

Thermo Scientific Orion Chlorine XP

Multiple parameter water quality analyzer

From brine and wastewater to clean drinking water, the Thermo Scientific™ Orion™ Chlorine XP™ analyzer provides the ultimate accuracy and stability for the measurement of routine water quality parameters. With minimal maintenance, low cost of ownership, and multiple parameter measurement in one unit, the Orion Chlorine XP analyzer provides one of the most comprehensive water quality monitoring solution on the market.



The Orion Chlorine XP analyzer measures free, total, and combined chlorine, providing accurate, objective, and fast readings of chlorine in water. It minimizes the need for periodic calibrations and is compatible with all disinfectant processes. It utilizes a DPD-based measurement technology that can be configured to use the least amount of reagents while maintaining utmost accuracy.

High Performance & Reliability

- Proven accuracy and repeatability even in harsh sample conditions (sea water, colored water, oil water)
- 0-10 ppm measurement range – in most applications
- Self zero calibration before each reading, enables “0” reading
- Wet tested for 24 hours before shipping
- 2 year warranty

Low Price & Cost of Ownership

- F&T Chlorine + pH, Temp (optional ORP, Conductivity, and Turbidity) in one analyzer – saves thousands of dollars over purchasing separate analyzers
- Low and customizable reagent consumption (default ~0.033 ml/sample) – lasts up to 2 months at 5 minutes cycle time, providing significant reagent savings compared to other manufacturers

Low Maintenance

- Light source self calibration adjustment
- Hands-free self cleansing of the photocell
- Automatic elimination of bubbling in the photocell
- Maintenance reminders and alarms (once a year on average)
- Auto buffer recognition at 4, 7, and 10

Additional Features

- Up to 6, 4-20mA isolated current outputs
- 6 x relays
- RS 485, Modbus® protocol support
- Optional Ethernet protocol to operations center



Markets:

- Drinking Water
- Wastewater
- Food and Beverage
- Industrial

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Applications

The Chlorine XP analyzer is recommended as a general purpose chlorine measurement analyzer along with other parameters- pH, temperature, ORP, and flow in water quality measurement applications.



Drinking Water Treatment - Most drinking water plants use chlorine as a preferred method of water disinfection and distribution monitoring. The Chlorine XP analyzer provides rapid feedback for chlorine additions for water disinfection and accurate checkpoint for chlorine levels during water distribution. As an EPA approved DPD method with up to two months of reagent usage, the Chlorine XP analyzer delivers significant cost savings compared to conventional one month usage systems.



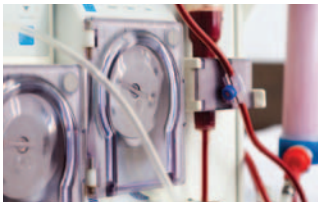
Wastewater Treatment - Most wastewater plants use chlorine as a preferred method of disinfection before releasing water into the environment. The Chlorine XP analyzer accurately measures both total and free chlorine continuously in the same unit as checkpoint before the water is discharged. This combination of measurements eliminates the use of two different instruments, resulting in operating cost savings for the plant.



Power Generation - Power plants measure free and total chlorine for cooling water effluent to meet the regulatory limits for chlorine discharge. The Chlorine XP analyzer measures as low as 10 ppb for total chlorine in seawater, well below the regulatory requirement of minimum detection limits in all samples matrices.



Food & Beverage Manufacturing - Food and beverage plants need to measure chlorine before water goes through the RO process because chlorine shortens the life of the RO membrane by chemically reacting to the membrane. The Chlorine XP analyzer provides low level detection (up to 10 ppb) and a quick response time, extending life span of RO membranes which translates to low operating costs for the plant.



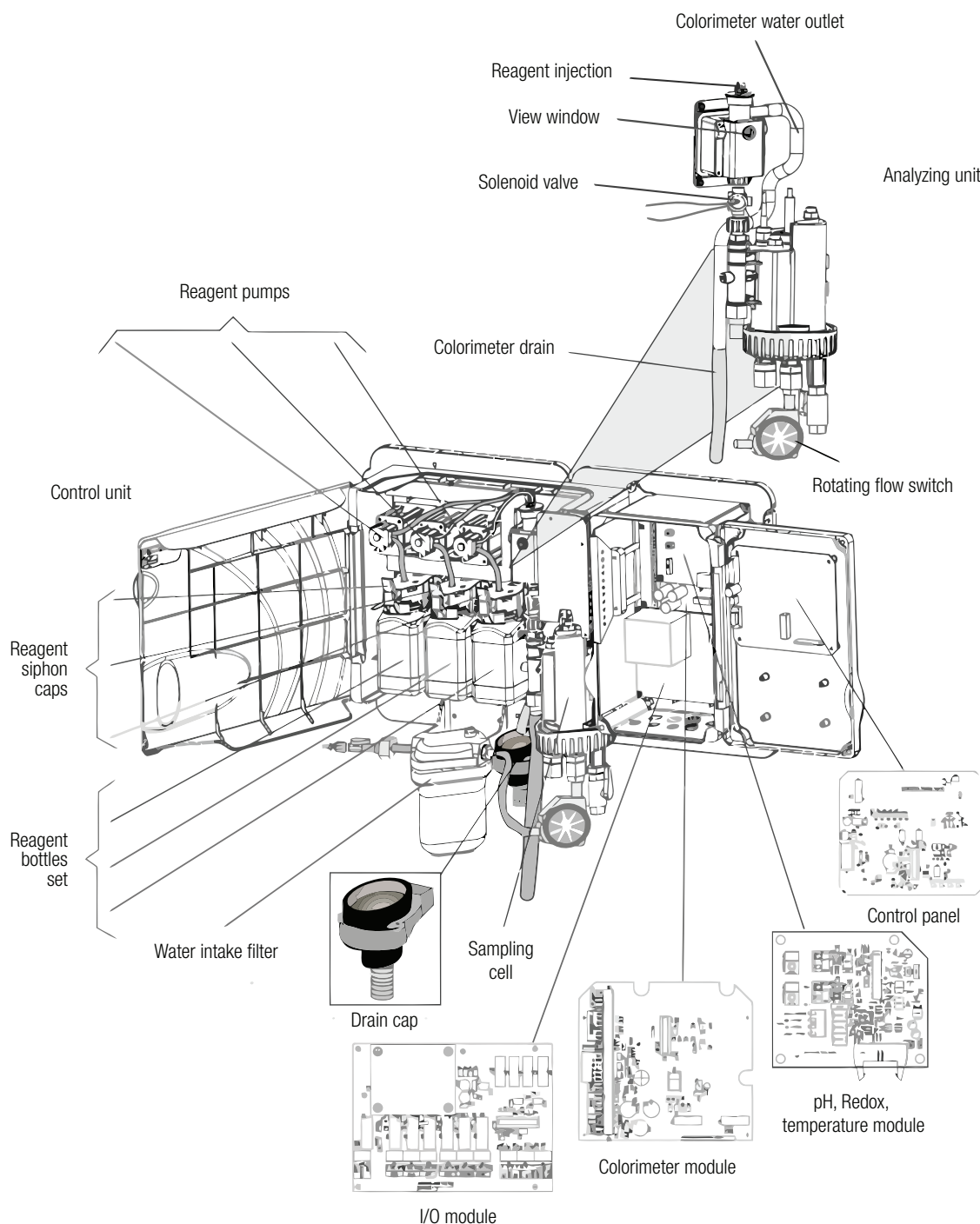
Dialysis Treatment - Dialysis treatment centers monitor the chlorine level in kidney dialysis machines to make sure that it doesn't come in contact with blood. Chlorine/chloramines in water used for dialysis can result in serious adverse patient reactions or death. The Chlorine XP analyzer measures less than 0.5 ppm (max. limit) total chlorine and provides quick response time, resulting in RO life extension and improving carbon filter efficiency.

The operating system is designed to be simple and intuitive. Once installed and calibrated, the Chlorine XP analyzer automatically releases the proper quantity of chemicals depending on measurement frequency. The Chlorine XP analyzer comes standard with chlorine measurement and can be configured to measure any combination of free chlorine, total chlorine, and both free and total chlorine.



Free chlorine (hypochlorous acid + hypochlorite ions) reacts with the Free Chlorine Indicator (DPD1) causing a color change in the sample from clear to red. The buffer is used to ensure reaction at a consistent pH. The more free chlorine that is present, the darker the red color that forms. The color intensity is converted to ppm employing the Beer-Lambert law.

Total chlorine is often used for monitoring combined chlorine (chloramines) levels. Combined chlorine is the difference between the total chlorine and free chlorine. When free chlorine and total chlorine need to be measured in sequence, the Total Chlorine Indicator (DPD3) is added to the sample already containing the Free Chlorine Indicator (DPD1) and buffer. The combined chlorine reacts with the Total Chlorine Indicator causing an increase in the red color. The total chlorine is determined from the color change and the combined chlorine is calculated from the difference between the total and free chlorine. When only total chlorine test is needed, the Total Chlorine Indicator (DPD4) is added to the sample causing color change and the levels of total chlorine is determined.



Product Specifications

Performance

| | |
|-------------------------|--|
| Accuracy | 3% |
| Repeatability | (+/- 5%) |
| Minimum Detection Limit | 10 ppb |
| Zero-Point-Adjustment | Self zero before each reading |
| Cycle Time | 2 to 10 minutes |
| Flow Monitoring | Rotary flow switch (see Additional Requirements section for inlet/outlet pressure) |
| Parameters | FC, TC, F&TC, ORP, pH, Temp. |
| Measuring Range | 0 to 10 ppm (Cl); 0-14 (pH); PT-100 Temp. |

Reliability

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|-----------------------|-----------------|
| Warranty | 2 years |
| Validation | Contact factory |
| USEPA Accepted Method | Yes |
| CSA | Yes |
| CE | Yes |

Operations Requirements

| | |
|-------------------|---|
| Maintenance | 1-2 months for reagent replacement and filter cleaning |
| Calibration | Every 6 months (pH and ORP only) |
| Reagent Usage | DPD up to 2 months at 5 min. cycle time |
| Power Consumption | Approx. 60VA |
| Power Supply | 100-115 VAC, 50/60Hz, 1.0A or 200-230 VAC 50/60Hz, 0.5A |
| Weight | 24 lbs. (11kg) |
| Dimensions | 67cm x 33cm x 14cm, 26" x 13" x 5.5" (WxHxD) |

Options/features

| | |
|------------------------|---|
| Alarms | Optional, see manual |
| Remote Monitoring | Not yet available |
| Enclosure | IP-65 rated enclosures (NEMA 4 equivalent) |
| Local I/O | 2 standard 4 to 20 mA outputs 4 optional 4 to 20 mA outputs |
| Memory | 256K |
| Lines | 1000 |
| Event Logger | Yes |
| Total Relay On Time | Yes |
| Display Type | 5.5" graphic monochromatic; character LCD with background light alarms and status |
| Password | Operator and technician |
| Servicing/ Maintenance | Self-cleaning photocell (minimum service requirement) |

Additional Requirements

| | |
|-----------------------------|---|
| Sample and Drain Connection | Pressurized sample inlet and gravity drain |
| Sample Temperature | 32° F to 212° F (0° C to 100° C) Ambient Temperature: 15° F to 131° F; (-10° C to 55° C) |
| Inlet Pressure | 5-15 psi |
| Sample Conditioning | Not required |

Product Ordering Information

| Cat. No. | Description |
|------------|---|
| CXP71 | Free Chlorine only with 2X 4/20mA outputs |
| CXP72 | Total Chlorine only with 2X 4/20mA outputs |
| CXP73 | Free & Total Chlorine combined, 2x4/20mA outputs |
| CXP71PH | Free Chlorine + pH + Temp. 2x4/20mA outputs |
| CXP72PH | Total Chlorine + pH + Temp. 2x4/20mA outputs |
| CXP73PH | Free & Total Chlorine combined + pH + Temp 2x4/20mA outputs |
| CXPRGDPD1F | 5 Sets of DPD1 reagents for Free Chlorine |
| CXPRGDPD4T | 5 Sets of DPD4 reagents for Total Chlorine |
| CXPRGDPD3T | 5 sets of DPD3 reagents for Total Chlorine (need to be used with DPD1 for CXP73 and CXP73PH) |

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