Enviro Technology Services Ltd

part of CuraTerrae

AL 4021 Continuous Formaldehyde Monitor for Air and Water Samples

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 seperate 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

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

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