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SolarEpic Tracer4210AN

EPEVER 40A MPPT Solar Charge Controller

Model: Tracer4210AN

Brand: SolarEpic

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your EPEVER 40A MPPT Solar Charge Controller, model Tracer4210AN. This advanced Maximum Power Point Tracking (MPPT) controller is designed to optimize the power output from your solar panels to efficiently charge your battery bank, ensuring reliable performance for various off-grid solar applications. It features a negative grounding design, high PV input voltage compatibility, and support for multiple battery types including LiFePo4.

2. Product Overview

The Tracer4210AN MPPT Solar Charge Controller is a robust device engineered for efficiency and versatility in solar power systems. It comes equipped with an MT52 remote meter and a temperature sensor for enhanced monitoring and control.

Key Features:

- Negative Grounding Design and advanced MPPT control algorithm for charging efficiency no less than 99.5%.
- 100V Max PV Input, allowing connection of multiple 12V solar panels in series.
- Compatible with LiFePO4 & Li(NiCoMn)O2 Batteries, with built-in preset lithium battery types.
- Works with both 12V and 24V battery systems, supporting 24V (or higher voltage) solar panels for charging.
- Standard Modbus communication protocol with RS485 interface for monitoring via cellphone APP (eBox required), PC Software, and MT52 remote meter.

Components:

The package includes the Tracer4210AN controller, MT52 remote meter, temperature sensor, and necessary cables.



Figure 2.1: EPEVER 40A MPPT Solar Charge Controller (Tracer4210AN) with included MT52 Remote Meter and connection accessories.

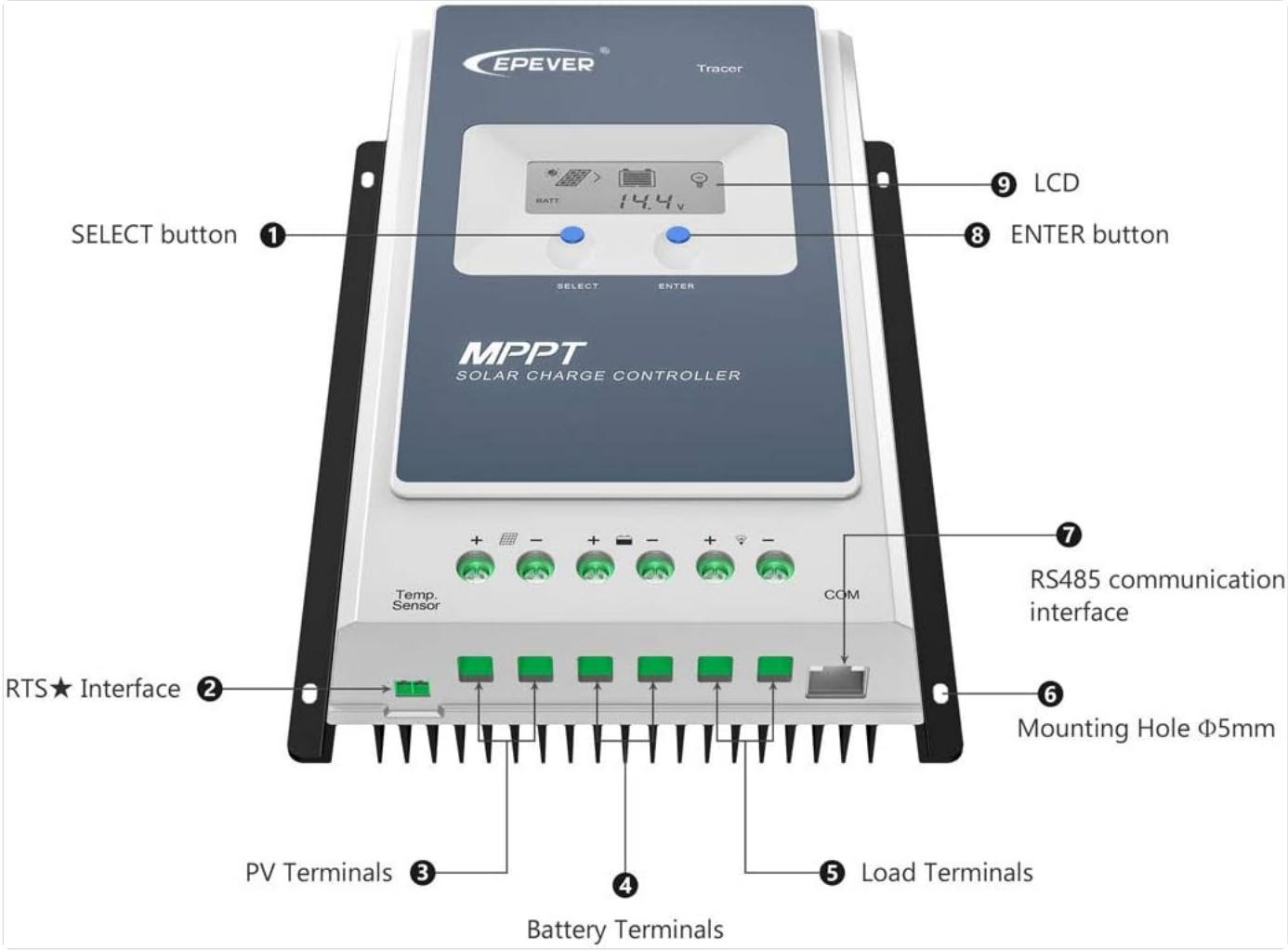


Figure 2.2: Detailed view of the Tracer4210AN controller's ports, including PV Terminals, Battery Terminals, Load Terminals, Temperature Sensor (RTS) Interface, and RS485 communication interface.

3. Setup and Installation

Proper installation is crucial for the safe and efficient operation of your solar charge controller. Always ensure all power sources are disconnected before making any connections.

Installation Steps:

1. **Prepare Wiring:** Ensure all wires are of appropriate gauge for the current and length, and that insulation is intact. Loosen the terminal screws on the controller.
2. **Connect Battery:** **ALWAYS connect the battery to the charge controller first.**Connect the positive (+) and negative (-) terminals of your battery to the corresponding battery terminals on the controller. Ensure a secure connection.
3. **Connect Solar Panel:** Connect the positive (+) and negative (-) terminals of your solar panel(s) to the corresponding PV terminals on the controller.
4. **Connect Load (Optional):** If you are connecting a DC load directly to the controller, connect its positive (+) and negative (-) terminals to the corresponding load terminals.
5. **Connect Remote Temperature Sensor:** Plug the remote temperature sensor into the dedicated RTS interface on the controller. Attach the sensor to the battery surface using tape or adhesive to ensure accurate temperature compensation for charging.
6. **Connect MT52 Remote Meter:** Connect the MT52 remote meter to the COM port on the controller using the provided RJ45 cable. The meter will power on and display information once connected.

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Video 3.1: This video demonstrates the unboxing, component identification, and step-by-step installation process for the Tracer 4210AN MPPT Charge Controller, including connections for the solar panel, battery, load, and remote temperature sensor. It also shows the connection and basic setup of the MT52 remote meter.

4. Operating Instructions

Once installed, the controller will automatically begin operation. The built-in LCD display and the MT52 remote meter provide real-time system status and allow for parameter adjustments.

LCD Display Navigation:

The controller's integrated LCD display shows various parameters. Use the 'SELECT' button to cycle through different display screens and the 'ENTER' button to confirm selections or enter settings menus.

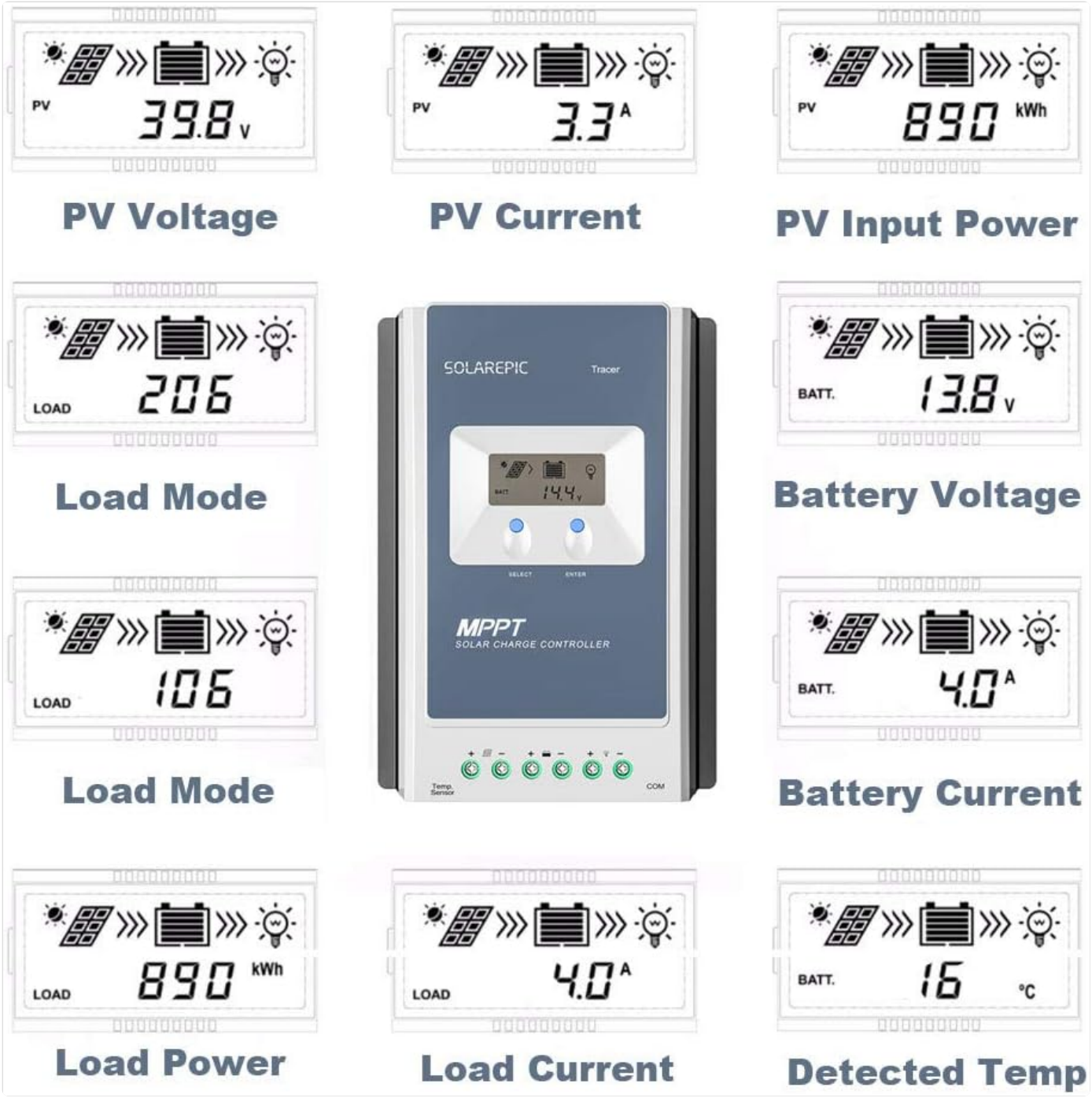


Figure 4.1: Examples of information displayed on the controller's LCD, including PV Voltage, PV Current, PV Input Power, Battery Voltage, Battery Current, Detected Temperature, Load Current, Load Power, and Load Mode.

Setting Parameters via MT52 Meter:

The MT52 remote meter offers a more comprehensive interface for monitoring and adjusting controller parameters.

Navigate through the menus using the arrow keys and 'ENTER' button. Key settings include battery type, charge/discharge limits, and load control modes (e.g., Manual Control, Light On/Off, Light On+Timer, Time Control).

5. Maintenance

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

- **Inspect Connections:** Periodically check all wiring connections for tightness and corrosion. Loose connections can cause overheating and performance issues.
- **Clean Controller:** Keep the controller clean and free from dust and debris. Ensure the heat sink is not obstructed to allow for proper heat dissipation.
- **Battery Inspection:** Regularly inspect your battery for any signs of damage, swelling, or leaks. Ensure battery terminals are clean.
- **Ventilation:** Ensure the installation area has adequate ventilation to prevent overheating of the controller.

6. Troubleshooting

If you encounter issues with your solar charge controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Controller not powering on	Incorrect battery connection; Battery voltage too low.	Verify battery polarity and connections. Ensure battery voltage is within operating range.
No charging from solar panels	PV input reversed; Solar panel not producing power; PV open circuit voltage too low/high.	Check PV polarity. Test solar panel output. Ensure PV voltage is within controller's specifications.
Load not working	Load connection incorrect; Load overcurrent; Load control mode setting.	Check load wiring. Reduce load current. Adjust load control mode via LCD or MT52.
Inaccurate battery readings	Temperature sensor not connected or faulty.	Ensure temperature sensor is properly connected and attached to the battery.

For more complex issues, refer to the detailed troubleshooting section in the full user manual or contact customer support.

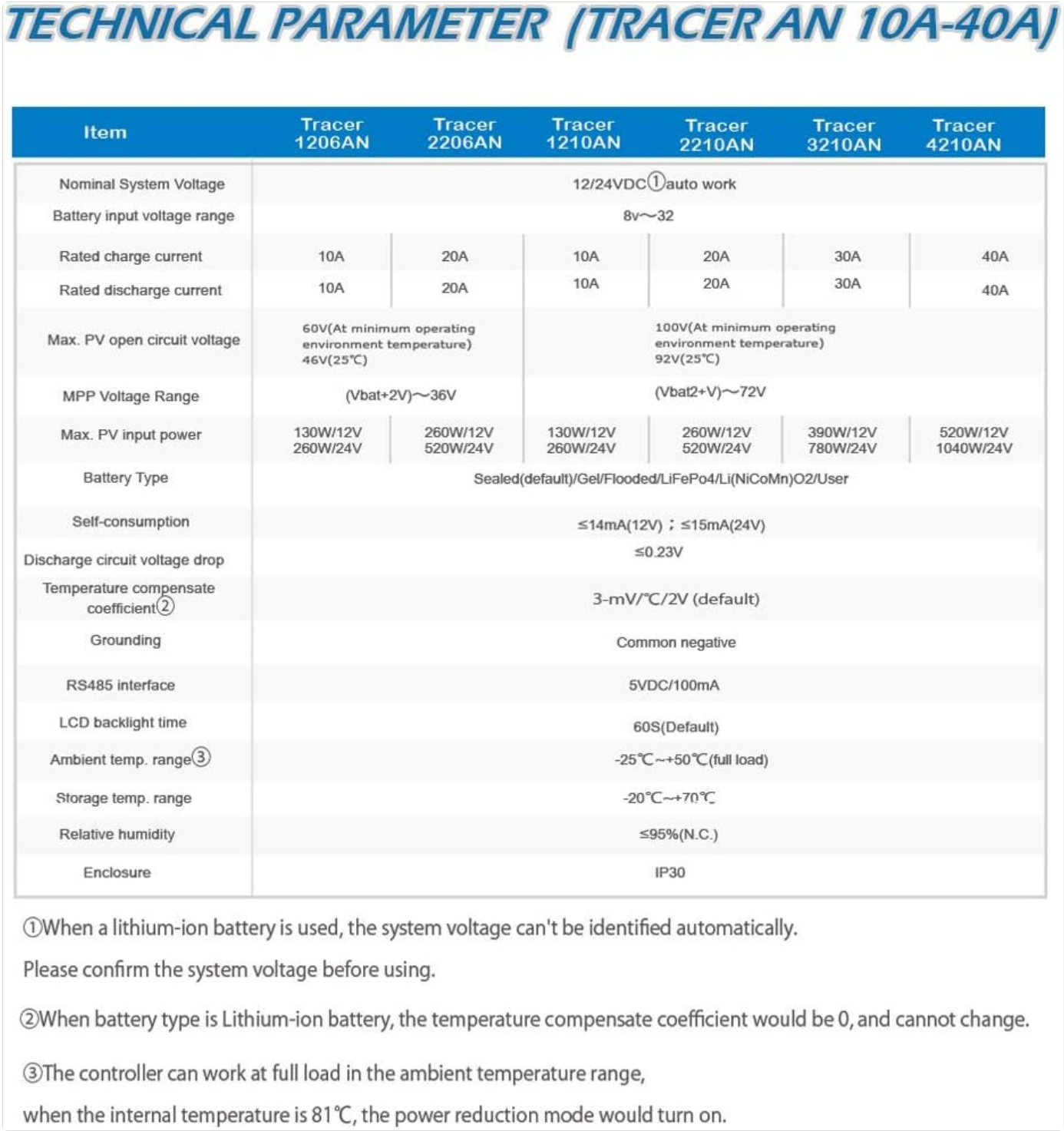
7. Specifications

The following table outlines the technical specifications for the Tracer4210AN MPPT Solar Charge Controller:

Parameter	Value
Nominal System Voltage	12/24VDC auto work
Rated Charge Current	40A
Rated Discharge Current	40A
Battery Input Voltage Range	8-32V
Max. PV Open Circuit Voltage	100V (at minimum operating environment temperature) / 92V (at 25°C environment temperature)

Parameter	Value
MPP Voltage Range	V(BAT)+2V 72V
Max. PV Input Power	520W (12V Battery) & 1040W (24V battery)
Power Terminals	#6 AWG (16mm²)
Operating Temperature	55 Degrees Celsius
Product Dimensions	9.92 x 7.09 x 2.48 inches
Item Weight	5.37 pounds
Display Type	LED

For a complete list of technical parameters, refer to the official product documentation.



TECHNICAL PARAMETER (TRACER AN 10A-40A)

Item	Tracer 1206AN	Tracer 2206AN	Tracer 1210AN	Tracer 2210AN	Tracer 3210AN	Tracer 4210AN
Nominal System Voltage	12/24VDC①auto work					
Battery input voltage range	8v～32					
Rated charge current	10A	20A	10A	20A	30A	40A
Rated discharge current	10A	20A	10A	20A	30A	40A
Max. PV open circuit voltage	60V(At minimum operating environment temperature) 46V(25℃)		100V(At minimum operating environment temperature) 92V(25℃)			
MPP Voltage Range	(Vbat+2V)～36V		(Vbat2+V)～72V			
Max. PV input power	130W/12V 260W/24V	260W/12V 520W/24V	130W/12V 260W/24V	260W/12V 520W/24V	390W/12V 780W/24V	520W/12V 1040W/24V
Battery Type	Sealed(default)/Gel/Flooded/LiFePo4/Li(NiCoMn)O2/User					
Self-consumption	≤14mA(12V)；≤15mA(24V)					
Discharge circuit voltage drop	≤0.23V					
Temperature compensate coefficient②	3-mV/℃/2V (default)					
Grounding	Common negative					
RS485 interface	5VDC/100mA					
LCD backlight time	60S(Default)					
Ambient temp. range③	-25℃～+50℃(full load)					
Storage temp. range	-20℃～+70℃					
Relative humidity	≤95%(N.C.)					
Enclosure	IP30					

①When a lithium-ion battery is used, the system voltage can't be identified automatically.

Please confirm the system voltage before using.

②When battery type is Lithium-ion battery, the temperature compensate coefficient would be 0, and cannot change.

③The controller can work at full load in the ambient temperature range,

when the internal temperature is 81℃, the power reduction mode would turn on.

Figure 7.1: Technical Parameter Table for Tracer AN 10A-40A series, including nominal system voltage, battery input voltage range, rated charge/discharge current, max PV open circuit voltage, MPP voltage range, max PV input power, battery type compatibility, and environmental conditions.

8. Warranty and Support

SolarEpic products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please contact SolarEpic customer service directly. Keep your purchase receipt as proof of purchase for warranty claims.

You can visit the official SolarEpic Store for additional resources and contact information:SolarEpic Store

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