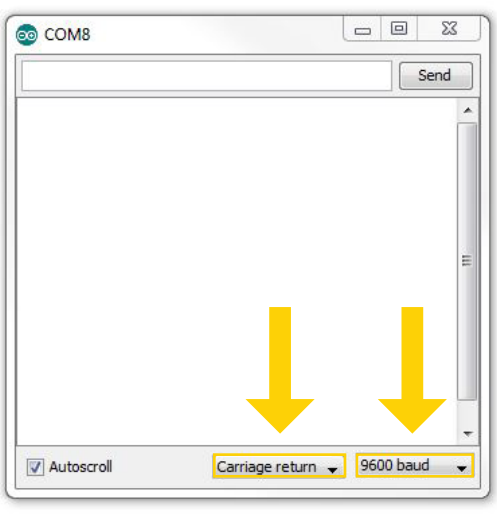
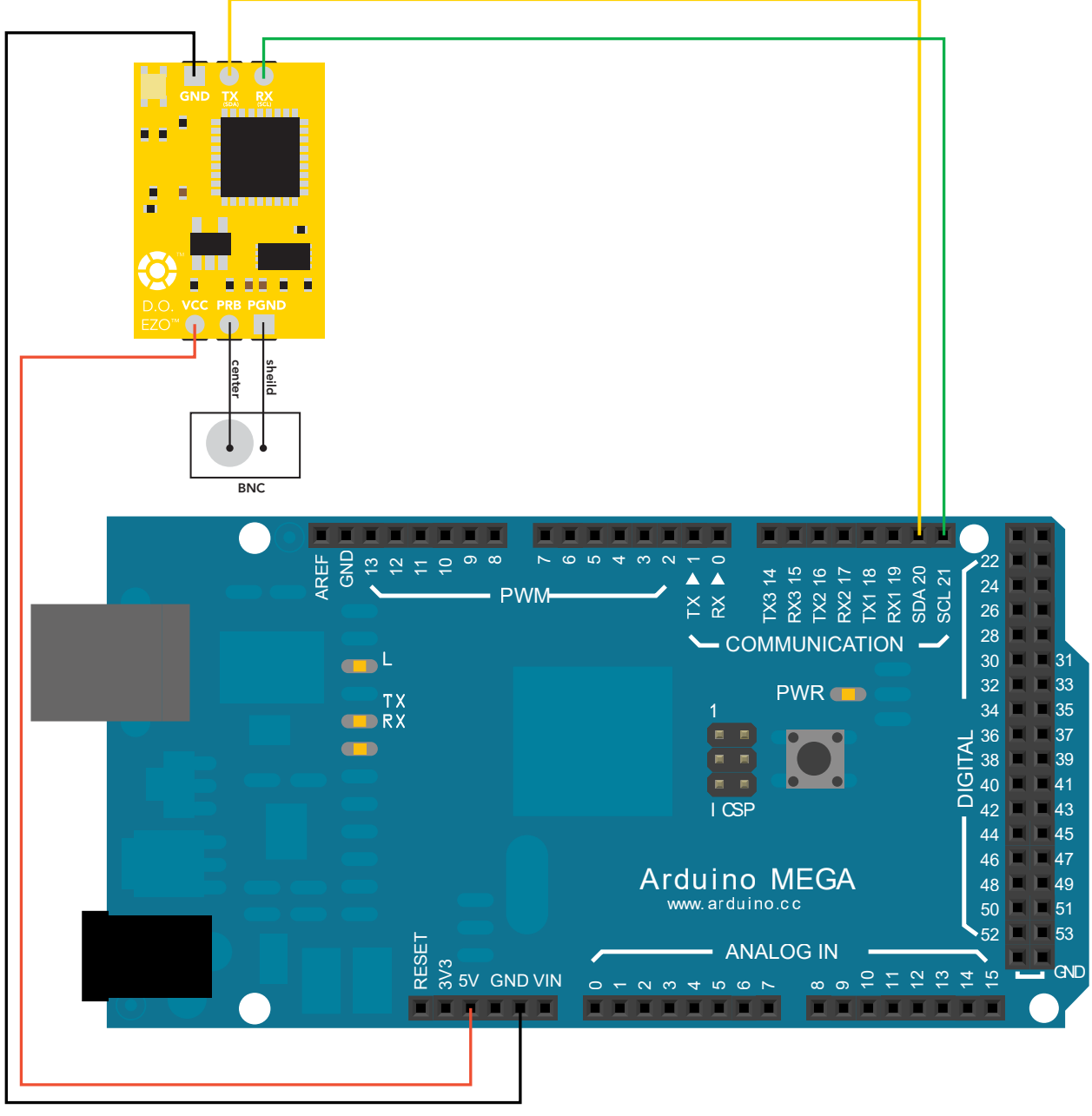
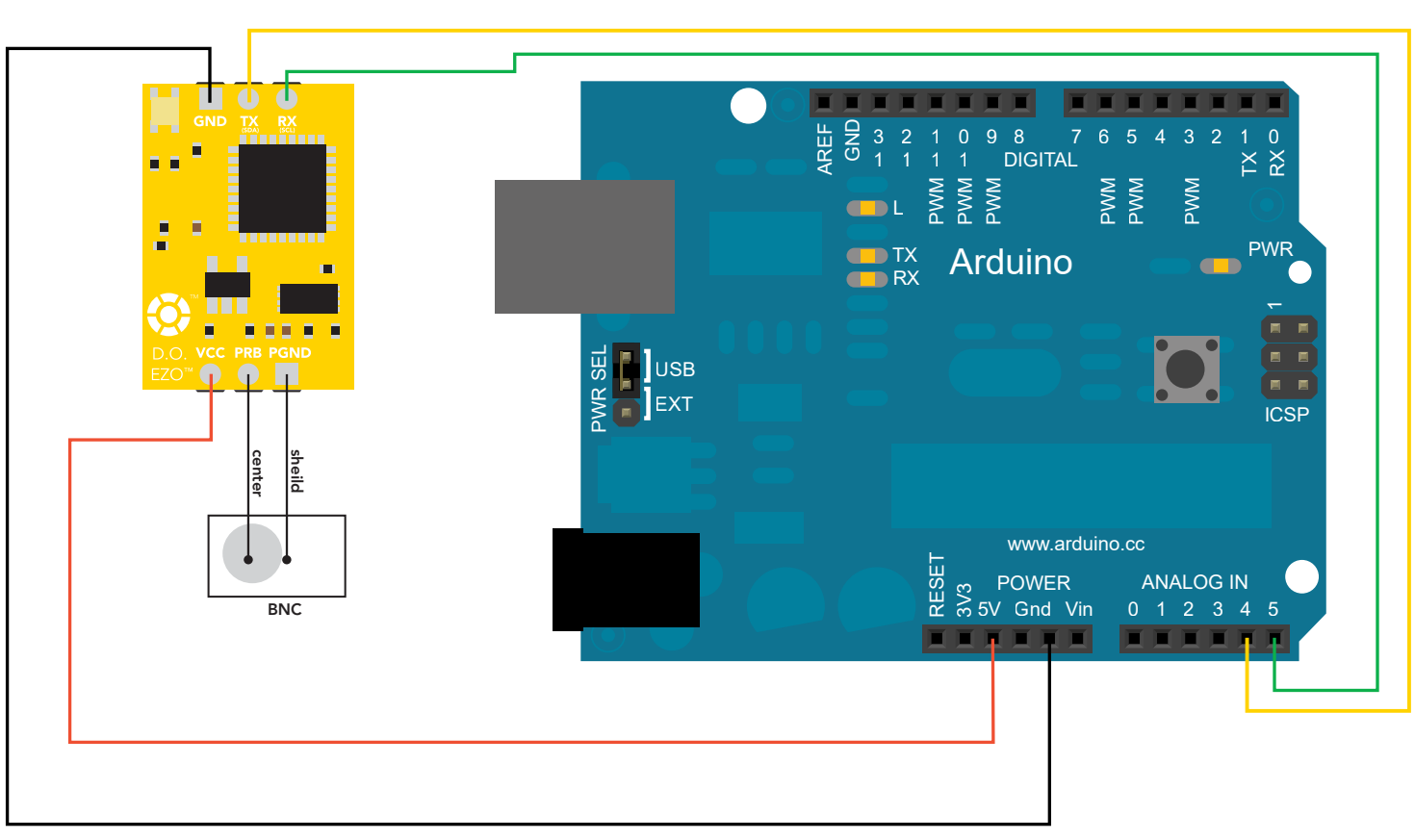
Atlas Scientific™
Environmental Robotics

I²C
Dissolved Oxygen Sample Code








```
//**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 D.O. Circuit in I2C mode.

#include <Wire.h>                 //enable I²C.
#define address 97                //default I²C ID number for EZO D.O. 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 serial_event=0;              //a flag to signal when data has been received from the pc/mac/other.
byte code=0;                      //used to hold the I2C response code.
char DO_data[20];                 //we make a 20 byte character array to hold incoming data from the D.O. circuit.
byte in_char=0;                   //used as a 1 byte buffer to store in bound bytes from the D.O. Circuit.
byte i=0;                         //counter used for DO_data array.
int time_=1800;                   //used to change the delay needed depending on the command sent to the EZO Class D.O. Circuit.
float DO_float;                   //float var used to hold the float value of the DO.
char *DO;                         //char pointer used in string parsing.
char *sat;                        //char pointer used in string parsing.
float do_float;                   //float var used to hold the float value of the dissolved oxygen.
float sat_float;                  //float var used to hold the float value of the saturation percentage.


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


void serialEvent(){                                                 //this interrupt will trigger when the data coming from
        received_from_computer=Serial.readBytesUntil(13,computerdata,20);   //the serial monitor(pc/mac/other) is received.
                                                                    //we read the data sent from the serial monitor
        computerdata[received_from_computer]=0;                     //(pc/mac/other) until we see a <CR>. We also count
        serial_event=1;                                             //how many characters have been received.
       }                                                            //stop the buffer from transmitting leftovers or garbage.


void loop(){                                                        //the main loop

 if(serial_event){                                                  //if the serial_event=1.
     if(computerdata[0]=='c'||computerdata[0]=='r')time_=1800;      //if a command has been sent to calibrate or take a reading
     else time_=300;                                                //we wait 1800ms so that the circuit has time to take the reading.
                                                                    //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.


  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.
   DO_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(DO_data);                  //print the data.
  serial_event=0;                           //reset the serial event flag.
  if(computerdata[0]=='r') string_pars();   //Uncomment this function if you would like to break up the comma separated string.
   }
}

  void string_pars(){                       //this function will break up the CSV string into its 2 individual parts, DO and %sat.
                                            //this is done using the C command “strtok”.

  sat=strtok(DO_data, ",");                 //let's pars the string at each comma.
  DO=strtok(NULL, ",");                     //let's pars the string at each comma.

  Serial.print("DO:");                      //We now print each value we parsed separately.
  Serial.println(DO);                       //this is the D.O. value.

  Serial.print("Sat:");                     //We now print each value we parsed separately.
  Serial.println(sat);                      //this is the % saturation value.

//Uncomment this section if you want to take the values and convert them into floating point number.
    /*
    DO_float=atof(DO);
    sat_float=atof(sat);
    */
  }
```

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