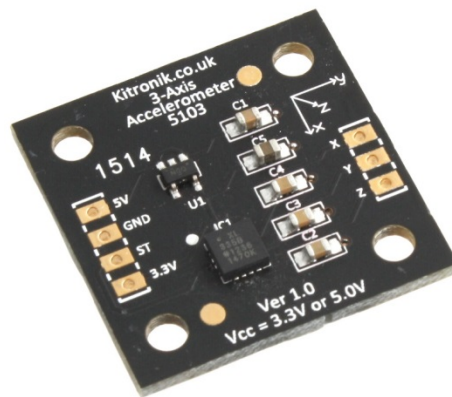


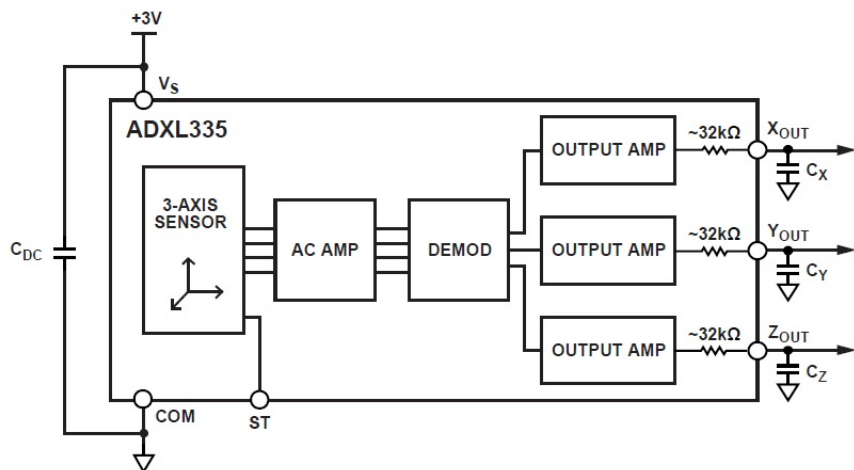
## 3-Axis Accelerometer Breakout - [5103](#)

### Board Overview

This board uses the ADXL335 and requires either a 5V or 3.3V input and provides acceleration values for three axis of movement, each on a separate analogue output. A Self-Test pin is also available which when brought above 2.4V should alter the 3 analogue output values, allowing the functionality to be tested. The change in the analogue output is proportional to the value of  $V_{CC}$ . The maximum sample rate of the board is approximately 50Hz (+ or – 15% from the internal resistors).



### Block Diagram



### Electrical Characteristics

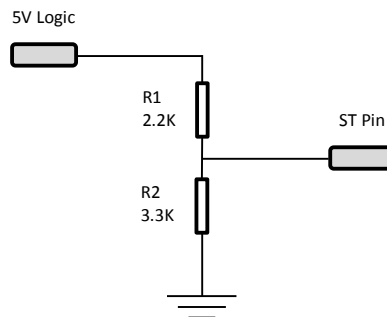
	Min	Typical	Max
Supply Voltage	1.8V	3.3-5V	6V
Output Voltage	0.1V		2.8V
Current Consumption		350uA	
Sensitivity at XOUT, YOUT, ZOUT ( $V_S = 3V$ )	270 mV/g	300 mV/g	330 mV/g
Temperature sensitivity			0.01V/°C

## Pinout

5V	5V input to regulator	5V
3V	3V input	1.8-3.6V
ST	Self Test	< 0.6V Off > 2.4V On (MAX 3.6V)
GND	Ground	0V
X	Analogue Acceleration in X	0.1V to 2.8V
Y	Analogue Acceleration in Y	0.1V to 2.8V
Z	Analogue Acceleration in Z	0.1V to 2.8V

### Warning: Do not connect ST to 5V

If you are using 5V logic and wish to use the self-test pin then you will need to use a potential divider. See the diagram below for details.

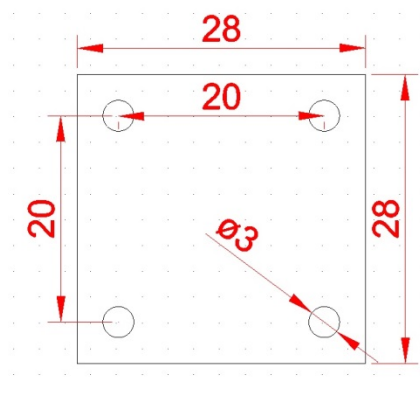


## Power-in connections

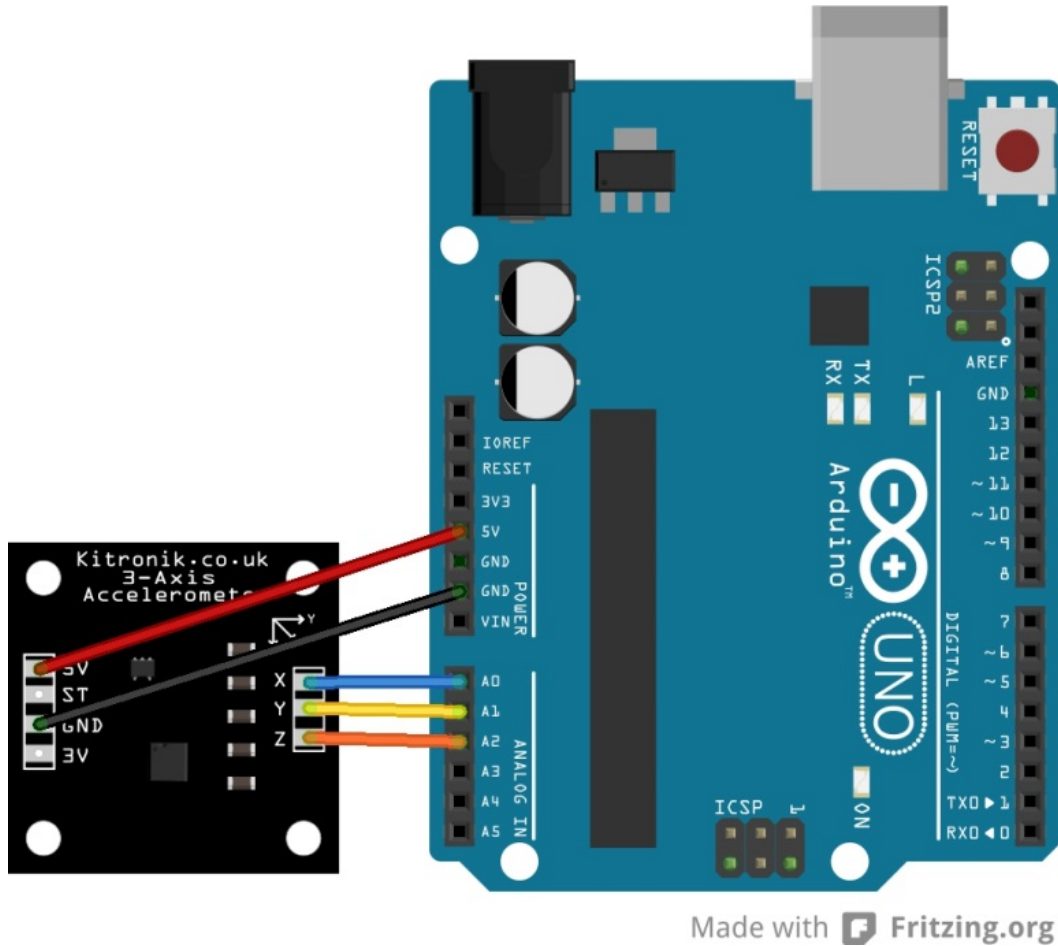
The board has two connections as listed in the pin out table, 3V and 5V. The 3V connects directly to the accelerometer IC, whereas the 5V goes through a regulator to get the 3V required for the accelerometer IC. Only one of the input pins should be used, either the 3V or 5V input, don't connect to both. Please be aware when using the 5V pin that the analogue readings will only be to a maximum of 3V.

## Mechanical Information

All dimensions in mm. Tolerance 0.1mm. All mounting holes are on 10mm spacing's.



## Using the board with an Arduino



The table below shows how to connect the wiring for the sketch below.

3-Axis Accelerometer	Arduino
5V	5V
3V	No Connection
ST	No Connection or GND
GND	0V
X	A0
Y	A1
Z	A2

The next page contains a very straightforward Arduino sketch that allows you to test the breakout board is working and display the acceleration in three axes on the serial monitor.

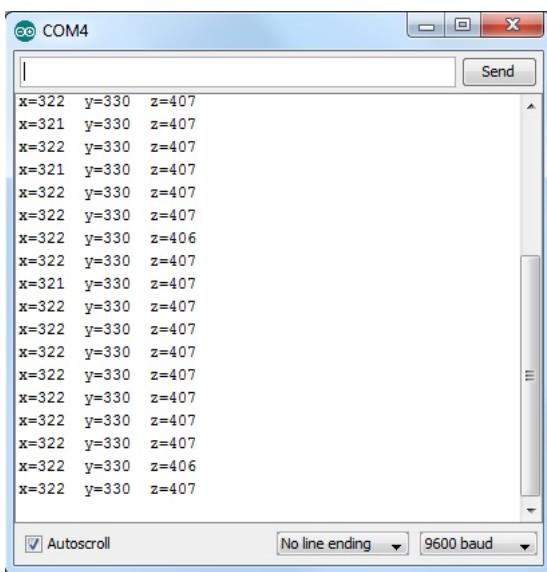
## Arduino Sketch

```
const int xval = A0;
const int yval = A1;
const int zval = A2;

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

void loop()
{
  Serial.print("x=");
  Serial.print(analogRead(xval));
  Serial.print("  y="); // print a tab between values:
  Serial.print(analogRead(yval));
  Serial.print("  z=");
  Serial.print(analogRead(zval));
  Serial.println();
  delay(500);
}
```

If you open the serial monitor you should see something like this:



These values are for the sensor running from 5V, with the breakout board stationary and almost parallel to the surface of a desk. You may notice that the Z-axis is showing a higher value than the X and Y axes. This is because the sensor measures proper acceleration, which means the sensor measures acceleration relative to free-fall. As a result it is detecting an upward acceleration equal to gravity ( $9.81\text{ms}^{-2}$  or  $1g$ ) being caused by the desk resisting gravity and holding the board in place. This might seem odd but it is useful as it allows us to determine which way up the chip is oriented. You can experiment with this by turning the board upside down or on its side. You will notice the acceleration values change to display the different orientation of the sensor.