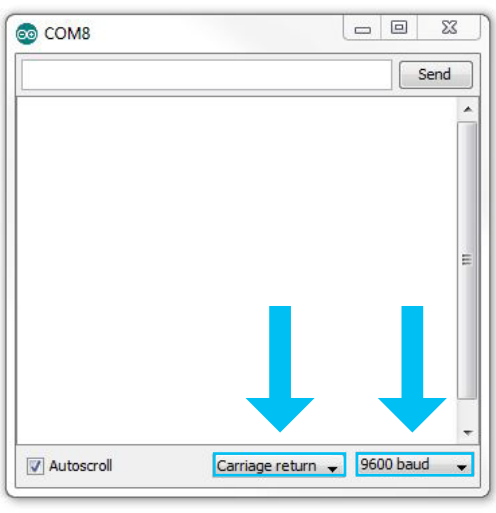
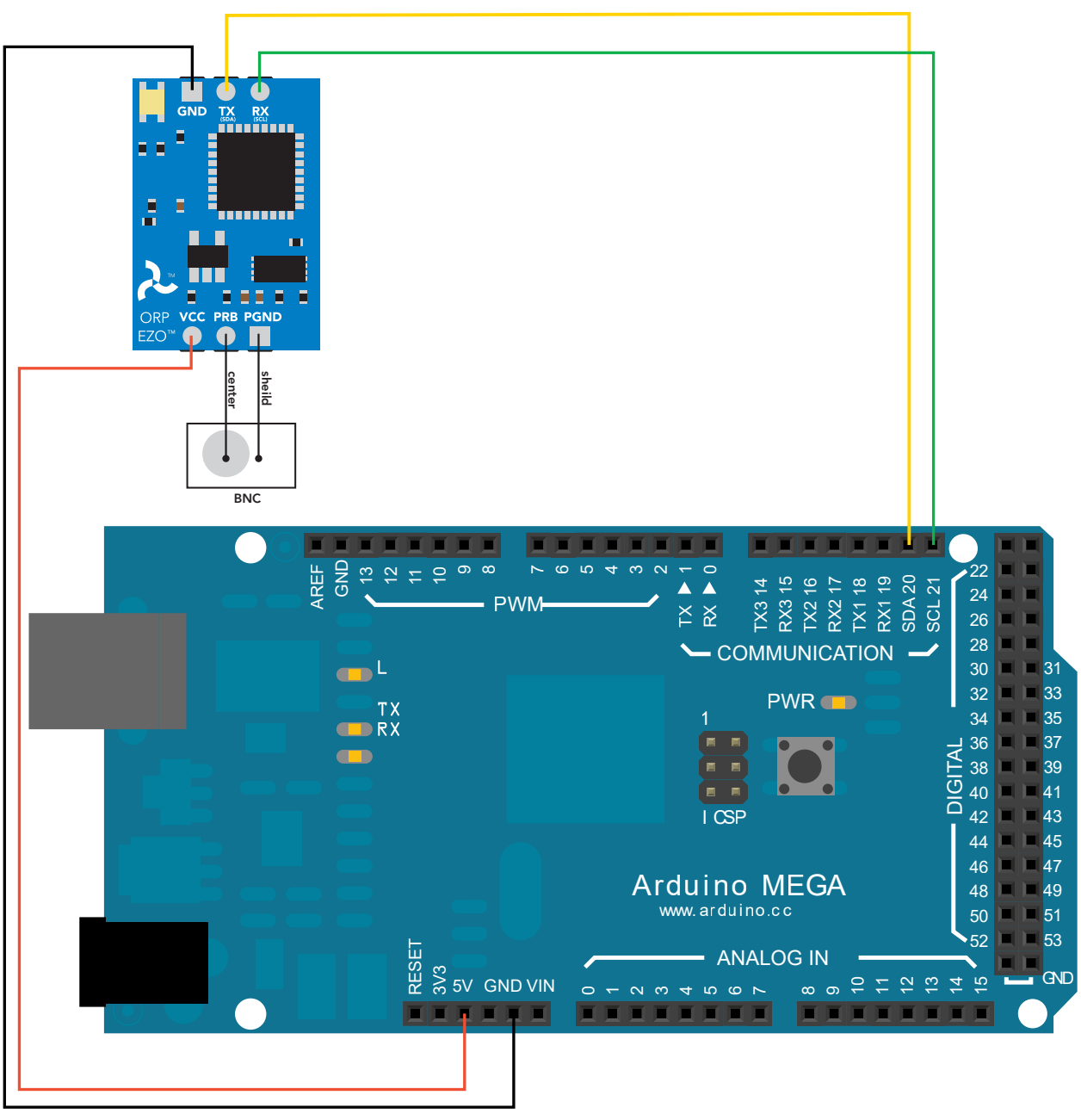
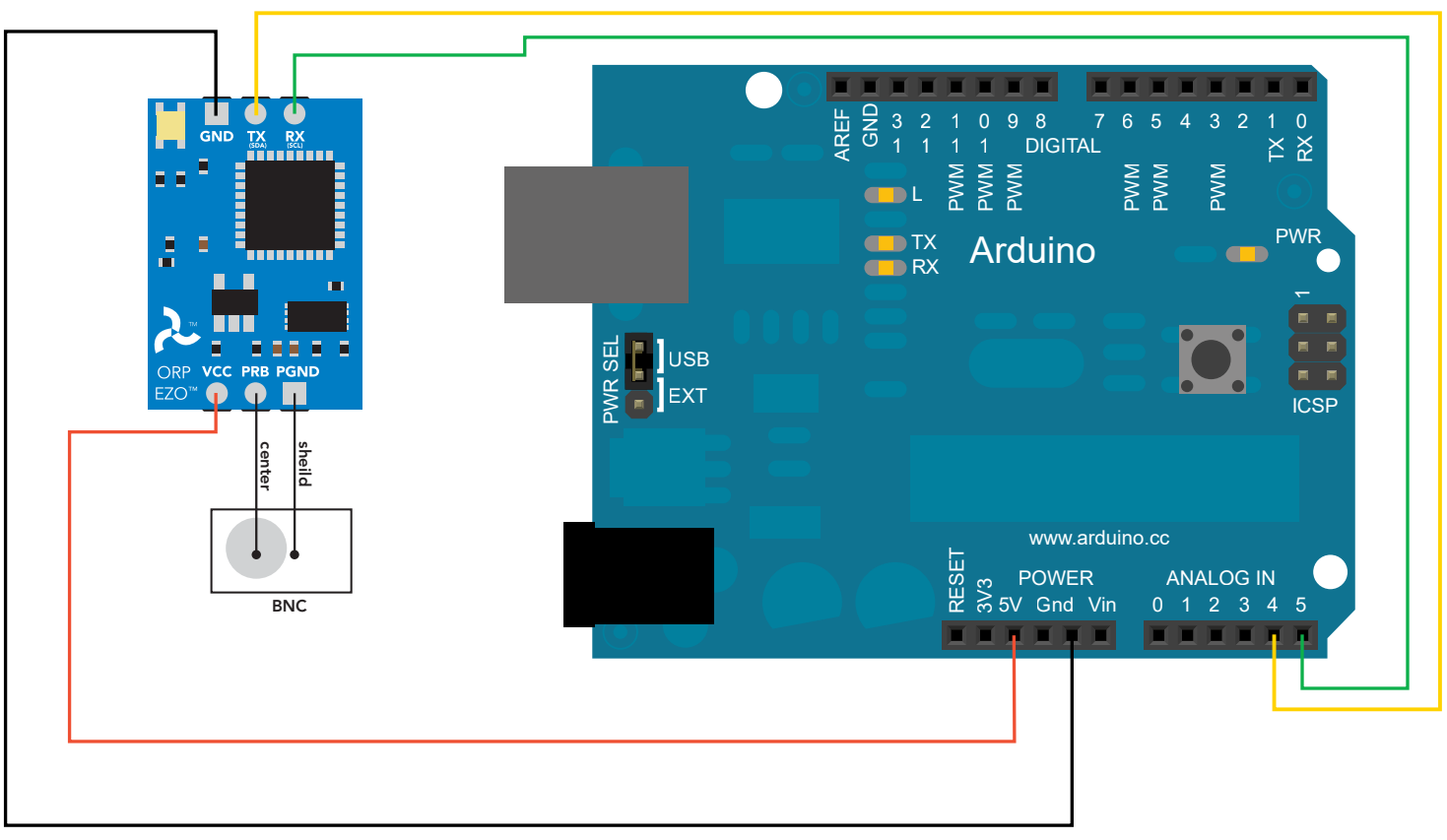
Atlas Scientific™
Environmental Robotics

I²C
ORP Sample Code
Revised 9/14/16








```
//**THIS CODE WILL WORK ON ANY ARDUINO**
//This code has intentionally has been written to be overly lengthy and includes unnecessary steps.
//Many parts of this code can be truncated. 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 EZO ORP Circuit in I²C mode.
//this code was last updated 9-14-2016


#include <Wire.h>                 //enable I²C.
#define address 98                //default I²C ID number for EZO ORP Circuit.


char computerdata[20];            //we make a 20 byte character array to hold incoming data from a pc/mac/other.
byte received_from_computer = 0;  //we need to know how many characters have been received.
byte code = 0;                    //used to hold the I2C response code.
char ORP_data[20];                //we make a 20 byte character array to hold incoming data from the ORP circuit.
byte in_char = 0;                 //used as a 1 byte buffer to store in bound bytes from the ORP Circuit.
byte i = 0;                       //counter used for ORP_data array.
int time_ = 1800;                 //used to change the delay needed depending on the command sent to the EZO Class ORP Circuit.
float ORP_float;                  //float var used to hold the float value of the ORP.


void setup()                      //hardware initialization.
{
  Serial.begin(9600);             //enable serial port.
  Wire.begin();                   //enable I²C port.
}


void loop() {                                                       //the main loop

 if (Serial.available() > 0) {                                      //if data is holding in the serial buffer
   received_from_computer = Serial.readBytesUntil(13, computerdata, 20);  //we read the data sent from the serial monitor
                                                                    //(pc/mac/other) until we see a <CR>.
                                                                    //We also count how many characters have been received.
   computerdata[received_from_computer] = 0;                        //stop the buffer from transmitting leftovers or garbage.
   computerdata[0] = tolower(computerdata[0]);                      //we make sure the first char in the string is lower case.
   if (computerdata[0] == 'c' || computerdata[0] == 'r')time_ = 1800;  //if a command has been sent to calibrate or take
                                                                    //a reading we wait 1800ms so that the circuit has time
                                                                    //to take the reading.
   else time_ = 300;                                                //if any other command has been sent we wait only 300ms.


   Wire.beginTransmission(address);       //call the circuit by its ID number.
   Wire.write(computerdata);              //transmit the command that was sent through the serial port.
   Wire.endTransmission();                //end the I²C data transmission.


   if (strcmp(computerdata, "sleep") != 0) {    //if the command that has been sent is NOT the sleep command, wait the correct
                                                //amount of time and request data.
                                                //if it is the sleep command, we do nothing. Issuing a sleep command and then
                                                //requesting data will wake the ORP circuit.


   delay(time_);                                //wait the correct amount of time for the circuit to complete its instruction.

   Wire.requestFrom(address, 20, 1);            //call the circuit and request 20 bytes (this may be more than we need)
   code = Wire.read();                          //the first byte is the response code, we read this separately.


   switch (code) {                              //switch case based on what the response code is.
     case 1:                                    //decimal 1.
       Serial.println("Success");               //means the command was successful.
       break;                                   //exits the switch case.

     case 2:                                    //decimal 2.
       Serial.println("Failed");                //means the command has failed.
       break;                                   //exits the switch case.

     case 254:                                  //decimal 254.
       Serial.println("Pending");               //means the command has not yet been finished calculating.
       break;                                   //exits the switch case.

     case 255:                                  //decimal 255.
       Serial.println("No Data");               //means there is no further data to send.
       break;                                   //exits the switch case.
   }


   while (Wire.available()) {                   //are there bytes to receive.
     in_char = Wire.read();                     //receive a byte.
     ORP_data[i] = in_char;                     //load this byte into our array.
     i += 1;                                    //incur the counter for the array element.
     if (in_char == 0) {                        //if we see that we have been sent a null command.
       i = 0;                                   //reset the counter i to 0.
       Wire.endTransmission();                  //end the I2C data transmission.
       break;                                   //exit the while loop.
     }
   }


   Serial.println(ORP_data);                    //print the data.
 }
}


//Uncomment this section if you want to take the ORP value and convert it into floating point number.

//ORP_float=atof(ORP_data);
}
```

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