

NEEXGENT[®]**PRODUCT
SPECIFICATIN**

DOC NO:

NG-X-071R00

REV: A/00ECN: 00**LiFePo4 Battery Specification**

Model: NGX-24100 (25.6V100Ah)

| Approved | Reviewed | Prepared |
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| Client confirmation | Customer signature | |
| | Date | |
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1. General Information

This specification defines the performance of rechargeable LiFePO4 battery pack NGX-25.6V100Ah manufactured by Foshan Neexgent Energy Co.,Ltd, describes the type, performance, technical characteristics, warning and caution of the battery pack.

2. Battery Specification

This model is a 25.6V100Ah energy storage lithium battery with a continuous discharge current of 1.0C .

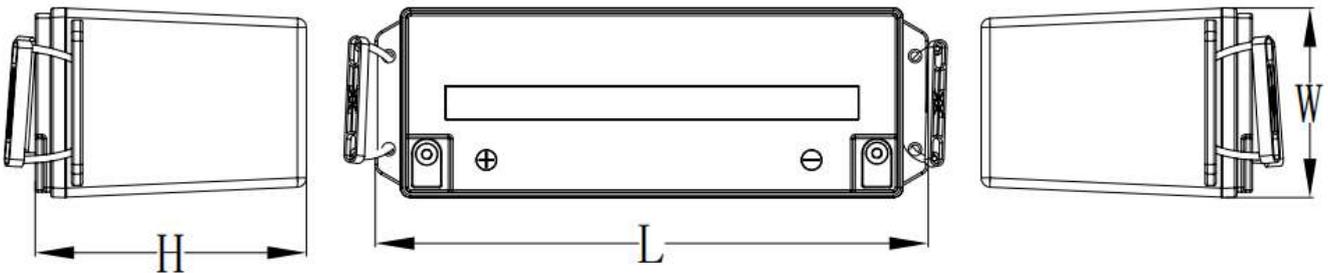
2.1 Battery Specification (@ 25±5℃)

| NO | Items | | Specification |
|------|---|-----------|---|
| 2.1 | Normal capacity | | 100.0Ah |
| 2.2 | Nominal energy | | 2560Wh |
| 2.3 | Nominal voltage | | 25.6V |
| 2.4 | Internal resistance | | ≤40mΩ @1kHz AC |
| 2.5 | Normal charge voltage | | 29.2V |
| 2.6 | Standard charging method | | 20.0A |
| 2.7 | Maximum continuous charging current | | 50.0A |
| 2.8 | Standard discharging method | | 50.0A |
| 2.9 | Maximum continuous discharge current | | 100.0A |
| 2.10 | End of discharge voltage | | 20.0V |
| 2.11 | Cycle Life | | ≥4000 cycles (0.2C charge,0.2C discharge)70%DOD |
| 2.12 | Guarantee period | | 3year |
| 2.13 | Operation temperature | Charge | 0 ~ 50℃ |
| | | Discharge | -10 ~ 60℃ |
| 2.14 | Shipment voltage | | ≥25.6V |
| 2.15 | Charge retention and capacity recovery capability | | Standard charge the battery, and then put aside at room temperature for 28d or 55 ℃for 7d, Charge |

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| | | retention rate≥90%, Recovery rate of charge≥90 |
| 2.16 | Size | Length 483±2 mm |
| | | Width 170±2 mm |
| | | Height 24±2 mm |
| 2.17 | Weight | About:22.5Kg |

2.3 Product appearance and size



| L(mm) | W(mm) | H(mm) |
|-------|-------|-------|
| 483 | 170 | 240 |

2.4 Physical Picture



3. BMS/PCM parameters

| Details | | Min. | Typ. | Max | Error | Unit |
|---|--------------------------|----------------|-------------|---------|------------|------|
| Protection plate type (same as different port) | | Same mouth | | | | |
| Battery Gas | | 3.2V LiFePO4 | | | | |
| Battery Link | | 8S | | | | |
| Loop capability | | | | | | |
| Input Charging Voltage | | | 30.80 | | ±1% | V |
| Input Charging Current | | | 20 | MAX100A | | A |
| Output Discharging Voltage | | | 25.60 | | | V |
| Continuous Output Discharging Current | | | 100 | MAX100A | | A |
| Ambient Condition | Operating Temperature | -20 | 25 | 60 | | °C |
| | Humidity (No Water-Drop) | 0% | | 90% | | RH |
| Storage Condition | Temperature | -40 | | 85 | | °C |
| | Humidity (No Water-Drop) | 0% | | 90% | | RH |
| Protection Parameters (for Individual Cell). | | | | | | |
| Over-Charge Voltage Protection (OVP) | | | 3.850 | | ±25mV | V |
| Overcharge protection delay time | | | 800—1200 | | ---- | ms |
| Over-Charge Voltage Protection Release (OVPR) | | | 3.650 | | ±50mV | V |
| Over-Discharge Voltage Protection (UVP) | | | 2.300 | | ±80mV | V |
| Over-discharge protection delay time | | | 100 | | ±50 | ms |
| Over-Discharge Voltage Protection Release (UVPR) | | | 2.500 | | ±100m V | V |
| Over-Current Discharge Protection (OCDP) | | | 300 | | ±50 | A |
| Over-Current Protection Delay Time (OCPDT) | | | 20 | | ±5 | mS |
| Discharging Temperature | | | 75 External | | ±5°C | °C |
| Discharging Temperature Protection Release | | | 53 | | ±5°C | °C |
| charging Discharging Temperature | | | / | | ±5°C | °C |
| charging Discharging Temperature Protection Release | | | / | | ±5°C | °C |
| Cell balance | | | | | | |
| Bleed StartPoint | | | 3.475 | | ±25 mV | V |
| Bleed Current | | | 51 | | ±10 | mA |
| Balance Mode | | Charge balance | | | | |
| Idle mode | | | ≤60 | | | uA |
| Single section self-consumption of electricity | | | ≤50 | | | uA |
| Main loop electrify resistance | | | ≤50 | | | mΩ |

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| PCBA Size | 150 ±0.5)×110 ±0.5)×<30 | mm |
|------------------|-------------------------|-----------|

4. Test Condition

Unless otherwise specified, all tests are carried out under the following conditions (standard test conditions):

Ambient temperature: (If the ambient temperature is lower than 20°C the battery pack should be left standing at ≥20°C for more than 5 hours before testing)

environment humidity: 30%~80%

Atmospheric pressure: 86kpa~106kpa

Standard charge and discharge of battery pack

Standard charging: charge the battery pack with a 0.5C current constant current and constant voltage to a cut-off voltage of 29.2V and a cut-off current of 0.02C (2.0A);

Standard discharge: discharge the battery pack at a constant current of 1.0C to a cut-off voltage of 20.0V;

5. Performance standards for battery packs

5.1 Electrochemical performance

| NO. | Item | Standard | Testing method |
|-----|----------------------------|--|--|
| 1 | Discharge characteristics | 0.2C ≥ 100% 1 C ≥ 90% | After standard charged, rest for 30min and then discharge at 0.2C and 1.0C to the end-off discharge voltage respectively. . Capacity (Ah) can be calculated by Discharging current and discharging time, and expressed as the percentage of nominal capacity. (Cycled by 3 times, when one of the three reaches the standard, it will meet the standard.) |
| 2 | Normal Storage Performance | Residual capacity ≥ nominal capacity * 80% Recovery capacity ≥ nominal capacity * 90% | Stored for 28 days after standard charge, discharge at 0.2C to the end-off discharge voltage, then test the residual capacity. Test the recovery capacity at 0.2C, if one of the three cycles can reach the standard, it represents the battery has reached the standard. |

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| 3 | Cycle life | capacity≥ nominal capacity *70% | Conduct 0.2C charge/0.2C discharge for 4000 continuous cycles, and then test capacity. |
| 4 | Storage Performance | Recovery capacity≥ nominal capacity*95% | Stored for 1 hour after standard charge, discharge at 0.2C for 2 hours, store the battery for 90 days at 20±5 °C. Stored for 1hour after standard charge, then discharge at 0.2C, at least 5 cycles, one of the 5 cycles reaches the standard means the battery has reached the standard. |

5.2 Safety performance

| NO. | Item | Standard | Testing method |
|-----|---|--|---|
| 1 | Over-charge performance | No exploding, No fire The highest temperature <150°C | When the battery pack is charged standard ,0.3 C is charged with a constant current constant voltage source, and the constant current is charged to 5 V to constant voltage charge until the cutoff current reaches 0 A or the surface temperature is less than 10 °C below the ambient temperature. Finish the test. |
| 2 | Over-discharge performance | No exploding, No fire | Store the battery at 20±5°C after standard charge, discharge at 0.2C till the voltage reaches 0V. |
| 3 | Short-circuit performance in normal temperature | No exploding, No fire The highest temperature <150°C | After standard charged, keep the battery pack in explosion-proof box and connect positive and negative to short-circuit(the total impedance should not be over than 50mΩ), stop the testing when the temperature of the battery reduces 10 °C compare with the top one 。 check the temperature and appearance of the battery. |
| 4 | Thermal Shock safe performance | No exploding, No fire | After standard charged. put the battery to hot-box, and connect with thermocouple, the temperature from 5 ±2 °C/min to 150 ±2 °C And keep warm 30 Min. check the temperature and appearance of the battery. |

5.3 Environmental Characteristic

| NO. | Item | Requirement | Testing Instruction |
|-----|------|-------------|---------------------|
|-----|------|-------------|---------------------|

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| 1 | Vibration Test | <p style="text-align: center;">The battery shall not rupture, smoke, explode or leak. Battery electric voltage $\geq 24V$</p> | 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 |
| 2 | Constant Temperature/ Humidity Test | <p style="text-align: center;">Appearance of the battery shall not rust, smoke or explode. Discharge Capacity $\geq 80\%$</p> | Keep the battery at $40\pm 2^{\circ}C$ and 90%-95%RH for 48 hrs after complete charge. After the test, keep the battery at $20\pm 5^{\circ}C$ for 2 hrs. Discharge at 10A constant current discharge to the termination voltage. |
| 3 | High Temperature Performance Test | <p style="text-align: center;">Appearance of the battery shall not rust, smoke or explode Discharge Capacity $> 90\%$</p> | Keep the battery at a hot oven with $55\pm 2^{\circ}C$ 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 $20\pm 5^{\circ}C$ for 2 hrs. |
| 4 | Low Temperature Performance Test | <p style="text-align: center;">Appearance of the battery shall not rust, smoke or explode Discharge Capacity $> 55\%$</p> | Keep the battery at $-20\pm 2^{\circ}C$ 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 $20\pm 5^{\circ}C$ for 2 hrs. |

6. Product packaging requirements

6.1 The sketch, sizes, color of marking should match GB/T191-2000 requests.

- 6.1.1 Model and specification of product;
- 6.1.2 Quantity;
- 6.1.3 Measure up marking;
- 6.1.4 Manufacturing date
- 6.1.5 Other markings (color.etc).
- 6.1.6 scratch, flaw, crack, and leakage are not allowed.

6.2 Package:



6.3 Sealing box, packing belt, batch matching stack board guard angle, layer height in line with the outer carton load-bearing requirements.

7. Transport & Store

7.1 Transport

No fall down, no pile up over 6 layers, and keep face up.

7.2 Storage

The battery need to be charged every 6 months if out of use.

8. Warning & Tips

Please read and follow the handling instructions before use. Improper use may cause heat, fire, rupture, damage or capacity deterioration of the battery. Neexgent Energy (GUANDGONG) TECH.CO.,LTD Describes is not responsible for any accidents caused by the usage without following our handling instructions.

8.1 Warning

- * Battery must be far away from heat source, high voltage, and no exposed in sunshine for long time.
- * Never throw the battery into water or fire;
- * Never reverse two electrodes when use the battery;
- * Never connect the positive and negative of battery with metal;
- * Never knock, throw or trample the battery;
- * Never disassemble the battery without manufacturer's permission and guidance.
- * Never use mixed with other type of battery;

8.2 Tips

- * Keep the battery against high temperature. Otherwise it will cause battery heat, get into fire or lose some function and reduce the life.
- * When battery run out of power, please charge your battery timely (≤ 15 day).
- * Please use the matched or suggested charger for this battery.
- * If battery emit peculiar smell, heating, distortion or appear any abnormity, please stop using.
- * If the battery leaks and get into the eyes or skin, do not wipe, instead, rinse it with clean water and see doctor immediately.
- * Please keep the battery far away from children or pets.
- * It is strictly prohibited any serials connections between the battery packs. Any requirements on serials connection, please contact Neexgent for details.
- * It is strictly prohibited any parallel between the battery packs. Any requirements on parallel connection, please contact Neexgent for details.