

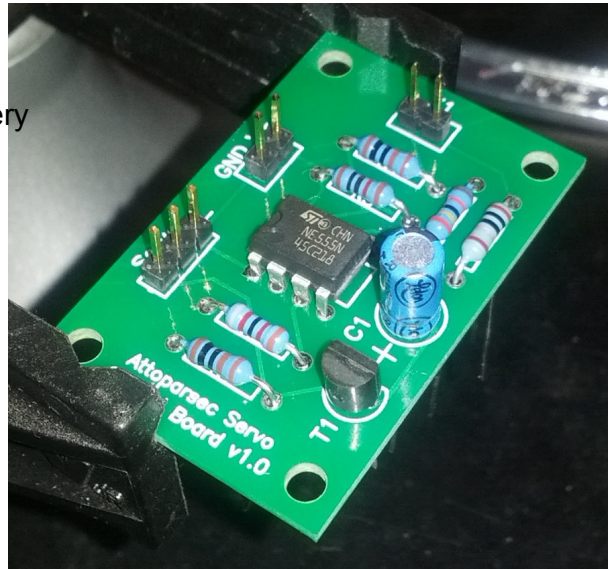
Servo Control Board Kit

Introduction and orientation

Congratulations on your purchase of an Attoparsec Servo Control Board kit! It is our only product to be (very briefly) featured on a cable channel new program, so that's something.

In the kit you should find:

- 1x printed circuit board
- 1x 555 chip
- 1x 1uF capacitor
- 1x 2N3904 transistor
- 1x 1 ohm resistor
- 2x 1k ohm resistors
- 1x 10K ohm resistor
- 1x 24K ohm resistor
- 1x 82K ohm resistor
- 2x 2 pin terminal strips
- 1x 3 pin terminal strip

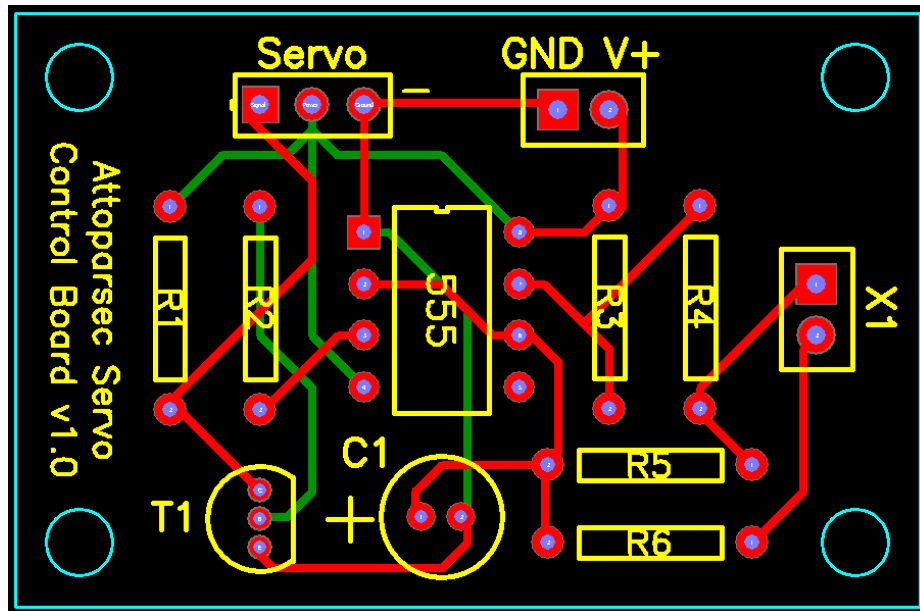


The Attoparsec Servo Control Board is a simple thing, and it exists to serve a single purpose -- to provide a dirt-simple way to control an RC servo. It is entirely analog, because it doesn't need to be any fancier than that. It is a little bit fancy, though, in that you can assemble it in one of two ways, depending on your exact needs. By connecting a potentiometer (not included) across the X1 terminal strip, you can adjust the exact position of the servo manually. Or you can change the resistors used and connect a switch instead (also not included), in which case the servo will move from one extreme of its motion to the other, depending on if the switch is open or closed. Both modes have been useful at Attoparsec in different projects.

Assembly

The control board is a basic 555 timer circuit configured in an astable mode. It outputs a pulse-width modulated (PWM) signal which tells the servo which position to be in. By changing the resistance values (either a potentiometer or by bridging a resistor with a switch) we change

the signal being output.



Most of the assembly is pretty straight forward -- stick the component in and solder it. See below for which resistors go where. You do have to be careful with the alignment of some of the component, though. Make sure the notch on the 555 lines up with the notch on the silk screened outline. Likewise, make sure the transistor body lines up with its silk screened outline. And finally, make sure the black bar on the body of the capacitor is on the side away from the '+' sign. Everything else can go in either way.

R1: 1K ohm
R2: 82K ohm
R3: 10K ohm
R4: 1K ohm

This isn't a particularly tight layout, and we haven't noticed any particularly important sequence. Starting with the 555 and working out from there works well. As always, a good soldering iron, circuit board clamp and bright lighting helps a lot.

Assembly options

As state above, there are two different ways to assembly the control board. Which one you want depends on your final application. Do you want to twist a knob which make a servo rotate an amount proportional to the position of the knob? Go with option A. Do you want to have a button that can be pushed with makes the servo rotate 180 degrees, only to rotate back to its original position when the button is released? Option B is your friend.

Option A

R5: <skip>

R6: 1 ohm or trim

You'll want a potentiometer in the 25K ohm range connected to the X1 terminal. (Or skip the terminal and solder directly to the board.) Unfortunately, an exact value can't be given as different servos have different PWM ranges. You'll have to play with a couple to see what works best for your application. You can always use the R6 resistor as a trim.

Option B

R5: 24K ohm

R6: 1 ohm

In this mode, by connecting a switch to X1 you're bridging across R5 with R6 whenever the switch is closed. Because of the way resistors in parallel work, this ends up dropping the value from the original value of 24K ohms to only very slightly over 1 ohm. The servo thus wants to go to the other extreme of its motion... probably. In reality, every servo is somewhat different, and you might need to play around with resistor values to find some that work.

Please let us know how the kit works for you and what you're doing with it. We'd love to put up a page of pictures and links to projects people have made with Attoparsec technology.