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EPEVER VS1024AU

EPEVER VS1024AU Solar Charge Controller User Manual

Model: VS1024AU

1. Product Overview

The EPEVER VS-AU series charge controller is a common positive, Pulse Width Modulation (PWM) charge controller designed for solar power systems. It features a built-in LCD display for easy monitoring and dual USB ports for charging external devices. This controller is suitable for various applications including solar home systems, traffic signals, solar street lights, and solar garden lamps.
The VS1024AU model supports 12V/24V auto-work systems and has a rated charge/discharge current of 10A. It offers multiple load control modes and extensive electronic protections to ensure safe and reliable operation of your solar system.

2. Key Features

- **Dual USB Ports:** Equipped with two USB ports, providing a maximum output of 2.4A for charging compatible devices.
- **LCD Display:** Integrated LCD screen for clear display of system parameters and operational status.
- **Battery Type Selection:** Supports Sealed, Gel, and Flooded battery types, allowing for optimized charging.
- **Intuitive Operation:** User-friendly button settings for comfortable and convenient operation.
- **High-Quality Terminals:** Features UL and VDE certified Nickel plated copper terminals for secure and reliable connections.
- **Three-Stage PWM Charging:** Utilizes Equalize, Boost, and Float charging stages for efficient battery management.
- **Wide Operating Temperature:** Designed to work continuously at full load within a temperature range of -25°C to +55°C.
- **Battery Temperature Compensation:** Includes a function for accurate battery charging based on temperature.
- **Robust Components:** Built with high-quality, high-reliability components from ST, IR, and Infineon.

3. Technical Specifications

Parameter	Specification (VS1024AU)

Parameter	Specification (VS1024AU)
Nominal System Voltage	12V/24V Auto Work
Battery Input Voltage Range	9 32V
Rated Charge/Discharge Current	10A
Max. PV Open Circuit Voltage	50V
Battery Type	Sealed (Default) / Gel / Flooded
Low Voltage Reconnect Voltage	12.6V (Sealed/Gel/Flooded)
Low Voltage Disconnect Voltage	11.1V (Sealed/Gel/Flooded)
Self-consumption	≤10mA
Temperature Compensation Coefficient	-3mV/°C/2V (25°C)
Grounding	Common Positive
USB Output	5VDC/2.4A
Overall Dimension	142x85x41.5mm
Terminals	12AWG (4mm²)
Net Weight	0.22kg
Enclosure	IP30
Working Environment Temperature	-25°C +55°C
Humidity Range	≤95% (N.C.)

4. Setup and Installation

Before installation, ensure all components are present and undamaged. It is recommended to mount the controller in a well-ventilated area, away from direct sunlight and moisture.

4.1 Wiring Connections

Connect the components in the following order to prevent damage:

1. **Connect the Battery:** Connect the battery to the controller's battery terminals. Ensure correct polarity (+ to + and - to -). The LCD will display the battery voltage.
2. **Connect the Solar Panel:** Connect the solar panel to the controller's PV terminals. Ensure correct polarity.
3. **Connect the Load:** Connect the DC load to the controller's load terminals. Ensure correct polarity.

Important: *Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.*



Figure 1: Front view of the VS1024AU controller, highlighting the LCD display, MENU and SET buttons, and the various connection terminals for temperature sensor, solar panel, battery, and load, along with dual USB ports.



Figure 2: Angled view of the VS1024AU controller, providing a clearer perspective of the terminal block layout and the dual USB charging ports.

4.2 Battery Type Setting

The controller supports Sealed, Gel, and Flooded battery types. The default setting is Sealed. To change the battery type:

1. Press the **MENU** button to cycle through the display screens until you reach the battery type setting.

2. Press and hold the **SET** button until the battery type icon flashes.
3. Use the **MENU** button to select the desired battery type (Sealed, Gel, or Flooded).
4. Press the **SET** button again to confirm and save the setting.

5. Operating Instructions

5.1 LCD Display and Button Functions

The LCD displays various system parameters. The **MENU** button is used to cycle through display screens and select options, while the **SET** button is used to enter settings mode and confirm selections.

5.2 Charging Modes

The controller employs a three-stage PWM charging algorithm:

- **Equalize:** Periodically overcharges the battery to balance cell voltages and prevent sulfation.
- **Boost:** Charges the battery at a higher voltage to quickly bring it to full capacity.
- **Float:** Maintains the battery at a lower voltage to keep it fully charged without overcharging.

5.3 Load Control Modes

The controller offers multiple load control modes, which can be configured via the settings. These modes typically include:

- **Manual Control:** Load can be turned on/off manually.
- **Light Control:** Load turns on at dusk and off at dawn.
- **Light Control + Timer:** Load turns on at dusk and stays on for a set number of hours.
- **Dual-Timer Control:** Load turns on for a set period after dusk and again for a set period before dawn.

Refer to the detailed manual provided with the product for specific instructions on configuring load control modes.

6. Maintenance

Regular maintenance ensures optimal performance and longevity of your solar charge controller:

- **Cleanliness:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning.
- **Connections:** Periodically check all wiring connections to ensure they are tight and secure. Loose connections can cause overheating and damage.
- **Ventilation:** Ensure the controller's ventilation openings are not blocked to allow for proper heat dissipation.
- **Battery Inspection:** Regularly inspect your batteries for any signs of damage, corrosion, or leakage.
- **Environmental Conditions:** Ensure the controller is operating within its specified temperature and humidity ranges.

7. Troubleshooting and Protections

The EPEVER VS1024AU controller is equipped with extensive electronic protections to safeguard the system. If an issue occurs, the controller's LCD display may show an error code or indicator. Common protections include:

- **PV Reverse Polarity Protection:** Prevents damage if solar panel polarity is reversed.
- **Battery Reverse Polarity Protection:** Protects the controller and battery from damage due to incorrect battery connection.
- **Battery Over Voltage Protection:** Stops charging when battery voltage exceeds safe limits.

- **Battery Over Discharge Protection:** Disconnects the load to prevent deep discharge of the battery.
- **Battery Overheating Protection:** Reduces charging current or disconnects if battery temperature becomes too high.
- **Controller Overheating Protection:** Protects the controller from internal damage due to excessive temperature.
- **Load Short Circuit Protection:** Automatically disconnects the load in case of a short circuit.
- **Load Overload Protection:** Disconnects the load if current exceeds the rated limit.

If you encounter an issue, first check all connections and ensure they are secure and correctly polarized. Consult the full product manual for specific error codes and detailed troubleshooting steps.

8. Warranty and Support

For information regarding product warranty, please refer to the warranty card included with your purchase or contact EPEVER customer support directly. Warranty terms and conditions may vary based on region and retailer.
For technical support, product inquiries, or assistance with troubleshooting, please visit the official EPEVER website or contact their authorized service centers. Keep your purchase receipt and product model number (VS1024AU) readily available when seeking support.

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