Traverser - Loop Operation

The Traverser controls DC power to a linear track, enabling a train to automatically traverse back and forth, with a stop at each end with a configurable duration. With the removal of the polarity-reversing relay and the appropriate track wiring, The Traverser may be used to operate a train around a loop with an even number of stops.

Relay Replacement with Jumpers

For loop operation, the train will continue to operate in the same direction, so instead of using a relay to reverse the direction, jumpers must be installed between the pads for the relay's common terminals and the pads for the relay's normally closed terminals.

In Figure 1, the jumpers for relay K1 are shown in black. The holes on the pads are large enough to accept 18 gauge wire. While 18 gauge wire is recommended, the wire used for jumpers should be no smaller than 22 gauge. Since relay K1 is not used, diode D2 is not necessary and may be left off.
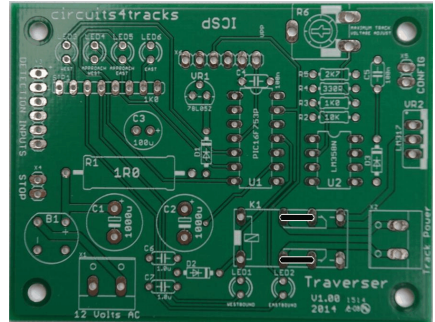

Figure 1

Track Block Wiring

Wiring the four blocks of track from the first to the second stop is similar to wiring a stretch of linear track. The train will move from the first stop to the second.

Even though no direction change will occur as far as the track power is concerned, The Traverser's logic will believe that a direction change will take place. This means that when the train is stopped, The Traverser will believe that it will continue in the opposite direction even though the train will continue in the same direction.

In order to reconcile this difference between The Traverser's logical view of the train and the train's physical actions, the blocks on the second half of the loop between the second stop and the first must be detected in the opposite order. Thus, The Traverser will "see" the train returning to the first stop via the same route even though it is on the other side of the loop.

If a train is stopped at the west end of the line, The Traverser powers it to move toward the east end of the line, and vice versa. Figure 2 shows a loop with two stops.
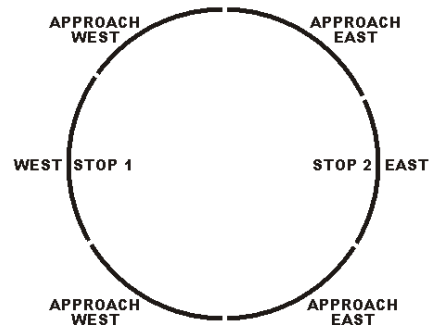

Figure 2

Power to the block where Stop 1 is located is detected as the "West" block. Heading to Stop 2 will be blocks labelled "Approach West" and "Approach East." Finally, Stop 2 is in the block detected as the "East" block.

Continuing around the loop, the order of the blocks must be reverse, passing through "Approach East," then "Approach West" before returning to Stop 1 in the block detected as "West." Though this loop is divided into six blocks, only four feeders from four detectors are needed. Both blocks labelled "Approach West" are powered from the same feeder, and both blocks labelled "Approach East" are powered from the same feeder.

Extending this to more than two stops is simply a matter of repeating the reversing order of connections. Thus, it is necessary to have an even number of stops. See Figure 3 for an example of a loop with four stops.

Every other stop is fed by the power detected as "East" and alternate stops are fed by the power detected as "West." The two blocks between stops must be powered in the correct order of "Approach East" and "Approach West" as needed.
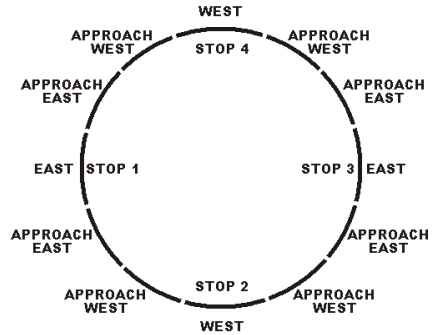

Figure 3

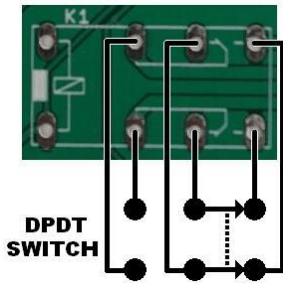# Manual Direction Changing

Figure 4

If it is necessary to manually change direction of the train on the loop, a double pole-double throw (DPDT) switch may be used.

The terminals of a typical DPDT switch match the relay's pads pin-for-pin. The switch's common terminals are connected to the common terminals for the relay on the board. One pair of the switch's terminals is connected to the normally closed relay terminals on the board and the other pair is connected to the normally open relay terminals on the board. See Figure 4 for the connections between a DPDT switch and the circuit board.

Changing the direction should only be done while the train is stopped. During normal operation, it is best to use the STOP jumper on the Traverser to hold the train at a stop while the direction switch is changed.

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