

Modbus RTU communication

1. Serial interface parameters

Baud rate: 9600 or 115200
 Data bits: 8
 Parity: None
 Stop bits: 1

2. Protocol

The protocol is a Modbus RTU protocol.

>Read Data Format :

Register Address	Function Code	Register H	Register L	Length H	Length L	CRCL	CRCH
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When reading the target temperature of the device at register location 0x01 :

0x01	0x03	0x00	0x01	0x00	0x01	0xd5	0xca
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Return Data Format :

Register Address	Function Code	Length	Data H	Data L	CRCL	CRCH
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Return Target Temperature :

0x01	0x03	0x02	0x07	0x58	0xbb	0x8e
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Obtained target temperature data: 0x0758 Calculation temperature: $(1880-1000)/10 = 88^{\circ}\text{C}$

>Set Data Format :

Register Address	Function Code	Register H	Register L	Length H	Length L	CRCL	CRCH
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If setting the device emissivity (0.950) at address 0x01

0x01	0x06	0x00	0x20	0x03	0xb6	0x09	0x46
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0x03b6 = 950

3. Function Description:

Register Address (hex)	Register Address (dec)	Description	Read/Write	Data-Format
0x01	1	Temp - process	R	(Byte H + Byte L - 1000) /10
0x02	2	Temp - Head	R	(Byte H + Byte L - 1000) /10
0x20	32	Emissivity	R/W	example : E 0.95 = 0x03B6 (950)
0x21	33	Transmittance	R/W	example : T 1.00 = 0x03E8 (1000)
0x22	34	Temp upper limit	R	
0x23	35	Temp lower limit	R	
0x24	36	High Temp Alarm	R/W	
0x25	37	Low Temp Alarm	R/W	
0x26	38	High End for outputs	R/W	
0x27	39	Low End for outputs	R/W	
0x28	40	Hold mode	R/W	0--Real mode 1--Peak Hold 2--Valley Hold 3--Advanced hold
0x29	41	Average time	R/W	example : 0.1s = (1) / Average time 1s = (10)
0x2A	42	Peak hold time	R/W	example : 0.1s = (1) / Average time 1s = (10)
0x2B	43	Valley hold time	R/W	example : 0.1s = (1) / Average time 1s = (10)
0x2C	44	Advanced Hold Mode	R/W	
0x2D	45	Advanced Hold Hysteresis	R/W	
0x2E	46	°C/ °F	R/W	
0x2F	47	Spot Illumination Laser	R/W	
0x30	48	MODBUS-ID	R/W	The range is: 1~255, 0 is the broadcast address. If the address code is forgotten, it can be queried through the broadcast address.
0x85	133	Protocol Type	R/W	0 : Autonomous Agreement 1 : modbus-rtu