

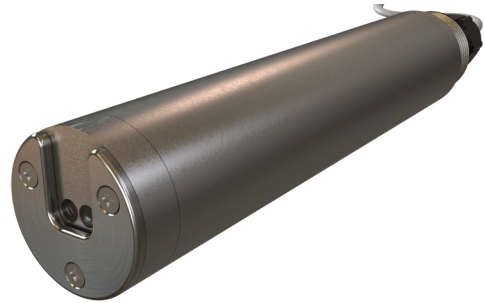


# SoliSense®

## Suspended Solids Monitor

The SoliSense® range of Suspended Solids/Turbidity analysers provides a single sensor with a large dynamic range which utilises a patent applied for measurement technology that eliminates the need for a "zero" and also eliminates the effect of background light. For multiple measuring ranges the one sensor can monitor Turbidity and Suspended Solids from 2 NTU (1mg/l) to 8%\* solids in one sensor.

- **Autoclean optical sensor - minimal operator intervention**
- **Stable and reliable - excellent process control**
- **Suitable for all potable, waste and process waters**
- **Up to 12 months between maintenance**
- **Up to 12 months between calibration**
- **From 2 NTU (1mg/l) to 8%\* Solids**
- **Up to 10 Bar**



The SoliSense® sensors are available with different controllers giving you the same great performance with different communication, display, and control options.

*\* 8% in typical municipal waste water slurries. This value will vary depending on the optical properties of the sample.*

### CRONOS® SoliSense®



- High Quality - Lowest Cost
- Multilingual
- High resolution grayscale display
- 9 buttons for easy navigation
- Graphing and datalogging
- Enclosure; wall, panel, pipe or pole mounting. IP65/Nema 4x.
- Options:
  - Modbus RS485/LAN
  - Profibus DPV 1
  - Up to 2 sensors
  - PID/flow proportional controls
  - Remote sensors
  - Colour display
  - Downloadable data logs

### CRIUS® 4.0 SoliSense®



- High Quality - Lowest Cost
- Multilingual
- High resolution colour display
- Intuitive user interface
- Downloadable data logs
- Customisable home pages
- All CRONOS® options plus:
  - Up to 4 sensors
  - Remote access via LAN
  - Remote access via 3G/4G
  - Expandable to 16 sensors

**For more information please see the individual brochures for CRONOS® and CRIUS® 4.0**

### Mounting Options

#### Dip Installation

- For open tanks and channels
- Optional handrail mounting kit
- Optional pole mounting kit



#### Pipe Insertion

- For in-line measurement in pipes



#### Flow Cell

- For at-line measurement
- Particularly suited to clean water applications
- Optional self-draining system for periodic settled solids removal



#### Light Shield

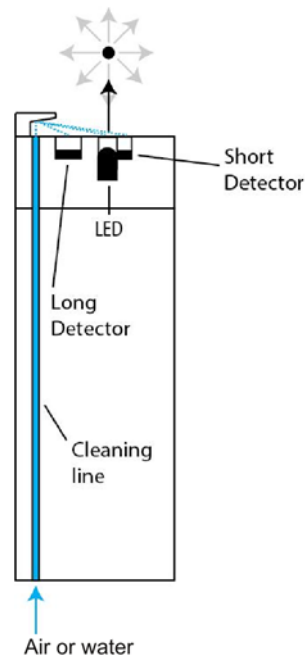
- For installations with higher ambient light



## Principle of Operation

The sensor determines the suspended solids concentration or the turbidity in water using a measurement of the backscattered light. The SoliSense® sensor uses lifetime based optical technology to provide an extremely stable, accurate, low-maintenance sensor, with no moving parts and no consumables.

Each sensor is fitted with a light source and two detectors for making the measurements. Having two detectors, positioned at different distances from the light source, allows the sensor to be used over a wide range of suspended solids concentrations. The light source is a long life infra-red LED emitter (providing for 15 years working life). The detectors are matched photodiodes. The detectors in the SoliSense® are positioned to detect backscattered light (light that is scattered by  $>90^\circ$ ). By measuring back scattered light the sensor can be used to detect low and high concentrations of solids. The SoliSense® uses Pi's novel measurement technique that automatically takes readings at four different light levels and uses the gradient between the four readings to produce the sensor output. This configuration allows accurate and reliable measurements of suspended solids concentrations and turbidity to be made.



## Mounting

The SoliSense® can be mounted on the end of a pole for dip mounting in a channel or tank, or in a low pressure or high pressure flow cell, or inserted into a pipe via a valve which allows for retraction and removal of the sensor without shutting down the process. See Technical Note 16, SoliSense® Mounting Options, for more details.

## Calibration

Calibration of the SoliSense® for turbidity measurements or measurements of samples with low concentrations of solids is very easy only requiring a single calibration sample. This sample can either be a reading from another method or a suitable standard. The analyser calibrates the sensor by a procedure that reduces the light output through four stages, taking measurements at each. This process provides an accurate and reliable zero and span without the requirement to use a '0' NTU/solids sample.

Calibration of the SoliSense® for the measurement of samples with high concentrations of solids uses a multi-point procedure. Up to 5 calibration points can be used to give an accurate performance across a wide range of sample concentrations.

## Cleaning

To keep the sensor clean, the SoliSense® is fitted with a cleaning nozzle. This can be used to clean the optical windows with a jet of clean water. This cleaning procedure can be automated to carry out the cleaning at predefined intervals.

## Specification\*

**\*All subject to change without notice**

<b>Range:</b>	Up to 500g/l, 4000 NTU (depending on the optical properties of the sample)
<b>Units:</b>	Selectable g/l, mg/l, ppm, ppt or % (suspended solids) NTU or FNU (turbidity)
<b>Accuracy:</b>	<2% of measured value or 0.01g/l or 0.8 NTU (whichever is greater)
<b>Reproducibility:</b>	<1% of measuring value or 0.001g/l or 0.8 NTU (whichever is greater)
<b>Limit of Detection:</b>	0.001g/l or 2.4 NTU
<b>Resolution:</b>	Up to 0.00001g/L
<b>Response Time:</b>	$T_{90} \leq 10\text{sec}$ (adjustable based on averaging)
<b>Drift (electronic):</b>	None
<b>Averaging:</b>	Configurable (10sec-10min)
<b>Lamp Source:</b>	IR LED (860nm)
<b>Weight:</b>	Approximately 1kg (35oz.)
<b>Process Temperature:</b>	0-50°C (32-122°F)
<b>Operating Pressure:</b>	10 bar (145psi) [maximum]
<b>IP Rating:</b>	IP68
<b>Mounting Thread (for dip installation):</b>	1" BSP
<b>Max. Power Consumption:</b>	70mA at 15 VDC
<b>Cable Length:</b>	6m (20ft.) as standard (extendable by request)
<b>Wetted Parts:</b>	316 stainless steel, sapphire
<b>Diameter</b>	38mm (1.49in.)
<b>Length:</b>	230mm (9.06in.)