

AL4021 Features

- ▶ Continuous online monitoring of formaldehyde emissions with unique sensitivity of 100ppt
- ▶ Analysis of gaseous and liquid samples with only one instrument
- ▶ Designed for climate research, environmental air monitoring and indoor air quality control
- ▶ Ideal for emission control of wood-, plastic-, and fabric based products
- ▶ Can be employed together with up to 16 emission test chambers



The Aero-Laser formaldehyde monitor AL4021 is an extremely sensitive chemical analyzer, based on the Hantzsch (acetyl-acetone) reaction [1]. It features the detection of formaldehyde down to lowest concentrations of 100ppt (parts per trillion) for gaseous samples, and 150ng/liter (eq. 2×10^{-9} molar) for liquid samples, respectively. The complete chemical processing, including gas stripping, is integrated into the instrument. Using a fluorimetric detection method, the instrument achieves an extraordinary selectivity, avoiding interferences of other chemical substances in the sample gas or liquid.

The AL4021 can be calibrated semi-automatically by using liquid formaldehyde standards or automatically, using an optional integrated standard gas generator, based on a permeation tube. Contrary to other highly sensitive formaldehyde monitoring methods, the instrument has a delay time of only a few minutes and a time resolution of 90 seconds.

Originally designed for environmental and climate research, the AL4021 became a major instrument in the field of formaldehyde emission monitoring of products based on wood, plastics or fibres, within the last years. The control of formaldehyde emissions is currently a main industrial issue; producers have the obligation to get certificates for their products several times a year. The AL4021 can be employed with several emission test chambers simultaneously. One instrument can read the emission from up to 16 separate chambers when connected via an valve controller (optional).

[1] T. Nash, *The colorimetric estimation of formaldehyde by means of the Hantzsch reaction*, Biochem. J. 55 (1953) 416

Specifications

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| ▶ HCHO detection technique | Fluorimetric, using Hantzsch (acetyl-acetone) reaction |
| ▶ Linear detection range | 0.1ppb to 3000ppb (gaseous), 150ng/liter - 5mg/liter (liquid) |
| ▶ Detection limit | < 100ppt (gaseous), < 150ng/liter eq. $< 2 \times 10^{-9}$ molar (liquid) |
| ▶ Time resolution and delay | 90sec (10% - 90%), ~ 300sec delay |
| ▶ Noise | 2% full scale |
| ▶ Sample gas temperature | > 0°C to + 120°C |
| ▶ Calibration and zeroing | Automatic zeroing and semi-automatic calibration using liquid standards or automatic calibration using internal gas generator (optional) |
| ▶ Operation | Operation via touch screen on front panel |
| ▶ Data storage | On USB stick (8Gb supplied) |
| ▶ Data output | Numeric/Graphic on display or via RS-232 interface (SQL-based graphic data logging software available) |
| ▶ Weight and dimension | 20kg, fit for 19" rack (whd: 45cm × 15cm × 56cm) |
| ▶ Power requirements | 110VAC / 220VAC, 110W, 24VDC on request |