

6S 10Ah LiPo Battery Data Sheet

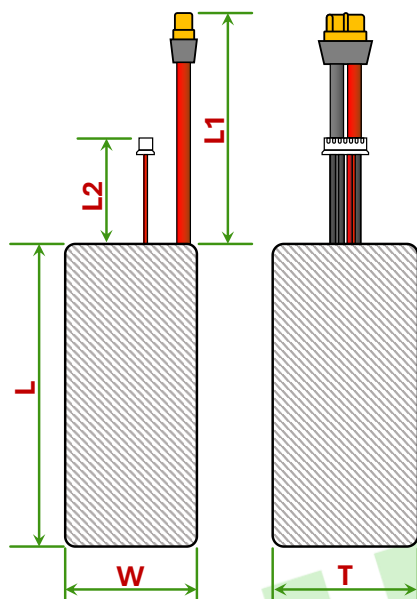
Model: HEBLP10000-6S (10000mAh) 23.1V 6S1P

Scope

This specification describes the product performance indicators of rechargeable polymer Lithium battery cells produced.

Initial Dimension

The drawing was not made to the actual scale



Unit (mm)					
T (ply)	Max:54.0	W (breadth)	Max:61.0	L (length)	Max:168
Discharge line	L1 XT60 10#red black silica gel line			125±10mm (interpolation)	
USB cable	L2 XH2.54-7P Reverse 22# 6 black 1 red silica gel line			80±10mm (interpolation)	

Specification

No.	Item	Characteristics
4.1	Nominal Capacity	10000mAh (0.5c discharge to 18.0vv)
	Minimum capacity	9800mAh (0.5c discharge to 18.0vv)
4.2	Nominal Voltage	23.1V (6S1P)
4.3	Battery pack internal resistance	≤25mΩ (23±2°C) AC 1KHz Ac impedance test
4.4	Limited Charge Voltage	26.4V
4.5	Discharge Cut-off Voltage	18.0V
4.6	End-of-Charge Current	0.02 CA
4.7	Standard Charge	0.5CA (5000mA) CC (constant current) charge to Charge Limited Voltage, then CV (constant voltage) charge till charge current decline to End-of-Charge Current at 23±2°C.
4.8	Standard Discharge	0.5CA (5000mA) discharge to the Discharge Cut-off Voltage at 23±2°C.
4.9	Max Continuous Charge Current	40C = 400A
4.10	Max discharge current	60C = 600A (≤10 seconds burst)
4.12	Operating Temperature Range	Charge: 0~45°C
	Storage Temperature Range	Discharge: -10~60°C
		-5~45°C≤1month; 0~35°C≤3months; 23±5°C≤12months
4.13	Wire Gauge	8 AWG or 6 AWG high-temp silicone wire
4.14	Operating and Storage Humidity Range	45~75% RH
4.15	Weight	about 1200g
4.16	OpenCircuit Voltage	22.8-24.0V
4.17	Connector Type	XT90 or AS150 (recommended for high current)

General Performance

No.	Item	Test methods and condition	Criteria
5.1	Standard Charge	Charging the cell initially with constant current at 0.5C and then with constant voltage at 26.4V till charge current declines to 0.02C.	/
5.2	Initial Capacity	The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.5C with 18.0V cut-off voltage after standard charge.	9800mAh
5.3	Cycle life	Constant current 1C charge to 26.4V, then constant voltage charge to current declines to 0.02C, rest 10min, constant current 1C discharge to 18.0V, rest 10 min. Repeat above steps till continuously discharging capacity Higher than 80% of the Initial Capacities of the Cells.	≥500 times
5.4	Capability of keeping electricity	After the battery is charged as a standard, after 28d of the battery at an ambient temperature of $20 \pm 5^{\circ}\text{C}$, discharge at 0.5C current at $23 \pm 2^{\circ}\text{C}$ environment.	≥Initial capacity 80

Environment Performance

No.	Item	Test methods and condition	Criteria
6.1	Temperature	- According to item Standard Charge, at $23 \pm 2^{\circ}\text{C}$. - Capacity comparison at $55 \pm 2^{\circ}\text{C}$, $23 \pm 2^{\circ}\text{C}$, $-10 \pm 2^{\circ}\text{C}$ temperature, measured with constant discharge current 0.2C with 18.0V cut-off.	$-10^{\circ}\text{C} \geq 70\%$ $23^{\circ}\text{C} \geq 100\%$ $55^{\circ}\text{C} \geq 90\%$

Safe Characteristics

No.	Item	Test methods and condition	Criteria
7.1	Vibration Test	After the battery is charged according to the standard, the battery is fixed on the shaking table, so that the battery cannot be deformed. The sine wave is used to vibrate, and the frequency is swept from 7 Hz to 200 Hz in a logarithmic sweep mode within 15 min and returned to 7 Hz. Vibration is carried out in three directions perpendicular to each other (one direction must be perpendicular to the plane in which the positive and negative electrodes of the sample are located, each direction is repeated 12 times according to the above pair sweep mode, and the vibration is 3 H.	No fire, no explosion
7.2	Drop Test	After the battery was fully charged according to the 1C standard, the drop body fell freely on the concrete plate at the drop height of 1.5m. The two end faces of the cylindrical battery fell once, and the cylindrical face fell two times, a total of four tests, and each square side fell once, a total of six tests.	No fire, No explosion

Above testing of safe characteristic must be with protective equipment.

Battery Protection

The battery shall be with the over-charging prevention, over-discharging prevention, and over-current prevention during use. Protective circuit shall have protective functions as follows:

- **Over-charging protection:** Overcharging prevention stops charging if any cell of the battery pack reaches 26.4V.
- **Over-discharging protection:** The Over-discharging protection monitors the voltage of every cell in the pack and works to avoid a drop in the cell voltage to 18.0V or less
- **Over-current protection:** The cell shall be discharged at less than the maximum discharge currents specified in the Specification Approval Sheet. A high discharging current may reduce the discharge capacity significantly or cause overheating.

Caution in use

To ensure proper use of the battery please read the manual carefully before using it.

.Handling

- Do not expose to, dispose of the battery in fire.
- Do not put the battery in a charger or equipment with wrong terminals connected.
- Avoid shorting the battery
- Avoid excessive physical shock or vibration.
- Do not disassemble or deform the battery.
- Do not immerse in water.
- Do not use the battery mixed with other different make, type, or model batteries.
- Keep out of the reach of children.

.charge and discharge

- Battery must be charged in appropriate charger only.
- Never use a modified or damaged charger.
- Do not leave battery in charger over 24 hours.

.storage

- Store the battery in a cool, dry and well-ventilated area.

.disposal

- Regulations vary for different countries.
- Dispose of in accordance with local regulations.

Battery operation instruction**Charging**

- Charging current: Cannot surpass the biggest charging current which in this specification book stipulated.
- Charging voltage: Does not have to surpass the highest amount which in this specification book stipulated to decide the voltage.
- Charging temperature: The battery charging temperature must be performed according to the temperature range of the specification, and when the battery surface temperature is found to exceed 45°C, the charging should be stopped immediately.

Uses the constant electric current and the constant voltage way charge, the prohibition reverse charges. If the battery positive electrode and the cathode meet instead, can damage the battery.

Discharging current

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharging capacity significantly or cause over-heat.

Discharge temperature

The discharge temperature of the battery must be carried out in accordance with the temperature range of the specification. When the surface temperature of the battery exceeds 60°C, it should be suspended until the battery is cooled to room temperature.

Over-discharges

It should be noted that the cell would be at 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 between 19.8V and 21.6V. Over-discharging may cause loss of cell performance, characteristics, or battery functions. The charger shall be equipped with a device to prevent further discharging exceeding a cut-off voltage specified in the Product Specification.

Also, the charger shall be equipped with a device to control the recharging procedures as follows:

The cell battery pack shall start with a low current (0.01C) for 15-30 minutes, i.e. -charging, before rapid charging starts. The rapid charging shall be started after the (individual) cell voltage has been reached above 2.0V within 15-30 minutes that can be determined with the use of an appropriate timer for pre-charging. In case the (individual) cell voltage does not rise to 2.0V within the pre-charging time, then the charger shall have functions to stop further charging and display the cell/pack is at abnormal state.

Storing the Batteries

If the cell has to be stored for a long time (Over 3 months), the environmental condition should be; Temperature: 23±2°C Humidity: 50±20%RH, the voltage for a long-time storage shall be 19.2V~21.6V range.

Period of Warranty

The battery shelf life is 12 months after delivery. Commitment to replace the quality of the battery itself during the shelf life, but not for the problems caused by user misuse or destructive testing.

Storage and Others

The retention rate within one month of receipt of goods is 96% of the nominal capacity, the retention rate within three months is 93% of the nominal capacity, the retention rate within six months is 90% of the nominal capacity, and the retention rate within twelve months is 80% of the nominal capacity.

Other The Chemical Reaction

Because batteries utilize a chemical reaction, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, if the various usage conditions such as charge, discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage. If the batteries cannot maintain a charge for long periods of time, even when they are recharged correctly, this may indicate it is time to change the battery.

Storage and use of Lithium batteries

The following content is some service guidelines of Shandong UAV Battery Co., Ltd. for the storage and use of Lithium batteries, please read and refer to them carefully, in order to obtain the best performance and the most reliable safety guarantee. The Company shall not be liable for any accident caused by the use of batteries under conditions other than those specified in the document.

Storage:

Lithium batteries should be stored in solid wall space area and separated from corrosive and flammable and explosive products;

Lithium batteries should be stored in an air-conditioned environment, and the temperature and humidity should meet the requirements of the product specifications; In the process of handling and storage, we should take it lightly and put it lightly, and there should be no abnormal behaviour of damaged battery: such as piercing, falling, external force extrusion and soon;

The batteries of different specifications / different suppliers should be placed in different areas, and the stacking should not be too high to avoid the battery being damaged by heavy pressure;

Between each battery, it is best to maintain a distance of about 100 CM, to ensure the smooth passage of fire; storage area should be equipped with basic firefighting facilities, such as fire extinguisher, fire sand, installation of spray, smoke alarm system, installation of monitoring system, preferably on duty;

Avoid long-term storage of Lithium batteries, which need to be recharged and discharged every 3 months.

Battery box load-bearing card plate is not more than 150 CM, high and the battery cannot be scattered placement, cannot be arbitrarily replaced with the original box;

Warehouse duty personnel must go through the municipal safety supervision bureau approved institutions to receive training, and hold the training institutions issued by the safety certificate before taking up the post.

Other considerations in use:

Lithium polymer batteries are aluminum-plastic housing design and packaging, no damage to the surface of the battery, batteries or semi-finished products have been used on line must be placed in a separate designated area, it is prohibited to mix with unused batteries;

It is forbidden to use such violence as falling, impact, bending the battery, and the like.

Direct short circuit of positive and negative batteries is prohibited, and batteries should not be removed privately under any circumstances.

It is strictly forbidden to use batteries in high temperature and high heat sources (such as fire, heaters), etc., leaving them or throwing them in.

It is strictly prohibited to use or place batteries in high temperature (direct sunlight or very hot environment) for a long time, otherwise it may cause the battery to overheat, fire or function failure, and reduce the service life.

Do not use damaged batteries, do not put batteries into fire;

Live batteries that are abandoned or need to be scrapped should be insulated to prevent short circuits, fires or explosions.

Please be sure to use the battery correctly according to the product specifications.

Special suggestion: customer purchase property insurance.

Note: Any other items which are not covered in this specification shall be agreed by both parties.

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