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Freescale MPX 5020 Pressure Sensor Arduino Demo

Please Note: This product is not sold by Parallax. This demo was created to support the 2013 National microMedic Contest kits, which are no longer available.

This demo connects the pressure sensor to the Board of Education Shield and uses the Arduino software's Serial Monitor to display the data.

This sensor detects changes in air pressure at its two ducted ports. The output of the sensor is an analog voltage that varies depending on the pressure. The pressure sensor can detect changes in both positive and negative air pressure. Positive air pressure is equivalent to blowing into a tube. Negative air pressure creates a vacuum, similar to sucking from a straw.
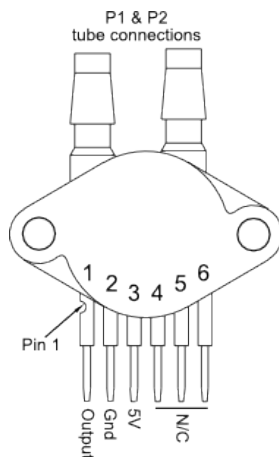
Rubber aquarium tubing measuring approximately 1/4" outside diameter may be used to attach an air or vacuum source to either of the sensor's ducted ports. Cut to length, and insert over the ribs of the ports. You may also use some of the items that come in the Parallax microMedic Content kit, including the LSP Handheld Nebulizer and MTR Manual Blood Pressure Cuff. Both consist of tubes and other components that may be used to build a finished project. When using the squeeze-bulb of the pressure cuff, exercise care to not over-pressure the sensor.

Connections

To connect the pressure sensors to the Arduino Shield, attach the three leads of the device as shown in the figure. The sensor is a 6-pin device, but only pins 1-3 are connected. Note that pin 1 is denoted by a small notch.
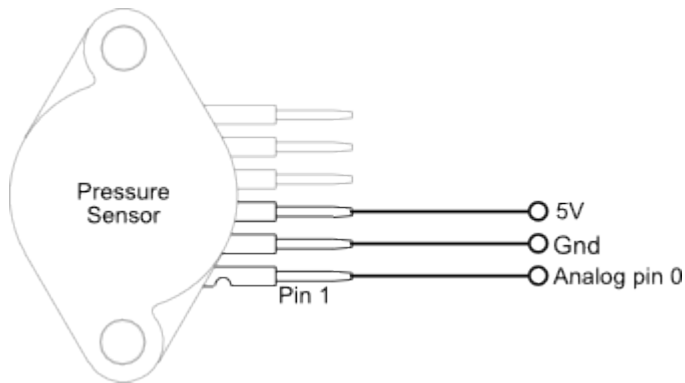
Although the leads on the pressure have the standard 0.100" spacing, it is recommended that you connect the device to the Arduino using male-female jumper wires, rather than plugging the sensor directly into the breadboard of the Arduino Shield. This allows you more flexibility in connecting tubes to the sensor.

Programming

To use this example, upload the PressureSensor sketch to your Arduino, then open the Serial Monitor window. Ensure that the Baud Rate is set at 9600. Using a tube connected to one of the ports on the sensor, use your mouth to blow into the tube, and watch the value change in the Serial Monitor window.

Sensor values will vary from 0 (0 volts) to 1023 (5V). The sensor will always read some value between, even when not blowing into the tube. This is because the sensor is registering the atmospheric pressure that is present.

Avoid excessive air pressure or vacuum at either port. Otherwise damage to the sensor may result. Refer to the Freescale Semiconductor MPX5010DP datasheet for the pressure sensor for maximum ratings for the device.

```
// Pin 1 (notch) - Analog output
// Pin 2 - Gnd
// Pin 3 - 5V


int sensorPin = A0;    // Select input pin for the potentiometer
int sensorValue = 0;   // Variable stores value coming from the sensor
```

```
void setup() {
  Serial.begin(9600);
}

void loop() {
  sensorValue = analogRead(sensorPin);  // Read sensor
  Serial.println(sensorValue, DEC);      // Display result
  delay(400);            // Wait 400 milliseconds
}
```