



12.8V

LiFePO₄ **334Ah**

Product Manual

 300A BMS



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LiFePO₄ Battery - Compliance Statement & Disclaimer



FCC STATEMENT

(FCC ID: 2BVX7LITHINK12VB)

Product Name: Li Think 12V334Ah Lifepo4 Battery

Model: LT-12-334-300-BT-LTP2-H-GEN

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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RF Exposure Information 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 and your body.

Disclaimer

- LIXIANG INTERNATIONAL (HONG KONG) ENERGY TECHNOLOGY CO., LIMITED SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY:
Unauthorized use or disregard of this manual
- Consequential/accidental damage
Improper repairs
Actions of unqualified personnel
- THIS LIMITATION OF LIABILITY ALSO APPLIES TO:
Use of non-original spare parts

STRICTLY PROHIBITED:
Unauthorized modifications or technical changes

※ Note: Applies only if battery incorporates wireless functionality.

Important Safety Information



DANGER

- **Risk of Fire, Explosion, or Burns:** DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery. Keep the battery away from fire, heat sources, sparks, and hazardous chemicals. Never soak the battery in water.
- **Risk of Severe Electrical Shock:** The terminals of this battery are always live. Avoid exposed metal terminals or connectors. DO NOT short circuit the battery, place tools on the terminals, or touch them with bare hands.
- **hemical Hazard:** DO NOT open, dismantle, or modify the battery. If the casing is damaged, DO NOT touch the exposed electrolyte or powder. Uncovered electrolyte or powder that has contacted the skin or eyes MUST be flushed out with plenty of clean water immediately. Seek medical attention afterward.

WARNING

- **Installation Hazard:** Battery installation and maintenance must be performed by trained and certified technicians. Improper configuration or installation may damage the battery and other related equipment.
- **Personal Protection:** Always wear proper personal protective equipment (PPE), such as insulating gloves and safety goggles, when working on the battery.
- **Reverse Polarity Risk:** Please verify the polarity before connecting the wiring using a multimeter. Reverse polarity can and will destroy the battery and other electrical equipment.
- **California Proposition 65 Warning:** This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

CAUTION

- **Overheating Risk:** Place the battery in a well-ventilated area with sufficient heat dissipation to prevent overheating and damage.
- **System Protection:** Please use circuit breakers, fuses, or disconnects that have been properly sized by certified electricians or regional code authorities to protect all the electrical equipment in your system. While the battery has a built-in battery management system (BMS), it alone will not protect your system from severe electrical conditions.

NOTICE

- **Cable Sizing:** Size the battery cables and connectors appropriately. Use high-stranded copper connectors and heavy gauge cables to handle possible battery loads. Make sure to keep identical cable lengths.
- **Application Limit:** DO NOT use this deep cycle battery as a starting battery (e.g., for starting vehicles).
- **Proper Disposal:** DO NOT dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.

If you have any questions or need any help, please feel free to contact us (and leave your contact phone number) at support@lithink.com, we will offer phone or email support in 12hrs.

LiFePO₄ Battery Installation

Preparation & Identification (Power OFF)

- Disconnect all loads and chargers
- Identify terminals: **Positive POS (+) Red / Negative NEG (-) Black**
- Prepare cables: **Color-coded O-terminals (red+/black-)**
- Clean contacts: **Wipe terminals with dry cloth**

Terminal Connection Sequence

- **Connect POS (+) first:**
Place red O-terminal on stud → **ensure full surface contact**
Hand-tighten M8 bolt (several turns)
- **Connect NEG (-) last:**
Torque wrench to **12 N·m** → tighten until audible "click"

Verification

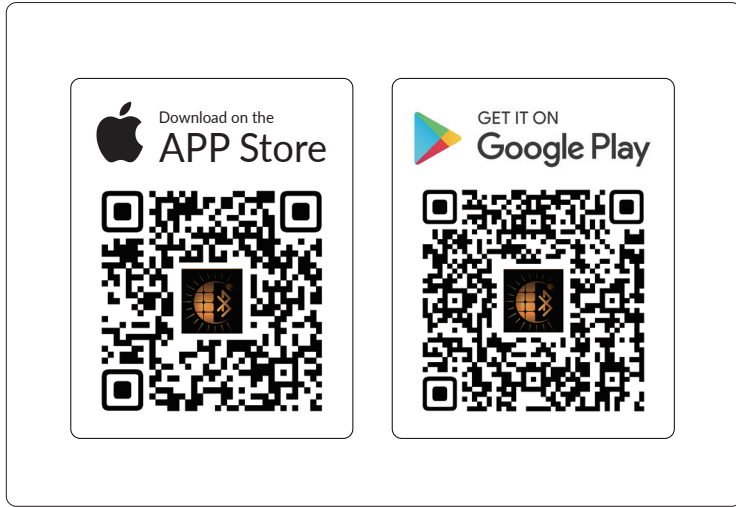
- **Polarity check (MANDATORY):**
Visually confirm **red cable → POS (+) / black cable → NEG (-)**
- **Security test:**
Gently tug cables → **O-terminals must show zero movement**

Scenario-Specific Checks

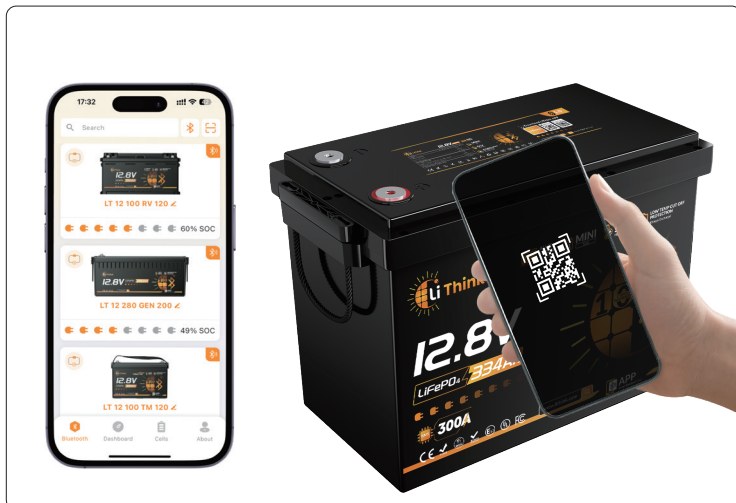
Scenario	Critical Post-Installation Checks
RV Use	1. Battery securely fastened (no wobble) 2. +/- cables separately secured (no friction) 3. Battery compartment well-ventilated
Marine Use	1. Battery mounted high & dry 2. Apply thin anti-corrosion grease (copper-based) on studs 3. Monthly check terminals for green corrosion
Solar Use	1. Use LiFePO₄-compatible charge controller 2. Avoid direct sunlight on battery 3. Keep cables away from heat sources

24/7 Monitoring Via Lithink App ⚡

Download the Lithink APP and register your account.



Pair the battery with the Lithink APP and effortlessly keep track of the battery's real-time status.



Product Overview

12.8V 334Ah Battery



Parameter Name	Parameter Value
Cell Type	LiFePO ₄
Nominal Voltage	12.8V
Rated Capacity	334Ah
Energy	4275.2Wh
Internal Resistance	≤100mΩ
Cycle Life	≥8000 cycles
Battery Management System (BMS) Board	300A
Charge Method	CC/CV
Charge Voltage	14.6V

Recommend Charge Current	66.8A
Required Minimum Charge Current for Heating Function	10A
Max. Continuous Charge Current	300A
Max. Continuous Discharge Current	300A
Surge Discharge Current (10s)	450A
Surge Discharge Current (5s)	600A
Surge Discharge Current (3s)	900A
Surge Discharge Current (1s)	1000A
Max. Continuous Output Power	3840W
Dimension (inch)	15.08 × 8.03 × 10.55
Dimension (mm)	383 * 204 * 268
Housing Material	ABS
Recommended Terminal Torque	12N·m
Protection Class	IP65
Charge Temperature Range	0°C to 50°C / 32°F to 122°F
Discharge Temperature Range	-20°C to 60°C / -4°F to 140°F
Storage Temperature Range (Less than 1 year)	-20°C to 25°C / -4°F to 77°F

Storage Temperature Range (Less than 3 months)	-20°C to 40°C / -4°F to 104°F
Storage Temperature Range (Less than 7 days)	-20°C to 65°C / -4°F to 149°F
Heating Temperature	0°C to 10°C / 32°F to 50°F
Approx. Heating Time @8A (From -10°C/14°F)	70-90 minutes
Approx. Heating Time @8A (From -20°C/-4°F)	100-150 minutes
Low Temperature Charging Protection	Yes
Stop Charging Temperature	0°C/32°F
Resume Charging Temperature	5°C/41°F
Number of Series and Parallel Connection	4P4S
Battery Weight	27.1 kg / 59.7 lbs
Color	Black
Cell Weight	22 kg / 48.5 lbs
Number of Cells	4
Charging Time @ Recommended Current	66.8A@5h
Discharge Cut-off Voltage	10.8V
Self-discharge Rate	≤2%
Terminals	M8 * 14mm

Battery Self-Heating Function Workflow



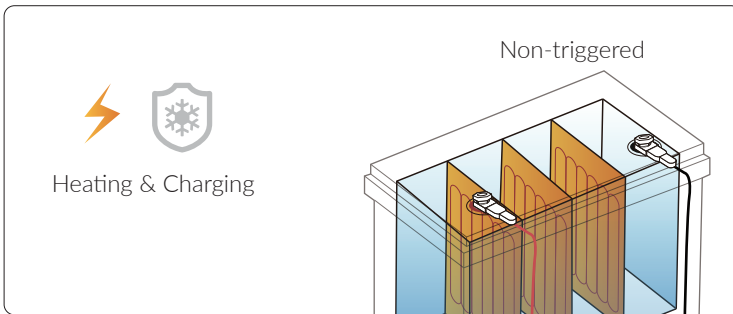
🔌 Conditions & Responses

1. Normal Charging Mode (Battery Temperature $> 0^{\circ}\text{C}$)

- **After connecting charger:**

If temperature between $0^{\circ}\text{C} \sim 5^{\circ}\text{C} \rightarrow$ Immediately initiates simultaneous heating & charging

When temperature reaches $\geq 10^{\circ}\text{C} \rightarrow$ Heating stops automatically, charging continues



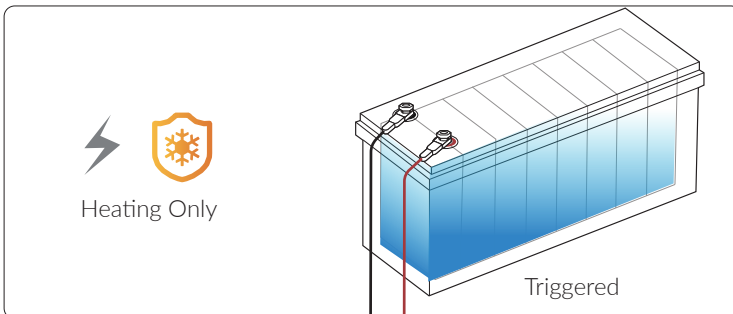
2. Low-Temperature Protection Mode (Battery Temperature $< 0^{\circ}\text{C}$)

- **After connecting charger:**

System prioritizes **heating only** (no charging)

When temperature reaches $\geq 5^{\circ}\text{C} \rightarrow$ Activates simultaneous heating & charging

When temperature reaches $\geq 10^{\circ}\text{C} \rightarrow$ Heating stops, charging continues



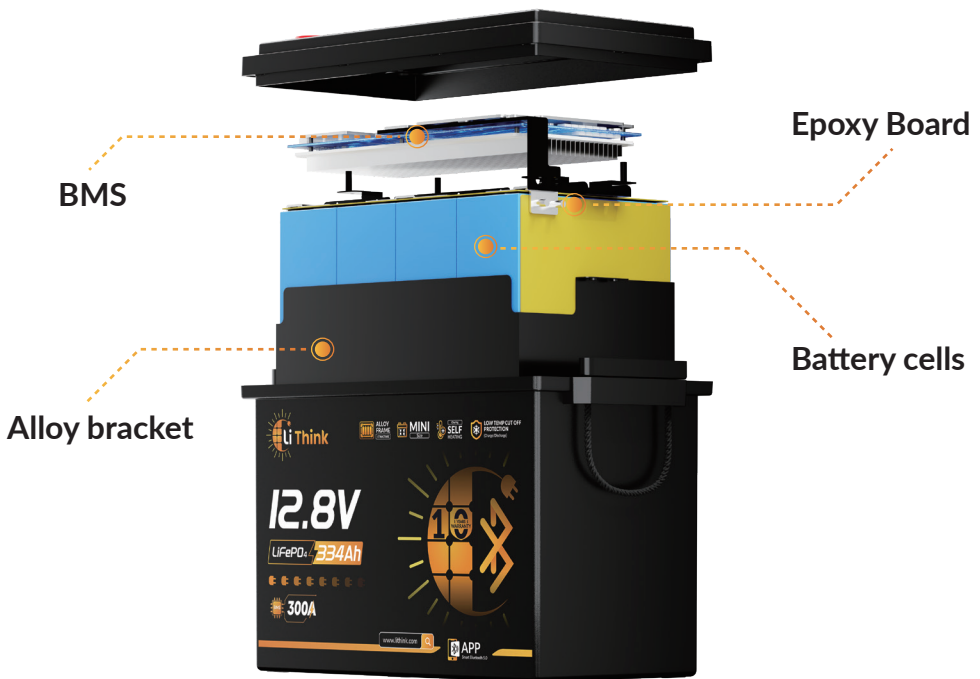
🔌 Heating Time Reference (Constant 8A Current)

Starting Temperature	Time to Reach 10°C
-10°C (14°F)	70-90 minutes
-20°C (-4°F)	100-150 minutes

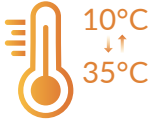
🔌 Charging Preparation

- In extreme cold environments: Reserve additional 20% charging capacity
- Example: Target charge 100Ah → Requires ≥ 120 Ah actual input

Internal structure ⚡



Things To Know Before Using



Terminal Security

- **Firmly tighten terminal bolts** to ensure secure connections. Loose terminals may cause **heat buildup**, leading to **battery damage or safety hazards**.
- Regularly inspect bolt tightness and retighten if necessary.

Usage Limitations

Not for Cranking Applications

This battery is engineered for **deep-cycle applications**, not high-crank currents required for engine starting. Use as a starter battery **reduces lifespan and performance**.

Long-Term Storage Protocol

- **Temperature:**
Operational range: -20°C to 60°C (-4°F to 140°F).
Ideal storage: 10°C to 35°C (50°F to 95°F).
Store in **fireproof containers** away from children.
Extreme temperatures **degrade performance and longevity**.
- **State of Charge (SoC):**
Maintain **50% SoC** during storage.
Avoid full-charge (100%) or full-discharge (0%) states.
If unused >3 months: **Recharge every 3 months.**

Maintenance Requirements

- **Regularly inspect** for wear, corrosion, or physical damage.
- Clean terminals with **baking soda-water solution** when corrosion occurs.
- **Ensure all connections remain tight.**

Charging Methods

Solar Panel

Recommended Charging Current: 66.8A (0.2C)

1300W	With effective daily sunlight of around 4.5 hours, a 1300W solar panel can fully charge the battery within one day.
	

LiFePO4 batteries Controller Settings

Charging	Charge / Bulk / Boost Voltage	14.4±0.2V
	Absorption Voltage	14.4±0.2V
	Over Voltage Disconnect	14.6V
	Over Voltage Reconnect	14.4V
	Tail Current	6.28A(0.02C)

Discharging	Low Voltage Disconnect	10.8V
	Low Voltage Reconnect	11.2V

Battery Charger

- **Recommendations:**

Charging Voltage: 14.4V to 14.6V

Disconnect the charger from the battery when it is fully charged.

- **Not recommended:**

Using alligator clips to connect the charger or load to the battery. (the small contact area may cause the terminals to melt and damage the battery).

66.8A (0.2C)	The battery will reach a full charge in approximately 5 hours.	
		

Alternator / Generator

The LiThink battery can be charged via an alternator or generator.
 Note: If the alternator/generator supports DC output, a DC-to-DC charger should be installed between the battery and the generator. If the alternator/generator supports AC output, refer to the "Battery Charger" section above and add a suitable battery charger between the battery and the generator.

66.8A (0.2C)	The battery will reach a full charge in approximately 5 hours.	
		

Battery Capacity Estimation Guide

- For LiFePO4 batteries, the voltage shown during charging or discharging isn't the battery's true voltage. Once you finish charging or discharging and disconnect the battery from the power source, its voltage will gradually settle to the real value.
- Resting Voltage: Measure the voltage after disconnecting the battery from the charger and loads. Leave it undisturbed with no current flow for 3 hours.

SOC (%)	Voltage(V)
0	10 to 12
25	13 to 13.15
50	13.15 to 13.2
75	13.3 to 13.33
100	≥ 13.33

Recommended Cable Sizing

The values above comply with **NEC Table 310.15(B)(16)** for copper cables rated at **167°F (75°C)** and apply to ambient temperatures **≤ 86°F (30°C)**. For cables longer than **6 feet (1,829 mm)** or in environments exceeding **86°F (30°C)**, use **larger-gauge cables** to prevent **excessive voltage drop** caused by undersized cables.

PVC Copper Cable Size (AWG/mm(2))	Ampacity (A)
14 (2.08)	20
12 (3.31)	25
10 (5.25)	35
8 (8.36)	50
6 (13.3)	65
4 (21.1)	85
2 (33.6)	115
1 (42.4)	130
1/0 (53.5)	150
2/0 (67.4)	175
4/0 (107)	230
2 * 1/0 (107)	300
2 * 2/0 (134.8)	350

Series / Parallel Connection

 **When connecting batteries in series or parallel, the following conditions must be met:**

- Same capacity (Ah)
- Same BMS
- Same Brand
- Purchased Recently: Batteries should be purchased within a close timeframe, ideally within one month of each other.

Limitation for Series/Parallel Connection

Top Configurations:

- Max Voltage: 4S1P → 51.2V/334Ah
- Max Capacity: 1S4P → 12.8V/1336Ah
- Max Energy: 4S4P → 51.2V/1336Ah (68,403.2Wh)



S	P	Voltage(V)	Sys Cap (Ah)
1	1	12.8	334
1	2	12.8	668
1	3	12.8	1002
1	4	12.8	1336
2	1	25.6	334
2	2	25.6	668
2	3	25.6	1002
2	4	25.6	1336
3	1	38.4	334
3	2	38.4	668
3	3	38.4	1002
3	4	38.4	1336
4	1	51.2	334
4	2	51.2	668
4	3	51.2	1002
4	4	51.2	1336

How to Connect Batteries ⚡

🔌 Voltage Balancing Before Connection

- Fully charge the batteries separately.
- Connect all of the batteries in parallel, and leave them together for 12~24hrs.



🔌 Battery-to-Battery Connection

Connect Batteries in Series



#2 Connect Batteries in Parallel



● #3 Connect Batteries Both in Series & Parallel

Connect in parallel first, then series.

Connect the batteries in parallel.



Connect the paralleled battery systems in series.



Connect in parallel first, then series.

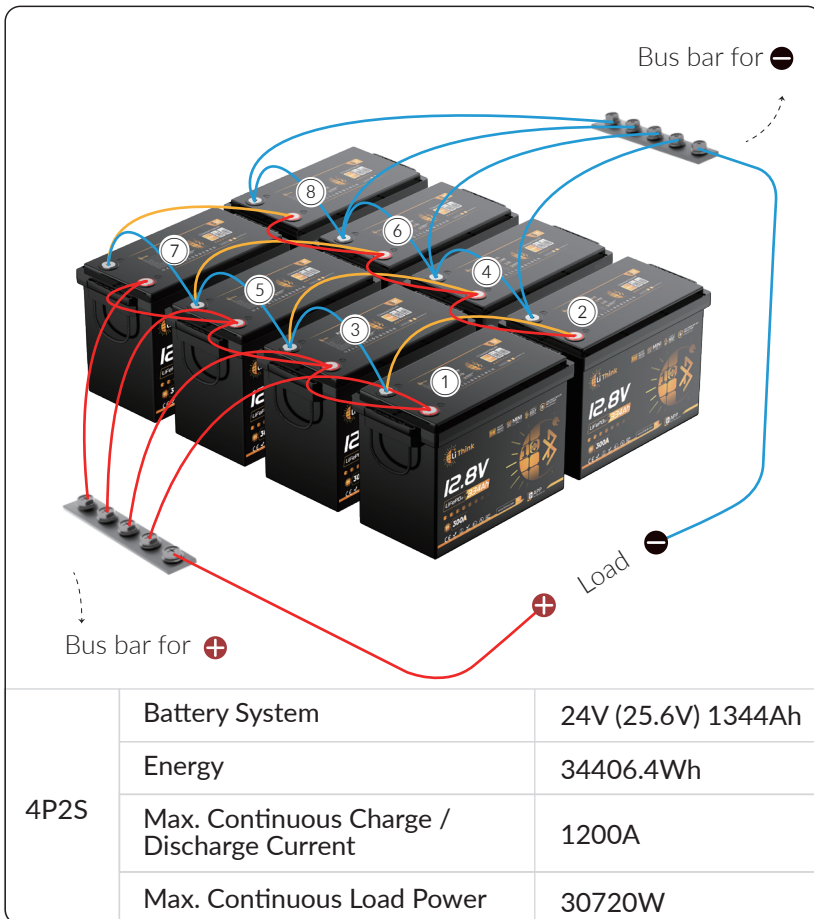
1.Mandatory Bus Bar Usage

- All positive/negative cables **must** connect to separate bus bars (one positive bus bar, one negative bus bar)
- **Never** connect main input/output cables directly to individual battery terminals

Exception: Standalone series connections (no parallel) may omit bus bars

2.Why Use Bus Bars?

- High current (e.g., 400A) through single terminals causes **overheating/melting**
- Bus bars **balance current across batteries** for safety

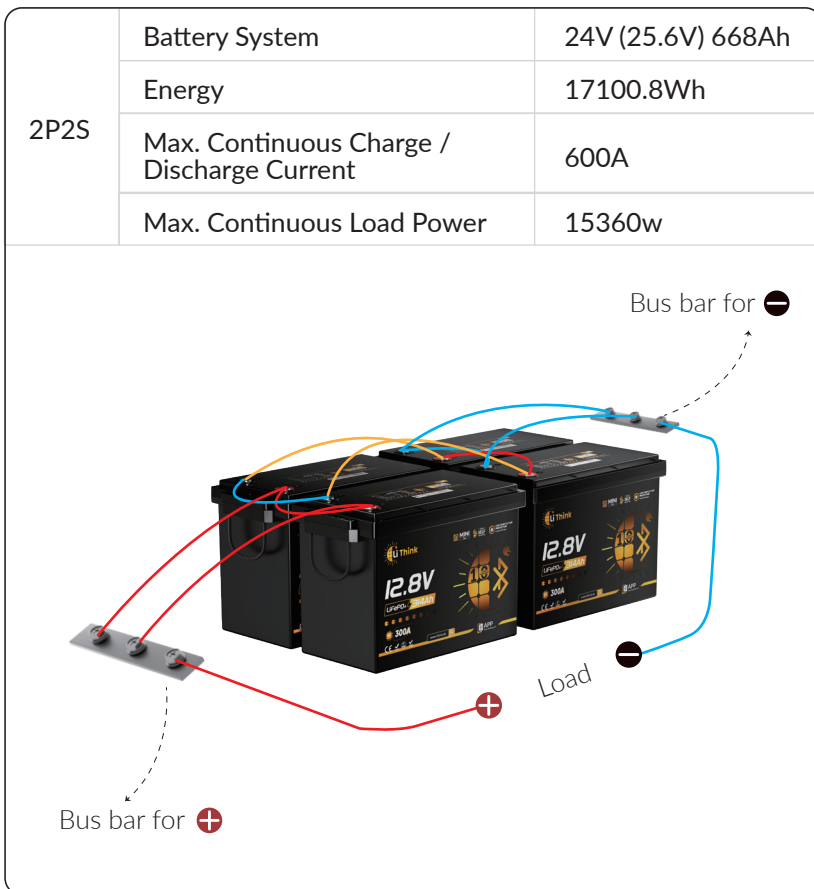


🔌 Prohibited Actions

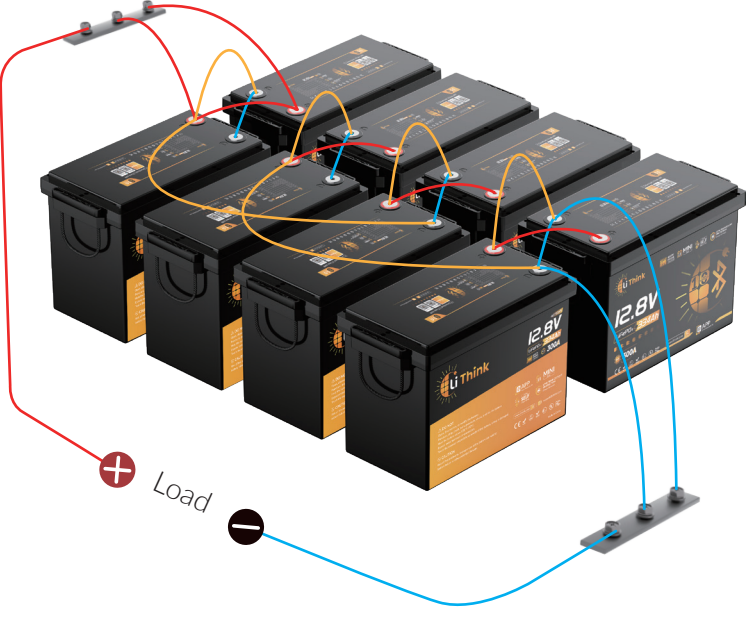
Error ①: Incorrect Jumper Connections

- Series-connected batteries (e.g., ①→②, ③→④) **must maintain sequential connections**
- **Never connect mid-series points** (e.g., + of Battery ①/③/⑤/⑦) directly to loads
- **Never interconnect non-endpoint batteries** (e.g., ③/④/⑥/⑨) or connect them to loads
Failure causes system malfunction

🔌 Wiring Diagram Reference



2P4S	Battery System	48V (51.2V) 668Ah
	Energy	34201.6Wh
	Max. Continuous Charge / Discharge Current	600A
	Max. Continuous Load Power	30720W



🔌 LiFePO4 Battery Balancing Procedure

1. Disconnect System

- Remove all inter-battery cables
- Let batteries rest for **2 hours**

2. Charge Individually

- Charge each battery separately until **charger green indicator illuminates**

3. Reconnect & Deep Discharge

- Rebuild series/parallel connections
 - Discharge entire system until **BMS low-voltage protection triggers**
- Frequency: Perform every 6 months**

What To Do When The Battery Stops Working?



When the battery



can't work



can't be charged



voltage < 9V

there's an 85% chance that the BMS has shut it off for protection. You can try the following ways to activate the battery.

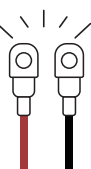
General Steps

If the BMS has cut off the battery for protection, follow these steps to activate it:

Step①

Disconnect all connections from the battery.

Trennen



Step②

Leave the battery aside for 30 minutes. The battery will then automatically recover to a normal voltage (>10V) and can be used again after being fully charged.



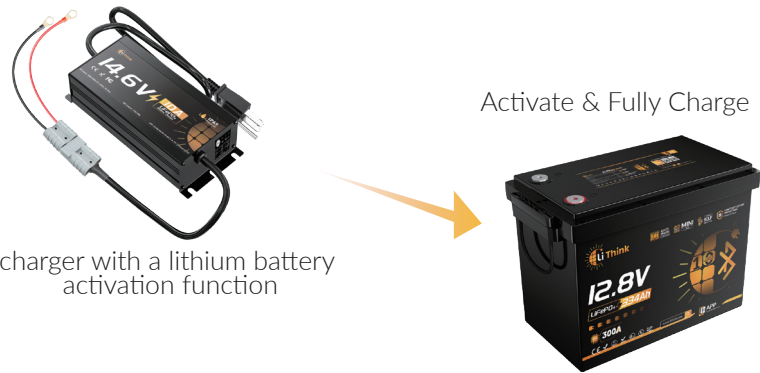
30min.



If the battery still can't recover after the above steps, try activating it using one of the following two methods. Once activated (voltage > 10V) and fully charged via the normal charging method, it can be used normally again.

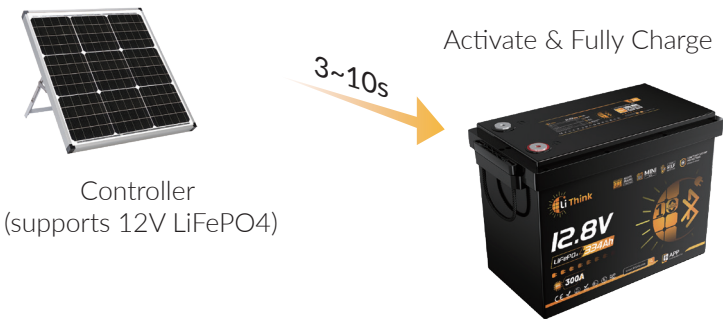
Method①

Use a charger with a lithium battery activation function to fully charge the battery.



Method②

Connect a controller that supports 12V LiFePO4 battery charging to charge the battery for 3 to 10 seconds in sunny daytime.





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