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产品型号 Product Model	ACSF16010D00Y	页码 Page	1 / 21	A00

产品规格书

Product specification

产品型号 Product Model ACSF16010D00Y

电芯类型 Chemistry 磷酸铁锂 LFP

产品规格 Product Specification 51.2V100Ah*n

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1 适用范围 Scope

本规格书描述了锂离子电池组的型号、规格、参数、存储、注意事项等。适用于深圳比克新动力科技有限公司、郑州比克新动力科技有限公司和安徽比克新动力科技有限公司及其关联公司生产的 ACSF16010D00Y 锂离子电池组。

This specification describes the model, specification, parameters, storage, precautions, etc. of Li-ion battery pack. This specification is applicable to ACSF16010D00Y Li-ion battery pack produced by Shenzhen BAK New Power Technology Co., Ltd., Zhengzhou BAK New Power Technology Co., Ltd., and Anhui BAK New Power Technology Co., Ltd. and their affiliated companies.

2 概述 Product overview

ACSF16010D00Y 锂电池组由 BAKCBBK100 电芯通过串并联方式组合而成，其具备过充、过放、过流、过温、短路、等安全保护。

The ACSF16010D00Y lithium battery pack is composed of BAKCBBK100 cells in series and parallel, and it has the safety protection of over charge, over discharge, over current, over temperature, short circuit, etc.

3 引用标准 Applicable Standards

3.1 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/T 31484-2015 cycle life requirements and test methods for power cell for electric vehicles,

3.2 GB/T 31486-2015 《电动汽车用动力蓄电池电性能要求及试验方法》

GB/T 31486-2015 electrical performance requirements and test methods for power cell for electric vehicles,

3.3 GB 38031-2020 《电动汽车用动力蓄电池安全要求》

GB 38031-2020 safety requirements and test methods for power cell for electrical vehicles

3.4 GB/T36672-2018 《电动摩托车和电动轻便摩托车用锂离子蓄电池》

GB/T36672-2018 Lithium Ion Batteries for Electric Motorcycles and Electric Mopeds

3.5 GB/T36972-2018 《电动自行车用锂离子蓄电池》

GB/T36672-2018 Lithium ion battery for electric bicycle

3.6 GB 31241—2014 《便携式电子产品用锂离子电池和电池组安全要求》

GB 31241-2014 Lithium ion cells and batteries used in portable electronic equipments safety requirements

3.7 IEC62619-2017、IEC 62133-2: 2017

在以上标准的基础上，结合我公司产品实际和试验条件，特制定《DF6032 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。

On the basis of the above standards, in combination with the actual product and test conditions of our company, the Standard of DF6032 Battery Product Specification is specially formulated, and the test

methods and determination standards are described.

4 测试条件 Test conditions

除非另外特别说明，所有参数测试环境条件为：温度 $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ，相对湿度为 25%~75%，大气压力为 86KPa~106kPa。

unless otherwise specified, all parameters are tested under the following environmental conditions:

temperature $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, relative humidity 25% ~ 75%, atmospheric pressure 86kpa ~ 106kpa.

5 定义 Definition

5.1 标准充电(单模块) Standard Charge Method(single module)

在 $25 \pm 2^{\circ}\text{C}$ 下，电池以 0.2C(20A)恒流充电至 57.6 V 后，以 57.6 V 恒压充电至电流小于等于 0.05C (5A)，静置 30min。

At $25 \pm 2^{\circ}\text{C}$, the Battery is charged to 57.6 V at constant current of 0.2C(20A), then charged at constant voltage of 57.6 V until the current tapers to $\leq 0.05\text{C}(5\text{A})$ followed by resting for 30min.

5.2 标准放电(单模块) Standard Discharge Method(single module)

指在 $25 \pm 2^{\circ}\text{C}$ 环境下，以 0.5C(50A)恒流放电至电池电压 44.8V。

Under $25 \pm 2^{\circ}\text{C}$, the Battery is discharged to 44.8V at a constant current of 0.5C(50A).

5.3 标称容量(单模块) Nominal Capacity(single module)

电池标称容量以 Cap 表示，单位为安时 (Ah)，是指电池按标准充电方式充电后，按标准放电方式放电得到的容量。

The nominal battery capacity is expressed in Cap, and the unit is ampere hour (Ah). It refers to the capacity obtained by discharging a battery in the standard discharge mode after it is charged in the standard charging mode.

6 技术参数 Product specifications and parameters

6.1 锂电池组技术参数 Battery Technical Parameters

项目规格 Project Specifications	标准参数 Standard Parameters	备注 Remarks
电池规格 Battery model	51.2V100Ah*n	每簇支持 10 个并联，簇与簇之间支持并联 Each cluster supports 10 parallel connections and parallel connections between clusters
电池类型 Battery Type	磷酸铁锂电池 LFP battery	
标称电压 Nominal voltage (V)	51.2	
标称容量 Nominal capacity (Ah)	100*n	25℃±2℃,0.5C 充电 0.5C 放电 25℃±2℃,0.5C Charge 0.5C Discharge n 代表并联数量 n is the number of parallel connections
最小容量 Minimum capacity(Ah)	99.5*n	25℃±2℃,0.5C 充电 0.5C 放电 25℃±2℃,0.5C Charge 0.5C Discharge n 代表并联数量 n is the number of parallel connections
标称能量 Nominal energy (KWh)	5.12*n	n 代表并联数量 n is the number of parallel connections
充电电压 Charging voltage (V)	57.6	
放电截止电压 Discharging cutoff voltage (V)	44.8	
标准充电电流 Standard charging current (A)	20	单模块 Single module
最大充电电流 Maximum charging current (A)	50	单模块 Single module
标准放电电流 Standard discharge Current (A)	50	单模块 Single module
持续工作电流 Continuous discharge current (A)	100	单模块 Single module
最大放电电流 Maximum discharge current (A)	100	单模块 Single module
最大充电功率 Maximum charging power (KW)	10KW	$n \geq 3$
最大放电功率 Maximum discharge power (KW)	10KW	$n \geq 2$

外壳材料 Shell material	钣金外壳 Sheet metal casing	
重量 Weight (kg)	约 About 68*n+35	
初始内阻 Initial internal resistance (mΩ)	≤50	3 个月内新电池，交流测试。 New battery within 3 months ACIR.
月自放电率 Monthly self-discharge rate	≤5%	
外形尺寸 Overall dimensions (mm)	820*540*830mm±5.0	产品最大堆叠层数外形尺寸，不含底座轮胎（长*宽*高） Maximum stack size, excluding base tire (length * width * height)
出厂电压 Delivery voltage (V)	48 ~ 54	30~60%SOC
循环寿命（次）（单模块） Cycle Life (times) (Single module) (25℃±2℃)	≥6000 容量保持率：≥80% capacity retention: ≥80%	a) 室温下，以 0.2C 恒流持续充电至电池电压 57.6V，恒压充电至电流 0.05C； b) 室温下，以 0.2C 恒流放电至终止电压 44.8V； c) 重复 a) ~b) 至容量衰减为额定容量的 80% 止，所完成的循环次数定义为该电池的循环寿命。 a) At room temperature, the battery is charged at a constant current of 0.2C to 57.6V, and the battery is charged at a constant voltage to a current of 0.05C; b) Discharged at 0.2C to the cut-off voltage 44.8V at room temperature; c) Repeating steps of a) ~ b), until the discharge capacity reached the 80% of rated capacity, the number of cycles completed was defined as the battery cycle life.
通讯方式 Communication mode	RS485、CAN	
充电温度范围 Charging temperature (℃)	0.2C	0~10℃
	0.5C	10~20℃
	0.5C	20~40℃
	0.2C	40~55℃
放电温度范围 Discharge temperature (℃)	-20 ~ 60	电芯表面温度不能超过 60℃ The surface temperature of the cell should not exceed 60℃
存储温度 (℃) Storage Temperature	-30~55℃ 90%RH Max	1 个月 1 month
	-10~45℃ 90%RH Max	6 个月

		6 month
建议存储温度 (°C) Recommended Storage Temperature	-10~35°C 85%RH Max	如果电池储存在高温下, 电池寿命将会缩短。the battery life would be reduced if battery is stored in high temperature.

6.2 充放电接口定义 Definition of charging and discharging interface

端子 PIN	定义 Definition	备注 Remarks
+	电池正极(+)Battery positive	红色 Red
-	电池负极(-)Battery negative	黑色 Black

6.3 BMS 管理系统 (单模块) Battery management system (Single module)

功能 Function	项目 Test project	最小值 Min	典型值 Typical	最大值 Max	单位 unit
工作电压 Operation voltage	电压范围 Voltage range	44.8	/	58.4	V
工作电流 Operation current	充电电流 Charging current	/	50	100	A
	放电电流 Discharge current	/	50	100	A
过充保护 Over charge protection	充电器电压(恒流转恒压) Charger voltage (CC/CV)	/	/	57.6	V
	过充保护电压(Cell) Over charge protection voltage(Cell)	/	3.65	/	V
	过充保护电压(Battery) Over charge protection voltage(Battery)	/	58.4	/	V
	过充保护延时时间 Over charge protection delay time	/	1000	/	ms
	过充保护恢复电压(Cell) Over charge protection recovery voltage (Cell)	/	3.45	/	V
	过充保护恢复电压(Battery) Over charge protection recovery voltage (Battery)	/	55.2	/	V
	过充保护释放条件 Over charge protection release condition	达到恢复电压或放电电流>1.5A Reach the recovery voltage or discharge current > 1.5A			
过放保护 Over Discharge protection	过放保护电压(Cell) Over discharge protection voltage(Cell)	/	2.8	/	V
	过放保护电压(Battery) Over discharge protection voltage(Battery)	/	45.6	/	V
	过放保护延时时间 Over discharge protection delay time	/	1000	/	ms

充电过流保护 Over-current Charge	过放保护恢复电压(Cell) Over discharge protection recovery voltage (Cell)	/	3.0	/	V
	过放保护恢复电压(Battery) Over discharge protection recovery voltage (Battery)	/	47.6	/	V
	过放保护释放条件 Over discharge protection release conditions	达到恢复电压或充电电流 > 1.5A Reach the recovery voltage or charging current > 1.5A			
	一级充电过流保护值 Primary charge over current protection value	/	105	/	A
	一级充电过流延时 First stage charge over current delay	/	40	/	S
	二级充电过流保护值 Secondary charge over current protection value	/	150	/	A
	二级充电过流延时 Secondary charge over current delay	/	3000	/	ms
	充电过流恢复条件 Charge over current recovery condition	延时自动恢复或放电恢复 保护次数达到 10 次后锁定 Delay automatic recovery or discharge recovery The lock is locked after the protection count reaches 10			
	锁定后恢复条件 Restore condition after lock	放电电流 > 1.5A 或关机后重新启动电池 Discharge current > 1.5A or restart the battery after shutdown			
	一级放电过流保护值 Primary discharge over current protection value	/	110	/	A
	一级放电过流保护延迟 Primary discharge over current protection delay	/	60	/	S
	二级放电过流保护电流值 Secondary discharge over current protection current value	/	200	/	A
	二级放电过流保护延迟 Secondary discharge over current protection delay	/	500	/	ms
	放电过流保护恢复条件 Over-current Discharge release	延时自动恢复或充电恢复 保护次数达到 10 次后锁定 Delay automatic recovery or charge			

		recovery The lock is locked after the protection count reaches 10			
	锁定后恢复条件 Restore condition after lock	充电电流>1.5A 或关机后重新启动电池 Charge current > 1.5A or restart the battery after shutdown			
短路保护 Short circuit	支持				
	短路保护延迟时间 Short circuit protection delay time	/	150	/	μ s
	短路保护恢复 Short circuit protection recovery	充电或移除负载后恢复 Restore after charging or removing load			
	短路说明：短路电流小于最小值或高于最大值可能会造成短路保护失效，短路电流超过 3000A，不保证有短路保护，也不建议做短路保护测试。 Short-circuit description: The short-circuit current is less than the minimum value or higher than the maximum value, which may cause the short-circuit protection to fail, and the short-circuit current exceeds 3000A, short-circuit protection is not guaranteed, and short-circuit protection testing is not recommended.				
放电高温保护 Discharge high temperature protection	温度保护值 Temperature protection value	/	55	/	℃
	温度保护释放值 Temperature protection release value	/	50	/	℃
放电低温保护 Low temperature protection of discharge	温度保护值 Temperature protection value	/	-20	/	℃
	温度保护释放值 Temperature protection release value	/	-15	/	℃
充电高温保护 Charging high temperature protection	温度保护值 Temperature protection value	/	50	/	℃
	温度保护释放值 Temperature protection release value	/	45	/	℃
充电低温保护 Charging low temperature protection	温度保护值 Temperature protection value	/	0	/	℃
	温度保护释放值 Temperature protection release value	/	5	/	℃
FET 高温保护(内置) high temperature protection of FET(Built-in)	温度保护值(Temperature protection value)	/	95	/	℃
	温度保护释放值(Temperature protection release value)	/	85	/	℃
均衡功能 Balance Function	均衡开启条件（开启电压以及开启关闭压差） Equilibrium opening condition（Opening	3.45V(0.05V/0.03V)			V

	voltage and opening closing pressure difference)				
	均衡电流 Balance current	/	100	/	mA
工作温度 Operation temperature	正常工作范围 Normal operating range	-30 ~ 75			℃
存储温度 Storage temperature	湿度低于 70%，时间≤1 年 Humidity below 70%，time ≤1 year	-5 ~ 40			℃
充放电线路 Charge discharge circuit	充放电同口 Same port for charging and discharging				

6.4 保护功能说明 Protection function description

6.4.1 过充保护 电池组在充电时，电压不断升高，当 BMS 检测到任意一串电芯电压或电池总电压达到过充保护值时，BMS 会关断充电 MOS，此时充电截止，电池组不能再给进行充电。

Overcharge protection When the battery pack is charging, the voltage keeps rising. When the BMS detects that any string of cell voltage or the total battery voltage reaches the overcharge protection value, the BMS will turn off the charging MOS. At this time, the charging cut-off, the battery pack can not be charged again.

6.4.2 过放保护 电池组在放电时，电压不断下降，当 BMS 检测到任意一串电芯电压或电池总电压达到欠压保护值时，BMS 会关断放电 MOS，此时放电截止，电池组不能再进行放电。

Over discharge protection When the battery pack is discharging, the voltage keeps dropping. When the BMS detects that any string of cell voltage or the total battery voltage reaches the under voltage protection value, the BMS will turn off the discharge MOS. At this time, the discharge is cut off, and the battery pack can no longer discharge.

6.4.3 过流保护 电池组在静置或者放电状态下，电流突然加大，当 BMS 检测到电流达到放电过流保护值时，BMS 会关断放电 MOS，此时放电截止，电池组能不能再进行放电；电池组在充电状态下，当 BMS 检测到充电电流值达到充电过流保护值时，BMS 会关断充电 MOS，此时充电截止，电池组能不能再进行充电。

Over-current protection the battery in standstill or discharge state, when the current is suddenly increased, if the BMS detects discharging current reaches over-current protection value, BMS will cut-off discharge MOS, then the discharge will be terminated and battery cannot discharge. When the battery is in charging state, if the BMS detects current reach over-charging current protection value , BMS will cut off charging MOS, then the charge will be terminated and battery can't be charged.

6.4.4 短路保护 电池组在负载异常或被短路情况下，BMS 会关断放电 MOS，此时放电截止，电池组不能再进行放电。

Short-circuit protection When the load of the battery string is abnormal or short-circuited, the BMS will turn off the MOS discharge. At this time, the discharge stops and the battery string cannot discharge

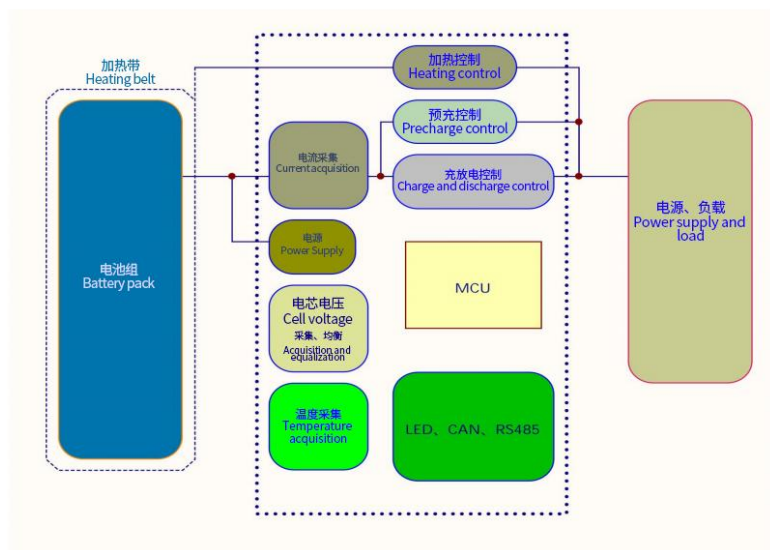
6.4.5 过温保护 电池组在放电时，当 BMS 检测到电芯表面温度达到放电过温保护值时，BMS 会关断放电 MOS，此时放电截止，电池组不能再进行放电；电池组进行充电时，当 BMS 检测到电芯表面温度达到充电过温保护值时，BMS 会关断充电 MOS，此时充电截止，电池组不能再进行充电。

Over-temperature protection When the battery is discharging, when BMS detects that the cell surface temperature reaches the over-temperature protection value, BMS will turn off the discharge MOS, and then the discharge will be terminated, and the battery can not longer discharge. When the battery pack is charged, when the BMS detects that the cell surface temperature reaches the charging over-temperature protection value, the BMS will turn off the charging MOS, and the charging will be terminated, and the battery pack can not be charged.

6.4.6 低温保护 电池组在放电时，当 BMS 检测到电芯温度表面达到放电低温保护值时，BMS 会关断放电 MOS，此时放电截止，电池组不能再进行放电；电池组进行充电时，当 BMS 检测到电芯表面温度达到充电低温保护值时，BMS 会关断充电 MOS，此时充电截止，电池组不能再进行充电。

Low temperature protection When the battery is discharging, when BMS detects that the temperature surface of the battery reaches the low temperature protection value of discharge, BMS will turn off the discharge MOS, and the discharge will be terminated, and the battery can not longer discharge. When the battery pack is charged, when BMS detects that the battery surface temperature reaches the low temperature protection value of charging, BMS will turn off the charging MOS. The charging will be terminated and the battery pack cannot be charged.

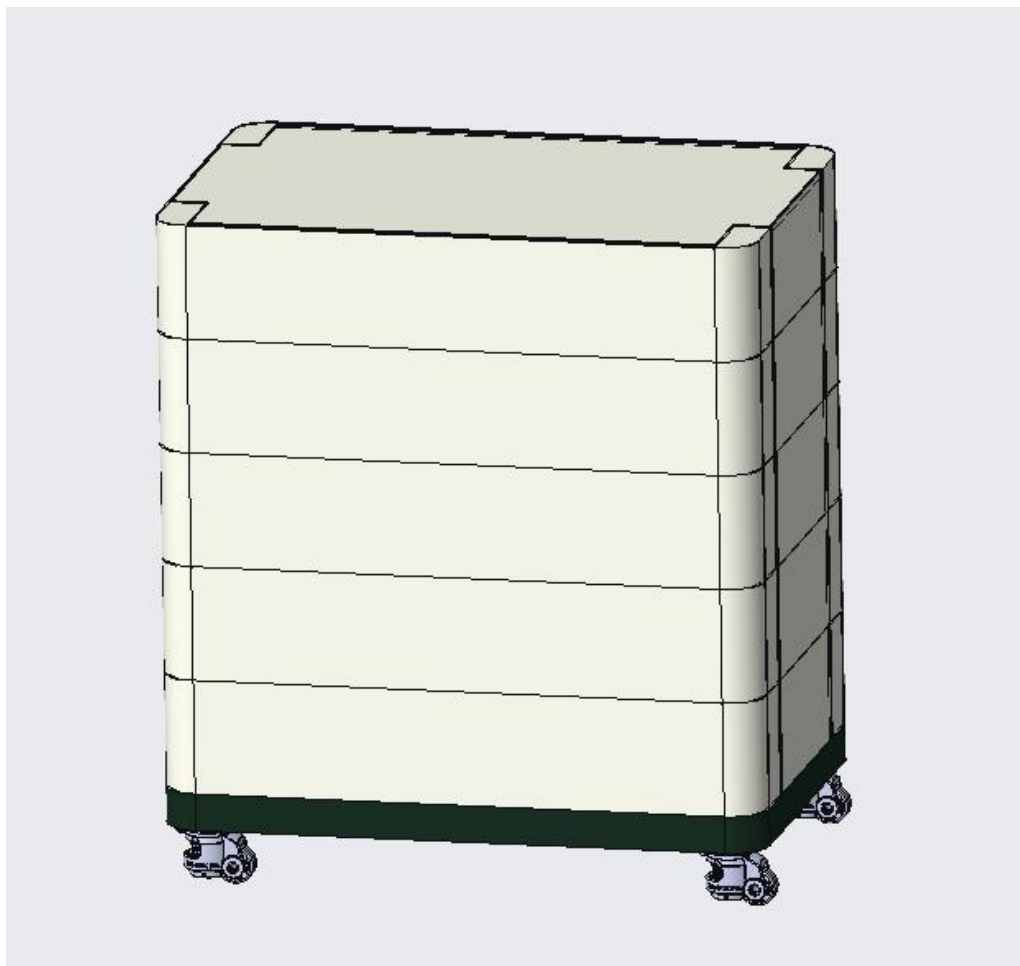
6.5 BMS 参考电路 BMS reference circuit



7 电池外观及包装 Battery appearance and packaging

7.1 电池外观 Battery appearance

成品图 Product map



正面视图 Front view

反面视图 Back view



左视图 Left view	右视图 Right view	尺寸图 Dimension drawing

7.2 电池标签信息 Battery label information

/

7.3 电池包装信息(参照最终出货实际要求)Battery packaging information(Refer to the final shipment requirements)

7.3.1 xxxPCS/箱，xxx 箱/卡板。

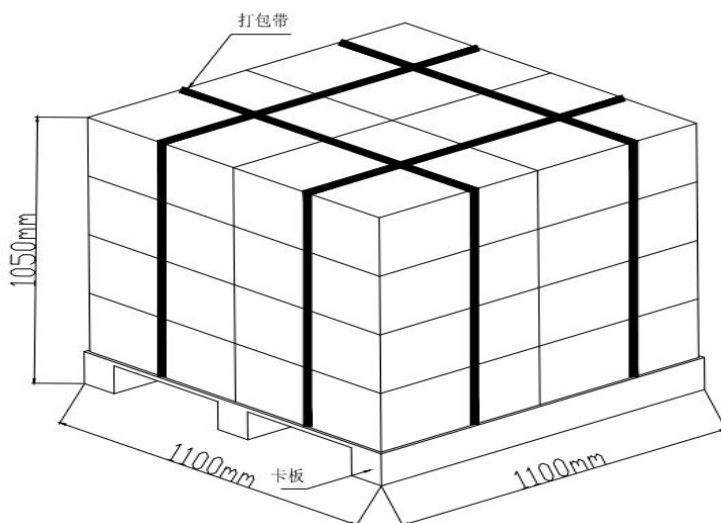
xxxPCS/box, xxx boxes/card board

7.3.2 产品外部用纸护角保护，在用打包带将产品固定，最后用拉伸膜缠绕。

The external part of the product is protected by paper corner protection, and the product is fixed with wrapping tape, and finally wrapped with stretch film

7.3.3 成品单个毛重 xxxKg 含包装，整卡板毛重约 xxxKg。

gross weight of the finished product is xxxKg, including the package, and the gross weight of the whole card board is about xxxK



8 电池组安全性能 Battery pack safety performance

序号 No.	测试项目 Test Item	性能标准 Performance Standard	测试条件与方法 Performance conditions and method
1	过充测试 Overcharge test	电池组不起火、不爆炸 No fire, No explosion	电池组以标准充电方式充满电，然后以 0.5C 充电至 $n \times 5V$ 为电池组内单体电池或单体电池并联块的串联级数) 充电 60min,之后搁置 6h,观察外观。 After fully charged according to the standard charge mode, charge the battery pack at 0.5C to $n \times 5V$ for 60 min, leave it in standstill and observe.
2	强制放电 Forced discharge	电池组不起火、不爆炸 No fire, No explosion	将电池组中的任何一个单体电池进行放电至终止电压，其余单体电池均为充满电状态，之后对电池组以 0.5C 恒流放电 60min,目检电池组外观。 Discharge any single cell to its end voltage, other cells are in full charged situation. Then discharge battery pack at 0.5C for 60 min. Observe battery appearance.
3	挤压测试 Crush test	电池组不起火、不爆炸 No fire, No explosion	电池组以标准充电方式充满电,按垂直于电池组中单体排列方向施压，挤压头为半径 75mm 的半圆柱体，半圆柱体长度(L)大于被挤压电池的尺寸(但不超过 1m)，挤压速度为 $(5 \pm 1) \text{ mm/s}$,当挤压至电池组至原尺寸的 70%，或挤压力达到 30kN 时保持 5min，之后下载挤压力，观察 1h。 After charging the battery pack with following the standard charge mode, the battery pack shall be crushed by a vertical force to cell pole. The crushing head is a semi-cylinder with radius of 75mm. The length of semi-cylinder is bigger than crushed battery pack (no more than 1meter). With crush speed of $5 \pm 1 \text{ mm/s}$, when battery deflection reaches to 70% of its original dimension or crushing force reaches to 30kN, keep it for

			5 min, then release load. Observe battery pack in 1 hour.
4	短路测试 Short circuit test	电池组不起火、不爆炸 No fire, No explosion	将电池组的正负极用电阻 $80\text{m}\Omega \pm 20\text{m}\Omega$ 的外线路进行短路, 直至电池组电压小于 0.2V , 目检电池组外。 Use an outer circuit with a $80\text{m}\Omega \pm 20\text{m}\Omega$ to short-circuited the battery pack until battery pack voltage is lower than 0.2V . Observe battery pack appearance.
5	过放测试 Over discharge test	电池组不起火、不爆炸、不漏液 No fire, No explosion, No leaking	电池组按标准充电后, 以 1C 电流放电至终止电压, 之后再继续以 0.1C 恒流放电 24h , 目检电池组外观。 After the battery pack is charged according to the standard, it is discharged to the terminal voltage with a current of 1C , and then continues to discharge at a constant current of 0.1C for 24h . Visually inspect the appearance of the battery pack.
6	跌落测试 Drop Test	电池组不起火、不爆炸 No fire, No explosion	将电池组放置在高度 (最低点高度) 为 1m 的位置, 以 X、Y、Z 三个方向自由跌落到水泥板面上各一次, 测试结束后目检电池组外观。 The battery pack is dropped from a height of 1m by X, Y, Z, three directions into the cement floor for each time. Observe the appearance after testing. 电池重量超过 5KG , 最低点高度为 0.6m , 只跌落 1 个方向 The battery weighs more than 5KG , and the lowest point is 0.6m high, falling in only one direction
7	温度循环 Thermal cycling	电池组不起火、不爆炸、不漏液 No fire, No explosion, No leaking	电池组首先按标准制式充电, 放入温度箱中, 温度箱温度调节如下: 1. 在 $70^\circ\text{C} \pm 3^\circ\text{C}$ 的环境中保持 4h 。 2. 在 30min 内由 $70^\circ\text{C} \pm 3^\circ\text{C}$ 降温至 $20^\circ\text{C} \pm 3^\circ\text{C}$, 保持 2h 。 2. 在 30min 内温度降至 $-20^\circ\text{C} \pm 3^\circ\text{C}$, 保持 4h 。 3. 在 30min 内温度升至 $20^\circ\text{C} \pm 3^\circ\text{C}$, 保持 2h 。 4. 循环以上步骤 5 次。 上述循环后, 将电池组放置在温度为 $20^\circ\text{C} \pm 5^\circ\text{C}$ 的环境中 7 天, 目检电池组外观。 After fully charged according to the standard charge mode, put battery in an oven with condition as follows: 1. $70^\circ\text{C} \pm 3^\circ\text{C}$ for 4h . 2. Decrease the chamber temperature from $70^\circ\text{C} \pm 3^\circ\text{C}$ to $-20^\circ\text{C} \pm 3^\circ\text{C}$, kept for 4h . 3. Raise the chamber temperature to $20^\circ\text{C} \pm 3^\circ\text{C}$, kept for 2h . 4. Repeat the test for 5 cycles. Afterwards, put the battery pack into a chamber with $20^\circ\text{C} \pm 5^\circ\text{C}$ for 7 days. Observe battery pack appearance.

8	低气压 Low air pressure	电池组不起火、不爆炸、不漏液 No fire, no explosion, no leaking	将电池组放置在 $20\pm3^{\circ}\text{C}$ 真空箱中，逐渐减小其内部气压至不大于 11.6 kPa（模拟 15420m 高度）并保持 6h，目检电池组外观。 The battery pack was placed in an empty box at $20\pm3^{\circ}\text{C}$, and the internal air pressure was gradually reduced to no more than 11.6 kPa (simulated height of 15420m) and kept for 6 hours. The appearance of the battery pack was visually examined.
备注 Note	除特殊说明，以上所有安全测试均应在 $25^{\circ}\text{C}\pm2^{\circ}\text{C}$ 通风橱中，且附带有保护装置的条件下进行。 Unless otherwise specified, all safety tests above shall be conducted in ventilated environment at $25\pm2^{\circ}\text{C}$ and under protective equipment.		

9 贮存与运输 Storage and shipping

9.1 贮存 Storage

如果要长时间存放(超过 3 个月)，应存储在温度范围为 $-10\sim35^{\circ}\text{C}$ @85%RH Max，不含腐蚀性气体的环境中，建议每隔 3 个月充放电一次，SOC 保持在 40-50%之间。

If you want to store it for a long time (more than 3 months), store it in an environment where the temperature ranges from -10°C to 35°C @ 85% RH Max and does not contain corrosive gases. Charge and discharge it every 3 months and keep the SOC between 40-50%.

电池组与充电器应贮存在清洁、干燥、通风良好的仓库内，避免与腐蚀性物质接触，远离火源及热源。电池组不得倒置，避免机械冲击或其它重物的重压。

Battery pack and charger should be stored in a clean, dry, well-ventilated warehouse, avoid contact with corrosive substances, away from fire and heat sources. The battery pack must not be turned upside down and avoid mechanical shock or any other heavy load.

9.2 运输 Logistics

电池组运输过程中荷电状态应处于 30~60%，在运输中不得受剧烈机械冲撞、暴晒、雨淋、倒置。在装卸过程中，应轻搬轻放，严防摔掷、翻滚和重压。

The battery pack should be in 30-60% state of its capacity during logistics and should not be subjected to violent mechanical crash, exposure to the blazing sun, rain, or inversion during logistics. In the process of loading and unloading, the battery should be handled lightly, strictly prevent throwing, rolling and heavy load.

10 电池使用注意事项 Precautions for battery use

为防止电池可能发生泄漏、发热、爆炸，请注意以下预防措施：

To prevent possible leakage, heating, and explosion of the battery, please pay attention to the following precautions:

10.1 请将锂电池组置放在孩童无法够触的区域。

Place the li-ion battery out of children's reach.

10.2 严禁将电池组正负极短路，安装中请勿将正负极接错（红线为正极，黑线负极）。

Forbidden to short circuit the positive and negative poles. Connect the positive and negative poles right. (Red +, Black -).

10.3 电池组充电必须使用比克新动力指定的专用充电器进行充电，若客户使用非指定的充电器，则充电器应符合比克新动力的要求及国家相关标准要求，充电方式为先恒流后恒压，充电器上限电压不超过电池组的上限电压，充电电流不超过 50A。

It is needed to charge battery with BNP specified charger as mandatory, if customer use the un-specified charger, then the charger should adhere to BNP requirement and related national criteria, charge mode should be in constant current as first and constant voltage as next, high limit of charge should not exceed high limit voltage of battery pack, charge current should be below 50A.

10.4 请在环境温度-20℃~60℃内使用，在环境温度 0℃~55℃内对电池进行充电，严禁在 0℃以下进行充电。

Use it at ambient Temperature of -20℃~60℃, charge it at ambient Temperature of 0℃~55℃. It is strictly forbidden charging battery under 0℃.

10.5 当电压降至大于截止电压 5V 时，请及时充电，充电不得超过 12 小时。

Charge in time when the voltage drops to greater than cut-off voltage 5V. The charging time should not exceed 12h.

10.6 严禁控制器限流超过电池组最大放电电流使用，更换控制器请提前咨询。

Forbidden to use the controller current limit exceeding the nominal discharge current of the li-ion battery. Please consult BNP before changing controller.

10.7 请严格按照锂电池操作规范使用，选择通风开阔地点充电，并远离易燃易爆物品。

Please use the lithium battery strictly according to the operation rules, choose the ventilated open place to charge and keep away from inflammable and explosive materials.

10.8 电池组中有保护装置，请勿私自拆解或改变电池组结构，否则不予售后，后果自负。

There is protective device in the battery pack. Please do not disassemble or change the structure of the battery pack, otherwise afters-ales is responsible and the consequence is on user' s own account.

10.9 电池进水损坏及电池组泡水，不提供质保。

No warranty is provided if the battery is damaged by water or the battery string is soaked.

10.10 电池组因接线错误而损坏，商务协商，付费维修。

If battery pack is damaged due to faulty wiring, the user should pay the bill of maintenance.

10.11 过流引起的保护板烧坏，商务协商，付费维修。

If BMS is damaged by over-current, the user should pay the bill of maintenance.

11 免责声明 Disclaimer

11.1 如果由于产品需求单位不按本规格书中的规定进行使用，造成的一切损失，供方将追究产品需求单位的责任。根据对供方造成的损失，产品需求单位可向供方提供赔偿。

If the customer does not use the product according to the provisions of this specification, causing all the related loss, the supplier will investigate the responsibility. If the responsibility is from supplier, the customer should provide compensation to the supplier.

11.2 质保期为五年产品质保，十年性能质保，如使用不当而非质量问题，即使在保用期内，比克新动力也不会无偿更换新电池，如果要延长质保请与我司联系沟通。

The warranty period is five years product warranty, ten years performance warranty, such as improper use rather than quality problems, even within the warranty period, BAK New Power will not be free to replace the new battery, if you want to extend the warranty please contact our company.

11.3 比克新动力保留对产品的规格及性能参数修改的权利。买方在订购比克新动力产品前，需要与比克新动力提前确认产品的最新状态。

BAK New Power reserves the right to modify the specifications and performance parameters of the product. Before order BAK New Power products, the buyer needs to confirm the latest status of the

products with BAK New Power in advance.

11.4 产品需求单位可提出对电池组的需求并与比克新动力沟通，如客户有一些特别的应用或者操作条件不同于此文件所描述的，比克新动力可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 its information and contact BAK New Power in advance, when the customer needs applications or operating conditions other than those described in this document.

BAK New Power could design and build such products according to customized special request.

11.5 英文规格释义仅供参考，请以中文版技术规格要求为准，我司进行工艺优化时不需另行通知。

English specifications are for reference only. Please refer to the technical specifications of the Chinese Version. We will carry out process optimization without prior notice.

12 联系方式 Contact us

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13 附录 Appendix