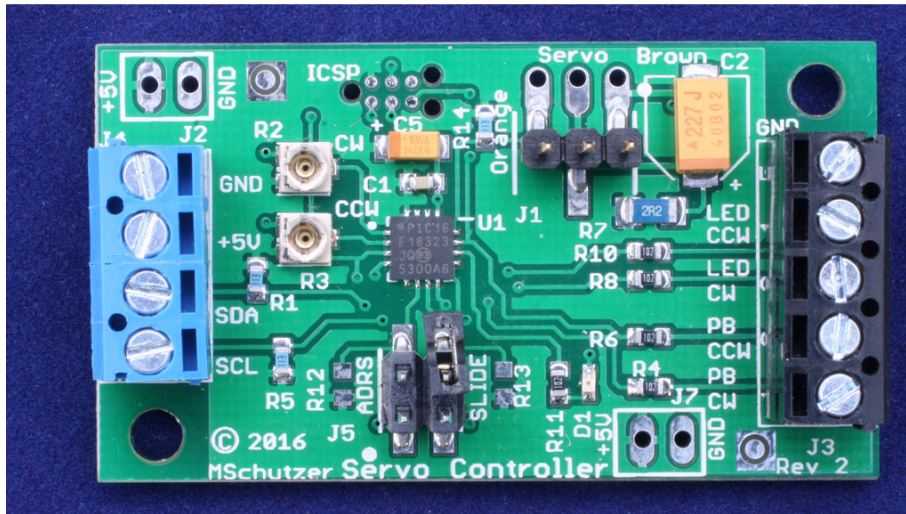


Servo Controller Instructions

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Overview

The Servo Controller is a low cost stand alone controller designed to control a single servo. The controller supports pushbutton, slide, and toggle switch inputs. The Servo Controller is designed to drive low cost servos such as a Tower Pro SG-90 model. Two outputs are provided that can directly drive position indicator LED's. The Servo Controller can be optionally remote controlled via a standard I2C serial interface.

Power Requirements

The Servo Controller board requires a 5 volt power source to operate. While the Servo Controller only consumes about 5 mA of current a minimum 1A power supply is recommended to supply the peak current needs of the servo motor. A single 1A supply can supply many Servo Controllers as servos (turnouts) will not all be changing state at the same time.

Adjusting the servo throw range

The throw range of the servo can be adjusted via two small adjustable trim pots located on the board. One trim pot controls the range of the clockwise motion, and the other trim pot controls the range of the counter clockwise motion. These trim pots are labeled CW and CCW respectively. Use a small flat blade jeweler's screwdriver to make adjustments. Turning a trim pot clockwise results in more travel, and counter clockwise rotation results in less travel in the respective direction.

The trim pots are read each time an input change is detected. To adjust the clockwise throw, adjust the CW trim pot a little and then press the CW push button. Adjust the CW trim pot a little more and press the CW push button again. Each time you press the CW push button the servo will go to the new position. Keep adjusting the trim pot and re-pressing the pushbutton until you get the servo throw where you want it. Repeat the adjustments for counter clockwise throw using the CCW trim pot and the CCW push button.

One note of caution, the small trim pots do not have stops on them and can turn 360 degrees. If you turn the pot too far the servo throw will become unpredictable. If this happens just turn the pot back in the other direction until it behaves as expected.

Input switches

By default the Servo Controller is set up to use two normally open push buttons to control the servo. The pushbuttons are to be connected between the terminals CW PB, CCW PB and ground. The ground connection is common to each pushbutton.

The Servo Controller can also use either a single slide switch or a single toggle switch as an input device. To activate the slide / toggle switch mode install a DIP jumper across the J5 pins labeled SLIDE. With the SLIDE jumper in place the CCW pushbutton input will be ignored. Connect the slide switch between the CW PB pin and ground. In the slide switch mode the servo will travel in the clockwise direction when the switch is closed, and will travel in the counter clockwise direction when the switch is open.

Output LED's

The two LED outputs are connected to the J3 terminal block and are labeled CW LED and CCW LED. The Servo Controller has 1k current limiting resistors in series with these outputs so a LED can be directly wired to the terminal block. The anode (positive) side of each LED should be connected to the CW (CCW) LED terminal with the cathode (negative) side of each LED connected to the ground terminal

Activity LED

The on board activity LED will blink for a ¼ second any time a push button is pressed, or any time the slide switch changes state. The LED will also blink if the Servo Controller receives a servo position update command from the I2C interface.

Other Notes

The current servo position is remembered in non volatile memory allowing the Servo Controller to wake up in the last set position. To save power consumption the servo is only driven for a couple of seconds after each position update. The servo position updates any time the activity LED blinks.

Support

Contact Seth Neumann, seth@modelrailroadcontrolsystems.com