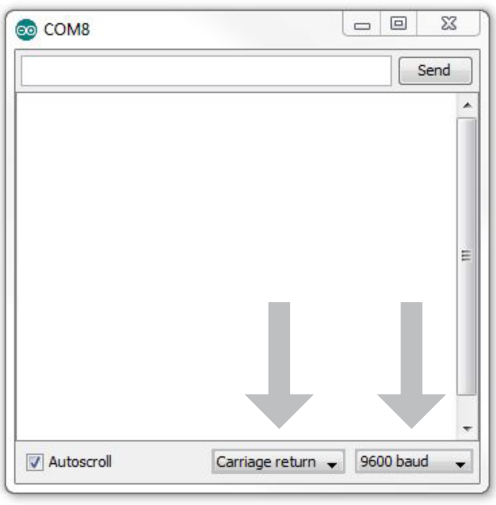
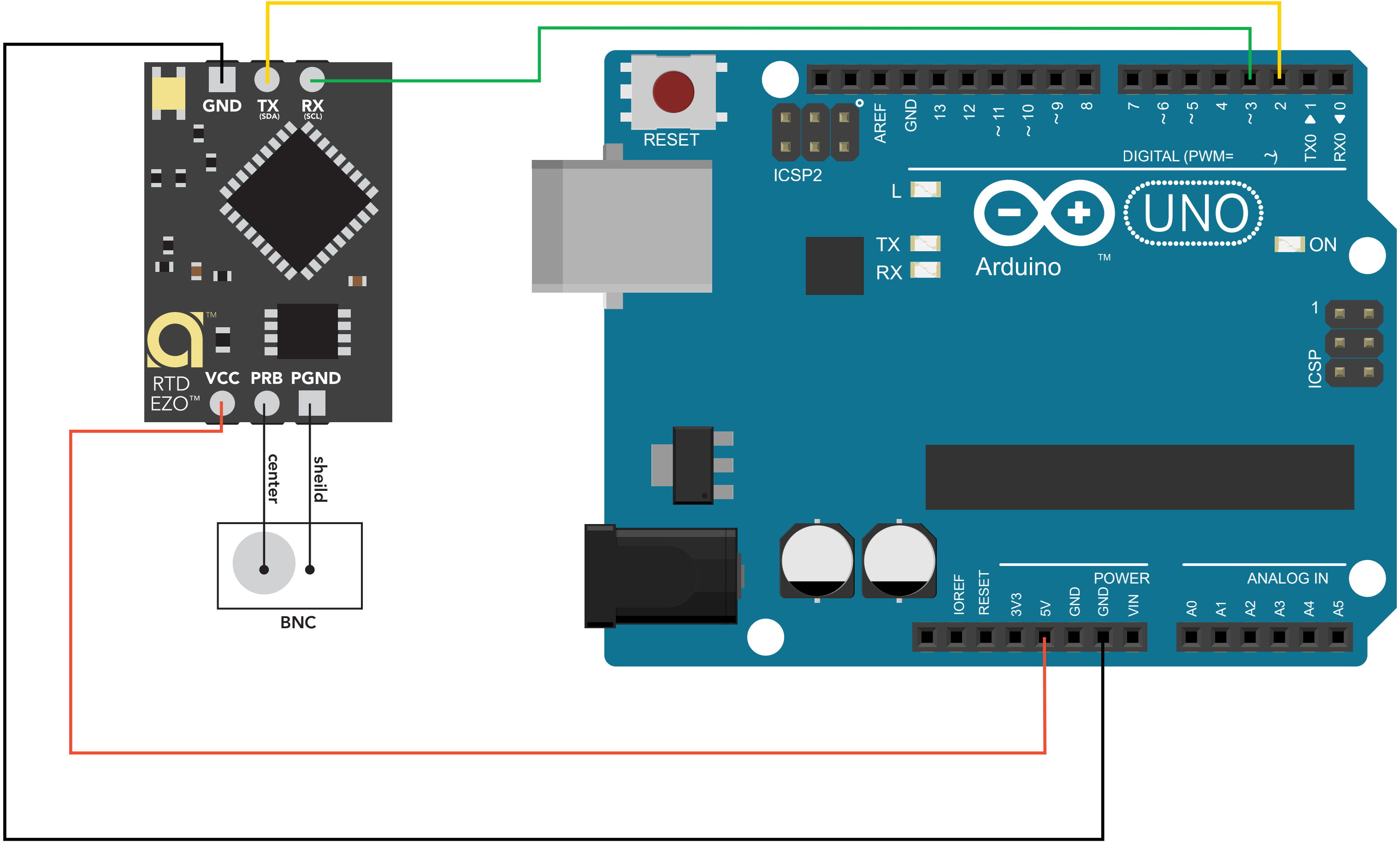
AtlasScientific™
Environmental Robotics

Arduino Uno
RTD Sample Code

Revised 3/31/16



//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 RTD temperature circuit.
//This code was written in the Arduino 1.6.7 IDE
//An Arduino UNO was used to test this code.



```
#include <SoftwareSerial.h>              //we have to include the SoftwareSerial library, or else we can't use it
#define rx 2                             //define what pin rx is going to be
#define tx 3                             //define what pin tx is going to be


SoftwareSerial myserial(rx, tx);         //define how the soft serial port is going to work


String inputstring = "";                 //a string to hold incoming data from the PC
String sensorstring = "";                //a string to hold the data from the Atlas Scientific product
boolean input_string_complete = false;   //have we received all the data from the PC
boolean sensor_string_complete = false;  //have we received all the data from the Atlas Scientific product
float temperature;                       //used to hold a floating point number that is the RTD temperature


void setup() {                           //set up the hardware
  Serial.begin(9600);                    //set baud rate for the hardware serial port_0 to 9600
  myserial.begin(9600);                  //set baud rate for the software serial port to 9600
  inputstring.reserve(10);               //set aside some bytes for receiving data from the PC
  sensorstring.reserve(30);              //set aside some bytes for receiving data from Atlas Scientific product
}


void serialEvent() {                     //if the hardware serial port_0 receives a char
  inputstring = Serial.readStringUntil(13); //read the string until we see a <CR>
  input_string_complete = true;          //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) {           //if a string from the PC has been received in its entirety
    myserial.print(inputstring);         //send that string to the Atlas Scientific product
    myserial.print('\r');                //add a <CR> to the end of the string
    inputstring = "";                    //clear the string
    input_string_complete = false;       //reset the flag used to tell if we have received a completed string from the PC
  }

  if (myserial.available() > 0) {        //if we see that the Atlas Scientific product has sent a character
    char inchar = (char)myserial.read(); //get the char we just received
    sensorstring += inchar;              //add the char to the var called sensorstring
    if (inchar == '\r') {                //if the incoming character is a <CR>
      sensor_string_complete = true;     //set the flag
    }
  }


  if (sensor_string_complete == true) {  //if a string from the Atlas Scientific product has been received in its entirety
    Serial.println(sensorstring);        //send that string to the PC's serial monitor
    if (isdigit(sensorstring[0])) {      //if the first character in the string is a digit
      temperature = sensorstring.toFloat(); //convert the string to a floating point number so it can be evaluated by the Arduino
      if (temperature >= 25.0) {         //if the RTD temperature is greater than or equal to 25 C
        Serial.println("high");          //print "high" this is demonstrating that the Arduino is evaluating the RTD temperature
      }                                  //as a number and not as a string
      if (temperature <= 24.999) {       //if the RTD temperature is less than or equal to 24.999 C
        Serial.println("low");           //print "low" this is demonstrating that the Arduino is evaluating the RTD temperature
      }                                  //as a number and not as a string
    }
    sensorstring = "";                   //clear the string
    sensor_string_complete = false;      //reset the flag used to tell if we have received a completed string from the
  }                                      //Atlas Scientific product
}
```

Click here to download the *.ino file

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