



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

## Ultra-High Purity Gas Analyzer

GASES & CHEMICALS

CEMS

ENERGY

ATMOSPHERIC

SEMI & HB LED

SYNGAS

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

### 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 – Continuous Wave Cavity Ring-Down Spectroscopy – you can verify moisture impurity levels down to 200 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.

**Tiger**optics

21<sup>ST</sup> CENTURY SPECTROSCOPY

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

## Ultra-High Purity Gas Analyzer



Performance	
Operating range	See table below
Detection limit (LDL, 24 h peak-to-peak variation)	See table below
Sensitivity (3σ)	See table below
Precision (1σ, greater of)	± 0.75% or 1/3 of Sensitivity
Accuracy (greater of)	± 4% or 1/2 of 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 (optional Hastelloy®) 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	50 sccm 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 (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	
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

Performance, H <sub>2</sub> O:	Range	LDL (peak-to-peak)	Sensitivity (3σ)
In Nitrogen	0 – 20 ppm	400 ppt	300 ppt
In Helium	0 – 4 ppm	200 ppt	60 ppt
In Argon	0 – 9 ppm	200 ppt	130 ppt
In Hydrogen	0 – 16 ppm	300 ppt	200 ppt
In Oxygen	0 – 10 ppm	200 ppt	150 ppt
In Carbon Dioxide	0 – 25 ppm	1000 ppt	800 ppt
In 1% GeH <sub>4</sub> /99% H <sub>2</sub> mixture	0 – 16 ppm	10 ppb	7 ppb
In 10% GeH <sub>4</sub> /90% H <sub>2</sub> mixture	0 – 16 ppm	50 ppb	35 ppb

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

**Tiger Optics, LLC**  
250 Titus Avenue, Warrington, PA 18976  
Phone: +1 (215) 343 6600 • Fax: +1 (215) 343 4194  
sales@tigeroptics.com • www.tigeroptics.com