EPEVER Tracer1206AN-GC

EPEVER Tracer1206AN-GC MPPT Solar Charge Controller User Manual

Model: Tracer1206AN-GC

1. Product Overview

The EPEVER Tracer1206AN-GC is a 10A Maximum Power Point Tracking (MPPT) solar charge controller designed for 12V/24V automatic system voltage detection. It efficiently manages power from solar panels, supporting a maximum PV input of 60V. This controller is suitable for various battery types, including Lead-acid (Sealed, Gel, Flooded) and Lithium (LiFePO4, Li(NiCoMn)O2), featuring common negative grounding for enhanced safety.

Figure 1: EPEVER Tracer1206AN-GC MPPT Solar Charge Controller

2. Key Features

- **Advanced MPPT Technology:** Achieves tracking efficiency of no less than 99.5% and a maximum conversion efficiency of 98%. Features ultra-fast tracking speed and accurate recognition of multiple-peaks maximum power point.
- **Automatic System Voltage:** Automatically detects 12V/24V DC system voltages.
- **Wide Battery Compatibility:** Supports Lead-acid (Sealed, Gel, Flooded) and Lithium (LiFePO4, Li(NiCoMn)O2) batteries, including a Lithium battery automatic activation function.
- **Comprehensive Protection:** Includes overcharging, over-discharging, overload, short-circuit, reverse

polarity, and over-temperature protection.

- **LCD Display:** Blacklight LCD display provides clear system operating information and data.
- **Remote Monitoring & Control:** RS-485 communication bus interface with Modbus protocol allows monitoring and parameter setting via mobile phone APP or PC software.
- **Temperature Compensation:** Battery temperature compensation function (for Lead-acid batteries only) ensures optimal charging.
- **Energy Statistics:** Real-time energy statistics function for system performance tracking.
- **Common Negative Grounding:** Enhances system safety.

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3. Specifications

Parameter	Value
Model	Tracer1206AN-GC
Rated Charge/Discharge Current	10 Amp
Nominal System Voltage	12V/24V DC Auto Work
Max. PV Input Power	130W (12V system) / 260W (24V system)
Max. PV Open Circuit Voltage	60V (at min. operating temp) / 46V (at 25℃ temp)
Battery Type	Lead-acid (Sealed/Gel/Flooded), Lithium (LiFePO4/Li(NiCoMn)O2), User-defined
Battery Voltage Range	8-32V
MPP Voltage Range	V(BAT+2V)-36V
Grounding	Common Negative
Tracking Efficiency	≥99.5%
Max. Conversion Efficiency	98%
Operating Temperature	-25℃ to +50℃ (100% input and output)
Dimensions (L×W×H)	172×139×44mm
Item Weight	0.6 KG
Display Type	LCD
Communication Interface	RS485 (RJ45)

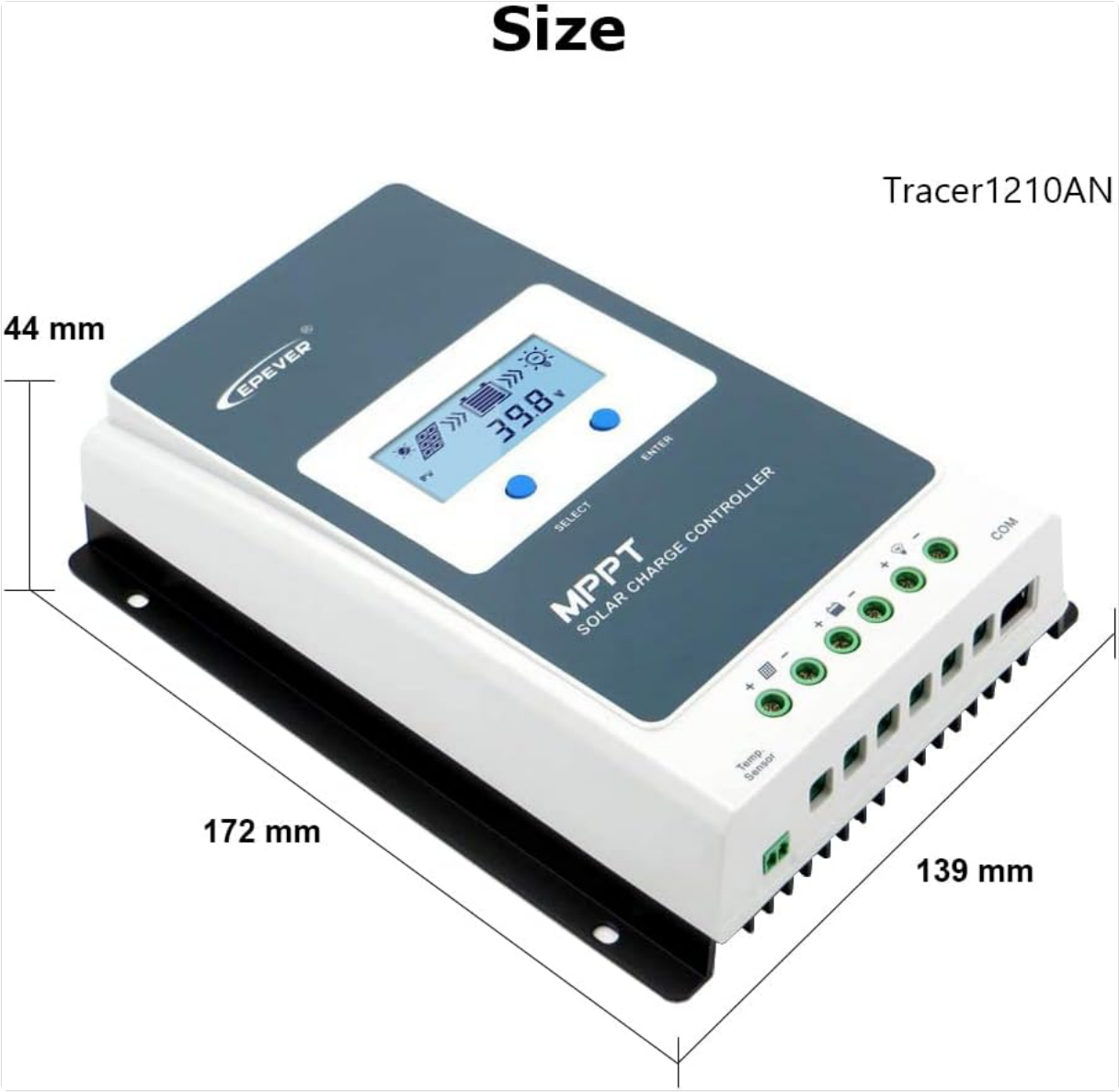

Figure 2: EPEVER Tracer1206AN-GC Dimensions (172x139x44mm)

4. Setup & Installation

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

1. **Mounting:** Mount the controller in a well-ventilated area, away from direct sunlight and heat sources. Ensure adequate clearance around the unit for heat dissipation.
2. **Wiring Sequence:** Connect the components in the following order to prevent damage:
    - **1. Battery:** Connect the battery to the charge controller's battery terminals (+ and -). Ensure correct polarity.
    - **2. Load:** Connect the DC load to the controller's load terminals (+ and -).
    - **3. Solar Panel:** Connect the solar panel to the controller's PV terminals (+ and -). Ensure correct polarity.
3. **Disconnection Sequence:** To disconnect the system, reverse the connection order: 1. Solar Panel, 2. Load, 3. Battery.
4. **Wire Sizing:** Use appropriate wire gauges for all connections to minimize voltage drop and ensure safety. Recommended wire cable for the controller terminals is #12 AWG (4mm²).

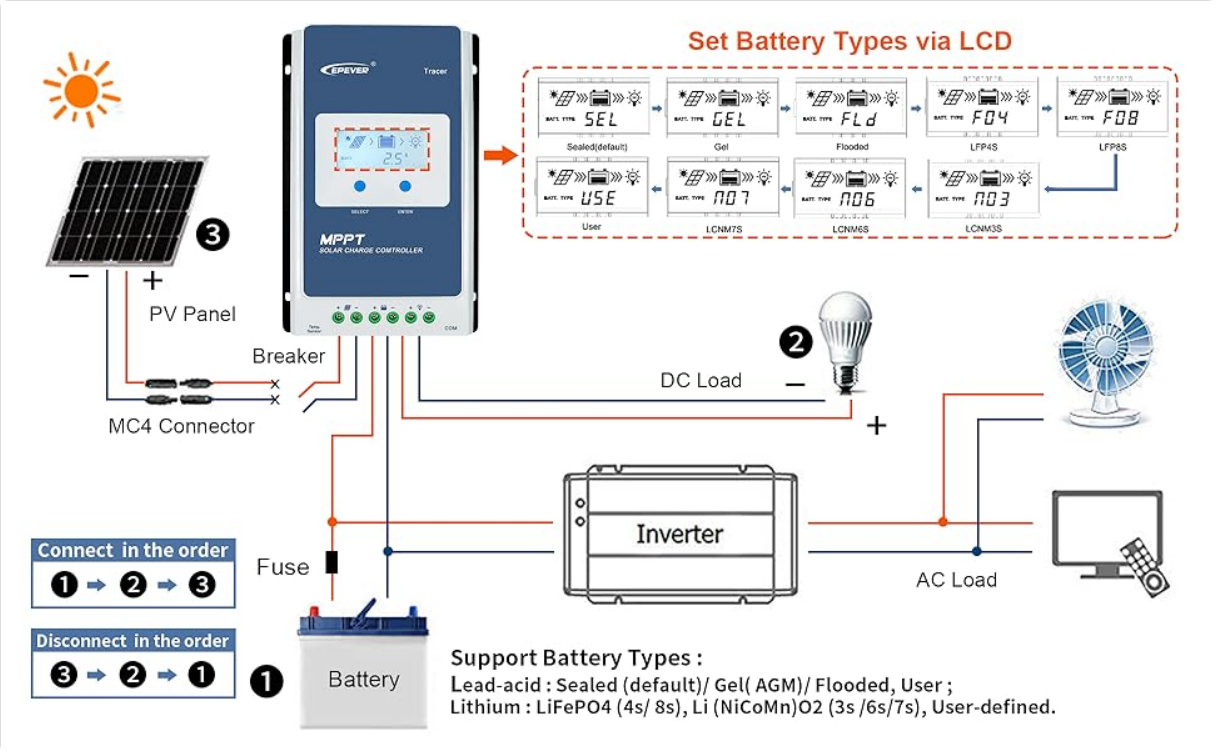

Figure 3: Wiring Diagram for EPEVER MPPT Solar Charge Controller. Connect battery first, then load, then PV panel. Disconnect in reverse order.

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Video 1: This video demonstrates the installation process for a solar charge controller, highlighting the correct wiring sequence for safe and effective setup.

5. Operating Instructions

The Tracer1206AN-GC features an LCD display and buttons for easy operation and monitoring.

5.1 LCD Display

The LCD provides real-time data on battery voltage, charging current, PV voltage, and system status. Use the 'SELECT' and 'ENTER' buttons to navigate through different display screens and adjust settings.

Figure 4: The LCD display shows real-time system information and allows for easy navigation through settings.

5.2 Battery Type Setting

The controller supports various battery types. It is essential to select the correct battery type for optimal charging and battery longevity. Refer to the manual for detailed instructions on how to set the battery type via the LCD or monitoring software.

5.3 Load Control

The controller offers multiple load work modes. These modes can be configured to control when the DC load is active, optimizing energy usage. Consult the manual for specific load control settings.

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6. Battery Compatibility

The Tracer1206AN-GC is designed to be compatible with a wide range of battery technologies:

- **Lead-acid Batteries:**
  - Sealed
  - Gel (AGM)

- Flooded

- **Lithium Batteries:**
  - LiFePO4 (4s/12V; 8s/24V)
  - Li (NiCoMn)O2 (3s/12V; 6s/24V)

- **User-defined:** Customizable settings for other battery types.

Figure 5: The controller supports various battery types including deep cycle sealed, gel, flooded, and lithium.

7. Protection Features

The Tracer1206AN-GC incorporates multiple electronic protections to safeguard your solar system and connected devices:

- **Over Charging Protection:** Prevents batteries from being overcharged, extending their lifespan.
- **Over Discharging Protection:** Disconnects the load when battery voltage drops below a safe level, preventing deep discharge.
- **Overload Protection:** Automatically disconnects the load if the current exceeds the rated capacity.
- **Short Circuit Protection:** Protects against short circuits in the load or PV array.

- **Reverse Polarity Protection:** Safeguards the controller and battery from damage due to incorrect wiring of battery or PV terminals.
- **Over Temperature Protection:** Reduces charging power or shuts down if the controller's internal temperature becomes too high.
- **Charging Power and Current Limitation:** Prevents excessive power or current from damaging the battery or controller.

Figure 6: The controller features multiple electronic protections to prevent damage from installation errors or system failures.

8. Monitoring & Connectivity

The Tracer1206AN-GC offers advanced monitoring and communication capabilities:

- **RS-485 Communication:** Equipped with an RS-485 communication bus interface and Modbus communication protocol. This allows for robust and reliable data exchange.
- **Mobile App & PC Software:** Monitor and set parameters remotely via a dedicated mobile phone application or PC software. This provides detailed insights into system performance and allows for customized settings.

Figure 7: Monitor and set parameters remotely via mobile phone app or PC software.

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Video 2: This video provides an overview of the EPEVER G3 Version TracerAN MPPT Solar Charge Controller, showcasing its features and connectivity options.

9. Maintenance

Regular maintenance ensures the longevity and optimal performance of your EPEVER Tracer1206AN-GC MPPT Solar Charge Controller. Perform the following checks periodically:

- **Visual Inspection:** Check for any loose connections, damaged wiring, or signs of corrosion on the terminals.
- **Cleanliness:** Ensure the controller's casing and ventilation openings are free from dust and debris to prevent overheating.
- **Firmware Updates:** Periodically check for and apply any available firmware updates via the mobile app or PC software to ensure the controller has the latest features and bug fixes.
- **Battery Health:** Monitor battery voltage and charging status regularly to ensure proper battery health. For Lead-acid batteries, check electrolyte levels if applicable.

- **Temperature Sensor:** Ensure the remote temperature sensor (if used) is securely connected and positioned correctly for accurate readings.

Figure 8: The remote temperature sensor measures battery temperature and provides compensation for optimal charging.

10. Troubleshooting

If you encounter issues with your Tracer1206AN-GC, refer to the following common troubleshooting steps:

- **No Display/Power:** Check battery connections and ensure the battery voltage is within the operating range (8-32V). Verify all wiring is secure and correctly polarized.
- **No Charging:** Ensure solar panels are receiving adequate sunlight and are connected correctly to the PV terminals. Check PV open circuit voltage and current. Verify that the battery type setting matches your battery.
- **Load Not Working:** Check load connections and ensure the load current does not exceed the controller's rated output. Verify the load work mode settings. Check for any active protection warnings on the LCD.
- **Error Codes:** If the LCD displays an error code, consult the full user manual for specific code meanings and recommended actions.
- **Communication Issues:** Ensure the RS-485 cable is properly connected. If using a mobile app or PC

software, verify the communication adapter (e.g., Bluetooth, WiFi) is correctly installed and configured.

11. Warranty & Support

EPEVER products are backed by a manufacturer's warranty. For specific warranty terms and conditions, please refer to the warranty card included with your product or visit the official EPEVER website.

For technical assistance, troubleshooting, or any questions regarding your EPEVER Tracer1206AN-GC MPPT Solar Charge Controller, please contact Goland Century, an EPEVER Official Authorized Supplier. Their professional engineers can provide solar system solutions and services.

Contact Information: Refer to your purchase documentation or the official EPEVER/Goland Century website for the latest support contact details.