Winsen
炜盛科技

Dissolved Oxygen Water Quality Sensor

（Model：ZW-O103）

Manual

Version：1.2

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Statement

Thanks for purchasing our product. In order to let customers use it 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, in order to get help if you have questions during the usage in the future.

Zhengzhou Winsen Electronics Technology CO., LTD

ZW-O103 Dissolved oxygen water quality detection module

Profile

ZW-O103 dissolved oxygen detection module is a universal module that uses electrochemical principles to detect oxygen content in water, with good selectivity and stability. Adopting digital signal output, convenient to use. ZW-O103 is a universal gas module designed and manufactured by combining mature electrochemical detection technology with sophisticated circuit design.

Module Features

Low power consumption, high precision, linear output, easy calibration, and good stability.

Main Application

Widely used in water quality testing fields such as aquaculture.

Parameters

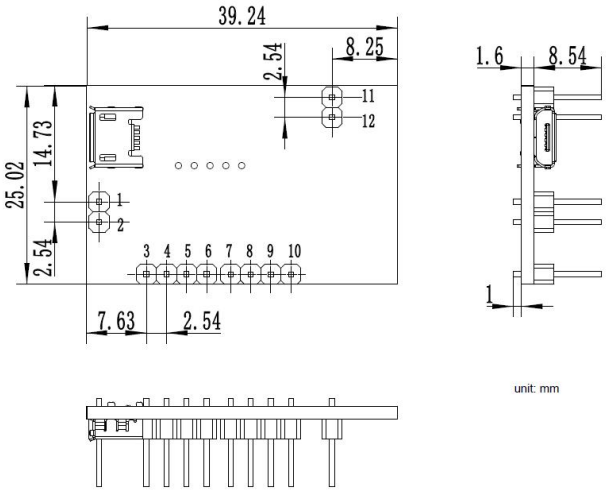
Table 1

Working voltage	5V(DC)	Working current	<5mA
Module power consumption	<25mW	Detecting Range	0-20mg/L
Detection temperature	0-40℃	Resolution	0.01mg/L
Output mode	TTL（3V leval）	Dimension Size	42X25mm
Response time	≤20S	Output linearity	Linear
Temperature range	0～40 ℃	Service life	3year

Pin Definition:

Table 2

PIN1	VCC
PIN2	GND
PIN3	VDD
PIN4	RXD（3Vleval）
PIN5	TXD（3Vleval）
PIN6	GND
PIN11	Negative terminal
PIN12	Positive terminal



Note: Tolerance range ±0.25mm

Figure 1: Module structure diagram

Sensitivity Curve:

Put the module in pure water and oxygen-free water, and the data is as shown in the figure below.

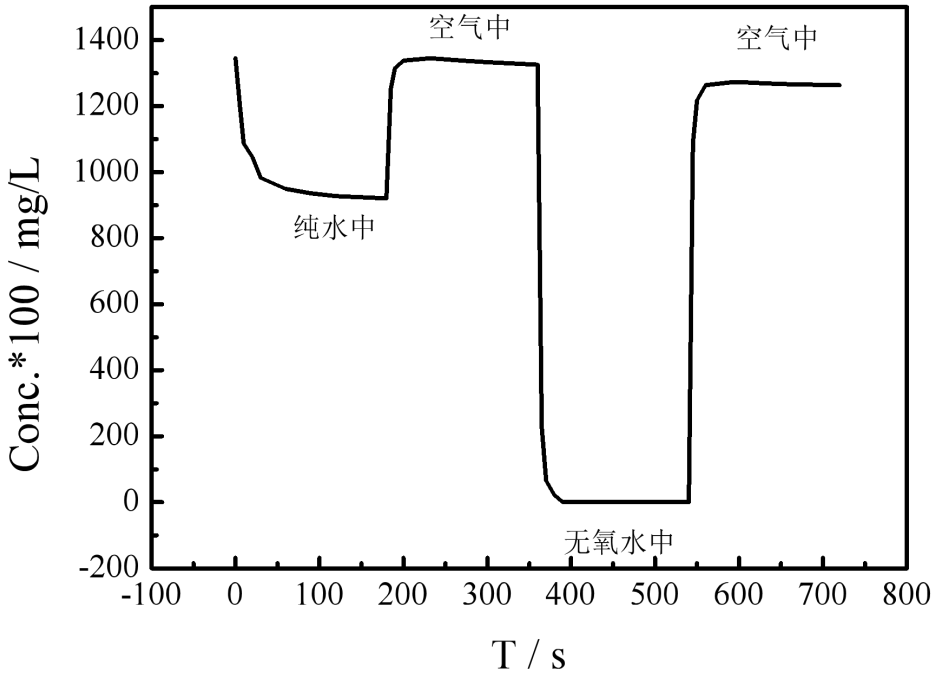


Figure 2: Response and recovery curves

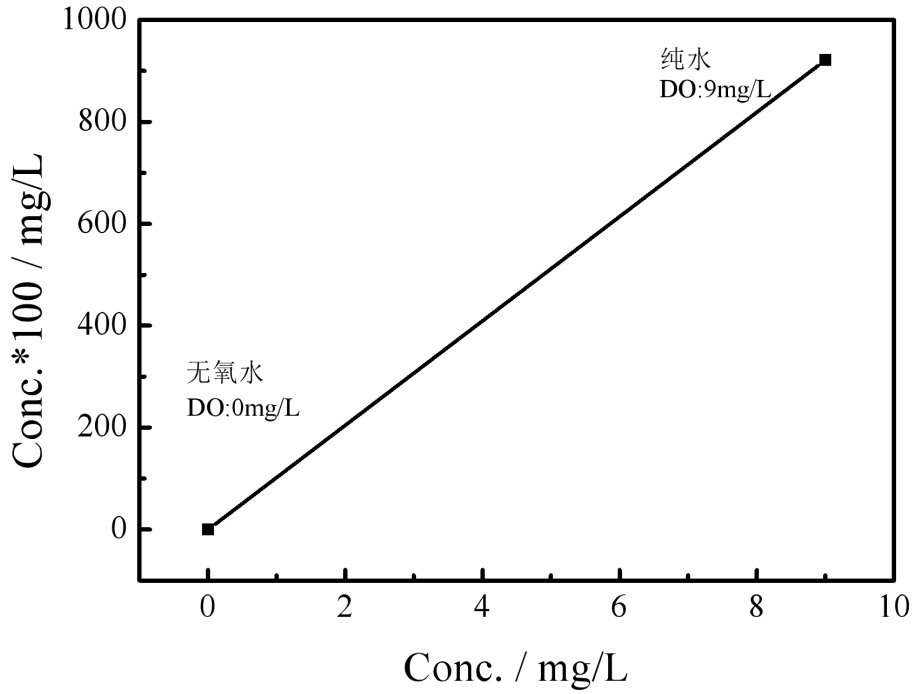


Figure 3: Linear curve

Communication protocols

1. General setting

Baud Rate	9600
Data bits	8 bits
Stop bits	1 bit
Check bits	None

2. General commands

The default communication mode is active upload mode, with concentration values sent every 1 second or so.

0	1	2	3	4	5	6	7	8
Start bit	Gas name	Unit mg/L	Decimal places	High gas concentration	Low gas concentration	Full range high position	Full range Low position	Checksums
0xFF	0x05	0x11	0x02	0x00	0x05	0x07	0xD0	0x0C

Gas concentration=Gas concentration high byte * 256+Gas concentration low byte

Oxygen concentration=(0 * 256+5) * 0.01=0.05mg/L
Full range=Full range * 256+Low range (0x07D0 is 2000, which means the maximum oxygen concentration output from the serial port is 20mg/L)

3. Verification and calculation

Verification = (Reverse (Byte 1+Byte 2+...+Byte 7)+1
The reference routine is as follows:

```
/*****************************************************************************
 *Function name：unsigned char FucCheckSum(unsigned char *i,unsigned char ln)
 *Function Description: Sum Verification
 *Function description: Add the elements of an array from 1 to the second to last and take the
  inverse+1 (the number of elements must be greater than 2)
*****************************************************************************/
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);
}
```

Precautions:

1. Modules should avoid contact with organic solvents, coatings, chemicals, and oils.

2. Do not apply the module to systems involving personal safety.

3. Do not install the module in a strong air convection environment for use.

4. The module should not withstand excessive impact or vibration, and should not produce shaking during use, otherwise the returned values will be inaccurate.

5. Please strictly supply power to the module according to its supply voltage. Voltage exceeding 5.5V can cause irreversible damage to the module.

6. Do not place the module in a strong air convection environment for use.

7. Do not place the mold in high concentration organic gas for a long time.

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