

EPEVER Tracer3210AN G3 (30A-100V)

EPEVER 30A MPPT Solar Charge Controller User Manual

Model: Tracer3210AN G3 (30A-100V)

Brand: EPEVER

1. INTRODUCTION

This manual provides essential information for the safe and efficient operation of your EPEVER 30A MPPT Solar Charge Controller, model Tracer3210AN G3. This device is designed to manage power flow from solar panels to batteries, ensuring optimal charging and extending battery life. It features advanced Maximum Power Point Tracking (MPPT) technology for high efficiency and supports various battery types, including lead-acid and lithium.

2. SAFETY INSTRUCTIONS

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

- **Electrical Safety:** Ensure all wiring is performed by qualified personnel. Disconnect all power sources (solar panels and battery) before installing or servicing the controller. Use appropriate circuit breakers or fuses for all connections.
- **Battery Safety:** Batteries can produce explosive gases. Install in a well-ventilated area. Wear eye protection when working near batteries. Avoid short-circuiting battery terminals.
- **Installation Environment:** Install the controller in a dry, well-ventilated area, away from direct sunlight, high temperatures, and moisture. Ensure adequate clearance around the controller for heat dissipation.
- **Grounding:** This controller features a common negative ground design. Ensure proper grounding according to local electrical codes.

3. PRODUCT OVERVIEW

3.1 Key Features

- 30A MPPT solar charge controller for 12V/24V battery systems (auto-identifying).
- Max. PV input power: 390W (12V battery), 780W (24V battery).
- Max PV voltage of 100V.
- High tracking efficiency (>99.5%) and peak conversion efficiency (98%) with MPPT technology.
- Supports Lead-Acid (Sealed, Gel, Flooded) and Lithium battery charging.
- Common Negative ground design.
- Backlight LCD display for system status.
- Multiple load control modes: Manual, Light ON/OFF, Light On+ Timer, and Test mode.
- RS485 Communication support for optional modules (MT52, RTS, PC Cable, Bluetooth, Wifi).
- G3 Version offers reduced noise and enhanced stability.

3.2 Components



Image 3.2.1: EPEVER Tracer3210AN MPPT Solar Charge Controller with key components labeled. This includes the LCD display, SELECT and ENTER buttons, battery terminals, load terminals, solar panel terminals, remote temperature sensor port,

3.3 Typical Applications



Image 3.3.1: The EPEVER Tracer 3210AN is suitable for various off-grid solar applications, including solar homes, solar power generators, solar cars, and solar boats.

4. SETUP AND INSTALLATION

Follow these steps carefully to install your solar charge controller. Ensure all power sources are disconnected before beginning.

4.1 Mounting the Controller

- Choose a dry, well-ventilated location, protected from direct sunlight and moisture.
- Mount the controller vertically on a wall or stable surface to allow for proper heat dissipation.
- Ensure there is sufficient space around the controller (at least 150mm above and below) for airflow.

4.2 Wiring Connections

Connect the components in the following order: **Battery** → **Solar Panel** → **Load**. Always disconnect in the reverse order.

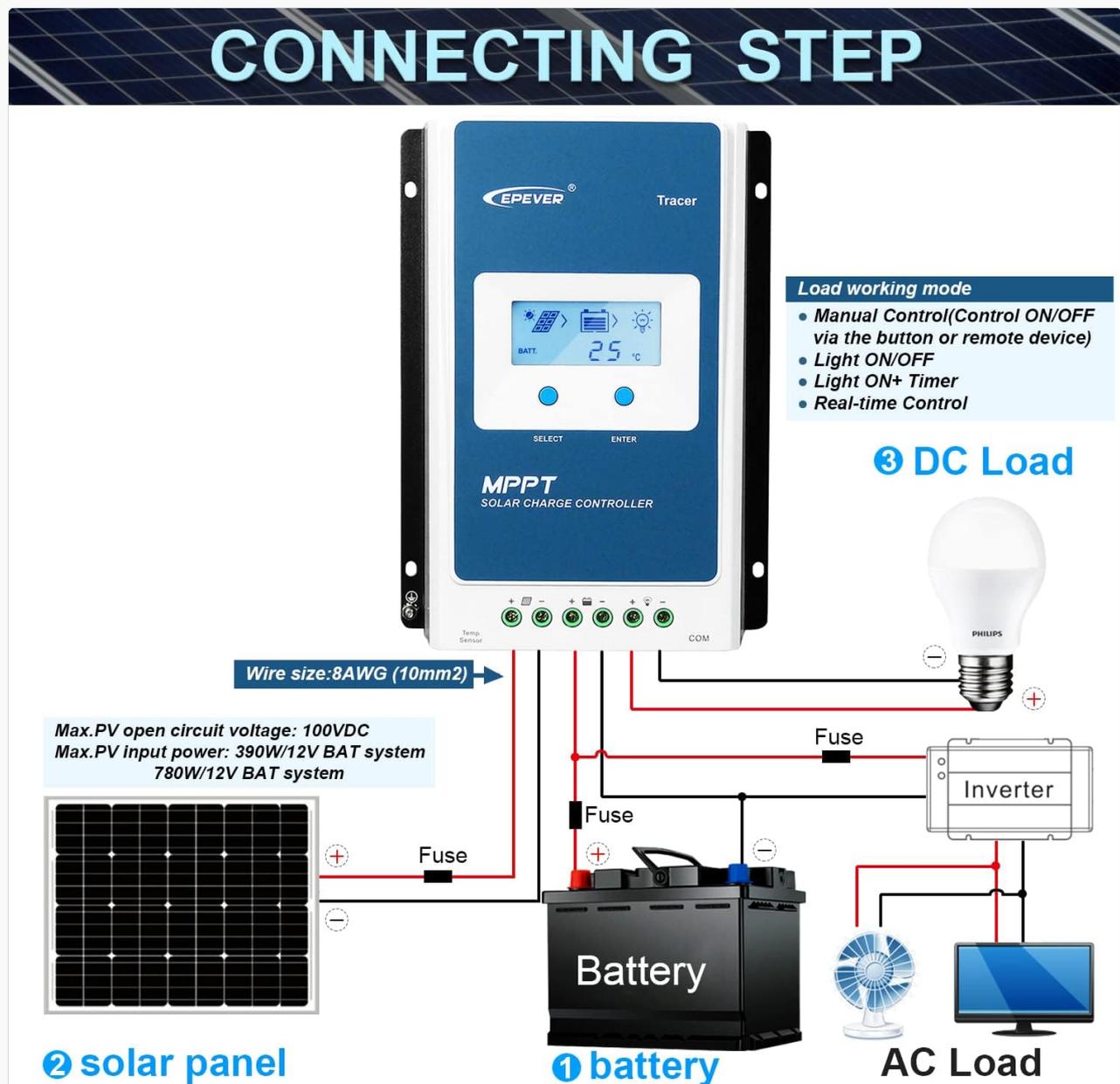


Image 4.2.1: Connection diagram illustrating the proper wiring sequence for the solar charge controller. Connect the battery first, then the solar panel, and finally the DC load. Recommended wire size for 30A is 8AWG (10mm²).

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the corresponding battery terminals on the controller. Observe polarity.
2. **Connect the Solar Panel:** Connect the positive and negative terminals of the solar panel array to the corresponding PV terminals on the controller. Observe polarity.
3. **Connect the DC Load:** Connect the positive and negative terminals of the DC load to the corresponding load terminals on the controller. Observe polarity.
4. **Connect Remote Temperature Sensor (Optional):** If using, connect the remote temperature sensor to the designated port. This improves charging accuracy by compensating for battery temperature.

Warning: Incorrect wiring polarity can damage the controller and other components. Always double-check connections before applying power.

5. OPERATING INSTRUCTIONS

5.1 LCD Display Overview

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



Image 5.1.1: The LCD display provides comprehensive system data, including PV input voltage and current, charging current, power generation, load work mode, battery voltage, battery current, discharge capacity, discharge current, and controller temperature.

5.2 Button Functions

- **SELECT Button:** Used to cycle through different display screens and menu options.
- **ENTER Button:** Used to confirm selections, enter settings mode, or save changes.

5.3 Load Control Modes

The controller offers four load control modes:

- **Manual Mode:** Load can be turned ON/OFF manually via the controller buttons or a remote device.
- **Light ON/OFF:** Load turns ON at dusk and OFF at dawn.
- **Light On + Timer:** Load turns ON at dusk and stays ON for a set duration.
- **Test Mode:** For testing purposes, typically keeps the load ON.

6. BATTERY COMPATIBILITY AND SETTINGS

The Tracer3210AN G3 controller supports various battery types. It is crucial to select the correct battery type for optimal charging and battery longevity.

Compatible with Battery types



Lead-acid battery	Lithium battery
Sealed(default)	LiFePO4
Gel	Li(NiCoMn)O ₂
Flooded	User
User	---



Lithium battery parameters need setting by phone APP
(Controller Bulit-in Bluetooth Module)

Image 6.1.1: The controller is compatible with Lead-acid batteries (Sealed, Gel, Flooded) and Lithium batteries (LiFePO₄, Li(NiCoMn)O₂). A 'User' setting is available for custom battery parameters.

6.1 Supported Battery Types

- **Lead-Acid Batteries:** Sealed (default), Gel (AGM), Flooded.
- **Lithium Batteries:** LiFePO₄, Li(NiCoMn)O₂.

- **User-Defined:** Allows for custom charging parameters for specific battery chemistries.

6.2 Setting Battery Parameters

For Lead-Acid batteries, you can select the preset types. For Lithium batteries or highly customized charging, use the 'User' setting. This typically requires an optional communication module (e.g., MT52, PC Cable, Bluetooth, Wifi) and dedicated software or app to set detailed parameters like over-voltage disconnect, charging limit voltage, boost charging voltage, and low voltage disconnect.

Suitable Battery Types: Lead-Acid or Lithium

Setting need EPEVER accessories device: MT50, eBOX, eLOG01, or PC Software; User type for customized settings

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

Image 6.2.1: Detailed table of battery parameters for Sealed, Gel, Flooded, User, LiFePO4 (LFP4S, LFP8S), and Li(NiCoMn)O2 (LCNM3S, LCNM6S, LCNM7S) battery types. This includes settings for over voltage disconnect, charging limit, equalize charging, boost charging, float charging, and various low voltage thresholds.

7. MAINTENANCE

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Loose connections can cause overheating and power loss.
- **Clean the Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth to wipe the casing. Ensure ventilation openings are not blocked.
- **Inspect for Damage:** Check for any physical damage to the casing, wires, or terminals.
- **Battery Inspection:** Regularly check battery terminals for corrosion and ensure battery fluid levels (for flooded batteries) are adequate.
- **Environmental Check:** Ensure the installation environment remains within the recommended temperature and humidity ranges.

8. TROUBLESHOOTING

This section provides guidance for common issues. For more complex problems, contact technical support.

- **No Display/No Power:**

- Check battery connections and ensure they are secure and correctly polarized.
- Verify battery voltage is within the controller's operating range (e.g., 9V-32V for 12V/24V systems).
- Check for blown fuses in the battery circuit.

- **No Charging from Solar Panels:**

- Ensure solar panel connections are secure and correctly polarized.
- Check PV input voltage on the display; it should be higher than battery voltage.
- Verify solar panels are receiving adequate sunlight and are not shaded.
- Check for open circuits or short circuits in the PV array.

- **Load Not Working:**

- Check load connections and ensure they are secure and correctly polarized.
- Verify the load control mode setting on the controller.
- Check if the battery voltage is above the low voltage disconnect threshold.
- Ensure the load current does not exceed the controller's maximum load current rating.

- **Incompatible with MT-50 Remote Meter:** Some older MT-50 remote meters may not be compatible with the latest G3 versions of the controller. Verify compatibility with EPEVER support or product documentation.

9. SPECIFICATIONS

Technical specifications for the EPEVER Tracer3210AN G3 MPPT Solar Charge Controller (30A-100V).

PRODUCT SIZE

Tracer 3210AN



Image 9.1.1: Physical dimensions of the Tracer 3210AN controller: approximately 228 mm (8.98 inches) in length, 164 mm (6.46 inches) in width, and 55 mm (2.17 inches) in height.

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 current	10A	20A	30A	40A
Power terminals	12AWG(4mm ²)	6AWG(16mm ²)		
MPPT 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	100V ^② 92V ^③			
Grounding	Common negative			
Weight	0.57kg	0.94kg	1.26kg	1.65kg
				

Image 9.1.2: This table compares different models in the Tracer-AN series, including 1210AN, 2210AN, 3210AN, and 4210AN, highlighting their dimensions, max power current, power terminals, MPPT voltage range, battery input voltage range, max PV input power, max PV open circuit voltage, grounding, and weight.

Parameter	Value
Model	Tracer3210AN G3
Rated Charge Current	30A
System Voltage	12V/24V Auto Recognition
Max. PV Open Circuit Voltage	100V
Max. PV Input Power (12V Battery)	390W
Max. PV Input Power (24V Battery)	780W
Battery Input Voltage Range	9V ~ 32V

Parameter	Value
Grounding	Common Negative
Display Type	LCD
Product Dimensions	8.98 x 6.46 x 2.17 inches (228 x 164 x 55 mm)
Item Weight	3.21 pounds (1.46 kg)
Communication Port	RS485 (RJ45 interface)
Battery Types Supported	Lead-Acid (Sealed, Gel, Flooded), Lithium (LiFePO4, Li(NiCoMn)O2), User

10. WARRANTY AND SUPPORT

EPEVER products are designed for reliability and performance. For warranty information, please refer to the documentation included with your purchase or visit the official EPEVER website.

10.1 Technical Support

If you encounter issues that cannot be resolved using this manual, please contact EPEVER technical support. When contacting support, have your product model (Tracer3210AN G3) and a detailed description of the problem ready.

10.2 Optional Accessories

Enhance your controller's functionality with optional accessories:

- **Remote Meters (e.g., MT52):** For remote monitoring and parameter adjustment.
- **Temperature Sensor (RTS):** For accurate battery temperature compensation.
- **PC Communication Cable:** For connecting to a computer for monitoring and advanced settings.
- **Bluetooth/Wifi Modules:** For wireless monitoring and control via smartphone apps.