N4D8C12 12-channel RS485 IO input and output controller commamd

MODBUS Command (function code 06 is Control command,03 is Read status command 0x0001-0x000C registers support 16 (0X10) Command)

Note :

1 MODBUS command must be HEX

2 Slave ID (Device address) must be consistent with the DIP switches (A0-A5)

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

Function code

RS485 address (Station address) (1)	Function (1)	Register address (2)	Read number (2)	CRC16 (2)
	03 Read			
	06 Write			
	16(0x10) Write multiple registers			

Function code	Register address	Register contents	Number of bytes	Register value	Remarks
03 06 16(0X10)	0x0001-0x000C	Output port status	2	0X0000 0X0001	0X0000 Relay Close 0X0001 Relay Open
03	0x0081-0x008C	Input port status	2	0X0000 0X0001	NPN Input 0X0000 Input Off 0X0001 Input On
03 06	0x00FD	Input and output relationship	2	0X0000-0X0004	0x0000 Unrelated 0x0001 Self-locking relationship (default) 0x0002 Interlocking relationship 0x0003 Momentary relationship 0x0004 Interlocking relationship between two channels Other values are the same as 0
03 06	0x00FE	Baud rate	2	0x0000-0x0005	0~5 0:1200 1:2400 2:4800 3:9600（default）

					4:19200 5: Factory reset

MODBUS 06 Command (**Control command** ,HEX):

Bytes Number	1	2	3	4	5	6	7	8
MODBUS Definitions	Slave ID	Function	Address		Data		CRC Check	
Function	Device Address	Function	Channel number		Command	Delay time	CRC Check	
Open	0x00-0x3F	0x06	0x0001-0x0008		0x01	0x00	2Bytes CRC	
Close	0x00-0x3F	0x06	0x0001-0x0008		0x02	0x00	2Bytes CRC	
Toggle (Self-locking)	0x00-0x3F	0x06	0x0001-0x0008		0x03	0x00	2Bytes CRC	
Latch Inter-locking)	0x00-0x2F	0x06	0x0001-0x0008		0x04	0x00	2Bytes CRC	
Momentary (Non-locking)	0x00-0x2F	0x06	0x0001-0x0008		0x05	0x00	2Bytes CRC	
Delay	0x00-0x2F	0x06	0x0001-0x0008		0x06	0x00-0xff	2Bytes CRC	
Open all	0x00-0xFE	0x06	0x0000		0x07	0x00	2Bytes CRC	
Close all	0x00-0xFE	0x06	0x0000		0x08	0x00	2Bytes CRC	
Interlock between two channels	0x00-0xFE	0x06	0x0001-0x000C		0x09	0x00	2Bytes CRC	
Input and output relationship	0x00-0xFE	0x06	0x00FD		0x0000 Unrelated 0x0001 Self-locking relationship (default) 0x0002 Interlocking relationship 0x0003 Momentary relationship 0x0004 Interlocking relationship between two channels Other values are the same as 0			
Baud rate	0x00-0xFE	0x06	0x00FE		0x00	0x00-0x05		

Remarks:

1 Momentary mode, delay time is 1 seconds

2 Delay mode, delay time is 0-255 seconds

3 0x0001-0x000C registers not only support 06 function code, but also support 16 (0X10) function code

4 Interlocking between two channels refers to interlocking of channels 1-2, 3-4, 5-6,7-8,9-10,11-12

Return command：
Command is active, return to send commands; instruction is invalid no return.

MODBUS 03 Command (**Read status command** ,HEX):

Bytes Number	1	2	3	4	5	6	7	8
MODBUS Definitions	Slave ID	Function	Address		Data		CRC Check	
Function	Device Address	Function	Starting register address		Register length		CRC Check	
Read Channel 1 State	0x00-0x2F	0x03	0x0001		0x0001			
Read Channel 2 State	0x00-0x2F	0x03	0x0002		0x0001			
Read 2 consecutive channels status	0x00-0x2F	0x03	0x0001-0x0003		0x0002			
Read 3 consecutive channels status	0x00-0x2F	0x03	0x0001-0x0002		0x0003			
Read all 8 channels status	0x00-0x2F	0x03	0x0001		0x0008			
Read input1 status	0x00-0x2F	0x03	0x0081		0x0001			
Read input2 status	0x00-0x2F	0x03	0x0082		0x0001			
Read input3 status	0x00-0x2F	0x03	0x0083		0x0001			
Read input4 status	0x00-0x2F	0x03	0x0084		0x0001			
Read the status of 2 consecutive input ports	0x00-0x2F	0x03	0x0081-0x0087		0x0002			
Read the status of 3 consecutive input ports	0x00-0x2F	0x03	0x0081-0x0086		0x0003			
Read 8 input port status	0x00-0x2F	0x03	0x0081		0x0008			
Input and output relationship	0x00-0x2F	0x03	0x00FD		0x0000-0x0004			

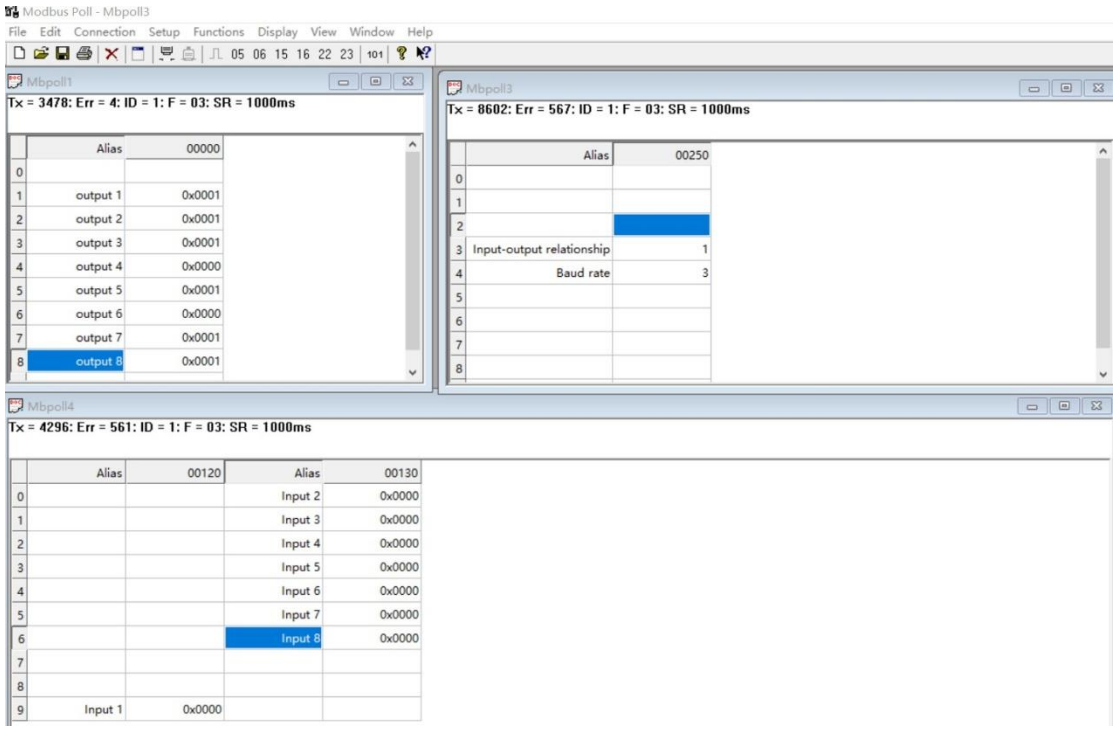
Baud rate	0x00-0x2F	0x03	0x00FE	0x0000-0x0005	

Read status command returns (function code 03, HEX format):

Bytes length	1	1	1		2
MODBUS Definitions	Slave ID	Function	data length	data	CRC16 Check
Function	Device Address	Function	data length	Relay state 0x0001 open 0x0000 close	CRC16 Check
Channel 1 open	0x00-0x1F	0x03	0x02	0x0001	
Channel 1 close	0x00-0x1F	0x03	0x02	0x0000	
Channel 2 open	0x00-0x1F	0x03	0x02	0x0001	
Channel 2 close	0x00-0x1F	0x03	0x02	0x0000	
Channel 1 open Channel 2 open	0x00-0x1F	0x03	0x04	0x0001 0x0001	
Channel 1 open Channel 2 close	0x00-0x1F	0x03	0x04	0x0001 0x0000	
Channel 1 close Channel 2 open	0x00-0x1F	0x03	0x04	0x0000 0x0001	
Channel 1 close Channel 2 close	0x00-0x1F	0x03	0x04	0x0000 0x0000	
Input 1 On	0x00-0xFE	0x03	0x02	0x0001	
Input 1 Off	0x00-0xFE	0x03	0x02	0x0000	
Input 2 On	0x00-0xFE	0x03	0x02	0x0001	
Input 2 Off	0x00-0xFE	0x03	0x02	0x0000	
Input 1 On Input 2 On	0x00-0xFE	0x03	0x04	0x0001 0x0001	
Input 1 On Input 2 Off	0x00-0xFE	0x03	0x04	0x0001 0x0000	
Input 1 Off Input 2 On	0x00-0xFE	0x03	0x04	0x0000 0x0001	
Input 1 Off Input 2 Off	0x00-0xFE	0x03	0x04	0x0000 0x0000	

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

（CRC check generated automatically）



You can also use HyperTerminal serial input, as shown below

（Manually add CRC check）

Examples (Slave ID is 1,DIP switch state)
Channel 1 Open ： 01 06 00 01 01 00 D9 9A
Channel 1 Close ： 01 06 00 01 02 00 D9 6A
Channel 1 Toggle：01 06 00 01 03 00 D8 FA
Channel 1 Latch：01 06 00 01 04 00 DA CA
Channel 1 Momentary: 01 06 00 01 05 00 DB 5A
Channel 1 Delay 10 seconds : 01 06 00 01 06 0A 5B AD
Channel 1 Delay 100 seconds: 01 06 00 01 06 64 DA 41
Interlock between channels 1-2: 01 06 00 01 09 00 DE 5A (open 1 close 2)

Channel 2 Open ： 01 06 00 02 01 00 29 9A
Channel 2 Close ： 01 06 00 02 02 00 29 6A
Channel 2 Toggle ： 01 06 00 02 03 00 28 FA
Channel 2 Latch ： 01 06 00 02 04 00 2A CA
Channel 2 Momentary : 01 06 00 02 05 00 2B 5A
Channel 2 Delay 10 seconds : 01 06 00 02 06 0A AB AD
Channel 2 Delay 100 seconds : 01 06 00 02 06 64 2A 41
Interlock between channels 1-2: 01 06 00 02 09 00 2E 5A (open 2 close 1)

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

16 (0X10) function code (only supports 0x0001-0x000C registers)
Open all：01 10 00 01 00 0C 18 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 DD 0D
Close Channels1-4：01 10 00 01 00 04 08 02 00 02 00 02 00 02 00 CB 5A
Close Channels 5-8：01 10 00 05 00 04 08 02 00 02 00 02 00 02 00 3A 95
Close Channels 9-12：01 10 00 09 00 04 08 02 00 02 00 02 00 02 00 2A 85

Read state (assuming that the channel 1 is open, the channel 2 is close).
Read channel 1 state ： 01 03 00 01 00 01 D5 CA
Return open：01 03 02 00 01 79 84

Read channel 2 state ： 01 03 00 02 00 01 25 CA
Return close：01 03 02 00 00 B8 44

Read channel 1 and channel 2 state ： 01 03 00 01 00 02 95 CB
Return channel open and channel 2 close ： 01 03 04 00 01 00 00 AB F3

Read 1-8 channel input status：01 03 00 81 00 08 14 24
Return all input channels OFF：01 03 10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 E4 59
Return input channel 1 ON：01 03 10 00 01 00 00 00 00 00 00 00 00 00 00 00 00 25 59

1. Read 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)

Function code 0x03

Register address：0x00FE

Read number：0x0001

For example:

send data(RS485 address is 1)：01 03 00 FE 00 01 E5 FA

Returns 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

2. Write baud rate

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)

Function code 0x06

Register address：0x00FE

Setting Content：2Bytes(0-4)

For example, Change the baud rate to 4800bps:

send data(RS485 address is 1)：01 06 00 FE 00 02 69 FB

Returns 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: Factory reset

Note: 1 The baud rate will be updated when the module is powered up again!

2 The factory setting can be restored when the baud rate corresponding to the number is 5.

For example: 01 06 00 FE 00 05 28 39

3. Read input and output relation register

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)

Function code 0x03

Register address：0x00FD

Read number：0x0001

For example:

send data(RS485 address is 1)：01 03 00 FD 00 01 15 FA

Returns data：01 03 02 00 01 79 84

01 RS485 address，03 Function，02 length，15 FA crc16

Register corresponding value:

0x0000 Unrelated

0x0001 Self-locking relationship (default)

0x0002 Interlocking relationship

0x0003 Momentary relationship

0x0004 Interlocking association between two channels

Other values are the same as 0

4. Write baud rate

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)

Function code 0x06

Register address：0x00FD
Setting Content：2Bytes(0-3)

For example, Set the input and output to be unrelated, and change the register value to 0X0000:

Send data(RS485 address is 1)：01 06 00 FD 00 00 18 3A
Returns data：01 06 00 FD 00 00 18 3A

Register corresponding value:

0x0000 Unrelated
0x0001 Self-locking relationship (default)
0x0002 Interlocking relationship
0x0003 Momentary relationship
0x0004 Interlocking association between two channels
Other values are the same as 0