

SPECIFICATION FOR APPROVAL

Product Name: Ultrasonic oxygen sensor

Specification: OCS-3F2.1

Customer:

CUST P/N:

Supplies : Winpower Technology Co.,Ltd.

Date :

CUSTOMER APPROVAL	CHK	APPD

DWN	CHK	APPD

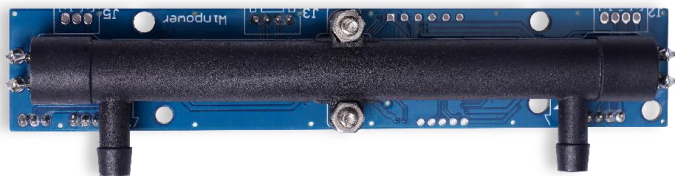
.The product specification is for reference only and shall be signed for confirmation in case of batch supply

Introduction

The OCS-3F2.1 ultrasonic oxygen sensor is a new type of gas sensor developed 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 sends the detection results through various methods such as UART digital output, analog output, and LED indicator lights. Compared with OCS-3F3.0, OCS-3F2.1 has an additional 0-2.5V output. OCS-3F2.1 has the same function as OCS-3F2.2.

Features

- ◆ High precision
- ◆ Strong anti-interference ability
- ◆ Good long-term stability
- ◆ No need for user calibration
- ◆ Life expectancy greater than 5 years
- ◆ Passed EMC test



Application

- Molecular sieve oxygen generator
- HFNC

Precautions for use

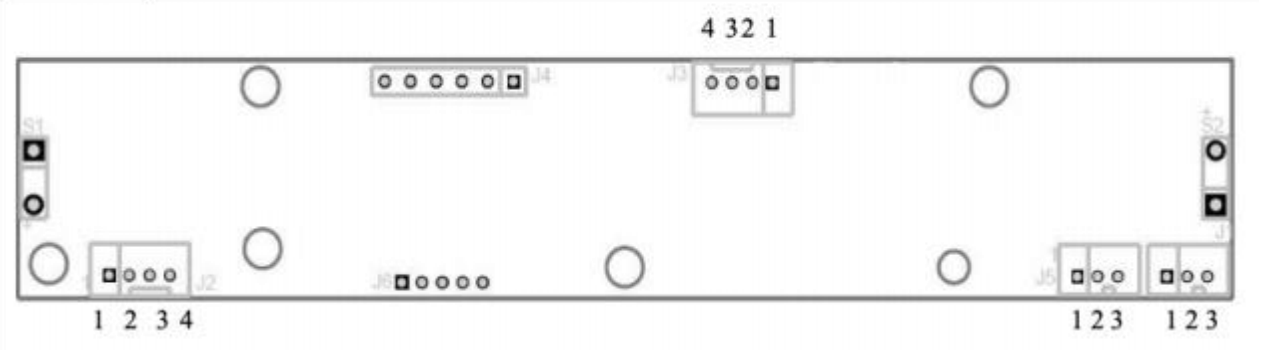
- ◆ Ensure that the detected gas is free of water, oil and dust.
- ◆ Sensor installation position: air reservoir - pressure regulating valve - float flowmeter / electronic flowmeter / control knob – sensor-check valve - humidification bottle
- ◆ The sensor shall not be disassembled without the permission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

Concentration Range	21%~95.6% （Other concentrations can be customized.）
Resolution	0.1%
Accuracy	$\pm 1.5\%FS@ (5 - 55) ^\circ C$
Flow Range	0~20L/min
Resolution	0.1L/min
Accuracy	$\pm 0.2L/min$ or 5% reading, which is bigger @ (5 - 55) $^\circ C$
Sample gas	no water vapor (no condensing); no dust (<1 μm)
Response Time	500ms
Warm-up Time	Sensor works as soon as power on; 10s to within specified accuracy;
Digital Output	9600bps UART3.3V TTV level
Analog Output	0-2.5V
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 arrow
Working Temperature	5~50 $^\circ C$
Storage temperature	-5~65 $^\circ C$
Working Humidity	5~85%RH (non-condensing)
Power Supply	DC 5-12V , 50mA
Dimensions	120.5mm x 22mm x 22mm (L x W x H)
Weight	25g
Withstand pressure	0-150Kpa, but the pipeline pressure will affect the flow accuracy of the sensor, and the flow reading will be low.

Connectors

接口定义说明



The arrangement of connectors are showed as above. The function of each connector described below:

Connector Number	Function
J1	Analog voltage output connector
J2	Digital signal output connector (UART)
J3	LED indicator output connector
J5	Power input connector

表 1 Analog voltage output connector J1

Pin1	0 - 2.5V output (0 - 99.9% O2)
Pin2	0 - 2.5V output (0 - 20 L/min)
Pin3	GND

表 2 Digital signal output connector J2

Pin1	DC 5-12V
Pin2	RXD
Pin3	TXD
Pin4	GND



表 3 LED indicator output connector J3

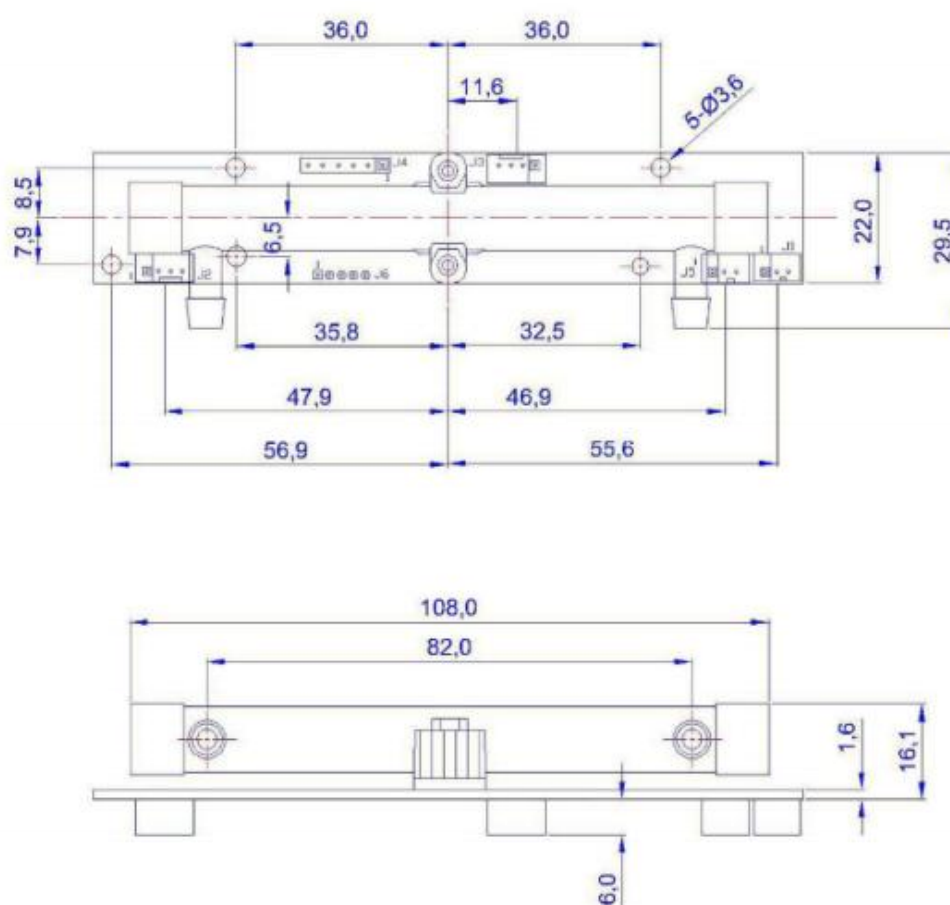
Pin1	COM
Pin2	Green LED: $\geq 82\%$ 02
Pin3	Yellow LED: 50% - 82% 02
Pin4	Red LED: $< 50\%$ 02

表 4 Power input connector J5

Pin1	+12V power input
Pin2	
Pin3	GND

Dimensions

Unit: mm, Tolerance: $\pm 0.2\text{mm}$



UART communication parameters

Baud rate: 9600bps

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

Communication Instructions

1. All the data in this protocol are in hexadecimal format. For example, "46" represents the decimal value [70].
2. Protocol verification must include 0x16, 0x09, 0x01 and the CS bit. Only the verified data is correct and 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. As long as the sensor receives the query command from the mainboard every 4 seconds, it will work 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 clearing to zero should be
performed first.Assuming 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)&&(U
SART2_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 rate
(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 20PCS / layer * 5 layers = 100PCS Length, width and height: 42*30*24cm	Logistics box: length, width and height: 50*32*44cm Two small boxes inside: 100*2=200PCS	Net weight:5KG Gross weight: 7.2KG
		

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