1 Thermistor Sketch

// Thermistor

float RT = 0; // Defines the variable RT (Resistance of the Thermistor).

float ADCin = 0;

float Vin = 0; // Defines the variable Vin (Voltage in). This is the measure of the voltage drop of the thermistor.

float T = 0;

float A = 48.8459;

float B = -28.0655;

float C = -1.15245;

float D = 0.165956;

int num = 0;

// LEDs

/\*

int LEDG = 13;

int LEDB = 12;

int LEDR = 11;

int LBG = 26;

int UBG = 38;

int LBB = 38;

int UBB = 100;

int LBR = -20;

int UBR = 26;

\*/

void setup() {

//Thermistor

Serial.begin(9600);

// LEDs

/\*

pinMode(LEDG, OUTPUT);

pinMode(LEDB, OUTPUT);

pinMode(LEDR, OUTPUT);

\*/

}

void loop() {

// Thermistor

ADCin = analogRead(A0);

Vin = ADC \* (4.88759) / 1000;

T = (A + (B \* Vin))/(1 + (C \* Vin) + (D \* Vin \* Vin));

// if(T >= 67.6){

// T = T- 0.50;

// }

// Serial.println("Voltage: ");

// Serial.print(Vin , 2);

// Serial.println(" V");

// Serial.println("Temperature:");

//num = num + 1;

//Serial.print(num);

//Serial.print(". ");

Serial.print(T, 3);

Serial.println(" C");

//Serial.print(Vin, 3);

//Serial.println();

// LEDs

/\*

if((T >= LBG)&&(T <= UBG)){

digitalWrite(LEDG, HIGH);

// GREEN

}

else{

digitalWrite(LEDG, LOW);

}

if((T >= LBB)&&(T <= UBB)){

digitalWrite(LEDB, HIGH);

// BLUE

}

else{

digitalWrite(LEDB, LOW);

}

if((T >= LBR)&&(T <= UBR)){

digitalWrite(LEDR, HIGH);

// RED

}

else{

digitalWrite(LEDR, LOW);

}

\*/

delay(3000);

}

1 Test Sketch

// Thermistor

float RT = 0; // Defines the variable RT (Resistance of the Thermistor).

float ADCin = 0;

float Vin = 0; // Defines the variable Vin (Voltage in). This is the measure of the voltage drop of the thermistor.

float T = 0;

float A = -32.3939991375;

float B = 28.347902;

float C = 0.41222751713;

float D = -0.081712910;

int num = 0;

// LEDs

/\*

int LEDG = 13;

int LEDB = 12;

int LEDR = 11;

int LBG = 26;

int UBG = 38;

int LBB = 38;

int UBB = 100;

int LBR = -20;

int UBR = 26;

\*/

void setup() {

//Thermistor

Serial.begin(9600);

// LEDs

/\*

pinMode(LEDG, OUTPUT);

pinMode(LEDB, OUTPUT);

pinMode(LEDR, OUTPUT);

\*/

}

void loop() {

// Thermistor

ADCin = analogRead(A0);

Vin = ADC \* (4.88759) / 1000;

RT = (-10\*Vin + 50)/(Vin);

T = (A + (B \* Vin))/(1 + (C \* Vin) + (D \* Vin \* Vin));

// if(T >= 67.6){

// T = T- 0.50;

// }

// Serial.println("Voltage: ");

// Serial.print(Vin , 2);

// Serial.println(" V");

// Serial.println("Temperature:");

num = num + 1;

Serial.print(num);

Serial.print(". ");

Serial.print(RT, 3);

Serial.print(" (");

Serial.print(T, 3);

Serial.print(")");

// Serial.println(" C");

Serial.println();

// LEDs

/\*

if((T >= LBG)&&(T <= UBG)){

digitalWrite(LEDG, HIGH);

// GREEN

}

else{

digitalWrite(LEDG, LOW);

}

if((T >= LBB)&&(T <= UBB)){

digitalWrite(LEDB, HIGH);

// BLUE

}

else{

digitalWrite(LEDB, LOW);

}

if((T >= LBR)&&(T <= UBR)){

digitalWrite(LEDR, HIGH);

// RED

}

else{

digitalWrite(LEDR, LOW);

}

\*/

delay(500);

}

2 Physics IA

float RT = 0;

float ADCin = 0;

float Vin = 0;

void setup() {

Serial.begin(9600);

}

void loop(){

ADCin = analogRead(A0);

Vin = ADCin \* (4.8828125) / 1000;

RT = 10000 \* ((5 / Vin)-1);

Serial.print("Resistance: ");

Serial.println(RT);

delay(1000);

}

2 Test Sketch

String b;

int i = 1;

int d[] = {1,2};

void setup() {

Serial.begin(9600);

}

void loop() {

if(Serial.available()>0){

b = Serial.readStringUntil('\n');

d[i] = b.toInt();

Serial.println(b);

Serial.println(d[i]);

Serial.println(d[i-1]);

Serial.println();

i = i+1;

}

}

2 Thermistor Calibration

float RT = 0;

float ADCin = 0;

float Vin = 0;

float T = 0;

float Temp;

String Test;

int i;

void setup() {

Serial.begin(9600);

pinMode(LED\_BUILTIN, OUTPUT);

}

void loop() {

if(Serial.available()>0){

Test = Serial.readStringUntil('\n');

}

// ADCin = analogRead(A0);

/\*

Vin = ADC \* (4.8828125) / 1000;

if(ADCin <= 295){

T =(-49.7328064450553 + (43.1510394046435 \* Vin))/(1 + (0.954418439082258 \* Vin) + (-0.174595020411036 \* Vin \* Vin));

}

else if(ADCin <= 324 && ADCin > 295){

T = 21.46047 \* cos(Vin + 0.256053896195902)-10.660461019 \* cos(2 \* Vin + 0.256053896195902) + 14.1012466538833 \* cos(3 \* Vin + 0.256053896195902);

}

else if(ADCin <= 745 && ADCin > 323){

T =(-42.6963171924986 + (36.5940244804046 \* Vin))/(1 + (0.683748227334955 \* Vin) + (-0.125430999466402 \* Vin \* Vin));

}

else if(ADCin > 745){

T = 17.6160483183193 \* pow(1+(0.936569306451955\*Vin)/-5.48188770902923, -1/0.936569306451955);

}

Serial.println("Voltage: ");

Serial.print(Vin , 2);

Serial.println(" V");

Serial.println("Temperature:");

Serial.print(T, 2);

Serial.println(" C");

Serial.println();

delay(500);

\*/

}

Detector Building

3 Sketch for ADC Device

int analogPin = 0;

float reading = 0;

float tempC;

float Vreading;

int tempPin = 0;

#include <Wire.h>

int tim = 350; //the value of delay time

void setup()

{

analogReference(INTERNAL);

Serial.begin(9600);

}

void loop()

{

while(Serial.available() > 0){

reading = analogRead(tempPin);

tempC = reading / (10.0 / (1100 / 1023))+1.44984127;

// Serial.print(reading);

// Serial.println(" ADC reading");

// Vreading = reading\*(4.8875855);

// Serial.print(Vreading/1000);

// Serial.println(" V reading");

Serial.print(tempC);

Serial.println();

delay(1000);

}

}

3 Thermistor – My Version

// Thermistor

float RT = 0; // Defines the variable RT (Resistance of the Thermistor).

float ADCin = 0;

float Vin = 0; // Defines the variable Vin (Voltage in). This is the measure of the voltage drop of the thermistor.

float T = 0;

float A = -32.3939991375;

float B = 28.347902;

float C = 0.41222751713;

float D = -0.081712910;

int num = 0;

// LEDs

/\*

int LEDG = 13;

int LEDB = 12;

int LEDR = 11;

int LBG = 26;

int UBG = 38;

int LBB = 38;

int UBB = 100;

int LBR = -20;

int UBR = 26;

\*/

void setup() {

//Thermistor

Serial.begin(9600);

// LEDs

/\*

pinMode(LEDG, OUTPUT);

pinMode(LEDB, OUTPUT);

pinMode(LEDR, OUTPUT);

\*/

}

void loop() {

// Thermistor

ADCin = analogRead(A0);

Vin = ADC \* (4.88759) / 1000;

T = (A + (B \* Vin))/(1 + (C \* Vin) + (D \* Vin \* Vin));

// if(T >= 67.6){

// T = T- 0.50;

// }

// Serial.println("Voltage: ");

// Serial.print(Vin , 2);

// Serial.println(" V");

// Serial.println("Temperature:");

//num = num + 1;

//Serial.print(num);

//Serial.print(". ");

//Serial.print(T, 3);

// Serial.println(" C");

Serial.print(Vin, 3);

Serial.println();

// LEDs

/\*

if((T >= LBG)&&(T <= UBG)){

digitalWrite(LEDG, HIGH);

// GREEN

}

else{

digitalWrite(LEDG, LOW);

}

if((T >= LBB)&&(T <= UBB)){

digitalWrite(LEDB, HIGH);

// BLUE

}

else{

digitalWrite(LEDB, LOW);

}

if((T >= LBR)&&(T <= UBR)){

digitalWrite(LEDR, HIGH);

// RED

}

else{

digitalWrite(LEDR, LOW);

}

\*/

delay(3000);

}

3 Thermistor – Less Current version

int ThermistorPin = 0;

int Vo;

float R1 = 10000;

float logR2, R2, T, Tc, Tf;

float c1 = 1.009249522e-03, c2 = 2.378405444e-04, c3 = 2.019202697e-07;

void setup() {

Serial.begin(9600);

}

void loop() {

Vo = analogRead(ThermistorPin);

R2 = R1 \* (1023.0 / (float)Vo - 1.0);

logR2 = log(R2);

T = (1.0 / (c1 + c2\*logR2 + c3\*logR2\*logR2\*logR2));

Tc = T - 273.15;

Tf = (Tc \* 9.0)/ 5.0 + 32.0;

Serial.print("Temperature: ");

Serial.print(Tf);

Serial.print(" F; ");

Serial.print(Tc);

Serial.println(" C");

Serial.println(R2);

delay(500);

}

3 Thermistor – Most Current Version

int ThermistorPin = 0;

int Vo;

float R1 = 10000;

float logR2, R2, T, Tc, Tf;

float c1 = 1.009249522e-03, c2 = 2.378405444e-04, c3 = 2.019202697e-07;

void setup() {

Serial.begin(9600);

}

void loop() {

Vo = analogRead(ThermistorPin);

R2 = R1 \* (1023.0 / (float)Vo - 1.0);

logR2 = log(R2);

T = (1.0 / (c1 + c2\*logR2 + c3\*logR2\*logR2\*logR2));

Tc = T - 273.15;

Tf = (Tc \* 9.0)/ 5.0 + 32.0;

Serial.print("Temperature: ");

Serial.print(Tf);

Serial.print(" F; ");

Serial.print(Tc);

Serial.println(" C");

delay(500);

}

4 LEDs

int LEDG = 13;

int LEDB = 12;

int LEDR = 11;

int x = 0;

int LBG = 15;

int UBG = 55;

int LBB = 50;

int UBB = 75;

int LBR = 0;

int UBR = 20;

void setup() {

pinMode(LEDG, OUTPUT);

pinMode(LEDB, OUTPUT);

pinMode(LEDR, OUTPUT);

}

void loop() {

if((x >= LBG)&&(x <= UBG)){

digitalWrite(LEDG, HIGH);

// GREEN

}

else{

digitalWrite(LEDG, LOW);

}

if((x >= LBB)&&(x <= UBB)){

digitalWrite(LEDB, HIGH);

// BLUE

}

else{

digitalWrite(LEDB, LOW);

}

if((x >= LBR)&&(x <= UBR)){

digitalWrite(LEDR, HIGH);

// RED

}

else{

digitalWrite(LEDR, LOW);

}

delay(300);

}

4 TM35

int analogPin = 0;

int reading = 0;

float tempC;

int tempPin = 0;

#include <Wire.h>

// #include <LiquidCrystal\_I2C.h>

int tim = 350; //the value of delay time

// LiquidCrystal\_I2C lcd(0x3f, 16, 2); // set the LCD address to 0x27 for a 16 chars and 2 line display

void setup()

{

// lcd.init(); //initialize the lcd

// lcd.backlight(); //open the backlight

analogReference(INTERNAL);

Serial.begin(9600);

}

void loop()

{

reading = analogRead(tempPin);

tempC = reading / (10.0 / (1100 / 1024))+1;

// Serial.print(tempC);

// Serial.println("C ");

Serial.print(reading);

Serial.println(" ADC reading");

// lcd.setCursor(0, 0);

// lcd.print(tempC);

// lcd.print("C");

delay(1500);

}

4 TM35 v2

int analogPin=0;

int reading=0;

float tempC;

float tF;

//int reading;

int tempPin = 0;

//int tF=0;

// include the library code

#include <Wire.h>

// #include <LiquidCrystal\_I2C.h>

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

char array1[]=" SunFounder "; //the string to print on the LCD

char array2[]="hello, world! "; //the string to print on the LCD

int tim = 350; //the value of delay time

// initialize the library with the numbers of the interface pins

// LiquidCrystal\_I2C lcd(0x3f,16,2); // set the LCD address to 0x27 for a 16 chars and 2 line display

//\*\*\*\*\*

void setup()

{

// lcd.init(); //initialize the lcd

// lcd.backlight(); //open the backlight

analogReference(INTERNAL);

Serial.begin(9600);

}

void loop()

{

reading = analogRead(tempPin);

tempC=reading/(10.0/(1100/1024));

tF=tempC\*9/5+32;

//Serial.println(" C");

Serial.print(tempC); Serial.print("C");

Serial.print(" Fahrenheit= ") ;

Serial.println(tF);

//Serial.println(" C");

// lcd.print(tempC); //Serial.print("C");

// lcd.print("Fahrenheit= ") ;

// lcd.println(tF);

Serial.print("Analog reading= ") ;

Serial.println(reading);

//Serial.println(" C");

delay(500);

// lcd.setCursor(15,0); // set the cursor to column 15, line 0

// for (int positionCounter1 = 0; positionCounter1 < 26; positionCounter1++)

// {

// lcd.scrollDisplayLeft(); //Scrolls the contents of the display one space to the left.

// lcd.print(array1[positionCounter1]); // Print a message to the LCD.

// delay(tim); //wait for 250 microseconds

// }

// lcd.clear(); //Clears the LCD screen and positions the cursor in the upper-left corner.

// lcd.setCursor(15,1); // set the cursor to column 15, line 1

// for (int positionCounter = 0; positionCounter < 26; positionCounter++)

// {

// lcd.scrollDisplayLeft(); //Scrolls the contents of the display one space to the left.

// lcd.print(array2[positionCounter]); // Print a message to the LCD.

// delay(tim); //wait for 250 microseconds

}

// lcd.clear(); //Clears the LCD screen and positions the cursor in the upper-left corner.

//}

5 Temperature Sensor

float tempC;

int reading;

int tempPin = 0;

void setup()

{

analogReference(INTERNAL);

Serial.begin(9600);

}

void loop()

{

reading = analogRead(tempPin);

tempC=reading/(10.0/(1100/1024));

Serial.println("Celsius ");

Serial.println(tempC);

delay(1000);

}

5 Temperature Sensor v2

float tempC;

int reading;

int tempPin = 0;

void setup()

{

analogReference(INTERNAL);

Serial.begin(9600);

}

void loop()

{

reading = analogRead(tempPin);

tempC=reading/(10.0/(1100/1024));

Serial.println("Celsius ");

Serial.println(tempC);

delay(500);

}