



标题:
Title:

IFP53148115-104Ah 锂离子电池产品规格书
Product Specification of IFP53148115-104Ah Lithium Ion Rechargeable Cell

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IFP53148115-104Ah 锂离子电池

产品规格书

Product Specification of

IFP53148115-104Ah Lithium-ion Rechargeable Cell

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IFP53148115-104Ah 锂离子电池产品规格书

Product Specification of IFP53148115-104Ah Lithium Ion Rechargeable Cell

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前 言 Preface 本标准为公司统一执行的企业标准。 The specification is the enterprise standard uniformly implemented by the company. 本标准的编写格式符合 GB/T 1.1-2020 《标准化工作导则 第 1 部分：标准化文件的结构和起草规则》的规定。 The format of this specification is in accordance with the provisions of GB/T 1.1-2020, Directives for standardization-Part1:Rules for the structure and drafting of standardizing documents. 本标准在参照：GB/T 31484-2015 《电动汽车用动力蓄电池循环寿命要求及试验方法》、GB 38031-2020 《电动汽车用动力蓄电池安全要求》、GB/T 31486-2015 《电动汽车用动力蓄电池电性能要求及试验方法》、IEC62619-2017、IEC 62660-2-2018、GB/T36276-2018、Q/GX 60013-2020 《电动汽车用锂离子动力电池单体电性能测试方法》的基础上，结合我公司产品实际和试验条件，特制定《IFP53148115-104Ah 锂离子电池产品规格书》标准，并对试验方法、判定标准内容进行了阐述，以指导 IFP53148115-104Ah 锂离子电池产品的性能检测。 This specification refers to GB/T 31484-2015 cycle life requirements and test methods for power cell for electric vehicles, GB 38031-2020 safety requirements and test methods for power cell for electrical vehicles, GB/T 31486-2015 electrical performance requirements and test methods for power cell for electric vehicles, IEC62619-2017, IEC 62660-2-2018, GB/T36276-2018, Q/GX 60013-2020 electrical performance test method of lithium ion power cell for electrical vehicles. Combined with the actual product and test conditions of our company, the standard of “IFP53148115-104Ah Lithium Ion Battery Product Specification” is specially formulated. The test method and criteria is revised and supplemented to guide the manufacturing and approval of IFP53148115-104Ah Lithium ion Cell. 注：若修改，以最新发布标准为准。 Remark: If modified, please take the latest version as standard.						

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1.基本信息 Basic Information																																		
1.1 适用范围 Scope																																		
本产品规格书由合肥国轩高科动力能源有限公司提供给客户，描述了其锂离子二次电池的性能。 This specification specification is provided to customers by HEFEI GOTION HIGH-TECH POWER ENERGY Co. Ltd., describing Lithium ion rechargeable cell properties.																																		
1.2 用途 Application: EV、储能 ES																																		
1.3 产品类型 Product Type																																		
锂离子二次电池，方形，LFP 电芯 Lithium ion rechargeable battery																																		
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2.2 推荐充电规范 Recommended Charge Specification

项目 Item	参数 Specification	条件/注释 Condition/Notes
2.2.1 常规充电（慢充）Regular Charging(Slow Charge)	52A 3.65V 5.2A 10°C≤T<45°C	恒流 Constant current 恒压 Constant voltage 截止条件（终止）Cut off condition (terminating) 温度 Temperature
2.2.2 阶梯充电（快充）Step Charge	见 附 件 Refer to Annex A.1	不同温度的快充策略 Fast charging strategy at different temperature

2.3 工作温度范围 Working Temperature Range

项目 Item	参数 Specification	条件/注释 Condition/Notes
2.3.1 最佳工作温度 Optimum Working Temperature	10°C~35°C	
2.3.2 充电温度范围 Charge Temperature Range	0°C~55°C	充电电流，见附件 A1 Charging current, refer to Annex A.1
2.3.3 放电温度范围 Discharge Temperature Range	-30°C~60°C	电芯温度≤60°C Cell temperature≤60°C

3.外观尺寸 Appearance & Dimensions

3.1 外观 Appearance

电池外表面无明显的划痕、裂痕、生锈、变色或电解液泄漏，无影响电池正常使用的其它外观缺陷。

Without obvious scratches, cracks, rust, discoloration or electrolyte leakage, no other appearance defects affecting cell normal operation.

3.2 尺寸 Dimensions

厚度: (52.3±0.5)mm（含外包膜厚度，17%±3% SOC，300±20 kgf）。
Thickness: (52.3±0.5)mm (including thickness of the insulating film, 17%±3% SOC, 300±20 kgf).
宽度: (148.6±0.5) mm（含外包膜）。
Width: (148.6±0.5) mm (including the insulating film).
高度: (115.83±0.5) mm（不含极柱，含外包膜和顶盖贴片）。
(118.9±0.5) mm（含极柱，含外包膜）。
Height: (115.83±0.5)mm（including outer film thickness and excluding terminals）
(118.9±0.5)mm（including outer film thickness）

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4.性能测试规范 Performance Specification 4.1 标准测试条件 Standard Test Conditions 4.1.1 单体电池充电 Single cell charging 室温下（25℃±2℃），湿度：15%~90%，单体电池以 104A 电流放电至电压为 2.0V，静置 30min，然后以 104A 电流充电至电压为 3.65V 时转恒压充电，充电电流降至 5.2A 时停止充电，充电后静置 30min。 At room temperature（25℃±2℃），104A constant current discharge to 2.0V, rest 30min, then 104A constant current charge to 3.65V followed by constant voltage charging until current drops down to 5.2A, rest 30min. 4.1.2 单体电池放电 Single battery discharge 室温下（25℃±2℃），单体电池以 104A 电流放电至电压为 2.0V，静置 30min。 At room temperature（25℃±2℃），104A constant current discharge to 2.0V, rest 30min.					

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4.2 电气特性 Electrical Characteristics

项目 Item	参数 Parameter	条件 Condition
4.2.1 初始容量 Initial Capacity	≥104Ah	按照 4.1.1 充电和 4.1.2 放电。 Refer to 4.1.1&4.1.2 standard charge and discharge procedure.
4.2.2 容量与温度的相关性 Capacity and temperature correlation	55℃, ≥95% 初始容量 initial capacity 25℃, 100% 初始容量 initial capacity 0℃, ≥95% 初始容量 initial capacity -10℃, ≥90% 初始容量 initial capacity -20℃, ≥85% 初始容量 initial capacity -30℃, ≥80% 初始容量 initial capacity	25℃ ± 2℃温度下按照 4.1.1 充电, 在测试温度下以 1C 放电至 2.0V (0℃及以下放电至 1.8V) 。 Charge refer to 4.1.1, rest 20h at testing temperature, 1C discharge to 2.0V at testing temperature (to 1.8V at or below 0℃) .
4.2.3 SOC-OCV 表 SOC-OCV Table	见附件 A.3 Refer to annex A.3	按照 4.1.1 充电,然后以 1C 放电 5%容量(此容量为按照 4.1.2 放电至对应截止电压 ([-30℃~0℃) 2.0V, [0℃~10℃) 2.3V, [10℃~55℃] 2.5V) 对应的容量, 静置 1h, 重复 20 次, 记录静置后的电压数据。 CCharge as per 4.1.1, then discharge for 5% capacity at 1C (The capacity is obtained by discharging to certain cut-off voltage as per 4.1.2 ([-30℃~0℃) 2.0V, [0℃~10℃) 2.3V, [10℃~55℃] 2.5V) rest 1h, repeat 20 times, record voltage after rest.

4.3 耐久性能 Durability

项目 Item	规格 Specification	条件 Condition
4.3.1 室温荷电保持率 Room Temperature Charge Retention Rate	≥95%	25℃, 100%SOC, 28days
4.3.2 室温容量恢复率 Room Temperature Capacity Recovery Rate	≥96%	
4.3.3 高温荷电保持率 High Temperature Charge Retention Rate	≥94%	55℃, 100%SOC, 7days

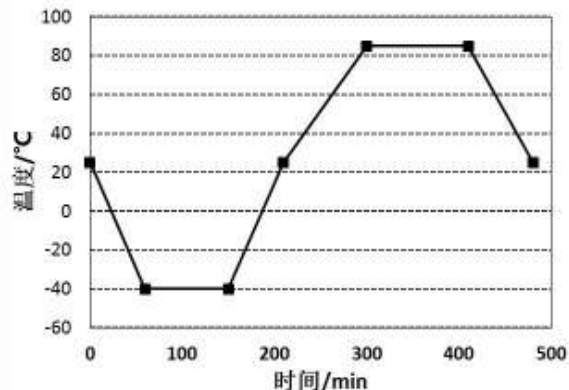
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4.3.4 高温容量恢复率 High temperature capacity recovery rate		≥95%		
4.3.5 储存容量恢复率 Storage capacity recovery rate		>94%	45℃, 50%SOC, 28days	
4.3.6 高温循环寿命 High Temperature Circular Life		800 cycles	80%容量保持率;55℃; 80% capacity retention rate; 55℃;	
4.3.7 高温循环寿命 High Temperature Circular Life		1500 cycles	80%容量保持率 capacity retention rate; 45℃;	
4.3.8 常温循环寿命 High Temperature Circular Life		3000 cycles	80%容量保持率; 25℃; 1C 阶梯 80% capacity retention rate;1C ladder; 25℃	
4.3.9 日历寿命 Calendar Life		10 years	80%容量保持率; 25℃, 50%SOC 80% capacity retention rate;1C ladder; 25℃, 50%SOC	
4.4 安全测试规范 Safety Test Specification				
项目 Item	判断标准 Judgment Standard	测试条件 Test Conditions		
4.4.1 过放电 Overdischarge	不爆炸, 不起火 No explosion, no fire	单体蓄电池(使用企业钢板夹具约束单体蓄电池)按 4.1.1 方法充电, 单体蓄电池以 1 I ₁ (A)电流放电 90min, 并观察 1h。(I ₁ =104A); The single cell was charged according to the method of 4.1.1, and the single cell was discharged with a current of 1 I ₁ (A) for 90 min and observed for 1 h. (I ₁ =104A) .		
4.4.2 过充电 Overcharge	不爆炸, 不起火 No explosion, no fire	单体蓄电池(使用企业钢板夹具约束单体蓄电池, 夹紧力 150±50kgf)按 4.1.1 方法充电, 以 1 I ₁ (A)电流恒流充电至电压达到企业技术条件中规定的充电终止电压的 1.1 倍或 115%SOC 后停止充电, 并观察 1h。(I ₁ =104A) The single cell is charged according to the method of 4.1.1, and is charged with a constant current of 1 I ₁ (A) until the voltage reaches 1.1 times of the charging end voltage or 115% SOC specified in the technical conditions of the enterprise, and 1 h is observed. (I ₁ =104A)		
4.4.3 加热 Heating	不爆炸, 不起火 No explosion, no fire	单体蓄电池按 4.1.1 方法充电, 温度箱按照 5℃/min 的速度由室温升至 130℃±2℃, 并保持此温度 30min 后停止加热, 并观察 1h。 The single battery was charged according to the method of 4.1.1, and the temperature box was raised from room temperature to 130 °C ± 2 °C at a rate of 5 °C / min. After maintaining this temperature for 30 min, the heating was stopped and observed for 1 h.		
4.4.4 短路 Short circuiting	不爆炸, 不起火 No explosion, no fire	单体蓄电池(使用企业钢板夹具约束单体蓄电池, 夹紧力 150±50kgf)按 4.1.1 方法充电, 将单体蓄电池正、负极经外部短路 10min, 外部线路电阻应小于 5mΩ, 并观察 1h。 The single cell is charged according to the method of 4.1.1, and the cathode and anode terminals of the single cell are externally short-circuited for 10 min, and the external line resistance should be less than 5 mΩ, and observed for 1 h.		

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4.4.5 挤压 Pressing	不爆炸，不起火 No explosion, no fire	单体蓄电池按 4.1.1 方法充电： a) 挤压方向：垂直于蓄电池极板方向施压； b) 挤压板形式：半径为 75mm 的半圆柱体，半圆柱体的长度(L)大于被挤压电池的尺寸； c) 挤压速度：（2±1）mm/s； d) 挤压程度：电压达到 0V 或变形量达到 15%或挤压力达到 100KN 后停止挤压，保持 10min；并观察 1h。 The single cell is charged according to the method of 4.1.1: Test according to the following conditions: a) extrusion direction: apply pressure perpendicular to the battery plate; b) extruded plate form: a semi-cylindrical body with a radius of 75 mm, the length (L) of the semi-cylindrical body is larger than the size of the battery to be squeezed; c) extrusion speed: (2 ± 1) mm / s; d) degree of extrusion: after the voltage reaches 0V or the deformation amount reaches 15% or the pressing force reaches 100KN, the extrusion is stopped and kept for 10 minutes; e) And observe 1h.																																		
4.4.6 温度循环 Temperature Cycling	不爆炸，不起火 No explosion, no fire	单体蓄电池按 4.1.1 方法充电，单体蓄电池放入温度箱中，温度箱温度按照下表进行调节，循环次数 5 次，观察 1h。 The single battery is charged according to the method of 4.1.1, the single battery is placed in the temperature box, the temperature of the temperature box is adjusted according to the following table, the number of cycles is 5 times, and then observe for 1h. <table><tr><td>温度 Temperature ℃</td><td>时间增量 Time increasingmin</td><td>累计时间 Cumulative Time min</td><td>温度变化率 Temperature Change Rate ℃/min</td></tr><tr><td>25</td><td>0</td><td>0</td><td>0</td></tr><tr><td>-40</td><td>60</td><td>60</td><td>13/12</td></tr><tr><td>-40</td><td>90</td><td>150</td><td>0</td></tr><tr><td>25</td><td>60</td><td>210</td><td>13/12</td></tr><tr><td>85</td><td>90</td><td>300</td><td>2/3</td></tr><tr><td>85</td><td>110</td><td>410</td><td>0</td></tr><tr><td>25</td><td>70</td><td>480</td><td>6/7</td></tr></table>			温度 Temperature ℃	时间增量 Time increasingmin	累计时间 Cumulative Time min	温度变化率 Temperature Change Rate ℃/min	25	0	0	0	-40	60	60	13/12	-40	90	150	0	25	60	210	13/12	85	90	300	2/3	85	110	410	0	25	70	480	6/7
温度 Temperature ℃	时间增量 Time increasingmin	累计时间 Cumulative Time min	温度变化率 Temperature Change Rate ℃/min																																	
25	0	0	0																																	
-40	60	60	13/12																																	
-40	90	150	0																																	
25	60	210	13/12																																	
85	90	300	2/3																																	
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5.使用注意事项 Notes

锂离子充电电池的使用警告。操作不当可能会造成电池发热、起火和性能劣化，务必认真阅读以下条款。

Warning on the use of rechargeable lithium-ion batteries. Improper operation may cause the battery to heat up, catch fire and deteriorate its performance. Be sure to read the following terms carefully.

注意事项 Precautions

- 应用配有电池的设备时，使用前请参阅用户手册。

When using a device equipped with a battery, refer to the user manual before use.

- 包装前请检查正极和负极端子的方向。

Check the orientation of the cathode and anode terminals before packaging.

- 端子或导线与电池模块相连，注意绝缘防止短路。

The terminal or wire is connected to the cell module, pay attention to the insulation to prevent short circuit.

- 长期不用时，电池要存放于阴凉干燥处 ($\leq 35^{\circ}\text{C}$, 30%~50%SOC, 环境湿度 $\leq 85\%\text{ROH}$, 无凝露, 3个月进行一次充放电)。

Store the cell in a cool dry place ($\leq 35^{\circ}\text{C}$, 30%~50%SOC, Storage ambient humidity $< 85\% \text{ ROH}$, no Condensation, charge and discharge once every 3 months) when not in use for a long time.

- 不要将电池放置于阳光直射处或热源。

Do not place the cell in direct sunlight or heat source to prevent high temperature of the cell.

- 处理电池单元时请勿穿戴金属饰品 (如戒指, 手表, 饰件等)。

Do not wear metal accessories (such as rings, watches, accessories, etc.) when handling cell units.,

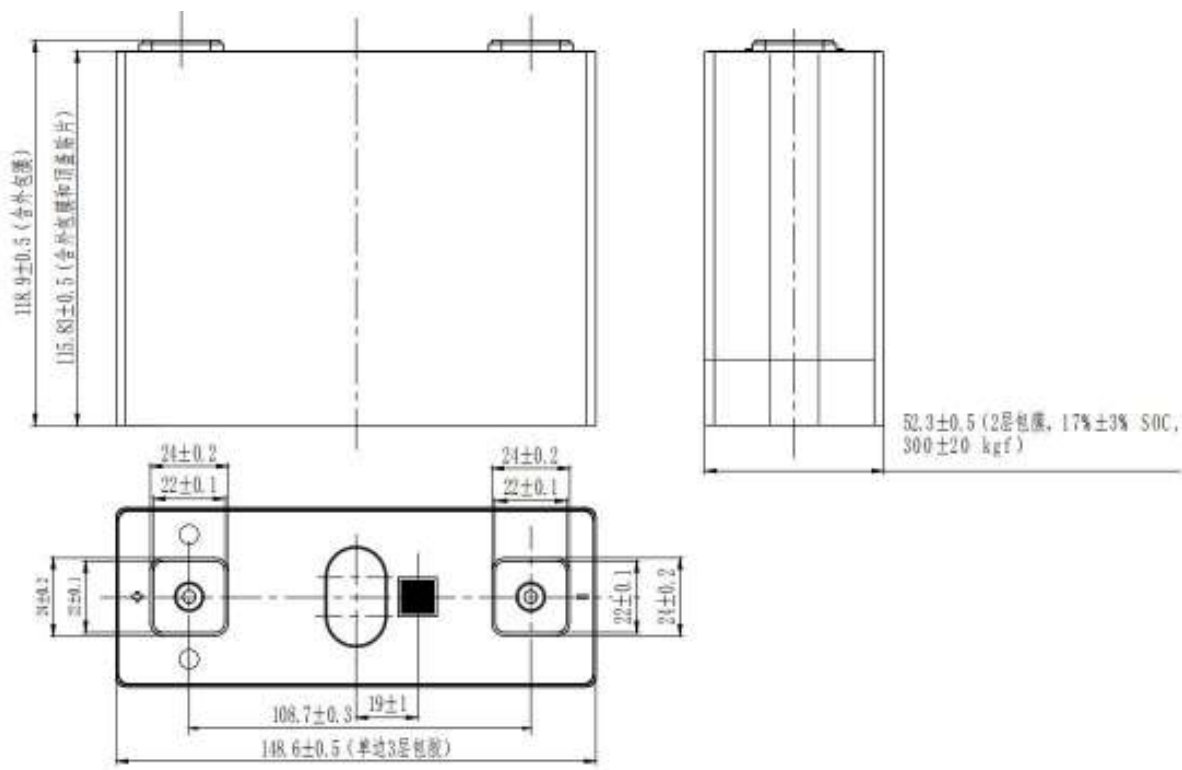
- 请勿将电池放置在本文件规定的使用温度范围之外的地方。

Do not place the cell outside the operating temperature range specified in this document.

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禁止事项 Prohibited Matters 请勿超过最大充电倍率充电。 Do not charge more than the maximum charge rate. 请勿拆卸或改装电池。 Do not disassemble or modify the Cell. 请勿抛掷或撞击电池。 Do not throw or hit the battery. 请勿用锐器刺穿电池。(例如钉子，刀子，笔，电钻) Do not pierce the battery with a sharp object. (eg nails, knives, pens, electric drills) 请勿与其它型号电池或模块单元混用。 Do not mix with other cell or module units. 勿将新、旧电池在 PACK 中同时使用。 Do not use both new and old cell in PACK. 请勿将电池放置于大于 60℃高温处。 Do not place the cell at a temperature higher than 60 °C. 不要将电池放入微波炉或高压容器中。 Do not put the cell in a microwave or high pressure container. 请勿用导电材料连接正、负极端子。(例如金属，电线) Do not connect the positive and negative terminals with conductive materials. (eg metal, wire) 不允许弄湿或将电池浸入水或海水中。 Do not allow to wet or immerse the cell in water or sea water. 请勿以制造商书面协议之外的方式使用电池。 Do not use the battery in a manner other than the manufacturer's written agreement.		

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6.外形图纸 Mechanical drawing



电芯整体尺寸 The overall size of the cell

注：图中尺寸单位为毫米（mm）。
Note: Dimensions in the figure are in millimeters (mm).

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附录 Appendix									
A.1 阶梯充电矩阵表 Table Of Ladder Charging Matrix									
步骤 Step	温度 Temperature	<0℃	0℃≤ T<5 ℃	5℃≤ T<10 ℃	10℃≤ T<15 ℃	15℃≤ T<25 ℃	25℃≤ T<45 ℃	45℃≤ T<50 ℃	50℃≤ T<55 ℃
1	充电电流 Charging current (C)	/	0.15	0.33	0.33	0.8	1	0.5	0.33
	跳转电压 Trip voltage (V)	/	3.62	3.6	3.6	3.51	3.51	3.51	3.6
2	充电电流 Charging current (C)	/	0.1	0.25	0.25	0.5	0.5	0.25	0.1
	跳转电压 Trip voltage (V)	/	3.65	3.62	3.62	3.6	3.6	3.62	3.65
3	充电电流 Charging current (C)	/	/	0.1	0.1	0.25	0.25	0.1	/
	跳转电压 Trip voltage (V)	/	/	3.65	3.65	3.62	3.62	3.65	/
4	充电电流 Charging current (C)	/	/	/	/	0.1	0.1	/	/
	跳转电压 Trip voltage (V)	/	/	/	/	3.65	3.65	/	/
A.2 单体电芯故障阈值 Single Cell Failure Threshold									
A.2.1 单体电芯故障阈值 Single Cell Failure Threshold									
电池型号 Battery Model		数值 Value	说明 Illustrate				参考 Reference		
单体过电压严重报警阈值 Severe alarm threshold when cell overvoltage (V)		3.8	充电时过电压超过报警阈值，将影响电池的循环寿命，用户充电不允许超过此电压值。 When the overvoltage exceeds the alarm threshold during charging, it will affect the cycle life of the battery. The user is not allowed to charge more than this voltage value.				必须强制断电。 Forced power off..		
单体过电压一般报警阈值 General alarm threshold when single overvoltage (V)		3.7	充电时过电压的临界值。 Critical value of overvoltage during charging.				超过 5s 强制断电。 Forced power off for more than 5s.		
最大工作电压 Maximum working voltage(V)		3.65	正常工作的最大极限值。 Maximum limit of normal operation.						
单体欠压严重报警阈值 Critical alarm threshold when		[-30℃ ~0℃) 1.8	放电时欠压超过报警阈值，将影响电池的循环寿命，用户放电不允许超过此电压值。						



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cell undervoltage(V)	[0℃ ~55℃] 2.0	When the under-voltage exceeds the alarm threshold during discharge, it will affect the cycle life of the cell. The user discharge must not exceed this voltage value.	
单体欠压一般报警阈值 General alarm threshold when cell undervoltage(V)	[-30℃ ~0℃) 1.9 [0℃ ~55℃] 2.2	放电时欠压超过报警阈值, 将影响电池的循环寿命, 用户放电不允许超过此电压值。 When the undervoltage exceeds the alarm threshold during discharge, it will affect the cycle life of the battery, and the user is not allowed to discharge more than this voltage value.	
最小工作电压 Minimum working voltage(V)	[-30℃ ~0℃) 2.0 [0℃ ~55℃] 2.3	正常工作的最小临界值。 Minimum limit of normal operation.	
电池温度过高一般报警阈值 General alarm thresholds when battery temperature is too high℃	55	电池工作温度超过此温度, 将会限制电池使用功率。 Battery operating temperature above this temperature will limit cell power	
电池温度过高严重报警阈值 Low battery temperature general alarm threshold ℃	60	电池温度超过此报警阈值, 将会影响电池安全性能, 用户使用时不应超过此温度。If the battery temperature exceeds this alarm threshold, it will affect the safety performance of the battery, and the user should not exceed this temperature when using it.	
电池温度过低一般报警阈值 General alarm threshold when battery temperature is too low℃	-20	电池工作温度低于此温度, 将会限制电池使用功率。 If the operating temperature of the battery is lower than this temperature, the power of the battery will be limited.	
电池温度过低严重报警阈值 Critical alarm threshold when battery temperature is too low	-30	电池温度低于此报警阈值, 将会影响电池安全性能, 用户使用时不应低于此温度。If the battery temperature is lower than this alarm threshold, the safety performance of the battery will be affected, and the user should not use it below this temperature.	



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A.2.2 为 Pack 设计提供的电池信息 Battery Information For Pack Design

电池型号 Battery Model	符号 Sign	数值 Value	意见 Suggestions	参考 Reference
Pack 装配过程中最大允许压力 Maximum allowable pressure during pack assembly	Fmax	TBD		600kgf, 17%±3% SOC
Pack 装配后电芯最终压力 The Final pressure of the cell after pack assembly	Fmin	TBD		150±50 kgf, 17%±3% SOC



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A.3 SOC-OCV 表 Table of SOC-OCV

T	-30℃	-20℃	-10℃	0℃	10℃	25℃	45℃	55℃
DOD	电压/V	电压/V	电压/V	电压/V	电压/V	电压/V	电压/V	电压/V
0%	3.36	3.36	3.36	3.36	3.36	3.38	3.35	3.34
5%	3.29	3.30	3.31	3.32	3.32	3.33	3.33	3.33
10%	3.28	3.30	3.31	3.32	3.32	3.33	3.33	3.33
15%	3.28	3.30	3.31	3.32	3.32	3.33	3.33	3.33
20%	3.27	3.29	3.31	3.32	3.32	3.33	3.33	3.33
25%	3.27	3.29	3.30	3.32	3.32	3.33	3.33	3.33
30%	3.27	3.28	3.30	3.31	3.32	3.33	3.33	3.33
35%	3.26	3.28	3.29	3.30	3.31	3.32	3.33	3.33
40%	3.26	3.27	3.28	3.29	3.29	3.30	3.30	3.30
45%	3.26	3.27	3.27	3.28	3.28	3.29	3.30	3.30
50%	3.26	3.27	3.27	3.28	3.28	3.29	3.29	3.30
55%	3.25	3.26	3.27	3.27	3.28	3.29	3.29	3.30
60%	3.25	3.26	3.27	3.27	3.28	3.29	3.29	3.30
65%	3.24	3.26	3.27	3.27	3.28	3.28	3.29	3.29
70%	3.24	3.26	3.27	3.27	3.28	3.28	3.28	3.28
75%	3.24	3.25	3.26	3.27	3.27	3.26	3.26	3.26
80%	3.24	3.25	3.25	3.25	3.25	3.25	3.25	3.24
85%	3.24	3.24	3.23	3.23	3.23	3.22	3.22	3.22
90%	3.23	3.24	3.22	3.21	3.20	3.20	3.20	3.20
95%	3.23	3.23	3.21	3.20	3.19	3.16	3.16	3.14
100%	3.23	3.22	3.19	3.03	2.84	2.66	2.67	2.57

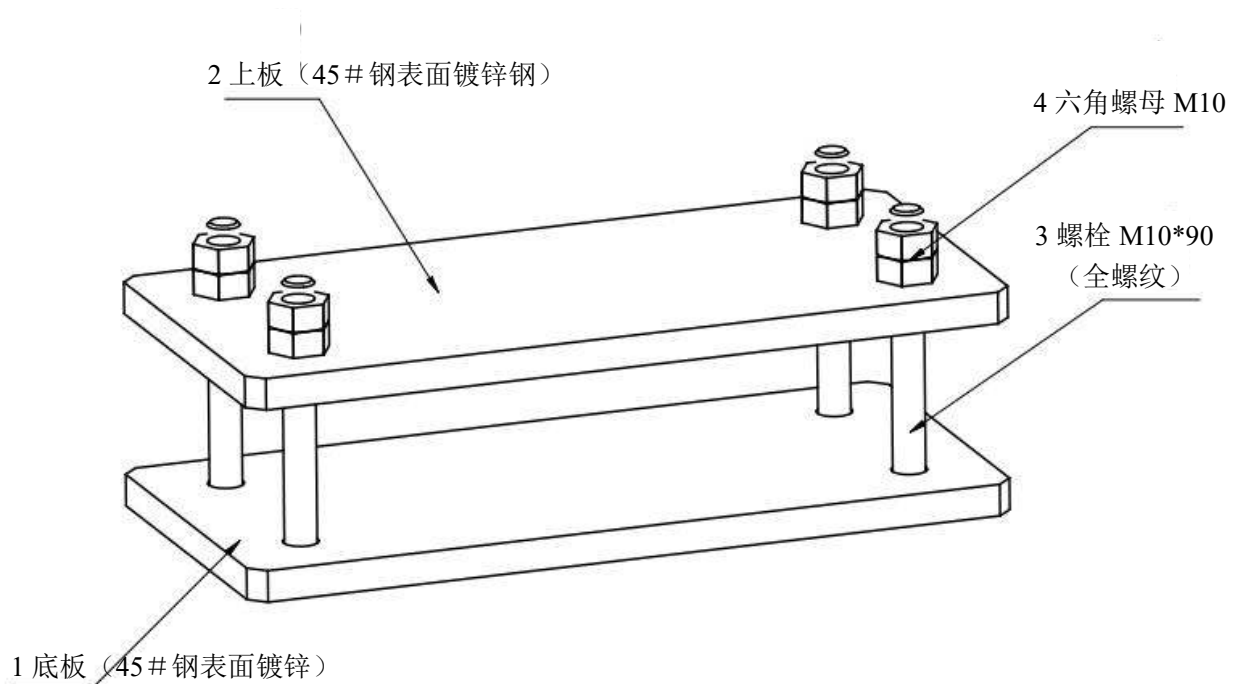
Note: SOC interval range, the left interval is the closed interval, and the right interval is the open interval.
E.g:10%~20% means $10\% \leq \text{SOC} < 20\%$.

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A.4 企业钢板夹具的使用 Using of steel plate

钢制夹板（45#钢，厚度 1cm）：夹具需覆盖住电芯大面，并做好绝缘处理，以免接触正负极导致电芯短路，夹板之间用 4 个 M10 螺栓固定，夹具工装如下图所示：

Steel plate(45#, thickness of 1 cm):The plates should cover the cell, and pay attention to the insulation to prevent short circuits, the plates should to be secured with four M18 bolts, as shown below:



电芯夹具示意图 Steel plat

IFP53148115-104Ah 锂离子电池产品环保声明 Li-ion Battery Product Environmental Declaration

根据欧盟(EU)2015/863 指令；2006-66-EC 电池指令要求，如下表所示镉、铅、汞、六价铬、多溴联苯(PBB)、多溴二苯醚(PBDE)及邻苯二甲酸酯(PAEs)共计 10 种物质纳入禁用物质清单。

In accordance with EU directive 2015/863, battery instruction requirements in 2006-66-EC, as shown in the following table, a total of 10 substances are included in the RSL, for example Cadmium、Lead 、Mercury、Hexavalent chromium、Polybrominated biphenyls (PBB)、Polybrominated diphenyl ethers (PBDE) and phthalate (PAEs).

表 Table A.11 十种禁用物质清单 List of Ten Prohibited Substances

RoHS 禁用物质 Prohibited Substances	最高限值 Upper Limit (PPM)	说明 Illustrate
镉(Cd)	20	2006-66-EC 指令要求 Instruction requirements
铅 (Pb)	40	2006-66-EC 指令要求 Instruction requirements
汞 (Hg)	5	2006-66-EC 指令要求 Instruction requirements
六价铬 (Cr ⁶⁺)	1000	RoHS 1.0 已有限用物质 Substances that have been restricted
多溴联苯 (PBB)	1000	RoHS 1.0 已有限用物质 Substances that have been restricted
多溴二苯醚 (PBDE)	1000	RoHS 1.0 已有限用物质 Substances that have been restricted
邻苯二甲酸二(2-乙基己基)酯 (DEHP- Di(2-ethylhexyl)Phthalate)	1000	RoHS 2.0 新增限用物质 Added restricted substances
邻苯二甲酸丁苄酯 (BBP- Benzyl Butyl Phthalate)	1000	RoHS 2.0 新增限用物质 Added restricted substances
邻苯二甲酸二丁酯 (DBP-Di-n-butyl Phtalate)	1000	RoHS 2.0 新增限用物质 Added restricted substances
邻苯二甲酸二异丁酯 (DIBP-Diiso butyl Phthalate)	1000	RoHS 2.0 新增限用物质 Added restricted substances

从发布日期立即实施执行。Execution is implemented immediately from the release date.