



## Tools Needed For This Project

- Phillips screwdriver
- Small Flat head screwdriver (Super-PID Terminals)
- Small Phillips screwdriver (G540 Terminals)
- Wire cutters/ strippers

## Other Items Needed For This Project

- Super-PID Controller
- Regulated 5v power supply
- Hookup Wire

### 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 is the power supplu that I used on this project.

## Prerequisites

See router conversions.

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

## Warning

The triac and metal heatsink should always be treated as LIVE and dangerous and connected to the AC mains. This is the safest option.

If the triac ever fails there is a possibility that the heatsink could then short to AC mains. So it is always best to be absolutely safe.

## Step 1

Attach the 5v power supply to the mounting board using double stick tape or mounting screws.

Attach the ground wire (green), the white wire (neutral) and the black wire (line) as shown in Figure 1.

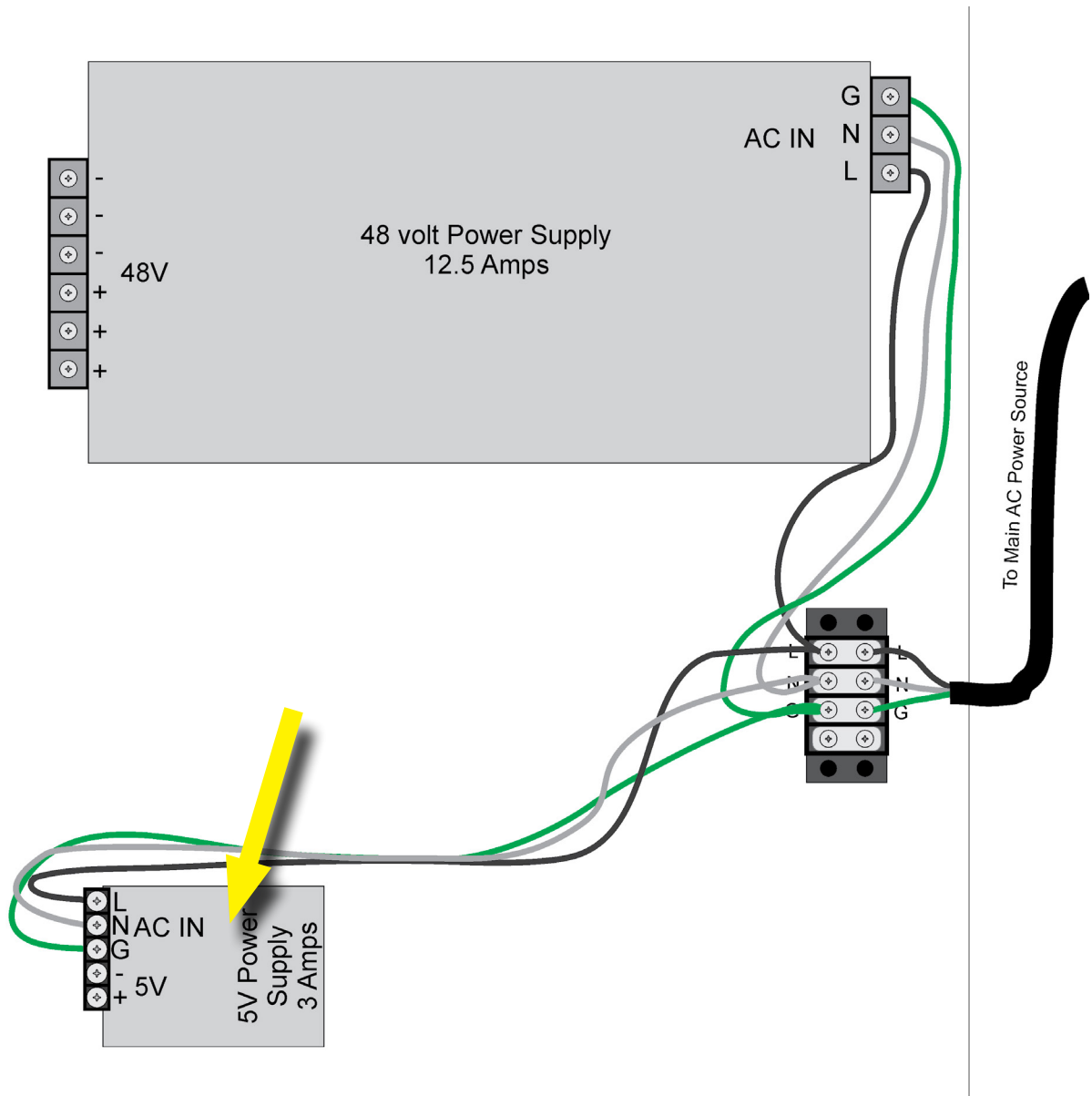


Figure 1

## Step 2

Attach the Super-PID to the mounting board using double sided tape or mounting screws, as shown in Figure 2.

Attach a red wire between the +5v on the power supply and +5v on the Super-PID.

Attach a black wire between -5V on the power supply and GND on the Super PID.

Attach a black wire from -5V on the power supply and the terminal block shown in Figure 2.

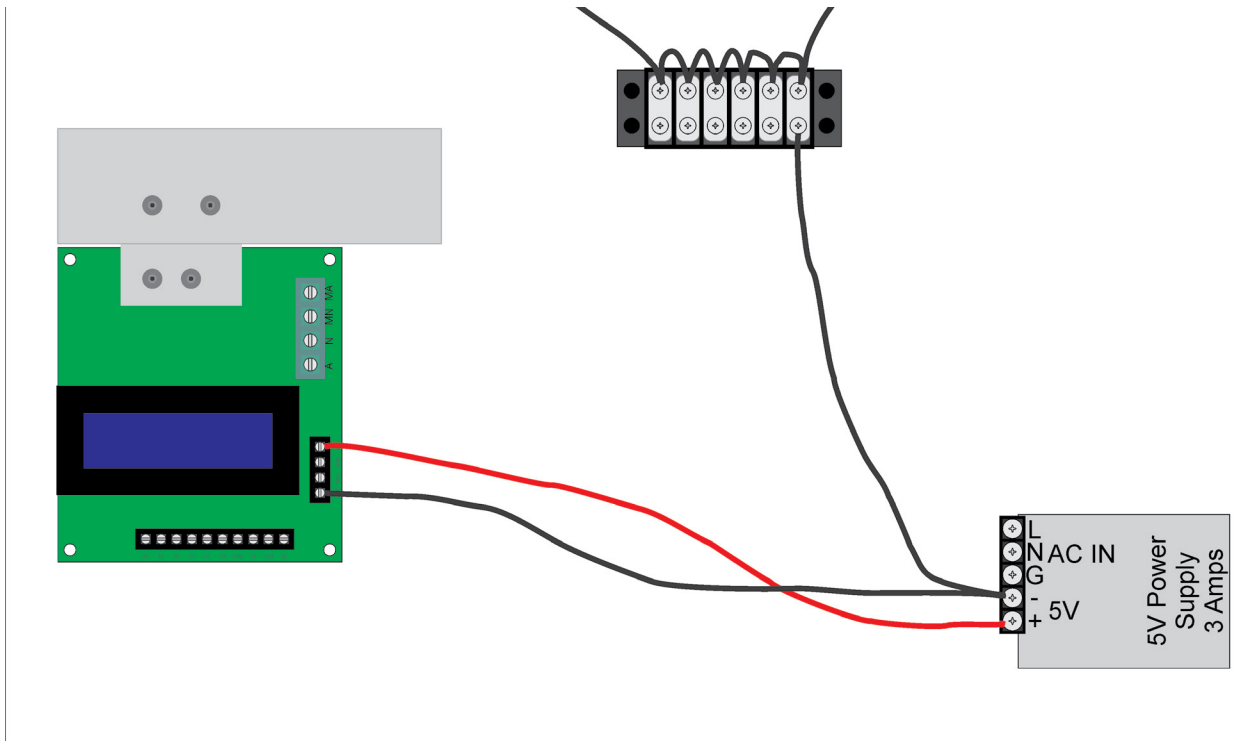


Figure 2

### Step 3

Attach the first lead on the potentiometer to the P5 terminal on the Super-PID. Attach the center lead on the potentiometer to the POT terminal on the Super-PID. Attach the last lead on the potentiometer to the PG terminal on the Super-PID, as shown in Figure 3

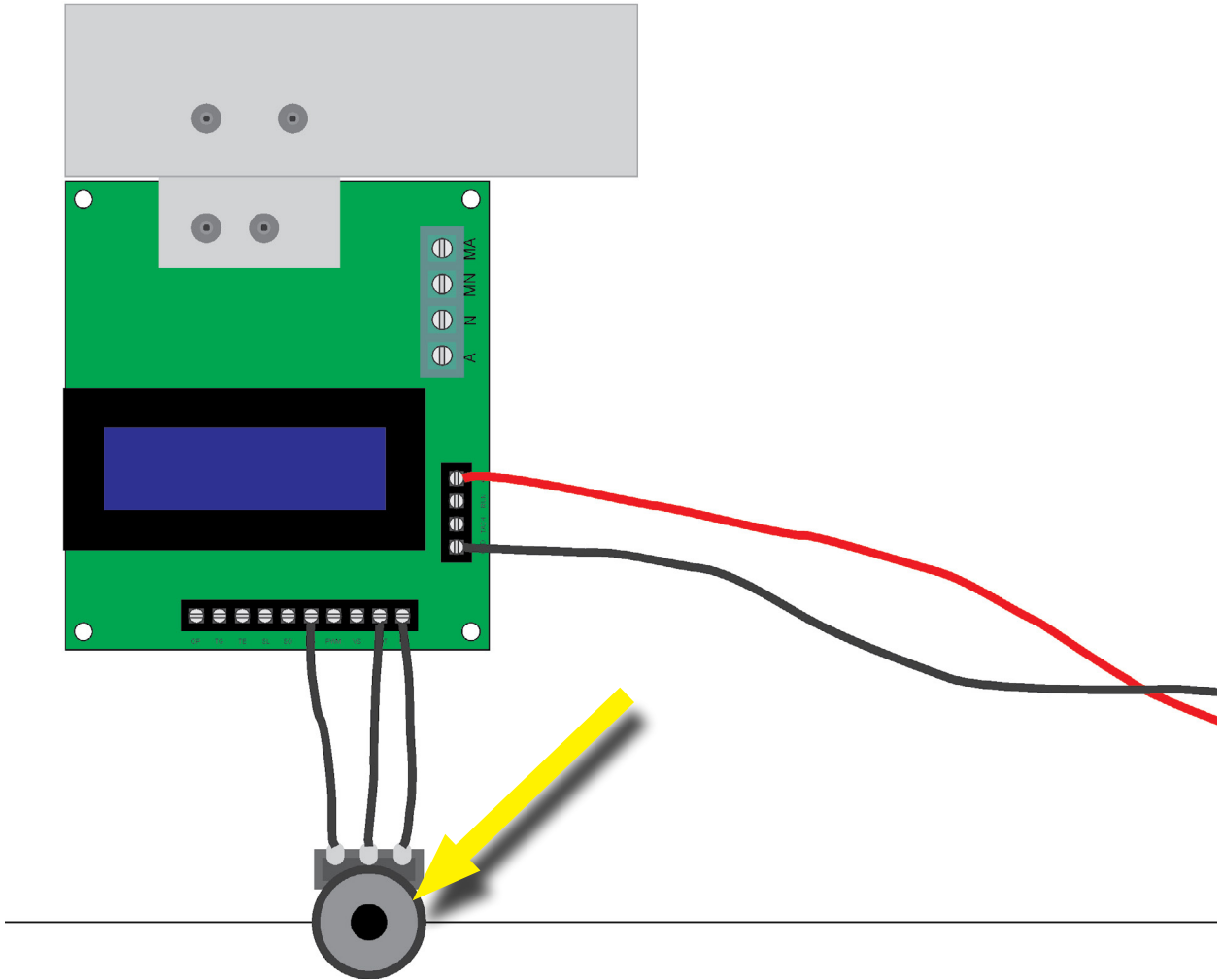


Figure 3

## Step 4

Attach a wire between terminal 5 on the G540 and terminal RUN on the Super-PID, as shown in Figure 4.

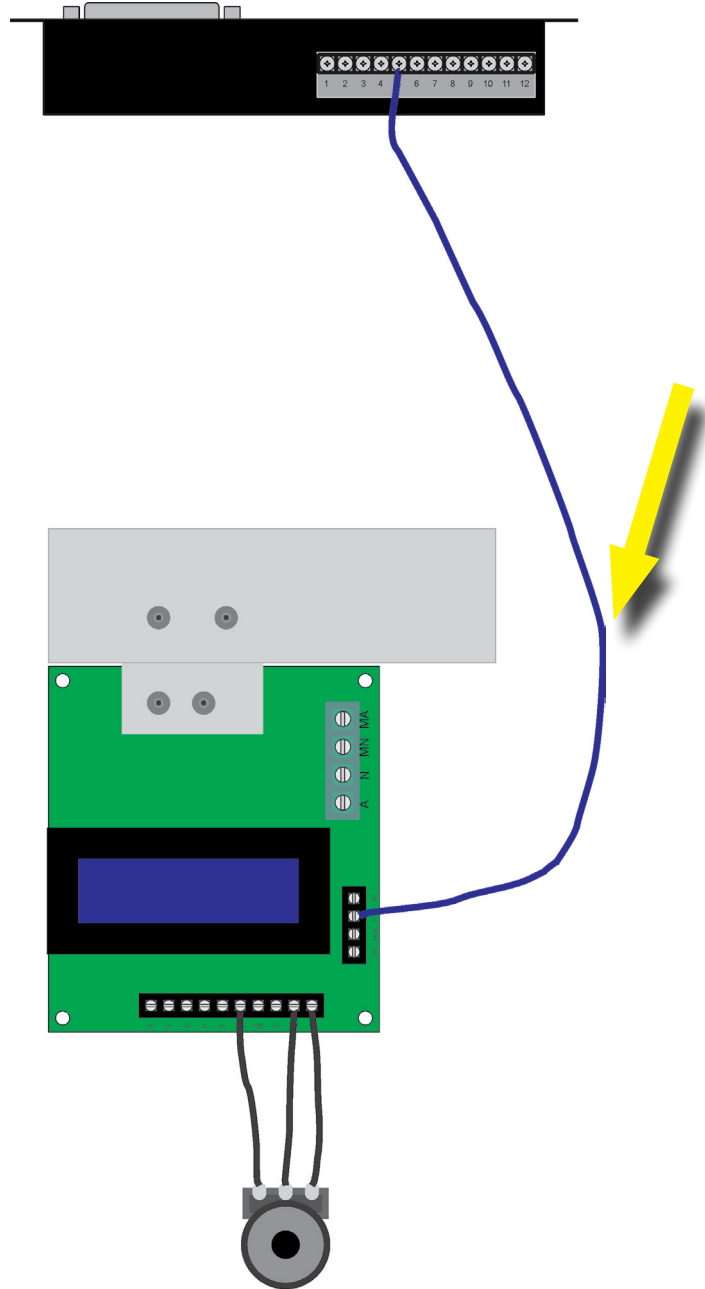


Figure 4

## Step 5

From the cord going to the router, connect the black lead to the terminal on the Super-PID marked MA. Connect the white lead to the terminal marked MN.

From the cord going to the AC power source, connect the white wire to the terminal marked N. Connect the black wire to the terminal marked A.

Connect the two green wires together as shown in Figure 5.

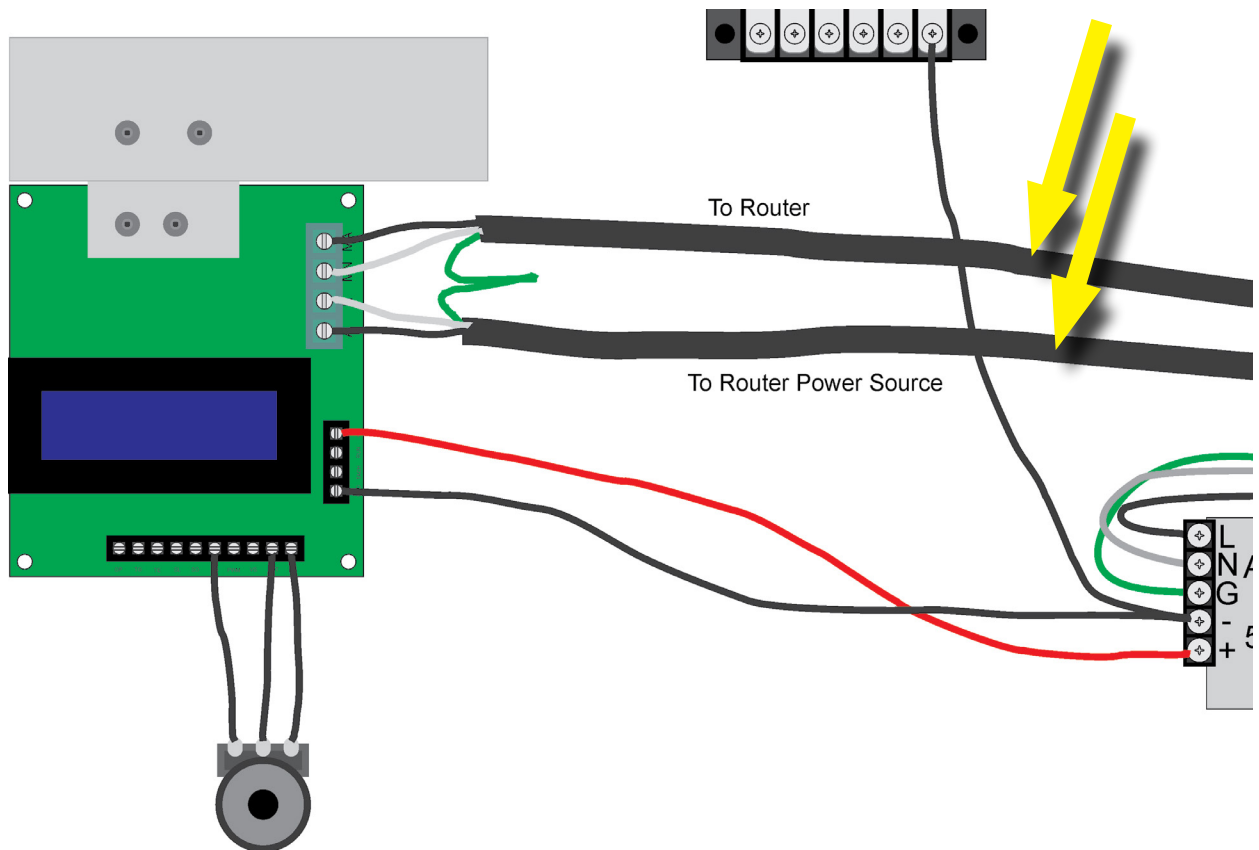


Figure 5



## Step 6 - Configure Output Port

Open the “Ports and Pins” form and select the Output Signals tab. Change the Output #1 settings to those shown in Figure 6

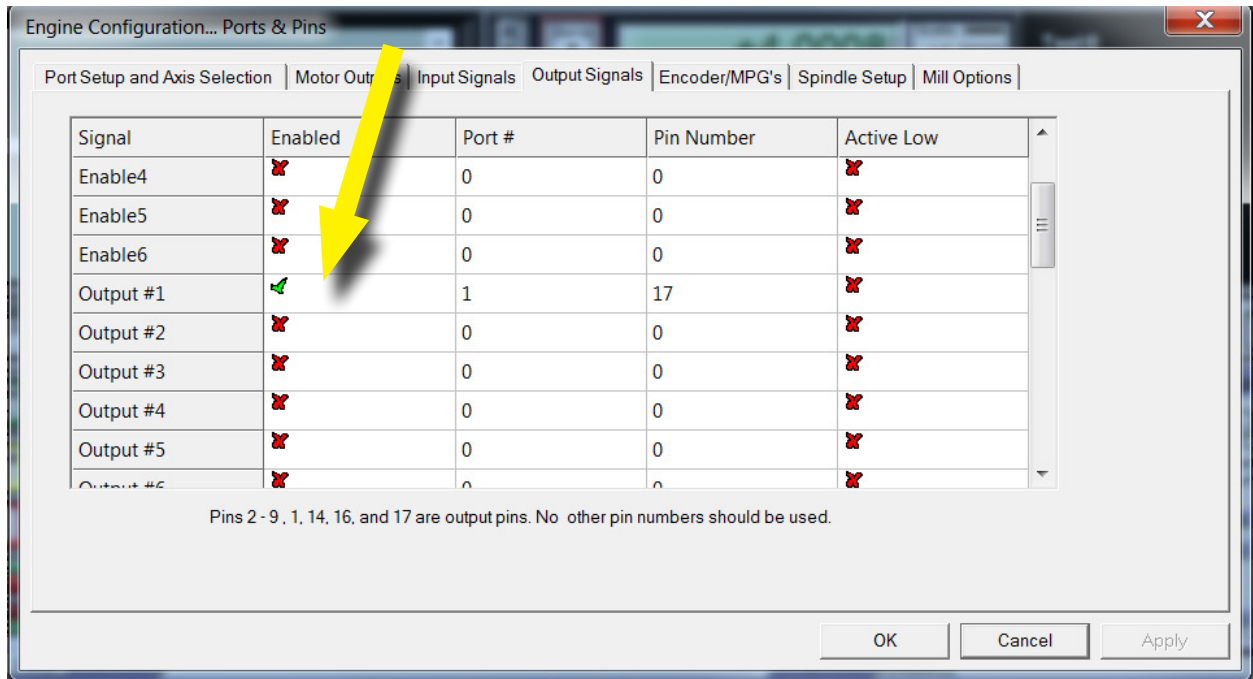


Figure 6

## Step 7 - Setup Spindle Control

Open the “Ports and Pins” form and select the Spindle Setup tab. Change the settings to those shown in Figure 7.

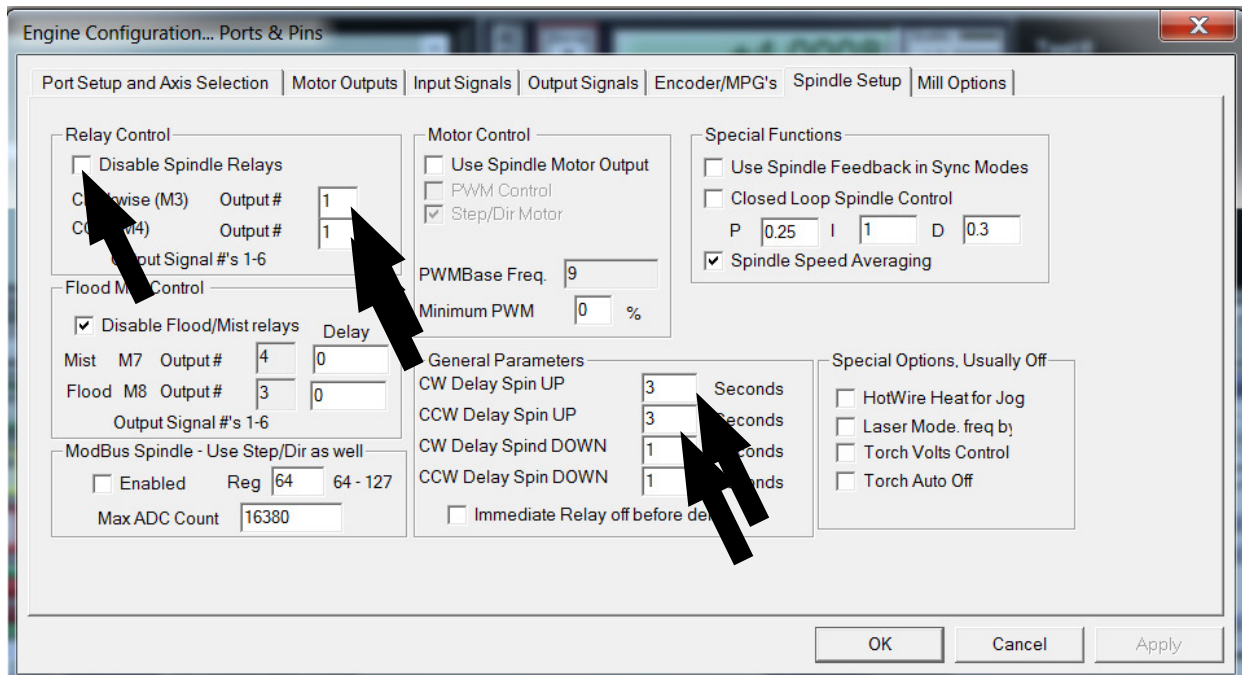


Figure 7

## Step 8 - Test

Power up your CNC and ensure that the software is in active mode (Reset = Green). When you hit the “Spindle CW” button shown in Figure 8, you should see the Super-PID go into run mode.. Hit it again and it will click off. If it does not go back and check your wiring and configuration.

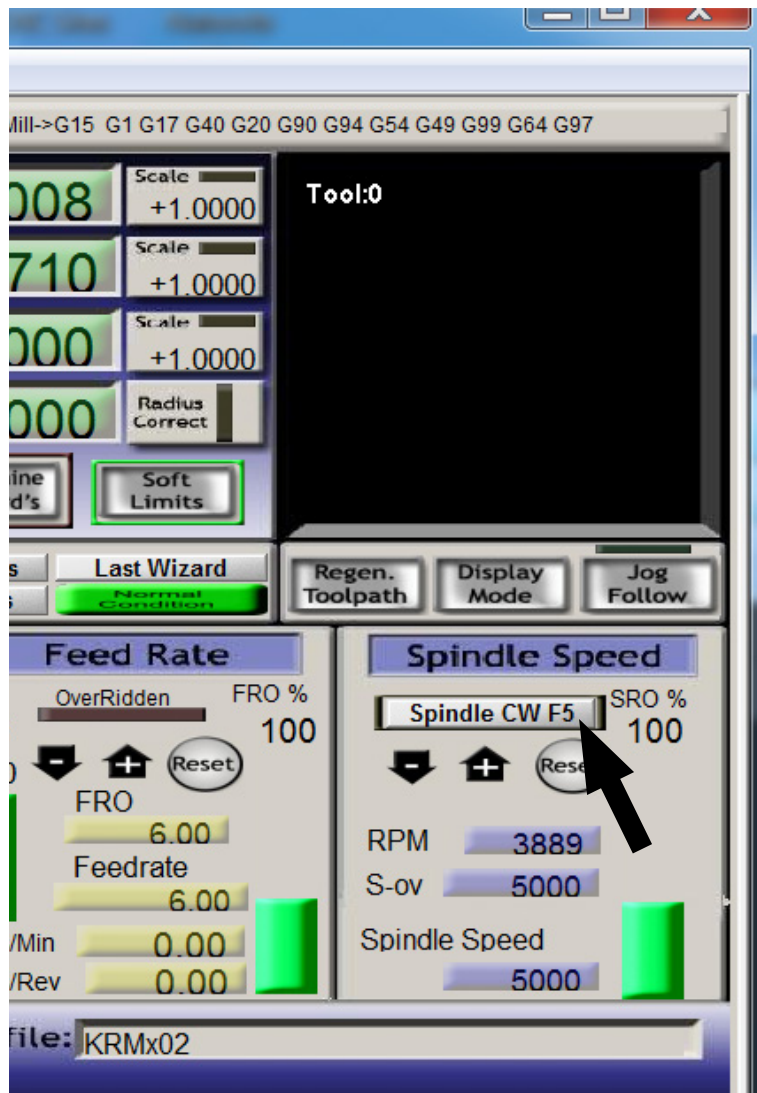


Figure 8

## Conclusion

In this configuration the Super-PID operates in much the same way as the Relay control does. While this step takes us closer to total control over our router it's not enough. In the next project I will show you how to use Mach 3 to control the speed of your router.