

**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

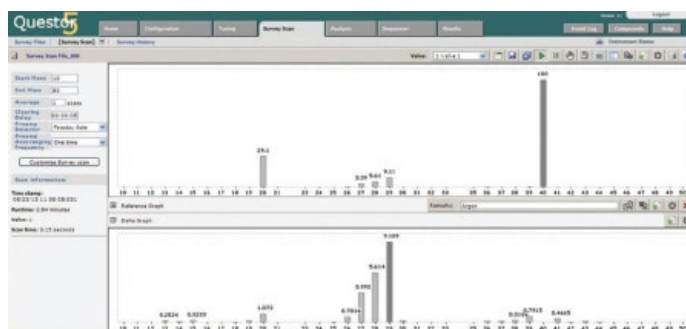
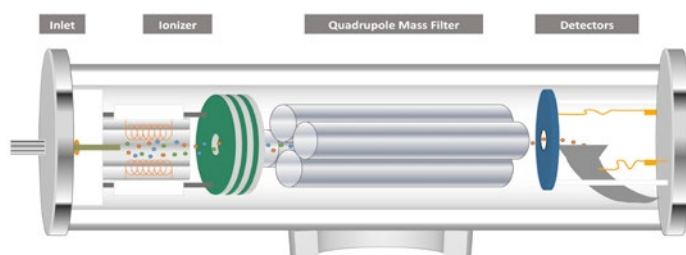
The MAX300-CAT is fast, compact, and easy to use. It can measure any gas or vapor sample concentration from ppb levels to 100%.

## 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.





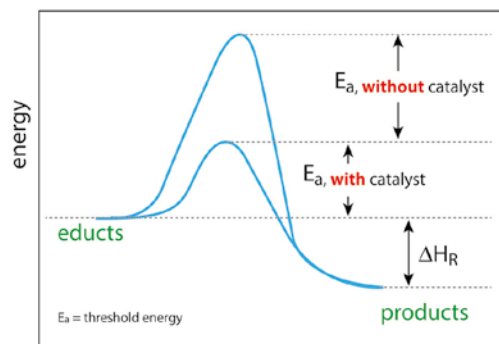






## Accurate Data, Endless Utility

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:  $1 \times 10^{-6}$  -  $5 \times 10^{-13}$  Torr  
(100% - 0.5 ppm)\*

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

## Analysis rate:

Up to 1000 measurements per second

**Gas consumption:** 10  $\mu$ 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)

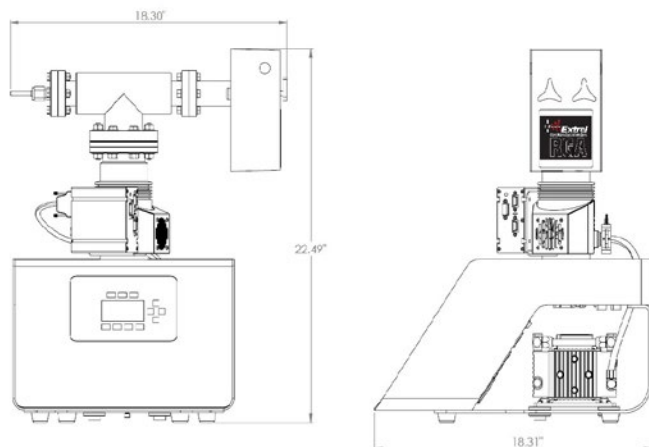
**Power supply:** 110/230 VAC, 50/60 Hz

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

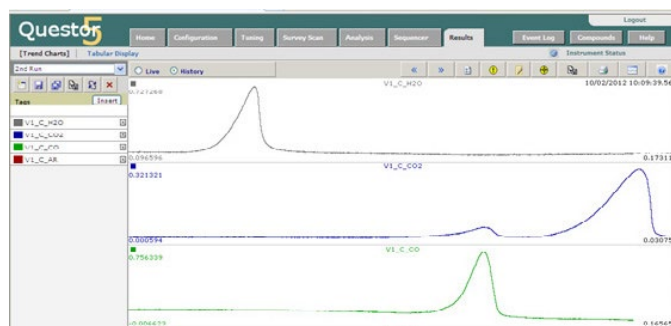
**Standard inlet length:** 50 cm

\* 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 <sub>2</sub>	0.6	0.03
N <sub>2</sub>	78	0.06
O <sub>2</sub>	20.9	0.06
Ar	0.93	0.0075
CO <sub>2</sub>	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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**EVERYWHERE**