SURRYN SS2403A50A

SURRYN 60 Two-Phase Stepper Motor SS2403A50A Instruction Manual

Model: SS2403A50A

1. Introduction

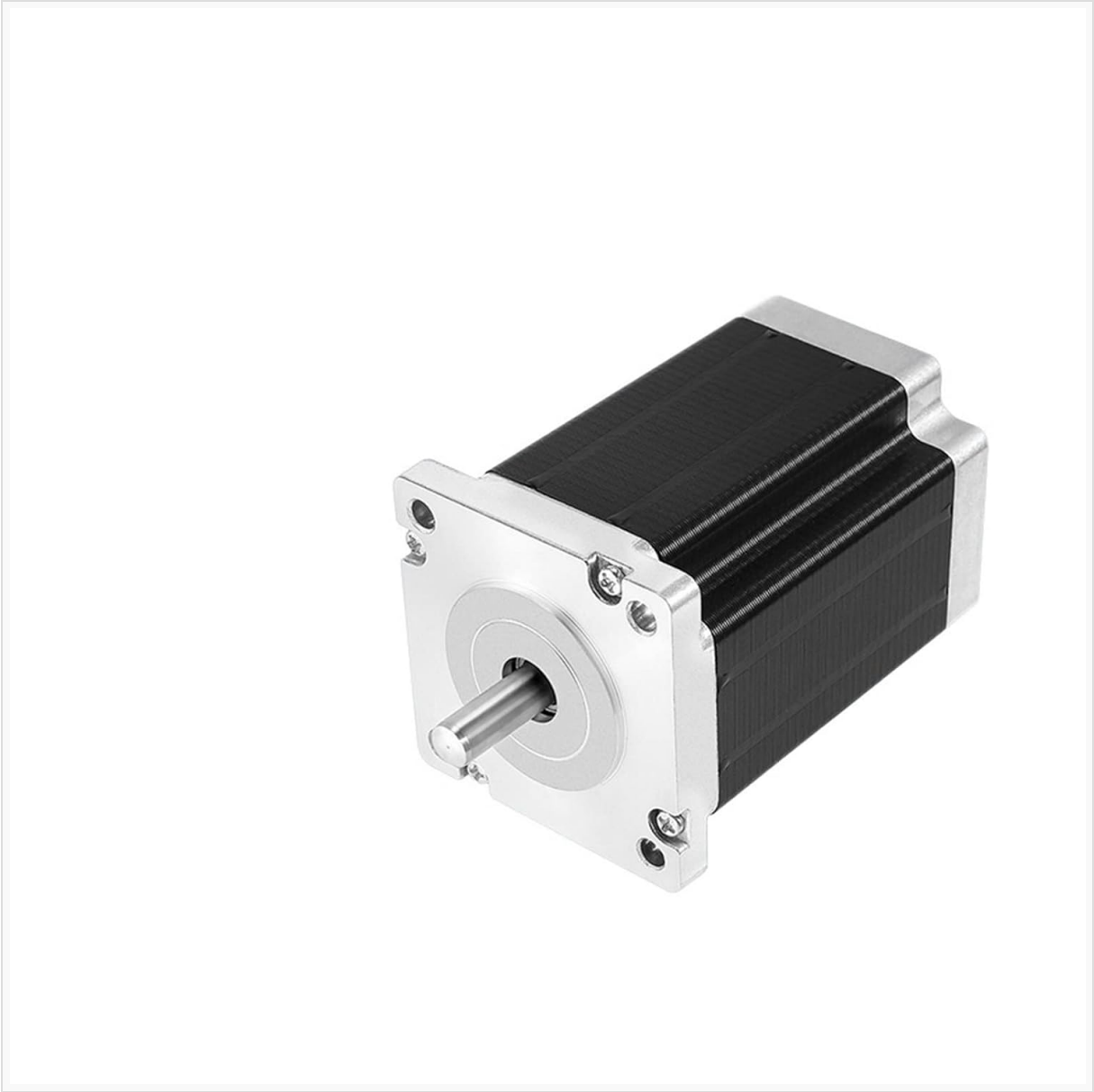
This manual provides essential information for the safe and efficient installation, operation, and maintenance of the SURRYN 60 Two-Phase Stepper Motor, model SS2403A50A. This motor is designed for precision motion control in applications such as engraving machines, 3D printers, and other automated systems requiring accurate positioning and holding torque. Please read this manual thoroughly before using the product to ensure proper function and to prevent damage or injury.

2. Safety Instructions

- **Electrical Safety:** Ensure all power connections are made by qualified personnel. Disconnect power before making any wiring changes or performing maintenance.
- **Grounding:** Properly ground the motor and associated equipment to prevent electrical shock.
- **Environmental Conditions:** Operate the motor within specified temperature and humidity ranges. Avoid exposure to dust, moisture, corrosive gases, or flammable materials.
- **Mechanical Safety:** Ensure the motor is securely mounted. Keep hands and loose clothing away from moving parts during operation.
- **Overheating:** Do not operate the motor beyond its specified current and torque limits to prevent overheating and potential damage.

3. Product Overview

The SURRYN SS2403A50A is a high-performance 60mm two-phase stepper motor featuring a holding torque of 3.0Nm and a rated current of 4.0A. It is equipped with an integrated brake driver, providing reliable holding capabilities when power is removed or during emergency stops. Its design focuses on low noise operation, making it suitable for environments where acoustic performance is critical.



This image displays the SURRYN 60 Two-Phase Stepper Motor SS2403A50A, showing its robust metallic casing, front mounting plate, and the output shaft. The motor is designed for precision motion control applications.

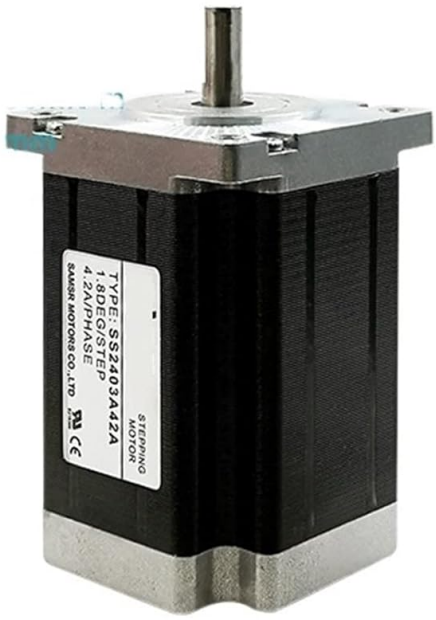
4. Setup

4.1 Mounting

Mount the stepper motor securely to a rigid, flat surface using appropriate screws through the mounting holes on the front flange. Ensure there is no vibration or misalignment that could affect performance or cause premature wear.

4.2 Wiring

Connect the motor to a compatible stepper motor driver. Refer to the driver's manual for specific wiring diagrams. Typically, two-phase stepper motors have four or six wires. The SS2403A50A is a two-phase motor, requiring connections for two coil phases (A and B) and potentially a common wire if it's a unipolar motor, or four wires for bipolar operation. The integrated brake driver will also require separate power and control signals, as specified by the driver manufacturer.



A rear view of the SURRYN stepper motor, highlighting the connection terminals and the product label which contains model information and electrical specifications. This view is crucial for proper wiring and identification.

4.3 Driver Configuration

Configure your stepper motor driver settings (e.g., current, microstepping, decay mode) according to the motor's specifications (4.0A rated current) and your application requirements. Incorrect settings can lead to reduced performance or motor damage.

5. Operating

5.1 Basic Operation

The SS2403A50A stepper motor operates by receiving pulse and direction signals from a compatible stepper motor driver. Each pulse typically corresponds to a single step (or microstep) of the motor. The direction signal determines the rotation direction.

5.2 Brake Operation

The integrated brake engages when power to the brake circuit is removed, or when a specific control signal is applied (depending on the driver). Ensure the brake is disengaged before attempting to move the motor to prevent damage. The brake provides holding torque to maintain position when the motor is unpowered or during emergency stops.

5.3 Speed and Acceleration

Optimize the motor's speed and acceleration profiles within your control system to achieve smooth motion and prevent step loss. Excessive acceleration or speed can lead to missed steps and reduced accuracy.

6. Maintenance

- **Cleaning:** Periodically clean the motor's exterior to prevent dust and debris buildup, which can affect heat dissipation. Use a soft, dry cloth.
- **Inspection:** Regularly inspect wiring for signs of wear, fraying, or loose connections. Check mounting screws for tightness.
- **Environmental Check:** Ensure the operating environment remains within specified conditions (temperature, humidity).
- **Lubrication:** Stepper motors are generally maintenance-free regarding lubrication. Do not attempt to lubricate internal components unless specifically instructed by the manufacturer.

7. Troubleshooting

- **Motor Not Moving:**
  - Check power supply to the driver and motor.
  - Verify control signals (pulse, direction, enable) from the controller.
  - Ensure wiring connections are correct and secure.
  - Check if the brake is disengaged.
- **Motor Overheating:**
  - Reduce the motor current setting on the driver if possible.
  - Ensure adequate ventilation around the motor.
  - Check for excessive mechanical load.
- **Loss of Steps/Inaccurate Positioning:**
  - Reduce acceleration or maximum speed settings.
  - Increase motor current (within limits).
  - Check for mechanical binding or excessive load.
  - Verify pulse signal integrity.
- **Excessive Noise/Vibration:**
  - Check for loose mounting or mechanical resonance.
  - Adjust microstepping settings on the driver.
  - Ensure proper current settings.

8. Specifications

Feature	Specification
Model	SS2403A50A
Motor Type	Two-Phase Stepper Motor

Feature	Specification
Holding Torque	3.0 Nm
Rated Current	4.0 A
Step Angle	1.8 degrees/step (typical)
Brake Driver	Integrated
Manufacturer	SURRYN
ASIN	B0FM2LCNR4
Package Dimensions	0.39 x 0.39 x 0.39 inches; 3.53 Pounds

9. Warranty and Support

For warranty information, technical support, or service inquiries, please contact SURRYN customer service through your point of purchase or the official SURRYN website. Please have your product model (SS2403A50A) and purchase details ready when contacting support.