Twin Coil Driver Quick Start Guide

Introduction

The Twin Coil Driver (TCD) operates both mild (Atlas, Bachmann, Lifelike, Peco) and "Nasty" (PFM, Tenshodo, Ken Kidder, NJ International) Twin Coil type machines. The TCD shapes the pulses driving the switch machines to soften both the physical and electrical blow, reducing electrical noise and physical impact. The timing is done in hardware (no chance of a software hang leaving the coils on). The design works with either classic Capacitive Discharge (CD) supplies or modern supplies such as those used for LEDs, or even inexpensive bench supplies.

The Twin Coil Driver has internal spike suppression diodes. Input is logic level and the coils are fired on the rising and falling edge, so a simple toggle switch or logic level input controls the machine.

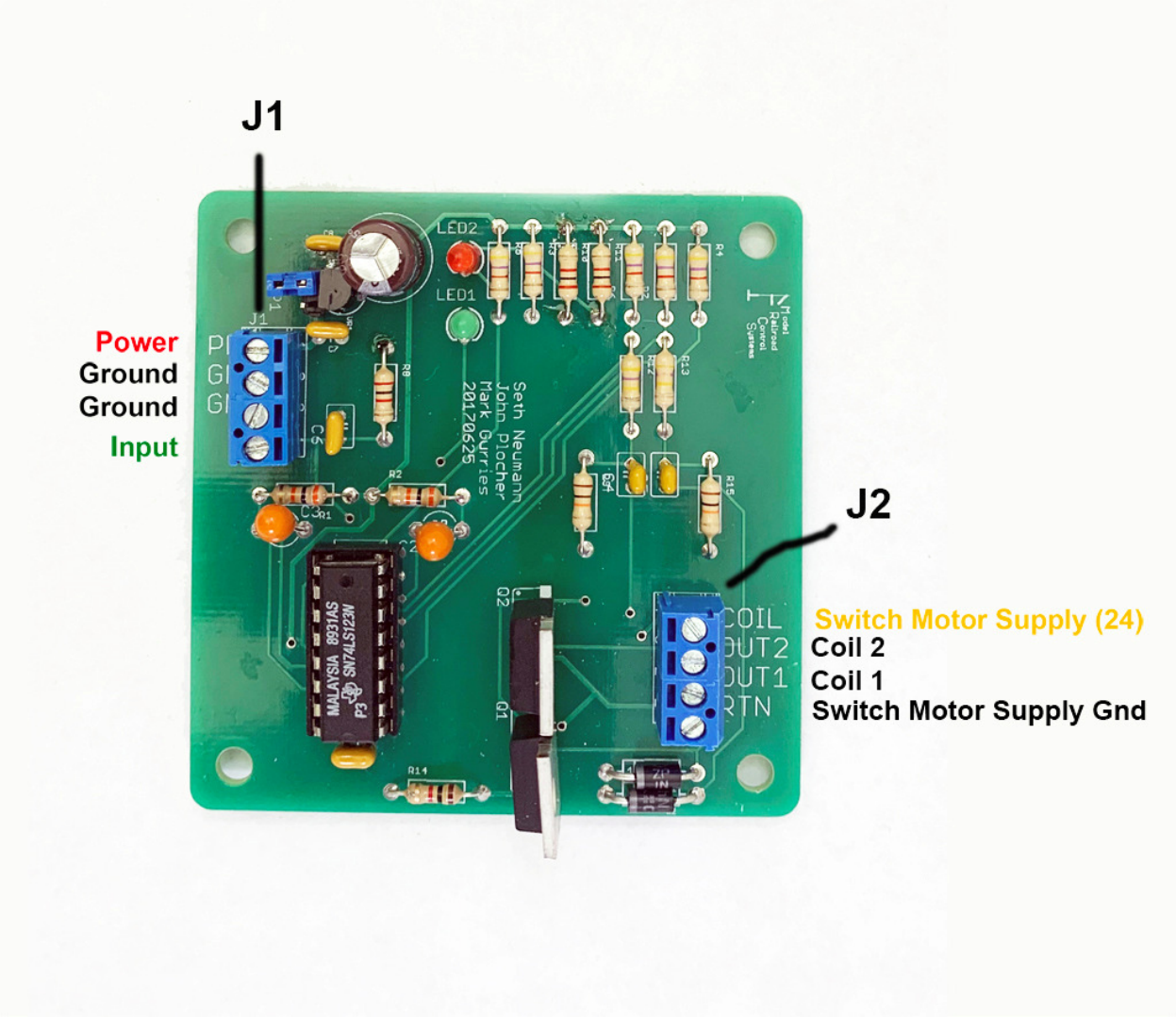

Figure 1- Twin Coil Driver Board with call outs

Connections:

- Power – 12-volt power from either your layout's auxiliary 12V bus or from a 12VDC wall wart. If using a wall wart, the TCD isn't too picky as it has an internal regulator. Make sure you've got at least an 0.5A (500 mA) supply.
- Ground – two provided, one for the ground of the 12 VDC Supply and an extra which is handy for daisy chaining if you've got a bunch of TCDs in the same place
- Input – logic level (5 Volt! Do not connect 12V to this) input. Coil 1 fires on the rising edge, Coil 2 fires on the falling edge. Logic devices (Arduinos, etc.) need to be connected to the same ground!
- Switch Motor Supply – The power supply for your twin coil switch machines, you must connect the switch machines common power to the supply and also the TCD. This allows the on-board snubber diodes to suppress spikes when the coils release. If you've already got diodes across your coils, this connection is not required.
- Coil 1, Coil 2 – the operate (ground) sides of the switch machine's coils
- RET – Switch Motor Supply Ground – use this connection rather than grounding directly to your system ground for best noise control.

Installation

- Locate the TCD as close to the switch machine as possible: you want to reduce the length of the leads connecting to the coils as they are antennae for transmitting noise in the electronics in your layout room!
- Use either #4 screws and standoffs or our 7CM DINRail track to mount the TCD securely.
- Connect 12VDC supply and Ground to the J1 screw terminal connector. If you have a system ground bus, make sure the 12V ground is connected to it. The extra ground terminal may be used for this.
- Connect the input signal to the input terminal on the J1 connector – figure 2 shows how to use an SPST switch for testing or direct control (as opposed to an Arduino or CMRI device)
    - If using a manual switch, DO NOT CONNECT 12V to the input, use 5V, this may be found on the output of the internal regulator as shown in figure 2
- Connect the Switch Machine Power Supply to the "Coil" terminal on J2 – not needed if there are snubber diodes on the switch machine
- Connect the operate (ground) sides of the switch machine's coils to out 1 out Coil 2 on J2
- Connect the Ground of the Switch Machine Power Supply to RTN on J2

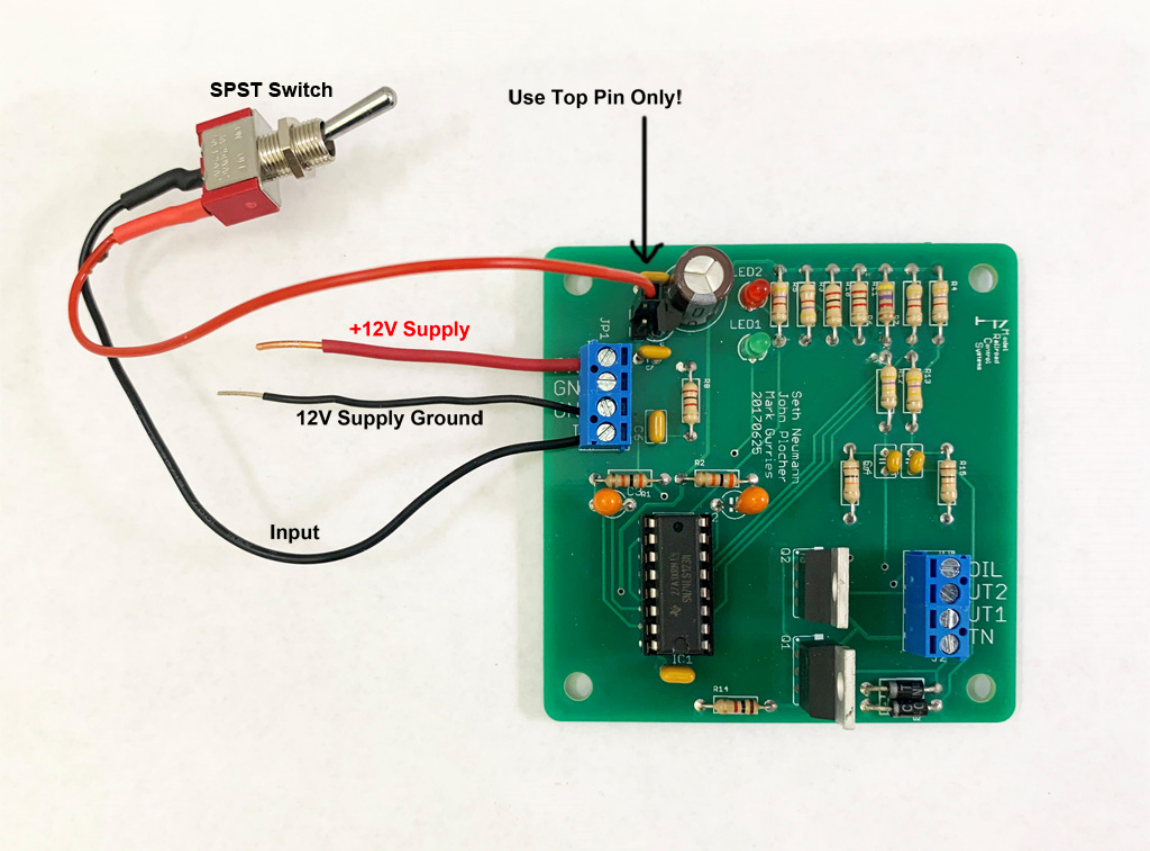

Figure 2- Manual Switch Control