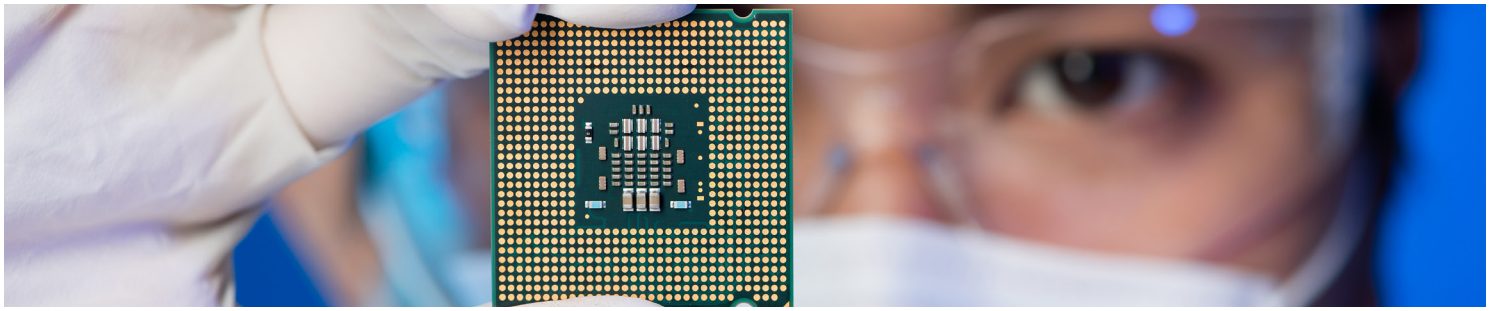

HALO KA H_2O

Ultra-High Purity Gas Analyzer

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

Compact, affordable and powerful, the HALO KA H_2O brings you:

- Parts per trillion (ppt) moisture detection capability in an array of gases
- Small footprint (two HALO KAs 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
- NOW INCLUDED: Speed+ performance upgrade—intelligent dynamic data processing boosts analyzer's speed of response while maintaining low noise performance

5+ NOW INCLUDED!

An analytical solution that's right on time

The HALO KA H_2O packs a punch in one all-included, compact and affordable package. Using Tiger Optics' renowned time-based technology—Cavity Ring-Down Spectroscopy (CRDS)—you can verify moisture impurity levels down to 100 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 KA H_2O specializes in trace-level moisture detection in bulk gases and specialty gases, as well as gas mixtures, including germane (GeH_4) in hydrogen and other specialty mixtures used in semiconductor manufacturing.

Pair the HALO KA H_2O with the HALO OK for ppt-level oxygen measurement to enjoy the benefits of laser-based technology for both of these critical contaminants.

Tiger Optics
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HALO KA H_2O
Ultra-High Purity Gas Analyzer

Performance	
Operating range	See table on next page
Detection limit (LDL, 3σ/24h)	See table on next page
Precision (1σ, greater of)	± 0.75% or 1/3 of LDL
Accuracy (greater of)	± 4% or LDL
Speed of response	< 2 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	0.05 – 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 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.
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

*with Speed+ activated

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HALO KA H_2O
Ultra-High Purity Gas Analyzer

	Performance, H_2O:	Range	LDL (3σ)	Precision (1σ) @ zero
INERT/ PASSIVE GASES	In Nitrogen	0 – 20 ppm	300 ppt	100 ppt
	In Helium	0 – 4 ppm	100 ppt	20 ppt
	In Argon	0 – 9 ppm	130 ppt	45 ppt
	In Hydrogen	0 – 16 ppm	200 ppt	70 ppt
	In Deuterium ($^2H_2$)	0 – 14 ppm	900 ppt	300 ppt
OXYGENATED GASES	In Oxygen	0 – 10 ppm	150 ppt	50 ppt
	In Clean Dry Air (CDA)	0 – 18 ppm	300 ppt	100 ppt
	In CO	0 – 24 ppm	600 ppt	200 ppt
	In CO_2	0 – 25 ppm	800 ppt	300 ppt
	In COS	0 – 23 ppm	4 ppb	1.4 ppb
RARE GASES	In Neon	0 – 5 ppm	100 ppt	30 ppt
	In Krypton	0 – 11 ppm	160 ppt	60 ppt
	In Xenon	0 – 13 ppm	250 ppt	90 ppt
COR- ROSIVE GASES	In Cl_2*	0 – 25 ppm	650 ppt	220 ppt
	In HCl†	0 – 50 ppm	1200 ppt	400 ppt
	In HBr*	0 – 50 ppm	12 ppb	4 ppb
FLUORINATED GASES	In SF_6	0 – 15 ppm	400 ppt	140 ppt
	In NF_3	0 – 20 ppm	600 ppt	200 ppt
	In CF_4	0 – 15 ppm	800 ppt	300 ppt
	In C_2F_6	0 – 15 ppm	1200 ppt	400 ppt
	In C_3F_8	0 – 20 ppm	1200 ppt	400 ppt
	In C_4F_6	0 – 25 ppm	150 ppb	50 ppb
	In C_4F_8	0 – 20 ppm	1200 ppt	400 ppt
	In C_5F_8	0 – 32 ppm	8 ppb	3 ppb
HY- DRIDE GASES	In 1% GeH_4/99% H_2 mixture	0 – 16 ppm	7 ppb	2.5 ppb
	In 10% GeH_4/90% H_2 mixture	0 – 16 ppm	35 ppb	12 ppb

*Corrosive gas version required
†Corrosive gas version recommended for H_2O concentration that could exceed 1 ppm

Contact us for additional analytes and matrices.
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