CloudEnergy

Product Manual

Product Manual

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Please Read The Manual Carefully Before Using The Equipment.

Before Getting Started

The user manual provides important operation and maintenance instructions for Cloudenergy 24V(25.6V) Truck Standby Smart Deep Cycle LiFePO4 Battery with Bluetooth BMS Self-heating.

Read the user manual carefully before operation and save it for future reference.

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Disclaimer

Cloudenergy (Self-Heating) Series 24V(25.6V) Truck Standby Smart Deep Cycle Lithiumiron Phosphate Battery© 2025 Cloudenergy. All rights reserved.

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BATTERY INFORMATION

Symbols Used

The following symbols are used throughout the user manual to highlight important information.

⚠ WARNING: Indicates a potentially dangerous condition which could result in injury or death.

⚠ CAUTION: Indicates a critical procedure for safe and proper installation and operation.

ⓘ NOTE: Indicates an important step or tip for optimal performance.

Introduction

Cloudenergy 24V(25.6V) 320Ah Truck Standby Smart Deep Cycle LiFePO4 Battery with Bluetooth BMS Self-heating. is designed for the drop-in replacement of deep-cycle lead-acid batteries with its standard Battery Council International (BCI) group size.

Weighing only half of the lead-acid counterparts, the battery can be safely discharged to 100% Depth of Discharge (DOD), delivering twice the energy. Manufactured with automotive grade battery cells, the battery features the highest safety standards and an extended 6000+ cycle life. In addition, the reliable Battery Management System (BMS) provides comprehensive protection to the battery.

Key Features

Unparalleled Performance
Features a greater energy density, a deeper discharge capability, a higher round-trip efficiency, and a faster charging speed in a smaller size over counterparts in the market.

Uncompromising Quality
Ensures an exceptional lifespan with more than 4000 cycles (80% DOD), a continuous charge current of 100A and a continuous discharge current of 100A, and a wide range of operating temperatures with the automotive grade battery cells.

Reliable Protection Mechanisms
Designed with a sturdy internal structure for truck use, and includes multiple levels of protection such as low temperature cut-off and precise balancing through the smart battery management system.

Intelligent high power self-heating Function
Equipped with self-heating function to ensure you can charge at low temperature.

Easy to Expand
Upgrades to lithium batteries seamlessly with the standard BCI group sizes; up to 16 batteries in 2 series and 8 parallels system connection delivering a maximum of 48V (51.2V) 2560Ah.

What's In the Box?

① 25.6V 320Ah LiFePO4 Battery
② Battery Straps (Quantity:2)
③Terminal Bolts (Quantity: 4)
④ Insulation dust caps (Quantity: 4)

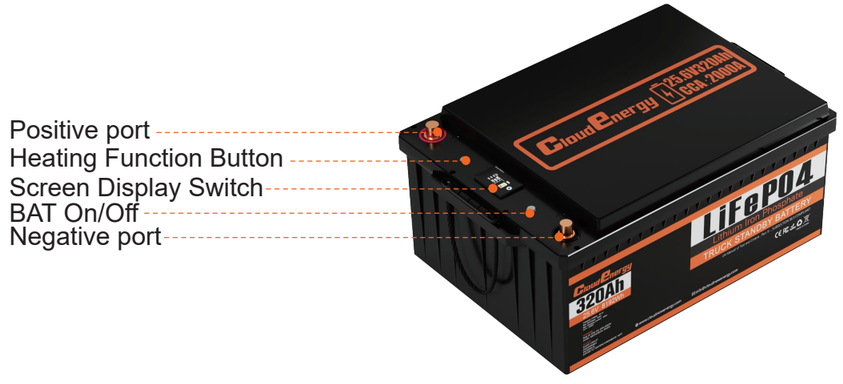
①

②

③

④

Product Overview



ⓘ Make sure that all accessories are complete and free of any signs of damage.

Dimensions

Combination: 24V (25.6V) 320Ah
Dimension: L20.87*W14.37*H9.25inch
Plastic Case Color: Orange and Black

Terminal Size: M8(1.25mm Metric Thread)
Post Bolts: M8(1.25mm Metric Thread*14mm Bolt Length)
(The bolts can be replaced with M8 bolts of other lengths based on actual needs)

Dimension tolerance: ±0.2 in (0.5 mm)

Battery Parameters

Cell	Prismatic LiFepo4 Battery
Nominal Capacity	320Ah
Usable Capacity	320Ah
Nominal Voltage	25.6V
Energy	8192Wh
Charge Method	CC/ CV
Charge Voltage	29.2V
Max. Charge Current	200A
Battery Managementsystem (BMS) Board	200A
Max. continuous charge / Discharge current	200A/200A
Max. Pulse Discharge Current 3 seconds	2000A
Max. continuous Load power	5.12KW
Internal Impedance	≤40mQ
Battery Pack Case	ABS
Dimension	L20.87*W14.37*H9.25inch L530*W365*H235mm
Temperature Range	Charge: 0°C to 50°C / 32°F to 122°F Discharge: -20°C to 60°C / -4°F to 140°F Storage: -10°C to 50°C / 14°F to 122°F
Consumption of running	≤25mA
Consumption of sleep	≤10mA
Sleep conditions	Delay 1min±20s under no current communication

The maximum continuous current that the battery can withstand.
The maximu m continuous output power that the battery can support.

Battery Management System Parameters

The battery is equipped with a Battery Management System (BMS) that provides warnings and protections against overvoltage, undervoltage, overcurrent, short circuit, high temperature, and low temperature conditions. Refer to the table below for the triggering and recovery conditions of each warning and protection.

Battery Operating Status		Condition (For Reference Only)	
Battery Cell Overvoltage	Protection	Trigger	Battery Cell Voltage ≥ 3.70V
		Recover	Battery Cell Voltage ≤ 3.55V
Battery Cell Undervoltage	Protection	Trigger	Battery Cell Voltage ≤ 2.5V
		Recover	Battery Voltage ≥ 3.0V
Charge High Temperature	Protection	Trigger	Battery Temperature ≥ 140°F (60°C)
		Recover	Battery Temperature ≤ 131°F (55°C)
Discharge High Temperature	Protection	Trigger	Battery Temperature ≥ 149°F (65°C)
		Recover	Battery Temperature ≤ 131°F (55°C)
Charge Low Temperature	Protection	Trigger	Battery Temperature ≤ 32°F (0°C)
		Recover	Battery Temperature ≥ 41°F (5°C)
Charge Overcurrent	Protection	Trigger	Charge Current ≥ 105A (5s)
		Recover	Discharge Current ≥ 1A or Recover automatically after 60s
Discharge Overcurrent	Primary Protection	Trigger	Discharge Current ≥ 300A (5s)
		Recover	Charge Current ≥ 1A or Recover automatically after 60s
	Secondary Protection	Trigger	Discharge Current ≥ 2000A (200ms)
		Recover	Charge Current ≥ 1A or Recover automatically after 60s
Short Circuit	Protection	Trigger	Discharge Current ≥ 3000A
		Recover	Charge Current ≥ 1A or Recover automatically after 60s

How to activate the battery when the BMS cuts off its protection?

If the BMS has disconnected the battery for protection, you need to disconnect the load from the battery and leave the battery for 30 minutes. The battery will then automatically recover to normal voltage and can be used after being fully charged.

If the battery cannot recover on its own and its voltage is too low to keep charging, You can activate it in the following two ways:

1.Charge the battery with a charger with CV charging function (which can charge the battery from CV). Once the battery is fully charged, it can be used normally.

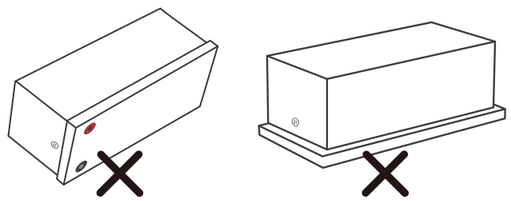
2.Activate the battery by con- necting another 24V lithium battery in parallel with the battery for 5 minute (lead-acid batteries with voltage >/=24V sun</=29.2V will also work). Then, fully charge the battery and it can be used normally.

READY TO INSTALL

Notice Before Install

The following symbols are used throughout the user manual to highlight important information.

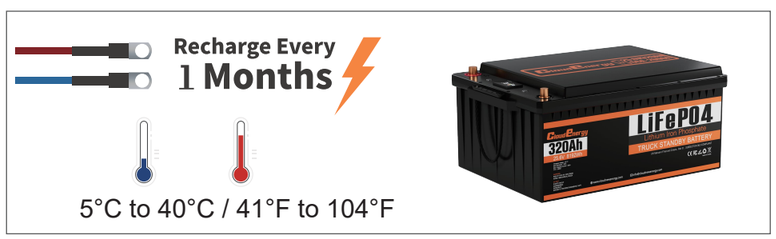
- Please take care to avoid metal or conductive objects touching the positive and negative termi-nals of the battery at the same time during your operation, otherwise it is likely to cause a short circuit.
- DO NOT install the battery with the top or the post bolt facing down.If you are not sure about the installation direction, please contact to confirm the direction.
- Tightly screw in the post bolts. Having loose battery terminals willcause the terminals to build up heat resulting in damage to the battery.



Suggestions for Long-term Storage:

- **Temperature**
  The battery can be operated at a temperature of -20°C to 60°C / -4°F to 140°F, and a tempera-ture between 5°C to 40°C / 41°F to 104°F is ideal foilong-term storage. Store in a fireproof con-tainer and away from children.

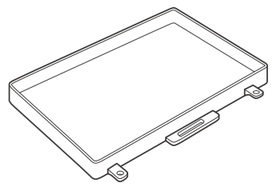
- **Capacity**
  For optimal battery lifespan:
  1. If storing long-term: Fully charge first, then disconnect terminals
  2. Recharge every 1 month (or ensure full charge before storage to prevent discharge damage)



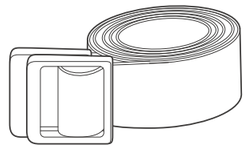
Fix the Battery to a Position (Optional)

Securing the battery prevents damage to the battery from loose cables and bumps.

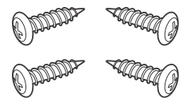
Recommended Components`



Battery Tray

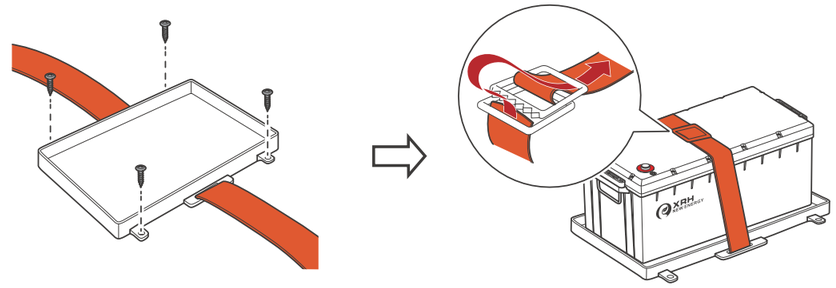


Tie Down Strap

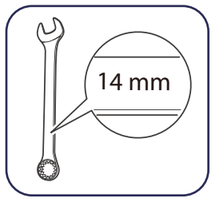


Mounting Screws × 4

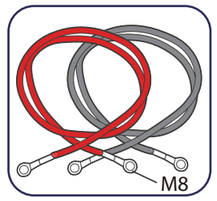
Alternative mounting methods are allowed to meet the requirements of specific applications.



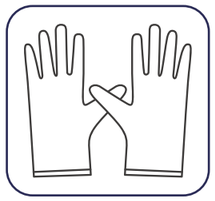
Required Tools & Accessories



Wrench (9/16 in)



Battery Adapter Cables × 2



Insulating Gloves

Multimeter

Prior to installing and configuring the battery, prepare the recommended tools, compo-nents, and accessories.
For how to size battery adapter cables, refer to “How to Size Battery Adapter Cables?” in this manual.

How to Size Battery Adapter Cables?

Use appropriately sized Battery Adapter Cables (sold separately) based on expected load. Refer to the table below for copper cable ampacities with different gauge sizes.

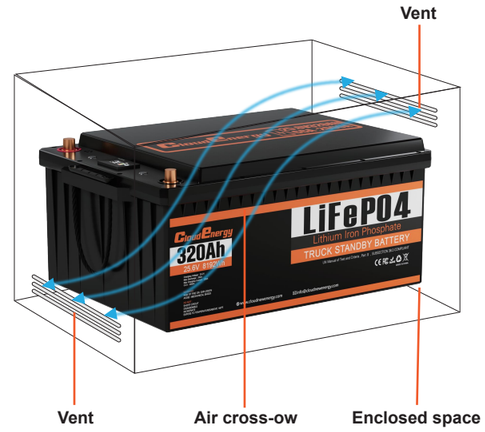
Cable Gauge Size	Ampacity	Cable Gauge Size	Ampacity
14 AWG (2.08 mm²)	35A	2 AWG (33.6 mm²)	190A
12 AWG (3.31 mm²)	40A	1 AWG (42.4 mm²)	220A
10 AWG (5.25 mm²)	55A	1/0 AWG (53.5 mm²)	260A
8 AWG (8.36 mm²)	80A	2/0 AWG (67.4 mm²)	300A
6 AWG (13.3 mm²)	105A	4/0 AWG (107 mm²)	405A
4 AWG (21.1 mm²)	140A		

The above values are from the NEC Table 310.17 for copper cables rated at 194°F (90°C), operating at an ambient temperature of no more than 86°F (30°C). Cables longer than 13 feet (4000 mm) may require thicker gauge wires to prevent excessive voltage drop in undersized wiring.

INSTALL THE BATTERY

Step 1. Plan a Mounting Site

For optimal battery performance, it is recommended to install the battery in a clean, cool, and dry location, free from any accumulation of water, oil, or dirt. Accumulation of such materials on the battery can lead to current leakage, self-discharge, and even short-circuiting.

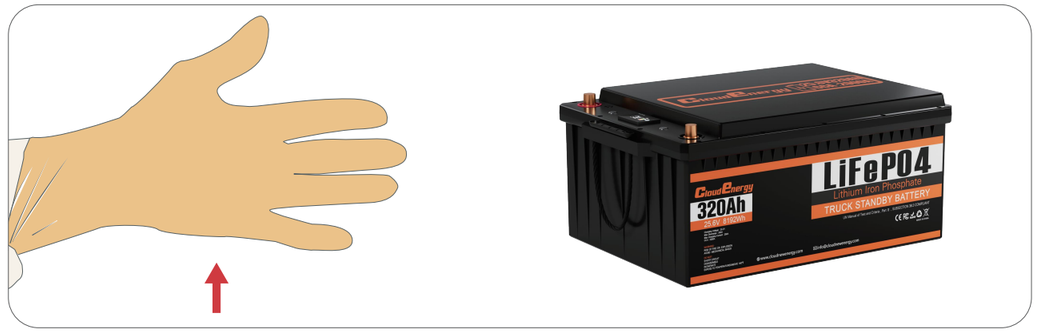


Charge:-4°F-131°F/-20°C-55°C
Discharge:-4°F-140°F/-20°C-60°C
Self-heating function: 0°C±3°C
(requires activating the heating button)

10%-95%

Sufficient air flow must be provided to prevent excessive heat build-up and to minimize temperature variation between the connected batteries.
This user manual takes a battery as an example to illustrate how to install the battery.

Step 2. Wear Insulating Gloves



Step 3. Remove the Dust Cover.

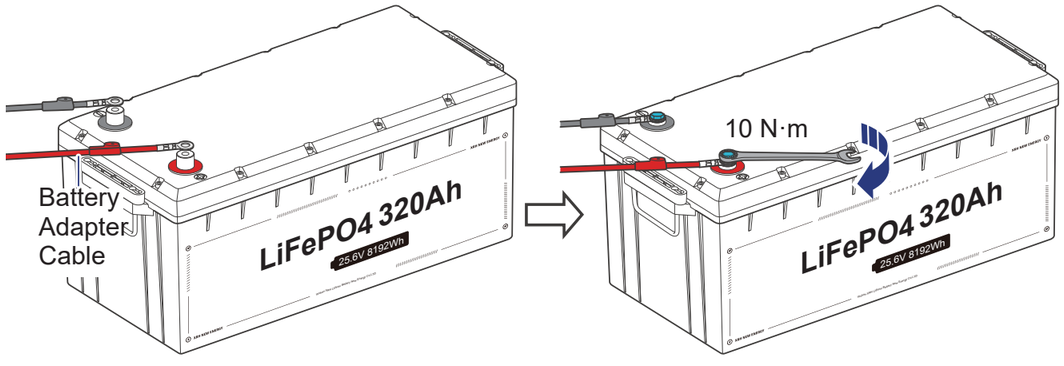
For optimal battery performance, it is recommended to install the battery in a clean, cool, and dry location, free from any accumulation of water, oil, or dirt. Accumulation of such materials on the battery can lead to current leakage, self-discharge, and even short-circuiting.

Step 4. Check the Battery

Inspect the battery for any visible damage including cracks, dents, deformation, and other visible abnormalities. All connector contacts shall be clean, free of dirt and corrosion, and dry.

⚠ Do not touch the exposed electrolyte or powder if the battery is damaged.
⚠ If uncovered electrolyte or powder contacts your skin or eyes, flush it out immediately with plenty of clean water and seek medical attention.

Step 5. Install Battery Terminals



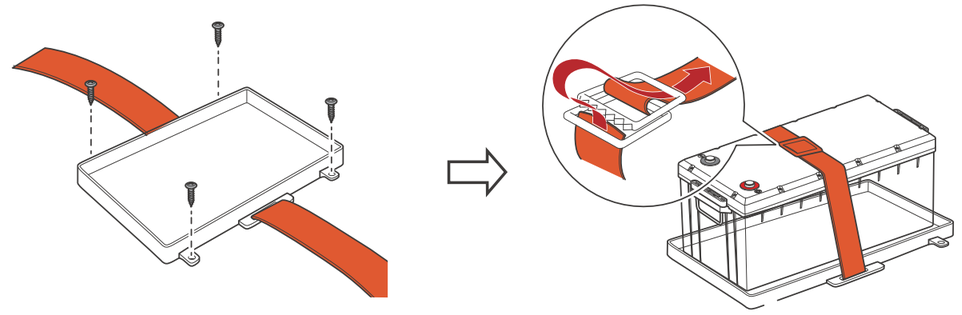
⚠ Ensure the cable lug and the top surface of the terminal are in contact, and place the washers on top of the lug. Do not place the washers between the battery terminal and the cable lug to avoid high resistance and excessive heating.

⚠ Avoid short-circuiting the battery terminals to prevent irreversible damage to the system and battery caused by current bursts.

⚠ Verify polarity before wiring to avoid irreversible battery damage due to polarity reversal.

ⓘ To ensure safe and reliable operation of the system, please follow the manufacturer's recommended torque specifications when securing cable connections. Over-tightening can result in terminal breakage, while loose connections can lead to terminal meltdown or fire. When securing multiple cable lugs on a single battery terminal, use the included Long.

Step 6. Install battery Straps

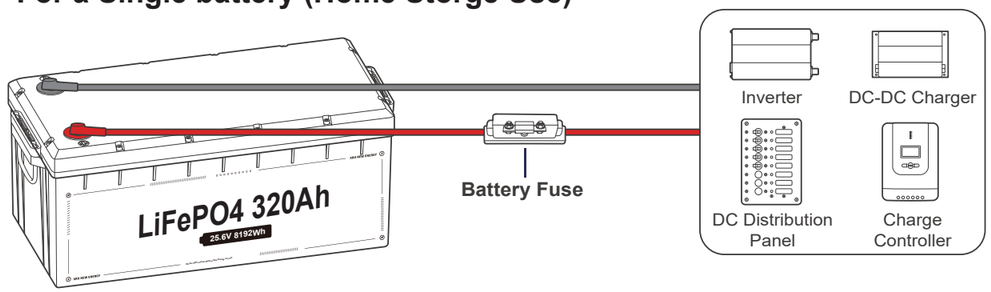


Step 7. Connect the battery to other devices.

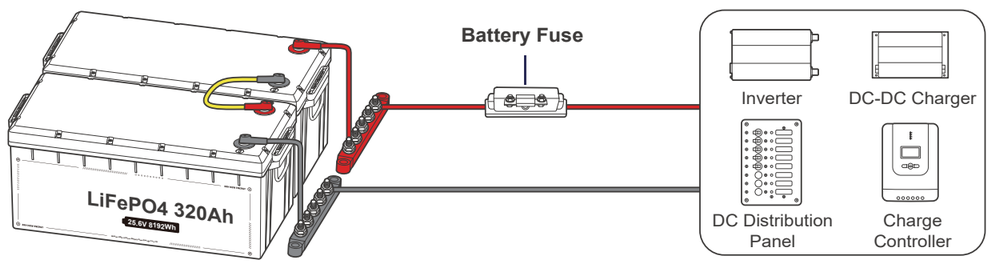
⚠ Please use circuit breakers, fuses, or disconnects appropriately sized by a certified electrician, licensed installers, or regional code authorities to protect all electrical equipment.

■ For a Single Battery (Truck Standby Use)

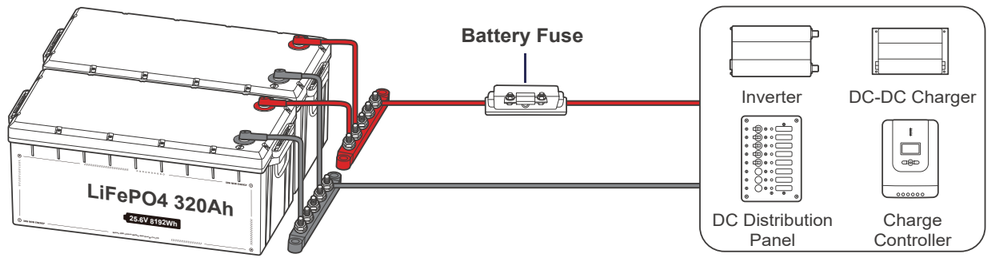
For a Single battery (Home Storge Use)



For Batteries in Series



For Batteries in Parallel



Step 8. Button Usage Instructions

Power Switch (BAT ON/OFF) Instructions

Before initial use, ensure the battery is activated by pressing the power switch (BAT ON/OFF).

When using the battery for the first time, please turn on the power switch.
· If you are using the battery regularly, keep the switch on; there is no need to turn it off.
· If you do not plan to use the battery for an extended period, please turn it off.

Heating Function Button Instructions (Force Start Switch Operation)

► Automatic Heating Mode (Daily Use)

Activation Conditions:
· Ambient temperature below 15°C (59°F)
· Battery in regular charge/discharge cycles
Operation: Fully automatic - Heating system self-activates to maintain optimal performance

► Force Start Mode (After Prolonged Storage)

When to Use:
· Temperature at 0°C (±3°C/32°F±5°F)
· Vehicle fails to start normally
Step-by-Step:
① Press and hold heating switch for 3 seconds
② Allow 10 minutes for BMS stabilization
③ Attempt vehicle ignition
Troubleshooting:
· If successful: Battery operational (charge immediately)
· If fails: Contact technical support at info@cloudnewenergy.com

Safety Protocols:
NEVER attempt force start more than 2 consecutive times
MUST recharge within 1 hour after force start
For long-term storage: POWER OFF battery completely

► Screen Display Switch Instructions

When you need to check the battery's charge level, you can turn on the screen display.

Step 9. Download APP & Monitor the Battery

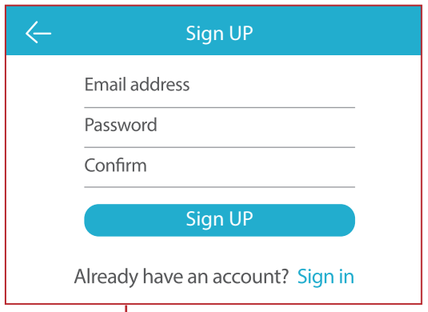
Install the App:

App QR code

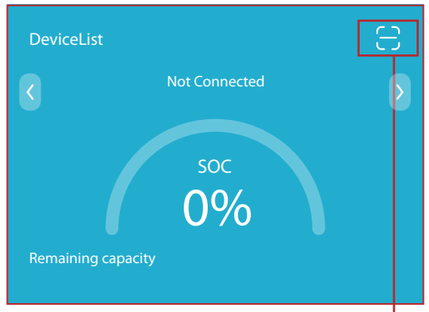
Method 1: Scan the QR code on the top of the battery to download the
Bluetooth app.
Method 2: Search for 'xiaoxiang electric' in your phone's app store and download it. If you cannot download it from the app store, please email us info@cloudnewenergy.com,let us help you.

Register the App and Connect/Bind the Battery:

Step 1 Turn on Bluetooth.

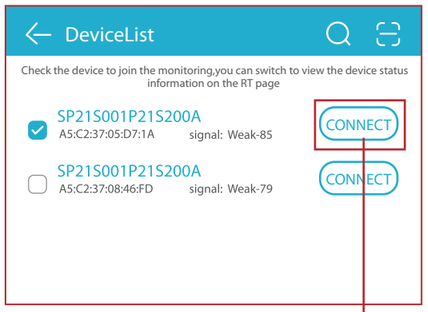


Step 2
Register the user

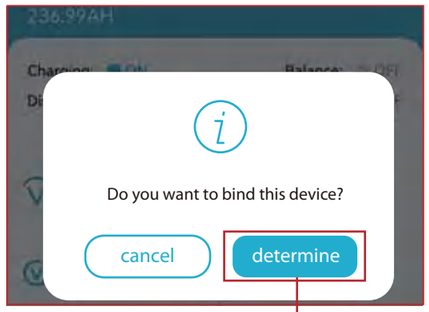


Step 3
Scan the code and add a device

If you cannot scan the QR code, you can refresh the device list to connect to the battery.



Step 4
Connect the battery



Step 5
Bind the device

Monitoring battery data:

You can view detailed data about the battery and cells on the page, as well as monitor the battery's charge level in real time. We recommend connecting to Bluetooth every time you use the battery to ensure real-time data updates.

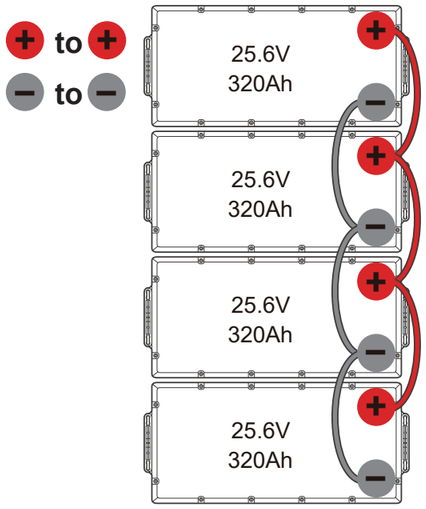
App Abbreviation Display

Display Code	Full name	Code	Explain
NOMAL	NOMAL	0000	Normal, no protection generated
COV	CELL OVER VOLTAGE	0001	Monoblock overvoltage protection, release condition highest monoblock below monoblock overvoltage release voltage or discharge (Please note: This is a normal full charge indication, the BMS will automatically disconnect the charge. Alarms are automatically canceled and restored.
CUV	CELL UNDER VOLTAGE	0002	Monobloc low voltage protection, release condition minimum monobloc above monobloc low voltage release voltage or charging (Please note: At this point, please end the use and recharge, after charging will automatically return to normal use.)
POV	PACK OVER VOLTAGE	0004	Total voltage overvoltage protection, release condition total voltage lower than the total overvoltage release voltage or discharge
PUV	PACK UNDER VOLTAGE	0008	Total voltage low voltage protection, release condition minimum single unit higher than single unit low voltage release voltage or charging
COT	CHARGE OVER TEMPERATURE	0010	Charging high temperature protection, the maximum temperature of the release condition is lower than the charging high temperature release temperature
CUT	CHARGE UNDRR TEMPERATURE	0020	Charging low-temperature protection, the minimum temperature of the release condition is higher than the charging low-temperature release temperature
DOT	DISCHARGE OVER TEMPERATURE	0040	Discharge high temperature protection, the maximum temperature of the release condition is lower than the discharge high temperature release temperature
DUT	DISCHARGE UNDRR TEMPERATURE	0080	Discharge cryoprotection, minimum temperature of release condition is higher than discharge cryogenic release temperature
COC	CHARGE OVER CURRENT	0100	Charge overcurrent protection, release condition delayed release, depending on parameters
DOC	DISCHARGE OVER CURRENT	0200	Discharge overcurrent protection, release condition delayed release, depending on parameters
SC	SHORT CIRCUIT	0400	Short-circuit protection, release condition after remov ing the load, whether to eliminate the problem
LOCK	SOFTWARE LOCK	1000	Software lock, by the software or display initiative to close the MOS, release conditions must also be active to release

CONNECT THE BATTERY IN SERIES OR PARALLEL

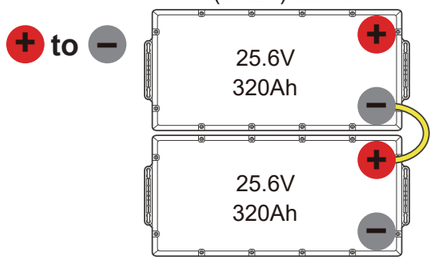
Calculate Voltage and Current in Series and Parallel Connections

Parallel Connection
24V(25.6V) 1280Ah



System Voltage	System current
25.6V	Sum of the individual battery currents

Series Connection
48V(51.2V) 320Ah



System Voltage	System current
Sum of the individual battery voltages	320A

⚠ Do not connect batteries with different chemistries, rated capacities, nominal voltages, brands,or models in parallel or in series. This can result in potential damage to the batteries and the connected devices, and can also pose safety risks.

⚠ Avoid connecting batteries that have been purchased for more than half a year. Over time,batteries can degrade and their performance may decrease, which can affect their ability to deliver reliable power and may lead to safety hazards.

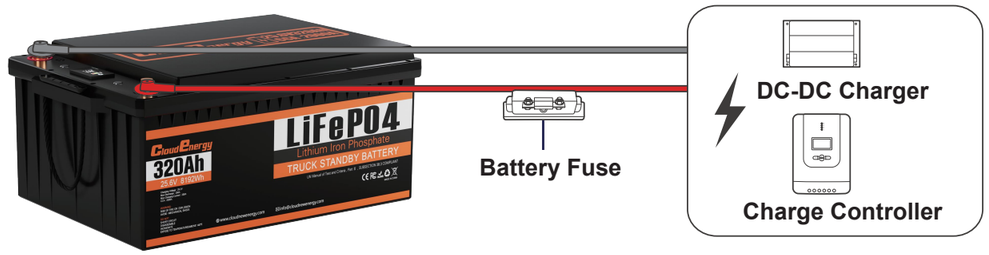
⚠ The cables between each connected battery should be of equal length to ensure that all batteries can work equally together.

ⓘ You can connect up to 8 batteries in parallel or 2 batteries in series.

Balance Batteries Prior to Connection

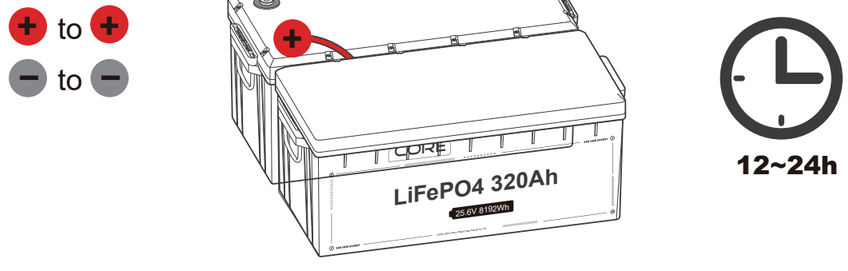
Before connecting batteries in series or parallel, it is important to balance them to reduce voltage differences and optimize their performance. Follow these three steps:

Step 1. Charge each battery individually to its full capacity using a suitable charger.



Step 2. Use a voltmeter to measure the voltage of each battery. It is best to keep the voltage difference of each battery less than 0.1V.

Step 3. Connect all the batteries in parallel and allow them to rest together for 12 to 24 hours.



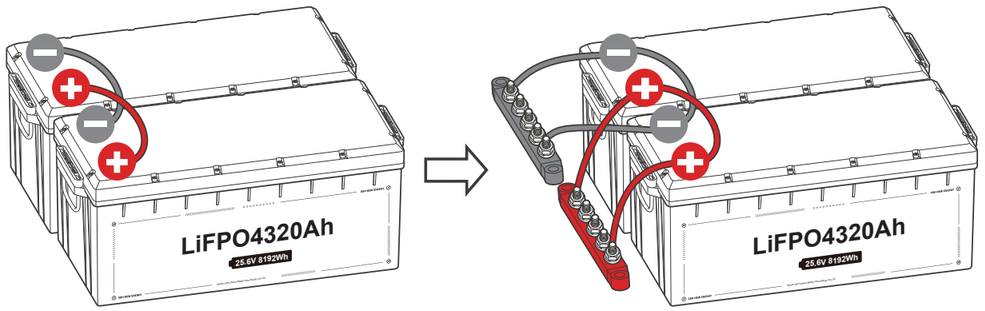
ⓘ It is recommended to periodically rebalance the battery voltages every six months when connecting multiple batteries as a battery system. Slight voltage differences can occur among batteries over time due to factors like battery chemistry, capacity, temperature, and usage patterns.

Series Connection vs. Parallel Connection — Installation Steps

⚠ You can choose suitable busbars in series and parallel connections. Busbars help handle high currents and are typically arranged in a parallel or stacked configuration to distribute electrical power efficiently.

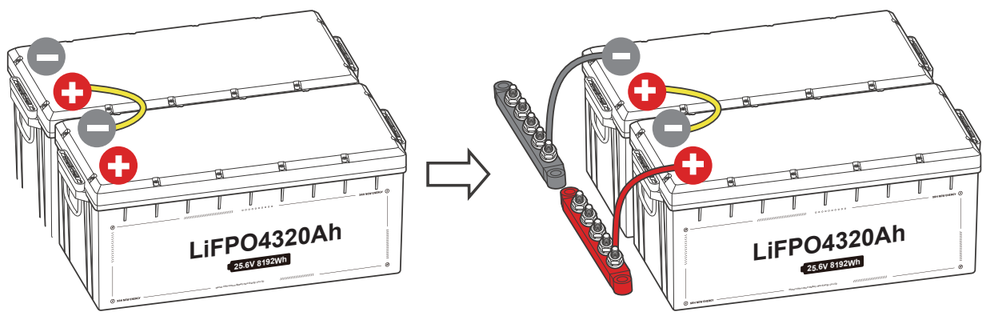
ⓘ Note that the cable connection methods provided below are for reference purposes only, as the optimal approach may vary depending on the specific situation. It is essential to consider various factors, such as the cable size, equipment used, and environmental conditions.

Parallel Connection



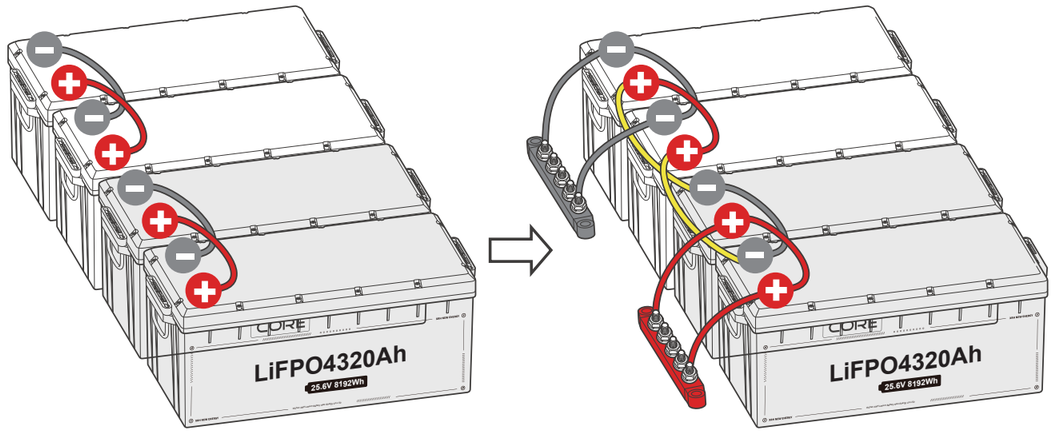
2P	Battery System	24V (25.6V) 640Ah
	Energy	16384Wh
8P	Battery System	24V (25.6V) 2560Ah
	Energy	65536Wh

Series Connection

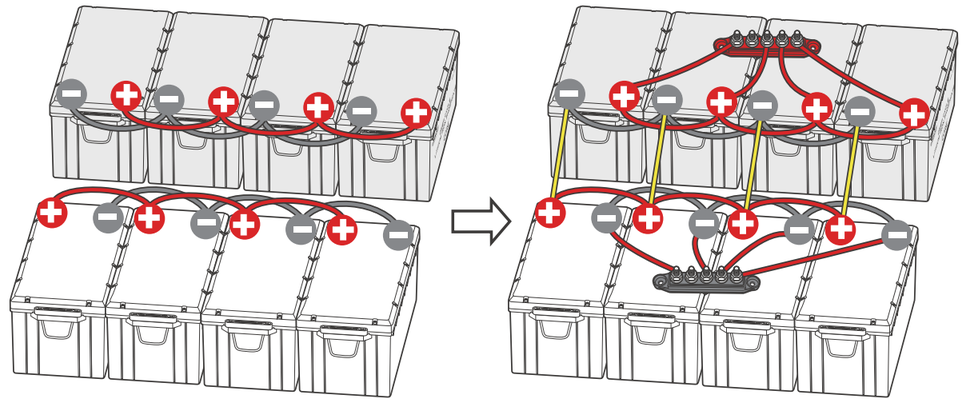


2S	Battery System	48V (51.2V) 320Ah
	Energy	16384Wh

Parallel & Series Connection



2P2S	Battery System	48V (51.2V) 640Ah
	Energy	32768Wh



4P2S	Battery System	48V (51.2V) 1280Ah
	Energy	65536Wh

Battery Cell Balancing

The battery employs bypass circuit to maintain the balance between each battery cell group.Each battery cell group is connected with a bypass resistor and a switch in parallel. During the charging process, if the highest-voltage battery cell group reaches the set balancing starting voltage and the voltage difference between the highest-voltage and the lowest-voltage battery cell group exceeds the set voltage difference, the switch connected to the highest-voltage battery cell group will be closed to shunt the charge current around the highest-voltage battery cell group through the bypass resistor until the voltage difference drops below the set value. To avoid excessive energy loss, the battery cell balancing is only performed during the charging process.

INSTRUCTIONS

Using Batteries in Truck Standby

First-Time Use

Install the Battery

Follow the installation steps to correctly install the battery, ensuring it is securely fixed and proper-ly connected.

Download the App

Download the companion app and connect to the battery via Bluetooth or Wi-Fi for real-time monitoring. monitoring.

Turn On the Battery

After installation, switch on the battery to enable normal operation.

First-Time Use

If the battery is in continuous use, there is no need to turn it off; keep it switched on. Regularly check the battery status via the app to ensure sufficient charge.

Heating Function Usage

In extremely cold environments, press and hold the heating button on the battery for about 5 seconds to activate the heating function.
The heating function helps the battery operate efficiently in low temperatures.

Precautions

- Heating Function: Use only in extremely cold conditions and avoid frequent activation.
- Charge Monitoring: Monitor the battery level in real-time through the app to avoid over-discharging.
- Safety Measures: Prevent short circuits, impacts, or exposure to extreme environments.

Charging/Discharging Parameter Settings

Charge/Boost Voltage	29.0V	Boost Return Voltage	26.4V
Bulk/Absorption Voltage	29.0V	Overvoltage Disconnect	30.0V
Bulk/Absorption Voltage	29.0V / Disabled	Overvoltage Reconnect	28.4V

Discharge

Low Voltage Reconnect	23.6V	Undervoltage Warning	24.0V
Undervoltage Shutdown	20.0V		

The parameters in the table are applicable to 24V (25.6V) battery packs. Please multiply by 2 for 48V (51.2V) packs.

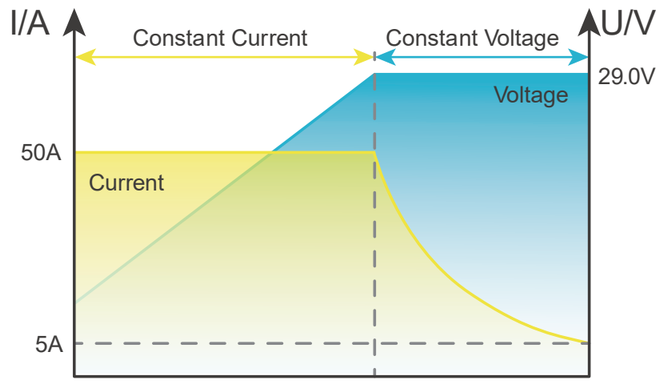
Battery Charging and Discharging Logic

The battery may be received at a partial state of charge (SOC) depending on the time between manufacturing and shipping. It is crucial to fully charge the battery before its initial use. In case the battery shuts off due to low SOC, promptly disconnect it from loads and charge it to prevent irreversible damage. Follow the instructions in this user manual for proper charging and usage to ensure optimal battery performance and longevity.

Charging Logic

The standard charging process for the battery involves charging at a constant current of 50A (Recommended Charging Current: 50A (0.2C) Max. Charging Current: 200A) until the battery voltage reaches 29.0V, followed by charging at a constant voltage of 29.0V while tapering the charge current. The charging process is considered complete when the charge current is less than 5A (also known as tail current).

The standard charging process typically takes 2.5 hours and requires battery temperatures to be between 32°F and 131°F (0°C and 55°C) for safe charging. Leaving the battery on float will continue to balance the battery cells without damaging the battery.



Lithium batteries are compatible with various charging methods, including MPPT charge controller, AC charger, and DC-DC charger. The crucial parameter setting for these chargers is to set the charge voltage, boost voltage, or bulk voltage at 29.0V (±0.2V).

⚠ Do not overcharge or overdischarge the battery.

⚠ Do not discharge the battery at high temperatures above 140°F (60°C).

⚠ Only charge the battery with a battery charger or charge controller that is compatible with lithium iron phosphate batteries.

⚠ Do not exceed the maximum continuous charge current (100A) of the battery.

Discharging Logic

During standard discharging, the battery is discharged at a constant current of 100A until the voltage drops to 20V. To ensure safe discharging, the battery temperature should be between -4°F (-20°C) and 131°F (60°C).

To ensure safe and optimal battery usage, it is recommended to pair the battery with discharge equipment that features a low voltage disconnect (LVD) function.

Do not connect large loads to the battery when it is running low.

Do not exceed the maximum continuous discharge current (100A) of the battery.

Charging Methods

Solar Panel

Recommend Power: **≥1200W**

- The battery can be fully charged in one day (with effective sunshine4.5hrs/day) by 1200W
  solar panels.
- It may take more than one day to fully charge the battery by 1200Wsolar panels since the duration and intensity of light would be a great factor for their charging efficiency.

Controller

Recommend Charging Current:

20A (0.2C)	The battery will be fully charged in around 16hrs to 100%capacity.
50A (0.5C)	The battery will be fully charged in around 6.4hrs to around 97% capacity.

Recommend Charging Mode: **25.6V(29.2V) 20Ah(LiFePO4)**

Controller Settings

Refer to the below parameters if you need to manually set up your controller.As different types of batteries have different charging modes, it is recommended to set only the following parameters for LiFePO4 batteries.
The settings for other types of batteries do not apply to LiFePO4 batteries except for the following settings.

CHARGING	Charge /Bulk /Boost Voltag	29.0V/29.2V
	Absorption Voltage	29.0V/29.2V
	Over Voltage Disconnect	29.2V
	Over Voltage Reconnect	27.2V
	Tail Current	2A(0.02C)
DISCHARGING	Under Voltage Warning	24.0V
	Under Voltage Recover	27.2V
	Low Voltage Disconnect	23.2V
	Low Voltage Reconnect	23.6V

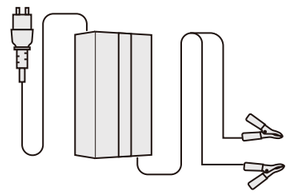
Battery Charger

Use 25.6Vlithium iron phosphate (LiFePO4) battery charger to maximize the capacity.

Recommend Charging Voltage: **Between 29V to 29.2V**
Recommend Charging Current:

20A (0.2C)	The battery will be fully charged in around 16hrs to 100%capacity.
50A (0.5C)	The battery will be fully charged in around 6.4hrs to around 97% capacity.

Tips
1.Connect the charger to the battery before connecting it to the gridpowerin case ot sparks.
2.It's recommended to disconnect the charger from the battery after fully charger.

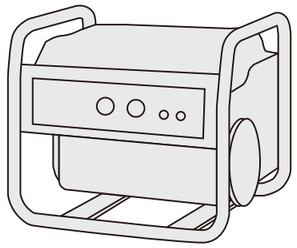


ALTERNATOR / GENERATOR

Cloudenergy battery can be charged by an alternator or generator.If the alternator/generator supports DC output, a DC-to-DC charger needs to be added between the battery and the generator; if the alternator/generator supports AC output, please refer to the recommendations in"Battery Charger" above to add a suitable battery charger between the battery and the generator.

Recommend Charging Voltage: **Between 29V to 29.2V**
Recommend Charging Current:

20A (0.2C)	The battery will be fully charged in around 5hrs to 100%capacity.
50A (0.5C)	The battery will be fully charged in around 2hrs to around 97% capacity.



INVERTER SETTINGS

METHOD ONE (RECOMMEND)

Select “25.6(29.2V) LI (LiFePO4) Mode”

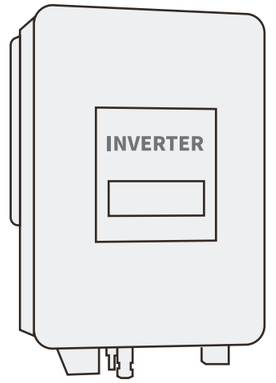
METHOD TWO

If method one is not available, select“User Mode”to enter values according to below parameters.

CHARGING	Charge Voltage	29.2V
	Over Voltage Disconnect	29.2V
	Over Voltage Reconnect	27.2V
DISCHARGING	Under Voltage Warning	24.0V
	Under Voltage Recover	27.2V
	Low Voltage Disconnect	23.2V
	Low Voltage Reconnect	23.6V

The above setting parameters apply to common inverters on the market(such as Victron, Renogy, Growatt, Xantrex, Go Power, Lux Power, etc). Different brands have slightly different descriptions or naming methods for each parameter.

Please directly set the parameters with the same meaning.
If the inverter parameters to be set are special or cannot correspond to one of the above items, please contact info@cloudnewenergy.com for confirmation.



How to Estimate the Battery SOC?

The SOC values listed below are estimated based on the resting voltage when the battery is at rest for 30 minutes, not in charging or discharging state.

SOC	Open Circuit Voltage	SOC	Open Circuit Voltage
100%	27.2V	30%	25.8V
99%	26.8V	20%	25.6V
90%	26.4V	14%	25.4V
70%	26.2V	9%	25.2V
40%	26.0V	0%	20.0V

The table above is for reference only because slight variations in battery voltage may occur among different batteries.

BATTERY FUNCTION

Bluetooth Function

Bluetooth App Usage

Refer to the "Bluetooth Function Download and Installation" section in the user manual for detailed instructions on how to download, install, and use the Bluetooth app.

Troubleshooting Bluetooth Connection Issues

If the Bluetooth fails to connect:
- Turn off the Bluetooth function and try reconnecting.
- Ensure the battery and the vehicle are within a reasonable distance for Blu etooth connectivity

Persistent Connection Issues

If multiple attempts to connect fail, please contact our customer service team for assistance:
Email: info@cloudnewenergy.com

Tips for Smooth Bluetooth Connection
- Ensure the battery is powered on and functioning properly.
- Keep the app updated to the latest version.
- Avoid interference from other electronic devices during the connection process.

Self-heating Function

Activating the Heating Function

In extremely cold environments (typically between 0°C ±3°C), the battery protection board will pause operation.At this time, press the heating function button on the top of the battery to manually activate the self-heating function.

Note: This function cannot be activated via the app; it must be started using the button on the battery.

Completion of Heating

When the battery temperature rises to 8°C ±3°C, the self-heating function will automatically turn off, and the battery will resume normal operation.

Item	Description
Heater Current	Continuous current ≤ 20A
Charging Heating	Heating activates when temperature is below 15°C and stops when above 15°C; only heats without charging if low-temperature protection is triggered.
Discharging Heating	Heating activates when temperature is ≤0±3°C and stops when it rises to 8±3°C; if temperature drops again, heating continues.
Forced Heating	Press the heating button to force heating when temperature is <15±3°C; heating automatically stops when temperature exceeds 15±3°C.

Sleep Function

Trigger Conditions

When the protection board is in a static state (Bluetooth disconnected, no communication, no current, no balancing, and no over-voltage protection), it will enter sleep mode after a delay of 1±0.5 minutes.

Sleep Mode

In sleep mode, the protection board reduces detection frequency and power consumption to save energy.

Exiting Sleep Mode

The following actions can automatically exit sleep mode:
Re-establishing communication (e.g., Bluetooth connection).
Toggling the switch.
Initiating charging or discharging operations.

Notes:
- The sleep function is designed to save battery power and is suitable for scenarios where the battery is not in use for extended periods.
- The protection board maintains basic functionality in sleep mode and can be quickly awakened by the above actions.

TROUBLESHOOTING

Problem	Possible Causes	Solution
■ The battery is unable to be activated with a charge/discharge current greater than 1A ■ The battery is activated at resting voltage below 20V	Severe battery overdischarge due to self-discharge or parasitic loads	Revive the battery with a battery charger or charge controller featuring lithium battery activation or force charging.
The battery shuts off due to undervoltage protection.	The battery voltage drops below the preset threshold	Disconnect the battery from loads, and charge the battery with a current greater than 1A as soon as possible.
The battery cuts off the charging current due to overvoltage protection	The battery voltage exceeds the preset threshold during charging.	· Disconnect the battery from the charging source. · Reduce charge voltage by 0.2V to 0.4V for 6 hours. · Attempt to fully charge the battery again with the correct voltage setting. If the problem persists with a lithium iron phosphate compatible charging source and correct voltage setting, repeat the above steps.
The battery temperature gets too low during operation and the self-heating function doesn't work very well	The charger connected to the battery has very little current	Check the charging current of the charger for each battery more than 10A
The battery is shorted and triggers short circuit protection.	Short circuit occurs in the battery.	· Remove the short circuit as soon as possible · Charge the battery with a current greater than 1A.
Charge/Discharge overcurrent protection is triggered due to too high current passing through the battery.	Excessive current flows through the battery during charging or discharging.	Disconnect the battery from the charging

For further assitance, contact Cloudenergy technical support service at info@cloud-newenergy.com

MAINTENANCE & STORAGE

Inspection

Please perform regular inspections following the steps below:

- Examine the external appearance of the battery. The housing and terminals of the battery shall be clean, dry, and free of corrosion.
- Check battery cables and connections. Replace any damaged cables and tighten any loose connections.

In certain application scenarios, corrosion may occur around the terminals. Corrosion can cause increased resistance and poor contact. It is recommended to regularly apply insulation grease to each terminal. Insulation grease can form a moisture-resistant seal and protect the terminals from corrosion.

Cleaning

Please clean the battery at regular intervals following the steps below:

- Disconnect the battery from the system.
- Clear the leaves and debris from the battery.
- Clean the battery with a soft, lint-free cloth. The cloth can be dampened with water or mild soap and water if the battery is extremely dirty.
- Dry the battery with a soft, lint-free cloth.
- Keep the area around the battery clean.
- Reconnect the battery to the system.

Checking Voltage

Please check the battery voltage periodically to assess battery health. If the battery is unable to be activated with a charge/discharge current greater than 1A or the battery is activated with a resting voltage below 10V, the battery may have been severely over-discharged due to self-discharge or parasitic loads. Please stop using the battery until the fault can be corrected and the battery can be charged.

Series Connection vs. Parallel Connection — Installation Steps

Please follow the tips below to ensure that the battery emerges from storage in a good condition:

- Charge the battery to 100% SOC.
- Disconnect the battery from the system.
- Store the battery in a well-ventilated, dry, clean area with temperatures between -13°F (-25°C)
- and 149°F (65°C).
- Do not expose the battery to direct sunlight, moisture, or precipitation.
- Handle the battery carefully to avoid sharp impacts or extreme pressure on the battery housing.
- Charge the battery at least once every 3 to 6 months to prevent it from overdischarge. Fully charge the battery when it is taken out of storage.

IMPORTANT SAFETY INSTRUCTIONS

The manufacturer accepts no liability for any damage caused by:

- Force majeure including fire, typhoon, flood, earthquake, war, and terrorism.
- Intentional or accidental misuse, abuse, neglect or improper maintenance, and use under abnormal conditions.
- Improper installation, improper operation, and malfunction of a peripheral device.
- Contamination with hazardous substances or radiation.
- Alterations to the product without express written consent from the manufacturer.

General

- Wear proper protective equipment and use insulated tools during installation and operation.
- Do not wear jewelry or other metal objects when working on or around the battery.
- Keep the battery out of the reach of children.
- Do not dispose of the battery as household waste. Comply with local, state, and federal laws and regulations and use recycling channels as required.
- In case of fire, put out the fire with a FM-200 or CO2 fire extinguisher.
- Do not expose the battery to flammable or harsh chemicals or vapors.
- Clean the battery regularly.
- It is recommended that all cables should not exceed 10 meters because excessively long cables result in a voltage drop.
- The cable specifications listed in the quick guide account for critical, less than 3% voltage drop and may not account for all configurations.
- Do not expose the battery to strong electrostatic fields, strong magnetic fields, or radiation.

Battery Safety

- Please keep the battery away from water, heat sources, sparks, and hazardous chemicals.
- Do not puncture, drop, crush, burn, penetrate, shake, strike, or step on the battery.
- Do not open, dismantle, repair, tamper with, or modify the battery.
- Do not touch any terminals or connectors.
- Please make sure any battery charger or charge controller has been disconnected before working on the battery.
- Do not connect or disconnect terminals from the battery without first disconnecting loads.
- Do not place tools on top of the battery.
- Please use suitable handling equipment for safe transportation of the battery.
- Do not insert foreign objects into the positive and negative terminals of the battery.

CLOUDENERGY SUPPORT

To discuss inaccuracies or omissions in this quick guide or user manual,visit or contact us at:

Website: https://www.cloudnewenergy.com/

info@cloudnewenergy.com

For technical questions about your product in the U.S., contact the Cloudenergy technical support team through:

Whatsapp: +86 15014019101
Phone: +86 18998512308

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful inteference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following
measures:
(1) Reorient or relocate the receiving antenna.
(2) Increase the separation between the equipment and receiver.
(3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
(4) Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.