

PRODUCT DATASHEET

Spark™ H₂O: Trace Level Moisture Analyzer

At last, measurements made easy!



The compact and affordable Spark H₂O offers:

- Powerful, proven Cavity Ring-Down Spectroscopy (CRDS) technology
- Low gas consumption
- No moving parts or consumables, lowest cost of ownership
- Fast response and recovery
- Measurement range from single-digit ppb to 1000s of ppm
- No calibration requirements
- 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. Say goodbye to cumbersome, complex, costly and labor-intensive 20th century technologies. Gone is the need for calibration, spare parts, limited measurement ranges, and worries about drift and downtime. Plus, the Spark is simple to start up and to operate.

The original maker of CRDS analyzers, we have been serving users worldwide for over 20 years. Nothing beats CRDS's unique combination of ease-of-use and unparalleled performance, making Tiger Optics' 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 (ASUs). The lack of calibration and fast speed of response will reduce downtime and operating costs, while increasing operational efficiency and throughput.

Discover the power of CRDS, and put a little Spark in your life!





Performance

Operating range:	See table on next page
Detection limit (LDL, 3σ/24h):	See table on next page
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 90%
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, 10 Ra surface finish
Gas connections:	1/4" male VCR inlet and outlet
Inlet pressure:	10 – 125 psig (1.7 – 9.6 bara)
Flow rate:	~1.0 slpm (in N ₂), gas-dependent
Sample gases:	Most inert, toxic, and passive matrices
Gas temperature:	Up to 60°C

Dimensions & Weight

Standard sensor:	H × W × D 8.73 × 8.57 × 23.6 in (222 × 218 × 599 mm)
Sensor rack (fits up to two sensors):	H × W × D 8.73 × 19.0 × 23.6 in (222 × 483 × 599 mm)
Standard sensor weight:	32 lbs (14.5 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, H₂O

	Range	LDL (3σ)	Precision (1σ) @ zero
In Nitrogen:	0 – 2000 ppm	12 ppb	4 ppb
In Oxygen:	0 – 1000 ppm	6 ppb	2 ppb
In Argon:	0 – 900 ppm	4.5 ppb	1.5 ppb
In Helium:	0 – 450 ppm	3 ppb	1.0 ppb
In Hydrogen:	0 – 1750 ppm	7.5 ppb	2.5 ppb
In Clean Dry Air (CDA):	0 – 1800 ppm	10 ppb	3 ppb
In CO:	0 – 2400 ppm	15 ppb	5 ppb
In Neon:	0 – 450 ppm	30 ppb	10 ppb
In Krypton:	0 – 1100 ppm	5.5 ppb	1.8 ppb
In Xenon:	0 – 1300 ppm	7.5 ppb	2.5 ppb
In CF ₄ :	0 – 1300 ppm	9 ppb	3 ppb
In NF ₃ :	0 – 1800 ppm	9 ppb	3 ppb
In SF ₆ :	0 – 1300 ppm	15 ppb	5 ppb
In HFPO (C ₃ H ₆ O):	0 – 300 ppm	300 ppb	100 ppb

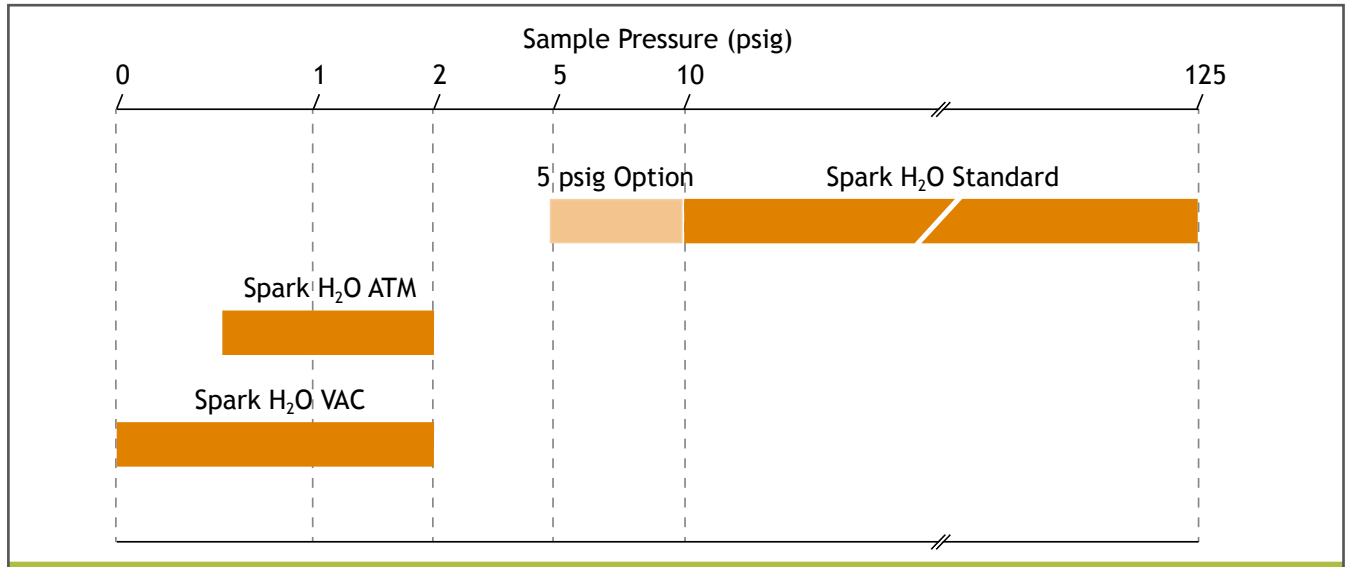
See Page 6 for lower pressure ranges

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 H₂O versions optimized for your sample pressure:



Spark Version	Description and Accessories	Applications	Gas Matrix [†]
Spark H₂O Standard	<ul style="list-style-type: none"> Standard model for most gas analysis applications with >10 psig No accessories required 	<ul style="list-style-type: none"> General purpose cylinder analysis 	All gases listed on Page 4
- 5 PSIG Option	<ul style="list-style-type: none"> Software add-on for standard Spark Extends low-pressure limit to 5 psig 6–10 psig sample pressure requires external 5 psig regulator 	<ul style="list-style-type: none"> Lower-pressure gas filling Pressure-restricted applications Air separation units 	N ₂ , O ₂ , Ar, and CDA
Spark H₂O ATM	<ul style="list-style-type: none"> Spark model for inlet pressures between ≈0.5 psig and 2 psig Requires external rotameter 	<ul style="list-style-type: none"> Low-pressure moisture generators Glove boxes Permeation setups 	N ₂ and CDA
Spark H₂O VAC	<ul style="list-style-type: none"> Spark model for non-pressurized samples (0 psig to 2 psig) Requires external metering valve and dry vacuum pump 	<ul style="list-style-type: none"> Atmospheric pressure chambers Glove boxes Permeation setups 	N ₂ and CDA

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

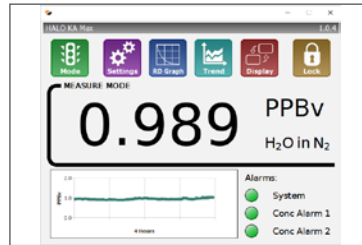


Analyzer Upgrades

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 (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 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 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



GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights delivers premium analytical sensors, analyzers, instrumentation, software and solutions that are mission-critical to keep your operations, personnel, and the environment safe. Our commitment to customer satisfaction is evident through our diverse range of products, programs, and services, designed to accommodate various budgets and application needs.

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