223-60094E
Sep. 2013

LabSolutions

Installation & Maintenance Guide

Read the instruction manual thoroughly before you use the product.
Keep this instruction manual for future reference.

Introduction

Read this Instruction Manual thoroughly before using the product.

Thank you for purchasing Shimadzu analytical instrument workstation "LabSolutions" (hereafter referred to as "the software" or "LabSolutions").

This manual describes the procedures for operating this product. Read this manual thoroughly before using the product and operate the product in accordance with the instructions in this manual.

Also, keep this manual for future reference.

This manual assumes that the reader is knowledgeable of basic operations of Windows. For the operation of Windows, refer to the instruction manual that comes with that product.

Important

- If the user or installation location changes, ensure that this Instruction Manual is transferred with the product.
- If this manual is lost or damaged, immediately contact your Shimadzu representative to request a replacement.
- To ensure safe operation, contact your Shimadzu representative for product installation, adjustment, or reinstallation(after the product is moved).

Original version is approved in English.

Notice

- LabSolutions software expands/limits its functions and controllable instruments according to the LabSolutions license. Please note that, depending on your license, some functions or instruments in this manual are not shown, or some windows styles in this manual may differ from those in the software.
- Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor.
- 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.
-
- Microsoft, Windows, Windows 7, Windows Vista and Windows XP are registered trademarks of Microsoft Corporation in the United States and/or other countries. Adobe, Adobe logo and Adobe Reader are trademarks or registered trademarks of Adobe Systems Incorporated in the United States and/or other countries.
  Other company names and product names mentioned in this manual are trademarks or registered trademarks of their respective companies. The TM and ® symbols are omitted in this manual.
- Microsoft® Windows® 7 Operating System is referred to as “Windows 7”.
  Microsoft® Windows Vista® Operating System is referred to as "Windows Vista".
  Microsoft® Windows® XP Professional Edition is referred to as "Windows XP".
- Replacement parts for this product will be available for a period of seven (7) years after the product is discontinued. Thereafter, such parts may cease to be available. Note, however, that the availability of parts not manufactured by Shimadzu shall be determined by the relevant manufacturers.

Instruction Manuals

■ List of Instruction Manuals

Name	Content
Getting Started Guide	This manual follows an actual data acquisition procedure to describe basic methods of operation for first-time users. Read this manual to learn basic operations of the software.
Operators Guide	This manual describes overall operations and handy functions in more details, such as the software's system configuration, data analysis, batch processing, confirmation of data acquisition results, and report functions.
System Users Guide	This manual describes system administration and data management of the software. Refer to this manual as necessary.
Installation & Maintenance Guide	This manual describes installation and maintenance of the software.
Data Acquisition & Processing Theory Guide	This manual describes peak detection and quantitation of sample components. Refer to this manual as necessary.
Help	Clicking the on-screen [Help] button or pressing the [F1] key displays a description of on-screen parameters, answers to specific questions or solutions to various problems. Also, clicking the [Help] button on the error message window displays the details of the error or solutions to the error. Be sure to refer to Help before contacting us.

■ Indications Used in Instruction Manuals

Cautions and Notes are indicated using the following conventions, and the following symbols are used in this manual:

Indication	Meaning
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor to moderate injury or equipment damage.
NOTE	Emphasizes additional information that is provided to ensure the proper use of this product.
☞ Reference	Indicates the location of related reference information.
[ ]	Indicates the names of buttons, menu options, setting options, windows/sub-windows, and icons that are displayed in a window. Example: Click [OK].

Warranty

Shimadzu provides the following warranty for this product.

1. Period:

Please contact your Shimadzu representative for information about the period of this warranty.

2. Description:

If a product/part failure occurs for reasons attributable to Shimadzu during the warranty period, Shimadzu will repair or replace the product/part free of charge (including USB dongles). However, in the case of products which are usually available on the market only for a short time, such as personal computers and their peripherals/parts, Shimadzu may not be able to provide identical replacement products.

3. Limitation of Liability:

(1) In no event will Shimadzu be liable for any lost revenue, profit or data, or for special, indirect, consequential, incidental or punitive damages, however caused regardless of the theory of liability, arising out of or related to the use of or inability to use the product, even if Shimadzu has been advised of the possibility of such damage.

(2) In no event will Shimadzu's liability to you, whether in contract, tort (including negligence), or otherwise, exceed the amount you paid for the product.

4. Exceptions:

Failures caused by the following are excluded from the warranty, even if they occur during the warranty period.

1) Improper product handling
2) Repairs or modifications performed by parties other than Shimadzu or Shimadzu designated companies
3) Product use in combination with hardware or software other than that designated by Shimadzu
4) Computer viruses leading to device failures and damage to data and software, including the product's basic software
5) Power failures, including power outages and sudden voltage drops, leading to device failures and damage to data and software, including the product's basic software
6) Turning OFF the product without following the proper shutdown procedure leading to device failures and damage to data and software, including the product's basic software
7) Reasons unrelated to the product itself
8) Product use in harsh environments, such as those subject to high temperatures or humidity levels, corrosive gases, or strong vibrations
9) Fires, earthquakes, or any other act of nature, contamination by radioactive or hazardous substances, or any other force majeure event, including wars, riots, and crimes
10) Product movement or transportation after installation
11) Consumable items
    Note: Recording media such as floppy disks and CD/DVD-ROMs are considered consumable items.

* If there is a document such as a warranty provided with the product, or there is a separate contract agreed upon that includes warranty conditions, the provisions of those documents shall apply.
* Warranty periods for products with special specifications and systems are provided separately.
* **The license cannot be reissued if you lose the USB dongle provided with the product.**

Contents

4 System Maintenance

1 Install LabSolutions

This chapter describes the procedure to install the software.

1.1 Install the Software

This section describes the installation of the software.

■ Before Software Installation

Verify the following items before software installation.

- The software runs on the Windows 7, Windows Vista and Windows XP operating systems. Confirm that the PC has the proper operating system.

NOTE

- The installer copies the system files to the following folders. The software cannot work if the files on these folders are removed, moved or renamed.

  C:\LabSolutions\System ("C:\LabSolutions" means target folder for installation.)
  (For 32-bit Windows) C:\Program Files\LabSolutions ("C:" means Windows system drive.)
  (For 64-bit Windows) C:\Program Files(x86)\LabSolutions ("C:" means Windows system drive.)

- The installer recognizes the language used with OS and starts the installation. Please integrate the setting of "Regional and Language Options" and "Date and time" in the Control Panel to the installation language.

1 Turn on the PC, start Windows and insert the software installation disk into the disk drive.

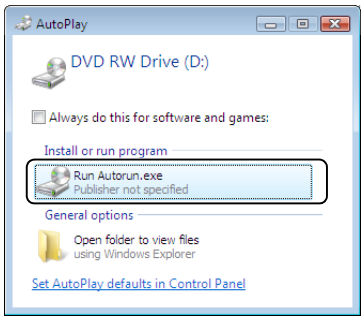
NOTE

- If the [LabSolutions Installer] window does not automatically start use the following procedure to start the setup program. The disk drive is E in the following example. Use the correct disk drive where “E:\” appears in the example.

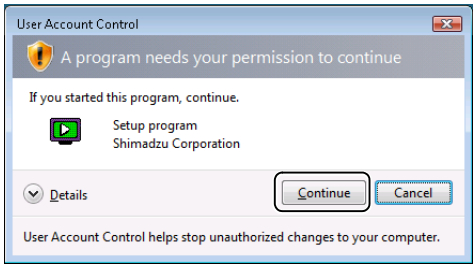
Windows 7/Windows Vista

1. Click the  (Start) menu.
2. Enter “E:\autorun.exe”, and press the [Enter] key.

3. Click [Run Autorun.exe].



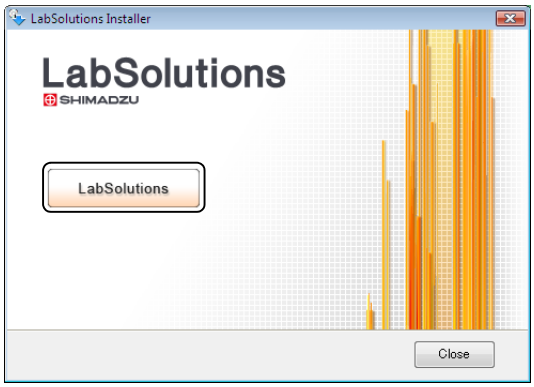
4. Click [Continue].



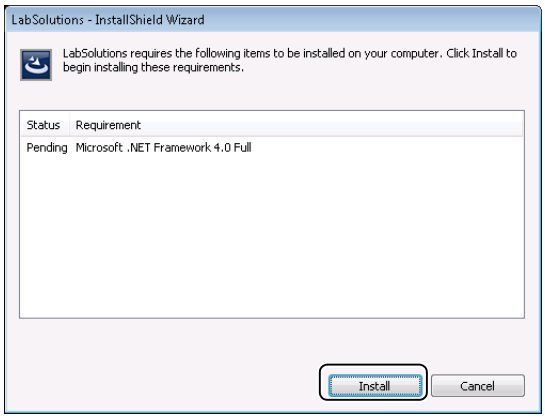
Windows XP

1. Click the start (Start) button, and click [Run].
   The [Run] window opens.
2. Enter "E:\autorun.exe", and click [OK].

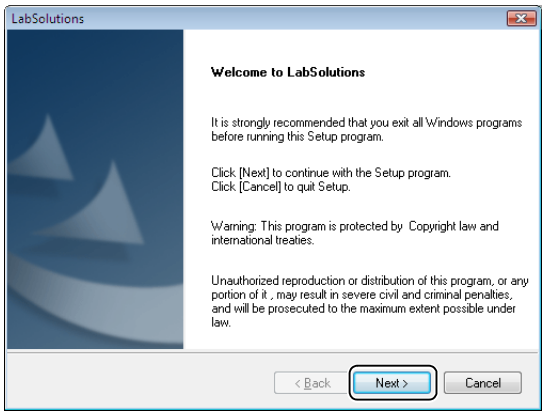
2 Click [LabSolutions].



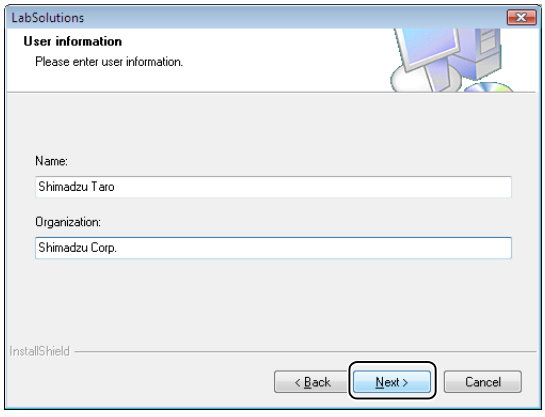
3 Click [Install].



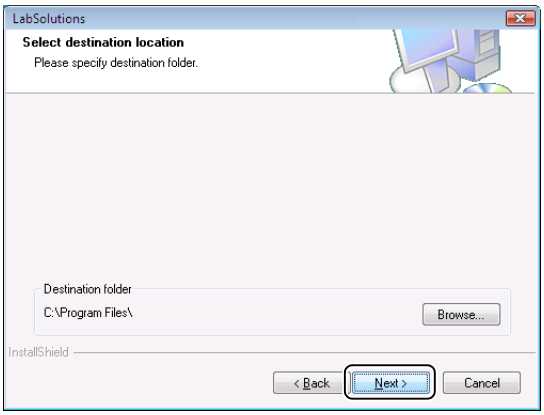
4 Review the license details, and click [Next].



5 Enter [Name] and [Organization], then click [Next].

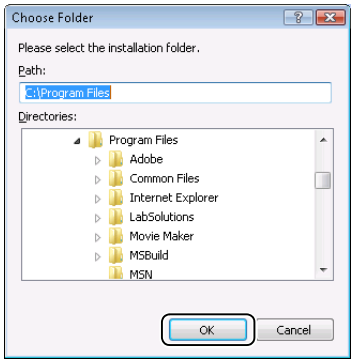


6 Check the installation directory folder, and click [Next].



NOTE

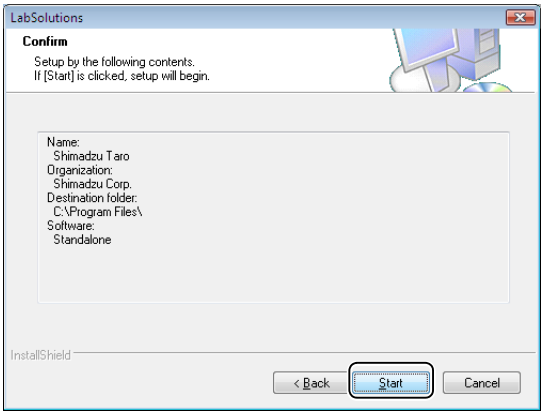
- Use the following procedure to change the software installation folder.
  1. Click [Browse].
  2. Select the installation folder, and click [OK].



- This message is displayed, when installing the software for the first time.
- Due to folder security features, some operating systems may have restrictions on creating subfolders, saving files, or other functionality, depending on the installation directory folder.

  Check the folder security settings to change the installation folder before installing the software.

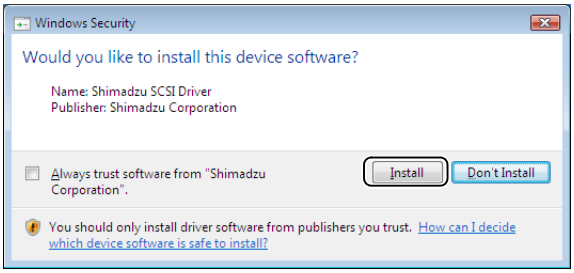
7 Check the settings, then click [Start].



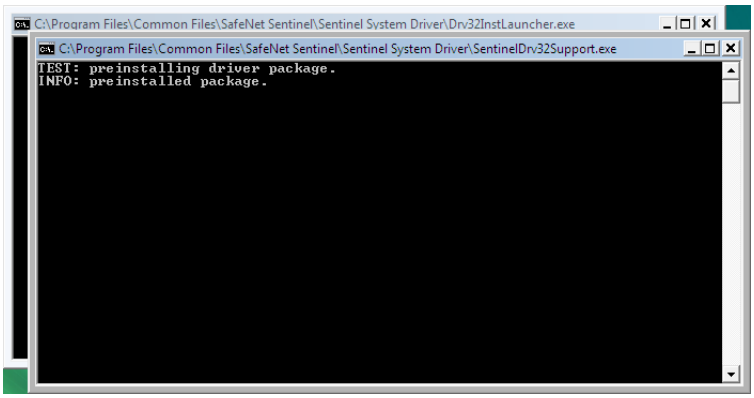
Installation begins.
The [InstallShield Wizard Complete] window opens when installation is complete.

NOTE

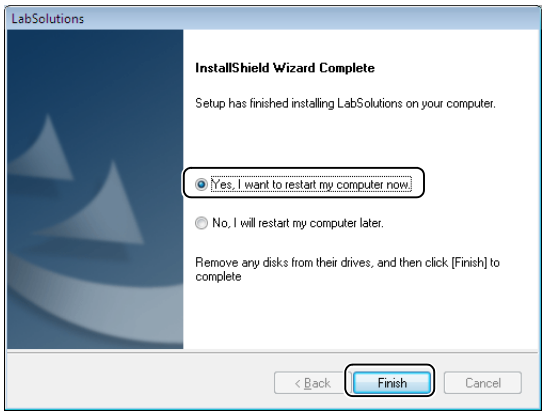
- The [Windows Security] window opens in Windows 7 (32bit)/Windows Vista. Click [Install].



- After a brief period, the following windows open. Wait until the [InstallShield Wizard Complete] window opens.



8 Select [Yes, I want to restart my computer now.] and then click [Finish].



This completes the installation process.

1.2 Uninstall the Software

This section describes the procedure to uninstall the software.

NOTE
Back up data files and method files before uninstalling the software.

1 Open [Program and Features] in the Control Panel.

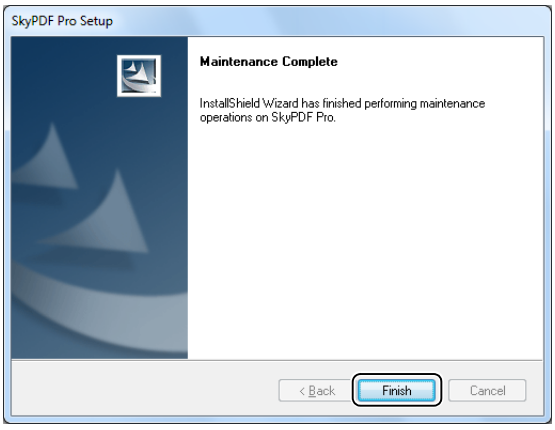
NOTE
Open [Add or Remove Programs] in Windows XP.

2 Click [SkyPDF Pro].

NOTE
Be sure to uninstall SkyPDF Pro before uninstalling the software.

Click [Delete], and uninstallation of SkyPDF Pro begins.
The [Maintenance Complete] window opens when uninstallation is complete.

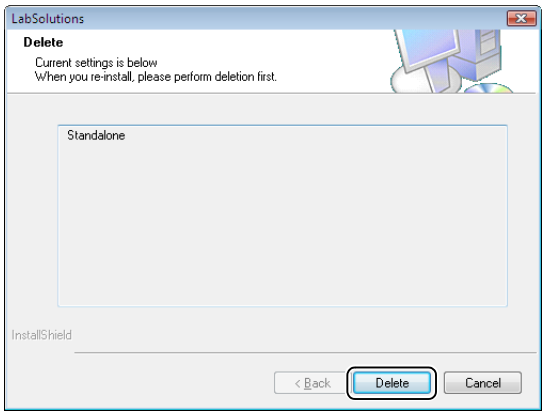
3 Click [Finish].



4 Click [LabSolutions].

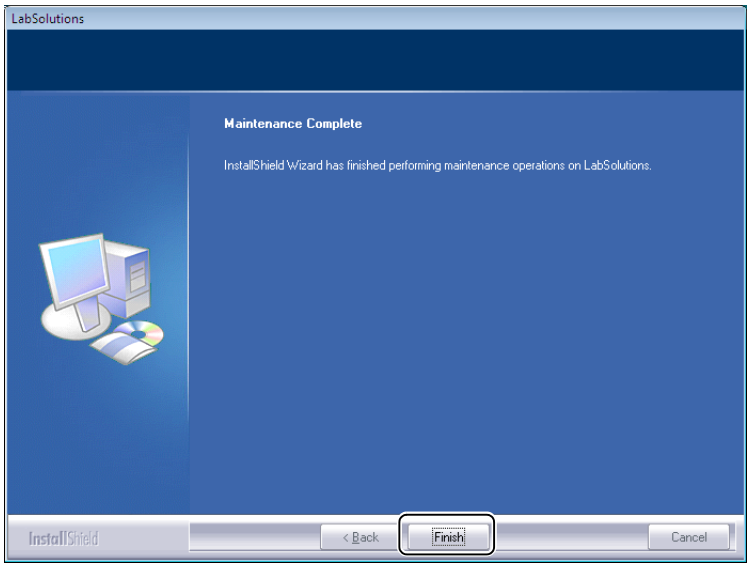
Click [Delete].

5 Check the details to delete, and click [Delete].



Uninstallation begins.
The [Maintenance Complete] window opens when uninstallation is complete.

6 Click [Finish].



This completes the uninstallation process.

2 Hardware Connection

This chapter describes how to connect the instrument to the PC installed with the software and how to make the communication settings.

2.1 Connect the PC to the LC Instrument

There are 2 types of connection, LAN cable and RS-232C cable, between the system controller and the PC. System controller models CBM-20A/CBM-20Alite are connected using a LAN cable, and system controller models SCL-10Avp, SCL-10Asp, and LC-2010 are connected using an RS-232C cable.

NOTE
CBM-20A/CBM-20Alite can also be connected using an RS-232C cable.

2.1.1 Connect the PC to the CBM-20A/CBM-20Alite

Connect the PC to the CBM-20A/CBM-20Alite using an Ethernet LAN cable. Enter the CBM-20A/CBM-20Alite communication settings on an LC-20A series unit (autosampler, pump or detector) that is connected to the CBM-20A/CBM-20Alite.

This section describes connection of the PC and the CBM-20A/CBM-20Alite.

Reference
Each of the LC units must be connected to the CBM-20A/CBM-20Alite using an optical link cable before connecting the PC to the CBM-20A/CBM-20Alite. Refer to the Instruction Manual for the respective LC unit for connection details.

1. **Connect the PC to the CBM-20A/CBM-20Alite using a LAN cable.**
2. **Turn on the power to one of the LC-20A series units (autosampler, pump or detector) connected to the CBM-20A.**
3. **Use the VP key to change the display to the [CALIBRATION] mode, and press enter.**
4. **Toggle through the items with the func key, and enter the parameters.**

INTERFACE	2: ETH (ETHERNET)
USE GATEWAY	0 (default)
IP ADDRESS	192.168.200.99 (default)
SUBNET MASK	255.255.255.0 (default)
TRS MODE	3: LCsolution

5 **Turn the CBM-20A off.**

Turn the CBM-20A on again to enable the new parameter settings.

NOTE

- A Category 5 UTP straight cable and 100Base-TX-compatible switching hub are required to connect the PC to the CBM-20A/CBM-20Alite.
- Assign an IP address to the PC and CBM-20A/CBM-20Alite to connect them to the network. Consult with the network administrator before setting the IP address, subnet mask and default gateway when connecting to a trunk LAN.
- Enter the network parameters in the following table to connect the PC to the LC without connecting to a network.

	IP Address	Subnet Mask	Default Gateway	Group Name	System Name	Master Name
PC	192.168.200.101	255.255.255.0	Not used	-	-	-
CBM-20A CBM-20Alite	192.168.200.99	255.255.255.0	Not used	HPLC1	CBM1	-

- When connecting the PC to the CBM-20A/CBM-20Alite using an RS-232C cable, set [INTERFACE] at [CBM PARAMETER] to [1: RS (RS-232C)].
- The settings for communication between the PC and the CBM-20A/CBM-20Alite can also be set in Internet Explorer. Refer to the CBM-20A/CBM-20Alite Instruction Manual for details on Internet Explorer settings and communication settings.

2.1.2 Connect the PC to the SCL-10Avp

Connect the PC to the SCL-10Avp using an RS-232C cable.

This section describes the communication mode settings for the SCL-10Avp.

Reference

Before connecting the PC to the SCL-10Avp, connect each of the LC units and the SCL-10Avp using an optical link cable. For details on connections, refer to the Instruction Manual for the respective LC unit.

1 **Connect the COM port on the PC to the connector marked "RS-232C" on the rear panel of the SCL-10Avp using an RS-232C cable.**

NOTE

When connecting 2 or more SCL-10Avp to the PC, install an optional board on the PC to add on COM ports. For details on how to install and set up optional boards, refer to the Instruction Manual for the optional board.

2 **Turn the SCL-10Avp on.**

3 **Select [4 SYSTEM] in the [MENU] (main menu) sub-window.**

4 **Display the [COMMUNICATION SETTING] sub-window by pressing the F3 (NEXT) key, and enter the parameters as follows:**

CLASS-VP	5or6
InterFace	RS-232C
Baud rate	19200
Level	Enhanced

NOTE

- To set the parameters, move between items with the up/down arrow keys, and select setting items with the left/right arrow keys. Select the desired item, and press the [Enter] key to apply the selection.
- When the SCL-10Avp ROM version is earlier than Ver. 6.00, [5.X] is displayed for [CLASS-VP].

5 **Turn the SCL-10Avp off.**

Turn the SCL-10Avp on again to enable the new transmission parameter settings.

NOTE

- The SCSI interface can also be used on the SCL-10Avp as an add-on communication port. However, when connecting using an SCSI cable, you need SCSI interfaces on both the PC and the SCL-10Avp. Note that the total length of the cable in an SCSI connection is limited to 6 m. When 64-bit Windows is used, the SCSI interface cannot be used.
- Make setting as follows when connecting to a PC using an SCSI cable.
  (When connecting only one SCL-10Avp)
  1. Select [4 SYSTEM] in the [MENU] (main menu) sub-window.
  2. Display the [COMMUNICATION SETTING] sub-window by pressing the F3 (NEXT) key, and enter the parameters as follows:

CLASS-VP	5or6
InterFace	SCSI
SCSI ID	5
SCSI TERM	On

  3. Turn the SCL-10Avp off.
- When connecting multiple SCSI devices (SCL-10Avp or SPD-M10Avp), assign SCSI IDs to each SCSI device, and install a terminator on the furthest connected SCSI device. (When the furthest connected SCSI device has a built-in terminator, set the terminator to on.)
  For example, when connecting the SPD-M10Avp after the SCL-10Avp, turn the [SCSI TERM] parameter of the SCL-10Avp [Off] and set [SCSI TERM] on the SPD-M10Avp hardware to [On].

2.1.3 Connect the PC to the LC-2010

Connect the PC to the LC-2010 using an RS-232C cable.

This section describes the communications settings on the LC-2010.

1 **Connect the COM port on the PC to the connector marked "RS-232C" on the rear panel of the LC-2010 using an RS-232C cable.**

2 **Turn the LC-2010 on.**

3 **Enter [Login Pass-ID-No.], and press the F2 (OK) key.**

You are logged into the system.

4 **Press the [Sys] key.**

5 **Display the [COMMUNICATION SETTING] sub-window by pressing the F3 (COM. SET) key, and enter the parameter as follows:**

UNIT: PC

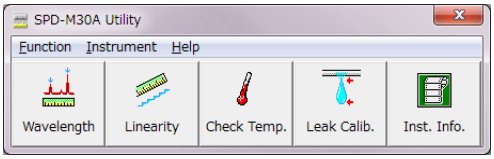
6 **Turn the LC-2010 off.**

Turn the LC-2010 on again to enable the new transmission parameter settings.

2.1.4 Group Settings for the SPD-M30A and CBM-20A/CBM-20Alite

Make group settings in order to be able to send a Start signal to the SPD-M30A from the system controller (CBM-20A/CBM-20Alite).

1 **Start up [SPD-M30A Utility].**



NOTE

Users are required to have the [Modify Instruments], [Run System Check] and [Modify System Check Settings] rights to execute the SPD-M30A network settings.

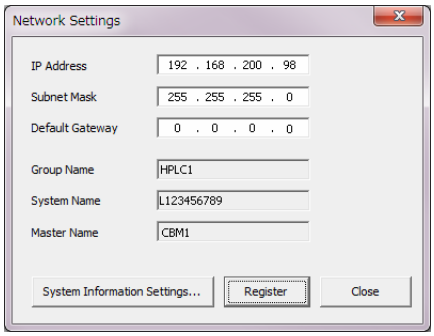
Reference

Refer to *"4.2 SPD-M30A Utility" P.46* for starting up [SPD-M30A Utility].

2 **On the [Instrument] menu, click [Network Settings].**

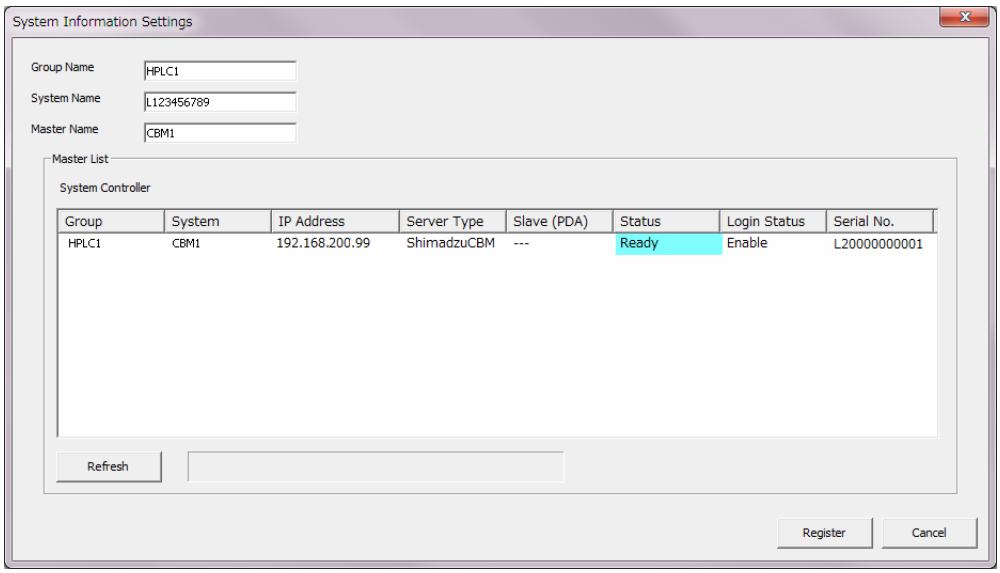
3 **In the [Network Settings] sub-window, click [System Information Settings]**

The [System Information Settings] sub-window is displayed.



4 **In the [Master List] area, select the CBM to make group settings for, and click [Register].**

Group settings for the CBM-20A/20Alite and SPD-M30A are now complete.



NOTE

- For information on the [SPD-M30A Utility] sub-window and Web window, refer to the SPD-M30A instruction manual.
- The start signal can be sent directly to the SPD-M30A by connecting it to the CBM-20A/CBM-20Alite using an event cable.

2.1.5 Group Settings for the SPD-M20A and CBM-20A/CBM-20Alite

Match the SPD-M20A and CBM-20A/CBM-20Alite group names, and set the master server name of the SPD-M20A so that it is the same as the CBM's system name to be able to send a Start signal to the SPD-M20A from the system controller (CBM-20A/CBM-20Alite),

This section describes how to make group setting for the CBM-20A and SPD-M20A.

	CBM-20A/20Alite	SPD-M20A
IP Address	192.168.200.99	192.168.200.98
Group Name	HPLC1	HPLC1
System Name	CBM1	M20A1
Master Name	-	CBM1
User ID	Admin (default)	administrator (default)
Password	Admin (default)	pdaadmin (default)

■ CBM-20A/20Alite Setup

Use the following procedure to enter the CBM-20A/20Alite group name and system name.

1 **Open Internet Explorer on the PC.**

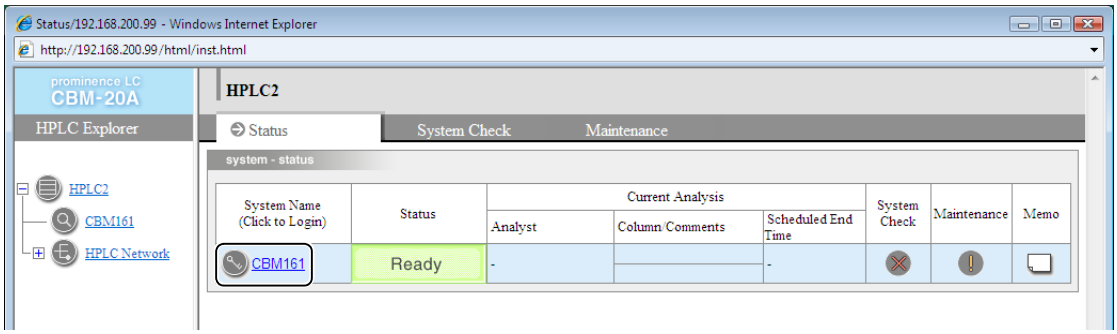
2 **Enter the IP address of the CBM-20A/20Alite ("192.168.200.99") in the address bar in Internet Explorer, and press Enter.**

The [CBM20A_Status] window opens.

3 **Click the system name in HPLC Explorer.**

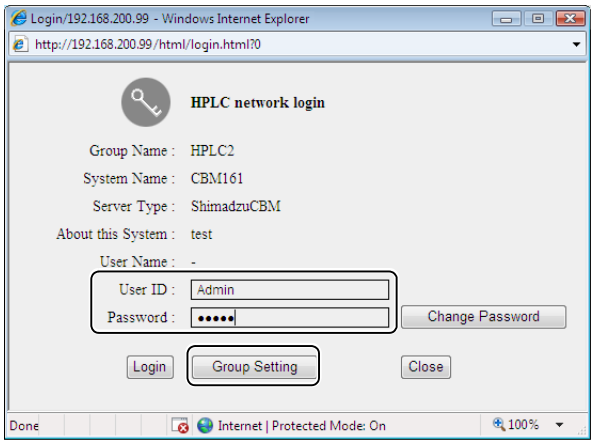
(The serial number of the CBM-20A is displayed as the default system name.)

The [Login] window opens.

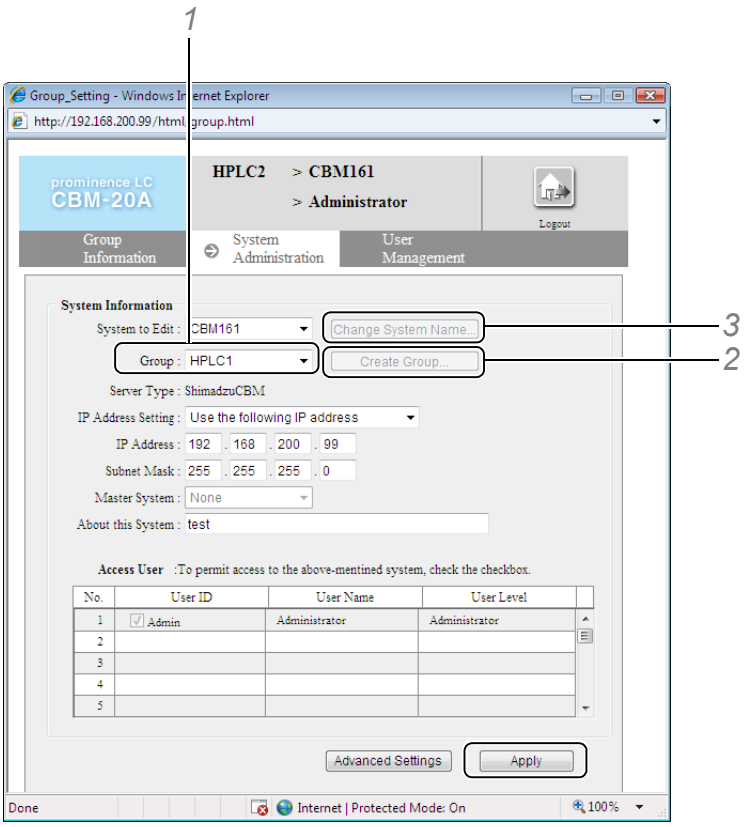


4 Enter "Admin" at [User ID] and [Password], and click [Group Setting].

The [Group Setting] window opens.



5 Enter the system information on the [System Administration] tab, and click [Apply].



1 Select [-] from the [Group] box.
2 Click [Create Group], and enter "HPLC1" at [Group Name].
3 Click [Change System Names], and enter "CBM1" at [System Name].

6 Click the (Logout) icon to close the CBM-20A window.

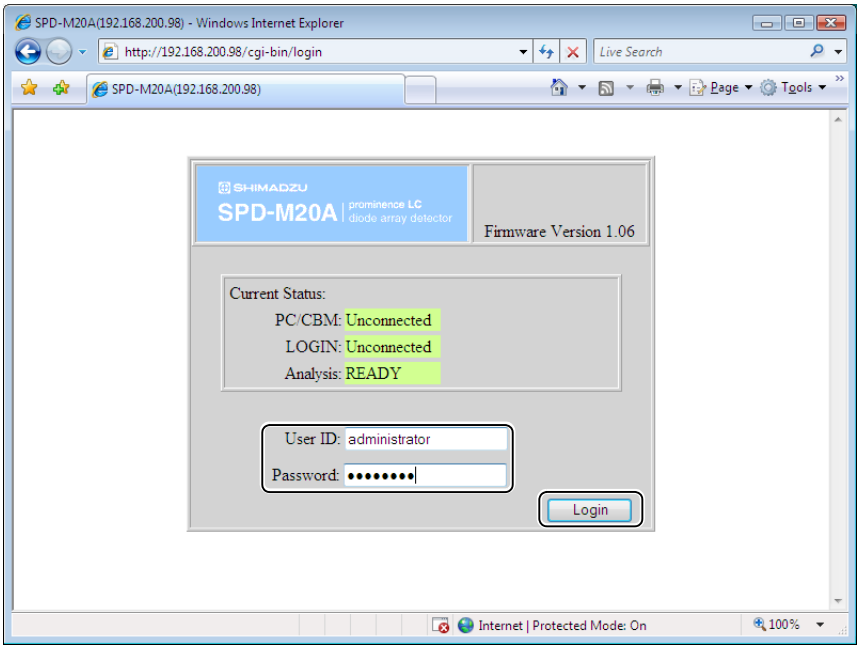
■ SPD-M20A Setup

Use the following procedure to enter the group settings for the SPD-M20A.

1 **Open Internet Explorer on the PC.**

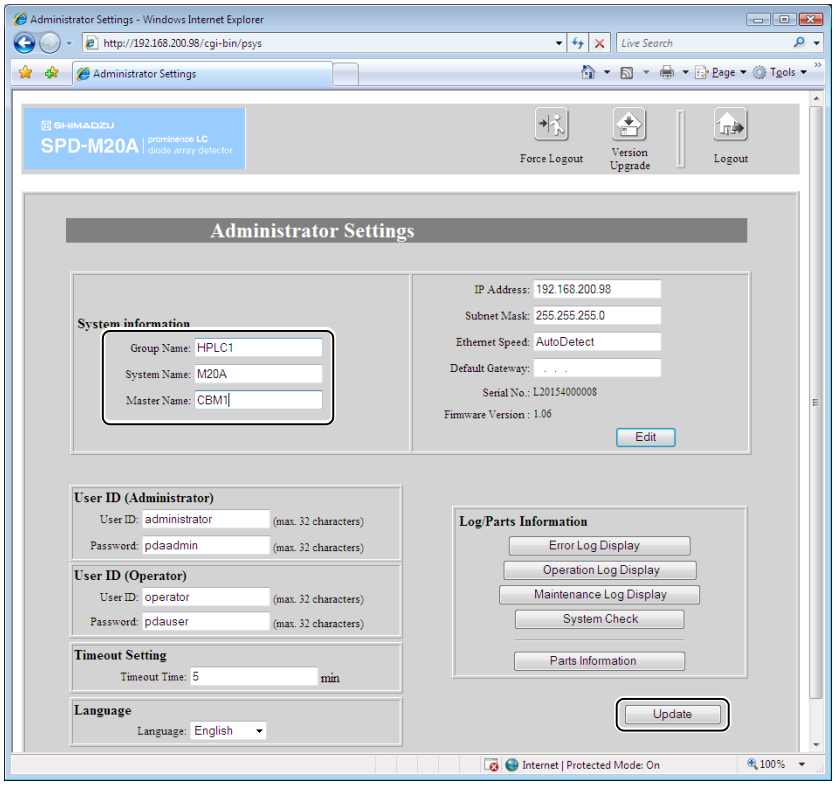
2 **Enter the IP address of the SPD-M20A ("192.168.200.98") in the address bar in Internet Explorer, and press [Enter] key.**

3 **Enter "administrator" at [User ID] and "pdaadmin" at [Password], and click [Login].**



4 Enter the system information items, and click [Update].

Group Name: HPLC1
System Name: M20A1
Master Name: CBM1



5 Click the (Logout) icon to close the SPD-M20A window.

This completes the setup on SPD-M20A.

When the SPD-M20A is linked to the CBM-20A/20Alite, the CBM-20A/20Alite system name is displayed at [PC/CBM] on the SPD-M20A's browser.

NOTE

- Refer to the CBM-20A/CBM-20Alite Instruction Manual for the details on CBM-20A/CBM-20Alite web windows.
- Up to 15 characters can be entered for the [Group Name] and [Master Name].
  (Alpha numerics, "-" (hyphen) and "_" (underscore) can be entered.)
- The start signal can be sent directly to the SPD-M20A by connecting it to the CBM-20A/CBM-20Alite using an event cable.

2.1.6 Connect the PC to the SPD-M10Avp

Connect the PC to the photodiode array detector SPD-M10Avp via the SCSI interface.

Install an SCSI interface board on the PC, and connect the PC and SCSI connector of the SPD-M10Avp using an SCSI cable.

NOTE

- In Windows 7, install the SCSI interface board driver.
- For details on the SCSI interface board to install on the PC, refer to the Instruction Manual for the SCSI interface board.
- Use the DIP switches on the SPD-M10Avp to set the SCSI ID and to turn the terminator on or off. When connecting multiple SCSI devices (SPD-M10Avp or SCSI-connected SCL-10Avp) on an SCSI line, assign SCSI IDs to each SCSI device, and install a terminator on the furthest connected SCSI device. (When the furthest connected SCSI device has a built-in terminator, set the terminator to on.) For details, refer to the instruction manual for the SPD-M10Avp.
- When 64-bit Windows is used, the SCSI interface cannot be used.

1. **Install the software without connecting the SPD-M10Avp on the SCSI interface.**
2. **Shut down Windows, and turn the PC off.**
3. **Connect the PC to the SPD-M10Avp using an SCSI cable, and turn the SPD-M10Avp on.**
4. **The SPD-M10Avp is initialized. Wait for initialization to end.**
5. **Turn the PC on, and start Windows.**
   The hardware wizard starts, and the driver is installed automatically.

2.1.7 Connect the PC to the ELSD-LTII

Connect the PC to the ELSD-LTII using an RS-232C cable.

1. **Connect the COM port on the PC to the connector marked "RS-232" on the rear panel of the ELSD-LTII using an RS-232C cable.**

NOTE

Use the straight serial cable.

2.2 Connect the PC to the GC Instrument

Connect the PC and the GC (GC-2010, GC-2014, GC-2025, GC-14B) using an RS-232C cable (interlink / cross) to set transmission parameters on the GC.

2.2.1 Connect the PC to the GC-2010, GC-2014 or GC-2025

This section describes how to connect the PC to the GC-2010, GC-2014 or GC-2025.

1. **Connect the COM port on the PC to the GC using an RS-232C cable.**
2. **Turn the GC on.**
   The GC starts up.
3. **Press the [FUNC] key on the LCD.**
   The [Function] sub-window opens.
4. **Press the [6] key, and then press the [ENTER] key.**
   The [System Configuration] sub-window opens.
5. **Press the [3] key, and then press the [ENTER] key.**
   The [Transmission Parameter] sub-window opens.
6. **Enter the parameters.**
   Protocol LEVEL 3
   Baud rate (bps) 115200

   NOTE
   To set the parameters, move between items with the up/down arrow keys, and select setting items with the left/right arrow keys. Select the desired item, and press the [Enter] key to apply the selection.
7. **Turn the GC off.**
   Turn the GC on again to enable the new transmission parameter settings.

2.2.2 Connect the PC to the Models other than GC-2010, GC-2014 and GC-2025

This section describes how to connect the PC to the models other than GC-2010, GC-2014 and GC-2025.

NOTE

A 3ch optical link interface (PC-57N) is required on the CBM-102 to connect the GC-14B to the AOC-20i. Connect connector 1 of the PC-57N and the connector marked [OPT LINK] on the power section for the AOC-20i using an optical link cable.

■ GC-14B

1. **Connect the COM port on the PC to the CBM-102 using an RS-232C cable.**
2. **Connect the connector marked [OPT LINK] on the rear panel of the CBM-102 and the connector marked [OPT LINK] on the rear panel of the GC using an optical link cable.**
   Exclusive optical link interfaces are required on the GC.

■ Other GC Instruments (Connecting only to the CBM-102)

Connect the COM port on the PC to the CBM-102 using an RS-232C cable.

3 System Configuration

Use the [System Configuration] sub-window to enter the instrument configuration of each system and register the instrument to the software. The system configuration is saved to the system configuration file for each system and does not need to be set each time the system is started. The instrument configuration information does need to be changed when the column is replaced or when the instrument configuration is changed.

Reference

Refer to "2.1 File Formats" in the System Users Guide for details on the system configuration file.

3.1 LC System Configuration

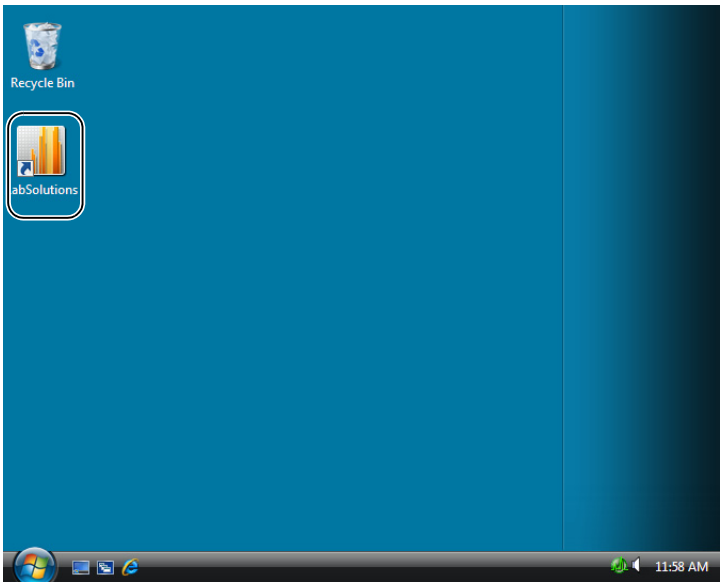
After the software has been installed, each instrument has been connected to the system controller, and the PC has been connected to the LC, register each instrument to be used for data acquisition to the software (system configuration).

This section describes how to register each instrument to the software.

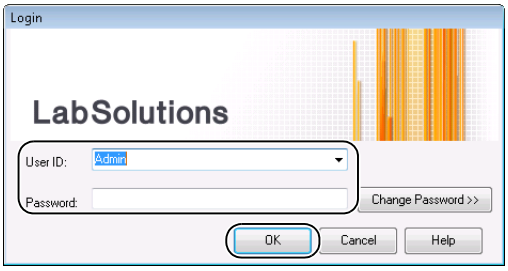
3.1.1 Register the System Configuration of Each Instrument

1. **Ensure that each instrument (pump, autosampler, column oven, and detector) is connected to the system controller using an optical link cable.**
2. **Turn each instrument on.**
3. **Turn the PC on, and start Windows.**

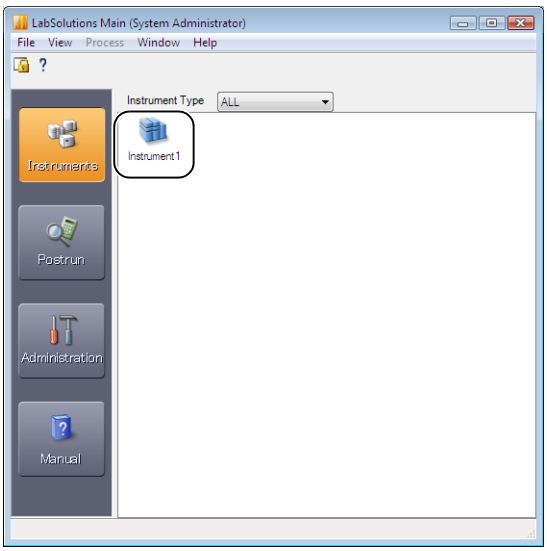
4 **Double-click the (Main Window) icon displayed on the Windows Desktop.**



5 **Enter "Admin" at [User ID], and click [OK].**



6 **Click the (Instruments) icon, and double-click the icon of the instrument to use.**

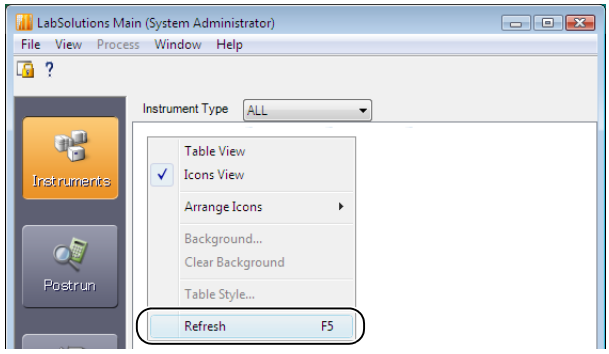


Reference

Refer to "Instrument Information" in Appendices of the System Users Guide for details on how to change instrument registration and instrument information.

NOTE

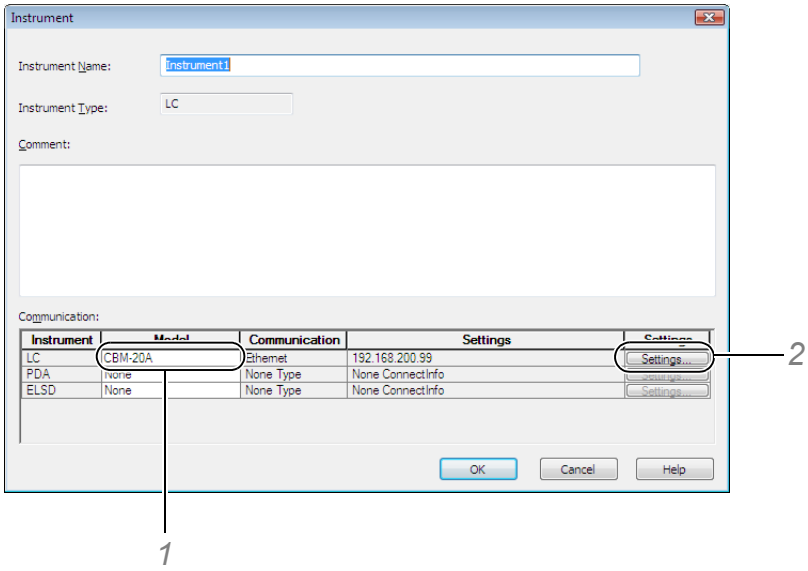
- Sometimes the instrument icon is not displayed immediately after the instrument is registered. If this happens, right-click on the instrument icon display area, and click [Refresh].



- A message is displayed if the system configuration information of the selected instrument differs from the actual instrument configuration.
  Refer to *"3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program" P.44* for details on displayed messages.

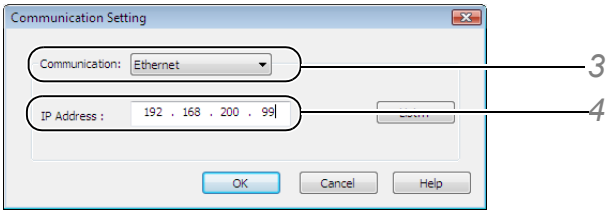
7 Click the (System Configuration) icon on the [Main] assistant bar.

8 Set each item, and click [OK].

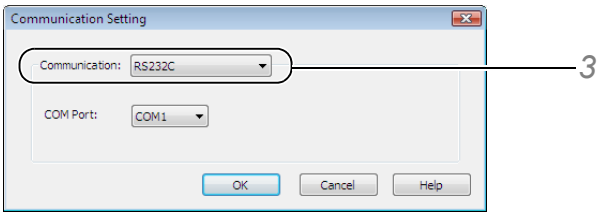


1 Select the type of system controller from the [Model] list.
2 Click [Settings].
  The [Communication Settings] sub-window opens.
3 Select the communication mode between the instrument and the PC from the [Communication] list.

Ethernet



RS232C

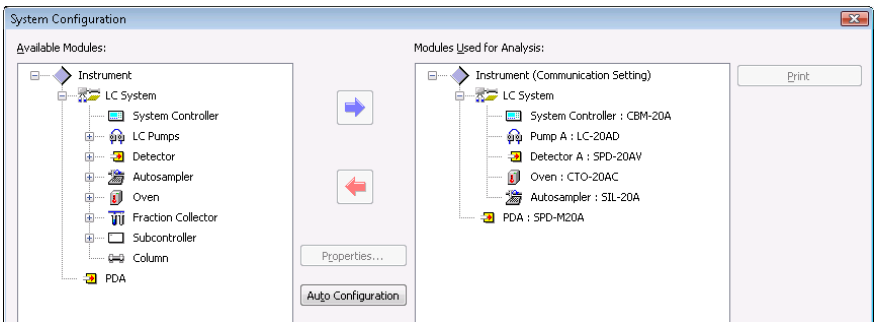


4 Enter [IP Address] when the connection method is Ethernet, enter [COM Port] when it is RS232C, and enter [SCSI Board] and [SCSI ID] when it is SCSI.

NOTE

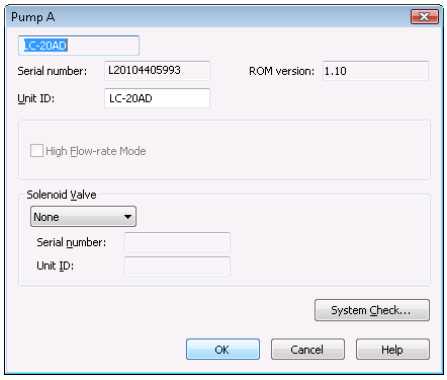
- Select SPD-M10Avp or SPD-M20A from the PDA [Model] list to register the photodiode array (PDA) detector.
- Select [Ethernet] as the communication mode, and enter the IP address that was set when the system was installed to register the SPD-M20A.
- Select ELSD-LTII from the ELST [Model] list to register ELSD-LTII. Select [RS232C] as the communication mode, and enter [COM Port].
- Select [RS232C(S)] in the [Communication Settings] sub-window when the SCL-10Asp ROM version is Ver.1 (CDD-6A compatible).

The icon of each instrument connected to the system controller is displayed in the [System Configuration] sub-window.
The photodiode array detector icon is displayed when the photodiode array detector is connected.



9 **Double-click the respective instrument icon at [Modules Used for Analysis].**

10 **Set the detailed information for the instruments.**



NOTE

- The serial number and ROM version of the instrument can be checked in the instrument [Properties] sub-window, and the connection settings of optional instruments can be set.
- Click [System Check] in the instrument [Properties] sub-window open the sub-window used to set the system check criteria used as the reference for frequency of use for instrument consumables.
- The instrument [Properties] sub-window can also be opened by selecting the icon of the instrument and clicking [Properties] in the [System Configuration] sub-window.

11 **When the instrument system configuration is complete, click [OK].**

The system controller emits a high-pitched link tone.
This completes the system configuration setup.

NOTE

- When connecting multiple LC systems, set the system configuration for other instruments by repeating the above procedure.
- The wavelength for the SPD-M10Avp, SPD-M20A, and SPD-M30A has been calibrated at the time of shipment. However, we recommend performing a wavelength check in the [PDA Utility] sub-window to check the operational qualification at the time of installation.
  For details, refer to *"4.3.2 Wavelength Check" P.50* for the SPD-M10Avp and SPD-M20A, or the instruction manual for the SPD-M30A.
- Be sure to perform wavelength calibration when using an SPD-M10Avp connected to CLASS-VP in the software. Refer to *"4.3.3 Automatic Wavelength Calibration" P.52* for details.

3.1.2 Change the System Configuration

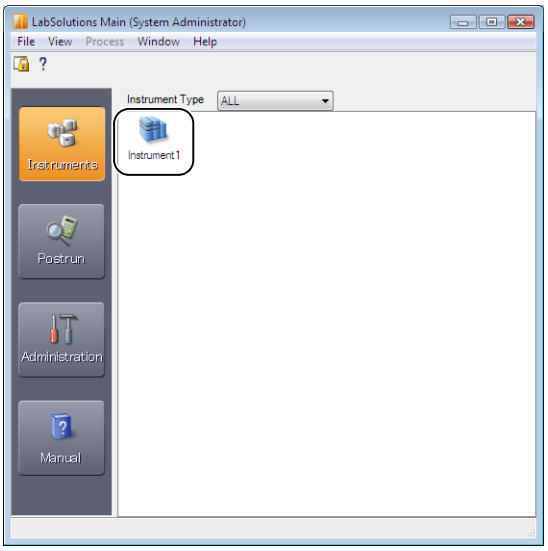
■ Use Only One of Two Detectors

The following example describes how to change the system configuration when using only detector (SPD-20A) of two detectors (SPD-20A and RF-20AXS).

1 **Turn the instrument (RF-20AXS) in use off.**

2 **Click the** 

(Instruments) icon on the icon bar in the [LabSolutions Main] window, and double-click the icon of the instrument in use.



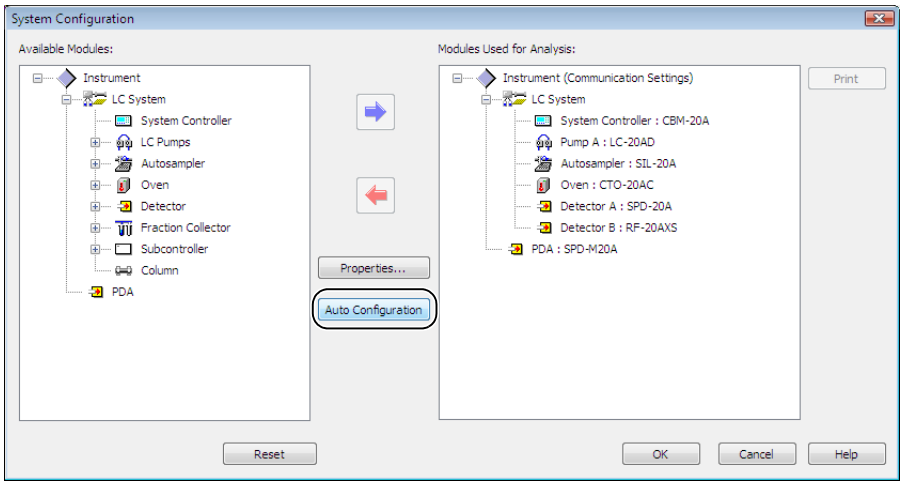
NOTE

A message is displayed if the system configuration information of the selected instrument differs from the actual instrument configuration.

Refer to *"3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program" P.44* for details on displayed messages.

3 **Click the**  **(System Configuration) icon on the [Main] assistant bar.**

4 Click [Auto Configuration] in the [System Configuration] sub-window.



[RF-20AXS] moves to [Available Modules] from [Modules Used for Analysis].

5 Click [OK].

The system controller emits a link tone.

This completes changing of the instrument configuration for using only the SPD-20A.

NOTE

When data acquisition is performed by only 1 detector when 2 detectors with the same system configuration information are turned on, select the checkbox of the detector used for data acquisition on the [Data Acquisition] tab in [Instrument Parameters View].

■ Add Detectors

The following example describes how to add on a new SPD-20A detector.

☞ Reference

Connecting the optical link cable and settings the communication parameters differ according to the instrument type and model. Refer to the Instruction Manual for the respective instrument for more details.

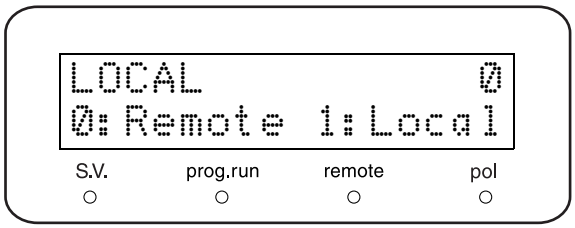
1 **Connect the system controller to the SPD-20A using the optical link cable.**

2 **Turn the SPD-20A on, and start the instrument.**

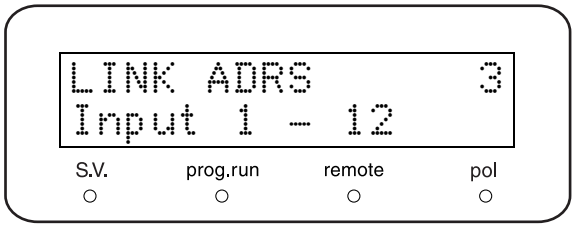
3 **Press the [func] key on the SPD-20A several times until [SYSTEM] is displayed, and press the [Enter] key.**

4 **Set each item, and press the [CE] key on the instrument.**

1 Make sure that [0: REMOTE] is set in the [LOCAL] sub-window.

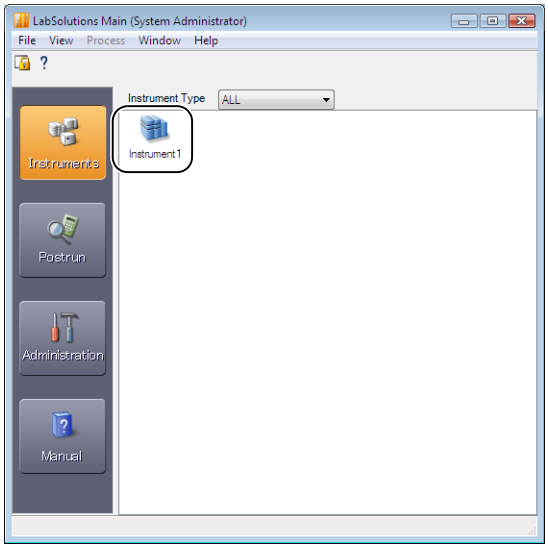


2 Enter the channel No. of the optical link cable inserted into the system controller in the [ADRS] sub-window, and press the [Enter] key.



5 **Turn on the other instruments such as the pump, autosampler, column oven, and detector.**

6 **Click the**  **(Instruments) icon on the icon bar in the [LabSolutions Main] window, and double-click the icon of the instrument in use.**



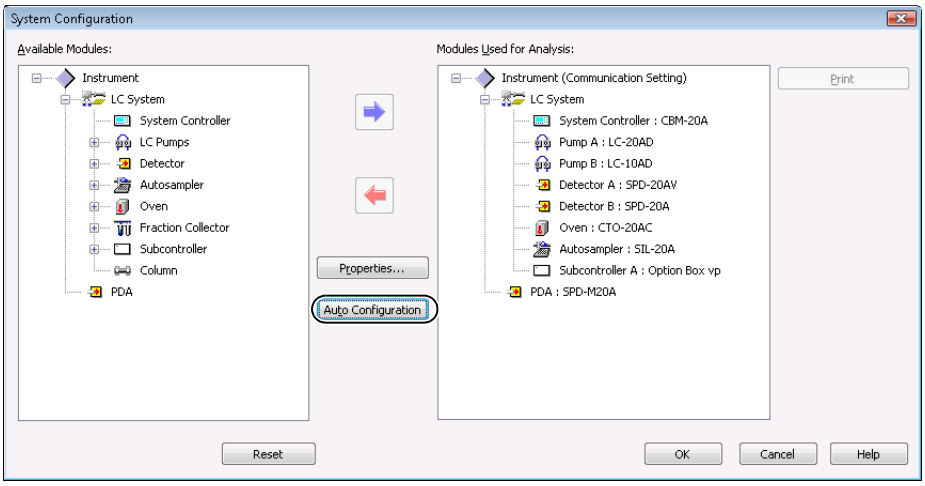
NOTE

A message is displayed if the system configuration information of the selected instrument differs from the actual instrument configuration.

Refer to *"3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program" P.44* for details on displayed messages.

7 **Click the**  **(System Configuration) icon on the [Main] assistant bar.**

8 Click [Auto Configuration] in the [System Configuration] sub-window.



[SPD-20A] moves to [Available Modules] from [Modules Used for Analysis].

9 Click [OK] in the [System Configuration] sub-window.

The system controller emits a link tone.

This completes adding on of an SPD-20A.

NOTE

- When 2 detectors are used, the detector with the lowest channel number in the detector [ADRS] sub-window is detector A and the detector with the highest channel number is detector B.
- Click the icon for the instrument to enter the detailed information for the added instruments in the displayed [Properties] sub-window.

3.2 GC System Configuration

After the software has been installed and the PC has been connected to the GC, register each instrument to be used for data acquisition to the software (system configuration).

This section describes how to register GC to the software.

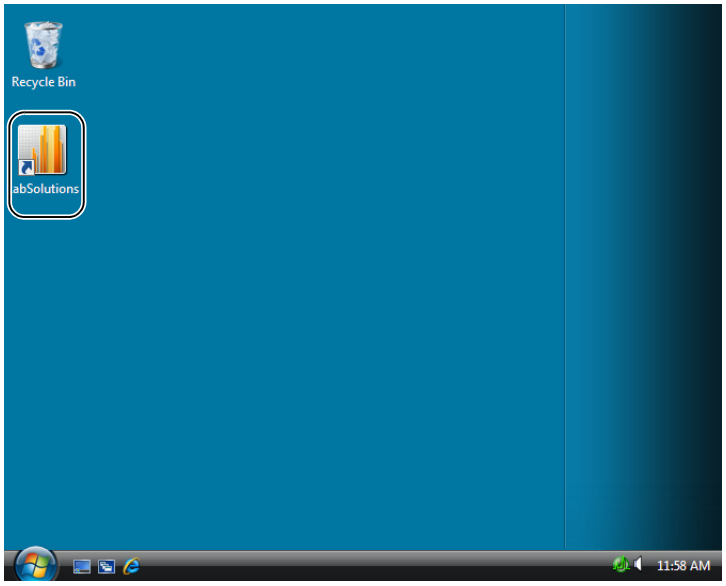
3.2.1 Register the System Configuration of Each Instrument

1 **Ensure that the GC is connected to the PC.**

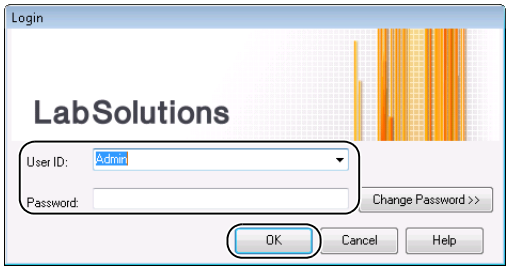
2 **Turn the GC on.**

3 **Turn the PC on, and start Windows.**

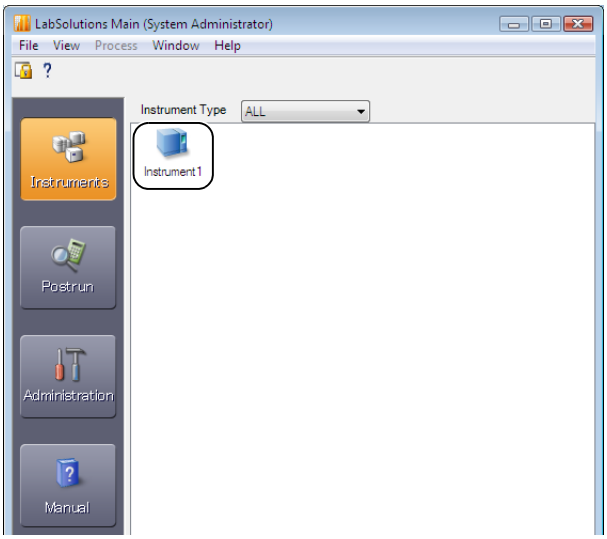
4 **Double-click the  (Main Window) icon displayed on the Windows Desktop.**



5 **Enter "Admin" at [User ID], and click [OK].**



6 Click the (Instruments) icon on the icon bar, and double-click the icon of the instrument to be used.

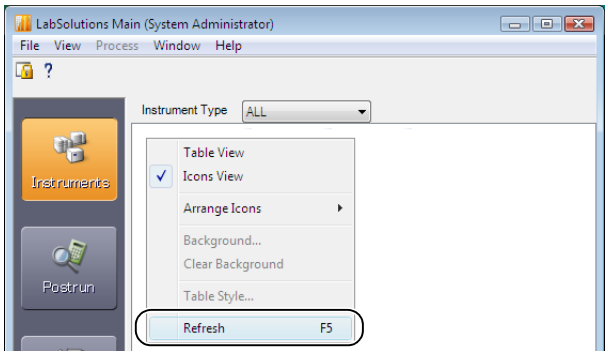


Reference

Refer to "Instrument Information" in Appendices of the System Users Guide for details on how to change instrument registration and instrument information.

NOTE

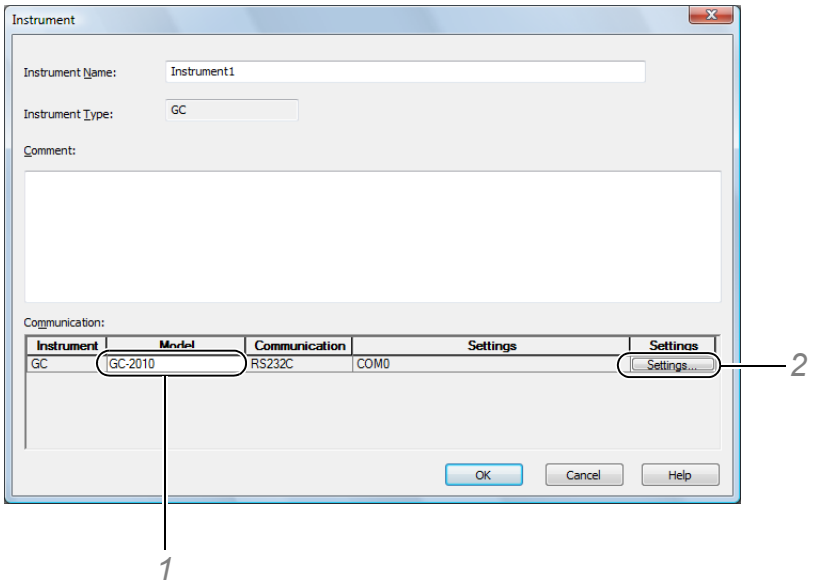
- Sometimes the instrument icon is not displayed immediately after the instrument is registered. If this happens, right-click on the instrument icon display area, and click [Refresh].



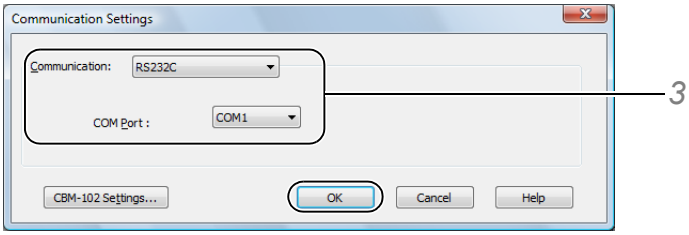
- A message is displayed if the system configuration information of the selected instrument differs from the actual instrument configuration.
  Refer to *"3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program" P.44* for details on displayed messages.

7 Click the (System Configuration) icon on the [Main] assistant bar.

8 Set the detailed information for the instrument, and click [OK].

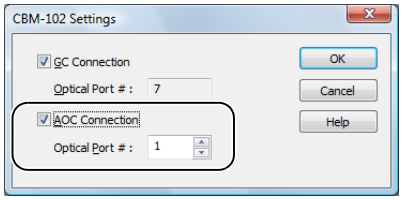


1 Select the type of instrument from the [Instrument] list.
2 Click [Settings].
3 Select the communication mode between the instrument and the PC from the [Communication] list, make setting at [COM Port], and click [OK].



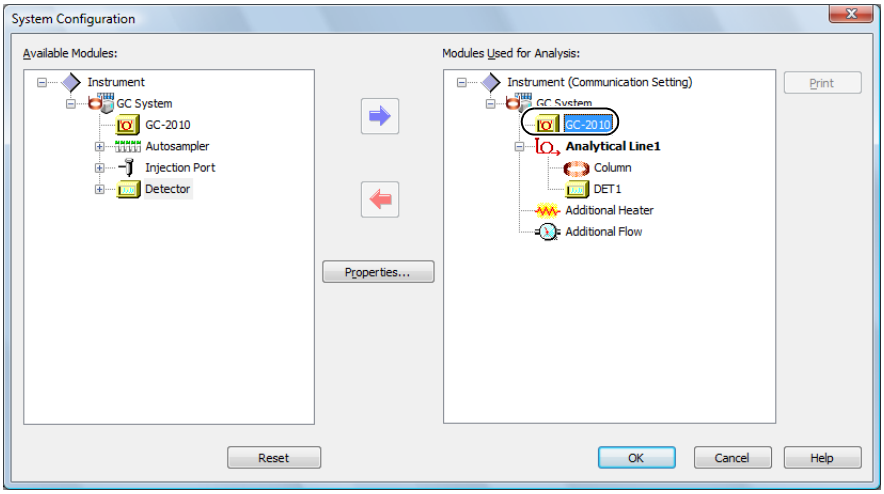
NOTE

To connect the GC-14B to AOC-20, click [CBM-102 Settings], and make settings in the [CBM-102 Settings] sub-window that is displayed.



All instruments that can be used on the GC unit are displayed, based on the installation information obtained from the GC, in the [System Configuration] sub-window.

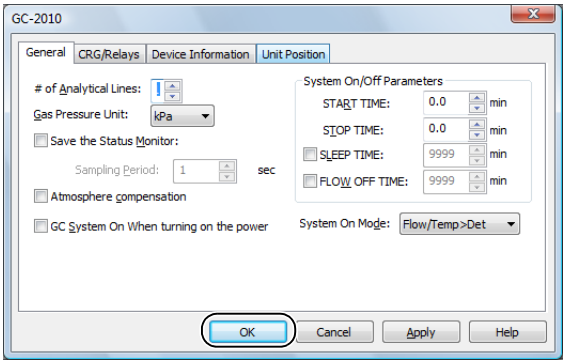
9 Double-click the GC icon at [Modules Used for Analysis], and set the detailed information for the instruments.



10 Set each item, and click [OK].

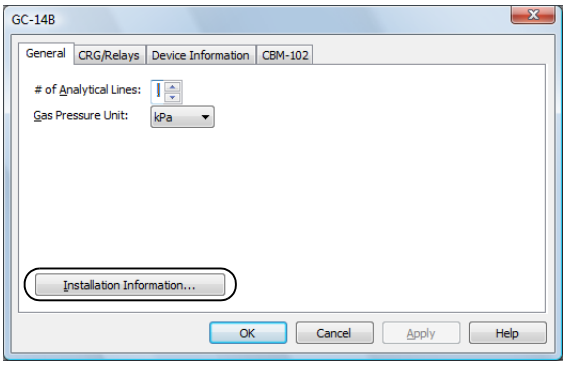
The following table lists frequently used parameters.

Parameter	Explanation	Default
# of Analytical Lines	Sets the number of analytical lines for the GC to be used in the software.	1
Gas Pressure Unit	Select a gas pressure unit to be used for displaying and setting the flow from the [Gas Pressure Unit] list.	kPa
Save the Status Monitor	Select this checkbox to record the GC monitor values (e.g. carrier gas pressure and column oven temperature) to the data file during data acquisition.	Deselected
START TIME	Sets the time up to start of temperature control after carrier gas has started to be fed. Substituting air in the flow path with carrier gas before the column oven temperature is raised prevents damage to the column. Set 3 to 10 (min).	0
STOP TIME	Sets the time up to end of temperature control after the GC has been stopped.	0
FLOW OFF TIME	Sets the time up to end of carrier gas flow after temperature control has been stopped. Deselect this checkbox if this parameter is not used. Set 30 to 60 (min).	0



NOTE

With the GC-14, click [Installation Information], and set an injection unit and a heater unit of detector in the [Installation Information] sub-window that is displayed.



11 Double-click the respective instrument icon at [Modules Used for Analysis], and set the detailed information for the instruments.

The [Properties] sub-window for each instrument opens.

NOTE

- All auto-sampler types that can be used on the GC unit are displayed since installation information for the auto-samplers cannot be obtained. Select the instruments that are used at [Available Modules], click , and move them to [Modules Used for Analysis].
- For details on the instrument [Properties] sub-window, click [Help] on the sub-window, and refer to the Help that is displayed.
- The instrument [Properties] sub-window can also be opened by selecting the icon of the instrument to be set and clicking [Properties] in the [System Configuration] sub-window.

12 When the instrument system configuration is complete, click [OK].

This completes the system configuration setup.

NOTE

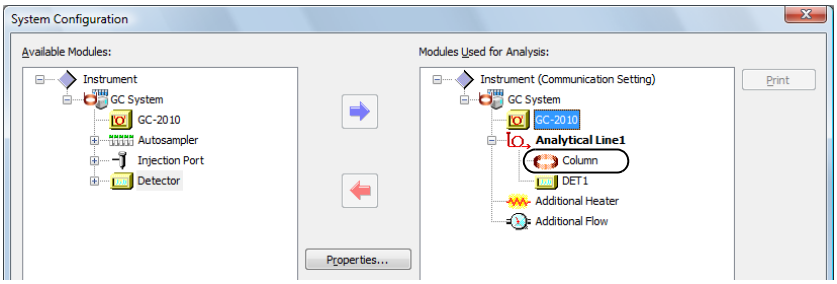
When connecting multiple GC systems, set the system configuration for other instruments by repeating the above procedure.

3.2.2 Change the Column to Be Connected

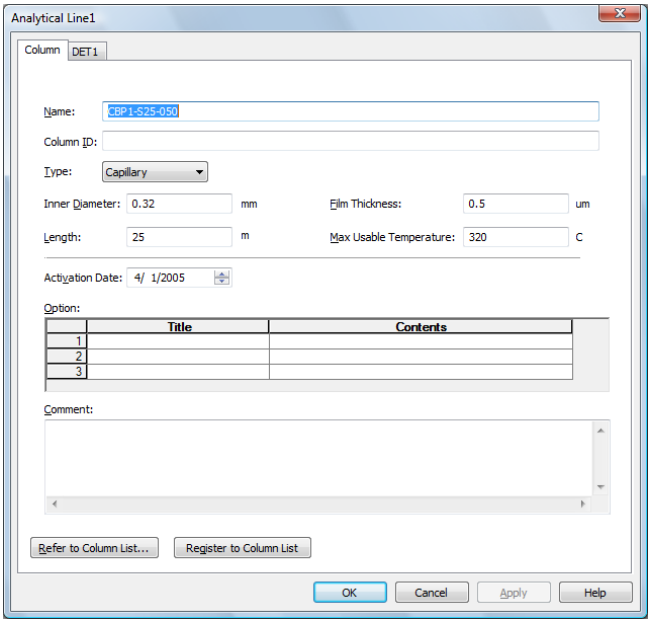
To change the column to be used for data acquisition, set the column information on the [Column] tab in the [System Configuration] sub-window.

1 **Click the (System Configuration) icon on the [Main] assistant bar.**

2 **Double-click the [Column] icon for the line to be changed at [Modules Used for Analysis].**



3 **Set each item, and click [Register to Column List].**



1. Enter the column name, type, inner diameter, length, film thickness of the liquid phase, and upper limit temperature.
2. If necessary, enter the start date for the column, option items and comments.

NOTE

To use the column registered in the column list, click [Refer to Column List], and select the column to be used for data acquisition.

4 **Click [OK] in the [System Configuration] sub-window.**

This completes the column replacement.

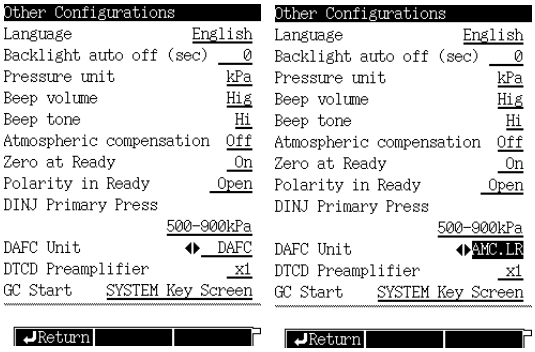
3.2.3 Change the DAFC Usage Mode on the GC-2014

This section describes how to set the dual AFC as a flow controller for makeup gas.

1 **Turn the GC-2014 on when the software is not linked to the GC (before startup).**

2 **Press the [FUNC] key on the GC-2014 to display [Function], and select [6 GC Configuration].**

3 **Select [9 Other Configurations] in the [System Configuration] sub-window.**



4 **Change [DAFC] to [AMC.LR] at [DAFC Unit].**

This sets the dual AFC to be a flow controller for makeup gas instead of the one for carrier gas.

NOTE

To set the flow rate of the makeup gas on the GC unit, select the channel (L or R) on the packed injection port on which the split flow lines of adapter were installed, on the sub-window where the [OPTION] key was pressed. Deselect the other channel that is not used.

5 **Click the  (Instruments) icon on the icon bar in the [LabSolutions Main] window, and double-click the icon for the instrument to be used.**

NOTE

A message is displayed if the system configuration information of the selected instrument differs from the actual instrument configuration.

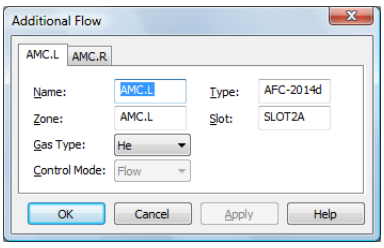
Click [OK] in the displayed message sub-window to open the [System Configuration] sub-window.

For more details on the displayed message, refer to *"3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program" P.44*.

6 **Double-click [Additional Flow] at [Available Modules], and add to [Modules Used for Analysis].**

7 **Double-click [Additional Flow] at [Modules Used for Analysis].**

8 **Set each item, and click [OK].**



9 **Click [OK] in the [System Configuration] sub-window.**

This completes setting of the dual AFC as a flow controller for makeup gas.

NOTE

To return the packed column to be used for data acquisition, dual AFC cannot be added to an analytical line as it is. Be sure to return setting on GC-2014, to [DAFC] at [DAFC Unit] before selecting AFC for an analytical line.

3.3 Instrument Is Not Recognized

Sometimes the instrument is not recognized when the software is opened and [Not Connected] is displayed as the LC status.

This section describes how to correct instrument recognition problems.

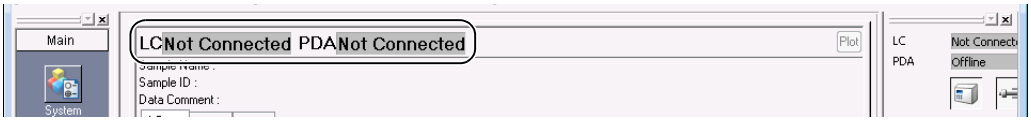
3.3.1 Check the PC and LC Connection

Check the following items when the LC is not recognized by the software:

- Connection between the PC and system controller
- Connection between the system controller and each instrument
- Order in which each instrument is turned on

■ Check the PC and System Controller Connection

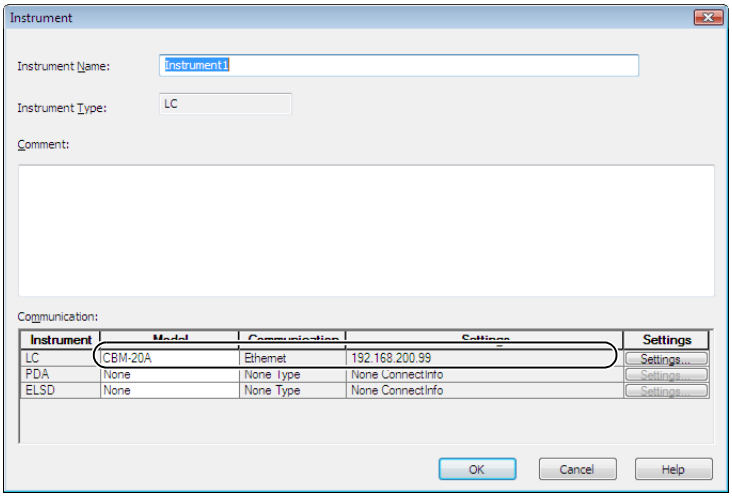
A possible cause for the LC status in the [Data Acquisition] window to be [Not Connected] is that the PC was not properly connected to the system controller. Check the following items.



CBM-20A/20Alite

Click [Instrument (Communication Setting)] at [Modules Used for Analysis] in the [System Configuration] sub-window, and check the [Model], [Communication] and [Settings].

Model:	[CBM-20A] or [CBM-20Alite]
Communication:	[Ethernet]
Settings:	IP address of CBM-20A or CBM-20Alite in use



NOTE

Check the IP Address and Subnet Mask on the CBM-20A/CBM-20Alite. Refer to *"2.1.1 Connect the PC to the CBM-20A/CBM-20Alite" P.9* for details on how to check the communication settings.

SCL-10Avp

Click [Instrument (Communication Setting)] at [Modules Used for Analysis] in the [System Configuration] sub-window, and check the [Model], [Communication] and [Settings].

Model:	[SCL-10Avp]
Communication:	[RS-232C]
Settings:	PC COM port No.

NOTE

Check the communication settings of the SCL-10Avp. Refer to *"2.1.2 Connect the PC to the SCL-10Avp" P.10* for details on how to check the communication settings.

LC-2010

Click [Instrument (Communication Setting)] at [Modules Used for Analysis] in the [System Configuration] sub-window, and check the [Model], [Communication] and [Settings].

Model:	[LC-2010]
Communication:	[RS-232C]
Settings:	PC COM port No.

NOTE

Refer to *"2.1.3 Connect the PC to the LC-2010" P.12* for details on how to check the communication settings.

■ Check the LC Instrument and the System Controller Connection

A possible cause for the LC status in the [Data Acquisition] window to be [Not Connected] is that the LC instrument was not properly connected to the system controller. Check the following items.

- The [REMOTE] indicator on the LC instrument
- Link address of the system controller

NOTE

- If the [REMOTE] indicator is not illuminated, check the optical link cables and connectors, and verify the [LOCAL] and [ADRS] communication settings of the LC instruments. Refer to *"Add Detectors" P.28* for details on how to check the communication settings.
- After the link addresses between the system controller and LC instrument are fixed, an error may occur when the connection with the software is established. After unlocking the link address on the system controller, establish the connection with the software again.

■ Check the Order in which the LC Instrument is Turned On

Depending on the order in which the instruments are turned on, the system controller may not recognize LC instrument. Turn the instruments on in the following order.

1. LC instrument
2. System controller
3. PC

3.3.2 Check the PC and PDA Detector Connection

If the photodiode array detector is not recognized by the software, check the following points:

- Connection between the PC and the photodiode array detector
- Connection between the system controller and the photodiode array detector
- Order in which each instrument is turned on

■ Check the PC and the Photodiode Array Detector Connection

A probable cause for the PDA status in the [Data Acquisition] window to be [Not Connected], is that the photodiode array detector is not properly connected to the PC.

Click [Instrument (Communication Setting)] at [Modules Used for Analysis] in the [System Configuration] sub-window, and check the [Model], [Communication] and [Settings].

SPD-M30A

Model:	[SPD-M30A]
Communication:	[Ethernet]
Settings:	IP address of SPD-M30A

SPD-M20A

Model:	[SPD-M20A]
Communication:	[Ethernet]
Settings:	IP address of SPD-M20A

SPD-M10Avp

Model:	[SPD-M10Avp]
Communication:	[SCSI]
Settings:	[SCSI Board] and [SCSI ID] of SPD-M10Avp

NOTE

- Depending on the order in which instruments are turned on, the photodiode array detector may not be recognized. If this happens, turn the photodiode array detector and the other instruments on, and then start the PC.
- Check the IP Address and Subnet Mask communications settings on the SPD-M20A. For details on how to check these settings, refer to "*"2.1.4 Group Settings for the SPD-M30A and CBM-20A/CBM-20Alite" P.12* for the SPD-M30A; *"2.1.5 Group Settings for the SPD-M20A and CBM-20A/CBM-20Alite" P.14* for the SPD-M20A; and *"2.1.6 Connect the PC to the SPD-M10Avp" P.18* for the SPD-M10Avp.

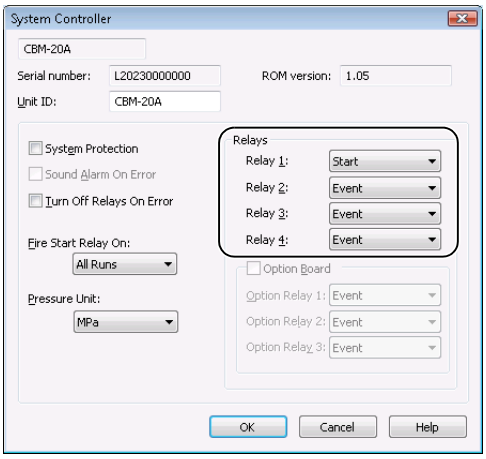
■ Check the System Controller and the Photodiode Array Detector Connection

When data acquisition using the photodiode array detector has not started even though [Ready] is displayed in the status in the [Data Acquisition] window, check the relay settings between the photodiode array detector and the system controller, and the following points:

- Event cable between the photodiode array detector and system controller
- Relay output terminal No. of system controller
- Relay settings of system controller

NOTE

- Click the [System Controller] at [Modules Used for Analysis] in the [System Configuration] sub-window and set the system controller [Relays] in the [System Controller] sub-window. Ensure that the relay output terminal setting is [Start] for the one the event cable is connected to on the rear of the system controller.



- SPD-M20A or SPD-M30A is not connected to the system controller using an event cable but the CBM-20A is registered to the detector as a master server. When data acquisition on the SPD-M20A or SPD-M30A does not start, check the detector communication settings. refer to *"2.1.4 Group Settings for the SPD-M30A and CBM-20A/CBM-20Alite" P.12* or *"2.1.5 Group Settings for the SPD-M20A and CBM-20A/CBM-20Alite" P.14* for details.
- The relay output terminal display differs according to the type of system controller. Refer to the Instruction Manual for the respective system controller for more details.

3.3.3 Check the PC and GC Connection

If the GC is not recognized by the software, check the following points:

- Communication settings between PC and GC (transmission parameters in GC instrument)
- Error display on the AOC-20 unit
- Order in which each instrument is turned on

■ Check the Communication Settings Between PC and GC

A probable cause for the GC status in the [Data Acquisition] window to be [Not Connected], is that the GC is not properly connected to the PC.

Click [Instrument (Communication Setting)] at [Modules Used for Analysis] in the [System Configuration] sub-window, and check the [Instrument], [Communication] and [Settings].

Instrument:	Name of the GC in use
Communication:	[RS-232C]
Settings:	PC COM port No.

NOTE

- Check the transmission parameters in GC instrument, refer to *"2.2 Connect the PC to the GC Instrument" P.19*.
- If the CBM-102 is in use, make sure that the CBM-102 and the GC are connected using an optical link cable.
- If the AOC-20 is in use, make sure that the [AOC Connection] checkbox is deselected on the [CBM-102 Settings] sub-window.

■ Check for Error Display on the AOC-20 Unit

If the AOC-20 is in use, and minus numbers or numbers prefixed with "E" are displayed on the unit, this means that an error has occurred. Cancel an error according to the AOC-20 Instruction Manual, and then restart the unit.

■ Check Order in Which Each Instrument Is Turned On

Depending on the order in which the instruments are turned on, the software may not recognize the instruments.

Turn the instruments on in the following order.

1. AOC
2. GC
3. PC

NOTE

If the CBM-102 is in use, first start the GC and then turn the CBM-102 on.

3.3.4 Messages Displayed during Start of the [Realtime Analysis] Program

This section describes messages that are displayed when the [Realtime Analysis] program is started.

■ [2206] The specified system configuration has been different with LC hardware configuration.

This message is displayed when the instrument configuration in the software differs from the current instrument configuration. It is also displayed the instruments are turned on in the wrong order or when an instrument is turned off while its connection is active.

Re-examine the system configuration of the instruments and the order in which they were turned on, and restart the software.

■ [241a] The hardware configuration for this method is different from the current instrument configuration. The configuration in the method is adapted to the current instrument configuration.

This message is displayed when the method file used for the previous data acquisition and the method file in the batch table differ from those in the current instrument configuration. The system configuration information saved in the method files must match the current instrument configuration to display the method files or execute realtime batch.

Click [OK] to match the system configuration information saved in the method files with the instrument configuration.

Click [Cancel] to stop loading the method files and the start of realtime batch.

Check the various parameters since defaults are entered to units in a different configuration when the system configuration information has been matched to the current instrument configuration.

4 System Maintenance

4.1 LC System Maintenance

4.1.1 Reset Consumables

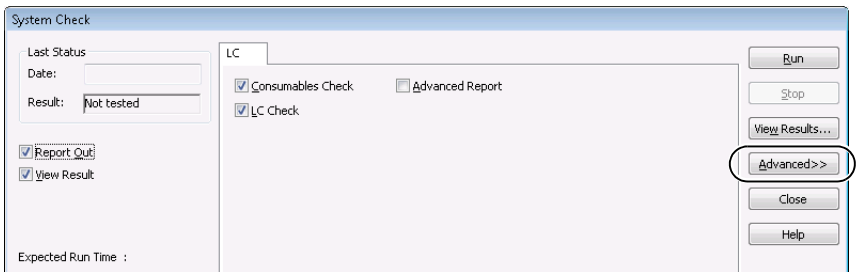
Reset records on usage rate records for consumables when LC unit consumables are replaced.

NOTE

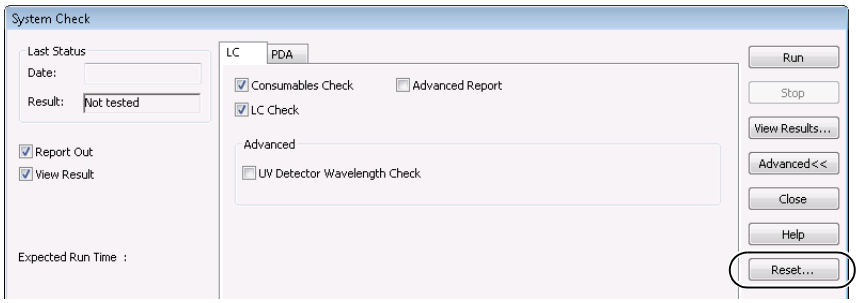
- ROM of version Ver.5.33 or later should be used for the SCL-10Avp.
- If an older version of the ROM is used for the SIL-10ADvp or the LC-10ADvp/10ATvp, the parameters should be initialized on the main unit.
- Use the PDA Utility to reset the usage time for the D2 lamp and W lamp on the photodiode array detector.

1 **Click the (System Check) icon on the [Main] assistant bar in the [Realtime Analysis] program.**

2 **Click [Advanced>>].**

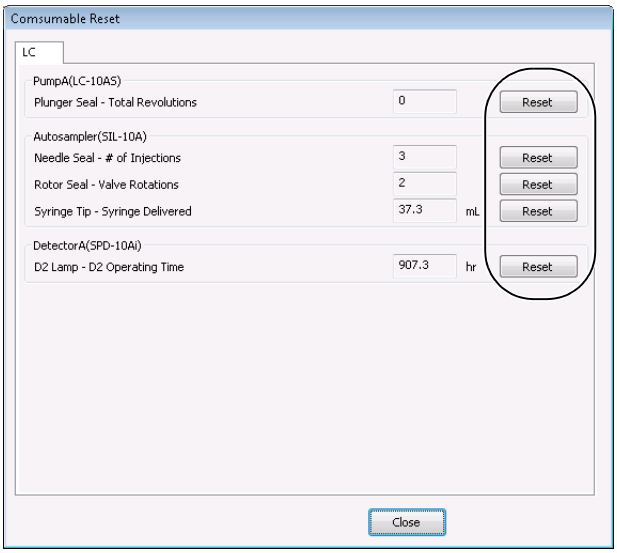


3 **Click [Reset]**



4 **Click the [LC] tab.**

5 **Click the [Reset] button for items that have been replaced.**



4.2 SPD-M30A Utility

Details on the SPD-M30AUtility are provided in the instrument instruction manual.

This section describes the startup procedure.

NOTE

The PDA detector must be configured with LabSolutions prior to open this utility.

If it is not configured, this utility cannot be opened.

Refer to *"3.1 LC System Configuration" P.21*.

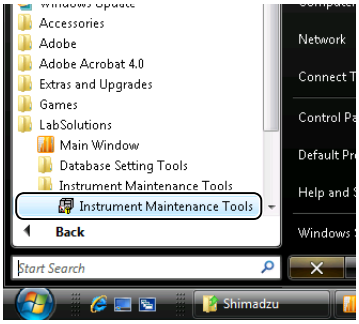
Reference

For details, refer to this utility help, or the instrument instruction manual.

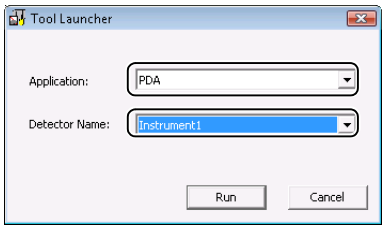
1 **Exit LabSolutions analysis.**

If the LabSolutions analysis program is running, exit the analysis program.

2 **Click the (Start) menu and click [All Programs] - [LabSolutions] -[Instrument Maintenance Tools] - [Instrument Maintenance Tools].**



3 Select the desired options in the [Tool Launcher] window.



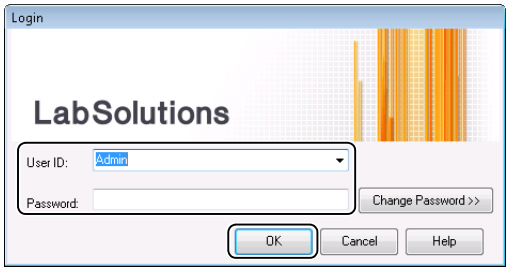
1. Select [SPD-M30A Utility] for [Application].
2. Select the analysis instrument that is connected to the instrument for maintenance for [Detector Name].

NOTE

When the analysis instrument that is connected to the instrument for maintenance is not displayed, check the system configuration. Refer to *"3.1 LC System Configuration" P.21*.

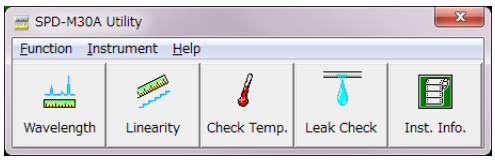
3. Click [Run].

4 Select a registered username from the [User ID] list, enter the password, and click [OK].

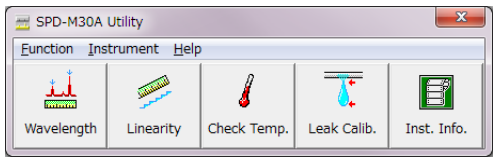


For exsample, the launcher window for SPD-M30A Utility is displayed.

Operator Privileges:



Administrator Privileges:



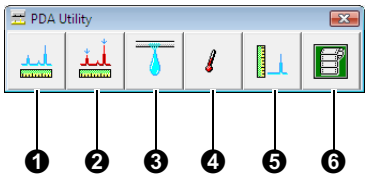
4.3 PDA Utility for SPD-M20A/M10Avp

Check and adjust the PDA (photodiode array) detector in the following cases.

When the detector is installed	Perform the wavelength check (D2/Ho). *
When a lamp is replaced	Perform automatic setting of the exposure time. Reset the total usage time for the lamp. Perform the wavelength check (D2/Ho). *
When a cell is replaced	Perform automatic setting of the exposure time. Perform the wavelength check (D2/Ho). *
When the detector is moved	Perform the wavelength check (D2/Ho). *
When the software is changed (to and from CLASS-VP)	Perform wavelength calibration. (SPD-M10Avp only)
When validation is performed	Perform the wavelength check (D2/Ho). * Check the leak sensor and the linearity and accuracy of absorbance.

* If the results of the wavelength check are unacceptable, perform automatic wavelength calibration.

Use the [PDA Utility] sub-window to perform maintenance on the photodiode array detector.



No.	Explanation
❶	Wavelength Check
❷	Wavelength Calibration
❸	Leak Sensor Check/Adjustment
❹	Cell Temperature Check
❺	Absorbance Accuracy Check/Calibration
❻	Instrument Information

NOTE

- These functions cannot be used simultaneously.
- Sometimes the liquid in the flow cell must be replaced with water when using the check and adjustment functions. Refer to the detector Instruction Manual for more details.
- [The Leak Sensor Check/Adjustment], [Cell Temperature Check] and [Absorbance Accuracy Check/Calibration] functions are exclusively for the SPD-M20A. These functions cannot be used when using the SPD-M10Avp.

4.3.1 Open the [PDA Utility] Sub-Window

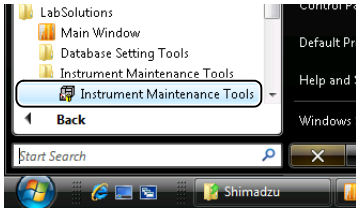
This section describes how to open the [PDA Utility] sub-window.

NOTE

- Do not use this utility if the [Realtime Analysis] program is already started.
- The PDA detector must be configured with LabSolutions prior to open the PDA Utility.
  If it is not configured, PDA Utility cannot be opened.
  Refer to *"3.1 LC System Configuration" P.21*.

1 **Exit the [Realtime Analysis] program if it is running.**

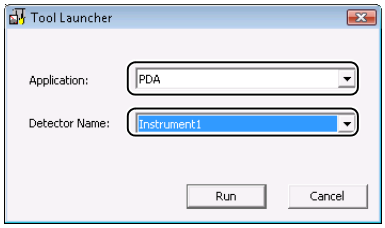
2 **Click the (Start) menu, and select [All Programs] - [LabSolutions] - [Instrument Maintenance Tools] - [Instrument Maintenance Tools].**



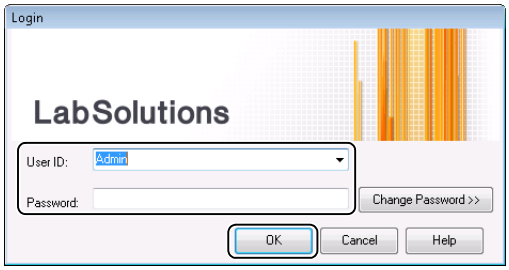
3 **Select [PDA Utility (SPD-M10Avp/M20A)] at [Application], and the connected analytical instrument that maintenance is to be performed at [Detector Name], and click [Run].**

NOTE

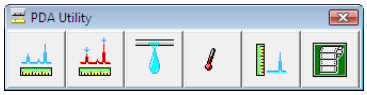
When the analysis instrument that is connected to the instrument for maintenance is not displayed, check the system configuration. Refer to *"3.1 LC System Configuration" P.21*.



4 **Select a registered user name in the [User ID] list, enter the [Password] and click [OK].**



The [PDA Utility] sub-window opens.



4.3.2 Wavelength Check

Two different checks are included in the wavelength check.

- Wavelength check using a deuterium lamp/holmium filter (D2/Ho)
- Wavelength check using a low-pressure mercury vapor lamp (Hg)

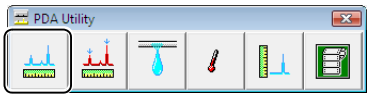
Use a deuterium lamp/holmium filter (D2/Ho) to perform the wavelength accuracy check during daily maintenance.

The two emission lines (486.0 nm and 656.1 nm) of the deuterium lamp and the two absorption maximums (287.6 nm and 360.8 nm) of the built-in holmium filter are measured to perform the wavelength accuracy check.

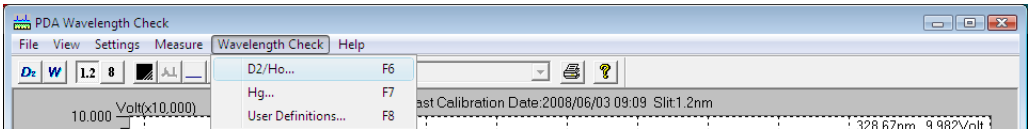
■ D2/Ho Wavelength Check

1 **Replace the liquid in the flow cell with water.**

2 **Click the**  **(Wavelength Check) button in the [PDA Utility] sub-window.**

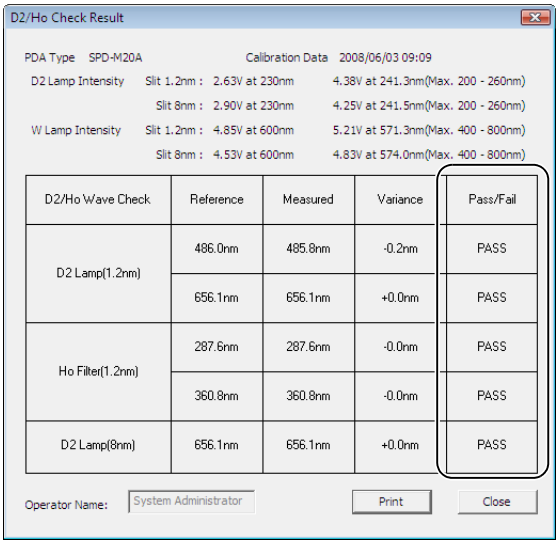


3 **Select [D2/Ho] in the [Wavelength Check] menu.**



The wavelength is checked, and the result is displayed on screen.

4 **Confirm that the check results indicate [PASS].**



5 **If [Fail] is returned for the check results, check the following items, and perform automatic wavelength calibration.**

- Was the liquid in the flow cell replaced with water during this wavelength check and at the previous automatic wavelength calibration?
- Weren't bubbles present in the flow cell during this wavelength check or at the previous automatic wavelength calibration?
- Did the deuterium lamp illuminate? (Verify that the LED located on the front of the detector is illuminated.)

NOTE

- Contact your Shimadzu representative if the results still indicate [FAIL] after performing the automatic wavelength calibration.
- All wavelength check functions that are not explained above are used by service personnel to make adjustments.

Reference

Refer to *"4.3.3 Automatic Wavelength Calibration" P.52* for details on the automatic wavelength calibration.

4.3.3 Automatic Wavelength Calibration

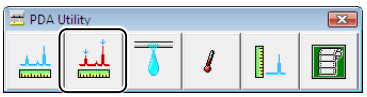
Use the [PDA Wavelength Calibration] window to adjust or check the automatic wavelength calibration, the automatic exposure time setting, the total usage time of the lamp, and the light intensity check.

■ Automatic Wavelength Calibration Procedure

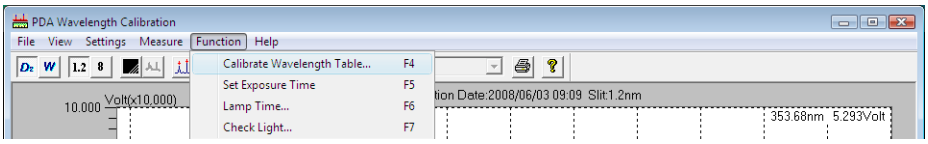
The automatic wavelength calibration function is used to determine the wavelength that enters into each light receiving element in the photodiode array. This function is not often used as the results of wavelength calibration are stored within the detector.

1 **Replace the liquid in the flow cell with water, and verify that no air bubbles are in the optical path inside the flow cell.**

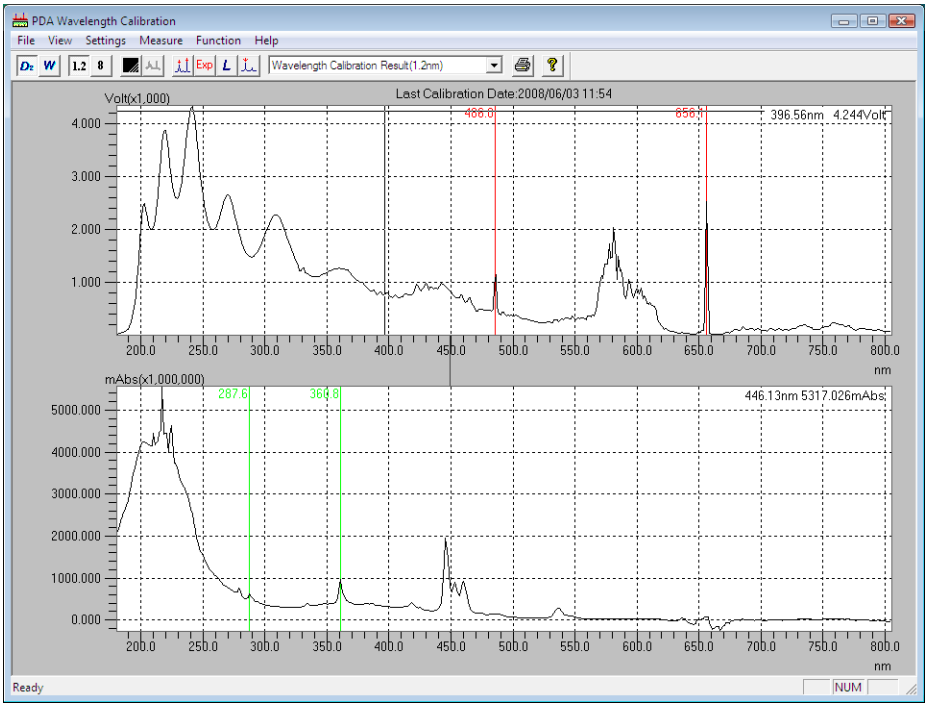
2 **Click the**  **(Wavelength Calibration) button in the [PDA Utility] sub-window.**



3 **Select [Calibrate Wavelength Table] in the [Function] menu.**



The wavelength is automatically calibrated.



NOTE

After automatic wavelength calibration, check the wavelength by performing a wavelength check.

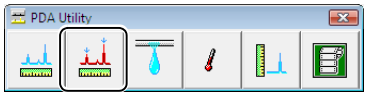
■ Set Exposure Time (Automatic)

Exposure time refers to the duration that the photodiode array elements accumulate electric charges. Proper exposure time values are important because if the value is set too long, the signal is saturated, and if it is too short, the S/N is poor. Use the automatic exposure time function to set proper values.

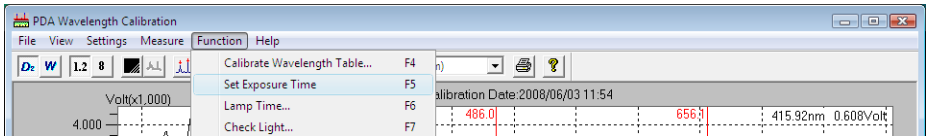
1 **Replace the liquid in the cell with water and verify that there are no bubbles in the cell before using the automatic exposure time function.**

NOTE
Air bubbles in the optical path inside of the cell will prevent proper values from being obtained.

2 **Click the**  **(Wavelength Calibration) button in the [PDA Utility] sub-window.**

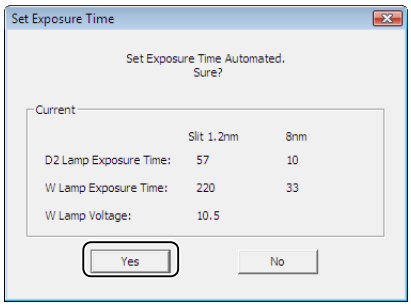


3 **Select [Set Exposure Time] in the [Function] menu.**



The exposure time is automatically set, and the result is displayed.

4 **Check the exposure time value, and click [Yes].**

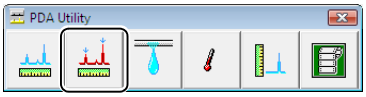


The exposure time and the voltage of the tungsten (W) lamp are set.

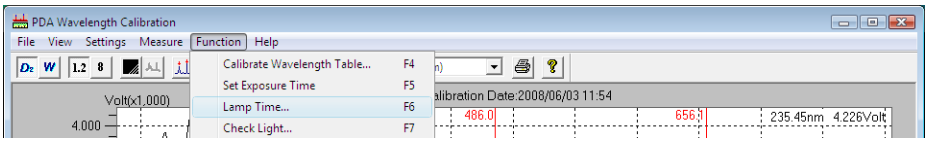
■ Total Lamp Usage Time

Check the total lamp usage time for the deuterium (D2) and tungsten (W) lamp individually. Reset the total usage time for the corresponding lamp when it is replaced.

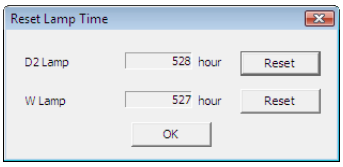
1 **Click the**  **(Wavelength Calibration) button in the [PDA Utility] sub-window.**



2 **Select [Lamp Time] in the [Function] menu.**



The total usage time of each lamp is displayed.



NOTE

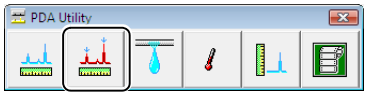
Clicking [Reset] for each lamp resets the total usage time.

■ Light Intensity Check

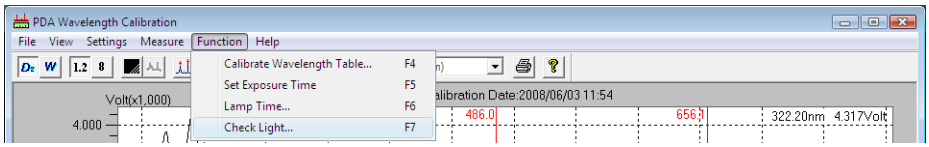
This function continuously scans and checks the light intensity of each lamp. Typically, the results of the light intensity check performed in the wavelength check are used. The light intensity check described in this section is used by service personnel when they perform detailed checks.

1 **Replace the liquid in the flow cell with water, and ensure that there are no air bubbles in the flow cell.**

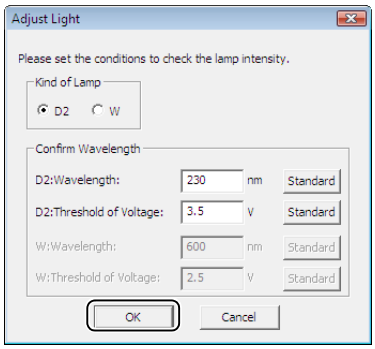
2 **Click the**  **(Wavelength Calibration) button in the [PDA Utility] sub-window.**



3 **Select [Check Light] in the [Function] menu.**



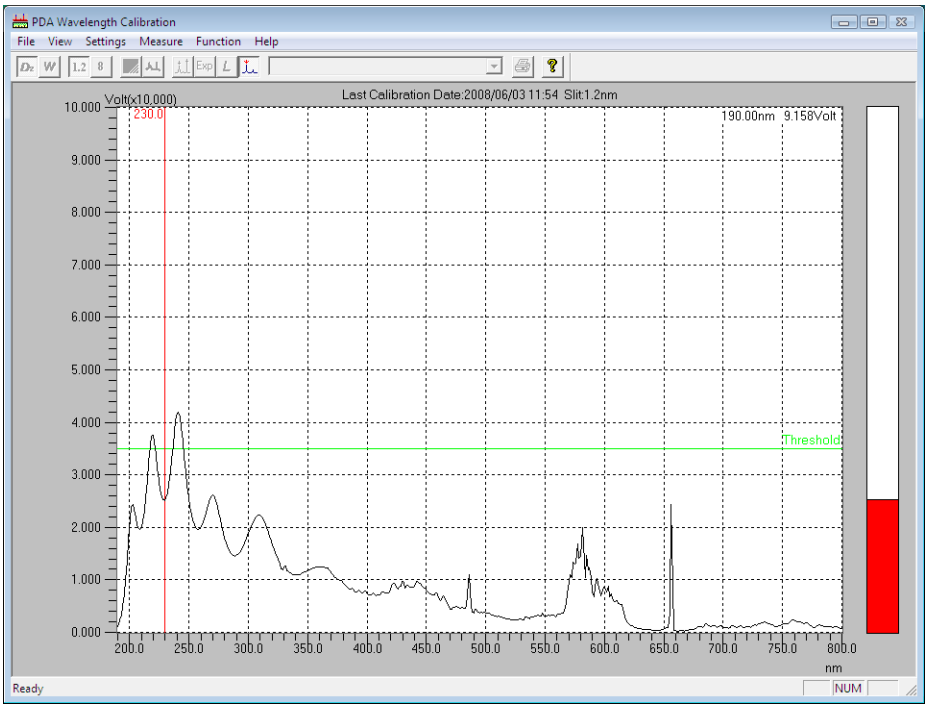
4 **Select the type of lamp in use, set the wavelength and voltage thresholds, and click [OK].**



NOTE

Click [Standard] to reset the values to their defaults.

The lamp intensity check begins, and the data is updated in real time through continuous scanning.



NOTE

The bar on the right changes color according to the voltage at a specified wavelength.

- Blue indicates that the voltage at the specified wavelength is higher than the threshold voltage.
- Red indicates that the voltage at the specified wavelength is lower than the threshold voltage. This signals that the light intensity of the lamp is insufficient. If the indicator bar is red, replace the lamp as necessary.

5 Select [Check Light] again in the [Function] menu to stop continuous scanning to check the light intensity.

4.3.4 Leak Sensor Check/Adjustment

Check operation of the leak sensor and adjust leak detection sensitivity in the [Leak Sensor Check] sub-window.

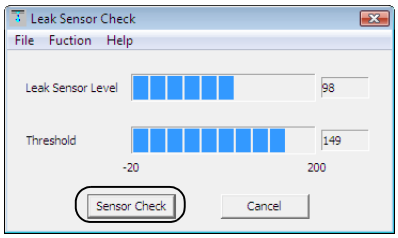
■ Check Operation of the Leak Sensor

Determine whether the leak sensor can properly detect leak.

1 **Verify that there are no leaks in the detector and confirm that the sensor output value is around 100.**

2 **Click the**  **(Leak Sensor Check/Adjustment) button in the [PDA Utility] sub-window.**

3 **Click [Sensor Check].**



4 **Open the front panel of the detector, and pour water into the leak sensor tray.**

If the sensor output exceeds the threshold, the sensor passes the check.

NOTE

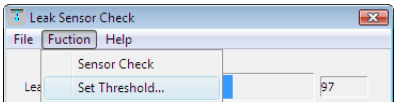
- If the sensor output does not exceed the threshold with water in the leak sensor tray, the detection sensitivity (threshold) must be adjusted.
- Click [Cancel] to stop the leak sensor check.

■ Adjust the Leak Sensor Threshold

Adjust the detection sensitivity if the sensor output does not exceed the threshold even after pouring water into the leak sensor tray. (threshold)

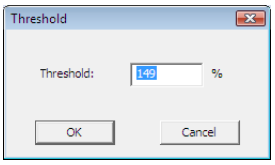
1 **Click the  (Leak Sensor Check/Adjustment) button in the [PDA Utility] sub-window.**

2 **Select [Threshold] on the [Function] menu.**



3 **Adjust the threshold value.**

Enter a value between 100 and the sensor output value obtained when the leak sensor is moistened with water.



NOTE

The lower the threshold value, the more sensitive the sensor becomes. If the value is close to 100, operational errors may occur due to changes in room temperature.

4.3.5 Temperature-Controlled Cell

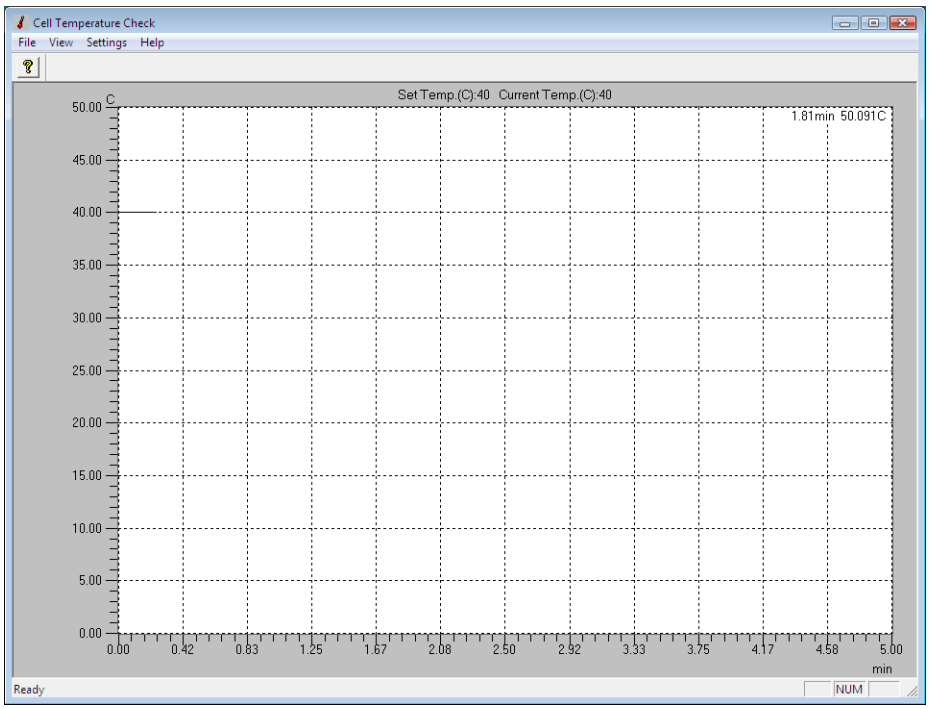
If a temperature-controlled cell is used for the flow cell, the plot of the actual temperature relative to the set temperature can be displayed in the [Cell Temperature Check] sub-window.

NOTE

Operation of the temperature-controlled cell can be checked only on the SPD-M20A.

■ Check the Temperature-Controlled Cell

1 **Click the (Cell Temperature Check) icon in the [PDA Utility] sub-window.**



NOTE

Select [Temperature] on the [Settings] menu to change the set temperature of the temperature-controlled cell.

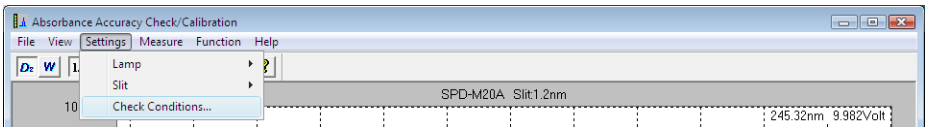
4.3.6 Absorbance Accuracy Check/Calibration

Check and calibrate the absorbance accuracy of the detector using a standard absorbance cell in the [Absorbance Accuracy Check/Calibration] sub-window.

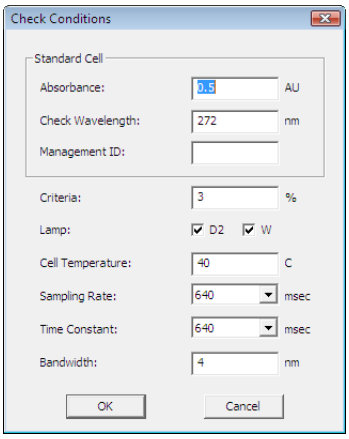
■ Check Absorbance Accuracy

1 **Click the  (Absorbance Accuracy Check/Calibration) icon in the [PDA Utility] sub-window.**

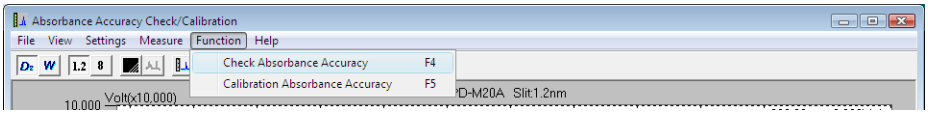
2 **Select [Conditions] on the [Settings] menu.**



3 **Enter the standard filter absorbance, measurement wavelength, acceptance criteria, and sampling conditions.**



4 **Select [Absorbance Accuracy Check] in the [Function] menu.**



5 **Replace the flow cell with a cell for measurement of absorbance accuracy.**

NOTE

Do not attach the optical filter for absorbance calibration (external standard filter).

6 **Click [Next], and adjust the absorbance without the filter attached (i.e. the background spectrum) to [0].**

7 **Attach the optical filter for absorbance calibration (external standard filter) to the cell, and click [Next].**

The absorbance of the cell with the filter attached is measured, and the absorbance accuracy check results are displayed.

NOTE

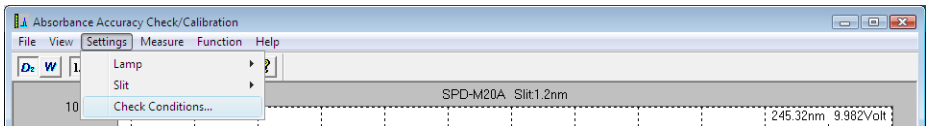
If the check results are unacceptable, absorbance accuracy calibration must be performed.

■ Calibrate Absorbance Accuracy

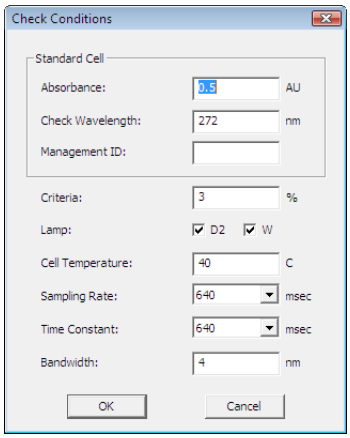
If the absorbance accuracy check results are unacceptable, calibrate the absorbance accuracy.

1 **Click the  (Absorbance Accuracy Check/Calibration) icon in the [PDA Utility] sub-window.**

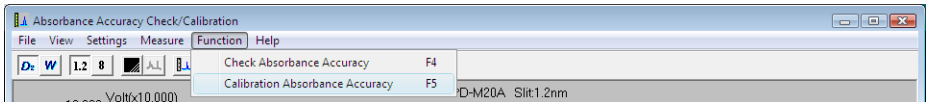
2 **Select [Conditions] on the [Settings] menu.**



3 **Enter the standard filter absorbance, measurement wavelength, acceptance criteria, and the sampling conditions at measurement of the standard cell.**



4 **Select [Absorbance Accuracy Check] on the [Function] menu.**



5 **Replace the flow cell with a cell for measurement of absorbance accuracy, and click [Next].**

NOTE
Do not attach the optical filter for absorbance calibration (external standard filter).

The absorbance without the filter attached (i.e. the background spectrum) is measured.

6 **Attach the optical filter for absorbance calibration (external standard filter) to the cell, and click [Next].**

The absorbance with the filter attached is measured, and parameters based on the measurement results are displayed.

7 **Confirm the displayed parameters, and click [Next].**

Absorbance accuracy is calibrated according to the displayed parameters.

NOTE
Click [Cancel] to discard the measurement results and use the original parameters.

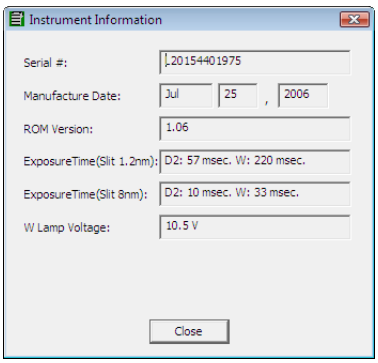
4.3.7 Instrument Information

The detector instrument information and ROM version can be reviewed.

■ Display Instrument Information

1 **Click the  (Instrument Information) button in the [PDA Utility] sub-window.**

Information about the detector including the serial number and the ROM version is displayed.



4.4 GC System Maintenance

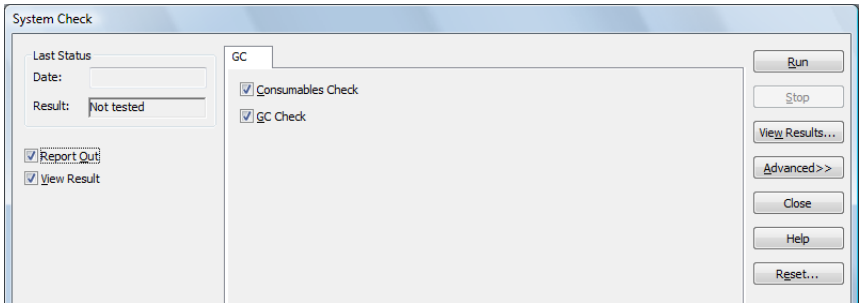
4.4.1 Reset the Number of Uses of the GC Septum and Glass Insert

The number of uses of the septum and glass insert can be reset on the software as well as on the GC. Reset the number of uses by one of the following methods when a septum or glass insert is replaced.

■ Reset with LabSolutions

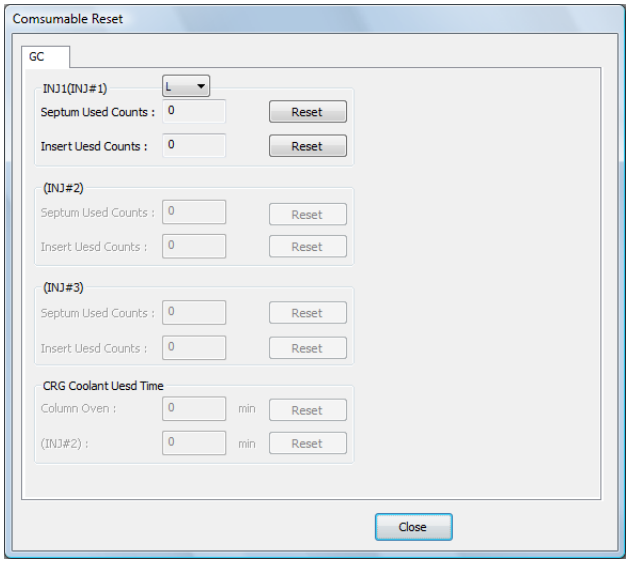
1 **Click the  (System Check) icon on the [Main] assistant bar in the [Realtime Analysis] program.**

2 **Click [Reset].**



3 **Click [GC] tab.**

4 **Click [Reset] for the replaced item.**



■ Reset on the GC Unit

1 **Select [3. Analysis Counter] in the sub-window where the [DIAG] key is pressed.**

2 **Move the cursor to the analysis counts of septum counter or that of insert counter, and select [Reset] on the PF menu.**

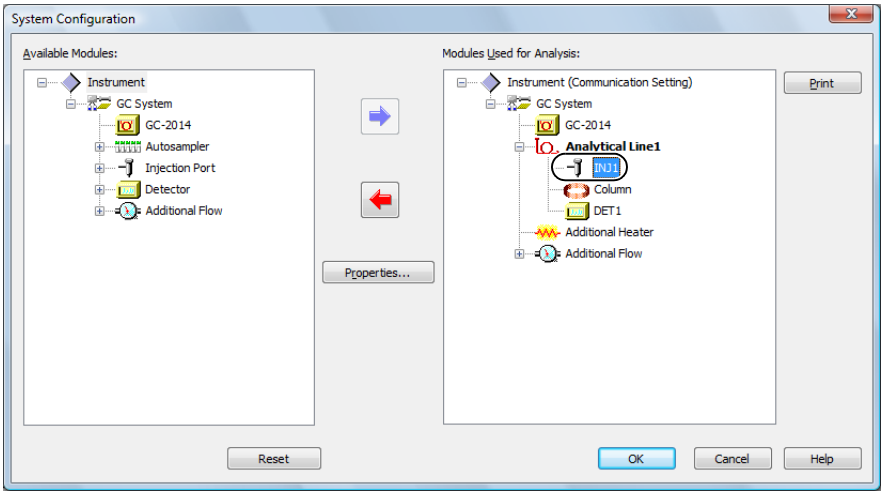
Rest the analysis counts.

4.4.2 Set the Estimated Replacement Time for Consumables

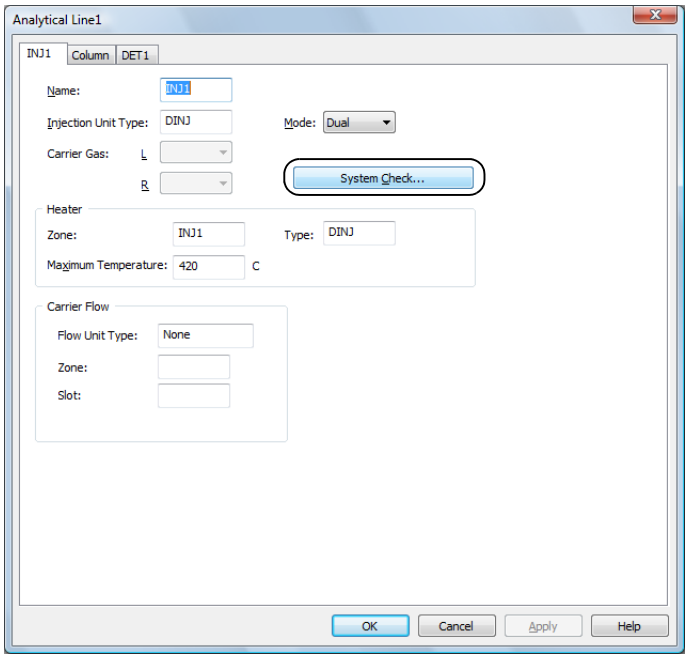
For the GC-2010, GC-2014 and GC-2025, replacement time (number of uses) of injection port septa and inserts can be preset.

1 **Click the  (System Configuration) icon on the [Main] assistant bar in the [Realtime Analysis] program.**

2 **Double-click [INJ] at [Modules Used for Analysis].**

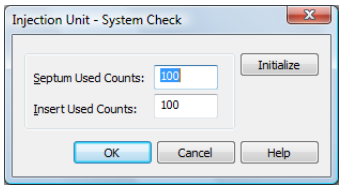


3 Click [System Check].



4 Set each upper limit of counts, and click [OK].

With the AOC-20, [Septum Used Counts] (estimated replacement time) is about 100. [Insert Used Counts] varies depending on each sample.



Index

R

S

T

U

W