# **3MPa Stainless Steel Pressure Transducer Sensor**

A **pressure sensor** is a device for [pressure measurement](https://en.wikipedia.org/wiki/Pressure_measurement) of [gases](https://en.wikipedia.org/wiki/Gas) or [liquids](https://en.wikipedia.org/wiki/Liquids). Pressure is an expression of the force required to stop a fluid from expanding, and is usually stated in terms of force per unit area. A pressure sensor usually acts as a [transducer](https://en.wikipedia.org/wiki/Transducer); it generates a signal as a [function](https://en.wikipedia.org/wiki/Function_(mathematics)) of the pressure imposed. For the purposes of this article, such a signal is electrical.

Here, we will present the small program which will show the interfacing of Arduino with Pressure Sensor. After execution of the program, we can check output on Serial Monitor in KPa and MPa.

We will use water to test the sensor. We will apply water pressure to the small hole (inlet) of sensor using “Injection”. So, fill the injection with water and insert the needle into the hole, just press the injection and see the output on Serial Monitor(Make sure that you have uploaded the program on Arduino).

We need few parameters such as operating voltage and working pressure range which is 1.6MPa in this case. Also, there is an “Offset” value which we need to revise while we do calibration with air/oil/water. Because, in this program, we are going to see **“ Voltage vs Pressure”** relationship as per chart.

This process will generate some values even if you do not apply any pressure to sensor when it is connected to Arduino. But do not worry!! It is normal. This is where the “Offset” value plays an important role. You need to set the value in such a way that when you run/test the sensor, it will show the Voltage near about 0.45V/0.48V/0.46V etc. That means, the value should be near about 0.5V and the pressure will be 3.5KPa/2.7KPa/2.5KPa etc. Here, in our program, **we set the value of 0.454.**

**Note: To see the Chart and other Operating Values, please refer the Attachment section.**

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**Connection:**

|  |  |
| --- | --- |
| **Sensor** | **Arduino** |
| VCC | VCC=5V |
| GND | GND |
| Signal | A0 |

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**Program:**

const float OffSet = 0.454 ;

float V, P;

void setup()

{

Serial.begin(9600); // open serial port, set the baud rate to 9600 bps

Serial.println("/\*\* Water pressure sensor demo \*\*/");

}

void loop()

{

//Connect sensor to Analog 1

V = analogRead(A0) \* 5.00 / 1024; //Sensor output voltage

P = (V - OffSet) \* 250; //Calculate water pressure

float R = P/1000;

Serial.print("Voltage:");

Serial.print(V, 3);

Serial.println("V");

delay(2000);

Serial.print(" Pressure:");

Serial.print(P, 1.6);

Serial.println(" KPa");

/// Serial.println();

//Serial.println();

delay(2000);

Serial.print("Pressure:");

Serial.print(R);

Serial.print(" MPa");

Serial.println();

Serial.println();

delay(2000);

}

Compile and Upload the program. Inject water into inlet of sensor using Injection. You will obtain voltage as well as pressure values on serial monitor. Check voltage vs pressure values as per chart.

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