

Loop Traverser Assembly

Circuit board and components supplied in kits are RoHS compliant. Using RoHS-compliant (non-lead) solder will result in a finished board that is also RoHS compliant. If maintaining RoHS-compliance is not important to you, you may use solder containing lead.

To avoid excessive heating of components, it is recommended to install more than one component at a time, and solder one lead of each component at a time, followed by a lead on each other component, before returning to the next lead of first component.

Component Order of Assembly

There is no mandatory order of assembly for components. However, the task may be a little easier by starting with the shortest components (ones that lie flattest on the board) and work towards the taller components.

Some components must be oriented correctly. These are described in the order of shortest to tallest:

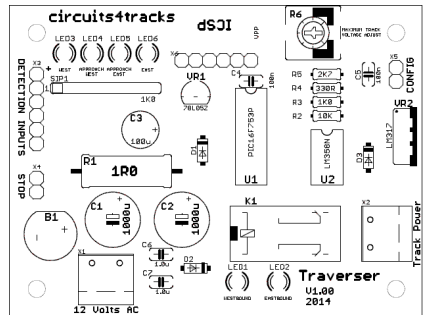


Figure 1

- Relay-Replacing Jumpers
- Instead of relay K1, two jumpers are installed using 18 gauge wire in the locations shown between the common and normally closed connections of the relay as shown in Figure 2. Pre-formed jumpers are supplied with the kit.

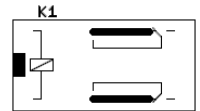


Figure 2

- Diodes D1 and D3
Orientation is important. The cathode lead of each diode is marked by a dark band on the diode and this must be oriented so that it is at the same end as the line on the image on the circuit board. Component D2 is not used for the Loop Traverser.
- Resistors R2, R3, R4, and R5
Orientation is not important.
R2 is 10k ohm and has colour bands: brown, black, orange, gold.
R3 is 1k ohm and has colour bands: brown, black, red, gold.
R4 is 330 ohm and has colour bands: orange, orange, brown, gold.
R5 is 2700 ohm and has colour bands: red, violet, red, gold.

- Integrated Circuits U1 and U2
Pin 1 of each IC must be oriented at the end with the notch image on the circuit board. The end of the device with pin 1 will have a notch similar to the image, and may also have a dot next to pin 1. Compare the photo in Figure 3 with the layout shown in Figure 1.

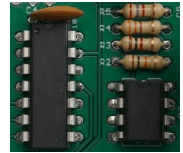


Figure 3

- Resistor R1
Orientation is not important. The board is labelled "1R0", but kits are shipped with a 1.2 ohm resistor with colour bands: brown, red, gold, gold.
- Capacitors C6 and C7
Orientation is not important. These are small blue capacitors with the number "105" on one side.
- Bridge Rectifier B1
Bridge must be oriented such that the terminal labelled with "+" is inserted through the hole with "+" next to it. The two terminals labelled with "~" will be inserted in the holes with no labelling.
- SIP Resistor SIP1
The SIP must be oriented such that the pin with the dot next to it is inserted into the pad with the "1" next to it. This is at the same end as the label "SIP1".
- Voltage Regulator VR1
This voltage regulator must be oriented so that its package matches the image on the circuit board. Compare photo in Figure 4 with the image in Figure 1. The flat edge of the voltage regulator is at the bottom in both figures.



Figure 4

- Trim Pot R6
Due to the position of its three pins, there is only one way to insert the trim pot on the circuit board.
- Green Direction Indicators LED1 and LED2
LEDs have a flat edge, nearest their shortest lead, that must be oriented towards the text describing the indicator on the board (e.g.: "WESTBOUND" or "EASTBOUND"). See Figure 5.



Figure 5

- Red Occupancy Indicators LED3, LED4, LED5, and LED6
LEDs have a flat edge, nearest their shortest lead, that must be oriented towards the text describing the indicator on the board (e.g.: "WEST", "APPROACH WEST", "APPROACH EAST", or "EAST"). See Figure 6.



Figure 6

- Capacitors C4 and C5
Orientation is not important. These are flat disk capacitors with the number "104" on one side.

- SIP Headers X3, X4, and X5
Orientation is not important. X3 is the 6-pin header, X4 and X5 are 2-pin headers.
- Screw terminal blocks X1 and X2
X1 is for the AC power input and is green in colour. X2 is for the DC track power output and is black in colour. Each block should be oriented so that wire insertion openings face the edge of the board.
- Capacitor C3
This is the 100 μF capacitor and must be oriented so that its longer lead goes through the hole marked with a "+".
- Capacitors C1 and C2
These are the 1000 μF capacitors and must be oriented so that their longer lead goes through the hole marked with a "+".
- Voltage Regulator VR2
This voltage regulator comes with a heat sink pre-installed. It is installed so that its back side (the side with the screw head visible - appearing on the right in Figure 7) faces the edge of the board.

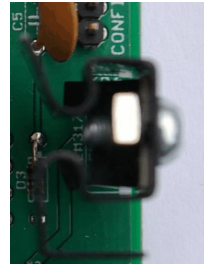


Figure 7

The left fin of the heatsink (top in Figure 7) is smaller than the right fin and should be bent to clear the position of C5.

Installing Detector

See the enclosed installation instruction sheet.

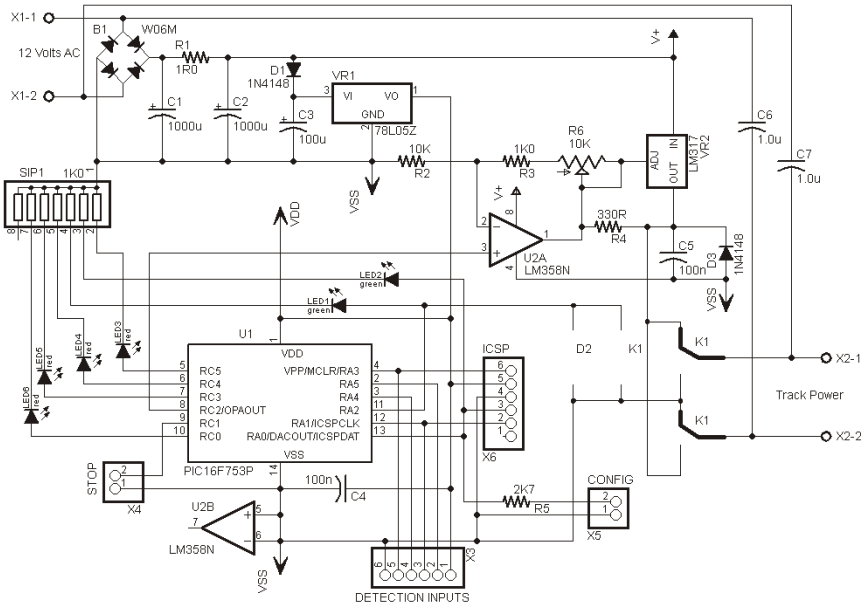
Warranty

Card and components are warranted against manufacturing defects for a period of 1 year from date of purchase. As the circumstances under which this kit is assembled and installed cannot be controlled, failure of the detector card due to assembly or installation problems cannot be warranted. This includes over-heating during assembly, misuse, miswiring, operation under loads beyond its specifications, or short circuits. The warranty is voided if The Traverser is connected to a power supply exceeding 14 volts AC.

If The Traverser fails for non-warranted reasons, it can be replaced with no questions asked for the cost of \$29 plus shipping for an assembled card, or for \$18 plus shipping for a replacement kit (fees subject to change).

Send an email to circuits@daxack.ca for information on warranty or non-warranty replacement.

Circuit Schematic



Part values:

B1	W06M bridge rectifier
C1, C2	1000 µF, 25 volt electrolytic
C3	100 µF, 25 volt electrolytic
C4, C5	100 nF, 10 volt ceramic
C6, C7	1 µF, 25 volt, non-polarized
D1, D3	1N4148 diode
K1	2 jumpers replace relay
LED1 - LED2	3mm LED, green
LED3 - LED6	3mm LED, red
R1	1R0 to 1R5, 2 watt
R2	10K, ¼ watt
R3	1K0, ¼ watt
R4	330R, ¼ watt
R5	2k7, ¼ watt
R6	10k ohm trim pot
SIP1	1K0 SIP resistors, 7RES 8SIP
U1	PIC16F753P
U2	LM358 Op Amp
VR1	78L05Z regulator
VR2	LM317 regulator
X1, X2	2-position screw terminals
X3	6-pin header
X4, X5	2-pin header
X6	6-pin 90° header (optional - for programming)

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