

PRODUCT BROCHURE

VeraSpec™ APIMS

Trace atmosphere pressure ionization mass spectrometer

- Real-time, multi-species monitoring for ALL Critical Impurities in bulk electronic gases including trace O₂, H₂, H₂O, CH₄, CO, CO₂, NH₃, Xe and more
- Well-established, powerful mass spectrometry technology
- Unparalleled measurement range from PPT to 100% with unique dual-source ionization configuration
- Easy to use with integrated User Interface and scheduled automated calibrations
- Industry-best customer support and applications team



The Extrel VeraSpec™ APIMS combines Atmospheric Pressure Ionization (API) technology with a high-performance mass spectrometer optimized over five decades in industrial gas analysis.

- Confident supply of UHP production gases
- One analyzer for all contaminants
- Fully automated, real-time contamination alerts
- Reliable 24-7 process protection
- Maximized wafer yields

VeraSpec™ APIMS combine speed, sensitivity, and ease-of-use to continuously monitor nitrogen, argon, helium, oxygen, and hydrogen supply streams, and rapidly report ppt-level contamination to protect the electronics fabrication process.

Protect your semiconductor production with Extrel VeraSpec™ APIMS

Ultra-pure gases are a necessity for semiconductor device fabrication and the continuous monitoring of bulk gas purity can ensure maximum production. Contamination is costly.

"Semiconductor manufacturers need the ability to continuously verify the purity of process gases in real-time and detect trace contamination at concentrations in the low parts-per-trillion (ppt)"

The best way to achieve these low detection limits is with the application of Atmospheric Pressure Ionization Mass Spectrometry (APIMS). For more than 20 years, APIMS has been the research and

industrial standard for on-line detection of low-level components of gas mixtures.

Extrel's quadrupole-based VeraSpec™ APIMS system can monitor a wide range of gases and gas mixtures with the stability that provides the long-term repeatability required in most applications.

Extrel is the **only mass spectrometer manufacturer in the world** that utilizes a 19mm, tri-filter quadrupole mass filter in semiconductor gas analysis for the very best performance, reliability, and uptime.



Simple to operate and maintain

The innovative design of the VeraSpec™ APIMS makes it easy to use and maintain for maximum uptime and utility.

Get the benefits of Extrel APIMS technology

VeraSpec™ APIMS make the analytical difference through intuitive, low-maintenance operation. Typical VeraSpec™ APIMS Low Detection Limits by Contaminant and Bulk Gas.

Trace Impurity*	Bulk Gas				
	N ₂	Ar	He	H ₂	O ₂ **
Hydrogen (H ₂)	100 ppt	100 ppt	50 ppt	n/a	500 ppb
Oxygen (O ₂)	10 ppt	10 ppt	10 ppt	10 ppt	n/a
Methane (CH ₄)	10 ppt	10 ppt	10 ppt	10 ppt	100 ppb
Water (H ₂ O)	10 ppt	10 ppt	10 ppt	10 ppt	100 ppb
Carbon Monoxide (CO)	50 ppt	10 ppt	10 ppt	50 ppt	100 ppb
Carbon Dioxide (CO ₂)	5 ppt	5 ppt	5 ppt	5 ppt	100 ppb
Nitrogen (N ₂)	n/a	200 ppt	10 ppt	150 ppt	100 ppb
Argon (Ar)	200 ppt	n/a	10 ppt	50 ppt	75 ppb
Xenon (Xe)	50 ppt	50 ppt	50 ppt	50 ppt	75 ppb
Ethane (C ₂ H ₆)	30 ppt	10 ppt	10 ppt	150 ppt	100 ppb
Propane (C ₃ H ₈)	50 ppt	50 ppt	50 ppt	50 ppt	75 ppb
> C ₃ (Butane, Pentane, etc.)	10 ppt	10 ppt	10 ppt	10 ppt	75 ppb
Ammonia (NH ₃)	500 ppt	500 ppt	500 ppt	500 ppt	100 ppb

* Additional impurities are available

** Impurities in O₂ are measured using the included EI source

Analyzer specifications

Dual Ionization Source	Atmospheric Pressure Ionization (API) / Electron Ionization (EI)
API Source Background	Less than 1ppt
Mass Range Options	1-500 amu (other mass ranges available)
Quadrupole Tri-Filter Rod Diameter	19mm
Detector	Pulse Counting Electron Multiplier
Detection Noise	< 3 counts in 10 ⁶
Detection Limit	< 5 ppt (component dependent)
Analysis Time	< 1 Second per component
Sample Switching Time	15 Minutes to <1 ppb
Bulk Gas Suitability	H ₂ , N ₂ , He, Ar, O ₂
Impurities Monitored	H ₂ , CO, CO ₂ , H ₂ O, O ₂ , CH ₄ , Kr, NH ₃ , Xe, C ₂ -C ₆ (other impurities available)
Dimensions	74" (H) x 28" (W) x 26" (D) (1.9 m x 0.7 m x 0.7 m)
Maximum Number of Components	Unlimited
Maximum Number of Digital I/O	16 (standard) Unlimited available
Maximum Number of Analog I/O	20 (standard) Unlimited available
Communication Protocols	Modbus, OPC, digital I/O, analog I/O

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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