

SPECIFICATION FOR APPROVAL

Product Name: Ultrasonic oxygen sensor

Specification: OCS-3F3.0

Customer:

C U S T 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

OCS-3F 3.0 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 and LED indicator lights. OCS-3F 3.0/3.11 are interchangeable versions.

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

- PSA oxygen generator/ concentrator

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	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 5% reading, which is bigger@ (5 - 55) $^\circ C$
Response Time	500ms
Warm-up Time	Sensor works as soon as power on; 10s 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 $^\circ C$
Relative humidity	5~85%RH (non-condensing)
Power Supply	DC 5-12V, 50mA
Dimensions	120.5mm x 22mm x 22mm (L x W x H) The length of the middle screw can be customized.
Weight	25g
Sample gas	no water vapor (no condensing); no dust (<1 μm)
Withstand pressure	0-150Kpa;the pipeline pressure will affect the flow accuracy of the sensor, and the flow reading will be low.

Connectors



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

Connection number	Function
J 2	Digital signal output connector (UART)
J 3	LED indicator output connector
J 5	Power input connector

表 1 Digital signal output connector J2

Pin 1	DC 5-12V
Pin 2	RXD
Pin 3	TXD
Pin 4	GND

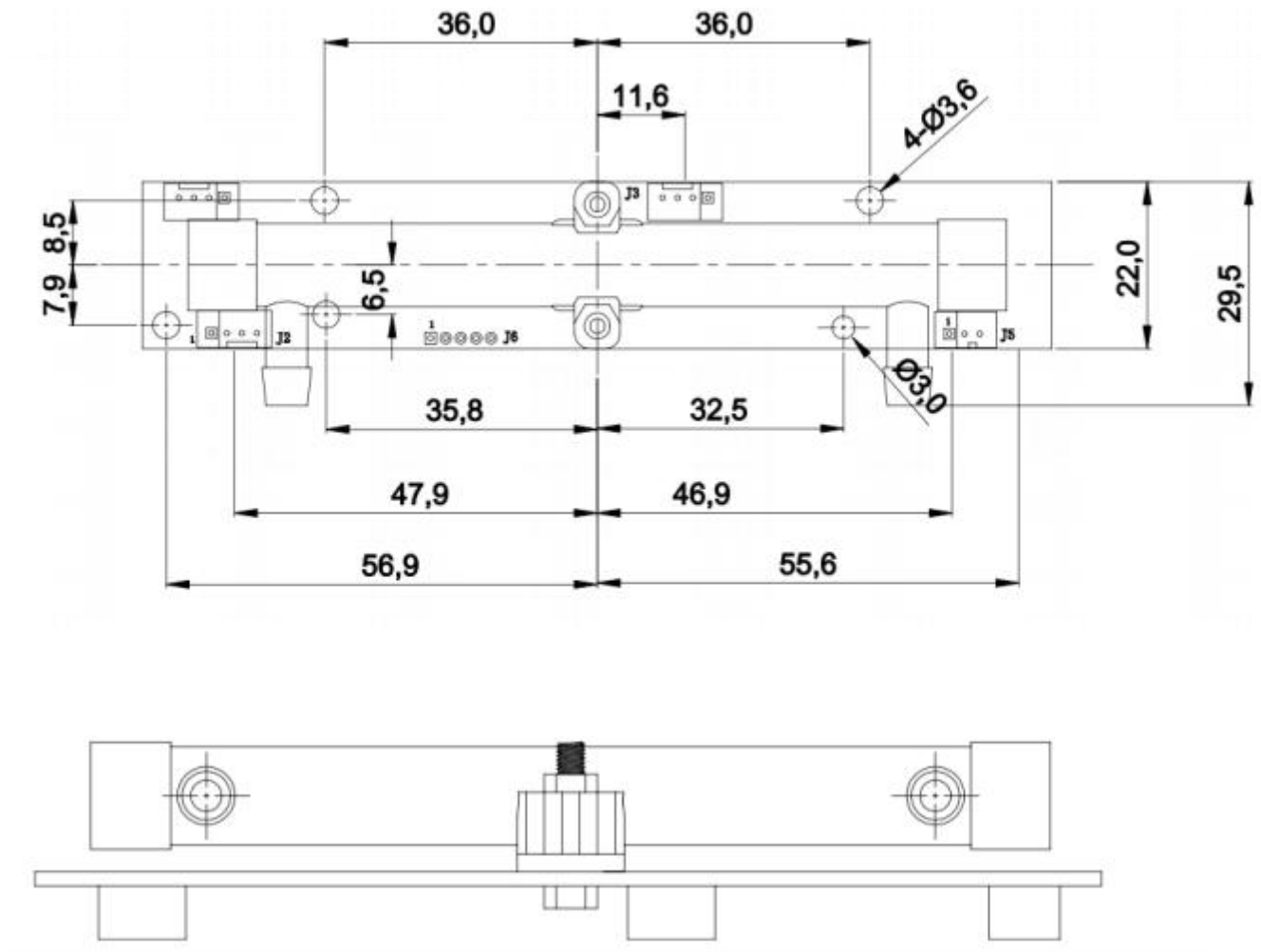
表 2 LED indicator output connector J3

Pin 1	COM
Pin 2	Green LED: $\geq 82\%$ O ₂
Pin 3	Yellow LED: 50% - 82% O ₂
Pin 4	Red LED: $< 50\%$ O ₂

表 3 Power supply voltage input connector J5

Pin 1	+12V power input
Pin 2	
Pin 3	GND

Dimensions



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.

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 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 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 (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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