PARAM® GC-7800 Gas Chromatograph with Autosampler

GC-7800 with autosampler is a classical and high automation gas chromatograph instrument which integrates the most advanced chromatography technique and national or international standards with the most extensive applications by the experienced experts of Labthink. Its automatic preparing, sampling and analyzing functions effectively avoid system errors caused by manual operations. This instrument can be widely used to test the relative indexes of various materials, gases, smell, residue, and cigarette packages, because of its powerful functions and ultra-high precision. It becomes the best choice for gas chromatographic analysis and control of testing organizations, research institutions, packaging companies as well as food and pharmaceutical industries.

Professional Technology

- Dual-detector (FID+TCD), dual-column and dual-gas path system
- Instrument utilizes patent design of solvent residue test, and is available for the determination of solvent purity and water content of hydrophilic solvents.
- This instrument supports the organic compound determination of packing paper for cigarette boxes and label paper.
- Utilizing patent design of automatic preparing and feeding sample
- Controlled by micro-computer
- Test parameters are displayed by LCD
- Equipped with two constant temperature chambers for sample preparation
- Two specimens can be tested simultaneously
- Special design of anti-condensation and back-flush cleaning avoids cross contamination between specimens
- Various testing modes of constant temperature, temperature program and mixed control are available
- Linear temperature program with 5 orders (customization available)
- Power off protection against over- or drop- temperature
- Modular designed detector provides extendable functions
- Practical design of base line auto-zero, power failure protection, and test data storage or inquiry ensures the safe operation condition
- Supported by professional chromatography data system with powerful processing functions

Characteristics of Gas Chromatograph

- The instrument is controlled by micro-computer and integrated circuit, with big display screen. Functions of keyboard inputting parameters, power failure protection and file storage or inquiry provide a comfortable operating environment.

- Reliable and flexible gas path system is easy to be extended with dual column and dual gas path operation, which is available for different feeding gases or tests and selected in accordance with user analysis requirements.
- Detectors uses unitized combination design and plug-and-play (PNP) extension control mode. Instrument is equipped with hydrogen flame ionization detector (FID) and thermal conductivity detector (TCD). Four different detectors could be installed simultaneously at most in accordance with user analysis requirements.
- Constant temperature or temperature program can be achieved in this instrument. And preset temperature of chromatographic column chamber could be reached through automatic open-close of its flexible back door.
- Sampler system is equipped with packed column, capillary column and other devices to transfer test gases into the system.
- Instrument is designed with functions of lower pressure for carrier gas tube and protection for gas transmission interrupt.
- High temperature protection is applied so that instrument could stop working and alarm when the temperature of any gas tube exceeds the preset temperature (set at 20°C).
- 1500mV wide range of response signal, with good consistency, could meet analysis requirements of high purity samples.
- Good performance of chromatographic column box makes it possible to achieve the operation at room temperature+3°C, even when the temperatures of detection and vaporizing chambers are as high as 200°C. Instrument comes with good repeatability of temperature program to ensure the retention time consistency of sample components.
- Special designed operating software and hardware could automatically monitor the whole operating process, which creates a safe test environment for users.
- Instrument could be easily connected with chromatography data converter, data system or other graphing devices.
- Professional chromatographic data system provides powerful and intelligent data process function to automatically identify the names and quantities (mg/m^2) of residual solvents of tested samples in accordance with reference data. Instrument is also available for the detection of solvent purity and water content of hydrophilic solvents.

Characteristics of Auto Sampler

- Controlled by single chip microcomputer, with keyboard for parameter input, LCD display; high automation provides convenient operating experience.
- Auto sampler utilizes integrated structure design, with 300 mL sample bottle. Standard specimen chamber is totally separated from test specimen chamber, so that parameter setting and heating could be individually performed.
- Feeding sample valve and transmission tube can be heated to preset temperature to avoid sample condensation.
- Back-flush cleaning of feeding valve and tube avoids cross contamination between specimens
- Combination of sampling pump, feeding valve and negative pressure method provides constant test pressure, accurate quantify, good repeatability and high sensitivity.
- Equipped with communication port which is used to connect gas chromatograph and chromatography data system to accomplish the one-click operation of preparing, sampling, and analyzing.

Test Principle

A gas chromatograph is a separating or analytical instrument for mixture containing various components. It takes the inert gas as mobile phase, and utilizes the chromatographic column separation technology. The mixture injected into the instrument follows the carrier gas into a separation tube known as “column”. Because of different distribution coefficients in the column, distinct components will display different mobile speeds. After certain column, the analyzed components will leave the column consecutively into the detector where corresponding electrical signals will be generated and taken into chromatography data system. The quantitative analysis of tested mixture is accomplished.

Applications

Basic Applications	Residual Solvent	For the residual solvent analysis test of plastic films, paper-plastic composite films for food and drugs, and , cigarette packaging materials
	Purity Analysis	For the purity analysis test of various solvents used in packaging and printing materials
	Moisture Analysis	For the moisture content analysis test of various solvents used in packaging and printing materials
	Automatic Sampler	Perform the test automatically to minimize the errors caused by human factors
Extended Applications (Special Accessories or Customization Required)	Chlorethylene Analysis	For the content analysis of Chlorethylene

Technical Specifications

Temperature of Specimen Chamber A	Room temperature +5°C~200°C with ±0.1°C accuracy
Temperature for Specimen Chamber B	Room temperature +5°C~200°C with ±0.1°C accuracy
Temperature of Specimen Gas Path	Room temperature +5°C~150°C with ±0.5°Caccuracy
Temperature of Auto-Feeding Specimen Switch Box	Room temperature +5°C~150°Cwith ±0.5°C accuracy
Specimen Volume	1.0 mL (0.5 mL, 2 mL, or 3 mL can be customized)
Headspace Bottle Specification	300 mL (Standard)
Specimen Analysis Station	2
Back-Flush Cleaning	0~60000 Seconds

Specimen-Feeding Time	0~60000 Seconds	
Headspace Balance Heating Time	0~60000 Seconds	
Specimen-Feeding Switch Time	0~60000 Seconds	
Temperature of Chromatographic Column Chamber	Temperature Accuracy	Better than ±0.1°C
	Temperature Gradient	Effective range of column is less than 1%
	Temperature Deviation	Deviation between preset temperature and display temperature is less than 1°C
	Temperature Deviation	Deviation between preset temperature and actual temperature is less than 2%
Orders of Temperature Program	5 orders (customization available)	
Rate of Temperature	0.1 ~ 30°C/min	
Temperature Range of Linear Temperature Program	Lower than 150 °C while 30°C per minute Lower than 300 °C while 15°C per minute Lower than 350 °C while 10°C per minute	
Control Time from Primary to Terminal Temperature	0 ~ 600 min	
Repeatability of Temperature Program	Less than 2%	
Temperature Decreasing Speed	Less than 15min from 300°C to 50°C (While temperatures of vaporizing and test chambers increase to 300 °C)	
Vaporizing Chamber	Temperature Accuracy	±0.1°C (room temperature +15°C~ 200°C) ±0.2°C while temperature is higher than 200°C
Test Chamber	Temperature Accuracy	±0.1°C (room temperature +15°C~ 200°C) ±0.2°C while temperature is higher than 200°C
Flame Ionization Detector (FID)	Test Limit	Less than 1×10^{-11}g/s (Benzene)
	Noise	Less than 0.025 mV
	Drift	Less than 0.15 mV/h
Thermal Conductivity Detector (TCD) (Optional Parts)	Sensitivity	More than 3000 mV·mL/mg (Benzene)
	Noise	Less than 0.035 mV
	Drift	Less than 0.5 mV/h
Mainframe	Power Supply	AC 220V 50HZ
	Instrument Dimension	620 mm (L) x 490 mm (W) x 480 mm (H)
	Net Weight	55 kg
Auto Sampler	Instrument Dimension	340 mm (L) x 535 mm (W) x 495 mm (H)
	Net Weight	27 kg

Configurations

Standard Configurations	Gas Chromatograph Mainframe, Autosampler, Hydrogen Flame Ionization Detector, Thermal Conductivity Detector, Water Analytical Column, Capillary Analytical Column, and

	Chromatography Data System
Note	1. Customers will need to prepare for gas supply (high purity nitrogen, high purity hydrogen, dry and oil-free air), analytical reagent (added in the process of printing or composition), 1mL glass syringe (with 5# needle), and computer. 2. Chromatographic analysis laboratory of Labthink will build test methods and provide operation training for free.

Please Note: Labthink is always dedicated to the innovation and improvement of product performance and function. Therefore, technical specifications are subject to change without further notice. Please visit our website at www.labthink.com for the latest updates. Labthink reserves the rights of final interpretation and revision.