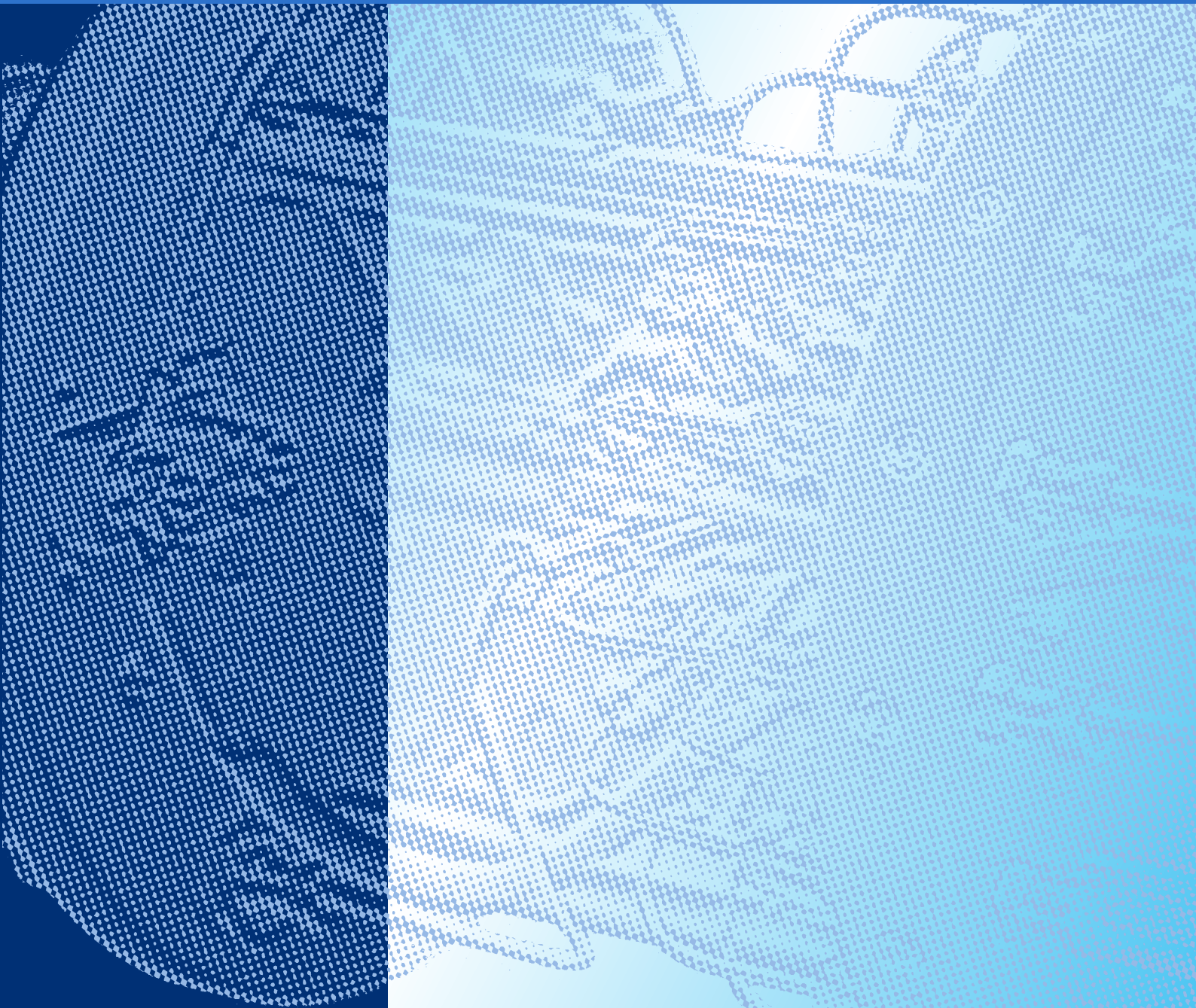




QIC Series Gas Analysers

System Configurations

realtime gas analysis systems



QIC Series Gas Analysers

System Configurations

Advanced real-time gas analysers for continuous sampling of processes and atmospheres near ambient pressure, all sharing a common system concept yet each expandable with the addition of application-specific accessories.

Common baseline features include:

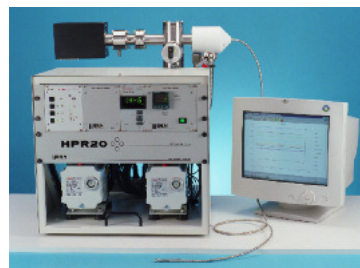
- Sample pressure range 2bar to 100mbar
- Species molecular weight range to 200amu(option: 300amu)
- Compact benchtop system(option: mobile cart)
- Fast 300msec sampling response
- Time/intensity trend monitoring of multiple species.
- Soft Ionisation Mode - simplified data presentation and interpretation
- Sample consumption rates down to 1ml/min
- Integration of external process data (temperature, weight, pressure)

Three system types offer choice dependent on application requirements, with performance progressing from general gas analysis through to light gas processes and on to high-precision analysis with integrated calibration and gas mixing resources.

The comprehensive range of optional modules and accessories enables the versatility of individual systems to be further optimised and extended for user-specific process requirements including direct analysis from multiple gas streams, process system control and protection, analysis of corrosive gases and of high-temperature sample.



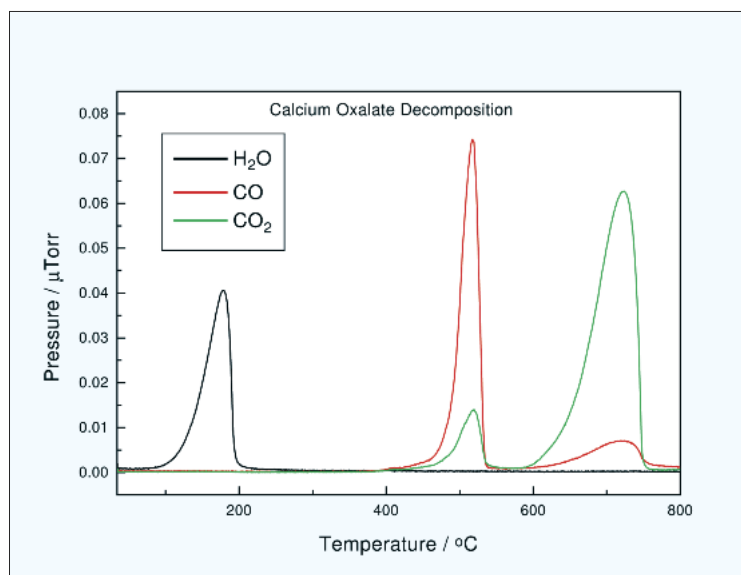
QGA



HPR-20 QIC



HPR-20 QICplus



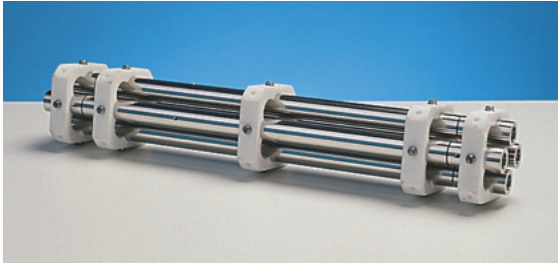
300amu Mass Range

The Hiden HAL/3F 301 RC mass spectrometer, with 600-series triple-stage mass filter element for increased mass resolution, abundance sensitivity and endurance, is offered for the more demanding applications in place of the 200 amu single-filter system.

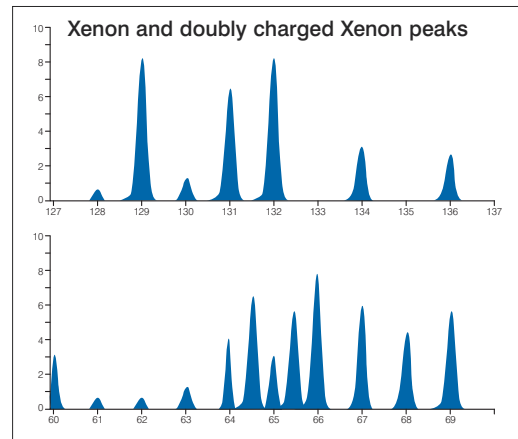
- Extends operation for high mass species.
- Gives high contamination resistance to aggressive gases and ionisation reaction by-product.
- Enhances detection levels to 5 parts/billion.

Options:

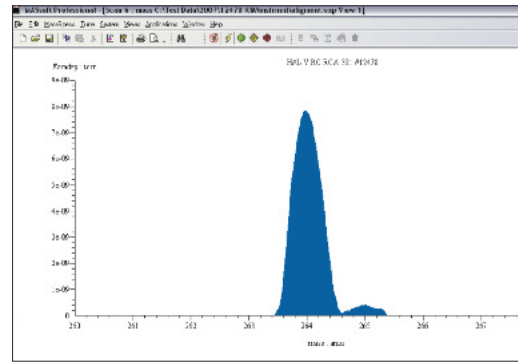
- Alternative mass ranges to 1000 amu.
- 900- and 1200-series mass filters for maximum mass resolution and abundance sensitivity.



Triple-stage mass filter technology enhances mass separation, detection levels and longevity.



Exceptional mass resolution easily separates doubly-charged Xenon ions at half-masses 64.5 and 65.5.



High mass measurement plus increased total performance

Corrosive Gas Sampling



An upgrade of the vacuum system and inlet system for continuous operation

with aggressive gas mixtures. Corrosion resistant seals and materials are used for all wetted surfaces.

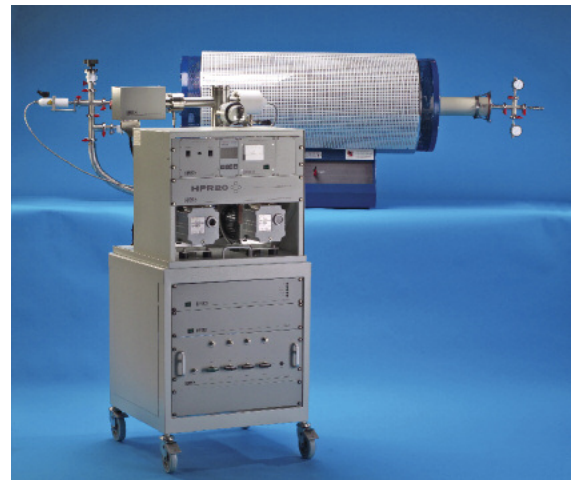
- Turbomolecular pump with gas purge for the rotor bearing protection
- Fomblinised rotary forepumps or Teflon-coated membrane forepumps.
- Anti-corrosion seals and materials used throughout the sampling line, UHV vacuum manifold and foreline.

Typically used in conjunction with the HAL/3F series 300amu Mass Range option with corrosion resistant triple-stage mass filter element.

Mobile Cart

A robust steel-framed mobile cart fully engineered for integration with the Hiden QIC or HPR-series benchtop modules.

- Single-bay low footprint and two-bay options.
- 19 inch rack-mounting space included
- Lockable wheels.
- Supplied fully integrated, wired and tested



Automated FCI Flow Control Interface

For application to precise monitoring of processes with unstable pressure regimes, the FCI interface automatically maintains a constant sample flow rate to the mass spectrometer through sample pressure changes up to a factor of five times.

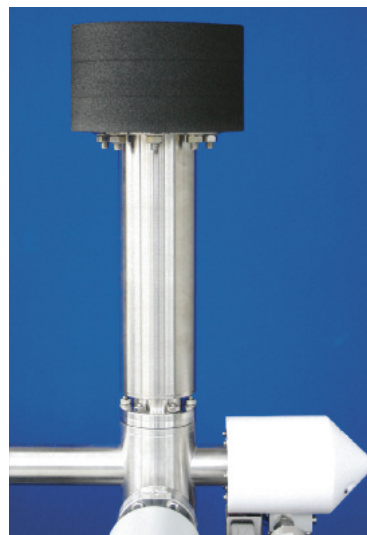
- Continuously variable automated control valve
- Capacitance manometer pressure reference
- Controls through any half-decade pressure window within the range 2 bar to 100 mbar
- Gives optimum measurement precision by minimising time-dependent variables.



Liquid Nitrogen Cryopanel

For direct mounting to the UHV vacuum manifold to achieve maximum vacuum integrity:

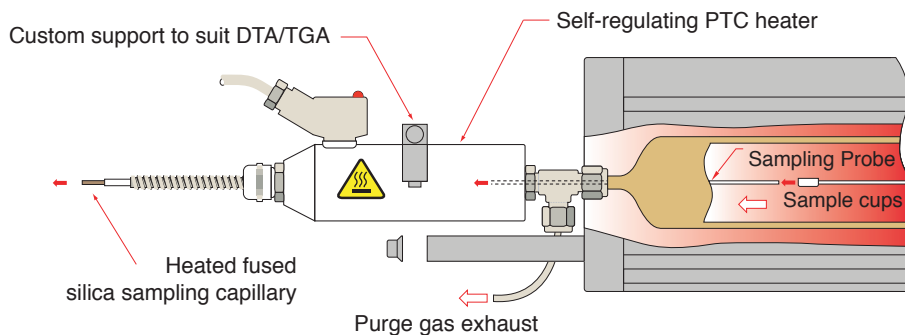
- Reduces background levels of water and HC vapours
- Speeds up system pumpdown time
- Improves overall ultimate vacuum levels
- Integral LN2 reservoir with 7 hour capacity



TGA Interface for Evolved Gas Analysis

Standard and custom-designed direct hot-zone sampling interfaces for a range of TA/TGA systems to provide secure fastening of the QIC capillary to the gas flow outlet. Configured for adaptation and data integration in collaboration with system manufacturers.

- Integrated thermal, gravimetric and gas analysis data
- Optimum response times and sample integrity
- Independently heated interface connection for avoidance of cold spots.
- Hot sample adaptor for 1000°C operation



Multi-stream Selectors

A family of gas stream selector assemblies configured and optimised for general applications together with additional options for applications requiring anti-condensation, corrosion resistance, fastest stream switching and low-level sample extraction.

Valves and manifolds are of all-stainless steel or fluoropolymer construction with vacuum and shut-off seals optimised to the application.

8-way Multi-purpose Stream Selector

A compact manifold with integrated solenoid-operated three-way valves configured either for dead-end or for continuous flow through all sampling lines which, together with the low internal volumes, gives optimum inter-stream dead times.

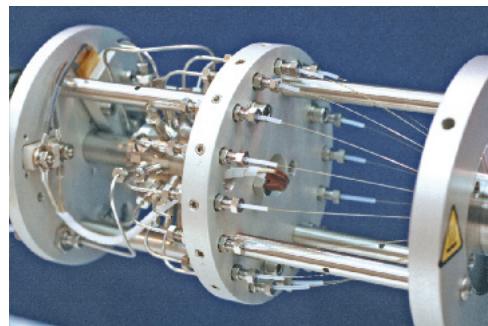
- Software-controlled valve operation, sequencing and purge delay fully integrated with the data acquisition cycle.
- Auto and manual valve operation.
- Corrosion-resistant and 65C anti-condensation versions.
- Between-stream measurement dead time less than 30 seconds.
- Sample consumption rate down to 20mL/min per stream.
- Vacuum grade extractor pump for sub-atmospheric samples.



16-way Low Throughput Stream Selector

A very compact rotary valve offering selection from 16 gas streams with very low sample extraction rates. Internal volumes are minimised and microbore capillary is used for all incoming continuous flow sample connection lines to give optimum inter-stream dead times.

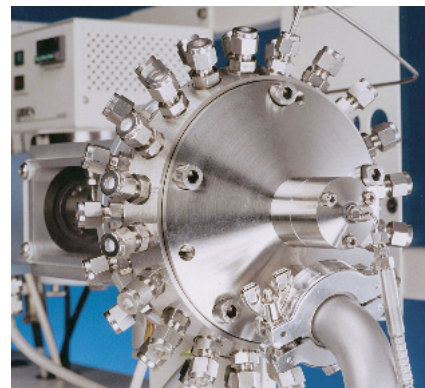
- Very compact assembly with fully automated operation.
- Positive stepper motor-driven stream selection.
- Low sample consumption rate of 4mL/min per stream.
- Exceptional between-stream dead time - less than 1 second.



PROTEUS 40-way and 80-way Rotary Valve

A rugged rotary valve for laboratory and industrial applications, the drive module providing for standalone operation or for integration with the Hiden gas analysis systems. The valve features fast stream selection and response times together with exceptional rotary seal lifetimes and simple maintenance procedures.

- 40-stream and 80-stream options.
- Long life rotary seals. Self-compensating face seal gives $>6 \times 10^6$ switching operations.
- Integrated heaters for 120C operation.
- Bi-directional micro-stepping motor drive under continuous closed-loop control for fastest stream selection.
- Operation down to 10mbar absolute sample pressure.



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It is Hiden Analytical's policy to continually improve product performance and therefore specifications are subject to change.

TECHNICAL DATA SHEET 165-1