# Hiden *RGA* Series Residual Gas Analysers

for vacuum measurement through to fundamental scientific research




gas analysis

surface science

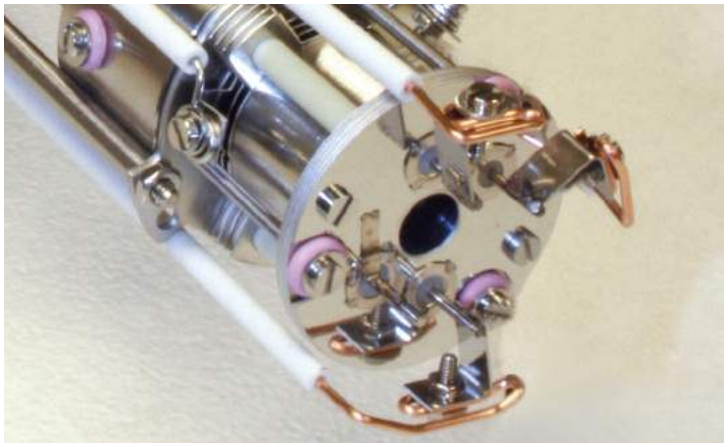
plasma diagnostics

vacuum analysis

HIDEN ANALYTICAL

# Quadrupole Mass Spectrometers for Residual Gas Analysis.

Hiden residual gas analysers are application tested and calibrated to provide the highest quality performance, and they are backed by an industry best 3 year warranty and lifetime service support.



## Core features:

- High sensitivity helium leak detection, mass selectable for alternative search gases
- Ultra-fast data acquisition - up to 500 measurements per second
- Advanced analysis capability for complex gas interpretation
- Data presentation as mass peak ratios for highest stability and accuracy
- Twin burnout-resistant oxide coated iridium filaments
- User-programmable multi-tasking firmware for creation of process-specific control and data acquisition functions
- All backed by an industry best 3 year warranty and lifetime service support

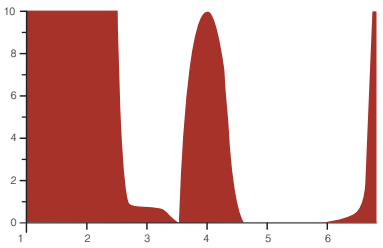


# *RGA* application specific performance

## The *Automatic* Residual Gas Analyser

**Technology levels to meet the needs of your analysis: from vacuum diagnostics through to fundamental scientific research.**

**Helium in Air- high sensitivity with stable background - even at high pressure**




Hiden's RGA sensitivity for helium is 5 times* that of a typical analyser providing excellent leak detection performance.

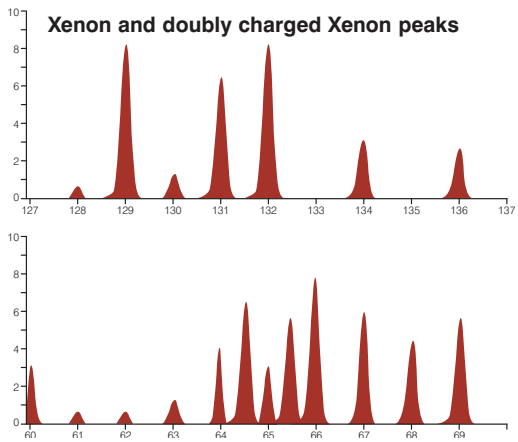
*Based on reference to published relative sensitivity data.

## HALO

***For multi-purpose HV/UHV vacuum applications***

- Interchangeable gauge heads and control modules reduce operational and aftersales support costs.
- Mass range options 200 amu and 300 amu.
- Dual Faraday / Electron Multiplier detector with partial pressure range $10^{-4}$ mbar to $10^{-13}$ mbar.
- Zero blast baseline drift is eliminated

**Xenon and doubly charged Xenon peaks**



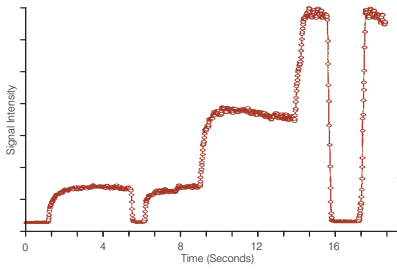

3F performance includes enhanced sensitivity for high mass species and increased resolution capablities.

## 3F

***for precise analytical capability***

- Triple mass filter technology for high sensitivity with enhanced contamination resistance and abundance sensitivity.
- Application-specific ionisation sources for gas analysis, molecular beam measurement and UHV/XHV studies.
- Mass range options 300 amu and 500 amu.
- Minimum detectable partial pressure 2 x $10^{-14}$ mbar.

**3F PIC Trend Analysis - up to 500 measurements per second**




High quality transient data acquisition at PPM/PPB levels.

For UHV/TPD for example.

## 3F PIC

***for fast event studies with optimum sensitivity at UHV/XHV pressure regimes***

- Fast pulse ion counting detector with continuous 7 decade measurement from 1c/s to $10^{7}$c/s.
- Fully compatible with the 3F series ionisation sources.
- Mass range options 300 amu and 500 amu.
- Minimum detectable partial pressure 5 x $10^{-15}$ mbar.

RGA

# *RGA* features, specification and software

**Lifetime Service Support**

Backed by a **3 year warranty**

Hiden's RGAs provide high performance analysis for the long term.

Advanced PC Software - Ethernet comms, RS232 and I/O as standard.

High speed data acquisition - up to 500 measurements/second.

Read in data (eg temperature) from external devices.

Data transfer to higher level systems.

## RGA configuration

Hiden's residual gas analyser systems include:

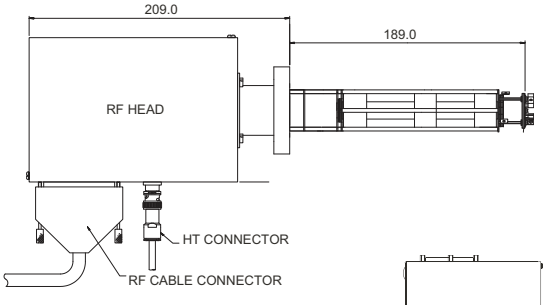
- **Analyser gauge head** – a precision assembly optimised for longevity, thermally stable to withstand repeated bakeout.
- **RF Head** including detection electronics and RF/DC mass filter supplies.
- **MSIU** – mass spectrometer interface unit with advanced microprocessor providing automatic scan functions and real time operation independently of the PC operating system.
- **MASsoft Professional PC software** – A new multi level user interface with automatic operating functions.

Standard mass range options: 200, 300, and 500 amu

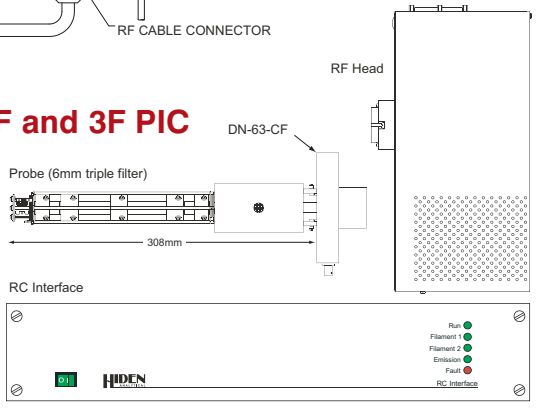
Specialist mass range options: 50, 1000 and 2500 amu.

Differential pumping modules and sampling inlet systems are available for a broad range of applications for both gases and vapours.

### HALO



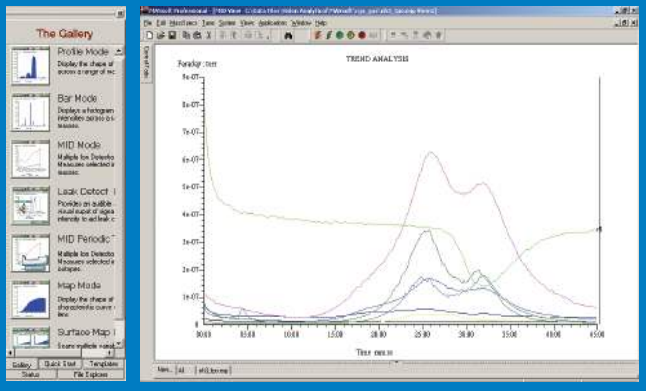

### 3F and 3F PIC

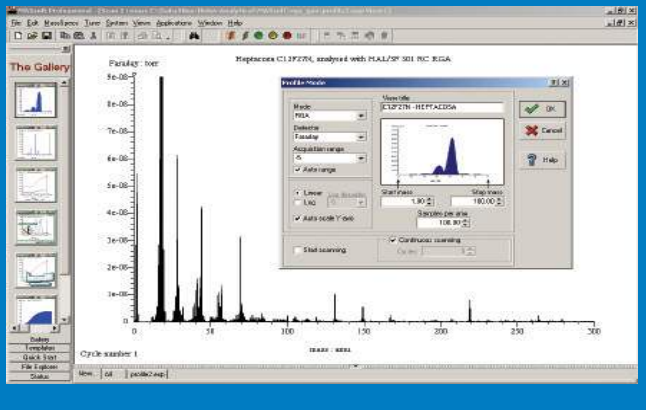



## MASsoft Professional PC Software

***provides for total automatic control of your analyser***

- Template files for automatic operation of routine analyses.
- Synchronous data acquisition with external inputs.
- Data output in NIST library format for use with one of the world's largest mass spectral database systems.
- Operator skill level selection.
- Multi-measurement modes, and mixed mode capability.
- Real time data zoom in all measurement modes, including trend analysis for on the fly review of gas composition changes, and for partial pressure measurements.
- Status bar indicates status of filaments, emission, detector, I/O and a broad range of user selectable parameters.
- Multiple system operation through Ethernet link.



# RGA Series Applications

Vacuum diagnostics

Leak detection

Contamination analysis

Semiconductor production

Vacuum process analysis

Reactive sputtering closed loop control

Vacuum furnace monitoring

Molecular beam studies

UHV/XHV surface science

UHV TPD

Hiden's quadrupole mass spectrometer systems address a broad application range in:

## *Vacuum and semiconductor process monitoring:*



- Partial measurement and control of process gases
- Reactive sputter process control
- Vacuum furnace gas analysis.
- Process contamination determination
- Vacuum coating process monitoring.
- **Refer to HPR-30 systems**

## *Gas Analysis*



Fast real time measurement of multiple gas species for:

- Catalysis studies
- Evolved gas analysis
- Fuel cell studies
- TG-MS
- **Refer to QIC series**

## *Plasma diagnostics*



Positive and negative ion mass and energy analysis for:

- Plasma source characterisation
- Etch and deposition process reaction kinetics studies
- Neutral and neutral radical analysis
- **Refer to EQP, PSM and Espion**

## *SIMS - secondary ion mass spectrometry*



- High sensitivity surface and interlayer contamination analysis
- End point detection in ion beam etch
- Depth profiling
- Elemental Imaging – surface mapping.
- **Refer to SIMS workstation, EQS and MAXIM**

HIDEN ANALYTICAL



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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 163