



Modbus RTU Protocol Example

1, Open the first relay (Manual mode)

Send: FF 05 00 00 FF 00 99 E4

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
05	Function code	Write single coil
00 00	Relay address	0x0000--0x0007 respectively are #1 Relay--#8 relay
FF 00	ON/OFF command	0x0000 is OFF, 0xFF00 is ON
99 E4	CRC16	CRC-16/MODBUS verify code

Same return: FF 05 00 00 FF 00 99 E4

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
05	Function code	Write single coil
00 00	Relay address	0x0000--0x0007 respectively are #1 Relay--#8 relay
FF 00	ON/OFF command	0x0000 is OFF, 0xFF00 is ON
99 E4	CRC16	CRC-16/MODBUS verify code

2, Close the first relay (Manual mode)

Send: FF 05 00 00 00 00 D8 14

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
05	Function code	Write single coil
00 00	Relay address	0x0000--0x0007 respectively are #1 Relay--#8 relay
00 00	ON/OFF	0x0000 is OFF, 0xFF00 is ON



	command	
D8 14	CRC16	CRC-16/MODBUS verify code

Same return: FF 05 00 00 00 00 D8 14

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
05	Function code	Write single coil
00 00	Relay address	0x0000--0x0007 respectively are #1 Relay--#8 relay
00 00	ON/OFF command	0x0000 is OFF, 0xFF00 is ON
D8 14	CRC16	CRC-16/MODBUS verify code

3, Open all of the relays

Send: FF 0F 00 00 00 08 01 FF 30 1D

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
0F	Function code	Write multiple coils
00 00	Start address	#1 Relay address
00 08	Relay quantity	Total quantity of controlled relays
01	Length of command	Length of control command
FF	Control command	0x00 is close all, 0xFF is open all
30 1D	CRC16	CRC-16/MODBUS verify code

Return: FF 0F 00 00 00 08 41 D3

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
0F	Function code	Write multiple coils
00 00	Start address	#1 Relay address



00 08	Relay quantity	Total quantity of controlled relays
41 D3	CRC16	CRC-16/MODBUS verify code

4, Close all of the relays

Send: FF 0F 00 00 00 08 01 00 70 5D

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
0F	Function code	Write multiple coils
00 00	Start address	#1 Relay address
00 08	Relay quantity	Total quantity of controlled relays
01	Length of command	Length of control command
00	Control command	0x00 is close all, 0xFF is open all
70 5D	CRC16	CRC-16/MODBUS verify code

Return: FF 0F 00 00 00 08 41 D3

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
0F	Function code	Write multiple coils
00 00	Start address	#1 Relay address
00 08	Relay quantity	Total quantity of controlled relays
41 D3	CRC16	CRC-16/MODBUS verify code

5, Set Device address to 255

Send: 00 10 00 00 00 01 02 00 FF EB 80

Byte	Meaning	Comment
00	Fixed value	
10	Function code	Write multiple register
00 00	Start address	



00 01	Number of written register	
02	Data length	The data length of write register
00 FF	Register data	Write Device address 0x00FF, Scope:0x0001-0x00FF
EB 80	CRC16	CRC-16/MODBUS verify code

Same return: 00 10 00 00 00 01 02 00 FF EB 80

Byte	Meaning	Comment
00	Fixed value	
10	Function code	Write multiple register
00 00	Start address	
00 01	Number of register	
02	Data length	The data length of write register
00 FF	Register data	Write Device address 0x00FF, Scope:0x0001-0x00FF
EB 80	CRC16	CRC-16/MODBUS verify code

6, Read the Device address 255

Send: 00 03 00 00 00 01 85 DB

Byte	Meaning	Comment
00	Fixed value	
03	Function code	Read hold register
00 00	Start address	
00 01	Number of register	Number of read register
85 DB	CRC16	CRC-16/MODBUS verify code

Return: 00 03 02 00 FF C5 C4

Byte	Meaning	Comment
00	Fixed value	
03	Function code	Read hold register
02	Length of data	Length of read register data
00 FF	Register data	Read Device address is 0x00FF
C5 C4	CRC16	CRC-16/MODBUS verify code



7, Read the status of the relays

Send: FF 01 00 00 00 08 28 12

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
01	Function code	Read the status of coil
00 00	Start address	#1 Relay address
00 08	Relay quantity	Total number of read relays are 0x0008
28 12	CRC16	CRC-16/MODBUS verify code

Return: FF 01 01 01 A1 A0

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
01	Function code	Read the status of coil
01	Length of data	length of read data
01	Data	The read data, Bit0-Bit7 respectively are #1 Relay--#8 relay status, 0 is OFF, 1 is ON
A1 A0	CRC16	CRC-16/MODBUS verify code

8, Read the status of the optocoupler input

Send: FF 02 00 00 00 08 6C 12

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
02	Function code	Read discrete input
00 00	Start address	#1 Optocoupler address
00 08	Optocoupler quantity	Total quantity of read optocoupler is 0x0008
6C 12	CRC16	CRC-16/MODBUS verify code



Return: FF 02 01 01 51 A0

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
02	Function code	Read discrete input
01	Length of data	length of read data
01	Data	The read data, Bit0-Bit7 respectively are #1 optocoupler --#8 optocoupler input status, 0 is high level, 1 is low level
51 A0	CRC16	CRC-16/MODBUS verify code

9, Set the baud-rate to 9600

Send: FF 10 03 E9 00 01 02 00 03 8B CC

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
03 E9	Start address	
00 01	Number of register	
02	Data length	The data length of write register
00 03	Register data	Baud-rate Write value, Scope:0x0002--0x0004,0x0002, 0x0003, 0x0004 respectively are Baud-rate 4800, 9600, 19200
8B CC	CRC16	CRC-16/MODBUS verify code

Return: FF 10 03 E9 00 01 C5 A7

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
03 E9	Start address	
00 01	Number of register	
C5 A7	CRC16	CRC-16/MODBUS verify code



10, Read the baud-rate 19200

Send: FF 03 03 E8 00 01 11 A4

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
03	Function code	Read hold register
03 E8	Start address	
00 01	Number of register	Number of read register
11 A4	CRC16	CRC-16/MODBUS verify code

Return: FF 03 02 00 04 90 53

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
03	Function code	Read hold register
02	Length of data	Length of read register data
00 04	Register data	Baud-rate read value, Scope:0x0002--0x0004, And 0x0002, 0x0003,0x0004 respectively are Baud-rate 4800,9600, 19200
90 53	CRC16	CRC-16/MODBUS verify code

11, Open the first relay (Flash ON mode 2S)

Send: FF 10 00 03 00 02 04 00 04 00 14 C5 9F

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
00 03	Relay address	#1 Relay--#8 Relay address respectively are: 0x0003,0x0008,0x000D,0x0012,0x0017,0x001C,0x0021,0x0026
00 02	Number of register	
04	Data length	The data length of write register



00 04	Data of 1st register	Value of Flash ON/OFF, 0x0004 is Flash ON, 0x0002 is Flash OFF
00 14	Data of 2nd register	Delay value, Scope:0x0001--0xFFFF。Delay base is0.1S, So delay time is 0x0014*0.1=20*0.1S=2S, #1 Relay closing for 2S then auto release
C5 9F	CRC16	CRC-16/MODBUS verify code

Return: FF 10 00 03 00 02 A4 16

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
00 03	Relay address	#1 Relay--#8 Relay address respectively are: 0x0003,0x0008,0x000D,0x0012,0x0017,0x001C, 0x0021,0x0026
00 02	Number of register	
A4 16	CRC16	CRC-16/MODBUS verify code

12, Close the first relay (Flash OFF mode 3S)

Send: FF 10 00 03 00 02 04 00 02 00 1E A5 99

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
00 03	Relay address	#1 Relay--#8 Relay address respectively are : 0x0003,0x0008,0x000D,0x0012,0x0017,0x001C,0x0021, 0x0026
00 02	Number of register	
04	Data length	The data length of write register
00 02	Data of 1st register	Value of Flash ON/OFF, 0x0004 is Flash ON, 0x0002 is Flash OFF
00 1E	Data of 2nd register	Delay value, Scope:0x0001--0xFFFF。Delay base is 0.1S, So delay time is 0x001E*0.1=30*0.1S=3S, #1 Relay will release for 3S then auto closing
A5 99	CRC16	CRC-16/MODBUS verify code



Return: FF 10 00 03 00 02 A4 16

Byte	Meaning	Comment
FF	Device address	Scope:1-255, Default:255
10	Function code	Write multiple register
00 03	Relay address	#1 Relay--#8 Relay address respectively are : 0x0003,0x0008,0x000D,0x0012,0x0017,0x001C, 0x0021,0x0026
00 02	Number of register	
A4 16	CRC16	CRC-16/MODBUS verify code