

## ARDUINO PROJECT

### SIMPLE FORCE SENSOR (FSG-15N1A) READOUT

Silicon sensor like Freescale MPX2102 and FSG-15N1A are now commonly available and can be used for many industrial applications and robotics. These sensors employ bridge circuits and their output is in milli volts making it necessary to use instrumentation amplifier like AD622.

For hobbyist however a simple circuit can be implemented using commonly available Op-Amp like LM358. The circuit below amplifies the difference in pressure sensor outputs by 20 and the Atmega8 subtracts the two to display the actual pressure reading.

This implementation requires calibration and has undergone limited testing.

```
// LiquidCrystal display with:  
  
// rs on pin 10  
  
// rw on pin 9  
  
// enable on pin 8  
  
// d0, d1, d2, d3 on pins 5, 4, 3, 2  
  
#include <LiquidCrystal.h>  
  
LiquidCrystal lcd(10, 9, 8, 5, 4, 3, 2);  
  
int Pos=0;  
  
int Neg=0;  
  
int Com=0;
```

```
char* str1[] = {
"CHANNEL A", "CHANNEL B", "CHANNEL C"};

void setup()
{
    // Print a message to the LCD.

    pinMode(12,OUTPUT);
    pinMode(13,OUTPUT);
    pinMode(11,OUTPUT);
    pinMode(7,INPUT);
    digitalWrite(12,LOW);
}

void loop()
{
    Pos = analogRead(0);
    Neg = analogRead(1);
    Com = 5*(Pos-Neg); //Correction factor please change as per your requirement

    lcd.clear();
    lcd.print(str1[0]);
    lcd.setCursor(0,1);
    lcd.print("Force");
    lcd.print(":");
    lcd.print(Com);

    lcd.print("grams"); //or any units that you want to use

    delay(100);
}
```

# HARDWARE

OPamp = LM358

Pressure sensor can also be pneumatic sensor like MPX2102 (100kPa).

