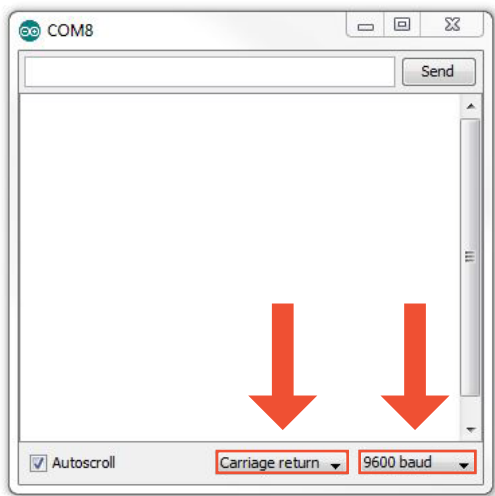




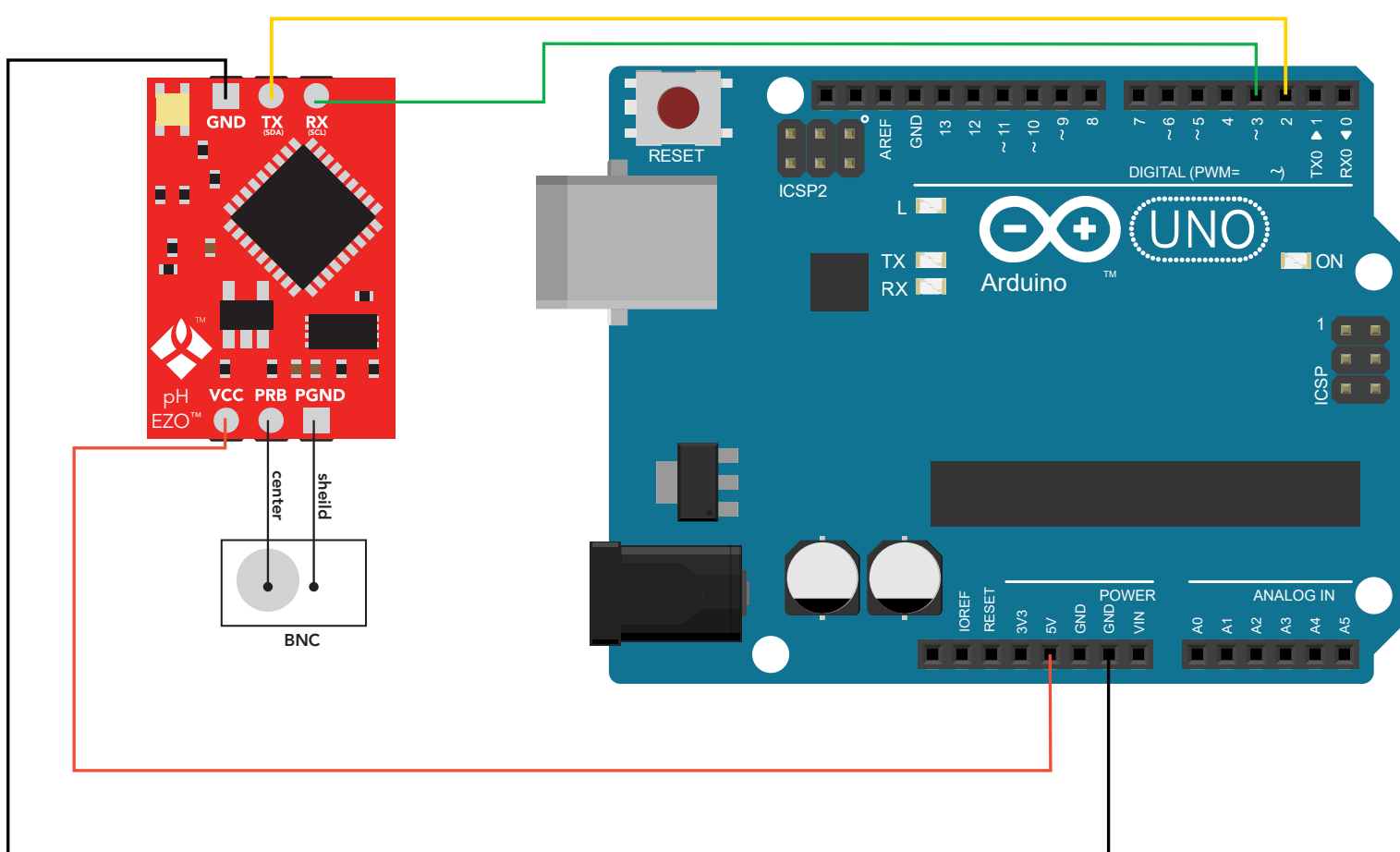
# Arduino Uno

## pH Sample Code

Revised 9/28/15



//This code was written to be easy to understand.  
 //Code efficiency was not considered.  
 //Modify this code as you see fit.  
 //This code will output data to the Arduino serial monitor.  
 //Type commands into the Arduino serial monitor to control the pH circuit.  
 //This code was written in the Arduino 1.6.5 IDE  
 //An Arduino UNO was used to test this code.



```
#include <SoftwareSerial.h>
#define rx 2
#define tx 3
```

//we have to include the SoftwareSerial library, or else we can't use it  
 //define what pin rx is going to be  
 //define what pin tx is going to be

```
SoftwareSerial myserial(rx, tx);
```

//define how the soft serial port is going to work

```
String inputstring = "";
String sensorstring = "";
boolean input_string_complete = false;
boolean sensor_string_complete = false;
float pH;
```

//a string to hold incoming data from the PC  
 //a string to hold the data from the Atlas Scientific product  
 //have we received all the data from the PC  
 //have we received all the data from the Atlas Scientific product  
 //used to hold a floating point number that is the pH

```
void setup() {
  Serial.begin(9600);
  myserial.begin(9600);
  inputstring.reserve(10);
  sensorstring.reserve(30);
}
```

//set up the hardware  
 //set baud rate for the hardware serial port\_0 to 9600  
 //set baud rate for the software serial port to 9600  
 //set aside some bytes for receiving data from the PC  
 //set aside some bytes for receiving data from Atlas Scientific product

```
void serialEvent() {
  inputstring = Serial.readStringUntil(13);
  input_string_complete = true;
}
```

//if the hardware serial port\_0 receives a char  
 //read the string until we see a <CR>  
 //set the flag used to tell if we have received a completed string from the PC

```
void loop() {
```

//here we go...

```
  if (input_string_complete){
    myserial.print(inputstring);
    myserial.print('\r');
    inputstring = "";
    input_string_complete = false;
  }
```

//if a string from the PC has been received in its entirety  
 //send that string to the Atlas Scientific product  
 //add a <CR> to the end of the string  
 //clear the string  
 //reset the flag used to tell if we have received a completed string from the PC

```
  if (myserial.available() > 0) {
    char inchar = (char)myserial.read();
    sensorstring += inchar;
    if (inchar == '\r') {
      sensor_string_complete = true;
    }
  }
```

//if we see that the Atlas Scientific product has sent a character  
 //get the char we just received  
 //add the char to the var called sensorstring  
 //if the incoming character is a <CR>  
 //set the flag

```
  if (sensor_string_complete == true) {
    Serial.println(sensorstring);
    if (isdigit(sensorstring[0])) {
      pH = sensorstring.toFloat();
      if (pH >= 7.0) {
        Serial.println("high");
      }
      if (pH <= 6.999) {
        Serial.println("low");
      }
    }
    sensorstring = "";
    sensor_string_complete = false;
  }
}
```

//if a string from the Atlas Scientific product has been received in its entirety  
 //send that string to the PC's serial monitor  
 //if the first character in the string is a digit  
 //convert the string to a floating point number so it can be evaluated by the Arduino  
 //if the pH is greater than or equal to 7.0  
 //print "high" this is demonstrating that the Arduino is evaluating the pH  
 //as a number and not as a string  
 //if the pH is less than or equal to 6.999  
 //print "low" this is demonstrating that the Arduino is evaluating the pH  
 //as a number and not as a string

//clear the string  
 //reset the flag used to tell if we have received a completed string from the  
 //Atlas Scientific product

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