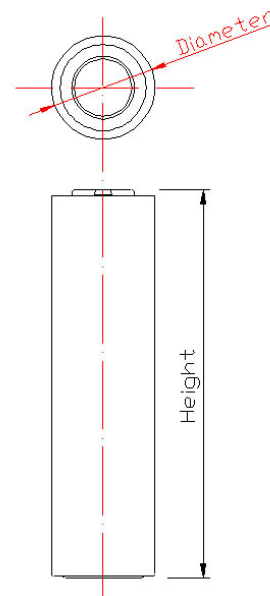


Product Name:	3.2V 2000mAh LiFePO4
Product Number:	
Battery Size:	26650
Battery Chemistry	Li-Ion

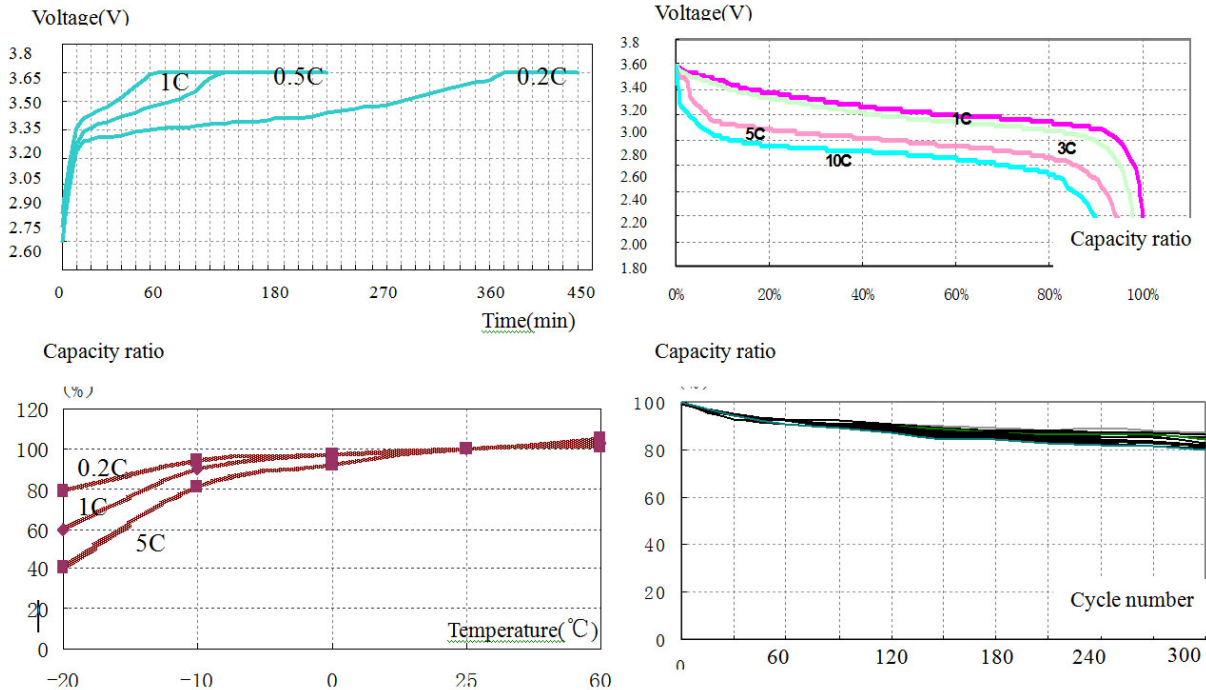
1. SPECIFICATIONS

Model	HLCF26650P-2000	
Material	LiFePO4	
Typical Capacity	2000mAh	
Nominal Capacity(0.2 C ₅ A 260mA)	2000mAh	
Nominal Voltage	3.2V	
Max Charge Voltage	3.65 V	
Discharge Cut-off Voltage	2.0V	
Max. Charge Current	1C ₅ A	
Max. Discharge Current	10C ₅ A	
Max. Diameter	26.0±0.3 mm	
Max. Height	65.0±0.3mm	
Weight (Approx.)	80.0g	
Cell Impedance (Max. at 1000Hz.)	≤35 mΩ (charged status)	
Charge Method (CC/CV)	Standard	0.2C ₅ A×7.5hrs
	Quick	1C ₅ A×2.5hrs
Operating Temperature	Charge	0°C~45°C / 32°F~113°F
	Discharge	-20°C~60°C / -4°F~140°F
	Storage	-10°C~45°C / 14°F~113°F

2. CONFIGURATION



3. CHARACTERISTIC CURVES



4. CHARACTERISTIC

Without special instructions, the following tests should be done under the condition of : temperature($20^{\circ}\text{C}\pm 5^{\circ}\text{C}$), atmospheric pressure(86KPa~106 Kpa), relative humidity (45%~75%), and the tests should be done within two weeks after receiving the products.

The definitions of some nomenclatures of this specification

- (1) standard Charge: Charge with current $1C_5A$ to limit charge voltage under the condition of $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$ surrounding temperature, then change to charge with constant voltage till the current less than or equal to $0.01 C_5A$.
- (2) Residual Capacity: The first discharge capacity after being tested by the specific procedure.
- (3) Recovery Capacity: The discharge capacity by implementing charge-discharge cycle repeatedly after being tested by the specific procedure.
- (4) $1 C_5A / 1 C_5A$ ($1 C_5A / 0.2 C_5A$, $1 C_5A / 5 C_5A$, $1 C_5A / 10 C_5A$) : Charge at $1C_5A$ to max. charge voltage, then change to charge with constant voltage until the current less than or equal to $0.01 C_5A$, rest for 30min, then discharge at $1C_5A(0.2C_5A, 5C_5A, 10C_5A)$ to discharge cut-off voltage.



4.1 Electrical Characteristic

NO.	Item	Standard	Test Method
1	Discharge Characteristics	Discharge capacity / Nominal capacity×100% A) 1C ₅ A ≥1h B) 5C ₅ A ≥10.8min C) 10C ₅ A ≥5.1min	Standard charged under the condition of normal atmospheric pressure and the environmental temperature of 25°C±5°C and 45%~80% RH, then rest for 30min and discharge at 1C ₅ A, 5C ₅ A, 10C ₅ A to the discharge cut-off voltage 2.75V respectively. Charge/discharge cycle can be conducted for 3 times before meeting the Standards (the same below) .
2	Normal Storage	Discharge Time≥4.25h	Store for 28 days after standard charged, then discharge at 0.2C ₅ A to the discharge cut-off voltage, measuring residual capacity.
3	Cycle Life	Discharge Time≥4.2min	Conduct 1C ₅ A /10 C ₅ A cycle for 300 times and measure final capacity.
4	Long Time Storage	0.2C ₅ A discharge duration stored for 12 months≥4h	Charge with 0.2 C ₅ A until the battery is half-full, storage for 12 months at room temperature. Conducts 0.2 C ₅ A /0.2 C ₅ A cycle for 3 times recording discharge time until meet the standard.

4.2 Safety Characteristic

NO.	Item	Standard	Test Method
1	Overcharge	No fire\explosion\ damage	Standard charge. Charge at 3C ₅ A to 10.0V, then change to charge with constant voltage till the current less than or equal to 0.01 C ₅ A.
2	Over Discharge	No fire\explosion\ damage	Standard charged. Discharge at 1C ₅ A to discharge cut-off voltage and then connect the positive and negative terminals with a resistor of 10Ω for 14 days.
3	Short Circuit at Room Temperature	No fire\explosion\ damage	Standard charged. Keep the battery into a ventilation cabinet and short-circuit the positive and negative terminals directly (general resistance shall be less than or equal to 50mΩ). Stop the test when the temperature falls to value 10 °C lower than the peak value. Observe the variation of the battery's appearance and temperature.



4	Short Circuit at High Temperature	No fire\explosion\ damage	Standard charged, Keep the battery into a ventilation cabinet of 55±2°C and store for 3h. Short-circuit the positive and negative terminals directly (general resistance shall be less than or equal to 50mΩ) at this temperature. Supervise the variation of the battery's temperature in the process of the test stop the test when the temperature falls to value 10 °C lower than the peak value. Observe the variation of the battery's appearance and temperature.
5	Impact	No fire\explosion	Standard charge. Keep the battery connected with a thermocouple and put it on a impaction platform, place a 15.8mm diameter bar across the center of the biggest surface, then let a 9.1kg heavy hammer self fall off to the platform from a height of 610mm. Observe the variation of the battery's appearance.
6	Nail Penetration	No fire\explosion	Standard charged. Keep the battery connected with a thermocouple on a nail penetration apparatus, then penetrate through it with a 3mm diameter nail rapidly at the center of its height direction.
7	Crush	No fire\explosion	Standard charge. Keep the battery connected with a thermocouple and put it into two iron sheets [the biggest surface of the battery should be parallel to the surface of the crush platform] . Apply 13KN force to crush instantly. Observe the variation of the battery's appearance.
8	Hot Oven	No fire\explosion	Standard charge. Keep the battery connected with a thermocouple and put it into a gravity convection or circulating air oven. Temperature is raised at a rate of 5°C±2 °C per minute to a temperature of 150°C±2 °C and remained for 30min at this temperature. Observe the variation of the battery's appearance.

4.3 Adaptation to Environment Characteristic

NO.	Item	Standard	Test Method
1	Thermal Cycle	No smoking \fire\explosion	Standard charge the battery, then store it at 75±2°C for 48h, then -20°C for 6h and room temperature for 24h. Then discharge at 1C ₅ A to discharge cut-off voltage.



2	Static Humidity	Discharge Time ≥ 36 min No remarkable deformation No smoking\ explosion	Standard charge. Put the battery into a $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 90% RH chamber for 48h, then get it out and store it for 2h at room temperature. Observe the variation of the battery's appearance and then discharge at $1\text{C}_5\text{A}$ to discharge cut-off voltage, measuring final capacity.
3	Drop	No smoking \fire\explosion Discharge time ≥ 51 min	Standard charge. Then let itself fall off from a height of 1.0m (the lowest height) to a smooth wooden surface. The self fall off should be conducted from every positive and negative direction. Then discharge at $1\text{C}_5\text{A}$ to discharge cut-off voltage. Conduct 1C/1C cycle for 3 times.
4	High-low Temperature Discharge	A) $60^{\circ}\text{C} \geq 57$ min B) $0^{\circ}\text{C} \geq 48$ min ; C) $-20^{\circ}\text{C} \geq 30$ min No fire\explosion	Standard charge. Then store for 3h at $60 \pm 2^{\circ}\text{C}$ and discharge at $0.2\text{C}_5\text{A}$ to discharge cut-off voltage. Then standard charge at room temperature and store for 20h according to the order of $0 \pm 2^{\circ}\text{C} / -20 \pm 2^{\circ}\text{C}$ and discharge at $0.2\text{C}_5\text{A}$ measuring corresponding discharge capacity. Then store for 2h at room temperature.
5	Vibration	No remarkable damage\smoking \explosion	Standard charge. Measure initial status. Equip it to the vibration platform, adjust and prepare the test equipment according to following vibration frequency and relevant swing, doing frequency sweeping from X, Y, Z three directions, each from 10Hz to 55Hz for 30 minutes of recycling, rating of which is 1oct/min: A)vibration frequency:10Hz~30Hz Displacement breadth (single swing): 0.38mm B) vibration frequency: 30Hz~55Hz Displacement breadth (single swing): 0.19mm。 Measure final status after sweeping and Observe the variation of the battery's appearance.

5. WARRANTY PERIOD& PRODUCT LIABILITY

Warranty period of this product is 6 months from manufacturing code. TENERGY is not responsible for the troubles caused by mishandling of the battery which is clearly against the instructions in this specification. When TENERGY find any new facts which require modification of this document, we will inform you.



6. WARNINGS AND CAUTIONS IN USING THE BATTERY

To prevent a possibility of the battery from leaking, heating or explosion, please observe the following precautions:

WARNINGS!

- 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 near a heat source as fire or heater.
- Use the battery charger specifically for that purpose when recharging.
- The battery only can be soldered on the Al/Ni composite strip of the bottom.
- Do not reverse the position and negative terminals.
- Do not connect the battery to an electrical outlet.
- Do not discard the battery in fire or a heater.
- Do not short-circuit the battery by directly connecting the positive and negative terminals with metal objects.
- Do not transport or store the battery together with metal objects such as hairpins, necklaces, etc.
- Do not strike, trample or throw the battery.
- Do not directly solder the battery and pierce the battery with a nail or other sharp objects.

CAUTIONS!

- Do not use or leave the battery at high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerate and its service life will be decreased.
- 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.
- 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 an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and stop using it.
- In case the battery terminals are dirty, clean the terminals with a dry cloth before use. Otherwise performance may occur due to the poor connection with the instrument.
- Be aware discarded batteries may cause fire or explosion, tape the battery terminals to insulate them.