AIRWAVE ELECTRONICS

Model AE2430
Sulfur Analyzer

Features:

* Low Detection limit
* Multiple Ranges: 0-50 ppb to 0-1000 ppb
* Proven Technology
* Multiple Front Panel Diagnostics
* Digital Display
* Easy to Operate
* Minimum Maintenance
* No Wet Chemistry
* Fast Response Time
* Linear Output for H2S - SOx - TRS
* No Air Flow Adjustments Required
* Solid State Timing Circuitry

Introduction

The AE2430 is a direct reading continuous ambient monitor that uses a flame photometric detector (FPD). The FPD provides fast response and is the most sensitive method for determining low concentrations of all sulfur species in air. The AE2430 is one in a series of versatile sulfur analyzers available in various configurations for the measurement of Total Sulfur, Phosphene, Hydrogen Sulfide, Sulfur Dioxide and Sulfates.

Operational Principal

The Model AE2430 operating principle is based on the chemiluminescence of sulfur species. All sulfur containing molecules are ionized by a hydrogen flame. When the sulfur reverts to a lower energy state, the light emitted is passed through a narrow band pass filter and measured by a photomultiplier tube (PMT). The current output of the PMT is converted to a voltage by a electrometer amplifier which is used as the instrument output.

The AE2430 operates for linear ranges: 0 to 50 ppb, 0 to 100 ppb, 0 to 500 ppb and 0 to 1000 ppb. The AE2430 uses a 1 or 10 second time constant where most competitors are forced to use 2 to 3 minute time constants. The AE2430 provides immediate response and is 99% efficient. Measurements in the lower range provide precision and resolution unmatched by any other instrument presently available.

Response Speed

The Model 2430 provides better information on a real-time basis than any other ambient Sulfur analyzer available today. Accurate measurements require fast response and real-time integrity to have true averages; whether it be for collecting data from rapidly occurring episodes for environmental health purposes, or long term environmental level measurements for impact studies.

Specifications

Ranges (linear in parts-per-billion)		0 - 50 0 - 100 0 - 500 0 - 1000
Noise (RMS) ppb	0% URL: 80% URL:	0.5* or 0.2** 2.5
Lower Detectable Limit		1.0* or 0.4**
Interference Equivalent 1) Each Interference,ppb: 2) Total Interference,ppb:		 0 20
Zero Drift,ppb	12 hour 24 hour	+/- 2 +/- 5
Span Drift,ppb (% of reading)	20% URL: 80% URL:	+/- 10% +/- 3%
Lag Time:		5 seconds
Response Time (95%):		0.5 to 5 min.
Recovery Time (95%):		0.5 to 5 min.
Precision,ppb	20% URL: 80% URL:	1.0 4.0
Linearity:		+/- 1% FS
Unattended Operation, days:		14 to 28
Sample Flow Rate (approx.):		240 ml/min.
Hydrogen Flow Rate (approx.):		125 ml/min.
Recorder Outputs:		0-1 V, 0-100 mV
Temperature Range:		+10 - +40°C
Power Requirements:		115 VAC, 250 W.
Weight:		25 kg.

* With 1 Second Time Constant
**With 10 Second Time Constant

Safety

If a flame out were to occur, the AE2430 automatically stops the flow of hydrogen and, as a safeguard, a critical orifice is mounted in the hydrogen transport system to stop excessive leakage. If the power returns and there is sufficient hydrogen gas present, the AE2430 will re-ignite and return to normal operation.

Stability of Zero and Span

Careful attention to thermoelectric temperature control of the burner block assembly and flow control devices results in zero and span stability that can remain within specifications for weeks to months. Precision temperature control of flow capillaries and critical orifices provide stable operating conditions to allow precision within a fraction of a part-per-billion. Jewelled control flow orifices with polished surfaces virtually eliminates the possibility of flow changes due to clogging.

High Reliability Electronics

The Model AE2430 utilizes current solid state electronics for years of trouble free operation and minimal down time. Solid state timers, optical isolated circuits and high quality amplifiers and associated circuitry are just a few examples of the state of the art features available with the AE2430.

Selective Scrubbers

Airwave manufactures scrubbers to remove H2S or SO2 to specifically measure the sulfur gas of concern. Airwave's patented scrubbers have a long service life without the need to heat the scrubber.