



# Electrochemical CH<sub>2</sub>O Detection Module

(Model: ZE07-CH<sub>2</sub>O)

# User's Manual

Version: 1.8

Valid from: 2014-11-10

Zhengzhou Winsen Electronics Technology Co., Ltd

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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 CH2O Detection Module ZE07-CH2O

### Product Description

ZE07-CH2O is a general-purpose and miniaturization electrochemical Formaldehyde detection module. It utilizes electrochemical principle to detect CH2O 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
- \* Excellent ability of Anti-interference
- \*Temperature compensation
- \*Excellent Linear output

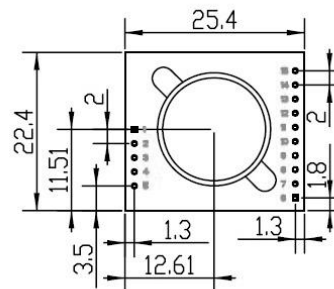
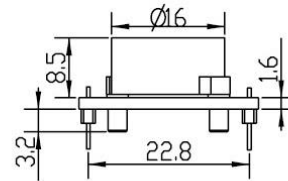
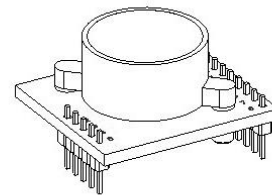


### Application

Portable detector, air-quality monitor device, air fresher, fresh air ventilation system, air-condition, smart home device &etc.

### Parameters

Model No.	ZE07-CH2O
Target Gas	CH2O
Interference Gas	Alcohol, CO &etc.
Output Data	DAC(0.4~2V standard voltage output)
	UART Output(3V Electrical Level)
Working Voltage	3.7V~9V (No voltage reverse connect protection)
Warm up time	≤3 minutes
Response time	≤ 60s
Resume time	≤ 60s
Detection Range	0~5ppm
Resolution	0.01ppm
Operating Temp.	0°C ~ 50°C
Operating Hum.	15%RH-90% RH (No condensation)
Storage temp.	0°C ~ 50°C
Working life	2 years(in air)

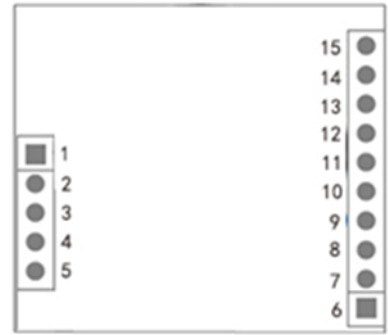


Structural drawing

**Pin Description**

**Table 2**

PIN15	Vin (Voltage input 3.7V-9V)
PIN5、PIN14	GND
PIN1	VOUT(Voltage output 3.0V)
PIN3	Reserved
PIN4	Reserved
PIN7	UART (RXD) 0~3.0V Data input
PIN8	UART(TXD) 0~3.0V Data output
PIN9	Sensor Analog signal
PIN10	DAC 0.4V-2V (0-full measuring range)
PIN2/PIN6/PIN11/PIN12/PIN13	NC



**Picture 2: Pin figure of the Module**

**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 other one second. Commands as follow:**

**Table 4**

0	1	2	3	4	5	6	7	8
Start Byte	Gas type	Unit	No decimal byte	Concentration (High Byte)	Concentration (Low Byte)	Full Range (High Byte)	Full Range (Low Byte)	Checksum
0XFF	CH2O =0X17	Ppb=0x04	0x00	0x00	0x25	0x13	0x88	0x25

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

**Switch to Q&A type, commends as follow:**

**Table 5**

0	1	2	3	4	5	6	7	8
Start Byte	reserved	Switch command	Q&A	reserved	reserved	reserved	reserved	checksum

0xFF	0x01	0x78	0x41	0x00	0x00	0x00	0x00	0x46
------	------	------	------	------	------	------	------	------

Switch to active upload type, commends as follow:

Table 6

0	1	2	3	4	5	6	7	8
Start Byte	reserved	Switch command	Active upload	reserved	reserved	reserved	reserved	checksum
0xFF	0x01	0x78	0x40	0x00	0x00	0x00	0x00	0x47

To read the concentration value, commends as follow:

Table 7

0	1	2	3	4	5	6	7	8
Start Byte	reserved	command	reserved	reserved	reserved	reserved	reserved	checksum
0xFF	0x01	0x86	0x00	0x00	0x00	0x00	0x00	0x79

To return, commends as follow:

Table 8

0	1	2	3	4	5	6	7	8
Start Byte	command	Concentration High byte(ug/m3)	Concentration Low byte (ug/m3)	reserved	reserved	Concentration High byte (ppb)	Concentration High byte (ppb)	Checksum
0xFF	0x86	0x00	0x2A	0x00	0x00	0x00	0x20	0x30

### 3 Checksum and calculation

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\* Function Name: ucharFucCheckSum(uchar \*i,ucharIn)

\* Functional description: Sum check 【Take Not(Byte1+Byte2+...Byte7) +1】

\*\*\*\*\*/

```
unsigned char FucCheckSum(unsigned char *i,unsigned char In)
```

```
{
    unsigned char j,tempq=0;
    i+=1;
    for(j=0;j<(In-2);j++)
    {
        tempq+=*i;
        i++;
    }
    tempq=(~tempq)+1;
    return(tempq);
}
```

**Cross interference gas:****Table 5**

Gas	Concentration	Concentration output
NH <sub>3</sub>	50ppm	0ppm
C <sub>6</sub> H <sub>6</sub>	100ppm	0.1ppm
Cl <sub>2</sub>	10ppm	0.1ppm
CH <sub>3</sub> L	5ppm	0.1ppm
C <sub>3</sub> H <sub>6</sub> O	100ppm	0.2ppm
C <sub>2</sub> H <sub>4</sub> O	10ppm	0.5ppm
SO <sub>2</sub>	20ppm	0.8ppm
H <sub>2</sub> S	100ppm	3.7ppm
H <sub>2</sub>	450ppm	5ppm
C <sub>2</sub> H <sub>5</sub> OH	131ppm	5ppm
CH <sub>3</sub> OH	42ppm	5ppm
CH <sub>2</sub> O	5ppm	5ppm

**Cautions**

1. Sensor shall Avoid organic solvent, coatings, medicine, oil and high concentration gases
2. Excessive impact or vibration should be avoided;
3. Please keep the modules warming up for at least 5 minutes when first using.
4. Please do not use the modules in systems which related to human being's safety.
5. Please do not use the modules in strong air convection environment.
6. Please do not expose the modules in high concentration organic gas for a long time.
7. Sensor can't be pulled out.
8. The component can't be removed or replaced.

**Note:** To keep continual product development, we reserve the right to change design features without prior notice.

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