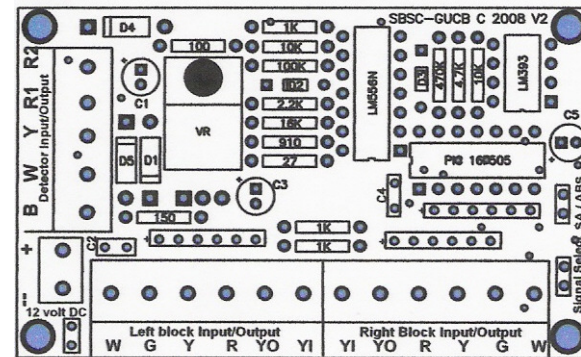


# South Bend Signal Company, LLC

*“Making Your Railroad Real”*

www.sbsignal.com

## IF Detector/Signal Driver



## DSDIF (V1)

DSDIF Manual

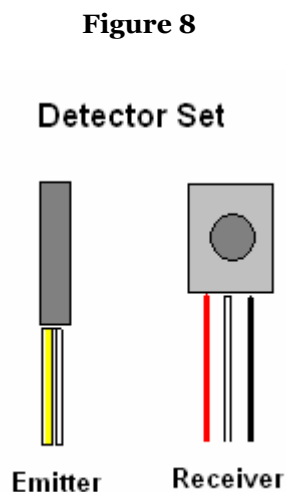
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## Detector Set Description

Each DSDIF comes with 2 detector sets. A set consists of an Emitter and a Receiver. When the signal system is connected to 12-18 volts, the emitter sends out an infrared beam at particular frequency and wave length. The receiver is calibrated to this same frequency and wave length. When the detector set is covered by a locomotive or any piece of rolling stock, the beam from the emitter is bounced off the rolling stock and is recognized by the receiver causing the receiver to transmit a signal to the Relay board microcontroller that a detection has been made. The microcontroller then sets the signals to the proper aspect depending on track conditions signal type, and other relay board inputs.

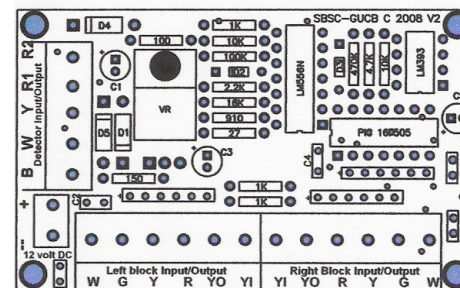
The emitter has a YELLOW and WHITE wire connected to it.  
The Receiver has RED, WHITE, and BLACK wires connected to it.

Figure 8 below shows how they look.



## DSDIF Terminal Descriptions

Refer to the diagram of the DSDIF board below to become familiar with the terminals and there purpose.



- + (input) Power wire 12 volt-18 DC \*
- (input) ground wire 12 volt-18 DC

### Left and Right Block Input/Output Terminals

- W (output) common (+) for color light signals
- G (output) Green wire for block signal
- Y (output) Yellow wire for block signal
- R (output) Red wire for block signal
- YO (output) block out to next Relay board
- YI (input) block in from next Relay board

### Detector Terminals (2 Detector Sets per Block)

- R1, R2 (input) Red wire: Receiver inputs from detector sets
- Y (output) Yellow wire: Emitter output to detector sets
- W (output) White wire: common ground to detector sets
- B (output) Black wire: positive power to Receiver

Jumper Blocks: Signal Select SA / ABS

- Use a separate DC power supply for this signal system. Do not use power from the rails or other throttle source to power this system. Failure to improperly power this system may damage the board. **SBSC will not be responsible for improperly connecting the system to an incorrect power source.**

## Step [6] Connecting Blocks Together

If you are interested in having a yellow aspect (next block occupied) for the INTERLOCKED version, you must connect the YO and YI input/outputs together otherwise you will only have two aspects; green (block clear), and red (block occupied). If you are selecting the STAND Alone version skip this step.

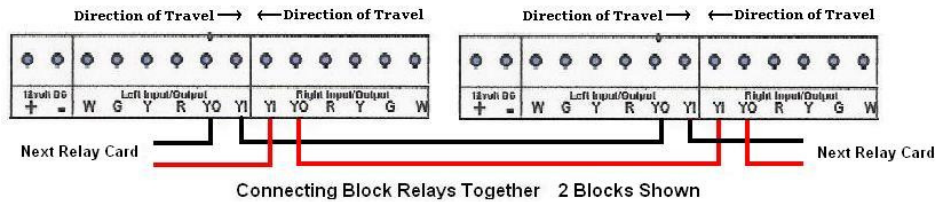
To connect blocks together for the amber (yellow) aspect do the following: (See Fig. 7). Without these connections for the interlocked version you will only have green and red aspects.

Connect YI and YO of the left I/O terminals together and connect YI and YO of the right I/O terminals together. See Fig. 7

[1] Connect all Left YO to next board to the left YI

[2] Connect all Right YO to the next board to the right YI.

Fig. 7 (2 blocks illustrated)



[3] Continue connecting block relay boards together until you have connect all the YO and YI input/outputs together. If a YI is left unconnected due to your track configuration, connect this YI to W on the signal I/O terminal. Failure to leave a YI disconnected will cause the next block for right or left without a yellow aspect.

## Step [2] Mounting Detectors

After establishing the signal block for your layout, one detector set (emitter and receiver) is mounted at each end of the block. See Figure 3. To mount the detectors, remove ballast between the ties in the mounting area. Drill a 5/32<sup>nd</sup> inch hole for the emitter and a 9/32<sup>nd</sup> hole for the receiver as shown in Figure 4A for O Scale, and Figure 4B for HO or 4C for N Scale.

Fig. 4A

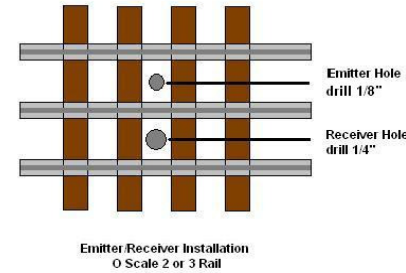


Fig. 4B

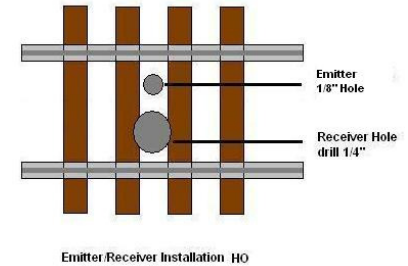


Fig 4 C

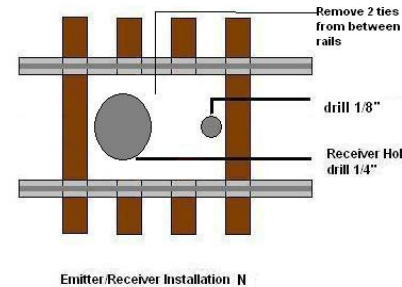
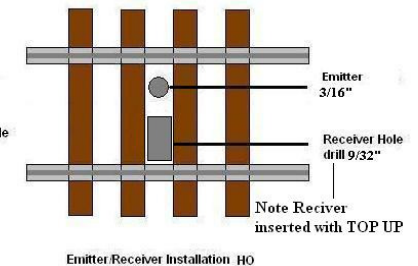


Fig. 4 D



Insert the **Emitter** and **Receiver** from the top. The **Emitter** should be flush with the top of the ties and **Receiver** even with the bottom of the ties. The receiver should be inserted so that the top of the receiver is pacing up. See Fig. 4 D