



Lithium Iron LiFePO4 | 25.6V 120Ah



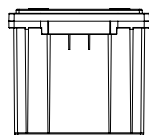
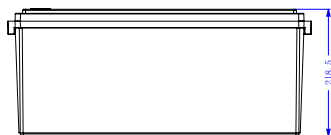
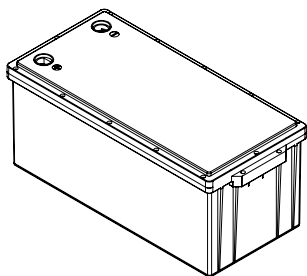
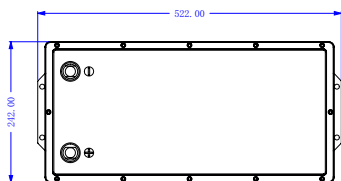
OT-BT-24120LFP

# USER MANUAL

## SCOPE OF APPLICATION

This user manual describes the basic performance, technical requirements, test methods, warnings and cautions for lithium-ion rechargeable batteries. This specification applies only to OT-BT-24120LFP batteries.

## PRODUCT APPEARANCE



| Item         |        | Parameter |
|--------------|--------|-----------|
| Product Size | Length | 522mm     |
|              | Width  | 242mm     |
|              | Height | 218.5mm   |

## PRODUCT CONFIGURATIONS

| Function                    | Configuration   | Function                     | Configuration |
|-----------------------------|-----------------|------------------------------|---------------|
| Number of strings supported | 8S1P            | 485 communication (isolated) | Not supported |
| Continuous current          | 100A            | CAN communication            | Not supported |
| Number of NTC               | 1               | Module of Bluetooth          | Not supported |
| Battery packs in parallel   | supported       | Battery packs in series      | supported 2S  |
| Balance Function            | Passive balance | Pre-discharge function       | supported     |
| Parallel Communication      | Not supported   | /                            | /             |

## BASIC PARAMETERS OF BATTERY

|                               |                 |
|-------------------------------|-----------------|
| Battery pack Model            | OT-BT-24120LFP  |
| Battery PACK                  | 8S1P            |
| Size (L*W*H)mm                | 522X242X218.5mm |
| Weight (kg)                   | 25.0KG          |
| Battery Rated Capacity (0.2C) | 120Ah           |
| Battery Rated Voltage         | 25.6V           |
| Rated Power                   | 3072Wh          |
| Operating Voltage Range       | 20-29.2V        |
| Battery Type                  | LiFePO4         |

## BASIC PARAMETERS OF BATTERY

|                                     |                                                         |
|-------------------------------------|---------------------------------------------------------|
| Charger voltage(CC/CV)              | DC29.2V/20A (Lithium battery charger)                   |
| Standard charging current           | 50A                                                     |
| Continuous Charging Current (Max.)  | 90 A                                                    |
| Standard discharge current          | 50A                                                     |
| Continuous Discharge Current (Max.) | 100A                                                    |
| Internal Resistance (mΩ)            | ≤20 mΩ                                                  |
| Storage Temperature                 | Within 2 months: -20℃~40℃                               |
|                                     | Within 6 months: -10-35℃                                |
| Storage Humidity                    | 10%~90% RH                                              |
| Charging Temperature                | 0~55℃ (Ambient temperature)                             |
| Discharge Temperature               | -20~60℃ (Ambient temperature)                           |
| Operating power consumption         | ≤25mA                                                   |
| Discharge cut-off voltage           | 20V                                                     |
| Charge cut-off voltage              | 29.2V                                                   |
| Cooling Mode                        | Natural Cooling                                         |
| Waterproof Level                    | IP67                                                    |
| Battery Cycle Life                  | 6000 times (0.2C standard charge and discharge) DOD 80% |
| Standard Environmental Condition    | Temperature: 25±2℃                                      |
|                                     | Humidity: 45-85%RH                                      |
|                                     | Atmospheric Pressure: 86-106 KPA                        |

## Battery pack Materials BOM (Main material)

| Part Name | QTY | Description               | Remarks |
|-----------|-----|---------------------------|---------|
| Cell      | 8   | 3.2V120Ah                 |         |
| PCM       | 1   | 8S-100A                   |         |
| Shell     | 1   | Case size:522*242*218.5mm |         |

## BMS Protection Parameters

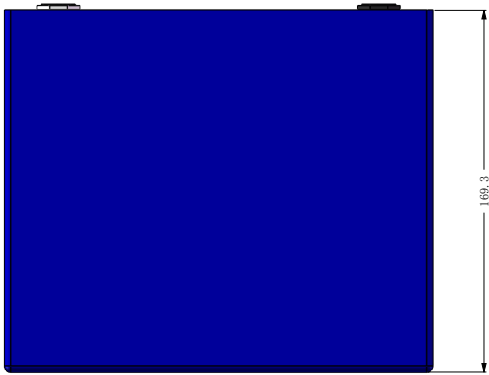
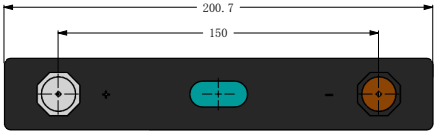
| Function                        | Project                                                  | Specification                          |      |      | Unit |
|---------------------------------|----------------------------------------------------------|----------------------------------------|------|------|------|
|                                 |                                                          | MIN                                    | TYP  | MAX  |      |
| Cell Overvoltage Protection     | Overvoltage protection voltage                           | 3.60                                   | 3.65 | 3.70 | V    |
|                                 | Overcharge protection delay time                         | 1000                                   | 2000 | 3000 | mS   |
|                                 | Overcharge protection restores voltage                   | 3.45                                   | 3.50 | 3.55 | V    |
| Cell Overdischarge protection   | Over-discharge protection voltage                        | 2.45                                   | 2.50 | 2.55 | V    |
|                                 | Over-discharge protection delay time                     | 1000                                   | 2000 | 3000 | mS   |
|                                 | Over-discharge protection recovery voltage               | 2.65                                   | 2.70 | 2.75 | V    |
|                                 | Over-discharge protects recovery conditions              | Disconnect load or charge recovery     |      |      |      |
| Charging overcurrent protection | Charge overcurrent protection value                      | I                                      | 105  | 110  | A    |
|                                 | Charging overcurrent delay                               | I                                      | 30   | 30   | S    |
|                                 | Charging overcurrent discharge conditions                | Automatic recover after a delay of 32S |      |      |      |
| Overcurrent Discharge           | 1st Overcurrent Discharge                                | I                                      | 105  | 110  | A    |
|                                 | 1st Overcurrent Discharge delay                          | I                                      | 30   | 30   | S    |
|                                 | 2st Overcurrent Discharge                                | 205                                    | 210  | 215  | A    |
|                                 | 2st Overcurrent Discharge delay                          | 1500                                   | 2000 | 2500 | mS   |
|                                 | Discharge overcurrent protection and recovery conditions | Automatic recover after a delay of 32S |      |      |      |

## BATTERY CONNECTED IN PARALLEL

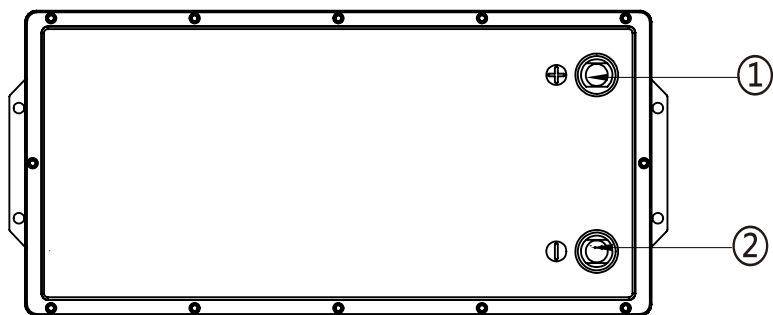
|                                              |                                                                                                                                                                                                                                                                                                                              |                                                    |      |      |    |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------|------|----|
| Short Circuit Discharge                      | Short protect protection current                                                                                                                                                                                                                                                                                             | 450                                                | 500  | 550  | A  |
|                                              | Short circuit protection delay time                                                                                                                                                                                                                                                                                          | 1                                                  | 560  | 900  | μS |
|                                              | Short circuit protection recovery                                                                                                                                                                                                                                                                                            | Recover after 5S delayafter disconnecting the load |      |      |    |
|                                              | Shortcircuit description: The short circuit current is less than the minimum value or higher than the maximum value, which may cause the short circuit protection to fail, and the short circuit current exceeds 2000A,short circuit protection is not guaranteed, and short circuit protection testing is not recommen ded. |                                                    |      |      |    |
| Overtemperature Charge                       | Temperature protection value                                                                                                                                                                                                                                                                                                 | 62                                                 | 65   | 68   | ℃  |
|                                              | Temperature protection release value                                                                                                                                                                                                                                                                                         | 52                                                 | 55   | 58   | ℃  |
| Undertemperature Charge                      | Temperature protection value                                                                                                                                                                                                                                                                                                 | -5                                                 | -2   | 1    | ℃  |
|                                              | Temperature protection release value                                                                                                                                                                                                                                                                                         | 2                                                  | 5    | 8    | ℃  |
| Overtemperature Discharge                    | Temperature protection value                                                                                                                                                                                                                                                                                                 | 62                                                 | 65   | 68   | ℃  |
|                                              | Temperature protection release value                                                                                                                                                                                                                                                                                         | 52                                                 | 55   | 58   | ℃  |
| Undertemperature Discharge                   | Temperature protection value                                                                                                                                                                                                                                                                                                 | -23                                                | -20  | -17  | ℃  |
|                                              | Temperature protection release value                                                                                                                                                                                                                                                                                         | -13                                                | -10  | -7   | ℃  |
| high temperature protection of FET(Built-in) | Temperature protection value                                                                                                                                                                                                                                                                                                 | 100                                                | 105  | 110  | ℃  |
|                                              | Temperature protection release value                                                                                                                                                                                                                                                                                         | 80                                                 | 85   | 90   | ℃  |
| Balance Function                             | Equalization turnon voltage                                                                                                                                                                                                                                                                                                  | 3.27                                               | 3.30 | 3.33 | V  |
|                                              | Turn on differential pressure                                                                                                                                                                                                                                                                                                |                                                    | 15   |      | mV |
|                                              | Balance current                                                                                                                                                                                                                                                                                                              | 150                                                | 200  | 250  | mA |
|                                              | Balance model                                                                                                                                                                                                                                                                                                                | Ldle equalization                                  |      |      |    |
|                                              | Balance type                                                                                                                                                                                                                                                                                                                 | Pulsed model                                       |      |      |    |

Cell technical parameters

| No. | Item             |        | Parameter   | Remark                                   |
|-----|------------------|--------|-------------|------------------------------------------|
| 1   | Nominal Capacity |        | 120 Ah      | (25±2)°C , Standard charge and discharge |
|     | Typical Voltage  |        | 3.2V        |                                          |
|     | Impedance (1KHz) |        | ≤0.5mΩ      |                                          |
| 2   | Dimension        | height | 169 ±0.5mm  | Length, width and height                 |
|     |                  | Length | 200±0.8mm   |                                          |
|     |                  | width  | 33±0.5mm    |                                          |
| 3   | Battery weight   |        | 2390g± 50 g |                                          |



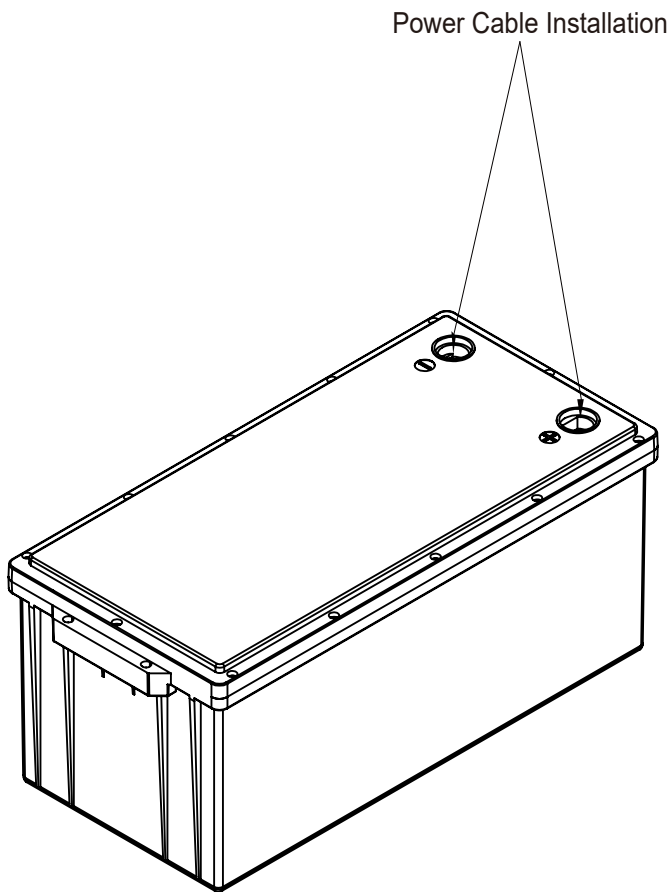
# BATTERY INTERFACE DESCRIPTION



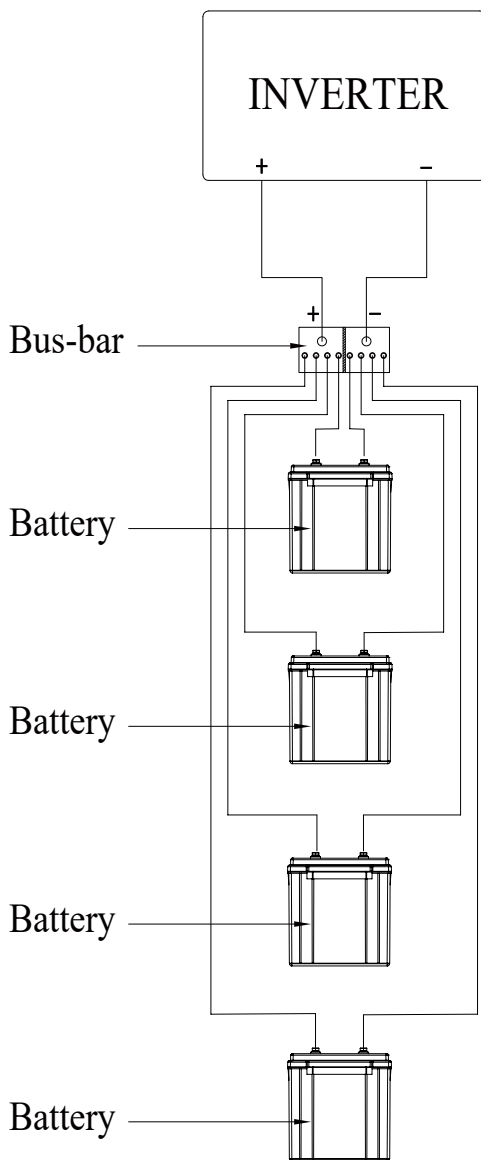
| NO. | Interfaces         | Instructions   |
|-----|--------------------|----------------|
| 1   | Positive Electrode | Power Positive |
| 2   | Negative Electrode | Power Negative |

## BATTERY CONNECTED IN PARALLEL

Use screws to fix the end of the wire with the OT terminal to the corresponding positive and negative poles. After tightening, apply insulating glue to the exposed copper poles to insulate them.



## BATTERY PARALLEL COMMUNICATION



## BATTERY OPERATION PRECAUTIONS

**In order to use and handle the battery safely, please read the operating instructions carefully before use:**

1. Do not expose the battery to the sun or throw it in a fire.
2. When charging the battery, the positive and negative polarities cannot be reversed.
3. Do not short-circuit the positive and negative poles of the battery pack with wires or other metal objects!
4. Do not pierce the battery pack housing with nails or other sharp objects, and do not hammer or pedal the battery pack!
5. Do not disassemble or deform the battery.
6. Do not immerse the battery in water.
7. Never place the battery pack in a microwave oven or pressure vessel!
8. Do not use the battery pack in an extremely hot environment, such as in direct sunlight or in a car on a hot day. Otherwise, the battery pack will over-heat, which will affect performance and shorten the life of the battery pack.
9. Do not mix batteries of different manufacturers, types and models.
10. Do not allow children to touch the battery.
11. If the battery pack emits odor, heat, deformation, discoloration or any other abnormal phenomenon, do not use it. If the battery pack is in use or charging, immediately remove it from the car (electrical appliance) or charger and stop using it!
12. If the electrolyte gets into the eyes after the battery leaks, do not wipe it, flush it with water immediately, and seek medical assistance immediately. If it is not handled in time, the eyes will be injured!

### **About Charge and discharge:**

1. The battery must be charged under suitable conditions.
2. Never charge the battery with a faulty charger.

## BATTERY OPERATION PRECAUTIONS

3. The battery can't be charged continuously for more than 24H.
4. Do not charge the battery pack in the presence of fire or extreme heat! Do not use or store battery packs near heat sources such as fire or heaters! If the battery leaks or emits peculiar smell, immediately move it away from the open flame. When using the battery for the first time, fully charge the battery before using it.
5. During the charging and discharging process of the battery pack, if there is an odor or abnormal sound, please stop charging and discharging immediately.
6. The ambient temperature will affect the discharge capacity. When the ambient temperature exceeds the standard environment ( $25\pm 5^{\circ}\text{C}$ ), the discharge capacity will be reduced!

### Storage:

1. The battery is stored in a ventilated and dry environment.
2. The battery is stored within the temperature range specified in the specification. If the battery is stored for more than six months, it is recommended that you start charging the battery.

### Disposal:

The laws and regulations of different countries are different, and the disposal should be based on the local laws and regulations.

## BATTERY OPERATION INSTRUCTION

### Charging:

**Charging current:** The maximum charging current specified in the specification cannot be exceeded.

**Charging voltage:** cannot exceed the highest limit voltage specified in the specification.

**Charging temperature:** The charging temperature of the battery must be performed in accordance with the temperature ranges of the specification. Charge in constant current and then in constant voltage mode, and reverse charging is prohibited. It is dangerous to charge the battery with the polarity reversed.

**Discharging current:**

The discharge current of the battery cannot exceed the maximum discharge current specified in the specification. Excessive current discharge will cause the battery to heat up and reduce its capacity.

**Discharge temperature:**

The battery discharge temperature must be performed within the temperature range of the specification.

**Over-discharges:**

Short-term overcharge and over-discharge will not affect the use of the battery, but long-term over-discharge will affect the function of the battery, and the battery will be permanently unsuitable. Another reason why the battery may be over-discharged is the disappearance of automatic energy. The way to prevent battery over-discharge is that the battery should maintain a certain amount of power.

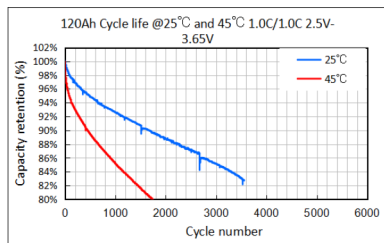
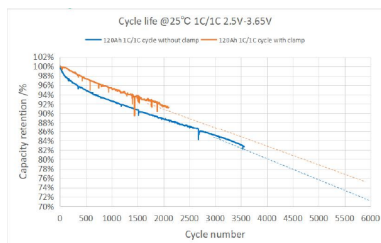
**Other Chemical Reaction:**

Since the battery uses the principle of chemical reaction, the performance of the battery will decrease with time, even if it is stored for a long time without use. If the conditions of use such as charging, discharging and ambient temperature are not within the specified range of use, the service life of the battery will also be shortened, or liquid leakage will result in equipment damage. If the battery cannot be charged for a long period of time, even if the charging method is correct, the battery needs to be replaced.

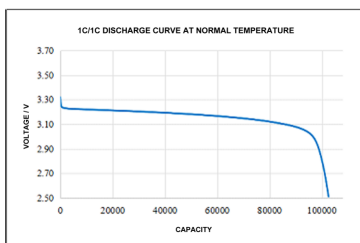
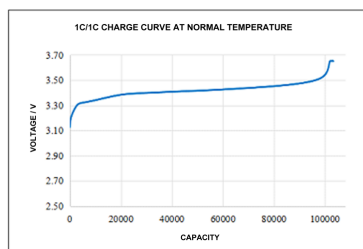
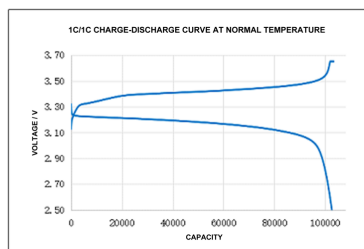
**Note:** Matters not included in this manual shall be determined by mutual agreement.

# CHARGE AND DISCHARGE CURVE

## The curves of cycle life



## The curves of charge and discharge





Lithium Iron LiFePO4 | 25.6V 120Ah  
OT-BT-24120LFP