AN-036 Rev 1.0

Z2M Part Number:
EMS-00008-A

Metal Touch Sensor
(Technical Note)

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What is Metal Touch Sensor?

Inspired by Mimosa pudica, the plant that closes its leaf on touch, metal touch sensor senses any touch on its metallic spike. Whenever a charged body with electromagnetic waves comes near the sensor, the high-gain Darlington transistor turns on and conveys the detection. The detected electromagnetic signal is compared with the steady signal and output is obtained in terms of 1's and 0's

The sensor module has a three parts-sensing unit, an amplifier, and the comparator unit. The Base of the high-gain transistor senses touch through conducted signal. Now depending on the amplified signal and resistance value of the potentiometer, the comparator decides whether it can be recognized as a "touched" i.e. digital '1' or "not touched" i.e. digital '0'.

Applications

Electromagnetic Wave Detector

Since the metal touch sensor responds whenever an electrical charged body makes a contact, it can be employed as electromagnetic detectors.

Touch Controlled Musical Bell

A circuit with a metal touch sensor generates a musical tone when somebody touches the touch panel in the circuit.

http://arduinolearning.com/

Metal Touch Sensor
(Application Note)

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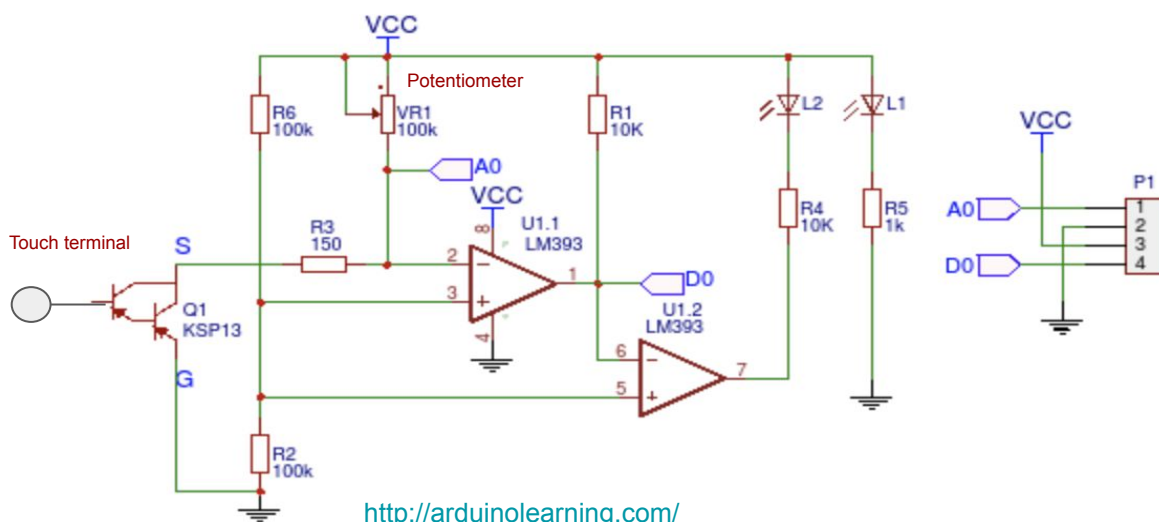
Project

To observe the serial monitor when the sensor is in close contact with metal objects.

Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
Metal Touch Sensor	EMS-00008-A	1

Procedure

1. Connect the components as shown in the schematics properly.

2. Note that the pin in the middle of the sensor plays a crucial role in detecting metal.

Schematic
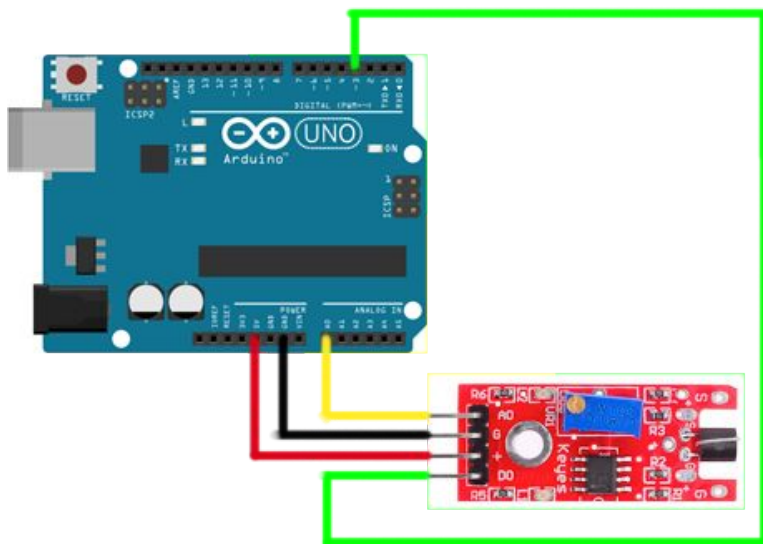
Challenge Yourself

1. Prepare a smart air quality detector for beverage mills.
2. Develop a model for traffic police to identify the drunk and drive cases.

Code

```
int AInput = A0;/*Analog Input from sensor
taken at A0 pin of Arduino*/
int DInput = 3;/*Digital Input from sensor
taken at 3 pin of Arduino*/

void setup (){
pinMode (AInput, INPUT);/*Setting the pin
to take INPUT*/
pinMode (DInput, INPUT);/*Setting the pin
to take INPUT*/
Serial.begin (9600);/*Setting the baud rate
of communication be 9600*/
}

void loop (){
float analogValue;
/*Defining the variable "analogValue" */
int digitalValue;
/*Defining the variable "digitalValue" */

/* Current value will be read and converted
to the voltage*/
analogValue = analogRead (AInput) * (5.0 /
1023.0);/*Reading the analog value from
sensor and converting it to Volts*/
digitalValue = digitalRead (DInput);
/*Reading the digital value from the sensor
and outputted here*/
Serial.print ("Analog voltage value:");
Serial.print (analogValue);
Serial.print ("V, ");
Serial.print ("Touch input:");

if(digitalValue==1)/*if the digtial read
value from the sensor = 1*/
{
    Serial.println (" detected"); /*print
on screen - detected*/
}
else{
    Serial.println (" not detected");
/*otherwise, print on screen - non detected
*/
}
Serial.println ("--------------------");
delay (250);
}
```

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