

N4ROA01_N4ROB02_N4ROC04_N4ROD08_N4ROE16_N4ROF32

MODBUS RTU Command

Demo:

MODBUS command (function code, write 05/06/15/16, read 01/03)

Note :

1 MODBUS command must be HEX

2 Slave address (device address) must be the same as the setting. You can also use this command to query the current device address: FF 03 00 FD 00 01 00 24

3 The Baudrate and parity should be consistent

4 If communication fails, please short the RES jumper on the board for 5 seconds to restore the factory settings

Product overview:

Channels	SKU	Relay current	Output type
1	N4ROA01	3A	NC COM NO
2	N4ROB02	3A	NC COM NO
4	N4ROC04	3A	NC COM NO
8	N4ROD08	3A	NC COM NO
16	N4ROE16	3A	NC COM NO
32	N4ROF32	2A	COM NO

Supported function codes:

Function Code	Modbus Address (PLC)	Register Address	Describe
01:	00001	0x0000-0x001F (0-0/1/3/7/15/31)	Read DO digital output status (relay)
05:	00001	0x0000-0x001F (0-1/3/7/15/31)	Write a single DO digital output (relay)
15:	00001	0x0000-0x001F (0-0/1/3/7/15/31)	Write multiple DO digital output (relay)
03	40001		
		0x0080-0x00FF (128-255)	Read special function registers (baud rate 485 address, etc.)
06	40001		
		0x0080-0x00FF (128-255)	Write a single special function register (baud rate 485 address, etc.)
16(0x10)	40001		
		0x0080-0x00FF (128-255)	Write multiple special function registers (baud rate 485 address, etc.)

All states are mapped into 4xxx range registers. The user can monitor the input and output status of the module by reading or modifying the value of the 4xxx interval register (03 06 16 function code)

Register address	Register contents	Register value	Remarks	R/W
0x0000-0x001F (0-0/1/3/7/15/31)	DO digital output	A register represents a channel The following commands are supported: Open: 0x0100 Close:0x0200 Self-locking: 0x0300 Interlock: 0x0400 Momentary: 0x0500 Delay: 0x06XX(XX=00-FF) unit: second Open all: 0x0700 Close all: 0x0800		R/W
0x0080-0x0081 (128-129)	DO digital output	(one bit represents one channel) Digital output state 0-0/1/3/7/15/31 bits		R/W
The following are special function registers:				
0x00FB (251)	Factory Reset	00	Factory Reset: Enter the following command at the current baud rate: FF 06 00 FB 00 00 ED E5	R/W
0x00FC (252)	Command Return Time	0-25	Time interval for command return (unit: 40MS) Setting value: 0-25	R/W
0x00FD (253)	RS485 address (Slave ID)	Read address: FF 03 00 FD 00 01 00 24; Set address to 0x02: FF 06 00 FD 00 02 8C 25		R/W
0x00FE (254)	Baud rate	0-255	0:1200 1:2400 2:4800 3:9600 (default) 4:19200 5:38400 6: 57600 7: 115200 Others: Factory reset	R/W
0x00FF (255)	Parity	0-2	0 None Parity 1 Even Parity 2 Odd Parity	R/W

9600 Band ,8 Data bits,None Parity,1 Stop Bit。

MODBUS commands you can use "Modbus Poll" input, as shown below

(CRC check generated automatically)

Modbus Poll - Mbpoll3

File Edit Connection Setup Functions Display View Window Help

05 06 15 16 22 23 101 ?

Mbpoll1

Tx = 3478: Err = 4: ID = 1: F = 03: SR = 1000ms

	Alias	00000
0		
1	output 1	0x0001
2	output 2	0x0001
3	output 3	0x0001
4	output 4	0x0000
5	output 5	0x0001
6	output 6	0x0000
7	output 7	0x0001
8	output 8	0x0001

Mbpoll3

Tx = 8602: Err = 567: ID = 1: F = 03: SR = 1000ms

	Alias	00250
0		
1		
2		
3	Input-output relationship	1
4	Baud rate	3
5		
6		
7		
8		

Mbpoll4

Tx = 4296: Err = 561: ID = 1: F = 03: SR = 1000ms

	Alias	00120	Alias	00130
0			Input 2	0x0000
1			Input 3	0x0000
2			Input 4	0x0000
3			Input 5	0x0000
4			Input 6	0x0000
5			Input 7	0x0000
6			Input 8	0x0000
7				
8				
9	Input 1	0x0000		

You can also use HyperTerminal serial input, as shown below
(Manually add CRC check)

Serial Port Tester

Port Options Help

Ready: COM1

☐ Loops Unit/ms Send

In addition to supporting the 01/05/15 function, the output control command also supports the 03/06/16 function code
One register represents one channel (register address: 0x0000-0x001F)

A register represents a channel
The following commands are supported:
Open: 0x0100
Close: 0x0200
Self-locking: 0x0300
Interlock: 0x0400
Momentary: 0x0500
Delay: 0x06XX (XX=00-FF) unit: second
Open all: 0x0700
Close all: 0x0800

Example:

Channel 1 Open: 01 06 00 00 01 00 88 5A
Channel 1 Close: 01 06 00 00 02 00 88 AA
Channel 1 Self-locking: 01 06 00 00 03 00 89 3A
Channel 1 Interlock: 01 06 00 00 04 00 8B 0A
Channel 1 Momentary: 01 06 00 00 05 00 8A 9A
Channel 1 Delay 10 seconds: 01 06 00 00 06 0A 0A 6D
Channel 1 Delay 100 seconds: 01 06 00 00 06 64 8B 81

Channel 2 Open: 01 06 00 01 01 00 D9 9A
Channel 2 Close: 01 06 00 01 02 00 D9 6A
Channel 2 Self-locking: 01 06 00 01 03 00 D8 FA
Channel 2 Interlock: 01 06 00 01 04 00 DA CA
Channel 2 Momentary: 01 06 00 01 05 00 DB 5A
Channel 2 Delay 10 seconds: 01 06 00 01 06 0A 5B AD
Channel 2 Delay 100 seconds: 01 06 00 01 06 64 DA 41

Open all channels: 01 06 00 00 07 00 8B FA
Close all channels: 01 06 00 00 08 00 8E 0A

16 (0X10) function code

Open channels 1-16: 01 10 00 00 00 10 20 01 00 01 00 01 00 01 00 01 00
01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 34 6D
Close channels 1-4: 01 10 00 00 00 04 08 02 00 02 00 02 00 02 00 36 99
Close channels 5-8: 01 10 00 04 00 04 08 02 00 02 00 02 00 02 00 C7 56

1. Read D0 switching output status:

Send data

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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Modbus Address(PLC): 00001-00032

RS485 address : 0x01~0x3F

Function code: 0x01

Register address:0x0000-0x001F

Read number :0x0001-0x0020

For example, read the status of D0 digital output of channel 0-7:

Send data(address 1): 01 01 00 00 00 08 3D CC

Return data : 01 01 01 7C 50 69

01 RS485 address, 01 function code, 01 length, 7C refers to the current D0 digital output status, converted to binary 0111 1100, indicating that 2/3/4/5/6 channels have output, and other channels have no output.

In addition, the D0 digital output is also mapped to the 40000 interval register. The user can read the value of the D0 digital output through the 03 function code.

Modbus Address(PLC): 40129

RS485 address : 0x01~0x3F

Function code:0x03

Register address:0x0080

Read number: 0x0008

For example, read the status of D0 digital output of channel 0-7:

Send data(address 1): 01 03 00 80 00 01 85 E2

Return data : 01 03 02 00 7C B9 A5

01 RS485 address, 03 function code, 02 length, 0203 refers to the current D0 digital output status, converted to binary 0000 0000 0111 1100, indicating that 2/3/4/5/6 channels have output, and other channels no output.

2. Write single DO digital output status :

Send data

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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Modbus Address(PLC): 00001-00008

RS485 address : 0x01~0x3F

Function code:0x05

Register address:0x0000-0x0007

For example 1, Write channel 0 to ON, others OFF:

Send data(address 1):01 05 00 00 FF 00 8C 3A

Return data :01 05 00 00 FF 00 8C 3A

For example 2, Write channel 5 to ON, others OFF:

Send data(address 1):01 05 00 05 FF 00 9C 3B

Return data :01 05 00 05 FF 00 9C 3B

For example 3, Write channel 7 to ON, others OFF:

Send data(address 1):01 05 00 07 FF 00 3D FB

Return data :01 05 00 07 FF 00 3D FB

In addition, the DO digital output is also mapped to the 40000 interval register. The user can write the DO digital output value through the 06/16 function code.

Modbus Address(PLC): 40129

RS485 address :0x01~0x3F

Function code:0x06/0x10

Register address:0x0080

For example, Write channel 0/3 to ON, others OFF:

Send data(address 1):01 06 00 80 00 09 48 24

Return data :01 06 00 80 00 09 48 24

3. Write multiple DO digital output status (relay output):

Send data

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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Modbus Address(PLC): 00001-00008

RS485 address :0x01~0x3F

Function code:0x0F

Register address:0x0000-0x0007

For example 1, Write channel 0-8 to OFF:

Send data(address 1): 01 0F 00 00 00 08 01 00 FE 95

Return data : 01 0F 00 00 00 08 54 0D

For example 1, Write channel 0-8 to ON:

Send data(address 1): 01 0F 00 00 00 08 01 FF BE D5

Return data : 01 0F 00 00 00 08 54 0D

For example 3, Write channel 0/3/7 to ON, others OFF:

Send data(address 1): 01 0F 00 00 00 08 01 89 3F 33

Return data : 01 0F 00 00 00 08 54 0D

In addition, the DO digital output is also mapped to the 40000 interval register. The user can write the DO digital output value through the 06/16 function code.

Modbus Address(PLC): 40129

RS485 address :0x01~0x3F

Function code:0x06/0x10

Register address:0x0080

For example, Write channel 0/3 to ON, others OFF:

Send data(address 1):01 06 00 80 00 09 48 24

Return data :01 06 00 80 00 09 48 24

Special function Register

1.Set the 485 address(Slave ID)

Send data

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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Modbus Address(PLC): 40254

RS485 address :0x01~0Xf8/0XFF

Function code:Write 0x06/0x10,Read 0x03

Register address:0x00FD(253)

Value: 2 bytes (values 1-248)

For example 1: Set the current device address to 0x02

Send data(address is 1): 01 06 00 FD 00 02 99 FB

Return data : 01 06 00 FD 00 02 99 FB

Send data(don't know the address): FF 06 00 FD 00 02 8C 25

Return data : FF 06 00 FD 00 02 8C 25

For example 2: Read device address(0X0001)

Send data : FF 03 00 FD 00 01 00 24

Return data : FF 03 02 00 01 50 50

Note: With this command, there can be only one module on the bus 485,
More than one will go wrong!

2.Write baud rate

Send data

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

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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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 05 89 F9
 Return data :01 06 00 FC 00 05 89 F9
 Return the delay time calculation formula: $X = 05 * 40 = 200MS$

Note: The maximum can be set to 1000MS. If it exceeds 1000MS, that is, the setting value is greater than 25, and the data return delay will be initialized.

That is: 01 06 00 FC 00 20 48 22 can make the data return delay to restore initialization 0

4. Set Parity

Send data

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

RS485 address (Station address) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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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)	Function (1)	Register address (2)	Read number (2)	CRC16(2)
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Returns data

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