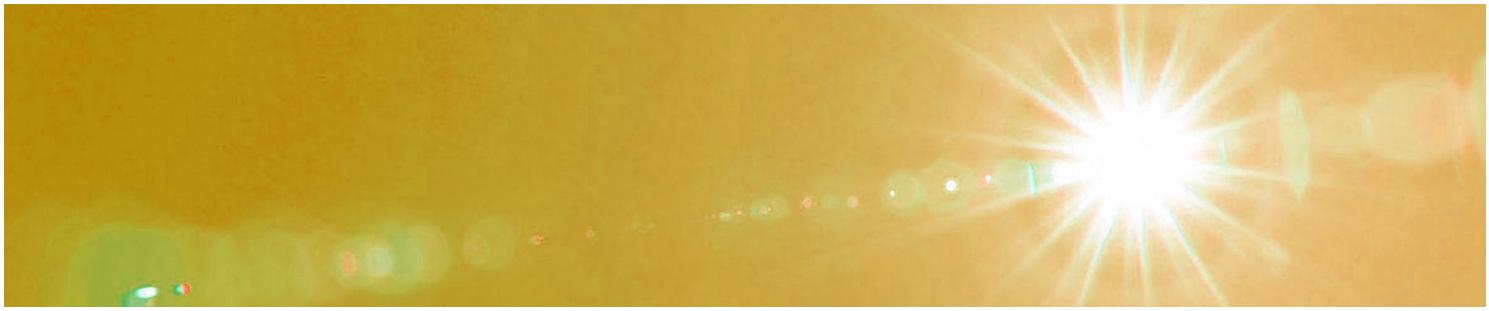

HALO 3Q H_2O

Ultra-High Purity Gas Analyzer

GASES & CHEMICALS | CEMS | ENERGY | ATMOSPHERIC | SEMI & HB LED | SYNGAS | LAB & LIFE SCIENCE

Compact, affordable and powerful, the HALO 3Q H_2O brings you:

- Sub-parts per billion (ppb) moisture detection capability in an array of gases
- Small footprint (two HALO 3Qs fit in a 19" rack)
- Absolute measurement (freedom from calibration)
- Low cost of ownership and great ease of use
- Wide dynamic range—over four orders of magnitude
- Clean technology

An analytical solution that's right on time

The HALO 3Q H_2O packs a punch in one all-included compact and affordable package. Using Tiger Optics' renowned time-based technology—Continuous Wave Cavity Ring-Down Spectroscopy—you can verify moisture impurity levels down to 120 ppt in helium, with drift-free stability and virtually instant response.

You'll find our system exceptionally fast to install, easy to use and effortless to maintain, with built-in zero verification. The HALO 3Q H_2O specializes in trace-level moisture detection in bulk gases and specialty gases, as well as gas mixtures.

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HALO 3Q H_2O
Ultra-High Purity Gas Analyzer

Performance	
Operating range	See table below
Detection limit (LDL, 3σ/24h)	See table below
Precision (1σ, greater of)	± 0.75% or 1/3 of LDL
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	
Wetted materials	316L stainless steel
	(corrosive gas version optional)
	10 Ra surface finish
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	Up to 1.8 slpm
Sample gases	Most inert, toxic, passive
	and corrosive matrices
Gas temperature	Up to 60°C

Dimensions	H x W x D [in (mm)]
Standard sensor	8.73 x 8.57 x 23.6 (222 x 218 x 599)
Sensor rack	8.73 x 19.0 x 23.6 (222 x 483 x 599)
(fits up to two sensors)	

Weight	
Standard sensor	28 lbs (12.7 kg)

Electrical	
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
	802.11g Wireless (optional)
	RS-232
	Modbus TCP (optional)
Certification	CE Mark

Performance, H_2O:	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen	0 – 20 ppm	0.6 ppb	0.2 ppb
In Helium	0 – 4 ppm	0.12 ppb	0.04 ppb
In Argon	0 – 9 ppm	0.3 ppb	0.1 ppb
In Hydrogen	0 – 16 ppm	0.4 ppb	0.15 ppb
In Oxygen	0 – 10 ppm	0.3 ppb	0.1 ppb
In CO_2	0 – 25 ppm	1.6 ppb	0.6 ppb

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

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