EPEVER Triron 2210N

EPEVER Triron 2210N MPPT Solar Charge Controller User Manual

Model: Triron 2210N | Brand: EPEVER

1. Introduction

The EPEVER Triron 2210N MPPT Solar Charge Controller is designed to efficiently manage power from solar panels to charge batteries. It utilizes Maximum Power Point Tracking (MPPT) technology to maximize energy harvest from photovoltaic (PV) arrays, ensuring optimal battery charging and system performance. This controller supports automatic 12V/24V system voltage detection and has a maximum PV input voltage of 100V.
Key features include:

- Advanced MPPT technology for high tracking efficiency.
- Automatic 12V/24V system voltage identification.
- Comprehensive electronic protection against various faults.
- Support for multiple battery types, including lead-acid (AGM, GEL, Flooded) and lithium batteries.
- Integrated RS485 and USB communication interfaces for monitoring and control.

Figure 1: Front view of the EPEVER Triron 2210N MPPT Solar Charge Controller, showing the display, buttons, and connection ports.

2. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Please follow these guidelines carefully.

2.1 Component Identification

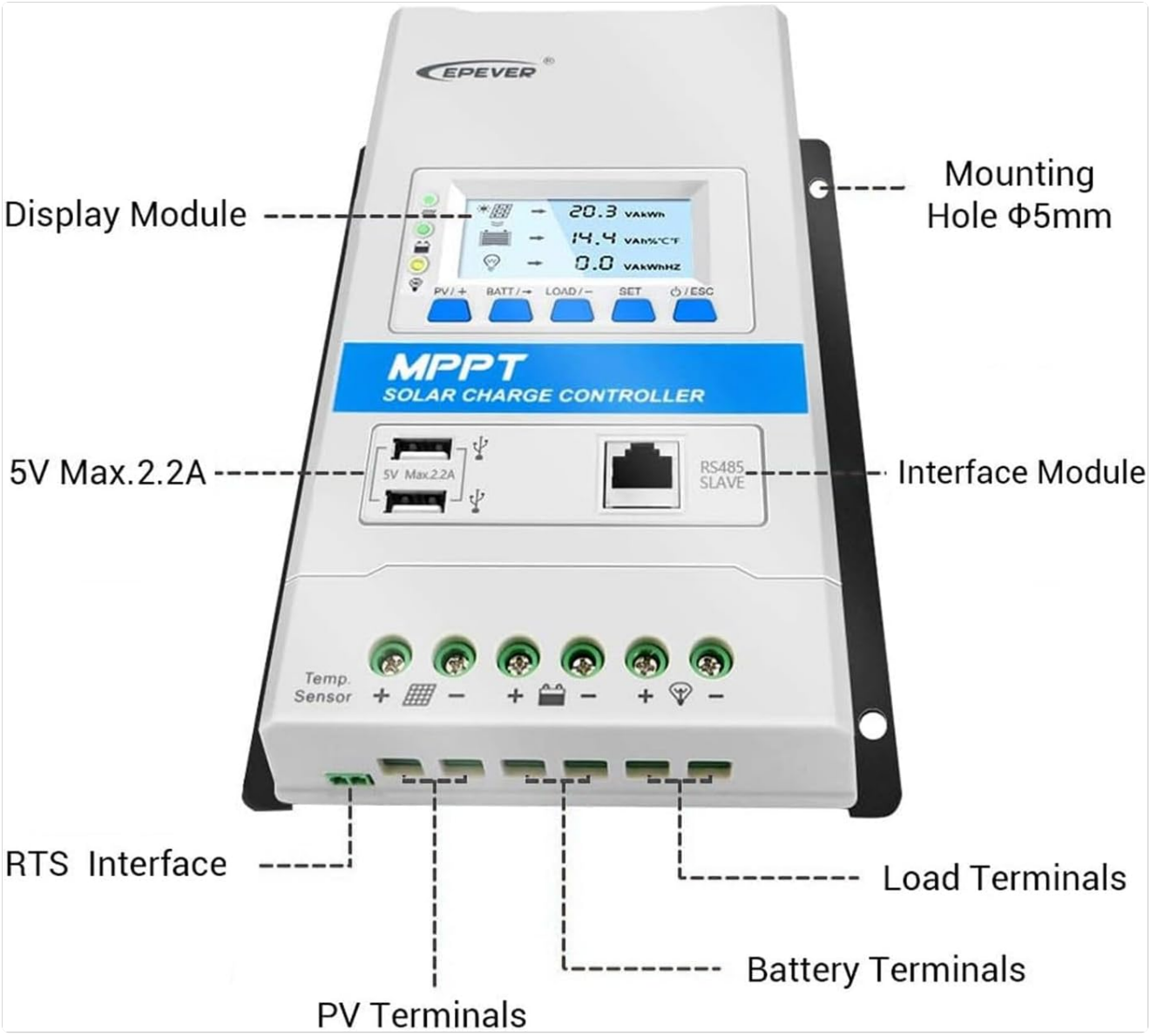

Figure 2: Diagram identifying key components and interfaces of the Triron 2210N, including the display module, mounting holes, USB ports, RS485 interface, RTS interface, PV terminals, battery terminals, and load terminals.

- **Display Module:** Shows system status and parameters.
- **Mounting Hole:** For securing the controller.
- **5V Max. 2.2A USB Ports:** For charging external devices.
- **RS485 Slave Interface:** For communication with external devices (e.g., PC, remote meter).
- **RTS Interface:** Remote Temperature Sensor connection.
- **PV Terminals:** Connect to solar panels.
- **Battery Terminals:** Connect to the battery bank.
- **Load Terminals:** Connect to DC loads.

2.2 Wiring Sequence

Follow the correct wiring sequence to prevent damage to the controller and other components:

1. Connect the battery to the charge controller.
2. Connect the solar panel to the charge controller.
3. Connect the load to the charge controller.

Ensure all connections are secure and correct polarity is observed. Reverse polarity can cause damage.

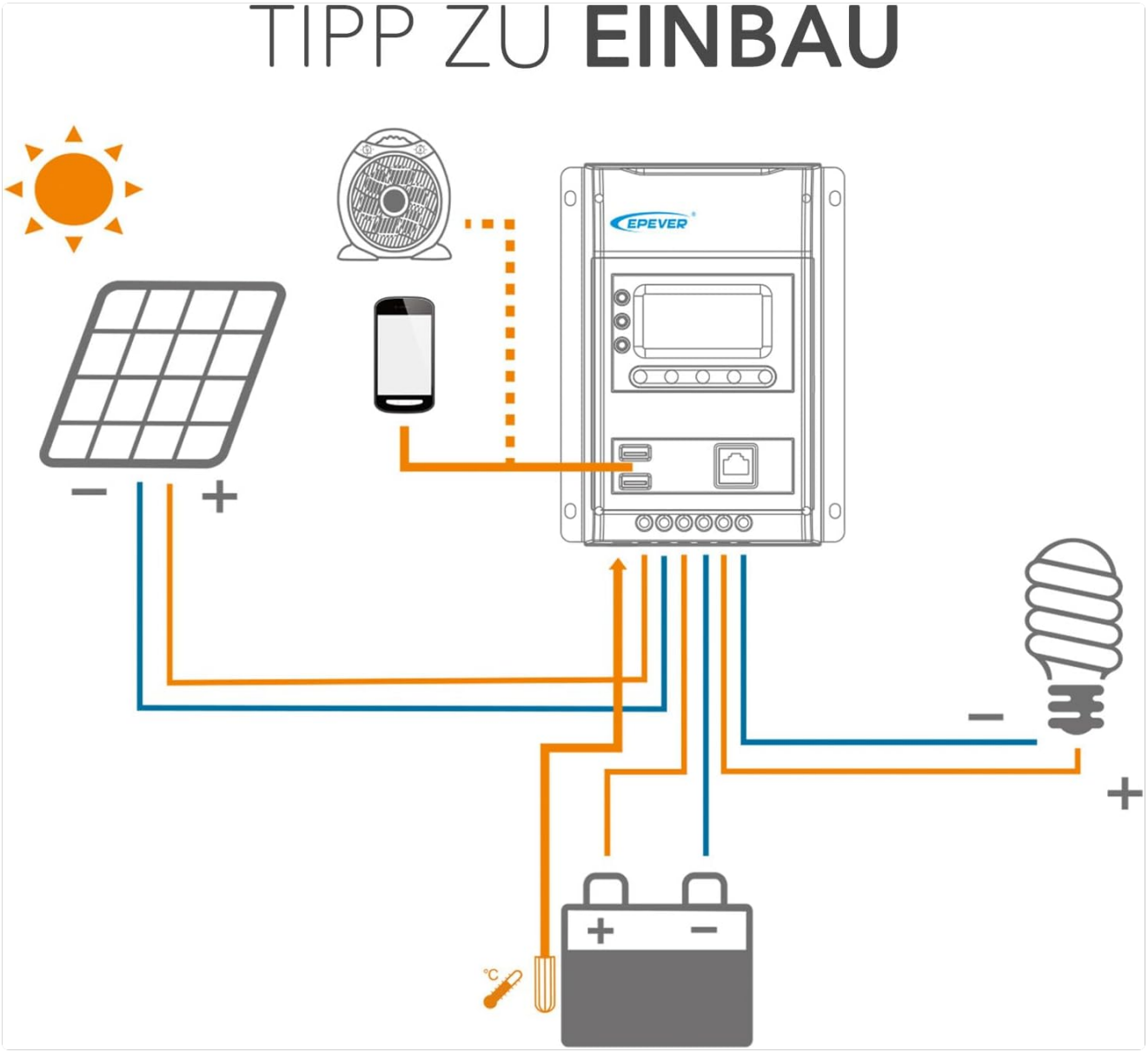

Figure 3: Basic wiring diagram showing connections for solar panels, battery, and DC load to the Triron 2210N controller. Note the temperature sensor connection to the battery.

2.3 Supported Battery Types

The controller supports various battery types. Ensure you select the correct battery type in the controller settings for optimal charging.

- Lead-Acid Batteries: AGM, GEL, Flooded, User-defined.
- Lithium Batteries: LiFePO4, Li(NiCoMn)O2 (User-defined settings may be required for specific lithium chemistries).

Figure 4: The Triron 2210N controller displaying information alongside a list of supported battery types, including lead-acid (AGM, GEL, Flooded, User) and lithium (LiFePO4, Li(NiCoMn)O2).

2.4 Accessory Connections

The Triron 2210N can be connected to various accessories for enhanced monitoring and control. Note that accessories are not included with the controller unless specified.

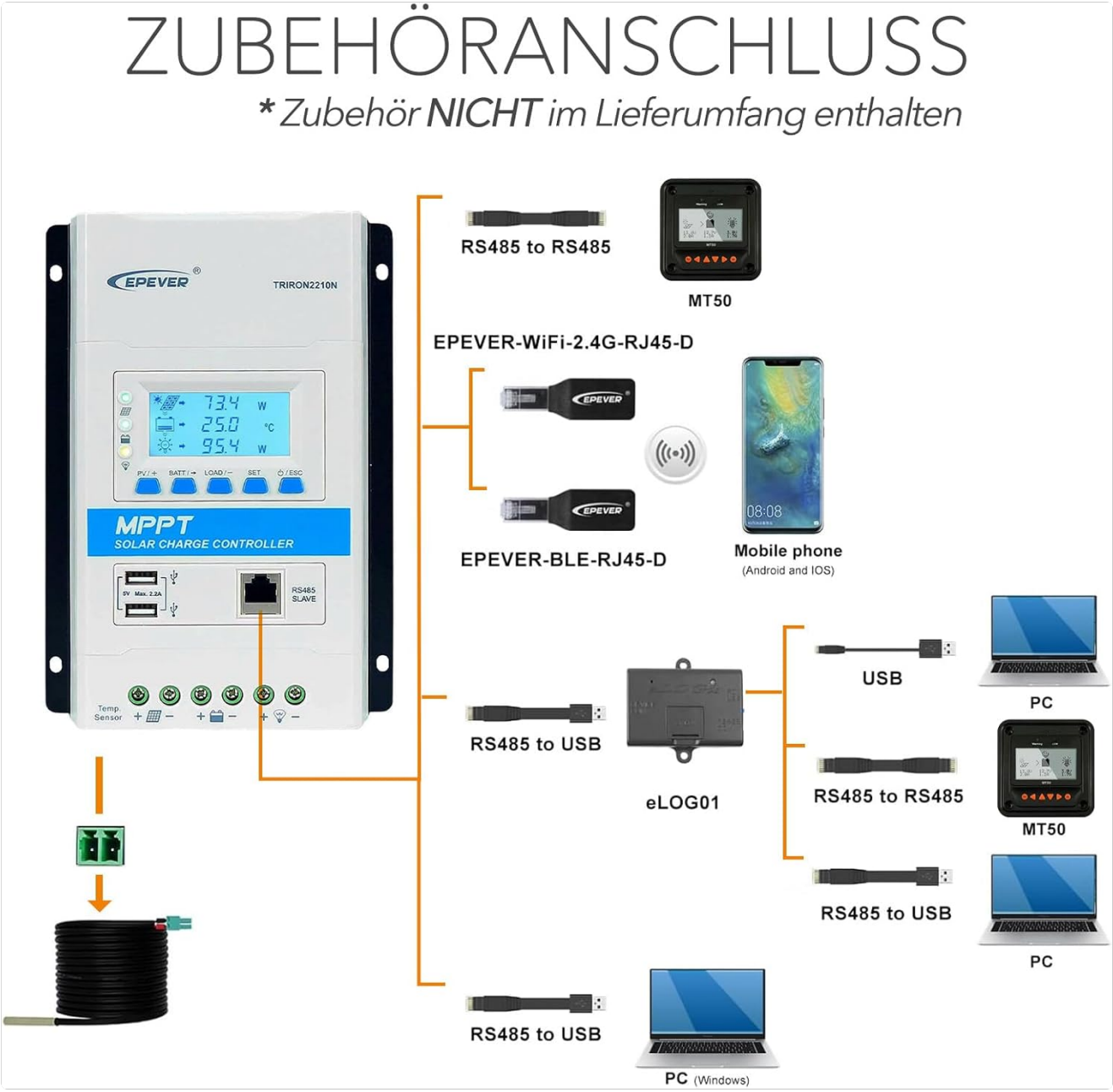

Figure 5: Diagram illustrating various accessory connections for the Triron 2210N, including remote meters (MT50), Wi-Fi/Bluetooth modules for mobile phone connectivity, and RS485 to USB adapters for PC connection.

3. Operating Instructions

Once installed, the controller will automatically begin charging the battery from the solar panels. The integrated LCD display provides real-time system status and parameters.

3.1 Display and Buttons

The display shows information such as PV input voltage, battery voltage, charging current, load status, and temperature. Use the buttons below the display to navigate through menus and adjust settings.

- **PV/+ Button:** Navigate forward or increase value.
- **BATT/- Button:** Navigate backward or decrease value.
- **LOAD/- Button:** Control load output (on/off) or decrease value.
- **SET Button:** Enter/exit setting mode or confirm selection.
- **ESC Button:** Exit current menu or cancel operation.

3.2 Charging and Load Management

The controller automatically manages the charging process using MPPT technology. It also provides a controlled DC load output. The USB ports provide 5V DC power for charging small electronic devices, but note that these ports may only be active when the load output is enabled or during daylight hours, depending on the controller's configuration.

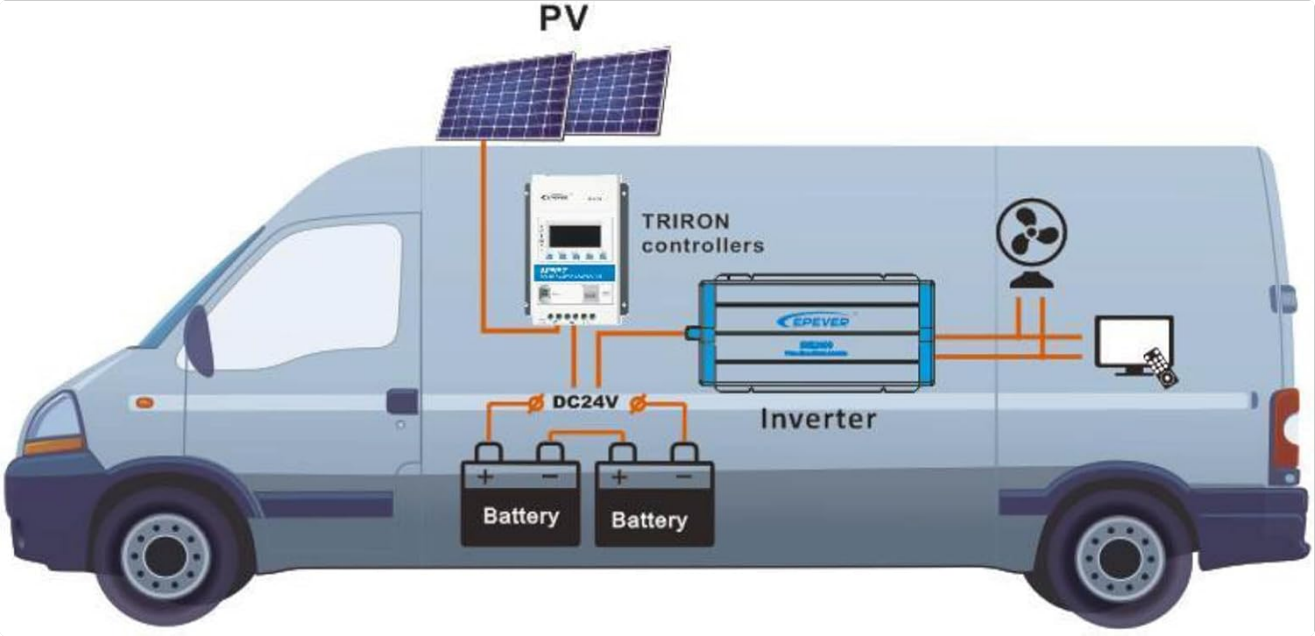

Figure 6: Example application of the Triron 2210N controller in a mobile setup, such as a camper van, connecting solar panels to batteries and an inverter to power various loads.

4. Maintenance

Regular maintenance ensures the longevity and optimal performance of your EPEVER Triron 2210N solar charge controller.

- **Check Connections:** Periodically inspect all wiring connections to ensure they are tight and free from corrosion.
- **Clean Controller:** Keep the controller clean and free from dust and debris. Ensure the heat sink (located at the bottom) is not obstructed to allow for proper cooling.
- **Inspect Wiring:** Check for any signs of wear, fraying, or damage to the cables.
- **Battery Inspection:** For lead-acid batteries, check electrolyte levels if applicable and clean terminals. For all battery types, ensure terminals are secure.
- **Environmental Conditions:** Ensure the controller is installed in a well-ventilated area, protected from direct sunlight, moisture, and extreme temperatures.

Figure 7: Bottom view of the Triron 2210N controller, highlighting the heat sink fins which are essential for dissipating heat during operation.

5. Troubleshooting

The Triron 2210N controller includes extensive electronic protection features. If you encounter issues, refer to the following common troubleshooting steps:

- **No Display/Power:**
  - Check battery connections and voltage. Ensure the battery is connected first and has sufficient charge.
  - Verify all wiring for correct polarity and secure connections.
- **No Charging:**
  - Check PV panel connections and voltage. Ensure panels are receiving sunlight.
  - Verify PV input voltage is within the controller's operating range (max 100V).
  - Confirm the battery type setting matches the connected battery.
- **Load Not Working:**
  - Check load connections and ensure the load is not overloaded.
  - Verify the load output is enabled via the controller's settings or buttons.
  - Check for short circuits in the load circuit.
- **Error Codes/Indicators:**
  - Refer to the controller's display for any specific error codes. Consult the full EPEVER manual for detailed explanations of error codes.

The controller features comprehensive protection against:

- PV reverse polarity, short circuit, overvoltage, and undervoltage.
- Battery reverse polarity, overvoltage, and over-discharge.
- Load short circuit and overload.
- Overheating.

6. Technical Specifications

Below are the detailed technical specifications for the EPEVER Triron 2210N MPPT Solar Charge Controller.

Feature	Specification
Battery Voltage	12V/24VDC (Auto-detection)
Rated Charge Current	20A
Rated Discharge Current	20A
Max. PV Input Power (12V)	260W
Max. PV Input Power (24V)	520W
Max. PV Open Circuit Voltage	100V
RS485 Interface	5VDC/100mA
USB Interface	5VDC/2.2A
Operating Temperature	-25°C to +45°C
Protection Degree	IP30
Dimensions (L×W×H)	21.6 x 15 x 5.7 cm
Weight	0.92 kg
Material	Plastic
Display Type	LCD with backlight

Figure 8: Dimensional drawing of the Triron 2210N controller, indicating its length (216mm), width (150mm), and depth (56.7mm), along with its weight (0.92kg).

7. Warranty and Support

The EPEVER Triron 2210N MPPT Solar Charge Controller comes with a manufacturer's warranty and support resources.

- **Warranty:** This product is covered by a 2-year manufacturer's warranty. Please retain your proof of purchase for warranty claims.
- **Certifications:** The product is CE, RoHS, FCC, IEC62109, and IEC62509 certified.
- **Technical Support:** For technical assistance, troubleshooting beyond this manual, or warranty inquiries, please contact EPEVER customer support or visit the official EPEVER brand store.

You can visit the EPEVER store for more information and support:EPEVER Official Store