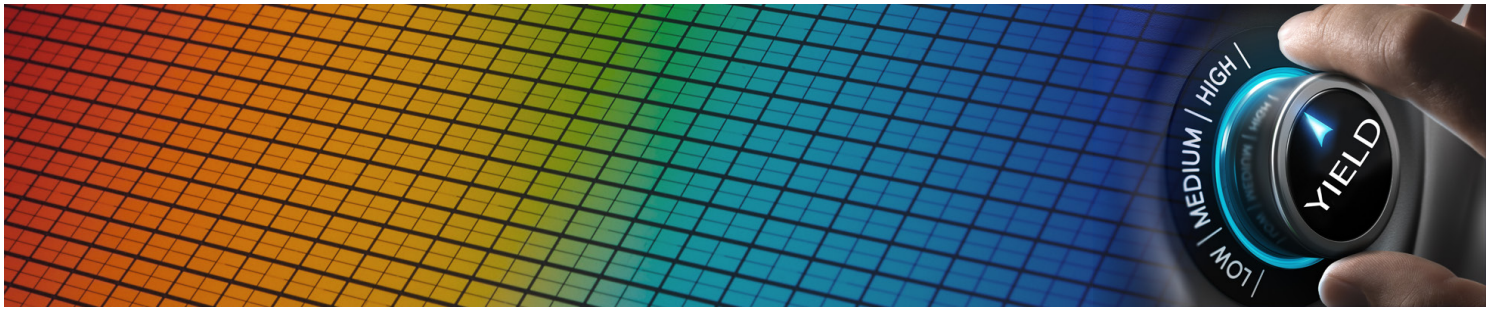

HALO KA Max

The Ultimate Trace Gas Analyzer

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

Maximizing ultimate low-detection performance and speed of response, the HALO KA Max series offers:

- Available for detecting traces on moisture (H_2O), ammonia (NH_3), or methane (CH_4)
- Parts per trillion (ppt) detection capability in an array of gases
- Absolute measurement (freedom from calibration)
- Field proven lowest Cost of Ownership and ease of use
- Wide dynamic range—over four orders of magnitude
- Unprecedented speed of response at sub-ppb levels
- Compact footprint (two HALO KA Max fit in a 19" rack)

Enabling Ultimate Contaminant Detection Performance in Semiconductor Manufacturing

As the International Roadmap for Devices and Systems (IRDS) drives the semiconductor industry beyond Moore's Law and sets the requirements for the next decade, Tiger Optics accepts the challenge with the HALO KA Max.

Building on Tiger Optics' widely accepted and renowned time-based technology—Cavity Ring-Down Spectroscopy (CRDS)—users can verify H_2O, CH_4, or NH_3 impurity levels to well below 1 ppb in semi bulk gases, with drift-free stability and virtually instant response to upsets.

The HALO KA Max, based on Tiger Optics' latest platform, offers exceptional speed and further improved usability in an all-inclusive and compact form factor. The analyzer is fast to install, easy to use and effortless to maintain, with built-in zero verification. The HALO KA Max series excels in trace-level contaminant detection in bulk gases and specialty gases used in semiconductor manufacturing.

Pair the three HALO KA Max systems with the HALO OK for ppt-level oxygen measurement to enjoy the benefits of advancements in laser-based technology for all critical contaminants.

Tiger Optics
A Process Insights Company

HALO KA Max

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Performance	
Operating range	See tables below
Detection limit (LDL)*	See tables below
Precision (1σ, greater of)	± 0.75% or see tables below
Accuracy (greater of)	± 4% or LDL
Speed of response	< 2 min to 95% (for H_2O/NH_3)
	< 1 min to 95% (for CH_4)
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	
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	~2 slpm in N_2 (gas dependent)
Sample gases	See tables below
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)
NH_3 sensor	34 lbs (15.4 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
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

HALO KA Max H_2O

Performance, H_2O:	Range	LDL*,†	Precision (1σ) @ zero
In Nitrogen	0 – 5 ppm	100 ppt	40 ppt
In Helium	0 – 1 ppm	100 ppt	10 ppt
In Argon	0 – 2 ppm	100 ppt	20 ppt
In Hydrogen	0 – 4 ppm	100 ppt	30 ppt
In Oxygen	0 – 2.5 ppm	100 ppt	20 ppt
In Clean Dry Air (CDA)	0 – 4 ppm	100 ppt	30 ppt

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HALO KA Max NH_3

Performance, NH_3:	Range	LDL† (3σ/24h)	Precision (1σ) @ zero
In Nitrogen	0 – 7 ppm	100 ppt	40 ppt

HALO KA Max CH_4

Performance, CH_4:	Range	LDL† (3σ/24h)	Precision (1σ) @ zero
In Nitrogen	0 – 8 ppm	500 ppt	200 ppt
In Helium	0 – 5 ppm	400 ppt	140 ppt
In Argon	0 – 7 ppm	450 ppt	150 ppt
In Hydrogen	0 – 8 ppm	500 ppt	200 ppt
In Oxygen	0 – 7 ppm	500 ppt	200 ppt

*The Detection limit (LDL) is defined as 3σ over 24 hours or the H_2O drydown limit, whichever is higher.

†Lowest achievable impurity level is dependent upon the quality of the sample gas and the integrity of the sampling system.

Contact us for additional analytes and matrices.

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