

>> Precise Rapid Sensitive



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GC5400

Series Gas Chromatograph



Gas Chromatograph

Intelligent and Integrated GC-5400

The intelligent Gas Chromatograph GC-5400 presented by Skyray Instrument Inc. incorporates advanced modern manufacturing technologies with years of experience in research and development. It is manufactured under a quality system conforming to international standards. The multi functional, easy-to-use and remotely controllable gas chromatograph provides superior performance for all applications.

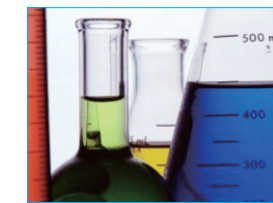
Precision Instruments

Skyray Elaborates



Wide Application Fields:

GC-5400 gas chromatograph plays a critical role in quality control of chemistry, medicine and food industries, and also applicable to quarantine, environment protection, quality supervision, oil, petrochemical industry, forensic analysis, agriculture and commodity inspection.



Advanced Microcomputer Control System

- With adoption of advanced control technology, the microcomputer temperature control system is highly precise (less than $\pm 0.05^{\circ}\text{C}$), reliable and anti-interfering. The system is divided into 5 independent heated zones with maximum temperature up to 400°C . Settable ultimate temperature and overheat protection mechanism ensure a safe operation of the instrument.
- Control and operating parameters can be set on the logical and easy-to-use keypad interface (including detector operating parameters). It has functions of self diagnosis, power-off protection, 10 method files saving and invoking, 2 controls of external events, timing start/stop of temperature control, time programming, detector selection, setting and display of range, polarity and current. The set value, actual value, retention and analysis time of each heated zone can be fully displayed.



High Performance Large Column Oven

The large column oven allows for simultaneous accommodation of capillary column and double packed columns. It is equipped with automated back door mechanism, a rapid heating/cooling device (lowering temperature from 350°C to 50°C in 7 minutes), to realize quasi room temperature control. It supports 5 oven ramps with 6 plateaus.

High precise pneumatics with dual stability

The carrier gas pneumatics is designed with constant pressure valve plus constant flow valve for dual stability. Constant pressure valve plus needle valve are used in the air and Hydrogen pneumatics for stable gas regulation. Both valves are in form of digital knobs, which delivers high precision, outstanding repeatability, good reliability and intuitive flow rate adjustment.

High sensitive and high stable detectors

- ➔ Up to three kinds of detectors, Flame Ionization Detector (FID), Thermo Conductivity Detector (TCD) and Electron Capture Detector (ECD), are provided for GC-5400. Different combinations of detectors, in series or parallel operation, can meet different application requirements.
- ➔ The novel FID has lower limit of detection, with ejector nozzle and ions collector easily disassembled or cleaned. The fixed and accurate installation structure of the ejector ensures every instrument has consistent performance.
- ➔ The high sensitive TCD adopts the high resistant rhenium-tungsten wire, with twofold electronic amplification circuit optional, resulting in maximum sensitivity up to 5000mV·mL/mg. Its unique air insulation structure brings TCD higher stability of performance.
- ➔ Sensitivity and current selections of pulse modulation ECD constant current source are computerized.



Technical specifications

Temperature Control	
Temperature range	7°C ~ 400°C above room temperature, increment 1°C
Temperature control objects	Column oven, detector, thermal conductivity cell, injector, accessories
Temperature ramps	5-stage
Temperature ramp rate	0.1°C ~ 40°C/min, increment 0.1°C
Constant Temperature Retention time	0 ~ 655 min, increment 1 min

Hydrogen Flame Ionization Detector (FID)	
Sensitivity	$M \leq 1 \times 10^{-11} \text{ g/s } (C_{10})$
Best testing results	$M \leq 8 \times 10^{-12} \text{ g/s } (C_{10})$
Noise	$\leq 5 \times 10^{-14} \text{ A}$
Drift	$\leq 6 \times 10^{-13} \text{ A/h}$
Linear dynamic range	$\geq 10^6$

Thermal Conductivity Detector (TCD)	
Sensitivity	$\geq 2500 \text{ mV} \cdot \text{mL/mg } (C_{10})$
Noise	$\leq 20 \mu \text{ V}$
Drift	$\leq 30 \mu \text{ V/h}$
Best testing results	$\geq 5000 \text{ mV} \cdot \text{mL/mg } (\text{Electronic amplification})$
Linear dynamic range	$\geq 10^4$

Electron Capture Detector (ECD)	
Detection limit	$\leq 2 \times 10^{-13} \text{ g/s } (r-666)$
Linear dynamic range	$\geq 10^3$
Maximum operating temperature	350°C

Single packed column/double packed columns injector

- ➔ Allowing for on-column injection, this type of injector is versatile to many chromatographic columns. By adding a 6-way valve, gas injection can be analyzed. With connector attached, the injector can be used together with the 0.53 wide bore capillary columns for analysis.

2 kinds of capillary column injector systems for all sizes of capillary columns

- ➔ Special-purpose capillary column injector with septum purge and split back pressure valve
- ➔ Special-purpose capillary column split/splitless injector, with independent carrier gas and makeup gas pneumatics, septum purge and split back pressure valve, inlet cleaning solenoid valve, capillary column split/splitless injection controlled by timing program.

Powerful Data Processing System at Your Option

- ➔ The in-built data acquisition board enables the work station software to perform base flow monitoring, single column compensation and chromatographic data processing.
- ➔ Composed of absolutely independent dual-channel external data acquisition box and intelligent software, the work station is capable of acquiring either floating signals or grounded signals instantly and processing chromatographic data accurately.
- ➔ Rs232 communication board and software, linking with Work Station, provides two-way communication with and inversion of control of the mainframe, that is, the temperature setting, the detector parameters setting and monitoring, and data processing parameters setting can be done on the computer.
- ➔ Unique chromatographic simulation software provides simulated searching of optimum operating conditions for chromatograph, simulated teaching and training, knowledge base of chromatograph, etc.

Flexible Injector System Meets Various Analysis Requirements

Maximum of three injectors can be installed on the instrument simultaneously. Their combinations can be optimized for different analysis requirements. Each of them is under independent heated zone. Their assembly and disassembly is done at ease.

Free Accessories for Carefree Setup

A complete set of accessories, i.e., purifier, external pneumatics pipes, wrenches, syringe and various types of connectors, are provided for the initial setup. The users are supposed to prepare the gas source only. The above mentioned accessories are free of charge.



Complete spare parts

All sorts of gas generators

Common Models and Configurations

The mainframes of GC5400 series have the features below: full microcomputer control, five temperature control zones, five-stage temperature ramps, ten method files saved, two external parts for optional installation, automated back door mechanism.

Models	Main configurations
GC5400-1	Capillary column injector(containing septum purge, split back pressure valve) +makeup gas setting+SE54 Ø0.25×15m capillary column + FID
GC5400-2	Double packed column injector + TCD
GC5400-3	Double packed column injector + double FID
GC5400-4	Double packed column injector + capillary column injector (containing septum purge, split back pressure valve) +double FID
GC5400-5	Double packed column injector + independent capillary column injector (containing carrier gas control, septum purge, split back pressure valve) + make-up gas setting+ double FID

Note: The above configurations are basic, which can be combined freely upon request by the users. Please state the requirements when placing the order.

Accessories	Main configurations and functions
Split/splitless capillary column injector	Split/splitless capillary column injector, independent temperature control, independent pneumatics (containing carrier gas control, septum purge, split back pressure valve), makeup gas setting, inlet cleaning solenoid valve, split/splitless injection controlled by timing program.
GC5400-TCD	Thermal Conductivity Detector, independent temperature control
GC5400-ECD	Electron Capture detector, independent temperature control
Wf50 in-built chromatographic work station	In-built interface module+ work station software(PC excluded)
Wf50 dual-channel chromatographic work station	Independent external dual-channel data acquisition box + work station software(PC excluded)
Software of inverse of control	Rs232 communication board and software, linking with Work Station, provides two-way communication with and inversion of control of the mainframe,
Simulation software	Unique chromatographic simulation software provides simulated searching of optimum operating conditions for chromatograph, simulated teaching and training, knowledge base of chromatograph, etc.