



AW10000

Lithium Battery

USER MANUAL

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Preface

Purpose

This manual describes the assembly, installation, operation and troubleshooting of the unit. Please read this manual carefully before installation and operation. Keep this manual for future reference.

Scope

This manual provides safety and installation instructions as well as information on tools and wiring.

Disposal

The storage, use and disposal of the products shall be carried out in accordance with the product manual, relevant contract or local environmental laws and regulations.

Target Group

This document is applicable to qualified personnel, but end users can execute programs that do not require qualification.

A qualified person requires having the relevant know-how and experience in the operation and installations of lithium batteries, and electrical devices (in particular inverters). Additionally, Knowledge of the applicable standards and safety procedures related to the aforementioned installations.

Disclaimer

Before using this product, please carefully read this manual, especially safety instructions, warning information, terms of use, and disclaimers. The user shall bear the risks and losses that may arise during the use of this product.

In compliance with law and regulations, the final interpretation rights of this document and all related documents of this product belong to the company.

No further notifications will be given in case of any update, revision or termination.

Safety Instructions

The following clauses contain important safety and operating instructions, please review it carefully.



Caution

- **Caution: Installing batteries, especially with inverters, poses a high-risk of electrocution or fire.**
- **Installation may only be performed by a qualified person.**
- Connect wires firmly, do not reverse polarity or bridge between poles.
- Do not puncture, drop the product when using it to avoid any physical damage to the batteries.
- Always keep the batteries dry, and avoid wet or humid environments where they are installed.
- Do not expose batteries to open flames or high temperature environments.
- Turn off the power when maintain or moving batteries.
- If a fire occurs, only dry powder fire extinguishers or other non-liquid methods can be used to extinguish the fire.
- Do not disassemble the batteries.
- If the batteries exhibit any faults, please contact the agent or supplier, do not attempt to repair by unauthorized person.
- When installed, batteries shall be grounded.
- Only used with compatible devices (especially inverters).
- Do not combine AU9000 Lithium Batteries with any other lithium batteries.
- When not in use (storage), batteries should be recharged once every 6 months, and the Charging amount should not exceed 80% of the rated capacity.
- Working temperature should be between -20°C and 60°C.
- Avoid dust where possible.
- Please charge the battery as soon as it gets empty because that will help to keep cycle life span.

Failure to comply with any of the above may damage the batteries and void the warranty.

Manual Declaration

The AW10000 lithium iron phosphate battery energy storage system can provide energy storage solutions for photovoltaic power generation users through parallel combination.

This user manual details the basic structure parameters, basic procedures and methods of installation, operation and maintenance of the equipment.

1 Introduction

1.1 Brief Introduction

The AW10000 Lithium Batteries are energy storage devices which are intended for the use in backup power and solar energy solutions.

1.2 Products Features:

The anode's material of the battery is lithium iron phosphate, battery cells are managed effectively by BMS with better performance, and the system's features are as below:

- The AW10000 Lithium Batteries offer high performance with 25A discharge current.
- The batteries are manufacture with quality lithium iron phosphate (LiFePO4) cells for extended life cycle.
- The battery' cells are managed by the latest Batteries Management System (BMS) for improved performance and protection against over-discharge/charge current/voltage and high/low temperature.
- Our products comply with European ROHS standards, are SGS Certified and are composed of nontoxic environment-friendly materials.
- The batteries are parallelable (Maximum of 3 units) for use in large energy storage solutions.
- The batteries offer a high depth of discharge (DOD) and low cut off voltage for maximum use.

2 Packing List

No.	Item	Quantity(pcs)	Notes
1	Battery AW10000	1	409.6V,7536Wh
2	Battery parallel cable	2	For parallel connection of batteries
3	L-shaped plug, orange	1	
4	L-shaped plug, black	1	
5	Ground wire terminals, $\Phi 6$	2	
6	User manual	1	
7	Install connector	2	For wall installation

3 Product Specification

3.1 Size and Weight

Battery size: 680mm*1110mm*125mm

Battery weight: ~88kg



3.2 Parameters

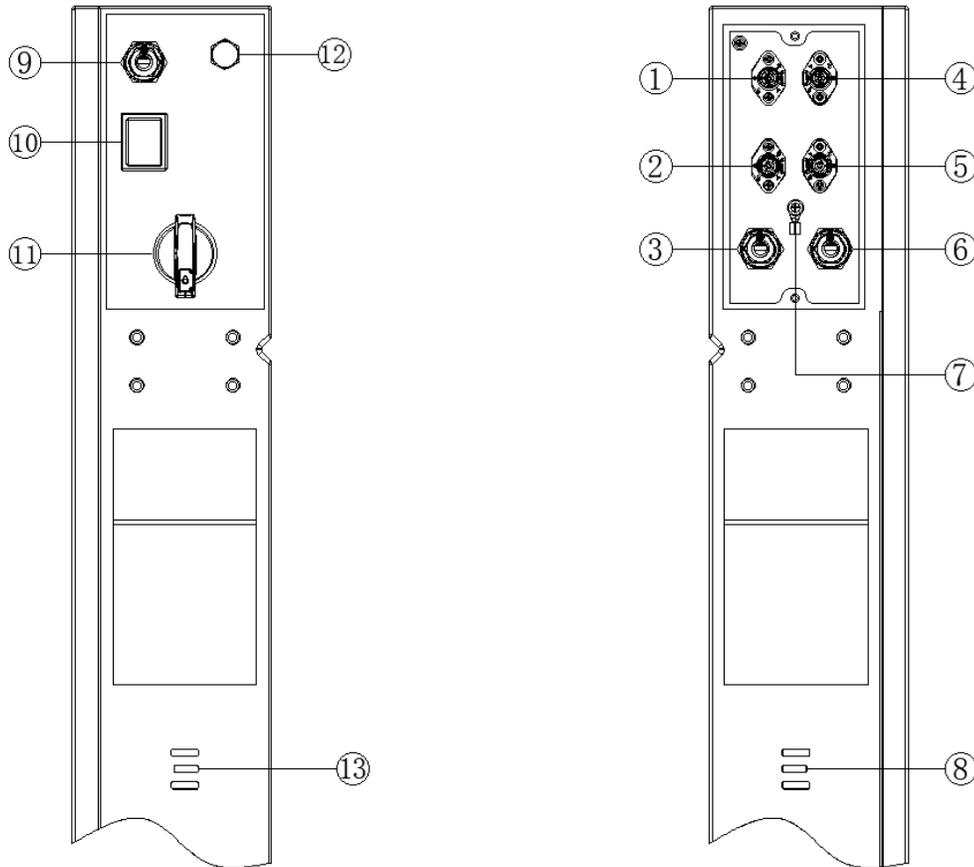
SPECIFICATIONS	
MODEL	AW10000
Rated Power	10000W
Parallel Capability	Up to 3 units
Basic Parameter	
Rated Voltage	409.6V
Nominal Capacity	7536Wh
Physical	
Dimension, W*H*D	680*1110*125mm
Net Weight	~88kg
Communication Interface	RS485/CAN/TCP/IP
Electrical Parameter	
Charge Mode	CC/CV/CP
Max. Charge Current (1)	18.4A
Charging Cut-off Voltage	460.8V
Discharge Mode	CC/CP
Discharging Cut-off Voltage	371.2V
Max. Discharge Current (2)	27.6A
Environment	
Humidity	5% to 95% RH
Operating Temperature	Charging: -10~+50°C / Discharging: -20~+60°C
Storage Temperature	-20~+45°C(three months) / -20~+25°C(one year)
Shipment Status	Voltage: 416~432V, SOC: 60~80%
Warranty	
10 years warranty, >6000 cycles life	

Notes:

(1) For better battery life cycles, we suggest charge in 9A (0.5C @25°C)

(2) For better battery life cycles, we suggest discharge in 9A (0.5C @25°C)

3.3 Interface Setting



Item	Name	Definition
1, 4	Positive Terminal	Battery output positive and parallel positive terminal
2, 5	Negative Terminal	Battery output negative and parallel negative terminal
3, 6	Communication port	Battery parallel communication and inverter communication port
7	Ground	Shell ground connection
8, 13	SOC Indicator	Refer to Chapter 4.2 1. SOC status 2. Alarm and processing
9	Communication port	Upper computer communication port
10	DIP Switch	Define battery address
11	Power Switch	ON/OFF, must be in the "ON" position when using
12	Pressure relief valve	Prevent excessive internal pressure of the battery and ensure its safe operation

3.4 Battery Management System (BMS)

3.4.1 Voltage Protection

Low-voltage protection

The battery will disconnect when low-voltage cut off is reached and will recover once it is recharged to reach the required voltage.

Over-voltage protection

The battery will stop charging when max-voltage cut off value is reached, charging will resume once the voltage goes under the setting value.

3.4.2 Current Protection

Over-current charge protection

The battery will stop charging when current exceed the maximum allowed current, charging will resume once the voltage goes under setting value.

Over-current discharge protection

When the discharge current is larger than the protection value, the battery will stop discharging. The protection will be released after rated delay time.

3.4.3 Temperature Protection

Under/Over temperature protection in charge

When the temperature of the battery is beyond range of $-10\sim+55^{\circ}\text{C}$ during charging, temperature protection will be triggered and the battery will stop charging. The protection will be released when the temperature returns to the set range.

Under/Over temperature protection in discharge

The working temperature of the battery is between -20°C and 60°C , the battery will be disconnected if these values are exceeded. The battery will resume operation once temperature reaches the allowed values.

3.4.4 Other Protection

Short Circuit Protection

When a short circuit happens, the short-circuit protection will be triggered. The protection will be released after removing the load or connecting the charging source.

Self-Shutdown

The device will dormant automatically if there are no external loads and no power supply or no external communication for over 24 hours

4 Installation and Configuration

4.1 Ready for installation

Safety Requirement

This system can only be installed by personnel who have been trained in the power supply system and have sufficient knowledge of the power system.

The safety regulations and local safety regulations listed below should always be followed during the installation.

- Use suitable cables for the expected load current.
- Sufficient space is available for the batteries.
- Sufficient ventilation exists as to avoid overheating of the batteries and other equipment.
- Use adequate personal protective equipment (PPE) when installing batteries.
- The power line specification shall meet the requirements of maximum discharge current for each product.

4.1.1 Environmental requirements

Working temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

- Charging temperature: $-10^{\circ}\text{C} \sim +50^{\circ}\text{C}$,
- Discharging temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

Storage temperature: $-20^{\circ}\text{C} \sim +25^{\circ}\text{C}$, <1year. $-20^{\circ}\text{C} \sim +45^{\circ}\text{C}$, <3moths

Relative humidity: 5% ~ 95%RH

Elevation: no more than 4000m

Operating environment: Indoor/outdoor installation, avoid conductive dust and corrosive gas.

Also meet the following conditions:

- The ground is flat and level.
- There is no flammable explosive near to the installation places.
- The optimal ambient temperature is $15^{\circ}\text{C} \sim 30^{\circ}\text{C}$
- Keep away from dust, high humidity and high condensation areas

4.1.2 Tools and data Hardware tool

Tools and meters that may be used are shown in table 3-1.

Table 3-1 Tools and instruments

Tools and Instruments	
Screw driver	AVO meter
Wrench	Clamp meter
Inclined pliers	Insulating tape
Needle nose pliers	Thermometer
Clip forceps	Wrist strap
Wire stripper	Tape
Electric drill	

4.1.3 Technical preparation

Devices that connected directly to the batteries can be user’s equipment, power supplies, and other power supply equipment.

- Please check if the user's PV power generation equipment, power supply or other power supply equipment has a DC output interface, and the voltage meets the requirements of the inverter.
- Check the maximum discharge current capability of the DC power interface of the user's photovoltaic power generation equipment, power supply or other power supply equipment, it should be greater than the maximum charging current of the product.

4.1.4 Unpacking inspection

- Firefighting equipment should be provided near the equipment, such as portable dry powder fire extinguisher.
- No flammable, explosive and other dangerous articles are placed beside the batteries.
- When the equipment arrives at the installation site, loading and unloading should be carried out according to the rules and regulations, prevent from being exposed to sunlight or rain.
- Before unpacking, the total number of packages shall be indicated according to the shipping list attached to each package with good condition.
- In the process of unpacking, handle with care and protect the surface coating of the object.
- After opening the packaging, the technical documents should be read, and the list should be verified according to the configuration table and packing list to ensure that the item is intact and undamaged. If the internal packaging is damaged, it needs to be inspected and recorded.

4.1.5 Engineering coordination

The following precautions should be taken before construction

- Power cord
The power cord should meet the maximum discharge current requirements of each product
- Installation space
Make sure that the battery has enough room to install
Ensure that the power cord and grounding wire are reasonable. Not prone to short circuits, water ingress, and corrosion

4.2 Equipment installation

Table 3-2 Installation steps

Step 1	Installation Preparation	Confirm that the power switch is on OFF position
Step 2	Mechanical Installation	Mount the battery module against the wall
Step 3	Electrical Installation	<ol style="list-style-type: none"> 1. Ground wire installation 2. Battery module parallel cable connection 3. Battery module total negative connection 4. Battery module total positive connection 5. Internal RS485 communication cable connection
Step 4	Battery System Self-test	<ol style="list-style-type: none"> 1. Rotate power switch to ON position 2. BMS system power on activation 3. Check the system output voltage 4. Shut down the system
Step 5	Inverter Connecting	<ol style="list-style-type: none"> 1. Connect total positive & total negative cable of the inverter 2. Connect the external RS485 communication cable to the inverter

4.2.1 Installation preparation

- a) Prepare equipment and tools for installation
- b) Check if the power switch of the battery unit is in the “OFF” position to ensure there is no live operation.

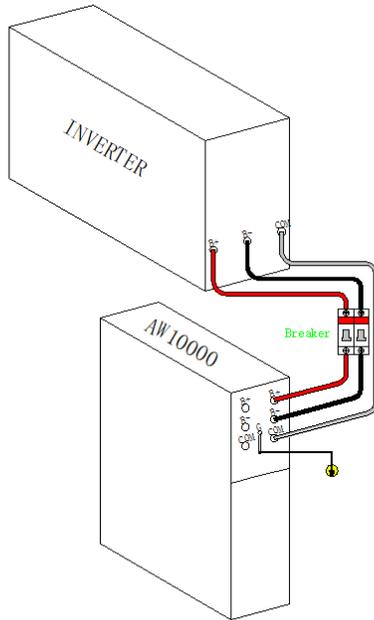
4.2.2 Electrical installation

Before connecting the power cables, use a multimeter to measure cable continuity, short circuit, confirm positive and negative, and accurately mark the cables.

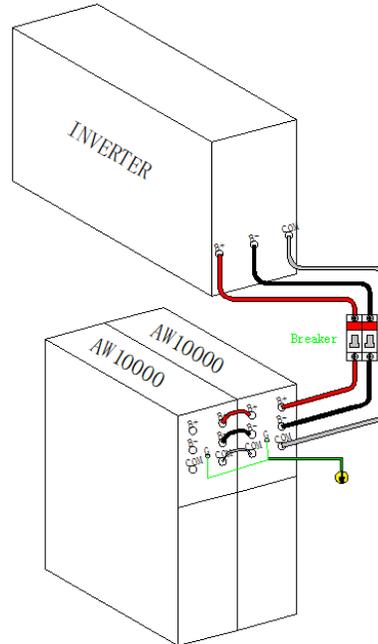
- Cable availability: select a buzzer and use a probe to measure the ends of the same color cable. If the buzzer sounds, it indicates that the cable is available
- After checking the appearance of the power cord connection, the positive and negative poles of the battery shall be connected respectively to the positive and negative poles of the opposite terminal.

4.3 Battery connecting Illustration

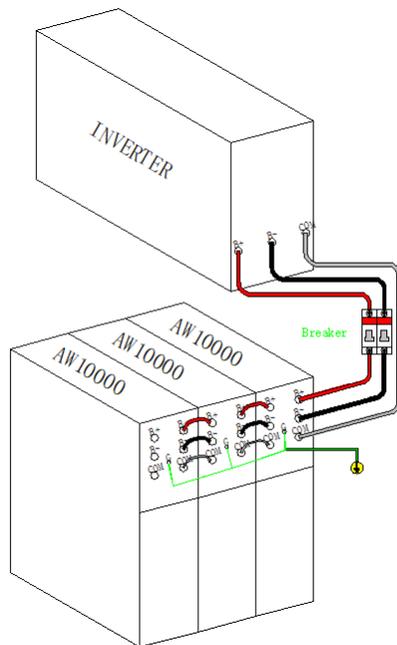
4.3.1 Single battery



4.3.2 Two parallel batteries



4.3.3 Three parallel batteries

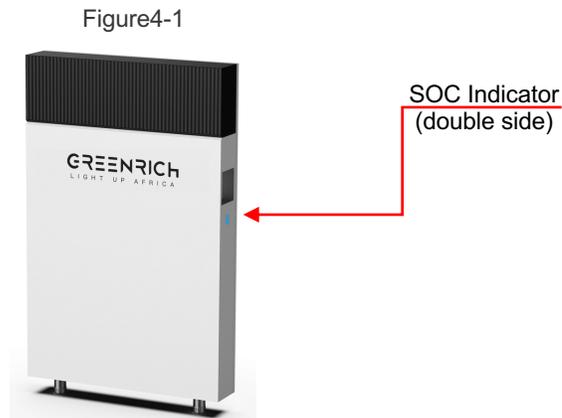


5 Use, maintenance and troubleshooting

5.1 Batteries system usage and operation instructions

After completing the electrical installation, follow these steps to start the battery system.

- 5.1.1 Rotate the ON/OFF knob to the ON position.
- 5.1.2 The SOC indicator will be on (Figure 4-1).



Note:

1. After turn on the power, if the SOC indicator on the two side continues to be red, please refer to the "4.2 Alarm description and processing ". If the failure cannot be eliminated, please contact the dealer timely.
2. Use a voltmeter to measure whether the voltage of the battery access terminal of the circuit breaker is greater than 372V, and check whether its polarity is consistent with the inverter input polarity. If the battery access terminal of the circuit breaker has a voltage output and is greater than 372V, the battery can function normally.
3. After confirming that the output voltage and the polarity of the battery are correct, turn on the inverter, close the circuit breaker.
4. Check if the indicator of the inverter and battery connection (communication indicator and battery access status indicator) is normal. If it's normal, the connection between the battery and inverter is successfully completed. If the indicator light is abnormal, please refer to the inverter manual for the cause or contact the dealer.

5.2 Alarm description and processing

LED instructions

State	Normal/ Alarm/Prot ection	ON/ OFF	Power Indicator LED	Instructions
			● ● ● ●	
Shutdown	Sleep	OFF	OFF	All OFF
Standby	Normal	ON	According to the gas gauging	Standby mode
	Alarm	ON	According to the gas gauging	Cell under Voltage
Charge	Normal	ON	SOC 0~25%: Red Flash 2 SOC 25%~50%: Yellow Flash 2 SOC 50%~75%: Blue Flash 2 SOC 75%~95%: Green Flash 2 SOC 95%~100%: Green ON	Charge mode
	Alarm	ON	According to the gas gauging	Alarm mode
	OVP	ON	Red Flash3	Fault status
	Temp/ occ/ failure	ON	Red Flash3	Temperature protection Overcurrent protection Failure protection
Discharge	Normal	ON	SOC 75%~100%: Green ON SOC 50%~75%: Blue ON SOC 25%~50%: Yellow ON SOC 10%~25%, Red ON SOC 0~10%, Red Flash2	Discharge mode
	Alarm	ON	According to the gas gauging	Alarm mode
	UVP	ON	Red Flash3	Fault status
	Temp/ ocd / ascd/ failure	ON	Red Flash3	Temperature, overcurrent, short circuit, reverse connection, failure protection
Failure		OFF	Red Flash3	Stop charging/discharging

LED flash instructions LED

Flash way	Light on	Light off
Flash1	0.25s	3.75s
Flash2	0.5s	0.5s
Flash 3	0.5s	1.5s

Note: The LED indicator can be enabled or disabled through the upper computer, and it is enabled by default.

Warranty Claim Form

Note: Signature or Seal stamp required. Please print it, sign or stamp and then email to Distributor. Distributor shall have no obligation for unqualified application such as incorrect information or missing necessary information.

Product Model		SerialNumber(S/N)	
Company Name			
Contact Person		Contact Number	
Contact Email			
Company Address			
Name of End user			
Date of Installation			
Installation Location (Outdoors and indoors)			

Fault Description

Can the battery start up	Communication is normal	LED status (Quantity and color)

Warranty Claim Authorized Signature:

The following information must provide after faulty battery been replaced Replacement Information

Replaced by		Replace Date	
-------------	--	--------------	--

Replacement Information Authorized signature:	
Contact Distributor :	
Distributor Name: (With stamp for confirmation)	
Contact Email:	
Telephone #:	



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