

Li-Ion Rechargeable Battery Pack

Specification

Product Name: Li-Ion Battery Pack

Product Specification: 46.8V200Ah (26650)

Designed	Checked	Approved

Directory

1. Preface-----	3
2. Product and Model -----	3
3. Battery Pack Specifications-----	3
3.1 Electronic performance-----	4
4. Standard Test Conditions-----	5
5. Cautions-----	5
6. Installation guide-----	6
7. Battery care and maintenance-----	7
8. Battery common faults and solutions -----	7
9. Other technical indicators -----	8
10. Product liability -----	8

1. Preface

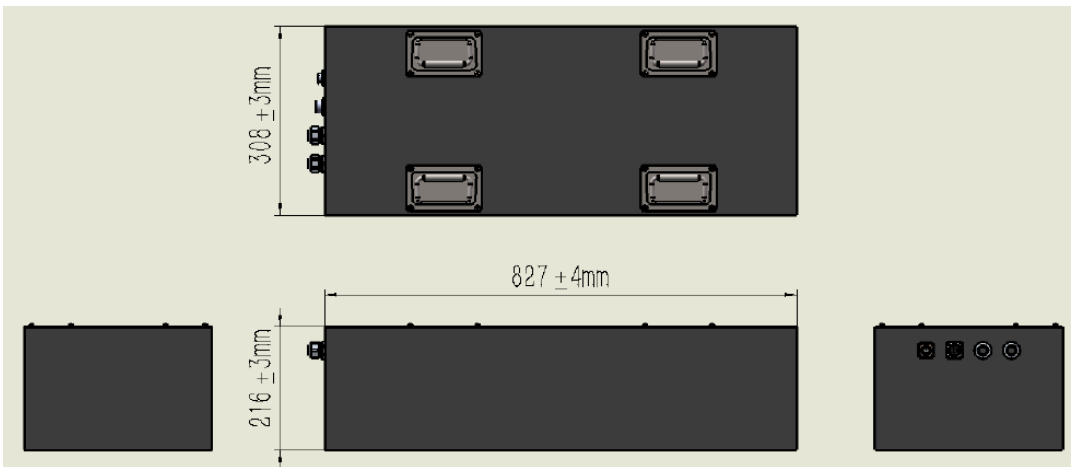
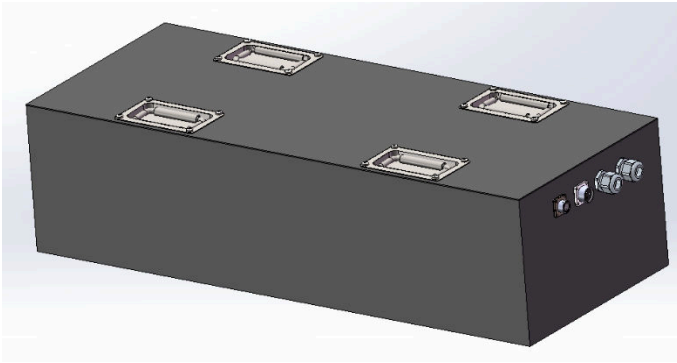
This specification describes the type and size, performance, technical characteristics, warning and caution.

2. Product and Model

2.1 Product: Lithium Ion Battery Pack

2.2 Model: ICR4682000 (ICR26650-3.6V-13S40P)

2.3 Picture and Output Wire (In order to prevail in kind)



3. Battery Pack Specifications

Items	Standard	Comments
Nominal voltage	46.8V	
Typical capacity	200Ah	At 0.2C discharge rate
Min. capacity	194Ah	At 0.2C discharge rate
Max continuous discharge current	80A	

Max Instantaneous discharge current	250A (≤5min)	
Discharge cut-off voltage	About 39.0V	
Charge voltage	53.95-54.6V	Charge mode: CC/CV. Use a constant current, constant voltage(CC/CV) please use special lithium charger.
Charge current	≤100A	
Operation temperature range	Charge	0°C~+45°C
	Discharge	-20°C~+60°C
Storage temperature range	0°C~40°C (Capacity 80%)	Recommended long-term storage temperature is 15~25°C
Humidity	5%≤RH≤85%	
Shell material	Iron	
Weight	Approx 75kg	
Size(L*W*H)	(827±4mm)*(308±3)mm *(216±3)mm	
BMS Function	Over charge protection, Over discharge protection, Temperature protection, Balanced function, CAN communication	
Connection	Power connector: 50mm ² EV power cable	
	Communication: 2P aviation connector	
Switch	3P aviation connector	

3.1 Electrical Performance

Test Items	Test Methods	Test Standards
Capacity retention rate	After standard charge under 5.1 specified conditions, store the cells for 28 days, then discharge at 0.2C(A) to cut-off voltage.	Capacity retention rate≥80%
Cycle Life	1) standard charge at 0.2C 2) rest 0.5~1 h 3) discharge at 0.2C to cut off voltage 4) rest 0.5~1h repeat the above steps until the capacity retention rate is ≥70%.	≥1000 cycles

4. Standard Test Conditions

Battery test must within 1 month after production.

All test in this specification should be in standard atmospheric conditions: temperature:

$25 \pm 5^{\circ}\text{C}$, relative humidity: $65 \pm 20\%$.

4.1 Standard charge

Charging terminal of battery is connected to charger appropriate with it, and then charge. Charging voltage is 53.95-54.6V.

4.2 Standard discharge

Discharge the battery at 0.2C(A) to 39.0V or battery cut off voltage.

5. Cautions

Please pay attention to followings in case of battery will have leakage, heat etc.

- Do not immerse the battery in water or seawater and keep the battery in a cool dry surrounding if it stands by.
- Do not use or leave the battery at high temperature as fire or heater. Otherwise, it can overheat or fire or its performance will be degenerate, and its service life will be decreased.
- Do not reverse the position and negative terminals.
- Do not reverse polarity charging.
- Do not connect the battery electrodes to an electrical outlet.
- Do not short circuit. Otherwise it will cause serious damage of the battery.
- Do not transport or store the battery together with metal objects such as hairpins, necklaces, etc.
- Do not strike, trample, throw, fall and shock the battery.
- Do not directly solder the battery and pierce the battery with a nail or other sharp objects.
- Do not use the battery in a location where static electricity and magnetic field is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.
- Please use special charger for charging.
- Please charge the battery within 12 hours after use .
- Charging current should be less than maximum charge current specified in the Product Specification, charging current bigger than recommended current may damage the battery.
- Discharging current should be less than maximum discharge current specified in the Product Specification; Discharging current bigger than recommended current may damage the battery.
- It should be noted that the cell would be possible to be at a over-discharged state by its self-discharge characteristics in case the cell is not used for long time. In order to prevent over-discharging, the cell shall be charged periodically to

maintain a certain voltage 49.4V, 2months one cycle. Over-discharging may cause loss of cell performance, characteristics, or battery functions. But for battery packs with communication function, please maintain it once in 1 month.

- If the battery leaks and the electrolyte get into the eyes, do not rub the eyes, instead, rinse the eyes with clean water, and immediately seek medical attention. Otherwise, it may injure eyes.
- If the battery gives off strange odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately stop charging, using, and remove it from the device.
- In case the battery terminals are dirty or oxidation, clean the terminals with a dry cloth before use. Otherwise poor performance may occur due to the poor connection with the instrument.
- Tape the discarded battery terminals to insulate them.
- The lithium ion battery charge discharge shallow is beneficial to improve the cycle life, proposal user each discharge is put to the nominal capacity of 80%.
- Do not combine the battery pack in series or in parallel.

6. Installation guide

6.1 Battery checking

- After receiving the battery, you should first check the packing carefully. During the handling process, please ensure there's no shock on the battery.
- Please check the battery case and accessories if there's any damage or leakage, if so, please contact us immediately.
- Please check the output connector is correct or not, measuring the positive and negative voltage and the voltage, if it's within the normal standard.

6.2 Precautions

- No smoking or fire during installation to avoid short-circuit of battery and prevent equipment damage or personal injury.
- The battery should be installed under a condition with well-ventilated and no sunlight. Don't put it under place with possible flooding.
- When fastening battery terminals, please don't use excessive force, or the terminals could be damaged.
- Use a dry cloth to clean the battery package, please don't use oil or other volatile organic solvents to clean the battery case, or it may damage it.
- Please make sure the positive(+) & negative(-) polarity is correct connected, or it may cause fire or damage the battery or the equipment.

6.3 Battery Installation

- Clean up the position of battery mounting, make sure there's no dust or mental objects or others.
- Put the battery in right place
- Make good connection of terminals between the equipment and battery.

- After the connection, please check if it's well connected, positive and negative is reversed, if there's dust or debris.
- Start testing the equipment if it could be well working with battery.
- Finished.

7 Battery care and maintenance

7.1. When the battery is low, please charge in time. This could ensure longer cycle life. If the battery can't be charged in time and let it under power shortage condition, it may affect the cycle life.

7.2. The battery should be installed in the air circulation, dry, clean environment. Please avoid flammable items during the charge/discharge.

7.3. Discharge temperature: $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$. Humidity: $\text{RH} \leq 85\%$. When the temperature is more than 45°C , please note ventilation. When the environment humidity is higher than 85%, please pay attention to protect. Charging temperature: $0^{\circ}\text{C} \sim +45^{\circ}\text{C}$. Humidity: $\text{RH} \leq 85\%$, When the environment humidity is higher than 85%, please pay attention to protect; Storage temperature: $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$ (Best temperature is $15^{\circ}\text{C} \sim 25^{\circ}\text{C}$ in dry environment). The battery will be effected by the temperature, it could be showed by the change of capacity, it's normal.

7.4. Don't use organic solvents to clean the battery case. If for battery fire accident, please use dry powder fire extinguisher or sand.

7.5. Battery is a consumable product with limited cycle life. Please change in time when the capacity can't reach the requirement to avoid any loss of the user.

8. Battery common faults and solutions

8.1 Battery voltage is too low after fully charged.

8.1.1 Battery was in Long-term storage with no used, not in accordance with the provisions for maintenance either. Solution: Charge the battery can be solved.

8.1.2 Battery suffered fierce collision, with character-External battery case damaged or with electrolyte odor.

Solution: It's not in the scope of maintenance generally. If needing maintenance, we need the confirmation of the problem whether on the output line or the battery itself. First, open the battery case, check the battery P+ / C+ and P- / C- lines or joints damaged or not. If damaged, it needs to be replaced. Then, instigating smell odors method to determine the battery, if there is irritation electrolyte odor, indicating that the battery has been leaking. You need to test the voltage of each series. If the voltage of one series is very different with much lower voltage, then this series needs to be replaced.

8.1.3 Insufficient capacity

Solution: To charge and discharge the battery with 3-5 cycles generally.

8.2 Battery voltage is zero or low after the battery is fully charged (charger displays full).

8.2.1 Battery disconnection

Solution: Remove the battery to check whether the line is broken or not, the solder joints come off or not, nickel belt breaks or not, and then repair according to the damage situation.

8.2.2 PCB does not work

Solution: First, make sure the cable is contact with the protective board well, then observe solder is off or not. If the

above conditions are normal, please test voltage between B+B- and P+ P- voltage, then the board would be failed if the voltage difference is very high. Then please do testing in detail on protection board, if not pass, please change another new PCB.

8.3 Battery voltage instability

8.3.1 Faulty soldering

Solution: To test the resistance with the internal resistance tester and confirm the internal resistance of the battery exceeding a predetermined value or not. If not, the battery would be in faulty soldering condition, the battery needs to be unpacked to be welded again.

8.3.2 Protection board abnormal

Solution: Replace the protection board.

8.3.3 Connector or terminals in poor contact condition

Solution: Replace the terminals or connectors

8.4 Battery works properly in charging but could not discharge or discharging well but could not charge.

Solution: The PCB is damaged; you need to replace the protection board.

9. Other technical indicators

If you need battery protection parameters and other related parameters, please contact our sales or technical staff, we will provide you as soon as possible.

10. Product Liability

It is not responsible for the incident caused by not obeying the specifications. Before using the battery, you should read the specifications, usage instruction and some attentions carefully to learn its application method and areas. If the phenomenon such as error using method or wrong circuit connection, or input power data, working index are inconsistent with the specifications , cause damage to product, load and its accessories, we are not responsible for it.

**Our company have the right to change the content of specification without prior notice;
The final explanation of specification belongs to our company.**