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Programmable Servo Board – 3 Channel



Here is a board based on the PIC microcontroller that allows you to program the independent movement of 3 servo motors. The program can last up to 6 minutes in length. The program, once entered, can be started by pressing a Play switch or connecting to a dry contact switch closure for remote triggering.

Details:

As mentioned above, this board is based on the PIC microcontroller that allows you to program the positioning of 3 servo motors. The servos can be programmed to operate completely independent of each other and programs can last up to 6 minutes in length. Other features include:

- Indicator lights showing which servo is being programmed.
- Servo actuates in real time while program is being entered.
- Ability to remotely trigger program.
- Program remains in memory even with power removed.
- Program Lock Switch
- Program Loop function
- Delay between playbacks of up to 1 minute when in Loop Mode

Operation:

To program the first servo, momentarily press the first programming pushbutton. You will see a yellow LED light for that servo indicating that the program is being recorded. Turn the on-board potentiometer (Servo Pot) to control the position of the servo being programmed. As you turn the pot, the servo will mimic the movement in real time. You can program up to 6 minutes of movement on a channel. When you are done recording that channel, press the programming pushbutton for that servo again and the yellow LED for that servo will go out. If you exceed the 6 minute time period, the board will automatically terminate the program and turn off the yellow LED. To program the second servo, press the second programming pushbutton. The second yellow LED will light indicating that the program is being recorded. This will also start the replay of the program sequence that was recorded for the first servo. This allows you to synchronize the second servo program to the first servo program. When done programming the second servo, press the second programming button again and the 2nd yellow LED will go out indicating that the storage of the program has stopped. If the length of the second program is shorter than the length of the first program, then the first servo program will continue to play until it finishes. The third channel is programmed the same as the second servo with both servos 1 and 2 replaying their stored movements while you are entering the program for servo 3. Once all programs

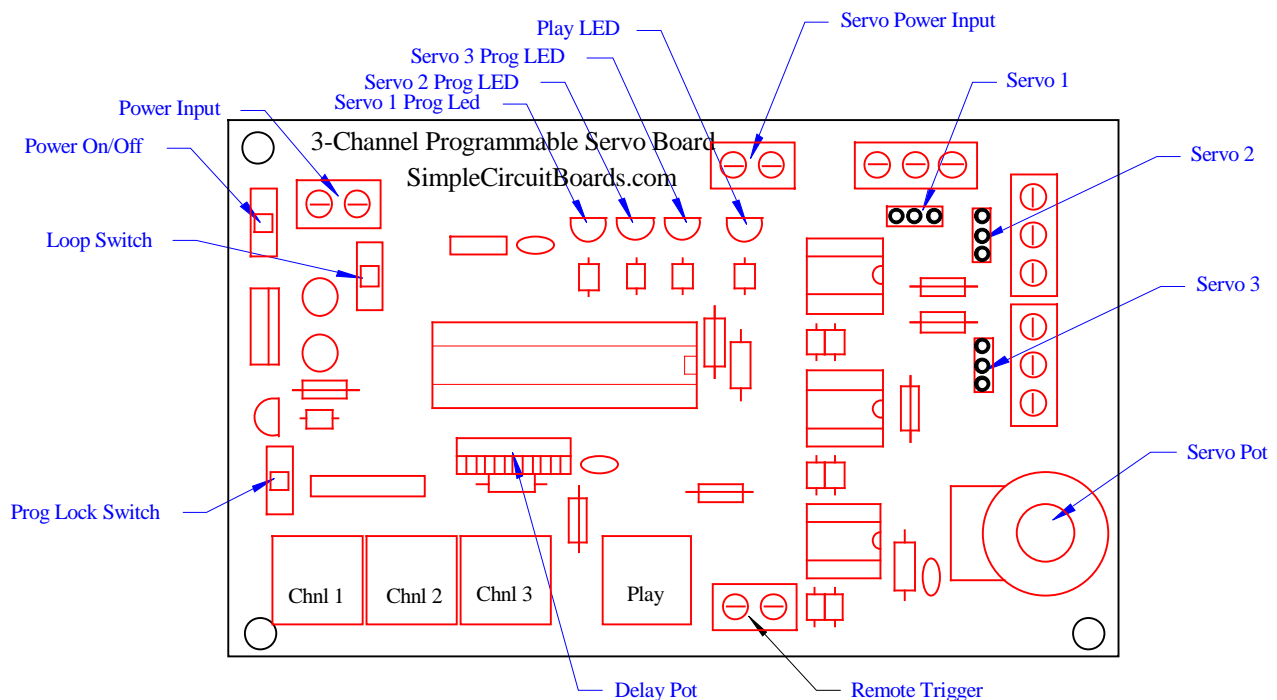
have been stored, you can play everything back by pressing the Play pushbutton – a green Play LED will light while the program is playing. Alternatively, you can hook a dry contact closure to the terminal block located next to the Play pushbutton and every time it is activated, the board will play back both programs. Switching the Program Lock switch to Lock will prevent the programs that you have entered from being accidentally changed. If you want to continuously loop the stored programs, switch the Loop Switch to Loop and the program will repeat over and over once triggered. A delay can be entered using the Delay Pot of up to 1 minute. The delay will occur between playbacks while in Loop Mode. When in the delay period, the green Play LED will flash. When the delay has expired, the Play LED will glow steady and the servos will start their movements.

You can re-record a program on any channel by simply repeating the programming process for that channel – it will overwrite whatever was previously recorded on that channel. To completely erase a program for a channel, just press the programming pushbutton for that channel, let it record for a second or two (without operating the potentiometer). Press the program button again to stop programming and the channel is now empty. Essentially, what you have done is record a 1-2 second program of nothing. This has no effect on the program stored in the other channels.

The board has a voltage regulator that allows you to power it with DC voltages of between 7.5 V and 24V. There is a terminal block next to the 3 servo connectors that is used to supply the power for servo movement. In most cases, this is 5V and should be at least 500 mA.

Board Layout:

Below is a diagram showing component placement.



Specifications:

- Input Power: 7.5 – 24 VDC
- Current Draw: Less than 30 mA (while not powering servos)
- Board Dimensions: 2.75 x 4.75 inches

Disclaimer:

These boards are designed for educational use only. In no circumstances should these circuit boards be used in critical situations where failure could mean injury or property damage.

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