____Definition and Note

__Term	__Definition
__ Product	_____75Ah_2.9V _____ This product specification is just applied to the 2.9V/75Ah rechargeable sodium ion cell produced by ### .
__ Custom	_____ The buyer in the sale contract.
__ ###	_____ The seller in the sale contract.
____ Ambient temperature	_____ The temperature of the air surrounding a cell.
_____ Battery manager system	_____ _____ _____ A tracking and controlling device integrating with hardware and software, which is used to monitor and record operating data in battery service life. The parameters consist of voltage, current, temperature and so on. The device can control the operating state of battery and keep the working surrounding and condition meeting the requirements of this specification.
____ Cell temperature	_____ Surface temperature of a cell measured by temperature sensor.
_____ Fresh cell status	_____7 _____ Within 7 days after being off-line.
_/____ C-Rate	_/_____/_____ The ratio of charge/discharge power to rated charge/discharge power
__ Cycle	_____ One sequence of charge and discharge as prescribed.
____ Manufacture date	_____ The date when the cell was manufactured, which is clearly printed by laser on the top cap.
____ Open-current voltage	_____ The voltage between the battery terminals with no load applied.
____ Rated power	_____ ___P rc_____P rd_ Under the test conditions and test methods in this specification, the battery can work continuously for a certain period of time, including rated charge power_P_{rc}_, rated

	discharge power_P_{rd}_
____ Energy efficiency	_____ ___ Under the test conditions and test methods in this specification, the ratio of discharge energy to charge energy of the battery is expressed as a percentage.
____ Nominal capacity	_____ The nominal capacity of battery is the minimum capacity under certain discharge conditions.
___/____ Rated charging/ discharging energy	_____/_____/_____/_____/ _____/_____ Under the charge/discharge conditions in this specification, the charging/discharging energy of the battery is charged/discharged from nominal charging/discharging power to the termination voltage.
___/____ Initial charging/ discharging energy	_____/_____/_____3 _____ The energy measured according to the charge and discharge procedure listed in this specification. The cell should be cycled 3 times, and select the averaged value as the initial capacity.
_____ Recovery rate of energy	_____ _____ After storage, the ratio of the charging energy and discharging energy of the battery to the initial charging energy and initial discharging energy is expressed as a percentage under the test conditions and test methods in this specification_
____ Supplier agreement	_____ The terms of the transaction between ### and the customer regarding the products of this specification.
_____SOC_ State of charge	_____75Ah __ ___100% SOC_____0Ah __SOC _0%_ An expression of the present battery capacity as a percentage of maximum capacity. For example, if the SOC is defined as 100% when the remaining capacity is 75 Ah, the state of 0 Ah is regarded as 0% SOC.
__ Temperature rising	_____ The surface temperature difference between the cells before and after charging or discharging.
____ Measurement unit	_V__Volt____V_____ voltage unit _A__Ampere____A_____ current unit _W__Ampere____W_____ power unit _Ah__Ampere-hour___-___Ah_____ capacity unit

	_Wh__Watt-hour___-___Wh_____ energy unit ____Ohm_____ resistance unit _m___milliohm____m_____ resistance unit _ _C__degree Celsius_____C_____ temperature unit _mm__millimeter____mm_____ length unit _s__second___s_____ time unit _Hz__Hertz____Hz_____ frequency unit

1. ____Scope

_____75Ah _____

This specification describes in detail the performances, conditions of use and risk warnings for 75Ah rechargeable sodium ion battery produced by ### .

2. _____Cell Performance

_____1 _____:

Unless otherwise stated, tests should be carried out within one month of delivery under the following conditions:

____Relative humidity: 75_20%

____Ambient Temperature: 25_2_C

____Barometric pressure_86_106 kPa

2.1 __General

__ No.	__ Parameter	____ Specification	__Condition
2.1.1	____Nominal capacity	75Ah	25_2__0.33C ____ 25_2_, 0.33C discharge current
2.1.2	____Operating voltage	1.5V~3.90V	
2.1.3	____Impedance(1KHz)	_1m_	25_2_____35%SOC __ 25_2_, BOL,35%SOC
2.1.4	____Shipping status	35%_____ 35%SOC	N.A.
2.1.5	____(__) Operating temperature (charging)	0_ < T _ 15_	0.2C CC to 100%SOC
		15_ < T _ 45_	0.5C CC to 100%SOC
		45_ < T _ 55_	0.5C CC to 80%SOC
2.1.6	____(__) Operating temperature (discharge)	-40_ _ T <-20_	1C
		-20_ _ T <0_	1.5C
		0_ _ T <15_	2C
		15_ _ T <30_	3C
		30_ _ T <45_	1.5C
		45_ _ T <60_	0.5C

2.1.7	____Weight	_1.9kg	N.A.
2.1.8	____Cell dimension	_____9 _Refer to section 9 of this specification	N.A.

2.2 ____/__Charging mode/Parameters

__ No.	__ Parameter	____Specification	__ Condition
2.2.1	_____ Standard charge current	0.33C	25_2_
2.2.2	_____ Standard charge voltage	_____3.90V Cell max. voltage 3.90V	25_2_
2.2.3	_____ Maximum charge current (continuous)	1C	25_2_
2.2.4	_____Standard charge mode	0.33C _____3.90V_ Charge to 3.90V at a constant current of 0.33C.	
2.2.5	_____Standard charge temperature	25_2_	N.A.
2.2.6	_____Absolute charge temperature _Cell temperature_	0~55_	_____ _____ Stop charging once cell temperature is out of this range regardless of the charging mode adopted.
2.2.7	_____Absolute charge voltage	__3.90V Max. voltage 3.90V	_____ _____ __ Stop charging once voltage exceeds this voltage regardless of the charging mode (including regeneration) adopted.

2.3 ____/__Discharging mode/Parameters

__ No.	__ Parameter	____ Specification	__ Condition /Note
2.3.1	_____Standard discharge current	0.33C	25_2_
2.3.2	_____Maximum discharge current (continuous)	3.0C	N.A.
2.3.5	_____ Discharge cut-off voltage	1.5V	
2.3.6	_____Standard discharge temperature	25_2_	N.A.

2.3.7	_____Absolute discharge temperature _Cell temperature_	-40~60_	_____ __ Stop discharging once cell temperature is out of this range regardless of the discharging mode adopted.

2.4 ____Discharge performances at different discharge rates

__ No.	__ Parameter	____Specification	__ Condition /Note
2.4.1	1.0C ____ Discharge performance at 1.0C	1.0C ____/_____95% 1.0C discharging capacity/standard discharging capacity_ 95% 1.0C ____/_____90% 1.0C discharging energy /standard discharging energy_ 90%	_____25_2_____1.0C ___1.5V BOL, 25_2_, standard charge and discharge at 1.0C.

2.5 _____Discharge performances of different temperature

__ No.	__ Parameter	____ Specification	__ Condition /Note
2.5.1	25_ ___ Capacity at 25_	_75Ah	_____25_2 _____ _ BOL, 25_2_, standard charge and discharge_
2.5.2	45_ ___ Capacity at 45_	_75Ah	_____25_2 _ _____45_2 _ _____ BOL, standard charge at 25_2_, standard discharge at 45_2_.
2.5.3	-20_ ___ Capacity at -20_	_67Ah	_____25_2 _ _____-20_2 _ _____ BOL, standard charge at 25_2_, standard discharge at -20_2__
2.5.4	-40_ ___ Capacity at -40_	_57Ah	_____25_2 _ _____-40_2 _ _____ BOL, standard charge at 25_2_, standard discharge at -40_2__

3. _____Storage and Cycle Performance

__ No.	__ Parameter	____ Specification	__ Condition
3.1	_____ Storage performance	_____95% _____97% Cap. Retention_95% Cap. Recovery_97%	_____100%SOC_25_2 _ ____28 _ Standard charge to 100% SOC, storage at 25_2_ for 28 days, standard discharge at 25_2_.
3.2	_____ Storage performance	_____85% _____90% Cap. Retention_85% Cap. Recovery_90%	_____100%SOC _60_____7 _ Standard charge to 100% SOC, storage at 60_2_ for 7 days, standard discharge at 25_2_.

3.3	____ Cycle life	_3000 _@100%DOC _3000 cycles@100%DOC	25_2_ _0.5C/0.5C_100%DOC 300_50Kgf___9N.m_0.5) _ _____80%*____ 25_2_ _0.5C/0.5C, 100%DOC 300_50Kgf (Torque 9N.m_0.5) preload_Final discharge Capacity_80% *nominal Capacity _____30min;
			Remark: The rest time after charging (or discharging) should not be less than 30min

4. _____Safety and Reliability

_____ ### ### -### ___

This product meets the requirements of ### ### -### .

4.1 ____ safety performance

__ **No.**	__ **Item**	__ **Standard**	____ **Testing method**
4.1.1	___ Over Discharge	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.2	___ Over Charge	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.3	__ Short Circuit	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.4	__ Hot box	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.5	__ Crush	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.6	__ Drop test	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.7	_____ Thermal runaway test	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###
4.1.8	_____ Low pressure test	_____ No fire, no explosion	__ ### ### -### Reference to ### ### -###

5. ____Application Conditions

_____

Client shall ensure that the following application conditions in connection with the Products are strictly observed:

5.1 _____