

Signal Animator 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 that one lead of each component at a time be soldered, followed by some time for the component to cool. If multiple components are in the same step, go on to solder the same lead of the next component, to give the first component time to cool.

Component Order of Assembly

There is no mandatory order of assembly for components. However, the job 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:

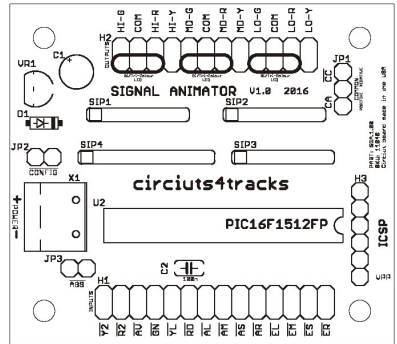


Figure 1

- Diode D1
Diode D1 is only used when the SGA is powered by 8-16 volts. Orientation is important. The cathode lead of the 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.
- Integrated Circuit U2
Pin 1 of the 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 2 with the layout shown in Figure 1.
- Resistor Networks SIP1, SIP2, and SIP3
These are 180Ω, have six pins, and have the number "6X-2-181LF" on them. Pin 1 of each SIP, denoted with a dot, is positioned at the end marked with a "1" on the circuit board, as shown in Figure 3.



Figure 2



Figure 3

- Resistor Network SIP4

These are 47k Ω , have eight pins, and have the number "8X-1-473LF" on them. Pin 1 of the SIP, denoted with a dot, is positioned at the end marked with a "1" on the circuit board, as shown in Figure 4.



Figure 4

- Capacitor C2

Orientation is not important. This is a blue monolithic capacitor with the number "104" on one side.

- Voltage Regulator VR1



Figure 5

The voltage regulator is only used when the SGA is powered by 8-16 volts. This voltage regulator must be oriented so that its package matches the image on the circuit board. Compare photo in Figure 5 with the image in Figure 1. The flat edge of the voltage regulator is at the top in both figures.

- Jumpers JP1, JP2, and JP3

JP1 is a 1x3 header while JP2 and JP3 are 1x2 headers, orientation is not important. A jumper is required on JP1 for operation and will be attached to the 1x3 header in the package. It should be removed during assembly.

- Headers H1 and H2

H1 is a 2x14 header and H2 is a 2x12 header, orientation is not important.

- Screw terminal block X1

X1 is for the power input and is green in colour. It should be oriented so the terminal connections face the edge of the circuit board.

- Capacitor C1

This is the 33 μ F capacitor and must be oriented so that its longer lead goes through the hole marked with a "+".

Solder Jumpers for 5 Volt Version

The circuit board for the SGA is designed to be used either with a 5 VDC regulated power supply or with an 8-16 VDC unregulated power supply. For the unregulated power supply, components D1 and VR1 must be installed.

For the regulated power supply, these components are not installed, but a pair of solder "bridges" must be created to jumper around the uninstalled components. These are highlighted in Figure 6.

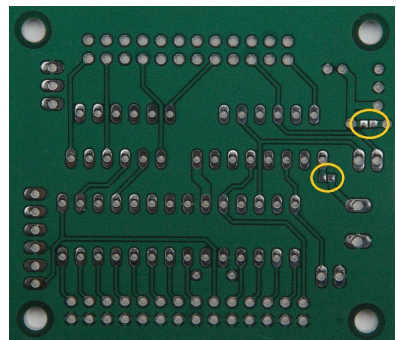


Figure 6

Warranty

Card and components are warranted against manufacturing defects for a period of one 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 detector card is connected to an output supply voltage more than 26 volts, used for a load greater than 190 milliamperes, or used for track power exceeding 4 amperes per block, or 16 amperes in total, including daisy-chained feeds.

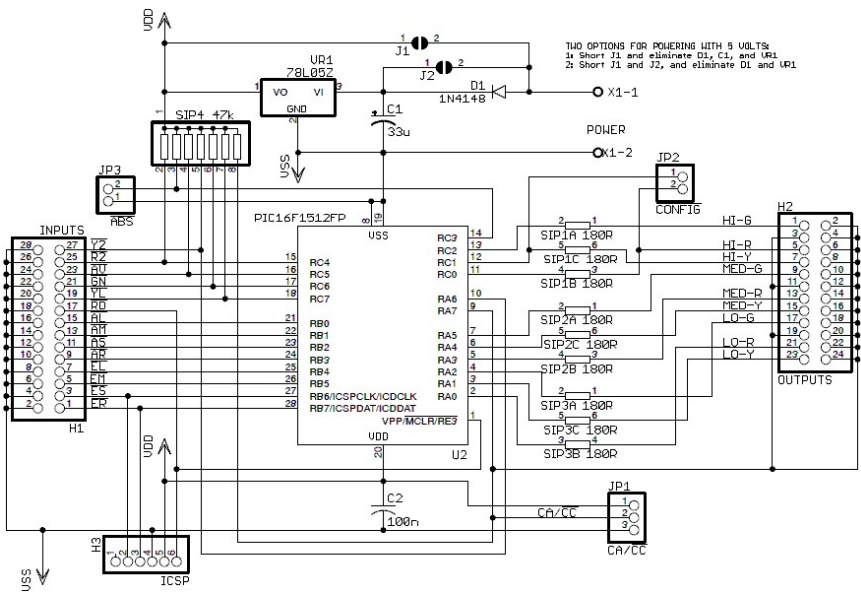
If the detector card fails for non-warranted reasons, it can be replaced with no questions asked for the cost of \$25 plus shipping for an assembled card, or for \$13 plus shipping for a replacement kit (fees subject to change).

Email to **circuits@daxack.ca** for information on warranty or non-warranty replacement.

Installation

See the enclosed installation instruction sheet.

Circuit Schematic



Component values:

- C1 33µF, 35 volt electrolytic
- C2 100 nF, 10 volt or greater capacitor
- D1* 1N4148
- H1 2x14 header
- H2 2x12 header
- JP1 1x3 header
- JP2, JP3 1x2 header
- SIP1, SIP2, SIP3 180R 3RES 6SIP
- SIP4 47k 7RES 8SIP
- U2 PIC16F1512 microcontroller
- VR1 78L05Z regulator
- X1 2-position screw terminal block

* If powering from a 5-volt regulated supply, D1 and VR1 may be omitted and a solder bridge is created across J1 and J2 (bottom of board, see Figure 6).

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