



# HALO 3 CO<sub>2</sub>

## Trace Level Carbon Dioxide Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

### The HALO 3 CO<sub>2</sub> offers best-in-class performance including:

- Low detection limit down to 8 ppb in with LR model
- Wide dynamic range
- Freedom from drift
- No spectral interferences
- Compact standalone footprint or rack mountable
- Low Cost of Ownership
- Simple operation

### Advancing Accurate, Consistent & Drift-Free CO<sub>2</sub> Measurements

The removal of contaminants prior to cooling and distillation is essential to the cryogenic air separation process. If not detected quickly, impurities such as CO<sub>2</sub> (carbon dioxide) can freeze in the downstream cryogenic equipment causing damage and product spoilage. Tiger Optics' HALO 3 CO<sub>2</sub> analyzer affords fast, accurate response and clean-up, with no possibility of drift.

Based on powerful Cavity Ring-Down Spectroscopy (CRDS), with a proprietary laser-locked cell, the HALO 3 is free of drift, guaranteeing consistent and reliable trace CO<sub>2</sub> detection in nitrogen and other inert gases. Highly specific to the target molecule, CRDS also prevents cross-interferences from distorting your measurement.

Plus, there is no need to perform costly and time-consuming zero and span calibrations, saving both time and money with continuous, on-line service.

Compact and portable, the HALO 3 CO<sub>2</sub> gives you unsurpassed speed of response and ease of use. In sum, the HALO 3 CO<sub>2</sub> analyzer serves a range of applications where trace gas measurement is extremely critical, such as syngas production, fixed bulk gas continuous monitoring, gas cylinder quality control, auto-load truckfill and a multitude of other challenging applications. The HALO 3 CO<sub>2</sub> builds on Tiger Optics' longstanding leadership for trace monitoring of critical compounds in pressurized gases.

**Tiger**optics  
a Process Insights Brand

# HALO 3 CO<sub>2</sub>

## Trace Level Carbon Dioxide Analyzer



Performance	
Operating range	See table below
Detection limit (LDL, 3σ/24h)	See table below
Precision (1σ, greater of)	± 0.75% or 1/3 of LDL
Accuracy (greater of)	± 4% or LDL
Speed of response	< 3 minute 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	Up to 1.8 slpm
Sample gases	Most inert, toxic, passive and corrosive matrices
Gas temperature	Up to 60°C

### Low Range (LR) Model

Performance, CO <sub>2</sub> :	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen	0 – 25 ppm	8 ppb	3 ppb
In Helium	0 – 25 ppm	8 ppb	3 ppb
In Argon	0 – 25 ppm	8 ppb	3 ppb
In Oxygen	0 – 25 ppm	8 ppb	3 ppb
In Clean Dry Air (CDA)	0 – 25 ppm	8 ppb	3 ppb

### High-Range (HR) Model

Performance, CO <sub>2</sub> :	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen	0 – 1500 ppm	250 ppb	100 ppb

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

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)

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

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