

LabSolutions

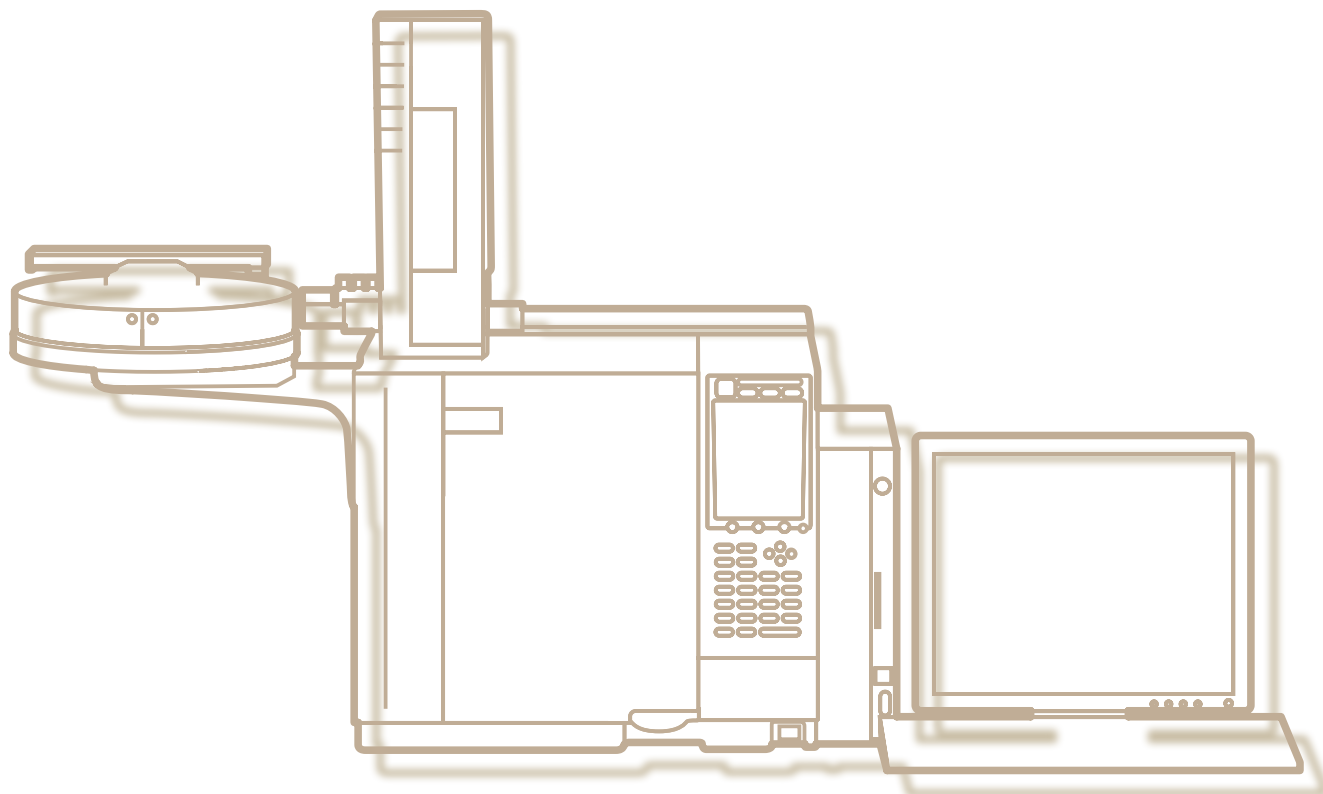
GC Getting Started Guide

| | | |
|----------|---|-----------|
| 1 | <i>Start Up</i> | 12 |
| 2 | <i>Set the Instrument Parameters</i> .. | 18 |
| 3 | <i>Single Run</i> | 24 |
| 4 | <i>Data Analysis</i> | 26 |
| 5 | <i>Realtime Batch</i> | 32 |
| | Create a Batch Table | 32 |
| | Realtime Batch Processing..... | 36 |
| 6 | <i>Multiple Data Analysis</i> | 40 |
| 7 | <i>ShutDown</i> | 48 |

NOTICES

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- Any errors or omissions which may have occurred in this manual despite the utmost care taken in its production will be corrected as soon as possible, although not necessarily immediately after detection.
- Maintenance parts for this product are provided for seven years after production has stopped. Please note that we may not be able to provide maintenance parts after this period. However, for parts that are not genuine Shimadzu parts, the period of provision is determined by the manufacturer.
- The contents of the hard disk in a PC can be lost due to an accident. Backup your hard disk to protect your important data from accidents.
- If the user or usage location changes, ensure that this Instruction Manual is always kept together with the product.

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Types of Manuals

Five Instruction Manuals are provided with LabSolutions.
You can also display the [Help] menu to confirm the meanings
and setting ranges of parameters.
The following shows how to make full use of the manuals.

■ Getting Started Guide

This manual is for first-time users.
Follow the sequence of procedures in this guide to gain
an understanding of basic LabSolutions operations.

■ Operators Guide

This manual gives comprehensive
information about overall
data acquisition operations in
LabSolutions, such as system
configuration, data analysis, batch
processing, and report functions.

■ System Users Guide

This manual is for system
administrators.
This manual describes system
administration and data
management.

■ Data Acquisition & Processing Theory Guide

This manual describes peak
detection and quantitation of sample
components (for advanced users).

■ Installation & Maintenance Guide

This manual describes installation
and maintenance of the LabSolutions
software.

■ Help

Refer to [Help] to learn more about
the displayed sub-window.
Click the on-screen [Help] button
or the [F1] key on the keyboard to
display [Help].

The meanings of symbols used in this manual are
as follows.



Useful advice for convenient
instrument operation



Shows where to refer to in the
Operators Guide

What LabSolutions Can Do

LabSolutions software is very easy to use, while incorporating high-grade functions. It provides powerful support for automating and improving the efficiency of sequential data acquisition and analysis operations.

Use LabSolutions to perform the following functions.

- Control of analytical instruments and data acquisition
- Data analysis and viewing of data
- Creation and printing of various customizable reports

System Structure

This Getting Started Guide describes data acquisition operations with the assumption that the system includes the following instruments.

Gas Chromatograph GC-2010

- Autosampler AOC-20i
- Split/Splitless Injection unit (SPL)
- Capillary column: Stabilwax 30 m × 0.32 mm I.D, 0.5 µm-thick film
- Flame ionization detector (FID)

File Types

Data file (.gcd)

This file contains all analysis results and acquisition information from the following files.

Method file (.gcm)

Acquisition conditions,
analysis conditions,
calibration curve information,
and etc.

Batch file (.gcb)

This file is used for
continuous data acquisition
of sequential samples.

Report format file (.lsr)

This file is used to print
data acquisition results.

-Checks Before Operation-

Data Acquisition Flow

STEP ①

Set Up the Conditions

Set up the data acquisition conditions to suit the component to be measured.

Before starting data acquisition, set up the data acquisition conditions on LabSolutions. For the data analysis operations described in this manual, set as follows:

| | |
|----------------------------|---|
| Column oven temperature | 50 °C (3 min retention) → 150 °C (2 min retention) (temperature rise speed 10 °C/min) |
| Injection unit temperature | 250 °C |
| Carrier gas | He, linear velocity 40 cm/sec, linear velocity mode |
| Sample injection method | Split method |
| Split ratio | 1:25 |
| Detector temperature | 250 °C |
| Sample | Alcohol mixed samples, 100, 500 and 1000 ppm standard samples, and 2 unknown samples |

STEP ②

Data Acquisition

When you have finished setting up the data acquisition conditions,

start off by acquiring the data.

On LabSolutions, the operation of analysis samples one at a time is called "**single run**".

To evaluate the data acquisition conditions, change the data acquisition conditions, measure standard samples and unknown samples, and check the separation state of the target component.

Perform data acquisition on other samples using the data acquisition conditions that provided the optimum separation state.

 **3** single run P.24

Reference

Setting up the data acquisition conditions and optimizing the data processing parameters are important for obtaining better data acquisition results. This section describes the basic flow of data analysis.

STEP ③

Analysis

Process the acquired data, and **apply the analysis conditions.**

Normally, multiple data is analyzed to determine peak integration conditions so that consistent results (e.g. repeatability of retention time and peak area, detection limits of target components, and linearity) can be acquired.

When the data analysis conditions have been fixed, quantitative calculation (i.e. investigation as to how much of the target component is contained in the sample) is performed on the unknown sample based on the data analysis results of the acquired standard sample.

To perform quantitation, a calibration curve must be made from the known concentrations and peak area values of the standard samples. This calibration curve is used to calculate the concentration of the unknown sample.

 **4 Data Analysis** P.26

STEP ④

Realtime Batch


Perform data acquisition on sequential samples together.

Realtime batch is performed to measure sequential samples continuously when the data acquisition conditions have been fixed by performing a single run.

 **5 Realtime Batch** P.32

 **6 Multiple Data Analysis** P.40

LabSolutions Main Window

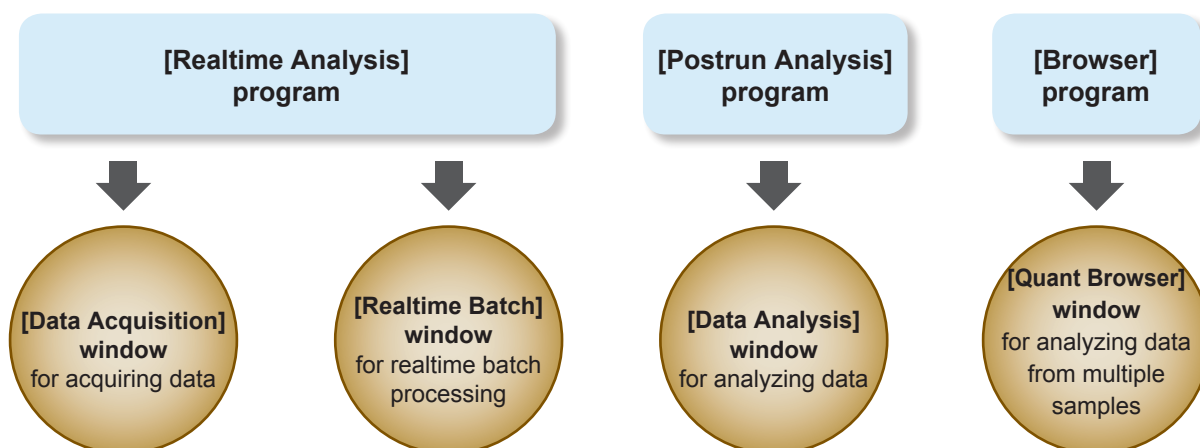
[Instruments]
The analytical instruments connected to the PC are displayed as icons. Double-click  to start the [Realtime Analysis] program where data acquisition settings are set and data is acquired.

[Postrun]
Displays the icons for the [Postrun Analysis] program (data analysis), and the [Browser] program (chromatogram display and quantitative calculation of results).

[Administration]
Displays the icons of the system administration programs for setting security policies, user administration and the log browser.

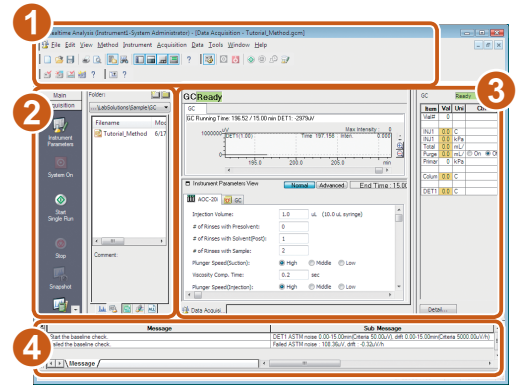
[Manual]
Displays the icons for the various PDF manuals and Help menu provided with LabSolutions.

LabSolutions Main Programs and Main Windows



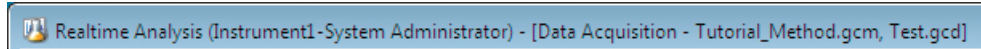
LabSolutions Windows

The following example describes the [Realtime Analysis] program window.



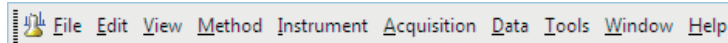
1 Title Bar

This bar displays the names of the current program, window, loaded file, and other information.



Menu Bar

This bar displays the current window and menus that are available based on the operating rights of the current user.



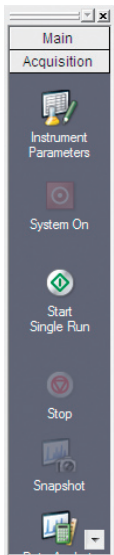
Toolbar

This bar displays icons of frequently used menu items and icons for operating analytical instruments.



2 Assistant Bar

This bar displays icons for frequently used data acquisition operations.



Data Explore

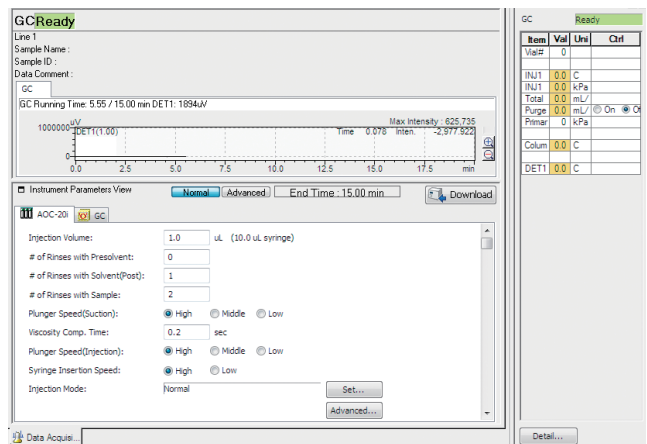
This sub-window displays the names of files in the selected folder.



3 Window

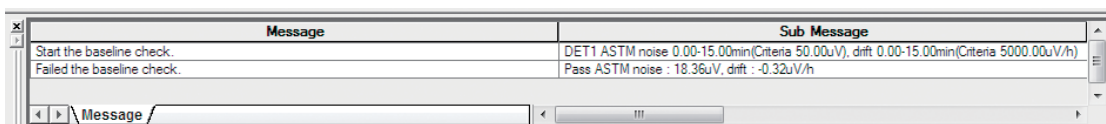
In the [Realtime Analysis] program, [Data Acquisition], [Realtime Batch] and other windows are displayed as icons on the assistant bar.

In the [Postrun Analysis] program, [Data Analysis], [Calibration Curve], [Report Format] and other windows are displayed. Switch the windows by clicking the icons on the assistant bar. Instrument Monitor (right side of the window) check the acquisition conditions and connections.



4 Output Window

This window displays an operation history and error messages that occur.



How to Open Windows

Set the Data Acquisition Parameters and Execute a Single Run:

Open the [Data Acquisition] window from the main window.



2 Set the Instrument Parameters P.18



3 Single Run P.24

▼ [Realtime Analysis] program

▼ [Data Acquisition] window

▲ Main Window

Continuous Data Acquisition of Sequential Samples:

Open the [Realtime Batch] window from the main window.



5 Realtime Batch P.32

▼ [Realtime Analysis] program

▼ [Realtime Batch] window

▲ Main Window

| Analysis | Sample Type | Method File | Data File | Level# | Summary Type | Summary Report | Format | File |
|----------|-------------|---------------------|---------------------|--------|---------------|----------------|--------|---------------------|
| 1 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std001.gsd | 1 | Summary Start | | | SummaryReport_4_1sr |
| 2 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std002.gsd | 1 | Summary Run | | | |
| 3 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std003.gsd | 1 | Summary End | | | |
| 4 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std004.gsd | 2 | Summary Start | | | SummaryReport_4_1sr |
| 5 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std005.gsd | 2 | Summary Run | | | |
| 6 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std006.gsd | 2 | Summary End | | | |
| 7 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std007.gsd | 3 | Summary Start | | | SummaryReport_4_1sr |
| 8 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std008.gsd | 3 | Summary Run | | | |
| 9 | 1 Standard | Tutorial_Method.gcm | Tutorial_Std009.gsd | 3 | Summary End | | | |
| 10 | 0 Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gsd | 0 | Summary Start | | | SummaryReport_1_1sr |
| 11 | 0 Unknown | Tutorial_Method.gcm | Tutorial_Unk002.gsd | 0 | Summary End | | | |

Data Analysis and Quantitative Calculations:

Open the [Data Analysis] window from the main window.



4 Data Analysis P.26

▼[Postrun Analysis] program

▼[Data Analysis] window

▲Main Window

The [Data Analysis] window displays a chromatogram and a peak table:

| Peak# | Ret. Time | Area | Height |
|-------|-----------|-----------|--------|
| 1 | 4.275 | 238399785 | 218628 |
| 2 | 5.754 | 27542 | 131 |
| 3 | 6.674 | 33118 | 140 |
| 4 | 8.705 | 34335 | 153 |
| Total | | 233134761 | 219631 |

Multiple Data Analysis and Quantitative Calculations:

Open the [Quant Browser] window from the main window.



6 Multiple Data Analysis P.40

▼[Browser] program

▼[Quant Browser] window

▲Main Window

The [Quant Browser] window displays a quantitative result table:

| File Name | Sample Type | Level# | Ret. Time | Integration | Identification | Quantitative | Compound | Group | Performance | Column |
|-----------|---------------------|----------|-----------|-------------|----------------|--------------|----------|-------|-------------|--------|
| 1 | Tutorial_Sel001.gsd | Standard | 4.275 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | Tutorial_Sel002.gsd | Standard | 5.754 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 3 | Tutorial_Sel003.gsd | Standard | 6.674 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 4 | Tutorial_Sel004.gsd | Standard | 8.705 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 5 | Tutorial_Sel005.gsd | Standard | 4.275 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | Tutorial_Sel006.gsd | Standard | 5.754 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 7 | Tutorial_Sel007.gsd | Standard | 6.674 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 8 | Tutorial_Sel008.gsd | Standard | 8.705 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 9 | Tutorial_Unk001.gsd | Unknown | 4.275 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 10 | Tutorial_Unk002.gsd | Unknown | 5.754 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 11 | Tutorial_Unk003.gsd | Unknown | 6.674 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 12 | Tutorial_Unk004.gsd | Unknown | 8.705 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Chapter

1

Start Up

This chapter describes how to start up LabSolutions.



Refer to "GC Data Acquisition" in *Operators Guide* for details on the "Data Acquisition" window.

1

Supply gas to the GC.

Open the main valve of the carrier gas and other gases to supply gas to the GC.

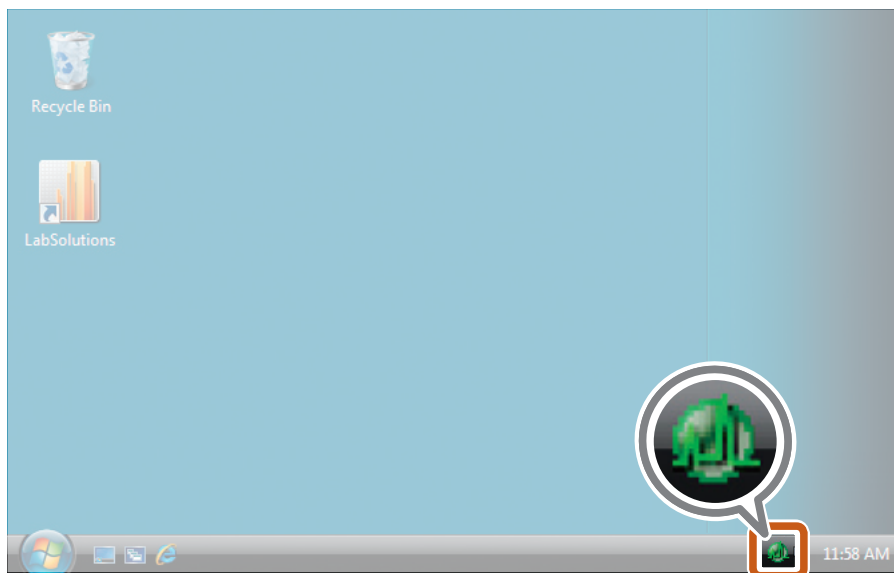
2

Turn the GC and peripheral devices on.

3

Turn the PC and printer on.

Verify that the [LabSolutions Service] icon in the systray on the taskbar is green after the PC starts up.

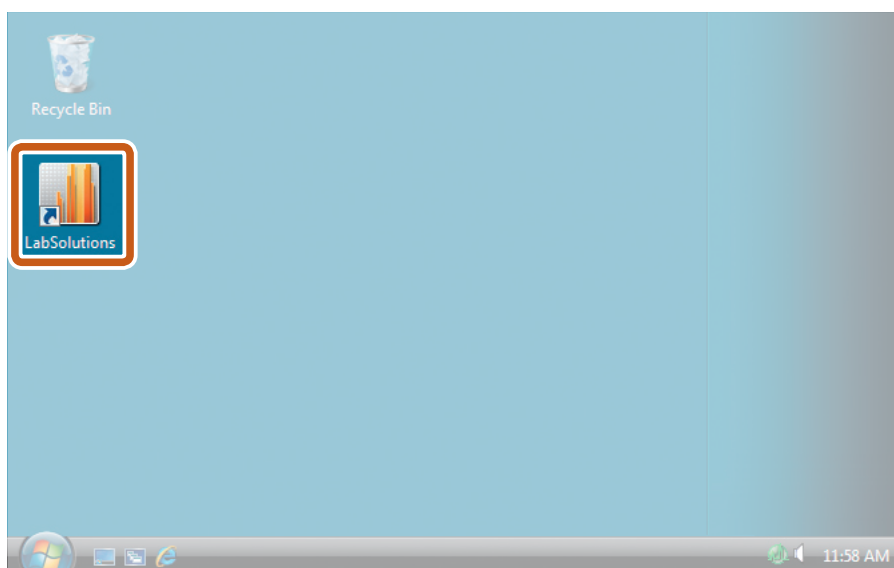


If the icon is yellow, this means that LabSolutions is in the process of starting up. Wait a while.

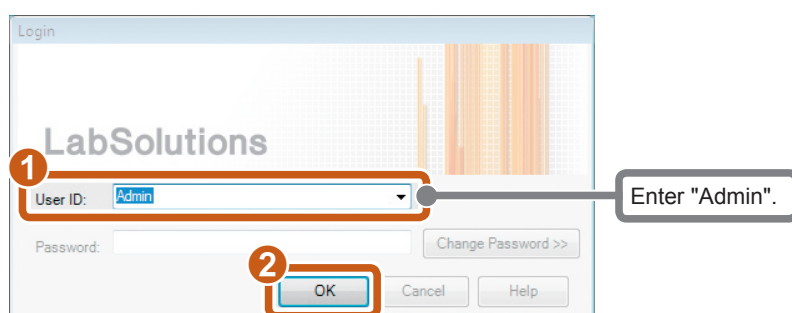
If the icon is red, this means that an error has occurred. Restart the PC.

4 Double-click on the desktop.

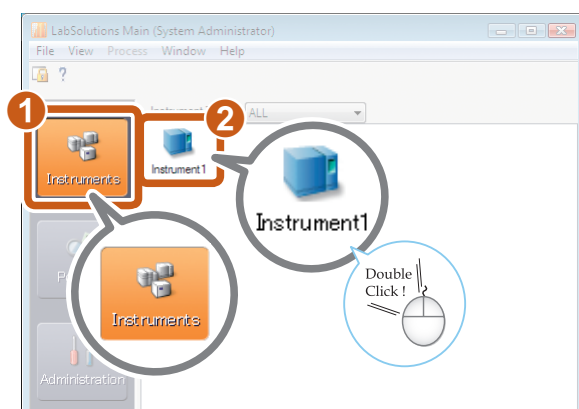
The [Login] sub-window opens.



5 Log in.



6 Open the [Realtime Analysis] program.

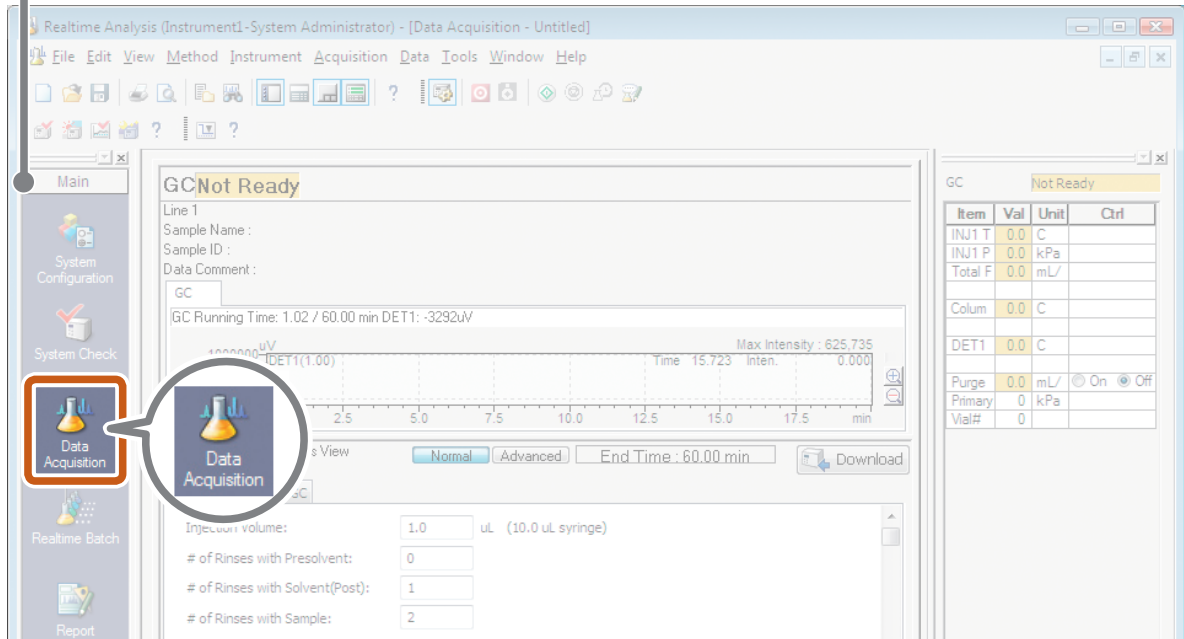


Continued on the following page 

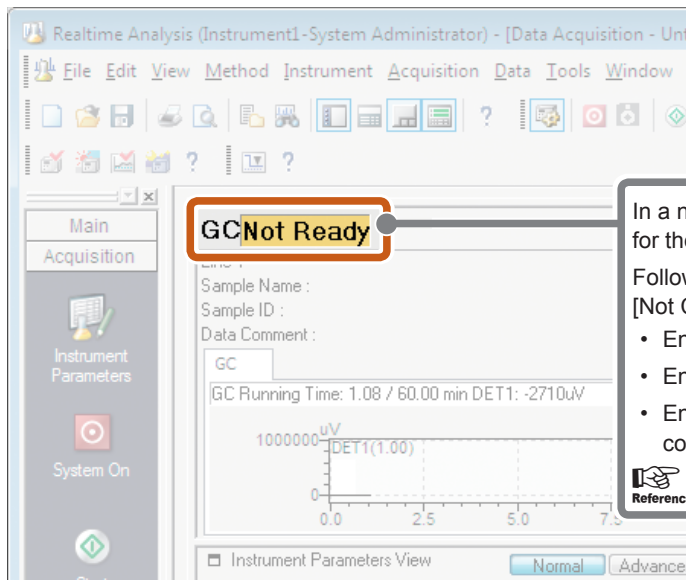
7 Open the [Data Acquisition] window.



Click here if the [Main] assistant bar is not displayed.



8 Check the status.



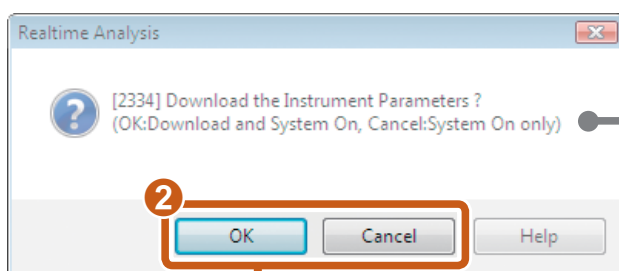
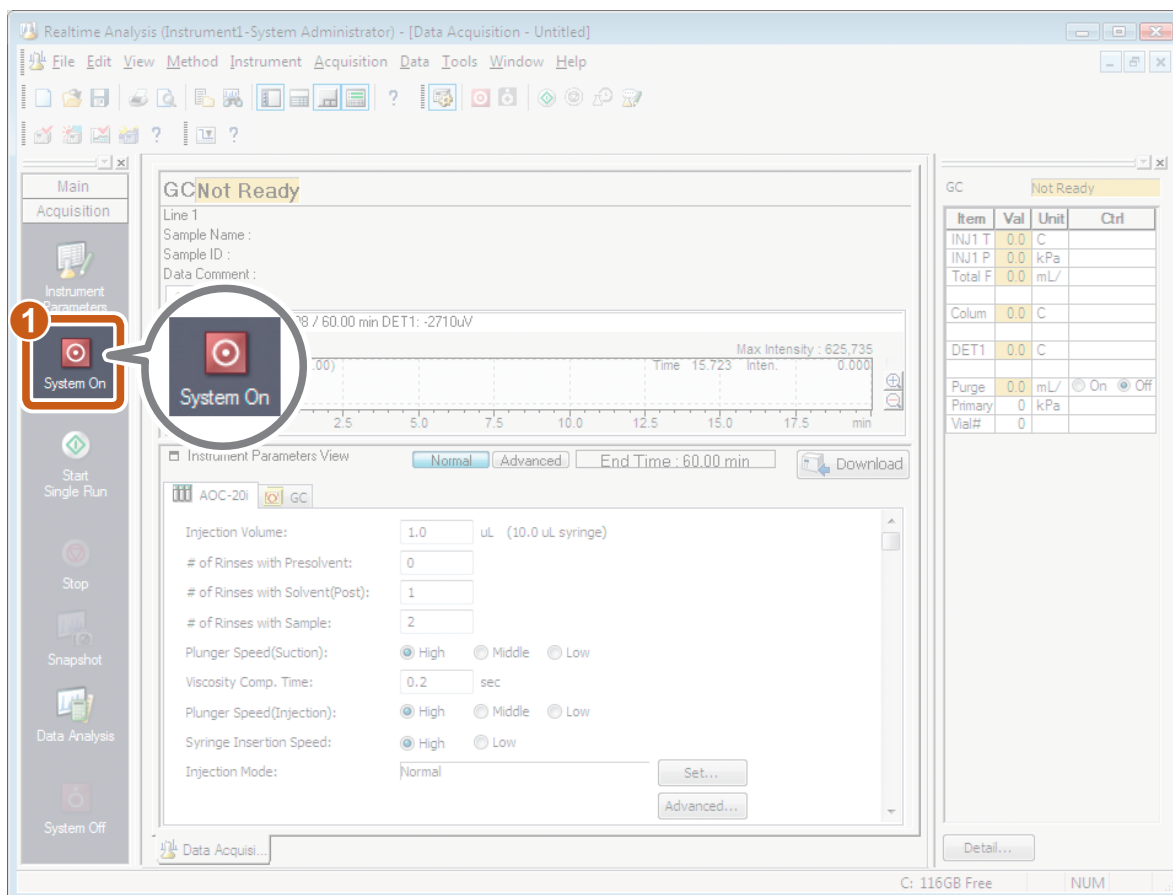
In a normal state, [Not Ready] or [Ready] is displayed for the status.

Follow the recommendations below if [Not Connected] is displayed.

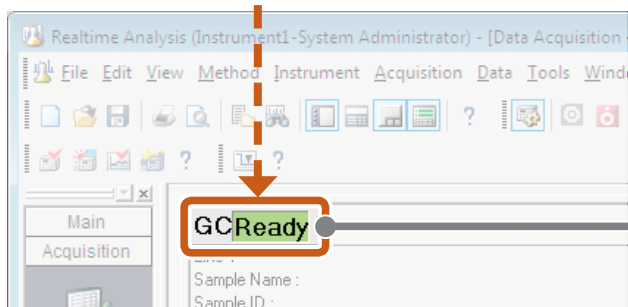
- Ensure that the power is ON.
- Ensure that instruments are connected correctly.
- Ensure that the system configuration settings are correct.

Reference P.16 for details.

9 Start the GC.



This message sometimes is not displayed.



Make sure that [Ready] is displayed for the status after the GC temperature and other preset values are reached.

"I want to connect to the system."
 "I want to change the system configuration."

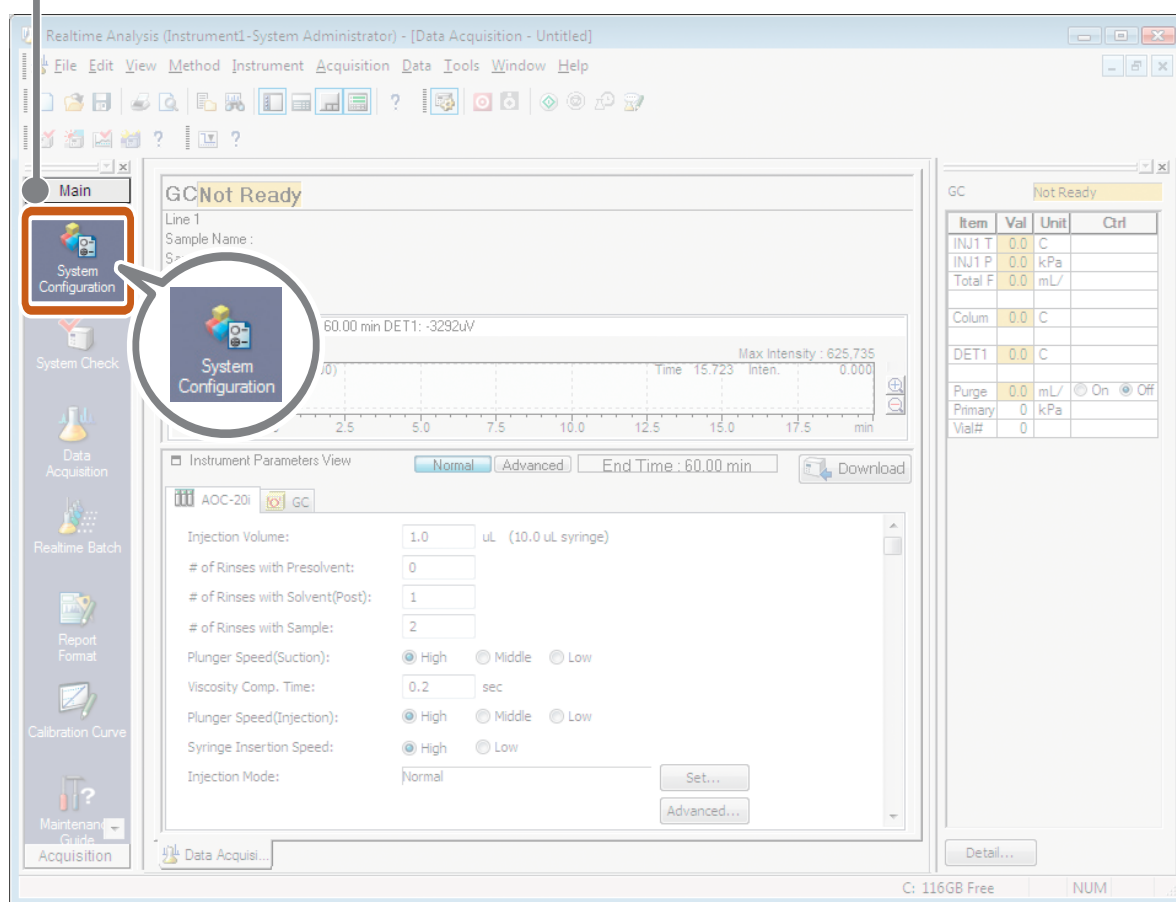
In such cases

Re-Set the System Configuration.

1

Open the [System Configuration] sub-window.

Hint Click here if the [Main] assistant bar is not displayed.



The [System Configuration] sub-window opens.

2 Set up communications.

1 Double Click!

The [Instrument] sub-window opens.

2 Select the GC to use.

3 Click [Settings...]

4 Select [RS-232C] and [COM Port].

5 Click here to display each instrument currently connected to the GC at [Modules Used for Analysis] in the [System Configuration] sub-window.

3 Check that the system configuration is correct.

1 Double-click the unit, and set the properties of each unit.

2 Click here to send the settings to the GC.

Chapter 2

Set the Instrument Parameters

The data acquisition method (instrument parameters) are saved to the method file after they have been set in [Instrument Parameters View] in the [Data Acquisition] window. This chapter explains how to set the instrument parameters.

1 Open the [Data Acquisition] window.

2 Set the items on the [GC] tab.

Realtime Analysis (Instrument1-System Administrator) - [Data Acquisition - Untitled]

File Edit View Method Instrument Acquisition Data Tools Window Help

Main Acquisition

Instrument Parameters

System On

Start Single Run

Stop

Snapshot

Data Analysis

System Off

GCReady

GC

GC Running Time: 4.63 / 60.00 min DET1: -2875uV

1000000 UV

0.0 2.5 5.0 7.5 10.0 12.5 15.0 17.5 min

Max Intensity : 625,735

Instrument Parameters View

Normal Advanced End Time : 60.00 min

Download

Acquisition Time

Detector: DET1

Stop Time: 60.00 min

Temperature

INJ1 : 250.0 C

Column Oven : 50.0 C

DET1 : 250.0 C

Detector Advanced...

Flow

Carrier Gas Type: He

Injection Mode: Split

Sampling Time: 1.00 min

Linear Velocity : 40.0 cm/sec

Total Flow: 65.4 mL/min

Column Flow: 2.40 mL/min

Split Ratio: 25.0

Details...

Click here to set the control mode.
Control mode : Linear Velocity

INJ1 : 250.0 °C
Column Oven : 50.0 °C
DET1 : 250.0 °C

Linear Velocity : 40.0 cm/sec
Split Ratio : 25.0

Total Program Time

Column Information

Name :

Length : 25.0 m Inner Diameter : 0.32 mm ID

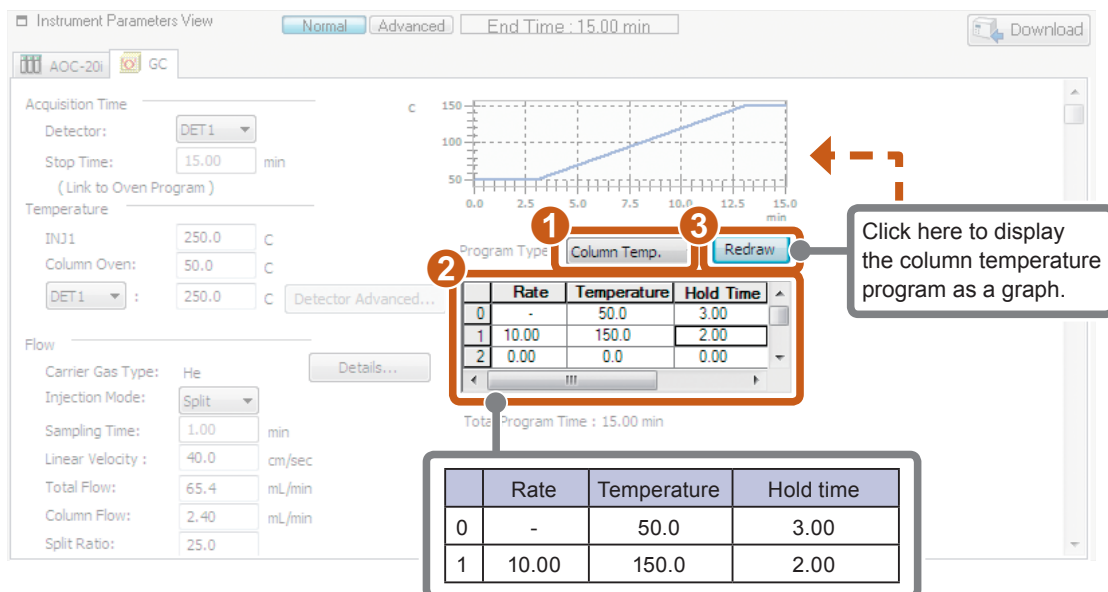
Set...

C: 116GB Free NUM

Reference Refer to P.6 for details on data acquisition conditions.

Reference Refer to "Set the Instrument Parameters" of the "GC Data Acquisition" chapter in *Operators Guide* for details on instrument parameters.

3 Edit the Time Table for the column temperature program.



Instrument Parameters View | Normal | Advanced | End Time : 15.00 min | Download

Acquisition Time
 Detector: DET1
 Stop Time: 15.00 min
 (Link to Oven Program)

Temperature
 INJ1: 250.0 C
 Column Oven: 50.0 C
 DET1: 250.0 C

Flow
 Carrier Gas Type: He
 Injection Mode: Split
 Sampling Time: 1.00 min
 Linear Velocity: 40.0 cm/sec
 Total Flow: 65.4 mL/min
 Column Flow: 2.40 mL/min
 Split Ratio: 25.0

Program Type: Column Temp. | Redraw

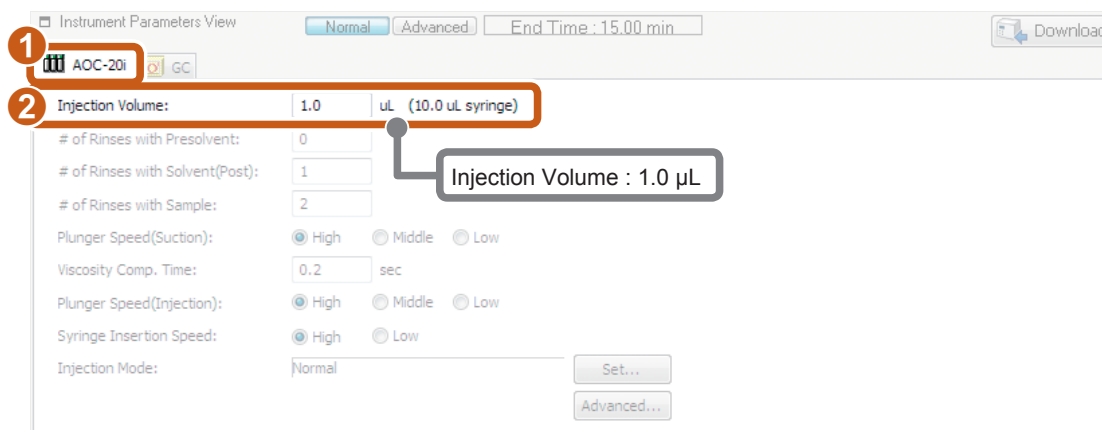
| Rate | Temperature | Hold Time |
|------|-------------|-----------|
| 0 | 50.0 | 3.00 |
| 1 | 150.0 | 2.00 |
| 2 | 0.0 | 0.00 |

Total Program Time : 15.00 min

| | Rate | Temperature | Hold time |
|---|-------|-------------|-----------|
| 0 | - | 50.0 | 3.00 |
| 1 | 10.00 | 150.0 | 2.00 |

Click here to display the column temperature program as a graph.

4 Set the injection volume.



Instrument Parameters View | Normal | Advanced | End Time : 15.00 min | Download

1 AOC-20i | GC

2 Injection Volume: 1.0 uL (10.0 uL syringe)

of Rinses with Presolvent: 0
 # of Rinses with Solvent(Post): 1
 # of Rinses with Sample: 2

Plunger Speed(Suction): High Middle Low
 Viscosity Comp. Time: 0.2 sec
 Plunger Speed(Injection): High Middle Low
 Syringe Insertion Speed: High Low
 Injection Mode: Normal

Set...
Advanced...

Injection Volume : 1.0 μ L

Continued on the following page



5 Save the data acquisition conditions.

The folder initially displayed here is the default folder.
To change the default folder,
Reference "Default Folder and Change the Default Folder" P.23

Enter "Tutorial_Method".

Click here to download the data acquisition conditions to the instrument.

| Item | Val | Uni | Ctrl |
|--------|-----|-----|------|
| Vial# | 0 | | |
| INJ1 | 0.0 | C | |
| INJ1 | 0.0 | kPa | |
| Total | 0.0 | mL | |
| Purge | 0.0 | mL | On |
| Primar | 0 | kPa | On |
| Colum | 0.0 | C | |
| DET1 | 0.0 | C | |

LabSolutions



Baseline Check

By the baseline check, you can check whether or not noise and drift values on the baseline are within the preset time and at the threshold or below.

Baseline check parameters are saved in the method file.

1 Set [Baseline Check Parameters].

Set both [Noise] and [Drift] to , and enter [Start], [End] and [Threshold].



In the [Baseline Check] sub-window, the noise calculation method can be changed, and the maximum delay time when the result of the baseline check is [Fail] within the preset time. [Reference](#) Help for details.

2 Perform the baseline check.

After measurement ends, the check results are displayed in [Baseline Check Results] sub-window and [Output Window].

[Output Window]

| Message | Sub Message |
|----------------------------|--|
| Start the baseline check. | DET1 ASTM noise 0.00-15.00min(Criteria 50.00uV), drift 0.00-15.00min(Criteria 5000.00uV/h) |
| Failed the baseline check. | Pass ASTM noise : 18.36uV, drift : -0.32uV/h |

Baseline Check Results

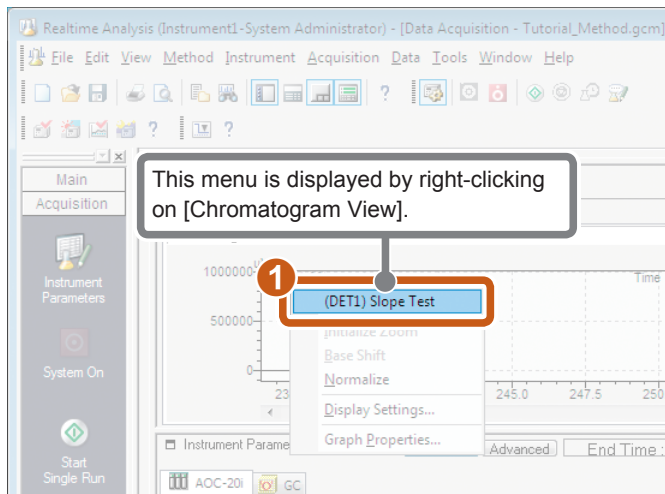
Slope Test

By performing the Slope Test, the peak detection sensitivity (Slope value) of peak integration parameters can be automatically set from the status of the noise and drift appearing on the chromatogram before data acquisition.

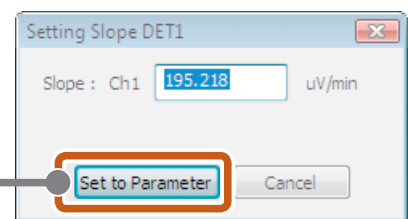
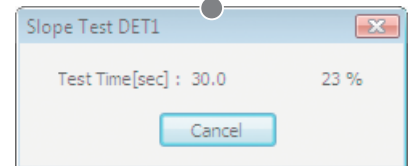
The slope value obtained by the slope test is effective when performing isothermal analysis. This section describes the Slope Test.



- Slope values refer to the numerical values for determining the peak start and end points. To be more precise, the peak start point is judged when an ascent slope exceeds the preset value, and, alternatively, the peak end point is judged when a descent slope falls below the preset value.
- Optimum Slope values can be obtained from the data by the Slope Test.



The measurement result is displayed when the test ends.



To make preset values clearer, set a value rounded up to the nearest integer larger than the displayed slope value. For example, set "200" for "195.218".

LabSolutions



Default Folder and Change the Default Folder

Realtime Analysis (Instrument1-System Administrator) - [Data Acquisition - Tutorial_Method.gcm]

File Edit View Window Help

Folder: ... \Sample\GC

Filename M

System On

Start Single Run

Stop

Snapshot

Data Analysis

System Off

Select Folder

Look in: C:\LabSolutions\Sample\GC

Close

New Folder...

Computer

Local Disk (C:)

LabSolutions

Common

Data

Manual

MSLibrary

Sample

GC

LC

System

Template

Help

of Rinses with Solvent(Post): 1

of Rinses with Sample: 2

Plunger Speed(Suction): High

Viscosity Comp. Time: 0.2

Plunger Speed(Injection): High Middle Low

Syringe Insertion Speed: High Low

Injection Mode: Normal

nd Time : 15.f

GC Ready

| Item | Val | Unit | Ctrl |
|---------|-----|------|--------|
| Vial# | 0 | | |
| INJ1 T | 0.0 | C | |
| INJ1 Pr | 0.0 | kPa | |
| Total F | 0.0 | mL/ | |
| Purge | 0.0 | mL/ | On Off |
| Primary | 0 | kPa | |
| Column | 0.0 | C | |
| DET1 | 0.0 | C | |

Detail...

C: 116GB Free NUM

This folder is the default folder.

Set this sub-window when changing the folder or creating a new folder.

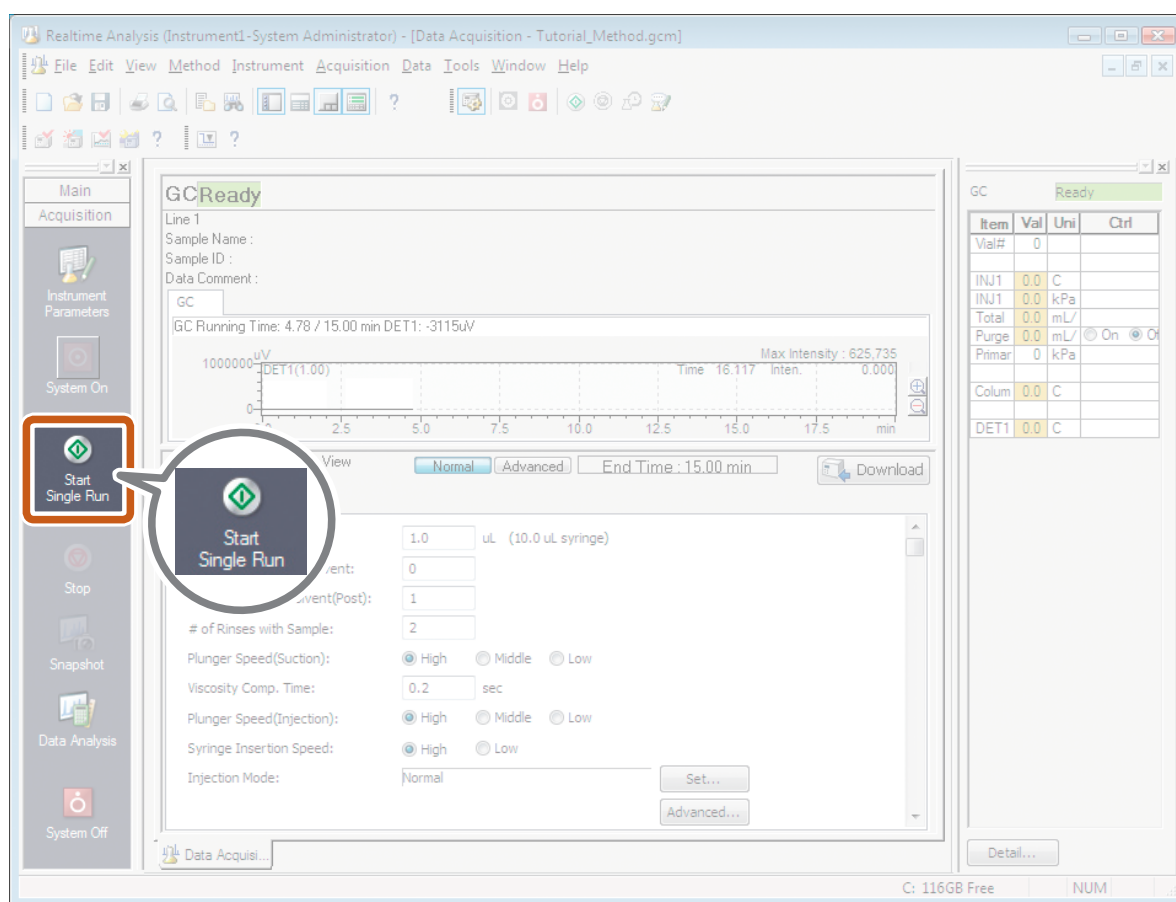
Chapter 3

Single Run

This chapter describes the operation of measuring a standard sample once only (single run) using a saved method file "Tutorial_Method.gcm".
First, perform single run using a standard sample.

1 Open the [Data Acquisition] window.

2 Open the [Single Run] sub-window.



The [Single Run] sub-window opens.

3 Set the conditions for a single run.

In this example, set the conditions for pouring 100 ppm of alcohol mixed sample into vial No. 1 on the auto-sampler, and injecting that sample.

1 Data File: Create into: C:\LabSolutions\Sample\GC
Test

2 Sampler
Vial#: 1
Syringe Volume: 10 uL

3 OK

Enter "Test".

Vial#: 1

Click here to start the acquisition.

Hint Data acquisition automatically ends when the [Stop Time] (15.00 min) set in the method file is exceeded.

The status changes to **Ready** when data acquisition ends.

Click here to cancel data acquisition midway.

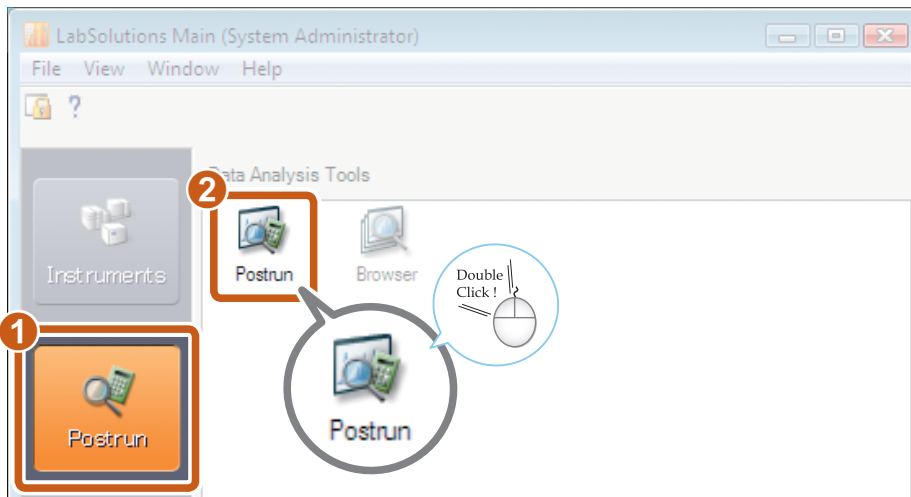
Chapter

4

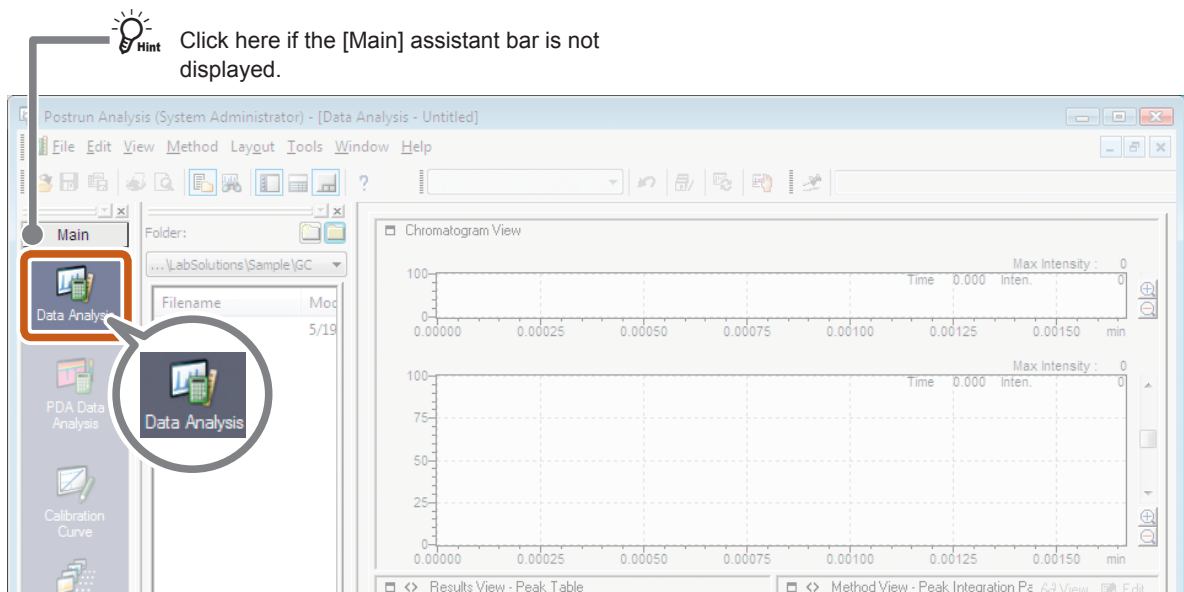
Data Analysis

After single run ends, check the data to see if the peaks have been detected correctly. This chapter describes how to change the peak integration conditions of the data file "Test.gcd" obtained by performing single run to optimize the peak integration parameters.

1 Open the [Postrun Analysis] program.

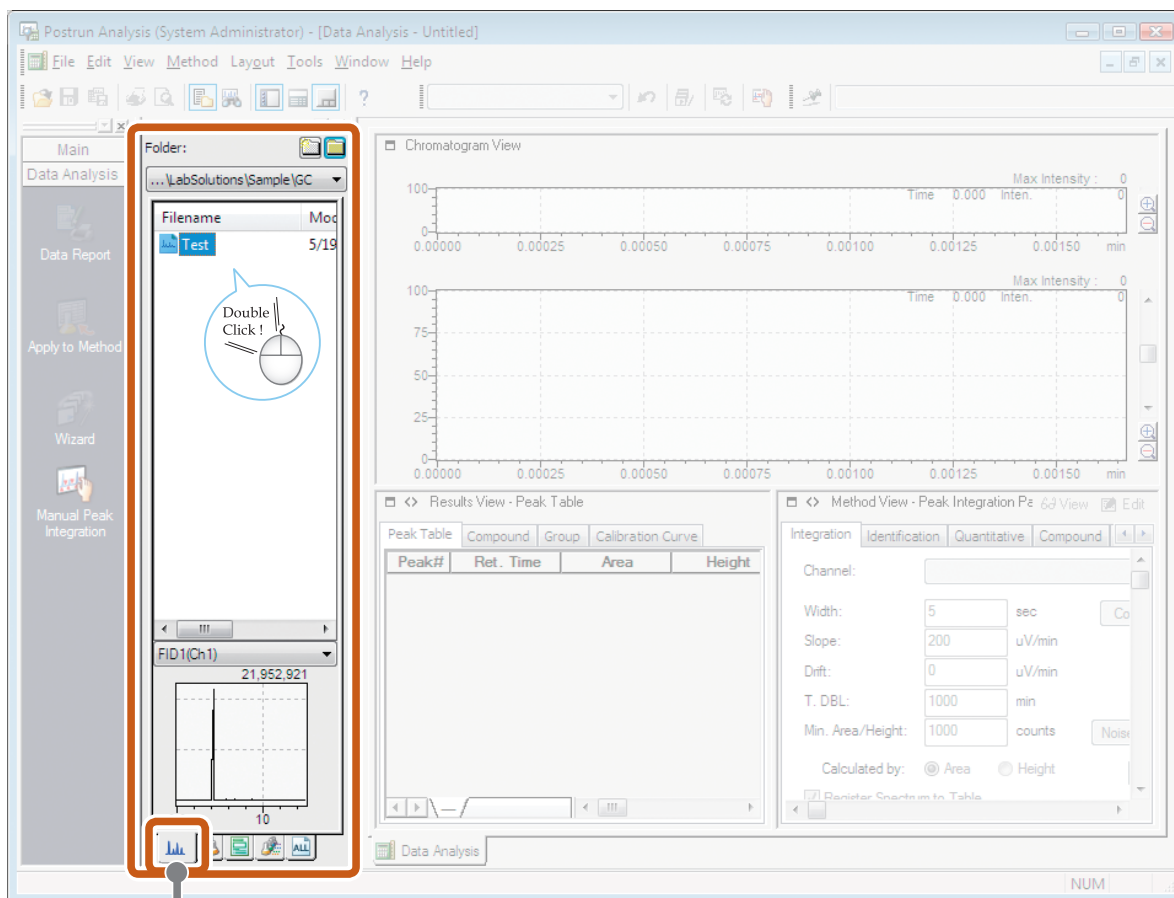



2 Open the [Data Analysis] window.



The [Data Analysis] window opens.

3 Display "Test.gcd".



Click  on the [Data Explorer] sub-window, and double-click "Test".



Reference Refer to "Data Analysis" chapter in *Operators Guide* for details on the "Data Analysis" window.

Continued on the following page 

4 Enter the peak integration parameters.

Click Edit to edit each parameter value.

Click View to perform processing on the data, and the processing results are displayed in [Chromatogram View] and [Results View - Peak Table].

| Peak# | Ret. Time | Area | Height |
|-------|-----------|-----------|--------|
| 1 | 4.276 | 233039765 | 218631 |
| 2 | 5.754 | 27542 | 7 |
| 3 | 6.674 | 33118 | 7 |
| 4 | 8.705 | 34336 | 153 |
| Total | | 233134761 | 218631 |

Integration identification Quantitative Compound

Width: 3 sec

Slope: 1000 uV/min

Drift: 0

Calculated by: Area Height

Slope : 1000 uV/min

Width : 3 sec



Hint Width values refer to the minimum half-width value (height 1/2 width) of the peak to detect.

Noise peaks are removed by optimizing the Width value.

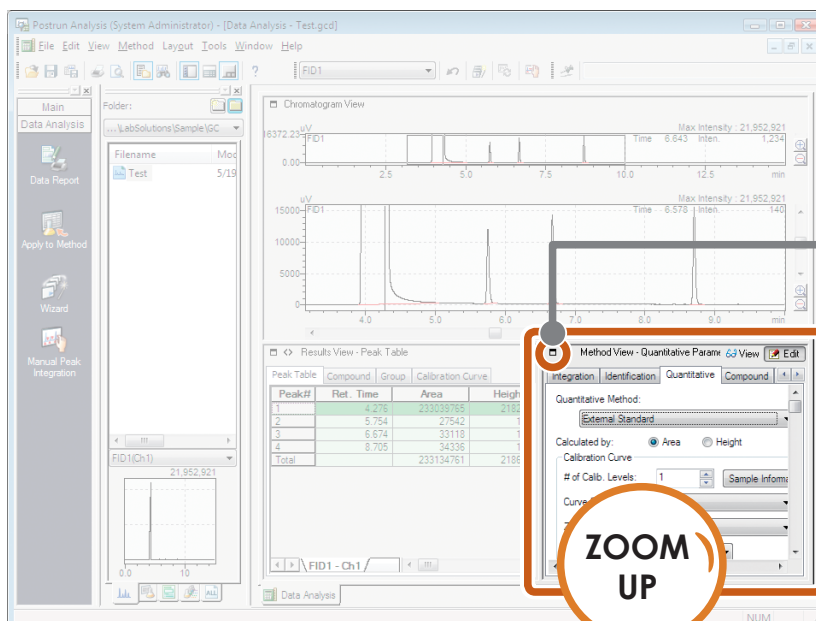
Determine the start and end points of the peak by the Slope value.

The positions where the absolute values of the baseline slope become these values are the start and end points of the peak.

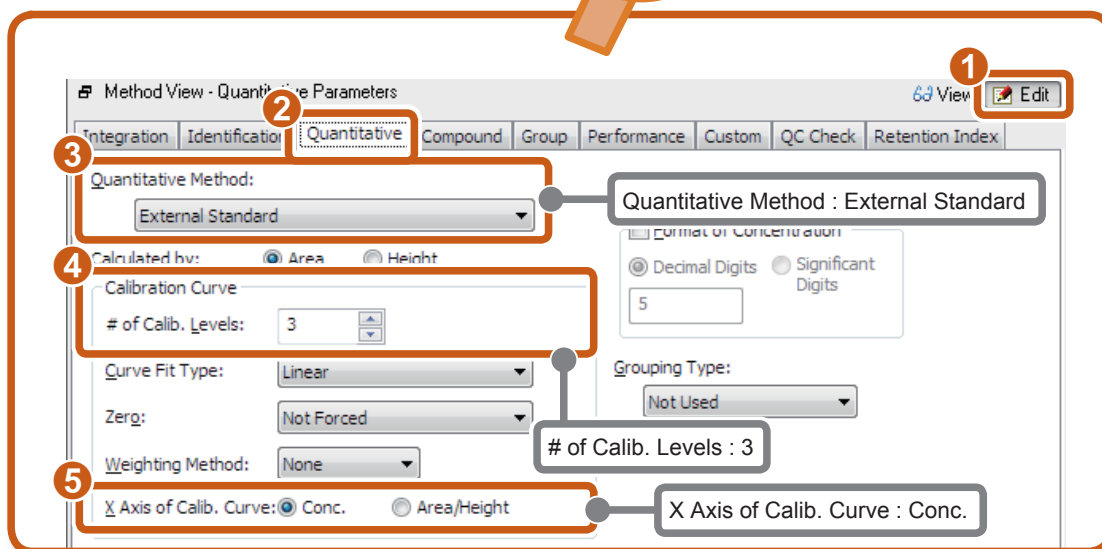


Reference Refer to "Peak Integration Parameters" of the "Data Analysis" chapter in *Operators Guide* for details on the Peak Integration Parameters.

5 Enter the quantitative parameters.



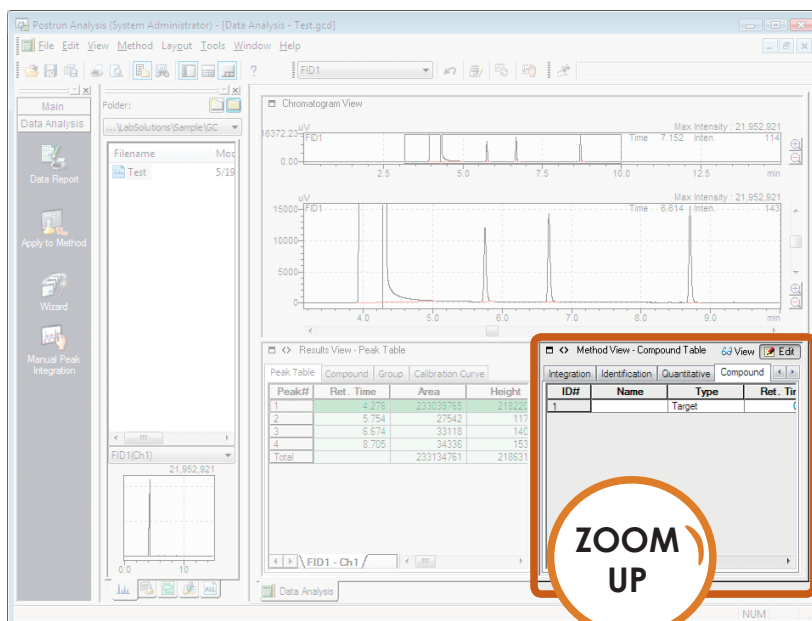
Hint Click to enlarge the window.



- The [External Standard] method involves calculating concentrations from the peak area (height) of unknown samples using a calibration curve made based on a standard sample.
- At [# of Calib. Levels], set the number of concentration points for the standard sample required for creating the calibration curve.
- When creating calibration curves with the least squares method, set [X Axis of Calib. Curve] to [Conc.].

Continued on the following page

6 Fill in the Compound Table.



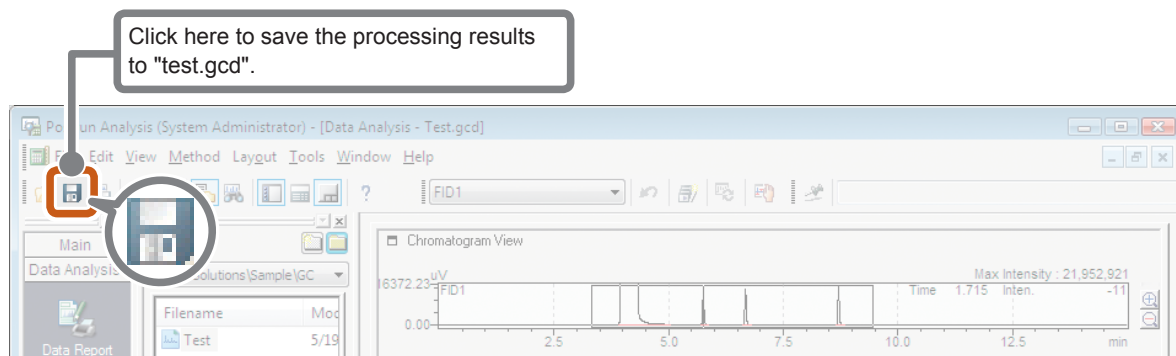
This section provides a detailed view of the 'Method View - Compound Table' window. It features several numbered callouts: '1' points to the 'Compound' tab, '2' points to the table header, and '3' points to the '63 View' button. A callout box explains that clicking the '63 View' button changes the cell background color to yellow to fix newly edited parameters.

| ID# | Name | Type | Ret. Time | Conc.(1) | Conc.(2) | Conc.(3) |
|-----|-----------------|--------|-----------|----------|----------|----------|
| 1 | 1-Propylalcohol | Target | 5.754 | 100.000 | 500.000 | 1000.000 |
| 2 | Isobutylalcohol | Target | 6.674 | 100.000 | 500.000 | 1000.000 |
| 3 | Isoamylalcohol | Target | 8.705 | 100.000 | 500.000 | 1000.000 |

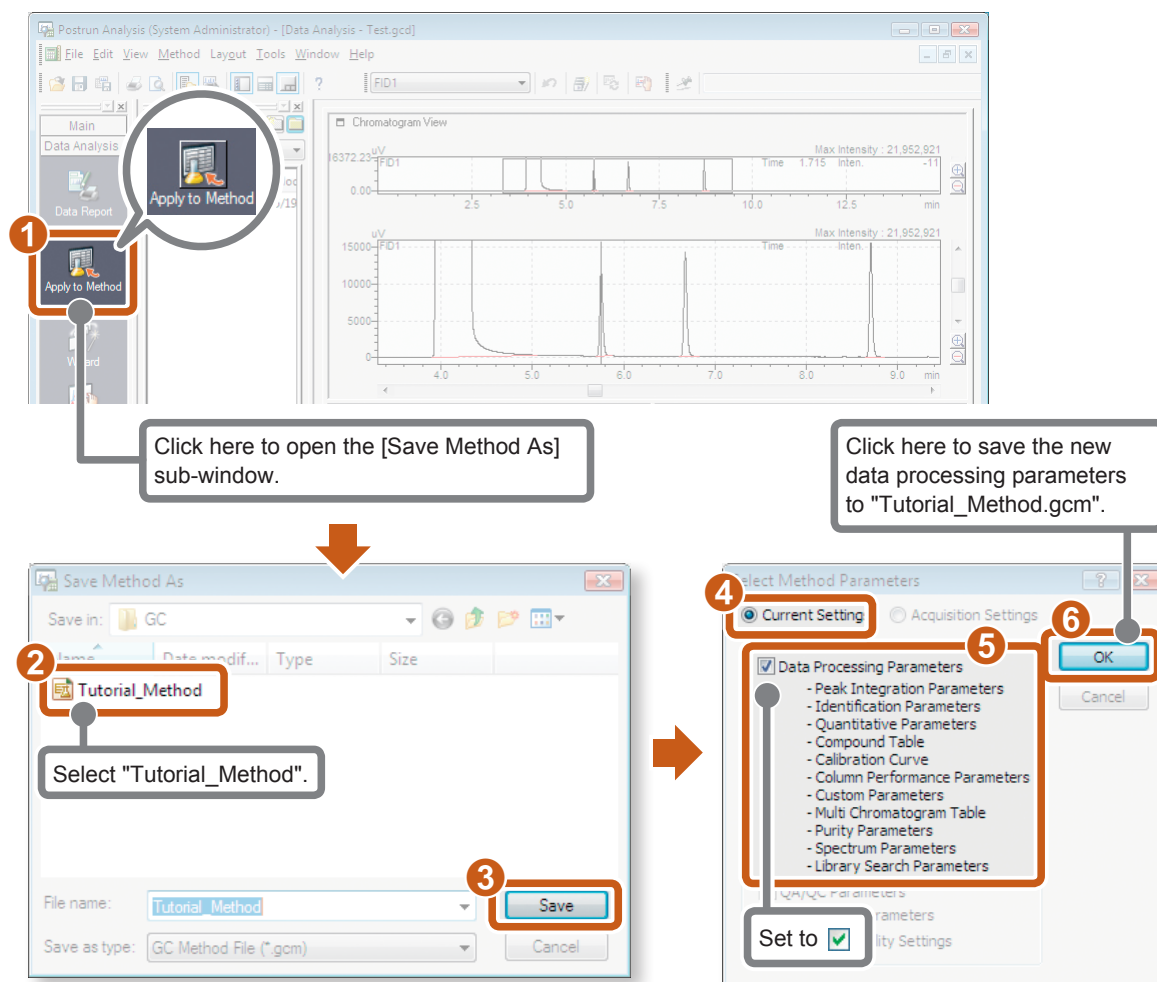
- Hint**
- The result obtained by performing data acquisition is used for [Ret. Time].
 - Selecting the [Ret. Time] cell, and clicking the peak in [Chromatogram View] automatically enters the retention time of that peak to the currently selected [Ret. Time] cell. The retention time can be set by simply clicking the mouse.

Reference Refer to "Compound Table Retention Times Using the Mouse" of the "Data Analysis" chapter in *Operators Guide* for details on setting retention times.


7 Save the processing results to a data file.



8 Save the method file.



To use saved data processing parameters for other data, perform either of the following operations to save the new data processing parameters to the method file (in this example, "Tutorial_Method.gcm").

- Click [Save Data and Method File] on the [File] menu.
- Click  (Apply to Method) on the [Data Analysis] assistant bar (operation in step 8 above).

Chapter 5

Realtime Batch

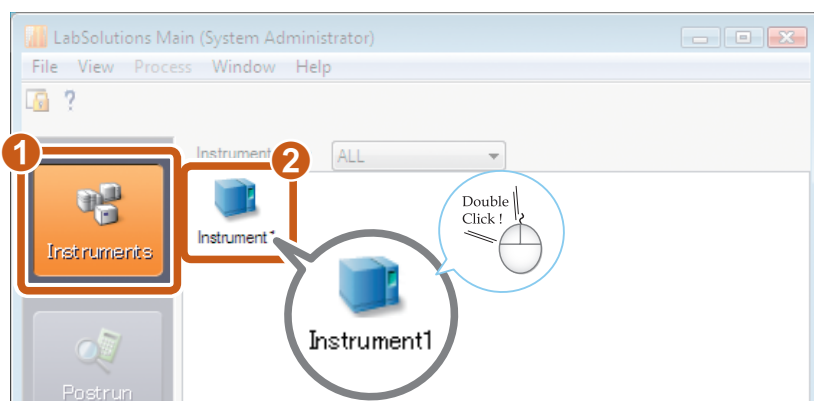
To perform data acquisition continuously on multiple samples (realtime batch), a Batch Table must first be created. Batch Tables can be easily created by using the table easy setting feature of LabSolutions.

5.1

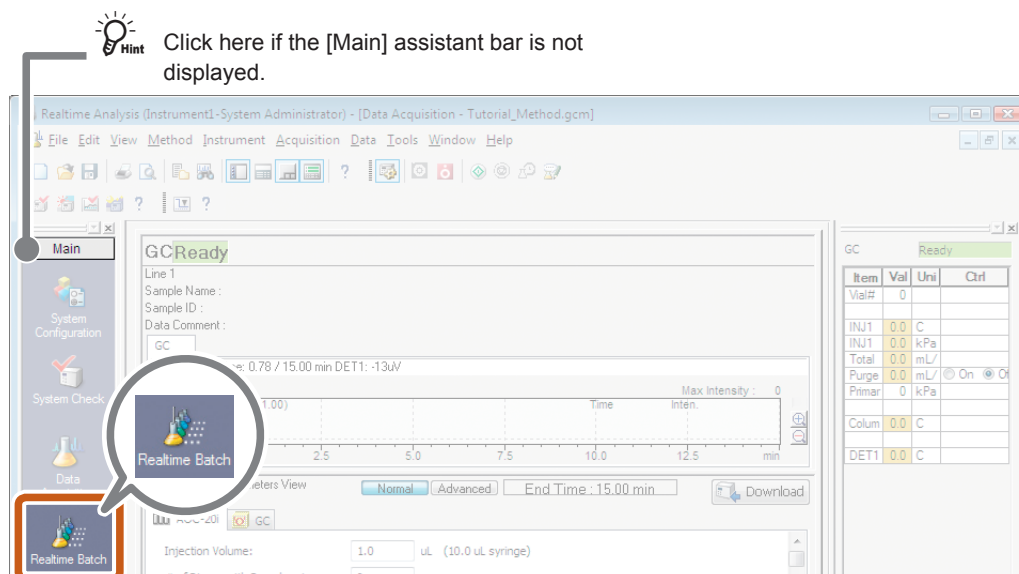
Create a Batch Table

In the following example, create a Batch Table with standard samples set to 1st to 9th rows, and unknown samples set to the 10th and 11th rows.

1 Open the [Realtime Analysis] program.



2 Open the [Realtime Batch] window.



The [Realtime Batch] window opens.

3 Edit the Batch Table.

1 Select [Table Easy Settings...]

2 Select [New].

3 Set [Standard] to .
 Vial# : 1 to 3
 Injection Volume : 1 μ L
 Repetitions : 3
 Data File : Tutorial_Std

4 Set [Unknown] to .
 Vial# : 4 to 5
 Injection Volume : 1 μ L
 Data File : Tutorial_Unk

5 Click here to create a Batch Table made up of 11 rows.

| Analysis | Vial# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Output |
|----------|-------|-------------|-----------|----------------|---------------------|---------------------|--------|--------------------------|
| 1 | 1 | | | 1:Standard (I) | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | <input type="checkbox"/> |
| 2 | 1 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | <input type="checkbox"/> |
| 3 | 1 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | <input type="checkbox"/> |
| 4 | 2 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | <input type="checkbox"/> |
| 5 | 2 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | <input type="checkbox"/> |
| 6 | 2 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | <input type="checkbox"/> |
| 7 | 3 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | <input type="checkbox"/> |
| 8 | 3 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | 3 | <input type="checkbox"/> |
| 9 | 3 | | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | 3 | <input type="checkbox"/> |
| 10 | 4 | | | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gcd | 0 | <input type="checkbox"/> |
| 11 | 5 | | | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk002.gcd | 0 | <input type="checkbox"/> |



- In Batch Tables, you can set the sample information of each sample and output of reports.



Refer to "Edit Batch Tables" of the "Realtime Batch" chapter, "Edit Batch Tables" of the "Calibration Curves" chapter in *Operators Guide* for details on the editing batch tables.

- When performing cleanup, enter "-1" in [Vial#] if the autosampler is used.

Continued on the following page



4 Copy a cell.

Folder: C:\LabSolutions\Sample\GC

| Analysis | Vial# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Outp |
|----------|-------|-------------|-----------|-------------|---------------------|---------------------|--------|-------------|
| 1 | 1 | | | | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | |
| 2 | 1 | | | | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | |
| 3 | 1 | | | | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | |
| 4 | 2 | | | | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | |
| 5 | 2 | | | | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | |
| 6 | 2 | | | | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | |
| 7 | 3 | | | | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | |

Select here.

Fill Down

Sample Name

Row #: 1

9

Sample Name: Alcohol Mixture

Auto-increment Repetitions: 1

OK Cancel Help

Folder: C:\LabSolutions\Sample\GC

| Analysis | Vial# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Outp |
|----------|-------|-----------------|-----------|---------------|---------------------|---------------------|--------|-------------|
| 1 | 1 | Alcohol Mixture | | 1:Standard:() | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | |
| 2 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | |
| 3 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | |
| 4 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | |
| 5 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | |
| 6 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | |
| 7 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | |
| 8 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | 3 | |
| 9 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | 3 | |
| 10 | 4 | | | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gcd | 0 | |

5 Enter a numbered series.

Folder: C:\LabSolutions\Sample\GC

| Analysis | Vial# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Outp |
|----------|-------|-----------------|-----------|---------------|---------------------|---------------------|--------|-------------|
| 1 | 1 | Alcohol Mixture | | 1:Standard:() | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | |
| 2 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | |
| 3 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | |
| 4 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | |
| 5 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | |
| 6 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | |
| 7 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | |
| 8 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | 3 | |
| 9 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | 3 | |
| 10 | 4 | | | | Tutorial_Method.gcm | Tutorial_Unk001.gcd | 0 | |
| 11 | 5 | | | | Tutorial_Method.gcm | Tutorial_Unk002.gcd | 0 | |

Select here.

Fill Series

Sample ID

Row #: 10

11

Sample ID: Unknown01

Auto-increment Repetitions: 1

OK Cancel Help

Folder: C:\LabSolutions\Sample\GC

| Analysis | Vial# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Outp |
|----------|-------|-----------------|-----------|---------------|---------------------|---------------------|--------|-------------|
| 1 | 1 | Alcohol Mixture | | 1:Standard:() | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | |
| 2 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | |
| 3 | 1 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | |
| 4 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | |
| 5 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | |
| 6 | 2 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | |
| 7 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | |
| 8 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | 3 | |
| 9 | 3 | Alcohol Mixture | | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | 3 | |
| 10 | 4 | | Unknown01 | Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gcd | 0 | |
| 11 | 5 | | Unknown02 | Unknown | Tutorial_Method.gcm | Tutorial_Unk002.gcd | 0 | |

6 Directly enter remaining items to the Batch Table to create the Batch Table shown below.

Folder: C:\LabSolutions\Sample\GC

| Analysis | Val# | Sample Name | Sample ID | Sample Type | Method File | Data File | Level# | Report Outp |
|----------|------|-----------------|------------------|----------------|---------------------|---------------------|--------|-------------|
| 1 | 1 | Alcohol Mixture | Standard 100ppm | 1:Standard (I) | Tutorial_Method.gcm | Tutorial_Std001.gcd | 1 | |
| 2 | 1 | Alcohol Mixture | Standard 100ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | 1 | |
| 3 | 1 | Alcohol Mixture | Standard 100ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | 1 | |
| 4 | 2 | Alcohol Mixture | Standard 500ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | 2 | |
| 5 | 2 | Alcohol Mixture | Standard 500ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | 2 | |
| 6 | 2 | Alcohol Mixture | Standard 500ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | 2 | |
| 7 | 3 | Alcohol Mixture | Standard 1000ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | 3 | |
| 8 | 3 | Alcohol Mixture | Standard 1000ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | 3 | |
| 9 | 3 | Alcohol Mixture | Standard 1000ppm | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | 3 | |
| 10 | 4 | Liquor | Unknown01 | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gcd | 0 | |
| 11 | 5 | Whiskey | Unknown02 | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk002.gcd | 0 | |

7 Save the batch file.

Realtime Analysis (Instrument1-System Administrator) - [Realtime Batch - Untitled (GC)]

Save in: GC

Name: Date modif... Type Size

No items match your search.

Enter "Tutorial_Batch".

File name: Tutorial_Batch

Save as type: GC Batch File (*.gcb)

Save Cancel

5.2

Realtime Batch Processing

Execute realtime batch using the Batch Table you created.

1 Place the samples in the autosampler.

| | | |
|------------------|--------------------------|---------------------------------------|
| Vial 1 (level 1) | Alcohol mixed sample | 100 ppm solution (standard solution) |
| Vial 2 (level 2) | Alcohol mixed sample | 500 ppm solution (standard solution) |
| Vial 3 (level 3) | Alcohol mixed sample | 1000 ppm solution (standard solution) |
| Vial 4 | Liquor (unknown sample) | |
| Vial 5 | Whiskey (unknown sample) | |

2 Start realtime batch processing.

Click here to open the [Realtime Batch] and [Data Acquisition] windows simultaneously, and starts data acquisition from the 1st row of the Batch Table.

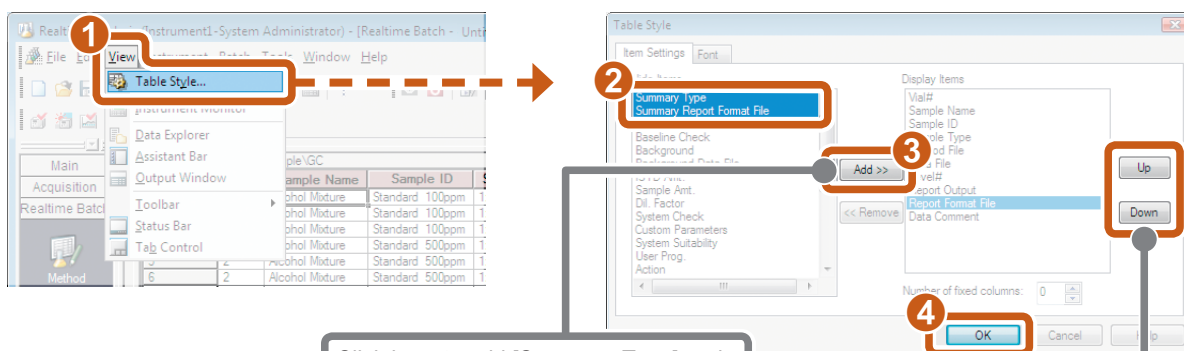
Click here to cancel data acquisition midway. To edit the content of the Batch Table during realtime batch, click [Pause] to pause realtime batch.

LabSolutions



Print a Summary Report

1 Add items to display in the Batch Table.

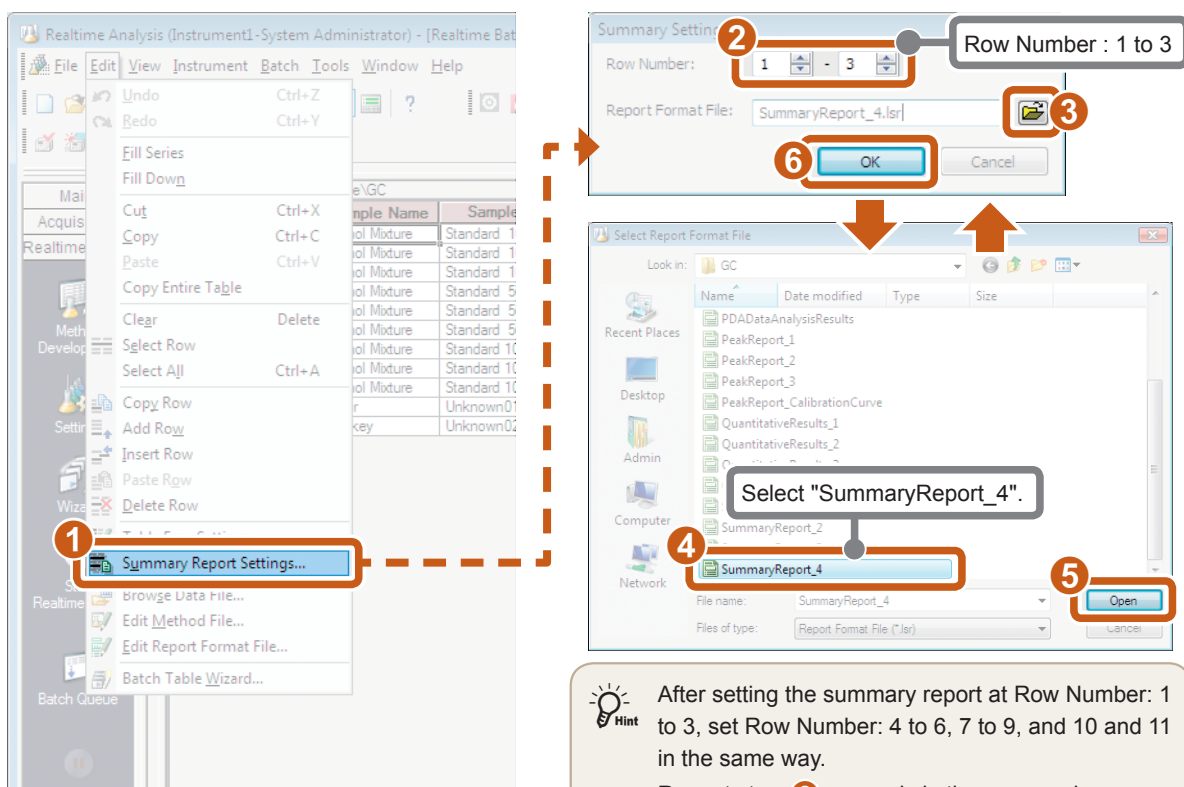


Click here to add [Summary Type] and [Summary Report Format File] to the items to display in the Batch Table.



The order of display items in the Batch Table can be changed by clicking [Up] or [Down].

2 Set up the summary report.



After setting the summary report at Row Number: 1 to 3, set Row Number: 4 to 6, 7 to 9, and 10 and 11 in the same way.

Repeat step 2 onwards in the same order.

Continued on the following page

3

Check the output configuration of the summary report.

| Analysis | Sample Type | Method File | Data File | Level | Summary Type | Summary Report Format File |
|----------|----------------|---------------------|---------------------|-------|---------------|----------------------------|
| 1 | 1:Standard (I) | Tutorial_Method.gcm | Tutorial_Std001.gcd | | Summary Start | SummaryReport_4.lsr |
| 2 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std002.gcd | | Summary Run | |
| 3 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std003.gcd | | Summary End | |
| 4 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std004.gcd | | Summary Start | SummaryReport_4.lsr |
| 5 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std005.gcd | | Summary Run | |
| 6 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std006.gcd | | Summary End | |
| 7 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std007.gcd | | Summary Start | SummaryReport_4.lsr |
| 8 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std008.gcd | | Summary Run | |
| 9 | 1:Standard | Tutorial_Method.gcm | Tutorial_Std009.gcd | | Summary End | |
| 10 | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk001.gcd | | Summary Start | SummaryReport_1.lsr |
| 11 | 0:Unknown | Tutorial_Method.gcm | Tutorial_Unk002.gcd | | Summary End | |

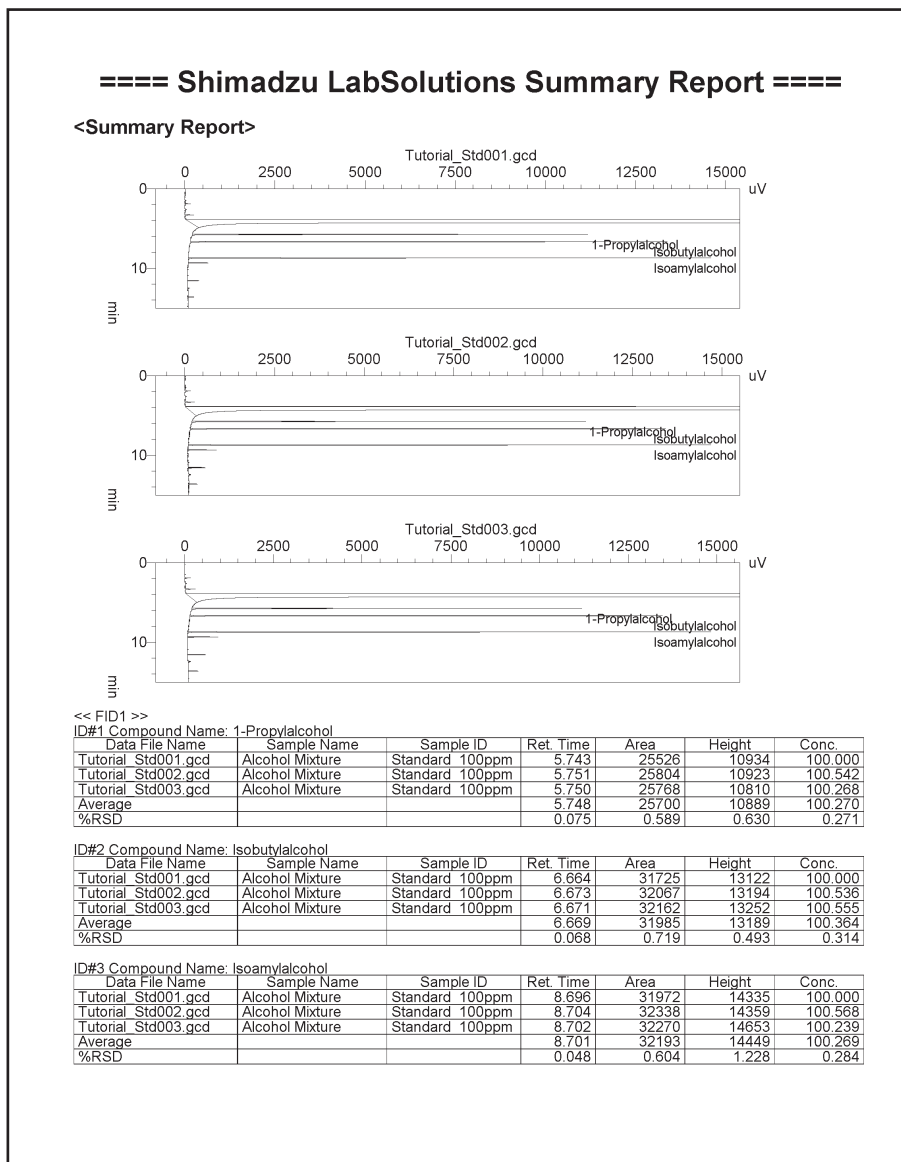
When you have finished the output configuration of the summary report, execute realtime batch to print the summary report.



Reference Refer to "5.2 Realtime Batch Processing" P.36 for details on executing realtime batch.

[Printout Example]

Standard samples

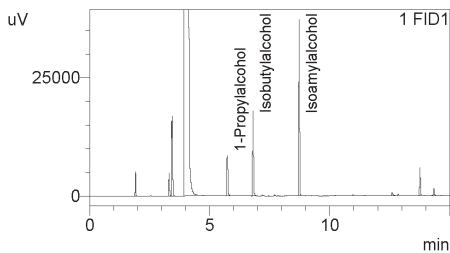


Unknown samples

==== Shimadzu LabSolutions Summary Report ====

Sample Name : Liquor
 Sample ID : Unknown01
 Data Filename : Tutorial_Unk001.gcd
 Method Filename : Tutorial_Method.gcm
 Batch Filename : Tutorial_Batch.gcb
 Vial # : 1-4
 Injection Volume : 1 uL
 Date Acquired : 4/9/2009 2:33:04 AM
 Date Processed : 7/13/2010 2:24:41 PM

Sample Type : Unknown
 Acquired by : System Administrator
 Processed by : System Administrator

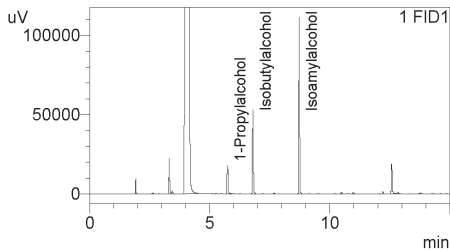


| Peak# | Ret. Time | Area | Height | ID# |
|-------|-----------|----------|---------|-----|
| 1 | 1.900 | 7737 | 5018 | |
| 2 | 3.299 | 10799 | 4830 | |
| 3 | 3.426 | 41993 | 16732 | |
| 4 | 4.080 | 42735188 | 8790611 | |
| 5 | 5.733 | 20659 | 8448 | 1 |
| 6 | 6.802 | 45081 | 17880 | 2 |
| 7 | 8.722 | 90812 | 36867 | 3 |
| 8 | 12.596 | 2747 | 680 | |
| 9 | 13.766 | 14329 | 5873 | |
| 10 | 14.336 | 3850 | 1453 | |
| Total | | 42973196 | 8888393 | |

| ID# | Name | Conc. | Unit |
|-----|-----------------|---------|------|
| 1 | 1-Propylalcohol | 85.137 | ppm |
| 2 | Isobutylalcohol | 143.676 | ppm |
| 3 | Isoamylalcohol | 277.442 | ppm |

Sample Name : Whiskey
 Sample ID : Unknown02
 Data Filename : Tutorial_Unk002.gcd
 Method Filename : Tutorial_Method.gcm
 Batch Filename : Tutorial_Batch.gcb
 Vial # : 1-5
 Injection Volume : 1 uL
 Date Acquired : 4/9/2009 2:54:45 AM
 Date Processed : 7/13/2010 2:24:42 PM

Sample Type : Unknown
 Acquired by : System Administrator
 Processed by : System Administrator



| Peak# | Ret. Time | Area | Height | ID# |
|-------|-----------|----------|----------|-----|
| 1 | 1.908 | 16371 | 9651 | |
| 2 | 2.632 | 1945 | 989 | |
| 3 | 3.305 | 49735 | 22059 | |
| 4 | 3.438 | 5679 | 1993 | |
| 5 | 4.118 | 64884225 | 11137946 | |
| 6 | 5.742 | 43193 | 17713 | 1 |
| 7 | 6.798 | 126351 | 52765 | 2 |
| 8 | 7.684 | 1424 | 666 | |
| 9 | 8.726 | 263828 | 110858 | 3 |
| 10 | 10.489 | 2765 | 1054 | |
| 11 | 10.983 | 2300 | 893 | |
| 12 | 12.223 | 2935 | 1336 | |
| 13 | 12.585 | 47370 | 18734 | |
| 14 | 12.869 | 2493 | 1116 | |
| 15 | 13.773 | 1625 | 623 | |
| Total | | 65452236 | 11378396 | |

| ID# | Name | Conc. | Unit |
|-----|-----------------|---------|------|
| 1 | 1-Propylalcohol | 168.318 | ppm |
| 2 | Isobutylalcohol | 394.559 | ppm |

| ID# | Name | Conc. | Unit |
|-----|----------------|---------|------|
| 3 | Isoamylalcohol | 791.143 | ppm |

Chapter 6

Multiple Data Analysis

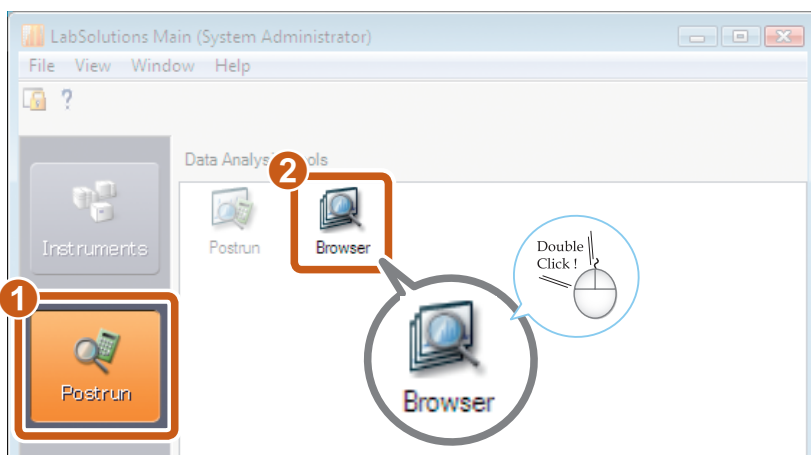
The LabSolutions [Browser] program is handy for checking the quantitative calculation results and chromatograms of multiple data.

In the [Quant Browser] window of the [Browser] program, you can check multiple data, and change the data processing parameters of the currently displayed method file to modify calibration curves and perform postrun batch on multiple data.

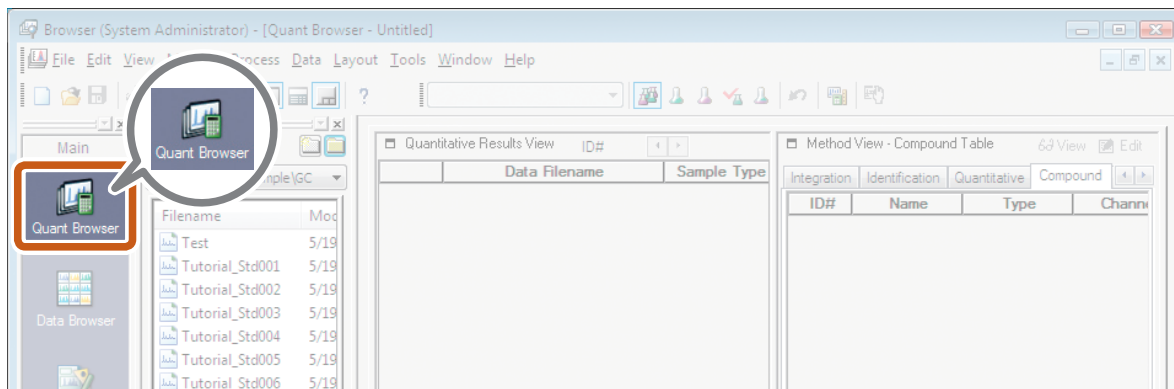


Reference Refer to "Quant Browser" chapter in *Operators Guide* for details on the "Quant Browser" window.

1 Open the [Browser] program.

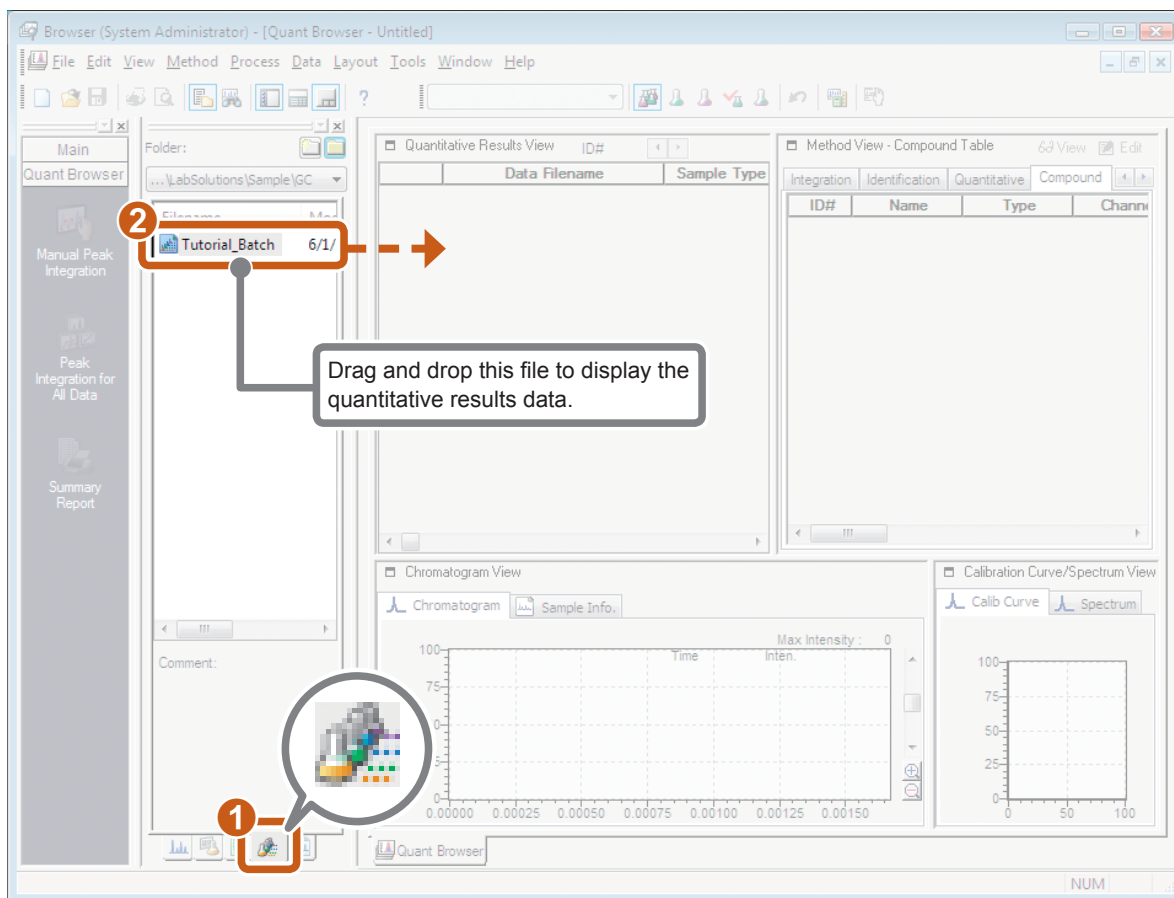


2 Open the [Quant Browser] window.



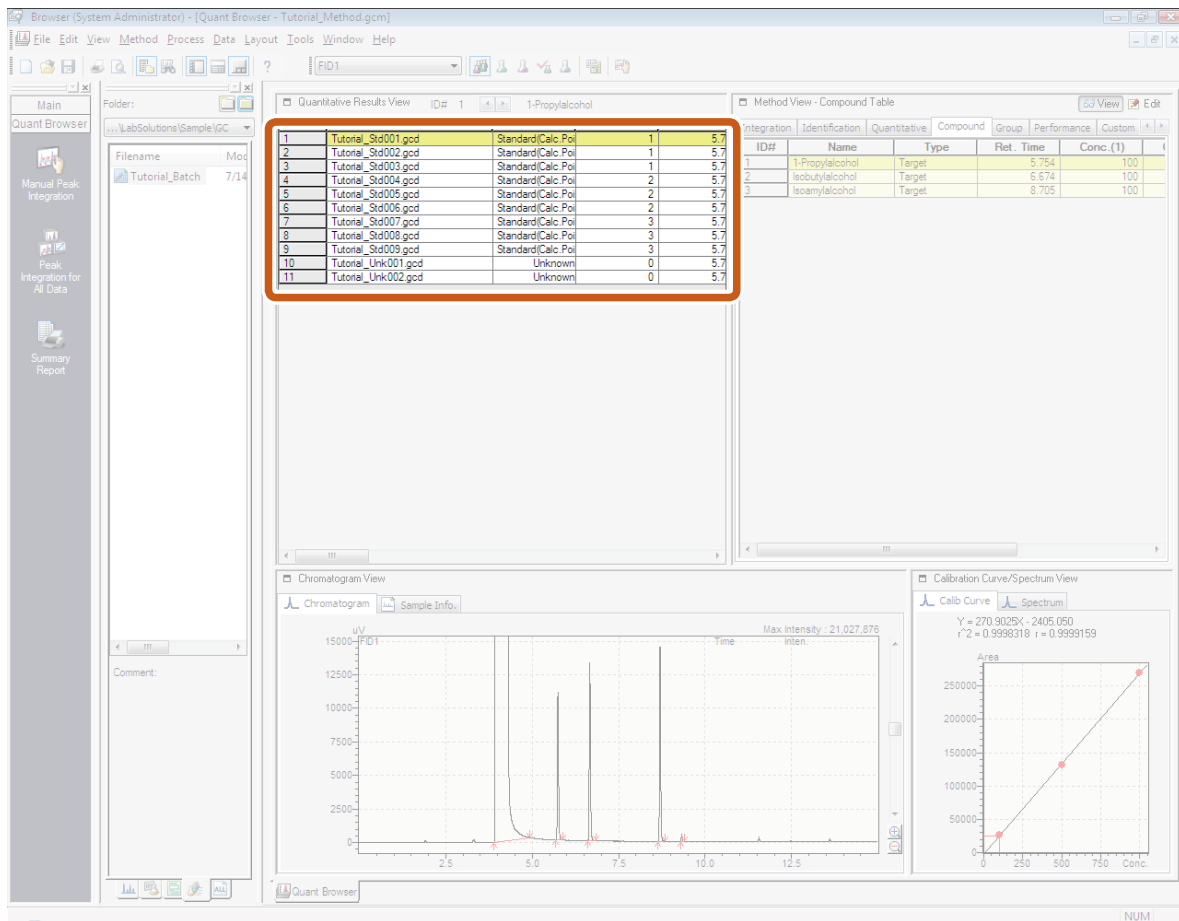
Open the [Quant Browser] window.

3 Load the batch file.



Continued on the following page 

4 Confirm quantitative results.



LabSolutions



Modify Calibration Curves

1

Confirm peak integration parameters.

Confirm the peak integration parameters when peak detection is inappropriate.

The screenshot displays the LabSolutions software interface. The main window shows a list of data files in the 'Quantitative Results View' table:

| Data Filename | Sample Type | Level# | Ret. Time |
|---------------------|--------------------|--------|-----------|
| Tutorial_Std001.gcd | Standard/Calc. Poi | 1 | 5 |
| Tutorial_Std002.gcd | Standard/Calc. Poi | 1 | 5 |
| Tutorial_Std003.gcd | Standard/Calc. Poi | 1 | 5 |
| Tutorial_Std004.gcd | Standard/Calc. Poi | 2 | 5 |
| Tutorial_Std005.gcd | Standard/Calc. Poi | 2 | 5 |
| Tutorial_Std006.gcd | Standard/Calc. Poi | 2 | 5 |
| Tutorial_Std007.gcd | Standard/Calc. Poi | 3 | 5 |
| Tutorial_Std008.gcd | Standard/Calc. Poi | 3 | 5 |
| Tutorial_Std009.gcd | Standard/Calc. Poi | 3 | 5 |
| Tutorial_Unk001.gcd | Unknown | 0 | 5 |
| Tutorial_Unk002.gcd | Unknown | 0 | 5 |

The 'Method View - Peak Integration Parameters' dialog is open, showing the following settings:

- Width: 3 sec
- Slope: 1000 uV/min
- Drift: 0 uV/min
- T. DBL: 1000 min
- Min. Area/Height: 1000 counts
- Calculated by: Area Height

A 'Zoom UP' callout points to the 'View' button in the dialog. A callout points to the 'Post Run Batch' button in the main window, with the text: 'Click here to perform postrun batch on all data.' Another callout points to the 'Edit' button in the dialog, with the text: 'Make sure that these values are appropriate.' A 'Calibration Curve/Spectrum View' window is also visible, showing a linear plot with the equation $Y = 270.9025X - 2405.050$ and $R^2 = 0.9996318$, $r = 0.9999159$.

Continued on the following page

2

Confirm identification parameters.

Confirm the identification parameters and Compound Table when peaks are not identified correctly.

ZOOM UP

1 View **2** Edit

3 Identification **4** View

Window/Band: Window Band
Window: 5 %
Default Bandwidth: 0.01 min
Identification Method: Absolute Rt
Peak Selection: All Peaks
 Display not identified peaks as peaks with zero area(height)
 Add the peaks with zero area(height) to calibration level
Retention Time Update: None Replace Average

Make sure that these values are appropriate.

Calibration Curve/Spectrum View
Y = 270.9025x - 2405.050
r² = 0.9998318 r = 0.9999159

3

Confirm the Compound Table.

ZOOM UP

1 View **2** Edit

3 Compound **4** View

| ID# | Name | Type | Ret. Time | Conc. (1) | Conc. (2) | Conc. (3) |
|-----|-----------------|--------|-----------|-----------|-----------|-----------|
| 1 | 1-Propylalcohol | Target | 5.754 | 100 | 500 | 1000 |
| 2 | Isobutylalcohol | Target | 6.674 | 100 | 500 | 1000 |
| 3 | Isoamylalcohol | Target | 8.705 | 100 | 500 | 1000 |
| 4 | | | 0.001 | 100 | 500 | 1000 |

Make sure that these time settings are appropriate.

Calibration Curve/Spectrum View
Y = 270.9025x - 2405.050
r² = 0.9998318 r = 0.9999159

4 Confirm calibration points.

ZOOM UP

Confirm the calibration curve.

Make sure that the calibration point on the 1st row is set to .

| Data Filename | Height | Conc. (ppm) | Std. Conc. | Area% | Height% | Accuracy | Cal. Point | Sample Type |
|---------------------|---------|-------------|------------|-------|---------|----------|-------------------------------------|---------------------|
| Tutorial_Std001.gcd | 10.934 | 103.103 | 100 | 0.012 | 0.052 | 104 u | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std002.gcd | 10.923 | 104.131 | 100 | 0.012 | 0.052 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std003.gcd | 10.810 | 103.999 | 100 | 0.012 | 0.052 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std004.gcd | 56.785 | 493.976 | 500 | 0.061 | 0.269 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std005.gcd | 56.542 | 492.957 | 500 | 0.061 | 0.269 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std006.gcd | 56.645 | 492.848 | 500 | 0.061 | 0.269 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std007.gcd | 118.063 | 1,004.735 | 1000 | 0.126 | 0.512 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std008.gcd | 117.871 | 1,003.076 | 1000 | 0.126 | 0.512 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Std009.gcd | 116.155 | 1,001.176 | 1000 | 0.126 | 0.512 | 88.8 | <input checked="" type="checkbox"/> | Standard(Calc. Poi) |
| Tutorial_Unk001.gcd | 9.448 | 89.137 | --- | 0.048 | 0.231 | --- | <input type="checkbox"/> | Unknown |
| Tutorial_Unk002.gcd | 17.713 | 168.318 | --- | 0.066 | 0.311 | --- | <input type="checkbox"/> | Unknown |

Calibration Curve/Spec View

Y = 270.5025X - 2405.050
r² = 0.9998318 r = 0.9999159

5 Save the method file and data file.

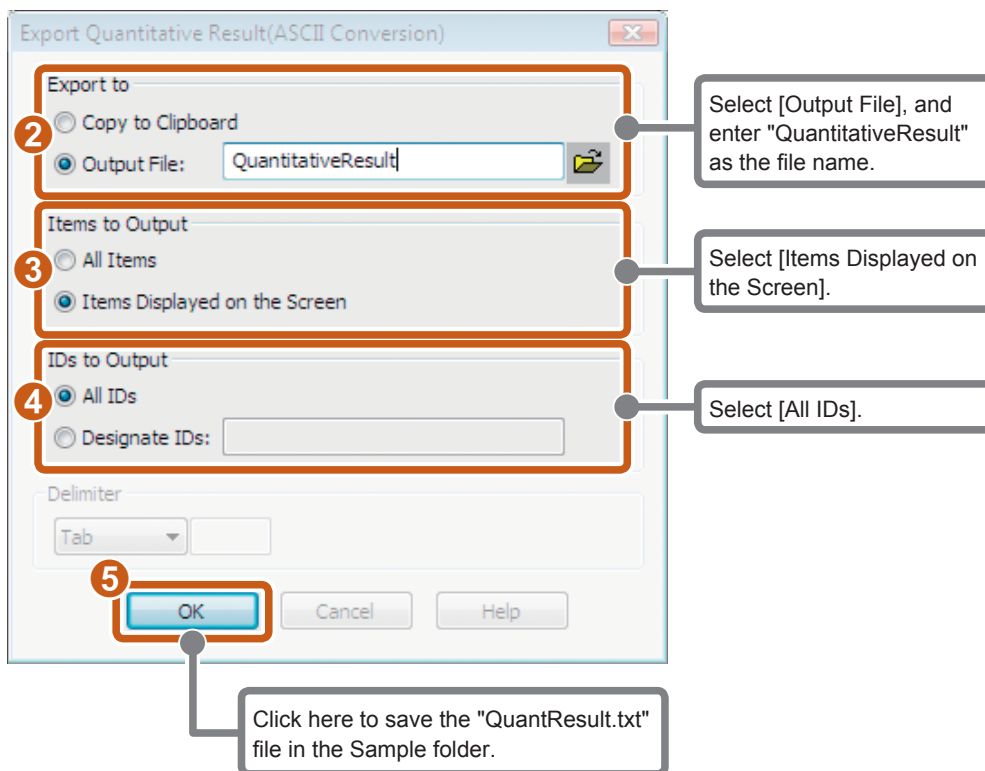
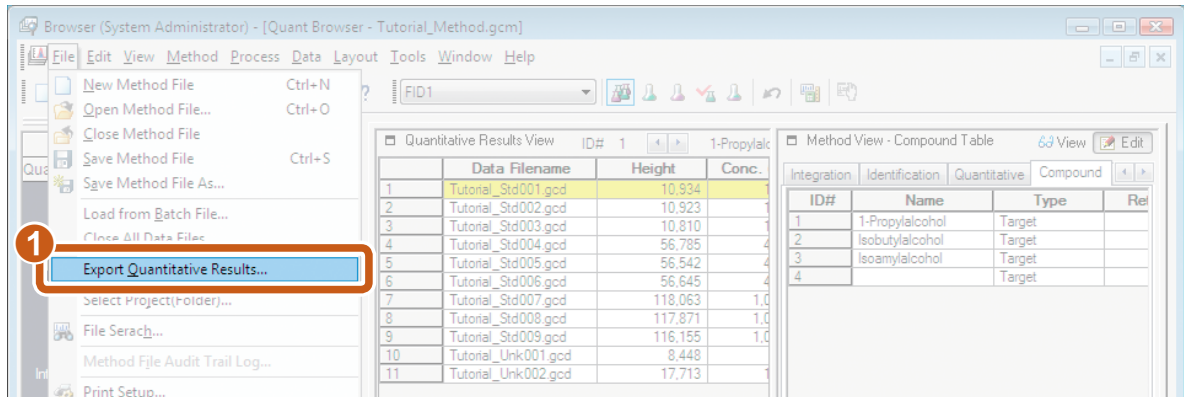
Save the method file and data file.

| Data Filename | Sample Type |
|---------------------|---------------------|
| Tutorial_Std001.gcd | Standard(Calc. Poi) |
| Tutorial_Std002.gcd | Standard(Calc. Poi) |
| Tutorial_Std003.gcd | Standard(Calc. Poi) |
| Tutorial_Std004.gcd | Standard(Calc. Poi) |
| Tutorial_Std005.gcd | Standard(Calc. Poi) |
| Tutorial_Std006.gcd | Standard(Calc. Poi) |
| Tutorial_Std007.gcd | Standard(Calc. Poi) |
| Tutorial_Std008.gcd | Standard(Calc. Poi) |
| Tutorial_Std009.gcd | Standard(Calc. Poi) |
| Tutorial_Unk001.gcd | Unknown |
| Tutorial_Unk002.gcd | Unknown |

| ID# | Name | Type | Ret |
|-----|-----------------|--------|-----|
| 1 | 1-Propylalcohol | Target | |
| 2 | Isobutylalcohol | Target | |
| 3 | Isoamylalcohol | Target | |

Export Quantitative Calculation Results

This section describes how to save quantitative calculation results as a text file.



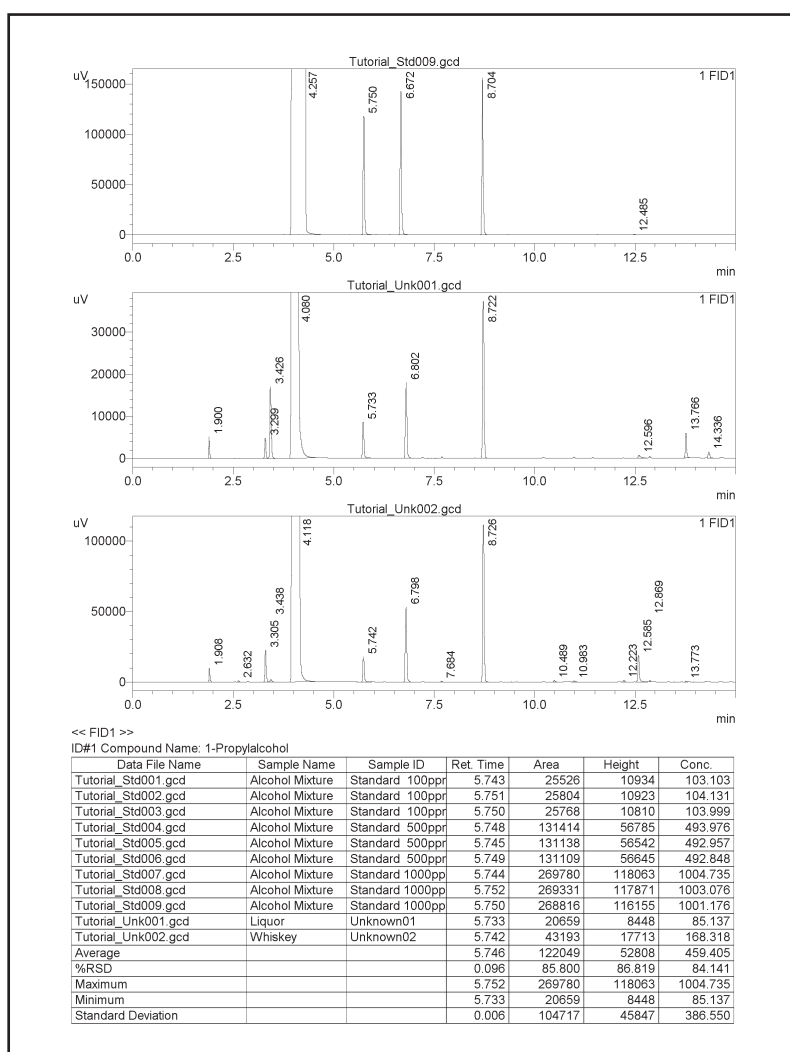
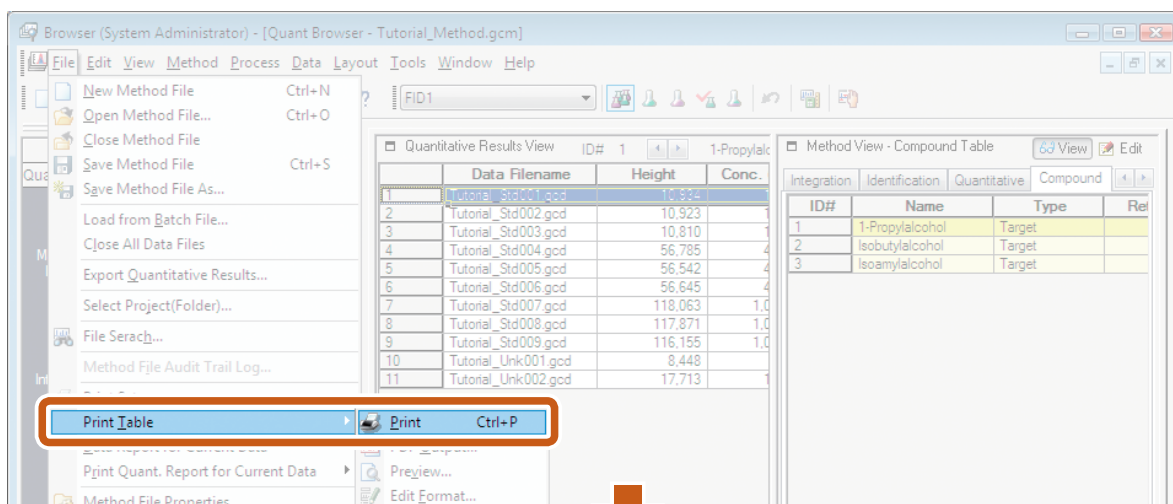
Refer to "Export the Quantitative Results" of the "Quant Browser" chapter in *Operators Guide* for details on exporting quantitative results.

LabSolutions



Print the Quantitative Results Table

To print a browser report, select [Print] at [Print Table] on the [File] menu.



Select [Edit Format] from [Print Table] on the [File] menu to edit the report format.

Chapter 7 ShutDown

Last of all, this chapter describes how to exit LabSolutions.

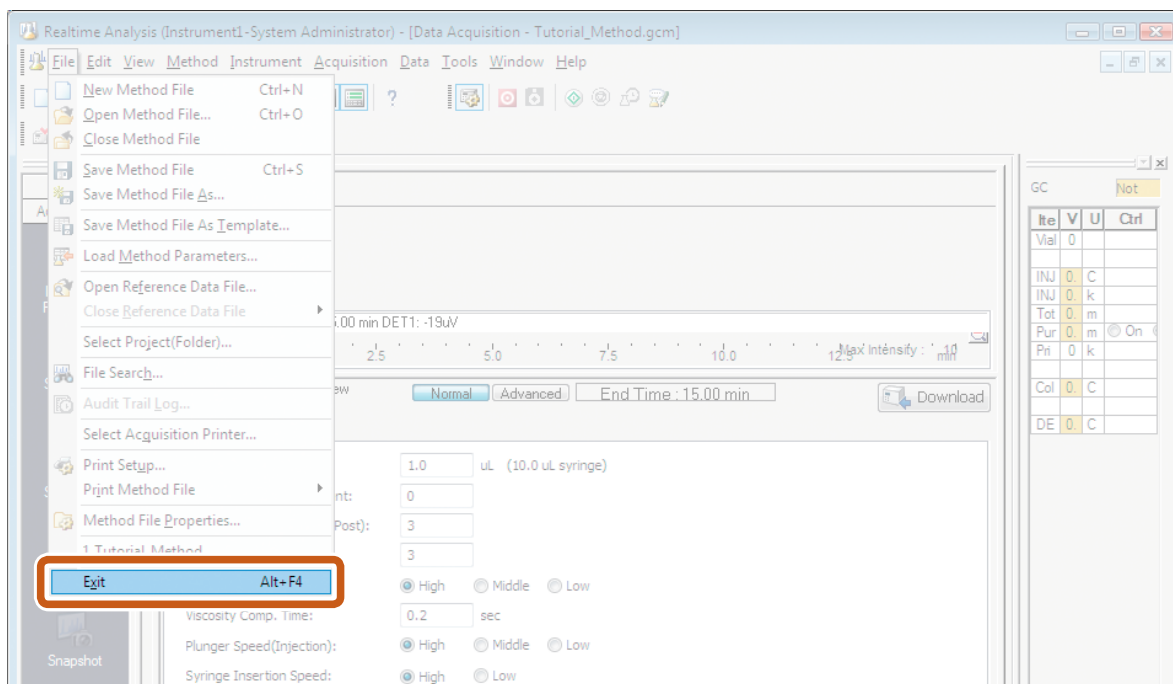
1 Stop the GC.

The screenshot displays the LabSolutions software interface. The main window is titled "GCReady" and shows a chromatogram with a y-axis labeled "uV" (0 to 15000) and an x-axis labeled "Time" (0.0 to 17.5 min). The chromatogram shows several peaks, with the highest peak at approximately 8.5 minutes. The text "GC Running Time: 15.73 / 15.00 min DET1: -14uV" is visible above the plot. The "Max Intensity: 21,952,920" is also displayed. The interface includes a menu bar (File, Edit, View, Method, Instrument, Acquisition, Data, Tools, Window, Help) and a toolbar. On the left side, there is a vertical toolbar with buttons for "Main", "Acquisition", "Instrument Parameters", "System On", "Start Single Run", "Stop", "Snapshot", and "Data Analysis". The "System Off" button is highlighted with a red box and a callout bubble. On the right side, there is a "GC Ready" status panel with a table of parameters:

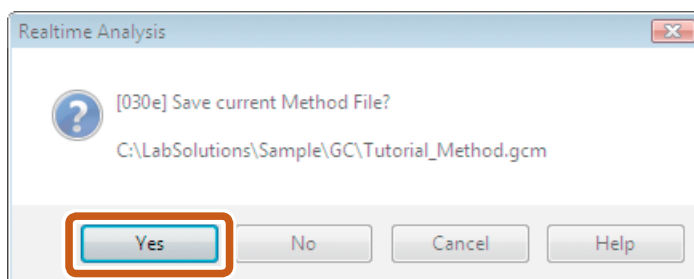
| Item | Val | Unit | Ctrl |
|----------|-----|------|---|
| Vial# | 0 | | |
| INJ1 T | 0.0 | C | |
| INJ1 Pr | 0.0 | kPa | |
| Total Fl | 0.0 | mL/ | |
| Purge | 0.0 | mL/ | <input type="radio"/> On <input checked="" type="radio"/> Off |
| Primary | 0 | kPa | |
| Column | 0.0 | C | |
| DET1 | 0.0 | C | |

At the bottom of the window, the status bar shows "C: 116GB Free" and "NUM".

2 Select [Exit] when the oven has cooled down.



3 Click [Yes].

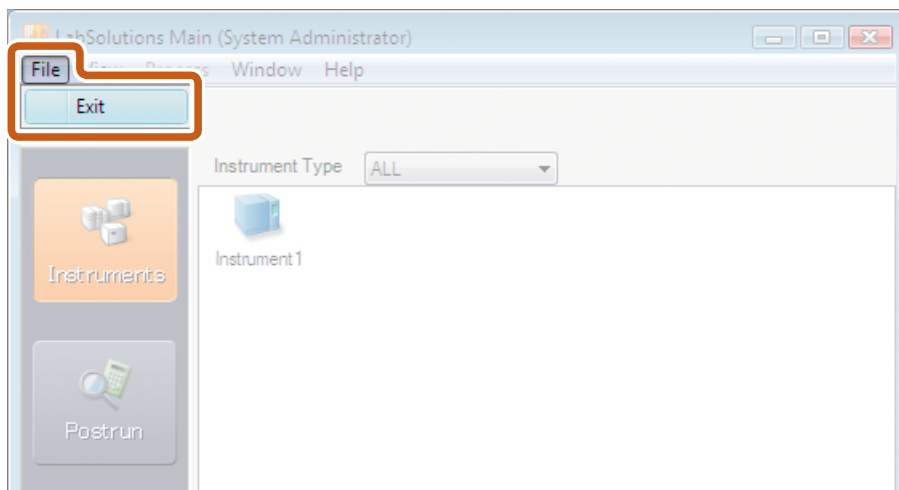


When there is a file that has not yet been saved, a window to confirm whether or not to save the file when exiting the [Realtime Analysis] program opens.

Continued on the following page 

4 Exit LabSolutions.

If the [Postrun Analysis] program or [Browser] program is open, click [Exit] on the [File] menu of each program to exit the respective program.



5 Shutdown Windows, and turn the PC and printer off.

6 Turn the GC and peripheral devices off.

7 Close the main valve of the carrier gas and other gases.