



AL2021SC

CONTINUOUS H₂O₂ MONITOR
FOR AIR AND LIQUID SAMPLES IN PPB RANGE

AL2021SC H₂O₂ ANALYZER

ONE STEP AHEAD IN FILLING OF INJECTABLES

Sterility is the key factor in the filling of pharmaceuticals and vaccines. To separate people from the work area, isolators or RABS (Restricted Access Barrier Systems) are increasingly used for aseptic filling. To ensure the sterility, the isolator is decontaminated with vaporized H₂O₂. The H₂O₂ fog is then removed from the air by air exchange until a predetermined concentration threshold is reached. In general, this process is monitored with electrochemical sensors that are sensitive down to about 1 ppm. For many vaccines or enzymes this concentration is far too high. The maximum possible concentrations are 20 - 50 ppb, otherwise the product will be destroyed.



RABS (symbol picture)

The AL2021SC closes this gap. It measures H₂O₂ using a fluorimetric method with a linear range from < 1ppb to ~2ppm. The measurement is near real-time and provides live data on the H₂O₂ concentration in the isolator or RABS. Unlike other instruments, the AL2021SC can handle both gas and liquid samples. This feature makes it easy to measure the uptake of H₂O₂ from the air inside the isolator into the injectable during filling. It also significantly simplifies calibration, as it can be performed using an easy-to-prepare liquid standard.

Simplicity is the key

The main graph plots Concentration [$\mu\text{g/l}$] on the y-axis (0 to 300) against Time [h] on the x-axis (13:00 to 16:00). The concentration starts at 0, rises sharply to a peak of approximately 280 $\mu\text{g/l}$ around 13:15, and then gradually decreases with some fluctuations, reaching 0 by 15:00.

The inset graph shows a linear calibration curve. The x-axis is Prepared conc [$\mu\text{g/l}$] (0 to 300) and the y-axis is Measured conc [$\mu\text{g/l}$] (0 to 300). The data points are black dots, and a red line represents the linear fit. The equation for the line is $mc = a \cdot pc + b$, with $a = 1.0091(6)$ and $b = 7.36(5)$.

Prepared conc [$\mu\text{g/l}$]	Measured conc [$\mu\text{g/l}$]
25	35
50	60
75	85
100	115
125	140
150	170
175	200
200	230
225	255
250	280
275	305

Linearity of the AL2021SCL H₂O₂ analyzer in the range up to 300µg/L



A catalyst for cost efficient productivity enhancement

The AL2021 is not just another piece of equipment; it is the key to unlocking greater process reliability, significantly reducing production rejects and downtime. Its impact on throughput and productivity is significant, enabling you to achieve more in less time. With traceability features, it ensures that you have a clear record of your processes, further enhancing quality control.

Specifications

Detection technique:	Continuous, using enzymatic reaction (peroxidase)
Detection limit:	<100ppt (gaseous), <100ng/L eq. $<2 \times 10^{-9}$ molar (liquid)
Linear range:	0.1ppb to 3000ppb (gaseous), 100ng/L - 3mg/L (liquid)
Noise:	2% full scale
Time resolution:	~90sec (10/90)
Sample:	Liquid and gas
Calibration:	Automatic, using liquid standard
Intergration:	RS232 and LAN interface, data logging software available
Operation data visualization:	Graphic user interface (7" touch panel) and remote via RS232/LAN
Data storage:	USB drive and internal data backup
Weight and dimensions:	15kg, fit for 19" rack (whd: 45cm x 15cm x 56cm)
Power requirements:	110VAC / 220VAC, <30W

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