

## ■ Key Features

Lithium Iron Phosphate(LiFePO<sub>4</sub>)chemistry provides exceptional stability and consistent performance

Advanced Battery Management System(BMS) ensures product safety and long lifespan

Supports fast charging and discharging

Constant voltage and full usable capacity at any state of charge

IP67 Rated (Dust and Water Resistant)

Grade UL94 V-0 (Fireproof)

## ■ External Features

01  
Nylon Handle

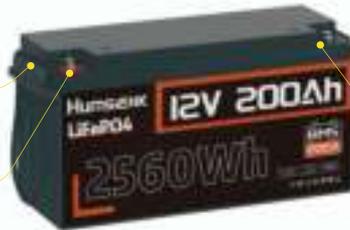
02  
Positive Terminal(red)



03  
Negative Terminal(black)

01  
Nylon Handle

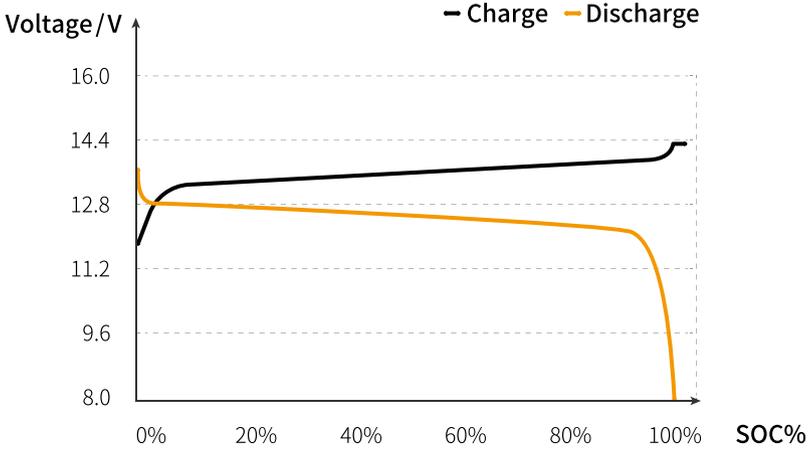
02  
Positive Terminal(red)



03  
Negative Terminal(black)

- 12V50Ah, 12V100Ah Mini and 12V100Ah Mini Smart are similar in appearance.
- 12V100Ah and 12V100 Smart are similar in appearance.
- 12V150Ah and 12V100Ah Pro are similar in appearance.
- 12V200Ah, 12V300Ah and 12V310Ah are similar in appearance.

## Charge-discharge Curve @ 77°F/25°C

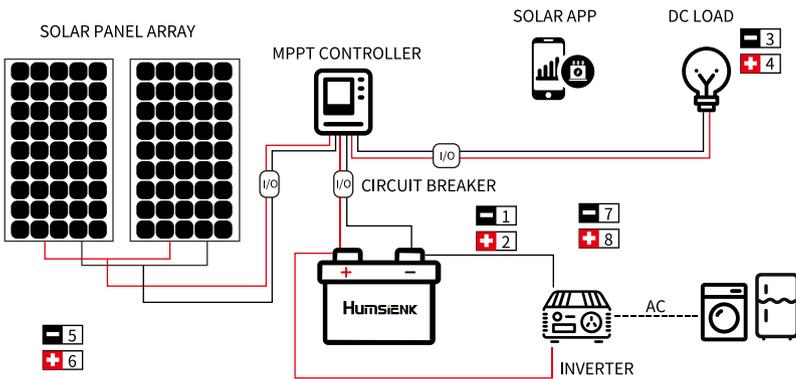


Sample: 12V50Ah battery

\*Environmental conditions required for all tests: 77±9°F/25±5°C

## Connection Diagram

Note: for a 12V50Ah battery, the usage is the same as that of other models



## Battery Management System(BMS) Warning and Protection

Content	12V50Ah 50A	12V100Ah 100A Mini 12V100Ah 100A Mini Smart	12V100Ah 100A 12V100Ah 100A Smart	12V100Ah 100A Max 12V100Ah 100A Max Smart
Standard/Maximum Continuous Charging	10A/50A	20A/100A	20A/100A	20A/100A
Max Continuous Discharge Current	50A	100A	100A	100A
Over-current Discharge Protection	170A±30A	300A±50A	300A±50A	300A±50A
Over-current Charge Protection	70A±10A	130A±30A	130A±30A	130A±30A
Weight(lbs)	11.46	21.72	23.15	26.45
Dimensions(inch)	7.68 X 5.12 X 6.7	9.02 X 5.43 X 8.19	10.24 X 6.61 X 8.23	11.78 X 7.63 X 7.77

Content	12V 100Ah 110A Max Plus 12V 100Ah 110A Max Plus Smart	12V150Ah 110A	12V200Ah 200A	12V300Ah 200A
Standard/Maximum Continuous Charging	20A/110A	30A/110A	40A/200A	60A/200A
Max Continuous Discharge Current	110A	110A	200A	200A
Over-current Discharge Protection	300A±50A	300A±50A	600A±50A	600A±50A
Over-current Charge Protection	130A±30A	130A±30A	240A±30A	240A±30A
Weight(lbs)	26.45	28.22	45.20	59.52
Dimensions(inch)	10.07 X 7.63 X 8.25	13.07 X 6.77 X 8.58	19.02 X 6.7 X 9.45	20.63 X 9.65 X 8.66

## Battery Management System(BMS) Warning and Protection

Content	12V300Ah 100A Smart	12V300Ah 200A Smart	12V310Ah 100A	12V310Ah 200A
Standard/Maximum Continuous Charging	60A/100A	60/200A	62A/100A	62A/200A
Max Continuous Discharge Current	100A	200A	100A	200A
Over-current Discharge Protection	300A±50A	210A±10A	300A±50A	600A±50A
Over-current Charge Protection	130A±30A	210A±10A	130A±30A	240A±30A
Weight(lbs)	59.52	57.98	59.52	57.98
Dimensions(inch)	20.63 X 9.65 X 8.66	20.51 X 9.37 X 8.70	20.63 X 9.65 X 8.66	20.51 X 9.37 X 8.70

Content	12V314Ah 100A Mini	12V314Ah 100A Mini Smart
Standard/Maximum Continuous Charging	62.8A/100A	62.8A/100A
Max Continuous Discharge Current	100A	100A
Over-current Discharge Protection	300A±50A	300A±50A
Over-current Charge Protection	130A±30A	130A±30A
Weight(lbs)	59.52	59.52
Dimensions(inch)	15.12 X 7.64 X 9.76	15.12 X 7.64 X 9.76

## Battery Parameters

Content	12V50Ah, 12V100Ah Mini, 12V100Ah Mini Smart, 12V100Ah, 12V100Ah Smart, 12V100Ah Max, 12V100Ah Max Smart, 12V100Ah Max Plus, 12V100Ah Max Plus Smart, 12V150Ah, 12V200Ah, 12V300Ah, 12V300Ah Smart, 12V310Ah, 12V314Ah Mini, 12V314Ah Mini Smart
Short Circuit Current Protection	Support
Release Condition	Cut Load
Charging High Temperature Protection	140~158°F
Discharge High Temperature Protection	149~167°F
High Temperature Protection Release Condition	Drop by 41~59°F
Charging Low Temperature Protection	23~41°F
Discharge Low Temperature Protection	-13~5°F
Low Temperature Protection Release Condition	Rise by 41~59°F
Rated Voltage	12.8V

## Battery Parameters

Content	12V50Ah, 12V100Ah Mini, 12V100Ah Mini Smart, 12V100Ah, 12V100Ah Smart, 12V100Ah Max, 12V100Ah Max Smart, 12V100Ah Max Plus, 12V100Ah Max Plus Smart, 12V150Ah, 12V200Ah, 12V300Ah, 12V300Ah Smart, 12V310Ah, 12V314Ah Mini, 12V314Ah Mini Smart
Standard Charging Voltage	14.6±0.2V
Shipping Voltage	12.8V~13.5V
Shipping Capacity	50%
Cycle Life	6000@80%DOD
Self Discharge Rate	<3%/Month
Series & Parallel Connections	4 Parallel(Max) 4 Series(Max)
Communications	Not Supported(Mini Smart/Smart Bluetooth support)
Case Material	ABS+PC/UL94-VO
Waterproof Grade	IP67
Battery Pack Certifications	IEC62133/RoHS/CE/FCC/UN38.3/Class9
Cell Certifications	UL1642/UL2580/UN38.3
Storage Temperature	32~140°F
Terminal Bolt Size	M8(M6 for 12V50Ah, 12V100Ah Max and 12V100Ah Max Smart)

## ■ Charging with AC-DC Battery Charger

Check the AC-DC battery charger you intend to use has a dedicated lithium charge setting that meets the below charging requirements. A lot of battery chargers are designed for charging lead-acid batteries only and may not have a suitable charge setting for LiFePO4 battery.

### Charging Tips:

- ▶ Use a 14.6V LiFePO4 battery charger
- ▶ Recommended Charging Voltage:  $14.6 \pm 0.2V$
- ▶ The recommended charging current is the battery capacity divided by 5 hours.  
(For example, the recommended charging current for 12V314Ah Mini battery is  $314Ah/5h=62.8A$ , so 12V60A charger would be perfect for a 12V314Ah Mini battery.)

Time at charging currents of 20A and 50A is shown in the following table:

Battery Model \ Charging Current	12V 50Ah	12V100Ah Mini 12V100Ah Mini Smart 12V100Ah 12V100Ah Smart	12V 150Ah	12V 200Ah	12V300Ah 12V300Ah Smart	12V314Ah Mini 12V314Ah Mini Smart
20A	2.5h	5h	7.5h	10h	15h	15.7h
50A	1h	2h	3h	4h	6h	6.28h

\*Comparison of charging time for 12V series batteries

## ■ Installation Environment

The battery should be installed in a clean, cool, and dry place, away from water, oil, and dirt. The accumulation of these substances on the battery may cause leakage, resulting in self-discharge and possible short circuits. Adequate ventilation must be maintained to prevent the battery from overheating, and temperature fluctuations between the batteries should be minimized as much as possible.

## ■ Preparation

Before installing and handling the battery, it is recommended that the following equipment or tools be available:

- ▶ Proper insulation protection equipment and tools
- ▶ Multimeter, battery cables
- ▶ Battery Charger/Charge Controller

## ■ Inspection

Check for visible damage, including cracks, dents, deformations, and other visible anomalies. The top of the battery and terminal connections should be clean, dry and free of dirt and corrosion. Should any issue be detected with the battery, feel free to get in touch with us for prompt assistance.

1. Do not short the battery terminals, as doing so may cause a current burst leading to irreversible damage to the system and battery.
2. Please check the polarity before wiring. Polarity reversal will damage the battery.
3. Protect all electrical equipment with circuit breakers, fuses, or appropriately sized circuit breakers as specified by a qualified electrician, licensed installer or regional regulatory authority.

## ■ Cable Size

Cable size should be selected based on the expected load.

Refer to the table below for the amperage of copper cables of different sizes.

Cable Specification and Capacity(AWG / MM2)	Current Capacity(A)
14(2.08)	20
12(3.31)	25
10(5.25)	35
8(8.36)	50
6(13.3)	65
4(21.1)	85
2(33.6)	115
1(42.4)	130
1/0(53.5)	150
2/0(67.4)	175
4/0(107)	230

## ■ Best Practice Guidelines

1. Same brand.  
(Do not connect any LiFePO4 battery of other brands due to differences in the BMS)
2. Same battery type(LiFePO4).  
(Do not connect any other battery type with this battery - such as Li-ion, SLA etc)
3. Same voltage. It is recommended to use the fully charged battery.
4. Same capacity.
5. The two batteries should be no more than 3 months older than each other.

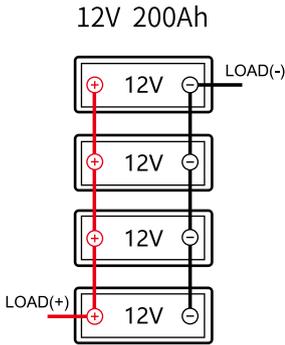
## ■ Connection Steps

STEP1. Fully charge the battery separately.

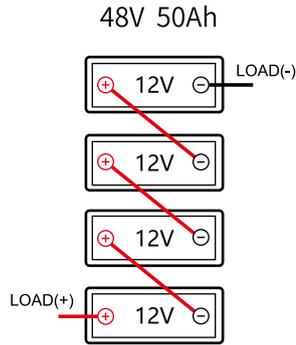
STEP2. Wait for 15mins and then test the voltage. It should be above 13V.

STEP3. Connect your batteries in series, parallel, or a combination of both.  
(Taking a 12V50Ah battery as an example)

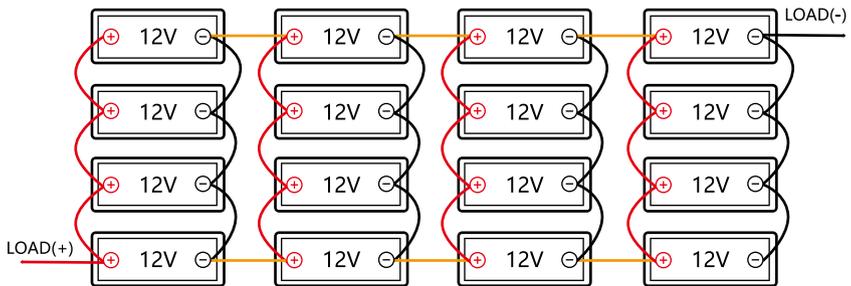
### Parallel Connection



### Series Connection



### Max. Connection in Series & Parallel(4S4P)



Taking a 12V 50Ah battery as an example, first, four such batteries in parallel form a 12V 200Ah pack. Then, four of these packs in series produce a 48V 200Ah battery pack.

### Over-charge Protection Voltage(>14.4V) \\

If an individual cell voltage exceeds a prescribed threshold during charging, the BMS will stop the charging.

### Over-discharge Protection Voltage(<9.2V) \\

If an individual cell falls below the prescribed threshold during discharge, the BMS will prevent further discharge. When the battery voltage reaches over 10.8V, the battery will automatically reconnect after 15 seconds.

### Charging High Temperature Protection \\

The BMS will not allow a charging current, if the internal temperature of the battery has reached 149°F/65°C.

### Discharging High Temperature Protection \\

The BMS will not allow a discharging current, if the internal temperature of the battery has reached 158°F/70°C.

### Low Temperature Charging/Discharging \\

The BMS will not allow a charging current under 32°F (0°C), but will continue to discharge down to -4°F(-20°C).

### Over-current/Short-circuit Discharge Protection \\

If the over-current/short-circuit protection is tripped, the BMS will shut the battery down and will remain disconnected until you remove the battery cables. While the battery cables are disconnected, we suggest taking the battery voltage with the use of a voltmeter. If it reads above 10.8V, reconnect the battery cables. If you are unsuccessful at obtaining a voltage reading above 10.8V, please contact our technical support team: [service@humsienk.com](mailto:service@humsienk.com).

### Cell Balancing \\

A passive balancing process is activated by the BMS at the top of each charge cycle when the battery voltage exceeds 14.1V. This ensures that all the cells remain at the same state of charge, which helps pack performance.

**The above data can be viewed on Page 03.**

## ■ Wide Application

RV

Solar Energy Storage

Industrial Battery

Fit for Replacing 12V Lead-acid Batteries

Home Energy Storage & Power Wall

Nautical Applications

Fishing, Boating Electronics

Ice Fishing

Recreational Vehicle

Off-grid Life

Deep Circulation Application

**Not Suitable For Starting Gasoline Engines**

