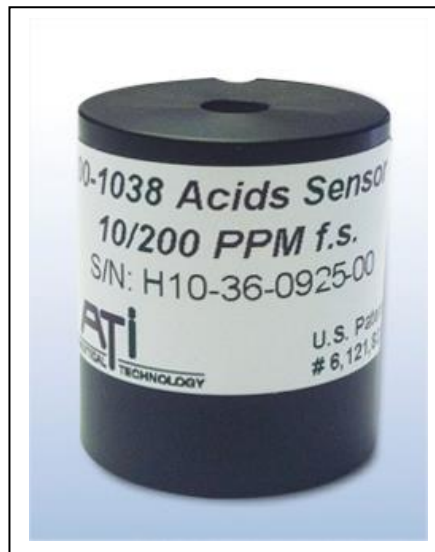


## E-Chem Sensor Data Model H10-50 Acetic Acid Gas Smart Sensor

Model H10-50 Acetic Acid Gas sensor is an electrochemical device used for the detection of acid gas vapors in ambient air. It is designed to be used in conjunction with ATI's Model C16 portable leak detector or Models D12 or F12 toxic gas transmitters. H10-50 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

Acid gas sensors operate by generating a small electrical current proportional to the partial pressure of acid vapors in the surrounding air. The current is the result of an indirect electrochemical reaction in which the proton in acid catalyzes a bromide-bromate reaction, with the subsequent reduction of bromine on the surface of a catalytic electrode. Acid sensors are 2-electrode sensors and do not require oxygen to function. Below is the chemical reaction using CH<sub>3</sub>COOH as the example.



The table below provides the operational and performance specifications for the H10-36 Acid sensor. Response data is relative to exposure to CH<sub>3</sub>COOH. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

Primary Response	Volume % Acetic Acid
Measuring Range	0.5 – 200 PPM V/V (1.23 – 491 mg/m <sup>3</sup> )
Sensor Current	0.04µA/PPM Nominal
Sensor Current Variability	0.04 – 0.15 µA/PPM
Linearity	± 3%
Response Time	T <sub>50</sub> = 50 Seconds, T <sub>90</sub> = 360 seconds
Temperature Range	-20° to +50° C
Memory	Internal e <sup>2</sup> memory for Calibration Data and Calibration History
Pressure Range:	- 5 to + 50 PSIG
Pressure Variability	Output proportional to HF partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-90% RH Non-condensing (Continuous)
Zero Stability	± 0.2 PPM at constant temperature ± 0.3PPM 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

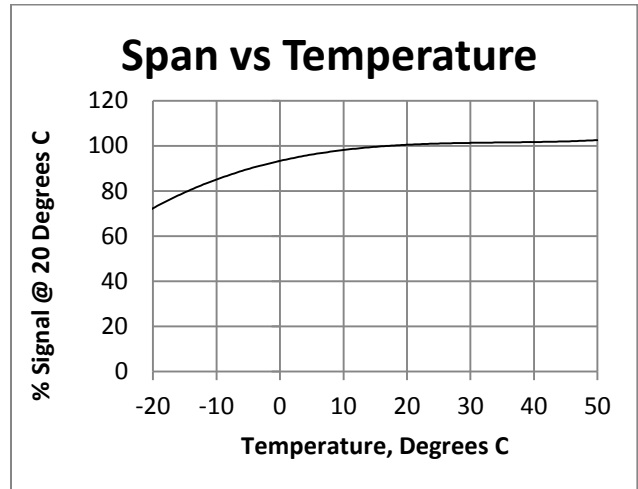
**E-Chem Sensor Data**  
**Model H10-50 Acetic Acid Gas Smart Sensor**

H10-50 acetic acid gas sensors exhibit response to a number of acid vapors and 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 present interference issues. Note that cross-sensitivity data is approximate. In some cases, response to other gases may not be stable or may be transient.

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.

Gas	Symbol	Response to 1 PPM
Hydrogen Fluoride	HF	2.5
Hydrogen Chloride	HCl	1.2
Nitric Acid	HNO <sub>3</sub>	1.0
Acetic Acid	C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	1.0
Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	Note 1
Carbon Monoxide	CO	None
Nitric Oxide	NO	0.3
Ozone	O <sub>3</sub>	0.6
Hydrogen Sulfide	H <sub>2</sub> S	-0.7
Nitrogen Dioxide	NO <sub>2</sub>	0.5
Sulfur Dioxide	SO <sub>2</sub>	2.5
Methyl Mercaptan	CH <sub>3</sub> SH	-0.3
Chlorine	Cl <sub>2</sub>	5
Hydrogen Cyanide	HCN	-0.3
Ethanol (alcohol)	C <sub>2</sub> H <sub>6</sub> O	None
Hydrogen Peroxide	H <sub>2</sub> O <sub>2</sub>	-0.1
Ammonia	NH <sub>3</sub>	-0.1

Note 1: Sulfuric acid will react on the acid sensor but is not found in the vapor phase except above concentrated sulfuric acid. Exact response cannot be quantified.



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

