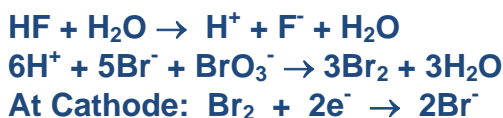


E-Chem Sensor Data

Model H10-23 Hydrogen Fluoride (HF) Smart Sensor

Model H10-23 Hydrogen Fluoride sensor is an electrochemical device used for the detection of HF gas leaks 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. H10-23 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

HF sensors operate by generating a small electrical current proportional to the partial pressure of HF gas in the surrounding air. The current is the result of an indirect electrochemical reaction in which the proton in HF catalyzes a bromide-bromate reaction, with the subsequent reduction of bromine on the surface of a catalytic electrode. HF sensors are 2-electrode sensors and do not require oxygen to function



The table below provides the operational and performance specifications for the H10-23 HF sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

Primary Response	Volume % HF
Measuring Range	0.5 – 200 PPM V/V (0.4 – 164 mg/m ³)
Sensor Current	0.1 µA/PPM Nominal
Sensor Current Variability	0.05 – 0.20 µA/PPM
Linearity	± 3%
Response Time	T ₅₀ = 50 Seconds, T ₉₀ = 360 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 HF partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-95% 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

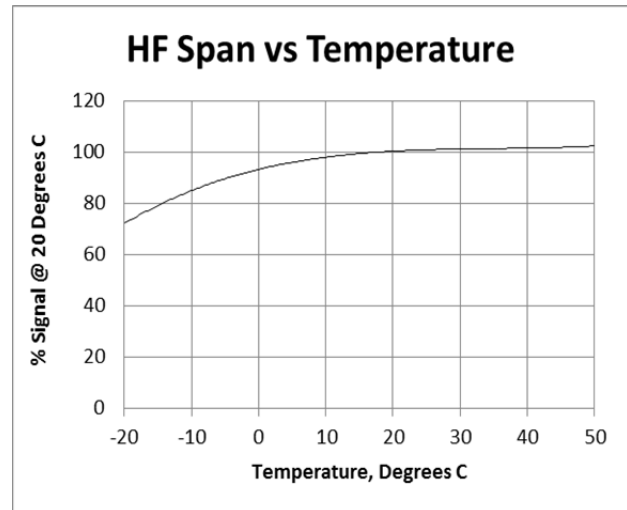
E-Chem Sensor Data

Model H10-23 Hydrogen Fluoride (HF) Smart Sensor

H10-23 Hydrogen Fluoride 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 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
Ammonia	NH ₃	-0.05
Hydrogen Chloride	HCl	0.5
Carbon Monoxide	CO	None
Carbon Dioxide	CO ₂	None
Nitric Oxide	NO	0.10
Ozone	O ₃	1
Hydrogen Sulfide	H ₂ S	-0.3
Nitrogen Dioxide	NO ₂	0.2
Sulfur Dioxide	SO ₂	1
Methyl Mercaptan	CH ₃ SH	-0.1
Chlorine	Cl ₂	2
Hydrogen Cyanide	HCN	-0.1
Ethanol (alcohol)	C ₂ H ₆ O	None



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

