

## MODBUS Temperature sensor

### MODBUS Serial communication:

- 1 start bit
- 8 data bits, the smallest valid bit is sent first
- No parity
- 1 stop bit

Supported baud rates: 1200, 2400, 4800, 9600, 19200BPS.

### Supported function codes:

Function code		
03	Read holding register	Reading measurement data
06	Set single register	Set the communication address, baud rate

Function code 03: read the holding register, reading measurement data

### Example 1: Reading measurement data:

Command:	01	03	00 00	00 02	CRC
	Address	Function	Start address	Number of registers	CRC check

Response:	01	03	04	00 EA	02 95	CRC
	Address	Function	Byte count	Temperature	Humidity	CRC check

### Example 1: Calculate the actual data

Temperature measurement is 00EAH, Then the actual temperature is  $00EAH / 10 = 23,4^{\circ}C$   
 Negative temperature is expressed in complement code.

Humidity measurement is 0295H, Then the actual humidity is  $0295H / 10 = 66,1\% RH$

Table 1: Function code 03H and data comparison table

Address		
0000	Temperature	Temperature data, two bytes, high byte first, low byte last
0001	Humidity	Humidity data, two bytes, high byte first, low byte last

Function code 06: Set single register, set the address, baud rate

### Example 2: Set module communication address, baud rate (set address from 1 to 2 and baud rate to 9600BPS):

Command:	01	06	00 00	00 01	02	02 06	CRC
	Address	Function	Start address	Number of registers	Byte count	Data	CRC check

Response:	01	06	00 00	00 01	CRC
	Address	Function	Address start register	Number of registers	CRC check

Table 2: Function code 06H and data comparison table

Address		
0000	Address, Baud rate	The upper 8 bits are the module address, address range is from 01~F7H; The lower 8 bits are the baud rate 03~07H 1200~19200BPS

**Technical specifications:**

Measuring range	Temperature: -20 °C ~ +70 °C; Humidity 0-100%RH,
Resolution rate	Temperature 0.1 °C; Humidity 0.1 %RH
Precision	Temperature ±0.5 °C; Humidity ±3%RH
Voltage	DC12 or DC24; current < 30mA
Working environment	Temperature: -20 °C ~ +70 °C; Humidity 5-95%RH,
Dimensions	45mm x 65mm x 28mm
Installation method	DIN rail or screws
Working area	10-20 m <sup>2</sup> , installed in air circulation
Weight	60 gram
Material	PC+ABS

Connector (top view, left to right)

1	2	3	4
GND	VCC	RS485 B	RS485 A