

Temank 140A, 48V

Temank 48V 140A MPPT Solar Charge Controller User Manual

Model: 140A, 48V

Brand: Temank

1. PRODUCT OVERVIEW

The Temank 48V 140A MPPT Solar Charge Controller is designed for efficient energy transfer from solar arrays to battery storage systems. It supports a wide range of open-circuit voltages up to 500V and power up to 6500W, with a broad MPPT voltage range of 60V to 450V DC. The charging current is customizable from 10A to 140A. This controller is ideal for applications requiring high-voltage systems to minimize energy loss over long transmission distances and is compatible with various 48V battery types, including Lead-acid and Lithium batteries.



Figure 1.1: Front view of the Temank 48V 140A MPPT Solar Charge Controller, showing the LCD display and control buttons.

140A MPPT Charge Controller

- ONLY Support 48V system
- Max. PV Array Power 6500W
- Max.PV Array Open Circuit Voltage 500V
- ONLY fit for 48V Lead-acid and Lithium Battery
- Configurable battery charging current via LCD setting

6500W

Max.PV Power

500V

Max.PV VOC

140A

Max.PV Current



Figure 1.2: Overview of the 140A MPPT Charge Controller's key features, highlighting its 48V system support, 6500W max PV array power, 500V max PV VOC, compatibility with Lead-acid and Lithium batteries, and configurable charging current.

2. SAFETY PRECAUTIONS

Please read and understand all safety instructions before installing or operating the solar charge controller. Failure to follow these instructions may result in electrical shock, fire, or serious injury.

- Ensure all wiring is correctly sized and connections are secure to prevent overheating and potential fire hazards.
- Always disconnect power from the solar panels and batteries before performing any installation, maintenance, or troubleshooting.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- Do not attempt to disassemble or repair the controller. Refer all servicing to qualified personnel.
- Wear appropriate personal protective equipment (PPE), including insulated gloves and eye protection, when working with electrical systems.

3. SETUP GUIDE

3.1 Unboxing and Initial Inspection

Carefully remove the solar charge controller from its packaging. Inspect the unit for any visible damage that may have occurred during shipping. Verify that all included components, as listed in the product packaging, are present.

3.2 Wiring Diagram

Proper wiring is crucial for the safe and efficient operation of your solar power system. The following diagram illustrates the recommended connection sequence. Ensure all components are rated appropriately for your system's voltage and current requirements.

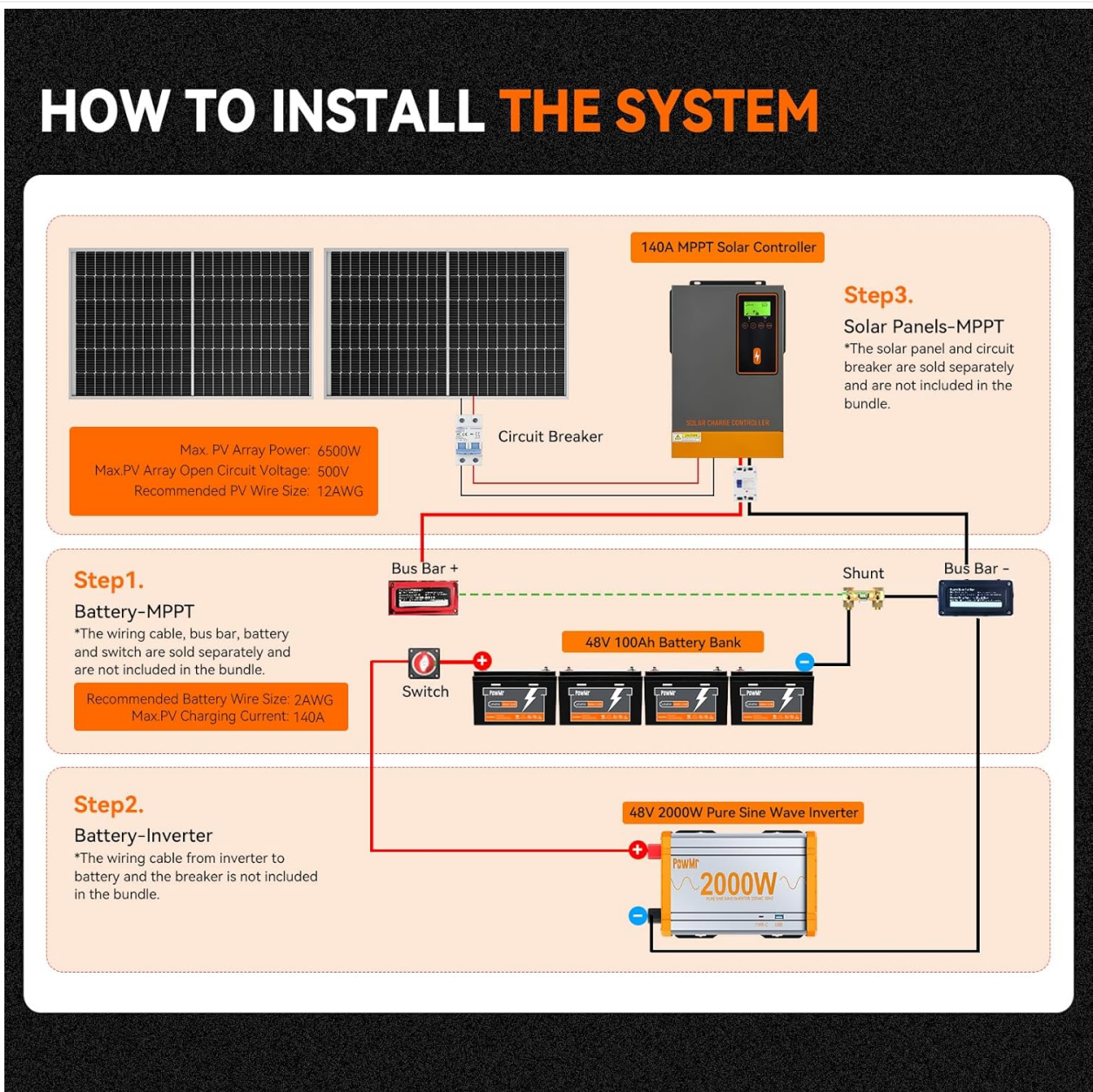


Figure 3.1: Detailed wiring diagram for the solar power system. Step 1 shows the battery bank connection to the MPPT controller, recommending 2AWG wire for the 140A charging current. Step 2 illustrates the battery-inverter connection. Step 3 details the solar panel connection to the MPPT controller, specifying a maximum PV array power of 6500W, 500V open-circuit

voltage, and recommending 12AWG PV wire size. Circuit breakers, bus bars, and shunts are shown as separate components not included with the controller.

Connection Sequence:

1. **Connect the Battery:** Connect the battery bank to the controller's battery terminals. Ensure correct polarity. Recommended battery wire size is 2AWG for the 140A charging current.
2. **Connect the Inverter (Optional):** If using an inverter, connect it to the battery bank. The wiring cable from the inverter to the battery and the breaker are not included.
3. **Connect the Solar Panels:** Connect the solar panel array to the controller's PV input terminals. The maximum PV array power is 6500W, and the maximum PV open-circuit voltage is 500V. For optimal results, 12AWG wire is recommended for photovoltaic connections. Ensure all solar panels are connected in series to meet the controller's voltage requirements.

3.3 Mounting the Controller

Mount the controller vertically on a solid surface, ensuring adequate clearance around the unit for proper ventilation. Avoid mounting in direct sunlight or areas with high humidity. Use appropriate fasteners for the mounting surface.

4. OPERATING INSTRUCTIONS

4.1 LCD Display Overview

The solar controller features a large LCD screen that provides real-time monitoring of system parameters. Use the 'UP' and 'DOWN' keys to navigate through the display information.

LARGE LCD SCREEN



The LCD information will be switched by pressing the "UP" or "DOWN" key. The selectable information is switched below: PV voltage, charging current, charging power, battery voltage, and main CPU Version.

The maximum charging current can be set to
10A/20A/30A/40A/50A/60A/70A/80A/90A/100A/110A/120A/130A/140A

Figure 4.1: The large LCD screen displaying input PV voltage, battery voltage, and charging status. The screen provides comprehensive monitoring capabilities, including PV voltages, PV current, PV power, battery voltage, charge current, date, power generation capacity, error codes, and version number.

Displayed Information:

- PV Voltage and Current
- PV Power (kW)
- Battery Voltage and Charge Current (Amps)
- Daily and Total Power Generation (kWh)
- Date and Time
- Error Codes (if any)
- Firmware Version

4.2 Battery Compatibility and Charging Modes

The 140A solar charge controller is compatible with a variety of 48V batteries, including Sealed, Gel, Flooded, and Lithium (LiFePO4 and Lithium-Ion). It also supports user-customized charging parameters for other battery types.

COMPATIBLE WITH ALL POPULAR 48V BATTERIES



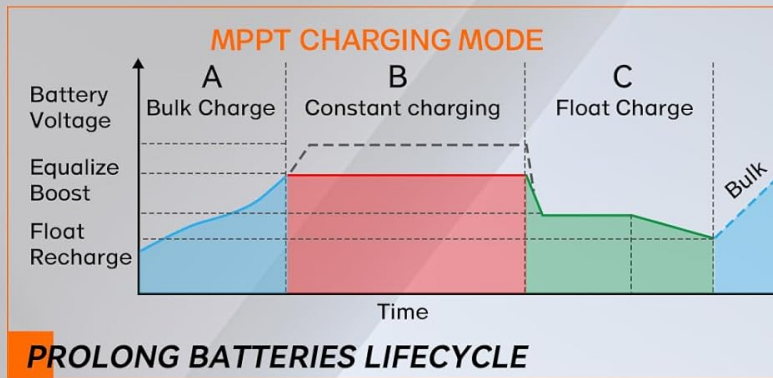
Figure 4.2: Visual representation of compatible 48V battery types: GEL, FLD (Flooded), AGM, LI (LiFePO₄), and SLA (Sealed Lead-acid). A table further clarifies supported battery types as Lead Acid Battery, Lithium Battery, and User-Defined.

The controller utilizes a three-stage charging process to prolong battery lifecycle:

1. **Boost Charge:** Rapidly charges the battery to its bulk charging voltage.
2. **Bulk Charge (Constant Charging):** Maintains a constant charging current until the battery reaches a set voltage.
3. **Float Charge:** Maintains the battery at a full state of charge by providing a small, constant voltage.
4. **Equalization Charge:** A periodic overcharge to balance battery cells (Note: Equalization charge is once a month).

THREE-STAGE CHARGING

Boost Charge → Bulk Charge → Float Charge → Equalization Charge



Note: Equalization charge is once a month.



Figure 4.3: Graph illustrating the three-stage MPPT charging mode (Boost Charge, Bulk Charge, Float Charge) and Equalization Charge, designed to prolong battery lifecycle.

4.3 Setting Charging Current

The maximum charging current can be set via the LCD display. Available settings include 10A, 20A, 30A, 40A, 50A, 60A, 70A, 80A, 90A, 100A, 110A, 120A, 130A, and 140A. Refer to the controller's menu for specific instructions on how to adjust this parameter to match your battery bank's capacity and charging requirements.

5. MAINTENANCE

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

- **Cleaning:** Periodically clean the exterior of the controller to remove dust and debris. Ensure ventilation openings are clear.
- **Connection Checks:** Annually inspect all wiring connections for tightness and corrosion. Loose connections can lead to power loss and overheating.

- **Battery Inspection:** Regularly check battery terminals for corrosion and ensure proper electrolyte levels for flooded batteries.
- **System Performance Monitoring:** Utilize the LCD screen to monitor system performance regularly. Note any unusual readings or error codes.

6. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your solar charge controller.

Problem	Possible Cause	Solution
No power to controller/LCD off	Loose battery connection, no battery power, reversed polarity.	Check battery connections and polarity. Ensure battery has sufficient charge.
No charging from PV	Low PV voltage, incorrect PV connection, shaded panels, PV input current limit reached.	Verify PV voltage is within MPPT range (60V-450V). Check PV wiring and ensure panels are not shaded. Confirm total PV input current does not exceed 18A.
Overheating/Fans constantly running	High ambient temperature, heavy load, insufficient ventilation.	Ensure adequate airflow around the controller. Reduce load if possible. Consider relocating to a cooler area.
Battery not fully charging	Incorrect battery type setting, low PV input, battery degradation.	Check battery type settings on LCD. Ensure sufficient solar input. Test battery health.
Error Code displayed	Specific system fault (e.g., overvoltage, overcurrent, short circuit).	Refer to the controller's internal error code list (accessible via LCD) for specific fault identification and resolution steps. The controller has self-protection and self-recovery functions.

7. TECHNICAL SPECIFICATIONS

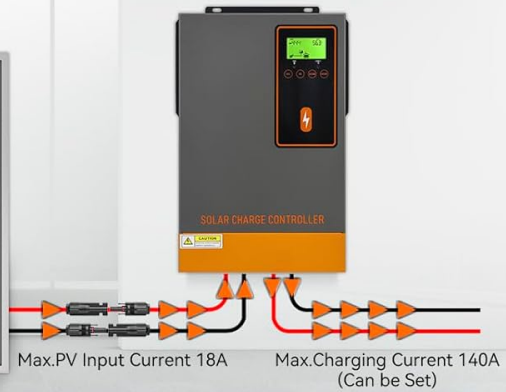
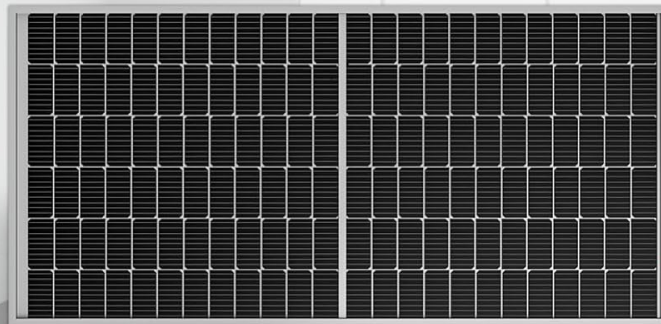
Key technical specifications for the Temank 48V 140A MPPT Solar Charge Controller:

Specification	Value
Max. PV Open-Circuit Voltage	500V
Max. PV Array Power	6500W
MPPT Voltage Range	60V to 450V DC

Specification	Value
Max. Charging Current	140A (Configurable 10A-140A)
Max. PV Input Current	18A
System Voltage	48V
Compatible Battery Types	Lead-acid (Sealed, Gel, Flooded), Lithium (LiFePO4, Lithium-Ion), User-customize
Display Type	LCD
Cooling	Dual smart fans (Forced Air Cooling)
Protection Features	Undervoltage, Overvoltage, Overcharge, Overcurrent, Overheating, Short Circuit
Dimensions (Package)	17.32 x 13.3 x 7.48 inches
Item Weight	14.08 pounds

SOLAR PANEL SPECIFICATIONS

MAX.PV OPEN-CIRCUIT VOLTAGE: 500V



Max. PV Array Power	6500W
Max.PV Array Open Circuit Voltage	500VDC
PV Array MPPT Voltage Range	60~450VDC
PV Wire Size:	12AWG

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of charger
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

Figure 7.1: Detailed solar panel specifications, including Max. PV Array Power (6500W), Max. PV Array Open Circuit Voltage (500VDC), Max. PV MPPT Voltage Range (60-450VDC), and PV Wire Size (12AWG). It also notes that the open circuit voltage of PV modules should not exceed the charger's max PV array open circuit voltage and should be higher than the min. battery voltage.



Figure 7.2: Illustrative diagram showing how the Temank MPPT Controller integrates into a home solar power system, connecting solar panels to a battery system and an inverter to power household appliances.

8. WARRANTY AND CUSTOMER SUPPORT

Temank products are manufactured to high-quality standards and are backed by a manufacturer's warranty. For specific warranty details, including coverage period and terms, please refer to the warranty card included with your product or contact Temank customer support directly.

For technical assistance, troubleshooting, or any inquiries regarding your Temank 48V 140A MPPT Solar Charge Controller, please contact Temank customer support through their official website or the retailer where the product was purchased. Please have your product model and purchase date available when contacting support.

