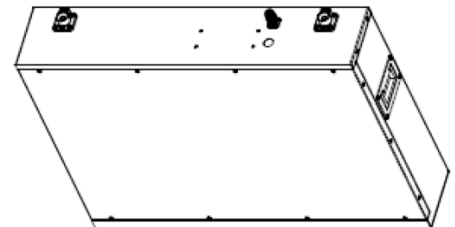
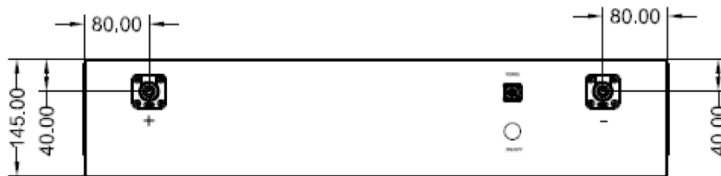
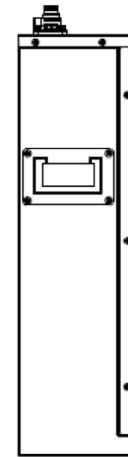
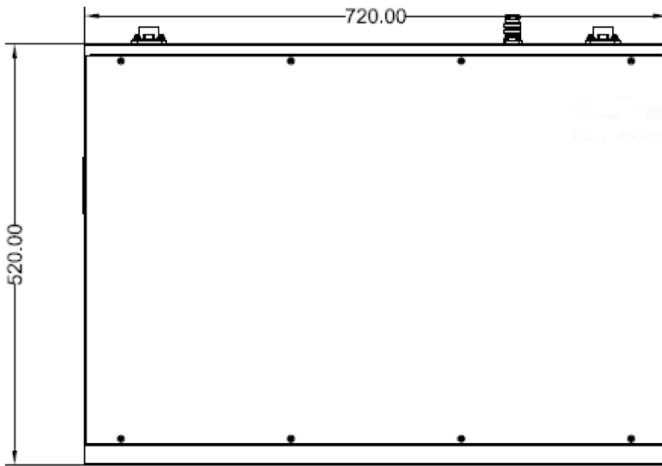


### 1. (Normal performance):

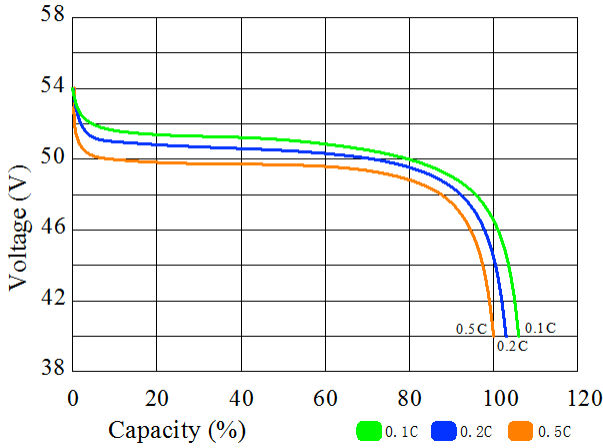
NO.	Item	General Parameter	Remark
1	(Model)	RB 48V150H	Battery Module
2	Casing material	Steel case	
3	Assembly	15S-2P	Single cell capacity 75Ah
4	Rated voltage	48V	Working voltage
5	Standard capacity (0.2C <sub>5</sub> A)	150Ah	
6	Standard Charging voltage	55V	
7	Cut-off voltage	42V	
8	Maximum charge & discharge current	150A	Peak Current 300A (1-3 seconds)
9	Operating temperature	Charging temp. range: -20 ~ 55 °C Discharging temp. range: -30 ~ 60 °C	
10	Standard charging(0°C~55°C)	CC-CV Charge: 55V/0.2 C <sub>5</sub> A Charging end current: 0.01C <sub>5</sub> A	Charging time: About 5.5hours
11	Low temperature charging (-20°C~0°C)	-20°C~-10°C : ≤0.05 C <sub>5</sub> A -10°C~0°C : ≤0.1 C <sub>5</sub> A	
12	Battery module dimension (Length*Width* Height)	See 2.0 below	±2mm
13	Battery Weight (Approx, including case)	TBD	
14	Energy density	80kw/kg	
15	Impedance (Max, at 1000Hz.)	≤ 60m Ω	
16	Storage temperature range	Less than 18 months at -20~25 °C	
		Less than 12 months at 25~35°C	
		Less than 3 months at 35~55 °C	

### 2.0 Drawing for Battery module:

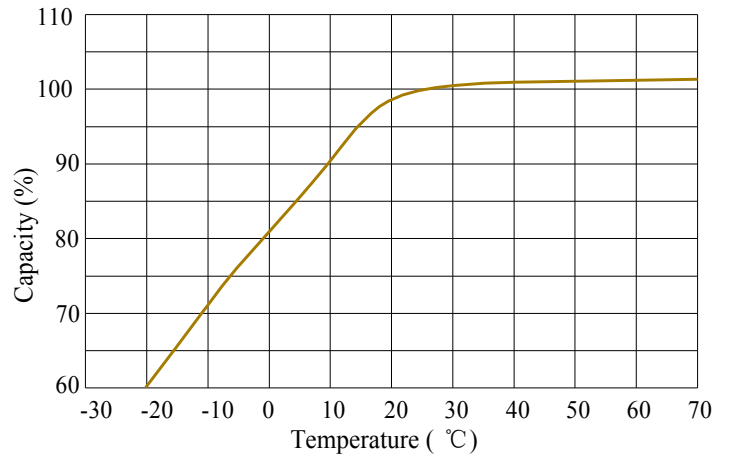


### 3.0 Charge and discharge curve:

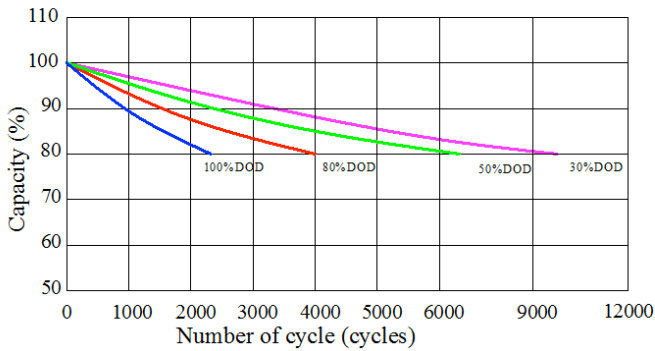
Discharge Performance at R.T



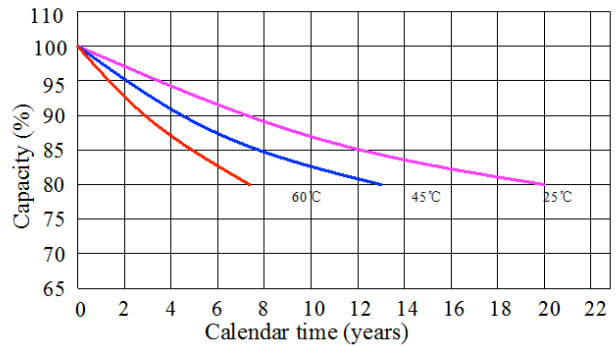
Temperature effects on capacity at 0.2C



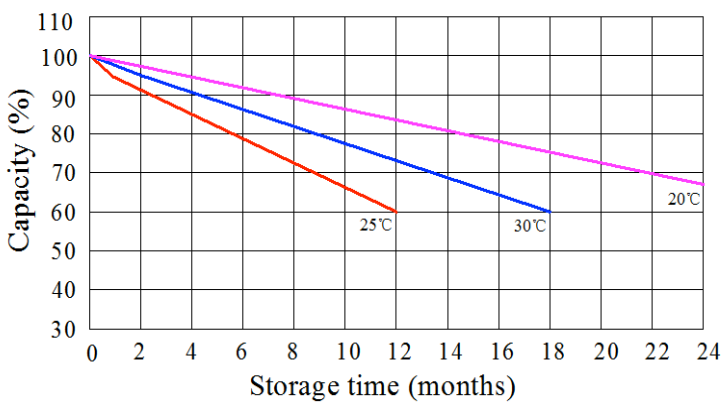
Cycle life with DOD at 25°C, 0.2C



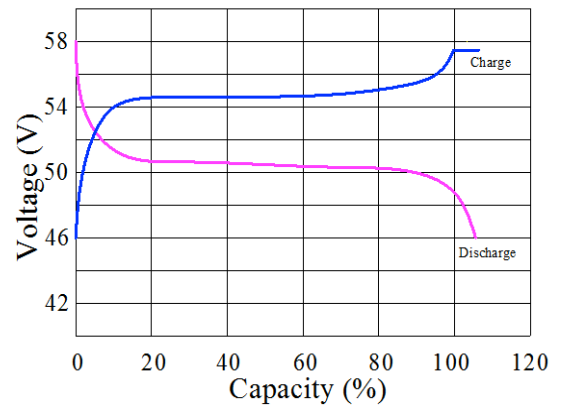
Float life with temperature



Self-discharge characteristic



Discharge Performance at R.T



### 4.0 Performance:

#### 4.1 Electrochemistry Performance:

No.	Project	Standard	Testing method
1	Discharge performance in normal temperature	<p>Cut-off Voltage is 42V, Discharge capacity /standard capacity×100%</p> <p>(A)0.2C<sub>5</sub>A ≥95%</p> <p>(B)0.4C<sub>5</sub>A ≥92%</p>	<p>Charge with 0.2C<sub>5</sub>A standard charge in the condition of temperature 25<del>±5</del>°C relative humidity 45%~80% (if there is no especial statement, the charging way is same as this) , rest for 10min, separated discharge with 0.2C<sub>5</sub>A、0.4C<sub>5</sub>A to cut-off voltage 42V, cycles for three times. One cycle capacity arrive standard, that's to say it is qualified.(The below as the same)</p>
2	Charging keep ability in normal temperature	<p>Remain capacity≥ standard capacity *95%</p>	<p>After standard charged, rest it in 25<del>±5</del>°C for 1 months. Then discharge with 0.2C<sub>5</sub>A to 46.4V, testing the battery capacity.</p>
3	Cycle life	<p>Capacity≥ Standard capacity *80%</p>	<p>After 0.2C<sub>5</sub> standard charged ,discharge with 0.2C<sub>5</sub>A to 42V.rest for10min, cycles for 3000 times.</p>
4	Storage performance	<p>Capacity can be kept ≥80%</p> <p>Storage for 12 months.</p>	<p>After standard charged, rest for 12 months, discharge with 0.2C<sub>5</sub>A to 42V, test the remain capacity; 0.2C/0.2C test the recover capacity.</p>

### 4.2 Environment adaptive Performance

No.	Project	Standard	Testing method
1	Temperature Cycle performance	No smoking, exploding, No fire	After standard charged, keep the battery for 48hrs under $60 \pm 2^{\circ}\text{C}$ , then rest for 6hrs under $-10^{\circ}\text{C}$ , then rest for 24h under normal temperature, discharge with $0.2C_5A$ to 42V。 with 0.2C/0.2C charge and discharge cycle for 3 times。
2	invariableness moist heat performance	Discharge capacity / standard capacity $\times 100\% > 60\%$ No exploding, No fire	After standard charged, keep in constant temperature and humidity case for 48hs under $40 \pm 5^{\circ}\text{C}$ relative humidity 95%, then rest for 2h, discharge with $0.2C_5A$ to 42V。
3	Discharge performance in different temperature	Discharge capacity / Rated capacity $\times 100\%$ (A) $60^{\circ}\text{C} \geq 95\%$ ; (B) $0^{\circ}\text{C} \geq 85\%$ ; (C) $-10^{\circ}\text{C} \geq 60\%$ ; No exploding, No fire	After standard charged, constant temperature rest for 3hrs in $60 \pm 2^{\circ}\text{C}$ discharge with $1C_5A$ to 42V, standard charge in normal temperature, separated rest for 20hrs in order $0 \pm 2^{\circ}\text{C}$ - $10 \pm 2^{\circ}\text{C}$ test the last capacity with $0.2C_5A$ , Then rest 2h in the normal temperature.
4	Vibration environment adaptive performance	Remain capacity $\geq$ original capacity $\times 95\%$ Voltage reducing rates $\leq 3\text{mV}$ Impedance increasing rate $\pm 3 \text{ m}\Omega$ No exploding, No fire	After standard charged, build battery in the vibration table-board, according to vibration frequency and relative moving to adjust the test equipment, from X、Y、Z three aspects, every aspect with 10Hz~55Hz vibrate for 30min, the speed is 1oct/min: (A)Vibration frequency: 10Hz~30Hz Moving: 0.38mm (B) Vibration frequency: 30Hz~55Hz Moving: 0.19mm。 After test, $0.2C_5/0.2C_5$ test the remain capacity

Remarks: the above standard professional word meaning is as below:

- (1) Standard charge: with the ambient temperature  $20 \pm 5^{\circ}\text{C}$ , charge with  $0.2C_5A$ , When the voltage is up to the limited charging voltage 55V, change to constant voltage charge, stop charging until the charging current is  $\leq 0.05C_5A$
- (2) The Original situation: the original appearance, open voltage, Internal impedance.
- (3) The last situation: the last appearance, open voltage, Internal impedance
- (4) Remain capacity: The first discharge capacity after the specific inspecting process
- (5) Recover capacity: The discharge capacity that through time after time cycles after the specific inspecting process.