Generic 86HS11860A4JEP

Nema34 2-Phase 4-Wire Stepper Motor User Manual

Model: 86HS11860A4JEP

Introduction

This manual provides essential information for the proper installation, operation, and maintenance of your Nema34 2-Phase 4-Wire Stepper Motor. Please read this manual thoroughly before using the product to ensure optimal performance and longevity. This motor is designed for high-torque applications requiring precise angular positioning.

Product Overview

This image displays the front of the Nema34 Stepper Motor, highlighting the label with the model number 86HS11860A4JEP, 1.8 degree step angle, and 6.0A current rating. The shaft is visible at the top.

The Nema34 Stepper Motor (Model: 86HS11860A4JEP) is a robust 2-phase, 4-wire hybrid stepper motor known for its high torque output and precise step accuracy. It is suitable for various industrial and scientific applications, including 3D printers, CNC machines, and automation equipment.

Key Features:

- **High Torque:** 8.5 Nm (1204 oz-in) holding torque.
- **Precision:** 1.8 degree step angle for accurate positioning.
- **Current Rating:** 6.0A per phase.
- **Shaft Dimensions:** 14mm diameter, 37mm length with a 5x25mm keyway.
- **Motor Length:** 118mm.
- **Wiring:** 4-wire configuration for simplified connection.

Setup and Installation

Mounting the Motor:

1. Ensure the mounting surface is flat and rigid to prevent vibrations.
2. Align the motor's mounting holes (69.6mm spacing) with the corresponding holes on your equipment.
3. Secure the motor using appropriate screws, ensuring even tightening to avoid stress on the motor casing.

Wiring Connections:

This image shows a side view of the Nema34 Stepper Motor, illustrating the four-wire connection cable extending from the motor body. The wires are typically color-coded for phase identification.

This motor features a 4-wire configuration, which simplifies connection to a compatible stepper motor driver. The typical color coding for the wires is as follows:

- **Red:** Phase A+
- **Green:** Phase A-
- **Yellow:** Phase B+

- **Blue:** Phase B-

Connect these wires to the corresponding terminals on your stepper motor driver. Refer to your driver's manual for specific wiring instructions and power supply requirements. Ensure all connections are secure to prevent intermittent operation or damage.

Operation

Once the motor is correctly mounted and wired to a suitable stepper motor driver, it can be controlled via pulse signals. The driver translates these signals into precise motor movements.

Operational Considerations:

- **Power Supply:** Use a stable DC power supply that meets the voltage and current requirements of your stepper motor driver and motor combination.
- **Microstepping:** Utilize microstepping settings on your driver to achieve smoother motion and reduce resonance, especially at lower speeds.
- **Current Setting:** Set the driver's current limit to match the motor's rated current (6.0A) to prevent overheating and ensure optimal performance.
- **Heat Dissipation:** Ensure adequate ventilation around the motor, especially during prolonged operation at high currents, to prevent overheating. Consider adding a heatsink if necessary.
- **Load:** Do not exceed the motor's rated torque capacity to avoid skipped steps or damage.

Maintenance

The Nema34 Stepper Motor is designed for durability and requires minimal maintenance. However, regular checks can extend its lifespan and ensure reliable operation.

- **Cleaning:** Keep the motor free from dust, debris, and moisture. Use a soft, dry cloth for cleaning. Avoid using solvents or abrasive materials.
- **Connections:** Periodically inspect all wiring connections to ensure they are secure and free from corrosion or damage.
- **Temperature Monitoring:** Monitor the motor's operating temperature. Excessive heat can indicate issues with current settings, load, or ventilation.
- **Shaft and Bearings:** The motor's bearings are typically sealed and lubricated for life, requiring no additional lubrication. Avoid applying excessive radial or axial loads to the shaft.

Troubleshooting

This section addresses common issues you might encounter with your stepper motor.

Problem	Possible Cause	Solution
Motor not moving or erratic movement	Incorrect wiring; insufficient power supply; driver current too low; motor overloaded; faulty driver.	Check wiring connections against the diagram; verify power supply voltage and current; adjust driver current setting; reduce mechanical load; test with a known good driver.
Motor overheating	Driver current too high; insufficient ventilation; continuous high load.	Reduce driver current setting; ensure adequate airflow around the motor; reduce duty cycle or load.

Problem	Possible Cause	Solution
Motor vibrating or making excessive noise	Resonance at certain speeds; loose mounting; incorrect microstepping settings.	Adjust microstepping settings; ensure motor is securely mounted; consider adding damping.
Loss of steps (motor skips positions)	Motor overloaded; acceleration/deceleration too high; driver current too low; mechanical binding.	Reduce load; decrease acceleration/deceleration rates in software; increase driver current; check for mechanical obstructions.

Technical Specifications

Parameter	Value
Model Number	86HS11860A4JEP
Motor Type	2-Phase 4-Wire Hybrid Stepper Motor
Step Angle	1.8 Degrees
Holding Torque	8.5 Nm (1204 oz-in)
Rated Current	6.0A / Phase
Motor Length	118 mm
Shaft Diameter	14 mm
Shaft Length	37 mm
Keyway Dimensions	5 x 25 mm
Boss Diameter	73 mm
Hole Spacing	69.6 mm

Dimensional Overview:

This image provides a top-down view of the Nema34 Stepper Motor, clearly showing the four mounting holes on the faceplate and the keyway shaft extending from the center. This view is useful for understanding mounting dimensions and shaft details.

Warranty Information

This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. The specific terms and duration of the warranty may vary. Please retain your proof of purchase for warranty claims. For detailed warranty information, refer to the documentation provided at the time of purchase or contact the seller.

Customer Support

If you encounter any issues or have questions regarding the Nema34 Stepper Motor that are not covered in this manual, please contact your point of purchase or the manufacturer's customer support. When contacting support, please provide the product model number (86HS11860A4JEP) and a detailed description of the issue.