SOGTICPS SY6048

SOGTICPS 60A MPPT Solar Charge Controller User Manual

Model: SY6048

1. Product Overview

The SOGTICPS SY6048 is a 60A MPPT solar charge controller designed for 12V, 24V, 36V, and 48V battery systems. It features an LCD display, dual USB 5V charging ports, and is compatible with various battery types including Seal, GEL, Flooded, and LifePO4. This controller integrates advanced MPPT technology for efficient solar energy utilization and includes multiple protection features to ensure safe operation of your solar system.

Figure 1: Front view of the SOGTICPS 60A MPPT Solar Charge Controller, showing the LCD display and control buttons.

2. Key Features

- **Advanced MPPT Technology:** Utilizes a maximum power point tracking algorithm for high efficiency (tracking efficiency not less than 99.5%).
- **Automatic Voltage Recognition:** Automatically detects 12V, 24V, 36V, and 48V battery systems.
- **Multi-functional LCD Display:** Backlit display shows operation data, working status, and clock.
- **Multiple Operating Modes:** Includes charging mode, light control mode, light control + time delay control mode, universal control mode, manual control mode, and timing control mode.
- **Comprehensive Safety Protections:** Features battery over-voltage, over-current, power failure, overcharge, deep discharge, reverse connection, and overheat temperature protection.
- **Dual USB Ports:** Provides 5V charging output.
- **Battery Compatibility:** Supports Seal, GEL, Flooded, and LifePO4 battery types.

3. Setup and Installation

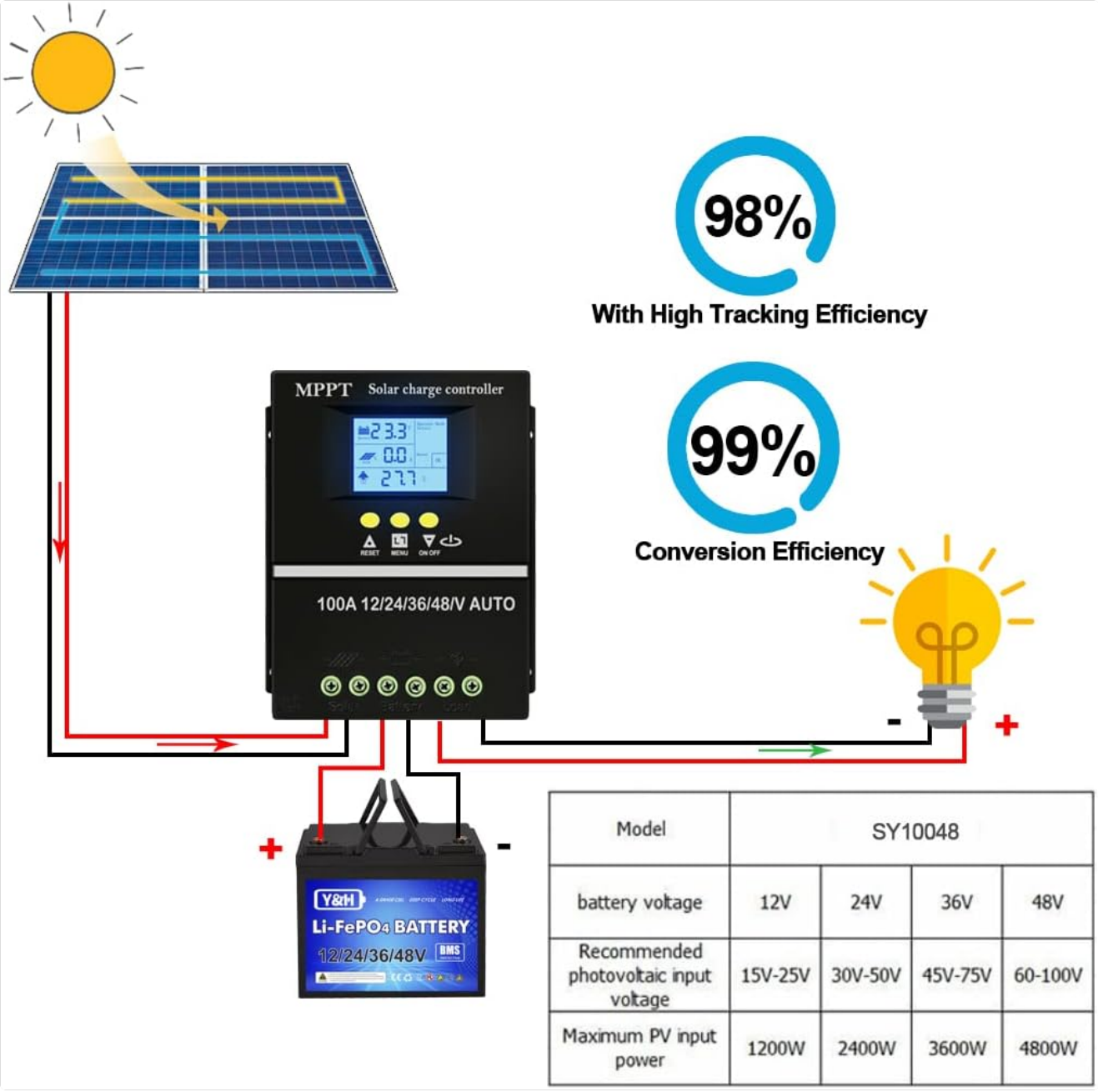
Proper installation is crucial for the safe and efficient operation of your solar charge controller. Please follow these steps carefully.

3.1 Connection Sequence

Always connect components in the specified order to prevent damage to the controller or batteries.

1. **Connect the Battery:** First, connect the battery to the controller. Ensure correct polarity (+ to + and - to -). The controller will automatically detect the battery voltage.
2. **Connect the Solar Panel:** Next, connect the solar panel array to the controller. Ensure correct polarity.
3. **Connect the DC Load:** Finally, connect your DC load to the controller's load terminals.

Disconnection Sequence: When disconnecting, reverse the order: 1) DC load, 2) Solar panel, 3) Battery.



Model	SY10048			
battery voltage	12V	24V	36V	48V
Recommended photovoltaic input voltage	15V-25V	30V-50V	45V-75V	60-100V
Maximum PV input power	1200W	2400W	3600W	4800W

Figure 2: Diagram illustrating the correct connection sequence for the solar panel, controller, and battery. Note the high tracking and conversion efficiencies.

3.2 Mounting

Mount the controller in a cool, dry, and well-ventilated area, away from direct sunlight and heat sources. Ensure there is sufficient space around the controller for air circulation.

Figure 3: Dimensions of the solar charge controller, useful for planning installation space.

4. Operating Instructions

4.1 LCD Display Interface

The LCD provides real-time data and status information. Familiarize yourself with the display areas:

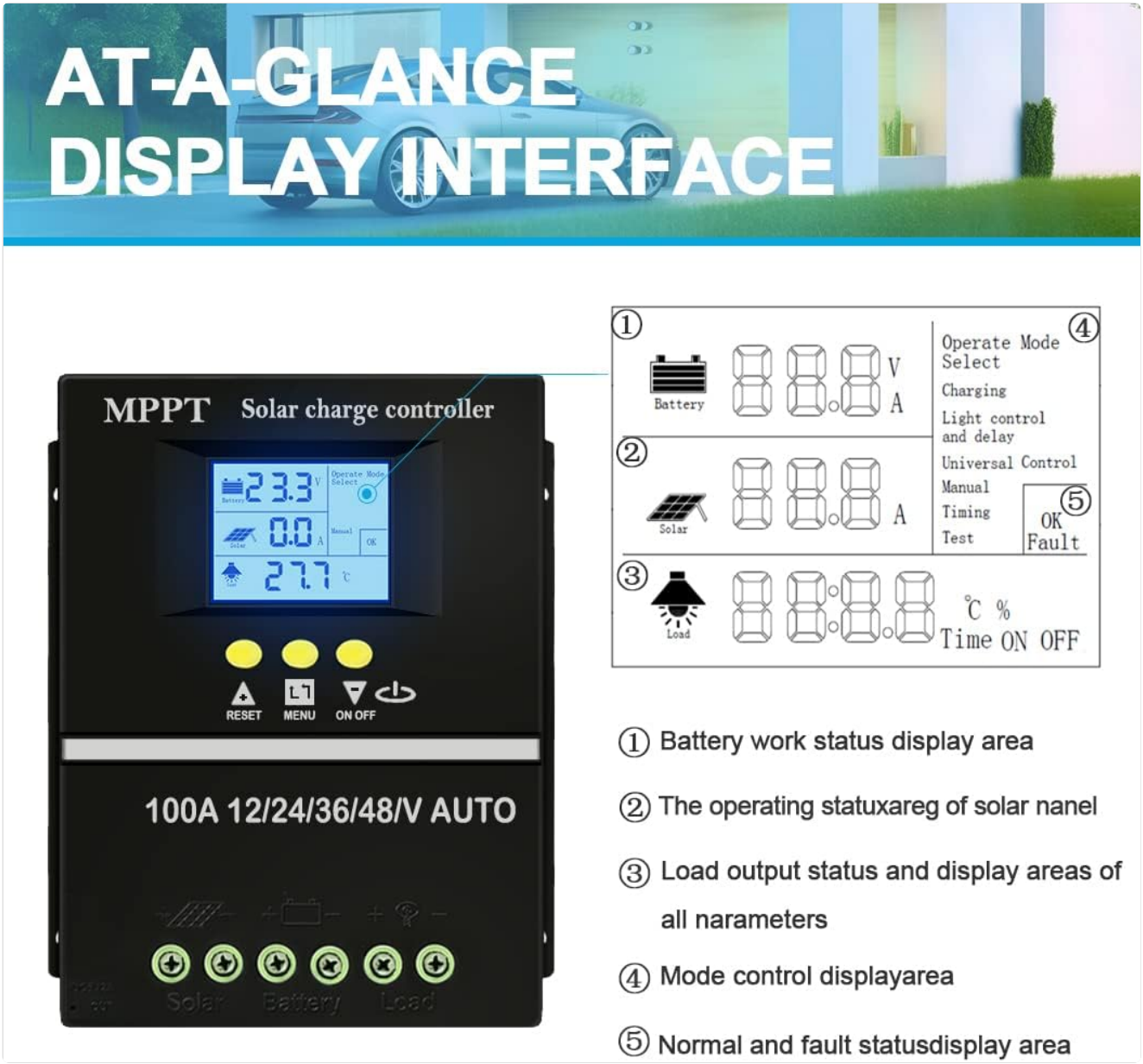


Figure 4: Detailed view of the LCD display interface, showing battery status, solar panel operation, load output, mode control, and fault status areas.

- **Battery Work Status Display Area:** Shows battery voltage and charging/discharging current.
- **Operating Status of Solar Panel:** Displays PV charging current.
- **Load Output Status and Parameters:** Shows load current, product working temperature, and delay time.
- **Mode Control Display Area:** Indicates the currently selected operating mode (e.g., Charging, Light control, Universal control, Manual, Timing, Test).
- **Normal and Fault Status Display Area:** Shows OK for normal operation or fault codes if an issue occurs.

4.2 Operating Modes

The controller supports various operating modes to suit different application needs:

Figure 5: Illustration of the different load working modes available on the controller, including Manual, Solar Light Control (Sunset-Sunrise), and Solar Light Time Control.

- **Charging Mode:** Standard battery charging.
- **Light Control Mode:** Load turns on at sunset and off at sunrise.
- **Light Control + Time Delay Control Mode:** Load turns on at sunset and stays on for a set duration.
- **Universal Control Mode:** Load is always on.
- **Manual Control Mode:** Load can be manually turned on/off.
- **Timing Control Mode:** Load operates according to a set schedule.

Refer to the controller's buttons (RESET, MENU, ON/OFF) to navigate and select desired modes and parameters.

4.3 Battery Charging Stages

The controller employs a multi-stage charging algorithm for optimal battery health and longevity.

Figure 6: Visual representation of the four charging stages: Bulk Charge, Boost Charge, Float Charge, and Equalization Charge.

- **Bulk Charge:** Charges the battery at maximum current until voltage reaches the boost voltage.
- **Boost Charge:** Charges at a constant voltage for a set period to ensure full charge.
- **Float Charge:** Maintains the battery at a constant voltage to compensate for self-discharge.
- **Equalization Charge:** Periodically overcharges flooded batteries to balance cell voltages. (Applicable for Flooded batteries only).

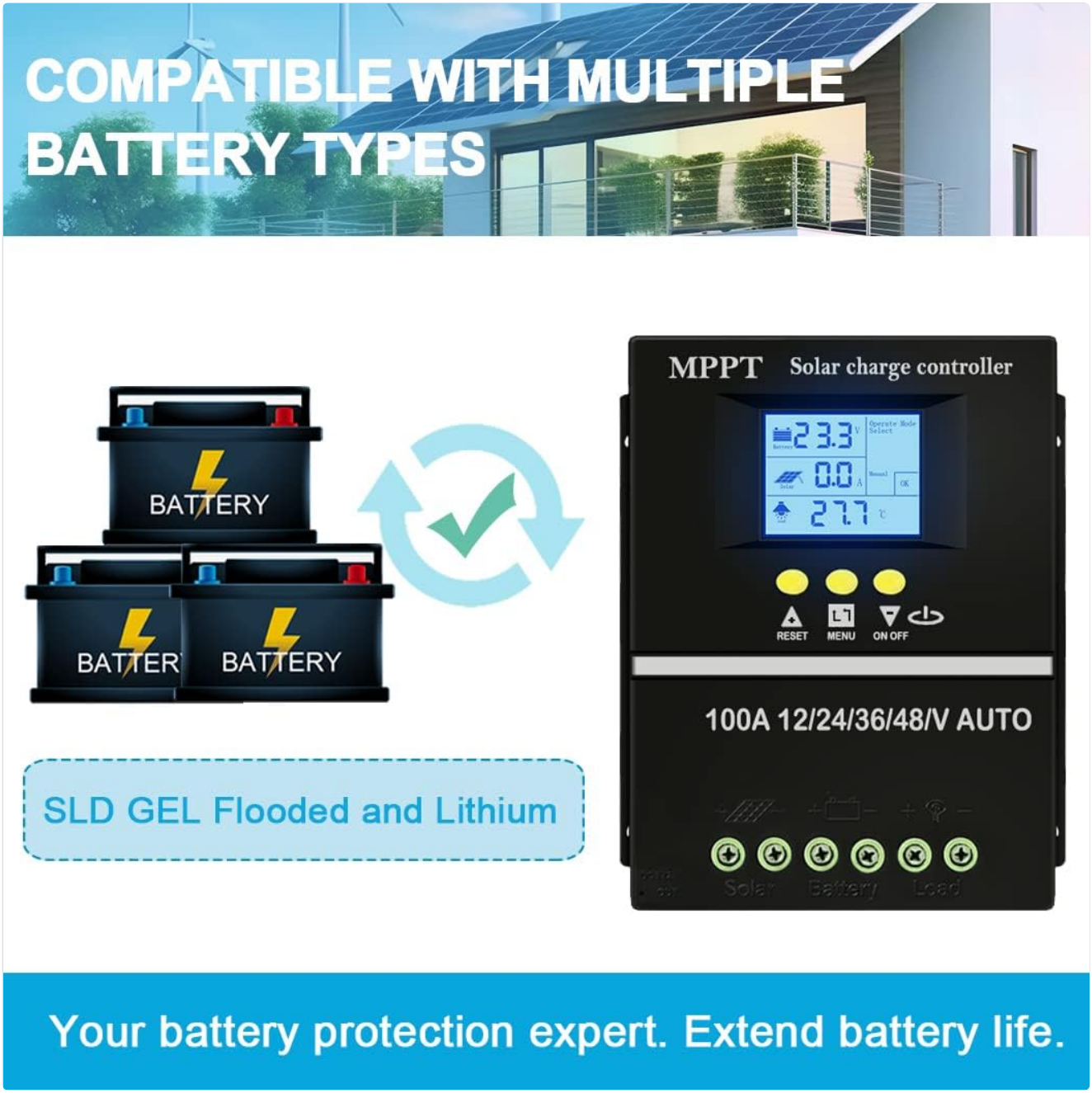


Figure 7: The controller is compatible with Seal, GEL, Flooded, and Lithium (LiFePO4) battery types.

5. Maintenance

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Loose connections can cause overheating and damage.
- **Clean the Controller:** Keep the controller clean and free from dust and debris. Use a dry cloth for cleaning. Do not use liquids.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow proper heat dissipation.
- **Battery Inspection:** Regularly check your batteries for signs of damage, swelling, or leakage. Ensure battery terminals are clean.
- **Environmental Conditions:** Ensure the controller is operating within its specified temperature and humidity ranges.

6. Troubleshooting

This section addresses common issues you might encounter with your solar charge controller.

Problem	Possible Cause	Solution
Controller display is off or blank.	Battery not connected or low voltage; reverse polarity connection.	Ensure battery is connected first and has sufficient voltage. Check battery polarity.
No charging current from solar panels.	Solar panel not connected; insufficient sunlight; reverse polarity of solar panel.	Check solar panel connections and polarity. Ensure adequate sunlight.
Load not working.	Load overcurrent; battery low voltage protection; load short circuit; incorrect operating mode.	Reduce load. Charge battery. Check load wiring for short circuits. Verify operating mode settings.
Battery not fully charged.	Insufficient solar input; battery aging; incorrect battery type setting.	Increase solar panel capacity or exposure. Consider battery replacement. Verify battery type setting.

If the problem persists, please contact customer support.

7. Specifications

Parameter	Value
Brand	SOGTICPS
Model Number	SY6048
Charging Port Type	USB (Dual 5V)
Package Dimensions	8.27 x 7.99 x 2.95 inches
Item Weight	1.3 pounds
Color	Black
Voltage (System)	12V/24V/36V/48V Auto
Display Type	LCD
Max PV Input Voltage	100V
Rated Charge Current	60A
Battery Compatibility	Seal, GEL, Flooded, LifePO4

8. Warranty and Support

SOGTICPS offers a 1-year warranty for this product. For technical support or any inquiries, please feel free to contact our team. Our engineers are available to provide advice and solutions to any problems you may encounter. For additional information, you may refer to the officialUser Guide (PDF).