C184-E012G

Access to your success
SHIMADZU

GC-2010
GCsolution Ver.2

Shimadzu
Capillary
Gas Chromatograph System

The future for better GC separation,
faster analysis, and reduced downtime
GC-2010 / GCsolution Ver.2

GC-2010
GCsolution Ver.2

CAPILLARY
GAS CHROMATOGRAPH SYSTEM

Innovation, Performance, Friendly

High Performance

Sensitive, high-speed analysis with excellent repeatability

Easy Operation

Self-diagnostic functions and easy-to-see large display

Carrier gas constant linear velocity mode

Flexibility

Simultaneous analysis system with 3 detectors

Dual injection system

Application Systems

Pretreatment units (headspace gas analysis, pyrolysis)

Distillation GC, PONA-GC

Data Management

GCsolution Ver. 2 workstation

Simple operation and comprehensive basic functions enhance analysis productivity

GLP/GMP compliant, network-compatible

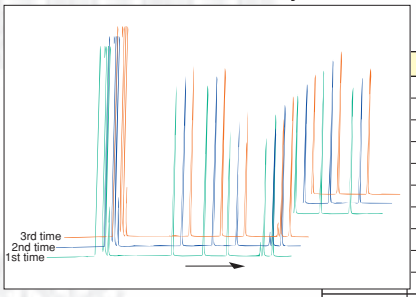
Contents

Superb Basic Functions Promise Fast

Ultimate Repeatability

A new-generation AFC (Advanced Flow Controller) features rapid response and temperature correction functions, plus an improved sample injection unit and column oven all work together to achieve excellent repeatability for retention time, peak area, and peak height.

Grob Test Mixture Analysis



Peak Area Repeatability (100 ppm Grob Test Mixture)

1	2	3	4	5	6	7	8
76579	60390	76285	68766	53094	54525	68680	57310
76843	60666	76546	69022	53314	54785	69058	57584
76975	60775	76693	69148	53331	54803	68954	57576
76873	60673	76505	69003	53244	54678	68870	57487
76294	60249	76053	68502	52872	54351	68625	57169
76396	60362	76178	68639	53010	54516	68849	57368
76216	60177	76037	68466	52850	54382	68651	57170
76362	60338	76150	68590	52941	54444	68735	57274
76371	60346	76113	68635	52976	54432	68733	57318
76725	60552	76401	68930	53225	54675	68936	57523
Mean	76394.0	60337.3	76155.3	68627.0	52979.0	54466.7	68754.8	57303.7
Standard deviation	174.815	126.709	132.031	164.275	134.922	116.704	118.488	133.666
CV%	**0.229**	**0.210**	**0.173**	**0.239**	**0.255**	**0.214**	**0.172**	**0.233**

Even Higher Sensitivity

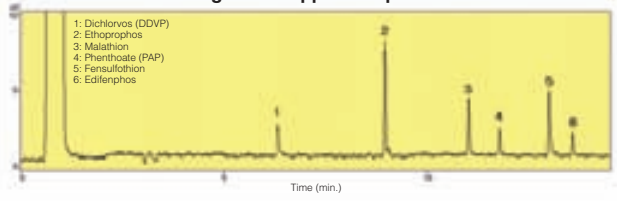
All detectors have been re-designed for greater compactness and higher sensitivity.
The upgraded optics of the FPD (Flame Photometric Detector) employs a condenser lens and total reflection system using mirrors to offer world-beating sensitivity.
The nozzle construction prevents adhesion and decomposition of the sample. (Sensitivity is increased five times compared to GC-17A.)

World-beating Sensitivity

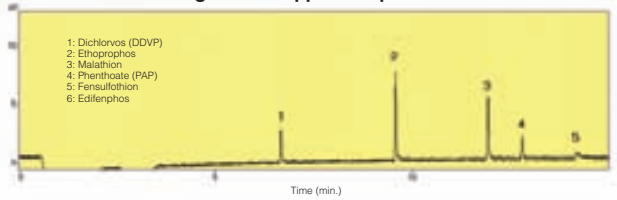
FPD
Flame Photometric Detector
Using total reflection system and condenser lens

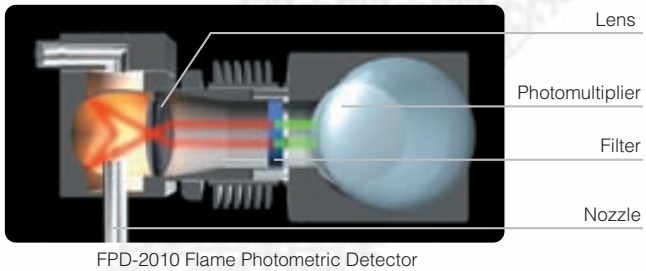
→ Sensitivity is Up **fivefold!!** (In comparison with Shimadzu GC-17A)

FPD-2010 Chromatogram of 5 ppb Phosphorus-based Pesticide



FPD-17 Chromatogram of 50 ppb Phosphorus-based Pesticide





FPD-2010 Flame Photometric Detector

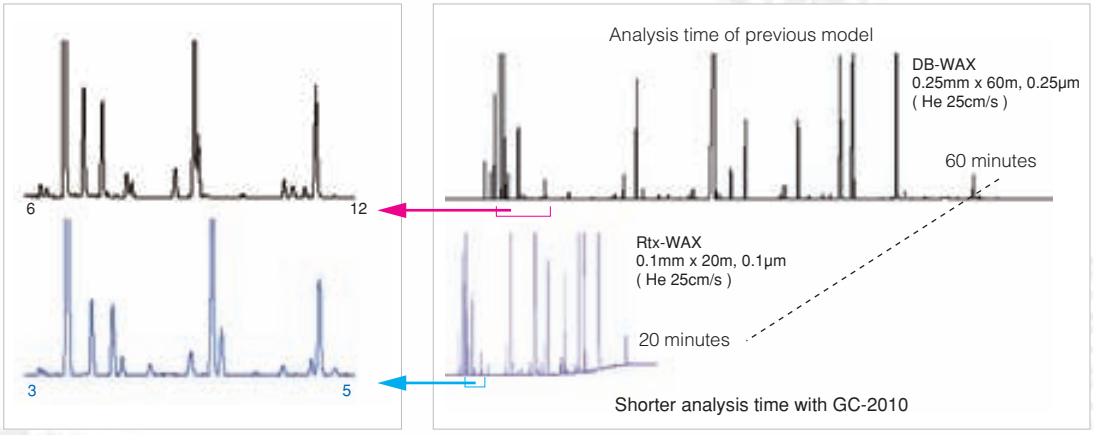
Column: DB1 30 m x 0.25 mm ID; d_f = 0.25 µm
Column temperature: 60°C(1min) — 20°C/min — 200°C — 10°C/min — 270°C
Injection unit temperature: 260°C
Detector temperature: 280°C
Carrier gas: He
Carrier gas linear velocity: 40 cm/s (constant linear velocity mode)
Detector H_2 flowrate: 80 mL/min.
Detector air flowrate: 120 mL/min.
Sample injection volume: 2 µL (high-pressure splitless analysis)

and Accurate Analysis Results

Greater Speed

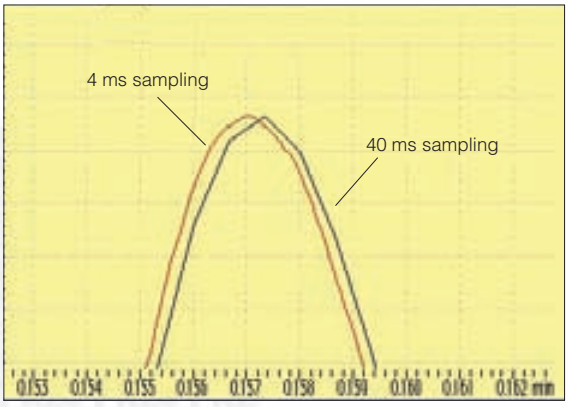
High-speed analysis with a narrow-bore capillary column reduces operator time and increases sample- throughput. But it places stringent demands on inlet design and carrier gas pneumatics (through high column back pressures and high split flow rates). The new-generation AFC digital flow controller supports high-speed analysis at a maximum pressure of 970 kPa and 1200 mL/minute maximum flow rate.

High-speed Analysis of Coffee Flavoring



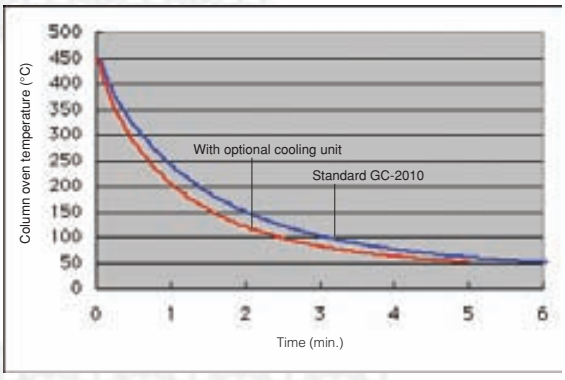
Workstation Engineered for High-speed Analysis

The rapid 250 Hz (4 ms) detector data sampling rate of the GCsolution GC workstation ensures sharp, accurate peaks for narrow-bore-column analysis.



Rapid Column Oven Heating and Cooling

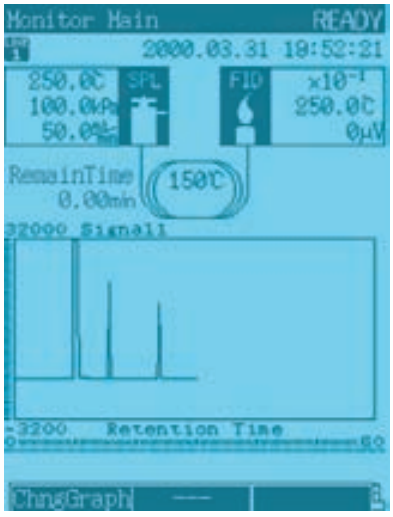
The high-power oven achieves rapid heating. The column-oven cooling rate is an important factor when conducting consecutive programmed-temperature gas chromatography analyses. The GC-2010 allows cooling from 450°C to 50°C in about 6 minutes. Adding the optional high-speed cooling unit makes cooling even quicker.



Easy Operation Saves Time and Total

Large Display

An information rich, large display is provided to show a lot of information.
The text and graphic screen lets you set the analysis conditions quickly and easily.
The built-in help functions make operation training almost unnecessary after the instrument is installed.
Digital setting of all parameters, including temperatures and flowrates, allows accurate reproduction of the analysis conditions.



Large Display

Graphic user interface
Text display
Built-in help functions
Chromatogram display

Intelligent Self-diagnostic Functions

Extensive self-diagnostic functions check that the instrument is functioning correctly.
These functions conduct a detailed diagnosis that includes the septum and glass insert operating status, temperature sensor errors, supplied gas pressure, control status for each gas, ignition operation, DC voltage, and AD converter.
Regular diagnosis prevents unexpected downtime.

Self-diagnostic Functions

Unit control check
Hardware diagnosis
Save and check diagnosis log

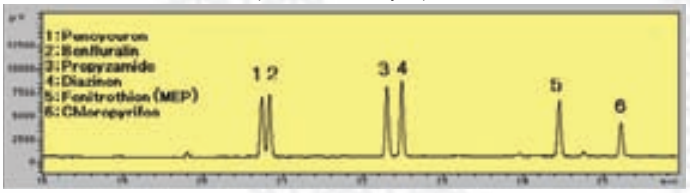
Cost

Constant Linear Velocity Mode Quickly Determines Separation Conditions

Shimadzu presents carrier gas control based on the carrier gas linear velocity, which bears a direct correlation to the separation performance, instead of the conventional method using column inlet pressure and column flowrate settings. The constant linear velocity mode reduces the time taken to determine the analysis conditions needed to obtain the optimal separation chromatogram.

Comparison of chromatograms with constant linear velocity and constant column inlet pressure
(Pesticides Analysis)

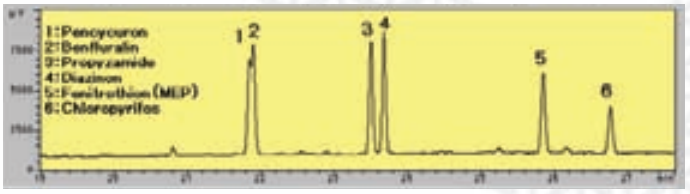
Constant linear velocity



Constant Linear Velocity Mode

Quickly determines optimal analysis conditions
Convenient method transfer between GCs and GC/MS

Constant column inlet pressure

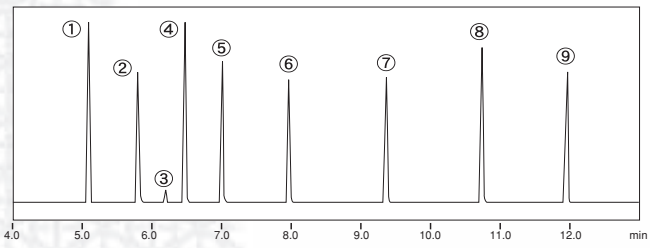


Column: DB1 30 m x 0.32 mm ID; d_f = 0.25 μm
Column temperature: 60°C(1min) — 7°C/min—230°C
Injection unit temperature:240°C
Detector temperature:270°C (FID)
Carrier gas: He
Carrier gas linear velocity: 40 cm/s (44.0 kPa column inlet pressure)
Sample injection volume: 1μL (splitless analysis)

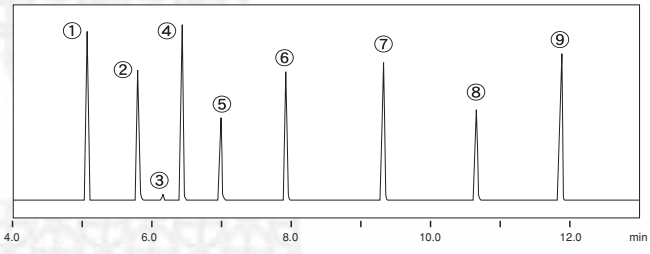
Comparison of the GC-FID chromatogram and GCMS-QP2010 total ion chromatogram (TIC) is also simple in the carrier gas constant linear velocity mode. Using the same type of column and setting the same carrier gas linear velocity values results in a virtually identical separation profile.

Comparison of GC-FID and GC/MS-TIC Chromatograms (Grob Test Mixture Analysis)

GC-FID



GC/MS(TIC)

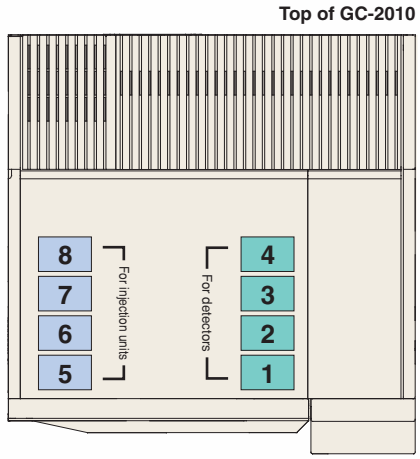


Unit Expandability Supports all

Simultaneously Mount Up to Three Injection Units and Four Detectors*

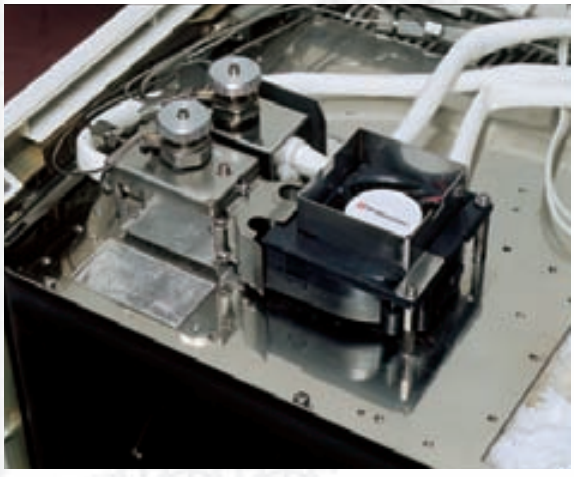
Select from three injection units and five detector types to suit the needs of the analysis and the target components. GCsolution allows up to four detectors to be mounted simultaneously. Options such as injection units, detectors, and auto-injectors can be easily added after installing the unit.

* The quantities of units which can simultaneously mount up depends on the injector and detector type.



Comprehensive Range of Injection Units

Obtaining superior data requires selection of the optimal sample injection method to suit the aim of the analysis and the target components. The GC-2010 can select the optimal injection mode from three types of injection unit.



Split / Splitless Injection Unit

SPL-2010

- Standard unit for high-speed analysis with a narrow bore column.
- Gas saver function can restrict the amount of split gas used.
- Support high-pressure injection.

Direct Injection Unit

WBI-2010

- Incorporates a septum purge flowpath to restrict solvent tailing.
- Sharing glass inserts with splitless analysis simplifies use (patented).
  (Contact your Shimadzu representative about connecting a packed column.)

On-column/Programmable Temperature Vaporizer Injection unit

OCI/PTV-2010

- Handles sample injection using both cold on-column and PTV methods.
- Uses inactive, heat-resistant quartz PTV inserts.
- The optional simple OCI insert permits use of a small-ID capillary column for the cold on-column method without a 0.53 mm ID. pre-column press-tight connection.
- Supports the analysis of compounds with a high boiling point (straight-chain hydrocarbons with 100 carbon number) .

Analysis Types

Compact, Highly Sensitive Detector Range

The detectors have been re-designed to be more compact. All detectors can be installed under the instrument top cover to allow easy mounting of each option and pretreatment unit.
Each detector incorporates an APC (Advanced Pressure Controller) that permits digital setting of the detector gas flowrate.

Thermal Conductivity Detector

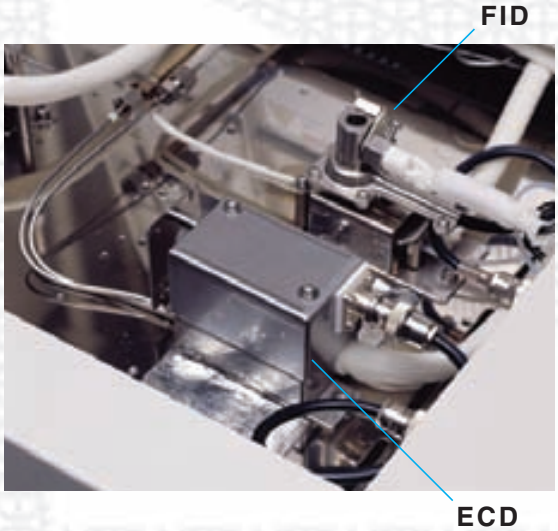
TCD-2010

- For the analysis of inorganic gases and concentrated organic compounds.
- Microvolume cell handles sharp peaks.
- Shorter stabilization time than previous Shimadzu instruments.

Flame Ionization Detector

FID-2010

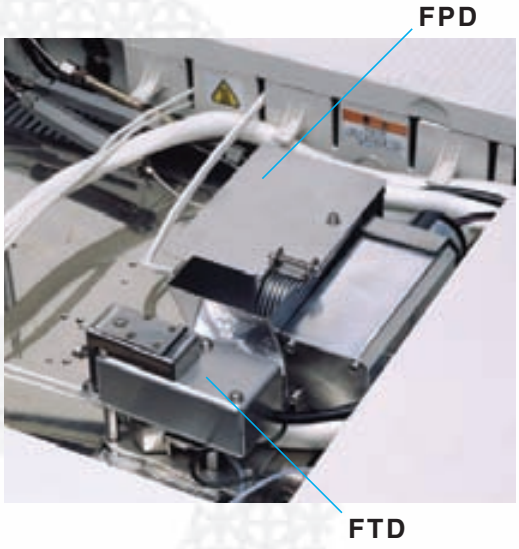
- For the general detection of organic compounds.
- Enhanced machining accuracy of the individual components restricts instrumental errors and improves sensitivity.
- Automatic ignition, extinguishing, and re-ignition functions
- Feedback function reduces gas supply pressure to zero when extinguishing the hydrogen flame.
- Optional flame monitor can be mounted.



Electron Capture Detector

ECD-2010

- Upgraded cell thermal insulation and reduced contamination improve sensitivity.
- Compact design achieves shorter stabilization times.
- In some countries, registration with the Ministry of Education, Culture, Sports, Science and Technology under the Law Concerning Prevention from Radiation Hazards due to Radio-Isotopes, is required before purchasing or using this detector. (Contact your Shimadzu representative for details.)



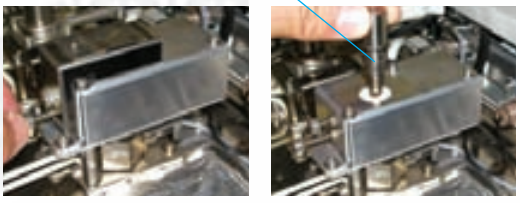
Flame Photometric Detector

FPD-2010

- For analysis of organic sulfur compounds and organic phosphorus compounds such as residual pesticides and malodorous components.
- Updated optics improve sensitivity 5 times, compared with previous instruments.
- Nozzle construction prevents adhesion and decomposition of the sample.
- Designed for compactness and high maximum operating temperature (350°C).
- No tools needed for filter replacement.

Filter replacement

Collector replacement



Remove screw

Replace collector

Flame Thermionic Detector (NPD)

FTD-2010

- For analysis of organic nitrogen compounds and organic phosphorus compounds such as residual pesticides.
- New collector construction allows collector replacement without tools.
- Optional alkali source regeneration kit saves running costs.

Dual Injector System

A dual injector system can be configured with a combination of two AOC-20i and one AOC-20s unit. Two-line simultaneous injection doubles the number of samples to improve productivity.

AOC-20i + AOC-20s

Shimadzu Gas Chromatograph V

Features of GCsolution Ver.2

Easy Operation

- Common operation and layout with other LabSolution software, such as Assistant Bar and Data Explorer, ensures an intuitive common user interface that can be easily learned. GCsolution Ver.2 realizes further simple operation.
- Manipulation function is improved and simple operation with versatile functions are realized.

Better Analysis Productivity

- Handles control and data processing for up to four GC systems (GC-2010, GC-2014, GC-17A, or GC-14B)
- Supports simultaneous processing of two samples on a single instrument and dual injection system for the ultimate in high throughput analyses.

Comprehensive Basic Functions

- Inherits the popular, proven and robust Chromatopac and CLASS-GC10 integration algorithm.
- Comprehensive functions for peak identification, quantitation, and data comparison.
- Flexible report generation functions with operation similar to MS-Word. Summary report output is possible.

GLP/GMP Compliance

- Full support of user management functions and GC-2010 self-diagnostic functions to enhance data reliability. Supports rigorous GLP/GMP requirements, including audit-trail functions for all method parameters.
- 21 CFR Part 11 compliance support functions are equipped as standard.

Network-compatibility

- Effective use of the network environment, such as in-office data analysis and remote access from the office is possible.
- CLASS-Agent provides file sharing and centralized data management.

Customization of User Interface

- OLE automation capability supports to realize simpler operating environment, for user's specific workflow. (Special order made)

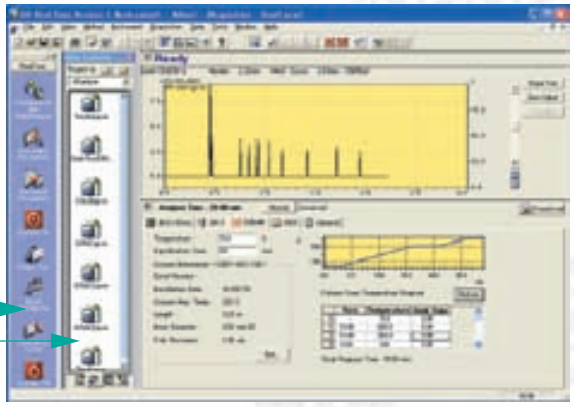
Workstation

User Interface

The latest Windows technologies offer multifunctionality and simple operation.
User interface including drag-and-drop and right-click menus offers quick and intuitive operation

Easy-to-operate Assistant Bar and Data Explorer

- Navigate operations with Assistant Bar Even novices can easily conduct analysis or re-analysis simply by sequentially clicking on icons.
- Data Explorer displays a list of files by type. Intuitively handle file operations by double-clicking or drag-and-drop.

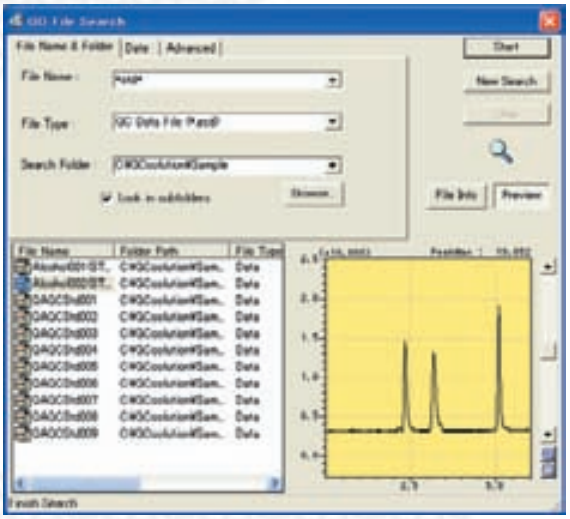


Batch Table Wizard Simplifies Consecutive Analyses

- Easily create batch tables for consecutive analysis of multiple samples using the Wizard.
- Simply fill in the prompts in the Wizard to create multi-point calibration curves and batch tables for repeated analyses.

File Search Function offers Convenient Previews

- Search any data file or method file.
- Search by file name, date, operator's name, sample name, or sample ID.
- Use the preview function to check the chromatogram in the searched data files before opening the file.

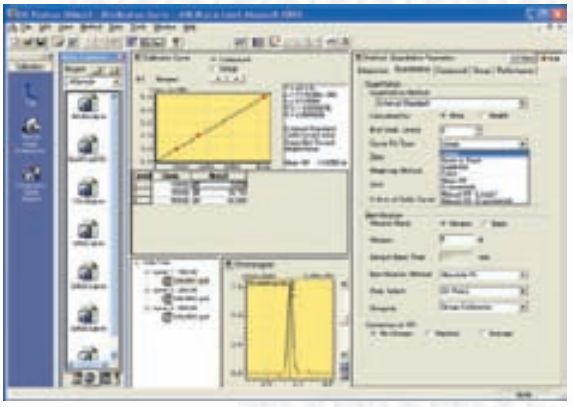


Data Analysis / Report Generation

Builds on the popular Chromatopac and CLASS-GC10 basic functions, including integration algorithms. Offers comprehensive functions for identification, quantitation, data comparison, and report generation.

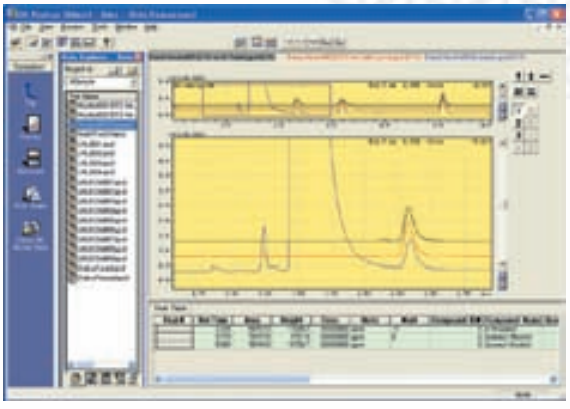
Identification and Quantitation Functions using Various Types of Calibration Curve

- Support for six quantitation methods, such as external and internal standard methods, and seven types of calibration curve, including linear, point to point and polynomial fits, ensures compatibility with an extensive range of requirements.
- Calibration curves can be created by dragging and dropping data files into the calibration window.



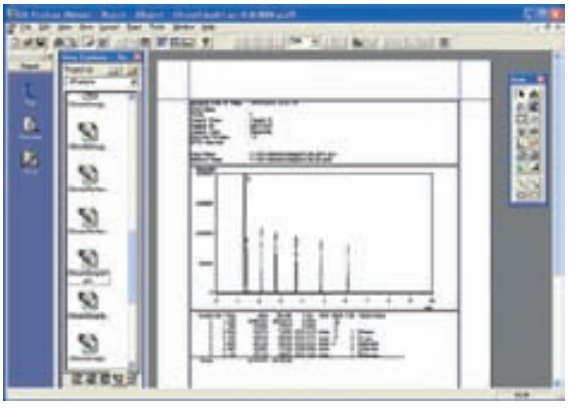
Data Comparison Function

- Display and compare up to eight chromatograms.
- Convenient for comparison of previous data and investigation of changes in time-course data.
- Select superimposed or split-screen display.
- Conduct detailed analysis using addition, subtraction, differential, and second-order differential operations.



Flexible Report Generation Functions

- Highly flexible report generation.
- Paste and freely edit chromatograms and peak tables.
- Save report formats as templates.

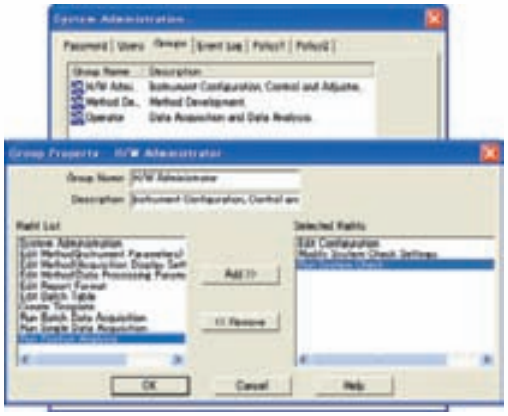


GLP/GMP-Functions

To be compliant with management requirements and regulations such as GLP/GMP, a variety of sophisticated demands related to: analyzer reliability, method development, analysis method validation, and electronic file management must be satisfied to ensure data integrity.
GCsolution Ver. 2 supports GLP/GMP strongly with various validation functions, user management functions and so on.
Also, 21 CFR Part 11 compliance support functions are equipped as standard.

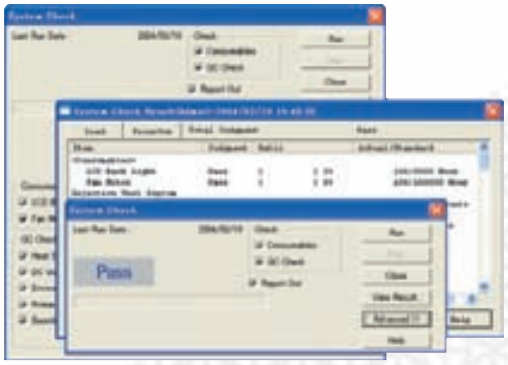
User Management Functions to Control User Access

- Limit user access to operations by setting operation restrictions for the Administrator, Method Developer, and Operator default user groups.
- Add or edit groups to create security that matches your laboratory work format.



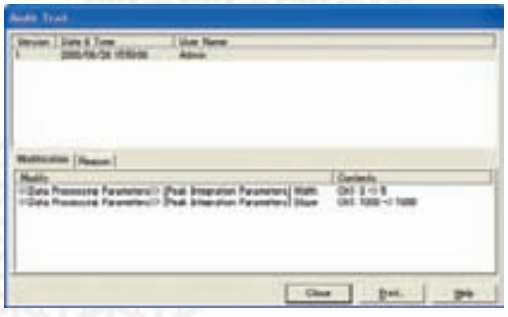
Validation Support - fully supports GC-2010 self-diagnostic functions

- Fully supports the GC-2010 self-diagnostic functions. Periodic checks of the GC status supports superior analysis and greater confidence in your results.
- Includes software-validation functions to check for software modifications.
- QA/QC functions offer pass/fail evaluation based on repeatability of component concentrations, recovery rate, or check of concentration upper/lower limit.



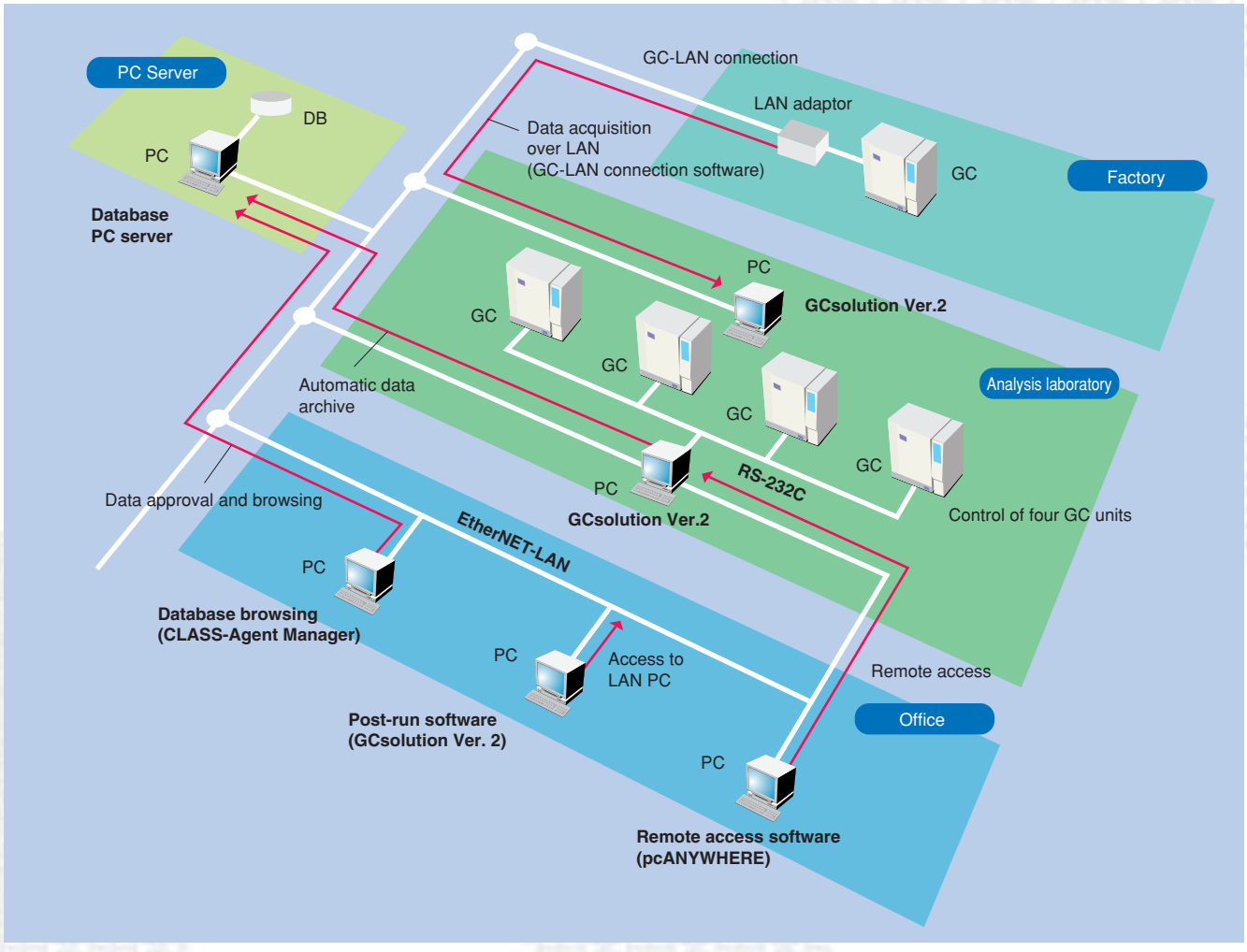
Audit Trail including Parameter Setting Log

- The changes and the reasons for the changes to instrument parameters and data-processing parameters can be saved to confirm the traceability of consecutive analysis results.
- Data files contain the method used for data acquisition and the latest data, allowing data to be reverted to the pre-analysis state.



Network-compatibility

Using a network such as an in-house LAN allows centralized data management and the sharing of files containing data or analysis methods.
In addition to the basic workstation software, GCsolution offers a range of network tools to enhance analysis efficiency.



CLASS-Agent for Centralized Data Control

CLASS-Agent Data Management System

- Software for centralized data management.
- Measured data automatically saved in the database.
- Browsing software easily finds target data.
- Browse data over the Internet.
- Compatible with Oracle, Access, and SQL databases.

GCsolution Ver. 2 Post-run Software

- Install the post-run software in a separate PC on the LAN to allow data analysis in the office.

Remote PC and GC Access

pcANYWHERE* remote access software

- Dedicated software for remote access of a laboratory PC from an office PC.

GC-LAN connection software

- Offers remote GC control and data acquisition in a LAN environment.
- Connects the GC instrument to PCs over a LAN using a LAN adaptor.

*pcANYWHERE is a product of Symantec Corporation.

Application Systems

Liquid Injection / Headspace Analysis System

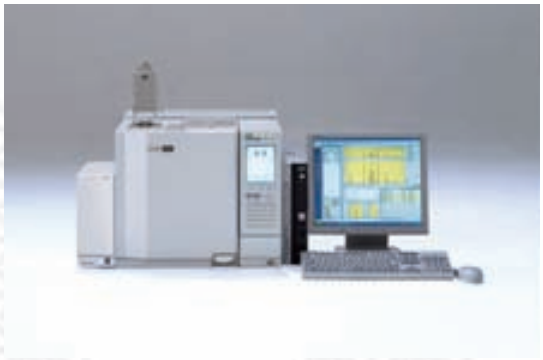
- Liquid large volume and headspace injection in one single instrument.
- Used to analyze the volatile components in solid or liquid samples.

System Configuration (GC with headspace sampler)

- GC-2010 + AOC-5000

Analysis Applications

- Measurement of residual solvents in pharmaceuticals
- Measurement of aromatic components in foods
- Upgradable to SPME mode (solid micro extraction)



Pyrolysis System

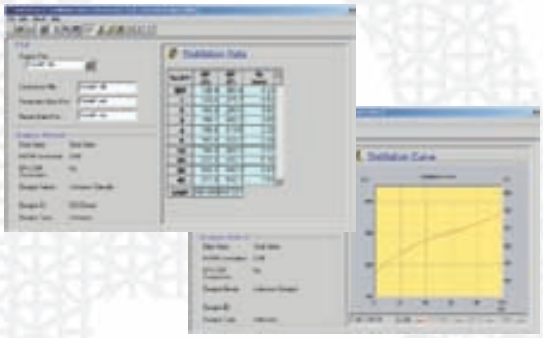
- Decomposes samples at high temperatures and analyzes the pyrolytic decomposition products.
- Used to analyze high molecular weight compounds such polymers, forensic samples etc.

System Configuration (GC with double-shot pyrolyser)

- GC-2010 + PY-2020iD
  Autosampler and cryotrap accessories available.

Analysis Applications

- Characterization of high molecular weight compounds
- Measurement of outgassing from inorganic samples, such as ceramics



Distillation GC System

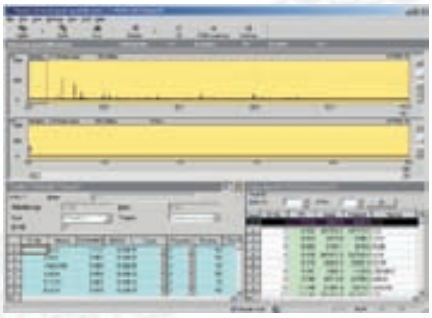
- Measures the boiling point distribution of petroleum fractions using the relationship between retention time and boiling point.
- Prints formatted reports after analysis of distillation characteristics.

System Configuration (Distillation GC)

- GC-2010 + WBI-2010, or OCI-2010 + GCsolution + distillation GC software
  (Select sample injection unit and column to suit the target sample.)

Analysis Applications

- Petroleum fractions



PONA Analysis System

- Separates gasoline or other hydrocarbon compounds; identifies the peaks; classifies them by carbon number, paraffin, olefin, naphthene, and aromatic series; and conducts quantitation.

System Configuration (PONA GC)

- GC-2010 + CRG-2010 + GCsolution + PONAsolution + MS Excel
  (Select sample injection unit and column to suit the target sample.)

Analysis Applications

- Categorization of naphtha, gasoline and gasoline-based materials by carbon number and quantitation by type.
  (Also offers calculation of mean specific gravity, mean molecular weight, and octane value.)

GC-2010 Specifications

■Column Oven

Temperature range: room temperature + 4°C to 450°C (using liquid CO_2 gas*: -50°C to 450°C)
Dimensions: 280 (w) x 280 (H) x 175 (D) mm
Oven volume: 13.7 L
Temperature accuracy: set value (K) ± 1% (calibration at 0.01°C)
Temperature deviation: <2°C max. (on 200 mm dia. circumference 30 mm from rear, 115V model)
Temperature variation coefficient: <0.01°C/°C
Temperature program steps: Up to 20 (cooling program possible)
Programmed rate setting range: -250 to 250°C/min.
Total time for all steps: 9999.99 minutes max.
* Optional parts are required to use liquid CO_2 gas.

■Injection Port

Maximum 3 independently temperature controlled injector units (The quantity that can be mounted simultaneously depends on the injector type) are provided.
Injection port unit:Split/splitless injection unit provided as standard.

Split/Splitless Injection Unit (SPL-2010)
Temperature range: room temperature + 5°C to 450°C

Direct Injection Unit (WBI-2010)
Temperature range: room temperature + 5°C to 450°C

On-column/Programmable Temperature Vaporizer Injection Unit (OCI/PTV-2010)
Temperature range: room temperature + 5°C to 450°C
Heating rate: 50°C to 450°C within 3 minutes
Cooling rate: 450°C to 50°C within 8 minutes (for 50°C column temperature)
Heating program: max. heating rate 250°C/minute, heating in 7 steps
Switching possible between on-column and programmable temperature vaporizer injection units (requires split piping re-connection between OCI and PTV)

To keep instrument specifications, max. 2 injection ports shall be heated simultaneously.

■Detectors

Four detectors can be installed simultaneously and individually temperature controlled. Detector gas is electronically controlled by APC (Advanced Pressure Control).*(The quantity that can be mounted simultaneously depends on the detector type)

Flame Ionization Detector (FID)
Temperature range: to 450°C
Minimum detected quantity: 3 pgC/s (dodecane)
Dynamic range: 10^7

Thermal Conductivity Detector (TCD)
Temperature range: to 400°C
Sensitivity: 20000 mV·mL/mg (decane)
Dynamic range: 10^5

Electron Capture Detector (ECD)
Temperature range: to 400°C
Minimum detected quantity: 8 fg/s (-BHC)
Dynamic range: 10^4

Flame Photometric Detector (FPD)
Temperature range: to 350°C
Minimum detected quantity: P 0.2 pgP/s (tributyl phosphate)
S 4 pgS/s (dodecane thiol)
Dynamic range: Phosphorus mode: 10^4
Sulfur mode: 10^3

Flame Thermionic Detector (FTD, also called NPD or TSD)
Temperature range: to 450°C
Minimum detected quantity: N 0.3 pgN/s (azobenzene)
P 0.03 pgP/s (malathion)
Dynamic range: N, P 10^3

To keep instrument performance, max. 2 detectors shall be operated simultaneously.

■Flow Control Unit

Advanced Flow Controller (AFC)

Split/splitless mode
Pressure setting range: 0 to 970 kPa
Programmable steps: 7 (cooling program possible)
Programmed rate setting range: -400 to 400 kPa/min.
Split ratio setting range: 0 to 9999.9
Total flowrate setting range: 0 to 1200 mL/min.
Column average linear velocity can be kept constant while temperature is increasing.

Direct injection mode
- Pressure mode
  Pressure setting range: 0 to 970 kPa
  Programmable steps: 7
  Programmed rate setting range: -400 to 400 kPa/min.
- Flow mode
  Flow setting range: 0 to 1200 mL/min.
  Programmable steps: 7
  Programmed rate setting range: -400 to 400 mL/min/min.

Column average linear velocity can be kept constant while temperature is increasing.

■Display

240 x 320-dot graphics display (30 columns x 16 lines)

■Dimensions, Weight, Power Requirements (GC main unit)

Dimensions: 515 (w) x 440 (H) x 530 (D) mm
Weight: 30 kg (FID model)
Power requirements: AC100V/115V230V ±10%, 1800VA (Normal oven type) or 2600VA (High power oven type), 50/60Hz

GCsolution Ver. 2 Specifications

■Software Specification

Compatible with Windows XP/2000/NT4.0
32-bit application (long-filename compatible), graphical user interface (Assistant Bar, etc.)

■Instrument Control

Controls GC-2010, GC-2014, GC-17A, GC-14B, AOC-20i/s, AOC-5000*.
Controls up to four GC units (9 detectors simultaneously).
Supports dual injection system with four detectors (GC-2010) or two detectors (non-GC-2010).
*Control of AOC-5000 requires optional software.

■Data Acquisition

4 ms minimum sampling time, snapshot function, supports single analysis and batch analysis, Batch Table Wizard, add or insert analyses, supports extended analysis time, automatic data file creation, QA/QC (statistical) functions, batch auto-stop function, run user program function, supports pre-run programs, OLE automation compatibility (batch analysis, etc.)

■Data Processing and Data Analysis

Peak integration manipulation, identification (supports multiple relative retention times and grouping), quantitation (percentage area method, corrected percentage area method, internal standard method, external standard method, standard addition method, index calculation, manual coefficient input), calibration points and levels (16 levels x 10 points), manual calibration curve creation, column performance calibration, data comparison functions.

■Report Generation

Over ten types of report item (sample information, environment settings, methods, chromatograms, peak tables, calibration curves, grouping results, diagrams, text, etc.), OLE object compatibility, layout customization and preview functions, summary report

■Files

Data Explorer for file management, All-In-One file structure
File conversion (CLASS-GC10 format, CLASS-VP4 format, AIA ANDI format, text format), file searching, template functions

■Hardware Functions

GC automatic stop/automatic start, system check (GC self-diagnosis), status log

■GLP/GMP-related

Audit trail, software validation, security, Part11 compatibility

■Network Compatibility

Post-run application software (option, secondary right of use), GC-LAN connectability (option)

■Other

Maintenance guide (GC-2010, GC-2014, GC-17A, GC-14A/B, AOC-20i)

PC Requirements for GCsolution

(1) CPU: 1.3GHz or faster,
RAM: 128 MB or greater
HDD: 40 GB or greater
24x speed CD-R/RW, OADG keyboard
100BASE-TX/10BASE-T LAN interface
(2) Software
Windows XP Professional
(3) Display
(4) 1 x RS-232C cable 2m for connecting to GC-2010

The GCMS-QP2010 Plus provides optimum performance analysis for all GCMS measurements. High-speed GCMS capability and optimum separation are standard with every GCMS-QP2010 Plus. Our GCMS with Lab Solutions software can analyze more unattended samples than any other product. Unique system checking verifies ideal operation. The GCMS-QP2010 Plus and GC-2010 continue the tradition of performance and maintenance simplicity - Shimadzu trademarks.

Gas Chromatograph-Mass Spectrometer

GCMS-QP2010 Plus

- Superior High-Speed GCMS
- 20 Temperature Ramps and patented Constant Linear Velocity for optimum separation
- Front-opening chamber for easy maintenance
- Pump down in under 4 minutes and input up to 15mL/min flow into the ion source.
- Automatic Adjustment of Retention Time (AART)
- Fast Automated Scan/SIM Type (FASST)
- Creation of Automatic SIM (Scan/SIM) Table (COAST)
- The direct inlet probe is available for less volatile and/or thermally labile samples.

ISO 9001

JQA-0376

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