



Lithium-ion Battery Specifications

12V 100Ah-4S

Prepared by: _____

Checked by: _____

Approved by: _____

1. Scope of Application

This specification applies to the 12V 100Ah lithium ion battery pack provided by Aolithium.

2. Product Specifications

2.1 General Spec

Item	Nominal
Dimension	$(305\pm 0.5) \times (174\pm 0.5) \times (188\pm 0.5)$ mm
Weight	10.7 \pm 0.5kg
Nominal capacity	100Ah
Nominal voltage	12.8V
Standard charging current	0.5C (50A) , @ (25 \pm 2) °C
Standard discharging current	0.5C (50A), @ (25 \pm 2) °C
CV charge voltage	14.6V
Discharge cut-off voltage	10V
Maximum continuous charge current	1C (100A)
Maximum continuous discharge current	1C (100A)
Maximum Pulse charge current	2C (200A) < 10s
Maximum Pulse discharge current	2C (200A) < 10s
Over voltage protection	14.6V
Low voltage protection	10V
Over current protection	120A
Cycle life	4000+ (90%DOD) @20 \pm 5°C
Operation temperature	Charge: 0°C ~ 55°C
	Discharge: -20°C ~ 55°C

2.2 Protection Board Electrical Parameters

Details	Min	Typ	Max	Error	Unit
Battery					
Battery Gas	LiFePO4 Battery				
Battery Links	4S1P				
Absolute Maximum Rating					
Input Charging Voltage			14.6		V
Input Charging Current			100		A
Output Discharging Voltage	10				V
Output Discharging Current			100		A
Continuous Output Discharging Current	100				A
Ambient Condition					
Operating Temperature	-20		70		°C
Humidity (No Water-Drop)	0%		90%		RH
Storage					
Temperature	-40		85		°C
Humidity (No Water-Drop)	0%		90%		RH
Protection Parameters (for Individual Cell)					
Over-Charge Voltage Protection (OVP)		3.65			V
Over-Charge Voltage Protection Release (OVPR)	3.50				V
Over-Discharge Voltage Protection (ODVP)		2.50			V
Over-Discharge Voltage Protection Release (UVPR)	3.00				V
Over-Current Discharge Protection (OCDP1)		120			A
Over-Current Protection Delay Time (OCPDT)			32		s
Over-Discharge Protection Release	Delay recovery				
Over-Current Discharge Protection Release	Delay recovery				
Short Circuit Current Protection	Work normally				
Short Circuit Current Protection Release Delay Time	< 600 us				
Short Circuit Current Protection Release	Remove the load				
Charge High Temperature Protection Temperature		65			°C
Charge High Temperature Protection Recovery Temperature		55			°C
Charge Low Temperature Protection Temperature		0			°C
Charge Low Temperature Protection Recovery Temperature		5			°C
Discharge High Temperature Protection Temperature		75			°C
Discharge High Temperature Protection Recovery Temperature		65			°C

Discharge Low Temperature Protection Temperature		-20			°C
Discharge Low Temperature Protection Recovery Temperature		-10			°C
Bleed Start Point		3.40			V
Bleed Current	40		60		mA
Balance Mode	Charge balance				
Self-Consumption of Working Mode			20		mA
Self-Consumption in Sleep Mode			250		uA
Sleep Conditions and Delay	10S delay in no current\communication\protection state				

2.3 Electrical Performance Inspection and Standards

Item	Test Profile	Specification
Standard Discharge Capacity	The standard discharge capacity is the initial discharge capacity of the battery, which is measured with discharge current of 0.5C with 10V cut-off at 25 °C within 1~ 4 hour after the standard charge.	0.5C ≥ 100Ah
High Temperature Capacity	1. After the standard charge, the battery is placed in a high temperature and set the temperature, keeping 480min after reaching a predetermined temperature; 2. Standard discharge.(0.5C)	The discharge capacity at different temperatures: >98% (Standard Discharge Capacity) @55°C Temperature setting should not exceed ± 2°C
Low Temperature Capacity	1. After the standard charge,the battery is placed in a low temperature and set the temperature, keeping 960min after reaching a predetermined temperature; 2. Standard discharge(0.5C)	The discharge capacity at different temperatures: >70% (Standard Discharge Capacity) @0°C; >60% (Standard Discharge Capacity) @-10°C; >50% (Standard Discharge Capacity) @-20°C; Temperature setting should not exceed ± 2°C

Cycle Life	Test condition (@20°C ± 5°C): Charge: 0.5C to 14.6V Discharge: 0.5C to 10V When the discharge capacity drops to 80% of the initial capacity, the number of cycles completed is defined as the cycle life of the cell	4000+
------------	---	-------

3. Product appearance



4. Precautions

4.1 The Use of Battery

4.1.1 Please observe the following safety rules when using batteries. Abuse of batteries can lead to overheating, bulging and fire of batteries and cause serious damage.

- ※ Do not put batteries in fire or heat them.
- ※ Do not reverse the battery so that the polarity of the battery is reversed.

* Do not use metal objects (such as wires) or conductive materials (such as carbon rods) to connect the positive and negative electrodes of batteries.

* Do not carry or place batteries with necklaces, hairpins or other metal objects.

* Do not use hard objects (such as nails, etc.) to puncture batteries, do not use hammers to hit batteries, do not tread batteries, do not strongly impact or shake batteries.

* Do not put the battery into water or other solvents, and do not leave the battery in a particularly humid environment for a long time.

4.1.2 Do not disassemble or modify the battery. Protection device inside the battery, the battery will become hot if damaged during use, distention or fire.

4.1.3 Do not place the battery in fire, or other hot objects near the stove. Do not expose the battery under intense sunlight.

4.1.4 Children use the battery should be under the supervision of adults to make sure the battery is properly used in accordance with the user manual.

4.1.5 When the battery scrap, specialized sites need to be sent for recycling.

4.1.6 When using the battery, if the battery gives off an odor, severe fever, tympanites, discoloration or deformation is not normal, please stop using it immediately. If something similar happens, you should contact your local dealer.

4.1.7 Do not put the battery into a microwave oven, induction cooker or pressure vessel.

4.1.8 By any chance the battery liquid leaking into your eyes, do not rub your eyes, rinse with water and immediately to the hospital, to avoid damage to the eyes.

4.2 Charging

4.2.1 Charging current

Charging Specification. Charging with higher current than recommended value may cause damage to cell electrical, mechanical and safety performance and could lead to heat generation or leakage.

4.2.2 Charging voltage

Charging shall be done by voltage less than that specified in the Product Specification . Charging beyond 14.6V, which is the absolute maximum voltage, must be strictly prohibited. The charger shall be designed to comply with this condition. It is very dangerous that charging with higher voltage than maximum voltage may cause damage to the cell electrical, mechanical safety performance and could lead to heat generation or leakage.

4.2.3 Charging temperature:

The cell shall be charged within 0°C ~55°C range in the product specification.

4.2.4 Prohibition of reverse charging

Reverse charging is prohibited. The cell shall be connected correctly. The polarity has to be confirmed before wiring, In case of the cell is connected improperly, the cell cannot be charged. Simultaneously, the reverse charging may cause damaging to the cell which may lead to degradation of cell performance and damage the cell safety, and could cause heat generation or leakage.

4.3 Discharging

4.3.1 Discharging current

The cell shall be discharged at less than the maximum discharge current specified in the Product Specification. High discharging current may reduce the discharging capacity significantly or cause over-heat.

4.3.2 Discharging temperature

The cell shall be discharged within $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$ range specified in the Product Specification.

4.3.3 Over-discharging

It should be noted that the battery would be at over-discharged state by its self-discharge characteristics in case the battery is not used for long time. In order to prevent over-discharging, the battery shall be charged periodically to maintain. Over-discharging may causes loss of cell performance, characteristics, or battery functions.

4.4 Storage

The battery stored for a long time (more than 2 months) should be kept in a dry and cool place, and the battery should be recharged regularly to ensure that the SOC is over 50%.

4.5 Transport Condition

The battery should be transported in a safe and normal state. Do not carry out stacking transportation as far as possible to avoid causing safety accident.

For your personal and property safety, please follow the specifications strictly. If there is any ambiguity in this specification, the Chinese version shall prevail.

The final interpretation right of this specification is owned by Aolithium.