



The Sercon CryoPrep & CryoGas

High performance trace gas analysis systems

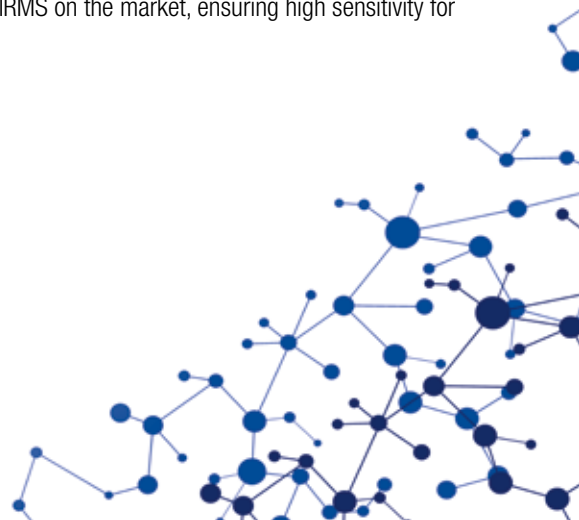
CryoPrep fully automated stable isotope analysis of the trace gases CO_2 , N_2O , CH_4 , CO , and NO , alongside N_2 , O_2 and air ratio measurements, by utilising cryogenic focussing, combustion and gas chromatography

CryoGas has all of the functionality of the CryoPrep, with an additional pyrolysis furnace. The CryoGas is optimised for the analysis of H isotopes in CH_4 , via pyrolysis of CH_4 to H_2

Key features include:

- Gas handling system allows a range of gases to be analysed over a range of concentrations
- Three automated cryogenic traps for trapping and focussing of condensable gases
- Temperature programmable furnaces
- Full automation for unattended analysis of gases in septum sealed bottles of from 6 to 250 ml
- Isothermal gas chromatography purification
- Bench-top module for easy interface to the Sercon HS2022, the most sensitive small radius IRMS on the market, ensuring high sensitivity for excellent precision, even for the smallest samples

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Software:

- Total software control of the instrument system and data processing
- Allows storage of sample analysis protocols to comply with good laboratory practice
- Standby mode to preserve consumable life during periods of low use.
- Inter-file import/export facility from instrument PC to laboratory server or internet (allows rapid updating of software or transfer to common spreadsheet packages)
- Fully compatible with all versions of Windows

Specifications

Design	Bench top module containing cryotrap, liquid nitrogen dewar, and oxidation furnace on swing out plate to enable combustion tubes to be changed easily. GC columns are housed in isothermal box.
Analytical Mode	Gas samples are flushed by helium from septum sealed bottles and purified by a user defined combination of gas chromatography, combustion, cryotrapping and cryofocussing.
Gas Chromatography	Dual selectable isothermal GC columns which include megabore capillary columns comprising of a Poraplot-Q and Molsieve PLOT columns to cover multiple gas analysis methods.
Cryofocussing Stage	Cryotrapping and focussing devices, capable of trapping and purifying N ₂ O and CO ₂ , are raised and lowered by software controlled pneumatics. With the CryoGas, the lighter gases NO and CH ₄ can also be trapped.
Sub-sampling valve	Valve to allow samples in the 1 ml range to be analysed as well as trace gases. Example applications are N ₂ and O ₂ analysis or N ₂ /Ar ratio analysis.
Oxidation stage	Ceramic capillary tube packed with oxidising chemicals for combustion of CH ₄ to CO ₂ . Close fitting conversion reactor with the facility to maintain a temperature of up to 1100°C.
Pyrolysis stage	Pyrolysis tube for the conversion of CH ₄ to H ₂ . Close fitting conversion reactor with the facility to maintain a temperature of up to 1500°C
Gas Control	High quality stainless steel diaphragm regulators.
Reference System	Isotope ratios are calculated either by the use of reference gases, or against internal standards of air placed in the autosampler.
Autosampler	The Sercon XYZ autosampler can accommodate 6 ml, 12 ml, 30 ml, 60 ml, 125 ml or 250 ml bottles, all of which are provided as required.

*CryoGas only

Gas	Reference Gas (% vs Ref)	Air Samples (% vs Ref)
N ₂ O (¹⁵ O)	0.1	0.4 (125 ml. 330 ppb)
N ₂ O (¹⁸ O)	0.1	0.7 (125 ml. 330 ppb)
CO ₂ (¹³ C)	0.06	0.2 (12 ml. 360 ppm)
CO ₂ (¹⁸ C)	0.06	0.15 (125 ml. 360 ppm)
CH ₄ (¹³ C)	-	0.2 (125 ml. 1.7ppm)
CH ₄ (²H)	-	0.3 (125 ml. 1.7ppm)
N ₂ (¹⁵ N)	0.06	0.1 (1 ml. 78%)
O ₂ (¹⁸ O)	0.1	0.1 (1 ml. 20%)

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Power and Gas Requirements

Power	100-240 VAC
Helium	99.999%
Oxygen	99.998%
Compressed Air	50 psi



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