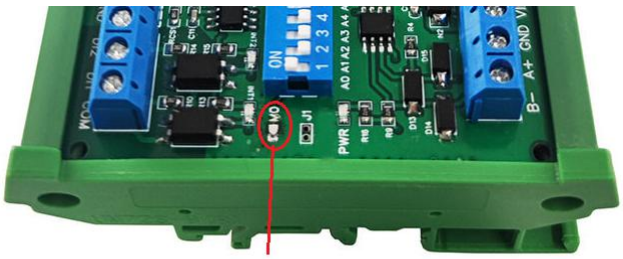
23IOXXX Modbus RTU Command 1

Jumper M0 disconnected (default)



M0 jumper disconnected (default)

MODBUS command (function code 06/16 is Control command,03 is Read status command)

Note :

1 MODBUS command must be HEX

2 Slave ID (device address) must be correct, the default slave address is 01, and the Slave ID is set to see the bottom.

3 If you don't remember the Slave ID, use the command Read Slave ID : FF 03 00 FD 00 01 00 24

The baud rate is 9600 , 8 data bits, one stop bit, and no parity bit.

Product Type

Channles	Product Model	Product ID	Input Type
8	23IOA08	2308	NPN/PNP
16	23IOB16	2316	NPN
24	23IOC24	2324	NPN
32	23IOD32	2332	NPN/PNP
48	23IOE48	2348	NPN

Function code

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

Function code	Register address	Register content	Number of bytes	Register value	Remark
03 06 16 (0x10)	0x0000-0x002F (0-47)	Output port status	One register for one channel The following Commands are supported: Open : 0x0100 Close : 0x0200 Toggle (Self-locking) : 0x0300 Latch(Inter-locking) : 0x0400 Momentary (Non-locking) : 0x0500 Delay : 0x06XX(XX=00-FF) unit: second Open all : 0x0700 Close all : 0x0800		
	0X0070-0X0072 (112-114)	Output port status	One bit for one channel. Only supports Open and Close Commands. 1 open 0 close		
	0x0080-0x00AF (128-175)	Input port status	One register for one channel 0X0000 no input 0X0001 has input		
	0X00C0-0X00C2 (192-194)	Input port status(bit)	One bit for one channel 0 no output 1 has output		
	Special Function Register:				
	0X00F5 (245)	Remote IO Sending	Unit: 0.2 seconds 0 Disable; 1-255 : Send once every 0.2-51 seconds		
	0X00F6 (246)	Remote IO Receive	0 Disable; 1 Enable;		
	0x00F7 (247)	Product ID	SKU ID 23IOA08 2308 23IOB16 2316 23IOC24 2324 23IOD32 2332 23IOE48 2348		
	0x00F8 (248)	Automatic reporting of digital input(DI) status	0X00C0-0X00C2 register is automatically reported 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		

	0x00FA (250)	Input and output relationship (DI-DO relationship)		0x0000 Unrelated(default) 0x0001 Self-locking 0x0002 Interlocking (all ch) 0x0003 Momentary 0x0004 Interlocking(2 ch) 0x0005 Output=Input Other values are the same as 0	
	0x00FB (251)	Factory Reset Enter the following command at the current baud rate: FF 06 00 FB 00 00 ED E5			
	0x00FC (252)	Command Return Time	2	0-25 data return delay Return data interval time after receiving the command (unit 40MS)	
	0x00FD (253)		2	RS485 address (0x01-0x3F)	Products with DIP switches can only read
	0x00FE (254)	Baud rate	2	0x0000~0x0007	0:1200 1:2400 2:4800 3:9600 (default) 4:19200 5:38400 6:57600 7:115200 Others: Factory reset
	0x00FF (255)	Parity			0 None Parity 1 Odd Parity 2 Even Parity

MODBUS 06/16 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	0x00-0xF8	0x06 /0x10	0x0000-0x0007		0x01	0x00	2Bytes CRC	
Close	0x00-0xF8	0x06 /0x10	0x0000-0x001F		0x02	0x00	2Bytes CRC	
Toggle (Self-locking)	0x00-0xF8	0x06 /0x10	0x0000-0x001F		0x03	0x00	2Bytes CRC	

LatchInter-locking)	0x00-0xF8	0x06 /0x10	0x0000-0x001F	0x04	0x00	2Bytes CRC
Momentary (Non-locking)	0x00-0xF8	0x06 /0x10	0x0000-0x001F	0x05	0x00	2Bytes CRC
Delay	0x00-0xF8	0x06 /0x10	0x0000-0x001F	0x06	0x00-0xff	2Bytes CRC
Open all	0x00-0xF8	0x06 /0x10	0x0000	0x07	0x00	2Bytes CRC
Close all	0x00-0xF8	0x06 /0x10	0x0000	0x08	0x00	2Bytes CRC

Remarks:
1 Momentary mode, delay time is 1 seconds
2 Delay mode,delay time is 0-255 seconds

Example:
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

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

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

16 (0X10) function code
Open Channels1-8： 01 10 00 00 00 08 10 01 00 01 00 01 00 01 00 01 00 01 00 01 00 01 00 B4 EB
Close Channels1-4： 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

Output port control (one bit one relay)

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)：40113
RS485 address : 0x01~0Xf8
Function code:Write 0x06/0x16;Read 0x03
Register address: 0x0070-0x0072(112-114) corresponds to the output port status of channels 0-47
Value : 0 OFF;1 ON

For example 1, Write channel 1/2/3 ON, others OFF:
Send data(address 1): 01 06 00 70 00 07 C9 D3
Return data : 01 06 00 70 00 07 C9 D3

For example 2, Write 16-19 channels ON:
Send data(address 1): 01 06 00 71 FF FF D8 61
Return data : 01 06 00 71 FF FF D8 61

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)

Returns data

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

Modbus Address(PLC)：40254
RS485 address :0x01~0Xf8/0XFF
Function code:Write Read 0x03
Register address:0x00FD(253)
Value: 2 bytes (values 1-248)

For example 1: Set the current device address to 0x02
Turn the second bit of the DIP switch to ON, and the other to OFF

For example 2: Read device address,only one RS485 device can be connected
Send data　: FF 03 00 FD 00 01 00 24
Return data : 01 03 02 00 01 79 84

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)

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 digital input and output relationship (DI-DO relationship):

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):40251
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00FA(250)
Value: 2 bytes (values 0-5)

For example, set the input and output to be unrelated, and change the register value to 0X0000:
Send data(address 1):01 06 00 FA 00 00 A9 FB
Return data :01 06 00 FA 00 00 A9 FB

Register value:
0x0000 Unrelated(default)
0x0001 Self-locking relationship
0x0002 Interlocking relationship(all channels)
0x0003 Momentary relationship
0x0004 Interlocking relationship(2 channels)
0x0005 Output=Input
Other values are the same as 0x0000

For example: read the current input-output relationship
Send data(address 1):01 03 00 FA 00 01 A4 3B
Return data :01 03 02 00 01 79 84
01 RS485 address, 03 Function,02 length 0001is Self-locking relationship ,15 FA crc16

4. Set DI digital input status to automatically report (8/16/24/32/48 channels are set at the same time):(Automatic reporting of digital input(DI) status)

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)：40249
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00F8(248)
Value: 2 bytes (values 0-255)

For example : For example, the current query function should be changed to automatic reporting:

1 second automatic report : 01 06 00 F8 00 01 C9 FB
2 second automatic report : 01 06 00 F8 00 02 89 FA
3 second automatic report : 01 06 00 F8 00 03 48 3A
4 second automatic report : 01 06 00 F8 00 04 09 F8
5 second automatic report : 01 06 00 F8 00 05 C8 38
10 second automatic report : 01 06 00 F8 00 0A 88 3C

Disable reporting function(Query function): 01 06 00 F8 00 00 08 3B

5. Set Remote IO Sender:

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):40246
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00F5(245)
Value: 2 bytes (values 0-255)

Configure this register, the 23IOXX board will actively send the input status of IN1-IN8/16/24/32/48 through RS485 Port, and control the output ports O1-O8/16/24/32/48 of another 23IOXX board (the RS485 address of the two boards should be the same).

The unit is 0.2 seconds. 0 Disable,1-255 means 0.2-51 seconds to send once

For example, if remote IO sending is currently disable, it should be changed to allow remote IO sending:
0.2 seconds, send data(RS485 address is 1): 01 06 00 F5 00 01 58 38
0.4 seconds, send frame (address is 1) 01 06 00 F5 00 02 18 39
0.6 seconds, send frame (address is 1) 01 06 00 F5 00 03 D9 F9
0.8 seconds, send frame (address is 1) 01 06 00 F5 00 04 98 3B
1 second, send frame (address is 1) 01 06 00 F5 00 05 59 FB
Disable remote IO sending: send frame (address is 1) 01 06 00 F5 00 00 99 F8

6.Set Remote IO Receive Enable:

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):40247
RS485 address :0x01~0x3F
Function code:Write 0x06/0x16;Read 0x03
Register address:0x00F6(246)
Value: 2 bytes (values 0-255)

When enable Remote IO Sender, please configure this register to 1.

For example,
Enable Remote IO Receive:
send frame (address is 1) 01 06 00 F6 00 01 A8 38
Disable Remote IO Receive:
send frame (address is 1) 01 06 00 F6 00 00 69 F8

Note: When this register is configured as 1, register 0x0080-0x0082 does not Read

7.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 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

8.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)	Function (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.

9. Factory reset:

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): 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 RESET/RST jumper of the board for 5 seconds, then power on again.