INNOVATOR IN ELECTRONICS

NTC Thermistor
Evaluation Board: MTHMR-N-0002A

Quick Start Guide

NTC Thermistor
Evaluation Board: MTHMR-N-0002A

- The Evaluation Board can be utilized for testing temperature sensor(NTC Thermistor; NXFT-series).

- It's simple way to test temperature sensing by connecting this board with your microcomputer or single-board computer. Because, this is integrated Thermistor and peripheral circuit.

  – Specifications
    - Rated Voltage   : 5V
    - Output signal   : analog
    - Dimension   : 15×10mm
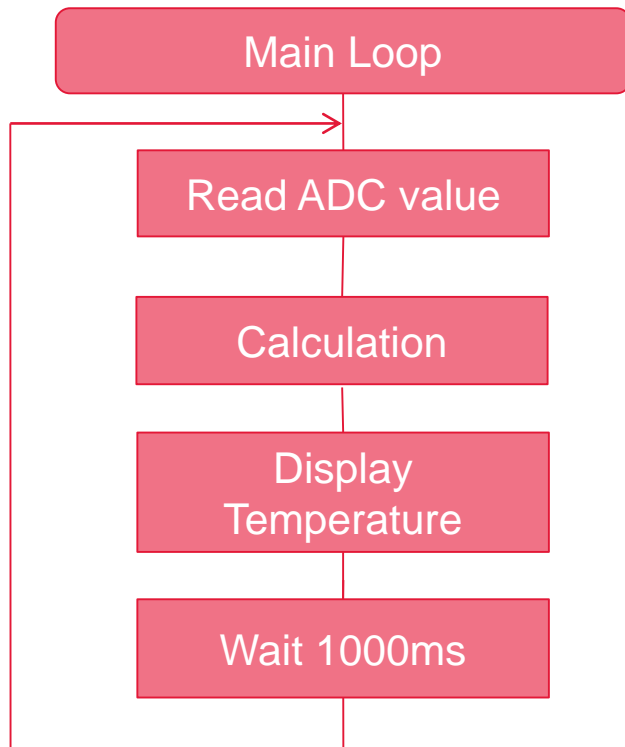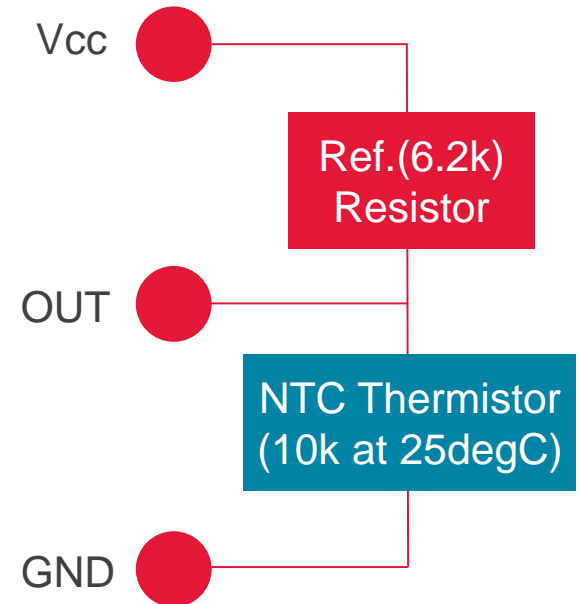
NXFT15XH103FA2B030

Thermistor

Thermistor is resistive component whose resistance value varies in respond to its temperature. NXFT15XH103FA2B030 as standard item for starter kit
has 10kohm at 25degC.

Hardware & Software Operation

On the board, Vcc (3.3V ~ 5V) is applied to thermistor and reference register (6.2kohm) and divided voltage is obtained at OUT.

Intaking OUT into ADC port and applying approximation formula, we obtain temperature value.
(About the formula, please refer to "*Approximation Formula.ppt*")

Vcc

Ref.(6.2k)
Resistor

OUT

NTC Thermistor
(10k at 25degC)

GND

Main Loop

Read ADC value

Calculation

Display Temperature

Wait 1000ms

Calculation Example :

V = V(out) = (ADC_reading / ADC_resolution) * Vcc
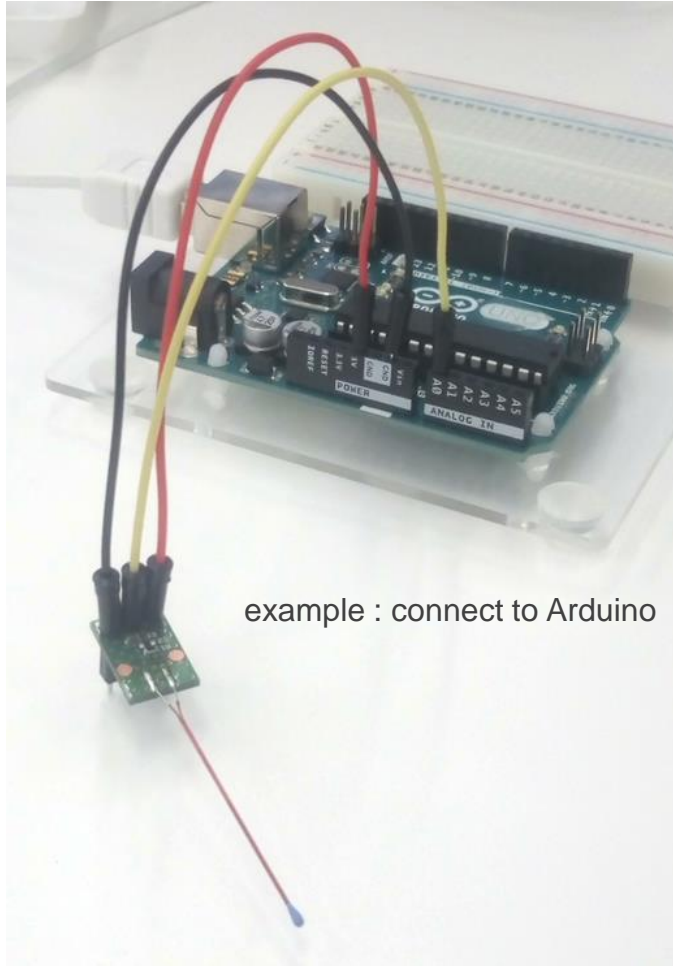(in case of Arduino : ADC_resolution is 1023, due to 10bit ADC.)

Applox. Formula:
Temp [degC] = $-0.30779 * V^5 + 4.1545 * V^4$
$- 23.272 * V^3 + 68.015 * V^2 - 126.35 * V + 160.42$.
(condition : 6.2kohm ref-resistor, 5V input)

Pin Connection

example : connect to Arduino

Pin connection to each CPU board is also instructed in sample code.

Evaluation Board	←→	Arduino UNO
VCC		5V
OUT		A0
GND		GND