Electrochemical Ozone Detection Module

（Model： ZE25A-O3）

User’s Manual

Version: 1.0

Valid from: 2021.04.01

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 ZE25A-O3

Product Description

ZE25-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 & resolution& low power consumption& long lifespan
*UART Output
*Good stability, good anti-interference
*Excellent linearity

Application

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

Parameter

Table1.

Model No.	ZE25A-O3
Target Gas	O3
Interference Gas	NO2, Cl2 etc.
Output Data	UART Output (3V Electrical Level)
Working Voltage	3.7V～5.5V(No reverse voltage protection)
Warm up time	≤3min
Response time	≤90s
Resume time	≤90s
Detection Range	0～2ppm
Resolution	0.001ppm
Operating Temp.	-10℃～55℃
Operating Hum.	15%RH-90％RH (No condensation)
Storage Temp.	-20℃~55℃
Working life	2 years (in air)

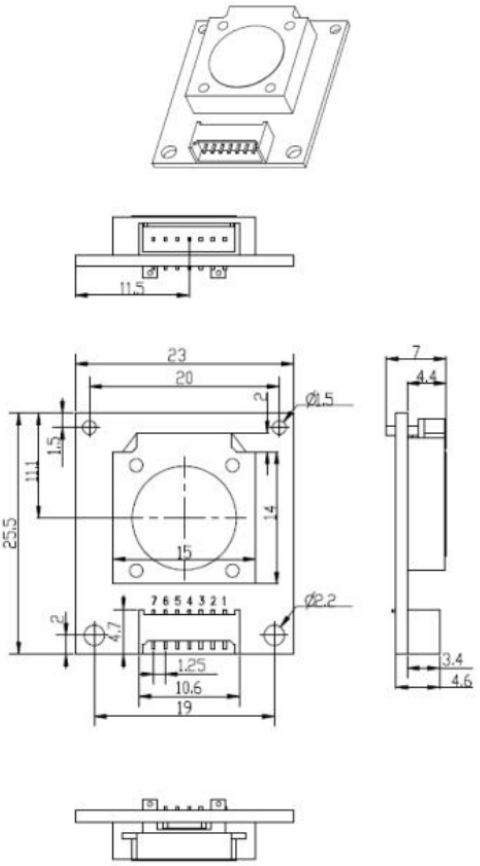
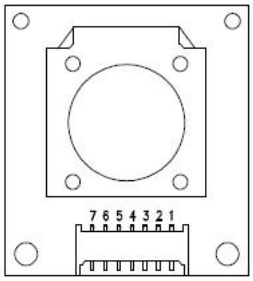


Fig. 1： **structure**

Pin definition **Table 2**

PIN1	Reserved
PIN2	Reserved
PIN3	GND
PIN4	Vin (input 3.7V~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 Byte	8 bytes
Stop Byte	1 byte
check bits	Null

2 Communication Commands

There are two communication type: active upload type and Question & Answer type. The default type for this module is active upload and it sends gas concentration every other second. If it is Q&A mode and you want to switch it to active upload mode again, please send following command:

Command to switch Q&A mode to active upload mode: **Table 4**

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

Data of active upload show as follow: **Table 5**

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Gas name O3	Unit (ppb)	Number of Digital 0	Concentration High Byte	Concentration Low Byte	Full scale High Byte	Full scale Low Byte	Checksum
0xFF	O3=0x2A	0x04	0x00	0x00	0x25	0x07	0xD0	0xD6

NOTE: Gas concentration(PPB)=(Concentration high byte*256+Concentration low byte). PPM=PPB/1000. When users need Q&A mode, send the following command to turn off active upload mode, and then send command to read concentration. The command to turn off active upload mode as follow:

Command to turn off active upload mode: **Table 6**

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

Read concentration under Q&A mode: **Table 7**

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 gas concentration as follow: **Table 8**

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

NOTE: Gas concentration(PPB)=(Concentration high byte*256+Concentration low byte).
If users would like to change the unit into PPM: PPM=PPB/1000.

3 Checksum calculation method

Checksum = (Negative (Byte1+Byte2+Byte3+Byte4+Byte5+Byte6+Byte7)) +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);
}
```

Packing

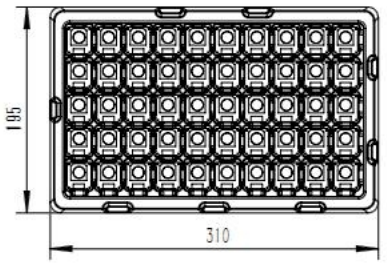
1.Put the sensor in the blister tray in the same direction.

2.According to the specifications of the packing box, place the blister tray with the sensor in the corresponding number of layers.

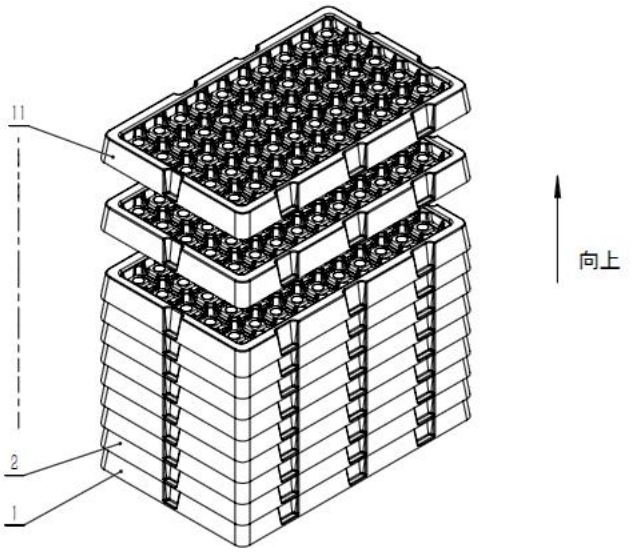
3.Put the packed sensor into the carton.

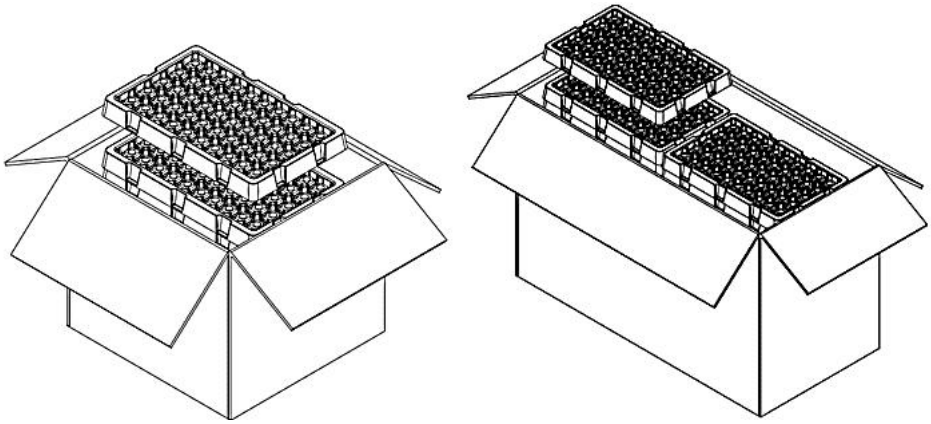
4.Carton sealing and packing.

5.Orders with a single shipment quantity less than the smallest packing box are not limited to this specification.



每个吸塑托盘容纳5×10=50个模组





Cautions

1.Prohibit plug and pull the sensor on the module.

2. Prohibit change and shift the installation of electronic components.

3. Please do not use the modules in strong air convection environment.

4.The module should not withstand excessive shock or vibration.

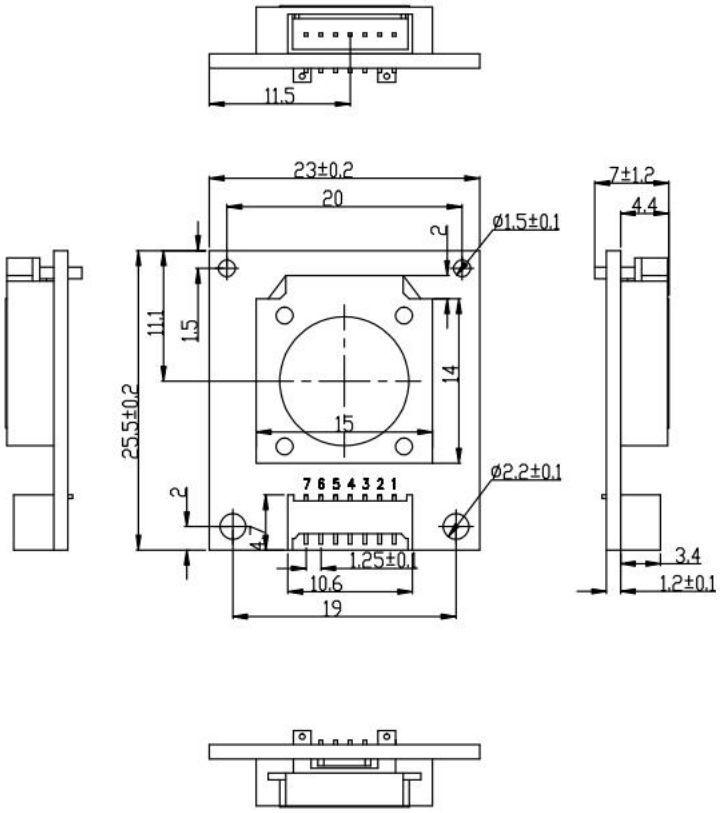
5. The module needs to be warmed up for 5 hours at the first power-on.

6.Do not use this module for systems involving personal safety.

7.Please do not use the modules in strong air convection environment.

8.Do not place the module in high-concentration organic gas for a long time. Long-term placement will cause the sensor zero point to drift and slow recovery.

9.It is forbidden to encapsulate modules with hot melt adhesive or sealant with curing temperature higher than 80 ℃.


11.5
23±0.2
20
2
Ø1.5±0.1
11.1
1.5
14
15
25.5±0.2
2
4.7
7 6 5 4 3 2 1
Ø2.2±0.1
1.25±0.1
10.6
19
7±1.2
4.4
3.4
1.2±0.1