

# 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.

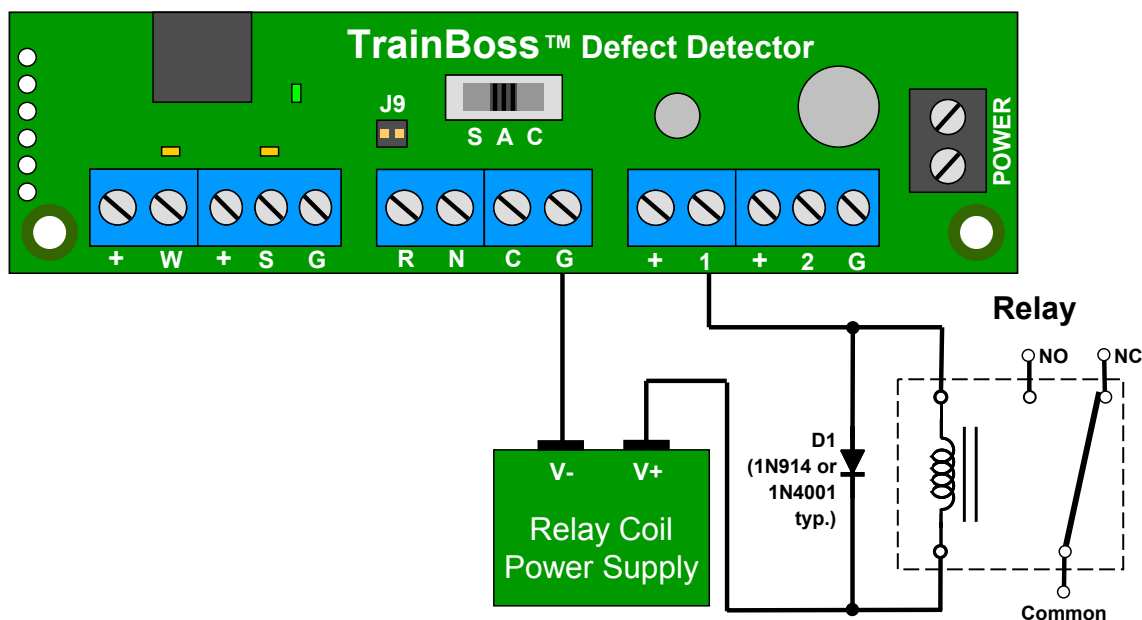


Figure Relay

**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.

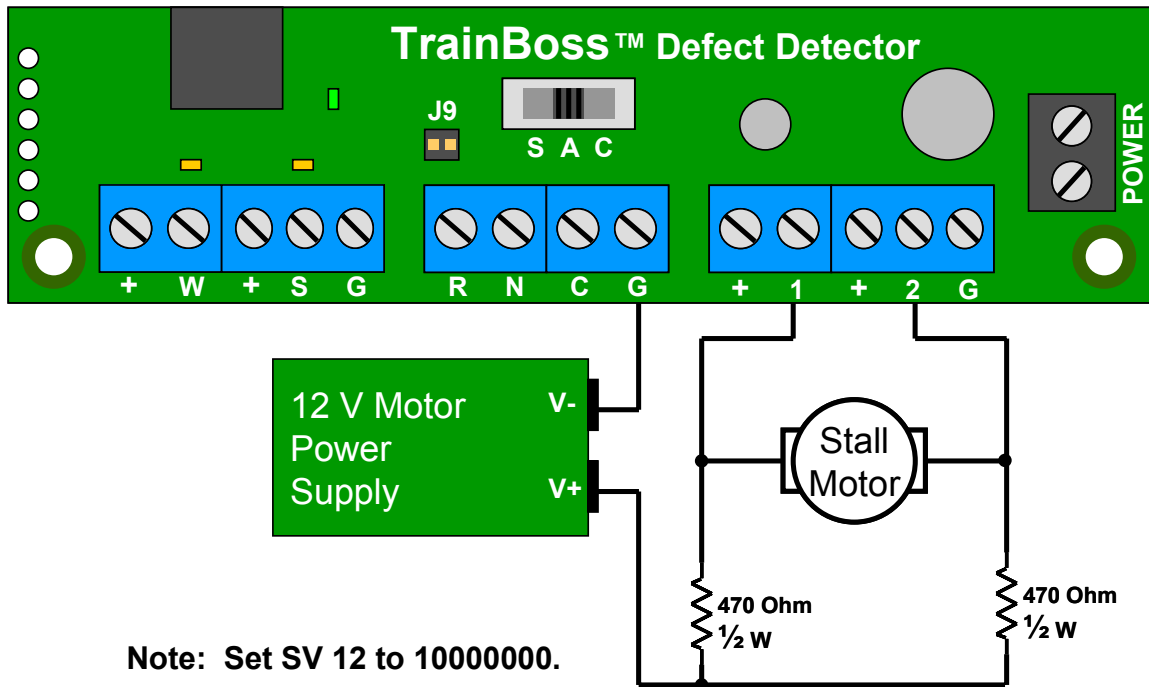


Figure Motor

### 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.

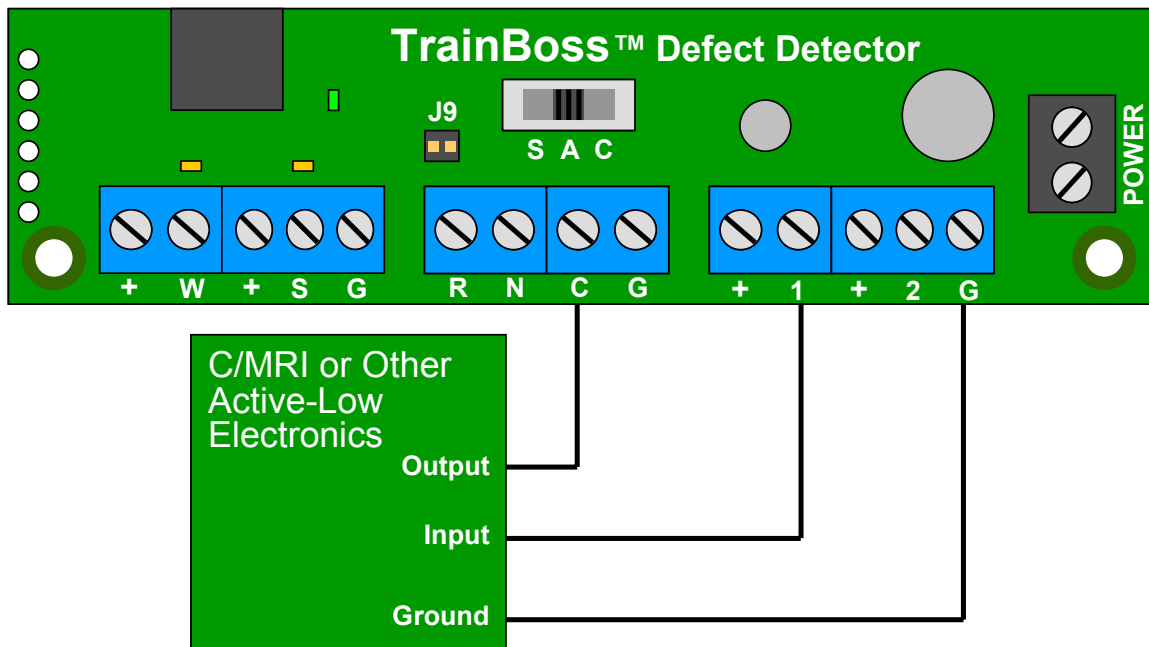


Figure CMRI

#### 4. SE8C Signal Decoder or DS64 Stationary Decoder from Digitrax

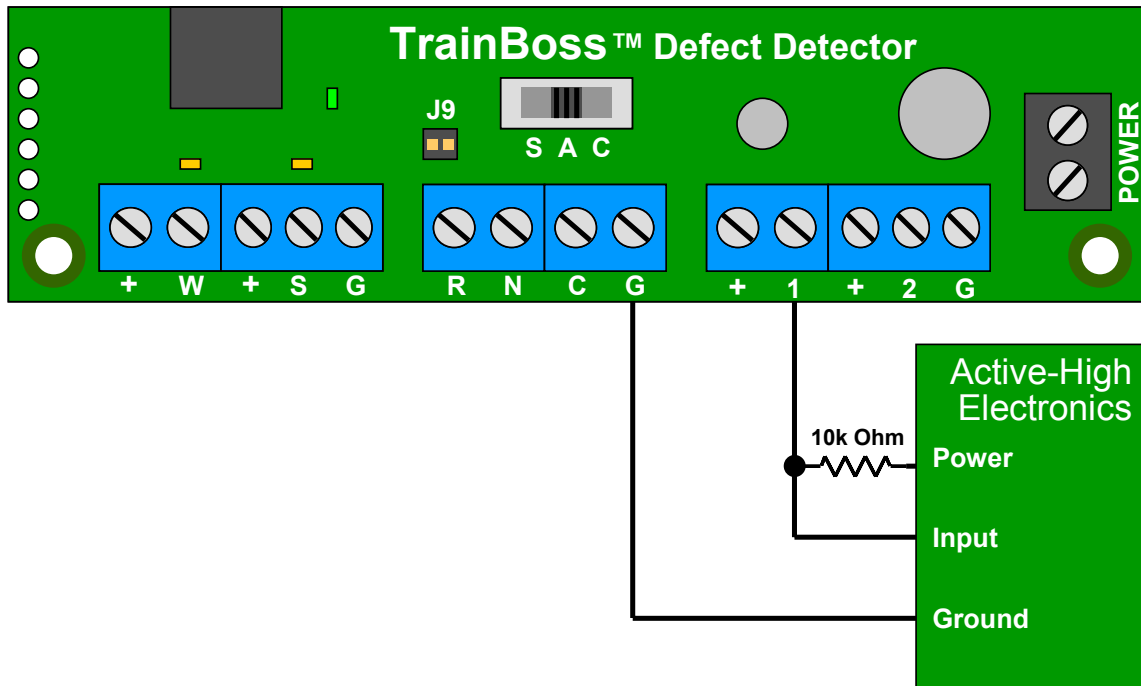
Digitrax produces a number of model railroad electronic systems that use “active-high” signals. In other words, signals are pulled to the Power when active, and pulled to near Ground when inactive. The SE8C Signal Decoder is one example; the DS64 Stationary Decoder is another.

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 how 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**