



HALO 3 NH₃

Trace Ammonia Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

Designed for trace ammonia analysis in laboratory and process applications:

- Accuracy traceable to the world's major national reference labs
- Industry-proven technology
- Freedom from the need for span calibrations
- No periodic sensor replacement/maintenance
- Wide dynamic range and no drift, different ranges available
- "Standard Model" for sub-part-per-billion (ppb) detection limit in N₂, H₂ & CO₂
- "N₂O Model" for single-digit ppb detection limit in N₂O & N₂

Versatile, sensitive and hassle-free trace ammonia analysis

Ammonia (NH₃) is a key impurity in many applications, ranging from industrial process control to the analysis of fuel cell hydrogen. Tiger Optics delivers a powerful analytical tool for the measurement of NH₃, based on Cavity Ring-Down Spectroscopy (CRDS). The HALO 3's low detection limit, drift-free operation, and compatibility with many different sample gases makes it an ideal tool for monitoring trace amounts of ammonia, for

example, to ensure compliance with SAE J2719, ISO 14687 or similar purity standards for hydrogen used for fuel cell electric vehicles (FCEVs).

Highly specific to the target molecule, CRDS also prevents cross-interferences from distorting your measurement. Plus, there is no need to perform costly and time-consuming zero and span calibrations, saving both time and money with continuous, online service.

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Trace Ammonia Analyzer



Performance		Dimensions	H x W x D [in (mm)]
Operating range	See table on next page	Standard sensor	8.73 x 8.57 x 23.6 (222 x 218 x 599)
Detection limit (LDL, 3σ/24h)	See table on next page	Sensor rack	8.73 x 19.0 x 23.6 (222 x 483 x 599)
Precision (1σ, greater of)	± 0.75% or 1/3 of LDL	(fits up to two sensors)	
Accuracy (greater of)	± 4% or LDL		
Speed of response	< 3 minutes to 95%		
Environmental conditions	10°C to 40°C 30% to 80% RH (non-condensing)		
Storage temperature	-10°C to 50°C		
Gas Handling System and Conditions*		Weight	
Wetted materials	316L stainless steel 10 Ra surface finish	Standard sensor	34 lbs (15.4 kg)
Gas connections	1/4" male VCR inlet and outlet		
Leak tested to	1 x 10 ⁻⁹ mbar l / sec		
Inlet pressure	10 – 125 psig (1.7 – 9.6 bara)		
Flow rate	~1 slpm		
Sample gases	Most inert, toxic, passive, and corrosive matrices		
Gas temperature	Up to 60°C		
		Electrical and Interfaces	
		Platform	Max series analyzer
		Alarm indicators	2 user programmable 1 system fault
			Form C relays
		Power requirements	90 – 240 VAC, 50/60 Hz
		Power consumption	40 Watts max.
		Signal output	Isolated 4–20 mA per sensor
		User interfaces	5.7" LCD touchscreen 10/100 Base-T Ethernet USB, RS-232, RS-485 Modbus TCP (optional)
		Data storage	Internal or external flash drive
		Certification	CE Mark

*Analysis in some specialty gases and certain applications may require a vacuum pump for operation. Please contact us to discuss your specific requirements.

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Standard Model

Performance, NH ₃ :	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen (Low Range)	0 – 7 ppm	0.5 ppb	0.2 ppb
In Nitrogen (Mid Range)	0 – 35 ppm	2.5 ppb	0.8 ppb
In Nitrogen (High Range)	0 – 130 ppm	20 ppb	7 ppb
In Hydrogen (Low Range)	0 – 6 ppm	0.4 ppb	0.15 ppb
In Hydrogen (Mid Range)	0 – 30 ppm	2.0 ppb	0.7 ppb
In Hydrogen (High Range)	0 – 110 ppm	15 ppb	5 ppb
In Carbon Dioxide†	0 – 30 ppm	2.5 ppb	0.8 ppb

N₂O Model

Performance, NH ₃ :	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen	0 – 150 ppm	9 ppb	3 ppb
In Nitrous Oxide (N ₂ O)	0 – 200 ppm	10 ppb* / 50 ppb	3.5 ppb* / 20 ppb

†Cannot be combined with Low or High Range detection in N₂/H₂

*Dry vacuum pump required

Contact us for custom ranges, as well as additional analytes and matrices.

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