

# 产品规格书

## Battery Specification

项目编号: HNZX-HY48100AH22081801

型号: Model: 51.2V/100Ah

版本号: A.0JX-4U

approval	签名	日期
	code	
	公司盖章 Company seal	

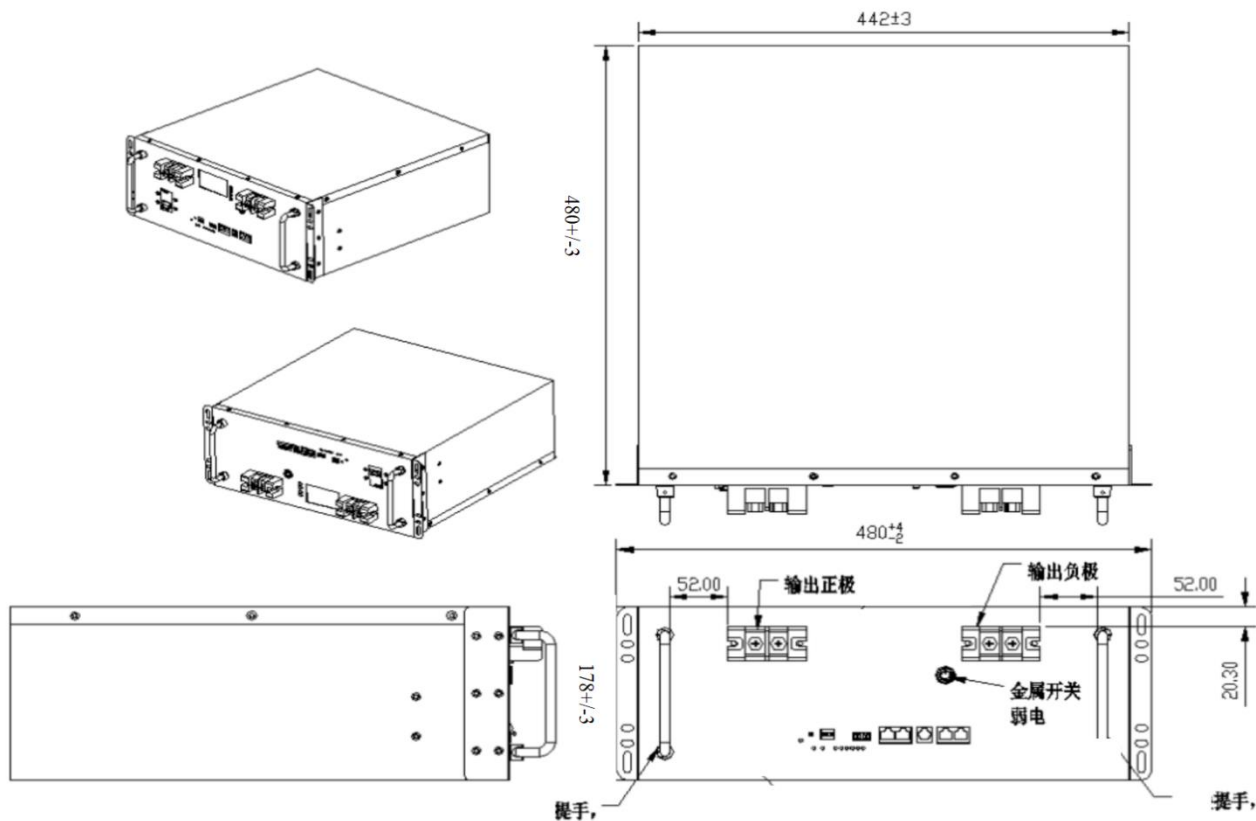
客户确认 Customer approval	签名	日期
	客户代码 Customer code	
	公司盖章 Company seal	

一、电池组基本特性 Battery Pack Normal performance

序号 NO.	项目 Item	常用参数 General Parameter		备注 Remark
1	电池类型 Battery type	磷酸铁锂电池 LiFePO4 Battery		
2	产品标称容量 (0.2C) Standard capacity (0.2C)	100Ah		CATL
3	额定电压 Rated voltage	51.2V		工作电压 (Work voltage)
4	标称能量 Rate Power	5120Wh		
5	内阻 Internal Impedance	≤60mΩ		Internal resistance measured at AC 1KHZ after 50% charge
6	最大充电电压 Max.Charge voltage	58.4V		建议充电器选型电压 (Voltage of Charger Selection)
7	放电截止电压 Cut-off voltage	44V		保护电压 BMS discharge voltage cut-off
8	标准充电电流 Standard charge current	20A		充电电流 20A-100A ( charge current 20- 100A)
9	持续放电电流 Continuous discharge current	0~100A		
10	最大持续放电电流 Max Continuous discharge current	100A		(1000 毫秒) (1000ms)
11	电池尺寸 Battery dimension	L480±3×W442±3×H178±3mm		尺寸参考，以实际为准
12	电池总重量 (Approx.) Total weight (Approx.)	约 60kg Approximately 60kg		以实测为准 Subject to actual measurement
13	工作温度 (CC/CV) Charge method (CC/CV)	标准 Standard	0℃~45℃	充电 Charge
		放电 Discharge	-20℃~55℃	
		贮存 Storage	-20℃~45℃	

14	运输容量 Capacity @ shipment	50%-60%		
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**二、产品图(参考, 尺寸以实物为准) Products drawing/ picture**



**三、电芯性能 Cell basic characteristics**

由 16 个单体电池通过 1 并 16 串组成的电池组模块，电芯性能如下列表。

16cells, 1 parallel and 16 serial, make a battery, Cell performance is as follows.

NO.	Item	General Parameter
1	电池类型 Cell Type	磷酸铁锂电池 LiFePO4 Battery
2	循环寿命 cycle life	≥4500 次
3	标称电压 Nominal Voltage	3.2V
4	标称容量 Nominal Capacity	100Ah+/-5%
5	内阻 Internal Resistance	≤1.5mΩ ( AC 1kHz )
6	放电截止电压 Discharge Cut-off Voltage	2.5V
7	最大充电电流 Max Charge Current	100A

8	最大持续放电电流 Max Discharge Current	100A
9	最大瞬时放电电流 Max Discharge Current (Peak)	200A(小于 30 秒)
10	最高充电电压 Max Charge Voltage	3.65V
11	充电方式 Charge Method	恒流恒压 CC/CV (constant current/constant voltage)
12	重量 Weight	2kg
13	充电温度 Charging Temperature	-10°C~65°C
14	放电温度 Discharging Temperature	-20°C~65°C
15	储存温度 Storage Temperature	0~25°C (≅ one month)
16	相对湿度 Relative Humidity	≅ 65%
17	运输电量 Voltage of shipment	2~5% SOC

#### 四、BMS 保护板 Protective board (建议参数-Recommended parameters)

4.1 保护板通过对单串电芯的监控，有完善的过充、过放、过流、短路、温度保护，并且电池具有独立的平衡功能。The protection board, provides protection against overcharge, Over discharge, Over current, short circuit, and over temperature through monitoring single string of cells. Also it enables every battery pack to obtain independent balancing function.

项目 Item	内容 Content	参数 General Parameter	单位 Unit	备注 Remark
过充电压保护 Overcharge voltage protection	单节过充保护阈值 Single cell overcharge protection threshold	3.65±0.05	V	
	单节过充保护延迟时间 Delay time of single cell overcharge protection	0-1000	mS	
	单节过充保护恢复阈值 Recovery threshold of single cell overcharge protection	3.38±0.05	V	
过放电压保护 Overvoltage protection	单节过放保护阈值 Single cell overdischarge protection threshold	2.9±0.05	V	
	单节过放保护延迟时间 Delay time of single cell overdischarge protection	0-1000	mS	
	单节过放保护恢复阈值 Recovery threshold of single cell overdischarge protection	2.9±0.1	V	

	休眠唤醒条件 Sleep wake condition	接入充电器 Connect charger		
充电过流保护 Charge overcurrent protection	充电过流保护阈值 1 Charging overcurrent protection threshold 1	110	A	
	充电过流保护延迟 1 Charging overcurrent protection delay 1	0-1	S	
	充电过流保护恢复条件 Recovery conditions of charging overcurrent protection	移除充电器 Remove charger		
放电过流保护 Discharge overcurrent protection	放电过流保护 Discharge overcurrent protection	过流保护一: 100 过流保护二: 110	A	
	放电过流保护延迟 Discharge overcurrent protection delay 1	过流保护一: 0-1000 过流保护二: 0-100	mS	
	放电过流恢复条件 Recovery conditions of discharge overcurrent	负载释放 Load release		
短路保护 Short circuit protection	放电短路保护阈值 Discharge short circuit protection threshold	400	A	
	放电短路保护延时 Discharge short circuit protection delay	100	uS	
	短路保护恢复条件 Short circuit protection recovery conditions	负载释放 Load release		负载释放/自动恢复 Load release / automatic recovery
高温保护 High temperature protection	放电高温保护阈值 Discharge high temperature protection threshold	60	°C	
	放电高温恢复阈值 Discharge high temperature recovery threshold	55		
	充电高温保护阈值 Charging high temperature protection threshold	55		
	充电高温恢复阈值 Charging high temperature recovery threshold	50		
	高温保护恢复延迟 High temperature protection recovery delay	1	S	
低温保护 Low	放电低温保护阈值 Discharge low temperature protection threshold	-20		
	放电低温保护恢复阈值 Recovery threshold of discharge low temperature	10		

temperature protection	protection		°C	
	充电低温保护阈值 Charging low temperature protection threshold	5		
	充电低温保护恢复阈值 Recovery threshold of charging low temperature protection	3		
	低温保护恢复延迟 Low temperature protectionrecovery delay	1	S	
自耗电 Self consumption	工作电流 Working current	≤45	mA	
	睡眠电流 Sleep current	≤100	uA	
均衡 Equalizing	均衡电流 Balancing current	30	mA	
	均衡电压 Balancing voltage	3.4	V	

#### 4.2 检测精度

电压	实际测量总电压与显示电压值误差精度小于 0.5%。 单体电压采样精度≤+/-10mV
电流	实际测量电流与显示电流值误差精度小于 3% (60%满量程)。
容量	电池组实际 SOC 与显示 SOC 误差精度小于 8%，容量设定值软件可调。
温度	实际温度与显示温度误差≤+/-3°C（温度在-28°C~105°C 范围内）。

#### 4.3 BMS 功耗

序号	BMS 工作状态	功耗电流
1	待机时自耗电电流	≤100mA
2	工作时自耗电电流	≤100mA
3	休眠时自耗电电流	≤100 μ
4	过放后休眠自耗电电流	≤100 μ A

#### 4.4 LED

1	3	5	7	9	11	13
SOC3_LED	SOC2_LED	SOC1_LED	SOCO_LED	MOOE_LED	ALM_LED	GND
2	4	6	8	10	12	14
MCU_A3	MCU_A2	MCU_A1	MCU_A0	TRIG	SWITCH	GND

J8 COMM 接口：(A2009-2\*8P)

1	3	5	7	9	11	13	15
CAN_L	CAN_H	232_RX	232_TX	DI1-	DI1+	DO1-	DO1+
2	4	6	8	10	12	14	16
485_A	RS485_B2	GND_COMM	485_B	RS485_A2	GND_COMM	GND_COMM	5V_COMM

J3 非自锁开关接口：(A2508-1\*4P)

1	2	3	4
LED9	GND	SWITCH	GND

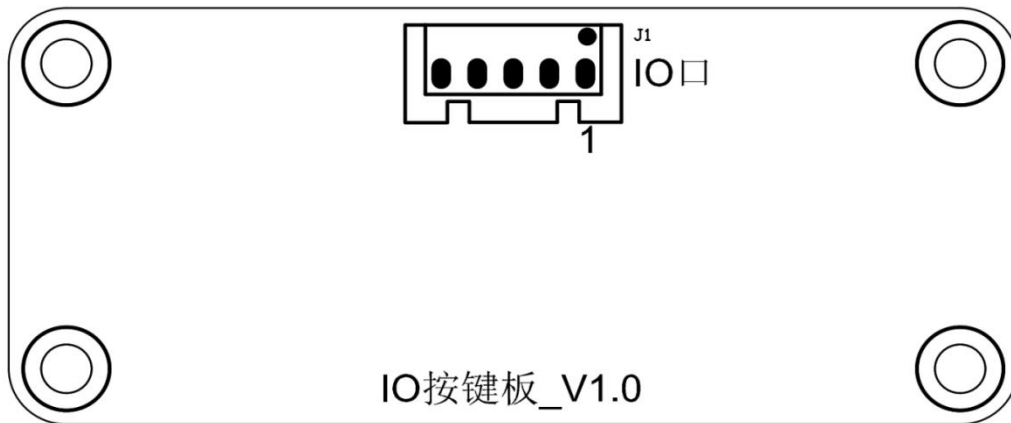
J1 并机 485 接口：(RJ45-8\*2 直式)

1	3	5	7	9	11	13	15
485_B	GND_COMM	RS485_A2	485_A	485_B	GND_COMM	RS485_A2	485_A
2	4	6	8	10	12	14	16
485_A	RS485_B2	GND_COMM	485_B	485_A	RS485_B2	GND_COMM	485_B

J12 RS485 接口：(RJ11-6 直式)

1	2	3	4	5	6
RS485_B2	RS485_A2	GND_COMM	GND_COMM	RS485_A2	RS485_B2

#### 4.5 显示屏按键板接口说明



J1: 显示屏按键板接口 (A2508-1\*5P)

1	2	3	4	5
空	空	空	IO1	3V3D

## 五、贮存与运输 Storage and Transportation

5.1 根据电池的特性，电池组在贮存运输过程应满足其贮存的环境条件，以最大的保护电池的性能。

Based on the character of cell, proper environment for transportation of battery pack need to be created to protect the battery.

5.2 电池存贮及运输过程中，应有适当的保护，保持 50%左右的 SOC 水平，确保不会短路及液体进入电池组或浸泡在液体中(如水、油等)

During transportation, 50% SOC must be kept to ensure that short circuit, appearance of liquid in the battery or immersion of battery in liquid never occur.

5.3 如果暂不使用，电池应贮存在 0℃~45℃干燥、清洁及通风良好的仓库内。

Battery should be kept at 0℃~45℃ in warehouse where it's dry, clean and well-ventilated.

5.4 电池在装卸过程中，应轻搬轻放，严防摔掷、翻滚、重压。

During loading of battery, attention must be paid against dropping, turning over and serious stacking.

5.5 禁止将电池与金属，如发夹、项链等一起运输或贮存；

Never ship or store the battery together with meta

## 六、电池使用时警告及注意事项 Warnings and Tips

为防止电池可能发生泄漏、发热、损坏，请注意以下预防措施：

In order to prevent the battery leaking, getting hot and breakdown, please pay attention to preventing measure as following:

- 充电时请选用锂离子专用充电器；
- When recharging, use a Matched battery charger specifically for that purpose.
- 禁止将电池正负极直接插入电源插座中；
- Never cut the battery in socket directly.
- 严禁将电池浸入海水或水中，保存不用时，应放置于阴凉干燥的环境中；
- Never throw the battery into water, keep it under dry, shady and cool circumstance when not use.
- 禁止将电池丢于火或加热器中以防损坏及污染环境；报废电池应退回供应商或电池回收点处理。
- Never throw the battery into fire or heating machine to avoid fire, and environment pollution; scrap battery should be returned to the supplier and handled by the recycle station.
- 禁止在高温下使用或放置电池，否则可能会引起电池过热、功能失效、寿命减短；电池长期储存建议最佳温度为 10-45℃。
- Never use or keep the battery under the high temperature. Otherwise it will cause battery heat, or lose some function and reduce the life. The proposed temperature for long-term storage is 10-45℃.
- 严禁颠倒正负极使用电池；
- Never upside down the positive and negative.
- 禁止用金属直接连接电池正负极短路；
- Never connect the positive and negative of battery with metal.
- 禁止敲击或抛掷、踩踏电池等；
- Never cut through the battery with nail or other edge tool.
- 禁止在强静电和强磁场的地方使用，否则易破坏电池安全保护装置，带来不安全的隐患。
- Never use the battery under strong static and strong magnetic field, otherwise it will destroy the protectingdevice.
- 如果电池发出异味，发热、变色、变形或使用、贮存、充电过程中出现任何异常，应立即将电池从装置或充电器中移离并停用。
- If battery emit peculiar smell, heating, distortion or appear any unconventionality during using, storage or charging process, please take it out from device or charge and stop using.
- 充电前需认真检查所有电线的绝缘性及破损和老化情况，所有导线决不能有破损和老化；另组合电池的电压必须大于等于最低放电电压为正常，若电压低于最低放电电压为异常，此时需要对此出现异常的箱子进行标识并与我司售后服务部联系，暂不充电，待我司派人检修后方可进行充电。
- Prior to charging, fully check the insulativity, physical condition and ageing status, since breakage and ageing are never allowed; the pack voltage must not be less than



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Cut-off voltage, if not, it's abnormal and that battery needs to be labeled. The user should contact our Customer Service Dept and It can't be charged until repaired by our staff.

- 电池半电存贮，若电池半年没有用过，需进行补充电一次。
- The battery should be stored in half SOC. It needs to be charged once if out of use for as long as half a year.
- 非专业人士请勿拆卸。
- Disassembly only by the prof.