PTDNC04 Modbus Rtu Command

Note:
1 Data must be in HEX format
2 The slave address (device address) must be consistent with the settings. You can also use this command to query the current device address: FF 03 00 FD 00 01 00 24
3 Baud rate and parity must be consistent
4 If communication fails, short the RES jumper for 5 seconds to restore the factory settings.

Function code

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16 (2)
	03 Read			
	06/16 Write			

Register address	Register contents	Number of bytes	Units	Remarks
Read-only register,Read Function code Is 03				
0x0000-0x0003	CH0-CH3 PT100/PT1000 Temperature value	2	0.1℃	For example, the data is 255, which is equal to 25.5 ℃
0X0020-0X0023 (32-35)	CH0-CH3 PT100/PT1000 Resistance value	2	0.1Ω	For example, the data is 1000, which is equal to 100.0Ω
Read / write register; Read function code is 03 ,Write function code is 06 and 16(0x10)				
0X0040-0X0043 (64-67)	CH0-CH3 Temperature correction value This register can only be written Data read: 0XFFFF	2	0.1℃	If the temperature is deviated, please input the correct temperature value for correction
0X0060-0X0063 (96-99)	CH0-CH3 PT100/PT1000 resistance correction positive value This register can only be written Data read: 0XFFFF	2	0.1Ω	If the PT100/PT1000 resistance value is deviated, please input the correct resistance value for correction
0X00F3 （243）	The board will be powered on again if no valid command is received within the set time. Setting value: 0-65535 0: Do not power on again			

	1: Power on again if there is no command for 1 second 2: Power on again if there is no command for 2 seconds 100: Power on again if there is no command for 100 seconds 65535: Power on again if there is no command for 65535 seconds (default) If you do not need this function, please set this register to 0		
0X00F5 (245)	Temperature unit 0 (default): unit 0.1℃; 1: unit 0.01℃		
0x00FA (250)	Automatic temperature reporting function (0x0000-0x0003)	0: Query function (default) 1-255: Automatically report, the unit is second. 1: Report every 1 second 2: Report every 2 seconds 10: Report every 10 seconds Maximum interval of 255 seconds	
0x00FB (251)	Factory Reset	Factory Reset： Enter the following command at the current baud rate: FF 06 00 FB 00 00 ED E5	
0x00FC (252)	Data return delay	0~1000 After receiving the command, return the data interval time (unit MS)	
0x00FD (253)	RS485 address (Station address)	Read address：FF 03 00 FD 00 01 00 24； DIP switch settings (read only)	
0x00FE (254)	Baud rate	0:1200 1:2400 2:4800 3:9600（default）4:19200 5:38400 6：57600 7：115200 Others：Factory reset	
0x00FF (255)	Parity	2	0 None Parity 1 Even Parity 2 Odd Parity

Serial baud rate：9600（default），N，8，1

Modbus RTU Communication protocol：

1. Read temperature

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40001-40008
RS485 address : 0x01~0x3F
Function code:0x03
Register address:0x0000-0x0007
Read number: 0x0008

The return of the temperature data is two bytes，High-bit in the former and low-bit in the post，convert it to decimal and divided by 10, is the current temperature value；The highest bit 1 indicates a negative value， this value directly subtracting 65536，is the current temperature value.

For example,Read the temperature value of channel 0:
send data(RS485 address is 1)：01 03 00 00 00 01 84 0A
Returns data：01 03 02 00 DB F8 1F
01 RS485 address，03 Function，02 length，F8 1F crc16
00DB is the temperature value, the highest bit is 0, so the temperature is positive, it is converted to decimal = 219, 219/10=21.9 is the current temperature value；

Returns data：01 03 02 FF 90 F2 3F
FF90 is the temperature value, the highest bit is 1, so the temperature is negative, it is converted to decimal = 65424, (65424-65536)/10=-11.2 is the current temperature value

2. Read resistance value of PT100 sensor (corresponding to temperature)

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40033-40040
RS485 address : 0x01~0x3F
Function code:0x03
Register address:0x0020-0x0027
Read number: 0x0008

The return of the resistance value data is two bytes，High-bit in the former and low-bit in the post，convert it to decimal and divided by 10, is the resistance value ；
For example, Read the resistance value of channel 1:
send data(RS485 address is 1)：**01 03 00 20 00 01 85 C0**
Returns data：01 03 02 04 64 BB 6F
01 RS485 address，03 Function，02 length，BB 6Fcrc16
0464is the resistance value, it is converted to decimal = 1124, 1124/10=112.4 is the resistance value；

3. Set the temperature correction value

If the collected temperature deviates from the actual temperature, please input the correct temperature value in this register.

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Setting Content (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Register value (2)	CRC16(2)

Modbus Address(PLC)：40065-40072
RS485 address : 0x01~0x3F
Function code:0x06/0x10

Register address:0x0040-0x0047
Read number: 0x0008

Setting value: 2 bytes, the highest bit represents the sign of positive and negative values, 0 represents positive, 1 represents negative, and the unit is 0.1°C. When the highest bit is 1, it means a negative value. At this time, you need to add 1 to this value, or you can directly subtract 65536 from this value to get the current temperature value.

For example 1: The correct temperature is 25.5°C, and the temperature read is 26.4°C. It can be corrected by entering the correct temperature. 25.5*10=255, converted to hexadecimal 0XFF
Send frame: 01 06 00 40 00 FF C8 5E
Return frame: 01 06 00 40 00 FF C8 5E
The return frame is the same as the send frame.

For example 2: Change the temperature to -12.1℃, 65536-121=65,415 =0XFF87
Send frame: 01 06 00 40 FF 87 89 8C
Return frame: 01 06 00 40 FF 87 89 8C
The return frame is the same as the send frame.

4. Set PT100 resistance correction value

If the collected PT100 resistance value deviates from the actual resistance value, please input the correct resistance value in this register.

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Setting Content (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Register value (2)	CRC16(2)

Modbus Address(PLC)：40097-40104
RS485 address : 0x01~0x3F
Function code:0x06/0x10
Register address:0x0060-0x0067
Read number: 0x0008

For example : The current PT100 resistance is 100Ω, and the read value is 102Ω. It can be corrected by entering the correct resistance value. 100*10=1000, converted to hexadecimal 0X03E8

Send frame: 01 06 00 60 03 E8 89 6A
Return frame: 01 06 00 60 03 E8 89 6A
The return frame is the same as the send frame.

Special function Register

2.Write baud rate

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40255
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00FE(254)
Value: 2 bytes (values 0-7)

For example 1, Change the baud rate to 4800bps:
Send data(address 1):01 06 00 FE 00 02 69 FB
Return data :01 06 00 FE 00 02 69 FB

Baud rate corresponds to the number: 0:1200 1:2400 2:4800 3:9600
4:19200 5:38400 6:57600 7: 115200 8: Factory reset
Note: 1 The baud rate will be updated only when the module is powered on again when this command is used!
2 When the number corresponding to the baud rate is 8, the factory settings can be restored
For example:01 06 00 FE 00 08 E9 FC

For example 2 Read the current baud rate:
Send data(address 1):01 03 00 FE 00 01 E5 FA
Return data :01 03 02 00 03 F8 45

01 RS485 address, 03 Function,02 length,F8 45 crc16,03 means the current

baud rate is 9600bps

Baud rate corresponds to the number: 0:1200 1:2400 2:4800 3:9600 4:19200 5：38400 6:57600 7: 115200

3.Set Command(Date) Return Time

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40253
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00FC(252)
Value: 2 bytes (values 0-25)

For example, set the data return delay to 200ms
Send data(address 1):01 06 00 FC 00 C8 89 F9
Return data :01 06 00 FC 00 C8 89 F9
Return the delay time calculation formula:X = 200 * 1 = 200MS

4.Set Parity

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Functio n (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40256
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00FF(255)
Value: 2 bytes (values 0-2)

For example, set the parity to Even parity
Send data(address 1):01 06 00 FF 00 01 78 3A
Return data :01 06 00 FF 00 01 78 3A
0 None Parity 1 Even Parity 2 Odd Parity
Note: 1. When using this command, the module is powered on again, and the check digit will be updated!
2. When the setting is greater than 2, the default value will be restored to 0 after powering on again, and there will be no verification.

5.Factory reset:

Send data

RS485 address (Station address) (1)	Functio n (1)	Register address (2)	Read number (2)	CRC16(2)

Returns data

RS485 address (Station address) (1)	Functio n (1)	Number of bytes (1)	data (n)	CRC16(2)

Modbus Address(PLC)：40252
RS485 address : 0x01~0x3F
Function code:Write 0x06;
Register address:0x00FB(251)
Send data(address 1):FF 06 00 FB 00 00 ED E5
Return data :FF 06 00 FB 00 00 ED E5

Hardware reset : Short the RES jumper of the board for 5 seconds, then power on again.