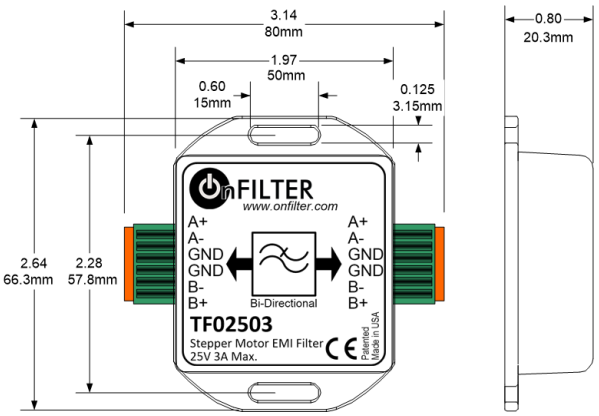
Filter Mounting

Panel Mount

Mounting dimensions are shown here. It is recommended to allow some space on the sides of the filter for wire routing.



DIN Rail Mount

Use supplied DIN rail mounting kit containing two mounting clips and screws. The mounted filter will look like the one shown lower on the right. It will occupy 2.64" (66.3mm) width on a DIN rail. We recommend to install mounting clips first and then screw the filter to them using supplied screws (self-tapping #4x3/8" if you misplaced them), and then make electrical connections.

DIN rail kit and mounted filter (included)

Filter Care

TF02503 does not require calibration or maintenance. Once in a while you may want to check wire connections and whether the filter overheats during motor's operation, which is extremely unlikely.

Technical Support

For customer service and technical support contact factory at +1-831-824-4052 or via email at info@onfilter.com

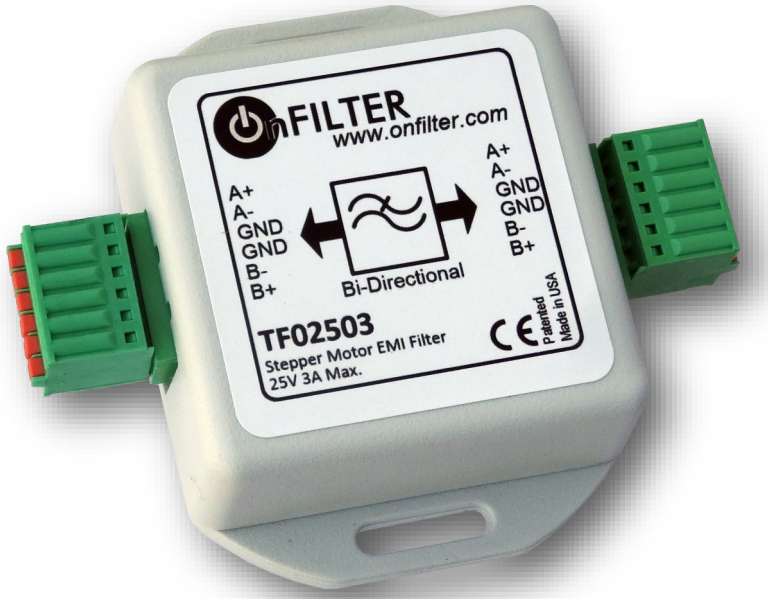
Warranty

In short, OnFILTER products carry three (3) years limiter warranty. Please see full text of our Warranty Statement at https://www.onfilter.com/warranty-statement

OnFILTER, Inc.
730 Mission Dr. Ste. 102
Santa Cruz, CA 95060 U.S.A.
Tel. +1.831.824.4052
FAX +1.206.350.7458
www.onfilter.com
info@onfilter.com

All specifications are subject to change without notice. U.S. Patent 10,263,591. Made in U.S.A.

Stepper Motor Filter TF02503



User's Guide

OnFILTER

Overview

Thank you for buying OnFILTER' stepper motor EMI filter. It will help to improve reliability of servo motor's bearings, reduce electromagnetic interference and EMI-caused electrical overstress to sensitive components. Please read this User's Guide carefully - improper use of stepper motor EMI filters can damage motors and servo controllers and cause injury or death.

WARNING

Failure to follow these warnings may cause equipment damage, personal injury or death

- ❑ Do not exceed maximum rating - it may cause overheating
- ❑ Allow sufficient space around this device for ventilation to avoid overheating
- ❑ No serviceable parts inside - do not open.
- ❑ High voltage may be present inside

Basics

Stepper motors (for simplicity referred to further in this document as "motors") are driven by pulsed signals. Sharp edges of these pulses can cause the following problems:

- ❑ damage to ball bearings in the motor due to capacitive coupling between stator and rotor of the motor
- ❑ ringing and overvoltage in wires going to the motor
- ❑ electromagnetic interference (EMI) inside the equipment
- ❑ electrical overstress (EOS) to sensitive electronic components

The TF series of stepper motor EMI filters substantially increase rise and fall times of drive pulses. The spectrum of the signal of drive pulses loses significant portion of energy at the high end. This serves a number of purposes:

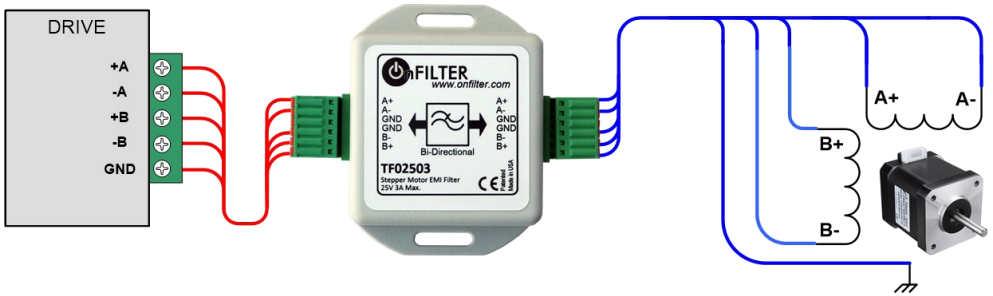
- ❑ The lower the frequency spectrum, the higher impedance is presented by the capacitive coupling between stator and rotor of the motor. This reduces high-frequency currents through the motor's bearing improving their longevity
- ❑ Lesser high-frequency component of the spectrum results in less ringing with high amplitude of the drive signal which reduces stress on the motor and wiring
- ❑ High frequency current on ground in the tool is reduced significantly which leads to less EOS (electrical overstress) exposure to sensitive components.

Additionally, unique patented filtering in ground further suppresses EMI on ground and within the equipment, further reducing ground EMI currents while providing needed grounding

Specification

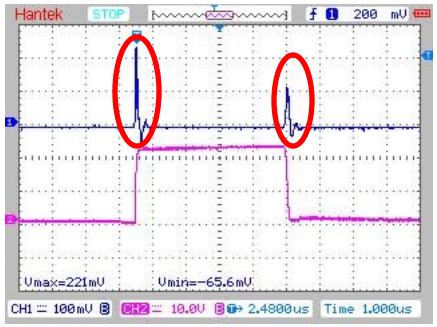
Max. Motor Voltage	25V
Max. Motor Current (each winding)	3A
Stepper Motor Type	Bipolar
Connector	Removable Terminal Block
Wire Gauge	AWG24...16 (0.205...1.31mm²)
Ambient Temperature	+5⁰...40⁰C
Climatic Category	+05/040/00

All specifications are subject to change without notice.

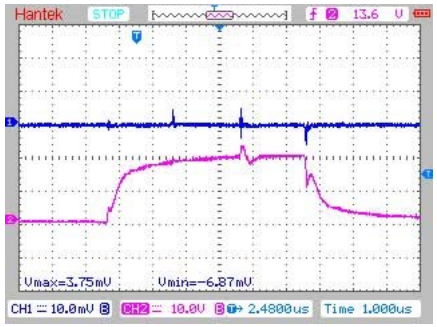


Recommended Connection Diagram

- The filter is fully bi-directional—it doesn't matter which way it is connected.
- Make sure that the ground connection to the motor goes through the filter for maximum performance.
- Locate filter closer to the drive, not to the motor—this way the wires to the motor will not be carrying strong high-frequency signals.



Without the Filter



With the Filter

Drive Pulses and Resulting Ground Current (Typical)