

EPEVER VS6048AU

EPEVER VS6048AU Solar Charge Controller Instruction Manual

Model: VS6048AU | Brand: EPEVER

1. INTRODUCTION

The EPEVER VS6048AU is a 60A common positive Pulse Width Modulation (PWM) solar charge controller designed for 12V, 24V, 36V, and 48V solar panel power systems. It incorporates advanced digital techniques to ensure efficient and reliable battery charging and load management. This controller is suitable for various applications, including solar home systems, traffic signals, solar street lights, and solar garden lamps.

Key Features:

- 3-Stage intelligent PWM charging: Bulk, Boost/Equalize, Float.
- Supports three battery charging options: Sealed, Gel, and Flooded.
- Integrated LCD display for dynamic monitoring of operating data and working conditions.
- Dual USB output ports (Max. 5VDC/2.4A) for charging electronic devices.
- User-friendly button settings for comfortable and convenient operation.
- Multiple load control modes for versatile application.
- Energy statistics function.
- Battery temperature compensation function.
- Extensive electronic protections for system safety.



Image 1.1: The EPEVER VS6048AU Solar Charge Controller shown in various application settings, including home power supply, street lighting, monitoring, and green energy solutions.

2. SAFETY INFORMATION

Please read all instructions and warnings carefully before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury.

- Ensure all wiring is correctly polarized and securely connected to prevent damage to the controller and other components.
- Always disconnect the solar panel and battery power before installing or adjusting the controller.
- Install the controller in a well-ventilated area, away from flammable gases, moisture, and direct sunlight.
- Use appropriate circuit breakers or fuses for the solar panel, battery, and load circuits.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Wear appropriate personal protective equipment, including eye protection, when working with batteries.
- Keep children away from the solar power system components.

Electronic Protections: The VS6048AU controller includes comprehensive electronic protections:

- PV reverse polarity protection
- Battery over voltage protection
- Battery over discharge protection
- Battery reverse polarity protection
- Battery overheating protection
- Load overload protection
- Load short circuit protection
- Controller overheating protection

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- Battery overheating protection
- Load short circuit protection
- Battery reverse polarity protection
- Battery over discharge protection
- Controller overheating protection
- Load overload protection



Optional accessories:



RTS300R47K3.81A
Remote temperature sensor (3m)

Image 2.1: Visual representation of the electronic protections integrated into the controller and a basic solar power system connection diagram.

3. PRODUCT OVERVIEW

Familiarize yourself with the components and interface of your EPEVER VS6048AU solar charge controller.

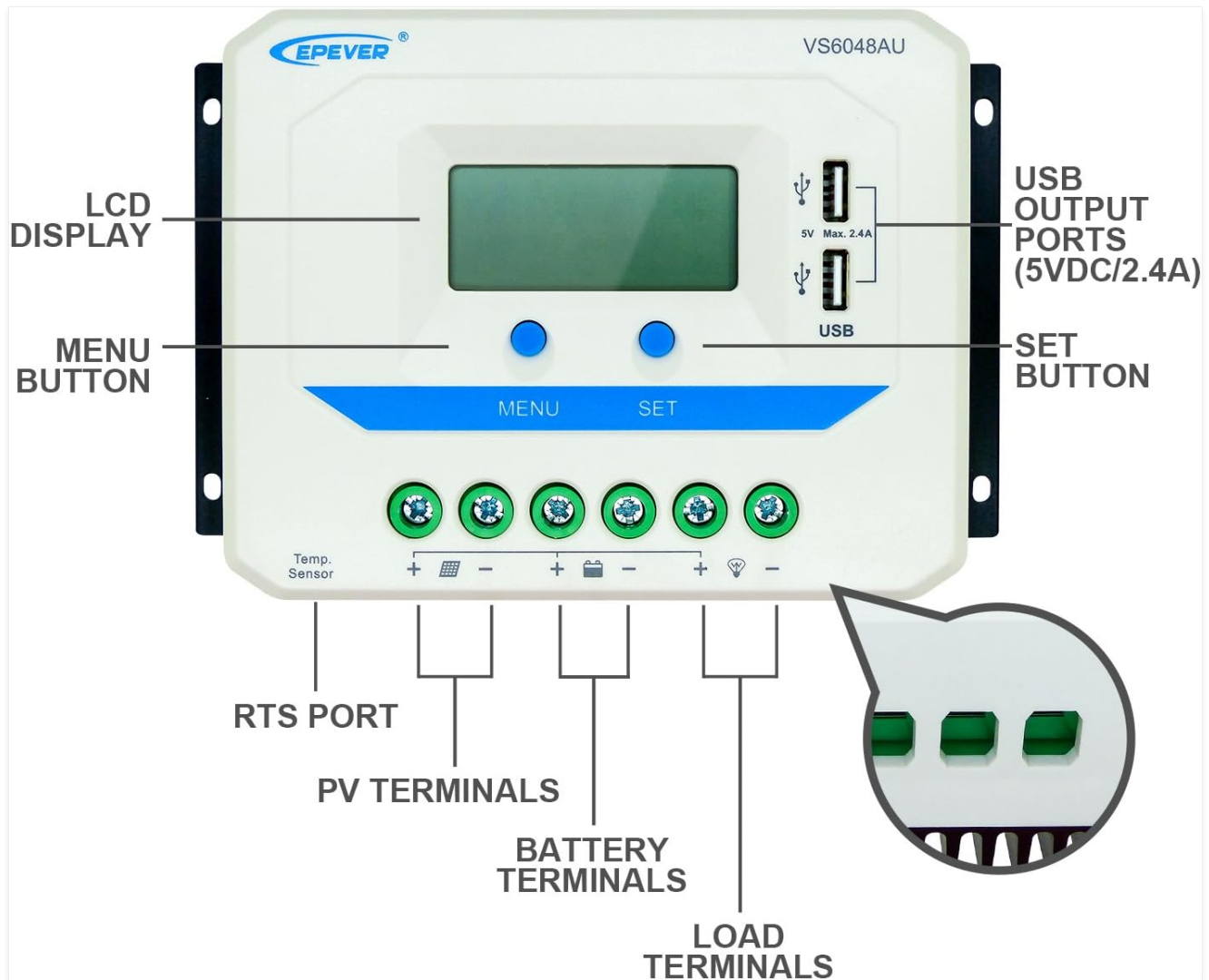


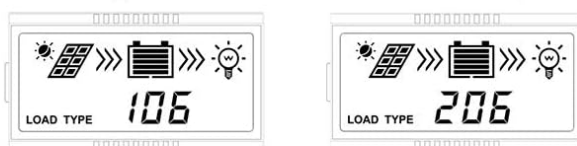
Image 3.1: Front view of the EPEVER VS6048AU controller with key components labeled.

- **LCD Display:** Shows system status, parameters, and error codes.
- **MENU Button:** Used to navigate through different display interfaces and enter/exit setting modes.
- **SET Button:** Used to confirm selections, modify parameters, and clear data.
- **USB Output Ports (5VDC/2.4A):** For charging external electronic devices.
- **Temp. Sensor Port (RTS Port):** Connects to the optional remote temperature sensor for accurate battery temperature compensation.
- **PV Terminals:** Connect to the solar panel array.
- **Battery Terminals:** Connect to the battery bank.
- **Load Terminals:** Connect to DC loads.



NOTE:

- 1) When no operation, the interface will be automatic cycle, but the follow two interfaces not be display.



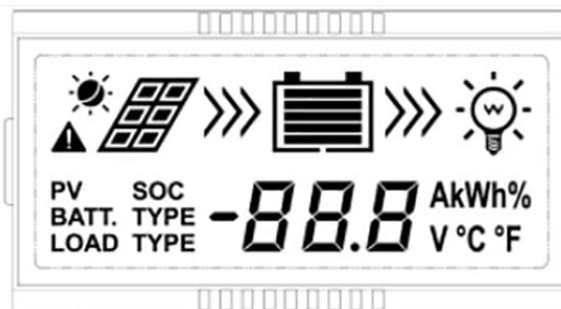
- 2) Accumulative power zero clearing: Under PV power interface, press SET button and hold on 5s then the value blink, press SET button again to clear the value.

- 3) Setting temperature unit: Under battery temperature interface, press SET button and hold on 5s to switch.

Image 3.2: Dimensions of the EPEVER VS6048AU Solar Charge Controller (approximately 21.4 cm x 12.87 cm x 7.22 cm).

LCD Display Status Description

The LCD display provides visual feedback on the system's operational status. Refer to the table below for icon meanings:



➤ Status Description

Item	Icon	Status
PV array		Day
		Night
		No charging
		Charging
	PV	PV Voltage, Current ,Power
Battery		Battery capacity, In Charging
	BATT.	Battery voltage. current, temperature
	BATT. TYPE	Battery type
Load		Load ON
		Load OFF
	LOAD	Load Voltage, Current, Load mode

Image 3.3: Detailed description of the icons displayed on the VS6048AU LCD screen.

4. SETUP AND INSTALLATION

Follow these steps for proper installation of your solar charge controller. Ensure all power sources are disconnected before making any connections.

Wiring Sequence:

1. **Connect the Battery:** Connect the battery to the controller's battery terminals. Ensure correct polarity (positive to positive, negative to negative). The controller will detect the battery voltage.
2. **Connect the Load:** Connect the DC load to the controller's load terminals. Ensure correct polarity.
3. **Connect the Solar Panel:** Connect the solar panel array to the controller's PV terminals. Ensure correct polarity.

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

Installation Video Guide:

Your browser does not support the video tag.

Video 4.1: An official EPEVER video demonstrating the connection process for the solar charge controller, including battery and load connections. This visual guide can assist with proper installation.

5. OPERATING INSTRUCTIONS

The EPEVER VS6048AU controller features an intuitive LCD display and button interface for monitoring and configuration.

LCD Display Navigation:

When no operation is performed, the LCD interface will automatically cycle through various display screens, showing real-time data such as PV voltage, current, battery voltage, and load status.

Function

21.4cm

7.22cm

12.87cm

	Multiple load control modes		Hight reliability components of ST IR and Infineon		PV reverse polarity/ Battery reverse polarity/ Load short circuit/ overload Protection
	12V/24V/36V/48V Auto Work		Informative black light LCD display		5V Dual USB 2.4A (Total)

Image 5.1: Illustration of the automatic cycling interfaces on the VS6048AU LCD display.

- Press the **MENU** button to manually cycle through the display interfaces.
- Press and hold the **MENU** button to enter or exit the parameter setting mode.
- In parameter setting mode, use the **SET** button to adjust values or confirm selections.

Special Operations:

- **Accumulative Power Clearing:** Under the PV power interface, press and hold the **SET** button for 5 seconds until the value blinks, then press **SET** again to clear the accumulative power value.
- **Setting Temperature Unit:** Under the battery temperature interface, press and hold the **SET** button for 5 seconds to switch between Celsius (°C) and Fahrenheit (°F).

Charging Modes:

The controller utilizes a 3-stage intelligent PWM charging algorithm:

1. **Bulk Charging:** The battery is charged at maximum current until its voltage reaches the Boost voltage.
2. **Boost/Equalize Charging:** The battery is charged at a constant voltage. An Equalize charge is typically performed once a month to balance battery cells.
3. **Float Charging:** The battery voltage is maintained at the Float voltage, and the charging current is reduced to a trickle to keep the battery fully charged.

The controller supports charging for Sealed, Gel, and Flooded battery types. Ensure the correct battery type is selected in the settings for optimal charging performance.

USB Output:

The dual USB ports provide a maximum output of 5VDC/2.4A for charging compatible electronic devices.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your EPEVER VS6048AU 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 for tightness and corrosion. Loose connections can cause overheating and damage.
- **Ventilation:** Ensure the installation area has adequate ventilation to prevent overheating of the controller.
- **Inspection:** Inspect the controller and wiring for any signs of damage, such as frayed cables or cracked casing. Replace damaged components immediately.
- **Battery Health:** Monitor battery voltage and performance regularly. Ensure the battery type setting in the controller matches your battery.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your solar charge controller.

Problem	Possible Cause	Solution
No display on LCD	Battery not connected or low voltage; reverse polarity.	Check battery connections and polarity. Ensure battery voltage is above 9V.
Battery not charging	PV panels not connected; PV reverse polarity; insufficient sunlight; PV open circuit voltage too low.	Check PV connections and polarity. Ensure adequate sunlight. Verify PV open circuit voltage is within specifications.
Load not working	Load disconnected; load short circuit; load overload; battery low voltage disconnect.	Check load connections. Remove short circuit. Reduce load. Recharge battery.
Controller overheating	Poor ventilation; excessive ambient temperature; prolonged high current operation.	Ensure proper ventilation. Relocate controller to a cooler environment. Reduce load if possible.

Problem	Possible Cause	Solution
USB output not working	Device not compatible; controller fault.	Try another USB device. If issue persists, contact support.

8. SPECIFICATIONS

Detailed technical specifications for the EPEVER VS6048AU Solar Charge Controller.



Technical specifications:

CE RoHS

Model	VS1024AU	VS2024AU	VS3024AU	VS4524AU	VS6024AU
			VS3048AU	VS4548AU	VS6048AU
Nominal system voltage	VS**24AU 12/24V auto work		VS**48AU 12/24/36/48V auto work		
Battery input voltage range	VS**24AU 9~32V		VS**48AU 9V~64V		
Rated charge/discharge current*	10A	20A	30A	45A	60A
Max. PV open circuit voltage	VS**24AU 50V VS**48AU 96V				
Battery type	Sealed(Default) / Gel / Flooded				
Equalize charging voltage*	Sealed:14.6V/ Gel: No/ Flooded:14.8V				
Boost charging voltage*	Sealed:14.4V/ Gel:14.2V/ Flooded:14.6V				
Float charging voltage*	Sealed/Gel/Flooded:13.8V				
Low voltage reconnect voltage*	Sealed/Gel/Flooded:12.6V				
Low voltage disconnect voltage*	Sealed/Gel/Flooded:11.1V				
Self-consumption	≤10mA/12V;≤18mA/24V; ≤14.5mA/36V; ≤17mA				
Temperature compensation coefficient	-3mV/°C/2V (25℃)				
Grounding	Common positive				
USB output	5VDC/2.4A				
Overall dimension	142x85x41.5 mm	160x94.9x49.3 mm	181x100.9x59.8 mm	194x118.4x63.8 mm	214x128.7x72.2 mm
Terminals	12AWG(4mm ²)	8AWG(10mm ²)	6AWG(16mm ²)	6AWG(16mm ²)	3AWG(25mm ²)
Net weight	0.22kg	0.35kg	0.55kg	0.76kg	1.02kg
			0.58kg	0.88kg	1.04kg
Enclosure	IP30				
Working environment temperature	-25℃~+55℃(Product can work continuously at full load)				
Humidity range	≤95% (N.C.)				

•Above the parameters are in 12V system at 25°C, twice in 24Vsystem, triple in 36V system and quadruple in 48V system.

•Rated charge/discharge current temp. range is -25 to 55 °C

Image 8.1: Comprehensive technical specifications table for the EPEVER VS-AU series, including the VS6048AU model.

Parameter	Value (VS6048AU)
Model	VS6048AU
Nominal System Voltage	12V/24V/36V/48V Auto Work

Parameter	Value (VS6048AU)
Battery Input Voltage Range	9V ~ 64V
Rated Charge/Discharge Current	60A
Max. PV Open Circuit Voltage	96V
Battery Type	Sealed (Default) / Gel / Flooded
Boost Charging Voltage	Sealed: 14.4V, Gel: 14.2V, Flooded: 14.6V
Equalize Charging Voltage	Sealed: 14.6V, Gel: No, Flooded: 14.8V
Float Charging Voltage	Sealed/Gel/Flooded: 13.8V
Low Voltage Reconnect Voltage	Sealed/Gel/Flooded: 12.6V
Low Voltage Disconnect Voltage	Sealed/Gel/Flooded: 11.1V
Self-consumption	≤10mA (12V), ≤18mA (24V)
Temperature Compensation	-3mV/°C/2V (77°F)
Grounding	Common Positive
USB Output	5VDC/2.4A (Total)
Overall Dimension	214x128.7x72.2 mm
Terminals	3AWG (25mm²)
Net Weight	1.02 kg
Enclosure	IP30
Working Environment Temperature	-25°C ~ +55°C
Humidity Range	≤95% (N.C.)

9. WARRANTY AND SUPPORT

EPEVER products are designed for reliability and performance. For technical assistance or warranty inquiries, please refer to the following:

- **Technical Support:** EPEVER provides technical support through its local service centers. For assistance, please contact the authorized dealer or service center in your region.
- **Warranty Information:** Please refer to the warranty card included with your product or visit the official EPEVER website for detailed warranty terms and conditions.
- **Free Solar System Design:** EPEVER's service centers may offer free solar system design assistance to help you optimize your setup.