文件编号 File NO.	BNP-GGS-BC100F
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文件编号: BNP-GGS-BC100F

# 比克新动力锂离子电池组 产品规格书

# BAK New Power Lithium Battery Specification

项目代号	BC100F
Project Code	BC100F
产品名称	锂离子电池组
Product Name	Li-ion Battery Pack
产品规格	60V100Ah
Product Specification	60V100Ah

版本 Edition	A00		发行日期 issue Date	
编制 Editor	校准 审核 Calibration Check		会签 Countersign	批准 Approval



文件编号 File NO. BNP-GGS-BC100F 版本 Edition A00

# 修订记录

# **Revision Record**

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文件编号 File NO. 版本 Edition BNP-GGS-BC100F

# 目录

# Contents

一、	概述 Product overview	1
	技术参数 Product specifications and parameters	
	2.1 锂电池组技术参数 Battery Technical Parameters	1
	2.2 充放电接口 Charging and discharging interface	2
	2.3 BMS	3
	锂电池外观照片 Battery pack dimension and Appearance测试条件 Test conditions	
	4.1 测试条件 Test Conditions	8
	4.2 电池组标准充电 Battery pack standard charging	8
	4.3 电池组标准放电 Battery pack standard discharging	8
五、	电池组安全性能 Battery pack safety performance	8
	贮存与运输 Storage and shipping	
	6.1 贮存 Storage	. 11
	6.2 运输 Logistics	11
七、	电池使用注意事项 Precautions for battery use	. 11
	免责申明 Disclaimer	
九、	联系方式 Contact us	14



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

1

# 一、概述 Product overview

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。本规格书适用于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 60V100Ah 锂离子电池组。

This specification describes the model, specification, parameters, storage, precautions, etc. of lithium-ion battery pack. This specification is applicable to 60V100Ah lithium-ion battery pack produced by Zhengzhou BAK New Power Technology Co., Ltd., and Anhui BAK New Power Technology Co., Ltd. And any affiliated companies from both

# 二、技术参数 Product specifications and parameters

# 2.1 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	60V100Ah	10		
电池类型 Battery Type	磷酸铁锂锂电池	3		
额定电压(V) Rated voltage(V)	60			
额定容量(Ah) Nominal capacity(Ah)	100	25℃±2℃,0.2C 充电 0.5C 放电 25℃±2℃,0.2C Charge 0.5C Discharge		
充电截止电压(V) Charging cutoff voltage(V)	73			
放电截止电压(V) Discharging cutoff voltage(V)	50			
标准充电电流(A) Standard charging current(A)	20			
最大充电电流(A) Maximum charging current(A)	50			
标准放电电流(A) Standard discharge Current(A)	50			
最大放电电流(A) Maximum discharge current(A)	100			
外壳材料	钣金			
Shell material	Plastic + Sheetmetal			
重量(kg)	约 51.5			
Weight (kg)	Approximate 51.5			
近扣丘方 土丛短扣 不得孔点体操 抹尖				



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

月自放电率 Monthly self-discharge rate	≤3%	
外形尺寸(mm) Overall dimensions(mm)	640*313*210	长*宽*高 Length* Width*Height
充电温度范围(℃) Charging temperature(℃)	0~55	
放电温度范围(℃) Discharge temperature(℃)	-20~60	
出厂电压(V) Delivery voltage(V)	60±2	
循环寿命 Cycle Life	500 次@70% 500cycles@70%	25℃±2℃,0.2C 充电 0.5C 放电 25℃±2℃,0.2C Charge 0.5C Discharge

# 2.2 充放电接口 Charging and discharging interface

电池组充放电插头为 120A 安德森插头,接口定义如下:



端子	定义	备注
PIN	Definition	Remarks
+	电池正极(+)	
	Battery Cathode	
-	电池负极(-)	
	Battery Anode	
1	1	
2	1	
3	/	
4	1	
5	1	
6	/	



文件编号 File NO. BNP-GGS-BC100F 版本 Edition A00

# 2.3 BMS

# 2.3.1 BMS 参数 BMS parameters

Z.O. I BINIC	多数 Divio parameters	具小店	曲 刑 /古	<b>旦</b> 十/古	
功能	项目	最小值	典型值	最大值	单位
Function	Test project	Minimum	Typical	Maximum	unit
		value	value	value	
工作电压					
Operation	电压范围	50	/	73	V
voltageOper	Voltage range		,		
ation voltage					
工作电流	充电电流		50		Α
Operation	Charging current		30		, , ,
current	放电电流		100		Α
Current	Discharge current		100		_ ^
	充电器电压(CC-CV)		73		V
	Charger voltage (CC-CV)		/3	20	V
	过充保护电压			6	
	Over charge protection		$3.65 \pm 0.05$		V
充电保护	voltage		A-9		
Charging	过充保护延时时间		10		
protection	Over charge protection		1000		ms
	delay time	25	$\rho$		
	过充保护恢复电压	1			
	Over charge protection	16	3.55		V
	recovery voltage	L			
	过放保护电压				
	Over discharge protection		2.5		V
	voltage				-
	过放保护延时时间				
	Over discharge protection		1000		ms
放电保护	delay time				
Discharge	过放保护恢复电压				
protection	Over discharge protection		2.7		V
	recovery voltage		2.7		
	过放保护恢复条件				
	Over discharge protection		充电或者断	开负载	
	recovery condition		Disconnect load	l or charge	
	充电过流保护值				
	尤电过机体扩阻 Charging overcurrent		60		Α
	protection value				^
	·				
	充电过流延时		2000		ms
	Over current charge delay				
	充电过流释放条件		断开充电	· · · · · · · · · · · · · · · · · · ·	



文件编号 BNP-GGS-BC100F File NO. 版本 A00 Edition

			L
充电保护	Charging overcurrent	Disconnect the charger	
Charging	release condition		
protection	放电过流 1 保护电流值		
	Discharge overcurrent level	100	A
	1 protection current value		
	放电过流 1 保护延迟		
	Discharge overcurrent level	8	S
	1 protection delay		
	放电过流 2 保护电流值		
	Discharge overcurrent level	150	A
	2 protection the current	130	
	value		
	放电过流 2 保护延迟		
	Discharge overcurrent level	2000	ms
	2 protection delay		
	放电过流保护恢复条件		
	Discharge overcurrent	断开负载或	者充电
	protection recovery	Disconnect load	d or charge
	condition	1.438.7	<u> </u>
	短路保护	36.VIO	
	Short circuit protection	800	A
	短路保护延迟时间	APA	
	Short circuit protection	300	μs
短路保护	delay time		
Short circuit		断开负载或	
	短路保护恢复	者充电	
	Short circuit protection	Disconnect	/
	recovery	load or	
		charge	
放电高温保	温度保护值		
护 Discharge	Temperature protection	60	$ $ $^{\circ}$
high	value		
temperature	温度保护释放值		
protection	Temperature protection	55	°C
p. 5.550.1011	release value		
放电低温保	温度保护值		
护	Temperature protection	-20	°C
Low	value		
temperature	温度保护释放值		
protection of	Temperature protection	-15	°C
discharge	release value	-15	
充电高温保	温度保护值		
护 Charging		55	°C
	Temperature protection value	) 33	
high	value		



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

temperature protection	温度保护释放值 Temperature protection release value	50	℃
充电低温保 护 Charging low	温度保护值 Temperature protection value	-3	$^{\circ}$
temperature protection	温度保护释放值 Temperature protection release value	0	$^{\circ}$ C
FET 放电高 温保护 FET	温度保护值 Temperature protection value	85	${\mathbb C}$
discharge high temperature protection	温度保护释放值 Temperature protection release value	60	°C
内阻 Internal resistance	放电回路内阻 Internal resistance of discharge circuit	10~20	m Ω
自耗电 Self-consum ption Power	工作模式 Operation mode	50~80	μ А
工作温度 Operation temperature	正常工作范围 Normal operating range	-20~70	${\mathbb C}$
存储温度 Storage temperature	湿度低于 90% Humidity below 90%	-40∼85	${\mathbb C}$

# 2.3.2 保护功能说明 Protection function description

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达到欠压保护值时,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 is charging, the voltage keeps rising. When the BMS detects that the voltage of any cell is higher than the overcharge protection value, the BMS will turn off the charging MOS tube and the charging will be terminated.

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



文件编号 File NO. BNP-GGS-BC100F 版本 Edition A00

能再进行放电。

Over discharge protection: When the battery pack is in the condition of discharge, the voltage decreases. When the BMS detects any series of batteries voltage below the discharge protection value, the BMS will cut-off MOS tube, discharge will be terminated.

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.

4)短路保护:电池组在负载异常或被短路情况下,导致放电电流急剧变大,当 BMS 检测到电流值达到过流保护值时,BMS 会关断放电 MOS,此时放电截止,电池组不能再进行放电。

Short-circuit protection: When the battery in the situation of abnormal load or short circuit, result in discharging current increases drastically. When the BMS detects current reaching to over current protection value, BMS will cut off discharge MOS, discharge will be terminated, and battery can't discharge

5)过温保护:电池组在放电时,当 BMS 检测到电芯温度表面达到放电高保护值时,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高温保护值时,BMS会关断充电 MOS,此时放电截止,电池组不能再进行充电。

Over temperature protection: When the battery pack is discharging and the BMS detects battery cell surface temperature reaching into high protection value, the BMS will cut off discharging MOS, discharge will be terminated,



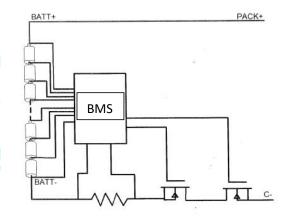
文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

battery pack can't discharge any more. When the battery pack is charging and the BMS detects battery cell surface temperature reaching into high protection value, the BMS will cut off charging MOS, charging will be terminated, battery pack can't be charged any more.

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,此时放电截止,电池组不能再进行充电。

Low temperature protection: When the battery pack is discharging and the BMS detects battery cell surface temperature reaching into low protection value, the BMS will cut off discharging MOS, discharge will be terminated, battery pack can't discharge any more. When the battery pack is charging and the BMS detects battery cell surface temperature reaching into low protection value, the BMS will cut off charging MOS, charging will be terminated, battery pack can't be charged any more.

2.3.3 电池管理系统原理图(Schematic diagram of BMS)



# 2.3.4 通讯方式 Communication mode

通讯方式为: 硬件版。

# 三、锂电池外观照片 Battery pack dimension and Appearance

电池组外观照片如下图所示:



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

The appearance photo of battery pack is indicated as below:



### 四、测试条件 Test conditions

### 4.1 测试条件 Test Conditions

除特别指定,所有测试均在温度为 25±2℃、相对温度 5%~90%、大气压力 86kPa~106kPa 环境中进行。

# 4.2 电池组标准充电 Battery pack standard charging

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0.2C。

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 0.2C

4.3 电池组标准放电 Battery pack standard discharging

电池组标准放电电流为 0.5C。

Battery pack standard discharge current is 0.5C

# 五、电池组安全性能 Battery pack safety performance



文件编号 File NO. BNP-GGS-BC100F 版本 Edition A00

		性能标准	
序号 No.	测试项目	Performance	测试条件与方法
, , ,	Test Item	Standard	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*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 90min,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*5V for 90 min, leave it in standstill and observe
2	Forced	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 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±1)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 ± 1mm/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 80m Ω ± 20m Ω 的外线 路进行短路,直至由池组由压小于 0.2V 目检由池
5		电池组不起火、不爆 炸、不漏液 No fire, No explosion, No	电池组按标准充电后以 0.5C 电流至终止电压,之后再继续以 0.1C 恒流放电 24h,目检电池组外观。 After fully charged according to the standard charge mode, then discharge battery at 0.1C for



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

		leaking	24h. Observe battery pack appearance.
6	跌落测试 Drop Test	电池组不起火、不爆炸、不漏液 炸、不漏液 No fire, No explosion, No leaking	将电池组放置在高度(最低点高度)为 1.5m 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 1.5m by X, Y, Z, three directions into the cement floor for each time. Observe the appearance after testing.
7	Thermal	电池组不起火、不爆炸、不漏液 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 72℃±2℃的环境中保持 4h。  2.在 30min 内由 72℃±2℃降温至 20℃±2℃,保持 2h。  2.在 30min 内温度降至-20℃±2℃,保持 4h。  3.在 30min 内温度降至 20℃±2℃,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℃±5℃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. 72℃±2℃ for 4h.  2. Decrease the chamber temperature from 72℃±2℃ to -20℃±2℃, kept for 4h.  3. Raise the chamber temperature to 20℃±2℃, kept for 2h.  4. Repeat the test for 5 cycles.  Afterwards, put the battery pack into a chamber with 20℃±5℃ 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 炸、不漏液 No fire, no explosion, no leaking	将电池组放置在真空箱中,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。 Put the battery pack into a vacuum chamber decrease inside air pressure to be less than 11.6 kPa, (simulates pressure at the height of 15420m) and keep it for 6h. Observe battery appearance.
备注 Note	条件下进行。 Unless other	wise specified, all sa	应在 25℃±2 ℃ 通风橱中,且附带有保护装置的 afety tests above shall be conducted in ventilated er protective equipment.

# 六、贮存与运输 Storage and shipping



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

# 6.1 贮存 Storage

电池组需长期贮存时,需保持 50%的电量,放置于干燥、通风处;每 3 个 月用充电器充电。

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。

When the battery pack needs to be stored for a long time, it should be kept at 50% of the electric capacity and placed in a dry and ventilated location. Use charger to charge every 3 months.

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.

# 6.2 运输 Logistics

电池组运输过程中荷电状态应处于 30~50%, 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 30-50% 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.

# 七、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:

7.1 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.

**7.2** 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 -)



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

7.3 请使用比克新动力指定的专用充电器充电。

Pease use the matching li-ion battery charger authorized by BNP.

**7.4** 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  $^{\circ}$ C ~60  $^{\circ}$ C , charge it at ambient Temperature of 0  $^{\circ}$ C ~45  $^{\circ}$ C. It is strictly forbidden charging battery under 0  $^{\circ}$ C.

7.5 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.

7.6 电池需长期贮存时,请将电池组充电至 30%~50%的电量(放完电后,用专用充电器充电 3-4 小时即可)。每隔三个月进行一次充放电。

Charge the li-ion battery to 30%-50% of the power (charge it for 3-4 hours after discharging), when it needs to be stored for a long time. Charge and discharge every three months.

7.7 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.

**7.8** 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.

**7.9** 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 aftersales is responsible and the consequence is on user's own account.

7.10 电池仓体侧放/倒放而引起的进水损坏及电池组泡水,不提供质保。

No warranty is provided for the water damage caused by the side-up/down of the battery compartment and the soaking of the battery pack.



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

7.11 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.

7.12 过流引起的保护板烧坏,商务协商,付费维修。

If BMS is damaged by overcurrent, the user should pay the bill of maintenance.

### 八、免责申明 Disclaimer

8.1 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.

**8.2** 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.

8.3 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.

8.4 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.



文件编号 File NO.	BNP-GGS-BC100F
版本 Edition	A00

# 九、联系方式 Contact us

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