WINGONEER TB6560

WINGONEER TB6560 3A Single-Axis Stepper Motor Driver Board User Manual

Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the WINGONEER TB6560 3A Single-Axis Stepper Motor Driver Board. Please read this manual thoroughly before using the product to ensure proper function and safety.

Safety Information

- Ensure power is disconnected before making any wiring connections or adjustments.
- Operate the board within the specified voltage and current limits to prevent damage.
- Avoid touching components while the board is powered, especially the heatsink, as it may become hot.
- This device is intended for use by individuals familiar with electronics and stepper motor control.

Product Overview

The WINGONEER TB6560 3A Single-Axis Stepper Motor Driver Board is designed for controlling a single stepper motor. It features adjustable current settings and microstepping capabilities, making it suitable for various applications requiring precise motor control.

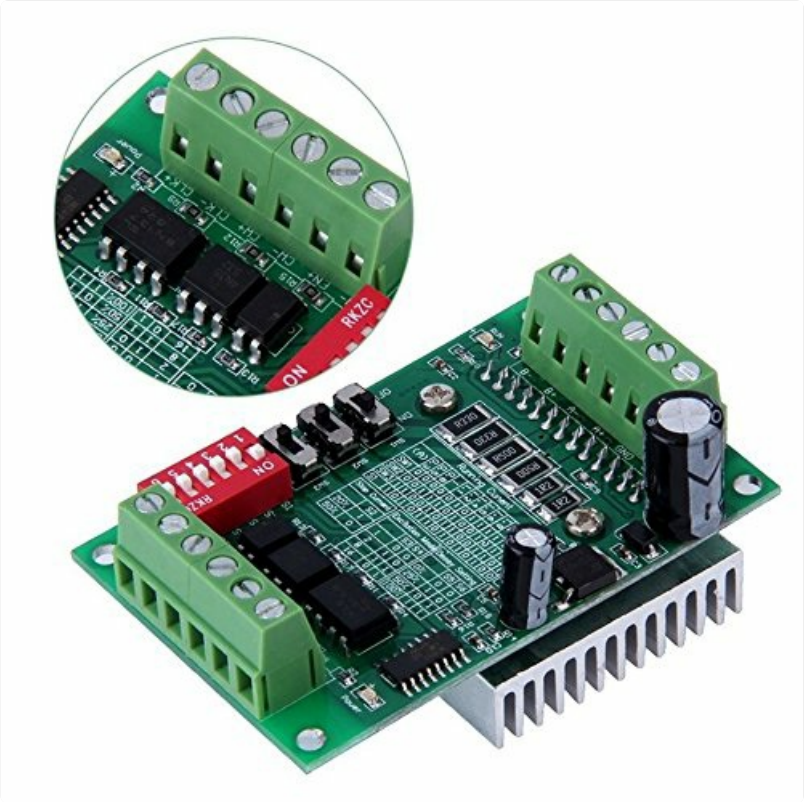

Figure 1: Top angled view of the TB6560 driver board, highlighting the terminal blocks for motor and power connections, as well as the DIP switches for configuration.

Figure 2: Angled view of the TB6560 board, showing the heatsink attached to the TB6560 chip, which is crucial for heat dissipation during operation.

Figure 3: Bottom view of the TB6560 driver board, illustrating the printed circuit board (PCB) layout and the underside of the heatsink.

Specifications

Feature	Value
Brand	WINGONEER
Voltage	10 Volts, 24 Volts (Operating Range)
Material	Plastic (Board components)
Item Weight	73 Grams (2.57 ounces)
Manufacturer	WINGONEER
UPC	723466639095
Package Dimensions	4.72 x 4.09 x 0.94 inches

Setup and Installation

1. Wiring Connections

Before connecting any wires, ensure the power supply is disconnected. Refer to the board's labels for correct polarity and pin assignments.

1. **Power Supply:** Connect a DC power supply (10V-24V) to the designated power input terminals. Observe polarity: **V+** for positive, **V-** for negative.
2. **Stepper Motor:** Connect your 4-wire or 6-wire stepper motor to the motor output terminals (A+, A-, B+, B-). For 6-wire motors, the center taps are typically left unconnected or connected as per specific motor requirements.
3. **Control Signals:** Connect your control signals (STEP, DIR, ENA) from your microcontroller or CNC controller to the

corresponding input pins on the driver board. Ensure a common ground connection.

2. DIP Switch Configuration

The TB6560 board features DIP switches to configure the output current and microstepping resolution. Always adjust DIP switches when the board is unpowered.

Current Setting

The output current can be set using a combination of DIP switches. Refer to the silkscreen on the board or the following table for common settings. The maximum current is 3A.

DIP Switch 1	DIP Switch 2	Output Current (Approx.)
ON	ON	100% (e.g., 3A)
OFF	ON	75% (e.g., 2.25A)
ON	OFF	50% (e.g., 1.5A)
OFF	OFF	25% (e.g., 0.75A)

Note: The exact current percentage may vary slightly. Always match the current to your stepper motor's rated current to prevent overheating.

Microstepping Setting

Microstepping allows for smoother motor operation and finer resolution. The TB6560 supports full step, half step, 1/8 step, and 1/16 step modes.

DIP Switch 3	DIP Switch 4	Microstepping Mode
ON	ON	Full Step
OFF	ON	Half Step
ON	OFF	1/8 Step
OFF	OFF	1/16 Step

Note: Higher microstepping values result in smoother motion but may require higher step pulse frequencies from your controller.

Operating Instructions

1. **Initial Power-Up:** After all connections are secure and DIP switches are set, apply power to the board. The power indicator LED should illuminate.
2. **Control Signal Input:** Send STEP pulses to the STEP input pin to move the motor. The DIR pin controls the direction of rotation. The ENA (Enable) pin, when active (typically low), enables the motor driver.
3. **Motor Movement:** Observe the motor's response. If the motor does not move or moves erratically, refer to the Troubleshooting section.
4. **Power Down:** Always disconnect the power supply before making any changes to wiring or DIP switch settings.

Maintenance

- **Cleaning:** Keep the board free from dust and debris. Use a soft, dry brush or compressed air for cleaning. Do not

use liquid cleaners.

- **Environmental Conditions:** Operate the board in a dry, well-ventilated environment. Avoid extreme temperatures and high humidity.
- **Heatsink:** Ensure the heatsink remains clear of obstructions to allow for efficient heat dissipation. Periodically check for dust buildup on the heatsink fins.

Troubleshooting

Problem	Possible Cause	Solution
Motor does not move.	No power, incorrect wiring, ENA pin disabled, no STEP pulses.	Check power supply, verify all wiring connections, ensure ENA is active, confirm STEP pulses are being sent.
Motor moves erratically or skips steps.	Insufficient current, excessive speed, incorrect microstepping, loose connections.	Increase current setting (if safe for motor), reduce step pulse frequency, verify microstepping settings, check all connections.
Motor overheats.	Current setting too high, inadequate cooling.	Reduce current setting via DIP switches, ensure proper ventilation around the heatsink.
Board does not power on.	No power supply, incorrect voltage, reversed polarity.	Verify power supply connection and voltage, check for correct polarity (V+ to positive, V- to negative).