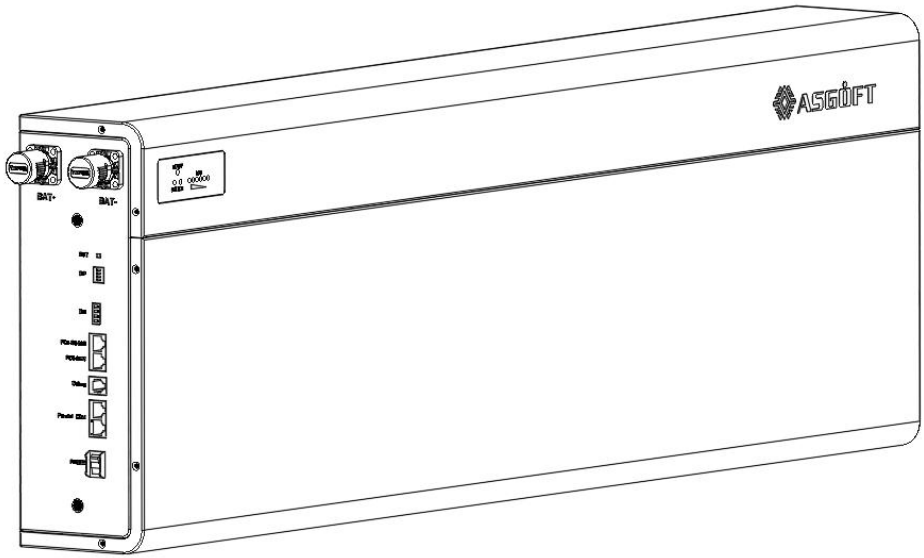
Wall-mounted energy storage battery
ASH-51153
User Manual



Product Model: ASH-51153

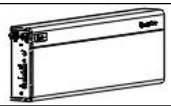
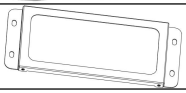
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1. Disclaimer

To protect the legitimate rights and interests of users, please carefully read this user manual before using this product to ensure proper use after a complete understanding. After reading, please keep this user manual in a safe place for future reference. Failure to operate this product correctly may cause serious injury to yourself or others, or result in damage to the product and property loss. By starting to use this product, you are deemed to have read, understood, acknowledged, and accepted all terms and contents of this product manual, disclaimer, and safety instructions. Users are responsible for their own actions and all consequences arising therefrom. Guangdong Palt New Energy Co., Ltd. (hereinafter referred to as Palt) assumes no responsibility for any losses arising from users' failure to use the product in accordance with the User Manual. Subject to compliance with laws and regulations, the company reserves the final right of interpretation of this document and all related documentation for this product. Updates, revisions, or discontinuation of this product will be made without prior notice. Please visit the official Palt website for the latest product information.

2. Packing list

	ASH-51153 *1			User Manual *1
	Wall mounting bracket A*1			Long pendant*1
	Handle*4			Expansion screws (M10-70mm) *4
	OC terminal*2			Parallel communication line*1
	M6 screws * 6			

3. Safety Guidelines

1. Do not expose this product to fire, water, or other liquids. Avoid using this product in direct sunlight or in humid environments.

2. Do not install the power supply in harsh environments such as those exposed to oil smoke, flammable or explosive materials, temperatures exceeding 40°C, temperatures below 0°C, or where there is heavy dust accumulation. Doing so will severely degrade product performance or even damage it, potentially endangering safety.

3. Do not use this product in environments with strong static electricity or strong magnetic fields.

4. This product should be installed and operated by qualified personnel. These personnel must be familiar with local regulations and electrical systems, have received professional training, and be familiar with the relevant product knowledge. Non-qualified personnel are prohibited from disassembling this product in any way. Unauthorized disassembly of this product may cause personal injury and may result in personal injury. Contact our qualified service personnel for repairs. Unauthorized disassembly will void the warranty.

5. Do not use unauthorized parts or accessories. If replacements are required, please contact our official sales channels for inquiries and purchase.

6. Do not use the power supply in parallel with other power supplies to avoid damage.

7. Do not place heavy objects on top of this product. Do not forcibly block the fan during use.

8. Handle this product with care to avoid impact, dropping, or severe vibration. If severe external impact occurs, immediately turn off the power and discontinue use. Secure the product during transportation to avoid vibration and impact. For long-distance transportation, it is recommended to use the original packaging.

9. If the product is accidentally dropped into water while in use, place it in a safe, open area. Stay away from the product until it has dried. Once dried, do not reuse the product and dispose of it properly according to the "Disposal" section below. If the product catches fire, use fire extinguishers in the following recommended order: water or water mist, sand, fire blanket, dry powder, and carbon dioxide fire extinguisher.

10. If the product connectors are contaminated, wipe them clean with a dry cloth.

11. This product is not recommended for powering medical emergency equipment related to personal safety, including but not limited to hospital-grade ventilators (Continuous Positive Airway Pressure) and ECMO (Extracorporeal Membrane Oxygenation). Home-use CPAP machines are suitable for home use and generally do not require continuous professional monitoring. Please follow your doctor's advice and consult the manufacturer regarding the device's usage restrictions. If used with general medical equipment, please monitor the battery level to ensure it does not run out.

12. Power supply products inevitably generate electromagnetic fields during use. These electromagnetic fields may affect the normal operation of implantable medical devices or personal medical devices, such as pacemakers, cochlear implants, hearing aids, and defibrillators. If these medical devices are used, please consult the manufacturer regarding the device's usage restrictions to ensure that this product maintains a sufficient safe distance from the implanted medical device (such as a pacemaker, cochlear implant, hearing aid, or defibrillator). 13. When the power supply is connected to the refrigerator load in normal mode, the power may automatically shut down due to the power fluctuation properties of some refrigerators. If the refrigerator stores medicines, vaccines or other high-value items, it is recommended to pay attention to whether there is a power outage after connection to ensure continuous power supply to avoid unnecessary losses.

3.1 Disposal

If conditions permit, please ensure that the battery in this product is completely discharged before placing it in a designated battery recycling bin. This product contains batteries, which are hazardous chemicals. Do not dispose of them in ordinary trash. Please follow local battery recycling and disposal regulations for details.

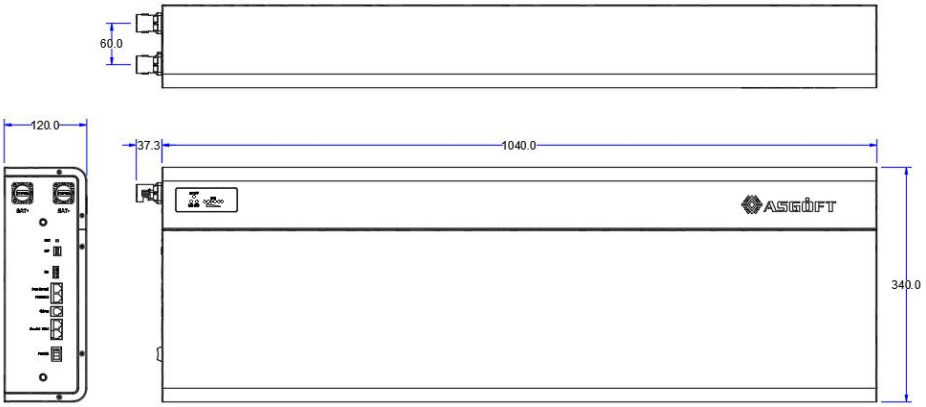
If the battery cannot be fully discharged due to a malfunction in this product, do not dispose of it directly in the battery recycling bin. Contact a professional battery recycling company for further processing.

4. Specifications

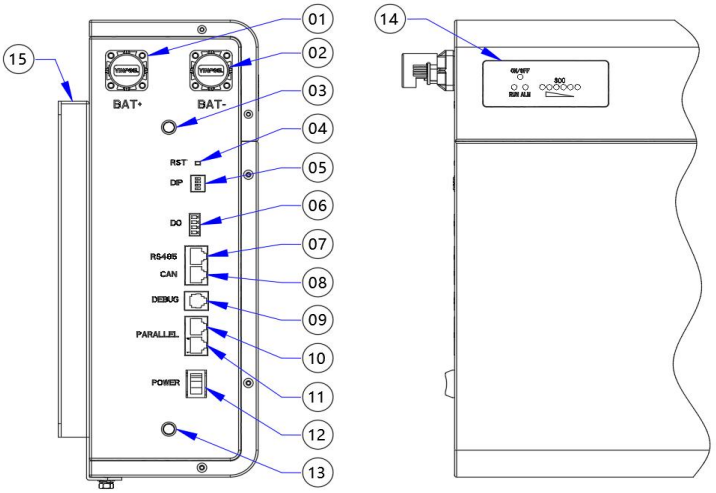
Project	Standard	Remark
Model	ASH-51153	

Rated capacity	153Ah	
Battery	7833.6Wh	
Battery cell chemistry	Lithium iron phosphate battery cells	
Combination	16S1P	
Nominal voltage	51.2V	Voltage range: 43.2~58.4V
Rated charging current	26A	
Rated discharge current	26A	
Maximum charging current	100A	
Maximum discharge current	100A	
Charging limit voltage	58.4V	
Discharge cut-off voltage	43.2V	
Battery cycle times	> 6000	
Battery capacity expansion	2-15	
Internal resistance	< 60mΩ	The measurement frequency is 1kHz
Overall dimensions	1040*340*120	L*W*H（mm）
Net battery capacity	58kg±5%	
Operating temperature range	Charging: 0 ~ 50℃	0℃ ~ 10℃ limited to 30A charging
	Discharge: -20 ~ 55℃	-10℃ ~ 0℃ limit 20A discharge 0℃ ~ 10℃ limit 50A discharge

5. External dimensions



6. Definition of structure and function



S/N	Silkscreen	illustrate	Remark
1	BAT-	Battery negative terminal	
2	BAT+	Battery positive terminal	
3		M8 screw hole	When moving, use the handle to turn at this point.

4	RST	Reset switch	
5	DIP	Dip switch	
6	DO	Dry Contact	
7	RS485	RS485 communication, connected to inverter	
8	CAN	CAN communication, connected to inverter	
9	DEBUG	RS232 communication method, communicating with the upper computer on the PC side	
10	PARALLEL	RS485 Parallel Communication Output	
11	PARALLEL	RS485 Parallel Communication Input	
12	POWER	Power switch	
13		M8 screw hole	When moving, use the handle to turn at this point.
14		Status indicator	
15		Wall mounting brackets	

7. Installation Instructions

Please note during installation:

a. This device should be installed in a cool, well-ventilated area. Avoid installing it near flammable or explosive materials.

b. The wall surface must be flat and perpendicular to the ground.

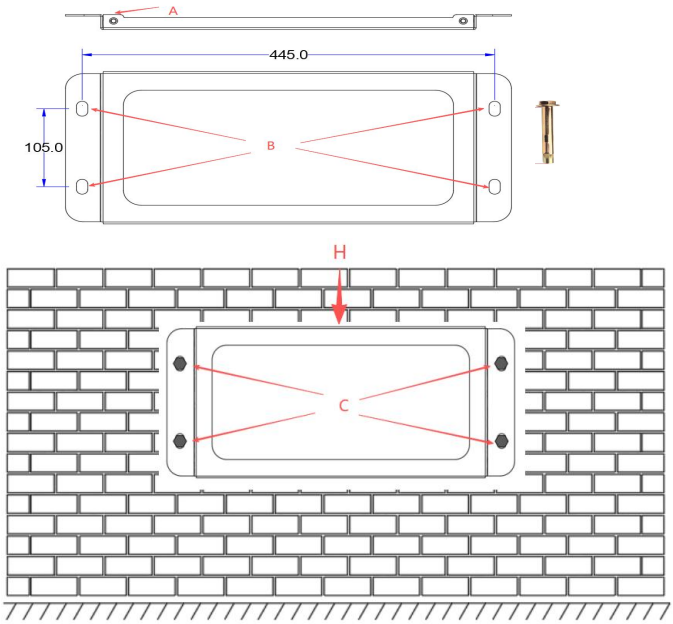
c. The operating temperature of the device must be between 0°C and 55°C.

Warning! All wiring must be performed by qualified personnel.

7.1 Install the wall mounting brackets:

1) Place the wall mount on the wall (side A in the image below). Measure the level with a spirit level. Mark the centers of the four holes at point B with a colored marker. Use an electric drill with a 12mm diameter drill bit to drill holes to a depth of 80mm.

2) Place the wall mount on the wall, align the holes, and then drive expansion screws into the holes and tighten them, as shown in point C.

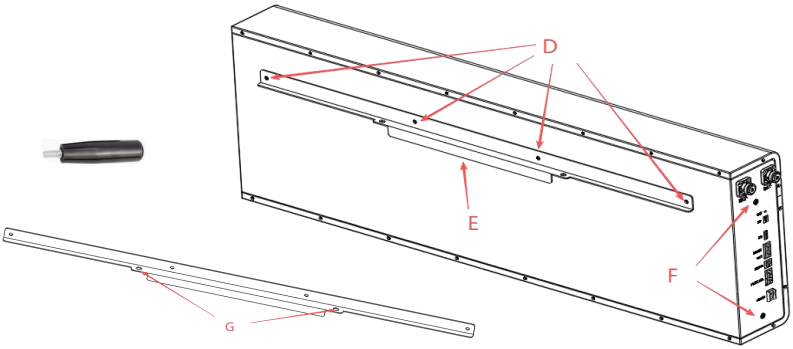


7.2 Hanging Products

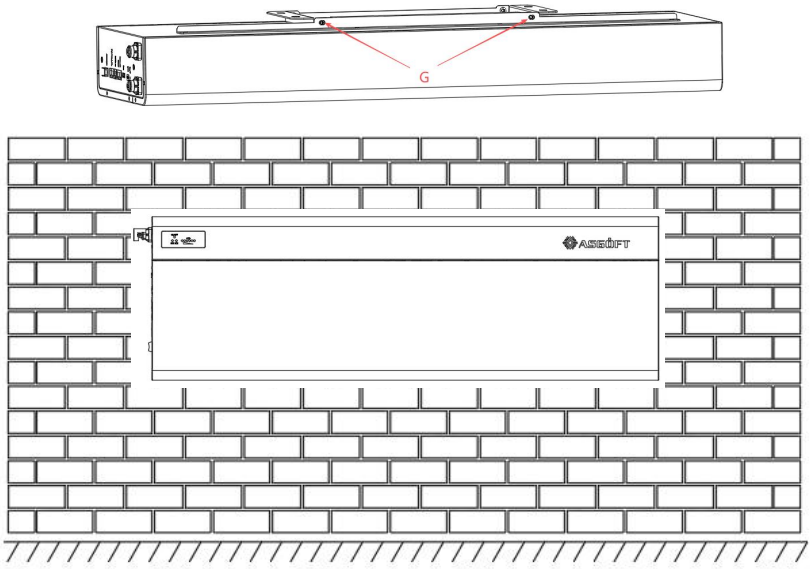
1) Install the long hanger on the back of the product and tighten it with four M6 screws at point D, paying attention to the orientation of the hooks as shown in the figure below (at point E).

2) Tighten the four handles into the screw holes on both sides of the product (at point F) to facilitate lifting and installation.

3) Lift the product, aligning the hooks at point E with the grooves at point H on the wall-mount bracket shown in the figure above, and hang it in place.



4) After hanging the product, there are two screw holes at G on the top of the product. Tighten them with M6 screws to ensure that the product does not loosen.



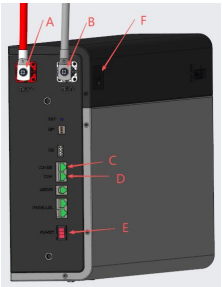
8. Connection of electrical circuits

8.1 Crimp terminal wire:



Connect the delivered cold-pressed terminal to the copper wire with a diameter of ≥25²mm and press the wire tightly with hydraulic pliers. It is recommended to use a red wire as the positive pole and a black wire as the negative pole for easy identification.

8.2 Connection of positive and negative poles of batteries:



Before wiring, ensure that the OFF switch at E is pressed, the indicator light at F is off, and there is no voltage between A and B.

1) Connect one end of the two pre-pressed terminal cables to the load (such as an inverter) and the other end to the product. Connect the positive terminal to the red wire at A and the negative terminal to the black wire at B. Secure the connections with the screws.

2) If the inverter is capable of communication, select either C (RS485 communication) or D (CAN communication) depending on the inverter's protocol. This product defaults to the Paineng protocol. If you are using an inverter like Paineng or Deye, plugging in the cables will enable direct communication.

9. Power on/off

9.1 Power on:

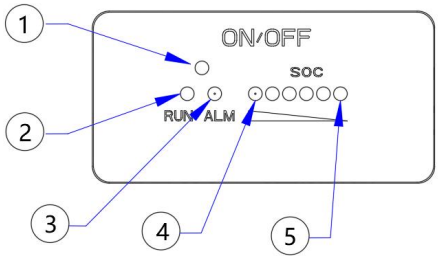
After ensuring the wiring is correct, press the switch at E in the figure above. All the indicators at F will flash once from left to right. The BMS self-test is complete and there is no battery fault information. In the figure below, the power indicator at ① will be on steadily, and the run indicator (RUN) at ② will flash according to the flashing pattern in the "Indicator Function Description Table". The red fault indicator (ALM) at ③ will not light up. The six indicators below the remaining power "SOC" will light up according to the remaining power. At this time, the system enters normal operation. Use a multimeter to measure the voltage between AB and 43.5V.

9.2 Shutdown:

Press E again, all indicators go out, there is no voltage output between AB, and the device enters shutdown state.

10. Indicator Light Description

10.1 LED working status indication



serial number	illustrate
1	Power indicator
2	Running indicator light
3	Fault indicator light
4	Battery indicator L6
5	Battery indicator L1

10.2 Indicator light flashing mode

Flashing mode	ON	OFF
Flash 1	0.25S	3.75S
Flash 2	0.5S	0.5S
Flash 3	0.5S	1.5S

10.3 Indicator Light Function Description

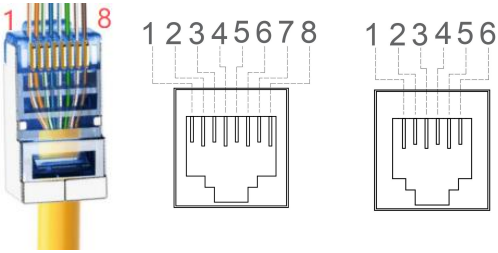
State	Normal/Warning/Protection	ON/OFF	RUN	ALM	Battery indicator LED						illustrate
		•	•	•	•	•	•	•	•	•	
Shutdown	Hibernation	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Not bright
Standby	Normal	Bright	Flash1	OFF	According to the power indicator						Standby mode
	Alarm	Bright	Flash1	Flash3							Module low voltage
Charge	Normal	Bright	Bright	OFF	According to the power indicator (Power indicator LED Flash 2)						ALM does not flash when overcharge alarm occurs
	Alarm	Bright	Bright	Flash3							
	Overcharge protection	Bright	Bright	OFF	Bright	Bright	Bright	Bright	Bright	Bright	Disconnect charging and switch to standby
	Temperature, overcurrent, and failure protection	Bright	OFF	Bright	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Bright	Flash3	OFF	According to the power indicator						
	Alarm	Bright	Flash3	Flash3							
	Undervoltage protection	Bright	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Temperature, overcurrent, short circuit, reverse connection, and failure protection	Bright	OFF	Bright	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Failure		OFF	OFF	Bright	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging and discharging

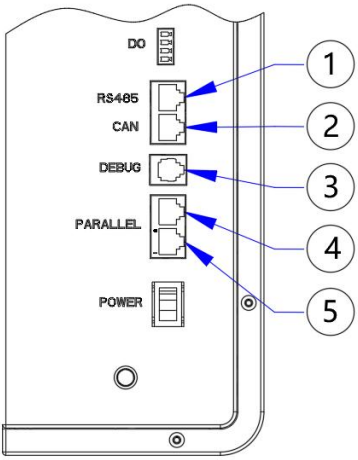
10.4 Capacity Indication

State		Charge						Discharge					
Capacity indicator light		L6●	L5●	L4●	L3●	L2●	L1●	L6●	L5●	L4●	L3●	L2●	L1●
Battery	0 ~ 16.6%	OFF	OFF	OFF	OFF	OFF	Flash2	OFF	OFF	OFF	OFF	OFF	Bright
	16.6 ~ 33.2%	OFF	OFF	OFF	OFF	Flash2	Bright	OFF	OFF	OFF	OFF	Bright	Bright
	33.2 ~ 49.8%	OFF	OFF	OFF	Flash2	Bright	Bright	OFF	OFF	OFF	Bright	Bright	Bright
	49.8 ~ 66.4%	OFF	OFF	Flash2	Bright	Bright	Bright	OFF	OFF	Bright	Bright	Bright	Bright
	66.4 ~ 83.0%	OFF	Flash2	Bright	Bright	Bright	Bright	OFF	Bright	Bright	Bright	Bright	Bright
	83.0 ~ 100%	Flash2	Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright
Running indicator light●		Bright						Flash (Flash3)					

11. Signal communication

11.1 Communication port pin definition





11.2. Communication with the inverter:

This product can communicate with the inverter via a network cable, transmitting information such as battery voltage, operating temperature, and battery charge level to the inverter.

1) ① in the figure is RS485 communication, with the factory default setting being the Pytron communication protocol and a baud rate of 9600 bps.

2) ② in the figure is CAN communication, with the factory default setting being the Pytron communication protocol and a baud rate of 500K.

The pin function definitions are as follows:

RJ45 Pinout	1	2	3	4	5	6	7	8
①：RS485	485-B	485-A	GND	---	---	GND	485-A	485-B
②：CAN	---	GND	---	CAN-H	CAN-L	---	---	---

11.3 Parallel communication:

This product can be used in parallel with multiple units. Connect multiple units via a network cable. By connecting a host computer to the RS232 communication port of the first unit, you can view information such as the battery voltage, operating temperature, and battery charge level of all units in parallel.

1) Point 4 in the diagram is the parallel communication output port, using 485 communication at a baud rate of 9600bps.

2) Point 5 in the diagram is the parallel communication input port, using 485 communication at a baud rate of 9600bps.

The pin function definitions are as follows:

RJ45 Pins	1	2	3	4	5	6	7	8
④：PARALLEL	485-B	485-A	GND	GND	UP_IN	GND	485-A	485-B
⑤：PARALLEL	485-B	485-A	GND	GND	DN_OP+	GND	485-A	485-B

11.4、 PC-side host computer communication:

Use an RS232 to USB adapter to connect to a computer at point ③ in the figure. The host computer software allows you to set protection parameters such as overcharge, overdischarge, charge and discharge overcurrent, overtemperature, and undertemperature, as well as capacity, sleep, and balancing. The default baud rate is 9600bps.

RJ45 Pins	1	2	3	4	5	6
③：RS232	----	----	TX	RX	GND	----

12. Other functions

12.1. Buzzer Action Description:

In the event of a fault, the buzzer beeps for 0.25 seconds every 1 second.

In the event of a protection condition, the buzzer beeps for 0.25 seconds every 2 seconds (excluding overvoltage protection).

In the event of an alarm, the buzzer beeps for 0.25 seconds every 3 seconds (excluding overvoltage alarm).

The buzzer function can be enabled or disabled by the host computer and is disabled by default.

12.2 Reset button description:

When the product is in sleep mode, pressing the button for 3-6 seconds and then releasing it activates the product, and the LED indicators illuminate sequentially for 0.5 seconds, starting with "RUN."

When the product is active, pressing the button for 3-6 seconds and then releasing it puts the product into sleep mode, and the LED indicators illuminate sequentially for 0.5 seconds, starting with the lowest battery level.

When the product is active, pressing the button for 6-10 seconds and then releasing it resets the protection board, and all LEDs illuminate simultaneously for 1.5 seconds.

After resetting, the product retains the parameters and functions set by the host computer. If you need to restore the initial parameters, you can use the "Restore Defaults" function on the host computer. However, relevant operating records and stored data (such as battery level, cycle count, and protection history) remain unchanged.

12.3. Hibernation:

The system enters low-power mode when any of the following conditions are met:

1) Single-cell or overall over-discharge protection is not released within 30 seconds.

2) A button is pressed (3-6 seconds) and then released.

3) The lowest single-cell voltage falls below the sleep voltage for a period equal to the sleep delay time (all while no communication, no protection, no balancing, and no current flow).

4) The standby time exceeds 24 hours (no communication, no charging or discharging, no mains power).

5) The system is forced to shut down via the host computer software.

Before entering sleep mode, ensure that no external voltage is connected to the input terminals; otherwise, low-power mode will not be entered.

12.4. Wake-up:

When the system is in low-power mode and any of the following conditions are met, it will exit low-power mode and enter normal operation:

1) Connected to a charger with an output voltage greater than 48V.

2) Press and hold the button for 3-6 seconds and then release it.

4) RS232 communication is activated.

13. Battery parallel connection

Notice! Turn off all devices and disconnect the power before wiring.

The number of parallel connections for this product is between 2 and 15 units, with a maximum of 15 units.

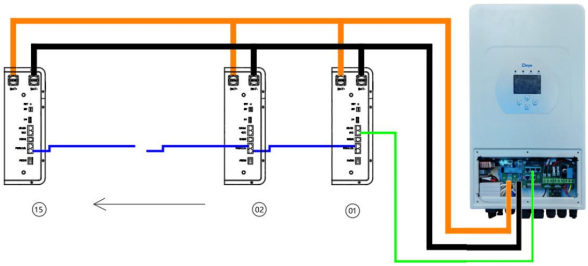
13.1 Parallel Wiring:

Before wiring, try to charge or discharge all batteries used for parallel operation to the same level before connecting them.

1) Connect the positive and negative terminals of the batteries. The orange color represents the positive terminal, and the black color represents the negative terminal. Connect the positive terminals of each unit to the positive terminals, and the negative terminals to the negative terminals.

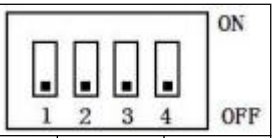
2) The blue cable is the parallel communication cable. Use an RJ45 cable to connect one end to the parallel port of the first unit and the other end to the parallel port of the next unit, and connect the parallel communication cables in sequence.

3) The green cable is the communication cable between this product and the inverter. Depending on the inverter's communication method, you can connect it to the RS485 port or CAN port.



13.2 Set the address code of each battery:

1) Manual dialing: Set the address for each battery. The address encoding value is in binary format. According to the order of the batteries in parallel in the figure above, dial the dial switch (A) of each battery according to the table below.

Address	Dip switch position 			
	#1	#2	#3	#4
01	**ON**	OFF	OFF	OFF
02	OFF	**ON**	OFF	OFF
03	**ON**	**ON**	OFF	OFF
04	OFF	OFF	**ON**	OFF
05	**ON**	OFF	**ON**	OFF
06	OFF	**ON**	**ON**	OFF

07	ON	ON	ON	OFF
08	OFF	OFF	OFF	ON
09	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14		ON	ON	ON
15	ON	ON	ON	ON

2) Automatic Dialup: This product also features automatic dialup. Turning all battery DIP switches to OFF initiates automatic dialup mode. After powering on, the batteries will automatically dial up. The automatic dialing sequence will generally be sequenced in the order in which the batteries were powered on. If the dialing fails, all indicators on the corresponding unit will flash simultaneously.

After connecting and checking the cables, power on the unit. Start with battery #, then power on the inverter one by one in the order in which the batteries were powered on.

14. Storage, care and maintenance

14.1 Storage

Before storing, please charge this product and ensure that the power is around 50% and the device is turned off. Store this product flat in a cool, dry and well-ventilated place. The recommended long-term storage temperature is 15°C-25°C. During storage, please charge this product according to the following table:

Storage temperature	Charging frequency	Recharge
0℃-40℃	Every 3 months	Charge to 50%

14.2 Maintenance

A. This product operates at high voltage and should only be repaired by qualified service personnel.

B. Even when this product is turned off, its internal components remain connected to the battery, creating a potential hazard.

C. Only technicians familiar with this product should perform repairs/maintenance. Unauthorized personnel are prohibited from operating this product.

D. This product may cause electric shock and has a high short-circuit current. Before repairing/maintenance, please remove any metal objects, such as watches and rings.

E. Do not disassemble this product without authorization.

15. Warranty Statement

15.1 Standard Warranty Period

ASGOFT offers a warranty for products that meet both of the following conditions:

A. A 24-month product warranty from the date of delivery.

B. A warranty for this product for a maximum of 6,000 cycles

15.2 Warranty Prerequisites

A. This product must be malfunctioning during the warranty period, unless the malfunction is caused by human error or force majeure.

B. Any system malfunction, fault, or warning that causes the system to not operate or malfunction must be reported within two weeks of occurrence in accordance with the terms of the "Warranty Policy."

C. This product must be installed and operated by qualified personnel familiar with local regulations and electrical systems, professional training, and knowledge of this product.

D. This product must be installed, operated, and used correctly in accordance with the user manual.

E. When requesting after-sales service or activating the warranty, proof of original purchase or equivalent documentation is required. The validity of this document is determined by ASGOFT.

15.3 Warranty Policy

If this product fails or doesn't work properly during the warranty period due to quality issues, please email ASGOFT's after-sales service email: service@asgoft.com. ASGOFT will provide a solution based on the product and fault information you provide, through ASGOFT or its authorized third-party service providers/distributors. ASGOFT end users should first contact their installer or distributor to report and resolve any issues with your product.

If a product malfunctions, please provide the following information or documentation (this information will assist our after-sales service team in addressing product issues):

a. Product model name and serial number;

b. Images of indicator lights or error messages on the inverter display (if applicable) and other descriptive error messages;

c. Detailed information about the entire power generation system (including the inverter used, circuit connections, etc.);

d. Previous error messages (if applicable);

If a quality issue occurs during the warranty period, ASGOFT will resolve the issue in the following ways, depending on the specific situation:

a. Remote online answers and guidance or software upgrades;

b. On-site inspection or repair;

c. Provision of original spare parts or a complete product set for on-site replacement.

15.4 Warranty Disclaimer

Product problems caused by the following circumstances are not covered by the ASGOFT standard warranty:

A. The product has expired (unless the parties have agreed to an extended warranty);

B. Failure or damage caused by failure to follow the user manual or related installation and maintenance instructions, or due to operating conditions, storage, or use not specified for the product. Such as installation distance, insufficient ventilation, etc.;

C. Unauthorized disassembly, repair, or modification of the product without ASGOFT authorization;

D. Failure or damage caused by unforeseen, human factors, or force majeure, such as storms, floods, flash power failure, overvoltage, insect infestation, fire, theft, etc.;

E. Consumable parts;

F. Failure to adhere to acceptable standards for maintenance procedures for this product;

J. Deliberate damage, defacement, or indelible markings (such as paint);

H. Failure to operate the product due to connection to other test equipment (such as a DC power supply);

I. Failure during transportation (including scratches on properly packaged products during transportation);

J. Rust or corrosion on the product casing due to harsh environments;

K. Products purchased from unauthorized channels are not covered by ASGOFT's product warranty.