

Version:1.0

Advantech AE Technical Share Document

Date	2023 / 11 / 17	Release Note	Internal External
Category	■ FAQ □ SOP	Related OS	
Abstract	How do we get the ter	nperature from m	odbus 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 <u>https://www.advantech.com/zh-tw/support/details/manual?id=1adv-plus GEadv-plus 715</u>

3.2.2 Technical specification of ADAM-4015

Table 3.1: Technica	I 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 Tem- perature Range	Pt100: -50 to 150 °C 0 to 100 °C 0 to 200 °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 _{DC}
Sampling Rate	10 sample/second (total)
Input Impedance	10 ΜΩ
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 _{DC} (non-regulated)
Power Consumption	Typical: 0.5 W @ 24 V _{DC} Max.: 0.9 W @ 24 V _{DC}

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

Advantech ADAM/APAX Utility (\	Vin32) Version 2.6.00 (E	315)	
<u>F</u> ile <u>T</u> ools <u>S</u> etup <u>H</u> elp			
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⊡	ADAM-4015 (MODBUS)		
4015(01h) COM3	Module setting Data area		n
Ethernet 172.16.4.28 Others Favorite Group	Channel: Input range:		
🗄 🐺 ADAM4500_5510Series	0 ~ Pt100(385) 0		ply
🗄 🧑 Wireless Sensor Networks		All foli	ow CH0
	Channel setting Modbus		
	Location Type	Value[Dec] Value[Hex]	Description
	40001 Word	***** ****	Ch-0 : Pt100(385) 0~100 °C
	40002 Word	***** ****	Ch-1 : Pt100(385) 0~100 °C
	40003 Word	65535 FFFF	Ch-2 : Pt100(385) 0~100 °C
	40004 Word	16557 40AD	Ch-3 : Pt100(385) 0~100 °C
	40005 Word	***** ****	Ch-4 : Pt100(385) 0~100 °C
	40006 Word	***** ****	Ch-5 : Pt100(385) 0~100 °C

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 <mark>16557</mark>, the linear conversion formula is as follows:

Temperature= 16557/65535*100	(Full scale range) +0 (initial value)= 25.26
Advantech ADAM/APAX Utility (Win32)	Version 2.6.00 (B15)

COM1 4015(01b) 4015(01b) 4015(01b)	ADAM-4015 (MOD Module setting				
e Ethemet	Channel	Input range:			
Others Sevorite Group ADAM4500_5510Series	0 ~	Pt100(385) 0~100 °C	~	Apply	
Wireless Sensor Networks				All follow CH0	
	Channel setting	9 Modbus			
	🗌 Ch-0	Disable	🗌 Ch-4	Disable	Apply change
	Ch-1	Disable	Ch-5	Disable	
	Ch-2	Burn			
	C CITE				