

E-Chem Sensor Data

Model H10-18 Hydrogen (H₂) Smart Sensor

Model H10-18 Hydrogen gas sensor is an electrochemical device used for the measurement of H₂ in ambient air. It is designed to be used in conjunction with ATI's Model C16 portable leak detector or Models D12 or F12 gas transmitters. H10-18 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

H₂ sensors operate by generating a small electrical current proportional to the volumetric concentration of hydrogen gas in the surrounding air. The current is the result of the oxidation of hydrogen on the surface of a catalytic electrode, with a resulting signal that is linear with respect to hydrogen concentration. Hydrogen sensors are 3-electrode sensors and require the presence of at least 5% oxygen to operate properly. They are not suitable for use in oxygen free environments.



The table below provides the operational and performance specifications for the H10-18 H₂ sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

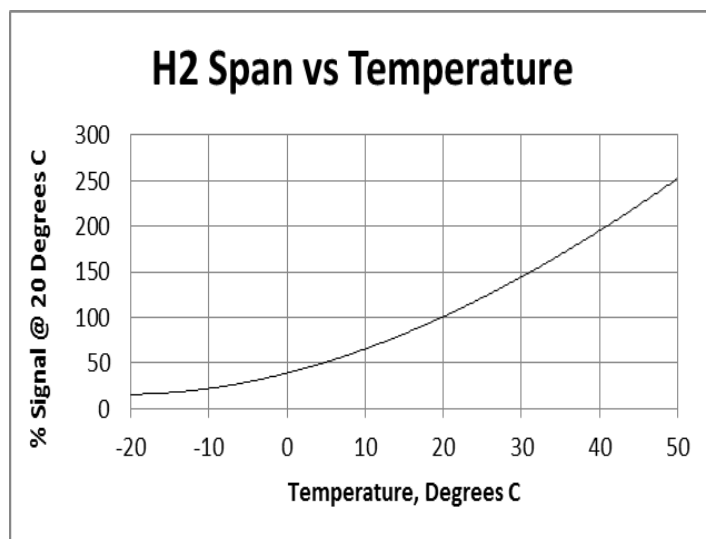
Primary Response	Volume % H ₂
Measuring Range	0.02 – 10.0% V/V
Sensor Current	3 µA/% H ₂ Nominal
Sensor Current Variability	1.5 – 5 µA/%
Linearity	± 2%
Response Time	T ₅₀ = 20 Seconds, T ₉₀ = 75 seconds
Temperature Range	-30° to +55° C
Memory	Internal e ² memory for Calibration Data and Calibration History
Pressure Range:	- 3 to + 3 PSIG
Pressure Variability	<0.1% per 1% change in pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 5-95% RH Non-condensing (Continuous)
Zero Stability	± 0.02% H ₂ at constant temperature ± 0.05% H ₂ over ±10° C ambient temperature change
Span Drift	< 1%/Month
Temperature Effect on Span	See Graph
Operating Life	> 24 Months Typical in Clean Conditions
Storage Recommendation	Recommended maximum of 6 months 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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H10-18 Hydrogen sensors respond to very few other gases. When applying this sensor to specific applications, it is good practice to verify whether or not any potential interferences are present and might present interference issues. Note that cross-sensitivity data is approximate and based on exposures under 100 PPM. 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 of changing temperature.

Gas	Symbol	Response to 1 PPM
Carbon Monoxide	CO	0.1
Acetylene	C ₂ H ₂	0.1
Ethylene	C ₂ H ₄	0.1
Ethanol (alcohol)	C ₂ H ₆ O	None
Nitrogen Dioxide	NO ₂	None
Sulfur Dioxide	SO ₂	None
Hydrogen Sulfide	H ₂ S	None
Methyl Mercaptan	CH ₃ SH	None
Chlorine	Cl ₂	None
Hydrogen Cyanide	HCN	None
Hydrogen Peroxide	H ₂ O ₂	None
Ammonia	NH ₃	None
Hydrogen Chloride	HCl	None
Carbon Dioxide	CO ₂	None
Nitric Oxide	NO	None
Hydrogen Fluoride	HF	None



Shown below is a typical response time graph for an H₂ sensor. Note that this response time can become significantly slower at temperatures below -25°C.

