EPEVER TracerAN Series 3210AN

EPEVER MPPT 30A Solar Charge Controller User Manual

Model: TracerAN Series 3210AN | Brand: EPEVER

1. Introduction and Overview

The EPEVER MPPT 30A Solar Charge Controller is an advanced Maximum Power Point Tracking (MPPT) device designed to regulate the power from your solar array to your battery bank. It automatically identifies 12V/24V system voltages and optimizes charging to ensure maximum power harvest from solar panels. This controller supports various battery types, including lead-acid (sealed, AGM, gel, flooded) and lithium batteries, offering versatile application in off-grid solar systems.

Figure 1: EPEVER MPPT 30A Solar Charge Controller with included accessories.

2. Safety Instructions

Please read all instructions and warnings carefully before installation and operation. Failure to follow these instructions may result in electric shock, severe injury, or death, or damage to the controller and other equipment.

- Ensure all wiring is correctly polarized and securely connected.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Install the controller in a well-ventilated area, away from flammable materials.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Wear appropriate personal protective equipment (PPE) during installation, including eye protection and insulated gloves.
- Ensure the system is properly grounded to prevent electrical hazards.

Figure 2: The controller features intelligent protection against various electrical faults, including battery over-discharging, over-voltage, overload, PV/load short circuit, battery/device overheating, reverse current, PV over current, PV/battery reverse polarity, TVS high voltage transients, battery over-voltage, and lithium battery low temperature.

3. Product Features

- **MPPT Technology:** Advanced Maximum Power Point Tracking technology with efficiency no less than 99.5%.
- **Automatic Voltage Identification:** Automatically identifies 12V/24V system voltage.
- **Charging Power & Current Limitation:** Auto control system to limit the charging power and current to prevent over-rating.
- **Battery Compatibility:** Supports 4 types of battery charging: Lead-acid (Sealed, AGM, Gel, Flooded), User-defined, and Lithium (LiFePO4, Li(NiCoMn)O2).
- **Real-time Data:** Real-time energy recording and statistical functions.
- **Temperature Compensation:** Battery temperature compensation function to prolong battery life.
- **Communication Interface:** Equipped with RS485 interface for monitoring via cellphone APP (eBox required), PC Software, and MT50 remote meter.
- **Comprehensive Electronic Protection:** Includes protections against overcharge, over-discharge, overload, short circuit, reverse polarity, and overheating.

4. Components and Interfaces

The EPEVER MPPT Solar Charge Controller features several key interfaces for connection and monitoring:

Figure 3: Front view of the MPPT 30A Charge Controller showing its interfaces.

- **Temperature Interface:** Connects to the temperature sensor for accurate battery temperature compensation.
- **PV Interface:** Connects to the solar panel array.
- **Battery Interface:** Connects to the battery bank.
- **Load Output Interface:** Connects to DC loads.
- **RS485 Interface (COM):** For communication with external devices like PC software, MT50 remote meter, or eBox-WiFi/Bluetooth adapter for mobile app monitoring.

5. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your solar charging system. Follow these steps carefully:

1. **Grounding:** First, properly ground the controller using the designated grounding terminal.
2. **Temperature Probe:** Connect the temperature probe to the controller and place it near the battery for accurate temperature readings.
3. **Battery Connection:** Connect the battery cables to the controller's battery terminals. Ensure correct polarity (positive to positive, negative to negative). The controller will automatically detect the battery voltage (12V or 24V).

4. **Solar Panel Connection:** Connect the solar panel cables to the controller's PV terminals. Ensure correct polarity.
5. **Load Connection (Optional):** If using the DC load output, connect your DC loads to the load output terminals.

Figure 4: Typical connection diagram for the EPEVER MPPT Solar Charge Controller, showing connections to solar panels, battery, and DC load.

Video 1: This video demonstrates the installation process for the EPEVER TracerAN series controllers, including grounding, connecting the temperature sensor, battery, and PV array. (Relevant section: 0:09 - 0:26)

6. Operation and Display

The controller features an LCD display that provides real-time system information. Use the 'SELECT' and 'ENTER' buttons to navigate through the display screens and adjust settings.

Figure 5: Various readings displayed on the LCD screen, including PV input voltage, charging current, power generation, load work mode, battery voltage, battery current, discharge capacity, discharge current, and temperature.

Short press the 'SELECT' key to enter browse mode and cycle through different display pages showing PV input, charging current, battery voltage, load status, and more.

7. Battery Type Settings

To optimize charging for your specific battery, you must select the correct battery type. The controller supports lead-acid (Sealed, Gel, Flooded) and lithium batteries (LiFePO4, Li(NiCoMn)O2, and User-defined).

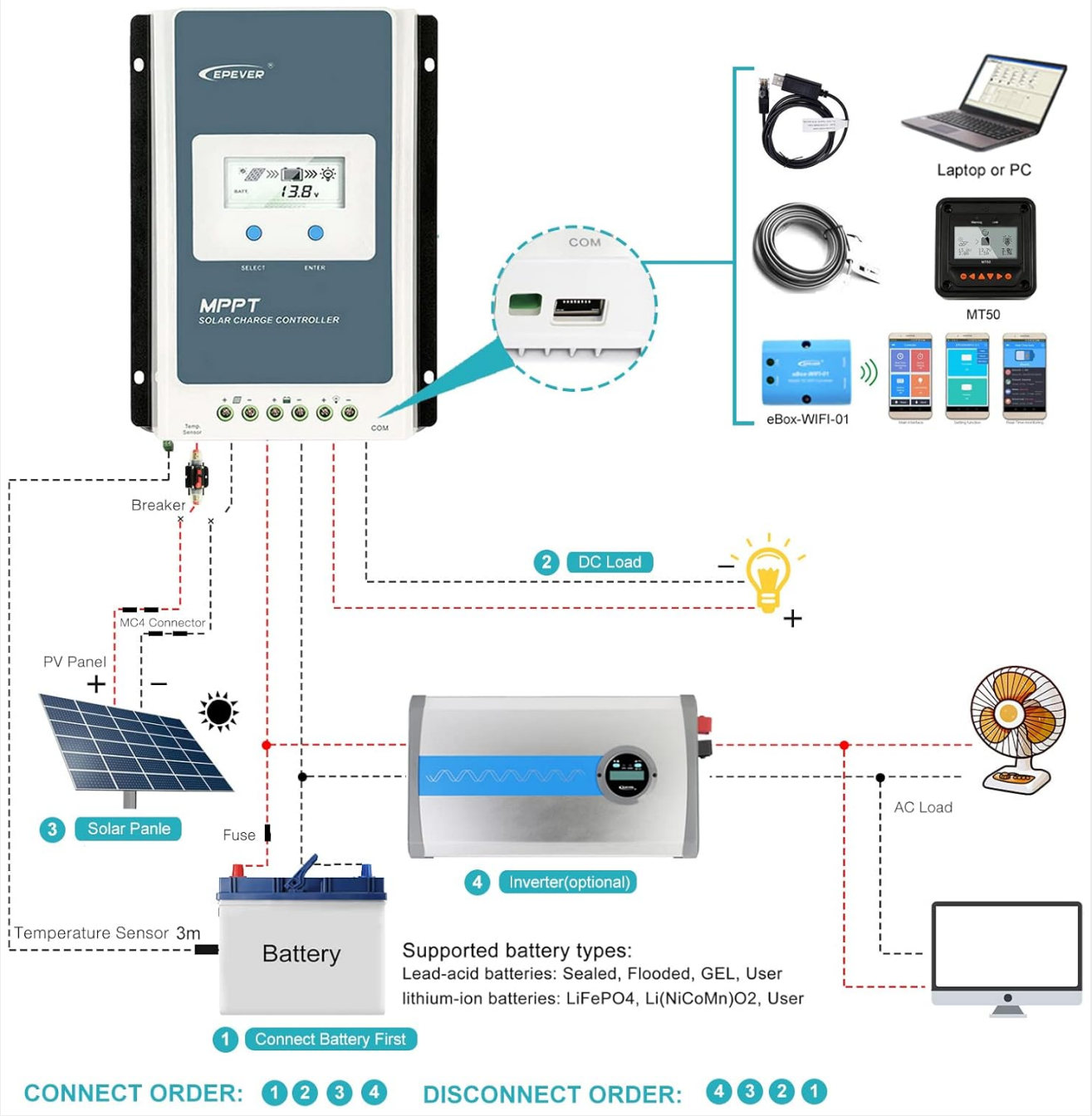

Figure 6: Visual representation of supported battery types: Lithium (LI), Sealed (SLD), Flooded (FLD), Gel (GEL), and AGM.

To enter the setting mode, navigate to the battery voltage page on the LCD display and long press the 'ENTER' key. You can then select the battery type. For lithium batteries, you can also specify the number of strings (e.g., F04 for 4 strings of LiFePO4, N03 for 3 strings of ternary lithium battery).

Video 2: This video demonstrates how to enter the setting mode and select the battery type, including lithium iron phosphate (F) and ternary lithium (N) batteries based on string number. (Relevant section: 0:33 - 0:51)

8. Monitoring and Communication

The controller offers various options for remote monitoring and parameter setting:

- **PC Software:** Connect the controller to a PC via the RS485 interface (requires a communication cable) to use EPEVER's monitoring software.
- **Mobile APP:** Use the EPEVER Cloud APP on your smartphone. This requires an eBox-WiFi-01 or eBox-BLE-01 adapter connected to the controller's RS485 port.
- **MT50 Remote Meter:** A dedicated remote meter (sold separately) can be connected to the RS485 port for convenient monitoring and parameter adjustment from a distance.

				
Product Model	1210AN	2210AN	3210AN	4210AN
Dimensions	6.77*5.47*1.73in	8.66*6.06*2.05in	8.99*6.46*2.17in	9.92*7.09*2.48in
Max power corrent	10A	20A	30A	40A
Power Terminals	12AWG（4mm²）	6AWG（16mm²）		
Mpp Voltage range	（Battery voltage+2V）~72V			
Battery input voltage range	8V~32V			
Max.PV input power	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	520W/12V 1040W/24V
Max.PV open circuit voltage	100V②92V③			
Grounding	Common negative			
Weight	0.57kg	0.94kg	1.26kg	1.65kg
				

Figure 7: Overview of monitoring options, including PC software, MT50 remote meter, and mobile app connectivity via eBox-WiFi-01 or eBox-BLE-01.

9. Specifications

Key technical specifications for the EPEVER MPPT 30A Solar Charge Controller:

Attribute	Value
Product Model	3210AN
System Voltage	12V/24V Auto
Rated Charge Current	30A
Max. PV Input Voltage	100V
Max. PV Input Power (12V)	390W
Max. PV Input Power (24V)	780W

Attribute	Value
Battery Voltage Range	8V-32V
Grounding	Common Negative
Dimensions	8.99 x 6.46 x 2.17 inches
Item Weight	3.5 pounds
Operating Temperature	-20°C to +45°C
Display Type	LCD

10. Troubleshooting

If you encounter issues with your EPEVER MPPT 30A Solar Charge Controller, refer to the following general troubleshooting tips. For a comprehensive guide, please consult the official Troubleshooting Guide PDF available from the manufacturer.

- **No Display/Power:** Check battery connections and ensure sufficient battery voltage. Verify all wiring is secure and correctly polarized.
- **No Charging:** Ensure solar panels are receiving adequate sunlight. Check PV input voltage and current. Verify PV connections and polarity. Ensure battery type settings are correct.
- **Load Not Working:** Check load connections and ensure the load is within the controller's rated capacity. Verify load output settings (e.g., always on, timer).
- **Error Codes:** Refer to the detailed user manual or troubleshooting guide for specific error code interpretations and solutions.
- **Overheating:** Ensure adequate ventilation around the controller. Check for obstructions to airflow. Reduce load if consistently overheating.

11. Maintenance

Regular maintenance helps ensure 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 for tightness and corrosion. Re-tighten if necessary.
- **Ventilation:** Ensure the ventilation openings are not blocked to allow for proper heat dissipation.
- **Battery Inspection:** Regularly inspect your batteries for any signs of damage, corrosion, or swelling.
- **Firmware Updates:** Check the manufacturer's website for any available firmware updates that may improve performance or add features.

12. Warranty and Support

EPEVER products typically come with a standard manufacturer's warranty. Please refer to the warranty card included with your product or visit the official EPEVER website for detailed warranty terms and conditions.
For technical support, product inquiries, or warranty claims, please contact EPEVER customer service through their official website or the contact information provided in your product packaging. You can also find additional resources, including the full user manual and troubleshooting guides, on the EPEVER support page.
Additional resources:

- User Manual (PDF): Download Here
- Troubleshooting Guide (PDF): Download Here