AUTEC POWER SYSTEMS
...POWERmatters.

# APS-LIR18650-2.6Ah Series

**2.6Ah, 3.65V Secondary Lithium-ion(Li-ion) Battery**

RoHS Compliant

## Features

- Secondary Lithium-Ion(Li-ion)
- Nominal capacity 2.6Ah
- Nominal voltage: 3.65V
- Standard Charge 2 hours
- Charge Temp. 0-45˚C
- Discharge Temp. -20˚C to 60˚C
- Over Charge/Discharge Protection
- Short Circuit Protection
- Dimensions: ϕ18.4x65.2
- 5-year Warranty


*Product images are for illustrative purposes only and may vary from actual design.

## Applications

- Small portable electronics

## Model List*(See part number scheme for model number details)

| Model Number | Nominal Capacity | Nominal Voltage | Standard Charge Time | Typical Max. Pulse Current |
|---|---|---|---|---|
| APS-LIR18650-2.6Ah | 2.6Ah | 3.65V | 2 hours | 1000mA |

*At 3mA +20˚C, 2V cut off. The capacity restored varies according to current temperature cut off

## Charging Table

| C-rate | Time |
|---|---|
| $5C_1$ | 12 min |
| $2C_1$ | 30 min |
| $1C_1$ | 1h |
| $0.5C_1$ or C/2 | 2h |
| $0.2C_1$ or C/5 | 5h |
| $0.1C_1$ or C/10 | 10h |
| $0.05C_1$ or C/20 | 20h |

**Table 1: C-rate and service times when charging and discharging batteries of 1Ah (1,000mAh)**

## Technical Data

| | |
|---|---|
| Nominal Capacity | 2500mAh ($1C_1$), 2600mAh ($0.2C_1$), After Standard charging, then discharge to 2.75V, 25˚C |
| Nominal Voltage | 3.65V, After Standard charging, then discharge to 2.75V, 25˚C |
| Standard Charging | CC-CV, Std. $0.5C_1$, 4.20V, cut-off at $1/20C_1$, 3hrs 25˚C±2˚C; $C_1$, nominal capacity |
| Charging Current (Max.) | 0˚C to 10˚C $0.2C_1$<br>10˚C to 45˚C $0.5C_1$ |
| Standard Discharging | CC, $1C_1$, cut-off at 2.75V |
| Discharging Current (Max.) | $3C_1$ @25˚C |
| AC Impedance | ≤40mΩ, AC 1kHz |

**Technical Sales / Customer Service:** +1-818-338-7788 • Email: sales@autec.com
31328 Via Colinas Suite 102 • Westlake Village, CA 91362 USA • www.autec.com

## ■ Technical Data(cont.)

| | |
|---|---|
| Cycle Life | 500th cycle>90% of 1st Cycle Capacity or 1000th cycle>80% of 1st Cycle Capacity, @25˚C, Standard Charging/Discharge: $1C_1$ to 2.75V. |
| Discharge Characteristics (by rate of discharge) | $1C_1$ =100%, $3C_1$ ≥90%; Cells are to be charged per standard charge profile. The discharge capacity of each cell at respective discharge rate shall be compared with the discharge capacity at $1C_1$ |
| Discharge Characteristics (by rate of discharge) | 55˚C ≥100%, 25˚C =100%, 10˚C ≥90%, 0˚C ≥80%, -10˚C ≥75%, -20˚C ≥70%; Discharge: CC $1C_1$, 2.75V cut-off at each temperature (-20˚C 2.2V cut-off) |
| Capacity retention performance at room temperature | Residual capacity ≥92%, Recoverable capacity ≥96%; 25˚C, 100% SOC, residual and recoverable capacity will be tested after 28 days at 25˚C±2˚C |
| Capacity retention performance at high temperature | Residual capacity ≥88%, Recoverable capacity ≥92%; 55˚C, 100% SOC, residual and recoverable capacity will be tested after 7 days at 25˚C±2˚C |
| Storage Characteristics | Recoverable capacity ≥90%; 100% SOC< discharge 30min at 2˚C current then storage 28 days at 45˚C, recoverable capacity will be tested at 25˚C±2˚C |
| Temperature | Charge 0 to 45˚C, Discharge -20 ˚C to 60˚C |
| Storage Temperature | 1 month -5˚C to 45˚C, 3 months -5˚C to 35˚C, 12 months -5˚C to 30˚C; Recommended storage temperature: -5˚C to 35˚C |
| Storage Humidity | ≤75% RH |
| Weight | ≤46.5g |
| Dimensions | ϕ18.4x65.2 |
| Drop test | After standard charge, the cell is to be dropped onto the cement floor from 1.5m height at each of X, Y and Z directions2 times. Test the open circuit voltage of cell. |
| Vibration Test | After standard charge, the cell is to be attached to a vibration table and tested under the following conditions: The Sine Wane is applied to the vibration test. The testing frequency is from 7Hz to 200Hz, and then to 7Hz with total sweep time15 min by the logarithm scanning method. The logarithm scanning method: 7Hz~8Hz with the acceleration of 9.8 m/s2, keep amplitude of 0.8mm to the acceleration of 78.4 m/s2 (50Hz), and then keep the acceleration of 78.4m/s2 to 200Hz frequency. Direction: the cell is to be tested in three mutually perpendicular to X/Y/Z axis for total 3h, every direction repeat 12 times. Test the open circuit voltage of cell. |
| Low Pressure Test | After standard charge, cell is to be placed in the vacuum oven. The inner pressure will be decreased to less than 11.6 KPa and keep 6h. Test the open circuit voltage of cell. |
| Temperature Cycling | After standard charge, cell is to be placed in the constant temperature oven. The inner temperature of oven should be set up as following table and testing will be repeated 5 times. Test the open circuit voltage of cell. *See Temp Cycling Table |

## ■ Technical Data(cont.)

| | |
|---|---|
| Over Discharge Protection | After standard charge, cell is to be discharged at $1C_1$ current for 90min; Keep 1h. |
| Overcharge Protection | After standard charge, cell is to be charged at $1C_1$ current until the voltage achieves 6.3V or the total charging time achieves 60 min. Observing the cell temperature while testing, the peak temperature will be less than 150°C. Keep 1h. |
| Short Circuiting Protection | After standard charge, cell is to be short-circuited by connecting the positive and negative terminals under the temperature of 25°C±2°Cwith a maximum resistance load of 5mΩ for 10min. Observing the cell temperature while testing, the peak temperature will be less than 150°C. Keep 1h. |
| Heating Protection | After standard charge, cell is to be heated in a circulating air oven. The temperature of the oven is raised to 130±2°C at the rate of 5±2°C/min and remains for 60 minutes. Keep 1h. |
| Crush Test | After standard charge, cell is to be crushed with its longitudinal axis parallel to two flat surfaces. The crushing plate is a half cylinder with a radius of 75mm. The testing speed is (5±1) mm/s. The crushing will be continued until the voltage of cell reaches 0V or the deformation amount reaches30% or an applied force of200KN is reached. Keep 1h. |
| Nail Penetrating | After standard charge, cell is to be penetrated with a steel nail which is high temperature resistance with diameter ϕ5 mm~ϕ8 mm at the speed of 20~30mm/s from the vertical direction of cell electrode. The steel nail should be kept in the cell. Keep 1h. |
| Sea Water Immersion Test | After standard charge, cell is to be thoroughly immersed in 3.5%(weight percentage) NaCl solution for 2h, or no obvious reaction can be seen. Keep 1h. |

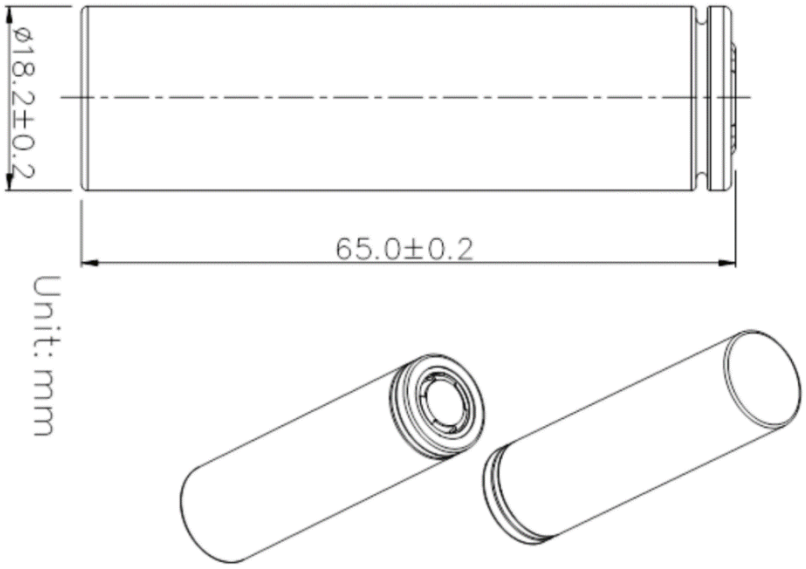
Notes:

1. Unless otherwise specified, all tests stated in this specification are conducted at temperature 25±2°C and relatively humidity 15~95%RH and atmosphere pressure 86~106KPa.

## ■ Temp Cycling Table

| Temperature(˚C) | Time Speed(min) | Total time(min) |
|---|---|---|
| 25 | 0 | 0 |
| -40 | 60 | 60 |
| -40 | 90 | 150 |
| 25 | 60 | 210 |
| 85 | 90 | 300 |
| 85 | 110 | 410 |
| 25 | 70 | 480 |

## ■ Mechanical Diagram




## ■ Warnings

1. **Install batteries correctly.**
2. **Ensure the contact points to be clean and conductive.**
3. **Do not mix different types or brands of batteries in any application.**
4. **Do not expose the batteries to heat or fire.**
5. **Keep away from small children.**
6. **Please check the manufacturing date code.**

## Part Number Scheme

**APS-LIR 18650-2.6Ah**

- APS=Autec Power Systems
- LIR=Lithium-ion Rechargeable Battery
- 2.6Ah=Nominal Capacity
- 18650=Height/Diameter

***Product images are for illustrative purposes only and may vary from actual design.**
***Specifications are subject to change without notice. Autec is not responsible for issues arising from errors or omissions.**