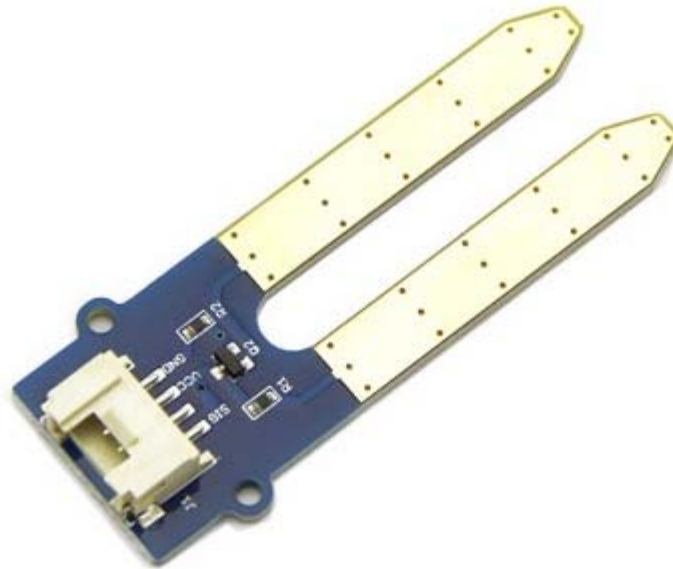


Grove - Moisture Sensor



This Moisture Sensor can be used for detecting the moisture of soil or judge if there is water around the sensor, let the plant in your garden able to reach out for human's help when they are thirsty. This sensor is very easy to use, you can just simply insert it into the soil and read the data. With this sensor, you can make a small project that can let the plant send a message to you like " I am thirsty now, please feed me some water."

Version

| Product Version | Changes | Released Date |
|------------------------------|---------|---------------|
| Grove - Moisture Sensor V1.4 | Initial | June 2014 |

Features

- Soil moisture sensor based on soil resistivity measurement
- Easy to use
- 2.0 cm X 6.0 cm grove module

Tip

More details about Grove modules please refer to [Grove System](#)

Specification

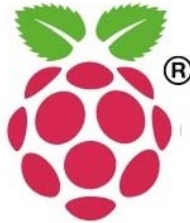
| Item | Condition | Min | Typical | Max | Unit |
|--------------|---|-----------------|---------|-------------------|------|
| Voltage | - | 3.3 | - | 5 | V |
| Current | - | 0 | - | 35 | mA |
| Output Value | Sensor in dry soil Sensor in humid soil Sensor in water | 0 300 700 | - | 300 700 950 | - |

Platforms Supported

Arduino



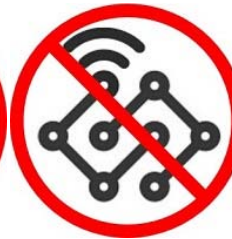
Raspberry Pi



BeagleBone



Wio



LinkIt ONE



Caution

The platforms mentioned above as supported is/are an indication of the module's hardware or theoretical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Application Ideas

- Botanical Gardening
- Moisture Sensoring
- Consistency Measurement

Getting Started


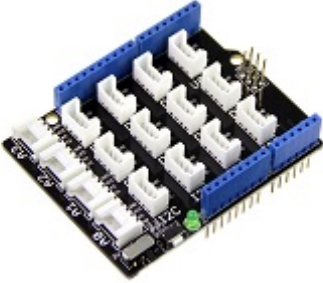

Note

If this is the first time you work with Arduino, we firmly recommend you to see [Getting Started with Arduino](#) before the start.

Play With Arduino

Hardware

- **Step 1.** Prepare the below stuffs:

| Seeeduino V4.2 | Base Shield | Grove-Moisture Sensor |
|---|---|---|
|  |  |  |

- **Step 2.** Connect Grove-Moisture Sensor to port A0 of Grove-Base Shield.
- **Step 3.** Plug Grove - Base Shield into Seeeduino.
- **Step 4.** Connect Seeeduino to PC via a USB cable.



Note

If we don't have Grove Base Shield, We also can directly connect Grove-Moisture Sensor to Seeeduino as below.

| Seeeduino | Grove-Moisture Sensor |
|---------------|-----------------------|
| 5V | Red |
| GND | Black |
| Not Conencted | White |
| A0 | Yellow |

Software

- **Step 1.** Copy the code into Arduino IDE and upload. If you do not know how to upload the code, please check [how to upload code](#).

```
1 int sensorPin = A0;
2 int sensorValue = 0;
3
4 void setup() {
5     Serial.begin(9600);
6 }
7 void loop() {
8     // read the value from the sensor:
9     sensorValue = analogRead(sensorPin);
10    Serial.print("Moisture = " );
11    Serial.println(sensorValue);
12    delay(1000);
13 }
```

- **Step 2.** We will see the moisture display on terminal as below.

- Moisture = 0
- Moisture = 31
- Moisture = 48
- Moisture = 139
- Moisture = 155
- Moisture = 124
- Moisture = 236
- Moisture = 218
- Moisture = 215
- Moisture = 221

Play With Raspberry Pi

Hardware

- **Step 1.** Prepare the below stuffs:

Raspberry pi



GrovePi_Plus



Grove-Moisture Sensor



- **Step 2.** Plug the GrovePi_Plus into Raspberry.
- **Step 3.** Connect Grove-Moisture Sensor to **A0** port of GrovePi_Plus.
- **Step 4.** Connect the Raspberry to PC through USB cable.



Software

- **Step 1.** Follow [Setting Software](#) to configure the development environment.
- **Step 2.** Git clone the Github repository.

```
cd ~
git clone https://github.com/DexterInd/GrovePi.git
```

- **Step 3.** Excute below commands to use the Grove-Moisture Sensor to meansure the moisture.

```
1 cd ~/GrovePi/Software/Python
2 python grove_moisture_sensor.py
```

Here is the grove_moisture_sensor.py code.

```
1 # Here are suggested sensor values:
2 #   Min Typ Max Condition
3 #   0   0   0   sensor in open air
4 #   0  20  300 sensor in dry soil
5 #   300 580 700 sensor in humid soil
6 #   700 940 950 sensor in water
7
8
9 import time
10 import grovepi
11
12 # Connect the Grove Moisture Sensor to analog port A0
13 # SIG,NC,VCC,GND
14 sensor = 0
15
16 while True:
17     try:
18         print(grovepi.analogRead(sensor))
19         time.sleep(.5)
20
21     except KeyboardInterrupt:
22         break
23     except IOError:
24         print ("Error")
```

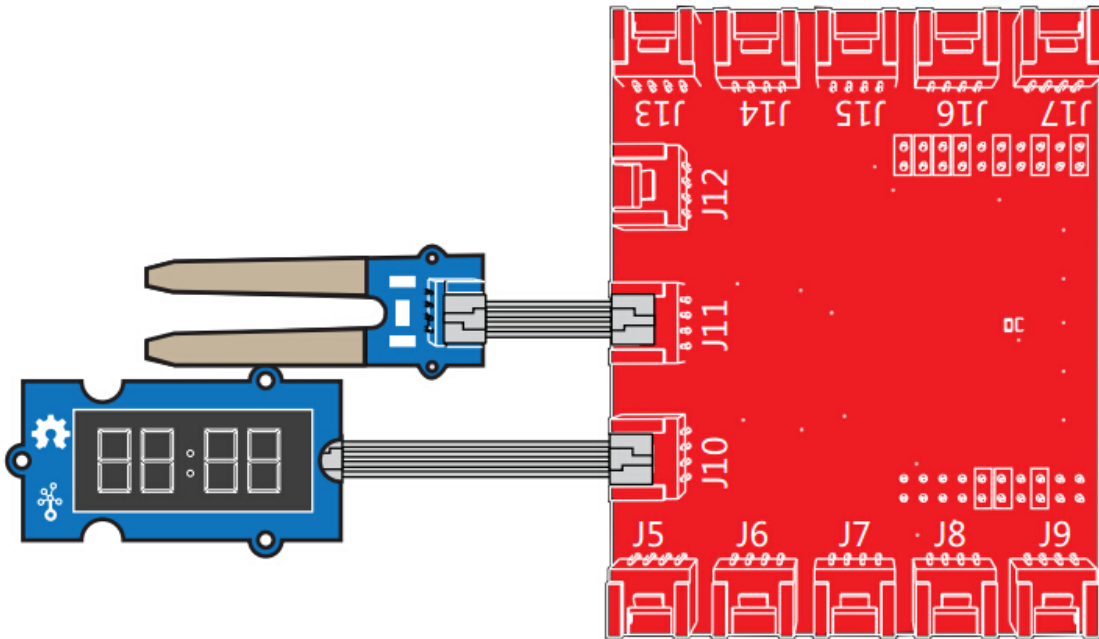
- **Step 4.** We will see the moisture display on terminal as below.

```
lpi@raspberrypi:~/GrovePi/Software/Python $ python
grove_moisture_sensor.py
20
390
4130
5150
6160
7218
8238
```

Play With TI LaunchPad

Hardware

The following sketch demonstrates a simple application of sensing the moisture in soil. With this, you can know whether your plant needs water or not by observing the result from the output of the sensor



Software

```
1 /*
2  Moisture-Sensor
3  The following sketch demonstrates a simple application of sensing
4  the moisture of the soil. You can know whether a plant needs water
5  or not by observing the results that the sensor outputs.
```



```

6 The circuit:
7 * Moisture-Sensor attached to pin 24 (J6 plug on Grove Base
BoosterPack)
8 * one side pin (either one) to ground
9 * the other side pin to +VCC
10 * LED anode (long leg) attached to RED_LED
11 * LED cathode (short leg) attached to ground
12 - NOTE:
13 This example code is in the public domain.
14 http://seedstudio.com/wiki/Grove\_-\_Moisture\_Sensor
15 */
16 #include "TM1637.h"
17 /* Macro Define */
18 #define CLK 39 /* 4-digital display clock pin */
19 #define DIO 38 /* 4-digital display data pin */
20 #define BLINK_LED RED_LED /* blink led */
21 #define MOISTURE_PIN 24 /* pin of moisture sensor */
22 #define THRESHOLD_VALUE 300 /* threshold for watering the flowers */
23 #define ON HIGH /* led on */
24 #define OFF LOW /* led off */
25 #define _handle_led(x) digitalWrite(BLINK_LED, x) /* handle led */
26
27 /* Global Variables */
28 TM1637 tm1637(CLK, DIO); /* 4-digital display object */
29 int analog_value = 0; /* variable to store the value coming
from rotary angle
30 sensor */
31 int8_t bits[4] = {0}; /* array to store the single bits of the
value */
32 /* the setup() method runs once, when the sketch starts */
33 void setup() {
34 /* Initialize 4-digital display */
35 tm1637.init();
36 tm1637.set(BRIGHT_TYPICAL);
37 /* declare the red_led pin as an OUTPUT */
38 pinMode(BLINK_LED, OUTPUT);
39 }
40 /* the loop() method runs over and over again */
41 void loop() {
42 analog_value = analogRead(MOISTURE_PIN); /* read the value from
the sensor */
43 /* if the value is smaller than threshold, turn on led */
44 if(analog_value < THRESHOLD_VALUE) {
45 _handle_led(ON);
46 } else {
47 _handle_led(OFF);
48 }
49 memset(bits, 0, 4); /* reset array when we use it */
50 for(int i = 3; i >= 0; i--) {
51 /* get single bits of the analog value */
52 bits[i] = analog_value % 10;

```



```
53     analog_value = analog_value / 10;
54     tml637.display(i, bits[i]); /* display by 4-digital display
*/
55     }
56     delay(200);
57 }
```

Resources

- [\[Eagle&PDF\]Grove - Moisture Sensor v1.4 Schematic](#)

Projects

Plant Monitoring System using AWS IoT: If you plan on a vacation, here is a great project to track the temperature and soil moisture of your Plant using dweet.io and AWS IoT.

Tech Support

Please submit any technical issue into our [forum](#).