

SPECIFICATION FOR APPROVAL

Product Name : Ultrasonic Oxygen SensorSpecification : OCS-3FL 2.0

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

Ultrasonic oxygen sensor User Manual

The OCS-3FL-2.0 ultrasonic oxygen sensor is a new type of gas sensor newly developed by Winpower Technology Co., LTD. It uses the ultrasonic principle to detect the oxygen concentration and flow rate in the gas output by the oxygen generator, and sends out the detection results in UART digital output.



Features

- High accuracy
- Strong anti-interference ability
- Good long-term stability
- No user calibration, life is more than 5 years
- Pass 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.

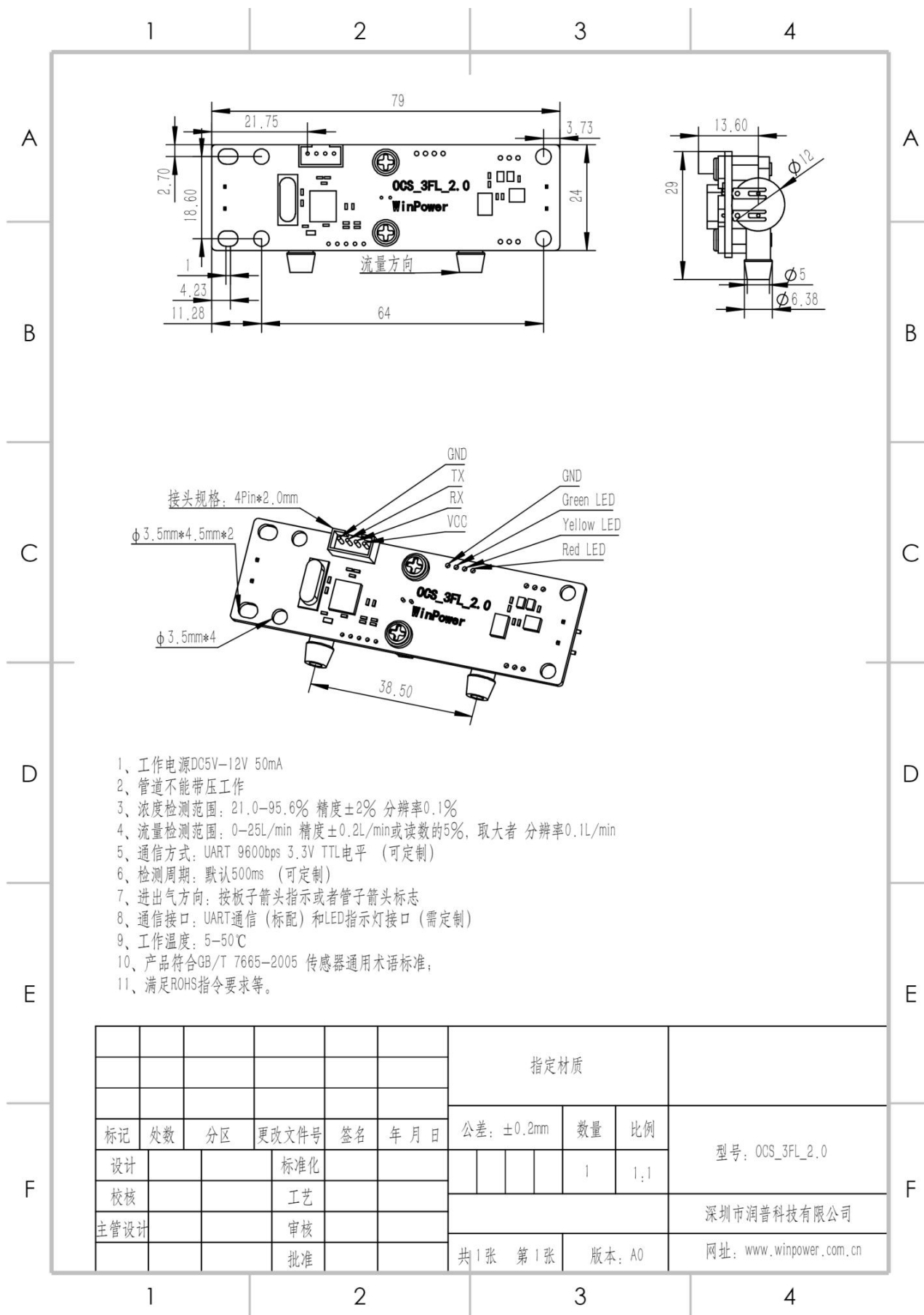
If there are other special customization requirements, please consult: 86-0755-82415317
phc@winpower.com.cn

Specification

Range of Concentration	21%-95.6% Other concentrations can be customized
Resolution	0.1%
Accuracy	±1.5%FS @ (5 - 55) °C
Range of Flow	0-20L/min
Resolution	0.1L/min
Accuracy	±0.2L/min or 5% reading, which is bigger @ (5 - 55) °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	This needs to be customized.
Direction	follow the arrow
Working temperature	5~55°C
Storage temperature	-5~65°C
Working humidity	5~85%RH
Withstand pressure	0-150 kPa, but the pipeline pressure will affect the flow accuracy of the sensor, and the flow reading will be low.
Power Supply	DC 5-12V, 50mA
Dimensions	79mm x 24mm x 22mm (L x W x H)
Weight	18.49g

Connectors

Unit: mm Tolerance: ±0.2mm



The connector positions and pin arrangements of the OCS-3FL2.0 sensor are shown in the above figure, and the specific functions of each connector are presented in the following table:

Socket number	Function
J2	Digital Signal Output Connector (UART)

Digital Signal Output Connector Socket J2	
Pin1	DC5-12V power input
Pin2	RXD
Pin3	TXD
Pin4	GND

UART communication parameters

Baud rate: 9600bps

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

Communication Instructions

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

Sample program:

(The motherboard receives the data reported by the sensor and performs data analysis.)

temp_u8=0; //It must be 8-bit unsigned data and a zeroing operation must be performed first. Suppose the motherboard serial port 2 receives 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 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 (o2_flow/10) L/min
o2_temp    = USART2_RXbuffer[7]*256 + USART2_RXbuffer[8]; //Oxygen temperature (o2_temp/10) °C
}
```

(The motherboard sends query instructions 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
		

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