# Electrochemical Ozone Detection Module

## （Model： ZE14-O3）

# User’s Manual

Version: 1.1

Valid from: 2017.6.5

Zhengzhou Winsen Electronics Technology Co., Ltd

# Statement



Thanks for purchasing our product. To make you use our sensors better and reduce the faults caused by misuse, please read the manual carefully and operate it correctly in accordance with the instructions. If users disobey the terms or remove, disassemble, change the components inside of the sensor, we shall not be responsible for the loss.

The specific such as color, appearance, sizes &etc., please in kind prevail.

We are devoting ourselves to products development and technical innovation, so we reserve the right to improve the products without notice. Please confirm it is the valid version before using this manual. At the same time, users' comments on optimized using way are welcome.

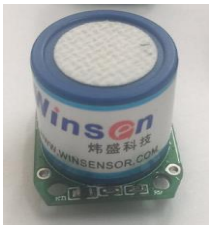
Please keep the manual properly, in order to get help if you have questions during the usage in the future.

**Zhengzhou Winsen Electronics Technology CO., LTD.**

# Electrochemical Ozone Detection Module ZE14-O3

## Product Description

ZE14-O3 is a general-purpose and miniaturization electrochemical Formaldehyde detection module. It utilizes electrochemical principle to detect ozone in air which makes the module with high selectivity and stability. It is a combination of mature electrochemical detection principle and sophisticated circuit design.



## Features

*High sensitivity & resolution& Good stability
*Extremely low power consumption
*UART/Analog Voltage/PWM wave output

## Application

Portable detector, air-quality monitor device, Ozone disinfection cabinet, smart home device &etc.

## Parameter

| | |
|---|---|
| Model No. | ZE14-O3 |
| Target Gas | O3 |
| Interference Gas | Alcohol…etc. |
| Output Data | UART Output (3V Electrical Level) |
| Working Voltage | 5±0.5V DC |
| Warm up time | 30S |
| Response time | ≤30S |
| Resume time | ≤30S |
| Detection Range | 0～10ppm/0～100ppm |
| Resolution | 0.01ppm/0.1ppm |
| Operating Temp. | -10℃～65℃ |
| Operating Hum. | 15%RH-90%RH (No condensation) |
| Storage temp. | -20℃～65℃ |
| Working life | 3-5 years (in air) |

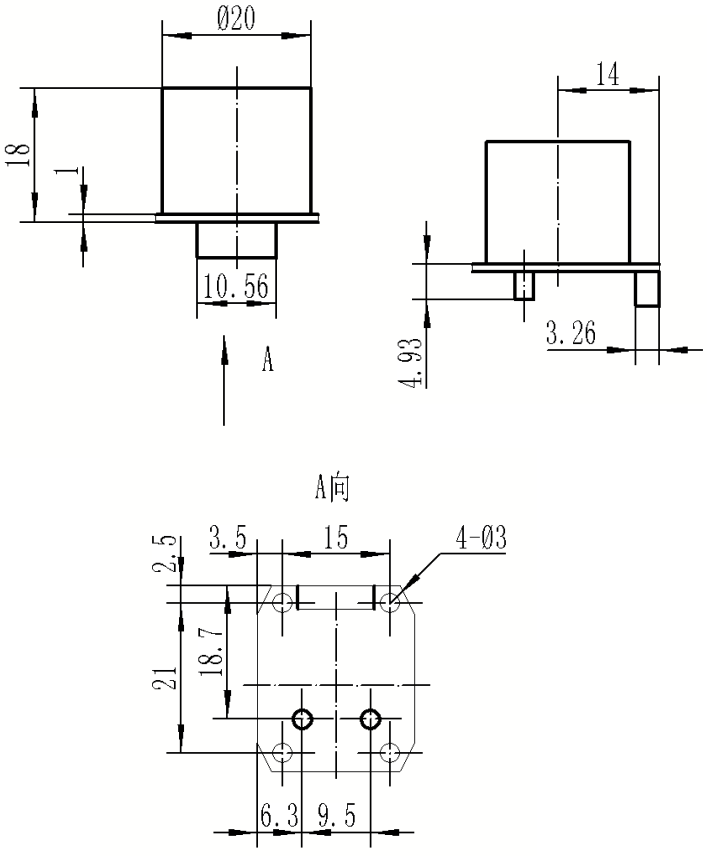
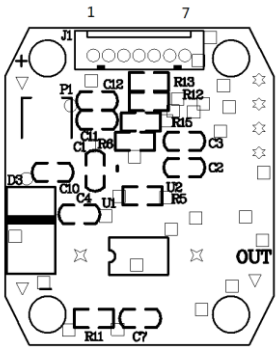



Fig. 1： structure

**Pin definition** **Table 2**

| | |
|---|---|
| PIN1 | Reserved |
| PIN2 | Analog output (reserved) |
| PIN3 | GND |
| PIN4 | + |
| PIN5 | UART (RXD) 0~3.3V Data input |
| PIN6 | UART (TXD) 0~3.3V Data output |
| PIN7 | Alarm output 3.3V high and low level (reserved) |

Fig. 2: Pin definition




**Communication Protocol**

1 **General Settings**

Table 3

| | |
|---|---|
| Baud Rate | 9600 |
| Data Bits | 8 bytes |
| Stop Bits | 1 byte |
| check bits | Null |

**2 Commands**

**There are two communication type: active upload type and Q&A type. The default type for this module is active upload and it sends gas concentration every second. Commands as follow ( take 40ppm for example)**

Table 4

| Byte0 | Byte1 | Byte2 | Byte3 | Byte4 | Byte5 | Byte6 | Byte7 | Byte8 |
|---|---|---|---|---|---|---|---|---|
| Start Byte | Gas type | Unit | No. decimal byte | Concentration (High Byte) | Concentration (Low Byte) | Full Range (High Byte) | Full Range (Low Byte) | Checksum |
| 0xFF | O3=0X2A | ppm=0x03 | 1 byte =0x01 | 0x01 | 0x90 | 0x03 | 0xE8 | 0x56 |

Gas concentration value= Concentration High Byte *256+ Concentration Low Byte

**3 hecksum calculation method**

Checksum = (Negative (Byte1+Byte2+Byte3+Byte4+Byte5+Byte6+Byte7)) +1

I. e:

```
/*****************************************************************************
* Function Name: ucharFucCheckSum (uchar *i,ucharln)
* Functional description: checksum【Non(sending/receiving commend
```

~~Byte1+Byte2+…Byte7) +1】~~

```
* Function description:
Negate【Element 1 of Array+ element 2+….Element(n-1) 】+1
**********************************************************************/
unsigned char FucCheckSum(unsigned char *i,unsigned char ln)
{
    unsigned char j,tempq=0;
    i+=1;
    for(j=0;j<(ln-2);j++)
    {
        tempq+=*i;
        i++;
    }
    tempq=(~tempq)+1;
    return(tempq);
 }
```

**Cautions**

1.prohibit plug and pull the sensor on the module.
2. prohibit change and shift the installation of electronic components.
3.Sensor shall avoid organic solvent (including silicone and other adhesives), coatings, medicine, oil and high concentration gases
4.The module cannot withstand excessive impact or vibration.
5. Please keep the modules warming up for at least 5 minutes when first time using.
6. Please do not use the modules in systems which related to human being's safety.
7. Please do not use the modules in strong air convection environment.
8. Please do not expose the modules in high concentration organic gas for a long time.

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