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> Bemonoc TS-D57BL54 BLDC 24V 5000 RPM Brushless DC Motor User Manual

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1. PRODUCT OVERVIEW

This manual provides essential information for the safe and efficient use of the Bemonoc TS-D57BL54 Brushless DC (BLDC) Motor. This high-speed, high-torque motor is designed for various applications requiring precise and reliable rotational power.

The Bemonoc TS-D57BL54 is a 24V DC brushless motor with a no-load speed of 5000 RPM and a rated torque of 0.12 N.m. It features a compact design with a diameter of 57mm and a length of 22mm, and an output shaft of 8mm diameter and 22mm length.

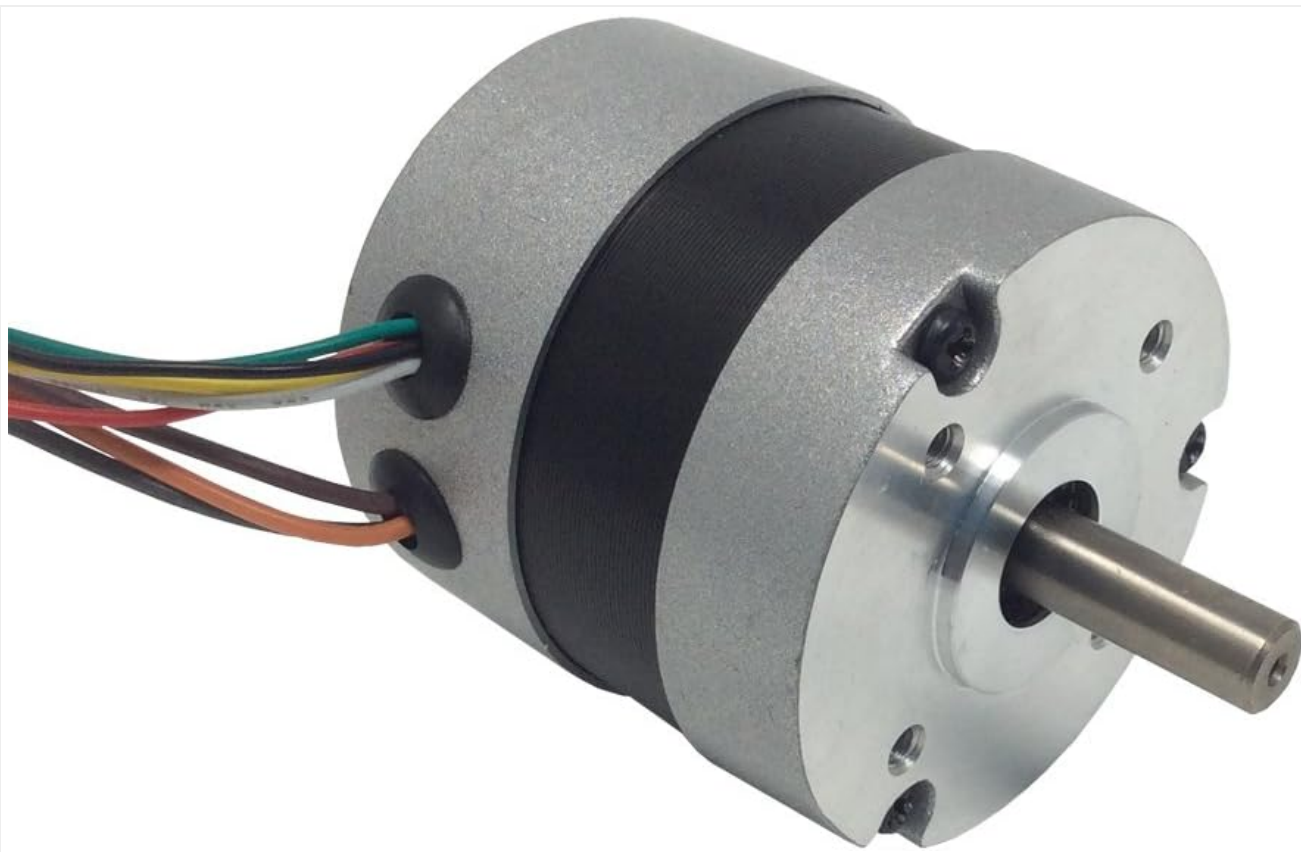


Image 1.1: Front view of the Bemonoc TS-D57BL54 BLDC Motor, showing the motor body and connected wiring harness.

2. SAFETY INSTRUCTIONS

Please read and understand all safety instructions before installing, operating, or maintaining the motor. Failure to follow these instructions may result in electric shock, fire, serious injury, or property damage.

- **Electrical Safety:** Ensure all power connections are made by a qualified professional. Disconnect power before making any connections or performing maintenance.
- **Voltage:** Only operate the motor with the specified 24V DC power supply. Using incorrect voltage can damage the motor and pose a safety risk.
- **Wiring:** Verify all wiring connections are secure and correctly polarized. Incorrect wiring can lead to motor malfunction or damage.
- **Moving Parts:** Keep hands, clothing, and tools clear of the rotating shaft and any connected components during operation.
- **Environment:** Do not expose the motor to excessive moisture, dust, or extreme temperatures. Operate within its specified environmental conditions.
- **Mounting:** Securely mount the motor to a stable surface to prevent vibration and movement during operation.

3. PACKAGE CONTENTS

Verify that all items are present and undamaged upon opening the package. If any items are missing or damaged, contact your supplier immediately.

- 1 x Bemonoc TS-D57BL54 BLDC Motor
- 1 x Wiring Instructions (included in this manual)

4. SPECIFICATIONS

The following table details the technical specifications of the Bemonoc TS-D57BL54 BLDC Motor:

Parameter	Value
Product Name	Brushless DC Motor
Type	TS-D57BL54
Rated Voltage	24V DC
No-load Speed	5000 RPM
Rated Torque	0.12 N.m
Motor Diameter (D)	57 mm (2.244 inches)
Motor Length (L)	22 mm (2.13 inches)
Output Shaft Diameter	8 mm (0.315 inches)
Output Shaft Length	22 mm (0.866 inches)
Horsepower	40 Watts
Material	Copper

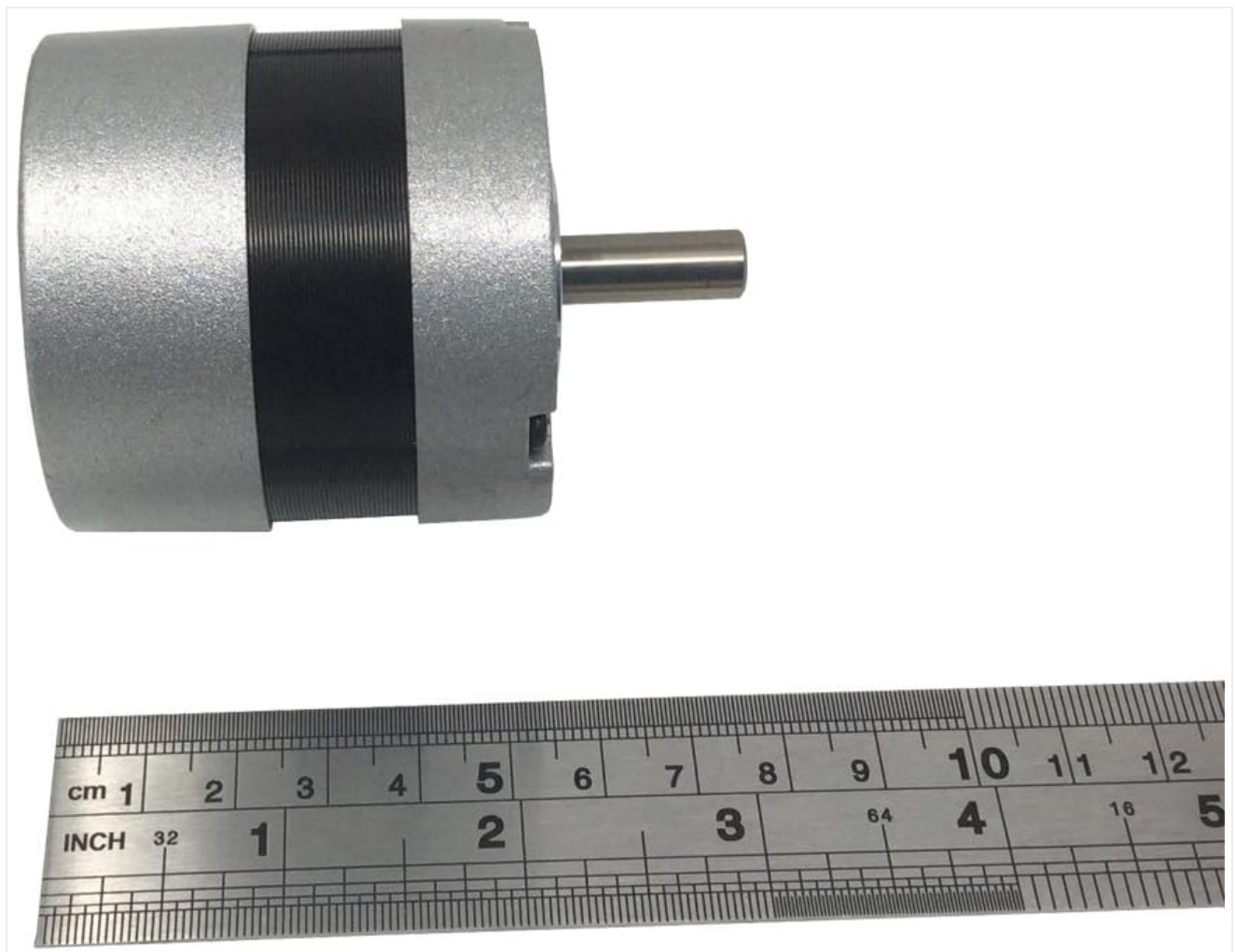


Image 4.1: Side view of the Bemonoc TS-D57BL54 BLDC Motor with a ruler, illustrating its physical dimensions.

5. SETUP AND WIRING

Proper wiring is crucial for the correct operation of the BLDC motor. Refer to the diagram and instructions below for connecting the motor to your control system.

5.1 Wiring Diagram

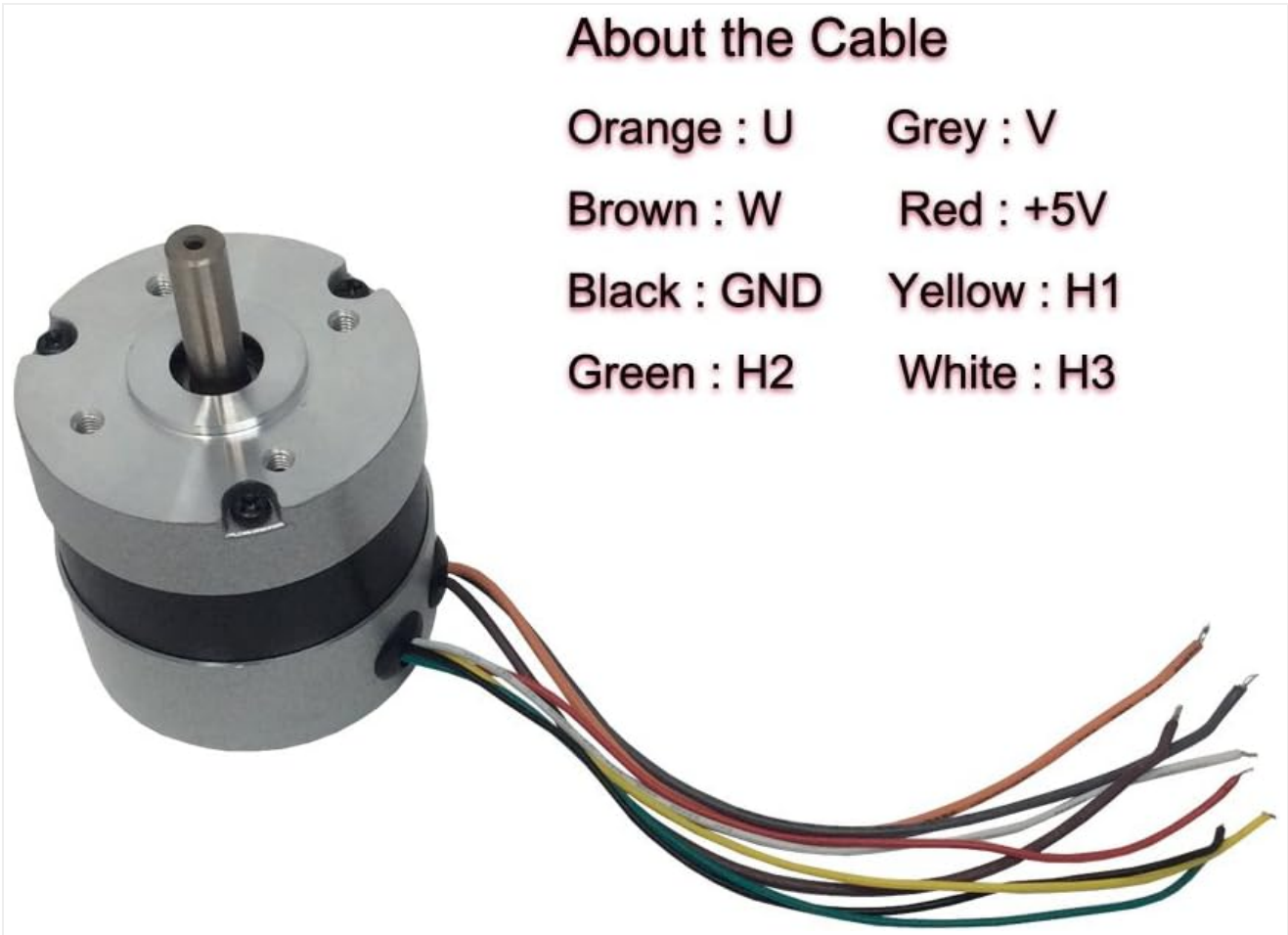


Image 5.1: Detailed wiring diagram for the Bemonoc TS-D57BL54 BLDC Motor, indicating the function of each colored wire.

5.2 Wire Connections

Connect the motor wires to your BLDC motor controller or power supply according to the following assignments:

- **Orange:** U (Motor Phase U)
- **Grey:** V (Motor Phase V)
- **Brown:** W (Motor Phase W)
- **Red:** +5V (Hall Sensor Power Supply)
- **Black:** GND (Ground for Hall Sensors)
- **Yellow:** H1 (Hall Sensor Output 1)
- **Green:** H2 (Hall Sensor Output 2)
- **White:** H3 (Hall Sensor Output 3)

Ensure all connections are firm and insulated to prevent short circuits. Incorrect wiring can lead to motor damage or improper operation.

6. OPERATING INSTRUCTIONS

Once the motor is correctly wired and mounted, it can be operated using a compatible BLDC motor controller. The controller will manage the commutation of the motor phases based on the Hall sensor feedback.

- **Power On:** Apply the rated 24V DC power to the motor controller.
- **Control Input:** Provide the appropriate control signal (e.g., PWM) to the motor controller to initiate and regulate motor speed and direction.
- **Monitoring:** Observe the motor's operation for any unusual noises, vibrations, or excessive heat.
- **Emergency Stop:** Be prepared to cut power to the motor in case of an emergency or malfunction.

Refer to your specific BLDC motor controller's manual for detailed operating procedures and programming.

7. MAINTENANCE

BLDC motors are known for their low maintenance requirements due to the absence of brushes. However, periodic checks can help ensure longevity and optimal performance.

- **Cleaning:** Keep the motor free from dust, dirt, and debris. Use a soft, dry cloth or compressed air for cleaning. Avoid using liquids directly on the motor.
- **Connections:** Periodically inspect all electrical connections for tightness and signs of corrosion.
- **Mounting:** Check that the motor remains securely mounted and that mounting screws are tight.
- **Bearings:** While BLDC motors typically have sealed bearings that do not require lubrication, listen for any unusual bearing noises that might indicate wear.
- **Temperature:** Ensure the motor operates within its specified temperature range. Excessive heat can reduce motor lifespan.

8. TROUBLESHOOTING

This section provides solutions to common issues you might encounter with your BLDC motor.

8.1 Motor Not Starting or Irregular Operation

- **Check Power Supply:** Ensure the 24V DC power supply is connected and providing the correct voltage.
- **Verify Wiring:** Double-check all motor phase (U, V, W) and Hall sensor (H1, H2, H3, +5V, GND) connections against the wiring diagram. Incorrect phase sequence or Hall sensor wiring will prevent proper commutation.
- **Controller Functionality:** Confirm that the BLDC motor controller is powered on and receiving the correct control signals. Refer to the controller's manual.
- **Obstruction:** Ensure the motor shaft is not mechanically obstructed.

8.2 Excessive Noise or Vibration

- **Mounting:** Check if the motor is securely mounted. Loose mounting can cause vibration.
- **Load Imbalance:** If a load is attached, ensure it is balanced and properly aligned with the motor shaft.
- **Bearings:** Worn bearings can cause noise. If persistent, consider professional inspection.

8.3 Overheating

- **Overload:** Ensure the motor is not operating under a load exceeding its rated torque.
- **Ventilation:** Verify that the motor has adequate ventilation and is not enclosed in a space that traps heat.
- **Ambient Temperature:** Check if the ambient temperature is within the motor's operating limits.

If troubleshooting steps do not resolve the issue, contact your supplier for further assistance.

9. WARRANTY AND SUPPORT

For information regarding warranty coverage, technical support, or replacement parts, please refer to the purchase documentation or contact Bemonoc customer service directly. Specific warranty terms and conditions may vary based on your region and point of purchase.