



# HALO 3 D<sub>2</sub>O/HDO

## Trace Level Heavy Water Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

### The HALO 3 D<sub>2</sub>O/HDO analyzer ensures purity and process protection with:

- Parts-per-billion (ppb) D<sub>2</sub>O 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 (D<sub>2</sub> or <sup>2</sup>H<sub>2</sub>), 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 D<sub>2</sub>O (heavy water) and HDO (semiheavy water).

The HALO 3 D<sub>2</sub>O/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 D<sub>2</sub>O 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 D<sub>2</sub>O/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 D<sub>2</sub>O/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	Weight	
Speed of response	< 1 minute to 90%	Standard sensor	28 lbs (12.7 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	0.05 to 1.8 slpm	User interfaces	5.7" LCD touchscreen 10/100 Base-T Ethernet USB, RS-232, RS-485 Modbus TCP (optional)
Sample gases	D <sub>2</sub> and N <sub>2</sub>	Data storage	Internal or external flash drive
Gas temperature	Up to 60°C	Certification	CE Mark

Performance, D <sub>2</sub> 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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**Tiger Optics, LLC**  
275 Gibraltar Road, Horsham, PA 19044  
Phone: +1 (215) 656 4000 · Fax: +1 (215) 343 7168  
sales@tigeroptics.com · www.tigeroptics.com



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