MOBILE POWER BANK MPB42 MANUAL



3 Ang Mo Kio Street 62 #01-05 Link@AMK Singapore 569139
Tel: (65) 6752 2282
Email: enquiries@nutechequipment.com.sg

Overview

This product is named Mobile Power Bank MPB42, which is mainly an energy storage device that provides power for emergency rescue, engineering construction, peak and valley adjustment and other scenarios.

Purpose

This operation manual is suitable for MPB42 and is designed to guide users on proper installation, operate and maintain the equipment to ensure its safe use and stable performance. Users should carefully study all the content before using it and strictly follow the instructions.

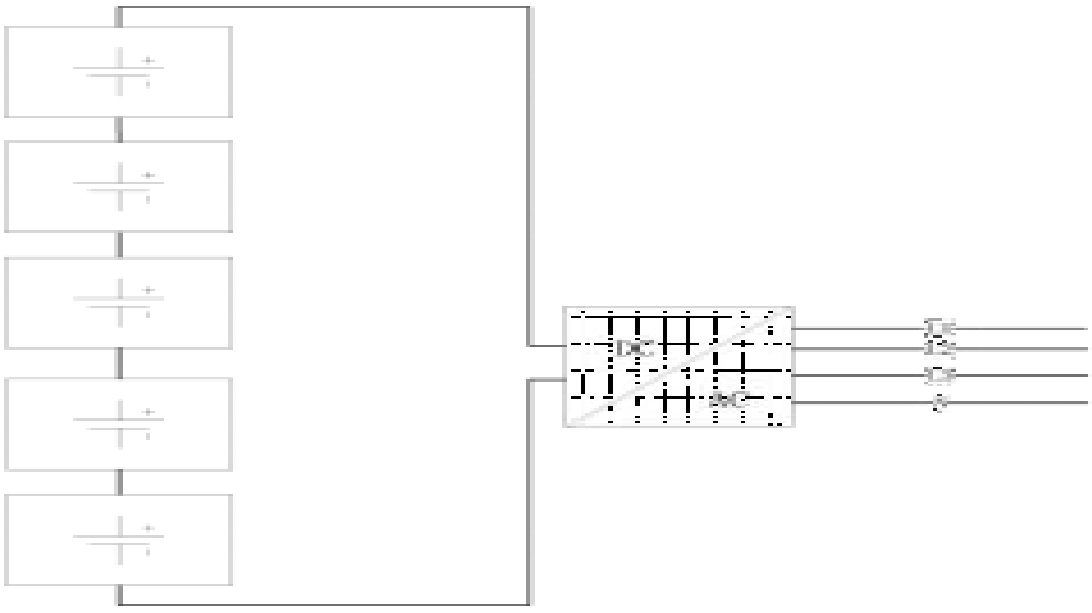
Composition

The Mobile Power Bank MPB42 is mainly composed of PCS power supply, battery module and distribution circuit. Among them, the battery module contains 7 battery packs, BMS management system and fire protection system. The overall appearance of the mobile power station is a cuboid box structure, white in color, and 4 high-load-bearing casters are installed at the bottom, which is convenient for mobile transportation and can achieve flexible operation.

The operation panel is equipped with a display screen, through which the charging and discharging operation can be carried out, and the operating status and various parameters of the mobile power station can be viewed. The mobile power station is equipped with 1 x 380V63A industrial waterproof socket and 3 x 220V 16A industrial waterproof socket, which supports simultaneous multi-load operation. Its charging method can be charged with the help of national standard charging piles, or AC 380V mains power and AC 220V mains power can be used for charging. The physical form is as follows:

Operation Principle

The MPB42 is a portable power supply device with a high-performance battery pack at its core, which can store electrical energy efficiently. During operation, the direct current (DC) stored by the battery pack is converted into alternating current (AC) power that meets the customer's electricity needs through the Power Conversion System (PCS). The working principle of the whole system can be summarized as follows: first, the battery pack completes the power storage and then realizes the conversion from DC to AC through PCS and finally outputs stable and reliable AC power for customers to use. The following figure shows a simple principal schematic of the system;

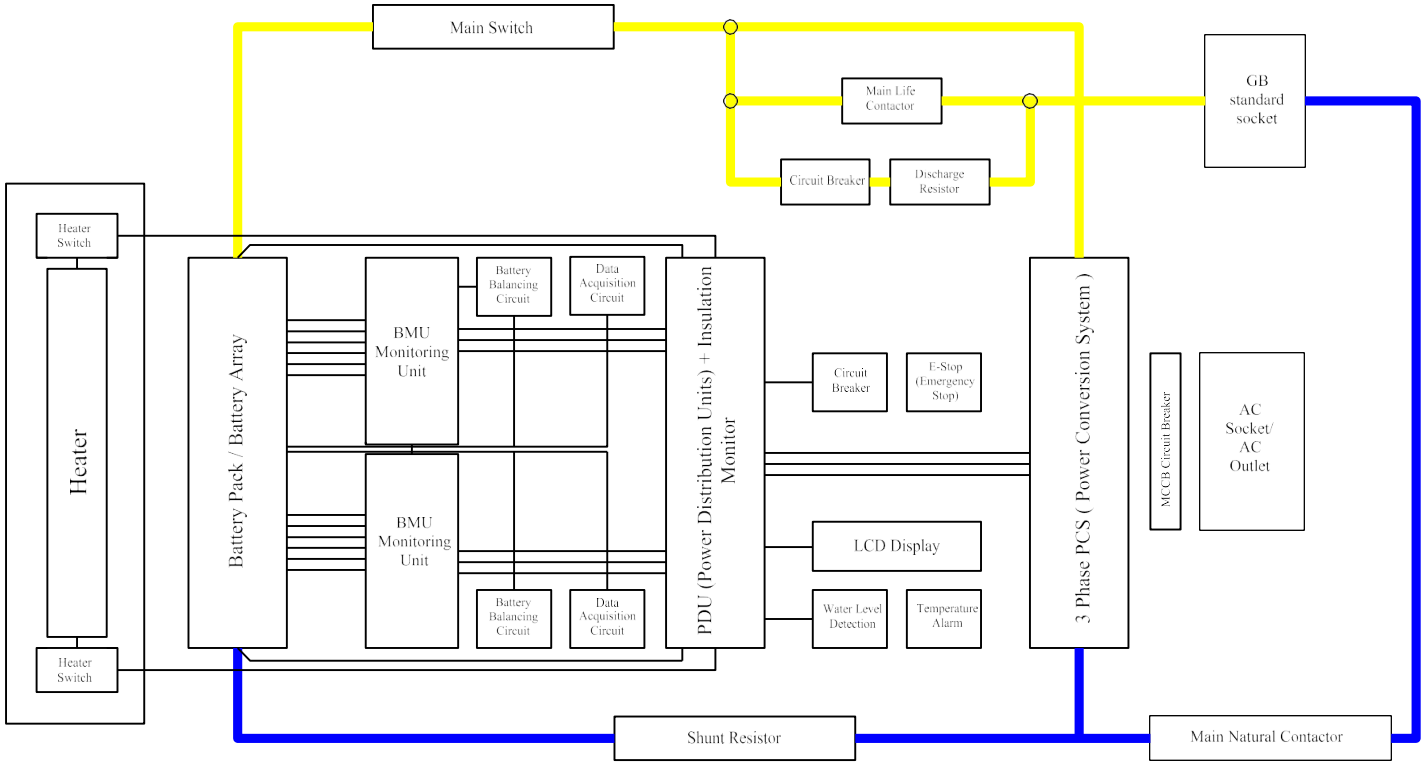


Technical parameters

The performance indicators of mobile power stations directly affect the reliability and stability of the power supply system.
The main technical parameters of this mobile power station cover key performance indicators such as power output, operating characteristics, and physical size, which will be used as an important basis for equipment selection and operation and maintenance. The specific technical parameters are shown in the following table:

Description	Detailed Parameters	Remarks
Total capacity	42 kWh	7 battery packs connected in series
Individual battery inclusion	5.76kWh	Battery pack method: 1P18S
Prepare the total weight	≤480 kg	
Rules	1050 x 750 x 12500 mm	Valuation
Charging method	AC 220V / 380V	
lose	220V AC / 50 Hz | 3 interfaces 380V AC / 50 Hz | 1 interface	
battery	Lithium iron phosphate LFP100A	
Cell cycle	After 4000 cycles capacity > 80% initial	25℃
Depth of charge and discharge	95%	
Storage temperature	-20℃ ~ +45℃	
Power rating	30 kW	
Protection level	IP54	
Cooling method	Forced air-cooling (self-regulating)	

Product Circuit Structure Diagram



Basic Parameter Soft the battery Module

The battery module system adopts a modular design, consisting of 7 standardized battery pack units, and each battery pack is equipped with 5 high-precision temperature control sampling points to monitor the battery working status in real time. In order to improve safety, a passive fuse safety device is integrated into the module, which immediately cuts off the circuit when an external short circuit is detected, effectively preventing accidents.

Each battery pack is equipped with an advanced thermal aerosol fire extinguishing system, which automatically triggers the fire extinguishing mechanism when the risk of abnormal battery heating or thermal runaway is detected, achieving dual protection of rapid-fire extinguishing and active cooling. The battery pack uses high-performance lithium-ion cells, and its detailed specifications are shown in the table below:

NO.	Items	Specification	Remarks
1	Rated capacity	100Ah	0.5C | (25±2℃ | 2.5-3.65V
2	Rated energy	320Wh	0.5C | (25±2℃ | 2.5-3.65V
3	Charging Cut-off Voltage	3.65V	
4	Discharge cut-off voltage	2.5V	0℃ < T ≤60℃
		2.0V	-30℃ < T ≤0℃
5	Shipmentstatus	~30%SOC	
6	ACR	≤0.5mΩ	25℃ | 1kHz | 30%SOC
7	Battery weight	2000 ± 150g	NA
8	Nominal voltage	3.2V	NA
9	Standard charging rate	0.5C	50A
10	Standard discharge rate	0.5C	50A
11	Residual Capacity Loss	≤3.0%	25℃ ± 2℃
		≤3.0% / month	
12	Storage Temperature	-30℃ ~ 45℃	Storage ambient humidity ≤80% RH, no condensation Storage ambient humidity ≤ 80% RH, no condensation
13	Operation Temperature	-30℃ ~ 60℃	Discharge
		0℃ ~ 60℃	Charge
14	Cycle life	25℃ 0.5C / 0.5C 4000 Cycles	100% DOD | 80%SOH | 300±20kgf

Installation Environment & Site Requirements

The MPB42 must be installed at a well-ventilated, dry, and non-corrosive environment to ensure safe and stable operation. The installation site should be free from corrosive gases, excessive dust, or moisture that could adversely affect electrical components and battery performance.

The surrounding area of the equipment must be kept clear and orderly. Except for the necessary accessories and auxiliary components required for operation, no flammable or combustible materials are allowed within a radius of 10 meters around the equipment. This precaution significantly reduces the risk of fire and ensures compliance with safety standards.

The ground at the installation location must be flat, solid, and structurally stable, with sufficient load-bearing capacity to support the full weight of the mobile power station during operation and maintenance. Uneven or unstable ground may lead to vibration, tilting, or structural stress, which could affect internal components and long-term reliability.

In addition, the equipment should be protected from prolonged direct sunlight. Continuous exposure to sunlight for more than 2 hours should be avoided. The mobile power station must not be operated in environments where the ambient temperature exceeds 45 °C or where the relative humidity is higher than 85%, as such conditions may accelerate component aging, reduce battery life, and increase the risk of malfunction.

Grounding & Electrical Safety Requirements

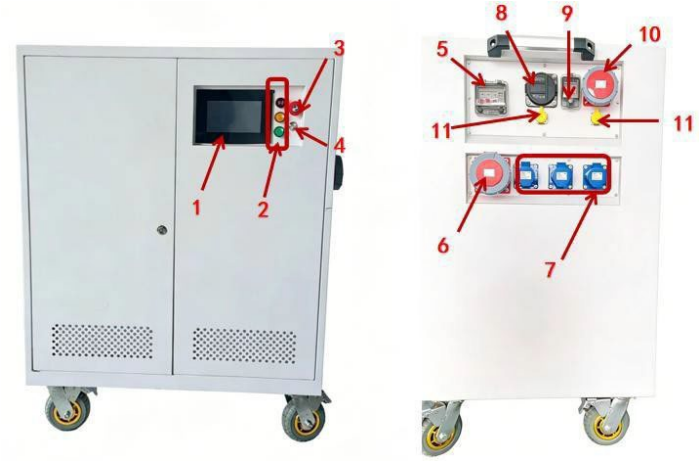
For electrical safety and system protection, the MPB42 must be provided with a dedicated grounding system. A separate grounding body is required, and the grounding resistance must not exceed 10 Ω to ensure effective fault current dissipation and personnel safety.

The grounding body should be installed at a distance of no more than 5 meters from the equipment to minimize grounding impedance. A special grounding core wire must be used for this purpose. Under no circumstances should the power supply cable or neutral conductor of the equipment be used as a grounding wire.

The grounding core wire must be securely and reliably connected to the metal enclosure of the mobile power station, ensuring a low-resistance electrical path. All grounding connections should be mechanically firm and protected against loosening or corrosion over time.

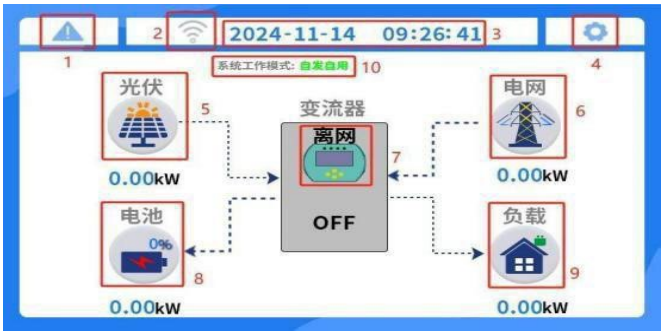
Finally, a clear and visible grounding identification mark should be installed on the equipment casing to indicate the grounding point. This marking facilitates inspection, maintenance, and safety verification, and helps ensure that grounding requirements are consistently followed during installation and operation.

Panel Introduction



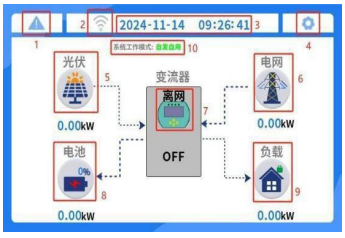
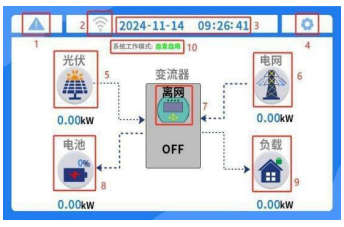
Function	Remarks
Display	The display screen is used to display the operation of the device Row status, parameter settings, and fault information.
Indicator light	A red light indicates a fault, a yellow light indicates an alarm, and a green light indicates normal operation.
Emergency stop switch	Emergency stop switches are used in emergency situations. Quickly cut off the power supply of the equipment to ensure safe operation.
button button	The start button is used to turn on the device, press it to turn on the display and self-test. Automatically enter the working state.
380V output drainage guarantee switch	63A leakage protection switch
380V output socket	5-hole 63A industrial aviation socket
220V output socket	3-hole 16A industrial aviation socket
DC charging dock	Used for DC charging piles
Start switch	Start the device and start the self-test, and enter the standby state after the self-test is completed
AC charging input	It supports 380V and 220V charging, and 220V charging can be directly L1 and N
Debug interface	It is used for maintenance and commissioning

Introduction to the display interface



Function	Remarks
Fault/alarm icon	When the fault/warning icon is gray, there is no warning, no fault. A warning is present when the fault/warning icon is yellow. When the fault/warning icon is red, there is a fault
WIFI icon	The WIFI icon shows if the communication stick is online. When the communication stick is online and the WiFi icon is blue, the communication stick is not online, and the WiFi icon is gray
Time display	Displays the current time
Set the keys	Click this button to enter the settings screen
Photovoltaic part	Including photovoltaic power, photovoltaic icon and energy flow, click the photovoltaic icon to enter the photovoltaic details interface
Grid section	Including grid power (positive value is converter consumption, negative value is converter discharge), energy current and grid icon, click the grid icon to enter the grid details interface
converter section	When the power is turned on (the converter icon is green) and when the power is turned off (the converter icon is gray), click the converter icon to enter the converter details screen
Battery section	Including battery power (positive value is discharge, negative value is discharge), energy flow, battery SOC and battery icon, click the battery icon to enter the battery details interface
Load section	Including load power, energy current, and load icons, click the load icon to enter the load details screen
Working mode section	Displays the current working mode of EMS in real time

Operating Instructions

<table>
<tr><td colspan="2">Equipment starts</td></tr>
<tr><td>1. Turn on the start switch (9) waterproof cover, toggle the start switch (9) up to the "NO" state, the BMS starts self-test, and after about 30S, the self-test is completed and enters the standby state</td><td>2. Open the operation panel of the device, press the start button, the display screen is turned on, EMS starts self-test, after the self-test is completed, it starts to run automatically about 30S;</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td colspan="2">The default operation mode is spontaneous self-use mode, when there is no mains power input, the battery power output is used; When connected to the mains, it automatically switches to grid-connected mode to charge the battery.</td></tr>
<tr><td colspan="2">Discharge operation</td></tr>
<tr><td>When the device is started, dial up the leakage protector on the output port</td><td>After the device is started, the corresponding output interface is inserted according to the voltage required by the load</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td colspan="2">The overall load power shall not be greater than 35kw, and it is recommended to use it from a 380V socket to the external distribution box.</td></tr>
<tr><td colspan="2">AC charging operation</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td colspan="2">220V charging intervene in the 220-volt power supply, of which the charging cable L1+N line, synchronously adjusts the parameters of spontaneous self-use in the display to -10kw.</td></tr>
<tr><td>
</td><td>
</td></tr>
</table>

AC charging operation

After starting the device, insert the charging cable of the charging pile into the national standard DC charging interface of the device, and after inserting the charging gun, follow the charging pile operation steps to charge;



Emergency shutdown operation



During the operation of the equipment, if an emergency occurs during operation, or if the equipment is found to have abnormal conditions or faults, immediately press the emergency stop button (3) of the equipment to disconnect the load and mains power and stop the operation of the equipment. After emergency shutdown, the source of the fault of the equipment should be checked in time
and repair or replace parts.

Turn off the machine and pay attention to the matter

1. Close the external closed load first;
2. Disconnect the output leakage switch;
3. Press the start button (4) to reset and turn off the display; 4, disconnect the start switch (9) to complete the power-down.

Charging Procedure

1. Ensure the unit is powered off before charging.
2. Connect the charging plug of the dedicated external charger to the charging port located at the rear of the unit.
3. Connect the charger to an AC 220V / 50Hz power source.
4. Charging will start automatically.
5. A full charge from 0% to 100% typically requires approximately 9 hours, depending on operating conditions.
6. Once fully charged, disconnect the charger from the power source and then from the unit.

Important:

Use only the specified charger provided or approved by the manufacturer.

Do not charge the unit in high-temperature, high-humidity, or poorly ventilated environments.

Storage Specifications

Correct storage conditions are essential to maintain battery safety, electrical performance, and service life of the unit.

Temperature Requirements

- Optimal storage temperature:
  15°C to 25°C
  This temperature range ensures stable electrochemical performance and minimizes battery aging.
- Permissible storage temperature range:
  −20°C to +50°C

Important considerations

- Long-term storage below 0°C is not recommended, as low temperatures may cause permanent capacity degradation and electrolyte performance deterioration.
- Long-term storage above 35°C is not recommended, as high temperatures accelerate battery aging and may result in cell swelling or electrolyte leakage.
- When storage temperature exceeds 35°C, regular inspection is mandatory.

Humidity Requirements

- Recommended ambient relative humidity: 30% to 70% RH

Humidity Range	Condition
30% – 50% RH	Optimal, battery performance remains stable
50% – 70% RH	Acceptable, periodic inspection and moisture protection required
> 70% RH	Not recommended; may cause insulation degradation, corrosion, or short circuits

Other Environmental Conditions

- Storage area must be dry and well ventilated
- Free from corrosive gases, conductive dust, and chemical vapours
- Avoid direct sunlight, rain exposure, and water ingress
- Keep away from open flames, heat sources, flammable, and explosive materials

Battery State of Charge (SOC Requirements)

Short-Term Storage (≤ 6 Months)

- The unit may be stored in a charged condition; however, prolonged full charge or deep discharge must be avoided.
- Recommended storage SOC: 40% – 60%

This SOC range minimizes internal stress on the battery and extends service life.

Long-Term Storage (> 6 Months)

- Charge the battery to 50% – 70% SOC before storage.
- Store the unit in a cool, dry, and ventilated environment.
- Recharge the battery every 3 months to compensate for self-discharge.

Emergency Treatment

Initial Fire (Small and Controllable)

- Immediately power off the unit and disconnect electrical equipment.
- Use a dry powder fire extinguisher from a safe distance.
- Remove nearby flammable materials to prevent fire spread.

Fire Out of Control or Explosion Risk

- Evacuate all personnel to a safe distance (minimum 50m).
- Contact emergency services immediately and report a battery fire.
- Do not approach the equipment due to the risk of thermal runaway and re-ignition.

Battery Electrolyte Leakage

Personal Protection

- Wear rubber gloves, safety goggles, and respiratory protection.
- Avoid direct skin or eye contact with electrolyte.
- Ensure adequate ventilation.

Leakage Handling

- Absorb leaked electrolyte using sand or absorbent material.
- Place waste material into an explosion-proof container.
- Maintain ventilation to prevent gas accumulation.

Electric Shock Risk

- If power cannot be disconnected, use insulated tools to separate the victim from the equipment.
- Perform CPR if necessary and call emergency services immediately.
- Seek medical attention even if no visible injury is present.

Leakage Investigation

- Stop operation and display a “Do Not Use” warning.
- Have a licensed electrician inspect insulation, grounding, and circuit integrity.
- Measure insulation resistance before re-energizing.

Equipment Overheating

Emergency Shutdown

- Power off immediately and disconnect charger if charging.
- Move the unit to an open, well-ventilated area away from flammable materials.

Cooling and Monitoring

- Do not apply water directly.
- Allow natural cooling and observe for signs of fire or explosion.
- Do not dismantle the unit during overheating conditions.

Conclusion

The Mobile Power Bank MP42 is a fully integrated, safe, and reliable new-energy power system designed for professional and industrial applications.

This manual provides comprehensive guidance on storage, operation, maintenance, troubleshooting, safety precautions, and emergency handling. Strict compliance with these instructions is essential to ensure safe operation, optimal performance, and extended service life.

Any repair, inspection, or modification involving internal electrical components or the battery system must be carried out by authorized and qualified personnel only.

For unresolved issues or conditions not covered in this manual, please contact the manufacturer or authorized service provider.