Analog Input

Overview

In this example, we use a variable resistor (a potentiometer), we read its value using one analog input of an Arduino board and we change the blink rate of the built-in LED accordingly.

The resistor's analog value is read as a voltage because this is how the analog inputs work.

Specification

Product Name: Potentiometer;

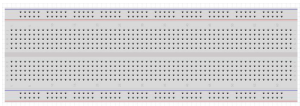
Resistance Value: 10K ohm;

Adjustment Type: Top Adjustment

Pin definition

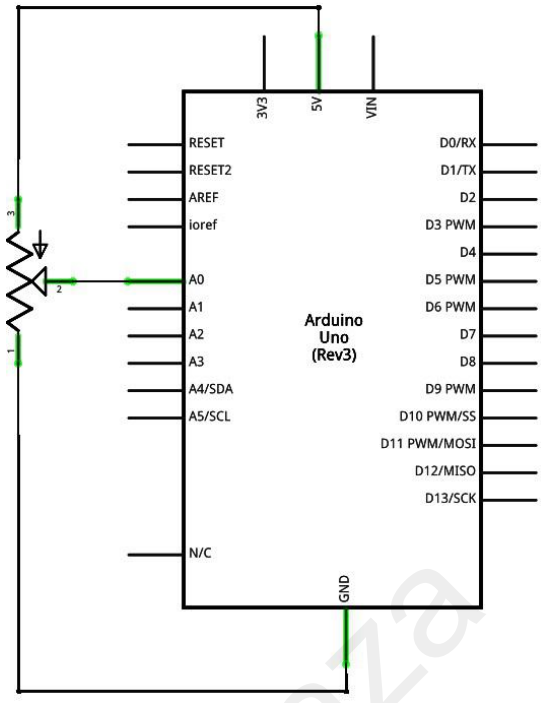
Null

Hardware required

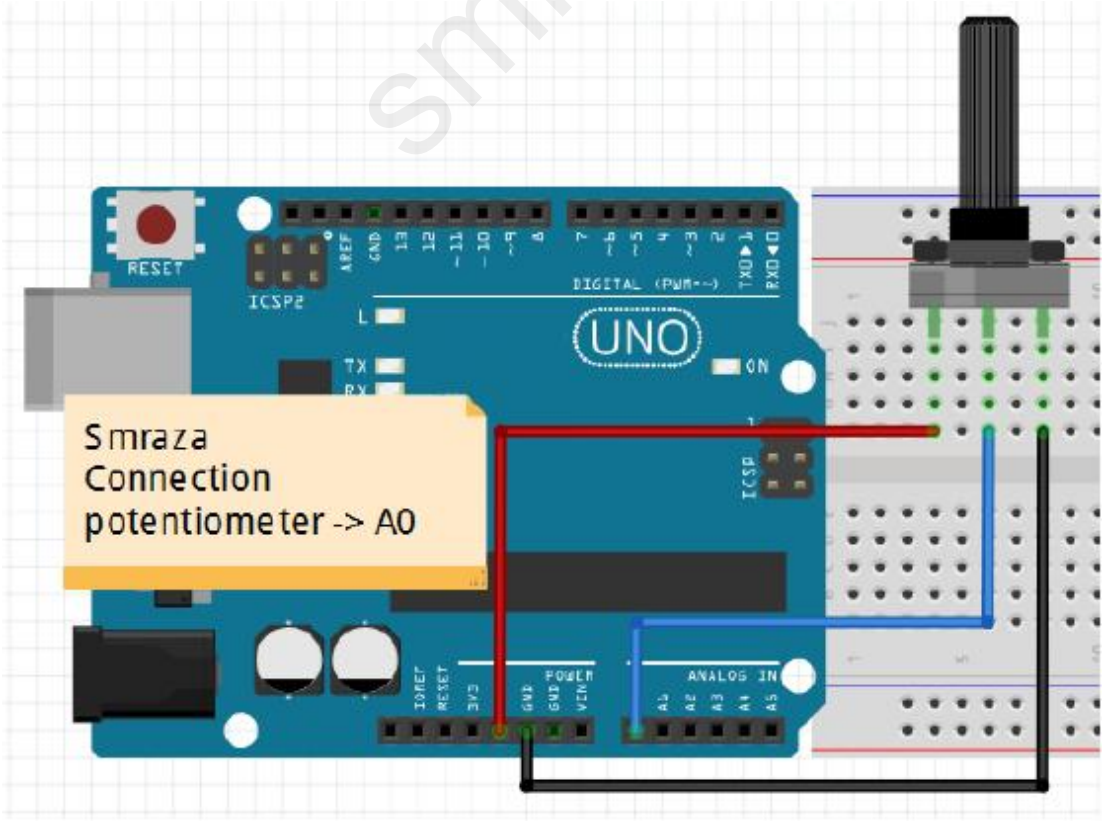
Material diagram	Material name	Number
	10KΩ potentiometer	1
	USB Cable	1
	UNO R3	1
	Breadboard	1
	Jumper wires	Several

Connection

Schematic



Connection diagram



Note：The middle pin of the potentiometer is connected to the analog port 0(A0).

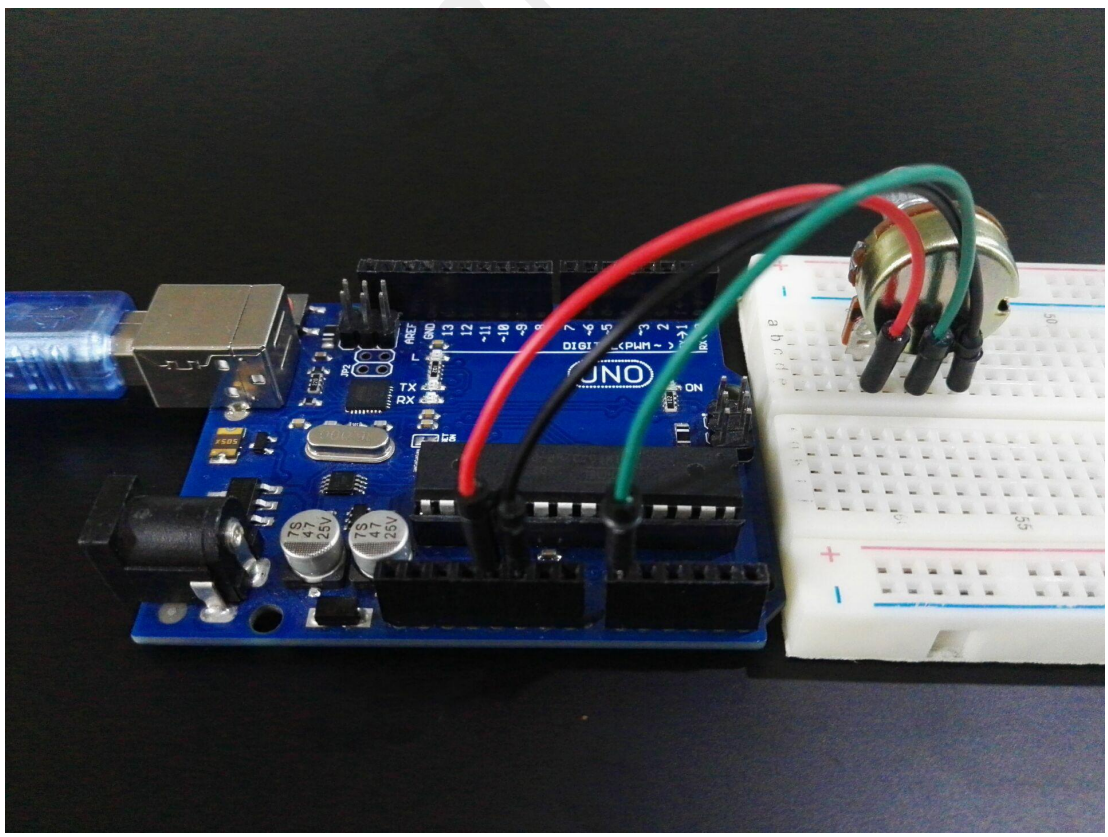
Sample code

Note : sample code under the **Sample code** folder

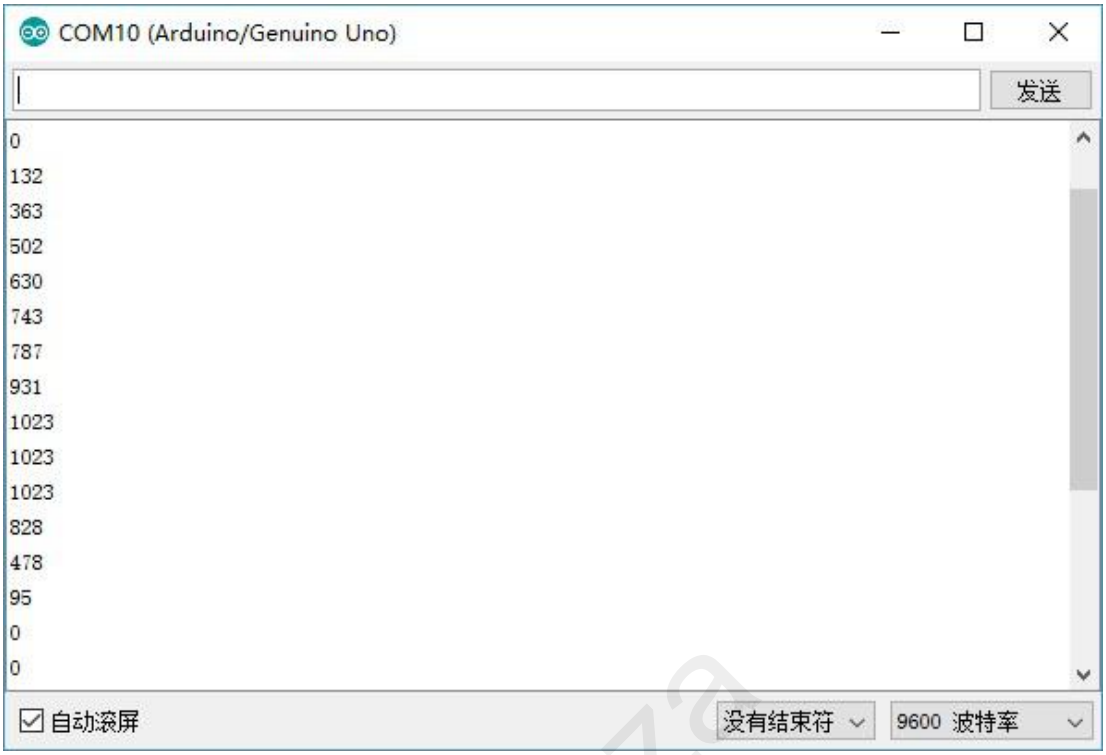
```
int sensorPin = A0;
int ledPin = 13;
int sensorValue = 0; // variable to store the value coming from the sensor
void setup() {
    // declare the ledPin as an OUTPUT:
    pinMode(ledPin, OUTPUT);
}

void loop() {
    // read the value from the sensor:
    sensorValue = analogRead(sensorPin);
    // turn the ledPin on
    digitalWrite(ledPin, HIGH);
    // stop the program for <sensorValue> milliseconds:
    delay(sensorValue);
    // turn the ledPin off:
    digitalWrite(ledPin, LOW);
    // stop the program for for <sensorValue> milliseconds:
    delay(sensorValue);
}
```

Example picture



Result



Language reference

Tips：click on the following name to jump to the web page.
If you fail to open, use the Adobe reader to open this document.
digitalWrite()
analogRead()

Application effect

By turning the shaft of the potentiometer, you change the amount of resistance on either side of the center pin (or wiper) of the potentiometer. This changes the relative resistances between the center pin and the two outside pins, giving you a different voltage at the analog input. When the shaft is turned all the way in one direction, there is no resistance between the center pin and the pin connected to ground. The voltage at the center pin then is 0 volts, and analogRead() returns 0. When the shaft is turned all the way in the other direction, there is no resistance between the center pin and the pin connected to +5 volts. The voltage at the center pin then is 5 volts, and analogRead() returns 1023. In between, analogRead() returns a number between 0 and 1023 that is proportional to the amount of voltage being applied to the pin.

That value, stored in sensorValue, is used to set a delay() for your blink cycle. The higher the value, the longer the cycle, the smaller the value, the shorter the cycle. The value is read at the beginning of the cycle, therefore the on/off time is always equal.

****

* About Smraza:
* We are a leading manufacturer of electronic components for Arduino and Raspberry Pi.
* Official website: http://www.smraza.com/
* We have a professional engineering team dedicated to providing tutorials and support to help you get started.
* If you have any technical questions, please feel free to contact our support staff via email at support@smraza.com
* We truly hope you enjoy the product, for more great products please visit our
Amazon US store: http://www.amazon.com/shops/smraza
Amazon CA store: https://www.amazon.ca/shops/AMIHZKLK542FQ
Amazon UK store: http://www.amazon.co.uk/shops/AVEAJYX3AHG8Q
Amazon DE store: http://www.amazon.de/shops/AVEAJYX3AHG8Q
Amazon FR store: http://www.amazon.fr/shops/AVEAJYX3AHG8Q
Amazon IT store: http://www.amazon.it/shops/AVEAJYX3AHG8Q
Amazon ES store: https://www.amazon.es/shops/AVEAJYX3AHG8Q

****