

DIRECT PIPE INSERTION TRO SENSOR

The Sensor measures chlorine using amperometry without the use of membranes, electrolytes or reagents requires far less maintenance than conventional systems. It measures chlorine from 0 to 15 ppm. Chlorine (TRO) measurements are internally compensated for temperature and salinity changes.

Measures

- PPM Free Chlorine or Bromine using 3 electrode Amperometric method
- Integrated Conductivity or Salinity (PSU)
- ORP
- Temperature using a digital sensor
- pH- fast wetting

Features

- Self-Cleaning system that cleans all the electrodes
- No membranes or electrolyte replacements
- No waste stream required
- Flow independent measurement
- Direct, in pipe installation

Benefits

- Long interval between calibrations
- Lower maintenance frequency
- Lower installation costs
- Lower maintenance costs



Figure 1: SWN-P for side stream

FLOW INDEPENDENT MEASUREMENT The sensor can operate from zero to 5 meters per second of velocity without significant change in signal. The signal is immune to changes in pressure, both momentary spikes and extended changes. No waste stream is required. No flow cell needed.

SELF CLEANING Continuous cleaning of the pH and chlorine electrodes ensures that the measurements will be accurate, further reducing the need to recalibrate, removing salts oils and biologicals. The chlorine sensor can operate in seawater with high hardness, alkalinity, and salt without scaling.

COMPACT the highly-integrated design perform signal conditioning on board and is resistant to external noise and stray electrical currents.

Sensors are available in several configurations. A display is necessary for calibration and local monitoring. These functions can also be implemented in a PLC using the Modbus protocol**.

Product Description	Model No.	Salinity PSU	Approvals
Hot Tap	SWN-P-HT2 +	0.2 to 35	DNV TA
Side Stream (STD)	SWN-P+	0.2 to 35	DNV TA
Explosion Proof	EX-HT4 /EX-STD	0.2 to 35	IECEX; ATEX Zone 1 Group IIC; DNV TA
Display/Transmitter 4-20 mA & Modbus	D01	NA	DNV TA

DISPLAY/ TRANSMITTER

The display enables remote display and calibration of the sensor parameters. Two 4-20 mA outputs are provided for interfacing with PLC. The Sensor and Display use Modbus RTU for communication.

Features

- Four-line transfective displays all parameters at once
- 2) 4-20 mA outputs
- Modbus output
- Use to calibration or check local operation of sensors
- 24 VDC Input voltage



Figure 2: Display D01




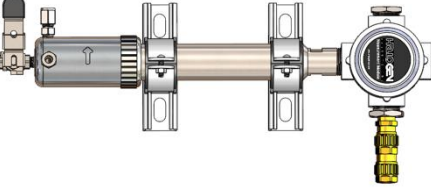
Measurement Parameters (all + Units)

Measurement Specifications	Range	PSU	Accuracy
Chlorine or Bromine	0 to 15 PPM	0.2 to 35	±15% or 0.06 ppm, whichever is greater
Chlorine Limit of Detection (LOD)	0.0 to 0.25		0.03
Oxidation Reduction Potential (ORP)	-1100 to 1100 mV		NA
Conductivity	200 to 50,000 µS		±10%
pH	5 to 12		±10%
Temperature	0 to 100° C		0.1
Cycle time		45 seconds	
Limit of Detection (LOD)		0.03 ppm	

IECEX MODELS EX-P-HT4/EX-P-STD

- IECEx marking string: Ex db ib IIC T5 Gb
- Zone 1 Gas Group IIC
- Environmental: IP65
- IECEx Certificate
- Complies with:
- DNV 2.4,
- LR Type Approval System Test Specification Number 1,
- IMO Rule MEPC.174(58) Annex 4
- IEC 60529 2.2 Edition, revised 2015.
- EN 60529 Revised 2013

ALL MODELS

Models	In Pipe (Hot Tap)	Side Stream
Non-Hazardous	 <p>SWN-P-HT2</p>	 <p>SWN-P+</p>
Hazardous-Zone1 Group IIC	 <p>EX-P-HT4</p>	 <p>Side stream chamber with IECEx sensor with sampling port EX-P-STD</p>

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