Marsrock G100-Base

Marsrock 100W 12V/24V Permanent Magnet Generator User Manual

Model: G100-Base

1. Introduction to the Marsrock Permanent Magnet Generator

The Marsrock Permanent Magnet Generator (PMG) is a synchronous generator designed for efficient power generation. It utilizes high-quality permanent magnets instead of rotor windings, eliminating the need for additional excitation and reducing energy losses. This design results in a compact model with high power density, capable of achieving high power generation efficiency across various speeds. The generator is suitable for a range of applications, including vertical and horizontal wind turbines, and various DIY power generation projects.

Figure 1: Marsrock 100W Permanent Magnet Generator with integrated base.

2. Product Features

- **High Efficiency:** Equipped with premium NdFeB Permanent Magnets and high-grade pure copper windings, ensuring stable and efficient power output.
- **Low Resistance Start-up:** Features a specially designed rotor and rotator that minimizes resistance torque during start-up.
- **Durable Construction:** Built with a die-casting aluminum alloy case, providing excellent heat dissipation, anti-corrosion, acid and alkali resistance, and anti-salt corrosion properties.
- **Gearless Design:** Direct-drive, low RPM rare earth Permanent Magnet Generator for easy and safe operation and maintenance.

- **Long Service Life:** Designed for an operational life of 20 years.

Figure 2: Internal view highlighting NdFeB magnets, pure copper coil, and rotor.

Figure 3: Aluminum shell features for enhanced durability and performance.

3. Specifications

Specification	Value
Brand	Marsrock
Model Number	G100-Base
Wattage	100 Watts (Running), 130 Watts (Maximum)
Voltage	12 Volts or 24 Volts (selectable variant)
Power Source	Wind Powered
Recommended Uses	Commercial, DIY Wind Turbines, Hydro Generators, Exercise Bikes
Item Weight	3 Kilograms (6.6 pounds)
Product Dimensions	5.91 x 4.72 x 5.91 inches (15 x 12 x 15 cm)

Specification	Value
Output Type	Three-phase AC
UPC	761587081645

Figure 4: Detailed dimensions of the generator.

4. Setup and Installation

The Marsrock Permanent Magnet Generator produces three-phase AC output. Its output wires are non-polar, meaning the connection order of the three wires does not affect the output direction of voltage and current. For proper operation and charging, it is essential to connect the generator to a suitable charge controller, such as the Marsrock WT060 MPPT charge controller, and then to a battery bank.

4.1 Wiring Diagram

Refer to the diagram below for a typical wiring setup. Ensure all connections are secure and properly insulated.

Figure 5: Example wiring diagram for the generator with a WT060 charge controller and battery.

The WT060 charge controller (or similar compatible model) is crucial for converting the AC output to DC, regulating the voltage, and protecting the battery from overcharging. For more information on the WT060 controller, please refer to its dedicated manual.

4.2 Mounting the Generator

The generator comes with an integrated base for stable mounting. Secure the base to a rigid surface using appropriate fasteners. Ensure the shaft is aligned with the driving mechanism (e.g., wind turbine hub, pulley system) to prevent undue stress on the bearings.

Figure 6: Various views of the generator, illustrating the base and mounting points.

5. Operating Instructions

The Marsrock PMG generates electricity when its rotor rotates within the permanent magnetic field. To achieve stable current output, the generator must rotate continuously and stably at a sufficient speed. The output voltage and current are directly related to the rotational speed.

5.1 Power Generation Principle

The pure copper coil within the generator outputs voltage as it rotates. The direction of rotation does not affect the output direction of its voltage and current due to its three-phase AC output. For optimal performance, aim for a stable rotational speed close to the rated speed of your specific application.

5.2 Applications

This generator is versatile and can be driven by various power sources:

- **Wind Power:** Ideal for wind turbine generators.
- **Water Power:** Can be used in hydro generators.
- **Motor Driven:** Suitable for test plants or motor-driven systems via a belt.
- **Human Power:** Applicable for exercise bikes or other human-powered devices.

Figure 7: Diverse applications for the Marsrock PMG.

5.3 Performance Testing Demonstration

The following video demonstrates the generator's performance under controlled testing conditions, showcasing its output characteristics.

Video 1: Demonstration of the Marsrock Permanent Magnet Generator's output during testing. This video illustrates how a professional testing machine measures speed, output voltage, and power, and explains the relationship between stable rotation and current output.

6. Maintenance

The Marsrock Permanent Magnet Generator is designed for durability and a long service life of 20 years, requiring minimal maintenance. However, regular checks can ensure optimal performance:

- **Visual Inspection:** Periodically inspect the generator for any signs of physical damage, loose connections, or corrosion.
- **Cleanliness:** Keep the exterior of the generator clean and free from dust, dirt, and debris to ensure proper heat dissipation.
- **Connection Integrity:** Verify that all electrical connections are tight and secure.
- **Shaft and Bearings:** Ensure the shaft rotates freely without excessive play. While designed for longevity, listen for unusual noises that might indicate bearing wear over extended periods.

7. Troubleshooting

If you experience issues with the generator's output, consider the following:

- **Low or No Power Output:**
    - **Check Rotational Speed:** The generator requires a stable and sufficient rotational speed to produce adequate current. If the speed is too low or unstable, you may only obtain voltage without significant current.
    - **Verify Connections:** Ensure all three output wires are correctly connected to the charge controller and that the controller is properly connected to the battery.
    - **Inspect for Obstructions:** If used with a wind turbine, check for any obstructions preventing the blades from rotating freely.

- **Unusual Noises or Vibrations:**
    - **Check Mounting:** Ensure the generator is securely mounted and that there is no wobble or misalignment with the driving mechanism.
    - **Inspect Bearings:** While rare, worn bearings can cause noise. If persistent, professional inspection may be required.
- **Overheating:**
    - **Ensure Ventilation:** Confirm that the generator's housing is not obstructed, allowing for proper airflow and heat dissipation.
    - **Check Load:** Ensure the load connected to the system does not exceed the generator's maximum output capacity.

For issues not resolved by these steps, please contact Marsrock customer support.

8. Warranty and Support

The Marsrock Permanent Magnet Generator comes with a**1-year warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use.

For technical support, warranty claims, or any questions regarding your product, please contact Marsrock customer service through the official Marsrock store or your point of purchase. Please have your model number (G100-Base) and purchase information ready when contacting support.