AL 2021 Continuous Hydrogen Peroxide (H_2O_2) Monitor for Air and Water Samples

AL2021 Features

- Continuous online monitoring of H_2O_2 with unique sensitivity of 100ppt
- Provides absolute concentrations for H_2O_2 and relative values for other peroxides
- Analysis of gaseous and liquid samples with only one instrument
- H_2O_2 concentration readings within minutes
- Designed for climate research, environmental air monitoring and indoor air quality control
- Perfectly suited for monitoring H_2O_2 during decontamination procedures

The H_2O_2 monitor AL2021 from Aero-Laser has an extraordinary high sensitivity and a unique low detection limit of 100ppt (parts per trillion) for gaseous samples and 100 ng/liter (eq. 2×10^{-9} molar) for liquid samples, respectively. The complete chemical processing, including gas stripping, is integrated into the instrument.
The detection technique is based on an enzymatic peroxidise reaction, which is not only sensitive for H_2O_2, but also for other peroxides. Hence, after stripping the sample gas, the aqueous solution is separated in two channels. In channel A the concentration of all peroxides is measured, while H_2O_2 is selectively destroyed in channel B by the enzyme catalase. The absolute concentration of H_2O_2 is further calculated from the difference of the signals of both channels. These signals are obtained by exciting the products of the peroxidase reactions with UV light and detecting the fluorescent light by photomultipliers. With this method an extraordinary selectivity is achieved, avoiding interferences from other substances. The AL2021 is the only instrument worldwide providing continuous concentrations ofH_2O_2 in the range around and below 1ppb.
The AL2021 was originally developed for environmental and climate research and is employed worldwide in atmospheric monitoring stations. Since H_2O_2 is getting more and more important in the field of sterilisation and decontamination, the instrument is widely used by the pharmaceutical industry for controlling of the atmosphere inside filling systems.

[1] A.L. Lazrus, G.L. Kok, S.N. Gitlin, J.A. Lind, S.E. McLaren, *Automated fluorimetric method for hydrogen peroxide in atmospheric preciptation*, Anal. Chem. 57 (1985) 917

Specifications

H_2O_2 detection technique	Fluorimetric, using an enzymatic reaction (peroxidase)
Linear detection range	0.1ppb to 3000ppb (gaseous), 100ng/liter - 3mg/liter (liquid)
Detection limit	100ppt (gaseous), 100ng/liter eq. 2×10^{-9} molar (liquid)
Time resolution and delay	90sec (10% - 90%), ~300sec delay
Noise	2% full scale
Sample gas temperature	0°C to +40°C
Calibration and zeroing	Automatic zeroing and semi-automatic calibration using liquid standards or automatic calibration using internal gas generator (optional)
Operation	Front panel and remote software via RS-232
Data output	On display or via RS-232 interface (SQL-based graphic data logging software available)
Weight and dimensions	20kg, fit for 19" rack (whd: 45cm × 19cm × 56cm)
Power requirements	110VAC / 220VAC, 110W, 24VDC on request

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