Acxico YY627

Acxico DC 5V 2-Phase 4-Wire Micro Stepper Motor User Manual

Model: YY627

1. Introduction

This manual provides instructions for the Acxico DC 5V 2-Phase 4-Wire Micro Mini Ultra-Tiny 4 mm Precision Stepper Motor. These motors are designed for various DIY projects requiring precise, small-scale rotational movement. Please read this manual thoroughly before use to ensure proper operation and safety.

2. Safety Information

Working with small electronic components requires care and attention. Observe the following safety guidelines:

- **Professional Level Required:** The use and integration of these micro stepper motors typically require a foundational understanding of electronics and soldering techniques.
- **Soldering Precautions:** When soldering wires to the motor terminals, use appropriate soldering equipment and techniques. Excessive heat or prolonged contact can damage the motor's internal wiring.
- **Voltage and Current:** Ensure the power supply and motor driver are configured for DC 5V. Operating outside specified parameters can lead to damage or overheating.
- **Heat Generation:** Stepper motors can generate heat during operation, especially under load or with incorrect driver settings. Ensure adequate ventilation if operating continuously.
- **Small Parts:** These motors are very small. Handle with care to avoid loss or damage. Keep out of reach of small children.

3. Package Contents

Your package should contain the following items:

- 10 x Acxico DC 5V 2-Phase 4-Wire Micro Mini Ultra-Tiny 4mm Precision Stepper Motors

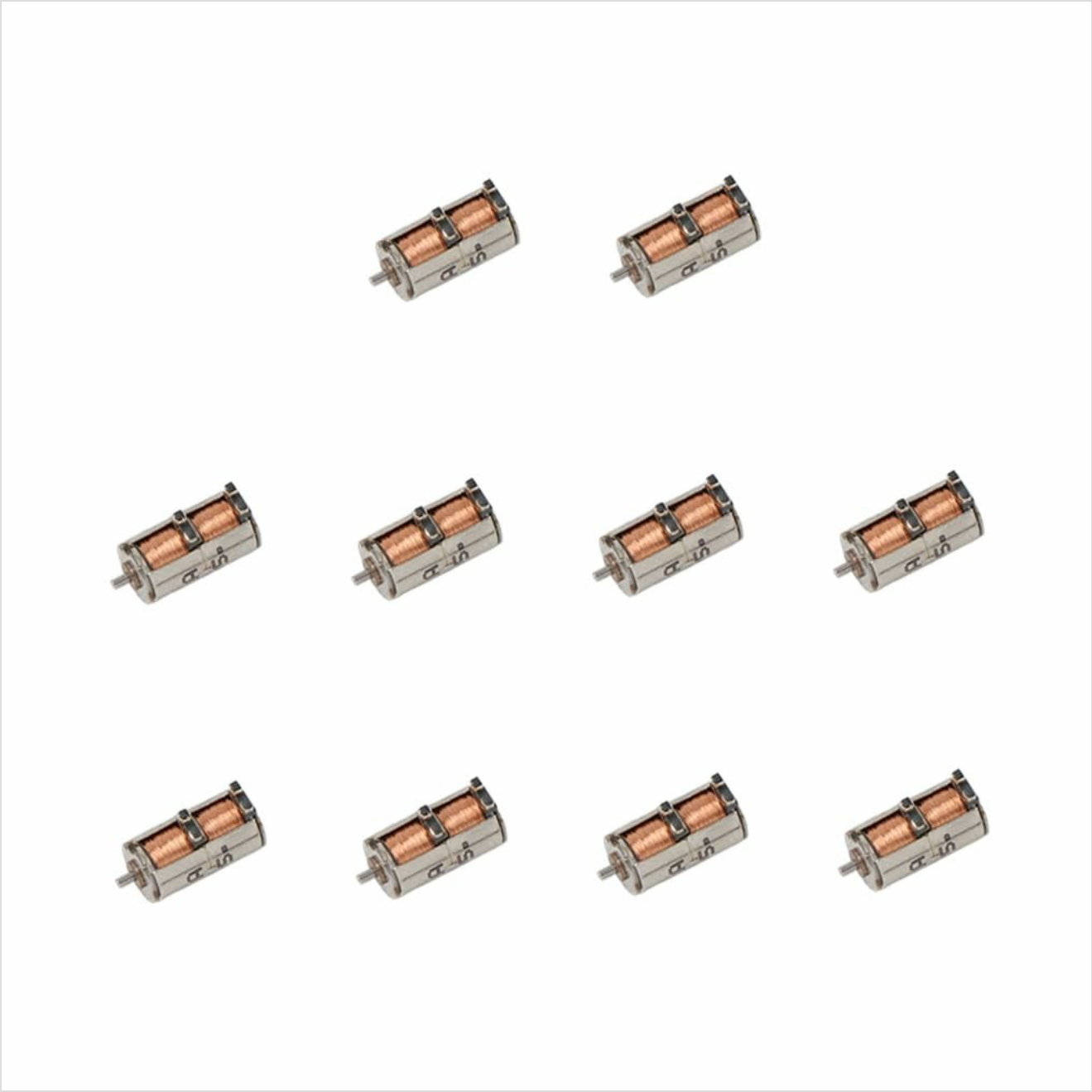

Image 3.1: Ten Acxico DC 5V 2-Phase 4-Wire Micro Stepper Motors as included in the package.

4. Product Specifications

Feature	Specification
Motor Type	2-Phase, 4-Wire Stepper Motor
Drive Voltage	DC 5V
Short-Circuit Current (at 5V)	0.3A
Resistance	Approximately 14 ohms
Motor Diameter	4.3 mm
Motor Height	8.4 mm
Output Shaft Diameter	0.7 mm (flat shaft 0.55 mm)

Output Shaft Length	1.7 mm
Product Dimensions (L x W x H)	0.17 x 0.17 x 0.33 inches
Material	Copper
Model Number	YY627

Image 4.1: A close-up view of the Acxico micro stepper motor, highlighting its compact size and construction.

5. Setup and Connection

These 2-phase, 4-wire stepper motors require an external stepper motor driver to function. The driver controls the sequence of current pulses to the motor coils, enabling precise step-by-step rotation.

5.1 Wiring Diagram

The motor features four terminals for connection. These correspond to the two phases of the stepper motor. Typically, these are labeled A+, A-, B+, and B- or similar designations on the motor driver.

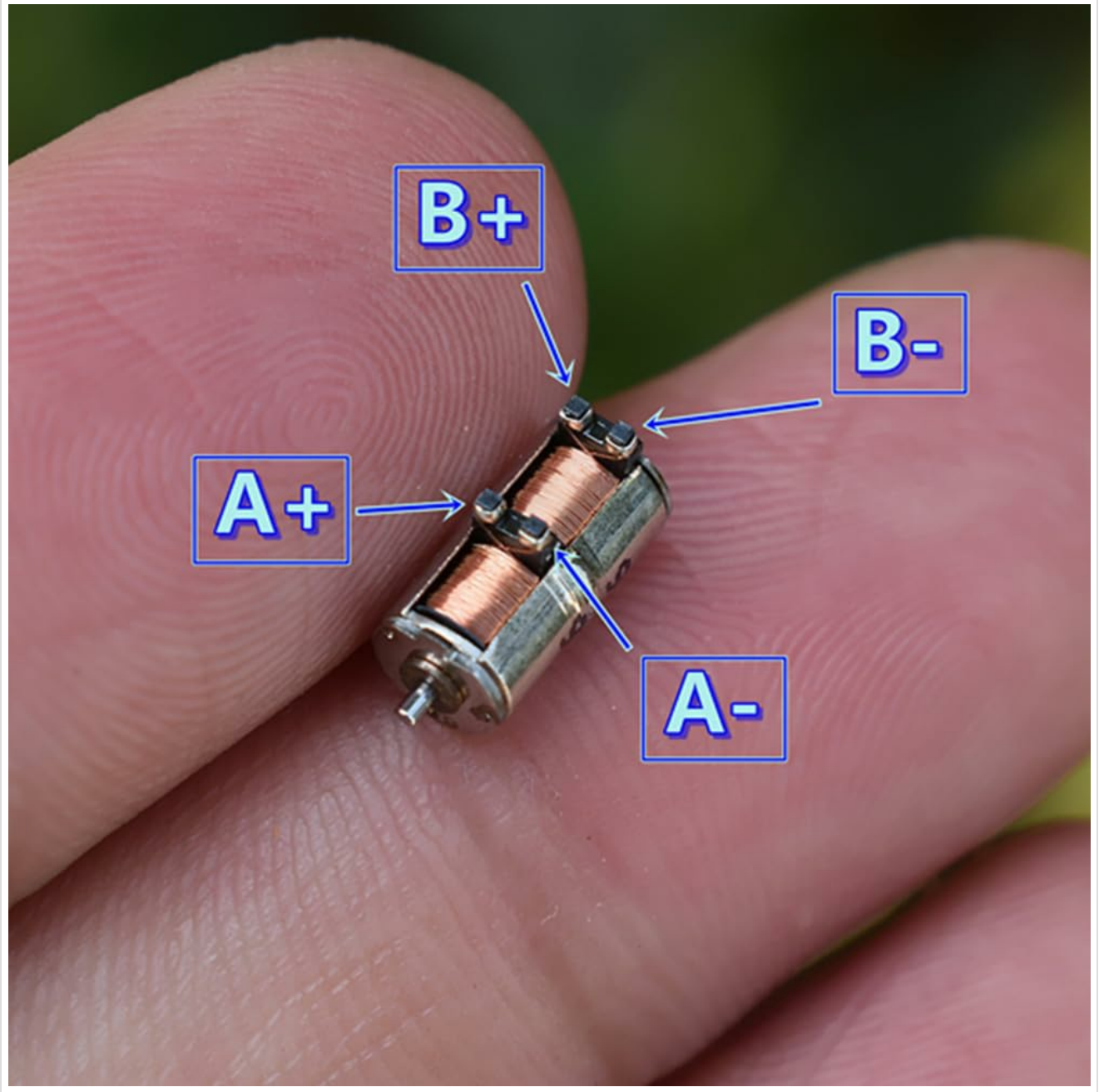

Image 5.1: Detailed view of the motor terminals, indicating the A+, A-, B+, and B- connections for a 2-phase, 4-wire configuration.

5.2 Recommended Driver

A common H-bridge motor driver, such as the L293D, DRV8411A, or TB6612, is suitable for controlling these motors. Consult the datasheet for your chosen driver for specific connection instructions.

5.3 Soldering Instructions

1. Prepare your soldering iron to an appropriate temperature for small electronics.
2. Carefully strip a small amount of insulation from your connection wires.
3. Tin the wire ends and the motor terminals.
4. Solder the wires to the corresponding motor terminals (A+, A-, B+, B-). Work quickly to avoid overheating the motor.
5. Ensure secure connections and check for any short circuits.

6. Operation

Once connected to a suitable stepper motor driver and microcontroller (e.g., Arduino, Raspberry Pi), the motor can

be controlled via software. The driver translates digital signals from the microcontroller into the necessary current pulses for the motor coils.

- **Power Supply:** Provide a stable DC 5V power supply to both the motor driver and the motor (if the driver doesn't supply it).
- **Control Signals:** Send step and direction signals from your microcontroller to the motor driver.
- **Step Angle:** The precise step angle of this motor is not specified, but it is a 2-phase motor. Experimentation or further technical documentation may be required for exact step calculations in your application.
- **Rotation:** By sequencing the current through the A and B phases, the motor will rotate in discrete steps. Reversing the sequence will reverse the direction of rotation.

7. Maintenance

These micro stepper motors are generally low-maintenance. Follow these guidelines to ensure longevity:

- **Keep Clean:** Avoid dust and debris accumulation, especially around the shaft and internal components.
- **Avoid Moisture:** Protect the motors from water and high humidity, which can cause corrosion and electrical shorts.
- **Temperature:** Operate within reasonable temperature ranges. Prolonged operation at high temperatures can reduce motor lifespan.
- **Physical Damage:** Handle carefully to prevent bending the shaft or damaging the delicate wiring.

8. Troubleshooting

If you encounter issues with your Acxico micro stepper motor, consider the following:

- **Motor Not Moving:**
  - Check all wiring connections for continuity and correct polarity.
  - Verify the power supply is providing a stable DC 5V.
  - Ensure the stepper motor driver is correctly configured and receiving control signals from your microcontroller.
  - Test the motor with a known working driver and power supply if possible.
- **Motor Getting Hot:**
  - Confirm the drive voltage is exactly 5V. Higher voltages will cause excessive heat.
  - Check the current limiting settings on your stepper motor driver. Excessive current will lead to overheating.
  - Ensure the motor is not stalled or overloaded, which can also cause heat buildup.
- **Insufficient Torque:**
  - These are micro motors designed for light loads. If your application requires significant torque, a larger motor may be necessary.
  - Ensure the motor is receiving adequate current from the driver.
  - Check for any mechanical obstructions or excessive friction in your setup.
- **Erratic Movement or Vibration:**
  - Review your control code and driver settings for correct stepping sequences.
  - Check for loose connections or intermittent power supply.

9. Warranty and Support

Acxico is committed to customer satisfaction. If you encounter any problems with your product, please contact us directly. Provide detailed information and, if possible, pictures of the issue to assist in finding the best possible solution.
For any questions or support, please feel free to reach out to our customer service.