



38.4V 45Ah



# PRODUCT (90A BMS) MANUAL

Lithium Iron Phosphate (LiFePO<sub>4</sub>) Battery

# PRODUCT OVERVIEW

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## 38.4V 45AH BATTERY

Operating Voltage: 38.4V

Charging Voltage:  $43.2 \pm 0.6V$

Recommended Charge Current: 9A (0.2C)

Max. Continuous Discharge Current: 90A

Max. Continuous Output Power: For Electric Cart<sup>①</sup>: 2000W  
For Energy Storage: 3456W

① This battery is suitable for electric carts that speed lower than 21MI/hour (35KM/hour), such as golf carts, low-speed vehicles (LSV), all-terrain vehicles (ATV), neighborhood electric vehicles (NEV), E-trike and so on.

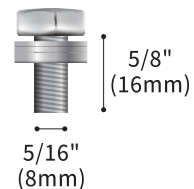


## ADDITIONAL COMPONENTS

### M8- 5/8" (16mm) Terminal Bolts

Recommended terminal torque: 106.2 to 123.9 inch•lbs / 12 to 14 N•m.

The terminal bolts are used to secure multiple cable lugs to a single battery terminal. The bolts can be replaced with **M8** bolts of other lengths based on actual needs.



### Insulating Caps for Bolts

Cover the battery with the insulating caps after tightening the bolts. If the cap melts, stop using the battery and reach out to [service@litime.com](mailto:service@litime.com) for further analysis.

# 24/7 MONITORING VIA LITIME APP

This product, integrated with Bluetooth 5.0, enables accurate and effortless real-time tracking and management of the battery status.

Step  
**1**

Download the LiTime APP and register your account.




Download on the  
App Store

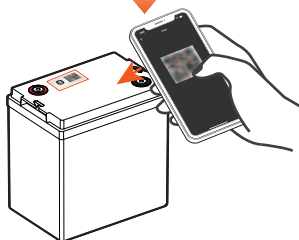
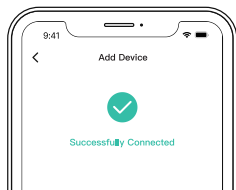
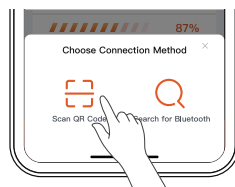
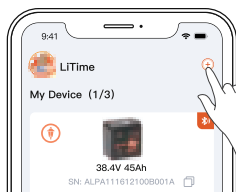
GET IT ON  
Google Play

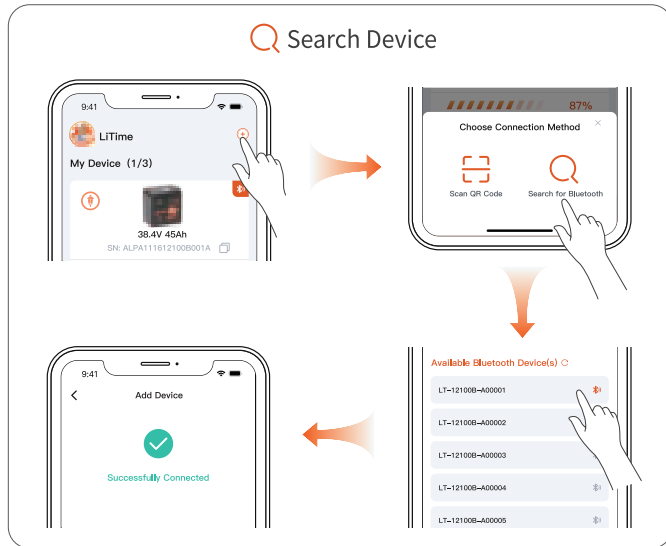


Step  
**2**

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

 Scan QR Code





## FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This device 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 device 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 device 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:

- Orient 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.

### 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## IMPORTANT SAFETY INSTRUCTION

**Please keep the battery away from heat sources, sparks, flames, and hazardous chemicals.**

**Secure the battery during installation of electric cart applications like golf carts or shaking applications like RVs, to avoid damage from shaking.**

**Maintain Adequate Ventilation and Heat Dissipation**

Place the battery in a well-ventilated area with sufficient heat dissipation to prevent overheating and damage.

**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.

Avoid accidents caused by unsuitable connectors or cables that make the connection a heat source during battery operation.

**Please tighten all cable connections, as loose cable connections can cause terminal meltdown or fire.**

**DO NOT puncture, drop, crush, burn, penetrate, shake, or strike the battery.**

The battery should be securely fastened during handling to prevent impact or dropping.

It should be safely secured to a solid plane and the cables safely tied to a suitable location to avoid arcing and sparking due to friction.

DO NOT press it by placing heavy stuff on top of it for long periods, which may damage it due to an internal short circuit.

**DO NOT immerse the battery in water whether the battery is in use or on standby.**

**DO NOT open, dismantle, or modify the battery.**

**DO NOT touch the exposed electrolyte or powder if the battery casing is damaged.**

**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.**

**Avoid Short Circuit**

Please use circuit breakers, fuses, or disconnects that have been properly sized by certified electricians, licensed installers, or regional code authorities to protect all the electrical equipment in your system. The battery has a built-in battery management system (BMS) that protects the battery cells from over-charge, over-discharge, and over-current, however this alone will not protect your system from severe electrical conditions.

**Trained and certified technicians are required for safe and reliable installation. This product manual can only serve as a guideline as it cannot cover all possible scenarios.**

**Verify Correct Polarity**

Please verify the polarity before connecting the wiring. Reverse polarity can and will destroy the battery and other electrical equipment. Use a multimeter to determine proper polarity.

**Avoid Exposed Metal Terminals or Connectors**

The terminals of this battery are always live. Avoid exposed metal terminals or connectors; DO NOT place tools on the terminals or touch them with bare hands; DO NOT short circuit or use outside of specified electrical ratings.

**DO NOT dispose of the battery as household waste. Please use recycling channels in accordance with local, state, and federal regulations.**

## WARNING

Batteries are potentially dangerous and proper precautions must be taken during operation and maintenance.

Improper use of the battery can lead to battery failure or other potential damage.

Improper configuration, installation, or use of related equipment in the battery system may damage the battery and other related equipment.

Please wear proper personal protective equipment when working on the battery.

Battery installation and maintenance must be performed by trained and certified technicians.

Failure to follow the warnings above can result in potential damage.

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

# BATTERY PARAMETERS

Cell Type	LiFePO4
Nominal Voltage	38.4V
Rated Capacity	45Ah
Energy	1728Wh
Internal Resistance	≤40mΩ
Cycle Life	≥4000 times
Battery Management System (BMS) Board	90A
Charge Method	CC/CV
Charge Voltage	43.2±0.6V
Recommended Charge Current	9A (0.2C)
Max. Continuous Charge Current	45A
Max. Continuous Discharge Current	90A
Surge Discharge Current	225A@1 second
Max. Continuous Output Power	For Electric Cart <sup>①</sup> : 2000W For Energy Storage: 3456W

Dimension	L10.24*W7.09*H10.43 inch
	L260*W180*H265 mm
Housing Material	ABS
Recommended Terminal Torque	106.2 to 123.9 inch•lbs / 12 to 14 N•m
Protection Class	IP65
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
Low Temperature Charging Protection (LTCP) Function <sup>②</sup>	Yes
Resume Charging Temperature Under LTCP	5°C/41°F (Battery Temperature)
FCC ID	2BDSV36V45

- ① This product is suitable for electric carts that speed lower than 21MI/hour (35KM/hour), such as golf carts, low-speed vehicles (LSV), all-terrain vehicles (ATV), neighborhood electric vehicles (NEV), E-trike and so on.
- ② This product supports Low Temperature Charging Protection (LTCP), where the BMS stops battery charging when the battery temperature falls below 0°C/32°F and resumes charging when the temperature rises above 5°C/41°F.



# HOW TO ESTIMATE THE BATTERY CAPACITY

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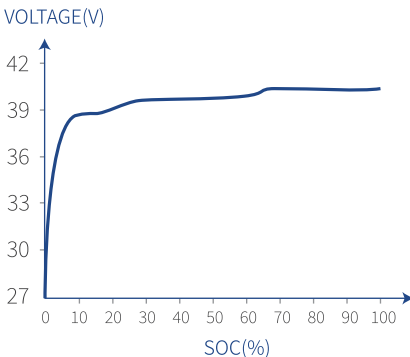
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## STATE OF CHARGE (SOC)

The battery capacity could be roughly estimated by its resting voltage (not charging/discharging voltage).<sup>①</sup>

Since the voltage of each battery is slightly different, and the voltage measurement is affected by the measuring instrument, ambient temperature, etc., the following parameters are for reference only. The actual SOC of the battery is based on the discharge capacity under load.

Resting Voltage: The voltage is measured after the battery has been disconnected from the charger and loads with zero current, and left alone for 3 hours.



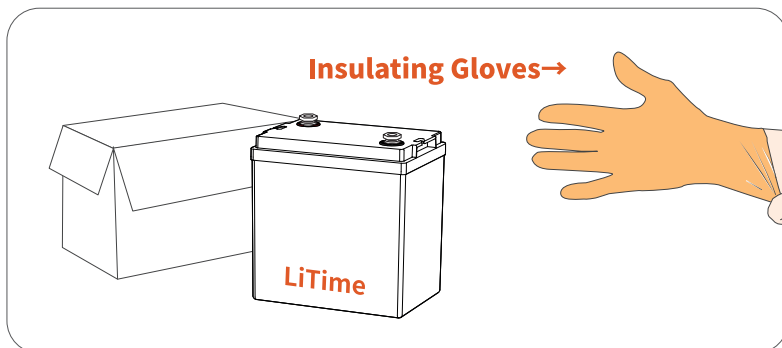
SOC (%)	VOLTAGE (V)
0	30 to 36
25	39 to 39.45
50	39.45 to 39.6
75	39.9 to 39.99
100	$\geq 39.99$ <sup>②</sup>

- ① Based on the characteristics of LiFePO<sub>4</sub> batteries, the voltage measured by all LiFePO<sub>4</sub> batteries during charging/discharging is not the real voltage of the battery. Therefore, after charging/discharging and disconnecting the battery from the power source, the voltage of the battery will gradually drop/increase to its real voltage.
- ② After this battery is protected from overcharge, the tested battery voltage (not the real voltage) will be lower than the real voltage. To calculate the SOC (%), add 0.5V to 0.7V to the tested battery voltage.

## HOW TO CONNECT BATTERIES

### Step1 Wear Insulating Gloves

Wear insulating gloves for protection before connecting. Please pay attention to operation safety in the process of connection.



### Step2 Voltage Balancing Before Connection

Below steps are necessary to reduce the voltage difference between batteries and let the battery system perform the best of it in parallel.

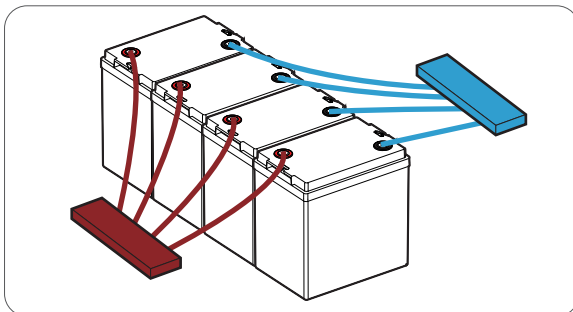
Step  
**1**

Fully charge the batteries separately.  
(voltage at rest:  $\geq 39.99V$ )

Step  
**2**

Connect all the positive and negative output cables of the batteries to bus bars<sup>①</sup> separately.

Connect Batteries in Parallel **+** to **+**, **-** to **-**.



①Bus Bar: It can help ensure the input & output currents of each battery are balanced and improve the conversion efficiency of the input & output currents for the battery.

Step  
**3**

Leave them together for 12-24hrs until the battery voltages have been balanced, the paralleled battery system can be connected to the load.

### **| Step3 Complete the System Connection**

Connect the **+** and **-** of the load to the bus bars. The cable gauge used in this step should be able to support the total input & output current of the entire battery system.

