

Membrane Inlet Mass Spectrometer MAX300-LG MIMS

The MAX300-LG Membrane Inlet Mass Spectrometer (MIMS) is a fully automated Quantitative Gas Analyzer with a temperature controlled Membrane Introduction Inlet for fast and repeatable analysis of gases and dissolved gases in liquids at the parts-per-trillion level.

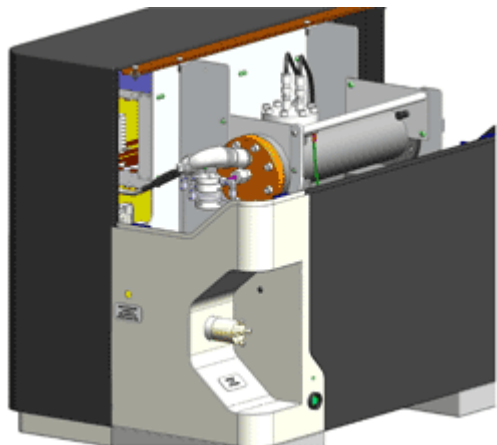
Quantitative Gas Analysis, performed with precision, accuracy and repeatability, demands an analyzer with exceptional stability & repeatability characteristics coupled with an inlet system and analysis methods that can handle routine calibrations and background gas subtractions. The MAX300-LG Membrane Inlet Mass Spectrometer delivers all this, plus the ability to significantly extend the detection range for many compounds down to the ppt level via enrichment through the semi-permeable membrane. Both gases and dissolved gases in liquids may be analyzed.



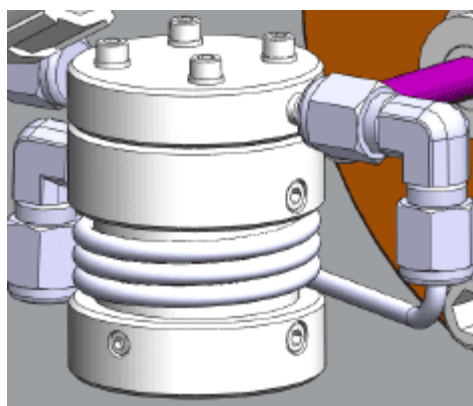
As standard it is configured with our highest specification 19mm quadrupole rod set, dual Faraday cup/Electron Multiplier detectors, temperature stabilized ion source, and 4 channel chemically inert auto-controlled inlet valve (expandable to 16 streams). Not only does this combination offer best in class stability and repeatability characteristics, it is backed by our industry leading Questor5 quantitative analysis control platform which features fully automated analysis routines that measure and deconvolute background gas interferences and overlapping fragment peaks. This is combined with automatic calibration stream analysis and a 180 component internal fragment pattern library to deliver single click quantitative analysis of unlimited components with a cycle time of 300msec per component.

All this is backed by our no-nonsense application review service which provides you with a written statement of expected precision and repeatability of analysis for each component in your gas mixture - taking the guesswork out of quantitative gas analysis.

MAX300-LG Membrane Inlet Mass Spectrometer Features:



- Temperature controlled membrane inlet
- +/-25ppm absolute precision measured on 1% argon
- parts-per-trillion (ppt) detection capability
- analysis of dissolved gases in liquids
- 8 decade dynamic measurement range
- 19mm high transmission and resolution triple quadrupole mass filters
- 250/300amu mass range
- 4 stream chemically inert auto-sampling inlet (expandable to 16 streams)
- Unlimited component analysis
- 180 species internal component cracking pattern library
- 21 CFR 11 compliant
- ONE CLICK QUANTITATIVE ANALYSIS METHODS



Mass Spectrometer Membrane Inlet:

The membrane inlet cell delivers sample gas or liquid through a heated path and across the membrane which transmits the sample into the low pressure ion source region of the mass spectrometer. Sample and membrane are at the same constant temperature which gives repeatable and stable measurements throughout.

Membrane Inlet Detection Enhancement:

Permeation through, and evaporation from the membrane produces a significant enrichment of many compounds over bulk carrier gas, resulting in increased detection levels in the part per trillion (ppt) range.

Bulk Gases \ Impurities	Impurities								
	H2	H2O	N2	Ar	O2	CO2	CO	CH4	NH3
Hydrogen (H2)	■	10 ppt	*100 ppb	*10 ppb	*100 ppb	5 ppt	10 ppt	10 ppt	500 ppt
Helium (He)	*1ppm	10 ppt	*100 ppb	*5 ppb	10 ppt	5 ppt	10 ppt	10 ppt	500 ppt
Nitrogen (N2)	*1ppm	10 ppt	■	*5 ppb	10 ppt	5 ppt	*500 ppb	10 ppt	500 ppt
Argon (Ar)	*1ppm	10 ppt	*100 ppb	■	10 ppt	5 ppt	10 ppt	10 ppt	500 ppt
Oxygen (O2)	*1ppm	*2 ppm	*500 ppb	*10 ppb	■	*500 ppb	*100 ppb	*500 ppb	*200 ppb
Carbon Dioxide (CO2)	*1ppm	*2 ppm	N/A	*10 ppb	N/A	■	N/A	N/A	*250 ppb

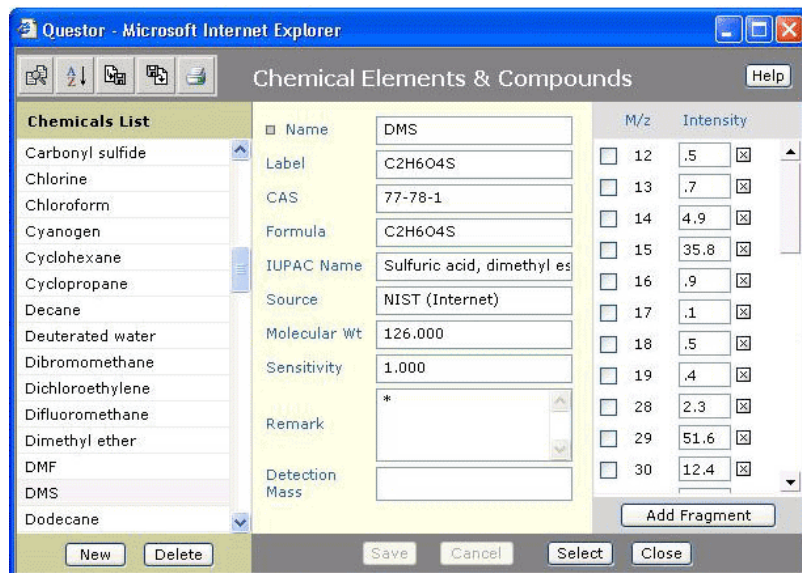
Quantitative Gas Analysis Software - Questor5:

The Questor™ 5 Process Control Software is ideal for bench scale and pilot scale process research and development. The Software is a fully automated package that provides single click quantification of complex gas mixtures. The Questor™ 5 software is capable of monitoring an unlimited number of components, and can utilize multivariate analysis for enhanced performance in complex matrixes. Single ion monitoring or full mass range scanning can be selected by the user. Component concentrations, intensities, and derived (calculated) values are displayed, stored, and outputted as defined by the user. Display options include graphical and tabular displays for both real time and archived data.

Unique analysis methods can be applied to individual streams, automatically calibrating relative sensitivity factors, subtracting background gas interferences and applying full matrix inversion techniques to deliver accurate and precise component concentrations in under 300msec per component cycle.

The system performs extensive diagnostics during SmartStart™ and continuously monitors diagnostics during operation to ensure data validity. The system status displays critical system parameters and the event logger flags any system issues. Questor™ 5 software operates under the Microsoft Windows® based operating system and features a Web based user interface. The Questor™ 5 user interface provides easy and secure access to your system and data. The connection can be direct from a workstation or from a plant network via a standard Ethernet or equivalent link. User based password protection is implemented to provide data and operational security. Advanced event logging allows for data integrity and compliance with 21 CFR-11 regulations.

Internal Cracking Pattern Library



- >180 components
- Fully integrated with NIST
- Fully editable

Automated Analysis Matrix:

Add components to the analysis fragment matrix and Questor5 automatically selects the appropriate analysis peak for the highest possible accuracy.

Fragment Matrix		Sensitivity	Relative Abundance						
Add Chemicals			m/z 12	m/z 14	m/z 28	m/z 32	m/z 40	m/z 44	m/z 84
<input checked="" type="checkbox"/>	N2	1.000		5.88806009	100				
<input checked="" type="checkbox"/>	CO	1.000	2.69	0.79	100				
<input checked="" type="checkbox"/>	O2	.924				100			
<input checked="" type="checkbox"/>	AR	1.844					100		
<input checked="" type="checkbox"/>	CO2	2.485	3.0		10			100	
<input checked="" type="checkbox"/>	KR	1.000							100
Background intensity:			.000000	.000000	.000000	.000000	.000000	.000000	.000000
Detector:			Farad	Farad	Farad	Farad	Farad	Farad	Mult
Ion Repeat:			1	3	1	1	1	1	1