

## MakeSkyBlue 60A-V123+CloudBOX

# MakeSkyBlue 60A MPPT Solar Charge Controller with CloudBOX

## MODEL: 60A-V123+CLOUDBOX USER MANUAL

### 1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your MakeSkyBlue 60A MPPT Solar Charge Controller with CloudBOX. This device is designed to efficiently manage power flow from your solar panels to your battery bank, ensuring optimal charging and system longevity. Please read this manual thoroughly before installation and use to ensure proper function and safety.

### 2. Safety Information

- Always connect the battery to the charge controller **first**, then connect the solar panels. Disconnect in the reverse order.
- Ensure all wiring is correctly polarized (positive to positive, negative to negative). Incorrect wiring can damage the controller and other components.
- Use appropriate wire gauges for your system's current and distance to prevent overheating.
- Install the controller in a well-ventilated area, away from flammable materials and moisture.
- Do not attempt to repair or modify the controller. Contact qualified personnel for service.
- Wear appropriate personal protective equipment (PPE) during installation, including eye protection and insulated gloves.

### 3. Key Features

- **MPPT Technology:** Advanced Maximum Power Point Tracking algorithm extracts up to 30% more solar energy compared to traditional PWM controllers.
- **Automatic System Voltage Detection:** Automatically identifies 12V, 24V, or 48V battery systems.
- **Wide Battery Compatibility:** Supports Sealed, Gel, AGM, Flooded, and Lithium batteries.
- **Integrated CloudBOX:** Enables real-time remote monitoring and control via a mobile application (iOS & Android).
- **Multi-function LCD Display:** Provides cumulative power generation, error codes, temperature, voltage, and current data.

- **Intelligent Battery Protection:** Guards against overcharging, overvoltage, and low voltage to extend battery life.
- **Efficient Cooling:** Features smart cooling mechanisms to maintain optimal operating temperature.

## 4. Product Overview



**Figure 1:** MakeSkyBlue 60A MPPT Solar Charge Controller with CloudBOX. The image shows the front of the charge controller with its LCD display and control buttons, along with the included CloudBOX module and connecting cable.

### 4.1 Package Contents

- MakeSkyBlue 60A MPPT Solar Charge Controller

- CloudBOX Module
- Connecting Cable for CloudBOX
- User Manual (this document)

## 4.2 Physical Description

The controller features a robust aluminum casing for durability and heat dissipation. The front panel includes an LCD display and control buttons for configuration and monitoring. Connection terminals for solar panels, batteries, and load are located at the bottom of the unit.



**Figure 2:** Product dimensions. The image displays the front view of the charge controller with measurements indicating its height (21.65 units), width (14.96 units), and depth (8.66 units).

## 5. Installation Guide

### 5.1 Mounting Location

- Mount the controller vertically on a non-flammable surface to allow for proper airflow and cooling.
- Ensure adequate clearance around the unit (at least 6 inches on all sides) for ventilation.

- Avoid direct sunlight, high temperatures, and humid environments.

## 5.2 Wiring Diagram



**Figure 3:** MPPT Charge Controller Wiring Diagram. This diagram illustrates the correct connection sequence: Solar Panel to Charge Controller, Charge Controller to Battery, and Battery to Inverter/Appliances. Ensure proper polarity for all connections.

## 5.3 Connection Steps

1. **Connect the Battery:** Connect the positive and negative terminals of your battery bank to the corresponding battery terminals on the charge controller (BT+ and BT-). Ensure correct polarity. The controller will automatically detect the battery voltage (12V/24V/48V).
2. **Connect the Solar Panels:** Connect the positive and negative terminals of your solar panel array to the corresponding PV input terminals on the charge controller (PV+ and PV-). Ensure correct polarity.
3. **Connect the DC Load (Optional):** If using a DC load directly from the controller, connect its positive and negative terminals to the load output terminals (OUT+ and OUT-). Note that the load output is typically for smaller DC loads and may not be present on all models or used in all configurations.
4. **Connect CloudBOX:** Plug the CloudBOX module into the designated communication port on the charge controller.

**Important:** Always follow the connection order: Battery > Solar Panel > Load. Disconnect in the reverse order: Load > Solar Panel > Battery.

## 6. Operation

### 6.1 LCD Display Overview

The LCD display provides real-time system status and allows for parameter configuration. Use the 'PROG/ESC', 'UP', 'DOWN', and 'ENTER' buttons to navigate and adjust settings.



**Figure 4:** Example LCD screens. These images show various display modes, including icons for solar input, charging status, battery, load output, and numerical values for current and voltage.

### 6.2 Navigating the Display

- Press the 'UP' or 'DOWN' buttons to cycle through different display screens, showing parameters like PV voltage, battery voltage, charging current, load current, accumulated power, and internal temperature.
- Press 'PROG/ESC' to enter or exit programming mode.
- In programming mode, use 'UP'/'DOWN' to change values and 'ENTER' to confirm.

### 6.3 Battery Type Settings

The controller supports various battery types. It is crucial to set the correct battery type for optimal charging and battery longevity. The default setting is for lead-acid batteries.



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## Battery Types

Compatible With 12V/24V/48V



**Figure 5:** Compatible Battery Types. The image illustrates the charge controller's compatibility with GEL, Flooded, and AGM battery types, indicating its versatility for various solar power setups.

To change battery type:

1. Enter programming mode by pressing 'PROG/ESC'.
2. Navigate to the battery type setting (often indicated by 'b00' or similar on the LCD).
3. Use 'UP'/'DOWN' to select your battery type (e.g., Gel, Flooded, AGM, Lithium). Refer to the controller's specific menu for exact options.
4. Press 'ENTER' to confirm your selection.



**Figure 6:** Battery Parameter Settings. These images show LCD screens for adjusting battery-related parameters such as battery type ('b00'), overcharge voltage ('b01'), and charge recovery voltage ('b02').

You can also adjust specific voltage parameters (e.g., overcharging protection voltage, charge recovery voltage, low voltage disconnect) for fine-tuning, especially for custom lithium battery configurations. Refer to your battery manufacturer's specifications for recommended values.

## 7. CloudBOX and Mobile App

The included CloudBOX module allows for remote monitoring and control of your solar system via a dedicated mobile application (available for iOS and Android). This feature provides convenience for checking system status, performance data, and adjusting settings from your smartphone or tablet.

### 7.1 Setup and Connection

1. Ensure the CloudBOX is securely connected to the charge controller's communication port.
2. Download the official MakeSkyBlue mobile application from your device's app store.
3. Follow the in-app instructions to register your device and connect to the CloudBOX. This typically involves scanning a QR code or entering a device ID.
4. Ensure your mobile device has an active internet connection for remote access.

### 7.2 App Functions

- View real-time data: PV voltage, battery voltage, charging current, load current, power generation.
- Access historical data and performance graphs.
- Receive alerts and notifications for system events or errors.
- Adjust certain controller parameters remotely.

## 8. Specifications

Parameter	Value
Model	60A-V123+CloudBOX
Rated Charge Current	60A
System Voltage	12V/24V/48V Auto-Detect
Max PV Array Power (12V Battery)	≤ 720W
Max PV Array Power (24V Battery)	≤ 1440W

Parameter	Value
Max PV Array Power (48V Battery)	≤ 2800W
PV Array Open Circuit Voltage (Voc) (12V Battery)	20V-80V
PV Array Open Circuit Voltage (Voc) (24V Battery)	37V-105V
PV Array Open Circuit Voltage (Voc) (48V Battery)	72V-160V
Battery Types Supported	Sealed, Gel, AGM, Flooded, Lithium
Overcharging Protection Voltage (12V Battery)	15V
Overcharging Protection Voltage (24V Battery)	30V
Overcharging Protection Voltage (48V Battery)	60V
Limited Current Protection	61A
Operating Temperature	Up to 75°C
Fan-on Temperature	>45°C
Fan-off Temperature	<40°C
Display Type	LCD
Dimensions (L x W x H)	Approx. 14.96 x 8.66 x 21.65 inches (based on image)
Item Weight	2.9 pounds

## 9. Troubleshooting

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

- **No Display/No Power:**

- Check battery connections and ensure they are secure and correctly polarized.
- Verify battery voltage is within the operating range (12V/24V/48V).
- Ensure any inline fuses or circuit breakers are not tripped.

- **No Charging from Solar Panels:**

- Check solar panel connections and polarity.
- Verify PV array open circuit voltage (Voc) is within the specified range for your battery system (e.g., 20V-80V for 12V battery).
- Ensure there is sufficient sunlight reaching the panels.
- Check for any shading on the solar panels.

- **Battery Not Fully Charging:**

- Confirm the correct battery type is selected in the controller settings.
- Check the maximum PV array power. If it's too low for your battery bank, charging will be slow.
- Inspect battery health. Old or damaged batteries may not hold a full charge.



- **Overcharging/High Voltage Spike:**

- Ensure the battery type and overcharging protection voltage settings are correctly configured for your battery chemistry and voltage.
- If experiencing voltage spikes, especially when batteries reach full charge, verify all connections are robust and consider adding external overvoltage protection if the issue persists. Consult with a qualified solar technician.

- **Error Codes on Display:**

- Refer to the specific error code displayed on the LCD. Consult the manufacturer's support resources or contact customer service for detailed explanations and solutions for each code.

## 10. Maintenance


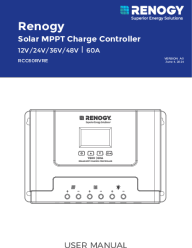
- **Regular Inspection:** Periodically check all wiring connections for tightness and corrosion.
- **Cleanliness:** Keep the controller clean and free from dust and debris. Ensure ventilation openings are not blocked.
- **Battery Health:** Monitor your battery bank's health and performance. Ensure proper ventilation for flooded lead-acid batteries.
- **Firmware Updates:** Check the manufacturer's website or mobile app for any available firmware updates for the controller or CloudBOX.

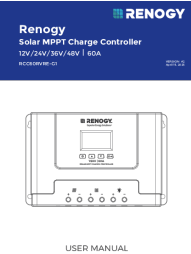



## 11. Customer Support

For technical assistance, warranty information, or further inquiries, please contact MakeSkyBlue customer support through their official website or the contact information provided with your purchase.

**Online Resources:** Visit the [MakeSkyBlue Store on Amazon](#) for product information and updates.

### Related Documents - 60A-V123+CloudBOX

	<p><a href="#">ICharger MPPT 6048 User Manual - Easun Power</a></p> <p>User manual for the Easun Power ICharger MPPT 6048 MPPT Solar Charge Controller. Provides installation steps, operating modes, error codes, and technical specifications.</p>
	<p><a href="#">Renogy RCC60RVRE Solar MPPT Charge Controller User Manual</a></p> <p>This user manual provides comprehensive instructions for the Renogy RCC60RVRE Solar MPPT Charge Controller, covering its features, installation, operation, monitoring, specifications, maintenance, and safety guidelines for 12V/24V/36V/48V systems.</p>

 <p>Renogy Solar MPPT Charge Controller 12V/24V/36V/48V   60A RCC60RVRE-G1</p> <p>USER MANUAL</p>	<p><a href="#">Renogy Solar MPPT Charge Controller RCC60RVRE-G1 User Manual</a></p> <p>User manual for the Renogy 12V/24V/36V/48V 60A Solar MPPT Charge Controller (Model RCC60RVRE-G1). Covers features, installation, wiring, monitoring, LCD display, settings, error codes, specifications, and maintenance.</p>
 <p>USER GUIDE iTECHDCDC60 INTELLIGENT BATTERY CHARGER</p> <p>iTECHWORLD</p>	<p><a href="#">iTECHDCDC60 Intelligent Battery Charger User Guide   iTECHWORLD</a></p> <p>Comprehensive user guide for the iTECHDCDC60 Intelligent Battery Charger from iTECHWORLD. This guide covers product overview, quick start, installation, specifications, and safety precautions for 12V/24V systems.</p>
 <p>ECO-WORTHY</p> <p>60A MPPT 12V/24V/36V/48V MPPT Installation And Operation Manual Solar Charge Controller</p>	<p><a href="#">ECO-WORTHY 60A MPPT Solar Charge Controller Installation and Operation Manual</a></p> <p>This manual provides comprehensive instructions for the installation, operation, and maintenance of the ECO-WORTHY 60A MPPT Solar Charge Controller. It covers safety precautions, product features, installation steps, working principles, troubleshooting, and specifications for 12V, 24V, 36V, and 48V systems.</p>
 <p>60AMP MPPT Solar Charge Controller</p> <p>60A 70A 9-70 VDC 150 VDC</p> <p>FEATURES</p>	<p><a href="#">Rich Solar 60A MPPT Solar Charge Controller - Features and Specifications</a></p> <p>Detailed information on the Rich Solar 60A MPPT Solar Charge Controller, including its features, technical specifications, and connection diagram. This controller supports various battery voltages and offers advanced MPPT technology for high efficiency.</p>