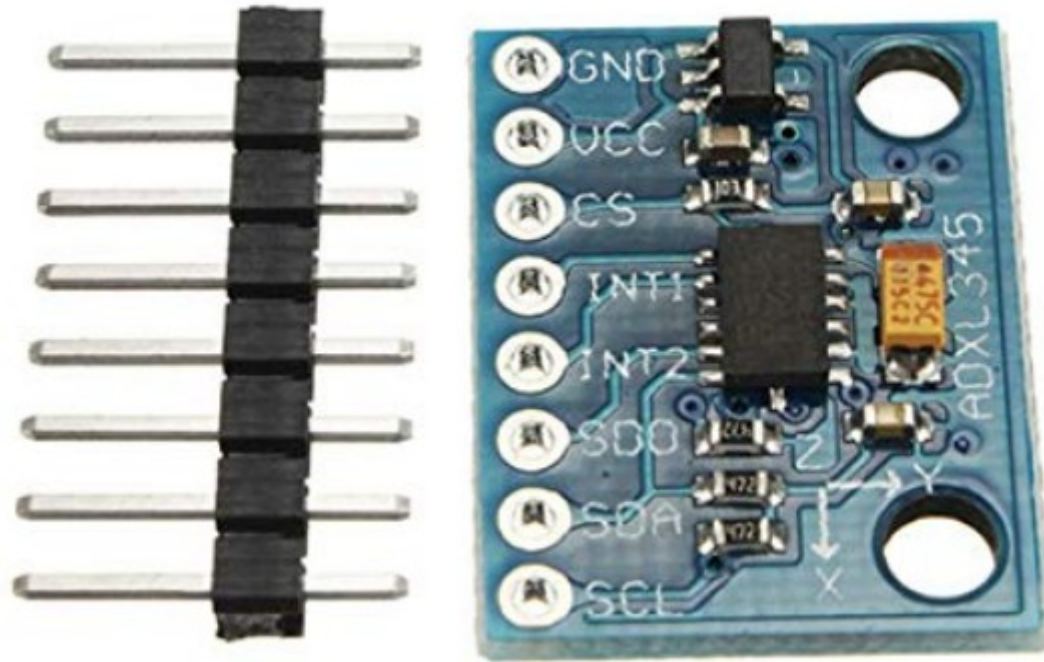


M13- SPI Assignment

The pins need to be soldered to the board. The connection pins are labeled on the board



These are the pin connections. This is the code from sketch_SPI_ADXL345.ino

```
1  /*****
2  * This is morph of RT_AD3 to SPI ADXL345 input and print
3  * replaces Arduino Loop: with 10 clock interrupts per second
4  * to process 'loop' tasks.
5  *
6  *
7  * 20181002 H. Watson
8  * Arduino Pin      ADXL345      MSP430FR2433
9  * pin 13 SCK  -> SCL  ..... P2.4
10 * pin 12 MISO -> SD0  ..... P2.5
11 * pin 11 MOSI -> SDA  ..... P2.6
12 * pin 8  CS   -> CS   ..... P2.1
13 *
14 * //https://www.sparkfun.com/tutorials/240
15 * //http://forum.arduino.cc/index.php/topic,159313.0.html
16 * robo_maniac
17 *
18 *
19 * 1. create 10 Hz timer interrupt
20 * 2. Get values from ADXL345 for x,y,z axes
21 * 3. add TxISR to print out string with axis values
22 * 4. add sprintf value to generate output string from axis values
23 *
24 *
25 *
26 * H. Watson 20181029
27 * /
28
```

File Edit Sketch Tools Help



sketch_SPI_ADXL345

```
*
* H. Watson 20181029
* /

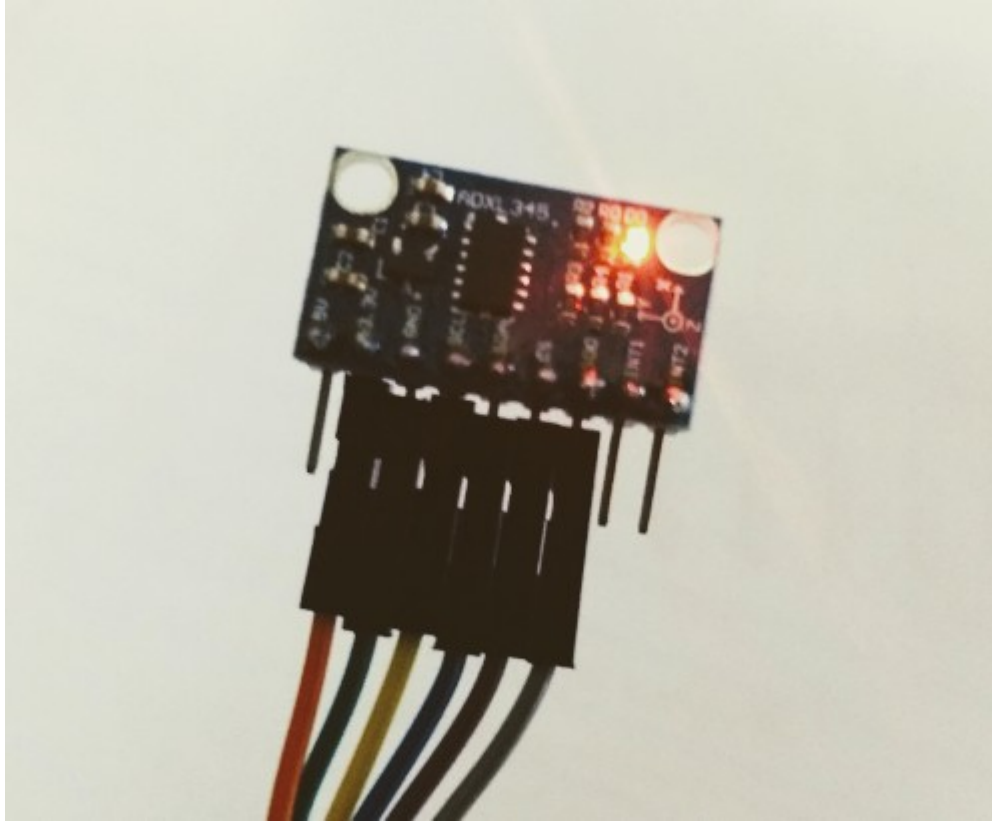
// ACLK = REFOCLK = 32kHz, MCLK = SMCLK = default DCODIV = 1MHz.
//
//           MSP430FR2433
//           -----
//           /\|\|
//           | |           P2.4|--->SCL / SCK
//           --|RST       P2.5|--->SDO / MISO
//           |           P2.6|--->SDA / MOSI
//           |           P2.1|--->CS
//           |           |
//           |           P1.0|--->RED LED
//
//
//
// Working & Energia - H Watson 20180731
//
```

```
Setting PC to entry point.: 94%
info: MSP430: Flash/FRAM usage is 3376 bytes. RAM usage is 0 bytes.
Running...
Success
```

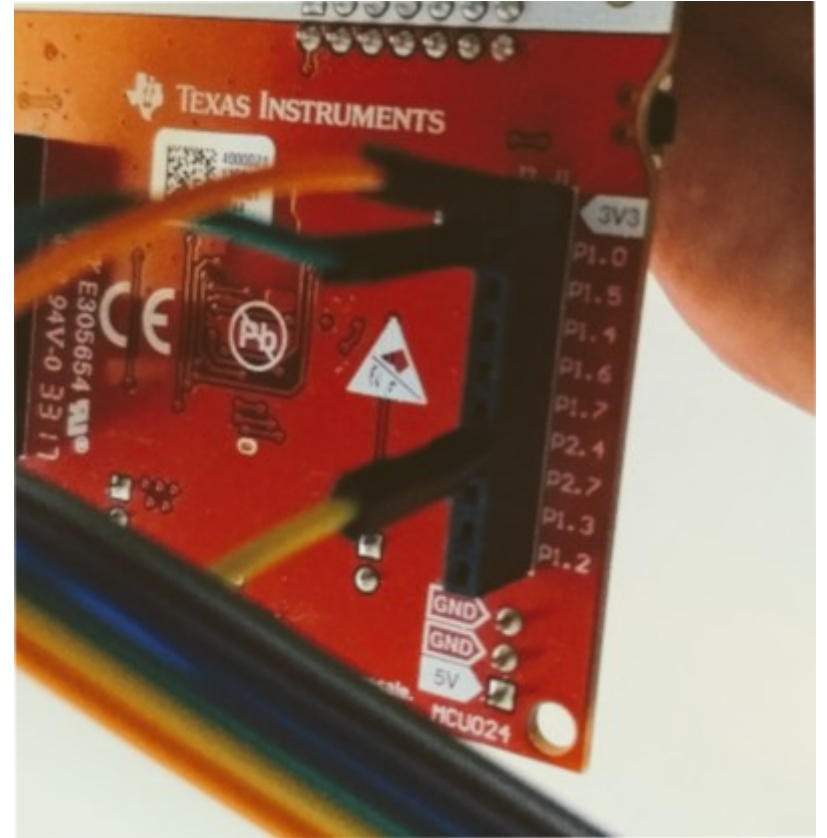
Load the sketch from the web link,
compile, and execute

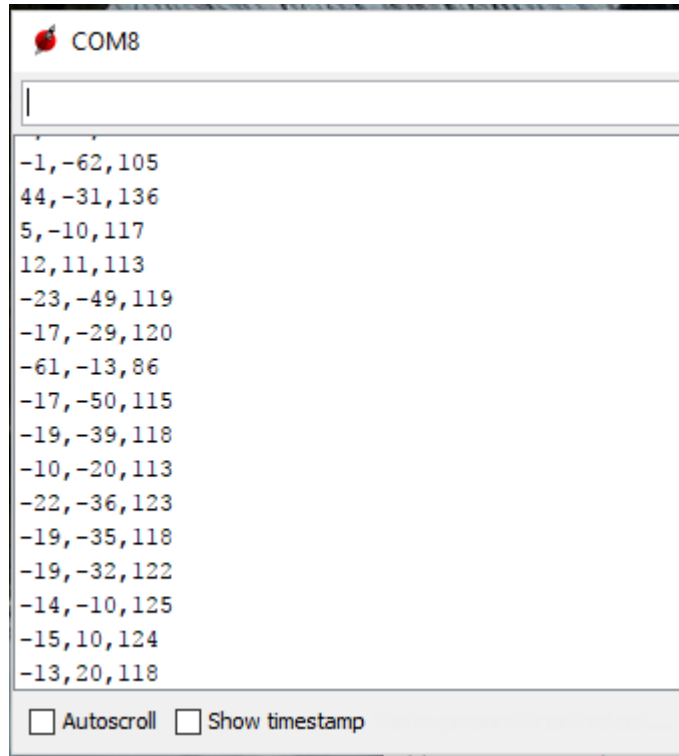
sketch_SPI_ADXL345.ino

Accelerometer with wires connected



Connections to the MSP430FR2433 Launchpad





The screenshot shows a Serial Monitor window titled "COM8". The window contains a list of 18 lines of three integers separated by commas. At the bottom, there are two checkboxes: "Autoscroll" and "Show timestamp", both of which are currently unchecked.

```
COM8  
-1,-62,105  
44,-31,136  
5,-10,117  
12,11,113  
-23,-49,119  
-17,-29,120  
-61,-13,86  
-17,-50,115  
-19,-39,118  
-10,-20,113  
-22,-36,123  
-19,-35,118  
-19,-32,122  
-14,-10,125  
-15,10,124  
-13,20,118  
 Autoscroll  Show timestamp
```

Written Questions:

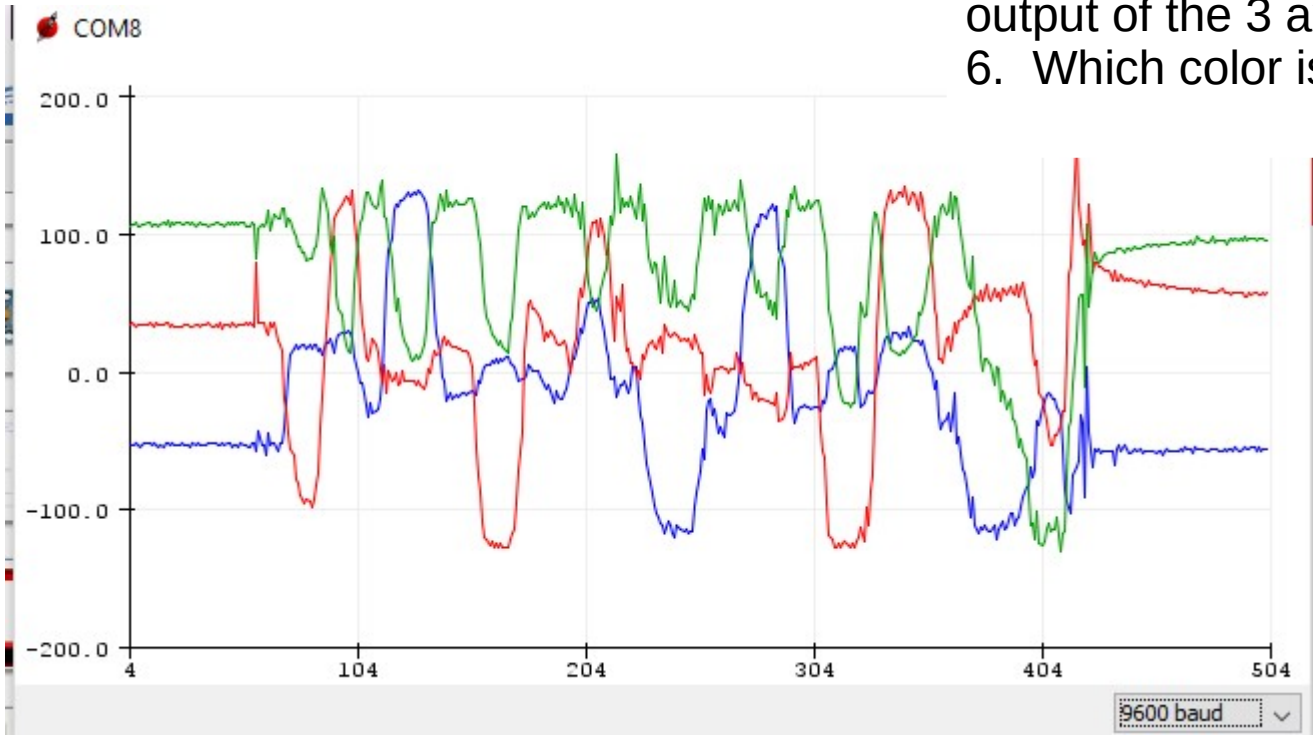
1. Turn in screen capture of the Serial Monitor output of the 3 axes.
2. Which numbers are which axis?
3. What is the sample rate of the measurements?
4. What is the range of the numbers?

Video:

1. Show the numbers going by on the video clip

Written Questions:

5. Turn in screen capture of the Serial Plotter output of the 3 axes.
6. Which color is which axis?



Video:

2. Show the plots on the video clip

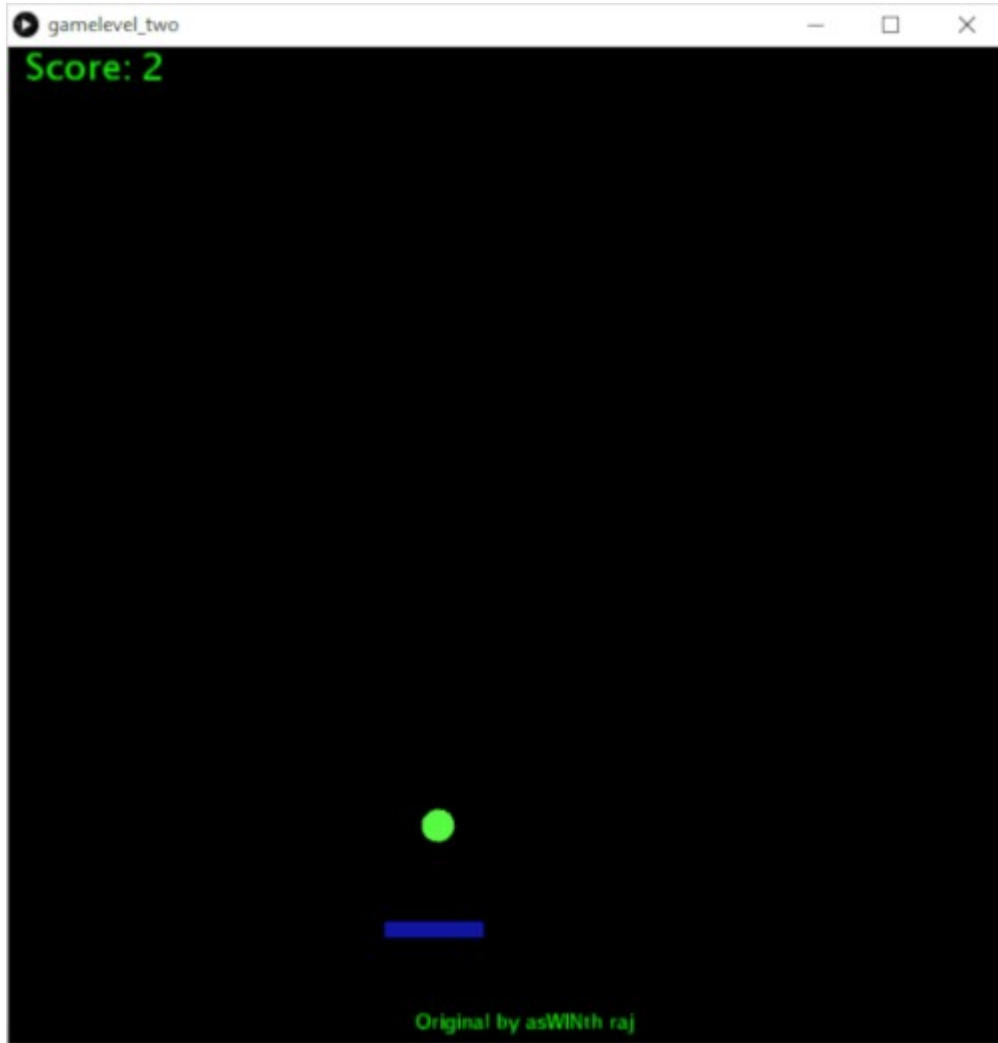

```
gamelevel_two | Processing 3.4
File Edit Sketch Debug Tools Help

gamelevel_two
1 /*
2 Program to create a game and gets its motion values serially from 3rd PORT
3 Programed by B.Aswinth Raj
4 Dated on : 21-08-2016
5 * modified for MSP430FR2433 20181004 H. Watson
6 * set for ADX345 Accelerometer
7 */
8
9
10
11 import processing.serial.*;
12
13 Serial port;
14
15 // int data;
16 int movby;
17 int MyValx, MyValy, MyValz, MyVal;
18 float x=300;
19 float y=00;
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44 180
44 180
44 180
44 180
```

Load the 'gamelevel_two' sketch into processing (class web site)

run the sketch with the MSP430FR2433 and Accelerometer connected.

Make sure the serial port is correct for Processing.



Written: capture a screen shot of the game running

Video: Show a clip with the game being played.

Also include your name, date, and time

Have fun!