

Hidden HPR-20 DLS

Ultra-high Resolution & Sensitivity Analysis of Hydrogen Isotopes and Light Gases

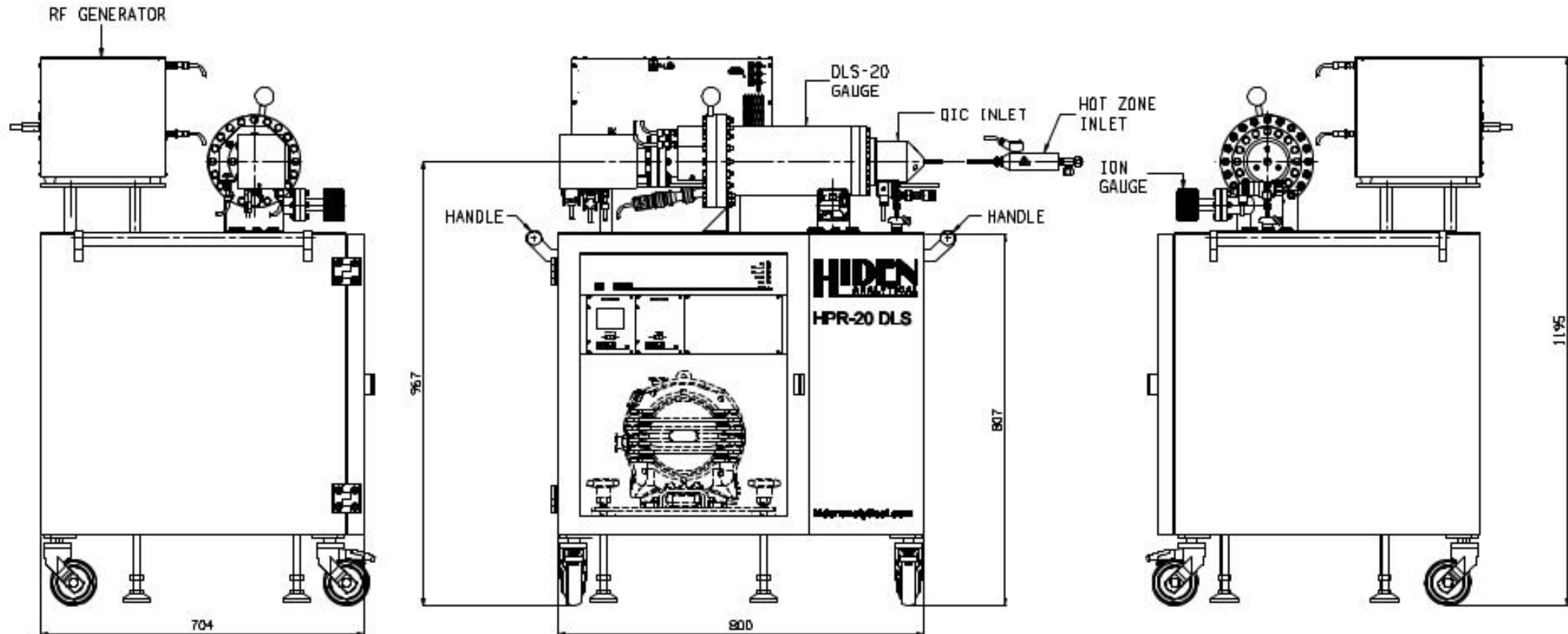
Introduction

The Hiden **HPR-20 DLS** gas analysis system is configured for continuous analysis of gases and vapours at pressures near atmosphere in standard form, with alternative inlet systems being offered for applications requiring direct sampling from higher pressures to 30 bar. The mass spectrometer includes an ultra-high resolution mode specifically designed for analysis at low masses, hydrogen isotopes and light gases.

HPR-20 DLS



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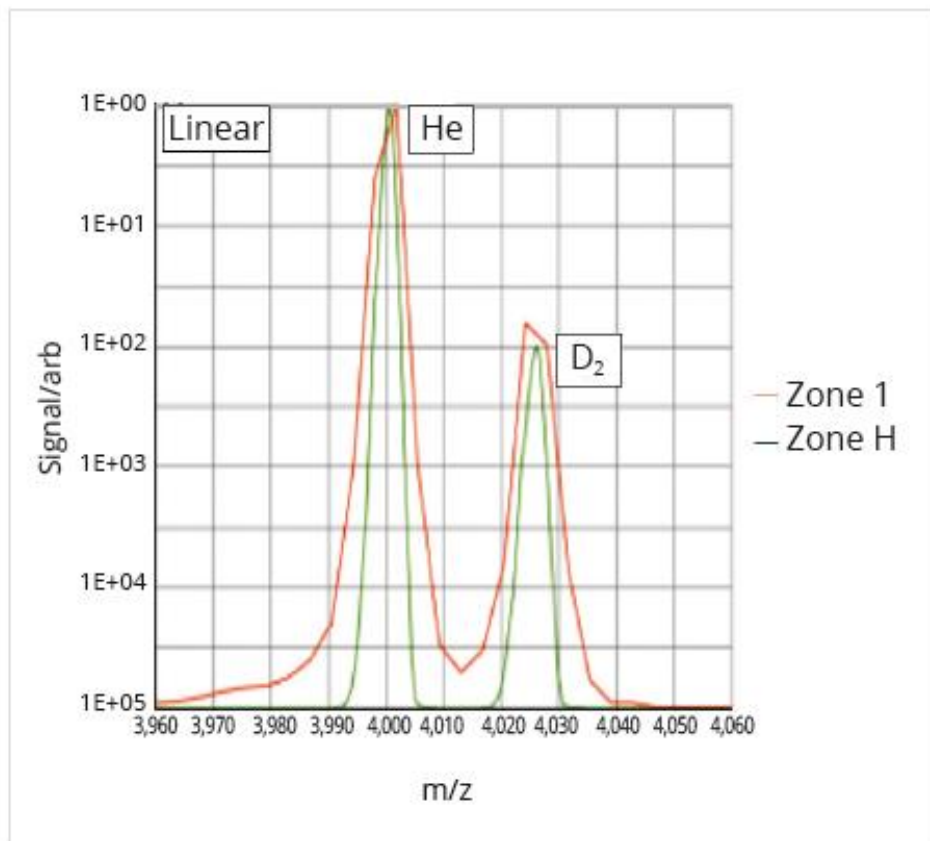
Application Areas

- Hydrogen Isotope Studies
- Nuclear Fusion Research
- Glovebox Monitoring

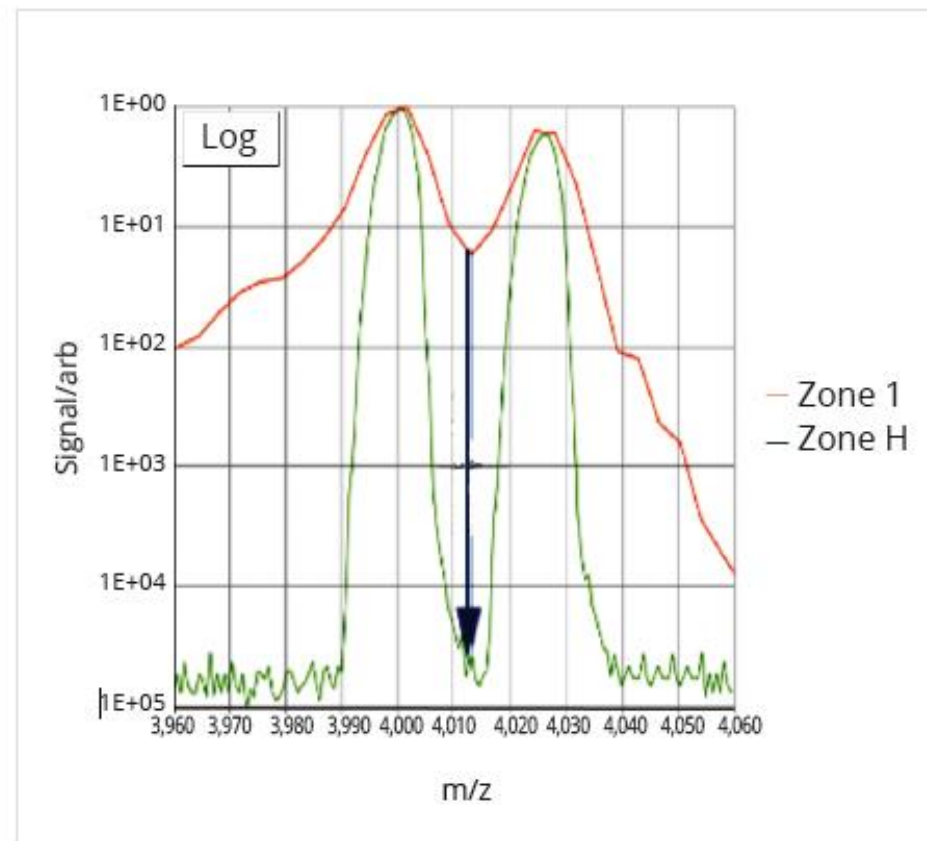
Standard Features

- Unique dual stability zone quadrupole switching mode: The ultra high resolving power of quadrupole Zone H operation is software selectable providing peak width at FWHM < 0.003 AMU.
- Mass range 200 AMU, and software switchable to 20 AMU mass range for the ultra high-resolution mode.
- Pulse ion counting electron multiplier detector with 7 decades continuous dynamic range.
- QIC inlet providing <300 ms response time to changes in gas concentrations.
- Fast scan speeds, with up to 650 measurements per second for transient analysis.
- Low dead volume, heated inlet for fast response to gases and vapours.
- Windows® PC software for data acquisition, data display and control of quadrupole parameters.
- Integration of external signals (temperature for example) simultaneously logged with mass spectrometer data. Two channels, ±10V user labelled and user scalable in units of user choice are included.

Example Data: Resolving He and D₂ in Zone 1 and H



The red trace shows He and D₂ acquired in Zone 1 and the green in Zone H.



In Zone H the valley separation of He and D₂ continues for 5 decades, making possible the measurement of 1 ppm He in D₂.

MASsoft Professional Control Software

The screenshot displays the MASsoft 10 software interface, which is used for controlling mass spectrometers. The main window shows a 'Real time trend analysis' plot with SEM (Secondary Electron Multiplier) on the y-axis (log scale from 10⁻¹² to 10⁻⁴) and Time (mm:ss) on the x-axis (from 08:20 to 41:40). The plot shows several peaks corresponding to different components: Water, Ammonia, Argon, Carbon Dioxide, Isopropyl alcohol, and Methyl Alcohol.

On the right side, there is a 'Scan Editor' window showing a sequence of scans:

- Scan 1 : mass 2.00
- Scan 2 : mass 18.00
- Scan 3 : mass 32.00
- Scan 4 : mass 40.00
- Scan 5 : Pressure 0.40

Below the scan editor, there is a 'MID Mode' window with a table of scan parameters:

Component	Mass	Mode	Detector	Range	Au.	Rel Sens	Rel SEM	Colour	Line	Style
Hydrogen	2.00	Unknown	Faraday	-5	✓	0.440	1.000	Aqua	Thin sc	---
Water	18.00	RGA	Faraday	-5	✓	0.900	1.000	Green	Thin sc	---
Oxygen	32.00	Unknown	Faraday	-5	✓	0.960	1.000	Red	Thin sc	---
Argon	40.00	RGA	Faraday	-5	✓	1.200	1.000	Blue	Thin sc	---
Pressure	0.40	RGA	Faraday	-5	✓	1.200	1.000	Fuchsia	Thin sc	---

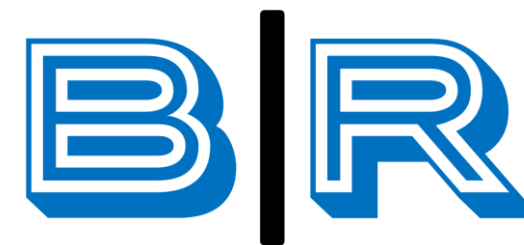
The interface also includes a 'Quick Start Tasks' panel on the left, a 'Scan Editor' panel, and a 'MID Mode' panel. The bottom of the screen shows the Windows taskbar with the date 29/03/2018 and time 10:42.

A multi-level software package allowing both simple control of mass spectrometer parameters and complex manipulation of data plus control of external devices.

Recent Customers



- Shanghai Institute of Ceramics of Chinese Academy of Sciences
- Lawrence Livermore National Laboratory LLNL
 - Breakwater Research LLC
- Sichuan Winntec Specialty Gases Co Ltd
 - Samsung Electronics



Summary

- Industry first 20 mm rod diameter quadrupole mass filter for ultra-high mass resolution
- Software switchable dual-zone RF power supply for Zone H ultra-high resolution 1-20 amu operation and Zone I ultra-high stability 1-200 amu operation
- 0.006 amu mass separation in real time

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- www.HidenAnalytical.com
 - The Hiden website is an excellent resource with product pages, brochures, catalogues, product pages with some application notes, presentation and other information.
 - Contact +44 1925 445225 for direct support.