

**NEEXGENT**<sup>®</sup>**PRODUCT  
SPECIFICATIN**

DOC NO:

NG-X-071R00

REV: A/00ECN: 00

# LiFePo4 Battery Specification

Model: NGX-1250 (12.8V50Ah)

Registered	Checked	Approved

Client confirmation	Customer signature	
	Date	
	Client stamp	

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**Modified Record**

Revision	Date	Modified Content	Principle
V00			

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## 1. General Information

This specification defines the performance of rechargeable LiFePO<sub>4</sub> battery pack NGX-12.8V50Ah 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 12.8V50Ah energy storage lithium battery with a continuous discharge current of 1.0C .

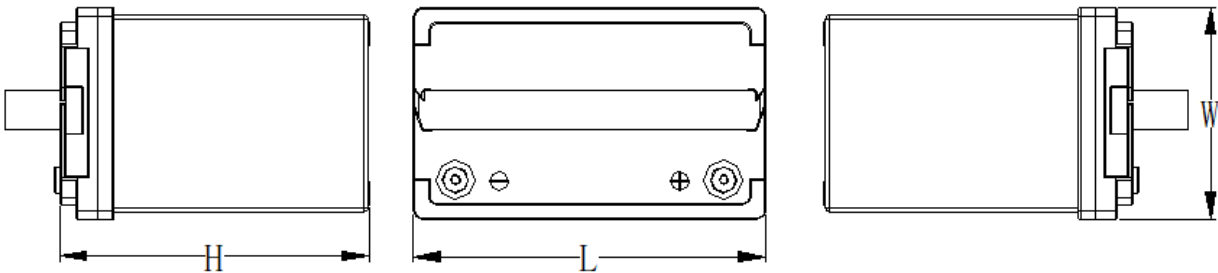
### 2.1 Battery Specification ( @ 25±5℃ )

NO	Items		Specification
2.1	Normal capacity		50.0Ah
2.2	Nominal energy		640Wh
2.3	Nominal voltage		12.8V
2.4	Internal resistance		≤40mΩ @1kHz AC
2.5	Normal charge voltage		14.6V
2.6	Standard charging method		10.0A
2.7	Maximum continuous charging current		50.0A
2.8	Standard discharging method		25.0A
2.9	Maximum continuous discharge current		50.0A
2.10	End of discharge voltage		10.0V
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		≥12.8V
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 retention rate≥90%, Recovery rate of charge≥90

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2.16	Size	Length: 228±2 mm
		Width: 144±2 mm
		Height: 210±2 mm
2.17	Weight	About:6.5Kg

## 2.2 Product appearance and size



L(mm)	W(mm)	H(mm)
228	144	210

## 2.3 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		4S				
Loop capability						
Input Charging Voltage			15.4		±1%	V
Input Charging Current			10	MAX50A		A
Output Discharging Voltage			12.8			V
Continuous Output Discharging Current			50	MAX50A		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		±100mV	V
Over-Current Discharge Protection (OCDP)			150		±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		±25mV	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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<b>PCBA Size</b>	150 $\pm$ 0.5)×110 $\pm$ 0.5)×<30	<b>mm</b>
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## 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  $\geq 20^\circ\text{C}$  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 14.6V 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 10.0V;

## 5. Performance standards for battery packs

### 5.1 Electrochemical performance

NO.	Item	Standard	Testing method
1	Discharge characteristics	0.2C $\geq$ 100% 1 C $\geq$ 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 $\geq$ nominal capacity*80% Recovery capacity $\geq$ 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°Cbelow the ambient temperature. Finish the test.
2	Over-discharge performance	No exploding, No fire	Store the battery at 20±5°Cafter 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 °O/min to 150 ±2 °CAnd 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	The battery shall not rupture, smoke, explode or leak. Battery electric voltage $\geq 12V$	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	Appearance of the battery shall not rust, smoke or explode. Discharge Capacity $\geq 80\%$	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	Appearance of the battery shall not rust, smoke or explode Discharge Capacity $> 90\%$	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	Appearance of the battery shall not rust, smoke or explode Discharge Capacity $> 55\%$	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 ( $\leq 15$ 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.