Battery Leak Detection Module

（Model No.: ZE21-CS）

Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd.

Tel: 86-371-67169097 67169670 Fax: 86-371-60932988 Email: sales@winsensor.com

Leading gas sensing solutions supplier in China !

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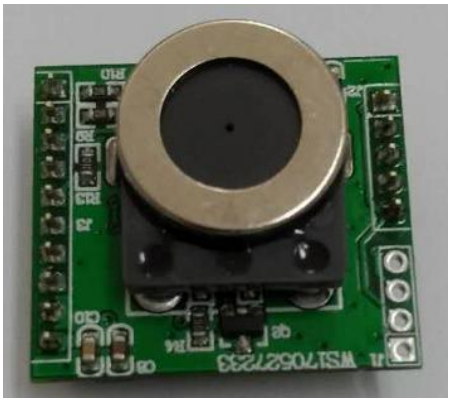
Battery Leak Detection Module ZE21-CS

Profile



ZE21-CS is a special-purpose and miniaturization electrochemical module. It utilizes electrochemical principle to detect Battery liquid volatile gas and detection of gas generated when the battery burns burning gas, 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 life, Uart output;

Main Applications

Battery leakage and leak detection in electric vehicle battery boxes and other places

Technical Parameters table1

Model No.	ZE21-CS
Detection gas	Battery leakage integrated gas
Interfering gases	Alcohol &etc.
Output data	UART output (3.3V TTL)
Working voltage	5~10V DC
Preheating time	40 seconds
Response time	≤5 seconds
Recovery time	≤60 seconds
Detection range	0～1000ppm
Resolution	1ppm
Working temperature	-20℃～65℃
Working humidity	15%RH-90%RH(no condensation)
Storage temperature	-30℃～65℃
Life span	5 years（in air）

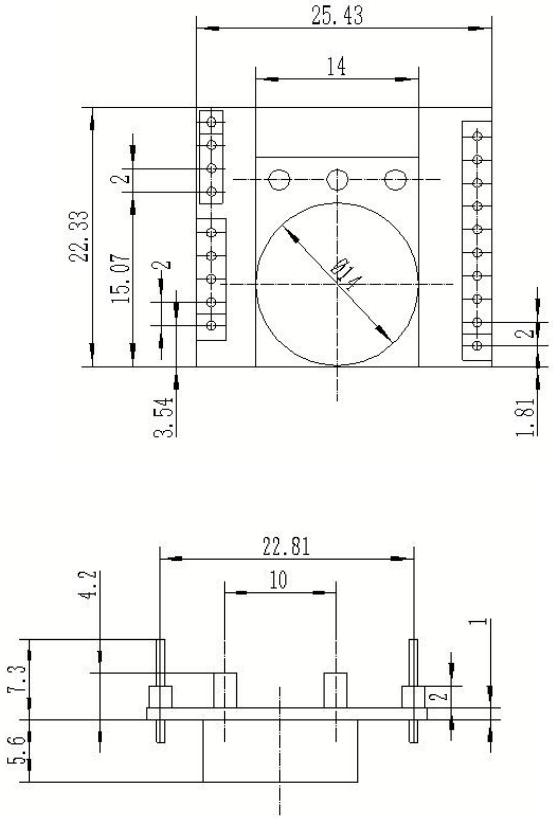
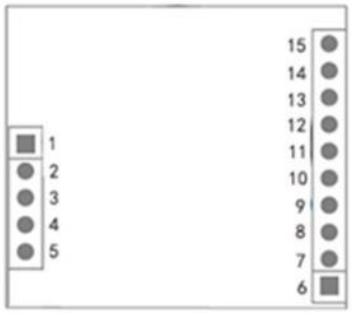


Fig1. Structure

Definition of pins

PIN15	Vin (voltage input 5~10V DC)
PIN5, PIN14	GND
PIN1	3.3V output
PIN3	3.3V when the concentration is over 300ppm
PIN4	Reserved
PIN6	Connect to GND to wake-up system
PIN7	UART(RXD) 0-3.3V data input
PIN8	UART(TXD) 0-3.3V data output
PIN9	Reserved
PIN10	Reserved
PIN2, PIN4, PIN11	NC
PIN12, PIN13	Reserved

table2.



Stable2. Pins

System wake-up condition

1. The system will wake up automatically, when the sensor detects that the gas concentration is higher than 300ppm.

2. The system is in self-test awake state, when PIN6 is shorted to ground. The system is in normal working state when PIN6 is left floating.

3. The system wakes up every 2s automatically, under normal working condition. If the gas concentration does not reach the wake-up condition, the system sleeps automatically.

Communication Protocol

1. General Settings

Table 3

Baud Rate	9600
Data Bits	8 bits
Stop Bits	1 bit
Check Bits	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(No data received when the system is in sleep status).

Command line as follow (300ppm concentration): **Table 4**

Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7	Byte8
Start Byte	Gas Name	Unit ppm	No. of decimal	Concentration (High Byte)	Concentration (Low Byte)	Full Range (High Byte)	Full Range (Low Byte)	Check sum
0xFF	0x04	0x03	0 byte=0x00	0x01	0x2C	0x03	0xE8	0xE1

Gas concentration value = High Byte*256+Low Byte

3. Check sum and calculation

Check = (invert(byte1+bye2+……+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