
POP-2200(CFA-2200/CRA-2200)
Integrated Free Chlorine/CLO₂/pH Online Analyzer

V1.0

Instruction Manual

1. General information

General

POP-2200 Integrated Free Chlorine /CLO₂/pH Online Analyzer comes together intelligent control meter, Free Chlorine/CLO₂ sensor, pH sensor, Temp probe and matching constant flow device and other relative accessories,with tight structure, easy transportation and installation and free of maintenance features.



Figure 1. Integrated Free Chlorine /CLO₂/pH Online Analyzer

1.1 Characteristics:

- a. Wall mounted integrated Free Chlorine/CLO₂ online analysis system integration;
- b. Embedded free chlorine, chlorine dioxide analysis software of two mathematical models;
- c. 3.5" LCD color display, bilingual Chinese/English, complete operation guided;
- d. Constant flow rate control with the patents, make sure the measurement accuracy, do not change by the pipeline pressure;
- e. Anti-siphon design, the system automatically in the conservation of the state after the shutdown;
- f. Double channels isolated (4~20) mA, Instrument / Transmitter for selection;
- g. High / low limit setting relay*2, Photoelectric programmable*1, switching / pulse regulating state;
- h. Protective plastic chassis, preset back cover, the independent panel.

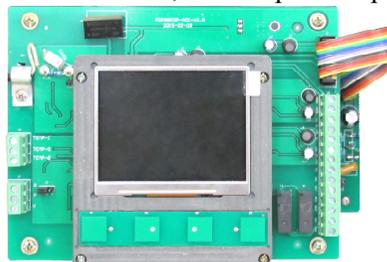


Figure 2. Integrated Free Chlorine /CLO₂/pH Online Analyzer indicator

1.2 Main technical features:

Model		POP-2200 (CFA-2200)	POP-2200(CRA-2200)
Sensor		Free Chlorine/pH/Temp/	CLO2/Temp
Measurement range	Free Chlorine	(0.10~2.00)mg/L(ppm); (0.10~20.00)mg/L(ppm)	
	CLO ₂	(0.10~2.00)mg/L(ppm); (0.10~20.00)mg/L(ppm)	
	pH	2.00~12.00(for the Free Chlorine)	
	Temp	(0.0~99.9)°C(Temp. Compensation Pt1000)	
Resolution	Free Chlorine	0.01mg/L	
	CLO ₂	0.01mg/L	
	pH	0.01	
	Temp	0.1 °C	
Accuracy	Free Chlorine	90% confidence interval ±10%FS	
	CLO ₂	90% confidence interval ±10%FS	
	pH	0.1level	
	Temp	±0.5°C	
Medium	pH	6.0~8.0(only for Free Chlorine)	
	Temp	(0.0~40.0) °C	
(4~20) mA Output	Channel	Double	
	Technical feature	Isolated,Reversible, fully adjustable, instrument/transmitter mode for selection	
	Channel configuration	Programmable for free chlorine, CLO ₂ , Temp, pH	
	Loop resistance	400 Ω (Max), DC 24V	
	Accuracy	±0.1mA	
Control port	channels	Triple channels	
	Contact mode	Photoelectric semiconductor relay	
	Load capacity	Load current 50mA (max) , AC/DC 30V	
	Functions	Programmable(free chlorine, CLO ₂ , Temp, pH, timing) output;	
Communication port	RS485	MODBUS RTU RS485	
Working power	Power supply	System AC 220V /50Hz, indicator DC24V.	
	Power	≤5.5W	
Working environment	temperature: (0~50) °C; humidity: ≤85% RH (none condensation)		
Storage	Temperature: (0~60) °C; humidity: ≤85%RH (none condensation)		
Protection	IP54 (plastic protection cabinet, integration system)		
Cabinet	ABS		
Cabinet size	380mm×280mm×130mm (H*W*D)		
installation	Wall mounted(with the preset back cover)		
Cabinet	≤10kg		

Pipeline flow

(250-350) mL/min

2. Installation and Construction

2.1 System Composition



Figure 3. Integrated Free Chlorine /CLO₂/pH Online Analyzer inside

2.2 Installation Method

POP-2200 Free Chlorine/CLO₂ Online Analyzer using wall-mounted installation, after selecting the appropriate installation position, first fix the backboard by steel nail or bolt and keep the vertical degree. Then aim the four mount points of backboard with the four hardy holes and go down the fixing holes. Be noticed to ensure the four fixed parts to be hanged firmed.

In order to avoid the prolapse of the case by upward force, after the case being hanged firmed, you need fold the two metal pieces of the backboard into a 90 degree Angle to prevent accidental stress drop; Installation size as below:

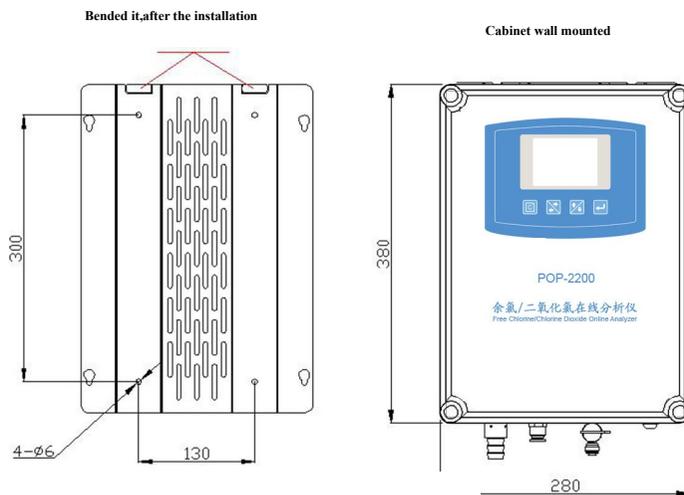


Figure 4. Installation Size sketch map

2.3 Water and Electricity installation



Figure 5. Integrated Free Chlorine /CLO₂/pH Online Analyzer wire indication

- a. In Figure 5, from left to right in turn is a water inlet, outlet, cleaning water mouth, RS485 data line, AC220V power line.
- b. The introduction of water, install a 1/2 "front ball valve in the pipeline, to facilitate future maintenance. Installed a 1/2 "turn 1/4" ball valve on the thread of 1/2" ball valve and then connect a filter and a reducing valve, and then connect with the water inlet of the instrument with 1/4 "pipe.
- c. Outlet pipeline, connect the bottom outlet of the analyzer with the dump tank by corrugated pipe, where there the water flow through the measurement process will be drain out.
- d. Clean the connection of dirt discharge valve. Use the 1/4" thin plastic pipe connect the bottom of plastic ball valve into the dump tank. Open the plastic ball valve can drain up the inner water.
- e. connect with the Power. Connect the instrument's own three pin plug with the near power socket;
- f. The height of the analyzer drainage must lower than cabinet. Do not access into the positive pressure or negative pressure pipeline. The corrugated drainage pipe access to lower geosyncline to ensure the pipe will not be tied a not.
- g. POP-2200 Free Chlorine/CLO₂ Online Analyzer Installation Design Sketch as below:



h. if there are lots of water suspended solids , you must install PP cotton filter, and then enter the equipment testing, remove the suspended solids impurities in water, as shown in the figure below.

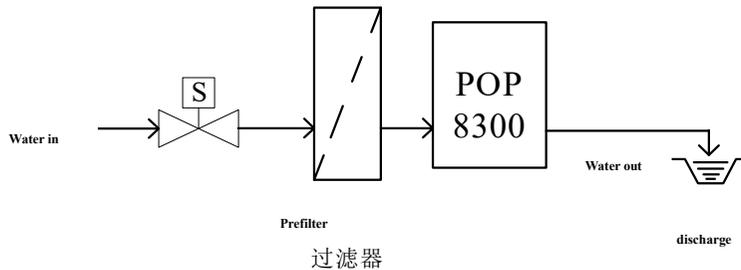


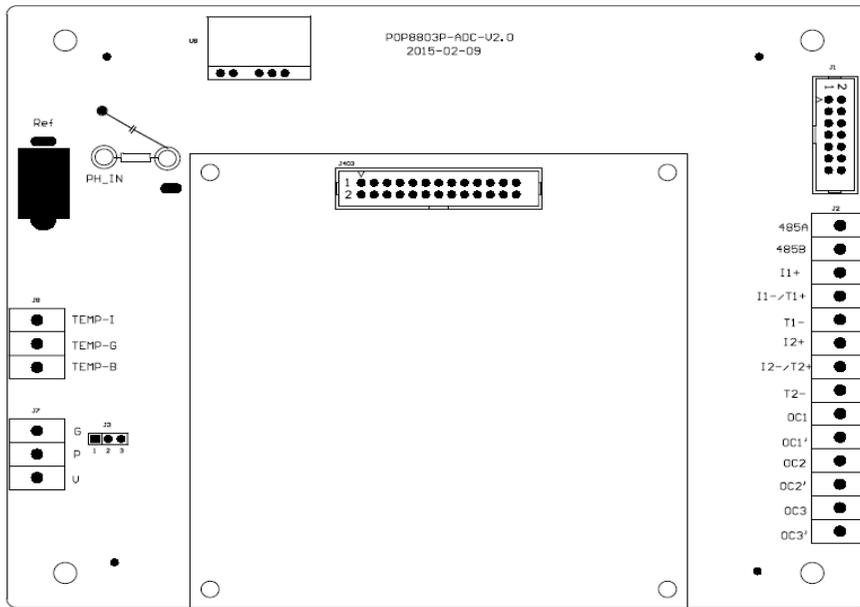
Figure 7.POP-2200 Free Chlorine/CLO2 Online Analyzer water line

i.Do not use the filter which can absorb free chlorine and the filter with large filter can cause the lag of measurement data, so n Figure 6.POP-2200 Free Chlorine/CLO2 Online Analyzer Installation

2.4 Power-on Check

- a.The equipment before the installation is always in a wet environment, so don't need to activate the sensors;
- b.To adjust the water valve, make the overflow pipe to the overflow condition;
- c.The equipment has been calibrated before they leave the factory. After powering on, it can directly measure (factory residual chlorine calibration solution pH value between 6.2 6.4), If the measurement is no accurate in the site, then calibrate it;
- d.If you need (4-20 mA) analog/control/RS485 communication functions, please open the case cover, and according to the connection instructions.(the case cover open method: first loosen the four screws evenly and remove the cover, connect with the corresponding terminal board.

2.5 Wire Connection



pH-IN	pH Sensor Center Wire (indicator electrode) weld on pH-IN high resistant
pH-ref	pH Sensor Shielded Wire (reference electrode) fix by pipe clamp
CELL-P	Free chlorine/CLO2 Sensor Shielded Wire
CELL-V	Free chlorine/CLO2 Sensor Control Wire
CELL-G	Free chlorine/CLO2 Sensor Measuring Wire
TEMP-I	Temperature sensor wire, Regardless of the polarity connection
TEMP-B	Temperature sensor wire, Regardless of the polarity connection
TEMP-G	Shorting Stub, Short connect TEMP-B with TEMP-G
OC1	Semiconductor photoelectric I two-way relay output
OC1'	
OC2	Semiconductor photoelectric II two-way relay output
OC2'	
OC3	Semiconductor photoelectric III two-way relay output
OC3'	
RS485A	Communication Port, connect with RS485 port
RS485B	Communication Port, connect with RS485 port
T1+/T1-	First channel mA output, transmitter mode
I1+/I1-	First channel mA output, instrument mode
T2+/T2-	Second channel mA output, transmitter mode
I2+/I2-	Second channel mA output, instrument mode

Note: The power supply for the whole system is AC220V. But the power will be converted to low voltage power distribution by AC/DC. Power panel and acquisition board is connected through terminal J1 & J2.

3. Application

Widely used for online monitoring HCIO/CLO₂ free chlorine in residential&drinking water or food industries. It is designed for constructing swimming pool ,Spa online analysis and the sewage and waste-water disinfection and drug Dosing control .

4. System maintenance

4.1 Clean maintenance

- a. Check the device regularly, the joints, filters, constant flow device, inlet water, outlet water etc. Observe whether these parts of the deposited material, such as found in these symptoms, should be cleaned in a timely manner;
- b. Regularly open the drain valve discharge filter retention of impurities, maintaining unobstructed filter;
- c. Use a damp cloth and a mild neutral detergent to clean the surface of the instrument, avoid using an acidic, corrosive and other strong solvents or abrasives.

4.2 Maintenance of sensors

- a. From the factory to use the sensor should always in a wet environment, can run directly on electricity;
- b. Even if the instrument not use for a long time the flow cell can keep moist all the time, do not need to handle;
- c. In case of suspended stuff attached, wash it with HCl or NaOH solution in 0.01mol/L and rinse with clean water;
- d. If the above methods are invalid to reset slope, it means that the sensor should be replaced;
- e. Buffer solution gets different value at different temperature so please confirm the temperature of buffer solution at calibration;
- f. Except Free chlorine/CLO₂, other oxidation and strong reducing agents is sensitive to sensor;
- g. Not recommend the measurement of using sodium hypochlorite prepared with electrolytic brine, in the process of electrolytic, the hydrogen ions can affect platinum layer, form the inverse chlorine against the current, lead to sensor failure accelerated.

4.3 Sensor Change

- a. Sensor from different sources differ with matching instruments, recommendation to replace the original sensor;
- b. Purchase statement for the Chlorine sensor should be made firstly, manufacturers have a particular connection;
- c. pH sensor replacement, screwed directly to the electrode wire from the sensor to the next, no need to

replace the electrode wire;

d.Replaceable or cropped sensor low noise coaxial cable is not allowed .

5.Trouble shooting

Common failure analysis:

Phenomenon	Possible factor	Trouble shooting
No reading with power supply	No power supply connection	Check the wire connection of power supply;
Error of reading	Inappropriate flow speed of measured point	Adjust the inlet ball valve to meet the requirement of velocity of flow or replace a new electrode
Difference at transmitting data	A. corresponding fault B. Receiver transfer error	A.reset corresponding of mA and reading B.reset receiver migration
pH value error	A. Sensor need to be calibrated B. pH sensor failure	A. Calibrate pH again B. Replace a new electrode and calibration

6.Components

Model	POP-2200 (CFA-2200)	POP-2200(CRA-2200)
Main configuration	POP-8803pA panel	POP-8803pB panel
	Free chlorine sensor	Chlorine dioxide sensor
	pH sensor	temperature sensor
	temperature sensor	
	P33 flow cell*1	
	constant flow device	
	reducing valve	
	cabinet	
	Operation menu	
	Certificate	
Assistant configuration	1/4"plastic pipe (5m)	
	4"turn to 2" Ball valve(2)	
	Drainage hosepipe (1)	
	hose clamp(1)	
	peg(4)	
	Back cover(1)	
	filter(1)	

7. Order Notification

Please note the following when ordering this product:

- a.Measure HCIO or CLO₂;
- b.Measurement range;
- c.Applicable Industry.

Communication Protocol

Set the Baud rate and address in the communication parameters setting menu .Keep the Baud rate and upper computer exactly same otherwise, it can not be connected to the upper computer.

[Note]: Pls log in our website for RS485 communication protocol. <http://www.createc.cn>

Guarantee Maintenance items:

A.The indicators' quality guarantee is one year from the date of purchasing. During this period, if the meter has quality problems, manufacturer is responsible for maintenance work for free or changes it.

B.We provide lifelong maintenance service for the product (Consumable items are not included).

C.If the damage of the meter is caused by the following reasons, it is out of the maintenance service:

- a.The meter is burned or foundered caused by improper usage and maintenance;
- b.The meter is refitted or misused without permit;
- c.The meter is destroyed under the condition out of company's regulation;
- d.The relevant damage caused by choosing the wrong type;
- e.Damage caused by the external force;
- f.All kinds of damage caused by brutal assignments.

Keep pace with the times is the natural law in the enterprise development, the products will have a phased upgrade, there will be no notice for general change, please prevail in kind.