



# HALO 3 HCl

## Trace Level Hydrogen Chloride Analyzer

GASES & CHEMICALS

CEMS

ENERGY

SEMI & HB LED

ATMOSPHERIC

LAB & LIFE SCIENCE

### The HALO 3 HCl offers:

- Low single-digit parts per billion (ppb) detection capability
- Absolute measurement (freedom from calibration gases)
- Wide dynamic range
- Low cost of ownership and operational simplicity
- Clean technology—no external calibration gases required

The HALO 3 HCl trace level hydrogen chloride gas analyzer provides users with the unmatched accuracy, reliability, speed of response and ease of operation that users of Tiger Optics' analyzers have come to know and expect. Featuring Tiger Optics' proven Cavity Ring-Down Spectroscopy-based trace gas sensor in a very compact and economic analyzer design, this versatile instrument allows users to measure HCl in most inert and passive gases with just one device.

Users also enjoy freedom from requirements, such as periodic sensor maintenance, span calibrations, purifier replacement and pump rebuilds. As a result, the HALO is ideally suited to many applications where HCl impurities are extremely critical, such as semiconductor utilization.

# HALO 3 HCl

## Trace Level Hydrogen Chloride Analyzer



| Performance                            |  | Dimensions                | H x W x D [in (mm)]  |
|--|--|---------------------------|--|
| Operating range                        | See table below  | Standard sensor           | 8.73 x 8.57 x 23.6 (222 x 218 x 599)   |
| Detection limit (LDL, 3 $\sigma$ /24h) | See table below  | Sensor rack               | 8.73 x 19.0 x 23.6 (222 x 483 x 599)   |
| Precision (1 $\sigma$ , greater of)    | $\pm$ 0.75% or 1/3 of LDL  | (fits up to two sensors)  |  |
| Accuracy (greater of)                  | $\pm$ 4% or LDL  | Weight                    |  |
| Speed of response                      | < 1 minute to 90%  | Standard sensor           | 28 lbs (12.7 kg)   |
| Environmental conditions               | 10°C to 40°C<br>30% to 80% RH (non-condensing)                                   | Electrical and Interfaces |  |
| Storage temperature                    | -10°C to 50°C  | Platform                  | Max series analyzer  |
| Gas Handling System and Conditions     |  | Alarm indicators          | 2 user programmable<br>1 system fault  |
| Wetted materials                       | 316L stainless steel<br>(corrosive gas version optional)<br>10 Ra surface finish |                           | Form C relays  |
| Gas connections                        | 1/4" male VCR inlet and outlet   | Power requirements        | 90 – 240 VAC, 50/60 Hz   |
| Leak tested to                         | 1 x 10 <sup>-9</sup> mbar l / sec  | Power consumption         | 40 Watts max.  |
| Inlet pressure                         | 10 – 125 psig (1.7 – 9.6 bara)   | Signal output             | Isolated 4–20 mA per sensor  |
| Flow rate                              | Up to 1.8 slpm   | User interfaces           | 5.7" LCD touchscreen<br>10/100 Base-T Ethernet<br>USB, RS-232, RS-485<br>Modbus TCP (optional) |
| Sample gases                           | Most inert, toxic, passive<br>and corrosive matrices                             | Data storage              | Internal or external flash drive   |
| Gas temperature                        | Up to 60°C   | Certification             | CE Mark  |

| Performance, HCl:      | Range      | LDL (3 $\sigma$ ) | Precision (1 $\sigma$ ) @ zero |
|------------------------|------------|-------------------|--------------------------------|
| In Nitrogen            | 0 – 20 ppm | 1.0 ppb           | 0.4 ppb                        |
| In Clean Dry Air (CDA) | 0 – 20 ppm | 1.0 ppb           | 0.4 ppb                        |
| In Hydrogen            | 0 – 10 ppm | 1.0 ppb           | 0.4 ppb                        |

Contact us for additional analytes and matrices.  
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