DBD2
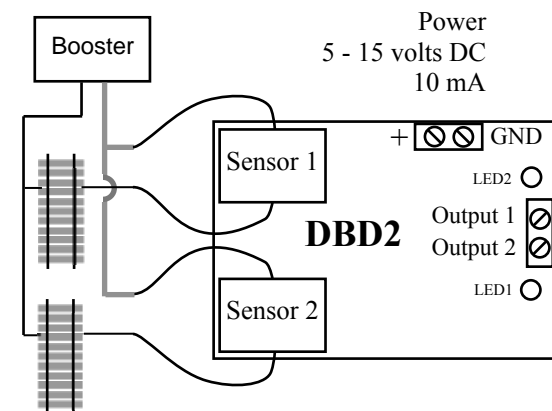# DCC Block Detector

> Two detectors with LED indicators
> Electrical isolation from the track
> No track voltage drop
> Low power requirements
> Drive relays
> Operates with SIC24 and SRC8

Booster

Power
5 - 15 volts DC
10 mA

Sensor 1

+ GND

LED2

Output 1
Output 2

DBD2

LED1

Sensor 2

11.10.03

Operation:
The DBD2 is capable of sensing current in two isolated sections of track called blocks. This provides for detecting the presence of locomotives or other rolling stock that draw current from the track.

The track feeder wire for one rail of the block is passed through the hole in the sensor (see figure 1) before connecting the feeder to the track. When the current in the feeder going though the sensor reaches the trigger level, the output is turned on and the LED lights showing the block is occupied. Passing the feeder though the sensor more than one time will increase the sensitivy. However, this is NOT recommended because the maximum sensor current specification will be greatly reduced.
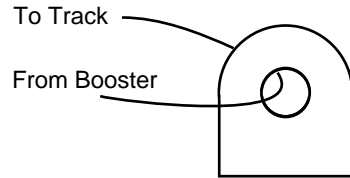
To Track

From Booster

Figure 1

Locomotives and lighted cars draw enough current to trigger the DBD2. In order for other rolling stock to draw current, resistive wheel sets will have to be added. For HO scale, one 4.7K ohm resistive wheel set will work per car. If you want to use 10K resistive wheel sets you will need two wheel sets per car.

Duty track can cause intermittant current flow. A built in filter keeps the DBD2 from rapidly turning off and on if the current flow is interrupted. Additionally, there is a small amount of hystersis so that small changes in track current near the trigger point do not cause the DBD2 to turn off and on. The filter keeps the output on after a train leaves the block for a short period of time. This time is typically about 1 to 2 seconds. The amount of track current through the sensor has an effect on this time.

Since the DBD2 does not use diodes to sense track current there is no drop in track voltage. This allows you to "double sense" a block. For example, suppose you want to add a grade crossing with gates and flashers to a section of track that already has a diode sensing block detector. The block could be cut in to three smaller blocks to detect traffic on each approach and island blocks. DBD2s can be used for the three new blocks with out interfering with the operation of the original detector or causing an additional track voltage drop. See the SIC24 signal and indicator controller for information on implementing a grade crossing.

Detector Output
Figure 2 shows the equivalent output configuration. The output is typically connected to a signal system input. However, the DBD2 has enough current capability to drive a relay. A clamping diode is build in, no external diode in required when driving a relay.
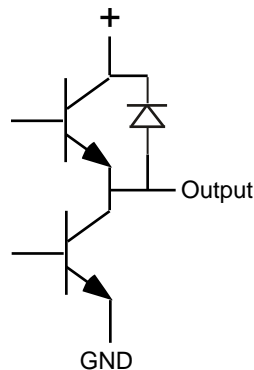
+

Output

GND

Figure 2

Using the DBD2 with a SIC24 or SRC8
The SIC24 and SRC8 both provide 5 volts and ground on each of their input connectors so they can directly power the DBD2. Figure 3 shows how to make the connections. Pins 1 and 2 are shown on the SIC24 input connector, but any of the inputs can be used.
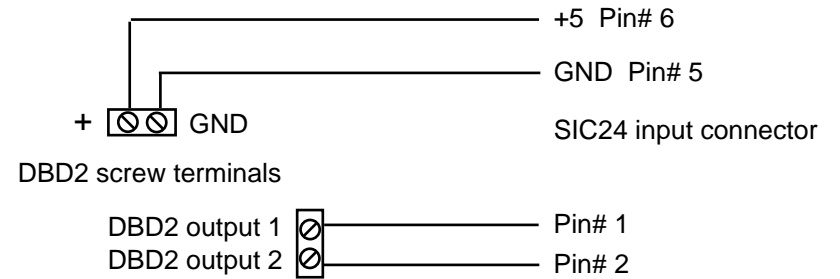
+5 Pin# 6

GND Pin# 5

+ GND

SIC24 input connector

DBD2 screw terminals

DBD2 output 1   Pin# 1
DBD2 output 2   Pin# 2

Figure 3

Specifications
Operating voltage: 5 to 15 volts DC
Operating current: 6 ma @ 5 volts, 10 ma @ 12 volts
Maximum output load: 400 ma
Typical trigger current: 3 ma @ 5 volts, 6 ma @ 12 volts
Maximum sensor current: 5 amps w/one pass of feeder wire

Warning
Do not reverse the ground and positive connections at the power connector or permanent damage will occur.