



# HALO OK

## Trace-Level Oxygen Analyzer

GASES & CHEMICALS

CEMS

ENERGY

ATMOSPHERIC

SEMI & HB LED

SYNGAS

LAB & LIFE SCIENCE

### Designed for trace-level oxygen analysis, the HALO OK offers:

- Industry-leading parts-per-trillion detection capability
- Unprecedented speed of response
- Wide dynamic range
- Absolute measurement (freedom from need for calibration gases)
- Low maintenance and cost of ownership
- Compact, portable package, ideal for both fixed and mobile cart installation
- Direct measurement in many matrices

### Leading Choice for Ultra-high Purity Gas Users

Detect gas quality upsets before they damage your process. Using Tiger Optics' HALO OK oxygen analyzer, you can verify oxygen impurity levels with part-per-trillion accuracy, drift-free stability and instantaneous response. You'll find our system exceptionally easy and fast to install, and effortless to maintain, with built-in zero verification. Its robust design—free of moving parts—results in an analyzer that has a high Mean Time Between Failure (MTBF) rate and a very low Cost of Ownership (CoO).

With its patented catalytic conversion technique, utilizing a minute amount of hydrogen to cleanly and safely convert oxygen to moisture, the OK offers a fully laser-based solution for Continuous Quality Control of your process. Based on powerful Cavity Ring-down Spectroscopy, the HALO OK aligns with the SEMI F-112 standard for moisture dry-down characterization of gas systems. Pair the new HALO OK with our HALO KA for ppt-level moisture measurement to enjoy the many advantages of profit-boosting CRDS technology for both critical contaminants.

**Tiger**optics

21<sup>ST</sup> CENTURY SPECTROSCOPY

# HALO OK

## Trace-Level Oxygen Analyzer



Performance	
Operating range	See table below
Detection limit (LDL, 3 $\sigma$ /24h)	See table below
Precision (1 $\sigma$ , greater of)	$\pm$ 0.75% or 1/3 of LDL
Accuracy (greater of)	$\pm$ 4% or 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 10 Ra surface finish
Leak tested to	1 x 10 <sup>-9</sup> mbar l / sec
Gas connections	1/4" male VCR
Sample inlet pressure	10 – 125 psig (1.7 – 9.6 bara)
Sample flow rate	0.5 to 1.8 slpm (gas dependent)
Sample gases	Most inert matrices
Gas temperature	Up to 60°C
H <sub>2</sub> supply requirements* <sup>†</sup>	~15 sccm, 20 – 125 psig

Dimensions	H x W x D [in (mm)]
Standard sensor	8.73 x 19.0 x 23.6 (222 x 483 x 599)
Weight	
Standard sensor	45 lbs (20.4 kg)
Electrical	
Alarm indicators	2 user programmable 1 system fault Form C relays
Power requirements	100 – 240 VAC, 50/60 Hz
Power consumption	450 Watts max.
Signal output	Isolated 4–20 mA
User interfaces	5.7" LCD touchscreen 10/100 Base-T Ethernet 802.11g Wireless (optional) RS-232 Modbus TCP (optional)
Certification	CE Mark

Performance, O <sub>2</sub> :	Range	LDL <sup>‡</sup> (3 $\sigma$ )	Precision (1 $\sigma$ ) @ zero
In Helium	0 – 0.5 ppm	50 ppt	17 ppt
In Argon	0 – 1 ppm	90 ppt	30 ppt
In Hydrogen	0 – 2 ppm	150 ppt	50 ppt
In Nitrogen	0 – 2.5 ppm	200 ppt	70 ppt
In Carbon Dioxide <sup>§</sup>	0 – 5 ppm	800 ppt	300 ppt

Contact us for additional analytes and matrices or information about our optional purged enclosure.

\*H<sub>2</sub> supply (maximum 10 ppm H<sub>2</sub>O and O<sub>2</sub> impurity) is required for sample conditioning via catalytic conversion.

<sup>†</sup>For enhanced safety, a mixture of 3% H<sub>2</sub>/97% N<sub>2</sub> can be used as an alternative to pure H<sub>2</sub>. This option requires a special configuration that must be specified at the time of order.

<sup>‡</sup>LDL is dependent upon the quality of the sample gas and the integrity of the sampling system.

<sup>§</sup>Special configuration required, must be specified at time of order.

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