

# Relay Module Opto-Isolated – 2 Channel Quickstart Guide








The 2-channel relay module is best use for your home automation and switching projects with high currents and load. Use this for turning on and off some high powered devices and appliances thru and Arduino or any microcontroller. The Input of this relay module is logic LOW (drive a GND/LOW/ Zero Volts) in the Input pins to activate the relay to Open and Close circuit.

## HARDWARE SPECIFICATIONS

- VCC = 3.3 or 5V
- Logic Low Activation
- Load capacity of 10A at 125-250VAC
- Load capacity of 10A at up to 30VDC
- with LED light indicator if activated or not activated

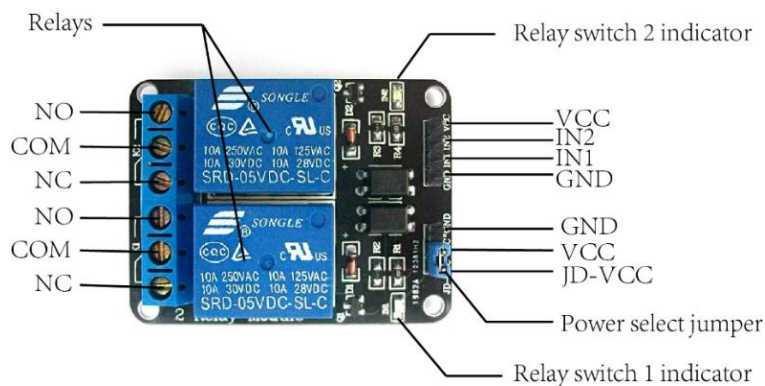
## PARTS LIST

For this quickstart guide, we will need the following materials. Click on the image for more information:

 <p>Arduino Uno 1 piece</p>	 <p>Line Follower Sensor Board (2 channel) 1 piece</p>	 <p>Male-Female Connecting Wires 1 piece</p>
 <p>Light bulb 1 piece</p>	 <p>Light bulb socket with AC plug 1 piece</p>	

## HARDWARE OVERVIEW

The 1 channel relay have 3 pins to be connected to the microcontroller: VCC, GND and IN. For the system to be controlled, the pins NO, COM and NC are used.



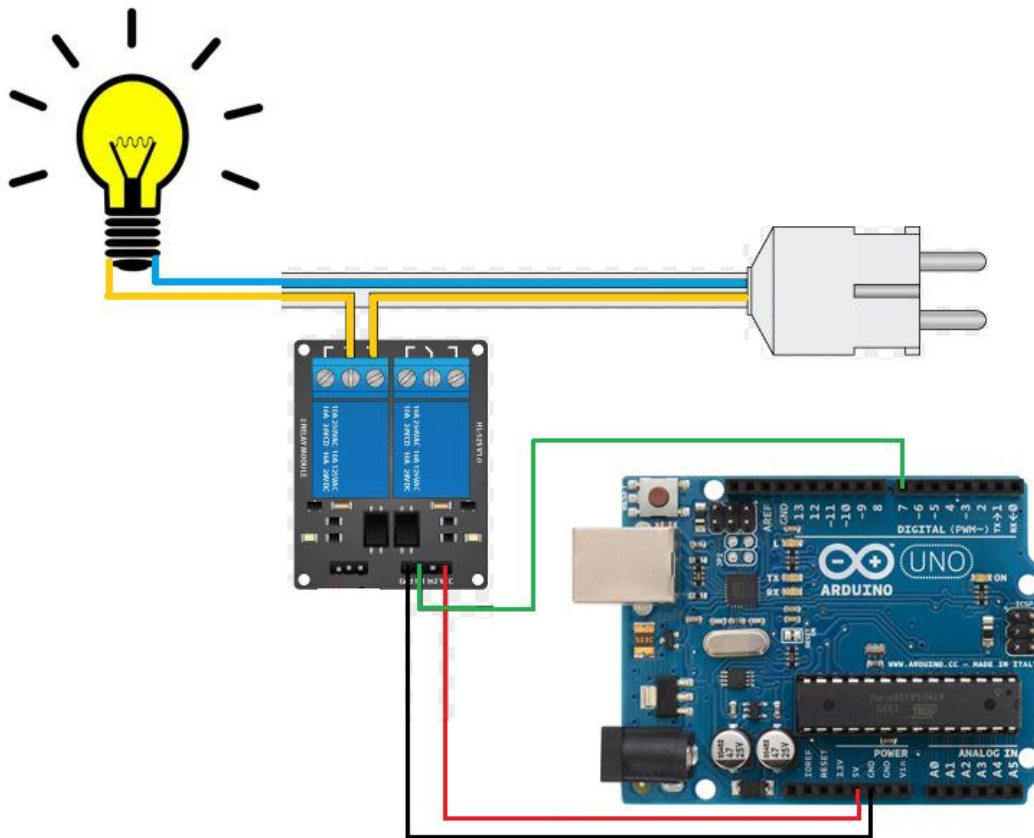
The table below describes the function of each pin in the module

INPUT	Description
IN1, IN2	Controls the state of the relay. This is connected to a digital pin in Arduino Uno or GPIO in Raspberry Pi.
GND	To be connected to the GND pin in a microcontroller.
VCC	Supplies power to the module. Could be connected to a +5V pin or +3.3V pin.
OUTPUT	
NO	Normally Open pin in a relay. When relay is in off state, this pin stays open with respect to COM pin. When relay is in on state, this pin connects with COM pin.
COM	Common pin. Connected to one part of the system to be controlled.
NC	Normally Closed pin in a relay. When relay is in off state, this pin stays close with respect to COM pin. When relay is in on state, this pin disconnects with COM pin.

## WIRING CONNECTION

Setup the circuit as shown below:

<b>Relay Board</b>	---	<b>Arduino</b>
VCC	---	5V
GND	---	GND
IN1	---	DIGITAL PIN# 7



### Other connection

Small bulb socket with 2 wires. 1 of the 2 socket wire is open stripped and cut. One cut end is inserted and screwed to COM “common” port of the relay (middle of the 3pin blue colored plastic screw terminal). The other cut end is inserted and screwed to NO “Normally-Open” port of the relay board (left side of the COM pin facing the 3pin screw terminal). Note that this project may involve high voltage so precautionary measures are needed.



Incorrect or improper use could result in:

- serious injuries or death
- physical damage of the product
- creating dangerous hazards



How it works:



Relays can be used for controlling (turn on and off) a high power device such as electric fan, TV monitor, bulbs and other high power devices whether AC or DC. The Arduino can only handle small current so we use a relay module to receive the high/low small signal from the Arduino and the relay will be the one to drive the high voltage and current of the load device.

Putting "LOW" (0V) to the input (IN1, IN2) of the relay, will activate the relay. It will close the Normally Open (NO) port and it will open the Normally Close (NC) port of the relay. When the relay is activated a corresponding indicator LED will also light up on the relay channel that is activated.

## ARDUINO CODE

Open Arduino IDE. Set the board to Arduino/Genuino Uno. Copy the code below to the sketch file:

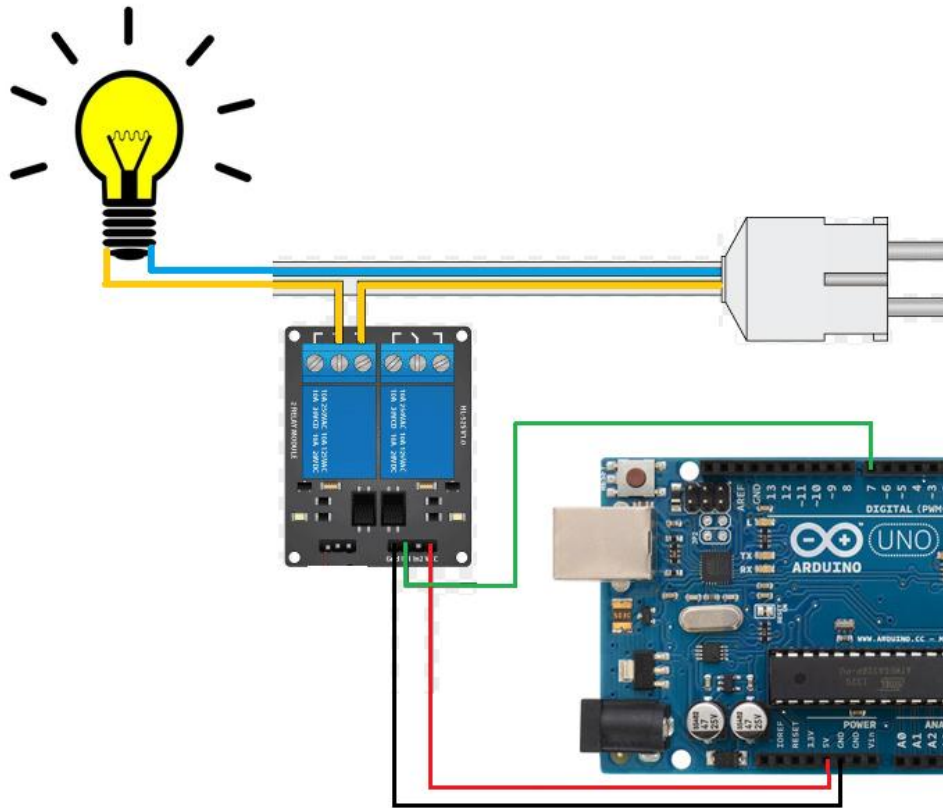
```
/*
  By howtomechatronics
  Rewritten and Edited for Example by BITSTOC
  Arduino and Relay Arduino Code
*/

//declare variable to use
int relayIN1 = 7; // use Arduino Digital PIN 7 and set as variable
"relayIN1"

void setup() {
  pinMode(relayIN1, OUTPUT); // declare arduino pin 7 as an output port
  digitalWrite(relayIN1, HIGH); // set HIGH initially for relay as not
  activated
}

void loop() {
  digitalWrite(relayIN1, LOW); // drive LOW to activate the relay
  delay(3000); // wait for 3 seconds
  digitalWrite(relayIN1, HIGH); // drive HIGH to deactivate the relay
  delay(3000); // wait another 3 seconds
}
```

## OUTPUT



When the code starts running the bulb should light ON and light OFF every 3 seconds.

The Arduino Digital PIN 7 will output a logic LOW to the IN1 pin of the Relay module board, thus activating the channel 1 relay on the board. The corresponding LED indicator for the relay channel will also light up. When relay channel 1 is activated, the **NO (Normally Open)** pin and the **COM** pin on the relay load side (blue screw terminal) will connect to each through the inside of the relay. Since the sliced wire is now electrically connected there will now be a continuous electricity to flow from the wall outlet to the bulb.

## APPLICATIONS

You can find more uses of the relay in the sample projects below:

Blinds Control by GPL3+:

[https://create.arduino.cc/projecthub/gomecin/blinds-or-any-ac-power-motor-control-27f633?ref=tag&ref\\_id=relay&offset=2](https://create.arduino.cc/projecthub/gomecin/blinds-or-any-ac-power-motor-control-27f633?ref=tag&ref_id=relay&offset=2)

Home Automation Using Raspberry Pi 2 and Windows 10 IoT by CC BY-NC:

[https://create.arduino.cc/projecthub/AnuragVasanwala/home-automation-using-raspberry-pi-2-and-windows-10-iot-0dcefc?ref=tag&ref\\_id=relay&offset=0](https://create.arduino.cc/projecthub/AnuragVasanwala/home-automation-using-raspberry-pi-2-and-windows-10-iot-0dcefc?ref=tag&ref_id=relay&offset=0)