



Power Queen



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Product Manual

Lithium Iron Phosphate
(LiFePO₄) Battery

12.8V 50Ah

(50A BMS)

PRODUCT OVERVIEW

12.8V 50AH BATTERY

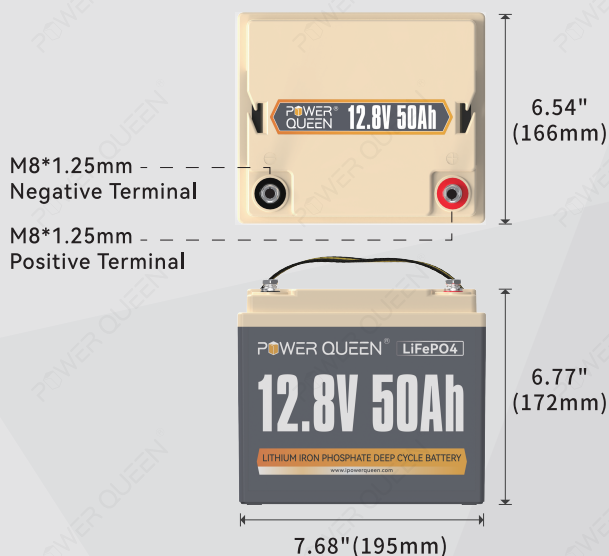
Operating Voltage: 12.8V

Charging Voltage: 14.4±0.2V

Recommended Charge Current: 10A (0.2C)

Max. Continuous Discharge Current: 50A

Max. Continuous Output Power: 640W



ADDITIONAL COMPONENTS

M8- 35/64" (14MM) 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@ipowerqueen.com for further analysis.

BATTERY

PARAMETERS

Item	Parameter
Cell Type	LiFePO ₄
Nominal Voltage	12.8V
Rated Capacity	50Ah
Energy	640Wh
Internal Resistance	≤40mΩ
Cycle Life	≥4000 times
Battery Management System (BMS) Board	50A
Charge Method	CC/CV
Charge Voltage	14.4±0.2V
Recommended Charge Current	10A (0.2C)
Max. Continuous Charge Current	50A
Max. Continuous Discharge Current	50A
Surge Discharge Current	150A@ 1 Second
Max. Continuous Output Power	640W

Item	Parameter
Dimension	L7.68*W6.54*H6.77 inch
	L195*W166*H172 mm
Housing Material	ABS
Protection Class	IP65
Recommended Terminal Torque	106.2 to 123.9 inch·lbs / 12 to 14 N·m
Temperature Range	Charge: 0°C to 50°C / 32°F to 113°F
	Discharge: -20°C to 60°C / -4°F to 140°F
	Storage: -10°C to 50°C / 14°F to 113°F

HOW TO ESTIMATE

THE BATTERY CAPACITY

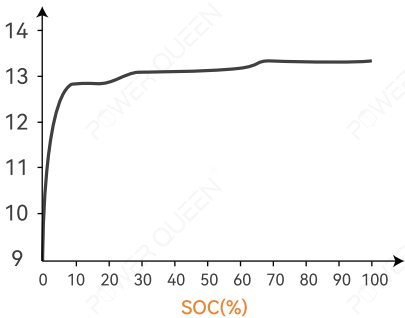
📦 STATE OF CHARGE (SOC)

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.

VOLTAGE(V)



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 LiFePO₄ batteries, the voltage measured by all LiFePO₄ 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:

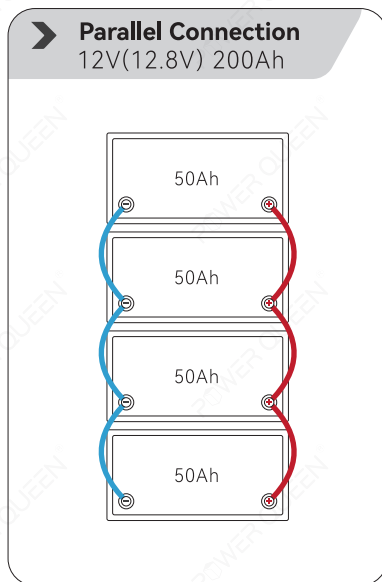
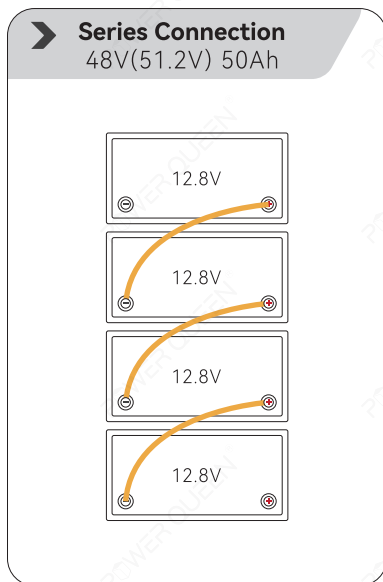
- identical batteries with the same battery capacity (Ah) and BMS (A);
- from the same brand (as lithium battery from different brands has their special BMS);
- purchased in near time (within one month).

LIMITATION FOR SERIES/PARALLEL CONNECTION

Support connecting **up to 16 identical batteries** for up to:

4 in series as **48V (51.2V)** battery system/

4 in parallel as **200Ah** battery system.



WHAT TO DO WHEN THE

BATTERY STOPS WORKING?

When the battery ① **can't work**; ② **can't be charged**; ③ **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.

➤ Step①

Cut off all the connections from the battery.

➤ Step②

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 THE BELOW TWO METHODS.**

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

➤ Method①

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

➤ Method②

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



POWER QUEEN[®]
Shenzhen Lizu Time Technology Co., Ltd

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