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› ASHATA TL Smoother Addon Module 3D Printer Smoother User Manual

ASHATA TL Smoother Addon Module

ASHATA TL Smoother Addon Module User Manual

Model: TL Smoother Addon Module

1. INTRODUCTION

The ASHATA TL Smoother Addon Module is an electronic component designed to enhance the performance of 3D printer stepper motor drivers. Its primary function is to eliminate pattern clipping and smooth out uneven signal waves, particularly noticeable during low-speed operations. This results in a significant reduction in motor vibration and noise, leading to improved print quality and smoother motion for your 3D printer.

TL SMOOTHER ADDON MODULE FOR PATTERN ELIMINATION MOTOR CLIPPING FILTER 3D PRINTER MOTOR DRIVER

An addon module for 3D printer stepper motor drivers. Can effectively eliminate low-speed situation uneven signal wave.

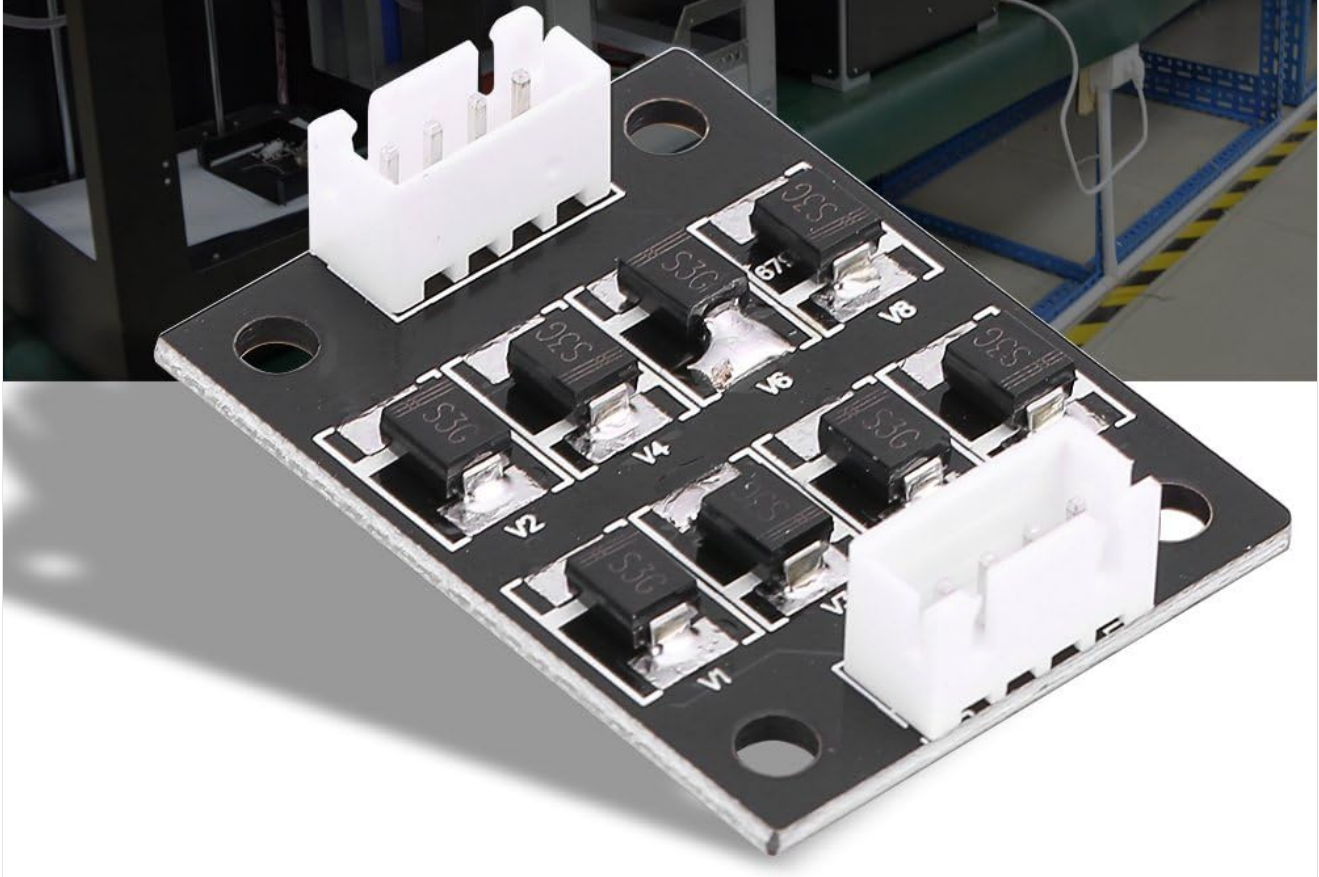


Image 1.1: The ASHATA TL Smoother Addon Module, highlighting its purpose in eliminating pattern clipping and smoothing motor driver signals for 3D printers.

2. KEY FEATURES

- **Signal Smoothing:** Effectively eliminates low-speed uneven signal waves, which can cause visible patterns on 3D prints.
- **Flyback Diodes:** Integrates eight flyback diodes (freewheeling diodes) for the motor outputs, providing protection and improving signal integrity.
- **Reduced Vibration and Noise:** Contributes to lower motor vibration and reduced operational noise, resulting in a smoother printing experience.
- **Improved Print Quality:** By smoothing motor signals, the module helps achieve cleaner and more precise print surfaces.
- **Compact Design:** Small form factor allows for easy integration into existing 3D printer setups.

**PROVIDES FLYBACK DIODES (FREEWHEELING DIODES)
FOR THE MOTOR OUTPUTS.**



**LOWER VIBRATION AND LOWER
NOISE SMOOTHER RESULT.**

Image 2.1: The module's design, emphasizing the inclusion of flyback diodes for motor outputs and its contribution to lower vibration and noise.

3. SPECIFICATIONS

Attribute	Value
Package Dimensions	3.94 x 2.76 x 0.79 inches (100 x 70 x 20 mm)
Module Dimensions (Approx.)	40mm x 30mm (1.6in x 1.2in)
Manufacturer	ASHATA
ASIN	B0C2NQMJR4
Date First Available	April 17, 2023

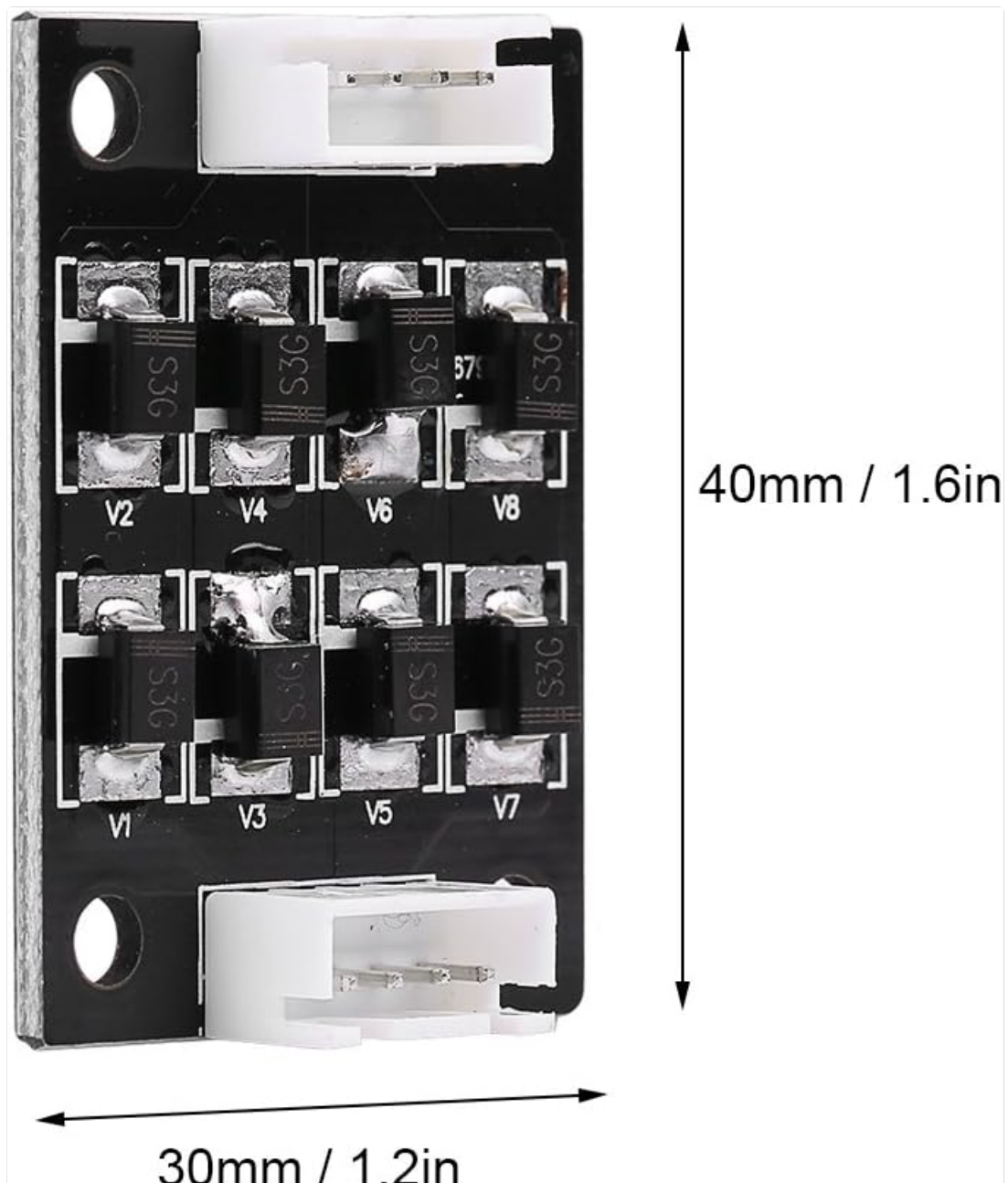


Image 3.1: Approximate dimensions of the TL Smoother Addon Module.

4. SETUP AND INSTALLATION

The TL Smoother Addon Module is designed for straightforward installation between your 3D printer's stepper motor driver and the stepper motor itself. Follow these steps for proper setup:

1. **Power Off:** Before beginning, ensure your 3D printer is completely powered off and unplugged from the mains electricity. This is crucial for safety and to prevent damage to components.
2. **Identify Connections:** Locate the stepper motor driver and the corresponding stepper motor you wish to smooth. Each axis (X, Y, Z, E) typically has its own driver and motor.
3. **Disconnect Motor Cable:** Carefully disconnect the existing 4-pin stepper motor cable from the stepper motor driver.
4. **Connect Module to Driver:** Connect one end of the provided 4-pin cable (or a similar compatible cable) to one of the 4-pin headers on the TL Smoother Addon Module. Then, connect the other end of this cable to the

stepper motor driver's output where the motor was previously connected.

5. **Connect Module to Motor:** Connect the original stepper motor cable (or the other end of the provided cable, if it's a pass-through type) to the remaining 4-pin header on the TL Smoother Addon Module. Then, connect the other end of this cable to the stepper motor. Ensure all connections are firm and correctly oriented.
6. **Secure Module:** If possible, secure the TL Smoother Addon Module within your printer's enclosure using non-conductive standoffs or double-sided tape to prevent it from moving or shorting against other components.
7. **Power On:** Once all connections are secure, plug in and power on your 3D printer.



Image 4.1: The TL Smoother Addon Module shown with a typical 4-pin connecting cable, illustrating the components involved in installation.

5. OPERATION

The ASHATA TL Smoother Addon Module operates passively once installed. It does not require any software configuration or external power. Upon successful installation, the module automatically filters and smooths the signals sent from the stepper motor driver to the stepper motor. You should observe the following improvements:

- **Reduced VFA (Vertical Fine Artifacts):** These are often visible as subtle vertical lines or patterns on printed surfaces, especially on smooth walls. The module helps to minimize these.
- **Quieter Motor Operation:** Stepper motors may run with less audible noise due to the smoothed current waveforms.
- **Smoother Motion:** The overall movement of the printer's axes should appear more fluid and less jerky, particularly at lower speeds.

To verify the effect, print a test piece known to exhibit pattern issues (e.g., a calibration cube with smooth walls) both before and after installing the module. Compare the results to observe the improvement.

6. MAINTENANCE

The ASHATA TL Smoother Addon Module is a low-maintenance electronic component. To ensure its longevity and optimal performance, consider the following:

- **Keep Clean:** Periodically inspect the module for dust accumulation. If necessary, gently clean it with a soft, dry brush or compressed air. Avoid using liquids or abrasive cleaners.
- **Avoid Moisture:** Ensure the module is kept in a dry environment. Moisture can damage electronic components.
- **Static Electricity:** When handling the module, especially during installation or inspection, take precautions against static electricity (e.g., use an anti-static wrist strap).
- **Physical Damage:** Avoid dropping or subjecting the module to physical impact, which can damage its delicate components.

7. TROUBLESHOOTING

If you encounter issues after installing the TL Smoother Addon Module, consider the following troubleshooting steps:

Problem	Possible Cause	Solution
No noticeable improvement in print quality or noise.	Incorrect installation; module not compatible with specific driver/motor; existing setup already optimized.	◦ Double-check all connections to ensure they are firm and correctly oriented. ◦ Verify that the module is installed between the driver and the motor, not elsewhere in the signal path. ◦ Ensure your printer's stepper drivers are compatible with such addon modules. ◦ Some modern stepper drivers (e.g., TMC2208, TMC2209 in stealthChop mode) already provide very smooth operation, making the effect of a smoother module less pronounced.
Motor not moving or moving erratically after installation.	Loose connection; incorrect wiring; damaged module.	◦ Power off the printer immediately. ◦ Inspect all 4-pin connections for looseness or incorrect pin alignment. ◦ Ensure the module itself is not physically damaged. ◦ Temporarily remove the module and reconnect the motor directly to the driver to confirm the motor and driver are functional without the module.

8. WARRANTY AND SUPPORT

Specific warranty details for the ASHATA TL Smoother Addon Module may vary depending on your region and the retailer from whom you purchased the product. Please refer to your purchase documentation or the retailer's website for precise warranty information.

For technical support, troubleshooting assistance beyond this manual, or warranty claims, please contact the manufacturer or your point of purchase. You can often find support contact information on the product packaging or the brand's official website.

For more information about ASHATA products, you may visit the official ASHATA store: [ASHATA Store on Amazon](#).

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