



## Water Quality Analysers



# HaloSense - Total and Free Chlorine Analyzer

The HaloSense range of Chlorine Analysers, Residual Chlorine Controllers and Chlorine Monitors utilise the very latest and best chlorine sensors available in the world today. They are membrane devices which are insensitive to changing pH, use no reagents, are extremely stable, and have reduced maintenance and reduced whole life costs.

**Amperometric sensors - accepted under US EPA method 334.0**

**No chemical reagents - lower cost of ownership**

**Stable and reliable - excellent process control**

**Suitable for all potable, process and salt waters**

**Up to 6 months between maintenance**

**Up to 3 months between calibration**



*"In my opinion the Pi chlorine analysers are simply the best in the world" John Clark, USA*

The HaloSense sensors and flow cells are available with different controllers giving you the same great performance with different communication, display, and control options. With the HaloSense range of residual chlorine analyzers, you get everything that you need - and nothing that you don't.

### CRONOS® HaloSense



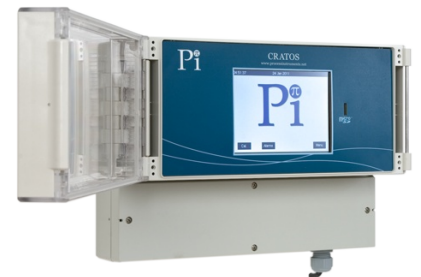
- High Quality and Multilingual
- Lowest Purchase Cost
- Up to 3 sensors
- Options include:
  - pH compensation
  - optical isolation for I/O
  - up to 3 4-20mA outputs
  - up to 4 relays (solid state or mechanical)
  - modbus TCP
  - modbus ASCII/RTU
  - profibus
  - HART
  - flow switch input
  - PID control

### CRIUS® HaloSense



- High Quality and Multilingual
- Low Cost
- Colour Display and Keypad
- Datalogging
- Sophisticated Comms and Control
- Up to 6 sensors
- All CRONOS® options plus:
  - texting alarms via GSM
  - remote internet access via GPRS
  - automatic cleaning
  - automatic calibration
  - integrated flow control

### CRATOS HaloSense



- High Quality and Multilingual
- Medium Cost
- Colour Touchscreen
- Datalogging
- Up to 12 sensors
- All CRONOS® and CRIUS® options plus:
  - lowest cost per point

For more information please see the individual brochure - CRONOS®, CRIUS® and CRATOS

## Principle of Operation

The membraned amperometric chlorine sensors, are enhanced with a third, reference electrode\*1 which eliminates zero drift. Its unique design means that pH correction is not usually required at all, completely eliminating reagents.

In addition to the state of the art potentiostatic chrono-amperometric free chlorine and total chlorine sensors, the HaloSense range of residual chlorine analyzers has all the functionality that you need, and more. Simply choose the CRONOS, CRIUS® or CRATOS controller to give you the highest quality chlorine monitor, with all the functionality you need at the lowest price possible. This means that you pay for everything that you need and nothing you don't, without sacrificing the quality of measurement!

## Autoflush and AutoCal

As described in separate brochures, the HaloSense can come equipped to automatically clean itself or calibrate at user defined intervals with all the benefits of no operator intervention for 6 months. The Autoflush is particularly useful in food preparation, pulp and paper, and many applications where there is likely to be a build up of solids in the sample. The AutoCal is used to give completely operator free operation for up to 6 months.

## Water Treatment

- Chlorine Dosing
- Remote Sites
- Cooling Towers
- Food Preparation
- Paper Mills
- Secondary Chlorination

Anywhere you have a requirement to measure residual free or total chlorine is a suitable application for the HaloSense. The HaloSense chlorine monitor range is particularly suited to working in sites where reliability and ease of use are most important.

## pH Compensation

For some applications with high and variable pH, pH compensation can improve the accuracy of the chlorine readings. For pH compensation to be valid it must be done with the highest quality pH sensors and with chlorine sensors that have a reduced susceptibility to varying pH, such as those used in the HaloSense range of chlorine analyzers.\*1

\*1 For more details please see technical notes

## Specification

### Chlorine Sensor Probe

<b>Type:</b>	Membrane covered potentiostatic chrono amperometric three-electrode system
<b>Measurand:</b>	Total Chlorine or Free Chlorine
<b>Range:</b>	0.01-1, 0.01-2, 0.01-5, 0.01-10mg/l (ppm 0-200mg/lppm)*2
<b>Resolution:</b>	0.01mg/l (ppm)
<b>Reproducibility:</b>	±5 %
<b>Stability:</b>	-2 % per month (without calibration)
<b>Working electrode:</b>	Gold
<b>Counter electrode:</b>	Stainless Steel
<b>Reference electrode:</b>	Silver / silver halide
<b>Membrane material:</b>	Micro-porous hydrophilic membrane
<b>Flow rate:</b>	Approximately 0.5l/min (min 0.2l/min)
<b>Temperature range:</b>	>0 to <50°C
<b>Temperature compensation:</b>	Automatically by an integrated thermistor
<b>pH-range:</b>	pH 4 up to pH 9
<b>First-polarisation time:</b>	120 min
<b>Re-polarisation time:</b>	30 min
<b>Response time:</b>	T <sub>90</sub> : approx.120 seconds
<b>Zero-point adjustment:</b>	Not necessary
<b>Calibration:</b>	Manual using DPD or Automatic
<b>Housing material:</b>	PVC, silicone, polycarbonate stainless steel
<b>Dimensions:</b>	Diameter approx. 25mm, length 175mm
<b>Maintenance intervals:</b>	
<b>Membrane:</b>	12-18 months
<b>Electrolyte:</b>	3-6 months
<b>Interferences:</b>	High levels of other oxidants such as Ozone and Chlorine Dioxide



\*2 The 0-200mg/l sensor is a 2 electrode sensor that is sensitive to pH variation

everything you need, and nothing you don't  
find your local supplier at [www.processinstruments.net](http://www.processinstruments.net)

