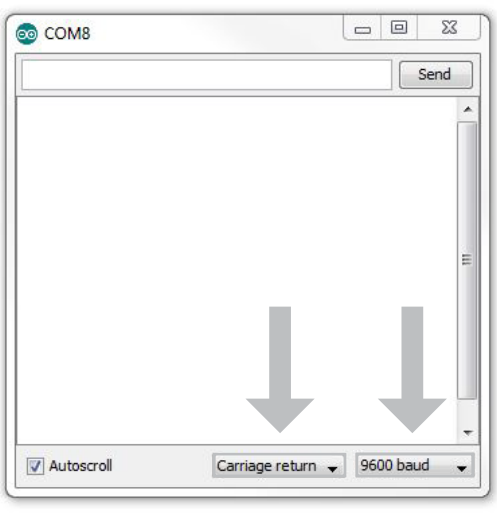
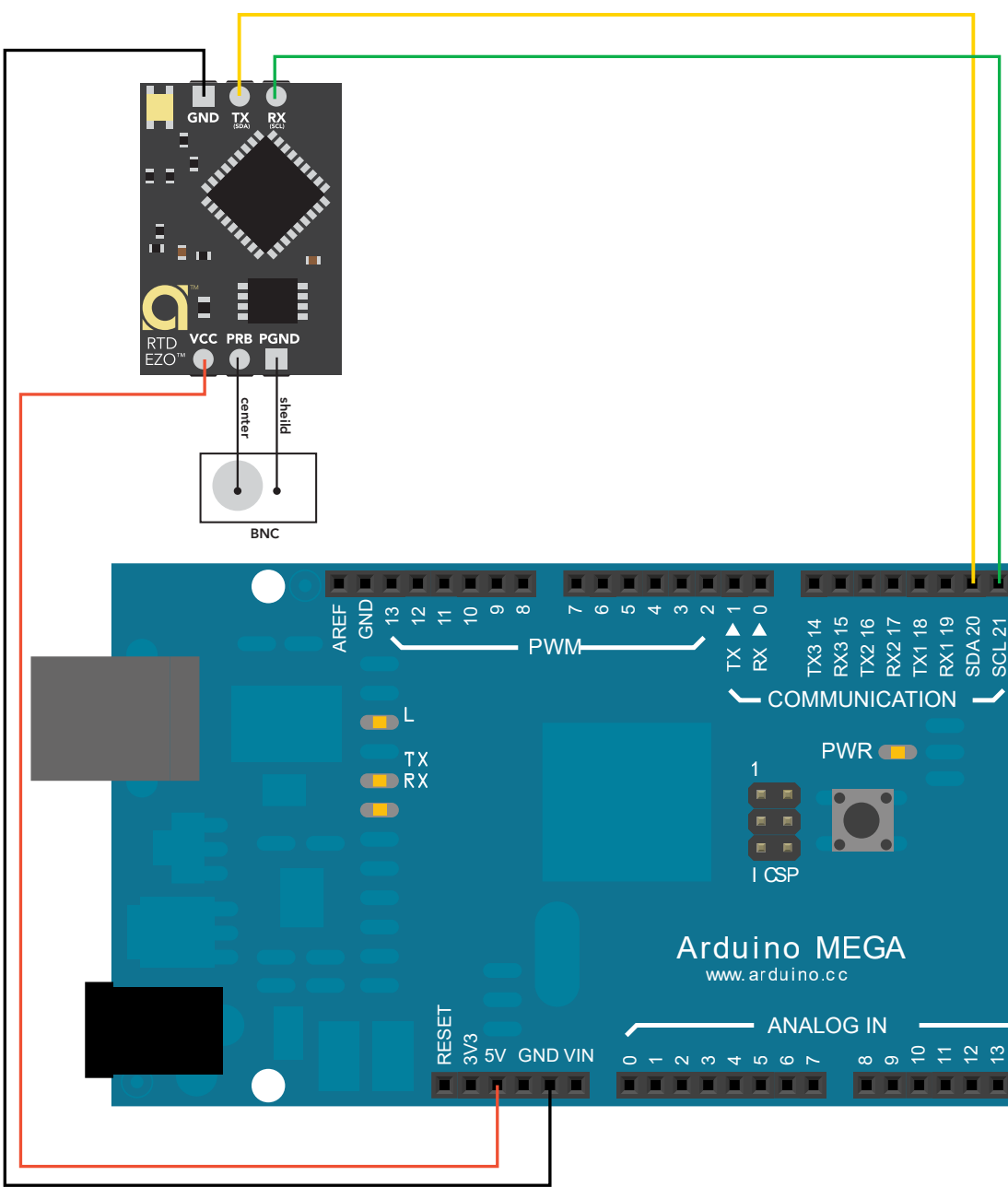
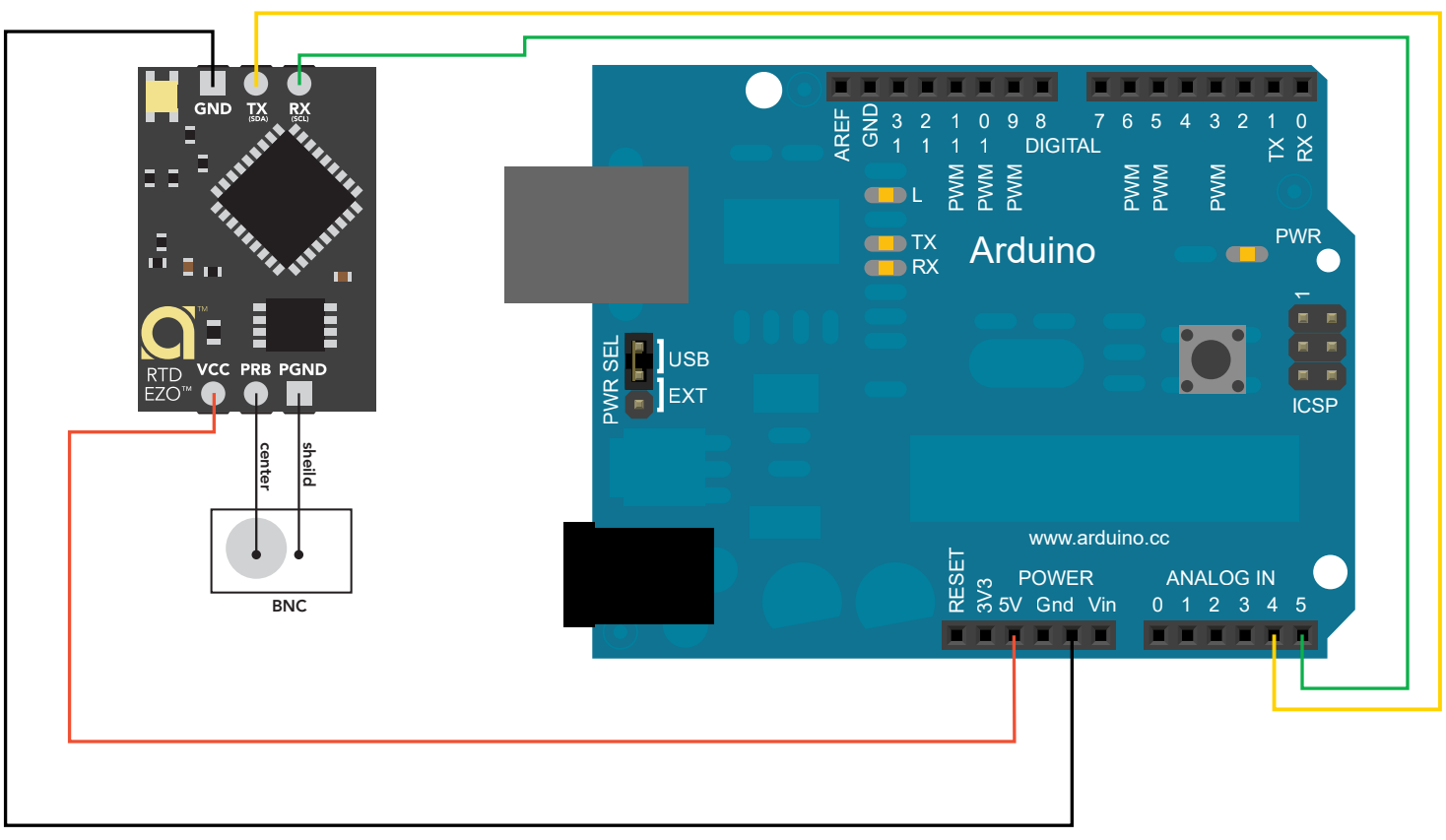
I²C
RTD Sample Code

Revised 7/25/16








```
//**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 RTD Circuit in I2C mode.


#include <Wire.h>                       //enable I²C.
#define address 102                     //default I²C ID number for EZO RTD 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 RTD_data[20];                      //we make a 20 byte character array to hold incoming data from the RTD circuit.
byte in_char=0;                         //used as a 1 byte buffer to store in bound bytes from the RTD Circuit.
byte i=0;                               //counter used for RTD_data array.
int time_=600;                          //used to change the delay needed depending on the command sent to the EZO Class RTD Circuit.
float tmp_float;                        //float var used to hold the float value of the RTD.


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.
          computerdata[received_from_computer]=0;                   //we read the data sent from the serial monitor
          serial_event=1;                                           //(pc/mac/other) until we see a <CR>. We also count
         }                                                          //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_=600;      //if a command has been sent to calibrate or take a reading
     else time_=300;                                                //we wait 600ms 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 is 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.
   RTD_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.
       Wire.endTransmission();                      //reset the counter i to 0.
       break;                                       //end the I²C data transmission.
       }                                            //exit the while loop.
    }


  Serial.println(ph_data);                          //print the data.
  serial_event=0;                                   //reset the serial event flag.
    }
}


//Uncomment this section if you want to take the pH value and convert it into floating point number.
//RTD_float=atof(RTD_data);
}
```

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