

GC-MS-3068

Gas Chromatograph

Mass Spectrometer 3068

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



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Analytical Technologies Limited

An ISO 9001 Certified Company

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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 spectrometer (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 industrial inspection, food safety, environmental protection, etc.

Hardware:

Electronic pressureflow control system (EPC/EFC) on GC 3068 improves baseline stability and sensitivity. Fully automated with programmable pneumatic control (PPC) /EPC/AFC (digital control) for injector, detector gas, carrier gas control with constant pressure, flow and linear velocity. AFC/EPC/PPC provide optimum performance with all types of columns and detectors. Patented EI filaments provide high efficiency of electron emission. Pre-quad removes undesirable contamination before the main analytical quadrupole and decreases cleaning frequency. High quality vacuum system combined with high energy dynode (HED) electron multiplier (EM) offer magnificent sensitivity. Self-protector 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 sensitivity 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 (including retention time, 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.



Specification:

Temperature program steps	24 steps
Heating zone	6
Display	LCD display
Display	LCD display
Capability to control electronically	16 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
Injection volume	Up to 150 μ L
Retention time repeatability	<0.0008 min
Peak area repeatability	<0.5 % 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 Specifications

Temperature range	Ambient +4°C ~ 450°C (0.1°C increment)
Column oven dimension	278x310x165mm=15L; accommodate up to 2pcs 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 rate:	450°C to 50°C with ≤3.5 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
Number of ramps and Plateaus	20 ramps and 21 Plateaus
Sample line temperature	350°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.
Pump	Turbo molecular pump with 300L/sec
Linear range	107
Ion source:	up to 450°C
Dynamic range :	10e6
Measurement Interval	0.01s
Emission Current	350 µA
Stabilizer :	0.1 amu/48 hour
Temperature:	50 ~ 450 C
Electron Energy	Adjustable from 0 eV to 150 eV
Filament	Dual automatic switching
Mass Filter	Dual Stage mass filter
Sensitivity (Signal/Noise)	El scan: 5000:1 S/N for 1 pg OFN
MDL	8 sequential 10 fg OFN Split less injections monitored, chromatographic peak area with 99% Confidence interval; IDL ≤ 3fg
Analyzer Scanning mode	Full scanning, Selective Ion Scanning, simultaneous full and selective ion scanning
Electron Ionization Voltage	10-240 eV
Electron Ionization Current	5-250 µA
Detector	Electron Multiplier
Ionization Mode	Electron Ionization

Detectors:

- FID :**
- Max operating temp: 450°C
 - Limit of detection: $\leq 1.2 \text{ pgC/s}$
 - Baseline Noise: $< 2 \times 10^{-14} \text{ A}$
 - Baseline drift (after 2hrs stabilization): $5 \times 10^{-14} \text{ A/30min}$
 - Linear dynamic range: $\geq 10^7$
 - Data Acquisition rate : $> 600 \text{ Hz}$
 - Sensitivity : $> 0.03 \text{ Coulombs/gC}$

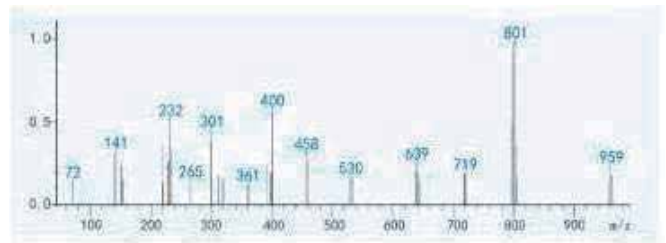
- ECD :**
- Max operating temp: 450°C
 - Limit of detection: $\leq 3 \times 10^{-14} \text{ pg/ml}$
 - Baseline Noise: $< 20 \text{ uV}$
 - Baseline drift (after 2hrs stabilization): $< 50 \text{ uV /30min}$
 - Linear dynamic range: $\geq 10^4$

Application:

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

Example:

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



Mass spectrum of deca polybrominated biphenyl ethers

Auto sampler:

- Vial capacity: 2 mL (optional micro-volume vials 300uL)
- Big displayer with double -tower automatic injection;
- Tray vial quantity: 16 or 150;
- Injection volume: 0.1-100uL;
- Sampling accuracy: $\pm 0.01 \text{ uL}$;
- Injection Port: split/splitless capillary
- **Sample injection method: Liquid sample injection**
- Injection needle: 0.5, 5, 10, 50, 100uL;
- Injection loop: multiport(0.25ml, 0.5ml and 1ml)
- Injection repeatability: $< 0.5\%$
- Maximum Temperature: 450°C
- Cross contamination: Less than 10^{-4}
- Temperature control range: $\text{RT} + 5^\circ\text{C} \sim 450^\circ\text{C}$ (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
- 100 sample vial capacity

Libraries:

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

Split/Split less:

Packed purge injection port (PPIP)
Split/splitless capillary port (S/SL)

- 1) Max Temperature: 450°
- 2) Split ratio: 12500:1
- 3) Gas saver mode to reduce gas consumption without compromising performance
- 4) Electronic septum purge flow control to eliminate carry-over
- 5) User-installable within a few minutes.

- 6) Pressure Range: 0-1000 kPa (0-150 PSI)
- 7) purge flow: 0 to 50 mL/min
- 8) Split flow: 0 to 1250 mL/min
- 9) Pressure set point resolution: 0.01 psi
- 10) Pressure ramp: 10 steps
- 11) Automatic shutdown facility in case of leak

MMI/PTV sample injection

- Temperature range: Ambient +5°C up to 450°C
- Heating rate and ramp: 850°C/min
- Split ratio: 12500:1.
- Pressure range: 0-150 psi
- Support hot/cold split and Splitless modes as well as large volume injections and cold on Column injection

Head Space Sampler

- 10 vials incubation with 1 additional capillary column.

►►► Regulatory compliances



►►► Corporate Social Responsibility

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