EPEVER Tracer3210AN

EPEVER MPPT Solar Charge Controller 30A Tracer3210AN User Manual

Brand: EPEVER | Model: Tracer3210AN

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the EPEVER Tracer3210AN MPPT Solar Charge Controller. The Tracer3210AN is designed for solar power systems, featuring Maximum Power Point Tracking (MPPT) technology to maximize energy harvest from solar panels. It supports 12V/24V DC auto-work systems and is compatible with various battery types, including Lead-acid (Sealed, Gel, Flooded) and Lithium-ion (LiFePO4, Li(NiCoMn)O2).
Key features include:

- Advanced MPPT control algorithm with tracking efficiency ≥99.5%.
- Automatic system voltage recognition (12V/24V).
- Support for multiple battery types: Sealed, Gel (AGM), Flooded, LiFePO4, Li(NiCoMn)O2, and User-defined.
- Common negative grounding design.
- Independent voltage regulation constant voltage output function.
- Upgraded ultra-quiet design.
- LCD display for operational status and parameter settings.
- Communication interface (RS485) for external monitoring and parameter adjustment.

2. Safety Instructions

Please read all instructions and warnings in this manual before installation and operation. Failure to follow these instructions may result in electric shock, fire, or severe injury.

- Ensure all wiring is correctly connected and securely fastened.
- Do not disassemble or attempt to repair the controller yourself. Contact qualified personnel for service.
- Install the controller in a well-ventilated area, away from flammable materials and corrosive gases.

- Ensure the system voltage is compatible with the controller's specifications.
- Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Wear appropriate personal protective equipment, including eye protection, when working with batteries and solar panels.

3. Product Overview

The EPEVER Tracer3210AN is a compact and efficient solar charge controller. It features an LCD display for real-time monitoring and two buttons for navigation and settings.

Figure 3.1: Front view of the EPEVER Tracer3210AN MPPT Solar Charge Controller, showing the LCD display and control buttons.

The controller's top and bottom panels feature connection terminals and heat dissipation fins.

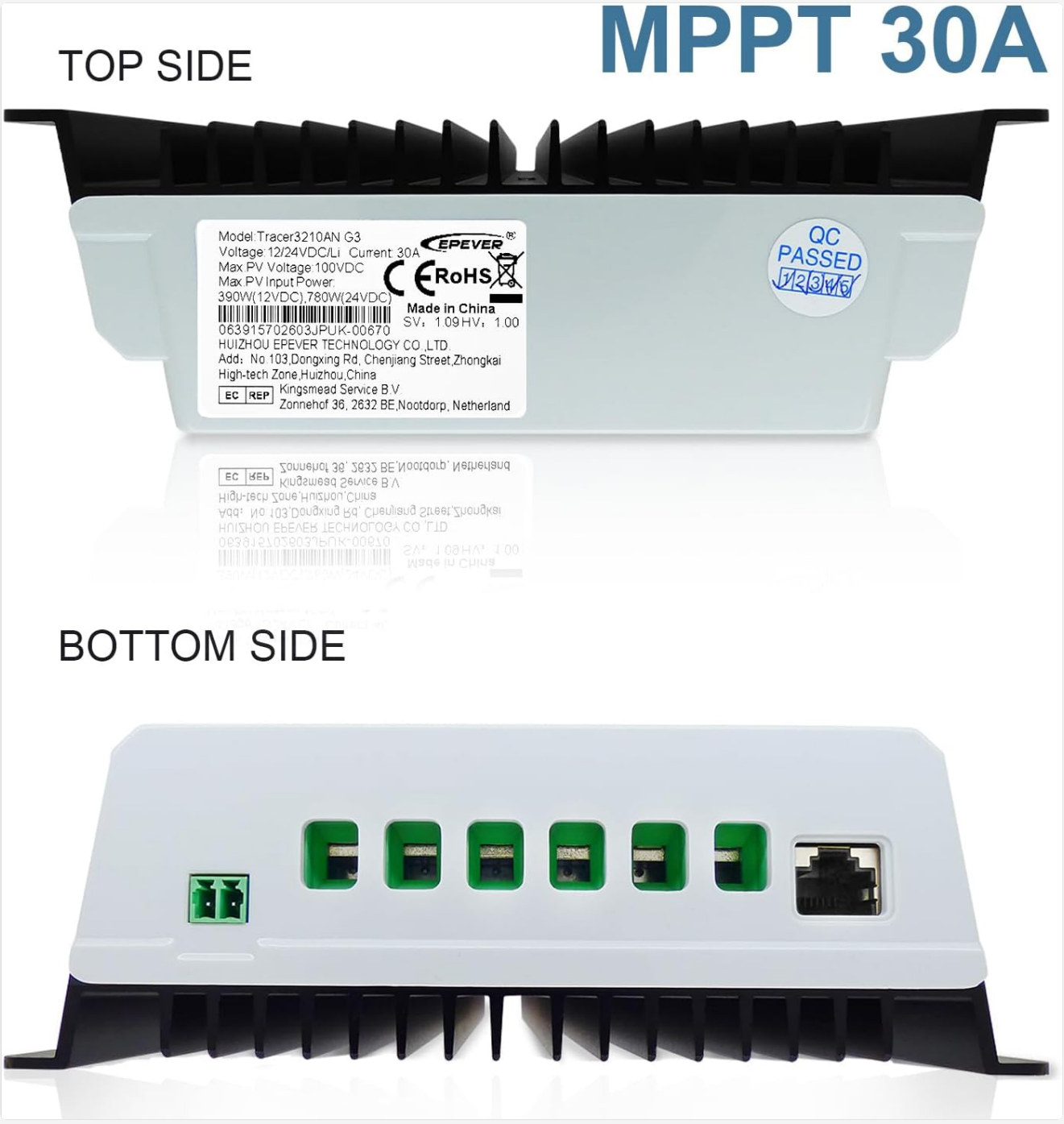


Figure 3.2: Top and bottom views of the controller, highlighting the terminals and model information.

4. Setup and Installation

Proper installation is critical for the safe and efficient operation of your solar system. Follow the connection order carefully.

4.1 Wiring Connections

The Tracer3210AN uses common negative grounding. Ensure all connections are tight to prevent loose contacts and overheating.

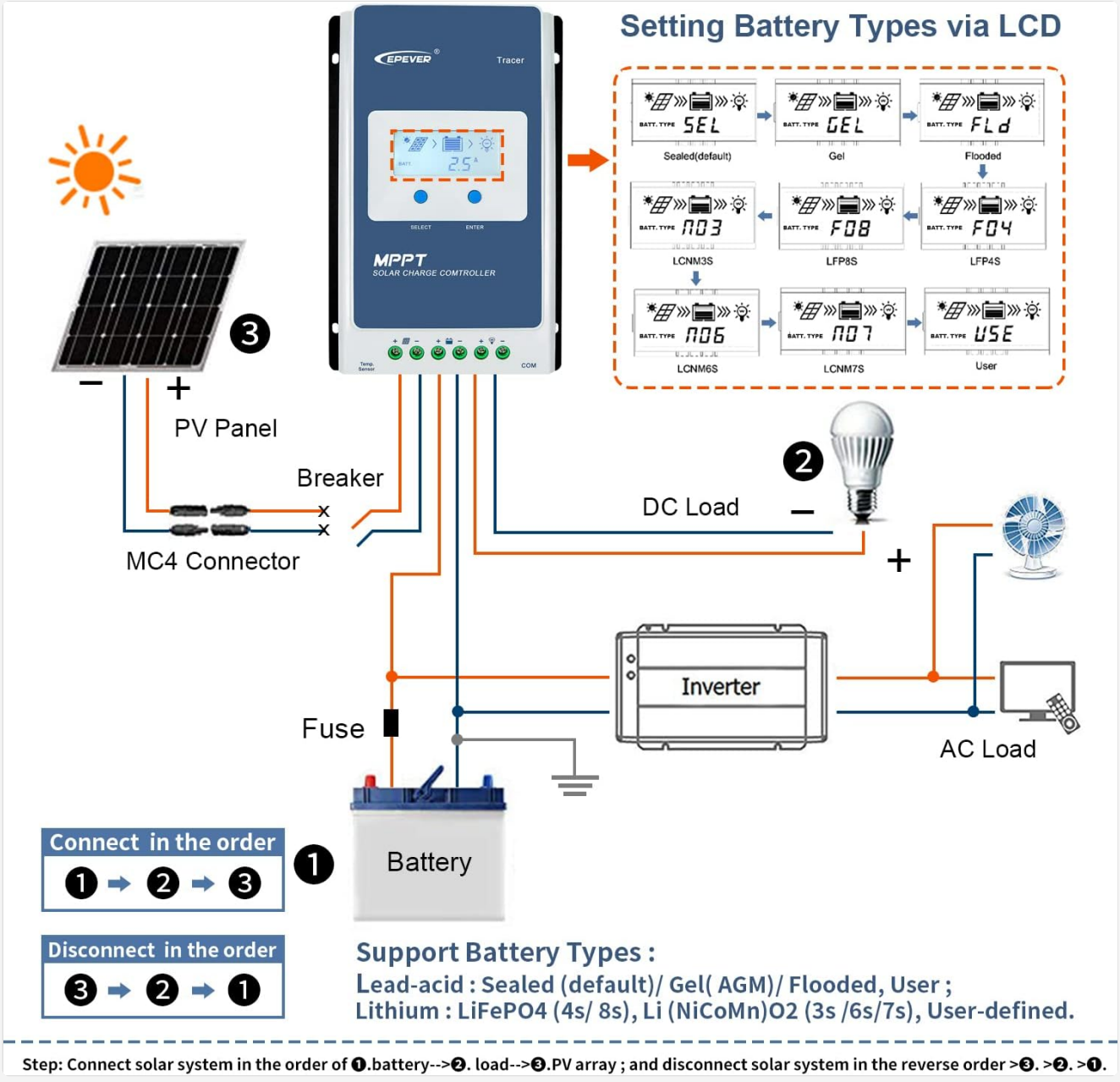


Figure 4.1: Connection diagram illustrating the proper sequence for connecting the battery, load, and PV panel to the solar charge controller.

1. **Connect the Battery:** Connect the battery to the controller's battery terminals (marked with a battery symbol). Observe polarity.
2. **Connect the Load:** Connect the DC load to the controller's load terminals (marked with a light bulb symbol). Observe polarity.
3. **Connect the PV Panel:** Connect the solar panel array to the controller's PV terminals (marked with a solar panel symbol). Observe polarity.

Important: Disconnect in the reverse order: PV Panel → Load → Battery.

4.2 No-Battery Mode (G3 Version)

The G3 version of the Tracer-AN series supports a "No-Battery Mode," allowing direct connection to an inverter without a battery. This mode is suitable for specific applications where immediate power conversion is required.

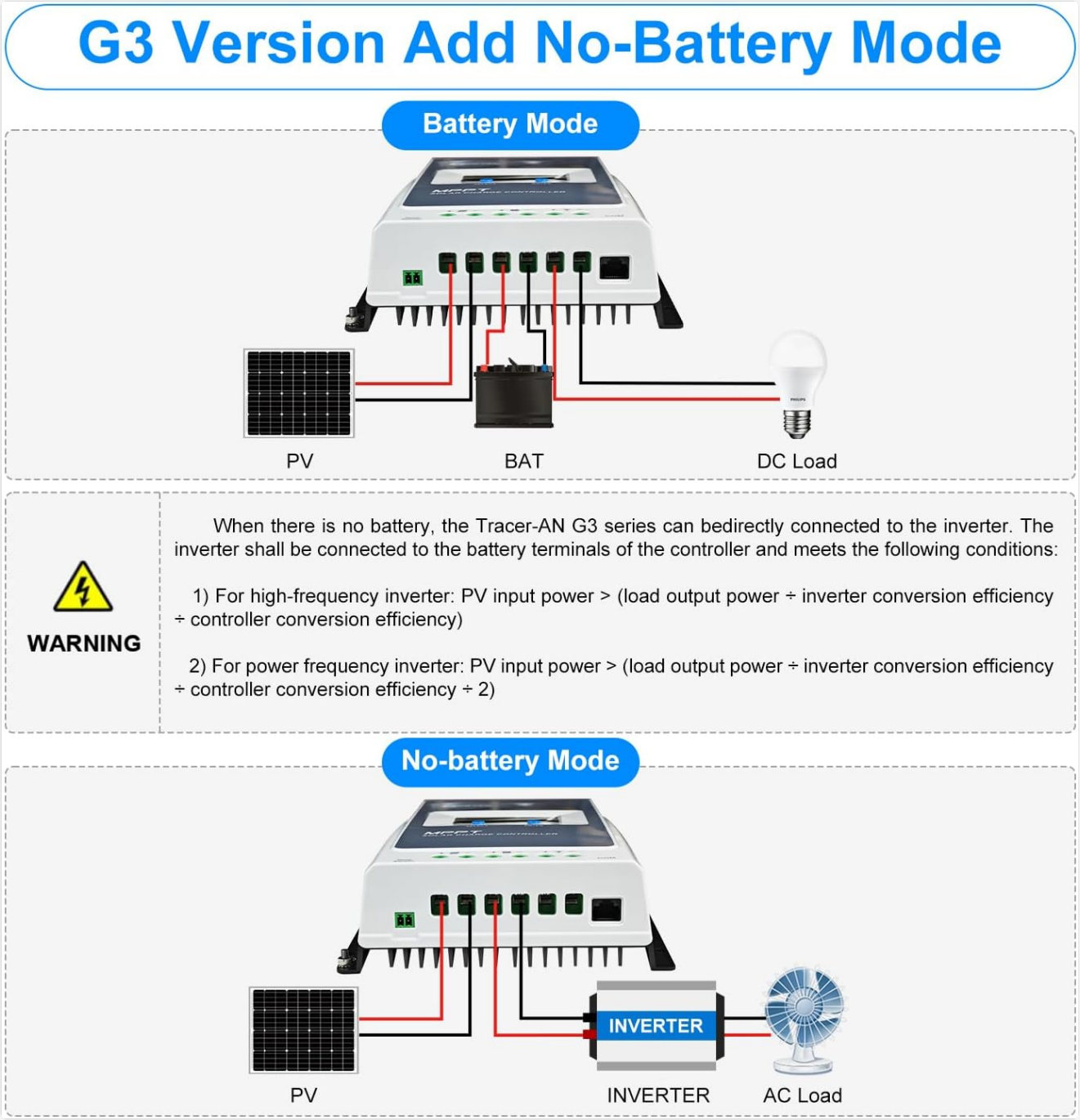


Figure 4.2: Illustration of the controller operating in Battery Mode (with battery) and No-Battery Mode (direct to inverter).

Warning for No-Battery Mode:

- For high-frequency inverters: PV input power > (load output power + inverter conversion efficiency + controller conversion efficiency).
- For power frequency inverters: PV input power > (load output power + inverter conversion efficiency + controller conversion efficiency × 2).

5. Operation

The controller's LCD display provides real-time system information, and the two buttons (SELECT and ENTER) allow for navigation and parameter adjustment.

5.1 LCD Display Interface

The LCD cycles through various screens displaying parameters such as PV voltage, battery voltage, charging current, load current, and energy statistics.

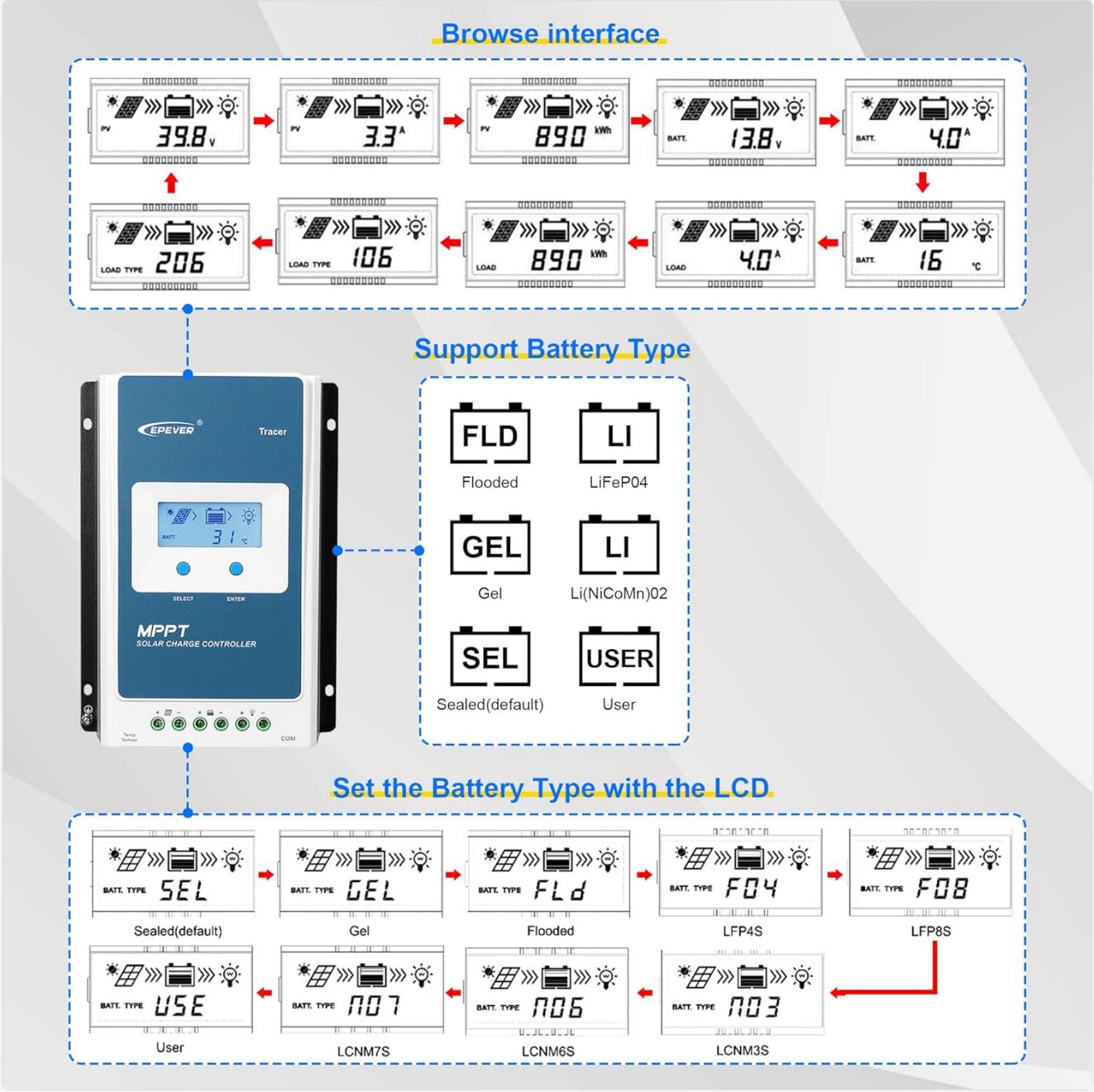


Figure 5.1: Examples of the LCD browse interface screens and the menu for setting battery types.

5.2 Setting Battery Type

The controller supports various battery types. It is crucial to select the correct battery type for optimal charging and battery longevity. The default setting is "Sealed" lead-acid battery.
To set the battery type:

1. Press the "SELECT" button to navigate through the display interfaces until you reach the battery type setting screen.
2. Press the "ENTER" button to enter the setting mode.
3. Use the "SELECT" button to cycle through the available battery types (Sealed, Gel, Flooded, LiFePO4,

Li(NiCoMn)O2, User).

4. Press "ENTER" to confirm your selection.

For "User" defined battery types, detailed parameters can be set via optional accessories like MT50, WiFi adapter, BLE adapter, or PC software. Refer to the battery manufacturer's specifications for accurate user-defined parameters.

Controller buttons suitable for setting battery types :Lead-Acid or Lihtium (default parameters) , USE type for customized setting. More setting need EPEVER accessories device: MT50 , eBox (APP), eLOG01, PC software.

Battery type / Voltage	Sealed	Gel	Flooded	User	LiFePO4		Li(NiCoMn)O2		
					LFP4S	LFP8S	LCNM3S	LCNM6S	LCNM7S
Over Voltage Disconnect Voltage	16.0V	16.0V	16.0V	9～17V	14.8V	29.6 V	12.8 V	25.6 V	29.8 V
Charging Limit Voltage	15.0V	15.0V	15.0V	9～17V	14.6 V	29.2 V	12.6 V	25.2 V	29.4 V
Over Voltage Reconnect Voltage	15.0V	15.0V	15.0V	9～17V	14.6 V	29.2 V	12.5 V	25.0 V	29.1 V
Equalize Charging Voltage	14.6V	——	14.8V	9～17V	14.5 V	29 .0 V	12.5 V	25.0 V	29.1 V
Boost Charging Voltage	14.4V	14.2V	14.6V	9～17V	14.5 V	29.0 V	12.5 V	25.0 V	29.1 V
Float Charging Voltage	13.8V	13.8V	13.8V	9～17V	13.8 V	27.6 V	12.2 V	24.4 V	28.4 V
Boost Reconnect Charging Voltage	13.2V	13.2V	13.2V	9～17V	13.2 V	26.4 V	12.1 V	24.2 V	28.2 V
Low Voltage Reconnect Voltage	12.6V	12.6V	12.6V	9～17V	12.8 V	25.6 V	10.5 V	21.0 V	24.5 V
Under Voltage Warning Reconnect Voltage	12.2V	12.2V	12.2V	9～17V	12.2 V	24.4 V	12.2 V	24.4 V	28.4 V
Under Voltage Warning Voltage	12.0V	12.0V	12.0V	9～17V	12.0 V	24.0 V	10.5 V	21.0 V	24.5 V
Low Voltage Disconnect Voltage	11.1V	11.1V	11.1V	9～17V	11.1 V	22.2 V	9.3 V	18.6 V	21.7 V
Discharging Limit Voltage	10.6V	10.6V	10.6V	9～17V	11.0 V	22.0 V	9.3 V	18.6 V	21.7 V
Equalize Duration	120 min	——	120 min	0～180 min					
Boost Duration	120 min	120 min	120 min	10～180 min					

① The battery parameters under the "User" battery type is 9-17V for LFP4S. They should x2 for LFP8S, and x4 for LFP15S/LFP16S.

Figure 5.2: Table detailing voltage parameters for various battery types (Sealed, Gel, Flooded, User, LiFePO4, Li(NiCoMn)O2).

6. Maintenance

Regular maintenance ensures 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. Loose connections can cause overheating and damage.
- **Ventilation:** Ensure the installation area has adequate ventilation to prevent overheating. Keep the heat sink fins clear of obstructions.
- **Environmental Conditions:** Verify that the operating environment remains within the specified temperature and humidity ranges.

7. Troubleshooting

This section addresses common issues you might encounter with the Tracer3210AN controller.

- **No Display/Power:**
  - Check battery connections and ensure correct polarity.
  - Verify battery voltage is within the controller's operating range (8-32V).
- **No Charging:**

- Ensure PV panel connections are correct and secure.
- Check PV panel voltage; it must be higher than battery voltage for charging to occur.
- Verify solar panel output under current light conditions.

- **Load Not Working:**
  - Check load connections and ensure correct polarity.
  - Verify load current does not exceed the controller's rated load current.
  - Check battery voltage; if it's too low, the load output may be disconnected to protect the battery.

- **Incorrect Battery Type Setting:**
  - Ensure the selected battery type matches your installed battery. Incorrect settings can lead to improper charging and reduced battery life. Refer to Section 5.2 for instructions on setting battery type.

For persistent issues, refer to the detailed troubleshooting guide in the full product manual or contact technical support.

8. Specifications

Detailed technical specifications for the EPEVER Tracer3210AN MPPT Solar Charge Controller.

Electrical Parameters

Item	Tracer 1210AN G3	Tracer 2210AN G3	Tracer 3210AN G3	Tracer 4210AN G3
Battery Rated Voltage	12/24VDC ① Auto-recognition			
Rated Charging Current	10A	20A	30A	40A
Rated Discharge Current	10A	20A	30A	40A
Controller Work Voltage Range	8-31V			
PV Maximum Open-circuit Voltage	100V② 92V③			
MPPT Voltage Range	(Battery voltage + 2V) to 72V			
Rated Charging Power	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	520W/12V 1040W/24V
Static Losses	≤ 8mA (12V);≤ 5mA (24V)			
Discharge-circuit Voltage Drop	≤ 0.23V			
Temperature Compensation④	-3mV/℃/2V (Default)			
Grounding Type	Common negative			
RS485 Port	5VDC/200mA (RJ45)			
LCD Backlight Time	Default: 60s, Range: 0-999s (0s: the backlight is ON all the time)			
Work Temperature Range	-25℃ to + 45℃ (100% loads working)			
Relative Humidity⑤	< 95 % (N.C.)			
Enclosure	IP30			

① When a lithium battery is used, the system voltage isn't automatically identified.
② At minimum operating environment temperature
③ At 25℃ environment temperature
④ When a lithium battery is used, the temperature compensation coefficient will be 0 and cannot be changed.
⑤ The controller can full load working in the working environment temperature. When the internal temperature reaches 81℃, the reducing charging power mode is turned on. Refer to Section 4.1 Protection.

Figure 8.1: Electrical parameters for Tracer 1210AN G3, 2210AN G3, 3210AN G3, and 4210AN G3 models.

EPEVER Tracer3210AN Technical Data

Parameter	Value
Model	Tracer3210AN (G3)
Rated Charge/Discharge Current	30 Amp
Nominal System Voltage	12V/24V DC Auto Work
Max. PV Input Power	390W (12V system) / 780W (24V system)
Max. PV Open Circuit Voltage	100V (at min. operating temp) / 92V (at 25°C)
Battery Voltage Range	8V ~ 32V
MPP Voltage Range	V(BAT+2V) ~ 72V

Parameter	Value
Grounding	Common Negative
Tracking Efficiency	≥99.5%
Max. Conversion Efficiency	98%
Working Environment Temperature	-25°C ~ +50°C (-13°F ~ 122°F)
Storage Temperature	-20°C ~ +70°C (-4°F ~ 158°F)
LCD Backlight Time	60S (Default)
Controller Terminals	#6 AWG (16mm²)
Recommended Wire Cable	#8 AWG (10mm²)
Dimensions (L×W×H)	228 × 164 × 55 mm (8.98 × 6.46 × 2.17 inches)
Weight	1.26 kg (2.77 lbs)
Enclosure	IP30

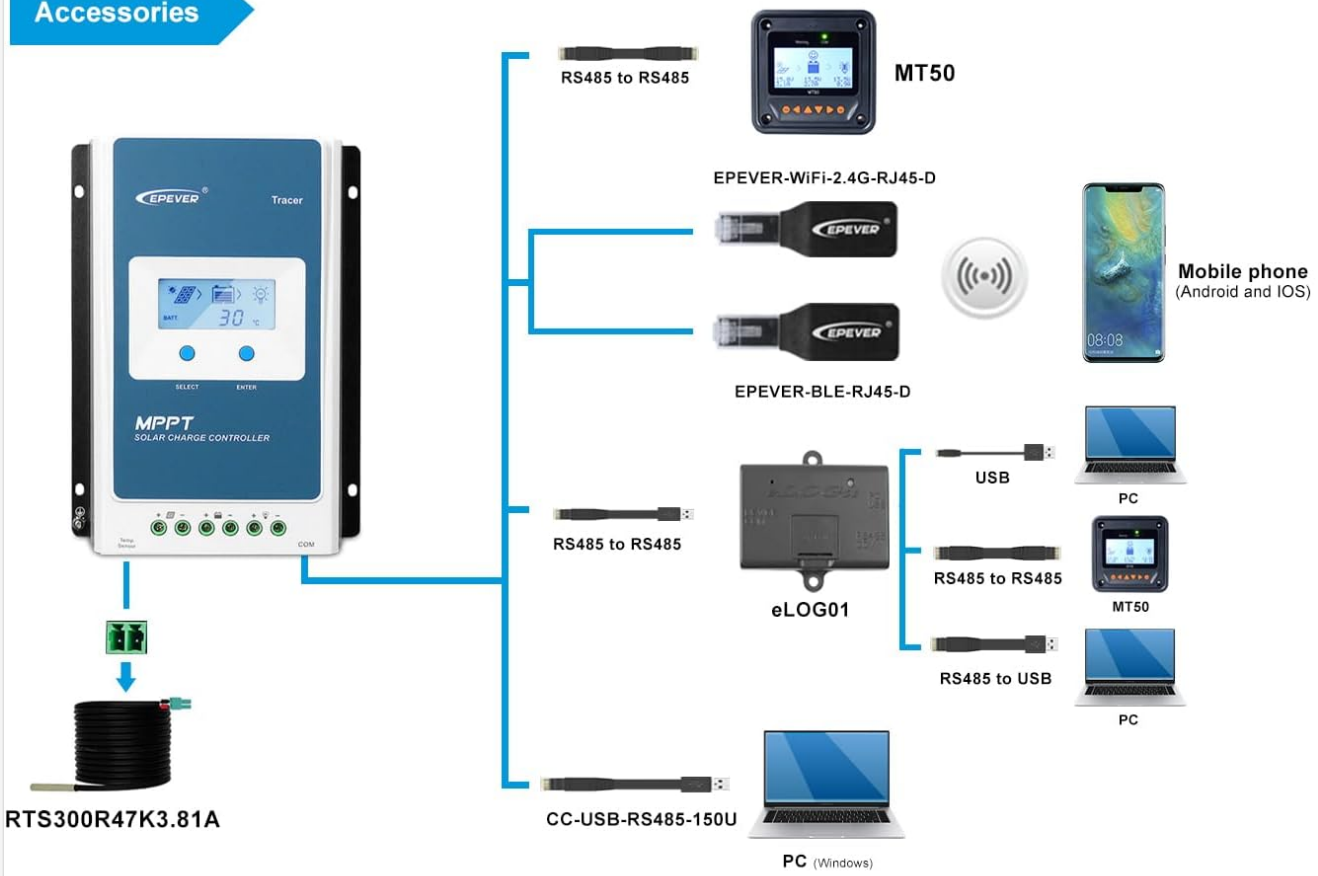
Figure 8.2: Product packaging with dimensions for the Tracer 3210AN.

9. Optional Accessories

The Tracer3210AN controller can be enhanced with various optional accessories for remote monitoring and advanced parameter configuration.

- **Remote Meter (MT50/MT52):** Provides a remote display for monitoring system status and modifying parameters.
- **WiFi Adapter (EPEVER-WiFi-2.4G-RJ45-D):** Enables wireless monitoring and control via a mobile application.
- **Bluetooth Adapter (EPEVER-BLE-RJ45-D):** Allows Bluetooth connectivity for monitoring and control via a mobile application.
- **eLOG01:** Data logger for recording system performance.
- **USB-RS485 Cable:** For connecting the controller to a PC for monitoring and advanced settings using PC software.

Accessories



Mechanical Parameters

Item	Tracer1210AN	Tracer2210AN	Tracer3210AN	Tracer4210AN
Diemension	172x139x44mm	220x154x52mm	228x164x55mm	252x180x63mm
Mounting dimension	130x130mm	170x145mm	170x164mm	210x171mm
Mounting hole size	Φ5mm			
Terminal	12AWG(4mm²)	6AWG(16mm²)	6AWG(16mm²)	6AWG(16mm²)
Recommended cable	12AWG(4mm²)	10AWG(6mm²)	8AWG(10mm²)	6AWG(16mm²)
Weight	0.57kg	0.94kg	1.26kg	1.65kg
Certification	CE IEC62109			

Figure 9.1: Overview of the controller and compatible accessories, including MT50, WiFi, Bluetooth, and PC connection options.

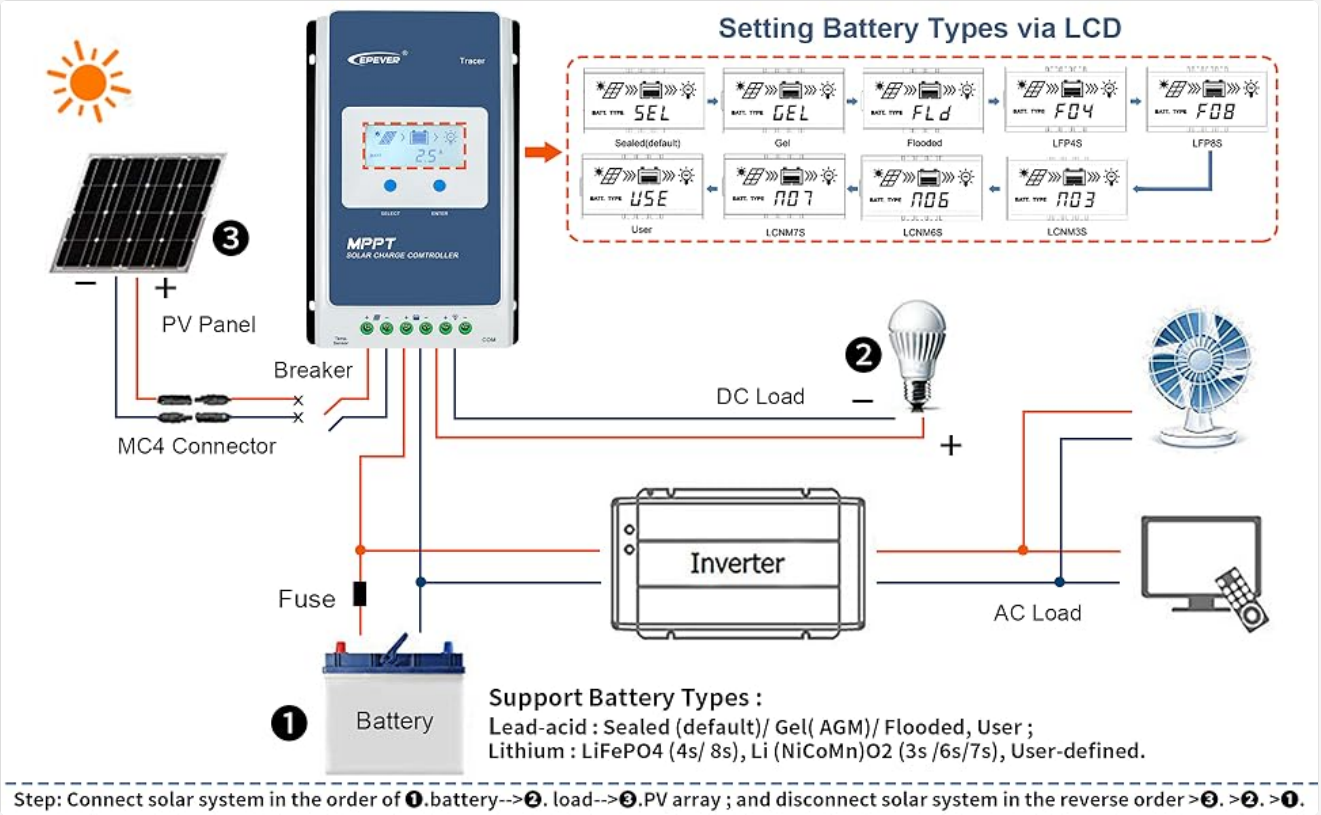


Figure 9.2: Illustration of real-time remote monitoring capabilities using a mobile app via WiFi and a PC cloud platform.

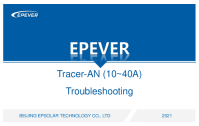
10. Warranty and Support

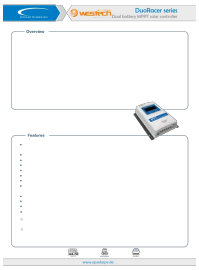
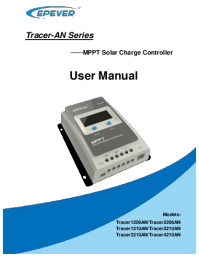
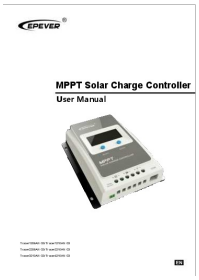
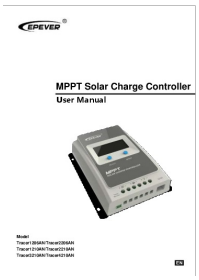
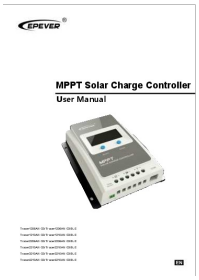
EPEVER products are distributed by authorized sellers. GolandCentury is an official authorized sales agent for the EPEVER brand.

- **Technical Support:** GolandCentury provides free technical support. They have service centers in Chicago (USA), Munich (Germany), Toronto (Canada), and Melbourne (Australia).
- **Product Authenticity:** Ensure you purchase from authorized distributors to receive genuine products and valid support.

For specific warranty terms and conditions, please refer to the warranty card included with your product or contact your authorized dealer.

Related Documents - Tracer3210AN

	EPEVER Tracer-AN (10~40A) Troubleshooting Guide A comprehensive troubleshooting guide for the EPEVER Tracer-AN series solar charge controllers (10-40A), covering common faults, connection issues, and component testing.

	[EPEVER DuoRacer Series Dual Battery MPPT Solar Controller Datasheet] Comprehensive datasheet for the EPEVER DuoRacer Series dual battery MPPT solar controller. Details features like advanced MPPT tracking, dual battery support, AES control, and IP33 protection. Includes full technical specifications, mechanical data, environmental parameters, and compatible accessories for RV, camper, and boat solar power systems.
	[EPEVER Tracer-AN Series MPPT Solar Charge Controller User Manual] Detailed user manual for the EPEVER Tracer-AN Series MPPT solar charge controllers, covering safety, installation, operation, troubleshooting, and technical specifications. Learn about MPPT technology, battery charging stages, and system configuration.
	[EPEVER Tracer-AN G3 Series MPPT Solar Charge Controller User Manual] Comprehensive user manual for the EPEVER Tracer-AN G3 series MPPT solar charge controllers, detailing installation, operation, safety, key features like advanced MPPT and multi-stage charging, remote monitoring capabilities, and essential technical specifications for efficient solar energy management in RVs, household systems, and field applications.
	[EPEVER Tracer AN Series MPPT Solar Charge Controller User Manual] Comprehensive user manual for the EPEVER Tracer AN series MPPT solar charge controllers, covering installation, operation, specifications, safety instructions, and troubleshooting for models including Tracer1206AN, Tracer2206AN, Tracer1210AN, Tracer2210AN, Tracer3210AN, and Tracer4210AN.
	[EPEVER Tracer-AN G3 Series MPPT Solar Charge Controller User Manual] Comprehensive user manual for EPEVER Tracer-AN G3 and G3 BLE series MPPT solar charge controllers. Covers installation, safety, features, specifications, troubleshooting, and maintenance for efficient solar energy management.