SHIMADZU

228-91535A

SHIMADZU HIGH PERFORMANCE LIQUID CHROMATOGRAPH

Prominence-i
LC-2030
LC-2030C
LC-2030C 3D

Operation Guide

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 the operation on the Operations screen and the operational method on the Web screen, iPhone, and iPad for 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 as a booklet or PDF document. PDF documents are included in the instruction manual CD-ROM(Part No. S228-56248-41).

System Guide (Booklet/PDF)	Describes the basic operation and troubleshooting for this product.
Integrity Guide (PDF)	Describes "validation" for verifying that this product meets "CHECK CRITERIA" and "calibration" for adjustment so that this product meets the CHECK CRITERIA, in order to secure the reliability of analysis data.
Operation Guide (PDF)	This instruction manual. Describes the operation of the operations screen and the operational method for the Web screen, iPhone, and iPad for this product.
Maintenance Guide (PDF)	Describes the maintenance for this product, including inspection, part replacement, and rinsing.

Read "Introduction" in this section thoroughly before using the product. "Introduction" describes the information about the warranty, after-sales service, safety instructions and precautions to ensure safe operation of the instrument.
For information on the operation, hardware validation, and accessories and options for this product, refer to "System Guide", "Integrity Guide", and "Maintenance Guide".
Keep this manual for future reference.

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 "Safety Instructions" P.iv thoroughly 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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- A part of illustration of this manual might be different from the instrument used.
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Indications Used in This Manual

Warnings, cautions, and notes are indicated using the following conventions:

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.

Safety Instructions

To ensure safe product operation, read these important safety instructions carefully before use and follow all WARNING and CAUTION instructions given in this section.

■ Product Applications

⚠ WARNING

Instruction

Use this instrument ONLY for the intended purpose.

This instrument is a high performance liquid chromatograph system. Using this instrument for any other purpose could cause accidents.

Instruction

Safety regulations and standards

For notifications on installation and safety controls, follow the necessary procedures in compliance with the laws and regulations applicable in the country where the product is used.

■ Installation Site

⚠ WARNING

Prohibition

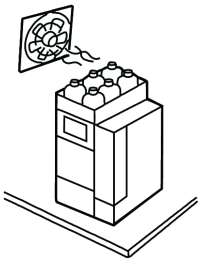
Use of open flame in the vicinity of this instrument must be strictly prohibited.
Do NOT install the instrument in the same room with any other equipment that emits. Otherwise could potentially emit sparks, since sparks could cause a fire.

High performance liquid chromatograph uses large amounts of flammable organic solvents.
Provide fire extinguishers for use in case of fire.

Instruction

The room where the instrument is installed should be well ventilated.

Otherwise, solvent vapors could cause poisoning or ignite and cause a fire. The solvents used in high performance liquid chromatograph are flammable and toxic.



Instruction

Provide sink washing equipment as close to the instrument as possible.

If solvent gets into the eyes or onto the skin, it must be flushed away immediately.

⚠ CAUTION

Prohibition

Avoid installation sites that are exposed to corrosive gases or excessive dust.

These adverse conditions may be detrimental in maintaining the instrument's performance and may shorten its service life.

Prohibition

Keep away from equipment generating strong magnetic fields.

Do NOT install the instrument near equipment that generates strong magnetic fields. If the power supply line is subject to high electrical noise, install a surge protector.

Prohibition

When transporting the instrument, do not hold it by the front panel.

Otherwise, it may cause the front panel to get damaged or detached.

Instruction

During installation, consider the entire mass of this system combined with other components.

- Model without a sample cooler: 58 kg
- Model with a sample cooler: 63 kg

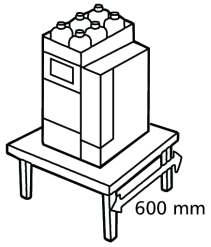
The mass of this system is as described above. Please set up this instrument in consideration of the entire mass combined with other components, PC, the monitor, and the printer, etc.

Reference "7 Technical Information" in the System Guide

Instruction

The lab table on which this instrument is installed should be strong enough to support the total mass of the system. It should be leveled, stable and have depth of at least 600 mm.

Otherwise, the instrument could tip over or fall off the table.



Instruction

Keep at least 100 mm between the rear of the instrument and the wall.

This allows for sufficient air circulation and ventilation from the grille to provide cooling and prevent the instrument from overheating and impairing the performance.

Instruction

Install the instrument in a location that satisfies the following conditions to preserve its performance:

- The room temperature is maintained between 4 and 35 °C, with minimal temperature variation during a day.
- Air currents from heating or air conditioning equipment are not directed onto the instrument.
- Ensure that Instrument is not exposed to direct sunlight.
- There is no vibration.
- Humidity is maintained within 20 to 85 %.
- There is no condensation.
- The location conforming to the installation environment (IEC)
  (Installation category II, Pollution degree: 2, Altitude: Up to 2000 m, Indoor)

⚠ CAUTION

Instruction

Install the product in locations where the power switch can be easily operated.
The power switch must be turned off in case of an emergency.

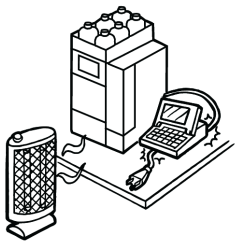
■ Installation

To ensure safe operation, contact your Shimadzu representative if product installation, adjustment, or re-installation (after the product is moved) is required.

⚠ WARNING

Prohibition

Do NOT place heavy objects on the power cord. Do NOT keep any hot items in the vicinity.
Do NOT modify the cord in any way. Do NOT bend it excessively.
Otherwise, fire, electric shock or malfunction may occur.
If the cord is damaged, contact your Shimadzu representative.

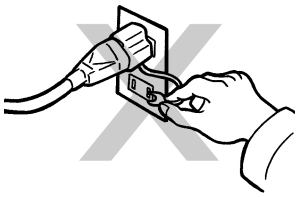


Prohibition

Use only the specified cable.
Arrange the cables as specified.
Otherwise, fire, electric shock or malfunction may occur.

Prohibition

Do NOT insert the adapter's grounding lead into the power outlet or allow it to make contact with the power outlet.
Otherwise, fire or electric shock may occur.

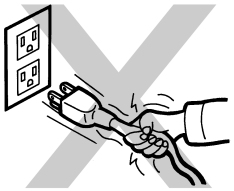


Prohibition

Do NOT connect the grounding lead to the gas tube, the water service tube or the telephone line.
Otherwise, accidents or malfunction may occur.

Instruction

To unplug the instrument, pull the plug itself, NOT the cord.
Before connecting the cable, turn off the power and unplug the instrument.
Otherwise, fire, electric shock or malfunction may occur. If the cord is damaged, contact your Shimadzu representative.



Instruction

Take measures to prevent the instrument from falling in the event of an earthquake or other disaster.
Strong vibrations could cause the instrument to fall over, resulting in injury.

⚠ WARNING

Instruction

Ground the instrument.

Grounding is necessary to prevent electric shock in the event of an accident or electrical discharge, and important for ensuring stable operation.
To prevent electric shock and to maintain stability in operation of the product, be sure to ground the product.
The product will be grounded when the provided 3-wired power plug is inserted into a 3-wired power socket equipped with a ground terminal.

Instruction

Connect the instrument only to a power supply of indicated voltage in consideration of total power consumption of this instrument, other LC components, PC, monitor, and printer, etc.

Otherwise, fire or electric shock could result.
Check that the power supply voltage is stable and that its current capacity is sufficient to operate all the components of the system. If not, the instrument will not operate at its rated performance, affecting not only this instrument, but other instruments connected to the same power supply. Connect the instrument to a power supply that complies with the capacity and use a power cord that complies with the capacity.
Please refer to the following for power supply voltage and power consumption of this product.

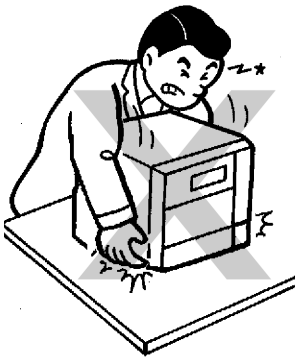
▶▶ Reference "7 Technical Information" in the System Guide

⚠ CAUTION

Instruction

When installing the instrument, be careful not to pinch your fingers between the system components.

Otherwise, injury may result from pinching your fingers, because the clearance between the components is only 20 mm.



Instruction

When opening the doors, be careful not to pinch your fingers as this could result in injury.

Instruction

Before plugging in the instrument, make sure that the main power switch on the side of the instrument is OFF.

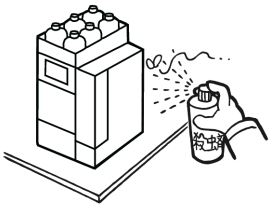
■ Operation

⚠ WARNING

Prohibition

Do NOT use flammable sprays (hair sprays, insecticide sprays, etc.) near the instrument.

Otherwise, they could ignite and cause a fire.



Prohibition

Never use a cracked reservoir bottle.

If a helium degassing unit is used, pressure is exerted on the reservoir bottles and may cause cracks in the bottles. It could break the reservoir bottles and cause injury.

Prohibition

Do NOT apply water to office equipment such as the PC as well as the instrument.

Instruction

Before removing any high pressure flow line part, such as tubing, the sample loop, the needle, and the needle seal, follow the safety precautions below:Be sure to stop the pump and confirm the pressure of the mobile phase has fallen to zero.

Removing any of these parts while high pressure remains could cause the mobile phase and the clogging particles to eject rapidly and injury could occur. Confirm that the pressure has fallen to zero before removing these parts. If the pressure has not fallen to zero, the high-pressure flow line might be clogged. After confirming the end of the drain tubing is in the waste container, open the drain valve and release the pressure of the mobile phase.

Instruction

Take thorough measures to prevent buildup of static electricity.

Static electricity could result in fires or explosion.

Reference "Static Electricity Precautions" P.xi

Instruction

Always wear protective gloves and protective goggles when handling solvents and samples.

If solvent gets into the eyes, it can result in blindness.
Should solvent get into the eyes, flush immediately with large amounts of water and get medical attention.

⚠ CAUTION

Prohibition

Do NOT bend any tubing of the instrument at the same position repeatedly.

Otherwise, a rupture or cracks of the tubing are likely to occur, and might result in solvent leaks.

■ Inspection and Maintenance

⚠ WARNING

Never remove the main cover.

Otherwise, this may cause injury or malfunctioning of the instrument.
The main cover does not need to be removed for routine maintenance, inspection and adjustment. Have your Shimadzu representative perform any repairs requiring removal of the main cover.

Do NOT allow spilled water to remain on the instrument surface, and do not use alcohol or thinner-type solvents to clean the surfaces.

Otherwise, these can cause rusting and discoloration.

If the power cord plug gets dusty, remove the plug from the power outlet and wipe away the dust with a dry cloth.

Otherwise, fire may occur.

Replacement parts must be of the specifications given in "Component Parts" or "Maintenance Parts" of the instruction manuals such as the System Guide and the Maintenance Guide.

Use of any other parts may result in instrument damage and malfunction.

Dispose of the waste liquid properly and in accordance with the instruction by your administrative department.

■ Repair, Disassembly and Modification

⚠ CAUTION

Do NOT modify or disassemble the product without permission.

Otherwise, electric shock or short-circuit accidents may occur. This may also cause injury or malfunctioning of the instrument.

When repair is necessary, request through your Shimadzu representative.

Failing to do so may result in an ignition, electric shock, or injury.

■ In an Emergency

If any problem is detected, such as a burning smell, take the following action:

Emergency Shutdown Procedure

1. Turn the power to the instrument OFF.
2. Disconnect the power cable at the rear of the instrument.

When the instrument is used again, inspect the instrument and, if necessary, contact your Shimadzu representative to request servicing.

■ During a Power Outage

Take the following measures in the event of a power outage.

1. Turn the power to the instrument OFF.
2. After confirming all related items in this section "Installation" P.vi and "Operation" P.viii, use the standard startup procedure to start the instrument.

Static Electricity Precautions

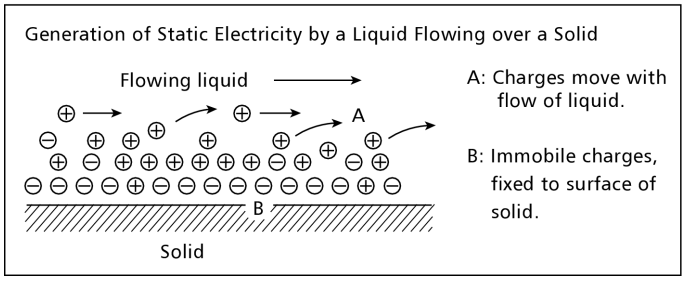
Liquid chromatograph (LC) uses flammable organic solvent(s) as the mobile phase. LC systems are also often used where large amount of flammable substances are present. Thus, an accident can produce large scale damage. Operators must be constantly on guard against accidents involving fire or explosion.
The major cause of these accidents is static electricity. Devising preventative measures for static electricity can be difficult, because the symptoms before an accident vary and can be hard to detect, since such accidents occur as a result of several simultaneous incidents. Recommended methods for preventing static electricity accidents are provided below. Take thorough safety measures based on this information.

■ Typical Cause of Static Electricity Accidents

Static electricity accidents are generally caused by this sequence of events:

Generation of static electricity

When liquid is passed through thin tubing at high flow rates, as in liquid chromatograph, the electrostatic charges of the flowing matter generate static electricity.



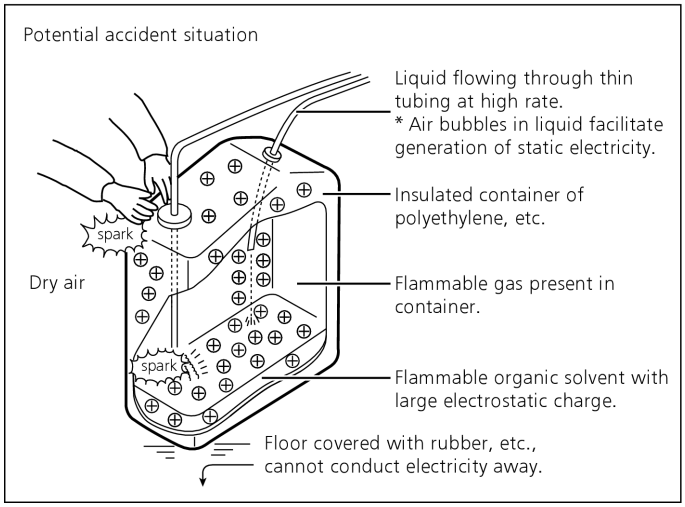
Accumulation of static electricity

If electrostatically charged liquid is allowed to accumulate in an electrically insulated container, the charge will gradually increase, and can eventually reach several thousand volts.

Release of energy through electrical discharge

If this happens and an electrical conductor is brought within a certain distance of the container, an electrical discharge will occur, releasing thermal energy which will ignite any flammable gas of sufficient density in the vicinity.

Ignition of flammable substances



Preventing Static Electricity Accidents

The best way to prevent static electricity accidents is simply to prevent the occurrence and accumulation of electrostatic charges.

⚠ CAUTION

Instruction

It is important to take multiple preventive measures simultaneously.
If large amounts of flammable solvents are collected in a large container, implement preventative measures 1, 2, and 3 below.

Instruction

Keep the room at a proper humidity.
Ambient humidity exceeding 65 % will prevent static.

■ Preventive Measure 1

Use a metal container for the waste liquid, and ground the container.
This will ensure that the electrical charges of the container and liquid pass to the ground.

Accessories for this measure

(1)	Grounding wire with clip	Part No. S228-21353-91
(2)	18-L metal container	Part No. S038-00044
(3)	4-L metal container	Part No. S038-00043-01

⚠ CAUTION

Instruction

Be sure to ground the metal waste container properly.
If the grounding wire is not properly attached or connected to the ground, static electricity can build up in the container.

Instruction

Be sure to verify, using a tester, that the waste container is properly grounded.
Some metal containers have surfaces that are oxidized or laminated. Such a container may not conduct electricity.

Instruction

If the liquid to be drained into the waste container is virtually nonconductive (10^{-10} S/m or less), it will be necessary to add properly conductive, and therefore safe, liquid to the tank.
This conductive liquid may be added beforehand.

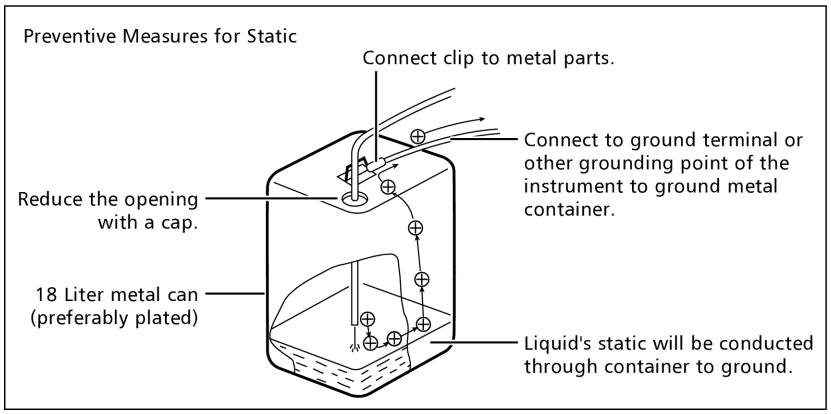
■ Preventive Measure 2

Cover the spaces between the tubing and the sides of the inlet and outlet openings of the waste container with caps or other protective covering. This will prevent any sparks generated outside the container from getting inside.

Accessories for this measure

Caps for 18-L or 4-L container (with three 3-mm diameter openings)

Part No. S228-21354-91



■ Preventive Measure 3

Keep electrostatically charged objects, including the human body, away from the waste liquid container.

To prevent electrostatic charging of the human body, take the following precautions:

- Wear anti-static clothing and shoes.
- Ground the human body with anti-static wrist straps. (For safety, the wrist strap should be connected to the ground using an intervening resistor of about 1 MΩ.)
- Spread anti-static matting or the like on the floor, to make the floor conductive.

⚠ CAUTION

Instruction

Persons who have not taken anti-static precautions should touch some grounded metal object before coming near the waste liquid container, in order to drain static charges.

■ Preventive Measure 4

Use tubing with an inner diameter of at least 2 mm for drain lines with high flow rates.

⚠ CAUTION

Instruction

Periodically check the tubing connections for leaks.

Air bubbles in liquid can multiply the electrostatic charge by a factor of 20, 30 or more.

■ Preventive Measure 5

If it is not possible to use a conductive waste liquid container, take the following precautions:

Ensure that the end of the inflow tubing is always submerged inside the container. Also, place some type of grounded metal object, such as a ground wire connected to the instrument, into the liquid.

⚠ CAUTION

For low conductivity (less than 10^{-10} S/m) liquids, take preventive measures 1 to 4.

For low conductivity (less than 10^{-10} S/m) liquids, preventive measure 5 has no effect.
Use as small a container as possible to minimize damage in the event of fire.

For Reference

Anti-static equipment (anti-static clothing, shoes and matting) and charge measurement equipment (potentiometer) are sold by specialty manufacturers.

Precautions for Mobile Phase Selection and Use

⚠ CAUTION

Do NOT use resin parts for the high-pressure tubing while pumping at high pressures.

Pumping at high pressure may cause resin tubing to be ruptured or disconnected, which could result in mobile phase leaks.
Please note the maximum withstand pressure of each part when resin parts are used for the high-pressure tubing.

Do NOT use highly volatile acids, such as acetic acids in high concentration (10 % to 50 %) or 1 % TFA (trifluoroacetic acid) solution, as a mobile phase or rinse solution of the autosampler continually.

Doing so could cause metallic parts in the instrument to corrode. If such liquids have been used for analysis, purge the mobile phase or rinse solution from the flow line with distilled water or other liquid that is less corrosive. Also, turn the autosampler off after analysis and open the front door slightly to let the vapor release from the inside of the instrument.

Do not use solutions of pH 13 or more..

Some types of mobile phases may damage the flow cell quartz if used for a long period of time at pH10 or more, resulting in transformation of the transmission characteristics. After using this type of mobile phase, pump HPLC grade pure water or other liquid to rinse the flow cell.

The following solvent could damage the system. Never use it in the degassing unit.

- HFIP (Hexafluoroisopropanol)
- HF (Hydrogen fluoride)
- Freon 113
- Fluorinert FC-40
- Fluorinert FC-72
- Fluorinert FC-75
- Perfluoro benzene
- Perfluoro octane
- Perfluoro decalin
- Perfluoro 1-methyldecalin
- Perfluoro dimethyldecalin
- Perfluoro methyl-cyclohexane
- Perfluoro dimethyl-cyclohexane
- AK-225
- Nitric acid of 30 % or more of concentration
- Sulfuric acid of 40 % or more of concentration
- Hydrogen peroxide

⚠ CAUTION

If PEEK resin parts are used for tubing connections, do not use the following mobile phases.

These mobile phases weaken PEEK resin, which may lead to cracked tubing and mobile phase leaks.

- Concentrated sulfuric acid
- Concentrated nitric acid
- Dichloroacetic acid
- Acetone*1
- Tetrahydrofuran (THF)
- Dichloromethane
- Chloroform
- Dimethyl sulfoxide (DMSO)
- Fluorine organic solvents such as hexafluoroisopropanol (HFIP)

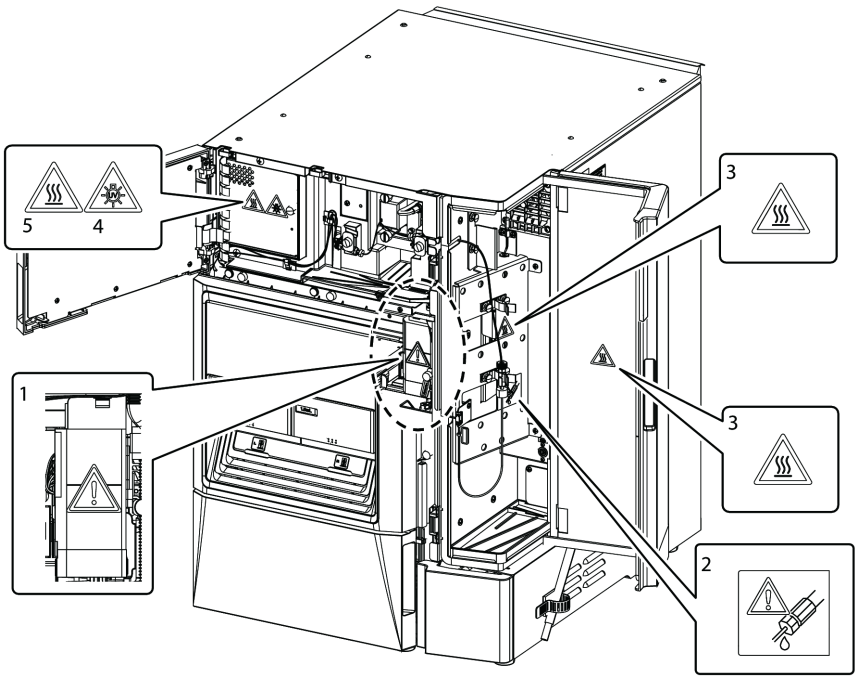
*1 There is no problem with temporarily using low-concentration aqueous solutions with an acetone concentration of 0.5 % or less, e.g. for the purpose of checking the performance of the gradient.

NOTE

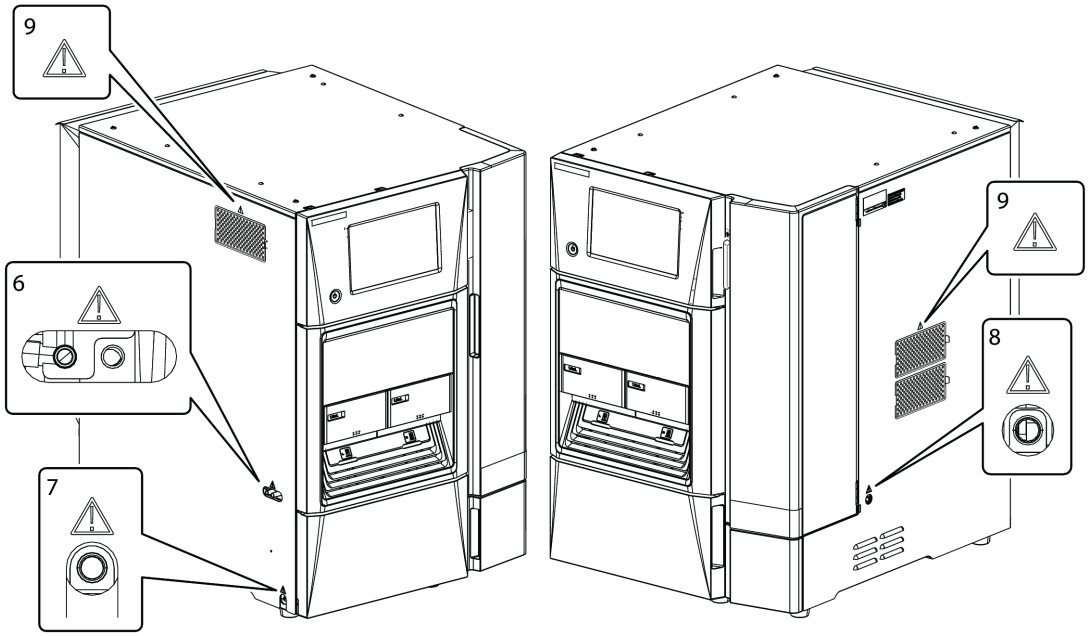
- Use only HPLC grade or comparable mobile phase, and filter it with a filter of 0.45 µm mesh or finer before use to remove particulates and foreign matter.
- Halogen ions can corrode the stainless steel material (SUS316L) used in the plumbing, so if such materials are used for the wetted parts of the equipment, avoid, as much as possible mobile phases that contain halogen ions - such as KCl, NaCl and NH_4Cl or mobile phases that generate halogen ions in certain reactions. If such mobile phases must be used, clean all flow lines thoroughly with distilled water immediately after analysis.
- Avoid ammonia aqueous solution at a concentration exceeding 0.1 %. It may damage the plunger of the pump and shorten the service life of the plunger and the plunger seal.
- When an absorbance detector or photodiode array detector is used for high-sensitivity analysis, be sure to use HPLC grade mobile phases that have a low absorptivity of UV rays.
- Always degas the mobile phase, as air bubbles may tend to form during solvent mixing or during temperature or pressure changes. Air bubbles may cause pump malfunctions and detector signal noise.
- Understand the properties, including boiling points, firing point and viscosities, of the mobile phase.

Warning Labels

In order to ensure safety, warning labels are attached in places requiring caution. If a warning label is lost or damaged, obtain a new label through your Shimadzu representative and attach it in the correct position.



No.	Warning Label	Description
❶		(Part No. S037-72999-02) During operations such as calibration, the autosampler operates even with the front panel open. Do NOT touch the needle moving parts.
❷		(Part No. S228-57699) Do NOT forget to tighten tubing completely. Otherwise, leakage may occur.
❸		(Part No. S206-77586) Be careful not to touch when the operating temperature of the column oven is high (60 °C or over).
❹		(Part No. S037-70854-02) The lamp emits ultraviolet light when illuminated. Do NOT look directly at the lamp light.
❺		(Part No. S037-72999-12) Allow the lamp and lamp mounting parts to cool down adequately before replacing the lamp. The lamp compartment is extremely hot just after turning off the lamp.



No.	Warning Label	Description
❻		(Part No. S228-53303) If a drain tube is not connected, the rinse solution may leak, resulting in malfunction of the instrument. When a model with a sample cooler is used, the condensation water may leak, resulting in malfunction of the instrument.
❼		(Part No. S228-53303) If a drain tube is not connected, leaked solutions will not drain, resulting in malfunction of the instrument.
❽		(Part No. S228-53303) If the column oven temperature is set to below the room temperature, condensation may occur. If a drain tube is not connected, leakage may occur, resulting in malfunction of the instrument.
❾		(Part No. S228-53303) Be careful of dirt on the air filter. If the filter is clogged with dust, the instrument's performance may be impaired.

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. 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

Recording media such as floppy disks and CD-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.

After-Sales Service and Availability of Replacement Parts

■ After-Sales Service

If any problem occurs with this product, perform an inspection and take appropriate corrective action as described in "6 Troubleshooting" of the System Guide.

If the problem persists, or the symptoms are not covered in the troubleshooting section, contact your Shimadzu representative.

■ Replacement Parts Availability

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.

■ Hardware Validation

Each unit in the instrument and the entire LC system should be checked periodically to ensure that they function normally, else the analysis data may not be reliable.
Therefore, it is necessary to carry out periodic hardware validation and keep records of the validation.
Before shipment from the factory, this instrument was rigorously inspected. The results are summarized in the Inspection Certificate accompanying the instrument. To inspect the instrument performance after installation, repeat the Hardware Validation as described in "2 Validation" of the Integrity Guide.

■ Hardware Validation Contract

This is a contract under which a qualified Shimadzu-approved engineer performs periodic validation, and provides reports of the results.
Details of the contract can be obtained from your Shimadzu representative.

Maintenance, Inspections, and Adjustment

In order to maintain the instrument's performance and obtain accurate measurement data, daily inspection and periodic inspection/calibration are necessary.

- For daily maintenance, inspection, and replacement parts, refer to the System Guide and Maintenance Guide.
- Periodic inspection/calibration should be requested to your Shimadzu representative.
- Replacement cycles described for periodic replacement parts are rough estimate. Replacement may be required earlier than the described replacement cycles depending on usage environment and frequency.

Disposal Precautions

When disposing of the instrument, contact your Shimadzu representative.
If you dispose them yourself, do so in accordance with the processing standards determined by law, separately from general industrial waste and household garbage.

Precautions on Handling Deuterium (D2) Lamp

■ When Disposing of the Lamp

If the deuterium (D2) lamp should be broken or its life is finished, dispose of the lamp separately from general garbage. When disposing of the deuterium (D2) lamp provided from Shimadzu Corporation, select a method, which will not harm the environment or cause bodily injury. Consult your local Government Agencies for a proper disposal method.

The materials of deuterium (D2) lamp are as follows:

- Metals (Tungsten, Aluminum)
- Quartz glass
- Ceramic
- Plastic

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1 Before Use

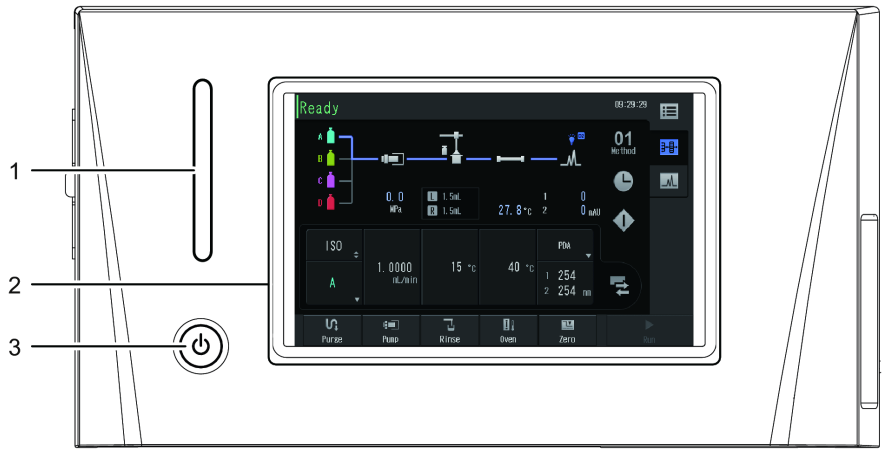
This chapter explains on-screen items, operating procedures, and the instructions to be noted before use.

1.1 Controller

This instrument collects the status of each unit of the pump, autosampler, column oven, and detector for executing control. The network function included as standard enables monitoring of the analysis status from a PC, iPad, or iPhone.

1.2 Names and Functions of Controller Parts

This instrument is controlled from the touch panel of the controller.



No.	Name	Explanation
1	Status Indicator	Displays the instrument status with different colors. • Green: Ready for analysis • Blue: During analysis • Yellow: Warming up • Red: Error • Orange: Sleep
2	Monitor Screen	Displays the Operations screen. Press on the Monitor screen for operation.
3	(Power Button)	Switches the power ON/OFF. • Off: Main power OFF • Orange: Main power ON • White: Power ON

1.3 Turning the Power ON/OFF

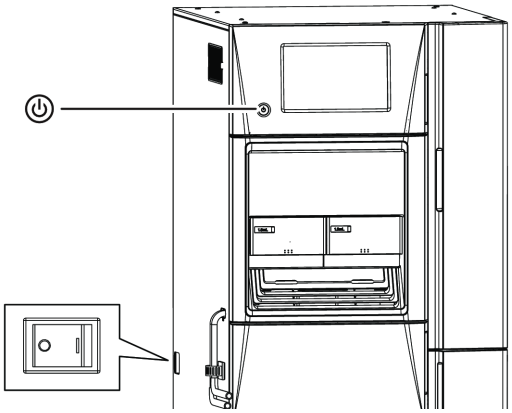
1.3.1 Turning the Power ON

Press (Power button) to display the screen.

NOTE A login pass ID Number will be requested on the Start screen. The initial value is "00000". To change the value, see "4.1.7 Changing the Login Pass ID Number" P.78.

1 **Check that the main power switch is set to ON (|) and then press (Power button).**

After the instrument starts up, the Startup screen is displayed followed by the [Login] screen.

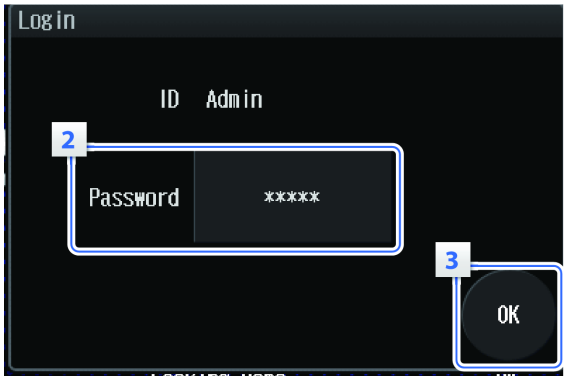


NOTE If the main power switch is switched from OFF (○) to ON (|), the instrument starts up even if (Power button) is not pressed.

2 **Input the login pass ID Number.**

NOTE The initial screen is displayed without entering Login Pass ID when [Password request to deactivate lock] is invalid.

Reference "1.5.4 Numeric Keypad Screen" P.9



3 **Press [OK].**

The initial screen is displayed.

NOTE The initial screen can be changed by changing the settings. The default is the Main Analysis screen.

Reference
- "2.1.1 Main Analysis Screen" P.13
- "5.2.5 Other" P.129

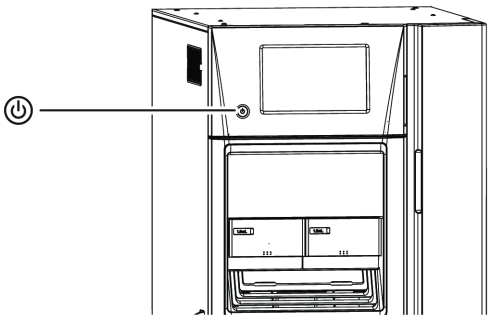
1.3.2 Turning the Power OFF

NOTE

- Pressing (Power button) will display the Confirmation screen.
- Do not operate the main power switch. Operating the main power switch during analysis or operation may cause corruption or failure when saving the settings data.
- Pressing and holding (Power button) for 4 seconds or more will forcibly turn the power OFF. Forced OFF may cause corruption or failure when saving the settings data.

1 **Press (Power button).**

The Confirmation screen is displayed.



2 **Press [OK].**

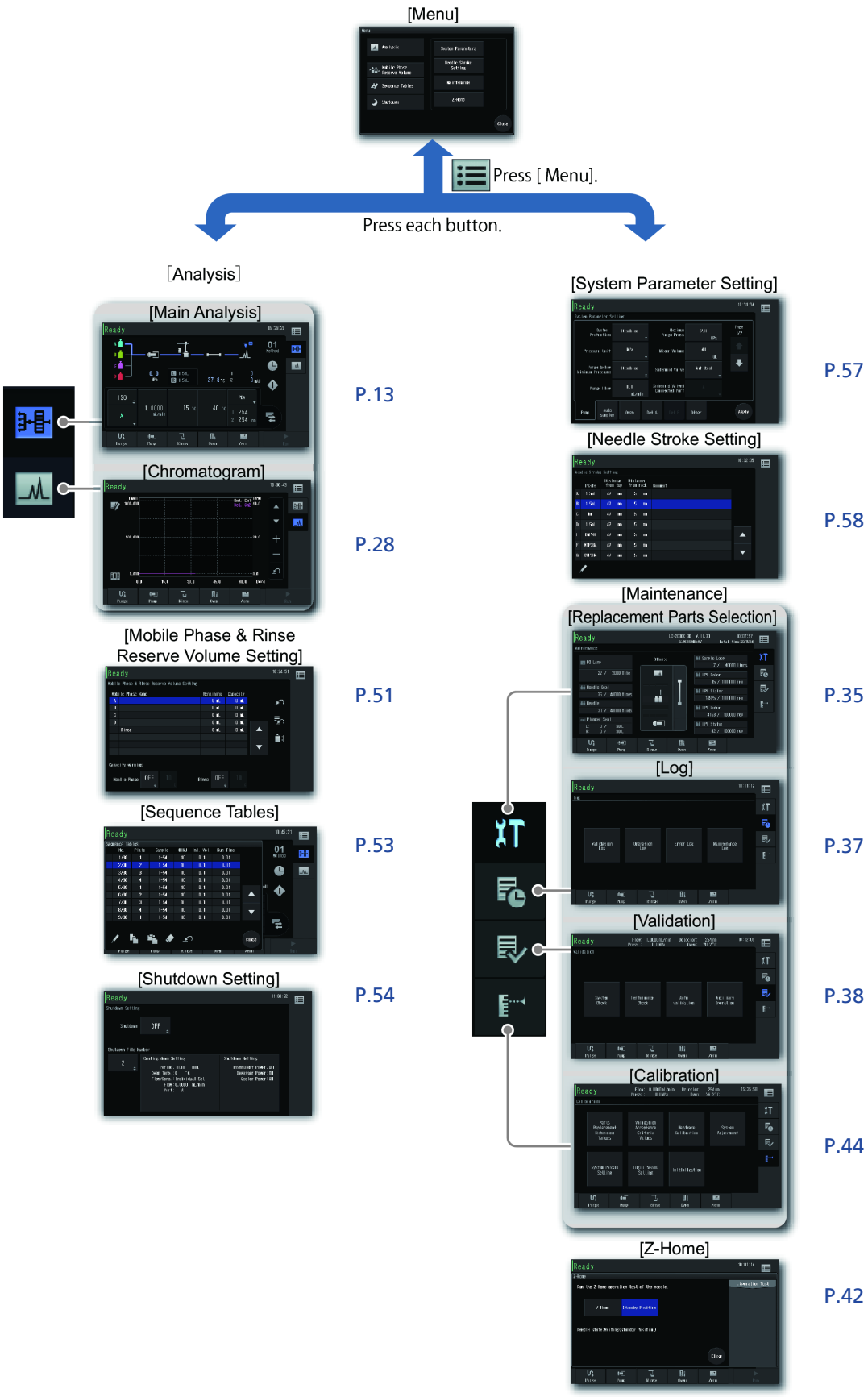
3 **Check that (Power button) is illuminated in orange.**

1.4 Screen Configuration

The screen configuration is described below. Pressing (Menu) will display the [Menu] screen. Press a button on the screen to go to the desired screen.

Reference "Screen Configuration" P.4

■ Screen Configuration

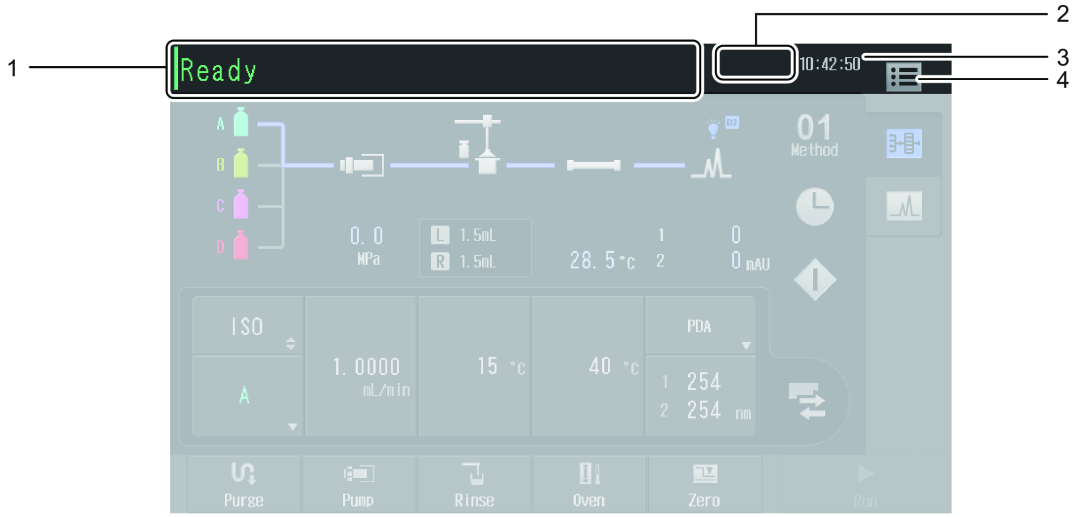


1.5 Common Items and Operations

This section explains the common items and operations displayed when operating a screen.

1.5.1 Common Screens

This section explains the common on-screen items.



No.	Name	Explanation	Ref.
1	System Status Information Display Area	Displays the instrument status. During analysis, the analysis start time, analysis end time, and analysis sample no. are displayed.	P.6
2	System Status Display Icon	Displays the instrument status with different icons.	P.6
3	Current Time Display	Displays the current time.	-
4	(Menu)	Displays the [Menu] screen.	-

■ System's status

This section explains the system's status indications and their meanings.

System's Status	Explanation
Ready	Ready for analysis.
Run	During analysis. The elapsed analysis time is shown as well. NOTE If [On Time Injection] is [ON], analysis time is not displayed.
Pause	Analysis is temporarily stopped.
Pretreat	Pretreatment of the autosampler is in progress.
Cooling Down	Shutdown is in progress.
Wait Oven	The instrument is waiting for the column oven temperature control to become stable.
Error	An error has occurred. The error code and error details are displayed on the [System monitor] screen.
Stop	Appears if the autosampler operation has been stopped by pressing [Stop] or from the occurrence of an error during analysis.
Rinse	Rinsing of the needle of the autosampler is in progress.
Z Home	The needle of the autosampler is stopped in the home position.
Sampler Purge	Autopurging of the autosampler is in progress.
Manual Prime	The autosampler is in the manual prime flow line status.
A.Purge / B.Purge / C.Purge / D.Purge	Autopurging of the pump is in progress.
Init Conc Flow	Autopurging of the pump has finished and the mobile phase is being replaced at the initial concentration of the method.
Safety Lock	The autosampler has stopped with the safetylock on.
Wait Sampler	Waiting for the autosampler to get ready for operation.
Posttreat	Appears when the autosampler is operating after the completion of analysis.
F Panel Open	The front panel is open.
No Rack L	The left sample rack is not set correctly.
No Rack R	The right sample rack is not set correctly.
Oven Door Open	The oven door is open.
Power Down	Shutdown has been executed.

■ System status display icons

This section explains the system status display icons and their meanings.

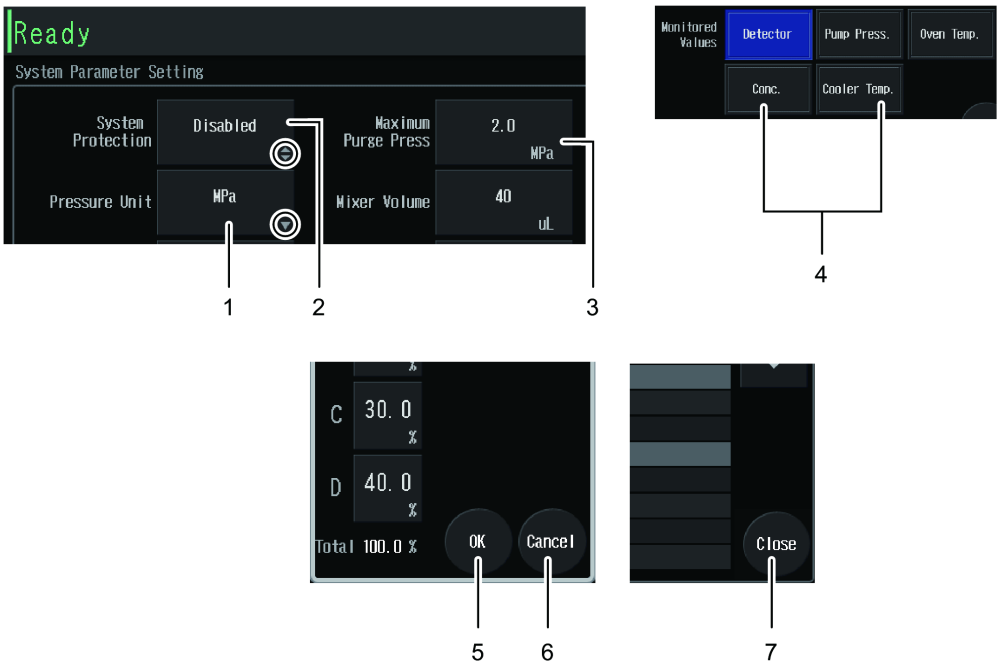
Display	Meaning	Ref.
	Appears when there are out-of-date consumable parts.	P.32

Display	Meaning	Ref.
	Appears when a PC is connected to the instrument over the network.	-
	Appears when the keypad lock is on.	P.83

1.5.2 Common Buttons

This section explains the common on-screen buttons.

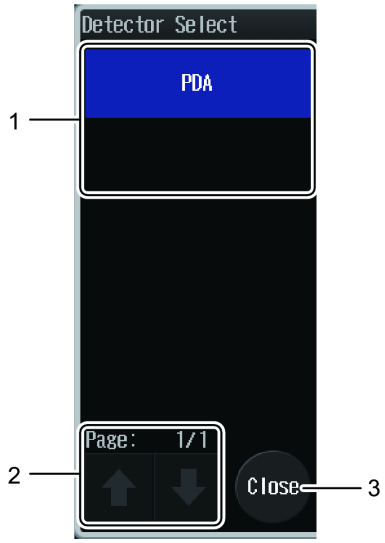
There are three kinds of buttons for items displayed with a set value: "selection", "switch", and "numeric keypad input". The setting procedures for each are not the same.There are also items that indicate their settings and process statuses with different button colors.



No.	Name	Explanation
1	Selection	The Selection screen opens.
2	Switch	Switches between ON and OFF, and enabled and disabled.
3	Numeric Keypad Input	The Numeric Keypad screen is displayed.
4	Multiple Selections	Switches between ON and OFF. The blue highlight indicates ON.
5	OK	Confirms the settings and closes the screen.
6	Cancel	Cancels the setting and closes the screen.
7	Close	Closes the screen.

1.5.3 Selection Screen

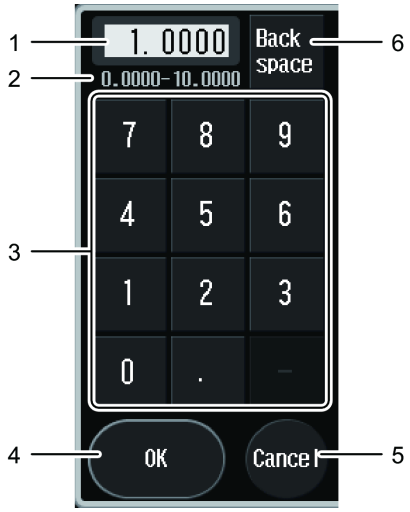
The Selection screen allows items to be selected.



No.	Name	Explanation
1	Selector Buttons	The selected item is highlighted in blue. Pressing the button will confirm the selection and close the screen.
2	Page Operation Buttons	Becomes active when the selection items cannot be shown on a single page. Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.
3	Close	Closes the Selection screen.

1.5.4 Numeric Keypad Screen

Allows values to be input with the Numeric Keypad screen.



No.	Name	Explanation
1	Display Field	Displays the input numbers and symbols.
2	Allowable Input Range	Displays the range of values allowed to be input.
3	Input	Inputs numbers and symbols.
4	OK	Confirms the input value and closes the screen. NOTE If the input value is not correct, an error window opens. Input again and press [OK].
5	Cancel	Cancels the input value and closes the screen.
6	Backspace	Removes the number immediately before the current position.

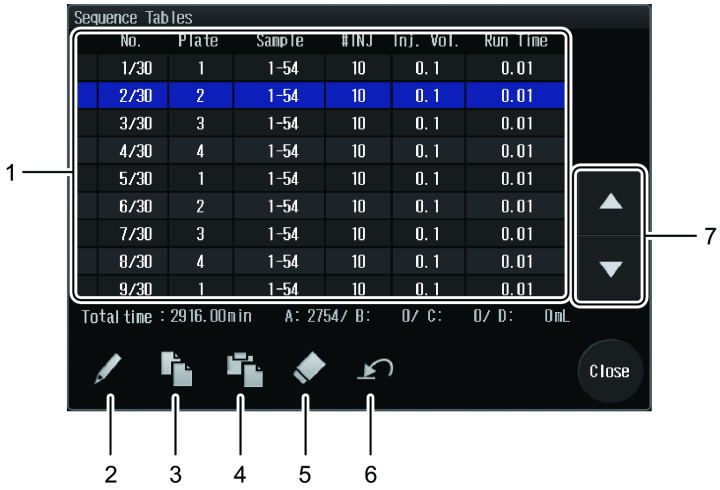
1.5.5 Alphanumeric Keypad screen

The Alphanumeric Keypad screen allows letters, numbers, and symbols to be input.

No.	Name	Explanation
1	Display Field	Displays the input letters, numbers, and symbols.
2	Input	Inputs letters, numbers, and symbols.
3	Switch Between Upper/Lower Case	Switches between uppercase and lowercase.
4	OK	Confirms the input and closes the screen.
5	Cancel	Cancels the input and closes the screen.
6	Backspace	Removes the character immediately before the current position.

1.5.6 List Screen

The List screen allows editing, copying, pasting, deletion, or initialization of the list.

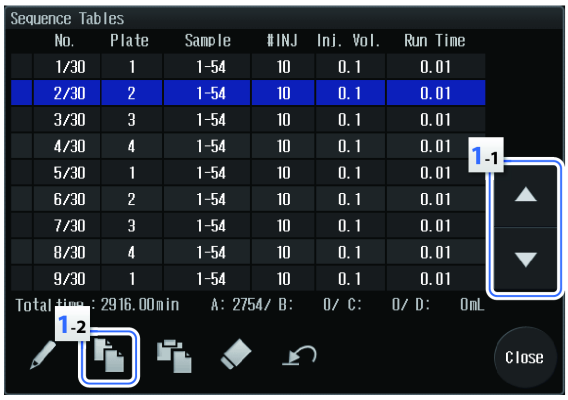


No.	Name	Explanation
1	File List	The selected line is highlighted in blue.
2	(Edit)	Displays the Edit screen for the selected line. NOTE To add a new line, select the line below the bottom line and press (Edit).
3	(Copy)	Copies the selected line.
4	(Paste)	The copied line is inserted before the selected line. NOTE • If the copied line is deleted before pasting, the copied information is lost. • The icon becomes active only when the line is copied.
5	(Delete)	Deletes the selected line.
6	(Initialize)	The Confirmation screen is displayed. Press [OK] to proceed to the next process. · [Time Program] screen and [Sequence Tables] screen: All lines will be deleted. · [Method] screen and [Mobile Phase & Rinse Reserve Volume Setting] screen: All values will be initialized.
7	(Selection Shift)	Moves the line selection up/down by one line.

■ Copying a line

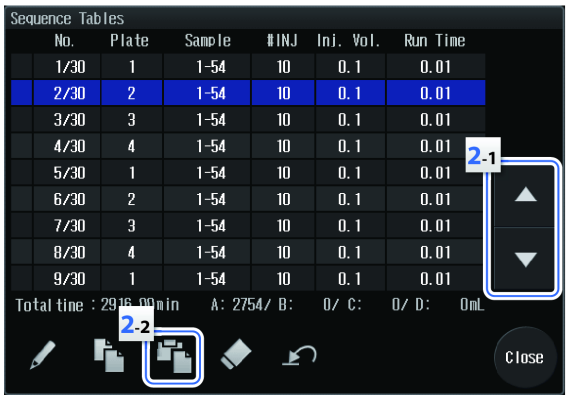
1 Press ▲ ▼ (Selection shift) to select the line to be copied, and then press (Copy).

The line is copied.



2 Press ▲ ▼ (Selection shift) to select the line position for insertion, and press (Paste).

The copied line is inserted before the selected line.



2 On-Screen Items and Operations

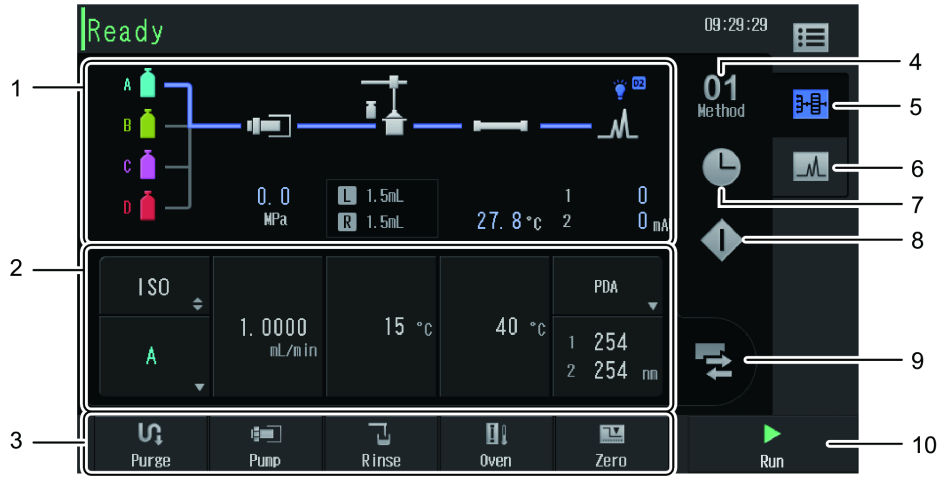
This chapter explains the items displayed on the screen after logging in and how to operate them.

2.1 Analysis Screen

The screen allows analysis execution, editing of the selected method file and sequence file, execution of direct control of the instruments, and viewing of the chromatogram display of the detector.
Press [Analysis screen] from the main menu to display the [Analysis] screen.

2.1.1 Main Analysis Screen

This section explains the item names and functions on the Main Analysis screen as below. The Main Analysis screen initially shows the flow display tab.

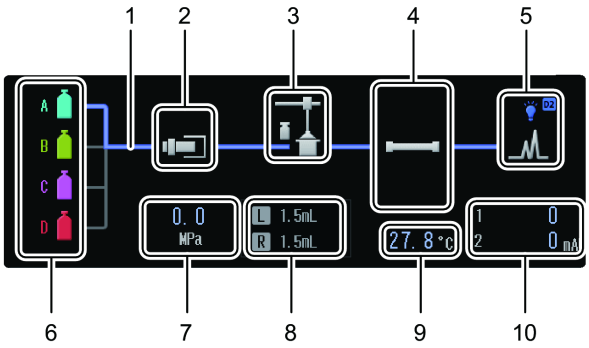


No.	Name	Explanation	Ref.
1	Flow Line Display Area	Displays the flow line and the monitor values. Pressing each unit's icon will display the [Parameter Setting] screen for setting each unit parameter.	P.15
2	User Selection Area	Switches the display between [Method Parameter] , [Chromatogram Monitor], and [Sequence List].	P.18

No.	Name		Explanation	Ref.
3	System Control Area		Displays the system control buttons. These can be used to execute operations or display the status.	-
		Purge	Displays the [Auto Purge] screen. Shown in blue during autopurging.	P.31
		Pump	Starts the pumping of the pump. Shown in blue during pumping.	-
		Rinse	Starts rinsing of the autosampler needle.	-
		Oven	Starts temperature control of the column oven. Shown in blue during column oven temperature control.	-
		Zero	Executes the autozero function of the detector selected in [Method Parameter]. **Hint** The autozero function uses the absorbance of the current detector as "0". It should be executed when chromatogram is stable.	-
4	 (Method Selection)		Displays the selected method number. The method can be selected on the [Method] screen.	P.23
5	Flow Display Tab		Displays the flow line.	P.15
6	Chromatogram Display Tab		Displays the chromatogram.	P.28
7	 (Editing Time Programs)		Displays the [Time Program] screen for editing the time programs.	P.25
8	 (Single Analysis)		Displays the [Single Run] screen for executing single analysis.	P.27
9	 (Switch Displays)		Displays the [Display Switch] screen for switching the user selection area displays.	P.18
10	Run		Starts analysis. After the analysis starts, the button display changes depending on the status. • [Pause]: Temporarily stops analysis. • [Stop]: Stops analysis. • [Restart]: Restarts analysis. If analysis cannot be started because there is no sequence setting or because of the instrument status, [Run] will be disabled.	P.64

■ Flow line display area

The status of in-line instruments and monitor values are displayed.



No.	Name	Explanation	Ref.
1	Flow Line Display	The indication that pumping is in progress is displayed during pump operation. : Inactive : Pumping is in progress. : Not selected	-
2	Pump	When the icon is pressed, the [Pump] tab is displayed on the [Parameter Setting] screen, allowing parameter settings to be configured.	P.112
3	Autosampler	When the icon is pressed, the [Autosampler] tab is displayed on the [Parameter Setting] screen, allowing parameter settings to be configured.	P.114
4	Column Status	The number of columns displayed differs depending on the connections of the column switching valves (optional). Also, the flow line currently used is displayed as the selected line. When the icon is pressed, the [Oven] tab is displayed on the [Parameter Setting] screen, allowing parameter settings to be configured.  : 6 columns  : Standard	P.116

No.	Name	Explanation	Ref.
5	Detector Lamp Status	Displays the detector lamp status. The icon blinks during preparation. When the icon is pressed, the [Detector] tab is displayed on the [Parameter Setting] screen, allowing parameter settings to be configured.  : OFF  : The deuterium (D2) lamp is ON.  : The tungsten lamp (W) is ON (displayed on PDA detector system models only).  : The deuterium (D2) lamp and tungsten lamp (W) are ON (displayed on PDA detector system models only).	-
	Recycling Valve Operational Status	Displays the recycling valve operational status.  : Waste liquid side  : Recycling side	P.117
6	Mobile Phase Port Display	When the icon is pressed, the [Pump] tab is displayed on the [Parameter Setting] screen, allowing parameter settings to be configured.	P.112
7	Pressure Monitor Value	Displays the current pump pressure value. The pump pressure unit can be changed.	P.7 P.124
8	Sample Cooler Temperature Monitor Value	Displays the sample cooler temperature monitor value and the rack type. The display can be switched between the sample cooler temperature monitor value and the rack type.  : Sample cooler OFF (Displayed only for models with sample cooler)  : Sample cooler ON (Displayed only for models with sample cooler)  : Rack type	-
9	Oven Temperature Monitor Value	Displays the current oven temperature.	-

No.	Name	Explanation	Ref.
10	Detector Data Monitor Value	Displays the monitor value of the current detector data. The displayed value differs depending on the selected detector and the settings. NOTE The PDA detector system model is not displayed until the analysis starts.	-

Parameter Setting screen

Configure the parameter settings of each unit.

Reference Operation details "1.5 Common Items and Operations" P.5
Set values "5 Parameter Setting" P.112

No.	Name	Explanation
1	Parameter Settings Button	Displays the set values. Press the buttons to change the settings. The displayed items differ depending on the system's hardware configuration and system settings.
2	Unit Selection Tab	Switches to the [Parameter Setting] screen of each unit. The tab of detector B cannot be selected if no external detector is connected.
3	Page Operation Button	Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.

■ User selection area

Press the switch displays button on the Main Analysis screen to display the [Display Switch] screen and to switch the content displayed in the user selection area.

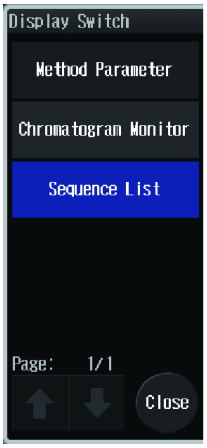
How to switch the display of the user selection area

1 **Press (Switch displays) from the Main Analysis screen.**

The [Display Switch] screen is displayed.

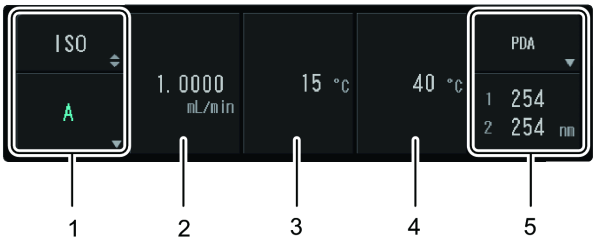
2 **Select the desired display.**

Item	Explanation	Ref.
Method Parameter	Displays the simple parameters.	P.19
Chromatogram Monitor	The chromatogram monitor is displayed.	P.20
Sequence List	Displays the sequence list.	P.20



Method Parameter

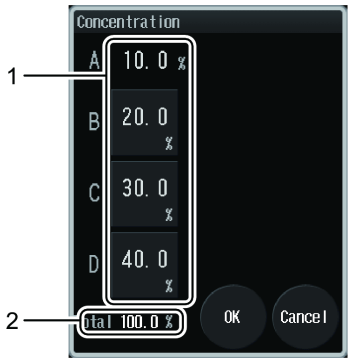
The current parameters are displayed. Press the buttons to change the settings.



No.	Name		Explanation
1	Pumping Mode		The pumping mode is switched each time the above button is pressed. • [GRAD.]: Pumping in gradient mode • [ISO]: Pumping in isocratic mode
		Concentration Settings	Appears at the bottom when the pumping mode is set to [GRAD.]. Displays the concentration. The [Concentration] screen is displayed allowing configuration of the port concentration settings. Reference "Concentration screen" P.20
		Mobile Phase Port Selection	Appears at the bottom when the pumping mode is set to [ISO]. Displays the mobile phase ports. The Selection screen is displayed allowing selection of the mobile phase port.
2	Flow Rate Settings Button		Displays the set flow rate. The Numeric Keypad screen is displayed allowing setting of the flow rate.
3	Sample Cooler Temperature Setting Button		Displays the set cooler temperature (models with sample cooler only). The Numeric Keypad screen opens, allowing the sample cooler temperature to be set.
4	Column Oven Temperature Setting Button		Displays the set oven temperature. The Numeric Keypad screen opens, allowing the oven temperature to be set.
5	Detector Area		The name of the currently selected detector is shown on the upper button. Pressing the upper button displays the [Detector Select] screen. The [Detector Select] screen displays buttons corresponding to the connected detectors. The detector wavelength is shown on the lower button. Pressing the lower button opens the screen for setting the wavelength.

Concentration screen

Allows the concentration settings of the mobile phase to be configured.

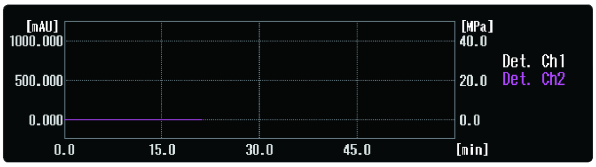


No.	Name	Explanation
1	Concentration Settings Button	Displays the concentration. Press B to D to display the Numeric Keypad screen for setting the concentration. A shows the calculated value (= 100 - solvent B concentration - solvent C concentration - solvent D concentration). After the settings are configured, the total concentration value will be updated.
2	Total Concentration Value	Displays the total concentration value. Shown red if the total value of B, C and D exceeds 100, and the error window opens even when [OK] is pressed.

Chromatogram Monitor

The chromatogram monitor is displayed. The displayed items and the range can be set in the [Chromatogram Display Settings] screen.

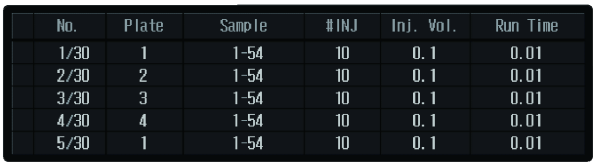
Reference "Chromatogram Display Settings screen" P.29



Sequence List

The list of sequence files is displayed. Press anywhere in the user selection area to display the [Sequence Tables] screen.

Reference "2.1.2 Sequence Tables Screen" P.21

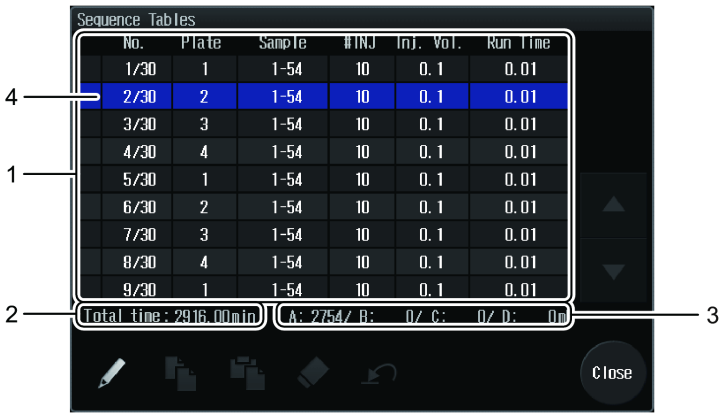


No.	Plate	Sample	#INJ	Inj. Vol.	Run Time
1/30	1	1-54	10	0.1	0.01
2/30	2	1-54	10	0.1	0.01
3/30	3	1-54	10	0.1	0.01
4/30	4	1-54	10	0.1	0.01
5/30	1	1-54	10	0.1	0.01

2.1.2 Sequence Tables Screen

The list of sequence files is displayed. Press  (Edit) to display the [Edit Sequence Parameter] screen of the selected file to edit the content.

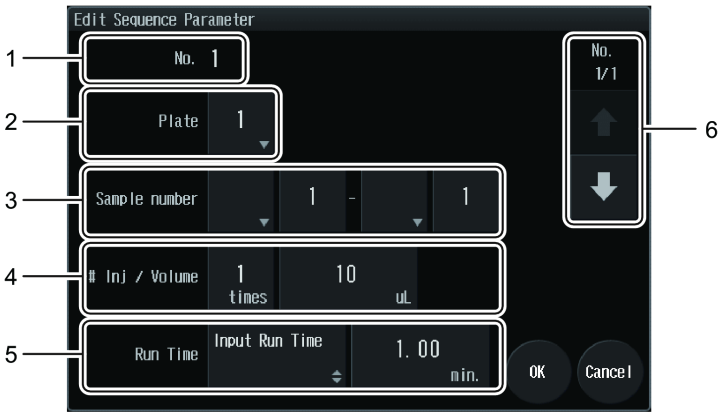
Reference "1.5.6 List Screen" P.11



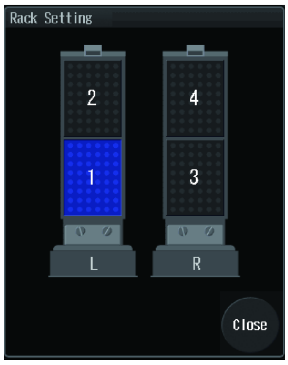
No.	Name	Explanation
1	Sequence List	Displays the list of set sequences.
2	Total Processing Time	Displays the total processing time for the sequence. (The time is only a guide.)
3	Mobile Phase Usage Estimation	Displays the mobile phase usage estimation for the sequence. Not displayed when an optional mobile phase switching valve is used.
4	Sequence Progress Status	Displays the sequence progress status during analysis. [→] is shown in the current line. [✓] is shown in completed lines.

■ Edit Sequence Parameter screen

Allows editing of each line of the sequence.



No.	Name		Explanation
1	No.		Displays the sequence line number.
2	Plate		Specifies the plate position where the sample is set. On the [Rack Setting] screen, press the plate position to select the number. The lower side of the screen is the near side of the sample rack. **NOTE** • The plate numbers are assigned in order of injection for standard analysis. • The injection order can be changed on the [System Parameter Setting] screen. Reference "5.2 System Settings" P.124
3	Sample Number		Specifies the starting and finishing sample numbers for injection.
4	# Inj / Volume		Sets the injection frequency and amount.
5	Run Time		Switches the analysis time source.
		Use Time Program	The method containing a time program used for analysis time is selected. The set values of the selected time program method are used for the analysis condition. Reference "5.3 Time Program" P.132
		Input Run Time	Enter the analysis time. The method selected on the Main Analysis screen is used for the analysis condition.
6	Line No. Switchover Button		Press the arrows to change the line number. The current line and the total number of lines are shown above the arrows. Pressing the down arrow from the bottom line will copy the bottom line and insert it as a new line.

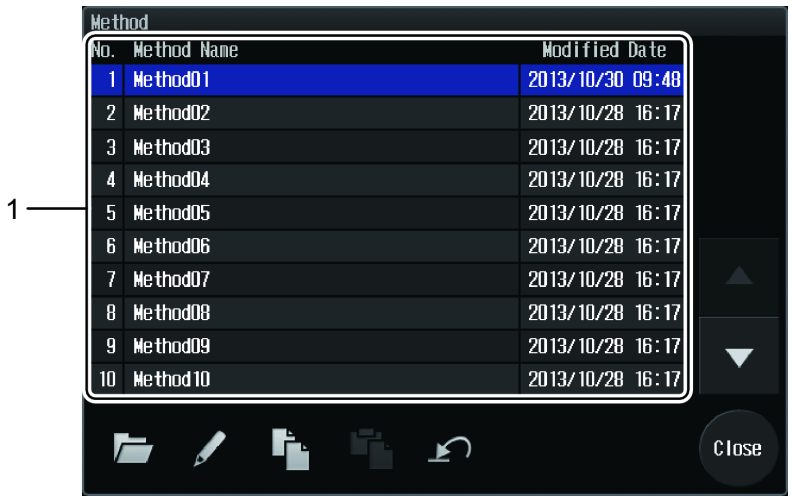


[Rack Setting] screen

2.1.3 Method Screen

The list of method files is displayed. Press (Edit) to display the [Edit Method Parameter] screen of the selected file to edit the content.

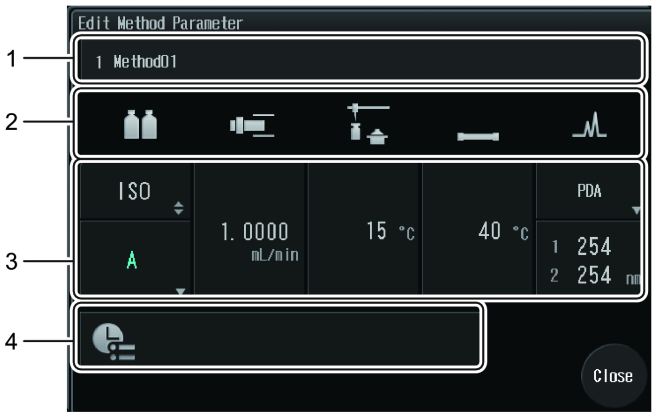
Reference "1.5.6 List Screen" P.11



No.	Name	Explanation
1	Method File List	The list of method files is displayed.

■ Edit Method Parameter screen

Edit the method content.

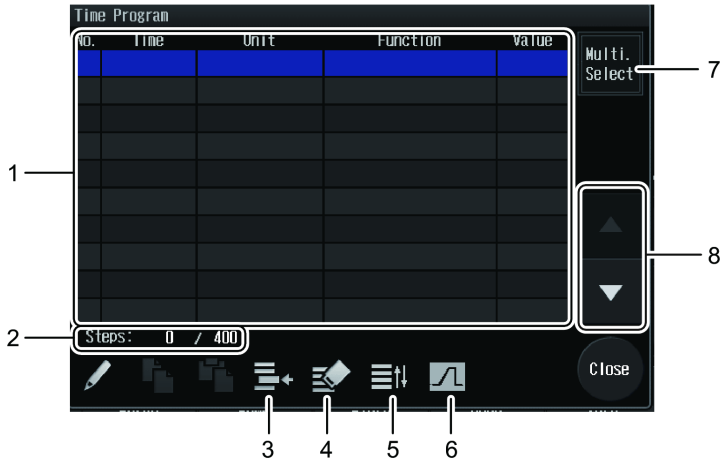


No.	Name	Explanation
1	Method Name	Displays the method name. The method name can be edited.
2	Unit	Press the unit icon to display the [Parameter Setting] screen. The screen has different tabs according to the unit. ▶▶ Reference Operation details "1.5 Common Items and Operations" P.5 Set values "5 Parameter Setting" P.112  : [Pump] tab  : [Pump] tab  : [Autosampler] tab  : [Oven] tab  : [Detector] tab
3	Method Parameter Display	Displays the method parameters. ▶▶ Reference "Method Parameter" P.19
4	Time Program	Displays the simplified information of the time program. The [Time Program] screen is displayed. ▶▶ Reference "2.1.4 Time Program Screen" P.25

2.1.4 Time Program Screen

Displays the list of time programs. Press (Edit) to display the [Edit] screen of the selected line to edit the content.

Reference Operation details "1.5.6 List Screen" P.11
Set values "5.3 Time Program" P.132



No.	Name	Explanation
1	Time-Program Table	Displays the list of set time programs. The time programs are shown in gray if they cannot be executed due to a mismatch of the settings or environment.
2	Steps:	Displays the number of lines used out of 400 (the maximum lines that can be set in the instrument). The total number of time programs used in the method is shown.
3	(One-Line Insertion)	Inserts a line before the selected line.
4	(Delete Selected Line)	Deletes the selected line.
5	(Sort by Time)	Sorts the lines in ascending order.
6	(Gradient Curve)	Displays the [Gradient Curve] screen. Cannot be pressed if the pumping mode is [ISO]. Reference "Gradient Curve screen" P.26
7	Multi. Select	Activates multiple selections. Press (Selection shift) to move the selected range.
8	Selection	Confirms the selected lines when multiple lines are selected. Appears when the multiple selections button is pressed.

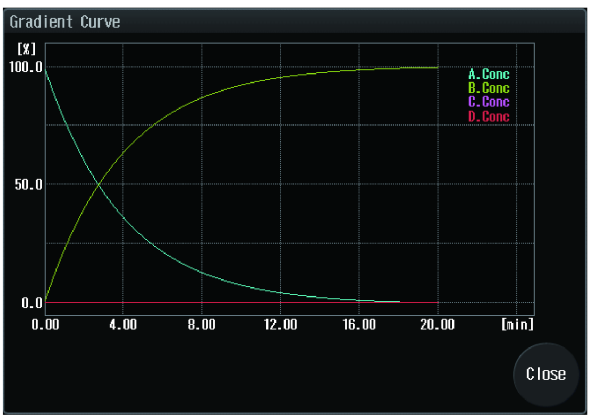
■ Edit Time Program screen

Allows the content of each line of the time program to be edited.

No.	Name	Explanation
1	No.	Displays the line number of the time program.
2	Time	Sets the time. The setting range is 0.01 to 9999.9.
3	Unit	Specify the module.
4	Function	Specify the process command. Differs depending on the unit.
5	Value	Input the value according to the process command. Reference "5.3 Time Program" P.132 NOTE The value cannot be input if not required by the process command.
6	Line No. Switchover Button	Press the arrows to change the line number. The current line number and the number of set time program lines are shown above the arrows. Pressing the down arrow from the bottom line will copy the bottom line and insert it as a new line.

■ Gradient Curve screen

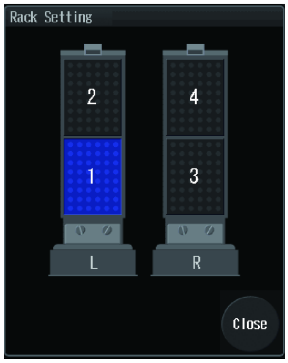
The gradient curve of the time program being edited is displayed.



2.1.5 Single Run Screen

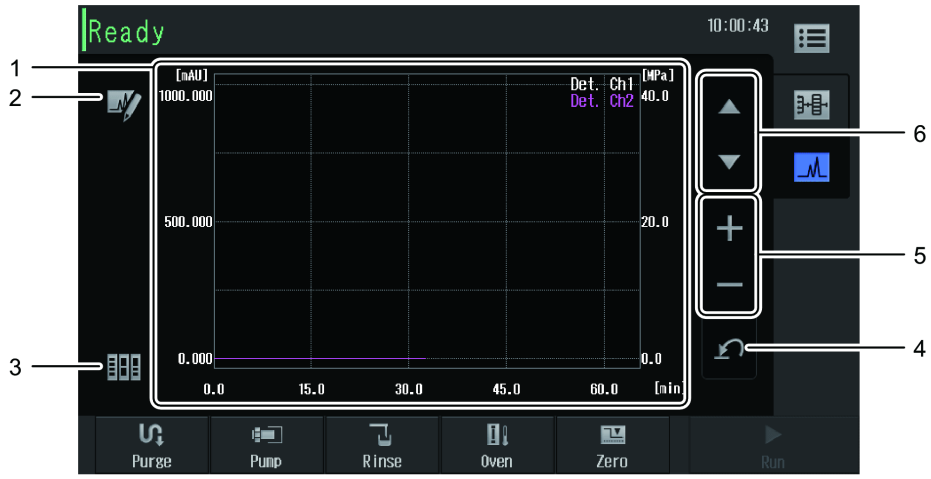
The screen allows single analysis to be executed. Input the settings and start analysis.

Reference "3.2.1 Executing Single Analysis" P.64

No.	Name		Explanation
1	Plate		Specifies the plate position where the sample is set. On the [Select Plate Number] screen, select the number to choose the plate. The lower side of the screen is the near side of the sample rack. **NOTE** • The plate numbers are assigned in order of injection for standard analysis. • The injection order can be changed on the [System Parameter Setting] screen. Reference "5.2 System Settings" P.124  [Select Plate Number] screen
2	Sample number		Specifies the position number of the sample vial and that of the well filled with the sample.
3	Injection Volume		Sets the injection volume.
4	Run Time		Switches the analysis time source.
		Use Time Program	The method containing a time program used for analysis time is selected. The set values of the selected method are applied to the analysis condition. Reference "5.3 Time Program" P.132
		Input Run Time	Enter the analysis time. The method selected on the Main Analysis screen is used for the analysis condition.
5	Run		Closes the screen and starts analysis. If analysis cannot be started due to the instrument status, [Run] will be disabled.

2.1.6 Chromatogram Display Tab

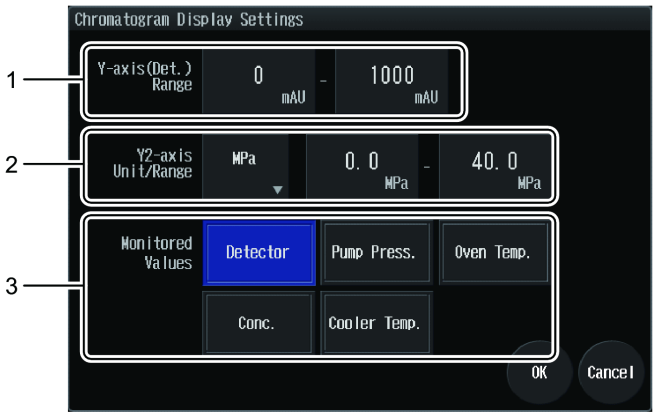
The chromatogram of the detector selected on the Main Analysis screen and the monitor values of the instruments are displayed.



No.	Name	Explanation
1	Chromatogram Monitor	Displays the chromatogram. The detector chromatogram displays the chromatogram of the detector selected in [Method Parameter]. The initial value of the time axis of the chromatogram monitor is 20 minutes. After analysis starts, the value changes according to the analysis time with a maximum of 120 minutes. The concentration appears only when the pumping mode is set to [GRAD.].
2	(Show Chromatogram Display Settings)	Displays the [Chromatogram Display Settings] screen. Reference "Chromatogram Display Settings screen" P.29
3	(Monitor Value Display)	Displays the [Monitor value display] screen. Reference "Monitor Value Display screen" P.30
4	(Reset)	Resets the chromatogram display of the detector to the status set on the [Chromatogram Display Settings] screen. Reference "Chromatogram Display Settings screen" P.29
5	(Zoom In/Out)	Zooms the vertical axis of the chromatogram display for the detector in/out.
6	(Shift Displays)	Shifts the display position of the vertical axis of the detector chromatogram display upward or downward.

■ Chromatogram Display Settings screen

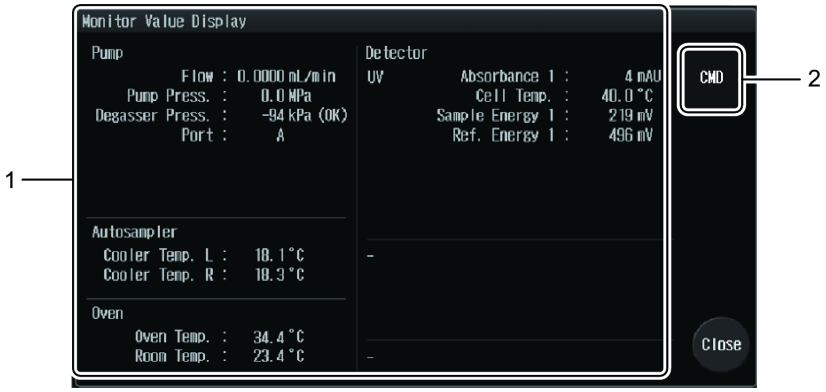
This screen allows the chromatogram monitor display settings to be configured.



No.	Name	Explanation
1	Y-axis(Det.) Range	Specifies the display range of the detector data (left vertical axis) of the chromatogram monitor.
2	Y2-axis Unit/Range	Specifies the unit and display range of the status data (right vertical axis) of the chromatogram monitor.
3	Monitored Values	Specifies the items to be displayed in the chromatogram monitor. The sample cooler temperature can be set only when a cooler is attached.

■ Monitor Value Display screen

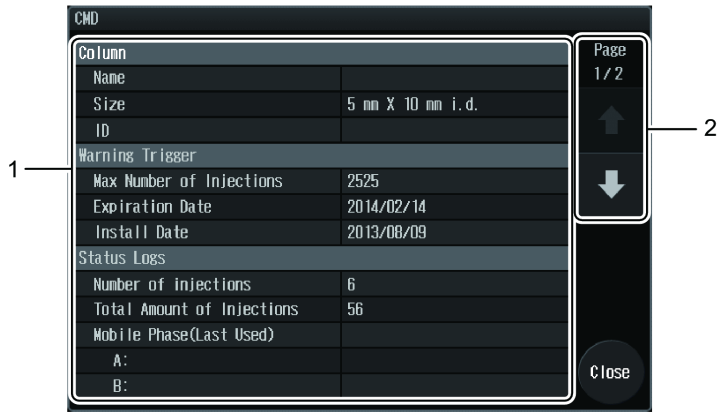
The current values of the chromatogram monitor are displayed. The displayed items differ depending on the type of built-in detectors and the optional parts connected.



No.	Name	Explanation
1	Monitor Value Display	Displays the monitor values of each unit.
2	CMD	Displays the [CMD] screen. Appears only when a CMD is connected.

CMD screen

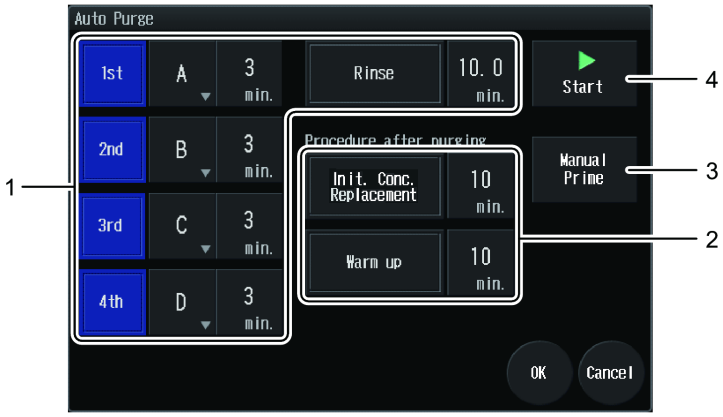
Displays the column oven data read by the CMD (Column Management Device) connected to the column oven.



No.	Name	Explanation
1	CMD Data Display	Displays the CMD data.
2	Page Display Button	Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.

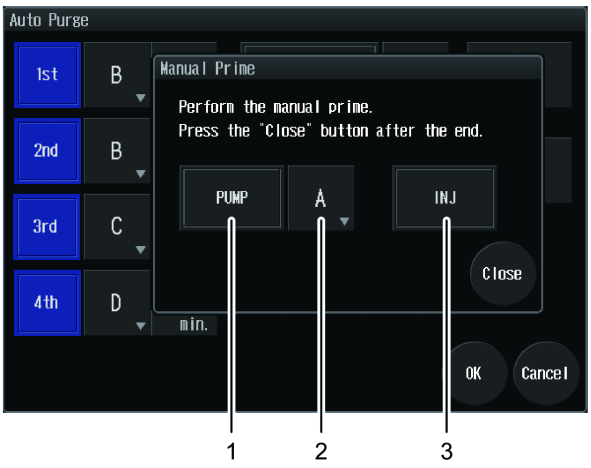
2.1.7 Auto Purge Screen

Specify the autopurge conditions and execute autopurging.



No.	Name		Explanation
1	Auto Purge Settings		Configures the ON/OFF setting and the process time of the mobile phases to be purged and the rinse solution. The process will be executed on the mobile phases and rinse solutions set to ON in order from 1st, 2nd, 3rd, 4th, and then rinse solution. The setting range and initial value of the purge process time are as follows. • Pump: Setting range of 1 minute to 20 minutes, initial value of 3 minutes • Autosampler: Setting range of 0.1 minutes to 25.0 minutes, initial value of 10 minutes
2	Procedure after purging		Specifies the operation to be executed after the autopurge is completed.
		Init. Conc. Replacement	Configures the ON/OFF setting and the purging process time with the initial concentration of the delivery liquid. Purging will be executed at 2 mL/min according to the gradient initial condition of the selected method. The setting can be specified only when the pumping mode is set to [GRAD.]. The setting range of the process time is 1 minute to 120 minutes, and the initial value 10 minutes.
		Warm Up	Configures the ON/OFF setting and the process time for warming up. Warming up will be executed at the rate of half that specified for the selected method. The setting range of the process time is 1 minute to 120 minutes, and the initial value 10 minutes.
3	Manual Prime		Displays the Manual Priming Standby screen.
4	Start		Starts autopurging.

■ Manual Priming Standby Screen



No.	Name	Explanation
1	PUMP Button	Opens the valve of selected mobile phase port.
2	Mobile Phase Port Selecting	Displays the mobile phase port. Opens the selecting screen to select the mobile phase port.
3	INJ Button	Switches the flow line for manual prime of rinse solution for autosampler.

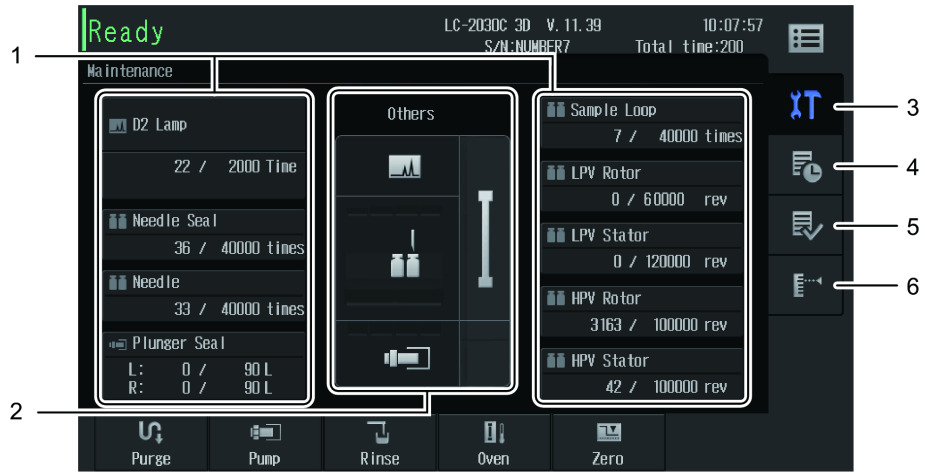
2.2 Maintenance Screen

This screen allows part replacement, log display, validation, and calibration to be performed.

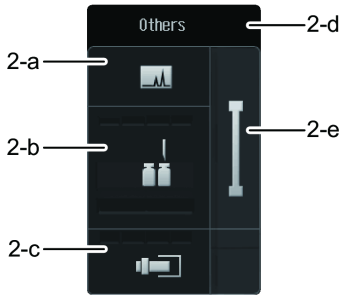
Press [Maintenance] from the main menu to display the Maintenance screen.

2.2.1 Maintenance Screen

This section explains the item names and functions on the [Maintenance] screen as below. The [Maintenance] screen initially shows the tab for the replaced part.



No.	Name	Explanation	Ref.
1	Main Parts Button	The buttons show the usage frequency and replacement guidelines for the corresponding parts. If a part needs to be replaced, the replaced part name, usage frequency, and replacement guideline are shown in yellow with ⚠. The Replacement screen for the corresponding part will be displayed. The replacement guidelines can be changed in the [Parts Replacement Reference Values Setting] screen. **NOTE** If a W lamp is connected, "D2 Lamp" and "W Lamp" will be switched each time [D2 Lamp/W Lamp] is pressed. Pressing the button displayed as "Usage frequency / Replacement guidelines" displays the Replacement screen for the corresponding part.	P.36

<table>
<tr><th>No.</th><th>Name</th><th>Explanation</th><th>Ref.</th></tr>
<tr><td>2</td><td>Unit Button</td><td>Displays the [Replacement Parts Selection] screen with the tab of the corresponding unit selected.
When replacement of a part inside the unit is necessary,  is displayed.
 

<table>
<tr><th>No.</th><th>Name</th></tr>
<tr><td>2-a</td><td>Detector</td></tr>
<tr><td>2-b</td><td>Autosampler</td></tr>
<tr><td>2-c</td><td>Pump</td></tr>
<tr><td>2-d</td><td>Other parts</td></tr>
<tr><td>2-e</td><td>Column oven</td></tr>
</table></td><td>P.35</td></tr>
<tr><td>3</td><td>  (Part Replacement)</td><td>Displays the part replacement tab.</td><td>P.33</td></tr>
<tr><td>4</td><td>  (Log)</td><td>Displays the log tab.</td><td>P.37</td></tr>
<tr><td>5</td><td>  (Validation)</td><td>Displays the validation tab.</td><td>P.38</td></tr>
<tr><td>6</td><td>  (Calibration)</td><td>Displays the [Login] screen. Input the system pass ID Number on the [Login] screen to display the calibration tab.</td><td>P.44</td></tr>
</table>

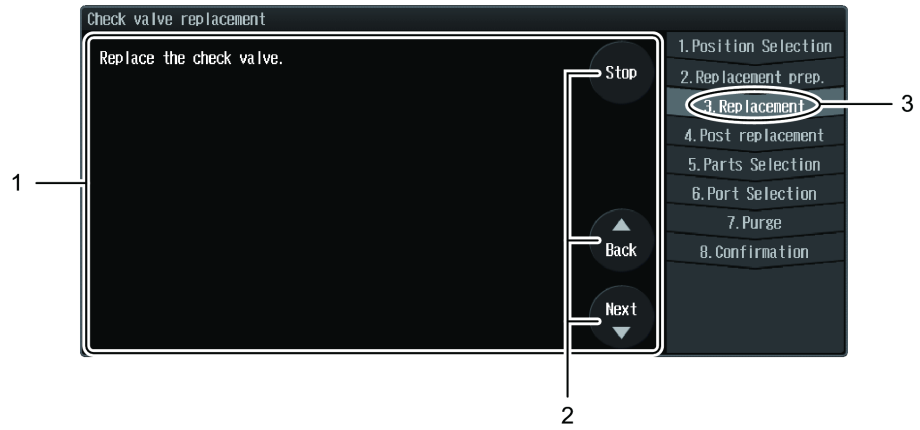
■ Replacement Parts Selection screen

The buttons of replaceable parts are displayed in the tab of each unit.
Pressing a button will display the Replacement screen for the corresponding part.

No.	Name	Explanation	Ref.
1	Replacement Parts Button	Displays the replaceable parts. If a part needs to be replaced, the replaced part name, usage frequency, and replacement guideline are shown in yellow with ⚠. The Replacement screen for the corresponding part will be displayed. The usage frequency and replacement guidelines of parts to be replaced as necessary upon periodic inspection are not displayed.	P.36
2	Unit Selection Tab	Switches the list display of each unit's replaceable parts. When replacement of a part inside the unit is necessary, ⚠ is displayed. It is not possible to select a unit that has no replaceable parts.	-

■ Replacement screen

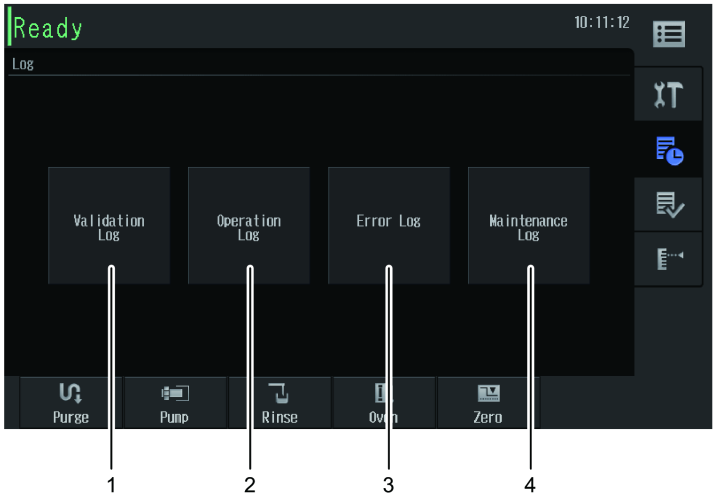
Replace parts according to the on-screen instructions. The procedure differs depending on the part.
This section uses the Check Valve Replacement screen as an example.



No.	Name		Explanation
1	Operations Guide Area		Displays the buttons used in the operations guide.
2	Entire Procedure		Displays the entire replacement procedure.
		Stop	Cancels replacement and closes the screen.
		Back	Returns to the previous step.
		Next	Proceed to the next procedure.
		Finish	Displayed when the items to be confirmed are shown after all the steps are performed. Closes the screen.
3	Current Procedure		Displays the current step in light gray.

2.2.2 Log Tab

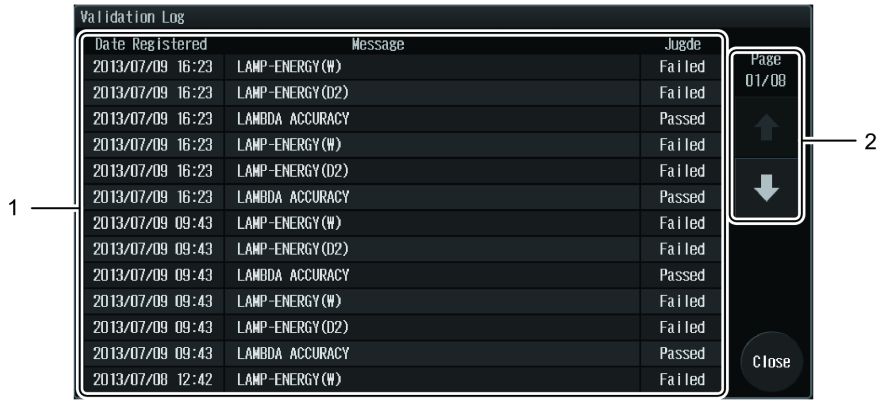
The validation log, operation log, error log, and maintenance log are displayed.



No.	Name	Explanation
1	Validation Log	Displays the process record of automatic validations and performance checks.
2	Operation Log	Displays the process record of ID Number changes, initializations, and calibrations.
3	Error Log	Displays the record of errors that occurred in the instrument.
4	Maintenance Log	Displays the part replacement record.

■ Log screen

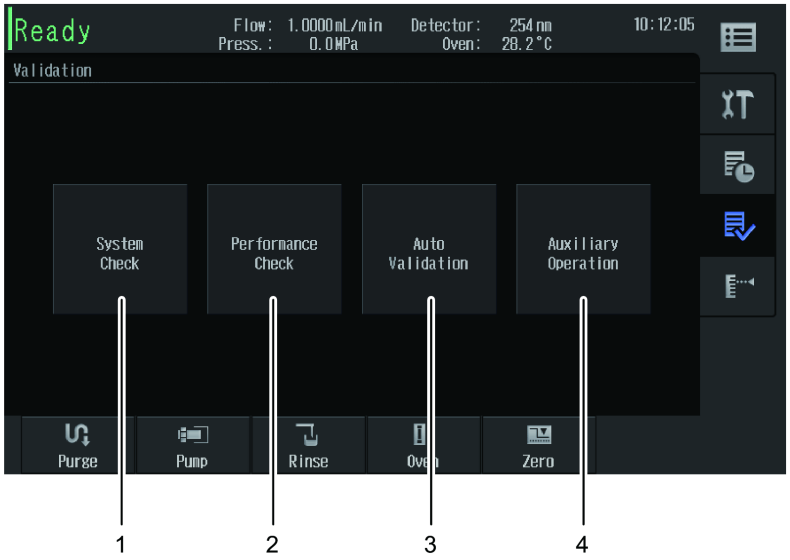
Displays the log. This section uses the [Validation Log] screen as an example.



No.	Name	Explanation
1	Log Display Area	Displays the log.
2	Page Operation Button	Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.

2.2.3 Validation Tab

The system check, performance check, auto validation, and auxiliary operation displayed.

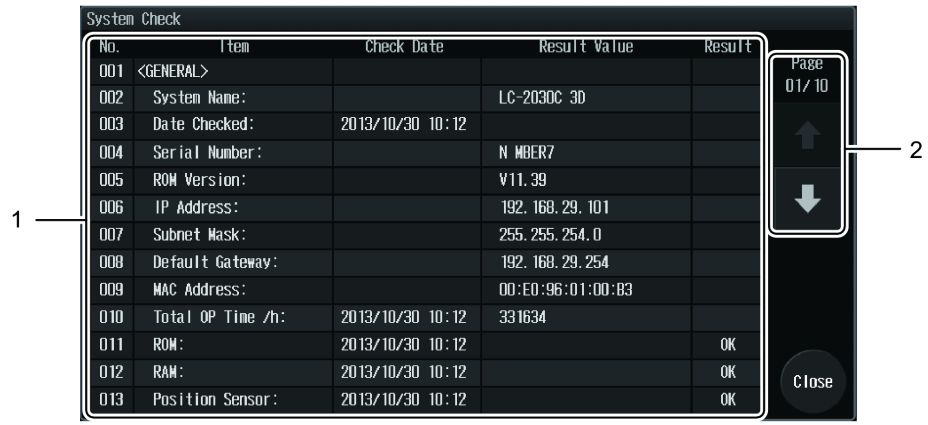


No.	Name	Explanation	Ref.
1	System Check	Displays the [System Check] screen. The [System Check] screen shows the system check report for the daily inspection summary including the usage status and the adjustment date and time of consumable parts.	P.39
2	Performance Check	Displays the [Performance Check] screen. On the [Performance Check] screen, it is possible to check if the instrument is working correctly by checking the items for each unit.	P.39
3	Auto Validation	Displays the [Auto Validation] screen. The [Auto Validation] screen allows execution of automatic validation to check if the instrument is working correctly.	P.41
4	Auxiliary Operation	Displays the [Auxiliary Operation] screen. The [Auxiliary Operation] screen allows the operation of each hardware unit to be checked.	P.42

■ System Check screen

The screen shows the system check report for the daily inspection summary including the usage status and the adjustment date and time of consumable parts.
For details of the displayed content, refer to the Integrity Guide.

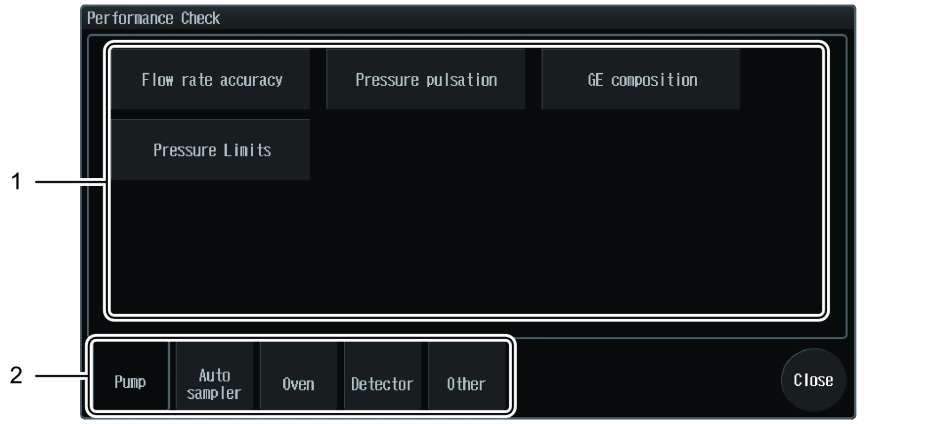
Reference Integrity Guide "2.2.3 List of System Check Results"



No.	Name	Explanation
1	System Check Report	Displays the system check report.
2	Page Operation Button	Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.

■ Performance Check screen

It is possible to check if the instrument is working correctly by checking the items for each unit.

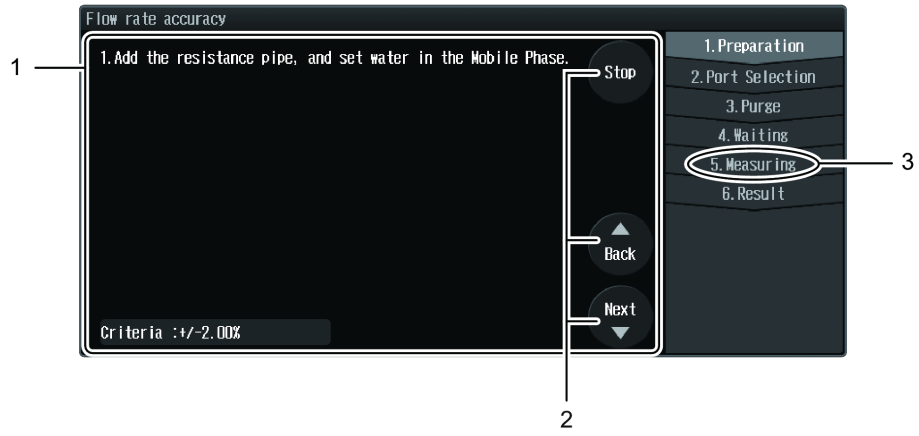


No.	Name	Explanation
1	Item Button	Displays the item buttons. Press the buttons to display the Performance Check screen for the item.
2	Unit Selection Tab	Switches the list display of each unit's items.

Operations screen

Follow the on-screen instructions to execute a performance check. The procedure differs depending on the item.

This section uses [Flow rate accuracy] as an example.



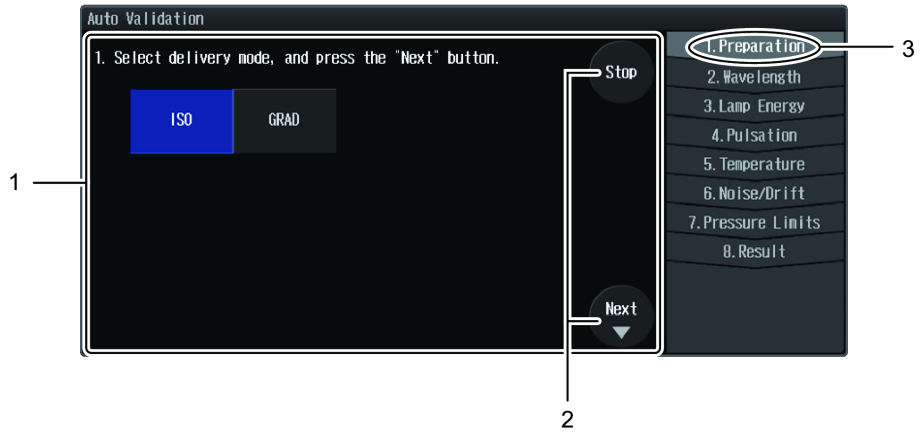
No.	Name		Explanation
1	Operations Guide Area		Displays the buttons used in the operations guide.
2	Entire Procedure		Displays the entire performance check procedure.
		Stop	Cancels the performance check and closes the screen.
		Back	Returns to the previous step.
		Next	Proceed to the next procedure.
		Finish	Displayed when the results are given after all the procedures are finished. Closes the screen.
3	Current Procedure		Displays the current step in light gray.

■ Auto Validation screen

The screen allows execution of automatic validation to check if the instrument is working correctly.

When the pumping mode is set to [ISO], only the cancel operation is possible in steps other than [1. Preparation] and [9. Result].

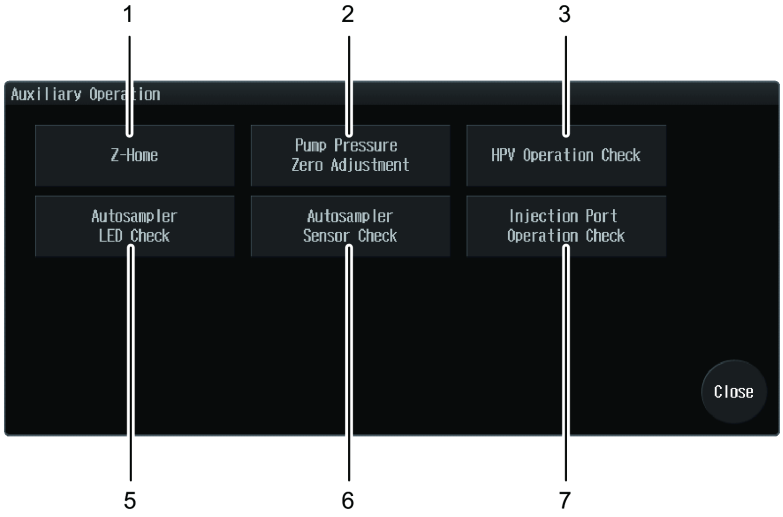
When the pumping mode is set to [GRAD.], only the cancel operation is possible in steps other than [1. Preparation] and [10. Result].



No.	Name		Explanation
1	Operations Guide Area		Displays the buttons used in the operations guide.
2	Entire Procedure		Displays the entire automatic validation procedure.
		Stop	Cancels automatic validation and closes the screen.
		Start	Starts automatic validation.
		Back	Returns to the previous step.
		Next	Proceed to the next procedure.
		Finish	Displayed when the results are given after all the procedures are finished. Closes the screen.
3	Current Procedure		Displays the current step in light gray. ⚠ will be shown beside the item if it is completed but an error occurred.

■ Auxiliary Operation screen

The screen allows the operation of each hardware unit to be checked.

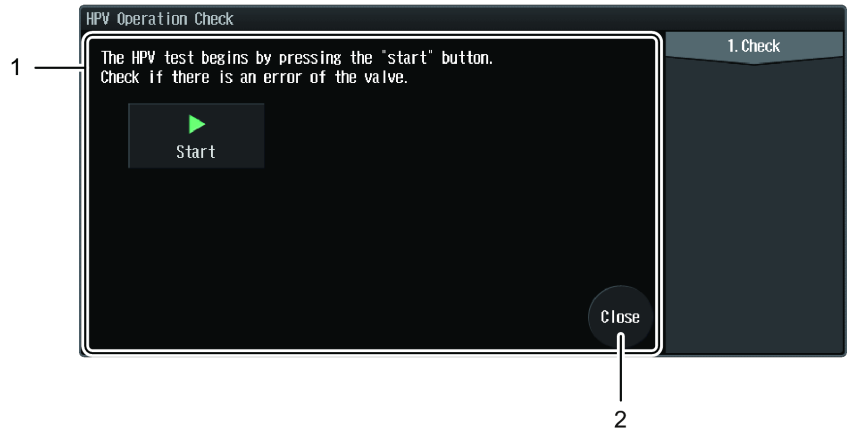


No.	Name	Explanation
1	Z-Home	The [Z-Home] screen is displayed. On the [Z-Home] screen, the needle is moved to the instrument center (Z-Home).
2	Pump Pressure Zero Adjustment	Displays the [Pump Pressure Zero Adjustment] screen. On the [Pump Pressure Zero Adjustment] screen, the current pump pressure value is adjusted to "0".
3	HPV Operation Check	Displays the [HPV Operation Check] screen. On the [HPV Operation Check] screen, the flow lines are switched in order.
4	Autosampler LED Check	Displays the [Autosampler LED Check] screen. On the [Autosampler LED Check] screen, the lighting operation of the autosampler LED is checked.
5	Autosampler Sensor Check	Displays the [Autosampler Sensor Check] screen. On the [Autosampler Sensor Check] screen, the sensor in the autosampler is checked for proper operation.
6	Injection Port Operation Check	Displays the [Injection Port Operation Check] screen. On the [Injection Port Operation Check] screen, the needle moves up and down.

Operations screen

Follow the on-screen instructions to check operation of each hardware unit. The procedure differs depending on the item.

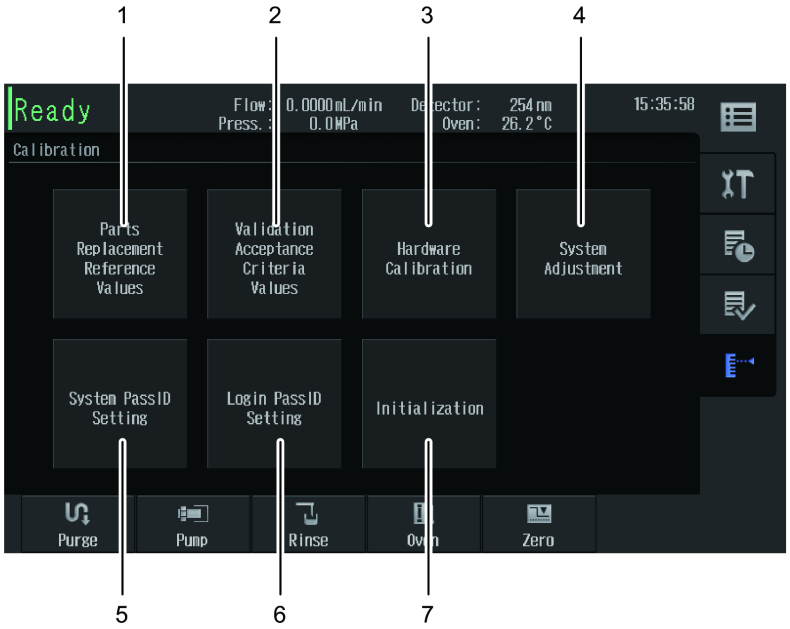
This section uses [HPV Operation Check] as an example.



No.	Name	Explanation
1	Operations Guide Area	Displays the buttons used in the operations guide.
2	Close	Closes the screen.

2.2.4 Calibration Tab

The screen allows the part replacement guidelines to be set and system calibration, teaching and other system adjustments, changing of the password, and initialization to be performed.



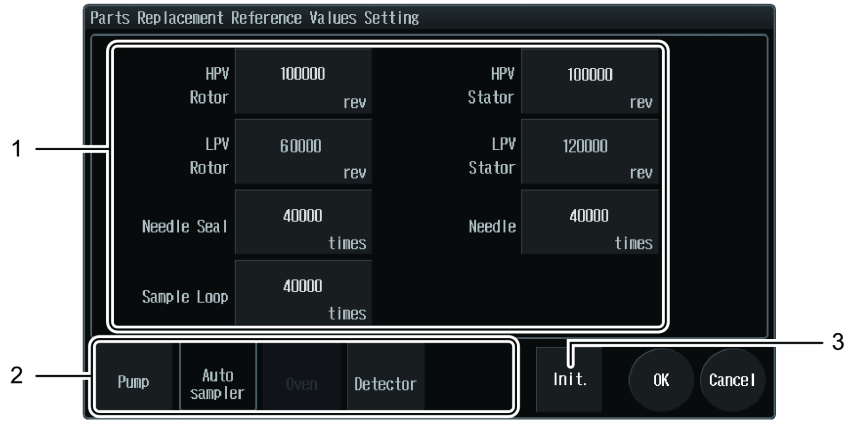
No.	Name	Explanation	Ref.
1	Parts Replacement Reference Values	Displays the [Parts Replacement Reference Values Setting] screen. The [Parts Replacement Reference Values Setting] screen allows the settings for parts replacement time guidelines to be configured.	P.45
2	Validation Acceptance Criteria Values	Displays the [Validation Acceptance Criteria Values Setting] screen. The [Validation Acceptance Criteria Values Setting] screen allows the criteria for performance checking and automatic validation to be set.	P.46
3	Hardware Calibration	Displays the [Hardware Calibration] screen. The [Hardware Calibration] allows execution of hardware calibration for each item.	P.47
4	System Adjustment	Displays the [System Adjustment] screen. The [System Adjustment] screen enables rack settings, injection port position adjustment, keypad lock, network settings, date settings, safety lock, and automatic vial detection settings to be configured.	P.49
5	System PassID Setting	Displays the [System PassID Setting] screen. The [System PassID Setting] screen allows the system pass ID Number required to display the Calibration Menu screen to be changed.	P.77
6	Login PassID Setting	Displays the [Login PassID Setting] screen. The [Login PassID Setting] screen allows the login pass ID Number that is required to log in to the instrument to be changed.	P.78

No.	Name	Explanation	Ref.
7	Initialization	Displays the [Initialization Instrument Parameters] screen. The [Initialization Instrument Parameters] screen allows the instrument parameters, system parameters, and other data to be initialized. The data related to the system check report (e.g., logs and calibration data) are not initialized. After initialization, the instrument needs to be restarted.	P.80

■ Screen to set guidelines for when parts should be replaced

The buttons of replaceable parts are displayed in the tab of each unit.
The parts replacement time guidelines for the applicable part can be set by pressing the button.

NOTE When connecting the instrument to LabSolutions, the values contained in LabSolutions take precedence.
In an environment where LabSolutions is connected, be sure to configure the settings for parts replacement time guidelines from LabSolutions.



No.	Name	Explanation
1	Replacement Parts Button	Displays the replaceable parts. The parts replacement time guidelines for the applicable part can be set.
2	Unit Selection Tab	Switches the list display of each unit's replaceable parts. It is not possible to select a unit that has no replaceable parts.
3	Init.	Displays the [Initialize parts replacement guide value] screen. The [Initialize parts replacement guide value] screen allows all the parts replacement guidelines to be initialized.

■ Validation Acceptance Criteria Values Setting screen

The buttons of validation items are displayed in the tab of each unit.
The check criteria for the applicable validation can be set by pressing the button.

No.	Name	Explanation
1	Item Button	Displays the check criteria of each validation. The check criteria can be set for the desired validation.
2	Unit Selection Tab	Switches the list display of each unit's validations.
3	Init.	Initializes the check criteria of all validations.

■ Hardware Calibration screen

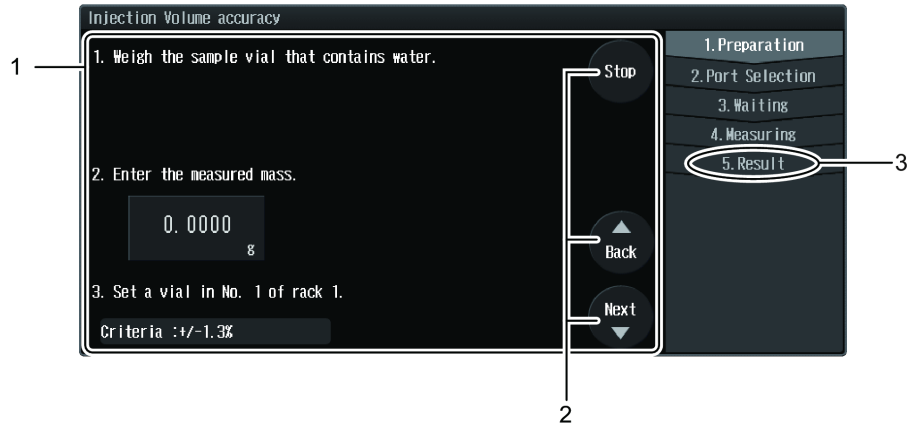
The buttons of hardware calibration items are displayed in the tab of each unit.
Pressing the button will display the applicable Hardware Calibration operation screen.

No.	Name	Explanation
1	Item Button	Displays the items of each hardware calibration. The applicable Hardware Calibration operation screen will be displayed.
2	Unit Selection Tab	Switches the list display of each unit's hardware calibration.

Operations screen

Follow the on-screen instructions to execute hardware calibration. The procedure differs depending on the item.

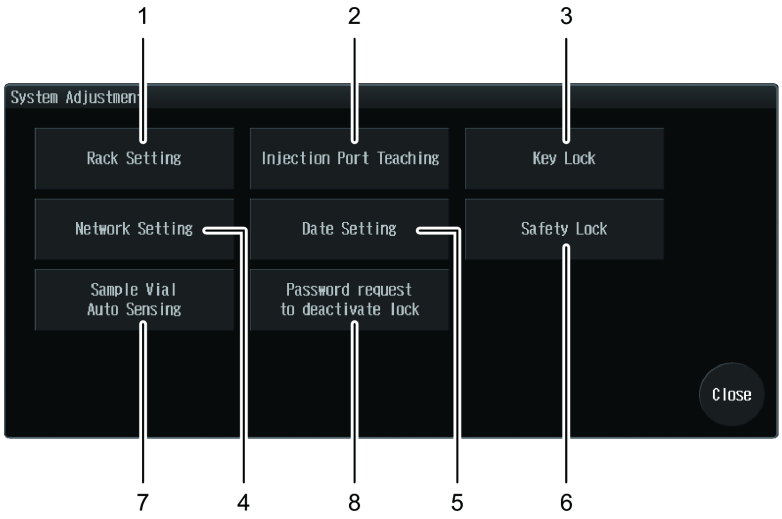
This section uses [Injection Volume accuracy] as an example.



No.	Name		Explanation
1	Operations Guide Area		Displays the buttons used in the operations guide.
2	Entire Procedure		Displays the entire hardware calibration procedure.
		Stop	Cancels hardware calibration and closes the screen.
		Back	Returns to the previous step.
		Next	Proceed to the next procedure.
		Finish	Displayed when the results are given after all the procedures are finished. Closes the screen.
3	Current Procedure		Displays the current step in light gray.

■ System Adjustment screen

The screen enables rack settings, injection port teaching, keypad lock, network settings, date settings, safety lock, and automatic vial detection settings to be configured.



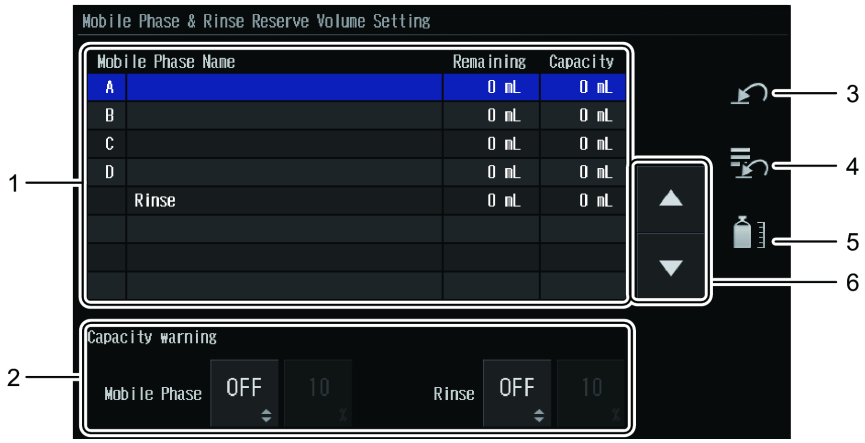
No.	Name	Explanation	Ref.
1	Rack Setting	Displays the [Rack Setting] screen. The plate type for each rack ID can be specified and rack position adjustment can be performed.	Integrity Guide "3.3.2 Adjusting the Rack Positions"
2	Injection Port Teaching	Displays the [Injection Port Teaching] screen. The injection port position is adjusted.	Integrity Guide "3.3.3 Adjusting the Injection Port Position"
3	Key Lock	Displays the [Key Lock] screen. The Login Password Input screen will be displayed at the time of operation to prohibit screen operation unless the login password is input.	P.83
4	Network Setting	Displays the [Network Setting] screen. The network settings can be configured.	P.75
5	Date Setting	Displays the [Date Setting] screen. The date and time settings can be configured.	P.76
6	Safety Lock	Displays the [Safety Lock] screen. The [Safety Lock] screen allows setting of the safetylock that stops the arm of the autosampler while the door is open.	P.73
7	Sample Vial Auto Sensing	Displays the [Sample Vial Auto Sensing] screen.	-

No.	Name	Explanation	Ref.
8	Password request to deactivate lock	Displays the [Password request to deactivate lock] screen. Password requirement can be set in the following case on [Password request to deactivate lock] screen. ・When the instrument starts. ・When the lock is canceled. ・When the analysis is registered.	P.74

2.3 Other Screens

2.3.1 Mobile Phase & Rinse Reserve Volume Setting Screen

The screen allows the remaining amount of mobile phases and rinse solution to be checked, their initial volumes to be specified, and the residual amount warning display settings to be configured. Press [Mobile Phase Reserve Volume] from the main menu to display the [Mobile Phase & Rinse Reserve Volume Setting] screen.

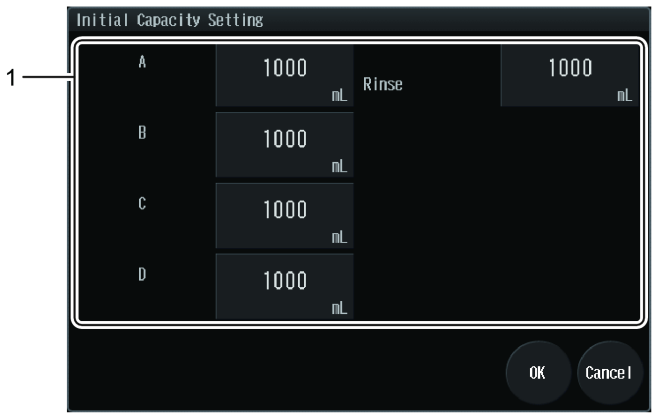


No.	Name	Explanation
1	List of Residual Mobile Phase / Rinse Liquid Volumes	Displays the list of residual volumes of mobile phases and rinse liquid. The selected line is highlighted in blue. **NOTE** The mobile phase names are displayed only if they have been input. The settings can be configured in LabSolutions only.
2	Capacity warning	Specifies the residual amount warning display for mobile phases and rinse liquid. If set to [ON] and the amount reaches the set value, a low remaining amount warning will be displayed.
3	(Initialize Capacity of Selected Mobile Phase)	Sets the remaining amount of the selected mobile phase or rinse solution to the value of [Capacity].
4	(Initialize Capacities of All Mobile Phases)	Sets the remaining amount of all mobile phases and rinse solution to the values of [Capacity].
5	(Initial Capacity Setting)	Displays the [Initial Capacity Setting] screen. The [Initial Capacity Setting] screen allows the initial remaining amount of mobile phases and rinse solution to be set. The set initial remaining amount is displayed in the [Capacity] column of the list of residual mobile phase / rinse liquid volumes.

No.	Name	Explanation
6	▲ ▼ (Selection Shift)	Moves the line selection up/down by one line.

■ Initial Capacity Setting screen

This screen allows the initial remaining amount of mobile phases and rinse liquid to be set. The set initial remaining amount is displayed in the [Capacity] column of the list of residual mobile phase / rinse liquid volumes. When an initial remaining amount is set to the mobile phases and the rinse solution, the remaining amount will be reset.



No.	Name	Explanation
1	Initial Mobile Phase / Rinse Solution Capacity	Displays the initial capacity of mobile phases and rinse solution. The initial capacity can be input. The setting range is 0 mL to 9999 mL, and the initial value 0.

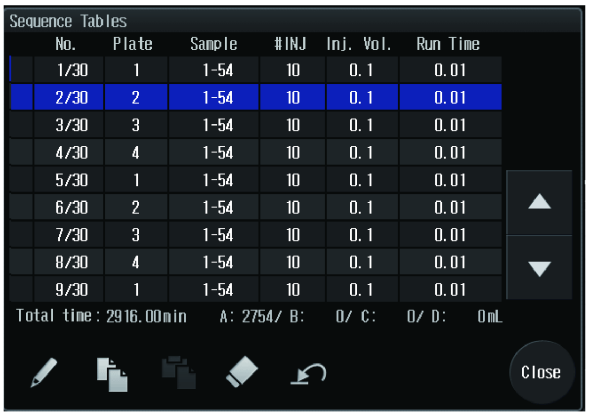
2.3.2 Sequence Tables Screen

The list of sequence files is displayed. Press  (Edit) to display the [Edit Sequence Parameter] screen of the selected file to edit the content.

The operating procedure is the same as for the [Sequence Tables] screen of the Analysis screen.

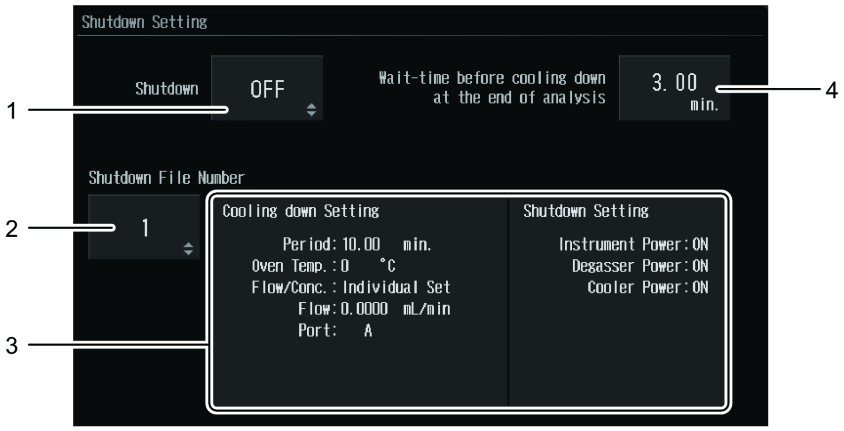
Reference "2.1.2 Sequence Tables Screen" P.21

Press [Sequence Tables] from the main menu to display the [Sequence Tables] screen.



2.3.3 Shutdown Setting Screen

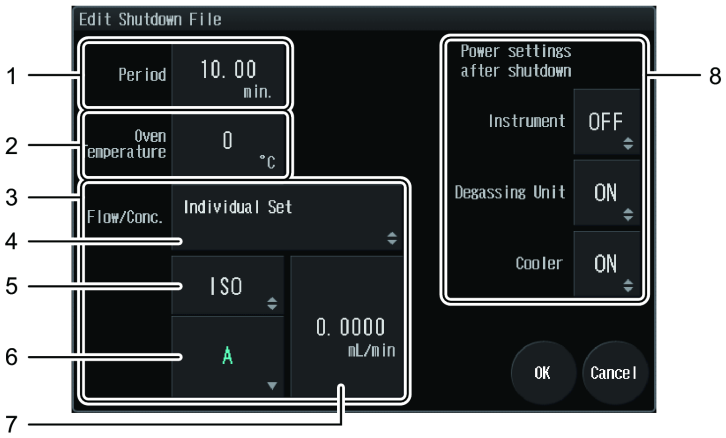
This screen allows a preconfigured shutdown-file to be selected and whether to execute it or not to be specified. Press [Shutdown] from the main menu to display the [Shutdown Setting] screen.



No.	Name	Explanation
1	Shutdown	Configures the ON/OFF settings of the shutdown execution. This item is automatically set to be OFF when the shutdown is executed.
2	Shutdown File Number	Switches the shutdown-file No. One of two shutdown-files can be selected.
3	Shutdown-File Content	Displays the shutdown-file content. The [Edit Shutdown File] screen is displayed. The content of the selected shutdown-file No can be edited.
4	Wait-time before cooling down at the end of analysis	Sets wait-time before cooling down at the end of analysis. In case that the shutdown execution is ON, cooling down starts when setting time is epapsed after the analysis.

■ Edit Shutdown File screen

This screen allows the content of the shutdown-file No. selected on the [Shutdown Setting] screen to be edited.



No.	Name	Explanation
1	Period	Displays the cooling down time of the column. The setting range is 0.01 minutes to 120.00 minutes, and the initial value 10 minutes.
2	Oven Temperature	Displays the oven temperature at the time of shutdown. The Numeric Keypad screen is displayed.
3	Flow/Conc.	Sets the concentration and flow rate of the pump.
4	Concentration/Flow Rate Settings Mode Switching Button	Displays the concentration/flow rate settings mode. The settings mode switches each time the button is pressed. · [Individual Set] The concentration and flow rate are set separately. · [Conc. : Same as the method. Flow : Half of the method.] The concentration is set to the same as that of the method and the flow rate to half that of the method.
5	Pumping Mode Switching Button During Cooldown	Displays the pumping mode during cooldown. The mode is switched between [GRAD.] and [ISO] each time the button is pressed. NOTE This is effective only when [Flow/Conc.] is set to [Individual Set].
6	Concentration Settings Button	Displays the concentration of solvents A to D. The [Concentration settings] screen is displayed. Reference "Concentration screen" P.20 NOTE This is effective only when [Flow/Conc.] is set to [Individual Set].
7	Flow Rate Settings Button	Displays the flow rate. The Numeric Keypad screen is displayed. NOTE This is effective only when [Flow/Conc.] is set to [Individual Set].

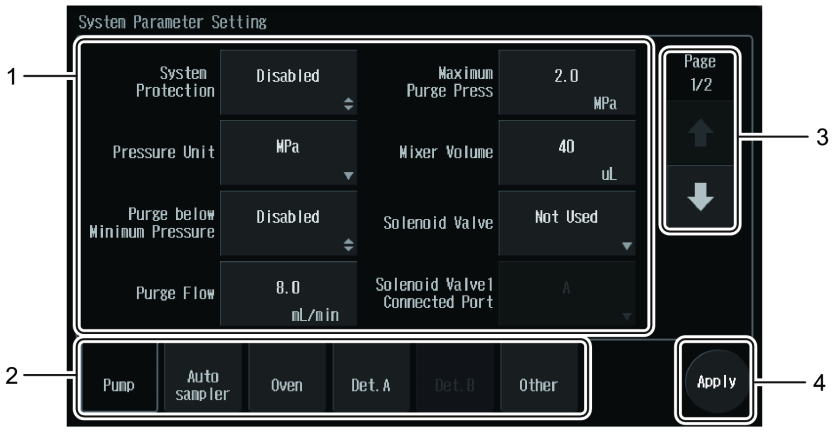
No.	Name	Explanation
8	Power settings after shutdown	Specifies the power supply conditions of the cooler, degassing unit, and instrument after shutdown. Press the button to switch ON/OFF. **Hint** • If the instrument is set to [ON], it enters the sleep state after shutdown. If the instrument is set to [OFF], it turns [OFF] regardless of the degassing unit and cooler settings. • Even if the power of the instrument turns [OFF] according to the shutdown settings, communication with the workstation is possible. It is possible to turn the power of instrument [ON] from the workstation.

2.3.4 System Parameter Setting Screen

The environment settings and other system related parameters can be specified.

Press [System Parameters] from the main menu to display the [System Parameter Setting] screen.

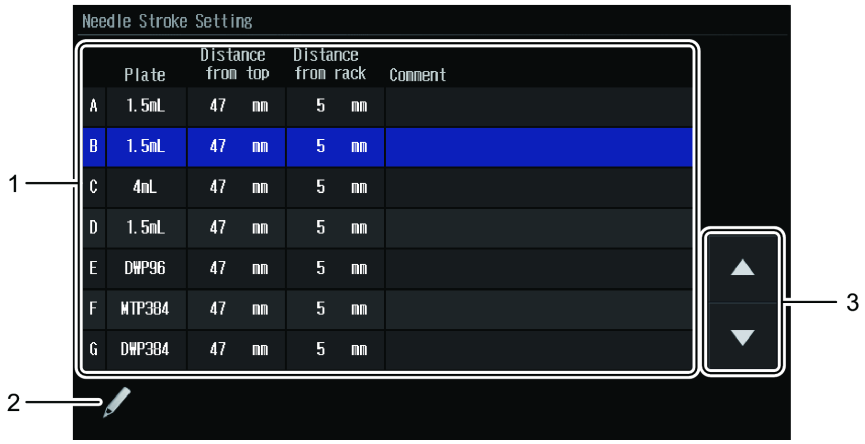
Reference Operation details "1.5 Common Items and Operations" P.5
Set values "5.2 System Settings" P.124



No.	Name	Explanation
1	Parameter Settings Button	Displays the set values. The settings can be changed.
2	Unit Selection Tab	Switches the list display of each unit's set values.
3	Page Operation Button	Press the arrows to turn the page. The current page and the total number of pages are shown above the arrows.
4	Apply Button	Applies the settings to the instrument. **NOTE** • Some parameters require that the instrument be powered OFF/ON to become effective. If it is necessary to turn the power OFF/ON, the Confirmation screen will be displayed. • After editing the settings, if attempting to go to another screen without pressing [Apply], a Confirmation screen (warning) will be displayed.

2.3.5 Needle Stroke Setting Screen

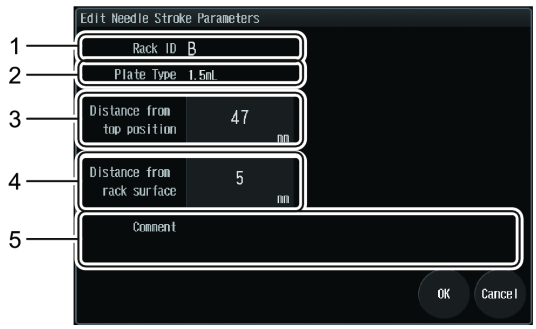
The needle stroke for each rack ID can be set. Press (Edit) to display the Needle Stroke Editing screen of the rack ID, and edit the content.
Press [Needle Stroke Setting] from the main menu to display the [Needle Stroke Setting] screen.

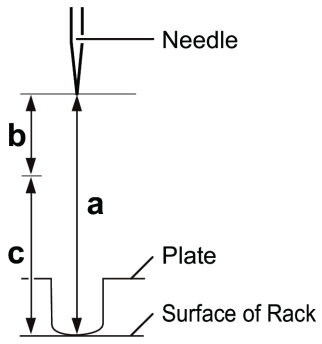


No.	Name	Explanation
1	Needle Stroke Setting List	Displays the needle stroke setting list. The selected line is highlighted in blue.
2	(Edit)	Displays the Editing screen. Set the distance of drop from the upper edge and the distance from the rack surface on the Editing screen.
3	(Selection Shift)	Moves the line selection up/down by one line. Press and hold to move up/down continuously.

■ Edit Needle Stroke Parameters screen

This screen allows the needle stroke settings to be configured.



No.	Name	Explanation	
1	Rack ID	Displays the rack ID.	
2	Plate Type	Displays the plate type.	
3	Distance from top position	Displays the distance of the drop from the upper edge. (b in the figure to the right.) Press to change the setting. The changes will be reflected in [Distance from rack surface].	 a: Needle moving distance b: Distance of drop from the upper edge c: Distance from the rack surface a = b + c
4	Distance from rack surface	Displays the distance from the rack surface. (c in the figure to the right.) Press to change the setting. The changes will be reflected in [Distance from top position].	
5	Comment	Displays the comments. **NOTE** The comments can be edited only in LabSolutions.	

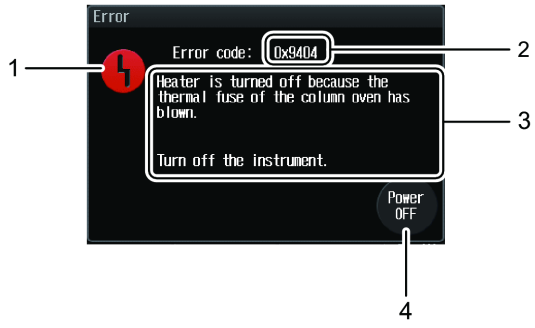
2.3.6 Error Window

If an error is detected, an alarm sounds and the error window is displayed.
To return to the original screen, press the clear button on the error window.
If the error level is [Fatal Error], it is necessary to turn off the power.

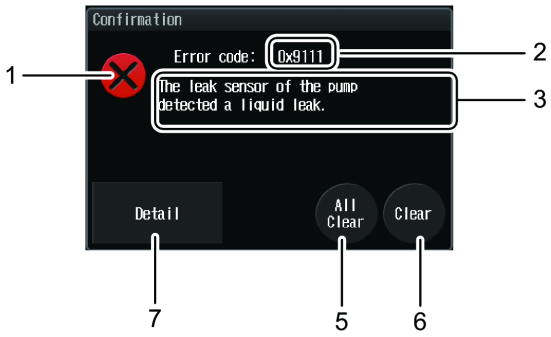
Hint The settings can be configured so that no alarm sound occurs when an error occurs in the [System Parameter Setting] screen.

Reference "5.2.5 Other" P.129

Fatal error



Error, warning



No.	Name	Explanation
1	Error Type	Displays the error type.
	 (Fatal Error)	Indicates a hardware problem.
	 (Error)	Indicates an error related to instrument use.
	 (Warning)	Indicates a caution and recommendation.
2	Error Code	Displays the error code. Reference System Guide "6.2.2 Error List"
3	Error Message	Displays the error content and countermeasures.
4	Power OFF	Turns the instrument power off.
5	All Clear	Clears all the current errors and returns the display to the original screen.
6	Clear	Clears the error being displayed and returns the display to the original screen. If there are several errors occurring at the same time, another error will be displayed.
7	Detailed Display Button	Displays the error location. This appears only for specific types of errors.

3 Basic Operation

This chapter explains the analysis condition, sequential analysis settings, and how to start analysis.

3.1 Setting Analysis Condition

Save each unit's parameters and the "time programs" for unit control as the analysis condition in the "method". Select the method at the time of analysis.

For one analysis, execute "single analysis".

For multiple analyses in series, create a "sequence" before executing the analyses.

3.1.1 Selecting the Method

Select the desired method to decide the analysis condition. Edit the analysis condition if necessary.

> **NOTE**
> - Up to 20 methods can be created. Each has preset initial values.
> - The rack-dependent parameters of the autosampler are shared by all of the methods. Changes made in one method will be applied to all the other methods.

Reference "5 Parameter Setting" P.112

1 **Press 01 Method (Method selection) from the Main Analysis screen.**

The [Method] screen is displayed.

> **NOTE** The method currently selected can be edited on the Main Analysis screen. A method not selected can be edited on the [Method] screen.

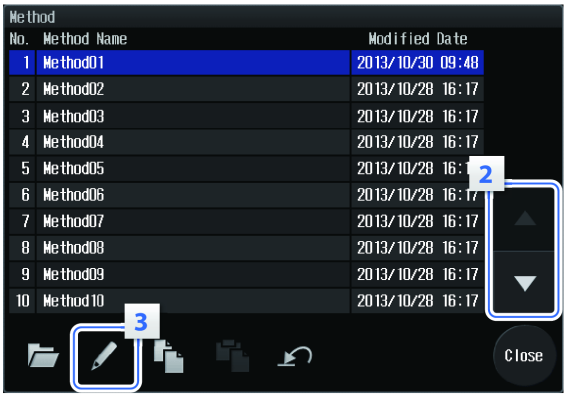
Reference "2.1.1 Main Analysis Screen" P.13

2 **Select the method.**

3 **To check/edit the method content, press (Edit).**

The [Edit Method Parameter] screen is displayed.
On the [Edit Method Parameter] screen, edit each unit's parameters and time programs.

Reference "Edit Method Parameter screen" P.24

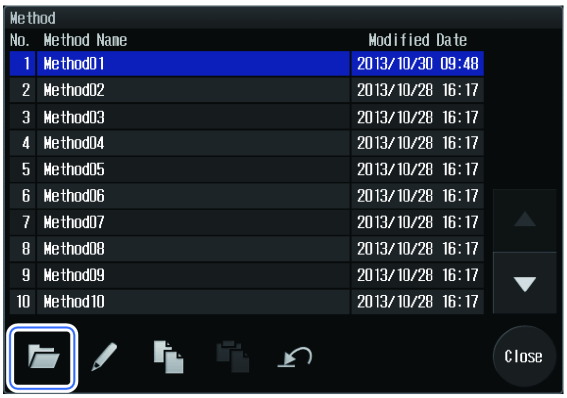


4 **After checking/editing the method content, press [Close].**

The [Edit Method Parameter] screen is closed.

5 **Press (Apply).**

The [Method] screen is closed and the selected method number is displayed on the Main Analysis screen.



3.1.2 Time Program Setting Examples

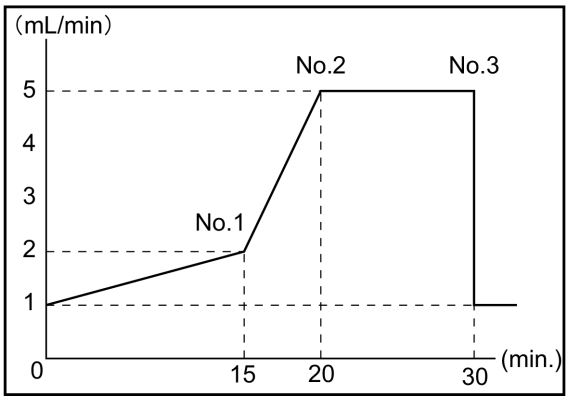
This section shows some setting examples for the time program.

Reference "2.1.4 Time Program Screen" P.25

NOTE The time program does not accept execution of multiple commands at the same time.

■ Changing the flow rate

The flow rate will be changed as shown in the graph. The initial flow rate is set to 1 mL/min.

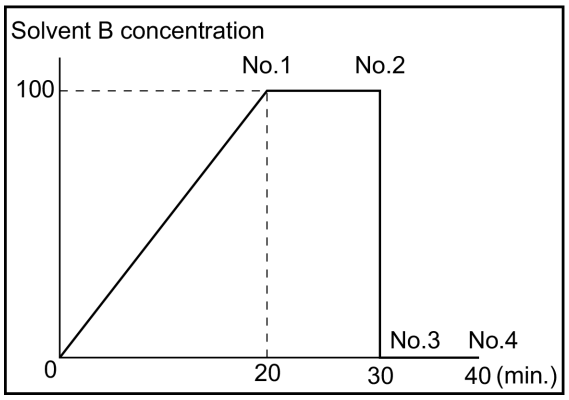


Set the time program as shown in the table below.

No.	Time (min.)	Unit	Process Command	Value
1	15.00	Pump (ISO)	FLOW	2.0000
2	20.00	Pump (ISO)	FLOW	5.0000
3	30.00	Controller	STOP	-

■ Creating a gradient program

The concentration of solvents A, B, C, and D can be changed with time if the concentration of solvents B, C, and D at the desired time points are specified using the time program. The initial concentration of solvent B is set to 0 %.



At this time, pump A (solvent A Conc.) will be as follows.

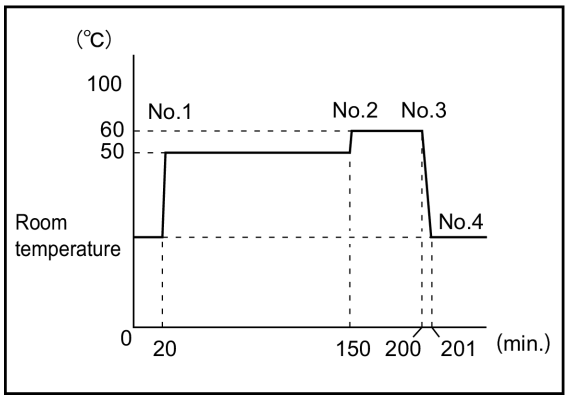
Solvent A Conc.(%) = 100(%) - Solvent B Conc.(%) - Solvent C Conc.(%) - Solvent D Conc.(%)

Set the time program as shown in the table below. Select [GRAD.] for the pump.

No.	Time (min.)	Unit	Process Command	Value
1	20.00	Pump (GRAD.)	B.CONC	100.0
2	30.00	Pump (GRAD.)	B.CONC	100.0
3	30.01	Pump (GRAD.)	B.CONC	0.0
4	40.00	Controller	STOP	-

■ Changing the column oven temperature

The operating temperature will be changed as shown in the graph.



Here, the column oven initial temperature is given as 50 °C.

No.	Time (min.)	Unit	Process Command	Value
1	20.00	Column Oven	ON	-
2	150.00	Column Oven	OVENT	60 °C
3	200.00	Column Oven	OFF	-
4	201.00	Controller	STOP	-

3.2 Executing Analysis

For analysis, "single analysis" is available for setting the condition each time, and "sequence analysis" is available for executing multiple analyses collectively.

NOTE
- For high-sensitivity analysis, light the detector lamp as early as possible in order to stabilize the baseline. The approximate time for stabilization after the lamp is turned on is 1 hour for UV detector system models and 1.5 hours for PDA detector system models.
- Be sure to close all the doors during measurement.

3.2.1 Executing Single Analysis

The single method will be used to start analysis.

1 **Set the analysis condition.**

Reference "3.1 Setting Analysis Condition" P.61

2 **Press (Single analysis) from the Main Analysis screen.**

The [Single Run] screen is displayed.

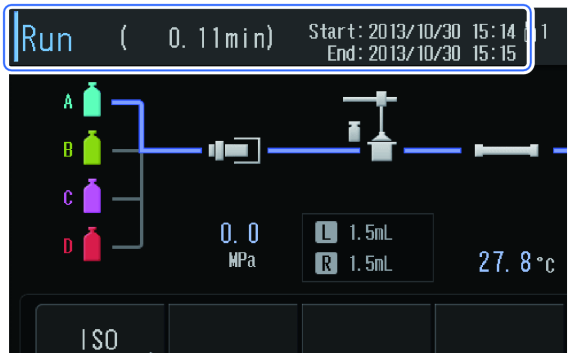
3 **Configure the single analysis settings.**

Reference "2.1.5 Single Run Screen" P.27

4 **Press [Run].**

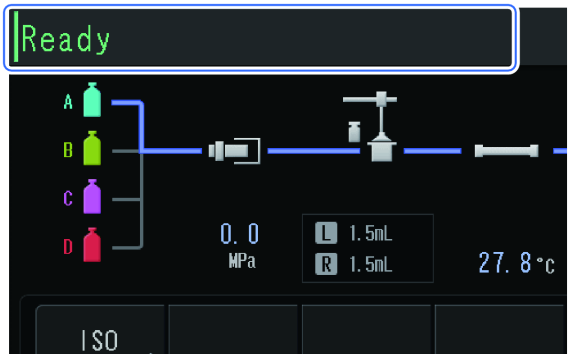
The display returns to the Main Analysis screen, and analysis starts.

[Run] appears in the upper part of the Main Analysis screen for checking the analysis progress.



> **NOTE**
> - To urgently stop analysis: Press [Stop].
> - If analysis is urgently stopped during injection, the needle moves to the drain port and discharges the sample remaining in the needle in order to clear the sample suctioned into the needle, after which rinsing of the needle starts.

Analysis is completed when [Ready] appears on the Main Analysis screen.



3.2.2 Executing Sequential Analysis

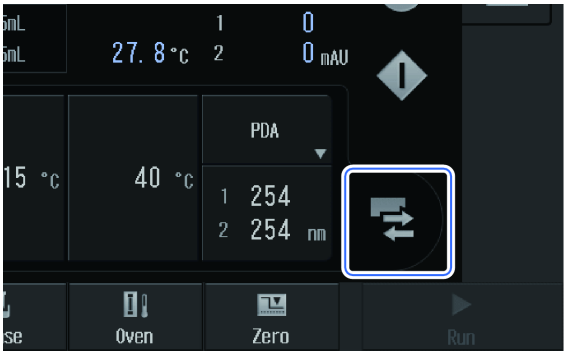
Arrange multiple methods in the sequence list in order and execute analyses in series. Edit the sequence list on the [Sequence Tables] screen of the Main Analysis screen.

Reference "2.1.2 Sequence Tables Screen" P.21

Hint The sequence list can also be edited on the [Sequence Tables] screen.

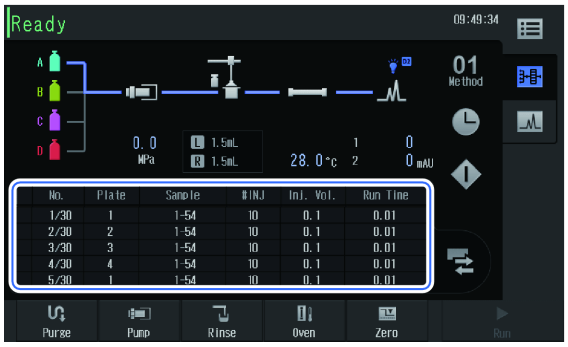
1 **Press  (Switch displays) on the Main Analysis screen.**

The [Display Switch] screen is displayed.



2 **Press [Sequence List].**
The sequence list is displayed.

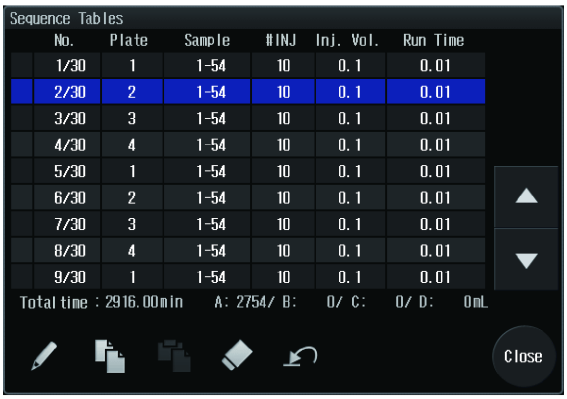
3 **Press the sequence list display area.**
The [Sequence Tables] screen is displayed.



4 **Edit the individual list.**

1 Press ▲ ▼ (Selection shift) to select the list to be edited, and press ✎ (Edit).
The [Edit Sequence Parameter] screen is displayed.

Reference "Edit Sequence Parameter screen" P.22

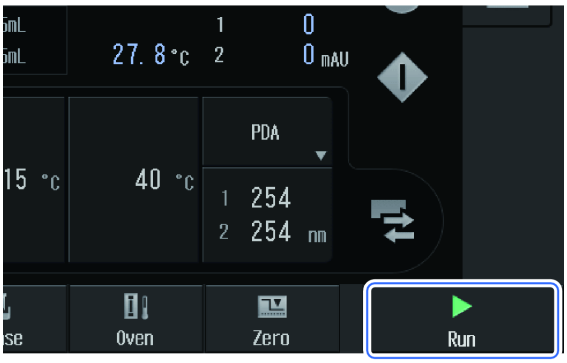


2 Input each item and press [OK].
The display returns to the [Sequence Tables] screen.

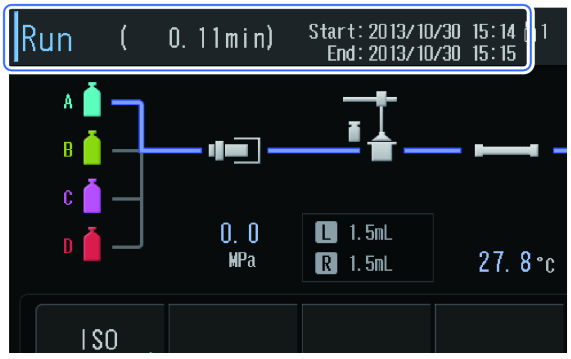
5 **After editing the list, press [Close] on the [Sequence Tables] screen.**
The display returns to the Main Analysis screen.

6 **Press [Run].**

Analysis is executed according to the sequence list.



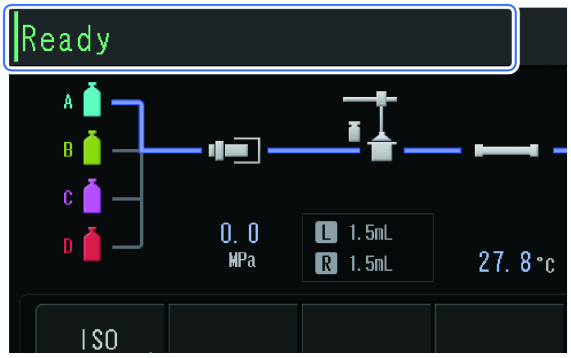
[Run] appears in the upper part of the Main Analysis screen for checking the analysis progress.



NOTE

- To pause analysis:
  Press [Pause]. Analysis is temporarily stopped when the analysis being processed ends. Press [Restart] to restart.
- To urgently stop analysis:
  Press [Stop].

Analysis is completed when [Ready] appears on the Main Analysis screen.



3.2.3 Starting Analysis by the Instrument while connecting to LabSolutions

It is possible to set a part of analysis conditions and start analysis even when the instrument is connected to LabSolutions. Refer to the help of LabSolutions to use this function.

■ Register the analysis

1 **Set analysis condition.**

The following parameter can be edited by awaking the lock when the instrument is connected to LabSolutions.

Unit	Parameter	Ref.
Pump	Flow, P.Max, P.Min, Port, Solvent B/C/D Conc., Solenoid Valve 1/2/3	P.112

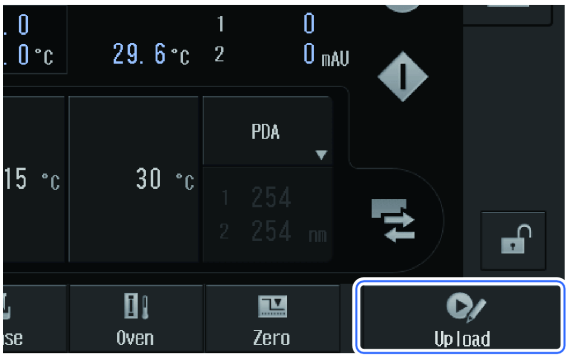
Unit	Parameter	Ref.
Autosampler	Cooler Temperature	P.114
Column Oven	Ovent Temperature, Temperature Limit （Maximum）, Valve Position	P.116
Detector	Wavelength Ch1/2 (Only for UV Detector) Excitation Wavelength, Excitation Wavelength2, Emission Wavelength, Emission Wavelength2	P.117

NOTE Method 01 is selected when PC is connected to LabSolutions. The method number can not be changed.

Reference System Guide "3.4 Setting Analysis Condition"
System Guide "3.8.2 Setting a Time Program"

2 Press [Upload].

The [Upload] screen is displayed.



3 Input each item.

Name	Explanation
Plate	Specifies the plate position where the sample is set.
Sample Number	Specifies the starting and finishing sample numbers for injection.
# Inj / Volume	Sets the injection frequency and amount.
Run Time	Display analysis time set in time program.※1
Run	Start analysis※2

* ※1 If [Stop] time program is not set in Controller, "—" is displayed.

* ※2 If analysis cannot be started due to the instrument status, [Run] will be disabled.

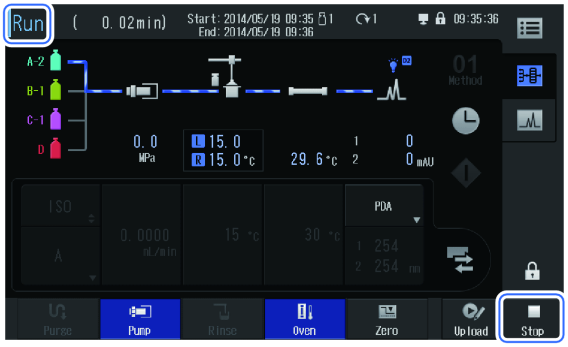
4 Press [Run].

1 Analysis starts on the set analysis condition.

> NOTE Analysis starts after about 10 seconds.

2 [Run] is displayed on the upper section of the Main Analysis screen and the process of analysis can be checked.

> NOTE Analysis can be stopped with an emergency by pressing [Stop].



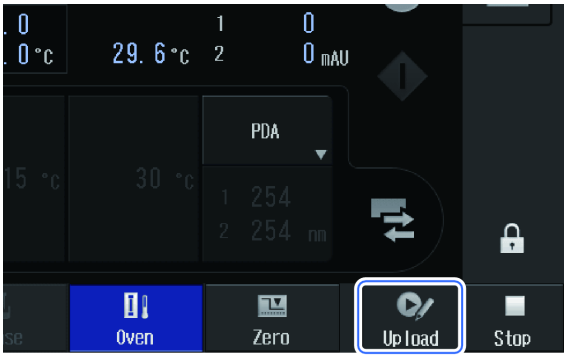
3 When the analysis is completed, [Ready] is displayed on the Main Analysis screen.

■ Register additional analysis while analysis is running.

1 Press [Upload].

The [Upload] screen is displayed.

> NOTE The method and time program cannot be edited while analysis is running.



2 **Set each item and press [Queue].**

The additional analysis is registered.

4 Various Operations

This chapter explains various operations other than analysis.

4.1 Configuring Initial Settings

This section describes the settings necessary before starting operation of the instrument. Use the [Calibration] tab to configure the settings.

> NOTE The system pass ID Number is required to display the [Calibration] tab.

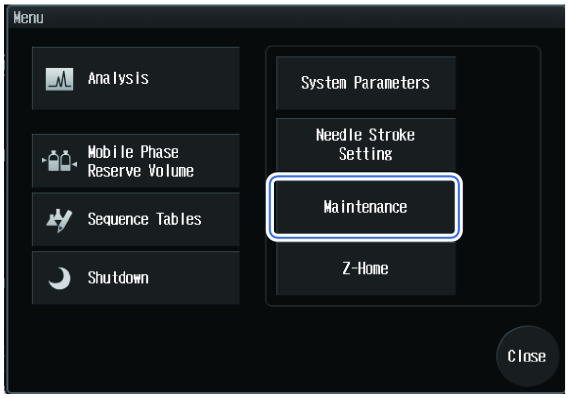
4.1.1 Displaying the Calibration Tab

1 **Press**  **(Menu).**

The [Menu] screen opens.

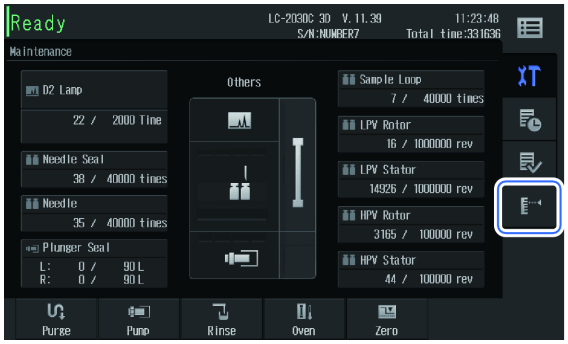
2 **Press [Maintenance].**

The [Maintenance] screen is displayed.



3 **Press**  **(Calibration).**

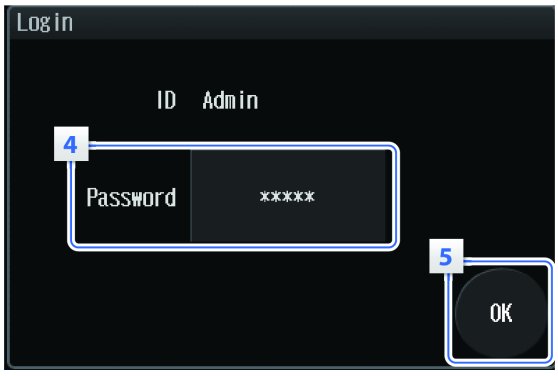
The [Login] screen is displayed.



4 **Input the system pass ID Number to the password.**

5 **Press [OK].**

The [Calibration] tab is displayed.



4.1.2 Setting a Safetylock

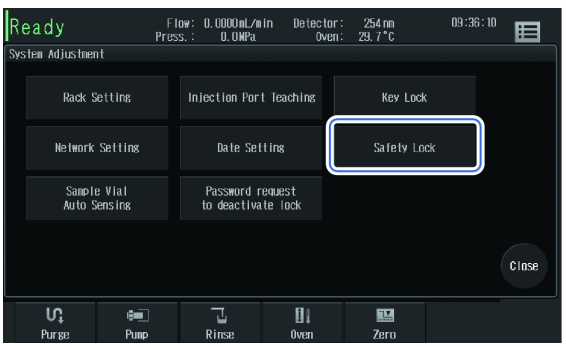
A safetylock can be set to keep the arm of the autosampler stopped while the front panel is open.

1 **Press [System Adjustment] on the [Calibration] tab.**

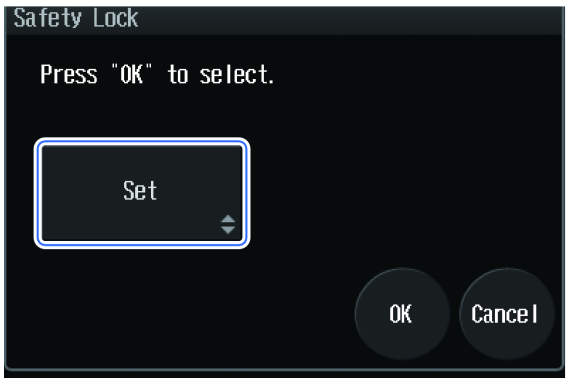
The [System Adjustment] screen is displayed.

2 **Press [Safety Lock].**

The [Safety Lock] screen is displayed.



3 **Press the switching button and select [Set].**



4.1.3 Setting Password Request to Deactivate Lock

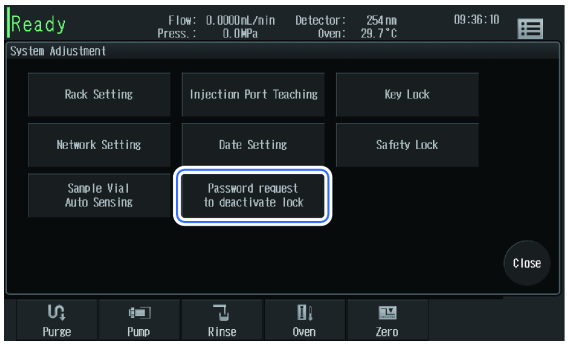
Set whether to display the [Login] screen when the instrument starts, the lock is canceled by [Lock deactivating button] and [Upload] screen is opened by [Upload button].

1 **Press [System Adjustment] on the [Calibration] tab.**

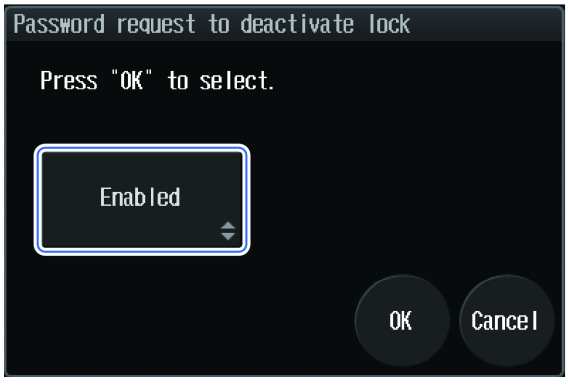
The [System Adjustment] screen is displayed.

2 **Press [Password request to deactivate lock].**

The [Password request to deactivate lock] screen is displayed.



3 **Press the switching button and select [Enabled].**



4.1.4 Configuring Network Settings

The network settings can be configured.

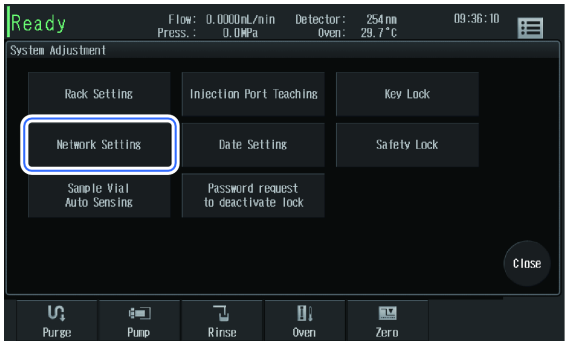
> **NOTE** For setting details, contact the network administrator.

1 **Press [System Adjustment] on the [Calibration] tab.**

The [System Adjustment] screen is displayed.

2 **Press [Network Setting].**

The [Network Setting] screen is displayed.



3 **Configure the network setting.**

Item	Explanation
System Name	Input the name of the instrument to be shown on the network.
Group Name	Input the group name to be joined on the network.
IP Address Setting	Select whether to automatically obtain an IP address from the server or to set it manually. If setting it manually, input [IP Address], [Subnet mask], and [Default Gateway].

NOTE If the IP address is allocated from a DHCP server (if automatic acquisition is selected), ensure that the term of the IP address lease is infinite. Note that if the IP address is changed during analysis data will be lost.

4.1.5 Setting Date and Time

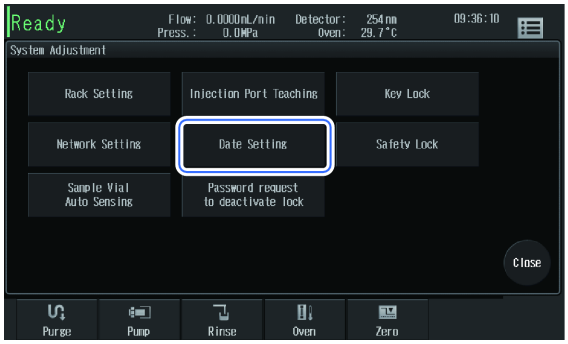
The date and time settings can be configured.

1 **Press [System Adjustment] on the [Calibration] tab.**

The [System Adjustment] screen is displayed.

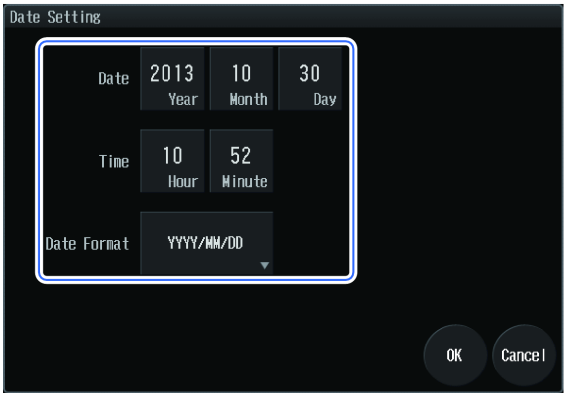
2 **Press [Date Setting].**

The [Date Setting] screen is displayed.



3 **Set the date and time.**

Item	Explanation
Date	Input the date in the Western format.
Time	Input the time using the 24-hour clock system.
Date Format	Specify the order of date components. For example, December 31, 2013, will be shown as follows. · YYYY/MM/DD: 2013/12/31 · MM/DD/YYYY: 12/31/2013 · DD/MM/YYYY: 31/12/2013



4.1.6 Changing the System Pass ID Number

The system pass ID Number can be changed. The system pass ID Number is required to display the Calibration Menu screen.

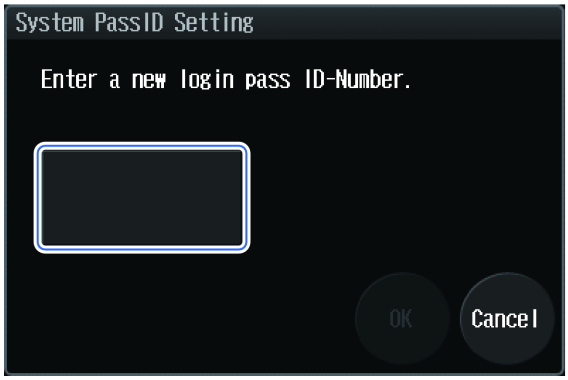
1 **Press [System PassID Setting].**

The [System PassID Setting] screen is displayed.

2 **Press [********] and input a new system pass ID Number.**

NOTE Input a 5-digit number.

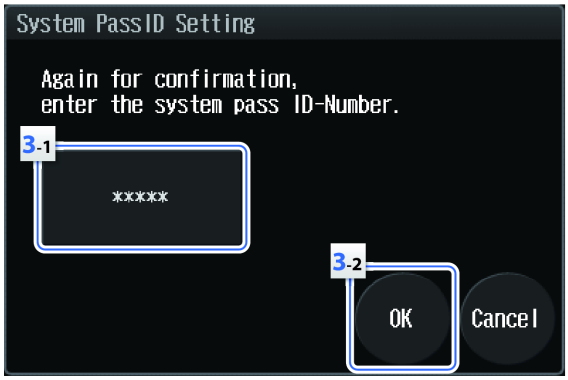
After input, the message "Again for confirmation, enter the system pass ID-Number." is displayed.



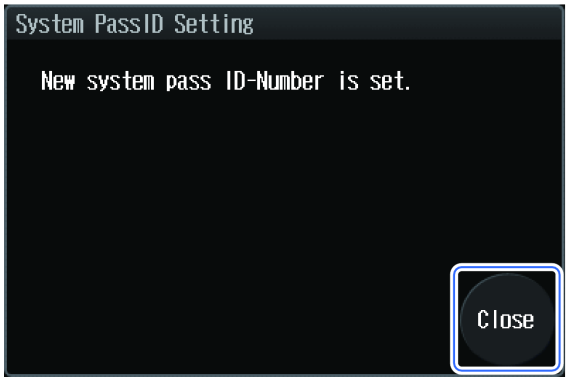
3 **Press [*****], input the new system pass ID Number again, and press [OK].**

The system pass ID Number is changed, and the message "New system pass ID-Number is set." is displayed.

NOTE If changing the system pass ID Number fails, "The system pass ID-Number entered does not match the one for verification purposes. Please change the system pass ID-Number again." is displayed.



4 **Press [Close].**

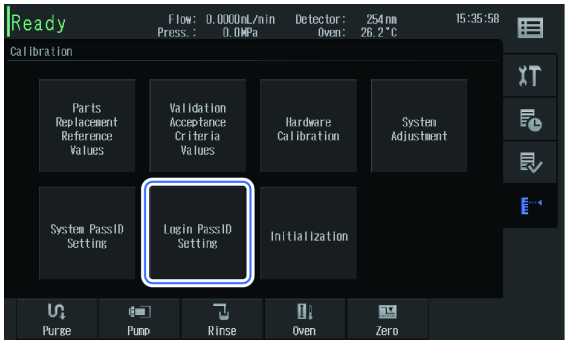


4.1.7 Changing the Login Pass ID Number

The login pass ID Number can be changed. The login pass ID Number is required to log in to the instrument.

1 **Press [Login PassID Setting].**

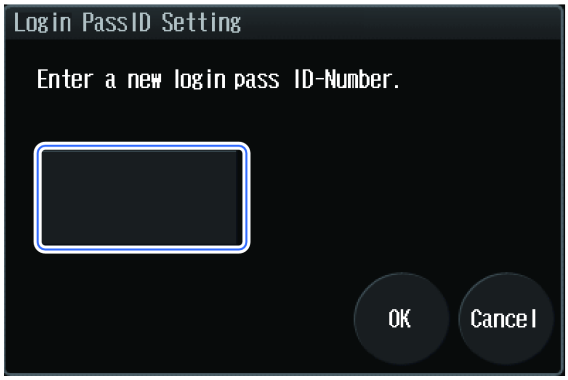
The [Login PassID Setting] screen is displayed.



2 **Press [********] and input a new login pass ID Number.**

NOTE Input a 5-digit number.

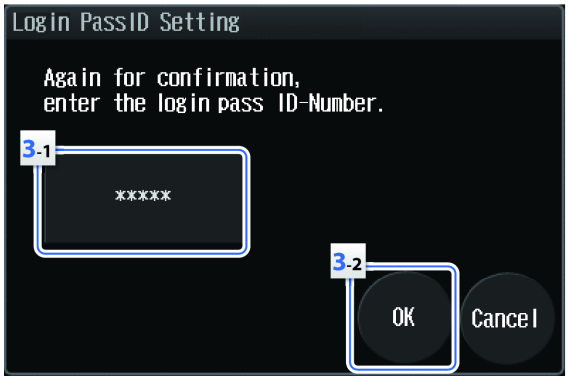
After input, the message "Again for confirmation, enter the login pass ID-Number." is displayed.



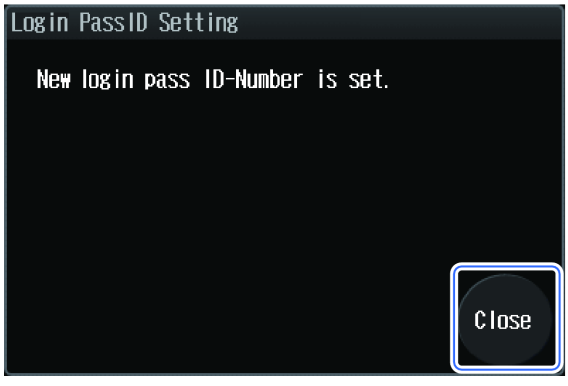
3 **Press [*****], input the new login pass ID Number again, and press [OK].**

The login pass ID Number is changed, and the message "New login pass ID-Number is set." is displayed.

NOTE If changing the login pass ID Number fails, "The login pass ID-Number entered does not match the one for verification purposes. Please change the login pass ID-Number again." is displayed.



4 **Press [Close].**



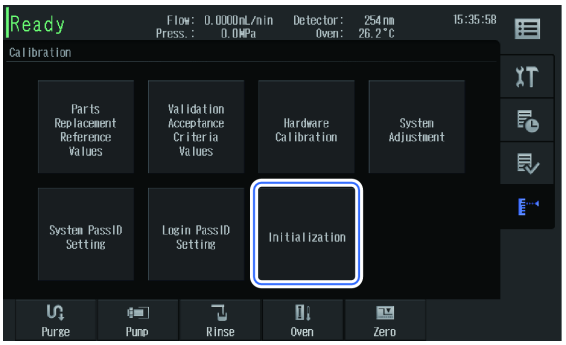
4.1.8 Initializing Settings

The parameters of parameter settings and system settings can be initialized. The data related to the system check report (e.g., logs and calibration data) are not initialized.

NOTE After initialization, it is necessary to turn off the main power switch.

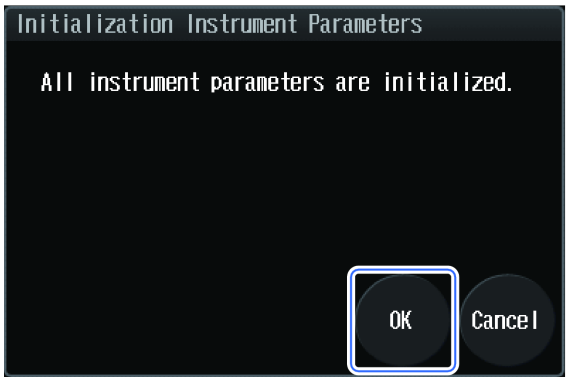
1 **Press [Initialization].**

The [Initialization Instrument Parameters] screen is displayed.



2 **Press [OK].**

The parameters of parameter settings and system settings are initialized, and the message "All parameters have been initialized. Turn the system power off." is displayed.



4.2 Checking Remaining Amount of Mobile Phase and Rinse Solution

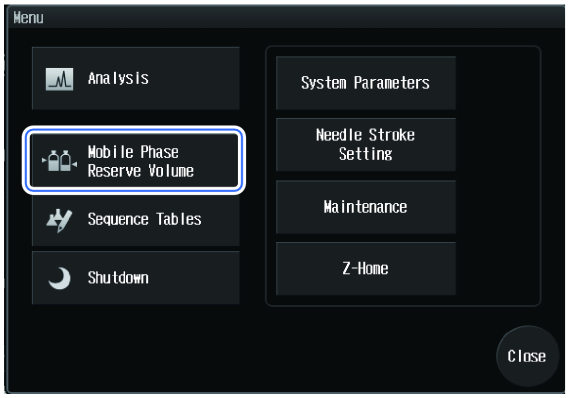
The remaining amount of mobile phases and rinse solution can be checked. It is possible for a warning to be issued when the amount falls below the set level by configuring the initial capacity settings of mobile phases and rinse solution.

1 **Press (Menu).**

The [Menu] screen opens.

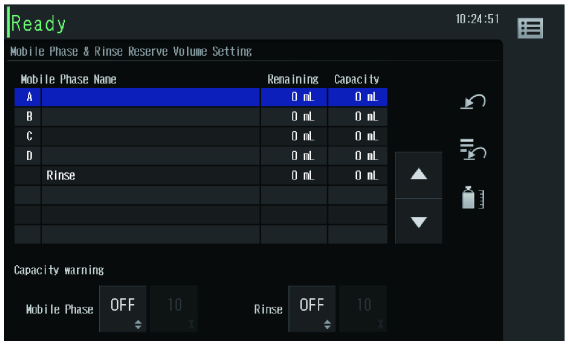
2 **Press [Mobile Phase Reserve Volume].**

The [Mobile Phase & Rinse Reserve Volume Setting] screen is displayed.



3 **Configure the initial capacity and warning settings.**

Reference "2.3.1 Mobile Phase & Rinse Reserve Volume Setting Screen" P.51



4.3 Executing Shutdown After Analysis

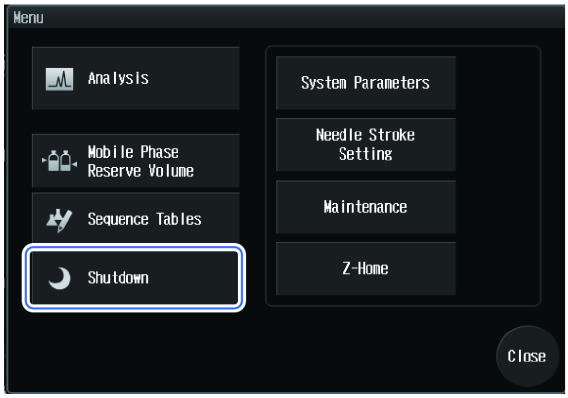
Shutdown can be configured so that the system terminates automatically after analysis completion.
It is possible to change the oven temperature and mobile phase concentration and flow rate at the time of shutdown, and to turn off the power of the instrument, sample cooler, and degassing unit.

1 **Press**  **(Menu).**

The [Menu] screen opens.

2 **Press [Shutdown].**

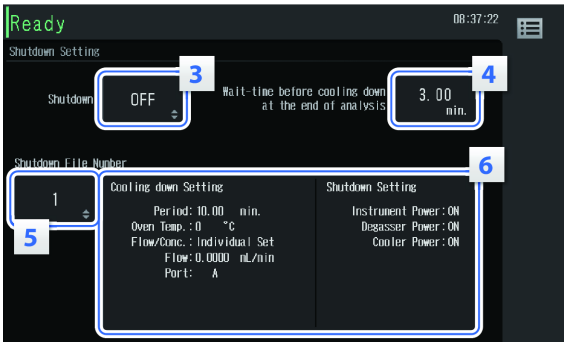
The [Shutdown Setting] screen is displayed.



3 **Set shutdown to [ON].**

4 **Set waiting time before cooling down.**

5 **Select the shutdown-file and check the setting contents.**



6 **To edit the setting contents, press anywhere in the content display area of the shutdown-file No.**

The [Edit Shutdown File] screen is displayed.

7 **Set the unit parameters after the completion of the analysis.**

Reference "Edit Shutdown File screen" P.55

4.4 System Locking

The Login Password Input screen will be displayed at the time of operation to prohibit screen operation unless the login password is input.

1 **Display the calibration tab.**

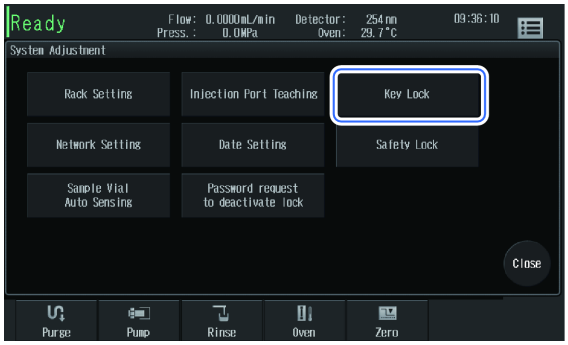
Reference "4.1.1 Displaying the Calibration Tab" P.72

2 **Press [System Adjustment] on the [Calibration] tab.**

The [System Adjustment] screen is displayed.

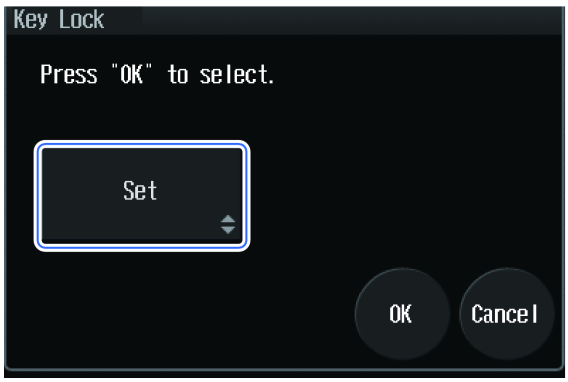
3 **Press [Key Lock].**

The [Key Lock] screen is displayed.



4 **Press the switching button and select [Set].**

The Login Confirmation screen is displayed, and screen operation will be prohibited unless the login password is input.



4.5 External Input/Output Terminal

The "external input/output terminal" relays the provided event terminals for connection with external devices such as an event output.
This section explains the signals of event cables and how to connect the cables.

⚠ CAUTION

Prohibition

Do NOT use any wiring cables other than those specified.

Do NOT wire in a different manner from that specified.

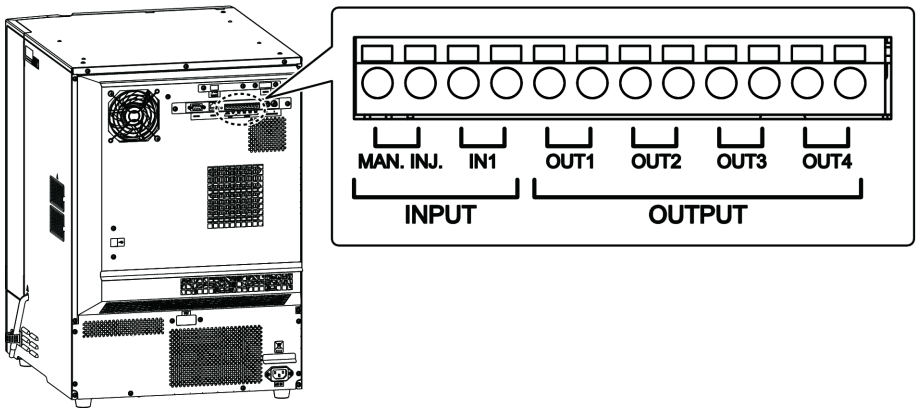
Failure to observe the above instructions may cause fire, electrical shock, or device failure.

Instruction

Before wiring, turn off the instrument power and disconnect the power plug from the outlet.

Failure to observe the above instructions may cause fire, electrical shock, or device failure.

4.5.1 Event Terminal Signals



Name		Explanation
MAN. INJ.	External Start Input Terminal	Receives an external start signal when connected to a manual injector or other such device.
IN1	General-Purpose Input Terminal	Receives "error input" and "stop input" signals from other devices. Reference "5.2.5 Other" P.129
OUT 1 to 4	General-Purpose Output Terminal	Sends an "autozero" signal to a detector or an "error output" or "start" signal to other devices. Reference "5.2.5 Other" P.129

4.5.2 Connecting Event Terminals

1 **Strip off about 10 mm of the end of the cable to be connected.**

NOTE This step is not necessary with the accessory event cable.

2 **If the cable core is a solid wire, insert it into the terminal hole as is.**

If the wire is stranded, twist the end well and press the button above the terminal with a small flathead screwdriver to insert into the hole.
To disconnect the cable, press the terminal button in the same manner and pull out the cable.

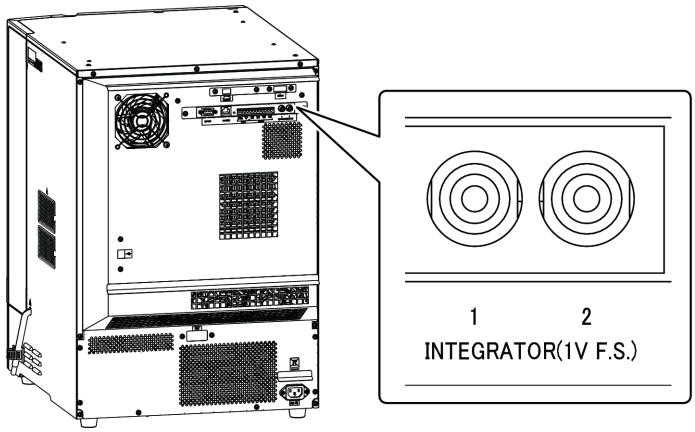
NOTE An event cable is provided with the instrument, but if there are two or more terminal connections, prepare the following cables. The applicable cable core diameters are as follows.

- Solid wire: Φ0.4 to Φ1.2 (AWG26 to 16)
- Stranded wire: 0.3 mm^2 to 1.25 mm^2 (AWG22 to 16), Strand diameter: Φ0.18 min.

To prevent disconnection, using stranded wire is recommended.

4.6 Analog Output

The instrument has a 2-channel analog output terminal described below that can be used as a multi-wavelength detector.



The terminal can output an absorbance signal of the detector to a device such as a recorder or data processing device that needs to be controlled through analog input.

Analog output terminal specifications

Output Range	0.5, 1, 2, 4, 1.25, 2.5 (AU/V)
Polarity	+, -
Allowable Range	-0.1 to +1.0 (V)

NOTE The output range and polarity can be changed.

Reference "5.1.4 Detector" P.117

NOTE
- The upper output limit of the analog output terminal is 1000 mV. If a higher signal is generated, the peak point may not be detected correctly or similar problems may occur.
- Set the wavelength in "method setting".

Reference "5.1.4 Detector" P.117

4.7 Analog Input

Attaching the optional A/D board enables analog input and allows the instrument to be connected to an analog output detector.
For details about optional parts, contact your Shimadzu representative.

Input Range	±1.0 (V) (Up to ±10 V possible by switching gain)
Sampling	10, 20, 40, 80, 100, 200, 500, 1000 (msec)

4.8 Connecting an External Detector

The following external detector can be connected by attaching an optional optical board.

Name	Type	Ref.
RF-20A	Spectrofluorometric detector	Method parameter : P.121 System settings : P.128 Time program : P.136
RF-20A$_{XS}$		
RID-10A	Differential refractive index detector	Method parameter : P.122 System settings : P.129 Time program : P.137
RID-20A		

For details about optional parts, contact your Shimadzu representative.

⚠ CAUTION

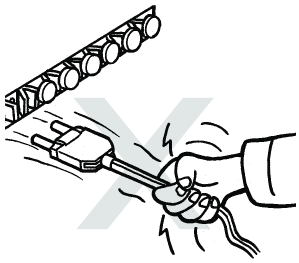
Prohibition

Do NOT bend the optical cable at a radius of 35 mm or less.

Do NOT pull the cord when disconnecting or connecting.

Do NOT bend the cable at the base of the plug when wiring.

Failure to observe the instructions above may damage the plug or cause the cable to become disconnected.



Prohibition

Do NOT let the end of plug become dirty.

Dirt or dust may enter the [REMOTE] connector hole resulting in failure or communication error.

Instruction

Keep the cap attached to unconnected [REMOTE] connectors.

The [REMOTE] connector has a cap for preventing dirt or dust from entering the connection part. If the cap is removed, dirt or dust may enter and cause communication errors.

Instruction

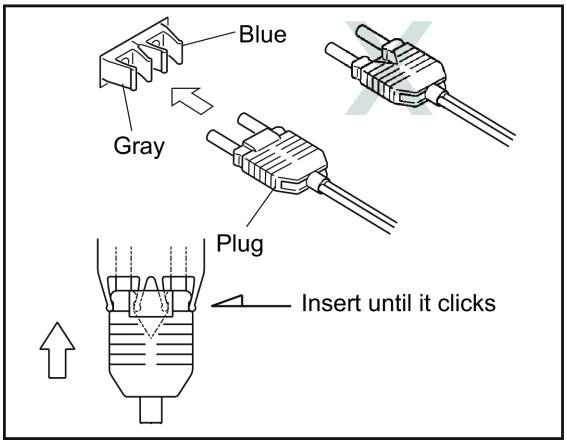
When the [REMOTE] connector is removed, store it in a safe place.

Doing so will prevent electric shock, power failure, and fire.

1 **Set the external detector link address to ch1.**

2 **Insert the plug (A) of the optical cable into the [REMOTE] connector of the detector until it clicks. (a: Gray, b: Blue)**

3 **Insert the other plug of the optical cable into the remote connector of the instrument until it clicks.**



4.9 Checking Instrument Status from PC

The instrument status can be checked via network by accessing the instrument's Web server from the PC's Web browser.

4.9.1 PC Specifications

The specifications for monitoring from a PC via a network are listed below.

NOTE When configuring the network, consult the department involved and the network management department or person responsible for the office.

Item	Explanation
CPU	Intel Pentium E5300 (2.6 GHz)
Memory	2 GB (min.) is recommended
LAN Adapter	Compatible with 100 Base-TX
Display	1024×768 min.
OS	Windows XP/7
Browser	Internet Explorer 8 or later
Language	Japanese, English

4.9.2 Browser Setting

Some browser settings need to be configured to monitor the instrument status on the PC's browser.

This section explains the parameters and procedures using Internet Explorer 8 as an example.

> **NOTE** If pop-up blocking is turned on, it may not be possible to open the Web screen from the browser. Disable pop-up blocking for the instrument's URL. When using Internet Explorer, delete the temporary files after disabling pop-up blocking.

1 From the [Tool] menu, click [Internet Options].

The [Internet Options] screen is displayed.

2 Add the instrument's URL to the local intranet zone.

1. On the [Security] tab, select [Local intranet].
2. Click [Sites].
3. Click [Advanced].
4. Input the instrument's URL in [Add this website to the zone:].
5. Click [Add] and check that the instrument's URL is shown in [Websites:].

3 Set the security level.

1. On the [Security] tab, click [Customize level].
2. In [Settings], set the items as follows.

Item	Setting
[ActiveX controls and plug-ins] - [Run ActiveX controls and plug-ins]	Enable
[ActiveX controls and plug-ins] - [Script ActiveX controls marked safe for scripting]	Enable
[Scripting] - [Active scripting]	Enable
[Miscellaneous] - [Access data sources across domains]	Enable

Item	Setting
[Downloads] - [File download]*1	Enable

*1 Necessary for saving method files and sequence files on the PC.

NOTE

- If Internet Explorer's history becomes large, updating the Web screen may become slow or the operation may become unstable. Click [Settings] in [Browsing history] and set [Disk space to use] to "100".
- If [Use a proxy server for your LAN] is checked on the screen displayed when [LAN settings] on the [Connections] tab is clicked, check [Bypass proxy server for local addresses] or click [Advanced] and add the instrument's URL to [Exceptions].

Hint

- If a script error occurs in the browser, the screen will stop updating. Checking [Browsing] - [Display a notification about every script error] in [Settings] of the [Advanced] tab will help identify the cause of errors when they occur.
- When printing a Web screen, checking [Printing] - [Print background colors and images] in [Settings] of the [Advanced] tab will create a print just as viewed on the screen.

4.9.3 Displaying the Web Screen

Input the following URL in the browser.
http://(instrument IP address)/html

4.9.4 Web Screen Items and Operations

On the System Monitor screen of the Web screen, the status of a system connected to the network can be monitored.

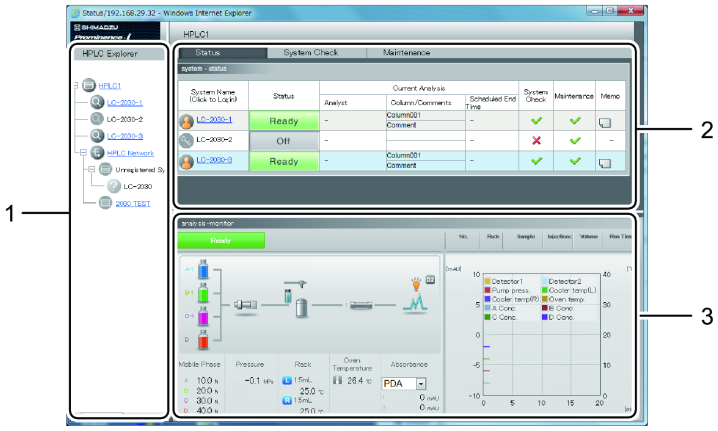
NOTE

- If the network load increases, the message "The system power has been turned off or the connection has been cut due to excessive network load. Reconnect?" may be displayed. If [OK] is clicked, the Web application stops and the screen will not be updated any more. If [Cancel] is clicked, the Web application ends.
- Do not execute a sequential operation while three or more Web screens are constantly opened at the same time.
- The status will be recognized as "Logged in" for 5 minutes after the system is disconnected, and "Logged out" after that.
- Do not press any shortcut key such as "F5" (update) or "F11" (full-screen). Doing so may cause an error or corrupt the screen.

Hint To print the contents displayed on the screen, such as the maintenance information and system configuration, press "Ctrl" + "P".

■ System Monitor screen

The screen is displayed first when the Web server is accessed. It consists of three areas: [HPLC Explorer], [Status Summary], and [Analysis Monitor].

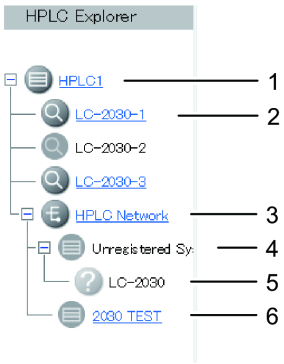


No.	Name		Explanation	Ref.
1	[HPLC Explorer] Area		The systems (up to 10) in the group and other systems are displayed in a tree. Click the system name to display the monitoring details in the [Analysis Monitor] area.	P.93
2	[Status Summary] Area		Contains three tabs. Click the tab to switch to each screen.	-
		[Status] Tab	Displays the status of the instrument in the group in a simple manner.	P.94
		[System Check] Tab	The system check execution and results for each system is displayed.	P.95
		[Maintenance] Tab	Displays the maintenance items of each system.	P.96
3	[Analysis Monitor] Area		Displays the monitoring details of the analyzer selected in the [HPLC Explorer] area.	P.97

HPLC explorer area

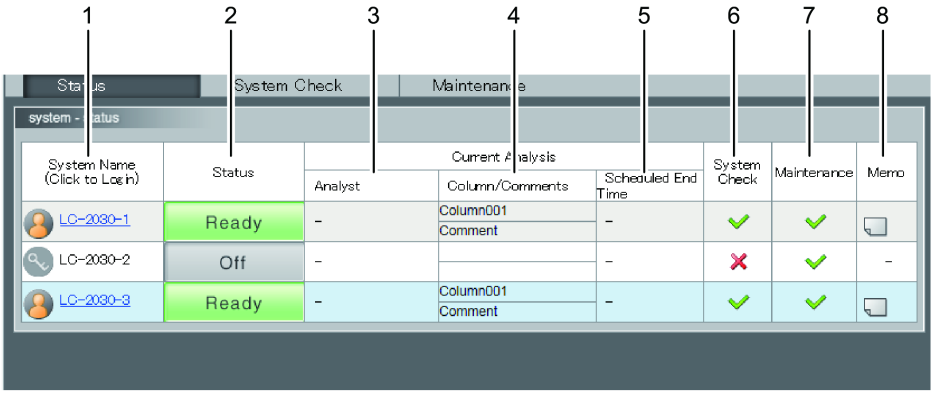
The systems (up to 10) in the group and other systems are displayed in a tree.

Click the system name to display the monitoring details in the [Analysis Monitor] area.



No.	Name	Explanation
1	Group	Displays the group name. Click ⊞ / ⊟ beside the icon to show/hide the systems in the group. Click the icon or group name to view other systems in the group.
2	System	Displays the system name. Click the icon or system name to display the system status in the [Simple Monitor] area.
3	HPLC Network	Displays the HPLC network name. Click ⊞ / ⊟ beside the icon to show/hide the groups in the network. Click the icon or HPLC network name to search the HPLC network. If the network has any other groups, the [Other group] icon and group names are displayed.
4	Unregistered System (Group)	Displays a system or group not registered in the group. Click ⊞ / ⊟ beside the icon to show/hide the instruments in the group.
5	Unregistered System	Displays a system not registered in the group. Click the icon to display the Group Management Login screen and register the system in the group.
6	Other Group	Displays a tree derived from another group. If an icon or group name is clicked, the content in the [HPLC Explorer] area and [Status Summary] area will be changed accordingly.

Status tab

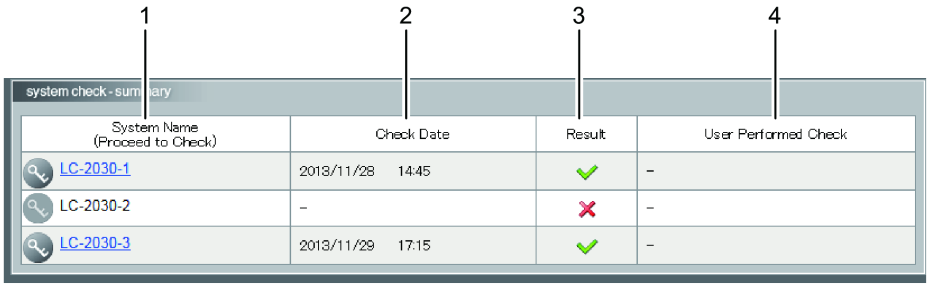


No.	Name	Explanation
1	System Name (Click to Login)	Displays the names of the systems configured using the same model as this instrument. Click the icon or system name to display the [Login] screen to enter the system. Once logged in, the [System Monitor] screen will be displayed.
2	Status	Displays the status information displayed on the system's "Analysis execution" screen.
3	Analyst	Displays the user name currently logged in to the system.
4	Column/Comments	Displays the column name and size in the upper line and the mobile phase name in the lower line. If no CMD is connected, the current analysis method comment is displayed.
5	Scheduled End Time	Displays the scheduled end time of the sequence when an autosampler is used for sequential analysis. Appears only while the sequence is in progress. Otherwise "-" is displayed.
6	System Check	Displays the system check results.
7	Maintenance	Displays the maintenance information.
8	Memo	Allows notes of system-related information to be made.
		Indicates that there is no note.
		Indicates that there is a note.

System check tab

The system check execution and results for each system is displayed.

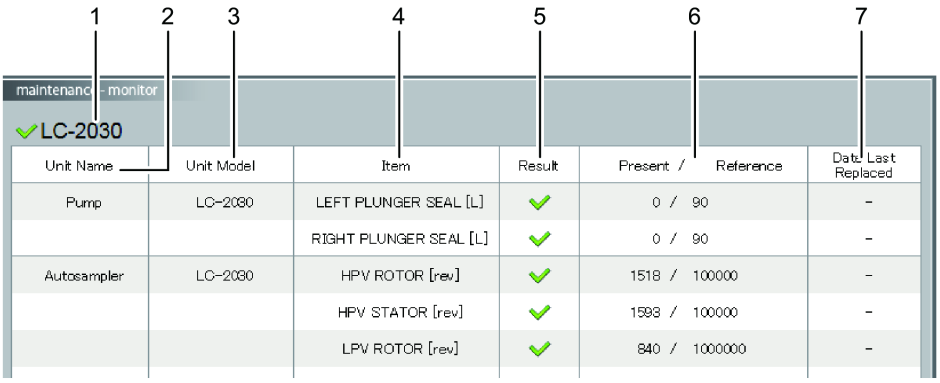
Reference Integrity Guide "2.2.2 Processing the System Check Using PC, iPad, or iPhone"



No.	Name	Explanation
1	System Name (Proceed to Check)	Displays the names of the systems configured using the same model as this instrument. Click the icon or system name to display the Login screen for the [Run system check] screen.
2	Check Date	Displays the last date when the system check was executed.
3	Result	Displays the results of the last system check.
4	User-Performed Check	Displays the user name that executed the last system check.

Maintenance tab

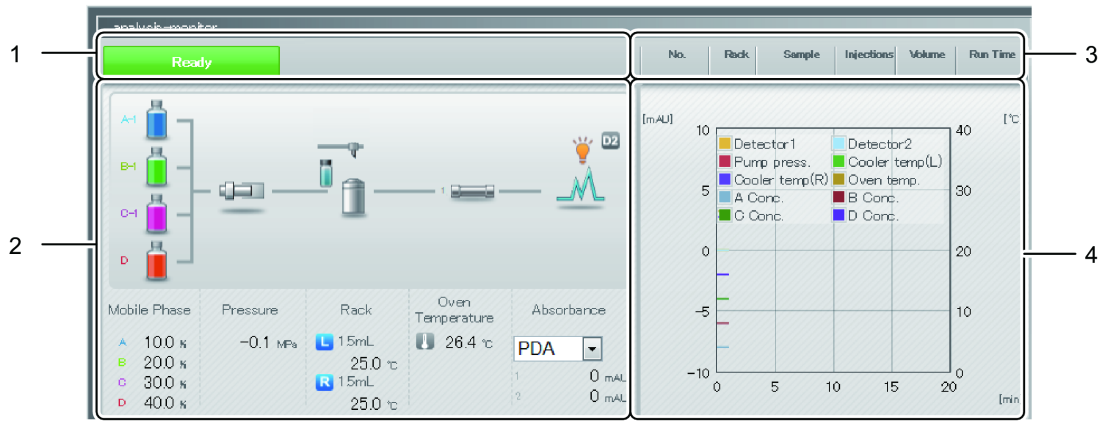
Displays the maintenance items of each system.



No.	Name	Explanation
1	System Name	Displays the system names configured using this instrument and the icon of the result of the check on consumable parts.
2	Unit Name	Displays the names of the components connected to the system.
3	Unit Model	Displays the model names of connected instruments.
4	Item	Displays the maintenance items.
5	Result	Displays the results in consideration of the replacement guidelines.
	✓	Indicates that the status meets the replacement guidelines.
	!	Indicates that the status does not meet the replacement guidelines.
	-	Indicates that there is no maintenance information for the connected instrument.
6	Present / Reference	Displays the replacement guidelines and the current values.
7	Date Last Replaced	Displays the last date the consumable part was replaced.

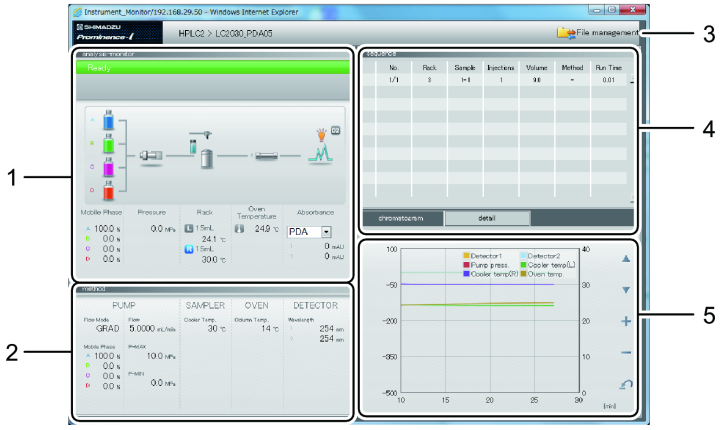
Analysis Monitor area

The status of the currently selected analyzer is displayed. Click the system name in the [HPLC Explorer] area to switch the screen.



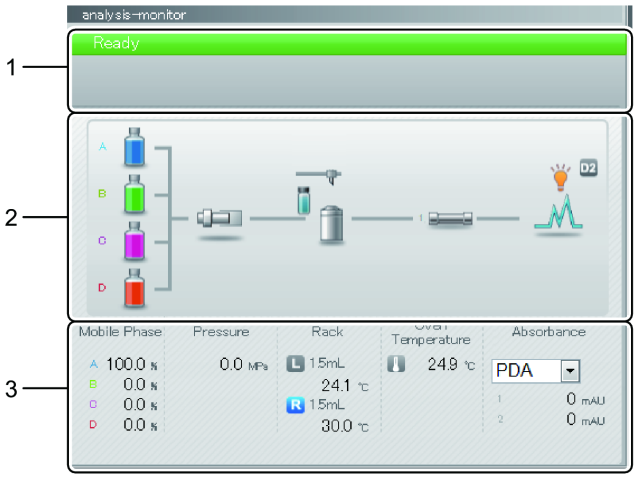
No.	Name	Explanation	Ref.
1	Analysis Status Display Area	Displays the analysis status of the instrument.	P.6
2	Monitor Value Display Area	Displays the unit set values of the pump, autosampler, column oven, and detector.	-
3	Sequence Display Area	Displays the sequence line being executed.	-
4	Chromatogram Display Area	Displays the chromatogram of the detector selected on the System Monitor screen and the graph of the various statuses. The display items and display ranges depend on the chromatogram monitor display settings of the instrument.	P.29

■ System Monitor screen



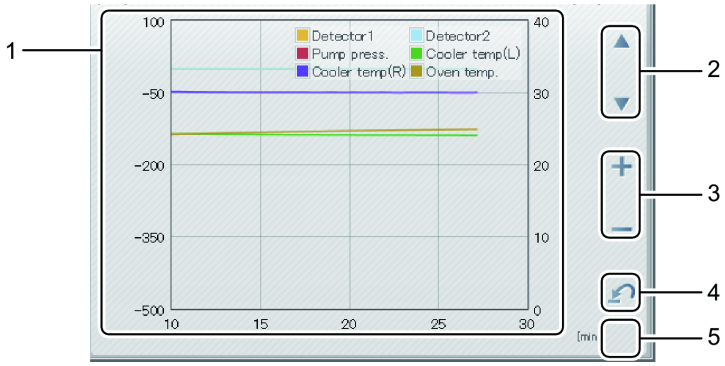
No.	Name		Explanation	Ref.
1	Analysis Status Display Area		The instrument analysis status and the unit operational status will be displayed.	P.99
2	Method Parameter Display Area		Displays the method parameters.	P.112
3	File Management		After authentication on the Login screen is successfully completed, the [File management] screen will be displayed. On the [File management] screen, it is possible to save the sequence files and method files from the instrument to a PC and also load them from a PC.	P.106
4	Sequence Display Area		Displays the sequence currently being executed.	-
5	Chromatogram Display Area		-	P.100
		[Chromatogram] Tab	Displays the chromatogram of the detector selected from the pull-down menu of the monitor.	
		[Advanced] Tab	The detailed monitor values of each unit will be displayed.	

Analysis status display area



No.	Name	Explanation	Ref.
1	Analysis Status Display	Displays the analysis status of the instrument.	P.6
2	Unit Operational Status (Flow Line Diagram)	Visually displays the operational status of the unit.	P.15
3	Unit Operational Status (Monitor Value)	Displays the operational status of the unit in figures. If the detector is changed, the graph in the chromatogram display area will change accordingly.	-

Chromatogram display area (chromatogram tab)



No.	Name	Explanation
1	Chromatogram Display	Displays the chromatogram of the detector selected on the System Monitor screen and the graph of the various statuses. The display items and display ranges depend on the chromatogram monitor display settings of the instrument. Reference "Chromatogram Display Settings screen" P.29
2	Display Shift Button	Shifts the vertical axis display position of the detector's chromatogram upward or downward.
3	Zoom In/Out Button	Zooms the vertical axis of the chromatogram for the detector in/out.
4	Reset Button	Returns the display setting of the chromatogram of the detector to the state for the previous operation.
5	Initialization Button	Returns the display setting of the chromatogram of the detector to the original state. NOTE After execution, pressing the reset button will not restore the state for the previous operation.

4.10 Checking the Instrument Status from iPad

The instrument status can also be checked from an iPad connected to the network.

4.10.1 iPad Specifications

NOTE When configuring the network, consult the department involved and the network management department or person responsible for the office.

- OS: iOS5, iOS6
- Language: Japanese, English

4.10.2 Preparation

Configure the iPad so that it can share the network with the instrument.

NOTE When configuring the network, consult the department involved and the network management department or person responsible for the office.

4.10.3 Displaying the Web Screen

Input the instrument's URL in the browser.

Hint If the Web screen is registered as the Home screen, it will be possible to display the Web screen simply by tapping the icon registered in the Home screen. For details, refer to the instruction manual provided with the iPad.

4.10.4 Web Screen Items and Operations

The instrument status can be checked in the same manner as with a PC.

Reference "4.9.4 Web Screen Items and Operations" P.91

NOTE Configure the browser settings according to the browser used.

4.11 Checking Instrument Status from iPhone

The instrument status can be checked from an iPhone connected to the network.

4.11.1 iPhone Specifications

NOTE When configuring the network, consult the department involved and the network management department or person responsible for the office.

- OS: iOS5, iOS6
- Language: Japanese, English

4.11.2 Preparation

Configure the iPhone so that it can share the network with the instrument.

NOTE When configuring the network, consult the department involved and the network management department or person responsible for the office.

4.11.3 Displaying the Web Screen

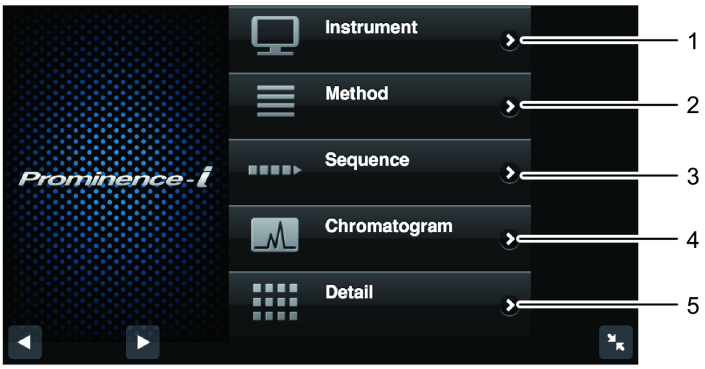
Input the instrument's URL in the browser.

Hint If the Web screen is registered as the Home screen, it will be possible to display the Web screen simply by tapping the icon registered in the Home screen. For details, refer to the instruction manual provided with the iPhone.

4.11.4 Web Screen Items and Operations

On the Web screen, it is possible to monitor the status of the instrument. The content of the [System Monitor] screen on the PC can be displayed.

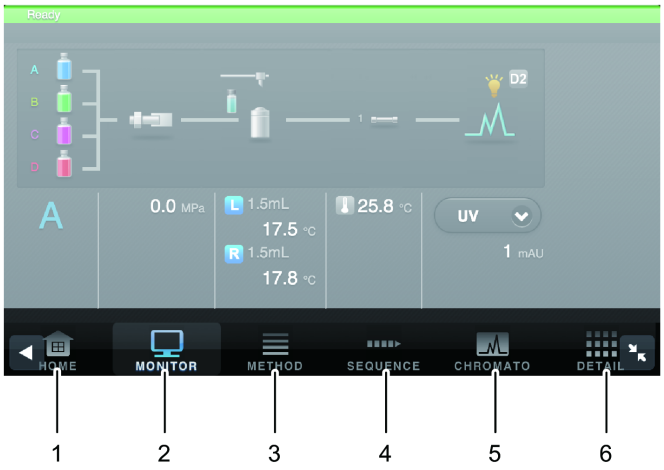
■ Home screen



No.	Name	Explanation	Ref.
1	Instrument	Tap to display the [System Monitor] screen. The instrument analysis status and the unit operational status will be displayed.	P.105
2	Method	Tap to display the [Method Monitor] screen. Displays the method parameters.	-
3	Sequence	Tap to display the [Sequence Monitor] screen. Displays the sequence currently being executed.	-
4	Chromatogram	Tap to display the [Chromatogram Monitor] screen. The chromatogram of the detector selected on the [System Monitor] screen will be displayed.	P.105
5	Detail	Tap to display the [Detailed Monitor] screen. The detailed monitor values of each unit will be displayed.	-

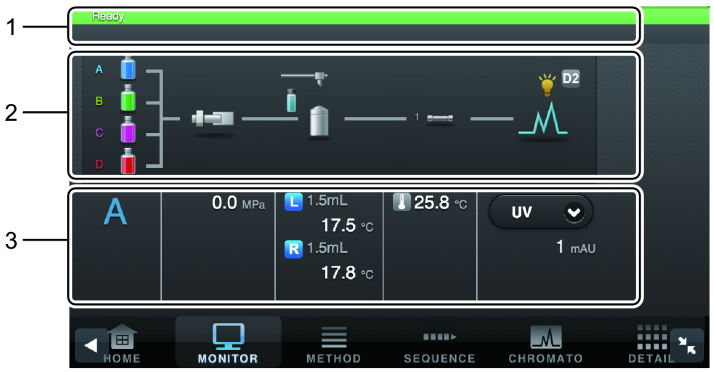
■ Common area

Each screen besides the Home screen can be switched to using the button at the bottom.



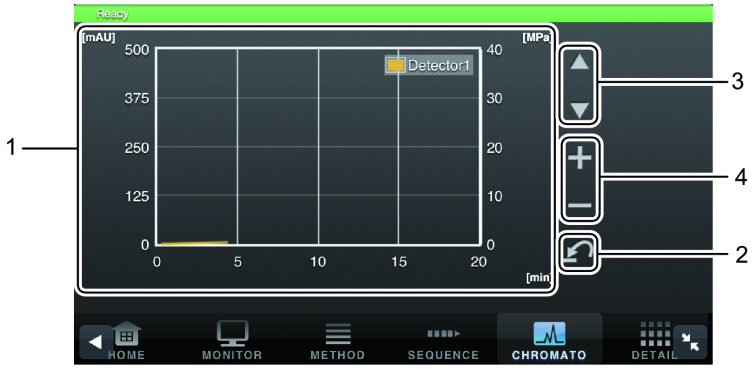
No.	Name	Explanation	Ref.
1	HOME	Tap to display the Home screen.	-
2	MONIT	Tap to display the [System Monitor] screen. The instrument analysis status and the unit operational status will be displayed.	P.105
3	METHOD	Tap to display the [Method Monitor] screen. Displays the method parameters.	-
4	CHROM	Tap to display the [Chromatogram Monitor] screen. The chromatogram of the detector selected on the [System Monitor] screen will be displayed.	P.105
5	SEQ	Tap to display the [Sequence Monitor] screen. Displays the sequence currently being executed.	-
6	DETAIL	Tap to display the [Detailed Monitor] screen. The detailed monitor values of each unit will be displayed.	-

■ System Monitor screen



No.	Name	Explanation	Ref.
1	Analysis Status Display	Displays the analysis status of the instrument.	P.6
2	Unit Operational Status (Flow Line Diagram)	Visually displays the operational status of the unit.	P.15
3	Unit Operational Status (Monitor Value)	Displays the operational status of the unit in figures. If the detector is changed, the graph on the [Chromatogram Monitor] screen will change accordingly.	-

■ Chromatogram Monitor screen



No.	Name	Explanation
1	Chromatogram Display	Displays the chromatogram.
2	Reset Button	Returns the display setting of the chromatogram to the state for the previous operation.
3	Display Shift Button	Shifts the vertical axis display position of the chromatogram upward or downward.
4	Zoom In/Out Button	Zooms the vertical axis of the chromatogram in/out.

4.12 Backup of Methods and Sequences

The sequences or methods of the instrument can be backed up to a PC connected to the network. It is also possible to retrieve the backed up sequences or methods to the instrument.

Perform operation from the System Monitor screen of the Web screen.

Reference "4.9 Checking Instrument Status from PC" P.88

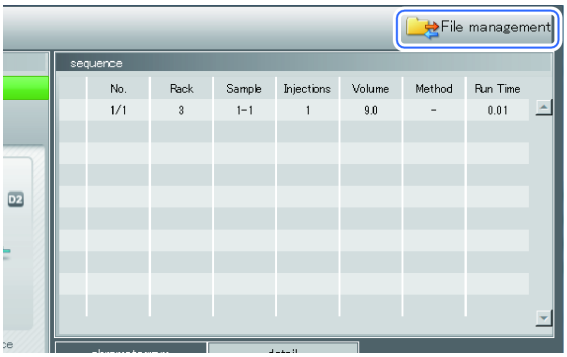
NOTE Operation is disabled during analysis.

4.12.1 Creating Backups

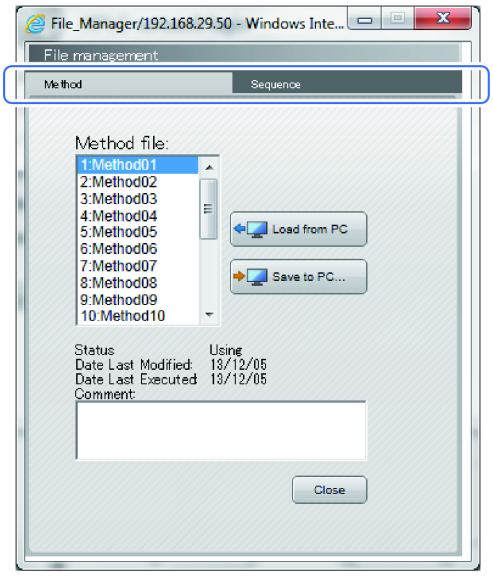
The sequences or methods of the instrument can be backed up to a PC connected to the network.

1 **On the System Monitor screen of the Web screen, click [File management].**

The [File management] screen is displayed.

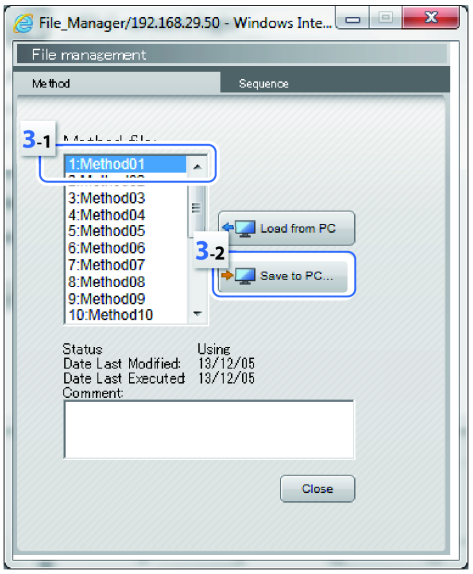


2 **Click the [Method] tab or the [Sequence] tab.**



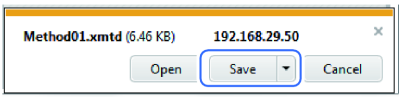
3 **From the file list on the left of the screen, click the desired file and click [Save to PC].**

The [File download] screen is displayed.



4 **Click [Save].**

> **NOTE** Do not click [Open]. The file may not be saveable as is if associated with any other application. If [Open] is accidentally clicked and the [Open With] screen is displayed, click [Cancel] on the displayed screen to close the screen.



The [Save as] screen is displayed.

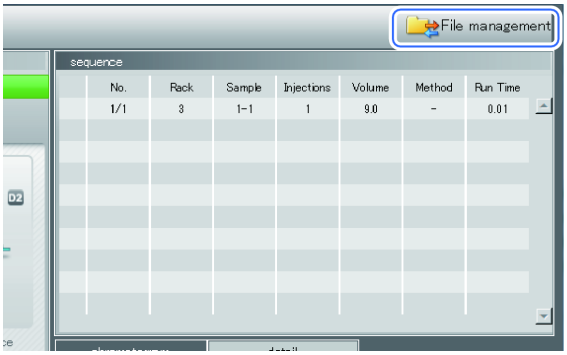
5 **Save the file.**

4.12.2 Retrieving Files

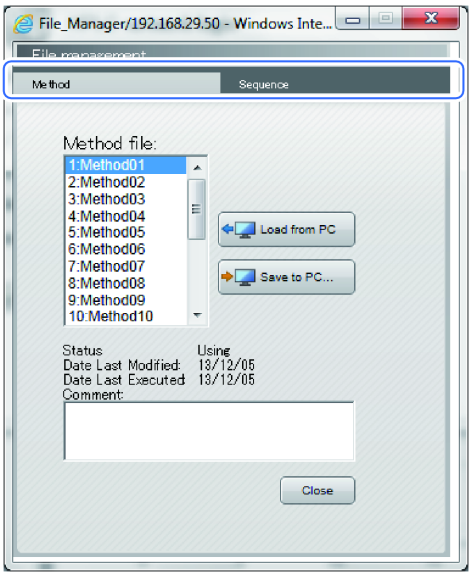
It is possible to retrieve the sequences or methods backed up in a PC connected to the network.

1 **On the Web screen, click [File management].**

The [File management] screen is displayed.

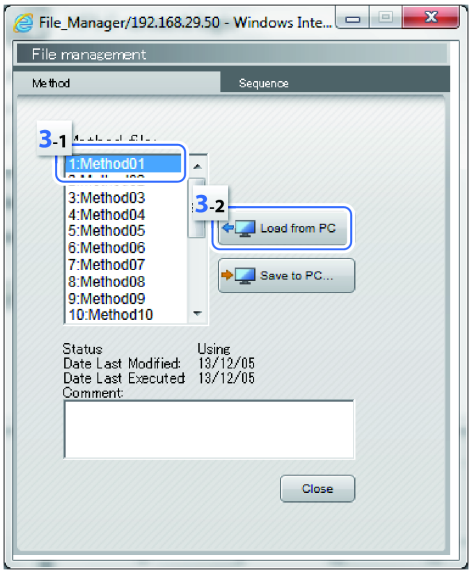


2 **Click the [Method] tab or the [Sequence] tab.**



3 **From the file list on the left of the screen, click the desired file and press [Load from PC].**

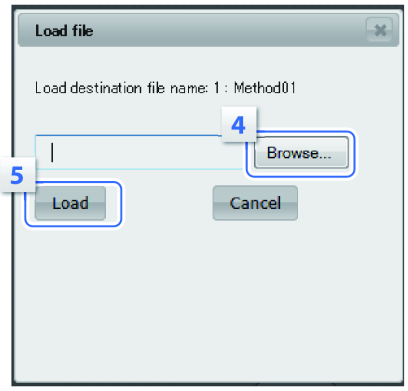
The [Load file] screen is displayed.



4 **Click [Browse] and select the file.**

5 **Click [Load].**

The selected file will be returned to the instrument.



4.13 Enhanced GxP Support Function

An enhanced GxP support function improves the reliability of analysis results by suppressing some instrument operations during analysis, recording instrument operations with an impact on analysis, and waiting the start of analysis until the instrument is in the correct state.

> **NOTE** Enabling this function will not only improve the reliability of analysis results but also involve certain operational limitations, so ensure that you fully understand the details of this function prior to use.

When Enhanced GxP Support Function is set to [ON], the system will implement the following operations in cooperation with the workstation.

- During analysis, it will suppress instrument operations with an impact on analysis.
- It will password-protect instrument operations with an impact on analysis.
- It will stand by so that analysis does not start until the instrument is in the correct state.
- When instrument operations are performed with an impact on analysis, they will be recorded in the workstation's log.

Conforming workstation to Enhanced GxP Support Function

Software	Conforming version
LabSolutions	Contact your Shimadzu representative.
OpenLAB	Contact your Shimadzu representative.

4.13.1 Setting Enhanced GxP Support Function

The ON/OFF settings for this function are configured by a field engineer during the instrument installation. This function will be disabled unless otherwise specified.

4.13.2 Instrument status under Enhanced GxP Support Function

When Enhanced GxP Support Function is set to be [ON], the instrument operates as described below depending on the state.

■ In case that the instrument is not connected to the workstation.

In case that workstation is not connected, the instrument is in the following state.

- [Login] screen is displayed on the Main Analysis screen and the instrument is in password lock state as shown in the figure.

  Password lock is canceled by entering Login Pass ID Number. The instrument becomes password lock state again when backing to the Main Analysis screen from the other screen.

- [PARAM LOGIN] is registered in the operation log of the instrument when password lock is canceled.
- All of operations on Monitor Screen of the instrument become possible by canceling password lock.

■ In case that the instrument is connected to the workstation (ready and waiting)

In case that the instrument is connected to the workstation and the analysis is not executed, the instrument is in the following state.

- The instrument waits without starting the analysis until the status becomes [Ready]. The status of the instrument is [S.Cool] when waiting for temperature control of sample cooler, [CEELL.T] when waiting for temperature control of detector cell. The analysis cannot be started until the status of the instrument turns to be [Ready]. In case waiting for temperature control of oven, the status turns to be [WaitOven] regardless of setting of Enhanced GxP Support Function.
- Method parameters cannot be edited on the Main Analysis screen of the instrument.
- System Control Area in Main Analysis screen of the instrument can be operated. The log is registered on workstation when the instrument is operated in System Control Area. Refer to the instruction manual of workstation for detail.
- The lock of the instrument cannot be canceled by workstation.

■ In case that the instrument is connected to the workstation (while analyzing)

In case that the instrument is connected to the workstation and analysis is executed, the instrument is in the following state.

- Method parameters cannot be edited on the Main Analysis screen of the instrument.
- System Control Area in Main Analysis screen of the instrument cannot be operated.
- The lock of the instrument cannot be canceled by workstation.

5 Parameter Setting

This chapter describes the parameter values and details.

5.1 Method

5.1.1 Pump

<table>
<tr><th>Parameter</th><th colspan="5">Explanation</th></tr>
<tr><td rowspan="4">Flow</td><td colspan="5">Sets the flow rate. The total flow rate will be displayed in the gradient mode.</td></tr>
<tr><td>Range</td><td colspan="4">0 to 10.0000 (mL/min)</td></tr>
<tr><td>Default</td><td colspan="4">0</td></tr>
<tr><td>Step</td><td colspan="4">0.0001</td></tr>
<tr><td rowspan="5">P.Max</td><td colspan="5">Sets the maximum pressure of the pump.
The unit can be switched in [System Parameter Setting].
NOTE If the flow rate exceeds 5 mL/min, pumping is automatically stopped when the pressure exceeds 22.0 MPa regardless of the maximum pressure set value.</td></tr>
<tr><td>Unit</td><td>MPa</td><td>kgf/cm^2</td><td>psi</td><td>bar</td></tr>
<tr><td>Range</td><td>1.0 to 44.0</td><td>10 to 449</td><td>142 to 6387</td><td>10 to 440</td></tr>
<tr><td>Default</td><td>10.0</td><td>102</td><td>1451</td><td>100</td></tr>
<tr><td>Step</td><td>0.1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td rowspan="5">P.Min</td><td colspan="5">Sets the minimum pressure of the pump.
The unit can be switched in [System Parameter Setting].</td></tr>
<tr><td>Unit</td><td>MPa</td><td>kgf/cm^2</td><td>psi</td><td>bar</td></tr>
<tr><td>Range</td><td>0 to 40.0</td><td>0 to 408</td><td>0 to 5804</td><td>0 to 400</td></tr>
<tr><td>Default</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Step</td><td>0.1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td rowspan="3">Degassing Unit</td><td colspan="5">Configures the ON/OFF setting of the degassing unit.</td></tr>
<tr><td>Range</td><td colspan="4">OFF, ON</td></tr>
<tr><td>Default</td><td colspan="4">ON</td></tr>
<tr><td rowspan="3">Port</td><td colspan="5">Selects the mobile phase port to be used. This can be set only in the ISO mode.</td></tr>
<tr><td>Range</td><td colspan="4">A, B, C, D</td></tr>
<tr><td>Default</td><td colspan="4">A</td></tr>
</table>

Parameter	Explanation	
Solvent A Conc.	The solvent A concentration cannot be edited directly. This is displayed in the gradient mode. Solvent A Conc. = 100 - Solvent B Conc. - Solvent C Conc. - Solvent D Conc.	
	Range	0 to 100.0(%)
	Default	100.0
	Step	0.1
Solvent B Conc. Solvent C Conc. Solvent D Conc.	This can be set in the gradient mode.	
	Range	0 to 100.0 (%)
	Default	0
	Step	0.1
LPGE Mode	Sets the LPGE mode. This can be set only in the gradient mode.	
	Range	Auto, 1, 2, 4, 8, 10
	Default	Auto
Solenoid Valve 1 Solenoid Valve 2 Solenoid Valve 3	The mobile phase switching valves are optional. They will be displayed when FCV-11AL or FCV-11ALS is selected in [Solenoid Valve] on the [System Parameter Setting] screen. NOTE The settings will be reflected in the mobile phase port selection when performing maintenance, validation, and calibration.	
	Range	Side 1, Side 2
	Default	Side 1

■ Compressibility Settings screen

Parameter	Explanation		
Compressibility	Sets the compressibility of solvents A to D. Compressibility will be optimized when the solvent to be used is selected. The desired compressibility can be specified by setting [Numerical].		
		Mobile Phase (Solvent)	Compressibility (GPa^{-1})
	Range	Water	0.45
		Acetonitrile	1.20
		Methanol	1.25
		Hexane	1.60
		Numerical	0 to 3.00
	Default	Water	0.45
	Step	Numerical	0.01

Compressibility of solvents A to D

This instrument compensates compressibility in order to reduce the increase in the pulsation value caused by the solvent's compressibility. Specifying the compressibility of the solvent used will enable more sensitive compensation. Change the parameters if pumping hexane, methanol, or such other high-compressibility solvent at 20 MPa or higher pressure. In case of low compressibility, it is not necessary to change the parameters.

5.1.2 Autosampler

Parameter	Explanation	
Cooler Rack Plate L Cooler Rack Plate R	Configures the ON/OFF setting of the rack plate temperature control. This is displayed only for models with sample cooler.	
	Range	OFF/ON
	Default	OFF
Cooler Temperature	Sets the sample cooler temperature. This is displayed only for models with sample cooler.	
	Range	4 to 45 (°C)
	Default	15
	Step	1
Purge Time (Rinse Port)	Sets the time to purge the flow line.	
	Range	0.1 to 25.0 (min)
	Default	10.0
	Step	0.1

<table>
<tr><th>Parameter</th><th colspan="2">Explanation</th></tr>
<tr><td rowspan="3">Rinse Mode</td><td colspan="2">Selects how to rinse the needle during sample injection.

NOTE If a parameter other than [No rinsing] is selected, it is recommended to set [Rinsing Volume] to a min. of 450 µL.</td></tr>
<tr><td>Range</td><td>No rinsing, Before aspir., After aspir., Before and after</td></tr>
<tr><td>Default</td><td>Before and after</td></tr>
<tr><td rowspan="4">Rinse Dip Time</td><td colspan="2">Sets the needle immersion and rinsing time. This becomes effective when a parameter other than ［No rinsing］ is selected in ［Rinse Mode］</td></tr>
<tr><td>Range</td><td>0 to 60 (sec)</td></tr>
<tr><td>Default</td><td>0</td></tr>
<tr><td>Step</td><td>1</td></tr>
<tr><td rowspan="4">Rinsing Volume</td><td colspan="2">Sets the replacement volume of the rinse solution in the rinsing port when rinsing the needle.

NOTE If a parameter other than [No rinsing] is selected in [Rinse Mode], setting a min. of 450 µL is recommended.</td></tr>
<tr><td>Range</td><td>0 to 2000 (µL)</td></tr>
<tr><td>Default</td><td>500</td></tr>
<tr><td>Step</td><td>1</td></tr>
<tr><td rowspan="4">Rinsing Speed</td><td colspan="2">Sets the rate to suction the rinse solution.

NOTE When a high-viscosity rinse solution prone to air bubbles is used, specify a smaller value.</td></tr>
<tr><td>Range</td><td>1 to 35 (µL/sec)</td></tr>
<tr><td>Default</td><td>35</td></tr>
<tr><td>Step</td><td>1</td></tr>
<tr><td rowspan="4">Sampling Speed</td><td colspan="2">Sets the rate to suction the sample into the needle.

NOTE • The initial value is 15.0 µL/sec as a general guideline. When a high-viscosity sample solvent is used, specify a smaller value. It is also recommended to specify 5.0 µL/sec or less when using a sample loop with a maximum injection value of 50 µL or less.
• If the sample loop is changed to one for 50 µL injections but the sample aspiration rate is set to more than 5.0 µL/sec, the sample aspiration rate will be changed to 5.0 µL/sec automatically.</td></tr>
<tr><td>Range</td><td>0.1 to 15.0 (µL/sec)</td></tr>
<tr><td>Default</td><td>15.0</td></tr>
<tr><td>Step</td><td>0.1</td></tr>
</table>

Parameter	Explanation	
Air Gap Volume	Sets the air amount to be put in before and after the suctioned sample.	
	Range	0 to 5.0 (µL)
	Default	0
	Step	0.1
MTP Order	Selects the injection order on MTP/DWP. NOTE Because [MTP order] depends on the installed racks, changes made in one method will be applied to all the other methods.	
	Range	A1A2, 1A1B
	Default	A1A2

5.1.3 Column Oven

Parameter	Explanation	
Oven Temperature	Sets the column oven temperature. NOTE A value between "room temperature -10 °C" or "4 °C" (whichever is higher) and 85 °C can be set.	
	Range	4 to 85 (°C)
	Default	40
	Step	1
Temperature Limit (Maximum)	Sets the column oven upper temperature limit. If the actual temperature exceeds this set value, an error window appears and temperature control stops. NOTE Setting a value outside the operating temperature range of the column may damage the column.	
	Range	5 to 90 (°C)
	Default	90
	Step	1
Valve Position	Sets the valve position. This is displayed only when a flow line switching valve is connected.	
	Range	1, 2, 3, 4, 5, 6
	Default	1

5.1.4 Detector

■ UV Detector

Parameter	Explanation	
Wavelength Ch1 Wavelength Ch2	Sets the measurement wavelength. NOTE • [Wavelength Ch1] and [Wavelength Ch2] should fall in the same range of either 190 to 370 or 371 to 700. [Wavelength Ch1] and [Wavelength Ch2] cannot fall in different ranges from each other. • [Wavelength Ch2] is displayed when [Wavelength Mode] is [Dual].	
	Range	190 to 700 (nm)
	Default	254
	Step	1
Lamp	Configures the ON/OFF setting of the deuterium (D2) lamp.	
	Range	OFF, D2
	Default	D2
Wavelength Mode	Selects the wavelength mode.	
	Range	Single, Dual
	Default	Single
Aux Range1 Aux Range2	Sets the output range to the integrator. NOTE [Aux Range2] is displayed when [Wavelength Mode] is [Dual].	
	Range	0.5, 1.0, 1.25, 2.0, 2.5, 4.0 (AU/V)
	Default	1.0
Response	Sets the time constant for filtering the data. This is effective for noise reduction. Setting a larger value increases noise reduction. However, setting too large a value will lower the peak height.	
	Range	No Filter, 0.05, 0.1, 0.5, 1.0, 1.5, 2.0, 3.0, 6.0, 8.0, 10.0 (sec)
	Default	1.0
Polarity	Sets the polarity.	
	Range	+, -
	Default	+

<table>
<tr><th>Parameter</th><th colspan="2">Explanation</th></tr>
<tr><td rowspan="4">Recycle Valve Threshold Level</td><td colspan="2">Sets the threshold for the switching level of the solvent recycle valve. If the wavelength absorbance exceeds the value set here, the solvent recycle valve is switched to the waste liquid side.
Set "0" to always use the recycling status regardless of the absorbance, and "1" to always use the waste liquid side. This is displayed only when a recycle valve is connected.</td></tr>
<tr><td>Range</td><td>0 to 1.0000 (AU)</td></tr>
<tr><td>Default</td><td>0</td></tr>
<tr><td>Step</td><td>0.0001</td></tr>
<tr><td rowspan="4">Recycle Valve Delay Time</td><td colspan="2">Specifies the delay time until the solvent recycle valve switches to the recycling side after the absorbance falls below [Recycle Valve Threshold Level]. This is displayed only when a recycle valve is connected.</td></tr>
<tr><td>Range</td><td>0 to 99.9 (sec)</td></tr>
<tr><td>Default</td><td>2.0</td></tr>
<tr><td>Step</td><td>0.1</td></tr>
<tr><td rowspan="3">Temperature Control</td><td colspan="2">Configures the ON/OFF setting of the cell temperature control.
This can reduce the impact on the baseline of outside temperature fluctuations. This is effective in such situations as when the light absorbance of the mobile phase is high or when the sample absorbance largely depends on the temperature.</td></tr>
<tr><td>Range</td><td>ON, OFF</td></tr>
<tr><td>Default</td><td>ON</td></tr>
<tr><td rowspan="4">Cell Temp.</td><td colspan="2">Sets the cell temperature. If the "cell temperature" is set lower than the "oven temperature", the cell temperature may not drop, thus preventing cell temperature control. Adding a cooling tube between the column outlet and the cell inlet will enable cell temperature control.
NOTE A value between "room temperature +15 °C" or "40 °C" (whichever is lower) and 50 °C can be set.
Reference System Guide "3.6.2 Column Equilibration"</td></tr>
<tr><td>Range</td><td>19 to 50 (°C)</td></tr>
<tr><td>Default</td><td>40</td></tr>
<tr><td>Step</td><td>1</td></tr>
</table>

■ PDA Detector

Parameter	Explanation	
Wavelength Ch1 Wavelength Ch2	Sets the measurement wavelength. NOTE • [Wavelength Ch1] is the measurement wavelength shown on the instrument. • Analog output of [Wavelength Ch1] and [Wavelength Ch2] is possible.	
	Range	190 to 800 (nm)
	Default	254
	Step	1
Lamp	Configures the ON/OFF setting of the deuterium (D2) lamp and the tungsten lamp (W). The wavelength band in which high sensitive measurement can be done differs depending on the lamp being illuminated. • D2: 190 nm to 600 nm • W: 370 nm to 800 nm • D2+W: 190 nm to 800 nm NOTE The tungsten lamp (W) is optional.	
	Range	OFF, D2, W, D2+W
	Default	D2
Aux Range1 Aux Range2	Sets the output range to the integrator.	
	Range	0.5, 1.0, 1.25, 2.0, 2.5, 4.0 (AU/V)
	Default	1.0
Bandwidth1 Bandwidth2	Sets the wavelength band for cumulated averaging of the spectrum. Setting a wider bandwidth will reduce noise but lower the spectral resolution.	
	Range	0 to 500 (nm)
	Default	4
	Step	1
Polarity1 Polarity2	Sets the polarity.	
	Range	+, -
	Default	+
Slit Width	Sets the slit width. Setting to 8.0 nm will lower the spectral resolution but can reduce noise and improve the S/N ratio. If high spectral resolution rather than high S/N ratio is required, use a 1.2 nm slit.	
	Range	1.2, 8.0 (nm)
	Default	8.0

<table>
<tr><th>Parameter</th><th colspan="2">Explanation</th></tr>
<tr><td rowspan="3">Sampling Rate</td><td colspan="2">Specifies the cycle for outputting the data. The average of the single sampling cycle data will be output.
Setting a smaller sampling rate will increase the data storing points per unit time, thus improving the quantitative performance, but will increase the data size, resulting in shorter analysis time.</td></tr>
<tr><td>Range</td><td>10, 25, 80, 160, 240, 320, 640, 1280, 2000 (msec)</td></tr>
<tr><td>Default</td><td>640</td></tr>
<tr><td rowspan="3">Response</td><td colspan="2">Sets the time constant for filtering the data.
This is effective for noise reduction.
Setting a larger value increases noise reduction. However, setting too large a value will lower the peak height.</td></tr>
<tr><td>Range</td><td>No Filter,
10, 25, 50, 80, 100, 160, 240, 320, 480, 640, 960, 1280, 2000 (msec)</td></tr>
<tr><td>Default</td><td>1280</td></tr>
<tr><td rowspan="3">Temperature Control</td><td colspan="2">Configures the ON/OFF setting of the cell temperature control.
This can reduce the impact on the baseline of outside temperature fluctuations. This is effective in such situations as when the light absorbance of the mobile phase is high or when the sample absorbance largely depends on the temperature.</td></tr>
<tr><td>Range</td><td>ON, OFF</td></tr>
<tr><td>Default</td><td>ON</td></tr>
<tr><td rowspan="4">Cell Temp.</td><td colspan="2">Sets the cell temperature. If the "cell temperature" is set lower than the "oven temperature", the cell temperature may not drop, thus preventing cell temperature control. Adding a cooling tube between the column outlet and the cell inlet will enable cell temperature control.
NOTE A value between "room temperature +15 °C" or "40 °C" (whichever is lower) and 50 °C can be set.
Reference System Guide "3.6.2 Column Equilibration"</td></tr>
<tr><td>Range</td><td>19 to 50 (°C)</td></tr>
<tr><td>Default</td><td>40</td></tr>
<tr><td>Step</td><td>1</td></tr>
<tr><td rowspan="3">Reference Correction</td><td colspan="2">Configures the ON/OFF setting of the reference compensation. The reference wavelength absorbance will be subtracted from the measurement wavelength. This can reduce noise caused by fluctuations in light intensity of the lamp.
The set reference wavelength should be a min. of 20 nm away from the measurement wavelength and should not allow absorption by the sample.</td></tr>
<tr><td>Range</td><td>ON, OFF</td></tr>
<tr><td>Default</td><td>OFF</td></tr>
</table>

Parameter	Explanation	
Reference Wavelength	Sets the reference wavelength. The set wavelength should be a min. of 20 nm away from the measurement wavelength and should not allow absorption by the sample. NOTE If the reference wavelength allows absorption by the sample, careful consideration should be given when using the data.	
	Range	190 to 800
	Default	350
	Step	1
Reference Bandwidth	Sets the reference wavelength bandwidth.	
	Range	0 to 100
	Default	20
	Step	1

■ Spectrofluorometric detector (RF-20A/RF-20Axs)

Parameter	Explanation	
Excitation Wavelength Excitation Wavelength2	Sets the excitation wavelength. NOTE [Excitation Wavelength2] is displayed when [Wavelength Mode] is dual wavelength mode (min).	
	Range	200 to 900 (nm)
	Default	350
	Step	1
Emission Wavelength Emission Wavelength2	Sets the emission wavelength. NOTE • [Emission Wavelength2] is displayed when [Wavelength Mode] is dual wavelength mode (min). • [Emission Wavelength] can be set to "0" only when [Wavelength Mode] is [Single].	
	Range	0, 200 to 900 (nm)
	Default	450
	Step	1
Wavelength Mode	Setting to triple wavelength mode and quad wavelength mode is possible only from the workstation.	
	Range	1-Wavelength, 2-Wavelength, 3-Wavelength, 4-Wavelength
	Default	1-Wavelength
Lamp	Switches the ON/OFF setting of the lamp.	
	Range	ON, OFF
	Default	ON

Parameter	Explanation	
Response	Sets the response.	
	Range	No Filter, 0.05, 0.1, 0.5, 1.0, 1.5, 2.0, 3.0, 6.0, 8.0, 10.0 (sec)
	Default	1.0
Gain	Sets the gain.	
	Range	x1, x4, x16
	Default	x4
Sensitivity	Sets the sensitivity.	
	Range	High, Middle, Low
	Default	Middle
Temperature Control (RF-20Axs Only)	Configures the ON/OFF setting of the cell temperature control.	
	Range	ON, OFF
	Default	ON
Cell Temp. (RF-20Axs Only)	Sets the cell temperature.	
	Range	4 to 40 (°C)
	Default	30
	Step	1

■ Differential refractive index detector (RID-10A/RID-20A)

Parameter	Explanation	
Measurement Mode	Selects the measurement mode.	
	Range	Analysis, Preparative, LargeScale prep.
	Default	Analysis
Response	Sets the response.	
	Range	0.05, 0.1, 0.5, 1.0, 1.5, 2.0, 3.0, 6.0, 8.0, 10.0, (sec)
	Default	1.5
Polarity	Switches the polarity.	
	Range	+, -
	Default	+
AUX Range	Selects the AUX range.	
	Range	10E-4, 10E-3, 10E-2, 2.5E-4 (RIU/V)
	Default	10E-3
Temperature Control	Switches the ON/OFF setting of the cell temperature control.	
	Range	ON, OFF
	Default	ON

Parameter	Explanation	
Cell Temp.	Sets the cell temperature.	
	Range	30.0 to 60.0 (°C)
	Default	40.0
	Step	0.1
Recycle Valve Threshold Level	Sets the threshold for the switching level of the solvent recycle valve.If the refractive index exceeds the value set here, the solventrecycle valve is switched to the waste liquid side. Set "0" to always use the recycling status regardless of the refractive index, and "9999.00" to always use the waste liquid side. NOTE This parameter is displayed only when [Recycle Valve] in [System Parameter Setting] is set to [Used] with using Differential refractive index detector RID-20A.	
	Range	0.00～9999.00（uRIU）
	Default	9999.00
	Step	0.01
Recycle Valve Delay Time	Specifies the delay time until the solvent recycle valve switches to the recycling side after the refractive index falls below [Recycle Valve Threshold Level]. NOTE This parameter is displayed only when [Recycle Valve] in [System Parameter Setting] is set to [Used] with using Differential refractive index detector RID-20A.	
	Range	0.0～99.9(sec)
	Default	2
	Step	0.1

5.1.5 Controller

Parameter	Explanation	
Event1 Event2 Event3 Event4	Switches the ON/OFF setting of the four relay contact outputs on the back of the instrument. NOTE To enable this function, set the corresponding event output (1 to 4) on the [System Parameter Setting] screen to [Event]. Reference "5.2.5 Other" P.129	
	Range	ON, OFF
	Default	OFF

5.2 System Settings

5.2.1 Pump

Item	Explanation				
System Protection	For errors dealt with by System Protection, refer to the System Guide "6 Troubleshooting". NOTE If set to [Enabled], pumping will stop when the error is cleared.				
	Range	Enabled: Pumping continues at a half flow rate when an error has occurred. Disabled: Pumping stops when an error has occurred.			
	Default	Disabled			
Pressure Unit	Switches the pressure unit.				
	Range	MPa, kgf/cm^2, psi, bar			
	Default	MPa			
Purge below Minimum Pressure	Specifies whether to purge when the pressure drops. Purging operation for mobile phases and rinse solutions set here is performed according to the settings configured in the [Auto Purge] screen.				
	Range	Enabled: Purging will be executed to try recovering when the pressure drops. Disabled: An error occurs when the pressure drops.			
	Default	Disabled			
Purge Flow	Sets the flow rate at the time of pump purge.				
	Range	0.1 to 10.0 (mL/min)			
	Default	8.0			
	Step	0.1			
Maximum Purge Press	Sets the maximum pressure at the time of pump purging.				
	Unit	MPa	kgf/cm^2	psi	bar
	Range	1.0 to 10.0	10 to 102	142 to 1451	10 to 100
	Default	10.0	102	1451	100
	Step	0.1	1	1	1
Mixer Volume	Selects the mixer volume.				
	Range	0 to 9999 (µL)			
	Default	40			
	Step	1			

Item	Explanation	
Solenoid Valve	Specifies whether to use the flow line switching valve. NOTE If a flow line switching valve is connected, select a setting other than [Not Used].	
	Range	Not Used, FCV-11AL, FCV-11ALS
	Default	Not Used
Solenoid Valve1 Connected Port Solenoid Valve2 Connected Port Solenoid Valve3 Connected Port	Specifies the flow line for connecting the valve. This is disabled if the [Solenoid Valve] is set to [Not Used].	
	Range	A, B, C, D
	Default	Solenoid Valve1 Connected Port: A Solenoid Valve2 Connected Port: B Solenoid Valve3 Connected Port: C

5.2.2 Autosampler

Item	Explanation	
Control	Specifies whether to use the autosampler for sample injection.	
	Range	Online, Offline
	Default	Online
Synchronize injection with external input	Specifies whether to have the autosampler wait a contact input (MAN. INJ.) to inject the sample after sample loading.	
	Range	• Disabled: After sample loading, the autosampler will inject the sample right. • Enabled: After sample loading, the autosampler will wait a contact input (MAN. INJ.) to inject the sample.
	Default	Disabled
Vial Skip	Specifies whether to skip the sample vial if it is not detected.	
	Range	Enabled: Skips to the next analysis. Disabled: An error occurs.
	Default	Disabled
Overlap Injection	For multiple analyses, the next injection will start before the current analysis ends so that the next analysis can start immediately after the current analysis ends. The timing to start the injection will be automatically calculated from the injection time of the previous analysis.	
	Range	Not Used, Used
	Default	Not Used
Max Injection Volume	Sets the maximum injection volume.	
	Range	50 to 2000 (µL)
	Default	100
	Step	1

Item	Explanation	
Use Small Vial	If a small capacity vial is used, the sampling value may be inaccurate due to air pressure changes in the sample vial at the time of sampling. Using this function can reduce the impact of air pressure in such cases. NOTE • This can be effective if sampling is inaccurate due to air contained in the needle, such as when a microtiter plate mat is used. • The effect will be enhanced if the needle stroke of the first release of pressure is set to a value that allows penetration of a few millimeters through the septum and the mat.	
	Range	Enabled: The small capacity vial mode (two punctures mode) is enabled. Disabled: The small capacity vial mode is disabled.
	Default	Disabled
Pre-Cut Needle Stroke	Specifies the first needle stroke when the small capacity vial mode is enabled.	
	Range	0 to 48 (mm)
	Default	22
	Step	1
Silent Mode	If the silent mode is enabled, the rotating speed of the cooling fan becomes slower, thus reducing operation noise of the instrument.	
	Range	Enabled, Disabled
	Default	Disabled
Z Home Mode	Specifies whether to move the Z mount to the center of the instrument upon shutdown. Enabling this mode can prevent corrosion of the Z mount motor due to contact with solvent.	
	Range	Enabled, Disabled
	Default	Disabled
Quick Injection	Enabling the high-speed injection mode will make the needle's vertical movement faster.	
	Range	Enabled, Disabled
	Default	Disabled
Plate Number Assignment	Sets the positions of the plate numbers.	
	Range	• Column: The plate numbers (1, 2, 3, and 4) are assigned in the analysis order of near left, far left, near right, and far right. • Row: The plate numbers (1, 2, 3, and 4) are assigned in the analysis order of near left, near right, far left, and far right.
	Default	Column

Item	Explanation	
LED Brightness	Sets the brightness of the chamber light.	
	Range	1, 2, 3, 4
	Default	3
LED Light Mode	Sets the lighting mode of the chamber light.	
	Range	Always off, ON during pret., OFF during pret., Always on
	Default	ON during pret.

5.2.3 Column Oven

Item	Explanation	
Wait Time	Specifies the time until [Ready] is displayed after the inside of the column oven reaches the set temperature.	
	Range	0 to 10 (min)
	Default	5
	Step	1
Ready Range	Specifies the temperature range for judging that the inside of column oven has reached the set temperature.	
	Range	0.1 to 1.0 (°C)
	Default	1.0
	Step	0.1
Fan Setting	Switches the fan rotation speed setting.	
	Range	Auto: The instrument's initial value is used. Manual: The value is set in [Fan Speed].
	Default	Auto
Fan Speed	Sets the fan rotation speed.	
	Range	2500 to 4500 (rpm)
	Default	4500
	Step	1
Rotary Valve	The setting cannot be configured. The display differs depending on the connected valve.	
	Range	Not Used, 6 positions
	Default	-

5.2.4 Detector

■ UV Detector

Item	Explanation	
Perform auto zero at analysis start	Specifies whether to execute autozero when starting the analysis.	
	Range	Enabled, Disabled
	Default	Enabled
Offset of the analog output	Sets the offset value of analog output.	
	Range	-2 to 250 (mV)
	Default	0
	Step	1
Recycle Valve	The setting cannot be configured. The display differs depending on the connection state.	
	Range	Not Used, Used
	Default	-

■ PDA Detector

Item	Explanation	
Autozero at Analysis Start	Specifies whether to execute autozero when starting the analysis.	
	Range	Enabled: Autozero will be executed. Disabled: Autozero will not be executed.
	Default	Enabled
W Lamp	Specifies whether to use the W lamp.	
	Range	Not Used, Used
	Default	Not Used

■ Spectrofluorometric detector (RF-20A/RF-20Axs)

Item	Explanation	
Autozero at Analysis Start	Specifies whether to execute autozero when starting the analysis.	
	Range	Enabled: Autozero will be executed. Disabled: Autozero will not be executed.
	Default	Enabled
	Step	-

■ Differential refractive index detector (RID-10A/RID-20A)

Item	Explanation	
Autozero at Analysis Start	Specifies whether to execute autozero when starting the analysis.	
	Range	Enabled: Autozero will be executed. Disabled: Autozero will not be executed.
	Default	Enabled
Recycle Valve	Specifies whether to use the Recycle Valve. NOTE This parameter is displayed only for Differential refractive index detector RID-20A.	
	Range	Not Used, Used
	Default	Not Used

5.2.5 Other

Item	Explanation	
Event Out 1 (Relay 1) Event Out 2 (Relay 2) Event Out 3 (Relay 3) Event Out 4 (Relay 4)	Specifies the signal of the event output terminal. Reference "5.1.5 Controller" P.123	
	Range	Start: START signal output Stop: STOP signal output Error: A signal is output when an error occurs. Event: Same as event outputs 1 to 4 of the method parameter Ready: READY signal output
	Default	Event
Event In	Specifies the signal of the event input terminal.	
	Range	• Alarm In: The event input terminal serves as the error input terminal. • Ready In: The event input terminal serves as the ready input terminal. The sequence pauses each time an analysis ends. The pause is canceled when the event terminal is closed and analysis of the next line starts. • Stop In: The input terminal serves as the stop input terminal.
	Default	Alarm In
Beep Mode	Configures the buzzer setting.	
	Range	ON: Always sounds. Alarm: Sounds only when an error occurs. OFF: Off
	Default	ON

Item	Explanation	
Date Format	Specifies the order of date components.	
	Range	YYYY/MM/DD: Year / Month / Day MM/DD/YYYY: Month / Day / Year DD/MM/YYYY: Day / Month / Year
	Default	YYYY/MM/DD
On Time Injection	Injection is executed after the time calculated from [Delay Volume].	
	Range	ON: Executed OFF: Not executed
	Default	OFF
Delay Volume	Specifies the volume from the mobile phase mixing point to the high-pressure valve of the autosampler. If [On Time Injection] is [ON], injection starts when the time (minutes) calculated by dividing [Delay Volume] by the pump flow rate has elapsed after the start of analysis. In this case, the rack LED for injection flashes until injection starts. For example, if the pump flow rate is "0.5 mL/min (= 500 µL/min) and [Delay Volume] is set to "1000 (µL)", injection starts 2 minutes (1000/500 = 2) after the start of analysis.	
	Range	0 to 9999 (µL)
	Default	385
	Step	1
External Start Output	Specifies the output of the start signal.	
	Range	None: Not output. allRUNs: Output when analysis starts. (Lines with no injection are also output.) INJonly: Output when analysis starts. (Lines with no injection are not output.)
	Default	allRUNs
Display Auto-off	Specifies the time until the Instrument screen automatically turns off.	
	Range	OFF: The screen does not turn off automatically. 1, 5, 10, 30, 60 (min)
	Default	OFF
Display Brightness	Sets the brightness of the Instrument screen.	
	Range	1 to 63
	Default	63
	Step	1
AD Input Range	Specifies the input range of the optional A/D board. This is enabled only when an optional A/D board is connected.	
	Range	±1, ±10 (V)
	Default	±1
Language	Switches the display language.	
	Range	Japanese, English
	Default	Japanese

Item	Explanation	
Start Screen	Specifies the initial screen displayed when the instrument starts up.	
	Range	Analysis, Chromatogram, Maintenance
	Default	Analysis
Link Check of External Detector	If set to [ON], an error occurs when the external detector connected via optical link is disconnected.	
	Range	ON: Link will be checked. OFF: Link will not be checked.
	Default	OFF

5.3 Time Program

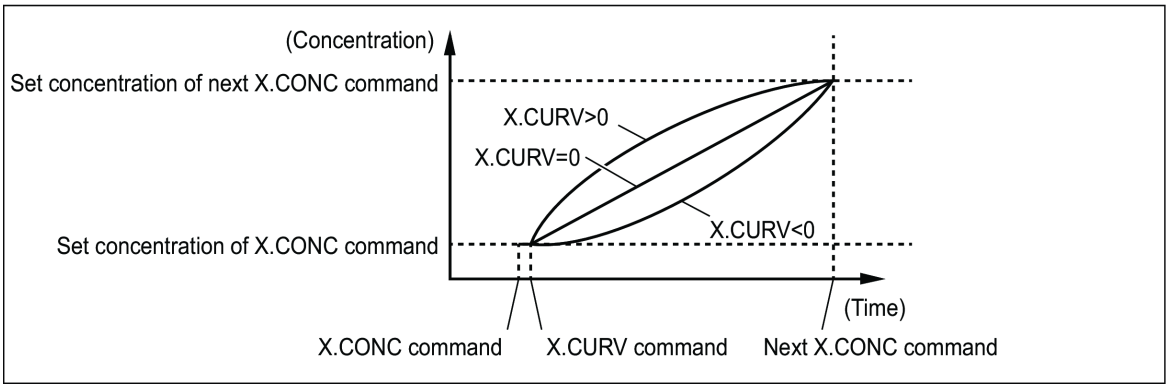
5.3.1 Pump

Time Program	Explanation	
FLOW	Sets the flow rate. The total flow rate will be displayed in the gradient mode.	
	Range	0 to 10.0000 (mL/min)
	Default	0
	Step	0.0001
DEGAS	Configures the ON/OFF setting of the degassing unit.	
	Range	0: OFF, 1: ON
	Default	1: ON
PORT	Selects the mobile phase port to be used. This can be set only in the ISO mode.	
	Range	1: A, 2: B, 3: C, 4: D
	Default	1: A
PPURGE	Executes purging of the pump.	
	Range	0: OFF 2: Mobile phase B 4: Mobile phase D 1: Mobile phase A 3: Mobile phase C
	Default	0: OFF
B.CONC C.CONC D.CONC	Specifies the concentration of the solvents A to D. This can be set only in the gradient mode. NOTE The result of the calculation below is displayed in [A Conc.]. It cannot be edited. Solvent A Conc. = 100 - Solvent B Conc. - Solvent C Conc. - Solvent D Conc.	
	Range	0 to 100.0(%)
	Default	0
	Step	0.1
B.CURV C.CURV D.CURV	Specifies the profile of the gradient curves of solvents B and C. This can be set only in the gradient mode.	
	Range	-10 to 10
	Default	0
	Step	1
PASV	Specifies the positions of the mobile phase switching valves. If valve 1 and valve 3 are set to "Side 2", set as [13].	
	Range	0 to 123
	Default	0
	Step	-

■ B.CONC, C.CONC, D.CONC, B.CURV, C.CURV, and D.CURV commands

In gradient analysis, if it is necessary to change the concentration in an exponential manner, specify the concentrations of the starting points of change (B.CONC, C.CONC, and D.CONC) and the profiles of the gradient curves (B.CURV, C.CURV, and D.CURV) in the time programs.

The concentration will change according to the profiles starting from the current concentration.



Time program setting example

No.	Time	Unit	Process Command	Value
1	0.01	Pump (GRAD.)	B.CONC	0.0
2	0.02	Pump (GRAD.)	B.CURV	3
3	10	Pump (GRAD.)	B.CONC	80.0
4	15	Pump (GRAD.)	B.CONC	80.0
5	15.01	Pump (GRAD.)	B.CONC	0.0
6	20	Controller	STOP	-

NOTE

- Set the curve profile (X.CURV) to 0.01 minutes after the concentration (X.CONC).
- If it is necessary to start the exponential change of concentration just after the start of analysis, set B.CONC to 0.01 minutes and B.CURV to 0.02 minutes.
- Do not set any other command between X.CONC and X.CURV.
- If X.CURV is not set, the gradient curve profile is considered as "0 (straight line)".

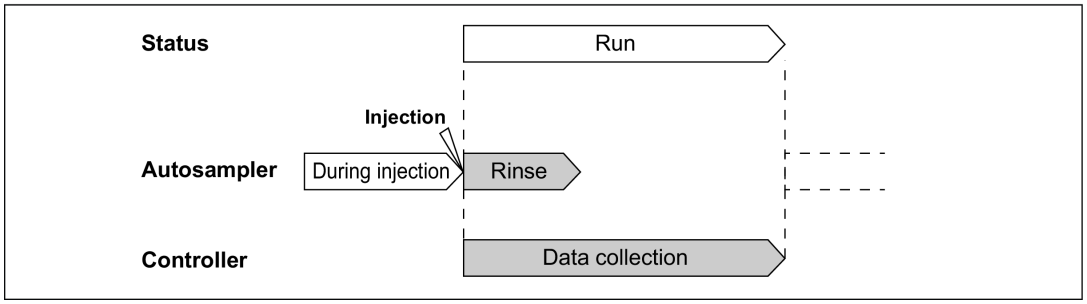
5.3.2 Autosampler

Time Program	Explanation
RINSE	Executes rinsing of the needle.
SPURGE	Executes purging.
INJECT	Starts injection.

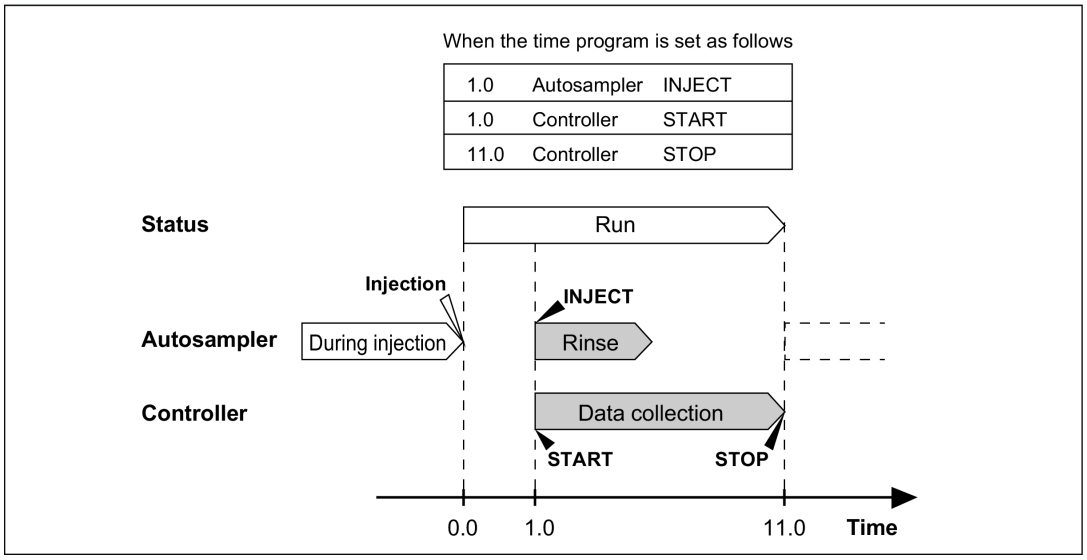
■ INJECT command

By using the [INJECT] command in the time program, it is possible to have the autosampler execute sample injection at the specified time during analysis time program. In this case, no sample is injected at the start of analysis sequence. See below for the flow difference between standard analysis and analysis with the [INJECT] command.

Standard analysis



Analysis with INJECT command



NOTE If data processing is started at the time of execution of the [INJECT] command, set [External Start Output] to [None] on the [System Parameter Setting] screen to prevent the start signal from being output at the start of the time program. Also set the [START] command along with the [INJECT] command in the time program.

Reference "START command" P.139

5.3.3 Column Oven

Time Program	Explanation	
OVENT	Sets the column oven temperature during operation. Setting "0" will turn off the column oven.	
	Range	0, 4 to 85 (°C)
	Default	40
	Step	1
CTORV	Sets the valve position. This is displayed only when a flow line switching valve is connected.	
	Range	1, 2, 3, 4, 5, 6
	Default	1
	Step	1

5.3.4 Detector

■ UV Detector

Time Program	Explanation			
WAVE WAVE2	Sets the measurement wavelength. NOTE • [Wavelength Ch1] and [Wavelength Ch2] should fall in the same range of either 190 to 370 or 371 to 700. [Wavelength Ch1] and [Wavelength Ch2] cannot fall in different ranges from each other. • [Wavelength Ch2] is displayed when [Wavelength Mode] is [Dual].			
	Range	190 to 700 (nm)		
	Default	254		
	Step	1		
LAMP	Configures the ON/OFF setting of the deuterium (D2) lamp.			
	Range	0: OFF, 1: D2		
	Default	1: D2		
RESP	Sets the time constant for filtering the data. This is effective for noise reduction. Setting a larger value increases noise reduction. However, setting too large a value will lower the peak height.			
	Range	0: No Filter 1: 0.05 2: 0.1 3: 0.5	4: 1.0 5: 1.5 6: 3.0 7: 6.0	8: 8.0 9: 10.0 10: 2.0 (sec)
	Default	4: 1.0		

Time Program	Explanation	
POL	Switches the polarity.	
	Range	-1: -, 1: +
	Default	1: +
ZERO	Executes autozero.	
SV.WASTE	Switches the solvent recycle valve.	
	Range	0: Same as the threshold setting of the recycle valve. 1: Always the waste liquid side.
	Default	0: Same as the threshold setting of the recycle valve.

■ PDA Detector

The time program cannot be set for the PDA detector.

■ Spectrofluorometric detector (RF-20A/RF-20Axs)

Time Program	Explanation		
EXWAVE1 EXWAVE2	Sets the excitation wavelength. NOTE [Excitation Wavelength2] is displayed when [Wavelength Mode] is [Dual].		
	Range	200 to 900 (nm)	
	Default	350	
	Step	1	
EMWAVE1 EMWAVE2	Sets the emission wavelength. NOTE • [Emission Wavelength2] is displayed when [Wavelength Mode] is [Dual]. • [Emission Wavelength] can be set to "0" only when [Wavelength Mode] is [Single].		
	Range	0, 200 to 900 (nm)	
	Default	450	
	Step	1	
LAMP	Switches the ON/OFF setting of the lamp.		
	Range	0: OFF, 1: ON	
	Default	1: ON	
RESP	Sets the response.		
	Range	0: No Filter 1: 0.05 2: 0.1 3: 0.5	4: 1.0 5: 1.5 6: 3.0 7: 6.0	8: 8.0 9: 10.0 10: 2.0 (sec)
	Default	4: 1.0		

Time Program	Explanation	
GAIN	Sets the gain.	
	Range	1: x1, 2: x4, 3: x16
	Default	2: x4
SENSE	Sets the sensitivity.	
	Range	1: High, 2: Middle, 3: Low
	Default	2: Middle
CELLT	Sets the cell temperature. Setting "0" will turn off the cell temperature control. NOTE This is displayed only for spectrofluorometric detector RF-20Axs.	
	Range	0, 4 to 40 (°C)
	Default	30
	Step	1
ZERO	Executes autozero.	

■ Differential refractive index detector (RID-10A/RID-20A)

Time Program	Explanation		
RESP	Sets the response.		
	Range (RID-10A Only)	0: No Filter 1: 0.05 2: 0.1 3: 0.5	4: 1.0 5: 1.5 6: 3.0 7: 6.0	8: 8.0 9: 10.0 10: 2.0 (sec)
	Default (RID-10A Only)	5: 1.5		
	Range (RID-20A Only)	0: No Filter		
	Default (RID-20A Only)	0: No Filter		
POL	Switches the polarity.			
	Range	-1: -, 1: +		
	Default	1: +		
CELLT	Sets the cell temperature. Setting "0" will turn off the cell temperature control.			
	Range	0, 30.0 to 60.0 (°C)		
	Default	40.0		
	Step	0.1		

Time Program	Explanation
R.FLOW (In case of RID-10A)	Executes reference purging.
PURGE (In case of RID-20A)	
R.CLOSE (In case of RID-10A)	Stops reference purging.
PURGE.E (In case of RID-20A)	
BALANCE	Automatically adjusts the optical balance.
ZERO	Executes autozero.
SV.LEVEL	Change the Recycle Valve Threshold Level. NOTE This time program is displayed only when [Recycle Valve] in [System Parameter Setting] is set to [Used] with using Differential refractive index detector RID-20A.
	Range: 0.00～9999.00（uRIU）
	Default: 9999.00
	Step: 0.01

5.3.5 Controller

Time Program	Explanation
EVENT	Switches the ON/OFF setting of the four relay contact outputs on the back of the instrument. NOTE If event 1 and event 3 are set to ON, set as [13].
	Range: 0 to 1234
	Default: 0
	Step: -
START	Starts analysis. Reference "START command" P.139
STOP	Stops the time program. NOTE Be sure to input the command at the end of the time program. If the [STOP] command is not input, the time program will continue up to 9999.9 minutes.

■ START command

In the standard analysis, a start signal will automatically be sent to the LC workstation and to the event output at the start of the analysis method time program. This command allows output of a start signal at the desired time.

> **NOTE** If the [START] command is used to output a start signal, set [External Start Output] to [None] on the [System Parameter Setting] screen to prevent the start signal from being output at the start of analysis. To output a start signal to the event output, set the desired relay output terminal to [Start] on the [System Parameter Setting] screen.

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