

LD58A08 MODBUS RTU Command(Full Version)

Notice:

If you only need to use it as a common output port, please refer to "LD58A08 MODBUS RTU Command(IO Version)"

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

DEMO 1 : <https://youtu.be/ny1EqvMb5QU>

DEMO 2: <https://youtu.be/uStm8xzQ4R0>

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

1 0-7 channels can be used as ordinary switch output, support 05/15 function code to write data, or use 06/16 function code to operate the 0X0080 register.

2 0-7 channels can also be used as PWM output, 0-5 channels are low-speed channels (output parameters are expressed by Period/Turn-On-Time), output Period range: 0.1-6553.5 seconds; Turn-On-Time range: 0-6553.4 seconds (cannot greater than the Period time).

3 Channels 6-7 are high-speed PWM channels (output parameters are represented by Frequency/Duty-Cycle), output Frequency range: 1-20000Hz, Duty-Cycle 0-100%.

4 0X0002/0X0012/...0X0072 registers are PWM output Disable/Enable registers.

Supported function codes:

Function Code	Modbus Address (PLC)	Register Address	Describe
01:	00001	0x0000-0x0007 (0-7)	Read DO digital output status
05:	00001	0x0000-0x0007 (0-7)	Write a single DO digital output
15:	00001	0x0000-0x0007 (0-7)	Write multiple DO digital output
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 4xxxx range registers. The user can monitor the input and output status of the module by reading or modifying the value of the 4xxxx interval register (03 06 16 function code)

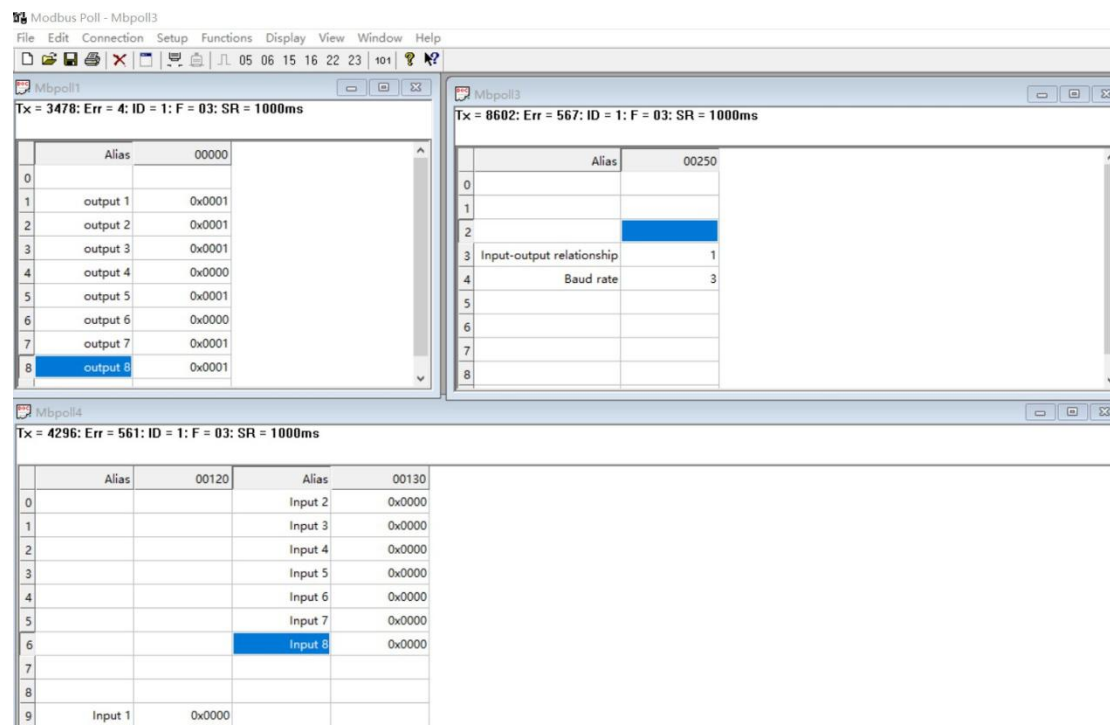
Register address	Register contents	Register value	Remarks	R/W
0x0000 (0)	(Low Speed PWM) Ch0 Period	Unit: 0.1 second(100MS) Output period range: 0.1-6553.5 seconds For example: write 0x1388 decimal 5000 Periodic output 500 seconds write 0x0064 decimal 100 Periodic output for 10 seconds (Can control relay/solenoid valve/LED switch)		R/W
0x0010 (16)	(Low Speed PWM) Ch1 Period			
0x0020 (32)	(Low Speed PWM) Ch2 Period			
0x0030 (48)	(Low Speed PWM) Ch3 Period			
0x0040 (64)	(Low Speed PWM) Ch4 Period			
0x0050 (80)	(Low Speed PWM) Ch5 Period			
0x0060 (96)	(High Speed PWM) Ch6 Frequency	Unit: Hz Frequency range 1Hz-20000Hz. For example: Write 0x07D0 decimal 2000 Frequency output 2000Hz write 0x0064 decimal 100 Frequency output 100Hz (Can control buzzer/LED dimming)		
0x0070 (112)	(High Speed PWM) Ch7 Frequency			
0x0001 (1)	(Low Speed PWM) Ch0 Turn-On-Time	Unit: 0.1 second (100MS) Turn-On-Time range: 0.0-6553.4 seconds (cannot be greater than Period time) Example 1: Ch0 has a period of 10 seconds and an on-time of 5 seconds (50% duty cycle) 0X0000 register write: 100 0x0001 Register write: 50 Example 2: Ch1 has a period of 100 seconds and an on-time of 90 seconds (90% duty cycle)		R/W
0x0011 (17)	(Low Speed PWM) Ch1 Turn-On-Time			
0x0021 (33)	(Low Speed PWM) Ch2 Turn-On-Time			
0x0031 (49)	(Low Speed PWM) Ch3 Turn-On-Time			
0x0041 (65)	(Low Speed PWM) Ch4 Turn-On-Time			
0x0051	(Low Speed PWM)			

(81)	Ch5 Turn-On-Time	0X0010 Register write: 1000 0x0011 Register write: 900	
0x0061 (97)	(High Speed PWM) Ch6 Duty-Cycle	Duty-Cycle adjustment range: 0-100% For example. Write 0x0037 decimal 55	
0x0071 (113)	(High Speed PWM) Ch7 Duty-Cycle	Duty-Cycle output 55% Write 0x002D decimal 45 Duty-Cycle output 45%	
0x0002 (2)	(Low Speed PWM) Ch0 Pulse Number	Disable/Enable PWM output 0 : Disable output (default)	R/W
0x0012 (18)	(Low Speed PWM) Ch1 Pulse Number	65535 (0xFFFF): Enable output 1-65534: Output by set quantity	
0x0022 (34)	(Low Speed PWM) Ch2 Pulse Number	Example 1 Write 65535 to register 0x0002, CH0 continues to output pulses according	
0x0032 (50)	(Low Speed PWM) Ch3 Pulse Number	to the set Period/Turn-On-Time	
0x0042 (66)	(Low Speed PWM) Ch4 Pulse Number	Example 2 Write 0 to register 0x0002 to turn off the pulse output of CH0	
0x0052 (82)	(Low Speed PWM) Ch5 Pulse Number	Example 3 Write 100 to register 0x0002, CH0 outputs 100 pulses and then turns off	
0x0062 (98)	(High Speed PWM) Ch6 PWM Output Time	Disable/Enable PWM output time (0.1S) 0 : Disable output (default) 65535 (0xFFFF): Enable output 1-65534: Output according to the set time Unit: 0.1 seconds	
0x0072 (114)	(High Speed PWM) Ch7 PWM Output Time	Example 1 Write 65535 to register 0x0062, CH6 continues to output pulses according to the set Frequency/Duty-Cycle Example 2 Write 0 to register 0x0062 to turn off the pulse output of CH6 Example 3 Write 100 to register 0x0062, the output time of CH6 is 10.0 seconds	
0x0080 (128)	DO digital output	Digital output status 0-7 bits (PWM enable register (0X0002/0X0012/...0X0072) should be set to 0)	R/W
0x00FA (250)	Enables PWM parameter power-down saving	0 : Disable power-down storage (default) 1: Enable power-down storage When this register is set to 1: The following registers enable	R/W

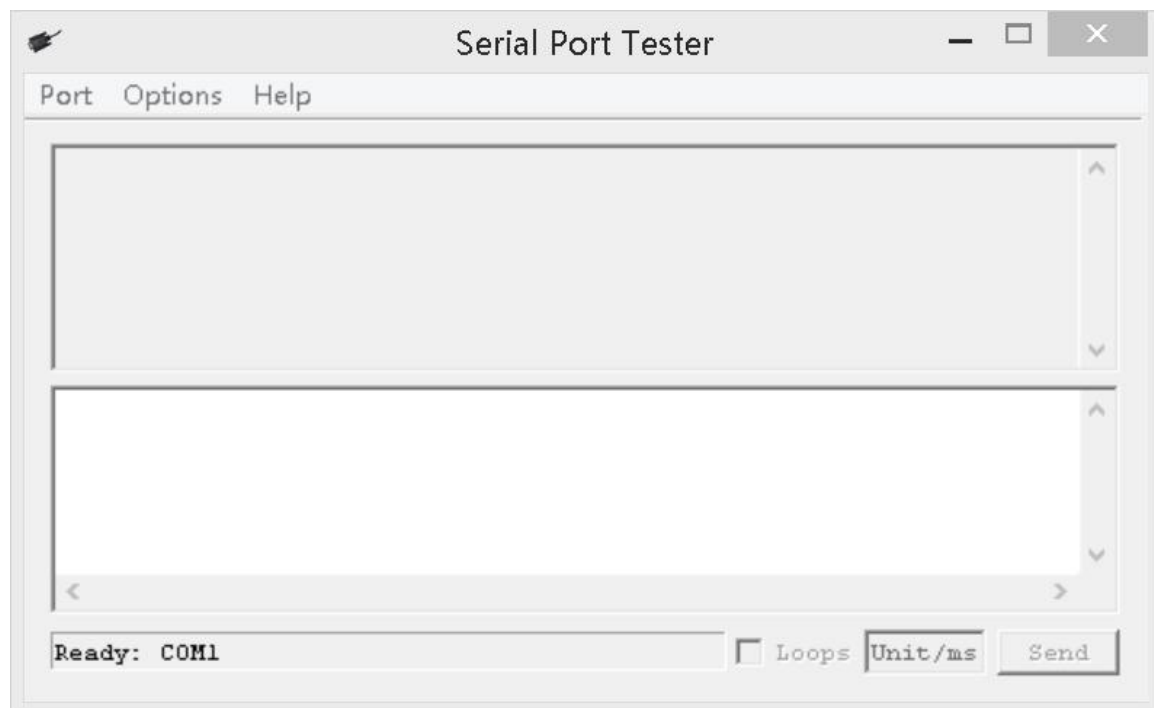
		power-down storage 0X0000-0X0002, 0X0020-0X0022, 0X0030-0X0032, 0X0040-0X0042, 0X0050-0X0052, 0X0060-0X0062, 0X0070-0X0072)		
0x00FB (251)	Factory Reset	00	Factory Reset: Enter the following command at the current baud rate: FF 06 00 FB 00 00 ED E5	R/W
0x00FC (252)	Command Return Time	0-25	Time interval for command return (unit: 40MS) Setting value: 0-25	R/W
0x00FD (253)	RS485 address (Station address)	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)



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



1. Set PWM output parameters:

Send data

RS485 address (Station address)	Function (1)	Register address (2)	Read number (2)	CRC16(2)
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(1)				
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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): 40001-40114

RS485 address : 0x01~0x3F

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

Register address: 0x0000-0x007F (0-127)

Read number : 0x0001-0x0003

CH0-5 are low-speed channels (output parameters are expressed by Period/Turn-On-Time), output Period range: 0.1-6553.5 seconds; Turn-On-Time range: 0-6553.4 seconds (cannot greater than the Period time).

CH6-7 are high-speed PWM channels (output parameters are represented by Frequency/Duty-Cycle), output Frequency range: 1-20000Hz, Duty-Cycle 0-100%.

The 0X0002/0X0012/...0X0072 register is the pulse output Disable/Enable register.

Example 1: Set CH0: Period 50 seconds, Turn-On-Time 20 seconds, continuous output pulse

Period 50 seconds: Write 500/0x01F4 to register 0x0000 :

01 06 00 00 01 F4 89 DD

Turn-On-Time 20 seconds: Write 200/0x00C8 to register 0x0001:

01 06 00 01 00 C8 D9 9C

Continuous output pulse: Write 65536/0xFFFF to register 0x0002 :

01 06 00 02 FF FF 29 BA

16 Function code write :

01 10 00 00 00 03 06 01 F4 00 C8 FF FF D6 CA

Example 2: Set channel 7 to: Frequency 10kHz, Duty Cycle 30%, continuous output time 100 seconds

Frequency 10000Hz: write 10000/0x2710 to register 0x0060:

01 06 00 60 27 10 93 E8

Duty-Cycle 30%: write 30/0x001E to register 0x0061:

01 06 00 61 00 1E 58 1C

100 seconds: write 1000/0x03E8 to register 0x0062:

01 06 00 62 03 E8 28 AA

16 Function code write:

01 10 00 60 00 03 06 27 10 00 1E 03 E8 42 92

1. Read D0 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: 0x01

Register address:0x0000-0x0007

Read number :0x0001-0x0008

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 D0 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 D0 digital output is also mapped to the 40000 interval register. The user can write the D0 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 D0 digital output status (D0 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 D0 digital output is also mapped to the 40000 interval register. The user can write the D0 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) (1)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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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)	Function (1)	Number of bytes (1)	data (n)	CRC16(2)
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(1)				
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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 n (1)	Register address (2)	Read number (2)	CRC16(2)
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Returns data

RS485 address (Station address) (1)	Function n (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

It can also be reset by hardware: short the RESET jumper of the board for 5 seconds, then power on again.