



Residual Chlorine Water Quality Sensor Module

(Model: ZW-RCI101)

Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd

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Zhengzhou Winsen Electronics Technology CO., LTD

ZW-RCI101 residual chlorine water quality sensor module

Profile

The ZW-RCI101 residual chlorine detection module is a universal module that uses electrochemical principles to detect residual chlorine concentration in the solution to be tested, with good selectivity and stability. Adopting digital signal output for easy use. ZW-RCI101 is a universal module designed and manufactured by combining mature electrochemical detection technology with excellent circuit design.



Fig1. Sensor module image

Sensor characteristics

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

Main application

It is widely used in the monitoring of residual chlorine content in water works, medical wastewater treatment and swimming pools.

Technical indicators

Stable 1

Operating voltage	12V(DC)
Operating current	<5mA
Module power consumption	<25mW
Measure range	0~20 mg/L
Temperature range	0~60°C
Minimum graduation value	0.01 mg/L
Output type	RS485 (5V level)
Dimension	59.5*25mm
Response time (T 90)	<90 s
Output linearity	linear
Working life	3 years

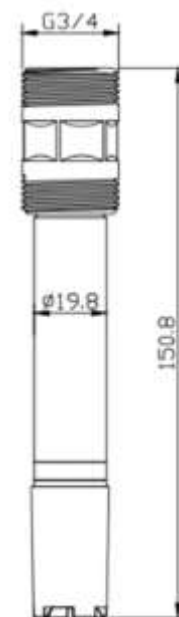


Fig2. Sensor Structure

Pin Definitions

PIN1	Power supply VCC
PIN2	Power supply GND
PIN3	A
PIN4	B
PIN5	GND
PIN6	RXD (3V level)
PIN7	TXD (3V level)
PIN8	+5V
PIN9	Sensor positive electrode
PIN10	Sensor negative electrode

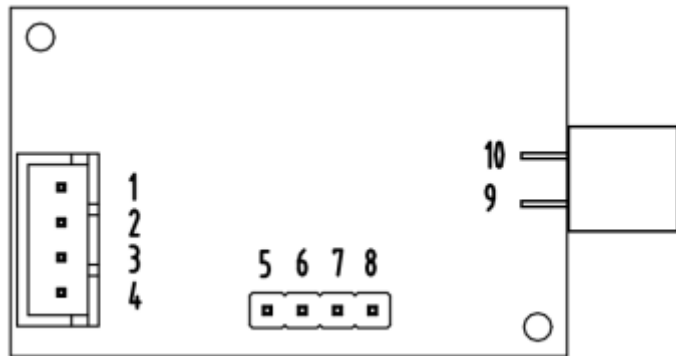


Fig2. Sensor structure diagram

Communication protocol

1. General Settings

Baud rate	9600
Data bits	8 bit
Stop bit	1 bit
Check bit	No

2. General Commands

Upper computer sending format:

	Data type	Analytical description	Remark
Integer	16 bit integer	The high and low bytes of the representation word element are not inverted	Ex: 0x 0032 convert to the decimal conversion number is 50
floating point number	ABCD	Represents parsing in order	Ex: 41 DB 72 37Z convert to floating point number is 27.4

Function code description:

03	Read one or more registers
06	Write a single register
16	Write multiple registers

Read the current concentration value sending format:

	Module addresses	Function code	Start address		Register number		CRC16	
			High Byte	Low byte	High Byte	Low byte	Low byte	High Byte
Device 1	0X01	0X03	0X00	0X40	0X00	0X02	0X95	0XCB
Device 2	0X02	0X03	0X00	0X40	0X00	0X02	0X95	0XF8

Write device address Send format:

	Device ID address	Function code	Register start address		Write device address (A hexadecimal integer)		CRC16	
			High Byte	Low byte	High Byte	Low byte	Low byte	High Byte
Device 1	0X01	0X06	0X00	0X14	0X00	0X01	0X08	0X0E
Device 2	0X01	0X06	0X00	0X14	0X00	0X02	0X48	0X0F

Calibration of sensor:

	Device ID address	Function code	Register start address		Write calibration point address (A hexadecimal integer)		CRC16	
			High Byte	Low byte	High Byte	Low byte	Low byte	High Byte
0mg/L	0X01	0X06	0X00	0X44	0X00	0X00	0XC9	0XDF
1mg/L	0X01	0X06	0X00	0X46	0X00	0X01	0X08	0X1F
5mg/L	0X01	0X06	0X00	0X48	0X00	0X05	0X09	0XDC

3. Checksum and calculation

```

/*****

```

Function name: crc16 checksum

function performance: crc16 checksum

Function Input: byte pointer*ptr, data length len

function returns: double byte crc

```

*****/

```

```

uint16_t getCRC16_485(volatile unsigned char* ptr, unsigned char len)

```

```

{
    unsigned char i;
    uint16_t crc = 0xFFFF;
    while (len--)
    {
        crc ^= *ptr;

```

```
for (i = 0; i < 8; i++)
{
    if (crc & 1)
    {
        crc >>= 1;
        crc ^= 0xA001;
    }
    else
    {
        crc >>= 1;
    }
}
ptr++;
return(crc);
}
```

Precautions

1. The module should avoid contact with organic solvents, coatings, chemicals, and oils.
2. Do not apply modules 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 shake during use, otherwise the returned value will be inaccurate.
5. Please strictly follow the power supply voltage of the module. Voltage exceeding 12V can cause irreversible damage to the module.
6. Do not use the module in a strong air convection environment.
7. Do not place the module in high concentration organic gas for a long time.

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