E-Chem Sensor Data
Model H10-34 Hydrogen Peroxide (H_2O_2) Smart Sensor

Model H10-34 Hydrogen Peroxide sensor is an electrochemical device used for the detection of H_2O_2 vapor in ambient air near sterilization systems. It is designed to be used in conjunction with ATI's Model C16 portable leak detector or Models D12 or F12 toxic gas transmitters. H10-34 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

H_2O_2 sensors operate by generating a small electrical current proportional to the partial pressure of peroxide gas in the surrounding air. The current is the result of the direct oxidation of hydrogen peroxide on the surface of the measuring electrode to form oxygen as shown in the equation below. The hydrogen peroxide sensor is a 3-electrode electrochemical cell.

$$H_2O_2 \rightarrow O_2 + 2H^+ + 2e^-$$

The table below provides the operational and performance specifications for the H10-34 H_2O_2 sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

Primary Response	Volume % H_2O_2
Measuring Range	0.2 – 100 PPM V/V
Sensor Current	0.20 μA/PPM Nominal
Sensor Current Variability	0.10 – 0.50 μA/PPM
Linearity	± 3%
Response Time	$T_{50} \leq 20$ Seconds, $T_{90} \leq 150$ seconds
Temperature Range	-20° to +50° C
Memory	Internal e^2 memory for Calibration Data and Calibration History
Pressure Range:	- 5 to + 50 PSIG
Pressure Variability	Output proportional to peroxide partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-95% RH Non-condensing (Continuous)
Zero Stability	± 0.1 PPM at constant temperature ± 0.2 PPM over ±10° C ambient temperature change
Span Drift	< 2%/Month
Temperature Effect on Span	See Graph
Operating Life	> 24 Months Typical in Clean Conditions
Storage Recommendation	Recommended maximum of 1 year for best sensor performance. Store at less than 25° C in a sealed container.
Size	1" D x 1.25" H (25 mm x 32 mm)
Weight	17 grams

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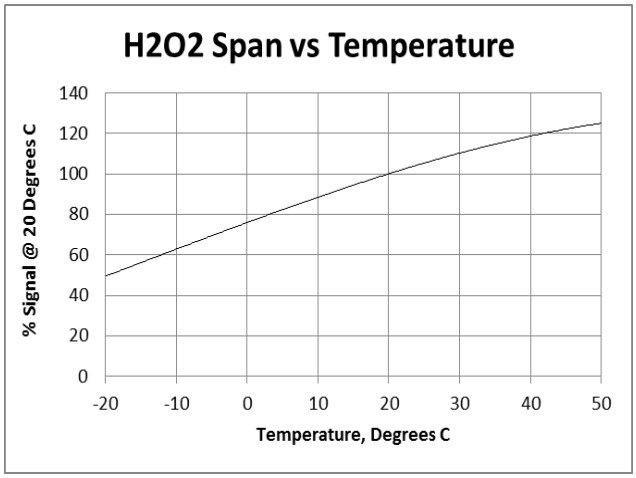
H10-34 Hydrogen Peroxide sensors exhibit response to certain other gases. When applying this sensor to specific applications, it is good practice to verify whether or not any of these potential interferences are present and might cause interference issues. Note that cross-sensitivity data is approximate. In some cases, response to other gases may not be stable or may be transient.

Gas	Symbol	Response to 1 PPM
Ammonia	NH_3	None
Hydrogen Chloride	HCl	None
Carbon Monoxide	CO	0.05
Peracetic Acid	CH3COOOH	None
Carbon Dioxide	CO_2	None
Nitric Oxide	NO	0.09
Ozone	O_3	-0.1
Hydrogen Sulfide	H_2S	6
Nitrogen Dioxide	NO_2	-0.1
Sulfur Dioxide	SO_2	0.42
Methyl Mercaptan	CH_3SH	2
Chlorine	Cl_2	-0.4
Hydrogen	H_2	0.03
Ethanol (alcohol)	C_2H_6O	0.1

Electrochemical sensors exhibit a response that is temperature dependent to a limited extent. Although the effect of temperature is not large, it is useful to be aware of the effect. Shown below is a graph showing the effect on span (uA/PPM) of changing temperature.



Shown below is a typical response time graph for an H_2O_2 sensor. Note that this response time can become significantly slower at temperatures below -20°C.