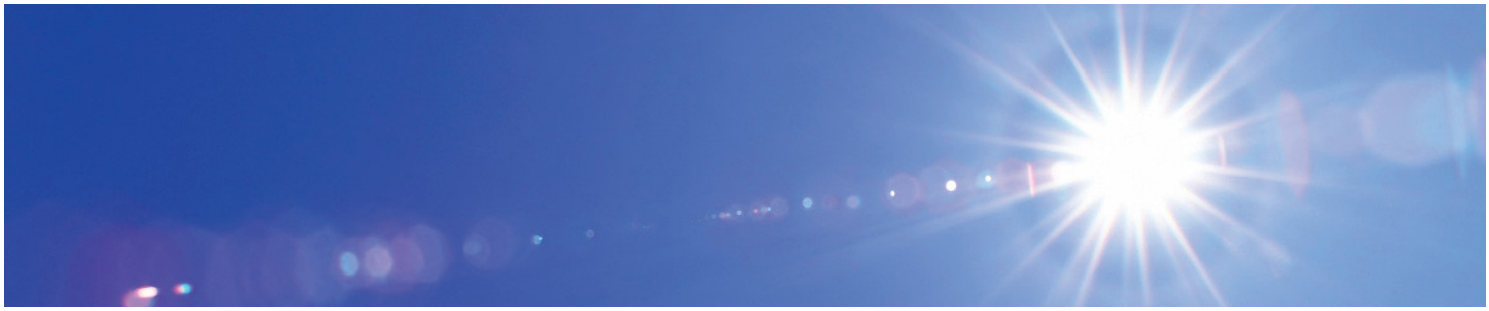

HALO 3 H_2O

Trace Level Moisture Analyzer

GASES & CHEMICALS | CEMS | ENERGY | ATMOSPHERIC | SEMI & HB LED | SYNGAS | LABORATORY

Designed for trace level moisture analysis, the HALO 3 H_2O offers:

- Sub parts per billion (ppb) moisture detection capability in an array of gases
- Absolute measurement (freedom from calibration gases)
- Wide dynamic range – over four orders of magnitude
- Low cost of ownership and operational simplicity
- Clean technology – no external calibration gases required
- Compact analyzer footprint
- Low gas consumption to conserve rare and costly gas

The HALO 3 H_2O analyzer provides users with the unmatched accuracy, reliability, speed of response and ease of operation that users of Tiger Optics analyzers know and expect. Featuring Tiger Optics' powerful Cavity Ring-Down Spectroscopy-based moisture sensor in a very compact and economic analyzer design, this versatile analyzer allows users to measure moisture in most inert, corrosive and toxic 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 3 H_2O analyzer is ideally suited to many applications where moisture measurement is extremely critical. These applications include fixed bulk gas continuous quality control, portable mobile analytical carts, process tool monitoring, air separation, gas cylinder quality control and many other demanding applications.

Tiger Optics | 21ST CENTURY SPECTROSCOPY

HALO 3 H_2O
Trace Level Moisture Analyzer

Performance	
Operating range	See table on next page
Detection limit (LDL,	See table on next page
24 h peak-to-peak variation)	
Sensitivity (3σ)	See table on next page
Precision (1σ, greater of)	± 0.75% or 1/3 of Sensitivity
Accuracy (greater of)	± 4% or 1/2 of LDL
Speed of response	< 1 minute to 90%
Environmental conditions	10°C – 40°C
	30% – 80% RH (non-condensing)
Storage temperature	-10°C – 50°C

Gas Handling System and Conditions	
Wetted materials	316L stainless steel
	(optional Hastelloy©)
	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	0.05 – 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	8.75 x 8.5 x 23.6 (222 x 216 x 599)
Sensor rack	8.75 x 19 x 23.6 (222 x 483 x 599)
(fits up to two sensors)	

Weight	
Standard sensor	28 lbs (12.7 kg)

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

Tiger Optics, LLC
250 Titus Avenue, Warrington, PA 18976
Phone: +1 (215) 343 6600 • Fax: +1 (215) 343 4194
sales@tigeroptics.com • www.tigeroptics.com

Tigeroptics | 21ST CENTURY SPECTROSCOPY

8/2015

HALO 3 H_2O
Trace Level Moisture Analyzer

Performance, H_2O:	Range	LDL	Sensitivity
INERT GASES			
In Nitrogen	0 – 20 ppm	1.5 ppb	1.2 ppb
In Helium	0 – 4 ppm	0.3 ppb	0.25 ppb
In Argon	0 – 9 ppm	0.7 ppb	0.6 ppb
In Hydrogen	0 – 16 ppm	1.2 ppb	1.0 ppb
In Oxygen	0 – 12 ppm	0.9 ppb	0.7 ppb
RARE GASES			
In Neon	0 – 5 ppm	0.4 ppb	0.3 ppb
In Krypton	0 – 11 ppm	0.8 ppb	0.6 ppb
In Xenon	0 – 13 ppm	1.0 ppb	0.8 ppb
CORROSIVE GASES			
In Cl_2	0 – 25 ppm*	2.0 ppb	1.5 ppb
In HCl	0 – 50 ppm†	4.5 ppb	3 ppb
In HBr	0 – 100 ppm (Hastelloy© required)	15 ppb	12 ppb

* Hastelloy© recommended for H_2O concentration > 10 ppm
† Hastelloy© recommended for H_2O concentration > 1 ppm

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

Tiger Optics, LLC
250 Titus Avenue, Warrington, PA 18976
Phone: +1 (215) 343 6600 • Fax: +1 (215) 343 4194
sales@tigeroptics.com • www.tigeroptics.com

Tigeroptics | 21ST CENTURY SPECTROSCOPY

8/2015