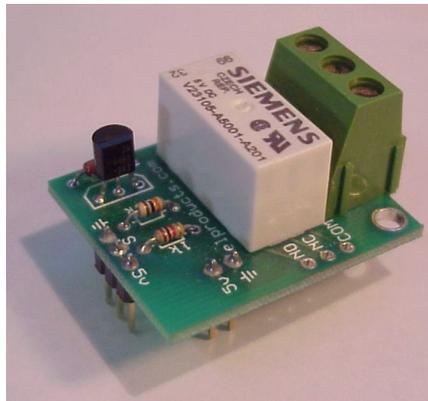


Breadboard Relay Module

The relay module is a double pole double throw version with one set of outputs on the screw terminal and the other are holes in the circuit board. The relay coil is buffered by a NPN transistor. The module requires 5v and ground to operate. It can connect via the 3 pins header on the front or the 2 pin header that fits into a breadboard power rail. A high signal (5v) at the S terminal will close the Normally Open (NO) contacts. A low or no connection will close the Normally Closed (NC) contacts.



Sample Project

The relay is wired to the Ultimate module through an NPN transistor. This is because the output pins of the Atom PIC can only source or sink 25 milliamps maximum. Since the relay has a 125 ohm coil, it takes 40 milliamps to make it work. The 2N4401 can easily handle up to 300 ma so putting the transistor between the Ultimate I/O pin and the relay makes this very easy to control.

The diode across the coil of the relay helps protect the circuitry from inductive spikes. When the relay coil is turned off suddenly, the energy built up inside of it has to go somewhere. Without the diode, the energy would try to go into the transistor or create a magnetic interference in the Atom PIC. The diode helps bleed the energy off safely.

The LED is powered from the same Vdd pin as the rest of the circuitry but in most cases you will power the relay control circuit from an outside supply.

Many times a 12v or higher supply will be used. Because the relay is isolated from the Ultimate module thru the transistor, this shows a great way to control a high voltage item from a low voltage module. Always be careful though not to exceed the power capabilities of the relay contacts.

Software

The program listing below will controls the relay to turn the LED on and off. You can type the program in or you can also download it off the included disk.

```
TrisB = %00000000    'Make all port B pins outputs
```

```
loop:
```

```
Portb = %00000001    'Relay on
```

```
pause 1000           'Pause 1 second
```

```
portb = %00000000    'Relay off
```

```
pause 1000           'Pause 1 second
```

```
goto loop            'Repeat
```

