LairtPOW CM-D60

LairtPOW 60A MPPT Solar Charge Controller Instruction Manual

Model: CM-D60

Product Overview

The LairtPOW 60A MPPT Solar Charge Controller (Model CM-D60) is designed for off-grid solar systems, featuring advanced Maximum Power Point Tracking (MPPT) technology to optimize solar panel efficiency. It supports 12V/24V systems and is compatible with various battery types, including LiFePO4, AGM sealed gel, and flooded lithium batteries. The controller includes dual USB ports for charging devices and offers smart control via a mobile application.



Figure 1: LairtPOW 60A MPPT Solar Charge Controller (Model CM-D60).

Key Features:

- **Advanced MPPT Technology:** Built-in algorithm tracks peak power of solar panels in real-time, increasing efficiency by over 30% compared to traditional PWM controllers, with a conversion efficiency of 99.9%.
- **High Amperage Capacity:** 60A capacity, automatically recognizes 12V/24V system voltages, compatible with solar panels within the 18-100V range.
- **Battery Versatility:** Compatible with LiFePO4, AGM sealed gel, and flooded lithium batteries.
- **Smart Control & Dual USB Charging:** Remote management via WiFi/Bluetooth app, tracking charge status and energy production. Dual USB ports for direct device charging.
- **Comprehensive Safety Features:** Includes current limiting charging mode, overvoltage, short circuit, reverse connection, reverse charging, over temperature, and TVS lightning protection.

Safety Information

Before installation and operation, please read this manual carefully to ensure proper use and prevent accidents. Observe all safety precautions.

- Ensure proper ventilation around the controller to prevent overheating.
- Always connect the battery first, then the solar panel, and finally the load.
- Connect the positive pole first, then the negative pole.
- Verify all connections are secure to prevent arcing or short circuits.
- Do not attempt to repair or modify the controller yourself. Contact qualified personnel for service.
- The controller is designed for specific voltage and current ranges. Exceeding these limits can cause damage or safety hazards.

Installation and Wiring

1. Preparing for Wiring

1. **Loosen Terminal Screws:** Using a screwdriver, loosen the screws of the controller's wiring ports counterclockwise.
2. **Prepare Cable Trough:** The cable trough at the wiring port should be sufficiently loosened to accommodate the wire for easy wiring.



Video 1: Instructions for Wiring the MPPT Controller. This video demonstrates the process of loosening terminal screws and preparing the wiring ports for connection.

2. Connection Sequence

When wiring, it is crucial to follow the correct connection order:

1. **Connect the Battery:** First, connect the battery to the controller. Ensure the positive pole is connected before the negative pole.
2. **Connect the Solar Panel:** Next, connect the solar panel to the controller.
3. **Connect the Load:** Finally, connect any DC loads to the controller.

After connecting each line, gently tug on it to ensure it is securely connected and properly seated in the terminal.



Figure 2: Wiring diagram illustrating connections for solar panels, battery, DC load, and USB output. The image shows the solar panel wiring port, battery wiring port, and load connection port.

Operating Instructions

1. Display Interface Overview

The controller features an LCD display that provides real-time information about your solar system. The main interface cycles through various parameters automatically every 5 seconds. You can also manually scroll through pages using the up and down keys.

LairtPOW MPPT Solar Charge Controller					
Model Number	CM-D20	CM-D40	CM-D60	CM-80	CM-100
Rated Charging Current	20A	40A	60A	80A	100A
Rated Load Current	20A			40A	
System Voltage	12V/24V Auto-Identification			12V/24V/36V/48V Auto-Identification	
Max.Solar Input Voltage	50V PV	100V PV		*160V PV*	
Max.photovoltaic system input power	240W/12V , 480W/24V	480W/12V ,960W/24V	720W/12V , 1440W/24V	960W/12V 1920W/24V 2880W/36V 3840W/48V	1200W/12V 2400W/24V 3600W/36V 4800W/48V
Conversion Efficiency	≤98%				
MPPT Tracking Efficiency	>99%				
Dimensions	5.12"L x 5.12"W x 2.28"H	7.32"L x 7.32"W x 2.63"H	8.58"L x 7.32"W x 2.63"H	12.32"L x 8.86"W x 4.13"H	12.32"Lx8.86"Wx4.13"H
Net Weight	0.83lb	2.09lb	2.70lb	6.4lb	6.84lb

Figure 3: Detailed view of the LCD display screen and parameter setting instructions. It highlights the ESC, Up, Down, and SET buttons for navigation and adjustment.

Main Interface Displays:

- **PV (Solar Panel):** Input voltage, current, and cumulative power generation.
- **BATT (Battery):** Battery voltage, charge current, and battery type.
- **LOAD:** Output voltage, current, and cumulative discharge capacity.
- **System Voltage:** 12V, 24V, 36V, 48V (auto-identified).
- **Fault Indication:** Displays an alert if system parameters are adjusted unreasonably.

2. Setting Parameters

1. **Enter Setting Interface:** Press and hold the **SET** key on the main interface for 5 seconds to enter the setting interface.
2. **Select Battery Type:** In the setting interface, use the **Up** and **Down** page keys to select the required battery type. Options include:
    - **USE** (Custom Battery Type)
    - **FLD** (Flooded Battery)
    - **GEL** (Gel Battery)
    - **SLD** (Sealed Battery)
    - **LI** (Lithium Battery)
3. **Adjust Parameter Values:** For customized battery types (USE) and lithium battery (LI) states, short press the **SET** key to select the input and output parameter values that need adjustment. Use the **Up** and **Down** keys to modify the value.
4. **Confirm and Save:** After modifying a value, press the **SET** key again to confirm and move to the next item.
5. **Exit Settings:** The operating system automatically saves parameters and returns to the main interface after 10 seconds of inactivity. You can also press the **ESC** key to quickly save the set parameters and return to the main interface.

3. Load Control

To switch the load on or off, press the **ESC** key on the main interface. The load indication icon will change accordingly.

MAINTENANCE

1. Cooling System

The LairtPOW MPPT controller features an advanced cooling system with a pure aluminum heat sink and smart dual fan design to maintain optimal operating temperature. Ensure that the ventilation openings are not obstructed to allow for proper airflow.



Figure 4: Illustration of the advanced cooling system, showing airflow over the pure aluminum heat sink and smart dual fans.

2. General Care

- Regularly inspect all wiring connections for tightness and corrosion.
- Keep the controller clean and free from dust and debris.
- Avoid exposing the controller to direct sunlight or extreme temperatures for prolonged periods.

Troubleshooting

1. Fault Indication

If system parameters are adjusted unreasonably, a fault indication will appear on the main interface. Review your settings and ensure they are within the recommended ranges for your battery type and solar array.

2. Restoring Factory Settings

To restore the controller to its factory default settings:

- From the main interface, press and hold both the **SET** key and the **ESC** key simultaneously for 5 seconds.
- The display will reset, and the system will automatically identify the parameter values and display them on the main interface.

Specifications (Model CM-D60)

Specification	Value
Model Number	CM-D60
Rated Charging Current	60A
Rated Load Current	40A
System Voltage	12V/24V Auto-Identification
Max. Solar Input Voltage	100V PV
Max. Photovoltaic System Input Power (12V system)	720W
Max. Photovoltaic System Input Power (24V system)	1440W
Conversion Efficiency	≥98%
MPPT Tracking Efficiency	>99%
Dimensions (L x W x H)	8.58"L x 7.32"W x 2.63"H
Net Weight	2.70 lbs
Display Type	LED
Material	Aluminum, Copper, Metal, Plastic
Color	Orange



Figure 5: Comparison table of LairtPOW MPPT Solar Charge Controller models, including CM-D60 specifications.

Warranty and Support

LairtPOW is committed to providing high-quality products and customer satisfaction. For any technical assistance, troubleshooting, or warranty inquiries regarding your LairtPOW 60A MPPT Solar Charge Controller (Model CM-D60), please contact LairtPOW customer support.

Refer to your purchase documentation or the official LairtPOW website for specific warranty terms and contact information.