

酸化マンガンリチウムポリマーバッテリー諸元

- 1.記号 LiMnO4
 2. 製品タイプ・モデル
 2.1 タイプ:リチウムイオンポリマーバッテリー
 2.2 モデル:THP48V20AH (LiMnO4)
 3.仕様

S/N	Item	Performance
3.1	容量	20Ah
3.2	標準電圧	48V
3.3	インピーダンス	≤200mΩ
3.4	最大充電電圧	54.6V
3.5	放電停止電圧	42V
3.6	充電完了時充電電流	0.02C(0.4A)以下
3.7	標準充電電流	4A(0.2C)
3.8	標準放電電流	10A(0.5C)
3.9	最大充電電流	2C(40A)
3.10	最大放電電流	2C(40A)
3.11	使用温度	充電時: 0~ 45°C 放電:: - 20 ~ 55°C
	保存温度	20~55°C≤1ヶ月以内; 20~ 45°C≤3ヶ月以内; 10~ 30°C≤12ヶ月以内
3.12	使用時湿度	45~75% RH
3.13	重量	9KG(without case)
3.14	外形寸法 (mm)	185*150*200 (MAX)※スイーツン、スニーク77電池ケース1個へ収納何

4. Appearance

No scratch、no crack、no attaint、no rust、no distortion、no turn colors、no leakage etc.

5. Electrical Characteristics tests パフォーマンステスト状況

S/N	Items	Criteria	Test Instructions
5.1	Shipment	voltage	49.5~51.5V Tested by voltmeters.
5.2	Norminal capacity	≥20Ah	Full charge at 20 ± 5 °C, rest for 10 minutes, then discharge at the same temperature with 0.5C(10A) .
5.3	discharge capacity	≥Norminal capacity*95%	Full charge at 20 ± 5 °C, rest for 10minutes, then discharge at the same temperature with 4A to 42 V.
5.4	Temperature characters	1.appearance: No evident crack、no leakage 2.discharge capacity: 55°C: ≥85%*Original capacity; 0°C: ≥80%*Original capacity; 20°C: ≥70%*Original capacity。	At 20±2 °C, then full charge with0.2C(4A), discharge with 0.5C(10A) to42V for one cycle, the capacity is the original one. Then full charge it, store at(20±2)°C for 4h, store at 0±2°C、55±2°C for 2h, then discharge at the same temperature with 0.5C(10A) to30 V. At last store at RT for 2h, visual cells' appearance.
5.5	Capacity Retention	Capacity retention≥85%*Original capacity	Full charge at 20±5 °C, rest for 10 minutes, discharge with 0.5C(10A) to 42V, this capacity is the original one. Then full charge it, in open circuit circumstance, store at 20°C±5°C for 28 days. Still in open circuit circumstance, store for 2hours, discharge it with 0.5C(10A) to 42V.
5.6	Cycle life (20±5°C)	capacity≥60%*Original capacity	At 20±5 °C, charge it with 0.2C(4A), rest for 10 minutes, discharge it with 0.5C(10A) to 42V. this is the original capacity. Repeat above steps 600 cycles

Note: Unless otherwise specified, all tests stated in this specification are conducted at the following conditions:
Temp. : $25 \pm 5^\circ\text{C}$; Relative Humidity: 2%~85%.

6. Safety Characteristics Test

S/N	Items	Criteria	Test Instructions
6.1	Overcharge	No fire, no explore , cell temperature no above 150°C .	After discharged at constant current of 0.5C(10A) to 42V, batteries are charged 0.2C(4A) continually to 60V, then under 60V CV continually charge for 7h
6.2	Over discharge	No fire, no explore , cell temperature no above 150°C .	at $20 \pm 2^\circ\text{C}$, discharge to limited voltage 42V with 0.5C 5A. Then still discharge to 0V with 0.2C(4A).
6.3	Shortcircuit test	No fire, no explore , cell temperature no above 150°C .	At $20 \pm 5^\circ\text{C}$, charge it with 0.2C(4A), then store it at $60 \pm 2^\circ\text{C}$ for 30 minutes, Batteries are shortcircuited by connecting the positive and negative terminals with cooper wires, its resistance load must $\leq 200\text{m}\Omega$ until batteries' temperature come within 10°C above RT.
6.4	Heating test	No fire, no explore , cell temperature no above 200°C .	At $20 \pm 5^\circ\text{C}$, charge it with 0.2C(4A) to 54.0V, Batteries are heated in a circulating air oven at a rate of $(5 \pm 2)^\circ\text{C}$ /minute to $(85 \pm 2)^\circ\text{C}$ and then store for 30 minutes

7. Reliability Characteristics Test

S/N	Items	Criteria	Test Instructions
7.1	(1)High Temp. and High Humidity Test	Rest capacity $\geq 80\%$ *original capacity; Restore capacity $\geq 85\%$ *original capacity Appearance : No nick, no crack, no attaint, no rust, no distortion, no leakage	At $20 \pm 5^\circ\text{C}$, then full charge with 0.2C(4A), discharge with 0.5C(10A) to 42V for one cycle, the capacity is the original one. Then charge it with 0.2C(4A), in open circuit, store at $40^\circ\text{C} \pm 2^\circ\text{C}$ (90%~95%RH) for 48h, then place at $20^\circ\text{C} \pm 5^\circ\text{C}$ for 2h ; then discharge it with 0.5C(10A) to 42V, write the rest capacity; then charge with 0.2C(4A), discharge with 0.5C(10A) to 42V, for three cycles, write down the restore capacity.
7.2	Vibration Test	Voltage $\geq 40\text{V}$; No crack, no leakage, no fire, no explore.	At $20 \pm 5^\circ\text{C}$, charge it with 0.2C(4A), write down its voltage; then attach the battery to the vibration table within 10 minutes, Batteries are vibrated 30 min in three mutually perpendicular directions(X,Y,Z)with amplitude of 1.6mm ($10 \sim 60\text{Hz}$) , scanning rate of 1otc/min; After test, watch the cells' appearance
7.3	High Temperature Storage Test	Recovery Capacity $\geq 60\%$ *Original capacity; No leakage。	At $20 \pm 5^\circ\text{C}$, charge it with 0.2C(4A), discharge it with 0.5C(10A), the capacity is original one; then charge it with 0.2C(4A), the in open circuit, at $(70 \pm 2)^\circ\text{C}$. Store it for 48hours; then at $20 \pm 2^\circ\text{C}$, store it for 2hours, then discharge with 0.5C (10A) to 42V. Then charge it with 0.2C(4A) and discharge it with 0.5C(10A), repeat three times. Then charge it with 0.2C(4A), test the recovery capacity.
7.4	Drop	Residual Capacity $\geq 90\%$ *Norminal capacity; No crack, no leakage, no fire, no explosion.	At $20 \pm 5^\circ\text{C}$, After fully charged with 0.2C(4A), then discharge with 0.5C(10A) to 42V, this is the original capacity; then charge it with 0.2C(4A), write down the voltage, let batteries drop from a height of 1m (3.28ft) to a thick hard wood. Each battery is to be dropped in the positive and negative sides for one time, repeat three times, each time, write down the voltage; after doing

8. Protective performance

To insure safety, PCB &BMS Parameter should meet requirement as below.

S/N	Unite	Items	Requirement
1	Adapter	Charge limited voltage	54.6V
2	BMS (For reference)	Over-Charge Protective Voltage	54.6V
3		Over-charge return voltage	54.6V
4		Discharge limited voltage	42V
5		OverDischarge Protective Voltage	40V
6		Protective Current	--

9. Guarantee period

24 months (Start from shipment).

10. Instructions and Warning

You should strictly comply with the instruction. Or TH Energy Limited Company will not be charged with you.

! Dangers

- Do not throw the battery fire, or heat, crush, impact and shock it.
- Do not throw the battery into water.
- Does not use or storage battery near a hot source as fire or heater.
- Storage in a clean, dry and ventilated environment with a temperature of 5°C~35°C and humidity less than 75%. Avoid contact with corrosive materials and keep far from any heat resource.。
- Do not destroy the surface or body with sharp object, or damage, short -circuit the positive (+) and negative (-)terminal.
- Do not reverse the position (+) and negative (-)terminals.
- Do not puncture battery with sharp things.
- Do not disassemble the battery.。
- Do not welding the battery directly.
- Stop utilizing the battery if the battery has been destroyed.
- Should there be any dissidence in the test items or instructions, please contact our R&D to find a solution. Specific charger or testing device should be adopted for the Liion battery.。

! Cautions

- Do not use our battery with other battery or new and old battery use together.
- If battery charge time is longer than given time, please stop charging.
- If you find battery become hot , release bad smell , c hange colors or distortion and so on, please stop use it.
- Please keep away from the battery if you find it leakage or release bad smell.
- Please wash your skin if the electrolyte contacts your skin.

! Attention

- Before using the battery, please read instruction carefully.
- Please follow the adapter specification to charge. Use CC charging process.
- Please put battery in the place that children can not get it.
- Guardian should explain the operation method to the children before children using battery.
- Please read the operation manual carefully before you put into or take out battery from equipment.
- Please replace battery when you find the using time is shorter than normal.
- Storage in a clean, dry and ventilated environment with a temperature of 5°C~35°C and humidity less than 75%.
- Battery should charge, use and storage at the place far away from static.

11. Anouncement

We will inform the consumer with written format, if our specification, materials, process, produce control system