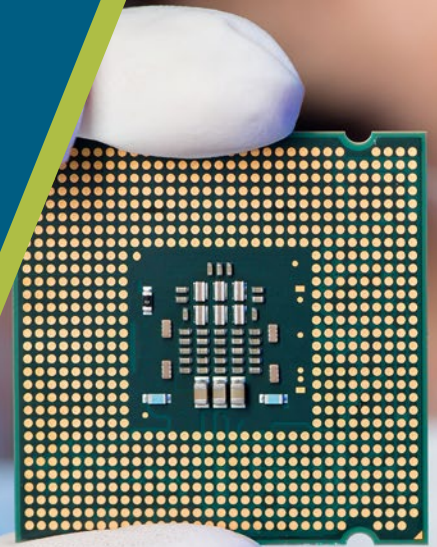


PRODUCT DATASHEET

HALO KA H₂O™

ULTRA-HIGH PURITY GAS ANALYZER



Compact, affordable and powerful, the HALO KA H₂O 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
- Clean technology
- Wide dynamic range – over four orders of magnitude
- **NOW INCLUDED:** Speed+ performance upgrade – intelligent dynamic data processing boosts analyzer's speed of response while maintaining low noise performance



An analytical solution that's right on time

The HALO KA H₂O packs a punch in one all-included, compact and affordable package. Using our 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 H₂O specializes in trace-level moisture detection in bulk gases and specialty gases, as well as gas mixtures, including germane (GeH₄) in hydrogen and other specialty mixtures used in semiconductor manufacturing.

Pair the HALO KA H₂O with the HALO OK for ppt-level oxygen measurement to enjoy the benefits of laser-based technology for both of these critical contaminants.



Specifications

Performance

Operating range:	See gas performance table on next page
Detection limit (LDL, 3σ/24h):	See gas performance table on next page
Precision (1σ, greater of):	$\pm 0.75\%$ or 1/3 of LDL
Accuracy (greater of):	$\pm 4\%$ 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 & Weight

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

Performance, H ₂ O		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 (² H 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
CORROSIVE GASES	In Cl ₂ *:	0 – 25 ppm	650 ppt	220 ppt
	In HCl†:	0 – 50 ppm	1200 ppt	400 ppt
	In HBr*:	0 – 100 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 ₂ F ₆ :	0 – 15 ppm	1200 ppt	400 ppt
	In C ₃ F ₈ :	0 – 20 ppm	1200 ppt	400 ppt
	In C ₄ F ₆ :	0 – 25 ppm	150 ppb	50 ppb
	In C ₄ F ₈ :	0 – 20 ppm	1200 ppt	400 ppt
HYDRIDE 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 H₂O concentration that could exceed 1 ppm

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

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