



C24230A

User Guide

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Legal Provisions

Purpose and Importance of the Guide

This guide provides detailed instructions for the safe installation, operation, and maintenance of the C24230A lithium battery packs. It is imperative that all users thoroughly review this manual before beginning any activities. The information herein ensures correct and safe handling of the battery packs.

Qualification for Handling

The procedures described are intended for qualified individuals with the necessary technical skills. These precautions prevent product damage and minimize personal safety risks. Unqualified handling can lead to improper installation or usage, compromising battery performance and posing significant hazards.

Warranty and Compliance

Adherence to Safety Guidelines

Failure to follow the safety guidelines in this manual can void the product's warranty and disqualify any warranty claims. Following the prescribed safety and operational protocols is essential.

Manufacturer's Liability

Epoch Batteries explicitly disclaims liability for damages or injuries arising from non-compliance with this manual's guidelines, including product damage, property damage, personal injury, or loss of life.

Information Accuracy and Updates

Content Validity

The content is accurate and reliable as of its publication date. Epoch Batteries reserves the right to modify product specifications without prior notice. These changes may include optimizations or enhancements.

Version Consultation

To access the most current and accurate information, consult the latest version of this manual. Regularly checking for updates ensures awareness of any changes or improvements.

Illustrations and Representations

Diagrams and Schematics

The diagrams and schematics are intended to aid understanding of system configuration and installation. They are illustrative and may not precisely represent actual components at the installation site.

Understanding Variations

Actual setups might differ slightly from illustrations. Adjustments may be needed to accommodate specific installation scenarios.

Intellectual Property and Usage Rights

Copyright Protection

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Introduction

Welcome

Thank you for choosing the C24230A, a state-of-the-art battery system. This comprehensive user guide has been meticulously crafted to help you achieve optimal performance, safety, and longevity from your investment.

Purpose and Scope

This guide is your ultimate resource for understanding and utilizing your C24230A battery. It provides in-depth information on features, technical specifications, and best operational practices. Whether you're a seasoned professional or new to advanced battery systems, this manual equips you with the knowledge and confidence to leverage your battery's capabilities fully.

Commitment to Quality and Support

Our commitment extends beyond supplying a high-quality battery; we're dedicated to offering exceptional customer support. If you have any questions or need assistance with your C24230A, our team of experienced professionals is readily available to provide support.

Part of Your Energy Journey

We're proud to be part of your energy solutions. Designed to meet and exceed your expectations in performance and reliability, the C24230A promises efficiency and endurance. By choosing our product, you're investing in a solution that delivers on its promises.

Appreciation

Thank you for choosing Epoch Batteries. Your trust in our brand and products is greatly valued, and we're committed to upholding the high standards you expect from us.

About This Guide

Comprehensive Coverage

This manual is a complete resource for the C24230A battery. We've compiled all the information you need to understand, install, and maintain your battery optimally.

User-Friendly Structure

Recognizing our diverse range of users, we've structured this manual to be accessible and straightforward. It provides clear, step-by-step instructions accompanied by important safety warnings.

Emphasis on Safety

Safety is paramount in the operation and maintenance of battery systems. This manual contains crucial safety warnings and guidelines to ensure your experience with the C24230A is both effective and safe.

Support and Feedback

We encourage you to use this manual as a comprehensive guide for all your needs regarding the C24230A. If you have feedback or require further clarification on any topics, please reach out to Epoch Batteries Support.

Conclusion

This manual is an essential tool in your journey with the C24230A, reflecting our commitment to providing you with a positive and productive experience.

Product Overview

The C24230A offers an exceptional balance of longevity, safety, and efficiency, making it a versatile choice for a wide range of applications. With a substantial 230 Ah capacity, this 24-volt battery delivers consistent and dependable power. Its advanced LiFePO₄ technology extends cycle life and ensures stable performance across various temperature conditions.

Applications

- **Marine and RV Power:** Provides onboard power to marine vessels and RVs, enhancing travel experiences without compromising comfort.
- **Off-Grid Power Systems:** Ideal for remote cabins, off-grid homes, and outdoor installations, serving as a reliable energy storage cornerstone.
- **Solar Energy Storage:** Excels in storing excess solar energy, enabling usage during low-light periods or at night, promoting energy independence.
- **Backup Power Solutions:** Serves as a dependable backup power source for critical equipment in residential, commercial, and industrial environments.

Key Features

- **Advanced LiFePO₄ Chemistry:** Offers exceptional stability, safety, and longevity.
- **High Capacity:** 230 Ah capacity suitable for extensive applications.
- **Compact Design:** Easy to install and integrate while optimizing space.
- **Durable Construction:** Rugged housing and robust components ensure long-term reliability.
- **Wide Temperature Range:** Operates effectively from -20 °C to 55 °C (-4 °F to 131 °F).
- **Integrated Heating System:** Enables charging in cold conditions, protecting cells in freezing temperatures.
- **Maintenance-Free:** Requires minimal upkeep for hassle-free operation.
- **Emphasis on Safety:** Built-in protections against overcharge, over-discharge, short circuits, and thermal issues.
- **Advanced Communication Capabilities:** Integrated CAN bus system compatible with Victron Energy devices and Bluetooth for wireless connectivity.

Specifications

Battery Specifications

Electrical Parameters

Parameter	Value
Nominal Voltage	25.6 V (3.2 V per cell)
Maximum Voltage	29.2 V (3.65 V per cell)
Minimum Voltage	20 V (2.5 V per cell)
Nominal Capacity	230 Ah
Stored Energy	5,888 Wh
Internal Resistance	$\geq 20 \text{ m}\Omega$
Cycle Life	$\geq 3,000$ cycles
Max Self-Discharge	$\leq 3\%$ per month

Current Ratings

Parameter	Continuous	Maximum
Charge Current	110 A	200 A
Discharge Current	110 A	300 A

Temperature Ranges

Condition	Fahrenheit (°F)	Celsius (°C)
Charge Temperature	32°F to 131°F	0°C to 55°C
Discharge Temperature	-4°F to 131°F	-20°C to 55°C
Storage Temperature (≤ 1 month)	-4°F to 113°F	-20°C to 45°C
Storage Temperature (≤ 1 year)	32°F to 95°F	0°C to 35°C

Physical Specifications

Parameter	Imperial	Metric
Weight	97 lbs	44 kg
Length	20.86 in	529.8 mm
Width	8.65 in	219.8 mm
Height	12.06 in	306.3 mm
Case Material	PC + ABS (UL94 V-0)	
Terminal Size & Torque	M8, 8–12 Nm	
Ingress Protection	IP67	

Connection Capabilities

Parameter	Maximum Supported
Series Connections	Up to 2 batteries
Parallel Connections	Up to 16 batteries

Battery Management System (BMS) Specifications

Self-Discharge Current

Condition	Current
Powered On	20 mA
Powered Off	200 μ A

Voltage Protections

Overcharging Protection

Parameter	Voltage
Activation	3.65 V $\pm$ 0.01 V per cell
Release	3.45 V $\pm$ 0.01 V per cell

Over-Discharging Protection

Parameter	Voltage
Activation	2.70 V $\pm$ 0.05 V per cell
Release	3.00 V $\pm$ 0.05 V per cell

Current Protections

Charging Overcurrent Protection

Parameter	Value
Protection Current	200 A
Protection Delay	5,000 ms
Release Current	125 A

Discharging Overcurrent Protection

Parameter	Value
Protection Current	280 A
Protection Delay	5,000 ms

Short Circuit Protection

Parameter	Value
Protection Current	1,200 A

Internal Fuse

Parameter	Value
Rated Current	270 A
Transient Overload Current	1,200 A @ 3s

Temperature Protections

Charging Temperature

Condition	Fahrenheit (°F)	Celsius (°C)
High Temp Protection Activation	131°F	55°C
High Temp Protection Release	122°F	50°C
Low Temp Protection Activation	32°F	0°C
Low Temp Protection Release	41°F	5°C

Discharging Temperature

Condition	Fahrenheit (°F)	Celsius (°C)
High Temp Protection Activation	131°F	55°C
High Temp Protection Release	122°F	50°C
Low Temp Protection Activation	-4°F	-20°C
Low Temp Protection Release	1.4°F	-17°C

Safety Guidelines

To ensure maximum safety and prevent potential accidents, injuries, or property damage, please adhere to the following safety instructions:

1. Comprehensive Understanding

- **Read the Manual Thoroughly:** Before using the battery, read and understand all instructions.
- **Familiarize Yourself:** Know the battery's functions, specifications, and safety guidelines.

2. Intended Usage

- **Use as Directed:** Operate the battery strictly as described.
- **Avoid Misuse:** Deviating from intended use can damage the battery and connected equipment.

3. Secure Storage

- **Keep Away from Children and Pets:** Store the battery out of reach to prevent injuries.

4. Professional Handling

- **Qualified Personnel Only:** Do not disassemble, modify, or repair the battery yourself.
- **Avoid Unauthorized Tampering:** Such actions can cause hazards.

5. Temperature Constraints

- **Operational Range:** Use within -20°C to 55°C (-4°F to 131°F).
- **Avoid Extremes:** Operating outside this range reduces performance and increases risks.

6. Charger Compatibility

- **Use Compatible Chargers:** Only use chargers designed for LiFePO₄ batteries.
- **Prevent Hazards:** Incompatible chargers can cause fires or damage.

7. Charging Oversight

- **Monitor Charging:** Keep an eye on the battery during charging.
- **Disconnect When Full:** Unplug once fully charged.

8. Fire Extinguishing Methods

- **Proper Agents:** Use a Class D fire extinguisher, sand, or dry powder.
- **Do Not Use Water:** Water can be dangerous.

9. Responsible Disposal

- **Follow Regulations:** Dispose according to local guidelines.
- **No Incineration:** Do not burn or discard with household waste.

10. Additional Safety Measures

- **Handle with Care:** Avoid impacts or drops.
- **Correct Polarity:** Ensure proper connections.
- **Regular Inspection:** Check for damage or unusual behavior.
- **Immediate Action:** Stop using and contact support if issues are detected.

Installation Guide

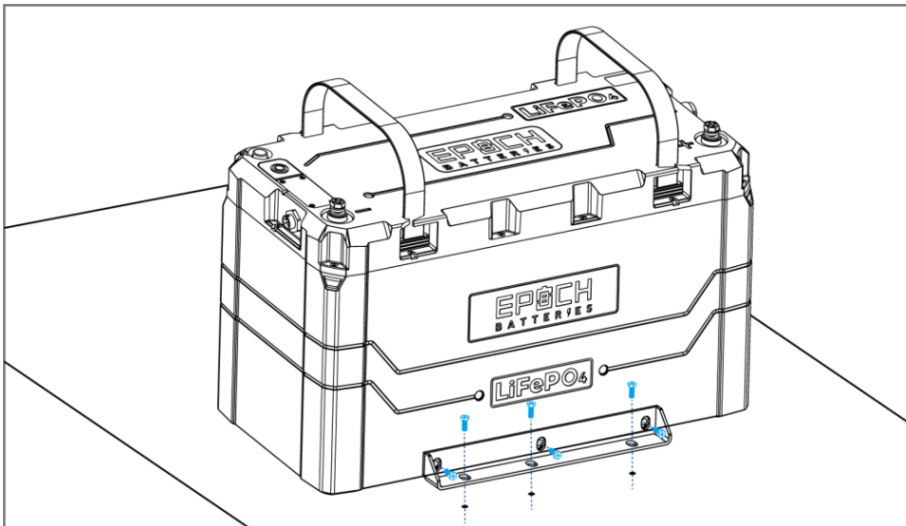
Proper installation of your C24230A battery is essential for optimal performance and safety.

Location

- **Ventilation:** Choose a well-ventilated area to dissipate heat.
- **Dry Environment:** Avoid moisture to prevent corrosion or short-circuiting.
- **Avoid Direct Sunlight:** Prevent overheating and cell degradation.
- **Stable Temperature:** Install in an area with stable temperatures.
- **Accessibility:** Ensure easy access for maintenance.
- **Safety Compliance:** Comply with local safety codes and regulations.

Mounting

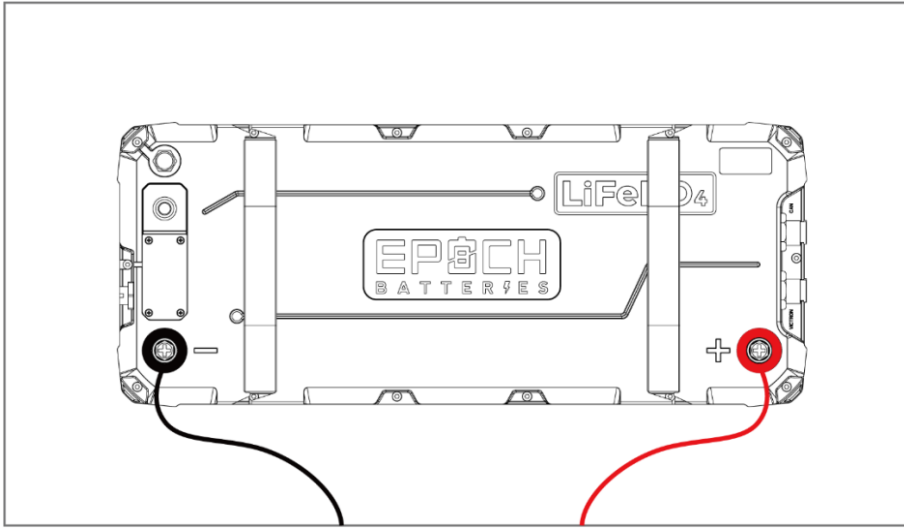
- **Secure Mounting:** Use appropriate hardware to mount the battery securely.
- **Orientation:** Install in an upright position.



Connection Guide

Ensuring Correct Polarity

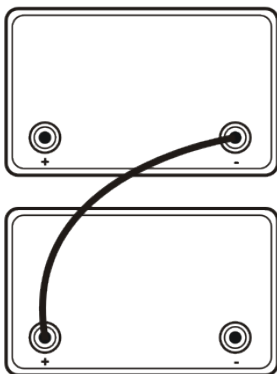
- **Positive Connection:** Connect the positive (+) terminal to the positive (+) terminal of the load.
- **Negative Connection:** Connect the negative (-) terminal to the negative (-) terminal of the load.
- **Importance:** Correct polarity ensures safe and effective operation.



Series and Parallel Connections

Series Connections

Series Connection



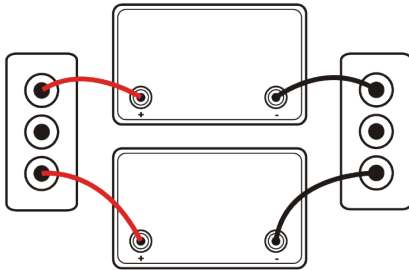
- **Voltage Increase:** Voltages add up (e.g., two batteries in series = 48 V).
- **Capacity Remains Same:** Capacity remains at 230 Ah.
- **Use Cases:** Applications requiring higher voltage.

Parallel Connections

- **Voltage Remains Same:** Voltage remains at 24 V.
- **Capacity Increase:** Capacities add up (e.g., two batteries = 460 Ah).
- **Use Cases:** Applications requiring higher capacity.

Busbar System

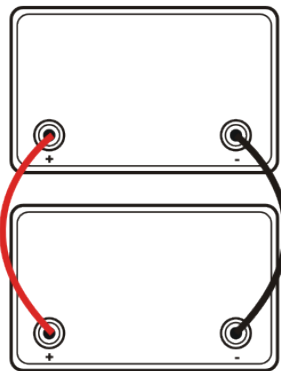
Parallel Connections with Busbars



- **Advantages:**
 - Equal resistance and uniform charging.
 - Simplifies adding more batteries.
 - Reduces voltage drop.
 - Facilitates battery isolation.

Daisy-Chaining

Parallel Connection



- **Advantages:** Simpler implementation in smaller systems.
- **Considerations:** Can lead to uneven charging and is less scalable.

Important Considerations

Compatibility

- **Use Identical Batteries:** Same voltage, capacity, and type.
- **Prevent Uneven Charging:** Mixing batteries can reduce performance.

Safety Precautions

- **Proper Fusing:** Install fuses or circuit breakers.
- **Secure Connections:** Tighten all connections to prevent resistance build-up.

Wired Communications with Victron GX Device

Connection Setup

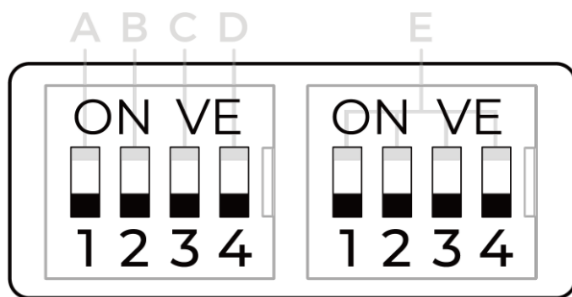
1. Physical Connection:

- **Locate Wiring Harness:** Included with your battery.
- **Connect to Battery:** Plug the cable labeled "**Victron**" into the Victron port.
- **Connect to GX Device:** Attach the cable labeled "**INV**" to the BMS-CAN or VE.CAN port.
- **Multiple Batteries:**
 - Use the cable labeled "**CAN**" to connect additional batteries.
 - Repeat connections for each battery.

2. VE.CAN Port Adjustment:

- **Adjust Port Speed:**
 - Navigate to **Settings > Services > VE.CAN** on the GX Device.
 - Set the speed to **500 kbps**.

DIP Switch Settings



Example

Configure the DIP switches to allow the battery bank to communicate with Victron GX devices and display data properly. Refer to the following DIP switch configurations based on your setup.

Note: Modifying DIP switches may affect data displayed on the Epoch Li-Ion app.

Standalone DIP Switch Settings

When using the C24230A battery as a standalone unit—without any series or parallel connections—set the DIP switches as shown below:



230 Ah Master

Series DIP Switch Settings

When connecting multiple batteries in series for a higher voltage bank, use the following settings to display data properly on Victron GX devices:

48 V 230 Ah DIP Switch Settings



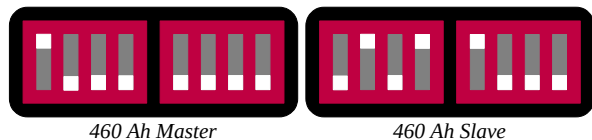
48 V Master

48 V Slave

Parallel DIP Switch Settings

When connecting multiple batteries in parallel for a higher capacity bank, use the following settings to display data properly on Victron GX devices:

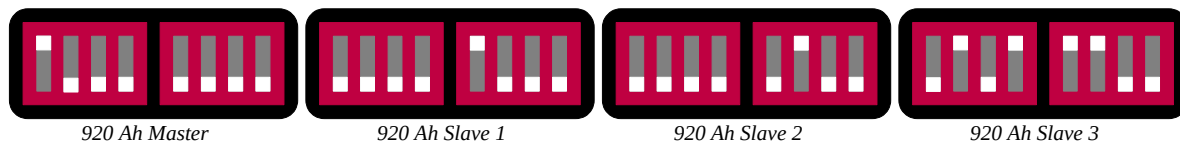
24 V 460 Ah DIP Switch Settings:



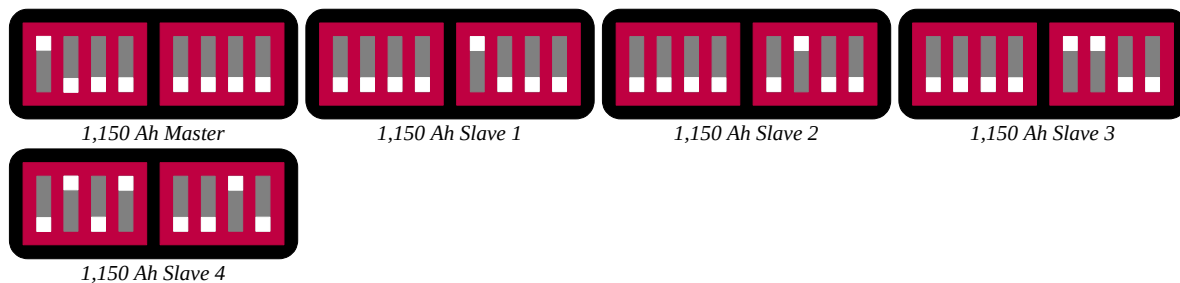
24 V 690 Ah DIP Switch Settings:



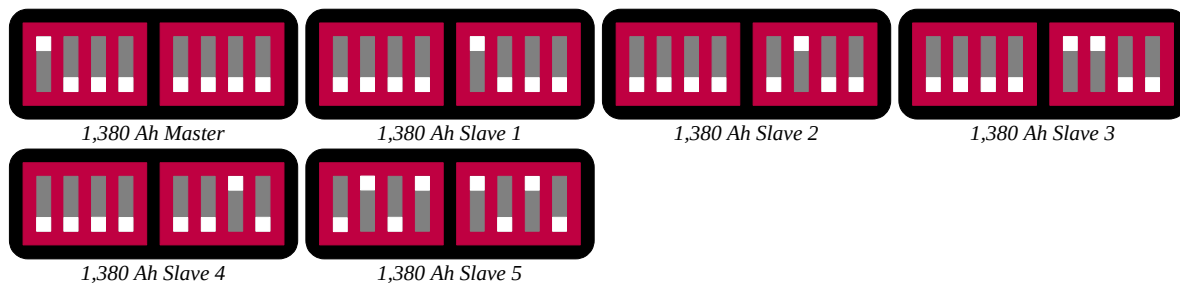
24 V 920 Ah DIP Switch Settings:



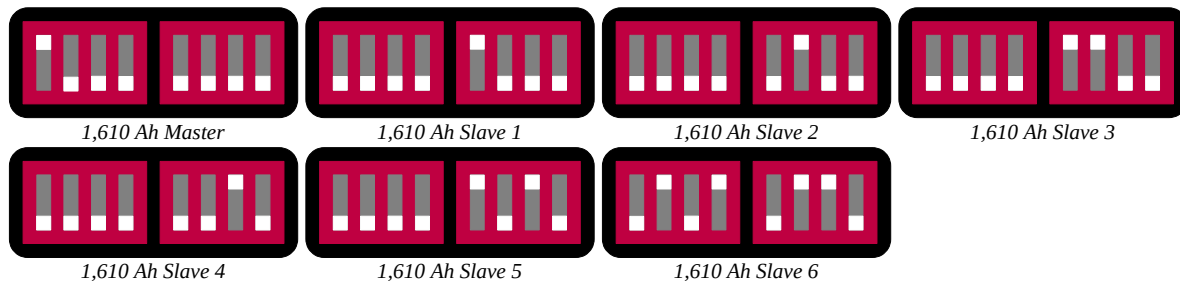
24 V 1,150 Ah DIP Switch Settings



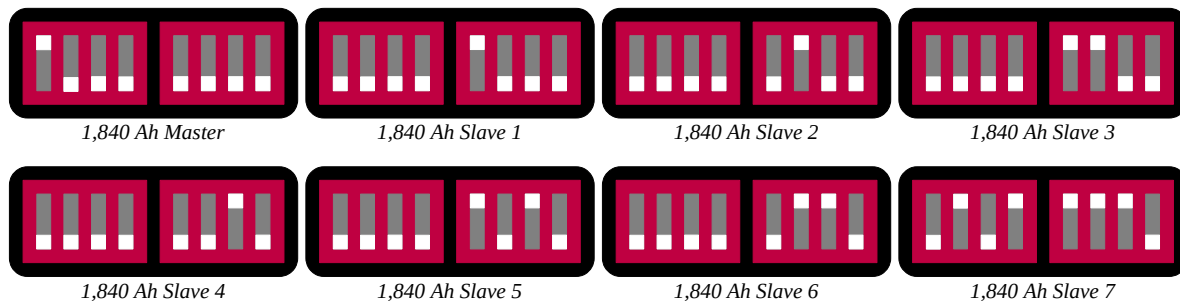
24 V 1,380 Ah DIP Switch Settings



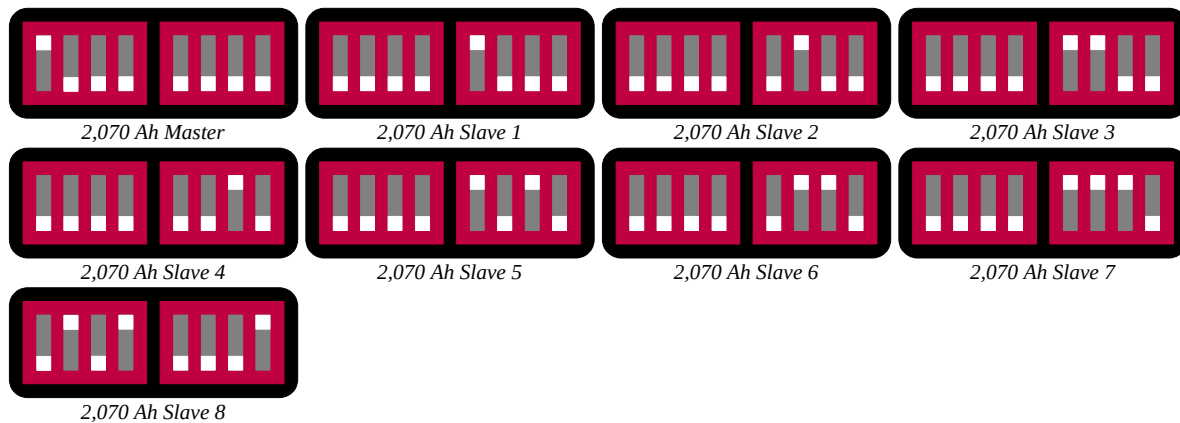
24 V 1,610 Ah DIP Switch Settings



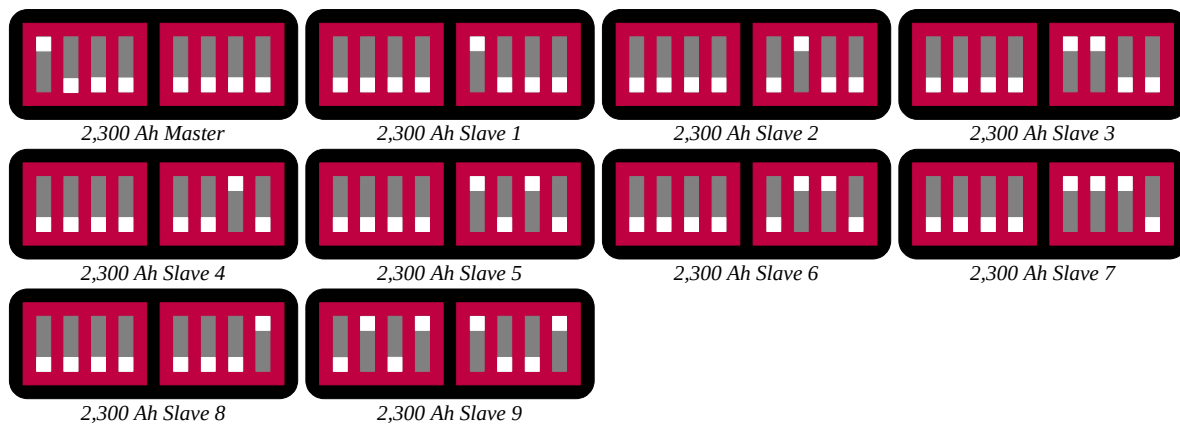
24 V 1,840 Ah DIP Switch Settings



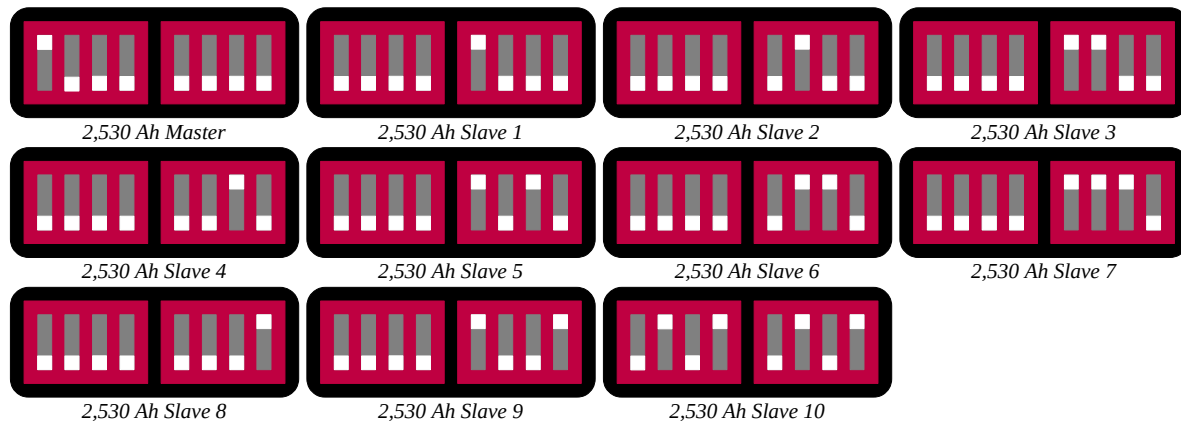
24 V 2,070 Ah DIP Switch Settings



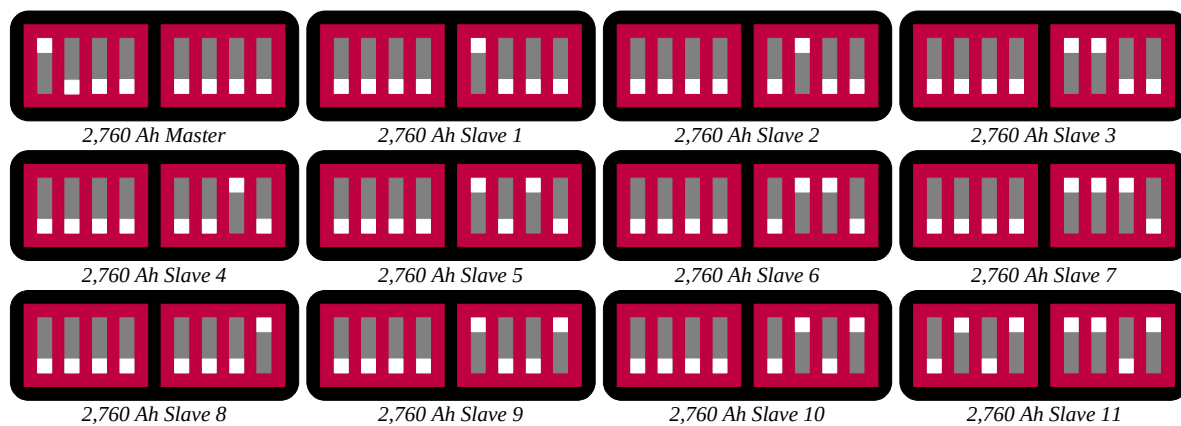
24 V 2,300 Ah DIP Switch Settings



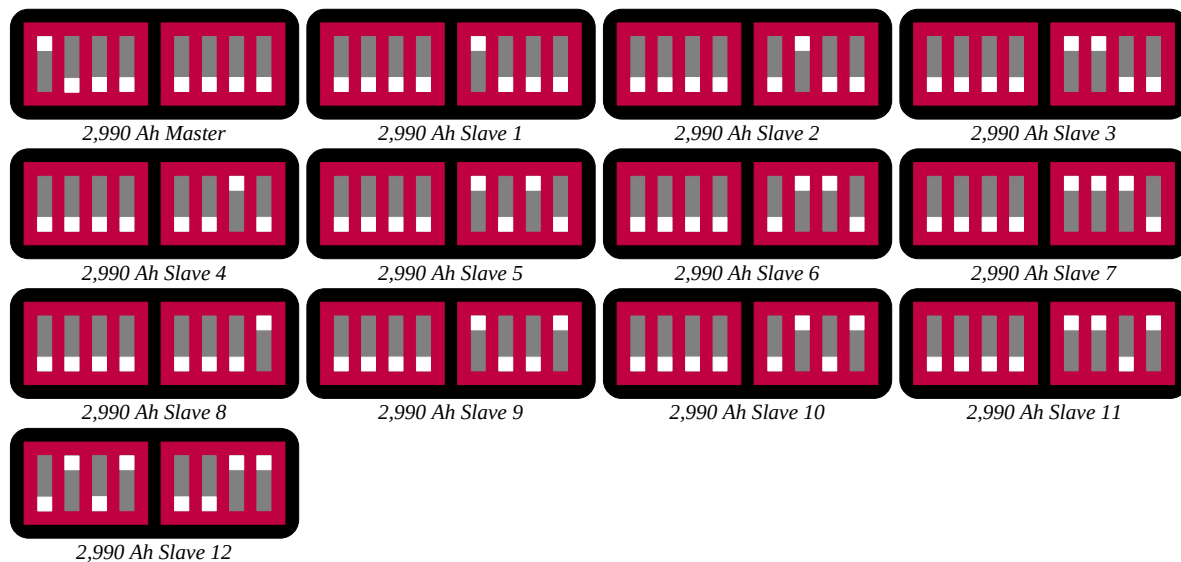
24 V 2,530 Ah DIP Switch Settings



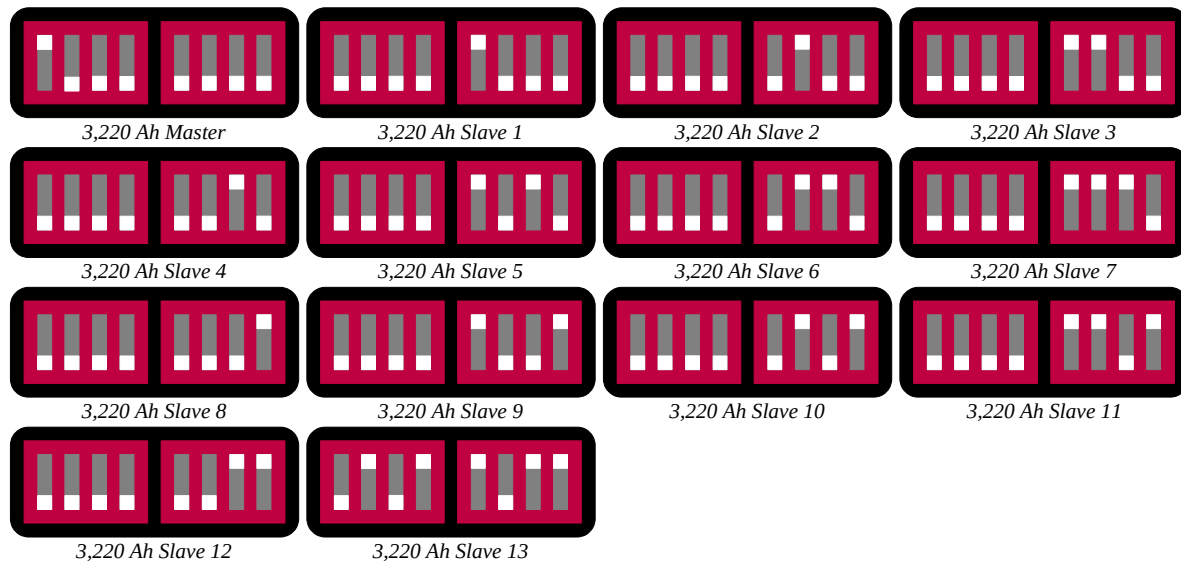
24 V 2,760 Ah DIP Switch Settings



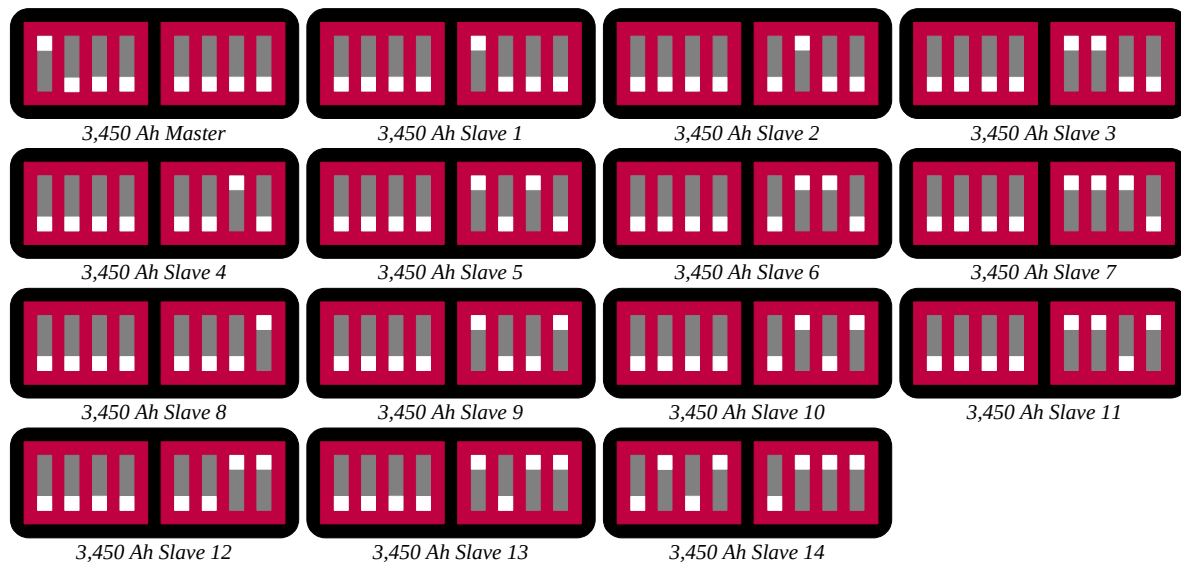
24 V 2,990 Ah DIP Switch Settings



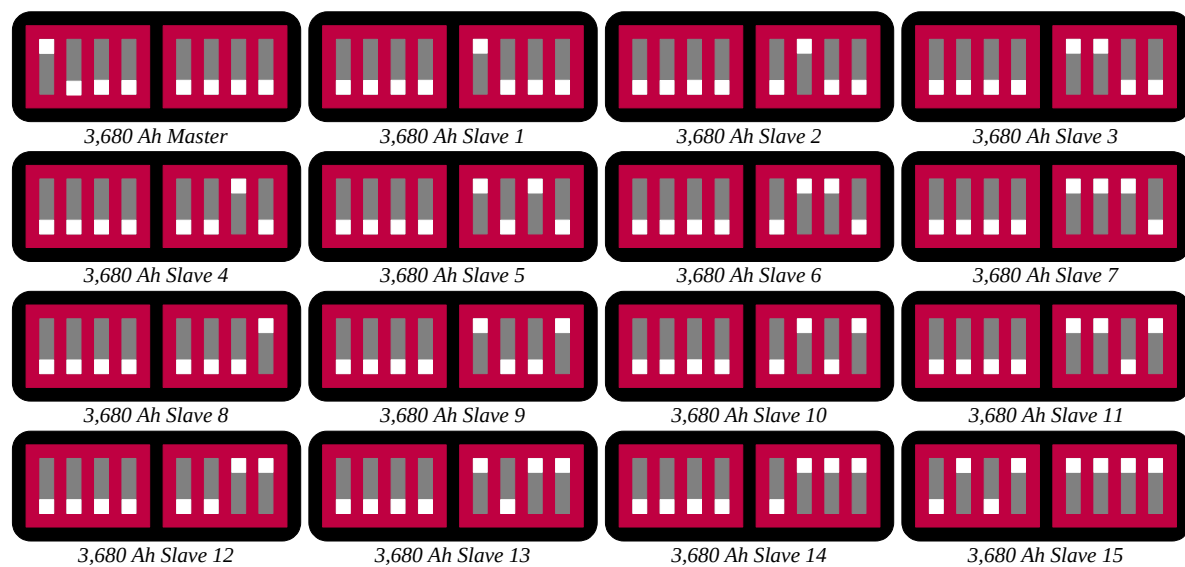
24 V 3,220 Ah DIP Switch Settings



24 V 3,450 Ah DIP Switch Settings



24 V 3,680 Ah DIP Switch Settings



Terminal and Cable Management

Terminal Inspection

- **Regular Checks:** Inspect terminals for damage or corrosion.
- **Cleaning:** Keep terminals clean for good electrical contact.

Cable Routing

- **Avoid Hazards:** Keep cables away from sharp edges and heat sources.
- **Secure Cables:** Use ties or clamps to prevent strain.

Overcurrent Protection

- **Install Protection Devices:** Use appropriate fuses or circuit breakers.

Fuses and Circuit Breakers

Note: The C24230A has a built-in fuse rated at 270 A

Choosing the Right Protection

- **Determine Current Requirements:** Identify maximum operating current.
- **Select Appropriate Rating:** Choose devices rated at 125%–150% of maximum current.

Voltage Rating

- **Match Voltage:** Ensure voltage rating meets or exceeds battery voltage.

Type Selection

- **Fuses:**
 - Slow-Blow: For high inrush currents.
 - Fast-Acting: For sensitive equipment.
- **Circuit Breakers:**
 - Thermal, Magnetic, or Hybrid types based on needs.

Charging Guide

Proper charging procedures are crucial for maximizing performance, lifespan, and safety.

Initiate Charging

- **Power Activation:** Press and hold the power button / remote power button.
- **Visual Indicator:** LED will illuminate, indicating readiness.

Use Compatible Chargers

- **LiFePO₄-Specific Chargers:** Only use compatible chargers to prevent risks.

Charging Parameters

Recommended Voltages

- **Bulk Voltage:** 28.8 V
- **Absorption Voltage:** 28.8 V
- **Float Voltage:** 27 V

Voltage and Current Limits

- **Do Not Exceed Maximum Ratings:** Prevent overcharging and hazards.

Charge Control Features

- **Advanced Chargers:** Use chargers with overcharge protection and temperature compensation.

Initial Full Charge

- **Before First Use:** Fully charge adhering to recommended parameters.

Charging Process

Correct Polarity

- **Ensure Proper Connections:** Positive to positive, negative to negative.

Active Monitoring

- **Supervise Charging:** Disconnect once fully charged.

Charging Environment

- **Well-Ventilated Area:** Avoid flammable materials and moisture.
- **Adequate Airflow:** Ensure heat dissipation.

Temperature Management

Optimal Charging Range

- **Recommended Temperature:** -20 °C to 55 °C (-4 °F to 131 °F).

Avoid Extreme Temperatures

- **Impact on Battery Life:** Avoid charging outside recommended range.

Safety Precautions

Personal Protective Equipment

- **Wear Appropriate Gear:** Safety glasses and gloves.

Avoid Direct Contact

- **Exposed Terminals:** Do not touch.

Regular Monitoring

- **Inspect Battery Condition:** Check for damage during charging.
- **Discontinue if Issues Arise:** Contact customer support.

Epoch Li-Ion App Guide

The Epoch Li-Ion app allows you to monitor and manage your C24230A battery's performance directly from your mobile device. This guide provides step-by-step instructions to help you maximize the app's features and ensure optimal battery functionality.

Download and Installation

To get started, download and install the Epoch Li-Ion app on your mobile device:

[App Store \(iOS\)](#)



[Google Play \(Android\)](#)



Permissions

Upon installation, the app will request certain permissions necessary for proper operation:

- **Bluetooth Access:** Grant the app permission to access Bluetooth when prompted. This allows the app to communicate with your battery.
- **Location Services (Android Users):** Devices running Android 10 or higher require location services to be enabled for Bluetooth scanning. Ensure that location services are turned on for the Epoch Li-Ion app.

Connecting to Your Battery

Follow these steps to connect the app to your C24230A battery:

1. Launch the App

- Open the Epoch Li-Ion app on your mobile device.

2. Grant Bluetooth Access

- If prompted, allow the app to access Bluetooth services.

3. Locate Your Battery

- Navigate to the **Bluetooth** tab within the app.
- The app will scan for nearby batteries. Your battery will appear as C24230A_(**Serial Number**).
- If you have multiple batteries, each will be listed separately.

4. Connect to Battery

- Tap the toggle switch to the right of the battery name to initiate the connection.
- For multiple batteries, toggle each one you wish to monitor.

5. Navigate to the Dashboard

- After connecting to your batteries, proceed to the **Dashboard** to view real-time data.

Navigating the App

The Epoch Li-Ion app consists of several key sections designed to provide comprehensive information about your battery system.

Dashboard

The **Dashboard** serves as your primary interface for monitoring battery performance. It provides both an overview and detailed metrics.

Bank-Level Data



- **State of Charge (SoC) Percentage:** Displays the overall charge level of your entire battery bank.
- **Total Voltage (V):** Shows the combined voltage of all connected batteries.
- **Total Current (A):** Indicates the total current flowing into or out of the battery bank.
- **Total Capacity (Ah):** Reflects the cumulative capacity of your battery system.

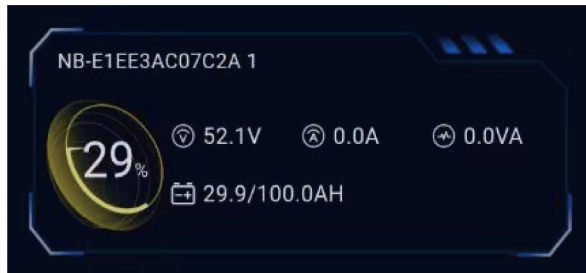
Series/Parallel Configuration Toggle



- **Toggle:** If you have multiple batteries connected, use the toggle to switch between **Series** and **Parallel** configurations to view data accordingly.

Individual Battery Data

For each connected battery, you can view:



- **Voltage (V):** The voltage of the individual battery.
- **Current (A):** The current entering or leaving the battery.
- **Power (VA):** The power output or input in volt-amperes (VA).
- **Capacity (Ah):** The remaining capacity in ampere-hours (Ah).
- **Warning Messages:** Any alerts or warnings related to battery status.
 - **Common Warnings:**
 - **Overvoltage / Fully Charged:** Typically indicates that the battery is fully charged and protected against overcharging.
 - **Undervoltage:** Typically indicates that the battery is deeply discharged and needs recharging.
 - **Overcurrent:** Current draw exceeding max continuous rating.
 - **High/Low Temperature**

Cells Page

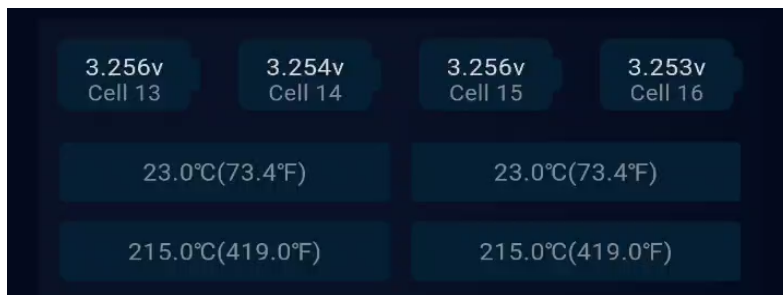
The **Cells** page provides in-depth information about the individual cells within each battery.

Overall Cell Metrics



- **AVEVOL:** The mean voltage across all cells in the battery.
- **VOLDIFF:** The difference between the highest and lowest cell voltages, indicating cell balance.
- **VOLLOW:** Identifies the cell with the lowest voltage
- **VOLHIGH:** Identifies the cell with the highest voltage.

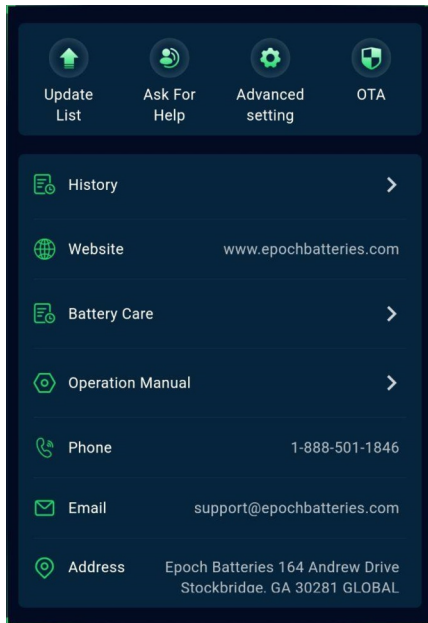
Individual Cell Data



- **Cell Voltages:** Voltage readings for each individual cell.
- **Cell Temperatures:** Temperature readings for each cell, crucial for maintaining battery health.

About Page

The **About** page offers additional resources and settings to enhance your user experience.



History

Access detailed historical performance data to analyze trends and optimize battery usage.

- **Battery History:** View graphs of key metrics over time, such as voltage, current, SoC, capacity, and temperature.
- **Graph Navigation:** Tap and hold any point on a graph to magnify data and see precise readings.
- **Time Frames:** Customize the time frame for data display (e.g., last hour, day, week, month).

OTA (Firmware Updates)

- **Update Process:**
 1. Ensure your battery is powered on and connected.
 2. Follow on-screen instructions to download and install the update.
 3. Do not disconnect or power off the battery during the update.

Guides and Support

- **User Manuals:** Access digital copies of user guides and installation manuals.
- **FAQ Section:** Find answers to common questions.
- **Contact Support:** Get in touch with customer service via email or phone directly from the app.

Advanced Settings

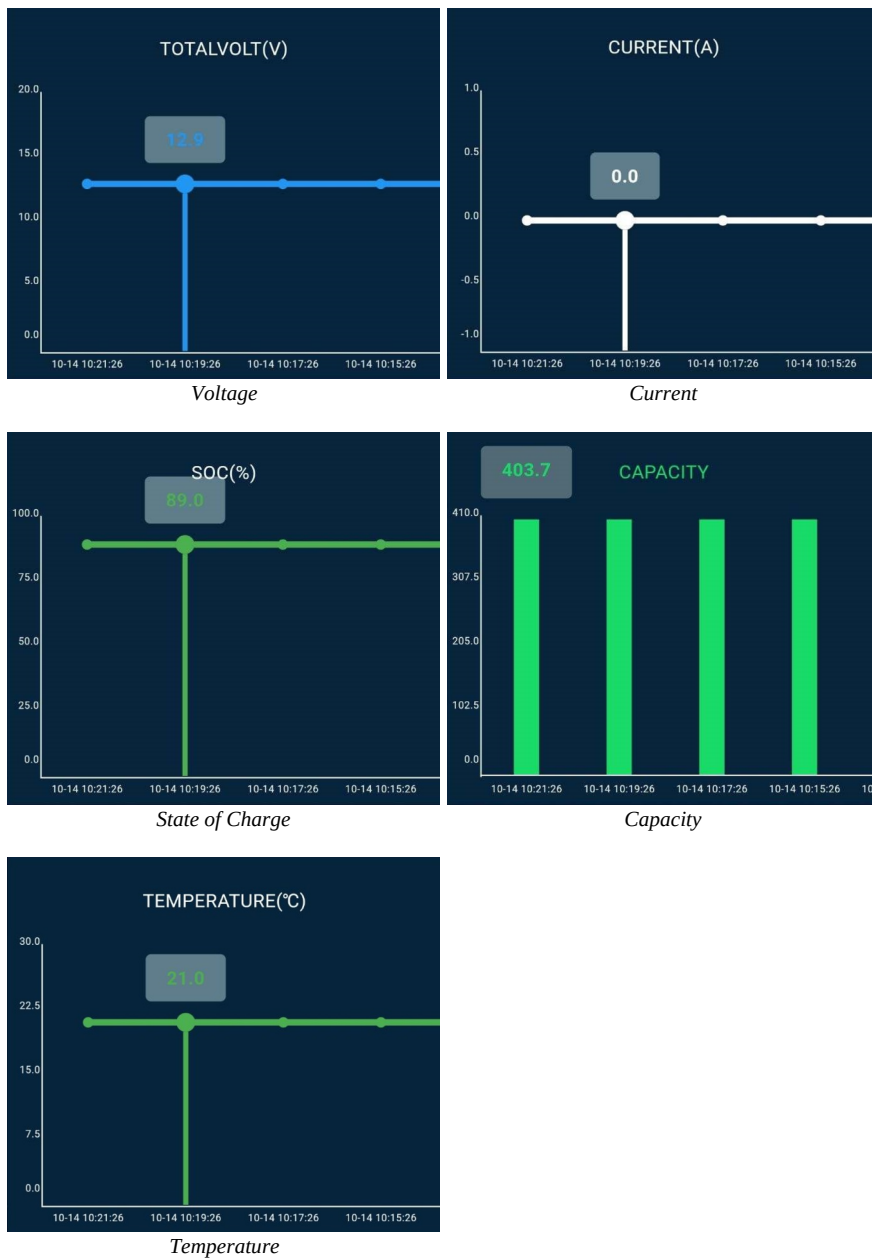
- **Important:** The advanced settings menu is intended for diagnostic purposes by qualified technicians.
 - **Warning:** Unauthorized changes can affect battery performance and may void your warranty.
 - **Access Restriction:** This section is password-protected to prevent unintended modifications.

Historical Data

Historical Data

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Battery Events

10-14	
Time	10:12:59
TotalVolt	12.9V
Current	0.0A
Temperature	21.0°C
Protection	Normal

- **Event Logs:** Displays a chronological list of events and protections triggered by the Battery Management System (BMS).
- **Event Details:** Includes time, temperature, current, and a description of the event.

Troubleshooting and Tips

- **Connection Issues:**
 - **Ensure Bluetooth is Enabled:** Verify that Bluetooth is turned on in your device settings.
 - **Proximity:** Stay within the effective Bluetooth range (typically 10 meters) of the battery.
 - **Restart App:** If the battery doesn't appear, try closing and reopening the app.
- **App Performance:**
 - **Keep App Updated:** Always use the latest version of the app for optimal performance and new features.
 - **Device Compatibility:** Ensure your mobile device meets the app's minimum system requirements.
- **Battery Not Showing in App:**
 - **Battery Power:** Confirm that the battery is powered on.
 - **Multiple Devices:** Ensure the battery is not already connected to another device.

Usage Guide

Ensure efficient and safe operation by following these guidelines.

Activating Discharge

- **Power On:** Press and hold the power button / remote power button until visual confirmation.
- **Visual Confirmation:** LED indicator illuminates.

Optimal Operating Conditions

- **Temperature Range:** -20 °C to 55 °C (-4 °F to 131 °F).
- **Optimal Performance:** 15 °C to 25 °C (59 °F to 77 °F).
- **Avoid Extremes:** Prevent exposure to extreme temperatures.

Managing Discharge Depth

- **Shallow Discharges:** Keep above 20% SOC.
- **Maintain Voltage Levels:** Avoid deep discharges to prolong lifespan.

Load Management

- **Current Limits:** Do not exceed 230 A continuous discharge.
- **Prevent Overloading:** Exceeding limits can cause damage.

Storage Practices

- **Ideal Conditions:** Cool, dry environment.
- **Charge State for Storage:** Keep at least 50% charged; recharge periodically.

Regular Maintenance

- **Inspections and Testing:** Regularly check for damage or wear.
- **Disconnection When Idle:** Disconnect and power off during extended non-use.

Careful Handling

- **Avoid Damage:** Handle carefully to protect components.

Adhering to Safety Precautions

- **Safe Operation:** Follow safety measures and wear PPE.
- **Avoid Exposed Terminals:** Do not touch.

Professional Consultation

- **Seek Expert Advice:** Consult support or [authorized dealer](#) if uncertain.

Maintenance Guide

Follow these guidelines to maintain optimal condition.

Regular Visual Inspections

- **Surface and Structure Check:** Inspect casing, terminals, wiring.
- **Immediate Action:** Address issues promptly.

Terminal and Connector Maintenance

- **Cleaning Process:** Use soft brush or cloth with mild solution.
- **Securing Connections:** Ensure tight and secure connections.

Voltage and Capacity Monitoring

- **Regular Testing:** Use multimeter or tester.
- **Verify Performance:** Compare with expected values.

Temperature Checks

- **Operational Heat Monitoring:** Observe during charging/discharging.
- **Temperature Regulation:** Avoid extreme conditions.

Implement Preventive Maintenance

- **Scheduled Checks:** Establish routine maintenance.
- **Maintenance Records:** Document activities.

Optimal Storage Environment

- **Proper Storage:** Clean, dry place away from sunlight and temperature variations.

Adherence to Safety Practices

- **Safety Gear:** Wear PPE during maintenance.
- **Avoid Direct Contact:** Be cautious with exposed parts.

Expert Consultation

- **Seek Professional Help:** Contact support for technical assistance.

Troubleshooting Guide

Battery Not Charging

1. **Connection Check:** Verify secure and correct polarity.
2. **Charger Compatibility:** Ensure charger is LiFePO₄-compatible and functional.
3. **Power Source Inspection:** Confirm power supply is active.

Low Voltage or Capacity

1. **Load Disconnect:** Remove loads and measure voltage.
2. **Visual Inspection:** Check for damage.
3. **Capacity Assessment:** Perform tests.

Overheating Issues

1. **Temperature Compliance:** Operate within specified range.
2. **Ventilation:** Ensure adequate airflow.
3. **Load Management:** Reduce load if necessary.

Short Circuit Concerns

1. **Load Disconnection:** Disconnect immediately.
2. **Inspect Terminals/Wiring:** Check for damage.
3. **Continuity Testing:** Use multimeter.

Abnormal Battery Behavior

1. **Behavioral Observation:** Monitor during cycles.
2. **Document Issues:** Record abnormalities.
3. **Seek Support:** Contact technical support.

Failure to Hold Charge

1. **Charging Parameters:** Verify correct settings.
2. **Capacity Testing:** Assess battery capacity.
3. **Consider Battery Age:** Evaluate lifespan.

Excessive Self-Discharge

1. **Load Disconnection:** Ensure no devices are draining power.
2. **Terminal Maintenance:** Clean terminals.
3. **Current Draw Measurement:** Detect parasitic loads.

Erratic Behavior

1. **Environmental Factors:** Check for extreme conditions.
2. **Connection Security:** Verify all connections.
3. **Component Testing:** Evaluate connected devices.

Seeking Professional Assistance

- **Consult a Professional:** Contact support or [qualified technician](#).
- **Safety First:** Do not attempt beyond expertise.

Warranty Information

Warranty Terms

Duration of Coverage

- **Limited Warranty:** Effective from date of purchase, lasting up to 11 years.

Coverage Scope

- **Manufacturing Defects:** Faulty components, assembly errors, structural irregularities.
- **Normal Usage Conditions:** Defects under normal use.

Exclusions from Warranty

- **User-Related Damages:** Misuse, abuse, neglect, improper handling.
- **Unauthorized Modifications:** Any alterations void warranty.
- **External Causes:** Accidents, natural disasters, unauthorized repairs.
- **Non-Approved Accessories:** Using unapproved accessories or chargers.

Warranty Claim Procedure

Initiating a Claim

- **Contact Support:** Reach out to customer support.
- **Provide Documentation:** Proof of purchase and issue description.

Assistance and Guidance

- **Guidance:** Support will assist with the claim process.

Inspection and Resolution

- **Eligibility Determination:** Upon product receipt and inspection.
- **Resolution Options:** Repair, replace, or refund.

Limitation of Liability

- **Extent of Responsibility:** Limited to repairing, replacing, or refunding.
- **Exclusion of Indirect Damages:** Not liable for indirect damages.

Consumer Rights

- **Legal Rights:** Warranty provides specific legal rights; may vary by jurisdiction.
- **Statutory Rights:** Consumer rights are not affected.

Warranty Support Contact

- **Customer Support:** Contact at <https://www.epochbatteries.com/support>.

Maintaining Your Warranty

- **Proof of Purchase:** Retain documents.
- **Register Products:** Register at <https://www.epochbatteries.com/pages/product-registration>
- **Queries and Assistance:** Reach out for support if needed.

We at Epoch Batteries are proud of the quality and reliability of our products. We are dedicated to providing exceptional customer service and stand firmly behind our batteries. **Thank you for choosing Epoch Batteries as your trusted energy solution.**

