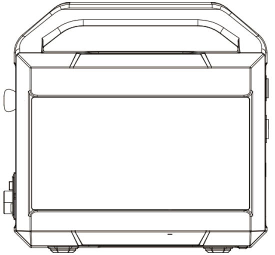
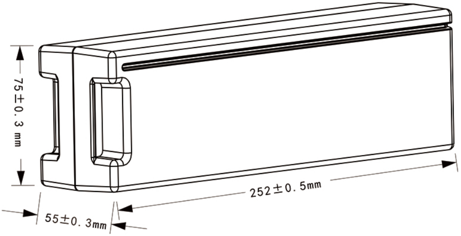
电池规格书

Battery Specification

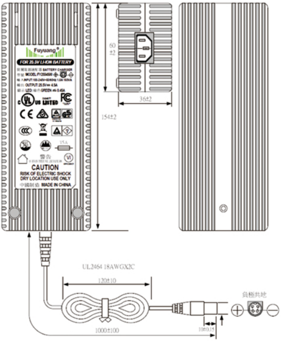


△ 充电时请务必关闭机身电源键

Press the power button off before charging



MECHANICAL DIMENSIONS **UNIT:MM**



1 Specification 产品规格

※The items from 4.1 to 4.12 were tested in Standard testing condition 4.16 (standard test environment). For special product requirements, it will be described separately.

※我司产品规格书从 4.1 至 4.12 项目，测试环境按 4.16项执行（标准测试环境），如有特制产品要求另行描述。

NO.	Item 项目	Specifications 规格要求	Notes备注
4.1	Nominal capacity 标称容量	13.4Ah	After the standard charge, 0.2C discharge to16.2V 标准充电后，0.2C 放电至16.2V
	Minimum capacity 最小容量	12.8Ah	
4.2	Initial Impedance 初始内阻	Pack ≤200mΩ	After standard charge,AC1KHz test标准充电后，AC 1KHz 测试
4.3	Weight 重量	Approx(约)：1.5Kg	Battery weight 成品电池重量
4.4	Nominal voltage 标称电压	21.6V	Standard voltage 标准电压
4.5	Charge limit voltage 充电限制电压	25.2V	Maximum voltage 最高电压
4.6	Discharge cut-off voltage 放电截止电压	16.2V	Protection voltage 保护电压
4.7	Standard charge current 标准充电电流	2.68A	0.2C
4.8	Maximum charge current 最大充电电流	6.7A	
4.9	Standard discharge current 标准放电电流	2.4A	0.2C
4.10	Max Continuous discharge current 最大持续放电电流	20A	

4.11	Charging time 充电时间	6.0-8.0 hours(Ref.) 6.0-8.0小时（参考值）	Standard Charging 标准充电	
		3.5 至4.5hours(Ref.) 3.5 至4.5小时（参考值）	Rapid charge 快速充电	
4.12	Operating temperature 工作温度	0°C~45°C	Charging 充电	
		-10°C~60°C	Discharging 放电	
	Storage temperature 储存温度	-10°C~ +45°C	less than 1 month 小于 1 个月	Recommended storage temperature: 25°C,at the shipment state 建议的储存温度：25°C
4.13	Recoverable capacity 恢复容量	Constant current 0.2C charge to 25.2V, then constant voltage 25.2Vcharge to current declines to 0.01C, rest for 10min，constant current 0.2C discharge to16.2V，rest for 10min.Repeat above steps 3 times, recording the maximum capacity 先用 0.2 C 恒流充电至 25.2V，再恒压 25.2V 充电直至充电电流 ≤0.01C,搁置 10 分钟,再用 0.2C 电流放电至 16.2V;又搁置 10 分钟,重复以上步骤 3 次,记录容量最大值		
4.14	Storage Humidity 储存湿度	≤75% RH		
4.15	Appearance 外观	No distortion and leakage 无变形、电解液泄露		
4.16	Standard testing condition 标准测试环境	Temperature(温度):25±2℃ Humidity(湿度):≤75% RHAtmospheric Pressure(大气压): 86-106 Kpa		

2 General Performance (Cell) 常规性能

NO.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
5.1	Standard Charge 标准充电	Charging the cell initially with constant current at 0.2C and then with constant voltage at25.2V till charge current declines to 0.02C. 先用0.2C恒流充电至25.2V，再恒压25.2V充电直至充电电流≤0.02C	
5.2	Rated Capacity 初始容量	The capacity means the discharge capacity of the cell, which is measured with discharge current of 0.2C with Protection Board over discharge protection after standard charge. 该容量是指标准充电后，0.2C放电至保护板过放保护所放出的容量。	≥12.8Ah

5.3	Cycle Life 循环寿命	Test condition： Charge:0.2C to 25.2V，then stored for 10 minutes Discharge:0.2 C to Protection Board over discharge protection， then stored for 10 minutes；80% or more of 1st cycle capacity at 0.2C discharge of Operation. 测试条件: 充电：0.2C 充电到 25.2V，搁置 10 分钟; 放电：0.2C 放电到保护板过放保护，搁置 10 分钟; 当放电容量降至初始容量的80%时，所完成的循环次数定义为该电芯的循环寿命	≥300周次

3 Safe Characteristic(Cell) 安全性能

NO.	Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
6.1	Overcharge testing （NO PCM） 过充测试 （无保护板）	At standard testing condition ,charging cell with constant current 2.0Ato voltage 4.6V, then with constant voltage 4.6V till current decline to 0. Stop test till cells temperature 10°C lower than max temperature. 在标准测试环境下，电池用 2.0A 电流充电至 4.6V,然后恒压 4.6V 让电流下降接近为 0A,监视电池温度变化,当电池温度下降至低于峰值 10°C时,停止实验.	No smoke , No fire 不起火,不冒烟
6.2	Forced discharge 强制放电 （无保护板）	After the standard discharge of the electric core, the 1.0C current to its reverse charging, 90min 将标准放电后的电芯，以 1.0C 的电流对其进行反向充电，时间 90min	No smoke , No fire 不起火,不冒烟
6.3	Short-circuit testing （NO PCM） 短路测试 （无保护板）	At standard testing condition ， after standard charging, connect pack anode and cathode by wire which impedance less than 80±20mΩ, keep 24h. 在标准测试环境下，标准充电后,将电池组合的正负极用一根小于80±20mΩ的导线连接,放置 24 小时.或外部温度降低到最大温升的 20%	No smoke , No fire 不起火,不冒烟
6.4	Drop Test 跌落测试	After the charge of the electric core from 1.0meters height fell to the ground each surface of the concrete fell 1 times a total of 6 tests 充电后的电芯从1.0米高度跌落至混凝土地面每个面各跌落1次共试验6次	Open circuit voltage should be no less than 90% initial voltage No fire,no leakage. 开路电压应不低于 90%初始电压，无起火、无泄漏

※ Above testing of safe characteristic must be carried out with protective equipment.(安全性能测试应在有保护措施下进行)

4 Warning 警告

☆Load circuit may cause voltage and current, and the voltage or current may add to the pack, the voltage or current must be controlled as lower than RWV and RWI, larger voltage or current may damage the PCM of pack.

☆负载可能产生电压和电流,该电压和电流会反加在电池组合（含 PCM）上，该电压和电流不能超过保护板自身反向耐压耐流值，过高电压或电流会损坏电池组合中的保护板。

To prevent possible leakage, heat generation and fire of the battery pack, pay attention to the following precautions:

☆为防止电池组合可能发生的泄漏,发热,起火,请注意以下预防措施:

The aluminum foil of the pack is very easily damaged by sharp edge objects such as Ni-tabs, pins and needles. Keep the battery away from any sharp edge objects.

☆电池组合外包装膜易被镍片,尖针等尖锐部件损伤,禁止以尖锐部件接触电池.

Do not immerse the pack in water.

☆ 严禁将电池组合浸入水中.

Do not use and store the pack near heat source, such as stoves, heaters and other heat equipment.

☆禁止将电池组合放在热高温源旁,如火炉,加热器等高温设备

When charging, use a special charger for lithium-ion battery.

☆ 充电时请选用锂离子电池专用充电器

Do not reverse the position and negative terminals

☆ 禁止颠倒正负极使用电池组合

Do not connect the pack to an electrical outlet

☆ 禁止将电池组合直接接入电源插座

Do not throw the pack in fire or heater.

☆禁止将电池组合丢入火或加热器中

Do not short-circuit the pack by directly connecting the positive and negative terminal with metal object such as wires.

☆禁止用金属直接将电池组合的正负极进行短路连接

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

☆ 禁止将电池组合与金属,如发夹,项链等一起运输或贮存

Do not strike, throw or trample the pack

☆ 禁止敲击或抛掷,踩踏电池组合等

Do not directly weld the pack or pierce the battery with nails or other sharp objects.

☆ 禁止直接焊接电池组合或电芯，禁止用钉子或其它利器刺穿电池组合或电芯.

5 Cautions 注意

Do not use or place the battery pack at high temperature (for example, in direct sunlight or in a vehicle in extremely hot conditions).Otherwise, it may cause the battery pack overheat, catch fire or function failure, which will shorten its life.

△ 禁止在高温下(直射阳光下或高温封闭汽车中)使用或放置电池组合,否则可能会引起电池过热,起火或功能失效,从而导致电池组合寿命减短.

Do not use the battery pack where static electricity is great, otherwise, the safety devices in the pack may be damaged, which will cause hidden trouble of safety.

△禁止在强静电和强磁场的地方使用,否则易破坏电池组合的安全保护装置,带来安全隐患.

Do not use it in places with strong static electricity and strong magnetic fields, otherwise it will easily damage the safety protection device of the battery and cause safety hazards.

△ 禁止在强静电和强磁场的地方使用,否则易破坏电池组合的安全保护装置,带来安全隐患.

If the pack leaks and the electrolyte get into the eyes, do not rub eyes, instead, rinse the eyes with clean water and immediately go to hospital for medical treatment.

△ 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.

If the battery pack emits smell, or becomes hot, or change its color, or is deformed during working or storage, or any abnormal phenomenon occurs during charging, immediately remove the battery from the charger or device and stop using it.

△ 如果电池组合在使用或贮存中发出异味,发热,变色,变形,或者是在充电过程中出现任何异常现象,立即将电池从充电器或装置中移开,并停止使用.

If the connection area of the battery pack is stained, wipe it off with a dry cloth before use, otherwise it may affect the performance due to poor contact.

△ 如果电池组合的连接点有污渍,使用前应用干布抹净,否则可能会因接触不良而影响性能.

Waste batteries should be covered with insulating paper to prevent fire and smoke.

△ 废弃之电池应用绝缘纸包住电极,以防起火, 冒烟.

The battery pack should be stored at normal room temperature and should be charged to 40% to 60% power. In order to prevent the battery from over-discharging, it is recommended to charge it every 3 months. If the storage time exceeds one year, it is recommended to charge and discharge the battery once a year to activate the battery.

△电池组合应当在正常室温下存放，应充到 40%至 60%的电量。为防止电池过放，建议每 3 个月进行一次充电，如储存时间超过一年，建议每年进行一次充、放电以激活电池。

6 Safety Precautions for Handling Batteries 电池操作注意事项

1 Battery precautions（电池注意事项）

△Don’t strike battery with any sharp edge objects. 勿用尖锐处撞击电池。

△Trim your nails or wear gloves before taking battery. 剪掉指甲，或者戴手套。

△Clean worktable to make sure no any sharp particle. 清理工作台，避免尖锐零部件

2 Prevent electrical short circuit（预防电池短路）

Prevent electrical short circuits. A short circuit will generate a very high current, which will cause the battery to heat up and electrolyte leakage, produce toxic gas or explode. The pole piece is easily short-circuited when connected to the surface of a conductive object. An external short-circuit can cause heat generation and damage the battery.

避免电池短路。短路会产生很高的电流而使电池发热以及电解液泄漏，产生有毒气体或爆炸。极片连接在导电物体表面很容易短路，外部短路会导致发热及损害电池。

3 Mechanical shock（机械撞击）

△Dropping, hitting, bending, etc. may affect the performance of the battery pack.

跌落、碰撞、弯曲等等都可能会降低电池的性能

7 Period of Warranty 保质期

The shelf life of the battery is one year from the date of shipment. If it is proved that the defect of the battery was caused by our company's manufacturing process and not caused by customer abuse or misuse, our company is responsible for returning the battery.

电池的保质期从出货之日算起为一年。如果证明电池的缺陷是在我们公司制造过程中造成的而不是客户滥用或错误使用造成，本公司负责退换电池。

8 Others 其它事项

If customers need to use the battery for applications beyond the document's specifications, or use the battery under conditions other than those specified in this specification, they should notify the manufacturer in advance, because specific experimental tests are required to verify the battery's use conditions performance and safety.

客户若需要将电池用于超出文件规定以外的应用，或在文件规定以外的使用条件下使用电池，应事先通知设备相关技术人员，因为需要进行特定的实验测试以核实电池在该使用条件下的性能及安全性。

2 The manufacturer shall not be responsible for any accidents caused by using the battery under conditions other than those specified in this specification.

对于在超出文件规定以外的条件下使用电池而造成的任何意外事故，本公司概不负责。

3 If necessary, the manufacturer will inform the customer in writing about how to use the battery correctly.

如有必要，本公司会以书面形式告之客户有关如何正确操作使用电池。

4 Any matters not mentioned in this specification must be negotiated and determined by both parties.

任何本说明书中未提及的事项，须经双方协商确定。