

AL2021 Features

- ▶ Continuous online monitoring of H₂O₂ with unique sensitivity of 100ppt
- ▶ Provides absolute concentrations for H₂O₂ and relative values for other peroxides
- ▶ Analysis of gaseous and liquid samples with only one instrument
- ▶ H₂O₂ concentration readings within minutes
- ▶ Designed for climate research, environmental air monitoring and indoor air quality control
- ▶ Perfectly suited for monitoring H₂O₂ during decontamination procedures



The H₂O₂ 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 peroxidase reaction, which is not only sensitive for H₂O₂, 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 H₂O₂ is selectively destroyed in channel B by the enzyme catalase. The absolute concentration of H₂O₂ 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 of H₂O₂ 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 H₂O₂ 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 precipitation*, Anal. Chem. 57 (1985) 917

Specifications

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| ▶ H ₂ O 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 |