EPEVER Tracer2210AN

EPEVER 20A MPPT Solar Charge Controller (Tracer2210AN) User Manual

Model: Tracer2210AN

1. Introduction

The EPEVER 20A MPPT Solar Charge Controller, model Tracer2210AN, is an advanced Maximum Power Point Tracking (MPPT) device designed for 12V/24V automatic work solar systems. It efficiently manages power flow from solar panels to batteries, ensuring optimal charging and extending battery life. This controller features high conversion efficiency, supports various battery types, and offers comprehensive protection functions. This manual provides essential information for the safe installation, operation, and maintenance of your solar charge controller.

Image 1.1: EPEVER 20A MPPT Solar Charge Controller (Tracer2210AN). This image shows the front view of the solar charge controller with its LCD display and control buttons.

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: load, then solar panel, then battery.
- Ensure proper ventilation around the controller to prevent overheating.
- Use appropriate wire gauges for all connections to prevent voltage drop and overheating. Refer to the specifications section for recommended cable sizes.
- Avoid short circuits at all terminals.
- Install the controller in a dry, well-ventilated area, away from direct sunlight and moisture.
- Do not attempt to repair or modify the controller yourself. Refer to qualified personnel for service.
- Wear appropriate personal protective equipment (PPE) during installation, including eye protection and insulated gloves.

3. Product Overview

The Tracer2210AN controller incorporates advanced features for efficient solar power management:

- **Advanced MPPT Technology:** Ensures maximum power extraction from solar panels with tracking efficiency not less than 99.5% and a maximum conversion efficiency of 98%.
- **High-Quality Components:** Utilizes international famous brands of ST and IR components for reliability and durability.
- **Battery Compatibility:** Supports various battery types including lead-acid (sealed, gel, flooded) and lithium-ion (LiFePO4, Li(NiCoMn)O2), with user-defined settings.
- **Temperature Compensation:** Includes battery temperature compensation function for lead-acid batteries.
- **Real-time Monitoring:** Provides real-time energy statistics and supports communication via RS-485 bus with Modbus protocol for monitoring and parameter setting via mobile APP or PC software (requires optional accessories like MT50, WiFi, or BLE adapters).
- **Protection Functions:** Features multiple safety protections including overheating power reduction.

3.1 Controller Components

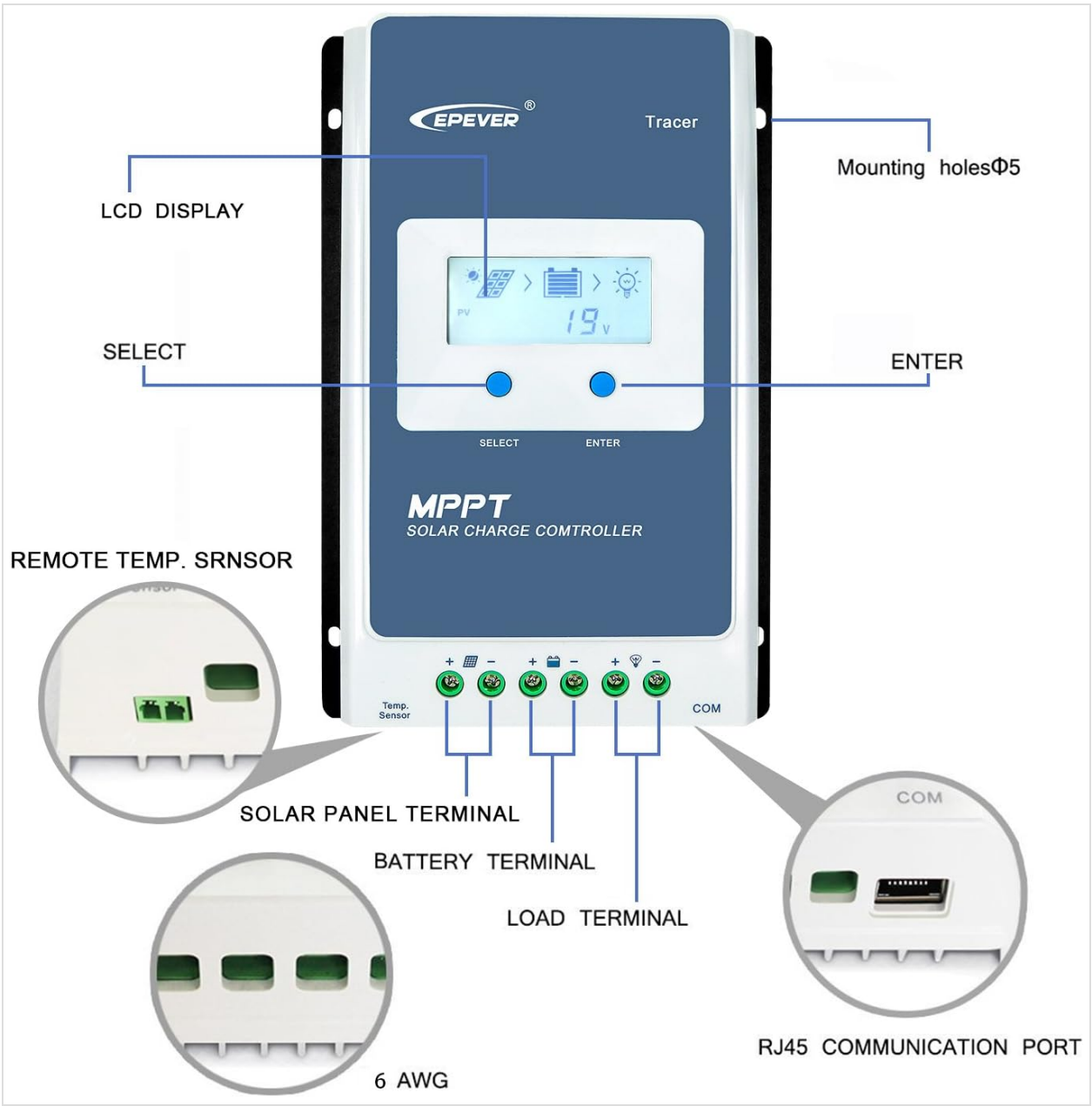


Image 3.1: Front view of the EPEVER Tracer2210AN controller with labeled components. Key components include the LCD display, SELECT and ENTER buttons, remote temperature sensor port, solar panel terminals, battery terminals, load

terminals, and an RJ45 communication port.

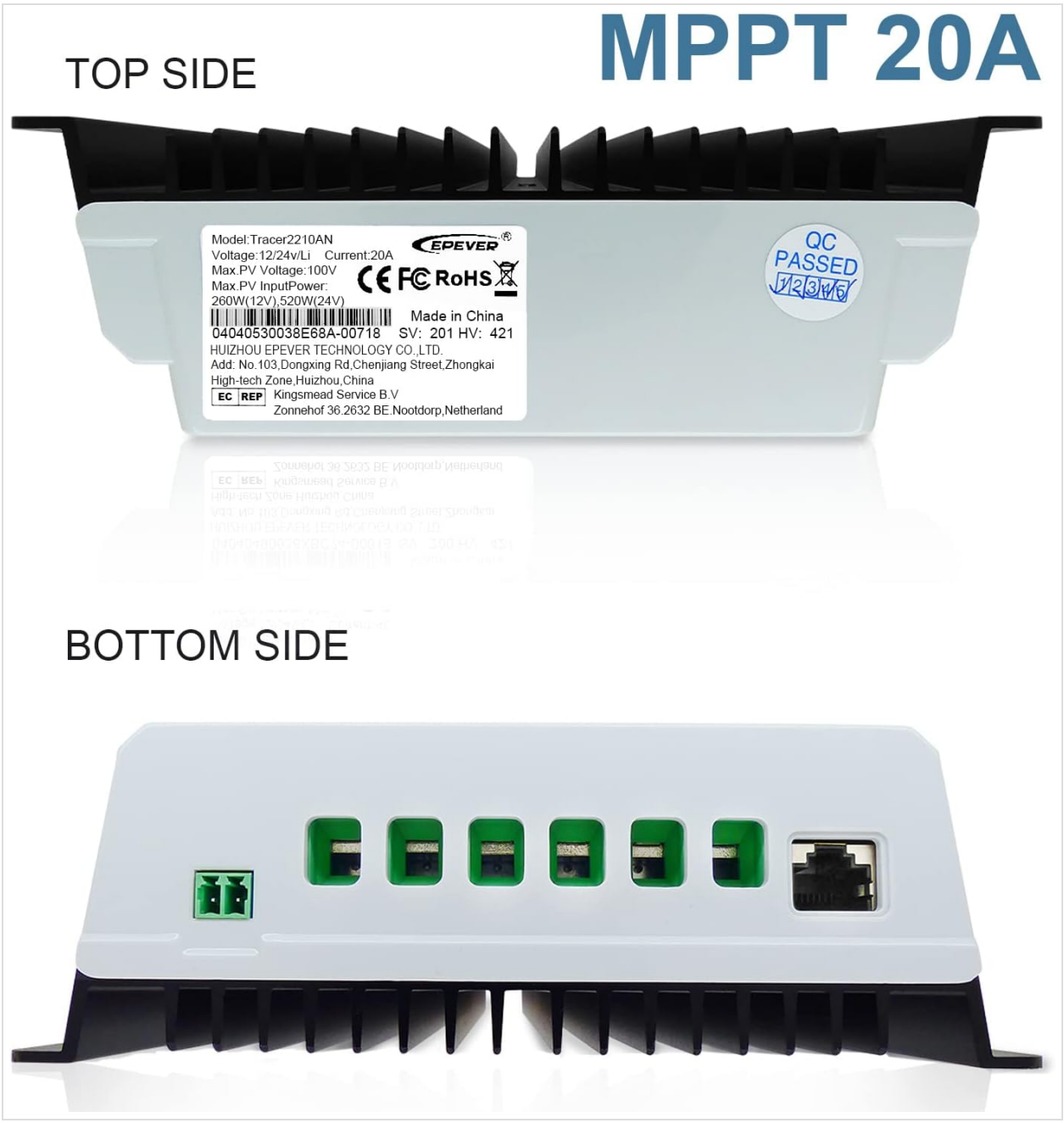


Image 3.2: Top and bottom views of the EPEVER Tracer2210AN controller. The top view shows the model information and certifications, while the bottom view displays the terminal connections and communication port.

4. Setup

4.1 Mounting the Controller

Mount the controller vertically on a wall or a stable surface. Ensure there is sufficient space around the controller for proper air circulation to dissipate heat. The dimensions of the controller are 220mm x 154mm x 52mm.

Image 4.1: EPEVER MPPT 20A Solar Charge Controller with its physical dimensions indicated. The controller measures 220mm in length, 154mm in width, and 52mm in height.

4.2 Wiring Connections

Follow the connection order carefully to avoid damage to the controller or other components. Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.

1. **Connect the Battery:** Connect the positive and negative terminals of the battery to the corresponding battery terminals on the controller. Ensure correct polarity.
2. **Connect the Solar Panel:** Connect the positive and negative terminals of the solar panel to the corresponding PV terminals on the controller. Ensure correct polarity.
3. **Connect the Load:** Connect the positive and negative terminals of the DC load to the corresponding load terminals on the controller. Ensure correct polarity.
4. **Connect Remote Temperature Sensor (Optional):** If using, connect the RTS300R47K3.81A temperature sensor to the designated port on the controller and attach the sensor to the battery for accurate temperature compensation.

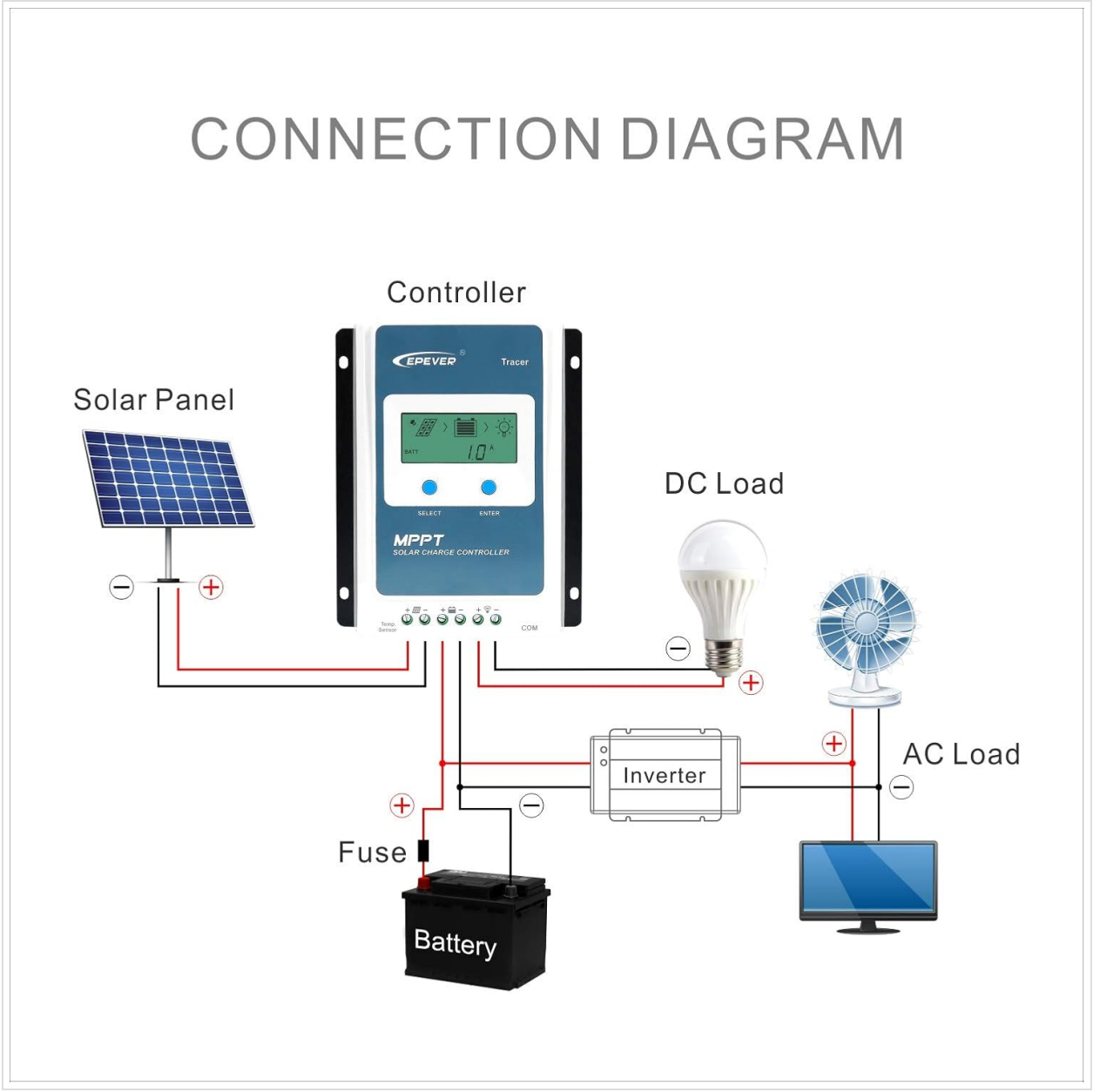


Image 4.2: Connection diagram illustrating the proper wiring sequence for the EPEVER solar charge controller. It shows connections from the solar panel, battery (with fuse), and DC load, as well as an optional inverter for AC loads.

5. Operating Instructions

5.1 LCD Display and Buttons

The controller features an LCD display that shows system status, charging parameters, and error codes. The 'SELECT' and 'ENTER' buttons are used to navigate through menus and adjust settings.

5.2 Battery Type Settings

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' for lead-acid batteries.

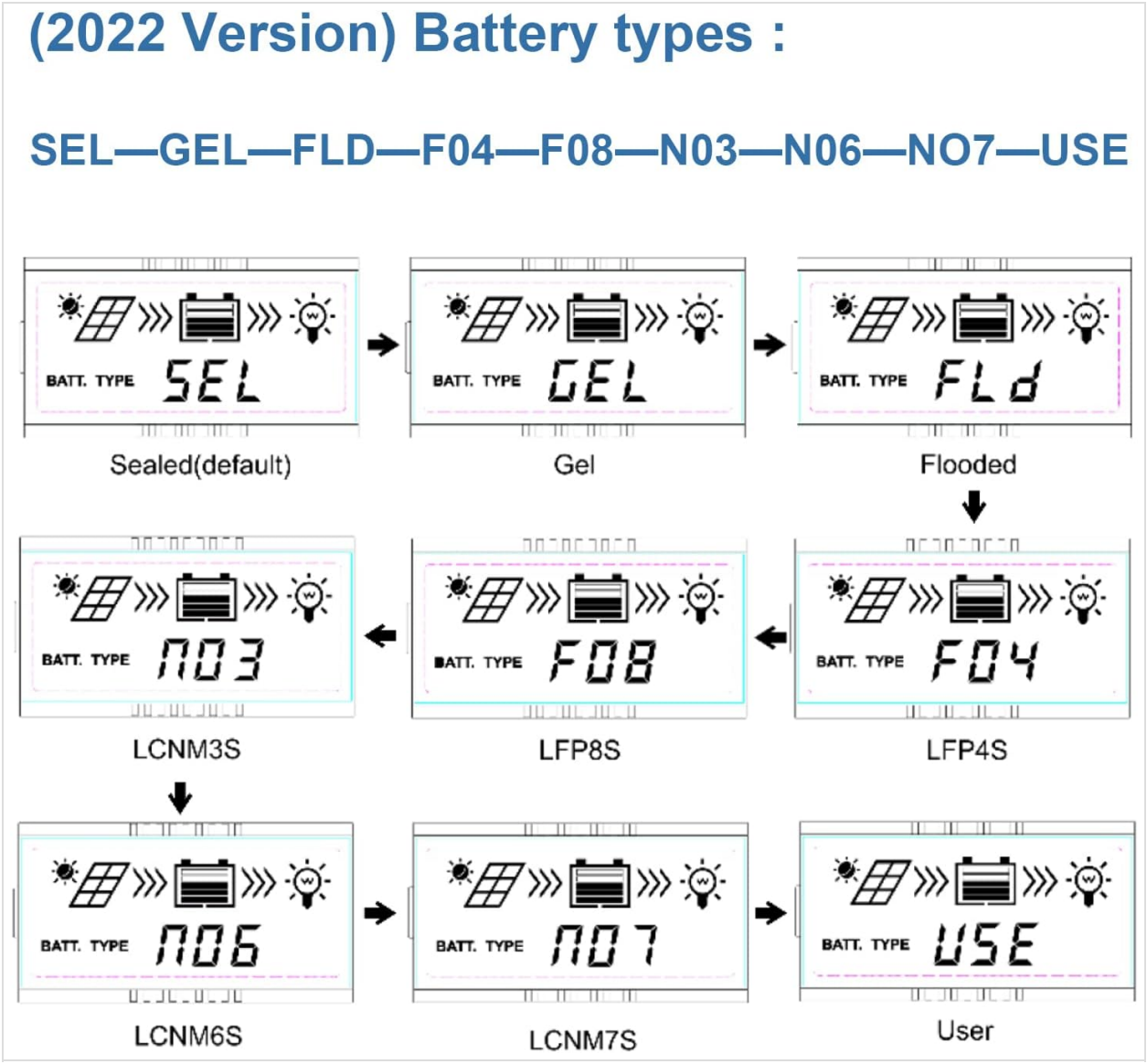


Image 5.1: LCD display showing various battery type selections. Options include Sealed (SEL), Gel (GEL), Flooded (FLD), LiFePO4 (LFP4S, LFP8S), Li(NiCoMn)O2 (LCNM3S, LCNM6S, LCNM7S), and User-defined (USE).

To change the battery type:

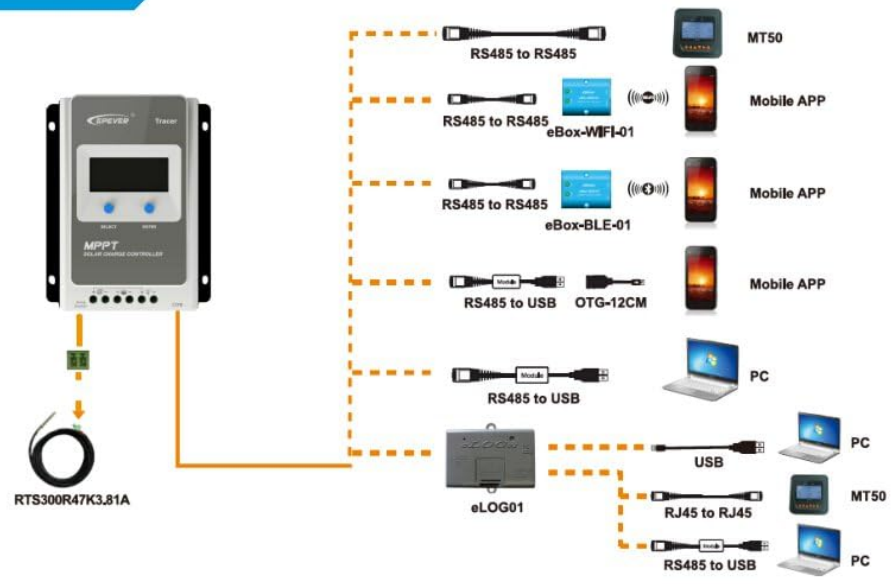
1. Press the 'SELECT' button to cycle through the main display screens until you reach the battery type setting.
2. Press and hold the 'ENTER' button to enter the setting modification mode.
3. Use the 'SELECT' button to choose the desired battery type (e.g., GEL, FLD, LFP4S, USE).
4. Press 'ENTER' again to confirm and save the selection.

5.3 Monitoring and Communication

The Tracer2210AN controller can be monitored and configured remotely using optional accessories:

- **MT50 Remote Meter:** Connects via RJ45 cable to display real-time data and modify parameters.
- **WiFi/BLE Adapters (eBox-WIFI-01, eBox-BLE-01):** Connects to the RS-485 port to enable wireless monitoring and control via a mobile application.
- **PC Communication Cable (CC-RS485-USB-150U):** Connects to a PC for monitoring and parameter setting using EPEVER PC software.

Accessories



Mechanical Parameters

Item	Tracer1210AN	Tracer2210AN	Tracer3210AN	Tracer4210AN
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(16mm^2)
Recommended cable	12AWG(4mm^2)	10AWG(6mm^2)	8AWG(10mm^2)	6AWG(16mm^2)
Weight	0.57kg	0.94kg	1.26kg	1.65kg
Certification	CE IEC62109			

Image 5.2: Diagram showing the EPEVER solar charge controller and its compatible accessories. These include the RTS300R47K3.81A temperature sensor, MT50 remote meter, eBox-WIFI-01, eBox-BLE-01, OTG-12CM, and eLOG01 for various monitoring and communication options.

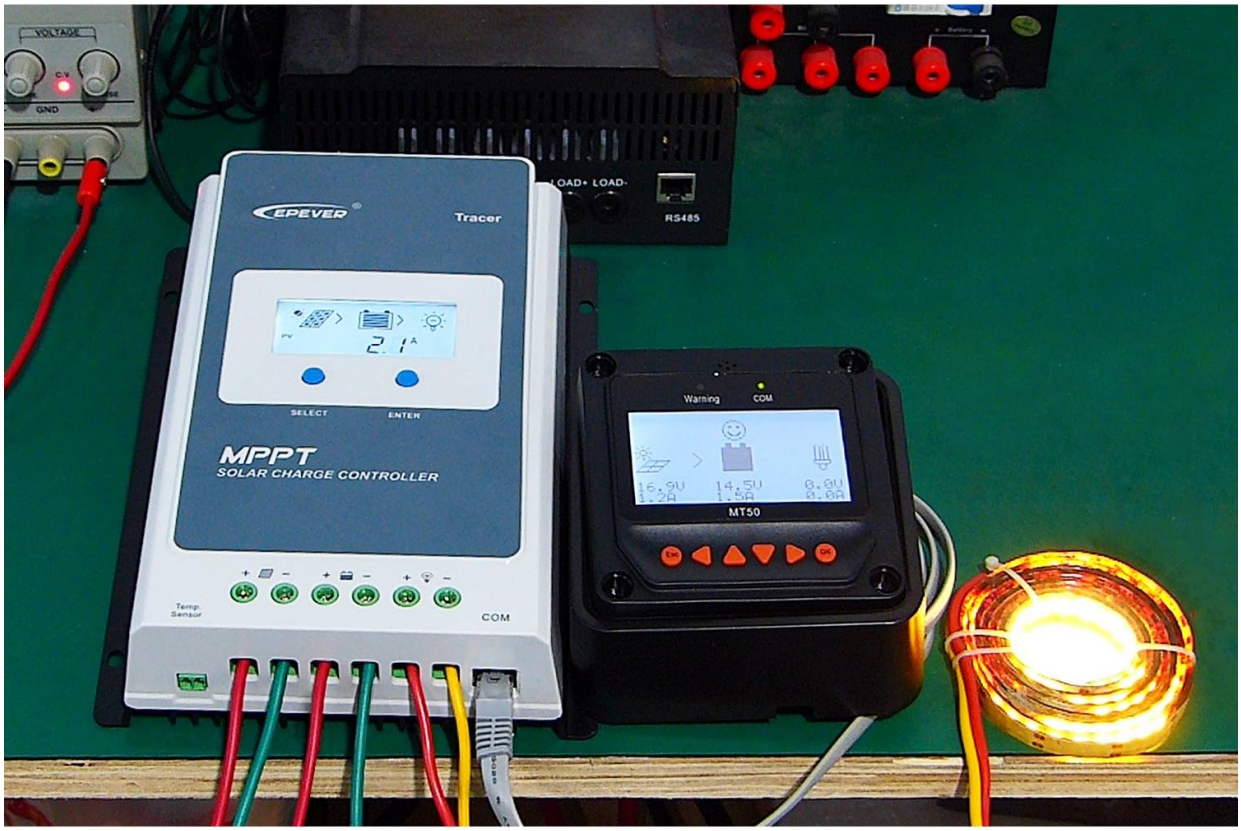


Image 5.3: The EPEVER Tracer2210AN solar charge controller connected to an MT50 remote meter, displaying system information. This setup allows for convenient monitoring and control.

6. 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 voltage drops and overheating.
- **Clean the Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth to wipe the surface. Ensure ventilation openings are not blocked.
- **Inspect for Damage:** Check for any physical damage to the controller, cables, or terminals.
- **Battery Inspection:** For lead-acid batteries, check electrolyte levels (if applicable) and terminal condition. Ensure lithium batteries are within their recommended operating parameters.
- **Environmental Conditions:** Ensure the installation environment remains within the specified operating temperature and humidity ranges.

7. Troubleshooting

If you encounter issues with your solar charge controller, refer to the following common troubleshooting steps:

- **No Display/Power:**
  - Check battery connections and ensure the battery voltage is within the controller's operating range.
  - Verify that the battery fuse (if installed) is intact.
- **No Charging from Solar Panel:**
  - Ensure solar panel connections are secure and correct polarity is observed.

    - Check the solar panel's open-circuit voltage (Voc) and short-circuit current (Isc) to ensure it is producing power.
    - Verify that the solar panel voltage is within the controller's input voltage range.
    - Check for shading on the solar panels.
- **Load Not Working:**
    - Check load connections and ensure correct polarity.
    - Verify that the battery has sufficient charge. The controller may disconnect the load if the battery voltage is too low.
    - Check load settings on the controller to ensure the load output is enabled.
- **Overheating:**
    - Ensure the controller is installed in a well-ventilated area and its heat sinks are not obstructed.
    - Reduce the load or solar input if operating in extreme temperatures.

For more detailed troubleshooting or specific error codes, please refer to the comprehensive manual provided by EPEVER or contact their customer support.

8. Specifications

The following table outlines the key electrical and mechanical parameters for the Tracer2210AN MPPT Solar Charge Controller:

Electrical Parameters

Item	Tracer 1210AN	Tracer 2210AN	Tracer 3210AN	Tracer 4210AN
System nominal voltage	12/24VDC① Auto			
Rated charge current	10A	20A	30A	40A
Rated discharge current	10A	20A	30A	40A
Battery voltage range	8～32V			
Max. PV open circuit voltage	100V② 92V③			
MPP voltage range	(Battery voltage +2V)～72V			
Max. PV input power	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	520W/12V 1040W/24V
Self-consumption	≤12mA			
Discharge circuit voltage drop	≤0.23V			
Temperature compensate coefficient④	-3mV/℃/2V (Default)			
Grounding	Common negative			
RS485 interface	5VDC/100mA			
LCD backlight time	60S (Default)			
Working environment temperature◆	-25℃～+50℃(100% input and output)			
Storage temperature range	-20℃～+70℃			
Relative humidity	≤95%, N.C.			
Enclosure	IP30			

Electrical Parameters

①When a lead-acid battery is used, the controller hasn't the low temperature protection.

②At minimum operating environment temperature

③At 25℃ environment temperature

④When a lithium-ion battery is used, the system voltage can't be identified automatically.

Image 8.1: Table detailing the electrical parameters for Tracer series controllers, including the Tracer2210AN. This table provides specific values for system voltage, currents, power, and environmental conditions.

Parameter	Value (Tracer2210AN)
System Nominal Voltage	12V/24V Auto Work
Rated Charge Current	20A
Rated Discharge Current	20A
Max. PV Input Power	260W (12V Battery System) 520W (24V Battery System)
Max. PV Open Circuit Voltage	100V (at min. operating temp) 92V (at 25°C ambient temp)
Battery Voltage Range	8-32V

Parameter	Value (Tracer2210AN)
MPP Voltage Range	V(BAT+2V) ~ 72V
Grounding	Common Negative
Tracking Efficiency	≥99.5%
Max. Conversion Efficiency	98%
Working Environment Temperature	-25℃ ~ +50℃
Storage Temperature Range	-20℃ ~ +70℃
Relative Humidity	≤95%, N.C.
Enclosure	IP30
Dimensions (L x W x H)	220 x 154 x 52 mm
Weight	0.94 kg
Terminal Size	#6 AWG (16 mm^2)
Recommended Cable	#10 AWG (6 mm^2)

9. Warranty and Support

For warranty information, please refer to the documentation provided with your purchase or contact your authorized EPEVER dealer. EPEVER products typically come with a manufacturer's warranty covering defects in materials and workmanship.
For technical support, product inquiries, or service, please visit the official EPEVER website or contact an authorized EPEVER service center. Ensure you have your product model (Tracer2210AN) and serial number available when seeking support.