HawkyStick Construction and Installation Instructions

HawkyStick Version 0.1a

These installation instructions are for the HawkyStick kit that began shipping in June 2018.

This kit is designed to be installed in the Korg Poly-800 (PS-800) and the Poly-800 MK2 (PS-800 II).
IMPORTANT: This kit does not include the two connectors CN1 and CN8. Nor does the kit include the connecting cables that attach to CN1 or CN8. The assumption is that you already have connectors CN1 and CN8 removed from the original joystick board KLM-599. If you do NOT have the connectors CN1 and CN8, it is still possible to wire the board directly into the Poly-800 with hook up wire connections. However, we do not provide instructions for doing so.

Congratulations!

Congratulations on your purchase of the HawkyStick retrofit kit. This kit provides your Poly 800 Mk1 or MK2 with a replacement joystick that we think is an improvement over the original unit. The HawkyStick uses a common PS2 type joystick part which means that replacement of a damaged or malfunctioning joystick will be a breeze! We also think that our new joystick is easier and more musician friendly.

WARNING and DISCLAIMER

You take full responsibility for any outcome, good, bad or ugly, when constructing, installing and using this retrofit kit. Do NOT attempt to construct, install or use this retrofit kit unless you understand and are willing to accept responsibility for any outcome that may result from your own attempts to construct, install and use this kit. This requires electronics technician skills. If you do not have the skills required then you should have someone else do the job for you. Your local music store should be able to help you to find a qualified technician in your area.

Safety First

NOTE: Remember to approach your work with patience, care and appropriate safety precautions.

Before you Begin

It is critically important to make sure that you received all of the components in the kit and that none of the components show any sign of physical damage. Check that you received all of the components in the quantities listed in the bill of materials sheet that was provided with your HawkyStick kit. You can also download the BOM from www.hawk800.com. Also visually inspect each component and ensure that there is no sign of any physical damage.

Preparation

The basic steps involved in the successful completion of this project are:

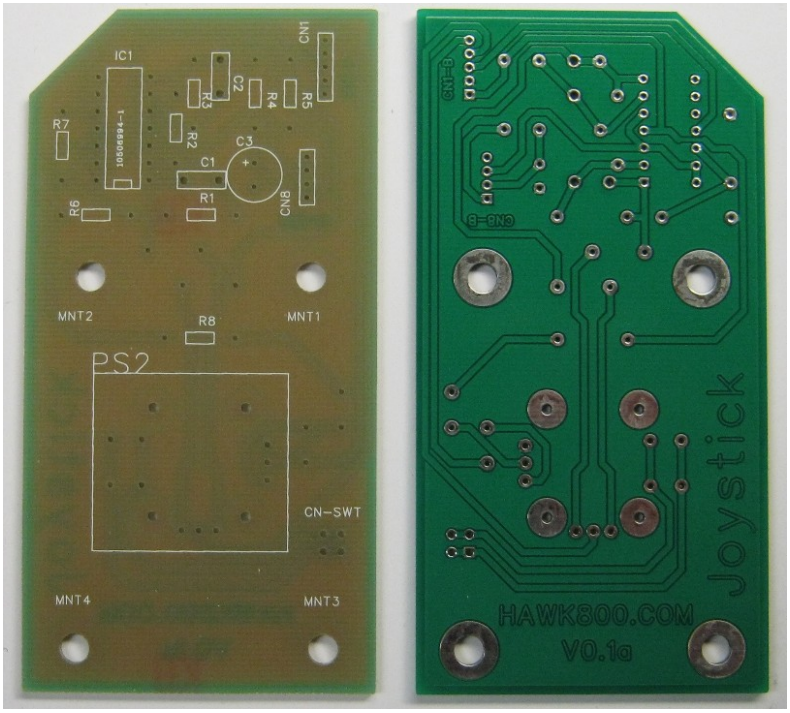
1. Read these instructions and understand the steps and tasks required.
2. Check the kit for delivery of all components physically undamaged.
3. Obtain the needed tools and supplies.
4. Construct the new joystick board (marked Joystick V0.1a).
5. Open up the Poly-800 Mk1 or MK2.
6. Fit the joystick board into your synth.
7. Attach the cable sets 1B and 8B.
8. Close up the synth and test.

Read the Instructions

It is very important that you read these instructions through to the end first before beginning any work. This should give you a good understanding of the steps involved in the project. If you need assistance you can contact support@hawk800.com for additional explanation of any part of these instructions. This project requires patience and about 1 hour to complete. You should plan to set aside 2 hours so that you have plenty of time to focus on each task. Do NOT rush any step in this project. It is better to take extra time instead of ruining your synthesizer or the retrofit kit.

Before you Begin

It is important to make sure that you received all of the components in the kit and that none of the components show any sign of physical damage. Use the bill of materials that came with the kit to ensure that the correct kit and parts have been supplied. Pictures of the front and rear of the printed circuit board are shown at right.



Required Tools and Supplies

To construct and install this kit will require (at minimum) the following tools:

1. Phillips screwdriver.
2. Small (2.5) flat blade screwdriver.
3. Small side cutter.
4. Small long nose pliers.
5. Pair of tweezers.
6. Suitable Soldering iron (around 20/40 watts with fine soldering tip).

You will need to obtain the following supplies:

1. Rosin core solder standard 60/40 formula for electronics work. Approx. 0.032” diameter.
2. Super glue (recommended) or hot glue gun or epoxy resin glue.

Populating the HawkyStick Printed Circuit Board

At this point, you should have obtained all of the needed tools and supplies to carry out the entire project. And you probably should have backed up your global, patch and sequencer data too (this is a good precautionary measure although it is not actually necessary). You are now ready to construct the HawkyStick PCB.

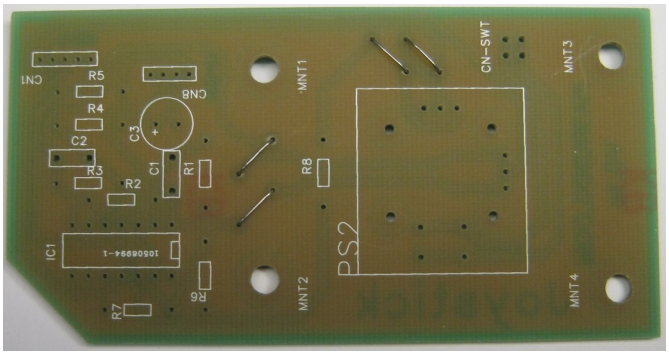
Step 1 – Prepare a work space

First, you need to prepare a work space. Find a flat surface (a kitchen table or work bench is recommended) to work on. You will need a flat area about 1 meter square (3 feet x 3 feet).

Step 2 – Install the jumper wires into the HawkyStick Board

Install the four jumper wires. Note the orientation of both pairs of jumpers diagonal to the line of the printed circuit board itself.

- Install four jumper wires as shown in the picture at right.



Step 3 – Install Resistors R1-R4

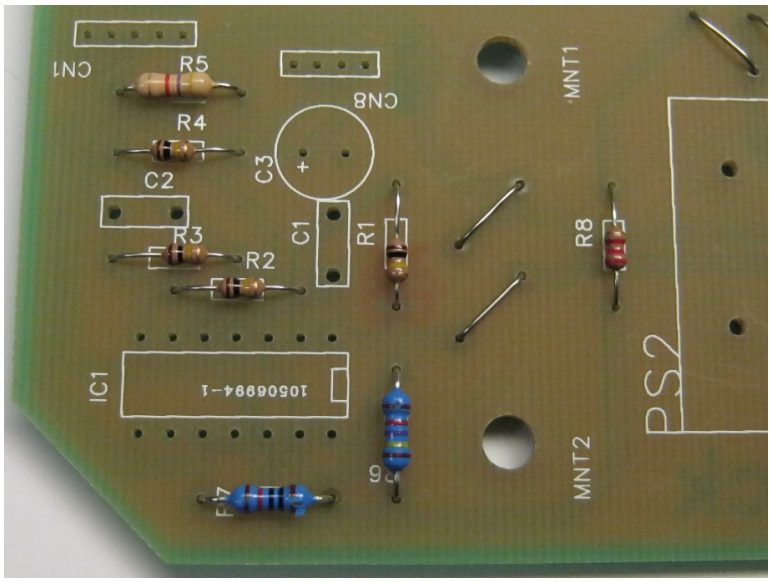
Install all four (4) of the 100K ohm resistors (R1, R2, R3, R4), as shown in the picture below right. The 100K ohm resistors are marked with **four** color bands: brown, black, yellow, gold.

Step 4 – Install Resistors R5-R8

Install the resistors R5 to R8.

- Resistor R5 has a value of 4.7K ohm with four color bands: yellow, violet, red, gold.
- Resistor R6 has a value of 14.7K ohm with **five** color bands: brown, yellow, violet, red, brown.
- Resistor R7 has a value of 10.0K ohm with **five** color bands: brown, black, black, red, brown.
- Resistor R8 has a value of 2.2K ohm with four color bands: red, red, red, gold.

Use the picture at right to check that you have the correct resistors installed in the correct locations.

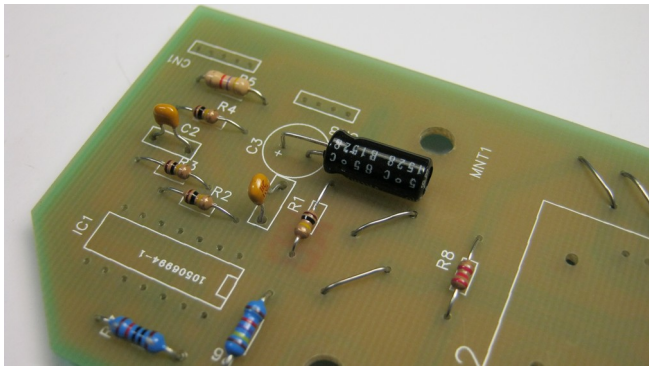


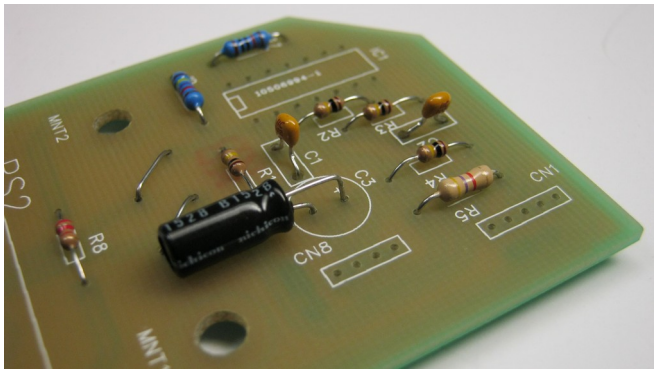
Step 5 – Installing Capacitors C1-C3

Install the two 0.001uf ceramic capacitors and the 10uF electrolytic capacitor.

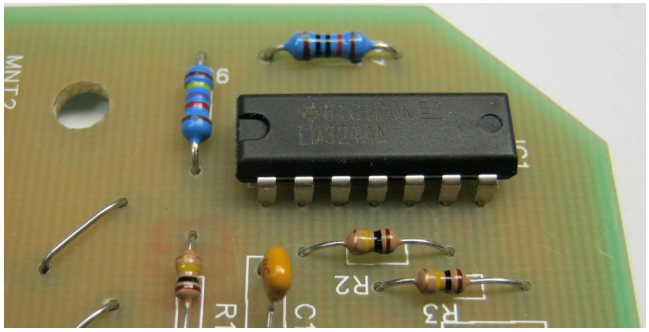
- Install C1 and C2 in their marked locations.
- IMPORTANT: Install C3 into its marked location making sure that it is installed horizontal (flat) onto the board.
- IMPORTANT: Make sure that the positive (longer) lead of C3 is inserted into the positive lead on the board.

Use the two pictures below as a guide to ensure you install the three capacitors correctly.





Step 6 – Install IC1 (LM324)



- Install IC1 LM324 (quad operational amplifier) install its marked location. Ensure that the chip is installed with the correct orientation where the notch in the chip is aligned with the marking on the PCB.

Use the picture at right as a guide for installing IC1. Note that the notch is on the left hand side.

Step 7 – Installing the Joystick Unit

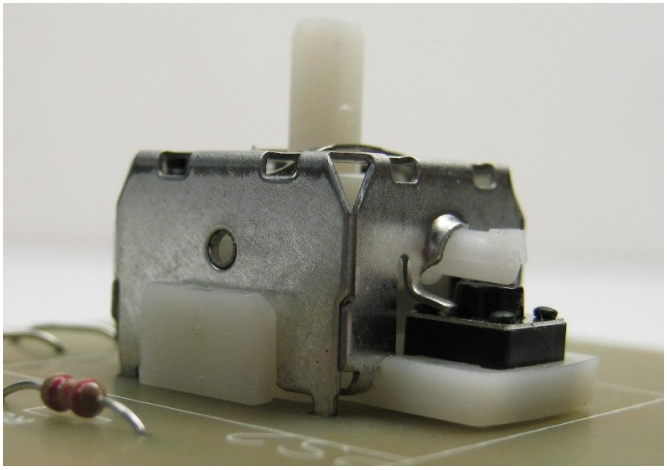
We now need to install the joystick unit. IMPORTANT: use caution to ensure that you do not bend over the pins of any part of the joystick.

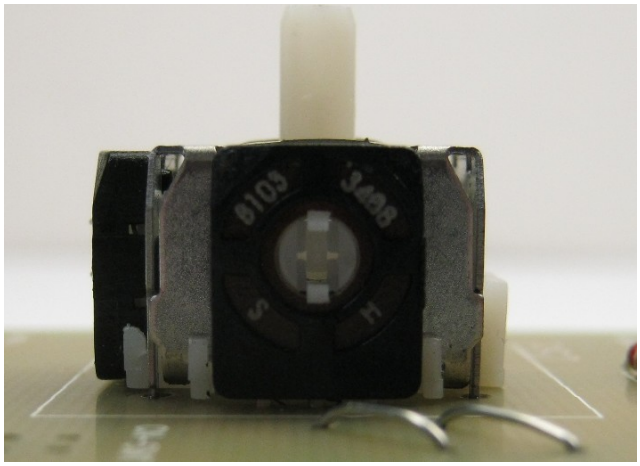
CAUTION: Be careful to make sure that the joystick is fully seated down onto the PCB.

- Remove the joystick knob from the unit itself. Set aside the know where you will not lose it.
- Using the pictures below, insert the joystick into the location on the board. Carefully line up each pin to ensure that they will push through the holes without bending over. Push the assembly down into position so that all sides of the unit are down against the PCB.

Use the pictures below to ensure that your joystick unit is installed fully seated down onto the PCB.

- When you are certain that the joystick unit is fully seated down against the PCB and all of the pins have pushed through to the underside of the board, go ahead and solder all of the pins including the four large mounting posts. All of the 10 pins and the 4 posts can be soldered.



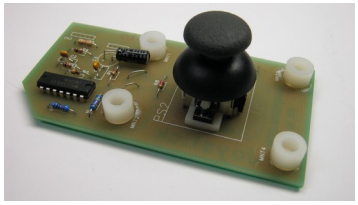


Step 8– Install the Four Nylon Spacers

It is possible to mount the HawkyStick without glueing the nylon spacers into position. However, it is very difficult to do. A far better option is to glue the four posts into positions onto the HawkyStick board. Super glue is recommended. A hot glue gun or even epoxy resin could work. We have only used super glue.

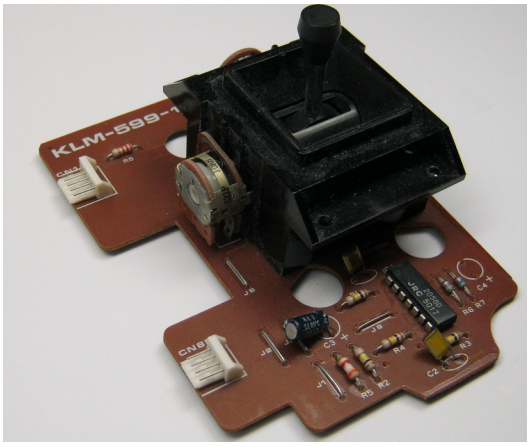
CAUTION: Be careful to ensure that the nylon spacers are in the correct position before applying force to squeeze the spacers to the board. It will be very difficult to remove a spacer if it is not in the correct position.

- Carefully apply a small amount of super glue to one spacer and press the spacer onto the PCB. Take extra care to ensure that the hole through the spacer is lined up with the hole in the PCB.
- Repeat the step above for each of the remaining three spacers.



- Remove any excess super glue with a dry cloth or paper towel.
- Be careful not to get any super glue on your fingers!

See the picture at left showing all four nylon spacers attached to the PCB using super glue.

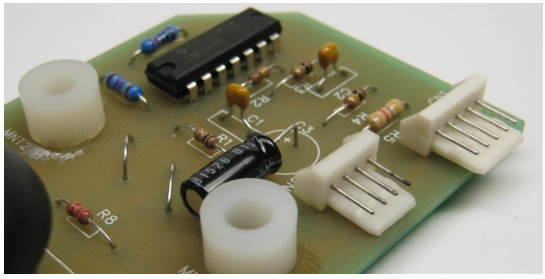


Step 9 – Remove CN1 and CN8 from Old Poly-800 Joystick

Carefully remove connectors CN1 and CN8 from the original Poly-800 joystick assembly.

- Using the picture at right as a guide, carefully remove the two small 5 pin (CN1) and 4 pin (CN8) connectors.
- CAUTION: Try to use as little heat as possible while removing the connectors from the old joystick board.
- Replace the connectors into the HawkyStick PCB and solder all of the connector pins.

Use the picture below right as a guide to the correct location of the CN1 and CN8 connectors in the HawkyStick PCB.



Step 10 - Install the HawkyStick into your Poly-800

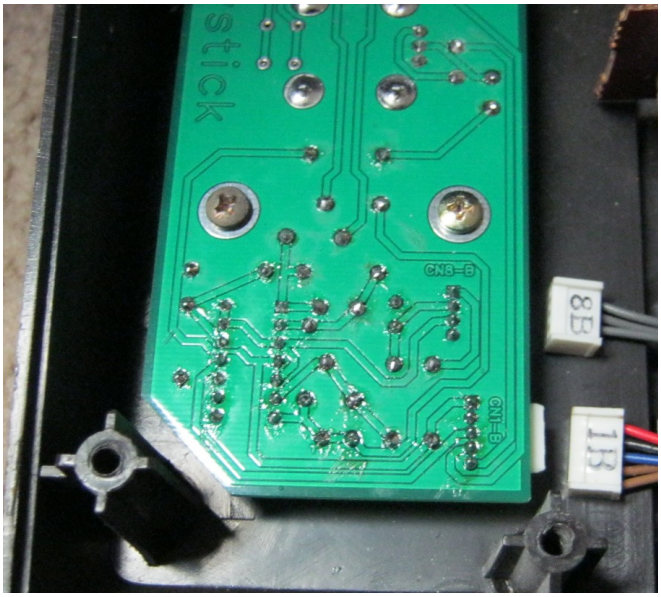
The time has come to install the new HawkyStick into your Poly-800 but before you do, check all of the soldering, the orientation and location of all of the components. Also check for the quality of your soldering and look for any solder bridges, cold solder joints or component leads that have not been trimmed.

- Use the four screws provided to install the HawkyStick into your Poly-800.

See the picture on the next page for help in positioning the HawkyStick and using the screws to attach it to your Poly-800.

Step 11 - Attach Cable Ends 1B and 8B

Now carefully plug in connector 8B and 1B to the connectors CN8 and CN1 on the HawkyStick board. If you have difficulty attaching the ends, you can remove the HawkyStick and plug in the cable ends then reinstall the HawkyStick.



Step 12 - Close Up and Test

You can now close up your Poly-800 and test it as well as the new joystick.

- Close the two halves of the Poly-800.
- Test that everything works as it should.
- Replace all of the case screws.

Congratulations!

Enjoy your new HawkyStick joystick assembly.

Getting Further Assistance

You can email support@hawk800.com to obtain assistance, answers to questions and for general inquiries.

https://www.hawk800.com

https://www.wantegrity.com

Appendix – Joystick Board Schematic

The HawkyStick schematic is reproduced below. The circuit is identical to the original Korg joystick board KLM-599-1.