版本号：A/0

武汉中原长江科技发展有限公司
（国营第七五二厂）

锂离子电池产品规格书

SPECIFICATION OF PRODUCT

Lithium Ion Rechargeable Cell

电池型号：INR18650

Model: INR18650

Document No. **文件编号**			**Date** **生效日期**		
Originator **拟制**		**Checked By** **审核**		**Approved By** **批准**	

武汉中原长江科技发展有限公司
(国营第七五二厂)

http://www.100752.com

Tel 电话：+86-027-84858752 **Fax** 传真：+86-027-84732186 Email：752@100752.com

1 适用范围

This specification describes the type and size, performance, technical characteristics, warning and caution of the lithium ion rechargeable cell. The specification only applies to INR18650 cell supplied by Wuhan Zhongyuan Changjiang Limited.

本产品规格书规定了武汉中原长江科技发展有限公司生产的 INR18650 二次电池的技术要求、测试方法及注意事项。

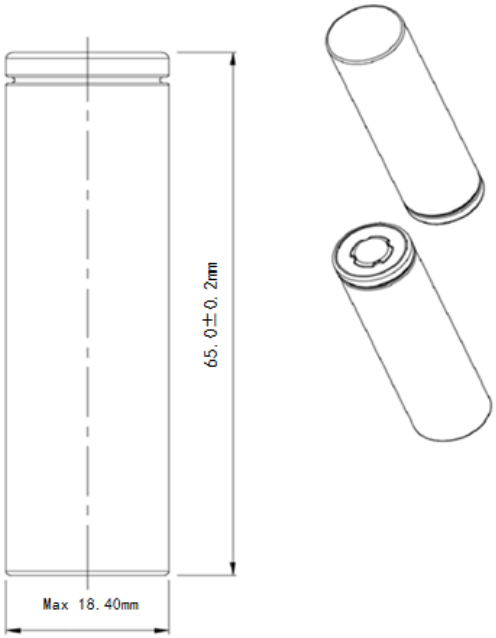
2 Nominal Specifications 产品基本特性

表 1

项目	参数
Nominal Capacity 标称容量	2600mAh Definition：1C=2450mA（定义：1C=2450mA）
Min. Capacity 最小容量	2450mAh 0.2C Discharge at 25℃（25℃时 0.2C 放电）
Nominal voltage 标称电压	3.60 V
Initial Impedance 初始内阻	≤50 mΩ
Standard charging method 标准充电方法	0.5C CC(constant current)charge to 4.2V，then CV（constant voltage）charge till charge current decline to ≤50mA 0.5C CC（恒流）充电至 4.2V，再 CV（恒压）充电至电流≤50mA
Max. charge current 最大充电电流	0～15℃ 0.2C 15～25℃ 0.5C 25～45℃ ≤1C
Standard Discharge current 标准放电电流	0.2C
Max. discharge current 最大放电电流	4.5A/8ms Instant discharge current 瞬间放电电流
Continuous discharge current 可持续放电电流	≤1.5C（3.675A）
Weight 重量	Approx (约) : 45g
Storage temperature 储存条件	≤1month：-20 to 60°C ≤3 month：-20 to 45 °C ≤12 month：-20 to 20 °C

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

3 Cell Specification



4 Nominal Specifications 基本规格参数

4.1 Appearance and Dimension 外观和尺寸

表 2

Item 项目	Remark 备注
Appearance 外观	There shall be no such defects like deep scratch, flaw, crack, rust or leakage. 外观整洁，标志清晰，无划伤变形，无生锈、漏液等现象。
Dimension 尺寸	Refer to the attached cell specification 参见电芯规格

4.2 General Performance 常规性能

表 3

Item 项目	Test Methods and Condition 测试方法和条件		Criteria 标准
Nominal Capacity 标称容量	Charging充电	Environment temperature (15 ~ 25) ℃，CC/CV mode, 0.5C constant current charge to 4.2V，then constant voltage charge mode, cut off current 50mA 在（15-25）℃条件下，0.5C恒流恒压充电至4.2V，截止电流50mA	Discharging time: ≥ 300 minutes. No distortion on appearance, no burst and no leak 放电时间≥300min 电池外观无形变、无爆裂、漏液

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

Item 项目	Test Methods and Condition 测试方法和条件		Criteria 标准
	Discharging 放电	Environment temperature (15 ~ 25) ℃, then discharging at 0.2C to voltage FD 在（15-25）℃条件下，0.2C横流放电至截止电压	
Discharge at high temperature 高温放电性能	At standard testing condition，after standard charging, rest the Cells 3h at 55 ±2℃, then discharging at 1C to voltage FD, recording the discharging time 在标准测试环境下，标准充电后，在 55±2℃条件下贮存 3h，然后用 1C 放电至 FD,所记录放电时间.		After test, 1C capacity should be ≥50minutes. 实验后的 1C 容量应≥50 分钟。
Discharge at low temperature 低温放电性能	At standard testing condition，after standard charging rest the Cells 3h at 0 ±2℃, then discharging at 1C to voltage FD, recording the discharging time. 在标准测试环境下，标准充电后，在 0±2℃条件下贮存 3h，然后用 1C 放电至 FD,所记录放电时间.		After test, 1C capacity should be ≥50minutes. 实验后的 1C 容量应≥30 分钟。
循环寿命	At standard testing condition , constant current 0.5C charge to FC, then constant voltage, charge to current declines to 0.01C, rest 30min，constant current 0.5C discharge to FD，rest 30min. Repeat above steps till continuously discharging capacity Higher than 65% of the Initial Capacities of the Cells 在标准测试环境下，先用 0.5C 恒流充电至 FC，再恒压 FC 充电直至充电电流≤0.01C,搁置 30 分钟,再用 0.5C 电流放电至 FD;又搁置 30 分钟,重复以上步骤,直到放电容量是初始容量的 65%		≥500 times(次)
室温存储性能	1) In environmental temperature 23℃± 5 ℃ condition, Use nominal capacity charging method full charge the battery. 2) Lay the battery opened circuit 28 days, then use 0.2C discharge it to cut off voltage. 将电池开路搁置 28 天,再以 0.2C 放电至终止电压。		0.2C discharging capatity should no less than 80%. 0.2C 放电容量应不低于 80%。

4.3 Environment Performance 环境性能

表 4

Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
Vibration 振动测试	Environment temperature (15 ~ 25)℃ , Set the vibration testing machine on F=20HZ, I=90%,	1) After test, 1C capacity should be no less than 98% of it before test Internal resistance

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
	T=30min. Record the discharging capacity after test. 温度(15～25)℃ ,实验过程中将振动仪设置在 F=20HZ；I=90%；T=30min 实验后记录电池的 1C 放电容量	discrepancy should be no more than 3mΩ. 2) Battery appearance should not be obvious nick, leak, smoke and burst 1）实验后的 1C 容量≥实验前 98%，内阻相差不超过 3mΩ 2）电池外观应无明显损伤、漏液、冒烟或爆炸。
Fall 自由跌落	Drop test for sample on floor of 18mm~20mm hard woods from 1M height (Anode and Cathode side，crosswise sides）1 time each，all together 6 times. 将电池样品由高度为 1m 的位置自由跌落到置于水泥地面上的 18mm~20mm 厚的硬木板上，自由跌落 6 面(正负极面，横向面)各 1 次，共 6 次。	1) After test, 1C capacity should be no less than 98% of it before test Internal resistance discrepancy should be no more than 3mΩ. 2) Battery appearance should not be obvious nick, leak, smoke and burst 1）实验后的 1C 容量≥实验前 98%，内阻相差不超过 3mΩ 2）电池外观应无明显损伤、漏液、冒烟或爆炸。
Constant Temperature and Humidity 恒温恒湿试验	Lay the battery in temperature 40±2℃ and humidity 90% ~ 95% environmental chambers for 48 hours. Then lay the battery in environmental temperature23±5℃condition for 2 hours. Later discharge it in 1Cand record the capacity. 将电池放入 40℃±2℃，相对湿度为 90%～95%的恒温恒湿箱中搁置 48 小时后，将电池取出在环境温度 23℃±5℃的条件下搁置 2h，以 1C 放电，并记录容量	1) Battery appearance should not be obvious nick, leak, smoke and burst. 2) 1C discharging capacity should no less than 36 minutes. 1)电池外观应无明显变形锈蚀、冒烟或爆炸 2) 1C 放电容量应≥36 分钟,

4.4 Safe Characteristic 安全性能

表 5

Item 项目	Test Methods and Condition 测试方法和条件	Criteria 标准
External short circuit 短路	After standard fully charge, the cell is to be short-circuited by connecting the positive and negative terminals under the temperature of 25℃±2℃with a resistance load of 80±20mΩ for 10min. Observe for1h. 电芯按标准充电后，电池放置在25±2℃的环境中，然后将单体电池经外部短路10 min，外部线路电阻应为80±20mΩ；观察1h。	No fire, No explosion 不起火、不爆炸
Overcharge 过充	After standard charging, the cell is to be charged at 1C current until the voltage reaches 150%SOC. Monitor the cell temperature during the test, Observe for1h. 电芯按标准充电后，以1C恒流恒压充电，至电池电压达到150%SOC即停止试验。观察1h。	No fire, No explosion 不起火、不爆炸
Over Discharge 过放	After standard charging, the cell is to be discharged at 1C current for 90mins; Observe for1h. 电芯按标准充电后，以1C恒流放电90min。观察1h。	No fire, No explosion 不起火、不爆炸

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

5 实验条件

Standard testing condition 标准测试环境

Temperature 温度 ：23±5℃

Humidity 湿度 ：≤75%RH

Atmospheric Pressure 大气压 ：86-106Kpa

6 Nameplate 铭牌

The nameplate should include battery model, rated voltage, code of production date, warning symbol and so on.

电池的铭牌(商标)包括电池型号、额定电压、生产日期代码、警示标识等内容。

7 Composition of Code 代码编写

The code of production date is a 6-digit figure. The first two digits stand for year, the middle two digits stand for month, the last two digits stand for day.

电池生产日期代码用六位数字表示。头两位数字表示年份，中间两位表示月份。后两位数表示日期。

8 Transportation 运输

8.1 During transportation, the batteries should not be exposed to direct sunlight, fire, rain, water, or corrosive substances.

电池在运输过程中，应避免日晒、火烤、雨淋、水浸及与腐蚀性物质放在一起。

8.2 Impacts and vibrations during the transportation, loading and unloading should be limited to the minimum scale.

运输和装卸中的冲击、震动应限制在最小程度。

8.3 The stacking height of cartons should not exceed 1.5 meters.

对于纸质的包装箱堆放高度不得超过 1.5 米。

8.4 When batteries transported over a long distance, if they are shipped, they should be kept away from the engine; in the summer, they should not be kept in an unventilated environment for a long period of time.

电池长途运输时，如是船运，应放在远离发动机的地方；夏季不应该长期滞留在不通风的环境内。

9 Warning 注意事项

9.1 Stop charging the battery if charging isn't completed within the specified time.

在规定时间还没有充满电时停止充电。

9.2 Don’t use the unspecified charger and breach charging requirement. Cell charged with unspecifiedcondition maybe lead to be overcharged or abnormal chemical reaction. It causes the generating heat, smoke, rupture or flame.

不要使用非规定充电设备和违反充电要求。非规定条件充电会引发电芯过充电或异常化学反应 ,发生产热，

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

冒烟，破裂或起火情况

9.3 Don't use or leave the cell under the blazing sun (or in heated car by sunshine), and keep cell away from little children in order to avoid troubles by Swallowing. In case of swallowing the cell, see a doctor immediately.

不要将电芯放置在太阳光直射的地方（或阳光直接照射的车内），电芯要远离儿童放置以避免儿童吞咽事故，如发生吞咽情况，请立即就医

9.4 Don't use or expose the cell to extreme heat disposed in fire or water or get it wet. Don't modify or disassemble the cell. It will be dangerous, and may cause ignition, heating, leakage or explosion.

切勿将电芯加热或投入火中或水中。不要更改或解剖电芯。否则会导致危险，如起火、发热、泄至爆炸；

9.5 Don't short-circuit cell positive(+) and negative(-) terminals. Keep away from metal or other conductive materials. Jumbling the cells of direct contact with positive(+) and negative (-) terminals or other conductive materials may cause short-circuit. Don't reverse the positive (+) and negative (-) terminals for any reason.

切勿短接电芯正极(+)和负极(-)，使电池远离金属和其他导电材料。处理不好电芯正极(+)和负极(-)以及金属和其他导电材料的直接接触会导致电芯短路；切勿反接电芯正极(+)和负极(-).

9.6 If the cell gives off an odor, generates heat, becomes discolored or deformed, or in any way appear abnormal during usage, recharging or storage, immediately remove it from the device or cell charger and stop using it.

当电芯在使用、充电及储存时发生放气、发热、变色或其他不正常现象，立即从夹具或充电器卸除,电芯停止使用。

9.7 Don't directly solder the cell. Excessive heating may cause deformation of the cell components such as the gasket, which may lead to the cell swelling, leakage, explosion, or ignition.

勿直接焊接电芯，过多的热量会导致电芯组件如绝缘件变形，进而导致电芯鼓胀、泄露、起火和爆炸。

9.8 Don't use abnormal cell which has damages by shipping stress, drop, short or something else, and which gives off electrolyte odor.

切勿使用在运输压力、跌落、短路或其他情况下损坏的电芯以及释放出电解液气味的电芯。

9.9 When the battery is not in use for a long time, it should be taken out from the device and stored in a low-temperature and low-humidity environment.

当长期不用时，要将电池从设备中取出并放在低温低湿的环境中保存。

10 Storage 储存

10.1 The battery should be used and stored in a place away from static electricity.

电池应在远离静电的场所使用和储存。

10.2 The battery should be stored in an environment where the temperature does not exceed 30°C and the relative humidity is between 45% and 75%.

电池应储存在温度不超过 30℃、相对湿度 45%～75%的环境中。

10.3 Keep the battery away from heat sources anddirect sunlight. Keep it clean, cool, dry, and away from the influence of the weather.

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播

电池储存时要远离热源，也不能置于阳光直射的地方，保证清洁、凉爽、干燥、通风，并不受气候影响。

10.4 The stacking height of the batteries depends on the strength of the package. Generally, the stacking height of the cartons shall not exceed 1.5 meters. And for wooden boxes, the stacking height shall not exceed 3 meters.

电池的堆放高度取决于包装强度，一般规定，纸质包装箱堆放高度不得超过 1.5 米，木箱不超过 3 米。

10.5 Store and display the batteries in its original package. If the package is removed, the batteries cannot be stacked, otherwise it may cause short-circuit and damage of the batteries.

电池以原包装存放和陈列电池，去掉包装后电池不能乱堆放，易引起电池短路和损坏。

11 Declaration 声明

If you have any question about this specification of product, please contact us. Wuhan Zhongyuan Changjiang Technology Co., Ltd reserves the right to modify this specification of product.

若对本产品规格书有疑问，请与武汉中原长江科技发展有限公司联系。武汉中原长江科技发展有限公司保留对本产品规格书更改的权利。

本产品规格书为武汉中原长江科技发展有限公司文件，未经授权不可翻印及传播