

User manual for IOT-S300CO2 Carbon Dioxide sensor

● Product Overview

The carbon dioxide sensor can be widely used for environmental testing and is installed in a standard mounting housing . The device uses (4~20) mA , (0~5)V, (0~10)V, standard MODBUS-RTU communication protocol, RS485 letter. Number output . The transmitter is widely used in applications where ambient temperature and humidity , atmospheric pressure, etc. need to be measured .

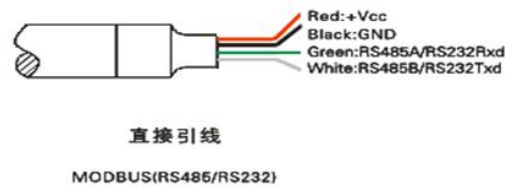
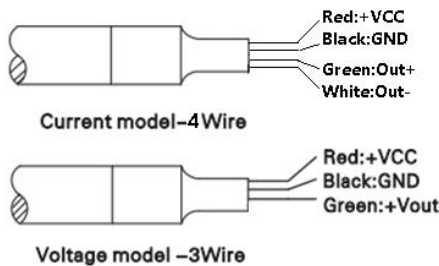
● Product Features

- (10-30) V wide DC voltage supply
- (4~20) mA , (0~5) V , (0~10) V , standard MODBUS-RTU communication protocol
- High sensitivity, low power consumption
- Temperature compensation, excellent linear output

● Technical indicators

Supply voltage	(10~30) VDC , (0~ 1 0 V) output limit 24 VDC
Precision	± 50ppm + 5% FS (2 5 °C)
Measuring range	0 ~ 5000ppm,0 ~ 2000ppm
Long-term stability	± 2% FS
output signal	(4~20) mA , (0~5) V , (0~10) V , RS485 (Modbus RTUcommunication protocol)
Operating temperature	0~ 50 °C 0%RH ~ 80%RH
Storage temperature	-40~100 °C

● Product electrical interface and connection method



● Notes

1. After opening the product packaging, please check whether the appearance of the product is intact, verify that the relevant content of the product manual is consistent with the product, and keep the product manual for more than one year;
2. Strictly follow the wiring diagram of the product, and work under the excitation voltage of the product, do not use over voltage;
3. Products should not be beaten to avoid damage to the appearance and internal structure of the ring;
4. There are no customer self-repair parts, please contact our company if there is any trouble;
5. The company's products under normal circumstances have a failure, the warranty period is one year (from the date of shipment from the company to the 13 months after the return date), whether it is a failure under normal circumstances, the inspection by our company's quality inspectors is in accordance with. After the deadline for maintenance, the company charges a basic fee, all products of the company for lifetime maintenance;
- 6 If you have not done anything, please check our website or call us.

● Important statement

Thank you very much for purchasing our sensor (transmitter), we will serve you forever. Firstrate Sensor pursues outstanding quality and pays more attention to good after-sales service. If you have any questions, please call:

400-607-8500 (7 × 24 h).

Operational errors can shorten the life of the product, reduce its performance, and can cause accidents in severe cases. Please read this manual carefully before using it. Submit this manual to the end user. Please keep the instructions in a safe place for your reference. The manual is for reference. The specific design shape is subject to the actual product.

User Manual of IOT-S300CO2 CO₂ sensor (RS485)MODBUS Communication Protocol

● Basic communication protocol settings

Transmission method: MODBUS-RTU mode .

Communication parameters: default baud

rate 9600bps (optional 2400 bps , 4800bps , 9600bps , 19200bps , 38400bps , 57600bps , 115200bps , can be configured according to user requirements), 1 start bit, 8data bits, no parity (optional) Odd parity, even parity) , 1 stop bit , after changing the communication parameters, it is recommended that the sensor be powered on again .

Slave address: The factory default is 1 , which can be configured according to user requirements .

● **Holding register list**

parameter	MODBUS holding register address (16 bits)
CO ₂ value	Address: 000 0 H I.e., read the value of the measured value of CO ₂ , such as reading a value of 0 x 0 498,converted to decimal 1176, the measured CO ₂ value 1 176ppm.
Baud rate	Address: 00 14 H Set value 24, 48, 96, 192, 384, 576,1152, corresponding to the baud rate, 2400, 4800, 9600,19200, 38400, 57600, 115200, 960 0, for example, defaultbaud rate, set to the value 0x00 60
Check Digit	Address: 00 15 H 0x0000 means no parity, 0x0001 means odd parity, 0x0002 means even parity
Slave address	Address: 00 17 H Default : 0x0001

Note: Access is prohibited for other addresses.

● **Modbus RTU instruction**

Supported MODBUS function code: 0x03 , 0x06

Example of 03H function code: Read the CO₂ measurement data of the sensor whose slave address is No. 1 .

★ **Host query command :**

Slave Address	01 H	Slave address
Function	03H	function code
Starting Address Hi	00H	Start register address is8 bits high
Starting Address Lo	0 0 H	Start register address is lower 8 bits
No. of Registers Hi	00H	The upper 8 bits of thenumber of registers
No. of Registers Lo	0 1 H	The lower 8 bits of thenumber of registers
CRC Check Lo	84H	CRC check code is lower 8bits
CRC Check Hi	0AH	CRC check code is 8digits high

★ **Slave response:**

Slave Address	01 H	Slave address
Function	03H	function code
Byte Count	0 2 H	2 bytes in length

Data Hi	0 4 H	CO ₂ is: 1 176 ppm
Data Lo	98 H	CO ₂ is: 1 176 ppm
CRC Check Lo	BB H	CRC check code is lower 8bits
CRC Check Hi	2E H	CRC check code is 8digits high

Example of 06H function code: modify the baud rate (this example is modified to 57600bps)

★ Host query command :

Slave Address	01 H	Slave address
Function	06H	function code
Starting Address Hi	00H	The baud rate holding register address is 00 14H
Starting Address Lo	14 H	The baud rate holding register address is 00 14H
Data Hi	0 2 H	When the baud rate is 57600 bps , the value of the register is 576 , which is 0x 0 240.
Data Lo	40 H	When the baud rate is 57600 bps , the value of the register is 576 , which is 0x0 240.
CRC Check Lo	C9 H	CRC check code is lower 8bits
CRC Check Hi	5E H	CRC check code is 8digits high

★ Slave response:

Slave Address	01 H	Slave address
Function	06H	function code
Starting Address Hi	00H	The baud rate holding register address is 00 14H
Starting Address Lo	14 H	The baud rate holding register address is 00 14H
Data Hi	0 2 H	When the baud rate is 57600 bps , the value of the register is 576 , which is 0x0 240.
Data Lo	40 H	When the baud rate is 57600 bps , the value of the register is 576 , which is 0x0 240.

CRC Check Lo	C9 H	CRC check code is lower 8bits
CRC Check Hi	5E H	CRC check code is 8digits high