ZXSYYDS 300W 12V

ZXSYYDS MPPT Wind Solar Hybrid Charge Controller

Model: 300W 12V System User Manual

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your ZXSYYDS MPPT Wind Solar Hybrid Charge Controller. This controller is designed for hybrid wind and solar street light systems, and with appropriate settings, can also be used in household systems. It ensures optimal configuration and management of various renewable energy resources.

The controller features high performance and stable chip control, automatically matching with 12V/24V/48V sealed battery voltages. It is compatible with both sealed lead-acid/GEL batteries and lithium batteries (Ternary Lithium, Lithium iron). An LCD displays real-time voltage and current parameters for wind, solar, and load. The internal circuit board is sprayed for protection against dust, moisture, and static electricity. Wind charging utilizes MPPT boost technology, while solar charging includes intelligent disconnection and external dump-load resistance.

Please read this manual thoroughly before installation and operation to ensure safe and efficient use of the product.

2. Product Features

- **Hybrid Charging Capability:** Supports both wind generators and solar panels for comprehensive energy management.
- **Wide Battery Compatibility:** Compatible with 12V, 24V, or 48V battery systems, including sealed lead-acid, GEL, Ternary Lithium, and Lithium iron batteries.
- **Informative LCD Display:** Intelligent color screen displays battery voltage, charging current, and other parameters for easy monitoring and adjustment.
- **Intelligent Stability System:** Automatically sets parameters based on selected battery type, with

options for user customization. Ensures stable charging voltage.

- **Multiple Protections:** Includes solar reverse protection, overcharge protection, undervoltage protection, overload protection, battery reverse connection protection, open circuit protection, and thunder protection.
- **MPPT Wind Charging:** Utilizes Maximum Power Point Tracking (MPPT) for efficient wind turbine charging.
- **PWM Unloading:** Features PWM unloading and overcurrent control for stable operation.
- **Durable Design:** Inner circuit board is sprayed to prevent dust, moisture, and static electricity. Aluminum profile heat dissipation for self-cooling.

3. Product Overview and Components

The ZXSYYDS MPPT Wind Solar Hybrid Charge Controller is designed with user-friendly controls and clear indicators. Below is an overview of its main components and their functions.

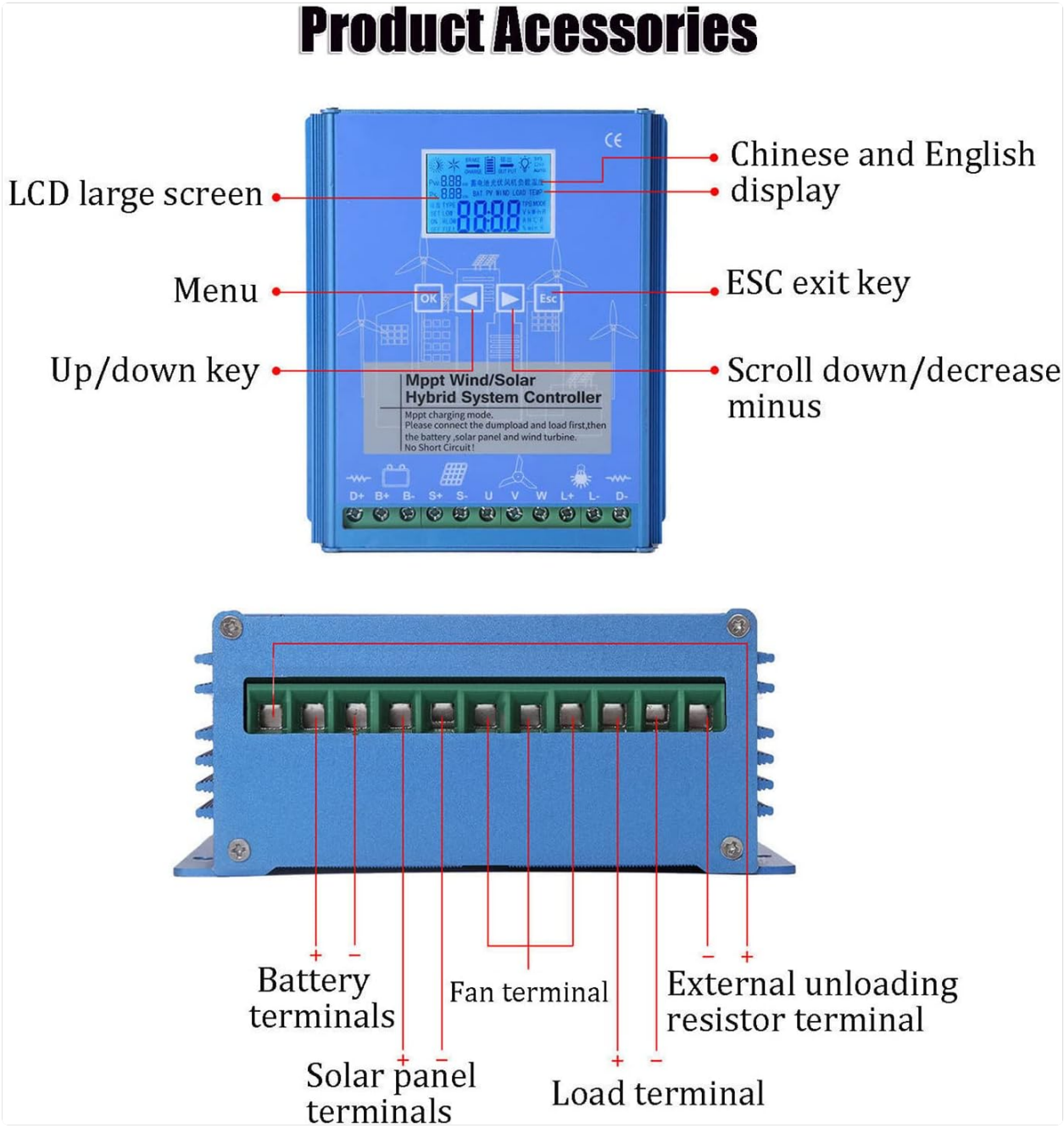


Figure 3.1: Controller Components. This image shows the front panel of the controller with its LCD screen, control buttons, and various terminal connections labeled. Key components include the LCD screen, menu button, OK button, up/down keys, ESC exit key, scroll down/decrease minus button, battery terminals, solar panel terminals, fan terminal, load terminal, and external unloading resistor terminal.

- **LCD Large Screen:** Displays system parameters, status, and settings. Supports both Chinese and English display.
- **Menu Button:** Used to access and navigate through the controller's menu options.
- **OK Button:** Confirms selections or enters sub-menus.
- **Up/Down Keys:** Used to navigate through menu options or adjust parameter values.
- **ESC Exit Key:** Used to exit menus or cancel operations.
- **Battery Terminals:** Connect to the battery bank.
- **Solar Panel Terminals:** Connect to the solar PV array.
- **Fan Terminal:** Connection point for the wind turbine.
- **Load Terminal:** Connects to DC loads.
- **External Unloading Resistor Terminal:** Connects to the external dump-load resistor for wind turbine overcharge protection.

4. Specifications

Parameter	Value
Rated System Voltage	12V/24V/48V (Auto-matching)
Rated Wind Power (for 300W 12V model)	300W
No-load Current (DC)	≤0.05A
Controller Power Supply Mode	Battery or Photovoltaic Panel
Control Mode	Wind turbine MPPT boost charging, PWM unloading, PWM overcurrent
Display Mode	LCD display
Display Parameters	Voltage, Battery Power, Current, Power, Load Mode, Temperature, etc.
Heat Dissipation Method	Aluminum profile heat dissipation and self-cooling
Working Temperature and Humidity Range	-20°C to +55°C / 35% to 85% RH
Item Weight	6.6 pounds (approx. 3 kg)
Package Dimensions	3.94 x 3.94 x 3.94 inches (approx. 10 x 10 x 10 cm)

5. Safety Instructions

- **Electrical Hazard:** Always disconnect power from the battery, solar panels, and wind turbine before installing or servicing the controller. High voltages can be present and cause electric shock.
- **Correct Polarity:** Ensure all connections are made with correct polarity. Reverse polarity can damage the controller and connected components.
- **Proper Wiring:** Use appropriate wire gauges for all connections to prevent overheating and ensure efficient power transfer.
- **Ventilation:** Install the controller in a well-ventilated area to allow for proper heat dissipation.

- **Environmental Protection:** Avoid exposing the controller to direct sunlight, rain, or excessive moisture.
- **Battery Safety:** Work with batteries in a well-ventilated area. Wear eye protection and gloves. Do not short-circuit battery terminals.
- **Wind Turbine Safety:** Wind generators can produce high voltages, especially when operating. Exercise extreme caution during wiring. Only connect the wind generator when the controller is working and the wind turbine is rotating at high speed.
- **Load Capacity:** Ensure that connected loads do not exceed the rated current capacity of the controller.

6. Setup and Installation

Follow these steps carefully for proper installation of the hybrid charge controller. Always ensure power is disconnected before making any connections.

6.1 General Wiring Diagram

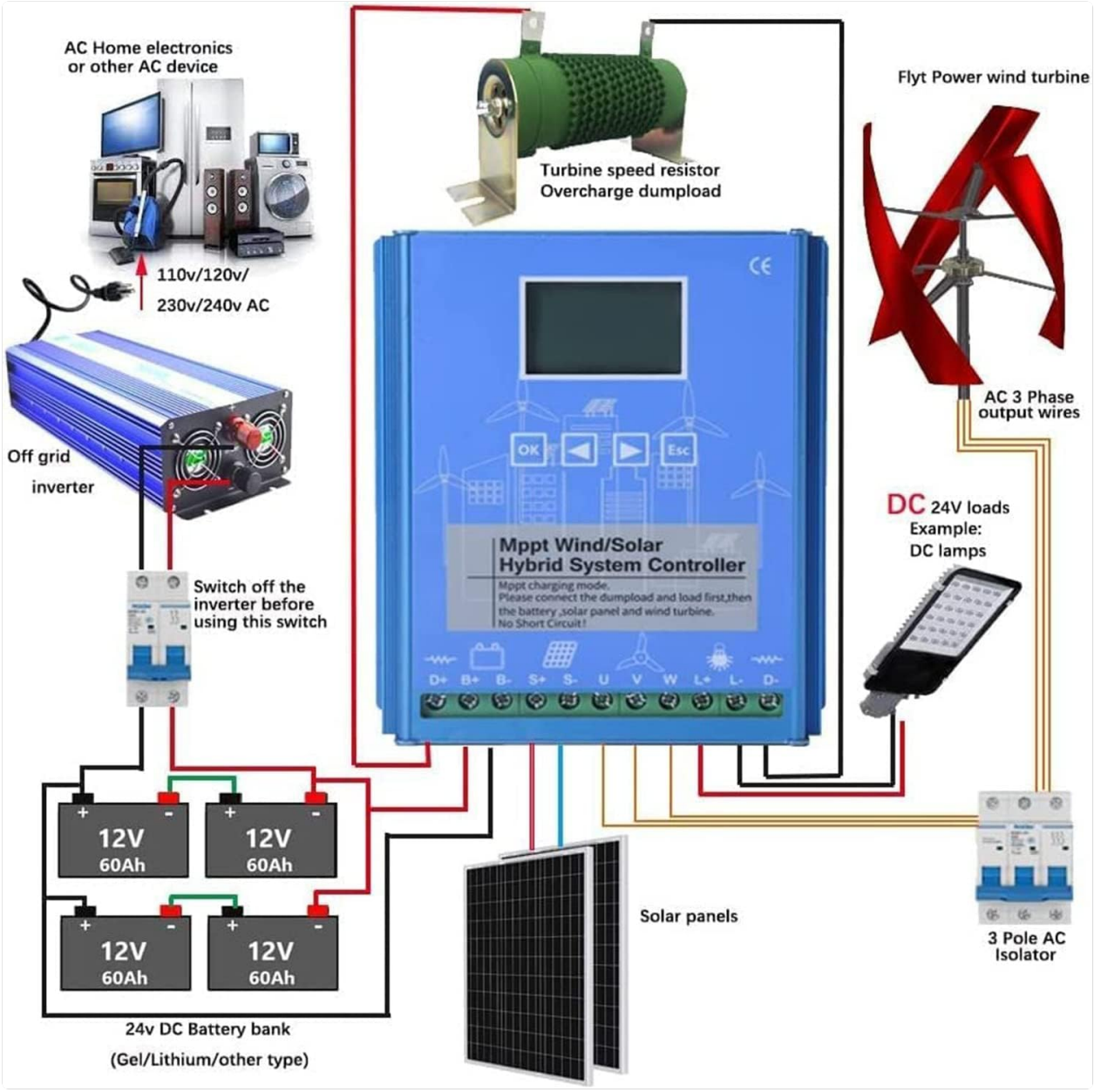


Figure 6.1: Full System Wiring Diagram. This diagram illustrates the complete connection of the MPPT Wind Solar Hybrid System Controller to solar panels, a wind turbine, battery bank, external dump-load resistor, off-grid inverter, and DC loads. Note the recommended circuit breakers and isolators for safety.

This diagram provides an overview of how the controller integrates into a complete wind-solar hybrid system. Ensure all components are correctly sized and protected with appropriate circuit breakers or fuses.

6.2 Connection Sequence

It is crucial to connect components in the specified order to prevent damage to the controller or other system parts. The general sequence is: **Battery → Load → Solar Panel → Wind Generator**.

6.3 Detailed Wiring Steps

2.2.2 Load Wiring



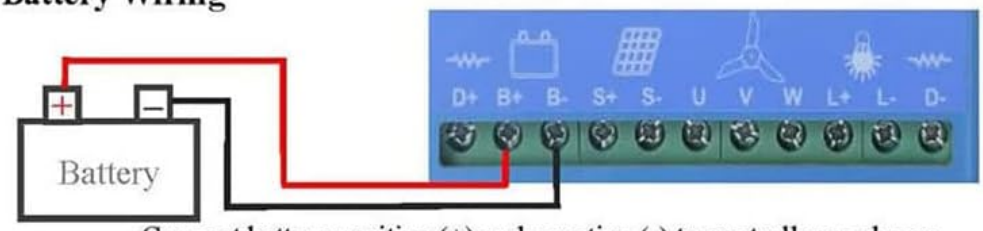
Connect loads positive(+) and negative(-) to controller as shown.

⚠Be careful of avoiding short circuit when wiring loads.

Anti-connecting of loads positive (+) and negative(-) is forbidden.

Loads current should not exceed the rating loads current.

2.2.3 Battery Wiring

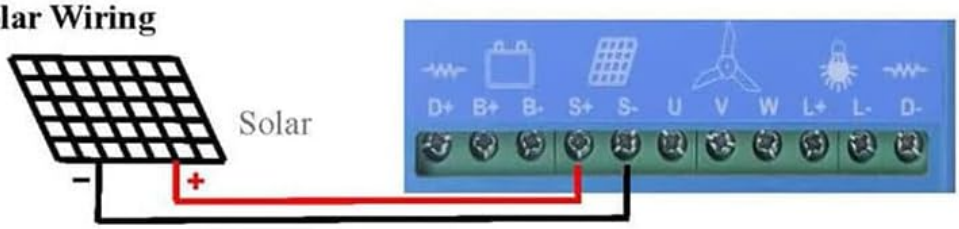


Connect battery positive (+) and negative (-) to controller as shown.

⚠ The solar PV array may produce high voltages in sunlight. Be careful of electric shock when wiring.

Although controller has the protection of solar anti-reverse, but anti-connecting of positive (+) and negative (-) is forbidden.

2.2.4 Solar Wiring



Connect solar positive (+) and negative (-) to controller as shown.

⚠ The solar PV array may produce high voltages in sunlight. Be careful of electric shock when wiring.

Although controller has the protection of solar anti-reverse, but anti-connecting of positive (+) and negative (-) is forbidden.

2.2.5 Wind Generator Wiring



Connect wind generator to controller as shown.

⚠ The wind generator could produce high voltages. Be careful of electric shock.

⚠ When it's breeze or windless, connection of wind generator and controller would be safer . Only when controller is working, high-speed rotate wind generator could be connected.

Figure 6.2: Detailed Wiring Connections. This image provides close-up diagrams for connecting the load, battery, solar panels, and wind generator to the controller, emphasizing correct polarity and safety warnings.

1. **Load Wiring:**
    - Connect the load's positive (+) and negative (-) terminals to the controller's load terminals as shown in Figure 6.2.
    - **Caution:** Avoid short circuits when wiring loads.
    - **Important:** Anti-connecting of load's positive (+) and negative (-) is forbidden.
    - **Note:** Loads current should not exceed the rated load current of the controller.
2. **Battery Wiring:**
    - Connect the battery's positive (+) and negative (-) terminals to the controller's battery terminals as shown in Figure 6.2.
    - **Warning:** The solar PV array may produce high voltages in sunlight. Be careful of electric shock when wiring.
    - **Important:** Although the controller has protection against solar anti-reverse connection, anti-connecting of positive (+) and negative (-) is forbidden for the battery.
3. **Solar Wiring:**
    - Connect the solar panel's positive (+) and negative (-) terminals to the controller's solar terminals as shown in Figure 6.2.
    - **Warning:** The solar PV array may produce high voltages in sunlight. Be careful of electric shock when wiring.
    - **Important:** Although the controller has protection against solar anti-reverse connection, anti-connecting of positive (+) and negative (-) is forbidden.
4. **Wind Generator Wiring:**
    - Connect the wind generator to the controller's wind terminals as shown in Figure 6.2.
    - **Warning:** The wind generator can produce high voltages. Be careful of electric shock.
    - **Caution:** When there is a breeze or wind, the connection of the wind generator and controller should be done carefully. Only connect the wind generator when the controller is working and the wind turbine is rotating at high speed.

7. Operating Instructions

The controller features an intuitive LCD screen and buttons for easy operation.



Figure 7.1: LCD Screen and Controls. This image highlights the LCD screen and its ease of navigation, along with key features like DC load output modes and various protection mechanisms.

7.1 Initial Power-Up

Once all connections are secure and verified, the controller will power on automatically when connected to the battery or solar panel. The LCD screen will illuminate and display the current system status.

7.2 Navigating the LCD Display

- Use the **Up**/**Down keys** to scroll through different display screens, showing parameters such as battery voltage, wind charging current, solar charging current, load status, and temperature.
- Press the **Menu button** to enter the main menu for settings adjustments.
- Use the **OK button** to select an option or confirm a setting.
- Use the **ESC button** to go back to the previous screen or exit the menu.

7.3 Setting Battery Type

The controller automatically matches with 12V/24V/48V systems. You will need to select the battery type (Sealed, GEL, Ternary Lithium, Lithium Iron) through the menu. Once selected, the controller will automatically adjust charging parameters for optimal battery health. You can also fine-tune these parameters if needed.

7.4 Load Output Modes

The controller supports 3 output modes for DC loads. Refer to the controller's menu for specific settings and configurations for these modes (e.g., always on, timed, or light-controlled).

8. Maintenance

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

- **Visual Inspection:** Periodically inspect the controller and all connections for any signs of damage, corrosion, or loose wiring.
- **Cleaning:** Keep the controller clean and free from dust. Use a dry, soft cloth to wipe the exterior. Do not use liquid cleaners.
- **Ventilation:** Ensure that the ventilation openings are not blocked to allow for proper heat dissipation.
- **Connection Check:** Annually, check all terminal connections to ensure they are tight and secure.
- **Battery Health:** Monitor battery voltage and health regularly, especially for lead-acid batteries, to ensure they are being charged correctly.

9. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
Controller not powering on	No battery connection or low battery voltage; faulty wiring.	Check battery connections and voltage. Ensure battery voltage is above the minimum operating threshold. Verify all wiring.
No solar charging	Solar panels not connected; insufficient sunlight; faulty solar panel or wiring; reverse polarity.	Check solar panel connections and polarity. Ensure panels are receiving adequate sunlight. Test solar panel output.
No wind charging	Wind turbine not connected; no wind; faulty wind turbine or wiring; reverse polarity.	Check wind turbine connections and polarity. Ensure there is sufficient wind. Test wind turbine output.
Load not working	Load not connected; overload protection activated; low battery voltage; load output mode setting.	Check load connections. Reduce load if overloaded. Check battery voltage. Adjust load output mode in settings.
Incorrect voltage/current readings	Loose connections; sensor malfunction.	Check all wiring connections. If problem persists, contact support.

10. Support

If you encounter any issues not covered in this manual or require further assistance, please do not hesitate to contact us. We are committed to providing support and will reply to your inquiries within 24 hours.

For technical support or customer service, please refer to the contact information provided with your purchase or visit the official ZXSYYDS website.

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