



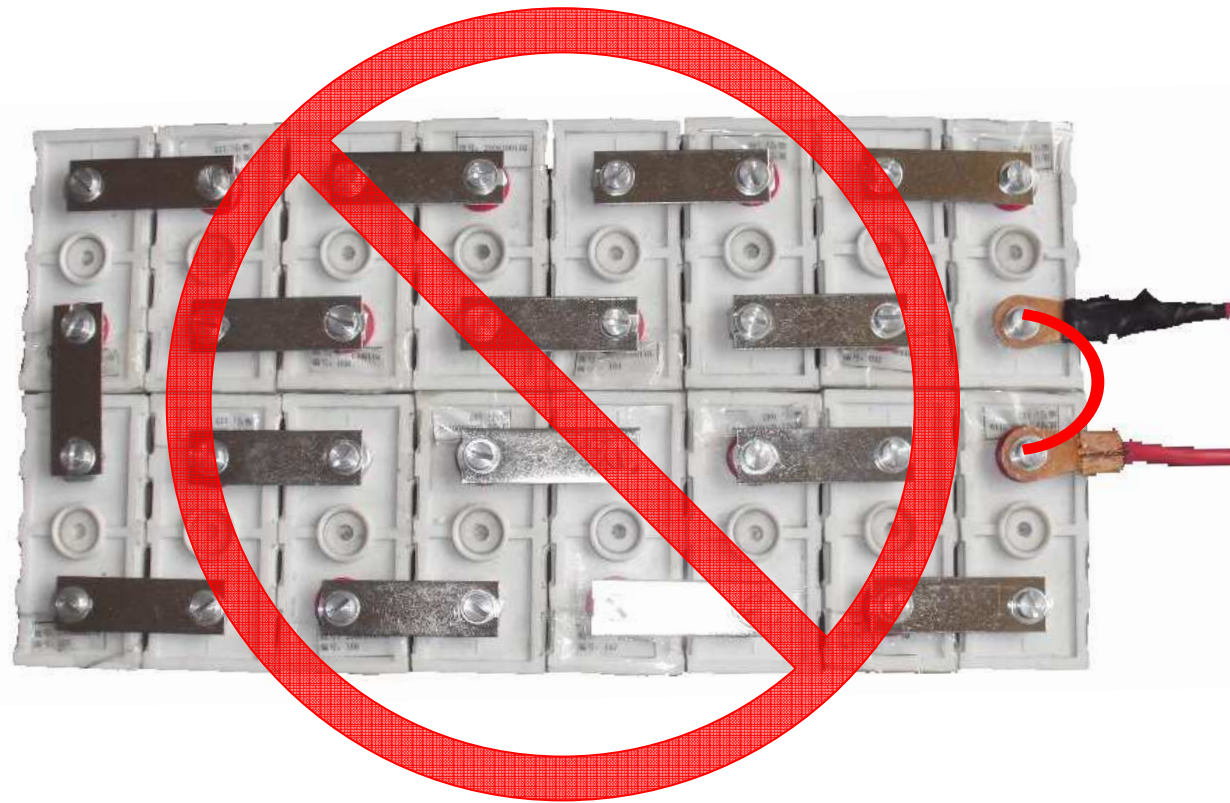
HiPower LiFePO₄ Battery

Introduction

The products meet the specification authorized by Q/SHB002-2007 enterprise standard (based on GB/Z18333.1-2001, the People's Republic of China's standard for electrical-vehicle –boarded lithium-ion and the coming regulation for lithium battery).

Security warning

1、 Battery cells and battery packs can not be short-circuited in any case!



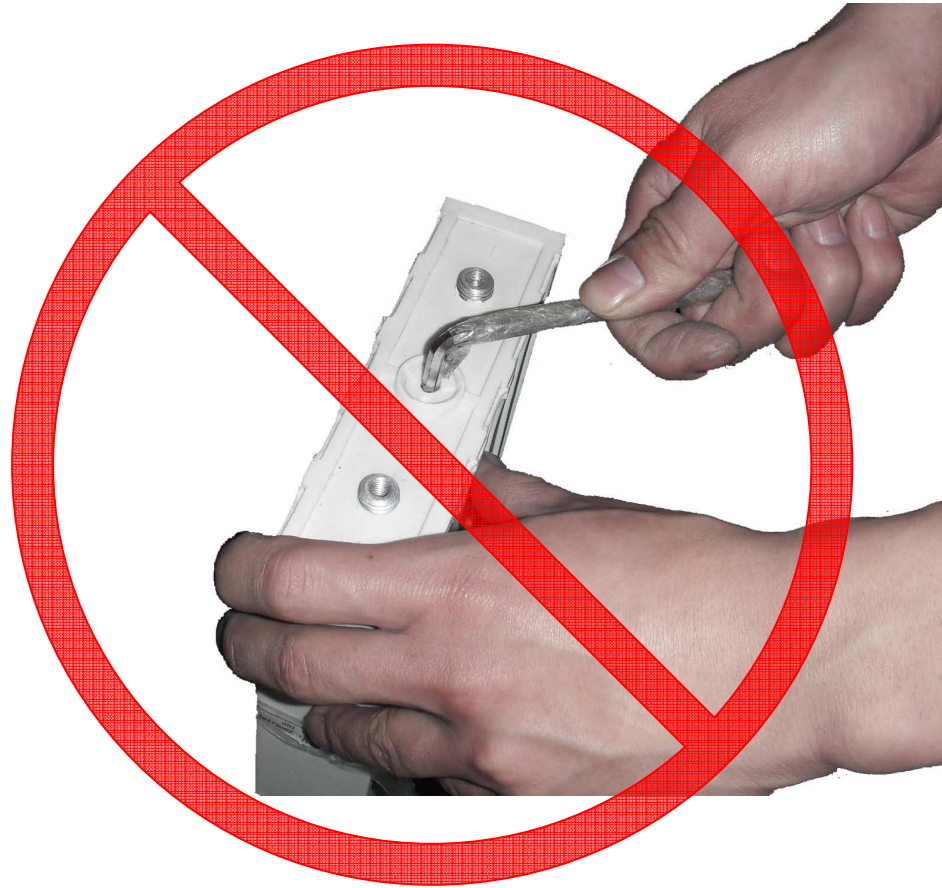
Security warning

2、 Battery cells should be fully charged before using.



Security warning

3、 Opening cell is forbidden in any case!

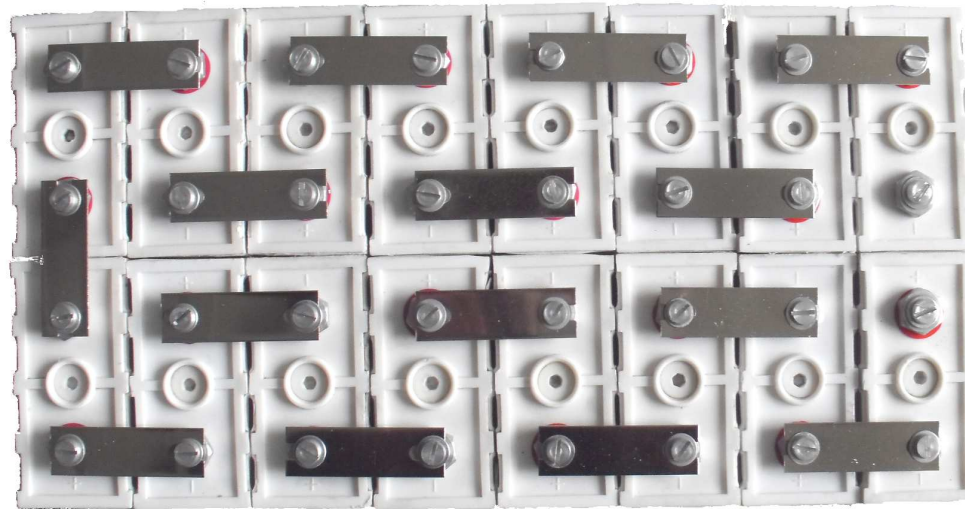


Pre-assembly Notes

1、 Check the type of the battery

Check the battery if it is the right type you have ordered

(1) Check the voltage: Please calculate the battery pack voltage in this way: $V=3 \times n$, "n" means the number of cells of the pack. For example, there are 16 pcs cells in a 48V battery pack, that is $48=3 \times 16$.



48V battery pack

Pre-assembly Notes

(2) Please check the capacity of the cells:

① You can check the capacity of the cells according to the dimension and weight of different kinds of cells.

No.	Type	Demension (mm)	Weight(g)	Case
1	10AH	29×88×106	350±5	PP
2	20AH	32×100×160	735±5	PP
3	30AH	48×100×160	1100±10	PP
4	40AH	56×110×160	1340±10	PP
5	50AH	42×150×190	1750±10	PP
6	100AH	50×160×282	3500±20	PP
7	200AH	58×220×330	6700±20	PP
8	10AH	Φ42×110	325±5	Aluminium
9	8AH	Φ35×110	220±5	Aluminium
10	8AH	Φ38×107	220±5	Aluminium
11	7.3AH	Φ32×117	210±5	Aluminium
12	3.5AH	Φ35×60	120±5	Aluminium
13	3.3AH	Φ32×65	110±5	Aluminium
14	3.0AH	Φ32×60	100±5	Aluminium

05

Pre-assembly Notes

② Parallel two cells ,you get a cell with double capacity.

50AH

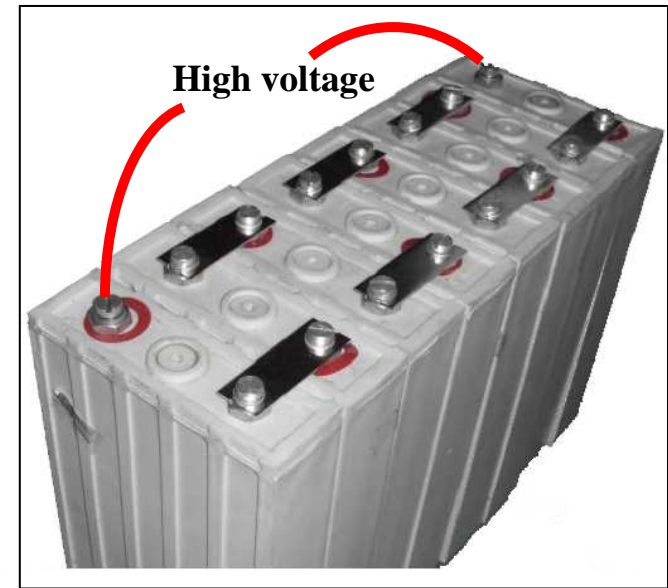


100AH



Battery Pack Assembly

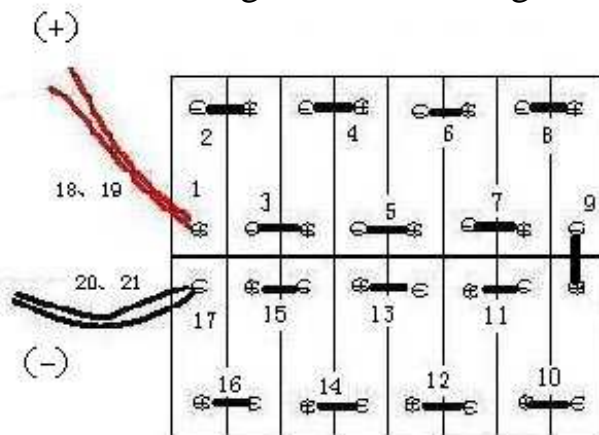
- 1、 Please be sure the anode and cathode of each cell. There is a red cushion on the anode, the cathode has no cushion.
- 2、 Confirm the cells belong to the same pack.
- 3、 Assemble the cells by the metal connections serially into a battery pack. Please be careful not to short-circuit the pack; don't touch the anode and cathode of pack ,especially pack with high voltage .



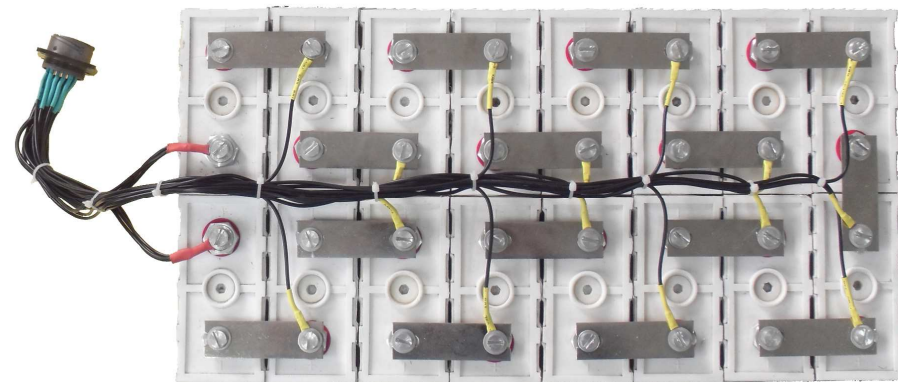
Install Balancing Wires

- 1、 Check if the balancing wires and the pins of the connecting plug are good. If they are defective, please replace these with good ones.
- 2、 Please check if the number of the balancing wires are identical with the number of pins of the connecting plug of the balancing chargers. Please contact the suppliers if they are not identical and stop using.
- 3、 Assemble the battery pack according to the following drawing.

Balancing-wire connecting drawing



The pack equipped with the balancing



Battery pack test notice

1、 Check the balancing wires to be sure they are fixed on the pack in the correct way. Then connect the balancing charger with the battery pack by connecting plug. All the LEDs on the panel should be lighten when the charging course is over. Charge the battery once again if there are LEDs not bright till all are on.

Start charging



Finish charging



Some Leds not on



all the Leds on



Battery pack testing notes

2、 Please check the anode and cathode of the battery pack clearly ,the red wire is the anode,the black cathode.

3、 When discharge at 0.5C at 25°C, the discharge voltage of the battery pack is $2.6V \times n$ (n means the number of the cells in the battery pack).Because the voltage of different kinds of battery packs is different,the cut-off voltage of the different battery packs is different.Please refer to the attached sheet.

4、 The normal working current of all kind of packs should not exceed 1 C.

5、 There are only 70% of the power in the battery packs when they are sent to the customers,please charge the battery packs fully before firstly using.

6、 Equip the balancing wires well.If Leds are bright before charging ,please check the voltage of that cell.If the voltage of the cell is

Battery pack testing notes

under 3.6V, please check if there is the wrong installation of the balancing wires. If the voltage of the cell exceed 3.95V, please stop charging.

7、 The discharge voltage of the single cell can be set between 2.0V-2.6V.

8、 It does not hurt the battery cell if the discharge voltage is less than 3.95V.

9、 At 80% DOD , the battery cycle life can be over 2000 times based on the conditions that the charge cut-off voltage for single cell is less than /equal to 3.85V and the discharge cut-off voltage for single cell is more than/equal to 2.0V .

10、 There would not be smoking or catching fire if the battery pack is

used correctly.

Sheet of the Cut-off voltage

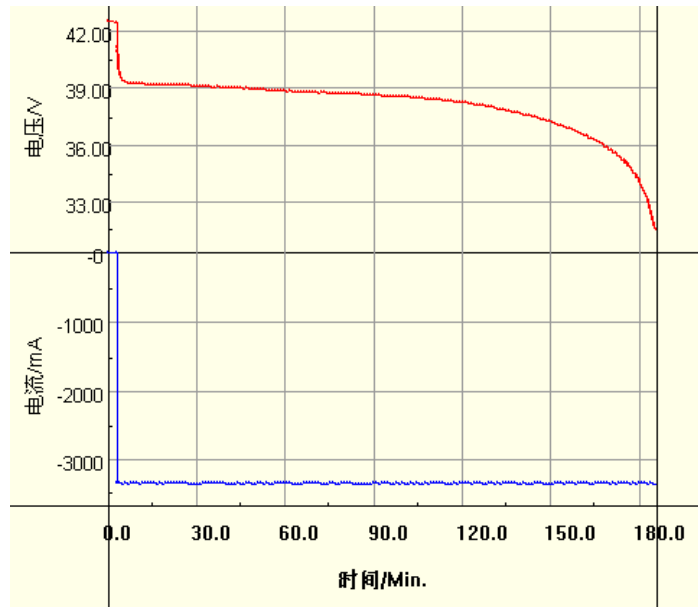
It is a refernece for customer setting the cut-off voltage of their pack`s controller.

No.	Type	Cut-off voltage of the pack
1	12VPack	10.0V
2	24VPack	20.0V
3	36VPack	30.5V
4	48VPack	41.0V
5	72VPack	63.0V
6	96VPack	90.0V
7	120VPack	116.0V
8	144VPack	139.2V

Notice : other kinds of the pack`s cut-off voltage will be set after testing .

Battery`s performance at high and low temperature

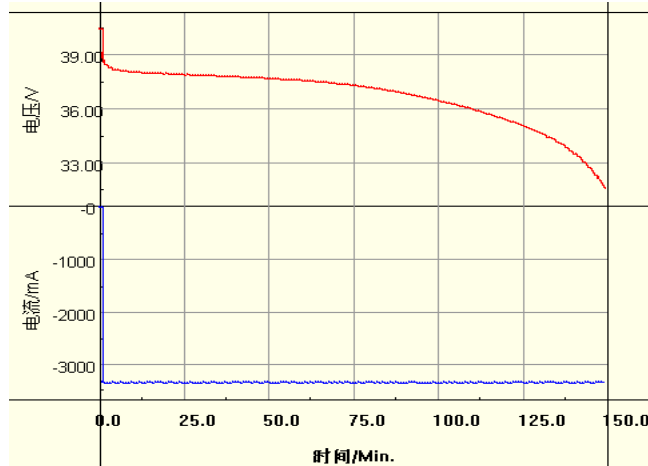
1、 The difference between winter and summer when using the same battery pack is nomal phenomenon ,please take the 36v10ah pack`s discharging curves at different sea as a reference.



Curveintroduction

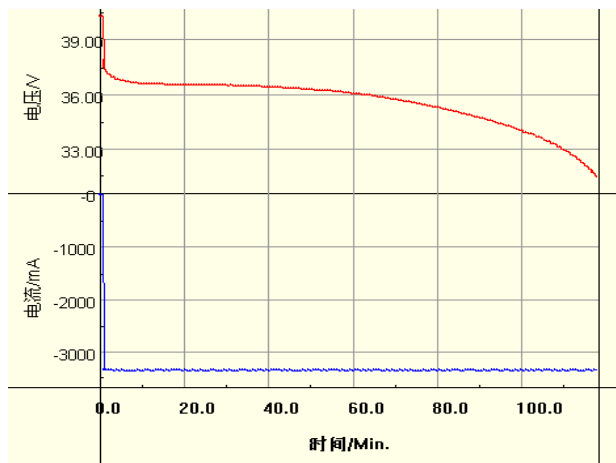
- 1、 Type:discharg curve
- 2、 Temperature:20°C
- 3、 Discharge current:3330mA
- 4、 Cut off voltage:31.5V
- 5、 Discharg capacity:10509.7mAH

Battery`s performance at high and low temperature



Curve Introduction

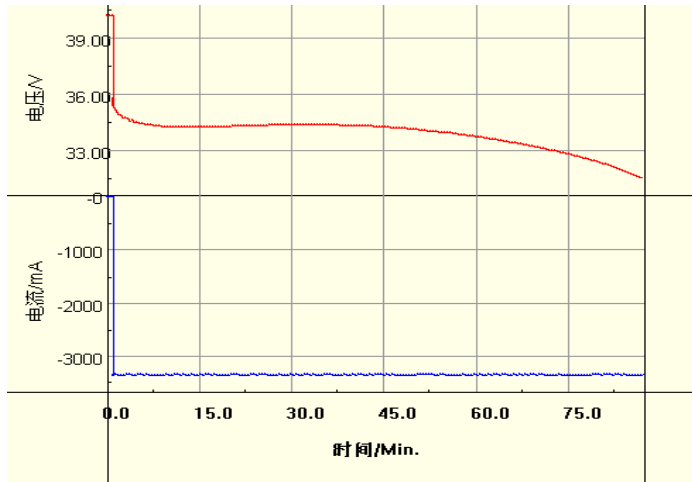
- 1、 Type:discharge curve
- 2、 Temperature: 0°C
- 3、 Discharge current:3330mA
- 4、 Cut-off voltage:31.5V
- 5、 Discharg capacity: 7786.1 mAH



Curve Introduction

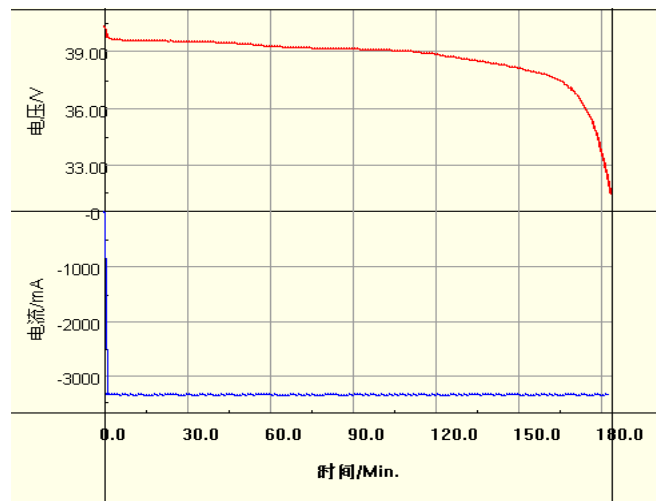
- 1、 Type:discharge curve
- 2、 Temperature: -10°C
- 3、 Discharge current:3330mA
- 4、 Cut off voltage:31.5V
- 5、 Discharg capacity: 6691.3mAH

Battery`s performance at high and low temperature



Curve Introduction

- 1、 Type:discharg curve
- 2、 Temperature: -20°C
- 3、 Discharge current:3330mA
- 4、 Cut off voltage:31.5V
- 5、 Discharge capacity: 5180.5mAH



Curve Introduction

- 1、 Type:discharg curve
- 2、 Temperature: 55°C
- 3、 Discharge current:3330mA
- 4、 Cut off voltage:31.5V
- 5、 Discharge capacity: 11251.6mAH

Battery`s performance at high and low temperature

- 2、 The capacity of battery pack is effected by temperature
 - (1) At temperature of 20°C ,the rated capacity is 105.09%
 - (2) At temperature of 0°C ,the rated capacity is 77.86%
 - (3) At temperature of -10°C ,the rated capacity is 66.91%
 - (4) At temperature of -20°C ,the rated capacity is 51.81%
 - (5) At temperature of 55°C ,the rated capacity is 112.51%
 - (6) There is no deformation of the battery pack when using at different temperature
 - (7) The performance of the battery pack isn`t be affected when the environment recovers normally either from a lower temperature or a higher one.

Malfunction and How to deal with

1. There is smoke from the charger after connecting the charger and the battery without plugging into the AC system. It is often caused by the damage of the transportation.

Please quickly pulled out the connect plugs, replace the balancing wires which have been burned.

Since we are using balancing charger, each cell has a balanced circuit. Therefore, the balancing lines must be fixed strictly according to the diagram of equipping balancing wires ,never make mistake.

2 . 0 voltage cell in the battery pack.

(1)The resistance of the cells will be changed during using .When the gap of the resistance between different becomes larger,the over-discharge phenomenon occurs, so some cells will be 0 voltage. In this case ,please

stop using the battery ,and contact us.

Malfunction and How to deal with

(2)The cut-off voltage of customer's Motor Controller could not match the recommended setting of the pack . If the controller`s cut-off voltage setting is lower than the recommended voltage value, the over-discharge phenomenon also will appear , then the voltage of the whole battery pack become 0 V.

Measurement: Discharge the battery pack to its standard minimum voltage ,then replace the cell with new one of same capacity.3. The battery pack gets hot during using

The reason is mainly due to the large discharge current (more than 1C) or the connection of cells is not well.

Battery`s maintenance

1、 LiFePO₄ battery, equipped with special balancing charger which can optimize the battery`s performance by making every single cell reach the same voltage . Please charge the battery pack as more as possible.

2、 Never open, acupuncture, burn, beat, short-circuit the cell or the pack and connect anode and cathode of the cell directly by metal sheet.

3、 When the pack`s working vlotage is lower than the low-cut-off voltage at the end of its cylce life ,please stop using ,and use the balancing charger to charge the pack .Only when the voltage of the pack reach the standard level ,the pack can be used normally again.

4、 25°C is the standardized temperature to test the capacity of the battery. If temperature declines continuously, it is a normal phenomenon that the travel range is shorter than usual . The pack should be charged at

room-temperature to make it fully charged.

Battery`s maintenance

5、 Be careful when plug in or out the connecting plugs in order to avoid breaking off the pins of the balancing connector plugs.

6、 The metal sheet should not be placed on the battery pack`s poles to avoid short-circuiting .

7、 Don`t immerge the battery into the water.

8、 Take or place the battery slightly ,avoid violent vibration.Please check the pack periodically if the connecting bars on the battery are loose.

9、 LiFePO₄ battery can`t approach fire ,or the sources with higher temperature.Never put battery into fire,please don`t constantly expose the

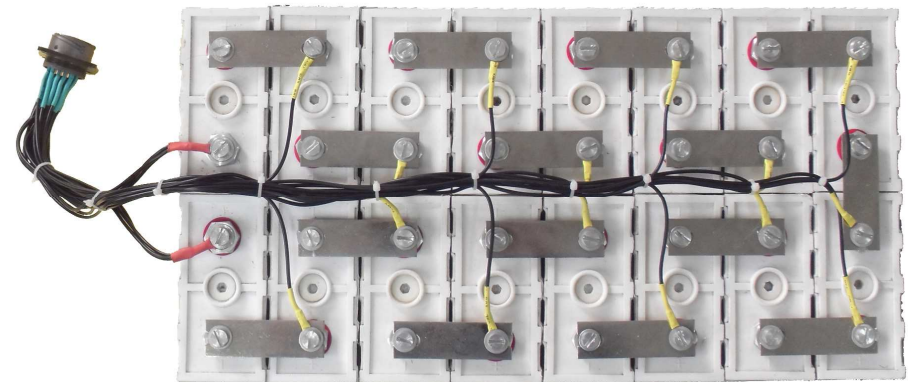
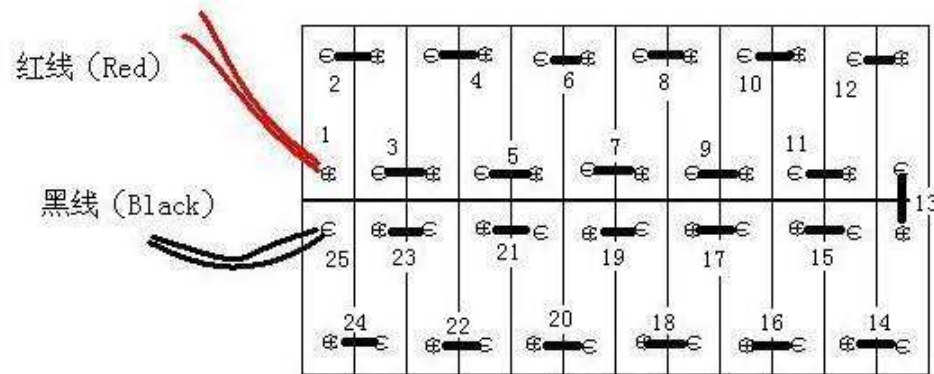
pack to the sun in summer .

10、 Please charge the battery before putting it for long time storage,check the battery condition once per month by checking the terminal voltage for each cell to make sure there is no big difference in the voltage of some batch.Please charge if you find the voltage of any cell is lower than 3.0V.The regular self-discharging rate is about 3%,please recharge the battery once per half year.

How to use the balancing charger

1、 Fix the balancing wires on the suitable cells .Each balancing wire of the plug has a number,such as 1.2.3.4....Please make sure the numbers on the wires are the same as the these of the battery cells indicated on the following assemble drawing .

Any mistakes should not be allowed,otherwise the charger will be damaged.



How to use the balancing charger

2、 After fix the balancing wires on the pack ,please connect the balancing plug before charging.



3、 Connect the anode and cathode of the pack to charger correctly.Red wire is anode,black one is cathode.Make sure the anode and cathode wires are insulated and seperated during charging,in order to avoid short-cutting .



How to use the balancing charger

4、 Turn on the switch of the charger and begin to charge the battery pack.

5、 Before the first using ,please charge the battery pack fully .During the charging process, please make sure all the balancing led lights on the panel are bright.When the charging finishes,but there are still some lights are dark,please separate the charger from AC power,and then recharge it .Redo this way till all the balancing led lights are bright.If there are lights still failing to be on after redoing several time, ,please test the voltage of the relative battery cells.Any cell`s voltage which is below 3.4V may have problem,please contact us on time .

HiPower Certificates

CE



CE



DOT



HiPower Certificates

ISO



ROHS



ROHS





Dear Clients:

Thank you for your kindly choosing HiPower LiFePO₄ battery.

If you are satisfied with our product`s performance and our service ,please kindly introduce HiPower to your friends .

If you have any advice,please feel free to contact us ,any kind of suggestion will be highly appreciated .We will continuously provide the best lithium power solution to you :
HiPower LiFePO₄ battery+balancing charger +BMS..

Many thanks for your respondence.

For further more information about HiPower,please visit

<http://www.haiba.net.cn/>

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