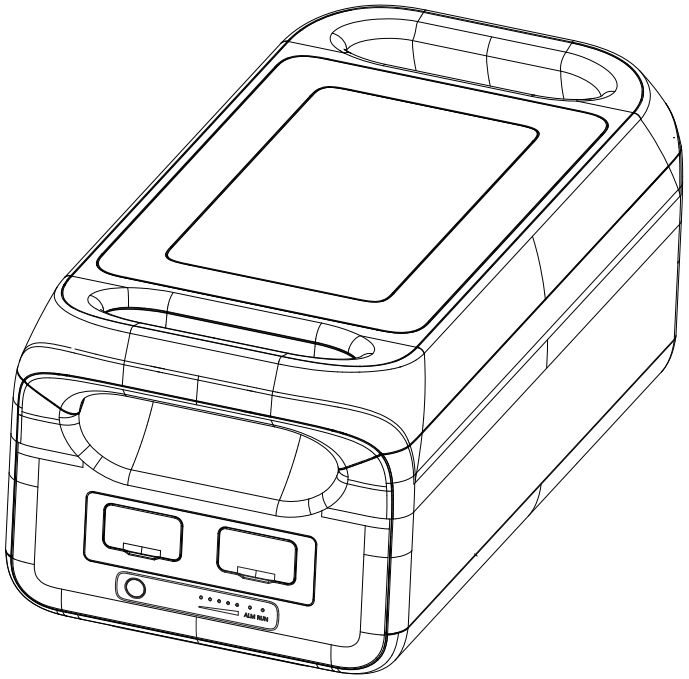
POWERGUARD

# Expansion Battery Pack



## User Manual

PGPS3000-EXP

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# 1. Parameter

## General

| | |
|---|---|
| Net Weight | ≈26.6kg |
| Dimension | 536*270*225mm |
| Nominal energy | 2560Wh |
| Nominal capacity | 50Ah |
| Nominal voltage | 51.2V ⎓ |
| Working voltage range | 40-57.6V ⎓ |
| Operating humidity | 10%-85%(Non-condensing) |
| Altitude | <2000m |

## Output

| | |
|---|---|
| Discharge current | 70A Max. |

## Input

| | |
|---|---|
| Charging current | 50A Max. |

## Battery

| | |
|---|---|
| Cell Type | Lithium iron phosphate battery（$LiFePO_4$） |
| Life Cycle | 4000 cycles |



| | |
|---|---|
| Protection type | Over temperature protection, low temperature protection, over discharge protection, over charge protection, over load protection, short circuit protection , over current protection |

* Test conditions：95% DOD, 0.5C charge & 1.0C discharge at +25±3°C.

## Operating Temperature

| | |
|---|---|
| Optimum ambient temperature for use | 20°C~30°C |
| Discharge temperature range | -20°C~45°C |
| Charge temperature range | 0°C~45°C |
| Storage ambient temperature | -20°C~45°C (20°C~30°C Preferred) |

*Whether this product can be charged or discharged depends on the actual temperature of the battery pack.

# 2. Safety guidelines

## 2.1 Use

1. Do not let a working expansion battery pack be close to the heat source, such as fire or heater.

2. Do not make expansion battery pack contact with any liquid. Do not immerse this product in water or get it wet. Do not use this product in the rain or in a wet environment.

3. Do not use this product in a strong electrostatic or strong magnetic field environment.

4. Do not disassemble in any way or pierce it with a sharp object.

5. Do not use wires or other metal objects to short-circuit the product.

6. Do not use parts or accessories that are not officially supplied. If replacement is required,Please visit the official website for related information.

7. When using this product, please strictly follow the ambient temperature in this User Manual. If the temperature is too high, the battery may fire or even explode; if the temperature is too low, the product's performance will be severely degraded, or it may not be able to meet the requirements for normal use.

8. Please do not put other heavy objects on the expansion battery pack except the expansion battery pack; the stacking method of the expansion battery pack has been designed and tested by structural mechanics. For the stacking method of the expansion battery pack, please refer to the chapter 4 of this user manual.

9. Do not stop the fan by force or expose expansion battery pack in an non-ventilated or dusty environment when it is working.

10. Please avoid collision, drop, and violent vibration. If severe impact happens, shut down the power supply immediately. Please fix expansion battery pack firmly during transportation to avoid vibration and impact.

11. If expansion battery pack falls into water accidentally, place it in a safe and wide area, and keep yourself away from it until it's dry. Dried product shall not be used again. Dispose it properly according to chapter 2.2 in this user manual. If expansion battery pack is on fire, please use fire extinguishing equipment in the recommended order: water or water mist, sand, fire blanket, dry powder, dioxide carbon fire extinguisher.

12. If there is dirt on the connector of this product, wipe it off with a dry cloth.

13. Be careful to store the product so that it does not fall over and cause damage. If the product is tipped over and severely damaged, immediately turn it off, place the battery in an open area, away from combustible materials and people, and dispose of it in accordance with local laws and regulations.

14. Please store this product out of the reach of children and pets.

15. The product should be stored in a dry and ventilated place.

## 2.2 Discard

1. When conditions permit, please be sure to completely discharge the battery of this product before placing the product in the designated battery recycling bin. This product contains batteries, batteries are hazardous chemicals, it is strictly forbidden to waste in ordinary garbage bins. For details, please follow local laws and regulations on battery recycling and disposal.

2. If the battery cannot be completely discharged due to the failure of the product itself, please do not dispose of the battery directly in the battery recycling bin, but contact a professional battery recycling company for further disposal.

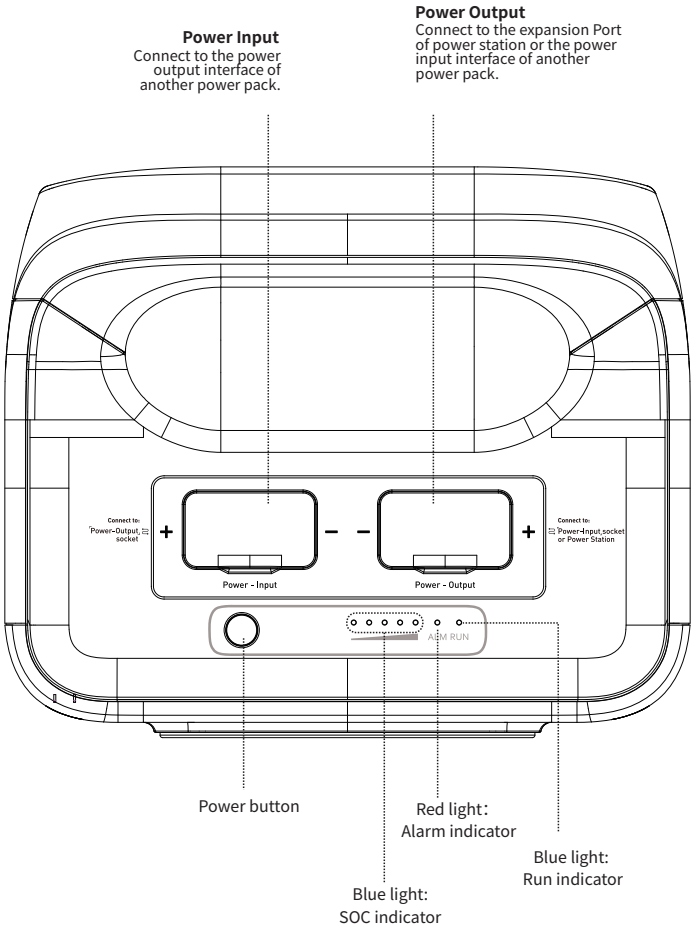
3. The battery will not start after over-discharging, please dispose of it as discarded.

# 3. Product display

1. This product cannot be used alone, it needs to be used together with our 3kW portable power supply.

2. When combined with a 3kW portable power supply, the on/off function is controlled by the power button of the 3kW portable power station.

3. If this product is used alone, press the power switch button of this product to display the current capacity of the battery, but it cannot output power, and it will automatically shut down after 2 minutes.




**Switching on/off:** After short press the power button, the indicator light is on, showing the current operating status light and the power light. Press the power button for 3 seconds, the expansion battery pack turns off, and the indicator light goes out.



## Indicator status

| Indicator | Status |
|---|---|
| Blue light: Run indicator | Standby, working |
| Red light： Alarm indicator | Alert, faulty |
| Blue light: SOC indicator | SOC indicator |

## Normal state

| SOC indicator | Description |
|---|---|
|  | 0%≤SOC≤20% |
|  | 20%<SOC≤40% |
|  | 40%<SOC≤60% |
|  | 60%<SOC≤80% |
|  | 80%<SOC≤100% |

## Alerting

| Button Indicator | SOC indicator | Alerting | Solution |
|---|---|---|---|
| Red light blinks |  | Battery over voltage | Restart the battery. If it' s still not fixed, contact customer service. |
| |  | Battery cell voltage difference fault | |
| |  | Unit under voltage | Charge the battery, waiting for the voltage to recover. |
| |  | VTOP under voltage | |
| |  | VTOP over voltage | Restart the battery. If it' s still not fixed, contact customer service. |
| |  | Battery over temperature | Turn off and wait for 2 hours. If it' s still not fixed, contact customer service. |
| |  | Battery low temperature | Turn off, wait the temperature to recover, restart the battery. If it' s still not fixed, contact customer service. |
| |  | Overcurrent when charging | Restart the battery. If it' s still not fixed, contact customer service. |
| |  | Overcurrent when discharging 1 | |
| |  | Overcurrent when discharging 2 | |
| |  | Short when discharging | Turn off, remove and check equipment, restart the battery. If it' s still not fixed, contact customer service. |
| |  | Short when charging | |
| |  | PCB over temperature | Turn off and wait for 2 hours. If it' s still not fixed, contact customer service. |
| |  | Pre-charge resistor over temperature | |
| |  | MOS over temperature | Turn off and wait for 1 hour, restart the battery. If it's still not fixed, contact customer service. |
| |  | IUIP parallel signal fault | Turn off, check the communication cable, restart the battery. If it' s still not fixed, contact customer service. |
| |  | I_WORK parallel signal fault | |
| |  | Parallelization over time | |
| |  | Parallelization readiness failure | |

**Remark**

- It is recommended to restart by the switch button.
- When parallelization is applied, after the battery under voltage protection and powered off, only need to press the button switch on any battery to forcibly activate it.



## Faulty

| Button Indicator | SOC indicator | Alerting | Solution |
|---|---|---|---|
| Red light always on |  | Battery voltage sampling wire broken | Restart the battery. If it' s still not fixed, contact customer service. |
| |  | MOS failure | |
| |  | AFE communication failure | |
| |  | EEPROM failure | |
| |  | Voltage sensor failure | |
| |  | Current sensor drift failure | Contact customer service. |
| |  | Main circuit fault | |
| |  | Pre-charge over time | Restart the battery. If it' s still not fixed, contact customer service. |
| |  | Current sensor failure | |
| |  | Dead battery | |
| |  | Inverter communication failure | Turn off, check the communication cable. If it' s still not fixed, contact customer service. |
| |  | CAN bus failure | |
| |  | Parallel address recognition failure | |
| |  | Short circuit protection fuse circuit fault | Contact customer service. |

# 4. Guideline for users

Up to six battery expansion packs can be connected simultaneously for greater capacity requirements.

**Please note the following when using**

- Before connecting the expansion battery pack, please ensure that the power station and the expansion battery pack are both in the offstate.
- After connecting the expansion battery pack, make sure that the number of parallel expansion battery pack icon appears on the LCD of the power station. before starting to use it.
- Please do not connect or remove the power station. Directly, during the charging and discharging process, if you need to connect or remove the expansion battery pack in process, please turn off the power first and then operate.
- Do not touch the metal terminal at the connection port of expansion battery pack with your hands or other objects, if the metal terminal is attached to other objects, please gently wipe it clean with a dry cloth.

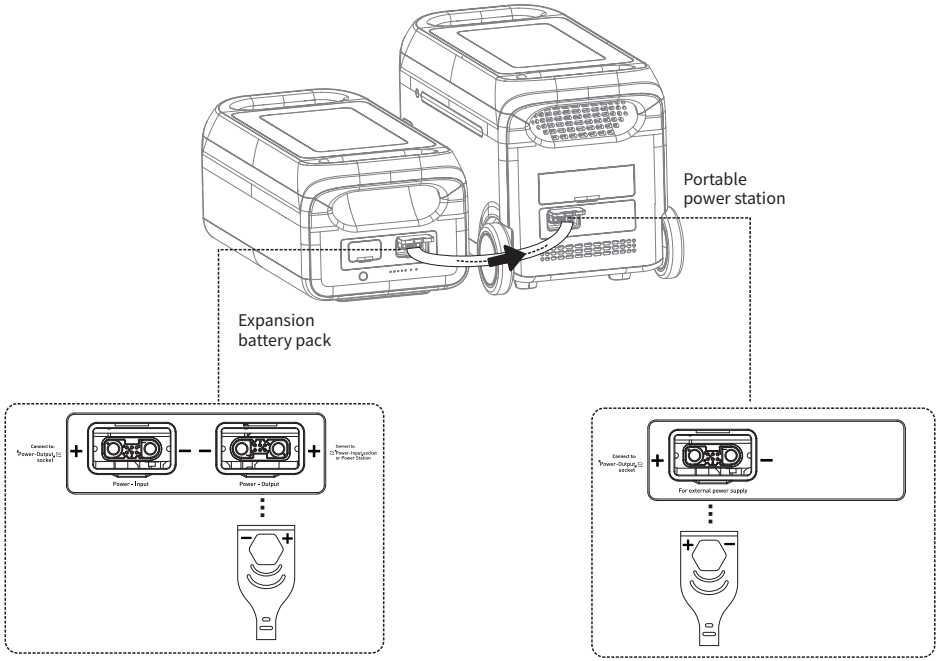
## 1 portable power station and 1 expansion battery pack in parallel mode

❶ Turn off all portable power station and expansion battery packs to be paralleled.

❷ The parallel connection cable is plugged into the expansion port of the portable power station and the Power Output of the expansion battery pack.

❸ After the parallel connection is completed, press the switch button ⏻ of the portable power station to wake up the parallel power station and the expansion battery pack to display the current capacity. The power station shows the paralleled quantity,then the parallel capacity expansion is successful.

❹ After the parallelization is completed, connect the corresponding outlet of the portable power station to charge or discharge (refer to the Power Station User Manual 3.3, 3.4, 3.5 and 3.6).




**Remark:** There are + and – symbols on battery packs and cables in case of reverse polarities.

## 1 portable power station with multiple expansion battery packs in parallel:

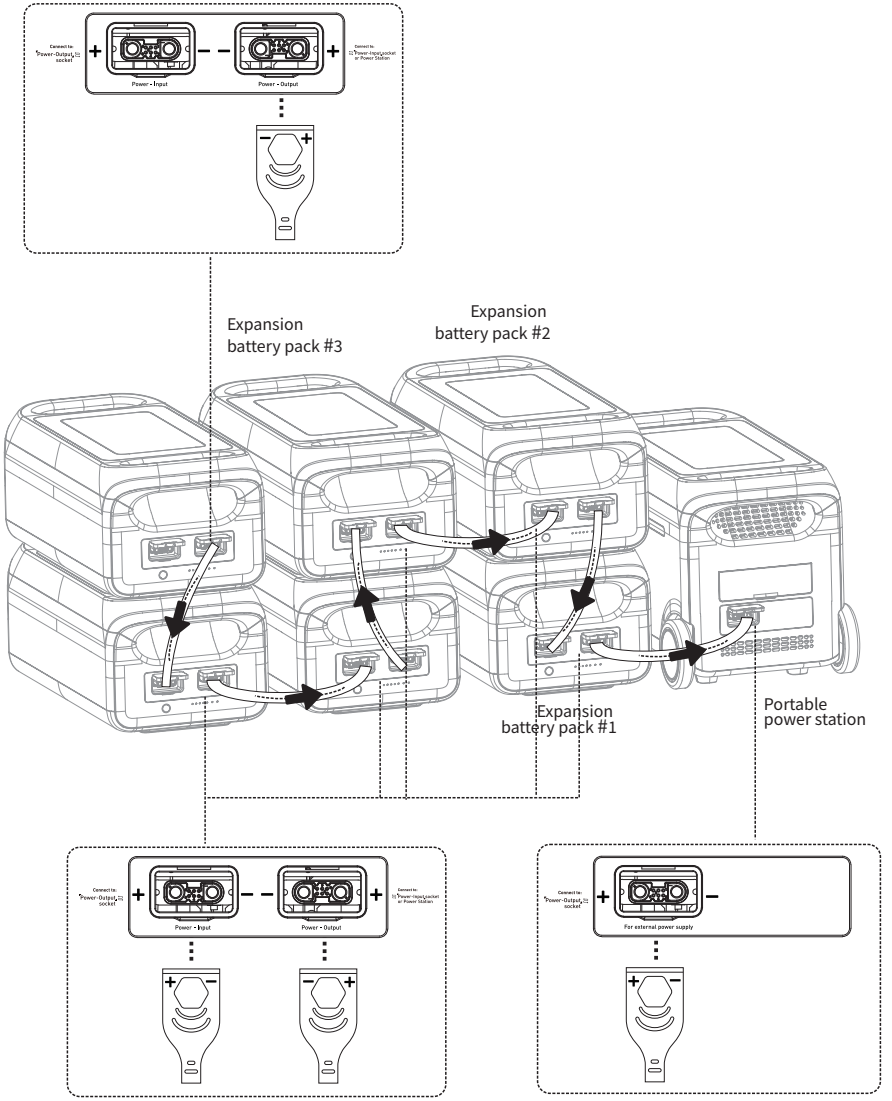
❶ Turn off all portable power station and expansion battery packs to be paralleled.

❷ The parallel connection cable is plugged into the expansion port of the portable power station and the Power Output of Expansion Battery Pack#1, the Power Input of Expansion Battery Pack#1 is connected to the Power Output of Expansion Battery Pack#2, the Power Input of Expansion Battery Pack#2 is connected to the Power Output of Expansion Battery Pack#3, and so on for up to six expansion battery packs in parallel.



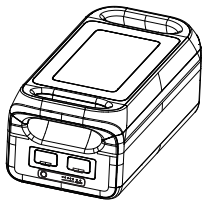
❸ After the parallel connection is completed, press the switch button ⏻ of the portable power station to wake up the parallel portable power station and the expansion battery pack to display the current power level and the current number of parallel expansion battery packs and the parallel expansion is successful.

❹ After the parallelization is completed, connect the corresponding outlet of the portablepower station to charge or discharge (refer to the Power Station User Manual 3.3, 3.4, 3.5 and 3.6).

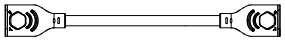



**Remark:** There are + and – symbols on battery packs and cables in case of reverse polarities.

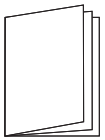
## 5. What's in the box?



Expansion battery pack



Expansion cable



User manual

## 6. FAQs

**1. What kind of battery is used?**

Lithium iron phosphate battery（$LiFePO_4$）.

**2.How to know the supply time?**

The LED screen of the portable outdoor power station displays the charge level of the expansion pack.

**3. How to know it is charging?**

When in charge, the power indicators will flash to showing the charging state.

**4. How to clean the product?**

Clean the unit with a dry, soft and clean cloth or tissue.

**5.How to store the unit?**

Turn it off, and keep it in a dry and ventilated place. Do not expose it close to water. For long-term storage, charge and discharge every 3 months. (i.e. discharge to 0% then charge to 100%, then discharge to 60% for long-term storage.)

**6. Can it be taken on board?**

No.



## 7. Maintenance

・Keep it away from water, heater and metal parts.

・ It is recommended to use or store expansion battery pack under 20~30°C ambient temperature.

・ For long-term storage, charge and discharge every 3 months (i.e. discharge to 0% then charge to 100%, then discharge to 60% for long-term storage); products that have not been charged and discharged for more than 6 months are not warranted.

・For safety, do not store expansion battery pack with temperature above 45°C or below -10°C.

・If the capacity is seriously insufficient and idle time is too long, the product will enter deep sleep mode, and the product can only be used after being charged.

## 8. Disclaimer

Before using the power station expansion battery pack, please read this user manual to ensure understanding and proper use. After reading the user manual, please keep it well for future reference. Improper operation may cause serious injury to yourself or others, or result in product damage and property loss. Once using expansion battery pack, you are deemed to have understood and accepted all terms and contents herein. Users promise to be responsible for their actions and all consequences arising therefrom. We shall not be liable for any loss arising from user' s not following this user manual.

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