

SPECIFICATION FOR APPROVAL

Product Name : Ultrasonic Oxygen SensorSpecification : OCS-3FL 1.2

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-3FL1.2 ultrasonic oxygen sensor is a new type of gas sensor newly developed by Winpower Technology Co., Ltd. It uses the principle of ultrasonic to detect the oxygen concentration and flow rate in the gas output by the oxygen concentrator and sends the detection results in various ways such as UART digital output and LED indicators.



Features

- High accuracy
- Strong anti-interference ability
- High precision, good long-term stability
- No user calibration, life is more than 5 years
- Passed the EMC test

Application scene

- Molecular sieve oxygen concentrator
- HFNC

Precautions for use

Ensure that the detected gas is free of water, oil and dust.

Sensor installation position: air reservoir - pressure regulating valve - float flowmeter / electronic flowmeter / control knob – sensor-check valve - humidification bottle

The sensor shall not be disassembled without the permission of the manufacturer. The manufacturer will not guarantee or repair the sensor damage caused by non-measurement.

This sensor and data manual may be changed due to product technical improvement without prior notice. Please forgive me.

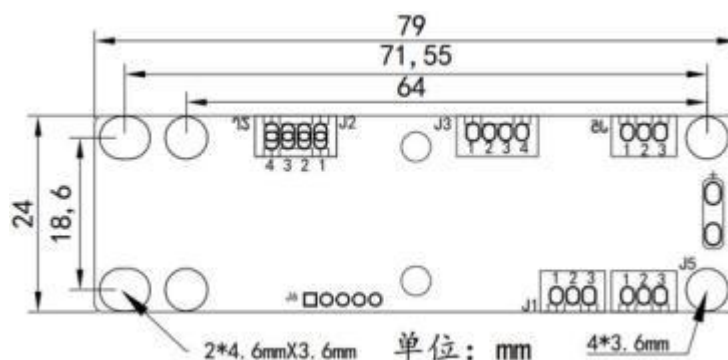
The company has the final right to interpret the sensor data manual.

If there are other special customization requirements, please consult: 86-0755-82415317
phc@winpower.com.cn

Specification

Range of Concentration	21%-95.6%
Resolution	0.1%
Accuracy	$\pm 1.5\%FS @ (5 - 55) ^\circ C$
Range of Flow	0-10L/min
Resolution	0.1L/min
Accuracy	$\pm 0.2L/min$ or reading 5% (take the larger value) @ (5 - 55) $^\circ C$
Sample gas requirements	Arefaction(No condensation);Dust filtration(<1um)
The spacing time of UART data	500ms
Warm-up Time	Sensor works as soon as power on; 10 seconds to within specified accuracy;
Digital Output	9600bps UART 3.3V TTV level
LED Output	GREEN:Concentration>82% YELLOW:82%>Concentration>50% RED:50%> Concentration (Settings are adjustable according to customer's requirement)
In and out air direction	Follow the direction indicated by the arrow.
Working temperature	5~55 $^\circ C$
Storage temperature	-5~65 $^\circ C$
Working humidity	5~85%RH
Power Supply	DC 5-12V, 50mA
Dimensions	79mm x 24mm x 22mm (L x W x H)
Weight	25g
Withstand pressure	0-150 kPa,but the pipeline pressure will affect the flow accuracy of the sensor, and the flow reading will be low.

Connectors



The connector positions and pin arrangements of the OCS-3FL1.2 sensor are shown in the above figure. The specific functions of each connector are listed in the following table:

Socket number	Function
J1	(Reserved)
J2	Power and Communication (UART)
J3	LED Output
J5	Power Supply

表 1 Power and Communication Socket J2

Pin1	+5V/10mA power output, or +12V power input
Pin2	RXD
Pin3	TXD
Pin4	GND

表 2 LED Output Socket J3

Pin1	COM
Pin2	Green LED: >=82% O2
Pin3	Yellow LED: 50%~82% O2
Pin4	Red LED: <=50% O2

表 3 Power Supply Socket J5

Pin1	+12V Power
Pin2	
Pin3	GND

UART communication parameters

Baud rate: 9600bps

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

Communication Instructions

1. The data in this protocol are all in hexadecimal format. For example, "46" is the decimal equivalent of [70].

2. Protocol verification must include 0x16, 0x09, 0x01 and the CS bit. Only the verified data that passes the verification can be used normally.

3. Automatic reporting mode: The sensor reports data once 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:

(The mainboard receives data sent by the sensor and performs data parsing.)

temp_u8=0; // It must be 8-bit unsigned data, and the operation of resetting to zero is required first. Assume that the serial port 2 of the motherboard is used for receiving sensor data.

```
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)) // The data packet header is correct and the cumulative sum is 0
{
```

```
o2_concent = USART2_RXbuffer[3]*256 + USART2_RXbuffer[4]; // Oxygen concentration
(o2_concent/10) %
```

```
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 mainboard sends a **query command** to the sensor)

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

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

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

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

Package

Small box: Packing capacity 30PCS / layer * 5 layers = 150PCS Length, width and height: 42*30*24cm	Logistics box: length, width and height: 50*32*44cm Two small boxes inside: 150*2=300PCS	Net weight:5KG Gross weight: 7.2KG
		

Winpower Technology Co.,Ltd.

ADD : 2ndfloor, Block 12, 2ndfloor, Block 6, Baosheng Industry Zone A, No.6, Tangbian Road,
Bainikeng Village, Pinghu, Longgang District, Shenzhen, Guangdong,China 518111

TEL : 86-0755-82415317

WEB : www.winpower.com.cn

E-mail:phc@winpower.com.cn