



深圳市劲驰科技有限公司
Shenzhen Jentc technology co. LTD

Battery Module Specification

电 池 组 规 格 书

Battery Type : 24V AGV battery

Edition : V1.0



1. SCOPE (适用范围)

This Specification describes the requirements of the lithium ion rechargeable battery supplied by Shenzhen Jentc technology co. LTD

本产品规格书描述了由深圳市劲驰科技有限公司生产的锂离子可充电电池的技术要求、测试方法、运输、储存及注意事项。

2. BATTERY PACK STRUCTURE (电池组结构)

The battery pack consists of the single cell, wire, PCM, Plastic shell etc.

电池组是由单体电芯、导线、保护板和钣金箱等组成。

3. BASIC CHARACTERISTICS OF BATTERY (电池组基本特性)

NO. 序号	ITEM 项目名称	General Parameter 常规参数
1	Battery Type 电芯型号	18650
2	Material of Case 外壳材质	PVC PVC 膜
3	Nominal Voltage 额定电压	24V
4	Nominal Capacity 额定容量	30Ah (0.5C)
5	Internal Resistance 内阻	$\leq 50\text{m}\Omega$
6	Charge Cut-off Voltage 充电电压	29.4V
7	Max Charge Current 最大充电电流	30A
8	Max Discharge Current 最大放电电流	30A
9	Max Discharge Current(Peak) 放电峰值电流	75A
10	Discharge Cut-off Voltage 放电截止电压	19.8V
11	Charge method 充电方式	CC/CV(constant current/constant voltage)



		CC/CV (恒流恒压)
12	Dimension 尺寸	Height: 70mm Width: 140mm Length: 250mm
13	Weight 重量	5.5kg
14	Charging Temperature 充电温度	0℃~45℃
15	Discharging Temperature 放电温度	-20℃~60℃
16	Storage Temperature and Time 存储温度和时间	7 days : -20℃ ~ 45℃ 1months:-20℃~45℃ 3months:-20~35 ℃ 10 months: -20~30 ℃
17	Storage Humidity 存储湿度	≤65%RH
18	Storage Pressure 存储压力	86~106Kpa
19	Warranty period 保质期	3 年

4. BATTERYR EQUIRED PROTECTION FUNCTIONS (电池组保护功能要求)

To insure the safety, charger and the protection circuit shall be satisfied the items below. As safety device, please use in combination with the temperature fuse. The standard charge method is CC/CV(constant current/constant voltage)

为了确保安全，充电器和保护电路应符合以下要求。标准充电方法为 CC/CV（恒流/恒压）

Item 内容		Specification Parameter 规格	Unit 单位	REQUIREM ENTS 备注
Over voltage 过充电保护	OV 过充电检测电压	4.25±0.025	V	
	Delay time 延迟时间	0.5	MS	

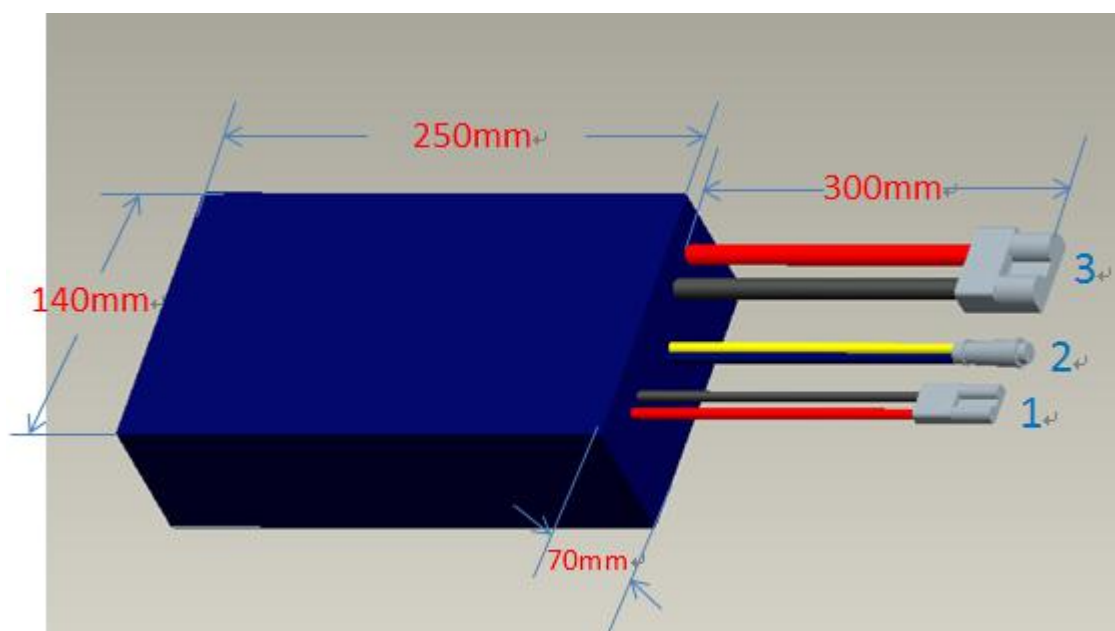


	OV Release Value 过充电解除电压	4.19±0.05	V	
Balancing 均衡	Balanced opening voltage 均衡开启电压	4.18±0.05	V	
	Balanced release voltage 均衡解除电压	4.18±0.05	V	
	Balanced current 均衡电流	35±5	MA	
Under Voltage 过放电保护	Discharge Protection 过放电检测电压	2.8±0.025	V	
	Delay time 延迟时间	0.5	MS	
	UV Release Value 过放解除电压	3.0±0.05	V	
Over Current 过流保护	OC 过流检测电流	75±15	A	
	OC Delay Time 过电流检测延时	≤9	mS	
	OC termination condition 过电流保护解除条件	Remove the load 断开负载		
Short circuit 短路	Short circuit conditions 短路条件	External load short circuit 外部负载短路		
	Delay time 短路延时时间	250	US	
	Short circuit termination condition 短路解除条件	Remove the load 断开负载		
Charging 充电	Max Charge Current 持续最大充电电流	30	A	
Discharging	Max Discharge Current	30	A	

放电	持续最大放电电流			
Internal Resistance 内阻	Internal Resistance 回路内阻	≤ 15	mΩ	
Power Dissipation 耗电	Working current 工作电流	≤ 50	uA	
Operating Temperature 工作温度	Temperature Range 温度范围	-30~80	°C	
Storage temperature 存储温度	Temperature Range 温度范围	-40~125	°C	

5. PRODUCT DIMENSIONS AND INTERFACE (产品外形尺寸)

Appearance (产品外形尺寸)





6. TECHNICAL REQUEST (技术要求)

6.1 Battery pack Working Temperature 电池组工作温度

Charging temperature 充电温度: $0^{\circ}\text{C} \sim 45^{\circ}\text{C}$

Discharging temperature 放电温度: $-20^{\circ}\text{C} \sim 55^{\circ}\text{C}$

6.2 Battery pack Test Conditions 电池组试验条件

Tests should be conducted with new battery pack within one month after shipment from our factory and the battery pack shall not be cycled more than five times before the test. All of the testing is done on the conditions hereinafter, unless there is individually requirement:

测试电池组必须是本公司出厂时间不超过一个月的电池组, 且电池组未进行过五次以上充放电循环。除非测试

项目另有规定, 本产品规格书中各项测试应在以下条件下进行:

Ambient temperature 温度: $25 \pm 3^{\circ}\text{C}$

Relative Humidity 相对湿度: $65 \pm 20\%\text{RH}$

Atmospheric pressure 大气压力: $86\text{kPa} \sim 106\text{kPa}$

6.3 Requirement of The Testing Equipment 测量仪表要求

Voltage meter: Internal resistance of the voltage meter should be no less than $10\text{K}\Omega/\text{V}$. 电压仪表要求: 测量电压的仪表内阻不小于 $10\text{K}\Omega/\text{V}$ 。

Temperature meter: The precision of the temperature meter should be no less than 0.5°C . 温度仪表要求: 测量温度的仪表准确度不低于 0.5°C 。

6.4 Electrochemistry Performance 电化学性能:

NO.	ITEM	Criterion	Testing method	Remark
序号	项目名称	标准	测试方法	备注

编号	规格	功能	备注
1	安德森插头 15A	充电口	
2	威浦航空插头 WS20-5 TQ 接头	通讯口	
3	安德森插头 30A	放电口	

1	Discharging performance at high and low temperature 高低温放电性能	-20°C	<p>The discharge capacity ratio between -10 °C and 25 °C should be no less than 70%.</p> <p>-10 °C 放电容量 / 25°C 放电容量 $\geq 60\%$ 。</p>	<p>Battery pack shall be charged following the standard charging method, and then standby 3 hours at 25 °C followed by a discharge at 15A to 29.4V at this temperature.</p> <ul style="list-style-type: none"> •Next the battery pack shall be charged following the standard charging method. then standby 8 hours at -20 °C followed by a discharge at 15A to 29.4V at this temperature. •Then battery pack shall be allowed to rise to room temperature for one hour, followed by standard charging. then standby 8 hours at -10 °C followed by a discharge at 15A to 29.4V at this temperature. •Then the battery pack shall be allowed to rise to room temperature for one hour, followed by standard charging. then standby 8 hours at 0°C followed by a discharge at 15A to 29.4V at this temperature. 	
		0°C	<p>The discharge capacity ratio between 0°C and 25°C should be no less than 85%.</p> <p>0 °C 放电容量 / 25°C 放电容量 $\geq 85\%$ 。</p>	<ul style="list-style-type: none"> •Then the battery pack shall be allowed to rise to room temperature for one hour, followed by standard charging. then standby 8 hours at 0°C followed by a discharge at 15A to 29.4V at this temperature. •Then the battery pack shall be allowed to rise to room temperature for one hour, followed by standard charging. then standby 8 hours at 55 °C followed by a discharge at 15A to 29.4V at this temperature. 	
		55°C	<p>The discharge capacity ratio between 55 °C and 25 °C should be no less than 90%.</p> <p>55°C 放电容量 / 25°C 放电容量 $\geq 90\%$</p>	<ul style="list-style-type: none"> •Then the battery pack shall be allowed to rise to room temperature for one hour, followed by standard charging. then standby 8 hours at 55 °C followed by a discharge at 15A to 29.4V at this temperature. • 电池组按照标准充电方式充满电，于 25°C 条件下存放 3 h 后，在该温度下以 15A 的电流放电至 29.4V ； •然后电池组按照标准充电方式充满电，于-20 °C 条件下存放 8 h 后，在该温度下以 15A 的电流放电至 29.4V ； •将温度恢复到室温，静置 1h， 	

				然后电池组按照标准充电方式充满电，于-10℃条件下存放 8 h 后，在该温度下以 15A 的电流放电至 29.4V ； •将温度恢复到室温，静置 1h，然后电池组按照标	
2	Cycle life at RT 常温循环	After 1000cycles, the discharge capacity retention ratio should be no less than 80%. 1000 次循环后，容量保持率 ≥80%	First fully charged the battery pack with standard charging method, then discharge the battery pack with standard discharging method, the time interval between charging and discharging should no less than 30 minutes, then repeat the steps mentioned above. 首先以标准充电方法将电池组充满电，然后用标准方法放电，连续循环，中间充放电的时间间隔不少于 30 分钟。		
3	Rated performance 倍率测试	The discharge Capacity retention ratio should be ≥90%. 放电容量比率为： ≥90%	<ul style="list-style-type: none">• Battery pack shall be charged following the standard charging method, and then discharge to the cut-off voltage protection or protection board by 3I₂• Based on the capacity of 1.4I₂, the capacity of 3I₂ divided by the capacity of 1.4I₂. Record temperature and discharge capacity.• 在标准测试条件下以标准充电方式充电，再以 3I₂ 恒流放电到截至电压或电路保护板护；• 以 1.4I₂ 放电容量为基准，3I₂ 容量除以 1.4I₂ 容量，记录温度和放电容量。		
4	RT Charge retention 常温荷电保持	After standing for 28 days, the discharge capacity retention	The capacity of the battery pack is tested by fully charged and discharged with standard method. Charging the battery pack with standard charging		

		ratio should be no less than 85%. 静置 28 天后， 放电容量保持率不低于 90%	method, then it is stored with open- circuit at RT for 28days; discharge the battery pack with standard discharging method. 将电池组用标准充放电模式做容量测试，再以标准充电方式充电，然后将电池组在常温环境中放置 28 天，放置 28 天后用标准放电方法放电，记录放电容量。	
5	RT Charge recovery 常温荷电恢复	The discharge capacity retention ratio should be no less than 90%. 放电容量保持率不低于 90%	The battery pack which had been through charge retention test is to be fully charged with standard charging method, then discharge the battery pack with standard discharging method. 经过荷电保持测试的电池组，标准充满电后，再用标准放电方法进行放电	

6.5 Environmental Characteristics 环境适应性测试

NO. 序号	Item 测试项目	Criterion 性能标准	Testing method 测试条件与方法
1	Temperature impact test 温度冲击	No leakage, no fire and no explosion. 不泄漏、不起火、不爆炸。	The battery pack is fully charged with standard charging method, and then it is to be stored for one hour at a test temperature equal to 85°C, followed by a storage for one hour at a test temperature equal to -40°C, the maximum time interval between test temperature extremes is 30s, this procedure is to be repeated for 32 times, after which all test battery packs are to be stored for 6 hour s at ambient temperature (25±3 °C). 将用标准充电方法充满电的电池组放入 85°C 的环境中搁置 1h，再在 -40° C 条件下搁置 1h，两个极端温度的变化时间间隔最长为 30s，如此循环 32 次结束实验，试验结束后将样品取出，在 25±3°C 环境中搁置 6h
2	Low pressure	No explosion, no fire	The battery pack is to be stored for 6

	test 低压测试	and no leakage. 不爆炸、不起火、不泄漏。	hours at an absolute pressure of 11.6Kpa and a temperature of 205℃. 将电池组在绝对压力为 11.6Kpa、20±5℃条件下贮存 6 小时。
3	High temperature and high humidity test 恒温湿热	No leakage, no smoke, no fire and no explosion. 不泄漏、不冒烟、不起火、不爆炸。	The battery pack is fully charged with standard charging method, then it is to be stored for 48 hours in an oven with a constant temperature of 40 ± 2 °C and a relative humidity of 90%~95%, after testing the battery pack should be stored for 6 hours at a temperature of 15~35 °C, 25%~85% relative humidity and a pressure of 86kPa~106kpa. 将充满电的电池组放入温度 40±2° C, 相对湿度 90%~95%的恒温恒湿箱中, 持续时间 48h, 试验结束后将样品取出, 在 15~35 °C, 相对湿度 25%~85%, 大气压力 86kPa~106kPa 的环境中搁置 6h。

6.6 Safety Characteristics 安全性能

NO. 序号	Item 测试项目	Criterion 性能标准	Testing method 测试条件与方法
1	Over-charge 过充	No explosion, no fire and no leakage. 不爆炸、不起火、不泄漏。	The battery pack is fully charged with standard charging method, and then the battery pack is charged using a constant current of 20A one hour or the PCB works. 电池组按照标准充电方法充满电后, 以 15A 的电流持续充电 1 小时或保护电路板保护
2	Over-discharge 过放	No explosion, no fire and no leakage. 不爆炸、不起火、不泄漏。	The battery pack is discharged to 19.6V, and then continues discharging the battery pack with 15A current until the voltage of any cell to 0 V. 将完全放电至 19.6V 的电池组, 除去放电电子保护线路后以 15A 的电流继续放电, 直至达到某个电池电压为 0V
3	Short-circuit test 短路	No explosion, no fire, and the temperature of the battery pack should not exceed 120℃. 不爆炸、不起火, 电池	The battery pack is fully charged with standard charging method, then connect one thermocouple with anode and cathode separately, the battery pack is to be short-circuit by connecting the positive and negative terminals of the battery pack with wire having a resistance load of less than



		组表面温度不超过 120 °C	30m Ω for 24 hours or the temperature drops to the 20 percents of the maximum temperature rise. 将满电电池组的正负极与热电偶相连，用≤30m Ω 的导线短路 24 小时或电池组温度下降至最高温升的 20% 时结束
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7. WARRANTY PERIOD & PRODUCT LIABILITY (保质期限及产品责任)

- 7.1 Warranty period of this product is 1 years from manufacturing code.

保质期是从出厂日期开始起壹年

- 7.2 Shenzhen Jentc technology co. LTD not responsible for the troubles caused by mishandling of the battery which is clearly against the instructions in this specification.

深圳市劲驰科技有限公司对因没有按照本规格书规定操作而导致的意外不负责任

- 7.3 When Shenzhen Jentc technology co. LTD find any new facts which require modification of this document, we will inform you again.

一旦深圳市劲驰科技有限公司发现本规格书有新的修改细节，我们将再告知

8. WARNINGS AND CAUTIONS IN HANDLING THE LITHIUM-ION BATTERY (电池使用时警告事项及注意事项)

To prevent a possibility of the battery from leaking, heating or explosion please observe the following precautions:

为防止电池可能发生泄漏、发热、爆炸，请注意以下预防措施：

- 8.1 Do not immerse the battery in water or seawater, and keep the battery in a cool dry surrounding if it stands by.

严禁将电池浸入水中，保存不用时，应放置于阴凉干燥的环境中

- 8.2 Do not use or leave the battery near a heat source as fire or heater

禁止将电池在热高温源旁，如火、加热器等使用和留置

- 8.3 When recharging, use the battery charger specifically for that purpose

充电时请选用锂离子电池专用充电器

- 8.4 Do not reverse the positive(+) and negative(-) terminals

严禁颠倒正负极使用电池

- 8.5 Do not connect the battery to an electrical outlet

严禁将电池直接介入电源插座



8.6 Do not discard the battery in fire or heat it

禁止将电池丢于火或加热器中

8.7 Do not short-circuit the battery by directly connecting the positive(+) and negative(-) terminal with metal objects such as wire

禁止用金属直接连接电池正负极短路

8.8 Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.

禁止将电池与金属，如发夹、项链等一起运输或贮存

8.9 Do not strike or throw the battery

禁止敲击或抛掷、踩踏电池等

8. 10 Do not directly solder the battery and pierce the battery with a nail or other sharp object.

禁止直接焊接电池和用钉子或者其他利器刺穿电池

CAUTIONS

- (1) Do not use or leave the battery at very high temperature (for example, at strong direct sunlight or in a vehicle in extremely hot weather). Otherwise, it can overheat or fire or its performance will be degenerated and its service life will be decreased.

禁止在高温下（炙热的阳关下或很热的汽车中）使用或者放置电池，否则可能会引起电池过热、起火或功能失效寿命减短

- (2) Do not use it in a location where static electricity is great, otherwise, the safety devices may be damaged, causing hidden trouble of safety.

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

- (3) If the battery leaks, and the electrolyte get into the eyes. Do not rub eyes, instead, rinse the eyes with clean running water, and immediately seek medical attention. otherwise ,it may injure eyes or cause a loss of sight.

如果电池发生泄漏，电解液进入眼睛，请不要揉擦，应用清水冲洗眼睛，并立即送医院治疗，否则会伤害眼睛



- (4) If the battery gives off an odor, generates heat, becomes discoloured or deformed, or in any way appear abnormal during use, recharging or storage, immediately remove it from the device or battery charger and stop using it.
如果电池发出异味，发热、变色、变形或者使用、贮存，充电过程中出现任何异常，立即将电池从装置或者充电器中移离并停用
- (5) In case the battery terminals are dirty, clean the terminals with a dry cloth before use. Otherwise power failure or charge failure may occur due to the poor connection with the instrument.
如果电极弄脏，使用前应用干布抹净，否则可能会导致解除不良功效失效
- (6) Be aware discarded batteries may cause fire, tape the battery terminals to insulate them
废弃之电池应用绝缘纸抱住电极，以防起火、爆炸