HUMSIENK

USER MANUAL
12V SERIES

LiFePO4 DEEP CYCLE BATTERY

HUMSIENK

www.humsienk.com

- 12V 50Ah
- 12V 100Ah Max
- 12V 100Ah Max Smart
- 12V 100Ah Max Plus
- 12V 100Ah Max Plus Smart
- 12V 100Ah
- 12V 100Ah Smart
- 12V 150Ah
- 12V 160Ah Plus
- 12V 200Ah
- 12V 200Ah Plus
- 12V 314Ah Mini
- 12V 314Ah Mini Smart
- 12V 320Ah
- 12V 320Ah Smart
- 12V 460Ah Plus
- 12V 640Ah Smart

Register Warranty

service@humsienk.com

CAUTION

Fire & Explosion Hazard

- Never short-circuit, disassemble, crush, or incinerate.
- Avoid mechanical impact, over-heating (>65°C/149°F), or immersion in water.
- Keep away from fire, flammable materials, and hazardous substances.

Charging & Handling

- Use only a $LiFePO_4$ charger (14.6V ±0.2V).
- Do not reverse polarity (battery/charger terminals).
- Use proper tools for installation/maintenance.

Series and Parallel Connection

- Use the same brand/type/capacity/voltage/BMS battery (purchased in 1 month).

Storage & Disposal

- Store in a ventilated and dry place (32~140°F/0~60°C)
- Recycle or dispose of according to local regulations.

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Key Features

Lithium iron Phosphate ($LiFePO_4$) chemistry provides exceptional stability and consistent performance.

-Maintain stable voltage and full capacity over thousands of cycles.
-Advanced Battery Management System (BMS) – Guards against overcharge, over-discharge, short-circuit, and temperature extremes.
-Support fast charging & discharging.
-IP65 (Ingress Protection Rating).
-UL94V-0 Certified.

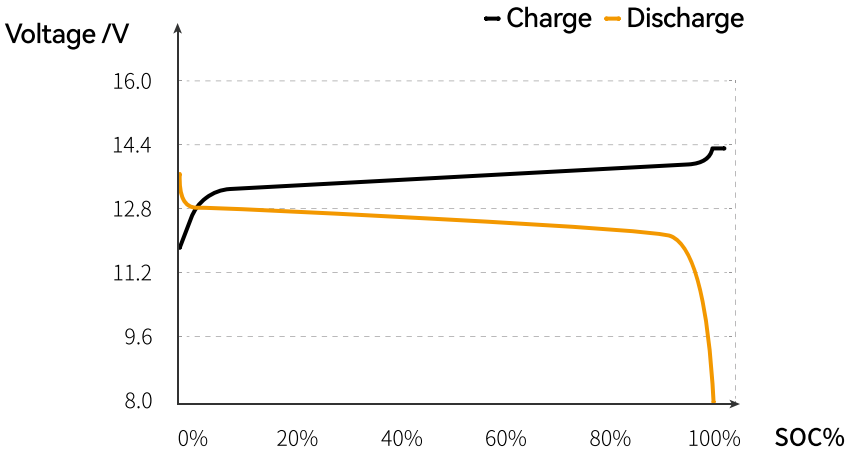
External Features



- 12V100Ah and 12V100Ah Smart are similar in appearance.

Charge-Discharge Curve

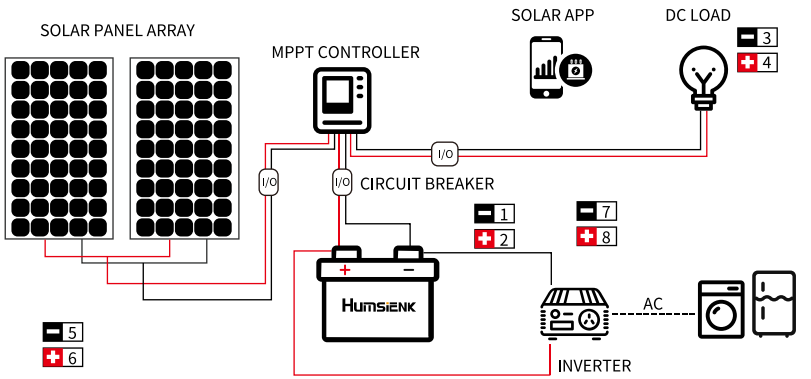
Charge-Discharge Curve@ 77°F/25°C



Sample: 12V50Ah battery

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

Connection Diagram



Product Specifications

Battery Management System(BMS) Warning and Protection

Content	12V50Ah 50A	12V100Ah 100A 12V100Ah 100A Smart	12V100Ah 100A Max 12V100Ah 100A Max Smart
Standard/Maximum Continuous Charging	10A/50A	20A/100A	20A/100A
Max Continuous Discharge Current	50A	100A	100A
Weight(lb)	10.80±3%	19.73±3%	26.46±3%
Dimensions(inch)	7.71 X 5.20 X 6.81	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	12V160Ah 150A Plus
Standard/Maximum Continuous Charging	20A/110A	30A/110A	32A/150A
Max Continuous Discharge Current	110A	110A	150A
Weight(lb)	28.68±3%	31.97±3%	41.23±3%
Dimensions(inch)	8.4 X 6.36 X 6.99	10.89 X 5.74 X 7.28	10.07 X 7.66 X 9.99

Content	12V200Ah 200A	12V200Ah 250A Plus	12V314Ah 200A Mini 12V314Ah 200A Mini Smart
Standard/Maximum Continuous Charging	40A/200A	40A/250A	62.8A/200A
Max Continuous Discharge Current	200A	250A	200A
Weight(lb)	44.75±3%	58.2±3%	58.42±3%
Dimensions(inch)	19.02 X 6.69 X 9.45	20.53 X 9.37 X 8.69	15.07 X 7.61 X 9.82

■ Battery Management System(BMS) Warning and Protection

Content	12V320Ah 250A	12V320Ah 250A Smart	12V460Ah 200A Plus
Standard/Maximum Continuous Charging	64A/250A	64A/250A	92A/200A
Max Continuous Discharge Current	250A	250A	200A
Weight(lb)	60.74±3%	59.75±3%	99.54±3%
Dimensions(inch)	20.55 X 9.37 X 8.58	20.55 X 9.37 X 8.58	25.00 X 9.65 X 8.66

Content	12V640Ah 250A Smart
Standard/Maximum Continuous Charging	128A/250A
Max Continuous Discharge Current	250A
Weight(lb)	111.88±3%
Dimensions(inch)	25.00 X 9.61 X 8.58

Battery Parameters

Content	12V50Ah, 12V100Ah, 12V100Ah Smart, 12V100Ah Max, 12V100Ah Max Smart, 12V100Ah Max Plus, 12V100Ah Max Plus Smart, 12V150Ah, 12V160Ah Plus, 12V200Ah, 12V200Ah Plus, 12V314Ah Mini, 12V314Ah Mini Smart, 12V320Ah, 12V320Ah Smart, 12V460Ah Plus, 12V640Ah 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, 12V100Ah Smart, 12V100Ah Max, 12V100Ah Max Smart, 12V100Ah Max Plus, 12V100Ah Max Plus Smart, 12V150Ah, 12V160Ah Plus, 12V200Ah, 12V200Ah Plus, 12V314Ah Mini, 12V314Ah Mini Smart, 12V320Ah, 12V320Ah Smart, 12V460Ah Plus, 12V640Ah Smart
Standard Charging Voltage	14.6±0.2V
Shipping Voltage	12.8V~13.5V
Shipping Capacity	50%
Cycle Life	6000@DOD80%
Self Discharge Rate	≤3%/Month
Series & Parallel Connections	4 Series(Max) 4 Parallel(Max)
Communications	Mini Smart/Smart Bluetooth support only
Case Material	ABS+PC/UL94-VO
Ingress Protection Rating	IP65
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

Charging with AC-DC Battery Charger

Check that the AC-DC battery charger you intend to use has a dedicated lithium charge setting that meets the following charging requirements. A lot of battery char-gers are designed for charging lead-acid batteries only and may not have a suitable charge setting for $LiFePO_4$ battery.

Charging Tips:

- Use a 14.6V $LiFePO_4$ battery charger.
- Recommended Charging Voltage: 14.6±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	12V50Ah	12V100Ah	12V150Ah	12V160Ah	12V200Ah
20A	2.5h	5h	7.5h	8h	10h
50A	1h	2h	3h	3.2h	4h

Battery Model / Charging Current	12V314Ah	12V320Ah	12V460Ah	12V640Ah
20A	15.7h	16h	23h	32h
50A	6.3h	6.4h	9.2h	12.8h

*Comparison of charging time for 12V series batteries.

Installation Guide

Installation Environment

The battery should be installed in a clean, cool, and dry place, away from water, to prevent leakage, resulting in self-discharge and short circuits. Keep adequate vent-ilation to prevent the battery from overheating. Temperature fluctuations betweenthe 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 visibleanomalies. 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. Avoid short-circuiting 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 local 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)	9.37
12(3.33)	14.89
10(5.26)	23.68
8(8.37)	37.66
6(13.30)	59.85
4(21.15)	95.19
2(33.62)	151.33
1/0(53.49)	240.74
2/0(67.43)	303.50
4/0(107.22)	482.57

Best Practice Guidelines

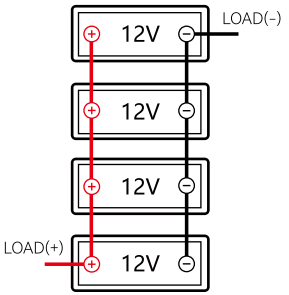
1. Same brand.
   (Do not connect any LiFePO4 battery of other brands due to differences in the BMS)
2. Same battery type(LiFePO4).
   (Do not connect any other battery type with this battery - Such as Li-Ion, SLA etc)
3. Same voltage. It is recommended to use the fully charged battery.
4. Same capacity.
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)

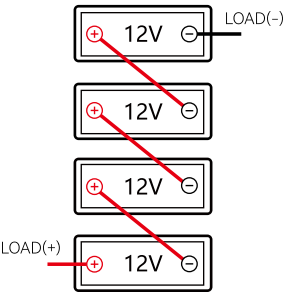
Parallel Connection

12V 200Ah

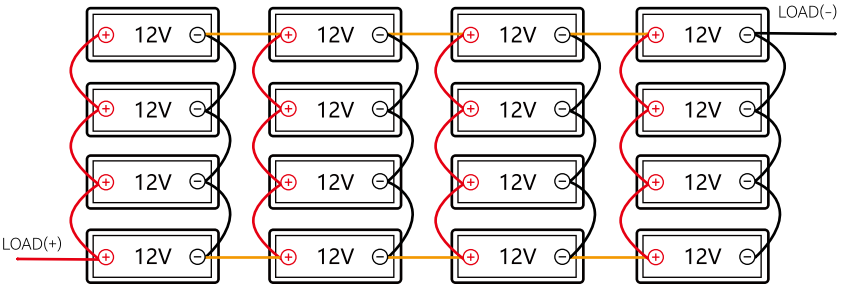


Series Connection

48V 50Ah



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.

BMS Function

Over-Charge ProtectionVoltage(>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.

Cell Balancing

The BMS activates a passive balancing process at the end of each charge cycle. 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.

Application Examples

Wide Application

Solar Energy System

Home Storage

Off-grid System

Industrial Battery Solutions

RVs

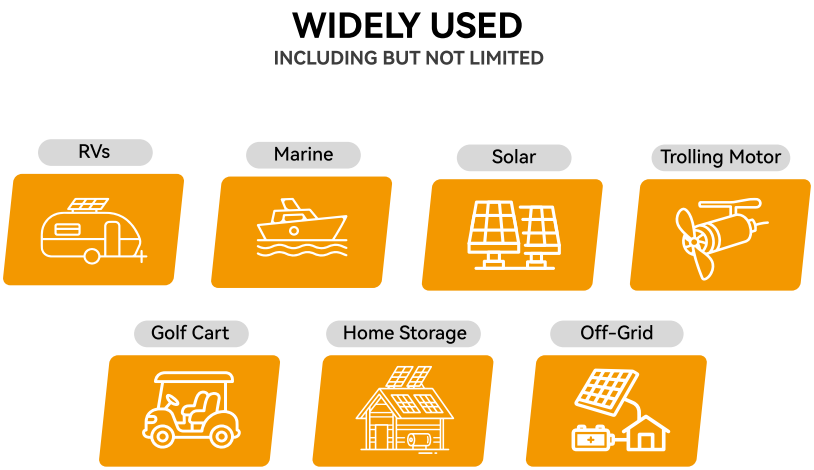
Boating Electronics

Trolling Motors

Golf Carts

Nautical Emergency Backup

Not Suitable For Starting Gasoline Engines.



FAQs

What Should do if the Battery is 0V?

Don't worry, if the battery is showing 0V, this is potentially due to BMS protection. Please disconnect the battery cable from the load, test the battery voltage. If the voltage is more than 10.8V, reconnect the battery cable. If the voltage is lower than 9.2V, please contact our technical team service@humsienk.com.

Is it Necessary to Charge the Battery Out of the Box?

Yes, you need to fully charge the battery.
NOTE: Please also fully charge the battery if you want to connect the batteries in series or parallel.

How Can I Check the Battery Voltage?

If you don't have a battery monitor, you can use a multimeter to monitor the voltage.

Can the Battery be Mounted in Any Position?

You can mount our battery in any position. Please make sure to secure and protect the terminals when mounting.

For More FAQs, Please Visit Our Website:

www.humsienk.com

Warranty and Returns

Warranty

Please Scan the QR Code to Register for the 5-Year Warranty

Register Warranty

Not covered by warranty:

- Damage caused by insufficient or improper fastening.
- Improper installation, use, maintenance, or service.
- Loose battery terminal connections.
- Series connection of more than 4 batteries (48V above) or parallel connection of more than 4 batteries.
- Reverse polarity connection.
- Improper storage conditions defined in the battery user manual.
- Any short circuit caused by accidentally, intentionally, or unintentionally connecting the positive and negative terminals.
- Damage caused by impact, accidents, collisions, or drops.
- Insufficient/overcharging of the battery as defined in the battery user manual.
- Use in conjunction with other third-party products.
- High resistance caused by terminal corrosion, poor crimping, or undersized cables.
- Battery failure caused by electrical system malfunctions. Modification of the product without the explicit written consent of the manufacturer.
- Use of the battery for applications beyond its design and intended use, including repeated engine starting or consuming more amperes than the battery's rated continuous discharge to meet their respective specifications.
- Batteries left uncharged for more than 1 year (batteries should be charged regularly).
- Batteries used in commercial applications that cycle to a discharge depth of 80% or more within 24 hours.
- Force majeure, including fires, typhoons, floods, or earthquakes.
- Buyers are responsible for any damage caused by improper operation or misuse of our products and/or failure to follow safety guidelines.

After-Sales Service

If you need any after-sales service for the product, please contact service@humsienk.com.
We will provide you with the necessary assistance.

How to Store the Battery

We recommend bringing the batteries to a 50% state of charge. Then, disconnect the batteries from any loads by removing the negative cable from one of the batteries. On average, the batteries lose < 3% capacity per month at 77°F/25°C. This is subject to an increase in capacity loss if stored in extreme environmental conditions.

Disposal and Recycling

Ensure that the battery is properly disposed of in accordance with the laws and regulations in your area.

This product contains lithium-ion batteries and other recyclable materials.

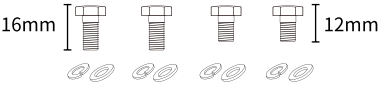
We strongly encourage our customers to recycle used batteries.

Packing List

Battery X 1



Screw X 4



Specification X 1



Plastic insulation cap X 2



HUMSIENK

Thank You

Dear Valued Customer,

Thank you for choosing Humsienk batteries. We sincerely appreciate your trust and support, which motivates us to continuously pursue excellence and provide you with higher-quality batteries.

At Humsienk, we are committed to advancing battery technology and making it accessible to everyone by offering reliable products at affordable prices.

We take pride in delivering products that not only meet your expectations but also reflect our mission to make cutting-edge lithium battery technology accessible to all.

We hope our batteries bring you great satisfaction and value. If you have any questions or need assistance, please feel free to contact us. Your feedback and trust drive our dedication to technological innovation and exceptional service.

Thank you once again for choosing Humsienk. We look forward to our products bringing you a more brilliant life.

Best regards,
Humsienk