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# INSTRUCTION MANUAL

Along quantity  
**HYDROGEN SULFIDE**

**JXBS-3001 - H<sub>2</sub>S**

**VER1.1**

WeihaiJXCTElectronicTechnologyCo.,Ltd.

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# I BRIEF INTRODUCTION

## 1.1 Product Overview

THE HYDROGEN SULFIDE SENSOR uses the specialized Hydrogen sulfide 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**

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| <b>PARAMETERS</b>      | <b>TECHNICAL SPECIFICATIONS</b> |
|------------------------|---------------------------------|
| <b>MEASURING RANGE</b> | 0-100ppm/0-1000ppm              |
| <b>MEASURING MODE</b>  | Electrochemical sensor          |

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|                              |   |
|------------------------------|---|
| <b>PRECISION</b>             | 3%F.s   |
| <b>WARRANTY PERIOD</b>       | 2 years ( Host ) / 1 year ( Sensor )            |
| <b>RESPONSE TIME</b>         | less than 15 seconds                            |
| <b>COMMUNICATION PORT</b>    | Analog interface (voltage type or current type) |
| <b>POWER SUPPLY</b>          | Bus Power, 12-24V DC                            |
| <b>POWER CONSUMPTION</b>     | <1.15W  |
| <b>WORKING ENVIRONMENT</b>   | <b>HUMIDITY</b><br>0-100%RH ( 15-95%RH )        |
| <b>OPERATING TEMPERATURE</b> | -30-50°C(-20-40°C continued)                    |
| <b>CURRENT OUTPUT TYPE</b>   | 4-20mA  |
| <b>CURRENT OUTPUT LOAD</b>   | ≤ 600 Ω   |
| <b>VOLTAGE OUTPUT TYPE</b>   | 0-5V/0-10V                                      |
| <b>VOLTAGE OUTPUT LOAD</b>   | ≤ 250 Ω   |
| <b>SIZE</b>                  | 110 × 85 × 44mm <sup>3</sup>                    |

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**WORKING PRESSURE RANGE** 0.9-1.1atm

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## 1.3 Probe Parameters And Selection

**TABLE 2** probe parameters and selection

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| <b>NO.</b>  | <b>MANUFACTURE<br/>R</b> | <b>RANGE</b> | <b>RESOLUTION</b> | <b>LIFE</b> |
|-------------|--------------------------|--------------|-------------------|-------------|
| <b>100P</b> | HONEYWELL                | 100ppm       | 100ppb            | >2 years    |
| <b>1KP</b>  | HONEYWELL                | 1000ppm      | 1ppm              | >2 years    |

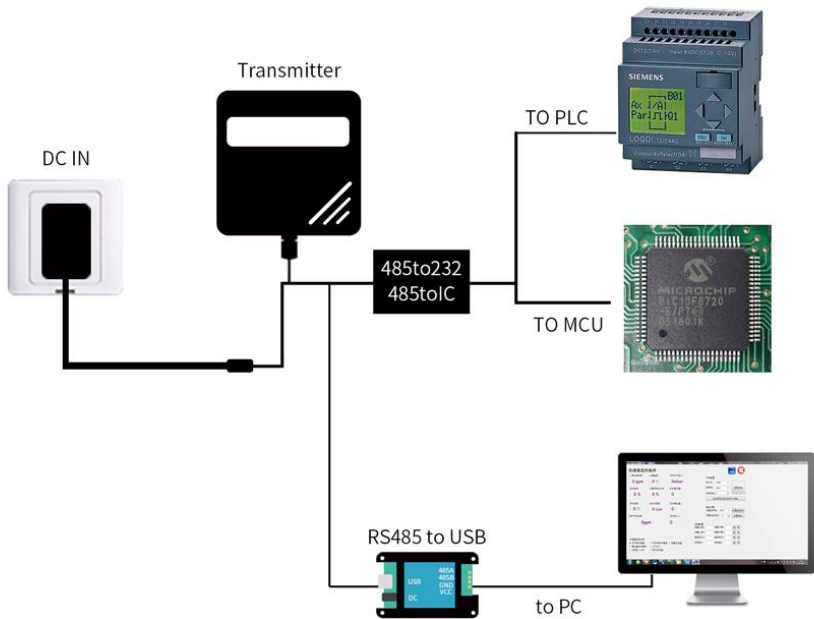
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## 1.4 Cross Interference Gas

| <b>TRACER GAS</b>       | <b>CONCENTRATION(ppm)</b> | <b>OUTPUT SIGNAL(amount to<br/>ppm H2S)</b> |
|-------------------------|---------------------------|---|
| <b>METHANE</b>          | <b>500</b>                | <b>≤0.1</b>                                 |
| <b>AMMONIA</b>          | <b>100</b>                | <b>≤0.1</b>                                 |
| <b>HYDROGEN SULFIDE</b> | <b>25</b>                 | <b>≤0.1</b>                                 |
| <b>CARBON MONOXIDE</b>  | <b>400</b>                | <b>≤0.1</b>                                 |

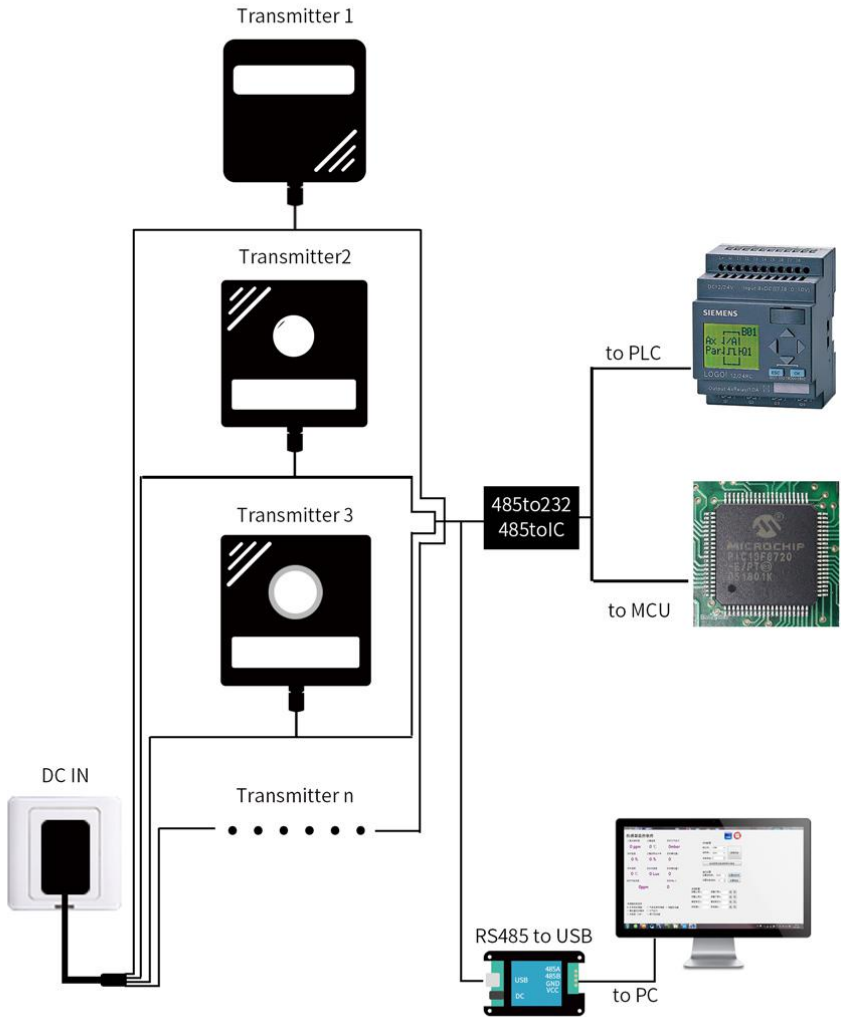
|                |    |      |
|----------------|----|------|
| OZONE          | 5  | 5    |
| SULFUR DIOXIDE | 20 | ≤0.1 |
| NITRIC OXIDE   | 50 | 0.2  |
| CHLORINE       | 10 | ≤0.1 |

## 1.5 System frame Diagram



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**FIGURE 1 SINGLE-ENDED**



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**FIGURE 2** MUTIPLE-ENDED

# **II HARDWARE CONNECTIONS**

## **2.1 CHECKING BEFORE INSTALLATION**

Check the list of devices before installation:

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| <b>Name</b>                    | <b>Number</b> |
|--------------------------------|---------------|
| THE NITRIC OXIDE SENSOR DEVICE | 1             |
| 12V POWER ADAPTER (Optional)   | 1             |
| WARRANTY CARD / CERTIFICATE    | 1             |

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**TABLE 3** List of Devices

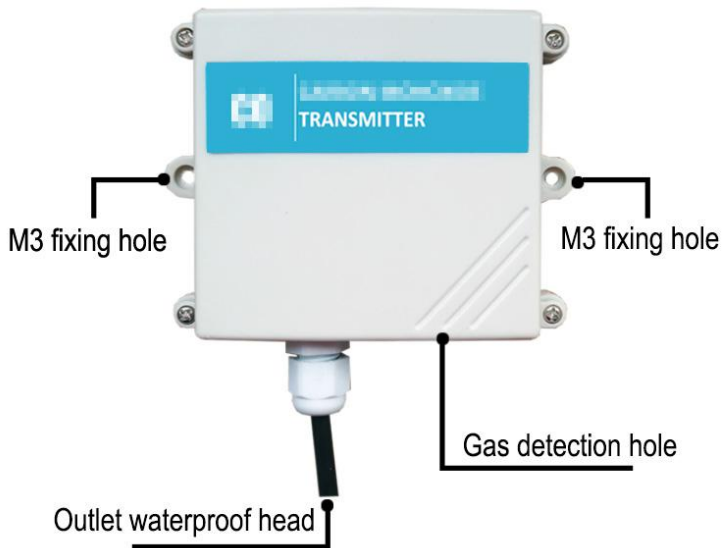
## **2.2 Interface Description**

The power interface is wide-voltage power input 12-24V. Analog



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products should pay attention to the positive and negative signal lines. Do not reverse the positive or negative of the current/voltage signal lines.



**FIGURE 3 PHYSICAL PICTURE**

**TABLE 4 Wiring Sequence**

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| Line Color | Description |
|------------|-------------|
|------------|-------------|

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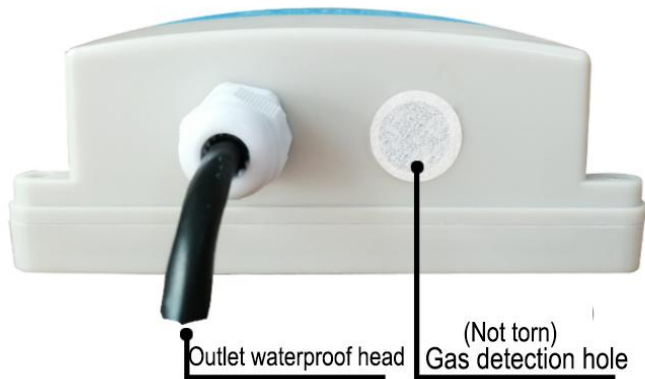
|                      |                 |                                     |
|----------------------|-----------------|-------------------------------------|
| <b>Power</b>         | Brown           | Power supply Positive ( 12-24V DC ) |
|                      | Black           | Power supply Negative               |
| <b>Communication</b> | Yellow ( Gray ) | Voltage/current output Positive     |
|                      | Blue            | Voltage/current output Negative     |

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

## 2.3 Gas Detection Holes

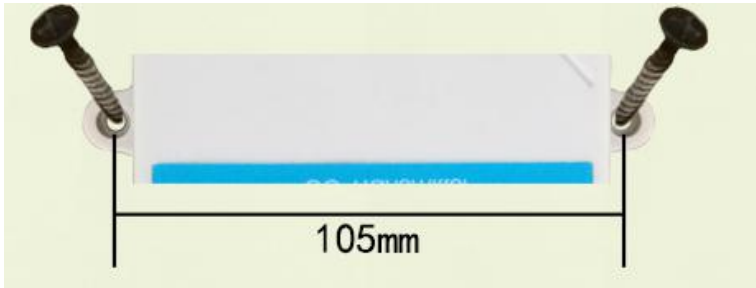
The gas detection hole uses a polymer gas membrane to isolate the membrane. This membrane is air- and water-tight and can permeate the gas but block the moisture. Do not destroy this membrane, otherwise it will affect the life of the product.



## 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.



## III WIRING INSTRUCTIONS

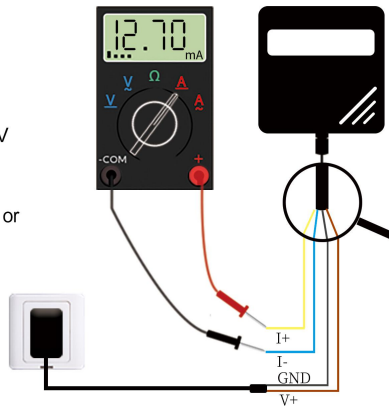
### 3.1 Typical four-wire wiring

As shown in the following figure, the current sensor connection mode connects the power line (brown line and black line) of the sensor to the power supply; the yellow (gray) color line of the sensor is the signal that is connected to the acquisition device and the current flows to the sensor. To the collection device; the blue line of the sensor is the signal is being connected to the signal of the current acquisition device, the current flow is from the acquisition device to

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the sensor;

- Current output type(4-20mA)
- Four-wire connection
- first step
- Connect the sensor with 12V~24V power adapter
- Second step
- Correctly select multimeter range or connect analog signal collector
- third step
- Calculate the formula



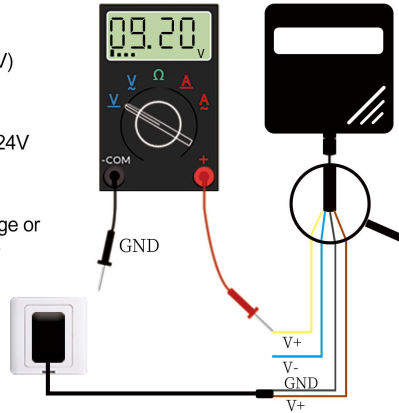
The following figure shows the voltage sensor connection mode.

The power line (brown line and black line) of the sensor is connected to the power supply; the yellow (gray) color line of the sensor is the signal that is connected to the acquisition device. Positive, yellow (gray) The voltage of the line is the output voltage; the blue line of the sensor is the signal that the signal is being connected to the voltage acquisition device, and the voltage of the blue line is the reference

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voltage, which is consistent with the voltage of the black line being 0V.

Voltage output type(0-5V/0-10V)  
Three-wire connection  
first step  
Connect the sensor with 12V~24V  
power adapter  
Second step  
Correctly select multimeter range or  
connect analog signal collector  
third step  
Calculate the formula



## 3.2 Typical Three-wire Connection Mode

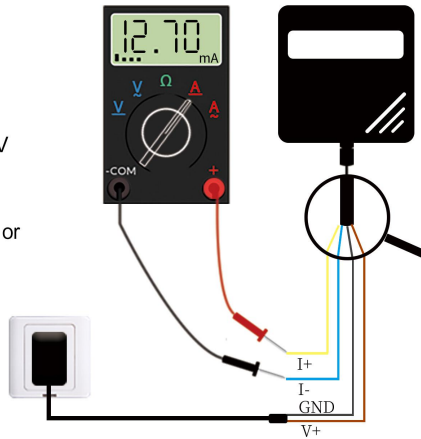
For a typical three-wire connection, the blue line can be omitted compared to the four-wire connection mode. In the sensor, the blue line and the black line are short-circuited in the sensor, so the blue line can be omitted.

For the three-wire current connection mode, connect the power

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line (brown line and black line) of the sensor to the power supply, and just connect the yellow (gray) color line of the sensor to the signal of the current acquisition device.

- Current output type(4-20mA)
- Four-wire connection
- first step  
Connect the sensor with 12V~24V power adapter
- Second step  
Correctly select multimeter range or connect analog signal collector
- third step  
Calculate the formula



For the three-wire voltage connection method, after the power cables (brown wires and black wires) of the sensors are connected to the power supply, it is only necessary that the yellow (gray) color line of the sensor is connected to the signal of the voltage acquisition device.

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Voltage output type(0-5V/0-10V)

Three-wire connection

first step

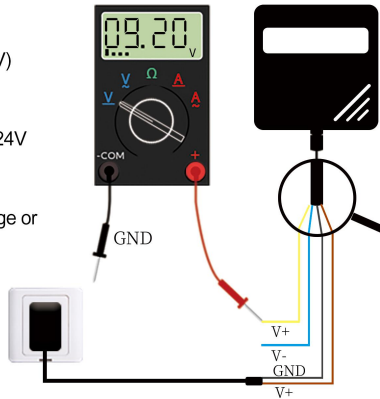
Connect the sensor with 12V~24V  
power adapter

Second step

Correctly select multimeter range or  
connect analog signal collector

third step

Calculate the formula



## IV ANALOG PARAMETERS MEANING AND CONVERSION

### 4.1 Analog 4-20mA Current Output

| Current value | Hydrogen Sulfide |
|---------------|------------------|
| 4mA           | 0ppm             |
| 20mA          | 100ppm           |

The formula is  $P_{(H_2S)} = (I_{(current)} - 4mA) * 6.25ppm$



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Where P is in ppm and I is in mA.

For example, the data collected in the current situation is 8.125 mA. When the selected range is 0-100 ppm, the test result is 25.78 ppm.

If you select a range of 0-10 ppm, the test result is 2.578 ppm.

## 4.2 Analogue 0-10V Voltage Output

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| Voltage value | Hydrogen Sulfide |
|---------------|------------------|
| 0V            | 0ppm             |
| 10V           | 100ppm           |

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The formula is  $P_{(H_2S)} = V_{(voltage)} / 100ppm$

Where P is in ppm and V is in mV.

For example, the data collected in the current situation is 3515mV, the selection range is 0-100ppm, and the test result is 35.15ppm.

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If you select a range of 0-10 ppm, the test result is 3.515 ppm.

### 4.3 Analogue 0-5V voltage output

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| Voltage value | Hydrogen Sulfide |
|---------------|------------------|
| 0V            | 0ppm             |
| 5V            | 100ppm           |

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The formula is  $P_{(H_2S)} = V_{(voltage)} / 50ppm$

Where P is in ppm and V is in mV.

For example, in the current situation, the collected data is 4228 mV, and the selected range is 0-100 ppm. At this time, the test result is 84.56 ppm.

If you select a range of 0-10 ppm, the test result is 8.456 ppm.