

Carbon Monoxide Module

(Model No.: ZE18-C0)

Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd

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Zhengzhou Winsen Electronics Technology CO., LTD.

Electrochemical Carbon Monoxide Gas Module ZE18-CO

Profile

ZE15-CO is a general-purpose and miniaturization electrochemical carbon monoxide detection module. It utilizes electrochemical principle to detect CO in air which makes the module with high selectivity and stability. Built-in temperature sensor can do temperature compensation; and it has digital output and analog voltage output. It is a combination of mature electrochemical detection principle and sophisticated circuit design.



Features

High sensitivity, High resolution, Low power consumption, Long lifespan
Supply UART, Analog Voltage signal output ways

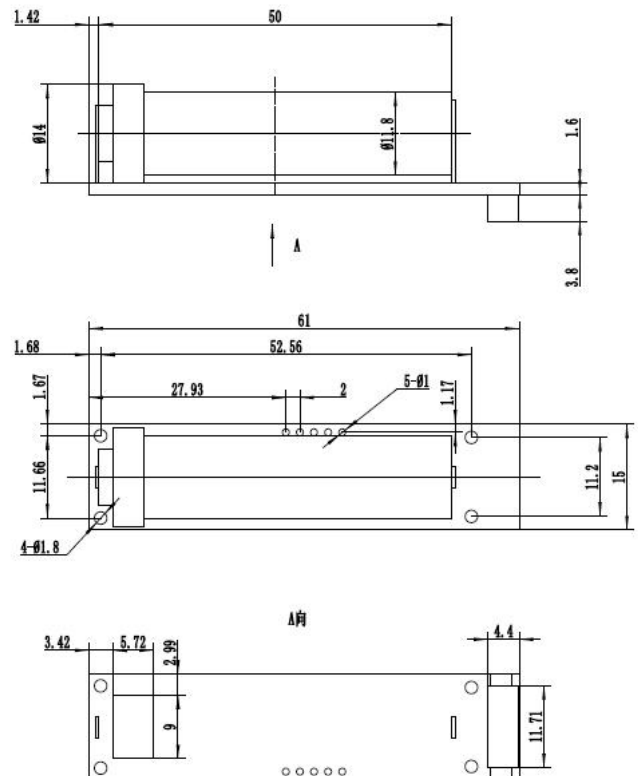
Main Applications

Household CO alarm gas, smart home devices.

Technical Parameters Stable1.

Model No.	ZE18-CO
Detection Gas	Carbon Monoxide
Interfering Gases	Alcohol &etc.
Output Data	UART output (0 or 3V)
Working Voltage	5V DC
Working Current	<5mA
Preheating time	30S
Response time	≤30S
Recovery time	≤30S
Detection Range	0~500ppm
Resolution	1ppm
Working Temperature	-10°C~55°C
Working Humidity	15%RH-90%RH (no condensation)
Storage Temperature	-10°C~55°C
Lifespan	5 year (In air)

Fig1. Structure



Definition of pins Stable 2

PIN 1	VCC(+5V)	
PIN2	GND	
PIN3	Reserved	
PIN4	UART-RXD	
PIN5	UART-TXD	
PIN6	Reserved	
PIN7	Reserved	
PIN8	Preheating State: 1.25S high level, 1.25S low level cyclic output 30s. It output low level after preheat completed .	

Fig2: PINS

Communication Protocol

1. General Settings

Table 3

Baud Rate	9600
Data Byte	8 bits
Stop Byte	1 bit
Check Byte	Null

2. Communication Commands

There are two kinds of communication, initiative upload mode and question & answer mode. Default settings is initiative upload mode. Modules upload gas concentration value every other 1S.

Table 4. Initiative upload data format

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Gas Type	Unit (ppm)	No. of decimal	Concentration (High Byte)	Concentration (Low Byte)	Full Range (High Byte)	Full Range (Low Byte)	Check sum
0xFF	0x04	0x03	0x00	0x01	0x2C	0x01	0xF4	0xD7

Gas Concentration = low 5 bits of high bit of gas concentration * 256 + low bit of gas concentration

CO Concentration = 1 * 256 + 44 = 300ppm

Full Scale = full scale high level * 256 + full scale low level (0x01f4 is 500, i.e. the maximum gas concentration output from serial port is 500ppm)

3. Check sum and calculation

Check = (negation(byte1+byte2+.....+byte7))+1

Please refer the following example:

```
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. DO NOT insert or extract the sensor on the PCB board.
2. DO NOT change or move the electronic part on the module.
3. Avoid sensor contact with organic solvent, coatings, medicine, oil and high concentration gases.
4. Excessive impact or vibration should be avoided.
5. Please keep the modules warming up for at least 5 minutes when first 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.

Zhengzhou Winsen Electronics Technology Co., Ltd

Add: No.299, Jinsuo Road, National Hi-Tech Zone,
Zhengzhou 450001 China

Tel: +86-371-67169097/67169670

Fax: +86-371-60932988

E-mail: sales@winsensor.com

Website: www.winsen-sensor.com