



PRODUCT SPECIFICATION
产品规格书

DOC NO. : PS-RD-0005
REV. : A2
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产品规格书 PRODUCT SPECIFICATION

可充电钠离子电池 Rechargeable Sodium Ion Battery

型号 Type: SIB 50160118-NFPP 60Ah

Prepared by RD 技术开发编制	Approved by RD 技术开发审核	Approved by PE 工艺工程审核	Approved by QA 品质审核	Approved by RD 技术开发批准

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	日期 Date:	
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更新记录

版本 Revision	描述 Description	日期 Date	承认 Approval
A0	新版本 Original Release		
A1	更新内阻值 Update the impedance		
A2	更新平台电压 Update the platform voltage		



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客户要求 Customer Inquiry

型号 Model: SIB 50160118-NFPP 60Ah

客户根据终端产品使用需求提出对电芯的需求并与维科沟通，如客户有一些特别的应用或者操作条件不同于此文件中所描述的，维科可以根据客户的特别要求进行产品的设计和生产。

The Customer is requested to write down your information and contact Veken in advance, if and when the Customer needs applications or operating conditions other than those described in this document. Veken could design and build such products according to your special request.

编号 No.	特殊要求 Special Request	标准 Criteria
1		
2		
3		
4		
5		

客户代码 Company code: _____ 签字 Signature: _____ 日期 Date: _____



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术语定义 Definition and Note

术语 Term	定义 Definition
产品 Product	本规格书中的“产品”是指维科生产的 60Ah、2.85V 可充电钠离子电池。 This product specification is just applied to the 2.85V/60Ah rechargeable sodium ion cell produced by Veken.
客户 Custom	指《维科产品销售合同》中的买方。 The buyer in the sale contract.
维科 Veken	指《维科产品销售合同》中的卖方 The seller in the sale contract.
环境温度 Ambient temperature	电池所处的周围环境温度。 The temperature of the air surrounding a cell.
电池管理系统 Battery manager system	客户用于监测和记录产品在整个服务期限内的运行参数的一种有效的追踪和控制系统。其追踪和记录的参数包括但不限于电压、电流、温度等，以控制产品的运行并确保产品运行环境及运行条件符合本规格书的规定。 A tracking and controlling device integrating with hardware and software, which is used to monitor and record operating data in battery service life. The parameters consist of voltage, current, temperature and so on. The device can control the operating state of battery and keep the working surrounding and condition meeting the requirements of this specification.
电芯温度 Cell temperature	由接入电池的温度传感器测量的电芯的温度。 Surface temperature of a cell measured by temperature sensor.
新电池状态 Fresh cell status	指电池下线日期开始算起 7 天范围内的状态。 Within 7 days after being off-line.
充/放电倍率 C-Rate	充/放电功率与电池额定充/放电功率的比值。 The ratio of charge/discharge power to rated charge/discharge power
循环 Cycle	电池按规定的充放电制度充放一次为一个循环。 One sequence of charge and discharge as prescribed.
生产日期 Manufacture date	电池的制造日期。每个电池的顶盖激光打码处标识了明确的制造日期。 The date when the cell was manufactured, which is clearly printed by laser on the top cap.
开路电压 Open-current voltage	没有接入任何负载和电路时测得的电池的电压。 The voltage between the battery terminals with no load applied.
额定功率 Rated power	在本规格书试验条件和试验方法下，电池可持续工作一定时间的功率，包括额定充电功率 P_{rc} 、额定放电功率 P_{rd} 。 Under the test conditions and test methods in this specification, the battery can work continuously for a certain period of time, including rated charge power (P_{rc}), rated discharge power (P_{rd})



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能量效率 Energy efficiency	在本规格书试验条件和试验方法下，电池的放电能量与充电能量的比值，用百分数表示。 Under the test conditions and test methods in this specification, the ratio of discharge energy to charge energy of the battery is expressed as a percentage.
标称容量 Nominal capacity	电池的标称容量是指在一定的放电条件下，电池应该放出的最小容量。 The nominal capacity of battery is the minimum capacity under certain discharge conditions.
额定充/放电能量 Rated charging/ discharging energy	按照本规格书所列的充/放电条件下，初始化充/放电的电池以额定充/放电功率充/放电至终止电压时的充/放电能量。 Under the charge/discharge conditions in this specification, the charging/discharging energy of the battery is charged/discharged from nominal charging/discharging power to the termination voltage.
初始充/放电能量 Initial charging/ discharging energy	按照本规格书所列的充/放电条件下所测得的充/放电能量，循环 3 次，取平均值。 The energy measured according to the charge and discharge procedure listed in this specification. The cell should be cycled 3 times, and select the averaged value as the initial capacity.
能量恢复率 Recovery rate of energy	电池储存后，在本规格书试验条件和试验方法下测得的充电能量、放电能量分别与初始充电能量、初始放电能量的比值，用百分数表示。 After storage, the ratio of the charging energy and discharging energy of the battery to the initial charging energy and initial discharging energy is expressed as a percentage under the test conditions and test methods in this specification.
供货协议 Supplier agreement	维科和客户共同签订的有关本规格书产品的交易条款。 The terms of the transaction between Veken and the customer regarding the products of this specification.
荷电状态 (SOC) State of charge	任意状态下，电池荷电量与电池最大荷电能力的比值。如：若将容量为 60Ah 的状态视为 100% SOC，则容量为 0Ah 时，SOC 为 0%。 An expression of the present battery capacity as a percentage of maximum capacity. For example, if the SOC is defined as 100% when the remaining capacity is 60 Ah, the state of 0 Ah is regarded as 0% SOC.
温升 Temperature rising	规格书规定的条件下，充电或者放电前后电芯表面温度差。 The surface temperature difference between the cells before and after charging or discharging.
测量单位 Measurement unit	“V” (Volt) 伏特 (V)，电压单位 voltage unit “A” (Ampere) 安培 (A)，电流单位 current unit “W” (Ampere) 瓦特 (W)，功率单位 power unit “Ah” (Ampere-hour) 安培-小时 (Ah)，容量单位 capacity unit “Wh” (Watt-hour) 瓦特-小时 (Wh)，能量单位 energy unit “Ω” (Ohm) 欧姆 (Ω)，电阻单位 resistance unit



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"mΩ" (milliohm) 毫欧 (mΩ), 电阻单位 resistance unit
"°C" (degree Celsius) 摄氏度 (°C), 温度单位 temperature unit
"mm" (millimeter) 毫米 (mm), 长度单位 length unit
"s" (second) 秒 (s), 时间单位 time unit
"Hz" (Hertz) 赫兹 (Hz), 频率单位 frequency unit

1. 适用范围 Scope

本规格书详细描述了维科生产的 60Ah 可充电钠离子电池的产品性能指标、产品使用条件及风险警示。

This specification describes in detail the performances, conditions of use and risk warnings for 60Ah rechargeable sodium ion battery produced by Veken.

2. 产品性能指标 Cell Performance

除非其它规定, 测试应在到货之日起 1 个月内进行, 并且符合以下测试条件:

Unless otherwise stated, tests should be carried out within one month of delivery under the following conditions:

相对湿度 Relative humidity: 65±20%

环境温度 Ambient Temperature: 25±2°C

大气压力 Barometric pressure: 86 ~ 106 kPa

2.1 概要 General

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition
2.1.1	电芯容量 Nominal capacity	60Ah	25±2°C, 0.5C 放电电流 25±2°C, 0.5C discharge current
2.1.2	工作电压 Operating voltage	1.5V~3.5V	
2.1.3	平台电压 Platform voltage	2.85V	25±2°C, 0.5C discharge current
2.1.4	电池内阻 Impedance(1KHz)	≤0.50mΩ	25±2°C, 新电池 38%SOC 状态 25±2°C, BOL,38%SOC
2.1.5	出货状态 Shipping status	38%的充电状态 38%SOC	N.A.
2.1.6	工作温度(充电) Operating temperature (charging)	0°C < T ≤ 15°C	0.2C CC to 80%SOC,CV to 0.05C
		15°C < T ≤ 45°C	0.5C CC to 100%SOC ,CV to 0.05C
		45°C < T ≤ 55°C	0.5C CC to 80%SOC,CV to 0.05C
2.1.7	工作温度(放电) Operating temperature (discharge)	-40°C ≤ T < -20°C	0.5C
		-20°C ≤ T < 0°C	1C
		0°C ≤ T < 15°C	1.5C
		15°C ≤ T < 30°C	2C
		30°C ≤ T < 45°C	1C
		45°C ≤ T < 60°C	0.5C
2.1.8	电池重量 Weight	≤1.8kg	N.A.
2.1.9	电池尺寸 Cell dimension	请参考本规格书第 9 条 Refer to section 9 of this specification	N.A.



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2.1.10	温升 Temperature rising	$\leq 8^{\circ}\text{C}$	25 $\pm$ 2 $^{\circ}\text{C}$, 0.5C 充放电 25 $\pm$ 2 $^{\circ}\text{C}$, 0.5C discharge/charge current
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2.2 充电模式/参数 Charging mode/Parameters

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition
2.2.1	标准充电电流 Standard charge current	0.5C	25 $\pm$ 2 $^{\circ}\text{C}$
2.2.2	标准充电电压 Standard charge voltage	单体电池最大电压 3.5V Cell max. voltage 3.5V	25 $\pm$ 2 $^{\circ}\text{C}$
2.2.3	最大充电可持续电流 Maximum charge current (continuous)	1C	25 $\pm$ 2 $^{\circ}\text{C}$
2.2.4	标准充电模式 Standard charge mode	0.5C CC to 3.50V, CV 0.05C	
2.2.5	标准充电温度 Standard charge temperature	25 $\pm$ 2 $^{\circ}\text{C}$	N.A.
2.2.6	绝对充电温度 Absolute charge temperature (Cell temperature)	0~55 $^{\circ}\text{C}$	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。 Stop charging once cell temperature is out of this range regardless of the charging mode adopted.
2.2.7	绝对充电电压 Absolute charge voltage	最大 3.5V Max. voltage 3.5V	无论电芯处在何种充电模式包括再生充电状态，一旦发现电芯电压超过绝对充电电压范围即停止充电。 Stop charging once voltage exceeds this voltage regardless of the charging mode (including regeneration) adopted.

2.3 放电模式/参数 Discharging mode/Parameters

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition /Note
2.3.1	标准放电电流 Standard discharge current	0.5C	25 $\pm$ 2 $^{\circ}\text{C}$
2.3.2	最大持续放电电流 Maximum discharge current (continuous)	5.0C	N.A.
2.3.5	放电截止电压 Discharge cut-off voltage	1.5V	
2.3.6	标准放电温度 Standard discharge temperature	25 $\pm$ 2 $^{\circ}\text{C}$	N.A.
2.3.7	绝对放电温度 Absolute	-40~60 $^{\circ}\text{C}$	若电芯温度不在绝对放电温度区间范围，则停止放



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discharge temperature
(Cell temperature)

电。 Stop discharging once cell temperature is out of this range regardless of the discharging mode adopted.

2.4 倍率性能 Discharge performances at different discharge rates

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition /Note
2.4.1	1.0C 放电性能 Discharge performance at 1.0C	1.0C 放电容量/标准放电容量 $\geq 95\%$ 1.0C discharging capacity/standard discharging capacity $\geq 95\%$ 1.0C 放电能量/标准放电能量 $\geq 90\%$ 1.0C discharging energy /standard discharging energy $\geq 90\%$	新电池状态, $25\pm 2^{\circ}\text{C}$, 标准充电, 1.0C 放电至 1.5V BOL, $25\pm 2^{\circ}\text{C}$, standard charge and discharge at 1.0C.

2.5 不同温度放电性能 Discharge performances of different temperature

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition /Note
2.5.1	25℃的容量 Capacity at 25℃	$\geq 60\text{Ah}$	新电池状态, $25\pm 2^{\circ}\text{C}$, 标准充放电。 BOL, $25\pm 2^{\circ}\text{C}$, standard charge and discharge.
2.5.2	45℃的容量 Capacity at 45℃	$\geq 60\text{Ah}$	新电池状态, $25\pm 2^{\circ}\text{C}$ 标准充电, $45\pm 2^{\circ}\text{C}$ 标准放电。 BOL, standard charge at $25\pm 2^{\circ}\text{C}$, standard discharge at $45\pm 2^{\circ}\text{C}$.
2.5.3	-20℃的容量 Capacity at -20℃	$\geq 54\text{Ah}$	新电池状态, $25\pm 2^{\circ}\text{C}$ 标准充电, $-20\pm 2^{\circ}\text{C}$ 标准放电。 BOL, standard charge at $25\pm 2^{\circ}\text{C}$, standard discharge at $-20\pm 2^{\circ}\text{C}$.
2.5.4	-40℃的容量 Capacity at -40℃	$\geq 45\text{Ah}$	新电池状态, $25\pm 2^{\circ}\text{C}$ 标准充电, $-40\pm 2^{\circ}\text{C}$ 标准放电。 BOL, standard charge at $25\pm 2^{\circ}\text{C}$, standard discharge at $-40\pm 2^{\circ}\text{C}$.

3. 存储和循环性能 Storage and Cycle Performance

编号 No.	参数 Parameter	产品规格 Specification	条件 Condition
3.1	常温存储性能 Storage performance	剩余容量 $\geq 95\%$ 可恢复容量 $\geq 97\%$ Cap. Retention $\geq 95\%$ Cap. Recovery $\geq 97\%$	标准充电到 100%SOC, $25\pm 2^{\circ}\text{C}$ 温度储存 28 天 Standard charge to 100% SOC, storage at $25\pm 2^{\circ}\text{C}$ for 28 days, standard discharge at $25\pm 2^{\circ}\text{C}$.
3.2	高温存储性能 Storage performance	剩余容量 $\geq 85\%$ 可恢复容量 $\geq 90\%$ Cap. Retention $\geq 85\%$ Cap. Recovery $\geq 90\%$	标准充电到 100%SOC, 60°C 满电存储 7 天 Standard charge to 100% SOC, storage at $60\pm 2^{\circ}\text{C}$ for 7 days, standard discharge at $25\pm 2^{\circ}\text{C}$.



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3.3	循环寿命 Cycle life	≥6000 次@100%DOD ≥6000 cycles@100%DOD	25±2℃, 0.5C/0.5C, 100%DOD, 上夹具, 300±50Kgf (扭矩 9N.m±0.5) 初始压力下, 循环后最终放电容量≥80%*标称容量 25±2℃, 0.5C/0.5C, 100%DOD 300±50Kgf (Torque 9N.m±0.5) preload, Final discharge Capacity≥80% *nominal Capacity 备注: 充放电结束后的静置时间要不小于 30min; Remark: The rest time after charging (or discharging) should not be less than 30min
		≥8000 次@90%DOD ≥8000 cycles@90%DOD	25±2℃, 0.5C/0.5C, 90%DOD, 上夹具, 300±50Kgf (扭矩 9N.m±0.5) 初始压力下, 循环后最终放电容量≥80%* (标称容量*90%) 25±2℃, 0.5C/0.5C, 90%DOD 300±50Kgf (Torque 9N.m±0.5) preload, Final discharge Capacity≥80% * (nominal Capacity*90%) 备注: 充放电结束后的静置时间要不小于 30min; Remark: The rest time after charging (or discharging) should not be less than 30min

4. 安全与可靠性 Safety and Reliability

本产品符合国家标准 GB/T 44265-2024 要求。

This product meets the requirements of GB/T 44265-2024.

4.1 安全性能 safety performance

编号 No.	项目 Item	标准 Standard	测试方法 Testing method
4.1.1	过放电 Over Discharge	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.2	过充电 Over Charge	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.3	短路 Short Circuit	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.4	加热 Hot box	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.5	挤压 Crush	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.6	跌落 Drop test	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.7	热失控测试 Thermal runaway test	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024
4.1.8	低气压测试 Low pressure test	不起火、不爆炸 No fire, no explosion	参照 GB/T44265-2024 Reference to GB/T44265-2024



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5. 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：

Client shall ensure that the following application conditions in connection with the Products are strictly observed:

5.1 客户应在使用中的每个产品附近安装合理数量的热传感器，以感应和测量电池温度。客户应使用该传感器在电池的整个使用寿命内监测和记录电池温度。电池温度是决定客户是否有权根据合同获得维科保证的关键参数。

5.1 A reasonable number of thermal sensors shall be installed by client in proximity each product in use to sense and measure cell temperature. Client shall make use of this sensor to monitor and record cell temperature throughout the entire service life of such cell. The cell temperature is a critical parameter for determining whether client shall be entitled to Veken's warranties under the contract.

5.2 客户应配置电池管理系统，严密监控、管理与保护每个电池。

5.2 Customers should configure battery management system to closely monitor, manage and protect each cell.

5.3 客户应向维科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，以供维科对该系统进行设计评估，并建立电池管理档案。

5.3 Customers should provide Veken with detailed design scheme, system characteristics, framework, system data, format and other relevant information of the battery management system, ensuring Veken can be evaluated of the system and establish battery management files.

5.4 未经维科同意，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。

5.4 Without Veken's consent, customers should not modify or change the design and framework of the battery management system to avoid affecting the performance of cells.

5.5 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，维科不承担产品质量保证责任。

5.5 Customers should keep complete battery operation monitoring data for the reference of product quality responsibility division. Veken does not assume responsibility for the design of a complete battery system without monitoring data during lifetime.

5.6 若预计将电池存放 30 天以上的，应将 SOC 调整为 50%左右。50%SOC 存储三个月后，应做一次充放电调整 SOC 到 50%。50%SOC 存储超过 6 个月不做一次充放电维护将造成不可逆容量损失 4%左右。50%SOC 存储超过 9 个月不做充放电维护对电池造成的容量损失或其他缺陷维科将不承担质量保护责任。

5.6 If the cell is expected to be stored for more than 30 days, the SOC should be adjusted to about 50%. After three months of 50% SOC storage, should be charged and discharged once, be adjusted to about 50%SOC. 50% SOC storage lasts for more than 6 months, irreversible capacity loss will be about 4% without charge-discharge maintenance. If 50% SOC storage exceeds 9 months without charge and discharge maintenance, Veken will not be responsible for quality protection due to capacity loss or other defects.

5.7 电池避免在本规格书禁止的低温条件下充电(包括标准充电，快充，紧急情况充电和再生充电)，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和再生充电温度进行控制。禁止在低于本规格书规定的温度条件下充电，否则，维科不承担质量保证责任。

5.7 Avoid charging under low temperature conditions in this specification (including standard charge, quick charge, emergency charge and regenerative charge), otherwise unexpected capacity reduction may occur. The battery management system should control charging according to the minimum charge and regenerative recharge temperature. It is forbidden to charge under this situation which the temperature is lower than the specified value in this specification. Otherwise, Veken will not be responsible for quality assurance.

5.8 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，维科不承担质量保证责任。

5.8 In the design of the battery box, the heat dissipation of cell should be fully considered. For the damage of cell or



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battery due to the heat dissipation design problem of the battery box, Veken will not be responsible for quality assurance.

5.9 电箱设计中应充分考虑电芯的防水、防尘问题，电箱必须满足国家有关标准规定的防水、防尘等级。由于防水、防尘问题而导致的电芯或电池的损坏（如腐蚀、生锈等），维科不承担质量保证责任。

5.9 The waterproof and dustproof protection should be fully considered in the design of the battery box. Battery box must meet the relevant national standards of waterproof and dustproof grade. For the damage of the cell or battery caused by the problems of waterproof and dustproof (such as corrosion, rust, etc.), Veken will not be responsible for quality assurance.

5.10 禁止不同 P/N 料号电芯在同一电池系统（或整车）中混用，否则，维科不承担质量保护责任。

5.10 It is forbidden to mix different P/N products in the same battery system (or vehicle), otherwise Veken will not be responsible for quality protection.

6. 安全防范 Safety Precautions

6.1 禁止将电池浸入水中。Do not immerse the cell into water.

6.2 禁止将电池投入火中或长时间暴露在超过本规格书的温度条件的高温环境中，否则可能会导致火灾。在任何正常的使用，存储情况下，电芯温度不能超过 55℃，如果电池中电芯温度超过 55℃，电池管理系统需关闭电池，停止电池运行。

6.2 It is prohibited to put the cell into fire or expose it for a long time to a high temperature environment beyond the temperature conditions specified in this specification, otherwise it may cause fire. In any normal use, the temperature of the cell in the battery should not exceed 55℃. If the temperature of cell in pack exceeds 55℃, the battery management system should shut down the battery and stop the operation of the battery.

6.3 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。由于电池的正负极暴露于塑料保护套中，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。

6.3 Do not short between the positive and negative terminal, otherwise the high current and high temperature may cause personal injury or fire. As the positive and negative of the cell are exposed to the plastic cover, safety protection should be provided when the battery system is assembled and connected to avoid short circuit.

6.4 严格按照标示和说明连接电池正负极，禁止反向充电。

6.4 Connect the positive and negative of the cell in strict accordance with the label and instructions. Reverse charging is prohibited.

6.5 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。最低保护要求见本规格书第 5.6 条和第 6.11 条。

6.5 Do not overcharge, otherwise, it may cause overheating and fire accident. During cell installation and use, the hardware and software should be protected from multiple overcharge failures. Basic protective requirements are in 5.6 and 6.11.

6.6 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。

6.6 Customers should secure the cell to a solid surface and secure the power cord to an appropriate position to avoid friction that may cause arc and spark.

6.7 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。

6.7 It is strictly forbidden to use plastic to encapsulate or electrical connection of cell. Incorrect electrical connection may cause overheating during battery use.

6.8 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。

6.8 Skin and eye contact should be avoided when electrolyte leakage occurs. If contact, wash the area with water and seek medical help. No person or animal is allowed to swallow any part or substance of the cell.

6.9 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。



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6.9 Try to protect the cell from mechanical vibration, collision and mechanical shock, otherwise the cell may short, causing high temperature and fire.

6.10 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系统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。

6.10 Improper charge stopping may occur during cell charge process. Such as: beyond the allowed charge time, charge voltage is too high or charge current is too high. The phenomenon is defined as "Improper charge stopping". When the above phenomenon occurs, it may mean that there is leakage of electricity in the battery system or a failure of some components. Continuing to charge the battery before the root cause is found and completely resolved may cause the battery to overheat or fire. In the event of any of the above, the battery management system should disable subsequent charge through an automatic lock function and remind the user to return the battery system to the dealer for system maintenance. The battery can only be recharged after a thorough inspection by a qualified technician to determine the root cause and thoroughly solve and improve it.

6.11 电芯测试实验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。

6.11 Improper operation of the cell test may cause fire or explosion. The test should only be carried out by professional personnel equipped with appropriate protective equipment in a professional laboratory. Otherwise, may result in serious injury and property damage.

8.12 严禁使用没有 BMS 或类似系统的电池。

8.12 It is strictly prohibited to operate the battery without a BMS or similar system.

7. 免责声明 Disclaimer

7.1 如果由于产品需要单位不按本规格书中的规定进行使用，造成社会性影响，并对维科的声誉造成影响的，维科将会追究需求单位的责任。根据对维科造成的影响程度，产品需求单位需向维科提供赔偿。

7.1 If product requesting units don't comply with the instructions in this specification, causing social impact and affecting the reputation of Veken, Veken will hold product requesting units responsible., Veken will hold the demander accountable. According to the degree of impact on Veken, product requesting units must provide compensation to Veken.

7.2 维科保留对产品的规格及性能参数修改的权利。买方在订购维科产品前，需要与维科提前确认产品的最新状态。

7.2 Veken reserves the right to modify the specifications and performance parameters of the product. The buyer needs to contact Veken to confirm the latest status in advance before ordering the product.

7.3 英文规格释义仅供参考，请以中文版技术规格要求为准。

7.3 English specifications are for reference only, please refer to the Chinese technical specifications.



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8. 风险警告 Warning and risks

8.1 警示声明 Warning 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！不正确地操作本产品标准所描述的充放电测试实验，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。

Warning

The cell has potential dangerous, proper protection must be taken during operation and maintenance. Improper operation of the charge and discharge test described in this product standard may result in serious personal injury and property loss! Proper tools and protective equipment must be used to operate the cell. Cell maintenance must be performed by a person with battery expertise and safety training. Failure to comply with the above warnings can lead to multiple disasters.

8.2 危险类型：Types of risks

客户知悉在电池使用和操作过程中存在以下潜在的危險：

Customers are aware of the following potential risks during battery use and operation:

8.2.1 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。

8.2.1 The operator may be injured by chemicals, electric shocks, or electric arcs during operation. Although the human body reacts differently to exposure to direct current and alternating current, damage to the human body from DC voltage higher than 50V is as serious as alternating current, so customers must adopt a conservative posture during operation to avoid current damage.

8.2.2 存在来自电池中的电解液的化学风险。

8.2.2 There is a chemical risk from the electrolyte in the cell.

8.2.3 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。

8.2.3 When operating cell and selecting personal protective equipment, customers and their employees must consider the above potential risks in order to prevent accidental short circuit that could cause electric arc, explosion, or thermal runaway.

9. 电芯尺寸 Mechanical Drawing

