

Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 1 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

锂离子电池组规格书

Lithium ion battery pack specifications

电池型号: Battery Type: TTN-12.8V-2560WH

客户名称: Customer Name:

客户确认: Customer Confirmation:

日期 Date: 2025-1-28

版本修正记录: Revision History:

版本 Revision	日期 Date	修正人 Originator	修正内容 Reason For Change

核准 Approved	审核 Reviewed	制订 Prepared

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 2 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

1、范围 Scope

本规格书描述腾腾新能源技术(温州)有限公司锂电池组有关参考技术指标及要求。

This specification describes the reference technical specifications and requirements of Dongguan Jiameng New Energy Technology Co., Ltd. for lithium battery packs.

2、产品描述 Description and Model

2.1 电池类型 Battery Classification: 磷酸铁锂电池 LFP Battery

2.2 电池型号 Battery Type: TTN-12.8V-2560WH

3、电池组基本参数 Basic Characteristics

No.	项目 Item	规格 Specification
1.	电芯型号 Cell Model	LFP-200Ah
2.	电芯串并方式 Array mode	4S2P
3.	额定容量 Nominal Capacity	200Ah (0.2C charge and 0.2C discharge)
4.	最低容量 Minimum Capacity	≥200Ah (0.2C charge and 0.2C discharge)
5.	瓦特小时 Watt Hour	2560Wh
6.	额定电压 Nominal Voltage	12.8V
7.	电池内阻 Initial AC Impedance	IR≤1mΩ (at 1kHz after standard charge)
8.	充电电压 Charging Voltage	14.6V
9.	充电截止电流 Charging cut-off current	4A(0.02C)
10.	标准充电 Standard charging method	Constant Current:40A Max Charge Current:100A
11.	标准放电 Standard discharging method	Constant current of 100A
12.	BMS 最大持续放电电流 Maximum continuous discharge current	100A
13.	瞬间最大放电流 Discharge Peak Current	200A±10A(200±100ms)
14.	循环寿命 Cycle Life	5000 cycles (0.5C charge , 0.5C discharge, capacity retention ≥80%)
15.	通讯方式 communication mode	/

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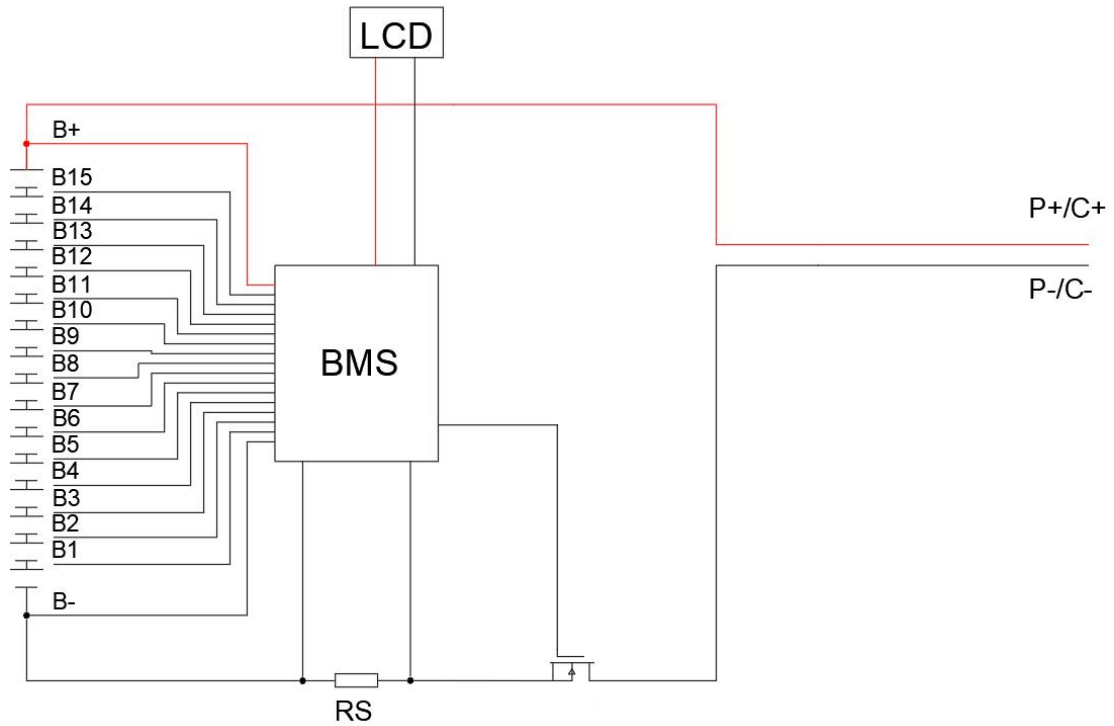
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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 3 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

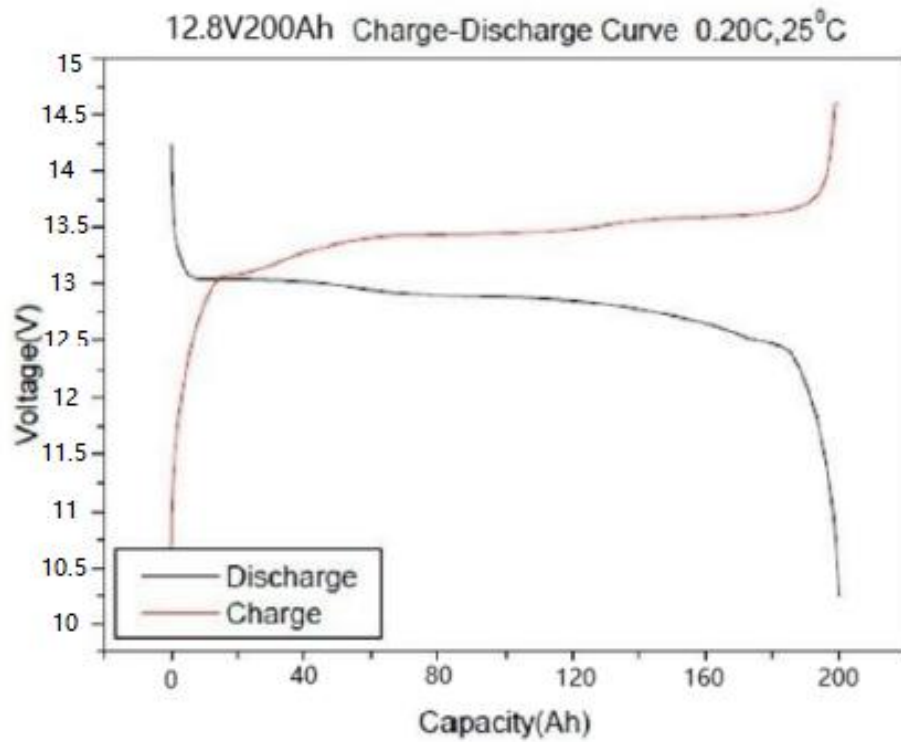
16.	重量 Weight (Kg)	25±0.5Kg
17.	尺寸 size	L483*W170*H240mm
18.	工作温度 Operating Temperature	Charging: 0°C ~ 55°C
		Discharging: -10°C ~ 60°C
19.	贮存温度 Storage Temperature	1 month: -20°C ~ 60°C
		6months: -20°C ~ 45°C
		1 year: -20°C ~ 25°C
20.	贮存相对湿度 Relative Humidity	65±20%
21.	出货容量 Delivery Capacity	SOC60%±10%
22.	荷电保持能力与容量恢复能力 Charge retention and capacity recovery capability	<p>电池标准充电后, 常温搁置 28d 或 55°C搁置 7d, 荷电保持率≥90%,容量恢复率≥90%</p> <p>Standard charge the battery, and then put aside at room temperature for 28d or 55 °C for 7d, Charge retention rate ≥90%, Recovery rate of charge≥90</p>
23.	串联 Series connection	Support 4 serial connections
24.	并联 Parallel connection	Supports 8-10 parallel connections

连接原理图

Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 4 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	



放电曲线图



Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 5 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

4、环境适应性能 Environmental Characteristic

序号 No.	项目 Item	测试条件 Testing Instruction	性能要求 Requirement
1	振动测试 Vibration Test	<p>电池满充电后, 将电池安装在振动台上, 在 X,Y,Z 三个垂直的方向进行实验, 振动频率在 10Hz 和 55Hz 间以 1Hz/min 的速率变化, 往复振动 30min。</p> <p>振动频率: 10-30Hz 位移振幅: 0.38mm 振动频率: 30-55Hz 位移振幅: 0.19mm</p> <p>The battery will be vibrated 30 minutes in three mutually perpendicular directions and changing frequency between 10 to 55Hz. The rate of scanning frequency is from 10 Hz to 55Hz with the rate of 1Hz per min. Vibration frequency: 10-30Hz amplitude: 0.38mm vibration frequency: 30-55Hz: amplitude: 0.19mm</p>	<p>电池外观应无明显的损伤, 不能破裂、漏液、冒烟或爆炸。</p> <p>电池电压≥12.8V</p> <p>The battery shall not rupture, smoke, explode or leak. Battery electric voltage ≥12.8V</p>
2	恒温恒湿性能 Constant Temperature/ Humidity Test	<p>电池满充电后, 将电池放入 40°C±2°C、相对湿度为 90%-95%的恒温恒湿箱中, 搁置 48h, 实验结束后, 将电池放在环境温度为 20°C±5°C的条件下搁置 2h, 目测电池外观。以 0.5C 的恒流放电至终止电压。Keep the battery at 40±2°C and 90%-95%RH for 48 hrs after complete charge. After the test, keep the battery at 20±5°C for 2 hrs. Discharge at 10A constant current discharge to the termination voltage.</p>	<p>电池外观应无明显的变形、锈蚀、冒烟或爆炸</p> <p>电池放电容量≥ 80%</p> <p>Appearance of the battery shall not rust, smoke or explode. Discharge Capacity ≥ 80%</p>
3	高温性能 High Temperature Performance Test	<p>电池满充电后, 将电池放入 55°C±2°C的高温箱中恒温 2h, 然后以 0.5C 电流放电至截止电压, 实验结束后, 将电池放在环境温度为 20°C±2°C的条件下搁置 2h, 目测电池外观。Keep the battery at a hot oven with 55±2°C for 2 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at 20±5°C for 2 hrs.</p>	<p>电池外观应无生锈、冒烟或爆炸, 电池放电容量≥90%</p> <p>Appearance of the battery shall not rust, smoke or explode Discharge Capacity >90%</p>
4	低温性能 Low Temperature Performance Test	<p>电池满充电后, 将电池放入 -10°C±2°C的低温箱中恒温 20h 后, 以 0.5C 电流放电截止电压。实验结束后, 将电池放在环境温度为 20°C±5°C的条件下搁置 2h, 目测电池外观。Keep the battery at -20±2°C for 16-24 hrs, then measure the capacity with constant discharge current 0.5C to discharge protection point after complete charge. After the test, keep the battery at</p>	<p>电池外观应无生锈、冒烟或爆炸, 电池放电容量≥55%</p> <p>Appearance of the battery shall not rust, smoke or explode Discharge</p>

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 6 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

	20±5°C for 2 hrs.	Capacity > 55%
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5、安全特性 Safe Characteristic

注：安全特性测试未安装电子保护线路

Note: safety characteristics test no electronic protection circuit

序号 No.	项 目 Item	测 试 条 件 Testing Instruction	性能要求 Requirement
1	过充测试 Over-charge test	按照如下两种充电方式进行充电（两者选一即可）。(1) 以 1C 电流充电 90min 或某一单体电池电压达到 3.8V（其中一个条件优先达到即停止试验）。(2) 以 3C 电流充电至某一单体电池电压达到 4V 即停止试验。Charge in accordance with the following two ways (Choosing one between the two). (1)Charge at 1C current for 90min or until voltage of some single battery reaches 3.8V (stop test when fulfills either condition). (2)Charge at 3C current until the voltage of some single battery reaches 4V, then stop the test.	不爆炸、不起火 The battery shall not explode or catch fire
2	过放测试 Over-discharge test	蓄电池组充电。在 20±5°C 条件下搁置 1h。然后在同一温度条件下，蓄电池以 1/3C 电流放电，直至某一单体电池电压达到 0V Charge the battery. Place at 20±5°C for 1h, then discharge in 1/3C current at same temperature until some cell's voltage is 0V	不爆炸、不起火 The battery shall not explode or catch fire
3	短路测试 Short-circuiting Test	蓄电池组充电后，在 20±5°C 条件下搁置 1h。将蓄电池经外部短路 10min，外部线路电阻应小于 5mΩ After charge batteries, place at 20±5°C for 1h. Short the battery for 10min, the external circuit resistance should be less than 5mΩ.	不爆炸、不起火 The battery shall not explode or catch fire

以上技术性能标准测试环境温度：20±5°C，相对湿度：65±20%（除非另外要求），大气压力：86Kpa-106Kpa

Above technical performance standard test environment temperature: 20±5°C, Relative humidity: 65 ± 20% (unless otherwise requested), Atmospheric pressure: 86Kpa-106Kpa

6、BMS Specification

No.	项 目 Item	参 数 Parameter
1.	产品规格型号 Model	4S-BMS
2.	BMS B-,P-导通内阻 BMS B-,P- On-resistance	≤30mΩ

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 7 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

3.	充电方式 Charge Method	CC->CV
4.	最大充电电流 Max. Charge Current	100A
5.	可持续放电电流 Continuous Discharge Current	≤100A
6.	充电过压保护值/延时时间 Over Voltage Protection Threshold	3.65V±0.05V (1±0.5S)
7.	充电过压保护去除条件 Over Voltage Protection Release Conditions	≤3.45V
8.	放电欠压保护值/延时时间 Under Protection Voltage Threshold	2.80V±0.08V (1±0.5S)
9.	放电过压保护去除条件 Under Voltage Protection Release Conditions	≥3V
10.	放电过流保护 Over Current Protection (Discharge)	一级过流 200A±10A 延时 200±100ms, 二级过流 400A±20A 延时 16±8mS
11.	放电过流保护去除条件 Protection Release Condition (Discharge)	Remove Load
12.	短路保护 Short Circuit Current Protection	OK
13.	一级充电过温保护(电芯表面)	65±5°C (NTC)
14.	一级放电过温保护(电芯表面)	75±5°C (NTC)
15.	二级充电过温保护(电芯内部)	80±5°C (NTC) (温度开关)
16.	二级放电过温保护(电芯内部,MOS 下方)	110±5°C (温度开关)
17.	BMS 功耗自耗电电流 BMS Consumption current	work:≤10mA sleep:100uA

7、产品图及接口定义、Product drawing and interface definition:

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 8 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	



项目project	类型type	图片picture
显示屏 Display	LCD 电量表 LCD meter	
充/放电接口 Charging/Discharge interface	M8 螺栓孔 M8 bolt hole	
开关/switch	M16 按钮开关 The M16 push-button switch	

8、储存条件 Storage conditions:

电池组需长期贮存时, 请将电池组充电至60%左右的电量, 放置于干燥、通风处, 每3个月用充电器充电1.5小时。(Charge Current:2A)

When the battery pack to be long-term stored, charge the battery pack to about 60% capacity, store in dry and ventilated place, charge 1.5h for every 3 months. (Charge Current:50A)

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 9 / 10
Description:		Model NO.: TTN-12.8V-2560Wh	

电池组与充电器应贮存在清洁、干燥、通风处，应避免与腐蚀性物质接触，远离火源及热源。
The battery pack and charger should be stored in clean, dry and ventilated place, avoid contacting with corrosive materials and be away from fire and heat.

9、产品责任

* 本公司对违反本规格书规定操作而导致的意外不负任何责任；

We assume no responsibility for the accident of not operating in accordance with the specification.

* 如果规格书、原材料、生产过程或生产控制系统发生改变，改变的信息将会随质量和可靠性数据以书面形式通知客户。

Specifications, raw materials, production process or production control system is changed, the change will vary depending on the quality and reliability of data written notice to the customer.

10、使用电池注意事项 Battery Handling Precautions

- 勿将电池组投入水中或将其浸湿！
Forbid to immerse battery in water or allow it to get wet!
- 禁止在火源或极热条件下给电池组充电！勿在热源（如火或加热器）附近使用或贮存电池组！如果电池泄漏或发出异味，应立即将其从接近明火处移开。第一次使用电池，需将电池充满电后再使用！
Don't charge, use and store battery near a heat source such as fire and heater! If the battery leaks or releases strange odor, pls remove it from place near fire place immediately. Fully charge the battery before first-time using.
- 勿将正负极接反！ Forbid to reverse the positive and negative pole!
- 勿将电池组投入火中或给电池组加热！
Forbid to throw the battery pack into fire or heat it!
- 禁止用导线或其他金属物体将电池组正负极短路！
Forbid to short-circuit battery with wire or other metal objects!
- 禁止用钉子或其他尖锐物体刺穿电池组壳体，禁止锤击或脚踏电池组！
Forbid to nail, knock or trample battery!
- 禁止以任何方式分解电池组和电池！
Forbid to disassemble the battery and battery pack in any way!
- 禁止将电池组置于微波炉或压力容器中！
Forbid to put the battery into microwave oven or pressure vessel!
- 如果电池组发出异味、发热、变形、变色或出现其他任何异常现象时不得使用；如果电池组正在使用或充电，应立即从用电器或充电器上取出并停止使用！
If the battery pack gives off odor, gets heat, deformation, discoloration or appears any abnormal phenomenon, stop using it; please remove the battery from electrical appliances and stop using it, when the battery is being used or charged!
- 不能使用处于极热环境中的电池组，如阳光直射或热天的车内。否则，电池组会过热，这样就会影响性能、缩短电池组的使用寿命！
Forbid to use battery pack in a very hot environment, such as under direct sunlight or in car on hot day. Otherwise, the battery pack will overheat, which will affect battery performance and shorten battery life!

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Document No.: TTN-ED-3-021	Rev: A1.0	Data:	Page: 10 / 10
Description:		Model NO. : TTN-12.8V-2560Wh	

- 如果电池漏液后电解液进入眼睛，不要擦，应立即用水冲洗，立即寻求医疗救助。如不及时处理，眼睛将会受到伤害!

If the battery leaks and electrolyte leakage enters into the eyes, do not rub, rinse with water immediately and seek immediate medical assistance. If not in time, eyes will be hurt!

- 环境温度会影响放电容量，环境温度超出标准环境时 (25±5°C) ，放电容量会有所降低!
Ambient temperature will affect the discharge capacity, if the ambient temperature is beyond the standard environment (25±5),°C the discharge capacity will drop!

特别注意事项 Special Considerations:

- 电池组在充电过程中，如果出现异味、异常声响，请立即停止充电。
During charging, if there is odor and unusual noise, immediately stop charging.
- 电池组在放电过程中，如果出现异味、异常声响，请立即停止放电。
During discharging, if there is odor, unusual noise, immediately stop charging.
- 如果出现上述现象，请与厂家联系，请勿私自拆卸。
If there are above phenomenon, please contact the manufacturer, do not disassemble by yourself.