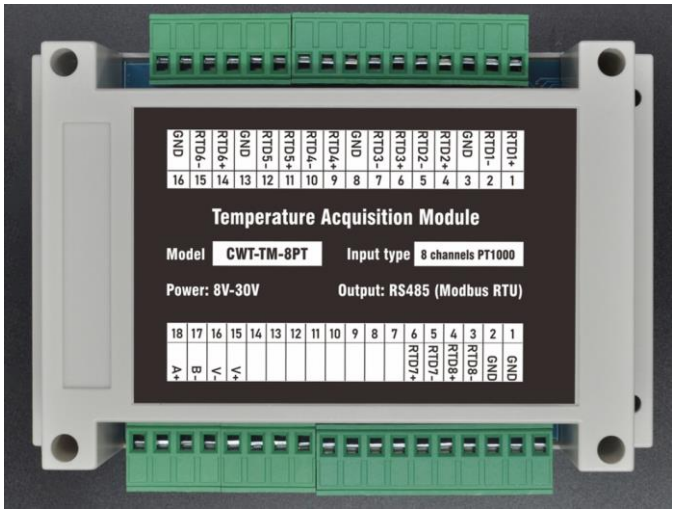
8 channels PT100/PT1000 RS485 module

Manual



Model: CWT-TM-8PT

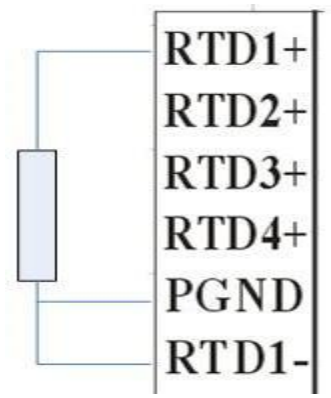
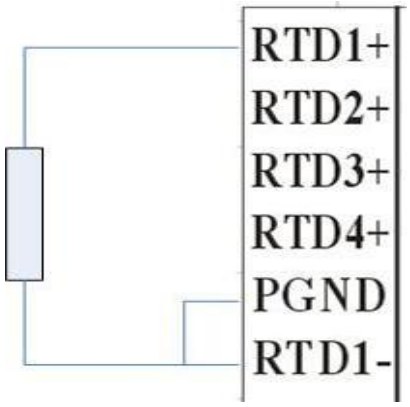
Basic parameters

Power supply	DC8~30V
Power consumption	9mA@30V,12mA@24V, 23mA@12V, 33mA@8V
Input	• Input sensor type: PT100 or PT1000 • Measure range: -180℃～+650℃ • Resolution 0.1℃； accuracy 0.25℃ • Support two and three wire connections • Supports disconnection and short circuit detection
Output	RS485 （Modbus RTU protocol）, isolation design
Working environment	-30~+55℃ / 0 -95%RH
Material	ABS
mounting type	35mm Din-rail
Dimensions	88*72*59mm

Terminal description

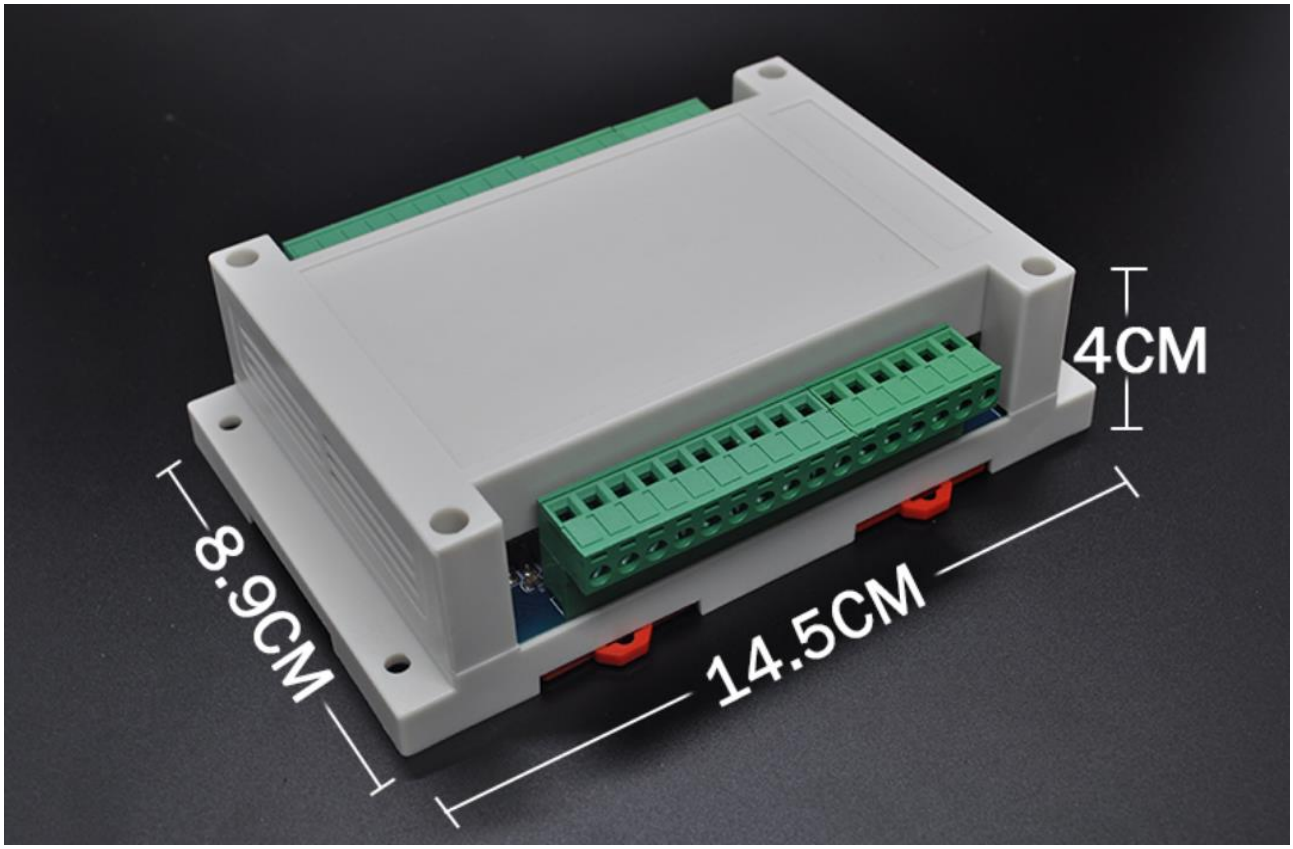
Terminals	description
+V	Power +
GND	Power -
RTDx+	PT100/1000 +
RTDx-	PT100/1000 -
GND	PT100/1000 GND
A（D+）	RS485 +
B（D-）	RS485 -

PT100/PT1000 wiring

Three wires connection	Two wires connection Need to short RTD(n)- and GND
	

Note: The PGND is completely isolated from the power negative.

Size



RS485 communication Default parameters: 9600,n,8,1

Default device address is 1

Modbus RTU protocol

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

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)

Sensor 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

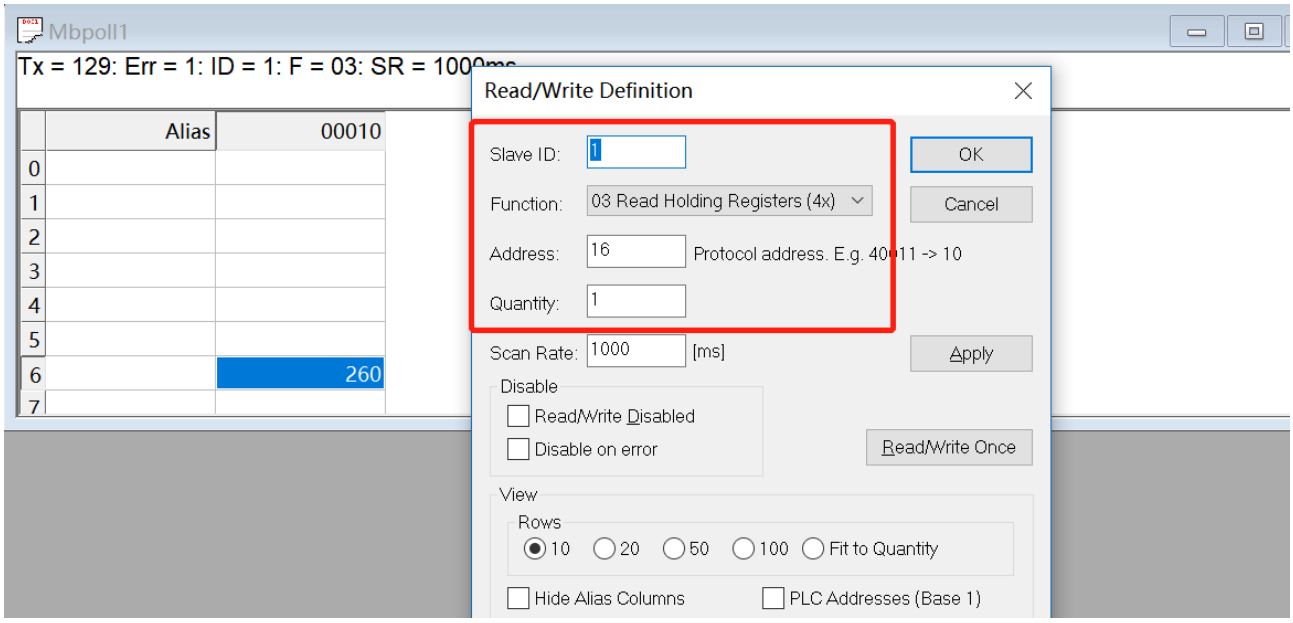
Sensor responds:

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

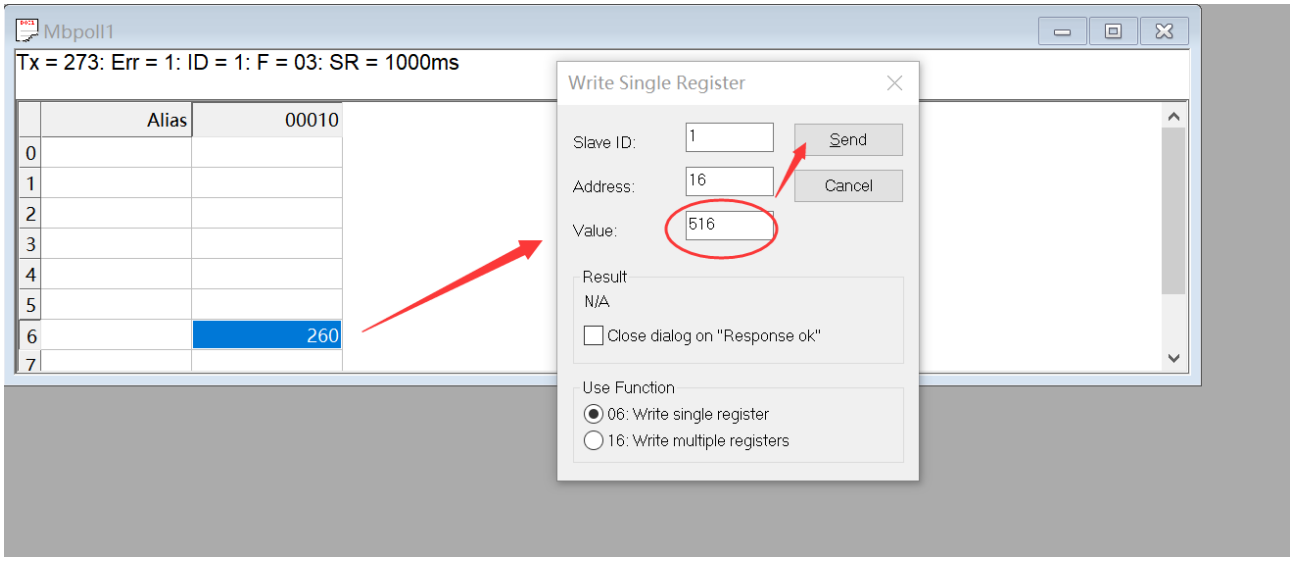
ID=01 (HEX) = 1 (DEC)
baud and parity =0B (HEX) = 0000 1011 (BIN)
so baud = 011 = 4800, parity = 01 = even

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



1. Data register map

Function code: 03H (read)

Address (hex)	PLC address	Description	Format		Number of bytes	Property
30H	40049-40050	Channel 1	Float32		4	R
32H	40051-40052	Channel 2			4	R
34H	40053-40054	Channel 3			4	R
36H	40055-40056	Channel 4			4	R
38H	40057-40058	Channel 5			4	R
3AH	40059-40060	Channel 6			4	R
3CH	40061-40062	Channel 7			4	R
3EH	40063-40064	Channel 8			4	R
68H	40105	Channel 1	UINT16	Scale: 0.1	2	R
69H	40106	Channel 2			2	R
6AH	40107	Channel 3			2	R
6BH	40108	Channel 4			2	R
6CH	40109	Channel 5			2	R
6DH	40110	Channel 6			2	R
6EH	40111	Channel 7			2	R
6FH	40112	Channel 8			2	R

E.g., read channel 1- channel 8 in UINT16

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	0x68	0x00	0x08	0XC5	0XD0

Sensor responds:

Address	Function Code	Number of byte	value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x10	0x00 0XDE 0x00 0XDF 0x00 0xE0 0x00 0xE2 0x00 0xE8 0x00 0xEB 0x01 0x4C 0x01 0x41	0x5B	0x6A

Channel 1: DE(HEX) = 222 (DEC), Channel 1 is 22.2

Channel 2: DF (HEX) = 223(DEC), Channel 2 is 22.3

Channel 3: E0(HEX) = 224 (DEC), Channel 3 is 22.4

Channel 4: E2 (HEX) = 226 (DEC), Channel 4 is 22.6

Channel 5: E8 (HEX) = 232 (DEC), Channel 5 is 23.2

Channel 6: EB (HEX) = 235 (DEC), Channel 6 is 23.5

Channel 7: 14C (HEX) = 332(DEC), Channel 7 is 33.2

Channel 8: 141 (HEX) = 321(DEC), Channel 8 is 32.1

E.g., read channel 1 - channel 8 in Float32
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	0x30	0x00	0x10	0X44	0x09

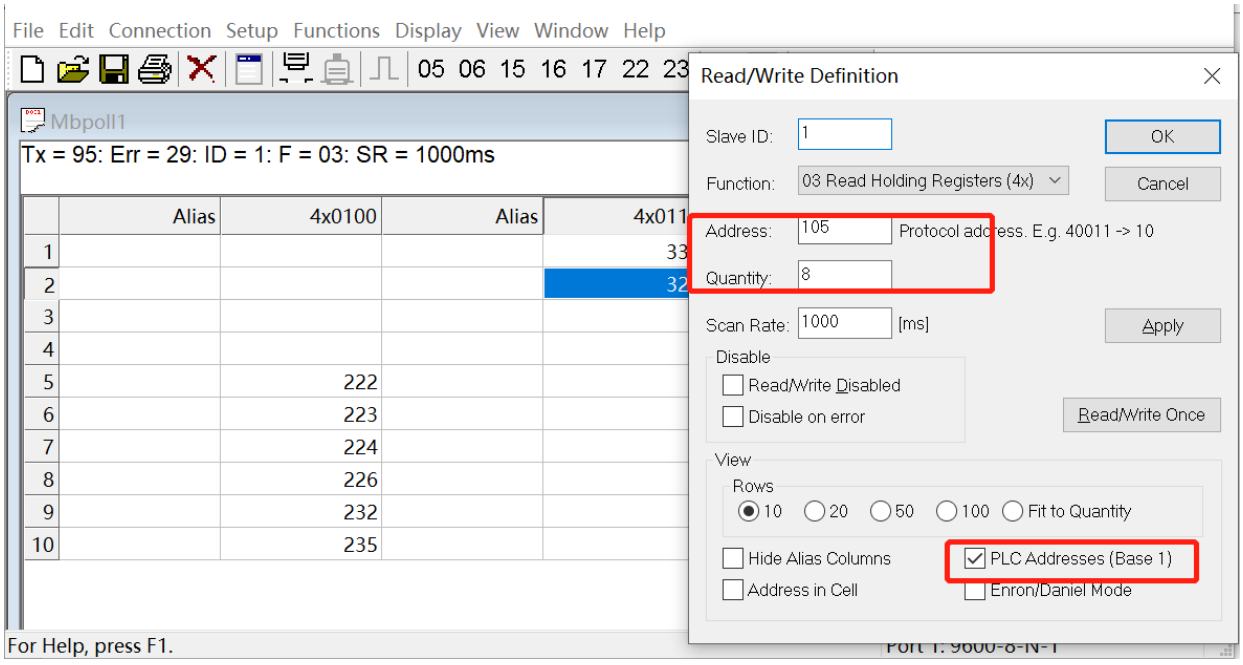
Sensor responds:

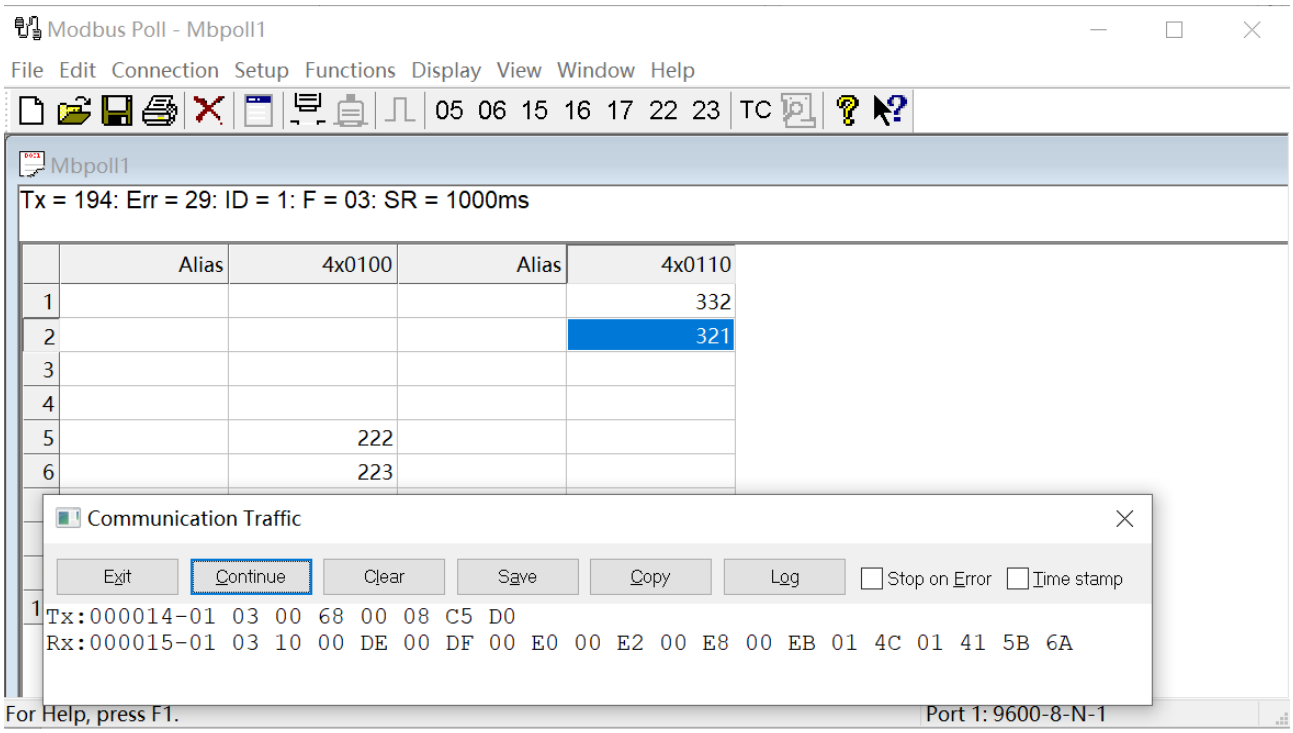
Address	Function Code	Number of byte	value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x20	0x41 0xB3 0xA7 0x52 0x41 0xE5 0x3B 0x99 0x42 0x03 0x8C 0xE7 0x41 0xC7 0xE6 0x9B 0x41 0xBB 0x9B 0xDA 0x41 0xED 0x3C 0x02 0x41 0xF5 0x36 0x11 0x41 0xDF 0xAI 0xFF	0x77	0xC9

Channel 1: 41 B3 A7 52 (IEEE) = 22.4567 (DEC), Channel 1 is 22.4567
Channel 2: 41 E5 3B 99 (IEEE) = 28.6541 (DEC), Channel 2 is 28.6541
Channel 3: 42 03 8C E7 (IEEE) =32.8876 (DEC), Channel 3 is 32.8876
Channel 4: 41 C7 E6 9B (IEEE) = 24.9876 (DEC), Channel 4 is 24.9876
Channel 5: 41 BB 9B DA (IEEE) = 23.4511 (DEC), Channel 5 is 23.4511
Channel 6: 41 ED 3C 02 (IEEE) =29.6543 (DEC), Channel 6 is 29.6543
Channel 7: 41 F5 36 11 (IEEE) = 30.6514 (DEC), Channel 7 is 30.6514
Channel 8: 41 DF Al FF (IEEE) = 27.9541 (DEC), Channel 8 is 27.9541

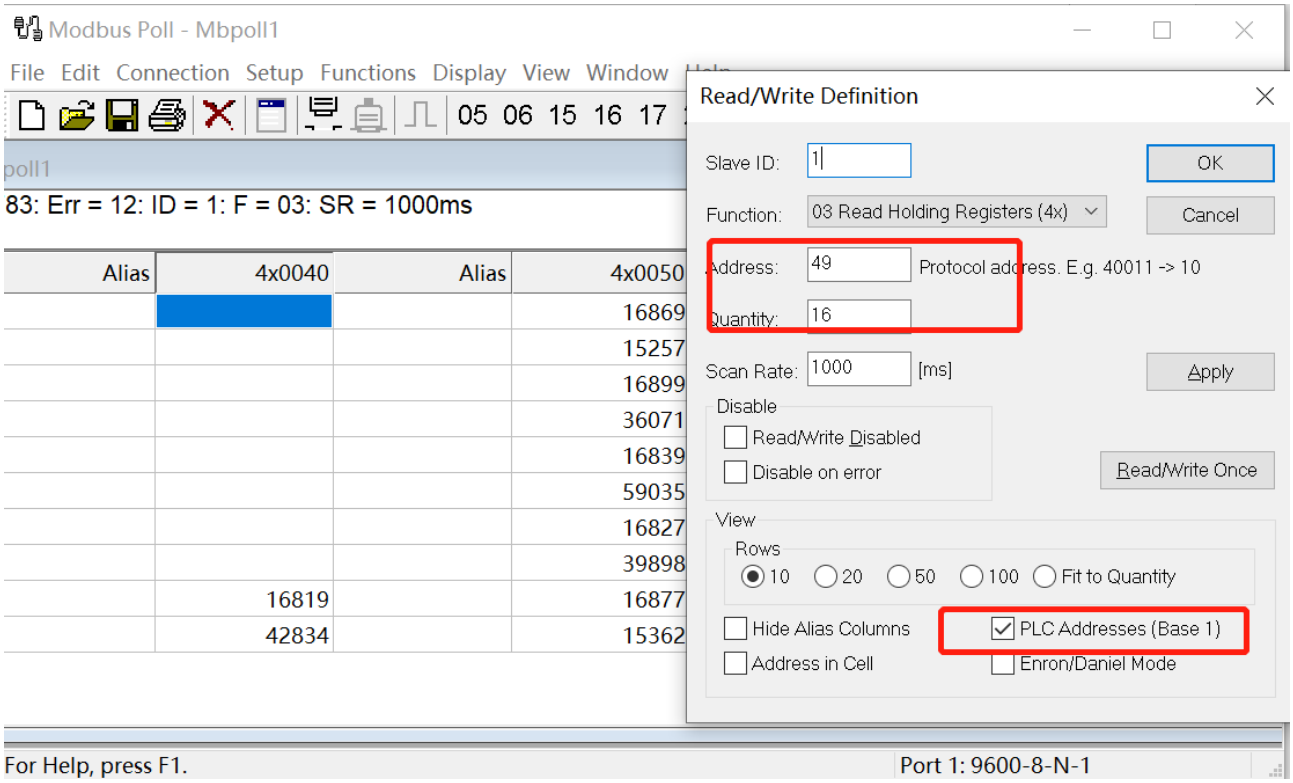
Read by Modbus poll

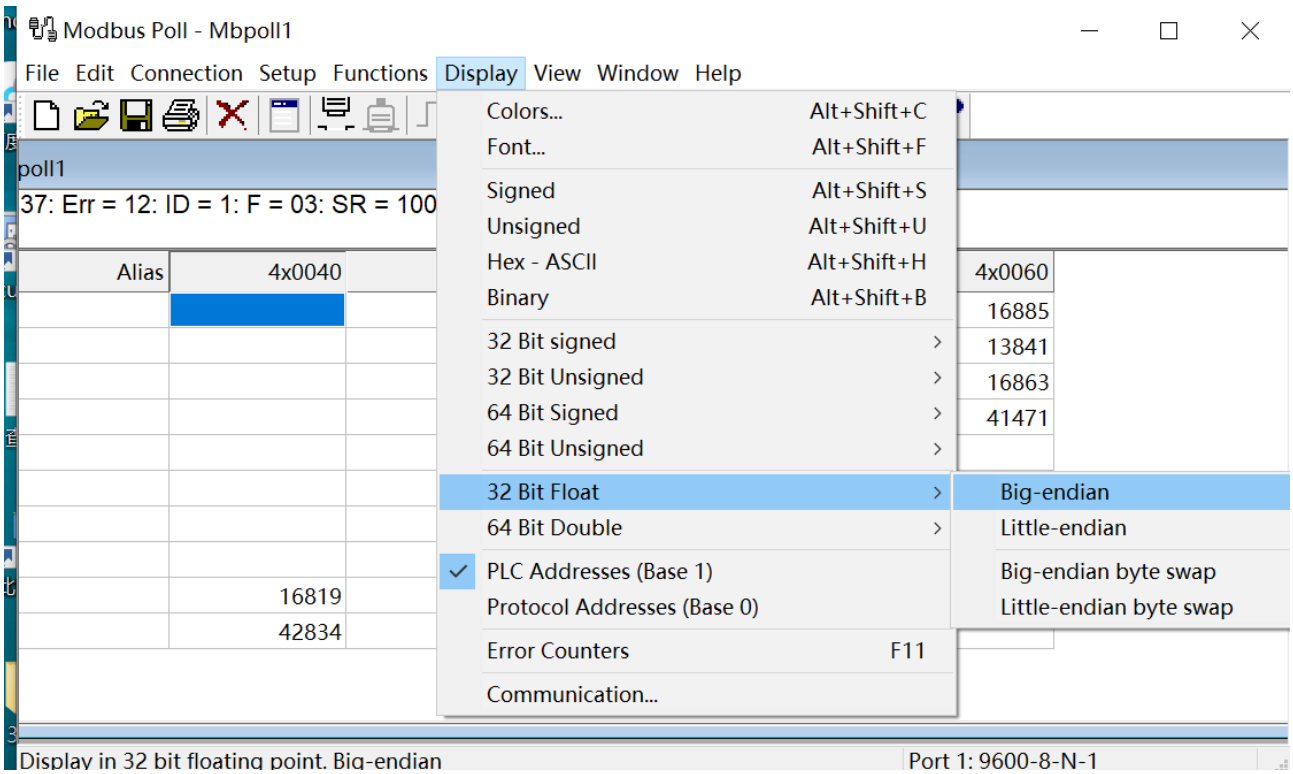
E.g., read channel 1- channel 8 in UINT16

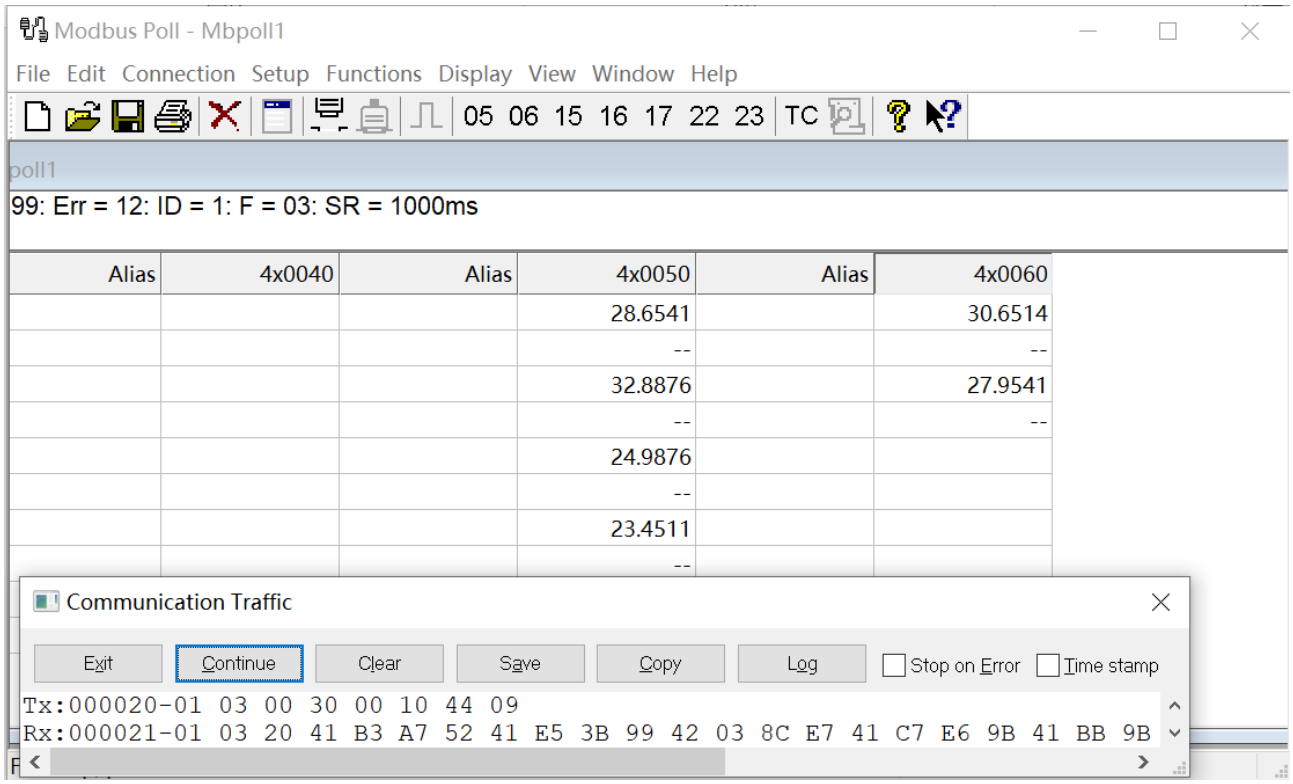




Read channel 1 - channel 8 in Float32




Modbus Poll - Mbpoll1
File Edit Connection Setup Functions Display View Window Help
poll1
37: Err = 12: ID = 1: F = 03: SR = 100
Alias
4x0040
4x0060
16885
13841
16863
41471
16819
42834
Colors... Alt+Shift+C
Font... Alt+Shift+F
Signed Alt+Shift+S
Unsigned Alt+Shift+U
Hex - ASCII Alt+Shift+H
Binary Alt+Shift+B
32 Bit signed
32 Bit Unsigned
64 Bit Signed
64 Bit Unsigned
32 Bit Float
64 Bit Double
PLC Addresses (Base 1)
Protocol Addresses (Base 0)
Error Counters F11
Communication...
Big-endian
Little-endian
Big-endian byte swap
Little-endian byte swap
Display in 32 bit floating point. Big-endian
Port 1: 9600-8-N-1


Modbus Poll - Mbpoll1
File Edit Connection Setup Functions Display View Window Help
05 06 15 16 17 22 23 TC
poll1
99: Err = 12: ID = 1: F = 03: SR = 1000ms
Alias
4x0040
Alias
4x0050
Alias
4x0060
28.6541
30.6514
32.8876
27.9541
24.9876
23.4511
Communication Traffic
Exit
Continue
Clear
Save
Copy
Log
Stop on Error
Time stamp
Tx:000020-01 03 00 30 00 10 44 09
Rx:000021-01 03 20 41 B3 A7 52 41 E5 3B 99 42 03 8C E7 41 C7 E6 9B 41 BB 9B