

## Total and Free Chlorine Analyzer

The HaloSense range of Residual Chlorine Analysers, Residual Chlorine Controllers and Residual Chlorine Monitors utilize 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 a year between maintenance
- Up to 3 months between calibrations
- Up to 15 yrs life - reduced costs



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 analysers, you get an extremely sophisticated chlorine analyser, chlorine monitor and chlorine controller.

### CRIUS® PeraSense



- High resolution color display
- Intuitive user interface
- Graphing and datalogging
- NEMA 4X Enclosure
- Options:
  - Modbus RS485/LAN
  - Profibus
  - PID/flow controls
  - Remote sensors
  - Downloadable data logs
  - Up to 4 sensors
  - Remote access via LAN
  - Remote access via GPRS
  - Expandable to 16 sensors

Additional controller information may be found on the CRIUS® product data sheet.

### Mounting Options



- Open overflow cell (single, double or triple)



- Single closed flow cell



- Single or double Autoflush

## Principle Of Operation

The membraned amperometric chlorine sensors, are enhanced with a third, reference electrode 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 chronoamperometric free chlorine and total chlorine sensors, the HaloSense range of residual chlorine analysers has all the functionality that you need, and more. Simply choose the CRIUS® controller options to give you the highest quality chlorine analyser, with all the functionality you need at the lowest price possible.

The HaloSense comes with a number of sensors including free chlorine, total chlorine and free chlorine 'zero'.

## Water Treatment

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

## CO<sub>2</sub> Buffering

As alternative to pH compensation is the use of CO<sub>2</sub> to suppress the pH such that changes in the pH of the sample do not affect the chlorine reading.

## Autoflush

As described in a separate brochure, the HaloSense can come equipped to automatically clean itself at user defined intervals with all the benefits of no operator intervention. The Autoflush is particularly useful in food preparation, pulp and paper, waste water and many applications where there is likely to be a build up of solids in the sample.

## 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.

## Installation

The HaloSense can be installed in a variety of auxiliary flow cells and selfcleaning devices.

HaloSense in single closed flow cell



HaloSense in single open flow cell



## Specifications

Type	Membrane covered potentiostatic chrono amperometric three-electrode system
Measures	Total Chlorine or Free Chlorine
Range	.01-2.0 mg/l, .01-5 mg/l, .01-10 mg/l, .01-20 mg/l, .5-200 mg/l (free only)
Resolution	.01 mg/l (ppm) / .1 on 200 mg/l rang
Reproducibility	Better than +/- .05 mg/l
Stability	-1% per month (without calibration)
Working electrode	Gold
Counter electrode	Stainless Steel
Reference electrode	Silver / Silver halide
Membrane material	Micro-porous hydrophillic membrane
Flow rate	Approximately .15 gal/min
Temperature range	32° to <113° F
Temperature compensation	Automatically by an integrated thermistor
pH range	pH 4 up to pH 9
First polarization time	2 hours
Re polarization time	30 mins
Response time	T <sub>90</sub> approximately 2 mins
Zero point adjustment	Not necessary
Calibration	Manual using electrochemical test kit or DPD test kit
Housing material	PVC, silicone, polycarbonate, stainless steel
Dimensions	Diameter approximately 1 in, length 7 in
Maintenance intervals	
Membrane	Once per year (depending on water quality)
Electrolyte	Once per year (depending on water quality)
Interferences	High levels of other oxidants such as ozone and chlorine dioxide