

# ProMass

## Quadrupole Mass Spectrometer Analyser System for low volume, quick responding gas measuring with large dynamic range

Protea's ProMass analyser is a compact, robustly designed semi-portable Quadrupole Mass Spectrometer (QMS) instrument incorporating all the latest mass spectrometer and vacuum pumping technology. ProMass can be supplied in portable carry case or a 6U 19" rack module for on-line process measurements. QMS is a useful mechanism for gas analysis in ambient air or process applications, being able to detect and measure almost all gases with low detection limits and fast response.

A mass spectrometer measures the mass-to-charge ratio of the molecules in a sample by collecting and analysing the mass spectrum we can identify and quantify which molecules are present. The QMS within ProMass contains a mass filter that is made up of 4 parallel circular rods, hence the name quadrupole. With variable mass ranges of 0-100amu, 0-200amu or 0-300amu it is an instrument suitable for portable or fixed installations ideally suited to semiconductor production processes, ambient air measurements, leak testing and quality testing for the food industry.

- \* Very quick (millisecond) response time
- \* Detects almost any gas
- \* Low maintenance costs, with corrosion resistance inlets
- \* Advanced chemometrics for multi-gas quantification



Detects almost any gas

Advanced vacuum pumping and ion stabilisation for quick start-up time

Application of Protea's advanced chemometric routines to aid quantification

Compatible with our sampling system control systems for turn-key solutions

Specific Applications for ProMass:

- \* Hydrogen (H<sub>2</sub>) fuel analysis
- \* H<sub>2</sub> production processes
- \* Ambient air measurements
- \* BTEX quantification
- \* Ethylene and ethylene oxide production
- \* Breath analysis
- \* Gas Blending and bulk gas production

### Hardware Specifications

UHV System	250 l/sec Turbo Molecular Drag pump (TMP), suitable for light gas pumping Rotary backing pump, with ultimate pressure <7E-3 mbar (housed external in sampling module) Automated vacuum system control for vacuum integrity and protection Pirani total pressure gauge PID controlled temperature bake-out of vacuum chamber
Ion Source	Open or closed electron ionization source with adjustable electron energy Filaments: Yttrium oxide coated Iridium Source energy controlled and ramped for long-life and stability Soft ionization (option)
Vacuum Inlet	Fast Capillary: 2m heated sample line, purge time <100ms, Swagelok 6mm fittings Membrane barrier: For liquid sampling Calibrated leak: Heatable Sintered Stainless Steel, Hastelloy, Tungsten for corrosive gases
QMS	Detector: Faraday and C-SEM Maximum Operating Pressure: 1x10 <sup>-5</sup> mbar (C-SEM) Range: upto 300amu Resolution: 0.7-2.0 amu adjustable Reproducibility: ≤ ± 1% Speed: 1amu/sec (standard), >200amu/sec (option)
Analysis	Minimum Sample Time: 10ms Detection limit: Typically 100ppb Units: ppb, ppm, %Vol
Operating Temperature	0 - 40°C
Dimensions	19" x 500 x 6U
Power	Mains input voltage: 90- 250vac. 50/60 Hz. Power consumption <3A
I/O	Built in I/O: 16 x analogue o/p, 5 x analogue inputs, digital I/O for alarms