

CHANNEL RELAY MODULE

1. Introduction:

In this experiment, we will learn how to use the 1 channel relay module. Relay is a kind of component when the change of the input variables (incentive) to specified requirements, the output electric circuits of the charged amount occurs due to the step change of a kind of electrical appliances. This company produces the relay module can meet in 28 v to 240 v ac or dc power to control all kinds of other electric parts. MCU can be used to achieve the goal of timing control switch. Can be applied to guard against theft and alarm, toys, construction and other fields. Relay is an electrical control device. It has a control system (also called input circuit) and control system (also called the output circuit), the interaction between. Usually used in automatic control circuit, it is actually with a small current to control large current operation of a kind of "automatics



2. Components:

- (1) X Uno board
- (1) X USB cable
- (1) X 1 channel relay module
- (5) X DuPont wires(Female toMale)
- (1) x leds
- (1) x 220 ohm resistors

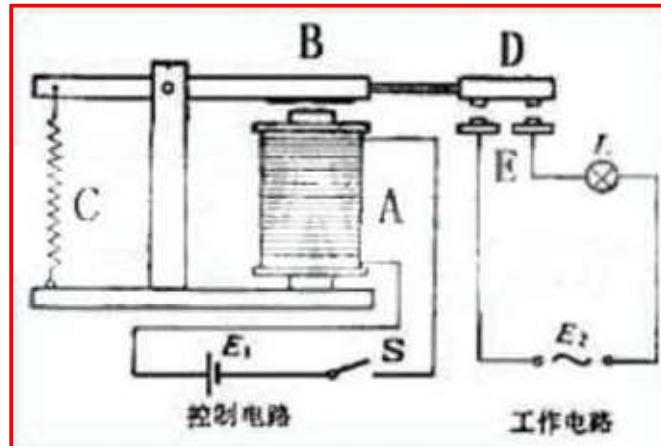
Working principle and Construction of 1 Channel Relay

As shown below: a is electromagnet, B is armature, C is spring, D is dynamic contact, E is static contact. The working circuit of electromagnetic relay can be divided into low-voltage control circuit and high-voltage working circuit. The control circuit is composed of electromagnet A, armature B, low voltage power supply E1 and switch. The working circuit consists of a small light bulb L, power supply E2 and the static contact and dynamic contact which as the function of switching. After connected the working circuit ,disconnected D and E, is not connected,the light bulb L does not shine because the working circuit turn-off .

When the switch S at E1 is closed, the control circuit switches on, A magnetic force push the armature B drawn down to elongate the spring. At the same time, the working circuit is connected by as the dynamic contact and the static contact connect. On the other hand, the light bulb L light

when E2 closed.

When the switch S at E1 and the control circuit are disconnected, the electromagnet loses its magnetism, the armature returns to its original position under the action of the spring, the dynamic contact is separated from the static contact and the light bulb L does not light.



3. Experimental Procedures:

Step 1: Connect circuit as :

Uno R3 GND --> Module A pin

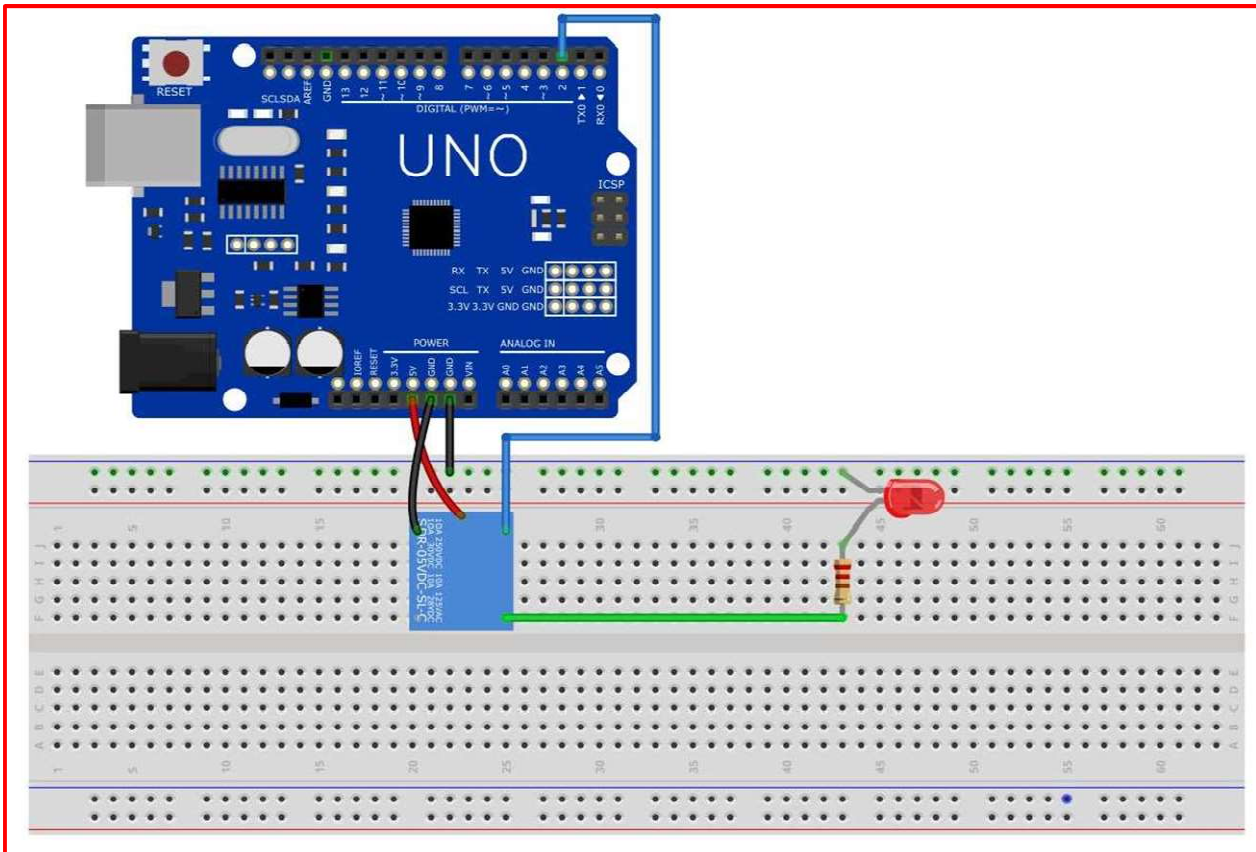
Uno R3 +5V --> Module 1 pin

Uno R3 Digital2 --> Module B pin

GND --> Led --> Resistance Pin--> Module 3 pin

Step 2: Download the Match tutorial to the UNO board

4. Wiring diagram:



5. Experiment Instructions:

We can see the following phenomenon after doing as the picture and download the procedure:

The LED lights up for three seconds and extinguish for two seconds, and circulates all the time. The relay also makes a crisp sound during the light and extinction, which is caused by the contact and disconnection between the dynamic contact and the static contact.

When the UNO gives a high level, the electromagnet makes a magnetic force to draws down the armature which contacts the dynamic contact with the static contact. At the same time, the outlet of the other end of the relay "normally closed" open, and the LED on the bread board light. After 3 seconds, the UNO gives a low level, when the electromagnet does not have magnetic force due to non-current , and the original magnetic force will disappear. Under the action of the spring, the dynamic contact is disconnected from the static contact, and the "normally closed" outlet is disconnected which makes LED extinguishes. UNO will gives a high level again after 2 seconds, the electric current is turned on and circulates all the time.

6. Example picture:

