
INSTRUCTION MANUAL

CARBON DIOXIDE

TYPE RS485

JXBS-3001-CO₂



VER1.1

Weihai JXCT Electronic Technology Co., Ltd.

I. Brief Introduction

1.1 Product Overview

THE CARBON DIOXIDE SENSOR uses the specialized carbon dioxide concentration sensor probe as core detecting device, which has the characteristics of wide measurement range, high precision, good linearity, good versatility, convenient using, easy installation, long transmission distance and moderate price.

1.2 Primary Parameters

TABLE 1 Primary Parameters

PARAMETERS	TECHNICAL SPECIFICATIONS
MEASURING RANGE	5000ppm/1%/3%/65%/100%
POWER SUPPLY	12-24V DC
PRECISION	±(50ppm+3%Readings) (25°C)
AVERAGE CURRENT	<85mA
NON-LINEAR	<1%F·S
OUTPUT SIGNAL	RS485 Modbus
POWER	≤1W (@12V DC 25°C)
WARRANTY PERIOD	2 years (Host) / 1 year (Sensor)
WORKING HUMIDITY ENVIRONMENT	0-95%RH
WORKING TEMPERATURE ENVIRONMENT	-10-50 °C
PRESSURE RANGE	0.9-1.1atm

1.3 Probe Parameters And Selection

TABLE 2 Probe Parameters And Selection

NO.	RANGE	PRECISION	ANTI-HIGH HUMIDITY	PREHEAT TIME	RESPONSE TIME
5KN	5000ppm	±(50ppm+5%)	×	<120S	<30S
5KW	5000ppm	±(50ppm+5%)	√	<60S	<15S
1BW	1%	±(50ppm+5%)	√	<60S	<15S
3BW	3%	±(50ppm+5%)	√	<60S	<15S
65B	65%	±(50ppm+5%)	×	<30S	<15S
100B	100%	±(50ppm+5%)	×	<30S	<15S

1.4 System Frame Diagram

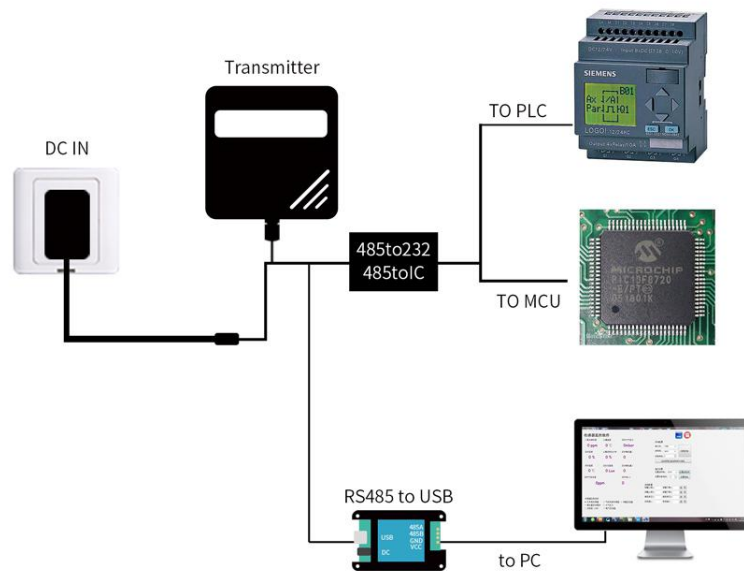


FIGURE 1 SINGLE-ENDED

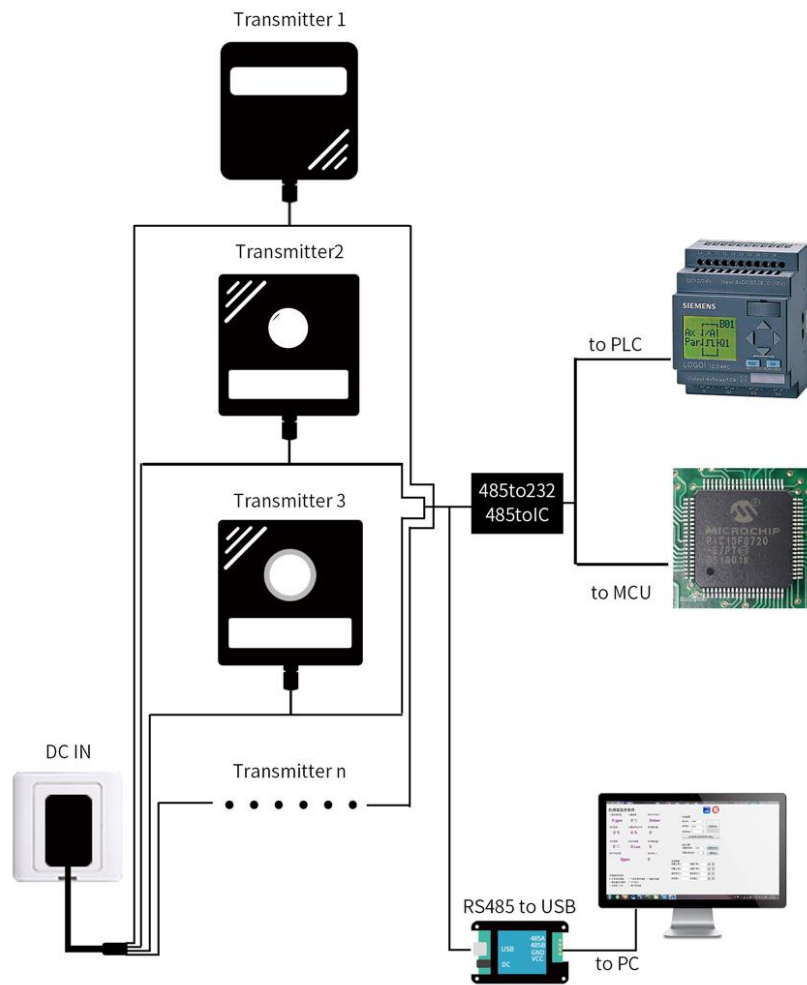


FIGURE 2 MUTIPLE-ENDED

II. HARDWARE CONNECTIONS

2.1 Checking Before Installation

Check the list of devices before installation:

TABLE 3 List of Devices

Name	Number
THE SENSOR DEVICE	1

12V POWER ADAPTER (Optional) 1

THE USB TO 485 DEVICE (Optional) 1

WARRANTY CARD / CERTIFICATE 1

2.2 Interface Description

Before you wiring and use, please read this article in detail, Improper use may result in irreversible damage to the product.

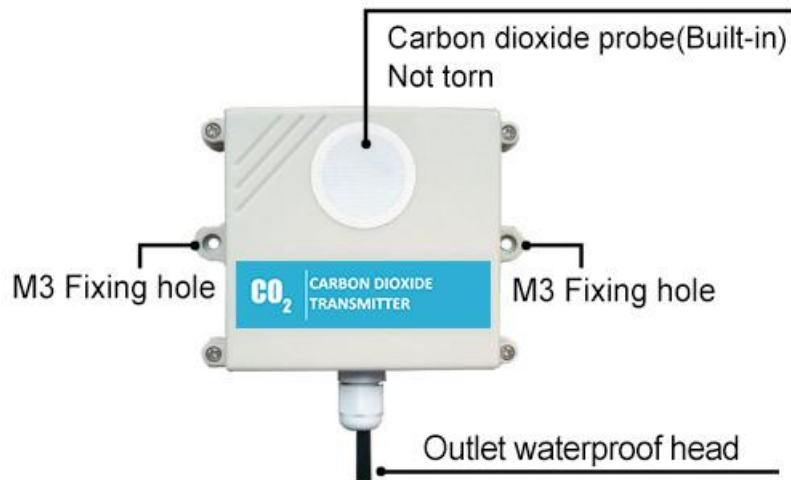


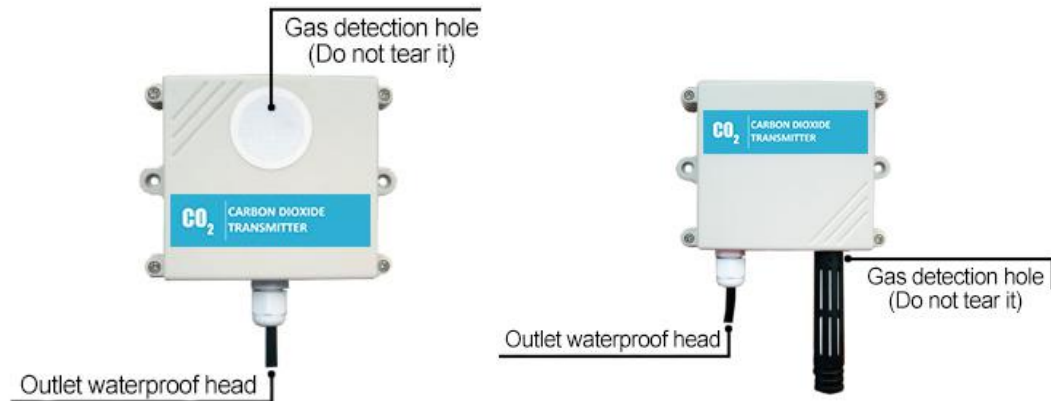
TABLE 4 Wiring Sequence

	Line Color	Description
Power	Brown	Power supply Positive (12-24V DC)
	Black	Power supply Negative
Communication	Yellow (Gray)	485-A
	Blue	485-B

We provide default cable length of 0.6 meters, you can extend the cable yourself according to your needs.

2.3 Gas Detection Holes

The gas detection hole uses a polymer gas membrane to isolate the membrane. This membrane is breathable and impermeable, and can function as a gas permeation but insulate moisture. Do not destroy this membrane, otherwise it will affect the product life.



2.4 Installation Description

The equipment needs to be placed in an environment where there is no wind and no rain. The equipment needs to be installed vertically. The device has two fixed holes with a spacing of 105mm. The size of each fixing hole is 3mm.

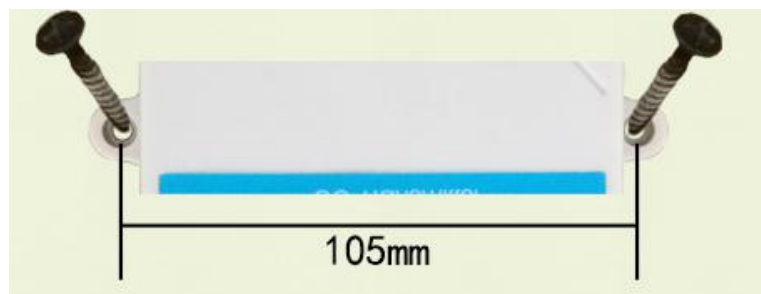


FIGURE 4 HOW FIXTURES

III. CONFIGURATION TOOL INSTALLATION AND USE

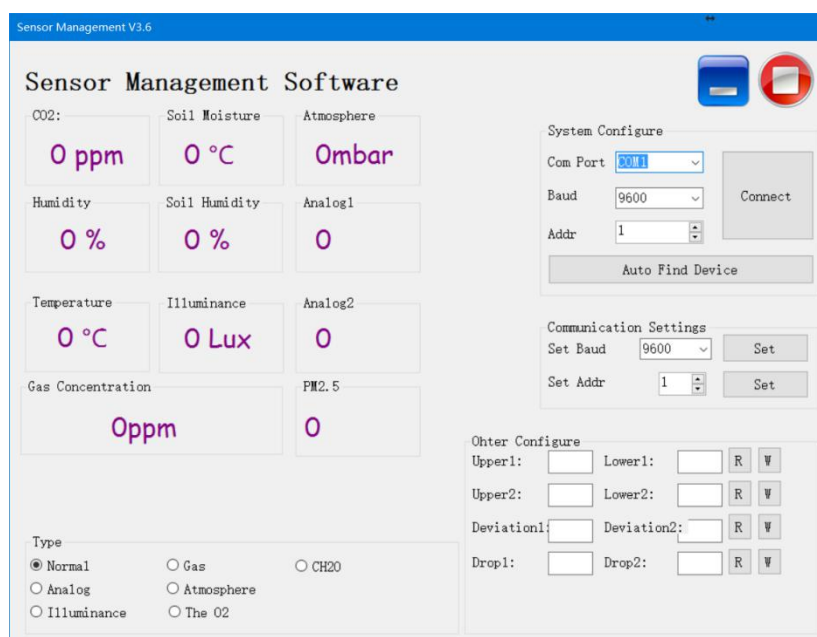
We provide CONFIGURATION TOOL , which can be easily used to test our sensor device.

3.1 Sensor Access Computer

Transmitter can be connected to PC with the RS485 to USB adapter. You can check the COM port

number through Device Manager (right click My Computer).

3.2 How To Use Configuration Tool



Please note that this software can only test one device at the same time. After connecting the physical device, click the **CONNECT** button to read the information. In the UNCONNECT state, you can modify BAUD and ADDR in COMMUNICATION SETTINGS.

Under the software, different check boxes can be selected according to different situations. For example, you can choose the GAS option to test the RS485 OXYGEN SENSOR , you can choose the NORMAL option to test the RS485 TEMPERATURE AND HUMIDITY SENSOR .

IV COMMUNICATION PROTOCOL

4.1 Communication Basic Parameters

TABLE 5 Communication Basic Parameters

PARAMETERS	CONTENT
Protocol	Modbus RTU
Data bits	8 bit
Parity bit	No

Stop bit	1 bit
Error checking	CRC (redundant loop code)
Baud rate	2400 bps/ 4800 bps/ 9600 bps can be set factory defaults to 9600 bps

For more information about **MODBUS RTU** please visit the website "www.modbus.org".

4.2 Register Address

TABLE 6 Register Address

Register Address	Plc Configuration Address	Content	Operation
0000H	40001	Humidity (Unit 0.1%RH)	Read-Only
0001H	40002	Temperature (Unit 0.1°C)	Read-Only
0005H	40006	Carbon Dioxide (unit 1ppm)	Read-Only
0100H	40101	Device Address (0-252)	R/W
0101H	40102	Baud Rate (2400/4800/9600)	R/W

4.3 Communication example

4.3.1 Read Device Address 0x01's Carbon Dioxide Concentration

Address Code	Function Code	Start Address	Data Length	CRC_L	CRC_H
0x01	0x03	0x00	0x00	0x94	0x0B
		0x05	0x01		

TABLE 7 Inquiry Frame

TABLE 8 Answer Frames

(For example, the reading is 18.9ppm)

Address Code	Function Code	Returns to The Number Of Valid Bytes	Carbon Dioxide Value	CRC_L	CRC_H
0x01	0x03	0x02	0x01 0xC3	0x78	0x35

Carbon Dioxide :

01C3 H (hexadecimal) =451=> Carbon Dioxide =451ppm

4.3.2 Read Device Address 0x01's Temperature And Humidity Value

TABLE 9 Inquiry Frame

Address Code	Function Code	Start Address	Data Length	CRC_L	CRC_H
0x01	0x03	0x00,0x00	0x00,0x02	0xC4	0x0B

TABLE 10 Answer Frame

Address Code	Function Code	Number Of Valid Bytes	Humidity Value	Temperature Value	CRC_L	CRC_H
0x01	0x03	0x04	0x00 0xFE	0x00 0xAF	0xDB	0xBF

Temperature :

00AF H (hexadecimal) =175=> Temperature =17.5 °C

Humidity :

00FE H (hexadecimal) =254=> Humidity =25.4%RH

4.3.3 Read Device Address 0x01's Temperature And Humidity, Carbon Dioxide Concentration Value

TABLE 11 Inquiry Frame

Address Code	Function Code	Start Address	Data Length	CRC_L	CRC_H
0x01	0x03	0x00,0x00	0x00,0x06	0xC5	0xC8

TABLE 12 Answer Frame

Address Code	Function Code	Number Of Valid Bytes	Humidity Value	Temperature Value
0x01	0x03	0x0C	0x03	0x01
			0x14	0x1B
6 Useless Bytes		Carbon Dioxide Value	CRC_L	CRC_H
0x00 ...		0x01	0x50	0x3B
		0xC3		

Temperature :

011B H (hexadecimal) =283=> Temperature =28.3 °C

Humidity :

0314 H (hexadecimal) =788=> Humidity =78.8%RH

Carbon Dioxide :

01C3 H (hexadecimal) =451=> Carbon Dioxide =451ppm