



# HALO 3 CH<sub>2</sub>O

## Trace Formaldehyde Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

### Designed for formaldehyde 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
- Low ppb detection limit
- Wide dynamic range and no drift

### Advancing Accurate, Consistent & Drift-Free CH<sub>2</sub>O Measurements

Formaldehyde (CH<sub>2</sub>O) is a key impurity in fuel cell hydrogen, where it is responsible for the degradation of the proton exchange membrane, adversely affecting performance. Tiger Optics delivers a powerful analytical tool for the measurement of trace CH<sub>2</sub>O for diverse applications. The low detection limit allows monitoring for compliance with SAE J2719, ISO 14687 or similar purity standards and protects fuel cell electric vehicles (FCEVs) from damage.

Based on powerful Cavity Ring-Down Spectroscopy (CRDS), with a proprietary laser lock cell, the HALO 3 CH<sub>2</sub>O is free of drift, guaranteeing consistent and reliable trace CH<sub>2</sub>O detection

in nitrogen, hydrogen and other inert gases. 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.

The HALO 3 CH<sub>2</sub>O gives you unsurpassed speed of response and ease of use. In sum, the HALO 3 analyzer serves a range of applications where trace gas measurement is extremely critical, such as sensor validation, gas standard preparation, and fuel cell hydrogen purity analysis.

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# HALO 3 CH<sub>2</sub>O

## Trace Formaldehyde Analyzer



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

Performance, CH <sub>2</sub> O:	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen	0 – 40 ppm	5 ppb	1.7 ppb
In Hydrogen	0 – 40 ppm	6 ppb	2.0 ppb

Contact us for additional analytes and matrices.  
U.S. Patent # 7,277,177

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