

SPECIFICATION FOR APPROVAL

Product Name : Ultrasonic oxygen sensorSpecification : OCS-3ML2.0

Customer : _____

CUST P/N : _____

Supplies : Winpower Technology Co., Ltd.

Date : _____

CUSTOMER APPROVAL	CHK	APPD

DWN	CHK	APPD

.The product specification is for reference only and shall be signed for confirmation in case of batch supply

User Manual

The OCS-3ML-2.0 ultrasonic oxygen concentration sensor is a newly developed type of gas sensor by Winpower Technology Co., Ltd. It uses the ultrasonic principle to detect the oxygen concentration and flow rate in the gas.

It uses the ultrasonic principle to detect the oxygen concentration in the air, with the following characteristics:

Features

- ◆ High accuracy
- ◆ Strong anti-interference ability
- ◆ Response quickly
- ◆ Long-term stability
- ◆ No need to adjust regularly
- ◆ long operating life



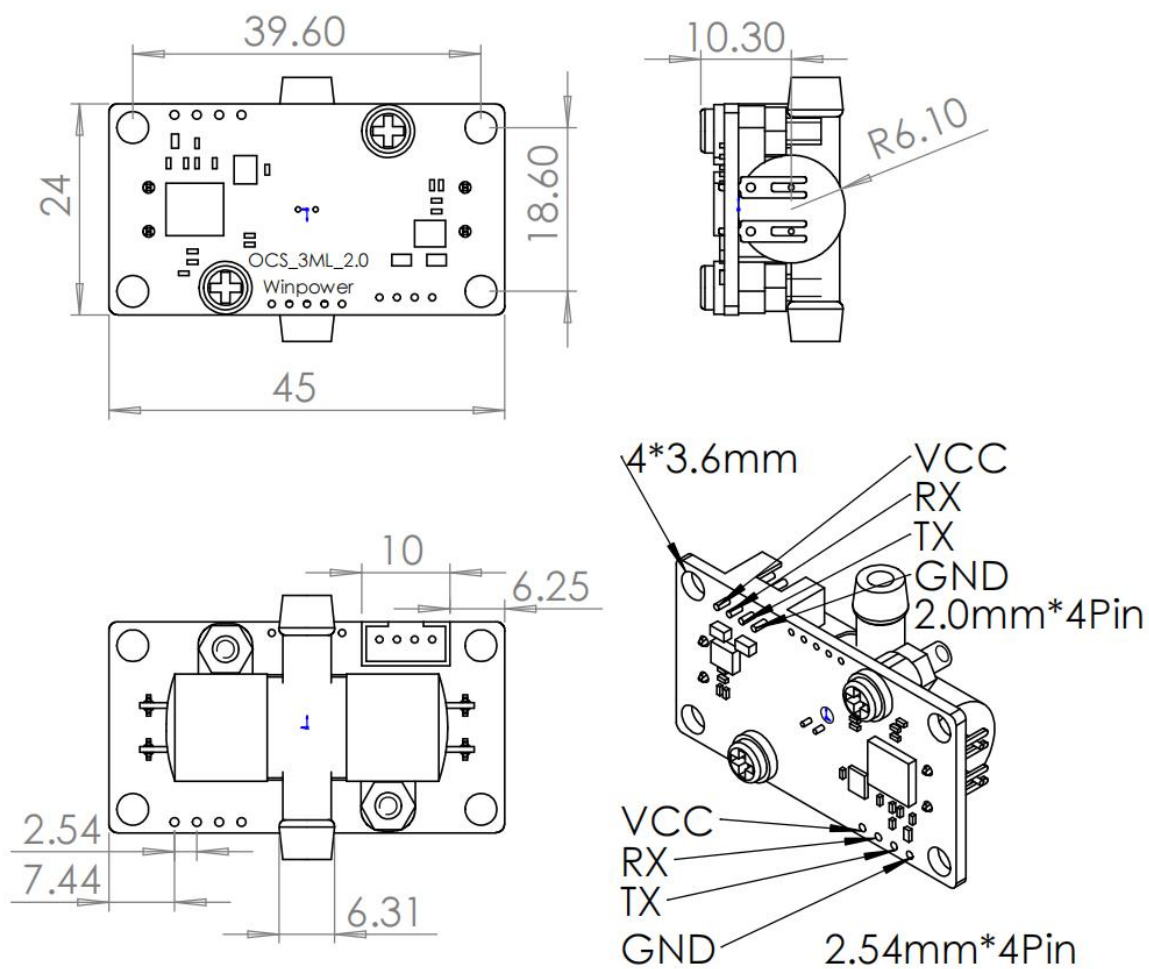
Precautions for use

- ◆ Ensure that the detected gas is water-free, oil-free and dust-free.
- ◆ Without the permission of the manufacturer, the sensor shall not be disassembled, and the sensor damage caused by the manufacturer will not be guaranteed or repaired.
- ◆ This sensor and data manual may change due to technical improvement of the product without prior notice, please forgive me.
- ◆ The company has the final interpretation of the sensor data manual.
- ◆ If there are other special customized requirements, please consult: [+86 0755-82415317](tel:+86-0755-82415317) or phc@winpower.com.cn
- ◆ Voltage data and air source data need to be provided before purchase.
- ◆ If it is detected in the space, it is equipped with a small fan to accelerate the diffusion of gas. If it is strung in the pipeline, it is necessary to increase the bacterial filter to prevent dust from entering.

Technology Characteristics

Range of concentration	21% - 95.6% Others can be noted and customized (such as 21 - 99.9%)
Resolution	0.1%
Accuracy	$\pm 1.8\%FS @ (5 - 55) ^\circ C$
Sample gas requirements	Anhydrous(No condensation); Dust filtration(<1um)
The spacing time of UART data	500ms (Others can be noted and customized)
Warm-up Time	Sensor works as soon as power on; 10 seconds to within specified accuracy;
Digital Output	9600bps UART 3.3V TTL level
Direction	Any side is ok
Working temperature	5~50 $^\circ C$ (non-condensing)
Storage temperature	-5~65 $^\circ C$ (non-condensing)
Working humidity	5~95%RH(non-condensing)
Power Supply	DC 4.5V-15VDC, 10mA. Recommended: 5V or 12V
Dimensions	45mm x 30mm x 17mm (L x W x H)
Weight	11g

Interface definition description (Unit :mm, tolerance $\pm 0.2\text{mm}$)



UART communication parameters Hardware

Baud rate: 9600bps

Character length: 1 start bit, 8 data bit, 1 stop bit, no check

Communication specification

1. The data in this protocol are all in hexadecimal format. For example, "46" is the decimal equivalent of [70].
2. The protocol verification must contain 0x16 0x09 0x01/0x02 and CS bits. Only the verified data that passes the verification can be used normally.
3. The default mode is automatic reporting. The sensor reports data every 500ms.
4. Response mode: The mainboard sends a query command, and the sensor replies immediately.
5. If the sensor does not receive the query command within 4 seconds, it will automatically enter the automatic reporting mode. If the sensor receives the mainboard's query command every 4 seconds, it will operate in the response mode.

Sample program:

temp_u8=0; //It must be 8-bit unsigned data, and the operation of resetting to zero must be performed first.

```
for(i=0;i<12;i++) temp_u8 += USART2_RXbuffer[i];
```

```
if((temp_u8==0)&&(USART2_RXbuffer[0]==0x16)&&(USART2_RXbuffer[1]==0x09)&&((USART2_RXbuffer[2]==0x01)||
(USART2_RXbuffer[2]==0x02))) //The data packet headers are all correct and the cumulative sum is 0.
```

```
{
```

```
o2_concent = USART2_RXbuffer[3]*256 + USART2_RXbuffer[4];
```

```
//oxygen concentration (o2_concent/10) %
```

```
//Based on USART2_RXbuffer[2], it is determined whether it is the PSA or pure oxygen mode. The default value is 0x01. In
PSA mode
```

```
o2_flow = USART2_RXbuffer[5]*256 + USART2_RXbuffer[6];
```

```
//oxygen flow ( o2_flow/10 ) L/min
```

```
o2_temp = USART2_RXbuffer[7]*256 + USART2_RXbuffer[8];
```

```
//oxygen temperature ( o2_temp/10 ) °C
```

```
}
```

(The motherboard sends a query instruction for the PSA concentration to the sensor)

```
USART2_TXbuffer[0] = 0x11; //
```

```
USART2_TXbuffer[1] = 0x01; //
```

```
USART2_TXbuffer[2] = 0x01; //
```

```
USART2_TXbuffer[3] = 0xED; //
```

(The motherboard sends a query instruction for the pure oxygen concentration to the sensor)

```
USART2_TXbuffer[0] = 0x11; //
```

```
USART2_TXbuffer[1] = 0x01; //
```

```
USART2_TXbuffer[2] = 0x02; //
```

```
USART2_TXbuffer[3] = 0xEC; //
```

Package

Small box: Packing capacity 48PCS / layer* 5 layers = 240PCS Length, width and height: 42*30*24cm	Logistics box: length, width and height: 50*32*44cm Two small boxes inside: 240*2=480PCS	Net weight:5KG Gross weight: 7.2KG
		

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