(SE017)Digital Temperature Sensor

1. Introduction

This module has both analog signal output pin and digital signal output pin, which is different from analog temperature sensor(module33) and other temperature sensor module. A thermistor is a type of resistor whose resistance is dependent on temperature, more so than in standard resistors. The word is a portmanteau of thermal and resistor. Thermistors are widely used as inrush current limiter, temperature sensors (NTC type typically), self-resetting overcurrent protectors, and self-regulating heating elements.

The Module's feature as below:

Feature	Value
Model No.	NTC-MF52 3950
Temperature Range	-55℃~+125℃
Accuracy	+/- 0.5℃

2.Pinout

Pin	Description
A0	Analog signal output pin
D0	Digital signal output pin
G	Gnd
"+"	Vcc(reference voltage:5V DC)

Temperature convert Formula

Here we use Steinhart–Hart equation to calculate the corresponding temperature. The equation is

$$\frac{1}{T} = A + B\ln(R) + C[\ln(R)]^3,$$

where:

T is the temperature (in Kelvins)

R is the resistance at T (in ohms)

A, *B*, and *C* are the Steinhart–Hart coefficients which vary depending on the type and model of thermistor and the temperature range of interest. (The most general form of the applied equation contains a [ln(R)]^2 term, but this is frequently neglected because it is typically much smaller than the other coefficients).

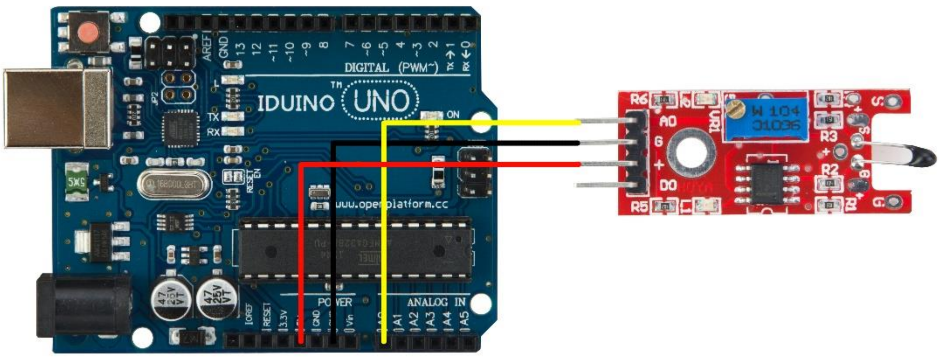
Note: For this module, the recommended coefficients of A,B,C are

A equals 0.001129148;
B equals 0.000234125;
C equals 0.0000000876741;

More, the same item products has a little bit different A,B,C coefficients , which depends your environmental temperature. If the recommended coefficients are not accurate enough, you’d better amend the A,B,C coefficients by Thermistor Calculator tool.

3 Example

This is a simple code for the NTC thermistor module, Connection as below:



Example code :

******Code begin******

```
#include <math.h>
double Thermister(int RawADC) {
double Temp;
Temp = log(((10240000/RawADC) - 10000));
Temp = 1 / (0.001129148 + (0.000234125 + (0.0000000876741 * Temp * Temp ))*
Temp );
Temp = Temp - 273.15;
return Temp;
}
void setup() {
Serial.begin(9600);
}
void loop()
 { Serial.print(Thermister(analogRead(0)));
  Serial.println("c");
 delay(1000); }
```

******Code End******