Victron Energy SmartSolar MPPT 150/100-Tr VE.Can

Victron Energy SmartSolar MPPT 150/100-Tr VE.Can Solar Charge Controller

User Manual

1. Introduction

This manual provides essential information for the safe and efficient installation, operation, and maintenance of your Victron Energy SmartSolar MPPT 150/100-Tr VE.Can Solar Charge Controller. This device is designed to maximize energy harvest from your solar panels and intelligently charge your batteries, ensuring optimal performance and longevity.

2. Safety Information

Important Safety Instructions:

- Read all instructions before installing or operating the device.
- Installation must be performed by qualified personnel in accordance with local electrical codes.
- Ensure all power sources (solar panels, battery) are disconnected before installation or maintenance.
- Wear appropriate personal protective equipment, including eye protection and insulated gloves.
- Do not expose the controller to water or excessive moisture.
- Ensure proper ventilation to prevent overheating.
- Never connect a damaged controller to a power source.

3. Product Overview

The SmartSolar MPPT 150/100-Tr VE.Can is an advanced Maximum Power Point Tracking (MPPT) solar charge controller. It efficiently converts solar energy into battery charge, supporting 12V, 24V, 36V, and 48V battery systems. Key features include Bluetooth connectivity for monitoring and configuration via the VictronConnect app, and VE.Can communication for integration into larger systems.

Figure 3.1: Front view of the SmartSolar MPPT 150/100-Tr VE.Can controller, showing the main casing and connection terminals.

Figure 3.2: Side view of the controller, highlighting the VE.Direct port and other connection points.

4. Setup and Installation

4.1 Mounting

Mount the controller vertically on a non-flammable surface, ensuring adequate airflow around the heatsink fins. Avoid direct sunlight exposure to prevent overheating. Leave sufficient space above and below the unit for cable connections and heat dissipation.

4.2 Wiring Connections

Follow the wiring sequence carefully to prevent damage to the unit or battery system:

1. **Battery Connection:** Connect the battery cables to the 'BATTERY' terminals. Ensure correct polarity (positive to positive, negative to negative). Use appropriately sized cables and fuses.
2. **Solar Panel (PV) Connection:** Connect the solar panel cables to the 'PV' terminals. Verify correct polarity. Do not exceed the maximum open circuit voltage of 150V.
3. **Load Connection (Optional):** If your model includes a load output, connect your DC loads to the 'LOAD' terminals. This output is typically protected against over-discharge.
4. **VE.Direct Connection:** For wired communication with other Victron devices or a computer, use a VE.Direct cable.
5. **VE.Can Connection:** For advanced system integration and communication, connect VE.Can cables to the designated ports.
6. **Relay and Remote Terminals:** These terminals can be used for external control or signaling, as configured via the VictronConnect app.

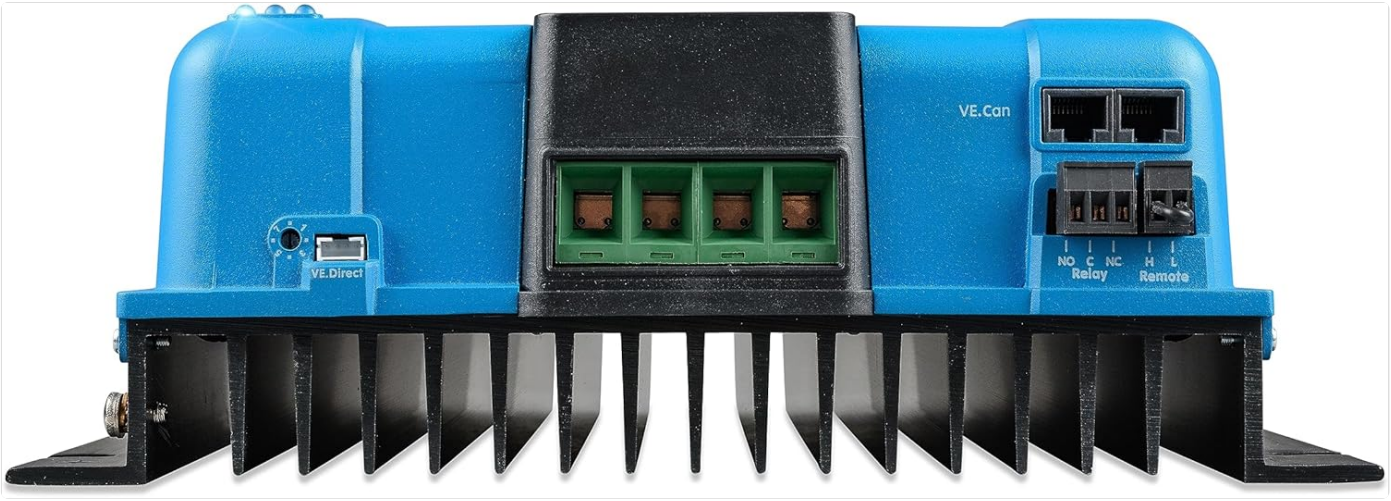

Figure 4.1: Rear view of the controller, showing the battery, PV, VE.Can, Relay, and Remote connection terminals.

4.3 Initial Configuration (VictronConnect App)

The SmartSolar controller does not have a physical display. All monitoring and configuration are done wirelessly via Bluetooth using the VictronConnect app on your smartphone or tablet. Download the app from your device's app store. Once installed, open the app, connect to your controller via Bluetooth, and follow the on-screen prompts to set up battery type, charging parameters, and other system settings.

Figure 4.2: The VictronConnect app provides real-time data and configuration options for your SmartSolar controller.

5. Operating Instructions

5.1 Power-Up Sequence

After all connections are securely made, connect the battery first, then the solar panels. The controller will perform a self-test and begin charging if solar power is available and the battery requires charge.

5.2 Monitoring and Control

Use the VictronConnect app to monitor the system's performance. The app displays real-time data such as solar power output, battery voltage, charging current, and charging stage. You can also adjust settings like battery charge parameters and enable optional features like solar priority charging.

Figure 5.1: Monitoring system performance and making adjustments through the VictronConnect app.

5.3 Charging Stages

The SmartSolar controller employs an intelligent charging algorithm to ensure optimal battery health and longevity. The main stages are:

- **Bulk:** Maximum current is delivered to rapidly charge the battery.
- **Absorption:** When the battery reaches a set voltage, the controller maintains this voltage while reducing current to fully charge the battery.
- **Float:** Once the battery is fully charged, the voltage is reduced to a lower level to maintain the battery without overcharging.

6. Maintenance

The SmartSolar controller is designed for minimal maintenance. However, regular checks ensure optimal performance and safety:

- **Visual Inspection:** Periodically inspect the controller and all connections for any signs of damage, corrosion, or loose wiring.
- **Cleaning:** Keep the heatsink fins free of dust and debris to ensure efficient cooling. Use a dry, soft cloth for cleaning. Do not use liquids or abrasive cleaners.
- **Firmware Updates:** Regularly check for and install firmware updates via the VictronConnect app. Updates often include performance improvements and new features.
- **Ventilation:** Ensure the installation area remains well-ventilated and free from obstructions.

7. Troubleshooting

If you encounter issues with your SmartSolar controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
No charging activity	No solar input, incorrect wiring, low battery voltage, controller fault.	Check solar panel connections and output. Verify battery connections and voltage. Ensure correct polarity. Check for error codes in VictronConnect.
Low power output	Shaded panels, dirty panels, undersized panels, high temperatures.	Clear panel shading/dirt. Ensure panel array matches system requirements. Improve ventilation around the controller.
Bluetooth connection issues	Out of range, app not updated, interference.	Move closer to the controller. Update VictronConnect app. Restart phone/tablet and controller.
Controller overheating	Insufficient ventilation, high ambient temperature, excessive load.	Ensure proper airflow around the heatsink. Reduce load if possible. Relocate controller to a cooler environment.

For more detailed diagnostics, use the VictronConnect app to view system status and any active alarms or warnings. The app provides pro-active system safety alerts to help identify and resolve issues quickly.

8. Specifications

Feature	Specification
Brand	Victron Energy
Model	SmartSolar MPPT 150/100-Tr VE.Can
Max PV Open Circuit Voltage	150 Volts
Rated Charge Current	100 Amps
Battery Voltage	12/24/36/48 Volts (Auto-select)
Material	Plastic
Item Weight	9.92 Pounds
Display Type	No Physical Display (Bluetooth via VictronConnect app)
Communication Ports	VE.Direct, VE.Can, Bluetooth
Included Components	Victron Energy Solar Charge Controller
UPC	859042007634

9. Warranty and Support

Victron Energy products are known for their quality and reliability. For specific warranty terms and conditions, please refer to the documentation included with your product or visit the official Victron Energy website. In case of technical issues or support needs, Victron Energy offers a dependable global network of skilled professionals to provide rapid and proficient assistance.
You can find further support and resources on the**Official Victron Energy Website**.