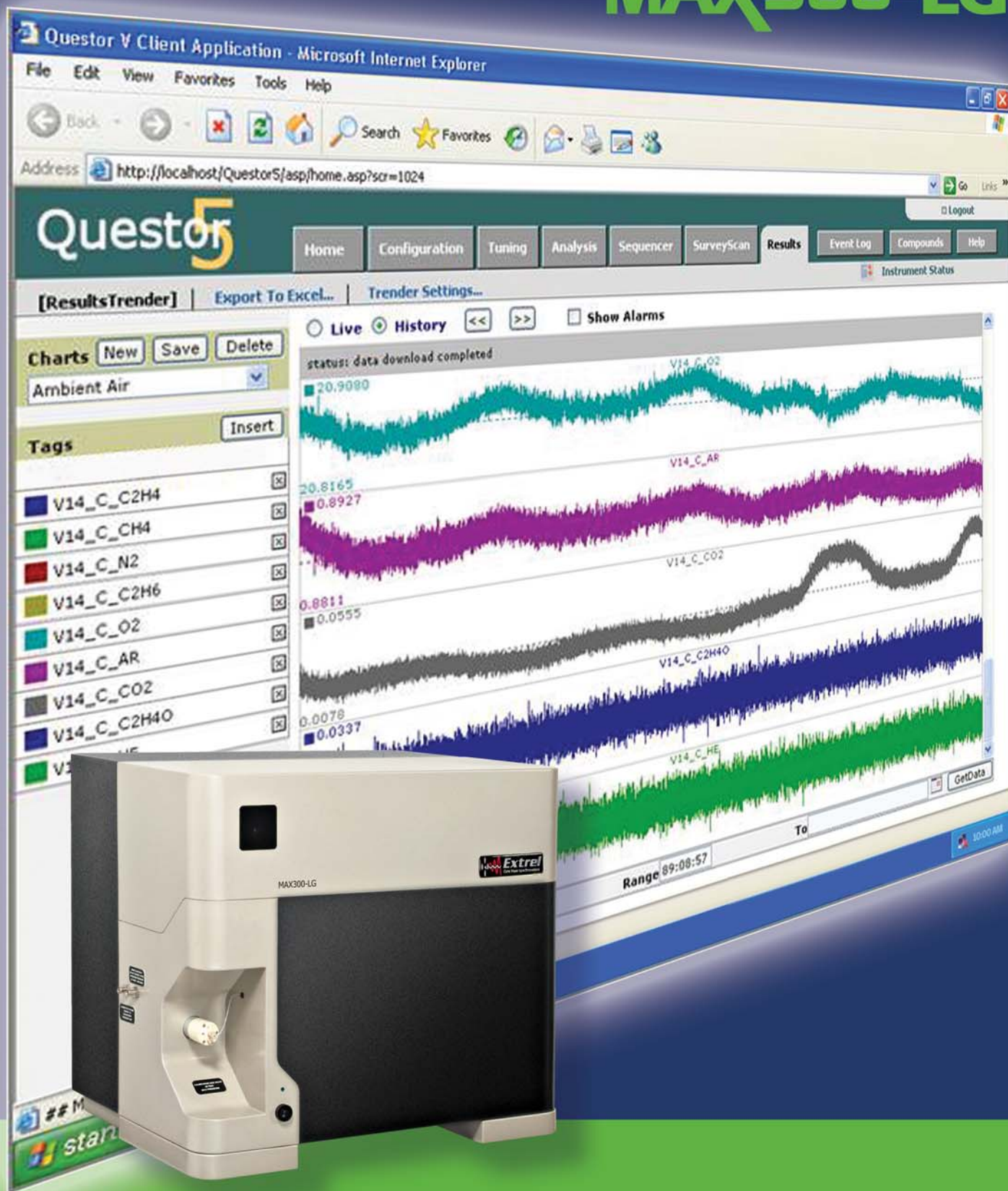


Quantitative Gas Analyzer

MAX300-LG



Extrel[®] MAX300-LG Quantitative Benchtop Gas Analyzer

The MAX300-LG sets a new standard in real-time quantitative gas analysis, combining our industry-leading 19 mm quadrupole mass spectrometer with fast sampling and a chemically inert inlet in a truly automated benchtop gas analyzer package. It delivers accurate gas and vapor concentrations for multiple streams from 100 % to 10 ppb with unrivaled precision, each time, every time.

Performance

Mass Analyzer

The MAX300-LG utilizes the industry-leading 19 mm quadrupole mass analyzer combined with a temperature controlled, chemically inert inlet.

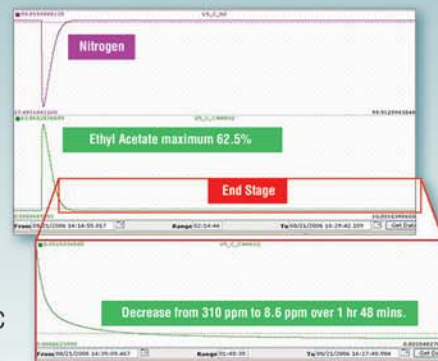
This combination delivers characteristics that are fundamental to true quantitation, characteristics that smaller quadrupole analyzers simply cannot achieve.



Sensitivity

Gas and vapor concentrations are measured over a continuous 8 decade dynamic range from

100 % to 10 ppb, extendable to ppt with the optional membrane inlet. Individual components are analyzed and reported in less than 400 msec.



Stability & Precision

The analytical precision of the MAX300-LG on a 1 % argon sample with no interference is +/- 0.0025 %. Repeatability is a function of sample concentration, and the argon measurement demonstrates an RSD of 0.25 %. The 30 day stability of that argon measurement is +/- 0.005 %. In both precision and stability the MAX300-LG far exceeds the capabilities of any 6 mm quadrupole.

Partnership

At Extrel we understand that your application is different from anyone else's and we have designed the MAX300-LG with this in mind. Our application chemists generate a unique application review containing a full evaluation of

Name	Est Concentration (%)	Sensitivity	Detection Mass	RIF	RSD(F)	RSD(M)
Nitrogen	78	1,000	28 - 100.0	< 0.01	0.0347	
Oxygen	19	980	32 - 100.0	< 0.01	0.071	
Argon	1	1,500	40 - 100.0	< 0.01	0.25	
Carbon dioxide	.0350	1,860	44 - 100.0	< 0.01	1.2	
Dimethyl Sulfate	.0001	1,000	95 - 100	< 0.01		4.0825

each sample stream with expected precision for every component measured, so that your purchase of a MAX300-LG can be made with the highest confidence.

Flexibility

The MAX300-LG can also be configured with a wide range of application-specific sampling options including:

- Multiport sample valves
- Interfaces for TGAs and microreactors
- Membrane inlet for improved detection limits
- Actively Controlled Sample System (ACSS) for sample pressures ranging from atmosphere down to < 10 torr

Questor5 Quantitative Analysis Platform

The MAX300-LG utilizes the industry-leading 19 mm quadrupole mass analyzer combined with a temperature controlled chemically inert inlet. This combination delivers characteristics that are fundamental to true quantitation, characteristics that smaller quadrupole analyzers simply cannot achieve.

Quantitative Analysis

Every MAX300-LG is equipped standard with the Questor5™ Software, a true quantitative matrix-inversion platform, providing unlimited flexibility in analysis design and automation, and a user-friendly interface.

Fragment Matrix		Relative Abundance					
	Sensivity	m/z 13	m/z 28	m/z 32	m/z 42	m/z 44	m/z 84
<input checked="" type="checkbox"/> H2O	.908	100					
<input checked="" type="checkbox"/> N2	1.000		100				
<input checked="" type="checkbox"/> O2	.915			100			
<input checked="" type="checkbox"/> AR	1.356				100		
<input checked="" type="checkbox"/> CO2	2.553		10			100	
<input checked="" type="checkbox"/> NR	1.000						100
Background intensity:		.000000	.000000	.000000	.000000	.000000	.000000
Detector:		Farad	Farad	Farad	Farad	Farad	Mult
Ion Repeat:		1	1	1	1	5	1

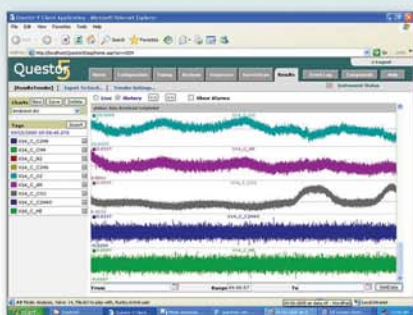
Detailed Database Library

Choose from and add to more than 180 compounds stored in our component library.

Chemicals List	Name	P/V	Intensity
<input type="checkbox"/>	Acetaldehyde	25	1,000.0
<input type="checkbox"/>	Acetic acid	26	6,000.0
<input type="checkbox"/>	Acetic acid, hydroxy-, methyl ester	27	4,000.0
<input type="checkbox"/>	Acetic acid, methoxy-, methyl ester	28	6,000.0
<input type="checkbox"/>	Acetic acid, oxo-, methyl ester	29	100.0
<input type="checkbox"/>	Acetic acid, ethyl ester (ethyl acetate)	30	1,000.0
<input type="checkbox"/>	Acetic acid, propyl ester (propyl acetate)	41	3,000.0
<input type="checkbox"/>	Acetic anhydride	42	12.00
<input type="checkbox"/>	Acetone (dimethyl ketone)	43	32.00
<input type="checkbox"/>	Acetonitrile	44	81.00
<input type="checkbox"/>	Acetylene	45	1,000.0
<input type="checkbox"/>	Acrolein		
<input type="checkbox"/>	Acrylic acid		

Real-Time Analysis

Quantitative data trending is effortless, with each component quantified and reported in less than 400 msec.



Security

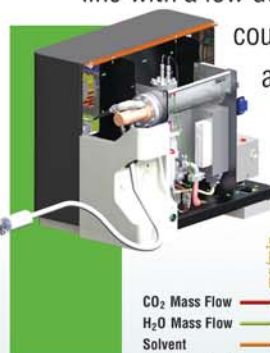
Not sure who's done what? Our data logger reports every user and every event so that you have full traceability. Need to go further and have 21 CFR 11 compliance? It's included.

Event Log	Filter	History	Print
Sequence event Analyzer#1	04/12/2011 14:04:18.000		
Valve set to 1:0:0#2	04/12/2011 14:04:18.700		
Analysis: add on Valve-1 Started by testadmin	04/12/2011 14:04:18.700		
Sequence event Analyzer#2	04/12/2011 14:14:47.700		
Valve set to 2:0:2	04/12/2011 14:14:47.800		
Analysis: app on Valve-2 Started by testadmin	04/12/2011 14:14:47.900		
Sequence event Analyzer#1	04/12/2011 14:15:18.870		
Valve set to 1:0:0#2	04/12/2011 14:15:19.000		
Analysis: app on Valve-1 Started by testadmin	04/12/2011 14:15:19.000		
Sequence event Analyzer#2	04/12/2011 14:15:49.800		
Valve set to 2:0:2	04/12/2011 14:15:50.100		
Analysis: app on Valve-2 Started by testadmin	04/12/2011 14:15:50.100		
Sequence event Analyzer#1	04/12/2011 14:46:11.070		
Valve set to 1:0:0#2	04/12/2011 14:46:11.200		
Analysis: app on Valve-1 Started by testadmin	04/12/2011 14:46:11.200		
Sequence event Analyzer#2	04/12/2011 14:56:52.150		

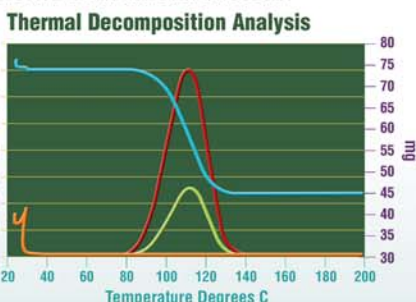
Application Specific Solutions

TGA-MS

The TGA-MS interface option comprises a fast-response, temperature controlled, inert quartz sample line with a low dead-volume reentrant probe that couples directly to most commercial TGAs and home built microreactors.



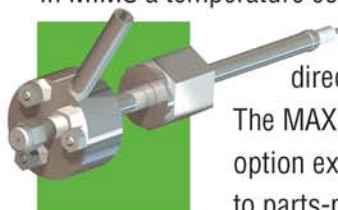
CO₂ Mass Flow
H₂O Mass Flow
Solvent
Mass Loss (mg)



Comprehensive instrument I/O facilities allow data acquisition synchronized with the TGA start/stop trigger and thermal event signals.

Membrane Inlet-MS (MIMS)

In MIMS a temperature controlled flow-through membrane cell delivers sample directly to the MS ion source. The MAX300-LG membrane inlet option extends the detection limit to parts-per-trillion for many organic compounds and also allows direct detection of dissolved species from liquid samples.



MAX300-LG

Specifications

Measurement Specifications

- Detection range: 100 % to 10 ppb
- Precision: +/- 0.0025 % on 1 % argon with no interference
- Stability: +/- 0.005 % on 1 % argon over 30 days
- 1msec per amu in scanning mode
- < 400 msec per component in any sample matrix
- Unlimited components per analysis
- Unlimited analyses/sequences

Mass Spectrometer/Detector

- 19 mm quadrupole mass filter
- Pole bias (quadrupole DC offset)
- 1-250 amu mass range standard, 300 amu option available
- $M/\delta M=2000$
- Dual Faraday/Continuous Dynode Electron Multiplier
- 8 decade dynamic range
- Temperature controlled enclosed ion source
- Dual filaments with auto sensing and switching in the event of a failure on the active filament

Sampling Inlet

- Fully automated multistream selector with user serviceable, temperature controlled capillary inlet
- Temperature regulated option for maintaining sample up to 250°C
- Optional ACSS Inlet (Actively Controlled Sample System) for a dynamic pressure range from atmosphere down to < 10 torr
- TGA interface optional, for use with commercial TGAs or home built microreactors

Questor5 Control Platform

- Automated measurement/selection of calibration, zero, check and sample gas streams
- Fully automatic quantitative output with individual statistics
- >180 compound spectral library, fully editable
- 21 CFR 11 compliance
- Web server interface
- 10/100/1000 LAN comms interface
- Additional I/O options:
Analog and Digital I/O, OPC server, Modbus

High Vacuum System

- High compression turbomolecular drag pump optimized for use with low molecular weight gases (H_2 and He)
- Auto-vent assembly
- Independent, fully interlocked total pressure gauge (hot ionization cathode)
- 2-stage backing pump

Application Areas

- Fuel Cell Development
- Gasification Research
- TGA/Thermal analysis
- TPD/TPR/TPO
- Reaction Kinetics
- Catalyst Development
- UHP Gas Analysis
- Fermentation
- Ambient Air Monitoring
- VOC Analysis
- Headspace Analysis
- Dissolved Species Analysis
- Solvent Recovery
- Lyophilizer Monitoring
- Pharmaceutical Drying

Represented By:

