INSTRUCTION MANUAL

OZONE

TYPE RS485

JXBS-3001-O$_3$

VER1.1

Ozone probe (Built-in)

M3 fixing hole

O_3 OZONE TRANSMITTER

Outlet waterproof head

Temperature and humidity probe (Optional)
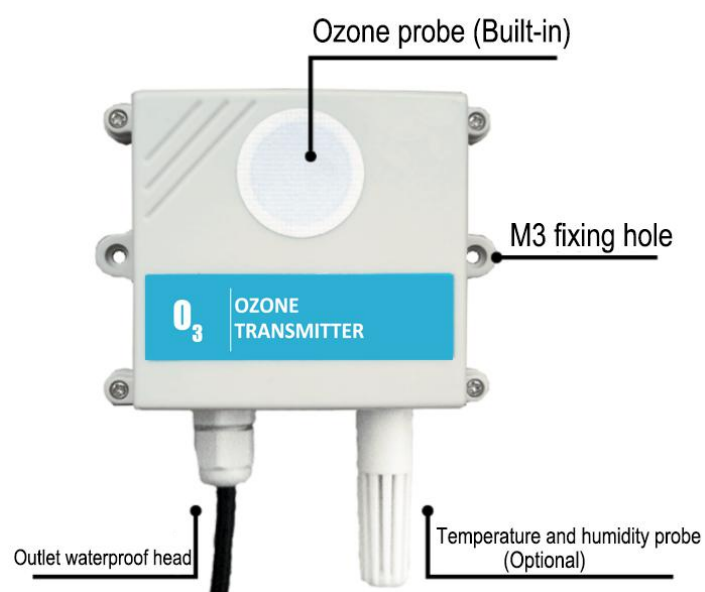
Weihai JXCT Electronic Technology Co., Ltd.

I BRIEF INTRODUCTION

1.1 Product Overview

THE OZONE SENSOR uses the specialized Ozone 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	0-10ppm/0-100ppm
MEASURING MODE	Electrochemical sensor
WARRANTY PERIOD	2 years (Host) / 1 year (Sensor)
RESPONSE TIME	less than 15 seconds
BAUD RATE	2400/4800/9600
COMMUNICATION PORT	RS485
POWER SUPPLY	12-24V DC
POWER	$\leq$0.15w
OPERATING TEMPERATURE	-30-50 ℃
WORKING HUMIDITY ENVIRONMENT	0-100%RH
CASE SIZE	110 x 85 x 44mm^3
PRESSURE RANGE	0.9-1.1atm

1.3 Probe Parameters And Selection

TABLE 2   Probe Parameters And Selection

NO.	MANUFACTURER	RANGE	RESOLUTION	LIFE
20P	ELECTROCHEMICAL	10ppm	200ppb	>2 years
20PL	SPEC	20ppm	100ppb	>5 years
100P	ELECTROCHEMICAL	100ppm	500ppb	>2 years

1.4 Cross Interference Gas

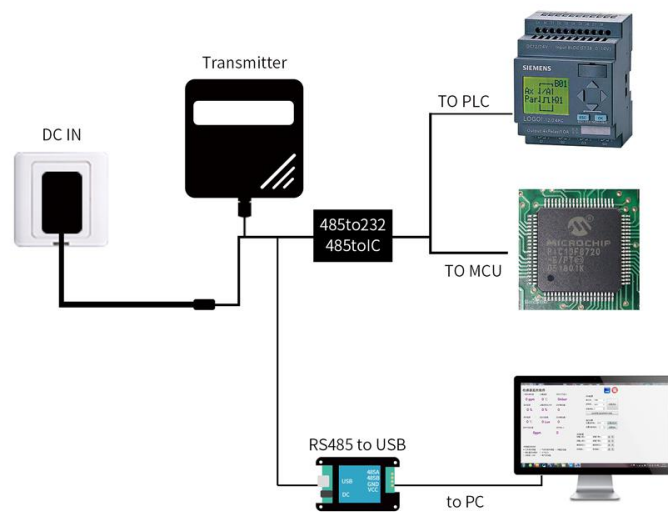| TRACER GAS	CONCENTRATION(ppm)	OUTPUT SIGNAL(amount to ppm H2S)
CHLORINE	3	1
HYDROGEN SULFIDE	15	0
CARBON MONOXIDE	300	0
SULFUR DIOXIDE	5	0
HYDROGEN CYANIDE	10	0
HYDROGEN CHLORIDE	5	0
NITRIC OXIDE	35	0
NITROGEN DIOXIDE	5	2
HYDROGEN	500	0
ETHYLENE	100	0
ETHANOL	10	3.5

1.5 System Frame Diagram
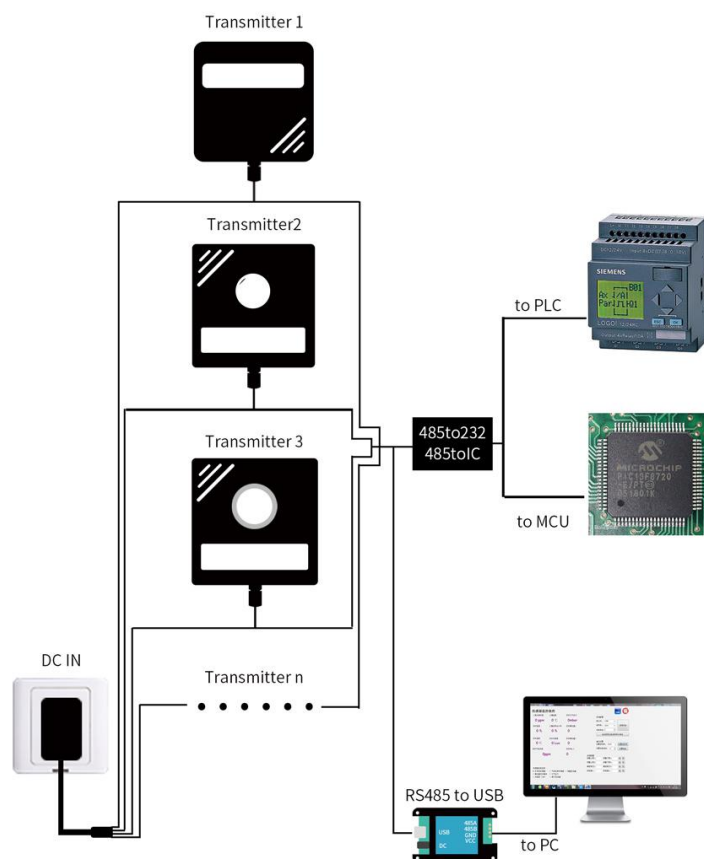
FIGURE 1   SINGLE-ENDED

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
WARRANTY CARD / CERTIFICATE	1
THE USB TO 485 DEVICE （Optional）	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.
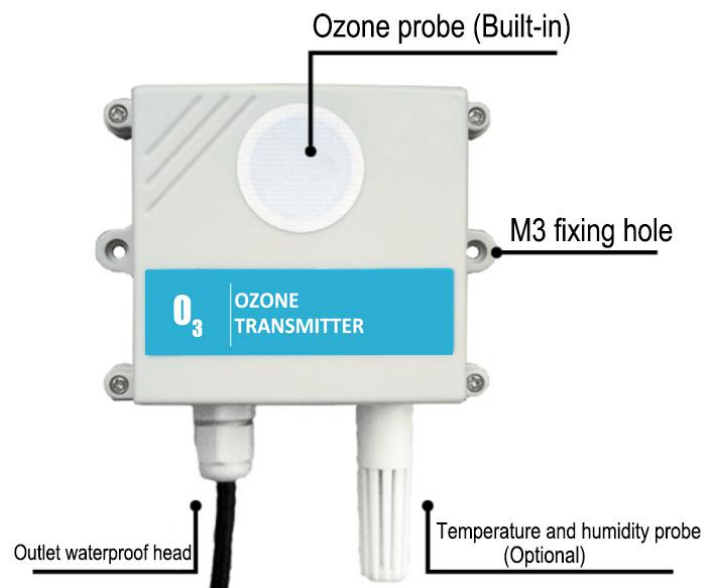

FIGURE 3   PHYSICAL PICTURE

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 air- and water-tight and can permeate the gas but block the moisture. Do not destroy this membrane, otherwise it will affect the life of the product.
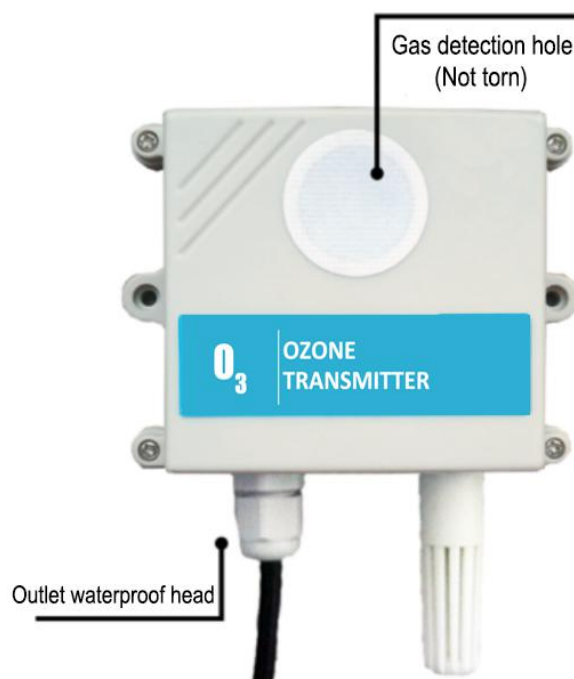
2.4 Installation Description

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.
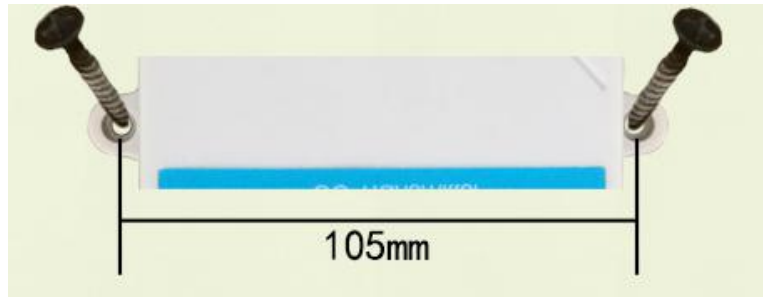
FIGURE 4   HOW FIXTURES
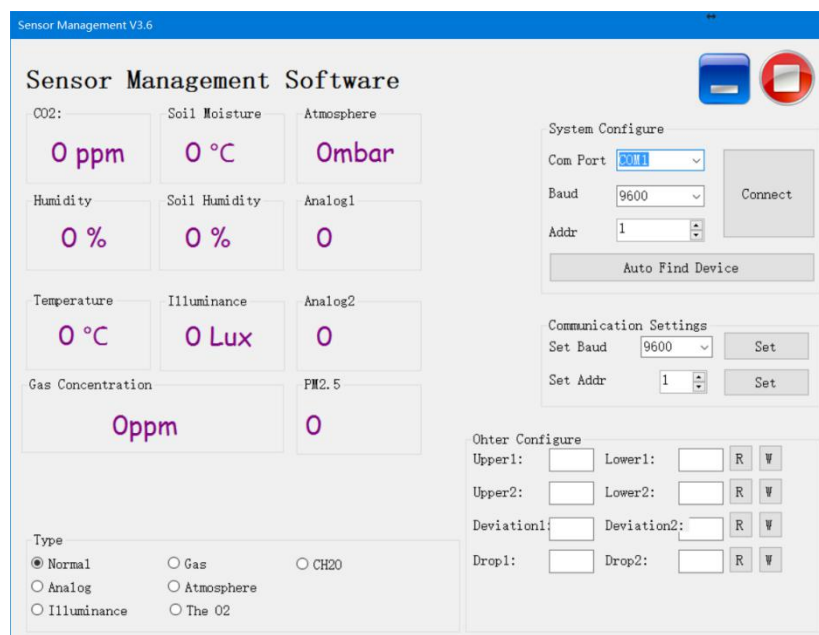
Ⅲ CONFIGURATION TOOL INSTALLATION AND USE

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 UNCONNET 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℃)	Read-Only
0006H	40007	Ozone (unit 0.01ppm)	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 Ozone Concentration

TABLE 7   Inquiry Frame

Address Code	Function Code	Start Address	Data Length	CRC_L	CRC_H
0x01	0x03	0x00 0x06	0x00 0x01	0x64	0x0B

TABLE 8   Answer Frames

(For example, the reading is 1.89ppm)

Address Code	Function Code	Returns to The Number Of Valid Bytes	Ozone Value	Check Digit Low	Check Digit High
0x01	0x03	0x02	0x00 0xBD	0x78	0x35

Ozone：

  00BD H (hexadecimal) =189=> Ozone =1.89ppm

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	0x02 0x92	0xFF 0x9B	0x5A	0x3D

Temperature：

FF9B H（hexadecimal）=-101=> Temperature =-10.1 ℃

Humidity：

0292 H（hexadecimal）=658=> Humidity =65.8%RH

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

TABLE 11   Inquiry Frame

Address Code	Function Code	Start Address	Data Length	CRC_L	CRC_H
0x01	0x03	0x00,0x00	0x00,0x07	0x04	0x08

TABLE 12   Answer Frame

Address Code	Function Code	Number Of Valid Bytes	Humidity Value	Temperature Value
0x01	0x03	0x0E	0x03 0x14	0x01 0x1B

8 Useless Bytes	Ozone Value	CRC_L	CRC_H
0x00 ...	0x00 0x28	0x50	0x3B

Temperature：

011B H (hexadecimal) =283=> Temperature =28.3 ℃

Humidity：

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

Ozone：

0028 H (hexadecimal) =40=> Ozone =0.4ppm