

KMW24V Series battery user manual

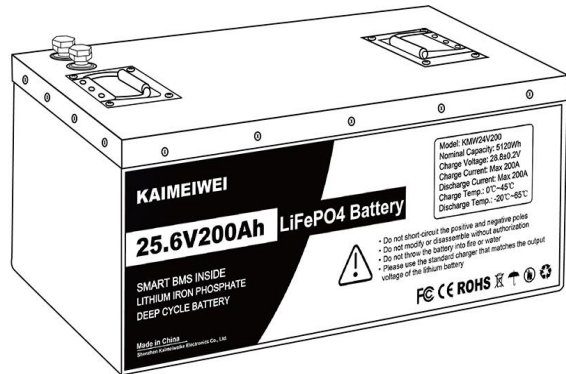
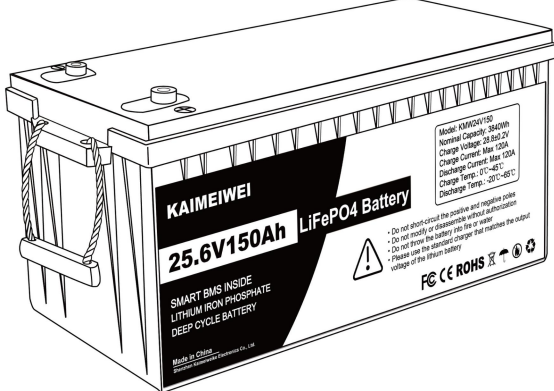
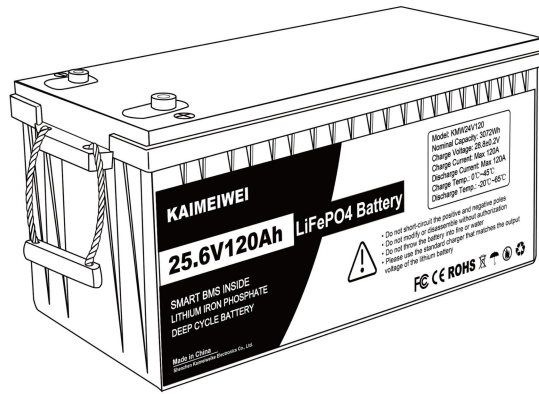
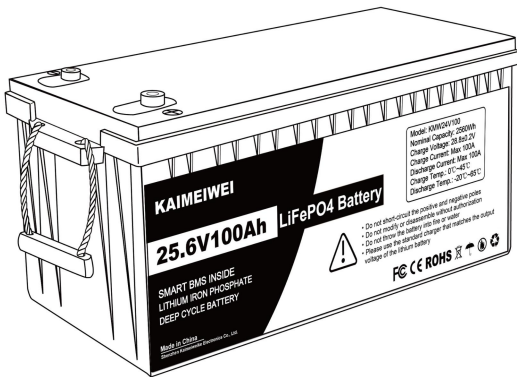
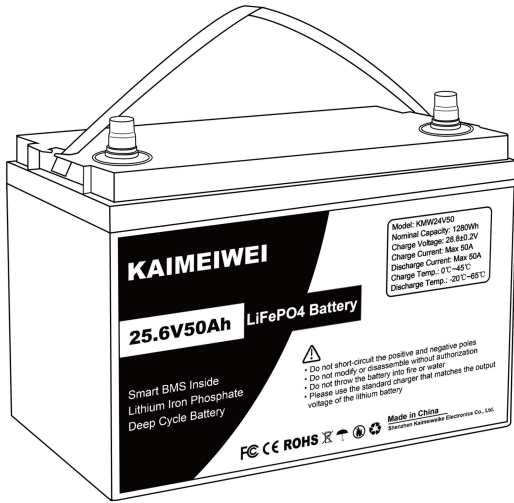
Lithium iron phosphate (LiFePO₄) battery

Catalogue

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Please read this manual before installation and use.

1.0 KMW24V Series Battery Introduction



Introduction to the 1.0 KMW24V series battery

1.1 KMW24V series battery has strong safety and stability, high temperature resistance, high energy density and high cycle performance.

The KMW24V series battery is designed for the highest quality, safest, most applicable and compatible lithium iron phosphate (LiFePO₄) battery pack.

Internal high-performance grade A cell.

Battery 0.2C rate charge and discharge cycle 3000 times, battery capacity 80%, typical battery life: 4000~5000 cycles.

24 V (nominal 25.6 V) Built-in intelligent battery management system (BMS), provides automatic and maintenance-free battery pack operation.

Temperature sensor that protects the battery from the extremely high temperature of the cell and the MOS.

1.2 Application

KMW24V Series batteries have the highest applicability and compatibility. It supports parallel use and is an ideal alternative to lead-acid batteries.

Many application scenarios are such as RVs, golf carts, small ESS (energy storage systems), and reserve power supplies.

2.0 Safety: Attention and warning

Read, understand, and follow all instructions: Fully read and understand all applicable instructions and documentation before using or installing this product. Keep all the manuals and documentation for future reference.

Wear appropriate safety equipment and use insulation tools.

Ensure that the charger / inverter is properly connected.

Installation shall be performed by the professionals.

Use the cables of the appropriate specifications.

Ensure the installation follows local, applicable and national electrical specifications.

Ensure that the system is properly grounded.

Ensure that the battery is installed in a suitable location for the electronic device.

Keep the battery in a safe temperature range for stable operation.

Clean the battery with an appropriate detergent (e. g., clean dry cloth). Do not use any spray cleaner, liquid, aerosol, or any type of solvent to clean or spray paint.

Ensure that all the fasteners are tightened properly.

Do not burn, crush, or puncture the battery.

Do not place batteries in a hazardous / flammable environment or be exposed to corrosive chemicals or steam.

Do not connect the battery directly to the solar energy wiring.

Do not operate the battery when charging or discharging.

Do not reverse the polarity.

Do not connect to different models of batteries.

Do not overuse it. For example, do not recycle at a high level of continuous charge / discharge current limit (charge after discharge, charge after discharge...).

Do not store or install products near any radiator, collector, stove, or in shells that may retain excessive heat.

Do not immerse this product in a liquid.

Fire, explosion, and burn risk. If any electrical smell or overheating, safely close the circuit breaker and call the fire department.

Be careful when lifting or moving, and the battery is very heavy. Beware of accidental falls.

Keep away from any liquid (electrolyte) or gas (flammable). If inhaled, evacuate the contaminated area and seek medical assistance.

If the battery leaks gas / liquid touching the eyes or skin, flush the affected area with running water for 15 minutes and seek medical attention.

Do not use water if a fire occurs! Only use the dry powder fire extinguishers. If possible, move the pack to a safe area before it catches fire.

3.0 Preparation for shipment, reception, and installation

3.1 Shipment and Receiving

KMW24V Series batteries are made of lithium iron phosphate cells (LiFePO₄) and are in category 9 dangerous goods, so please note the following matters for shipment and reception:

Shipping: KMW24V series batteries shall be properly packed and shipped according to the handling and labeling rules of UN3480 lithium batteries.

Receiving: Check the KMW24V series battery when receiving it. If any damage is found inside the package or battery pack, please take photos and video, and contact the dealer immediately.

Check: Upon receipt of the product, fully charge the "7.0 KMW24V series battery charged correctly" in this manual and discharge it to confirm that the KMW24V series battery is working properly. Read, understand, and follow all the instructions in this manual, and contact the manufacturer or distributor if any problems are found during the inspection.

Please keep the original packaging box and packaging materials intact in case the KMW24V series battery will need to be repackaged or sold after warranty in the future.

3.2 Installation and preparation

3.2.1 Tool required for installation

Suitable size cross screwdriver / torque wrench / riveting pliers

3.2.2 Use the cable / wiring patch to connect the battery

Correct cable: a cable that meets the safe current of the battery pack.

Correct wiring patch: meet the battery pack installation size and safety current wiring patch, hole diameter of 8mm.

4.0 Installation

KMW24V Series batteries shall be firmly installed:

- 1) Use safety devices and insulation tools to fully read, understand and strictly follow all instructions in this manual by qualified personnel according to applicable local and national electrical codes.
- 2) In the applicable location and environment:
Suitable for electronic equipment with appropriate temperature and humidity.
No hazardous / flammable or corrosive chemicals or steam.
There are no heat sources nearby, such as a radiator, collector or stove to transfer heat to the battery or retain excess heat in the enclosure.
No children or pets were present, or may be present.
If it is a mobile environment like the RV, the battery is installed where it can be firmly fixed to avoid any vibration.
- 3) In the appropriate system:
All components (including but not limited to batteries, connection cables, connections, buses, fuses, circuit breakers, inverters, chargers, and other electrical inputs, PV and electrical loads) are properly calculated, determined and programmed according to the detailed specifications for each individual component, specific system requirements and any changes or possible changes.
Its correct grounding, twisting, fastening and wiring.

The 5.0 is connected to the KMW24V series battery

- 1) Identify the positive electrode and negative extremes on the battery. The positive (+) is marked red and the negative (-) is marked black.
- 2) Check whether you are correctly connected to all the hardware of the battery. Ensure that the screw inserts of the terminals are fully in place and can be tightened to an appropriate torque (12 to 15 N-m).
- 3) Connect the cable to the battery terminal. The method is to remove the terminal screw, pass it through the hole of the cable terminal, and then reinstall the screw into the terminal to achieve the correct torque.

Do not tighten the terminal screws with your fingers. Specific torques are necessary to ensure that they are not loosened during operation. Failure to tighten the terminal screws properly may cause serious damage and fail the warranty.

6.0 Connect the battery together by cable / connector

All parallel or series connected (LifePO40) batteries shall be of the same model and the same voltage / SOC (charging status) before connection. Ensure that the positive and negative electrodes of the battery are interrupted before and during the parallel or series electrical wiring process. Make sure that you follow the following correct practices and procedures to ensure the correct operation.

6.1 Connect the battery by a parallel cable

Before parallel wiring, ensure that the battery and the rest of the system can handle the increased current limit and increased heat. The rest of the system includes, but is not limited to, electrical inputs including connecting cables, cable connections, buses, fuses, circuit breakers, inverters, chargers, PVs and electrical loads.

6.1.1 Consequences of the parallel connection

Multiple KMW24V series batteries can be connected in parallel to increase the capacity and current of the 24 VESS (Energy Storage System). When multiple batteries are connected in parallel, the system maintains the same voltage as the single battery, but the capacity and current limits are additive. For example, if two unit KMW24V series batteries are connected in parallel, their output voltage is still 24V, but their storage capacity increases from 100Ah to 200Ah, and the current limit increases from 100A to 200A.

6.1.2 Connect the battery through a parallel cable without a bus bar



6.1.2 Bus-less parallel battery 6.1.3 Battery in parallel with the bus

- 1) Connect correctly to the positive extreme of the first battery. Ensure that the cables are properly connected to the terminal as indicated. Improper connections can cause serious damage and can cause warranty failure.
- 2) Connect the other end of the positive electrode cable to the positive terminal of the other battery. Repeat step
- 3) Repeat steps 1-2 for the negative electrode connection on the battery negative terminal.
- 4) For other batteries, repeat steps 1-3 until all batteries are properly connected together.
- 5) Connect the main positive electrode cable to the rest of the system from a positive extreme of a battery at the end of the battery string. From the battery negative terminal to the other end of the battery string, connect the main negative electrode cable to the rest of the system. The positive and negative cables do not come from the same battery.

Refer to "3.2.2 Connect batteries with cable / connector" to select the appropriate cable and patch.

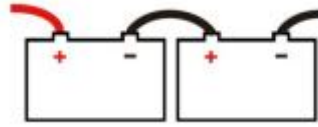
6.1.3 Connect the battery by a cable parallel to the bus bar

The parallel busbar is used to receive current output from each single battery in parallel and conduct it to the main power cable (two thicker cables as two busbars). They enable the battery terminals and their direct connection cables to withstand only the current from the battery itself, rather than the additional current from other batteries in parallel. Therefore, the bus bar is suitable for battery terminals and their direct connection cables operating in normal and safe current and temperature ranges to avoid overheating and burns

- 1) Correct connection between a positive terminal of each battery and the positive terminal bus.
- 2) Correct connection between one negative terminal of each battery and the negative bus bar.
- 3) Connect the main cathode power cable to the rest of the system from the cathode bus. Connect the main negative power cord to the remainder of the system from the negative bus bar.

For the main power cable (positive / negative) connecting the bus to the rest of the system, thicker cables and larger battery connections must be calculated and determined according to the detailed specifications of the cables and connections and certain system requirements.

6.2 Connect batteries by series cable (no more than 2 KMW24V series battery connection units and require specific BMS systems supporting 2 battery series)



A series-connected battery refers to the positive terminal of the first battery connecting to the negative terminal of the second battery. In a single-line connection system. Compared to the parallel connection, it has opposite effects on the system — capacity and current remain constant, but the system voltage is additive. Before series wiring, ensure that the battery and other parts of the system will respond to increased voltage limits and increased risk of electric shock and injury. The KMW24V series battery can only support 2 units connected to the 48V. Do not exceed 2 series-connected KMW24V series battery cells with a voltage above 48V.

Correct charging of the 7.0 KMW24V series battery

For batteries, it is important to select the correct charger with the correct charging current and voltage settings or the correct settings in the inverter or solar controller. It takes longer to reach 100% SOC, but with the low low current consumption. High current charging takes less time to reach 100% SOC, but as high charging current consumption increases, the battery life cycle will shorten. Refer to the '10.0 Battery Module Performance Curve' section. Please select or set the appropriate charging current and voltage depending on the specific application and system.

1) Select the appropriate charging current and voltage for a single KMW24V series battery.

Recommended charging current: 0.2C rate current.

Recommended maximum charging current: 0.5C rate current.

After the high current charge reaches 100% SOC, leave it alone for 30 minutes to cool, and then start the high current discharge.

We suggest that the charging voltage of the KMW24V series battery is 28.8V. **The 28.4~29.2V charging voltage is applicable.**

2) Select the appropriate charging current for multiple units of KMW24V series batteries in parallel or in series.

KMW24V Series batteries are connected in series or in parallel as battery packs. Refer to "5.0 Connect KMW24V series batteries" and "6.0 Connect batteries together by cable / connecting sheet" to make the correct battery pack where all KMW24V series batteries connected in parallel or in series must be the same model and in the same voltage / SOC (charging state) before connection.

For the battery pack of multiple unit KMW24V series batteries connected in parallel, the correct charging voltage is always $28.8 \pm 0.2V$. The correct charging current is determined by the "KMW24V Series battery specifications" and by specific applications and systems. For example, four unit KMW24V series batteries are connected in battery series and in parallel, according to the recommended current of a single KMW24V series battery of 0.2C, the correct charging current of the battery pack = 0.2C current for a single battery * 4

For the battery pack of multiple unit KMW24V series batteries, the correct charging current is the 0.2C rate current for the single battery, or our recommended value in the "KMW24V series battery Specification". The correct charging voltage shall be added up to the recommended voltage $28.8 \pm 0.2V$. For example, 2 KMW24V series battery cells are connected as batteries in series, and according to the recommended voltage of a single KMW24V series battery, $28.8 \pm 0.2V$, the correct charging voltage of the charger should be $28.8 * 2 = 57.6V$.

Introduction of BMS (Battery Management System) and BMS in 8.0 KMW24V series battery

BMS represents the battery management system designed to collect, analyze and monitor data on battery cells and packs to manage its operations through a range of settings and programming and communication with external devices such as inverters. The BMS protects the battery cell and battery pack from a variety of damaging situations. All parameters in the BMS are specifically set to ensure the optimal performance, operation and safety of the battery pack. Changing these BMS parameter settings is prohibited without our official permission or authorization, and we do not recommend trying to change them. Problems or damage caused by unauthorized parameter changes are not covered by the warranty.

The BMS in the KMW24V series battery does not include communication modules or functions. The parameter settings in the KMW24V Series Battery BMS can not be changed in or through the software.

The BMS in the KMW24V Series battery include the following systems:

1) Voltage management system

Protection and protective release of overvoltage (OV) overvoltage (UV) / discharge during battery charging.
Battery voltage equalization.

2) Current management system

Protection and protective release of battery pack overcurrent (OV) during charge / discharge.
Battery pack short-circuit protection and protection release

3) Temperature management system

Protection and protective release of excessive battery pack temperature during charge / discharge
Protection and protective release of battery overheating during charge / discharge
Over-temperature protection and protection release on the BMS board MOS during charge / discharge MOS = MOSF: metal oxide semiconductor.

KMW24V Series battery pack BMS during charging / discharging process is too low protection and protection release is ineffective, because in the emergency situation or when necessary, the battery pack must charge or discharge at low temperature, charging / discharging at low temperature is harmful to battery life. Follow the charge and discharge temperature instructions in the KMW24V series battery specification and charge and discharge the KMW24V series battery only in emergency or necessary situations.

4) Extreme value duration management system

In most cases, extreme values of voltage, current or temperature and their duration (mS) are associated with the setting of BMS, as a mechanism for BMS. For BMS in the KMW24V series battery, these extreme values and their duration are as follows:

Charge overvoltage (UV) / discharge undervoltage (OV) of the battery and its duration

Battery pack short circuit and its duration

9.0 KMW24V series battery specifications

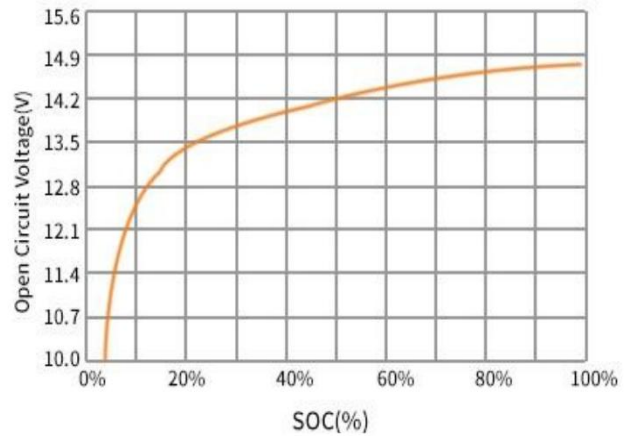
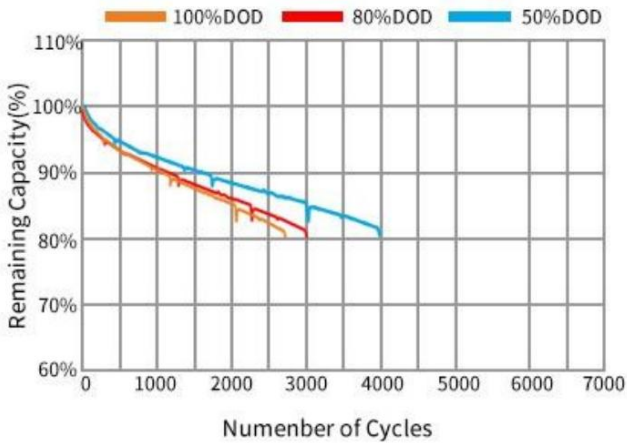
Electrical features	serial model No				
	24V 50Ah	24V 100Ah	24V 120Ah	24V 150Ah	24V 200Ah
Size (length x width x height)	330*175*220mm	525*270*220mm	525*270*220mm	525*270*220mm	560*300*235mm
Nominal voltage / capacity	25.6V 50Ah	25.6V 100Ah	25.6V 120Ah	25.6V 150Ah	25.6V 200Ah
energy	1280Wh	2560Wh	3072Wh	3840Wh	5120Wh
maximum output	1280W	2560W	3072W	3072W	5120W
internal resistance	≤ 80mΩ@50% SOC	≤ 45mΩ@50% SOC	≤ 45mΩ@50% SOC	≤ 35mΩ@50% SOC	≤ 30mΩ@50% SOC
self discharge	<3% Monthly	<3% Monthly	<3% Monthly	<3% Monthly	<3% Monthly
Case material	ABS plastics	ABS plastics	ABS plastics	ABS plastics	Black iron shell
classification of waterproof	IP55	IP55	IP55	IP55	IP55
Standard charging current	10A	20A	24A	30A	40A
Maximum charging current	50A	100A	120A	120A	200A
Charging temperature	0°C~45°C	0°C~45°C	0°C~45°C	0°C~45°C	0°C~45°C
charging voltage	28.8±0.2V	28.8±0.2V	28.8±0.2V	28.8±0.2V	28.8±0.2V
storage temperature	-5°C~45°C	-5°C~45°C	-5°C~45°C	-5°C~45°C	-5°C~45°C
Maximum discharge current	50A	100A	120A	120A	200A
Discharge temperature	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C	-20°C~65°C
overcurrent protection	60A	130A	130A	130A	210A
bluetooth function	apolegamy	apolegamy	apolegamy	apolegamy	apolegamy
Protection plate specifications	50A	120A	120A	120A	200A
Parallel connection mode	support	support	support	support	support
Series connection mode	Defdefault battery BMS system is not supported, and customized BMS system requires series use				
Certificate obtained	UN3480, Class9, MSDS, RoHs				

Note:

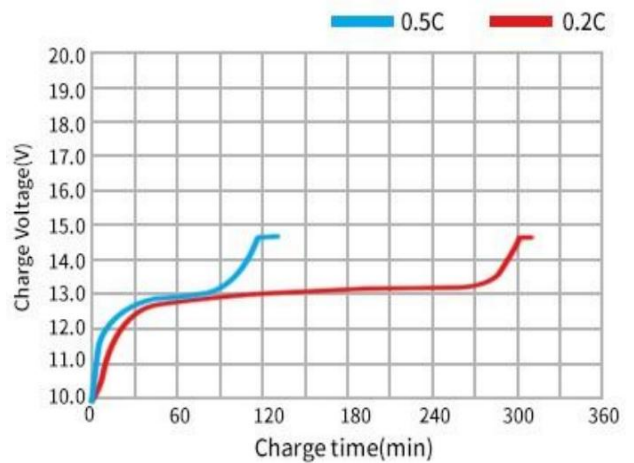
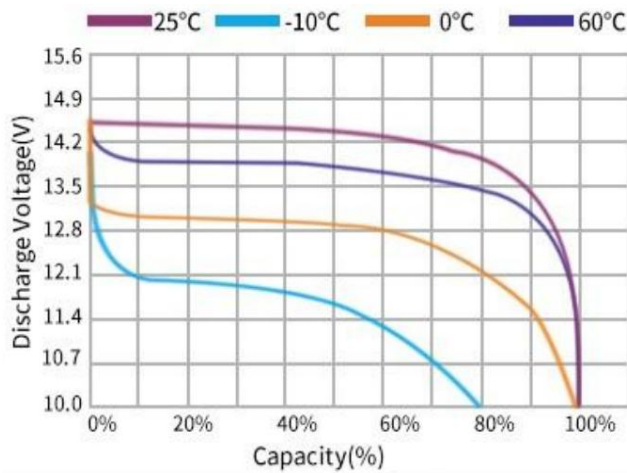
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Above parameters are from testing in an environment with a temperature of $25 \pm 2^\circ\text{C}$ and $75 \pm 10\%$ humidity. Parameters may vary by context and application. All specifications are subject to change without prior notice. These data were used for evaluation purposes only. This data does not intend or imply any warranty.

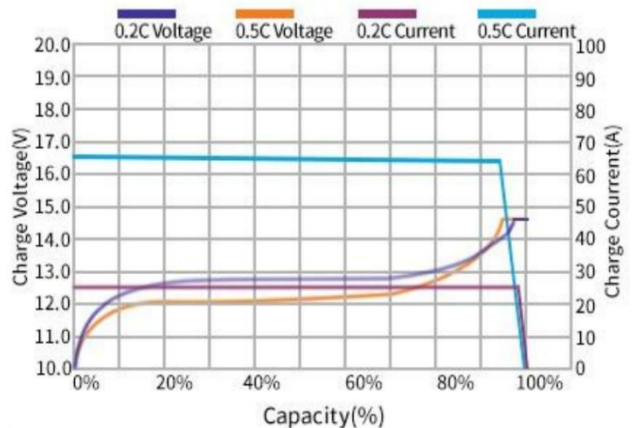
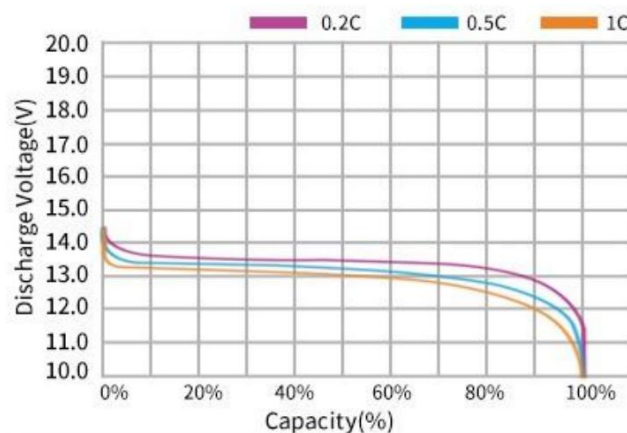
10.0 Battery module performance curve



Cycle life curve: 0.2C@ open circuit voltage curve at different DOD and different SOC



Charging characteristics of the continuous voltage at rate 0.2C/0.5C of the discharge voltage curve at different temperatures



Charging characteristics of the capacitance voltage at discharge voltage Curver Different rate 0.2C/0.5C

Note: The above data and curves are from simple tests in the laboratory environment with a constant temperature of 25°C, which may vary depending on the actual environment and application. Therefore, they are available for reference and evaluation only. These data and curves are not intended or imply any warranty.

Electrical connection / disconnect of the 11.0 KMW24V series battery

connection inverter

KMW24V Series batteries are separate batteries, or connected in series or in parallel with each other, serving as a battery pack in the ESS (Energy storage system). The following instructions are applicable for connecting the battery or battery string to the inverter, charger, solar controller and system or for being disconnected from the inverter, charger and solar controller and power load.

11.1 Before the connection / disconnect operation

Ensure that the batteries are properly connected as per "5.0 Connect the KMW24V Series battery" and "6.0 Connect the batteries together by cable / connecting piece" in this manual.

Ensure that all circuit breakers and power buttons for the inverter, charger, solar controller, and power load are in the "off" position. All equipment in the system shall be switched off prior to and during the wire connection / disconnection process

11.2 Electrical connection operation of the KMW24V series battery or the KMW24V series battery string with the inverter

- 1) Ensure that all equipment in the system is closed before and during wire connection.
- 2) Connect the terminal of the battery or battery pack to the DC connection port of the inverter through the main power cable, such as "5.0 Connect KMW24V series battery". Ensure that the red positive (+) terminal of the battery is directly connected to the red positive connection port of the inverter, and the black negative (-) terminal of the battery is directly connected to the black negative connection port of the inverter.

11.3 Electrical disconnection operation of the KMW24V series battery or the KMW24V series battery string to the inverter

- 1) Ensure that all equipment in the system is closed before and during wire connection.
- 2) Remove the screws of the battery negative terminal, and then remove the main power cable (negative terminal) from the battery negative terminal junction box.
- 3) Remove the screws in the positive terminal of the battery, then remove the main power cable (cathode) from the battery cathode junction box.
- 4) Remove the main power cable (negative and positive electrode) from the inverter.



Warning: Strictly follow the steps.

Warning: exposed metal components such as terminals, connections, screws, and power cables may transmit high current.

Use insulation tools such as insulation wrenches, screwdrivers and gloves and ensure that children do not touch these parts.

12.0 Storage and maintenance of the batteries

12.1 How to keep the battery healthy in storage:

KMW24V Series batteries are lithium-ion battery packs and should not be stored for a long time. So please don't store it for too long. Follow the following steps to ensure safety and health during storage:

Charge it to 50% to 60% of the battery capacity before idling or storage. LiFePO4 The battery will lose a certain amount of its total power supply (about 3% per month) during storage. Fully charged batteries should not be stored for as long as possible. However, we do not recommend fully charging the battery to 100% SOC before storage, because fully charged batteries are more sensitive to the external environment and internal chemistry compared to 50% to 60% SOC batteries.

Conduct a deep cycle of stored batteries at least every 3 months (Step A: fully charge the battery to 100% SOC; step B: then discharge it to 0%; step C: then recharge the battery to 50% to 60% of the battery capacity). This periodic operation facilitates the balance of battery balance and BMS.

Environmental factors can greatly affect the health of batteries in storage or at work. The temperature should be moderate and we recommend keeping the battery away from wet places where humidity is extremely high. Refer to 2.0 Safety: Attention and Warning and 9.0 KMW24V Series Battery

Optimum storage temperature / humidity	Short term disease 1 month	-5°C ~45°C	Relative humidity of 70%
	Long-term eggplant for 3 months	0°C) ~ 40°C)	Relative humidity of 60%

12.2 Battery maintenance

The Camry battery is a lithium iron phosphate (LiFePO4) battery pack with BMS. They require minimal maintenance and are therefore called "maintenance-free". They have a design life of 10 to 15 years, correct initial setting and correct use in this manual. Please note and fully observe the "2.0 Safety: Attention and Warning" in this manual, especially the "Do not" content.

Recovery or disposal of 13.0 LiFePO4 cells

LiFePO4 Batteries are classified as hazardous materials, so they should not simply be placed in a trash can for disposal. The KMW24V series of batteries are removable into plastic boxes, cables and terminals with plastic and metal, LiFePO4 batteries and circuit boards. They are recyclable and should be recycled. Please search the Internet for "Lithium battery treatment near me" for organizations that accept and can safely recycle LiFePO4 batteries, and then contact them for further action.

14.0 Warranty

We offer limited product warranties to cover reasonable product defects. This means that the manufacturer or distributor will freely repair or replace an otherwise certified defective product or its parts during the warranty period.

1) Warranty exclusions-We have no obligation under this limited warranty for products meeting the following conditions (including but not limited to):

Faults and damage during installation or removal or during operation.

Inappropriate environmental exposure, such as humidity, water, or extreme cold or heat.

Tampering, alteration or removal of the product or damage due to improper storage or maintenance.

The product is used in the manufacturer or in an application where its original design is not applicable.

Lightning, fire, flood or natural disaster, or physical objects stolen or lost.

Any product whose serial number is changed, defiled, or deleted.

2) This is a limited product warranty that does not guarantee the buyer's safety, successful equipment implementation or compliance with local codes and regulations; it does not include any freight, handling, packing, or taxes. Warranty claimant requires prepaid all costs.

3) Warranty must be registered by the original purchaser within the first year of purchase to take effect.

4) We strongly recommend that customers seek assistance from licensed, trained and insured electrical professionals and fully read and follow this manual for proper installation, operation and repair.

5) Warranty service requires the returned merchant authorization number and original packaging.

15.0 Troubleshooting

In most cases, the KMW24V series battery does not work properly because the electrical connection is problematic, or it is in BMS protection, triggered by extreme voltage, current, or temperature.

The following are some common problem-checking procedures and related troubleshooting measures:

1) Check whether the connections to the components and all the connections in the system are correct and valid.

2) The battery can not be charged or discharged.

Check the operating temperature of the KMW24V series battery and confirm that the charging temperature is within the recommended range of 0~45°C and the discharge temperature is -20~65°C. If it is not moved to an environment without extreme temperature.

Related mechanisms of BMS: overtemperature protection (OTP) and OTP release

When the NTC detects that the temperature of the MOS on the battery surface or the BMS circuit board is higher than the high temperature protection value during charging and discharge, the BMS enters the over temperature protection (OTP) state and the charging and discharge MOS turns off, so the battery pack cannot be charged or discharged to avoid further temperature increase. When the detected extreme temperature drops to the temperature range of the OTP release, the BMS recovers from the OTP and turns the charge MOS and the discharge MOS on.

Related mechanisms of BMS: charge overcurrent protection (charge OCP) and charge OCP release

During battery charging, if the charging current exceeds the set value of the charging protection current and the duration reaches the overcurrent delay setting, the BMS enters the charging OCP (charging overcurrent

protection) and turns off the charging MOS so that the battery cannot be charged to avoid overcurrent charging. Disconnecting the incompatible charger and discharging the battery in the charging OCP with the correct current will release the charging OCP.

Related mechanisms of BMS: discharge overcurrent protection (discharge OCP) and discharge OCP release

During the battery discharge, if the discharge current exceeds the set current value of the discharge overcurrent protection and the duration reaches the overcurrent delay setting, the BMS will enter the discharge OCP (discharge overcurrent protection) and turn off the discharge MOS to avoid the battery discharge due to the overcurrent. Disconnecting the incompatible load or charging the battery in the discharge OCP with the correct current will release its discharge OCP.

Disconnect the load / cable and charge the KMW24V series battery to release possible short circuit protection (SCP).

Relevant mechanism of BMS: short circuit protection (SCP) and SCP release

When the current in the battery exceeds the set current value of the short circuit protection (SCP) and the duration reaches the short circuit protection delay setting, the BMS enters the SCP (short circuit protection) and turns off the discharge MOS to stop the overcurrent short circuit. Disconnecting the incompatible load or charging the battery in the SCP with the correct current will release its SCP.

3) The battery cannot be charged.

Disconnect the cable and measure the voltage of the KMW24V series battery, discharge it if it exceeds 29.2V, and charge as "Correct charging of the KMW24V series battery". If the KMW24V series battery is below 25.6V and still fails to charge as per correct charging for KMW24V Series batteries, contact the manufacturer or dealer.

Related mechanisms of BMS: charging overvoltage protection (charging OVP) and charging OVP release

During battery charging, if any voltage of the battery is higher than the set value of the battery overcharge voltage and the duration reaches the battery overvoltage delay setting, the BMS enters the charging OVP (overvoltage protection) and the charging MOS is turned off, so the battery cannot be charged to avoid further increase in the battery voltage. When the voltage of all cells drops to the charge OVP release range, the BMS is recovered from the charge OVP and the charge MOS is turned on. The battery is in the charge state to discharge OVP can release the charging OVP.

4) The battery cannot be discharged.

Unable to discharge: Disconnect the cable and measure the voltage of KMW24V series battery, if the voltage is below 20V, charge by "Charge correctly of KMW24V series battery". If the KMW24V series battery voltage exceeds 25.6V and still cannot discharge, contact the manufacturer or distributor.

Related mechanisms of BMS: discharge undervoltage protection (discharge MVP) and discharge OVP release

During battery discharge, if the minimum single cell voltage is below the setting value of the discharge MVP (undervoltage protection), the BMS will enter the discharge MVP and turn off the discharge MOS, so that the

battery cannot discharge to avoid further reduction of the battery voltage. Charging the battery in the discharge OVP mode can release the discharge UVP.