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**AUSTRALIA**

## **Specification for Lithium-ion Battery**

**AUTOSLIDE AUTOSWING BATTERY  
MODEL : AWS-BATTERY**

**Part Number : DY-6S1P18650-2103C**

## 1、 Range of application

This specification applies to the battery production using Li-ion Pack.

Declaration: This product conforms the requirement of RoHS.

## 2、 Battery model

2.1 Battery model: NiCoMn

2.2 Cell type and specification: 18650 (3.6V/3200mAh, cell resistance $\leqslant 30 \pm m\Omega$  AC 1kHz)

## 3、 Battery pack basic function

Item	Performance	Remark
Standard discharge capacity	3.2Ah	-charge : 0.5C (1.55A), 25.2V, 0.02C(0.62A) up to current @ RT - release charge: 0.2C (20A), 15V end voltage @ RT
Minimal discharge capacity	3.1Ah	-charge: 0.5C (1.55A), 25.2V, 0.02C(0.62A) up to current @ RT - release charge: 0.2C (20A), 15V end voltage @ RT
Standard voltage	21.6V	
Discharge protection voltage	2.8V $\pm 0.08V$	Single string voltage protection value
Charge voltage	25.2 $\pm 0.05V$	
Charge mode	CC/CV	
Charge protection voltage	Level 1: 4.2 $\pm 0.025V$ Level 2: 4.34.2 $\pm 0.025V$	Single string voltage protection value, with secondary protection
Standard charge current	1.55A (Max $\leqslant 2A$ )	The continuous current of the charger is not more than 2A
Standard discharge current	3A	Maximum sustainable discharge current 8A
Over discharging current protection	8A $\pm 1A$	delay >1S
Short circuit protection	YES (Short circuit is not allowed)	Delay <0.4mS
power dissipation	$\leqslant 50\mu A$	working status

#### 4、Test condition

##### 4.1、Environmental condition:-

Unless otherwise specified, all test of this specification should be performed under standard atmospheric condition:

Temperature: 15°C~35°C; Relative humidity: 45%~75%; Atmosphere pressure: 86kPa~106kPa

##### 4.2、Measure instrument and equipment requirement

Accuracy of measuring voltage instrument should not be less than level 0.5, resistance should be no less than 10KΩ/V.

- Accuracy of measuring current instrument should not be less than level 0.5.
- the relative error of measuring time instrument is ±0.1%.
- The current of constant current load is adjustable if it is within the power voltage range, the current relative error is ±0.1%.
- The current of constant current load is adjustable if it is within the power voltage range, the current relative error is ±0.1%.
- Charging power (or the charger) should be able to change to constant voltage charging after the battery voltage achieve constant voltage value of charging voltage.

## 5、Function and test method

Item	Test method	Criterion
Standard charge	CC/CV mode, in the condition that environment temperature is $(23\pm 5)^\circ\text{C}$ , charging source keep constant current charge with 0.2C current until battery voltage reach 25.2V, then turn to constant voltage charge method until charge current is less than 0.02C(0.062A).	
Capacity	After standard charge, Shelve battery at indoor temperature for 1h, in the condition that environment temperature is $(23\pm 5)^\circ\text{C}$ , constant current discharge with 0.2C current until reach the cut-off voltage.	Capacity $\geq$ Minimal discharge capacity
vibration refer to UN38.3 Stands	<p>1. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face.</p> <p>2. From 7 Hz a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm (1.6 mm total excursion) and the frequency increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is increased to 200 Hz.</p>	No leakage, No venting, No disassembly, No rupture and No fire, voltage $\geq 90\%$ before testing
Overcharge protection	Set the charge voltage of battery pack as 25.2V, charge with 0.5C current, experiment time less than 24h, and stop charge when PCM start to protect battery.	Protection function work normally, no liquid leakage、no air leakage、no fracture、no fire、no explosion
Over discharge protection	Discharge battery pack with 0.8C current, experiment time less than 24h, and stop discharge when PCM start to protect battery.	Protection function work normally, no liquid leakage、no air leakage、no fracture、no fire、no explosion
Short circuit protection	0.5h. After a full charge, short current the discharge positive and negative pole 0.5h with an external circuit which resistance is no more than 50m $\Omega$ .	After short circuit the protection function is normal
Recycle life	In the condition that environment temperature is $(23\pm 5)^\circ\text{C}$ , standard charge, and shelve for 1h, and constant current discharge with 0.2C current to the cut-off voltage.	500 times discharge capacity $> 70\%$ initial capacity of cells

## 6、Battery package diagram

### 6.1 Battery pack picture



## 7、Transport

50%~60% Capacity, Battery should prevent vibration、impact、extrusion or exposed to the sun and rain, apply to cars, trains, ships, aircraft and other ordinary vehicles transportation.

## 8、Storage

The battery should be stored at the clean, dry and ventilative indoor with a ambient temperature for -10 °C ~ 35 °C, Relative humidity: 45%~75%, should avoid contact with corrosive substances, keep away from fire and heat source.

The process of storage battery charge once every three months.

It should follow the principle "first in first out" when storage cells are used for the work piece process and batteries are delivered from storage.

## 9、Safety specification and instructions

Please read the instructions and battery surface marks carefully before use battery.

Please use battery in the normal and indoor environment

In use process, stay away from heat source and high voltage, prevent children playing with battery. Don't throw it.

Don't short circuit the anode and cathode, don't disassembling battery one self, also don't let the battery be affected with damp, lest produce risk.

Please store battery in good condition if not use it for a long time. Keep battery with a half charged state.

Please pack battery with non-conductive material to avoid direct contact with the metal and damage battery.

Please dispose waste battery safely, don't put into the fire or water.

## 10、Danger warning and notice

Battery can avoid danger with protection agency and protection circuit inside. Inappropriate dismantling will damage the protection function, and cause the battery heating, smoking, deformation or burn

Do not let the electrodes of the battery connected by metal, don't let the battery and metal stored or moved together . If the battery is short circuit, there will be a large current and it will damage the battery, cause battery heating, smoking, deformation or burn.

Heating and burning the battery will cause the battery spacer melting, security function is lost. Overheating will make the battery heating, smoking, deformation or burn.

Don't use battery near the fire source or the environment more than 75 °C. Overheating will cause internal short circuit, heating, smoking, deformation or burn.

Don't wet battery or put battery into the water. Otherwise it will cause the battery internal protection function loss and abnormal chemical reaction, battery may be heating, smoking, deformation or burn.

Avoid charging near the fire or under direct sun light. It will cause the battery internal protection function loss and abnormal chemical reaction, battery may be heating, smoking, deformation or burn.

Use dedicated charger and properly charging

It is dangerous to charge the battery by non-dedicated charger, It will cause the battery internal protection function loss and abnormal chemical reaction, battery may be heating, smoking, deformation or burn.

It is forbidden to cut into the battery with metal, hammering or throw the battery, or damage the battery with other methods, otherwise it will cause the battery heating, smoking, deformation or burn

It is strictly forbidden to connect battery directly on the power socket

High voltage, large current will flow through the battery and damage it, or make it heating, smoking, deformation or burn.

Don't use batteries for other none supporting tools

Inappropriate condition will damage the battery performance, reduce the life span, even will make the battery heating, smoking, deformation or burn.

## 11. Other items

As above, it can be used as rules framework for battery product performance and stipulations of inspection to supply and demand. If there is not new agreement in writing or change notification, then perform according this.

## FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ▶ -Reorient or relocate the receiving antenna.
- ▶ -Increase the separation between the equipment and receiver.
- ▶ -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ▶ -Consult the dealer or an experienced radio/TV technician for help.

### RF warning:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC approved

