

Classification	DCON Utility Pro FAQ					No.	DCON_02_005
Author	Martin	Version	1.0.0	Date	2020/12/23	Page	1/2

How to set the User define type for NTC thermistor thermometer?

The Thermistor temperature measurement modules supported by DCON Utility Pro and the types of temperature sensors supported are as follows

模組名稱	通道數	支援的溫度 Sensor
I-87005 I-7005/M-7005 tM-TH8	8	Precon ST-A3, Fenwell U, YSI L100, YSI L300, YSI L1000, YSI B2252, YSI B3000, YSI B5000, YSI B6000, YSI B10000, YSI H10000, YSI H30000 User-defined

The last User-defined category is to allow users to purchase NTC thermistor thermometers that are not in the above list. They must use the User Define Type setting function in the DCON Utility Pro setting sheet to establish the temperature/resistance value correspondence relationship. To measure the correct temperature.

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There is a NTC thermistor thermometer available on the official website of ICP DAS, the model is CA-TM-M100-L050P

We will demonstrate how to use DCON Utility Pro to explain how the tM-TH8 thermal temperature sensor module sets the User-defined type code of this sensor

<https://www.icpdas.com/en/product/CA-TM-M100-L050P>

Method 1: Use the temperature resistance corresponding table RT-TABLE.

Step 1: Obtain the temperature resistance table RT-TABLE (RESISTANCE-TEMPERATURE) from the sensor manufacturer, and select the temperature/resistance at the three points of the maximum, intermediate and minimum values in the temperature range to be measured. The value is as shown below

Temp. (°C)	Resistance (Ω)		
	MIN.	CENTER	MAX.
-10	41700	42800	43900
-9	39900	40900	41900
-8	38100	39100	40000
34	7091	7189	7286
35	6840	6937	7034
36	6599	6695	6791
37	6367	6463	6558
78	1714	1765	1817
79	1666	1716	1766
80	1619	1668	1717

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Step 2: After searching for the module, select the User Define Type tab and fill in the temperature and resistance values of the three points in the above table in the setting screen. After pressing "Calculate", the calculation result of its Steinhart Coefficients will pop up.

Step 3: Select the Type code to be set and press "Setting" to complete the setting.

tTH8 Firmware[A102]

Configuration AI User Defined Type Commands Log Summary About

Set By Resistor and Temperature Set By Steinhart Coefficients Help

Temperature °C Resistor Value

T1 -10 R1(ohms) 42800

T2 35 R2(ohms) 6937

T3 80 R3(ohms) 1668

Calculate

Clear

Please input temperature and resistor values

Exit

Analog Input Under Range==>Please connect to input source or check the input connector

tTH8 Firmware[A102]

Configuration AI User Defined Type Commands Log Summary About

Set By Resistor and Temperature Set By Steinhart Coefficients Help

Float Format Hex Format

A 0.000860188316994386 3A617E43

B 0.00025637505126661 39866A14

C 1.69742393827106E-07 3436426F

Calculate

Clear

Select Type Code

0x70

0x70

0x71

0x72

0x73

0x74

0x75

0x76

0x77

Setting

Please input A , B , C Coefficients in float format

Exit

Analog Input Under Range==>Please connect to input source or check the input connector

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Step 4: Switch to the AI tab to check whether the measured temperature is correct.

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AI Value	Type Code	Temperature Offset
<input checked="" type="checkbox"/> CH:00 +020.880	[70] 0x70 User-defined -50 ~ 150	00.00 + -
<input checked="" type="checkbox"/> CH:01 -9999.90 [UnderRange]	[63] YSI L Mix 100 @ 25°C -80 ~ 100	00.00 + -

Method 2: Use Steinhart Coefficients.

Step 1. As above, three coefficients of Steinhart Coefficients A, B, C will be calculated from RT-Table, as shown in the following list. Some NTC thermistor thermometer manufacturers will provide Steinhart Coefficients A, B, C three coefficients. The following steps will explain how to use Steinhart Coefficients to develop User-define type code.

Coefficient	float format
A:	0.000860188316994386
B:	0.00025637505126661
C:	1.69742393827106E-07

Step 1: Take the three coefficients of Steinhart Coefficients A, B, C and fill in the setting screen, press "Calculate" to convert the floating point number into hexadecimal format.

tTH8 Firmware[A102]

Configuration AI User Defined Type Commands Log Summary About

Set By Resistor and Temperature **Set By Steinhart Coefficients** Help

Float Format

A: 0.000860188316994386

B: 0.00025637505126661

C: 1.69742393827106E-07

Hex Format

Calculate

Clear

Select Type Code

0x70

Setting

1 Please input A, B, C Coefficients in float format

2

Exit

Analog Input Under Range==>Please connect to input source or check the input connector

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Step 2: Select the Type Code to be made by the converted hexadecimal value and press “Setting” to complete.

The screenshot shows the 'tTH8 Firmware[A102]' application window. It has a menu bar with 'Configuration', 'AI', 'User Defined Type', 'Commands Log', 'Summary', and 'About'. Below the menu bar are two tabs: 'Set By Resistor and Temperature' (selected) and 'Set By Steinhart Coefficients', along with a 'Help' button. The main area is divided into two columns: 'Float Format' and 'Hex Format'. Under 'Float Format', there are three input fields labeled A, B, and C with values: 0.000860188316994386, 0.00025637505126661, and 1.69742393827106E-07 respectively. Under 'Hex Format', there are three corresponding input fields with values: 3A617E43, 39866A14, and 3436426F. A red box labeled '3' highlights the 'Hex Format' column. To the right of these fields are buttons for 'Calcualte' (misspelled), 'Clear', and 'Setting'. Below the 'Hex Format' fields is a 'Select Type Code' dropdown menu showing '0x70' and a 'Setting' button. A red box labeled '4' highlights the 'Setting' button. At the bottom left is an 'Exit' button. A status bar at the bottom reads: 'Analog Input Under Range==>Please connect to input source or check the input connector'.