

PRODUCT BROCHURE

MAX300-CAT

Laboratory Gas Analyzer



Fast Response

Process Control

**Stable
Measurement**

- Real-Time Gas Analysis
- Catalysis
- Reaction Monitoring
- Environmental Research

Introducing the MAX300-CAT Fast, Flexible Quantitative Gas Analyzer

The MAX300-CAT is a high-sensitivity, quantitative gas analyzer for catalysis, reaction monitoring, and environmental research.

Fast and powerful, this quadrupole mass spectrometer performs high precision quantitative analysis on every component in a gas or vapor mixture, and can be equipped for the fully-automated sampling of multiple gas channels.

With the ability to track concentration changes from ppb levels to 100% and continuous data updates in seconds, the MAX300-CAT provides compact, flexible platform optimized for gas reaction studies in catalysis, bioreactor control, process development, and environmental analysis.



MAX300-CAT Laboratory Gas Analyzer

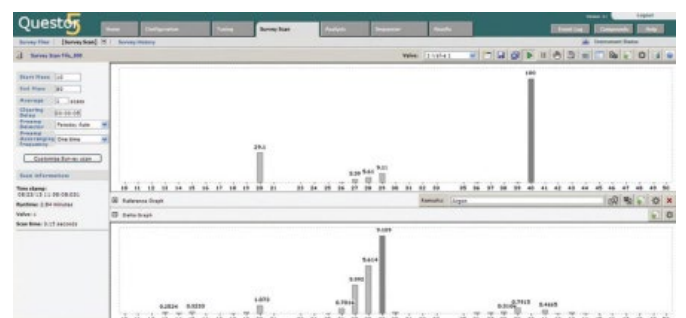
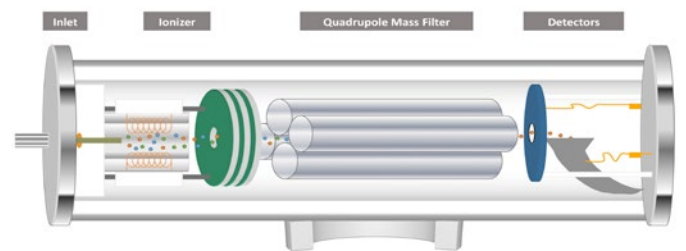
The MAX300-CAT is fast, compact, and easy to use. It can measure any gas or vapor sample concentration from ppb levels to 100%.

Laboratory Gas Analyzer Features

- Measures any gas or vapor sample
- Real-time analysis of the input and effluent streams reveals what is happening in the reaction
- Fast response: measures changes to sample concentration in <300 ms
- High sensitivity: detection limit 50 ppb
- Data acquisition: up to 1000 measurements/second
- 1-100, or 1-300 amu mass range
- Complete quantitative sample composition
- Sample selector options for up to 61+ sample streams

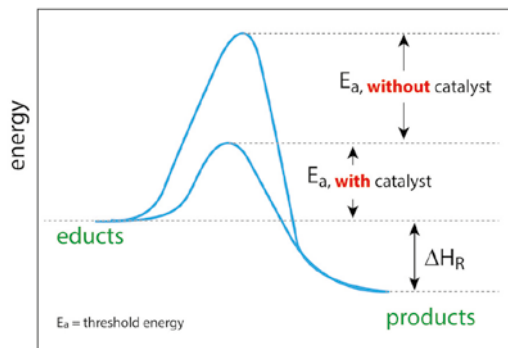
MAX300-CAT Quadrupole Advantage

The mass spectrometer uses an ionizer to break sample molecules into charged fragment ions that are separated based on their mass-to-charge ratio as they move through the electric fields generated by the quadrupole mass filter. The ions register a current at the detector, creating a set of peaks called a mass spectrum. Each compound has a unique spectrum, making mass spectrometry a highly selective, flexible technique.



Accurate Data, Endless Utility

Simply select the gases to measure, or the mass range to scan, in the software and the MAX300-CAT is configured to monitor a new reaction or process.



Gas and Vapor Analysis

- Catalysis
- Reaction Monitoring and Kinetics
- TPD/TPR/TPO
- Combustion Studies
- Process Development
- Vapor Deposition



Gas Phase Synthesis

- Evolved Gas Analysis
- Bioreactor Monitoring
- Organic Chemistry



Environmental Research

- Fuel Cell Studies
- Alternative Fuels
- Gasification
- Air Monitoring



Pure Gas Analysis

- Trace Contamination
- Pharmaceutical Solvents
- Semiconductor Manufacturing
- Scrubber Efficiency
- Food and Beverage Gas
- Gas Mixing

System Specifications

Detectable compounds:

Any gas or vapor sample

Detection range:

Faraday/electron multiplier

- Analysis range: 1×10^{-6} - 5×10^{-13} Torr

(100% - 0.5 ppm)*

- Low detection limit: 5×10^{-14} Torr (50 ppb)**

Analysis rate:

Up to 1000 measurements per second

Gas consumption: 10 μ L/min

Heated inlet option available

Ionization energy control for reduced fragmentation

Software:

- VacuumPlus control software, standard

- Questor5 upgrade, optional

Computer interface: RS-232C or USB

Filaments:

Two, one active and one spare

- Over-pressure protection provided by built-in Pirani and BA gauges

Mass range options: 1-100, 1-300 amu

6 mm quadrupole mass filter

Weight: 55 lbs. (25 kg)

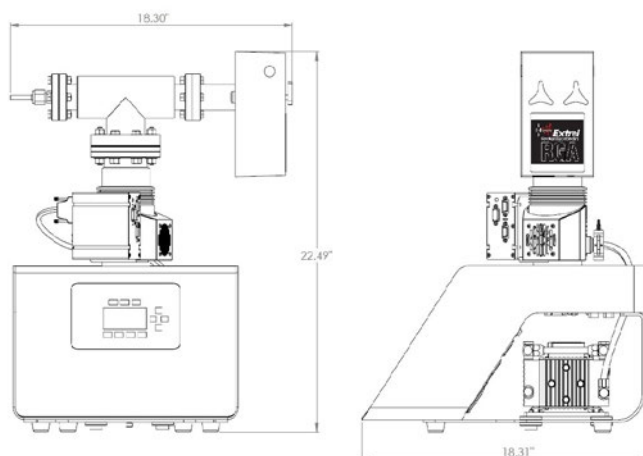
Power supply: 110/230 VAC, 50/60 Hz

Dimensions (L x W x H): 465 x 465 x 571 mm

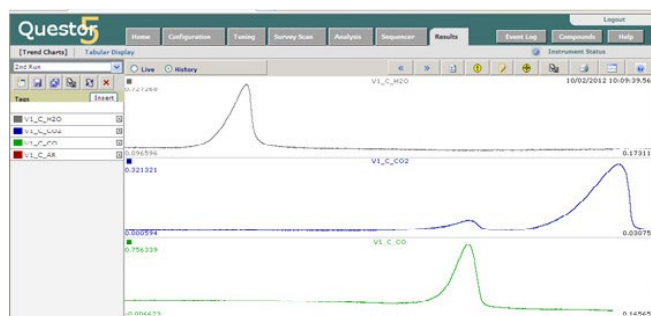
Standard inlet length: 50 cm

* Standard multicomponent analysis, measured at <2 seconds/component.

** Demonstrated on argon isotopes in air.



Questor5 Quantitation Software Features



Real-time, continuous, total composition measurements of any gas or vapor sample

Component	[C] (%)	STD (% absolute)
H ₂	0.6	0.03
N ₂	78	0.06
O ₂	20.9	0.06
Ar	0.93	0.0075
CO ₂	0.05	0.003

Fully automated, high precision, high stability quantitative analysis of multiple sample streams

- Number of components: Unlimited
- Number of analysis routines: Unlimited
- Automatic removal of spectral overlap
- Data recorded as % or ppm
- Manual or automated calibration
- Automated sample selector configurations:
 - 4, 8, 16, 31, 46, 61+
- Number of user configurable data tags and alarms: Unlimited
- Security: 21 CFR Part 11
- Security levels: Administrator, User, Viewer
- Comprehensive spectral library included NIST MS database and spectrum matching software upgrade, optional
- Analysis can be triggered by external devices
- External communications
 - Ethernet, Modbus serial, digital I/O, analog I/O, OPC

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For over 50 years, Extrel has been committed to providing the highest quality support services for the thousands of instruments installed worldwide. Factory trained and certified personnel offer industry-leading support to Extrel customers at every stage of process development and manufacturing.

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