

	<b>科迈斯科技有限公司</b>	<b>NO.編號:</b> AUG- 2020
	COREMAX TECHNOLOGY COMPANY LIMITED	<b>Rev 版本:</b> A0

## Specification for Lithium Iron Phosphate Battery

### 磷酸鐵鋰電池規格書

**Model:**CX01250AP  
**型號:** CX01250AP  
**Type:** LiFePO4  
**類型:** 磷酸鐵鋰  
**Revision:** A0  
**版本:** A0  
**Customer:** Belux eclairage  
**客戶:** Belux eclairage  
**Date:**2020-08-15  
**日期:**2020-08-15

Approved	Checked	Prepared
批准	審核	編寫

**Customer Comment:**  
 客戶意見:

  
  
  
  
  
  
  
  
  
  

**Customer Approval/Date:**  
 客戶批准/日期:

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### Product Modified Record List

### 產品變更履歷表

Revision 版本	Date 日期	Prepared by 編寫	Modified content 變更內容	Remark 備註
A0	2020-8-15	安湘	Original Release 出版發行	

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### 1. Scope 範圍

This specification describes the structural ,performance, testing method, warning and caution of the Lithium Iron Phosphate battery.

The specification applies to the lithium iron phosphate battery supplied by COREMAX TECHNOLOGY COMPANY LIMITED

範圍：本標準描述了磷酸鐵鋰電池的結構設計，基本性能，測試方法和注意事項。

本標準適用於科迈斯科技有限公司生產的磷酸鐵鋰電池。

### 2. Structural Design 結構設計圖

2.1 Model 電池組總體規格: 12V/50AH

2.2 Dimension of Battery Pack(with case) 330\*160\*80MM approximately

2.3 Cell 電芯 : LiFEPO4 LFP26650

說明:

a. This battery pack will be as assembled by LiFePo4 LFP26650 battery cell .

採用串并聯的方式組合成 12V/50AH 的電池組。

b. Ensure that the battery pack can work with outdoor solar street lighting. Battery pack apply with IP65. Aluminium casing with holder. Battery pack is a finished pack ready to use.

c. Ensure the battery pack quality. Apply with high quality brand new cells. All cell is balance before pack. All pack with aging test after it is finished.

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### 3. Basic Performance(Battery Pack) 基本性能(電池組)

NO. 序號	Item 專案	Specification 規格	Remark 備註
1	Nominal Capacity 標稱容量	50AH	0.2C, CC(constant current)discharge to 9.2V cut off,at 23 ±3°C 23 ±3°C. 0.2C 恒流放電。9.2V 截止
2	Nominal Voltage 標稱電壓	12.8V	Standard Output Nominal Voltage 電池組輸出標稱電壓
3	Standard Charging Current 標準充電電流	10A(0.2C)	0°C~45°C 0.2C CC(constant current)charge to 14.6V,then CV(constant voltage 14.6V)charge till charge current ≤ 0.01C 0°C~45°C 0.2C CC(恒流)充電至 14.6V, 再 CV (恒壓) 充電至充電電流將至≤0.01C 時截止
4	Max.Charging Current 最大充電電流	15A(0.3C)	At 0°C~45°C,Max 15A CC(constant current) charge to 14.6V 在 0°C~45°C 下, 電池組最大充電電流不超過 15A
5	Charge Ending Voltage 充電截至電壓	14.6V	Best for 10A CC/CV 14.6V,0.01C cut off. 最佳 10A 恒流恒壓充電到 14.6V, 0.01C 截止
6	Standard Discharging Current 標準放電電流	15A(0.3C)	0.3C CC(constant current)discharge to 9.2V -20°C~60°C 0.5C CC(恒流)放電至 9.2V 截止
7	Max.Discharging Current 持續最大放電電流	25A(0.5C)	At 23°C,The battery working discharge current keeps 25A 在 23°C 下, 電池組持續 25A 放電
8	Discharge Ending Voltage 放電截至電壓	9.2V	2.3V for each cell, For the battery pack,it will be over than 9.2V 按單體電池保護 2.3V, 估算總體保護電壓 9.2V
9	Instant Max.Discharging Current 瞬間最大放電電流	50A(1C)	At 23°C,The battery instant Max discharge current less than 50A 在 23°C 下, 電池組瞬間最大放電電流 50A
10	Temperature while charging 充電條件下的工作溫度	0°C~55°C	Battery charging process, battery and ambient temperature does not exceed 55°C 電池組充電過程中, 電池和環境溫度不超過 55°C
11	Temperature while discharging 放電條件下的工作溫度	0°C~65°C	The specified temperature range,the battery work nomally within the framework of capacity loss in the error 電池組在規定的溫度範圍內能正常工作, 容量損失在誤差範圍內
12	Battery Weight 電池重量	約 6.5Kg	Include wires and packaging material 包括線材
13	Product Impedance 成品內阻	≤10mΩ	AC Impedance 交流內阻

**4.Performance Data 性能參數表**

**4.1 Battery Pack Performance 電池組性能**

NO. 序號	Item 專案	Criterion 標準	Test Method 測試方法
1	C-rate characteristics 放電倍率特性	0.5C	100%
		2C	≥95%
2	Temperature Dependence of Capacity 容量溫度特性	60°C	≥95%
		45°C	≥95%
		23°C	100%
		0°C	≥65%
		-10°C	≥50%
3	Cycle Life Characteristics 迴圈壽命特性	2000~3000 cycles 2000~3000 次	Charge:0.2C CC/CV,14.6V,current≤0.01C cut-off Discharge:0.5C CC 9.2V cut-off When the discharge capacity reduced to 80% of initial capacity,Stop testing. 充電: 0.2C 恒流恒壓充至 14.6V。電流≤0.01C 截止 放電: 0.5C 恒流放電 9.2V 截止 當放電容量降至初始容量的 80%時, 停止測試
4	Storage Characteristics (Recovery Capacity) 儲存特性(可恢復 容量)	23°C 6 個月	≥95%
		45°C 3 個月	≥90%
		60°C 1 個月	≥90%
			On a storage,Cell state is 60%~75% charge 電池充 60%~75%容量儲存

4.2 Environment Characteristics 環境性能

NO. 序號	Item 專案	Criterion 標準	Test Method 測試方法
1	Constant temperature and constant humidity test 恒定濕熱	No explosion, no fire, no leakage. Discharging capacity is not less than 60% initial capacity 不起火, 不爆炸, 不洩漏。放電容量不低於初始容量的 60%	After Standard Charging, test condition: Temperature: 40±5°C Relative Humidity: 90~95RH Storage Time: 48Hours Then return to room temperature for 2 hours, Then 1C discharge to ending voltage 標準充電後, 測試條件如下: 溫度: 40±5°C 相對濕度: 90~95% 放置時間: 48 小時 取出在室溫下放置 2 小時, 然後以 1C 電流放電至終止電壓
2	Vibration Test 振動	No explosion, no fire, no leakage 不起火, 不爆炸, 不洩漏	After Standard Charging, fixed the cell to vibration table, then subjected to vibration test for 30 minutes per axis of XYZ axes Frequency rate: 1oct/min Vibration frequency: 10Hz-30Hz Excursion (single amplitude): 0.38mm Vibration frequency: 30Hz-55Hz Excursion (single amplitude): 0.19mm 電芯標準充電後, 固定在振動臺上, 然後沿 XYZ 每個座標方向震動 30 分鐘 掃頻速率: 1oct/min 震動頻率: 10Hz-30Hz 位移幅值 (單振幅): 0.38mm 震動頻率: 30Hz-55Hz 位移幅值 (單振幅): 0.19mm
3	Low-pressure 低氣壓	No explosion, no fire, no leakage 不起火, 不爆炸, 不洩漏	23±3°C .Stalled in really empty, gradually reduce the internal pressure ≤11.6 kPa (simulated altitude 15240m) and maintain 6 hours. 在 23±3°C 的環境溫度下, 將其擱置在真空箱中, 逐漸減少其內部壓力至不高於 11.6kPa (模擬海拔 15240m) 並保持 6 小時。
4	Drop Test 跌落測試	No explosion, no fire, no leakage 不起火, 不爆炸, 不洩漏	Drop the battery in the shipment condition from 1m height onto 5cm thicker concrete with p-tile on it 3 times each of X, Y and Z directions at 23±3°C. 在出貨條件下將電池由高度 1m 的位置自由跌落到 5cm 厚的混泥土地板, X, Y, Z 方向上各三次。

**4.3 Safety Performance 安全性能**

NO. 序號	Item 專案	Criterion 標準	Test Method 測試方法
1	Overcharge Test 過充電測試	No explosion, no fire, 不起火, 不爆炸	3C,CC/CV,14.6V at 23±3°C;When the capacity reach 2.5C or time reach 60 min,end test. 在 23±3°C 的環境下用 3C, 14.6V 進行恒流恒壓充電, 待其充電容量至 2.5C 或充電時間達 60min 後, 結束測試。
2	Overdischarge Test 過放電測試	No explosion, no fire, 不起火, 不爆炸	After discharged to the cut-off voltage.the battery shall be subjected to a short-circuit condition with a load of resistance less than 30Ω for 24 hour. 放電至截止電壓後, 外接小於 30Ω 的負載電阻放電 24 小時。
3	Heating Test 熱衝擊	No explosion, no fire, 不起火, 不爆炸	A battery is to be heated in a gravity in a gravity convection or circulating air oven.The temperature of the oven is to be raised at a rate of 5±2°C/min to a temperature of 130±2°C at which temperature the oven is to remain for 30 minutes before the test is discontinued. 電池放於熱箱中, 溫度以 5±2°C/min 的速率升至 130±2°C 並保溫 30min.
4	High Temp. Test 高溫測試	No explosion,no fire, Recovery Capacity ≥ 80% 不起火, 不爆炸 恢復容量不小於 80%	After standard charge , leaving the battery at 85°C for 4 hours. 標準充電後, 將電池置於 85°C 的高溫下 4 小時。
5	Short-circuit Test 短路測試	No explosion, no fire, 不起火, 不爆炸	After standard charge,the battery shall be subjected to a short-circuit condition with a wire of resistance less than 100mΩ for 1 hour. 標準充電後, 將電池接電偶置於通風櫥中, 短路其正負極, 線路總電阻不大於 100mΩ, 測試 1 小時。

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**5.PCM Specification 管理系统規格**

**5.1 Electrical Characteristics(Normal temperature,Relative humidity≤90%)**

Item 專案	Test standard value 檢測標準值
Over charge Protection voltage 過充保護電壓	3.90±0.025V/15.6V±0.40V
Over discharge Protection voltage 過放保護電壓	2.30±0.05V/9.2V±0.80V
Over current Protection current 過流保護電流	40±10A
Short Protection release condition 短路保護恢復條件	延时 20S

**5.2 Circuit Diagram 電路圖**

**6.Storage and Shipment Requirment 存儲及運輸要求**

Item 專案	Requirement 需求	
Storage temperature 儲存溫度	Short period less than 1 month 少於 1 個月的短期存放	-10°C~+45°C
	Long period less than 6 month 不超過 6 個月的長期存放	-10°C~+35°C
Humidity 濕度		<75%RH
Charged 荷電		About 60~75% charged state 60~75%電荷狀態



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## 7.Danger and Warning and Caution in handing the battery

### 電池使用時危險事項，警告事項及注意事項

#### Danger Warning 警告

(It should be indicated especially in manual or instruction for users.)

To prevent the possibility of the battery from leaking, heating and explosion,

Please observe the following precautions:

危險警告：（應在使用說明手冊或說明書中，特別注明）為防止電池組可能發生洩漏，發熱，爆炸，請注意一下預防措施：

1. Do not disassemble or reconstruct battery.  
禁止拆卸或重組電池組！
2. Do not short-circuit battery.  
禁止短路電池組！
3. Do not use or leave battery near fire, stove or heated place (more than 80°C).  
禁止在熱源旁使用！
4. Do not immerse the battery in water or sea water, or get it wet.  
禁止將電池組投入水中，海水中或弄濕！
5. Do not charge battery near the fire or under the blazing sun.  
禁止在近火處或陽光照射下充電！
6. Do use the specified charger and observe charging requirement.  
使用指定充電器，遵照充電要求！
7. Do not drive a nail into the battery strike it by hammer, or tread it.  
禁止將釘子插入電池組中，用鐵錘敲打或腳踩！
8. Do not give battery impact or fling it.  
禁止衝擊或投擲！
9. Do not use the battery with conspicuous damage or deformation.  
禁止嚴重損害或變形下使用！
10. Do not make the direct soldering on battery.  
禁止在電池組上直接焊接！
11. Do not reverse-charge or over discharge the cell.  
禁止反向充電或過放電！
12. Do not reverse-charge or reverse-connect.  
禁止反向充電或反極連接！
13. Do not connect battery to the plug socket or car-cigarette-plug.  
禁止把電池組連接到充電插座或汽車點煙插座上！
14. Do not use battery for unspecified equipment.  
禁止用於非指定設備上！
15. Do not touch a leaked battery directly.  
禁止直接接觸漏液電池組！

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### **Warning 警告**

1. Do not use Lithium ion battery in mixture.  
禁止將一，二次鋰電池混合使用！
2. Keep the battery away from babies.  
遠離小孩觸手可及的地方！
3. Do not get into a microwave or a high pressure container.  
禁止將電池置於微波或高壓容器中！
4. Do not use a leaked battery nearby fire.  
禁止在近火處使用漏液電池！
5. Do not use an abnormal battery.  
禁止使用非正常電池！

### **Caution 小心**

1. Do not use or leave the battery under the blazing sun (or heated car by sunshine).The battery may smoke, heat or flame. And also, it might cause the deterioration of battery's characteristics or cycle life.  
禁止在陽光照射下（或陽光直射的汽車上）使用或放置電池組，否則可能會引起電池過熱，起火和功能失效，壽命減短。
2. Do not use near the place where static electricity (more than 64V) exists?  
禁止在靜電（超過 64V）場所旁使用！
3. Do not charge the battery out of recommended temperature range of 0°C and 60°C.  
禁止在 0°C 以下和 60°C 以上環境充電！
4. When the battery has rust, bad smell or something abnormal at the first-usage, do not use the equipment. Bring the battery to the shop where it was bought.  
電池首次使用時，若有腐蝕，難聞氣味或不正常現象，禁止使用用電器並送回出售點！
5. In case children use the battery,their parents should teach how to use battery according to the manual with care.  
小孩要使用電池組時，父母鬚根據手冊詳細指導其使用方法！