

# H<sub>2</sub>S IN WATER ANALYZER

Model 204H | Clean Water, Dirty Water



## Product Features

- No consumables required for detector
- Completely solid state detector, no moving parts
- Accurate and continuous analysis
- Quantitative measurement in ppm & percent Levels
- Proven reliability
- Fast response time
- Remote & Web based monitoring/control of analyzer

## Applications

- Waste water treatment facilities
- Industrial discharger
- Municipalities chlorine efficiency
- H<sub>2</sub>S in cooling water
- well water, pond water, holding water, ditch water
- Refining/processing industrial water
- Seawater fractioning towers

## Product Description

The ability to analytically quantify H<sub>2</sub>S in Water online is enhanced with the Sample Transfer Stripper™ (exclusive ASI Membrane Technologies) and the advanced electrochemical H<sub>2</sub>S sensor or rateometric-colorimetric H<sub>2</sub>S detector technologies offered by Analytical Systems Keco. Economic payout is increased because of this automated and continuous process monitor.

The most effective process for measuring H<sub>2</sub>S in water involves representatively stripping the H<sub>2</sub>S vapor from the water for precise measurement in the gas phase. Direct optical measurement of H<sub>2</sub>S in the water is plagued by high routine maintenance and recalibration procedures. Analytical Systems utilizes the state-of-the-art Sample Transfer Stripper (STS) with exclusive ASI Membrane Technologies to efficiently and reliably separate the H<sub>2</sub>S from the water sample for measurement by the advanced electrochemical sensor or rateometric-colorimetric H<sub>2</sub>S detector. The STS is a very simple device that provides an ultra-clean and dry sample to the detector for analysis. This results in radically reduced maintenance requirements when compared to direct optical measurement techniques. Analytical Systems is established as the world-wide leader in H<sub>2</sub>S in water analysis due to the benefits of this exclusive technology.

The principle of operation requires a continuous free flowing water sample into the heated compartment where the STS unit separates the H<sub>2</sub>S from the water sample. An H<sub>2</sub>S free air/gas then sweeps the H<sub>2</sub>S gas sample to the H<sub>2</sub>S detector for quantitative analysis in PPBw, PPMw, and up to saturation levels.

ASI offers two detection technology choices for H<sub>2</sub>S measurement in water: The ASTM approved rateometric-colorimetric tape detector (Model 205) and the Smart Electrochemical Cell (Model 204H).



# Typical Specifications

## DISPLAY

- Alpha Numeric LCD
- Up to four concentration display digits
- Back-lit / color display
- Non-intrusive operation (remains explosion proof)

## AMBIENT TEMPERATURE RANGES

- 1°C to 55°C (operating) without ext. cooling/heating
- 0°C to 70°C (storage)

## ANALOG

- Isolated 4-20mA

## ANALYTICAL PERFORMANCE

- Resolution: <1 to 50 ppb (app. dependent)
- Accuracy:  $\pm 2\%$  of FS
- Repeatability:  $\pm 1\%$
- Linearity:  $\pm 2\%$
- Drift:  $< \pm 0.5$  to  $\pm 0.1$  ppm/year (conc. dependent)
- Temp. Coefficient: 0.01% / °C
- Response time: <55 second @ sensor (conc. dep.)
- Sensor life: >24 months

## DETECTION RANGES

- 0-1 ppm by wt.
- 0-10 ppm by wt.
- 0-50 ppm by wt.
- 0-100 ppm by wt.
- 0-500 ppm by wt.
- Customer specified (contact factory)

## SAMPLING SYSTEM

- Sample Pressure Regulator (400 or 1,500 psig max)
- Sample Needle Valve
- Sample Flow Meter
- Carrier Air/Gas Flow Meter
- Secondary filter or optional AutoClean primary filter

## WEIGHT

- ~280 lbs

## DIMENSIONS

- 3 ft X 4 ft X 1 ft

## UTILITIES/SETTINGS

- 110VAC or 220VAC
- 100 Watts normal, 700 Watts max
- Carrier Air/Gas: 180 ml/min (15 psig max)
- Sample flow: ~200 ml/min
- Sample pressure: 30 psig (400 or 1,000 psi max)

## AREA CLASSIFICATIONS OPTIONS

- Class 1 Division 1
- Class 1 Division 2
- Zone 1 or Zone 2

## AVAILABLE OPTIONS

- Concentration relay alarms
- Diagnostic/fault alarms
- Low flow relay alarms
- RS-485 Modbus
- Remote monitoring/control with PC
- AutoClean Sample Filter

## TECHNOLOGIES

- Sample Transfer Stripper™ (ASI Membrane Technology)
- Smart Electrochemical Cell
- Rateometric-Colorimetric Tape (Model 205)
- Other detection options available upon request

## Advantages

**Consumable Free** There are no costly consumables needed for analysis with Smart Electrochemical cell

**Dependable operation** ASI Membrane Technology eliminates liquid carry-over that plague **headspace stripping columns**

**Ultra low maintenance** The analyzer is completely solid state with no moving parts for sensor / transmitter

# H<sub>2</sub>S IN LIQUIDS ANALYZER

Model 205 | Crude Oil, Fuel Oil, Dirty/Clean Water, Drilling Fluid, Condensate, Diesel



## Product Features

- Specific to H<sub>2</sub>S only. No false positives, ever
- No field calibrations required
- Accurate and continuous analysis
- Quantitative measurement in PPB, PPM & percent Levels
- Proven reliability
- Conformity to ASTM methods
- Fast response time
- Long tape life: As few as 4 tape changes per year
- Remote & Web based monitoring/control of analyzer

## Applications

- Crude Oil (light/medium/heavy) • Dirty/clean Water • Diesel • Fuel Oil • Drilling Fluid • Condensate • Quality control
- Corrosion control • Transportation safety • Loading/unloading of trucks, rail cars, pipelines, etc. • Compliance

**No 'false positives'** The only detection method specific to H<sub>2</sub>S only, proven by thousands of applications

**Ultra low-maintenance** Advanced Colorimetric-Rateometric Detector is guaranteed hassle-free for long term operation

**Dependable operation** ASI Membrane Technology eliminates liquid carry-over that plague **headspace stripping columns**

**No field calibrations** The analyzer does not require calibrations in the field despite unexpected process changes

## Product Description

The effective process for measuring H<sub>2</sub>S in crude oil and other liquids involves representatively stripping the H<sub>2</sub>S vapor from the liquid for precise measurement in the gas phase. The problematic and complicated 'headspace' stripping column, which often suffers from liquid carry-over, is not required for this separation. Analytical Systems utilizes the state-of-the-art Sample Transfer Stripper (STS) with exclusive ASI Membrane Technologies to efficiently and reliably separate the H<sub>2</sub>S from the liquid sample for measurement in the gas phase. The STS is a very simple device that provides an ultra-clean and dry sample to the detector for analysis. The STS uses 90% fewer parts than the complicated 'headspace' stripping column method. This results in radically reduced maintenance requirements when compared to the headspace stripping column method and also enhances analytical reliability. Analytical Systems is established as the world-wide leader in H<sub>2</sub>S in liquids analysis (including crude oil) due to the many benefits of this exclusive technology.

The principle of operation is based on a continuous flowing liquid sample into the heated STS unit which separates the liquids from the H<sub>2</sub>S gas sample, based in part on Henry's Law. Carrier gas/air then sweeps the H<sub>2</sub>S sample to the H<sub>2</sub>S specific detector for quantitative analysis in ppb, ppm, or percent levels. The analyzer does not require zero or span field calibrations even when faced with process changes.



# Typical Specifications

## DISPLAY

- Alpha Numeric LCD
- 128 x 64 pixel
- Back-lit display

## TEMPERATURE RANGES

- 1°C to 50°C (operating) without cooling/heating
- 0°C to 70°C (storage)

## ANALOG

- 4-20mA Isolated

## ANALYTICAL PERFORMANCE

- Resolution: 1 ppb
- Accuracy:  $\pm 2\%$
- Repeatability:  $\pm 1\%$
- Linearity:  $\pm 1\%$
- Drift: Nil
- Temp. Coefficient: 0.01% / °C
- Analysis time: 0.75 Second

## DETECTION RANGES

- 0-1 ppm by wt.
- 0-10 ppm by wt.
- 0-50 ppm by wt.
- 0-100 ppm by wt.
- 0-500 ppm by wt.
- Percent ranges
- Customer specified (contact factory)

## SAMPLING SYSTEM

- Sample Pressure Regulator (400 or 1,500 psig max)
- Sample Needle Valve
- Sample Flow Meter
- Carrier Air/Gas Flow Meter
- AutoClean Sample Filter (205HV, standard)

## WEIGHT

- ~280 lbs (205HV)
- ~130 lbs (205P)

## DIMENSIONS

- 3 ft X 4 ft X 1 ft (205HV)
- 2 ft X 2 ft X 1 ft (205P)

## UTILITIES/SETTINGS

- 110VAC or 220VAC
- 100 Watts normal, 700 Watts max
- Carrier Air/Gas: 180 ml/min (15 psig max)
- Sample flow: ~200 ml/min
- Sample pressure: 30 psig (400 or 1,000 psi max)

## AREA CLASSIFICATIONS

- Class 1 Division 1
- Class 1 Division 2
- Zone 1 or Zone 2

## AVAILABLE OPTIONS

- Concentration relay alarms
- Diagnostic/fault relay alarms
- Low flow relay alarms
- RS-232/485 Modbus
- Data Logger for data download to PC
- Remote monitoring/control with PC
- Automatic calibration

## TECHNOLOGIES

- Sample Transfer Stripper™ (ASI Membrane Technology)
- Rateometric-Colorimetric Tape
- Electrochemical Cell (see Model 204H, for water)
- Others available (consult factory)

## Advantages

**No 'false positives'** The only detection method specific to H<sub>2</sub>S only, proven by thousands of applications

**Ultra low-maintenance** Advanced Colorimetric-Rateometric Detector is guaranteed hassle-free for long term operation

**Dependable operation** ASI Membrane Technology eliminates liquid carry-over that plague **headspace stripping columns**

**No field calibrations** The analyzer does not require calibrations in the field despite any unexpected process changes



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