Voltage Sensor Module (up to 25V) for Arduino

Figure 1

Introduction:

The Arduino analogue input is limited to a 5 VDC input. This device is used to measure higher voltages. This device is used in voltage divider. It is fundamentally a 5:1 voltage divider using a 30kΩ and a 7.5kΩ resistor.

This is a module designed for measuring voltage below 25 VDC. The concept behind the module is using a voltage divider to scale down the input voltage by 5 times. This module is based on resistance points pressure principle, and it can make the input voltage of red terminal reduce 5 times of original voltage. The max Arduino analogue input voltage is 5 V, so the input voltage of this module should be not more than 5 V x 5 = 25V

Notes:

- Voltages must below than 25VDC

- If for 3.3 V system, the input voltage should be not more than 3.3 V x 5 = 16.5V because the Arduino AVR chip have 10-bit AD, so this module simulation resolution is 0.00489 V (5 V / 1023), and the input voltage of this module should be more than 0.00489 V x 5 = 0.02445 V.

Specification:

- Voltage input range: 0-25 V DC
- Voltage detection range: DC0.02445 V-25 V
- Voltage analogue resolution: 0.00489 V
- Operating voltage output: 3.3V – 5V MAX
- 100% Arduino Compatible

Components needed:

- Arduino Uno
- Jumper Wires
- Voltage Sensor Module (up to 25V)
- Battery (used for testing the voltage sensor)

Objectives:
To measure the voltage of the battery using voltage sensor module.

Procedures:
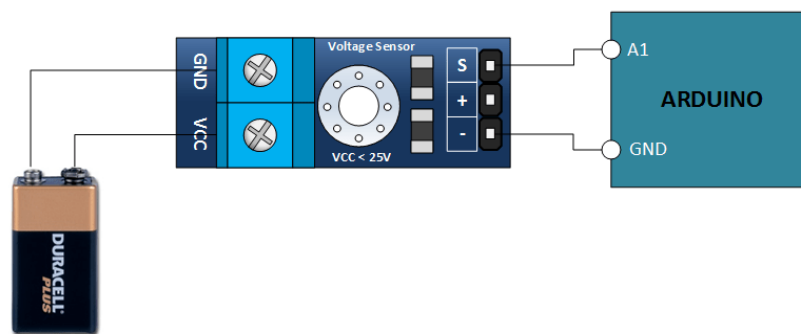
1) The circuit was constructed as in the picture below.

Figure 2

2) Arduino Uno was connected to the pc and the coding was uploaded in the Arduino software.
3) The voltage of the battery was measured by connecting GND of the voltage sensor to the negative terminal of the battery. VCC of the voltage sensor was connected to the positive terminal of the battery.
4) The reading of the voltage was displayed at Serial Monitor in the Arduino software.

Result:

Figure below shown the reading of the battery that was displayed at Serial Monitor.

```
15:24:48.258 -> INPUT V= 0.00
15:24:48.762 -> INPUT V= 9.59
15:24:49.230 -> INPUT V= 9.47
15:24:49.734 -> INPUT V= 9.62
15:24:50.238 -> INPUT V= 9.62
15:24:50.742 -> INPUT V= 9.62
15:24:51.246 -> INPUT V= 9.62
15:24:51.749 -> INPUT V= 9.62
15:24:52.253 -> INPUT V= 9.62
15:24:52.757 -> INPUT V= 9.62
15:24:53.261 -> INPUT V= 9.62
```

Figure 3

Reference:

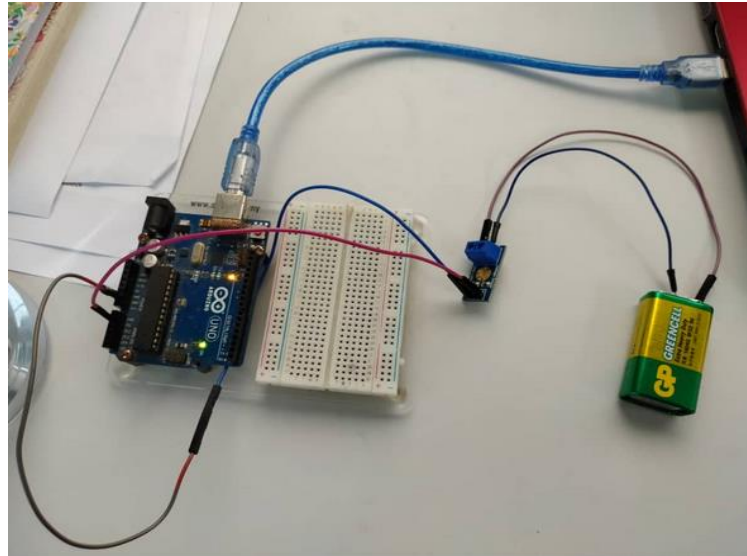Figure 4 below shown the voltage sensor that had been tested

Figure 4