PRODUCT MANUAL

Household energy storage battery

Contents

1.Introduction

This product is a household type lithium iron phosphate energy storage battery specifically designed for the household storage market. This product is widely used in household energy storage markets in various regions around the world for its integrated, miniaturized, lightweight, intelligent, long cycle and other design features, simple and beautiful shape, safe and reliable products.

2.Reference Standards and Specifications

- GB/T 8897.4-2008 Primary batteries Part 4: Safety tips for lithium batteries
  QB/T 2502-2000 General specification for lithium-ion batteries
- GB T36276-2018 National Standard for Lithium-ion Batteries for Power Storage
- IEC 62619-2017 Lithium cells and batteries containing alkaline or other non-acid electrolytes Safety requirements for lithium cells and batteries for industrial use.
- GB/T 36276-2018 Lithium-ion batteries for power storage
- GB/T 34131-2023 Battery Management System for Power Storage
- GB/T 16935.1-2008 Insulation coordination for equipment in low voltage systems - Part 1: Principles, requirements and tests

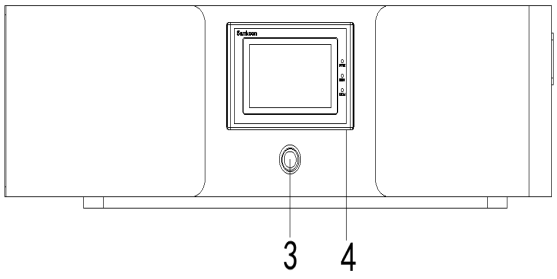
3.Product Features

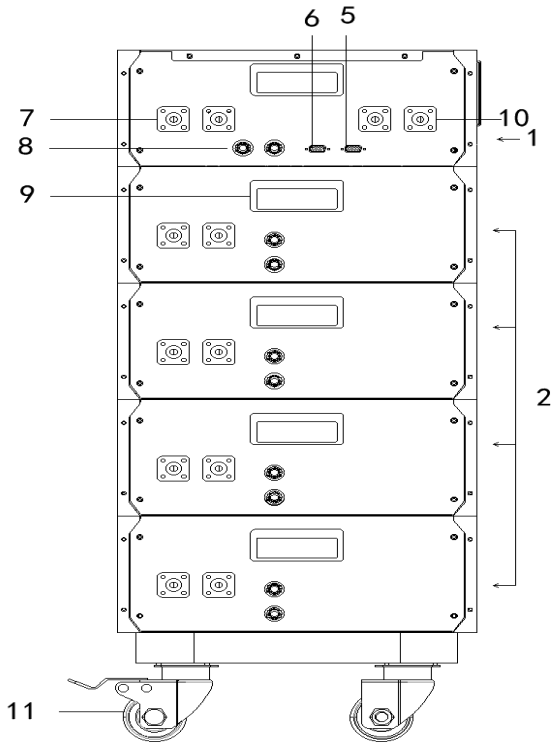
- The battery is made of lithium iron phosphate (LiFePO4) material, which has good safety performance and long cycle life;
- The battery system uses a high-performance BMS battery management module, which has multiple protection functions such as overcharge, over-discharge, over-current, and temperature, and enables good communication between the battery system and the host;
- Automatic charge and discharge management: the monitoring unit automatically measures the charge and discharge current of the battery and manages the floating charge and equalization charge of the battery;
- Fully intelligent high-end design, equipped with centralized monitoring function, realizes computer intelligent management, and can communicate through the remote central monitoring center;
- The efficient combination of battery control technology and computers can monitor and control various parameters and states in real time;
- Flexible configuration: multiple battery modules connected in parallel can meet high power demand;
- The whole system adopts self-cooling method, and has extremely low noise.

4. Product Parameters

Battery cells						
Model	Capacity	Nominal voltage	Internal resistant standard	Connection		
NSFL100D10	100A	3.2V	≥0.5mΩ	60S1P		
NSFK100D10	100A	3.2V	≥0.5mΩ	30S1P		
Product						
Nominal capacity	Minimum capacity (0.2C5A)	Nominal voltage	Maximum charging voltage	Discharge cut-off voltage	Charging current	Working current
100AH	100AH	192V	210.15V	168V	50A	100A
100AH	100AH	96V	105.15V	84V	50A	100A
Applicable charging			Operating temperature			
Standard		Fast charging	Charging	Discharging		
50A		100A	0°C～55°C	-15°C～65°C		

5.Product Description

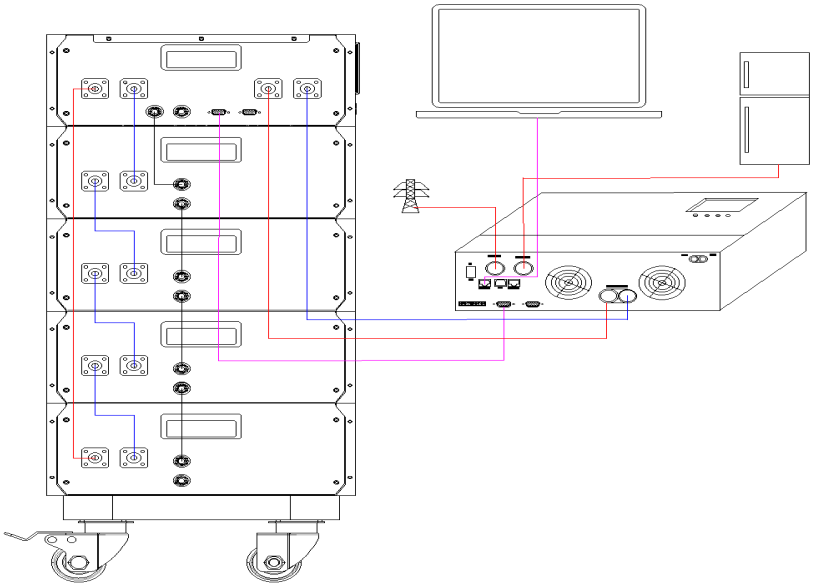




1	Main control box	7	Connect terminals(B+/B-)
2	Battery pack	8	8-cores aviation plug
3	Power switch	9	Handle
4	Display screen	10	Output terminals(P+/P-)
5	RS232 host computer port	11	Battery rack steering wheel
6	RS485 communication port		

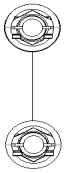
(1). Battery and inverter connection

Selection of connecting wires between batteries and inverters



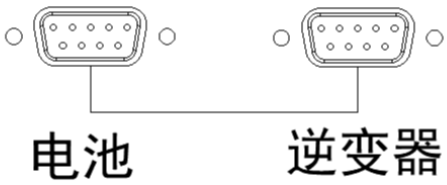
(2). Battery Communication Description

①. Communication Connect between battery packs



The upper battery pack number corresponds to the lower battery pack number. For example,The upper battery pack number 1-1 corresponds to the lower battery pack number1-1.

②. Communication connect between battery pack and inverter



(3). Power on/off

- Press the power button to power on around 3-6 seconds.
- When shutting down, press the power button to cut off the battery power around 3-6 seconds.

(4). UI display

(5). Buzzer Action Description

- In case of fault, Long beep and automatic shutdown;
- In case of protection,Long beep until recovery;
- In case of alarm,Long beep until recovery;
- The buzzer function can be enabled or disabled by the host computer, and is disabled by factory default.

(6). Shutdown mode and wake up

* Shutdown

The system enters low power mode when any of the following conditions are met:

① Single or overall over-discharge protection is not released within 30 minutes.

② Press the button (3~6S), then release it.

③ The lowest single-cell voltage is lower than the sleep voltage and lasts for a period of time equal to the sleep delay time (while satisfying the conditions of no communication, no protection, no balancing, and no current).

* Wake up

When the system is in shutdown mode, if any of the following conditions are met, the system will exit shutdown mode and enter normal operation mode:

① Connect to a charger, and the charger output voltage must be greater than 324V.

② Press the button (3~6S), then release it.

6. Common Alarms and Troubleshooting

1	Cannot start, fault indicator light is on	Shut down, restart, and press the reset button to restore.
2	Screen does not light up	Check the battery operation indicator and the power indicator. If the battery works properly, the screen is burned out or the wiring is disconnected.
3	Battery cannot fully charged	Check whether the inverter charging setting cut-off SOC is set to 100%, check the voltage difference of each cell, and whether any cell is fully charged.
4	The battery cannot be fully discharged	Check whether the inverter discharge cut-off soc is set to 0, check the voltage difference of every cell, and whether one of the cell already reach its cutoff voltage.
5	Insufficient discharge time	Check the display for possible cell voltage different
6	Unable to shut down normally	Press the reset button to reset. If the reset is not working and after the load is disconnected and the reset still doesn't work, please contact us.
7	No output current	Check whether the inverter mode is set correctly and whether it is set to give priority to its input. Check whether the communication between the battery and the inverter is normal.

7. Battery Maintenance

(1). Notes before using lithium batteries：

① Please read this manual carefully and keep it properly.

② Please pay attention to all warning signs on the battery and do not tear or damage the warning labels.

③ Before use, double check whether the battery model matches the used inverter. If the lithium battery and inverter do not match, it may cause damage to the lithium battery and other electrical equipment.

④ Check that the lithium battery is intact and has no obvious signs of damage, leakage, heat, water immersion, or smoking.

⑤ To ensure transportation safety, the lithium battery's power level is about 30% when it leaves the factory. Due to battery self-discharge during transportation and storage process, the battery level may be low or even zero when used for the first time. This is normal. Don't worry, just recharge according to the charging instructions.

⑥ Under low temperature conditions, the available capacity of lithium batteries will decay to varying degrees. The specific reference levels are:

The available capacity is 70% at -10°C, 85% at 0°C, and 100% at 25°C.

If the battery has an odor, is hot, deformed, or has other abnormal conditions, please stop using it immediately, stay away from the battery, and contact the after-sales department.

Warning:

The battery is not a user-serviceable part. If any abnormality occurs, please contact the after-sales department for repair.

Disassembling the battery without permission will not be covered by the warranty and may cause the battery to generate heat, smoke, catch fire, or explode.

(2). Charging environment:

① Use charging equipment that matches the battery parameters, and do not use equipment with mismatched voltages for charging. Continuous charging current: 0.2 CA -0.5 CA is the optimal charging current.

② Please charge the battery in an ambient temperature of 0°C ~ 45°C, ensure there are no flammable substances around and ensure good ventilation.

③ Charging time description: The battery charging time should not exceed 12 hours. Overcharging will affect the battery life and pose a safety hazard.

④ The power level increases quickly in the early stage of charging and slow down in the later stage. This is a procedure set for charging safety and is normal.

⑤ When charging in winter, the outdoor temperature is low. When the environment is below -20℃, the battery will stop charging. This is normal. Please charge the battery in a suitable ambient temperature to ensure the charging effect.

⑥ During the charging process, the surface of the battery pack chassis will have a temperature rise, this is a normal. Please use it with confidence and be careful to avoid children from touching it.

(3). Storage environment：

① When the battery is stored, due to the internal resistance of the lithium battery itself, the battery will self-discharge slowly hence lower the battery power level. It is normal for battery that has being stored for a long period of time.

② Please store the battery at an ambient temperature of -10℃ ~ 45℃. Do not store the battery in an environment above 50℃, otherwise it may cause battery overheating, fire or malfunction, and shorten its life.

③ When the battery pack is not used for a long time, it must be regularly maintained and charged,

otherwise the battery may be completely discharged and cause irreversible damage.

④ The most suitable storage capacity of the battery is 30%. If the battery is stored at a capacity lower than 10% or higher than 50% for a long time, it will cause irreversible capacity decay.

⑤ when storage to ensure the battery will not damage by self-discharge， the following standards has to be followed:

* If the lithium battery is not used for a long time and is connected to the load and stay plugged in, the maximum safe period is 3 months. Otherwise, the battery may be over discharged and cannot be repaired.。

* If the battery is not used for a long time, the battery power level should not be less than 30% and it should be stored separately. The maximum safe period is 6 months. Otherwise, battery may fully discharge and cannot be repaired.

⑥ Avoid storing the battery in places where there is a risk of falling. Falling may cause uncontrollable damage to the battery and may cause the battery to leak, heat, smoke, catch fire or explode.

⑦ It is forbidden to use it in places with strong static electricity or strong magnetic fields, otherwise it will easily damage the BMS and bring potential safety problem.

Warning:

Battery undervoltage causing by the improper usage above are not covered by the warranty.

(4). battery usage instructions:

① When wiring, make sure to double check which is the positive and negative poles of the lithium battery and the polarity of the connecting wires of the electrical equipment are connected correctly.

② Please recharge the battery before using it for the first time, as the battery power is less than 30% due to transportation reasons.

③ During later use, try to keep the battery power not less than 10% and charge it in time to extend the battery cycle life.

④ During normal use, it is recommended to avoid long-term high-rate discharge and use the battery according to the battery specifications to extend the battery life.

⑤ Connecting the positive and negative ends of the battery to any conductor will cause an external short circuit. Short circuits may cause different severity of consequences for different battery types, such as battery failure, leakage, explosion, etc. Do not place batteries in a humid environment and do not mix them with conductors. For example, putting keys and batteries in your pocket at the same time may cause a short circuit.

Serious warning:

Avoid exposing the battery to rain or water, and never soak the battery in water. Internal short circuits may cause lithium batteries to explode and catch fire, and may also cause permanent battery failure.

8. Battery Usage Precautions

To prevent battery leakage, abnormal heating, fire, performance degradation, explosion and other accidents, please use the battery correctly according to the following specifications. NPP is not responsible for any accidents caused by failure to operate according to the provisions of this manual.

1）Handle with care and avoid severe vibration!

2）Do not immerse the battery and its accessories in water or other liquids, and keep them away from moisture!

3）Avoid short circuit between the positive and negative output terminals of the battery pack!

4）Do not disassemble the battery. Disassembling the battery may cause an internal short circuit, decomposition of internal substances, fire, explosion, etc. In addition, disassembling the battery may cause the battery electrolyte to leak; if the electrolyte splashes onto the skin, eyes or other parts of the body, please rinse with clean water immediately and seek a doctor immediately!

5）Do not throw used batteries into fire, otherwise explosion and other dangerous accidents may occur!

6）If the battery is damaged, deformed, leaking electrolyte, smelling strange odor or other abnormal phenomena, do not use the battery; please send it to the manufacturer's authorized department or relevant agency for proper disposal. In addition, batteries with leaking electrolyte should be kept away from fire to avoid explosion!

7）Battery replacement should be performed by the battery supplier, and users are not allowed to replace it without authorization!

8）Unauthorized disassembly is prohibited. Users are not allowed to disassemble the battery pack and charger without authorization. Otherwise, our company will not be responsible for any losses caused by this reason!

9）Combine batteries with different capacities, models, or types are prohibited!

10）This product must be properly grounded before use to ensure your safety!