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新能源动力及储能系统专家

NEW ENERGY POWER AND ENERGY STORAGE SYSTEM EXPERT

瑞浦能源有限公司

RUIPU ENERGY CO., LTD.

Lithium-ion Power Battery
CB3914895EA-50Ah Product Specification

Prepared	Reviewed	Approved
Customer Signature:		

RuiPu Energy Co., Ltd.

Contents

1 Scope of Application

This product specification document specifies the performance requirements, test methods, transportation, storage requirements, and precautions for the CB3914895EA-50Ah lithium-ion battery.

2 Normative References

The following files are essential for the application of this document. For referenced documents with dates, only the version with the date specified applies to this document. For referenced documents without dates, the latest version (including all amendments) applies to this document.

GB/T 31484—2015 Requirements and Test Methods for Cycle Life of Power Batteries for Electric Vehicles

GB/T 31485—2015 Requirements and Test Methods for Safety of Power Batteries for Electric Vehicles

GB/T 31486—2015 Requirements and Test Methods for Electrical Performance of Power Batteries for Electric Vehicles

GB/T 19596 Terms for Electric Vehicles

3 Performance Indicators

Note: Indicators are only applicable to new batteries

No.	Item	Specification	Remarks
3.1	Nominal Capacity	50Ah	1C, Room t e mperature
3.2	Nominal Voltage	3.2V	
3.3	Operating voltage range	2.5-3.65V	
3.4	Rated discharge current	≤50A	Typical value =25A
3.5	Peak discharge current	≤150A	@30s
3.6	Rated Charging Current	≤50A	Typical Value =25A
3.7	Peak Charging Current	≤100A	@10s
3.8	Operating Temperature	Charge: 0°C~55°C Discharge: -20°C~55°C	
3.9	Storage Temperature	-20°C~55°C	
3.10	Battery Size	Thickness: 39.5±0.5mm Width: 148.0±0.5mm Shoulder height: 95.0±0.5mm Total height: 101.65±0. 5mm	
3.11	Cathode Material	LiFePO4	
3.12	Battery Weight	1.18±0.05kg	
3.13	Energy Density	140Wh/kg	

3.14	Standard Charging Mode (CC&CV)	Under ambient temperature (25±2)°C conditions, charging is performed using a constant current followed by a constant voltage method. Constant current is 1I_t(A), constant voltage is 3.65V, and charging is terminated when the current drops to 0.05I_t(A) during the constant voltage process, and it is left standing for 1 hours.	—

4 Electrical Performance

4.1 Standard Test Conditions

The battery should be a new product (stored for less than 1 month after manufacturing), with fewer than 5 cycles. Unless otherwise specified, all test conditions in this standard are as follows:

Temperature: 25±5°C, humidity: 15%~90% RH, pressure: 86kPa~106kPa. The room temperature in the specification refers to 25±2°C, and the current 1I_t(A) is 50A.

4.2 Test Equipment Accuracy

(1) Voltage measurement accuracy: ≥0.5 grade.
(2) Current measurement accuracy: ≥0.5 grade.
(3) Temperature measurement accuracy: ±0.5°C.
(4) Time measurement accuracy: ±0.1%.

(5) Dimension measurement accuracy: ±0.1%.

4.3 Test process

No.	Item	Test Procedure	Performance Requirements
4.5.1	Room temperature discharge capacity (initial capacity)	1) Test temperature: 25±2°C. 2) Fully charge the battery according to 3.14. 3) Discharge the battery at 1I_t(A) current to 2.5V and record the discharge capacity (Ah).	110%*rated capacity ≥ discharge Capacity ≥100%*rated capacity
4.5.2	Room Temperature Charging	1) Test Temperature: 25±2°C. 2) Discharge the battery at 1I_t(A) to 2.5V and let it rest 1h. 3) Charge the battery with a current of 2I_t(A) to a total charge voltage of 3.65V and the charging time should not exceed 30min, then rest for 1h. 4) Discharge the battery with a current of 1I_t(A) to 2.5V and record the discharge capacity (Ah).	Discharge Capacity ≥ 85%*Initial Capacity
4.5.3	Room temperature discharge	1) Test temperature: 25±2°C.	Discharge capacity ≥

		2) Charge the battery according to 3.14. 3) Discharge the battery with a current of $2I_1$(A) to 2.5V and record the discharge capacity (Ah).	90%*Initial Capacity
4.5.4	High-temp Discharge	1) Fully charge the battery according to 3.14 2) Let the battery stand at 55±2°C for 5h. 3) Discharge the battery at $1I_1$(A) current to 2.5V at 55±2 °C and record the discharge capacity (Ah). 4) Let t he battery stand at 25±5°C for 12h and inspect the battery's appearance.	No deformation, swelling, or other abnormalities; Discharge capacity≥95% *Initial Capacity
4.5.5	Low-temp Discharge	1) Charge the battery to full capacity according to 3.14 2) Let the battery stand at -20±2°C for 24h. 3) Discharge the battery at $1I_1$(A) current to 2.0V at -20±2°C and record the discharge capacity (Ah). 4) Let the battery stand at 25±5°C for 12h and check the battery's appearance.	No deformation, swelling, or other abnormalities; Discharge capacity ≥70%* of initial capacity
4.5.6	Cycle Life	1) Test temperature: 25±2°C. 2) Use a constant-current then constant-voltage charging method, with a constant-current of 0.5I 25±2 (A), a constant-voltage voltage of 3.65V, and stop the constant-voltage process when the current drops to 0.05I(A). During the constant-voltage process, the c urrent drops to $0.05I_1$(A) and Charge can be terminated, then rest for 30min. 3) Discharge the battery with a current of $0.5I_1$(A) to 2.5V, and rest for 30min. 4) Repeat steps 2) and 3) until the battery capacity is less than 70% of the initial capacity, and record the cycle count.	Cycle life ≥4000 times
4.5.7	Room temperature storage and recovery	1) Test temperature: 25±2°C. 2) Fully charge the battery according to 3.14. 3) Store the battery at room temperature for 28 days. 4) Discharge the battery with a $1I_1$(A) current to 2.5V, and record the remaining capacity (Ah). 5) Fully charge the battery according to 3.14. 6) Discharge the battery with a $1I_1$(A) current to 2.5V, and record the recovery capacity (Ah).	No deformation, expansion, or other abnormalities; re maining capacity ≥90%* initial capacity; recovery capacity ≥ 94%* initial capacity
4.5.8	High-temperature storage and recovery	1) Charge the battery to 3.14. 2) Store the battery at 55±2°C for 7 days. 3) Remove the battery and let it stand at 25±2°C for 5h later, then discharge the battery with a $1I_1$(A) current to 2.5V and record the remaining capacity (Ah). 4)Charge the battery to 3.14. 5) Discharge the battery with a current of $1I_1$(A) to 2.5V, and record the recovery capacity (Ah).	No deformation, s welling, or other abnormalities; Remaining capacity ≥90% * initial capacity; Recovery capacity ≥ 94% * initial capacity

5 Safety Performance —

No.	Item	Test Procedure	Performance Requirements
5.1	Vibration	1) Charge the battery according to 3.14. 2) Fix the battery to the vibration test bench, under the following conditions Perform a linear sweep frequency vibration test: --- Discharge current: 1/3I_t(A) --- Vibration direction: Up and down single vibration --- Vibration frequency: 10~55Hz --- Maximum acceleration: 30m/s^2 --- Cycle: 10 times --- Vibration time: 3h 3) Observe battery behavior during testing.	No current fluctuations, no abnormal voltage; no deformation, no leakage, or other abnormalities;
5.2	Altitude Simulation	1) Test temperature: 25±2°C. 2) Charge the battery according to 3.14. 3) Place the battery into a low-pressure chamber, maintaining a pressure of 11.6kPa, and let it sit for 6h. 4) Observe the battery for 1h.	No fire, no explosion, no leakage
5.3	Overcharge	1) Test temperature: 25±2°C. 2) Charge the battery according to 3.14. 3) Charge the battery with a current of 1I_t(A) for 1h or until the voltage reaches 5.5V. 4) Observe the battery for 1h.	No fire, no explosion
5.4	Over-discharge	1) Test temperature: 25±2°C. 2) Charge the battery according to 3.14. 3) Discharge the battery with a current of 1I_t(A) for 90min. 4) Observe the battery for 1h.	No fire, no explosion, no leakage
5.5	Short Circuit	1) Test temperature: 25±2°C. 2) Charge the battery according to 3.14. 3) Short-circuit the battery externally for 10min, with an external circuit resistance of ≤5mΩ. 4) Observe the battery for 1h.	No fire, no explosion

6 Transport and Storage

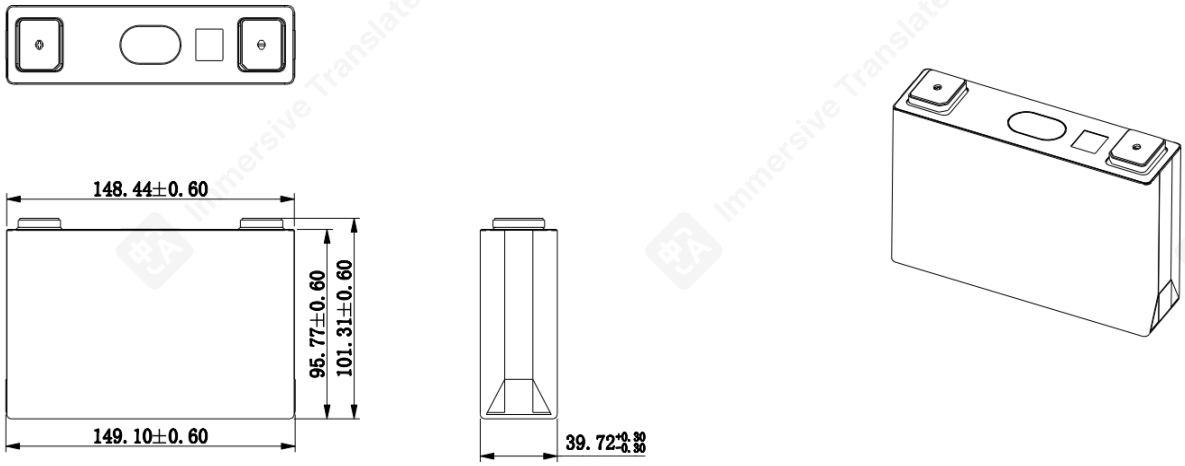
6.1 Transportation

The appropriate battery packaging method should be selected based on the destination and mode of transportation. During transport, severe vibration, external impact, or compression should be prevented, and exposure to sunlight or rain avoided. For transport by air, maintain ⩽30% of the battery's charge; for transport by car, train, ship, or other means, maintain 30%~50% of the charge or follow the customer's special requirements.

6.2
Storage

Batteries should be stored in an environment with an allowable temperature of -20~55°C, with a recommended storage temperature of -10~40°C and a relative humidity of 10%RH ~90%RH. Batteries should be kept away from corrosive substances or magnetic environments. They should be stored in a clean, dry, and ventilated environment, away from fire and heat sources. When not in use, continuous storage should not exceed 3 months.

7 Dimensions



8 Quality Assurance

The warranty period for the battery depends on the commercial contract. Within this period, if the battery issues are caused by user misuse rather than manufacturing process or quality reasons from the manufacturer, Ruipu Energy Co., Ltd. can provide technical guidance but does not guarantee free replacement services.

Ruipu Energy Co., Ltd. assumes no responsibility for issues or accidents arising from the following situations:

1) Issues and accidents caused by violation of the safety usage guidelines;

2) Defective batteries produced during the user's assembly process after shipment;

3) Issues arising from the use of batteries, circuits, battery packs, and chargers in combination. For safety, if there are special applications such as companion equipment design, lithium-ion battery system protection circuits, or high-current applications, please consult relevant matters with Ruipu Energy Co., Ltd.

9 Safety Instructions

To avoid battery damage or personal injury caused by the misuse of square lithium-ion battery modules, please carefully read the following safety instructions before using square lithium-ion batteries:

warning!

- Improper use and storage of the battery carry risks of fire, explosion, and burns; do not disassemble, crush, burn, heat, or throw the battery into fire;

Crush, burn, heat, and cast into the fire;

- Keep the battery out of reach of children, do not remove the original packaging before use, and should

handle used batteries in accordance with local recycling or waste disposal regulations;

- If a replacement is needed, use a battery from the same manufacturer; using batteries from other manufacturers may pose a risk of fire and explosion;

batteries may pose a risk of fire and explosion;

- Do not immerse the battery in water or get it wet;

- Do not allow the positive and negative terminals of the battery to contact the metal casing at the same time;

- Do not short-circuit, overcharge, or over-discharge the battery;

- Do not use or store the battery near heat sources (such as fire or heaters);

- Do not reverse the positive and negative terminals of the battery;

- Do not place the battery together with coins, metal accessories, or other metal objects;

- Do not pierce the battery casing with nails or other sharp objects; do not hammer or step on the battery;

- Do not directly solder the battery;

- Do not disassemble or modify the battery in any way;

- Do not strike, throw, or subject the battery to mechanical shock or natural drops;

- Do not mix lithium-ion batteries of different types or brands;

- Do not connect the negative terminal to the casing (positive polarity);

- If the battery emits an odor, heats up, deforms, changes color, or exhibits any other abnormal phenomena, do not use it and remove the battery from the operating environment;

- If the battery catches fire, extinguish it with dry powder, foam extinguishers, sand, or other materials and keep it away from the operating environment.

10 Shipping Status

When customers have no special requirements and do not use air transport, the battery leaves the factory with approximately 30%~50% charge.

11 Manufacturer Information

Manufacturer: Ruipu Energy Co., Ltd.

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