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REF: **B32-CSMS**

Arduino Analog Capacitive Soil Moisture Sensor

Description

This soil moisture sensor uses capacitive sensing rather than resistive sensing like other sensors on the market to assess soil moisture levels. It is built of corrosion-resistant material, giving it a long service life. Put it in the soil around your plants and wow your guests with real-time soil moisture data!

This module has an on-board voltage regulator with a working voltage range of 3.3 5.5V. It is ideal for 3.3V and 5V low-voltage MCUs. It will require an ADC converter to be compatible with a Raspberry Pi.

This soil moisture sensor works with our 3-pin “Gravity” interface, which may be connected straight to the Gravity I/O expansion shield.

Specifications

- Operating Voltage: 3.3 ~ 5.5 VDC
- Output Voltage: 0 ~ 3.0VDC
- Operating Current: 5mA
- Interface: PH2.0-3P
- Weight: 15g

Pin connection

Connecting a capacitive soil moisture sensor to an arduino is a breeze. You only need to connect three wires.

Start by connecting the sensor's red wire (VCC) to the power supply, 3.3V-5V is fine. Use the same voltage that your microcontroller logic is based off of. For most Arduinos, that is 5V. For 3.3V logic devices, use 3.3V. Now connect the black wire (GND) to ground.

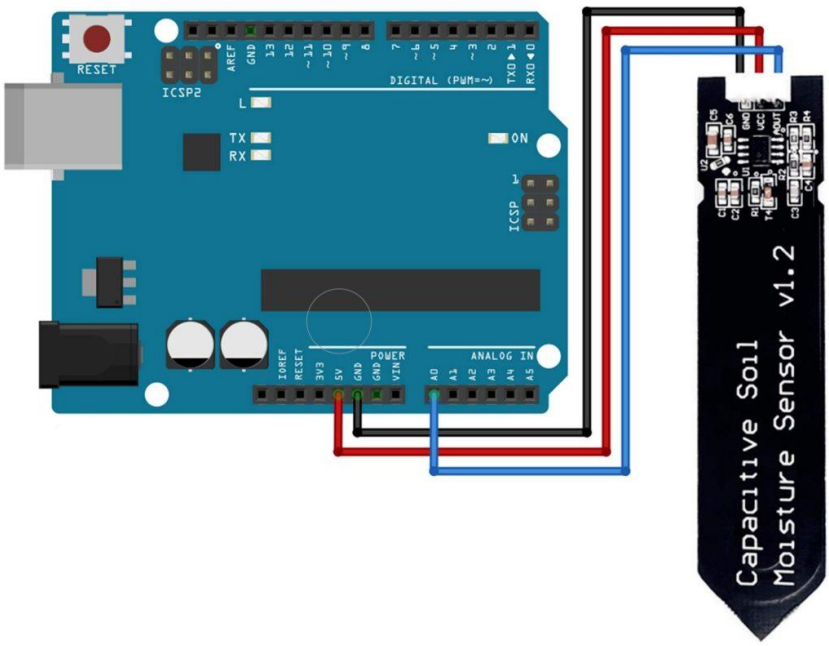
Finally, connect the yellow wire (AOUT) to one of the analog input pins on your Arduino. In our case, it is connected to the A0 pin.

The following table lists the pin connections:

Adruino uno (PIN)	capacitive soil moisture sensor (PIN)
5V	VDD
GND	GND
A0	AOUT

Circuit diagram

Start by connecting the sensor's red wire (VCC) to the power supply, 3.3V-5V is fine. Use the same voltage that your microcontroller logic is based off of. For most Arduinos, that is 5V. For 3.3V logic devices, use 3.3V. Now connect the black wire (GND) to ground.



Pinout

The capacitive soil moisture sensor features a 3-pin JST PH2.0 type connector. One end of the provided cable plugs into this connector, while the other end is a standard Dupont style 3-pin female connector. The cable is color-coded so you can easily identify which wire is which: black represents ground, red represents VCC, and yellow represents AOUT.

CODING

The sketch below estimates the level of soil moisture using the following threshold values:

- < 277 is too wet
- 277 – 380 is the target range
- > 380 is too dry

```
/* Change these values based on your observations */
#define wetSoil 277   // Define max value we consider soil 'wet'
#define drySoil 380   // Define min value we consider soil 'dry'

// Define analog input
#define sensorPin A0

void setup() {
  Serial.begin(9600);
}

void loop() {
  // Read the Analog Input and print it
  int moisture = analogRead(sensorPin);
  Serial.print("Analog output: ");
  Serial.println(moisture);

  // Determine status of our soil
  if (moisture < wetSoil) {
    Serial.println("Status: Soil is too wet");
  } else if (moisture >= wetSoil && moisture < drySoil) {
    Serial.println("Status: Soil moisture is perfect");
  } else {
    Serial.println("Status: Soil is too dry - time to water!");
  }
  Serial.println();

  // Take a reading every second
  delay(1000);
}
```

Result

Here's what the output looks like on the serial monitor