

Luminous Luminous-20A

Luminous 20A Solar Charge Controller User Manual

Model: Luminous-20A

1. INTRODUCTION

The Luminous 20A Solar Charge Controller is designed to manage power flow from solar panels to batteries and connected DC loads. Utilizing advanced Pulse Width Modulation (PWM) technology, it ensures efficient battery charging and extends battery life. This controller is suitable for 12V solar systems and offers various protection features for reliable operation.

Key Features:

- PWM based technology with 98% efficiency.
- Automatic selection of 12V / 24V battery voltage.
- Integrated USB port for mobile charging.
- Option for selecting between SMF (Sealed Maintenance Free) and Lead Acid battery types.
- Load controller with Low Voltage Disconnect (LVD) and dusk to dawn feature.
- Fuse-less electronic and software-controlled protections.

2. SAFETY INFORMATION

Please read and understand all safety instructions before installing or operating the Luminous 20A Solar Charge Controller. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Ensure all connections are tight and correct to prevent loose connections that can cause excessive heating.
- Always connect the battery to the charge controller first, then the solar panel, and finally the load. Disconnect in the reverse order.
- Do not short-circuit the solar panel or battery terminals.

- Install the controller in a dry, well-ventilated area, away from flammable materials and direct sunlight.
- Wear appropriate personal protective equipment (PPE) such as safety glasses and insulated gloves when working with batteries and electrical systems.
- Keep children away from the solar power system components.
- Do not attempt to repair or modify the controller. Refer to qualified service personnel.

3. PRODUCT OVERVIEW



Figure 1: Luminous 20A Solar Charge Controller. The image shows the grey controller with a power switch on the top panel

and connection terminals for solar input, battery, and load at the bottom.

4. INSTALLATION AND SETUP

4.1 Unpacking

- Carefully unpack the controller and inspect it for any damage.
- Verify that all included components are present. The package should contain: **1x Luminous 20A Solar Charge Controller**.

4.2 Mounting

- Select a suitable mounting location that is dry, protected from direct sunlight, rain, and excessive dust.
- Ensure adequate air circulation around the controller for proper heat dissipation.
- Mount the controller vertically on a non-flammable surface using appropriate fasteners.

4.3 Wiring Connections

Follow the wiring sequence carefully to avoid damage to the controller or other components. Ensure correct polarity for all connections.

1. **Connect the Battery:** Connect the positive (+) and negative (-) terminals of your 12V battery to the corresponding battery terminals on the charge controller. The controller will automatically detect the battery voltage.
2. **Connect the Solar Panel:** Connect the positive (+) and negative (-) terminals of your solar panel(s) to the corresponding solar input terminals on the charge controller. The controller supports 40 watts to 125 watts of panels in a 12V system.
3. **Connect the DC Load:** Connect your 12V DC load directly to the load output terminals on the charge controller, ensuring correct polarity. The controller will manage the load based on battery voltage and selected settings.

Note: Always ensure that the battery is connected first and disconnected last.

5. OPERATING INSTRUCTIONS

5.1 Initial Power-Up

Once all connections are made correctly, the controller will power on. Indicators (if present) will show the status of the battery, solar charging, and load output.

5.2 Battery Charging

The controller uses PWM technology to efficiently charge the connected battery. It automatically adjusts the charging current and voltage to optimize battery health. The controller supports both SMF and Lead Acid battery types, which can be selected via a switch or setting (refer to specific model details if a selection mechanism is present).

5.3 Load Management

The controller provides a direct 12V load output. It features a Low Voltage Disconnect (LVD) function to protect the battery from over-discharge. When the battery voltage drops below a certain threshold, the load will be disconnected. The controller may also include a dusk to dawn feature, which automatically turns the load on at dusk and off at dawn.

5.4 USB Charging

The integrated USB port allows for convenient charging of mobile devices. Simply connect your USB charging cable to the port on the controller.

6. MAINTENANCE

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

- **Check Connections:** Periodically inspect all wiring connections for tightness and corrosion. Tighten any loose connections.
- **Clean the Controller:** Keep the controller free from dust and debris. 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 airflow and cooling.
- **Battery Inspection:** Regularly check the battery terminals for corrosion and ensure the battery is in good condition.

7. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your Luminous 20A Solar Charge Controller.

Problem	Possible Cause	Solution
No power to controller/No indicators	Loose battery connection, discharged battery, incorrect battery polarity.	Check battery connections and polarity. Ensure battery has sufficient charge.
Battery not charging	No solar input, low solar panel voltage/current, incorrect solar panel polarity, faulty solar panel.	Check solar panel connections and polarity. Ensure sufficient sunlight. Test solar panel output.
Load not working	Battery Low Voltage Disconnect (LVD) activated, loose load connection, incorrect load polarity, overloaded load.	Check battery voltage (recharge if low). Verify load connections and polarity. Ensure load current does not exceed controller's rating.
USB port not charging	Controller not powered, faulty USB cable/device, battery voltage too low.	Ensure controller is powered. Try a different USB cable/device. Check battery charge level.

8. TECHNICAL SPECIFICATIONS

Feature	Specification
Model Number	Luminous-20A
Brand	Luminous
Current Rating	20A
Technology	PWM (Pulse Width Modulation)

Feature	Specification
Efficiency	98%
Battery Voltage	Automatic 12V / 24V selection
Max. Panel Wattage (12V System)	40W to 125W
Load Output	12V Direct, with LVD and Dusk to Dawn feature
Protections	Electronic & Software controlled, Fuse-less
Additional Features	USB Mobile Charger Output, SMF and Lead Acid Battery selection
Dimensions (L x W x H)	14.8 x 14.3 x 6.4 cm
Item Weight	1 kg
Colour	White
Included Components	Controller

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries regarding your Luminous 20A Solar Charge Controller, please contact Luminous customer service or visit their official website. Keep your purchase receipt as proof of purchase.