

12V SERIES

USER MANUAL

LiFePO4 DEEP CYCLE BATTERY



www.wattcycle.com

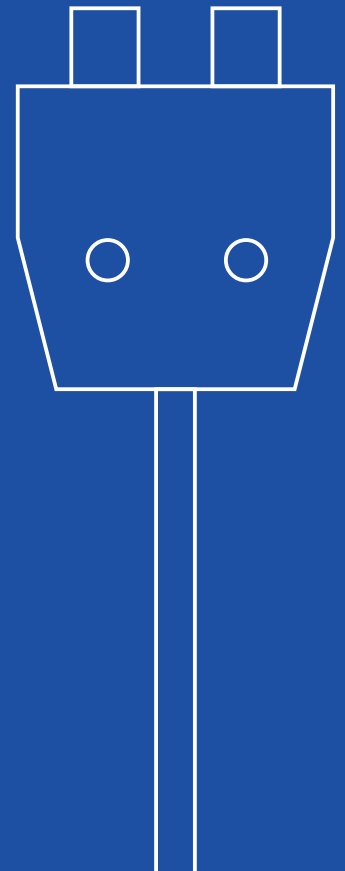


To better protect your rights and interests, please log in to the WattCycle website or scan the QR code to register for the warranty promptly!

-  12V 50Ah
-  12V 100Ah Mini
-  12V 100Ah Mini Smart
-  12V 100Ah
-  12V 100Ah Pro
-  12V 100Ah H190 Smart
-  12V 200Ah
-  12V 280Ah Mini
-  12V 280Ah Mini Smart
-  12V 300Ah Mini
-  12V 300Ah Mini Smart
-  12V 314Ah Mini
-  12V 314Ah Mini Smart
-  12V 314Ah Ultra
-  12V 314Ah Ultra Smart



 service@wattcycle.com



CAUTION

- Flammable/explosive hazard avoid mechanical impact
- Do not short circuit
- Do not crush
- Do not disassemble
- Do not incinerate
- Do not heat above 149°F/65°C
- Do not exceed the charging voltage of 15V
- Do not immerse the battery in water
- Do not reverse the polarity of the battery and charger
- Use the appropriate tools when handling the battery
- When connecting batteries in series/parallel, do not use batteries from other brands/types (BMS may not be compatible)
- This battery should be charged using a lithium iron phosphate battery charger with a charging voltage of $14.6V \pm 0.2V$
- Keep the battery away from fire, hazardous materials, or substances

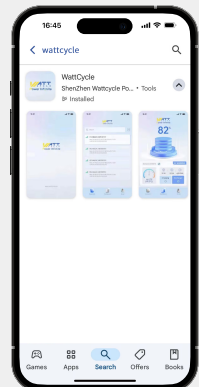
APP Introduction

This application is developed and designed by WattCycle®. It specializes in monitoring lithium batteries, providing real-time status readings such as the voltage, charging and discharging current, alarm prompts, protection status, etc. This allows users to clearly understand the status of lithium batteries and ensure safe use.



You can search "WattCycle" in the Apple or Google Play Store to download and install.

*This app only for smart batteries.



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■ Key Features

Lithium Iron Phosphate(LiFePO₄)chemistry provides exceptional stability and consistent performance

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

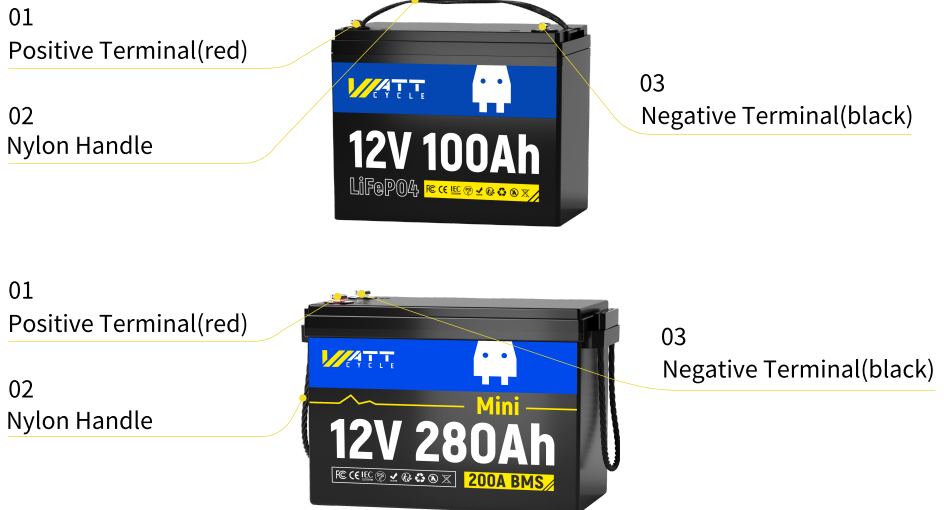
Supports fast charging and discharging

Constant voltage and full usable capacity at any state of charge

IP67 Rated (Dust and Water Resistant)

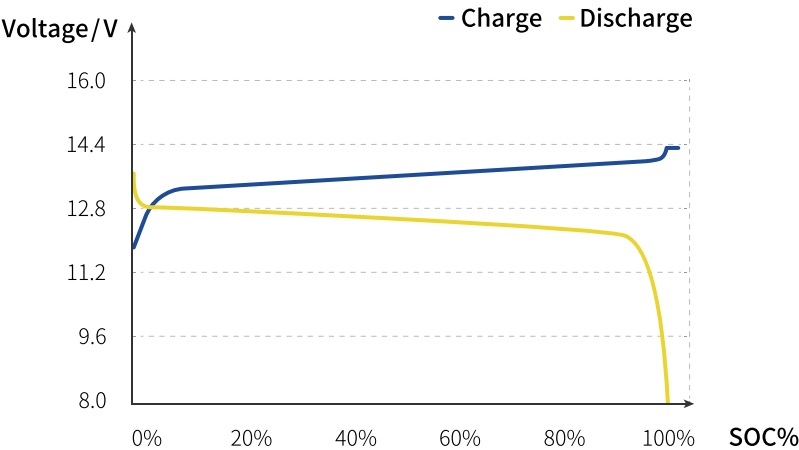
Grade UL94 V-0 (Fireproof)

■ External Features



12V50Ah, 12V100Ah and 12V100Ah Mini are similar in appearance.
12V200Ah and 12V400Ah are similar in appearance.

■ Charge-discharge Curve @ 77°F/25°C

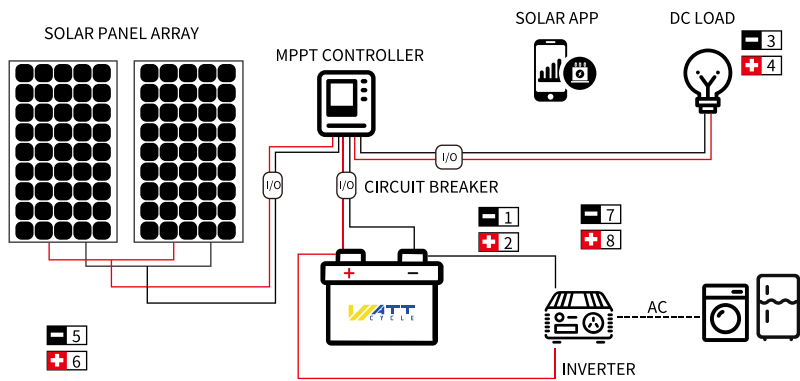


Sample: 12V50Ah battery

*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	12V100Ah Mini	12V100Ah Mini Smart
Standard/Maximum Continuous Charging	10A/50A	20A/100A	20A/100A
Max Continuous Discharge Current	50A	100A	100A
Over-current Discharge Protection	170A±30A	300A±50A	150A±50A
Over-current Charge Protection	70A±10A	130A±30A	110A±10A
Weight(lbs)	11.46	20.94	20.94
Dimensions(inch)	7.68*5.12*6.7	9.02*5.43*8.19	9.02*5.43*8.19

Content	12V100Ah	12V100Ah Pro	12V200Ah
Standard/Maximum Continuous Charging	20A/100A	20A/110A	40A/200A
Max Continuous Discharge Current	100A	110A	200A
Over-current Discharge Protection	300A±50A	300A±50A	600A±50A
Over-current Charge Protection	130A±20A	130A±20A	210A±10A
Weight(lbs)	23.15	26	45.20
Dimensions(inch)	10.24*6.61*8.23	13.07*6.77*8.58	19.02*6.7*9.45

Battery Management System(BMS) Warning and Protection

Content	12V280Ah Mini	12V280Ah Mini Smart	12V100Ah H190 Smart
Standard/Maximum Continuous Charging	56A/200A	56A/200A	20A/100A
Max Continuous Discharge Current	200A	200A	100A
Over-current Discharge Protection	600A±50A	210A±10A	150A±50A
Over-current Charge Protection	210A±10A	210A±10A	110A±10A
Weight(lbs)	59.52	59.52	24.9
Dimensions(inch)	15.12*7.64*9.76	15.12*7.64*9.76	13.94*6.93*7.36

Content	12V300Ah Mini	12V300Ah Mini Smart	12V314Ah Mini
Standard/Maximum Continuous Charging	60A/200A	60A/200A	62.8A/200A
Max Continuous Discharge Current	200A	200A	200A
Over-current Discharge Protection	600A±50A	210A±10A	600A±50A
Over-current Charge Protection	210A±10A	210A±10A	210A±10A
Weight(lbs)	59.52	59.52	59.52
Dimensions(inch)	15.12*7.64*9.76	15.12*7.64*9.76	15.12*7.64*9.76

■ Battery Management System(BMS) Warning and Protection

Content	12V314Ah Mini Smart	12V314Ah Ultra	12V314Ah Ultra Smart
Standard/Maximum Continuous Charging	62.8A/200A	62.8A/300A	62.8A/300A
Max Continuous Discharge Current	200A	300A	300A
Over-current Discharge Protection	210A±10A	310A±10A	310A±10A
Over-current Charge Protection	210A±10A	310A±10A	310A±10A
Weight(lbs)	59.52	61.72	61.72
Dimensions(inch)	15.12*7.64*9.76	20.63*9.65*8.66	20.63*9.65*8.66

Battery Parameters

Content	12V50Ah、12V100Ah Mini、12V100Ah Mini Smart、12V100Ah、12V100Ah Pro、12V100Ah H190 Smart、12V200Ah、12V280Ah Mini、12V280Ah Mini Smart、12V300Ah Mini、12V300Ah Mini Smart、12V314Ah Mini、12V314Ah Mini Smart、12V314Ah Ultra、12V314Ah Ultra Smart
Short Circuit Current Protection	Support
Release Condition	Cut Load
Charging High Temperature Protection	140°F~158°F
Discharge High Temperature Protection	149°F~167°F
High Temperature Protection Release Condition	Drop by 41°F~59°F
Charging Low Temperature Protection	23°F~41°F
Discharge Low Temperature Protection	-13°F~5°F
Low Temperature Protection Release Condition	Rise by 41°F~59°F
Rated Voltage	12.8V
Standard Charging Voltage	14.6V±0.2V
Shipping Voltage	12.8V~13.5V

Battery Parameters

Content	12V50Ah、12V100Ah Mini、12V100Ah Mini Smart、12V100Ah、12V100Ah Pro、12V100Ah H190 Smart、12V200Ah、12V280Ah Mini、12V280Ah Mini Smart、12V300Ah Mini、12V300Ah Mini Smart、12V314Ah Mini、12V314Ah Mini Smart、12V314Ah Ultra、12V314Ah Ultra Smart
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-V0
Waterproof Grade	IP67
Battery Pack Certifications	IEC62133/RoHS/CE/FCC/UN38.3/Class9
Cell Certifications	UL1642/UL2580/UN38.3
Storage Temperature	32°F~140°F
Terminal Bolt Size	M8(M6 for 12V50Ah)

■ 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: $14.6V \pm 0.2V$
- ▶ Recommended Charging Current:

Charging Current \ Battery Model	12V50Ah	12V100Ah Mini 12V100Ah Mini Smart 12V100Ah 12V100Ah Pro	12V200Ah	12V300Ah Mini 12V300Ah Mini Smart
20A	2.5h	5h	10h	15h
50A	1h	2h	4h	6h

*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.

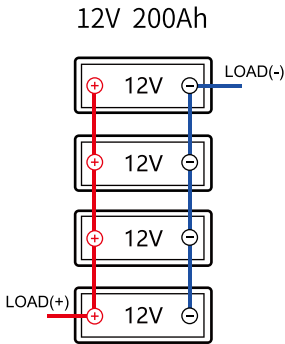
■ Connection Steps

STEP1. Fully charge the battery separately.

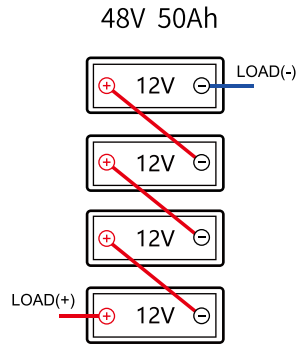
STEP2. Wait for 15mins and then test the voltage. It should be above 13V.

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

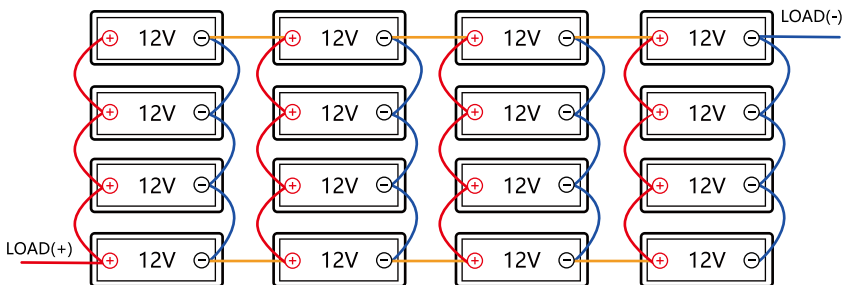
Parallel Connection



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@wattcycle.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

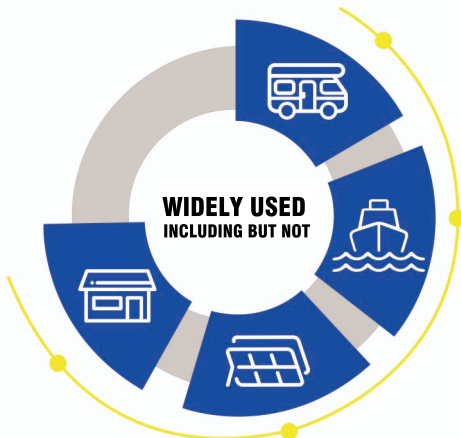
Ice Fishing

Recreational Vehicle

Off-grid Life

Deep Circulation Application

Not Suitable For Starting Gasoline Engines



What should I do if the battery is 0 V ?

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 10.8V, please contact our technical team service@wattcycle.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.wattcycle.com



■ Warranty



Please scan the QR code to register for the 5-year 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@wattcycle.com.
We will provide you with the necessary assistance.

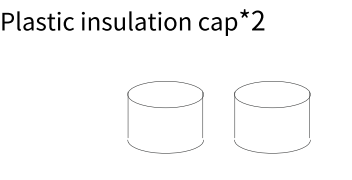
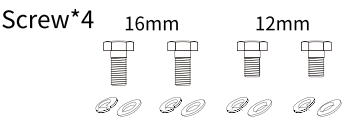
■ How to Store the Battery?

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



Thank You

Dear Valued Customer,

Thank you for choosing Wattcycle batteries. We greatly appreciate your support. Our team works diligently behind the scenes to create advanced battery systems and provide top-notch service to our customers. Support and feedback from our customers along with the hard work and dedication of our staff allow us to deliver exceptional products, competitive prices, and an overall excellent experience. Thanks again for giving us your vote of confidence. We hope that you'll enjoy using our products as much as we've enjoyed creating them. Please feel free to reach out to us if you have any questions.

Power infinity!

————— WattCycle