Electrochemical Ozone Detection Module

（Model： ZE25-O3）

User’s Manual

Version: 1.1

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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, to get help if you have questions during the usage in the future.

Zhengzhou Winsen Electronics Technology CO., LTD.

Electrochemical Ozone Detection Module ZE25-O3

Product Description

ZE25-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.	ZE25-O3
Target Gas	O3
Interference Gas	Alcohol…etc.
Output Data	DAC(0.4～2V)
	UART Output (3V Electrical Level)
Working Voltage	3.7V～5.5V
Warm up time	≤3min
Response time	≤90s
Resume time	≤90s
Detection Range	0～10ppm
Resolution	0.01ppm
Operating Temp.	-10℃～55℃
Operating Hum.	15%RH-90%RH (No condensation)
Working life	2 years (in air)

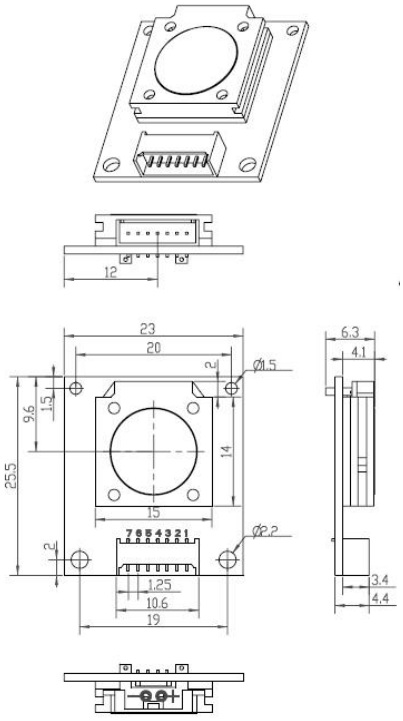
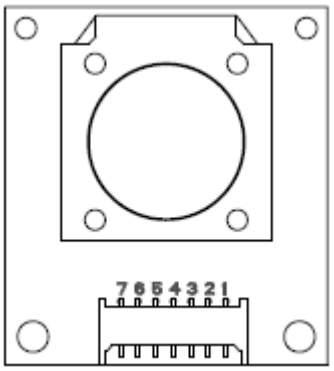


Fig. 1： structure

Pin definition Table 2

PIN1	Reserved
PIN2	DAC 0.2-4.0V
PIN3	GND
PIN4	Vin (input 3.7-5.5V)
PIN5	UART (RXD) 0~3.0V Data input
PIN6	UART (TXD) 0~3.0V Data output
PIN7	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. If you want to change to Q&A mode, please turn off active upload type first and then turn on Q&A mode: please send following command:(takes 40ppm for example)

Command for turning off active upload mode:

Table 4

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Reserved	Switch command	Q&A mode	Reserved	Reserved	Reserved	Reserved	Checksum
0xFF	0x01	0x78	0x41	0x00	0x00	0x00	0x00	0x46

Command to send to read gas concentration under Q&A mode:

Table 5

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Reserved	command	Reserved	Reserved	Reserved	Reserved	Reserved	Checksum
0xFF	0x01	0x86	0x00	0x00	0x00	0x00	0x00	0x79

Return command for reading gas concentration:

Table 6

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	command	Concentration (High Byte PPB)	Concentration (Low Byte PPB)	Reserved	Reserved	Concentration (High Byte PPB)	Concentration (Low Byte PPB)	Checksum
0xFF	0x86	0x00	0x20	0x00	0x00	0x00	0x20	0x30

Send following command to switch to active upload mode under Q&A mode:

Table 7

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Reserved	Switch command	Active upload	Reserved	Reserved	Reserved	Reserved	Checksum
0xFF	0x01	0x78	0x40	0x00	0x00	0x00	0x00	0x47

Return command for reading gas concentration:

Table 8

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Gas O3	Unit	decimal digits 0 bits	Concentration (High Byte PPB)	Concentration (Low Byte PPB)	Full range high byte	Full range Low byte	Checksum
0xFF	O3=0x2A	ppb=0x04	0x00	0x00	0x25	0x27	0x10	0x75

Note: Gas concentration value(PPB)= Concentration High Byte *256+ Concentration Low Byte. PPM= PPB×1000.

3 Checksum calculation method

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

I.e：

```
/************************************************************************
 * Function Name: unsigned 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 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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