

# TOTAL SULFUR ANALYZER

Series 600 & 700 | Continuous Process Analyzer for GAS/LPG/LNG



## Product Features

- Specific to sulfur only. No false positives, ever
- Conformity to ASTM methods
- Explosion proof for hazardous areas (Series 700)
- Automatic self-zero (no zero gas required)
- Does not suffer from sensor 'zero drift'
- Fast response time
- Accurate and continuous analysis
- Quantitative measurement in PPB, PPM & percent Levels
- Proven reliability
- Automatic Calibration (optional)
- Remote & Web based monitoring/control (optional)

## Applications

- Alkylation processes • Sulfurs in Ammonia • Reformers • Sales gas • Sulfur in Synthesis Gas • Landfills • Chemical plants
- Food & beverage plants • Refineries • Liquid Petroleum Gas (LPG) / Liquid Natural Gas (LNG) • Environmental

## Product Description

Total Sulfur Analyzer: The petrochemical, gas processing, and gas pipeline industry has required an accurate, dependable, low maintenance, and cost-effective sulfur analyzer for quality and process control purposes. With over twenty-five years of experience in developing and manufacturing sulfur analyzers and associated parts and supplies, Analytical Systems Keco has met these requirements with their proven microprocessor based analyzer. The Series 700 (explosion proof) and Series 600 (general purpose) systems measures total sulfur by hydrogenation similar to that as described in ASTM Method D3031, D4084-82, D4468-85 and 4045-81. The sulfur sample is precisely metered into a continuous flowing stream of hydrogen gas. The sample and hydrogen are heated in the furnace up to 1,200 C resulting in thermal cracking of the sulfur that are reduced to short chain hydrocarbons. These reactions result in the formation of H<sub>2</sub>S. After complete humidification of the sample, the H<sub>2</sub>S comes in direct contact with the lead acetate tape and produces a darkening of lead sulfide that is immediately measured by the photodiode/LED optics and rate-of-reaction digital electronics to provide an accurate and reproducible total sulfur analysis with PPB or PPM sensitivity up to 100%. The LCD display provides the current reading, any alarm condition, procedure prompts (i.e., calibration procedure), and failure indicators (local and remote capability). Quality materials are selected for their compatibility and utilized through fabrication. Special attention is given to wetted parts that come in contact with the process stream and are selected to be non-reactive with H<sub>2</sub>S and other sulfurs.

The rateometric-colorimetric tape detector offered by KECO is the only total sulfur detection method that is practically free from cross-interference. The analyzer will not suffer from "false positives" like other total sulfur analyzer methods. Users demand KECO's total sulfur analyzer due to its precision and reliability proven by thousands of worldwide installations around the globe.

# KECO

[www.LiquidGasAnalyzers.com](http://www.LiquidGasAnalyzers.com)

# Typical Specifications

## DISPLAY

- Alpha Numeric LCD
- 128 x 64 pixel
- Back-lit display (optional)
- LCD Graph Display w/ month of data (optional)

## TEMPERATURE RANGES

- neg. -10°C to 50°C (operating)
- 0°C to 70°C (storage)

## ANALOG

- 4-20mA Isolated

## ANALYTICAL PERFORMANCE

- Resolution: 10-50 ppb
- Accuracy:  $\pm 2\%$
- Repeatability:  $\pm 1\%$
- Linearity:  $\pm 1\%$
- Drift: Nil
- Temp. Coefficient: 0.01% / °C
- Analysis time: 0.75 Second (initial response)

## 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 (STANDARD)

- Sample Pressure Regulator
- Sample Flow Meter
- Secondary particulate filter
- Fast sweep (fast loop) needle valve

## ENCLOSURE (CABINET)

- High-impact, industrial strength fiberglass
- NEMA 4X / IP 65 options
- Other options available

## WEIGHT/DIMENSIONS

- ~200 lbs. w/o options (Series 700)
- ~100 lbs. w/o options (Series 600)
- 30" W X 50" H X 12" D (Series 700)
- 36" W X 36" H X 12" D (Series 600)

## UTILITIES/SETTINGS

- 110VAC or 220VAC
- ~1 KWatt
- Hydrogen: 100 ml/min
- Sample flow: 0.3 SCFH
- Sample pressure: 10 psig constant
- Calibration gas: H<sub>2</sub>S ~25% of scale balance N<sub>2</sub>, 2L per cal

## AREA CLASSIFICATIONS

- Class 1 Division 2 (Series 700)
- Zone 2 (Series 700)
- General purpose/ non-explosion proof (Series 600)

## 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
- H<sub>2</sub>S Scrubber (for vent)
- Fugitive Emission Control Unit (for vent)
- Sample Probe
- Sampling System for gas contaminated with liquids
- Sampling System for LNG/LPG (Vaporizing Regulator)



## CMC TECHNOLOGIES

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## Advantages

**No 'false positives'** The only detection method specific to sulfur only, proven by thousands of applications

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

**Field-proven operation** The analyzer conforms to ASTM methods & field proven by thousands of global applications



## Advantages of Colorimetric Method Analyzers for H<sub>2</sub>S & Sulfur Measurement

*The most cost effective & accurate ASTM approved analyzer available*

1. **Specific only to H<sub>2</sub>S** -No known interferences proven by thousands of world wide applications.
2. Only requires **2 to 4 tape changes per year** typical on standard 100' foot tape roll.
3. Conformity to **ASTM analytical methods** D4084-82, D4468-85, and D4045-81.
4. **Automatic self-zero**. The ASI H<sub>2</sub>S analyzer does not suffer from a 'zero drift' as seen in other analyzers thus eliminating zero gas requirements.
5. **Versatile** - The analyzer will not suffer in the event of process changes no matter how drastic.
6. **Wide Range Ability** - The analyzer is capable of measuring from the low **PPB** levels, thru PPM up to 100% saturation.
7. Analyzer **holds calibration long term**.
8. **Linear Response**. The tape darkening is proportional to H<sub>2</sub>S concentration so the response is fully linear.
9. Dual processors for both communication and analysis allows for essentially **100% continuous analysis time**. Other analyzers with only one processor cannot continually analyze and communicate simultaneously which lags the response time.
10. The humidifier assembly in the ASI H<sub>2</sub>S analyzer has **no dead volume** which results in **faster response & no absorption of H<sub>2</sub>S**. In addition, the humidification membrane eliminates the possibility of liquid carry over.
11. 24-bit AD converter equals **less tape consumption, faster response & lower range ability**.
12. Direct read display--no codes to memorize or characters to refer to.
13. **Easily return the analyzer to Factory Calibration** by choosing this option in the electronic menu of the analyzer.
14. Automatic calibration (No Attendant Required)

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