



# HALO KA H<sub>2</sub>O

## Ultra-High Purity Gas Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

### Compact, affordable and powerful, the HALO KA H<sub>2</sub>O 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



### An analytical solution that's right on time

The HALO KA H<sub>2</sub>O 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<sub>2</sub>O specializes in trace-level moisture detection in bulk gases and specialty gases, as well as gas mixtures, including germane (GeH<sub>4</sub>) in hydrogen and other specialty mixtures used in semiconductor manufacturing.

Pair the HALO KA H<sub>2</sub>O with the HALO OK for ppt-level oxygen measurement to enjoy the benefits of laser-based technology for both of these critical contaminants.

# HALO KA H<sub>2</sub>O

## 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 <sup>-9</sup> 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 (fits up to two sensors)	8.73 x 19.0 x 23.6 (222 x 483 x 599)

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

# HALO KA H<sub>2</sub>O

## Ultra-High Purity Gas Analyzer

Performance, H <sub>2</sub> 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 ( <sup>2</sup> H <sub>2</sub> )	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 <sub>2</sub>	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 <sub>2</sub> *	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 <sub>6</sub>	0 – 15 ppm	400 ppt	140 ppt
	In NF <sub>3</sub>	0 – 20 ppm	600 ppt	200 ppt
	In CF <sub>4</sub>	0 – 15 ppm	800 ppt	300 ppt
	In C <sub>2</sub> F <sub>6</sub>	0 – 15 ppm	1200 ppt	400 ppt
	In C <sub>3</sub> F <sub>8</sub>	0 – 20 ppm	1200 ppt	400 ppt
	In C <sub>4</sub> F <sub>6</sub>	0 – 25 ppm	150 ppb	50 ppb
	In C <sub>4</sub> F <sub>8</sub>	0 – 20 ppm	1200 ppt	400 ppt
	In C <sub>5</sub> F <sub>8</sub>	0 – 32 ppm	8 ppb	3 ppb
HY- DRIDE GASES	In 1% GeH <sub>4</sub> /99% H <sub>2</sub> mixture	0 – 16 ppm	7 ppb	2.5 ppb
	In 10% GeH <sub>4</sub> /90% H <sub>2</sub> mixture	0 – 16 ppm	35 ppb	12 ppb

\*Corrosive gas version required

†Corrosive gas version recommended for H<sub>2</sub>O concentration that could exceed 1 ppm

Contact us for additional analytes and matrices.

U.S. Patent # 7,277,177

**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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a Process Insights Brand

5/2022