

## Specification for Lithium-ion/Polymer Battery

**Model** : PX7500WB

**Description** : Power-Xtra PX7500WB 14.8V 4S2P 7500 mAh (45C) Li-Polymer Battery

Prepared by	Checked by		Approved by
	CELL	PACK	
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Note : After the receipt of the finished product specification data sheet, please kindly confirm in time. The specification of the product after the product finalized is effective only after both of the two parties, the manufacturer and the customer, sign and stamp with a across-page seal on. As the specification of the drawings is only the schematic drawings, there may be some difference with the physical objects. Power-Xtra reserves the final interpretation of it.

**Please return this sheet after your approvals.**

## Product Modification Record

Revision	Date	Modified content
A0	2018-07-04	Original Release

## Scope

This specification describes the technical parameter, testing method and using requirement of Lithium-ion Battery manufactured by Power-Xtra GROUPE INTERNATIONALE LIMITED

## Main Technical Parameter

### Battery specifications

Item		Parameter	Remark
Capacity	Nominal Capacity	7500mAh	Fully Discharge to 12.0V @ 0.2C.after standard charge
Nominal Voltage		14.8V	Average Discharge Voltage (discharged at 0.2CmA)
Configuration		4S2P	Cell Configuration
Max Charge Voltage		16.8V	4.2V/Cell
Shipments of Open-circuit voltage		14.8-15.84V	Test within 30 days from the date of shipment
Internal resistance		≤ 23.4mΩ	Test through the discharging wire terminal
Standard Discharge current		7.5 A	1.0C
Burst Discharge Current		337.5A	45C
Standard charge current		7.5A	1.0C
Maximum charge current		15.0A	2.0C (Ref.Temperature:10~45°C)
Overcharging protection Voltage			4.2V/Cell
Over-discharging Protection Voltage			3.0V/Cell
Dimension		Max 49.0*47.5*139.5 mm	
Weight		640.0g	Max
Working Temperature Range		10~45°C	10~45°C
		-20~60°C	-20~60°C

## Testing method and conditions

### Standard test conditions

The battery for test must be new produced no more than 1 month. Unless otherwise specified, all tests stated in this Specification shall be proceeded in the following conditions:

Temperature of  $23\pm 2^{\circ}\text{C}$ , the relative humidity of 45%~65%RH, atmospheric pressure is 86kPa~106kPa.

### Measuring Equipment requirements

- Slide caliper should have an accuracy of the grade 0.01mm or higher.
- The multimeter should have an accuracy of the grade 0.5 or higher. The impedance when testing voltage should be more than 10K $\Omega$ /V.
- The impedance meter with AC 1 kHz should be used.
- For the battery testing system, the accuracy of current should be more than  $\pm 0.1\%$ , the accuracy of voltage should be more than  $\pm 0.5\%$  and the accuracy of time should be more than  $\pm 0.1\%$ .
- The thermometer should be have an accuracy of the grade  $0.5^{\circ}\text{C}$  or higher.

### Standard Charge

1.0CmA (7500mA) 16.8V (CC-CV) ,Cut-off current is 0.05CmA.

**Note:** Charging equipment special for Lithium-ion Polymer battery must be used only for the above charging.

### Standard Discharge

1.0CmA(7500mA) CC Discharge cut-off Voltage 12.0V

### Standing Time

Unless otherwise specified, between battery charging and discharging, there is a 30min interval or more.

## Performance

### Electricity Characteristics

Item	Testing method	Requirement	
Open-circuit voltage	Measure the open-circuit voltage of the battery within 24 hours after the Standard Charge	$\geq 16.4\text{V}$	
AC Resistance	After half charge, measure the resistance through the discharge wires at AC 1KHz , $23\pm 2^{\circ}\text{C}$	Resistance of Battery Pack $\leq 23.4\text{m}\Omega$	
Capacity	Discharge the battery with a constant current of 0.2CmA(1500mA) to 12.0V after Standard Charge and rest 30min	Discharge Capacity $\geq 100\%$ (min Capacity)	
Discharge Temperature Characteristics	Heat or cool the battery to the testing temperature within 30min and rest for 3 hours after standard charge at $23\pm 2^{\circ}\text{C}$ , then discharge at 1.0CmA . When a test finished, charge the battery after rested 2 hours at room temperature ( $23\pm 2^{\circ}\text{C}$ )	$-20^{\circ}\text{C}$	$\geq 60\%$
		$25^{\circ}\text{C}$	$\geq 100\%$
		$60^{\circ}\text{C}$	$\geq 95\%$
Cycle Life Performance	Measure capacity under the cycle conditions described below, until the discharge capacity $\leq 80\%$ for three times. Cycle conditions: Standard Charge (CC-CV, 7500mA, 16.8V) , Rest for 30min; Discharge with 1C, 12.0V cutting off. Testing temperature is $23\pm 2^{\circ}\text{C}$	Cycle Life $\geq 300$ cycles Discharge Capacity $\geq 80\%$	

## Storage Characteristics

Item	Testing method	Requirement
General Temperature Storage Characteristics	1 Store the battery, which is charged at standard charge condition, for 30 days at 23±2°C. Measure the remaining capacity of the battery with 1.0CmA discharge	Remaining Capacity ≥ 85% C1.0
	2 Charge and discharge with 1.0CmA for 3 cycles. Measure the recovery capacity (the max. discharge capacity for three cycles)	Recovery Capacity ≥ 90% C1.0
High Temperature Storage Characteristics	1 Store the battery, which is charged at standard charge condition, for 7 days under 60±2 °C . Measure the remaining capacity of the battery with 1.0CmA discharge	Remaining Capacity ≥ 65% C1.0
	2 Charge and discharge with 1.0CmA for 3 cycles. Measure the recovery capacity (The max. discharge capacity for three cycles)	Recovery Capacity ≥ 85% C1.0
Long-term Storage Characteristics	Store the battery at 23±2°C for 365 days after charging the battery with 50% capacity, then charge and discharge the battery with 1.0CmA , under 23±2°C for 3 cycles. Measure the recovery capacity (The Max. discharge capacity for three cycles)	Recovery Capacity ≥ 85% C1.0

## Mechanical Performance

Item	Testing method	Requirement
Constant humidity and temperature test	Put the battery into an oven of constant humidity (90%~95%) and constant temperature (40±2°C), rest for 48 hours, take it out and rest for 2 hours at 23±2°C, then discharge with 1.0CmA , 12.0V cutting off.	Discharge Capacity ≥ 80% C1.0
Vibration test	Fix the battery on a vibration table, vibrate it at X, Y, Z orientation. Change the frequency of vibration with 1Hz/min from 10Hz to 55Hz, redo it for 30min Frequency: 10~30Hz Swing distance: 0.38mm Frequency: 30~55Hz Swing distance: 0.19mm	The battery have no obvious defaced, no leakage, no fire or no explosion.
Free drop test	Do the free drop test according to the condition described below after finished the vibration test Altitude: 1.0m Receiver: a hard board of 18~20mm Orientation: Six sides of battery at horizontal Discharge the battery to 12.0V with 1.0CmA CC, then charge-discharge the battery 3 cycles, measure the discharge capacity	The battery have no obvious defaced, no leakage, no fire or no explosion Remaining Capacity ≥ 85% C1.0. Recovery capacity ≥ 90% C1.0

### Storage Characteristics

Item	Testing method	Requirement
Extrusion test	When the battery is fully charged, set the battery between the two plates, with the extrusion force gradually up to 13KN. Once the maximum force has been applied, the force is released. The plane of the extrusion device should be extruded against any plane where the anode and cathode tap of the battery are parallel with.	No fire, no explosion

### Storage and Shipment Requirement

Item	Requirement	Remarks
Storage temperature	1 month : -20°C~+45°C 3 month : -20~30°C 1 year : -20~25°C	The best temperature for shipment is 23±5°C
Humidity	≤75%RH	
State of Charge (SOC)	30-60%	Pack 14.8-15.84V Pack Voltage14.8-15.84V

## PCM Specification and Characteristic

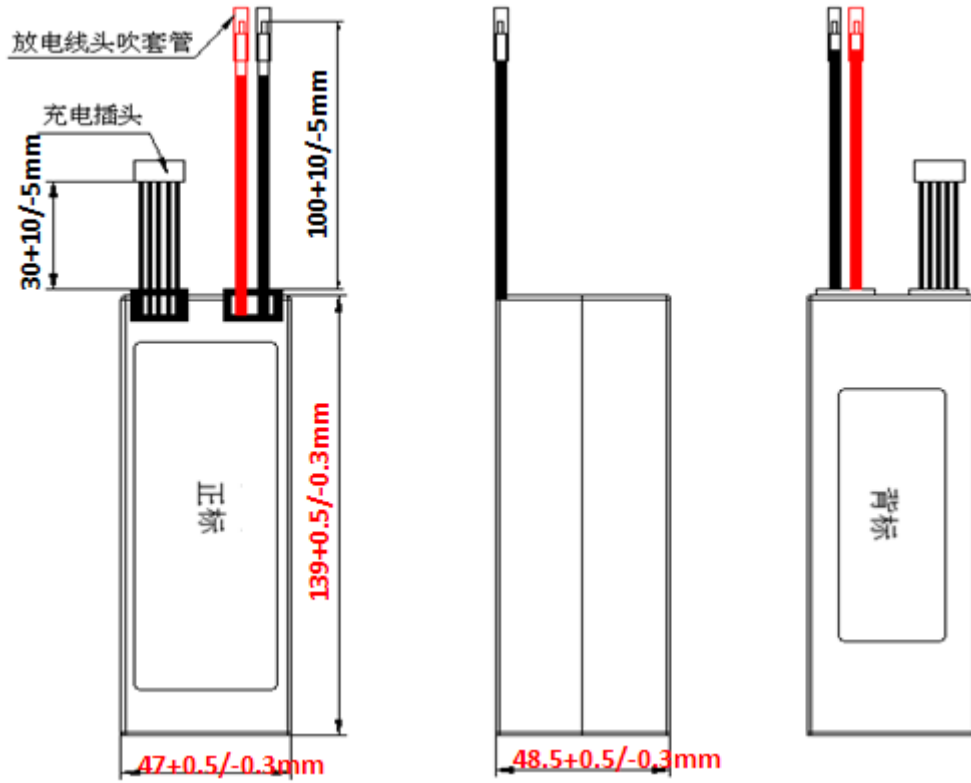
PCM Circuit Diagram  
PCM Electrical Characteristics  
PCM Material List

## Mounting structure

### Battery materials

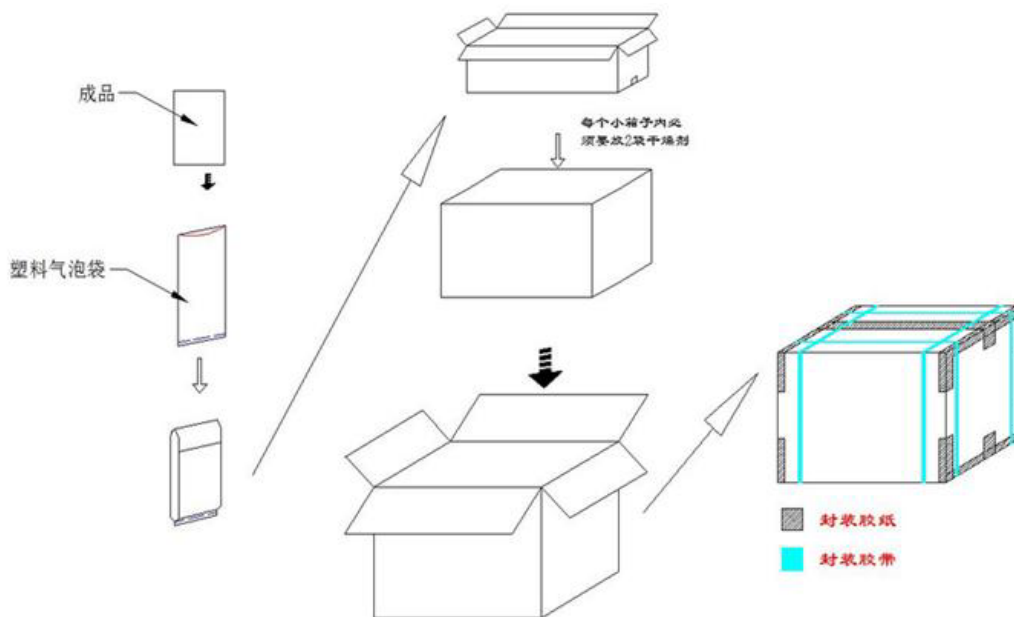
No	Title	Specifications	Unit	Qty	Remark
1	cell	5644129XL	PCS	8	
2		JST-XHR-5P 3239-22#	PCS	1	
3		3239-10#	PCS	2	
4		33		1	

Battery Dimension (Unit: mm) and Structure



Packaging Instruction (Inner packaging)

The photo, size and color of the mark are all comply with the requirement of GP/T 191-2000.



## Warranty period of battery and Quality guarantee

- The warranty period of a battery is half a year from the delivery date of shipment. The defective product caused by Power-Xtra GROUPE INTERNATIONALE LIMITED will be returned within the warranty period.
- For the use of the battery exactly, in order to obtain optimum performance and safety, the Customer shall strictly observe this item described below. The defects other than those caused by user overstep this Specification shall be excluded from the warranty of Power-Xtra GROUPE INTERNATIONALE LIMITED
- Any matters which are not covered in this specification should be negotiated between the customer and Power-Xtra.

## Notice

### Product Cautionary Statement and Disclosure

Power-Xtra GROUPE INTERNATIONALE LIMITED, Ltd will not take any responsibility for the problems caused by incorrect operation beyond the specification.

**Note(1):** The battery might be at an over-discharged state because of its self-discharge characteristics if the battery is not used for long time. In order to prevent over-discharging, the battery should be charged (at least once every three months) periodically to maintain the voltage between  $(3.7V \text{ and } 3.9V) * N$  (N represents the number of series of cell).

**Note(2):** Power-Xtra GROUPE INTERNATIONALE LIMITED, Ltd will not take any responsibility for the problems caused by improper use of PCM, battery pack, RC model and charger.

**Note(3):** It is necessary to use the charger with protection balanced function to charge if the finished battery without PCM.

**Note(4):** Power-Xtra GROUPE INTERNATIONALE LIMITED, Ltd will not take any responsibility for products beyond the warranty period.

**Note(5):** The charging current can't exceed the maximum charging current in this specification; The charging with higher current than recommended value may cause the problems of performance of charge & discharge, mechanical and safety, and may lead to fever or leakage. The maximum charging voltage can't exceed this specification.

**Note(6):** 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.

**Note(7):** Power-Xtra will not take any responsibility for battery damaged resulting from the client assembly after the products were accepted.

## User manual

- Stop using the battery immediately whenever it deforms, swells, leaks.
- Check the total output of the battery pack if the appearance is normal. Within one month of shipment, the total output is within the standard as specification sheet shows, confirmed it is OK if in this range;
- Once the total voltage output is confirmed OK, test each cell voltage. Within one month of shipment, the standard of the single cell output is in the range of 3.70V ~ 3.96V, and it is OK again if it is in this range;
- Once the total voltage and cell voltage are confirmed OK, test the total internal resistance through the discharge wire, if its total internal resistance standard is within the standard range as specification sheet shows, it is OK for normal using.
- The battery might be in over-discharge status because of its self-discharge characteristics if no battery operation for a long time. To prevent over-discharge occurs, the battery should be charged regularly to maintain its power between 30% ~60%. Over-discharge will lead to the loss of battery function;
- Battery long-term storage process, the remaining capacity should be between 30 to 60%, about 50% at best status. High voltage storage conditions will accelerate the self-discharge, increase the side reaction products, and may damage the battery performance;
- Battery long-term storage temperature is 0°C ~ 30 °C, for the storage period of more than 3 months, battery pack needs to be activated before use. Activation means that charge the battery pack with a balanced charger, charging until the electricity is displayed at 100% SOC, then discharged at a current of 0.2CmA to the voltage protection, and then charge the battery to about 50% SOC with the balance charger;
- Do not discharge battery pack with less than  $3.2V * N$  (N refers to the number of batteries in series) otherwise it will lead to the battery pack performance degradation and shorten its cycle life;
- Recommend to remain no less than 20% of the battery electricity after the end of using.

## Warnings

The battery will fire, explode or leak if not strictly observing this item described below.

- Do not immerse the battery in water or seawater, and keep the battery in a cool dry environment during stands by period.
- Do not mix using the battery with one-off battery (such as dry battery) or different performance together.
- Keep all batteries out of the reach of little children. Consult a doctor immediately if a battery is swallowed.
- Do not use or leave the battery near a heat source such as fire or heater.
- Use the battery charger specifically for that purpose when recharging.
- Do not reverse the positive (+) and negative (-) terminals.
- Do not connect the battery to an electrical outlet.
- Do not dispose the battery in fire or heat.
- Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminals with metal objects such as wire.
- Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.
- Do not strike or throw the battery against hard surface.
- Do not directly solder the battery.
- Do not unpack the battery with a nail or other sharp object.
- Never disassembling the battery in any way.

## Cautions

- Do not use or leave the battery at very 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 shortened.
- Do not use it in a location where static electricity is rich, otherwise, the safety devices may be damaged, causing a harmful situation.
- In case the electrolyte getting into the eyes due to the leakage of battery, do not rub the eyes! Rinse the eyes with clean running water, and seek medical attention immediately. Otherwise, it may injure eyes or cause a loss of sight.
- 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 place it in a contained vessel such as a metal box
- In case the battery terminals are contaminated, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection between the battery and the electronic circuitry of the instrument
- Be aware discarded batteries may cause fire, 100%discharged the battery and tape the battery terminals to insulate them before disposal.
- Battery disposal: The scrapped cells or packs should be handed over to professional recycling battery companies or institution for disposal.

