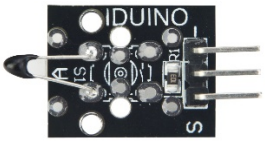
Analog Temperature Sensor(ST1147)



1. Introduction

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℃
Pull-up resistor	10KΩ

2.Pinout

Pin	Description
"S"	Signal pin
"-"	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).

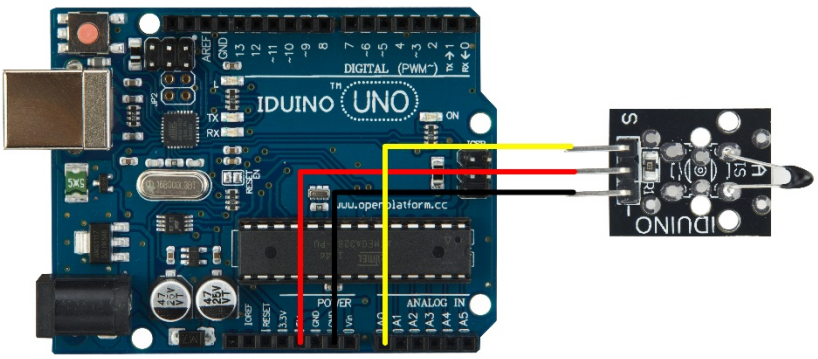
Note: For this module, the recommended coefficients of A,B,C are

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>
void setup()
```

```
{
   Serial.begin(9600);
}
void loop()
{
  double val=analogRead(0);
  double fenya=(val/1023)*5;
  //  r/100=fenya/(3.3-fenya)
  //double r=(5-fenya)/fenya*10000;//
  double r=fenya/(5-fenya)*10000;//
  Serial.println(  1/(    log(r/10000)  /3950  +  1/(25+273.15))-273.15);
delay(1000);
}
```

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