YS-ZQX-1
Cleaning bracket user manual

SIBO.X INDUSTRIAL CO.,LTD.
Add: No. Building 1, No. 1, Jingshi Road, Cicheng Town Industrial Park, Jiangbei District, Ningbo City, Zhejiang, China
https://www.sbxsun.com
Email: info@sbxsun.com
Tel: +86-15958288207

Table of Contents

1. Product introduction

YS-ZQX-1 is a clean bracket launched by our company. The product is reliable and easy to use. It can install up to four digital sensors at the same time, and can choose parameters such as dissolved oxygen, pH, ORP, conductivity and turbidity.

The online self-cleaning bracket is equipped with an automatic cleaning device, which consists of a built-in motor drive circuit, position detection circuit, DC motor, and cleaning brush. This device effectively removes contaminants from the sensor surface, prevents microbial attachment, and significantly reduces maintenance costs. The sensor can be easily installed around the cleaning bracket.

The upper end of the cleaning bracket is designed with 3/4NPT thread, which can be easily fixed and installed.

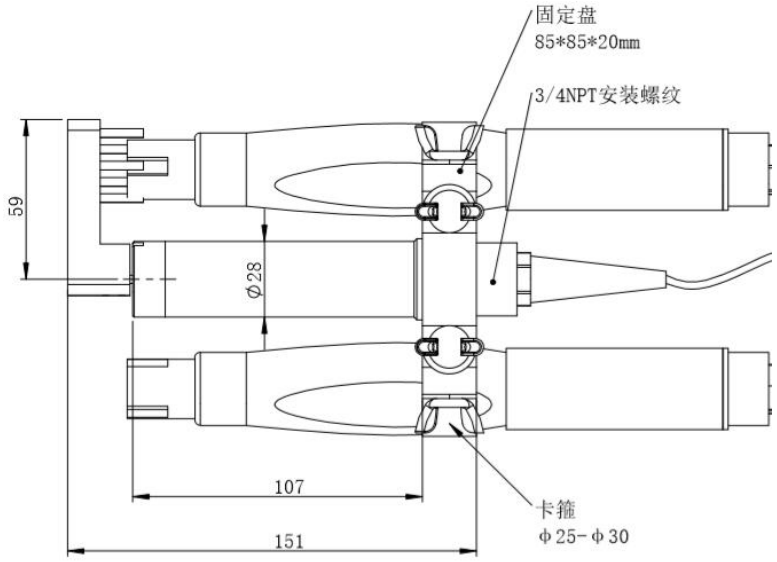
2. Functional features

- Equipped with automatic cleaning device, it can effectively remove the dirt on the surface of the sensor and prevent the attachment of microorganisms, which is more convenient and lower maintenance.
- Optional installation of dissolved oxygen, conductivity, turbidity, pH, ORP and other sensors, suitable for long-term online monitoring.
- Four digital sensors can be installed at the same time to measure five parameters.
- Customers can attach application of jet pipeline, water pipe, ultrasonic cleaning head, sodium hypochlorite generator (sea water anti-pollution) according to actual needs.

3. Technical parameters description

service temperature	-5 ~ 50℃
Power Supply Voltage	12 ~ 24VDC
Cable specifications	Φ 6mm, 4 cores, 5 meters (customizable)
space usage	85mm×85mm×20mm
Work power consumption	0.4W@12V
service temperature	-5 ~ 50℃
Power Supply Voltage	10~30VDC

4. Description of external dimensions

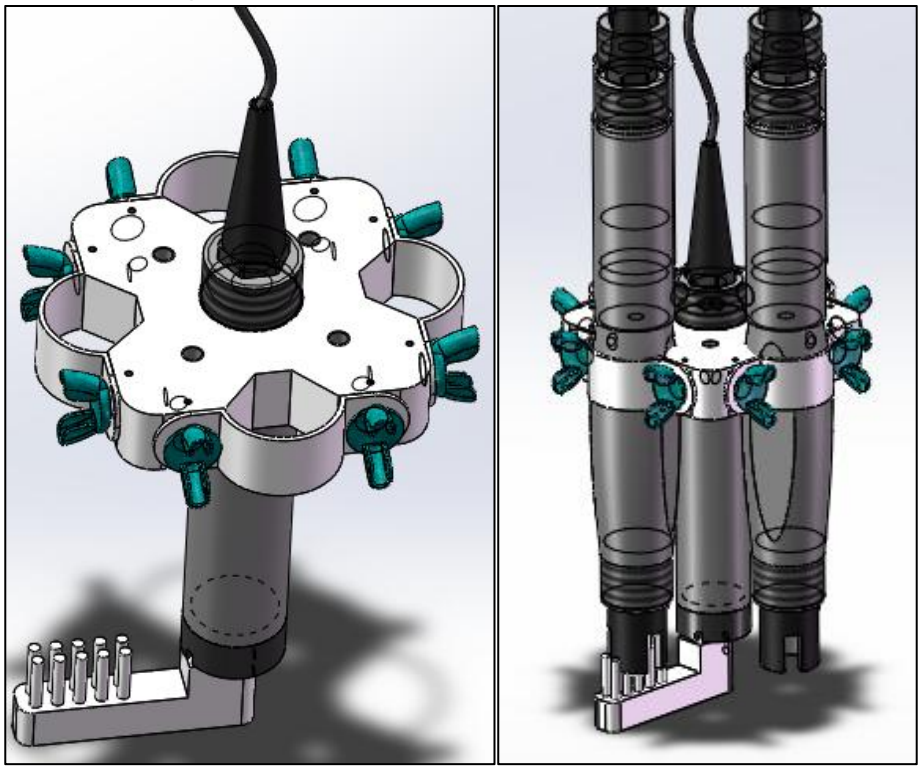


5. Equipment installation

equipment list ：

- One main equipment
- Certificate of conformity, warranty card, etc

Equipment installation diagram:



Cable information:

Definition of line sequence:

Line color	description
brown	Power line 10~30V
black	landing （GND）
yellow	485 A
blue	485 B

Note: The yellow and blue lines are communication lines, which are used to set the cleaning revolution and cleaning interval time through 485 interface. The communication protocol is Modbus protocol (see appendix).

Before power on, check the wiring sequence carefully to avoid unnecessary losses caused by wiring errors.

Wiring instructions: Considering that the cable is immersed in water (including seawater) or exposed to air for a long time, all wiring should be waterproof, and the user's cable should have a certain corrosion resistance.

There are certain specifications for 485 wiring. Please refer to the data pack "485 Equipment On-site Wiring Manual" for details.

When the device is connected to the 485 bus, ensure that the addresses of multiple devices are not duplicated.

6. Configuration software installation and use

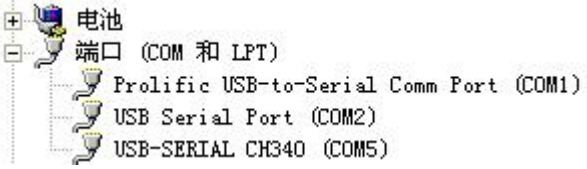
6.1 Software selection

If you need to modify the address and baud rate of the device, you need to use this configuration software to set it. Open the data package, select "Debugging software" --- "485 parameter configuration software", find open.

Note: When using this configuration software, you must connect to a single device! The wiring diagram of the device is as follows:

6.2 Parameter Settings

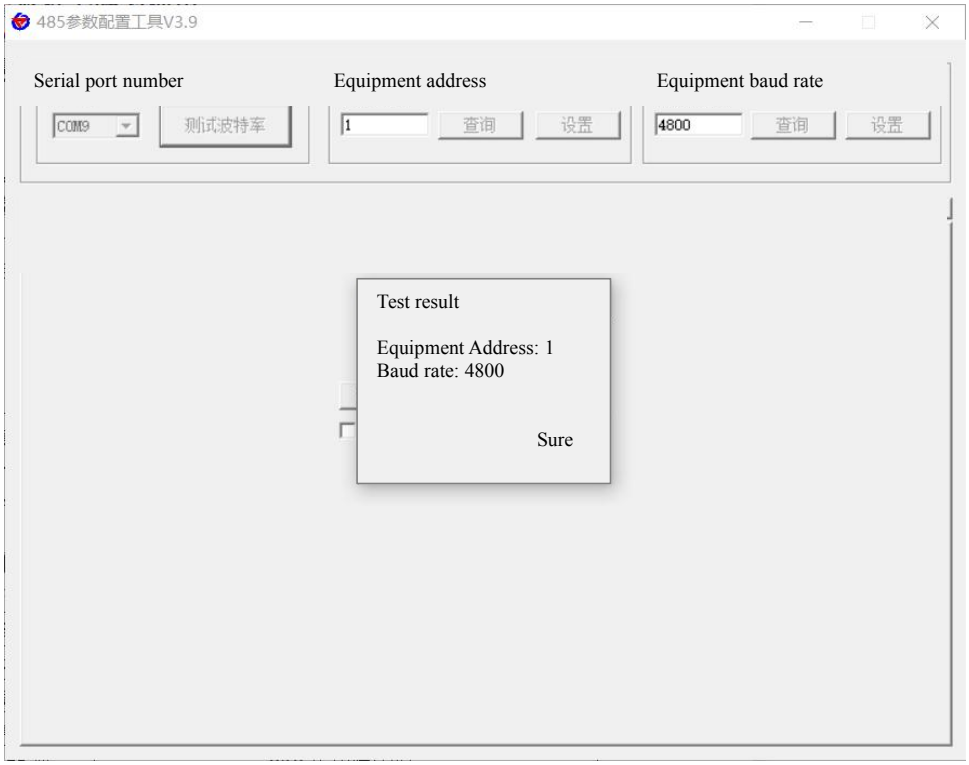
① Select the correct COM port ("My Computer-Properties-Device Manager-Ports" to view the COM port), and the following figure lists the driver names of several different 485 converters.



② Connect a single device and power it on. Click the test baud rate of the software. The software will test the current baud rate and address of the device. The default baud rate is 4800bit/s, and the default address is 0x01.

③ Modify the address and baud rate according to the use requirements, and query the current function status of the device.

④ If the test fails, please check the equipment wiring and 485 driver installation again.



7. Communication protocols

7.1 Basic communication parameters

encoding	Eight bits in binary
data bit	8th place
parity check bit	not have
stop bit	1st place
error check	CRC (redundant cyclic code)
Baud rate	2400~115200 can be set through the neutral mobile phone configuration software "touch NFC configuration"

7.2 Definition of data frame format

The Modbus-RTU communication protocol is adopted, and the format is as follows:

Initial structure has a time of at least 4 bytes

Address code = 1 byte

Function code = 1 byte

Data area = N bytes

Error check = 16-bit CRC code

End structure takes at least 4 bytes of time

Address code: The address of the transmitter, which is unique in the communication network (default 0x01 at factory).

Data area: The data area is the specific communication data. Note that the high byte of 16bits data is in front!

CRC code: a two-byte check code.

Host inquiry frame structure:

address code	FC	The starting address of the register	register length	Check code low	Check code high
One byte	One byte	Two bytes	Two bytes	One byte	One byte

Structure of the machine response frame:

address code	FC	Number of valid bytes	Data Zone 1	Second data area	Data area N	check code
One byte	One byte	One byte	Two bytes	Two bytes	Two bytes	Two bytes

7.3 Register address description

Address description:

Register address	PLC or configuration address	content	operate
0000H	40001	Automatic cleaning interval time	read-write
0001H	40002	Automatic cleaning revolutions (number of rotations in forward and reverse directions)	read-write
0002H	40003	Reset the sensor (restore factory Settings)	read-write

Register parameter description:

Register	PLC or	parameter

address	configuration address	
0000H	40001	The default is 30 minutes, and the value can be set from 6 to 6000 minutes.
0001H	40002	The default is to rotate both sides 3 times. The value ranges from 0 to 10.
0002H	40003	Writing 0 restores the default value of automatic cleaning revolutions and automatic cleaning interval time

7.4 Examples and explanations of communication protocols

For example, read the automatic cleaning interval time and automatic cleaning revolutions of device address 0x01

Query frame (hexadecimal):

address code	FC	start address	DL	Check code low	Check code high
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0B

Response frame (hexadecimal): (e.g. read automatic cleaning interval time: 6; automatic cleaning revolutions: 3)

address code	FC	Returns the number of valid bytes	Humidity	temperature scale	Check code low	Check code high
0x01	0x03	0x04	0x00 0x1E	0x00 0x0A	0x5A	0x32

The current mode automatically cleans every 30 minutes

Automatic cleaning interval calculation:

Temperature: 001E H (hexadecimal) = 30 => Automatic cleaning interval time = 30 minutes

Automatic cleaning revolution calculation:
Humidity: 000A H (hexadecimal) = 108 => automatic cleaning revolutions =3

For example, modify the automatic cleaning interval time of device address 0x01 to 6 minutes

Frame format (hexadecimal):

address code	FC	start address	Write in the content	Check code low	Check code high
0x01	0x06	0x00 0x00	0x00 0x06	0x09	0xC8

7.5 Common problems and solutions

The device cannot be connected to the PLC or computer

probable cause ：

1) The computer has multiple COM ports, and the selected port is incorrect

2) The device address is incorrect, or there are devices with repeated addresses (all 1 by default).

3) Port rate, check method, data bit, stop bit error.

4) The 485 bus is disconnected, or the A and B lines are reversed

5) If the number of devices is too much or the wiring is too long, power supply should be provided nearby, and 485 enhancer should be added at the same time, and 120Ω terminal resistor should be added.

6) The USB to 485 driver is not installed or damaged

7) Equipment damage.