

**PRODUCT DATASHEET**

# HALO 3 HCl™

## TRACE HYDROGEN CHLORIDE ANALYZER



### 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

# Specifications

## Performance

|   |   |
|---|---|
| <b>Operating range:</b>                                 | See gas performance table below             |
| <b>Detection limit (LDL, 3<math>\sigma</math>/24h):</b> | See gas performance table below             |
| <b>Precision (1<math>\sigma</math>, greater of):</b>    | $\pm$ 0.75% or 1/3 of LDL                   |
| <b>Accuracy (greater of):</b>                           | $\pm$ 4% or LDL                             |
| <b>Speed of response:</b>                               | < 1 minute to 90%                           |
| <b>Environmental conditions:</b>                        | 10°C to 40°C 30% to 80% RH (non-condensing) |
| <b>Storage temperature:</b>                             | -10°C to 50°C                               |

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## Gas Handling System and Conditions

|                          |  |
|--------------------------|--|
| <b>Wetted materials:</b> | 316L stainless steel (corrosive gas version optional) 10 Ra surface finish |
| <b>Gas connections:</b>  | 1/4" male VCR inlet and outlet   |
| <b>Leak tested to:</b>   | 1 x 10 <sup>-9</sup> mbar l / sec  |
| <b>Inlet pressure:</b>   | 10 – 125 psig (1.7 – 9.6 bara)   |
| <b>Flow rate:</b>        | Up to 1.8 slpm   |
| <b>Sample gases:</b>     | Most inert, toxic, passive and corrosive matrices                          |
| <b>Gas temperature:</b>  | Up to 60°C   |

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## Dimensions & Weight

|  |  |
|--|--|
| <b>Standard sensor:</b>                      | H x W x D 8.73 x 8.57 x 23.6 in (222 x 218 x 599 mm) |
| <b>Sensor rack</b> (fits up to two sensors): | H x W x D 8.73 x 19.0 x 23.6 in (222 x 483 x 599 mm) |
| <b>Standard sensor weight:</b>               | 28 lbs (12.7 kg)                                     |

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## Electrical and Interfaces

|                            |  |
|----------------------------|--|
| <b>Platform:</b>           | Max Series analyzer  |
| <b>Alarm indicators:</b>   | 2 user programmable 1 system fault Form C relays   |
| <b>Power requirements:</b> | 90 – 240 VAC, 50/60 Hz   |
| <b>Power consumption:</b>  | 40 Watts max.  |
| <b>Signal output:</b>      | Isolated 4–20 mA per sensor  |
| <b>User interfaces:</b>    | 5.7" LCD touchscreen. 10/100 Base-T Ethernet. USB, RS-232, RS-485. Modbus TCP (optional) |
| <b>Data storage:</b>       | Internal or external flash drive   |
| <b>Certification:</b>      | CE Mark  |

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## Performance, HCl

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

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