OPERATING MANUAL

LiFePO4 Battery

Additional information concerning important procedures and features of the battery.

Read all the instructions in this manual before installation, operation, transportation, storage and maintenance.

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1. SAFETY

Do not throw in the garbage. Do not dispose in fire .

Use personal protective equipment when working with batteries.

Use special charger for LiFePO4 Battery.

This product must be recycled and is made of recycled materials.

CAUTION !

Do not disassemble or modify the battery. If the battery housing is damaged, do not touch exposed contents.

1.1 Do ' s

√ Do note about all the warning labels on the battery

√ Do protect terminals from short circuit before, during and after installation

√ Do wear electrically insulated gloves and use electrically insulated tools

√ Do wear eye protection and safety toe boots / shoes

√ Do handle battery carefully and secure battery safety

1.2 Don ' ts

× Do not operate or store battery outside of operating limits

× Do not short circuit battery

× Do not wear rings, watches, bracelets or necklaces when handling or working near battery

× Do not knock, drop, puncture or crush battery

× Do not expose battery to flames, incinerate or direct sunlight

× Do not open battery case or dissemble battery

× Do not lift battery by the terminal cables

× Do not vibrate battery

× Do not expose battery to water or other fluids

× Do not connect with other types of batteries

× Do not expose battery to high temperatures

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2. INSTALLATION

2.1 Tools

1) Insulated tools sized to match nuts, bolts, and cables in use Voltmeter

2) Personal protective equipment

2.2 Securing Battery

Battery can be strapped into place with non-conductive nylon straps or on the ground.

2.3 Inspection

To check the battery package, type, quantity, appearance and other components.

- ✧ Check if there is any damage on the battery box
- ✧ Check the battery terminals and connections to make sure they are clean, free of dirt, fluids and corrosion
- ✧ All battery cables and their connections should be tight, intact, and NO broken or frayed
- ✧ Replace any damaged batteries
- ✧ Replace any damaged cables
- ✧ Check torque on terminal bolts

NOTE !

Please inform us within **7 days** after receipt of goods if any problem, otherwise we deem clients have no objection to the goods .

2.4 Installation

- ✧ If the battery circuit has a disconnect, open and disconnect to isolate battery
- ✧ Clean cable connections. Broken, frayed, brittle, kinked or cut cables should be replaced
- ✧ Install and secure new battery. Be careful not to ground the terminals to any metal mounting, fixture, or body part
- ✧ Connect battery cables. Connect ground cable last to avoid sparks

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- ✧ Recommended terminal torque is 7.0-7.7 Nm (5.1-5.7 ft-lb)
- ✧ Measure the open Circuit voltage, which is to prevent the battery reverse or reverse during manufacturing

NOTE !

Without exception, product experiencing terminal burn out will not be warranted.

3. Supplement for the Use of LiFePo4 Batteries

3.1 Serial or parallel using of LiFePo4 Batteries

12V LiFePo4 Batteries

- ➢ QTY in serial using: max 4pcs
- ➢ QTY in parallel using: max 4pcs
- ➢ Mixed serial and parallel using: NOT allowed
- ➢ Max allowed battery current in serial or parallel using will be the same as a single battery.
- ➢ Voltage difference between 4 batteries should be less than 50mV before hooked up in serial or parallel.
- ➢ Do not hook up the batteries in different capacity (for example hook up 100Ah battery with 200Ah battery).
- ➢ Do not hook up the old batteries with new batteries.

24V and 36V LiFePo4 Batteries

Do not connect the 24V and 36V batteries in series!!

If there is a need for parallel connection, please communicate with the manufacturer in advance.

3.2 200A cont. discharging of LiFePo4 Batteries

For the batteries with 200A BMS, do not discharge too long time @200A current, because the high discharge current will heat up the battery quickly, and may activate

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the high temperature protection.

- For the batteries with capacity 100Ah or lower, the longest limited working time @200A discharge current is 20mins.
- For the batteries with capacity 150Ah or higher, the longest limited working time @200A discharge current is 30mins.

4. OPERATING

4.1 Operating Environment

Charge Temperature(Min./ Max .)	0℃ ~ 45℃
Discharge Temperature (Min./ Max .)	-20℃ ~ 60℃
Humidity	10% ~ 90%RH

4.2 Storage

Systems should be stored out of direct sunlight under the following temperature conditions.

Storage Temperature (Min./ Max .)	-20℃~ 45℃

Systems should be put into storage at 60% SOC and checked monthly to ensure the system SOC does not fall below 20%. At 20% SOC the battery will self discharge in approximately 2 months . Also check the voltage every 3 months and recycle every 6 months if the battery is not use for long time .

4.3 Charging

Never attempt to charge a battery without first reviewing and understanding the instructions for the charger being used.

CAUTION !

Always make sure the charging curve meets the battery's charging requirement; never charge a visibly damaged battery; never charge a frozen battery.

1) Connect the charger leads to the battery
2) Make sure that the charger lead, both at the charger and the battery side, connections are tight

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3) Turn on the charger

4.4 Charge Curve

1) Charge at constant current (CC) to 3.65VDC every string (Bulk)
2) Maintain constant voltage (CV)3.65VDC every string (Absorption)
3) Terminate when charge current drops below 0.05C
4) Max. charge voltage is 3.65VDC every string (over charge protection)

CAUTION !
Recommended charging current is 0.5C, Max 1.0C or follow the BMS max charging current (follow battery pack specification sheet)

4.5 Discharging

- ✧ Do not discharge battery below operating voltage
- ✧ Do not discharge battery at rates greater than maximum continuous current
- ✧ Do not operate in conditions that will exceed the internal operating temperatures of the battery

5. PROTECTION AND FAULTS

In the event of a fault, the battery protection circuit will open its internal relay/ mosfet, disconnecting the negative battery terminals from the internal cells. The battery uses a solid state relay / mosfet and precautions should be taken to reduce voltage spikes and large inductance in the application.

6. SERVICE AND MAINTENANCE

Batteries should be carefully inspected on a regular basis in order to detect and correct potential problems. This routine should be started when the batteries are first received.

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