

SUSPENDED SOLIDS SENSOR TSS with HydroACT Series

DESCRIPTION

The Chemtrac **Suspended Solids Sensor** is a sophisticated sensor that ranges from 2 NTU to 8% solids (in waste water, up to 50% in other solids), and is unique in its ability to measure from low NTU to percent solids in one sensor. It is suitable for waste water, potable water monitoring, mixed liquor suspended solids monitoring, return activated sludge, centrate monitoring, filtrate monitoring, sludge, and many more applications where a traditional turbidimeter or suspended solids analyzer would be used.

FEATURES

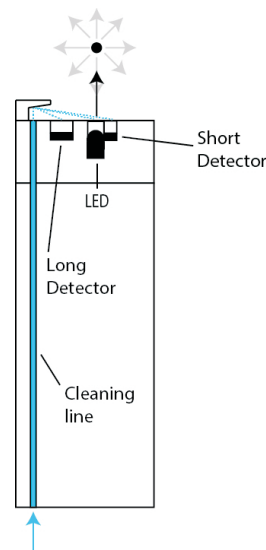
- Autoclean optical sensor - minimal operator intervention
- Stable and reliable - excellent process control
- Suitable for all potable, waste and process waters
- 'Maintenance free' with up to 1 year between calibration
- From 2 NTU (1 mg/l) to 8% Solids
- Up to 145 psi
- Extremely low total cost of ownership



PRINCIPLE OF OPERATION

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

Each sensor is fitted with a light source and two detectors for making 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 sensor 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 sensor uses Chemtrac'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.



CALIBRATION

Calibration of the sensor for turbidity measurements, or measurements of samples with low concentrations of solids, is very easy and only requires a single calibration sample. This sample can either be a reading from another method or a suitable standard. The analyzer 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 sensor for 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.

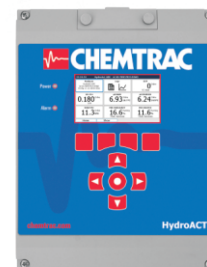
CLEANING

To keep the sensor clean, the Suspended Solids Sensor 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.

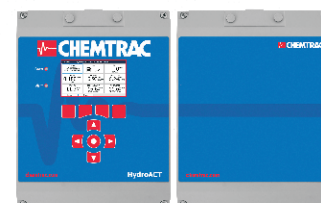
GENERAL SPECIFICATIONS

ANALYZER

	HA2	HA4	HA8
Power	100-240 VAC / 0.25 A or 12 VDC / 0.8 A (standard) or 24 VDC (optional)		
Display	4.3", 480x272, 8 bit, grayscale	4.3", 480x272, 24 bit, color	
Sensor Inputs	Up to 2	Up to 4	Up to 8
Sensor Options	TSS/NTU, Free Cl, Total Cl, Cl Dioxide, Chlorite, Ozone, pH with Temperature Ozone, ORP, SCM, UV254 organics, DO, Conductivity, Particle Counter		
External Input (optional)	4-20 mA, 4-20 mA loop-powered, +/- 2000 mV for pH / ORP / ISEs		
Analog Outputs (optional)	Up to 2	Up to 4	Up to 8
	Menu configurable outputs: 4-20 mA (Note: unused sensor inputs can be used as outputs)		
Relays (optional)	Up to 4	Up to 8	Up to 16
	SPST, electromechanical, 380 VAC, 6 A max		
Digital Inputs (optional)	Up to 4	Up to 8	Up to 16
Alarms & Thresholds	2 user-configurable alarms & thresholds with deadband and delay for each parameter and control output		
Control Loops (optional)	Up to 2	Up to 4	Up to 8
Control Types (optional)	High / Low Threshold	PID (with start delay and SP ramping options), feed forward (NTU/UV), flow pacing, high/low threshold, timer	
Communication (optional)	Modbus ASCII/RTU (RS485), Modbus TCP (Ethernet), PROFIBUS DP		
Data & Event Logging	1,000 event / status records stored in internal memory	1 million records stored internally storage expandable with MicroSD card	
Modem (optional)	None	GSM / GPRS / 3G intergrated modem	
Remote Access (optional)	None	Internet browser access, alerts and reports via email (requires ethernet or modem card)	
Enclosure	ABS flame retardant, NEMA 4X / IP65		
Dimensions & Weight	HA2 & HA4: 9 in (230 mm) x 12.2 in (309 mm) x 4.1 in (103 mm); 4.4 lbs (2 kg) HA8: 18 in (460 mm) x 12.2 in (309 mm) x 4.1 in (103 mm); 4.4 lbs (2 kg)		



HA2 / HA4



HA8

TURBIDITY & SUSPENDED SOLIDS SENSOR

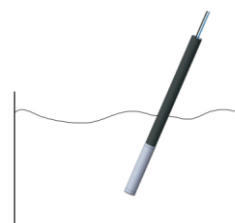
Range:	Up to 80g/l (8% solids), 4000 NTU (depending on the optical properties of the sample)
Units:	Selectable g/l, mg/l, ppm, ppt or % (suspended solids) NTU or FNU (turbidity)
Accuracy:	< 2% of measured value or 0.01g/l or 0.8 NTU (whichever is greater)
Reproducibility:	< 1% of measuring value or 0.001g/l or 0.8 NTU (whichever is greater)
Limit of Detection:	0.001g/l or 2.4 NTU
Resolution:	Up to 0.0001g/l or NTU
Response Time:	T ₉₀ ≥ 10 sec (adjustable based on averaging)
Drift (electronic):	None
Averaging:	Configurable (10 sec - 10 min)
Lamp Source:	IR LED (860nm)
Weight:	2.2 lbs (approximately 1kg)
Process Temperature:	32-122°F (0-50°C)
Operating Pressure:	145 psi (10 bar) [maximum]
IP Rating:	IP68
Mounting Thread (for dip installation):	1" BSP
Max. Power Consumption:	70mA at 12 VDC
Cable Length:	20 ft. (6m) as standard (extendable by request)
Wetted Parts:	316 stainless steel, sapphire
Diameter:	1.49" (38mm)
Length:	9.06" (230mm)

Suspended Solids Sensor



Mounting Options

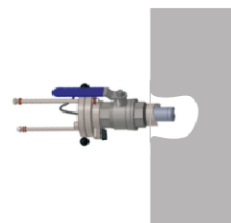
Dip Installation



Flow Cell



Pipe Insertion



Pressure T Fitting

