DESCRIPTION: Ultrasonic Oxygen Concentration/Flow Sensor

MODEL: NL-YND-FL1.2

PICTURE:

The NL-YND-FL1.2 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

（1）High accuracy
（2）Strong anti- interference ability
（3）High precision, good long-term stability
（4）No user calibration, life is more than 5 years

Application scene

➢ Molecular sieve oxygen 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.

SPECIFICATIONS

Range of Concentration	21%-95.6%
Resolution	0.1%
Accuracy	±1.5%FS @ (5 - 55) ℃
Range of Flow	0-10L/min
Resolution	0.1L/min
Accuracy	±0.2L/min or 5% reading, which is bigger@(25±2) ℃
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 5V / 3.3V (TTL Level)
LED Output	GREEN：Concentration >82% YELOW: 82%>Concentration>50% RED:50%>Concentration (Settings are adjustable according to customer's requirement)
Direction	follow the arrow
Working temperature	5~55℃
Storage temperature	-5~65℃
Working humidity	5~85％RH
Maximum Pressure	150 kPa
Power Supply	DC 6.5-12V，50mA
Dimensions	79mm x 24mm x 22mm (L x W x H)
Weight	25g

Connectors

Socket Size（J2、J3 are 4P*2.0mm，J1、J5 is 3P*2.0mm）
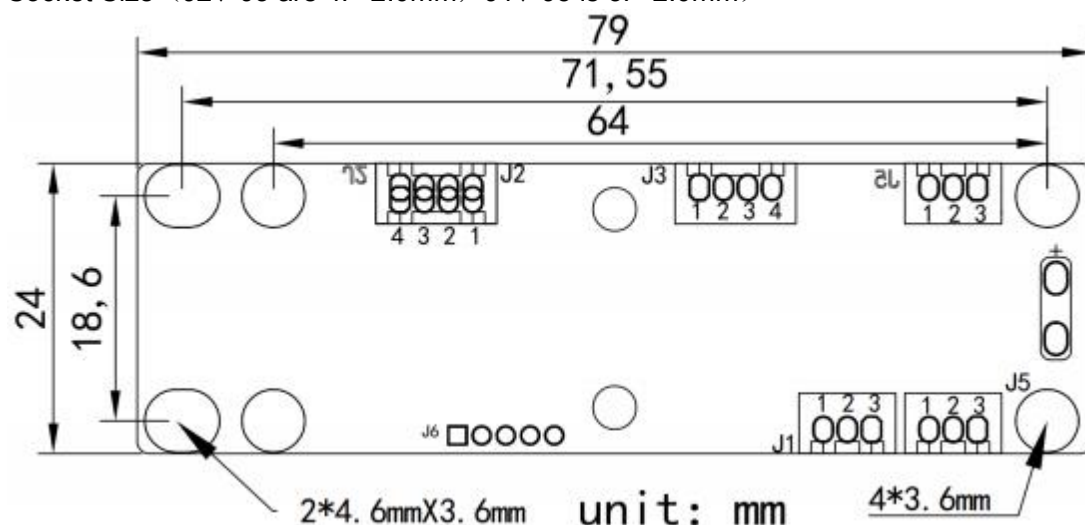
Socket number	Function
J1	(Reserved)
J2	Power and Communication (UART)
J3	LED Output
J5	Power Supply

Power and Communication
Socket J2

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

Attention: The pin1 of J2 could either be the +12VDC power input, or the +5VDC power output. When there is external +12VDC applied to pin1, this pin acts as the power input. When there is no external voltage applied to pin1, it acts as the +5VDC output. The exchange is completed automatically. The customer can use just one connector to fulfill both power supply and digital output functions.

LED Output
Socket J3

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

Power Supply Socket J5

Pin1	+12V Power
Pin2	
Pin3	GND

UART communication parameters

Connect sensor pin Vin-RXD-TXD-GND with 12V-TXD-RXD-GND.   (Customers must use 3.3v/5vTTL level. RS232 level needs conversion)。

Software
Baud Rate: 9600
Data Bits: 8
Stop Bits: 1
Parity (check bits): NO

Mode 1 (Autosend model)

The sensor sends the data automatically in the period of 500 ms. Autosend model is the default working mode of the sensor.
The data format is as follows:

0x16	0x09	0x01	0x01	0xF4	0x00	0x64	0x00	0xD2	0x00	0x00	0xB5
ACK	LB	CMD	Concent (High Byte)	Concent (Low Byte)	Flow (High Byte)	Flow (Low Byte)	Temperature (High Byte)	Temperature (Low Byte)	ST1	ST2	Checksum

Hex to Decimal：

	Decimal	**Hex**
Concent	=50.0%	=0x01F4
Flow	=10.0L/min	=0x0064
Temperature	=21.0℃	=0x00D2

Checksum:

```c
C language:
unsigned char getCheckSum(unsigned char *getbuff)
{
unsigned char i, checksum;
for( i = 0; i < 11; i++)
{
checksum += getbuff [i];
}
checksum = 0x00 – checksum;
return checksum;
}
```

Mode 2 (QueryMode)

When the sensor can not receive query data for 4 s continuously, it sends the data automatically in the period of 5 0 0 ms.

Host sends	11 01 01 ED	4 Byte
The sensor answers	16 09 01 (Concent-High) (Concent-Low) (Flow-High)(Flow-Low)(Temperature-High)(Temperature-Low)) [ST1] [ST2] [CS]	12 Byte

Note: Query mode needs customization, if you need this mode, please communicate in advance.