

PRODUCT DATASHEET

HALO 3 CO₂™

TRACE LEVEL CARBON DIOXIDE ANALYZER



The HALO 3 CO₂ 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 CO₂ 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 CO₂ (carbon dioxide) can freeze in the downstream cryogenic equipment causing damage and product spoilage. The HALO 3 CO₂[™] 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 CO₂ 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 CO₂ gives you unsurpassed speed of response and ease of use. In sum, the HALO 3 CO₂ 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 CO₂ builds on our longstanding leadership for trace monitoring of critical compounds in pressurized gases.

Specifications

Performance

Operating range:	See table below
Detection limit (LDL, 3σ/24h):	See table below
Precision (1σ, 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 (corrosive gas version optional) 10 Ra surface finish
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:	Up to 1.8 slpm
Sample gases:	Most inert, toxic, passive and corrosive matrices
Gas temperature:	Up to 60°C

Dimensions & Weight

Standard sensor:	H × W × D: 8.73 x 8.57 x 23.6 in (222 x 218 x 599 mm)
Sensor rack (fits up to two sensors):	H × W × D: 8.73 x 19.0 x 23.6 in (222 x 483 x 599 mm)
Standard sensor weight:	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

Performance, CO₂	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
In Hydrogen Chloride (HCl):	0 – 30 ppm	9 ppb	3 ppb

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

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