CL02

Integrated CL transmitter user 's manual



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1. Product introduction

This product is a device for measuring the residual chlorine concentration (hypochlorite and hypochlorite concentration) in water bodies. The three electrode system has the advantages of high measurement accuracy, long working life and no frequent calibration. This product is applicable to automatic dosing of circulating water, chlorination control of swimming pool, and accurate measurement of residual chlorine content in water solution by drinking water treatment plant, drinking water distribution network, swimming pool and hospital wastewater.

1.1 Functional features

- CL The measurement range is 0-10mg/L, and the resolution is 0.01mg/L.
- Integrated design directly outputs 485 signals to eliminate signal interference.
- 3/4 upper and lower mounting thread design, easy to install。
- Protection grade IP68。
- The advanced non membrane constant voltage sensor is adopted, without replacing the membrane and the reagent。
- RS485 communication interface: MODBUS RTU communication protocol can be easily connected to the computer for monitoring and communication.
- ModBus communication address can be set and baud rate can be modified.
- The equipment adopts wide voltage power supply DC 7~30V。

1.2 Technical parameters of equipment

power supply	DC 7~30V
power waste	0.19W
communication interface	RS485； Standard MODBUS-RTU protocol; The communication baud rate defaults to 4800
CL Concentration measurement range	0-10mg/L，resolving power 0.01mg/L 0-2mg/L，resolving power 0.01mg/L
CL measurement error	±5%FS
Repeatability error	±0.05mg/L
response time	<30s
Equipment working conditions	ambient temperature：0-40℃ PH：4-9 Current Speed：30～60L/h

Transmitter withstand	0.6MPa
Transmitter line length	Default 5m (10m, 15m and 20m can be customized)
Transmitter service	1year
Degree of protection	IP68

The performance data stated above are obtained under the test condition of using our testing system and software. In order to continuously improve the product, our company reserves the right to change the design functions and specifications without notice.

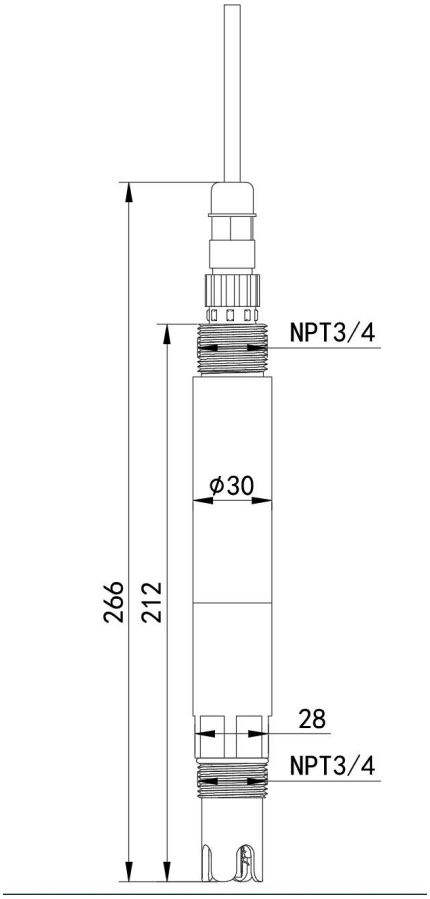
1.3 Product selection

CL02-				Industrial CL transmitter
	N01-			RS485 (Modbus RTU protocol)
		3-		Integrated housing
			2	The measuring range is 2mg/L
			10	Range: 10mg/L

1.4 inventory

◆One integrated CL transmitter
◆Certificate, warranty card, etc
◆One cable (5m)

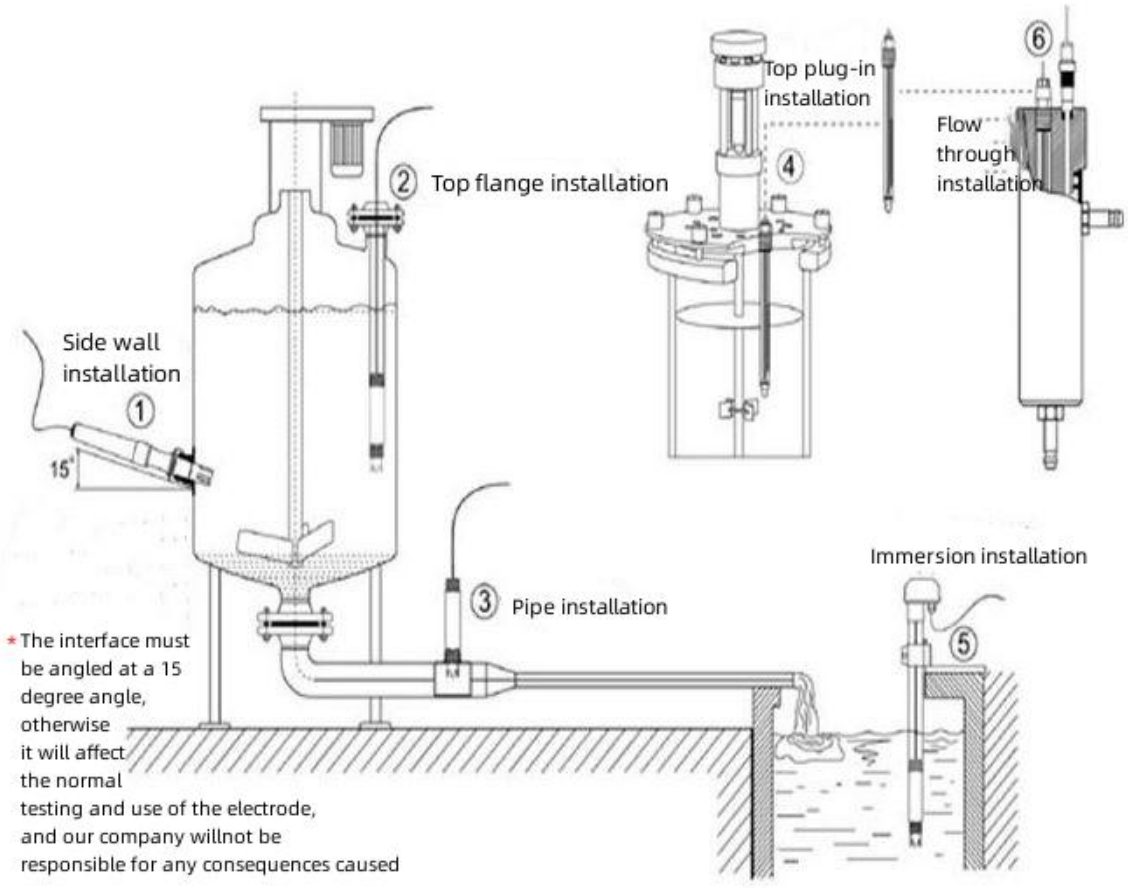
1.5 Equipment dimensions



1.6 equipment installation

1. Submerged installation: the lead of integrated CL transmitter goes through the waterproof bracket, and the 3/4 thread on the top of integrated CL transmitter is connected with the 3/4 thread of waterproof bracket with raw material tape.

2. Pipe installation: connect with the pipe through 3/4 thread at the lower part of CL transmitter.



2. Equipment instructions

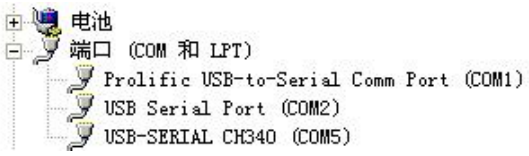
2.1 Wiring instructions

	explain	explain
Power Supply	brown	V+（7~30V DC）
	black	V-
communic ation	yellow	485-A
	blue	485-B

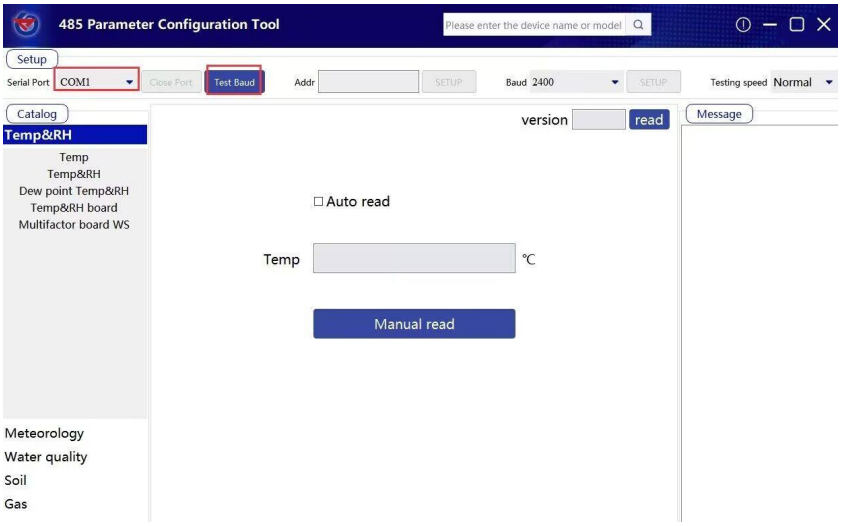
2.2 Parameter Configuration Description

Open the data package and select "Debugging software" --- "485 parameter configuration software"，find“485 parameter configuration tool”Open it。

1) Select the correct COM port (view the COM port in "My Computer - Properties - Device Manager - Port"). The following figure lists the drive names of several different 485 converters.



2) Connect only one device and power it on. Click the test baud rate of the software, and the software will test the baud rate and address of the current device. The default baud rate is 4800bit/s, and the default address is 0x01.
3) Modify the address and baud rate as required, and query the current function status of the device.
4) If the test is not successful, please recheck the equipment wiring and 485 driver installation.



2.3 ModBus Communication and Register Details

2.3.1 Basic parameters of equipment communication

code	8-bit binary
Data bits	8-bit
Parity bit	-
Stop bit	1bit
Error check	CRC（Redundant cyclic code）
Baud rate	1200bit/s、2400bit/s、4800bit/s、9600 bit/s、19200bit/s、38400bit/s、57600bit/s、115200bit/s can be set, and the factory default is 4800bit/s

2.3.2 Data frame format definition

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

Time of initial structure ≥ 4 bytes

Address code=1 byte

Function code=1 byte

Data area=N bytes

Error check=16 bit CRC code

Time to end structure ≥ 4 bytes

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

Function code: the instruction function indication sent by the host.

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

CRC code: two byte check code.

2.3.3 Register address

Register address	PLC address	Support function code	data type	explain
0000H	40001	0x03/0x04	16 bit unsigned integer	CL concentration value (100 times of actual value)
1010H，1011H	44113,44114	0x03/0x04/0x10	Floating point number	CL coefficient A (actual value)
1012H，1013H	44115,44116	0x03/0x04/0x10	Floating point number	CL deviation B (actual value)
07D0H	42001	0x03/0x04/0x06/0x10	16 bit unsigned integer	1~254 (factory default 1)
07D1H	42002	0x03/0x04/0x06/0x10	16 bit unsigned integer	0 representative 2400 1 representative 4800 2 representative 9600 3 representative 19200 4 representative 38400 5 representative 57600 6 representative 115200 7 representative 1200

2.3.4 Example and explanation of communication protocol

Example 1: Read the current CL concentration of the device with address 01

Issuing frame:

Address code	Function code	Register address	Register contents	Check code low bit	Check code high
0x01	0x03	0x0000	0x00 0x01	0x84	0x0A

Response frame: (for example, the CL concentration value read is 7.90)

Address code	Function code	Number of valid bytes	Register contents	Check code low bit	Check code high
0x01	0x03	0x02	0x03 0x16	0x39	0x7A

CL concentration calculation: 316H (hex)=790=>CL=7.90

Example 2: Numerical correction of the current CL value setting deviation value of the equipment with address 01

Issuing frame: (If the current device outputs a CL value of 7.90, the value should be corrected to 8.00. The difference is 8.00-7.90=0.10, 0.1=>3DCCCCD (floating point number). Write 3DCCCCD to the contents of the two registers.)

Address code	Function code	Register address	Number of registers	Number of bytes	Register contents	Check code low bit	Check code high
0x01	0x10	0x01 0x12	0x00 0x02	0x04	0x3DCC，0xCCCD	0x26	0xE0

Answer frame:

Address code	Function code	Register address	Number of registers	Check code low bit	Check code high
0x01	0x10	0x01 0x12	0x00 0x02	0xE5	0x0D

3. Precautions and maintenance

◆ The equipment itself generally does not need routine maintenance. In case of obvious failure, please do not open it for self repair, and contact us as soon as possible!

◆ After use, please clean the transmitter head with clean water and cover it with a protective cover

◆ If dirt and mineral composition are attached to the platinum wire of the transmitter, the sensitivity will be reduced, and it may not be possible to perform adequate measurement. Please

ensure that the platinum wire is clean.

◆ The platinum wire of a good CL transmitter should always be clean and bright. If the platinum wire of the transmitter becomes rough or covered by pollutants after measurement, please clean it as follows: (for reference)

◆ Inorganic pollution: immerse the transmitter in 0.1mol/L dilute hydrochloric acid for 15 minutes, gently wipe the platinum wire of CL transmitter with a cotton swab, and then clean it with tap water.

◆ Organic matter or oil contamination: immerse the transmitter in tap water with a small amount of detergent, such as detergent, and thoroughly clean the sensing surface of the transmitter sensor.

◆ Gently wipe the platinum wire of the transmitter with a cotton swab, and then rinse it with tap water. If the platinum wire of the transmitter has formed an oxide film, use toothpaste or 1000 mesh fine sandpaper to polish the sensing surface moderately, and then clean it with tap water. Please be careful when grinding to avoid deformation of platinum wire.

◆ The equipment should be calibrated before each use. For long-term use in water, it is recommended to calibrate once every three months to ensure the accuracy of the sensor. The calibration frequency should be properly adjusted according to different application conditions (the degree of contamination in the application, the deposition of chemical substances, etc.).