

PRODUCT DATASHEET

# Spark H<sub>2</sub>O: Trace Level Moisture Analyzer

At last, measurements made easy!



## The compact and affordable Spark H<sub>2</sub>O offers:

- Powerful, proven Cavity Ring-Down Spectroscopy (CRDS) technology
- Self-tuning and auto-calibration
- Extremely low cost of ownership
- Fast response with low gas consumption
- H<sub>2</sub>O analysis over a vast range: 12 ppb to 2000 ppm (in N<sub>2</sub>)!
- NOW INCLUDED: **Speed+ performance upgrade** – intelligent dynamic data processing boosts analyzer's speed of response while maintaining low noise performance



For the first time, powerful advanced spectroscopy is available at a popular price for a host of applications, from quality assurance to cylinder filling, as well as welding, medical, industrial and high-purity gas production; bulk delivery and distribution transfer points; and more. Say goodbye to cumbersome, complex, costly and labor-intensive 20<sup>th</sup> century technology. Gone is the need for calibration, spare parts, limited measurement ranges, and worries about drift and downtime. Plus, it's a joy to start up and to operate.

The original maker of CRDS analyzers, Tiger Optics has been serving users worldwide for over a dozen years. Nothing beats CRDS's unique combination of ease of use and excellent performance, making Tiger's analyzers a perfect solution for a variety of applications, from monitoring trace moisture in semiconductor gases in accordance with the SEMI F112 standard, to fast and effortless monitoring of tube trailer filling processes, and the analysis of gases produced in Air Separation Units. Discover the power of CRDS with the Spark!

Put a little Spark in your life!





## Performance

<b>Operating range:</b>	See table on next page
<b>Detection limit (LDL, 3<math>\sigma</math>/24h):</b>	See table on next page
<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>	< 3 minutes 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, 10 Ra surface finish
<b>Gas connections:</b>	1/4" male VCR inlet and outlet
<b>Inlet pressure:</b>	10 – 125 psig (1.7 – 9.6 bara)
<b>Flow rate:</b>	~1.0 slpm (in N <sub>2</sub> ), gas-dependent
<b>Sample gases:</b>	Most inert, toxic, and passive matrices
<b>Gas temperature:</b>	Up to 60°C

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## Dimensions & Weight

<b>Standard sensor:</b>	H × W × D 8.73 × 8.57 × 23.6 in (222 × 218 × 599 mm)
<b>Sensor rack</b> (fits up to two sensors):	H × W × D 8.73 × 19.0 × 23.6 in (222 × 483 × 599 mm)
<b>Standard sensor weight:</b>	32 lbs (14.5 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



## Performance, H<sub>2</sub>O

**In Nitrogen:**

**In Oxygen:**

**In Argon:**

**In Helium:**

**In Hydrogen:**

**In Clean Dry Air (CDA):**

**In Neon:**

**In Krypton:**

**In Xenon:**

**In CF<sub>4</sub>:**

**In NF<sub>3</sub>:**

**In SF<sub>6</sub>:**

**Range**

**LDL (3σ)**

**Precision (1σ) @ zero**

0 – 2000 ppm

12 ppb

4 ppb

0 – 1000 ppm

6 ppb

2 ppb

0 – 900 ppm

4.5 ppb

1.5 ppb

0 – 450 ppm

3 ppb

1.0 ppb

0 – 1750 ppm

7.5 ppb

2.5 ppb

0 – 1800 ppm

10 ppb

3 ppb

0 – 450 ppm

30 ppb

10 ppb

0 – 1100 ppm

5.5 ppb

1.8 ppb

0 – 1300 ppm

7.5 ppb

2.5 ppb

0 – 1300 ppm

9 ppb

3 ppb

0 – 1800 ppm

9 ppb

3 ppb

0 – 1300 ppm

15 ppb

5 ppb

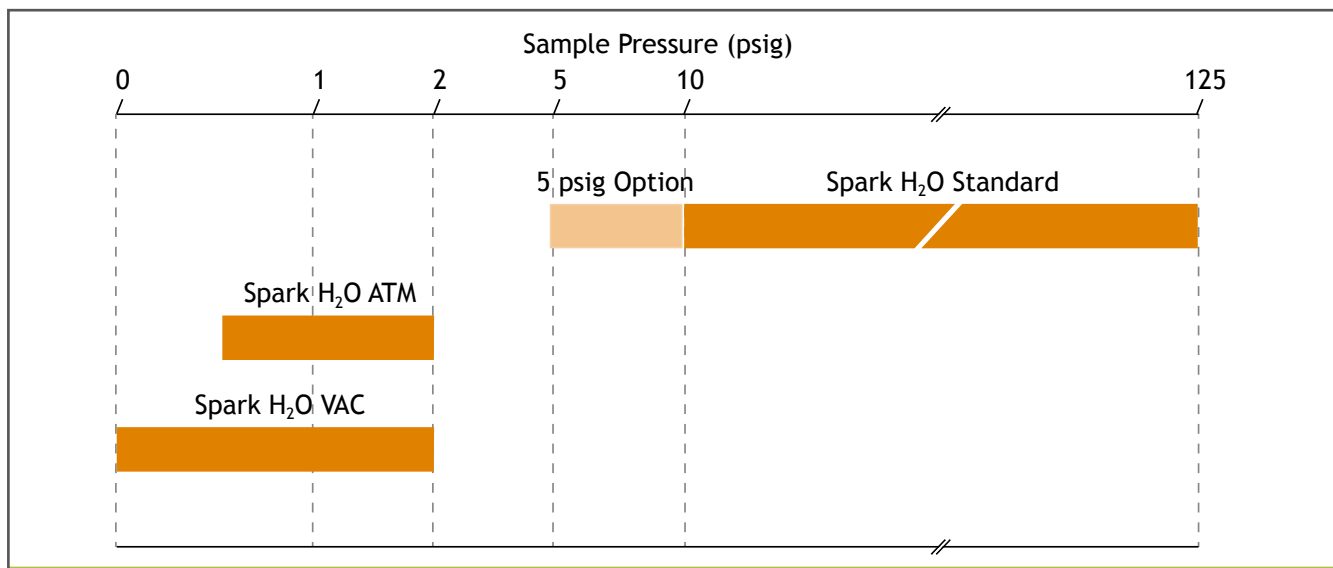
See Page 5 for lower pressure ranges

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



## Models for Different Pressure Ranges

Depending on your application, there are different Spark H<sub>2</sub>O versions optimized for your sample pressure:



Spark Version	Description and Accessories	Applications	Gas Matrix†
<b>Spark H<sub>2</sub>O Standard</b>	<ul style="list-style-type: none"> <li>Standard model for most gas analysis applications with &gt;10 psig</li> <li>No accessories required</li> </ul>	<ul style="list-style-type: none"> <li>General purpose cylinder analysis</li> </ul>	All gases listed on Page 4
<b>- 5 PSIG Option</b>	<ul style="list-style-type: none"> <li>Software add-on for standard Spark</li> <li>Extends low-pressure limit to 5 psig</li> <li>6–10 psig sample pressure requires external 5 psig regulator</li> </ul>	<ul style="list-style-type: none"> <li>Lower-pressure gas filling</li> <li>Pressure-restricted applications</li> <li>Air separation units</li> </ul>	N <sub>2</sub> , O <sub>2</sub> , Ar, and CDA
<b>Spark H<sub>2</sub>O ATM</b>	<ul style="list-style-type: none"> <li>Spark model for inlet pressures between ≈0.5 psig and 2 psig</li> <li>Requires external rotameter</li> </ul>	<ul style="list-style-type: none"> <li>Low-pressure moisture generators</li> <li>Glove boxes</li> <li>Permeation setups</li> </ul>	N <sub>2</sub> and CDA
<b>Spark H<sub>2</sub>O VAC</b>	<ul style="list-style-type: none"> <li>Spark model for non-pressurized samples (0 psig to 2 psig)</li> <li>Requires external metering valve and dry vacuum pump</li> </ul>	<ul style="list-style-type: none"> <li>Atmospheric pressure chambers</li> <li>Glove boxes</li> <li>Permeation setups</li> </ul>	N <sub>2</sub> and CDA

† Additional gas matrices on lower-pressure models may be available on request. Please contact us to discuss your requirements.

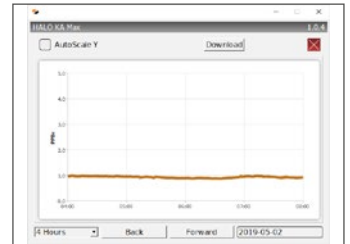
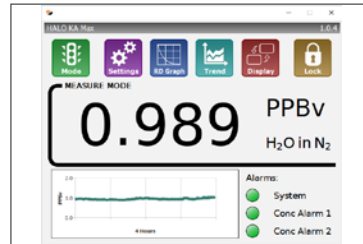


## Analyzer Upgrades

Add more value your Spark analyzer with these powerful options:

### Serani™ Max Analyzer Interface Software

- Connect to your analyzer remotely from your computer via Ethernet or RS-232 (Windows XP or higher required)
- Data recording, plotting and analysis in real-time with the click of a button
- One-step data collection and other service function shortcuts



### Annual Performance Verification

- Low-cost and easy remote verification process, with no need to return the analyzer to the factory
- Annual verification by Tiger Optics ensures that your analyzer continues to meet its original specifications
- Up-to-date Verification Certificate to comply with your QA/QC standards



### Installation & Commissioning Package

- On-site analyzer installation and start-up by Tiger Optics trained personnel
- Ensuring correct installation helps prevent future issues with the analyzer or your sampling system
- Gain peace of mind and save money in the long run



## PREMIUM INSIGHTS – GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights' products and solutions deliver innovative and differentiated analysis and measurement solutions and technologies that add high value to our customers and protect the environment.

Our commitment is to deliver smart and affordable innovation that optimizes process, improves safety, and transforms our world.

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PROVIDING PROVEN SOLUTIONS FROM A GLOBAL TECHNOLOGY LEADER



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