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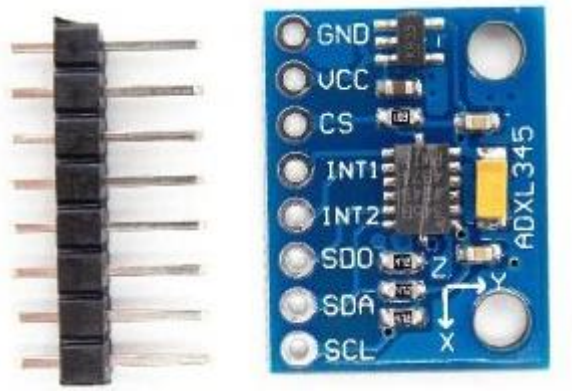
# Interfacing Accelerometer ADXL345 (GY-291) with Arduino UNO

**Introduction:**

GY-291 ADXL345 3-Axis Accelerometer & Acceleration sensor is a 3-dimensional accelerometer that measures acceleration in 3 dimensions X, Y and Z axis.




## Specification

### General Specifications

- Single tap/double tap detection
- Activity/inactivity monitoring
- Free-fall detection
- 10,000 g shock survival
- SPI (3- and 4-wire) and I2C digital interfaces
- Flexible interrupt modes mappable to either interrupt pin
- Measurement ranges selectable via serial command
- Bandwidth selectable via serial command

### Technical Specifications

- Operating Voltage: 4V to 6V
- I/O Voltage Range: 1.7V to 3.6V
- Communication: SPI and I2C
- Operating Temperature: -40$^0$C to 85$^0$C
- Size: 3 mm × 5 mm × 1 mm

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**Objective:**

In this Tutorial the sensor will send the data about the reading of the acceleration of the sensor in 3-dimension (x, y & z). The Serial Monitor in Arduino IDE will continuously display the data.

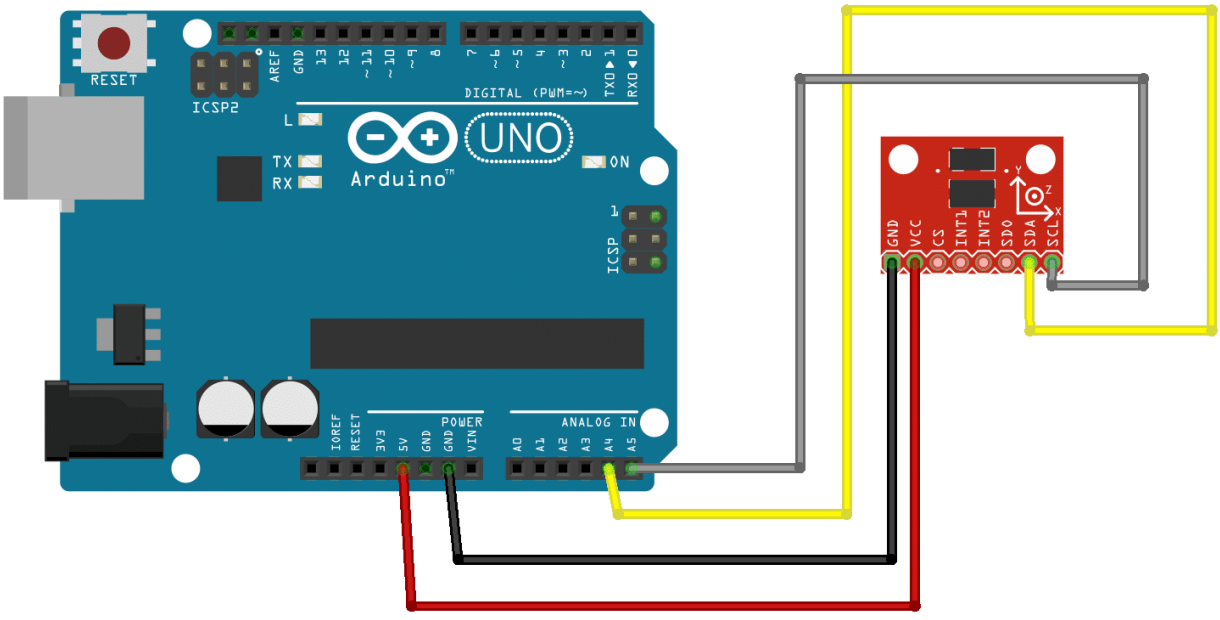
**Components Needed:**

- Accelerometer ADXL345 (GY-291)
- Arduino UNO
- Few Jumper Wires
- Breadboard

**Procedures:**

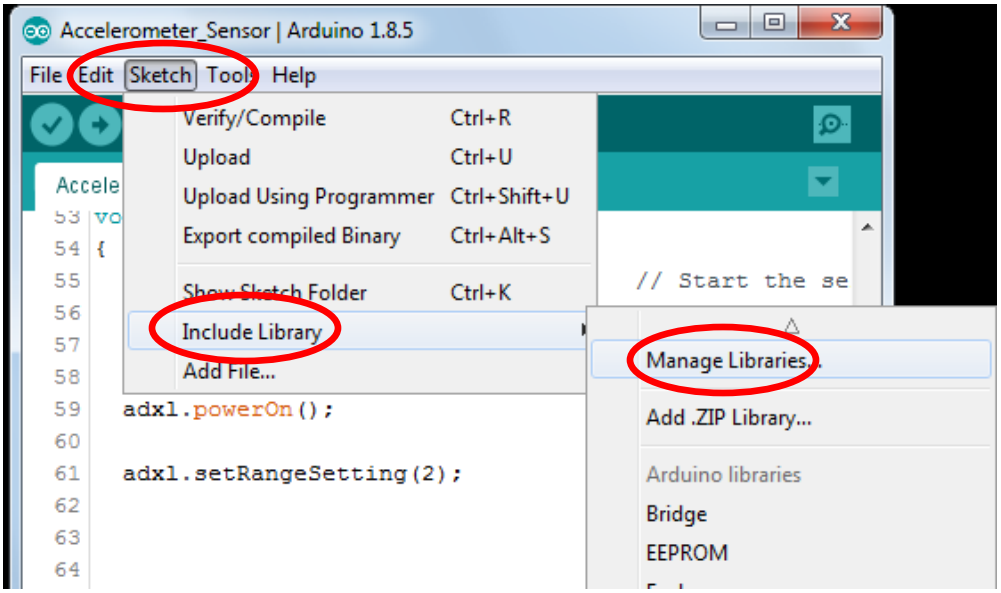
1) Connect the jumper based on the given picture and the table below.

| Terminal / Pin | |
|---|---|
| Arduino UNO | ADXL345 (GY-291) Sensor |
| 5V | VCC |
| GND | GND |
| A4 | SDA |
| A5 | SCL |

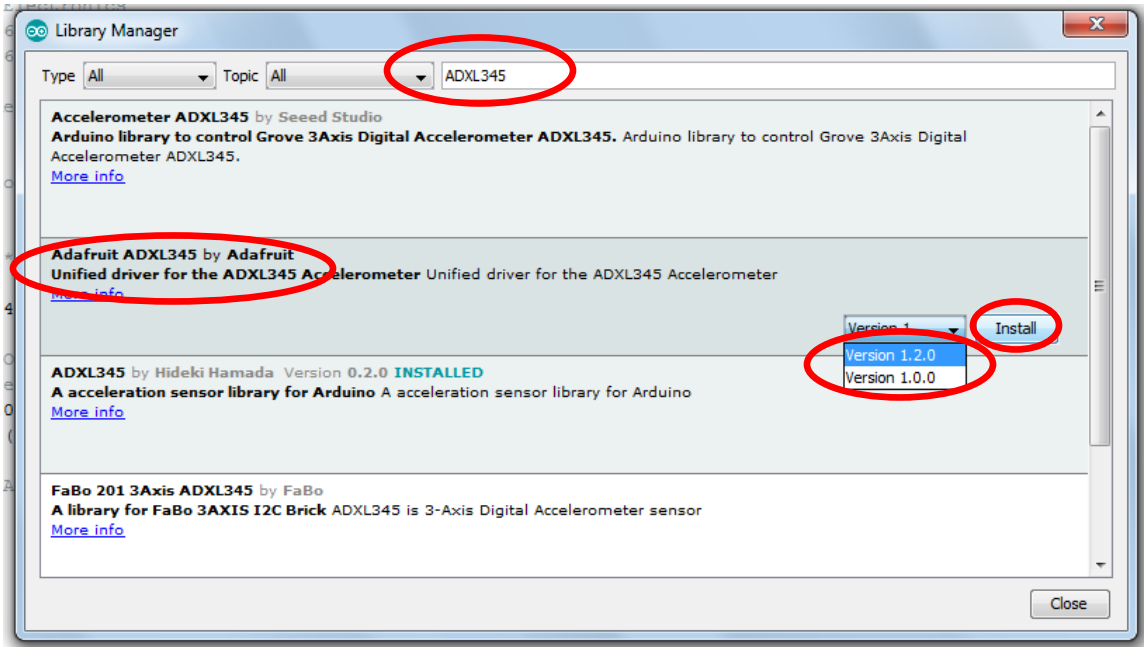



*Circuit connection for Arduino UNO*

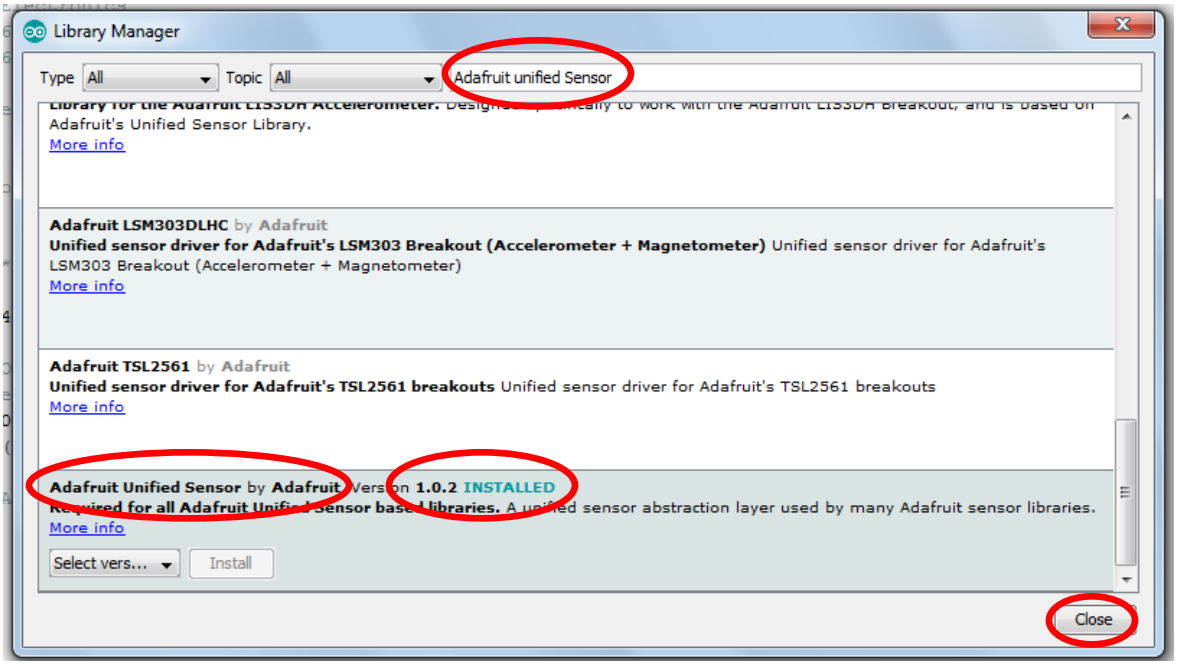
2) Download and install the needed Library from **Arduino IDE**. Open **the Library Manager** tab by following picture below.



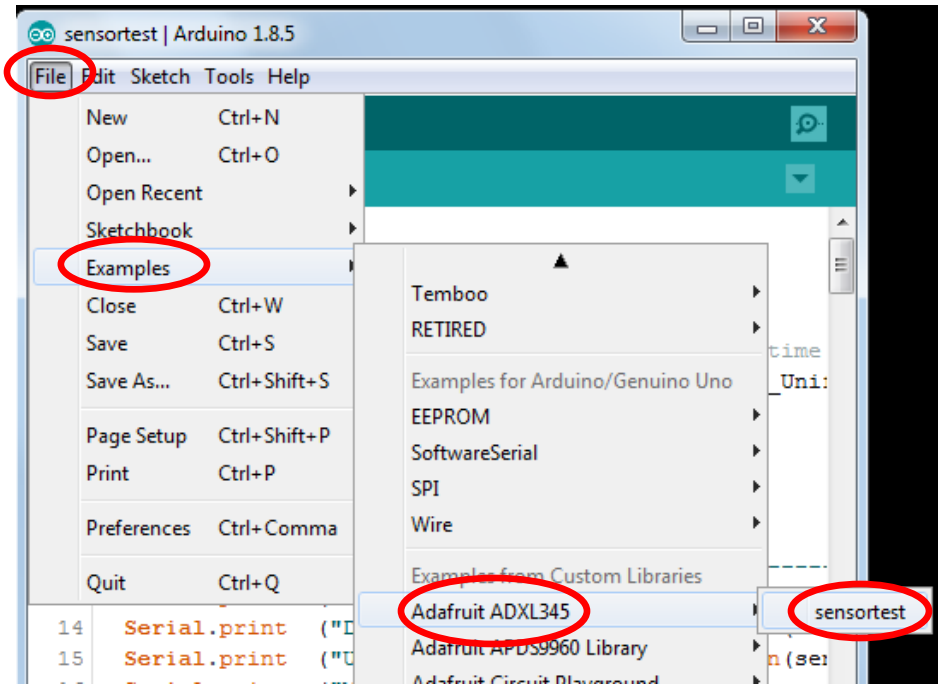

3) Search **for ADXL345** in search bar and it will show result. Select **Adafruit ADXL345 by Adafruit** with the latest version of library and click **Install**.



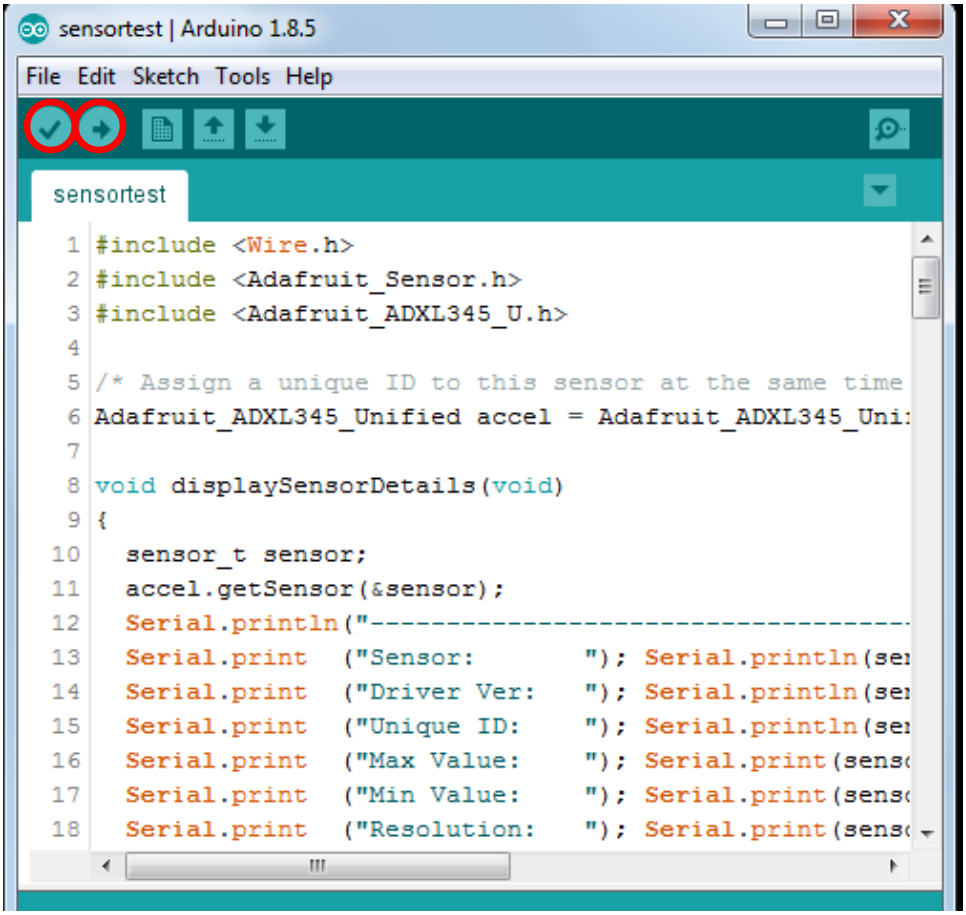
4) Repeat step 2 & 3 to install **Adafruit Unified Sensor Library**. Select **Adafruit Unified Sensor by Adfruit** and **Install** the lastest version. **Close** the **Library Manager**.



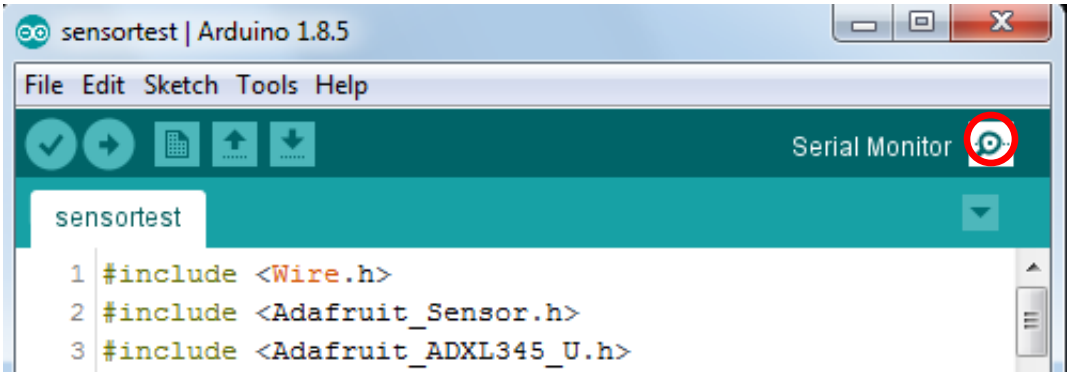

5) Still in Arduino IDE click on **File > Examples > Adafruit ADXL345 > sensortest** to open the program coding.



6) Connect the Arduino UNO to PC click on **Verify** and **Upload**.




7) Done! Open the **Serial Monitor** tab to see the result when changing the sensor position.



8) Result data showed in serial monitor tab based on sensor position.