

受控

锂离子电芯产品规格书

Product Specification of Lithium-ion Cell

电芯型号：CBA71173207EES-314Ah

Cell Model: CBA71173207EES-314Ah

研发审核 RD	工艺审核 PE	品质审核 QA	销售审核 AE
宋保国	阳磊	张发俊	王

客户承认 Customer Approval	签名 Signature	日期 Date
	公司名称 Company name:	
	公司盖章 Company stamp:	

 DJENERGY 德晋新能源	<h1>产品规格书</h1> <h2>Product Specification</h2>	编号 No:PS-71173207-A02
		版本 Rev. : A/0
		时间 Date: 2024/09/18
		页码 Page: 2

客户要求

要求客户写出他们的需求信息并提前与山东德晋新能源科技有限公司沟通（以下均简称为 DJENERGY）。如果客户有一些特别的应用或者操作条件不同于此文件中描述的，DJENERGY 可以根据客户的特别要求进行产品的设计和生产。

Customer Requirements

The Customer is requested to write down your information and contact Shandong Dejin New Energy Science and Technology Co., Ltd. (hereafter refer to as “DJENERGY”). in advance, if and when the Customer needs applications or operating conditions other than those described in this document. DJENERGY could design and build such products according to your special request.

序号 No.	特殊要求 Special Requirements	标准 Standards
1	/	/
2	/	/
3	/	/

客户代码 Customer Code: _____ 签字 Signature: _____ 日期 Date: _____

目 录
Contents

客户要求 CUSTOMER INQUIRY	2
修订记录 REVISION HISTORY	4
1 适用范围 SCOPE OF APPLICATION	5
2 规范性引用文件 NORMATIVE REFERENCE	5
3 术语和定义 TERMS AND DEFINITIONS	5
4 基本性能 BASIC PERFORMANCE	7
5 电性能 ELECTRICAL PERFORMANCE	8
5.1 测试条件 Test Condition	8
5.2 测试仪表与设备要求 Testing Instruments and Equipment Requirements	9
5.3 电性能指标及测试方法 Electrical Performance Indicators and Test Methods	9
5.4 充电模式 Charging Mode	13
5.5 其它充电模式 Other Charging Mode	13
5.6 放电模式 Discharging Mode	13
5.7 其它放电模式 Pulse Discharging Mode	13
6 可充放电次数 CYCLE PERFORMANCE	14
7 安全性能 SAFETY PERFORMANCE	14
8 产品寿命终止管理 PRODUCT END OF LIFE MANAGEMENT	17
9 应用条件 APPLICATION CONDITIONS	18
10 运输及装卸要求 TRANSPORTATION AND HANDLING REQUIREMENTS	20
11 安全防范 SAFETY PRECAUTIONS	21
12 免责声明 DISCLAIMER	23
13 保密协议 CONFIDENTIALITY AGREEMENT	23
14 风险警告 RISK WARNING	24
15 附录 APPENDIX	25
15.1 电芯外观图 Cell Outside View Drawing	25
15.2 电芯尺寸图 Cell Dimension Drawing	26

 德晋新能源	<h1>产品规格书</h1> <h2>Product Specification</h2>	编号 No:PS-71173207-A02
		版本 Rev. : A/0
		时间 Date: 2024/09/18
		页码 Page: 5

1 适用范围 Scope of Application

本产品规格书规定了 DJENERGY 生产的 CBA71173207EES-314Ah 锂离子电芯的性能要求、试验方法、检验规则、标志、贮存和安全要求。

This product specification regulates the performance requirements, test methods, inspection rules, storage and safety requirements of CBA71173207EES-314Ah lithium-ion cell produced by DJENERGY.

2 规范性引用文件 Normative Reference

下列文件中的条款通过部分引用而成为本标准的部分条款。凡是不注日期的引用文件，其最新版本适用于本标准。

Provisions in the following documents are partly quoted as part of the standard. The latest version of undated reference documents is applicable to this standard.

GB/T 2900.41-2008 《电工术语原电芯和蓄电芯》

GB/T 2900.41-2008 *Electrotechnical Terminology Primary and Secondary Cells and Batteries*

GB/T 36276-2023 《电力储能用锂离子电池》

GB/T 36276-2023 *Lithium Ion Batteries for Electric Energy Storage*

3 术语和定义 Terms and Definitions

3.1 产品：本规格书中的产品是指 DJENERGY 生产的 314Ah 3.2V 可充电方形铝壳锂离子电池；

3.1 Products: The products in this specification refer to the 314Ah 3.2V rechargeable lithium iron phosphate cells produced by DJENERGY.

3.2 客户：客户是指购买本规格书所述产品的公司、企业或个人；

3.2 Customer: Customer refers to the company, enterprise or individual that purchases the products mentioned in this specification.

3.3 环境温度：电池所处的周围环境；

3.3 Environmental temperature: the surrounding environment in which the battery is located;

3.4 电池温度：由接入电池表面中心的温度传感器测量的电池的温度；

3.4 Battery temperature: The temperature of the battery measured by a temperature sensor connected to the center of the battery surface;

3.5 标称电压：标志或识别一种电芯或一种电化学体系的适当的电压近似值；

3.5 Nominal voltage: Marking or identifies an appropriate approximation of the voltage for a cell or an electrochemical system;

3.6 标准充电：本规格书第 5.3.1 条所述充电模式；

3.6 Standard charging: The charging mode described in Article 5.3.1 of this specification;

3.7 标准放电: 本规格书第 5.3.2 条所述放电模式;

3.7 Standard discharging: The discharging mode described in Article 5.3.2 of this specification;

3.8 开路电压: 没有接入任何负载和电路时测得的电芯的电压, 缩写用 OCV 表示。

3.8 Open circuit voltage: The voltage of the cell measured when unloaded or circuit is disconnected. The abbreviation is expressed by OCV.

3.9 能量密度: 在规定试验条件和试验方法下, 电池的放电能量与电池的重量或者体积的比值;

3.9 Energy density: The ratio of the discharge energy of the cell to the weight or volume of the cell under the specified test conditions and methods;

3.10 起火: 电芯任何部位发生持续燃烧的现象, 火花、闪燃及拉弧不属于起火;

3.10 Ignition: The phenomenon of continuous combustion in any part of the cell, including sparks, flash fires, and arcing, does not constitute a fire;

3.11 爆炸: 电池壳体破裂, 伴随剧烈响声, 且有固体物质等主要成分抛射;

3.11 Explosion: Battery shell burst, accompanied by violent sound, and have solid substances and other main components of the ejection;

3.12 漏液: 电池内部液体泄漏到壳体外部;

3.12 Leakage: The liquid inside the cell leaks to the outside of the shell;

3.13 功率: 充放电功率与电池系统多次测量的电芯的能量值的比率, 用字母 P 表示。例如, 当电池能量为 1004.8Wh, 充电或放电功率为 502.4W 时, 则充电或放电功率为 0.5P; 当电芯能量衰减为 900Wh, 充电或放电功率为 450W 时, 则充电或放电功率为 0.5P。

3.13 Power:The ratio of the charge/discharge power to the battery energy value measured multiple times by the battery system, denoted by P. For example, when the battery energy is 1004.8Wh and the charge/discharge power is 502.4W, the charge/discharge power is 0.5P; When the battery energy decays to 900Wh and the charge/discharge power is 450W, the charge/discharge ratio is 0.5P.

3.14 交流内阻: 电芯在室温条件下, 用交流内阻测试仪以 1KHZ 50mA 条件测试的内阻结果;

3.14 AC internal resistance: The internal resistance of the cell was measured by AC internal resistance tester with 1KHZ 50mA at room temperature;

3.15 脉冲电流: 以周期重复出现的电流或电压脉冲称为脉冲电流, 脉冲电流或是以同一方向出现, 或是以正、负交替变换方向出现。

3.15 Pulse current: The current or voltage pulses that appear periodically are called pulse currents. The pulse currents appear-either in the same direction or in alternating positive and negative directions.

3.16 荷电状态: 在无负载的情况下, 以安培小时或者以瓦特小时为单位计量的电池容量状态与额定容量的比值, 缩写用 SOC 表示。例如:若将容量为 314Ah 的状态视为 100%SOC, 若容量为 0Ah 时, SOC 为 0%。

	<h1>产品规格书</h1> <h2>Product Specification</h2>	编号 No:PS-71173207-A02
		版本 Rev. : A/0
		时间 Date: 2024/09/18
		页码 Page: 7

3.16 State of charge: Under unloaded conditions, the ratio of the cell capacity state which measured in ampere-hour or watt-hour to the rated capacity. The abbreviation is expressed by SOC. For example, if the capacity is 314Ah which considered as 100% SOC, the capacity is 0 Ah, considered as 0% SOC.

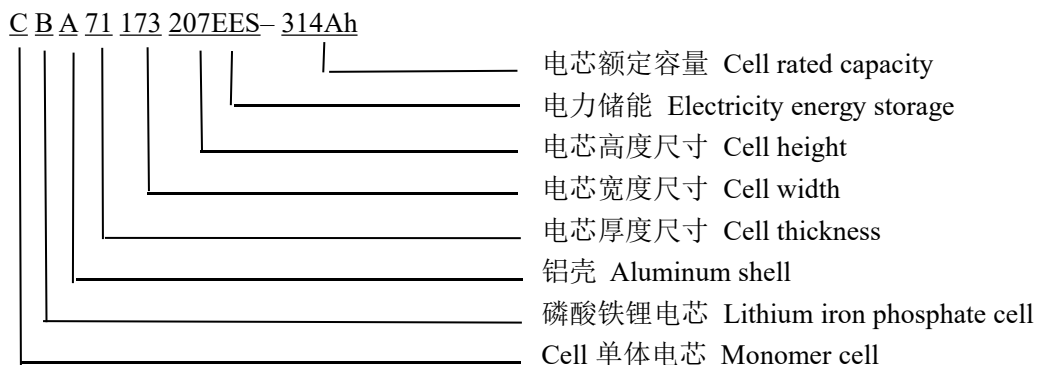
3.17 循环: 电池按规定的充放标准充放一次为一个循环。循环包括短时的正常充电或者再生充电和放电过程的组合，在充电过程中有时只有正常充电而无再生充电的情况。放电可以由一些部分放电组合在一起形成。

3.17 Cycle: Means a state when a total of charge and discharge according to rules from a cell as recorded by BMS, the cycle includes a combination of short-term normal charging or regenerative charging and discharging processes, sometimes with only normal charging and no regenerative charging during the charging process and it may consist of a summation of a few segments of partial charge and discharges.

3.18 新电芯: 是指客户收货的 7 天以内的状态（仅限国内运输）。

3.18 Fresh cell: Means the state within 7 days after customer received the product（domestic only）


3.19 型号含义 Model meaning:



4 基本性能 Basic Performance

表 1 基本性能
Table 1 Basic Performance

序号 S.N.	参数 Parameter	产品规格 Specification	条件 Condition
4.1	外观 External appearance	无破裂、划痕、变形、污渍、 电解液泄漏等 No breakage, scratch, deformation, stain, electrolyte leakage, etc.	N/A
4.2	尺寸 Size	71mm*173mm*207mm	详细见附录 15 See Appendix 15 in detail
4.3	额定功率 Rated current	0.5P	502.4W, 25±2℃, 2.5V~3.65V
4.4	标称容量 Nominal capacity	314Ah	0.5P, 25±2℃, 2.5V~3.65V

	产品规格书 Product Specification		编号 No:PS-71173207-A02
			版本 Rev. : A/0
			时间 Date: 2024/09/18
			页码 Page: 8
4.5	标称电压 Nominal voltage	3.2V	25±2°C
4.6	重量 Weight	5555g±75g	N/A
4.7	最高充电电压 Maximum charging voltage	3.65V	环境温度 Ambient temperature 0°C≤T≤55°C
4.8	最低放电电压 Minimum discharging voltage	2.5V	环境温度 Ambient temperature 0°C<T≤55°C
		2.0V	环境温度 Ambient temperature-20°C≤T≤0°C
4.9	能量密度 Energy density	≥178Wh/kg	质量能量密度 Mass energy density
		≥393Wh/L	体积能量密度 Volume energy density
4.10	交流内阻 AC internal resistance	0.17±0.05mΩ	新电芯, Fresh cell, AC, 1 kHz, 30% SOC
4.11	月自放电 Residual capacity loss	≤3.5%/月 Per month ≤3.5%	25±2°C储存 25±2°Cstorage 30%SOC
4.12	应用海拔 Altitude	≤2000m	N/A
4.13	储存温度 Storage temperature	-20~0°C, 35~45°C 1个月以内 (within 1month) 0~35°C 6个月以内 (within 6 months)	荷电状态: 20~50% 储存环境湿度≤85%RH SOC: 20~50% Storage environment humidity≤85%RH
4.14	循环衰减 Cycle fading	≤5%	25±2°C环境温度下, 初始夹紧力 300±30Kgf, 0.5P 充放电测试循环 180 圈。 25±2°C, cycle test by 0.5P charge and discharge method under 300±30Kgf preload for 180 cycles.
4.15	储存衰减 Storage fading	≤5%	25±2°C环境温度下, 初始夹紧力 300±30Kgf, 标准充电至 100%SOC 存储 6 个月。 25±2°C, under 300±30Kgf preload, standard charging to 100% SOC storage for six months.

5 电性能 Electrical Performance

5.1 测试条件 Test Condition

除另有规定外, 试验应在温度为 25±2°C, 相对湿度为 15%RH~90%RH, 大气压力为 86kPa~106kPa 的环境中进行。本规格书提到的室温是指 25±2°C。

Except as otherwise specified, the test shall be carried out in an environment of 25±2°C, 15%RH~90%RH and 86kPa~106kPa atmospheric pressure. The room temperature mentioned in this specification refers to 25±2°C.

5.2 测试仪表与设备要求 Testing Instruments and Equipment Requirements

—电压测量装置: ±0.1%

-Voltage measuring device: ±0.1%

—电流测量装置: ±0.1%

-Current measuring device: ±0.1%

—温度测量装置: ±0.5°C

-Temperature measuring device: ±0.5°C

—尺寸测量装置: ±0.1mm

-Dimension measuring device: ±0.1mm

—质量测量装置: ±0.1g

-Mass measuring device: ±0.1g

5.3 电性能指标及测试方法 Electrical Performance Indicators and Test Methods

表 2 电性能指标及测试方法

Table 2 Electrical Performance Indicators and Test Methods

序号 S.N.	项目 Item	技术要求 Technical requirement	测试方法 Test methods
5.3.1	初始化充电 Initial charge	/	在环境温度 25±2°C 的条件下, 搁置 5h, 初始夹紧力 300±30kgf; 对电池以 502.4W 恒功率放电至 2.5V, 搁置 30min; 对电池以 502.4W 恒功率充电至 3.65V, 搁置 30min。 At the ambient temperature 25±2°C, rest for 5h, initial clamping force is 300 ± 30kgf; Discharge at a constant power of 502.4W to 2.5V,and rest for 30min; Charge at a constant power of 502.4W to 3.65V,and rest for 30min.
5.3.2	初始化放电 Initial discharge	/	在环境温度 25±2°C 的条件下, 搁置 5h, 初始夹紧力 300±30kgf; 对电池以 502.4W 恒功率充电至 3.65V, 搁置 30min; 对电池以 502.4W 恒功率放电至 2.5V, 搁置 30min。 At the ambient temperature 25±2°C, rest for 5h, initial clamping force is 300 ± 30kgf;

			<p>Charge at a constant power of 502.4W to 3.65V, and rest for 30min;</p> <p>Discharge at a constant power of 502.4W to 2.5V, and rest for 30min.</p>
5.3.3	<p>绝对充电温度 (电芯温度) Absolute charging temperature (cell temperature)</p>	0~60°C	<p>无论电芯处在何种充电模式，一旦发现电芯温度超过绝对充电温度范围即停止充电。</p> <p>No matter what charge mode the battery is in, stop charging once the cell temperature exceeds absolute charging temperature range</p>
5.3.4	<p>绝对充电电压 Absolute charging voltage</p>	<p>最大 3.65V Max 3.65V</p>	<p>无论电芯处在何种充电模式，一旦发现电芯电压超过绝对充电电压范围即停止充电。</p> <p>No matter what charge mode the battery is in, stop charging once the cell voltage exceeds absolute charging voltage.</p>
5.3.5	<p>绝对放电温度 (电芯温度) Absolute discharge temperature (cell temperature)</p>	-20~60°C	<p>无论电芯处在持续放电模式或其它放电模式，若电芯温度超过绝对放电温度，则停止放电。</p> <p>Stop discharging once cell temperature is outside this range regardless of whether continuous or pulse current is adopted.</p>
5.3.6	<p>初始充放电能量 Initial charge and discharge energy</p>	≥1004.8Wh	<p>在环境温度 25±2°C，初始夹紧力 300±30kgf，对电池按照按照 5.3.2 进行初始化放电。</p> <p>以 502.4W 恒功率充电至 3.65V，搁置 30min；</p> <p>以 502.4W 恒功率放电至 2.5V，搁置 30min。</p> <p>重复 5 次，记录后 3 次充电能量平均值为充电能量值，后 3 次放电能量平均值为放电能量值。</p> <p>At ambient temperature of 25 ± 2°C and initial clamping force of 300 ± 30kgf, initial discharge of the battery as per 5.3.2.</p> <p>Charge the battery at a constant power of 502.4W to 3.65V and rest for 30min.;</p> <p>Discharge the battery at a constant power of 502.4W to 2.5V and rest for 30min.</p> <p>Repeat 5 times and record the average of the last three charging energy as charging energy value and the average of the last three discharging energy as discharge energy value.</p>

5.3.7	初始充放电能量效率 Initial charging and discharging energy efficiency	$\geq 93\%$	按照 5.3.6 测试方法得到的放电能量与充电能量的比值 The ratio of discharging energy to charging energy obtained according to the test method 5.3.6.
5.3.8	25°C倍率充放电性能 25 °C rate charging and discharging performance	$E1^*/E1 \geq 93\%$ $E2/E1 \geq 95\%$ $E2^*/E1^* \geq 95\%$ $E4^*/E4 \geq 90\%$	<ol style="list-style-type: none"> a. 电池按照(5.3.2)初始化放电; b. 以 502.4W 恒功率充电至 3.65V, 搁置 30min, 记为 E1; c. 以 502.4W 恒功率放电至 2.5V, 搁置 30min, 记为 E1*; d. 以 1004.8W 恒功率充电至 3.65V, 搁置 30mn, 记为 E2; e. 以 502.4W 恒功率充电至 3.65V, 搁置 30min, 记为 E3; f. 以 1004.8W 恒功率放电至 2.5V, 搁置 30min, 记为 E2*; g. 以 502.4W 恒功率放电至 2.5V, 搁置 30min, 记为 E3*; h. 以 1004.8W 恒功率充电至 3.65V, 搁置 30min, 记为 E4; i. 以 1004.8W 恒功率放电至 2.5V, 记为 E4*。 <ol style="list-style-type: none"> a. The battery is initially discharged as per (5.3.2); b. Charge to 3.65V at 502.4W, hold for 30min, recorded as E1; c. Discharge to 2.5V at 502.4W, hold for 30min, recorded as E1 *; d. Charge to 3.65V with constant power of 1004.8W, hold for 30min, recorded as E2; e. Charge to 3.65V with 502.4W constant power, hold for 30min, recorded as E3; f. Discharge to 2.5V with constant power of 1004.8W, shelved for 30min, recorded as E2 *; g. Discharge to 2.5V at 502.4W, hold for 30min, recorded as E3 *; h. Charge to 3.65V with 1004.8W constant power, shelve for 30min, recorded as E4; i. Discharge to 2.5V at 1004.8W constant power, denoted as E4 *.
5.3.9	能量保持与能量恢复能力 Energy retention & energy recovery ability	能量保持率 $(E6^*/E5^*) \geq 95\%$ 充电能量恢复率 $(E6/E5) \geq 95\%$ 放电能量恢复率 $(E7^*/E5^*) \geq 95\%$ Energy retention rate $(E6^*/E5^*) \geq 95\%$	<ol style="list-style-type: none"> a. 电池按照(5.3.2)初始化放电, 记为初始放电能量 E5*; 以 502.4W 恒功率充电至 3.65V, 记为初始充电能量 E5; b. 电池在 45±2°C条件下静置 30 天; c. 电池在 25±2°C条件下静置 5h; d. 在 25±2°C下, 以 502.4W 恒功率放电至 2.5V, 搁置 30min, 记为 E6*; e. 在 25±2°C下, 以 502.4W 恒功率充电至 3.65V, 搁置 30min, 记为 E6;

		<p>Charging energy recovery rate (E6/E5) ≥ 95% Discharge energy recovery rate (E7*/E5*) ≥ 95%</p>	<p>f. 在 25 ± 2 °C 下, 以 502.4W 恒功率放电至 2.5V, 记为 E7*。 a. The battery is initialized and discharged according to (5.3.2), denoted as initial discharge energy E5*; Charge with a constant power of 502.4W to 3.65V, denoted as the initial charging energy E5; b. The battery is left to stand at 45 ± 2 °C for 30 days; c. The battery is left to stand at 25 ± 2 °C for 5 hours; d. At 25 ± 2 °C, discharge at a constant power of 502.4W to 2.5V and let it sit for 30 minutes, denoted as E6*; e. Charge at a constant power of 502.4W to 3.65V at 25 ± 2 °C, let it sit for 30 minutes, denoted as E6; f. Discharge at a constant power of 502.4W to 2.5V at 25 ± 2 °C, denoted as E7*.</p>
<p>5.3.10</p>	<p>贮存性能 Storage performance</p>	<p>充电能量恢复率 (E8/E7) ≥ 96.5% 放电能量恢复率 (E9*/E8*) ≥ 96.5% Charging energy recovery rate (E8/E7) ≥ 96.5% Discharge energy recovery rate (E9*/E8*) ≥ 96.5%</p>	<p>a. 电池按照(5.3.2)初始化放电, 记为初始放电能量 E8*; 以 502.4W 恒功率充电至 3.65V, 搁置 30min, 记为初始充电能量 E7; b. 在 25 ± 2 °C 下, 以 502.4W 恒功率放电至初始放电能量的 50%; c. 电池在 50 ± 2 °C 条件下贮存 30 天; d. 电池在 25 ± 2 °C 下静置 5h; e. 在 25 ± 2 °C 下, 以 502.4W 恒功率放电至 2.5V, 搁置 30min; f. 在 25 ± 2 °C 下, 以 502.4W 恒功率充电至 3.65V, 搁置 30min, 记为 E8; g. 在 25 ± 2 °C 下, 以 502.4W 恒功率放电至 2.5V, 记为 E9*。 a. The battery is initialized and discharged according to (5.3.2), denoted as initial discharge energy E8*; Charge with a constant power of 502.4W to 3.65V, let it sit for 30 minutes, and record it as the initial charging energy E7; b. Discharge at a constant power of 502.4W at 25 ± 2 °C to 50% of the initial discharge energy; c. The battery is stored at 50 ± 2 °C for 30 days; d. The battery is left to stand at 25 ± 2 °C for 5 hours; e. Discharge at a constant power of 502.4W to 2.5V at 25 ± 2 °C and let it sit for 30 minutes; f. Charge at a constant power of 502.4W to 3.65V at 25 ± 2 °C, let it sit for 30 minutes, and record it as E8; g. Discharge at a constant power of 502.4W to 2.5V at 25 ± 2 °C, denoted as E9*.</p>

	产品规格书 Product Specification	编号 No:PS-71173207-A02
		版本 Rev. : A/0
		时间 Date: 2024/09/18
		页码 Page: 13

5.4 充电模式 Charging Mode

表 3 充电模式

Table 3 Charging Mode

参数 Parameters	产品规格 Product Specifications	条件 Condition
标准充电功率 Standard charging power	0.5P	25±2°C
标准充电电压 Standard charging voltage	单体电池 3.65V Single cell 3.65V	
标准充电模式 Standard charging style	以 502.4W 恒功率充电至 3.65V Charge to 3.65V with a constant power of 502.4W	
标准充电温度 Standard charging temperature	25±2°C	

5.5 其它充电模式 Other Charging Mode

表 4 分阶段恒功率充电

Table 4 Staged Constant Power Charging

电芯温度/°C Cell temperature /°C		0	5	10	15	20	25	45	50	55	60
最大充电功率 (P) Max charging power	0%-70% SOC	0	0.1	0.2	0.3	0.5	0.5	0.5	0.3	0.2	0
	70%~100% SOC	0	0.05	0.1	0.2	0.3	0.5	0.25	0.2	0.1	0

5.6 放电模式 Discharging Mode

表 5 放电模式


Table 5 Discharging Mode

序号 S.N.	项目 Item	规格 Spec.	备注 Remark
5.6.1	标准放电功率 Standard discharge current	0.5P	-20°C≤T≤60°C (电芯温度 cell temperature)
5.6.2	允许放电温度范围 Permissible discharge temperature range	-20~60°C	(电芯温度 cell temperature)
5.6.3	最佳放电温度范围 Optimum discharge temperature range	15~35°C	(电芯温度 cell temperature)
5.6.4	放电截止电压 Discharge cut-off voltage	2.5V	温度 temperature>0°C
		2.0V	温度 temperature≤0°C

5.7 其它放电模式 Pulse Discharge Mode

表 6 其它放电模式

Table 6 Other Discharge Mode

	产品规格书 Product Specification						编号 No:PS-71173207-A02			
							版本 Rev. : A/0			
							时间 Date: 2024/09/18			
							页码 Page: 14			
电芯温度/°C Cell temperature /°C		-20	-10	-5	0	5	45	50	55	60
最大放电功率 (P) Max discharging power	0%~100% SOC	0.2	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0

6 可充放电次数 Cycle performance

表 7 可充放电次数测试

Table 7 Cycle Life Test

序号 S.N.	项目 Item	技术要求 Technical Requirement	测试方法 Test Method
6.1	可充放电次数 Cycle performance	≥8000cls	a) 环境温度 25±2°C，初始夹紧压力 300±30Kgf，0.5P 充电 8000cls 至能量为初始能量的 70%。 b) 室温下电芯以 0.5P 恒功率充电至 3.65V； c) 室温下静置 30min； d) 室温下电芯以 0.5P 恒功率放电至 2.5V； e) 室温下静置 30min； f) 重复 b)~e)。 a) 25±2°C initial clamping pressure 300±30Kgf, 0.5P charge and discharge 8000cls to energy of 70% of the initial energy; b) Charge the cell 0.5P at constant power to 3.65V at room temperature; c) Stay at room temperature for 30mins; d) Discharge the cell 0.5P at constant power to 2.5V at room temperature; e) Stay at room temperature for 30mins; f) Repeat b)~e) .

注：为确保全生命周期的使用安全并最大限度延长电芯使用寿命，充电功率（倍率）必须要根据电芯的 SOH（容量衰减）来进行调整。BMS 应确保具有该功能，并对实际的充电功率（和允许充电功率限制）做监测，并在必要的时候触发故障和保护功能。

Note: In order to ensure the safe use of the whole life cycle and maximize the service life of the cell, the charging power (ratio) must be adjusted according to the SOH (capacity attenuation) of the cell. The BMS shall ensure that this function is available and monitor the actual charging power (and allowable charging power limits) and trigger the fault and protection functions when necessary.

7 安全性能 Safety Performance

表 8 安全性能

Table 8 Safety Performance

序号 S.N.	项目 Item	技术要求 Technical	测试方法 Test Method
------------	------------	-------------------	---------------------

		Requirement	
7.1	过充电 Over charge	不起火、不爆炸 No fire, no explosion.	在环境温度 25±2°C 的条件下, 电池初始化充电, 以 157A 的电流恒流充电至 5.475V 或充电时间达到 1h, 停止充电。观察 1h。 At the ambient temperature of 25 ± 2 °C, the cell initialized charging with constant current of 157A to 5.475V or charging time to 1 hour, then stop charging. Observe for 1h.
7.2	过放电 Over discharge	不起火、不爆炸 No fire, no explosion.	在环境温度 25±2°C 的条件下, 电池初始化放电, 然后以 157A 的电流恒流放电 1h 或电压达到 0V 时停止放电。观察 1h。 At an ambient temperature of 25 ± 2 °C, battery initialization for charging, discharge the battery to 0V at a constant current of 157A or for 1 hour, and then stop discharging. Observe for 1h.
7.3	短路 Short circuit	不起火、不爆炸 No fire, no explosion.	在环境温度 25±2°C 的条件下, 电池初始化充电, 将电池正、负极经外部短路 10min, 外部线路电阻值应小于 5mΩ。观察 1h。 At the ambient temperature of 25 ± 2 °C, the battery is initialized to short circuit the positive and negative electrodes of the cell for 10min, and the resistance value of the external line should be less than 5m Ω. Observe for 1h.
7.4	挤压 Extrusion	不起火、不爆炸、不漏液 No fire, no explosion, no leakage	a) 在环境温度 25±2°C 的条件下, 电池初始化充电; b) 按下列条件进行试验: ➤ 挤压方向: 垂直于电芯极板方向施压; ➤ 挤压板形式: 半径为 75mm 的半圆柱体, 半圆柱体的长度大于被挤压电芯尺寸; ➤ 挤压速度: 5mm/s; ➤ 挤压程度: 挤压力达到 50kN 时保持该压力 10min, 停止挤压。 c) 观察 1h。 a) At the ambient temperature of 25 ± 2 °C, the cell initializes for charging; b) Conduct tests under the following conditions: ➤ Extrusion direction: Pressure perpendicular to the cell plates. ➤ Extruded plate form: The length of the half cylinder of the radius 75mm is larger than the size of the extruded cell; ➤ Extrusion speed: 5mm/s; ➤ Extrusion level: when the squeezing pressure reaches 50kN, keep the pressure for 10mins and stop squeezing. c) Observe for 1hr.
7.5	跌落 Falling	不起火、不爆炸 No fire, no explosion.	在环境温度 25±2°C 的条件下, 电池初始化充电, 将电池正负极柱向下从 1.5m 高度处自由跌落至水泥地面上。观察 1h。 Under the condition of an ambient temperature of 25 ± 2 °C, the battery is initialized and charged. The positive and negative poles of the battery are freely dropped downwards from a height of 1.5m onto the cement floor. Observe for 1 hour.

7.6	加热 Heating	不起火、不爆炸 No fire, no explosion.	<p>在环境温度 $25 \pm 2^\circ\text{C}$ 的条件下，电池初始化充电，将电芯放入加热试验箱，以 $5^\circ\text{C}/\text{min}$ 的速率由环境温度升至 $(130 \pm 2)^\circ\text{C}$，并保持此温度 30min 后停止加热；观察 1h。</p> <p>At the ambient temperature of $25 \pm 2^\circ\text{C}$, the cell initializes charges, puts the cell into the heating test chamber, rises from the ambient temperature to $(130 \pm 2)^\circ\text{C}$ at a rate of $5^\circ\text{C}/\text{min}$, and maintain this temperature for 30min and stop heating; observe for 1h.</p>
7.7	热失控 Thermal runaway	不起火、不爆炸 No fire, no explosion.	<p>a. 在环境温度 $25 \pm 2^\circ\text{C}$ 的条件下，电池初始化充电，置于热失控试验装置中；</p> <p>b. 按下表的要求选取加热部件和温度传感器并布置于电池表面，设置温度采样周期为 1s，设定连续监测到三个温升速率值均 $\geq 3^\circ\text{C}/\text{s}$ 或起火或爆炸为发生热失控的判定条件；</p> <p>c. 连接电池与充放电装置及其电压数据采样线；</p> <p>d. 以 $I=157\text{A}$ 恒流充电，启动加热，记录时间、电压、电流、温度、温升速率，记录试验现象，包括膨胀、漏液、冒烟、起火、爆炸、外壳破裂及破裂位置；</p> <p>e. 触发发生热失控的判定条件或温度达到 300°C 或试验时间达到 4h 时，停止充电和加热，观察 1h，记录时间、电压、温度、温升速率，记录试验现象，包括膨胀、漏液、冒烟、起火、爆炸、外壳破裂及破裂位置；</p> <p>f. 断开电池和充放电装置的连接，拆除加热部件和数据采样线，取出试验样品；</p> <p>g. 记录发生热失控时的温度为热失控温度。</p> <p>a. Under the condition of an ambient temperature of $25 \pm 2^\circ\text{C}$, the battery is initialized and charged, and placed in a thermal runaway test device;</p> <p>b. Select heating components and temperature sensors according to the requirements in the table and place them on the surface of the battery. Set the temperature sampling period to 1 second, and set the continuous monitoring of three temperature rise rate values $\geq 3^\circ\text{C}/\text{s}$ or fire or explosion as the criteria for thermal runaway;</p> <p>c. Connect the battery to the charging and discharging device and its voltage data sampling line;</p> <p>d. Charge with a constant current of $I=157\text{A}$, start heating, record time, voltage, current, temperature, temperature rise rate, and record test phenomena, including expansion, leakage, smoking, fire, explosion, shell rupture, and rupture location;</p> <p>e. When the condition for triggering thermal runaway occurs or the temperature reaches 300°C or the test time reaches 4 hours, stop charging and heating, observe for 1 hour, record the time, voltage, temperature, temperature rise rate, and record the test</p>

discussion and agreement of the customer and DJENERGY. Client and/or its customer shall stop using any of the cells when the internal resistance of the cell in use exceeds 200% of the initial internal resistance of this cell or less than 60% of the nominal capacity (25°C) or exceeds the permitted voltage range. Any violation of this requirement will exempt DJENERGY from product quality assurance liability under the Product Sales Agreement and this Technical Agreement.

8.2 电芯寿命判定条件参考 6.1 可充放电次数。

The cell life determination conditions can refer to paragraph 6.1 Cycle performance.

9 应用条件 Application Conditions

客户应当确保严格遵守以下与电池相关的应用条件：

Customer shall ensure that the following application conditions in connection with the products are strictly observed.

9.1 客户应配置电池管理系统，严密监控、管理与保护每个电池。电芯初次使用必须进行小电流满充满放以激活，以保证后续使用中容量的充分发挥。

The customer shall configure a battery management system to closely monitor, manage and protect each cell. When the cell is first used, it must be fully charged and discharged for activating it and giving fully capacity.

9.2 客户应向 DJENERGY 提供电池管理系统详细的设计方案、系统特点、框架、系统数据、格式等相关信息，以供 DJENERGY 对该系统进行设计评估，并建立电池管理档案。

Customer shall provide detailed information of the BMS, including but not limited to its design, features, setting and data file format to DJENERGY for design review and record keeping.

9.3 未经 DJENERGY 同意，客户不可擅自修改或者改变电池管理系统的设计和框架，以免影响电池的使用性能。

The customer may not modify or change the design and framework of the battery management system without the consent of DJENERGY to affect the performance of the battery.

9.4 客户应保存完整的电池运转的监测数据，用作产品质量责任划分的参考。不具备完整的电池系统使用期限内的监测数据的，DJENERGY 不承担产品质量保证责任。

Customer shall maintain complete battery operation monitoring data for reference in the division of product quality responsibility. Without complete monitoring data for the life of the battery system, DJENERGY is not responsible for product quality assurance.

9.5 电池管理系统需满足以下最基本的检测和控制要求

The battery management system must meet the following basic test and control requirements.

序号 S.N.	项目 Item	规格 Spec	保护动作 Protections
9.5.1	充电终止 Stop charge	3.65V	终止充电 Stop charging
9.5.2	一级过充保护	3.7V	终止充电 Stop charging

	First level over charge protection		
9.5.3	二级过充保护 Second level over charge protection	3.8V	终止充电并锁定电池管理系统 Stop charge and lock the battery management system
9.5.4	放电终止 Stop discharge	2.5V ($>0^{\circ}\text{C}$)	终止放电 Stop discharge
9.5.5	一级过放保护 First level over discharge protection	2.4V ($\geq 0^{\circ}\text{C}$)	终止放电 Stop discharge
9.5.6	二级过放保护 Second level over discharge protection	2.0V ($\geq 0^{\circ}\text{C}$)	终止放电并锁定电池管理系统 Stop discharge and lock the battery management system
9.5.7	短路保护 Short circuit protection	不允许短路 Short circuit not allowed	断开电路 Circuit disconnection
9.5.8	过流保护 Over current protection	参考 5.4~5.7 Refer to 5.4~5.7	管理系统控制电流符合规格 Management system control current meets the specification
9.5.9	过热保护 Overheat protection	参考 5.3.3, 5.3.5 Refer to 5.3.3, 5.3.5	过热时终止工作 Stop working in case of overheating
9.5.10	充电时间过长保护 Long charging time protection	标准充电模式下, 充电时间在 3 小时内 In the standard charging mode, Charging completes within 3hours.	充电时间长于 3 小时, 则终止充电 If the charging time is longer than 3 hours, the charging will be terminated

备注: 以上 No.9.5.2、9.5.3、9.5.5、9.5.6 为警示条款, 提请客户注意: 当电池达到上述任何一项条款描述的指标和参数状态时, 意味着电池已超出本技术协议规定的使用条件, 客户需依“保护动作”及本技术协议其他相关规定对电池采取保护措施, 同时, DJENERGY 声明对上述使用状态的电池质量不承担任何保证责任, 并对因此而导致的客户及第三方的任何损失不予赔偿。

Note: The above No. 9.5.2, 9.5.3, 9.5.5, 9.5.6 are the warning clause, draw the attention of customers: When the battery reaches any of the terms described in the above, means that the battery has been used beyond the specifications, the customer shall take protective measures on the battery in accordance with the "protection action" and other relevant provisions of this specification. At the same time, the DJENERGY shall not take any responsibility for the damage in connection therewith.

9.6 避免电池到达过放状态。电池电压低于 2.0V 时, 电池内部可能会遭到永久性的损坏, 此时 DJENERGY 的产品质量保证责任失效。根据本技术协议第 4.8 条, 当实际放电截止电压低于标准放电



产品规格书 Product Specification

编号 No:PS-71173207-A02

版本 Rev. : A/0

时间 Date: 2024/09/18

页码 Page: 20

截止电压时，系统内部能耗降低到最小，并在重新充电之前延长休眠时间。客户需要培训使用者在最短的时间内重新充电，防止电池进入过放状态。

Avoid over discharge of the battery. If the battery voltage falls below 2.0V, there is a risk of permanent internal damage, which invalidates DJENERGY's warranty. According to Clause 4.8 of this technical agreement, when the actual discharge cut-off voltage is lower than the standard discharge cut-off voltage, the internal energy consumption of the system is reduced to a minimum and the sleep time is extended before recharging. The customer needs to train the user to recharge the battery in the shortest possible time to prevent the battery from over discharge.

9.7 单体电池，-30~45°C建议补电周期为3个月，45°C~60°C建议补电周期为1个月，实际存储SOC不得低于8%。存储周期不考虑BMS或其他除单体电池以外的自耗电影响。电池在存放过程中，建议每隔3个月将SOC调整为50%左右。

Single cells are recommended to have a recharge cycle of 3 months for -30~45 °C and 1 month for 45~60 °C. The actual stored SOC should not be lower than 8%. The storage period does not take into account the influence of BMS or other self consuming devices other than individual cells. It is recommended to adjust the SOC of the cells to around 50% every 3 months during storage.

9.8 电池避免在本技术协议禁止的低温条件下充电(包括标准充电，快充，紧急情况充电)，否则可能出现意外的容量降低现象。电池管理系统应依照最小的充电温度进行控制。禁止在低于本技术协议规定的温度条件下充电，否则 DJENERGY 不承担质量保证责任。

Batteries shall avoid charging at low temperatures prohibited by this Technical Agreement (including standard charging, fast charging and emergency charging), otherwise accidental capacity reduction may occur. Battery management system shall be controlled according to the minimum charging temperature. It is forbidden to charge under the temperature stipulated in this technical agreement. Otherwise, DJENERGY will not undertake the responsibility of quality assurance.

9.9 电箱设计中应充分考虑电芯的散热问题，由于电箱散热设计问题导致的电芯或电池过热损坏，DJENERGY 不承担质量保证责任。

The heat dissipation of the cells should be fully considered in the design of the battery system. Because of the overheating damage of the cells caused by the heat dissipation design of the battery system. DJENERGY will not be responsible for quality assurance.

9.10 电箱设计中应符合有关规范要求（防火、防水、防尘等）否则由此引发的电池损坏和系统风险 DJENERGY 不承担质量损失。

The design of the battery system should comply with the relevant specifications (anti-fire, anti-water, anti-dust, etc.), otherwise, DJENERGY does not bear the quality loss for the battery damage and system risk caused by.

10 运输及装卸要求 Transportation and Handling Requirements



产品规格书 Product Specification

编号 No:PS-71173207-A02

版本 Rev. : A/0

时间 Date: 2024/09/18

页码 Page: 21

10.1 在运输过程中不允许和易燃、易爆、易腐蚀的物品同车装运，大包装运输过程中禁止堆叠;产品不允许经受雨、雪或液体物质的淋袭与机械损伤;

It is not allowed to ship with inflammable, explosive and corrosive articles in the same vehicle during transportation, and stacking is prohibited during large package transportation; The product shall not be subjected to rain, snow or liquid substances and mechanical damage;

10.2 产品装卸时，须采用升降车或专用工具对产品进行上下车;要轻取轻放，不得扔掷、挤压，造成电池损坏或对人身体的意外伤害，严禁与酸碱等腐蚀物品放在一起。

When loading and unloading products, lift trucks or special tools shall be used to load and unload products; Handle with care, do not throw or squeeze, which may cause battery damage or personal injury. It is strictly prohibited to put it together with corrosive substances such as acid and alkali.

11 安全防范 Safety Precautions

11.1 禁止将电池浸入水中。

Immerse cells into water is prohibited.

11.2 禁止将电池与金属，如发夹、项链等一起运输或贮存。

It is forbidden to transport or store the cell with metal, such as hairpins, necklaces, etc.

11.3 禁止敲击或抛掷、踩踏和弯折电池等。

It is forbidden to knock or throw, step on, or bend the cell.

11.4 禁止直接焊接电池和用钉子或其他利器刺穿电池。

It is forbidden to directly weld the cell or pierce the cell with nails or other sharp objects

11.5 尽力保护电池，使其免受机械震动、碰撞及压力冲击，否则电池内部可能短路，产生高温和火灾。

Try to protect the battery from mechanical shock, collision and pressure impact. Otherwise,the battery may be short-circuited internally,resulting in high temperature and fire.

11.6 禁止在高温下（炙热的阳光下）使用或放置电池，否则可能会引起电池过热或功能失效、寿命减短。

It is forbidden to use or place the battery at a high temperature（under the hot sun）. Otherwise, the battery may overheat, fail to function, and its service life may be shortened.

11.7 禁止在强静电和强磁场的地方使用，否则易破坏电池安全保护装置，带来不安全的隐患。

It is forbidden to use it in places with strong static electricity and strong magnetic fields; otherwise it will easily damage the protection device of cell safety and bring potential for insecurity.

11.8 禁止将电池投入火中或长时间暴露在超过本技术协议第 5.3.3 条，第 5.3.5 条和第 4.7、4.8 条规定的温度条件的高温环境中，否则可能会导致火灾。在任何正常的充放电使用情况下，电芯温度不能超过 60°C，如果电芯温度超过 60°C，电池管理系统需关闭电池，停止电池运行。



产品规格书

Product Specification

编号 No:PS-71173207-A02

版本 Rev. : A/0

时间 Date: 2024/09/18

页码 Page: 22

Drop cells into fire or expose them to any high temperature environment exceeding operation temperature as set out in paragraphs 5.3.3、5.3.5&4.7、4.8 are forbidden, otherwise it may cause fire. At all use time, cell temperature should not exceed 60°C; if the temperature of the cell exceeds 60°C, the battery management system shall shut down the battery and stop the battery running.

11.9 禁止电池正负极短路，否则强电流和高温可能导致人身伤害或者火灾。在电池系统组装和连接时，应有足够的安全保护，以避免短路。

Do not short circuit the positive and negative battery terminals. Otherwise, strong current and high temperature may cause personal injury or fire. When the battery system is assembled and connected, adequate safety protection shall be provided to avoid short circuit.

11.10 严格按照标示和说明连接电池正负极，禁止反向充电。

Always connect cell terminals according to its label(s) in right polarity. Reverse charging is strictly prohibited.

11.11 禁止超过最大电流进行电池充电，和禁止电池过充。否则，可能引起电池过热和火灾事故的发生。在电池安装和使用中，硬件和软件需实行多重过充失效安全保护。最低保护要求见本技术协议第 9.5.1~9.5.6 条。

Do not charge the battery beyond the maximum current and do not overcharge the battery. Otherwise, it may cause battery overheating and fire accidents. In battery installation and use, hardware and software need to implement multiple overcharge failure safety protections. The minimum protection requirements are specified in Articles 9.5.1 to 9.5.6 of this technical agreement.

11.12 客户应将电池安全地固定在固体平面上，并将电源线安全地束缚在合适的位置，以避免摩擦而引起电弧和火花。

Products should be securely fixed to solid platform, and power cables should be securely attached by fastener to avoid intermittent contact which may cause arcing and sparks.

11.13 严禁用塑料封装电池或用塑料进行电气连接。不正确的电气连接方式可能会造成电池使用过程中发生过热现象。

Do not service cells and electrical connections within plastic package of cell. Improper electrical connection within a cell may cause overheating in service.

11.14 当电解液泄露时，应避免皮肤和眼睛接触电解液。如有接触，应使用大量的清水清洗接触到的区域并向医生寻求帮助。禁止任何人或动物吞食电池的任何部件或电池所含物质。

When the electrolyte leaks, skin and eye contact with the electrolyte should be avoided. In case of contact, a large amount of clean water should be used to clean the contact area and seek help from the doctor. It is forbidden for any person or animal to swallow any part or substance contained in the cell.

11.15 电池充电过程中可能发生不适当的终止充电现象。如:超出允许的充电时间充电，充电电压过高而终止充电或充电电流过强而终止充电。上述现象被定义为“不适当的终止充电”。当发生以上现象时，可能意味着电池系统出现漏电或某些部件出现故障。在没有找到根本原因并彻底解决之前继续对该电池充电可能会引起电池过热或发生火灾。当发生以上现象时，电池管理系统应该通过自动锁定功能，禁止后续的充电，并提醒使用者将装载有该电池的交通工具退回到经销商处进行系统维护。该电池只有经过有认证资格的技术人员全面检查，确定根本原因并彻底解决、改善后方可恢复充电。

When cells charging is terminated improperly for reasons such as exceeding allowable charging time, cut-off due to exceeding charging voltage or cut-off due to exceeding charging current, all these events are defined as “improper charge termination”. Such event may indicate that there is current leaking within a battery system or some components have started to malfunction and subsequent charging of such battery system without finding and fixing root cause of problem may cause potential overheat or fire hazards. When such event occurs, the BMS should lock itself up to prevent subsequent charging and notice should be given to the user to return the vehicle to dealer for servicing. Subsequent charging should only be resumed after the system has been thoroughly checked by qualified technician who can identify and fix root cause attributed to the “improper charge termination”.

11.16 在进行滥用测试实验时如操作不当可能会引起电池起火或者爆炸。该测试实验只能由配备适当的防护装备的专业人员在专业的实验室进行。否则，可能会导致严重的人身伤害和财产损失。

Battery fire or explosion may be caused by improper operation during abuse test. The test can only be carried out in a professional laboratory by professionals equipped with appropriate protective equipment. Otherwise, it may lead to serious personal injury and property loss.

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

If the cell emits peculiar smell, heat, discoloration, deformation, or any abnormality during use, storage, or charging, immediately remove the cell from the device or charger and stop using it.

11.18 未经 DJENERGY 书面同意，禁止私自拆解产品。

No unauthorized dismantling of products without written consent of DJENERGY.

12 免责声明 Disclaimer

12.1 如果由于产品需求单位或使用者不按本说明书中的规定进行使用，DJENERGY 不再承担产品质量保证责任及由此引起的损失赔偿等一切相关责任。因前述行为，对 DJENERGY 的声誉造成负面影响的，DJENERGY 保留追究产品需求单位法律责任权利。

If the product demand unit or user does not use the product in accordance with the provisions of this manual, DJENERGY will no longer bear all relevant responsibilities such as product quality assurance liability and loss compensation caused thereby. In case of any negative impact on DJENERGY's reputation due to the above-mentioned acts, DJENERGY reserves the right to investigate the legal liability of the product demand unit.

12.2 DJENERGY 保留对产品的规格及性能参数修改的权利。买方在订购 DJENERGY 产品前，需要与 DJENERGY 提前确认产品的最新状态。

DJENERGY reserves the right to modify the specifications and performance parameters of the product.

Before ordering DJENERGY products, the buyer needs to confirm the latest status of the products in advance with DJENERGY.

13 保密协议 Confidentiality agreement

客户应对合作内容高度保密，未经 DJENERGY 许可，不得向第三方透露规格书的任何内容，否则，将依照相关法律追究责任。

Customer shall keep the cooperation content highly confidential. Without the permission of DJENERGY, Customer shall not disclose any content of the technical agreement to a third party. Otherwise, Customer will be held responsible according to relevant laws.

14 风险警告 Risk Warning

14.1 警示声明 Waring statement

警告

电池存在潜在的危險，在操作和维护时必须采取适当的防护措施！

不正确地滥用测试实验，可能导致严重的人身伤害和财产损失！

必须使用正确的工具和防护装备操作电池。

电池的维护必须由具有电池专业知识并经过安全培训的人士执行。

不遵守上述警告可能造成多种灾难。

电池的使用和储存需要符合规范要求，否则会给电池带来不可逆伤害，甚至引发风险。

CELLS ARE POTENTIALLY DANGEROUS AND PROPER PRECAUTIONS MUST BE OBSERVED IN HANDLING AND MAINTENANCE.

RUNNING TESTS ON THE CELLS IMPROPERLY MAY RESULT IN SEVERE PERSONAL BODY INJURY OR PROPERTY DAMAGES.

WORK ON CELLS MUST BE PERFORMED ONLY WITH PROPER TOOLS AND PROTECTIVE EQUIPMENT MUST BE USED.

CELL MAINTENANCE MUST BE CARRIED OUT BY PERSONNEL KNOWLEDGEABLE OF CELLS AND TRAINED IN THE SAFETY PRECAUTIONS INVOLVED.

FAILURE TO OBSERVE THE ABOVE MAY CAUSE VARIOUS HAZARDS.

CELL USE AND STORAGE REQUIRES COMPOSITE SPECIFICATION REQUIREMENTS, OTHERWISE IT WILL CAUSE IRREVERSIBLE DAMAGE TO THE CELL, EVEN RAISES RISKS.

14.2 危险类型: Types of Hazards

客户知悉在电池使用和操作过程中存在以下潜在的危險:

	产品规格书 Product Specification	编号 No:PS-71173207-A02
		版本 Rev. : A/0
		时间 Date: 2024/09/18
		页码 Page: 25

Customer acknowledges the following potential hazards in connection with the usage and handling of the Products:

14.2.1 操作者在操作时可能会受到化学品、电击或者电弧的伤害。尽管人体对遭受直流电与交流电的反应不同，但是高于 50V 的直流电压与交流电对人体的伤害是同样严重的，因此客户必须在操作中采取保守的姿势以避免电流的伤害。

Working with battery can expose the handler to chemical, shock and/or arcing hazards. Although a person's body might react to contact with direct current voltage differently than from contact with alternate current voltage, Customer shall take a conservative position and consider the risk of shock or electrocution to be the same for both alternate current and direct current exposures greater than 50V.

14.2.2 存在来自电池中的电解液的化学风险。

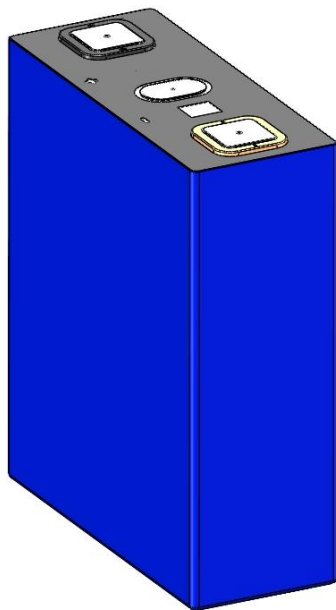
Cells expose its handler to chemical hazards associated with the electrolyte used in the cell.

14.2.3 在操作电池和选择个人防护装备时，客户及其雇员必须考虑到以上潜在的风险，防止发生意外短路，造成电弧、爆炸或热失控。

When selecting work practices and personal protective equipment, customer and its employees should consider potential exposure to these hazards and therefore prevent accidental short-circuit that can result in electrical arcing, explosion, and/or "thermal runaway" of the cells.

15 附录 Appendix

15.1 电芯外观图 Cell Outside View Drawing



15.2 电芯尺寸图 Cell Dimension Drawing

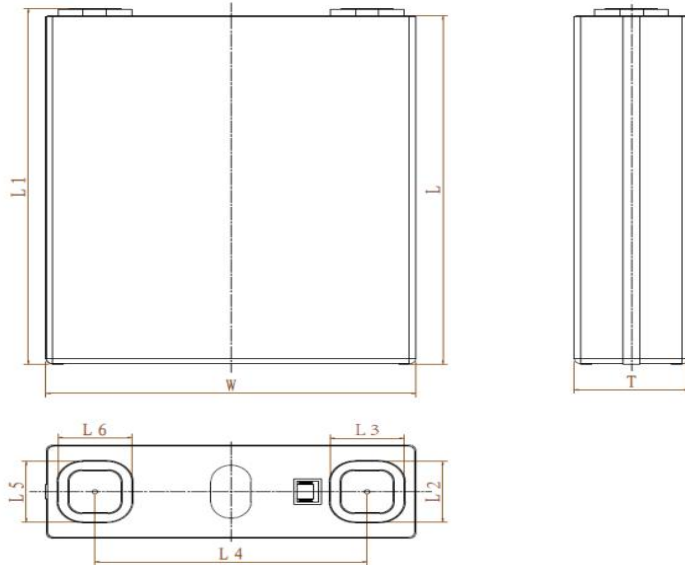


表 9 电芯尺寸

Table 9 Cell Dimension

序号 No.	名称 Name	尺寸参数 Dimension Parameters
1	T	71.8±1.0mm
2	W	173.8±0.8mm
3	L	204.8±0.8mm
4	L1	207.8±0.8mm
5	L2=L3=L5=L6	34.7±0.5mm
6	L4	123.0±0.5mm

备注:

- 极柱允许焊接熔深 $\leq 2.0\text{mm}$ ，正负极柱承受扭力 $\geq 10\text{Nm}$
The welding penetration depth of the pole is allowed to be $\leq 2.0\text{mm}$, and the positive and negative pole can withstand a torque of $\geq 10\text{Nm}$
- 电芯尺寸测量时厚度方向施加 $300\pm 30\text{kgf}$ 压力。
 $300\pm 30\text{kgf}$ pressure is applied in the thickness direction during the measurement of cell size.
- 电芯表面绝缘性：绝缘测试压力 $300\pm 30\text{kgf}$ ，AC1500V，漏电流 $\leq 10\text{mA}$ 。
Cell surface insulation, test pressure $300\pm 30\text{kgf}$, AC1500V, leakage current $\leq 10\text{mA}$.
- 正常工况下，正极柱与铝壳电压差为 $0\sim 1000\text{mv}$ ，负极柱与铝壳电压差为 $1500\sim 3650\text{mv}$ ，通常情况下，正极柱与铝壳之间存在的电压差可忽略不计。
Under normal working conditions, the voltage difference between the positive column and the aluminum shell is $0\sim 1000\text{mv}$, and the voltage difference between the negative column and the aluminum shell is $1500\sim 3650\text{mv}$. Under normal circumstances, the voltage difference between the positive column and the aluminum shell is negligible.