Electrical Conductivity

Water Quality Detection Sensor

(Model：ZW-C101)

User's Manual

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Zhengzhou Winsen Electronic Technology Co., Ltd

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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-C101 Electrical Conductivity Water Quality Detection Sensor

Profile:

ZW-C101 model sensor is electrochemical electrical conductivity water quality detection sensor.It works by applying a constant voltage at both ends of the electrode of the sensor, so that the change of the resistance of the solution leads to a change of the current of the measuring electrode and the change is in accordance with Ohm's law, the the resistivity value could be replaced by conductivity value, so as to achieve the measurement of the conductivity of the solution.

Features:

*Quick response

*High sensitivity

*Low power consumption

*Linear output

*RS485 signal output

Applications:

It is widely used in laboratory research, domestic sewage, industrial production, seawater testing and other fields of electrical conductivity detection.

Technical indicators:

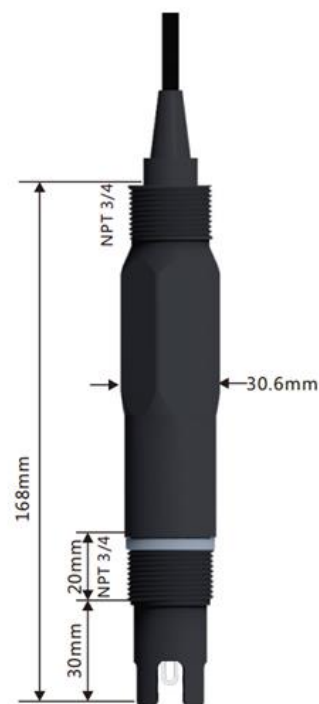| Detection index	Parameter
Range	0～20000μS/cm
Temperature range	0～80℃
Resolution	0.01μS/cm
Response time (T 90)	≤ 30s
Accuracy	≤±3%
Protection class	Ip68
Working Pressure	0~4bar
Working humidity	Relative humidity ＜90%
Installation method	Immersion type
Signal output method	4~20mA/RS485
Calibration method	Two-point type

Table 1

Figure 1: Sensor structure

Instructions:

1. The sensor should be connected to the test devices as required before use.

2. Put the sensor into the solution to be tested, connect the power supply, and start the test.

3. After the test is completed, the sensor should be cleaned with de-ionized water, dried and stored in a dry place.
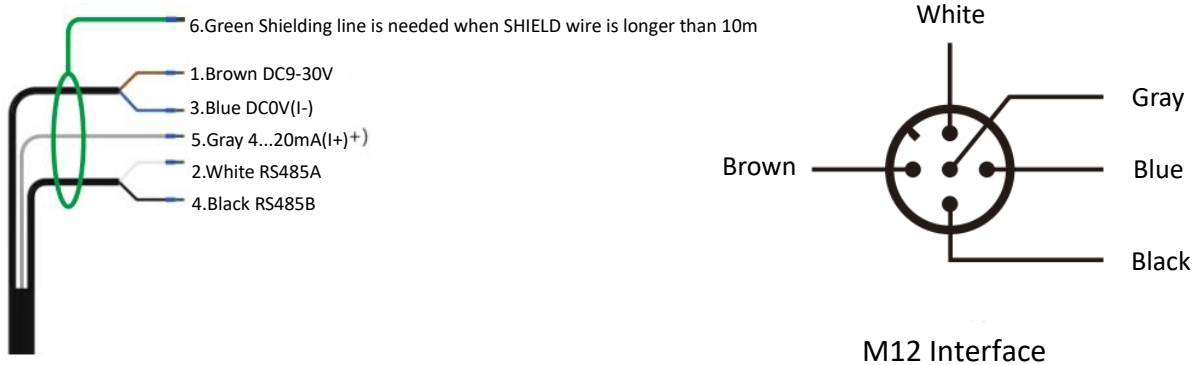
Lead wire connection method:

Figure 2: Sensor connection method

Please connect the sensor carefully and strictly according to the figure, wrong connection will lead to damage of the sensor. To avoid danger, it is strictly forbidden to supply power before all cables are connected. Please double check all wiring of the system is completely correct before supplying power.

Calibration instructions

1. Clean and dry the electrode into the standard solution, send the instruction: 01 03 00 00 00 02 C4 DB

2. Read the measured value to be stable, calculate the conductivity constant, the constant = standard solution value / current measured value. For example: Put the sensor into 1.413mS/cm standard solution and read the current measured value of 1.450mS/cm, then the constant = 1.413/1.450 = 0.97448

3. Write data 0.97448 to the 0x0A register

4. Send the instruction:01 10 00 0A 00 02 04 77 85 3F 79 A9 9F

5. End

Address Description

Register name	Data address	Data type	Length (bit)	Read/ Write	Remarks
Conductivity value	0X 00 00	Float(Floating)	2	R	Default unit is ms/cm.Or multiply by 1000 if US/cm is

					needed
Resistivity value	0X 00 02	Float(Floating)	2	R	Ω•cm
Temperature	0X 00 04	Float(Floating)	2	R	℃
TDS	0X 00 06	Float(Floating)	2	R	ppm or mg/L
Salinity	0X 00 08	Float(Floating)	2	R	ppm or mg/L
Conductivity Constant	0X 00 0A	Float(Floating)	2	R/W	
Compensation Factor	0X 00 0C	Float(Floating)	2	R/W	
Manual compensation temperature	0X 00 0E	Float(Floating)	2	R/W	
Temperature Offset	0X 00 10	Float(Floating)	2	R/W	
Baud rate	0X 00 12	Float(Floating)	2	R	
Slave address	0X 00 14	Float(Floating)	2	R	
Filter seconds	0X 00 16	Float(Floating)	2	R	
Electrode sensitivity	0X 00 18	Float(Floating)	2	R	
Compensation mode	0X 00 1A	Float(Floating)	2	R	
Model. Compensation type	0X 00 1C	Float(Floating)	2	R	50.0-PT1000, 50.1-NTC10K
4-20mA high point value	0X 00 20	Float(Floating)	2	R	
Modify Baud Rate	0X 00 12	Signed(Integer）	1	W	2400,4800,9600,19200 38400,43000,57600
Modify slave address	0X 00 14	Signed(Integer）	1	W	1-254
Modify filter seconds	0X 00 16	Signed(Integer）	1	W	Second value
Modify compensation mode	0X 00 1A	Signed(Integer）	1	W	0 is automatic, 1 is manual
Modify floating point order	0X 00 32	Signed(Integer）	1	W	0 is positive order, 1 is negative order
Modify the temperature compensation type	0X 00 33	Signed(Integer）	1	W	0 is PT1000,1 is NTC10K
Restore default values	0X 00 64	Signed(Integer）	1	W	1
Restore baud rate and address	0X 27 0F	Signed(Integer）	1	W	1

Modify 4-20mA high point value	0X 00 12	Float(Floating)	2	W	

Cautions:

1. The cable connector must be kept clean and dry, avoid to be exposed to moisture or water.
2. During the measurement process, if there is dirt, adhesion or scale on the sensor, it will lead to inaccurate or fluctuating measured values.When it happens, the sensor should be cleaned and calibrated in time.
3. The conductivity sensor needs to be dried before storage, do not store the sensor in distilled water or de-ionized water.
4. To ensure the measured accuracy of the conductivity sensor, the conductivity sensor should be re-calibrated for the electrode constants before use. At the same time, the conductivity sensor constant calibration should be carried out regularly, and the conductivity sensor should be replaced in time if there is a large error.