

# Advantech AE Technical Share Document

Date	2023 / 11 / 17	Release Note	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Category	<input checked="" type="checkbox"/> FAQ <input type="checkbox"/> SOP	Related OS	
Abstract	How do we get the temperature from modbus value?		
Keyword	Modbus address, RTD, temperature		
Related Product	ADAM-4015		

- **Problem Description:**

How do we get the temperature from the Modbus value?

- **We should check the resolution of ADAM-4015 at first**

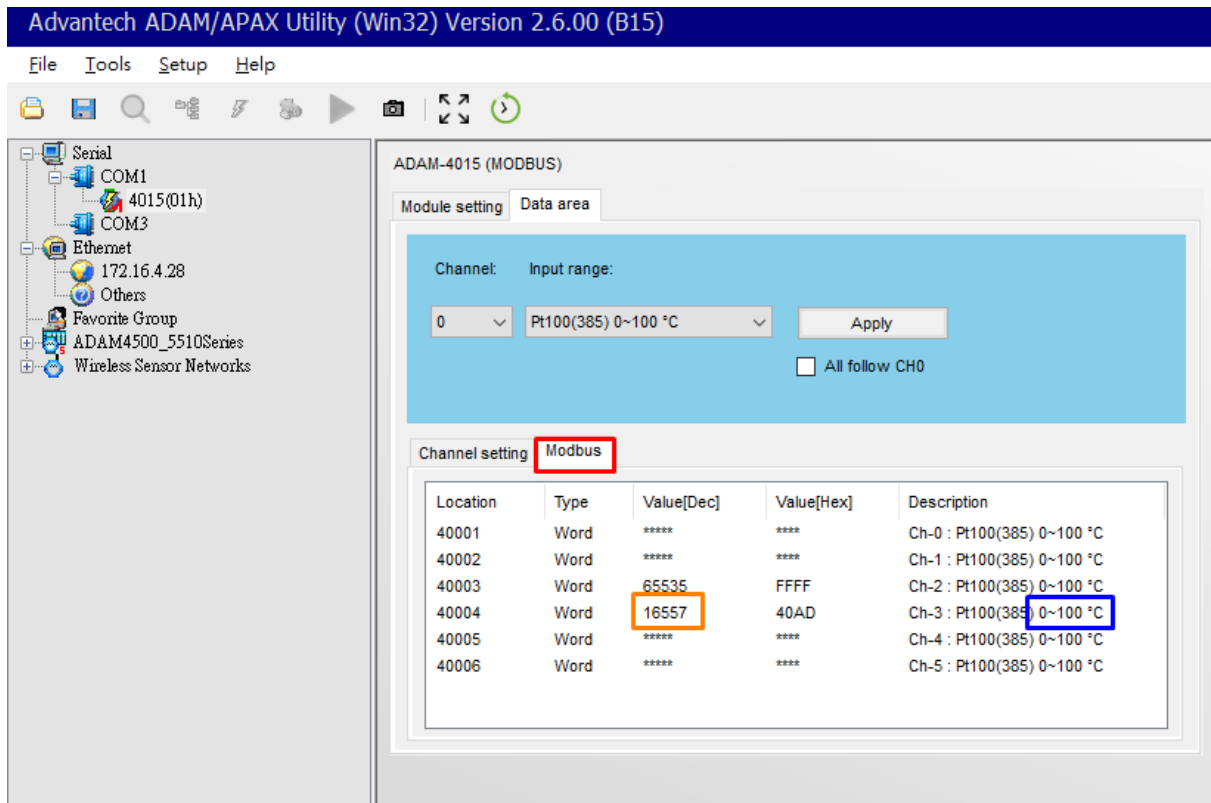
[https://www.advantech.com/zh-tw/support/details/manual?id=1adv-plus\\_GEadv-plus\\_715](https://www.advantech.com/zh-tw/support/details/manual?id=1adv-plus_GEadv-plus_715)

## 3.2.2 Technical specification of ADAM-4015

**Table 3.1: Technical Specification of ADAM-4015**

Channel Number	6 differential
Support Protocol	ADAM ASCII and MODBUS/RTU
Input Type	Pt100, Pt1000, BALCO500, Ni
Input Connections	2 or 3 wires
Wire Burnout Detection	Yes
Input Type and Temperature Range	Pt100: -50 to 150 °C 0 to 100 °C 0 to 200 °C 0 to 400 °C -200 to 200 °C Pt1000: -40 to 160 °C Balco500: -30 to 120 °C Ni(518): -80~100 °C 0~100 °C Ni(508): 0~100 °C -50~200 °C BA1: -200~600 °C
Isolation Voltage	3000 V <sub>DC</sub>
Sampling Rate	10 sample/second (total)
Input Impedance	10 MΩ
Resolution	16-bit
Accuracy	± 0.1% (Typical)
CMR@50/60Hz	120 dB
NMR@50/60Hz	100 dB
Span Drift	±25 ppm/°C
Zero Drift	±6 μV/°C
Watchdog Timer	System (1.6 second) and Communication
Power Input	+10~+30 V <sub>DC</sub> (non-regulated)
Power Consumption	Typical: 0.5 W @ 24 V <sub>DC</sub> Max.: 0.9 W @ 24 V <sub>DC</sub>

- Check the measure range (Blue highlight) and read Modbus value (Orange highlight)  
Example: ADAM-4015



Value[Dec] is Modbus Raw Data , it is usually Decimal. The module has a resolution of 16 bits, with a resolution of 2 to the power of 16. The raw data range is from 0 to 65535, mapped to a physical quantity in the range of 0 to 100°C

If the raw data is 16557, the linear conversion formula is as follows:

$$\text{Temperature} = 16557 / 65535 * 100 \text{ (Full scale range)} + 0 \text{ (initial value)} = 25.26$$

