# **Spark $H_2O$:** Trace Level Moisture Analyzer
## At last, measurements made easy!

GASES & CHEMICALS | CEMS | ENERGY | ATMOSPHERIC | SEMI & HB LED | SYNGAS | LAB & LIFE SCIENCE

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 20th 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.

See Page 3 for our optional add-on packages!

**The compact and affordable Spark $H_2O$ offers:**

- Powerful, proven Cavity Ring-Down Spectroscopy (CRDS) technology
- Self-tuning and auto-calibration
- Extremely low Cost of Ownership
- Ethernet, 4-20 mA and RS-232 connectivity
- Fast response with low gas consumption
- $H_2O$ analysis over a vast range: 12 ppb to 2000 ppm (in $N_2$)!

The original maker of CRDS analyzers, Tiger Optics has been serving users worldwide for over a dozen years. We are in HyCO plants, with our Class I, Div 2 rated CO-rekt analyzer; in nuclear plants, where we are Safety Integrity Level One (SIL 1) approved; and we are widely used in semiconductor fabs for bulk and specialty monitoring, in addition to toolmounted process control and QA/QC of purifiers and gas delivery systems. We are the designated standard under SEMI F-112-0613 for determining moisture dry-down characteristics of such systems. Tiger Optics was used by NIST to name the new hydrogen chloride protocol for continuous emissions monitoring, and we now measure HCl in stack gas at coal-fired utilities.

**Put a little Spark in your life!**

Tiger Optics | 21ST CENTURY SPECTROSCOPY

# Spark $H_2O$
## Trace Level Moisture Analyzer


| Performance | |
|---|---|
| Operating range | See table below |
| Detection limit (LDL, 3σ/24h) | See table below |
| Precision (1σ, greater of) | ± 0.75% or 1/3 of LDL |
| Accuracy (greater of) | ± 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 (for $N_2$) |
| Sample gases | Most inert, toxic, and |
| | passive matrices |
| Gas temperature | Up to 60°C |

| Dimensions | H x W x D [in (mm)] |
|---|---|
| Standard sensor | 8.73 x 8.57 x 23.6 (222 x 218 x 599) |
| Sensor rack | 8.73 x 19.0 x 23.6 (222 x 483 x 599) |
| (fits up to two sensors) | |

| Weight | |
|---|---|
| Standard sensor | 32 lbs (14.5 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 |
| | Modbus TCP (optional) |

| Performance, $H_2O$: | 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 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 $SF_6$ | 0 – 1300 ppm | 15 ppb | 5 ppb |

*Inlet pressure as low as 0 psig available with Atmospheric Pressure Sampling option
Contact us for additional analytes and matrices • U.S. Patent # 7,277,177

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# Spark $H_2O$
## Trace Level Moisture Analyzer

## Optional Packages

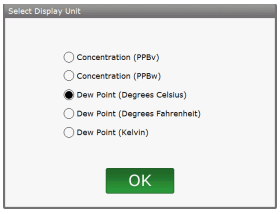
Customize your Spark $H_2O$ analyzer with these powerful add-ons:

### Atmospheric Pressure Sampling

- Sample in Nitrogen and Clean Dry Air (CDA) with lower inlet pressure, down to 0 psig (may require vacuum pump)
- Wider inlet pressure range for $H_2O$ measurement in Air Separation Units (ASUs)
- Expanded use with moisture standards and Low-Frost Point Generators (LFPGs)

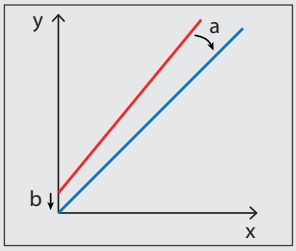
### Dew Point Measurement

- Moisture measurement can be displayed as Dew Point (in units of °C, °F or K) or Concentration (as volume or weight basis)
- Ideal for use as transfer standard for Dew Point-based moisture generators – no unit conversion necessary
- Wide Dew Point measurement range from −100°C to −13°C


### Linear Fit Mode

- Linear y = a x + b fit function permits user-defined calibration curves with programmable slope (a) and offset (b)
- Automatically adjusts readings to factor in dilution probes and sampling system offsets, while retaining the absolute data
- Enables calibration against external standards, when mandated by rules or regulations




### Annual Remote Certification

- Low-cost and easy remote certification process, with no need to return the analyzer to the factory
- Annual re-certification 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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