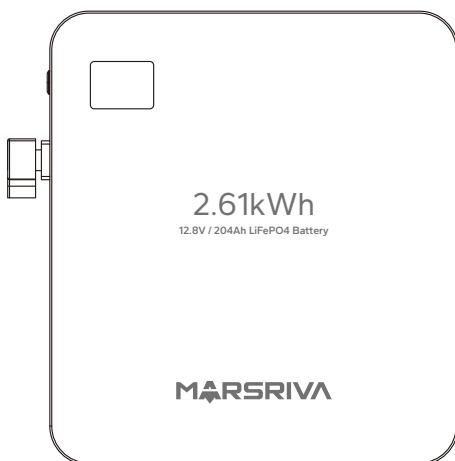




USER MANUAL

LiFePO4 Battery

MR-LFP12-200-WMD



1. Security Instructions

Please retain this manual for future reference. This manual contains instructions for the installation as well as operation of the Home Storage Battery Pack. Please read all instructions and precautions in the manual carefully before installation and use. There are non-safe voltages inside the home energy storage battery pack, to avoid personal injury, users should not disassemble it by themselves, and contact our professional maintenance personnel if maintenance is needed.

1. **Do not** put the battery into water or get it wet!
2. **Do not** charge the battery in a source of ignition or in extremely hot conditions!
Do not use or store batteries near sources of heat such as fire or heaters! If the battery leaks or emits an odor, remove it immediately from close proximity to an open flame;
3. Please use a dedicated charger!
4. **Do not** reverse the positive and negative terminals!
5. **Do not** connect the battery directly to a wall outlet or vehicle cigarette lighter outlet!
6. **Do not** put the battery into a fire or heat the battery!
7. It is prohibited to short-circuit the positive and negative terminals of the battery with wires or other metal objects, and it is prohibited to transport or store the battery together with necklaces, hairpins or other metal objects!
8. **Do not** pierce the battery case with nails or other sharp objects, and do not hammer or foot the battery!
9. **Do not** hit, throw or subject the battery to mechanical shocks!
10. Direct soldering of battery terminals is prohibited!
11. It is prohibited to disassemble the battery in any way!
12. It is prohibited to place the battery in a microwave oven or pressure vessel!
13. Prohibit the use of batteries in combination with primary batteries (e.g. dry cell batteries) or batteries of different capacities, models and varieties!
14. **Do not** use the battery if it emits a strange odor, heat, deformation, discoloration or any other abnormal phenomenon; if the battery is in use or charging, it should be immediately removed from the appliance or charger and stop using it!

2. Attention

1. Do not put the battery in an extremely hot environment, which will affect the performance of the battery, shorten the service life of the battery; and even cause safety accidents.
2. If the electrolyte gets into your eyes after a battery leak, do not rub, flush with water, and seek medical assistance immediately. If left untreated, the eyes will be damaged.

3. APP User Guide

1. APP Download

Please open the scanning function on Google Play (Android devices), scan the QR code below and download the application.

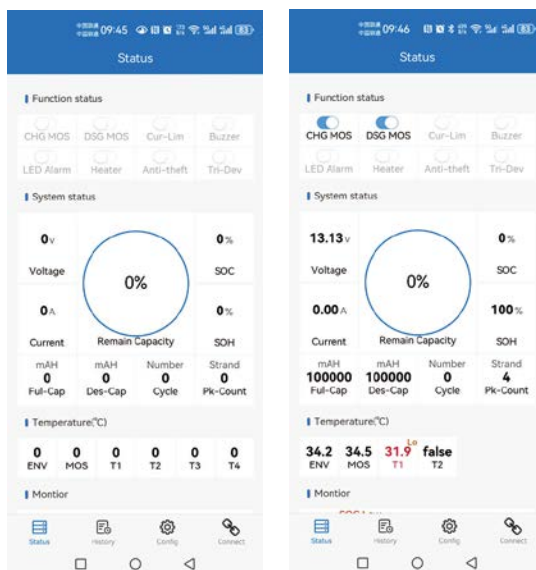
Connect the BMS system via Bluetooth, support status view, abnormal alarm, log view, parameter configuration, firmware upgrade and other functions. It is convenient for users to manage and maintain the BMS system on the cell phone.



2. APP Function

You need to connect the BMS Bluetooth after launching the APP for the first time, when not connected, the system displays the default value as shown in the left figure below.

After successful connection, the system will display the BMS data information, as shown in the right figure below.



3. Device Status

Displays status information about the currently connected BMS.



3.1 Function Status

Displays the BMS system function on/off status information and allows function on/off control in administrator mode.

3.2 System Status

Displays current operating voltage, current, remaining charge, SOC, SOH, full charge capacity, rated capacity, cycle count, battery number of strings.

3.3 Temperature

Displays the ambient, MOS, and sampling temperatures, with the number of temperatures displayed dynamically based on the number of temperatures sampled by the BMS. The maximum temperature will be shown as Hi at the top right and the minimum temperature will be shown as Lo at the bottom left.

3.4 Monitor

Alarm list, display the alarm status information generated by current BMS, if not, display "None".

Protection list, displays the protection status information generated by the current BMS, if not, display "None".

Fault list, displays the fault information generated by the current BMS, if not, display "None".

3.5 Unit Voltage

Display single real-time voltage value, unit mV, the number of voltage is dynamically displayed according to the number of battery strings, the highest voltage is labeled Hi on the upper right, and the lowest voltage is labeled Lo on the upper right.

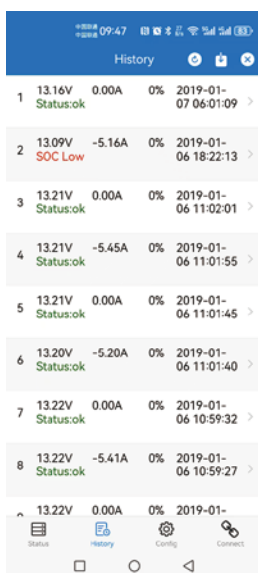
4. Historical Record

History records show the history status records of BMS system, support dynamic loading, default 20 records are loaded each time, scroll down to the bottom and refresh.

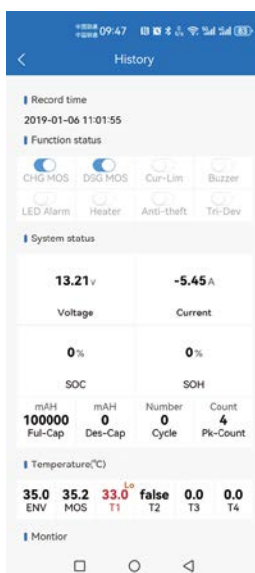
View Detail: Click the icon on the right side of the list to view the history details.

Record Export: Click "Save" button on the top right to export the current display records, after saving, you will be prompted to save the path, you can copy the record file from the memory of the device and view it. Users can copy the record file from the memory of the device to view it.

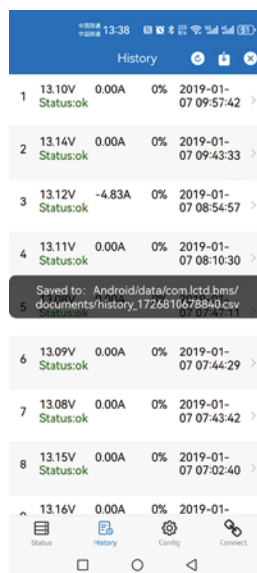
Clear Records: Click the "Clear" button on the top right to clear the history records, which cannot be restored after clearing, so please be careful with the operation.



History Top



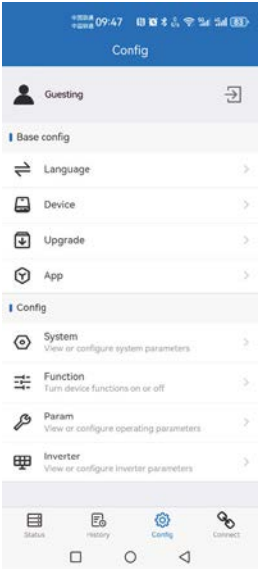
History Details



Export History

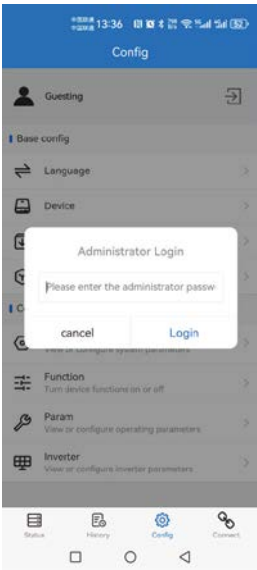
5. Parameter Configuration

Parameter configuration function, supports system configuration as well as BMS parameter configuration.



5.1 Model Management

The application defaults to “Guest Mode”, in which you can only view the data, but not operate it. After entering the administrator password, you can switch to “Administrator Mode”, and then you can configure the operation.

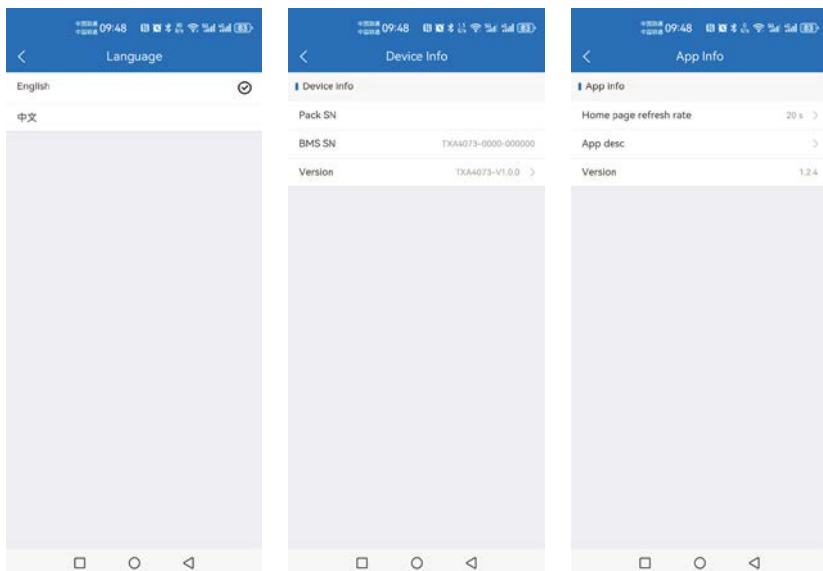


5.2 Basic Configuration

Language Configuration: Support Chinese/English language configuration, you need to restart the application after setting the language.

Device Information: You can view device SN and version information.

Application Information: Configuration of application parameters and description of the application.



5.3 Firmware Upgrade

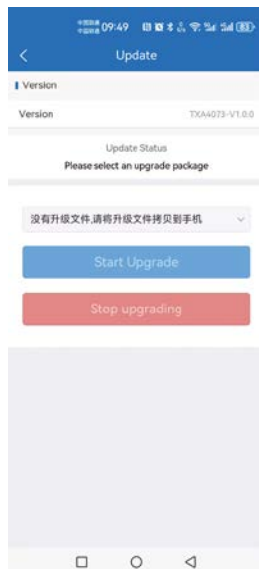
Before upgrading, you need to copy the update package to the specified directory, then select the update package in the upgrade interface and click "Start Upgrade" button to execute the upgrade.

Android system storage path:

Android\data\com.lctdbms\apps__UNI__4053077\doc\update

IOS system storage path:

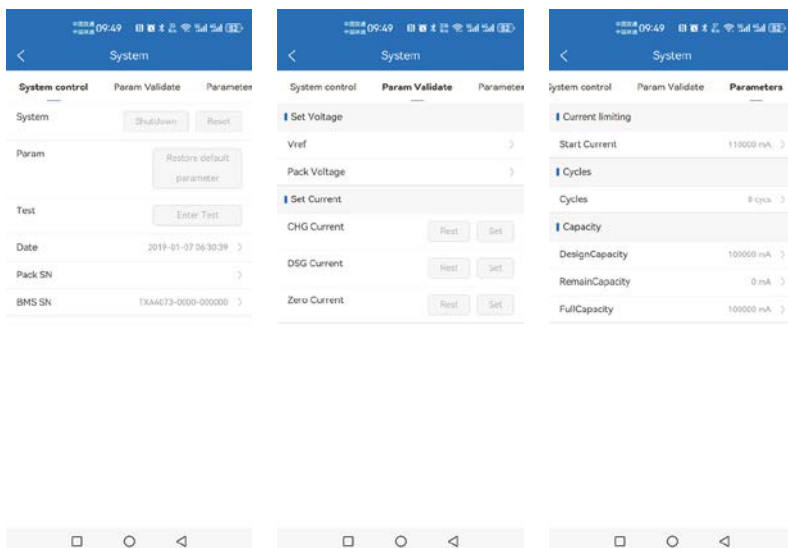
Connect iTunes and copy the update file to the LCTDBMS shared directory.



5.4 Configuration Management

Performs system parameter configuration and control.

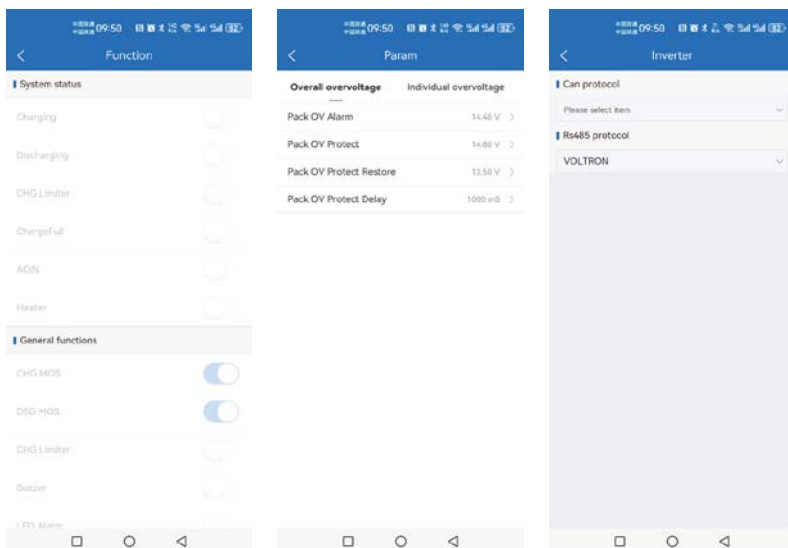
System Control, Parameter Calibration, and Parameter Settings.



Function Configuration: Displays the real-time status of functions and the configuration of function switches.

Parameter Configuration: Supports the configuration of BMS operating parameters.

Inverter Configuration: Supports inverter protocol configuration.

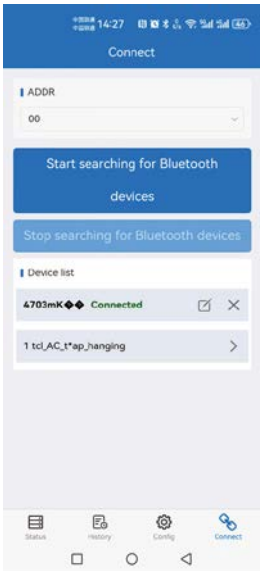


5.5 Connection Management

Configure the Bluetooth connection and the address of the host computer, when you turn on the Bluetooth, it will show the list of Bluetooth that can be searched at present by default.

Click on the Bluetooth to connect to the BMS, after the test passes, the connection is successful and the data can be displayed and operated in the application.

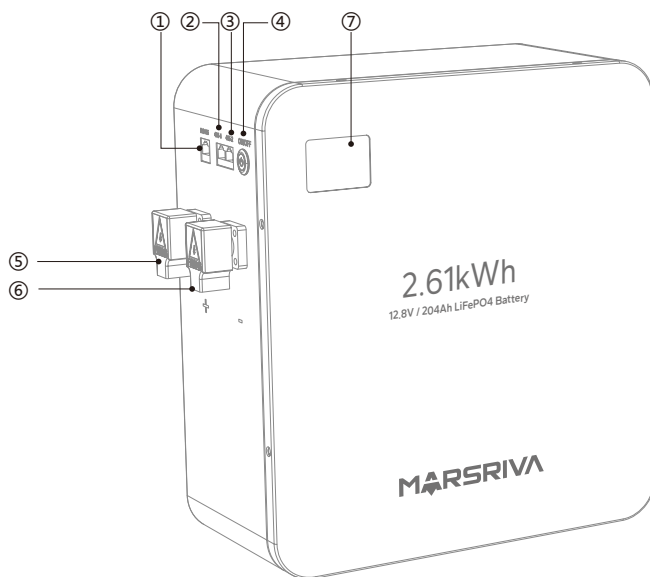
After Bluetooth connection, you can click Edit button to modify the Bluetooth name.



4. Specification

Model	MR-LFP12-200-WMD
Storage Energy	2.61kWh
Battery Type	BYD LiFePO4 Battery (Grade A)
Nominal Voltage	12.8V
Nominal Capacity	204Ah
Charge Current	50A, 100A (Max.)
Discharge Current	100A (Max.)
Full Charge Voltage	14.4VDC
Discharge Cut-Off Voltage	10.8VDC
Maximum Charging Temperature	55°C
Minimum Charging Temperature	0°C
Maximum Discharge Temperature	60°C
Minimum Discharge Temperature	-20°C
Communication Interface	Bluetooth, RS485 (BMS), RS485 (Parallel)
Master-Slave Addressing Mode	485 Auto-Encoding
Max.Number of Parallel Machines	≤15
Terminal Size	M6
Battery Cycle Life	≥6000@25°C, 70% EOL
Self-Draining Power Off	≤300uA
Installation	Wall-mounted
Weight	21.65kg
Dimensions (W×H×D)	315 × 350 × 155mm

5. Function Introduction



- ① Inverter Communication Port
- ② 485-1 Battery Communication Input Port
- ③ 485-2 Battery Communication Output Port
- ④ Switch
- ⑤ Battery Positive Terminal
- ⑥ Battery Negative Terminal
- ⑦ Display Screen

Attention: After the inverter and battery are connected, start the battery first, wait for about 5S to finish powering up, then start the inverter. If the utility power is available, start the inverter first, then start the battery.

6. Installation Instructions

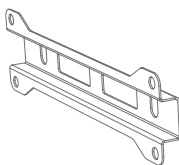
1. Unpacking And Inspection

Inspect the unit before installation. Make sure there is no damage in the package. You should receive the following items in the package:

- ① Lead Acid to Lithium Battery × 1
- ② Wall-Mount Brackets × 1
- ③ Screws × 4
- ④ User Manual × 1



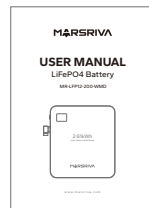
①



②



③

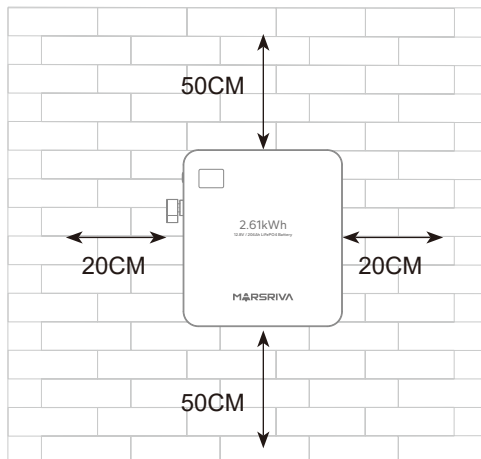


④

2. Installation Of Equipment (Power-Off Installation)

Before selecting a mounting location, consider the following:

- ① The ambient temperature should be between 0°C and 55°C to ensure optimum operation.
- ② It is recommended that the unit be placed vertically against a wall.
- ③ Be sure to move away from other objects and surfaces as shown in the diagram to the right to ensure adequate heat dissipation and sufficient space for removing wires.



7. Hibernation & Wakeup

1. Hibernation

When any of the following conditions are met, the system enters the low-power mode:

- ① The single unit or overall over-discharge protection is not removed within 30 seconds.
- ② The lowest unit voltage is lower than the hibernation voltage, and the duration reaches the hibernation delay time (no communication, no protection, no equalization, no current are satisfied at the same time).
- ③ Standby time exceeds 24 hours (no communication, no charging/discharging, no utility power).
- ④ Forced shutdown through the software of the upper computer.
- ⑤ Disconnect the weak switch can control the hibernation.

Before entering hibernation, make sure that no external voltage is connected to the input terminal, otherwise it will not be able to enter the low-power mode.

2. Wakeup

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

- ① Connect the charger, the output voltage of the charger should be more than 12V.
- ② Connect the communication line and open the software of the upper computer (the protection board can not be woken up by this method because it has entered the dormant state due to over-discharge protection).

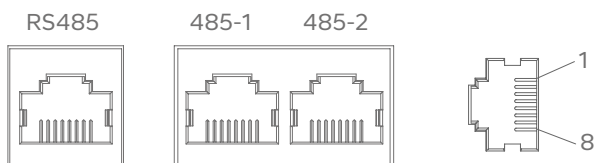
Remarks: enter low power consumption mode after over-discharge protection of single or total, wake up once every 4 hours to turn on the charging and discharging MOS, if it can be charged, it will exit from hibernation and enter into normal charging; if it can not be charged for 10 consecutive times of automatic awakening, it will no longer be automatically awakened.

When the system defines that the recovery voltage is not reached after 2 days/48h of standby (standby time setting value) after the charging is finished, the charging will be resumed until the charging is finished again.

8. Communication Functions

The product has two types of 485 communication interfaces.

1. The RS485 port on the left is used for BMS communication with the inverter.
If you need to establish BMS communication between the battery and the inverter, please check the pin assignment of the BMS port in the inverter manual and make a specific network cable.
2. The 485-1 and 485-2 ports on the right are used for parallel communication of multiple batteries, or connecting to the upper computer to use software.
If parallel communication is required, standard RJ45 8P8C network cables can be used. If you need to connect to upper computer and use software, please buy a USB to RS485 converter, and use half a standard RJ45 network cable to connect the corresponding 485 pins (485-A&485-B) with the converter.t



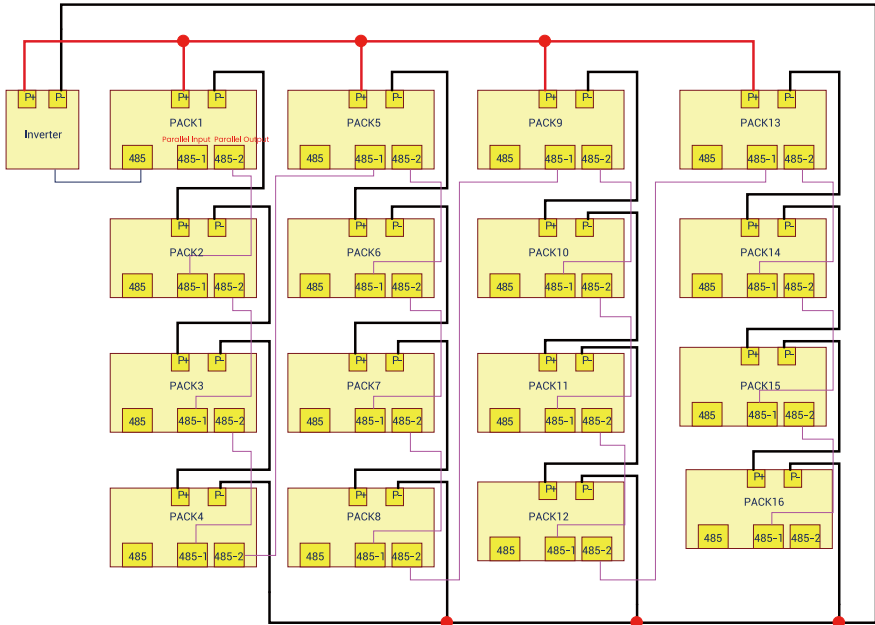
RS485: Inverter BMS RJ45 Port	
RJ45 Pin	Description
1, 8	RS485-B1
2, 7	RS485-A1
3, 6	GND
485-1: Parallel Communication Input, Using 8P8C Vertical RJ45 Port	
RJ45 Pin	Description
1, 8	RS485-B
2, 7	RS485-A
3.6	GND
4	Auto-dial upper input IN_DP+
5	Auto-dial upper input IN_DP-
485-2: Parallel Communication Output, Using 8P8C Vertical RJ45 Port	
RJ45 Pin	Description
1.8	RS485-B
2.7	RS485-A
3.6	GND
4	Auto-dial lower output ON_DP+
5	Auto-dial lower output ON_DP-

9. Series and Parallel

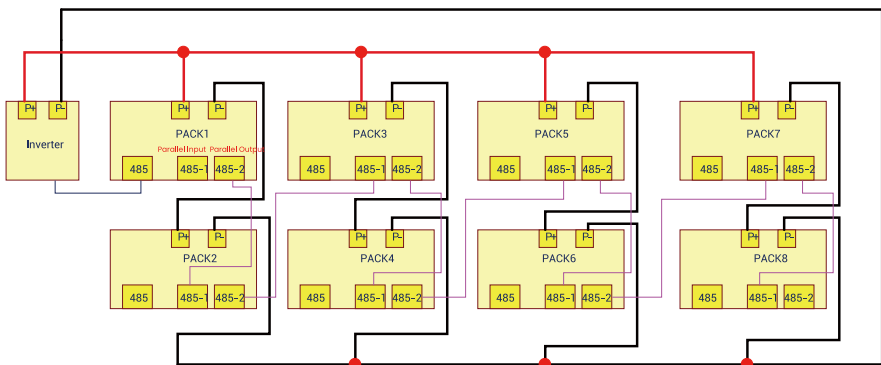
As shown in the figure, you need to connect the parallel communication lines; PACK1,2,3,4 in series; PACK5,6,7,8 in series; PACK9,10,11,12 in series; PACK13,14,15,16 in series; and then connect the four groups in parallel together;

Note: Before connecting in parallel to make sure that the four groups of the total pressure is the same; Battery parallel communication lines need to be connected in order as shown in the figure downwards;

4 Series 4 Parallel Connection Scheme (48V 400A)



2 Series 4 Parallel Connection Scheme (24V 400A)



Set the series-parallel connection of the actual battery strings to the host computer through the host computer or monitor, such as the above figure should set the host computer to 4 series 4 parallel; only the host computer needs to be set because the host computer will collect all the information of the batteries, and the host computer will calculate the total voltage and total current based on the total number of connected batteries and the set number of series-parallel connections.

As above figure set PACK1 as host 4 series 4 parallel; the related current and voltage parameters are:

Total current = current (PACK1) + current (PACK5) + current (PACK9) + current (PACK13)

Total voltage = voltage (PACK1) + voltage (PACK2) + voltage (PACK3) + voltage (PACK4)

Example 1: If the total number of batteries is 8; the host set the number of series-parallel connection is 4 series and 2 parallel (4 modules are connected in series and then parallel together), then the total current, the total voltage is:

PACK1 for the host

Total current = current (PACK1) + current (PACK5)

Total voltage = voltage (PACK1) + voltage (PACK2) + voltage (PACK3) + voltage (PACK4)

Example 2: If the total number of batteries is 8; host set the number of series-parallel connection is 2 series 4 parallel (2 modules in series, and then 4 groups together), then the total current, the total voltage is:

PACK1 for the host

Total current = current (PACK1) + current (PACK3) + current (PACK5) + current (PACK7)

Total voltage = voltage (PACK1) + voltage (PACK2)

Caution:

1. Make sure the total voltage of the parallel group is the same before parallel connection.
2. Be sure to set the series-parallel mode of the host computer.
3. Because of the need to address the upper level to the lower level parallel communication lines have input and output distinction. It is necessary to go through the series group before going to the parallel group.

10. Warranty Description

Please read the instructions carefully and keep them in a safe place,

- ① We are responsible for this product and repair it if it malfunctions during the warranty period.
- ② For replacement or warranty, please send this warranty card together with the product.
- ③ No free repairs will be made during the warranty period if any of the following conditions apply.
 - Damage caused by failure to comply with the requirements of the instruction manual for use, maintenance and repair, or the use of non-original parts.
 - Failure or damage caused by improper storage and custody (product battery failure due to not recharging the product for a long period of time).
 - Failure or damage caused by the use of power supply equipment and load rated equipment not within the specified voltage range.
 - Failure or damage caused by private repair, dismantling or modification.
 - Damage to the surface coating and exterior is not covered by the warranty.
 - Product outer packaging and product accessories are not covered by the warranty.
 - Torn, altered or unrecognizable product labels, seals and serial numbers (SN).
- ④ Failure or damage due to force majeure (force majeure refers to an objective event that cannot be foreseen, avoided or overcome. This includes natural disasters such as floods, fires, explosions, lightning, earthquakes and storms, as well as social events such as wars and disturbances).
- ⑤ This manual is for use only in (this sales area), the final interpretation right belongs to the company. Please keep this manual in a safe place as it will not be distributed separately to users.
- ⑥ If the name of the distributor is not written or stamped, ask the distributor from whom you purchased the product for proof of the date of purchase and the name of the distributor, and issue a receipt to the distributor. If you do not have such proof, please contact your dealer or the company from which you purchased the product. If you purchased the product from our online store, please be sure to provide proof of the date of purchase, such as an invoice, order number, or a screen shot of your order history.

11. Reimbursable Service Warranty

Because the product does not meet the warranty conditions need to be charged, the company will be based on parts and labor costs to calculate the appropriate repair costs and put forward a repair quote to you, after obtaining your consent and payment of the cost to provide repair services for your product.

Thank you for purchasing Marsriva product

PRODUCT WARRANTY CARD

Product :

Model :

Purchase Date (DD / MM / YY) :

Customer Name :

Telephone Number :

E-mail Address :

Dealer's Name and Address :

Serial Number* :



This Warranty applies only if the Product was newly manufactured on the Date of Purchase and not sold as used, refurbished, or manufacturing seconds. Please keep the proof of purchase and this warranty card for future service requests.

IMPORTANT!

Please store this card in a secured location for future reference.

Marsriva reserves the right to request this card before accepting repair requests.

This does not affect or limit your mandatory statutory rights.

Marsriva Technology Co., Ltd.

Website: www.marsriva.com

E-mail: support@marsriva.com

Made in China

CE

FC

RoHS



Specifications are subject to change without notice, all product drawings are for reference only.