

## Temperature Setting

Parameters

Setting

Actual

200

200

250

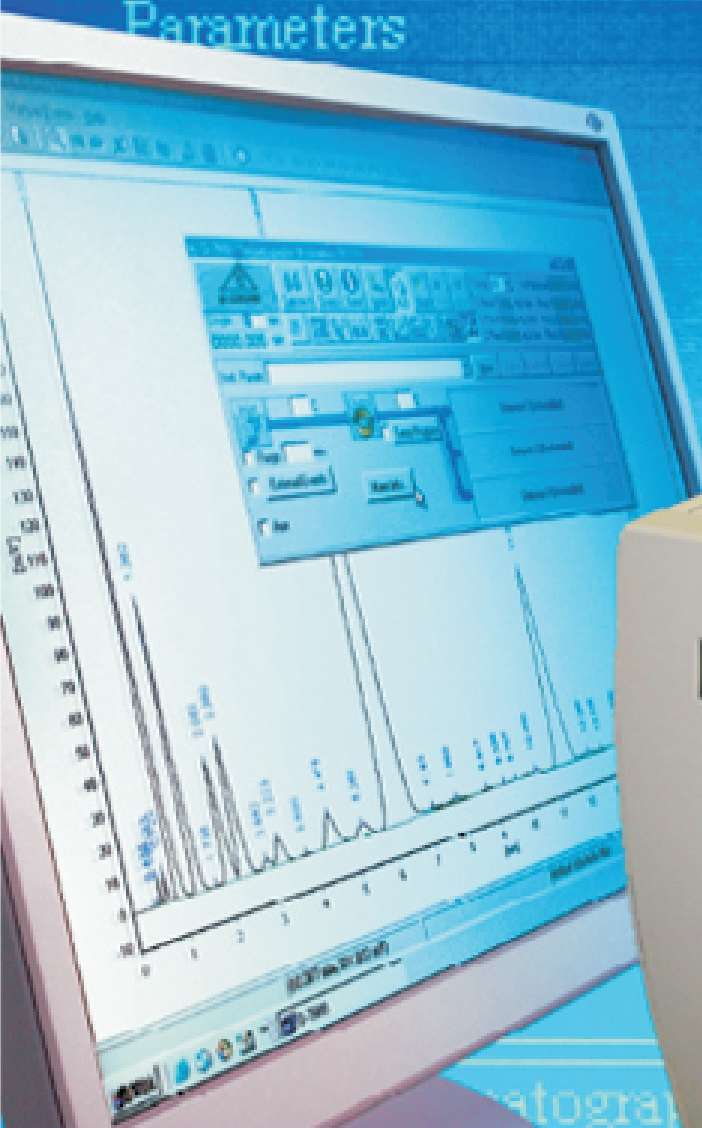
250

250

250

98

98



# GC9000

Gas Chromatograph

# Compact, Versatile, GC 9000 Gas Chromatograph System

## Compact

- Small footprint
- Occupy less bench space

## Easy Operation

- Large LCD informative display
- Real-time chromatogram display

## Versatility

- Choice of 3 injectors and 3 detectors
- Dual column analysis

## High Performance

- Fast and accurate temperature program
- Fast oven cooling rate

## Intuitive Software

- Real-time display and control parameters of GC mainframe by control panel and PC Software
- Step-by-step method development, injection sequence, calibration and reporting



# Performance

## GC 9000



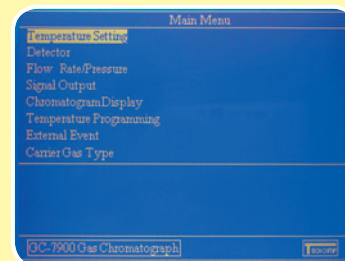


# EASY OPERATION

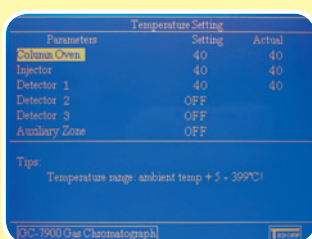
## Large LCD

GC9000 has built-in large LCD. Rich information can be displayed. Users will feel easy to control and operate the instrument. The user interface is designed to be menu driven, and the menu is user-friendly.

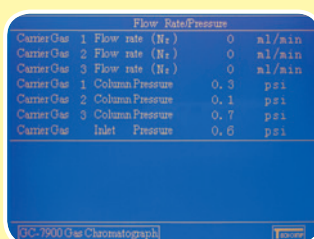
Information such as temperature setting and actual, column head pressure, carrier flow rate, as well as detector signal are shown in different screen. Even the dual channel chromatogram can be displayed in real-time for user to monitor the running status.



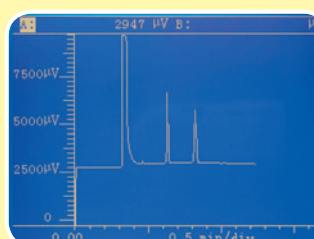
Main menu



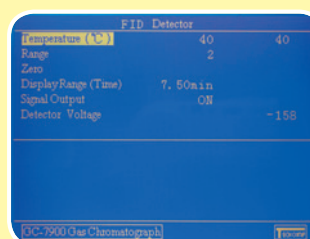
Temperature setting



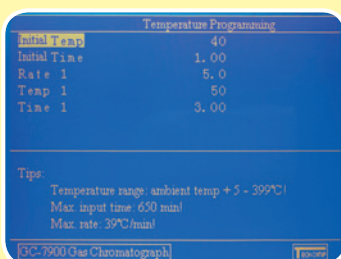
Digital display of pressure flow rate



Real-time display of chromatogram



Detector setting and signal



On-screen Tip

On-screen tips are available to help user to set up the instrument parameters.

## Soft touch keypad

- Navigation key provides a intuitive operation to the menu.
- Auto-ignition of FID and FPD by pressing the ignite key on the keypad.
- Carrier gas type (N<sub>2</sub>, H<sub>2</sub> and He ) can be specified.



Soft touch keypad

## Optional liquid autosampler

With optional liquid autosampler, sample injection and sequence injection can be automated. Overnight and unattended operation is possible. This is beneficial to most high sample throughput laboratory like QA and Testing Laboratory. Smart swivel injector tower allows manual injection without disassembling the autosampler.





# VERSATILE

## Wide Range of Applications



Due to the nature and response factor of different compounds of interest, different injectors and detectors are required. With the 3+3 design, all 3 injectors and 3 detectors can be mounted on the instrument together.

Analysis of gases by packed column and pesticides by high resolution capillary column are possible in single instrument by mounting the corresponding injectors and detectors. The choice is yours to optimize the usage of the instrument.

### 3 + 3 design

#### 3 injector positions

- Packed column injector port
- Wide bore capillary column adaptor
- Split/ Splitless capillary injector port

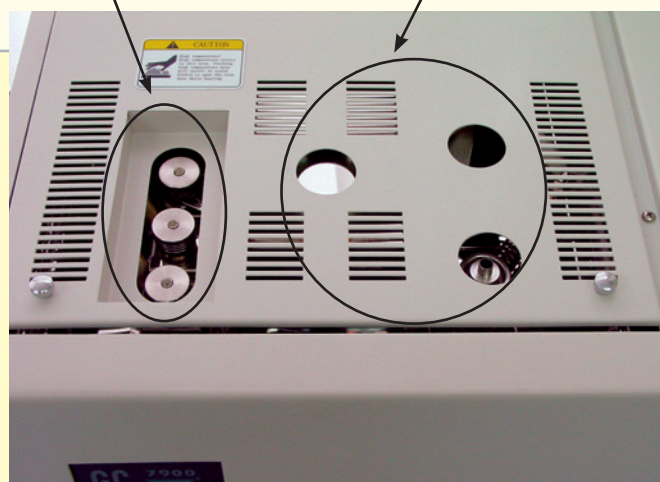
#### 3 detector positions

- FID—Flame Ionization Detector
- TCD—Thermal Conductivity Detector
- ECD—Electron Capture Detector
- NPD—Nitrogen Phosphorus Detector
- FPD—Flame Photometric Detector

You can analyze hydrocarbons, organochlorine compounds and organophosphorus compounds in a single GC by constructing a 3 detectors (FID, ECD, NPD) system.

Dual column analysis is also possible by using a column splitter with two different or same detectors.

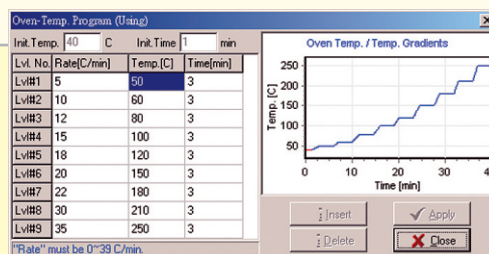
Injector zone      Detector zone



Injectors and detectors position

### 9 ramps temperature program

Better peak resolution can be achieved by using of the temperature program. Complex mixtures of similar compounds, such as polychlorinated biphenyls, phthalates, fatty acid methyl ester etc, can be resolved without any limitation of the steps of temperature program.



Temperature program profile

# PERFORMANCE

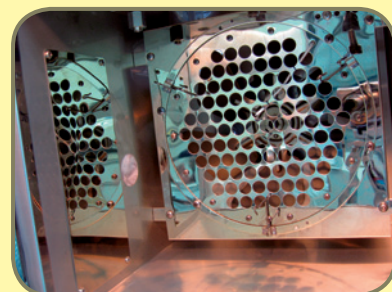
## High efficiency column oven

The column oven is designed to be compact yet highly efficient. The maximum heating rate is 40°C/min (at <200°C) which allows shorter running time in temperature program. Productivity is thus enhanced.

Oven cooling is fast thanks to the counter flow of hot air out and cool air by double pathway. Two separate doors are independent and intelligent regulated to control the oven cooling rate. Idle time between runs is much reduced and thus sample throughput is enhanced.



Various kind of high performance capillary / packed columns are available.



## Front access of control of gas flow

Precise gas valves are used to control the carrier gas flow rate. Thanks to the accurate flow sensor and digital display, the column head pressure can be fine adjusted to 0.1psi.

Detector gases (air, hydrogen and make up) of each detector can be switched on and off by combination needle valve. This is applicable to FID and FPD.

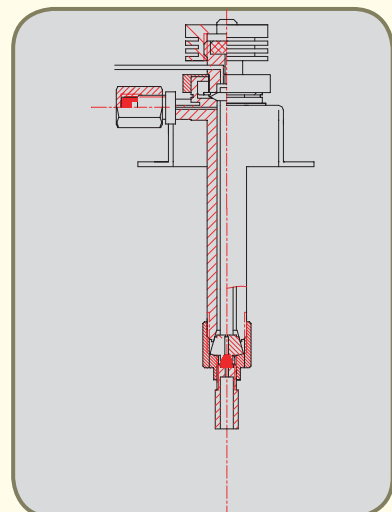


Carrier gas and detector gas flow control

## High resolution analysis by capillary column

Split / Splitless injection port for capillary column is available. You can choose any type of capillary column from narrow bore (0.25~0.32mm) or wide bore (0.53mm) type.

Septum purge function helps to clean the septum after each injection and reduces the interference from ghost peak.



Split / Splitless injection port



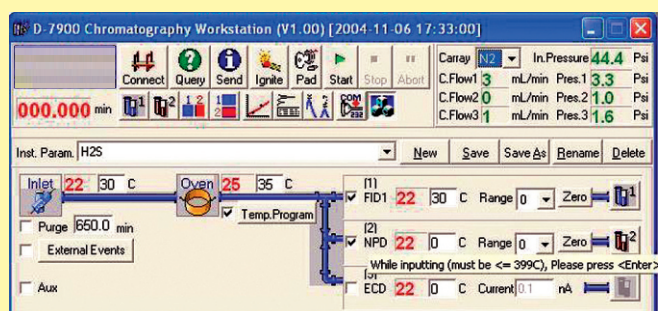
# D-7900 Chromatography Workstation Intuitive Software



With a single communication cable, GC 9000 can be connected to a Windows based Chromatograph Software. D-7900 offers as much function as instrumental control, data acquisition and processing as well as flexible report generation.

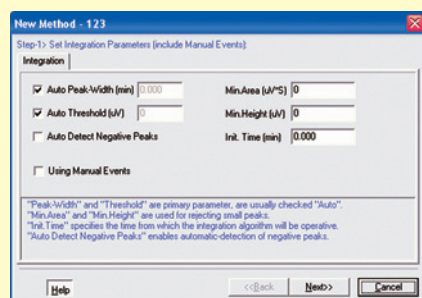
## Main control panel

- Display of instrument status
- Access to other functions: new method, injection and sample table, calibration table, data reprocessing and report preview
- Connect and send the parameters to the instrument



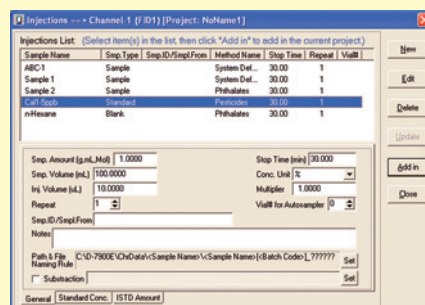
## Setting up chromatographic method

- Injection type and temperature
- Oven temperature and program
- Detector type and temperature
- Calibration method



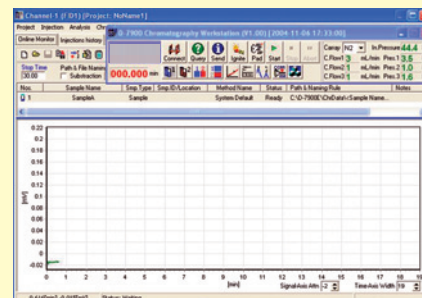
## Input the sample information

- Sample information
- Sequence table as project



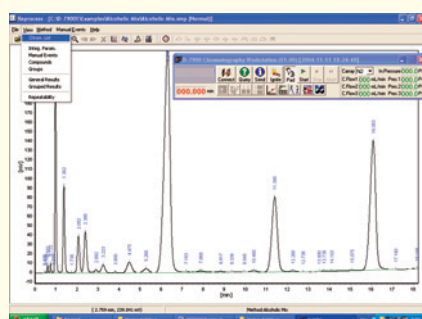
## Perform injections of standards and samples

## Data acquisition



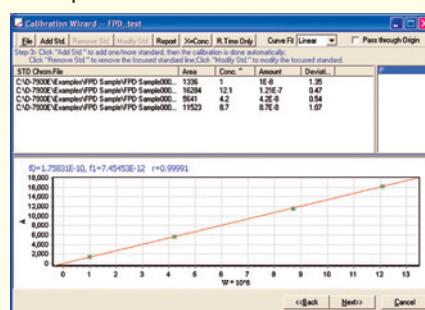
## Data reprocessing

- Integration (auto or manual)
- Compound identification and naming
- Repeatability analysis



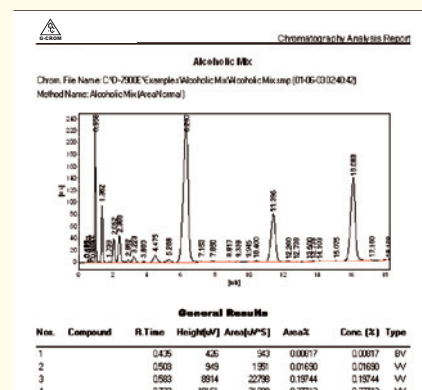
## Calibration table

- Select standards for calibration
- Compound identification (by retention time)
- Generate calibration curve for each compound



## Report generate

- Generate report based on user selected options.





# Specification

Operating Environment	
Temperature range	5°C to 35°C
Humidity range	25% to 80% (non-condensing)
Power supply	220V $\pm$ 10%, 50Hz
Power consumption	2500W
Column Oven	
Dimension	250 x 250 x 176 mm
Operating temperature	Ambient+5°C to 400°C (increment of 1°C)
Temperature accuracy	0.5%
Ramp rate	0.1~40°C/min (Temp 200°C)  0.1~20°C/min (Temp > 200°C)
Max no of ramp	9
Reproducibility of temperature ramping	2%
Communication	
PC connection	RS-232, 9600 baud rate
Analog output	-5 mV to 1000 mV

Ordering Information	
T790202	GC7900 Main unit, 1 Packed Injectors 1 Split / Splitless with 1 FID
T790204	GC7900 Main unit, 2 Packed Injectors with 1 TCD
T790208	GC7900 Main unit, 1 Packed Injector with 1 FID
T790211	GC7900 Main unit, 1 Split / Splitless Injector with 1 FID
T790212	GC7900 Main unit, 2 Packed Injectors with 1 FID and 1 TCD
HT310A-220	10 positions liquid autosampler

Injection Port	
Display of column pressure and flow rate	Display of column pressure 0.1psi Display of flow rate 1ml/min
Control of column pressure and flow rate	Manual control with flow stabilizer
Temperature control (max)	400°C (increment of 1°C)
No of injection ports	3 (max) Packed column injector Wide bore capillary column adaptor Capillary column injector
Detectors	
<b>FID</b> Max operating temp Limit of detection Noise level Baseline drift	400°C $5 \times 10^{-12}$ g/s (n-hexadecane) $5 \times 10^{-14}$ A $1 \times 10^{-13}$ A (30 mins) after instrument warm-up for 2 hours
<b>TCD</b> Max operating temp Sensitivity Noise level Baseline drift	Wheaton bridge arrangement for using two packed column 350°C 10,000 mV-ml/mg (n-hexadecane) 30 $\mu$ V (carrier gas of 99.999% He) 100 $\mu$ V (30 mins) after instrument warm-up for 4 hours
<b>ECD</b> Max operating temp Limit of detection Noise level Baseline drift	350°C $3 \times 10^{-14}$ g/ml (BHC) 15 $\mu$ V 50 $\mu$ V (30 mins) after instrument warm-up for 4 hours
<b>NPD</b> Max operating temp Limit of detection of N Limit of detection of P Noise level Baseline drift	400°C $5 \times 10^{-12}$ g/s (azobenzene) $5 \times 10^{-13}$ g/s (malathion) $2 \times 10^{-13}$ A $4 \times 10^{-13}$ A (30 mins) after instrument warm-up for 2 hours
<b>FPD</b> Max operating temp Limit of detection of S Limit of detection of P Noise level Baseline drift	400°C $1 \times 10^{-10}$ g/s (methyl parathion) $1 \times 10^{-11}$ g/s (methyl parathion) $8 \times 10^{-11}$ A $5 \times 10^{-12}$ A (30 mins) after instrument warm-up for 2 hours

## GC9000

*Perfeito em qualquer ângulo*



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