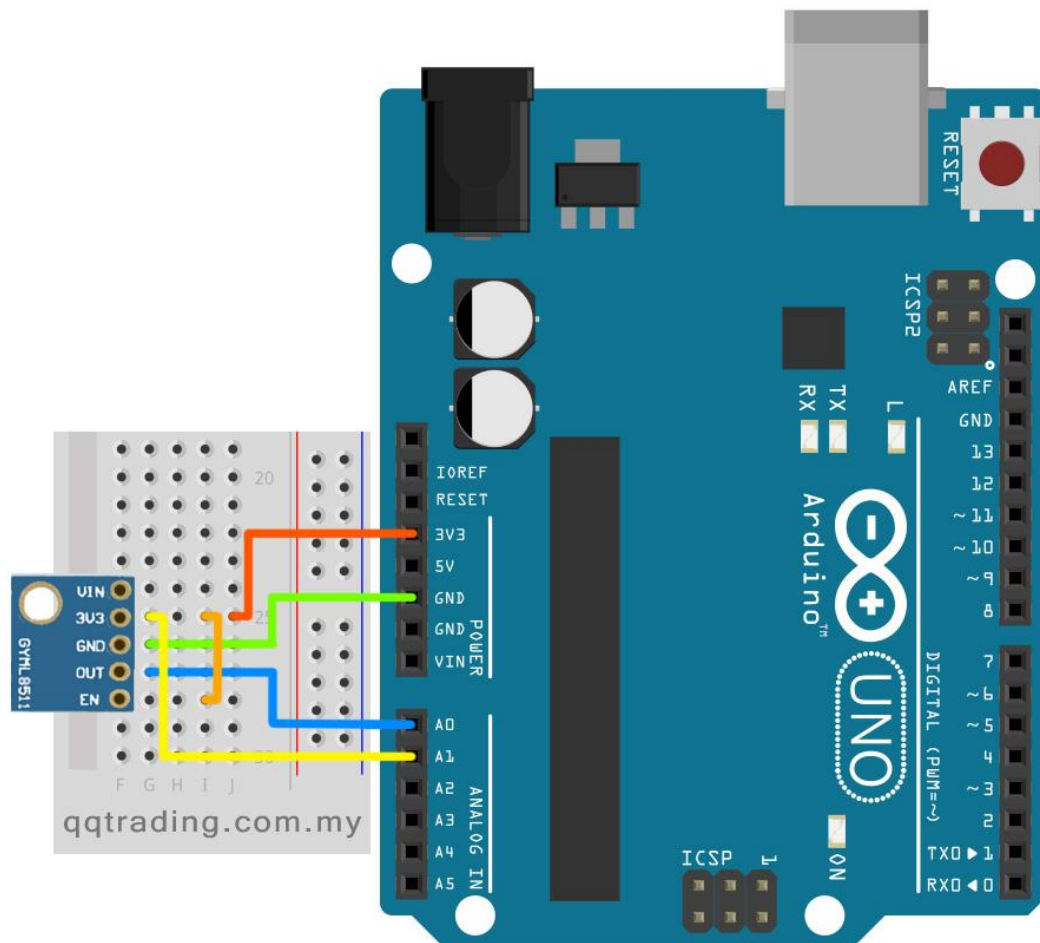## Connect to Arduino

Connect the following ML8511 breakout board to Arduino:

```
3.3V = 3.3V
OUT = A0
GND = GND
EN = 3.3V
3.3V = A1
```

These last two connections are a little different. Connect the EN pin on the breakout to 3.3V on the breakout.
This will enable the output. Also connect the 3.3V pin of the breakout to Arduino pin 1.

```
//Hardware pin definitions

int UVOUT = A0; //Output from the sensor

int REF_3V3 = A1; //3.3V power on the Arduino board


void setup()
```

```arduino
{
  Serial.begin(9600);

  pinMode(UVOUT, INPUT);
  pinMode(REF_3V3, INPUT);

  Serial.println("ML8511 example");
}

void loop()
{
  int uvLevel = averageAnalogRead(UVOUT);
  int refLevel = averageAnalogRead(REF_3V3);

  //Use the 3.3V power pin as a reference to get a very accurate output value from sensor
  float outputVoltage = 3.3 / refLevel * uvLevel;

  float uvIntensity = mapfloat(outputVoltage, 0.99, 2.8, 0.0, 15.0); //Convert the voltage to a UV intensity level

  Serial.print("output: ");
  Serial.print(refLevel);

  Serial.print("ML8511 output: ");
  Serial.print(uvLevel);

  Serial.print(" / ML8511 voltage: ");
  Serial.print(outputVoltage);

  Serial.print(" / UV Intensity (mW/cm^2): ");
  Serial.print(uvIntensity);

  Serial.println();

  delay(100);
}
```

```
//Takes an average of readings on a given pin
//Returns the average
int averageAnalogRead(int pinToRead)
{
  byte numberOfReadings = 8;
  unsigned int runningValue = 0;

  for(int x = 0 ; x < numberOfReadings ; x++)
    runningValue += analogRead(pinToRead);
  runningValue /= numberOfReadings;

  return(runningValue);
}


//The Arduino Map function but for floats
//From: http://forum.arduino.cc/index.php?topic=3922.0
float mapfloat(float x, float in_min, float in_max, float out_min, float out_max)
{
  return (x - in_min) * (out_max - out_min) / (in_max - in_min) + out_min;
}
```