

ScaleSense

Real-Time Ion-Specific Sensor for Saline Waters



Robust and Always On

- Configurable for calcium (Ca^{2+}), barium (Ba^{2+}) or sulfate (SO_4^{2-}) ions
- Sensing available for silica (SiO_2) via an alternate method
- Real-time measurement for optimizing your process, reducing risk, and minimizing operational and maintenance demand
- Robust, simple, cost-effective, and automated; easy to clean and use compared to existing spectrophotometer methods
- Optimized for saline waters in which other sensors (e.g. colorimetric) do not function
- Corrosion-resistant construction for high-salinity water
- Tolerance for high pH (0–14) and temperature (5–80 °C)
- Commodity reagents



ScaleSense sensor in use

Why ScaleSense Instead of Other Optical Sensors?

ScaleSense was developed to operate on the most challenging flows (e.g. high-TDS range) in which other sensors do not function effectively. Existing real-time sensors perform well for cleaner water, but failed to meet our needs for industrial saline waters—so we developed our own. See the comparisons below.

Parameter	Titration	Manual Colorimetric	Auto-Colorimetric	ScaleSense
Real-Time Digital Feedback	offline	offline	real-time	real-time
Resolution Uncertainty (\pm %)	~0.1–1	0.1–1	2	~2–5
Temperature (°C)	~5–100	0–40	5–50	~5–80
Testing Volume (mL)	~1–100	~2–50	continuous	continuous
Testing Rate (mL/min)	static	static	100–500	up to 300
Analysis Cycle Time (min)	~5	~2–100	~7	~5
High-TDS Operation	no	no	not accurate	yes

Applications

- Reverse osmosis: real-time scaling ion control to maximize recovery while protecting membranes
- Cooling tower blowdown minimization: reduce freshwater withdrawal on a scale-limited tower
- Barium, sulfate precipitation and chemical softening process control: ensure your phys-chem process is meeting treatment goals for Ca^{2+} , Ba^{2+} , SO_4^{2-} , SiO_2
- Oil & gas: monitor sulfate, protect disposal wells, maximize nanofiltration recovery in enhanced oil recovery (EOR)

ScaleSense Operation

Electrical Supply	120 VAC, 10 A
Weight	250 lbs (113 kg)
Dimensions	21" x 30" x 80" (0.53 x 0.76 x 2.03 m)