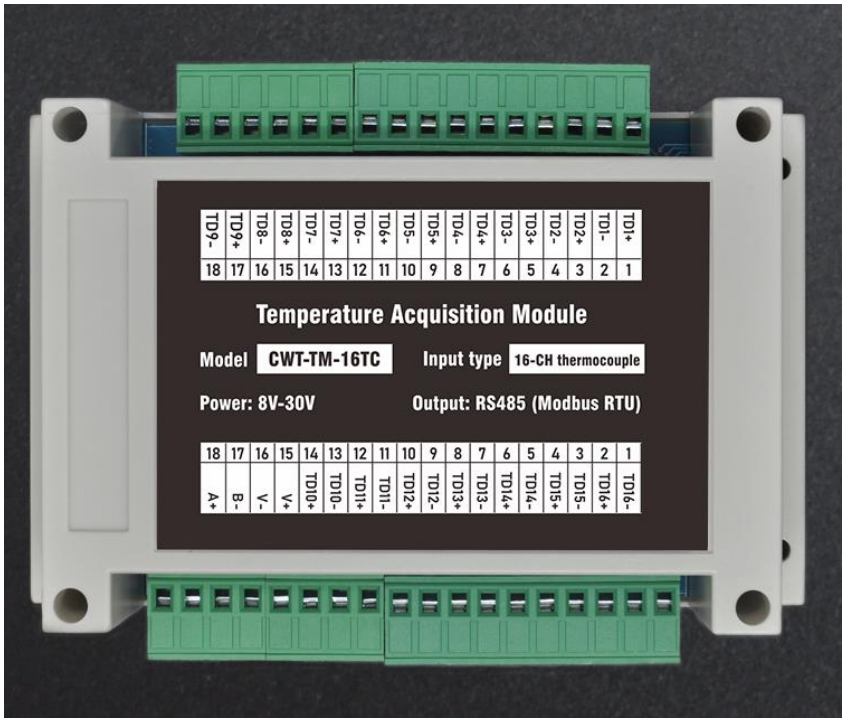
CWT-TM-16TC K-type thermocouple

RS485 module Manual



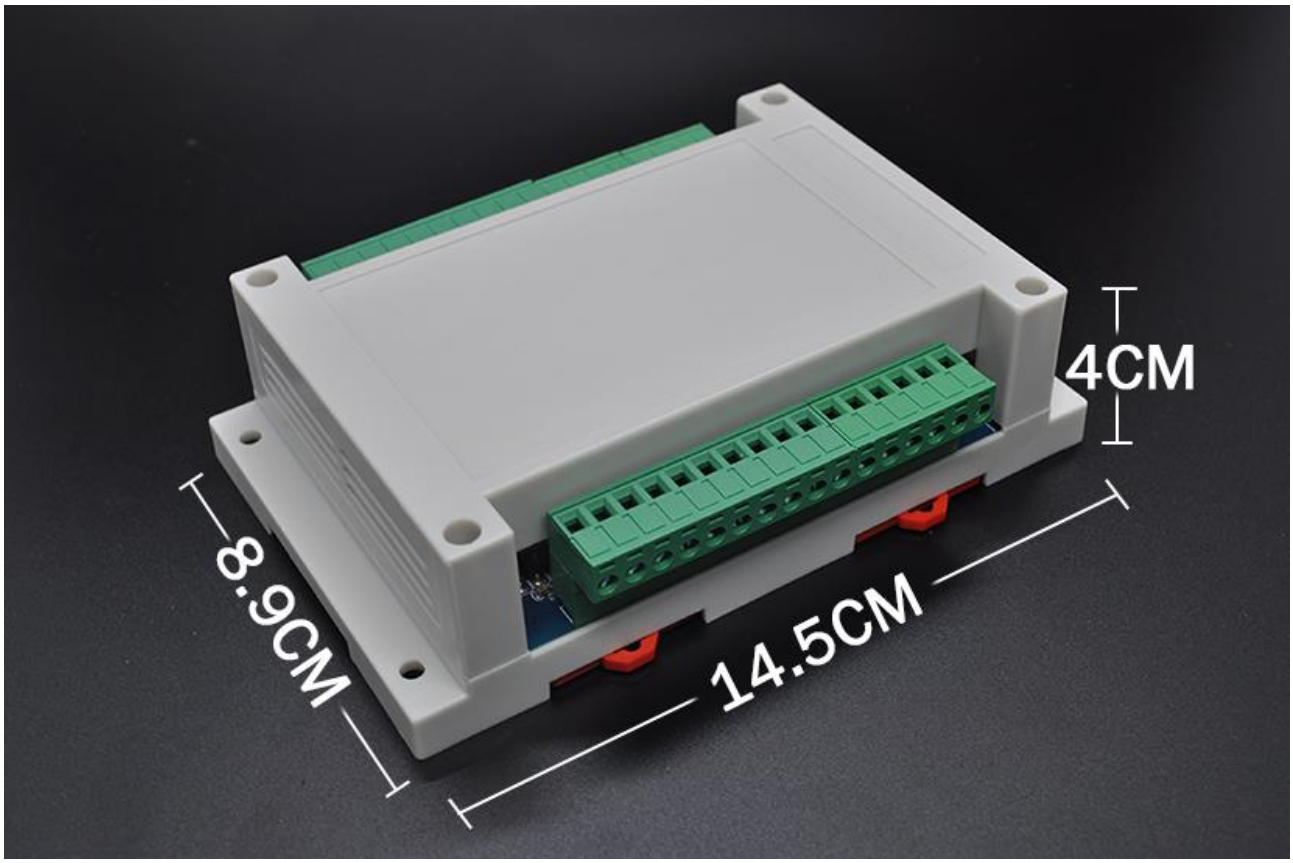
Basic parameters

Power supply	DC8~30V
Power consumption	19mA@30V, 22mA@24V, 45mA@12V, 41mA@8V
Input	• type: K-thermocouple • Measure range: -200℃ ~ +1350℃ • Resolution 0.25℃
Output	RS485 （Modbus RTU protocol）, isolation design
Working environment	-30~+55℃ / 0 -95%RH
Material	ABS
mounting type	35mm Din-rail
Dimensions	145*90*40mm

Terminal description

Terminals	description
+V	Power +
GND	Power -
TD(n)+	Sensor +
TD(n)-	Sensor -
A （D+）	RS485 +
B （D-）	RS485 -

Size



RS485 communication (Modbus RTU protocol)

Default parameters: 9600,n,8,1

Default device address is 1

Modbus register map

1. Parameter register map

Function code: 03H (read), 06H (write)

Address (hex)	Byte order	Meaning	Description	Property
10	LO	Communication parameters initial value: 00	BIT<7:5> reserve BIT<4:3> 00=none 01=even 10=odd （11= odd） BIT<2:0> 000=9600 001=1200 010=2400 011=4800 100=9600 101=14400 110=19200	RW
	Hi	address initial value: 01	1-250	RW

2. Data register map

Function code: 03H (read)

Address (hex)	Description	Format	scale	Number of bytes	Property
20H	Channel 1	UINT	0.1	2	R
21H	Channel 2	UINT	0.1	2	R
22H	Channel 3	UINT	0.1	2	R
23H	Channel 4	UINT	0.1	2	R
24H	Channel 5	UINT	0.1	2	R
25H	Channel 6	UINT	0.1	2	R
26H	Channel 7	UINT	0.1	2	R
27H	Channel 8	UINT	0.1	2	R
28H	Channel 9	UINT	0.1	2	R
29H	Channel 10	UINT	0.1	2	R
2AH	Channel 11	UINT	0.1	2	R
2BH	Channel 12	UINT	0.1	2	R
2CH	Channel 13	UINT	0.1	2	R
2DH	Channel 14	UINT	0.1	2	R
2EH	Channel 15	UINT	0.1	2	R
2FH	Channel 16	UINT	0.1	2	R

Set slave ID

E.g., set slave ID=2, baud=9600, parity=none,

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	baud and parity	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x00	0x10	0x02	0x04	0x88	0xAC

ID=02 (HEX) = 2 (DEC)

Band and parity=0000 0100 (BIN) = 04 (HEX)

Module responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	baud and parity	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x00	0x10	0x02	0x04	0x88	0xAC

Enquiry slave ID, baud and parity

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x00	0x03	0x00	0x10	0x00	0x01	0x84	0x11

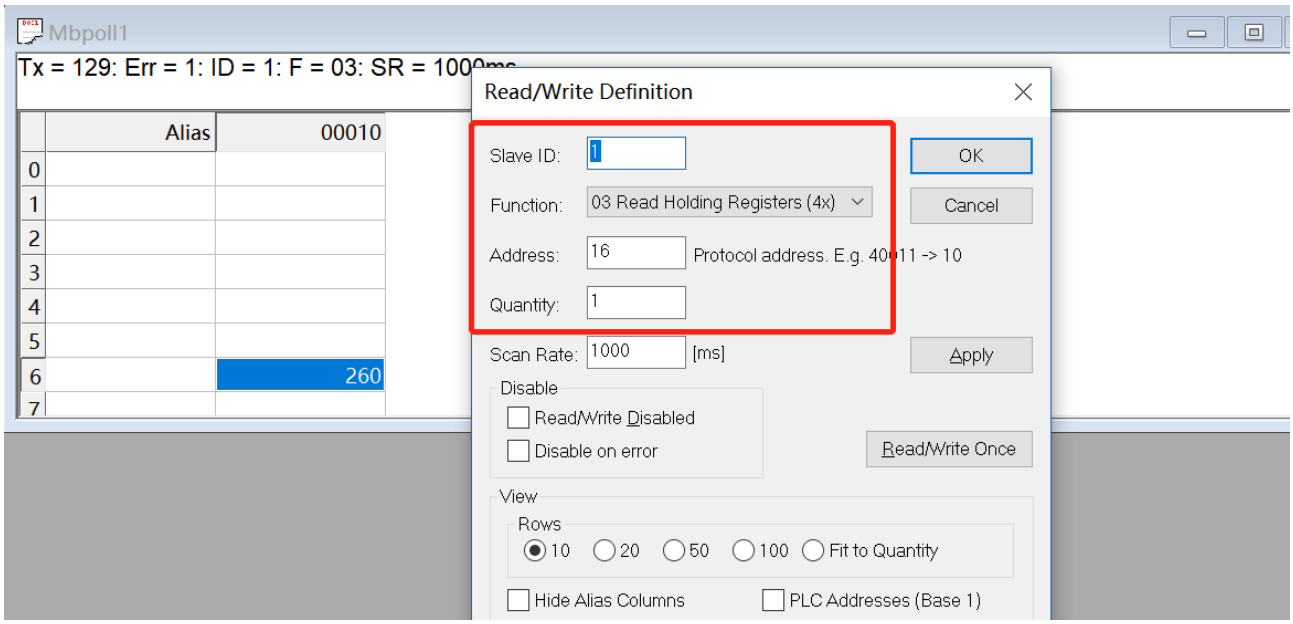
Module responds:

Address	Function Code	Number of Points	ID	baud and parity	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x02	0x01	0x0B	0xF8	0x13

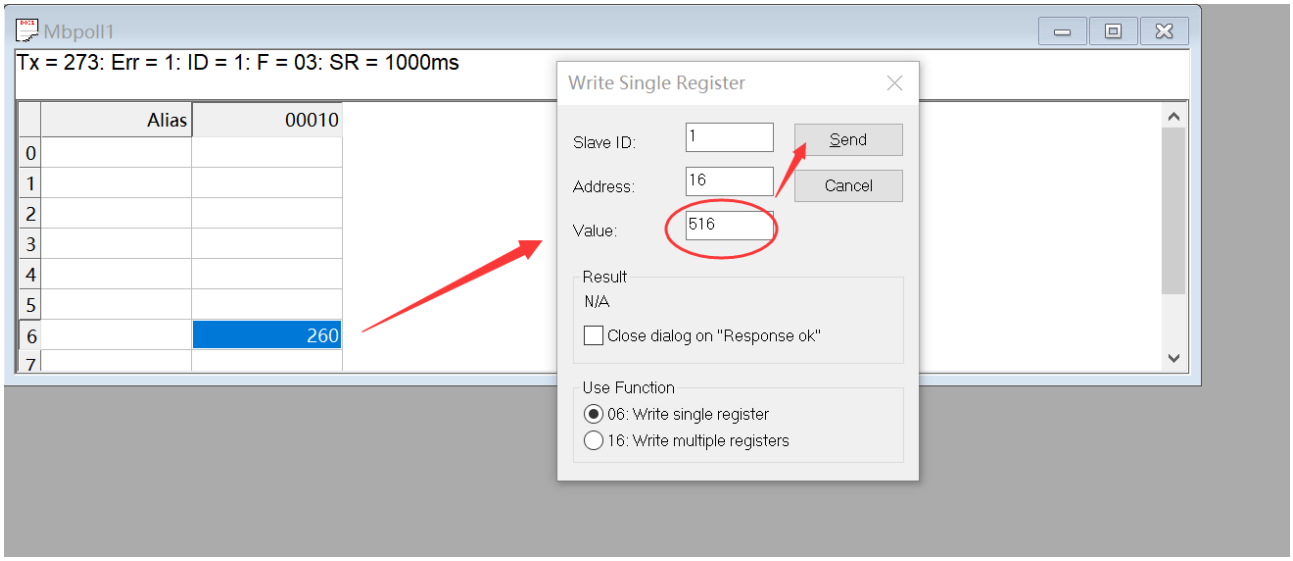
ID=01 (HEX) = 1 (DEC)
baud and parity =0B (HEX) = 0000 1011 (BIN)
so, baud = 011 = 4800, parity = 01 = even

Set id by Modbus poll

1. Read Parameter register (address = 10 Hex = 16)



2. E.g., Set id=2, baud=9600, parity=none (corresponding value= 02 04 H = 516)
Double click register value, enter 516 and click send



Read channel 1 - channel 16 in unit16

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x20	0x00	0x10	0X45	0XCC

Module responds:

Address	Function Code	Number of byte	value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x20	0x00 0xDE 0x01 0x15 0x01 0x05 0x01 0x20 0x01 0x08 0x01 0x22 0x01 0x41 0x00 0xEF 0x01 0x57 0x01 0x69 0x01 0x19 0x01 0x64 0x00 0xC8 0x01 0x1C 0x01 0x6E 0x01 0x60	0x8A	0x4A

Channel 1: DE H=>222 D=22.2

Channel 2: 115 H=>277 D=27.7

Channel 3: 105 H=>261 D=26.1

Channel 4: 120 H=>288 D=28.8

Channel 5: 108 H=>264 D=26.4

Channel 6: 122 H=>290 D=29.0

Channel 7: 141 H=>321 D=32.1

Channel 8: EF H=>239 D=23.9

Channel 9: 157 H=>343 D=34.3

Channel 10: 169 H=>361 D=36.1

Channel 11: 119 H=>281 D=28.1

Channel 12: 164 H=>356 D=35.6

Channel 13: C8 H=>200 D=20.0

Channel 14: 11C H=>284 D=28.4

Channel 15: 16E H=>366 D=36.6

Channel 16: 160 H=>352 D=35.2