

PRODUCT DATASHEET

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

PART-PER-TRILLION DETECTION LIMITS FOR H<sub>2</sub>O



## 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



# Specifications

## Performance

<b>Operating range:</b>	See gas performance table below
<b>Detection limit (LDL, 3<math>\sigma</math>/24h):</b>	See gas performance table below
<b>Precision (1<math>\sigma</math>, greater of):</b>	$\pm$ 0.75% or 1/3 of LDL
<b>Accuracy (greater of):</b>	$\pm$ 4% or LDL
<b>Speed of response:</b>	< 2 minutes to 95%*
<b>Environmental conditions:</b>	10°C to 40°C, 30% to 80% RH (non-condensing)
<b>Storage temperature:</b>	-10°C to 50°C

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## Gas Handling System and Conditions

<b>Wetted materials:</b>	316L stainless steel (corrosive gas version optional) 10 Ra surface finish
<b>Gas connections:</b>	1/4" male VCR inlet and outlet
<b>Leak tested to:</b>	1 x 10 <sup>-9</sup> mbar l / sec
<b>Inlet pressure:</b>	10 – 125 psig (1.7 – 9.6 bara)
<b>Flow rate:</b>	0.05 – 1.8 slpm
<b>Sample gases:</b>	Most inert, toxic, passive and corrosive matrices
<b>Gas temperature:</b>	Up to 60°C

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## Dimensions & Weight

<b>Standard sensor:</b>	H x W x D 8.73 x 8.57 x 23.6 in (222 x 218 x 599 mm)
<b>Sensor rack</b> (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)
<b>Standard sensor weight:</b>	28 lbs (12.7 kg)

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## Electrical and Interfaces

<b>Platform:</b>	Max Series analyzer
<b>Alarm indicators:</b>	2 user programmable, 1 system fault, Form C relays
<b>Power requirements:</b>	90 – 240 VAC, 50/60 Hz
<b>Power consumption:</b>	40 Watts max.
<b>Signal output:</b>	Isolated 4–20 mA per sensor
<b>User interfaces:</b>	5.7" LCD touchscreen, 10/100 Base-T Ethernet, USB, RS-232, RS-485, Modbus TCP (optional)
<b>Data storage:</b>	Internal or external flash drive
<b>Certification:</b>	CE Mark

\*with Speed+ activated

## 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	20 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
CORROSIVE GASES	In Cl <sub>2</sub> <sup>*</sup> :	0 – 25 ppm	650 ppt	220 ppt
	In HCl <sup>†</sup> :	0 – 50 ppm	1200 ppt	400 ppt
	In HBr <sup>*</sup> :	0 – 50 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
HYDRIDE 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

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### Tiger Optics

275 Gibraltar Road  
Horsham, PA 19044  
USA  
+1 215 656 4000  
[sales@tigeroptics.com](mailto:sales@tigeroptics.com)  
[service@tigeroptics.com](mailto:service@tigeroptics.com)  
[www.tigeroptics.com](http://www.tigeroptics.com)

### Process Insights – The Americas

4140 World Houston Parkway  
Suite 180  
Houston, TX 77032  
USA  
+1 713 947 9591  
[info@process-insights.com](mailto:info@process-insights.com)

### Process Insights – EMEA

ATRICOM  
Lyoner Strasse 15  
60528 Frankfurt  
Germany  
+49 69 20436910  
[info@process-insights.com](mailto:info@process-insights.com)

### Process Insights – APAC

Wujiang Economic and Technology  
Development Zone  
No. 258 Yi He Road, 215200 Suzhou  
Jiangsu Province China  
+86 400 086 0106  
[info@process-insights.com](mailto:info@process-insights.com)

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