

Customer(客户): _____

Customer Model name(客户型号): TBD

Customer P/N(客户料号): TBD

MC Model name(MC 型号): MLFP33200172-4S1P

MC P/N(MC 料号): MK1901

Cell P/N(电芯料号): TBD

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Customer Approved (客户承认)	Date (日期)

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1. Scope 适用范围

This specification is applicable to the LFP rechargeable battery MLFP33200172-4S1P battery. This specification outlines key requirements of the battery supplied by Mica Power Co., Ltd.

本规格书适用于东莞市米卡新能源有限公司生产的MLFP33200172-4S1P可充电磷酸铁锂电池的产品，包含该电池的各项关键规格需求。

2. Model型号: MLFP33200172-4S1P

3. Specification description 规格描述

No. 序号	Items 项目	Specification description 规格
3.1	Appearance 外观	The surface is clear and is free of scratch, mechanical cuts and match well with the host. 电池外表面清洁，无擦伤，无机械损伤，与主机配合良好
3.2	Charge voltage 充电电压	14.4V±0.2V
3.3	Nominal voltage 标称电压	12.8V
3.4	Cut-off voltage 截止电压	10V
3.5	Nominal Capacity 标称容量	100Ah(at 0.5C rate discharge after standard charge) (按标准充电后以 0.5C 倍率放电)
3.6	Minimum capacity 最小容量	100Ah(at 0.5C rate discharge after standard charge) (按标准充电后以 0.5C 倍率放电)
3.7	Standard Charge Current & Voltage 标准充电电流及电压	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> Step 1: 0.5 CC charge to 14.4V; Step 2: CV (constant voltage 14.4V) charge till charge current decline to 0.05C. 第一步：恒流 0.5C 充电至 14.4V; 第二部：恒压（恒压 14.4V）充电直到充电电流到 0.05C。 </div> <div style="width: 35%; text-align: right;"> Temperature: 0~60°C 温度：0~60°C </div> </div>
3.8	Charging time 充电时间	2.5 hours (Ref.) 2.5 小时（参考）
3.9	Max. charge current 最大充电电流	100A
3.10	Max. discharge current 最大放电电流	100A
3.11	Operating temperature 工作温度	Charging(充电): 0°C ~ 60°C Discharging(放电): -20°C ~60°C
3.12	Storage Temperature and Humidity Range 储存温度与湿度范围	<div style="display: flex; justify-content: space-between;"> <div style="width: 60%;"> 1 month:-20~45°C 3 months:-10~45°C 6 months: 0~25°C Humidity:45%~90% RH 1个月:-20~45°C </div> <div style="width: 35%; text-align: right;"> The battery should cycle once in three month. Recommended storage temperature is 25 ± 5°C of SOC 50%~60%. 电池每三个月循环一次。 </div> </div>

		3 个月:-10~45°C 6 个月月: 0~25°C 湿度:45%~90% RH	
3.13	Cycle Life 循环寿命	≥3000 cycles, more than 80% at 0.5C charge and 0.5C discharge at 80% DOD 25° C. 3000 次循环后,以 0.5C 充 0.5C 放电可恢复容量 ≥80% 在 80%深度放电 25° C。	
3.14	Pack Initial Internal Impedance 电池初始内阻	≤100mΩ (50% SOC, Measure the AC impedance at 1kHz) ≤100mΩ (50%容量, 交流阻抗1kHz测量)	
3.15	Pack weight 电池重量	Approx 14kg	
3.16	Delivery voltage 出货电压	13-13.8V	
3.17	Battery dimension 尺寸	330 (L) *173 (W) *221 (H)	
3.18	功能 Function	可支持 4S Can be support 4 series	
3.19	Color 颜色	黑色 Black	

4. Caution 警告

In order to prevent the battery possibly occurs leaks, over heat, swollen, please note the preventive measure.
为了预防电池可能发生的漏液、过热、膨胀, 请谨记预防措施。

Handling Precautions and Guideline 预防措施指南:

- 4.1 Strictly prohibits inverting the cathode use battery.
严格禁止置换极性使用电池
- 4.2 Strictly prohibits directly connect battery to power source plug
严格禁止直接连接电源
- 4.3 Please do not throw the battery to water or put into heater
请勿把电池丢进水中或火中
- 4.4 Strictly prohibits plunging the battery in sea water or water, when battery do not use, please store battery in the cool-dry environment.
禁止将电池浸入海水或水中, 电池不用时, 请在干燥环境中保存。
- 4.5 The prohibition in strong static electricity and strong magnetic field place use, otherwise is easy to destroy the battery PCBA.
禁止在强静电及强磁场中使用, 否则很容易损坏保护板。
- 4.6 The prohibition puts the battery nearby the hot high temperature source, like the fire, the heater and so on use and leaves alone
禁止将电池单独放在高温源如明火、热源等附近。
- 4.7 The prohibition directly connects the battery cathode with the metal to short-circuit.
禁止用金属类物质直接短路电池。
- 4.8 The prohibition rap or throws, steps on the battery and so on
禁止重碰重跌重压电池。
- 4.9 Forbids directly to weld the battery and pierces the battery with the nail or other sharp weapons

禁止直接焊接电池及使用钉子等其它利器在电池上打孔。

- 4.10 If the battery sends out the unusual smell, gives off heat, the distortion or appears any exceptionally, immediately moves the battery from the installment or the battery charger to and stops using.
如果电池散发异味、发热、变形或出现其它异常，请立即移除电池或充电器停止使用。
- 4.11 If the battery occurs leaks, the electrolyte enters eye, please do not have to rub scratches, the application clear water flushing eye, and delivers the medical treatment otherwise to be able immediately to injure the eye
如果电池漏液，电解液进入眼睛，请不要擦揉，应立即用清水冲洗眼睛后就医治疗，否则有可能伤害眼睛。
- 4.12 When battery long-term storage, or assembly in the host, suggest customer should take every 3 months carry on one time charge and discharge and recharge it to half-charge state
电池在长期的贮存，建议客户每 3 个月对其进行充放电一次，之后充到半带电状态。
- 4.13 Abandon the battery to wrap up the electrode using the insulating paper, prevented the battery short-circuits.
遗弃电池时用绝缘纸包裹住正负极，以预防电池短路。
- 4.14 Abandon battery processing to be supposed to follow the local government the laws and regulations.
遗弃电池应该遵循当地的法律法规要求进行处理。
- 4.15 Do not decompose the battery.
请勿拆解电池。

5. Outline Drawing 产品外形图（供尺寸参考）

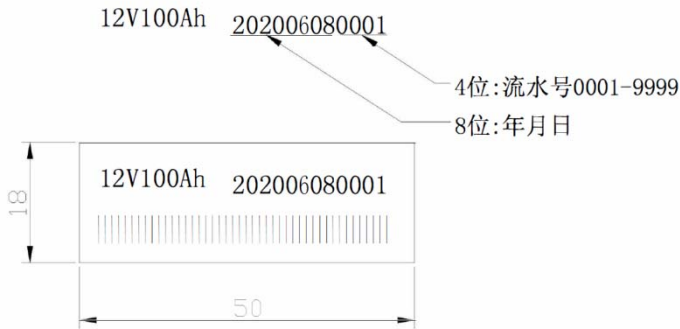


尺寸Size: 330 (L) *173 (W) *221 (H)

5.1 Label 贴纸

客供

条码 Barcode



6. Package 包装示意图

客户指定包装（一盒一装、内部珍珠棉）

7. Pack BOM 成品BOM表

项次 No	名称 Name	描述 Type or Specification	数量 Qty	单位 Unit
7.1	电芯 (Cell)	MC-LFP33200172	4	Pcs
7.2	塑胶外壳 (plastic case)	标准 12V100 外箱 +提带	1	Pcs
7.3	保护控制板 (BMS)	JBD-HP32S001-L4S-100A-B-T V1.5 R5478N185CJ(2)---80V MOS	1	pcs

8. PCM Specification 保护板组件规格

8.1 Scope 范围

The specification is applied to the protection of 4S LFP battery from overcharge、over discharge、over current and short-circuit.

本规格适用于 4S 磷酸铁锂电池的过充保护，过放保护，过流保护及短路保护等。

8.2 Model(型号): JBD-HP32S001-L4S-100A-B-T V1.5 R5478N185CJ(2)---80V MOS

8.3 PCB description(PCB 描述):

1. Plank material: FR4 whole glass 板材: FR4玻纤板
2. Copper skin thickness: Cu \geq 35um Ni \geq 5um 镀层厚度: 铜 \geq 35um 镍 \geq 5um
3. Electroplate the craft: Plate with gold (unleaded) 电镀工艺: 镀金(无铅)
4. Inside resistance oil color: Green 阻焊油颜色: 绿色
5. The silk prints oil color: White 丝印油颜色: 白色

8.4 Electricity parameter (Environment temperature 25°C) :

电子参数 (环境温度 25°C)

Function	Testing Item	Parameter			Unit
		Minimum	Typical	Maximum	
Operation Voltage	Range	10		14.6	V
Operation Current	Charging (Continuous)			100	A
	Discharging (Continuous)			100	A
Over Charging Protection	Protection voltage	3.600	3.650	3.700	V
	Protection delay time	0.5~1.5			S
	Protection Recover Voltage	3.400	3.450	3.500	V
Over Discharging Protection	Protection voltage	2.400	2.500	2.600	V
	Protection delay time	0.1~0.4			S
	Protection Recover Voltage	2.400	2.500	2.600	V
Over Current	Charging protection current				
	Charging protection delay				
	Charging recover condition				
	Discharging protection	130		200	A
	Discharging delay	0.1		1	S
Short circuit	Protection time	80	100	200	uS
	Recover	Disconnect the load			
Balance Function	Open Voltage	N/A			V
	ΔV				mV
	Balance model				
	Balance current				mA
Temperature Protection	Discharging temperature	N/A			°C
	Protection release value				°C
Internal Resistance		-	10	20	mΩ