

Ammonia& Nitrogen Detection Module
(Model: ZW-NH101)

Manual

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Zhengzhou Winsen Electronic Technology Co., Ltd

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Zhengzhou Winsen Electronics Technology CO., LTD

ZW-NH101 Ammonia& Nitrogen Detection Module

Profile

The ZW-NH101 ammonia nitrogen water quality detection module is a general-purpose module, which uses the electrochemical principle to detect the ammonia nitrogen concentration in the solution to be tested. It has good selectivity and stability. Using digital signal output, it is easy to use.

ZW-NH101 is a universal module designed and manufactured with mature electrochemical detection technology and sophisticated circuit design.



Sensor characteristics

Low power consumption, wide linear range, excellent repeatability and stability.

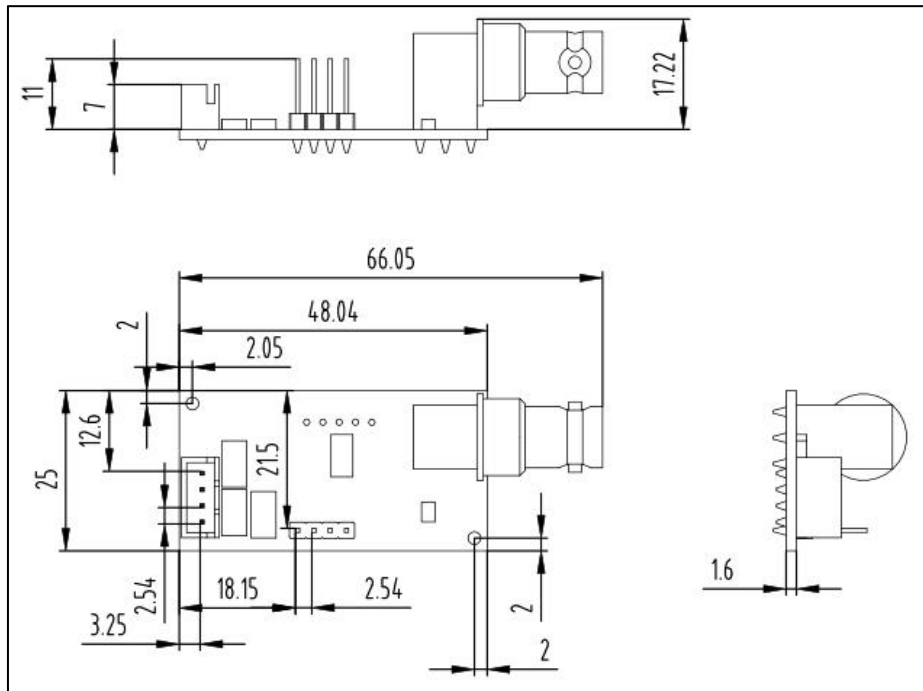
Main application

It is widely used in the detection of ammonia nitrogen content in the fields of laboratory scientific research, farmland irrigation, domestic sewage and industrial wastewater.

Parameters

Table 1

Operating Voltage	12V(DC)	Current	<5mA
Power consumption	<25mW	Detection range	0~1000 mg/L
Detection Temperature range	10~50 °C	Resolution	0.1 mg/L
Output	RS485 (5V TTL)	Dimension	66×25×21.22mm
Response time	≤30S	linearity	linear
Temperature range	10~50 °C	Life span	3 years



Note: Tolerance $\pm 0.25\text{mm}$

Fig.1: Module Structure

PIN definition

Table 2

PIN1	VCC
PIN2	GND
PIN3	A
PIN4	B
PIN5	GND
PIN6	RXD (3VTTL)
PIN7	TXD (3VTTL)
PIN8	+5V

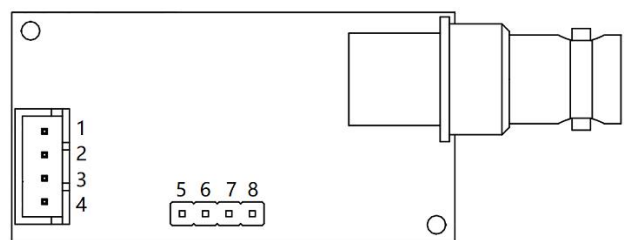


Fig.2: PIN

Communication Protocol

1.General settings

Baud rate	9600
Data byte	8
Stop byte	1
Check	Null

2.General command

Host-computer software format

	Type	Instructions	Note
Integer	16 byte	Indicates that high and low bytes are not reversed	For example :0x 0032 turn into the decimal number is 50
Floating point number	ABCD	Represents analyze in order	For example: 41 DB 72 37Z turn into a floating point number is 27.4

Code description:

03	Read single or multiple registers
06	write a single register
16	write multiple registers

Read the current concentration value sending format:

	Module address	Code	start address		Number of registers		CRC16	
			High byte	Low byte	High byte	Low byte	Low byte	High byte
Device 1	0X01	0X03	0X00	0X50	0X00	0X04	0XC4	0X1A

Response format:

	Module address	Code	Byte Numbers byte	Read concentration (hexadecimal floating point number)				CRC16	
				A	B	C	D	Low byte	High byte
Detection value	0X01	0X03	0X04	0X41	0XDB	0X72	0X37	0XE5	0XE1

Concentration unit: mg/L.

Write device address sending format:

	Device ID address	Code	Register initial address		write device address (hex integer)		CRC16	
			High byte	Low byte	High byte	Low byte	Low byte	High byte
Device 1	0XFE	0X06	0X00	0X16	0X00	0X01	0XBD	0XC1

Response format:

	Device ID address	Code	Register initial address		write device address (hex integer)		CRC16	
			High byte	Low byte	High byte	Low byte	Low byte	High byte
Return	0X01	0X06	0X00	0X16	0X00	0X01	0XA9	0XCE

Sensor calibration:

	Device ID address	Code	Register address		Write calibration point value (hex integer)		CRC16	
			High byte	Low byte	High byte	Low byte	Low byte	High byte
0mg/L	0X01	0X06	0X00	0X52	0X00	0X00	0X28	0X1B
100mg/L	0X01	0X06	0X00	0X53	0X00	0X64	0X78	0X30
1000mg/L	0X01	0X06	0X00	0X54	0X03	0XE8	0XC8	0XA4

3.Checksum calculation

/******

Name: crc16 verification

Function: crc16 verification

Enter: (byte pointer)*ptr, (data length) len

Return: (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 shall avoid contact with organic solvents, coatings, agents 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.
4. The module shall not withstand excessive impact or vibration, and can not shake during use, otherwise the value returned will be inaccurate.
5. Please supply the module in strict accordance with the power supply voltage of the module. The voltage exceeding 12V will lead to irreversible damage to the module.
6. Do not place the module in a strong air convection environment.
7. Do not place the module in a high concentration of organic gas for a long time.

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