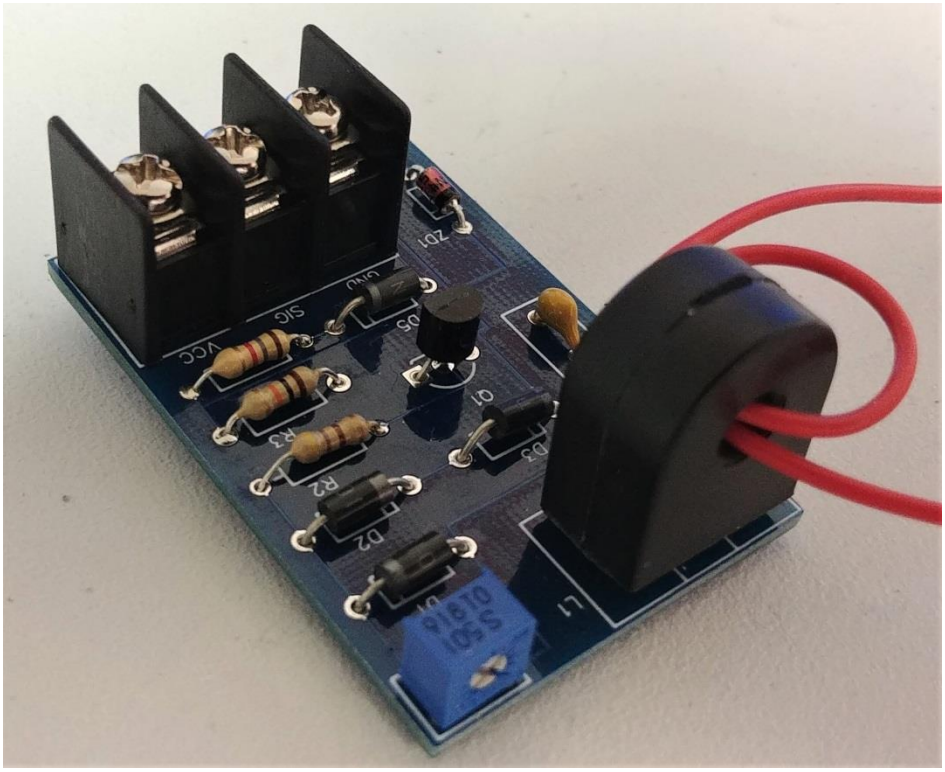
Block Detector Card

This card is not an original design by me; it is a simplified version of what is supposed to be a NCE block detector. I found the schematic on the Internet and do not know whom to credit, but I want it recognized that I just modified an existing design.



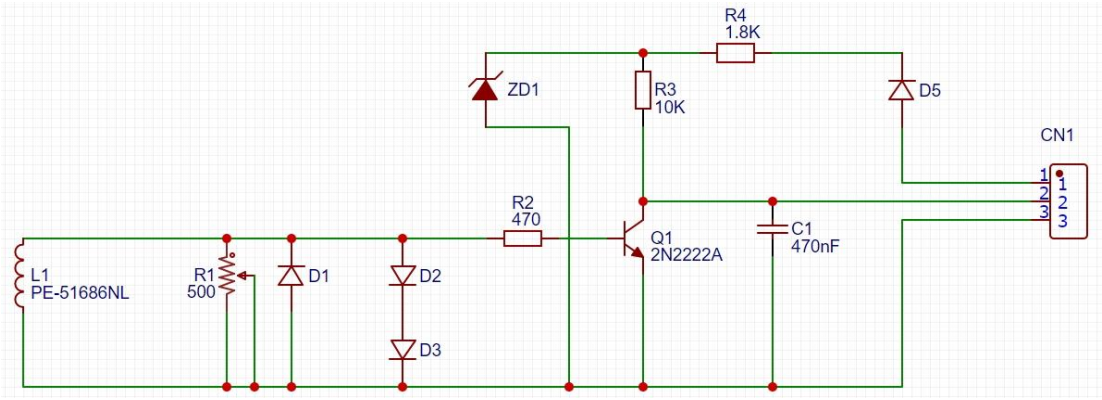
The terminal strip connects the board connection to power 12 VDC and the logic output (GND, SIG, VCC.)

The current transformer (L1) shows how one track feed is passed though and then looped back through one more time.

The blue cube is a variable resistor for adjusting the SIG sensitivity.

Schematic Overview:

Please don't be alarmed by the following schematic, mastery is not necessary to use the block detector card. It is included for a more in-depth understanding of how the card works and will allow advanced users to adapt the card for other purposes.



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Power sources:
The terminal strip connections (1) and (3) connect the board to 12 VDC.

Logic connection:
Terminal (2) labeled SIG is the board output to the computer. When the block is not occupied this terminal will have 5 VDC present. When L1 detects a DCC current the block is considered occupied and this terminal will drop to 0 VDC. The board is considered to be an active low device.

ZD1:
This diode is designed to drop the 12 VDC input to 5.1 VDC to be used by transistor Q1. When Q1 is OFF the 5 VDC is passed to terminal (2) through R3.

L1:
When DCC current passes through the current transformer and the other control elements it is applied to transistor Q1 through R2 and turns it ON. The transistor acts as a switch and terminal (2) is then connected to terminal (3) GND and sees 0 VDC.

R1:
The variable resistor adjusts the sensitivity of the control circuit and determines how much current must be present in L1 before it will turn ON transistor Q1.

Configuring JMRI to use the board as C/MRI hardware:
There is no JMRI configuration associated with this board. It is used by connecting the SIG output to an input board terminal.

Arduino Code:
There is no Arduino code associated this board.