



CMB Lithium-Ion Battery User Manual

At CM Batteries, we're here to boost your energy - from the chemical energy that powers your devices to the ethereal energy that powers you. We create custom battery packs that bring lasting energy to devices of all shapes, sizes, and functions. But our purpose as a company extends beyond the high-quality products we design and manufacture.

This manual contains all the information to use, charging, discharging, storage, cautions and prohibitions which the customers should take or employ when the customers use to obtain the optimum performance and safety.

Charge

1.1 Charger

The battery can be charged when using the original charger which is provided by CM Batteries or the right one.

1.2 Charge Time

Continuous charge does not cause any loss of characteristics with the original charger. But the charge time is recommended to be installed from a safety consideration. Please remove the charge at the specified time in the product specification.

1.3 Charge Temperature

The lithium-ion battery should be charge under temperature range from 0°C ~45°C. The optimum charge temperature :under the temperature of 15°C ~ 35°C. When the battery is charged below 0°C or exceed 45°C which reduce the battery performance of lifecycles even bring the bulges or fires .



1.4 Reverse Charge

Reverse charge should be strictly prohibited. The lithium-ion battery should be connected with its poles and it is correctly aligned. If the lithium-ion battery is connected improperly, it may be damaged.

Discharge

2.1 Discharge Current

The lithium ion battery should be discharged at less than maximum discharge current specified in the product specification. High discharging current may reduce the discharging capacity significantly or cause over-heat.

If you would like to use this battery pack for your new devices please contact CMB's consultant to guide you.

2.2 Discharge Temperature

The lithium-ion battery can be discharged under -20°C ~ 60°C . If you would like to use your lithium-ion battery work over 60°C even reach 85°C , please contact CMB'S consultant to guide you. The lithium-ion battery should be discharged within a range of the temperature in the production specification. The optimum discharge temperature is 20°C ~ 40°C . Otherwise, it may cause any loss of characteristics or be damaged.

2.3 Over-discharge

It should be noted that the lithium ion battery would be at an over-discharged state self-discharge characteristics in case the lithium-ion battery is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to maintain the specific voltage in the product specification. It may cause loss of performance, characteristics and battery function.



Storage Condition

3.1 The battery shall be stored within $-10^{\circ}\text{C} \sim 45^{\circ}\text{C}$ range environmental condition. If the battery has to be stored for a long time (Over 3 months), the environmental condition should be: Temperature: $23 \pm 5^{\circ}\text{C}$, Humidity: $65 \pm 20\% \text{RH}$. The voltage for a long time storage shall be in the specific range in the product specification. Otherwise, it may cause loss of characteristics, leakage and/or rust.

Life Cycles

4.1 The battery can be charged/discharged repeatedly up to times specified in the produce specification with a certain level of capacity also specified in the product specification. When the battery reach the life cycles, please stop to use and abandon. Otherwise, it may cause the battery fire or explosion. If you are not sure what to do, please contact CMB's consultant to guide you.

Danger !

5.1 Electrical misuseage

5.1.1 Use the original or dedicated charger

5.1.2 Use or charge the battery only in the dedicated application

5.1.3 Don't charge the battery by an electric outlet directly or a cigarette lighter charger.

5.1.4 Don't charge the battery reversely.

5.2 Environmental misuseage

5.2.1 Do not use or store the battery near sources of heat such as a fire or heater.

5.2.2 Do not put the battery into a fire or apply direct heat to it.

5.2.3 Do not short-circuit the battery by connecting wires or other metal objects to the positive (+) and negative (-) terminals.



5.2.4 Do not pierce the battery casing with a nail or other sharp object, break it open with a hammer, or step on it.

5.2.5 Do not strike, throw or subject the battery to sever physical shock.

5.2.6 Do not directly solder the battery terminals.

5.2.7 Do not attempt to disassemble or modify the battery in any way.

5.2.8 Do not place the battery in a microwave oven or pressurized container.

5.2.9 Don't leave, charge or use the battery in a car or similar place where inside of temperature may be 60°C for a long time.

5.2.10 Do not use the battery in combination with primary batteries (such as dry-cell batteries) or batteries of different Capacity type or brand.

5.2.11 Do not use the battery if it gives off an odor, generates heat, becomes discolored or deformed, or appears abnormal in any way. If the battery is in use or being recharged, remove it from the device or charger immediately and discontinue use.

Warning !

6.1 Do not use or store the battery where is exposed to extremely hot, such as under window of a car in direct sunlight in a hot day. Otherwise, the battery may be overheated. This can also reduce battery performance and/or shorten service life.

6.2 If the battery leaks and electrolyte gets in your eyes, do not rub them. Instead, rinse them with clean running water and immediately seek medical attention. If left as is, electrolyte can cause eye injury.

6.3 Use the battery only under the following environmental conditions. Failure to do so can result in



reduced performance or a shorten service life. Recharging the battery outside of the temperatures can cause the battery to overheat, explode or catch fire.

Operating environment:

Charge temperature ranges: 0°C ~ 45°C

Discharge Temperature ranges: -20°C ~ 60°C

Store the battery at temperature for 30 days :-20°C ~ 60°C

Store the battery at temperature for 90 days :-20°C ~ 30°C

Caution !

7.1 Electric Misusage

7.1.1 Battery must be charge with constant current-constant voltage (CC/CV)

7.1.2 Charge current must be controlled by specified value in Cell specification.

7.1.3 Cut-off Voltage of charging must be 4.2V/cell.

7.1.4 Charger must stop charging battery by detecting either charging time or current specified in Cell's.

7.2 Specification

7.2.1 Discharge current must be controlled by specified value in Cell's specification.

7.2.2 Cut-off Voltage of discharging must be over 2.5V.

7.2.3 Replace the battery when using time of battery becomes much shorter than usual

7.2.4 If the battery is needed to be stored for an long period, battery should be removed from the

Application and stored in a place where humidity and temperature are low. While the battery is charged, used and stored, keep it away from object materials with static electric.



CMB loves to hear from and support our customers

We have a professional technical Team to support you to build the right li ion battery pack solution. The related support information can be found below:

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