

LiFePO4 ENERGY STORAGE BATTERY

Apply to energy-storage systems of solar and wind power, wind-solar hybrid power, and small UPS, etc.



PRODUCT MANUAL

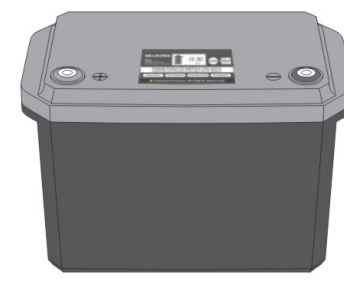
www.powertextbatteries.com



PowerTex
BATTERIES

INSTRUCTIONS

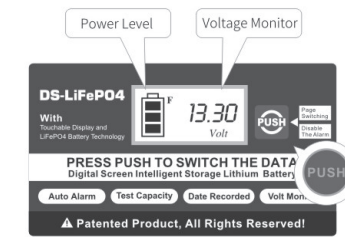
LiFePO4 energy storage battery is a type of high-waterproof intelligent lithium-ion battery with a touch LCD screen, which can real-time monitor the battery situation and used days. When abnormal voltage and capacity are detected itself, a timely reminder for maintenance for a longer battery life will be indicated.



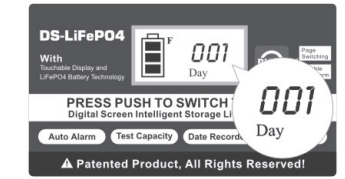
The battery with a lithium iron phosphate cell is of super performance:

- Longer service life, twice than that of a lead-acid battery;
- High safety and reliability, the LiFePO4 cell is by laser beam welding;
- Lighter weight, only one-half of a lead-acid battery;
- Low self-discharge rate, a fully-charged lithium battery can still work normally after more than one-year storage;
- Eco-friendly, no corrosive liquid and harmful heavy metals;

LiFePO4 ENERGY STORAGE BATTERY

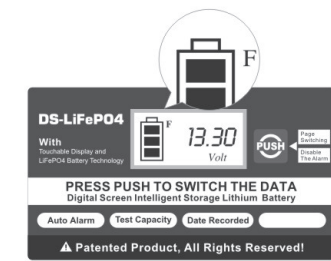


Two interfaces for voltage display and days display are on the battery screen, and both can be switched by touching the PUSH button.



The recording of the battery used days will be started automatically after the battery is activated initially.

LiFePO4 ENERGY STORAGE BATTERY



The battery has two states: activation or non-activation.
a) Batteries are not activated when delivered from the factory. "000" is displayed for the days recording, which is in the forbidden state. The display functions of the voltage, power, and the sound alarm are normal.

b) Generally, the battery can be activated when firstly used. However, batteries may have an activation delay due to different application situations. It is normal for this battery to have 2% deviation on the battery used days.

c) The recorded days begin to accumulate after the battery is activated, and when the battery is abnormal, the buzzer will give an alarm so as to prompt users to maintain the battery timely.

Intelligently set off the alarm when the battery voltage is abnormal.

LiFePO4 ENERGY STORAGE BATTERY

In order to make you have a better use of PowerTex LiFePO4 energy storage batteries that produced by our company, please read this manual carefully before use.

This manual is applicable to PowerTex batteries: intelligent digital screen energy storage lithium batteries and energy storage lithium batteries.

OPEN-BOX INSPECTION

Each battery box is equipped with an PowerTex LiFePO4 energy storage battery and a manual.

APPLICATIONS

Apply to energy-storage systems of solar and wind power, wind-solar hybrid power, and small UPS, etc.

PRODUCT FEATURES

- 100% pre-delivery inspection, with stable, reliable, and long-term quality assurance.
- Highly-waterproof designed and rated above IP65, this battery can be used normally under the rainy conditions in the wild and more.
- With the LiFePO4 cell through laser beam welding, safe and reliable;
- Longer service life, the normal life expectancy is about 5-10 years;
- Low self-discharge rate, a fully-charged lithium battery can still work normally after more than one-year storage without frequent recharging;
- Easy to use without leakage, maintenance free;
- Eco-friendly, no corrosive liquid and harmful heavy metals;
- The intelligent electronic chip can monitor the battery status in real time. When abnormal voltage and capacity are detected itself, the intelligent alarm will be given.
- The battery used days can be recorded automatically.

LiFePO4 ENERGY STORAGE BATTERY

USAGE

The battery is usually in the power-saving mode.

- Press the key to enter the normal mode, and 5 seconds later after the LCD works, enter the power-saving mode.
- After the battery is activated, the function of day-recording will be activated too.
- The battery will end up at the power-saving mode. And once the voltage becomes abnormal, the alarm will sound and the screen will show "maintain".
- The battery has four modes: normal, power-saving, prompt and alarm.

| Mode | Description |
|----------------------------|---|
| NORMAL MODE | When the LCD screen is on, press the key within 5 seconds to switch the display between voltage and days, otherwise, enter the power-saving mode. |
| POWER-SAVING MODE | No display on the LCD screen and no alarm. |
| PROMPT MODE | The LCD flashes in order to remind users of maintaining, and press the key within 5 seconds to switch the display between voltage and days, otherwise, enter the power-saving mode. |
| ALARM MODE | When the battery becomes abnormal, the LCD will flash and the alarm will sound for 5 minutes to remind users of maintaining. After the end of the alarm mode (4 hours as an alarm cycle), the prompt mode will finally be put into operation if the maintenance is not carried out within 48 hours. |
| EXIT THE ALARM MODE | Under the alarm mode, press and hold the key 3S to exit. |

LiFePO4 ENERGY STORAGE BATTERY

SPECIFICATIONS

| Cylindrical Cell Model | Dimensions (L*W*H) (mm) | Standard Voltage (V) | Capacity (Ah) | Max Current (A) | 0.2C/1h Charge Current | 0.2C/1h Fast-Charge Current | Net Weight (kg) | Terminal | Polarity | Lead-acid Battery Model |
|------------------------|-------------------------|----------------------|---------------|-----------------|------------------------|-----------------------------|-----------------|----------|----------|-------------------------|
| PTL1212(DS) | 150*100*99 | 12 | 12 | 12 | 1.2 | 2.4 | 1.50 | LC1 | +- | PT12-12(GEL) |
| PTL1220(DS) | 180*70*170 | 12 | 20 | 20 | 2 | 4 | 2.80 | LC1 | +- | PT20-12(GEL) |
| PTL1224(DS) | 166*114*125 | 12 | 24 | 20 | 2.4 | 4.8 | 3.00 | LC2 | +- | PT24-12(GEL) |
| PTL1238(DS) | 197*160*172 | 12 | 38 | 20 | 3.8 | 7.6 | 4.90 | LC3 | +- | PT38-12(GEL) |
| PTL1260(DS) | 357*166*173 | 12 | 60 | 35 | 6 | 12 | 7.50 | LC4 | +- | PT60-12(GEL) |
| PTL1265(DS) | 357*166*173 | 12 | 65 | 45 | 6.5 | 13 | 7.80 | LC4 | +- | PT65-12(GEL) |
| PTL1275(DS) | 357*166*173 | 12 | 75 | 45 | 7.5 | 15 | 9.30 | LC4 | +- | PT75-12(GEL) |
| PTL1280(DS) | 331*173*220 | 12 | 80 | 60 | 8 | 16 | 11.30 | LC4 | +- | PT80-12(GEL) |
| PTL12100(DS) | 331*173*220 | 12 | 100 | 60 | 10 | 20 | 11.30 | LC4 | +- | PT100-12(GEL) |
| PTL12150(DS) | 484*170*241 | 12 | 150 | 60 | 15 | 30 | 14.30 | LC4 | +- | PT150-12(GEL) |
| PTL12200(DS) | 484*170*241 | 12 | 200 | 60 | 20 | 40 | 23.00 | LC4 | +- | PT200-12(GEL) |

Notes
1. Max current refers to Maximum discharge current when the battery works normally.
2. The ambient temperatures of charging vary from 0-45 °C, and that of discharging vary from -20-55 °C. Battery life will be affected if charging or discharging are beyond above temperature ranges.

LiFePO4 ENERGY STORAGE BATTERY

| Cylindrical Cell Model | Dimensions (L*W*H) (mm) | Standard Voltage (V) | Capacity (Ah) | Max Current (A) | 0.2C/1h Charge Current | 0.2C/1h Fast-Charge Current | Net Weight (kg) | Terminal | Polarity | Lead-acid Battery Model |
|------------------------|-------------------------|----------------------|---------------|-----------------|------------------------|-----------------------------|-----------------|----------|----------|-------------------------|
| PTL1255(DS)-F | 197*160*172 | 12 | 55 | 35 | 5.5 | 11 | 6.80 | LC4 | +- | PT55-12(GEL) |
| PTL1275(DS)-F | 331*173*220 | 12 | 75 | 45 | 7.5 | 15 | 8.50 | LC4 | +- | PT75-12(GEL) |
| PTL12100(DS)-F | 331*173*220 | 12 | 100 | 60 | 10 | 20 | 11.30 | LC4 | +- | PT100-12(GEL) |
| PTL12150(DS)-F | 484*170*241 | 12 | 150 | 60 | 15 | 30 | 14.30 | LC4 | +- | PT150-12(GEL) |
| PTL12200(DS)-F | 484*170*241 | 12 | 200 | 60 | 20 | 40 | 23.00 | LC4 | +- | PT200-12(GEL) |

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SPECIFICATIONS

| Cylindrical Cell Model | Dimensions (L*W*H) (mm) | Standard Voltage (V) | Capacity (Ah) | Max Current (A) | 0.2C/1h Charge Current | 0.2C/1h Fast-Charge Current | Net Weight (kg) | Terminal | Polarity | Lead-acid Battery Model |
|------------------------|-------------------------|----------------------|---------------|-----------------|------------------------|-----------------------------|-----------------|----------|----------|-------------------------|
| PTL123 | 151*64*94 | 12 | 3 | 5 | 0.3 | 0.6 | 0.53 | F2 | +- | PT3-12(GEL) |
| PTL124 | 151*64*94 | 12 | 4 | 5 | 0.4 | 0.8 | 0.57 | F2 | +- | PT4-12(GEL) |
| PTL127 | 151*64*94 | 12 | 7 | 5 | 0.7 | 1.4 | 0.80 | F2 | +- | PT7-12(GEL) |
| PTL127.5 | 151*64*94 | 12 | 7.5 | 5 | 0.75 | 1.5 | 0.86 | F2 | +- | PT7.5-12(GEL) |
| PTL1212 | 150*100*99 | 12 | 12 | 12 | 1.2 | 2.4 | 1.50 | LC1 | +- | PT12-12(GEL) |
| PTL1220 | 180*70*170 | 12 | 20 | 20 | 2 | 4 | 2.80 | LC1 | +- | PT20-12(GEL) |
| PTL1224 | 166*114*125 | 12 | 24 | 20 | 2.4 | 4.8 | 3.00 | LC2 | +- | PT24-12(GEL) |
| PTL1238 | 197*160*172 | 12 | 38 | 20 | 3.8 | 7.6 | 4.90 | LC3 | +- | PT38-12(GEL) |
| PTL1260 | 357*166*173 | 12 | 60 | 35 | 6 | 12 | 7.50 | LC4 | +- | PT60-12(GEL) |
| PTL1265 | 357*166*173 | 12 | 65 | 45 | 6.5 | 13 | 7.80 | LC4 | +- | PT65-12(GEL) |
| PTL1275 | 357*166*173 | 12 | 75 | 45 | 7.5 | 15 | 9.30 | LC4 | +- | PT75-12(GEL) |

Notes
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LiFePO4 ENERGY STORAGE BATTERY

LCD SCREEN

| BATTERY STATES | | | BATTERY STATES |
|----------------|----------------------------|---------------|--|
| POWER LEVEL | SCREEN FLASH | WARNING SOUND | BATTERY STATES |
| | - | - | 12.70V-13.00V |
| | - | - | 13.00V-13.20V |
| | - | - | 13.20V-15.50V |
| | Space Flash Shows Maintain | - | If the voltage is less than 12.70V, the battery must be charged or maintained. |
| | Full Flash Shows Maintain | "tick-tick-" | If the voltage is more than 15.50V, stop overcharging and maintain it by the professional. |

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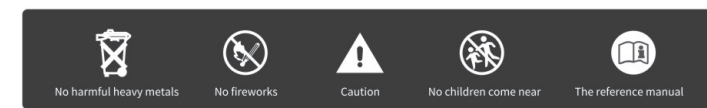
| Cylindrical Cell Model | Dimensions (L*W*H) (mm) | Standard Voltage (V) | Capacity (Ah) | Max Current (A) | 0.2C/1h Charge Current | 0.2C/1h Fast-Charge Current | Net Weight (kg) | Terminal | Polarity | Lead-acid Battery Model |
|------------------------|-------------------------|----------------------|---------------|-----------------|------------------------|-----------------------------|-----------------|----------|----------|-------------------------|
| PTL1280 | 331*173*220 | 12 | 80 | 60 | 8 | 16 | 11.30 | LC4 | +- | PT80-12(GEL) |
| PTL12100 | 331*173*220 | 12 | 100 | 60 | 10 | 20 | 11.30 | LC4 | +- | PT100-12(GEL) |
| PTL12150 | 484*170*241 | 12 | 150 | 60 | 15 | 30 | 14.30 | LC4 | +- | PT150-12(GEL) |
| PTL12200 | 484*170*241 | 12 | 200 | 60 | 20 | 40 | 23.00 | LC4 | +- | PT200-12(GEL) |

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| PTL12100(F) | 331*173*220 | 12 | 100 | 60 | 10 | 20 | 11.30 | LC4 | +- | PT100-12(GEL) |
| PTL12150(F) | 484*170*241 | 12 | 150 | 60 | 15 | 30 | 14.30 | LC4 | +- | PT150-12(GEL) |
| PTL12200(F) | 484*170*241 | 12 | 200 | 60 | 20 | 40 | 23.00 | LC4 | +- | PT200-12(GEL) |

The above models without (DS) have no digital display.
Notes
1. Max current refers to Maximum discharge current when the battery works normally.
2. The ambient temperatures of charging vary from 0-45 °C, and that of discharging vary from -20-55 °C. Battery life will be affected if charging or discharging are beyond above temperature ranges.

LiFePO4 ENERGY STORAGE BATTERY

MATTERS NEEDING ATTENTION



- Please read the manual carefully before using the battery. The company will not be responsible for any problems caused by not following the instructions.
- Do not overvoltage the battery LCD screen and keep the LCD screen clean and dry. Pay attention to whether there is an alarm. If there is, please timely maintain the battery as required.
- Please do not use or store the battery for high temperatures or open fires.
- Please do not short-circuit the battery. For example, do not connect the metal objects directly to the battery positive or negative.
- Please do not damage the battery by knocking, throwing, trampling, etc.
- Please do not disassemble, refill, or connect batteries in series or in parallel.
- In case of any battery abnormality, such as unusual odor or deformation, please stop using the battery immediately and to isolate it timely before contacting our professional technician in time.
- When the voltage is lower than 12.80V, the battery should be charged as soon as possible rather than discharging again.
- The charging voltage should be lower than 15.00V during charging the battery.
- After using the battery continuously a long time, the battery used should be left standing for more than 10 minutes before the battery can be tested or disassembled.
- Keep children and pets away from batteries.
- Please discharge the battery up before recycling (disposal).

Warning
* Please be in strict accordance with the manual, and do not short-circuit, over-charge or over-discharge the battery. Otherwise, the battery may smoke, fire, or even endanger security.
* The electrolyte in the battery is harmful to the eyes and skin. If the electrolyte leaks and gets on your skin, please rinse immediately with soap and water. If it gets in your eyes, please rinse with water and see a doctor immediately.

LiFePO4 ENERGY STORAGE BATTERY

INSTALLATION AND MAINTENANCE

- Select the matching battery model according to your vehicle type. Check the voltage before installation, and please charge the battery if the voltage is lower than 12.80V.
- It is better to use a normal 12V lead-acid battery charger without a pulse charging function or a lithium ion phosphate special battery charger to charge the battery. Meanwhile, the charging voltage should be limited to 14.40-15.00V, and the charging current shall be lower than its maximum charging current, and the ambient temperature shall be 0-45 °C.
- When charging with an individual charger, please take the battery out of the car. Do not charge the battery directly on the vehicle.
- The dead battery should be charged for 100.1h hours with its standard current and 50.2h hours with its maximum current, and do not charge for a long time.
- The terminals marking the "+" and "-" should be connected to the positive and negative linking lines of the vehicle respectively, and please connect the positive one first. Reverse connection is strictly banned, otherwise it will damage the electric equipment.
- Due to different applications, it is normal that the day-recording function may not be activated firstly even though the battery has already worked, but indeed it will get started after 2-3 times of use.
- Some of batteries are equipped with the separate EVA foam and twin adhesive, which can be cut, pasted, and filled to facilitate the battery installation.
- Please check the battery regularly and make sure that the terminals are clean and firmly connected during the use. If the battery voltage becomes lower than 12.80V, please recharge the battery in time.

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SPECIAL STATEMENTS

With a built-in BMS protection system, lithium-ion batteries can prevent itself from over-charging, over-discharging, over-temperature and more. In case of a short battery life or any accident, the system will be cut off automatically under abnormal or extreme conditions. The following are some common situations that may cut off the protection: overcharged batteries resulting from a mismatched charger or a broken-down charging device trigger the BMS overcharge protection to cut off the battery charging circuit. At that time, the measured battery voltage is close to 0V, please disconnect the charger or the charging device from the battery in time and get a match. After the battery internal voltage drops back to normal, the BMS system will cancel the protection, and the external measured voltage will return to normal as well, then the battery can work normally again; if the electric equipment is used for a long time or the switch is not turned off in time, the used battery will continue to discharge and end up resulting in over-discharging, etc. At that time, the BMS system will automatically cut off the discharge, and the measured battery voltage is close to 0V. Please turn off the power-consumption devices in time and remove all electrical loads on the battery (such as turning off the air switch of the inverter). Then, the BMS system will cancel the protection and the voltage will return to normal, and please recharge it in time for reuse, when the ambient temperature is too high (more than 35 °C) and the electrical load reaches the maximum of the specified current, the internal temperature of the battery will continue to rise as well. After reaching a certain temperature, the BMS will automatically cut off the discharge, and the measured battery voltage is close to 0V. At that time, please disconnect the electrical equipment in time until there is a normal temperature and voltage, then the battery can be used normally again. The cooling time is generally 15 to 30 minutes. Other abnormal conditions not mentioned here may also cause the BMS to trigger the cut-off protection due to various factors. If the battery fails to be used normally or there are other situations that are quite complex, please contact us in time or find the professional.

LiFePO4 ENERGY STORAGE BATTERY

STORAGE AND TRANSPORTATION

- It should be ensured that the battery has 60% - 90% power (from two to three levels) during storage.
- The battery should be stored in a dry and open environment at 0-40 °C with the humidity of less than 70%. If the battery will be stored for a long time, it is better to place it at the temperatures of 0-25 °C and the humidity below 50%. Avoid contacting with the corrosive substances, and keep away from high temperatures and open fire.
- It is recommended that the battery should be fully charged every half a year if it is expected to be stored for a long time.
- It should be ensured that the battery has 60% - 90% power (from two to three levels) during transportation.
- When the battery is transported, the outer packing materials should be insulated and shockproof.
- In the process of battery transportation, please avoid severe collisions. During loading and unloading, please handle with care to avoid throwing and colliding the battery.
- Please do not transport batteries with inflammable, explosive and sharp articles.

WARRANTY TERMS

The batteries under 24Ah used in accordance with the instructions are subject to a 2-year limited warranty, batteries above 24Ah a 3-year limited warranty, which are not guaranteed under the following circumstances:

- The package is damaged after purchase, or the stickers on the battery is torn.
- The battery is damaged due to over-charge or over-discharge.
- The battery is damaged owing to improper reasons, such as the short circuit, an impact, a fall, immersing for a long time, and using a mismatched charger, etc.
- The battery is damaged because of natural or man-made disasters, such as earthquakes, rainstorms, traffic accidents and a fire, etc.
- The battery is damaged out of a broken-down vehicle or a mismatched battery model.
- The battery is damaged due to other unspecified operations.

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