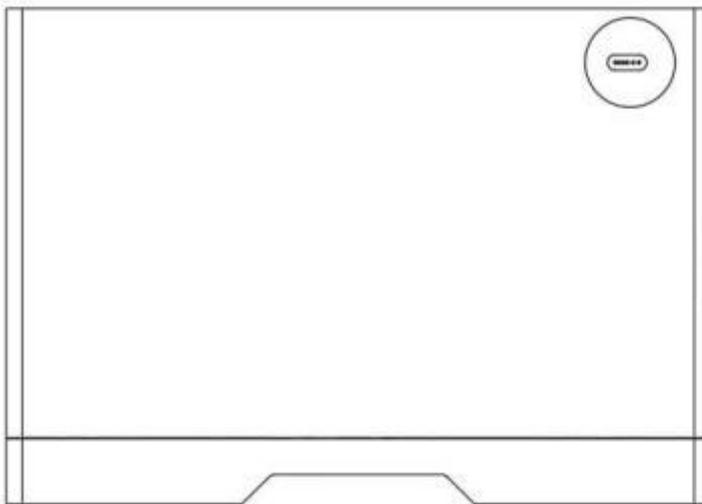
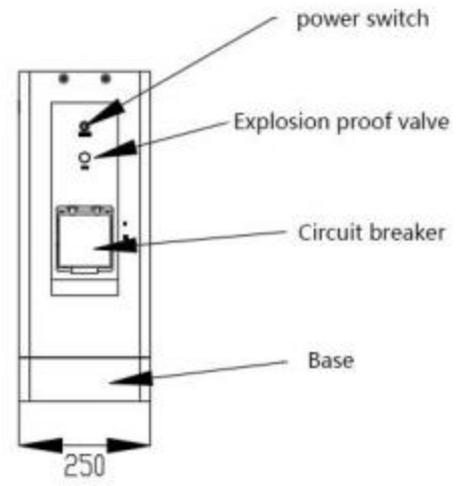
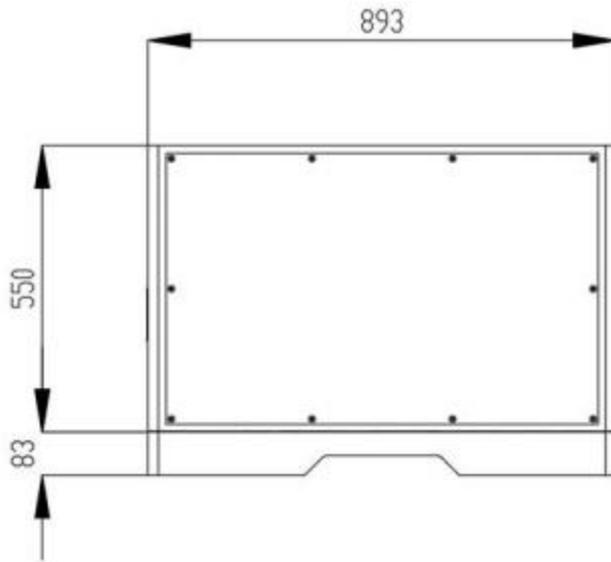
This battery system is applicable both for residential and commercial energy storage system, which is assembled with 3.2 V 314Ah lithium iron phosphate cell in 1P16S configuration and intelligent BMS form 51.2V314Ah lithium battery system.

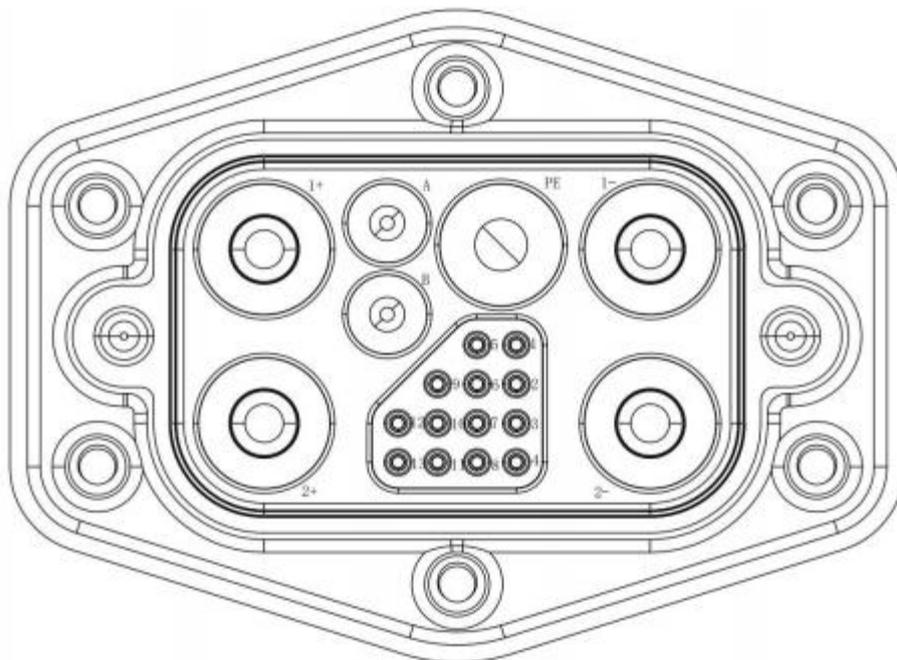
2. Functions

- **Battery Voltage Measurement:**
Supports voltage sampling for 16 battery cells, with a measurement deviation of ± 20 mV.
- **Battery and Temperature Detection:**
Equipped with 4 battery temperature sensors, 1 ambient temperature sensor, and 1 MOS temperature sensor, with a measurement deviation of ± 2 °C.
- **Battery Capacity and Cycle Monitoring:**
Performs a complete charge–discharge cycle to determine the actual capacity of the battery. Continuously monitors the remaining capacity with an estimation accuracy of within $\pm 5\%$. Both the charge/discharge cycle count and the complete cycle duration can be configured.
- **Smart Cell Balancing:**
Flexible charging and static balancing strategies can be configured to optimize performance and extend battery service life.
- **Communication Interface:**
Enables monitoring and control via a PC or intelligent front-end system. Supports telemetry, remote signalling, remote adjustment, and remote-control commands. The communication protocol complies with CAN&RS485 and supports cascade communication.
- **Historical Data Recording and Retrieval:**
In the event of an abnormal condition, the system records and saves real-time battery status and alarm information. Up to 500 historical fault records can be stored and accessed.
- **BMS Parameter Configuration:**
Configurable parameters include:
 - Cell overvoltage/undervoltage
 - Total battery overvoltage/undervoltage
 - Charge/discharge overcurrent
 - High/low temperature limits
 - Battery capacity
 - Operating mode
 - Charge and discharge current limits
- **Operating Modes:**
The system supports multiple working modes, including: Charge/discharge current limiting; Constant voltage output; Direct output mode.
- **Multiple Protection Functions:**
Includes comprehensive protection features such as:
 - Hardware protection
 - Battery protection
 - High and low temperature protection
 - Output short-circuit protection

3. Specifications

3.1 Appearance and interface





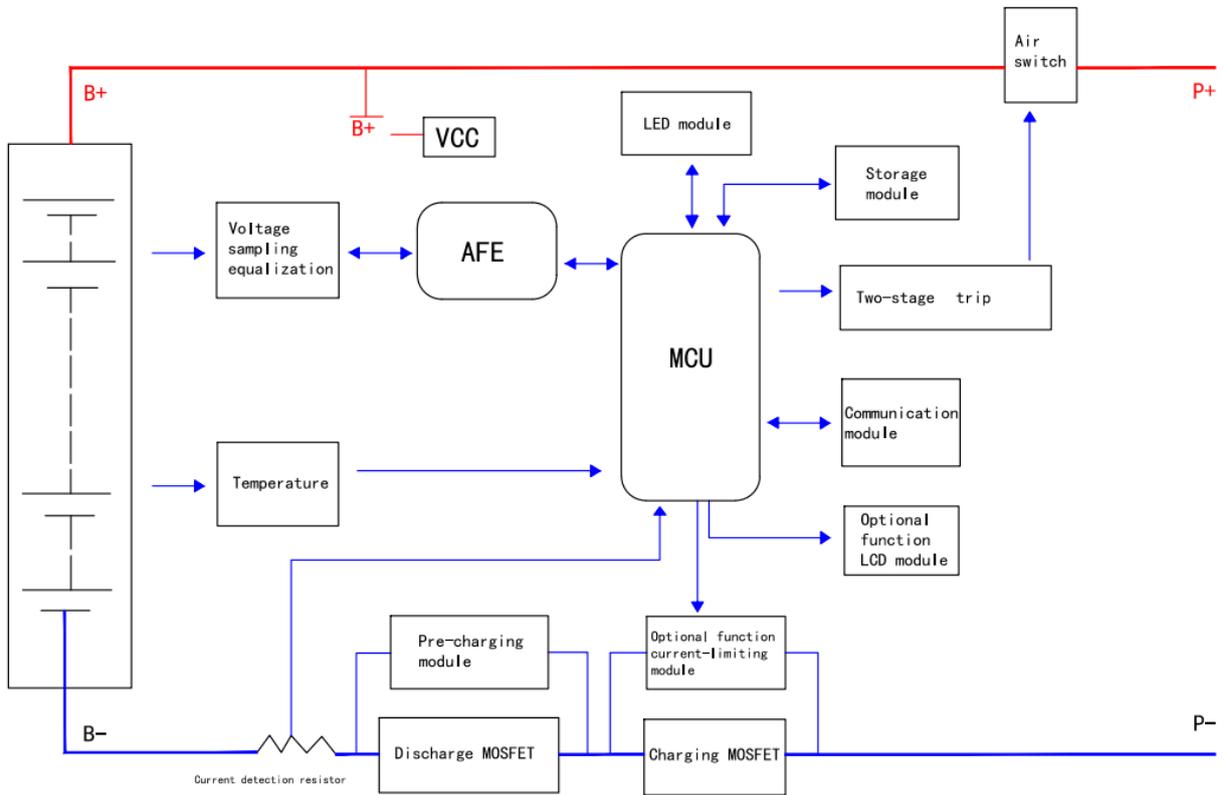
Interface definition		
P1-1	CANH	Inverter communication
P1-2	CANL	
P1-4	485A2	Battery host computer communication
P1-5	485B2	
P1-12	48V+	Reserved 48V power supply port (can only connect to 48V loads within 20W)
P1-13	48V-	
P1-1+	B+	Battery positive
P1-1-	B-	Battery negative
P1-PE	PE	Box ground

3.2 Symbols on the System

Symbol	Explanation
	Beware of a danger zone.
	Beware of electrical voltage. The product operates at high voltages.
	Risk of chemical burns.
	Risk of explosion.
	Risk of electrolyte leakage.
	Do not dispose of the product together with the household waste.
	Read all documents supplied with the system.
	This symbol indicates the position for connecting a grounding conductor.
	Refer to the instruction for operation.

	<p>Wear glove.</p>
	<p>Use eye protection.</p>
	<p>Keep away from children.</p>
	<p>Fire, naked light and smoking are prohibited. Keep the battery modules away from open flame or ignition sources.</p>
	<p>Do not short circuit.</p>
	<p>Do not step on.</p>
	<p>CE marking The product complies with the requirements of the applicable EU directives.</p>
	<p>RCM (Regulatory Compliance Mark), a brief guide to Electrical equipment approvals in Australia.</p>

3.3 Electrical schematic diagram



3.4 Parameters

NO	Items	Specifications
1	Cell power (kWh)	16.076KWh
2	Configuration	1P16S
3	Nominal voltage (V)	51.2V
4	Working voltage (V)	43.2V~58.4V
5	Cell capacity (Ah)	314Ah
6	Rated charge/discharge current (A)	157A@25± 2°C
7	Maximum charging current	200A@25± 2°C
8	Maximum discharge current	200A@25± 2°C
9	Working temperature	0~50°C (Charge) -15~50°C (Discharge)
10	Maximum temperature	-20~65°C (Warranty limit)
10	Humidity (%)	5~80%
11	Altitude limited(m)	0-3000m
12	Dimension(mm)	893×250×633mm (minimum thickness 0.3mm)
13	Storage temperature and humidity	-10°C~35°C(Within one month of storage) 25±2°C(Within three months of storage) 65%±20% RH
14	Weight	120kg± 3kg
15	Cycle life	6000 cycles, 70%SOH
16	IP grade	IP65
17	Communication mode	CAN&RS485
18	Max depth of discharge (%)	98%
19	Internal DC isolator	2
20	Short circuit current(A)	550A(100μs)

3.5 Protection parameters

3.5.1 cell over voltage parameters

cell over voltage parameter				
Functions	Status	Item	Default	Configurable Range
Over voltage warning	ON	Over voltage warning	3500mV	
		Over voltage warning recovery	3400mV	
		Under voltage warning	2900mV	
		Under voltage warning recovery	3000mV	
Over voltage protection	ON	Over voltage protection	3650mV	
		Over voltage protection recovery	3400mV	
		Over voltage recovery condition	1. Individual cell voltage decreases to over voltage recovery threshold. 2. The remaining capacity is lower than 96% of the intermittent power supply. Both conditions should be satisfied	
			Output current $\geq 1A$	

3.5.2 cell low voltage parameters

cell low voltage parameter				
Functions	Status	Item	Default	Configurable Range
under voltage protection	ON	Under voltage protection	2700mV	
		Under voltage protection recovery	2900mV	
		Under voltage protection condition	When an individual cell gets under voltage protection threshold, BMS maintain communication with inverter for 1 minute and powered off.	
		Under voltage protection recovery	Input current $\geq 1A$	

3.5.3 Battery over voltage parameters

Battery over voltage parameter				
Functions	Status	Item	Default	Configurable Range
Over voltage warning	ON	Over voltage warning	56.0V	
		Over Warning recovery voltage	54.0V	
		Under voltage warning	46.4V	
		Under Warning recovery voltage	48.0V	
Over voltage protection	ON	Over voltage protection	58.4V	
		Over voltage protection recovery	54.0V	
		Over voltage protection recovery conditions	1. Individual cell voltage decreases to over voltage recovery threshold. 2. The remaining capacity is lower than 96% of the intermittent power supply. Both conditions should be satisfied.	
Output current≥1A				

3.5.4 Battery low voltage parameters

Battery low voltage parameter				
Functions	Status	Item	Default	Configurable Range
Under Voltage protection	ON	Under voltage protection	43.2V	
		Under voltage protection recovery	46.0V	
		Under voltage protection condition	When the total voltage gets under voltage protection threshold, BMS maintain communication with inverter for 1 minute and powered off.	
		Recovery conditions	Input current \geq 1A	
	compensation point2	0m Ω	13	

4. LED indicator

4.1 LED lights

One running indicator (Green)
 One warning indicator (Red)
 Four capacity indicators (Green)

●	●	●	●	●	●
SOC				ALARM	RUN

4.2 Capacity indicators

Status	Charging				Discharging			
Capacity	L4●	L3●	L2●	L1●	L4●	L3●	L2●	L1●
0-25%	OFF	OFF	OFF	Blink	OFF	OFF	OFF	Green
25%-50%	OFF	OFF	Blink	Green	OFF	OFF	Green	Green
50%-75%	OFF	Blink	Green	Green	OFF	Green	Green	Green
≥75%	Blink	Green	Green	Green	Green	Green	Green	Green
Running	Green				Blink			

4.3 Lights blinking explanation

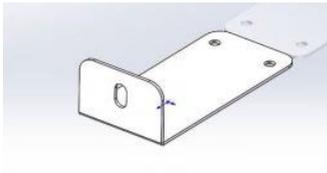
Blink Type	Lighten TIEM	OFF TIME
Blink A	0.25S	3.75S
Blink B	0.5S	0.5S
Blink C	0.5S	1.5S

4.4 Running status indicators

SYSTEM	Running	RUN	ALM	SOC				REMARK
		●	●	●	●	●	●	
OFF	Sleeping	OFF	OFF	OFF	OFF	OFF	OFF	OFF
STANDBY	Running	Blink A	OFF	OFF	OFF	OFF	OFF	Standby
CHARGE	Running	Green	OFF	According to the remaining capacity				LED Blink B
	Over current warning	Green	Blink B	According to the remaining capacity				LED Blink B
	Over voltage protection	Blink A	OFF	OFF	OFF	OFF	OFF	
	Temp and over current protection	Blink A	OFF	OFF	OFF	OFF	OFF	
DISCHARGE	Running	Blink C	OFF	According to the remaining capacity				
	warning	Blink C	Blink C					
	Temp Over current, short circuit protection	OFF	RED	OFF	OFF	OFF	OFF	Stop discharging, and there is no action to force sleep after 48h when the mains power is offline
	Under voltage protection	OFF	OFF	OFF	OFF	OFF	OFF	No discharge

5. Installation and debugging

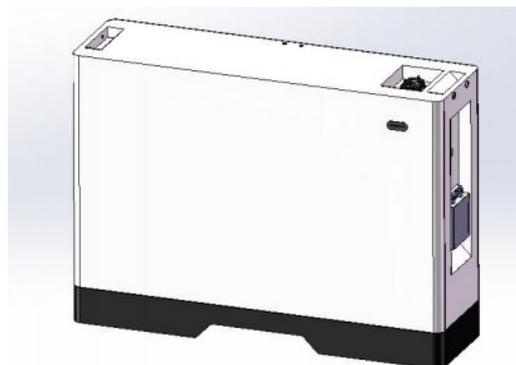
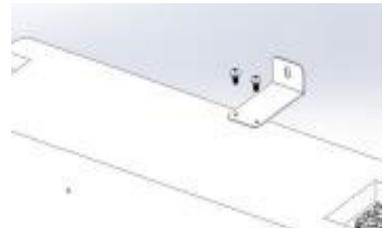
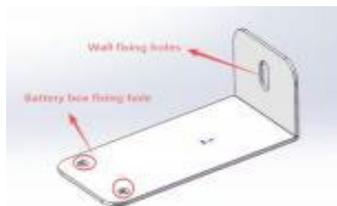
5.1 Material List

NO	NAME	QUANTITY	PICTURE
1.	Battery box	1 PCS	
2.	Wall fixing bracket	1PCS	
3.	Expansion bolt (M8*80)	2pcs	
4.	Flat head screws (M6*14)	4pcs	

5.2 Installation instructions

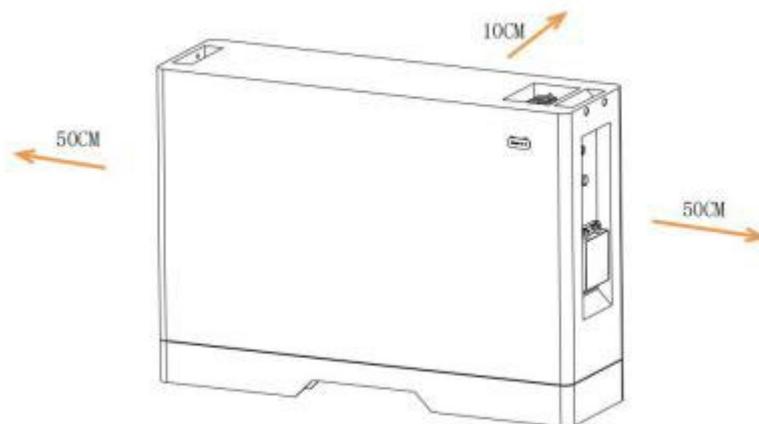
Assemble the battery box and install the base → According to the height of the battery box, install M8*80 expansion bolts on the wall or ground. → The wall or ground fixing bracket and battery box are fixed with flat head M6*14 screws

5.2.1 Check the battery status before installation



5.2.2 Choose a suitable installation location

- Do not place the battery within 60 cm of any flammable materials.
- The horizontal clearance between the equipment and any unrelated heat sources (such as water heaters, air-conditioning units, gas heaters, steam pipes, or space heaters) shall not be less than 60 cm. In addition, the equipment shall not be installed within 90 cm vertically below any of these heat sources.
- Ensure the ambient temperature remains between 10°C and 30°C to maintain optimal performance.
- The battery is suitable for both indoor and outdoor installation.
- For indoor installations, the battery must not be located in living spaces, roof cavities, or beneath stairways. It is recommended to install the battery in a garage or a dedicated battery room or cabinet with adequate natural ventilation. The battery is equipped with an emergency shut-off function to prevent the generation of hazardous gases; therefore, no forced ventilation is required.
- Install the battery on a level surface, away from direct sunlight (shaded area).
- Secure the battery to concrete, brick walls, or other non-flammable surfaces.
- Ventilation openings shall not be located within the following “restricted areas”:
 - within 600 mm of an exit;
 - within 600 mm of windows or ventilation openings of habitable rooms;
 - within 900 mm of a water heating system.In addition, ventilation openings shall be staggered from the air inlets and outlets of other equipment to prevent hot-air recirculation. For example, the outlet of an inverter shall not directly face the ventilation opening of a battery system.
- Maintain the required clearance distance around the battery to allow for proper heat dissipation (see figure below). The clearance from the ceiling should be at least 60 cm. If the distance between the top of the equipment and the ceiling or roof structure is less than 90 cm, the ceiling or roof surface within 60 cm outward from the edges of the equipment must be made of non-combustible materials (such as concrete or metal panels).



5.2.3 Ventilation requirements for indoor installation

(1) Normal Operating Condition

The equipment does not emit toxic or flammable gases during normal operation; therefore, no additional ventilation system is required.

(2) Ventilation Requirements Under Abnormal Conditions (e.g., electrolyte leakage, thermal runaway)

- To ensure potential toxic gases (such as HF) can be safely discharged under abnormal conditions, the ventilation openings shall meet the following requirements:
- The ventilation opening shall exhaust directly to the outdoors and shall not be connected to indoor air ducts;
- The ventilation opening shall not be located within restricted areas (e.g., near exits or windows of habitable rooms);

If the room lacks natural ventilation, an explosion-proof exhaust fan shall be installed.

(3) Note

These ventilation requirements are intended to ensure that non-hazardous levels of emissions or potential emissions during testing can be properly discharged. They are not intended to meet the test standard requirement of “no hazardous emissions of toxic or flammable gases.”

(4) Emergency Response to Electrolyte Leakage

In the event of electrolyte leakage, follow these steps:

- Immediately disconnect the equipment from power, including turning off the main switch and disconnecting the PE grounding conductor;
- Ventilate the room, and after air exchange is completed, measure the gas concentration to confirm safety before proceeding;
- Avoid contact of battery materials with skin or eyes. If contact occurs, rinse the affected area with plenty of water or seek medical assistance.

5.2.4 Battery and inverter connection and commissioning instructions

- (1) Electrical connection between battery and inverter. The compatible inverters are listed in Inverter Compatibility Statement.
- (2) The battery P+P- is connected to the BAT+ and BAT- of the inverter.
- (3) After connecting, make sure the positive and negative poles of the battery screws are not reversed and tighten the screws.

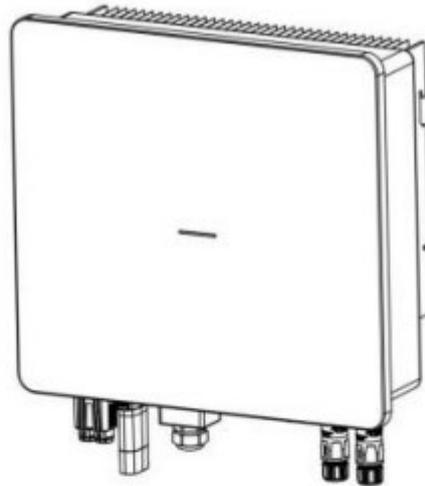


Figure 4.1 Inverter appearance

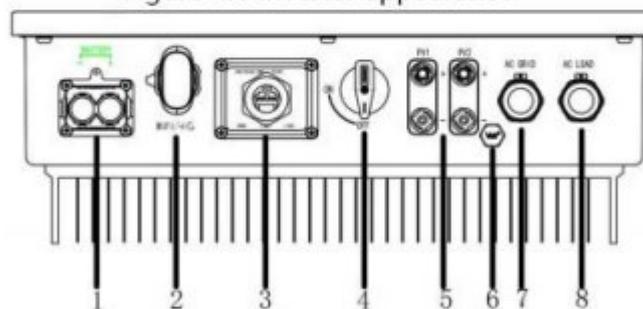
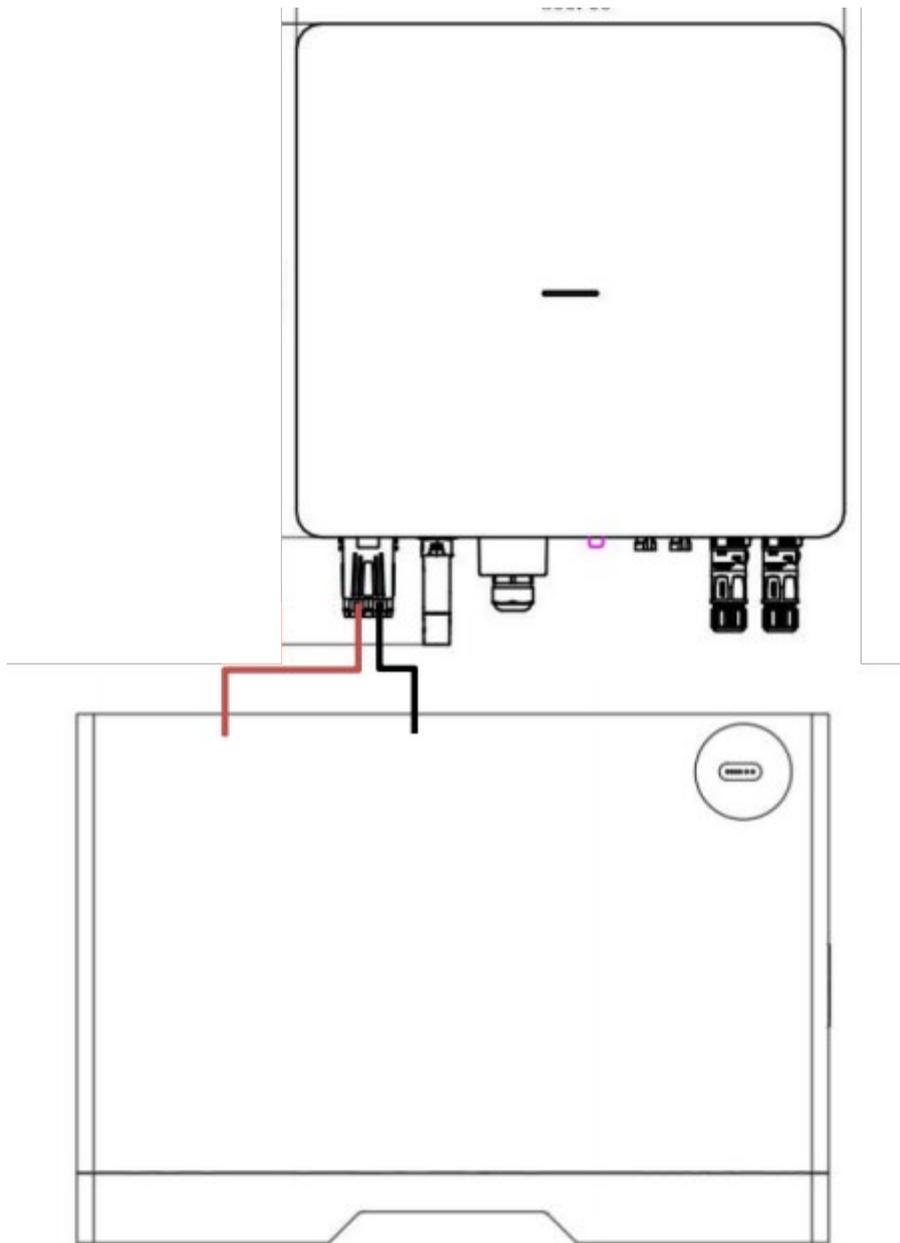
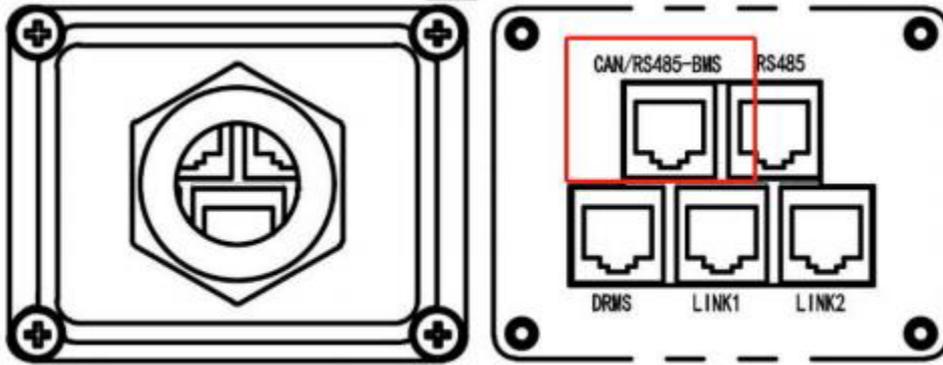


Table 4-1 Definition of external terminals

1	Battery DC input port	5	Photovoltaic DC input port(PV+/-)
2	WIFI/4G/Bluetooth	6	Explosion-proof ventilation device
3	Multifunctional communication interface	7	Grid-connected AC connection port
4	Photovoltaic DC input switch	8	Load wiring port



Communication line connection between battery and inverter:
Find an Ethernet cable and connect it to the CAN/485 port of the battery and the
CAN/485 port of the inverter.



1. **Power On Sequence**

Turn on the **battery switch** and the **circuit breaker**, then switch on the **inverter**.

2. **App Installation**

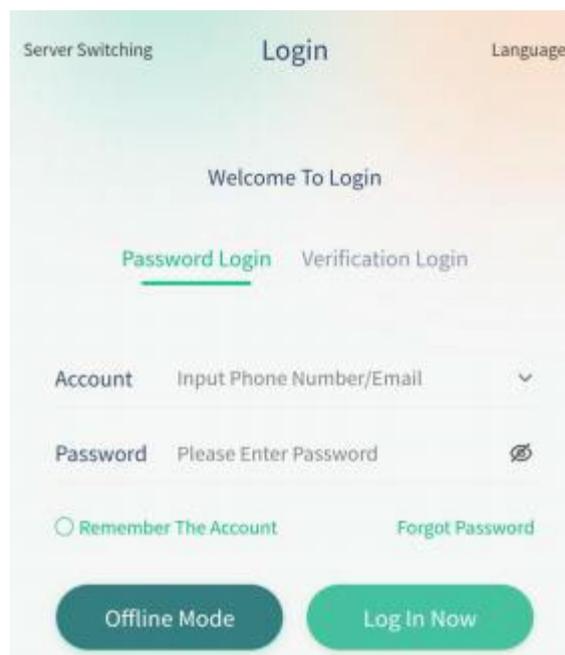
Search for and download the “**ESS_LINK**” app from your phone’s app store.

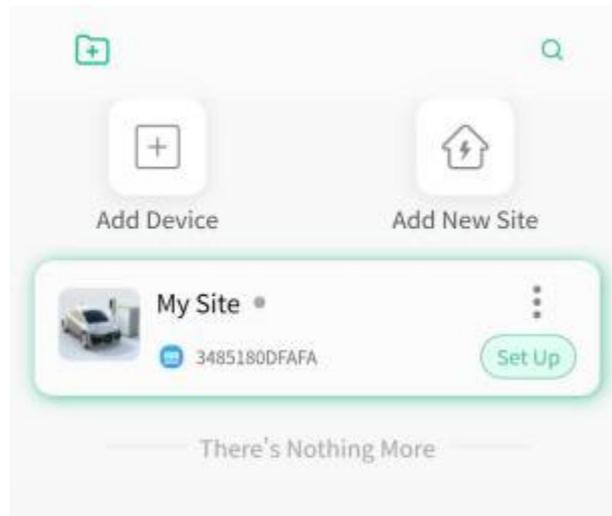
3. **System Setup and Verification**

After registering an **inverter account**, add your **power station** in the app.

Check the battery’s **state of charge (SOC)**, **voltage**, **charging current**, and **discharging current** on the inverter’s cloud platform.

Successful data display confirms that **communication between the battery and inverter** has been established





Grid	Load	Electric Meter	Photovoltaic	Battery	Inverter
Battery Voltage 1				53.4V	
Battery Current 1				0A	
Battery Full-load Support Time 1				0.45h	
Total Battery Power				0.15kW	
Battery Full Capacity Percentage				100.00%	
Battery Charging Capacity				0kW.h	
Battery Discharging Capacity				0kW.h	
Today's Battery Charging				0kW.h	
Today's Battery Discharging Capacity				0kW.h	
Total Charging Energy of Battery Cabinet 1				0kW.h	
Total Discharging Energy of Battery Cabinet 1				0kW.h	
Total SoC of Battery Cabinet				100.00%	

5.2.5 Post-installation inspection

(1) Clearance verification

Use a measuring tape to verify all actual installation clearances against the predefined equipment clearance requirements, including:

- Distance to walls, floor, and ceiling/roof;
- Safety distance to heat sources;
- Clearance from other equipment and ventilation openings;

Ensure no measured value exceeds the allowed deviation range.

(2) Mounting and fixation check

- Re-inspect all mounting bolts using a torque wrench to confirm proper tightening;
- Wall-mounted installations: Apply horizontal pulling force at the mid-height of the equipment to verify that the device does not shift and the brackets show no deformation;
- Floor-mounted installations: Apply horizontal pushing force to ensure the equipment remains stable without wobbling.

(3) Ventilation check

- Ensure all ventilation openings are unobstructed and free of debris;
- For indoor installations, operate the ventilation system for a period of time (e.g., 30 minutes). Then measure ambient temperature and relative humidity in the installation area to confirm compliance with the equipment-specified operating range;
- Use a smoke generator to test the abnormal-gas exhaust pathway, ensuring the smoke is fully discharged outdoors without backflow or stagnation.

(4) Accessories and interface inspection

- Accessory verification: Check that all accessories (e.g., PE grounding conductor, waterproof plugs, communication cables) are installed correctly, with no missing, loose, or incorrectly assembled parts;
- Grounding resistance test: Measure the grounding resistance of the PE grounding conductor with a grounding resistance tester to confirm effective grounding and compliance with safety limits;
- Interface inspection:
 - Visually inspect communication and power interfaces to ensure proper seating, no looseness, and correct wiring sequence;
 - For outdoor installations, pay special attention to waterproof plugs, ensuring they are intact, properly seated, and fully sealed;
- Voltage measurement: Measure the input terminal voltage using a multimeter to confirm that no overvoltage, unstable voltage, or other abnormal conditions are present that may cause electrical faults after power-on

6. Battery safety instructions

- Do not use the battery if it shows any signs of **deformation**.
- Do not use **thermal insulation** material to wrap up the batteries.
- Always **observe the correct polarity** of the battery and its terminals.
- Ensure the **equipment is properly insulated** and use tools and instruments **correctly and safely**.
- The **installation site** must be **away from fire and flammable materials** and should remain **well-ventilated and dry**.
- Do not **disconnect the battery terminals** while the system is operating.
- Only **qualified technical personnel** are permitted to open or service any functional module.
- Before first use, or after long-term storage, **fully charge the battery** using the **designated charger**.
- Do not **disassemble, open, crush, bend, puncture, or break** the battery.
- Do not **modify** the battery or connect it to unauthorized equipment. Avoid immersing the battery in **water, seawater, beverages, or any other liquids**. Keep it away from **fire, explosive materials, and other hazardous items**.
- Prevent the battery from **short-circuiting**. Do not allow **metal objects or conductors** to come into contact with the terminals.
- Do not drop the battery. If it is dropped, especially onto a hard surface, **contact the service centre** before further use.
- If there are any signs of **electrolyte leakage**, avoid direct contact with **skin or eyes**. In case of contact, **rinse immediately with plenty of water** and **seek medical attention**.
- Do not disassemble individual **battery cells**, as this may cause **internal short circuits, fire**, or other hazards.
- Do not **burn** or **throw the battery into fire**, as this may cause **explosion or fire**.