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› MakeSkyBlue V124 100A MPPT Solar Charge Controller User Manual

MakeSkyBlue V124 100A

MakeSkyBlue V124 100A MPPT Solar Charge Controller

User Manual

1. INTRODUCTION

Thank you for choosing the MakeSkyBlue V124 100A MPPT Solar Charge Controller. This device is designed to efficiently manage power flow from your solar panels to your battery bank, ensuring optimal charging and extending battery lifespan. It features advanced Maximum Power Point Tracking (MPPT) technology, intelligent DSP control, and automatic voltage detection for 12V, 24V, and 48V battery systems. This manual provides essential information for safe installation, operation, and maintenance.



The MakeSkyBlue V124 100A MPPT Solar Charge Controller is designed for efficient solar energy management.

2. SAFETY INSTRUCTIONS

- Always connect the battery first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Ensure all wiring is secure and correctly polarized to prevent damage to the controller and connected devices.

- Do not exceed the maximum PV input voltage of 160V. Exceeding 180V PV open-circuit voltage (Voc) will permanently damage the controller.
- Install the controller in a well-ventilated area, away from flammable materials and direct sunlight.
- The controller is designed for indoor use (IP20 rating). Avoid exposure to moisture or extreme temperatures.
- Only qualified personnel should perform installation and maintenance.

Overcharging Protection Voltage



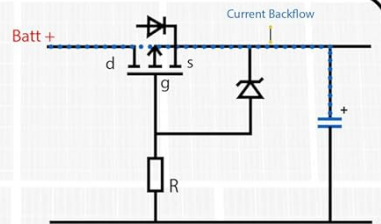
12V system (1200W) 24V system (2400W) 48V system (4800W)

PV Reverse Polarity Protection

Yes (When $V_{oc} < 100V$ only)

PV Over-voltage Protection

Yes (When $V_{oc} > 180V$, the controller will be burnt.)



The controller includes built-in overcharging and reverse polarity protection. Ensure PV V_{oc} remains below 180V to prevent damage.

3. PRODUCT FEATURES

- **Advanced MPPT Technology:** Upgraded V124 100A controller with intelligent DSP control for faster response, enhanced stability, and higher charging efficiency.
- **Optimized Cooling:** Enhanced heat dissipation design and enlarged terminal ports for smoother current flow and reduced temperature rise.
- **Smart Auto Voltage Detection:** Automatically recognizes 12V/24V/48V battery systems.

- **Wide Battery Compatibility:** Fully compatible with LiFePO4, AGM, Gel, and Lead-Acid batteries.
- **Intuitive LCD Display:** Provides real-time charging data, system voltage, and operating status. Allows for easy parameter adjustment.
- **Full-System Protection:** Includes overcharge, reverse polarity, short-circuit, and over-temperature safeguards.
- **Cloud Box Compatible:** Supports remote monitoring and control (Cloud Box sold separately).



The MakeSkyBlue V124 100A MPPT Solar Charge Controller offers a range of features for efficient and safe solar power management.

4. SETUP AND INSTALLATION

4.1 Mounting the Controller

Mount the controller vertically on a non-flammable surface in a cool, dry, and well-ventilated indoor location. Ensure adequate clearance around the unit for proper heat dissipation. The fan-on temperature is $>45^{\circ}\text{C}$ (113°F) and fan-off temperature is $<40^{\circ}\text{C}$ (104°F).

Temperature protection



Temperature protection: 75 °C / 167 °F

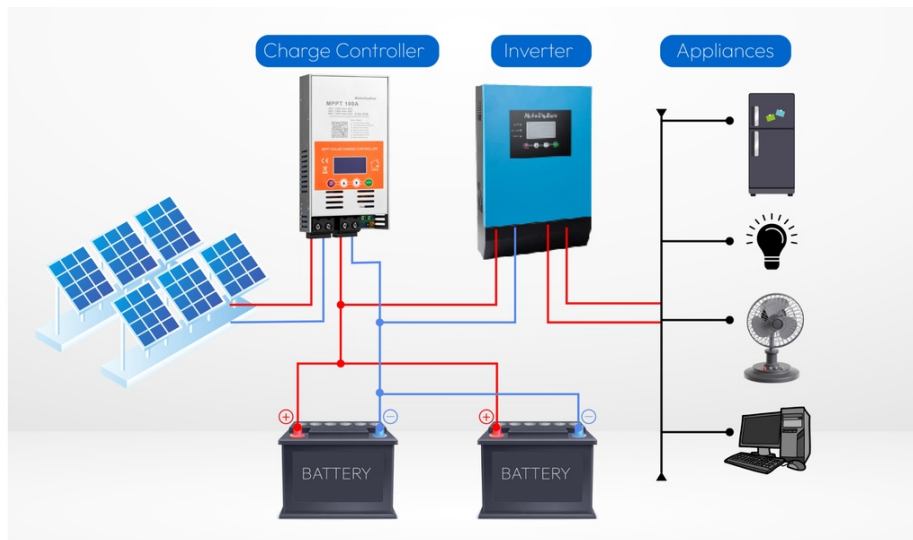
- Fan-on temperature: > 45 °C / 113 °F
- Fan-off temperature: < 40 °C / 104 °F

The controller features temperature protection, with fans activating above 45°C and deactivating below 40°C.

4.2 Wiring Sequence

Follow the wiring diagram carefully. Incorrect wiring can damage the controller or other components. Use appropriate gauge wiring for your system's current and distance.

1. **Connect the Battery:** Connect the positive and negative terminals of the battery bank to the corresponding battery terminals on the controller. Ensure correct polarity. The controller will automatically detect the battery voltage (12V/24V/48V).
2. **Connect the Solar Panels (PV):** Connect the positive and negative terminals of your solar array to the corresponding PV terminals on the controller. Ensure the PV open-circuit voltage (Voc) does not exceed 160V.
3. **Connect the DC Load (Optional):** If using a DC load directly from the controller, connect its positive and negative terminals to the load terminals.



Typical system wiring diagram for the solar charge controller, connecting solar panels, batteries, and loads.

5. OPERATING INSTRUCTIONS

5.1 LCD Display

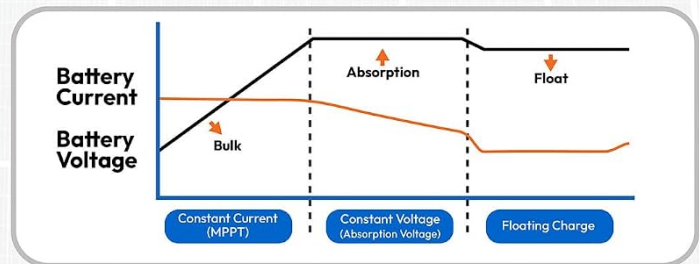
The intuitive LCD screen displays real-time operational data, including battery voltage, charging current, PV voltage, and system status. Use the navigation buttons (ESC, UP, DOWN, ENTER) to cycle through display screens and adjust parameters.

5.2 Charging Stages

The controller utilizes a 3-stage smart charging algorithm to optimize battery health and performance:

- **Bulk Charge:** Delivers maximum current to rapidly charge the battery until it reaches the absorption voltage.
- **Absorption Charge:** Maintains a constant voltage while the current gradually decreases, fully charging the battery.
- **Float Charge:** Reduces voltage to a lower level to maintain the battery at full charge, compensating for self-discharge.

3 Stage Smart MPPT Solar Charge Controller



Recognition Automatically
DC 12V/24V/48V



The controller employs a 3-stage smart charging process to optimize battery charging and longevity.

5.3 Parameter Adjustment

Refer to the detailed instructions accessible via the QR code on the product label or the official MakeSkyBlue website for specific parameter settings for different battery types. The LCD allows for quick and precise setup.

For detailed parameter settings, scan this QR code: <https://qr61.cn/o6fhWz/qg6SHhE>

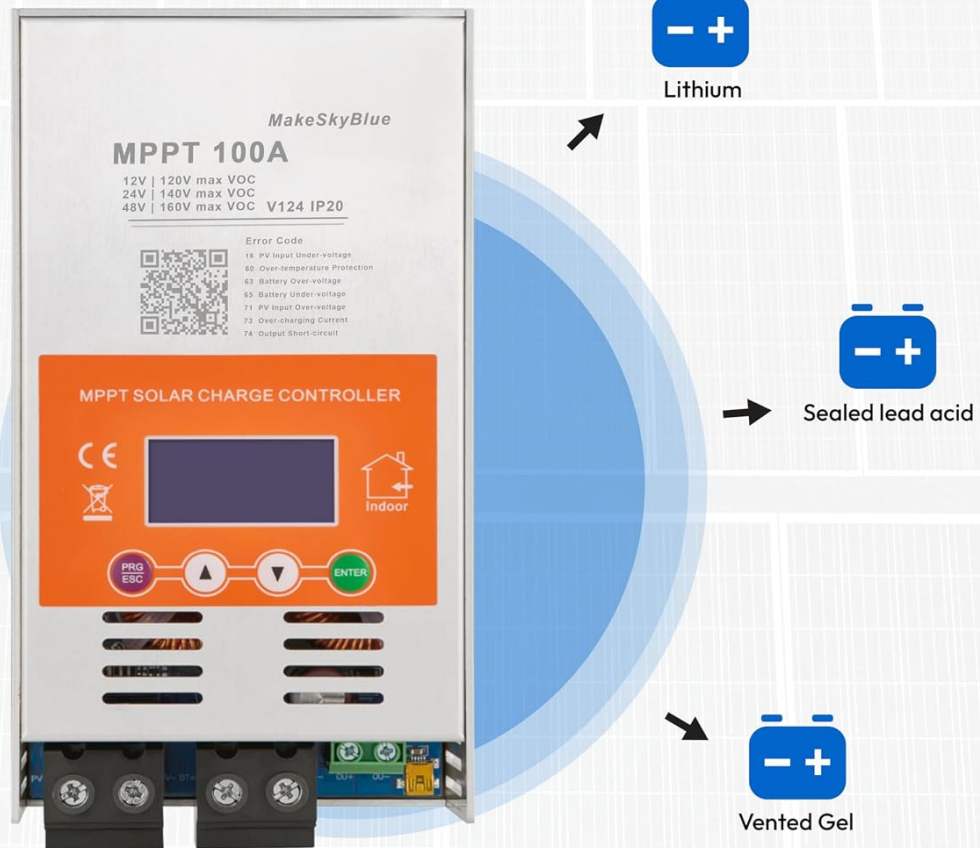
6. BATTERY COMPATIBILITY

The MakeSkyBlue V124 100A MPPT Solar Charge Controller is designed for broad compatibility with various battery chemistries. It automatically detects 12V, 24V, and 48V battery systems and supports:

- Lithium Iron Phosphate (LiFePO4)
- Absorbed Glass Mat (AGM)
- Gel
- Lead-Acid (Sealed, Vented)

Suitable for battery types

Easy to set for lithium battery



The controller is suitable for various battery types, including Lithium, Sealed Lead Acid, and Vented Gel, with easy setup for lithium batteries.

7. MAINTENANCE

- **Regular Inspection:** Periodically check all wiring connections for tightness and corrosion.
- **Cleanliness:** Keep the controller clean and free from dust and debris to ensure proper airflow and cooling.
- **Ventilation:** Ensure the installation area remains well-ventilated.
- **Battery Health:** Monitor battery voltage and performance regularly.

8. TROUBLESHOOTING

If you encounter issues, perform the following basic checks:

- **No Display/Power:** Check battery connections and ensure the battery has sufficient charge.
- **No Charging:** Verify solar panel connections, ensure panels are receiving sunlight, and check PV voltage.

- **Error Codes:** The LCD may display error codes. Refer to the detailed manual (accessible via QR code) for specific error code meanings and solutions.
- **Overheating:** Ensure proper ventilation and that the ambient temperature is within operating limits.

For persistent issues, contact MakeSkyBlue customer support.

9. SPECIFICATIONS

Feature	Specification
Model	V124 100A
System Voltage	12V/24V/48V Auto
Max PV Input Voltage	160V
Rated Charge Current	100A
Display Type	LCD
Material	Aluminum
Product Dimensions (L x W x H)	8.46" x 4.52" x 1.96" (21.5 x 11.5 x 5 cm)
Item Weight	2.9 Pounds (1.3 kg)
Included Components	Solar Charge Controller, CloudBox, User Manual
IP Rating	IP20

Size and Weight

21.5 x 11.5 x 5 cm / 8.46 x 4.52 x 1.96 in



Dimensions and weight of the MakeSkyBlue V124 100A MPPT Solar Charge Controller.

10. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation included with your product or visit the official MakeSkyBlue website. You can also contact MakeSkyBlue customer service directly for assistance with product inquiries, troubleshooting, or warranty claims.

Visit the MakeSkyBlue Store: [MakeSkyBlue Store](#)