Carbon monoxide sensor

Product Manual

(V1.0)

● Important Notice

Thank you very much for purchasing the first sensor (transmitter), we will serve you sincerely forever. First pursues excellent quality and pays more attention to good after-sales service. If you have any questions, please call:+86 (571) 8670-8175 (7×24h).

Operational errors will shorten the life of the product, reduce its performance, and in severe cases may cause accidents. Please read this manual carefully before use. Put this manual in the hands of the end user. Please keep the manual in a safe place for reference when needed. The instruction manual is for reference only, and the specific design and appearance are subject to the actual product.

● product description

Wired gas monitoring sensor series, suitable for oxygen, ammonia, hydrogen sulfide, ammonia, carbon monoxide and other gas monitoring in the environment, the equipment adopts standard MODBUS-RTU data protocol. The sensor can be widely used in toxic and combustible gas monitoring, combustion control, food and beverage processing, medical diagnosis, industrial monitoring and governance and many other occasions.

● Features

● 9-30V wide DC voltage power supply

● Standard MODBUS-RTU communication data protocol

● A variety of gases are optional (the parameter indicators in this manual are carbon monoxide monitoring)

● Technical indicators

Supply voltage	(9~30)VDC
Resolution	0.01ppm
Measuring range	0~1000ppm
long term stability	±3.5%FS
output signal	RS485 (Modbus RTU communication protocol)
Operating temperature	-30~50℃ 0%RH~80%RH

Storage temperature	-40~100℃

● Product electrical interface and connection method

Direct outlet: Red: +Vcc, Black: GND, Green: RS485A, White: RS485B

Note: The specific wiring standard is subject to the product line standard.

● Precautions

1.After opening the product package, please check whether the appearance of the product is in good condition, verify whether the relevant content of the product instruction manual is consistent with the product, and properly keep the product instruction manual for more than one year;

2. Strictly follow the wiring diagram of the product, and work under the allowable excitation voltage of the product, and do not use it with overvoltage;

3. Do not knock the product, so as not to damage the appearance and internal structure of the ring;

4.The product has no customer-maintained parts, please contact our company in case of failure;

5.The company's products are faulty under normal use, and the warranty period is one year (13 months from the date of delivery from the company to the date of return). in accordance with. If the maintenance period is exceeded, the company will charge the cost of production, and all products of the company will be maintained for life;

6.For further details, please refer to our website or call us for inquiries.

(RS485) MODBUS communication protocol

1、 Basic settings of communication protocol

Transmission mode: MODBUS-RTU mode.

Communication parameters: default baud rate 9600bps (optional 1200bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps, can be configured according to user requirements), 1 start bit, 8 data bits, no parity, 1 stop bit, after changing the communication parameters, the sensor needs to be powered on again.

Slave address: 1-254 (200 is a universal address, setting is prohibited), the factory default is 1, which can be configured according to user requirements.

2、 Holding register list

parameter	MODBUS holding register address
gas	Register address: 0x02, 0x03, where register 0x02 stores the high bit of the concentration value, and 0x03 is the low bit of the concentration value; the read value is the actual value*1000, for example, the read value is 3180, and the actual value is 3.18ppm (data format: unsigned long)
baud rate	Baud rate Register address: 0x2D, 0x2E, where register 0x2D stores the high bits of the baud rate (only useful when the baud rate is 115200, the values in other baud rate registers 0x2D are all 0), 0x2E is the baud rate low rate.
slave address	Register address: 0x2F Default value: 1 (data format: unsigned integer)

Note: Access to other addresses is prohibited.

3、 Modbus RTU command

1. If the current sensor address is 01, read the gas concentration

Slave Address	01H	slave address
Function	03H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	02H	Start register address lower 8 bits
No. of Registers Hi	00H	The upper 8 bits of the number of registers

No. of Registers Lo	02H	The lower 8 bits of the number of registers
CRC Check Lo	65H	CRC check code lower 8 bits
CRC Check Hi	CBH	CRC check code high 8 bits

Sensor response:

Slave Address	01H	slave address
Function	03H	function code
Byte Count	04H	4 bytes long
Data HHH	00H	At this point the gas reading is: 1500 The data type is a 32-bit integer
DataHH	00H	
Data H	05H	
Data L	DCH	
CRC Check Lo	F8H	
CRC Check Hi	FAH	CRC check code lower 8 bits

Actual concentration=(0*65536+1500)/1000=1.5ppm

2、 If the current sensor address is 01, change its address to 02

Slave Address	01H	slave address
Function	06H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	2FH	Start register address lower 8 bits
No. of Registers Hi	00H	The upper 8 bits of the slave address
No. of Registers Lo	02H	Slave address lower 8 bits
CRC Check Lo	39H	CRC check code lower 8 bits
CRC Check Hi	C2H	CRC check code high 8 bits

Sensor response::

Slave Address	01H	slave address
Function	06H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	2FH	Start register address lower 8 bits
No. of Registers Hi	00H	The upper 8 bits of the slave address
No. of Registers Lo	02H	Slave address lower 8 bits
CRC Check Lo	39H	CRC check code lower 8 bits
CRC Check Hi	C2H	CRC check code high 8 bits

3、将传感器的波特率改为 4800(0x12 C0)

Slave Address	01H	slave address
Function	06H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	2EH	Start register address lower 8 bits
No. of Registers Hi	12H	8-bit higher baud rate
No. of Registers Lo	C0H	baud rate lower 8 bits
CRC Check Lo	E5H	CRC check code lower 8 bits
CRC Check Hi	33H	CRC check code high 8 bits

Sensor response:

Slave Address	01H	slave address
Function	06H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	2EH	Start register address lower 8 bits
No. of Registers Hi	12H	8-bit higher baud rate

No. of Registers Lo	C0H	baud rate lower 8 bits
CRC Check Lo	E5H	CRC check code lower 8 bits
CRC Check Hi	33H	CRC check code high 8 bits

4、将波特率改为 115200，需要采用功能码 10H

Slave Address	01H	slave address
Function	10H	function code
Starting Address Hi	00H	Register address 002DH
Starting Address Lo	2DH	
Data Hi	00H	Data length
Data Lo	02H	Data length
Data	04H	number of bytes
Data HHH	00H	baud rate 115200
DataHH	01H	
Data H	C2H	
Data L	00H	
CRC Check Lo	30H	
CRC Check Hi	8EH	CRC check code lower 8 bits

Sensor response：

Slave Address	01H	slave address
Function	10H	function code
Starting Address Hi	00H	The upper 8 bits of the starting register address
Starting Address Lo	2DH	Start register address lower 8 bits
No. of Registers Hi	00H	Data length high 8 bits

No. of Registers Lo	02H	Data length lower 8 bits
CRC Check Lo	D1H	CRC check code lower 8 bits
CRC Check Hi	C1H	CRC check code high 8 bits