

	产品规格书 PRODUCT SPECIFICATION	DOC NO.:	XC16S-LP314												
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SHANDONG XUCHU ENERGY TECHNOLOGY CO., LTD. 山东旭储能源科技有限公司 Specification For Approval 客户承认书 Model : XC16S-LP314 型号: XC16S-LP314 <table><tr><td>Approval</td><td>Checked</td><td>Draft</td></tr><tr><td></td><td></td><td></td></tr><tr><td>Customer</td><td colspan="2"></td></tr><tr><td>Approval</td><td colspan="2"></td></tr></table> 山东旭储能源科技有限公司 SHANDONG XUCHU ENERGY TECHNOLOGY CO., LTD.				Approval	Checked	Draft				Customer			Approval		
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1. 概述 / General Information

本规格书适用于山东旭储能源 XC16S-LP314 立式储能电池柜，内部采用 LP314Ah 储能磷酸铁锂电芯，16 串 1PACK 集成 BMS 管理系统。

The specification shall be applied to Li-ion rechargeable battery pack Of XC16SLP314 which is manufactured by SHANDONG XUCHU ENERGY TECHNOLOGY CO., LTD.

2. 产品尺寸/Product dimension



3. 电池技术规格 / Battery Specification (@ 25±5°C)

序号 NO.	项目 Items	特性 Characteristics
3.1	额定容量 Rated Capacity	314Ah
3.2	单电芯标称容量 Nominal Capacity of Single Cell	314Ah
3.3	PACK 最小容量 PACK Minimum Capacity	≥320Ah
3.3	额定能量 Rated Energy	16.07kWh
3.4	串并联结构 Series-parallel Connection Structure	16S1P
3.5	单电芯标称电压 Nominal Voltage of Single Cell	3.2V
3.6	PACK 额定电压 PACK Rated Voltage	51.2V
3.8	PACK 放电终止电压 PACK Discharge Cut-off Voltage	42.4V (单个 2.65V)
3.9	标准充电电压 Standard Charging Voltage	57.6V (单个 3.60V)
3.10	标准充电电流 (0.5C) Standard Charging Current (0.5C)	157A
3.11	推荐充电电流 Recommended Charging Current	≤157A
3.12	最大持续充电电流 (短时) Maximum Continuous Charging Current (Short-term)	200A (≤0.7C, 禁止长期运行)
3.13	标准放电电流 (0.5C) Standard Discharging Current (0.5C)	157A
3.14	长期推荐放电电流 Long-term Recommended Discharging Current	≤157A
3.15	通讯方式 communication method	CAN/RS485
3.16	重量 Weight	约 111.65kg
3.17	出货电量 Ex-factory capacity	Approx.30% SOC
3.18	工作温度 Operation temperature	放电 Discharge -20℃~50℃
		充电 Charge 0℃~50℃
3.19	储存环境 Storage environment	≤1Month -10~+35℃、5~75%RH
		≤6Month -10~+30℃、5~75%RH
		Recommend environment 15~+30℃、5~75%RH

4. 电气性能及测试条件 Electrical Characteristics & Test Condition

测试条件 Testing Conditions: Ambient Temperature: 25±5℃; Humidity:45%~75% .

标准充电: 在 CC(0.5C)/CV(57.6V)模式下充电至电流减小至 0.02C , 然后静置 1h.

Normal charge: Charge battery under CC(0.5C)/CV(57.6V) mode until the charge current reduce to 0.02C, and then rest for 1h.

序号 No.	项目 Items	标准 Standard	测试方法 Test condition
4.1	额定容量 Normal capacity	$\geq 100\%$	电池经标准充电后, 以0.5C 电流放电至截止电压。 After Normal charge, discharge @0.5C current to the end of discharge voltage.
4.2	初始内阻 Internal Impedance	$\leq 8\text{m}\Omega$	在 50%SOC 条件下用 1kHz AC 的交流内阻测试仪。 @50% SOC @ 1kHz AC internal resistance test Instrument.
4.3	短路保护 Short circuit protection	短路后自动断开负载 Auto cutoff load when short circuit	用 0.1Ω 的电阻短接电池的输出正、负极。 Connect the positive and negative of this battery pack through a lead with 0.1Ω resistance.
4.4	放电温度特性 Discharge temperature Characteristic	-20℃/25℃ $\geq 45\%$	电池按标准规定充电, 按 0.5C 的电流放电至 42.4V。电池必需先在不同的试验温度中放置 4 个小时后放电, 百分比按放电容量比最小容量计算。 Battery shall be charged according to standard charge, discharged at 0.5C to 42.4V. Battery shall be stored for 4 hours at the test temperature prior to discharging and then shall be discharged at the test temperature, The percentage shall be calculated using discharging capacity compared to the minimum capacity.
		-10℃/25℃ $\geq 70\%$	
		0℃/25℃ $\geq 85\%$	
		25℃/25℃ $\geq 100\%$	
		55℃/25℃ $\geq 95\%$	
4.5	常温放电性能 Discharge performance in normal temperature	放电容量 Discharge capacity 0.5C $\geq 100\%$	在 25℃±2℃环境中, 电池标准充电后, 搁置10min , 然后以 0.5C 放电至42.4V 。计算各倍率下的放电容量与额定容量的比值。 When the battery is in the environment of 25℃±2℃, after standard charging, rest for 10min, and then discharge to 42.4V with 0.5C, Calculate the ratio of discharge capacity to rated capacity at each multiple.
4.6	容量保存率 Capacity retention rate	保持容量 $\geq 90\%$ 恢复容量 $\geq 95\%$ Capacity retention $\geq 90\%$ Capacity recovery $\geq 95\%$	测量电池的初始状态和初始容量, 电池标准充电后, 开路放置28天, 测量电池最终状态; 以0.5C 放电至42.4V , 测量电池的剩余容量; 电池再经标准充电后, 以 0.5C 放电至42.4V , 测量电池的恢复容量; 可循环三次, 当有一次达到标准, 即达到标准要求。 Measure the initial state and capacity of the

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			battery, after standard charge, then rest for 28 days, measure the final state of the battery; discharge at 0.5C to 42.4V, measure the remaining capacity of the battery. After standard charging, the battery is discharged at 0.5C to 42.4V to measure its recovery capacity. It can be cycled three times.		
4.7	循环寿命 Cycle life@DOD100%	≥8000 cycles	电池标准充电后以 0.5C 电流放电至截止电压，静置 1h；重复上述步骤直至放电容量小于初始容量的 80%。 After Normal charge, discharge @0.5C current to the end of discharge voltage. Repeat above process until discharge capacity reduce to 80% of initial value.		

5. 保护电路规格参数 Circuit Protection

本电池内部包含磷酸铁锂电池保护板，能实时监控电池运行状态，必要时提供过充、过放、过流、过温等保护，必要时切断动力电池的输入输出进行保护。

The batteries are supplied with a LiFePO4 Battery Management System (PCB)that can monitor and optimized each single prismatic cell during charge & discharge, to protect the battery pack overcharge, over discharge, short circuit. Overall, the BMS helps to ensure safe and accurate running.

序号 NO.	项目 Item	内容 Content	参数 Parameter
5.1	过充 Over charge	单电芯过充保护电压 Over-charge protection for each cell	3.6±0.05V
		整组过充保护电压 Over-charge protection for battery	58.4±0.20V
		单串过充保护延迟时间 Over-charge protection delay time	1S
		过充保护恢复方法 Over-charge release method	单电芯电压≤3.38±0.05V 且电池电压≤54±0.20V 或放电电流大于 1A Cell voltage≤3.38±0.05V and battery voltage ≤54±0.20V or Discharge current≥1A
5.2	充电过流保护 Over charge current	充电过流保护 Charge over current protection 1	210A
		充电过流延时 Charge over current protection delay time	1.0S
		充电过流解除条件	断开负载自动恢复或放电电流>1A

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		Charge over current release	Cut load,Auto Recovery or dischargecurrent>1A	
5.3	过放 Over discharge	单电芯过放保护电压 Over-discharge protection for each cell	2.8V±0.10V	
		整组过放保护电压 Over-discharge protection for battery	43.2±0.30V	
		过放保护延迟时间 Over-discharge protection delay time	0.5-1.5S	
		过放保护恢复方法 Over-discharge release method	单串电压大于 2.8±0.05V，且整组电池电压大于 43.2±0.20V 或；充电电流大于 1A Cell voltage≥2. 8±0.05V and batteryvoltage ≥43. 2±0.20V or chargecurrent > 1A	
5.4	放电过流保护 Over discharge current	放电过流保护 Discharge over current protection	210A	
		放电过流延时 Discharge over current protection delay time	1S	
		放电过流解除条件 Discharge over current release	断开负载自动恢复或充电电流 >1A Cut load,Auto Recovery or charge current≥1A	
5.5	温度 Temperature	充电高温保护 Charging high temperature protection	60°C	
		充电电池保护温度解除 Charge Over-temperature release method	50°C	
		充电低温保护 Charging low temperature protection	0°C	
		放电电池温度保护 Discharge over temperature protection	65°C	
		放电电池温度保护解除 Discharge Over-temperature release method	55°C	
		放电低温保护 Discharge low temperature protection	-20°C	
		保护板温度保护 PCB temperature protection	115°C	
		保护板温度解除 PCB Over-temperature release method	85°C	
		温度保护延时 temperature protection delay time	<10S	

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5.6	均衡功能 Cell balance	均衡启动电压 Balance Start Voltage	3.4V		
		开启压差 Balance Trigger Voltage Difference	30mV		
5.7	短路保护 Short circuit protection	短路保护 Short circuit protection	连续出现10次将锁定该状态，不再自动解除		
		保护条件 Protection condition	负载短路或 Load short circuit		
		保护延时 Protection delay	450~800uS		
		保护解除条件 Short circuit protection release	断开负载， 自动恢复 Cut load,Auto Recovery		
备注：保护板厂家规格信息					
6. 电池使用规范/Battery usage specification					
6.1 单电池使用时，禁止直接接入交流电源。 6.2 电池需要并联使用时，应先将每只电池按标准充电方式充满电后再并联。 6.3 电池禁止串联，并联数建议不要大于 10 并。 ■Do not connect a single cell directly to an AC power supply. ■When batteries are to be used in parallel, each battery shall be fully charged following the standard charging procedure before parallel connection. ■Series connection of batteries is prohibited; the recommended number of parallel-connected cells shall not exceed 10.					
7. 运输、存储注意 / Transport & Store					
长期储存时， 电池带电量一般在30%~50% ， 高的带电量储存会加快电池容量衰减。 按规格书规定的方式每 6 个月需充放电循环一次。 运输过程装卸电池时请注意不要摔落，请勿超过 5 层堆积、翻转放置，保证正面朝上。 ■When long-time storage, the battery SOC is 30% ~ 50% , if high-SOC storage will accelerate the battery capacity degradation. The battery need to be charged every 6 months if out of use No fall down, no pile up over 5 layers, and keep face up.					
8. 警示及注意事项 / Warning & Tips.					
使用电池前请仔细阅读规格书和电池箱表面的警示标志。 不当的使用电池可能会引起电池过热损坏，对于未按规格书操作造成的任何意外事故，山东旭储能源科技有限公司不负担任何责任，为了使电池安全的使用及处理请在使用前认真的阅读操作说明 ■Please read and follow the handling instructions before use. Improper use may cause heat, fire,rupture,damage or capacity deterioration of the battery. SHANDONG XUCHU ENERGY TECHNOLOGY CO., LTD. Describes isnot responsible for any accidents caused by the usage without following our handling instructions.					



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警告 Warning

- 电池请远离热源、高压场所、并避免长时间的日光暴晒；
 - 不能将电池投入水或火中；
 - 不要接反电池的正负极；
 - 不要用金属短接电池正负极；
 - 避免过分的物理震动和冲击电池，不要撞击、摔落、踩踏电池；
 - 未经厂家许可和指导，严禁私自拆卸或组装电池；
 - 不能将其它不同厂家，类型，型号的电池混合使用；
-
- Battery must be far away from heat source, high voltage, and no exposed in sunshine for long time.
 - Never throw the battery into water or fire;
 - Never reverse two electrodes when use the battery;
 - Never connect the positive and negative of battery with metal;
 - Never knock, throw or trample the battery;
 - Never disassemble the battery without manufacturer's permission and guidance.
 - Never use mixed with other type of battery;

注意 Attention

- 请不要高温环境下使用或储存，否则会引起电池发热、起火或使用寿命降低；
 - 电池用完电后，请及时(15 天内)充电；
 - 请使用配套或者推荐的专业锂电池充电器；
 - 电池有异味、变色、噪音、漏液、严重变形等异常情形时，请停止使用；
 - 电解液泄露溅入皮肤、眼睛时，用清水冲洗并立即找医生诊治；
 - 请将电池放置在宠物和儿童接触不到的位置，禁止小孩接触电池；
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- Keep the battery against high temperature. Otherwise it will cause battery heat, get into fire or lose some function and reduce the life.
 - When battery run out of power, please charge your battery timely (≤ 15 day) .
 - Please use the matched or suggested charger for this battery.
 - If battery emit peculiar smell, heating, distortion or appear any abnormity, please stop using.
 - If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately.
 - Please far away from children or pets.

9. 质保期限 Warranty

以质保协议为准。Subject to the warranty agreement.