

SPECIFICATION FOR APPROVAL

Product Name : Ultrasonic oxygen sensor

Specification : OCS-3MFL3.0-CG

Customer : _____

CUST P/N: _____

Supplies : Winpower Technology Co.,Ltd.

Date : _____

CUSTOMER APPROVAL	CHK	APPD

DHW	CHK	APPD

■The product specifications are for reference only and shall be signed for confirmation in case of batch supply.



Data Manual

The OCS-3MFL-3.0CG ultrasonic oxygen sensor is manufactured by Winpower Technology Co., Ltd. It uses the ultrasonic principle to detect the oxygen concentration and flow rate of the gas output by the oxygen generator, and outputs the detection results via UART digital interface.

Feature

- ◆ High precision, 5 - 50°C temperature compensation
- ◆ Strong anti-interference capability
- ◆ Good long-term stability
- ◆ No user calibration required
- ◆ Service life is more than 5 years
- ◆ Small in size, Specifically adapted for portable devices
- ◆ Simultaneously measure concentration and flow rate



Application

- ◆ Molecular sieve oxygen generator / Portable molecular sieve oxygen generator / High-altitude

Precautions for use

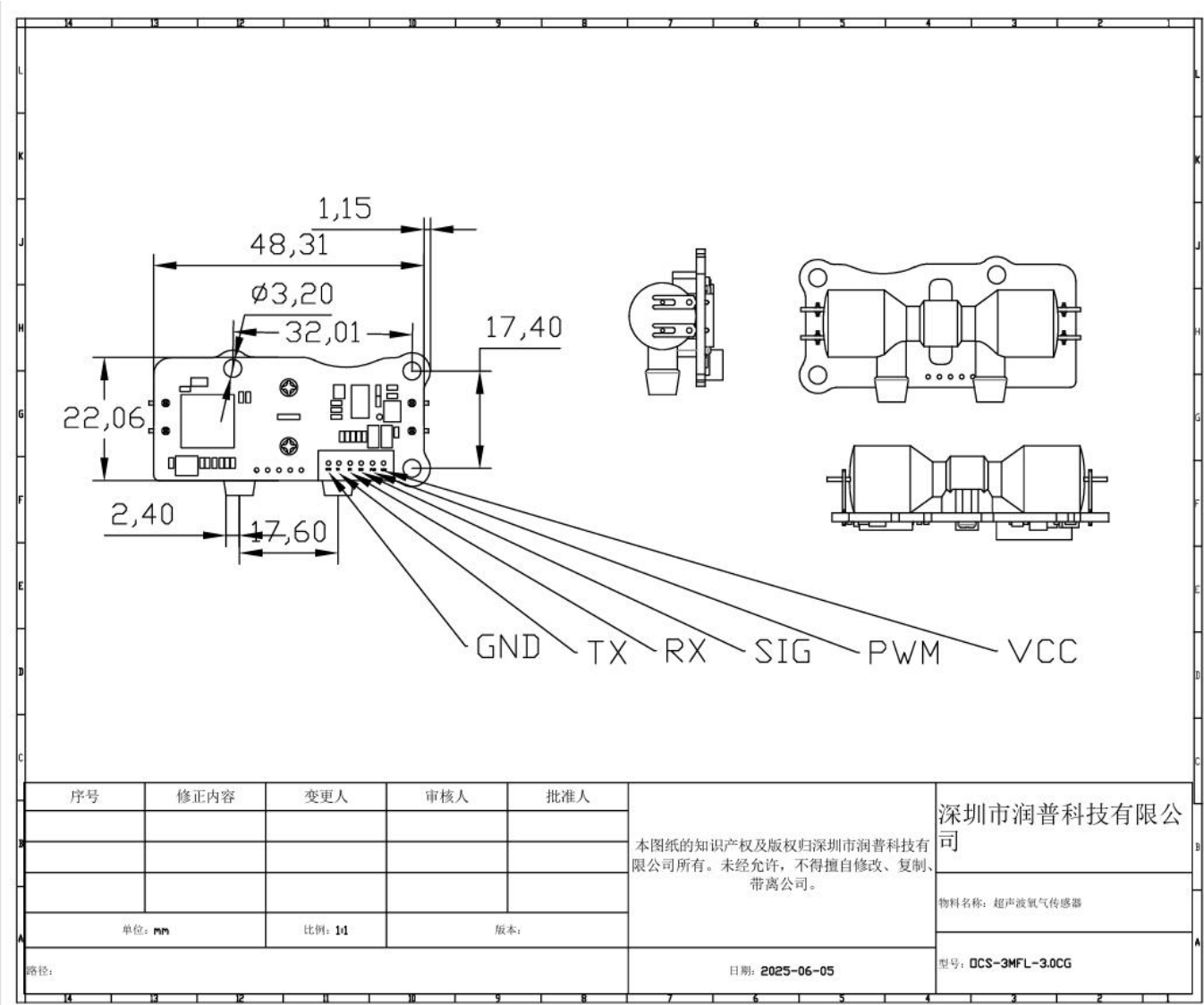
- ◆ Ensure that the detected gas is free of water, oil and dust.
- ◆ Sensor installation position: air reservoir - pressure regulating valve - float flowmeter/ electronic flowmeter/ control knob - sensor - check valve - humidification bottle.
- ◆ The sensor shall not be disassembled without the permission 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

Technical index

Gas concentration range	21%-95.6%,other concentrations can be customized
Concentration resolution	0.1%
Concentration accuracy	$\pm 2\%$ FS @ (5 - 50) °C
Gas flow detection range	0-25L/min
Flow resolution	0.1L/min
Flow detection accuracy	± 0.2 L/min or reading 5% (whichever is larger) @ (5-50) °C (Working Condition Mode)
Sample gas requirement	Water removal (no condensation); Dust filtration (< 1 u m)
Detection period	customizable
Warm-up time	It can be measured by turning on the machine, and 10s reach basic accuracy
Digital output	9600bps UART 3.3V is compatible with 5V TTV level
Level input	The sensor receives the valve opening signal (rising edge) at 3.3V
Level output	The sensor outputs the valve opening signal (3.3V high-low level PWM) as customized
Gas inlet and outlet direction	Chip end input, socket end output
Working temperature	5~50°C
Storage temperature	-35~65°C
Working pressure	50 - 250 Kpa (absolute pressure)
Single gas supply volume	Maximum 250ml, accuracy 5% @ (5 - 50)°C (working condition mode)
Relative humidity	5~85%RH
Working power	DC 5-12V, 50mA
Boundary dimension	49mm x 23mm x 16mm (L x W x H)
Weight	About 20g

Interface definition description:Communication connector (6-pin 1.25mm)



Communication protocol

Baud rate: 9600bps

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

Communication specification

1. The data in this agreement are all in hexadecimal format. For example, "46" represents the decimal value of [70].
2. Protocol verification must include 0x16, 0x09, 0x01 and the CS bit. Only the data that passes the verification is correct and can be used normally.
3. Automatic reporting mode: The sensor reports data every 500ms.
4. Response mode: The motherboard sends a query command, and the sensor responds immediately.
5. If the sensor does not receive the query command within 4 seconds, it automatically enters the automatic reporting mode. If it receives the query command from the motherboard every 4 seconds, the sensor operates in the response mode.

Sample program:

(The main board receives data from the sensor for data analysis)

temp_u8=0; //It must be 8-bit unsigned data, and a reset operation must be performed first.
Assume that the serial port 2 on 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)&&(U  
SART2_RXbuffer[2]==0x01)) //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) %
```

```
o2_flow = USART2_RXbuffer[5]*256 + USART2_RXbuffer[6]; // Oxygen flow rate  
(o2_flow/10) L/min
```

```
o2_temp = USART2_RXbuffer[7]*256 + USART2_RXbuffer[8]; // Oxygen temperature  
(o2_temp/10) ° C
```

```
o2_p = USART2_RXbuffer[9]; // Oxygen pressure (kPa), gauge pressure
```



```
Atm = USART2_RXbuffer[10];           // Atmospheric pressure (in kPa), absolute pressure
}
```

(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 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
		

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