

## SPDT Relay Module

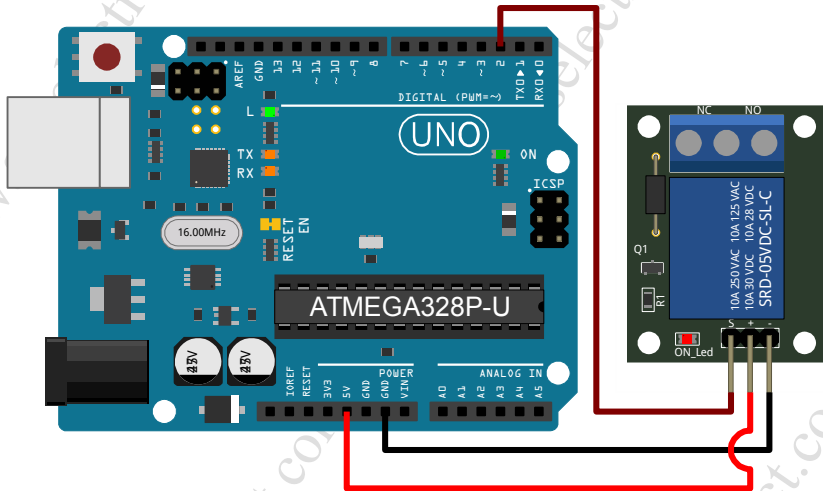
This module contains a **Single Pole Double Throw** relay capable of switching loads of up to **10 amps [A]** (up to **250 Volts Alternating Current**, or up to **30 Volts Direct Current**). The state of the relay is controlled using a **5 VDC** signal from a digital pin. The primary component is a "Songle SRD-05VDC-SL-C" (or equivalent), which is driven by a **Surface Mount Device** transistor. A diode is included to protect against reverse current spikes when the relay coil transits from the energised to the de-energised state.

The relay has both **Normally Open**, and **Normally Closed** contacts so it can be used to switch between two electrical paths of a circuit. A **Light Emitting Diode** is included which lights when the relay is the energised.

**Table 1: SPDT Relay Module Pin Connections**

Device	Arduino	Wire	Description
S	D2	■	Signal for relay activation.
+	5V	■	5 VDC positive supply for board circuitry.
-	GND	■	Ground connection.

D2: can be any digital pin.



The sketch below can be used to control the SPDT Relay Module via the Arduino Serial Monitor.

```
int pRelay = 2;
void setup () {
  digitalWrite ( pRelay, LOW );
  Serial.begin( 9600 );
  while ( !Serial ) {
    ;
  }
  pinMode ( pRelay, OUTPUT );
  digitalWrite(pRelay, LOW);
  Serial.println( "0 to turn off, 1 to turn on" );
}
void loop () {
  if ( Serial.available() > 0 ) {
    int cInput = Serial.read();
    if ( cInput == '0' ) {
      Serial.println( "Off" );
      digitalWrite ( pRelay, LOW );
    }
  }
}
```

## SPDT Relay Module...

```
if ( cInput == '1' ) {  
  Serial.println( "On" );  
  digitalWrite( pRelay, HIGH );  
}  
}  
}
```

### Module Specifications

PCB Dimensions ( H × W × D ): 33.9 × 26.4 × 1.6 millimetres [mm]  
Enclosing Dimensions ( H × W × D ): 38.5 × 26.4 × 19.6 mm  
Weight: 14.51 grams [g]  
Input Voltage: 5 VDC

### Relay Manufacturers Specifications

Relay Model: Single SRD-05VDC-SL-C  
Nominal Coil Voltage: 5 VDC Max (120% = 6 VDC)  
Coil resistance: 70 ohm Ω  
Coil Nominal Current: 71.4 milliamps [mA]  
Structure: Sealed  
Coil Sensitivity: 0.36 watts [W]  
Energise Time: 10 milliseconds [ms]  
De-energise Time: 5 ms  
Contact Resistance: 100 milliohm [mΩ] Max  
Contact Life Expectancy: 10<sup>7</sup> (operation no load), 10<sup>5</sup> (at rated coil voltage)

### Module Performance

Current Draw (Relay energised): 79 mA (relay coil + on-board circuitry)  
Current Draw (Relay not energised): 0 mA

### Module Mounting

The module has 4 × 3 mm diameter holes at each corner of the Printed Circuit Board. As the bare component leads protrude through the bottom of the PCB, suitable spacers and insulation must be used.

### Projects

Folder: \Modules\Electromagnetic\SPDT\_Relay\

- **SPDT\_Relay\_SM**: Controls the relay by entering "0", or "1" in the Arduino Serial Monitor.
- **SPDT\_Relay\_Timed**: Toggles the state of the relay based on "time on" and "time off" intervals.

# SPDT Relay Module - Dimensions

