

STEPPERONLINE 17HS16-2004S

STEPPERONLINE Nema 17 Bipolar Stepper Motor (Model 17HS16-2004S) Instruction Manual

INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your STEPPERONLINE Nema 17 Bipolar Stepper Motor, model 17HS16-2004S. This high-torque stepper motor is designed for precision applications such as 3D printers, CNC machines, and various robotics projects. Please read this manual thoroughly before use to ensure safe and optimal performance.

SAFETY INFORMATION

Warning: Failure to follow these safety instructions may result in damage to the motor, driver, or other components, and may pose a risk of injury.

- Always connect the stepper motor to a constant current or chopper driver. Connecting the motor directly to a power supply will destroy the motor.
- Ensure the driver's output current does not exceed the motor's rated current (2A).
- Ensure the driver's voltage does not exceed 36V.
- Carefully verify the four wire coil order when connecting to the driver to prevent damage to the driver.
- Avoid touching the motor during operation as it may become hot.

PRODUCT FEATURES

- Holding Torque: 45Ncm (63.7oz.in)
- Frame Size: NEMA 17 (42x42mm)
- Step Angle: 1.8 degrees (200 steps per revolution)
- Rated Current: 2A per phase
- Number of Leads: 4-wire configuration
- Pre-fitted 1-meter power cable with 4-pin Harwin female connector

SPECIFICATIONS

Electrical Specification

- Manufacturer Part Number: 17HS16-2004S
- Motor Type: Bipolar Stepper
- Step Angle: 1.8 deg.
- Holding Torque: 45Ncm (63.7oz.in)
- Rated Current/phase: 2A
- Phase Resistance: 1.1 ohms
- Inductance: 2.6mH +/- 20% (1KHz)

Physical Specification

- Frame Size: 42 x 42mm (1.65" x 1.65")
- Body Length: 40mm (1.57")
- Shaft Diameter: 5mm
- Shaft Length: 23mm
- D-cut Length: 21mm
- Number of Leads: 4
- Lead Length: 1000mm (1 meter)
- Weight: 310g (10.9 ounces)
- Material: Alloy Steel, Aluminum, Copper

PRODUCT OVERVIEW



Figure 1: Front view of the STEPPERONLINE Nema 17 Bipolar Stepper Motor, showing the shaft and the CE marking on the motor body.

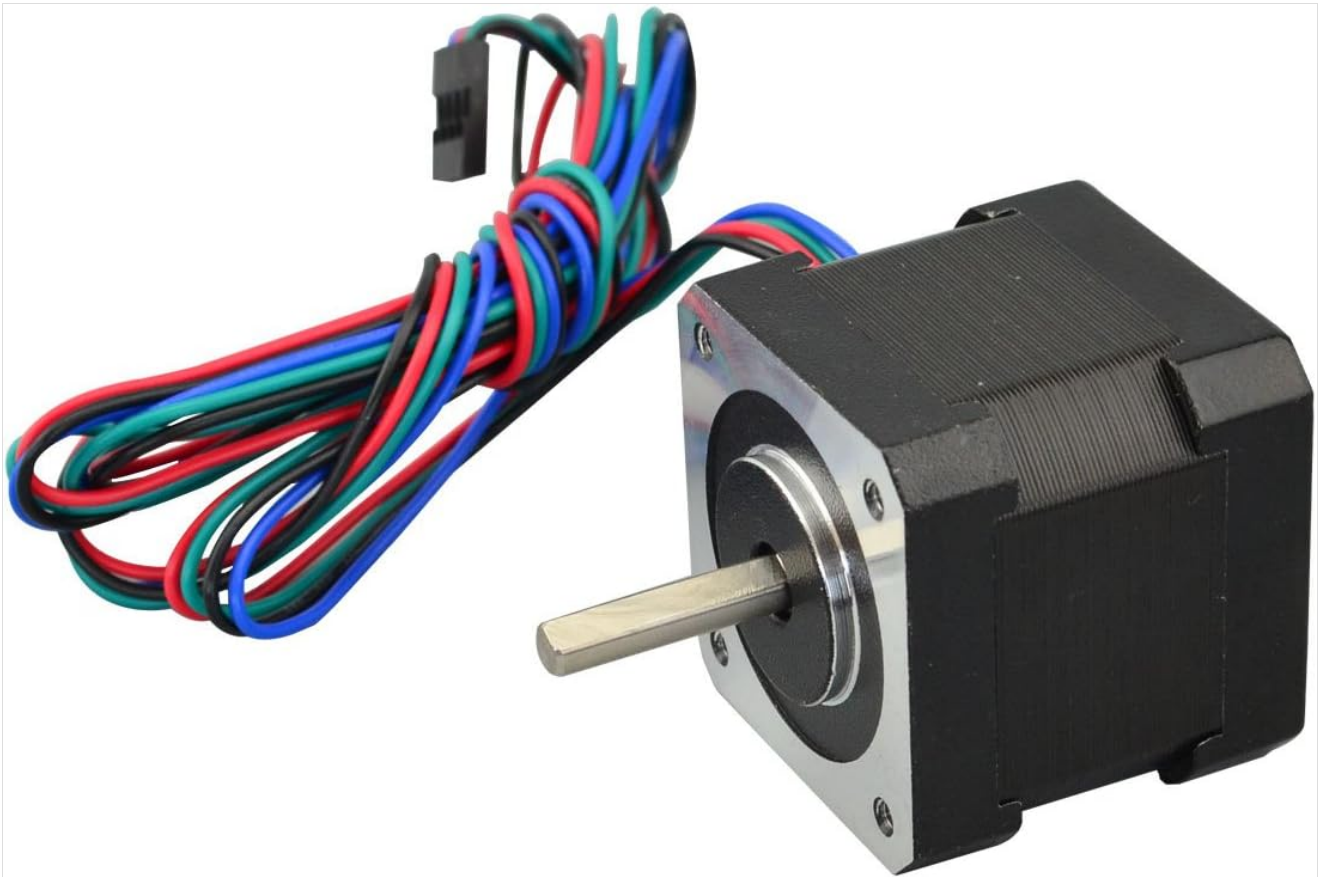


Figure 2: Side view of the stepper motor, illustrating the attached 1-meter wiring harness with a 4-pin Harwin female connector.

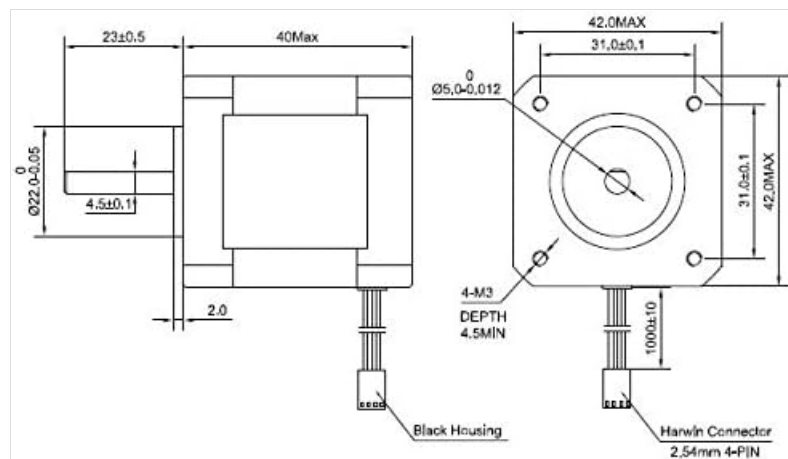


Figure 3: Detailed technical drawing providing precise dimensions for the stepper motor, including frame size, body length, shaft diameter, and mounting hole specifications. This diagram is crucial for integration into mechanical designs.

SETUP AND CONNECTION

Wiring Diagram

The motor comes with a 1-meter cable and a 4-pin Harwin female connector. The wire colors correspond to the motor phases as follows:

- **Black:** A+
- **Green:** A-
- **Red:** B+
- **Blue:** B-

Connect these wires to your stepper motor driver according to the driver's specifications. Ensure correct polarity and

phase assignment to prevent damage.

Mounting

The motor features a 42x42mm frame with standard NEMA 17 mounting holes. Use appropriate M3 screws (maximum depth 4.5mm) to secure the motor to your application's frame or bracket. Refer to Figure 3 for detailed mounting dimensions.

OPERATING INSTRUCTIONS

Once the motor is securely mounted and correctly wired to a compatible stepper motor driver, follow these general operating guidelines:

- **Driver Configuration:** Configure your stepper motor driver's current limit to match or be slightly below the motor's rated current of 2A per phase.
- **Voltage Supply:** Provide a DC voltage to the driver within its specified range, ensuring it does not exceed 36V. Higher voltages (within the driver's and motor's safe limits) can improve high-speed performance.
- **Step Control:** Use your control system (e.g., microcontroller, CNC controller) to send step and direction signals to the driver. The motor will move 1.8 degrees per step.
- **Microstepping:** Utilize microstepping features of your driver for smoother operation and reduced resonance, especially at lower speeds.

MAINTENANCE

The STEPPERONLINE Nema 17 stepper motor is designed for long-term, reliable operation with minimal maintenance. Consider the following:

- **Cleaning:** Keep the motor free from dust and debris, especially around the shaft and mounting surfaces, to ensure smooth operation and proper heat dissipation.
- **Inspection:** Periodically check wiring connections for looseness or damage. Ensure mounting screws remain tight.
- **Operating Temperature:** Ensure the motor operates within its recommended temperature range. Excessive heat can reduce motor lifespan. If the motor becomes excessively hot, reduce the driver current or improve cooling.

TROUBLESHOOTING

- **Motor Not Moving/Erratic Movement:**
 - Check all wiring connections, especially the phase order (A+, A-, B+, B-). Incorrect wiring can cause erratic movement or prevent rotation.
 - Verify the power supply to the driver is adequate and stable.
 - Ensure the driver's current limit is correctly set for the motor (2A).
 - Check for mechanical obstructions preventing motor rotation.
- **Motor Overheating:**
 - Reduce the current setting on the stepper motor driver.
 - Ensure adequate ventilation around the motor. Consider adding a heatsink or fan if operating in a high-load or enclosed environment.
 - Verify the load on the motor is not exceeding its holding torque capacity.

- **Lost Steps/Inaccurate Positioning:**

- Increase the driver current (up to 2A) if it's currently set lower.
- Reduce the acceleration or maximum speed settings in your control software.
- Check for excessive mechanical friction or binding in the system the motor is driving.
- Ensure the step pulse width from your controller is sufficient for the driver.

WARRANTY AND SUPPORT

For specific warranty information or technical support, please refer to the official STEPPERONLINE website or contact your point of purchase. Keep your purchase receipt for warranty claims.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question