



HALO 3 D₂O/HDO

Trace Level Heavy Water Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

The HALO 3 D₂O/HDO analyzer ensures purity and process protection with:

- Parts-per-billion (ppb) D₂O and HDO detection capability
- Wide measurement range
- Freedom from calibration (absolute CRDS measurement technology)
- Low cost of ownership and zero maintenance
- Easy to use touchscreen and remote software interface

Deuterium (D₂ or ²H₂), also known as “heavy hydrogen”, is used in a variety of applications, including industrial and university research comparisons between hydrogen and deuterium in deposited film analysis, rapid thermal anneal for certain semiconductor devices, and optical fiber manufacturing to eliminate the water peak in the telecom E-band. Whether it is for process control or quality assurance, gas suppliers need accurate, low-level contaminant monitoring to ensure deuterium purity, especially for the detection of trace D₂O (heavy water) and HDO (semiheavy water).

The HALO 3 D₂O/HDO analyzer offers unparalleled accuracy and reliability for your

deuterium purity analysis. Compact and easy to use, this analyzer features Tiger Optics' proven Cavity Ring-Down Spectroscopy technology to effortlessly detect single-digit ppb levels of D₂O and HDO in your sample.

Users enjoy freedom from periodic sensor maintenance, and with no calibration gases required, operating costs are nearly eliminated. With drift-free stability and rapid response time, the HALO 3 D₂O/HDO analyzer is ideal for continuous, online gas monitoring that is critical to process control in gas and chemical industries or anywhere purity is a necessity.

HALO 3 D₂O/HDO

Trace Level Heavy Water 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		
Speed of response	< 1 minute to 90%	Weight	
Environmental conditions	10°C to 40°C 30% to 80% RH (non-condensing)	Standard sensor	
Storage temperature	-10°C to 50°C	28 lbs (12.7 kg)	
Gas Handling System and Conditions		Electrical	
Wetted materials	316L stainless steel 10 Ra surface finish	Alarm indicators	
Gas connections	1/4" male VCR inlet and outlet	2 user programmable 1 system fault	
Leak tested to	1 x 10 ⁻⁹ mbar l / sec	Form C relays	
Inlet pressure	10 – 125 psig (1.7 – 9.6 bara)	Power requirements	
Flow rate	0.05 to 1.8 slpm	90 – 240 VAC, 50/60 Hz	
Sample gases	D ₂ and N ₂	Power consumption	
Gas temperature	Up to 60°C	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	

Performance, D ₂ O:	Range	LDL (3σ)	Precision (1σ) @ zero
In Deuterium	0 – 20 ppm	3 ppb	1.0 ppb
In Nitrogen	0 – 50 ppm	7 ppb	2.5 ppb

Performance, HDO:	Range	LDL (3σ)	Precision (1σ) @ zero
In Deuterium	0 – 30 ppm	5 ppb	2 ppb
In Nitrogen	0 – 40 ppm	6 ppb	2 ppb

Contact us for additional analytes and matrices.
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