HALO LP H_2O

Trace Level Moisture Analyzer

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

Designed for trace level moisture analysis, the HALO LP H_2O offers:

- Low parts per billion (ppb) moisture detection capability in NH_3, PH_3, AsH_3 and GeH_4
- Absolute measurement (freedom from calibration gases)
- Wide dynamic range—over four orders of magnitude
- Low cost of ownership and operational simplicity
- Clean technology—no external calibration gases required
- Compact analyzer footprint
- User-programmable alarms immediately notify on high events

Simple Trace Moisture Detection in Hydride Gases

Semiconductor and High Brightness LED manufacturers rely on ultra-high purity process gases, such as ammonia and phosphine, to build the high-tech products such as smartphones, LED TVs and light bulbs, and CPU and memory chips that consumers desire. Residual moisture in these critical gases degrade device performance, reduce yield, and negatively impact product and corporate profitability. The HALO LP H_2O analyzer is designed to provide users with a simple, cost-effective, and compact analyzer for ensuring trace levels of moisture in NH_3, PH_3 and AsH_3 are within the required specifications.

Operating at low pressure, this analyzer allows users to measure moisture in hydride gases with unmatched accuracy, reliability, and speed of response. Evidenced by our global installed base of over 2000 sensors, users enjoy the freedom from requirements such as periodic sensor maintenance, span calibrations, purifier replacement and pump rebuilds that are commonplace with other technologies. As a result, Tiger Optics' HALO LP H_2O is relied upon as an industry leader in the detection of trace moisture levels in ammonia and phosphine for electronic manufacturers and specialty gas suppliers worldwide.

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HALO LP H_2O
Trace Level Moisture Analyzer

Performance	
Operating range	See table on next page
Detection limit (LDL, 3σ/24h)	See table on next page
Precision (1σ, greater of)	± 1% 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)
Outlet pressure	<10 Torr (13 mbar)
Flow rate	Up to 1.0 slpm
Sample gases	NH_3, PH_3, AsH_3 & inert matrices
Gas temperature	Up to 60°C

Dimensions	H x W x D [in (mm)]
Standard sensor	8.73 x 8.57 x 26.4 (222 x 218 x 670)
(incl. shutoff valves)	
Sensor rack	8.73 x 19.0 x 26.4 (222 x 483 x 670)
(fits up to two sensors)	

Weight	
Standard sensor	33 lbs (15.0 kg)

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.
	(excluding vacuum pump)
Signal output	Isolated 4–20 mA
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

*Vacuum source required

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Standard Model

Performance, H_2O:	Range	LDL (3σ)	Precision (1σ) @ zero
In Ammonia	0 – 20 ppm	9 ppb	3 ppb
In Phosphine†	0 – 10 ppm	9 ppb	3 ppb
In Nitrogen	0 – 6 ppm	1.0 ppb	0.3 ppb
In Argon	0 – 4 ppm	0.8 ppb	0.25 ppb
In Hydrogen†	0 – 6 ppm	1.0 ppb	0.3 ppb
In Helium	0 – 3 ppm	0.6 ppb	0.2 ppb
In NO†	0 – 100 ppm	16 ppb	6 ppb
In Germane†	0 – 18 ppm	20 ppb	7 ppb

Arsine Model

Performance, H_2O:	Range	LDL (3σ)	Precision (1σ) @ zero
In Arsine†	0 – 10 ppm	5 ppb	2 ppb
In Nitrogen	0 – 6 ppm	1.0 ppb	0.3 ppb
In Argon	0 – 4 ppm	1.0 ppb	0.3 ppb
In Hydrogen†	0 – 6 ppm	1.0 ppb	0.3 ppb
In Helium	0 – 3 ppm	1.0 ppb	0.3 ppb

†Low leak rate vacuum pump (safety certified for service in relevant gas) required

Contact us for additional analytes and matrices.
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