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GC-MS-3068
Gas Chromatograph
Mass Spectrometer 3068

- High performance, high reliabillity
- Low cost for customers of all types
- Holding multiple patents

EPC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

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GC-MS-3068

Gas Chromatograph - Mass Spectrometer 3068
GCMS 3068 -- High performance-to-price ratio

Introduction:

ATL'S new generation Gas Chromatograph mass spactrometer (GC-MS) system offers high performance, high reliability, and low cost for customers of all types. Holding multiple patents, ATL manufactures high quality GC-MS 3068 which is widely used in industrical inspection, food safety, environmental protection, etc.

Hardware:

Electronic pressureflow control system (EPC/EFC) on GC 3068improves baseline stability and sensitivity.
Patented EI filaments provide high efficiency of electron emission.
Pre-quad removes undesirable contamintion before the main analytical quadrupote and decreases cleaning frequency
High quility vacuum system combined with high energy dynode (HED) electron multiplier (EM) offer magnificent sensitivity
Self-protevtor safeguards the system against the situations, which would normally damage expensive components and require significant repair.
Advanced digital compensation technology on Radio Frequency (RF) power supply guarantees satisfactory sensivity and resolution over full mass range.

Analchrom is the workstation software for GC-MS 3068 it features
a user-friendly interface to simultaneously control autosampler, chromatograph and mass spectrometer. Using high speed net card. Software have Security, Audit trail, System check, Software integrity and system Suitability test should as standard functions. Flexible report Format for Method, chromatogram, Mass Spectrum, Peak table, Quantitation result, calibration curve, Status Log, texts, graphics. Automated tuning & File management functions with Library Search facility.

In INDIA, ATL has been the only authorized distributor of NIST database (System have retention time locking facility, molecular Structure etc.) which is the most popular for mass spectral search and examination of unknowns and target. Compounds in qualitative and quantitative analysis Complete Software control of vacuum system with Auto Start-up / Shut-down and vacuum protection against Power Failures

Turbo Molecular Pump
Turbo Molecular pump with capacity of 250L/Sec

Specification:

Temperature program steps	24 steps
Heating zone	6
Display	LCD
Capability to control electronically	17 channels for gas
Capability to install	5 detectors +1 MS detector + 3 sample injectors with independent temperature control
Channel analysis	3
Data acquisition speed	≤ 3ms (250Hz) for all modules
Pressure and detector gas	digitally controlled
Memory	able to store 14 methods
Safety feature	Memory Protection When Power Off, Leakage Detection, Power line Failure
Self diagnostic	provided
Pressure	0 to 150 PSI
Operating Temperature range of inlet	50°C to 450°C in 1°C increments
Injection volume	Up to 150 µL
Retention time repeatability	<0.0008 min
Peak area repeatability	<0.3 % RSD

Injection Port :

Independently temperature controlled injector units are provided Injection port unit: Split/split less injection unit provided as standard injection ports shall be heated simultaneously

Oven Specfications

Temperature range Ambient +3°C ~ 450°C	
Column oven dimension	278x310x165mm=15L; accommodate up to 2 column 105m x 0.53mm ID capillary column
Oven volume:	15 Liters
Temperature calibration at	0.04°C
Temperature variation coefficient:	0.040°C/0°C
Programming rate setting:	130°C/min
Cooling and Heating rate:	50°C to 450°C within 1 minute
Temp. accuracy	0.1°C
Oven temperature programmed rate setting range	-250 to 250°C.
Total system time:	~9999.99 min
Temperature set point resolution:	≤0.1°C
Temperature deviation:	≥ 2°C
Ramp rate	120°C/min
Heating ramp	30 ramps
Ambient injection	<0.01 °C per 1 °C

Mass Spectrometry Specifications

Mass range:	M/z 1 to 1300
Mass Stability	±0.1 amu / 48 hours
Resolution:	R=1M (FWHM)
Scan rate:	20000 amu/sec max.
Direct connection with capillary column	
Temperature:	room temperature to 450 C
Ion source:	up to 450 C
Dynamic range :	10e8
Maximum flow of He to MS:	18 ml/min
Stabilizer :	0.1 amu/48 hour
Temperature:	50 ~ 450 C
Filament	Dual
Sensitivity (Signal/Noise)	EI scan: 3000:1 S/N for 1 pg OFN Scanning from 50-300u at m/z 272 with Helium as carrier gas
MDL	8 sequential 10 fg OFN Split less injections monitored, chromatographic peak area with 99% confidence interval: IDL ≤ 4 fg
Electron Ionization Voltage	0-200 eV
Electron Ionization Current	5-350 µA
Detector	photomultiplier
Ionization Mode	Electron Ionization
Mass Analyzer	Single Quadruple
MS system should be offered with air-cooled	250 Litre single vacuum output turbo molecular pump, EI ion source

system shall have the upgradation facilityfor no vent to change the column as well as source cleaning without venting the vacuum of MS	_____
Tune facility	auto & manual tune facility
Acquisition rate	200 scans/s
Vacuum pump capacity	200 lit/ sec or more air-cooled turbo molecular pump

Detectors:

Detector	Max operating temp.	Limit of detection	Baseline noise	Baseline drift (after 2hrs stabilization)	Linear dynamic range	Data acquisition rate
FID	450°C	≤1.2 pgC/s	<2 x 10^{-14} A	5 x 10^{-14} A/30min	≥10^{7}	> 300Hz
ECD	450°C	≤3 x 10^{-14} pg/ml	<20uV	< 50uV /30min	≥10^{4}	

Flameout detection and re-ignition shall be possible

TCD Detector

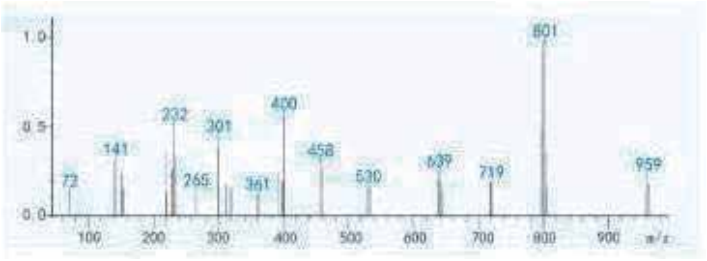
Sensitivity: 10micro volt/ppm for Nonane
Noise: ≤20μV
Linear range: ≤30μV
Linear range: ≥104
Compatible with 1/4",1/8",1/16" and capillary Columns
MDL: ≤800 pg C12/ml He
Maximum Temperature: 400°C

Application:

Industrial Inspection
Food safety and hygiene
Enviromental Protection
Pharmaceutical development
Criminal investigation/Forensics

Example:

Poly Brominated Biphenyis (PBBs)/Poly Brominated Diphenyl Ethers (PBDEs)



Mass spectrum of deca polytrominated biphemyl ethers

Auto sampler:

- Vial capacity: 2 mL (Optional micro-volume vials: 300 μL)
- Big displayer with double -tower automatic injection;
- Typical area repeatability: <0.8% RSD
- Tray vial quantity: 16 or 150
- Injection volume: 0.01-100uL
- Injection cycle time: 8 sec
- Sampling accuracy: +0.01uL
- **Injection Port: split/split less capillary**
- Sample injection method: Liquid sample injection
- Injection needle: 5, 10, 50, 100uL;
- Injection loop: multiport (0.25ml, 0.5ml and 1ml)
- Injection repeatability: <0.5%
- Maximum Temperature: 450°C
- Cross Contamination: Less than10-4
- Temperature control range: RT+5°C~ 450°C (0.1°C)
- Maximum Pressure: 0-150 psi (with EPC)
- Vial volume: 10 ml to 22 ml
- Transfer line based with loop system for precise quantification
- Transfer Line to the GC temperature range: 50 to 200 Degree
- Automatic leak check and gas saving facility
- System heating up to 200°C or better in increments of 1°C with shaker
- 120 sample vial capacity
- Increments: 1% of the syringe volume
- Injection speed: Fast/Slow/Custom (1-60,000.00μL/min)

- Carryover :<0.001% measured by the residual area in a heptane
- Linearity: <4% RSD on response factor between 10% and 50% volume
- Option for cooled tray with vial capacity is to be available (with external circulating chiller) to upgrade in future if needed. (For Highly volatiles samples)
- Oven capacity: Air ventilated oven with 24-seat electrically-driven carousel

Libraries:

Latest NIST Library, Wiley, Pesticide Library, FFNSC Library etc.

Split/Split less:

Packed purge injection port (PPIP)
Split/splitless capillary port (S/SL)
1) Max Temperature: 450"
2) Capillary column: 50um to 530um id
3) Split ratio: 12500:1
4) Gas saver mode to reduce gas consumption without compromising performance
5) Electronic septum purge flow control to eliminate carry-over
6) User-installable within a few minutes
7) Pressure range: 0-1000kPa (0-150psi)
8) future upgradation facility of Isolation mode to allow column change without breaking vacuum
9) Total flow setting: 1mL/min from 0 to 1250 mL/min
10)Purge flow from 0 to 50mL/min