FAQ-030: Setting special "range" parameter of temperature input board to get clear "Degree Celsius" or "Degree Fahrenheit" input value. For ex, "1535" means 15.35 degree.

Important: Special "range" is supported since driver version of I-8xx7:3.11 , W-8xx7:3.24

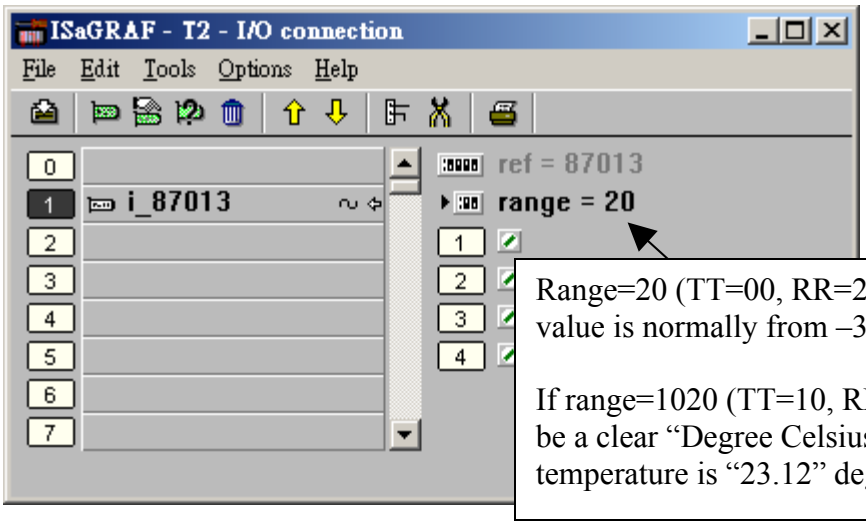
ICPDAS provides many temperature input modules as below.

With "broken-line detection" or called "wire opening detection"
Thermocouple type: I-87018R, 87019R, 7018R, 7018BL, 7019, 7019R
RTD type: I-87013, 87015, 7013, 7015, 7033
Thermister type: I-87005, 7005

Without "broken-line detection"
Thermocouple type: I-87018, 7018, 7018P

The "range" parameter of temperature IO board can be "standard setting" or "special setting".

For example, I-87013: 4 channel RTD input module. Its range can be
20 : Platinum 100, a=0.00385, -100 ~ +100 degree Celsius
…
2F : Platinum 100, a=0.003916, -200 ~ +200 degree Celsius



Range=20 (TT=00, RR=20), standard setting. Input value is normally from –32768 to +32767

If range=1020 (TT=10, RR=20), the input value will be a clear "Degree Celsius" value. For ex, 2312 means temperature is "23.12" degree celsius.

If setting range as 20 (or 21 to 2F), then it is "standard setting". The temperature input value is 2's compliment value from –32768 to +32767 depends on the "range" value. For example, setting range as 20, value of –32767 means temperature is about –100 Degree, +32766 is about +100 Degree. Value of 16383 means +50 Degree (**Note**:Normally value of –32768 or +32767 means wire "broken-line")

If user want to get a clear temperature input value, for example, value of 2312 means "23.12" Degree Celsius. Then please set "range" to a special value defined as below.

Format: TTRR (Hex. Value)
TT=10 (Convert to "Degree Celsius")
TT=20 (Convert to "Degree Fahrenheit")

TT=00 (Default value, -32768 to +32767, this is “standard setting”)
RR: original "range" setting

For example, setting I-87013’s "range" as

A. 1020 : (TT=10, RR=20) the input value will be "Degree Celsius", unit is 0.01 degree, range= "20 : Platinum 100, a=0.00385, degree Celsius". That results input value of "2356" = 23.56 Degree Celsius, "-489" = -4.89 Degree Celsius, "999990" = sensor broken line.

B. 202A : (TT=20, RR=2A) the input value will be "Degree Fahrenheit", unit is 0.01 degree, range= "2A: Platinum 1000, a=0.00385, degree Celsius". That results input value of "4512" = 45.12 Degree Fahrenheit, "500" = 5.00 Degree Fahrenheit, "999990" = sensor broken line.

C. 21 : (TT=00, RR=21) the input value will be Default value (standard “range” setting), -32768 to +32767, range = "21 : Platinum 100, a=0.00385, degree Celsius"