Hobbywing 30402141

HOBBYWING EZRUN 4278 Sensored 2250KV G2R Brushless Motor User Manual

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1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of your HOBBYWING EZRUN 4278 Sensored 2250KV G2R Brushless Motor. Please read this manual thoroughly before use to ensure proper function and longevity of the product.



Figure 1: HOBBYWING EZRUN 4278 Sensored 2250KV G2R Brushless Motor, front view.

2. Key Features

- **Optimized Compatibility:** Designed for excellent compatibility with Hobbywing EZRUN MAX8 G2S ESC, enabling automatic recognition and a fully sensored power system for enhanced control and feel. Includes motor overheat protection.
- **High-Performance Rotor:** Features four high-strength, high-temperature-resistant sintered Nd-Fe-B magnets with widened magnetic tiles for exceptional torque, explosive power, and stable output.
- **Reliable Sensor Signal:** An independent magnetic ring ensures a pure rotor position signal, preventing interference and allowing stable operation in sensor mode.
- **High Efficiency:** Reduces operating temperature and delivers more power under the same load, contributing to overall performance.
- **Durable Construction:** CNC-machined aluminum housing, high-purity copper windings, advanced rotor structure, 0.2mm silicon steel laminations, high-quality stainless steel output shaft, and high-precision bearings enhance

durability and smoothness.

- **Improved Waterproofing & Dustproofing:** Innovative new sensor interface and rubber-covered bearings offer superior protection compared to traditional sensored motors.



Figure 2: Side view of the motor, highlighting its robust construction.

3. What's in the Box

Upon opening the package, you should find the following item:

- (1) HOBBYWING EZRUN 4278 Sensored 2250KV G2R Brushless Motor

4. Technical Specifications

Attribute	Value

Model Name	Ezrun 4278SD 2250KV G2R
KV Rating	2250KV
Lipo Cell Compatibility	3-6S Lipo
Outer Diameter	42mm (1.654in)
Length	78mm (3.071in)
Shaft Diameter	5mm
Exposed Shaft Length	18.5mm
Poles	4
Weight	465g (1.025 lbs)
Application	1/8 Truck, Monster Truck
Product Dimensions	1.65"W x 3.07"H (42mm x 78mm)
Item Model Number	30402141



Figure 3: The motor showing its power and sensor cables.

5. Setup and Installation

Proper installation is crucial for optimal performance and safety. Follow these steps carefully:

1. **Mounting the Motor:** Securely mount the motor to your vehicle's motor mount using appropriate screws. Ensure the motor is aligned correctly with the pinion gear.
2. **Pinion Gear Installation:** Install the pinion gear onto the motor shaft. Ensure the gear mesh between the pinion and spur gear is set correctly to prevent premature wear and maximize efficiency. A small amount of play is usually desired.
3. **Connecting to ESC:** Connect the three motor phase wires (typically A, B, C or U, V, W) from the motor to the corresponding output terminals on your Electronic Speed Controller (ESC). For the best performance and sensored operation, it is highly recommended to use a Hobbywing EZRUN MAX8 G2S ESC, which can automatically recognize this motor.
4. **Sensor Cable Connection:** Connect the sensor cable from the motor to the sensor port on your ESC. Ensure the

connector is fully seated and oriented correctly. This connection enables the sensored operation mode, providing smoother low-speed control.

5. **Power Supply:** Connect your battery pack to the ESC. Ensure the battery voltage is within the motor's specified range (3-6S Lipo).
6. **Initial Testing:** Before full operation, perform a low-power test to ensure all connections are secure and the motor spins freely and in the correct direction. Adjust ESC settings if necessary.



Figure 4: Exploded view illustrating the internal components and sensor board of the motor.

6. Operating Instructions

Once the motor is installed and connected, follow these guidelines for operation:

- **ESC Calibration:** Always calibrate your ESC with the motor and your radio system before the first run. Refer to your ESC's manual for specific calibration procedures.
- **Temperature Monitoring:** Regularly monitor the motor's temperature during operation. Excessive heat can damage

the motor. If the motor becomes too hot to touch (typically above 80°C / 176°F), allow it to cool down before further use. Adjust gearing or driving style if overheating persists.

- **Battery Voltage:** Ensure your battery voltage is appropriate for the motor's specifications (3-6S Lipo). Using an incorrect voltage can lead to damage.
- **Sensored Mode Benefits:** When paired with a compatible sensored ESC (like the EZRUN MAX8 G2S), the motor will operate in sensored mode, providing smoother throttle response, especially at low speeds, and more precise control.
- **Environmental Conditions:** While the motor features improved waterproofing and dustproofing, avoid prolonged exposure to extreme moisture or dusty conditions to maximize lifespan.

7. Maintenance

Regular maintenance will help prolong the life and performance of your motor:

- **Cleaning:** Periodically clean the motor's exterior to remove dirt, dust, and debris. Use a soft brush or compressed air. Ensure no foreign objects enter the motor's internal components.
- **Bearing Inspection:** Check the motor bearings for smooth rotation. If you notice any roughness or excessive play, the bearings may need replacement.
- **Wire and Connector Check:** Inspect all wires and connectors for signs of wear, fraying, or corrosion. Ensure all connections are secure.
- **Shaft Inspection:** Check the motor shaft for any bends or damage.
- **Storage:** When not in use, store the motor in a clean, dry place away from extreme temperatures and direct sunlight.

8. Troubleshooting

If you encounter issues with your motor, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Motor not spinning or stuttering	Loose or incorrect wiring; damaged sensor cable; ESC not calibrated; motor or ESC fault.	Check all motor-to-ESC connections. Ensure sensor cable is properly connected. Recalibrate ESC. Test with a different motor/ESC if possible to isolate the issue.
Motor overheating	Incorrect gearing (too high); excessive load; insufficient cooling; damaged bearings.	Reduce pinion gear size or increase spur gear size. Ensure adequate airflow. Check for binding in drivetrain. Inspect and replace bearings if necessary.
Loss of power or inconsistent performance	Low battery voltage; poor battery connection; damaged motor windings; sensor issue.	Charge battery fully. Check battery connectors. Inspect motor for visible damage. Ensure sensor cable is intact.
Motor making unusual noises	Damaged bearings; foreign object inside motor; incorrect gear mesh.	Inspect bearings for smooth rotation. Check for debris. Adjust gear mesh.

If the problem persists after attempting these solutions, please contact Hobbywing customer support.

9. Safety Precautions

Always observe the following safety precautions when handling and operating the motor:

- **Electrical Safety:** Always disconnect the battery before performing any maintenance or making adjustments to the motor or ESC. Avoid touching exposed wires or terminals.
- **Heat:** Motors can become very hot during operation. Allow the motor to cool down before handling to prevent burns.
- **Rotating Parts:** Keep fingers, loose clothing, and other objects away from rotating parts (motor shaft, pinion gear) during operation.
- **Ventilation:** Ensure adequate ventilation around the motor during operation to prevent overheating.
- **Children:** This product is not a toy. Keep out of reach of small children. Adult supervision is required for minors operating RC vehicles.
- **Proper Use:** Use the motor only for its intended purpose in compatible RC vehicles.

10. Warranty and Support

Hobbywing products are manufactured to high standards. For warranty information or technical support, please contact Hobbywing North America directly or visit their official website. Please retain your proof of purchase for warranty claims.
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Model Number: 30402141
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For further assistance, please visit: www.hobbywing.com

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