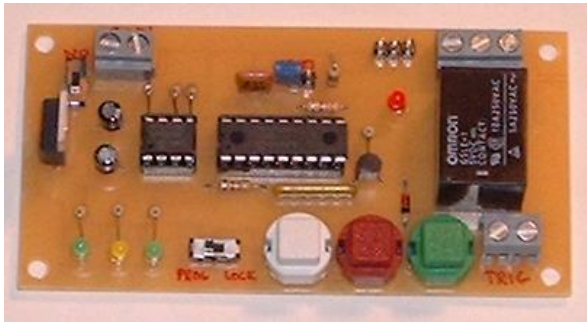


SimpleCircuitBoards.com

Programmable Relay Board – 1 Channel



Here is a board based on the PIC microcontroller that allows you to program the on and off operation of a 10-amp rated on-board relay. The relays can be programmed to operate completely independent of each other and the program can last up to 12 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. Also, you can place the board in Loop Mode that will cause the program to repeat continuously.

Details:

As mentioned above, this board is based on the PIC microcontroller that allows you to program the on and off operation of a 10-amp rated on-board relay. The relay program can last up to 12 minutes in length. Other features include:

- A Loop feature that replays the program over and over
- Indicator lights showing Program and Playback modes.
- Relay actuates while program is being entered.
- Servo actuation with relay.
- Relay has an indicator LED that shows when relay is actuated.
- Ability to remotely trigger program.
- Relay has normally open and normally closed contacts.
- Program remains in memory even with power removed.

Operation:

There are 3 pushbuttons on the board that allow the programming and playback of the relay (see diagram below). From left to right, they are Start / Stop Record, Key and Playback. To program the relay, momentarily press the Record / Stop pushbutton. You will see a yellow LED light indicating that the program is being recorded. Press the Key pushbutton to actuate the relay. The relay on/off cycles that you program can be of any number and length up to the 12 minute program time. When pressing the Key pushbutton, you will see the red LED associated with the relay light up when the relay is actuated as well as hear the relay click. When you are done recording, press the programming pushbutton again and the yellow LED will go out. If you exceed the 8 minute time period, the board will automatically terminate the program and turn off the yellow LED. Once you have finished programming the relay, you can play the program 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 the program. If you want to continuously loop the stored program, short the Loop Jumper. In this mode, it will continually replay the program over and over until the Loop Jumper is removed or the

power is turned off. If you attach a servo motor to the servo connector, it will actuate in synch with the relay closures.

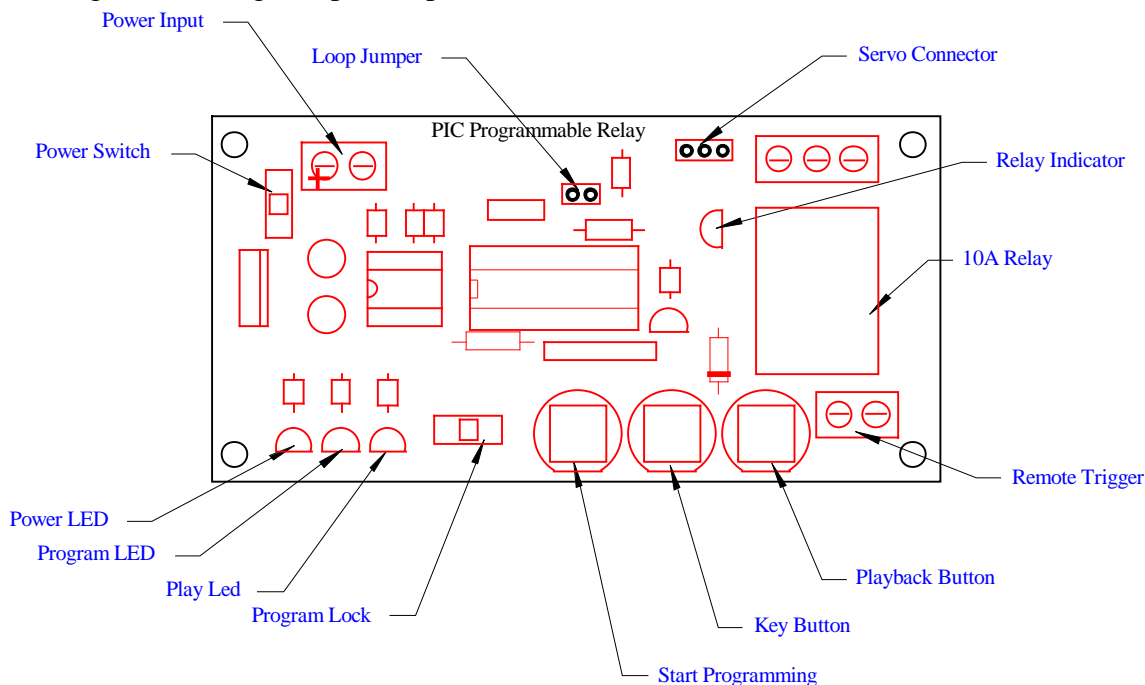
You can re-record your program by simply repeating the programming process.

The board has a voltage regulator that allows you to power it with DC voltages of between 7.5 V and 24V.

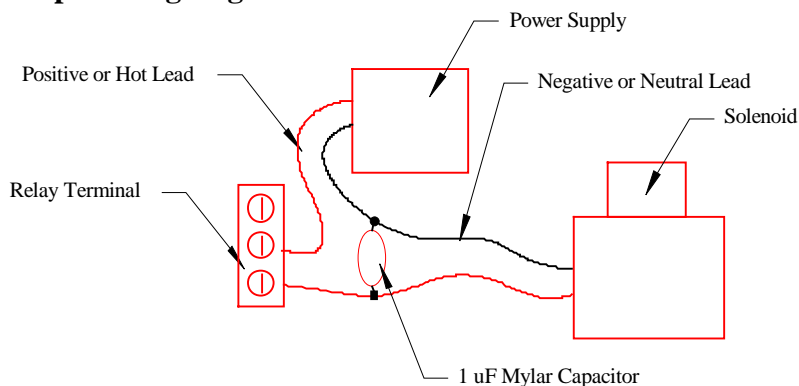
If you are powering a device that draws a load of over 100 mA (like a solenoid), you should install a 1 uF Mylar capacitor (available from Radio Shack) as shown in the second diagram below. This absorbs the large power spike when the device is switched on and off. If you do not use this capacitor when powering large loads, your board might lock up when the program is started. If this happens, turn off the board and install the capacitor. I also build Noise Suppression Boards specifically for this purpose. They also provide fusing for your circuit. Please contact me for more information.

Board Layout:

Below is a diagram showing component placement.



Use of Capacitor when powering larger loads:



Specifications:

- Input Power: 7.5 – 24 VDC
- Current Draw: 330 mA (while not powering any other devices)
- Board Dimensions: 2 x 4 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.

Please check out the other circuit board designs that I offer at www.SimpleCircuitBoards.com. Here are just a few examples:

- Thermocouple Amplifiers
- 8-Bit Digital to Analog Converter
- TTL-Driven Relay Boards – 1 Amp and 10 Amp
- TTL-Driven Latching Relay Board
- Voltage Amplifier Board
- Water Level Monitors
- Water Level Control Boards
- Motor Control Boards
- Programmable Relays
- Programmable Servos

Check back often for new additions!

For more information, contact us at:

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