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DC GEAR MOTOR gear 110RPM

DC GEAR MOTOR Hall Sensor Geared Motor with 48 CPR Encoder 12V 110RPM Instruction Manual

Model: gear 110RPM

1. Product Overview

This document provides instructions for the DC GEAR MOTOR Hall Sensor Geared Motor, model gear 110RPM. This motor features a two-channel quadrature Hall effect encoder, making it suitable for applications requiring precise position or speed feedback.

Key Features:

- DC Gear motor with two-channel Hall effect encoder.
- Rated Voltage: 12V.
- No-Load Speed: 110RPM.
- No-Load Current: ≤ 0.3A.
- Rated Torque: 0.5kg.cm.
- Encoder Resolution: 48 counts per revolution (CPR) of the motor shaft, resulting in 3312 pulses per revolution of the gearbox output (48 CPR * 69 Gear Ratio).

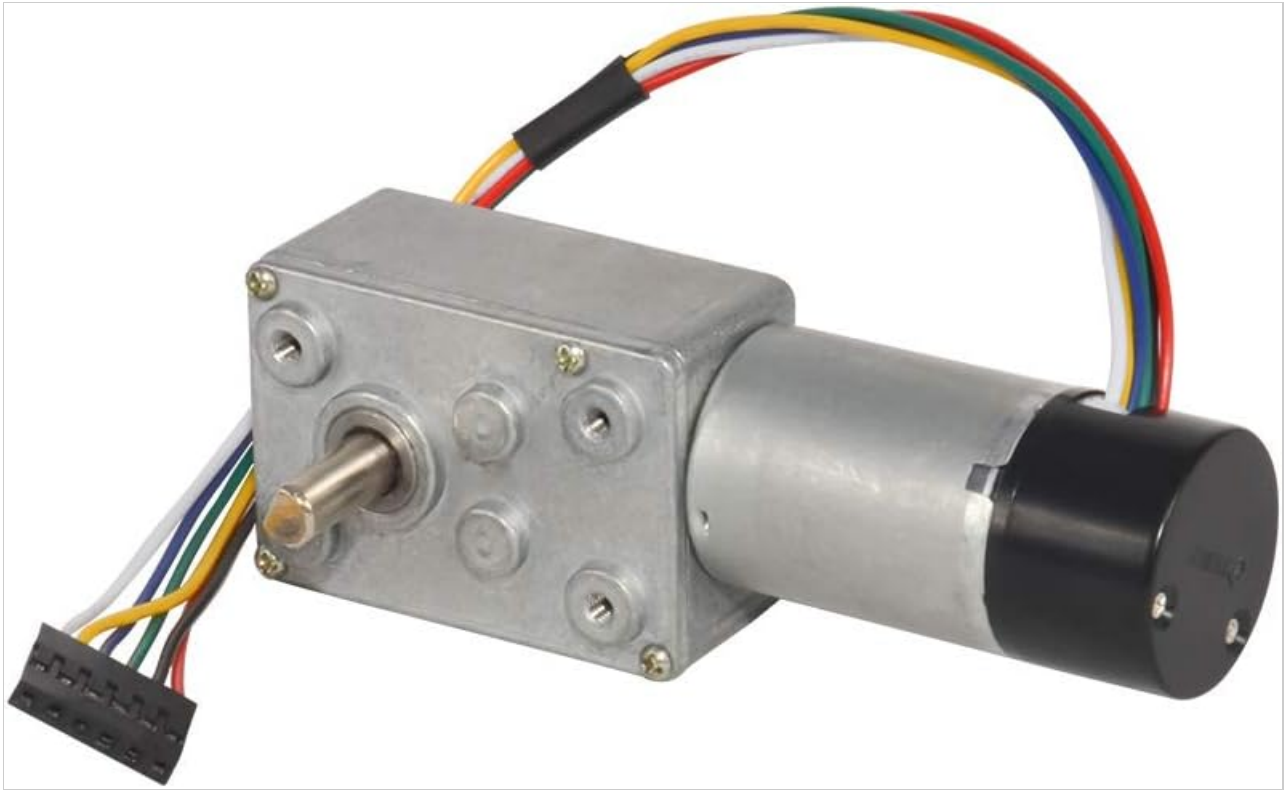


Figure 1: Front view of the DC Gear Motor with Hall Sensor Encoder. This image shows the motor assembly with the gearbox and the attached wiring harness for the encoder.

2. Setup and Wiring

Proper wiring is essential for the correct operation of the motor and its Hall effect encoder. Refer to the wiring diagram below for connections.

Wiring Diagram:

Red - Motor power terminal (+)

Black - Motor power terminal (-)

Green - Hall encoder Ground

Blue - Hall encoder +5V Vcc

Yellow - Hall encoder A signal

White - Hall encoder B signal

Ensure all connections are secure and correctly polarized to prevent damage to the motor or connected electronics. The Hall encoder requires a +5V power supply.

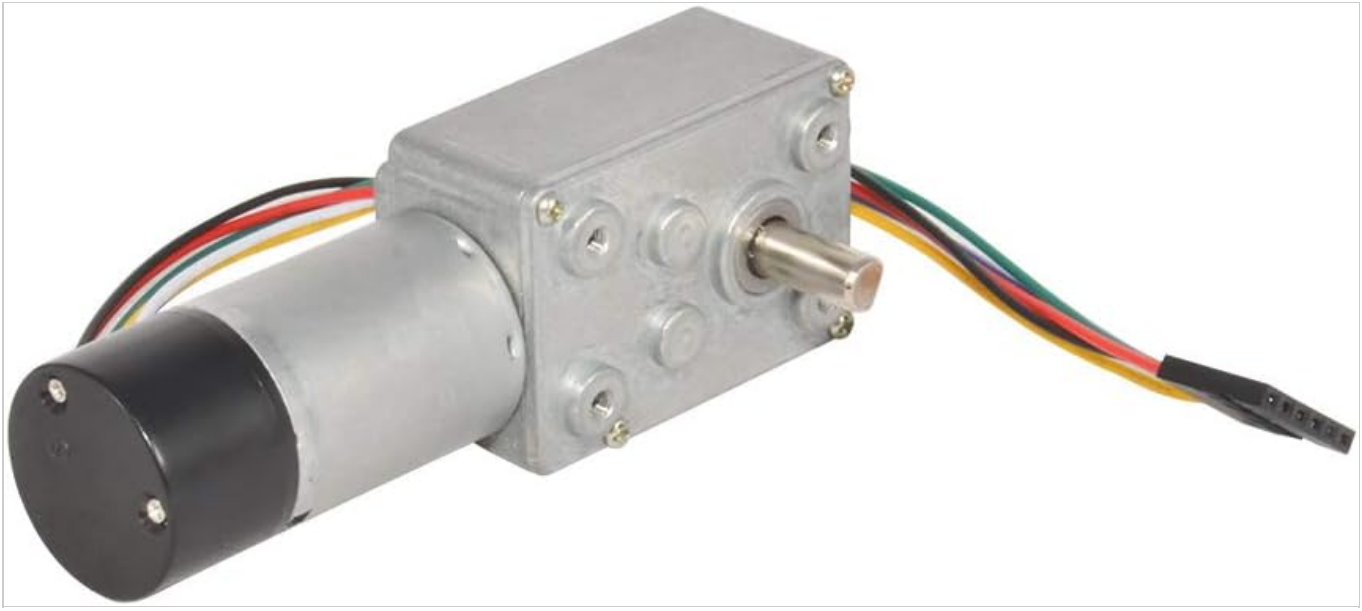


Figure 2: Side view of the motor, illustrating the wiring harness connected to the encoder at the rear of the motor. The colored wires correspond to the functions listed in the wiring diagram.

3. Operating Instructions

Motor Operation:

1. Connect the motor power terminals (Red and Black wires) to a 12V DC power supply. Reversing polarity will reverse the motor's direction.
2. Apply the rated voltage for optimal performance. Operating outside the specified voltage range may damage the motor or reduce its lifespan.
3. Avoid stalling the motor for extended periods, as this can lead to overheating and permanent damage.

Encoder Operation:

The two-channel Hall effect encoder provides A and B signals, which are 90 degrees out of phase. This quadrature output allows for both direction sensing and higher resolution counting.

- Connect the encoder's Vcc (Blue) to +5V and Ground (Green) to your control system's ground.
- Connect the A (Yellow) and B (White) signal lines to digital input pins on your microcontroller (e.g., Arduino, Raspberry Pi).
- To determine the motor's direction, monitor the phase relationship between the A and B signals.
- The encoder provides 48 counts per revolution of the motor shaft. To calculate the counts per revolution of the gearbox output shaft, multiply the motor shaft CPR by the gear ratio (48 CPR * 69 = 3312 counts per output shaft revolution).

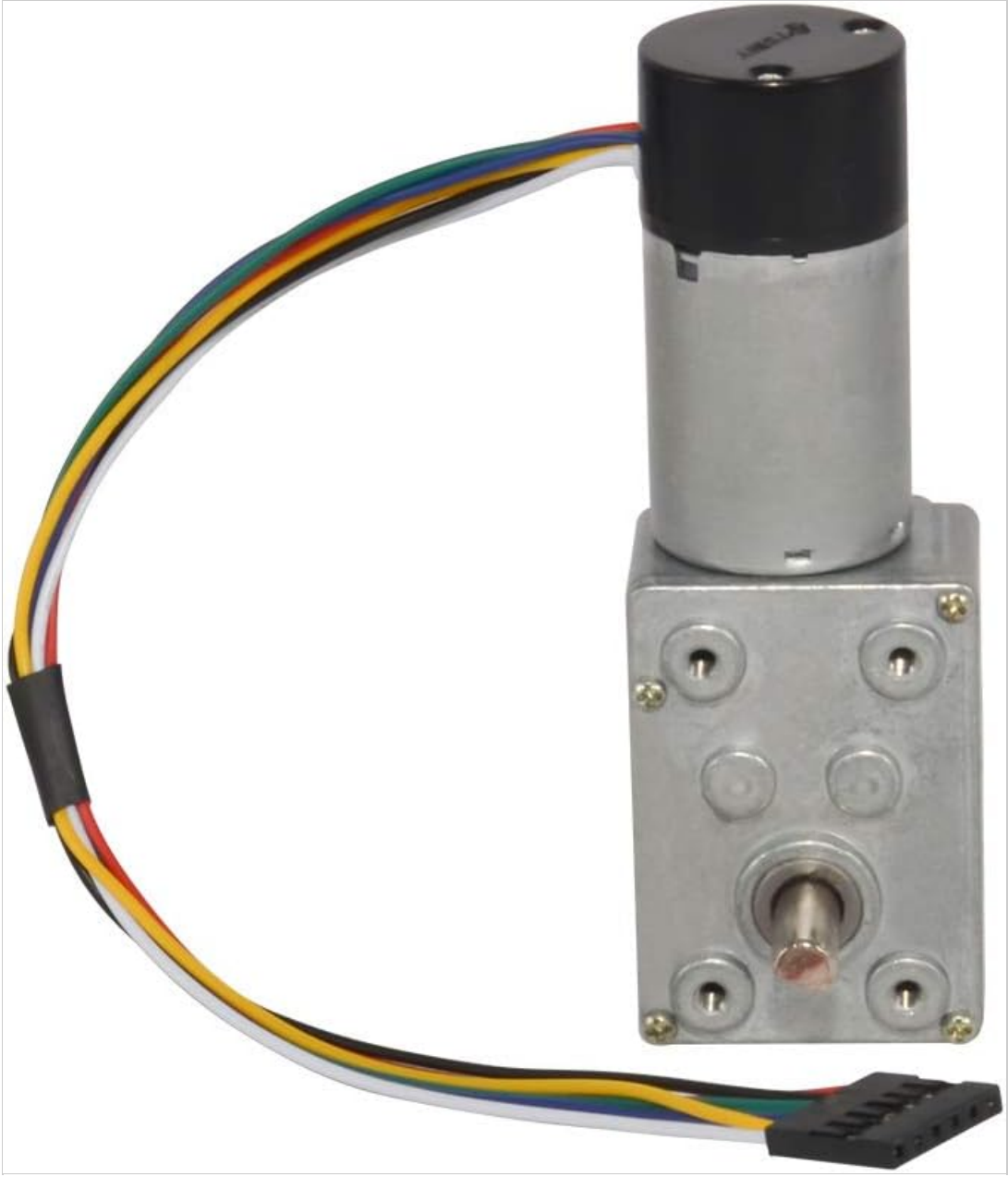


Figure 3: Top-down view of the motor, showing the gearbox and the motor body. This perspective highlights the compact design.

4. Maintenance

This DC gear motor is designed for durability and generally requires minimal maintenance.

- **Cleaning:** Keep the motor and gearbox free from dust and debris. Use a soft, dry cloth for cleaning. Avoid using liquids or solvents that could damage electrical components or lubricants.
- **Inspection:** Periodically inspect the wiring for any signs of wear, fraying, or loose connections. Ensure the motor is securely mounted in its application.
- **Lubrication:** The gearbox is pre-lubricated. Avoid disassembling the gearbox unless absolutely necessary, as this can compromise its sealing and lubrication.
- **Operating Environment:** Operate the motor within its specified temperature and humidity ranges to ensure optimal performance and longevity.



Figure 4: Rear view of the motor, highlighting the encoder housing and the exit point for the wiring harness.

5. Troubleshooting

If you encounter issues with your DC GEAR MOTOR, refer to the following common troubleshooting steps:

Problem	Possible Cause	Solution
Motor does not run	No power supply; Incorrect wiring; Motor stalled; Damaged motor.	Check power connections and voltage; Verify wiring against diagram; Remove any obstructions; Replace motor if damaged.
Motor runs intermittently	Loose connections; Intermittent power supply; Overheating.	Secure all wiring connections; Ensure stable power supply; Check for proper ventilation and load.
Encoder signals are erratic or absent	Incorrect encoder wiring; Faulty encoder power (5V); Damaged encoder.	Verify encoder wiring (Green, Blue, Yellow, White); Check +5V supply to encoder; Inspect encoder for physical damage.

Problem	Possible Cause	Solution
Motor makes unusual noise	Excessive load; Worn gears; Misalignment.	Reduce load on the motor; Inspect gearbox for wear (if accessible); Ensure proper mounting.

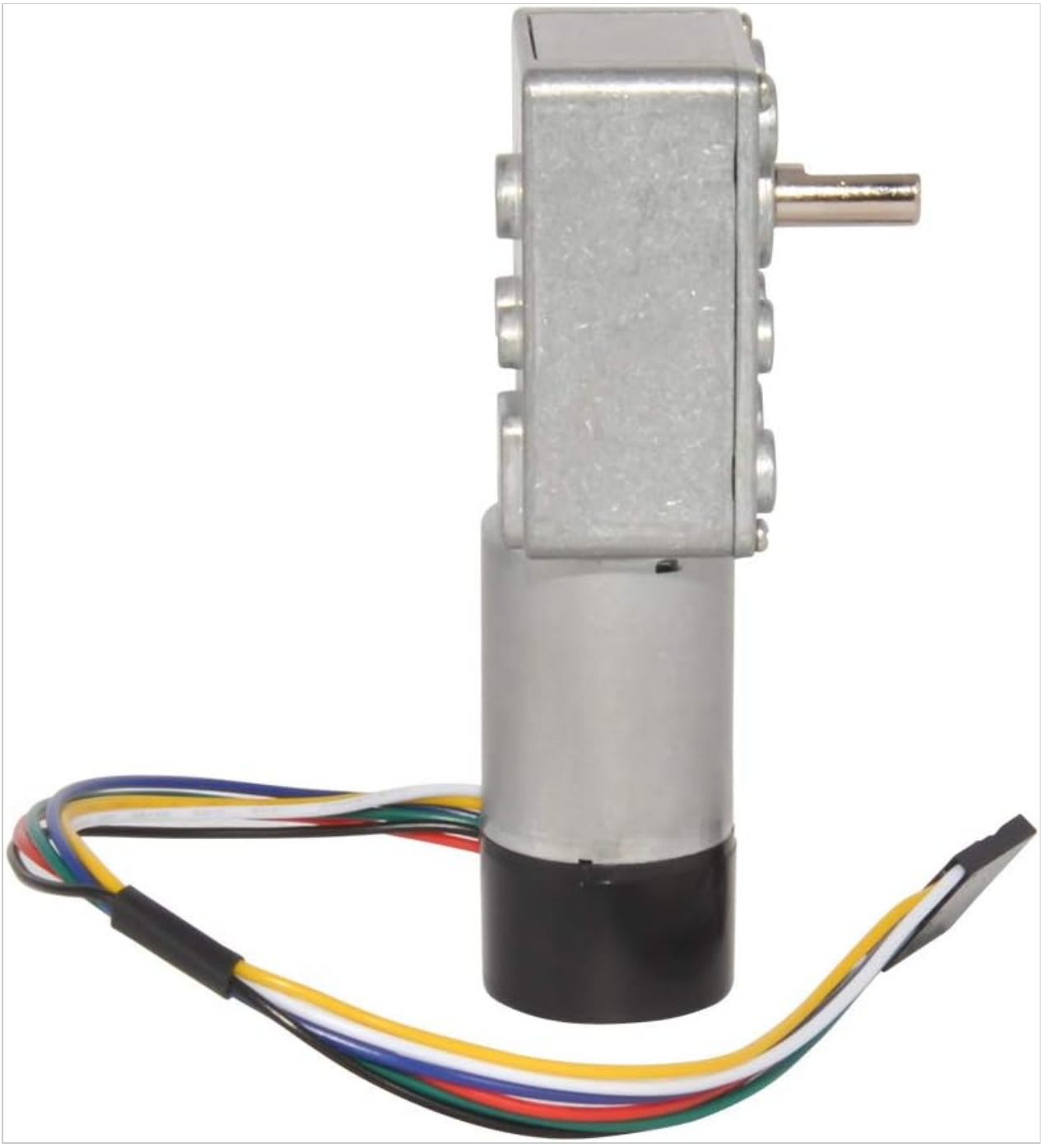


Figure 5: Another side view of the motor, providing a different angle of the gearbox and motor body, useful for identifying mounting points.

6. Specifications

Parameter	Value
Product Type	DC Gear Motor with Two-Channel Hall Effect Encoder
Brand	DC GEAR MOTOR
Model Name	gear

Parameter	Value
Rated Voltage	12V DC
No-Load Speed	110 RPM
No-Load Current	≤ 0.3A
Rated Torque	0.5 kg.cm
Gear Reduction Ratio	1/69
Encoder Type	Two-channel Quadrature Hall Effect Encoder
Encoder Resolution (Motor Shaft)	48 Counts Per Revolution (CPR)
Encoder Resolution (Output Shaft)	3312 Counts Per Revolution (48 CPR * 69 Gear Ratio)
Main Body Dimensions (L*W*H)	93 x 32 x 27mm / 3.66" x 1.26" x 1.06"
Output Shaft Dimensions (L*D)	14 x 6mm / 0.55" x 0.23" (with 11 x 1.2mm flat cut off)
Material	Copper (motor windings)
UPC	734779751442
ASIN	B07HQC9NPT

7. Warranty and Support

For warranty information or technical support regarding your DC GEAR MOTOR Hall Sensor Geared Motor, please refer to the retailer or manufacturer's official website where the product was purchased. Keep your purchase receipt as proof of purchase.

For further assistance, you may contact the manufacturer, DC GEAR MOTOR, through their designated support channels.

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