Automatic
Self-Heating

Li Time

12.8V 140Ah

Smart BLUETOOTH 5.0 x Dual Purpose and More

PRODUCT (140A BMS) MANUAL

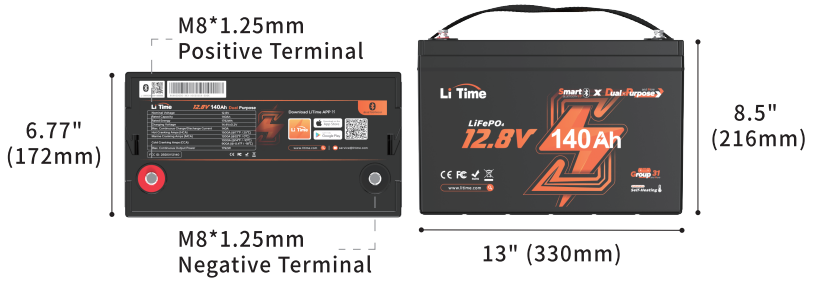
Lithium Iron Phosphate Battery ($LiFePO_4$)

www.litime.com

PRODUCT OVERVIEW

12.8V 140AH BATTERY

- Operating Voltage: 12.8V
- Charging Voltage: 14.4V±0.2V
- Recommended Charge Current: 28A (0.2C)
- Required Minimum Charge Current for Heating Function: 10A
- Hot Cranking Amps (HCA): 1500A (@77°F / 25°C)
- Marine Cranking Amps (MCA): 1200A (@32°F / 0°C)
- Cold Cranking Amps (CCA): 1000A (@14°F / -10°C)
  900A (@-0.4°F / -18°C)
- Max. Continuous Discharge Current: 140A
- Max. Continuous Output Power: 1792W

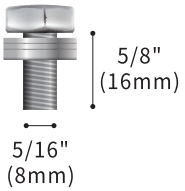


ADDITIONAL COMPONENTS

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 for further analysis.

BATTERY PARAMETERS

Cell Type	$LiFePO_4$
Nominal Voltage	12.8V
Rated Capacity	140Ah
Energy	1792Wh
Internal Resistance	≤40mΩ
Cycle Life Times	≥4000①
Cranking Times	≥5000①
Battery Management System (BMS) Board	140A
Charge Method	CC/CV
Charge Voltage	14.4V±0.2V
Recommended Charge Current	28A (0.2C)
Required Minimum Charge Current for Heating Function②	10A
Max. Charging Current	Outboard Alternator: 150A Charger: 140A
Hot Cranking Amps (HCA)	1500A (@77°F / 25°C)
Marine Cranking Amps (MCA)	1200A (@32°F / 0°C)
Cold Cranking Amps (CCA)	1000A (@14°F / -10°C) 900A (@-0.4°F / -18°C)

Max. Continuous Discharge Current	140A
Max. Continuous Output Power	1792W
Max. Expansion (Series & Parallel)	For Starting and Deep Cycle: 4P, No Series For only Energy Storage: 4P4S
Dimension	L13*H6.77*H8.5 inch
	L330*W172*H216 mm
Housing Material	ABS
Recommended Terminal Torque	106.2 to 123.9 inch · lbs/ 12 to 14 N · m
Protection Class	IP67③
Temperature Range	Charge: -20°C to 50°C / -4°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
Heating Temperature	Charge: -20°C to 5°C / -4°F to 41°F
Approx. Heating Time @10A	40-70mins (From-10°C / 14°F)
	80-120mins (From-20°C/-4°F)

① The specified number of cycles or starts only applies to single energy storage or single starting applications. If used for dual purposes, the actual number of cycles or starts will vary based on actual usage.

② The charge current should be at least 10A to activate the automatic self-heating function.

③ This product supports IP67 protection. To avoid potential issues, it is recommended to install the battery in a waterproof battery container and/or position it at a higher level. This will prevent the battery from being partially or wholly submerged in the water accumulated at the bottom of the boat.

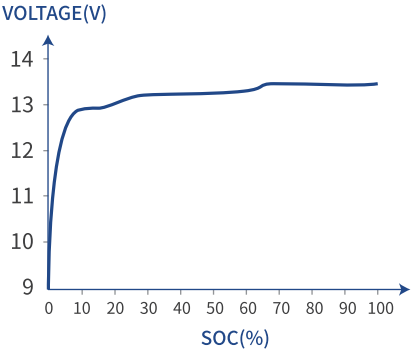
HOW TO ESTIMATE THE BATTERY CAPACITY

STATE OF CHARGE (SOC)

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

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	10 to 12
25	13 to 13.15
50	13.15 to 13.2
75	13.3 to 13.33
100	⩾13.33

① Based on the characteristics of $LiFePO_4$ batteries, the voltage measured by all $LiFePO_4$ 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.

SERIES / PARALLEL CONNECTION

THE PREMISE OF CONNECTION

To connect in series or /and parallel, batteries should meet the below conditions:

a. identical batteries with the same battery capacity (Ah) and BMS (A);

b. from the same brand (as lithium battery from different brands has their special BMS);

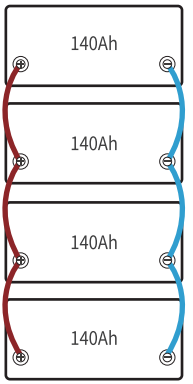
c. purchased in near time (within one month).

LIMITATION FOR SERIES/PARALLEL CONNECTION

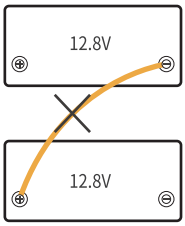
For Starting and Deep Cycle

Support connecting up to 4 identical batteries in parallel for up to:
12V (12.8V) 560Ah battery system.

Parallel Connection
12V(12.8V) 560Ah



DO NOT support Series Connection

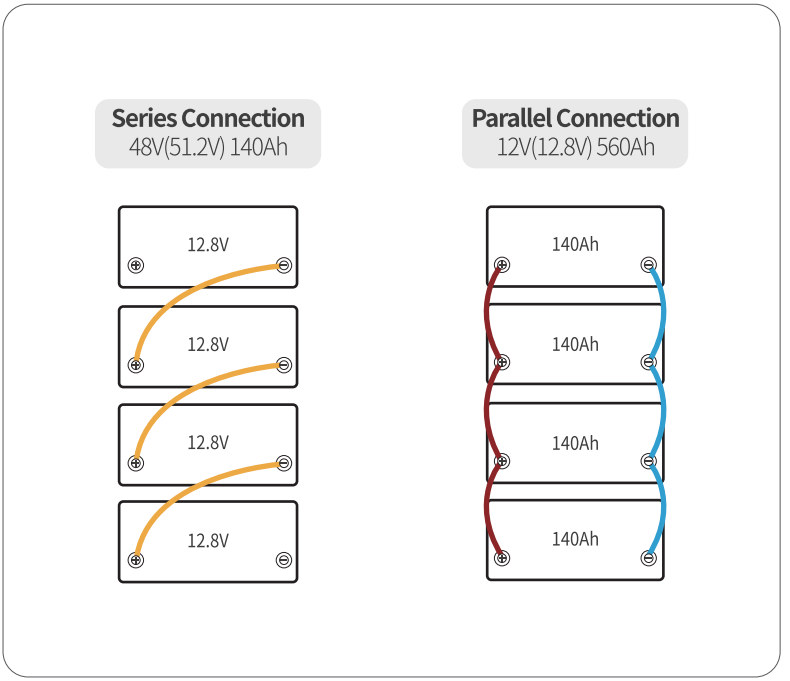


For ONLY Energy Storage

Support connecting up to 16 identical batteries for up to:

4 in series as 48V (51.2V) battery system or

4 in parallel as 560Ah battery system.



WHAT TO DO WHEN THE

BATTERY STOPS WORKING?

When the battery

Can't work or Can't be charged or Voltage < 9V

It has 85% chances that BMS has shut it off for protection, and you could try **one of below ways** to activate the battery.

GENERAL STEPS

If the BMS has cut off the battery for protection, follow the below steps to activate it.

Step 1 Cut off all the connections from the battery.

Step 2 Leave the battery aside for 30mins.
Then the battery will automatically recover itself to normal voltage (>10V) and can be used after fully charged.

If the battery is unable to recover itself after the above steps, please try activating by **ONE OF BELOW TWO METHODS.**

After activated (voltage > 10V) and fully charged by the normal charging method, it can be used normally.

Method ①

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

Method ②

Connect a controller that supports 12V $LiFePO_4$ battery charging to charge the battery for 3~10s in sunny daytime.

Shenzhen Litime Technology Co., Ltd