



pQA – Portable Quadrupole Analyser

- ▶ A compact transportable case mounted gas analyser configured for environmental field studies.

Detailed product information / introduction

Wastewater, sludge and soil core analysis



Environmental research



Groundwater studies



***p*QA a compact transportable ruggedized case mounted gas analyser configured for environmental field studies.**

Membrane inlet mass spectrometry (MIMS) enables direct analysis of dissolved gases and volatile compounds in liquid samples. The choice of membrane and inlet employed provides application specific enhancements.

The *p*QA is available with interchangeable inlets using either polydimethylsiloxane (PDMS) or the proprietary X44 membrane.

The X44 membrane offers enhanced sensitivity for atmospheric gases and is particularly suited to groundwater studies.

The PDMS membrane provides excellent sensitivity for volatile organic compounds (VOCs) and supports a wide range of MIMS applications.

Applications:

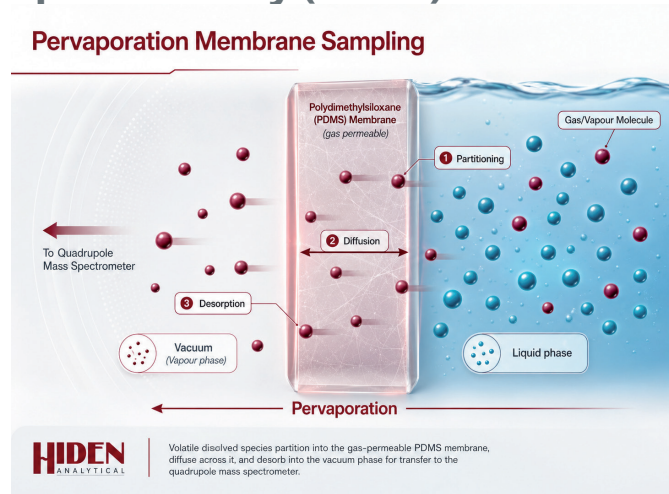
- ▶ Groundwater studies
- ▶ Volatile organic compounds (VOCs) detection
- ▶ Pollution monitoring
- ▶ Denitrification studies
- ▶ Environmental research
- ▶ Oceanic trace gas measurements
- ▶ Wastewater, sludge & soil core analysis
- ▶ Swimming pool analysis
- ▶ Enzyme activity studies

Key Features

- ▶ Real-time field ready dissolved gas and VOC analysis
- ▶ Interchangeable membrane inlets for application specific deployment
- ▶ Dissolved gas targeting with specialised membrane selectivity
- ▶ Minimal sample preparation with direct sampling
- ▶ Portable, rugged case design for field studies
- ▶ 12 V operation for mobile deployment
- ▶ Soft ionisation for simplified spectra and confident identification

Example Data

Membrane Inlet Mass Spectrometry (MIMS)



TYPICAL LOD USING MIMS	
GAS	LOD ppt
Helium	5
Chloroform	20
Carbon disulphide	50
Dimethyl sulphide	60
Methane	100
Carbon dioxide	300
Argon	300
Oxygen	300
Acetone	330
Benzene	500
Hydrogen	1200

Applications in water/soil/sludge analysis

The MIMS instrument is versatile, robust and portable for use in the laboratory and field based applications including:

Diurnal variation of stream denitrification in a southeast China coastal watershed

- ▶ China - *Coastal and Ocean Management Institute, Xiamen University.*
- ▶ Sweden - *Dept. of Water Resources Engineering, Lund University.*

Enhancing denitrification using a carbon supplement generated from the wet oxidation of waste activated sludge

- ▶ Australia - *University of Queensland.*
- ▶ New Zealand - *Sustainable Design, Scion.*

Oceanic Trace Gas Measurements by Membrane Inlet Mass Spectrometry (MIMS)

- ▶ Canada - *University of British Columbia, Institute of Ocean Sciences - Fisheries and Oceans.*
- ▶ USA - *Universities of California, Delaware, and Charleston.*

Methane stimulates massive nitrogen loss from freshwater reservoirs in India

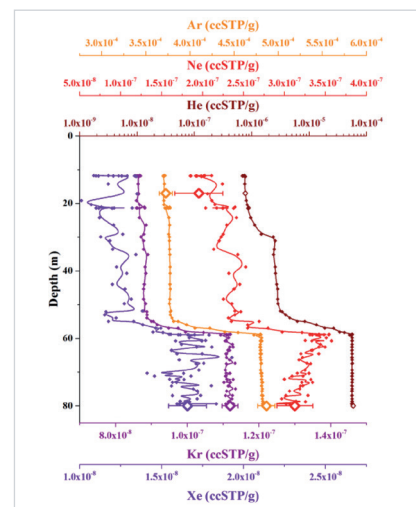
- ▶ India - *CSIR-National Institute of Oceanography, Goa.*
- ▶ Germany - *Max-Planck Institute for Marine Microbiology, Bremen.*
- ▶ UK - *National Oceanography Centre, University of Southampton.*

The impact of sludge amendment on gas dynamics in an upland soil: Monitored by membrane inlet mass spectrometry (MIMS).

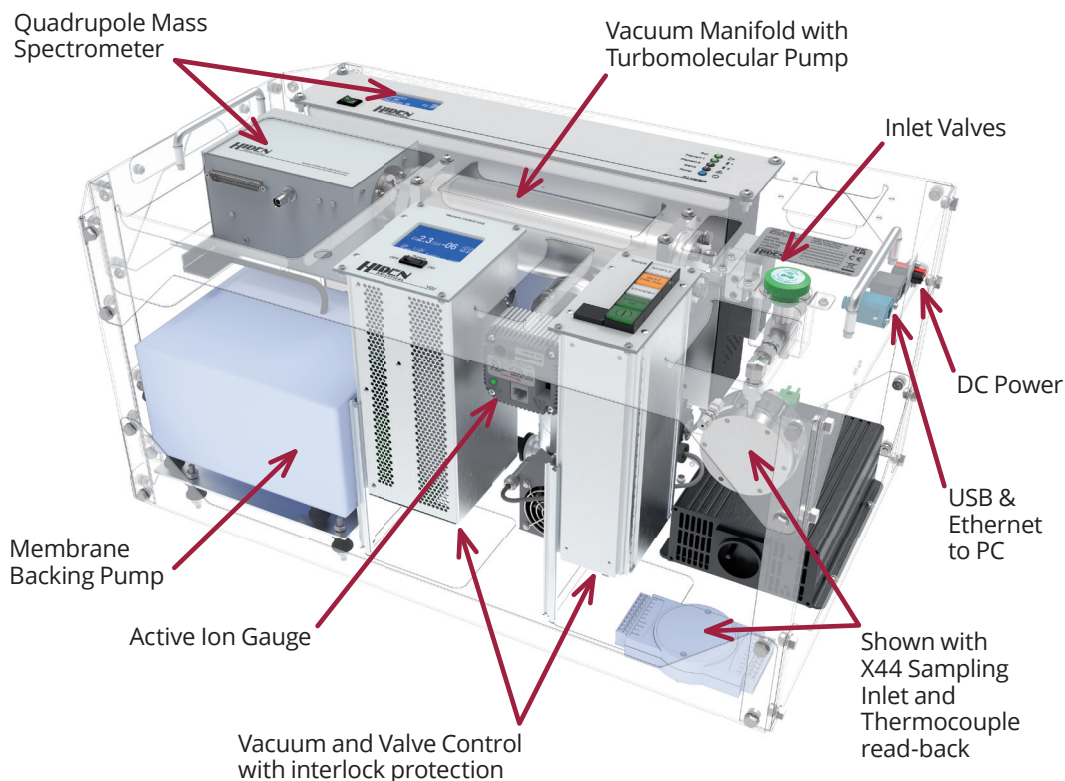
- ▶ UK - *University of Bath.*

Ground water study of 5 biologically/chemically inert gases - He, Ne, Ar, Kr, Xe - and their reaction to physical external forces in the environment.

- ▶ France - <https://geosciences.univ-rennes1.fr/en/experiments-hydrology-and-hydrogeology-leth2>



Technical data



Mass Ranges:	1-200/1-300 amu
Sensitivity:	100% to 60 PPT
Speed:	Up to 1000 measurements/second
Response time:	MIMS Probe < 60 s T90
Software:	MASsoft Professional
	QGAssoft
Dimensions:	Pelican® Case Dimensions:
	Width: 795 mm Depth: 518 mm Height: 394 mm
Weight:	< 40 kg
Power:	120 W / 70 W standby:
	12 V DC or 24 V DC option

System Configuration & Options

ITEM	DESCRIPTION	PARTCODE
	pQA SYSTEM	
pQ 1.1	pQA Portable Gas Analysis System, including Hidden HAL 201 RC quadrupole mass spectrometer with dual Faraday/electron multiplier detector. Mass Range 200 amu.	305220
QC 2.1.1	Extended Mass Range 300 amu - single or triple filter MS as applicable (in place of standard 200 amu mass range).	305113
	SAMPLING INLETS	
GA 3.7.0a	MIMS Probe: Membrane Inlet MS Probe - 500 mm long for analysis of dissolved species in fermentation cultures, soil samples, and general applications where analysis of dissolved species in liquid sample is required.	303416
GA 3.7.0b	MIMS Proximity Probe: Membrane sampling probe, 6 mm OD with 4 mm membrane diameter, approx. 50 mm overall length for ultra-low volume and thin-layer sampling in confined or space-limited setups. Non-metallic.	303418
	FLOW THROUGH SERIES	
GA 3.7.3f	FT-Standard: Flow through inlet, with liquid connections for continuous analysis of environmental water samples, ideal for ground, sea and wastewater analysis. Includes one probe, item GA 3.7.0a and integrated thermocouple and thermocouple interface.	303420
GA 3.7.3g	FT-High Sensitivity: High sensitivity flow through inlet with liquid flow connections, for wastewater, slurry, solvent and oil analysis, including silicone-incompatible media. Circular carrier including x44 membrane. Integrated thermocouple and thermocouple interface.	303437
GA 3.7.3h	FT-Low Volume: Flow through inlet for low sample volumes requiring high sensitivity analysis suited to vial analysis and denitrification studies. Includes stainless steel U-tube connection for use with liquid N ₂ Dewar for water removal (Dewar not included).	303438
	GAS SAMPLING CAPILLARY INLET	
QIC uF-2	Micro-flow Inlet: 2 metre micro-flow capillary inlet, with sample flow rate 12 µl/min, for gas sampling at atmospheric pressure.	303456



HiddenAPPLICATIONS

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

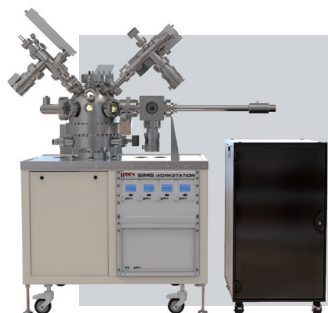
GAS ANALYSIS

- ▶ Dynamic measurement of reaction gas streams
- ▶ Catalysis and thermal analysis
- ▶ Electrochemical analysis
- ▶ Dissolved gas analysis
- ▶ Fermentation, environmental and ecological studies



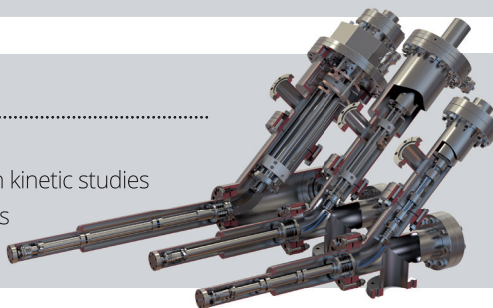
SURFACE ANALYSIS

- ▶ UHV TPD/TDS
- ▶ ToF qSIMS and SIMS analysers
- ▶ End point detection in ion beam etch
- ▶ Elemental imaging – 3D mapping
- ▶ SIMS system with simultaneous dual polarity analysis



PLASMA DIAGNOSTICS

- ▶ Plasma source characterisation
- ▶ Etch and deposition process reaction kinetic studies
- ▶ Analysis of neutral and radical species



VACUUM ANALYSIS

- ▶ Partial pressure measurement and control of process gases
- ▶ Reactive sputter process control
- ▶ Vacuum diagnostics
- ▶ Vacuum coating process monitoring



HIDDEN

ANALYTICAL

Hidden Analytical Ltd.
420 Europa Boulevard
Warrington WA5 7UN England

T +44 [0] 1925 445 225
E info@hidden.co.uk
W www.HiddenAnalytical.com



Sales Offices:

We have sales offices situated around the globe. **Visit our website for further information.**