100Ah 产品规格书

Product Specification of 100Ah Cell

电芯型号 Cell Model：__001CB270__

电芯容量 Cell Capacity：__100Ah__

产品设计准备	产品设计审批	销售审批	项目工程审批	品质保证审批	产品经理审批
Yang Longfei	Zheng Xianfeng	Liu Yuxiang	Deng Kai	Wan Piaopiao	Wang Xu

客户确认	签名	日期
	客户代码：	
	公司印章：	

修改记录

AMENDMENT RECORDS

Rev.	ECN No.	Effective Date	Author	Description of Revision
1.0		2019/09/02	Yang Longfei	New release

目录 Content

0 术语定义 Definitions

术语 Terms	定义 Definition
产品 Product	本技术协议中的“产品”是指 CATL 生产的 100Ah 3.2V 储能用磷酸铁锂电池。 Means the 100Ah 3.2V lithium ion cells for energy storage system produced by CATL
客户 Customer	指《CATL 产品销售合同》中的买方 The customer in the 《CATL product sales contract》
CATL	宁德时代新能源科技股份有限公司 Contemporary Amperex Technology Co. Limited
PN	为了区别电池应用于不同的使用区域或不同的应用条件下，CATL 为 100Ah 3.2V 可充电锂电池定义的物料编号。 In order to distinguish the battery application in different areas or under different application conditions, the material number defined by CATL is 100Ah 3.2V rechargeable lithium battery.
周围环境温度 Ambient Temperature	电池所处的周围环境温度。 Means the ambient air temperature of the environment to which the Products are exposed;
电池管理系统 （BMS）	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技术协议的规定。 Means an active tracking and control system to be developed and implemented by CATL to monitor and record the operating parameters, including but not limited to voltage, current and temperature, of each Product in its entire service life, and to control the operation of each Product to ensure a safe operation of Product.
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，成组在电池系统中温度为连接片温度。 The temperature of the core measured by the temperature sensor connected to the battery is the temperature of the connecting chip in groups in the battery system
新电池状态 Fresh State	是指电池自产品的制造日期算起 7 天以内的状态。 Means the state within 7 days after production
充电倍率 C-Rate	充电电流与电池管理系统多次测量的电池的容量值的比率。例如：电池容量为 100Ah，充电电流为 20A 时，则充电倍率为 0.2C；当电池容量衰减为 80Ah，充电电流为 16A 时，则充电倍率为 0.2C。 The ratio of charging current to the capacity of batteries measured repeatedly by the battery management system. For example, when the battery capacity is 100Ah and the charging current is 20A, the charging rate is 0.2C; when the battery capacity is attenuated to 80Ah and the charging current is 16A, the charging rate is 0.2C.
放电倍率 D-Rate	放电电流与电池管理系统多次测量的电池的容量值的比率。例如：电池容量为 100Ah，放电电流为 20A 时，则放电倍率为 0.2C； Means the ratio of charging current to the latest cell capacity as frequently measured by the BMS. For example, the initial cell capacity is 100 Ah and a Charge C-Rate of 0.2C equals to a charge current of 20A.
循环 Cycle	电池按规定的充放标准充放一次为一个循环。充电可以由一些部分充电组合在一起形成。放电可以由一些部分放电组合在一起形成。 Batteries are charged and discharged once in a cycle according to the prescribed charging and discharging standards. Charging can be formed by combining some parts of the charge. Discharge can be formed by combining some partial discharges.
生产日期 Production date	电池的制造日期，每个相关的电池的顶端刻码上标示的明确的日期代码为制造日期。 Means the production date of the cell marking on the top of the cell by date code.
开路电压（OCV）	没有接入任何负载和电路时测得的电池的电压。 Means open circuit voltage;
标准充电 Standard Charge	本技术协议第 2.2.4 条所述的充电模式。

术语 Terms	定义 Definition
	Means the default charging method set out in paragraph 2.2.4 titled "Standard Charging Method".
标准放电 Standard Discharge	符合本技术协议第 2.3.1 条所述的 50A 的放电电流以及本技术协议第 2.3.5 条所述的最小 2.5V 电压的放电模式。 Means a discharge current of 50A as set out in paragraph 2.3.1 with a discharge cut-off voltage of 2.5 V as set out in paragraph 2.3.5;
充电状态(SOC) State of Charge	在无负载的情况下，以安培小时为单位计量的电池充电容量状态的所有的线性关系。如：若将容量为 100Ah 的状态视为 100%SOC，则容量为 0Ah 时，SOC 为 0%. In the case of no load, all linear relationships of battery charging capacity states measured in ampere hours or watt hours. For example, if the state of capacity 100Ah is regarded as 100% SOC, the SOC is 0% when the capacity is 0 Ah.
温度上升 Temperature Rise	在本技术协议规定的条件如充电过程或者放电过程中电芯温度的升高。 Means the increase of cell temperature from one state to another in certain event such as charging or discharging;
测量单位 Units of Measure	"V" (Volt)伏特(V)，电压单位 "A" (Ampere)安培(A)，电流单位"A" "Ah" (Ampere-Hour)安培-小时(Ah)，负荷单位"Ah" "Wh" (Watt-Hour)瓦特-小时(Wh)，能量单位"Wh" "Ω" (Ohm) 欧姆(Ω)，电阻单位"Ω" "mΩ" (MilliOhm) 毫欧姆(mΩ)，电阻单位"mΩ" "℃" (degree Celsius) 摄氏度(℃)，温度单位"°C" "mm" (millimetre) 毫米(mm)，长度单位"mm" "s" (second) 秒(s)，时间单位"s" "Hz" (Hertz)赫兹(Hz)，频率单位"Hz"

1. 适用范围 Scope of application

本技术协议详细描述了 CATL 生产的 3.2V 100Ah 储能用磷酸铁锂电池的产品性能指标以及产品使用条件及风险警示。

The purpose of this document is to specify the specifications of 100Ah 3.2V lithium iron cells for energy storage system with CATL ("Product") to be supplied by CATL.

2. 产品电性能指标 Electrical specification

2.1. 概要 General

No.	参数 Parameter	产品规格 Specification	条件 Condition
2.1.1	标准容量 Typical capacity	100 Ah	25±2℃，0.33C，新电池状态 25±2℃,fresh cell, 0.33C discharge
2.1.2	工作电压 Operating voltage	2.5~3.65V 2.0~3.65V	电芯温度 T>0℃ 电芯温度 T≤0℃
2.1.3	电池内阻 Impedance (1KHz)	0.39±0.05mΩ	新电池状态（30~40%SOC）
2.1.4	出货容量 Shipping capacity	40±1Ah	40% SOC
2.1.5	月自放电 Residual capacity	≤3.5%	25℃，50%SOC，新电池 3 个月后 Fresh after 3month
2.1.6	工作温度(充电) Operating	0~60℃	参考第 2.2 节 Reference 2.2

No.	参数 Parameter	产品规格 Specification	条件 Condition
2.1.7	工作温度(放电) Operating	-30~60℃	参考第 2.3 节 Reference 2.3
2.1.8	电池重量 Cell Weight	2.27±0.30Kg	N.A.
2.1.9	存储温度 Storage Temp.	-30~60℃	存储环境湿度≤85%ROH，无凝露 Storage ambient humidity < 85% ROH, no condensation
2.1.10	电池尺寸 Typical dimension （L*W*H）	宽度(Width)：200.33±0.5mm 高度(Height)：172.2±0.5mm 厚度(Thickness)：33.22±0.5mm	300±20Kgf 压力下，新鲜电池（详见本技术协议第 8 条） Thickness with compression force (300±20 Kgf), Height with Terminal, BOL(Reference item 8)
2.1.11	静置 SOC Rest SOC	≥5%	无负载或充电时的 SOC 区间 SOC interval without load or charging
2.1.12	应用海拔 Altitude	≤2000m	N.A.
2.1.13	循环寿命 Cycle life	25℃ 0.5C/0.5C 80% ≥4000Cycle 25℃ 0.5C/0.5C 70%≥6000Cycle	100% DOD，300±20Kgf 压力下，容量保持率基于标称计算 100% DOD, under 300±20Kgf preload，based on typical capacity

2.2. 充电模式/参数 Charging/Parameter

No.	参数	产品规格 Specification	条件 Condition
2.2.1	标准充电电流 Standard charge current	0.5C	25±2℃
2.2.2	最大充电可持续电流 Max. continuous charge current	1C	25±2℃
2.2.3	标准充电电压 Standard charge voltage	单体电池最大 3.65V Cell max voltage 3.65V	/
2.2.4	标准充电模式 Standard charge method	0.5C 恒流持续充电至单体电池最大 3.65V，然后在常压 3.65V 下恒压持续充电直至电流下限 0.05C 0.5 C constant current charge to 3.65 V for cell, then switch to constant voltage charge until charge current declines to ≤0.05C	
2.2.5	标准充电温度 Standard charge temperature	25±2℃	电芯温度 Cell Temperature
2.2.6	绝对充电温度（电芯温度） Absolute charging temperature （Cell Temperature）	0~60℃	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 Regardless of the charging mode of the cell, once the temperature of the cell exceeds the absolute charging temperature range, it will stop charging.
2.2.7	绝对充电电压 Absolute charging voltage	最大 3.65V Max 3.65V	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 Regardless of the charging mode of the cell, once it is found that the cell voltage exceeds the absolute charging voltage range, it will stop charging

2.2.8 其他充电条件(模式) C-Rate Other charge Condition (C-Rate)

电芯温度/℃ Cell Temperature/℃		**0**	**5**	**10**	**15**	**20**	**25**	**45**	**50**	**55**	**60**
SOC	0%~<100%	0	0.1	0.35	0.5	0.75	1	1	0.27	0.27	0

2.3. 放电模式 Discharging

No.	**参数** Parameter	**产品规格** Specification	**条件** Condition
2.3.1	标准放电电流 Standard discharge current	0.5C	25±2℃
2.3.2	最大持续放电电流 Maximum discharge current (continuous)	1C	N.A.
2.3.3	放电截止电压 Discharge cut-off voltage	2.5V 2.0V	温度（Temp.）T>0℃ 温度（Temp.）T≤0℃
2.3.4	标准放电温度 Standard discharge temperature	25±2℃	电芯温度 Cell temperature
2.3.5	绝对放电温度 Absolute discharge temperature	-30~60℃	无论电芯处在持续放电模式或脉冲放电模式，若电芯温度超过绝对放电温度，则停止放电 Stop discharging once cell temperature is outside this range regardless of whether continuous or pulse current is adopted.

2.3.6 其他放电条件 Other Discharging model（D-Rate）

电芯温度/℃		**-20**	**-10**	**0**	**15**	**25**	**35**	**45**	**50**	**55**	**60**
SOC	0%~100%	0	0.5	1.0	1.0	1.0	1.0	1.0	0.5	0.5	0

2.4. 低温容量 Low Temperature Capacity

No.	**参数** Parameter	**产品规格** Specification	**条件** Condition（Cell Temperature）
2.4.1	0℃的容量 Capacity@0℃	≥80%	新电池状态，0℃，0.5C，2.0V~3.65V，基准是 100Ah Fresh cell，0℃，0.5C，2.0V~3.65V, 100Ah as benchmark
2.4.2	-10℃的容量 Capacity@-10℃	≥70%	新电池状态，-10℃，0.5C，2.0V~3.65V，基准是 100Ah Fresh cell，-10℃，0.5C，2.0V~3.65V, 100Ah as benchmark

3. 安全与可靠性 Safety and Reliability

3.1. 使用条件说明：安全测试、寿命测试、系统成组设计需要施加预紧力，新鲜电芯的预紧力范围为 2000N~5000N，全生命周期受力范围为 2000N~15000N。

Description of service conditions: safety test、cycle life test and pack design need to add pre-tightening force, and the range of pre-tightening force of fresh cell is 2000N~5000N, the range of stress force of the whole life cycle is 2000N~15000N.

3.2. 所有测试符合国标 GB/T 31485-2015，GB/T 31486-2015 标准。

All test meet GB/T 31485-2015, GB/T 31486-2015 requirements.

4. 产品寿命终止管理 Product End of Life Management

电池的使用期限是有限的。客户应该建立有效的跟踪系统监测并记录每个使用期限内电池的内阻和容量。内阻以及容量的测量方法和计算方法需要客户和 CATL 共同讨论和双方同意。当使用中的电池的内阻超过这个电池最初内阻的 150%或容量小于等于标称容量 70%（25℃），应停止使用电池。违反该项要求，将免除 CATL 依据产品销售协议以及本技术协议所应承担的产品质量保证责任。

This cell is designed to service with a finite life time. The customer shall develop and implement an active tracking system to monitor and record impedance of each Product in its entire service life. CATL and its customer shall come into agreement about internal resistance and capacity measurement methods, CATL and/or its customer shall stop using any of the Products when its resistance exceeds 150% of its internal resistance or it capacity @ 25 ℃ fading to 70% typical capacity (70Ah). Failure to comply with this requirement shall render CATL's warranties under the Contract inapplicable, thereby releasing CATL from any liability in connection therewith.

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：

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

5.1. 客户应配置电池管理系统，严密监控、管理与保护每个电池。

Customer shall procure that each Product shall be used under the strict monitor, control and protection by the BMS to be incorporated by CATL.

5.2. 客户应向 CATL 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 CATL 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 CATL for design review and record keeping.

5.3. 客户应保存完整的电池运转的监测数据。

Customer shall keep relevant records of the BMS monitoring data throughout the entire service life of each Product.

5.4. 电池管理系统需满足以下最基本的检测和控制要求

The BMS shall include the following monitoring and control features as a minimum requirement.

No.	参数 Parameter	产品规格 Specification	保护动作 Action
5.4.1	充电终止 Stop charging	3.65V	电池的电压达到 3.65V 时，BMS 申请终止充电 Stop charging when cell voltage reaches 3.65 V
5.4.2	第一级过充电保护 First overcharge protection	≥3.69V	当电池电压达到 3.69V，BMS 强制终止充电 Stop charging when cell voltage reaches 3.69 V
5.4.3	第二级过充电保护 Second overcharge protection	≥3.8V	当电池电压达到 3.8V，BMS 强制终止充电，且 BMS 应锁定直到技术人员解决问题 When the battery voltage reaches 3.8V, the BMS is forced to terminate charging, and the BMS should be locked until technicians solve the problem.
5.4.4	放电终止 Stop discharge	最小 2.8V Minimum 2.8V	当电池的电压到达 2.8V， BMS 申请终止放电

			Minimize the discharging current when cell voltage reaches 2.8 V.
5.4.5	第一级过放保护 First over discharge protection	最小 2.5V Minimum 2.5V	当电池的电压到达 2.5V， BMS 强制终止放电 Stop discharging when cell voltage reaches 2.5V
5.4.6	第二级过放保护 Second over discharge protection	最小 2.0V Minimum 2.0V	当电池电压低于 2.0V 时，BMS 强制终止放电，应及时以 0.1C 回充至 50%，且 BMS 应锁定直到技术人员解决问题 When the battery voltage is less than 2.0V, the BMS should be charged back to 50% at 0.1C in time, and the BMS should be locked until technicians solve the problem.
5.4.7	短路保护 Short circuit protection	不允许短路 No short circuit allowed	发生短路时，由过流保护装置断开电池(电池) When a short circuit occurs, the battery (battery) is disconnected by the overcurrent protection device.
5.4.8	过流保护 Over current protection	参考第 2.2 和 2.3 条 See paragraph 2.2&2.3	电池管理系统控制充放电电流符合规格 Control discharge current by BMS to values within specification
5.4.9	过热保护 Over temperature protection	参考第 2.2 和 2.3 条 See paragraph 2.2&2.3	当温度超过本技术协议规定时，终止充电/放电 Stop charging and discharging when temperature exceeds specification

备注：以上 No.5.4.2、5.4.3、5.4.5、5.4.6 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，CATL 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. 5.4.2, 5.4.3, 5.4.5, 5.4.6 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 CATL shall not take any responsibility for the damage in connection therewith.

5.5. 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 CATL 的产品质量保证责任失效。根据本技术协议第 5.4.4 条，当放电截止电压低于 2.8V 时，电池能耗降低到 0。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。

Prevent draining any Product down to over discharge state. When the battery voltage is less than 2.0V, the battery interior may be permanently damaged. At this time, the product quality assurance responsibility of CATL is invalid. According to Article 5.4.4 of this technical agreement, when the discharge cut-off voltage is less than 2.8V, the battery energy consumption is reduced to 0. Customers need to train users to recharge batteries in the shortest time to prevent over discharge.

5.6. 若预计将电池存放 30 天以上的，应定期（建议每隔 3 个月）将 SOC 调整为 50%左右

When the Products are intended to be stored for a prolonged period of time (more than one month), the SOC of cells should be adjusted to around 50% periodically(every three months is recommended).

5.7. 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 CATL 不承担质量保证责任。

Batteries should 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 should be controlled according to the minimum charging temperature. It is forbidden to charge under the temperature stipulated in this technical agreement. Otherwise, CATL will not undertake the responsibility of 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，CATL 不承担质量保证责任。

The design of the electric box must fully consider the heat dissipation problem of the cell. CATL does not take the responsibility due to the overheating of the cell or batteries caused by the thermal design problem of the electric box.

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 UL 和 IEC 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），CATL 不承担质量保证责任。

The design of the electric box must fully consider the waterproof and dustproof problems of the cells. The electric box must meet the waterproof and dustproof grade stipulated by the relevant national standards. The CATL does not take the responsibility due to damage to the cell or batteries (such as corrosion, rust, etc.) caused by water and dust.

5.10. 禁止不同 P/N 料号电芯在同一电池系统中混用，否则，CATL 不承担质量保证责任。

It is forbidden to mix different P/N batteries in the same battery system, otherwise, CATL will not be responsible for quality assurance.

6. 安全防范 Safety Precautions

6.1 禁止将电池浸入水中。

Do not immerse cells into water.

6.2 禁止将电池投入火中或长时间暴露在超过本技术协议第 2.1.6 条，第 2.1.7 条和第 2.1.9 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 55℃，如果电芯温度超过 55℃，电池管理系统需关闭电池，停止电池运行。

Do not drop cells into fire or expose them to any high temperature environment exceeding operation temperature as set out in paragraphs 2.1.6、2.1.7&2.1.9, otherwise fire hazards may present. At all use time, cell temperature should not exceed 55 °C, shut down system by BMS when it occurs.

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。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 cell terminals, otherwise high current and temperature may cause body injury or fire hazards. Metallic cell terminals are exposed from plastic packaging and ample safety precautions should be implemented to avoid short circuiting them during system integration or connections.

6.4 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.

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。最低保护要求见本技术协议第 5.4.1、5.4.2、5.4.3、5.4.9 条。

It is extremely dangerous to overcharge a cell which may cause overheating and fire hazards. Multiple level of fail-safe overcharge protection should be implemented by hardware and software. See paragraph5.4.1、5.4.2、5.4.3、5.4.9 for minimum requirement to be adopted by the BMS for protection.

6.6 根据本技术协议第 5.4.9 条充电后，应结束正常充电。当持续充电时间超过合理的时间限制，电池会出现过热现象可能会引起热失控和火灾。

After charging according to Article 5.4.9 of this Technical Agreement, normal charging shall be terminated. When the continuous charging time exceeds the reasonable time limit, the battery will overheat, which may cause thermal runaway and fire.

6.7 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 battery.

6.8 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。

Protect cells from mechanical shock, impact and pressure. Internal electrical circuit may short circuit to generate high temperature and fire hazards.

6.9 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 cell system or some components have started to malfunction and subsequent charging of such cell 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”.

6.10 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.

7. 免责声明 Disclaimer

7.1 如果由于产品需求单位不按本说明书中的规定进行使用，造成社会性影响，并对 CATL 的声誉造成影响的，CATL 将会追究产品需求单位的责任。根据对 CATL 造成的影响程度，产品需求单位需向 CATL 提供赔偿。

If the product demand unit does not use the product according to the provisions of this specification, causing social impact and affecting the reputation of CATL, CATL will investigate the responsibility of the product demand unit. According to the degree of impact on CATL, the product demander should provide compensation to CATL.

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

CATL reserves the right to modify the specifications and performance parameters of the product. Before ordering CATL products, the buyer needs to confirm the latest status of the products in advance with CATL.

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。

English specifications are for reference only. Please refer to the technical specifications of the Chinese version.

8 风险警告 Risk Warning

8.1 警示声明 Waring statement

警 告

电池存在潜在的危险，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。

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.

8.2 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险:

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

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。

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 50 volts.

8.2.2 存在来自电池中的电解液的化学风险。

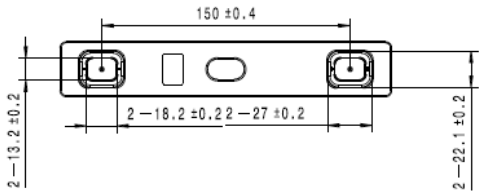
Cells expose its handler to chemical hazards associated with the electrolyte used in the cell.

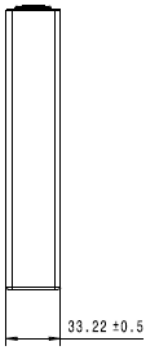
8.2.3 在操作电池和选择个人防护装备时，客户及其雇员必须考虑到以上潜在的风险，防止发生意外短路，造成电弧、爆炸或热失控。

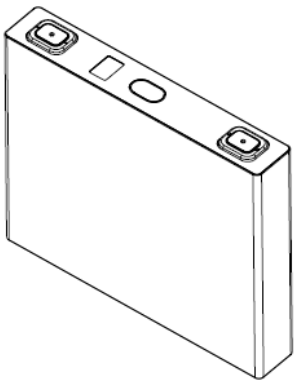
When selecting work practices and personal protective equipment, Customer and its employees shall consider potential exposure to these hazards and therefore prevent accidental short-circuit that can result in electrical arcing, explosion, and/or “thermal runaway” of the cells.

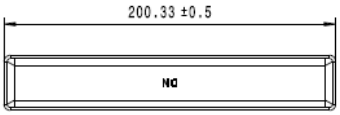
9 电芯图纸 Mechanical Drawing

ECN MEMO	REV	ZONE	DESCRIPTION	DRI	DATE
	01		NEW RELEASE FOR REFERRENCE	Cai QC	Nov.23,2018









GENERAL TOLS UNLESS NOTED		DRAWN BY	DATE	TITLE
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1 PLACE (X.X)	±0.2	CHECKED BY Xing CY	DATE Nov.23,2018	
2 PLACE (X.XX)	±0.1	APPROVED BY Bond Wang	DATE Nov.23,2018	CATL Contemporary Amperex Technology Co.,Limited
ANGULAR (X °)	±1°			
ANGULAR (X.X °)	±0.5°	PART NO. TBD		DRAWING NO. DRW-TBD / SHEET NO. 1 OF 1
THIRD ANGLE PROJECTION	DIMS IN MM	SCALE 1:1	SIZE A3	THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO ATL INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION