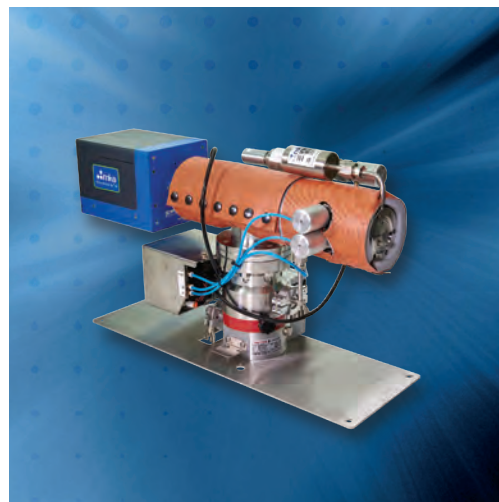


MASS SPECTROMETERS

SENSITIVE AND REPRODUCIBLE GAS PROCESS MONITORING



MASS SPECTROMETERS

POWERFUL ANALYTICAL TOOLS FOR A WIDE RANGE OF APPLICATIONS

Our wide range of powerful, versatile, and proven mass spectrometry-based solutions deliver a new level of understanding and control in vacuum and gas-related applications to customers. Residual Gas Analyzers are an effective tool to analyze system gas loads resulting from real leaks, virtual leaks or chamber wall outgassing. Process mass spectrometers are used in varied applications, including; Semiconductor (CVD, PVD, and Etch, etc), Electronic Thin Film (Display, LED, HDD and Solar), and pharmaceutical lyophilization for in-situ gas monitoring. Atmospheric pressure gas monitoring systems are ideal for the identification and analysis of gases, gas mixtures, gas impurities and reaction byproducts in a wide variety of applications.

- Seamless monitoring
- Field-proven technology
- Unprecedented range of control
- Completely automated operation
- Fully integrated, application-specific packages
- Increased stability and reproducibility of results



MICROVISION 2 Flexible, Integration-ready Residual Gas Analyzer

- Double: 100, 200, 300 amu
5" Single: 100, 200 amu
Triple: 100, 200, 300 amu
- Field proven quadrupole mass analyzer design
- Faster and more accurate responses in closed-loop control applications
- Acquires the highest quality of data at the fastest possible speeds
- Signals close to the noise floor can still be reliably measured
- Integrates seamlessly into the widest possible range of hardware and software systems



E-VISION 2 General Purpose Residual Gas Analyzer

- 1-100 amu or 1-200 amu
- ± 0.1 amu over 8 hours at stable ambient
- Built-in web application
- Dedicated realtime acquisition processor
- Designed to collect data at millisecond speeds per data point
- Suitable for a wide range of applications including pump down and chamber contaminant monitoring
- Offers the highest flexibility and connectivity through the use of hardware and software



HPQ3/HPQ3S High Pressure Residual Gas Analyzer

- 1-100 amu
- Up to 0.008 Torr maximum pressure depending on model
- <3ms per point for analog or barchart scanning
- 5 ppm at 0.001 Torr (0.0013 mbar) minimum detectable concentration
- Offers the highest flexibility and connectivity through the use of hardware and software
- Provides a complete range of additional digital and analog connections for integrating into systems with flexible low cost solutions



CIRRUS™ 3 & CIRRUS™ 3 XD

Powerful and Versatile Atmospheric Gas Analyzers

- 1-100 amu; 100HP, 1-200 amu or 1-300 amu
- 5°C to 35°C operating temperature
- Gas consumption of 20 ml/min
- 2.0 m long with 0.25" Swagelok® end connection, heated to 150°C
- High compression turbo-molecular pump with internal 4-stage diaphragm backing pump standard
- High sensitivity XD version with V-lens™ technology available

Application Specific Monitoring

The Vision 2000-B™ Residual Gas Analyzer is designed to track levels of potentially damaging residual gases that can negatively impact the quality of product for example, aluminum deposition can be negatively impacted by the presence of O₂ and H₂O, which can lead to poor bulk film characteristics and surface roughness. The Vision 2000-B Residual Gas Analyzer features the "smart head" technology from the Microvision 2. The electronics unit mounts directly onto the analyzer head, and connects to the system PC via an ethernet interface.



Process and Chamber Monitoring

MKS process and monitoring solutions feature real-time, web-enabled, hardware, software, and systems to support a variety of tools and processes. These solutions improve performance and yield while reducing tool damage and false alarms. Available solutions are:

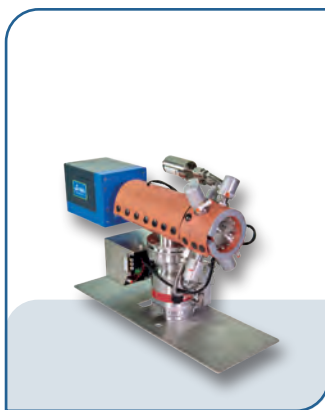
- Process Eye™ Professional Residual Gas Analyzer Software
- EasyView Residual Gas Analyzer Software Platform
- TOOLweb® RGA Process and Chamber Environment Monitor Software
- AMDS-1000 Arc Monitoring and Detection System



VISION 2000-A & VISION-A XD

Residual Gas Analyzer for ALD & CVD Processes

- 1-100 amu; 1-200 amu or 1-300 amu
- Temperature inlet up to 200°C (consult the factory for models up to 300°C)
- Direct coupling for a sample transfer tube
- Modular UniBloc inlet with all metal seals and field serviceable parts
- Incorporates a Remote Vacuum Controller (RVC) providing fail-safe protection for the process tool and RGA
- High sensitivity XD version with V-lens™ technology available



VISION 2000-C™/E™ & VISION 2000-C™/E™ XD

Residual Gas Analyzers for Multi-pressure & CVD/ALD Processes

- 1-100 amu; 1-200 amu or 1-300 amu (C version for ALD/CVD; E Version for Etch processes)
- Better than ±0.1 amu over 8 hours
- Modular UniBloc inlet with all metal seals and field serviceable parts
- Incorporates a Remote Vacuum Controller (RVC) providing fail-safe protection for the process tool and RGA
- High sensitivity XD version with V-lens™ technology available



VISION 2000-P™ & VISION 2000-P™ XD

Residual Gas Analyzers for Select Pressure & PVD Processes

- 1-100 amu standard; 1-200 amu or 1-300 amu
- Better than ±0.1 amu over 8 hours
- 4 analog inputs and 2 outputs (plus 1 dedicated gauge input)
- Simultaneous multiple-sensor operation capability
- Incorporates a Remote Vacuum Controller (RVC) providing fail-safe protection for the process tool and RGA
- High sensitivity XD version with V-lens™ technology available



300MM RESIST-TORR® & 300MM RESIST-TORR® XD

Photoresist Detection Monitors

- Detection of photoresist contamination during high pressure (~8 Torr) degas
- 1-200 amu
- Better than ±0.1 amu over 8 hours
- Built in calibration standard with automatic calibration routine
- Fully automated process monitoring
- Powerful optional data review feature
- High sensitivity XD version with V-lens™ technology available

WHY MKS?

CRITICAL TECHNOLOGIES

World-class technology and development capabilities for leading-edge processes



PROVEN PARTNER

Recognized leader delivering innovative, reliable solutions for our customers' most complex problems



OPERATIONAL EXCELLENCE

Consistent execution across all aspects of our business



COMPREHENSIVE PORTFOLIO

Extensive offering of products and services for the markets we serve



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MKS INSTRUMENTS, INC. enables technologies that transform our world. We deliver foundational technology solutions to leading edge semiconductor manufacturing, electronics and packaging, and specialty industrial applications.

We apply our broad science and engineering capabilities to create instruments, subsystems, systems, process control solutions and specialty chemicals technology that improve process performance, optimize productivity and enable unique innovations for many of the world's leading technology and industrial companies.

Our solutions are critical to addressing the challenges of miniaturization and complexity in advanced device manufacturing by enabling increased power, speed, feature enhancement, and optimized connectivity. Our solutions are also critical to addressing ever-increasing performance requirements across a wide array of specialty industrial applications.

Additional information can be found at www.MKS.com.

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