SEVENERGY

Powering What's Next

12314-180L-BT

SEVENERGY Support Center

LiFePO4 Battery

Model: 12314-180L-BT

SEVENERGY

Powering What's Next

Model: 12314-180L-BT



Please read all instructions carefully before operating this product. SEVENERGY reserves the right to update this user manual. The appearance of the product is subject to the product received. Product technology and software may be updated without prior notice.

⚠ Warning: Read this entire document before installing or using the product. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage the product, potentially rendering it inoperable.

PRODUCT SPECIFICATIONS

All specifications and descriptions contained in this document are verified to be accurate at the time of printing. Because continuous improvement is a goal at SEVENERGY, we reserve the right to make product modifications at any time.
The images in this document are for demonstration purposes only. Depending on product version and market region, details may appear slightly different.

ERRORS OR OMISSIONS

To report inaccuracies or omissions in this manual, please contact SEVENERGY.



ELECTRONIC DEVICE: DO NOT THROW AWAY

Proper disposal of batteries is required. Refer to your local codes for disposal requirements

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IMPORTANT SAFETY INSTRUCTIONS

This manual contains important instructions for the product that must be followed during installation and maintenance of the system. Product installation and service require knowledge of high voltage electricity and should only be performed by Certified Installers. SEVENERGY assumes no liability for injury or property damage due to repairs attempted by unqualified individuals or a failure to properly follow these instructions. These warnings and cautions must be followed when using the product.

SYMBOLS USED

These symbols indicate important safety information in this guide or on the equipment:



WARNING
indicates a hazardous situation which, if not avoided, could result in injury or death.

CAUTION
indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.

NOTE
indicate an important step or tip that leads to best results, but is not safety or damage related.



REFER TO OPERATING INSTRUCTIONS
indicates that user should refer to operating or installation instructions before proceeding.



RISK OF ELECTRIC SHOCK
indicates components that present risk of electrical shock.



CAUTION, RISK OF ELECTRIC SHOCK, ENERGY STORAGE TIMED DISCHARGE
Discharge time is 5 minutes from de-energization.



Keep the battery out of reach of children.

ENVIRONMENTAL CONDITIONS

⚠ WARNING: Read this entire document before installing or using the product. Failure to follow these instructions or warnings can result in electrical shock, serious injury, or death, or can damage the product and render it inoperable.

⚠ WARNING: A battery can present a risk of electrical shock, fire, or explosion from vented gases. Observe proper precautions.

⚠ WARNING: Do not use the product if it is defective, appears cracked, broken, or otherwise damaged, or fails to operate.

⚠ WARNING: Do not attempt to open, disassemble, repair, tamper with, or modify the product. The product and its components are not user serviceable. Contact the Certified Installer who installed the system for any repairs.

⚠ CAUTION: Do not use fluids, parts or accessories other than those specified in this manual, including non-genuine SEVENERGY parts or accessories, or parts not purchased directly from SEVENERGY or a SEVENERGY-certified party.

⚠ CAUTION: Do not leave the product unused or disconnected from its electrical supply for more than one (1) month without placing it into storage in accordance with SEVENERGY's storage specifications.

⚠ CAUTION: Do not connect the product directly to photo voltaic (PV) solar wiring.

REVISION HISTORY

Date	Revision	Description	Owner
2025-02-15	V1.0	Ir SEVENERGY	

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SPECIFICATION



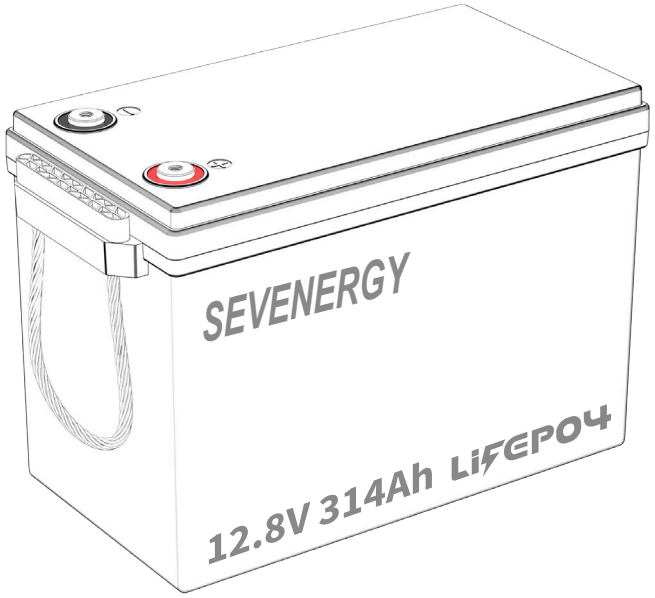
FRONT VIEW



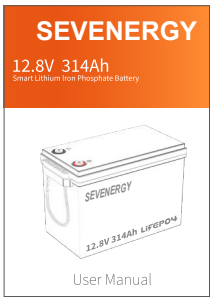
TOP VIEW

Technical Parameters	12314-180L-BT
Cell Type	LiFePO4
Rated Capacity	314Ah
Rated Battery Energy	4.0192kWh
Rated Voltage	12.8V
Working Voltage Range	10-14.6V
Usable Battery Capacity	4.0192kWh
Cell Configuration	4S1P
Max. External Connection	4S4P (64.3072kWh max.)
Battery Depth of Discharge	100%
Battery Max. Charge/Discharge Power	2.56kW
Available SOC Range	0%-100%
SOC Transportation Range	40%
Operating Temperature	Charge: 0°C to 45°C Discharge: -10°C to 60°C
Storage Temperature	-20°C to 45°C
Working Humidity	5%-95%RH
Standard Charging Current	0.2C, 62.8A
Maximum Continuous Charging Current	200A
Continuous / Peak Discharge	200A; 600A / 5s; 800A / 1s
Rated DC Power	2.56kW
IP Grade	IP65
Recommended Indoor/Outdoor Usage	Indoor/Outdoor
Weight	26.5 kg (58.4 lb) net
Dimensions (L x W x H)	384 x 194 x 250 mm (15.12 x 7.64 x 9.84 in)

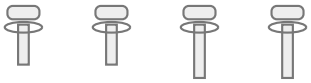
Packing List



12.8V 314Ah
Smart Lithium lron Phosphate Battery x1



M8 x12 mm: 2 pcs
M8 x16 mm: 2 pcs
Terminal bolt sets: 4 pcs



M8 x12 (2) + M8 x16 (2)
Bolt, spring washer and flat washer

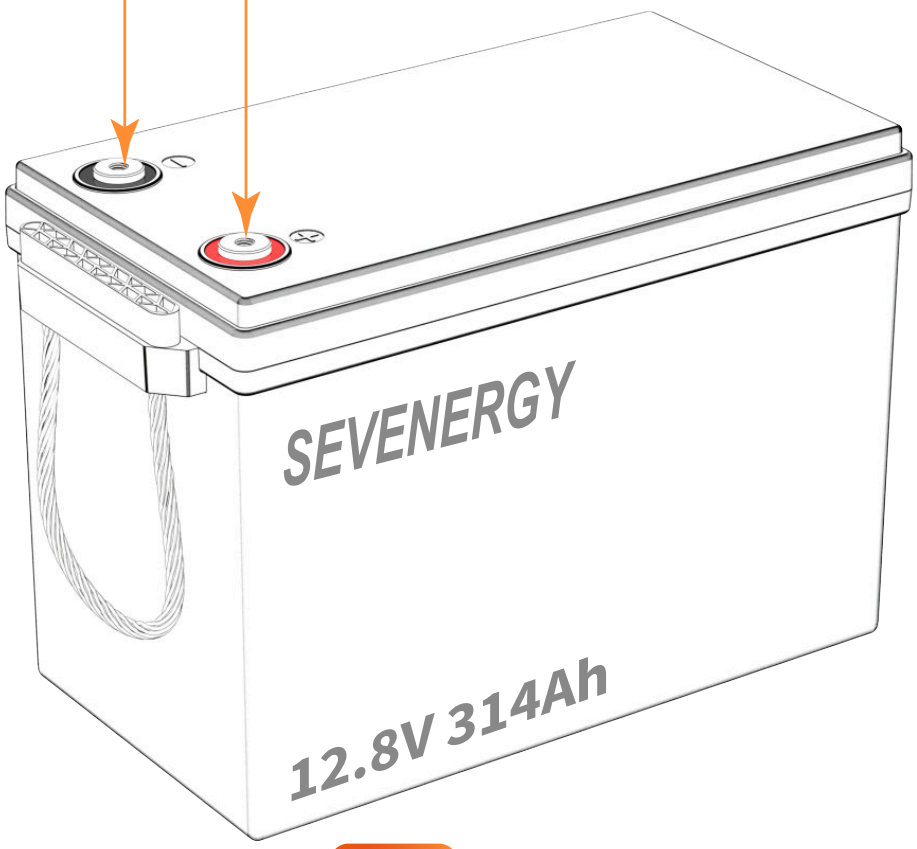
Make sure that all accessories are complete and free of any signs of damage.

Mechanical Specification

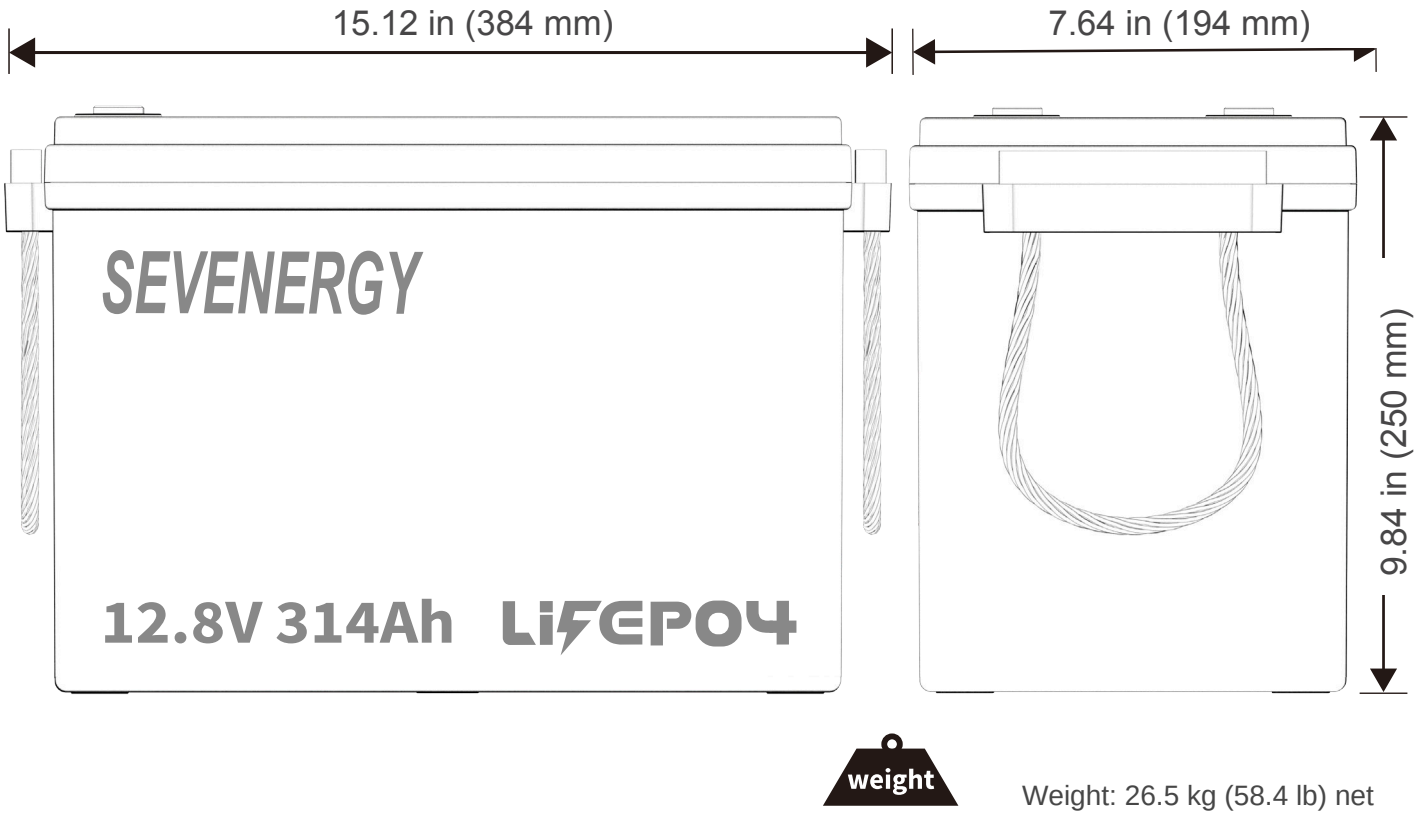
Top

Negative Terminal (M8)

Positive Terminal (M8)



Dimensions



weight

Weight: 26.5 kg (58.4 lb) net

Dimensions are nominal; confirm final production dimensions.

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
15 AWG (1.5 mm^2)	16A	3 AWG (33.5 mm^2)	125A
13 AWG (2.5 mm^2)	25A	2 AWG (50 mm^2)	160A
9 AWG (6 mm^2)	35A	1 AWG (70 mm^2)	200A
7 AWG (12 mm^2)	50A	1/0 AWG (95 mm^2)	250A
6 AWG (16 mm^2)	80A	2/0 AWG (150 mm^2)	300A
4 AWG (25 mm^2)	100A	4/0 AWG (185 mm^2)	355A

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.

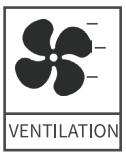
Choose a Mounting Site

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.







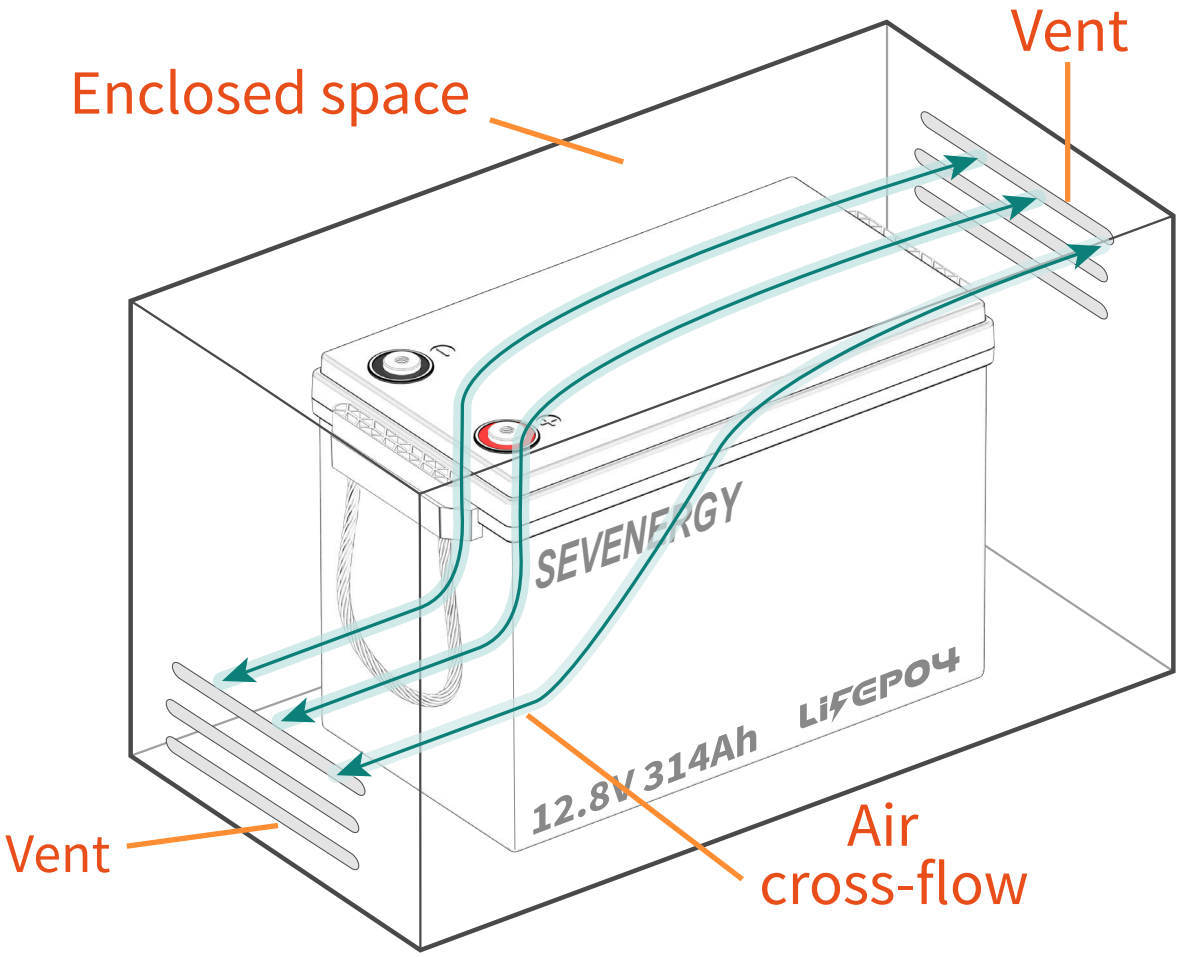




Min-20℃

Max+45℃

RH.+5%~+95%



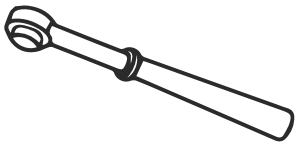
Sufficient airflow must be provided to prevent excessive heat build-up and to minimize temperature variation between the connected batteries.

This user manual takes a battery as an example to illustrate how to install the battery.

Tools required for installation

Prior to installing and configuring the battery, prepare the recommended tools, components, and accessories.

1 Torque wrench



2 Wrench



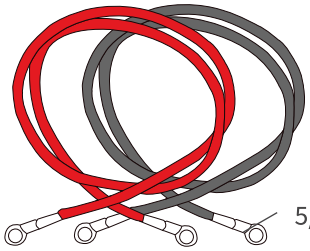
3 Scissors



4 tie

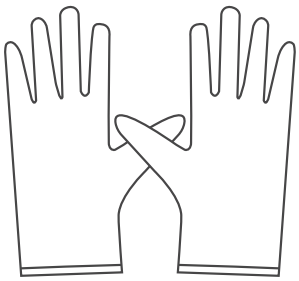


5



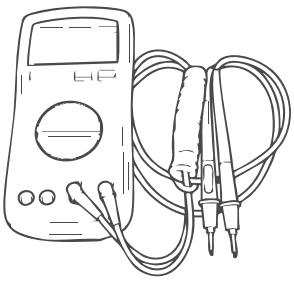
Battery Adapter Cables × 2

6



Insulating Gloves

7

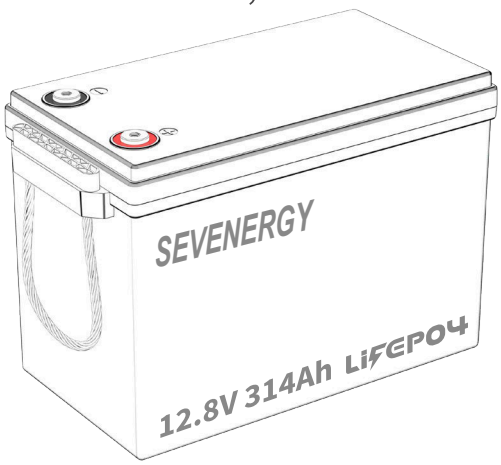


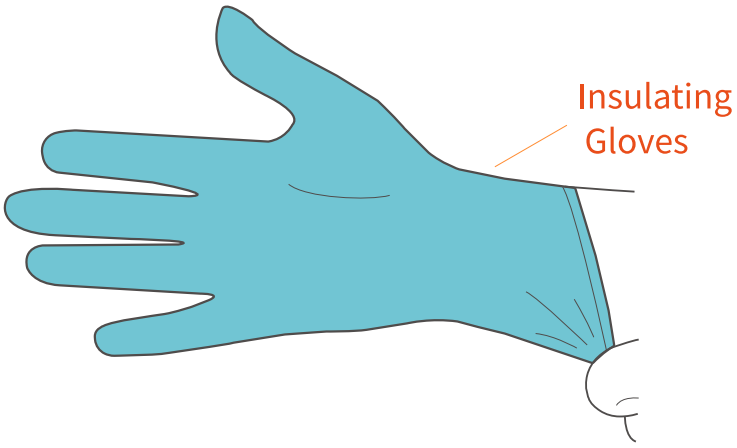
Multimeter

When assembling, ensure that parallel and series connection wires are of equal length.

Wear Insulating Gloves

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.

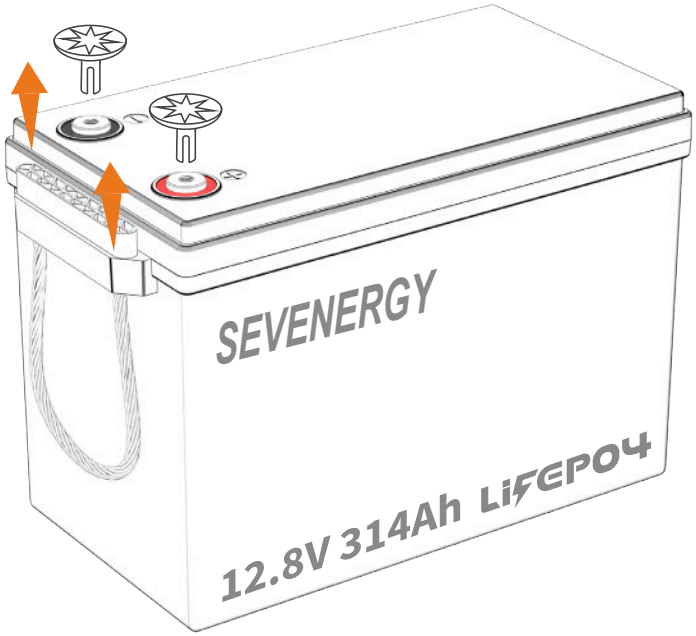
If uncovered electrolyte or powder contacts your skin or eyes, flush it out immediately with plenty of clean water and seek medical attention.

If it is used as a single unit (1S1P)

Step 1

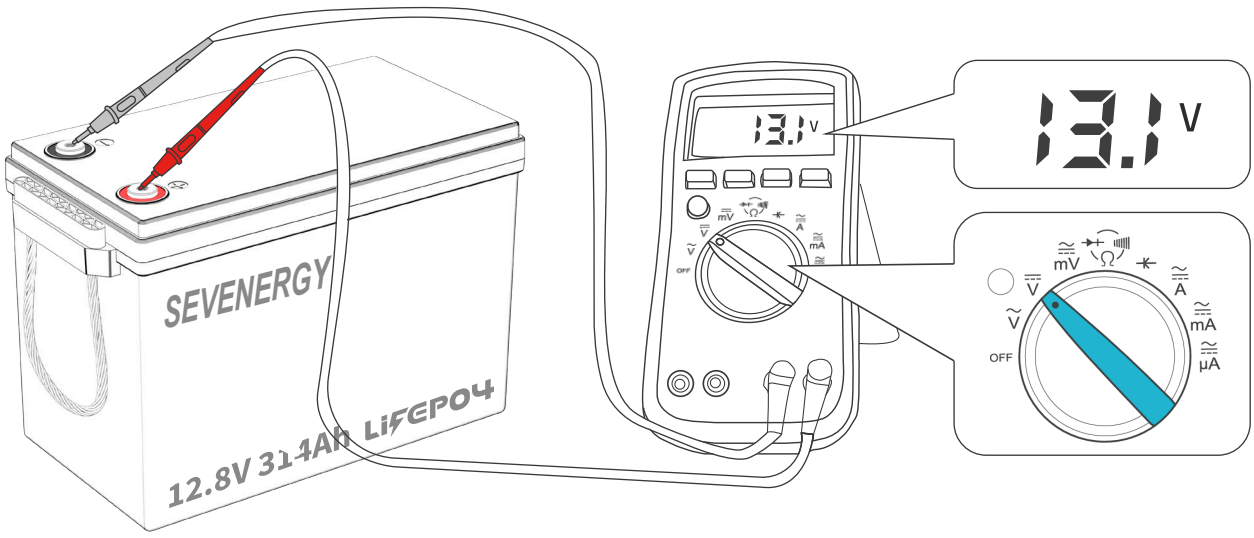
Check The Battery And Remove The Insulation Cover

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.

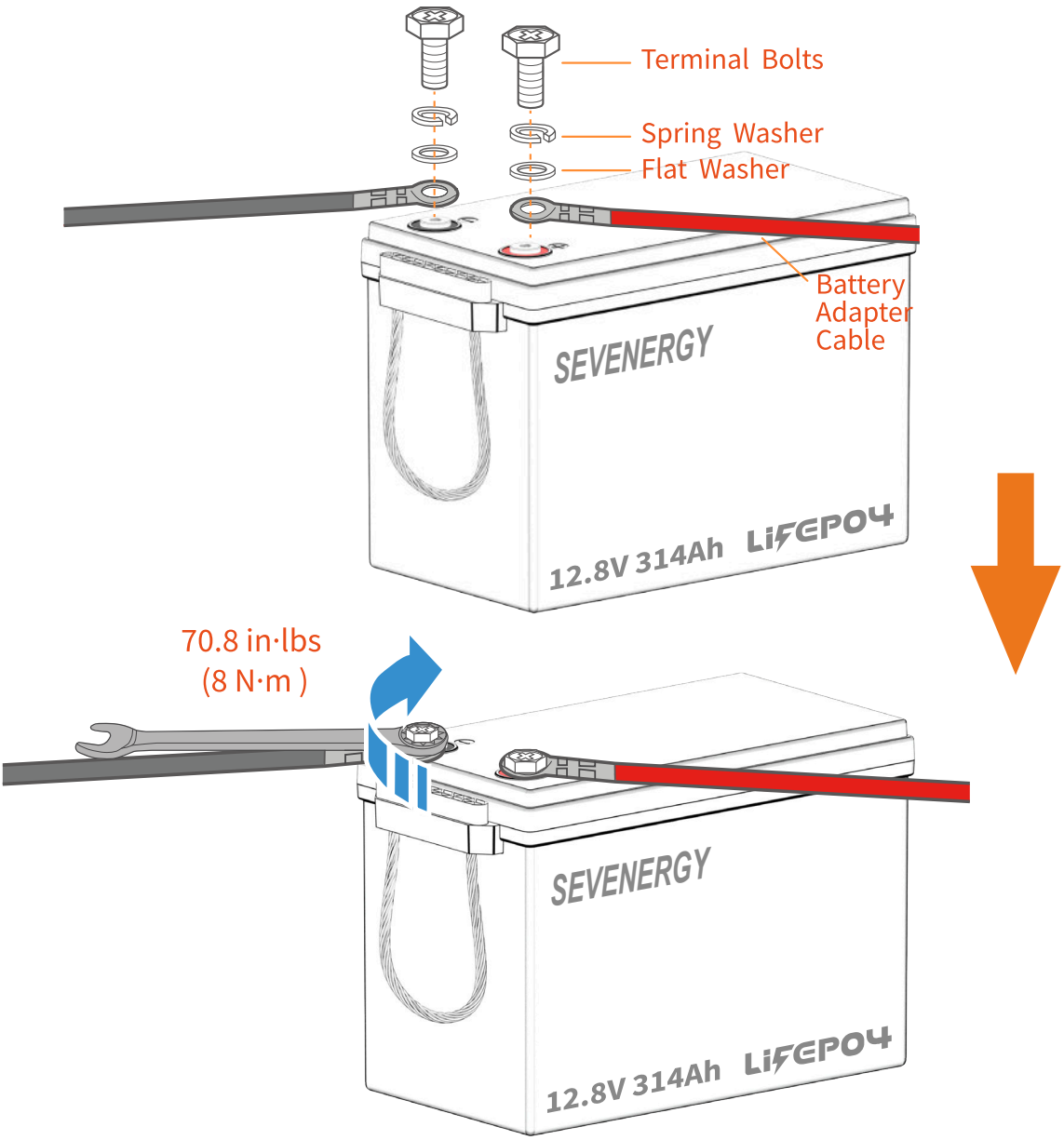


Step 2

Test The Battery Voltage with Multimeter



Step 3
Install Battery Terminals

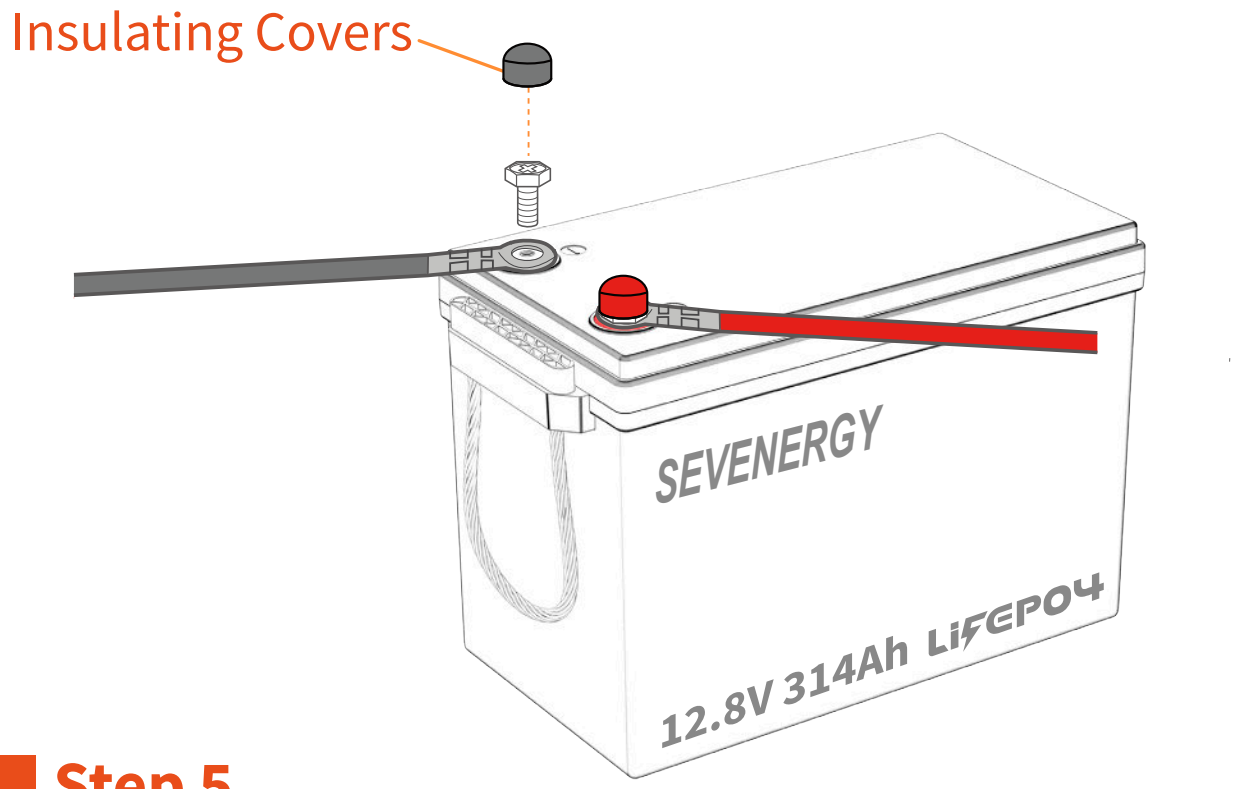


- Ensure the cable lug and the top surface of the terminal are in contact. Place washers on top of the lug, never between the battery terminal and cable lug, to avoid high resistance and excessive heating.
- Avoid short-circuiting the battery terminals to prevent irreversible damage from current bursts.
- Verify polarity before wiring to avoid irreversible damage due to polarity reversal.
- Do not touch the positive and negative terminals with your hands.
- Follow the specified tightening torque (8 N.m). Over-tightening can break a terminal; loose connections can cause terminal meltdown or fire.
- Use one bolt per terminal (two in use per battery). Select M8 x12 mm or M8 x16 mm for the actual cable lug and washer stack. Do not allow the bolt to bottom out.

Step 4

PUT ON Insulating Covers

Please put on the insulating covers to avoid metal or conductive objects touching the positive and negative terminals of the battery at the same time, otherwise it is likely to cause a short circuit.



Step 5

Fully Charge The Battery Separately

(Refer to Page 21-23 for battery charging methods)

Step 6

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.

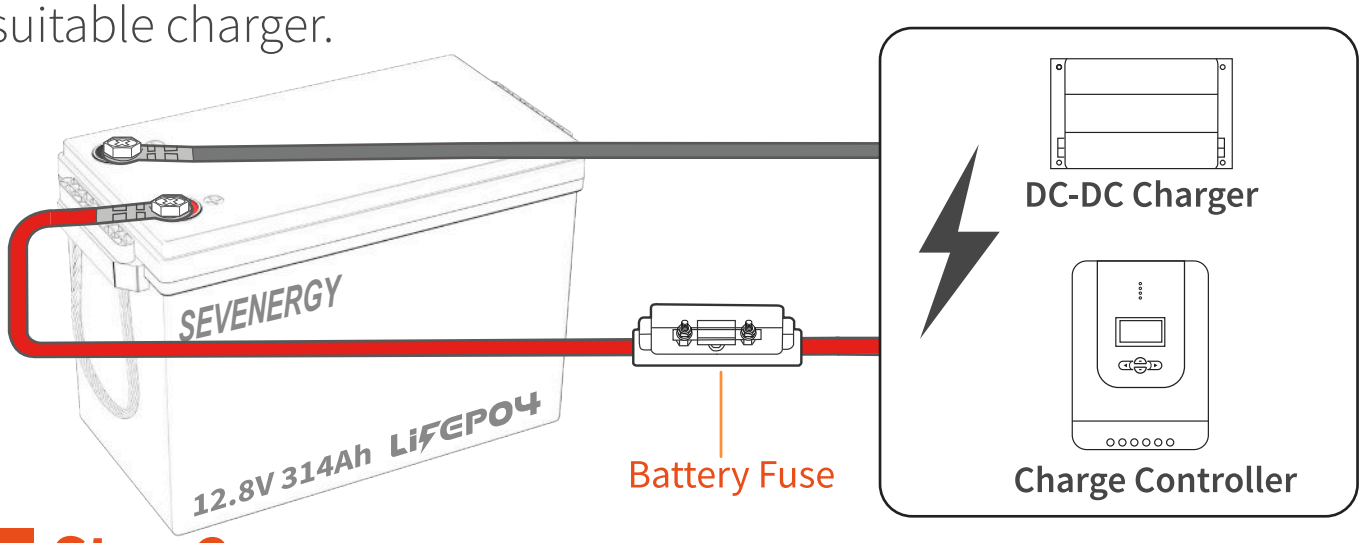
If you use 2 or more units in parallel

Balance Batteries Prior to Connection

Before connecting batteries in parallel, it is important to balance them to reduce voltage differences and optimize their performance. Follow these three steps: (You can choose suitable busbars in parallel connections. Busbars help handle high currents and are typically arranged in a parallel or stacked configuration to distribute electrical power efficiently.)

Step 1

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



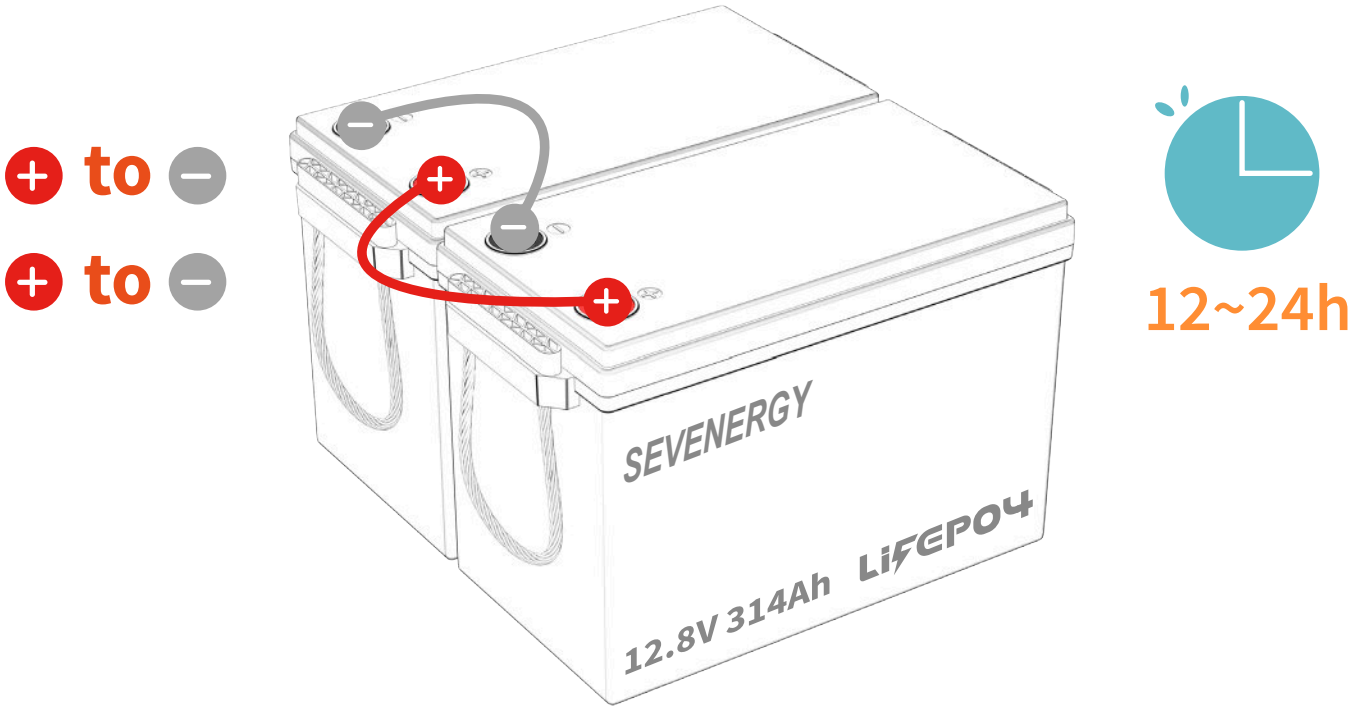
Step 2

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

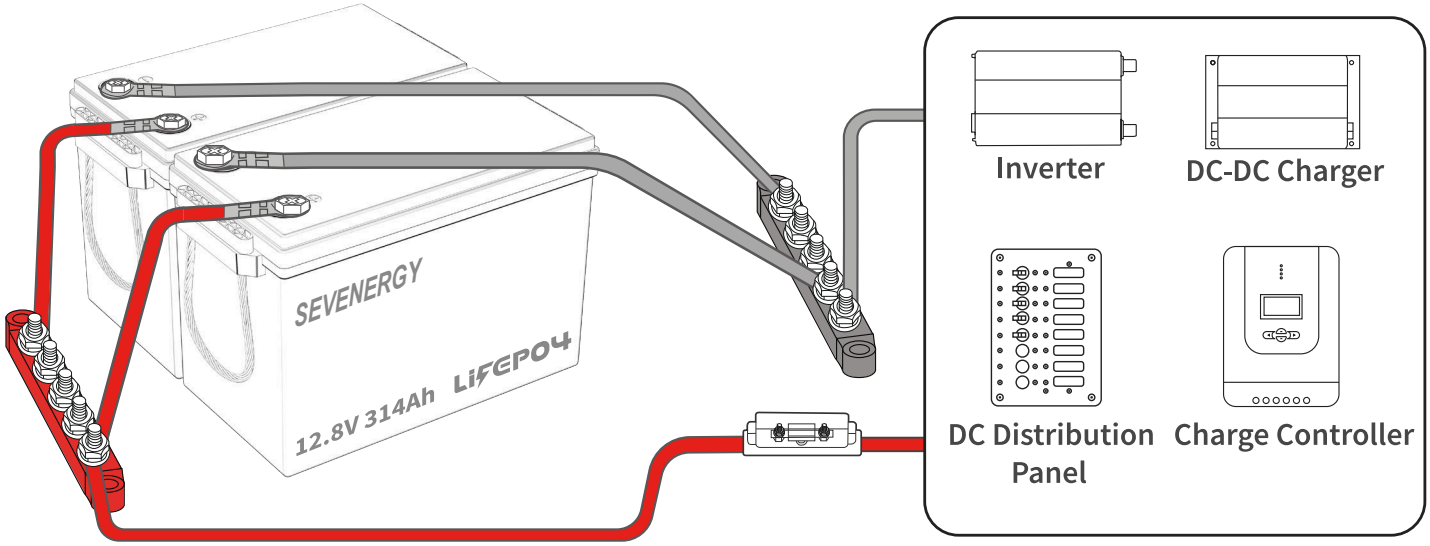
Connect all the batteries in parallel and allow them to rest together for 12 to 24 hours.



Refer to page 11 for terminal bolt installation.

Step 4

Connect the 1# and 2# positive and negative poles to the busbars that match the current power. Then connect the busbar + and busbar - to the power supply end and the load end respectively.



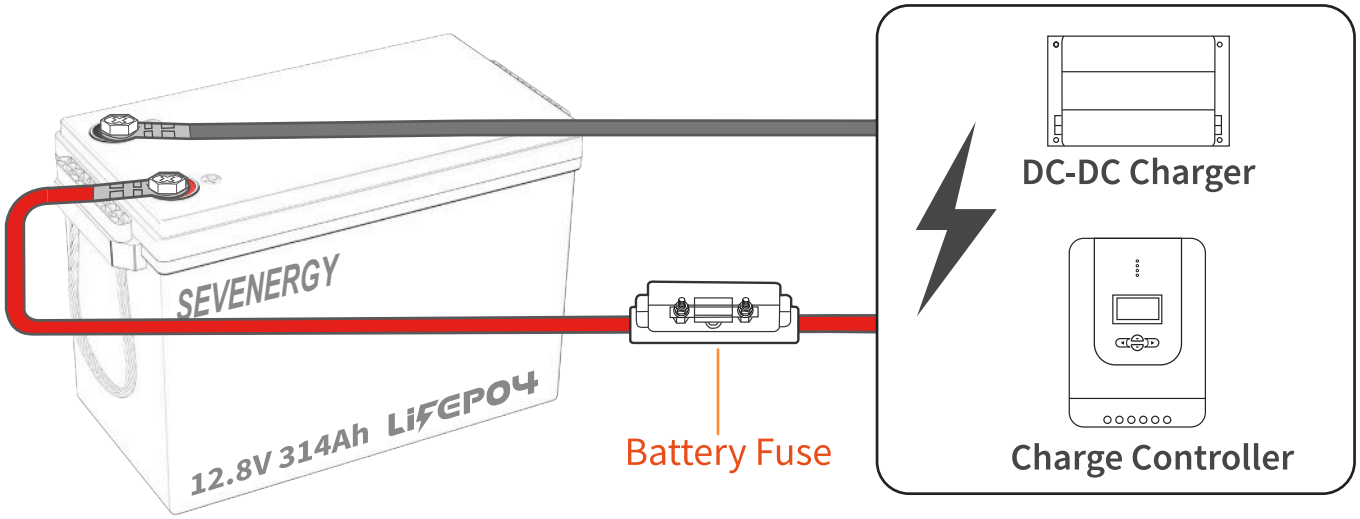
NOTICE BEFORE USING

If you use 2 or more units in series or parallel:

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

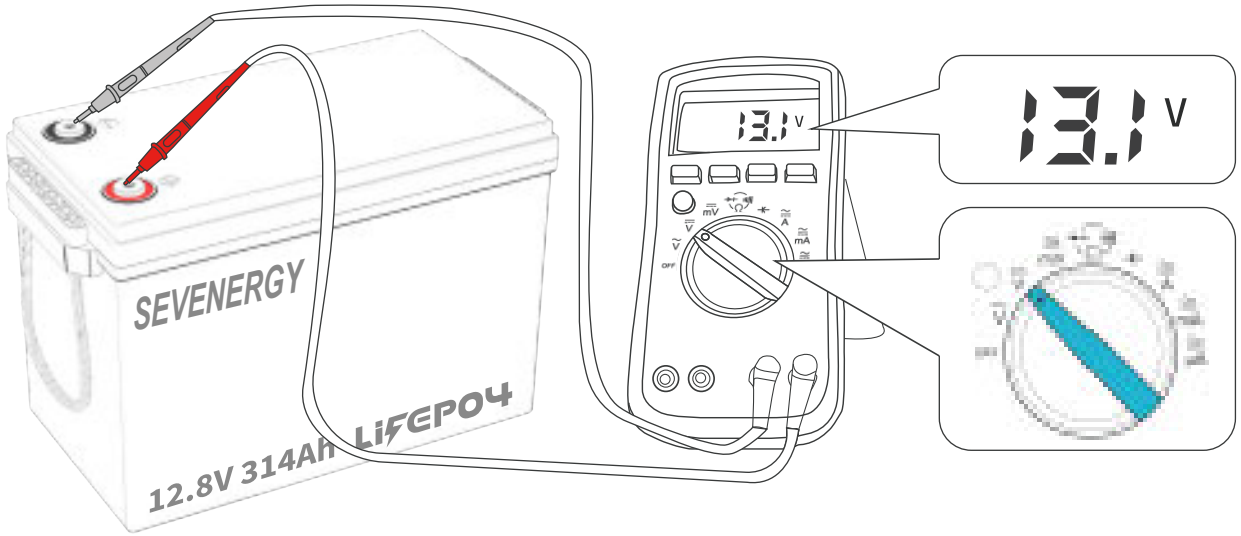
Step 1

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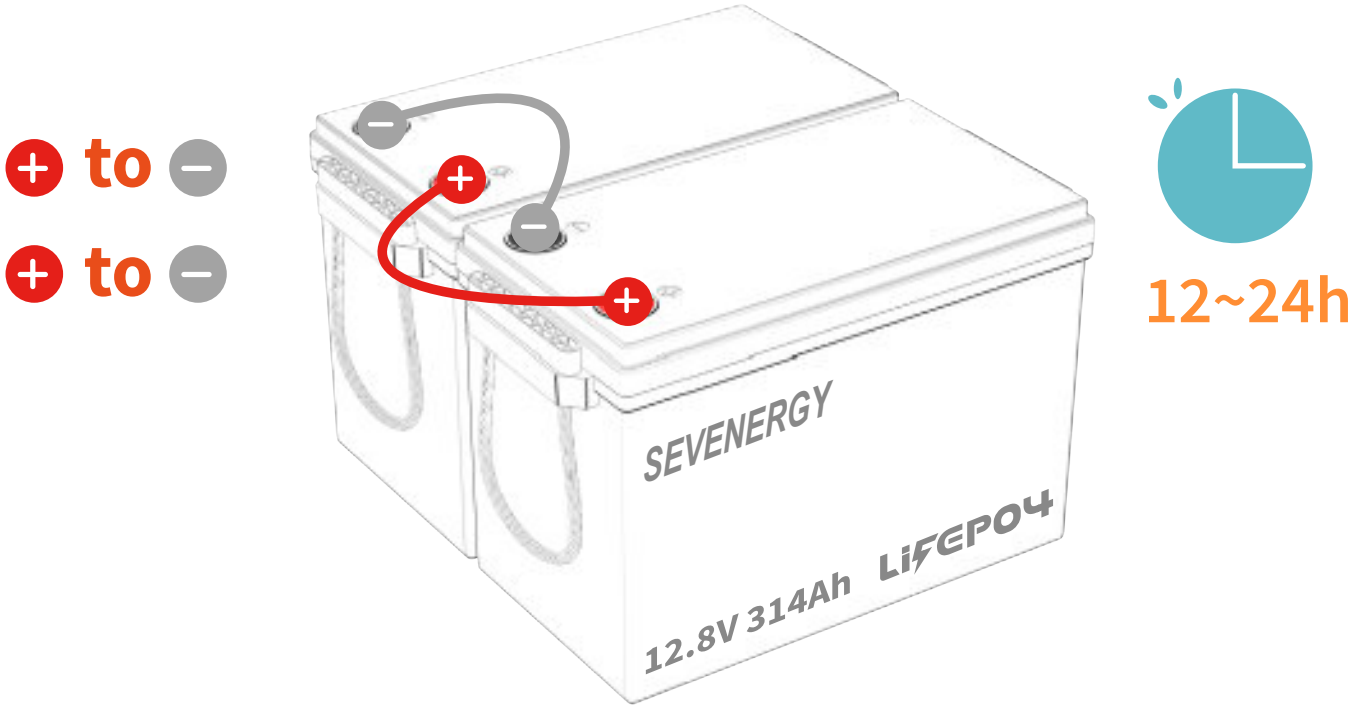
Step 2

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Step 3

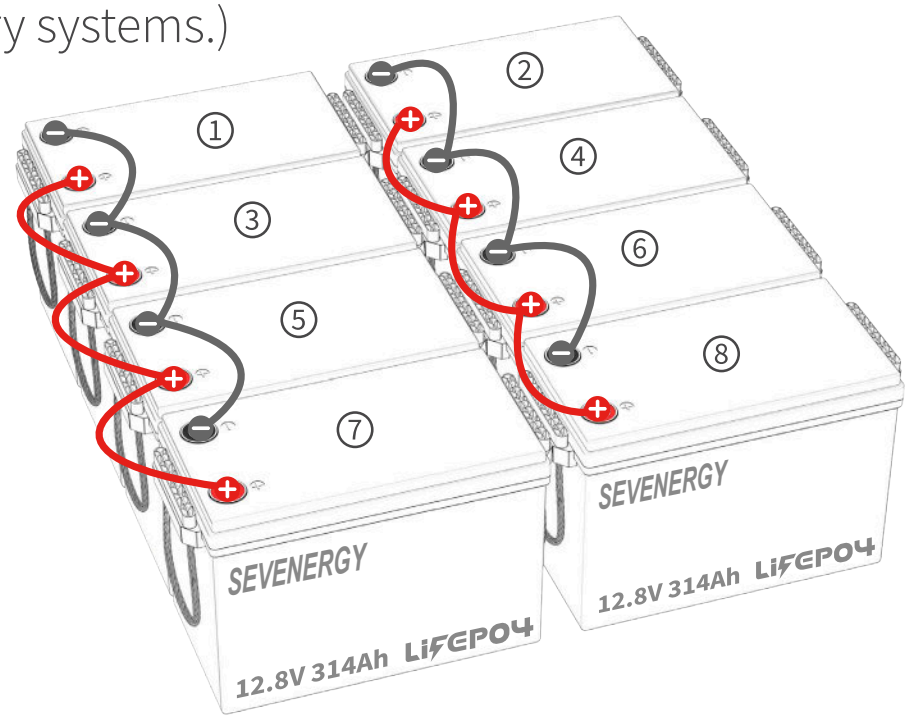
Connect all the batteries in parallel and allow them to rest together for 12 to 24 hours.



Refer to page 11 for terminal bolt installation.

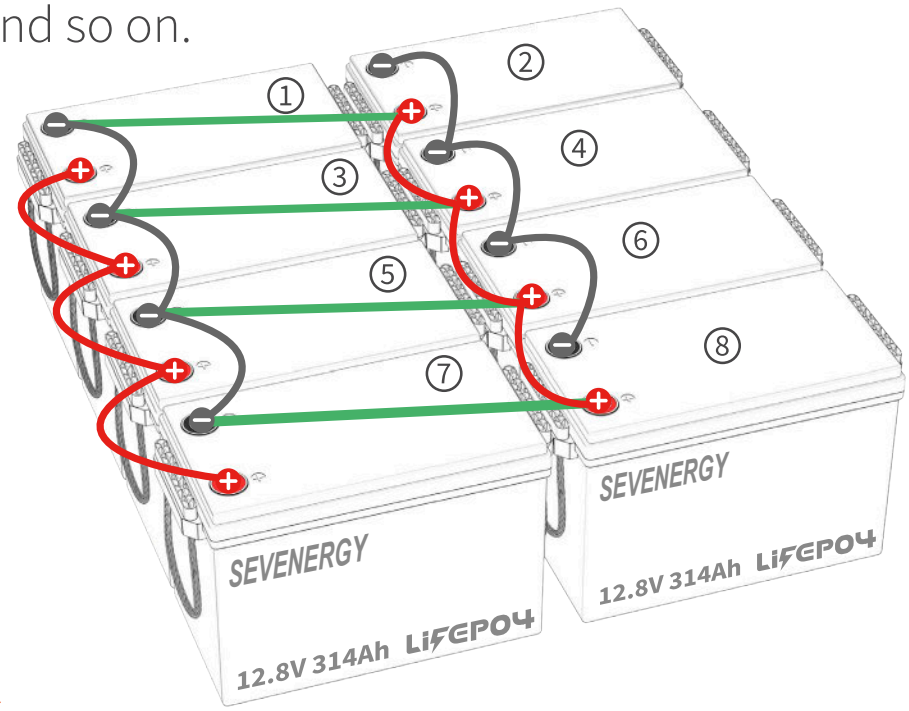
Step 4

After the voltage is balanced, remove the screws of the battery and connect the batteries in parallel first. (Take 2S4P as an example, first connect the 8 batteries 1#, 3#, 5#, 7# and 2#, 4#, 6#, 8# in parallel to form 2 battery systems.)



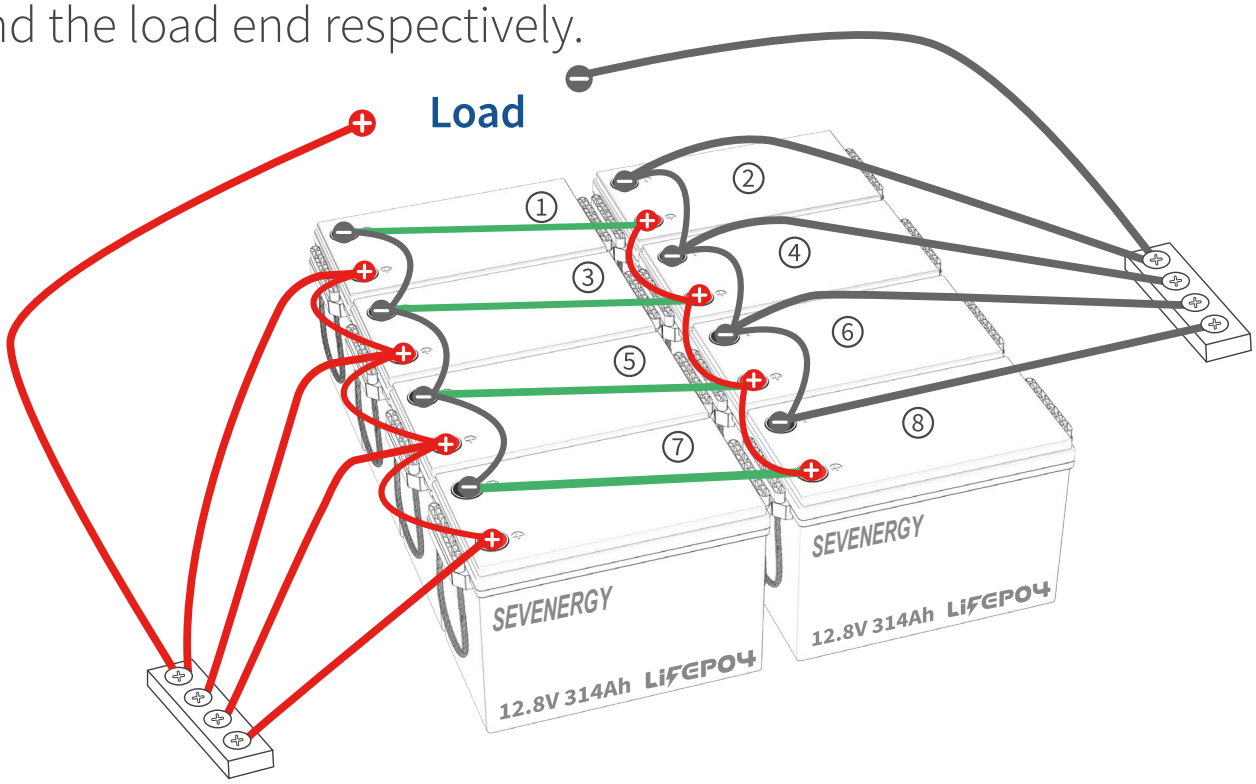
Step 5

Connect the two battery systems in series. Connect the negative pole of 1# and the positive pole of 2# in series, 3# and 4#, 5# and 6#, 7# and 8# and so on.



Step 6

Connect the positive poles of 1#, 3#, 5#, 7# and the negative poles of 2#, 4#, 6#, 8# to the busbars that match the current power. Then connect the busbar + and busbar - to the power supply end and the load end respectively.



4P2S 24 (25.6V) 1256Ah Battery System

Note: It is recommended to periodically re-balance 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.
Please refer to Table 1 for the voltage, capacity parameters and maximum number of series and parallel connections.
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.

Battery System Energy	12V (12.8V) 628Ah 8038Wh	1S2P
Battery System Energy	12V (12.8V) 942Ah 12057Wh	1S3P
Battery System Energy	12V (12.8V) 1256Ah 16076Wh	1S4P
Battery System Energy	24V (25.6V) 314Ah 8038Wh	2S1P
Battery System Energy	24V (25.6V) 628Ah 16076Wh	2S2P
Battery System Energy	24V (25.6V) 942Ah 24115Wh	2S3P
Battery System Energy	24V (25.6V) 1256Ah 32153Wh	2S4P
Battery System Energy	36V (38.4V) 314Ah 12057Wh	3S1P
Battery System Energy	36V (38.4V) 628Ah 24115Wh	3S2P
Battery System Energy	36V (38.4V) 942Ah 36172Wh	3S3P
Battery System Energy	36V (38.4V) 1256Ah 48230Wh	3S4P
Battery System Energy	48V (51.2V) 314Ah 16076Wh	4S1P
Battery System Energy	48V (51.2V) 628Ah 32153Wh	4S2P
Battery System Energy	48V (51.2V) 942Ah 48230Wh	4S3P
Battery System Energy	48V (51.2V) 1256Ah 64307Wh	4S4P

Battery Charging and Discharging Logic

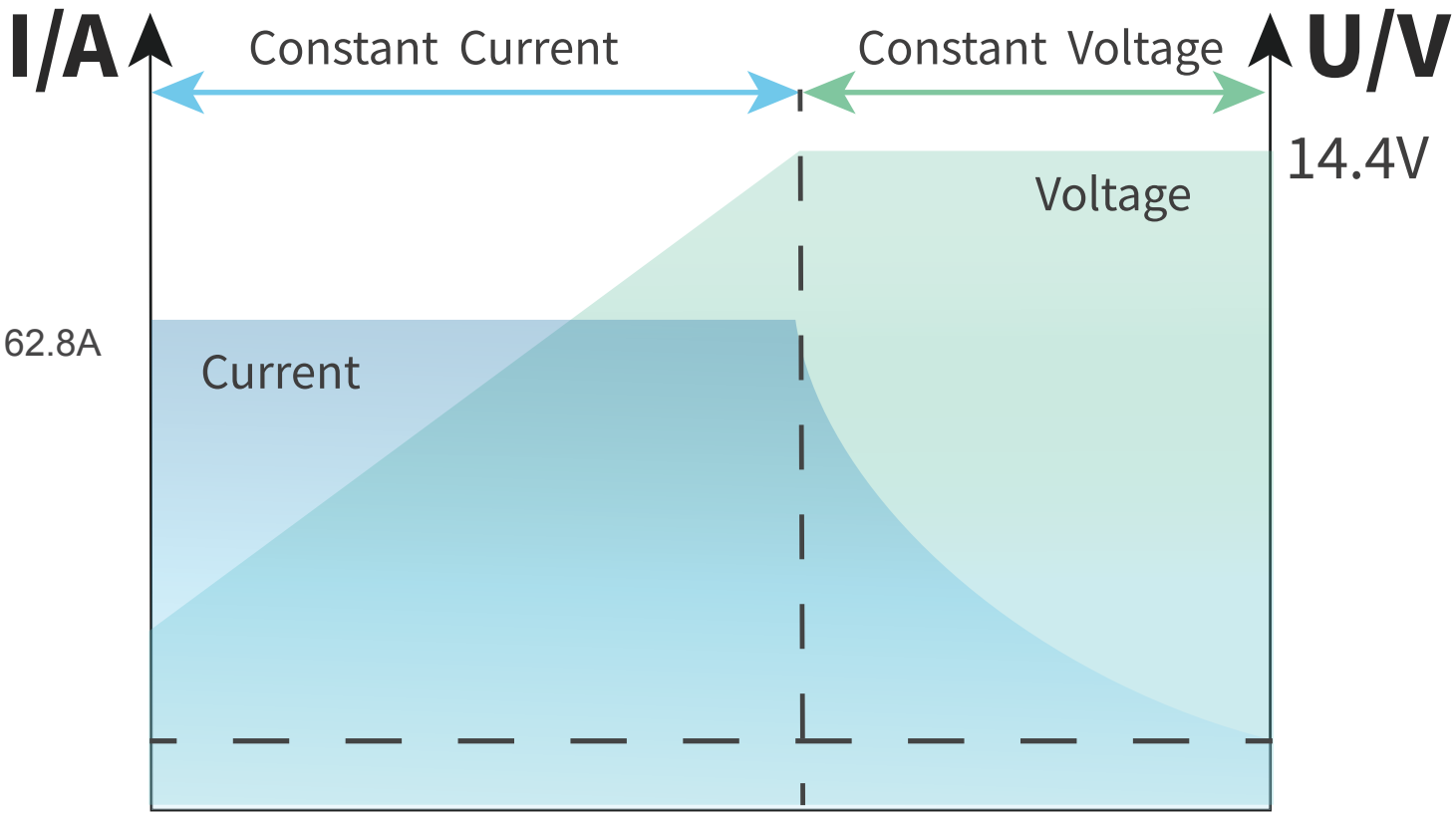
The battery may be received at a partial state of charge (SOC) depending on the time between manufacturing and shipping. It is crucial to fully charge the battery before its initial use. In case the battery shuts off due to low SOC, promptly disconnect it from loads and charge it to prevent irreversible 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 uses a constant current of 62.8A until the battery voltage reaches 14.4V, followed by charging at a constant voltage of 14.4V while the current tapers. Charging is complete when the current falls below 15.7A (the tail current).

At 62.8A, charging takes approximately 5 hours, depending on the initial state of charge. Charge only at battery temperatures between 32°F and 113°F (0°C and 45°C).

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 14.4V (±0.2V).
- Do not overcharge or over-discharge 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 (160A) of the battery. (When using a single unit).

Discharging Logic

During standard discharging, the battery is discharged at a constant current of 160A until the voltage drops to 10V. 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.
- When the SOC of the battery is >30%, the maximum discharge current can be based on the parallel number of batteries *200A. When the battery's SOC≤30%, it can only support 160A discharge.

SOLAR PANEL(S) & CONTROLLER

Solar Panel

Recommend Power: >=900W （When using a single unit）

- The battery can be fully charged in one day (with effective sunshine 4.5 hrs/day) by 900W solar panels.
- It may take more than one day to fully charge the battery by > 900W solar panels since the duration and intensity of light would be a great factor for their charging efficiency.

Controller

Recommend Charging Current:

62.8A (0.2C)	Approx. 5 hours to reach 100% capacity.
157A (0.5C)	Approx. 2 hours to reach 97% capacity.

Battery Type: 12V (12.8V) LiFePO4

Controller Settings

Use the following settings for this 12.8V LiFePO4 battery:

We recommend configuring the following parameters exclusively for LiFePO4 batteries. Settings for other battery types are not applicable to LiFePO4 batteries, except for the settings listed below.

CHARGING	Charge Voltage	14.2~14.4V
	Over Voltage Disconnect	14.4V
	Over Voltage Reconnect	13.8~14.2V
	Tail Current	15.7A (0.05C)
DIS-CHARGING	Under Voltage Warning	11.6V
	Under Voltage Recover	11~11.5V
	Low Voltage Disconnect	10V

BATTERY CHARGER

Use 14.4V lithium iron phosphate (LiFePO4) battery charger to maximize the capacity.

★ **Recommend Charging Voltage:** Between 14.2V to 14.4V

★ Recommended Charging Current:

62.8A (0.2C)	Approx. 5 hours to reach 100% capacity.
157A (0.5C)	Approx. 2 hours to reach 97% capacity.

Tips

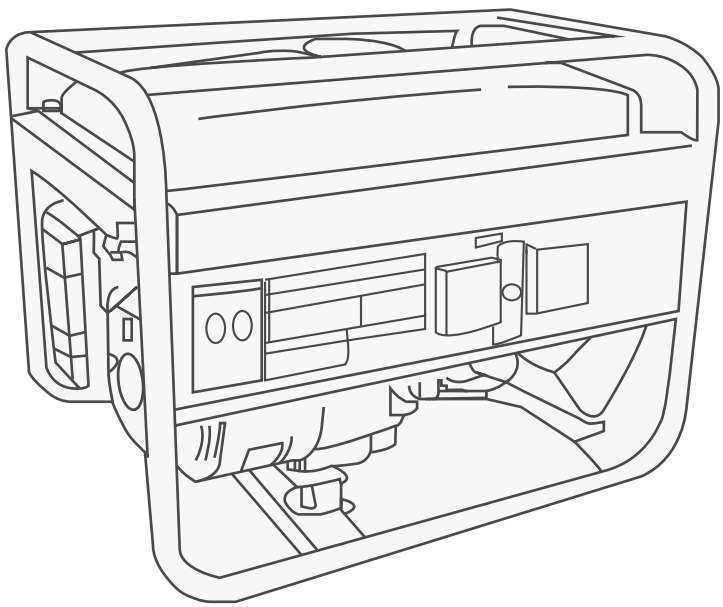
- Connect the charger to the battery before connecting it to the grid power in case of sparks.
- It's recommended to disconnect the charger from the battery after fully-charged.

ALTERNATOR/GENERATOR

The battery can be charged by an alternator or generator, and it needs to connect a DC to DC charger between the battery and the alternator or generator.

★ **Recommend Charging Voltage:** Between 14.2V to 14.4V

62.8A (0.2C)	Approx. 5 hours to reach 100% capacity.
157A (0.5C)	Approx. 2 hours to reach 97% capacity.



To Estimate the Battery SOC

The SOC values listed below are estimated based on the open circuit 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%	13.50V	40%	13.15V
99%	13.40V	30%	13.05V
90%	13.35V	20%	13.00V
80%	13.30V	14%	12.80V
70%	13.25V	9%	12.75V
60%	13.23V	5%	12.50V
50%	13.20V	0%	11.60V

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

Troubleshooting

Problem	Possible Causes	Solution
The battery cannot be activated, or its open-circuit voltage is below 10V.	Severe over-discharge due to self-discharge or parasitic loads.	Revive the battery with a charger or charge controller featuring lithium battery activation or forced charging.
The battery shuts off due to under-voltage protection.	Battery voltage drops below the preset threshold.	Disconnect all loads and charge at a current greater than 1A as soon as possible.
The battery cuts off charging due to over-voltage protection.	Over-voltage protection interrupts charging.	1. Disconnect the charging source. 2. Reduce charge voltage by 0.2V to 0.4V for 6 hours. 3. Recharge using the correct voltage setting. If the issue persists with a compatible LiFePO4 charging source and the correct voltage, repeat these steps.

Troubleshooting (continued)

Problem	Possible Causes	Solution
High/low-temperature protection interrupts battery operation.	Battery temperature exceeds the preset threshold.	1. Disconnect the battery from the charging source or loads. 2. Allow it to cool down or warm up. 3. The battery automatically recovers and resumes operation once temperature returns to its operating range.
Short-circuit protection is triggered.	A short circuit occurs in the battery.	1. Remove the short circuit as soon as possible. 2. Charge at a current greater than 1A.
Charge/discharge over-current protection is triggered.	Excessive current flows during charging or discharging.	Disconnect the battery from the charging source or loads as soon as possible.

MAINTENANCE AND VOLTAGE CHECKS

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-resistan 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.

> 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-resistan seal and protect the terminals from corrosion.

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 open circuit 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.

Storage

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

- Charge the battery to 30% to 50% SOC.
- Disconnect the battery from the system.
- Store the battery in a well-ventilated, dry, clean area at temperatures between -4°F and 113°F (-20°C to 45°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 3~6 months to prevent it from over-discharge.
- Fully charge the battery when it is taken out of storage.

Important Safety Instructions

SEVENERGY 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.

FCC Statement

Inspection

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 interference 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 ID: 2BOVI-MOTLFP128 for Model 12314-180L-BT

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.

SEVENERGY APP CONNECTION

Connect to your battery via Bluetooth with the SEVENERGY app.

Step 1: Download and open the app

Scan the QR code below. Open the app after installation. No account required.

mysevenergy.com/app/



SEVENERGY

Download on the App Store

GET IT ON Google Play

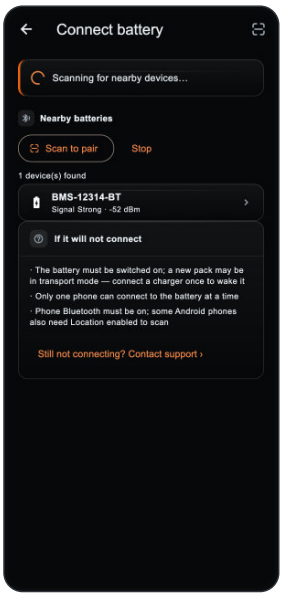
Step 2: Select your battery and connect

Turn on Bluetooth and allow permissions. Tap Reconnect on the Overview screen.

Select your battery under Nearby batteries, then view its status in Overview.



BLUETOOTH



Select battery



Connected

Screens shown in English. Device names and readings are examples.