



# 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 nitrogen
- 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 crossinterferences 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.

# 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

### 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)
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### 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 Modbus TCP (optional)
Certification	CE Mark

Performance, CO <sub>2</sub> :	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen (Low range)	0 – 12 ppm	8 ppb	3 ppb
In Nitrogen (High range)	0 – 1500 ppm	250 ppb	100 ppb

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

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**TigerOptics**  
High-Performance Gas Analyzers

2/2019