

EPEVER Tracer4210AN

EPEVER Tracer4210AN 40A MPPT Solar Charge Controller User Manual

Model: Tracer4210AN

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1. INTRODUCTION

This manual provides essential instructions for the installation, operation, and maintenance of the EPEVER Tracer4210AN MPPT Solar Charge Controller. The Tracer AN series controllers utilize advanced Maximum Power Point Tracking (MPPT) technology and a common negative design, ensuring efficient energy conversion and reliable performance for your solar power system.

The controller is designed to optimize the charging process for various battery types, including lead-acid (sealed, gel, flooded) and lithium-ion batteries, in 12V or 24V DC systems. It features an LCD display for real-time status monitoring and supports external accessories like the MT52 remote meter, temperature sensor (RTS), and RS485 communication cable for enhanced control and data access.

2. SAFETY INSTRUCTIONS

- Always connect the battery to the charge controller first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Ensure correct polarity for all connections (positive to positive, negative to negative) to prevent damage to the controller and other components.
- Do not close the circuit breaker or fuse while wiring the controller.
- Install a fuse on the battery side with a current rating 1.25 to 2 times the rated current of the controller. The fuse should be located no more than 150 mm from the battery.
- For installations in areas prone to lightning strikes or unattended locations, an external surge arrester must be installed.
- If an inverter is part of your system, connect it directly to the battery, not to the load terminals of the controller.
- Ensure adequate ventilation around the controller to prevent overheating.
- Avoid touching live terminals. Use insulated tools during installation.

3. PRODUCT OVERVIEW

3.1. Key Features

- Advanced MPPT technology with tracking efficiency of 99.5% and conversion efficiency up to 99%.
- Automatic identification of 12V/24V DC system voltage.
- Rated charge/discharge current: 40A.
- Maximum PV input power: 520W (12V system); 1040W (24V system).
- Maximum PV open circuit voltage: 100V.
- Common negative ground design.
- Compatible with lead-acid (sealed, gel, flooded) and lithium-ion batteries.
- Adaptive three-stage charging mode for extended battery life.
- Comprehensive electronic protection functions.
- Supports MT52 remote meter for real-time data monitoring and parameter modification.
- Includes Temperature Sensor (RTS) for accurate temperature compensation.
- RS485 communication port for PC monitoring and advanced settings.

3.2. Components Included

The package typically includes the following items:

- EPEVER Tracer4210AN MPPT Solar Charge Controller
- MT52 Remote Meter
- Temperature Sensor (RTS) - 3m cable length
- RS485 Communication Cable
- User Manual



Image: EPEVER Tracer4210AN MPPT Solar Charge Controller kit, showing the main controller unit, the MT52 remote display, the temperature sensor, and the RS485 communication cable.

Features



Image: Diagram highlighting the features of the EPEVER Tracer4210AN controller, including the LCD display, SELECT and ENTER buttons, Remote Temp Sensor port, and RJ45 Communication Port.

3.3. Product Characteristics and Applications

Characteristics

Heat dissipation
aluminum alloy

Insulating
material



Image: Diagram showing the heat dissipation aluminum alloy and insulating material components of the EPEVER Tracer4210AN controller, emphasizing its robust construction.

Application



Image: Various application scenarios for the EPEVER Tracer4210AN solar charge controller, including rooftop solar installations and RV power systems, demonstrating its versatility.

Environmental protection



Image: The EPEVER Tracer4210AN solar charge controller integrated into a residential setting with solar panels, highlighting its contribution to sustainable energy and environmental protection.

4. SETUP AND INSTALLATION

4.1. Mounting the Controller

Mount the controller vertically on a flat, non-flammable surface in a well-ventilated area. Ensure there is sufficient clearance around the controller for heat dissipation. Avoid direct sunlight, high temperatures, and moisture.

4.2. Wiring Sequence

Follow this wiring sequence carefully to prevent damage:

1. **Connect the Battery:** Connect the battery to the controller's battery terminals. Ensure correct polarity. The controller will automatically detect the system voltage (12V or 24V).
2. **Connect the Solar Panel:** Connect the solar panel array to the controller's PV terminals. Ensure correct polarity.

3. **Connect the Load:** Connect the DC load to the controller's load terminals. Ensure correct polarity.

4. **Connect Accessories:**

- **Remote Temperature Sensor (RTS):** Plug the RTS into the designated port for accurate battery temperature compensation.
- **MT52 Remote Meter:** Connect the MT52 to the controller's communication port (RJ45) for remote monitoring and parameter adjustment.
- **RS485 Cable:** Use the RS485 cable to connect the controller to a PC for advanced monitoring and configuration via EPEVER software.

Important: Always ensure all connections are secure before applying power. Do not reverse polarity.



Image: Detailed wiring diagram showing connections for solar panels, battery, load, inverter, and accessories like the MT52 remote meter, computer, speaker, fan, and TV.

5. OPERATING INSTRUCTIONS

5.1. LCD Display and Buttons

The controller features an LCD display that shows real-time system data and operating status. The "SELECT" and "ENTER" buttons are used to navigate through menus and adjust parameters directly on the controller.

- **SELECT Button:** Used to cycle through display screens or menu options.
- **ENTER Button:** Used to confirm selections or enter parameter editing mode.

5.2. Remote Monitoring with MT52

The MT52 remote meter provides a convenient way to monitor the system and modify parameters from a distance. It displays information such as PV voltage, battery voltage, charging current, load current, and energy statistics. Refer to the MT52 user manual for detailed operation instructions.

5.3. Battery Type Settings

The controller supports various battery types. It is crucial to set the correct battery type for optimal charging and to prevent battery damage. This can typically be done via the controller's display menu, the MT52 remote meter, or EPEVER PC software.



Image: Diagram illustrating the controller's compatibility with both lithium batteries and lead-acid batteries.

5.4. Load Control Settings

The controller offers various load control modes, such as manual control, light control, and time control. These settings can be configured to manage when the connected DC load receives power. Consult the full user manual for detailed instructions on configuring load control parameters.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your solar charge controller:

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Loose connections can cause overheating and damage.
- **Clean the Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth to wipe the exterior. Ensure ventilation openings are not blocked.
- **Inspect Wiring:** Check for any signs of wear, fraying, or damage to the cables. Replace damaged cables immediately.
- **Monitor Performance:** Regularly check the system's performance via the LCD display or MT52 remote meter. Note any unusual readings or behavior.
- **Battery Inspection:** For lead-acid batteries, check electrolyte levels (if applicable) and clean battery terminals.

7. TROUBLESHOOTING

This section addresses common issues you might encounter with your EPEVER Tracer4210AN controller.

Problem	Possible Cause	Solution
No display on controller/MT52	Battery not connected or low voltage; reversed battery polarity; loose connection.	Check battery connections and voltage. Ensure correct polarity. Tighten all connections.
Battery not charging	Solar panel not connected or insufficient sunlight; PV reversed polarity; PV open circuit voltage too low; battery full.	Check solar panel connections and ensure adequate sunlight. Verify PV polarity. Check PV voltage. The controller stops charging when the battery is full.
Load not working	Load disconnected or reversed polarity; load overcurrent; battery low voltage; load control setting.	Check load connections and polarity. Reduce load or check for short circuit. Charge battery. Adjust load control settings.
Controller overheating	Insufficient ventilation; ambient temperature too high; excessive load.	Ensure proper airflow around the controller. Relocate to a cooler environment if possible. Reduce load.

8. SPECIFICATIONS

Parameter	Value
Model	Tracer4210AN
System Voltage	12V/24V DC Auto

Parameter	Value
Rated Charge Current	40A
Rated Discharge Current	40A
Max. PV Input Power (12V)	520W
Max. PV Input Power (24V)	1040W
Max. PV Open Circuit Voltage	100V
Battery Type	Lead-acid (Sealed, Gel, Flooded), Lithium-ion
Grounding	Common Negative
Communication Port	RS485 (RJ45 interface)
Temperature Sensor Port	Yes (RTS included)
Display Type	LCD
Dimensions (Controller)	252 x 180 x 63 mm (approx. 9.92 x 7.09 x 2.48 inches)
Item Weight (Controller)	2.46 kg (5.41 lbs)

Size



Model	Tracer1210AN	Tracer2210AN	Tracer3210AN	Tracer4210AN
Mechanical Parameters				
Dimension	172x139 x 44mm	220x154x 52mm	228x164x55mm	252x180x63mm
Mounting dimension	130x130mm	170x145mm	170x164mm	210x171mm
Mounting hole size	Φ5mm			
Terminal	12AWG(4mm ²)	6AWG(16mm ²)	6AWG(16mm ²)	6AWG(16mm2)
Recommended cable	12AWG(4mm ²)	10AWG(6mm ²)	8AWG(10mm ²)	6AWG(16mm2)
Weight	0.57kg	0.94kg	1.26kg	1.65kg

Image: Table detailing mechanical parameters including dimensions, mounting dimensions, mounting hole size, terminal size, recommended cable, and weight for Tracer1210AN, Tracer2210AN, Tracer3210AN, and Tracer4210AN models.

9. WARRANTY AND SUPPORT

For technical assistance, warranty claims, or further inquiries, please contact EPEVER customer support or your authorized dealer. Refer to your purchase documentation for specific warranty terms and conditions. You can also visit the official EPEVER website for additional resources, software downloads, and updated manuals. For direct support, you may contact SolaMr, the seller, as mentioned in the product information.

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Example: How do I reset this device or fix this error?

Details

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