228-97201A
Jun. 2022

System Controller
for Shimadzu Liquid Chromatograph

CBM-40 CL

Instruction Manual

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

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Introduction

Read this Instruction Manual thoroughly before using the product.

Thank you for purchasing this product.
This manual describes accessories, options and usage of this product.
Read this manual thoroughly before using the product and operate the product in accordance with the instructions in this manual.
The following instruction manuals are included with the product in booklet or PDF document. The PDF document is contained in the instruction manual CD-ROM (part number 228-97193-41).

Document Name	Document Number	Description
Instruction Manual (PDF)	228-97201	This book.
System Guide (PDF)	228-97194	This section describes the entire system. Optimization of system performance, analysis procedures, troubleshooting methods, validation, installation, etc. are described.
Safety Guideline (Booklet/PDF)	228-97195	Precautions for safe use are listed.

Be sure to read "Safety Instructions" before using this product. "Safety Instructions" includes precautions, product warranties, and after-sales service to ensure safe use.
The instructions for use must be kept with this product so that they can be viewed at any time.

IMPORTANT

- If the user or usage location changes, ensure that this manual is always kept together with the product.
- If this manual or a product warning label is lost or damaged, immediately contact your Shimadzu representative to request a replacement.
- To ensure safe operation, read all Safety Instructions before using the product.
- To ensure safe operation, contact your Shimadzu representative if product installation, adjustment, re-installation (after the product is moved), or repair is required.

Original version is approved in English.

Notice

- 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.
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- Illustrations in the instruction manual may differ from the products you use.
- Nexera and LabSolutions are trademarks of Shimadzu Corporation.
  Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries. iPhone and iPad are registered trademarks of Apple Inc. Other company names, product names, service marks and logos that are listed in the instruction manual are trademarks and registered trademarks of each company. TM and ® marks are not specified in the text.

Indications Used in This Manual

The following precautions are included in this manual depending on the magnitude of the hazard or damage:

Indication	Meaning
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in serious injury or possibly death.
⚠ 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.

The following symbols are used in this manual:

Indication	Meaning
Prohibition	Indicates an action that must not be performed.
Instruction	Indicates an action that must be performed.
Hint	Indicates information provided to improve product performance.
Reference	Indicates the location of related reference information.

Electromagnetic Compatibility

Descriptions in this section apply only to the following models:

• 228-65502-55 CBM-40 CL

This product complies with European standard EN61326, class B for electromagnetic interference (Emissions) and industrial electromagnetic environment (Immunity).

■ EN55011 Emissions (Electromagnetic Interference)

This is a class B product. When this product causes an electromagnetic disturbance to devices being used near this product, create an appropriate distance between those devices and this product in order to eliminate the disturbance.

Operating Nexera CL System

■ Intended Use

This system is designed to perform qualitative and quantitative analysis of target compounds in a sample matrix and can be used as a system controller of the liquid chromatograph for general in vitro diagnostic applications. However, only personnel who have received appropriate training on use of the system can use it for these purposes.
IVD

■ Calibration

A calibration curve should be generated for each analyte in appropriate methods. At least four out of six non-zero standards should meet the appropriate criteria, including the calibration standard lower than the assumed LOQ and the calibration standard at the highest concentration.

■ Quality Control

Implement quality control of the instrument by routinely measuring at least one each of four types of quality-control samples (a sample with a normal concentration level, a sample with a concentration level higher than normal as well as a sample lower than normal, and a blank sample). Check the selectivity/specificity in the matrix used for the actual sample, the accuracy, correctness, recovery rate, dynamic range, linearity, and lower limit of quantitation.
Based on these assessment results, check that the results are within the permissible range. If the assessment results are out of range, the measured data may be invalid, so do not use analysis results obtained from the instrument in question until it can be confirmed that it is functioning normally. When, for example, analyzing samples that contain complex sample matrices such as serum, plasma or urine, it may be possible to obtain stabilized data by using an appropriate pre-treatment or an internal standard.

Contents

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1 Overview

This instrument is a system controller for a Shimadzu liquid chromatograph. The system controller builds a system by connecting the solvent delivery unit, the autosampler, the column oven, the detector, etc., and performs analysis operations by controlling gradients, sample injection, data collection, etc. for each unit according to the analysis conditions of LabSolutions (chromatography data system). And it can monitor data for liquid chromatograph systems with various equipment configurations. This instrument basically controls the Nexera CL series.

1.1 Features

■ Network Functions

Correspond with Ethernet Connection.

The instrument has the network function normally. By connecting with Shimadzu liquid chromatograph data processing software (workstation), it can set up conditions, execute, monitor, and process analysis from the PC.

Equipment Monitoring Function by Smart Device

The operation status of the equipment, analysis progress situation, maintenance information, etc. can be monitored from a smart device such as an iPad via the network even where you are away from the system.

■ Number of controllable modules

8 units. When optical connenctor expansion option is used: 12 units.

1.2 Component Parts

This equipment consists of the following parts: Check the contents and quantity when unpacking.

No.	Part Name	Part No.	Q'ty	Remark
—	CBM-40 CL Main body	—	1	
—	Safety Guideline (Booklet)	228-97195*1	1	
—	Instruction Manual/ Nexera CL Series System Guide (CD-ROM)	228-97193-41	1	
1	LAN Cable	228-61083-41	1	2 m
2	Waste Liquid Tube Silicone	228-25162-03	1	
3	Drain Adapter	228-42204	1	
4	Drain OUT, STD	228-42205	1	
5	Drain OUT, CTO	228-42206	1	
6	L Type Joint	035-61561-12	1	
7	Straight Joint	228-28163	1	

* 1 It contains cautions for use regarding the instrument.

1.3 Optional Parts

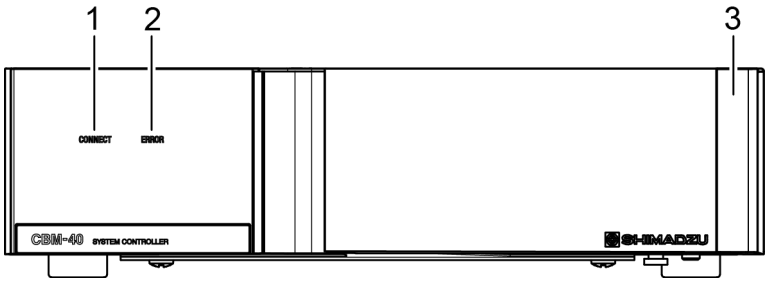
The optional parts that can be added to this instrument are shown below.
For details of optional parts, please contact our sales office/distributor or our designated service representative.

Option Name	Part No.	Features
Optical Cable 0.6 m	228-77025-06	It is an optical cable for communication between the system controller and each module.
Optical Cable 0.8 m	228-77025-08	
Optical Cable 1 m	228-77025-10	
Optical Cable 2 m	070-92025-52	
Optical Cable 3 m	070-92025-53	
Optical Cable 5 m	070-92025-54	
Remote Cable	228-28253-91	It is used for input or output of error / start / stop signals from other equipment. Reference "4.1 External Input/Output Terminal" P.48
Optical Connector Expansion Board	228-70481-41	Optical connectors can be added with this option. It can be mounted on CBM-40 CL and expands from standard 8ch to 12ch.

2 Parts Identification and Function

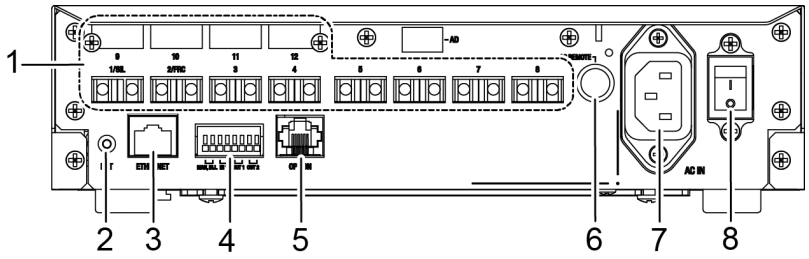
2.1 Front

NOTE There is no power button on the CBM-40 CL. Of the connected pumps, turn on/off the system power with the power button of the pump that has the lowest address number.



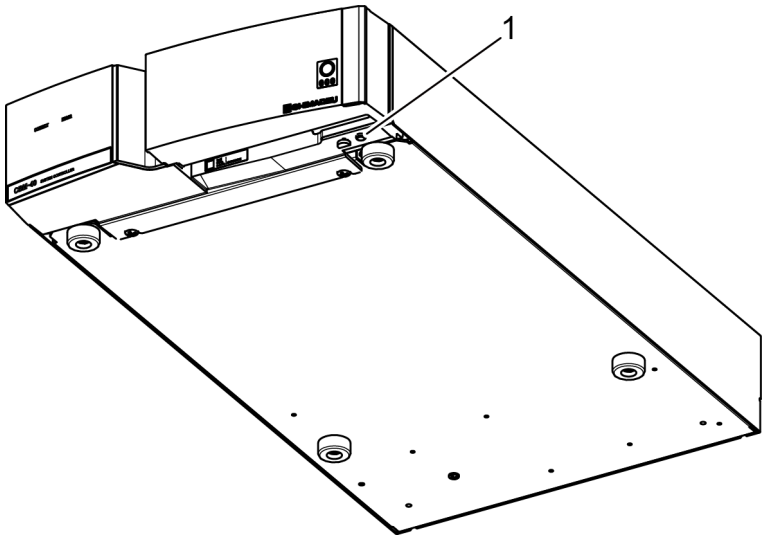
No.	Name	Description
1	[CONNECT] Lamp	It lights up when connected to the workstation.
2	[ERROR] Lamp	It lights up when an error occurs in the system.
3	Side Cover	Piping such as suction tubes can be passed through it. This cover is removable.

2.2 Back



No.	Name	Description
1	[REMOTE] Connector	It is used for connection with each module. NOTE Connect the autosampler to Ch.1.
2	[INIT] Switch	This is an initialization button to perform a factory reset. NOTE • All settings including device log, network setting, etc. are initialized to the factory default setting. • While holding down the [INIT] switch, turn the main power switch to "ON" and initialize it by holding the [INIT] switch for 20 seconds.
3	[ETHERNET] Connector	It is a terminal for connection with a PC.
4	External Input/Output Terminal	It is a terminal for connection with external equipment. Reference "4.1 External Input/Output Terminal" P.48
5	[OPTION] Connector	Not used.
6	[AC REMOTE] Connector	Not used in CL model.
7	[AC IN] Connector	It is a terminal for connecting the power cord.
8	Main Power Switch	Switch ON/OFF the main power supply of the equipment.

2.3 Bottom



No.	Name	Description
1	Drain Port	When a leakage occurs in the unit located on top of the CBM-40 CL, the liquid is discharged from this drain port. Please connect the drain adapter according to the system guide.

3 Web Screen

CBM-40 CL can be connected to the Web screen from the Web browser of the PC connected to the network. Web screen provides analysis monitoring, system controller environment settings etc.

> NOTE • On the Web screen, only two ovens are displayed (Oven C, D can not be displayed).

3.1 Connect to the Web Screen (Windows)

This section explains the case of Windows.

3.1.1 PC Specification

Describes the specifications of the PC necessary for accessing the Web screen.

> NOTE When building a network, please consult with the department to be used, the network management department of the business office, or the person in charge.

Item	Description
CPU	Intel Pentium E5300 (2.6 GHz) or more
Memory	Recommended 2 GB or more
LAN Adapter	100 Base-TX compatible
Display	1024×768 or more
OS	Windows XP / 7 / 8 / 10
Browser	Internet Explorer 6 to 9. Internet Explorer 10 and 11 are compatible view only
Language	English

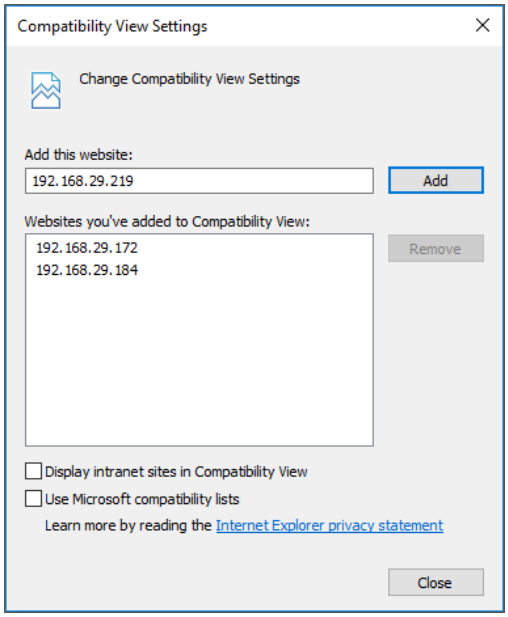
3.1.2 Browser Settings

In order to access the web screen of the system controller, several settings are required in the web browser.
The following shows how to set Internet Explorer 11 as an example.

1 Click [Compatible View Settings] from the [Tools] menu to register the URL of the system controller.

Hint

- For Internet Explorer 10 and 11, compatible view settings must be made.
- For Internet Explorer 6 to 9, compatible view setting is unnecessary, so skip this step.



2 Click [Internet Options] from the [Tools] menu of the browser.

The [Internet Options] screen appears.

3 Add the URL of this device to the zone of the local intranet.

1. On the Security tab, select Local intranet.
2. Click [Sites].
3. Click [Advanced] Settings.
4. In [Add this website to the zone], enter the URL of this device. (http://[IP address of this device])
5. Click [Add] and confirm that the URL of this device is displayed on [Web sites].

4 Set the security level.

1. On the Security tab, click Custom Level.
2. Set the items in [Setting] as follows

Item	Configuration
[ActiveX controls and plug-ins] - [Run ActiveX controls and plug-ins]	Enable

Item	Configuration
[ActiveX controls and plug-ins] - [Script ActiveX controls marked safe for scripting]	Enable
[Script] - [Active Scripting]	Enable
[Download] - [File Download]*1	Enable
[Miscellaneous] - [Access data sources across domains]	Enable

*1 Set it to save method file and sequence file on PC.

NOTE

- If software with pop-up blocking function (security software or browser toolbar) is installed on the PC, the Web screen may not be opened. Please disable popup blocking function for system controller URL. In the case of Internet Explorer, delete the temporary file after disabling the pop-up blocking function.
- When the history data of Internet Explorer increases, the updating of the Web screen slows down and the operation becomes unstable. Click [Settings] in [Browsing History], and set [Disk space to use] to '100' MB.
- If [Use a proxy server for your LAN] is checked on the [LAN settings] on the [Connections] tab, please check [Bypass proxy server for local address], or click [Advanced] settings and add the URL of this device to [Exceptions].
- Avoid continuous operation by opening three or more web screens.
- Do not press shortcut keys such as "F5" (update) or "F11" (full screen display). An error may occur or display on the screen may be lost.

Hint

- When browser script errors occur, the screen update stops. By checking [Browsing] - [Display a notifications about every script error] in Settings on the Advanced tab, cause of the error can be easily identified when an error occurs.
- To print the display contents of the screen such as maintenance information and device configuration, press the "Ctrl" + "P" key.
- When printing the contents of the Web screen, check [Page Setup] - [Print Background and Color Image] in the [File] menu.

3.1.3 Display Web Screen

Enter the following URL in the browser.
http://(IP address of this device)/html/

3.2 Connect to the Web Screen (iPad)

This section explains operation with an iPad.

3.2.1 iPad Specification

Specifications that checked the operation are shown below.

Item	Description
Model	Wi-Fi model
OS	iOS8～11
Browser	Safari
Language	English

3.2.2 Preparation

Add a wireless LAN adapter (Wi-Fi) to the same network as this device, and make the iPad ready for connection.

NOTE
- When building a network, please consult with the department to be used, the network management department of the business office, or the person in charge.

3.2.3 Display Web Screen

Enter the URL of this device in the browser.
http://(IP address of this device)/html/

Hint By registering the Web screen on the home screen, the Web screen can be displayed just by tapping the registered icon. For details, refer to the instruction manual attached to iPad.

3.2.4 Notes on Operating the iPad

Describes notes on displaying web screen from iPad.

■ About Automatic Lock Function

The web application's operation may become unstable when locked due to the automatic lock function of the iPad. In that case, turn off the automatic lock function by the following procedure.

1 **Click the setting icon from the iPad's home screen.**
Select "General" on the setting screen.

2 **Select "Auto lock" in General setting.**
In the automatic lock setting screen, select "OFF".

■ About Continuous Operation

If connecting to the Web screen for a long time from the iPad, the operation of the iPad may become unstable. When using continuously, please note the following points.

NOTE

- Please close all screens of Safari about once a day.
- Avoid continuous operation by opening three or more operation screens. Normally open the "Group Monitor" screen and "Device Monitor" screen one by one and use them.
- If the operation of the iPad becomes unstable, turn off/on the iPad.

■ About Safari's Cache

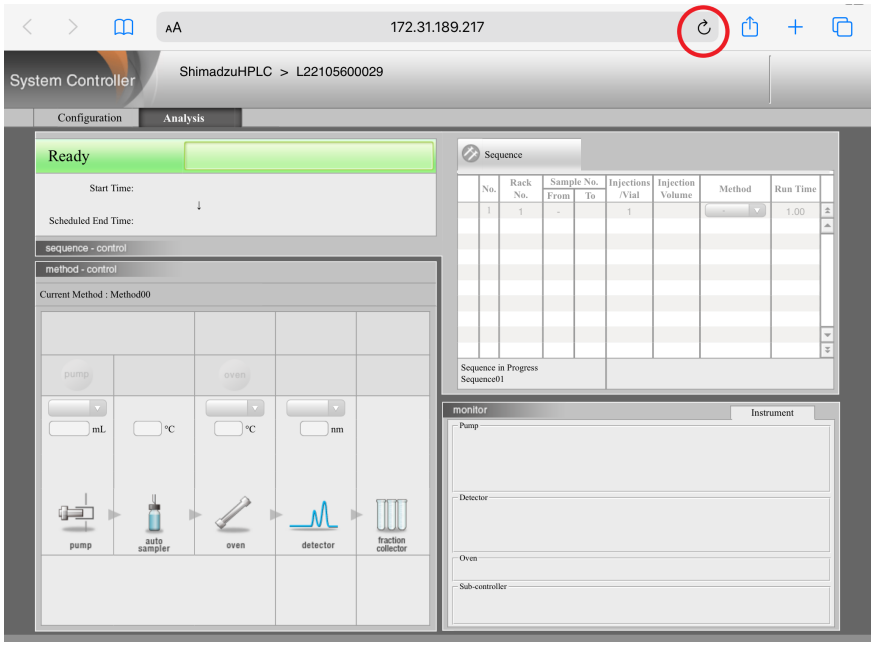
If the operation and display of the web screen are incorrect due to Safari's cache, please delete the cache in the following procedure.

1 **Click the setting icon from the iPad's home screen.**
On the setting screen, select "Safari".

2 **Select "Clear cache" in Safari setting.**
A confirmation dialog will be displayed, so select "delete".

■ Update Screen Button

Please do not press the update button in the address bar. An error may occur or screen design may be lost.



■ Restrict Function of iPad Version

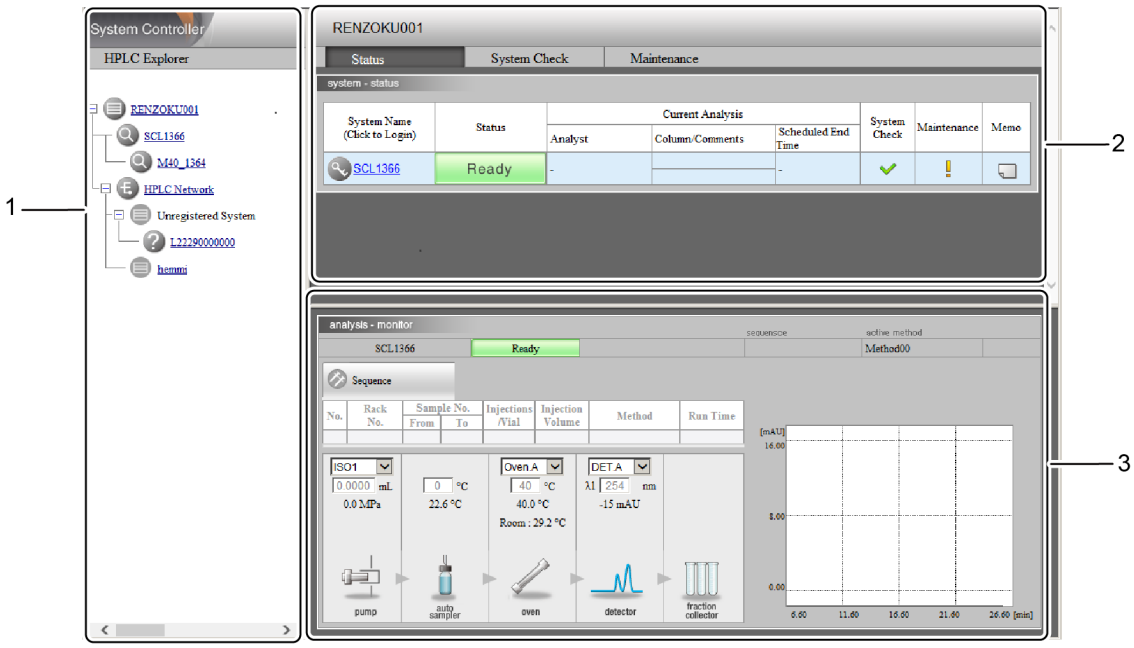
The iPad version Web screen has some functions restricted compared with the IE version. For functions that can not be executed from the iPad, please use the IE version.

Screen				IE Version	iPad Version
Group Monitor Screen	HPLC Explorer Area			○	○
	Status Summary Area	• Status Tab • System Check Tab • Maintenance Tab		○	○
	Simple Device Monitoring Area			○	○
Equipment Monitor Screen	Header	• Utility • Management		○	×
	Perform Analysis Tab	Sequence Area		○	○
		Method Area	System Controller Configuration	○	×
			Other than those above	○	○
		Chromatogram Monitor Area		○	○
	Device Configuration Tab			○	○
System Check Screen	Display/Execute System Check			○	○
	Save System Check Result			○	×

3.3 Group Monitor Screen

> **NOTE**
> - When the network load becomes large, the message "Is the system turned off or the load on the network got bigger and the connection was broken. Do you want to reconnect?" may be displayed. Clicking [OK] will attempt to reconnect to the web screen. Click [Cancel] to close the web screen.
> - It is considered to be "logging in" for 5 minutes after the connection with the Web screen is lost, and "logged out" after that.

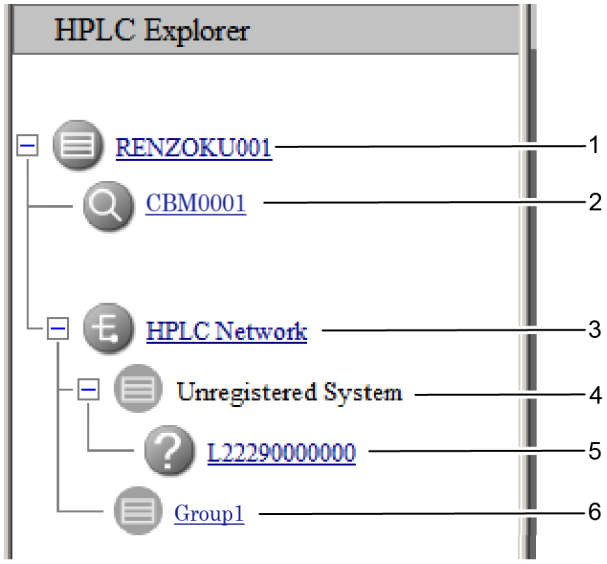
When the web screen starts up, [Group monitor screen] is displayed. This screen is composed of three areas: [HPLC Explorer] area, [Status summary] area, and [Simplified device monitoring] area.



No.	Name		Description	Ref.
1	[HPLC Explorer] Area		Displays the LC systems found within the subnet mask in group units. **Hint** Clicking on the system name will switch the display of the [Simplified Device Monitor] area.	P.15
2	[Status Summary] Area		It consists of three tabs. Click the tab to change the screen.	—
		[Status] Tab	Summarizes the status of the devices in the group and displays it.	P.17
		[System Check] Tab	Not used in CL model.	-
		[Maintenance] Tab	Maintenance items of each system are displayed.	P.18
3	[Simplified Device Monitor] Area		The monitor content of the currently selected LC system is displayed.	P.20

3.3.1 HPLC Explorer Area

Display groups and systems in a tree format.
By clicking on ⊞/⊟ in the tree, it is possible to open/close the tree.



No.	Name	Description
1	Selection Group	This is the selected group. **Hint** Clicking on the icon or group name will search for other systems in the group.
2	System	Displays the systems belonging to the selected group. **Hint** Clicking on this icon or system name will display the status of that system in the "Simplified Device Monitor" area.
3	HPLC Network	Other groups are displayed together under this tree. **Hint** By clicking this icon or HPLC network name, it searches the HPLC network for other groups.
4	Unregistered System (Group)	Systems not registered in the group will be displayed together under this tree.
5	Unregistered System	Display the systems not registered in the group. **Hint** Click the icon to display the login screen of the [Group Administration] screen, please register the system into the group.

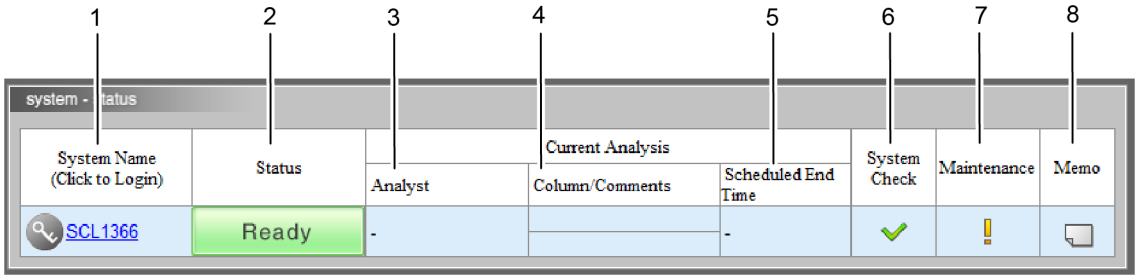
No.	Name	Description
6	Other Group	It is another group. **Hint** Clicking the icon or group name switches the display of the web screen to the contents of the selected group.

3.3.2 Status Summary Area

The status summary area consists of the [Status] tab, [System check] tab, [Maintenance] tab.

■ Status Tab

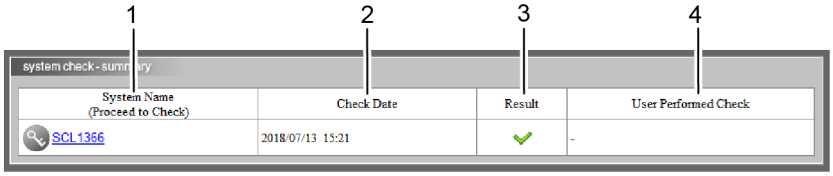
Summarize the status of each system and display it.



No.	Name	Description
1	System Name (Click to Login)	Displays the system name and login status. **Hint** Click the icon or system name to display the "Device Monitor" screen. Reference "3.4 Device Monitor Screen" P.21
2	Status	Displays the status of the system.
3	Analyst	When sequence analysis is executed, the name of the user who is analyzing is displayed.
4	Column/Comment	Column name and column size are displayed in the upper row and mobile phase name in the lower row. If CMD (column management device) is not connected, the comment of the current analysis method is displayed. **Hint** Displayed only when executing analysis from the workstation and this information is entered in the method.
5	Scheduled End Time	When sequence analysis is being executed, the scheduled end time of the sequence is displayed.
6	System Check	The result of the system check is displayed.
7	Maintenance	Displays maintenance information.
8	Memo	Make a note of the information about the system and keep it.
		It is displayed when notes are empty.
		It is displayed when there is a memo.

■ System Check Tab

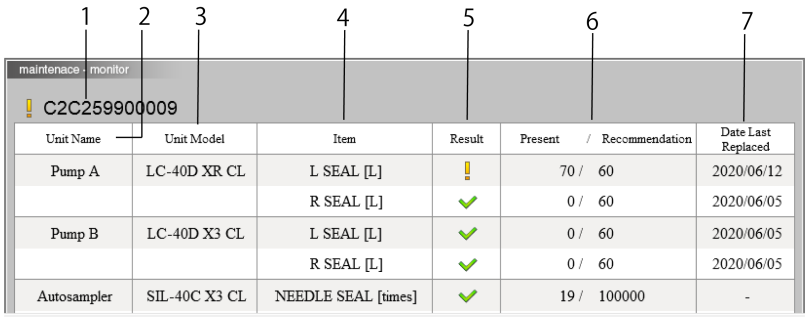
The system check execution result of each system is displayed.



No.	Name	Description
1	System Name (Proceed to Check)	Displays the system name and login status.
2	Check Date	It is the date and time when the system check was last executed.
3	Result	It is the result when the system check was last executed.
4	User Performed Check	The name of the user who last performed the system check.

■ Maintenance Tab

Maintenance information of each system is displayed.

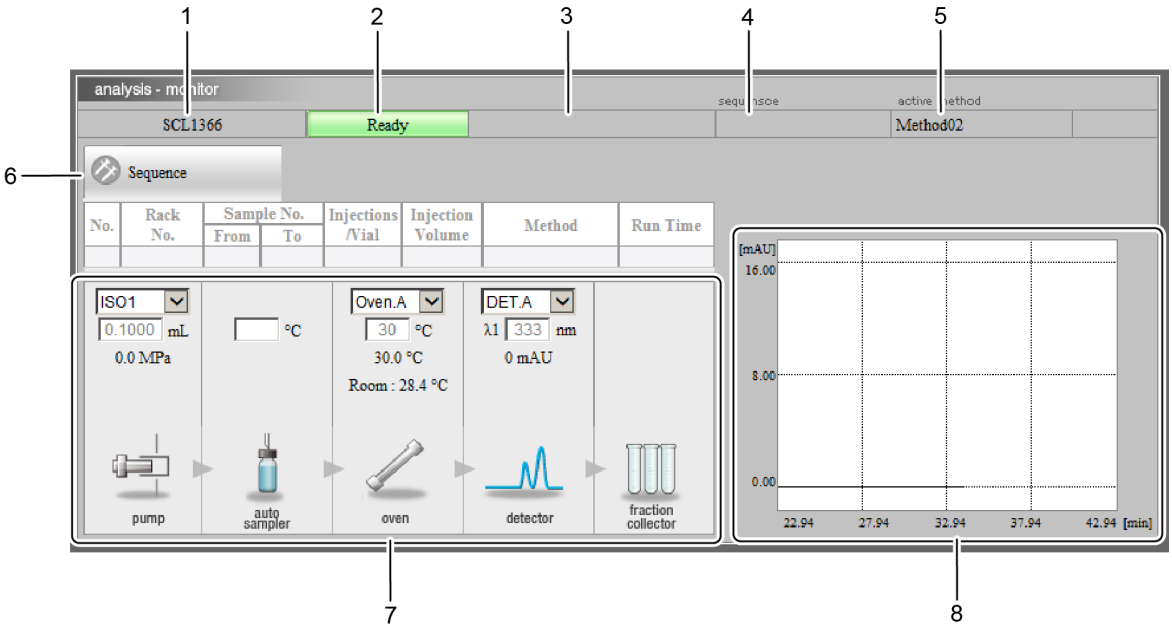


No.	Name		Description
1	System Name		The name of the currently selected system.
2	Unit Name		This is the unit name connected to the system.
3	Unit Model		This is the model name of the connected device.
4	Item		It is a maintenance item.
5	Result		It is the judgment result for the replacement guide value.
		✓	It is displayed when it is within the replacement guide value.
		!	It is displayed when it exceeds the replacement guide value.
		—	It is displayed when a device without maintenance information is connected.

No.	Name	Description
6	Present/ Recommendation	It is the current value and replacement guide value.
7	Date Last Replaced	It is the date when consumables were last changed.

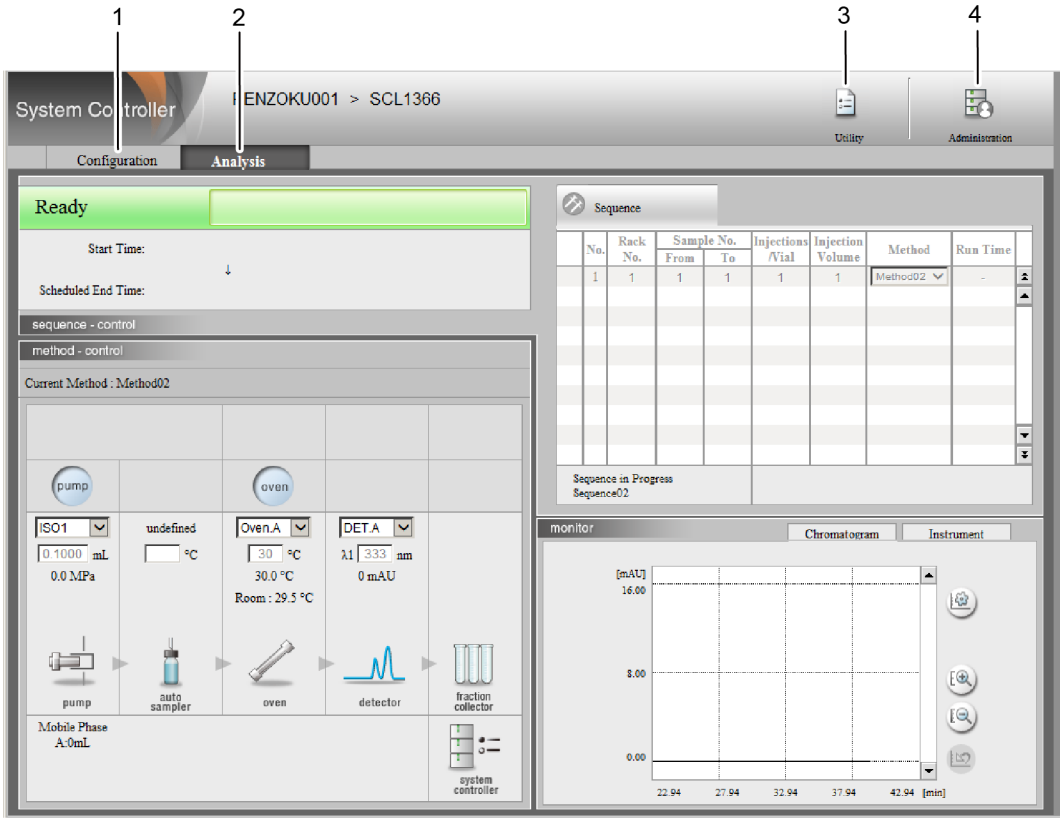
3.3.3 Simple Device Monitoring Area

Displays the summary of the currently selected system.
Clicking on the system name in the HPLC Explorer area switches the screen to the selected system.



No.	Name	Description
1	System Name	The name of the currently selected system.
2	Ready	It is the state of the current system. **Hint** If analysis is in progress, analysis time is also displayed.
3	Analyst	Displays the name of the user currently analyzing.
4	Sequence	This is the sequence file name currently being used for analysis.
5	Active Method	This is the method file name currently being used for analysis.
6	Sequence Analysis	Displays the contents of the sequence line currently being executed.
7	Device Monitor	Displays the set values and monitor values of LC device such as pump, autosampler, column oven, detector etc.
8	Chromatogram Display Area	It displays the chromatogram of the detector and the pressure of the pump. **Hint** The chromatogram to be displayed is selected from the detector pull-down menu in the [Device Monitor] area.

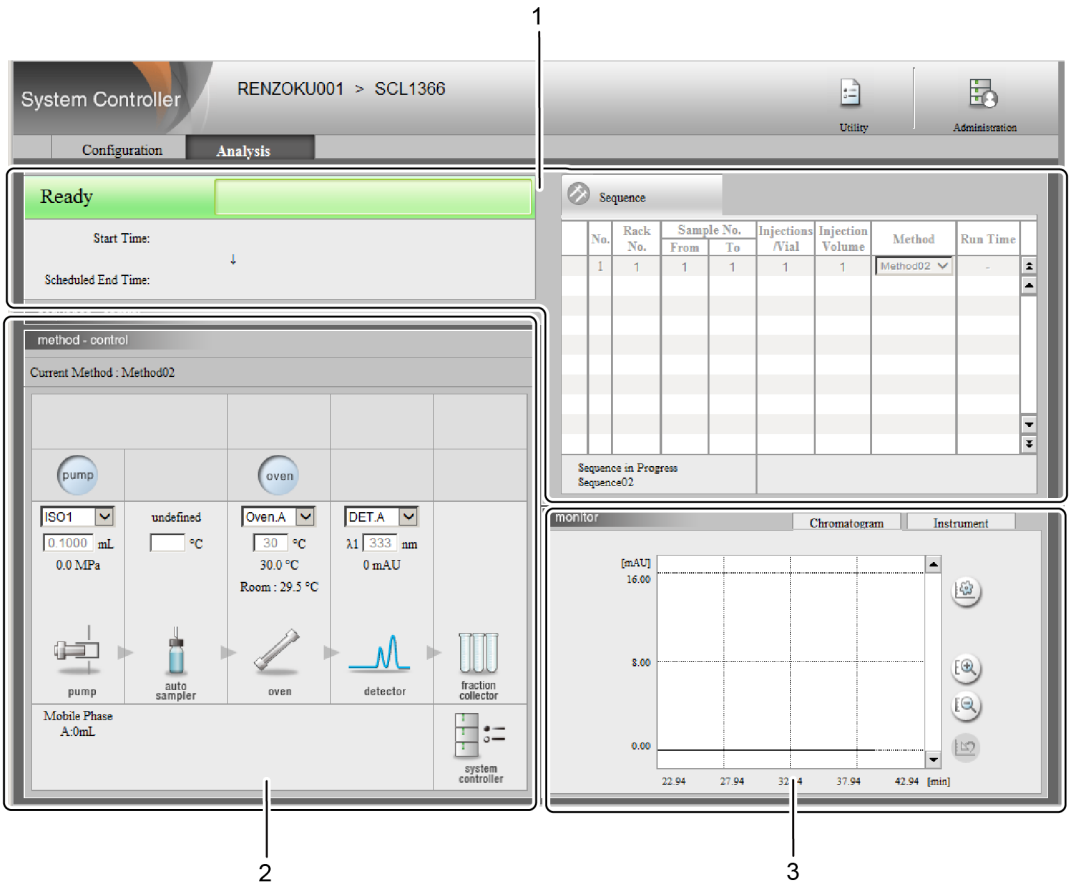
3.4 Device Monitor Screen



No.	Name	Description	Ref.
1	Configuration Tab	Displays the [Device Configuration] screen.	P.30
2	Analysis Tab	Displays the Execute Analysis screen.	P.22
3	Utility Button	Displays the [Utility] screen.	P.41
4	Administrator Button	Displays the [Group Management] screen.	P.32

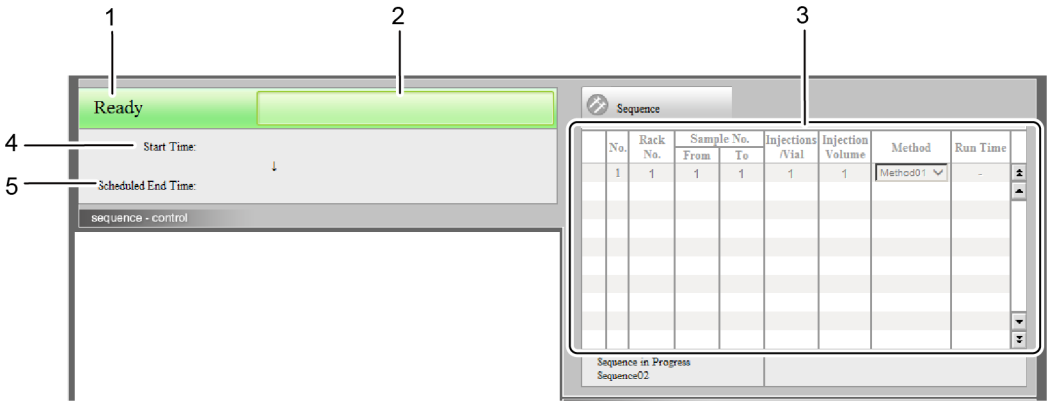
3.4.1 Executing Analysis Status Screen

Displays the execution status of the analysis. It is a screen for monitoring, and parameters such as flow rate can not be set.
However environment setting of the system controller can be set.



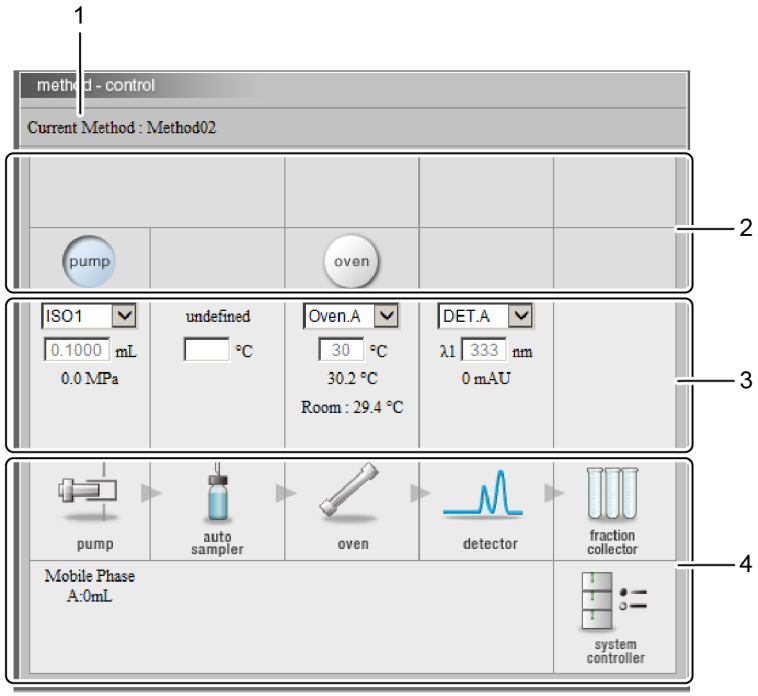
No.	Name	Description	Ref.
1	Sequence Area	Displays the status of the current system. When analyzing, analysis sequence is also displayed.	—
2	Method Area	Displays the current method.	P.23
3	Chromatographic Monitor Area	Displays the chromatogram. Other monitor values of each device are also displayed.	P.28

■ Sequence Area



No.	Name	Description
1	Status	Displays the status of the system.
2	Sequence File Name and Analyst	Displays the sequence file name and the name of the user who is analyzing. It is not displayed if the analysis is still running.
3	Sequence Table	Display the contents of the sequence file.
4	Start Time	It is the time when analysis started.
5	Scheduled End Time	The scheduled end time of the running sequence.

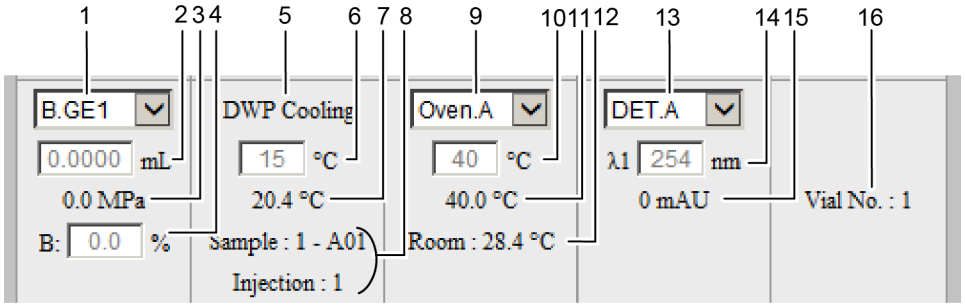
■ Method Area



No.	Name	Description	Ref.
1	Current Method	Displays the filename of the method being executed.	—

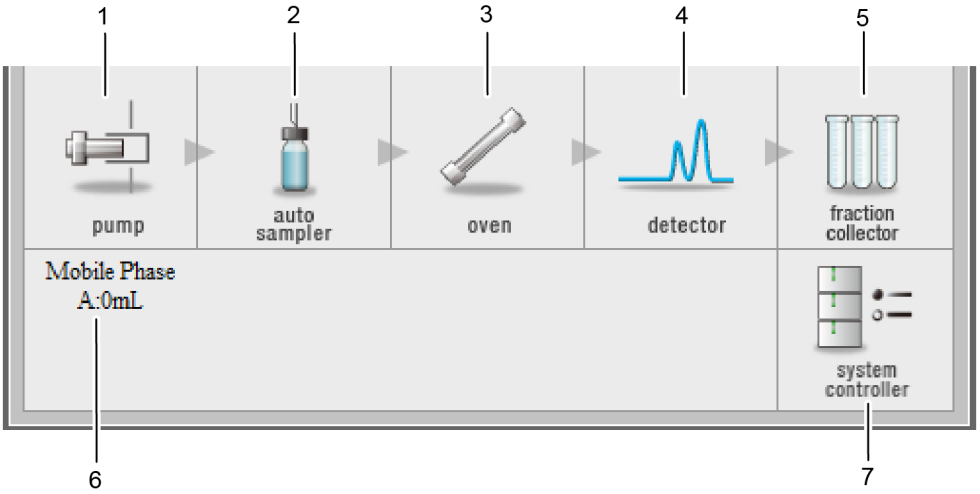
No.	Name		Description	Ref.
2	Direct Control Button Status Display	PUMP	The ON / OFF status of the pump is displayed. NOTE Operation is not possible.	—
		OVEN	The ON / OFF status of the column oven is displayed. NOTE Operation is not possible.	
3	Basic Monitor		Displays the setting parameters of each device.	P.25
4	Component Icons		[system controller] icons can be opened on the dedicated screen.	P.26

Basic Monitor



No.	Name	Description
1	Pump	Select the pumping mode to be displayed.
2		Displays the pump flow rate setting value.
3		Displays the current pressure value.
4		At gradient analysis, the concentration of mobile phase is displayed.
5	Autosampler	Displays the type of rack of the autosampler.
6		For the autosampler with the cooler, the set value of the cooler temperature is displayed.
7		For the autosampler with the cooler, the current cooler temperature is displayed.
8		The sample number and the number of injections under analysis are displayed.
9	Column Oven	Select the column oven to display. NOTE On the Web screen, only two ovens are displayed (Oven C, D can not be selected).
10		Displays the oven temperature setting value.
11		Displays the current oven temperature.
12		Display the current room temperature. (It may not be displayed depending on the type of oven.)
13	Detector	Select the detector to display.
14		Display the main setting parameters. (The display content varies depending on the type of detector connected.)
15		The detected value is displayed. (The display content varies depending on the type of detector connected.)
16	Fraction Collector	Not used in CL model.

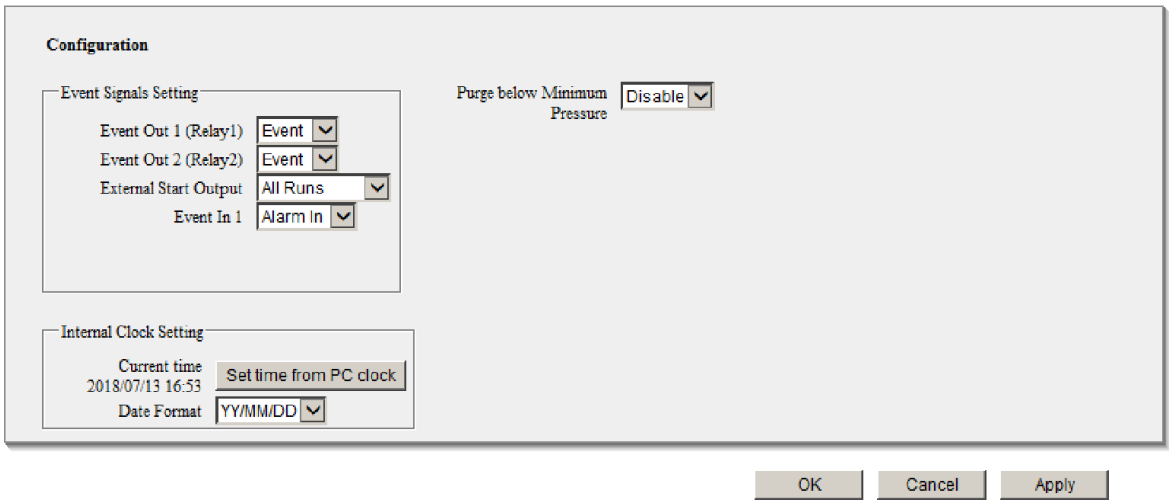
Icon of Each Device



No.	Name	Description
1	Pump Icon	(Only icon display, no function assigned.)
2	Autosampler Icon	
3	Column Oven Icon	
4	Detector Icon	
5	Fraction Collector Icon	Not used in CL model.
6	Monitor Display of Mobile Phase	Displays the residual amount of the pump's mobile phase and the autosampler rinsing liquid. **Hint** • The mobile phase remaining amount display can be switched by the pump pull down menu on the simple monitor screen. • It is not displayed when the remaining amount is not set or using pumps or autosampler of 6 A to 10 A series.
7	System Controller Icon	After the login screen is displayed, the [System Controller] screen will be displayed. On that screen the environment parameter of the system controller can be set. Reference "System Controller Screen" P.27

System Controller Screen

The environment parameters of the system controller can be set on this screen. For details of each parameter, see ."6.1 Environment Setting List" P.56



■ Chromatogram Monitor Area

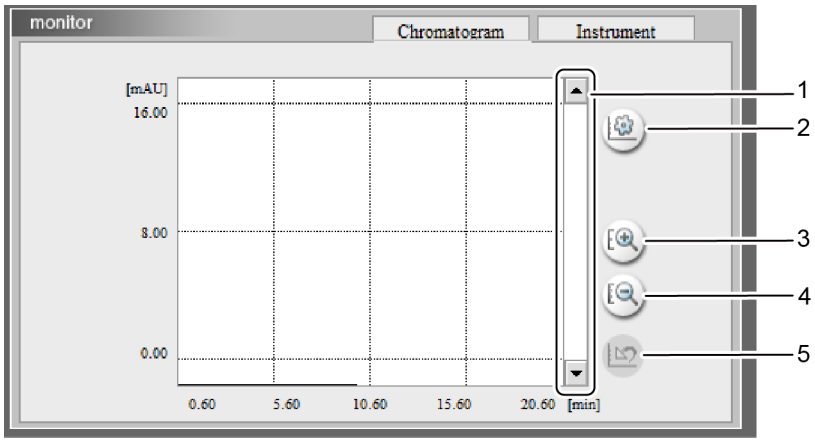
The chromatogram of the detector selected in the pull-down menu of the simple monitor area and the monitor value of each device are displayed.

[Chromatogram] Tab

The chromatogram is displayed.

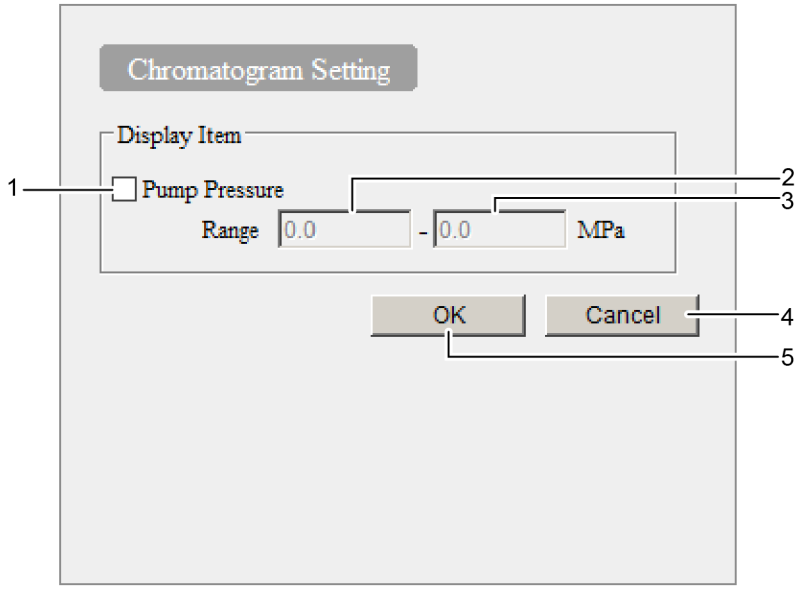
Hint

- When detector setting is dual mode (2 wavelength mode), Ch.1 is drawn in black and Ch.2 is drawn in red. The pressure value is drawn in blue when the pump pressure display is turned on in the [Chromatogram Monitor Display Setting] screen.



No.	Name	Description
1	Scroll Bar	Shift the display of the chromatogram in the up (or down) direction.
2	Chromatogram Monitor Display Setting Button	The [Chromatogram Monitor Display Settings] screen is displayed. Set pump pressure display and upper and lower limit values.
3	Zoom in Button	Expand the vertical axis of the chromatogram.
4	Zoom out Button	Reduce the vertical axis of the chromatogram.
5	Initialize Button	Restore display of shifted and scaled chromatogram.

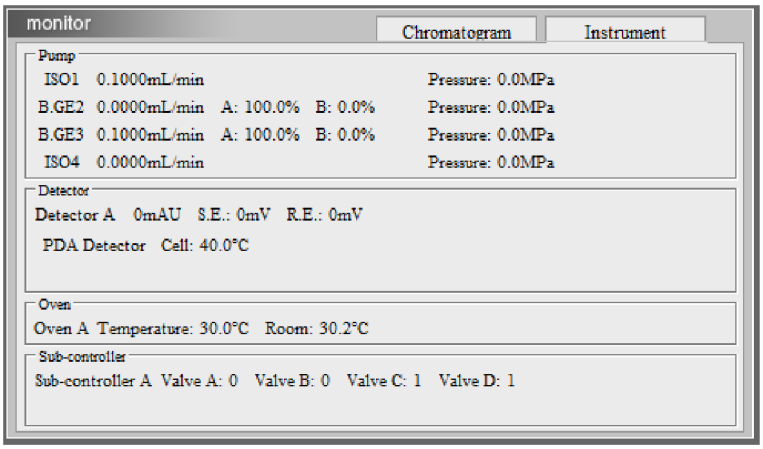
Chromatogram Monitor Display Setting Screen



No.	Name	Description
1	Pump Pressure Display	When displaying the pump pressure on the Chromatogram monitor screen, input a check mark.
2	Display Setting Range (Lower limit)	Set the lower limit of the pump pressure display range.
3	Display Setting Range (Upper limit)	Set the upper limit of the pump pressure display range.
4	Cancel Button	Cancel the setting and close the screen.
5	OK Button	Reflect the settings and close the screen.

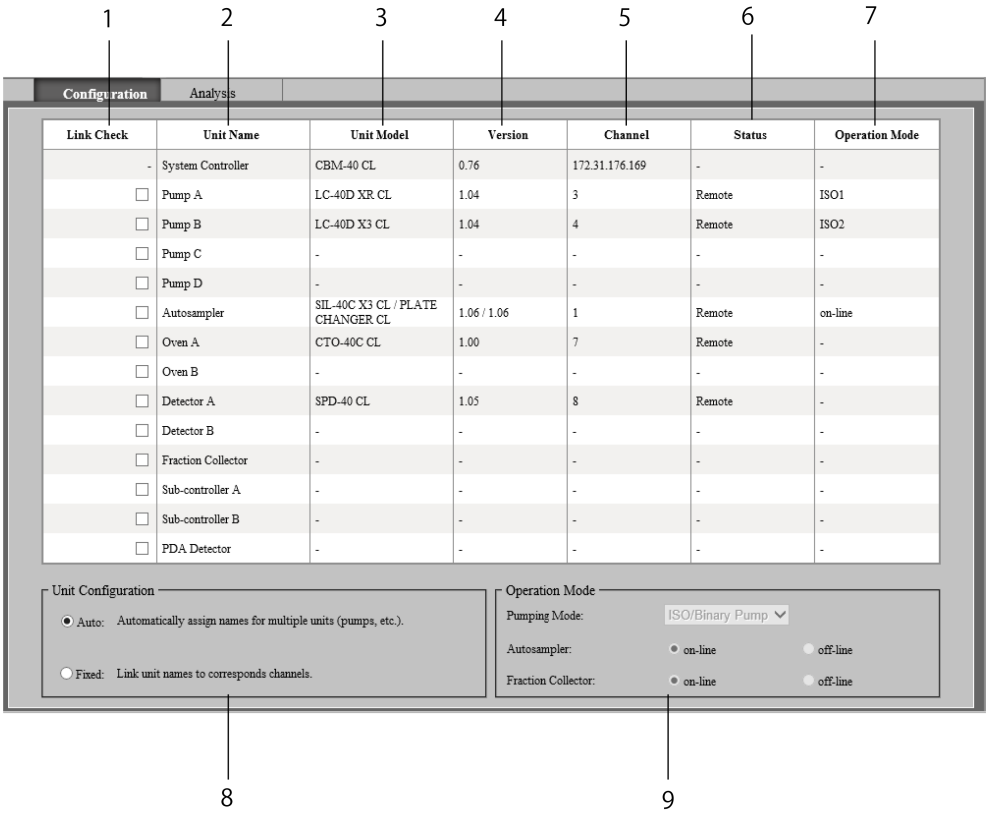
[Instrument] Tab

The monitor value of each device is displayed. The contents displayed depend on the connected device and type.



3.4.2 [Device Configuration] Screen

Displays the device configuration of the system.



No.	Name	Description
1	Link Check	Input a check mark if you want error handling when the system controller and each device are disconnected.
2	Unit Name	This is the device name of the connected device.
3	Unit Model	This is the model name of the connected device.
4	Version	The version number of the connected device.
5	Channel	The channel number of the connected optical link is displayed.
6	Status	Displays the connection status. [Remote]: It is remote state, control from workstation and system controller is valid. [Local]: It is mean that the [LOCAL] setting on the module side is set to "local". Control from the workstation and system controller is invalid.
7	Operation Mode	Displays the operation mode of pump and autosampler.
8	Unit Configuration	Configure link mode. **Hint** It can not be set when a workstation is connected.

No.	Name	Description
9	Operation Mode	The pumping mode and autosampler use mode are displayed.

3.5 Group Management Screen

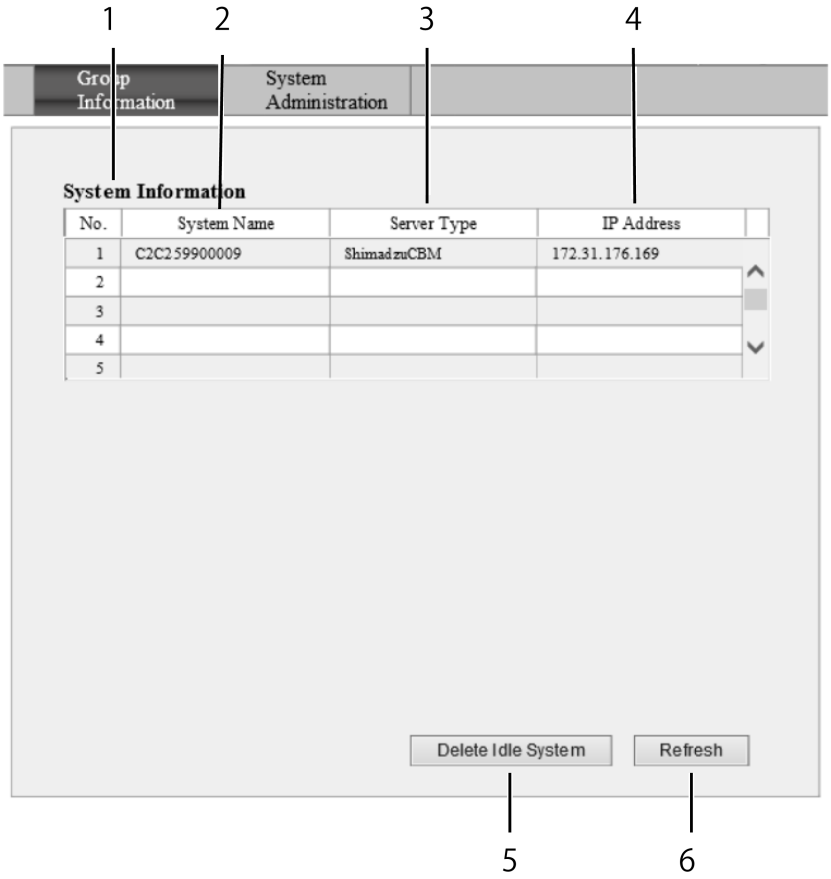
The group management screen is displayed by clicking  (management button) at the top of the device monitor screen.
On this screen, the group settings and network settings such as IP address are available.

Hint If you want to change the network settings such as IP address when the system controller can not connect to the network, change it with [CBM PARAMETER] on the [CALIBRATION] menu of each module.

Reference "4.2.1 When Setting From Connected Device" P.50

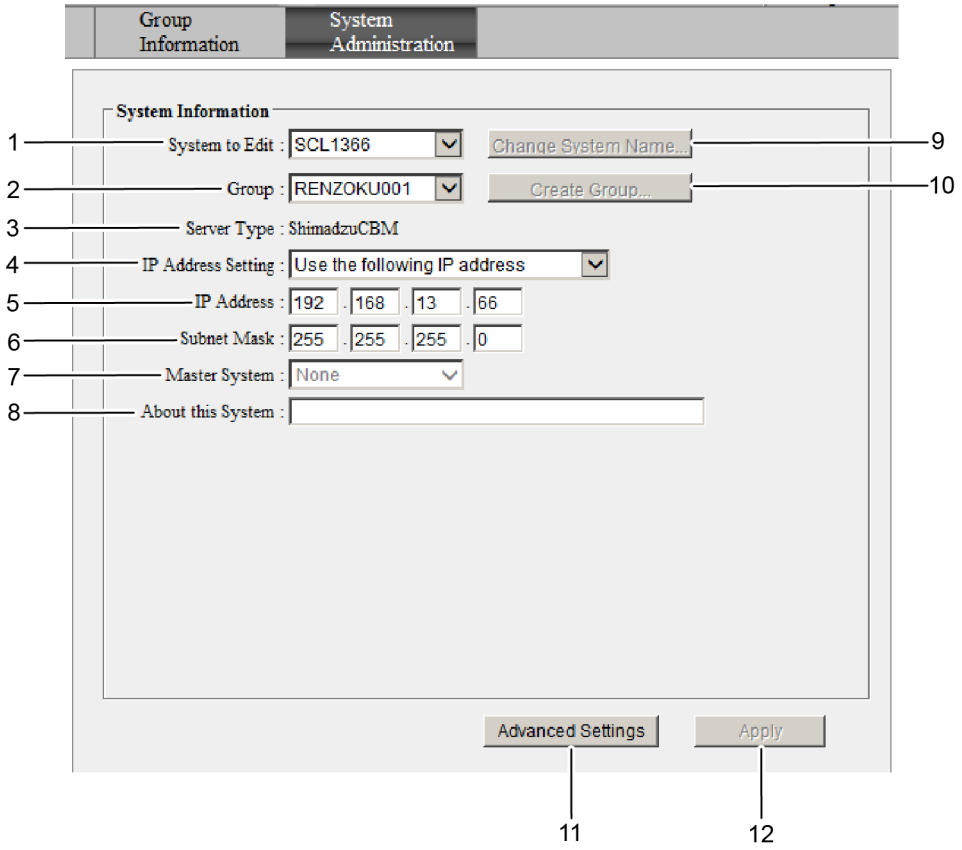
Screen	Description
[Group Information] Tab	Click the tab to display the [Group Information] screen. This is a screen for displaying the device information registered in the group.
[System Administration] Tab	Click the tab to display the [System Administration] screen. This is a screen for setting system information within the group.
	It is a logout button. Click this button to close the group management screen.

■ Group Information Screen



No.	Name	Description
1	System Information	The system that belongs to the group is displayed in the list. **Hint** Systems with power turned "OFF" are displayed in red.
2	System Name	System name (distinguished name) of the system controller.
3	Server Type	This is the server type of the system controller. It is fixed to "ShimadzuCBM".
4	IP Address	The network address of the system controller.
5	Delete Idle System	Delete information on the system that is not powered on from the device information table. **Hint** Delete from the table the system that can not be recognized from the network due to device relocation or disposal. Systems that are powered off are also deleted from the table, but will be automatically re-registered when the power of the system is turned on.
6	Refresh	Update the device information table to the latest information.

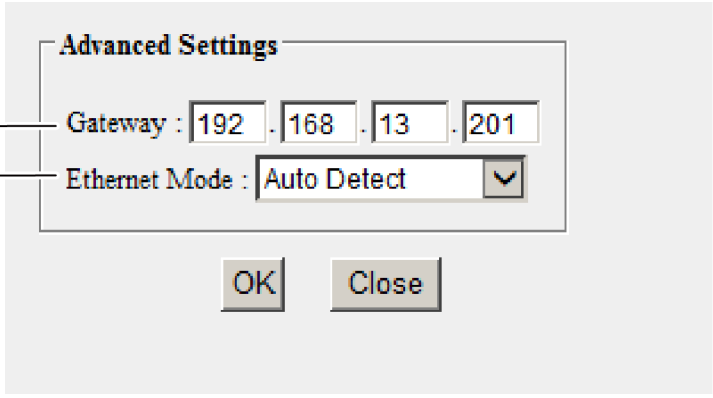
■ System Administration Screen



No.	Name	Description
1	System to Edit	Select the system to edit from the pull-down menu. System information can be changed without logging in to the selected system.
2	Group	It is used to move the system selected in [System to Edit] to another group. Select the destination group by pulldown and press Apply to complete the move. "-" (group not registered) is also included in the pull-down menu.
3	Server Type	It is the server type of the system controller. It is fixed with "ShimadzuCBM".
4	IP Address Setting	When acquiring the IP address from the DHCP server, select "Obtain an IP address automatically".
5	IP Address	Set the IP address of the system controller.
6	Subnet Mask	Set the subnet mask of the network to which the system controller is connected.
7	Master System	(For future expansion and not used) It is fixed with "None".
8	About This System	Enter the usage purpose etc. of this system. Up to 10 characters can be entered with double-byte characters. (30 characters for single-byte characters)

No.	Name	Description
9	Change System Name...	Change the system name. **Hint** • The system name can not be changed when the system belongs to one of the groups. This button is enabled only when "-" (not registered) is displayed in the "Group" field. • In order to activate this button, it is necessary to select [-] (unregistered) once from the pull-down menu in the [Group] field and press Apply to become independent. After that, this button becomes functional when logging in again. Reference "3.5.1 Change the System Name" P.36
10	Create Group...	It is used when creating a new group. **Hint** This button is enabled only when "-" (not registered) is displayed in the "Group" field.
11	Advanced Settings	Displays the [Advanced Settings] screen. Reference Please refer to the section below.
12	Apply	Set the change contents. **NOTE** If "IP Address Setting", "IP Address", "Subnet Mask" and "Default Gateway" are changed, please restart the system controller.

■ Advanced Setting Screen



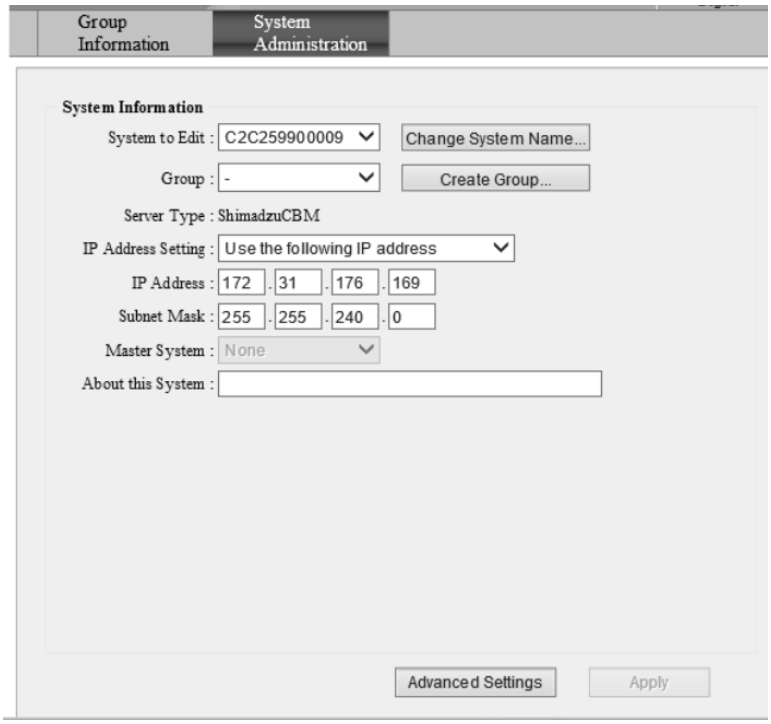
No.	Name	Description
1	Gateway	Enter the default gateway.
2	Ethernet Mode	Select the transmission speed of Ethernet from the pull-down menu.

3.5.1 Change the System Name

To change the system name, do the following.

1 **Select [-] from the pull-down menu in the [Group] field.**

Hint If the [Change system name] button is already enabled, start with step 4.



2 **Click [Apply].**

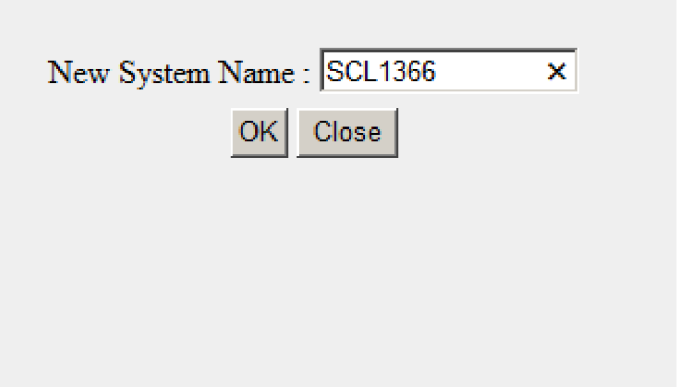
Log out will be done automatically.

3 **Log in again to the "Group management" screen and click the "System Administration" tab.**

The [System Administration] screen appears.

4 **Click [Change System Name].**

The following screen will be displayed.



5 **Enter the new system name.**

Hint Input is up to 15 single-byte characters. Available characters are alphanumeric single byte characters and "-" (half size minus), "_" (half size underscore).

6 **Click [OK].**

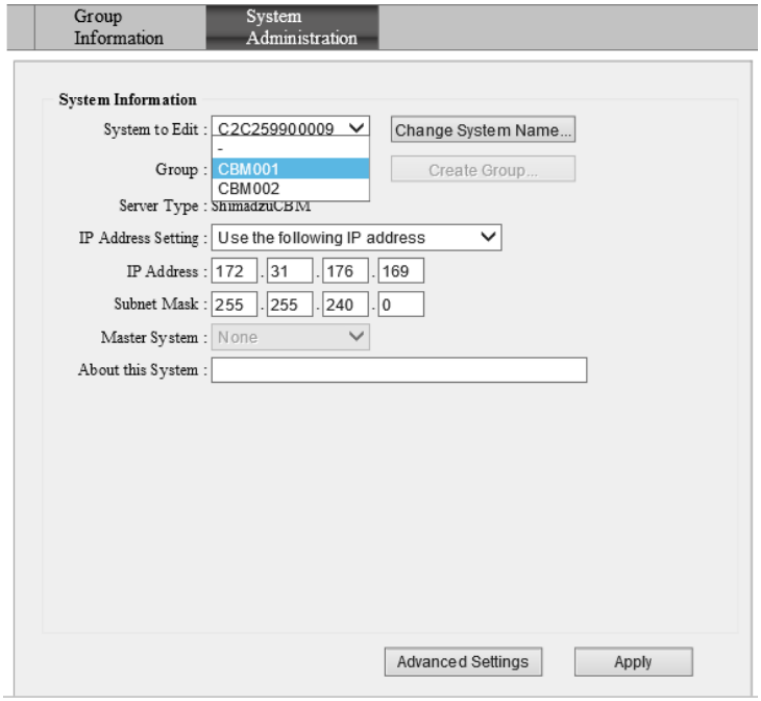
7 **Click [Apply].**

Changes will be reflected and log out will be done automatically.

3.5.2 Move the System to Another Group

To move the system to another group, do the following.

1 **Select the system to move from the pull-down menu in the "System to edit" field.**



2 **Select the destination group from the pull-down menu in the [Group] field.**

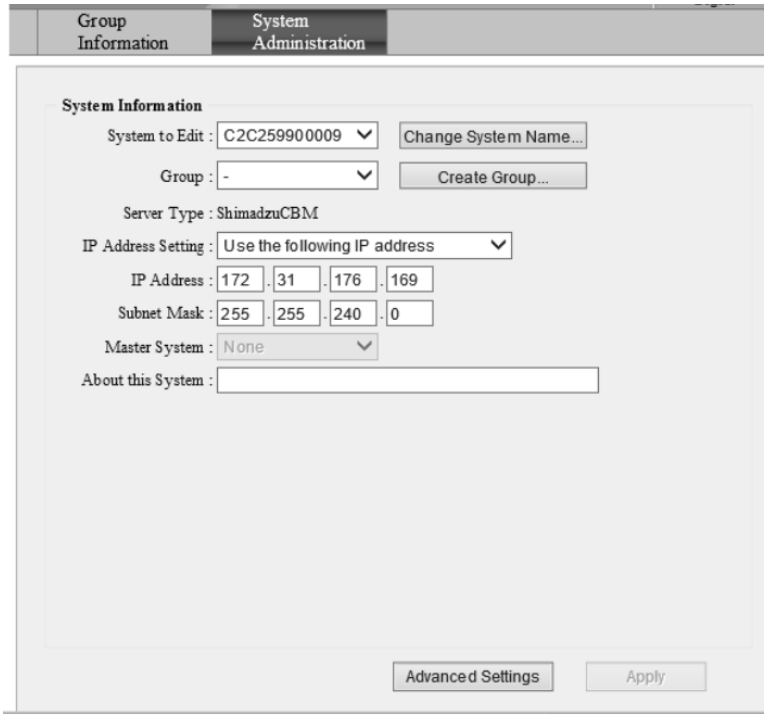
3 **Click [Apply].**

Changes will be reflected and log out will be done automatically.

3.5.3 Create a New Group

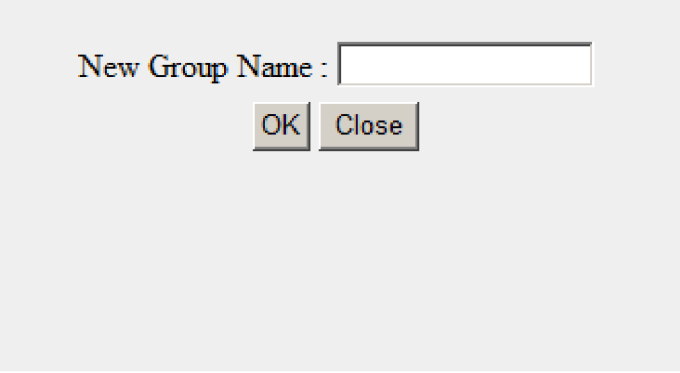
To create a new group, do the following.

1 **Select [-] from the pull-down menu in the [Group] field.**



2 **Click the [Create Group] button.**

The following screen will be displayed.



3 **Enter a new group name.**

> **NOTE** Input is up to 15 single-byte characters. Available characters are alphanumeric single byte characters and "-" (half size minus), "_" (half size underscore).

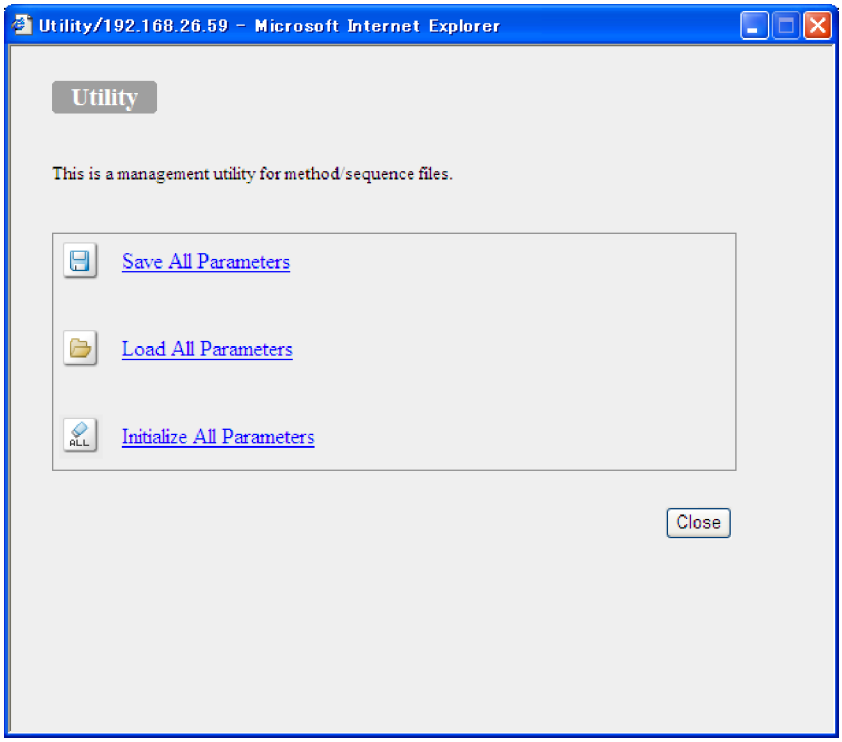
4 **Click [OK].**

5 **Click [Apply].**

Changes will be reflected and log out will be done automatically.

3.6 Utility Screen

The utility screen is displayed by clicking (Utility button) at the top of the device monitor screen.
On this screen, system parameters (environment settings, methods, sequences) can be saved to a PC. And later, these parameters can be read from a PC.

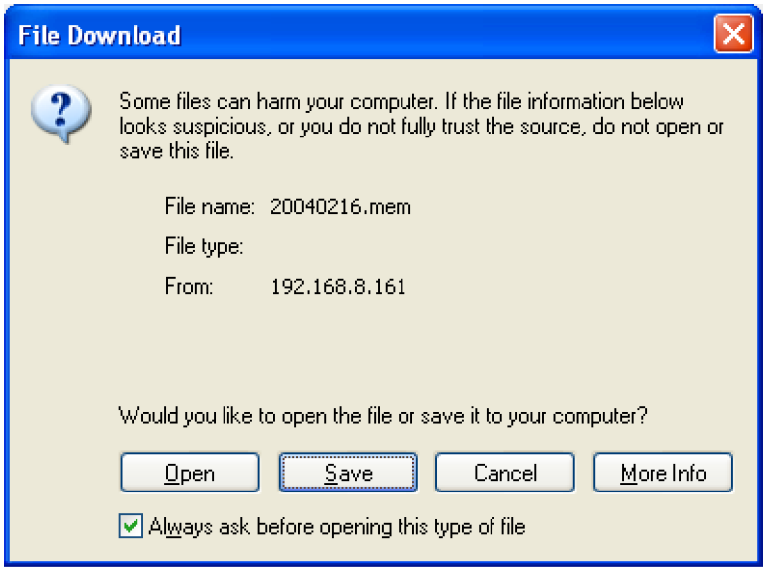


3.6.1 Store System Parameters Collectively on the PC

Store system parameters (environment setting, method, sequence) all at once on the PC.

1 **Click [Save All Parameters].**

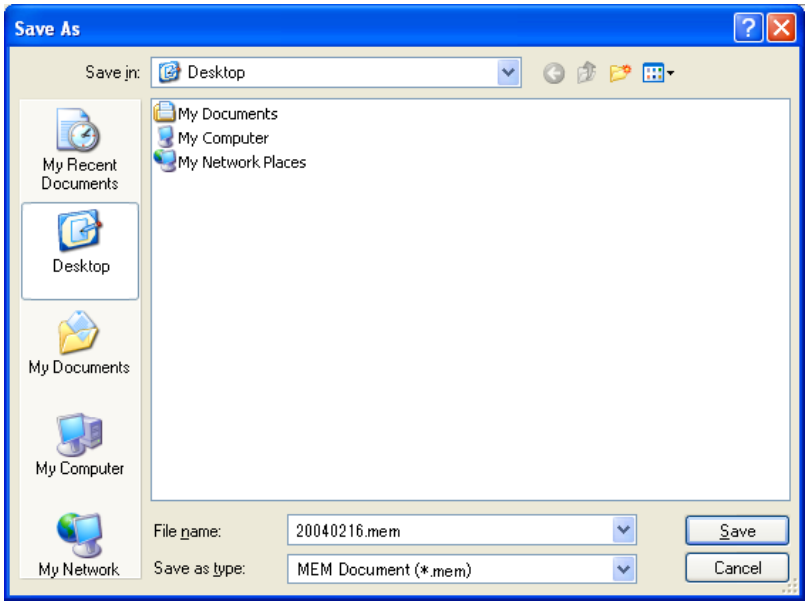
The following screen will be displayed.



NOTE If you click [Open] in the dialog above and associate it with another application, it may not be saved as a file, so please do not click on it. In the unlikely event that the dialog "Please select the application to open the file" appears, click [Cancel] to close it.

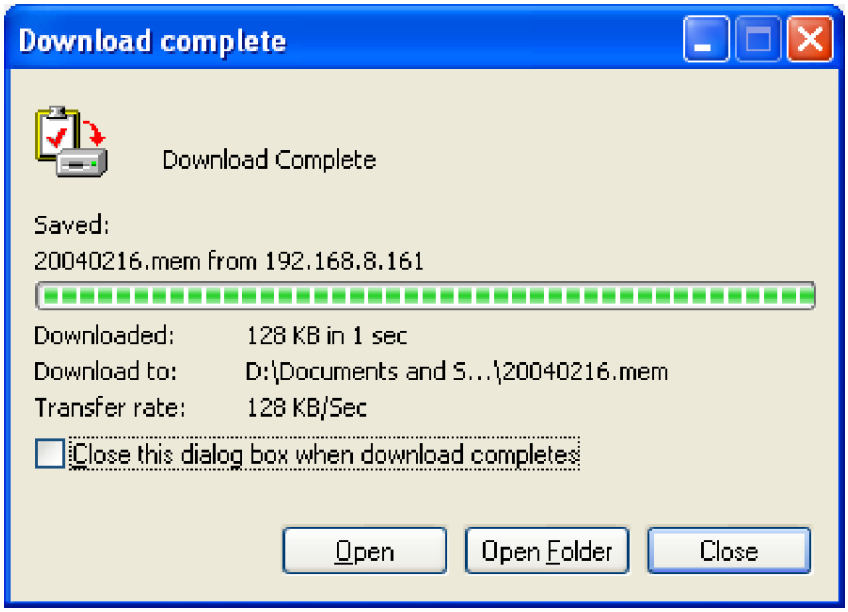
2 **Click [Save].**

The following screen will be displayed.



3 **Select the location to save and enter the file name.**

4 **Click [Save].**
The file is saved in the selected location.

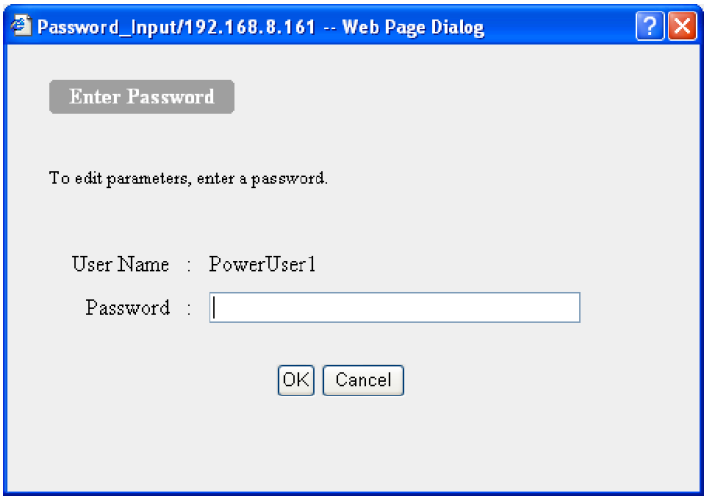


3.6.2 Load System Parameters That Were Saved at Once

The system parameters (environment setting, method, sequence) saved can be loaded all at once from the PC.

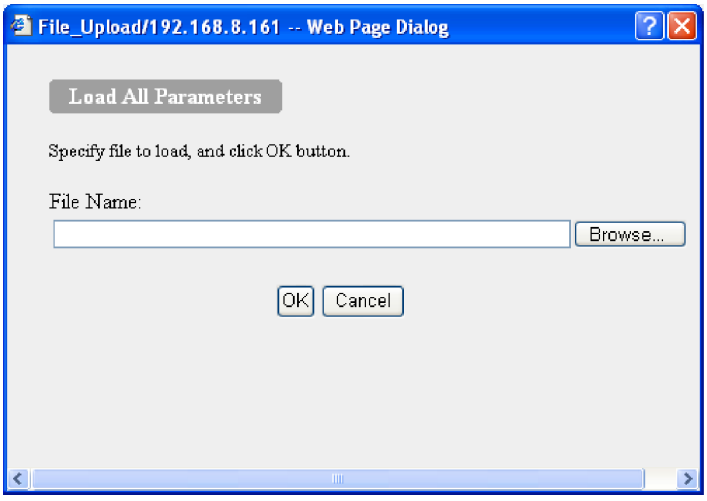
1 **Click [Load All Parameters].**

The password entry screen will be displayed.



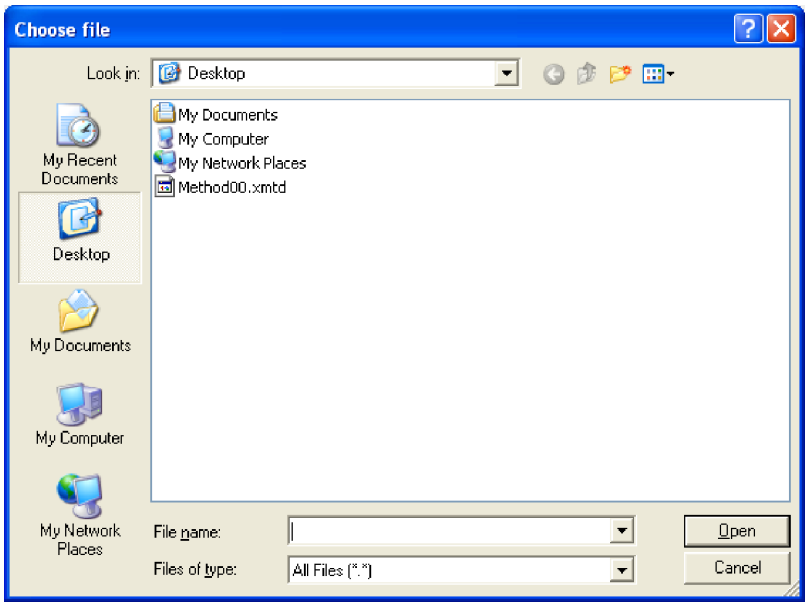
2 **Enter the user's password and click on [OK].**

The [Load All Parameters] screen is displayed.



3 **Click [Browse] in the file name field.**

The following screen will be displayed.



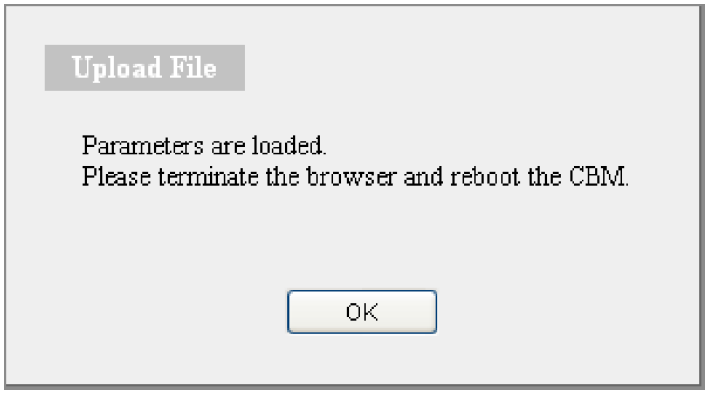
4 **Click on the file to be read and click on [Open].**

Hint • Only files with extension ".mem" can be read.

5 **The selected file name is displayed in the [File Name] field on the [Load All Parameters] screen.**

6 **Click [OK].**

The following screen will be displayed.



7 **Click [OK].**

8 **Click [Close] on the Utility screen.**
The [Utility] screen closes.

9 **Exit the browser and restart the system controller.**

3.6.3 Initialize Device Parameters

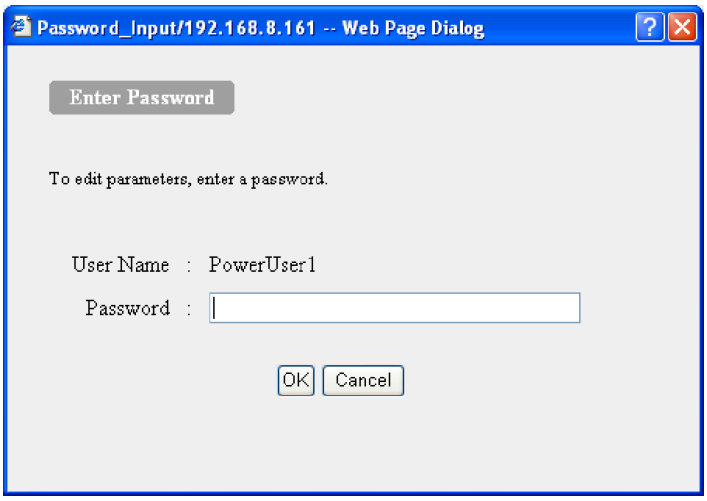
On this screen, the environment setting can be initialized.

Hint The important parameters such as logs, passwords and network settings are not initialized. To initialize these parameters, use the INIT switch.

Reference "2.2 Back" P.5

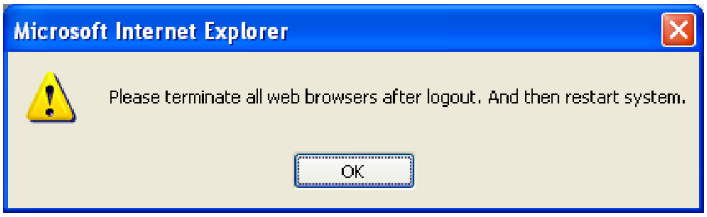
1 **Click [Initialize All Parameters].**

The password entry screen will be displayed.



2 **Enter the user's password and click on [OK].**

Initialization is performed and the following screen is displayed.



3 **Exit the browser and restart the system controller.**

4 Applied Operation

This chapter explains applied operations.

4.1 External Input/Output Terminal

The external input / output terminal is used by connecting to an external device with an optional event cable.

> **NOTE** Wiring is done by service personnel during installation.

Reference "1.3 Optional Parts" P.3

⚠ CAUTION

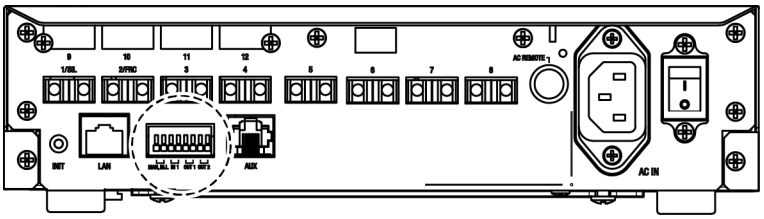
Prohibition

Do not use wiring cables other than instructions allow.
Do not wire other than instructions allow.
Failure to observe the above may cause fire, electric shock, or malfunction.

Instruction

Before wiring, turn off the main power switch on the back of the unit and disconnect the power plug from the outlet.
Failure to observe the above may cause fire, electric shock, or malfunction.

4.1.1 Event Terminal Signals



Name		Description
MAN. INJ.	External Start Input Terminal	Not used in CL model.
IN1	General Purpose Input Terminal	Not used in CL model.
OUT1～2	General Purpose Output Terminal	Send signals such as "Error output" and "Start signal" to other devices. Reference "6.1 Environment Setting List" P.56

4.1.2 Connect the Event Cable

1 **Strip about 10 mm of covering from the end of the cable.**

Hint This process is unnecessary for the optional event cable.

2 **In the case of solid core wire, insert it directly into the hole of the terminal. In the case of stranded wires, twist the tips and then insert them into the hole.**

When Inserting the cable, put it in while pressing the button on the terminal with a thin flathead screwdriver or similar tool. When removing the cable, pull out the cable while pressing the button above the terminal.

Hint In addition to the event cable which is an optional item, it is possible to substitute the cable of AWG 28 to 20. To avoid disconnection of cables, a stranded cable is recommended.

4.2 Network Settings

How to set up the network is summarized.

4.2.1 When Setting From Connected Device

The following describes how to set the network settings from [CBM PARAMETER] of each device connected by optical link.

1 **Connect the system controller and the pump of Nexera CL series by use of an optical link cable.**

2 **Set the following items on [CBM PARAMETER] screen of the device.**

- IP ADDRESS
- SUBNET MASK
- DEFAULT GATEWAY

3 **Reboot with the main power switch on the back of the system controller.**

4.2.2 When Setting From the Web Screen

The following explains the case of network setting from web screen with CBM-40 CL etc. This way is available when the IP address of the system controller is known.

Hint If the set values such as IP address are not known at all, it is necessary to return to the factory default state with the INIT button on the back of the system controller. The network setting values after initialization are shown in the table below.

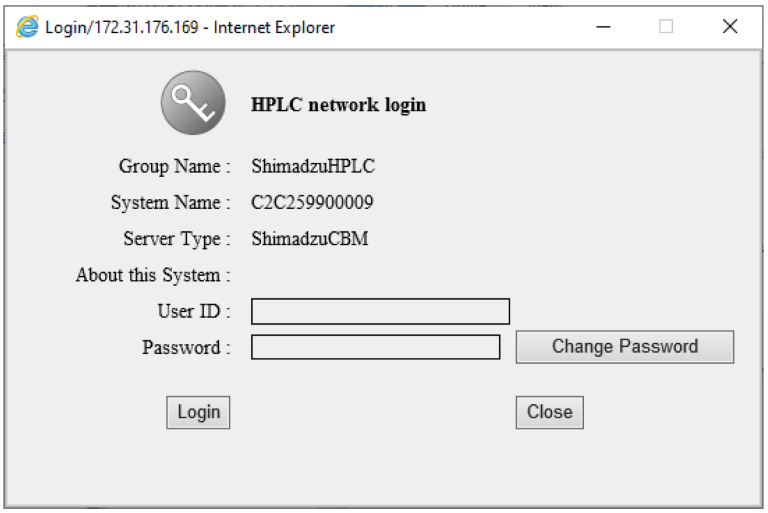
Item	Initial Value
IP Address	192.168.200.99
Sub Net Mask	255.255.255.0
Default Gateway	Default gateway not used
Group Name	ShimadzuHPLC(not registered)
System Name	(Serial No.)
User ID	Admin
Password	Admin

Hint Since the currently set IP address etc may not match the network environment to be installed, it is necessary to perform the setting operation on an independent local network composed only of "PC used for network setting" and "system controller". In this case, set the PC's IP address in the same subnet as the system controller.

1 **Launch a web browser such as Internet Explorer and enter the URL of the system controller.**

2 **On the "Status Summary" screen, click the system name to open the device monitor screen.**

3 Click (Management button) and log in to the [Group management] screen.



4 Set the IP address and subnet mask on the [Device Management] tab and set the default gateway on the [Advanced Setting] screen.

Reference "System Administration Screen" P.34

5 On the [Group Information] tab, set the group name and system name.

Reference "3.5.1 Change the System Name" P.36

4.3 GxP Enhancement Function

The GxP Enhancement function is a function to improve the reliability of the analysis result, such as restraining the operation of the device under analysis, recording of device operation affecting the analysis, and waiting for the start of analysis until the device is in the correct state.

> **NOTE** Enabling GxP Enhancement Function will improve the reliability of the analysis results, but since it involves operational restrictions, please use it after fully understanding the content.

When the GxP enhancement function is enabled, the system controller coordinates with the workstation and performs the following operations.

- Suppress device side operations affecting analysis during runs.
- Protect device operations affecting analysis with a password.
- Wait to start analysis until the device is in the correct state.
- When an operation that affects analysis is performed on the device side, it is recorded in the log of the workstation.

Workstation Corresponding to GxP Enhancement Function

Software Name	Supported Version
LabSolutions	Please contact our sales office or distributor

4.3.1 Set Up GxP Enhancement Function

The ON/OFF setting of the GxP enhancement function is performed by the field engineer at the time of equipment installation. To enable the GxP function, please contact the field engineer.

5 Maintenance

⚠ CAUTION

Prohibition

Never remove the main body cover.

If repairing that removes the main body cover is necessary, please contact our sales office or designated Shimadzu representative.

Instruction

When replacing components, the parts described in "1.2 Component Parts" P.2 should be used.

Use of parts not specified may cause injury or malfunction.

5.1 Periodic Inspection

It is not necessary to perform periodic inspections of this instrument.

5.2 Cleaning the Exterior

5.2.1 Usual cleaning

If the exterior of the instrument is dirty, clean it with a dry soft cloth or tissue paper. If it is very dirty, clean it as below.

1 **Clean with a cloth soaked in diluted neutral detergent and wrung tightly.**

2 **Wipe off detergent with a cloth soaked in water and wrung tightly and then wipe off water with a dry cloth.**

⚠ CAUTION

Prohibition

Do NOT leave any part wet nor use thinner for cleaning.
Doing so may cause rust or discoloration.

5.2.2 Decontamination cleaning

After handling the hazardous substances, using the following procedure.

1 **Turn off the power of the column oven.**

NOTE The gas sensor may defect volatile gas generated from organic solvent.

2 **Clean with a cloth soaked in Aqueous ethanol solution (80%) or aqueous sodium hypochlorite solution (0.05%) and wrung tightly.**

⚠ CAUTION

Prohibition

Do not leave metal surfaces wet.
This can cause rusting and discoloration.

6 Technical Information

6.1 Environment Setting List

Describes the environment settings of the system controller.

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Purge below Minimum Pressure</td><td>Not used in CL model.</td></tr>
<tr><td>External Start Output</td><td>Sets the output mode of the start signal.

Hint To use this parameter setting, the setting of [Relay 1] or [Relay 2] must be set to [Start].

<table>
<tr><th colspan="2">Setting Range</th><th>Initial Value</th></tr>
<tr><td>None</td><td>Do not output the start signal.</td><td rowspan="3">All Runs</td></tr>
<tr><td>All Runs</td><td>Always output the start signal at start of analysis.
(It also outputs in non-injection mode "-1")</td></tr>
<tr><td>Inj. Only</td><td>Output the start signal only when injected with autosampler
(It does not output in non-injection mode "-1".)</td></tr>
</table>
</td></tr>
<tr><td>Relay 1
Relay 2</td><td>Sets the operation mode of the event output terminal.

<table>
<tr><th colspan="2">Setting Range</th><th>Initial Value</th></tr>
<tr><td>Start</td><td>Close the contact at start.</td><td rowspan="5">Event</td></tr>
<tr><td>Stop</td><td>Close the contact at stop.</td></tr>
<tr><td>Error</td><td>Close the contact when an error occurs.</td></tr>
<tr><td>Event</td><td>Follow [Event 1] and [Event 2] of method parameters.</td></tr>
<tr><td>Ready</td><td>Close the contact in case of Ready or Pause.</td></tr>
</table>
</td></tr>
<tr><td>Event In 1</td><td>Not used in CL model.</td></tr>
</table>

6.2 Error Type

There are three kinds of errors as follows.

Error Type		Description
Warning		It is a cautionary recommendation.
Error		It is an instrument issue.
	Level 3	Both the column oven and the pump will not turn "OFF".
	Level 2	Both the column oven and the pump turn "OFF".
	Level 1	Both the column oven and the pump turn "OFF".
Fatal Error		It is a hardware issue. Please turn off the main power switch of the equipment and contact our sales office/distributor or our designated service representative.

6.3 Specifications

<table>
<tr><th>Item</th><th>Specification</th></tr>
<tr><td>Operating Environment Temperature</td><td>4-35 ℃</td></tr>
<tr><td>Available Humidity Range</td><td>20-85 % (No condensation)</td></tr>
<tr><td>External Dimensions</td><td>W 260 × H 72 × D 500 mm (Excluding protruding parts)</td></tr>
<tr><td>Mass</td><td>5 kg</td></tr>
<tr><td>Power Supply</td><td>
<table>
<tr><th>Part No.</th><th>Power Supply Voltage*1 (Display on main unit nameplate)</th><th>Power Consumption</th><th>Frequency</th><th>Rated Breaking Capacity *2</th></tr>
<tr><td>228-65502-55</td><td>AC100-240 V (100-240V～)</td><td>50 VA</td><td>50/60 Hz</td><td>50 A</td></tr>
</table>
*1 The voltage fluctuation of the power supply should not exceed 10% of the nominal voltage of the power supply.
*2 Please connect the power supply of this unit to an outlet with a circuit breaker that shuts off with current below this current capacity.
</td></tr>
<tr><td>External Connecting Terminal</td><td>Ethernet x 1
Optical link connector x 8
(Up to 12 ch by optical connector expansion board)
Event In x 1*3
Event Out x 2
External Start Terminal (Man.Inj) x 1*3
Option Connector x 1*4
AC Remote Connector x 1*3</td></tr>
<tr><td>Installation Environment (IEC)</td><td>Installation category Ⅱ, pollution degree 2, altitude 2000 m or less
Install indoors.</td></tr>
</table>

* 3 :Not used in CL model.

* 4: Not used.

■ Connectable Device

The controllable devices are shown below.

Unit	Nexera Series		Maximum Number of Connectable Units
	Nexera X3 (130MPa)	Nexera XR (70MPa)	
Pump	LC-40D X3 CL LC-40B X3 CL	LC-40D XR CL	4
Autosampler	SIL-40C X3 CL	SIL-40C XR CL	1
Column Oven	CTO-40C CL		4
Detector	SPD-40 CL		2

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