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› [EPEVER MPPT Solar Charge Controller Tracer2210AN G3 User Manual](#)

EPEVER Tracer2210AN G3

EPEVER MPPT Solar Charge Controller User Manual

Model: Tracer2210AN G3

Brand: EPEVER

1. PRODUCT OVERVIEW

The EPEVER Tracer2210AN G3 is an advanced Maximum Power Point Tracking (MPPT) solar charge controller designed for efficient and reliable charging of various battery types from solar panels. It automatically detects 12V/24V battery systems and supports a maximum PV input voltage of 100V. This controller is equipped with an LCD display for real-time data viewing and parameter setting, and features multiple load control modes for versatile application.

Key features include support for Sealed lead acid, AGM, GEL, Flooded, and Lithium batteries (LiFePO₄, Li(NiCoMn)O₂), common negative ground design, and PC software compatibility for enhanced monitoring and control.



Figure 1: EPEVER Tracer2210AN G3 MPPT Solar Charge Controller and its packaging.

TOP SIDE

MPPT 20A



BOTTOM SIDE

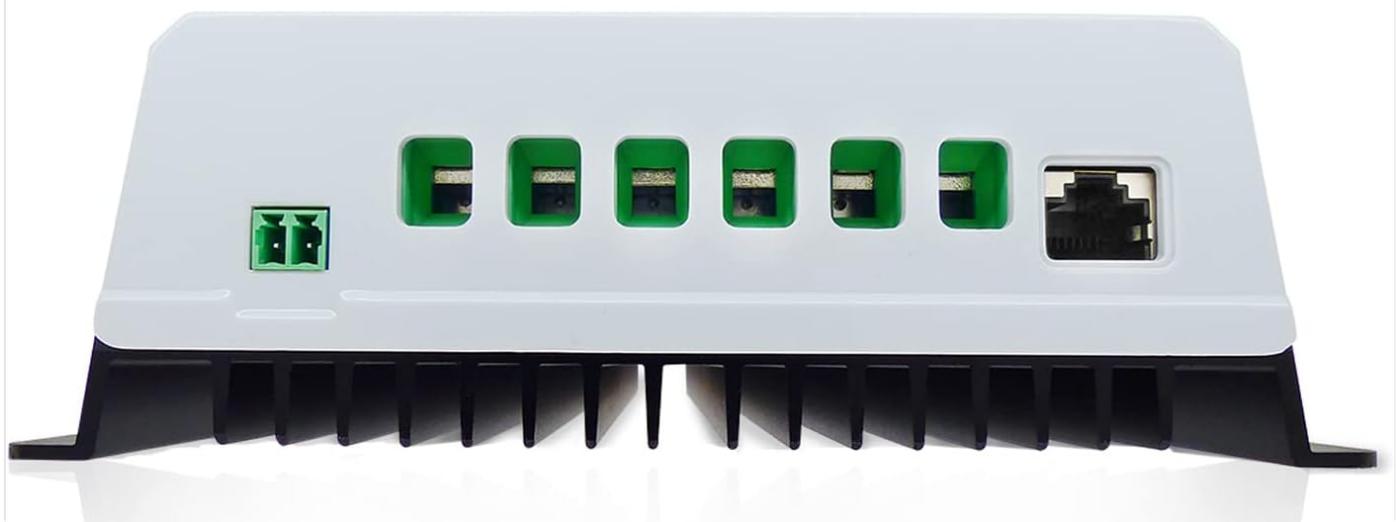


Figure 2: Top and bottom views of the Tracer2210AN G3, highlighting model specifications and terminal layout.

2. FEATURES

- **Advanced MPPT Technology:** Ensures maximum power point tracking for optimal solar panel efficiency.
- **Automatic System Voltage Recognition:** Automatically detects 12V or 24V battery systems.
- **Wide PV Input Range:** Supports a maximum PV voltage of 100V.
- **High Power Capacity:** Max. PV input power of 260W for 12V systems and 520W for 24V systems.
- **Versatile Battery Compatibility:** Supports Sealed lead acid, AGM, GEL, Flooded, LiFePO4 (4s/12V; 8s/24V), Li(NiCoMn)O2 (3s/12V; 6s/24V), and user-defined battery types (9~34V).
- **Common Negative Ground:** Designed with common negative grounding for system compatibility.
- **Backlight LCD Display:** Provides clear real-time data and allows for easy parameter adjustments.
- **PC Software Support:** Compatible with PC (Windows) software and MT50 for convenient data viewing and

parameter configuration.

- **Multiple Load Control Modes:** Includes manual mode, light ON/OFF, light On+ Timer, and test mode for flexible load management.
- **Communication Port Protection:** Features a professional protection chip on the communication port, providing 5VDC power supply.



Figure 3: Supported battery types for the Tracer2210AN G3 controller.

3. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Please follow these steps carefully.

3.1 Wiring Sequence

1. **Connect the Battery:** First, connect the battery to the charge controller. Ensure correct polarity. The controller will automatically detect the battery voltage (12V or 24V).

2. **Connect the Solar Panel:** Next, connect the solar panel(s) to the charge controller. Ensure correct polarity. The controller will begin charging the battery.
3. **Connect the DC Load:** Finally, connect the DC load to the charge controller. Ensure correct polarity.

Important: Always connect the battery first and disconnect the solar panel and load before disconnecting the battery.

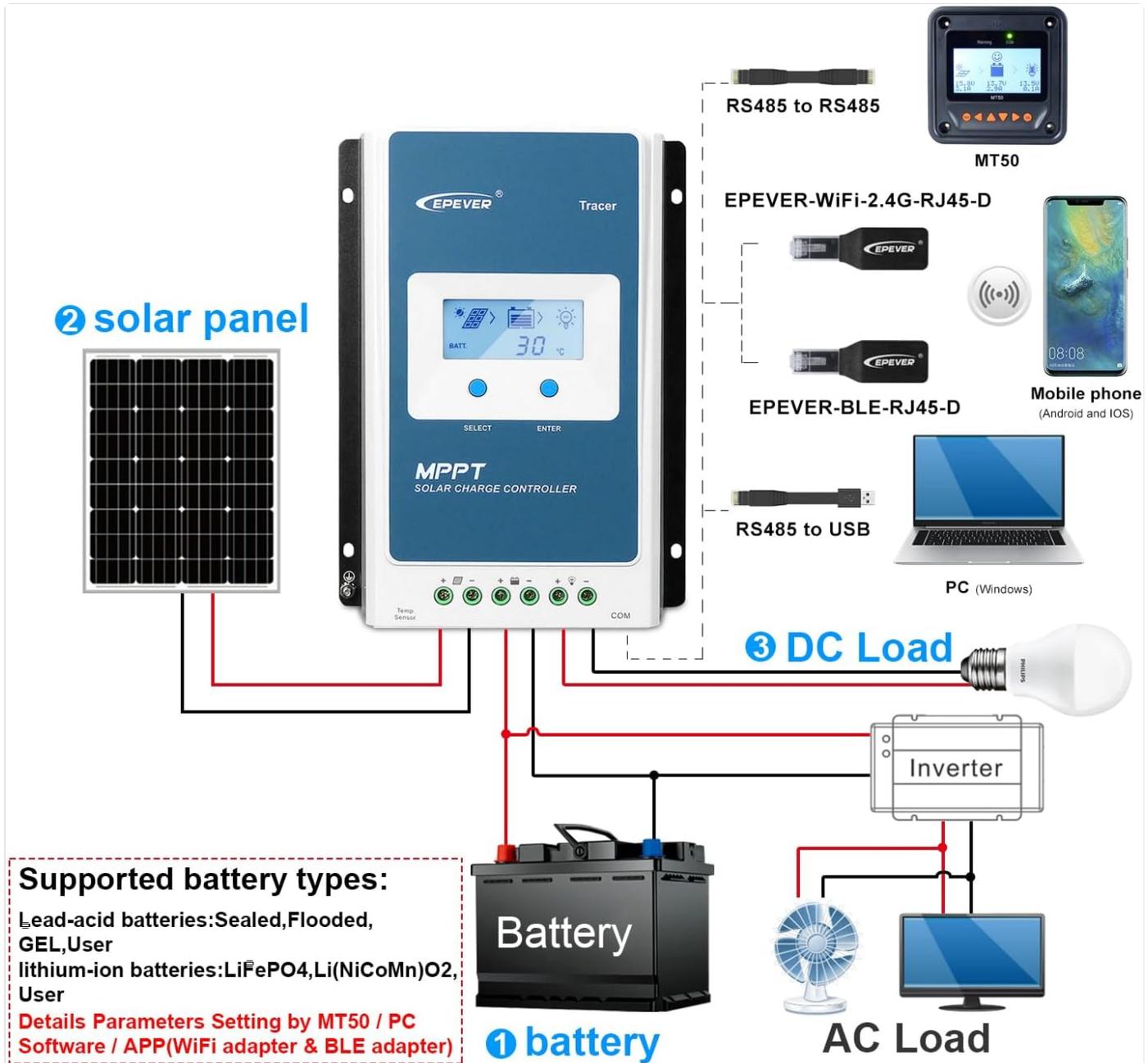


Figure 4: System connection diagram for the Tracer2210AN G3.

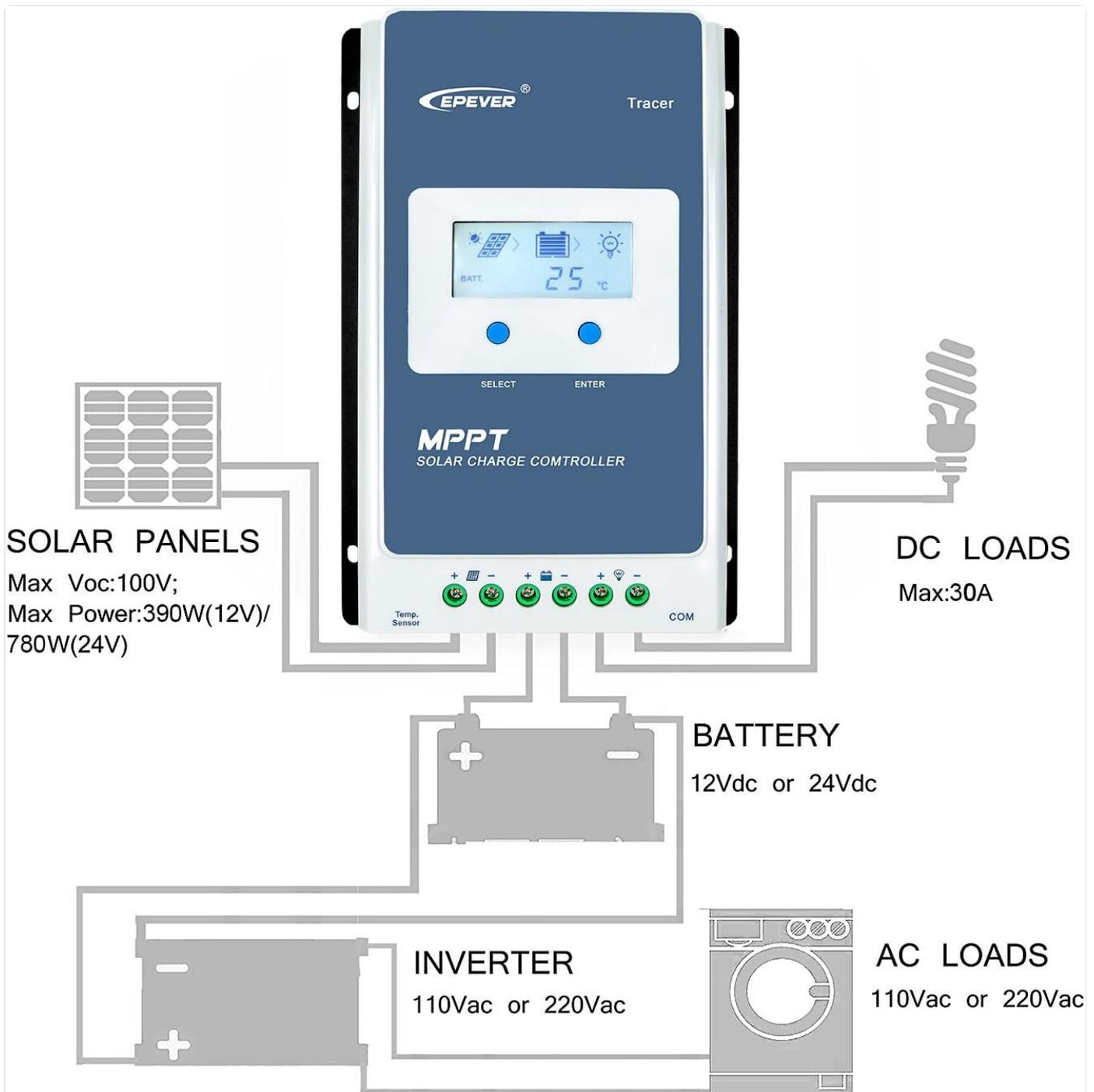


Figure 5: Simplified connection diagram illustrating solar panel, battery, and load connections.

3.2 Mounting

Mount the controller vertically on a flat, non-flammable surface in a well-ventilated area, away from direct sunlight, high temperatures, and water. Ensure sufficient clearance around the controller for proper heat dissipation.

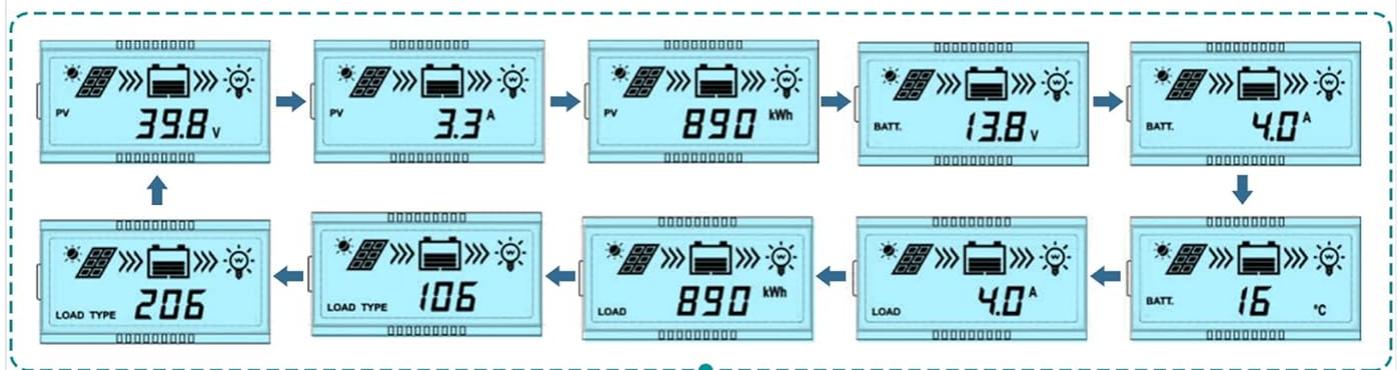
4. OPERATING INSTRUCTIONS

The Tracer2210AN G3 features an intuitive LCD display and control buttons for easy operation and monitoring.

4.1 LCD Display and Button Functions

The LCD displays various system parameters such as battery voltage, charging current, load current, and temperature. Use the "SELECT" and "ENTER" buttons to navigate through menus and adjust settings.

Browse interface



Support Battery Type



Set the Battery Type with the LCD

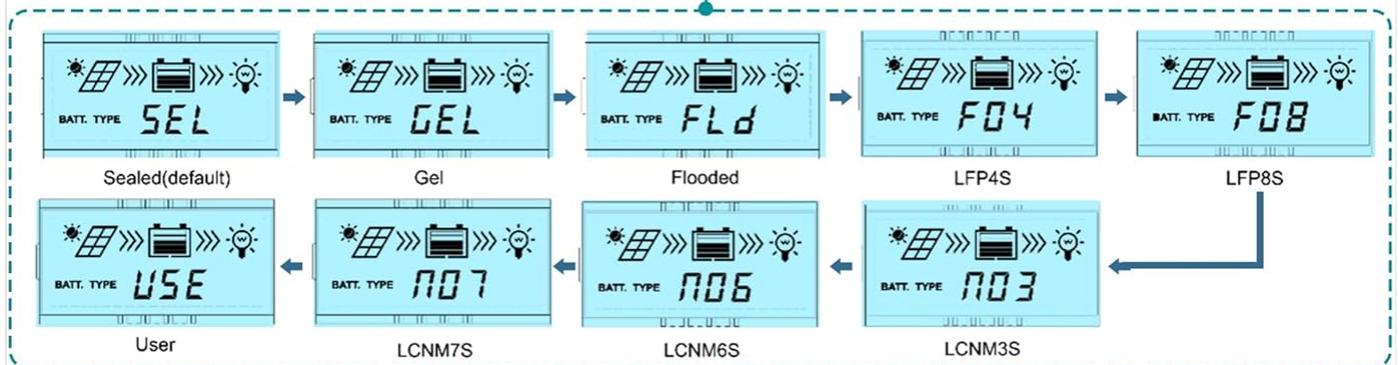


Figure 6: LCD display interfaces and battery type setting process.

4.2 Setting Battery Type

The controller supports various battery types. It is crucial to set the correct battery type for optimal charging and battery longevity. Refer to Figure 6 for visual guidance.

1. Press the "ENTER" button to enter the main menu.
2. Navigate using "SELECT" to find the battery type setting option.
3. Press "ENTER" to select, then use "SELECT" to choose your battery type (e.g., Sealed, Gel, Flooded, LiFePO4, Li(NiCoMn)O2, User).
4. Press "ENTER" to confirm your selection.

For user-defined battery types, you can set specific voltage parameters (e.g., charge voltage, low voltage disconnect) via the PC software or MT50.

4.3 Load Control Modes

The controller offers four load control modes:

- **Manual Mode:** Load can be turned ON/OFF manually via the controller buttons.
- **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.

These modes can be configured through the LCD display or the PC software.

4.4 PC Software and MT50

For advanced monitoring and parameter setting, connect the controller to a PC (Windows) using the appropriate communication cable (e.g., RS485 to USB) or use the MT50 remote meter. This allows for detailed data logging, custom battery parameters, and firmware updates.

5. 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 to ensure they are tight and free from corrosion. Loose connections can cause overheating and damage.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow for proper heat dissipation.
- **Environmental Conditions:** Ensure the controller is operating within its specified temperature range (Operating Temperature: 25 Degrees Celsius, though typically wider for electronics). Avoid exposure to extreme humidity or direct water.
- **Battery Health:** Monitor your battery's health and ensure it is properly maintained according to its type (e.g., checking electrolyte levels for flooded batteries).

6. TROUBLESHOOTING

The Tracer2210AN G3 incorporates various protection mechanisms. Understanding these can help in diagnosing and resolving common issues.

Protections

PV Over Current/power	When the charging current or power of the PV array exceeds its rated current or power, it will be charged at the rated current or power. NOTE: When the PV modules are in series, ensure that the open-circuit voltage of the PV array does not exceed the "maximum PV open-circuit voltage" rating. Otherwise the controller may be damaged.
PV Short Circuit	When not in PV charging state, the controller will not be damaged in case of a short-circuiting in the PV array.
PV Reverse Polarity	When the polarity of the PV array is reversed, the controller may not be damaged and can continue to operate normally after the polarity is corrected. NOTE: If the PV array is reverse connected to the controller, 1.5 times rated controller power (watts) from the PV array, will damage the controller.
Night Reverse Charging	Prevents the battery from discharging through the PV module at night.
Battery Reverse Polarity	Fully protected against battery reverse polarity; no damage to the controller will result. Correct the miswire to resume normal operation.
Battery Over Voltage	When the battery voltage reaches the over voltage disconnect voltage, it will automatically stop battery charging to prevent battery damage caused by over-charging.
Battery Over Discharge	When the battery voltage reaches the low voltage disconnect voltage, it will automatically stop battery discharging to prevent battery damage caused by over-discharging. (Any controller connected loads will be disconnected. Loads directly connected to the battery will not be affected and may continue to discharge the battery.)
Battery Overheating	The controller can detect the battery temperature through an external temperature sensor. The controller stops working when its temperature exceeds 65 °C and begins working when its temperature is below 55 °C.
Lithium Battery Low Temperature	When the temperature detected by the optional temperature sensor is lower than the Low Temperature Protection Threshold (LTPT), the controller will stop charging and discharging automatically. When the detected temperature is higher than the LTPT, the controller will be working automatically (The LTPT is 0 °C by default and can be set within the range of 10 ~ -40 °C).
Load Short Circuit	When the load is short circuited (The short circuit current is ≥ 4 times the rated controller load current), the controller will automatically cut off the output. If the load reconnects the output automatically five times (delay of 5s, 10s, 15s, 20s, 25s), it needs to be cleared by pressing the Load button, restarting the controller or switching from Night to the Day (nighttime > 3 hours).
Load Overload	When the load is overloading (The overload current is ≥ 1.05 times the rated load current), the controller will automatically cut off the output. If the load reconnects automatically five times (delay of 5s, 10s, 15s, 20s, 25s), it needs to be cleared by pressing the Load button restarting the controller, switching from Night to Day (nighttime > 3 hours).
Controller Overheating*	The controller is able to detect the temperature inside the battery through an optional remote sensor. The controller stops working when its temperature exceeds 85 °C and begins to working when its temperature is below 75 °C.
TVS High Voltage Transients	The internal circuitry of the controller is designed with Transient Voltage Suppressors (TVS) which can only protect against high-voltage surge pulses with less energy. If the controller is to be used in an area with frequent lightning strikes, it is recommended to install an external surge arrester.

★When the internal temperature is 81°C, the reducing power charging mode which reduce the charging power of 5%,10%,20%,40% every increase 1 °C is turned on. If the internal temperature is greater than 85°C, the controller will stop charging. But while the temperature decline to be below 75 °C, the controller will resume.

Figure 7: Protection mechanisms of the Tracer2210AN G3.

6.1 Common Protections and Solutions

- **PV Over Current/Power:** If the charging current or power from the PV array exceeds the rated current or power, the controller will limit it. Ensure PV modules are in series to prevent open-circuit voltage from exceeding the maximum PV open-circuit voltage.
- **PV Short Circuit:** When the PV array is short-circuited, the controller will not be damaged. The controller will resume normal operation once the short circuit is removed.
- **PV Reverse Polarity:** If the PV array is connected with reverse polarity, the controller will not be damaged. Correct the wiring to resume operation.
- **Night Reverse Charging:** Prevents the battery from discharging through the PV module at night.
- **Battery Reverse Polarity:** Fully protected against battery reverse polarity; no damage to the controller will result. Correct the miswire to resume normal operation.
- **Battery Over Voltage:** When the battery voltage reaches the over voltage disconnect voltage, the controller automatically stops battery charging.
- **Battery Over Discharge:** When the battery voltage reaches the low voltage disconnect voltage, the controller automatically stops battery discharging. Loads directly connected to the battery will not be affected.
- **Battery Overheating:** The controller can detect battery temperature through an external temperature sensor. Charging stops when temperature exceeds 65°C and begins working when below 55°C.
- **Lithium Battery Low Temperature:** If the temperature detected by the optional temperature sensor is lower than the Low Temperature Protection Threshold (LTPT), the controller will stop charging and discharging automatically.

When the detected temperature is higher than the LTPT, the controller will resume operation.

- **Load Short Circuit:** If the load short circuit current is 2-4 times the rated load current, the controller will automatically cut off the output. It will reconnect automatically after 5s, 10s, 15s, 20s, 25s.
- **Load Overload:** If the load current is 1.05-1.25 times the rated load current, the controller will automatically cut off the output. It will reconnect automatically after 5s, 10s, 15s, 20s, 25s.
- **Controller Overheating:** The controller is able to detect the temperature inside the battery through an optional remote sensor. The controller stops working when its temperature exceeds 85°C and begins working when its temperature is below 75°C.
- **TVS High Voltage Transients:** The internal circuitry is designed with Transient Voltage Suppressors (TVS) which can only protect against high-voltage surge pulses with less energy. For stronger protection, an external surge arrester is recommended.

Note: When the internal battery temperature is 81°C, the charging power reducing mode will reduce the charging power by 5%, 10%, 20%, 40% every increase of 1°C. If the internal temperature is greater than 85°C, the controller will stop charging. While the temperature declines to below 75°C, the controller will resume.

7. SPECIFICATIONS

Detailed technical specifications for the EPEVER Tracer2210AN G3 MPPT Solar Charge Controller.

Specification	Value
Model Number	Tracer2210AN G3
Charge/Discharge Current	20A
System Voltage	12V/24V Auto Work
Max PV Input Voltage	100V
Max. PV Input Power (12V)	260W
Max. PV Input Power (24V)	520W
Operating Temperature	25 Degrees Celsius (typical range is wider, refer to full manual)
UPC	791280364424
Manufacturer	EPEVER
Charging Port Type	USB (for communication, not charging)
Package Dimensions	9.45 x 6.3 x 2.76 inches
Item Weight	2.64 pounds
Material	Aluminum
Display Type	LCD

MPPT 20A



Figure 8: Physical dimensions of the Tracer2210AN G3.

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	100V②92V③			
Grounding	Common negative			
Weight	0.57kg	0.94kg	1.26kg	1.65kg
				

Figure 9: Comparison of Tracer AN series models, including Tracer2210AN.

8. WARRANTY AND SUPPORT

For any questions, technical assistance, or warranty claims, please consult the customer service of your retailer or the manufacturer directly. It is recommended to read the instruction manual carefully to avoid damage due to improper operation.

Please refer to the official EPEVER website or your purchase documentation for detailed warranty terms and conditions.