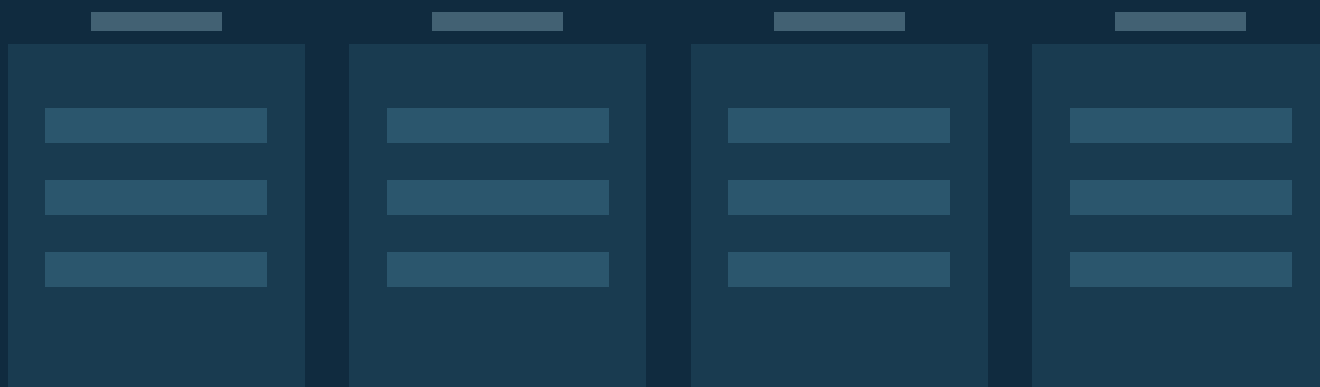


24V



Deep-cycle battery

LiFePO4 · Installation, charging and operation



READ BEFORE INSTALLATION

Keep this manual with your battery. Match every setting and connection to the exact model supplied.

USING THIS MANUAL

Find what you need

Safety essentials	03
Features & external connections	04
Charge curve & system diagram	05
Model specifications	06
Charging	09
Installation & battery banks	10
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Choose the exact model

This is a family manual. Capacity, current limits, dimensions, heating, monitoring and connection limits vary by model. Use the matching table column and the technical datasheet supplied with your product.

The technical pages retain the manufacturer's tables and diagrams. Product labels and interface screens may show the original equipment branding.

BEFORE YOU BEGIN

Safety essentials

Prevent short circuits and reverse polarity

Keep terminals protected. Never bridge the positive and negative terminals with tools, cables or other metal objects. Confirm polarity before connecting.

Handle and install with care

Do not crush, puncture, strike, dismantle, incinerate or immerse the battery. Keep it away from heat sources and flammable materials. Do not use a damaged or deformed battery.

Isolate before wiring

Switch off and disconnect equipment before installation. Use insulated tools and suitable protective equipment. Cables and circuit protection must suit the battery and installation. Qualified personnel must carry out the wiring.

Use the correct charger

The family manual specifies a LiFePO4 charger at $29.2V \pm 0.2V$. Confirm the exact model's charging current and temperature limits before charging. Protection thresholds are not normal charger setpoints.

Match batteries before combining them

Use matching batteries of the same brand, chemistry, voltage and capacity. The source manual specifies a purchase-age difference of no more than three months. Fully charge each battery separately before assembling a permitted bank.

Stop if the battery behaves abnormally

Stop use if the battery becomes unusually hot, leaks, smells abnormal, swells or smokes. Keep people clear and seek appropriate assistance. Do not handle or move a hot or smoking battery.

FEATURES & EXTERNAL CONNECTIONS

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
- IP65 (Ingress Protection Rating)
- Grade UL94 V-0 (Fireproof)

External Features



24V50Ah

L: 10.24"

W: 6.61"

H: 8.35"

24V100Ah/Smart

L: 19.00"

W: 6.70"

H: 9.49"

24V200Ah

L: 20.60"

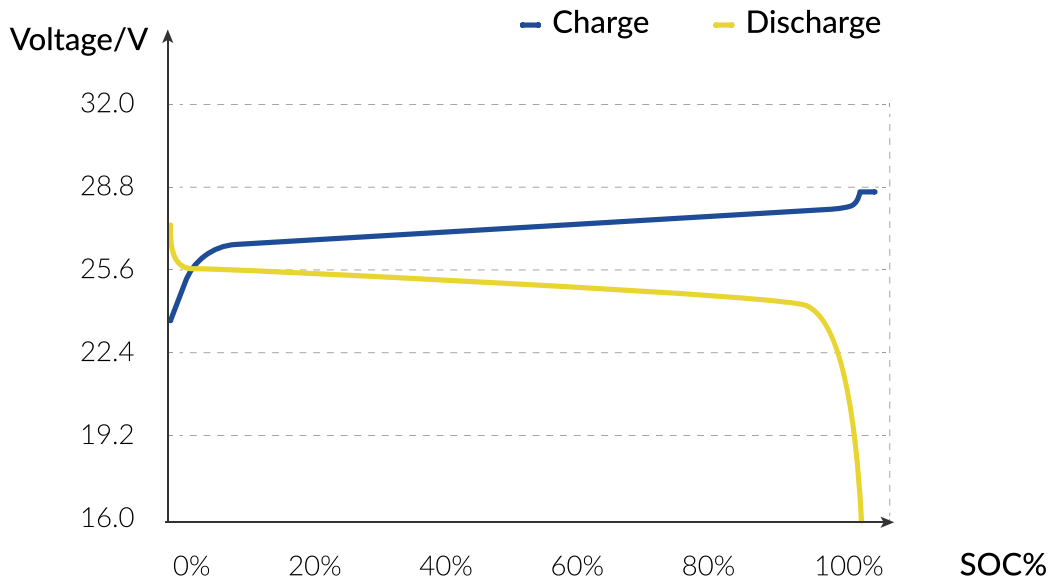
W: 10.60"

H: 8.74"

24V50Ah,24V200Ah are similar in appearance.

CHARGE CURVE & SYSTEM DIAGRAM

Charge-Discharge Curve @ 77°F/25°C

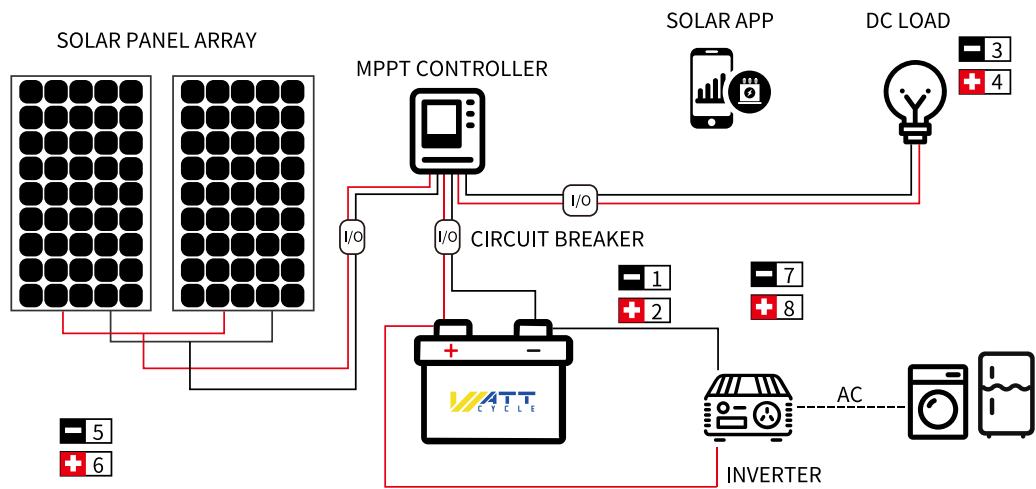


Sample:24V100Ah battery

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

Connection Diagram

Note: For a 24V100Ah battery, the usage is the same as that of other models



MODEL SPECIFICATIONS

 Battery Management System(BMS) Warning and Protection

Content	24V50Ah 24V50Ah Smart	24V50Ah TM Smart	24V100Ah	24V100Ah Smart
Standard/Maximum Continuous Charging	10A/50A	10A/50A	20A/100A	20A/100A
Max Continuous Discharge Current	50A	50A	100A	100A
Over-current Discharge Protection	170A±30A	60A±5A	400A±50A	150A±20A
Over-current Charge Protection	70A±10A	60A±5A	160A±40A	110A±10A
Weight	25lbs±3%/ 11.3kg±3%	20.61lbs±3%/ 9.35kg±3%	44.75lbs±3%/ 20.3kg±3%	49lbs±3%/ 22.2kg±3%
Dimensions(inch)	10.24 x 6.61 x 8.35	10.24 x 6.61 x 8.35	19 x 6.7 x 9.49	19 x 6.7 x 9.49
Dimensions(mm)	260 x 168 x 212	260 x 168 x 212	482 x 170 x 241	482 x 170 x 241

Content	24V100Ah TM Smart	24V200Ah	24V314Ah 24V314Ah Smart	24V314Ah Ultra Smart
Standard/Maximum Continuous Charging	20A/100A	40A/200A	62.8A/300A	62.8A/300A
Max Continuous Discharge Current	100A	200A	300A	300A
Over-current Discharge Protection	220A±20A	600A±50A	750A±50A	310A±10A
Over-current Charge Protection	110A±10A	250A±50A	350A±50A	310A±10A
Weight	43.65lbs±3%/ 19.8kg±3%	96lbs±3%/ 43.5kg±3%	147lbs±3%/ 66.7kg±3%	153.99lbs±3%/ 69.85kg±3%
Dimensions(inch)	20.08 x 10.24 x 8.46	20.6 x 10.6 x 8.74	25 x 9.61 x 8.58	20.09 x 14.25 x 9.53
Dimensions(mm)	510 x 260 x 215	523 x 269 x 222	635 x 244 x 218	510.3 x 362 x 242

MODEL SPECIFICATIONS



Battery Parameters

Content	24V50Ah, 24V50Ah Smart, 24V50Ah TM Smart, 24V100Ah, 24V100Ah Smart, 24V100Ah TM Smart, 24V200Ah, 24V314Ah, 24V314Ah Smart, 24V314Ah Ultra Smart
Short Circuit Current Protection	Support
Release Condition	Cut Load
Charging High Temperature Protection	122~140°F / 50~60°C
Discharge High Temperature Protection	131~149°F / 55~65°C
Charging Low Temperature Protection	23~41°F / -5~5°C
Discharge Low Temperature Protection	-13~5°F / -25~-15°C
Charging High-Temperature Protection Release Value	113~131°F / 45~55°C
Discharging High-Temperature Protection Release Value	122~140°F / 50~60°C
Charging Low-Temperature Protection Release Value	26.6~44.6°F / -3~7°C
Discharging Low-Temperature Protection Release Value	-4~14°F / -20~-10°C
Rated Voltage	25.6V
Standard Charging Voltage	29.2V±0.2V
Shipping Voltage	25.6V~29.2V
Shipping Capacity	60%
Cycle Life	6000@80%DOD

MODEL SPECIFICATIONS



Battery Parameters

Content	24V50Ah, 24V50Ah Smart, 24V50Ah TM Smart, 24V100Ah, 24V100Ah Smart, 24V100Ah TM Smart, 24V200Ah, 24V314Ah, 24V314Ah Smart, 24V314Ah Ultra Smart
Self Discharge Rate	<3%/Month
Series & Parallel Connections	4 Parallel(Max) 2 Series(Max)
Communications	24V50Ah Smart, 24V100Ah Smart, 24V100Ah TM Smart, 24V314Ah Smart, 24V314Ah Ultra Smart
Case Material	ABS+PC/UL94 V-0
Ingress Protection Rating	IP65
Battery Pack Certifications	IEC/RoHS/CE/FCC/UN38.3/Class9
Cell Certifications	UL1642/UL2580/UN38.3
Storage Temperature	32°F~140°F / 0°C~60°C
Terminal Bolt Size	M8

CHARGING



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 29.2V LiFePO₄ battery charger
- Recommended Charging Voltage: 29.2V±0.2V
- The recommended charging current is the battery capacity divided by 5 hours.

(For example, the recommended charging current for 24V100Ah battery is 100Ah/5h=20A, so 24V20A charger would be perfect for a 24V100Ah battery.)

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

Battery Model Charging Current	24V50Ah	24V100Ah	24V200Ah	24V314Ah
20A	2.5h	5h	10h	15.7h
50A	1h	2h	4h	6.5h

*Comparison of charging time for 24V 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 connect the positive and negative poles of the battery together, 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.

INSTALLATION & BATTERY BANKS

 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.**
(Do not connect any other battery type with this battery - such as Li-ion, SLA etc)
- 5. The two batteries should be no more than 3 months older than each other.**

INSTALLATION & BATTERY BANKS

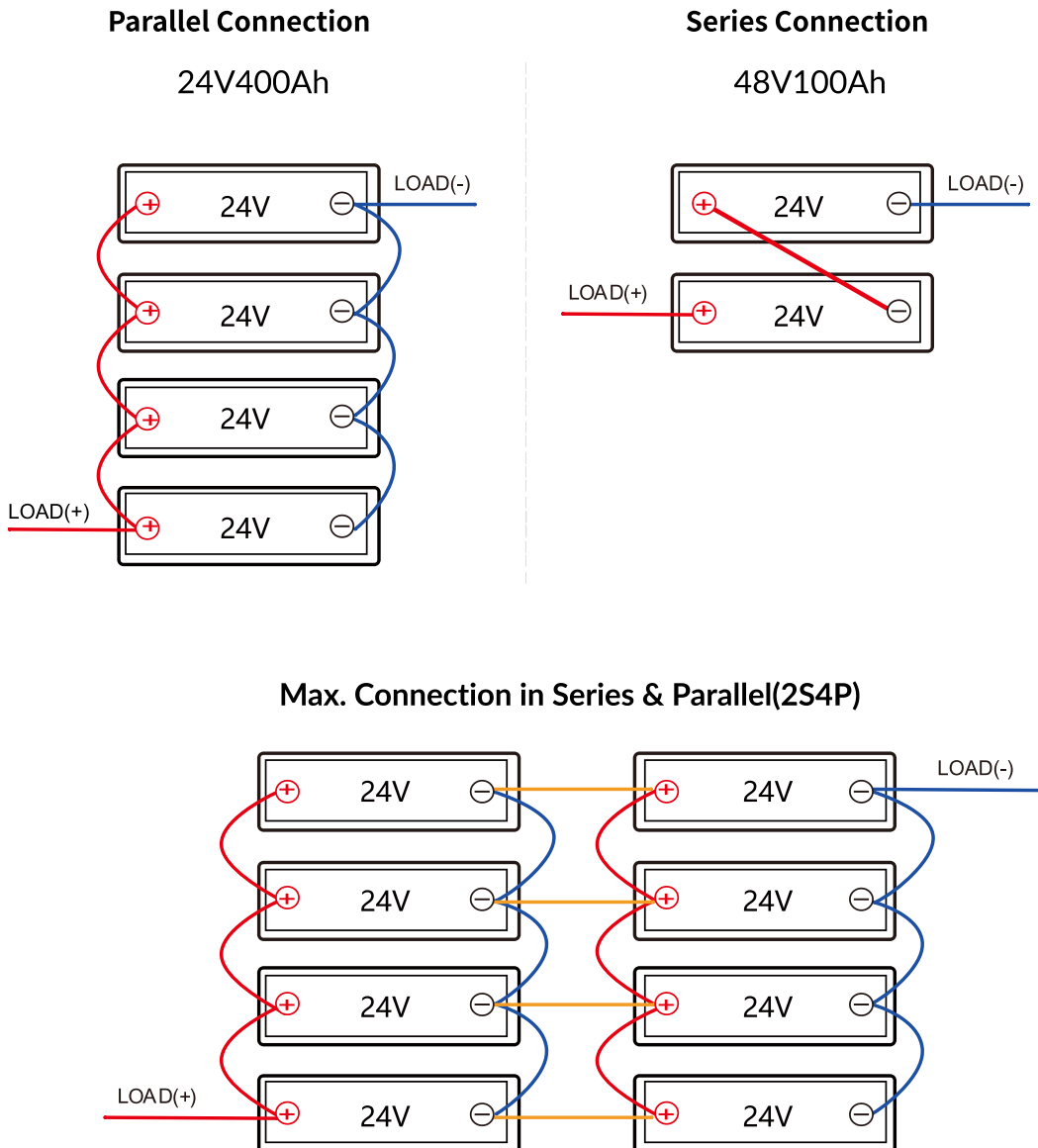
Connection Steps

STEP1. Fully charge the battery separately.

STEP2. Wait for 15mins and then test the voltage. It should be above 26V.

STEP3. Connect your batteries in series, parallel, or a combination of both.

(Taking a 24V100Ah battery as an example)



Taking a 24V 100Ah battery as an example, first, four such batteries in parallel form a 24V 400Ah pack. Then, two of these packs in series produce a 48V 400Ah battery pack.

BATTERY MANAGEMENT SYSTEM



BMS Function

Over-Charge Protection Voltage(>28.8V)

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

Over-Discharge Protection Voltage(<20V)

If an individual cell falls below the prescribed threshold during discharge, the BMS will prevent further discharge. When the battery voltage reaches over 21.6V, 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 131°F/55°C.

Discharging High Temperature Protection

The BMS will not allow a discharging current, if the internal temperature of the battery has reached 140°F/60°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 21.6V, reconnect the battery cables. If you are unsuccessful at obtaining a voltage reading above 21.6V, please contact our technical support team: pvshop.store

Cell Balancing

A passive balancing process is activated by the BMS at the top of each charge cycle when the battery voltage exceeds 27.8V. 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 06](#) .

APPLICATIONS



Wide Application

Trolling Motor
Boat Electronics
Recreational Vehicle
Fit for Replacing 24V Lead-acid Batteries

Solar Energy System
Industrial Storage System
Home Storage & Power Wall
Off-Grid System

Note: Not suitable for starting gasoline engines.

WIDELY USED
INCLUDING BUT NOT LIMITED



RVs



Marine



Solar



Home Storage



Golf Cart



Trolling Motor



Off-Grid

Keep your battery ready

Storage

For the 12V and 24V families, the source manual recommends approximately 50% state of charge before storage. Disconnect loads. Check the battery periodically and avoid leaving it uncharged for a year. Self-discharge rises in extreme conditions.

Inspection

Keep the casing and terminals clean and dry. Look for loose connections, corrosion, damaged insulation or signs of impact before use. Resolve faults before reconnecting the system.

If the battery shows 0V

A 0V reading can indicate BMS protection. Disconnect the load and check the relevant protection section. Do not bypass the BMS or repeatedly reconnect a faulted circuit. Contact support if the cause is unclear or protection does not clear.

Smart features

Bluetooth, heating, active balancing and communication interfaces are model-dependent. Use only the app, cable and protocol specified for your exact battery. A connector alone does not establish inverter compatibility.

Support and warranty

Keep the order number, model, serial number and a description of the fault. Contact PVShop through your order confirmation or pvshop.store for assistance. Warranty and return terms are those provided with your purchase; this manual does not create additional warranty coverage.

End of service

Arrange battery recycling in accordance with local requirements. Protect the terminals during handling and follow the collection provider's instructions.