CHINA BEIHAI POWER CO., LTD.

Ultra-low Temperature Battery Technical Specifications

1.Basic Characteristics

Model		BH-12118365-115Ah
Housing Material		Aluminum-plastic composite film
Nominal capacity（ 0.2C）		115Ah
Rated voltage		3.4V
Maximum charging voltage		4.25V
Low Temperature -40°C Cut-off Discharge Voltage		2.35V
Maximum continuous discharge current		230A
Maximum instantaneous current		460A
Battery Length L3 (Max.)		12±0.2 mm
Battery width (Max.)		118±0.5 mm
Battery thickness (Max.)		365±0.6 mm
Battery weight (Max)		≤1020g
Internal resistance（Max, at 1000Hz.）		≤28mΩ(Charged state)
Operating Temperature	discharge	-40℃ ~ 55℃
	Storage	-20℃ ~ 45℃
	Charging	0℃ ~ 40℃

2. **Appearance and Performance**

The battery must not exhibit any of the following defects: scratches, rust, discoloration, leakage, etc.

3. **Testing Standards**

3.1 Test Environment

Unless otherwise specified, all tests shall be conducted at 1 standard atmosphere, ambient temperature of 20°C ± 5°C, and relative humidity between 45% and 80%.

3.2 Testing Equipment

A. Ammeters and voltmeters: Accuracy class higher than 0.5.

B. Vernier caliper: Accuracy requirement exceeding 0.01mm.

C. Internal Resistance Tester：AC1KHZ。

4. Battery Performance 4.1 Standard Discharge

Ambient temperature: 23°C ± 2°C. Discharge at a constant current of 0.2C until the termination voltage of 2.35V is reached.

Serial No.	Project	Standard	Test Method
4.2.1	Room-temperature discharge performance	0.2 CA ≥98%	Test conducted at 1 standard atmosphere, ambient temperature 23°C ± 2°C, relative humidity 45% to 80%. After a 10-minute standby period, discharge at 0.2C until reaching the lower limit voltage of 2.35V.
4.2.2	Discharge Performance at Different Temperatures	A）55°C ≥95% B）25°C ≥100% C） 0°C ≥95% D）-40°C ≥60%	Take 4 batteries, measure their initial state, and condition them at 60±2°C, -40 ±2°C, 25±2°C, and 0±2°C for 3 hours. Discharge at 0.2C until 2.35V to measure the final capacity.
4.2.3	Charge retention capability at room temperature	Remaining capacity ≥ nominal capacity*85%	Measure the battery's initial state and initial capacity, leave it for 30 days, then measure the battery's final state; discharge at 0.2C to 2.35V and measure the battery's remaining capacity.

5.Safety Performance

WARNING: All experiments described below must be conducted by qualified personnel under proper safety precautions. Failure to do so may result in unexpected damage to equipment and personal injury!!!

Serial No.	Project	Standard	Testing Procedures
5.1	Overdischarge performance	Non-flammable Non-explosive	Measure the battery's initial capacity. After standard charging, assess the battery's initial state by discharging at 0.2C until 2.35V. Then connect the positive and negative terminals with a 10Ω resistor, leave it for 14 days, and measure the battery's final state.
5.2	Room-temperature short-circuit performance	Non-flammable Non-explosive	Standard battery charging: Measure the battery's initial state. Place it within an explosion-proof glass enclosure and directly short-circuit its positive and negative terminals (total circuit resistance not less than 50mΩ). Terminate the test when the battery temperature drops to approximately 10°C below its peak value.
5.3	Thermal shock performance	Non-flammable Non-explosive	Measure the initial state of the battery. After standard charging, connect it to a thermocouple and raise the temperature at a rate of (5±2°C)/min to 105±2°C. Maintain this temperature for 10 minutes. Observe any changes in the battery's appearance.

6. Environmental Adaptability

Serial No.	Project	Standard	Testing Procedures
6.1	Constant Humidity and Heat Performance	Discharge capacity after storage / Nominal capacity *100% ≥ 80%	After standard charging, the battery is placed in a constant temperature and humidity chamber at 40Ñ5ÁC and 95Ñ2% relative humidity for 168 hours. It is then removed and left at room temperature for 2 hours before discharging at 0.2CA until reaching 2.35V.
6.2	Drop Performance	Non-flammable Non-explosive	After standard charging, measure the battery's initial state. Drop the battery sample freely from a height of 1m (to the lowest point height) in six directions along the XYZ axes onto a 30mm-thick wooden board. Measure the battery's final state after the drop is completed.
6.3	Vibration Environmental Adaptability	Remaining Capacity: 95% of rated capacity No visible damage to battery exterior; does not catch fire or explode	Initial State: After standard charging, the battery is mounted on a vibration table. Adjust the test equipment according to the following vibration frequencies and corresponding amplitudes. Perform a 30-minute cyclic sweep vibration in the X, Y, and Z directions, each ranging from 10Hz to 55Hz, with a sweep rate of 10 cycles per minute: A) Vibration Frequency: 10Hz to 30Hz Displacement Amplitude (Single Amplitude): 0.38mm B) Vibration frequency: 30Hz–50Hz Displacement amplitude (single amplitude): 0.19mm After the sweep frequency test, measure the battery's final state and final capacity.

7. Shelf Life and Product Liability

The shelf life is 24 months from the date of manufacture (as indicated by the spray-printed date). The company shall not be held responsible for issues arising from failure to operate in accordance with the specifications. The company reserves the right to modify the specifications without prior notice.

8. Markings on packaged batteries

✧ Typically, battery labels consist of the product model, positive and negative terminals, voltage, capacity, and manufacturing date.

✧ Customer-specified markings may be added upon request.

9. Battery Usage Warnings and Precautions

To prevent potential battery leakage, overheating, or explosion, please observe the following precautions:

✧Never immerse batteries in seawater or water. When not in use, store them in a cool, dry environment.

✧Do not use or leave batteries near heat sources such as fire or heaters.

✧Never reverse the battery terminals.

✧Never connect batteries directly to power outlets.

✧Do not throw batteries into fire or heaters.

✧Do not short-circuit battery terminals with metal objects.

✧Do not transport or store batteries with metal objects such as hairpins or necklaces.

✧Do not strike, throw, or step on batteries.

✧Do not directly solder batteries or puncture them with nails or other sharp objects.

Important Notes:

✧Do not use or store batteries in high temperatures (direct sunlight or hot vehicles), as this may cause overheating, fire, malfunction, or reduced lifespan.

✧Avoid using batteries in areas with strong static electricity or magnetic fields, as this may damage safety protection mechanisms and create hazards.

✧If battery leakage occurs and electrolyte enters the eyes, do not rub them. Rinse immediately with clean water and seek medical attention promptly to avoid eye damage.

✧If the battery emits an unusual odor, becomes hot, changes color, deforms, or exhibits any abnormal behavior during use, storage, or charging, remove it immediately from the device or charger and discontinue use.

✧If the battery becomes dirty, wipe it clean with a dry cloth before use; otherwise, poor contact may cause malfunction.

✧Disposed batteries should have their terminals wrapped in insulating paper to prevent fire or explosion.