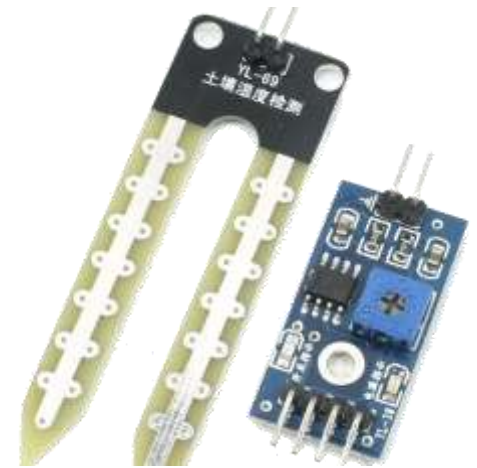


# Smart Irrigation



# Soil Moisture Sensor

- The Soil Moisture Sensor measures soil moisture grace to the changes in electrical conductivity of the earth (soil resistance increases with drought).
- The electrical resistance is measured between the two electrodes of the sensor.
- A comparator activates a digital output when a adjustable threshold is exceeded.



# Working of Soil Moisture Sensor

- The soil moisture sensor consists of two probes that measure the volume of water in the soil. The two probes allow the electric current to pass through the soil and, according to its resistance, measures the moisture level of the soil.
- When there is more water, the soil conducts more electricity, which means that the resistance will be less. So the moisture level will be higher. Dry soil reduces conductivity. So, when there is less water, the soil conducts less electricity, which means it has more resistance. So the moisture level will be lower.

# One Channel Relay

- The Single Channel Relay Module is a convenient board which can be used to control high voltage, high current load such as motor, solenoid valves, lamps and AC load.
- It is designed to interface with microcontroller such as Arduino, PIC and etc.
- The relays terminal (COM, NO and NC) is being brought out with screw terminal. It also comes with a LED to indicate the status of relay.



# Working of One Channel Relay

- The mains electricity enters the relay at the common (COM) terminal. While use of NC & NO terminals depends upon whether you want to turn the device ON or OFF.
- Between the remaining two pins (coil1 and coil2), there is a coil that acts like an electromagnet.
- When current flows through the coil, the electromagnet becomes charged and moves the internal contacts of the switch. At that time the normally open (NO) terminal connects to the common (COM), and the normally closed (NC) terminal becomes disconnected.
- When current stops flowing through the coil, the internal contact returns to its initial state i.e. the normally closed (NC) terminal connects to the common (COM), and the normally open (NO) terminal reopens.

# Working of project

- In this smart irrigation system project we are using an Arduino microcontroller to control and sense the things. Such as to sense or measure the moisture in the soil we are using soil moisture sensor.
- When the moisture is more then the value of resistance will decrease and when the moisture is less then the resistance value is more.
- So we have to first calibrate the sensor into the different moisturizing condition of the water. And then water pump module will throw water in more dry soil or in wet soil it will not throw water later.

# Components Required

- Arduino UNO
- One Channel Relay
- Soil Moisture Sensor
- Water Pump Module
- Jumper wires
- Breadboard





# Connections

1. Connect **D0** pin of **Soil Moisture sensor** with **2** pin of Arduino.
2. Connect **Vcc** pin of **Soil Moisture sensor** with **+5V** pin of Arduino.
3. Connect **GND** pin of **Soil Moisture sensor** with **GND** pin of Arduino.
4. Connect **NO** pin of relay with water pump's **positive** .
5. Connect **COM** pin of relay with **Vcc** of Arduino.
6. Connect **negative wire** water pump with **GND** pin of Arduino.
7. Now connect **INT** pin of relay with **3** pin of Arduino.
8. Connect **Vcc** of relay with **Vcc** of Arduino.
9. Now connect **GND** of relay with **GND** of Arduino.

**Project Link :** <https://youtu.be/BE5J8AtuDaU>