Electrochemical Ozone Detection Module

（Model：ZE14-O3）

User's Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd

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Electrochemical Ozone Detection Module ZE14-O3

Product Description

ZE14-O3 is a general-purpose and miniaturization electrochemical Ozone 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 and resolution, low consumption, long life
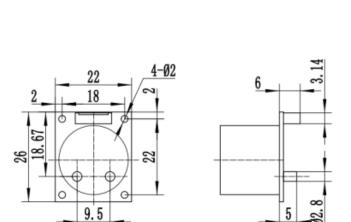*UART output
*Detection range: 0~100ppm

Application

Ozone disinfection cabinet, smart home devices &etc.

Parameters

stable1.

Model No.	ZE14-O3
Target Gas	Ozone (O3)
Interference Gas	NO2,CL2&etc.
Output Data	UART Output (3V Electrical Level)
Working Voltage	5±0.1V DC
Warm up time	180S
Response time	≤90S
Resume time	≤90S
Detection Range	0～100ppm
Resolution	0.1ppm
Operating Temp.	-10℃～65℃
Operating Hum.	15%RH-90％RH (No condensation)
Storage temp.	-20℃～65℃
Working life	2 years (in air)

Fig.1   structure (tolerance ±0.1mm)
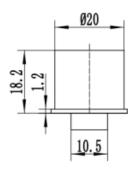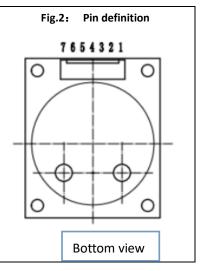
Pin definition   **Table** 2

PIN1	Reserved
PIN2	Reserved
PIN3	GND
PIN4	Power +
PIN5	UART (RXD) 0~3V Data input(Connect to 10K pull-up when not in use, No hanging)
PIN6	UART (TXD) 0~3V Data output
PIN7	Reserved

Fig.2： Pin definition

7 6 5 4 3 2 1

Bottom view

Communication Protocol

1 **General Settings**

Table 3

Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None

2 Commands

The communication of this module is active upload type and it sends gas concentration every other second. The module with 0~100ppm range sends the concentration commands as follow (take 40ppm for example).

Table **4**

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Gas type	Unit	Number of 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

   NOTE: **1.** The number of decimal byte is 1 for 0~100ppm range.

   2.Gas concentration value= (Concentration High Byte *256+ Concentration Low Byte)*0.1

   =(1*256+144)*0.1=40ppm

3 Checksum and calculation.

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

      I.e：

       /***

       * Function Name: ucharFucCheckSum (uchar *i,ucharln)

* Functional description: checksum【Non(sending/receiving command 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 pluging and pulling the sensor on the module.

2. prohibit changing and shifting 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 hours 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.

9.To avoid positive vertical gas inflowing while the modules are test and used.

10. The inlet surface of the sensor shall not be blocked or contaminated.

11. The waterproof breathable membrane above the sensor is strictly forbidden to be opened and broken.

12. Do not use it if any damage or deformation.

13. Ban using hot melt adhesive or sealant curing temperature higher than 80 ℃ or more to seal the sensor.

14. It is forbidden to store and use in high concentration alkaline gases for a long time.