

Selection of Nitrogen Dioxide (NO₂) Sensors

SemeaTech produces various types of Nitrogen Dioxide (NO₂) sensors to meet the diverse needs and applications of customers. This document highlights the different sensors and provides recommendations for the selection of these NO₂ sensors in accordance with user application.

NO ₂ Sensors	Model	Expected Lifetime	Typical T90 (Seconds)	Typical Resolution (ppm)	Notes
4-Series NO ₂ Sensors	4NO ₂ -5AOF	2	< 90	0.050	Built-in filter removing cross-sensitivity to SO ₂ and O ₃
	4NO ₂ -20		< 30	0.008	
	4NO ₂ -20A			0.100	Built-in filter removing cross-sensitivity to SO ₂
	4NO ₂ -20AF			0.100	Built-in filter removing cross-sensitivity to SO ₂ and H ₂ S
	4NO ₂ -2000			< 60	0.200
7-Series NO ₂ Sensors	7NO ₂ -5AOF	2	< 90	0.020	Built-in filter removing cross-sensitivity to SO ₂ and O ₃
	7NO ₂ -20		<30	0.005	
	7NO ₂ -100		< 40	0.010	
	7NO ₂ -500		< 60	0.015	
3-Series NO ₂ Sensors	3NO ₂ -500	3	<35	0.500	
	3NO ₂ -500CT	3	<35	0.500	Replacement for a major brand 3-Series NO ₂
AQM NO ₂ Sensors	7E4-NO ₂ -5	3	< 60	0.010	Air quality monitoring (AQM) 4 electrodes and 7-Series platform No cross-sensitivity to O ₃ Minimized sensitivity to SO ₂
Mini-Series NO ₂ Sensors	mini NO ₂ -20	2	< 35	0.100	Miniaturized platform

Highlights

- The 4 series NO₂ sensor with the 'A' suffix, 4NO₂-20A, is equipped with a built-in filter that eliminates cross-sensitivity to SO₂. The 4 series NO₂ sensor with the 'AF' suffix, 4NO₂-20AF, is designed to eliminate cross-sensitivity to both SO₂ and H₂
- The NO₂ Sensors in the 4 and 7 series with the 'AOF' suffix are engineered to eliminate interference from SO₂ and O₃, making them suitable as low-cost NO₂ sensors for air quality monitoring (AQM).

- The sensors mentioned above are designed for versatile applications, providing more precise and dependable measurements by eliminating potential interference from other toxic gases in the environment. This enhances safety through prompt and accurate alerts when dangerous levels of SO₂, O₃, or H₂S are detected.
- The 4-electrode NO₂ sensors, 7E4-NO₂-5, based on the 7-series platform, are specifically designed for air quality monitoring (AQM) with high resolution and a more stable baseline to account for environmental variations. The 7E4-NO₂-5, featuring an additional electrode (Auxiliary), is utilized to correct baseline drift on the sensing electrode. This correction significantly improves performance in accuracy, resolution, baseline stability, repeatability, and environmental independence. It has no cross-sensitivity to O₃ and minimized cross-sensitivity to SO₂.
- The 7-series NO₂ sensors, including 7NO₂-20, 7NO₂-100, and 7NO₂-500, are designed for fixed gas monitors typically used in industrial safety or gas safety applications.
- The 3-series NO₂ sensors, 3NO₂-500 and 3NO₂-500CT, have a larger platform that contains more electrolyte, providing good stability against high concentrations of NO₂. They are suitable for stack emission and automobile exhaust testing applications. The 3NO₂-500CT introduces a new design tailored for compatibility with a major brand of 3-Series sensors while maintaining the same level of performance as the 3NO₂-500.
- Except for the 3-series, SemeaTech offers Smart Modules to pair with these sensors. The Smart Modules provide UART and I²C outputs with a compensation mechanism for environmental variations. They are calibrated and ready for plug-and-play.