产 品 规 格 书

方形锂离子电池

Product Specification

of 314Ah Prismatic Cells

型号：SBP-01-3140

Prepared 准备 （产品）	Checked 审核 （产品）	Checked 审核 （项目）	Checked 审核 （销售）	Checked 审核 （品质）	Approved 批准
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Sunwoda Mobility Energy Technology CO., LTD

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A0	2023-3-1	首次发行	
A1	2023-8-15	更新充电能力规格	
A2	2024-03-26	更新充放电工步描述、更新倍率性能	

目录

1 概述 General

1.1 保密要求 Requirement for Confidentiality

本文档仅供双方直接参与该项目的人员阅读，未经欣旺达动力科技股份有限公司允许，不得转发、翻印或泄露文件中的任何细节，欣旺达动力科技股份有限公司保留对本文档的最终解释权。

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1.2 适用范围 Scope of application

本产品规格书描述了SBP-01-3140电芯的类型、尺寸、规格、性能、储存运输注意事项。本规格书仅适用于欣旺达动力科技股份有限公司（以下简称欣旺达）生产的SBP-01-3140（型号）电芯。

The purpose of this document is to specify the size, specification, performance, storage and transportation precautions. This document is only appropriate to SBP-01-3140 batteries manufactured by SEVB.

1.3 术语与定义 Terms and Definition

术语 Terms	定义 Definition
欣旺达 SEVB	欣旺达动力科技股份有限公司 SEVB
产 品 Product	欣旺达生产的 SBP-01-3140 方形铝壳电芯 The SBP-01-3140 prismatic batteries manufactured by SEVB
客 户 Client	购买本规格书所述产品的公司、企业或个人 The customer who buy the product described in this < product specification >
周围环境温度 Ambient temperature	25 ± 2℃
电芯温度 cell temperature	由接入电池的温度传感器测试的电芯大面温度。Means the temperature of the cell measured by the temperature sensor connected to the large surface of cell

标称容量 nominal capacity	在寿命初始（BOL），按规定的条件完全充电后的电芯以0.5CP放电所能提供的最小容量。 Means the minimum discharge capacity at 0.5CP, after fully charged by standard charge method in BOL state.
标称电压 nominal voltage	通过标准放电对电芯进行放电测试，所得到电芯能量与容量比值。Means the ratio of the energy to capacity by standard discharge measurement.
标准充电 Standard Charge	本规格书第 4.1.1 条所述的充电制度。The default charging method set out in paragraph 4.1.1
标准放电 Standard Discharge	本规格书第 4.1.2 条所述的放电制度。The default discharging method set out in paragraph 4.1.2
SOC	State of Charge，荷电状态
BOL	Beginning of life，寿命初始
EOL	End of life，寿命终止
CC	Constant current 恒流充电
CV	Constant voltage 恒压充电
CP	Constant power 恒功率
C_0	C_0 为电芯多次核容的真实容量，CP 功率随 C_0 变化而变化。例如， 当电芯容量为 314Ah 时，C_0 为 314Ah，则 CP=1004.8W (1004.8W=314A*3.2V)；当电芯容量衰减为 251.2Ah 时， C_0=251.2Ah，则 CP 为 803.8W (803.8W=251.2A*3.2V)。 C_0 is cell real capacity, which is calculated by several times charge/discharge cycling, and CP will change with C_0. For example, when the cell real capacity is 314Ah, C_0 is 314 Ah, and CP is 1004.8W (1004.8W=314A*3.2V); when the cell decay to 251.2Ah, C_0 is 251.2Ah, and CP is 803.8W (803.8W=251.2A*3.2V).
测量单位 Unit	“V”（Volt）伏特，电压单位
	“A”（Ampere）安培，电流单位
	“Ah”（Ampere-Hour）安培-小时，容量单位
	“Wh”（Watt-Hour）瓦特-小时，能量单位
	“mΩ”（MilliOhm）毫欧姆，电阻单位
	“Hz”（Hertz）赫兹，频率单位

2 电芯外形尺寸 Battery Dimension

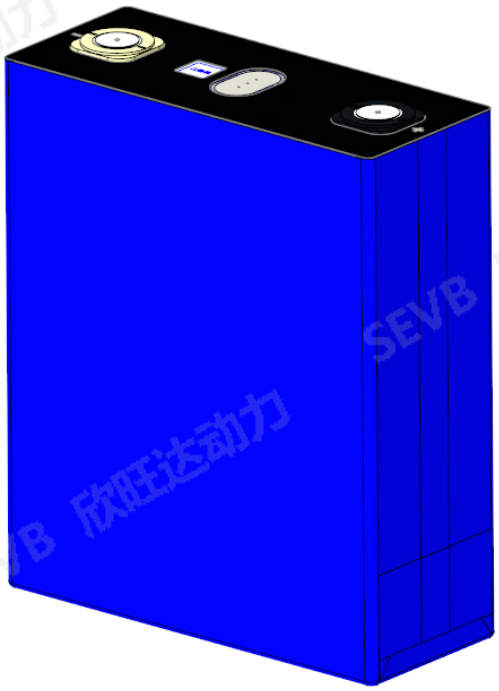

图 1 电芯外形尺寸图（300kgf 夹具力）

电芯尺寸 Battery dimension	厚度 Thickness	宽度Width	高度（不含端子）Height	高度（含端子）Height (including
	71.53±0.50 mm	174.30±0.50 mm	204.33±0.50 mm	206.90±0.50 mm

3 产品规格 Specification

序号 No.	项目 Terms	规格 Specification
1	电芯类型 cell type	容量型方型铝壳电池 The prismatic battery with high
2	标称容量（0.5CP）nominal capacity	314 Ah，（1 个月内） 314 Ah，(within 1 month)
3	标称电压（0.5CP）nominal voltage	3.2 V
4	电池重量 cell weight	5.6±0.1 Kg

5	充电截止电压（V 上限） Cut-off Voltage		3.65 V
6	放电截止电压（V 下限） End-off Voltage	T＞0℃	2.5 V
		T≤0℃	2.0 V
7	标准充电功率 standard charge power		0.5 CP
8	最大持续充电功率 max continuous charge power		0.5 CP
9	标准放电功率 standard discharge power		0.5 CP
10	最大持续放电功率 max continuous discharge power		0.5 CP
11	电池内阻（1kHz，50%SOC）Impedance		≤ 0.23 mΩ
12	绝对充电温度范围 charge temperature		0℃~ 60℃
13	绝对放电温度范围 discharge temperature		-30℃~ 60℃
14	存储温度 storage temperature		-40℃~ 60℃
15	最佳工作温度 the optimum working temperature		25℃~ 35℃
16	月自放电（25±2℃ 30-50%SOC 新电池三个月内）residual capacity loss (the first 3 month at BOL state)		≤2%/月, per month ≤ 2%

4 产品性能 Product Performance

测试电芯必须为欣旺达出厂时间不超过一个月的电芯，且电芯未经过五次以上充放电循环。测试均在湿度：(65±20)% RH 和大气压力为：86-106 kPa 的条件下进行。系统成组设计需对电芯施加一定的预紧力，新鲜电芯预紧力范围为 500～3000N，建议的预紧力为 3000N，建议的预紧力公差为±200N.

电芯在使用过程中会产生膨胀力，电芯在≥10mm 钢板初始大面夹具力为 (3000±200)N 测试条件下，衰减至 70%时膨胀力约为 40000N，客户在产品设计过程中需要考虑与电芯产品配套使用的系统结构强度的可靠性，客户需征询欣旺达的建议，如果客户未征询或未采纳欣旺达的建议，发生的一切质量、安全问题，欣旺达均不负责。

The cells for test should be the ones manufactured less than one month and cycled less than five times. The test should be processed in the condition of humidity of (65 ± 20) % RH and atmospheric pressure of 86-106 kPa. There is a

certain amount of preload force applied on the surface of cells to assemble the cells to a pack. The range of the force is 500~3000N, and the recommended preload force is 3000N with the tolerance of ±200N.

Swelling force will increase with cells operating. Under the test condition that the initial preload force of ≥10mm steel plate test fixture on the surface of cells is (3000±200)N, the swelling force for cells is about 40000N when the cells fade to 70%SOH. Customers should consider the reliability of structural strength of the pack system to design the application scenarios of products. Customers should consult sunwoda about the mechanical properties of the cell and pack system. If customers fail to consult, sunwoda will not be responsible for any quality or safety problems for the products.

4.1 充放电模式 Standard Cycle Method

4.1.1 标准充电 Standard Charge power

恒功率充电：电池能量为1004.8Wh，充电功率为502.4W时，则充电倍率为0.5CP；

Constant power charge: The charge rate is 0.5CP, corresponding to battery energy 1004.8Wh and charge power of 502.4W.

4.1.2 标准放电 Standard Discharge power

恒功率放电：电池能量为1004.8Wh，放电功率为502.4W时，则放电倍率为0.5CP。

Constant power discharge: The discharge rate is 0.5CP, corresponding to battery energy is 1004.8Wh and to charge power is 502.4W.

4.2 适候性能 Different Temperature Performance

序号 No.	项目 Terms	测试流程 Test Step	规格 Specification
1	室温放电容量 Capacity@ room temperature	在室温环境下，0.5 CP充电至3.65V，静置30min，然后以0.5 CP放电至2.5V，并记录放电容量。 At room temperature, 0.5CP constant power charge to 3.65V, rest 30min; then 0.5CP constant power discharge to 2.5V. Record the final discharge capacity.	≥314 Ah

2	高温放电容量（55℃） Capacity@55℃	在室温环境下，0.5 CP充电至3.65V，静置30min，将电芯置于55±2℃环境中搁置4h，然后以0.5 CP放电至2.5V，并记录放电容量。 At room temperature, 0.5CP constant power charge to 3.65V, rest 30min; then put the cell under 55±2℃ for 4h; 0.5CP constant power discharge to 2.5V. Record the final discharge capacity.	55℃放电容量/室温放电容量≥90% discharge capacity @ 55℃/ discharge capacity @ room temperature≥90%
3	低温放电容量（-20℃） Capacity@-20℃	在室温环境下，0.5 CP充电至3.65V，静置30min，将电芯置于-20±2℃环境中搁置6h，然后以0.5 CP放电至2.0V，并记录放电容量。 At room temperature, 0.5CP constant power charge to 3.65V, rest 30min; then put the cell under -20±2℃ for 6h; 0.5CP constant power discharge to 2.0V. Record the final discharge capacity.	-20℃放电容量/室温放电容量≥80% discharge capacity @ -20℃/ discharge capacity @ room temperature≥80%

4.3 倍率性能 Rate Performance

序号 No.	项目 Terms	测试流程 Test Step	规格 Specification	
1	倍率能量 Rate energy	在室温环境下，0.5 CP 充电至 3.65V，静置30min，按不同倍率放电至截止电压，记录不同倍率放电能量。 At room temperature, 0.5CP constant power charge to 3.65V, rest 30min; then discharge the cell to cut-off voltage at different rate. Record the final discharge energy.	放电倍率	容量百分比
			0.25CP	≥100%
			0.5 CP	100%
			1.0 CP	≥98.0%

4.4 充电能力 Charging Capacity

序号 No.	电芯温度 cell temperature	最大充电可持续功率 max continuous charge power
1	T＜0℃	0 CP
2	0℃≤ T＜5℃	0.05 CP
3	5℃≤ T＜10℃	0.1 CP
4	10℃≤ T＜15℃	0.2 CP
5	15℃≤ T ≤ 20℃	0.3 CP
6	20℃≤ T＜25℃	0.5 CP
7	25℃≤ T＜35℃	0.5 CP
8	35℃≤ T ≤ 45℃	0.5 CP
9	45℃≤ T ≤ 50℃	0.5 CP
10	50℃≤ T≤ 60℃	0.5 CP
11	>60℃	0 CP

4.5 寿 命 Cycle Performance

序号 No.	项目 Terms	测试流程 Test Step	规格 Specification
1	储存性能（25±2℃）Storage performance	25±2℃，0.5 CP充电至3.65V，静置30min，然后以0.5 CP放电至2.5V，记录初始容量。将电芯放置在室温下搁置28天然后在室温下，0.5CP充电至3.65V，静置30min，然后以0.5 CP放电至2.5V，并放电容量记为恢复容量。 At 25±2℃, charge the cell to 3.65V at 0.5CP constant power, rest 30min; discharge the cell at 0.5CP to 2.5V. Record the initial discharge capacity. Put the cell under room temperature for 28 days, and then charge the cell at 0.5CP constant power to 3.65V, rest 30min, then discharge the cell at 0.5CP constant power to 2.5V. Record the recovery discharge capacity.	容量恢复率≥98% Recovery capacity ratio≥98%
2	循环性能 (25±2℃) (0.5P /0.5P)	25±2℃，电池在300kgf夹具下：以0.5 CP充电至3.65V，搁置30min，以0.5 CP放电至2.5V，搁置30min，再进行下一次循环，至容量衰减为标称容量的80%止。 At 25±2℃ and 300kgf clamp force, charge the cell to 3.65V at 0.5CP constant power, rest 30min, then discharge at 0.5CP to 2.5V, rest 30min. Keep cycling to the capacity of battery reach to 80% nominal capacity.	≥6000次； ≥6000 times

4.6 安全性能 Safety Performance

序号 No.	项目 Terms	测试流程 Test Step	规格 Specification
1	过放测试 Overdischarge test	在室温下， 0.5 CP放电至2.5V, 搁置10min，在室温下以0.5C电流放电90min或电压达到0V时停止放电，观察1h。 At room temperature，discharge the cell to 2.5V at 0.5CP constant power, rest 10min., then discharge the cell at 0.5C for 90 min or until the voltage up to 0V, rest and observe 1h.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent
2	过充测试 Overcharge test	在室温下，0.5 CP充电至3.65V, 搁置10min，以0.5C充电至电压达到电池单体充电终止电压的1.5倍或时间达到1h，停止充电，观察1h。 At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min, then still charge the cell at 0.5C	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No

		until the voltage up to 1.5*cut-off voltage or the charging time up to 1h, rest 1h.	rupture outside vent
3	短路测试 Short Circuit	在室温下，0.5 CP充电至3.65V, 搁置10min，在室温将电芯正/负极经外部短路10min，外部线路电阻小于1mΩ，观察1h。 At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min, link the cathode and anode electrode with external line (resistance less than 1 mΩ) for 10min, rest 1h.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent
4	跌落测试 Drop	在室温下，0.5 CP充电至3.65V, 搁置10min，电芯正/负极端子向下从1.5m高度处自由跌落到水泥地面上，观察1h。 At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min. Fall down the cell from 1.5m height to cement floor, keeping its cathode and anode terminals pointing downwards. Rest 1h.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent
5	绝热测试 Adiabatic heating	在室温下，0.5 CP充电至3.65V, 搁置10min，将电池单体置于绝热装置，加热到表面温度40℃，静置5h，然后加热幅度每达到5℃静止1h后保持温度恒定20min直到130℃ At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min. Heat the cell in adiabatic apparatus to 40℃, rest 5h, then continue heating the cell by the step of 5℃ (with 1h rest) to 130℃, and keep 20min.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent
6	挤压测试 Crush	在室温下，0.5 CP充电至3.65V, 搁置10min按以下条件进行挤压试验： 挤压方向：垂直于电芯极板方向施压； 挤压板形式：半径为75mm半圆柱体，半圆柱体的长度L大于被挤压电芯的尺寸； 挤压速度：5±1 mm/s； 挤压程度：电挤压力达到50 kN后停止挤压，保持10min，观察1h。 At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min. Crush the cell as following condition: Crush direction: be perpendicular to the main cell plate; Shape: half-cylinder with 75mm radius, and its length should be longer than the width of cell; Crush speed: 5±1 mm/s; Crush level: Stop crushing when the extrusion force is up to 50kN, then keep the cell at such condition for 10min, rest 1h.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent

7	过载测试 High rate	在室温下，0.5 CP放电至2.5V，搁置10min，室温下电池单体在2CP条件下充放电，静置10min；观察1h。 At room temperature, discharge the cell to 2.5V at 0.5CP constant power, rest 10min, cell charge at 2CP to 3.65V, rest 10 min, and then discharge at 2CP to 2.5V, rest 1h.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent
8	热失控试验 Thermal runaway	在室温下，0.5 CP充电至3.65V, 搁置10min，0.5C恒流充电,充电同时使用平面或棒状加热片以其最大功率对电池进行加热，当发生热失控或监测点温度达到300℃或者加热4h，停止触发，关闭加热装置并停止充电；记录试验结果。 At room temperature, charge the cell to 3.65V at 0.5CP constant power, rest 10min. Charge the cell at 0.5C while heat the cell by flat or bar shaped heater with the highest power. When the thermal runaway is triggered or the temperature of monitoring point has been higher than 300℃ or heating for 4h, turn off the heating equipment and stop charging, and record test data.	不起火，不爆炸，不在防爆阀以外破裂 No fire, No explosion, No rupture outside vent

5 存储和运输 Storage and Transportation

5.1 存储要求 Storage Requirement

电池存储环境温度为-40℃~60℃，建议保存温度-10℃~35℃，相对湿度为 10%RH~90%RH 的条件下。电池应避免与腐蚀性物质或磁性环境接触，电池存储在清洁、干燥、通风的环境中，远离火源及热源。

At 10%RH~90%RH relative humidity, the ambient temperature for battery storage should be -40℃~60℃, during which -10℃~35℃ is recommended. The battery should avoid corrosive material and magnetic environment. The battery should be storage at clean, dry, and ventilated atmosphere, keeping away from fire source and heat source.

5.2 运输要求 Transportation Requirement

在运输过程中，应防止剧烈振动、充击、日晒、雨淋，不得倒置，确保不会发生短路。在装卸过程中，应轻搬轻放，严防摔掷，翻滚、重压和倒置，运输过程中应使电芯处于 10%~40%SOC。

During transportation, protect the cell from vigorous shaking, impact, sun and rain, and make sure do not invert the cell to avoid short circuit. During loading and unloading, the cell should be lightly move to avoid throw, roll, pressing, and inversion. Keep the cell with 10%~40%SOC during transportation.

6 操作规范 Operation Specification

6.1 操作警告事项 Operation precaution

6.1.1 严禁过充、过放，严禁反向充电。

Overcharging, overdischarging and reverse charging should be strictly prohibited.

6.1.2 严禁用金属或其他导线将电芯正、负极柱导通，可能引起电芯起火甚至爆炸。

Do not short circuit the cathode and anode terminals, otherwise high current and temperature may cause fire hazards and even explosion.

6.1.3 严禁将电芯浸入海水或水中，存放不用时，应放置于阴凉干燥的环境中。

Do not immerse cells into sea or any water. When the cells are not in use, keep them into cool and dry environment.

6.1.4 使用过程中严禁电芯发生挤压、跌落、碰撞、外短路等。

During operating, the cells should avoid to be squeezed, dropped, crashed, and external short-circuit.

6.1.5 禁止在超过本规格书规定的温度范围以外使用或存放电芯，否则可能会引起电芯过热、起火或功能失效、寿命减短。

Do not operate or storage the cell outside the specific temperature range in this specification, otherwise it may cause the batteries becoming overheating, firing, invalid or life span shorting.

6.2 操作注意事项 Operation Cautions

6.2.1 在使用之前，应详细阅读本规格书并理解其中注意事项。

This specification should be particularly read and understand before operating the batteries.

6.2.2 电芯应远离静电场所、热源、火源进行储存、使用。

The batteries should storage and use away from static electricity, heat source, fire source.

6.2.3 保持电芯表面清洁，避免接触不良导致功能失效。

Keep the cell surface cleaning, and avoid cell function failure due to poor contact.

6.2.4 如果电芯发出异味，发热、变色、变形或使用、贮存、充电过程中出现任何异常，应立即将电芯从装置或充电器中移离并停用。

During operating and storage period, if the cell emits peculiar odor; overheats; discolors; deforms, or any abnormality

occurs, it should be immediately stopped using and removed from the devices.

6.2.5 如果电芯发生泄露，电解液进入眼睛，请不要揉擦，应采用清水冲洗眼睛，并立即送医院治疗，否则会伤害眼睛。

If the electrolyte leaks and enters into eyes, please do not rub the eye. Wash the eyes with clean water and then go to see a doctor immediately, otherwise the eyes will be hurt.

6.2.6 生产或成组过程中，注意避免正负极短路。

Avoid short circuit due to cathode and anode terminals directly connect during manufacturing and packing process,

7 其 他 Others

7.1 如果客户需要将电芯在该文件之外的条件下操作或应用，请先咨询欣旺达相关事宜。在该文件说明的条件之外使用该电芯而产生的事故，公司不承担任何责任。

If customers need to operate or apply cells in the condition beyond this specification, please consult SWD for details at first. The company is not responsible for any accident if the cells are not operated as the conditions specified in this document.

7.2 对单体电芯与模组、系统搭配使用不当所产生的问题，公司不承担任何责任。

The company is not responsible for the event due to mismatch of cell with module or battery systems.

7.3 出货后客户在电芯组装过程中，因加工产生的不良电芯，不在质量保证的范围之内。

After delivery, the defective cells during processing and assembly process by customers are not within the scope of quality assurance.

7.4 电芯达到寿命终止条件时，应该放电到2.0V，再由专业机构回收拆解和进一步处理。

It should be discharged to 2.0V when the cell reaches the EOL state. The cell should be recovered, disassembled and applied further disposal by a professional organization.