TrainBoss™ Defect Detector

Application Guide Models TB-21T, TB-21D

The ***TrainBoss*™ Defect Detector** is extremely flexible and can reliably drive a variety of model railroad signals and receive inputs from assorted electronic systems. This guide goes beyond driving LEDs as shown in the Product Manual and demonstrates connecting a Defect Detector for many common applications.

1. Driving Relays for Power Control

For controlling very high currents or control signals such as DCC track signals, a relay is hard to beat.

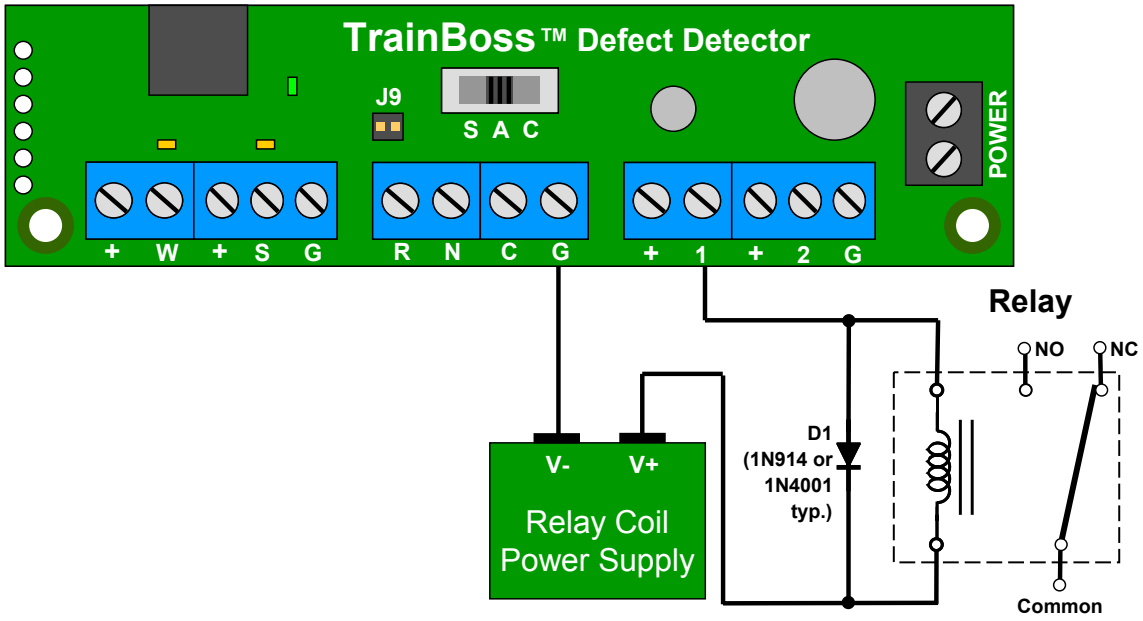

Figure Relay

Figure Relay shows how the "1" LED Output from the Defect Detector circuit board can be wired to drive a relay. The "2" LED Output can be used similarly to drive a second relay. The V- connection to the Relay Coil Power Supply can be to any of the "G" inputs on the Defect Detector.

Warning: Do not exceed 200 mA coil current as this will damage the Defect Detector circuit board.

2. Driving Stall Motors for Semaphores, etc.

Stall motors, such as Tortoise and Switch Master, are low current devices and are very easy to directly drive from the Defect Detector.

Figure Motor shows how the "1" and "2" LED Outputs from the Defect Detector circuit board can be combined to drive a motor. The V- connection to the Motor Power Supply can be to any of the "G" inputs on the Defect Detector.

Note that SV 12 must be programmed to drive Output 2 opposite to Output 1.

Warning: Do not exceed 200 mA motor current as this will damage the Defect Detector circuit board.

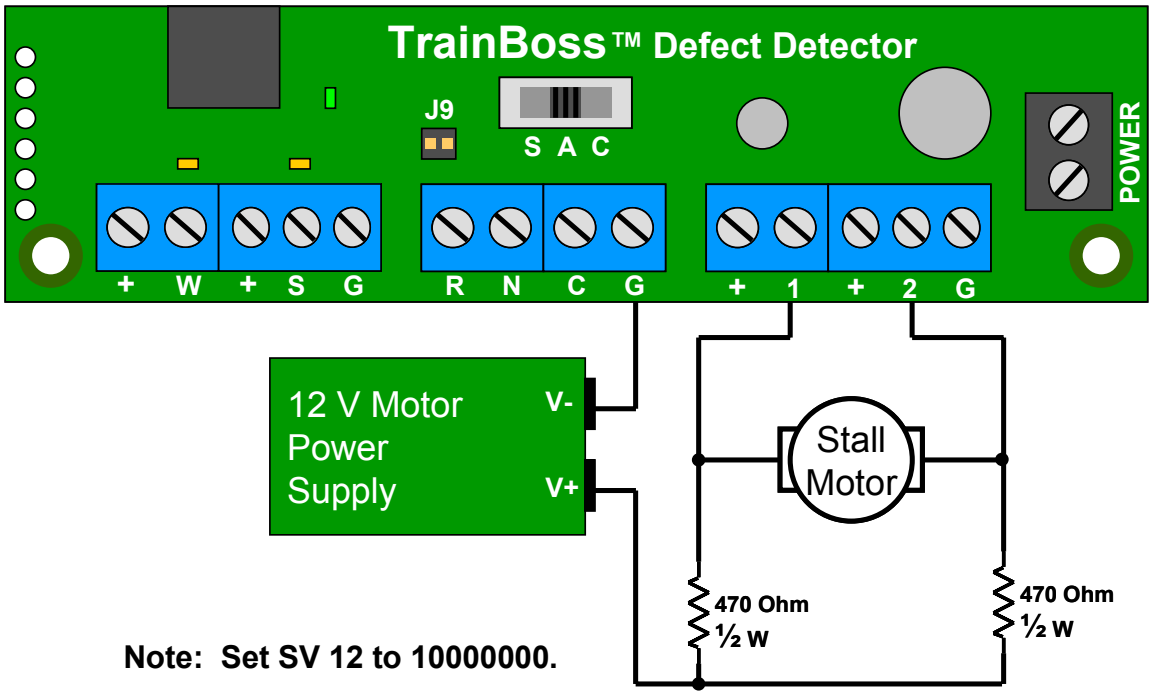

Figure Motor

3. *Computer/Model Railroad Interface (C/MRI) from JLC Enterprises*

C/MRI is probably the best-known computer control system for model railroads. The Defect Detector easily connects to C/MRI by pulling outputs ("1" and "2" LED Outputs) to a common ground, while accepting inputs from C/MRI that do the same.

Figure CMRI shows how to connect signals to and from C/MRI. All signals are active-low or "sinking" signals as described in C/MRI documentation. As above, any Defect Detector "G" connection will work for C/MRI Ground. The output connection to the "C" Clear Outputs terminal allows C/MRI to clear the Detector's outputs.

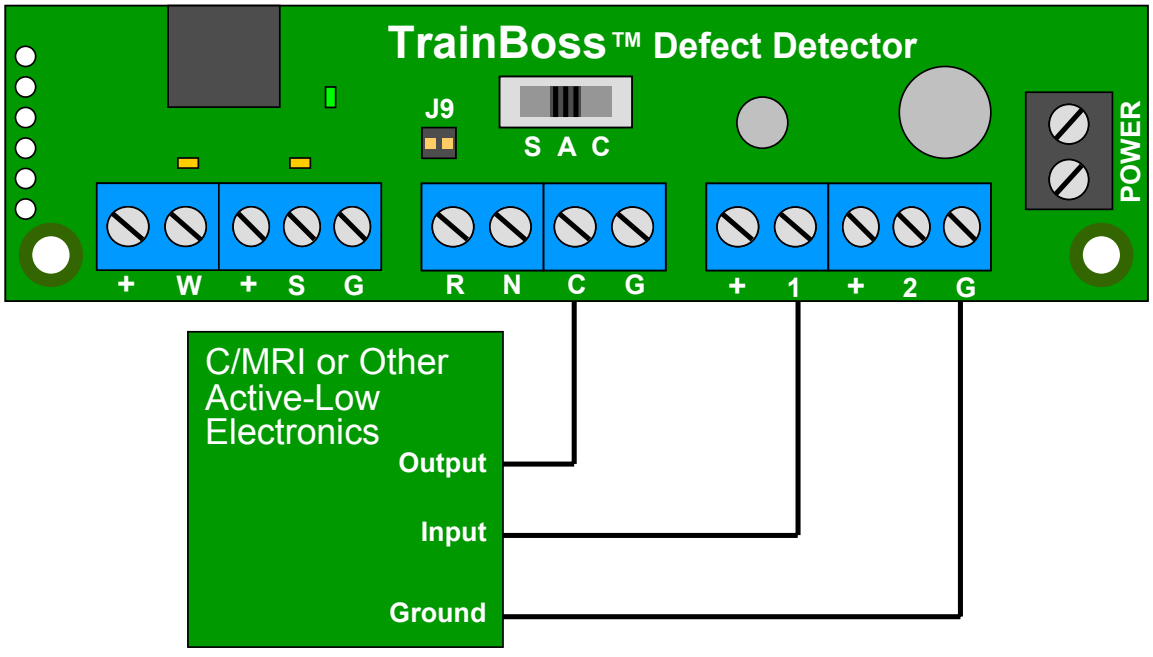

Figure CMRI

4. SE8C Signal Decoder or DS64 Stationary Decoder from Digitrax

Digitrax produces a number of model railroad electronic systems that use “active-high” signals. In other words, signals are pulled to the Power when active, and pulled to near Ground when inactive. The SE8C Signal Decoder is one example; the DS64 Stationary Decoder is another.

The Defect Detector connects to these systems by pulling outputs (“1” and “2” LED Outputs) to a common Ground when **inactive**, and allowing signals to be pulled to the other system’s Power through a pull-up resistor when **active**. The Defect Detector “inverts” its outputs in this manner when Bit 2 of the Output Behavior SV is set to 1 (SV 11 for the “1” LED Output, SV 12 for the “2” LED Output).

Figure Digitrax shows ho w to connect signals to an active-high system such as the SE8C or DS64. Notice the 10k ohm pull up resistor to the system’s Power terminal. As above, any Defect Detector “G” connection will work for C/MRI Ground.

Specific to the SE8C, Power = +VE, Ground = -VE, Input = DS01 or DS02 or ... etc.

Specific to the DS64, Power = AX2, Ground = AX1, Input = A1 or A2 or ... etc.

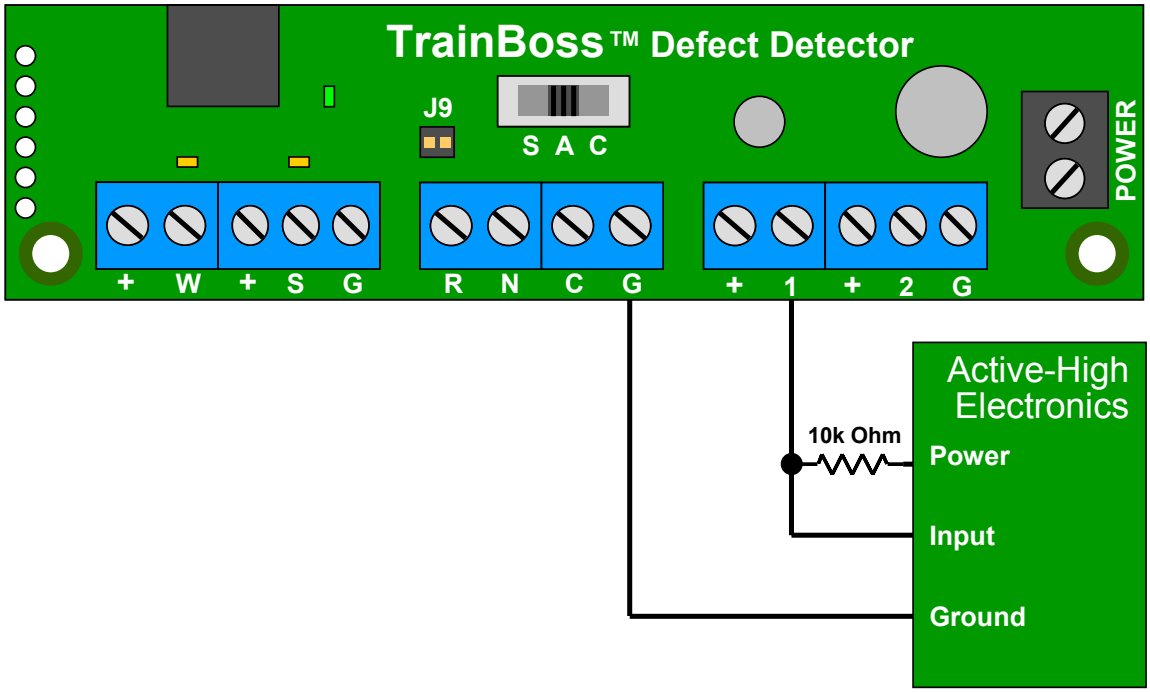

Figure Digitrax