

## HCO Series Ultrasonic Oxygen Concentration Sensor

### Characteristics & Application

- Measurement by ultrasonic principle
- High precision/stable measurement
- Small volume/quick response
- Full range temperature compensation
- Low cost
- Long service life
- No periodic calibration is required



### Product description

HCO series oxygen concentration sensor is an ideal economic and practical oxygen concentration detection module based on ultrasonic principle. It has the characteristics of high precision, low cost, high reliability, easy to use, and also has the function of concentration/flow/temperature detection. It is widely used in the fields of agriculture/industry/environmental detection, especially in the oxygen generator industry.

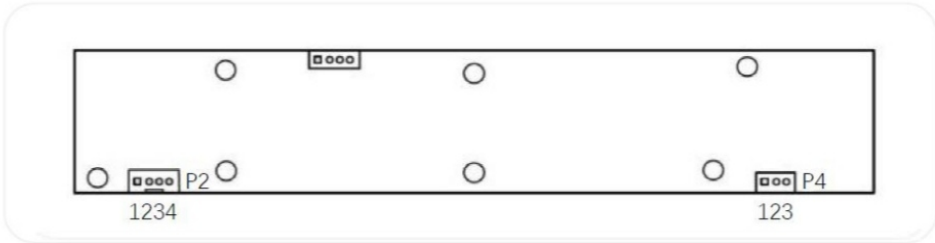
### Specifications

|                                  |   |
|----------------------------------|---|
| Concentration measurement range  | 21%-95.6%(Other ranges can be customized)         |
| Concentration resolution         | 0.1%  |
| Concentration detection accuracy | ±1.5%FS@(5~55℃)(1% Customizable)                  |
| Flow detection range             | 0-10L/min   |
| Flow detection accuracy          | ±0.2 L/min@(5~55℃)                                |
| Digital output                   | USART   |
| Working voltage                  | 5V or 12V(Optional)                               |
| Communication method             | Blind or inquiry (default blind)                  |
| Detection period                 | 500ms   |
| Oxygen                           | No corrosion / No condensate                      |
| Working temperature              | 5~55℃(Other temperature ranges can be customized) |
| Storage temperature              | -40~85℃   |
| Relative temperature             | 0~99%(Non condensation)                           |
| Working current                  | < 30mA  |
| Intake direction                 | Follow the arrow                                  |

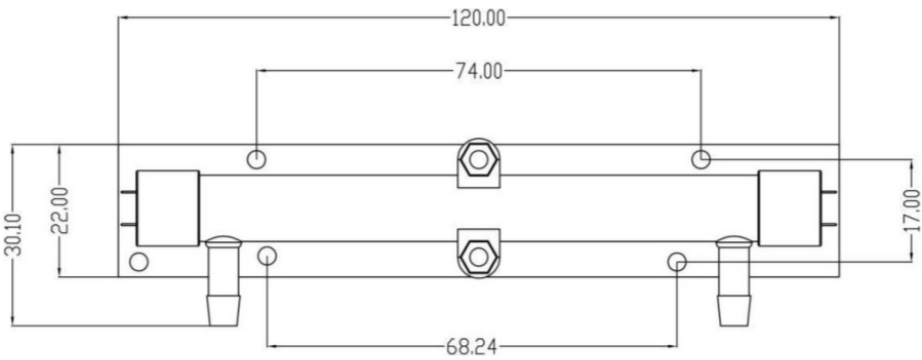
Interface definition

| Single Output 5V |          | Single Output 12V |          |
|------------------|----------|-------------------|----------|
| P2               |          | P2                |          |
| PIN1             | Vcc 5V   | PIN1              | Vcc 12V  |
| PIN2             | USART RX | PIN2              | USART RX |
| PIN3             | USART TX | PIN3              | USART TX |
| PIN4             | GND      | PIN4              | GND      |

| Double Output 12V |          |      |         |
|-------------------|----------|------|---------|
| P2                |          | P4   |         |
| PIN1              | NC       | PIN1 | Vcc 12V |
| PIN2              | USART RX | PIN2 | NC      |
| PIN3              | USART TX | PIN3 | GND     |
| PIN4              | GND      |      |         |



Dimensions



Unit (mm)

## Communication protocol

### 1. Overview of the agreement

Baud rate: 9600bps, data bit: 8 bit, stop bit: 1 bit, parity: none;

Data in this protocol are all hexadecimal data, such as "46" is decimal 70;

[XX]It represents single byte unsigned data (0-255). The high byte of double byte data is in the front and the low byte is in the rear;

The data received by the serial port must be divided by 10 to be valid data;

About 0.3 seconds, the module automatically sends a frame of data, the whole data length is 12 bytes.

### 2. Data format

| Head | Len | CMD | Data1 |        | Data_n | CS |
|------|-----|-----|-------|--------|--------|----|
| 16   | 09  | 01  | XX    | ... .. | XX     | XX |

16 09 01(concentration)(flow)(temperature) 00 00[CS];CS is the check bit, CS=0-( Add all preceding bytes).

### 3. Application examples

Reception: 16 09 01 00 D2 00 00 00 C8 00 00 46

Decimal conversion: D2 is 210; C8 is 200

Degree value:  $0 \times 256 + 210$  (21.0%)

O2 flow value= $0 \times 256 + 0 = 0$ (0L/ min)

O2 temperature value= $0 \times 256 + 200 = 200$ (20.0 °C)

## Precautions for use

- 1.The gas to be measured needs to be pretreated to ensure that the gas inlet of the sensor is free of dust,water,oil
- 2.The air outlet of the sensor should be connected with the external atmosphere to ensure the safety of the emission without blocking
- 3.Do not smoke or use open fire near the sensor
- 4.Ensure the integrity of the pipeline in use to avoid gas leakage
- 5.Do not disassemble or disassemble the sensor by yourself without the permission of the manufacturer, otherwise the sensor will be damaged and the manufacturer will not provide warranty or repair service
- 6.Please read the instructions carefully before use to avoid personal injury or sensor damage

## Installation requests and suggestions

- 1.Correct installation sequence of oxygen concentration sensor: air storage tank flow regulating device oxygen concentration sensor single display valve humidification cup
- 2.Working environment of oxygen concentration sensor: 5 ~ 55 °C, operating under normal pressure

3.It is recommended to install one-way valve at the outlet of oxygen concentration sensor to prevent backflushing phenomenon and damage to ultrasonic probe when the compressor is shut down

4.The installation of oxygen concentration sensor should avoid being close to the compressor and away from electromagnetic interference



3PIN:Power plug

4PIN:Data plug