

[Manuals.plus](#) /

› [EPsolar](#) /

› Solar Charge Controller 10A 12V 24V Auto Work PWM Solar Panel Controller ViewStar VS1024BN with LCD Display Common Negative Grounding for Sealed, Gel, Flooded, and User Type (VS1024BN) - Instruction Manual

EPsolar VS1024BN

EPsolar ViewStar VS1024BN PWM Solar Charge Controller

Model: VS1024BN | Brand: EPsolar

INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the EPsolar ViewStar VS1024BN PWM Solar Charge Controller. This controller is designed for off-grid solar systems, such as street lighting, solar home systems, or small power stations. It features an LCD display, reliable battery charging, comprehensive electronic protections, and programmable parameters. Please read this manual thoroughly before installation and use to ensure proper function and safety.

SAFETY INFORMATION

Always observe the following safety precautions during installation and operation:

- Ensure all wiring is performed by qualified personnel and complies with local electrical codes.
- Connect the battery to the controller first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Do not short-circuit the solar panel or battery terminals.
- Ensure adequate ventilation around the controller to prevent overheating.
- Avoid exposure to water or excessive humidity.
- The controller is designed for common negative grounding. Ensure all negative terminals are connected to a common ground.
- Wear appropriate personal protective equipment, including eye protection, when working with batteries.

PRODUCT OVERVIEW

The EPsolar ViewStar VS1024BN is a Pulse Width Modulation (PWM) solar charge controller. It automatically detects 12V or 24V system voltage and manages the charging process for various battery types.



Figure 1: Front view of the EPsolar ViewStar VS1024BN Solar Charge Controller, showing the LCD display, control buttons, and terminal connections.

Components and Features



- | | |
|--|---------------------------|
| 1 Local temperature sensor | 6 Buttons |
| 2 Fault LED indicator | 7 Communication port |
| 3 Charging LED indicator | 8 Load terminals |
| 4 Battery slot | 9 Battery terminals |
| 5 Liquid crystal display(LCD) | 10 Solar module terminals |
| 11 Remote temperature sensor interface(optional) | |

Figure 2: Labeled diagram of the VS1024BN controller's external components.

1. **Local temperature sensor:** Measures the ambient temperature for temperature compensation.
2. **Fault LED indicator:** Illuminates to indicate system faults or warnings.
3. **Charging LED indicator:** Shows the charging status of the battery.
4. **Battery slot:** Location for internal battery (if applicable, or for specific models).
5. **Liquid crystal display (LCD):** Displays real-time system data and settings.
6. **Buttons:** Four buttons for menu navigation and parameter adjustment.
7. **Communication port:** RS485 port for PC monitoring software or remote meter connection.
8. **Load terminals:** Connections for DC loads.
9. **Battery terminals:** Connections for the battery bank.
10. **Solar module terminals:** Connections for the solar panel array.
11. **Remote temperature sensor interface (optional):** Port for an external temperature sensor (RTS300R47K3.81A).

Key Features:

- High-efficient Series PWM charging.
- Automatic 12V/24V system voltage recognition.
- Support for four battery types: Sealed, Gel, Flooded, and User-defined.
- Intelligent lighting and timer control for solar lighting systems.
- 12-bit A/D high-precision sampling for accurate data.
- MOSFET used as electronic switch.
- Full control parameters setting and modification, with diversified load control modes.
- Humanized browser interface with 4 buttons for easy operation.
- Temperature compensation for optimal charging.
- Energy statistics function.
- RS485 ports with MODBUS communication protocol.
- Optional PC monitoring software and remote meter (MT50) for real-time monitoring and parameter setting.
- Field upgradable firmware.

Electronic Protections:

- PV short circuit protection
- PV reverse polarity protection
- Battery overcharge protection
- Battery over discharge protection
- Battery reverse polarity protection
- Load overload protection
- Load short circuit protection
- Overheating protection (controller and battery)

SETUP AND INSTALLATION

Follow these steps for proper installation of the VS1024BN controller:

1. **Mounting:** Choose a dry, well-ventilated location away from direct sunlight and heat sources. Ensure sufficient space around the controller for air circulation.
2. **Wiring Sequence:**
 - Connect the battery to the controller's battery terminals (9) first. Ensure correct polarity (+ to + and - to -). The controller will automatically detect the system voltage (12V or 24V).
 - Connect the solar panel array to the controller's solar module terminals (10). Ensure correct polarity.
 - Connect the DC load to the controller's load terminals (8). Ensure correct polarity.
3. **Grounding:** The VS1024BN features common negative grounding. Ensure all negative terminals (battery, solar, load) are connected to a common ground point.
4. **Optional Remote Temperature Sensor:** If using, connect the remote temperature sensor (RTS300R47K3.81A) to the interface (11). This improves charging accuracy by compensating for battery temperature fluctuations.

5. **Communication Port:** For PC monitoring or remote meter (MT50) connection, use the RS485 communication port (7).

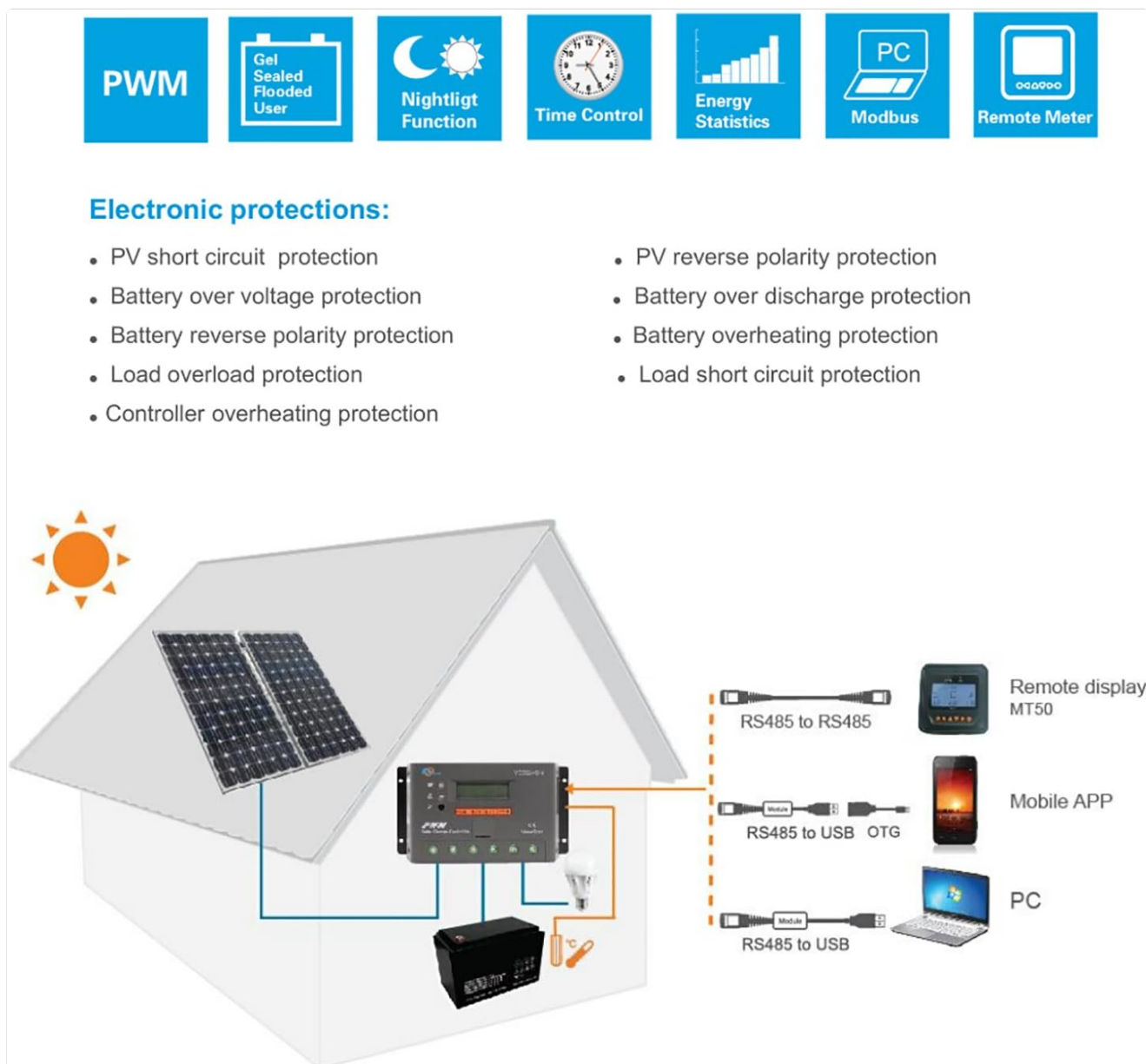


Figure 3: Typical solar system connection diagram with the VS1024BN controller, showing connections to solar panels, battery, load, and optional communication accessories.

OPERATING INSTRUCTIONS

LCD Display and Button Functions

The LCD (5) provides real-time system information. The four buttons (6) allow navigation through menus and adjustment of parameters.

- **MENU button:** Enters/exits the menu, or cycles through main display screens.
- **UP/PLUS button:** Navigates up in menus or increases parameter values.
- **DOWN/MINUS button:** Navigates down in menus or decreases parameter values.
- **ENTER button:** Confirms selection or enters editing mode for a parameter.

Battery Type Selection

It is crucial to select the correct battery type for optimal charging and battery longevity. Use the menu to select from Sealed, Gel, Flooded, or User-defined settings. Refer to your battery manufacturer's specifications for recommended charging voltages.

Load Control Modes

The controller offers diversified load control modes, including manual control, light control, and light control with timer. These settings are programmable via the LCD menu or through PC software/mobile app.

PC Software and Mobile App

The VS1024BN supports communication via its RS485 port. Optional PC monitoring software and a mobile application are available for real-time data monitoring, parameter setting, and energy statistics. This allows for more detailed system management.



Figure 4: Examples of the PC monitoring software interface and mobile application for EPSolar controllers, demonstrating data display and control options.

MAINTENANCE

Regular maintenance ensures the longevity and optimal performance 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 free from corrosion. Loose connections can cause overheating and poor performance.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow for proper heat dissipation.
- **Battery Health:** Monitor battery voltage and health regularly. Ensure the battery type setting on the controller

matches your battery.

- **Firmware Updates:** Check the manufacturer's website for any available firmware updates to ensure your controller has the latest features and bug fixes.

TROUBLESHOOTING

This section provides solutions to common issues you might encounter with the VS1024BN controller.

Problem	Possible Cause	Solution
No display on LCD	Battery not connected or low voltage; reverse polarity.	Check battery connections and voltage. Ensure correct polarity. Charge battery if voltage is too low.
Battery not charging	Solar panel not connected; low solar voltage; PV reverse polarity; PV short circuit.	Check solar panel connections and ensure sufficient sunlight. Verify PV polarity. Check for PV short circuits.
Load not working	Load short circuit; load overload; battery low voltage; load control mode setting.	Check load wiring for short circuits. Reduce load power. Charge battery. Adjust load control mode settings.
Overheating warning	Insufficient ventilation; excessive ambient temperature; overloaded system.	Ensure proper airflow around the controller. Reduce load or improve ventilation.
Fault LED illuminated	Indicates a protection event (e.g., overcharge, over-discharge, short circuit).	Refer to the controller's display for specific fault codes and address the underlying issue.

SPECIFICATIONS

Detailed technical specifications for the EPsolar ViewStar VS1024BN Solar Charge Controller:

Technical specifications:

Model	VS1024BN	VS2024BN	VS3024BN	VS4524BN	VS6024BN
		VS2048BN	VS3048BN	VS4548BN	VS6048BN
Nominal system voltage	12/24V auto work	VS**24BN: 12/24V auto work			
		VS**48BN: 12/24/36/48V auto work			
Rated charge current	10A	20A	30A	45A	60A
Rated discharge current	10A	20A	30A	45A	60A

Model	VS1024BN	VS2024BN	VS3024BN	VS4524BN	VS6024BN
		VS2048BN	VS3048BN	VS4548BN	VS6048BN
Battery input voltage range	VS**24BN: 8~32V, VS**48BN:8~64V				
Equalize charging voltage*	Sealed: 14.6V, Flooded: 14.8V, User-defined: 9~17V				
Boost charging voltage*	Gel: 14.2V, Sealed: 14.6V, Flooded: 14.8V, User-defined: 9~17V				
Float charging voltage*	Gel /Sealed /Flooded: 13.8V, User-defined: 9~17V				
Low voltage reconnect voltage*	Gel /Sealed /Flooded: 12.6V, User-defined: 9~17V				
Low voltage disconnect voltage*	Gel /Sealed /Flooded: 11.1V, User-defined: 9~17V				
Self-consumption	≤15mA(12V); ≤10mA(24V); ≤9mA(36V); ≤8mA(48V)				
Temperature compensation coefficient	-3mV/°C/2V				
Grounding	Common negative				
Communication	RS485 / RJ45 interface				

• Technical data for 12V system at 25℃, twice in 24V system rate, triple in 36V system rate and quadruple in 48V system rate.

Model	VS1024BN	VS2024BN	VS3024BN	VS4524BN	VS6024BN
Overall dimension	162x85x40mm	162x100x50mm	200x103x58mm	201x109x59mm	205x129x67mm
Terminals	12AWG(4mm ²)	8AWG(10mm ²)	6AWG(16mm ²)	2AWG(35mm ²)	2AWG(35mm ²)
Net weight	0.3kg	0.4kg	0.7kg	0.8kg	1.3kg
Enclosure	IP30				

Figure 5: Technical specifications table for the ViewStar series, including the VS1024BN model.

Parameter	VS1024BN
Nominal System Voltage	12V/24V Auto Work

Parameter	VS1024BN
Rated Charge Current	10A
Rated Discharge Current	10A
Battery Input Voltage Range	9~32V
Equalize Charging Voltage*	Sealed: 14.6V, Gel: 14.8V, Flooded: 14.8V, User-defined: 9~17V
Boost Charging Voltage*	Sealed: 14.4V, Gel: 14.2V, Flooded: 14.6V, User-defined: 9~17V
Float Charging Voltage*	Sealed/Gel/Flooded: 13.8V, User-defined: 9~17V
Low Voltage Reconnect Voltage*	Sealed/Gel/Flooded: 12.6V, User-defined: 9~17V
Low Voltage Disconnect Voltage*	Sealed/Gel/Flooded: 11.1V, User-defined: 9~17V
Self-consumption	≤15mA (12V); ≤10mA (24V)
Temperature Compensation Coefficient	-3mV/°C/2V
Grounding	Common Negative
Communication	RS485 / RJ45 interface
Overall Dimensions	162 x 85 x 40 mm (6.38 x 3.35 x 1.57 inches)
Terminals	12AWG (4mm ²)
Net Weight	0.3 kg (10.6 ounces)
Enclosure	IP30

**Technical data for 12V system at 25°C, twice in 24V system rate.*

WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official EPsolar website or contact your authorized dealer. Keep your purchase receipt as proof of purchase for any warranty claims.

Additional protection plans may be available for purchase to extend coverage beyond the standard manufacturer's warranty. Please check with your retailer for details on available protection plans.