

MODBUS RTU Command

MODBUS command (function code, write 06/16, read 04/03)

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

1、Command Overview

Supported function codes:

Function Code	Modbus Address (PLC)	Register Address	Describe
04:	30001	0x0000-0x0007 (0-7)	1-8 channel DS18B20 temperature values Unit: 0.1°C
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
0x00A0-0x00A7 (160-167)	DS18B20 temperature value	0	1-8 channel DS18B20 temperature values Unit: 0.1°C	R
0x00C0-0x00C7 (192-199)	1-8 channel DS18B20 temperature correction value If the collected temperature error exceeds 1%, please correct it here.		Enter a positive number to increase; enter a negative number to decrease	R/W

0X00F6 (246)	Automatic reporting of DS18B20 temperature values. Automatic reporting of register (160-163)		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	R/W
0x00F7 (247)	Product ID	0-65535	SKU ID AMD SG08 2508	R
0x00FB (251)	Factory Reset	00	To restore factory settings. 1 Short the RESET jumper for 5 seconds 2 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)	1-247	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	

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)

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0x00FF (255)	Parity	0-2	0 None Parity 1 Even Parity 2 Odd Parity	

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)

1. Reading the current temperature:

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): 30001-30008

RS485 address :0x01~0xF7

Function code:0x04

Register address:0x0000-0x0007

Read number :0x0001-0x0008

For example, to read a 1-channel DS18B20 temperature value.

Send data(address 1):01 04 00 00 00 01 31 CA

Return data :01 04 02 00 DB F9 6B

01 address code, 04 function code, 02 length, 00DB is the temperature value, the highest bit is 0, so the temperature is positive, convert it to decimal = 219, divide it by 10, 21.9 is the current temperature value.

In addition to this the DS18B20 temperature values are mapped to the 40000 interval register. The user can read the PT100 temperature value using the 03 function code.

Modbus Address(PLC): 40161-40168

RS485 address : 0x01~0xF7

Function code:0x03

Register address:0x00A0~0x00A7

Read number:0x0001~0x0008

For example, to read a 1-channel DS18B20 temperature value.

Send data(address 1):01 03 00 A0 00 01 84 28

Return data :01 03 02 00 DB F8 1F

01 address code, 03 function code, 02 length, 00DB is the temperature value, the highest bit is 0, so the temperature is positive, convert it to decimal = 219, divide it by 10, 21.9 is the current temperature value.

2. Setting the temperature correction value:

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Setting Content (2)	CRC16(2)
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Returns data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Register value (2)	CRC16(2)
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Modbus Address(PLC): 40193-40200

RS485 address :0x01~0xF7

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

Register address:0x00C0(192)-0x00C7(199)

Value: (0-65535)highest bit represents the sign of positive and negative values, 0 represents positive, 1 represents negative, and the unit is 0.1° C. When the highest bit is 1, it means a negative value. At this time, you need to add 1 to this value, or you can directly subtract 65536 from this value to get the current temperature value.

For example 1: The correct temperature is 25.5° C, and the temperature read is 26.4° C. Then the temperature is 0.9 degrees Celsius higher, you need to subtract 0.9 degrees Celsius

Send data(address 1):01 06 00 C0 00 09 49 F0

Return data 01 06 00 C0 00 09 49 F0

The return frame is the same as the send frame.

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 :0x01~0xF7

Function code:Write 0x06/0x10;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 Others: Factory reset

Note: 1 The baud rate will be updated only when the module is powered on again when this command is used!

2 Factory settings can be restored if the baud rate corresponds to a number greater than 7

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 the automatic temperature reporting function:

Send data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Setting Content (2)	CRC16(2)
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Returns data

RS485 address (Station address) (1)	Function (1)	Register address (2)	Register value (2)	CRC16(2)
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Modbus Address(PLC): 40247

RS485 address :0x01~0xF7

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

Register address:0x00F6(246)

Value: 2 bytes (0-255)

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

Automatically report in 1 second: 01 06 00 F6 00 01 A8 38

Automatically report in 2 second:01 06 00 F6 00 02 E8 39

Automatically report in 3 second:01 06 00 F6 00 03 29 F9

Automatically report in 4 second:01 06 00 F6 00 04 68 3B

Automatically report in 5 second:01 06 00 F6 00 05 A9 FB

Automatically report in 10 second:01 06 00 F6 00 0A F9 FF

Disable reporting function: 01 06 00 F6 00 00 69 F8

4. 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 0x06/0x10;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: $X = 05 * 40 = 200\text{MS}$

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

5. 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 0x06/0x10;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!

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.

6. Factory reset:

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): 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

