

E-Chem Sensor Data Model H10-47 Dimethylamine (DMA) Smart Sensor

Model H10-47 Dimethylamine sensor is an electrochemical device used for the detection of DMA 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. H10-47 sensors contain internal electronics and memory that control sensor bias and store calibration data, calibration history, and limited data log.

DMA sensors operate by generating a small electrical current proportional to the partial pressure of DMA gas in the surrounding gas. The current is the result of the electrochemical oxidation of DMA on a catalytic electrode as shown below. DMA sensors are 3-electrode sensors and require oxygen levels above 5% to operate properly. They may not be used in oxygen free applications.



The table below provides the operational and performance specifications for the H10-47 DMA sensor. Contact ATI or your ATI local representative with questions regarding specific applications for this sensor.

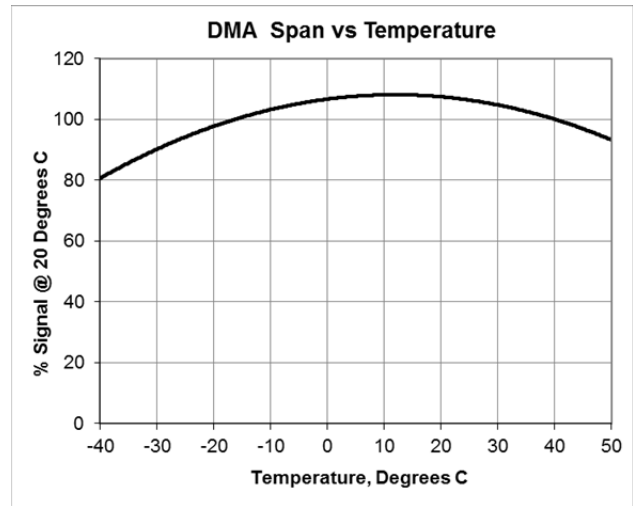
Primary Response	Volume % (CH ₃) ₂ NH
Measurement Range	5 – 500 PPM V/V
Sensor Current	0.05 μA/PPM Nominal
Sensor Current Variability	0.02 – 0.10 μA/PPM
Linearity	± 3%
Response Time	T ₅₀ = 50 Seconds, T ₉₀ = 230 seconds
Temperature Range	-40° to +50° C
Memory	Internal e ² for Calibration Data and Calibration History
Pressure Range:	- 5 to + 50 PSIG
Pressure Variability	Output proportional to DMA partial pressure
Operating Humidity	0-99% RH Non-condensing (Intermittent) 20-90% RH Non-condensing (Continuous)
Zero Stability	± 1 PPM at constant temperature ± 3 PPM over ±10° C ambient temperature change
Span Drift	< 2%/Month
Temperature Effect on Span	See Graph
Operating Life	> 18 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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H10-47 Dimethylamine 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	1.4
Hydrogen Chloride	HCl	-0.75
Carbon Monoxide	CO	0.015
Carbon Dioxide	CO ₂	None
Nitric Oxide	NO	0.10
Hydrogen	H ₂	0.003
Hydrogen Sulfide	H ₂ S	1.4
Nitrogen Dioxide	NO ₂	-0.11
Sulfur Dioxide	SO ₂	-0.14
Methyl Mercaptan	CH ₃ SH	0.4
Chlorine	Cl ₂	-0.7
Hydrogen Cyanide	HCN	0.15
Ethanol (alcohol)	C ₂ H ₆ O	0.020



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

