# POWERBOX F

## User Manual

# Content

Statement of Law ..... 1

Safety Precautions ..... 2

Preface ..... 3

1 Introduction ..... 4
1.1 Brief Introduction ..... 4
1.2 Product Properties ..... 4
1.3 Product identity definition ..... 5

2 Product Specification ..... 6
2.1 Size and Weight ..... 6
2.2 Performance Parameter ..... 6
2.3 Interface Definition ..... 6
2.4 Battery Management System(BMS) ..... 8
2.4.1 Voltage Protection ..... 8
2.4.2 Current Protection ..... 9
2.4.3 Temperature Protection ..... 9
2.4.4 Other Protection ..... 9

3 Installation and Configuration ..... 10
3.1 Ready for installation ..... 10
3.1.1 Environmental requirements ..... 10
3.1.2 Tools and data ..... 11
3.1.3 Technical preparation ..... 11
3.1.4 Open the box to have inspection ..... 12
3.1.5 Engineering coordination ..... 13
3.2 Equipment installation ..... 13
3.2.1 Floor installation ..... 14
3.2.2 Mounted on the wall ..... 15
3.2.3 Electrical installation ..... 17

4 Use, maintenance and troubleshooting ..... 21
4.1 Battery system usage and operation instructions ..... 21
4.2 Alarm description and processing ..... 22
4.2.1 Alarm and countermeasure influence system output ..... 22
4.2.2 Alarm and countermeasure without affecting the output of the system ..... 22
4.3 Analysis and treatment of common faults ..... 23

# Statement of Law



This product complies with the design requirements of environmental protection and personal safety. The storage, use and disposal of the products shall be carried out in accordance with the product manual, relevant contract or relevant laws and regulations.

Customer can check the related information on the website of Jiangsu Daqin New Energy Technology Co., Ltd when the product or technology is updated.

Please note that the product can be modified without prior notice.

**Manual Version:** V1.0

**Manual NO.:**

**Revision History**

| Revision NO. | Revision Date | Revision Reason |
|---|---|---|
| 1.0 | 2019.02.01 | First Published |

# Safety Precautions

## Warning

- Please do not put the battery into water or fire, in case of explosion or any other situation that might endanger your life.
- Please connect wires properly while installation, do not reverse connect.
  To avoid short circuit, please do not connect positive and negative poles with conductor (Wires for instance).
- Please do not stab, hit, trample or strike the battery in any other way.
- Please shut off the power completely when removing the device or reconnecting wires during the daily use or it could cause the danger of electric shock.
- Please use dry powder extinguisher to put out the flame when encountering a fire hazard, liquid extinguisher could result in the risk of secondary disaster.
- For your safety, please do not arbitrarily dismantle any component in any circumstances unless a specialist or an authorized one from our company, device breakdown due to improper operation will not be covered under warranty.

## Caution

- We have strict inspection to ensure the quality when products are shipped out, however, please contact us if case bulging or other abnormal phenomenon.
- For your safety, device shall be ground connected properly before normal use.
- To assure the proper use please make sure parameters among the relevant device are compatible.
- Please do not mixed use batteries from different manufacturers, different types and models, as well as old and new together.
- Ambient and storage method could impact the life span and product reliability, please consider the operation environment abundantly to make sure device works in proper condition.
- For long-term storage, the battery should be recharged once every 6 months, and the amount of electric charge shall exceed 80% of the rated capacity.
- Please charge the battery in 18 hours after it discharges fully and starts over-discharging protection.
  Formula of theoretical standby time: T=C/I (T is standby time, C is battery capacity, I is total current of all loads).

# Preface

## Manual declaration

POWERBOX F Lithium Iron Phosphate Battery is external battery module which can storage the power for home use. When the grid is on, it supplies the home loads and charges the battery meantime. When grid off, the battery discharges to power up the home loads.

POWERBOX F User manual systematically elaborates device structure, parameters, basic procedure and method of installation, operation, maintenance.

## Safety Statement

- Only qualified trained professionals are allowed to install, operate, maintain the device.
- Please comply with local safety regulations and operational rules when installation, operation and maintenance, or it could lead to human injury or device damage.
- Mentioned attentions are only as a supplement to local safety regulations.
- The seller does not undertake any responsibility for device operations or usage violating general safety requirements and safety standards.

## Sign explanation

Attention should be paid when configuring or operating POWERBOX-F series products, which follows below format to explain.

 **Caution**

Neglecting the warnings might cause malfunction.

# 1 Introduction

## 1.1 Brief Introduction

POWERBOX F series lithium iron phosphate home battery is newly power storage products designed according to market demands, supplies reliable power for all kinds of home equipment. It is especially suitable for situations with higher temperatures, less space, higher demand of weight and life span.

POWERBOX F series lithium iron phosphate home battery carries self-developed battery management system. When the grid is on, it supplies the home loads and charges the battery meantime. When grid off, the battery discharges to power up the home loads. Batteries can be paralleled to build a module with more capacity to satisfy the longtime energy storage demand.

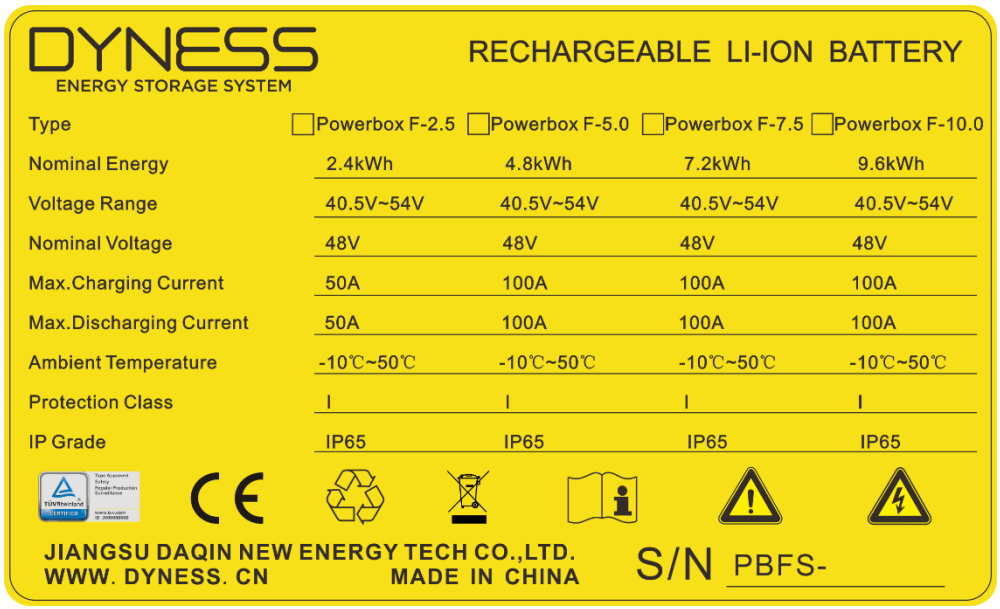
## 1.2 Product Properties

POWERBOX-F series energy storage product's anode materials are lithium iron phosphate, battery cells are managed effectively by BMS with better performance, the systems features as below:

- Comply with European ROHS, Certified SGS, employ non-toxic, non-pollution environment-friendly battery.
- Anode materials are lithium iron phosphate (LiFePO4), safer with longer life span.
- Carries battery management system with better performance, possesses protection function like over-discharge, over-charge, over-current, abnormal temperature.
- Self-management on charging and discharging, Single core balancing function.
- Intelligent design configures integrated inspection module, with 3 remote functions (remote-measuring, remote-communicating and remote-controlling).
- Flexible configurations allow parallel of multi battery for longer standby time.
- Self-ventilation with lower system noise.
- Less battery self-discharge, then recharging period can be up to 10 months during the storage.
- No memory effect so that battery can be charged and discharged shallowly.
- With wide range of temperature for working environment, -20$^{o}$C ~ +55 $^{o}$C, circulation span and discharging performance are well under high temperature.
- Less volume, lighter weight, seal grade up to IP65 embedding design for easier installation and maintenance.

## 1.3 Product identity definition

FIG1-1 Battery Energy Storage System nameplate




| | |
|---|---|
|  | **Battery voltage is higher than safe voltage, direct contact with electric shock hazard.** |
|  | **Be careful with your actions and be aware of the dangers.** |
|  | **Read the user manual before using.** |
|  | **The scrapped battery cannot be put into the garbage can and must be professionally recycled.** |
|  | **After the battery life is terminated, the battery can continue to be used after it recycled by the professional recycling organization and do not discard it at will.** |
|  | **This battery product meets European directive requirements.** |
|  | **This battery product passed the TUV certification test.** |

# 2 Product Specification

## 2.1 Size and Weight

Table 2-1 POWERBOX F Series Device Model

| Product Series | Specification Model | Nominal Voltage | Nominal Capacity | Dimension (mm) | Weight (kg) | IP Level |
|---|---|---|---|---|---|---|
| POWERBOX | POWERBOX F-10 | 48V | 200Ah | 928×555×210 | 113 | IP65 |
| POWERBOX | POWERBOX F-7.5 | 48V | 150Ah | 928×555×210 | 91 | IP65 |
| POWERBOX | POWERBOX F-5.0 | 48V | 100Ah | 928×555×210 | 69 | IP65 |
| POWERBOX | POWERBOX F-2.5 | 48V | 50Ah | 928×555×210 | 47 | IP65 |

## 2.2 Performance Parameter

Table 2-2 POWERBOX F performance parameter

| Item | POWERBOXF -2.5 | POWERBOX F -5.0 | POWERBOX F -7.5 | POWERBOX F -10.0 |
|---|---|---|---|---|
| **Nominal Voltage(V)** | 48 | 48 | 48 | 48 |
| **Work Voltage Range(V)** | 40.5~54 | 40.5~54 | 40.5~54 | 40.5~54 |
| **Nominal Capacity(Ah)** | 50 | 100 | 150 | 200 |
| **Nominal Energy(kWh)** | 2,4 | 4.8 | 7.2 | 9.6 |
| **Nominal Power(kW)** | 0.7 | 1.5 | 2.2 | 2.9 |
| **Max Power(kW)** | 2.4 | 4.8 | 4.8 | 4.8 |
| **3S Peak Power(kW)** | 2.6 | 5.5 | 7.2 | 9.6 |
| **3S Peak Current(A)** | 55 | 115 | 150 | 200 |
| **Charging Current(A)** | 15 | 30 | 45 | 60 |
| **Discharge Current(A)** | 15 | 30 | 45 | 60 |

## 2.3 Interface Definition

This section elaborates on interface functions of the front panel of the device.

Figure2-1 POWERBOX F the sketch of front interface.

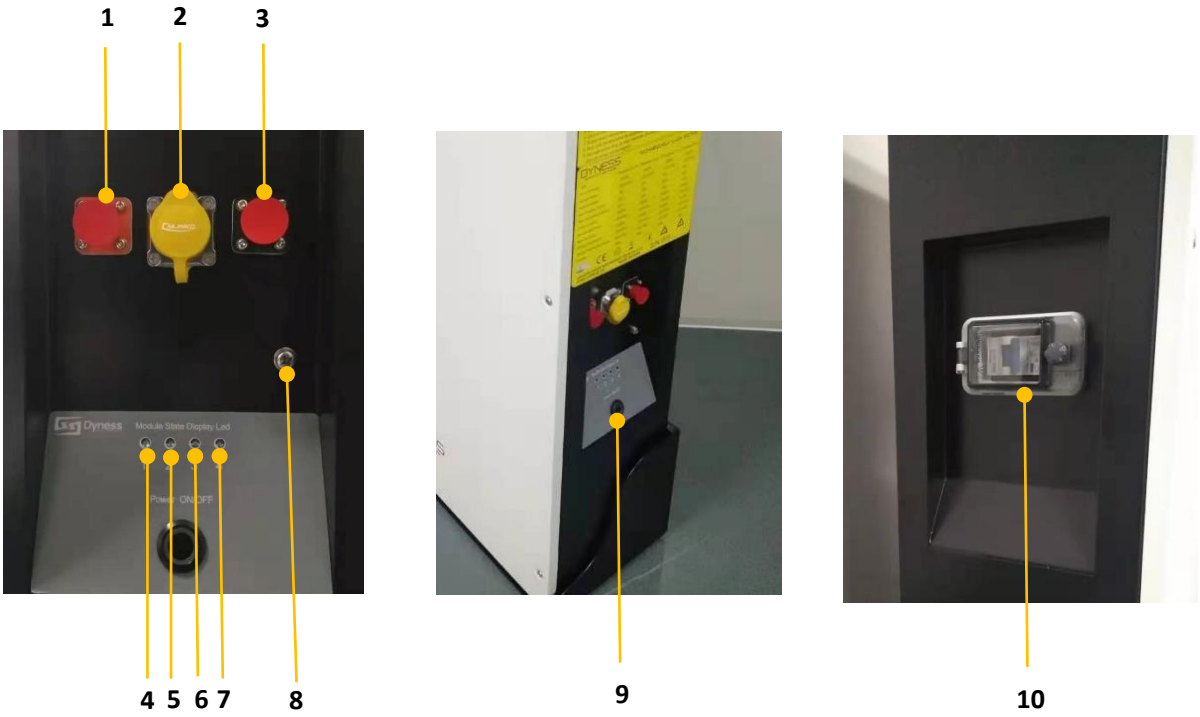



Table 2-3 Interface Definition

| Item | Name | Definition |
|---|---|---|
| **1** | Positive socket | The battery DC output positive pole, which is connected to the positive pole of the inverter through the cable |
| **2** | COM | The CAN/RS485 socket is connected to the inverter CAN/RS485 interface through the network wire<br>(Factory default CAN communication mode) |
| **3** | Negative socket | The battery DC output negative pole, which is connected to the negative pole of the inverter through the cable |
| **4** | LED1 | Module 1 status indicator light |
| **5** | LED2 | Module 2 status indicator light |
| **6** | LED3 | Module 3 status indicator light |
| **7** | LED4 | Module 4 status indicator light |
| **8** | Ground connection point | Shell ground connection |

| Item | Name | Definition |
|---|---|---|
| **9** | Reset switch | Press the switch and the battery system turn on.<br>When the battery is in the nonuse state such as storage, transportation etc., it needs to be turn off by pressing the Reset/on-off button, and the battery system will automatically sleep after the device without external load and power for 24 hours. |
| **10** | DC circuit breaker | Protective circuit |

Table 2-4 LED status indicators

| Battery Status | Protection /Alarm/ Normal | | | | | Explanation |
|---|---|---|---|---|---|---|
| Shutdown | | off | off | off | off | All off |
| Standby | | off | off | off | off | Activated when charging |
| Operation | Normal | ● | ● | ● | ● | Green led on or blinking slowly |
| | Alarm | ● | ● | ● | ● | Yellow led on(10%<SOC<30%) |
| | Protection | ● | ● | ● | ● | Red led on |

## 2.4 Battery Management System(BMS)

### 2.4.1 Voltage Protection

**Discharging Low Voltage Protection：**

When any battery cell voltage is lower than the protection value during discharging, the over-discharging protection starts, battery stops supplying power to the outside. When the voltage of each cell recover to rated return range, the protection is over.

**Charging Over Voltage Protection：**

When total voltage or any battery cell voltage reaches the protection value during charging, battery stops charging. When total voltage or a cell recover to rated return range, the protection is over.

### 2.4.2 Current Protection

**Over Current Protection in Charging：**

Device stops charging when charging current exceeds the protection value.
Protection is over after rated time delaying.

**Over Current Protection in Discharging：**

Device stops discharging when discharging current exceeds the protection value.
Protection is over after rated time delaying.

### 2.4.3 Temperature Protection

**Less/Over temperature protection in charging：**

When battery's temperature is beyond range of 0℃~+55℃during charging, temperature protection starts, device stops charging.
The protection is over when it recovers to rated return range.

**Less/Over temperature protection in discharging：**

When battery's temperature is beyond range of -20℃~+55℃ during discharging, temperature protection starts, device stops supplying power to the outside.
The protection is over when it recovers to rated return range.

### 2.4.4 Other Protection

**Short Circuit Protection：**

When the battery is activated from the off state, if a short circuit occurs, the DC circuit breaker will act first. If the DC circuit breaker does not operate, the BMS will start the short circuit protection function and cut off the external voltage output.

**Self Shutdown：**

When device connects no external loads for over 24 hours, device will dormant standby automatically.

## Caution

Battery’s maximum discharging current should be more than load’s maximum working current

# 3 Installation and Configuration

## 3.1 Ready for installation

### Safety Requirement

This system can only be installed by personnel who have been trained in the power supply system and have sufficient knowledge of the power system.
The safety regulations and local safety regulations listed below should always be followed during the installation.

- All circuits connected to this power system with an external voltage of less than 48V must meet the SELV requirements defined in the IEC60950 standard.
- If operating within the power system cabinet, make sure the power system is not charged. Battery devices should also be switched off
- Distribution cable wiring should be reasonable and has the protective measures to avoid touching these cables while operating power equipment.
- when installing the battery system, must wear the protective items below:

The isolation gloves

Safety goggles

Safety shoes

### 3.1.1 Environmental requirements

Working temperature: -20 ºC ~ +55 ºC

- Charging temperature range is 0ºC~+55 ºC,
- Discharging temperature range is -20 ºC ~+55 ºC

Storage temperature: -10 ºC ~ +35 ºC
Relative humidity: 5% ~ 85%RH
Elevation: no more than 4000m
Operating environment: no conductive dust and corrosive gas sites

- Installation location should be away from the sea to avoid brine and high humidity environment.
- The ground is flat and level.
- There is no flammable explosive near to the installation places.

- The optimal ambient temperature is 15ºC ~ 30 ºC
- Keep away from dust and messy zones

### 3.1.2 Tools and data

Hardware tool

Tools and meters that may be used are shown in table 3-1.

Table 3-1 Tool instrument

| **Name** | |
|---|---|
| Screwdriver (word, cross) | AVO meter |
| wrench | clamp meter |
| Inclined pliers | Insulating tape |
| Needle nose pliers | The thermometer |
| Clip forceps | wrist strap |
| Wire stripper | AVO meter |
| Electric drill | Tape |

### 3.1.3 Technical preparation

**Electrical interface check**

Devices that can be connected directly to the battery can be user equipment, power supplies, or other power supplies.

- Confirm whether the user equipment, the PV equipment or other power supply equipment has the DC standby interface, and measure whether the output voltage of the standby interface meets the requirements of the voltage range of table 2-2
- Verify that the maximum discharge current capacity of the user equipment, the PV equipment or other power supplies, the DC standby interface, and the maximum discharge current shall be greater than the maximum charging current of the products used in table 2-2.
- If the user equipment DC prepared interface maximum discharge capacity is less than the maximum charging current products using table 2-2, the user interface should have the power equipment of DC current limiting function, give priority to ensuring the normal work of user equipment.

**The security check**

- Firefighting equipment should be provided near the equipment, such as portable dry powder fire extinguisher.
- Automatic fire fighting system shall be provided for the case where necessary.
- No flammable, explosive and other dangerous articles are placed beside the battery.

### 3.1.4 Open the box to have inspection

- When the equipment arrives at the installation site, loading and unloading should be carried out according to the rules and regulations, so as to prevent from being exposed to sun and rain.
- Before unpacking, the total number of packages shall be indicated according to the shipping list attached to each package, and the case shall be checked for good condition.
- In the process of unpacking, handle with care and protect the surface coating of the object.
- Open the package, the installation personnel should read the technical documents, verify the list, according to the configuration table and packing list, ensure objects are complete and intact, if the internal packing is damaged, should be examined and recorded in detail.

Packing list is as follows:

| | | |
|---|---|---|
|  <br>Battery×1 |  <br>Battery bracket ×1 |  <br>Fixed support×2 |
|  <br>M6 bolt ×8<br>fix battery bracket and fixed support |  <br>Power cable ×2<br>connect battery with inverter |  <br>M6 3 sets of combined screws x 1<br>Ground wire |

| | | |
|---|---|---|
|  OT6-6 terminal×1 |  Positioning cardboard×1 |  Expansion screw ×8 |

### 3.1.5 Engineering coordination

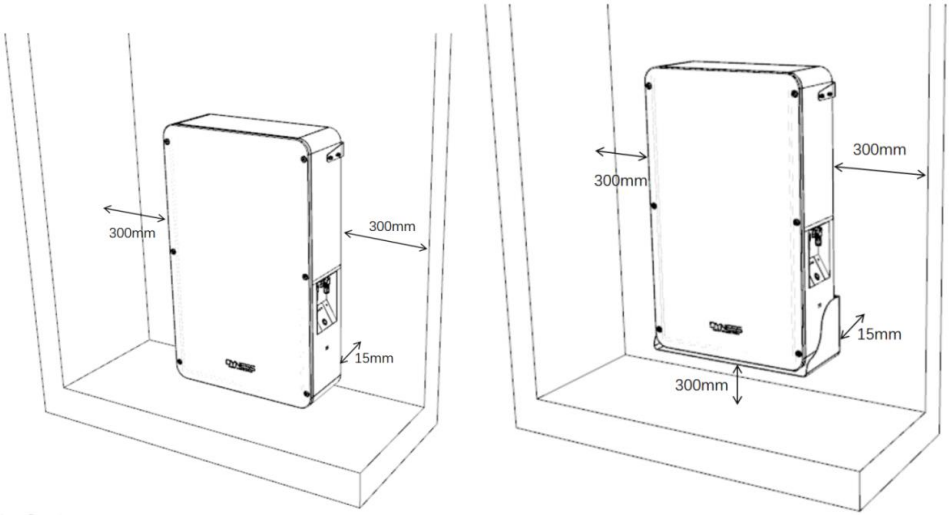
Attention should be paid to the following items before construction:

- Power line specification.
- The power line specification shall meet the requirements of maximum discharge current for each product.
- Mounting space and bearing capacity.
- Make sure that the battery has enough room to install, and that the battery rack and bracket have enough load capacity.
- Wiring.
- Make sure the power line and ground wire are reasonable. Not easy to short-circuit, water and corrosion.

## 3.2 Equipment installation

The wall for battery installation shall be solid brick or cement wall with strong bearing capacity and wall thickness no less than 100mm.

Mounting space requirements：




Floor installation　　Mounted on the wall installation

Table 3-2 Installation steps

| | | |
|---|---|---|
| **Step1** | System outage | Ensure that the battery is in a shutdown state |
| **Step 2** | Mechanical installation | 1. Hanger mounting |
| | | 2.Equipment installation |
| **Step3** | Electrical installation | 1. Connect the ground cable |
| | | 2 Electrical installation |
| | | 3.connect inverter |
| | | 4.Communication interface connection |

### 3.2.1 Floor installation

When the battery system is placed directly on the ground, a fixed support must be used to fix the top of the battery box with the wall.

1. Draw the hole opening position of the screw on the wall with the positioning board supplied with the goods, such as the four holes in the left picture.
2. The bottom of board must be good connection with the ground level while drawing the holes.


3. 4 holes with diameter of 10mm shall be opened on the wall with electric drill according to the marked position, and the hole depth shall be greater than 70mm to fit the expansion bolts of M6.

4. Fix the expansion bolt M6 into the bottom of the hole on the wall.
5. The bracket is fixed to the wall with M6 bolts to control the torque of 6NM.

6. Carry the battery box to the installation site, and put the battery to the wall of 15mm, fixing the hanger and the upper part of the battery box with M6 bolts.

### 3.2.2 Mounted on the wall

The following accessories need to be added when mounted the battery on the wall.

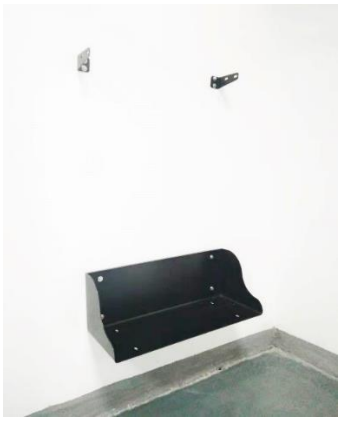
Battery bracket ×1

Expansion screw ×4

Installation procedure


1. Drawing on the screw opening position by cardboard, such as the left picture.
2. The cardboard must be perpendicular to the ground while drawing the holes.
3. The bottom of the cardboard is about 300mm from the ground.

4. According to the position of the mark, 8 holes in diameter 10mm and depth of more than 70mm are hit on the wall with an electric drill, which are used for fitting expansion bolt M6.



5. Fix the expansion bolt M6 into the bottom of the hole on the wall, and fix upper bracket and bottom support plate on the wall with M6 bolts, twisting force keeps 6NM.

6. Carry or hoist the battery box to the installed bracket. Fixing the hanging and the upper part of the battery box with M6 bolts, twisting force keeps 6NM.

### 3.2.3 Electrical installation

Before connecting the power cables, using multimeter to measure cable continuity, short circuit, confirm positive and negative, and mark well the cable labels.

Measuring methods：

- Switch off cables: select the buzzer and use the probe to measure the ends of the same color cable. If the buzzer calls, it means the cable is available.
- Short circuit judgment: choose multimeter resistor file, probe the same end of positive and negative pole, if the resistor shows infinity, means that the cable is available.
- After visual testing of power line is connected well, the positive and negative poles of the battery shall be connected respectively to the positive and negative poles of the opposite terminal.

**Connect the battery box to the ground cable**

Take out the M6 OT terminal and M6 bolts in the accessories package.

Ground the battery shell as shown below. The sectional area of the grounding cable shall be at least 6mm$^2$ and the bolt locking torque is 6NM.

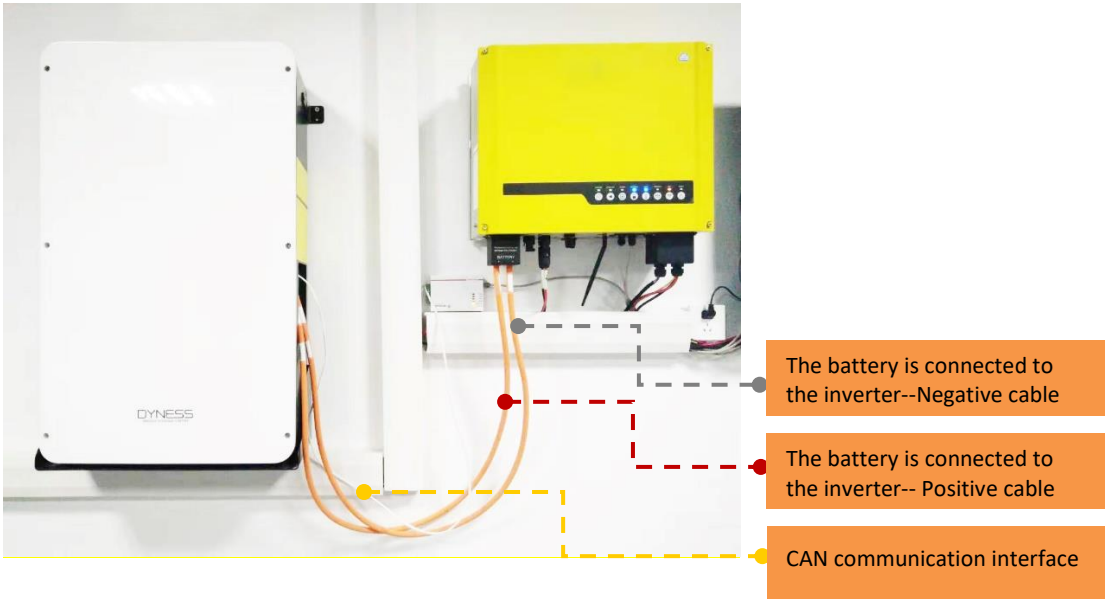

**Connected inverter**

**Note:**

If there is any question during installation, please contact your dealer to avoid damage to the equipment.

The battery is connected to the inverter with a dedicated power cable as follows:

The battery output terminal is the fast connector of Amphenol company, the power cable (positive pole, negative pole) plug can be directly inserted into the battery socket.
Power cable section 25mm$^2$.



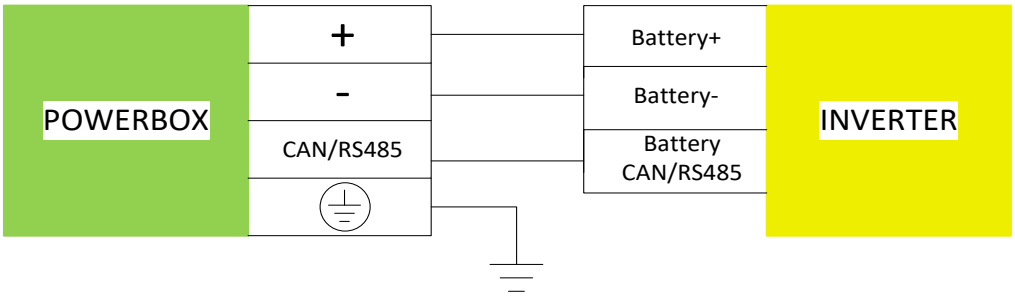




Table 3-3 Battery& Inverter power matching table

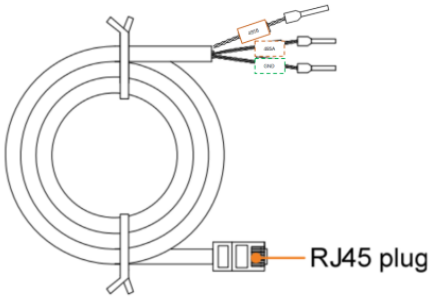
| Hybrid Inverter | Off-grid Inverter | B4850 | | Powerbox | |
|---|---|---|---|---|---|
| EPS(backup port) AC Output power | AC Output Power | Min. parallel number | System Energy (kWh) | Type | System Energy (kWh) |
| ≤2.5kW | | 1 | 2.4 | Powerbox F-5.0 | 2.4 |
| 2.5~5.0 kW | | 2 | 4.8 | Powerbox F-5.0 | 4.8 |
| 5.0~7.5 kW | | 3 | 7.2 | Powerbox F-7.5 | 7.2 |
| 7.5~10.0 kW | | 4 | 9.6 | Powerbox F-10.0 | 9.6 |
| 10~12.5 kW | | 5 | 12.0 | Powerbox F-5.0+Powerbox F-7.5 | 12.0 |
| 12.5~15.0 kW | | 6 | 14.4 | 2 * Powerbox F-7.5 | 14.4 |
| 15.0~17.5 kW | | 7 | 16.8 | Powerbox F-7.5+Powerbox F-10.0 | 16.8 |
| 17.5~20.0 kW | | 8 | 19.2 | 2 * Powerbox F-10.0 | 19.2 |

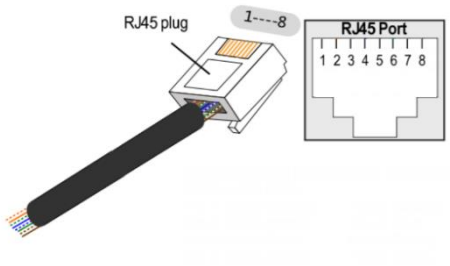
## Note:

- Before connection, the positive and negative pole of the inverter input interface and the battery output interface should be confirmed.
  The red power line is connected to the positive pole and the black power line is connected to the negative pole.
- Before connection, it is necessary to confirm the charge and discharge parameters of the inverter interface.
  Voltage and current should meet the requirements of table 2-2 battery performance parameters.

### Communication port interface

Using RJ45 network wire to connect the CAN port of the battery to the CAN communication interface of the inverter. Factory default CAN communication mode.
Alternatively, using RJ45 network wire to connect the RS485 port of the battery to the RS485 communication interface of the inverter.




| Foot position | Color | Definition |
|---|---|---|
| **PIN1** | Orange/white | 485A |
| **PIN2** | Orange | XGND |
| **PIN3** | Green/white | 485B |
| **PIN4** | Blue | CANH |
| **PIN5** | Blue/white | CANL |
| **PIN6** | Green | NC/NULL |
| **PIN7** | Brown/white | XIN |
| **PIN8** | Brown | NC/NULL |

# 4 Use, maintenance and troubleshooting

## 4.1 Battery system usage and operation instructions

After completing the electrical installation, follow these steps to start the battery system.

**1 Check whether the breaker is in disconnection.**

**2 Press the battery power button, the power button LED light is on, and 4 LED indicator light will turn on the green color after self-check.**


**Note:**

**After pressing the power button, if the battery status indicator on the front panel continues to be red, please refer to the "4.2 Alarm description and processing". If the failure cannot be eliminated, please contact the dealer timely.**

**3 Use the voltmeter to measure if the two circuit voltage of circuit breaker battery is greater than 37V, and check whether the voltage polarity is consistent with the**

**input polarity of the inverter. If the battery circuit breaker is connected with a voltage output greater than 37V, the battery has begun to work normally.**

4 **After confirming that the battery output voltage and polarity are correct, turn on the inverter, then close the circuit breaker switch.**

5 **Check whether the indicator light of the inverter and the battery connection (the communication indicator and the battery access status indicator) is in normal condition. If normal, the connection between the battery and the inverter is completed. If there is an abnormity in the indicator light, please check the reason or contact the local dealer with the inverter manual.**

## 4.2 Alarm description and processing

When protection start or failure, the ALM indicator on the front panel will alarm, through net management can query specific alarm class and take appropriate action.

### 4.2.1 Alarm and countermeasure influence system output

In the system, if the fault of influence output occurs for a single battery, please follow table 4-1 processing if output of fault appears such as over-voltage, charge over-current, under-voltage protection, high-temp protection and other abnormalities

Table 4-1 Main alarm and Protection

| Statue | Alarm category | Alarm indication | Processing |
|---|---|---|---|
| Charging state | Cell over-voltage | RED | Stop charging and find out the cause of the trouble |
| | Over-current | RED | Stop charging and find out the cause of the trouble |
| | High temp | RED | Stop charging |
| Discharge state | Over-current | RED | Stop discharging and find out the cause of the trouble |
| | High temp | RED | Stop discharging |
| | Total voltage undervoltage | RED | Start charging |
| | Cell voltage undervoltage | RED | Start charging |

### 4.2.2 Alarm and countermeasure without affecting the output of the system

If the total voltage has a low voltage alarm or a low voltage occurs in the single cell, the battery system will also generate the corresponding alarm signal.

Maintenance personnel should check the equipment according to the prompt information, determine the type and location of the fault, and take appropriate measures to ensure the system in the best working condition, so as not to affect the system output.

This phenomena and measures are shown in table 4-2

Table 4-2 minor alarm

| Alert category | Alarm indication | Countermeasure |
|---|---|---|
| Low total voltage alarm | System working status and yellow light is always on | Discharge at reduced power and charging in time |
| Low cell voltage alarm | System working status and yellow light is always on | Discharge at reduced power and charging in time |

## 4.3 Analysis and treatment of common faults

Analysis and treatment of common faults in the Table 4-3:

Table 4-3 Analysis and treatment of common faults

| Item | Fault phenomenon | Reason analysis | Solution |
|---|---|---|---|
| 1 | The indicator does not respond after the power on | Power switch is broken | Check the power switch |
| 2 | No DC output | Battery data status is abnormal | The network management is connected to backstage supporter server to read the battery information. |
| 3 | The DC power supply time is too short | Battery capacity become smaller | Storage battery replacement |
| 4 | The battery can't be full of electricity | Charging voltage is too low | Adjust charging voltage within 54V ~ 55V range |
| 5 | The power line sparks once power on and ALM light RED | Power connection short-circuit | Turn off the battery, check the cause of the short circuit |

If you have any technical help or question, please contact the seller in time.


Jiangsu Daqin New Energy Tech Co., Ltd
Address: 158# South Ji'an Road, Hi-Tech District,
Yangzhou City, Jiangsu Province, China, 211400.
Email: Sales@dyness.net
Website: www.dyness.net