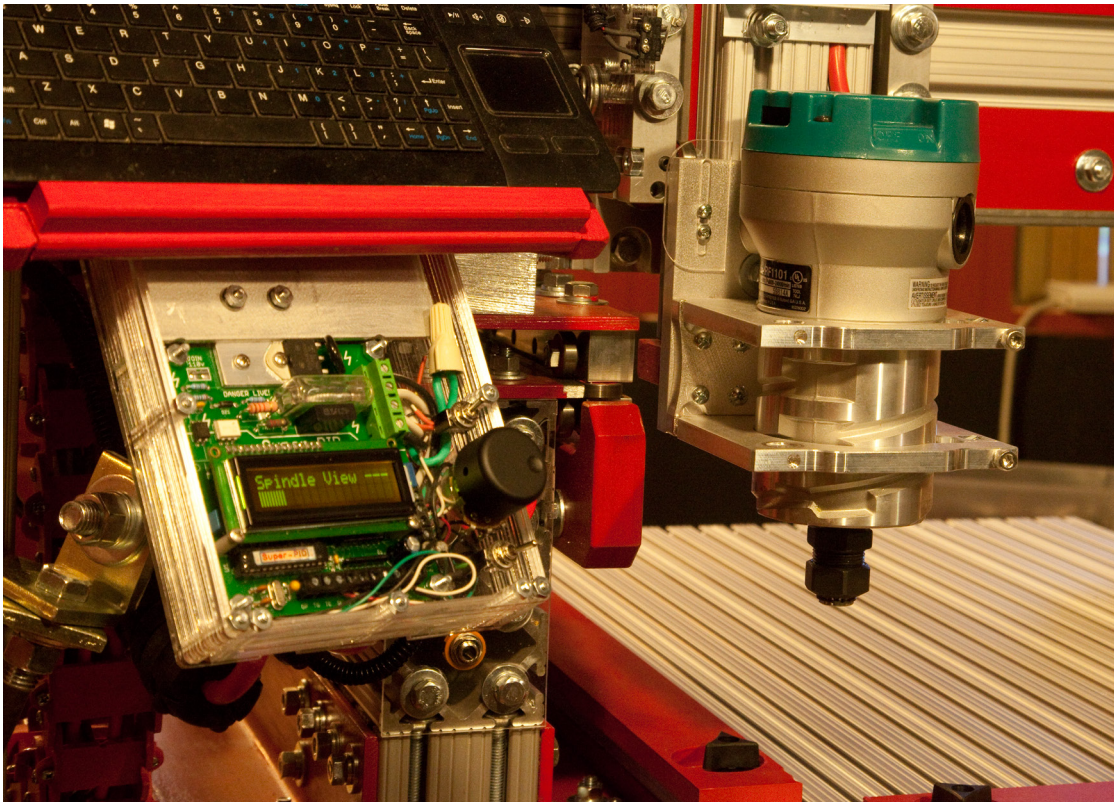# Makita RF1101 Super-PID Conversion

V2.0 Copyright 2012 Kronos Robotics

I n this project, you will be shown how to convert the Makita RF1101 router for use with the SUPER-PID2 Speed controller. Please note that this conversion will void your warranty.

Tools Needed For This Project

- Phillips screwdriver
- Wire cutters
- Wire strippers
- Needle nose pliers
- 7/32" Drill bit
- Hot glue gun

Other Items Needed For This Project

- White paint pen
- Black paint pen
- Twist on wire connectors
- 14 GA extension cord (25 foot)
- Regulated 5v power supply with hookup wire
- Super-PID2
- Scrap MDF 1/2" thick

Tip

You can get a regulated 5v power source a from your PC via the USB cable or from one of the hard drive connectors inside your PC. The connector will have four wires.
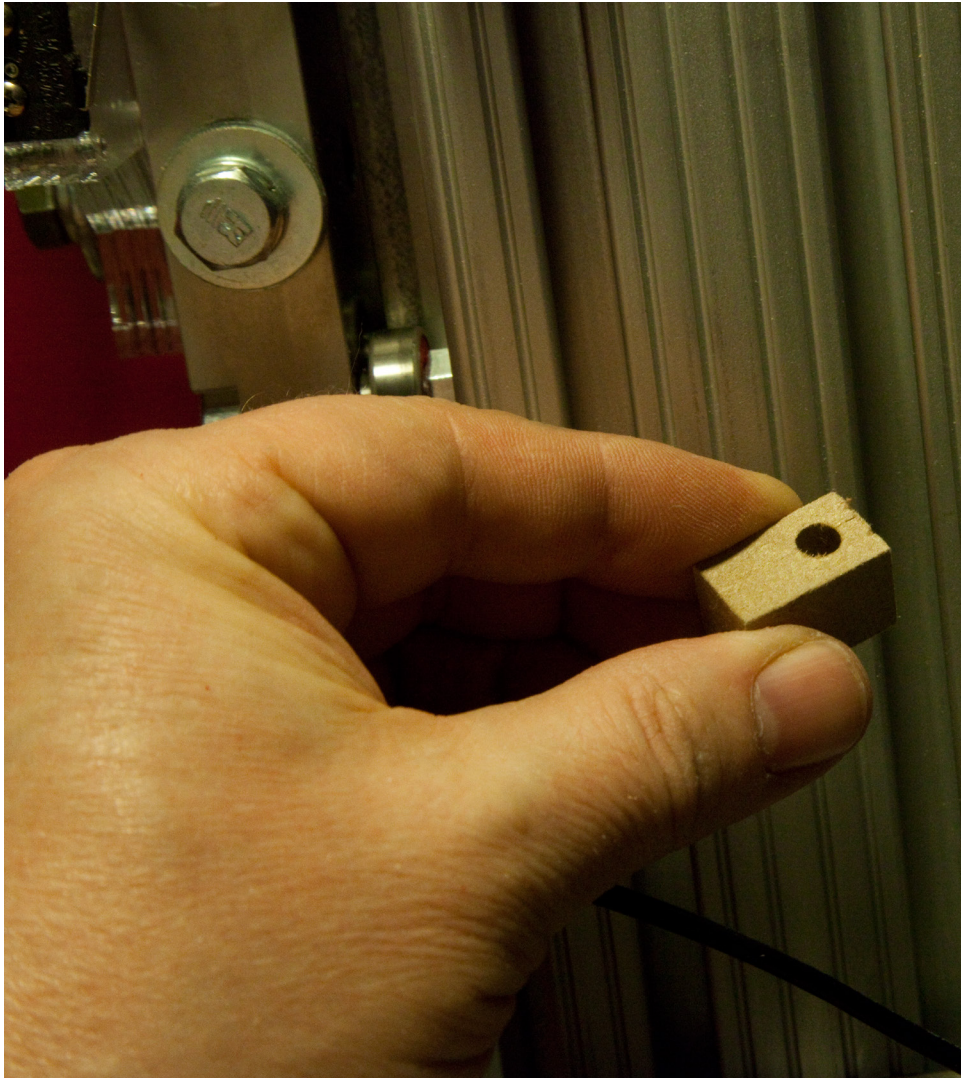
Yellow = 12V

Black = GND

Black = GND

Red = 5V

You will want to use one of the black wires and the red wire.

The following two links are power supplies that can also be used.

Prerequisites

You need to cut a small cube out of MDF. The cube should be 1/2" x 1/2" x 3/4". You will need to drill a 7/32" hole at about 1/4" from the bottom as shown in Figure 1.

You should also download the Super-PID instructions. They can be found here:

Figure 1

Step 1

It it best to work on your router after it has been mounted on your CNC. This will keep the business end pointed up while you perform the conversion.

Start by removing the cover. To do this remove the four screws shown in Figure 2, then lift the cover off.

Figure 2

Step 2

Disconnect the two wires shown in Figure 3. A pair of needle nose pliers will help.
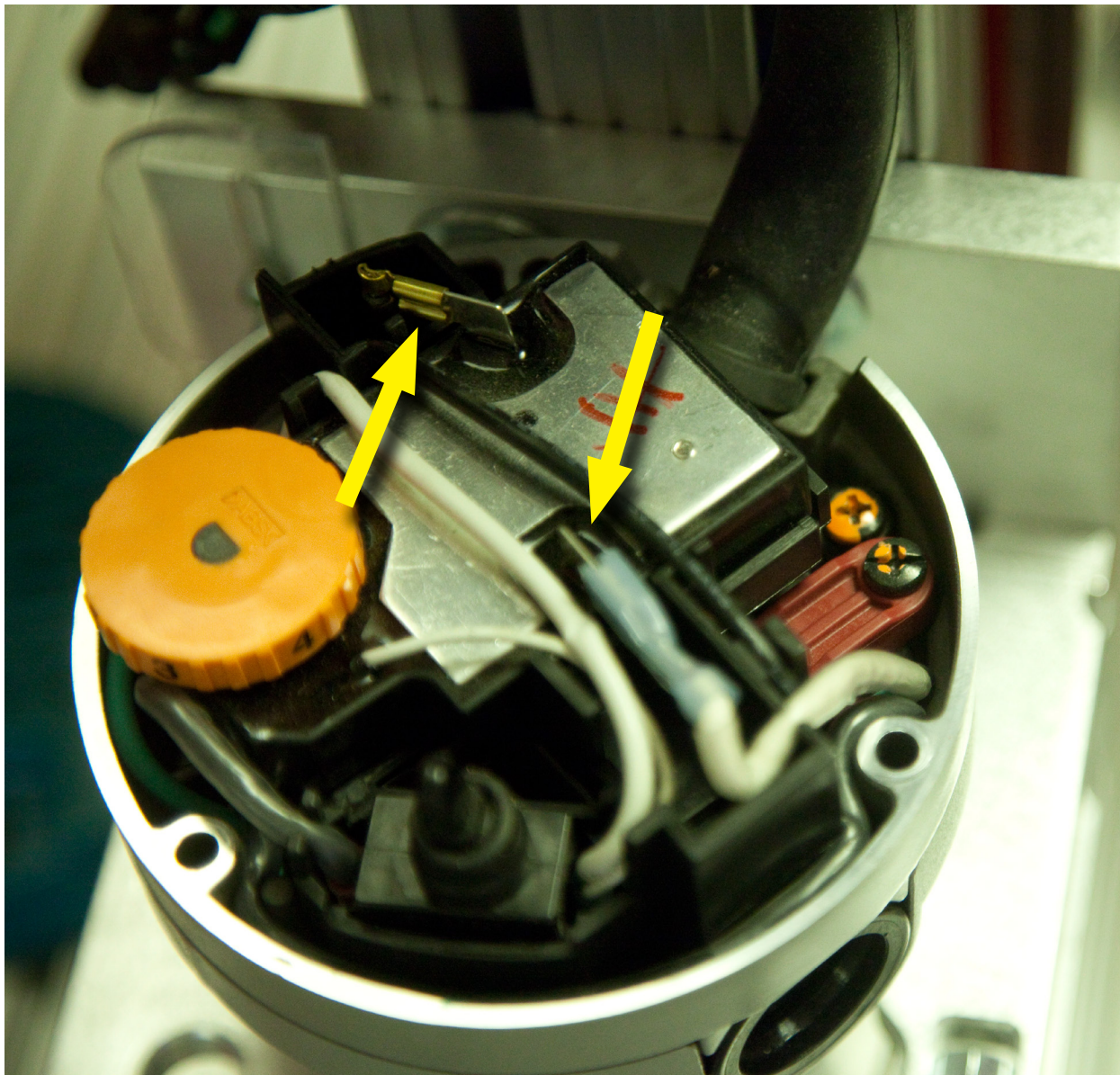

Figure 3

Step 3

Remove switch, speed controller, and sensor module from the router. You should be able to lift them out with ease. Remove the screws from the cord clamp and pull the cord free. Disconnect the green wire from the housing using a Phillips screw driver.

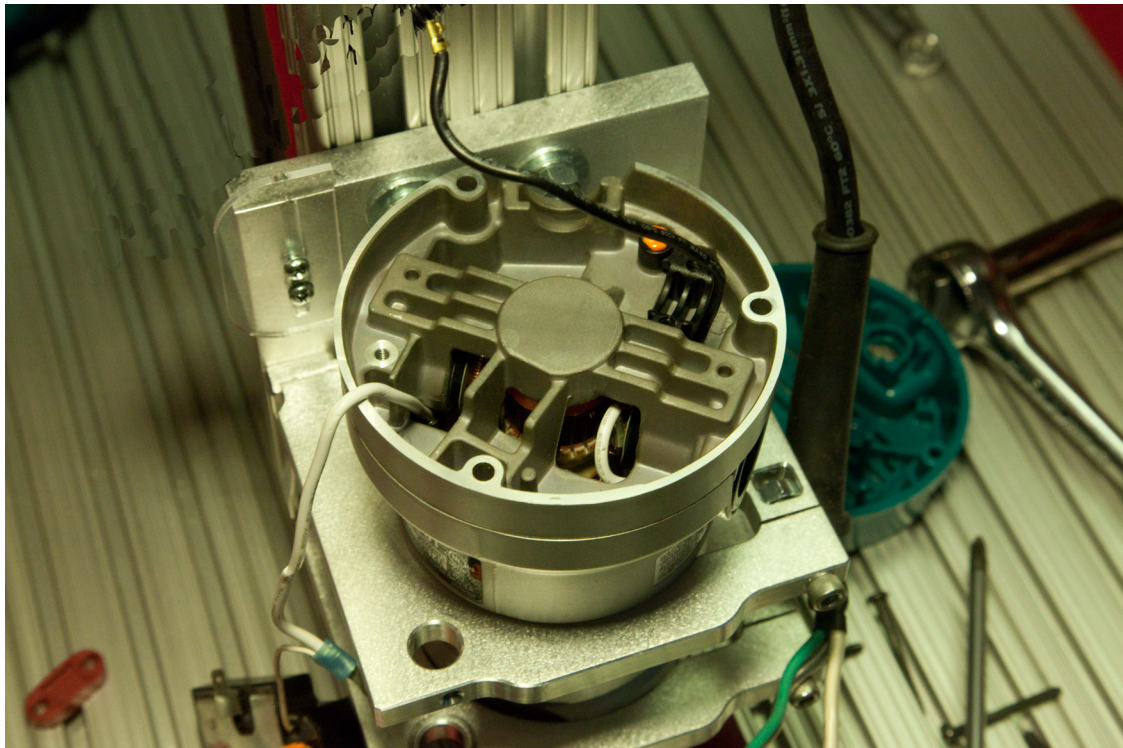Note that the sensor module is the black bracket that holds the switch and speed controller.

Figure 4

Step 4

Using a pair of wire cutters, clip the end of the black wire as shown in Figure 5. Clip the white wire as shown in Figure 6. Using wire strippers, strip about 3/4" of the insulation from each wire.
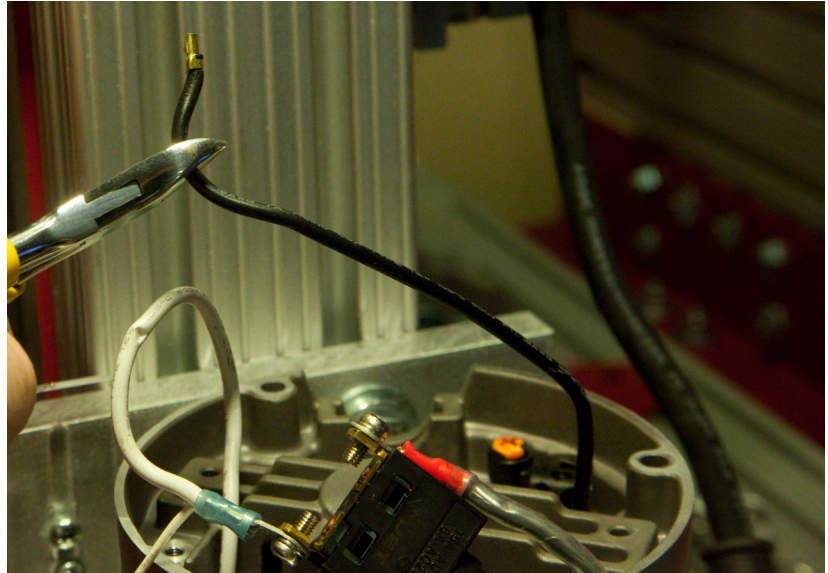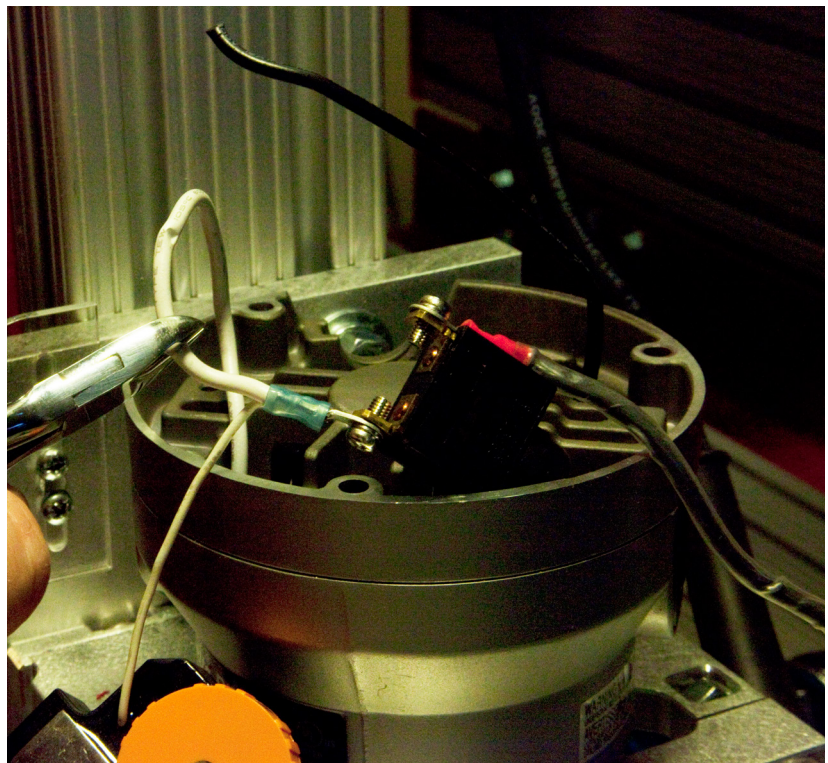
Figure 5

Figure 6

Step 5

Using black and white paint pens like the ones shown in Figure 7, paint the red sensor ring shown in Figure 8. Paint half of the ring white and the other half black.
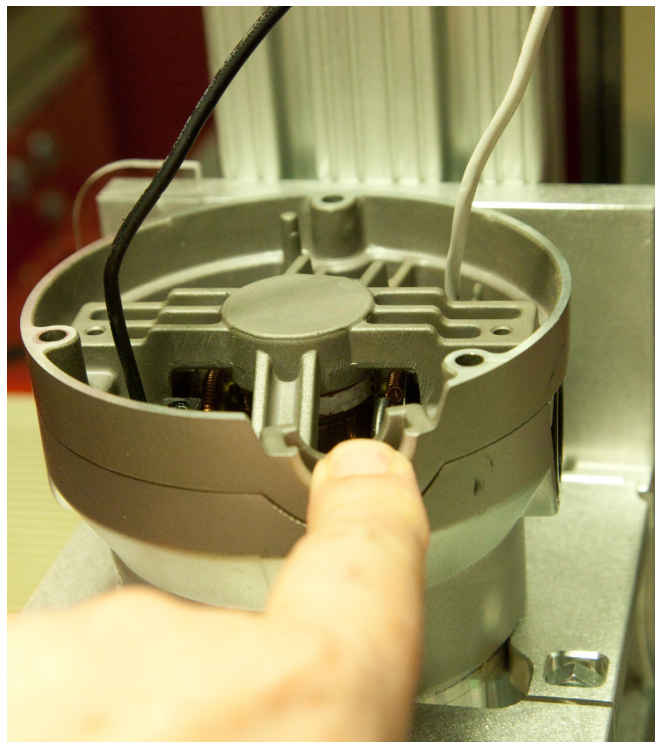

Figure 7

Figure 8

Step 6

Take the MDF cube and with the hole pointed down as shown in Figure 9, insert the RPM sensor into the hole.

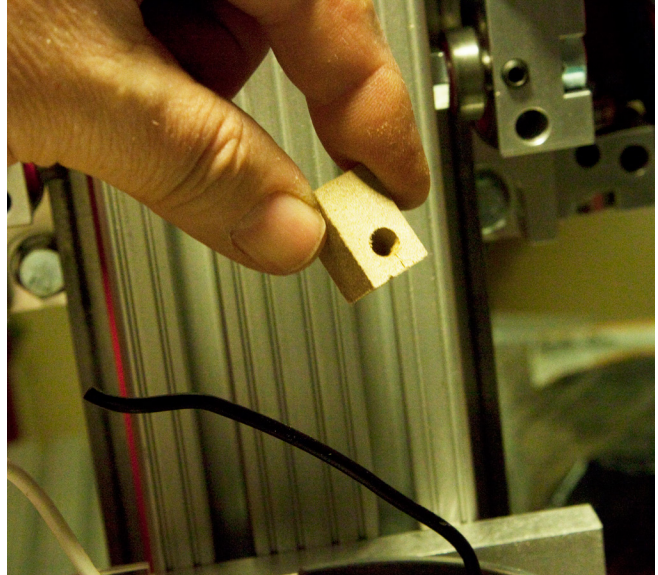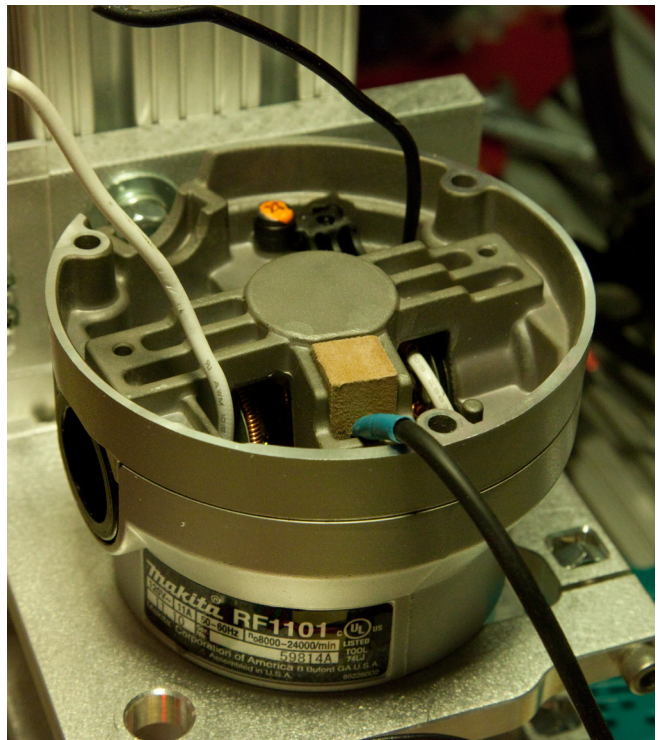Place the cube with the sensor into the router as shown in figure 10.

Figure 9

Figure 10

Step 7

Connect the sensor cable to the Super-PID. Attach a regulated 5v power source to the Super-PID.

Rotate the spindle on the router slowly. When the sensor passes over the black portion of the painted band, the display should indicate a low reading as shown in Figure 11.

When the sensor passes over the white portion of the painted band, the display should indicate a high reading as shown in Figure 12.

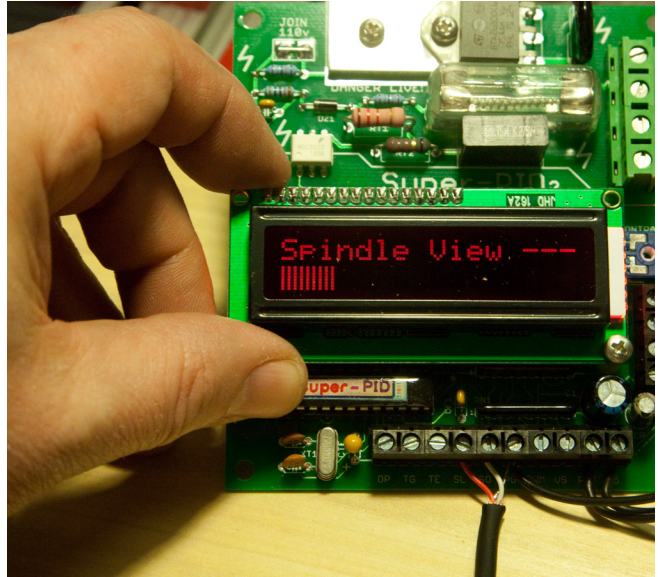Adjust the sensor as necessary to achieve these readings before preceding to the next step.
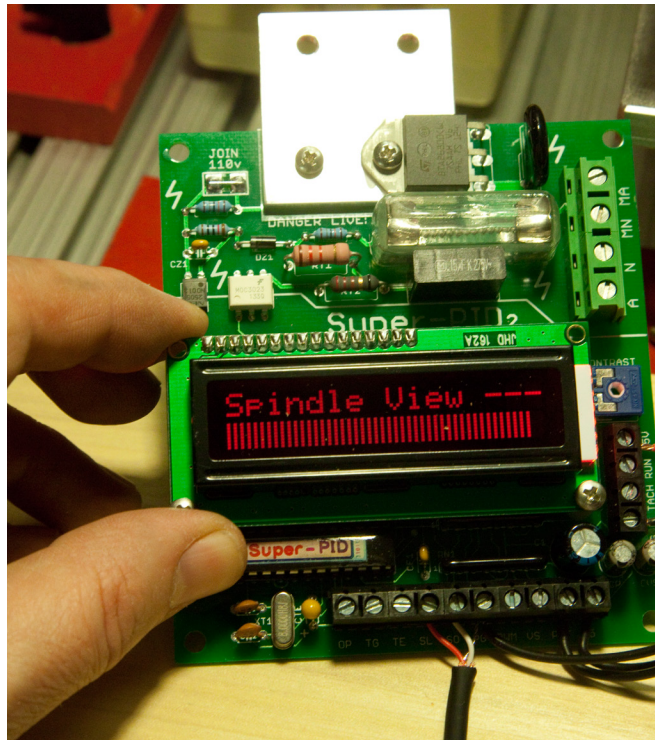

Figure 11

Figure 12

Step 8

Once you are satisfied with the readings add some hot glue to the sensor and cube to hold it in place, as shown in Figure 13.
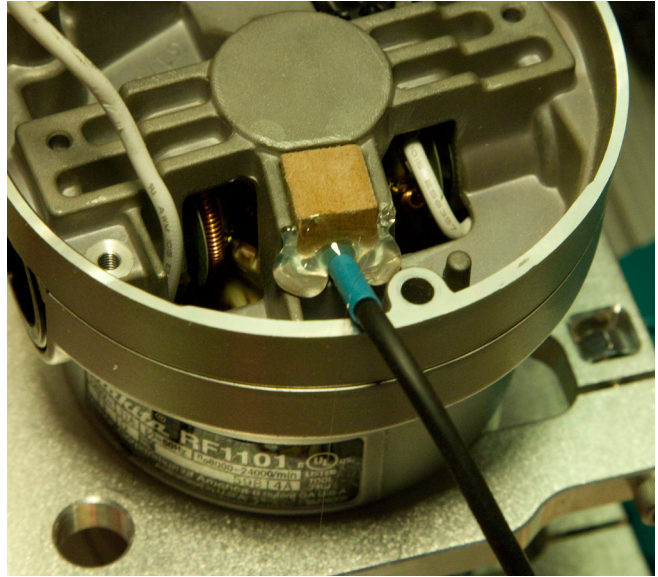

Figure 13

Step 9

Now attach your Super-PID power cord to the router using the cord clamp you removed earlier, as shown in Figure 14. Strip about 3/4" of the insulation from each of the wires.
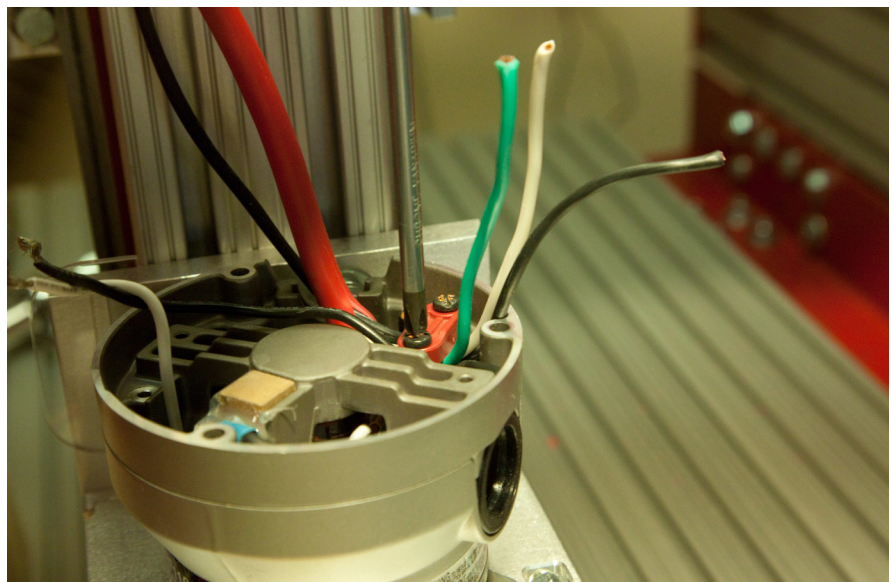

Figure 14

Step 10

Connect the two white wires and the two black wires together. Then, twist on the two wire connectors as shown in Figure 15.
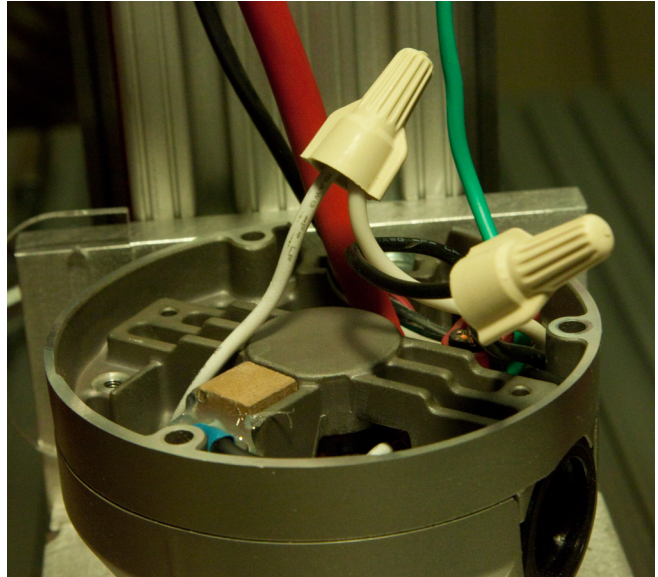

Figure 15

Step 11

Using the original screw attach the green (or ground) wire from the cord to the case as shown in Figure 16.

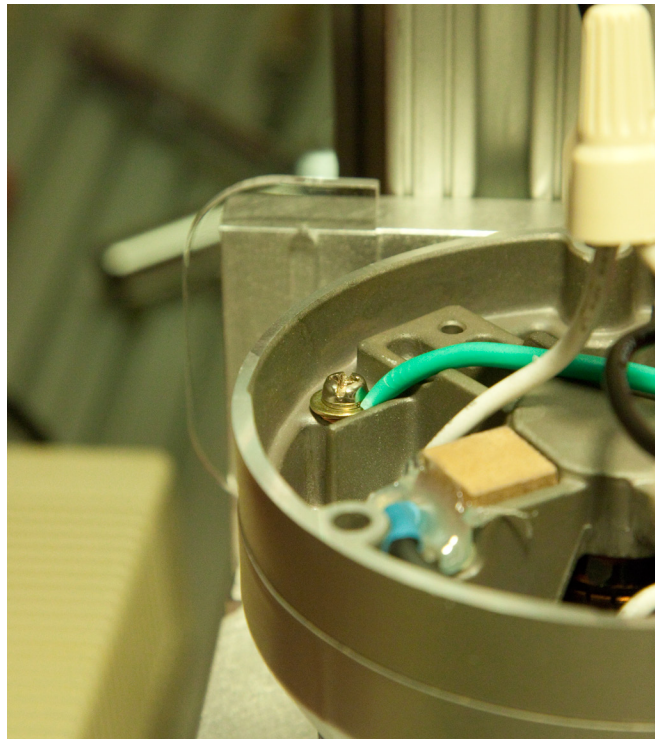A small #10 washer may help hold the wire in place.

Figure 16

Step 12

Rout the sensor wire and power cord out through the original cord slot and re-attach the cover as shown in Figure 17.
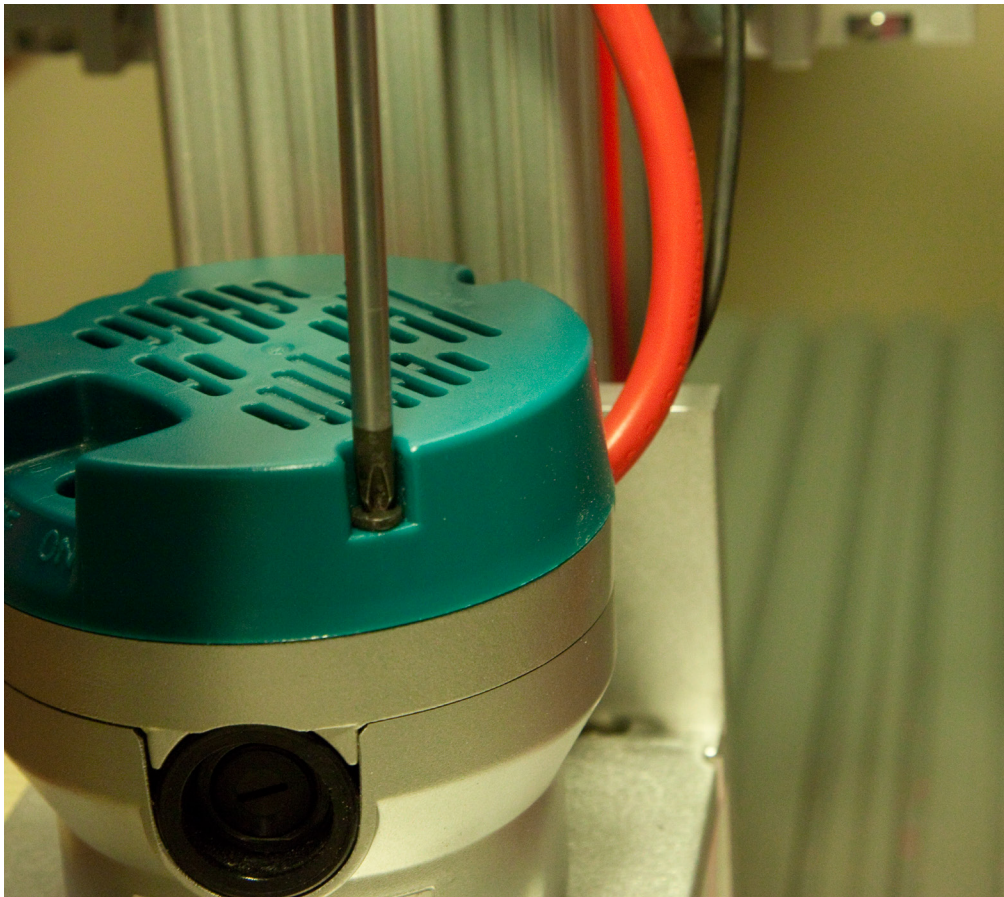

Figure 17

Conclusion

Rout the wires up the Z beam by first running the sensor wire up the T slot in the Z beam. Then rout the power cord over top of the sensor wire as shown in Figure 18.

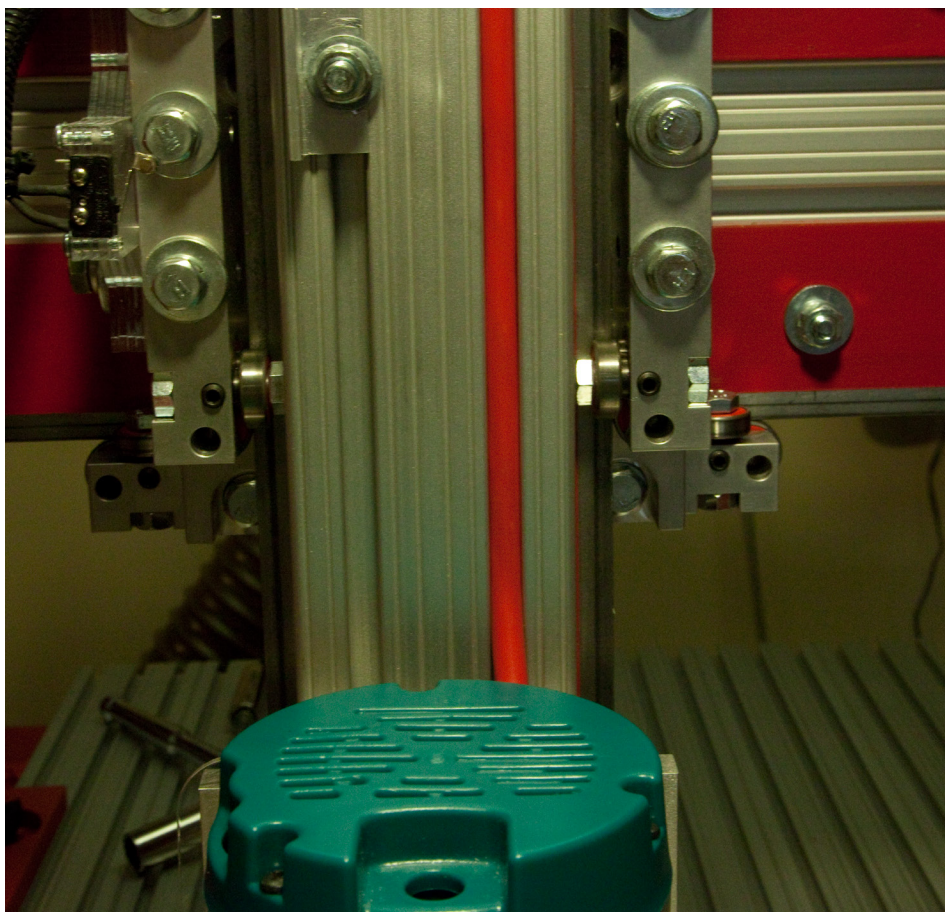Be sure to visit the KRMx02 CNC web site for other Super-PID conversion instructions and videos at :

http://www.kronosrobotics.com/krmx02/index.shtml

Figure 18