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Technical protocol

技 术 方 案 书

Specification 产品规格：12V330Ah

Cell Model 电芯型号：3.2V-330Ah

Prepared by 订制	Approved by Sales 销售部批准	Approved by R&D 研发部批准	Approved by GM 总经理批准

Customer Approval 客户批准	Signature 签字	Date 日期
	Customer Name 客户名称	
	Company Stamp 客户盖章	

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Amendment records 变更记录

Revision 版本号	Description 变更描述	Date 日期	Prepared By 拟制	Approval By 批准
A				

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1. Specification 产品规格

No.	Item	Specification	
01	Pack configuration 产品结构	4S1P	
02	Cell Model 电芯型号	3.2V-330Ah	
03	Charge Voltage 充电电压	14.4V(单串3.6V)	
04	Discharge cut-off Voltage 放电截止电压	10V	
05	Nominal Voltage 标称电压	12.8V	
06	Minimum Capacity 最小容量	330Ah @ 0.2C discharge	
07	Nominal Capacity 标称容量	330Ah @ 0.2C discharge	
08	Nominal Energy 标称能量	4424Wh @ 0.2C discharge	
09	Max Charge Current 最大充电电流	50A	
10	Max Cont Discharge Current 最大持续放电电流	200A	
11	Standard Charge 标准充电	0.2C constant current to 14.4V, CV to taper current≤0.05C 0.2C恒流充电至14.4V，然后以14.4V恒压充电，至充电电流降至0.05C为止	
12	Standard Discharge 标准放电	0.2C constant current to 10V 0.2C恒流放电，至电压降至10V为止	
13	Pack Weight 成品重量	26.5KG 大	
14	Waterproof level 防水等级	IP65	
15	Shipment Voltage 出货电压	12.6~13.2V	
16	Operating Temperature 工作温度	Charge 充电	0°C ~45°C: standard charging method 0°C ~45°C: 标准充电方式
		Discharge 放电	-10°C ~60°C

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17	Storage Temperature 储存温度	-20 ~ 25°C, the pack shall be able to deliver $\geq 80\%$ rated capacity after 1 yr. of storage; -20 ~ 45°C, the pack shall be able to deliver $\geq 80\%$ rated capacity after 3 months of storage; -20 ~ 60°C, the pack shall be able to deliver $\geq 80\%$ rated capacity after 1 month of storage -20 ~ 25°C, 储存一年之后产品的可恢复容量不少于额定容量的80%; -20 ~ 45°C, 储存三个月之后产品的可恢复容量不少于额定容量的80%; -20 ~ 60°C, 储存一个月之后产品的可恢复容量不少于额定容量的80%
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2. Product Performance 产品性能

4.1 Electrical characteristics

No.	Item 项目	Test method 测试方法	Criteria 标准
1	Capacity 容量	The capacity shall be measured at a discharge current of 0.2C and a cut-off voltage of 10V after standard charging. 标准充电后，以0.2C的电流放电至10V截止电压所放出的容量	$\geq 330\text{Ah}$
2	Cycle Life 循环寿命	After standard charging, discharge the battery at 0.2C to 10V. Repeated the above test cycle till retained capacity is 80% of initial capacity. 标准充电后，以0.2C电流放电到10V；持续重复以上测试，直到保持容量为初始容量的80%	Cycles ≥ 8000 times 循环次数≥ 8000次

3. Storage and Others 储存及其他

5.1 Long Time Storage 长时间储存

If the pack is stored for a long time, the pack's storage voltage should be 12.6~13.2V and the pack should be stored in a condition as section 5.2;

如果本产品需要长期储存，电池电压需要保持在 12.6~13.2V，且储存环境需要符合 5.2 要求；

5.2 Standard Environmental Test Condition 标准测试环境

Unless otherwise specified, all tests stated in this Product Specification are conducted at below condition:

Temperature: 25 $\pm$ 3°C; Humidity: 65 $\pm$ 20% RH;

除非另有说明，该规格书中涉及的所有测试都应在以下环境条件下进行：

温度：25 $\pm$ 3°C；湿度：65 $\pm$ 20% RH；

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4. Battery Drawing 成品图纸

1. 整个电池系统共使用 4 个 3.2V330Ah 电池，4 串 1 并，组成 12V330AH 的电池包，内置蓝牙保护板，电池包尺寸 383*203*269mm 公差±2mm（不包括出线和连接器），电池包黑色胶壳。内置蓝牙模块，外部接线柱 M8 螺丝孔。



5. Battery pack main parts list 电池组主要零件清单

No	Name 名称	Specification 规格	Qty 数量	Unit 单位
1	Cell 电芯	3.2-330Ah	4	EA
2	BMS	BMS-4S200A	1	EA
3	producing shell 胶壳	black 黑色	1	EA

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6. BMS Specification 保护板规格

8.1 BMS Electrical Characteristics 电性能参数 (Ta=25±3℃)

Item	Name	Min	Typical	Max	Units
项目	类型	最小值	典型值	最大值	单位
Voltage 电压	Over charge Detection Voltage 过充保护电压	3.7	3.75	3.8	V
	Over charge protection delay time 过充保护延迟	1000	2000	3000	mS
	Over charge Release Voltage 过充恢复电压	3.55	3.6	3.65	V
	Over discharge Detection Voltage 过放保护电压	2.1	2.2	2.23	V
	Over discharge protection delay time 过放保护延迟	1000	2000	3000	mS
	Over discharge Release Voltage 过放恢复电压	2.5	2.6	2.7	V
Current 电流	Discharge Over current Detection 放电过流保护	700	800	580	A
	Over current protection delay time 过流保护延迟	7	9	20	mS
	Charge Over current Detection 充电过流保护	/	/	/	A
	Charge Over current protection delay time 充电过流保护延迟时间	/	/	/	mS
	Short circuit protection delay time 短路保护延迟	800	1000	1400	uS
Short circuit protection 短路保护		Allow 允许			
Short circuit protection Release 短路保护恢复方式		/			
Work Current Consumption 工作自耗电		≤10			mA
BMS Impedance 内阻		≤2			mΩ

7. Warranty 保质期

Warranty period of this product is 3 years from delivery date.

You are kindly requested to use the battery, which is delivered from Sichuan Minghong in strict accordance with the

specification, and remarks include at the end of the document. Due to improper usage of the battery, an accident or a fire may occur due to the battery generating heat, catching fire or rupture, smoke.

该产品的保质期为自出货之日起的 3 年之内。

建议客户严格按照该规格书中标示的注意事项来使用电池；如果不正确的使用电池，电池可能发热、破裂、着火、冒烟等，进而导致安全事故。