GC-4000A Series Gas Chromatographs

GC-4000A Series Gas Chromatographs can be used in analys is of a wide range of chemicals, from ambient temperature gases to liquids and gas-liquid mixtures with boiling points of 400℃ or lower. This extremely versatile instrument has many applications in industries such as oil, coal, chemical engineering, environmental protection, textile, agriculture, medicinal research, and sanitation.

Technical specifications:

	TCD	FID	ECD	FPD	NPD
Sensitivity	S≥5000 mv.ml/mg (benzene)				
Detectability		M≤1×10^{-11} g/sec (hexadecane)	M ≤1×10^{-13} g/ml(r-666)	Mp≤2×10^{-12} g/s(1605) Ms≤5×10^{-11} g/s(thiophene)	MN≤5×10^{-13} g/s Mp≤1×10^{-12} g/s
Noise	≤0.1mv	≤5×0^{-14}A	≤0.01mv	≤2×10^{-12}A	≤2×10^{-13}A
Align range		10^{6}	10^{3}	10^{3}	10^{3}
Excursion		1×10^{-14} A/30min	0.02mv/30min	3×10^{-13} A/30min	2.5×10^{-12} A/h

1. We offer five types of detectors. Each is designed to fit the customers' special needs.
√ Flame Ionization Detector (FID): used for highly sensitive organic compound analysis.
√ Thermal Conductivity Detector (TCD): analyzes ambient temperature gases, water, and small hydrocarbon compounds.
√ Flame Photometric Detector (FPD): used in analysis of pesticide traces, sulfur and phosphorous compounds.
√ Electron Capture Detector (ECD): for detecting pesticides, and chlorine-containing compounds.
√ Nitrogen-Phosphorus Detector (NPD): ideal for analyzing trace quantities of nitrogen and phosphorus.
2. With unit type monolithic construction design, it is easy to the installation and maintenance.
3. Outfitted with large column oven, three columns can be installed simultaneously.
4. Reasonably designed, the instrument may install three kinds of detectors of different types simultaneously. In addition, it has three independent electro circuit systems and three signal output fan-outs.
5. Flexible packed column and capillary column system.
6. Stable temperature control system; 8 ramp programmable heating; the sample injector and every detector may control the temperature independently and has over temperature protection function.
7. Fire new regulating and multi-gas system; single, double and three gas path can be chosen discretionarily.

- Injector and valve sample injection system are outfitted or chosen discretionarily.
- Reversible flow and pre incision device can be chosen discretionarily.
  Methane reforming furnace and cracking furnace are to be chosen freely.

Whole set of instruments
- Instrument (model can be chosen freely);
- Data treatment workstation: PC, printer, special software and interface can be chosen.
- Air supply: Air generator, hydrogen generator and high purity nitrogen gas can be chosen.
- Chromatographic column is to be chosen in line with the requirement of the clients.
- Spare parts.

The followings can be chosen for chromatographs.
GH-200(G-101) High purity hydrogen generator
GH-100(G-101A) High purity hydrogen generator
GA-100(G-103) High purity air generator

GC-4000A Series Data Sheet **(Please click here)**

GC-4000A Gas Chromatographs (Big Screen Liquid Crystal Display)
Technical characteristics
1. Column oven
   Volume of column oven: 300×300×200mm
   Temperature ranges: indoor temperature +5℃~400℃
   Temperature veracity: 1% of the enactment value.
   Overheat protection: discretional temperature within 400℃
   Precision of the temperature control: ±0.1℃
2. Big screen liquid crystal display will display temperature, exterior event, operational conditions, etc.
3. Automatic back door control; temperature exceeding protection.
4. Constant temperature enactment of man-machine conversation, or 8 ramps programmable heatingup.
   Temperature ranges: indoor temperature +5℃~400℃
   Velocity of heatingup: 0.1~40℃/min.
   Precision of the temperature control: ±0.1℃
   Windage of temperature indication value: 1%
5. Heatingup program
   Programmable ramp: 8 ramps
   Velocity of heatingup: 0~40℃/min (increment: 0.1℃/min)
6. Way of sample injection
   Capillary diffluence/sample injection of non diffluence, packed column sample injection, cold chapiter sample injection.

GC-MS 3100 Gas Chromatograph–(Quadrupole) Mass Spectrometer

Uses and Specification

Currently, among the analytical instruments, the chromatograph instruments are of important roles. Since the chromatograph columns of the chromatograph instruments have high efficiency separation ability and are able to separate the

matters according to the value of retention time and to determine the nature of matters by the method of comparing with the retention time of the standard material, the instruments are difficult to perform qualitative analysis for unknown samples. While, the MS directly measure the ratio of mass over electrons (m/z) of the matter and it is accurate and quick in the aspect of qualitative analysis. The combined use of chromatograph and mass spectrometer is, actually, uses the mass spectrometer as a general detector for the chromatograph. The chromatograph has many detectors, such as TCD, FID, ECD, FPD, NPD and etc, and each detector has a certain scope and applications, not general, and it causes inconvenience in use. The mass detector of the mass spectrometer can replace all the detectors of chromatograph. They are general and very easy to use. So, chromatograph-mass spectrometer combines the high efficiency separation ability of chromatograph with the accurate discrimination ability for the unknown samples, raising the ability of the analytical instruments to a new level. All the fields that can use chromatograph are able to use chromatograph-mass spectrometer. Currently, it is universally recognized that the instrument of chromatograph—mass spectrometer is the top of the current analytical instruments.

Chromatograph—Mass Spectrometer is the result of close combining of 3 modern technologies, technology of chromatograph, technology of mass spectrometer, and technology of computer. Due to the big difficulty in technology, China can not manufacture all along. And each year, a large amount of foreign currency is used for importing such kind of instruments. According to the statistics, in year 2005, China imports around 600 units of all kinds of Chromatograph—Mass Spectrometer. The average price of each unit is around RMB 600,000 ~ 1,000,000. The GC-MS 3100 Gas Chromatograph – Mass Spectrometer, developed by East & West Analytical Instruments, Inc. is the first commercial chromatograph—mass spectrometer in China and each technical feature reaches the advanced level of the current international technologies.

Be able to Equip Foreign Spectrogram Databases, such as NIST, WILEY, DRUG and etc. to Realize Automatic Searching.

Application Scope of Chromatograph—Mass Spectrometer

1. All the Situations where Gas Chromatograph is Needed, especially where Quantitative Analysis for Unknown Samples is Required.
2. Handle each kind of Emergencies, such as Leakage of Harmful Material and Heavy Environment Disasters and etc.
3. Anti-Terrorism Battles, Drug Prohibition and Arrest Drug Dealers, Analysis of Explosive Materials and etc.

Major Technical Features

1. Mass Scope: 1.5 ~ 800 amu
2. Mass Resolution: >2M
3. Scan Speed: Fully Tunable for Whole Scope. Max 3000amu/sec
4. Ion Source: EI Electron Bombardment Source. Independent Heating System, Adjustable between 120 ~ 350℃
5. Detector: Electron Multiplier
6. Vacuum System: (Standard Equipment) 70L/s Air Cooling Turbulent Molecular Pump with Front Stage Vacuum Pump. Optional 240L/s Turbulent Molecular Pump
7. Chromatograph Equipment: GC-4000A Series FID Single Detector with Capillary Tube Sample Injection System. GC-MS is Directly Connected by Capillary Tube. Temperature of Transportation Wire is Adjustable between 50 ~ 350 ℃.
8. Computer System: Inside the Instrument, there is Computer System to Perform Data Processing and Automatic Control. Can Add PCs and Printers of any Model.

Basic Working Principle

For the normal work of the MS, it is a must to form the vacuum chamber of the high vacuum system. Our instrument utilizes the high performance turbulent molecular pump and the front stage vacuum pump to ensure vacuum. Only under the condition of high vacuum, can it reduce the unnecessary ion collision, to lower the background noise and memory effect. The samples for analysis first are separated through the capillary tube inside the chromatograph, and then into the ion source. By using the heated electrons to bombard the vaporized sample, to hit off the out layer electrons, generating positive ions, after the effect of electrodes of repelling, focusing and extraction, the positive ions are sent into the quadrupole system. Under the joint effect of high frequency voltages and the positive-negative voltages, the quadrupole forms the high frequency electric field. Under the effect of scan voltage, only the ions satisfying the requirement can pass the symmetrical center of the quadrupole, to enter the electron multiplier. The after the ion flow is amplified by the amplifier, it generates the mass spectrogram signals. Change of the scan voltages will make ions of different masses be accepted by the electron multiplier one after another, generating the mass spectrogram, to discriminate the composition of unknown samples.

International Co. for Lab. Instruments
45 Shalhoub st. Ain Shams, Cairo, Egypt. Post Code 11311
+202 24916139 or +202 24916139 +202 24953441