M411 E 13.6.NF.10(2/2)

Nikon

Cell Culture Observation System

BioStation CT

Ver. 3.8

Instructions

<PC Operations>

Introduction

Thank you for purchasing a Nikon product.

This instruction manual is written for users of the Nikon Cell Culture Observation System, BioStation CT.

To ensure correct usage, read this manual carefully before operating the product.

- No part of this manual may be reproduced or transmitted in any form without prior written permission from Nikon.
- The contents of this manual are subject to change without notice.
- Although every effort has been made to ensure the accuracy of this manual, errors or inconsistencies may remain. If you note any points that are unclear or incorrect, please contact your nearest Nikon representative.
- Some of the equipment described in this manual may not be included in the set you have purchased.
- If you intend to use any other equipment with this product, read the manual for that equipment too.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Microsoft, Windows, and Internet Explorer are registered trademarks of Microsoft Corporation in the U.S. and other countries. Other product and company names mentioned in this manual are trademarks or registered trademarks of their respective owners.

Unpacking and installation

Only Nikon service staff or the trained staff of a Nikon representative is permitted to unpack, install, and initialize the product.

Product warranty

Please read the product warranty card carefully and check the warranty information.

Nikon will not be liable for damage of any kind to cultured cell conditions in the product.

Contents

Safety Precautions

To ensure correct and safe operation, read this manual before using the product.

Warning and Caution Symbols Used in This Manual

Although this product is designed and manufactured to be completely safe during use, incorrect usage or failure to follow the safety instructions provided may cause personal injury or property damage. To ensure correct usage, read this manual carefully before using the product. Do not discard this manual and keep it handy for easy reference.

Safety instructions in this manual are marked with the following symbols to highlight their importance. For your safety, always follow the instructions marked with these symbols.

Symbol	Description
⚠ **Warning**	Disregarding instructions marked with this symbol may lead to serious injury or death.
⚠ **Caution**	Disregarding instructions marked with this symbol may lead to injury or property damage.

1 Overview

1.1 Overview

When the Nikon BioStation CT is connected to a network in your facility, the cultured sample images observed by the Nikon BioStation CT can be viewed and observation schedules can be set from an external PC connected to the network.

No special application software is required to log in to this product from an external PC. This product can be operated using Internet Explorer 8 or Internet Explorer 9.

BioStation CT

2 Networking

This chapter describes the procedure for connecting the product to a network and the login procedure for the product through a network using an external PC.

2.1 Connecting the BioStation CT to the Network

The product can be connected to a network via a LAN cable. When the product is connected to a network, cultured sample images observed with the product can be viewed or the observation schedules can be set with an external PC connected to the network.

Connecting to a LAN system

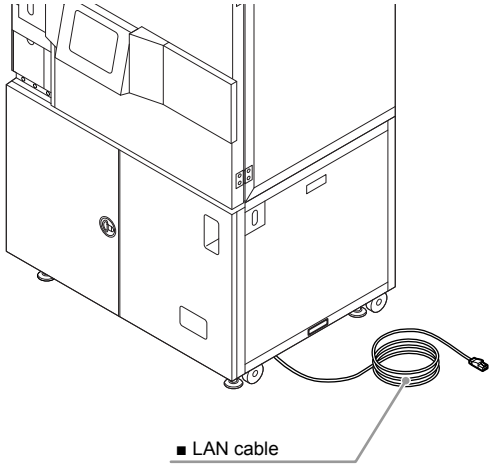
Use a LAN cable (category 5E or higher straight cable) to connect the product to the network hub for the facility's LAN.

> The internal components of this product are designed for Gigabit Ethernet connection. The intended performance may not be achieved in other network environments.

Connecting to a PC directly

Use a LAN cable (category 5E or higher cross-wired cable) to connect the product to a PC directly.

> For the procedure for setting the Network, contact the store where the product was purchased.



Connecting to a network

2.2 External PC Preparation

The external PC used via a network must meet the following minimum requirements.

Network PC specifications

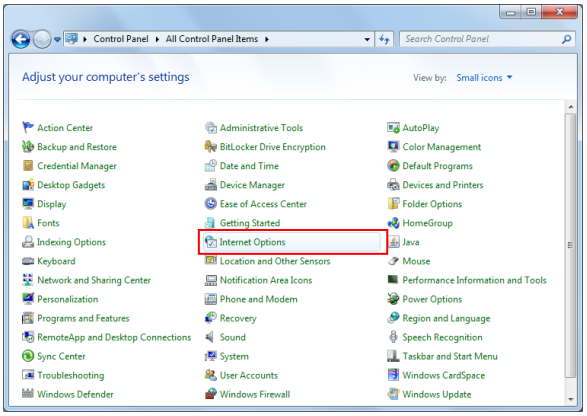
Item	Remarks
Browser/OS	Internet Explorer 8 or Internet Explorer 9/Microsoft Windows operating system. However, when the display screen is enlarged with the zoom function etc., in Internet Explorer, the screen layout may collapse. In this case, change the size to original (100%).
Resolution of the monitor	XGA (1024 x 768 pixels) or larger
Free space in the HDD	To download observation data, the PC must have enough free space for the data. Check the observation data file volume in the download window. See Section 3.9.3.1, "Downloading a single file."
Simultaneous accessible PCs	Up to 10 PCs

2.3 External PC Setup

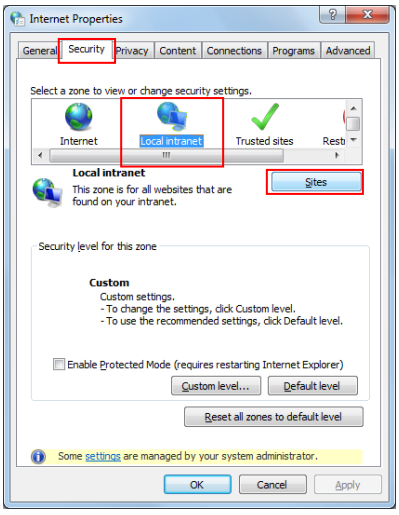
This section describes the procedure for setting up Internet Options for an external PC used via a network.

Internet Options (Security)

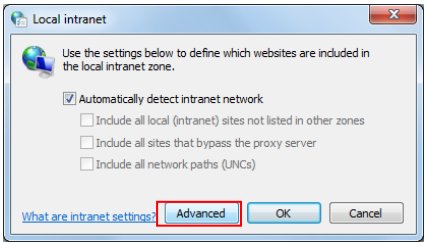
(1) Double-click on Internet Options on the Control panel. (In the Category view, select Internet Options from [Network and Internet Connections].)



(2) Click the Security tab in the Internet Properties window. Click the Local intranet icon and then click the Sites button.



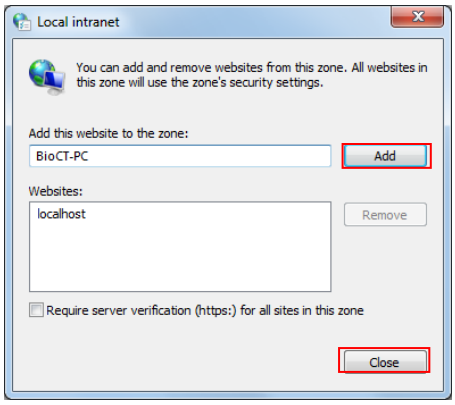
(3) Click the Advanced button in the Local intranet window.



(4) Enter “BioCT-PC” into the “Add this Web site to the zone:” field. Click the Add button.

If BioStation CT is published to the web, enter the published address of the BioStation CT (e.g., http://biostationct.nikon.co.jp/) instead of “BioCT-PC.”

(5) Click the Close button. The Internet Properties window appears again.

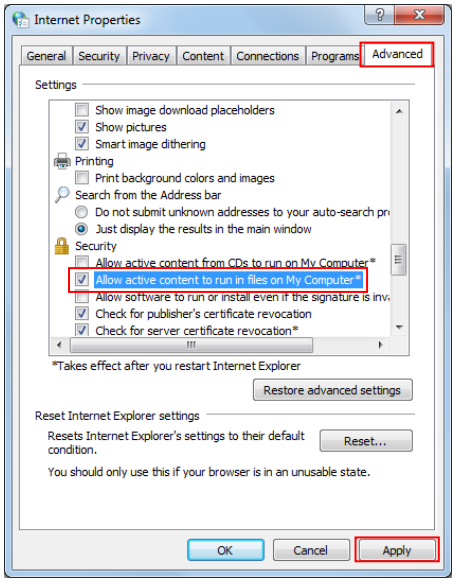


Internet Options (Advanced)

(1) Click the Advanced tab in the Internet Properties window.

(2) Check the “Allow active content to run in files on My Computer” check box. Click the Apply button.

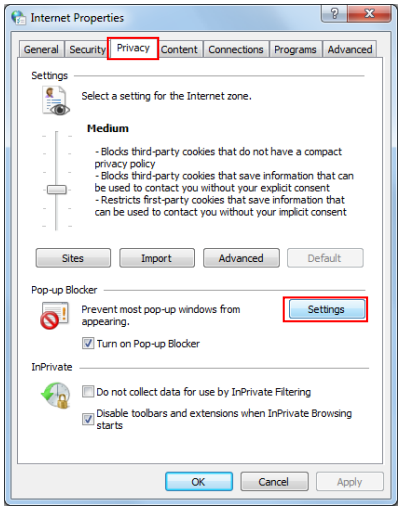
(3) Click the OK button.



Internet Options (Privacy)

(1) Click the Privacy tab in the Internet Properties window.

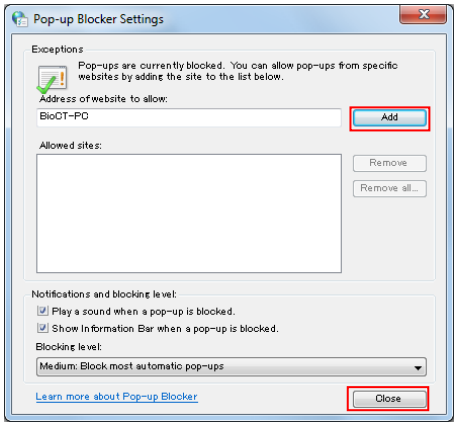
(2) Click the Settings button in the Pop-up Blocker area.



(3) Enter “BioCT-PC” into the “Address of Web site to allow:” field. Click the Add button.

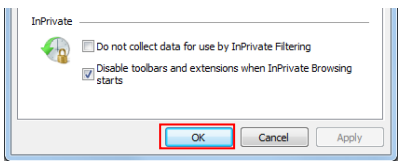
If BioStation CT is published to the web, enter the published address of the BioStation CT (e.g., http://biostationct.nikon.co.jp/) instead of “BioCT-PC.”

(4) Click the Close button.



(5) The Internet Properties window appears again. Click the OK button.

Internet Options setup is complete. The Internet Properties window closes.

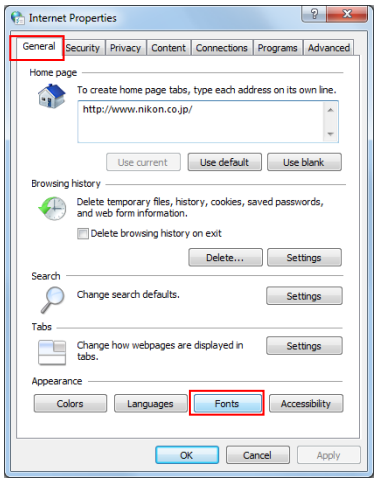


Internet Options (General)

The screen layout may collapse depending on the fonts used in Internet Explorer. In this case, follow the procedure described below to check the language script of the fonts in the Internet Properties window.

(1) Click the General tab in the Internet Properties window.

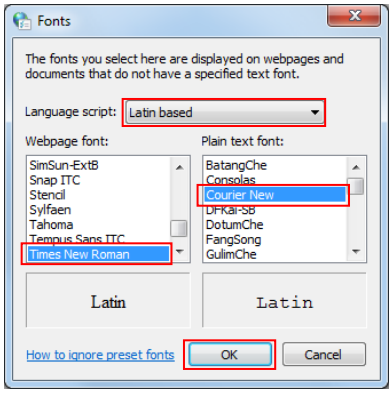
(2) Click the Fonts button.



(3) Check whether the default fonts, “Times New Roman” (Web page font) and “Courier New” (Plain text font) are specified for the “Latin based” language script in the Fonts window.

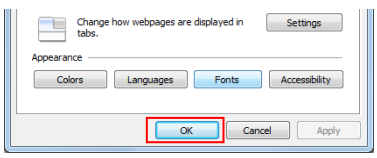
If different font names have been specified, select “Times New Roman” (Web page font) and “Courier New” (Plain text font).

(4) Click the OK button.



(5) The Internet Properties window appears again. Click the OK button.

Internet Options setup is complete. The Internet Properties window closes.



2.4 Login from the External PC

This section describes the procedure for logging in to the product through a network from an external PC.

(1) Start Internet Explorer 8 or Internet Explorer 9 on the external PC.

(2) Enter "http://BioCT-PC/BioStationCTWeb100/" into the address bar and click the Enter key.

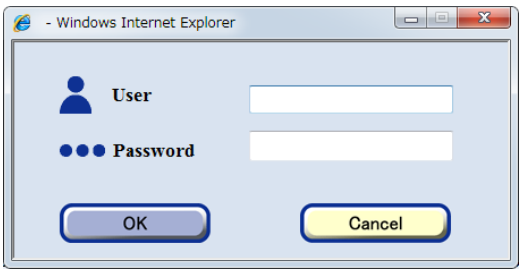
If BioStation CT is published to the web, enter the published address of the BioStation CT (e.g., http://biostationct.nikon.co.jp/BioStationCTWeb100/).

The Login window appears.
However, if the Login window does not appear on the screen, the above Network setting or the method of connection between this product and the Network being used may be incorrect. Be sure to check with the administrator for this product or the network administrator.

(3) Enter the user name and the password. Click the OK button.

For the procedure for changing the password, see Section 4.1.1, "Changing the Password."

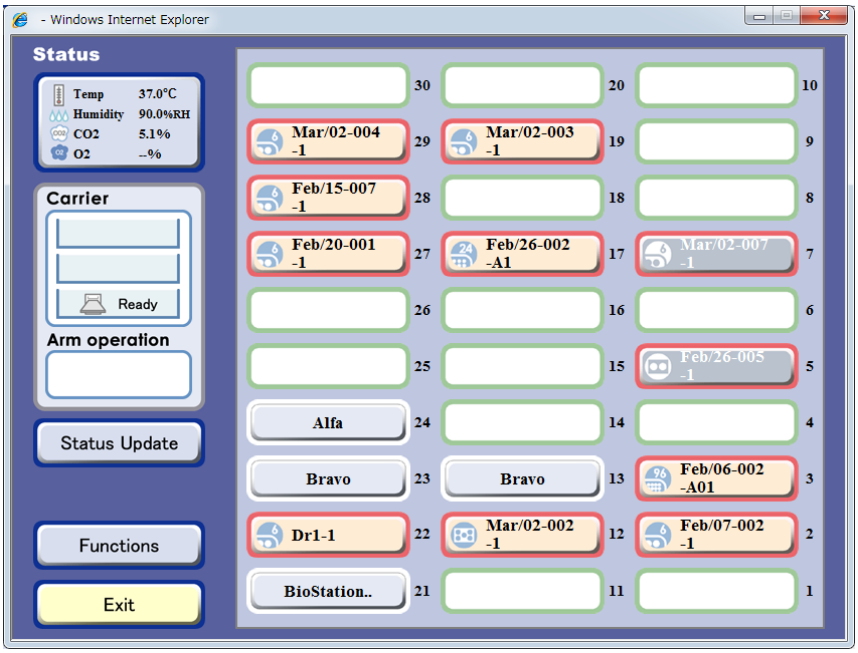
To log in to the product, you need to register a user name in accordance with the procedure shown in Section 5.3.2.1, "Registering new user master data."
The user name is set as the Login name, and the password as the Login pass.



Login window

The System status screen for the external PC is displayed on Internet Explorer 8 or Internet Explorer 9.

The stocker buttons for the samples owned by the logged in user are displayed in red. Note that all samples can be operated.



System status screen

3 Operation

This chapter describes the procedure for operating this system using an external PC.

Caution

When operating the windows displayed when logging in to this system, be sure to use the buttons and tabs displayed in the windows.

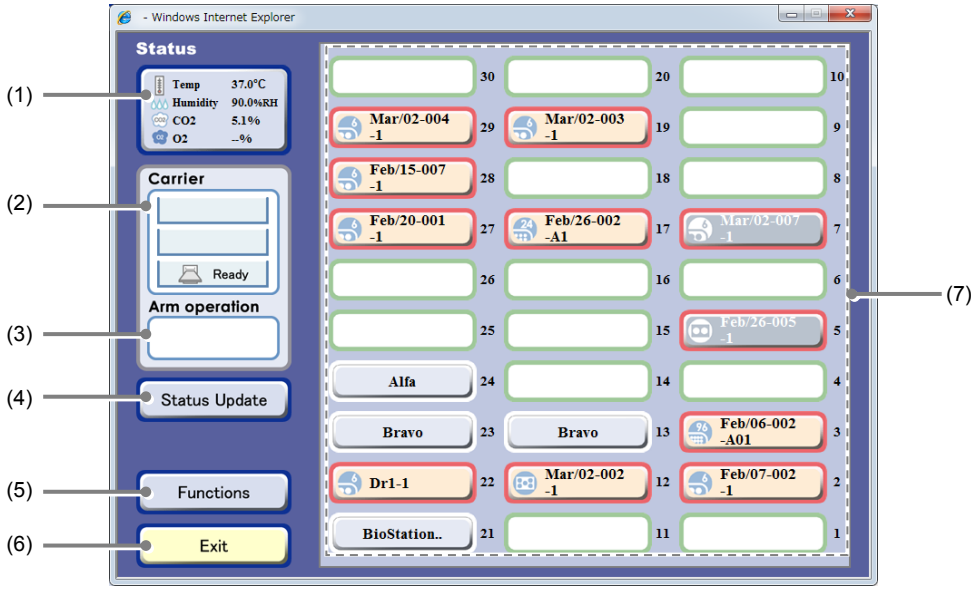
Using a Windows shortcut key may cause unexpected behavior.

Caution

This system does not adjust for daylight savings time. As such, depending on the location where this system is used, you may notice a difference between the actual local time and the time shown on the product. Pay attention when setting the schedule observation settings and viewing the observation history.

3.1 Initial Screen

When you log in to this system from an external PC, the System status screen is displayed first.
The operation status can be checked on this System status screen.



System status screen

No.	Name	Function
(1)	Status button	The temperature, humidity, CO_2 concentration and O_2 concentration in the CO_2 incubator are visible on the Status button. Click this Status button to display the Environmental factor graph window. See Section 3.2, “Checking the Environmental Changes.”
(2)	Carrier area	This area displays the status of the 3-column carrier.
(3)	Arm operation area	This area displays the transport status of the sample by icons.
(4)	Status Update button	Click this button to display the latest status of the system.

No.	Name	Function
(5)	Functions button	Click this button to display the Function window. This window is for conducting operations such as schedule confirmation, search, latest photo listing, user environmental setting, download, upload, observation data deletion and master maintenance.
(6)	Exit button	Click this button to close the window.
(7)	Stocker display area	This area displays the status of the three-row and ten-column stocker. A user name or a sample name is displayed on the stockers in use. Nothing is displayed on an empty stocker. The sample cultures of the login user are framed in red. The stocker numbers are displayed next to the stocker buttons. The stockers in three rows and ten columns are numbered from 1 to 30. Click the Stocker button of the stocker that contains a sample to display the Select function window.

The system status screen shows the system status at the time of screen display.
To check the latest status of the system, update the display by clicking the Status Update button.

3.1.1 Stocker Display Area

The stocker display area displays the status of samples stored in the stockers. Click a button in the stocker display area to open the Select function window and operate the corresponding sample.

Button appearance

Button appearance in the stocker display area

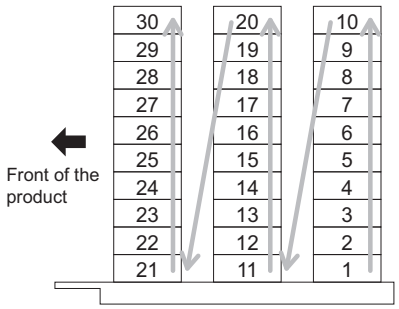
Appearance	Frame color	Detail
	Red	This is a sample which belongs to the user as specified during the login procedure.
	Red	This is a holder that is being used for scheduled observation.
	Red	This is a stocker that is temporarily unloading a sample so the medium can be changed or the sample can be checked.
	Green	This is an empty stocker.
	White	This is an empty stocker that can be used by any user.
	White	This is a sample that does not belong to the user specified in the login procedure.

Stocker number

The stockers in three rows and ten columns are numbered from 1 to 30.

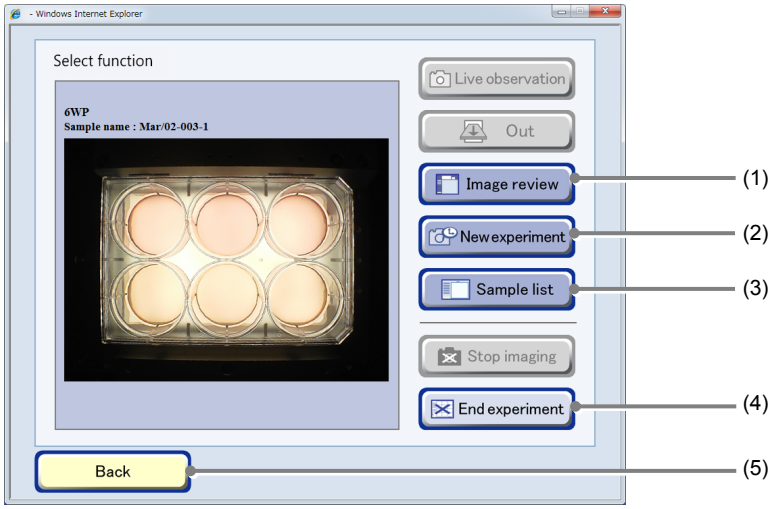
The rear stockers are numbered from 1 to 10, the center stockers are numbered from 11 to 20, and the front stockers are numbered from 21 to 30.

These stocker numbers are displayed next to the stocker buttons in the stocker display area.



Stocker number

Select function window displayed by the Stocker button



Select function window

No.	Name	Function
(1)	Image review button	Click this button to display the Image review window and view the observation data.
(2)	New experiment button	Click this button to display the Observation condition setting window and set the schedule observation.
(3)	Sample list button	Click this button to display the Sample list window.
(4)	End experiment button	Click this button to delete all scheduled observations scheduled for the samples in the selected holder.
(5)	Back button	Click this button to display the System status screen.

Icon

The icons in the stocker display area indicate the type of culture vessel used for samples and the status of the stocker. The design of the light blue icon indicates the type and size of the culture vessel.

Icons in the stocker display area

Appearance	Color	Detail
	Blue	A 75 cm^2 culture flask or the 25 cm^2 culture flask (wide type)
	Blue	A 25 cm^2 culture flask (oblong type)
	Blue	A 100 mm dish
	Blue	A 60 mm dish
	Blue	A BD Falcon 35 mm dish. For details on using it for embryo automatic observation (optional), see the “Embryo Automatic Observation Function Instructions.”
	Blue	A 35 mm dish
	Blue	A 6-well plate
	Blue	A 12-well plate
	Blue	A 24-well plate
	Blue	A 48-well plate
	Blue	A 96-well plate
	Blue	A sample that belongs to another user is being observed. The culture vessel icon changes to this camera icon during observation.
	Red	Your own sample is being observed. The culture vessel icon changes to this camera icon during observation.
	Pink	A sample temporarily stored in a stocker
	Orange	Your own samples for which scheduled observation is set
	Gray	Another user’s sample for which scheduled observation is set

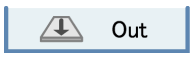
3.1.2 Carrier Area

The Carrier area displays the three carrier shelf columns. The following icons show the status of the holder set in each column of the carrier.

Icons for displaying the setting status of the carrier

Icon	Detail
	The carrier is not set in the carrier slider.
	The carrier is set in the carrier slider.

Icons in the Carrier area

Icon	Detail
	A holder is not set in the carrier.
	A sample to be loaded is set in the carrier.
	If the door is opened during live observation, the icon turns red after live observation is finished. The color returns to normal if a sample is loaded or the door is opened again.
	A sample for loading is being loaded from the carrier to the stocker or the observation part.
	A sample for unloading is being unloaded from the stocker or the observation unit to the carrier.
	A sample for unloading has been returned to the carrier.

3.1.3 Arm Operation Area

The Arm operation area shows the transport status using the following icons. When any of these icons is displayed, the door cannot be opened or closed for safety.

Icons on the Arm operation area

Icon	Detail
	A sample is being transported from the carrier to the stocker.
	A sample is being transported from the stocker to the carrier.
	A sample is being transported from the stocker to the observation unit's XY stage.
	A sample is being transported from the observation unit's XY stage to the stocker.
	A sample is being transported from the carrier to the observation unit's XY stage.
	A sample is being transported from the observation unit's XY stage to the carrier.

3.1.4 Alert

When an error occurs on the file server's hard disk drive or the control PC's hard disk drive, or when the file server for storing image data is running out of space, the following alert icons are displayed on HDD area of the System status screen.

If an error occurs on the hard disk drive, immediately contact your nearest Nikon representative.

If the file server's hard disk drive is not recognized, observation data and image data cannot be saved. Be sure that the file server is switched on, and if not, turn on the power switch.

When the free space is insufficient for saving new observation data, old observation data is automatically deleted in the order it was recorded. If an alert icon indicating that free space is insufficient is displayed, back up any necessary observation data and image data to an external PC. If the free space on the file server is increased to 200 gigabytes or more by deleting unnecessary old observation data, the alert icon disappears.

For the procedure for downloading the observation data or image data to an external PC, see Section 3.5.3, "Displaying Images of the Culture Sample and History Information" and 3.9, "Managing the Observation Data." For the procedure for deleting the observation data, see Section 5.2, "Deleting the Observation Data."

HDD area

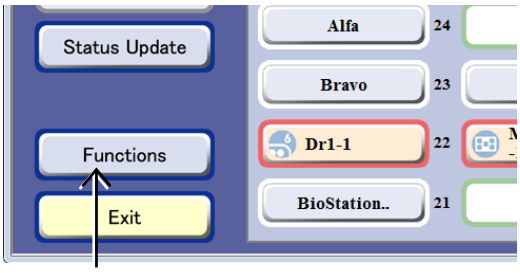
Appearance	Color	Detail
	Blue	An error occurred on the hard disk drive of the control PC.
	Blue	An error occurred on the hard disk drive of the file server.
	Blue	An error occurred on the hard disk drive of the control PC and file server.
	White	Unable to recognize the hard disk drive of the file server. This icon disappears when connection is confirmed.
	Red	Unable to recognize the hard disk drive of the file server after a predetermined time.
	Yellow	The free space on the file server is 200 gigabytes or less.
	Red	The free space on the file server is 100 gigabytes or less.

3.1.5 Checking the Usage Status of the Stocker

This section describes the procedure for viewing the usage status of the stocker.

(1) Click the Functions button on the System status screen.

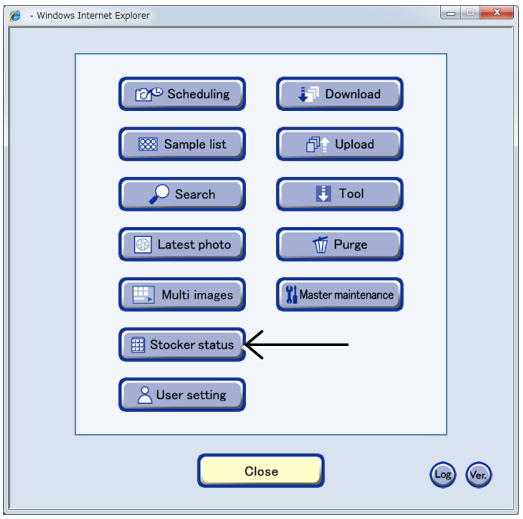
The Functions window appears.



System status screen

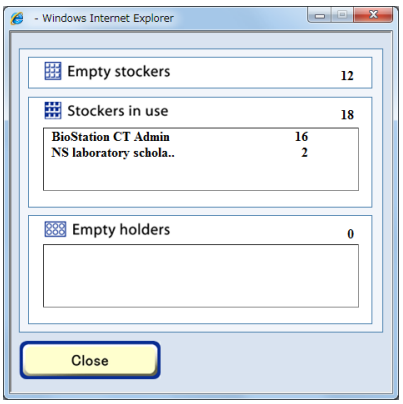
(2) Click the Stocker status button.

The Stocker usage status window appears.



Functions window

In the Stocker usage status window, the number of empty stockers, the number of used stockers, and the number of empty holders can be checked.



Stocker usage status window

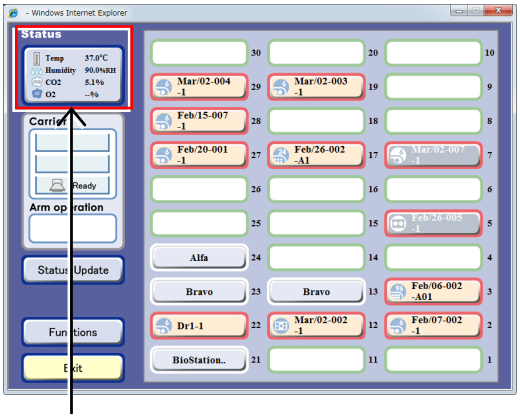
3.2 Checking the Environmental Changes

This system records changes in the temperature, humidity, CO_2 concentration and O_2 concentration in the CO_2 incubator. The changes can be shown on the touch panel display in graph format. Perform the following procedure to check environmental changes in the Environmental factor graph window.

Environmental factor graph window

Click the Status button on the System status screen to display the Environmental factor graph window.

The temperature, humidity, CO_2 concentration and O_2 concentration in the CO_2 incubator are visible on the Status button. The O_2 concentration is displayed as -9.9% when an Oxygen Control unit is not connected, and --% when the option is set to OFF even though an Oxygen Control unit is connected.

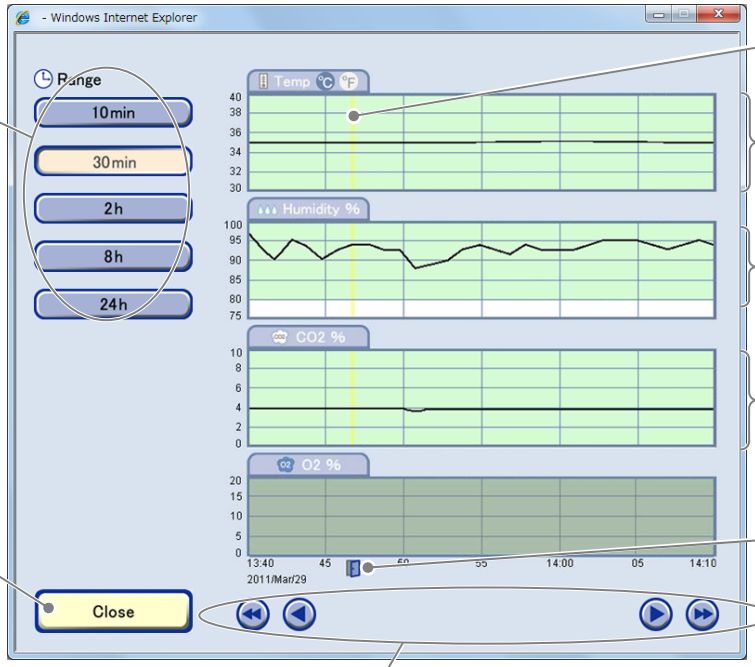


Initial screen (System status screen)

The four graphs for temperature, humidity, CO_2 concentration and O_2 concentration are displayed from the top of the Environmental factor graph window. The O_2 concentration graph is grayed out when an Oxygen Control unit is not connected.

Normal ranges (set in the Alarm settings) are displayed in green on the graphs. If a value is outside the normal range, the corresponding alarm lamp will turn on the temperature/humidity controller and the CO_2 concentration controller. The Alarm lamp can be checked on the BioStation CT.

When the access gate is opened, a gate open icon appears below the graph. The gate open period is displayed in yellow in the graphs. The system shutdown period is displayed in gray.



Range buttons

Gate open period

Normal range

Close button

Close the Environmental factor graph window.

Gate open icon

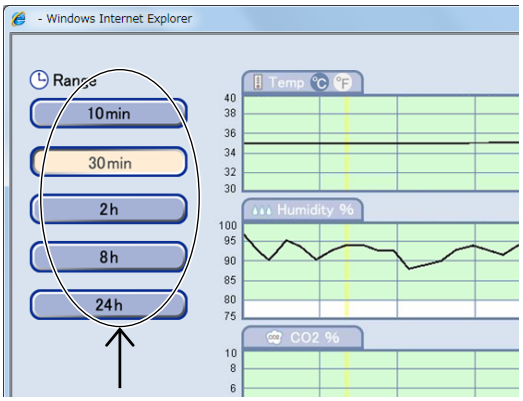
The icon indicates that the access gate was opened in the period.

Time axis switching buttons

Environmental factor graph window

Changing the range

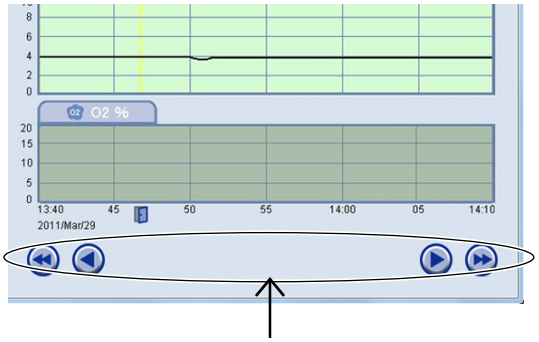
Click the Range button on the left side of the window to display graphs for the time range displayed on the Range button. When the 30 min button is clicked, the environmental changes from 30 minutes ago to the present are displayed in the graphs.



Shifting the time axis

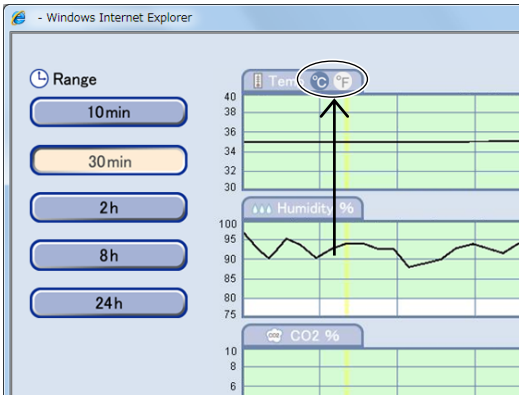
Click the arrow button below the graphs to shift the time axis of the graphs and change the display of the graphs.

- : Shift back the time axis by one grid.
- : Shift forward the time axis by one grid.
- : Shift back the time axis by one window.
- : Shift forward the time axis by one window.



Changing the temperature unit

Click “°C” or “°F” on the tab to change the unit of the temperature graph to Celsius or Fahrenheit.



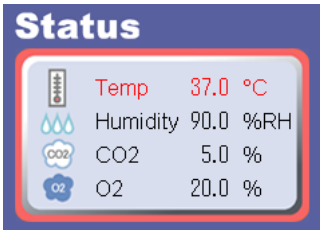
3.2.1 Status Button Color Change

If there is a change in the temperature, humidity, CO_2 concentration, or O_2 concentration due to a control error in the system, the color of the frame and characters of the Status button change to red to indicate an abnormality. If the O_2 concentration value deviates from the preset upper-limit and lower-limit values, the color of the Status button and the character display area changes to yellow. When you find any abnormality, take proper measures in accordance with the description in the “BioStation CT Ver. 3.8 Instructions” and the instruction manual of the optional Oxygen Control unit.

Display indicating controller errors

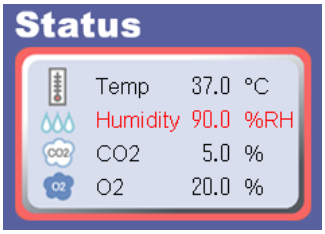
♦ **When temperature control is abnormal**

The button frame and the text in the Temp display area are displayed in red.



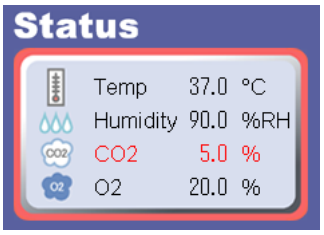
♦ **When humidity control is abnormal**

The button frame and the text in the Humidity display area are displayed in red.



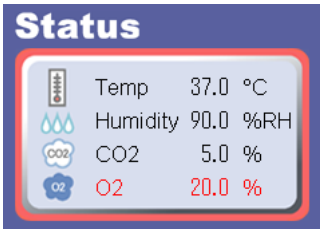
♦ **When CO_2 concentration control is abnormal**

The button frame and the text in the CO_2 display area are displayed in red.



♦ **When O_2 concentration control is abnormal**

The button frame and the text in the O_2 display area are displayed in red.



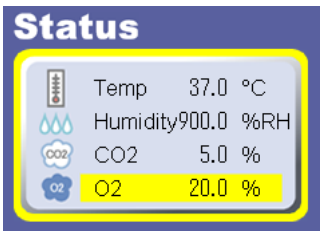
Display indicating that the value deviates form the preset range

♦ **When O_2 concentration value deviates from the preset range**

The button frame and the O_2 display area are displayed in yellow.

If a control error occurs at the same time, the button frame is displayed in red.

For details on setting the O_2 concentration value, see the instruction manual for the optional Oxygen Control unit.



3.3 Observing and Capturing Samples

This product can be used to observe and capture a sample loaded into the culture chamber or being cultured in the culture chamber, with the built-in microscope in the observation unit. There are two observation methods as follows:

Live observation (manual observation):

The sample in the stocker or the carrier is observed by operating the touch panel display manually.
For the procedure for live observation (manual observation), see the "BioStation CT Ver. 3.8 Instructions."

Scheduled observation (automatic observation):

By setting the observation schedule for each sample in the system, culture images are automatically captured at the specified times.
For the scheduled observation procedure, see Section 3.4, "Scheduled Observation (Automatic Observation)."

Caution

When observing a sample immediately after it is loaded, be very careful with condensation on the culture vessel lid. Condensation on the lid may degrade autofocus performance.

If the temperature of a culture vessel is significantly lower than that of the interior of this product, condensation may occur on the lid. Make sure that there is no condensation causing temperature difference before loading the culture vessel, or wait until the temperature difference is minimized before performing observation.

3.3.1 Observation Area

Caution

The observation image may be unclear when certain types or shapes of culture vessel are used, or some observation point is observed in phase contrast microscopy. This phenomenon may also occur on the BioStation CT because the product performs phase contrast microscopy.

This phenomenon occurs frequently at low magnification (2x or 4x) observations, especially with a small area culture vessel such as a 96-well plate, a 48-well plate, or 24-well plate.
This phenomenon occurs in the peripheral areas of a culture vessel at high magnification (10x, 20x, or 40x) observations.

Consider these conditions before setting observation conditions for live observation and scheduled observations. For details on desirable observation areas, see the following tables.

Desirable observation areas (6-well plate)

Magnification 2x	Within 4 mm radius of the well center
Magnification 4x	Within 6.5 mm radius of the well center
Magnification 10x	Within 12.5 mm radius of the well center
Magnification 20x	Within 12.5 mm radius of the well center
Magnification 40x	Within 12.5 mm radius of the well center

Desirable observation areas (96-well plate)

Magnification 2x	No good observation area
Magnification 4x	No good observation area
Magnification 10x	Within 0.8 mm radius of the well center
Magnification 20x	Within 0.8 mm radius of the well center
Magnification 40x	Within 0.8 mm radius of the well center

Unclear image area near the peripheral of a culture vessel

Magnification 2x	13.5 mm or near from the peripheral area of a culture vessel
Magnification 4x	10.5 mm or near from the peripheral area of a culture vessel
Magnification 10x	5.0 mm or near from the peripheral area of a culture vessel
Magnification 20x	5.0 mm or near from the peripheral area of a culture vessel
Magnification 40x	5.0 mm or near from the peripheral area of a culture vessel

3.4 Scheduled Observation (Automated Observation)

This section describes the procedure for automatically observing samples cultured in a stocker in accordance with a preset schedule.

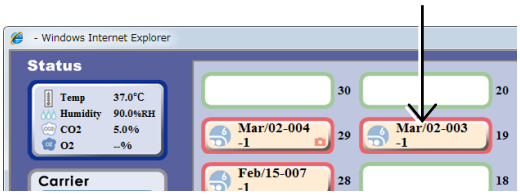
3.4.1 Selecting a Sample

(1) Select the sample to schedule observation.

a. To open the Observation condition setting window from the Select function window

a-1. On the System status screen, click the button for the stocker that contains the sample to be scheduled.

The Select function window appears.



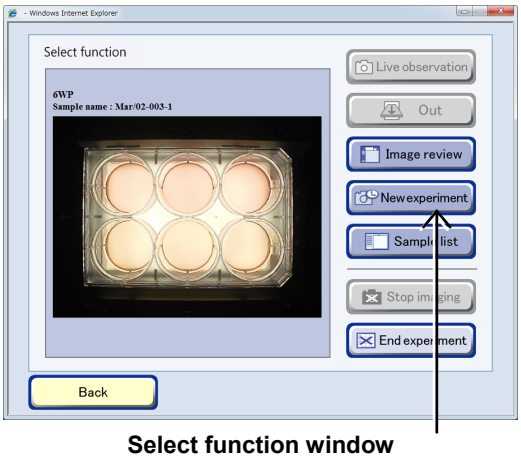
System status screen

a-2. Click the New experiment button.

The Observation condition setting window for the selected sample appears.

If the Observation condition setting window is opened from the Select function window, samples have already been selected. Go to step (3) in Section 3.4.2, “Setting Scheduled Observation Conditions.”

To check the observation schedule for the selected sample, go to step (2).

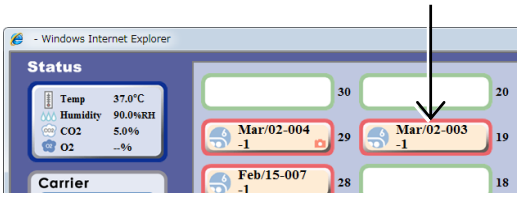


Select function window

b. To open the Schedule confirmation window from the Image review window

b-1. On the System status screen, click the button for the stocker that contains the sample to be scheduled.

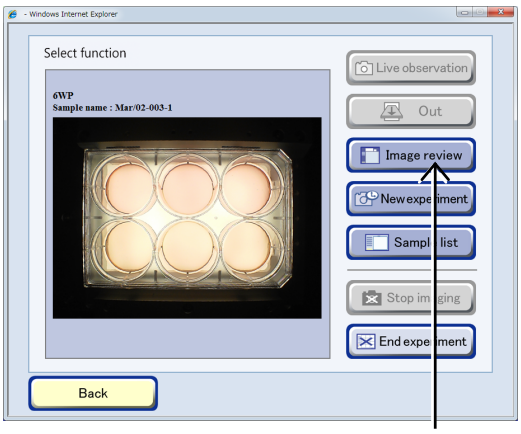
The Select function window appears.



System status screen

b-2. Click the Image review button.

The Image review window for the selected sample appears.



Select function window

b-3. Click the Timelapse button on the left side of the Image review window.

The Schedule confirmation window appears.

If the Schedule confirmation window is opened from the Image review window, the Schedule confirmation window for the sample displayed in the Image review window appears.
Since samples have already been selected, go to step (3) in Section 3.4.2, “Setting Scheduled Observation Conditions.”

To check the observation schedule for the selected sample, go to step (2).

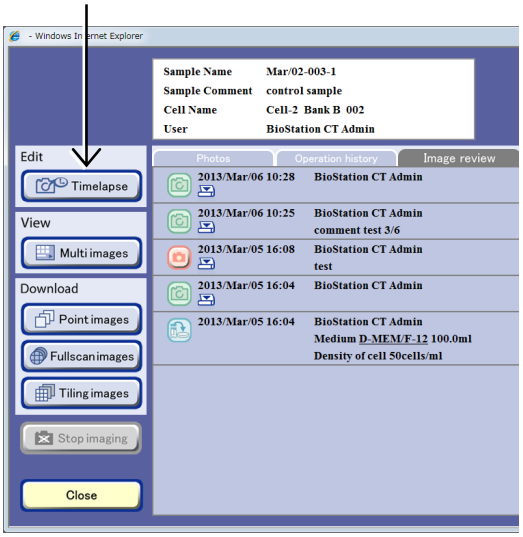
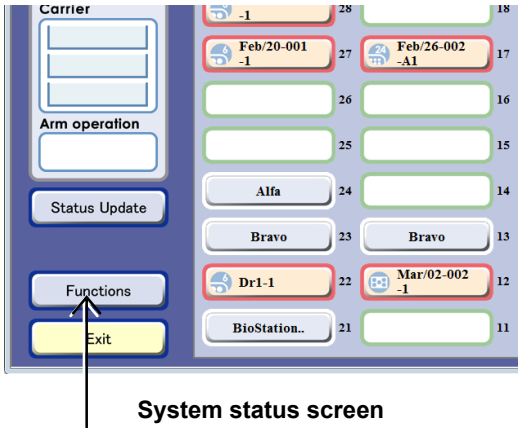


Image review window

c. To open the Schedule confirmation window from the Functions window

c-1. Click the Functions button on the System status screen.

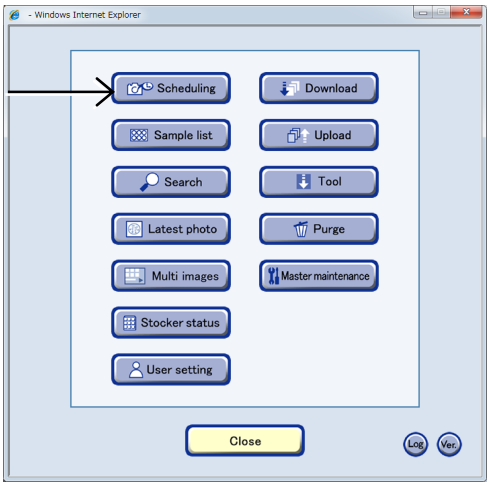
The Functions window appears.



System status screen

c-2. Click the Scheduling button.

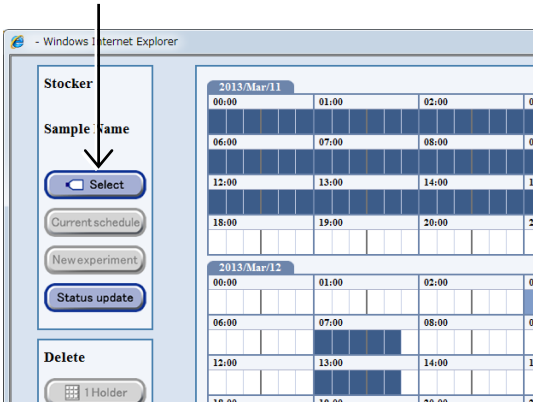
The Schedule confirmation window appears.



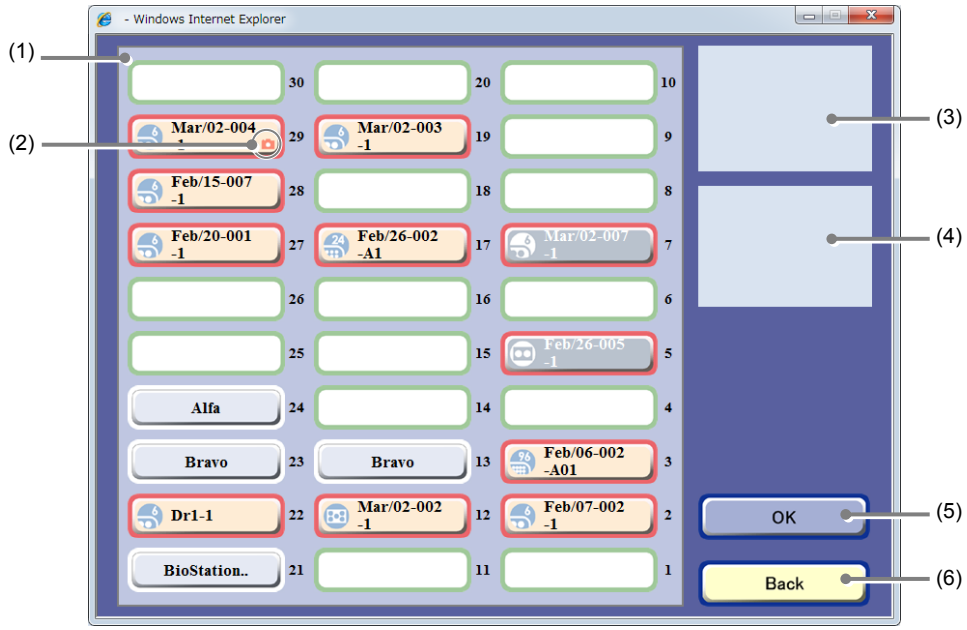
Functions window

c-3. Click the Select button.

The Sample selection window appears.



Schedule confirmation window



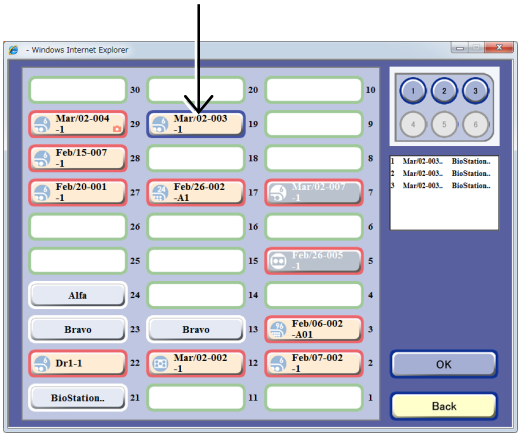
Sample selection window

No.	Name	Function
(1)	Stocker display area	Select a stocker that contains the sample to be scheduled.
(2)	Scheduled observation icon	This icon indicates that a scheduled observation is set for the sample in the stocker.
(3)	Holder map display area	This area displays a holder map of the selected stocker.
(4)	Sample list display area	This area displays a list of samples in the selected stocker. When a 96- or 48-well plate is selected, the Sample list is not displayed.
(5)	OK button	Click this button to open the Schedule confirmation window for the selected sample.
(6)	Back button	Click this button to return to the Schedule confirmation window.

c-4. Select the button for the stocker that contains the sample to be scheduled.

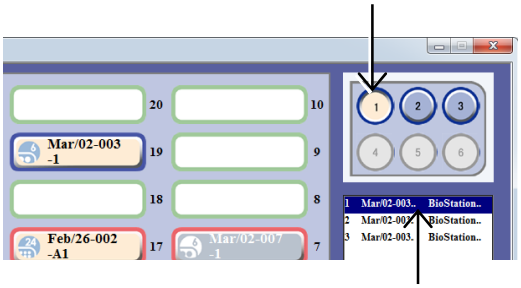
The frame color of the selected stocker button turns blue and the holder map and the Sample list are displayed.

To set the same schedule for all the samples in the holder, go to step c-6 and click the OK button.

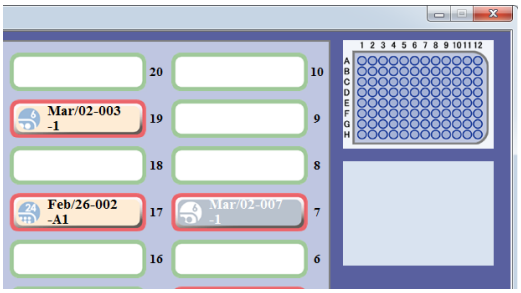


Sample selection window

c-5. To schedule a single sample, select the sample from the holder map or the Sample list.



When a 96- or 48-well plate is selected, the Sample list is not displayed.
Go to step c-6.



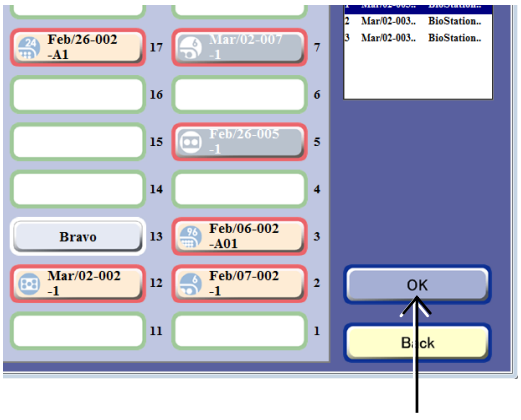
Sample selection window
(When 96-, 48-well plate is selected)

c-6. Click the OK button.

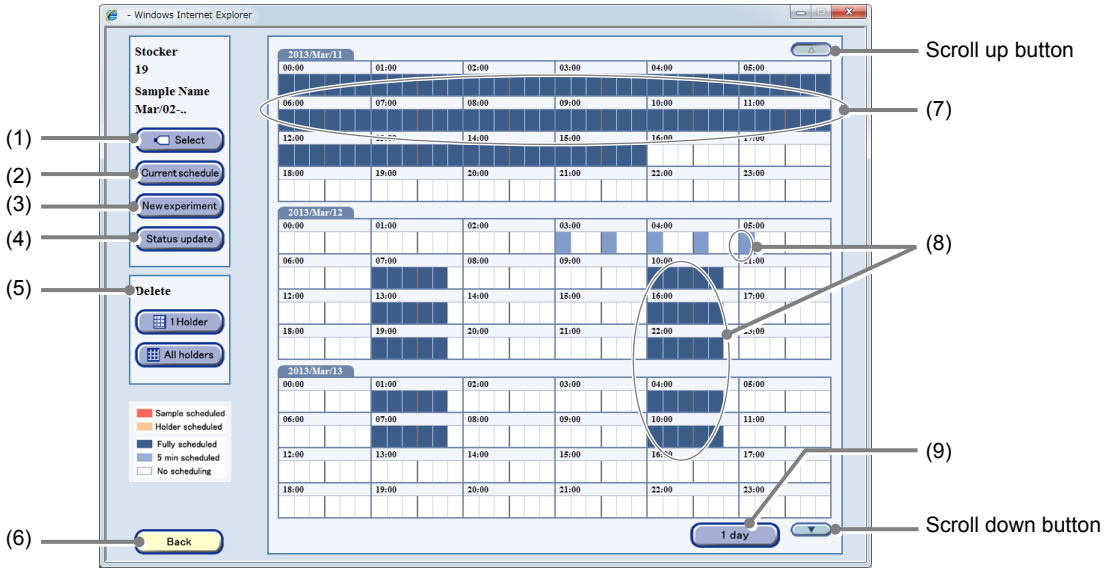
The Sample selection window closes and the Schedule confirmation window appears.

After the sample is selected, the Current Timelapse button and the New experiment button are enabled in the Schedule confirmation window.

When a schedule is already set up, and when the sample selected in the Sample selection window is the same as the previous one, the schedule is displayed in red. The schedule for other samples stored in the same holder is displayed in orange.



The Schedule confirmation window shows the schedule for a single day or three days in one screen, with each 10 minute period categorized by color.

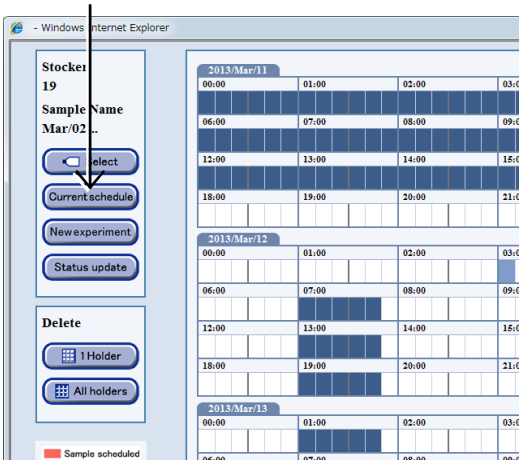


Schedule confirmation window

No.	Name	Function
(1)	Select button	Click this button to display the Sample selection window for scheduled observation.
(2)	Current schedule button	Click this button to display the Current schedule window. One-week observation schedule for the selected sample is displayed in the Current schedule window.
(3)	New experiment button	Click this button to display the Observation condition setting window.
(4)	Status update button	Click this button to display the latest schedule setting.
(5)	Delete area	Delete the observation schedule. **1 Holder button:** Delete all observation schedule settings in the selected stocker at the same time. **All holders button:** Delete all observation schedules for the samples cultured by the same user and in the same vessel in all stockers at the same time.
(6)	Back button	Click this button to close the Schedule confirmation window.
(7)	Elapsed periods	The time frame already elapsed is displayed in blue because it cannot be scheduled.
(8)	Scheduled periods	An already scheduled time frame is displayed in blue in 10 minute units or in light blue if the time for scheduled observation is no more than 5 minutes. A schedule can be set in an already scheduled time frame if any vacant time is available.
(9)	Displayed days switch button	Click this button to switch the number of days (1 or 3) displayed in a single screen.

(2) To check the observation schedule for the selected sample, click the Current Timelapse button.

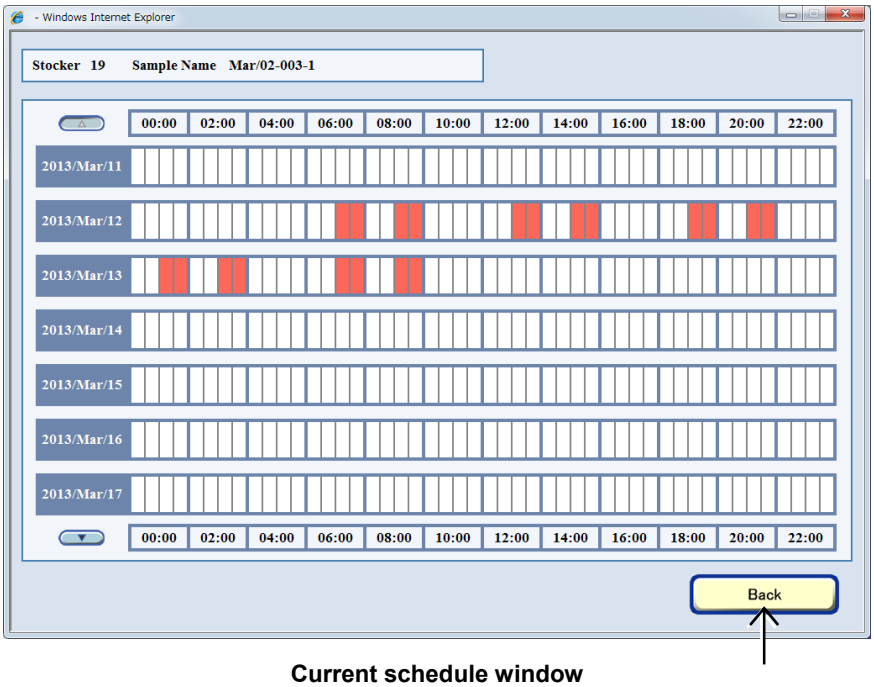
The Current schedule window appears.



Schedule confirmation window

The Current schedule window shows the one-week observation schedule for the selected sample. A period of time in which scheduled observation is set is displayed in red.

1. **Click the Back button to return to the Schedule confirmation window after checking the Schedule.**



Current schedule window

The procedure for selecting a sample is now complete.

To set scheduled observation conditions, go to Section 3.4.2, “Setting the Scheduled Observation Conditions.”

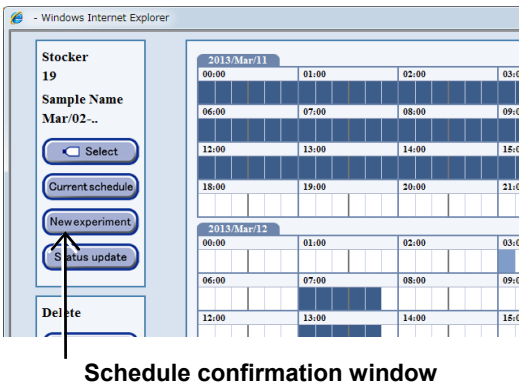
3.4.2 Setting the Scheduled Observation Conditions

(1) Set the observation conditions for schedule observation.

> To copy already registered scheduled observation settings, see Section 3.4.5.1, “Copying standby scheduled observation settings.”

(2) Click the New experiment button.

The Observation condition setting window appears.



Schedule confirmation window

(3) Select an appropriate observation method from the observation method selection tabs.

There are three observation methods: Point observation, Full Scan observation, and Tiling observation.

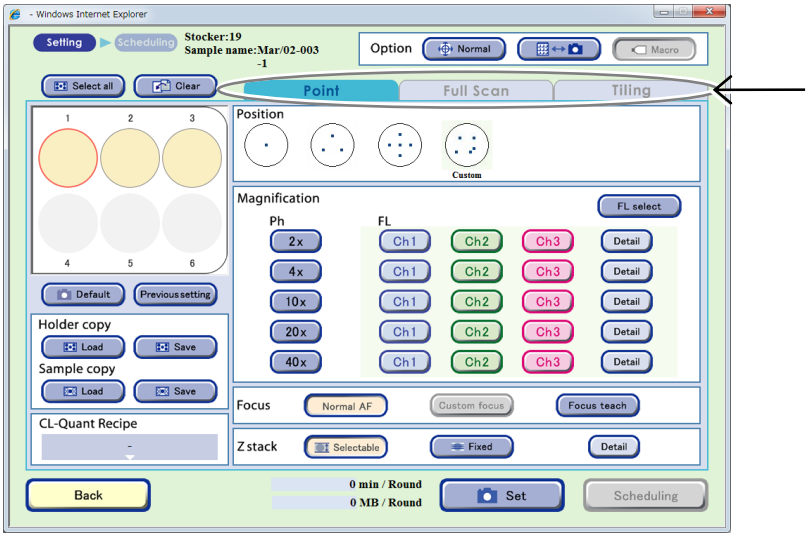
Point: An observation method which specifies the observation position from default or custom.
See Section 3.4.2.1, “Point observation.”

Full Scan: An observation method which captures the entire culture area of the Sample as tiled images.
See Section 3.4.2.2, “Full Scan observation.”

* Full Scan observation is not possible when a 75 cm^2 culture flask or a part of 25 cm^2 culture flask (25CF(ob), 25CF_A(ob), 25CF_A) or Nunc 4-well multi dish is used.

Tiling: An observation method that specifies the area to be observed at high magnification from the entire culture area captured by Full Scan and captures the specified area by tiling.
See Section 3.4.2.3, “Tiling observation.”

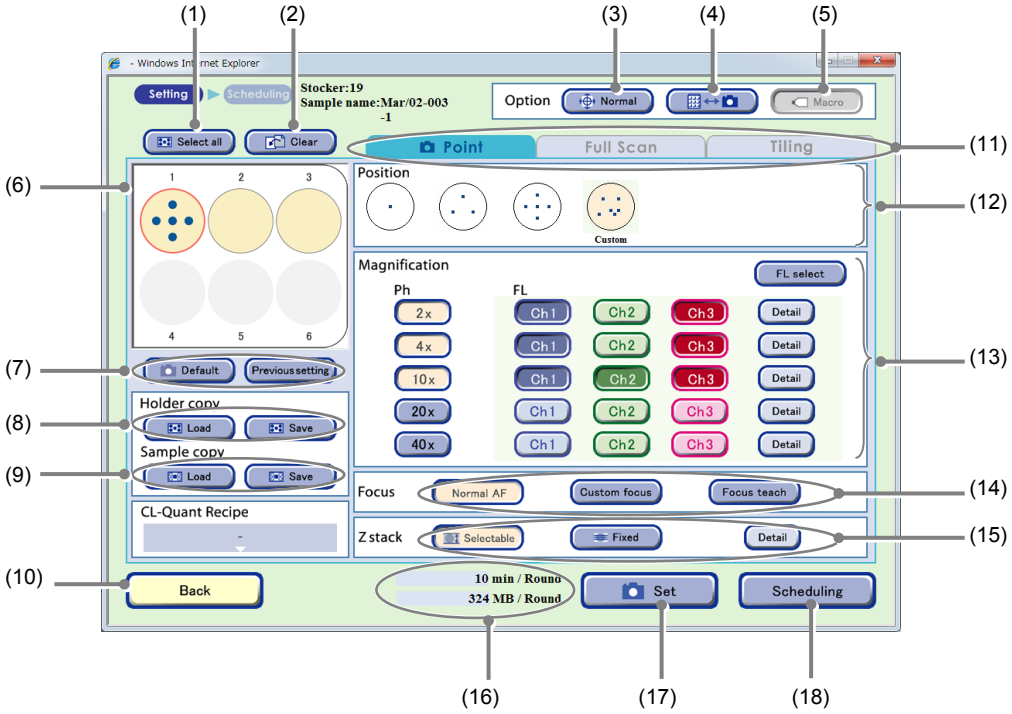
* To specify a desired observation area as a capture area by Tiling observation, a Full Scan image must be captured by Full Scan and the captured area must be registered as a custom observation point in the Full Scan image display window in advance.



Observation condition setting window

3.4.2.1 Point observation

This section describes the setting procedure when Point observation is selected as the observation method.



Observation condition setting window (Point tab selected)

No.	Name	Function
(1)	Select all button	Click this button to select all samples of the holder. The selected sample is marked with a red frame.
(2)	Clear button	Click this button to clear the observation condition settings.
(3)	Stage speed selection button	Select the stage speed. **Normal:** Set the stage speed to normal. **Slow:** Set the stage speed to slow.
(4)	Scheduled observation mode selection	Select the scheduled observation mode. **button:** **(Normal mode)** The holder is returned to the stocker when each round in scheduled observation is finished. **Keep button:** **(Stage exclusive mode)** The holder is kept on the stage from the first round to the last round for scheduled observation.
(5)	Macro button	Select whether to capture a macro image during scheduled observation. (Enabled only during stage exclusive mode) **ON (Concave):** Enable macro capture. **OFF (Convex):** Disable macro capture.

No.	Name	Function
(6)	Sample selection area	Select the sample for scheduled observation. (All samples are selected in the Observation condition setting window by default.) The selected sample is marked with a red frame. To cancel the selection, click the selected sample again.
(7)	Settings load buttons	The scheduled observation conditions are loaded. **Default button:** Load the Scheduled observation default setting. (See Chapter 4, “Environmental Settings.”) **Previous setting button:** Load the previous observation settings.
(8)	Holder copy area	Capture conditions of the holder are loaded and saved. **Load button:** Load the saved capturing conditions for the holder into the vessel being displayed. **Save button:** Save the capturing conditions for the vessel being displayed on a holder basis.
(9)	Sample copy area	Capture conditions of each sample are loaded and saved. **Load button:** Load the saved capturing conditions into the selected sample. **Save button:** Save capture conditions of the selected sample.
(10)	Back button	Click this button to returns to the previous window without saving the settings.
(11)	Observation method selection tabs	Select the observation method. There are three observation methods: Point observation, Full Scan observation, and Tiling observation. Select the Point tab here.
(12)	Observation position setting area	Select the default observation position or a custom observation point. **Default observation position:** An observation position preregistered on this product by default. **Custom observation point:** An observation position newly registered for a live observation, scheduled observation, or in the Full scan image display window. Two ways for displaying the custom observation point are shown below. ● When the custom observation point is registered for the sample selected from the sample selection area. ● When multiple samples are selected from the sample selection area. (Note that a sample without a registered custom observation point cannot be set even though the Set button is clicked.)

No.	Name	Function
(13)	Magnification/FL channel setting area	Select the observation magnification and FL channel button. **Magnification button:** Select the magnification to be used to capture a phase contrast image in scheduled observation. **FL channel button:** Click the buttons for the magnifications and channels of the fluorescence images to be captured. Multiple channels can be selected. **Detail button:** The FL image exposure conditions setting window appears. Set the exposure time and the intensity of each excitation light source. (See Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”) **FL select button:** The FL channel selection window appears. When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used when setting scheduled observation conditions can be changed to the added fluorescence filter channels (Ch4, Ch5). (See Section 3.4.2.5, “Changing the fluorescence channel (optional).”)
(14)	Focus Type area	Select the focus type. **Normal AF:** Perform autofocus at the specified observation position (the center of the sample when a 96- or 48-well plate is used). **Custom focus:** Autofocus is not performed. Instead, the Z position of the registered custom observation point is used. (Enabled only when Custom observation point is selected.) **Focus teach button:** Register custom observation points (X, Y, Z) during scheduled observation when Normal AF is clicked.
(15)	Z stack area	Specify the number of Z stack images. **Selectable button:** Enable the Z stack capture function in selectable pitches. Select a capture range and pitch for each magnification. The number of images to be captured is selected automatically. **Fixed button:** Enable the Z stack capture function in fixed pitch. Select the number of images to be captured for each magnification. The pitch and capture area are selected automatically. **Detail button:** Display the setting window for selectable pitches or fixed pitches.
(16)	Time required for observation/data size	The time and data size required for one round of scheduled observation is displayed when the Set button is clicked.
(17)	Set button	Click this button to set the Observation setting for the selected sample.
(18)	Scheduling button	Click this button to display the Scheduling window.

(1) Set the mode for scheduled observation.

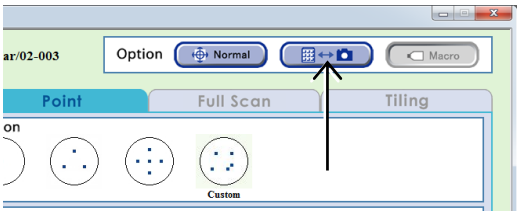
There are two modes available for scheduled observations: The Normal mode to return the holder to the stocker each time 1 Round is finished, and the Stage exclusive mode that keeps the holder on the stage from the first Round to the last Round.

> The procedure for setting scheduled observation varies depending on whether Normal mode or Stage exclusive mode is used. For details, see Section 3.4.3, “Setting Schedules.”

To use the Normal mode for scheduled observation

a. Switch the Scheduled observation mode selection to (Normal mode).

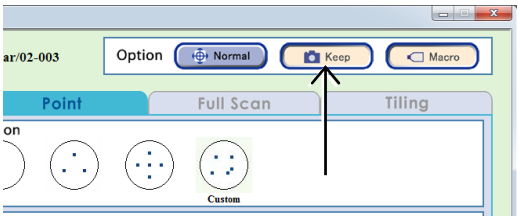
The figure on the right shows the mode button set to the Normal mode.



To use the Stage exclusive mode for scheduled observation

a. Switch the Scheduled observation mode selection to Keep (Stage exclusive mode).

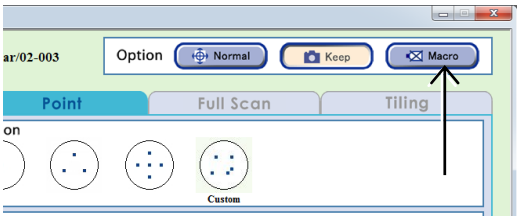
The figure on the right shows the mode button set to the Stage exclusive mode.



b. Switch the Macro button to either enable or disable macro capture.

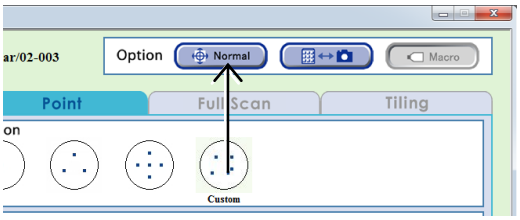
The figure on the right shows the Macro button set to OFF (to disable the macro capture).

The Macro button is only effective for the Stage exclusive mode. Be sure to perform macro capture when using the Normal mode for scheduled observation.



(2) If necessary, use the Stage speed selection to switch the stage speed when shifting the observation position.

Each time the Stage speed selection button is clicked, the mode is switched between Normal (normal speed) and Slow (slow speed).



(3) Select the sample for scheduled observation.

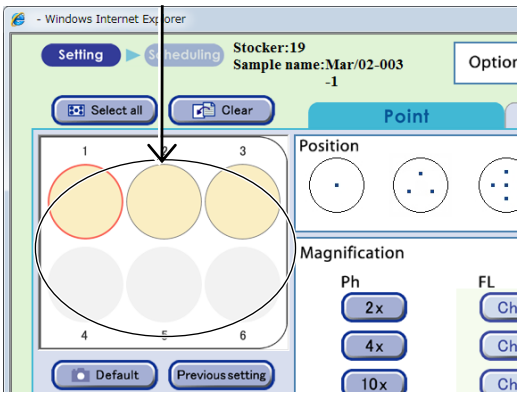
All samples are selected in the Observation condition setting window by default.

When a vessel other than 96-, 48-well plate is used

Click the Sample button in the Sample selection area to select the sample for scheduled observation.
The selected sample is marked with a red frame.
To cancel the selection, click the selected sample again.

To select or unselect all samples in the holder, click the Select all button.

To use the sample and the Observation setting used in the previous observation, click the Previous setting button.



Observation condition setting window

When using a 96-, 48-well plate

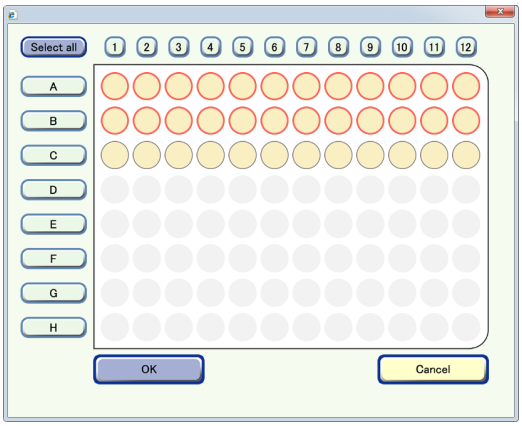
Click the Sample selection area to display the 96-well or 48-well plate sample selection window.

Click the target sample to select it.
The selected sample is marked with a red frame.

Clicking the Select all button selects or unselects all samples.

Clicking one of the vertical alphabet buttons selects all samples in that row. Clicking one of the horizontal number buttons selects all samples in that column. When the selected sample is clicked again, the selection is canceled.

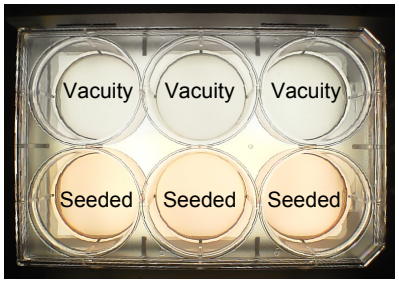
Clicking the OK button applies the selection and reopens the Observation condition setting window.



Well plate sample selection window (96-well)

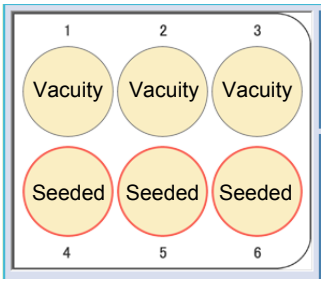
If a well plate is used and the selected samples contain an empty well on which cells are not seeded, autofocus on other wells may not work correctly.

Because images may become out of focus, exclude empty wells before selecting samples and setting the observation conditions.



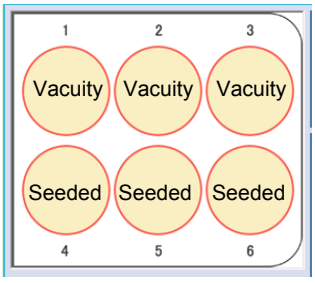
Well plate

Good



Selecting only wells on which cells are seeded

Not good



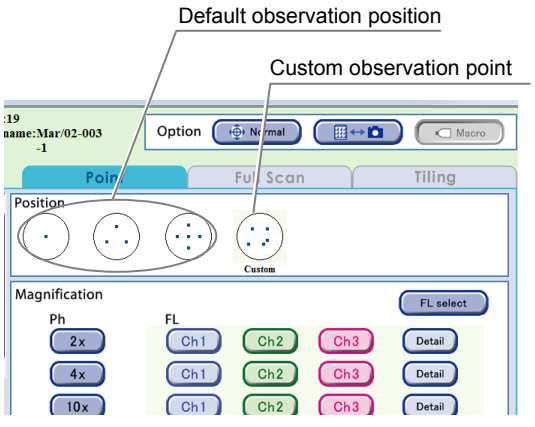
Selecting wells including empty wells

(4) Select the observation position.

Select the default observation position or a custom observation point.

Two ways for displaying the custom observation point are shown below.

- **When the custom observation point is registered for the sample selected from the sample selection area.**
- **When multiple samples are selected from the sample selection area.**
  (Note that a sample without a registered custom observation point cannot be set even though the Set button is clicked in step (9).)



Observation condition setting window

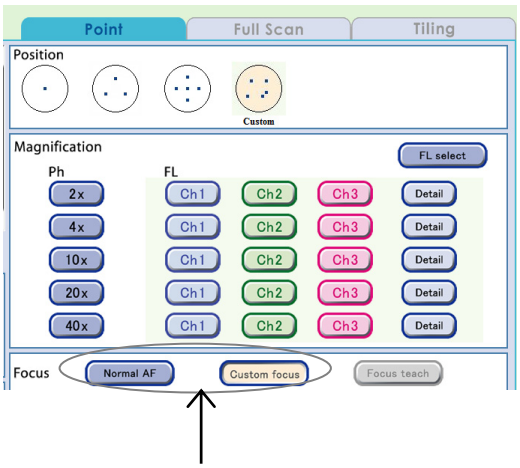
(5) Select the focus type.

Focus type can be selected for samples with a custom observation point registered.

The following describes each case.

a. When a default observation point is selected

Focus type cannot be selected.
Normal AF is selected and autofocus is performed at the specified observation position (the center of the sample when a 96- or 48-well plate is used).



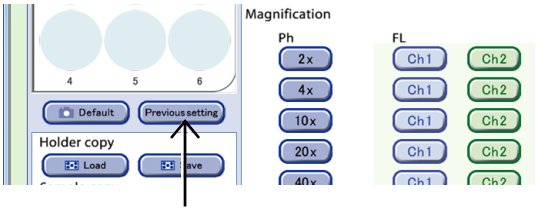
b. When a custom observation point is selected

Either Custom focus or Normal AF can be selected.

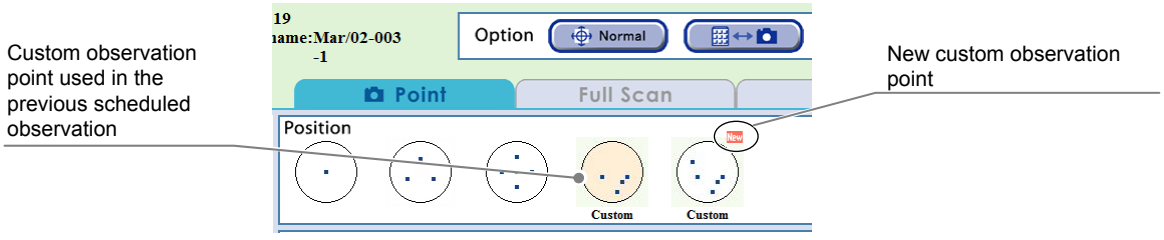
With Custom focus, scheduled observation is performed at the Z position of the registered custom observation point without performing autofocus.

Select Normal AF to perform autofocus at the specified observation position.

When the custom observation point is changed after the previous scheduled observation, the custom observation point (on the left) used in the previous scheduled observation and the new custom observation point (on the right) are both displayed by clicking the Previous setting button in step (3).



To use the new custom observation point changed from the observation position in the previous scheduled observation, select the custom observation point (displayed in NEW) on the right.



If the sample unloaded so the medium can be changed or for checking is reloaded, the custom observation point remains without being deleted. When a new custom observation point is registered without the current custom observation point being deleted, the new custom observation point is added to the current custom point. Delete unnecessary custom observation point in the relevant Live observation window.

A custom observation point can be registered as shown below.
(Up to 25 custom observation points can be registered per sample.)

a. Registration during live observation

For details on the procedure for registering custom observation points during a live observation, see the “BioStation CT Ver. 3.8 Instructions.”

b. Registration during scheduled observation

A custom observation points (X, Y, Z) can be registered using the following procedure. In this case, the Autofocus setting is registered as the custom observation point (Z).

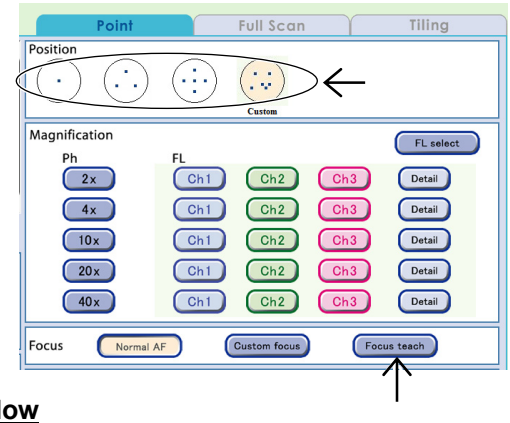
The custom observation point is registered automatically during scheduled observation so that it can be used at the next scheduled observation.

b-1. Select the default observation position or a custom observation point.

If a custom observation point is selected, click the Normal AF button to enable the Focus teach button.

b-2. Click the Focus teach button.

When the scheduled observation is performed by selecting the Focus teach button, observation is allowed only once and cannot be repeated.



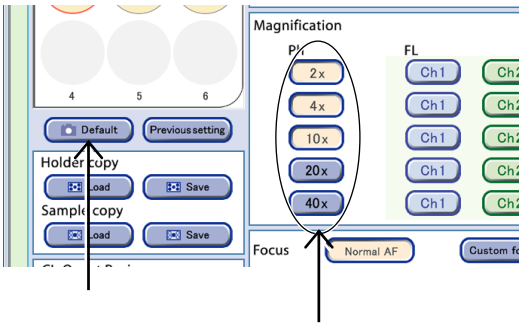
c. Registration in the Full Scan image display window

For details on registration, see Page 129.

(6) Select magnifications to be used for scheduled observation.

The figure on the right shows an example that the three magnifications (2x, 4x, and 10x) are selected.

To use the default settings of magnifications and the observation position, click the Default button.



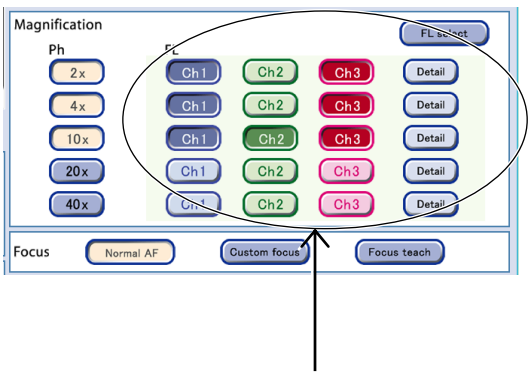
For details on the default settings, see Chapter 4, “Environmental Settings.”

(7) To capture the fluorescence image, select the FL channel button.

To change the exposure conditions for capturing fluorescence images, click the Detail button. For details, see Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”

When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used can be changed to the added fluorescence filter channels (Ch4, Ch5). For details, see Section 3.4.2.5, “Changing the fluorescence channel (optional).”

When the Fluorescence unit is not connected, the FL channel button is disabled.



(8) Specify the number of Z stack images.

If the default setting is acceptable, go to step (9).

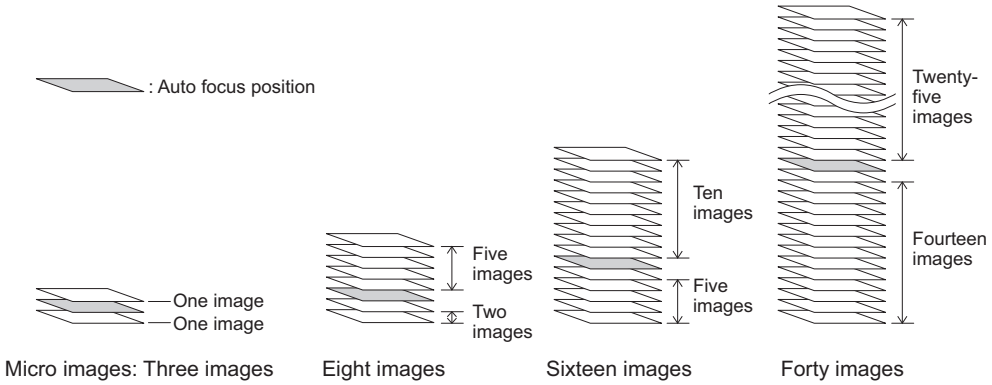
For details on the default settings, see Chapter 4, “Environmental Settings.”

Z stack

Micro images captured in a scheduled observation are included in a set of images shifted in the Z-axis direction around the autofocus position. The image set is called a Z stack image.
For Z stack images, there are two ways to capture images; Fixed pitch for capturing images in accordance with a fixed pitch and selectable pitch for capturing images in accordance with a specified range and pitch.

Fixed pitch images

Images are captured at a predefined range and pitch by selecting the number of images (1, 3, 8, 16, or 40).
The autofocus position in a Z stack image captured with a fixed pitch is defined for each image count by default as shown below. However, if a position near the upper or lower limit of the Z-axis is set for the autofocus position, the image count of the upper part and the lower part will change. (Example: If the lowest position in the Z-axis is set as the autofocus position in fixed pitch capturing of eight images, the lower part image count is zero and the upper part image count is seven.)



Additionally, if a custom observation point is selected and the Custom focus button is clicked to capture an image for in scheduled observation, the AF position described above will be the Z position registered as the custom observation point.

Selectable pitch images

To capture images using a selectable pitch, determine the number of images to be captured by selecting the range in the Z-axis direction (0, 100, 200, 300, or 400 µm) and pitch (5, 10, or 20 µm).
When the selected range is 0 µm, a Z stack is not generated and only one image is captured.
When the selected range is 400 µm and the pitch is 5 µm, the number of capturing images is the maximum (81 images).

* The function called “Micro set” in BioStation CT Ver.3.3 and earlier is now referred to as “Fixed-pitch Z stack.”

Click the Selectable or Fixed button to select the pitch setting.

a. Using Selectable pitch

Selecting a capture range and pitch for each magnification automatically specifies the number of images to be captured.
Note that the magnifications in the Observation condition setting window change in conjunction with the magnifications selected in the Selectable pitch setting window.

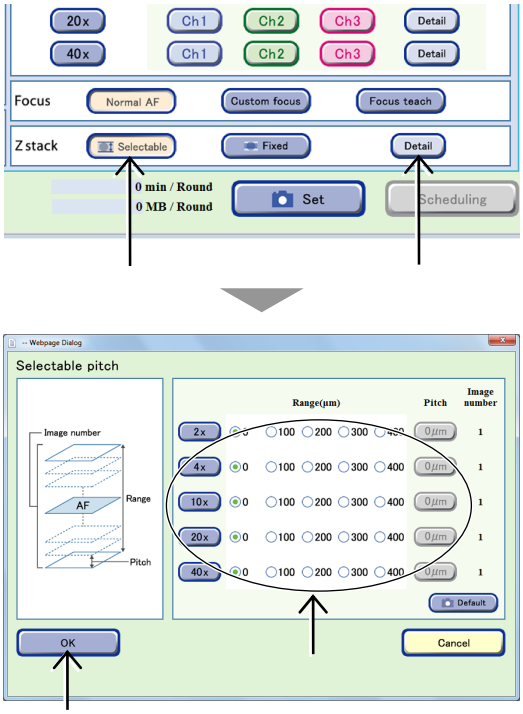
a-1. Click the Selectable button and then click the Detail button.

The Selectable pitch setting window appears.

a-2. Select a Range and Pitch for each magnification.

Depending on the selected range and pitch, the number of images to be captured is determined and displayed on the right side of the window.

a-3. Click the OK button.



Selectable pitch setting window

b. Using Fixed pitch

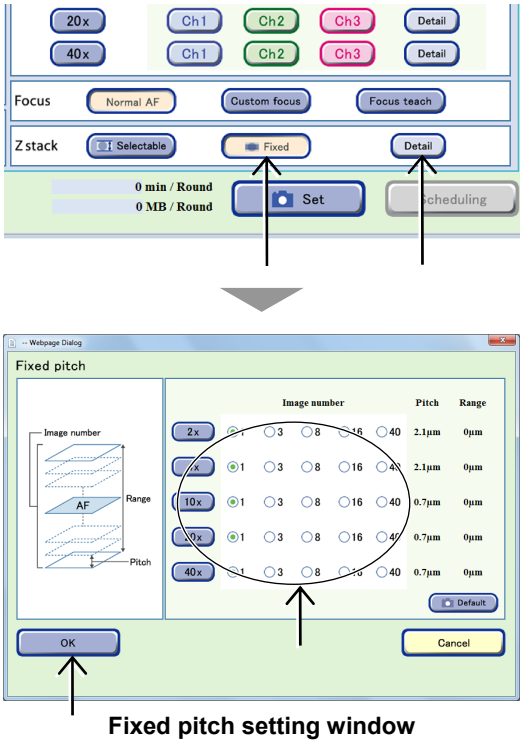
Selecting the number of capturing images for each magnification automatically specifies a corresponding capture range and pitch.
Note that the magnifications in the Observation condition setting window change in conjunction with the magnifications selected in the Fixed pitch setting window.

b-1. Click the Fixed button and then click the Detail button.

The Fixed pitch setting window appears.

b-2. Directly select the number of images to be captured (1, 3, 8, 16, or 40).

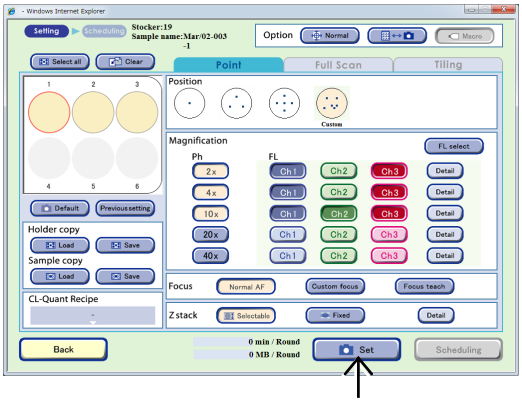
b-3. Click the OK button.



Fixed pitch setting window

(9) To specify the selected observation setting, click the Set button.

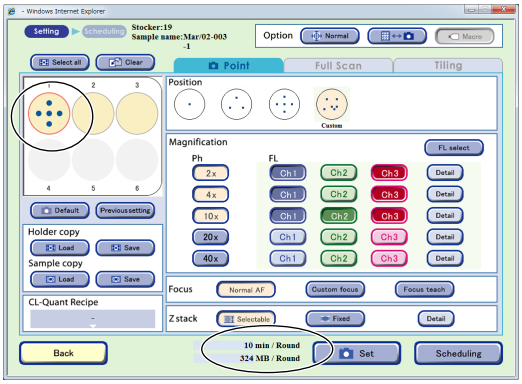
The observation setting is set up for the selected sample.



Samples set for scheduled observations are displayed as shown in the figure on the right.

The time and data size required for one round of scheduled observation is displayed.

When the observation setting is set, the icon appears on the Observation method selection tab.



The procedure for setting the point observation conditions is now complete.

To set schedules, see Section 3.4.3, "Setting Schedules."

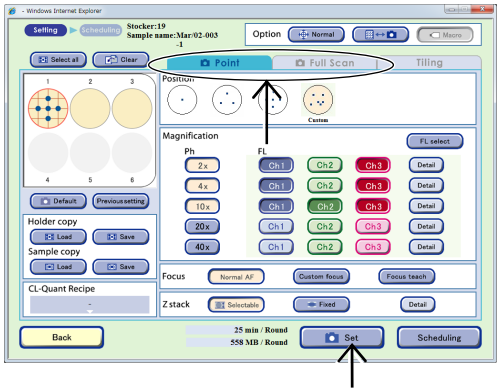
A high magnification image of any point and a low magnification image of entire sample can be captured at the same time with one scheduled observation setting by combining Point observation that enables high magnification observation and Full Scan observation which performs low magnification observation. Full Scan observation is not possible when a 75 cm^2 culture flask or a part of 25 cm^2 culture flask (25CF(ob), 25CF_A(ob), 25CF_A) or Nunc 4-well multi dish is used.

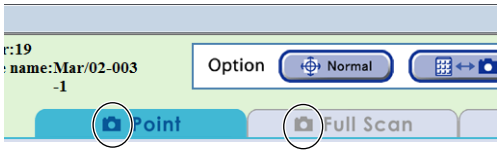
Perform the setting in accordance with the following procedure.

1. Set the scheduled observation condition for Point observation and click the Set button.
2. Select the Full Scan observation method selection tab and set the Full Scan scheduled observation condition. (See Section 3.4.2.2.)
3. Click the Set button.

   The observation setting is set to the selected sample and the total time and data size required for a round of both scheduled observations is displayed in the time required for observation area.

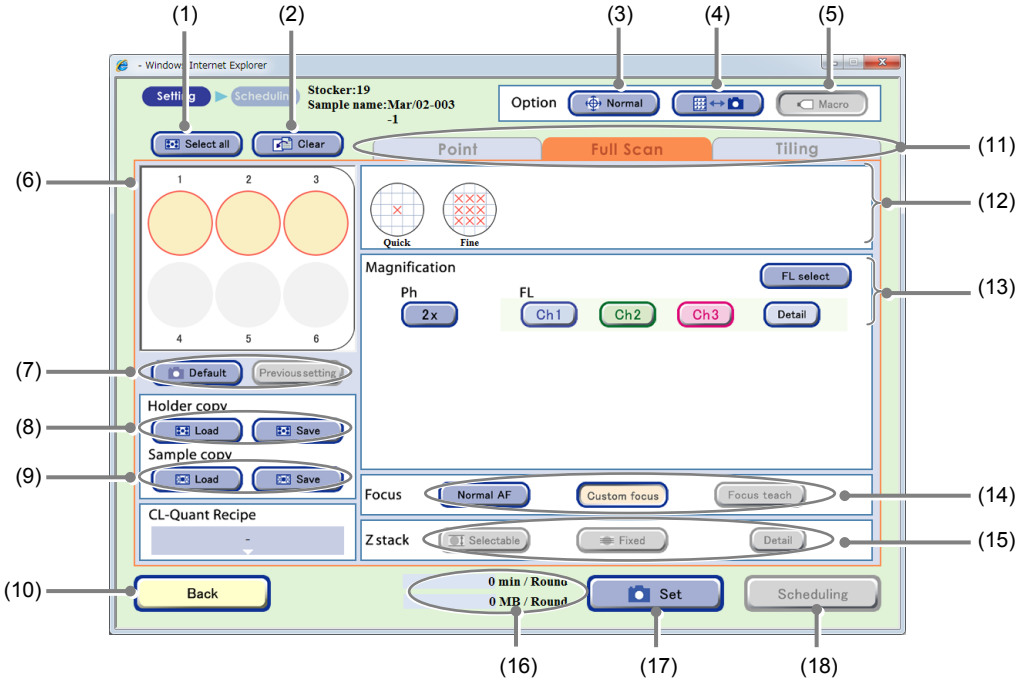
   The icon appears on the Observation method selection tab for which the observation setting is set.





3.4.2.2 Full Scan observation

This section describes the setting procedure when Full Scan observation is selected as the observation method.



Observation condition setting window (Full Scan tab selected)

No.	Name	Function
(1)	Select all button	Click this button to select all samples of the holder. The selected sample is marked with a red frame.
(2)	Clear button	Click this button to clear the observation condition settings.
(3)	Stage speed selection button	Select the stage speed. **Normal:** Set the stage speed to normal. **Slow:** Set the stage speed to slow.
(4)	Scheduled observation mode selection	Select the scheduled observation mode. **button: (Normal mode)** The holder is returned to the stocker when each round in scheduled observation is finished. **Keep button: (Stage exclusive mode)** The holder is kept on the stage from the first round to the last round for scheduled observation.
(5)	Macro button	Select whether to capture a macro image during scheduled observation. (Enabled only during stage exclusive mode) **ON (Concave):** Enable macro capture. **OFF (Convex):** Disable macro capture.
(6)	Sample selection area	Select the sample for scheduled observation. (All samples are selected in the Observation condition setting window by default.) The selected sample is marked with a red frame. To cancel the selection, click the selected sample again.

No.	Name	Function
(7)	Settings load buttons	The scheduled observation conditions are loaded. **Default button:** Load the Scheduled observation default setting. (See Chapter 4, “Environmental Settings.”) **Previous setting button:** Load the previous observation settings.
(8)	Holder copy area	Capture conditions of the holder are loaded and saved. **Load button:** Load the saved capturing conditions for the holder into the vessel being displayed. **Save button:** Save the capturing conditions for the vessel being displayed on a holder basis.
(9)	Sample copy area	Capture conditions of each sample are loaded and saved. **Load button:** Load the saved capturing conditions into the selected sample. **Save button:** Save capture conditions of the selected sample.
(10)	Back button	Click this button to return to the previous window without saving the settings.
(11)	Observation method selection tabs	Select the observation method. There are three observation methods: Point observation, Full Scan observation, and Tiling observation. Select the Full Scan tab here.
(12)	AF position setting area	Select the autofocus position. **Quick:** Autofocus is performed at the center of the sample. **Fine:** Autofocus is performed at more than one point. Disabled when a 96-well plate or 48-well plate is used.
(13)	Magnification/FL channel setting area	Select the observation magnification and FL channel button. **Magnification button:** Select the magnification to be used to capture a phase contrast image in scheduled observation. The observation magnification displayed in the Magnification area depends on the combination of the type of culture vessel and Quick or Fine in the AF position setting area. **FL channel button:** Click the buttons for the magnifications and channels of the fluorescence images to be captured. Multiple channels of the same magnification can be selected. **Detail button:** The FL image exposure conditions setting window appears. Set the exposure time and the intensity of each excitation light source. (See Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”) **FL select button:** The FL channel selection window appears. When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used when setting scheduled observation conditions can be changed to the added fluorescence filter channels (Ch4, Ch5). (See Section 3.4.2.5, “Changing the fluorescence channel (optional).”)

No.	Name	Function
(14)	Focus Type area	Select the focus type. **Normal AF:** Autofocus is performed at the center of the sample. **Custom focus:** Autofocus is performed near the custom observation point. (Enabled only for sample with FullScan Z registered with live observation.) **Focus teach button:** (When Full Scan is selected, this button is disabled.)
(15)	Z stack area	When Full Scan is selected, this button is disabled.
(16)	Time required for observation/data size	The time and data size required for one round of scheduled observation is displayed when the Set button is clicked.
(17)	Set button	Click this button to set the Observation setting for the selected sample.
(18)	Scheduling button	Click this button to display the Scheduling window.

* The optional software “CL-Quant” allows analyzing the captured Full Scan images and saving the combined images.

(1) Set the mode for scheduled observation.

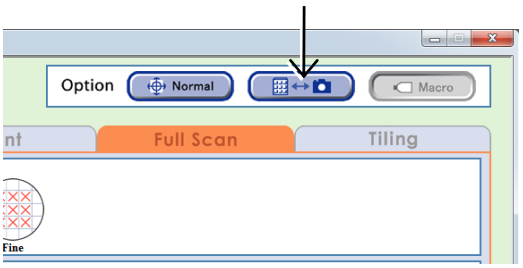
There are two modes available for scheduled observations: The Normal mode to return the holder to the stocker each time 1 Round is finished, and the Stage exclusive mode that keeps the holder on the stage from the first Round to the last Round.

> The procedure for setting scheduled observation varies depending on whether Normal mode or Stage exclusive mode is used. For details, see Section 3.4.3, “Setting Schedules.”

To use the Normal mode for scheduled observation

a. Switch the Scheduled observation mode selection to (Normal mode).

The figure on the right shows the mode button set to the Normal mode.

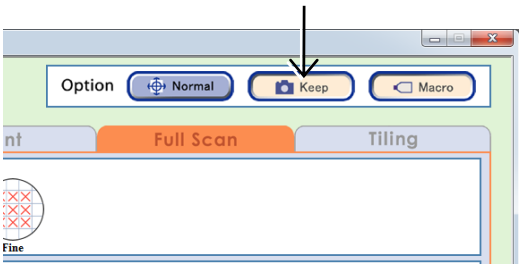


Observation condition setting window

To use the Stage exclusive mode for scheduled observation

a. Switch the Scheduled observation mode selection to Keep (Stage exclusive mode).

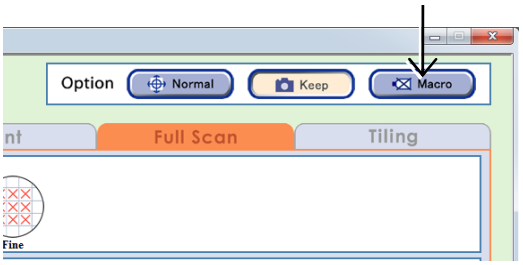
The figure on the right shows the mode button set to the Stage exclusive mode.



b. Switch the Macro button to either enable or disable macro capture.

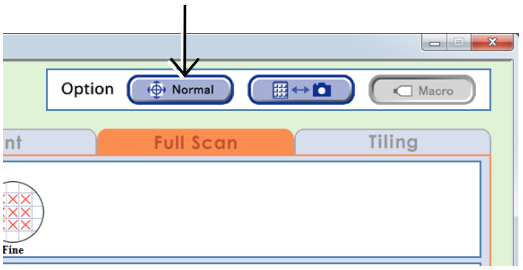
The figure on the right shows the Macro button set to OFF (to disable the macro capture).

The Macro button is effective only in the stage exclusive mode. Be sure to perform the macro capture when using the normal mode for scheduled observation.



(2) If necessary, use the Stage speed selection to switch the stage speed when shifting the observation position.

Each time the Stage speed selection button is clicked,, the mode is switched between Normal (normal speed) and Slow (slow speed).



(3) Select the sample for the scheduled observation.

All samples are selected in the Observation condition setting window by default.

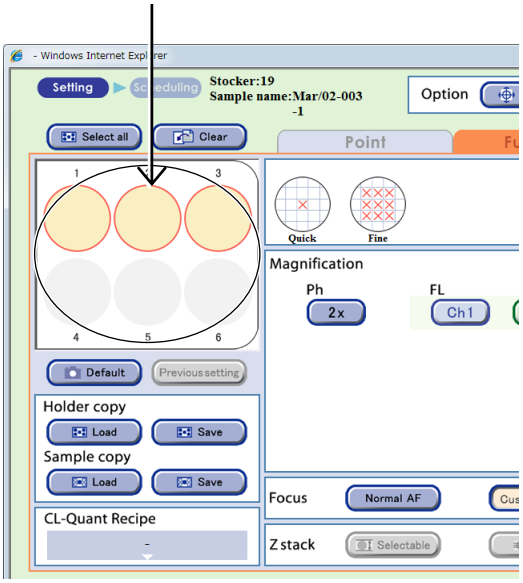
<u>When a vessel other than a 96-, 48-well plate is used</u>

When the Full Scan tab is selected, all samples appear as selected (red frame).

If there is a sample for which observation conditions do not need to be set, click the selected sample once more to deselect it.

To select or unselect all samples in the holder, click the Select all button.

To use the sample and the same observation setting used in the previous observation, click the Previous setting button.



<u>When using a 96-, 48-well plate</u>

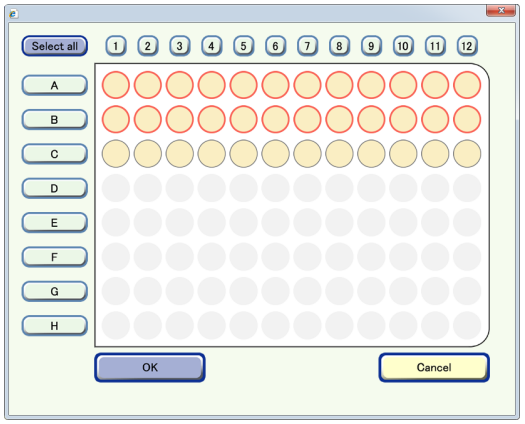
Click the Sample selection area to display the 96-well or 48-well plate sample selection window.

Click the target sample to select it.
The selected sample is marked with a red frame.

Clicking the Select all button selects or unselects all samples.

Clicking one of the vertical alphabet buttons selects all samples in that row. Clicking one of the horizontal number buttons selects all samples in that column. When the selected sample is clicked again, the selection is canceled.

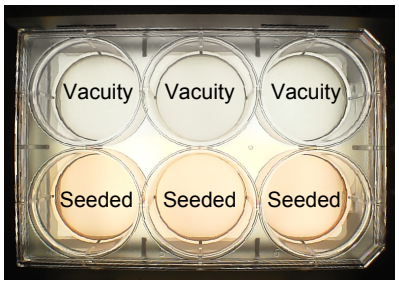
Clicking the OK button reflects the selection and reopens the Observation condition setting window.



Well plate sample selection window (96-well)

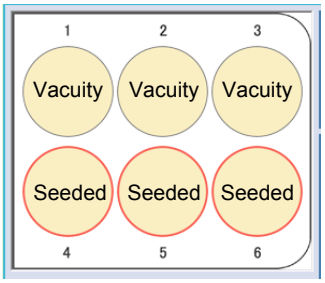
If a well plate is used and the selected samples contain an empty well on which cells are not seeded, autofocus on other wells may not work correctly.

Because images may become out of focus, exclude empty wells before selecting samples and setting the observation conditions.



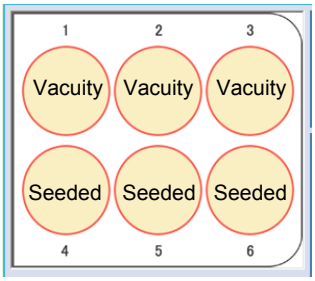
Well plate

Good



Selecting only wells on which cells are seeded

Not good

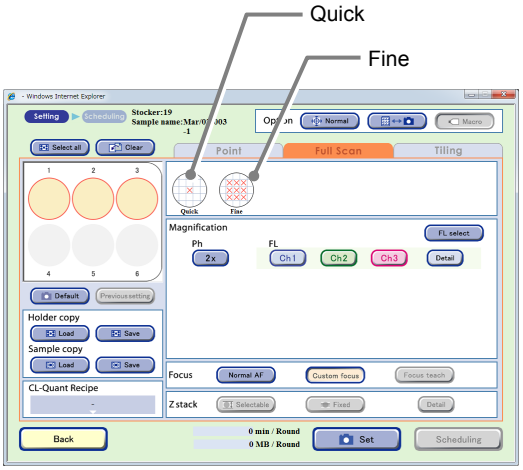


Selecting wells including empty wells

(4) Select the autofocus position.

Select Quick to perform AF at the center of the sample.

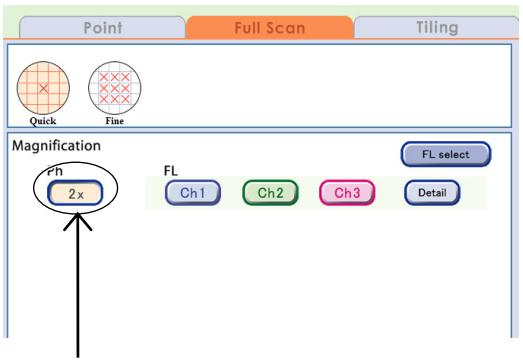
Select Fine to perform AF at more than one position. (Disabled when a 96-well plate or 48-well plate is used.)
Because the AF is performed at more than one position, a high-precision image can be acquired. (However, it takes time to observe one round.)



Observation condition setting window

(5) Select magnifications to be used for scheduled observation.

The observation magnification displayed in the Magnification area depends on the combination of the type of culture vessel and Quick or Fine in the AF position setting area.



The magnifications, the number and exposure time of images captured by Full Scan observation for each culture vessel are as follows: (* Reference value)

Culture vessel	35 mm dish			60 mm dish			
AF position mode	Quick		Fine	Quick	Fine		
Observation magnification	2x	4x	10x	2x	2x	4x	10x
Number of AF position	1	1	9	1	4	4	9
Number of images captured	10x10	20x20	10x10	14x14	7x7	14x14	15x15
Exposure (min) - Ph only	15	30	55	10	15	25	40
Data size - Ph only	396	1567	3521	309	309	1227	3166
Exposure (min) - Ph + FL 1ch (*)	55	75	150	45	45	65	120
Data size - Ph + FL 1ch (*)	786	3130	7036	615	615	2452	6330

Culture vessel	100 mm dish				6-well			
AF position mode	Quick	Fine			Quick	Fine		
Observation magnification	2x	2x	4x	10x	2x	2x	4x	10x
Number of AF position	1	16	16	25	1	4	4	25
Number of images captured	20x20	5x5	10x10	15x15	10x10	5x5	10x10	7x7
Exposure (min) - Ph only	10	20	30	55	15	30	40	115
Data size - Ph only	314	314	1251	4396	475	475	1881	5748
Exposure (min) - Ph + FL 1ch (*)	45	50	65	165	65	80	100	275
Data size - Ph + FL 1ch (*)	626	626	2501	8790	943	943	3756	11490

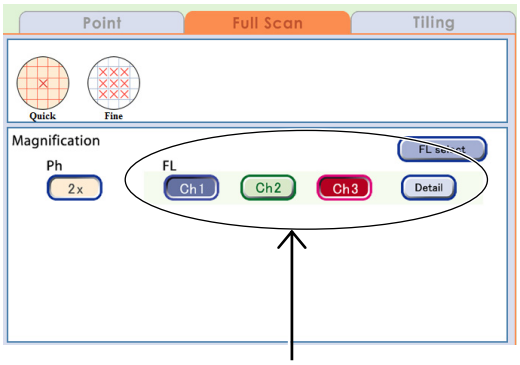
Culture vessel	12-well			24-well		
AF position mode	Quick		Fine	Quick		Fine
Observation magnification	2x	4x	10x	2x	4x	10x
Number of AF position	1	1	4	1	1	1
Number of images captured	6x6	12x12	11x11	4x4	12x12	15x15
Exposure (min) - Ph only	15	30	65	25	30	50
Data size - Ph only	349	1361	4549	322	1222	4240
Exposure (min) - Ph + FL 1ch (*)	55	70	185	55	70	160
Data size - Ph + FL 1ch (*)	686	2711	9086	622	2422	8459

Culture vessel	48-well		96-well	
AF position mode	Quick	Fine	Quick	Fine
Observation magnification	4x	10x	4x	10x
Number of AF position	1	1	1	1
Number of images captured	6x6	10x10	4x4	8x8
Exposure (min) - Ph only	45	55	60	80
Data size - Ph only	1393	3793	1285	4885
Exposure (min) - Ph + FL 1ch (*)	85	155	105	210
Data size - Ph + FL 1ch (*)	2743	7543	2485	9685

Culture vessel	25cm^2 culture flask				75cm^2 culture flask
AF position mode	Quick	Fine			
Observation magnification	2x	2x	4x	10x	
Number of AF position	1	4	4	25	
Number of images captured	14x14	7x7	14x14	12x12	Not applicable
Exposure (min) - Ph only	10	10	15	40	
Data size - Ph only	155	155	614	2814	
Exposure (min) - Ph + FL 1ch (*)	25	25	35	115	
Data size - Ph + FL 1ch (*)	308	308	1226	5626	

The reference values in this table are by culture vessel unit. (by one dish or one well-plate)

(6) To capture the fluorescence image, select the FL channel button.



To change the exposure conditions for capturing fluorescence images, click the Detail button. For details, see Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”

When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used can be changed to the added fluorescence filter channels (Ch4, Ch5). For details, see Section 3.4.2.5, “Changing the fluorescence channel (optional).”

When the optional Fluorescence unit is not connected, the FL channel button is disabled.

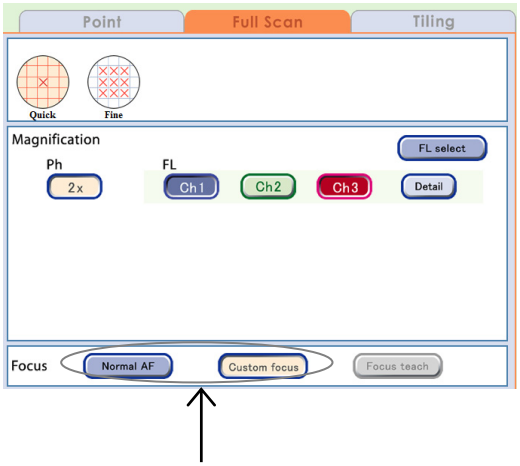
(7) Select the focus type.

Focus type can be selected for sample with FullScan Z registered in the Ph live observation window.

The following describes each case.

a. Sample name without registered FullScan Z button

The Focus type cannot be selected.
Normal AF is selected and autofocus is performed at the center of sample.



b. Sample name with registered FullScan Z button

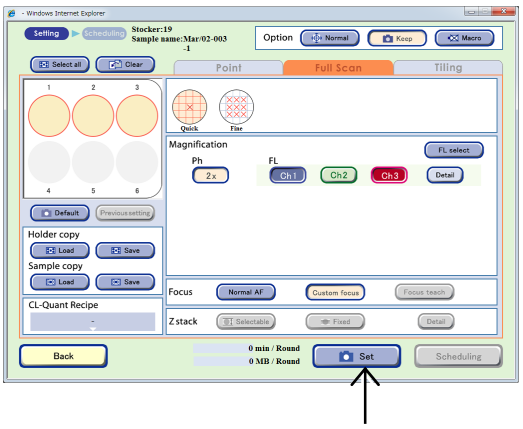
Either Custom focus or Normal AF can be selected.

Custom focus performs autofocus near the custom observation point of the registered FullScan Z.

Select Normal AF to perform autofocus at the center of the sample.

(8) To specify the selected observation setting, click the Set button.

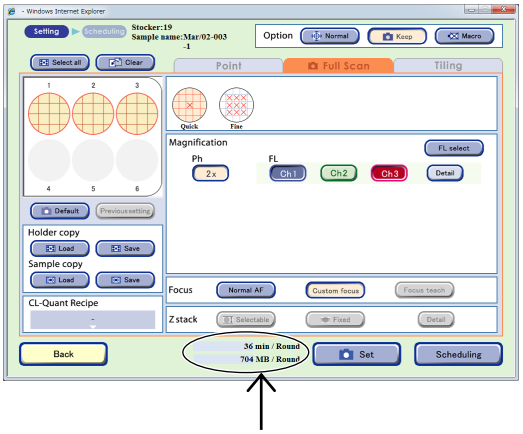
The observation setting is set up for the selected sample.



Samples set for scheduled observations are displayed as shown in the figure on the right.

The time and data size required for one round of scheduled observation is displayed.

When the observation setting is set, the icon appears on the Observation method selection tab.



The procedure for setting the full scan observation conditions is now complete.

To set schedules, see Section 3.4.3, "Setting Schedules."

A low magnification image of entire sample and high magnification images of any point can be captured at the same time with one Scheduled observation setting by combining Full Scan observation which is low magnification observation and Point observation or Tiling observation that enables high magnification.

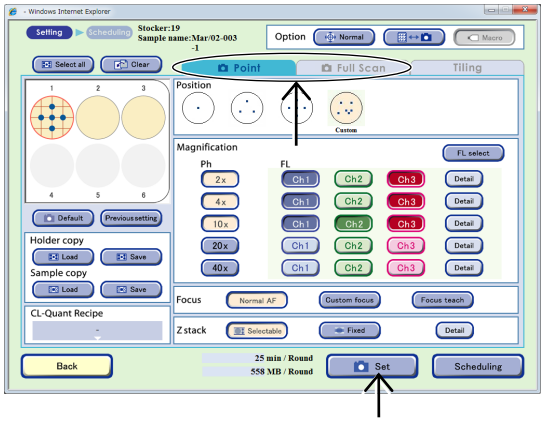
* To specify a desired observation area as a capture area by Tiling observation, a Full Scan image must be captured by Full Scan and the captured area must be registered in the Full Scan image display window in advance.

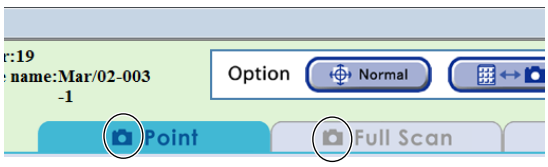
Perform the setting in accordance with the following procedure.

1. Set the Full Scan observation scheduled observation condition and click the Set button.
2. Switch to Point observation or Tiling observation and set the scheduled observation conditions. (See Section 3.4.2.1 for details on settings on the Point tab and Section 3.4.2.3 for settings on the Tiling tab.)
3. Click the Set button.

   The observation setting is set to the selected sample and the total time and data size required for a round of both scheduled observations is displayed in the time required for observation area.

   The icon appears on the Observation method selection tab for which the observation setting is set.





3.4.2.3 Tiling observation

This section describes the setting procedure when Tiling observation is selected as the observation method.

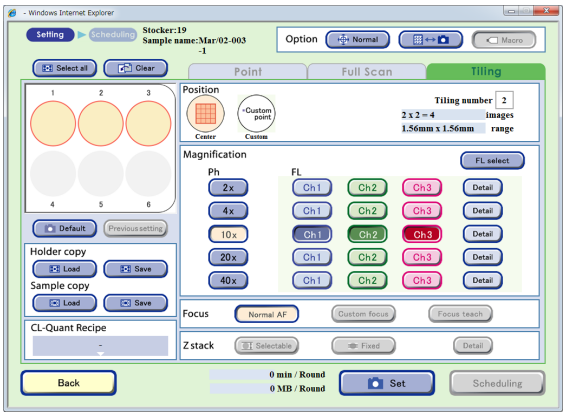
The procedure for Tiling observation depends on the method used to specify the position to be observed.

a. Tiling capture by autofocusing at the center of the entire sample (Center)

Go to step (5).

b. Tiling capture by autofocusing at the center of each specified capture area (Custom)

To perform Tiling observation at a desired observation position (Custom), a Full Scan image must be captured by Full Scan and the captured area must be registered as Tiling observation area in the Full Scan image display window in advance.
The Full Scan image must be captured by Full Scan in advance.
Set after completing image capturing in accordance with the procedures from sections 3.4.2.2, “Full Scan observation” to section 3.4.3, “Setting Schedules.”



Observation condition setting window (Tiling tab selected)

(1) Display the Full Scan image display window.

1. The Image review window is displayed.

For the procedure for displaying the Image review window, see Section 3.4.1, “Selecting a Sample.”

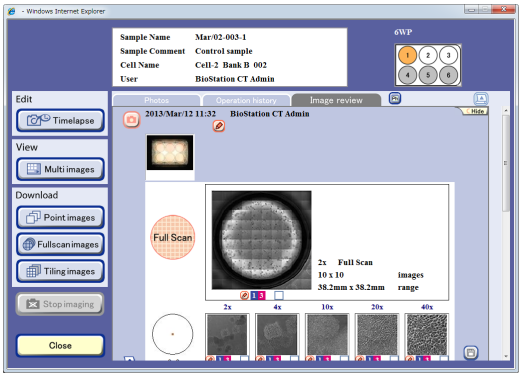
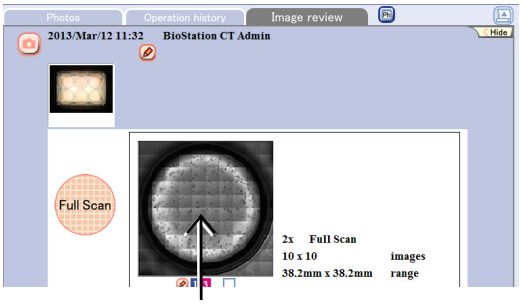


Image review window

2. Click the thumbnail image of the Full Scan image.

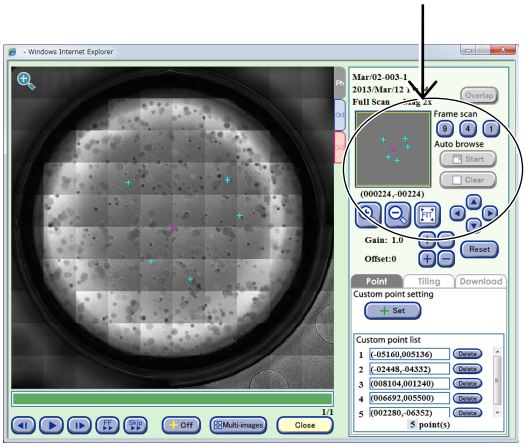
The Full Scan image display window appears.



(2) On the Point tab of the Full Scan image display window, register the center of the area on which tiled observation is to be performed as the custom observation point.

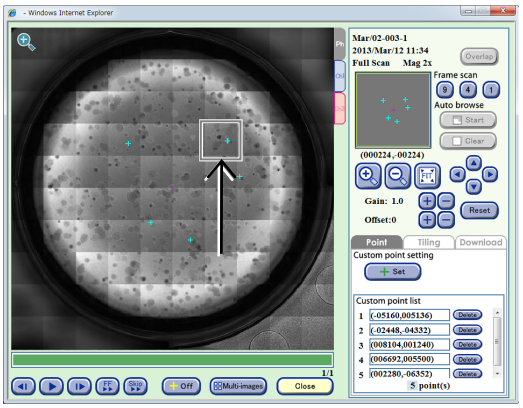
1. In the image display Area select area the center of the area on which tiled observation is to be performed.

Enlarge, reduce, or shift the field of view to move the position to be registered as a custom observation point to the center of view.



Full Scan image display window (Point tab)

Alternatively, click a point in the tiled image displayed in the image display area to enlarge the selected point.

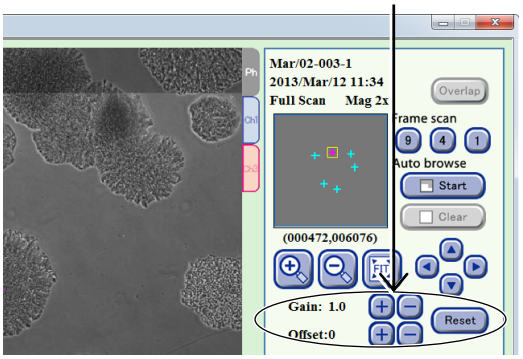


For more information on the operation of the Full Scan image display window, see Section 3.5.3.4, “Viewing the Full Scan image and preparing download.”

Use Gain and Offset to adjust the brightness of a displayed image when searching for an area to observe.

Use the Gain +/- button to adjust the contrast.

Use the Offset +/- button to adjust the brightness.

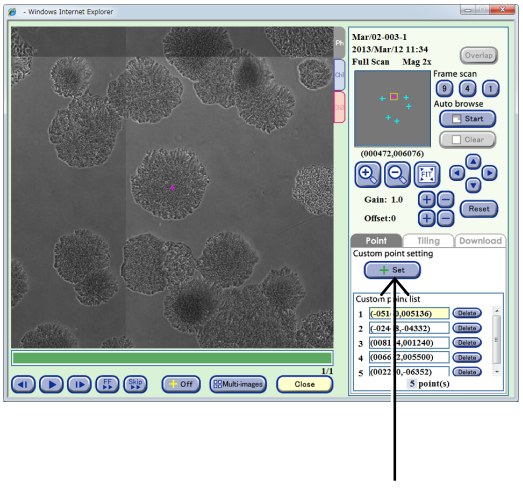


2. Click the Set button.

The XY coordinates of the center of view displayed in the image display area are registered as a custom observation point.

The registered custom observation point is added to the custom point list field and indicated with a light blue pointer (crosshair) in the image display area and observation point display area.

The pointer in the image display area can be shown/hidden using the +Off button.

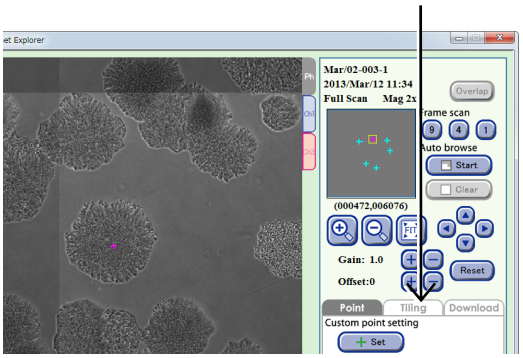


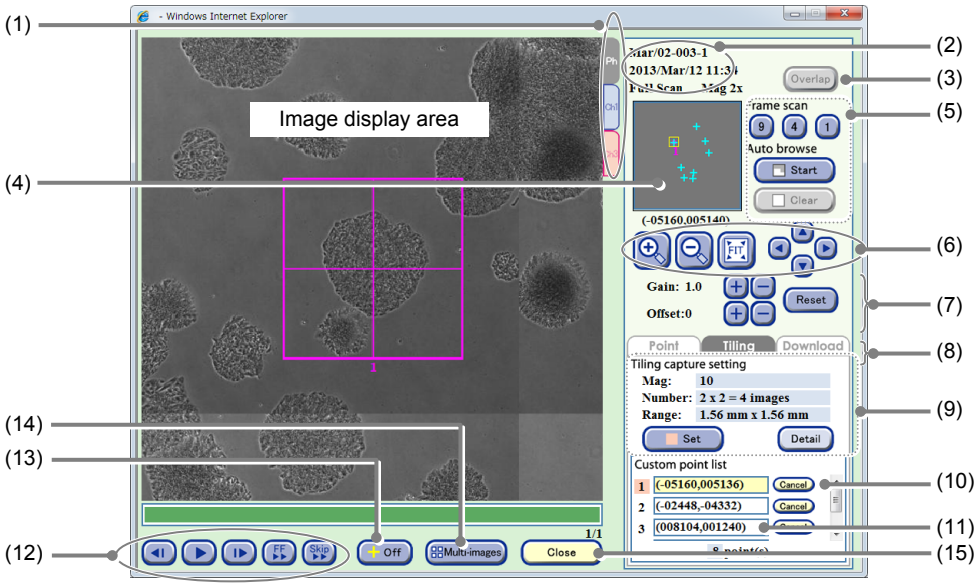
3. To perform tiled observation of more than one area, register the center of each area as a custom observation point.

(3) Register the area on which Tiling observation is to be performed.

1. Click the Tiling tab.

The Tiling tab window appears.





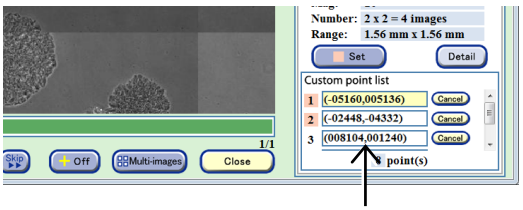
Full Scan image display window (Tiling tab)

No.	Name	Function
(1)	Channel tabs	These tabs are displayed when fluorescence images are captured. Select a tab to switch the image displayed among Ph (a phase contrast image) and Ch1 to 3 (FL channel images).
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Overlap button	Click this button to overlay the fluorescence image and the phase contrast image.
(4)	Observation point display area	This area displays all custom observation points registered in the entire sample area or the position and size of observation field of view displayed in the image display area.
(5)	Scan playback function	Scanning of the entire field of view is played back automatically. **Frame scan:** Play back scan of entire field of view with the selected frame size. **Auto browse:** Play back scan with the displayed magnification from the currently displayed point. Also enables pause, resume, or clear playback of scan.
(6)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **Field of view 1 frame move button:** Shift the field of view up/down, left/right by one frame.

No.	Name	Function
(7)	Brightness adjustment of a displayed image	Adjust the brightness of a displayed image. **Gain:** Use the +/- button to adjust the contrast by ±0.1. **Offset:** Adjust the brightness. Use the +/- button to adjust the brightness by ±5 for a phase contrast image or by ±10 for a fluorescence image. **Reset button:** Reset the brightness of a displayed image.
(8)	Operation window switch tabs	Click a tab to switch the operation window. **Point tab:** Enable registration of custom observation point. **Tiling tab:** Enable registration of capture area for Tiling observation. (See Section 3.4.2.3, “Tiling observation.”) **Download tab:** Enable download preparation for an Full Scan image. (See Section 3.5.3.4, “Viewing the Full Scan image and preparing download.”)
(9)	Tiling capture area setting area	This area displays the set tiling capture magnification, count, and capture range. **Detail button:** Display the Tiling observation condition change window and allows changing the tiled capture magnification and count. **Set button:** Register the position displayed in the image display area as tiled captured area.
(10)	Cancel button	Click this button to cancel the tiled capture area registered with the Set button.
(11)	Custom point list field	This field displays the registered custom observation point. Select a Custom observation point from the list moves the field of view to that position.
(12)	Timelapse images playback button	**► button:** Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. **I►/◄I button:** Play one frame forward /one frame backward **FF button:** Fast-forward an image. **Skip button:** Skip the image for the predefined frame during playback.
(13)	+Off button	Click this button to display or hide pointers displayed in the image display area.
(14)	Multi-images button	Click this button to display the Multi images display window. Full Scan observation thumbnail images are registered in the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(15)	Close button	Click this button to close the Full Scan image display window.

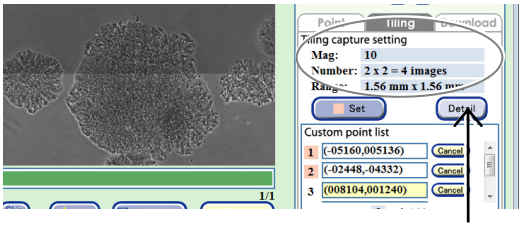
2. **From the Custom observation point list, select a custom observation point within the area on which tiling capture is to be performed.**

   The specified custom observation point appears in the image display area.



Full Scan image display window (Tiling tab)

3. Check the tiling observation condition displayed in the image display area.

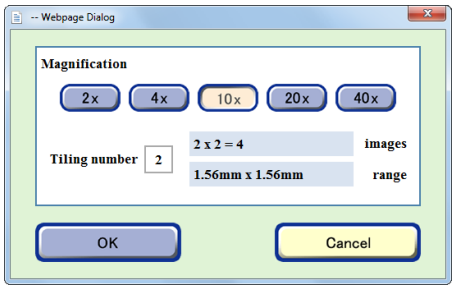


Click the Detail button as necessary to change the tiling capture magnification and tiling count setting.
Click the Detail button to display the Tiling observation condition change window.

Select the Magnification button to change the magnification. (Multiple selections are not allowed.)

To change the tiling count, select a tiling area from the number selection box showing a number from 1 to 20 which is displayed by clicking the Tiling number field. (Selecting 5 captures 25 images in a 5×5 grid.)

Click the OK button to confirm the change.

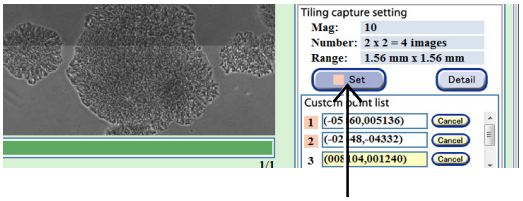


Tiling observation condition change window

> One tiling observation condition can be set for each sample.

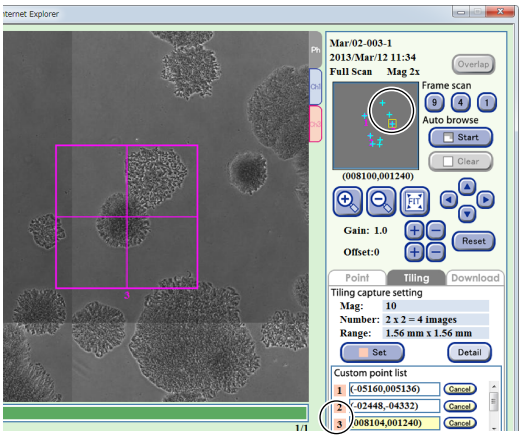
4. Click the Set button.

A Tiling observation area is registered.

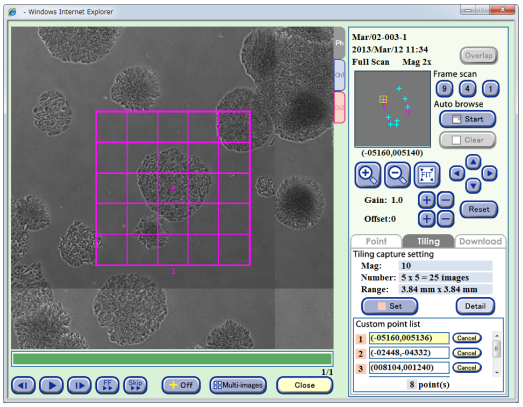


When registered, the number of the corresponding point in the Custom point list field turns pink.

The registered tiling observation area pointer is displayed in the observation point display area in pink and the number of the custom observation point in the Custom point list field is displayed near the pointer.



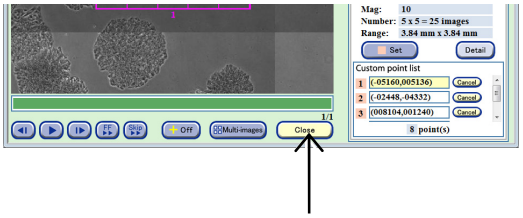
In the window on the right, the tiling capture magnification is 20x, capture count is 25 in 5×5 grid, and the tiling capture area is 1.92 mm × 1.92 mm.



Capture area that is not adjacent to each other can also be captured as tiling image. In that case, repeat steps 2 to 4 for each Tiling observation area to register.

5. Click the Close button.

The Full scan image display window closes and the Image review window appears.



(4) Set the observation conditions for schedule observation.

1. With the sample for Tiling observation selected, click the Timelapse button on the left side of the Image review window.

The Schedule confirmation window appears.

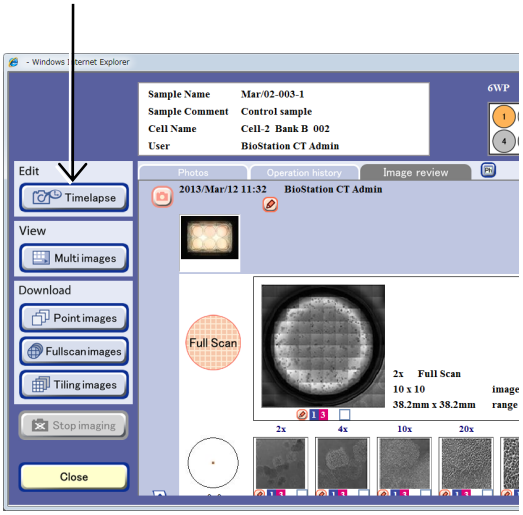
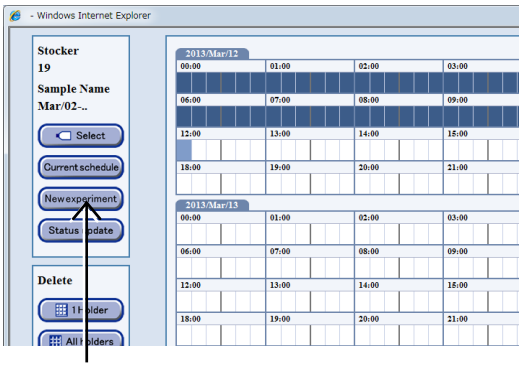


Image review window

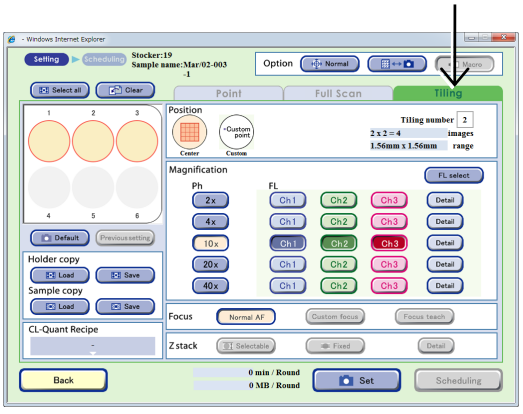
2. Click the New experiment button.

The Observation condition setting window appears.

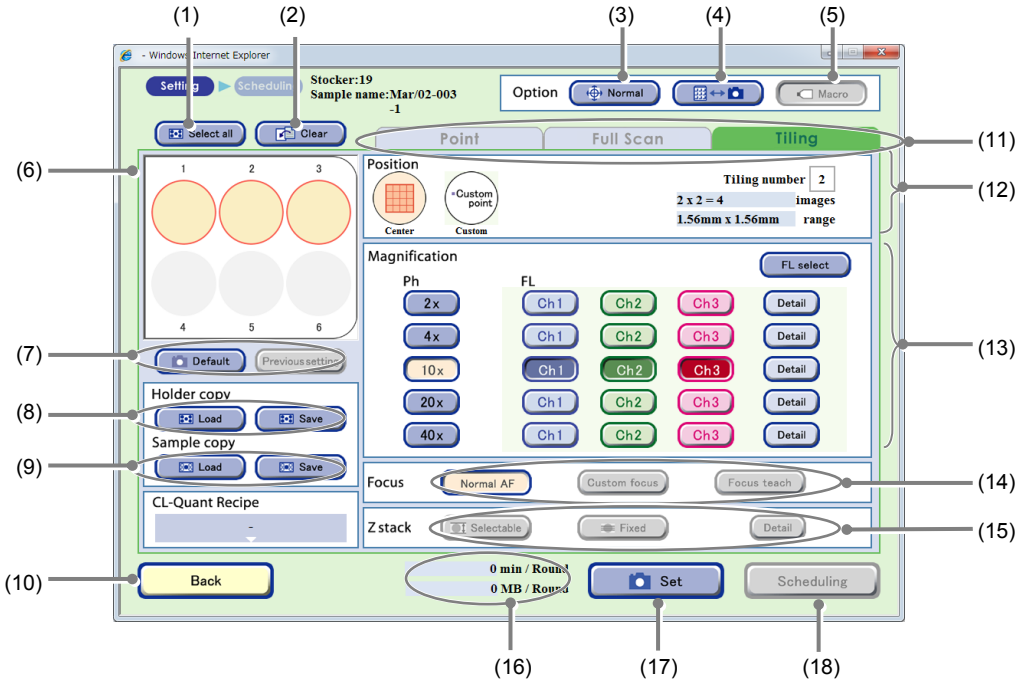


Schedule confirmation window

3. Select Tiling observation on the Observation method selection tab.



Observation condition setting window



Observation condition setting window (Tiling tab selected)

No.	Name	Function
(1)	Select all button	Click this button to select all samples of the holder. The selected sample is marked with a red frame.
(2)	Clear button	Click this button to clear the observation condition settings.
(3)	Stage speed selection button	Select the stage speed. **Normal:** Set the stage speed to normal. **Slow:** Set the stage speed to slow.
(4)	Scheduled observation mode selection	Select the scheduled observation mode. **button: (Normal mode)** The holder is returned to the stocker when each round in scheduled observation is finished. **Keep button: (Stage exclusive mode)** The holder is kept on the stage from the first round to the last round for scheduled observation.
(5)	Macro button	Select whether to capture a macro image during scheduled observation. (Enabled only during stage exclusive mode) **ON (Concave):** Enable macro capture. **OFF (Convex):** Disable macro capture.
(6)	Sample selection area	Select the sample for scheduled observation. (All samples are selected in the Observation condition setting window by default.) The selected sample is marked with a red frame. To cancel the selection, click the selected sample again.

No.	Name	Function
(7)	Settings load buttons	The scheduled observation conditions are loaded. **Default button:** Load the Scheduled observation default setting. (See Chapter 4, “Environmental Settings.”) **Previous setting button:** Load the previous observation settings.
(8)	Holder copy area	Capture conditions of the holder are loaded and saved. **Load button:** Load the saved capturing conditions for the holder into the vessel being displayed. **Save button:** Save the capturing conditions for the vessel being displayed on a holder basis.
(9)	Sample copy area	Capture conditions of each sample are loaded and saved. **Load button:** Load the saved capturing conditions into the selected sample. **Save button:** Save capture conditions of the selected sample.
(10)	Back button	Click this button to return to the previous window without saving the settings.
(11)	Observation method selection tabs	Select the observation method. There are three observation methods: Point observation, Full Scan observation, and Tiling observation. Select the Tiling tab here.
(12)	Observation position setting area	Select the default observation position or a custom observation point. Select the default observation position (Center) or the custom observation point (Custom). **Center:** Autofocus is performed at the center of the entire sample and tiling capture is performed. **Custom:** Autofocus and tiling capture is performed at the center of each specified area. **Tiling number:** Specify/display the tiling area.
(13)	Magnification/FL channel setting area	Select the observation magnification and FL channel button. **Magnification button:** Select an observation magnification to be used for scheduled observation. (Multiple observation magnifications cannot be selected for Tiling observation.) **FL channel button:** Click the buttons for the magnifications and channels of the fluorescence images to be captured. Multiple channels of the same magnification can be selected. **Detail button:** The FL image exposure conditions setting window appears. Set the exposure time and the intensity of each excitation light source. (See Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”) **FL select button:** The FL channel selection window appears. When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used when setting scheduled observation conditions can be changed to the added fluorescence filter channels (Ch4, Ch5). (See Section 3.4.2.5, “Changing the fluorescence channel (optional).”)

No.	Name	Function
(14)	Focus Type area	Select the focus type. **Normal AF:** Autofocus is performed at the center of the sample. **Custom focus:** (When Tiling is selected, this button is disabled.) **Focus teach button:** (When Tiling is selected, this button is disabled.)
(15)	Z stack area	When Tiling is selected, this button is disabled.
(16)	Time required for observation/data size	The time and data size required for one round of scheduled observation is displayed when the Set button is clicked.
(17)	Set button	Click this button to set the Observation setting for the selected sample.
(18)	Scheduling button	Click this button to display the Scheduling window.

(5) Set the mode for scheduled observation.

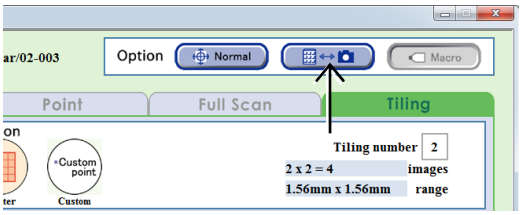
There are two modes available for scheduled observations: The Normal mode to return the holder to the stocker each time 1 Round is finished, and the Stage exclusive mode that keeps the holder on the stage from the first Round to the last Round.

> The procedure for setting scheduled observation varies depending on whether Normal mode or Stage exclusive mode is used. For details, see Section 3.4.3, “Setting Schedules.”

To use the Normal mode for scheduled observation

a. Switch the Scheduled observation mode selection to (Normal mode).

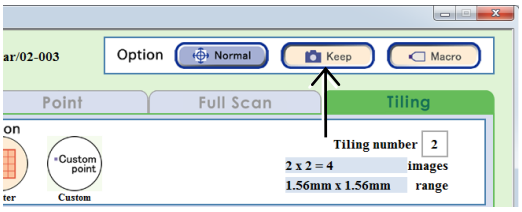
The figure on the right shows the mode button set to the Normal mode.



To use the Stage exclusive mode for scheduled observation

a. Switch the Scheduled observation mode selection to Keep (Stage exclusive mode).

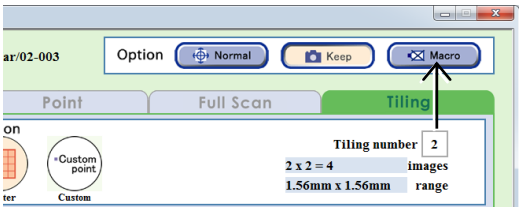
The figure on the right shows the mode button set to the Stage exclusive mode.



b. Switch the Macro button to either enable or disable the macro capture.

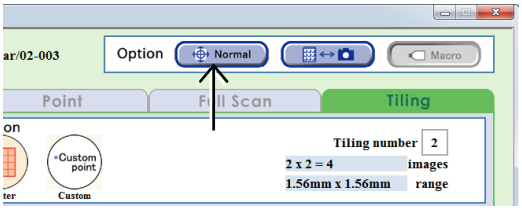
The figure on the right shows the Macro button set to OFF (to disable the macro capture).

The Macro button is only effective for the Stage exclusive mode. Be sure to perform the macro capture when using the Normal mode for scheduled observation.



(6) If necessary, use the Stage speed selection button to switch the stage speed when shifting the observation position.

Each time the Stage speed selection button is clicked, button, the mode is switched between Normal (normal speed) and Slow (slow speed).



(7) Select the sample for scheduled observation.

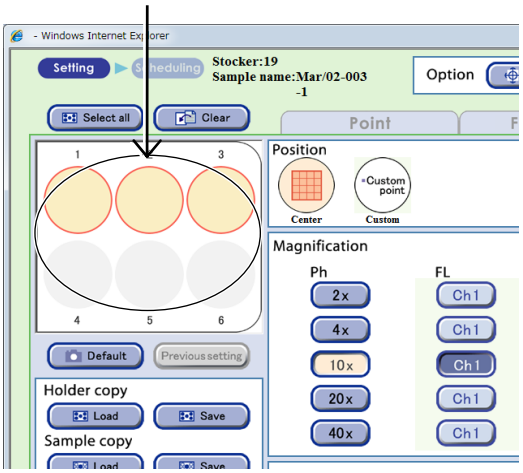
All samples are selected in the Observation condition setting window by default.

When a vessel other than 96-, 48-well plate is used

Click the Sample button in the Sample selection area to select the sample for the scheduled observation.
The selected sample is marked with a red frame.
To cancel the sample, click the Sample button again.

To select or unselect all samples in the holder, click the Select all button.

To use the sample and the observation setting that was used in the previous observation, click the Previous setting button.



Observation condition setting window

When using a 96-, 48-well plate

Click the Sample selection area to display the 96-well or 48-well plate sample selection window.

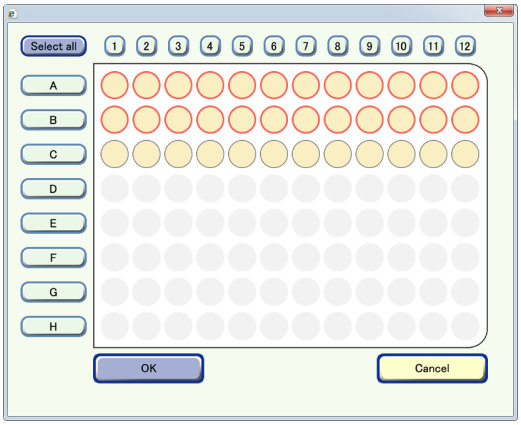
Click the target sample to select it.
The selected sample is marked with a red frame.

Clicking the Select all button selects or unselects all samples.

Clicking one of the vertical alphabet buttons selects all samples in that row. Clicking one of the horizontal number buttons selects all samples in that column.

When the selected sample is clicked again, the selection is canceled.

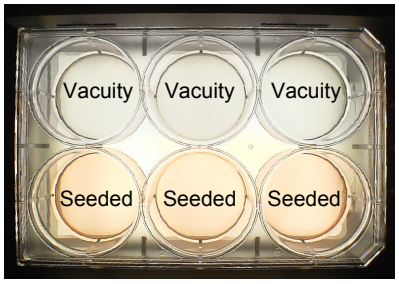
Click the OK button to apply the selection and reopen the Observation condition setting window.



Well plate sample selection window (96-well)

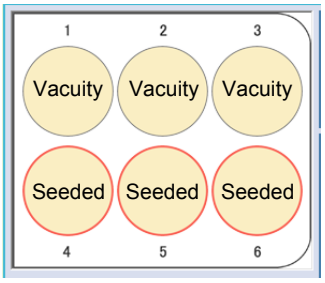
If a well plate is used and the selected samples contain an empty well on which cells are not seeded, autofocus on other wells may not work correctly.

Because images may become out of focus, exclude empty wells before selecting samples and setting the observation conditions.



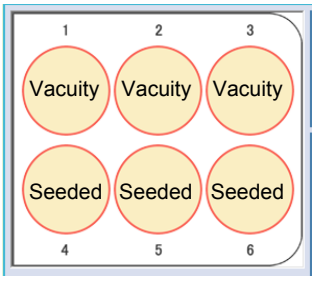
Well plate

Good



Selecting only wells on which cells are seeded

Not good



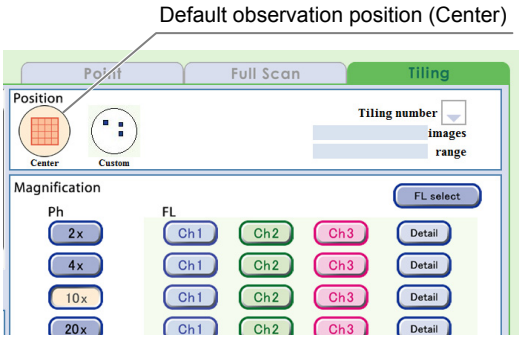
Selecting wells including empty wells

(8) Select the observation position.

Select the default observation position (Center) or the custom observation point (Custom).

a. When Center is selected

Autofocus is performed at the center of the entire sample and tiling capture is performed.



Observation condition setting window

a-1. Select a magnification to be used for scheduled observation.

Multiple magnifications cannot be selected for Tiling observation.

The figure on the right shows an example with 10x selected.

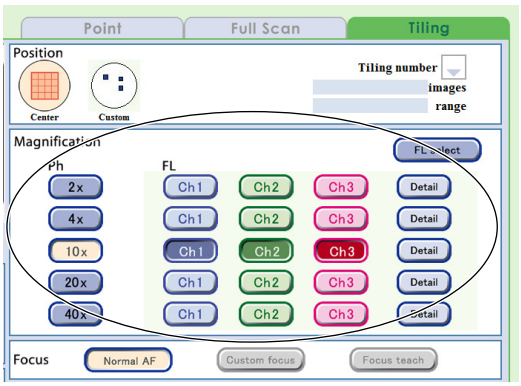
To use the default settings of the magnification and the observation position, click the Default button.

a-2. To capture the fluorescence image, click the FL channel button for the selected observation magnification.

To change the exposure conditions for capturing fluorescence images, click the Detail button. For details, see Section 3.4.2.4, “Setting exposure conditions for fluorescence images.”

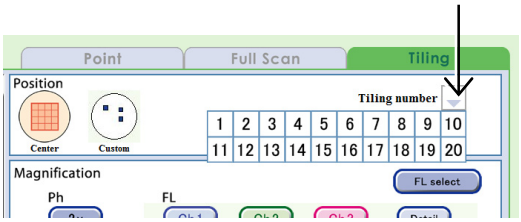
When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used can be changed to the added fluorescence filter channels (Ch4, Ch5). For details, see Section 3.4.2.5, “Changing the fluorescence channel (optional).”

When the optional Fluorescence unit is not connected, the Channel button is disabled.



a-3. When using Center, set the tiling area in the Tiling number field.

Select a tiling area from the number selection box showing a number from 1 to 20 which is displayed by clicking the Tiling number field. (Selecting 5 captures 25 images in a 5×5 grid.)

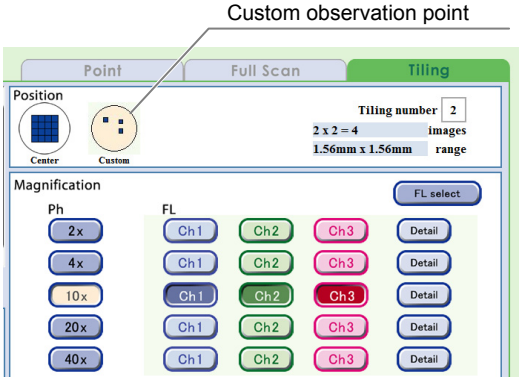


b. When Custom is selected

Autofocus is performed on each tiling observation area registered in the Full Scan image display window and tiling capture is performed.

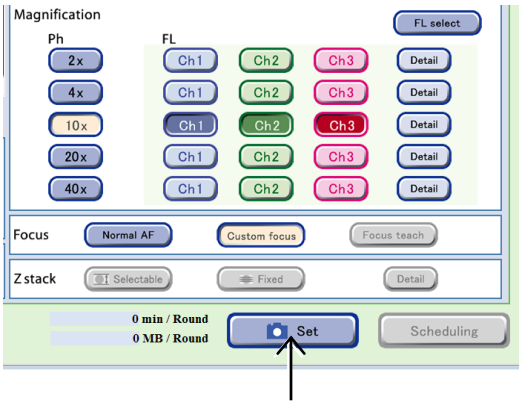
When using Custom, the area to be captured must be registered as a Tiling observation area in advance. (See steps (1) to (3).)

When Custom is selected, the magnification and FL channel cannot be changed in the Observation condition setting window. The magnification when the tiling observation area is set in the Full Scan image display window is used.



(9) To specify the selected observation setting, click the Set button.

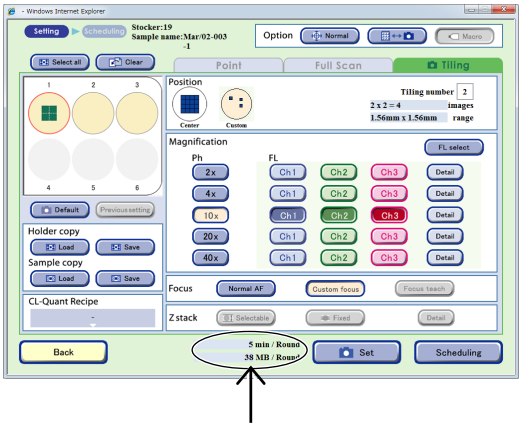
The observation setting is set up for the selected sample.



Samples set for scheduled observations are displayed as shown in the figure on the right.

The time and data size required for one round of scheduled observation is displayed.

When the observation setting is set, the icon appears on the Observation method selection tab.



The procedure for setting the observation conditions is now complete.

To set schedules next, see Section 3.4.3, "Setting Schedules."

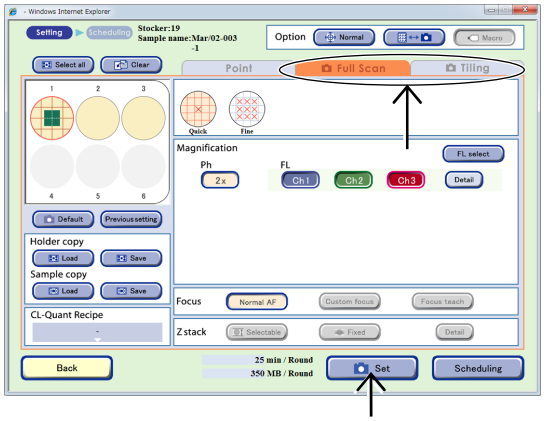
A high magnification image in the specified area and a low magnification image in the entire area can be captured at the same time with one scheduled observation setting by combining Tiling observation that enables high magnification observation and Full Scan observation which performs low magnification observation.

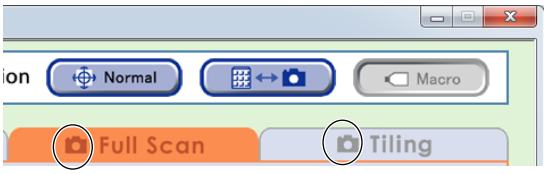
Perform the setting in accordance with the following procedure.

1. Set the scheduled observation condition for Tiling observation and click the Set button.
2. Select the Full Scan observation method selection tab and set the Full Scan observation scheduled observation condition. (See Section 3.4.2.2.)
3. Click the Set button.

   The observation setting is set to the selected sample and the total time and data size required for a round of both scheduled observations is displayed in the time required for observation area.

   The icon appears on the Observation method selection tab for which the observation setting is set.



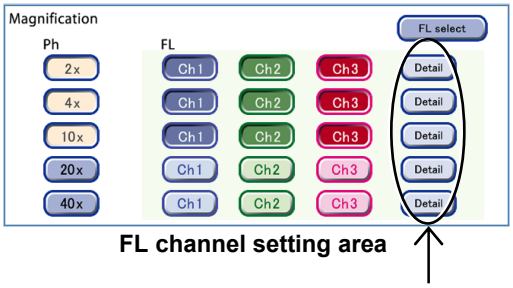


3.4.2.4 Setting exposure conditions for fluorescence images

This section describes how to set the exposure time and brightness of each excitation light source when a fluorescence image is captured.

(1) In the FL channel setting area in the Observation condition setting window, click the Detail button.

Click the Detail button in the FL channel settings area. The FL image exposure conditions setting window appears.



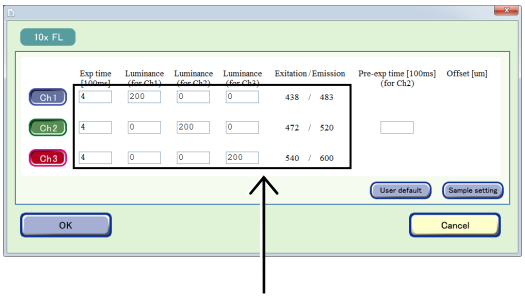
FL channel setting area

(2) Set the exposure time and the intensity of each excitation light source.

Click the entry field to set the exposure conditions (exposure time and intensity of each excitation light source) for each channel.

The unit of the exposure time is [100ms], but up to the 2nd decimal digit (i.e. unit: 1 ms) can be entered.
The maximum value of the intensity of excitation light source is 240.

When multiple samples are selected, no value is displayed for each entry field.
The registered exposure conditions for a sample are used as the default exposure conditions.

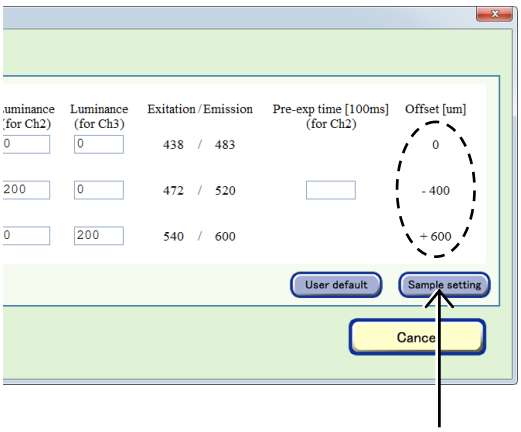


FL image exposure conditions setting window

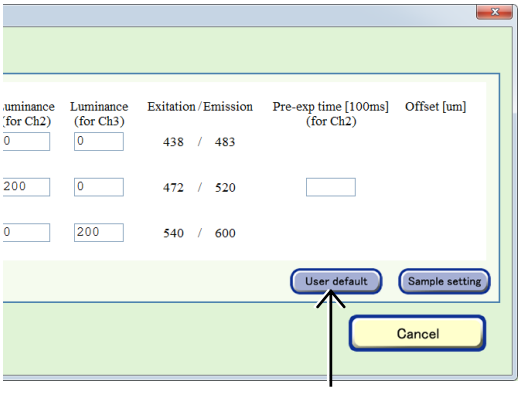
When the Sample setting button is clicked, the registered exposure conditions are applied. Exposure conditions are registered in live observation. For details on the procedure for registering exposure conditions, see the “BioStation CT Ver. 3.8 Instructions.”

When multiple samples are selected, if the exposure conditions for only one of the selected samples have been registered, the registered values are applied when the Sample setting button is clicked.

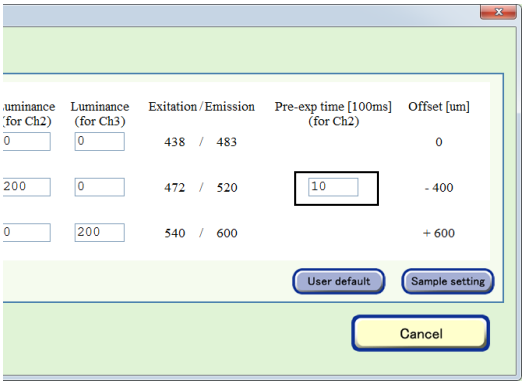
In addition, when Z position correction from a phase contrast image for each channel is registered on the FL-Z/Offset tab in the FL live observation window, the registered values are loaded to the Offset [um] area of each channel.



When the User default button is clicked, the default values specified with the environmental settings are applied. For details on setting the default values of the exposure conditions for each user, see Chapter 4, “Environmental Settings.”



(3) If a sample has a strong autofluorescence signal at Ch2 (GFP), set a fluorescence pre-exposure.



Some samples including cells and medium have an autofluorescence which becomes apparent especially when they are observed near the GFP fluorescence wavelength. The autofluorescence is likely to be subject to photobleaching faster than the fluorescent molecules to be observed. Fluorescence illumination immediately before image acquisition can minimize the influence of the autofluorescence on the captured image.

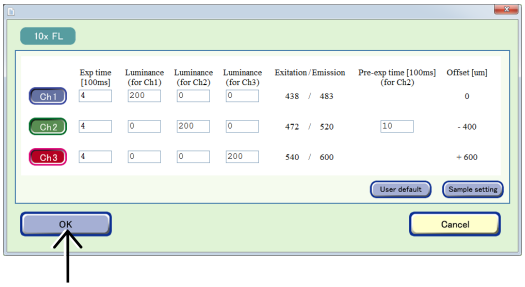
Enter the exposure time in the Pre-exp time field.

The unit of the exposure time is [100ms], but up to the 2nd decimal digit (i.e. unit: 1 ms) can be entered.

> Set the exposure time of fluorescence pre-exposure longer than the actual exposure time of capturing.
>
> Note that fluorescence fades and becomes less visible by setting a too long fluorescence pre-exposure time.

(4) Click the OK button.

The Observation condition setting window appears again.



When a channel is selected for fluorescence observation, the observation magnification button is automatically selected. When fluorescence observation is selected, phase contrast images are always captured as a set. When the selected observation magnification button is cancelled, any selected channel for fluorescence observation is also cancelled.

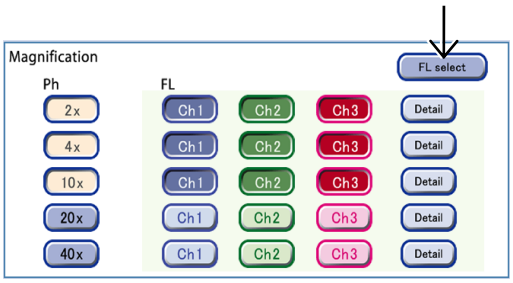
3.4.2.5 Changing the fluorescence channel (optional)

When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be used when setting scheduled observation conditions can be changed to the added fluorescence filter channels (Ch4, Ch5).

Follow the procedure below to change the fluorescence channel to be used.

(1) Click the FL select button in the FL channel setting area of the Observation condition setting window.

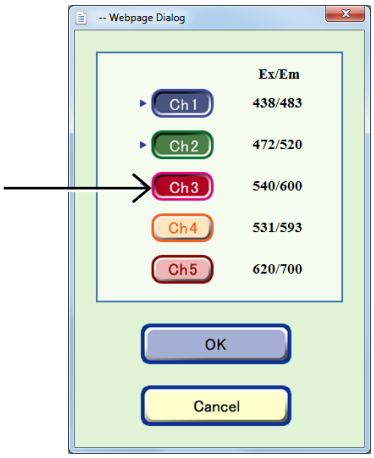
The FL channel selection window appears.



FL channel setting area

(2) Select the button for the fluorescence channel not to be used.

The channel is deselected and the surface becomes convexed.



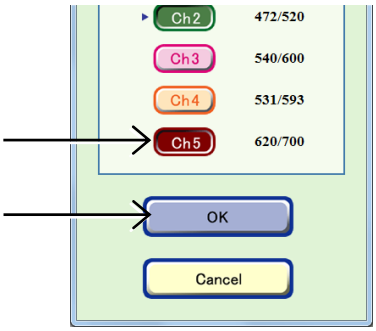
FL channel selection window

(3) Select the desired fluorescence channel button.

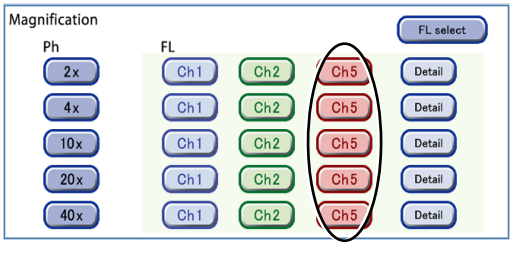
The channel is selected and the surface becomes concaved.

(4) Click the OK button.

The Observation condition setting window appears again.



The selected channel is applied to the FL channel setting area.



FL channel setting area

3.4.3 Setting Schedules

3.4.3.1 Setting schedules for each sample

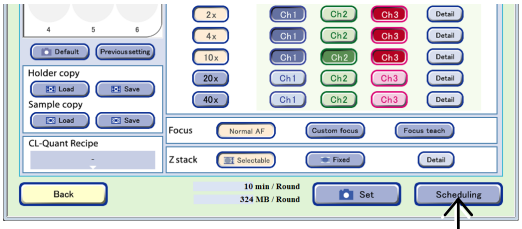
This section describes the procedure for setting a schedule for each sample after setting scheduled observation conditions in Section 3.4.2, “Setting Scheduled Observation Conditions.”

(1) Open the Scheduling window.

Click the Scheduling button in the Observation condition setting window.

The Scheduling window appears.

The schedule can be set by operating the Scheduling window as shown below.



Observation condition setting window

Scheduling window
(For the Normal mode without the Timelapse setting)

* The function called “Interval setting” in BioStation CT Ver.3.3 and earlier is now referred to as “Timelapse setting.” The button name has been changed to the Timelapse button.

No.	Name	Function
(1)	Information area	This area displays the stocker number of the stocker that contains the selected sample and sample name.
(2)	Edit area	Enter the experiment name for schedule observation.
(3)	Select holder area	Set schedules of samples in multiple holders with one schedule setting. **Select button:** Display the Holder selection window which allows selection of multiple samples for scheduled observation. **All button:** Enable batch setting for scheduled observation for samples with same type of vessel and same user. (See Section 3.4.3.2.)

No.	Name	Function
(4)	Set timelapse area	Timelapse is set here. **Timelapse button:** Select to set a time-lapse. When the Stage exclusive mode is used, this button is always selected. **Interval area:** Set the observation interval (time from the start of the first Round until the start of the next Round). Click the h or m Interval field, and then enter an interval by hours in the h field and by minutes in the m field. **Rounds tab:** Set the repetition of the observation. Enter the number, then click the Set button. **Duration tab:** Set the desired observation period. Enter the duration in the d, h, and m entry fields, then click the Set button. **Total time:** Display the total observation period of this scheduled observation experiment in increments of 5 minutes under the conditions for which Timelapse was set. **Data size:** Display the total data size of this scheduled observation experiment under the conditions for which Timelapse was set. **Stay on stage button:** Hold the sample under live observation on the stage without returning it to the stocker, until scheduled observation starts. (Enabled only during live observation) For details, see “b. When the Timelapse setting is assigned in the Normal mode” or “c. When the stage exclusive mode is assigned” in subsequent pages.
(5)	Back button	Click this button to return to the Observation condition setting window.
(6)	Finish button	Click this button to finish the setting for schedules.
(7)	Start now button	Click this button to start scheduled observation immediately.
(8)	Schedule setting field	Periods displayed in white have no schedule. Click a period for a scheduled observation to set the schedule.
(9)	Clear button	Click this button to clear the registered period displayed in yellow.
(10)	Displayed days switch button	Click this button to switch the number of days (1 or 3) displayed in a single screen.

(2) Set the schedule.

The procedure for setting the scheduled setting differs in the following cases:

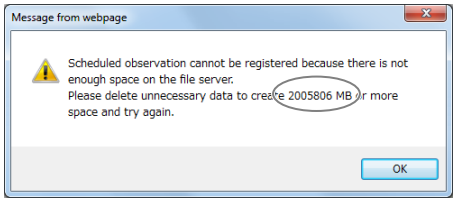
a. When the Timelapse setting is not assigned in the Normal mode
b. When the Timelapse setting is assigned in the Normal mode
c. When the Stage exclusive mode is assigned
d. When immediately starting scheduled observation (with no timelapse set)
e. When immediately starting scheduled observation (with timelapse set)

When schedule cannot be set:

If sufficient space to save the observation data cannot be allocated on the file server, an Insufficient data space warning dialog box is displayed during scheduled observation setting. When this dialog is displayed, more space must be allocated by deleting unnecessary observation data. (To delete the observation data, it is necessary to log in as an administrator.)

In addition, it is recommended that the data space circled in the figure as shown on the right be written down before starting schedule data deletion. The data space displayed in the dialog is the estimated amount to be deleted.

See Section 5.2, “Deleting the Observation Data” for details.



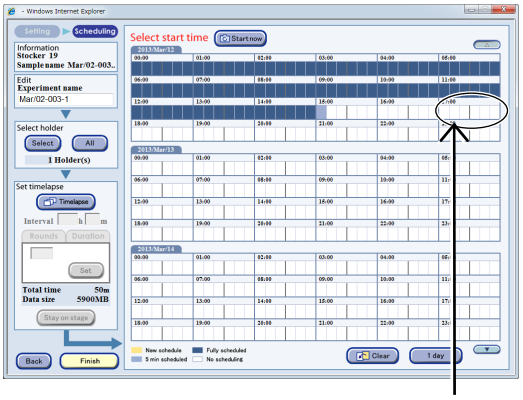
Insufficient data space warning dialog box

The following describes each case.

a. When the Timelapse setting is not assigned in the Normal mode

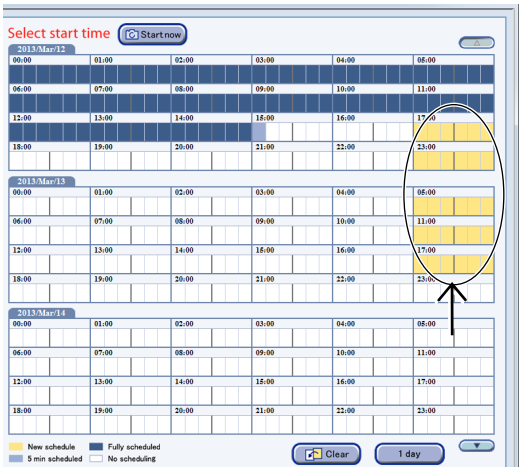
a-1. Click a period displayed in white on the Schedule setting area to set the start time of the observation.

Multiple schedules can be set.
The scheduled period is displayed in units of 10 minutes and colored in yellow.



The figure on the right shows an example of multiple scheduled observations set at 6 hours intervals from 17:00.
To set 55 minutes for the scheduled observation time, click the period of 17:00. The one hour period from 17:00 is displayed in yellow.

To cancel the schedule setting, click the period to be canceled again or click the Clear button (to clear all registrations).



In the example in the above figure, the period from 17:00 can be clicked even if a 5 minute schedule is already registered between 17:00 and 17:10.
In this case, the set schedule starts at 17:05. In other words, if a schedule is registered already, a new schedule may not start at the exact time (17:00).
All schedule settings can be verified in the Observation condition setting window.

Go to step (3).

b. When the Timelapse setting is assigned in the Normal mode

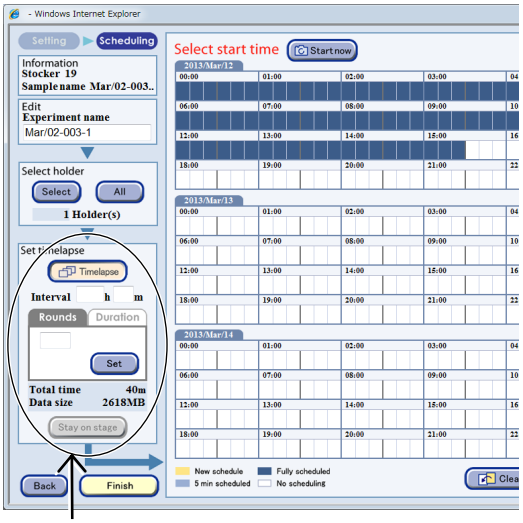
b-1. Click the Timelapse button.

b-2. Click the Interval field (the h field and the m field of the Interval field), and then enter the interval by hours in the h field, and by minutes in 5 minute increments in the m field.

A time shorter than the observation time required per one round cannot be entered.

b-3. Enter the number of rounds (Rounds tab) or the desired observation period (d, h, m on the Duration tab), and then click the Set button.

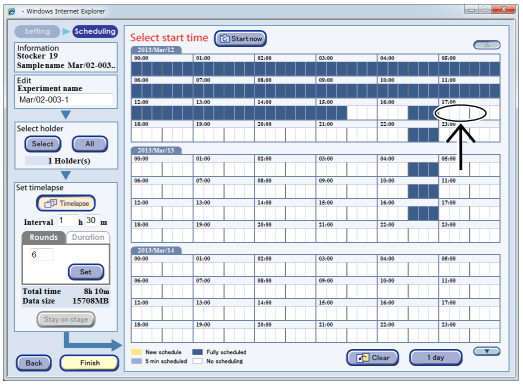
The observation period (Total time) is displayed in 5 minute intervals under the condition for which Timelapse was set.



The Scheduling window (When the Timelapse setting is assigned in the Normal mode)

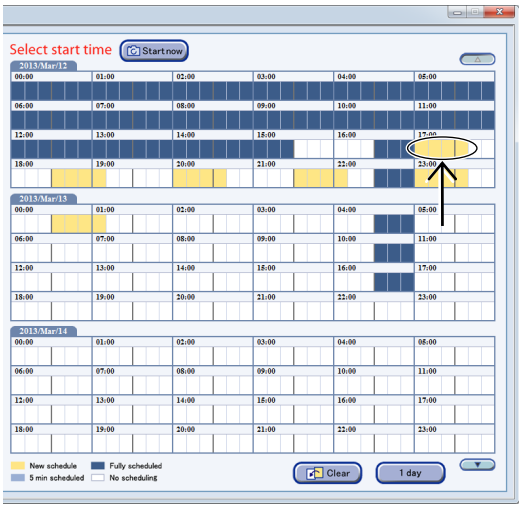
b-4. To set the time for scheduled observation, in the Schedule setting field click the time zone (white part) in which you desire scheduled observation to start.

Multiple schedules can be set.
The scheduled period is displayed in units of 10 minutes and colored in yellow.



> The start time of the timelapse cannot be set within the period during which scheduled observation has already been scheduled. However, whether to skip or delay the schedule can be selected if the ongoing Round falls at the same time.

The figure on the right shows an example of Timelapse setting in which scheduled observation is set to a Round (40 min), Interval (1 h 30 m) and Rounds (6) from 17:00.



Note that a new schedule cannot be registered if the observation time for an already-scheduled observation overlaps even for one interval. In the example in the figure on the right, the time 17:30 cannot be selected since a scheduled observation has already been registered for 22:30. Note that the entire schedule is invalid for registration of a scheduled observation in this case.

To cancel the schedule setting, click the period to be canceled again or click the Clear button (to clear all registrations).

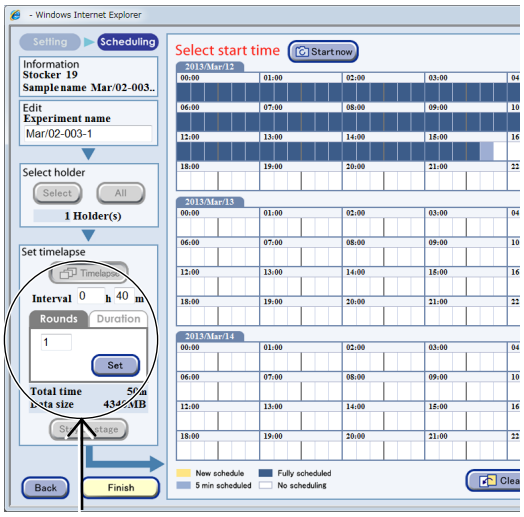
> Timelapse cannot be set when the Focus teach button is clicked in the Observation condition setting window.

Go to step (3).

c. For Stage exclusive mode observation

c-1. To change the observation interval, click the h or m Interval field, and then enter an interval by hours in the h field and by minutes in the m field.

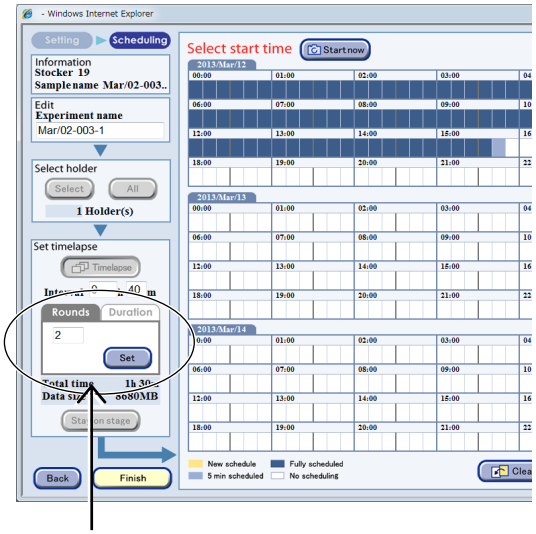
A time shorter than the observation time required per one round cannot be entered.



Scheduling window
(For Stage exclusive mode)

c-2. To change the number of rounds to repeat, enter a value in d, h, and m on the Rounds tab, and then click the Set button. To change the desired observation period, enter a value in d, h, and m on the Duration tab, and then click the Set button.

The observation period (Total time) is recalculated, and then the sum of the 5 minute intervals is displayed.
When the observation period is recalculated, the load time is not included in the observation period per Round in the Stage exclusive mode. The load time is then added.



c-3. To set the time for scheduled observation, in the Schedule setting field click the time zone (white part) in which you desire scheduled observation to start.

Multiple schedules can be set. The scheduled period is displayed in units of 10 minutes and colored in yellow.

The figure on the right shows an example of Timelapse settings with a 40 min/round, Interval of 40 m, 2 Rounds and 17:00 as the start time of the scheduled observation.

To cancel the schedule setting, click the period to be canceled again or click the Clear button (to clear all registrations).

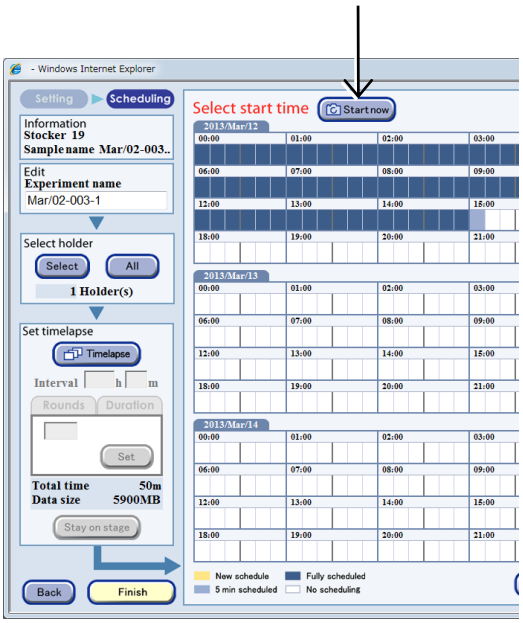
Go to step (3).

d. When immediately starting scheduled observation (with no timelapse set)

d-1. Click the Start now button.

A scheduled observation immediate start confirmation dialog box appears.

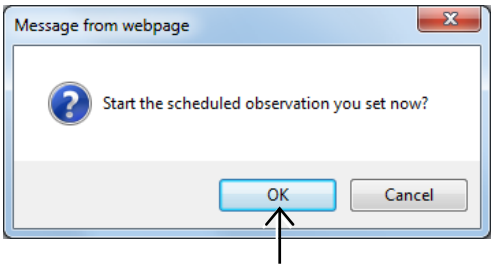
> If a scheduled observation is scheduled in the immediate future, an already registered schedule has priority. After the registered scheduled observation completes, the schedule set with the Start now button is executed.



Scheduling window

d-2. Click the OK button to close the dialog box.

The Scheduling window appears and the scheduled observation starts.



Confirmation dialog box

Go to step (3).

e. When immediately starting scheduled observation (with timelapse set)

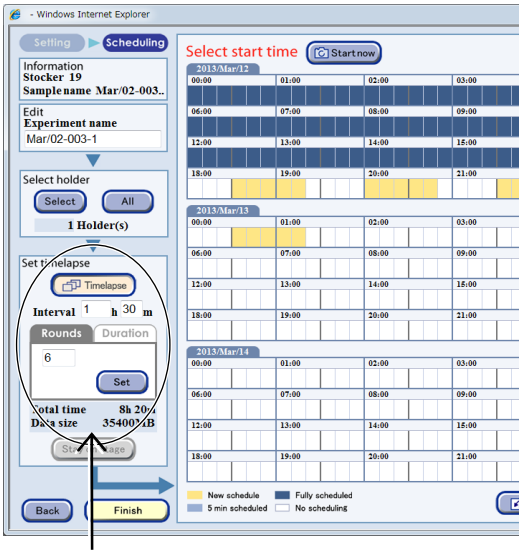
e-1. Click the Timelapse button.

e-2. Click the h or m Interval field, and then enter an interval by hours in the h field and by minutes in 5-minute increments in the m field.

A time shorter than the observation time required per one round cannot be entered.

e-3. Enter the number of rounds (Rounds tab) or the desired observation period (d, h, m on the Duration tab), and then click the Set button.

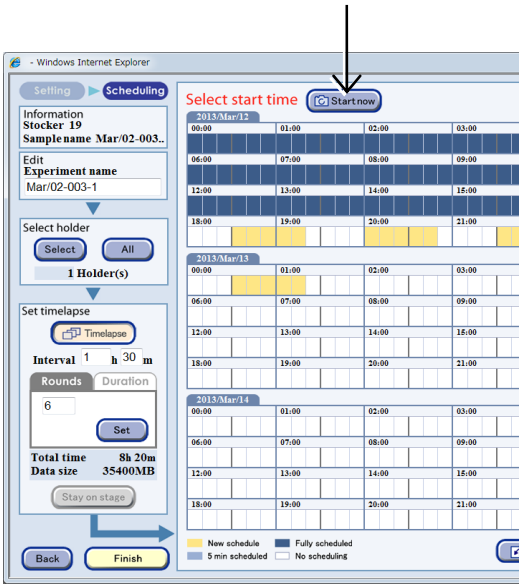
The observation period (Total time) is displayed in 5 minute intervals under the condition for which Timelapse was set.



Scheduling window

e-4. Click the Start now button.

A scheduled observation immediate start confirmation dialog box appears.

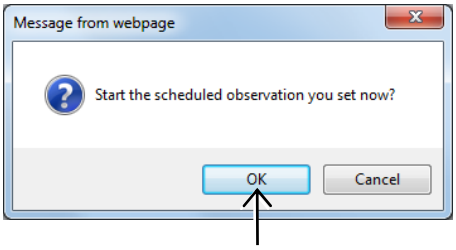


> Timelapse cannot be set if the Focus teach button is clicked in the Observation condition setting window.

> The start time of the timelapse cannot be set within the period during which scheduled observation has already been scheduled. However, whether to skip or delay the schedule can be selected if the time of the ongoing Round falls at the same time.

e-5. Click the OK button to close the dialog box.

The Scheduling window appears and the scheduled observation starts.

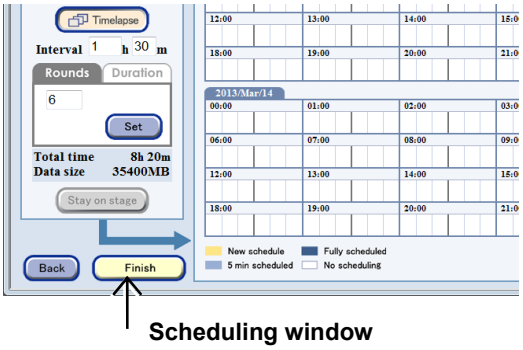


Confirmation dialog box

(3) Click the Finish button.

The Scheduling window closes.

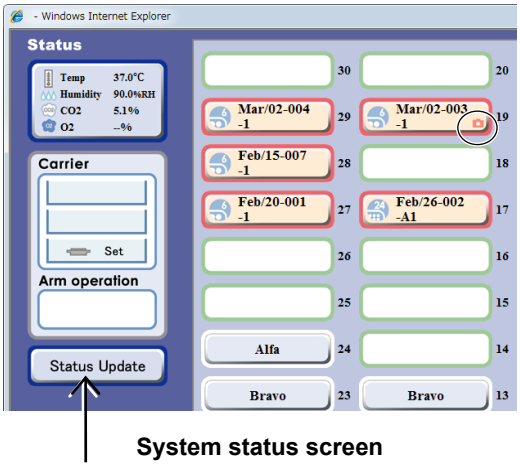
> The registered schedule setting is deleted if a sample is unloaded with “No return” selected as the purpose of unloading.
>
> If [Medium change] is selected as the purpose of unloading, the registered schedule setting is preserved even though a sample is unloaded.



Scheduling window

The scheduled observation has now been scheduled, and the System status screen is displayed.

Click the Status Update button to update the window. A camera symbol appears on the corresponding stocker button on the System status screen.



System status screen

The procedure for setting scheduled observation is now complete.

3.4.3.2 Batch setting schedules to multiple samples

This section describes the procedure for setting schedules of samples in multiple holders with one schedule setting.

When culturing and observing a large number of samples, scheduled observation can be set efficiently by batch scheduling.

Schedules can be set in batches either on all holders for the same type of vessel within a stocker or on selected holders.

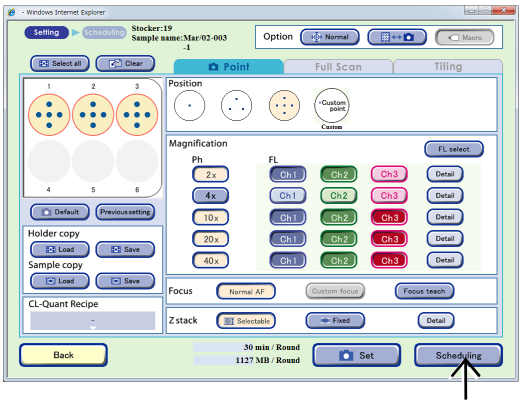
Batch setting for all vessels of the same type within a stocker

(1) Set scheduled observation conditions in the Observation condition setting window.

For details, see Section 3.4.2, “Setting the Schedule Observation Conditions.”

(2) Click the Scheduling button.

The Scheduling window appears.

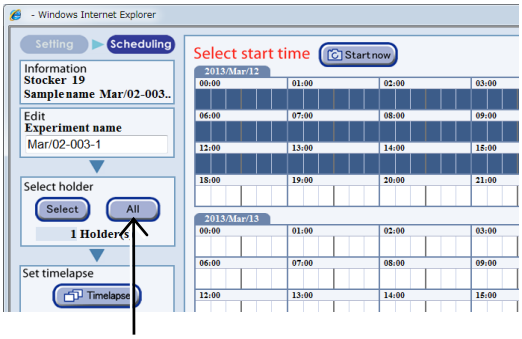


Observation condition setting window

(3) Click the All button.

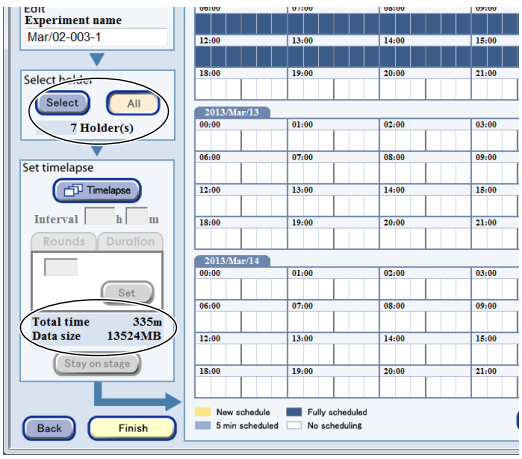
Click this before setting the time table.

When the All button is clicked, the same schedule is applied to all vessels of the same type within the stocker.



Scheduling window

For the observation setting in the example on the right, if there are seven holders that contain the same type vessels for the same user, a 30 min/Round schedule is applied to the seven holders and the total required observation time is displayed as 335 min (30 min × 7).

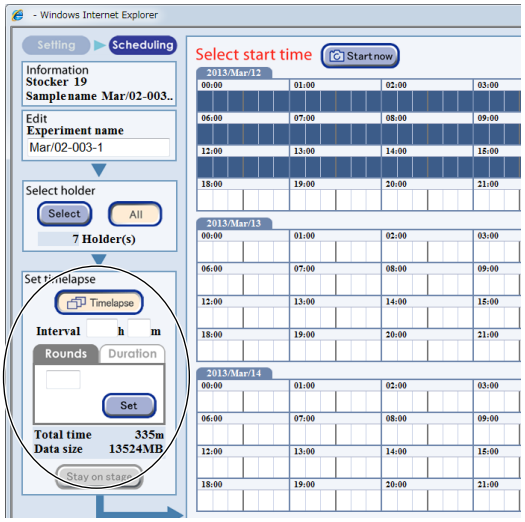


(4) Set the time table.

Go to step (5) if timelapse is not set.

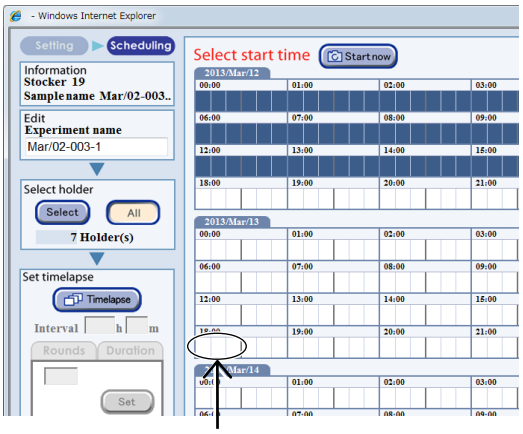
To configure timelapse settings, click the Timelapse button and then specify the observation interval (Interval area), the number of repetitions (Rounds tab), and the desired observation period (Duration tab).

For details, see Page 64, “b. When the Timelapse setting is assigned in the Normal mode.”

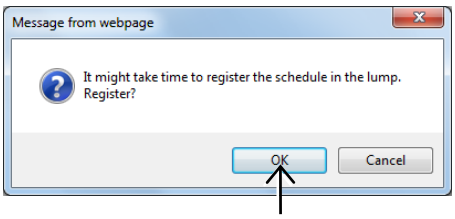


(5) To set the time for scheduled observation, in the Schedule setting field click the time zone (white part) in which you desire scheduled observation to start.

A confirmation dialog box appears.



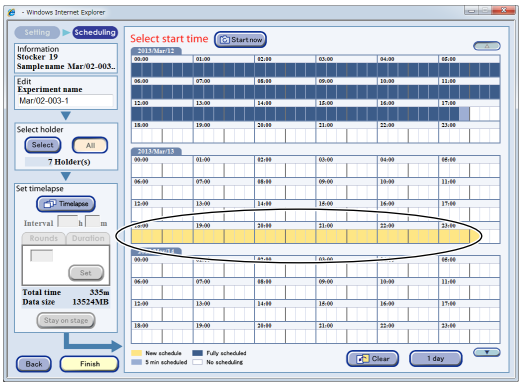
(6) Click the OK button.



Confirmation dialog box

A registered schedule is shown in yellow.

Select other periods for registration if necessary.



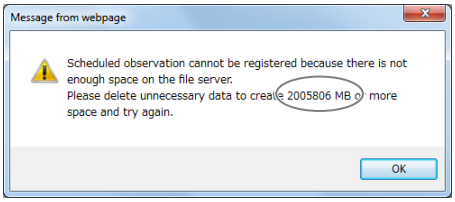
Scheduling window

When schedule cannot be set:

If sufficient space to save the observation data cannot be allocated on the file server, an Insufficient data space warning dialog box is displayed during scheduled observation setting. When this dialog is displayed, more space must be allocated by deleting unnecessary observation data. (To delete the observation data, it is necessary to log in as an administrator.)

In addition, it is recommended that the data space circled in the figure as shown on the right be written down before starting schedule data deletion. The data space displayed in the dialog is the estimated amount to be deleted.

See Section 5.2, “Deleting the Observation Data” for details.

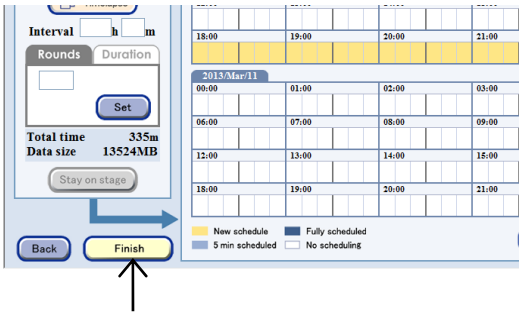


Insufficient data space warning dialog box

(7) After registration, click the Finish button.

The Scheduling window closes.

Batch set scheduled observations can be confirmed in the Schedule confirmation window.
For details, see Section 3.4.3.3, “Checking batch set scheduled observations.”

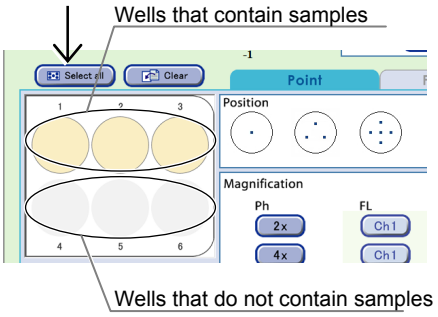


The registered schedule setting is deleted if a sample is unloaded with “No return” selected as the purpose of unloading.

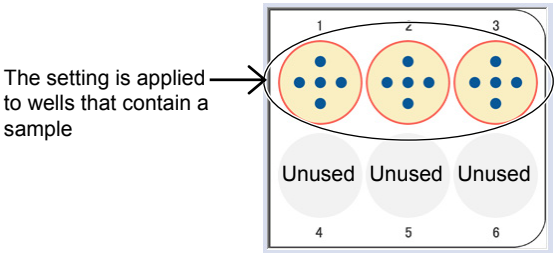
If [Medium change] is selected as the purpose of unloading, the registered schedule setting is preserved even though a sample is unloaded.

When the scheduled observation condition is set for a holder that has an unused well or unused part that does not contain samples, the setting is not applied to the unused well or unused part even if all samples are selected with the Select all button.

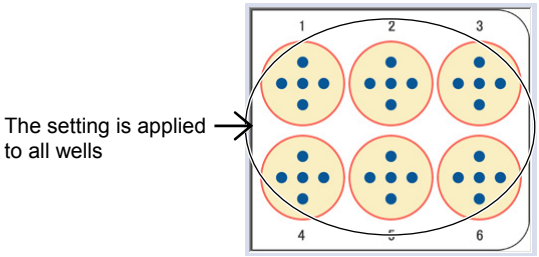
However, if scheduled observation is set in a batch for multiple holders based on that holder, the setting is applied to all samples even if there are holders without an unused well or unused part.



Observation condition setting window



Holder with 3 wells out of 6 used



Holder with all 6 wells used

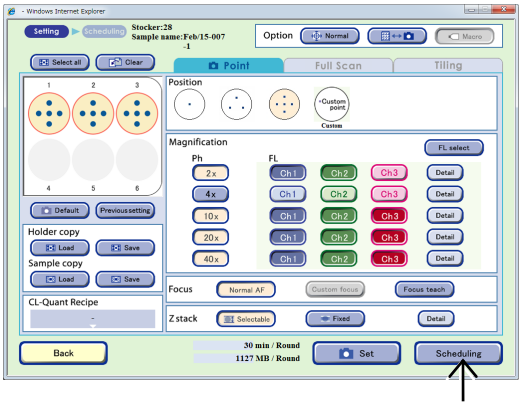
Batch setting to selected holders

(1) Set scheduled observation conditions in the Observation condition setting window.

For details, see Section 3.4.2, “Setting the Schedule Observation Conditions.”

(2) Click the Scheduling button.

The Scheduling window appears.

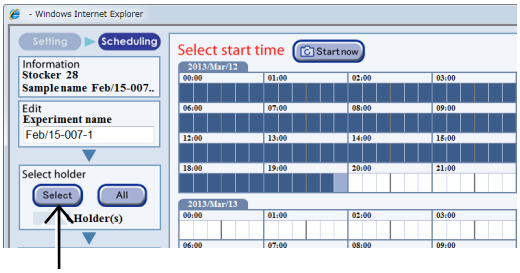


Observation condition setting window

(3) Click the Select button.

The Holder selection window appears.

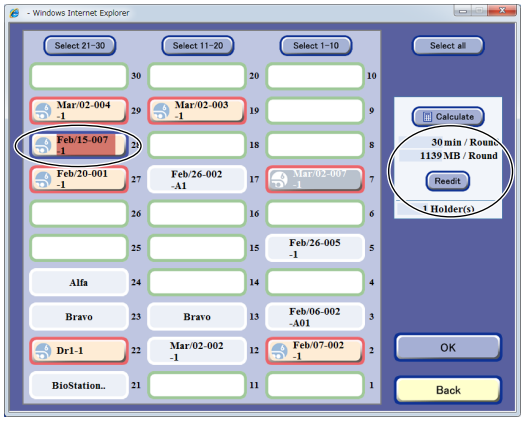
Click the Select button before setting the time table.



Scheduling window

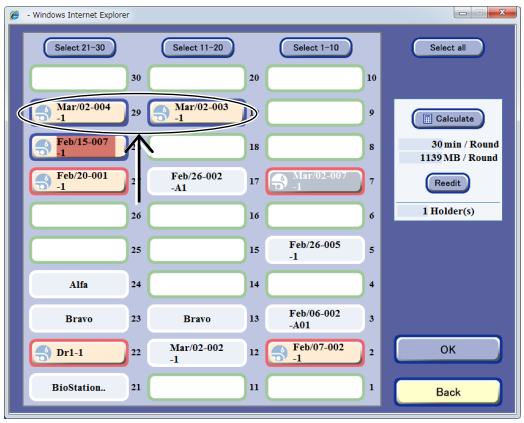
Selected holders are displayed with a blue frame. Selectable holders are displayed with a red frame.

The time required for observation and the number of observation setting holders can be set on the right side of the window.



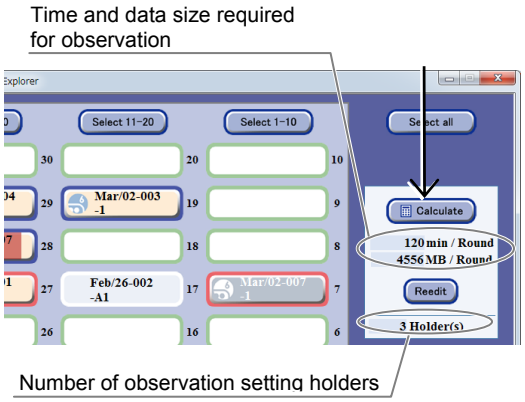
Holder selection window

(4) Select a stocker to apply the scheduled observation.



(5) Click the Calculate button.

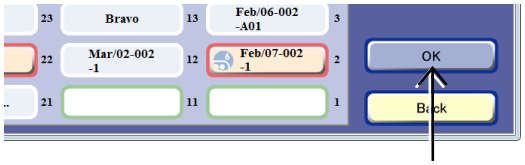
The total time required for the observation and the number of observation setting holders for the selected holders will be updated.



Holder selection window

(6) Click the OK button.

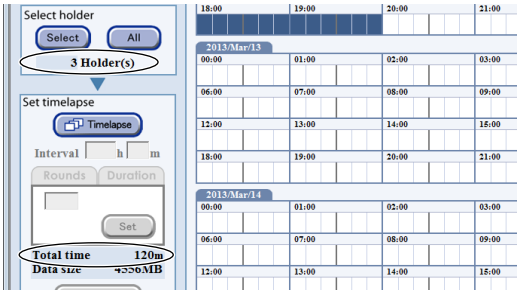
The Scheduling window appears.



Holder selection window

(7) The observation setting is applied to the selected holder.

For the observation setting in the example on the right, three holders are selected, and a 30 min/Round schedule is applied to those three holders, so the total required observation time is displayed as 120 min (30 min × 3).



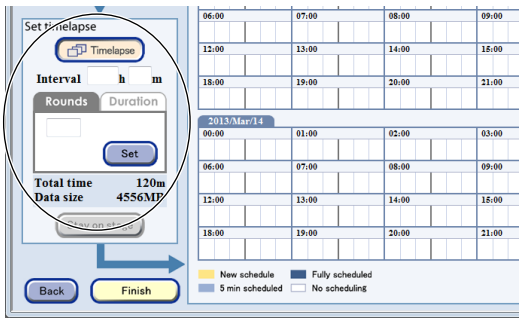
Scheduling window

(8) Set the time table.

Go to step (9) if timelapse is not set.

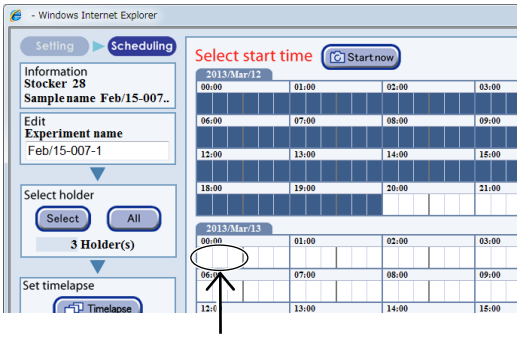
To configure Timelapse settings, click the Timelapse button and then specify the observation interval (Interval area), the number of repetitions (Rounds tab), and the desired observation period (Duration tab).

For details, see Page 64, “b. When the Timelapse setting is assigned in the Normal mode.”

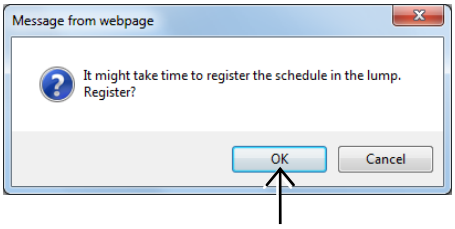


(9) To set the time for scheduled observation, in the Schedule setting field click the time zone (white part) in which you desire scheduled observation to start.

A confirmation dialog box appears.



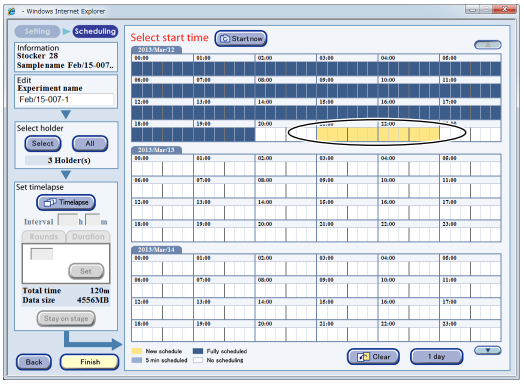
(10) Click the OK button.



Confirmation dialog box

A registered schedule is shown in yellow.

Select other periods for registration if necessary.



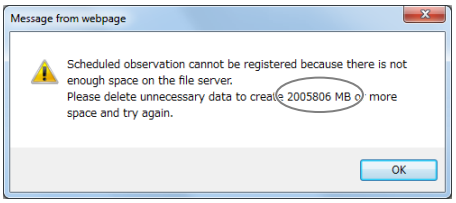
Scheduling window

When schedule cannot be set:

If sufficient space to save the observation data cannot be allocated on the file server, an Insufficient data space warning dialog box is displayed during scheduled observation setting. When this dialog is displayed, more space must be allocated by deleting unnecessary observation data. (To delete the observation data, it is necessary to log in as an administrator.)

In addition, it is recommended that the data space circled in the figure as shown on the right be written down before starting schedule data deletion. The data space displayed in the dialog is the estimated amount to be deleted.

See Section 5.2, “Deleting the Observation Data” for details.



Insufficient data space warning dialog box

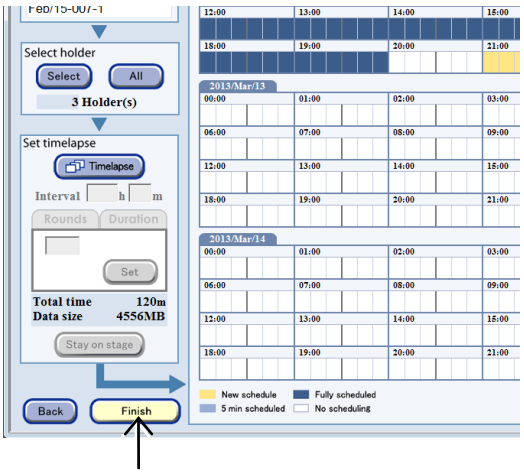
(11) After registration, click the Finish button.

The Scheduling window closes.

Batch-scheduled scheduled observations can be confirmed in the Schedule confirmation window. For details, see Section 3.4.3.3, “Checking batch set scheduled observations.”

The registered schedule setting is deleted if a sample is unloaded with “No return” selected as the purpose of unloading.

If [Medium change] is selected as the purpose of unloading, the registered schedule setting is preserved even though a sample is unloaded.

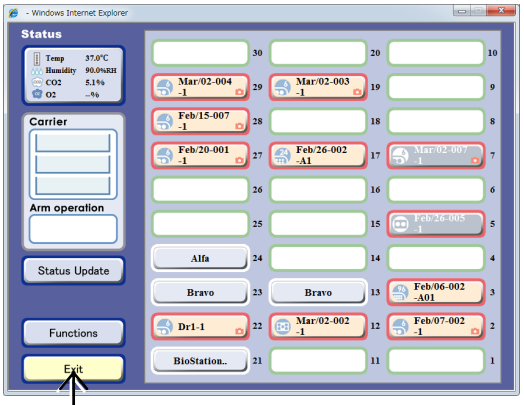


3.4.3.3 Checking batch set scheduled observations

Check batch set scheduled observations by holder or sample.

(1) Click the Functions button on the System status screen.

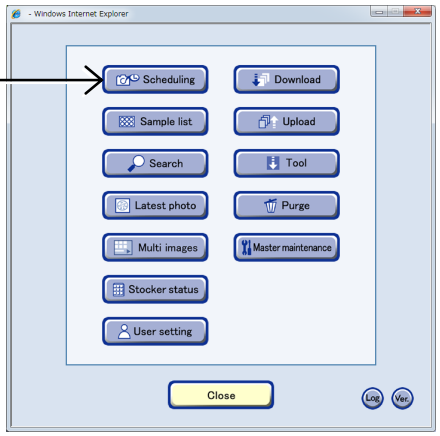
The Functions window appears.



System status screen

(2) Click the Scheduling button.

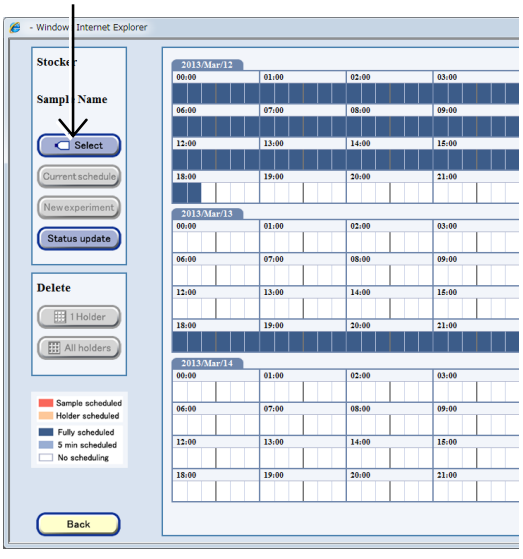
The Schedule confirmation window appears.



Functions window

(3) Click the Select button.

The Sample selection window appears.

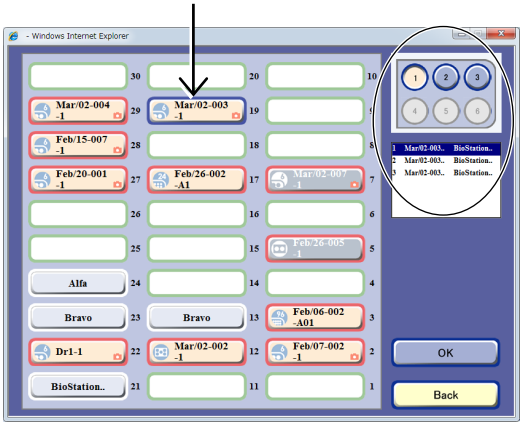


Schedule confirmation window

(4) Click the button of the stocker that contains the sample for which scheduled observations are to be confirmed.

Selected holders are displayed with a blue frame. Selectable holders are displayed with a red frame.

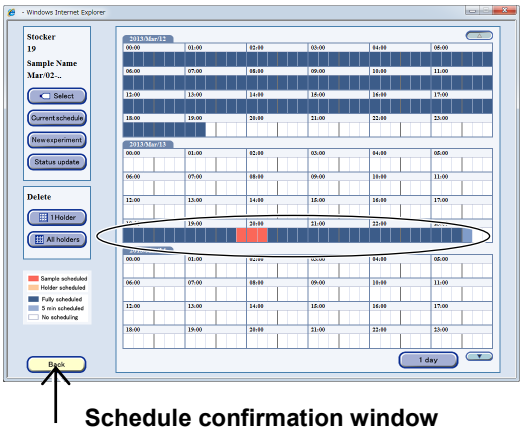
To confirm a schedule for one sample, click to select the sample on the Holder map or in the Sample list.



Sample selection window

In the Schedule confirmation window, scheduled observations that are scheduled for the selected holder are displayed in red (when an individual sample is selected in the Sample selection window) or in orange (when samples are selected as a holder in the Sample selection window).

The scheduled observations set for the holders of the same type vessels in the stocker selected in the Sample selection window are shown in blue.



Schedule confirmation window

(5) Click the Back button.

The Schedule confirmation window closes.

3.4.4 Saving and Loading Observation Conditions

There are two ways to save capture conditions for scheduled observations; saving the observation conditions of the executed schedule afterward and saving when waiting for execution. The saved capture conditions can be loaded when setting a new scheduled observation.

3.4.4.1 Saving capture conditions for executed scheduled observations

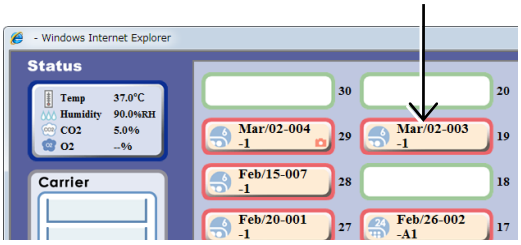
Capture conditions (observation points, observation magnification, number of images of Z stacking, fluorescence, etc.) for the executed scheduled observation can be saved for either a holder or a sample. The X and Y values or X, Y, and Z values are saved for an observation point, whereas the values for the channel, brightness and exposure time are saved for fluorescence conditions.

Also, the capture conditions are saved by holder or by sample. Capture conditions for an entire holder can be saved by selecting a desired holder. Capture conditions for an individual sample can be saved by selecting a desired sample.

(1) Display the Image review window.

1. On the System status screen, click the holder for which the observation conditions are to be saved.

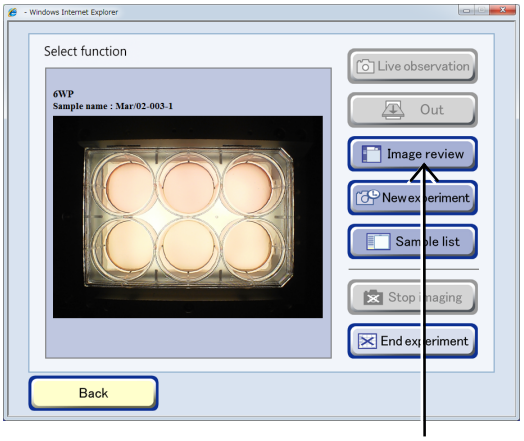
The Sample list window appears.



System status screen

2. Click the Image review button in the Select function window.

The Image review window of the selected sample appears.



Sample list window

(2) Select the observation history in which the capture conditions are to be saved.

In the Image review window, click the icon of the observation history for which capture conditions are to be saved. The Capture conditions confirmation window appears.

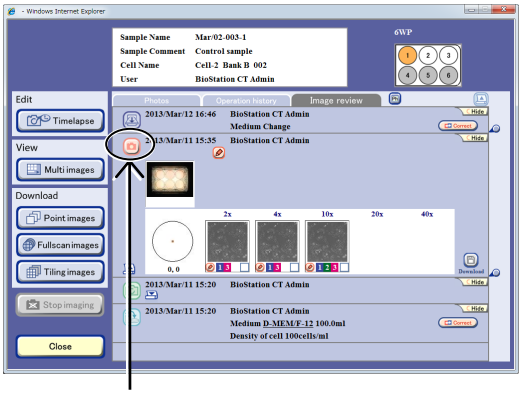


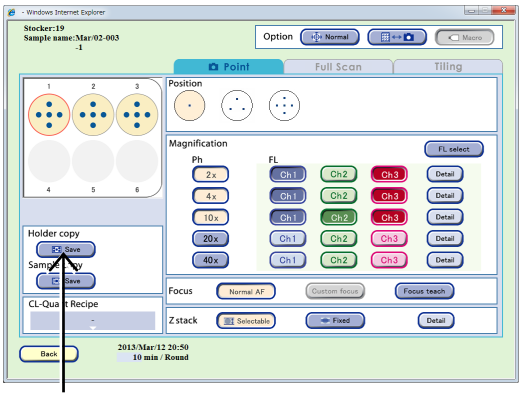
Image review window

(3) Save the capture conditions.

a. Saving capture conditions for each holder

a-1. Click the Save button in the Holder copy area.

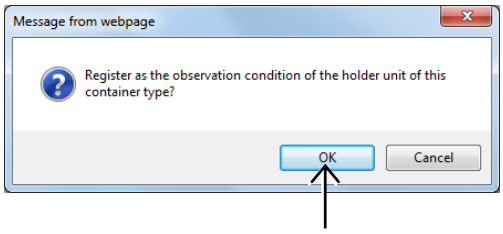
A confirmation dialog box appears.



Capture conditions confirmation window

a-2. Click the OK button to close the dialog box.

Capture conditions are saved for each holder.



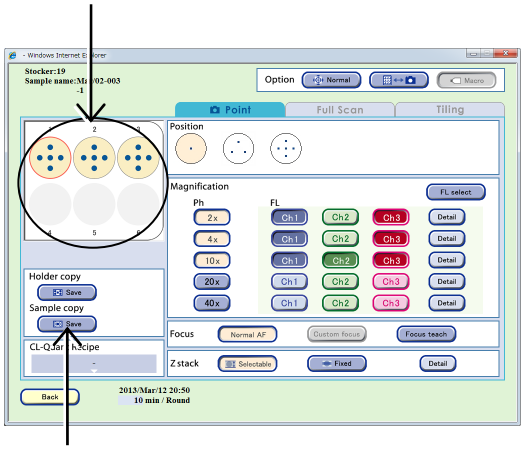
Confirmation dialog box

b. Saving the capture conditions for each sample

b-1. Select a sample.

Select the sample for which capture conditions are to be saved by clicking the sample selection area in the Capture conditions confirmation window.

When a 96-, 48-well plate is used, click the sample selection area to open the respective 96-, 48-well plate sample selection window and then select a sample in the window.



Capture conditions confirmation window

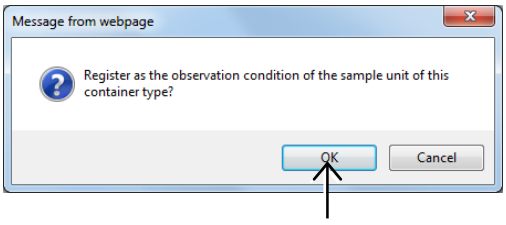
b-2. Save capture conditions.

Click the Save button in the Sample copy area.

A confirmation dialog box appears.

b-3. Click the OK button to close the dialog box.

The capture conditions are saved for each sample.



Confirmation dialog box

3.4.4.2 Saving capture conditions for standby scheduled observations

Capture conditions (observation points, observation magnification, number of images of Z stacking, fluorescence, etc.) for a standby scheduled observation can be saved for either a holder or a sample.

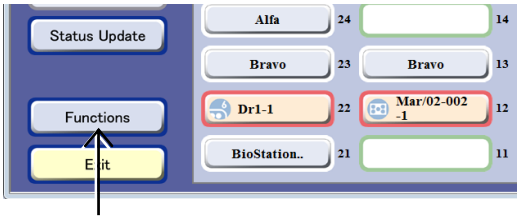
The X and Y values or X, Y, and Z values are saved for an observation point, and values for the channel, brightness and exposure time are saved for fluorescence conditions.

Also, the capture conditions are saved by holder or by sample. Capture conditions for an entire holder can be saved by selecting the desired holder. Capture conditions for an individual sample can be saved by selecting a desired sample.

(1) Display the Schedule confirmation window.

1. Click the Functions button on the System status screen.

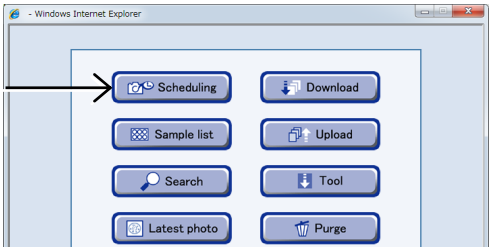
The Functions window appears.



System status screen

2. Click the Scheduling button.

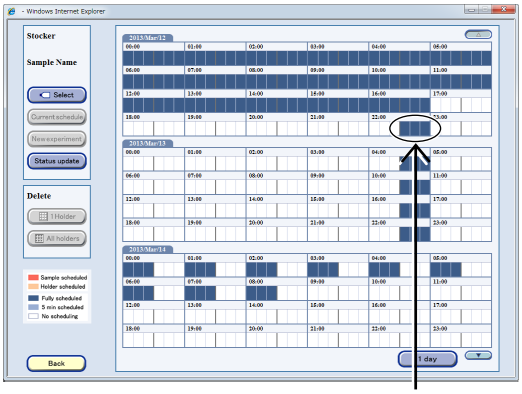
The Schedule confirmation window appears.



Functions window

(2) Select the period of the standby schedule.

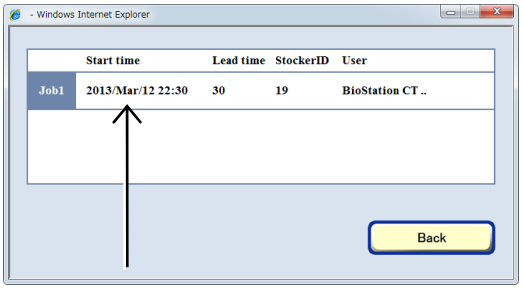
Click the period of the standby schedule in the Schedule confirmation window. The Scheduled observation selection window appears.



Schedule confirmation window

(3) Select the desired observation schedule for which capture conditions are to be saved.

In the Scheduled observation selection window, click the desired observation schedule for which capture conditions are to be saved. The Observation condition setting window appears.



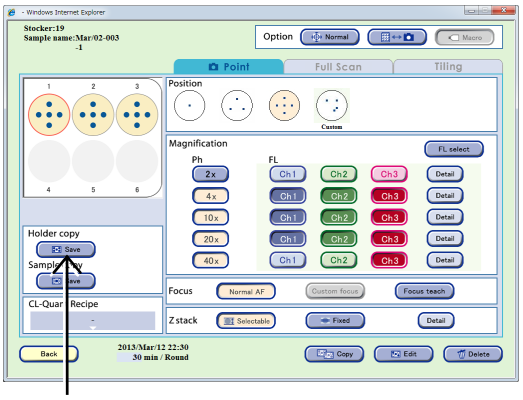
Scheduled observation selection window

(4) Save the capture conditions.

a. Saving capture conditions for each holder

a-1. Click the Save button in the Holder copy area.

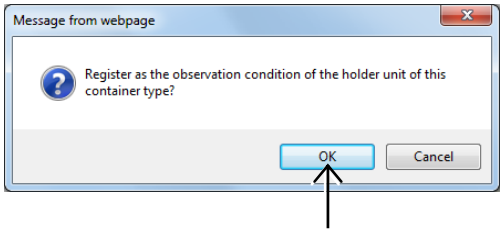
A confirmation dialog box appears.



Capture conditions confirmation window

a-2. Click the OK button to close the dialog box.

Capture conditions are saved for each holder.



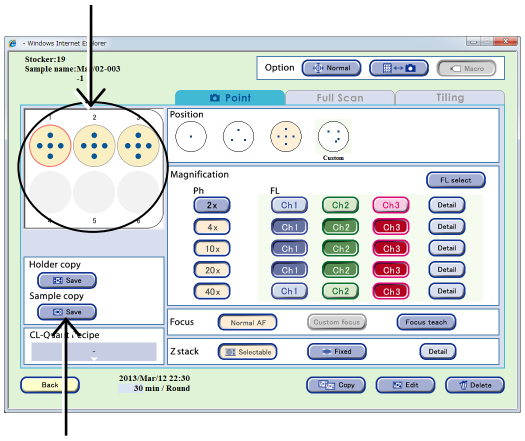
Confirmation dialog box

b. Saving capture conditions for each sample

b-1. Select a sample.

Click the sample selection area on the Capture conditions confirmation window to select a desired sample for which capture conditions are to be saved.

When a 96-/48-well plate is used, click the sample selection area to open the respective 96-, 48-well plate sample selection window and select a sample in the window.



Capture conditions confirmation window

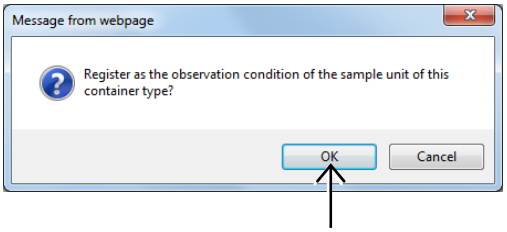
b-2. Save the capture conditions.

Click the Save button in the Sample copy area.

A confirmation dialog box appears.

b-3. Click the OK button to close the dialog box.

The capture conditions are saved for each sample.



Confirmation dialog box

3.4.4.3 Loading saved capture conditions

When setting scheduled observations, the saved capture conditions can be loaded if the culture vessels are the same type.

Capture conditions can be loaded by loading either conditions saved by holder unit or by sample unit.

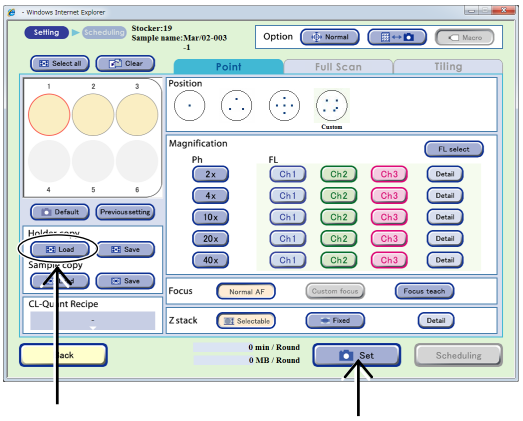
a. Loading capture conditions for each holder

a-1. Click the Load button in the Holder copy area.

Capture conditions saved for a holder are loaded.

a-2. Click the Set button.

Loaded capture conditions are set by holder.



Observation condition setting window

b. Loading capture conditions for each sample

b-1. Select the sample.

In the Sample selection area of the Observation condition setting window, select the sample for which capture conditions are to be set.

When a 96-/48-well plate is used, click the sample selection area to open the respective 96-, 48-well plate sample selection window and select a sample in the window.

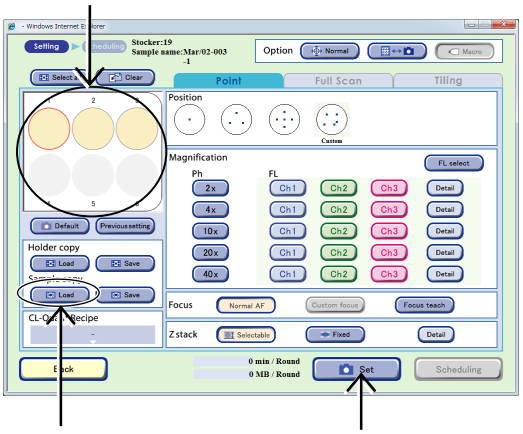
b-2. Click the Load button in the Sample copy area.

Capture conditions saved for a sample are loaded.

When multiple samples are selected as loading destination, the saved capture conditions are loaded for all the selected samples.

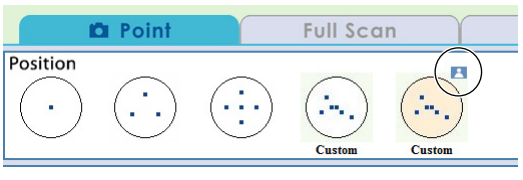
b-3. Click the Set button.

Loaded capture conditions are set by sample.



Observation condition setting window

When capture conditions with custom observation point are loaded, a custom observation point icon will be displayed in the observation position setting area.



3.4.5 Copying, Editing, and Deleting Observation Settings

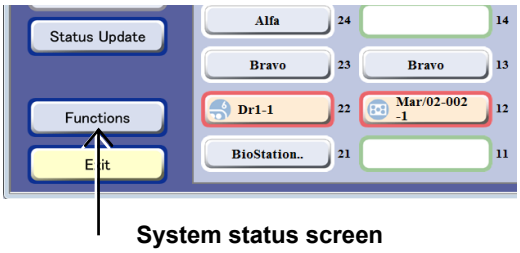
3.4.5.1 Copying standby scheduled observation settings

This section describes the procedure for adding a Round by copying the standby scheduled observation settings.

(1) Display the Schedule confirmation window.

1. Click the Functions button on the System status screen.

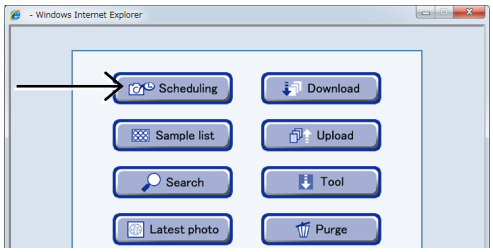
The Functions window appears.



System status screen

2. Click the Scheduling button.

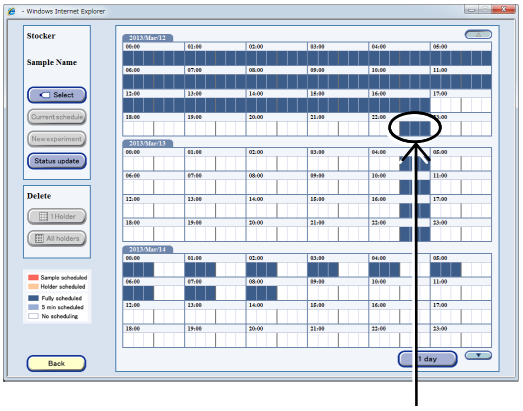
The Schedule confirmation window appears.



Functions window

(2) In the Schedule confirmation window, click the period of the schedule to be copied.

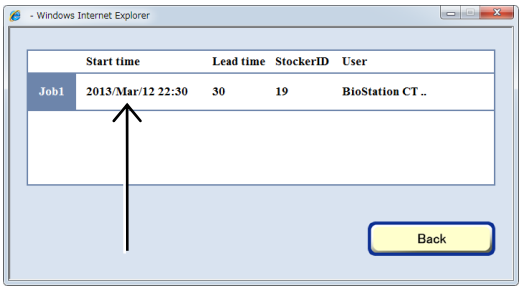
When a scheduled period is clicked, the Scheduled observation selection window appears.



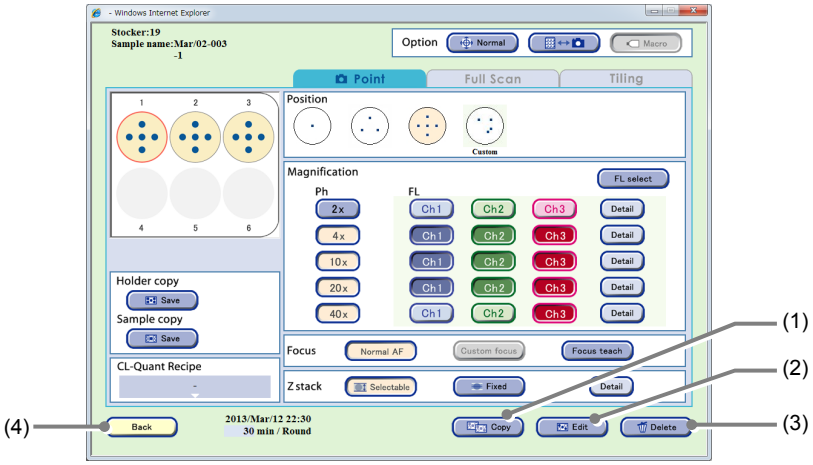
Schedule confirmation window

(3) Select the original scheduled observation in the Scheduled observation selection window.

The Capture conditions confirmation window appears.



Scheduled observation selection window

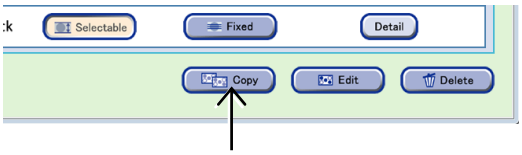


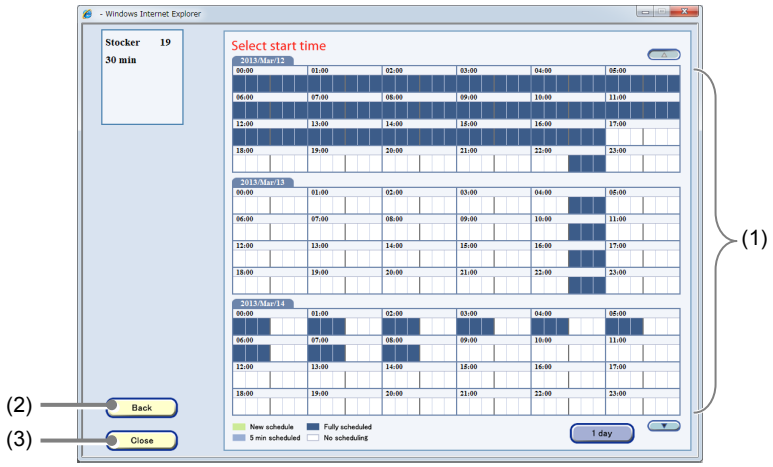
Capture conditions confirmation window

No.	Name	Function
(1)	Copy button	Click this button to copy the selected schedule.
(2)	Edit button	Click this button to display the observation modification window.
(3)	Delete button	Click this button to delete the selected schedule.
(4)	Back button	Click this button to close the Capture conditions confirmation window.

(4) Click the Copy button.

The Observation condition copy destination window in which the copy destination of the schedule can be specified appears.





Observation condition copy destination window

No.	Name	Function
(1)	Schedule setting field	Periods displayed in white have no schedule. Click the period for a scheduled observation to set a schedule.
(2)	Back button	Click this button to return to the Capture conditions confirmation window.
(3)	Close button	Click this button to close the Observation condition copy destination window.

(5) Click the copy destination time period of the schedule.

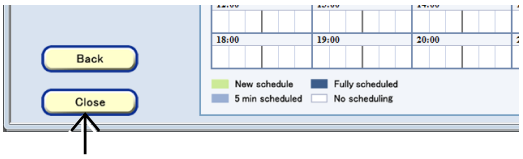
The selected period is displayed in green.

To cancel the setting, click the period again.

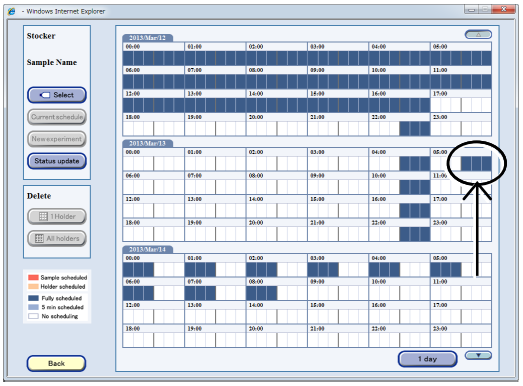
Observation condition copy destination window

(6) Click the Close button.

The Observation condition copy destination window closes.



The Schedule confirmation window shows schedules of observations in red.



Schedule confirmation window

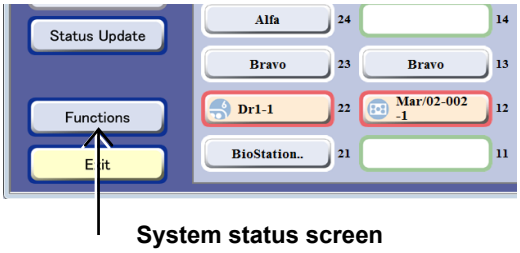
3.4.5.2 Editing standby observation conditions settings

This section describes the procedure for editing the standby scheduled observation settings.

(1) Display the Schedule confirmation window.

1. Click the Functions button on the System status screen.

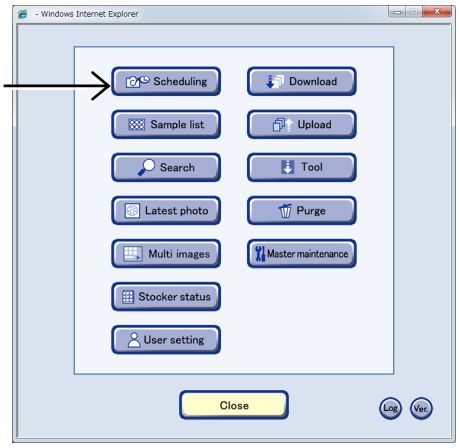
The Functions window appears.



System status screen

2. Click the Scheduling button.

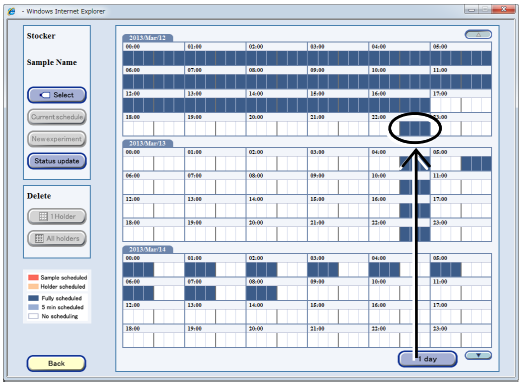
The Schedule confirmation window appears.



Functions window

(2) In the Schedule confirmation window, click the period with the schedule settings to be edited.

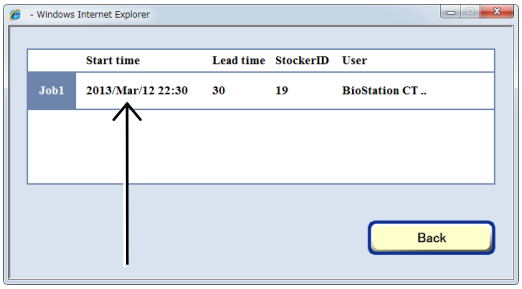
When a scheduled period is clicked, the Scheduled observation selection window appears.



Schedule confirmation window

(3) Select the observation schedule in the Scheduled observation selection window.

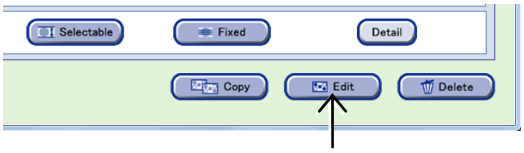
The Capture conditions confirmation window appears.



Scheduled observation selection window

(4) Click the Edit button.

The Scheduled Observation condition modification window appears.



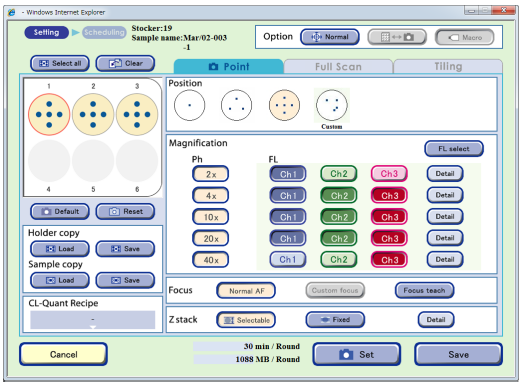
Capture conditions confirmation window

> If scheduled observation is in operation or if the Stage exclusive mode is set, schedule settings cannot be edited.

(5) Modify the observation settings.

For information on how to edit scheduled observation settings, see Section 3.4.2, “Setting Scheduled Observation Conditions.”

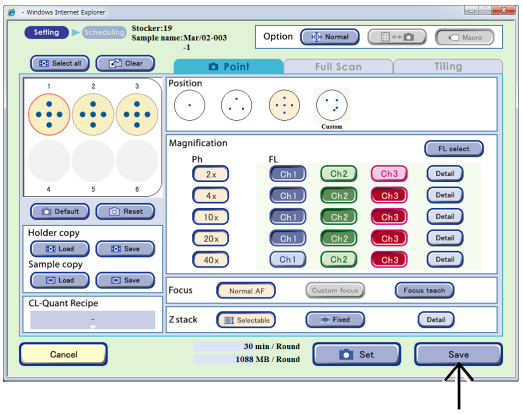
> If the modified schedule for observation conditions setting becomes longer and exceeds the free period, it cannot be registered. Change the observation conditions setting.



Observation condition modification window

(6) Click the Save button to finish the edit.

The modified schedule is saved, and the Schedule confirmation window appears again.



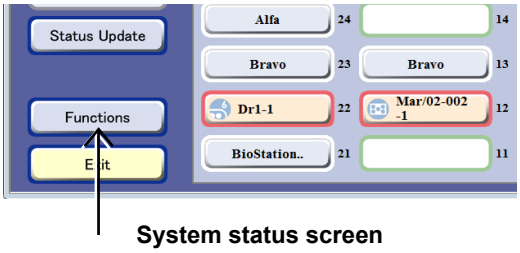
3.4.5.3 Deleting standby scheduled observation settings

This section describes the procedure for deleting the standby scheduled observation settings.

(1) Display the Schedule confirmation window.

1. Click the Functions button on the System status screen.

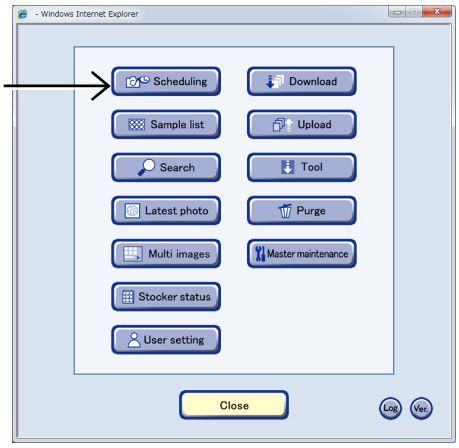
The Functions window appears.



System status screen

2. Click the Scheduling button.

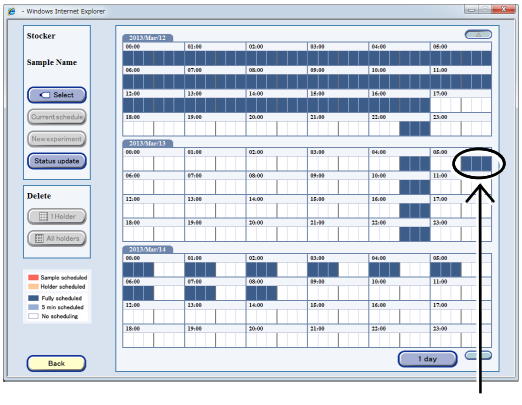
The Schedule confirmation window appears.



Functions window

(2) In the Schedule confirmation window, click the scheduled period to be deleted.

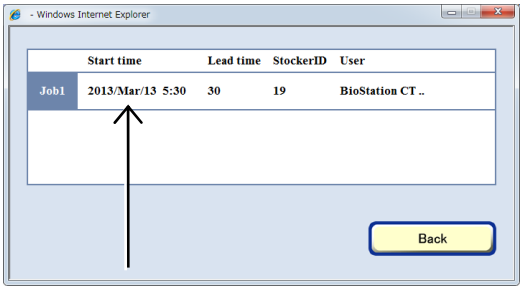
When a scheduled period is clicked, the Scheduled observation selection window appears.



Schedule confirmation window

(3) In the Scheduled observation selection window, select the scheduled observation setting to be deleted.

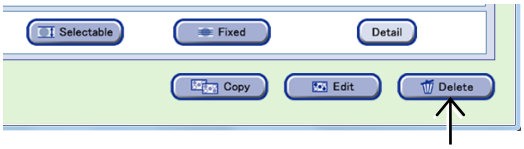
The Capture conditions confirmation window appears.



Scheduled observation selection window

(4) Click the Delete button.

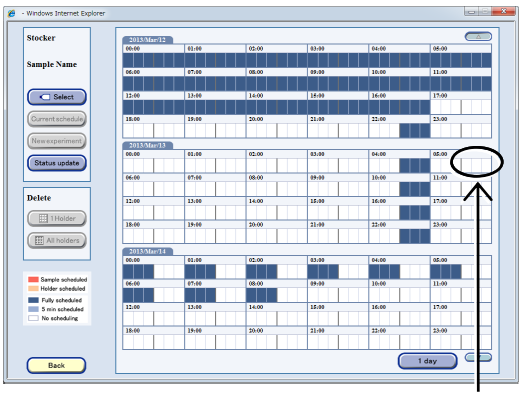
> If scheduled observation is in operation, schedule settings cannot be deleted.



Capture conditions confirmation window

A schedule delete confirmation dialog box appears.

Click the OK button to delete the selected schedule setting. The Schedule confirmation window appears.



Schedule confirmation window

> See the next section for details on the procedure for batch deleting the schedule settings of multiple samples.

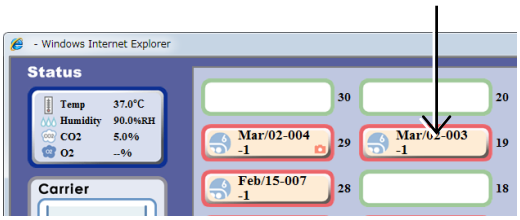
3.4.5.4 Batch deleting standby scheduled observation settings (applied to a selected holder)

This section describes the procedure for batch deleting the standby scheduled observation settings.
Batch deleting of scheduled observation settings is applied to all scheduled observations that are set for the samples in the selected holder.

When the stocker button is used to select a holder

(1) Click the button of the stocker that contains the holder whose schedule is to be deleted.

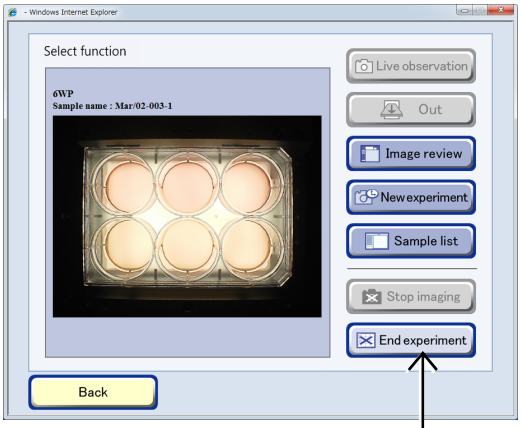
The Select function window appears.



System status screen

(2) Click the End experiment button.

All observation schedule settings in the selected stocker are deleted at the same time.



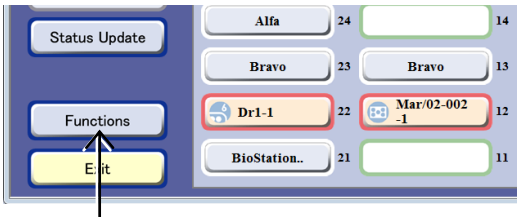
Select function window

When a holder is selected in the Schedule confirmation window

(1) Open the Schedule confirmation window.

1. Click the Functions button on the System status screen.

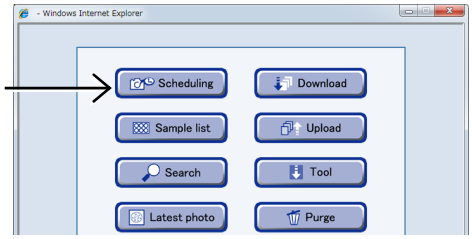
The Functions window appears.



System status screen

2. Click the Scheduling button.

The Schedule confirmation window appears.

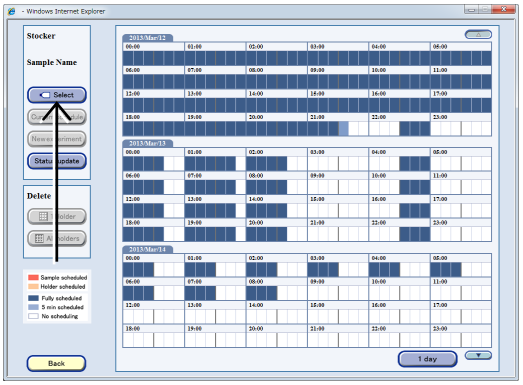


Functions window

(2) Select the samples for which the schedules are to be deleted.

1. Click the Select button.

The Sample selection window appears.



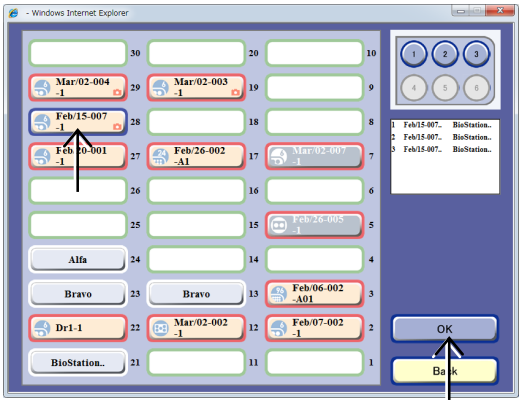
Schedule confirmation window

2. Click the button for the stocker that contains the samples whose schedule is to be deleted.

The frame color of the selected stocker button turns blue.

3. Click the OK button.

The Sample selection window is closed and the Schedule confirmation window appears.

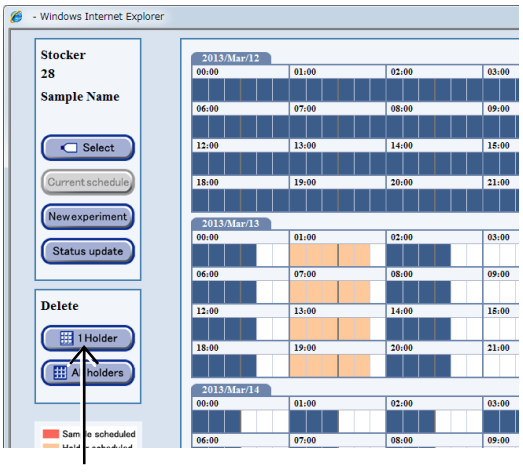


Sample selection window

(3) Delete the observation schedule.

1. Click the 1 Holder button in the Delete area.

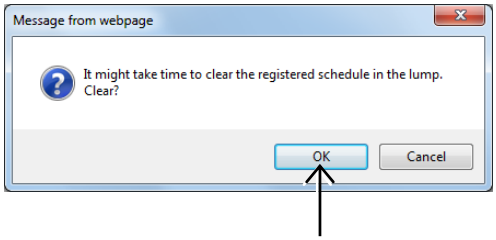
A schedule batch delete confirmation dialog box appears.



Schedule confirmation window

2. Click the OK button to close the dialog box.

All observation schedule settings in the selected stocker are deleted at the same time.



Confirmation dialog box

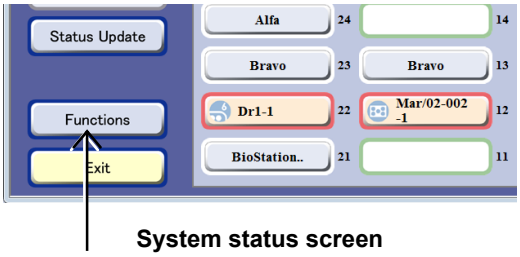
3.4.5.5 Batch deleting standby scheduled observation settings (applied to all culture vessels of the same type)

This section describes the procedure for batch deleting the standby scheduled observation settings. Batch deleting of scheduled observation settings is applied to all samples cultured by the same user in the same type of vessel in all stockers.

(1) Open the Schedule confirmation window.

1. Click the Functions button on the System status screen.

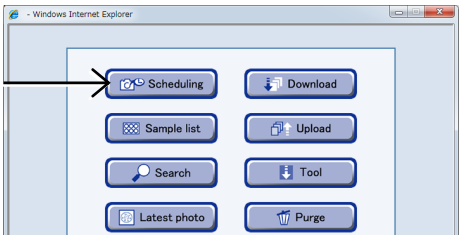
The Functions window appears.



System status screen

2. Click the Scheduling button.

The Schedule confirmation window appears.

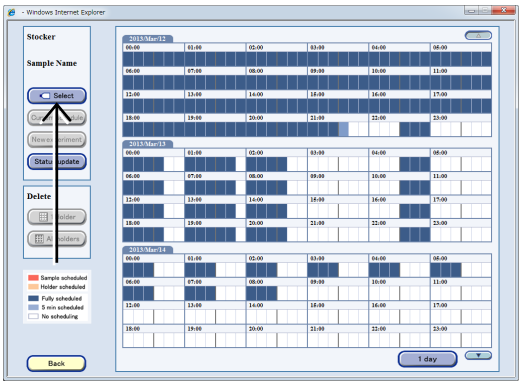


Functions window

(2) Select the samples for which the schedules are to be deleted.

1. Click the Select button.

The Sample selection window appears.



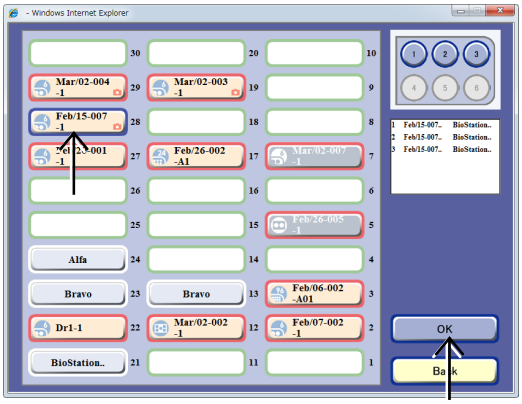
Schedule confirmation window

2. Click the button for the stocker that contains the samples whose schedule is to be deleted.

The frame color of the selected stocker button turns blue.

3. Click the OK button.

The Sample selection window is closed and the Schedule confirmation window appears.

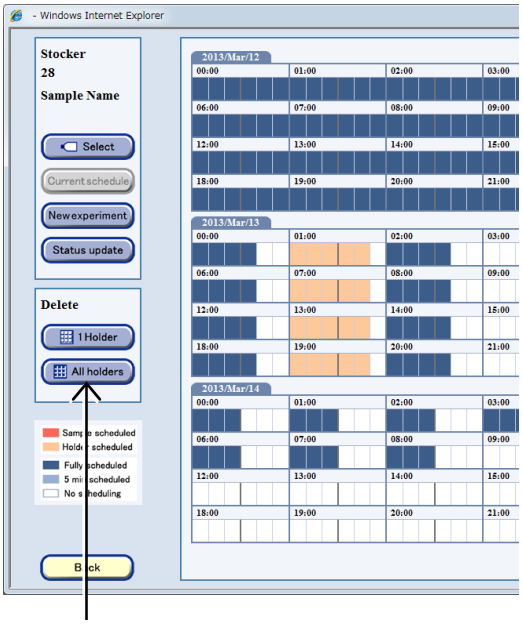


Sample selection window

(3) Delete the observation schedule.

1. Click the All holders button in the Delete area.

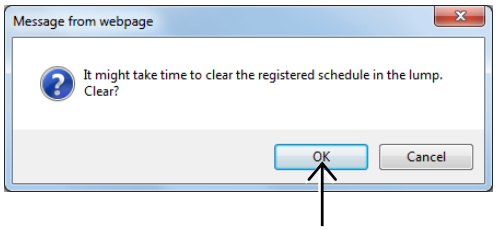
A schedule batch delete confirmation dialog box appears.



Schedule confirmation window

2. Click the OK button to close the dialog box.

All observation schedules for the samples cultured by the same user and in the same vessel in all stockers are batch deleted.



Confirmation dialog box

3.5 Displaying and Editing the Observation Data

3.5.1 Displaying a List of the Observation data

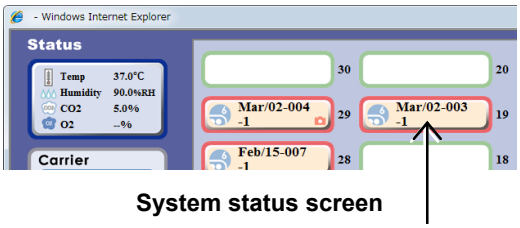
This section describes the procedure for checking the observation data of each sample.

(1) Display the Image review window.

a. To select a stocker where a sample is being cultured

a-1. On the System status screen, click the button of the stocker where the sample is stored.

The Select function window appears.



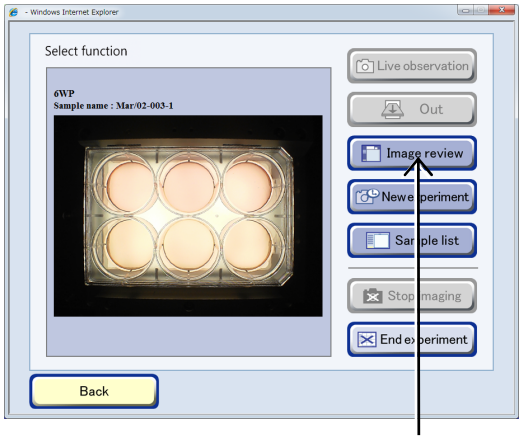
System status screen

a-2. Click the Image review button.

The Image review window for the selected sample appears.

An observation data list of samples stored in the selected holder is displayed in the Image review window.

For details on the Image review window, see Section 3.5.2, “Image review window.”

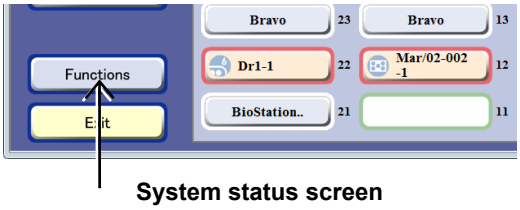


Select function window

b. To select sample(s) in the sample list

b-1. Click the Functions button on the System status screen.

The Functions window appears.



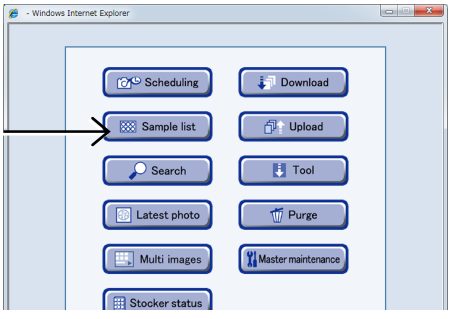
System status screen

b-2. Click the Sample list button in the Functions window.

The Search result sample list appears.

All samples cultured by the User are displayed in this Sample list window.

> To display the list of the already observed culture samples in the Sample list window, use the search function.
> For details on the search function, see Section 3.8, “Searching for Observation Data.”



Functions window

b-3. In the sample list in the Sample list window, click the sample name of the sample to be displayed.

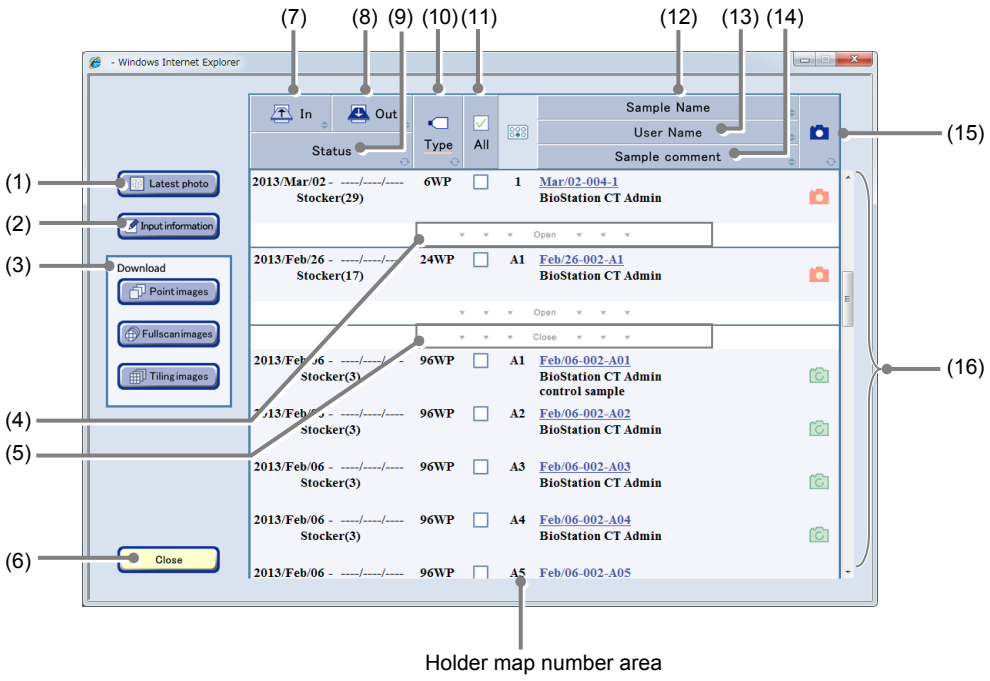
The Image review window for the selected sample appears.
For details on the Image review window, see Section 3.5.2, “Image review window.”

In the Sample list window, samples are listed in accordance with their stocker numbers and grouped by holder.
The display order in the sample list can be changed by the sort function at the top of the Sample list window.
Click the Open area to display all sample names in the holder. Click the Close area to display only the first sample.

> If a name of the sample whose observation data is deleted is clicked, a dialog box appears indicating that the history cannot be found on the file server. If observation data has been downloaded using Ver. 3.7 or earlier, it can be uploaded and displayed again.
> For details on the procedure for uploading observation data, see Section 3.9.4, “Uploading culture history data downloaded in Ver. 3.7 or earlier.”

mark	Switch the display order of the sort result between ascending order and descending order.
mark	Display the sort result from top to bottom cyclically so that the first sample comes after the last sample.

* The most recently clicked sort button is underlined in pink.



Sample list window

No.	Name	Function
(1)	Latest photo button	Click this button to display the Latest photo list window. (See Section 3.5.6.)
(2)	Input information button	Click this button to display the Basic information batch input window for selected multiple samples. (See Section 3.5.5.)

No.	Name	Function
(3)	Download preparation area	Prepare for downloading. (See Section 3.9.2.) **Point images button:** Perform download preparation of the Point images of selected multiple samples. **Full scan images button:** Perform download preparation of the Full Scan images of selected multiple samples. **Tiling images button:** Perform download preparation of the Tiling images of selected multiple samples.
(4)	Open area	Click the area to display all sample names in the holder.
(5)	Close area	Click the area to display only the first sample in the holder.
(6)	Close button	Click this button to close the Sample list window.
(7)	In sort button	Click this button to sort the list in order of loaded date.
(8)	Out sort button	Click this button to sort the list in order of unloaded date.
(9)	Status sort button	Click this button to sort the list in order of status.
(10)	Type sort button	Click this button to sort the list by the type of culture vessels.
(11)	All check button	Click this button to select all displayed samples or cancel the selection.
(12)	Sample Name sort button	Click this button to sort the list in order of sample name.
(13)	User Name sort button	Click this button to sort the list in order of user name.
(14)	Sample comment sort button	Click this button to sort the list in order of sample comment.
(15)	Observation status sort button	Click this button to sort the list in order of observation status.  (Pink) : Scheduled observation images are included  (Green) : Live observation images are included (No icon) : No observation images
(16)	Sample list	The user name and the sample name of the sample are listed.

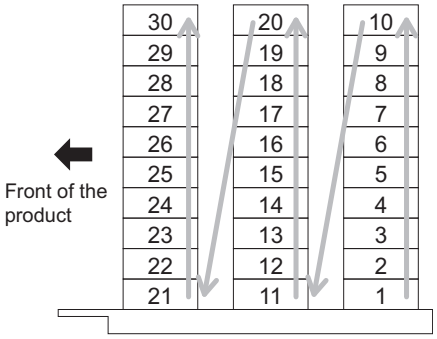
Abbreviation and description for vessels

Vessel type	Abbreviation in the list	Description
Petri Dish	35PD	35 mm dish
	60PD	60 mm dish
	100PD	100 mm dish
Culture Flask Suffix “A”: flat-bottom type. Without suffix “A”: partially-slanted (cant) bottom type. Suffix “(ob)”: oblong type.	25CF(ob)	25 cm^2 culture flask(ob)
	25CF_A(ob)	25 cm^2 culture flask A(ob)
	25CF	25 cm^2 culture flask
	25CF_A	25 cm^2 culture flask A
	75CF	75 cm^2 culture flask
	75CF_A	75 cm^2 culture flask A
Well Plate	6WP	6-well plate
	12WP	12-well plate
	24WP	24-well plate
	48WP	48-well plate
	96WP	96-well plate

Stocker number

The three-row and ten-column stocker is numbered from 1 to 30 as shown in the figure on the right side.

The rear stocker is numbered from 1 to 10, the center stocker is numbered from 11 to 20, and the front stocker is numbered from 21 to 30.



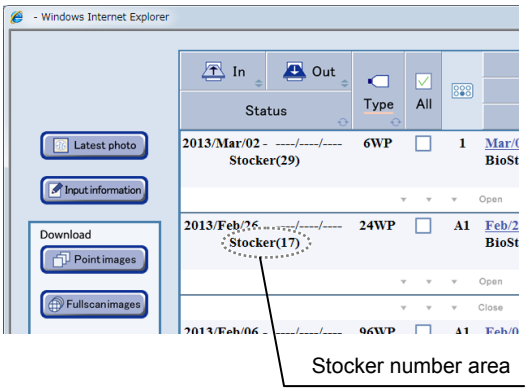
Stocker number

These stocker numbers are displayed in the Stocker number area in the window.

When a sample is being unloaded (Medium change), “OUT” is displayed in the Stocker number area.

In the Sample list window displayed using the Sample list button, samples that have been cultured (No return) are not displayed.

Samples that have been cultured (No return) are displayed on the Search result sample list window that is displayed using the Search button.

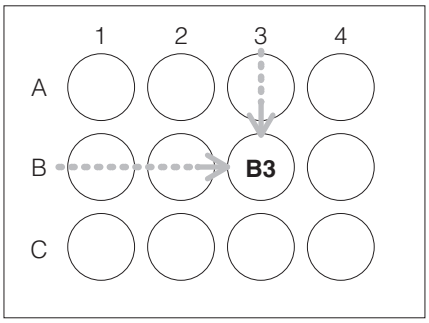


Holder map number

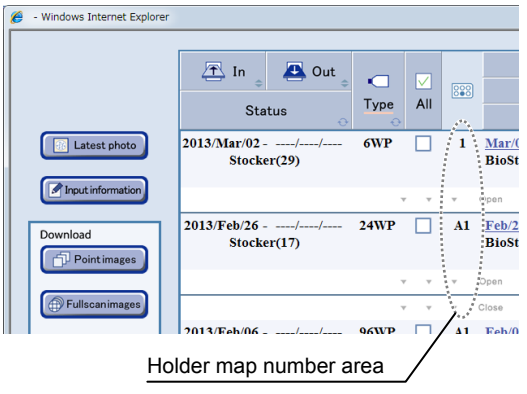
A sample position in a 12-well plate, 24-well plate, 48-well plate or 96-well plate is displayed using a letter of alphabet and a number.

The figure on the right side is an example of a 12-well plate. The columns are named from up to down in alphabetical order and the rows are named from left to right in numerical order. For example, the sample in the third row and the second column is named “B3.”

A sample position in a 6-well plate, flask, or dish is displayed with a number.



Holder map number

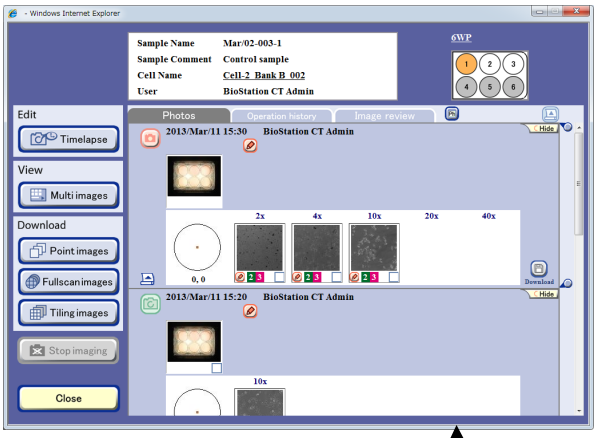


3.5.2 Image review window

The observation history and the operation history are displayed along a time-axis in the Image review window. The Display switch tab can switch between the observation history and the operation history.

Photos tab

Click this tab to display the observation history only.



Operation history tab

Click this tab to display the operation history only.

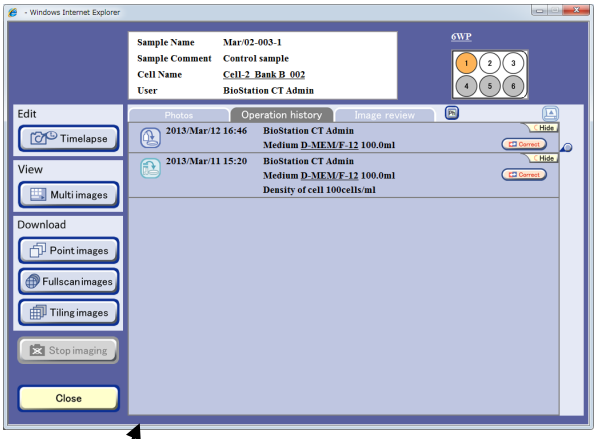


Photo display in the Image review window

Operation display in the Image review window

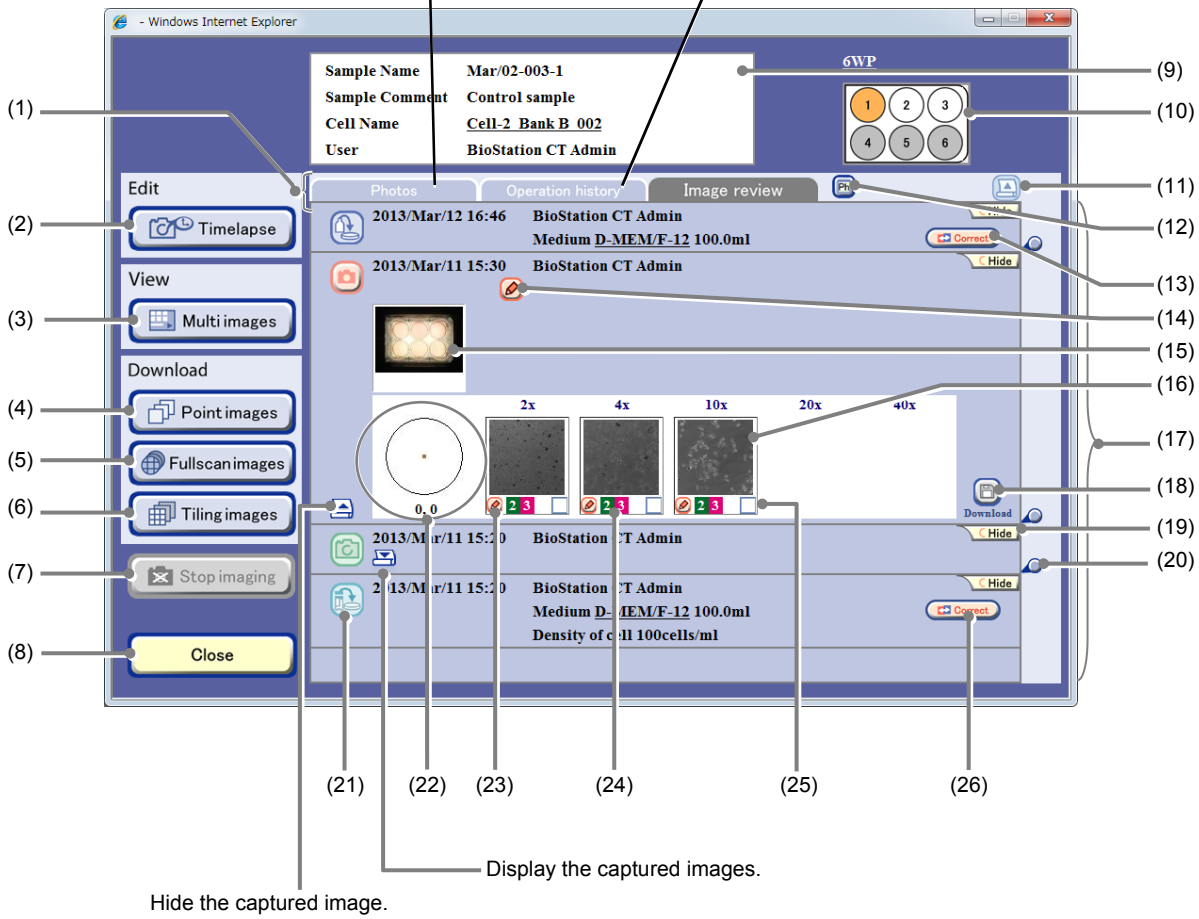


Image review window

No.	Name	Function
(1)	Display switch tab	**Photos tab:** Display the observation history only. **Operation history tab:** Display the operation history only. **Image review tab:** Display both the observation history and the operation history.
(2)	Timelapse button	Click this button to display the Schedule confirmation window.
(3)	Multi images button	Click this button to display the Multi images display window with selected multiple scheduled observation images next to each other. (See Section 3.7, “Multi Images Display of Captured Image.”)
(4)	Point images button	Click this button to perform the download preparation of all Timelapse images captured by the Point observation.
(5)	Fullscan images button	Click this button to perform the download preparation of all Timelapse images captured by the Full Scan observation.
(6)	Tiling images button	Click this button to perform the download preparation of all Timelapse images captured by the Tiling observation.
(7)	Stop imaging button	Click this button to cancel the execution of the scheduled observation in stage exclusive mode or when some sample is waiting on the stage before performing scheduled observation, stop the wait state of the sample and cancel the scheduled observation. (Enabled only while executing)
(8)	Close button	Click this button to display the previous window.
(9)	Basic information display area	This area displays the Basic information edit window. Edit the basic information of a sample.
(10)	Holder map	This area displays the position of the sample of the displayed history. Samples can be selected also by clicking the Holder map button. The selected sample is shown in orange.
(11)	 Expand button	Click this button to hides all captured images.
(12)	Thumbnail display switch button	Click this button to switch between phase contrast images and fluorescence images for thumbnails when fluorescence images are included.  : Display the phase contrast thumbnail images.  : Display the fluorescence thumbnail images.
(13)	 Load information edit button	Click this button to display the Load information edit window. (See Section 3.5.4.3.)
(14)	Observation history comment button	Click this button to display the Observation history comment edit window. (See Section 3.5.4.4.)
(15)	Thumbnail images (Macro image)	This area displays the macro thumbnail images. Click the macro thumbnail image to display the Macro image display window.
(16)	Thumbnail images (Micro image)	This area displays the micro (Ph and/or FL) thumbnail images. Click the micro thumbnail image to display each image display window.

No.	Name	Function
(17)	Observation history display area	This area displays the history in observation/operation date order. In Live observation, an observation history is added each time a sample is observed. When the Scheduled observation mode is set to the Normal mode, a new observation history is created when each Round is finished. When the Stage exclusive mode is set for scheduled observation, a new observation history is created when 1 Round observation is finished.
(18)	 Download preparation button	Click this button to display the Image download setting window.
(19)	 Hide button	Click this button to hide the observation data.
(20)	 Redisplay button	Click this button to redisplay the hidden observation data.
(21)	Observation status icon	This icon displays the observation status. (See Section 3.5.3)
(22)	Observation positions and Coordinate of the observation point	This area displays the observation positions in the culture vessel. The coordinate (x,y) for the observation point on the selected image is displayed, where (0,0) is the center of the sample.
(23)	Micro image comment button	Click this button to display the Micro image comment edit window. (See Section 3.5.4.5.)
(24)	FL channel number	This area displays the FL channel number with which the fluorescence image was captured. Multi is displayed when images were captured using 4 or more channels.
(25)	Download image selection button	Click this button to select the image for download. A checked symbol appears in the check box for the image.
(26)	 Medium change information edit button	Click this button to display the Medium change information edit window. (See Section 3.5.4.2.)

Information data in the Image review window cannot be updated automatically.
To update the information data, return to the previous window, and then open the Image review window again.

3.5.3 Displaying Images of the Culture Sample and History Information

This section describes the procedure for displaying the captured images of culture sample and their history information in the Image review window. The following buttons and links are used to switch the Image review window to another window.

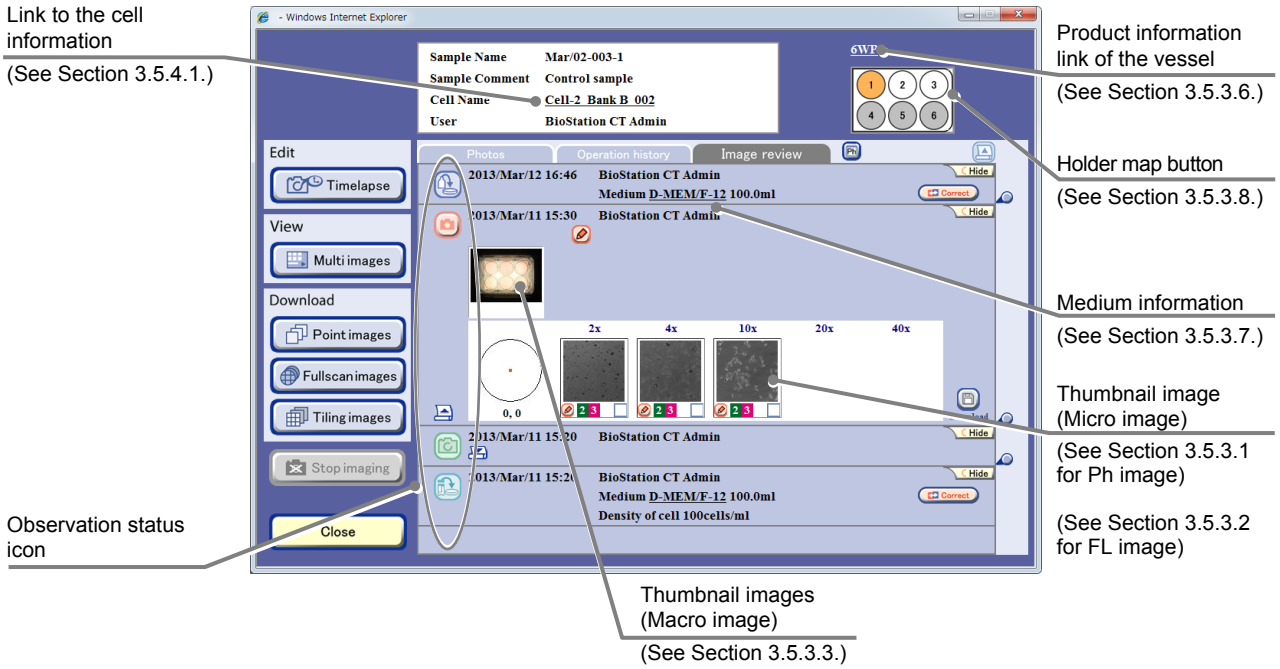


Image review window

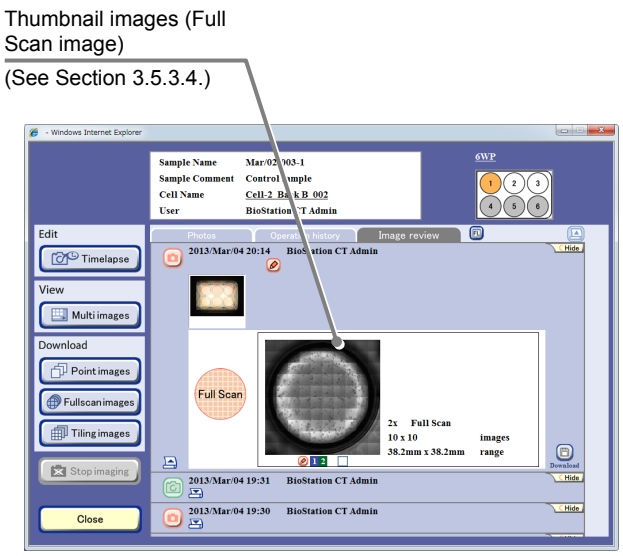


Image review window (Full Scan image)

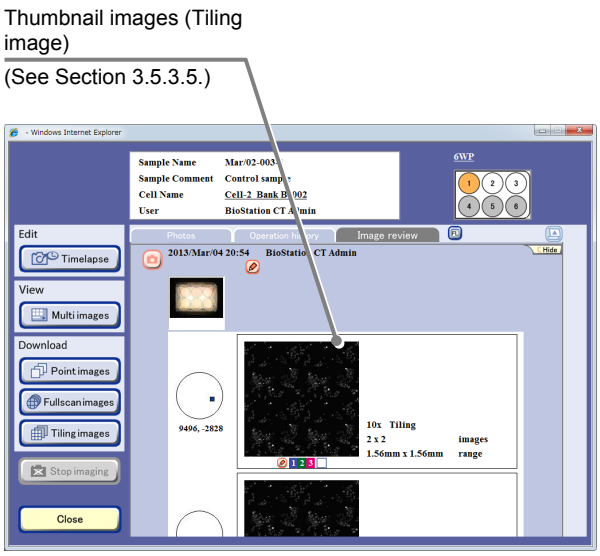


Image review window (Tiling image)

The observation status icon on the left side of each observation data indicates the history as follows:

Icon/Button	Color	Detail
	Blue	This history icon indicates that culturing has started.
Normal mode 	Red	These observation history buttons indicate that scheduled observation has been performed. The macro images, the Ph and FL images for each observation position, displayed in order of magnification. Click either of these buttons to check capture conditions. If one of the following error messages is displayed next to the icon, schedule observation has been skipped. The details are as follows: Error (Loader unit) : An error occurred in the loading unit. Error (Observation unit) : An error occurred in the observation unit. Error (Macro camera) : An error occurred in the macro camera. Error (Micro camera) : An error occurred in the micro camera. Error (PC disk full) : Insufficient disk space on the control PC
Stage exclusive mode 	Orange	
	Green	This icon indicates that a live observation has been performed. Captured macro images, micro images (Ph image and FL image) for each observation position are displayed in order of capturing.
Normal mode 	Red	This button indicates that a scheduled observation was skipped. Click this button to check capture conditions. One of the following messages will be shown. System stop : The microscope was stopped. Live observation (with a user name) : The user skipped a scheduled observation during a live observation. Delay (without a user name) : The user unlocked the access gate during a live observation. Delay (without a user name) : An operation such as loading or unloading a sample caused the schedule to be canceled.
Stage exclusive mode 	Orange	
	Blue	This icon indicates that the medium has been changed.
	Violet	This icon indicates that the sample was unloaded to check or unloaded with other sample in the same holder.
	Blue	This icon indicates that samples are being unloaded for a medium change or the culture has been finished.

3.5.3.1 Viewing the micro image (Ph image) and preparing download

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

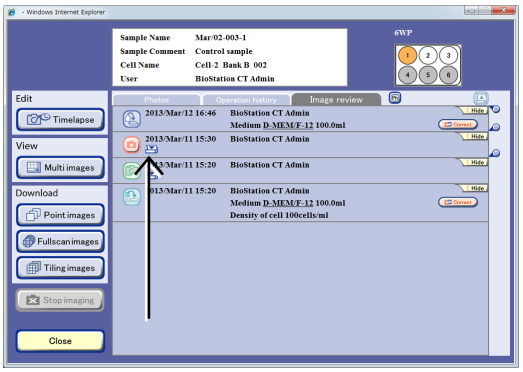


Image review window

(2) Display the Ph image.

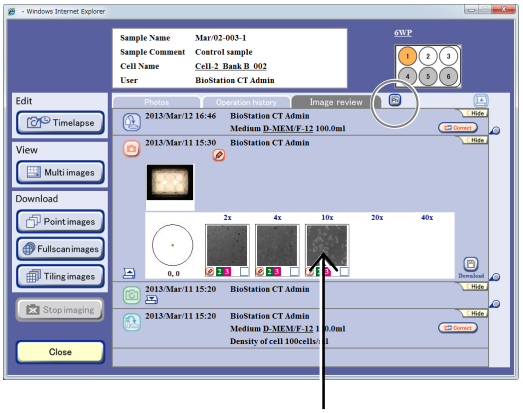
1. Change the Thumbnail display switch button to [Ph].

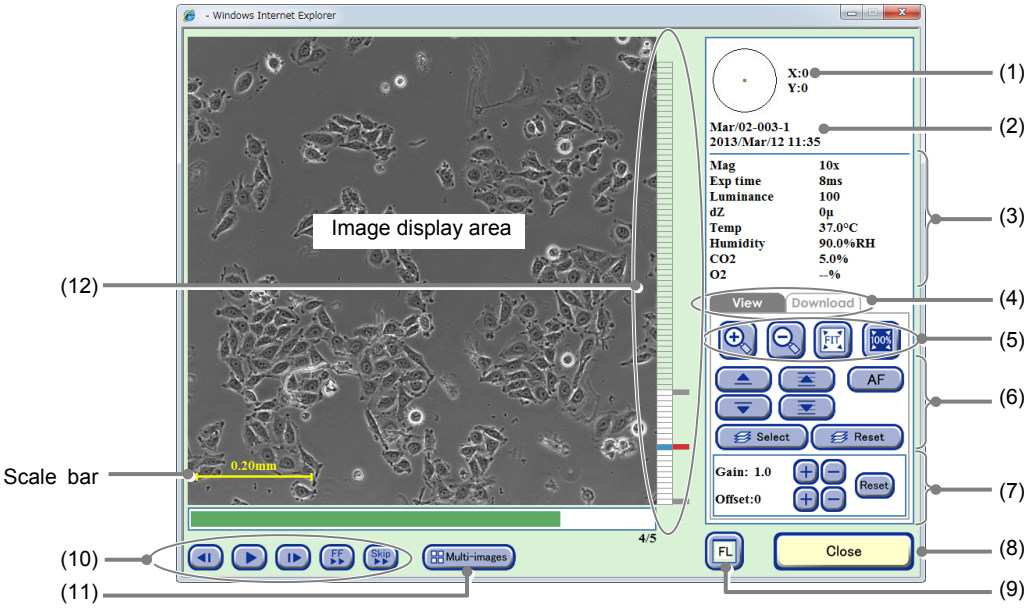
2. Click a thumbnail image of the micro image.

The Point image display window (Ph) appears.

The figure below shows an example of capturing an image count of 21 for a Z stack image in a scheduled observation.

For details on Z stack settings, see Chapter 4, “Environmental Settings” and 3.4.2, “Setting the Scheduled Observation Conditions.”





Point image display window (Ph)

No.	Name	Function
(1)	Coordinate of the observation point	This area displays the coordinate (x,y) for the observation point where (0,0) is the center of the sample.

No.	Name	Function
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Image capture conditions and environmental information	This area displays the Image capture conditions and the temperature, humidity, and CO_2 concentration and O_2 concentration (optional) in the CO_2 incubator.
(4)	Operation window switch tabs	Click a tab to switch the operation window. The Download tab includes the functions shown below: **Z stack button:** Create a download file for the micro image selected with the Select button. **Timelapse button:** Create a download file for images captured in all rounds at the same observation point (Z position) as that of the image displayed. **All Z & T button:** Create a download file for all Z stack images captured in all rounds.
(5)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **100% button:** Display the image with the actual size.
(6)	Z-axis direction display switch	**▲/▼ buttons:** Display the captured images changing the image one by one in the Z-axis direction. **⏫/⏬ buttons:** Continuously play back images in the Z-axis direction. Click the button again to pause the playback. **AF button:** Display the image captured at the autofocus position. **Select button:** Select the Z image to be downloaded. **Reset button:** Reset an image to be downloaded.
(7)	Brightness adjustment of a displayed image	Adjust the brightness of a displayed image. **Gain:** Click the +/- button to adjust the contrast by ±0.1. **Offset:** Click the +/- button to adjust the brightness by ±5. **Reset button:** Reset the brightness of a displayed image.
(8)	Close button	Click this button to close the Point image display window (Ph).
(9)	FL button	Click this button to switch to Point image display window (FL). (See Section 3.5.3.2.)
(10)	Timelapse images playback button	**► button:** Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. **I►/◄I button:** Play one frame forward /one frame backward **FF button:** Fast-forward an image. **Skip button:** Skip the image for the predefined frame during playback.

No.	Name	Function
(11)	Multi-images button	Click this button to display the Multi images display window. Selected multiple scheduled observation images can be displayed and played back side by side. (See Section 3.7, “Multi Images Display of Captured Images.”)
(12)	Z position display area	Click somewhere in the Z position display area to display the image at the selected position. In the Z position display area, the AF position is indicated in red, and gray marks are displayed at the positions located in increments of ten images from the AF position.

Z stacks

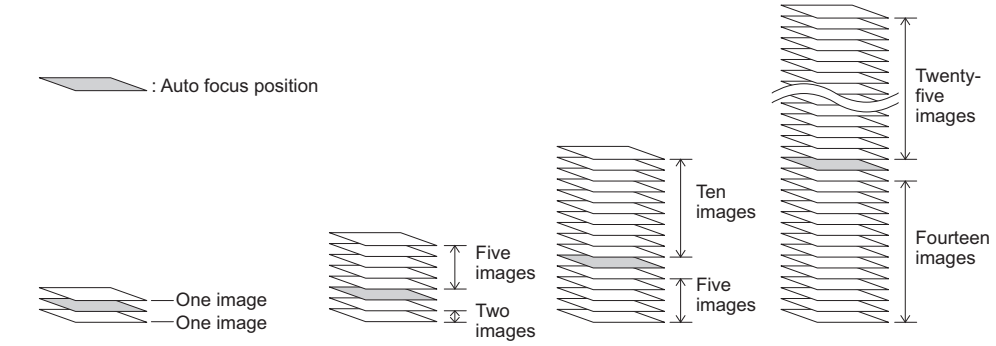
Micro images captured in a scheduled observation are a set of images taken at slightly different positions along the Z-axis centered on the autofocus position. The image set is called a Z stack image.

For Z stack images, there are two ways to capture images; by using a fixed pitch to capture images at a fixed pitch and by using a selectable pitch to capture images at a specified range and pitch.

Fixed pitch images

Images are captured at a predefined range and pitch by selecting the number of images (1, 3, 8, 16, or 40).

The autofocus position in a Z stack image captured using a fixed pitch is defined for each image count by default as shown below. However, if a position near the upper or lower limit of the Z-axis is set as the autofocus position, the image count of the upper part and the lower part will change. (Example: If the lowest position in the Z-axis is set as the autofocus position in a fixed pitch capturing of eight images, the lower part image count is zero and the upper part image count is seven.)



Additionally, if a custom observation point is selected and the custom focus button is clicked to capture an image in scheduled observation, the AF position described above will be the Z position registered as the custom observation point.

Selectable pitch images

To capture images with using a selectable pitch, determine the number of images to be captured by selecting the range in the Z-axis direction (0, 100, 200, 300, or 400 µm) and pitch (5, 10, or 20 µm).

When the selected range is 0 µm, a Z stack is not generated and only one image is captured.

When the selected range is 400 µm and the pitch is 5 µm, the number of capturing images is the maximum (81 images).

3. To display the micro images captured at the positions shifted by small increments in the Z-axis direction, click the ▲/▼/⏫/⏬ buttons.

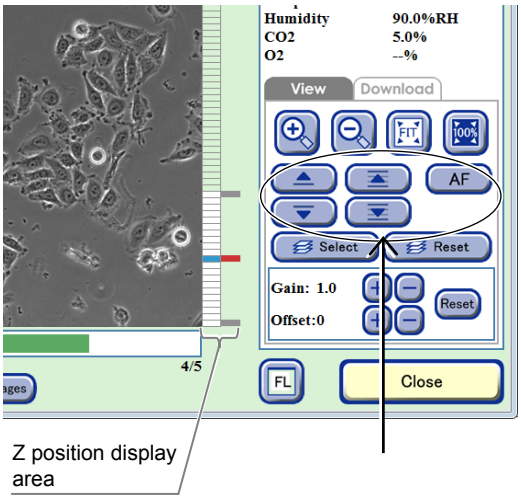
Click the ▲/▼ buttons to display the captured images changing the image one by one in the Z-axis direction.

Click the ⏫/⏬ buttons to continuously play back images in the Z-axis direction. Click the button again to pause the playback.

Click (click) somewhere in the Z position display area to display the image at the selected position.

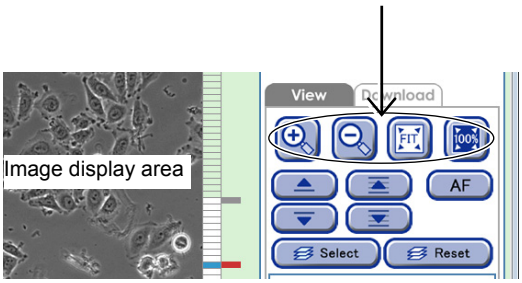
Click the AF button to display the image captured at the autofocus position.

In the Z position display area, the AF position is indicated in red, and gray marks are displayed at the positions located in increments of ten images from the AF position.



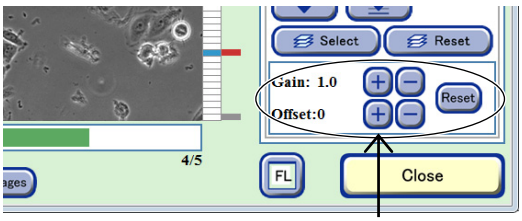
4. Change the display size of the image.

Click +/-, FIT or the 100% button to change the display size of the image.



5. Adjust the contrast and brightness of an image.

Click the Gain and Offset +, - buttons to adjust the contrast and brightness of a displayed image.



6. To play back the displayed timelapse images, click the ► button, and to proceed to the next image or to return to the previous image, click the I► button or the ◄I button.

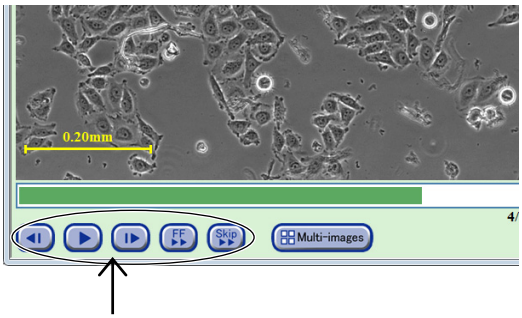
To fast-forward the image, click the FF button.

Each time the FF button is clicked, the playback speed is switched. (The speed is switched in the order of 1-step → 2-step → Normal.)

To skip the playback with a frame specified, click the Skip button.

A dialog box to specify the frame to skip is displayed.

When no image is to be downloaded, go to step (6) and close the window.



(3) Select the image to be downloaded.

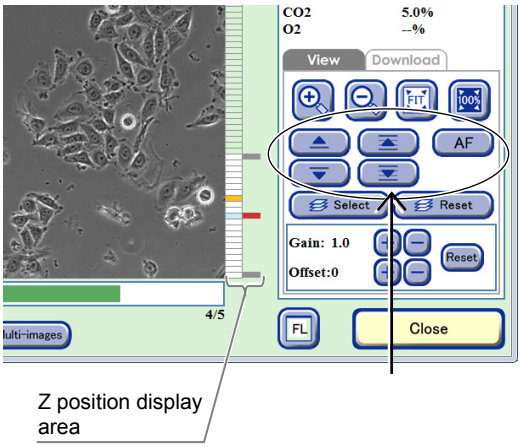
a. To put all selected images into one file

a-1. Click the ▲/▼/▲̲/▼̲ buttons to display the images to be downloaded.

Click somewhere in the Z position display area to display the image at the selected position.

The Z position of the displayed Z stack image is marked in orange (or blue when the Select button is clicked) on the Z position display area.

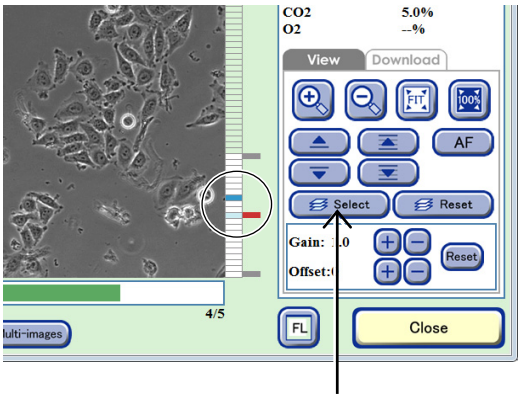
The window example on the right side displays the third image above the AF position.



a-2. Click the Select button.

The Z position of the selected image is displayed in blue.

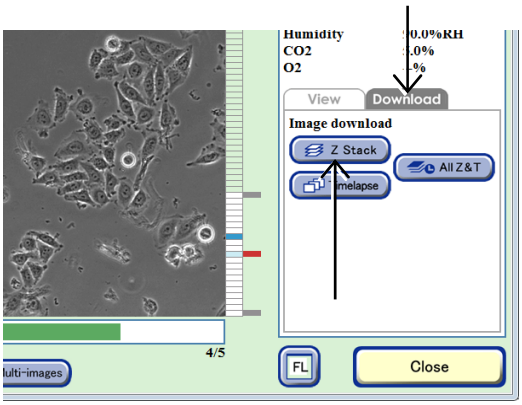
To cancel the selection, click the Reset button.



a-3. Select the Download tab and click the Z Stack button in Image download area.

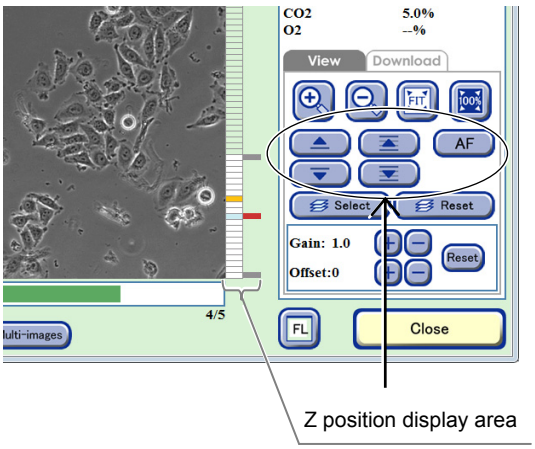
The Image download setting window appears.

Go to step (4).



b. To select and arrange all images for the observation position of the displayed image (Z) in chronological order

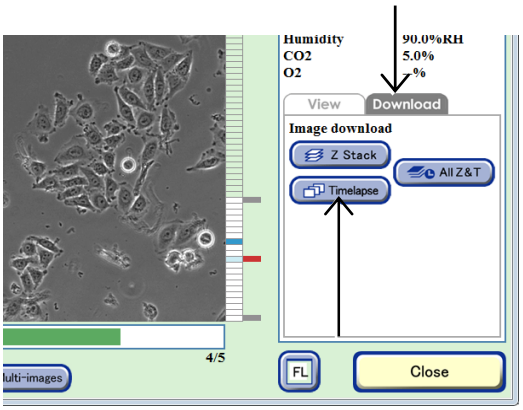
b-1. Click the ▲/▼/▲̲/▼̲ buttons to display the images to be downloaded.



b-2. Select the Download tab and click the Timelapse button in Image download area.

The Image download setting window appears.

Go to step (4).



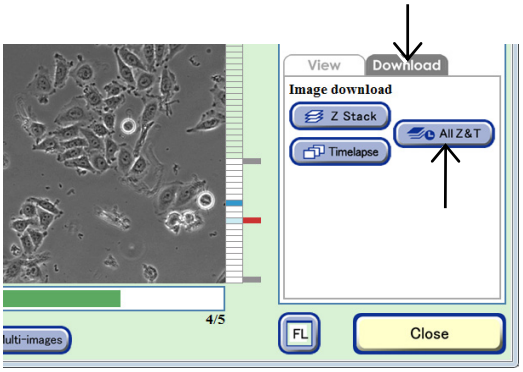
> The images downloaded using the Timelapse button are based on the AF position of the Z stack images captured in each round. For example, when the Timelapse button is clicked while an image at a focus position two up from the AF position is displayed in the Image display area, all images at the focus position two up from the AF position will be downloaded for all rounds.
> However, download preparation cannot be performed for a round without images at that focus position.

c. To select and arrange all Z stack images captured in all rounds in chronological order

c-1. Select the Download tab and click the All Z & T button in Image download area.

The Image download setting window appears.

Go to step (4).



(4) Set the format conditions of the images to be downloaded.

The allowable conditions depend on the type of image to be downloaded.

Set the format conditions of the images to be downloaded, and then click the OK button.
After download preparation is completed, the download preparation complete dialog box appears.

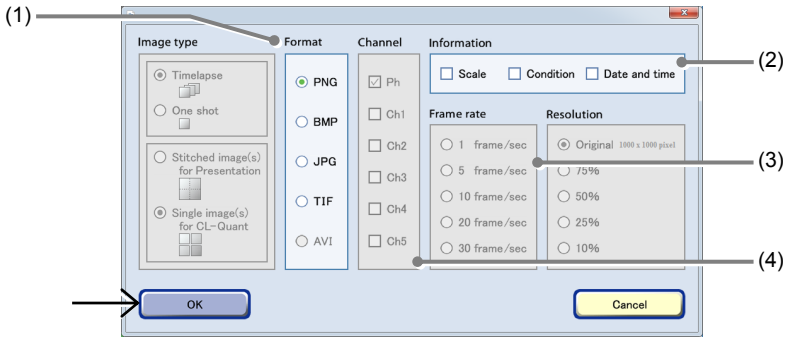


Image download settings window

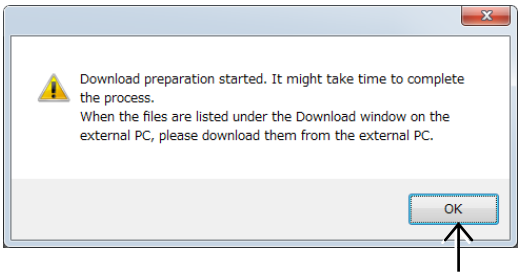
No.	Name	Function
(1)	Format area	Select the format of the images to be downloaded. AVI is enabled only when the Timelapse button in the Image download area is used for download.
(2)	Information area	Select the image information to be added. Three types of image information can be added: Scale, Condition and Date and time. In addition, when AVI is selected for the format, Scale cannot be selected.
(3)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(3)	Channel area	Select the channels to be downloaded. Enabled only when an image captured also by fluorescence capturing is selected and the All Z & T button in the Image download area is used for download.

(5) Click the OK button.

Download preparation for the micro images is completed.

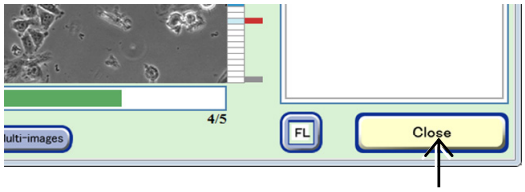
The Point image display window (Ph) appears.

> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual download).”



Download preparation complete dialog box

(6) Click the Close button to close the Point image display window (Ph).



Point image display window (Ph)

Caution

The scale bar displayed in the Point image display window (Ph) is not included in the original image.
An image data file prepared for download includes the original image only.

The image size is calculated as shown below. The dynamic range of the CCD camera is 8 mm × 8 mm (1000 × 1000 pixels), and when the image is captured at 2x, the above size becomes 8/2 mm × 8/2 mm (4 mm × 4 mm) (1 pixel=4 µm).

The image size of each observation magnification is calculated based on the above information.

- **2x of the image size becomes 4 mm × 4 mm (1 pixel=4 µm)**
- **4x of the image size becomes 2 mm × 2 mm (1 pixel=2 µm)**
- **10x of the size becomes 0.8 mm × 0.8 mm (1 pixel=0.8 µm)**
- **20x of the image size becomes 0.4 mm × 0.4 mm (1 pixel=0.4 µm)**
- **40x of the image size becomes 0.2 mm × 0.2 mm (1 pixel=0.2 µm)**

3.5.3.2 Viewing the micro image (FL image) and preparing download

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

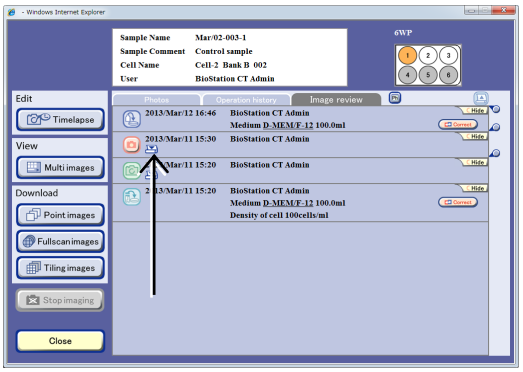


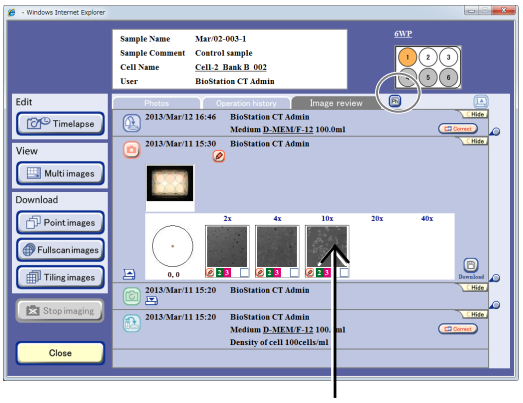
Image review window

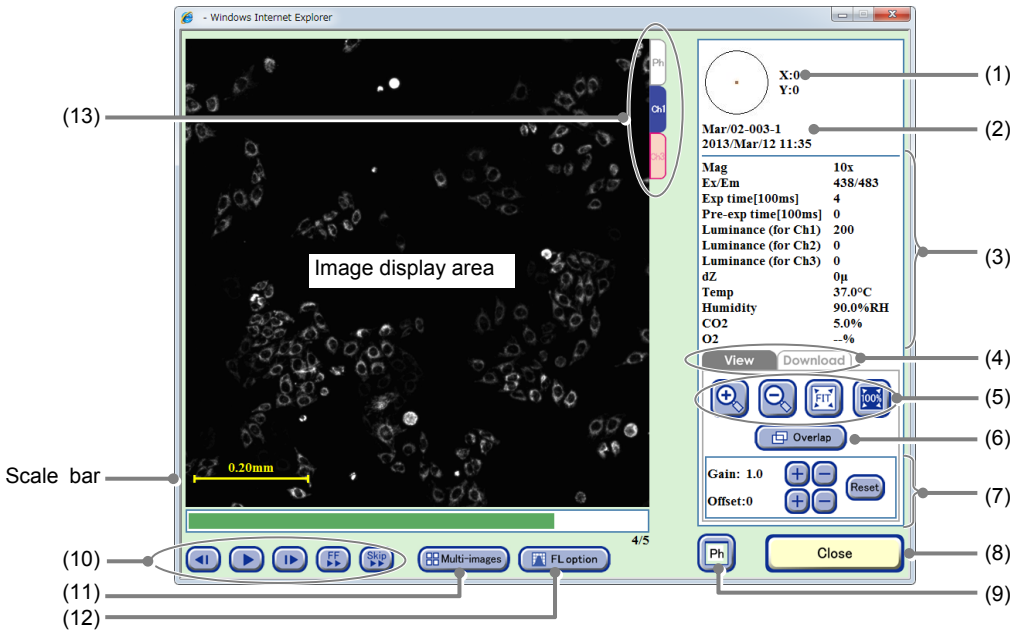
(2) Display the FL image.

1. Change the Thumbnail display switch button to [FL].

2. Click a thumbnail image of the micro image.

The Point image display window (FL) appears.





Point image display window (FL)

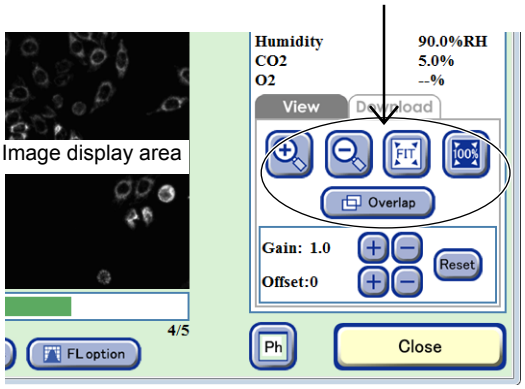
No.	Name	Function
(1)	Coordinate of the observation point	This area displays the coordinate (x,y) for the observation point where (0,0) is the center of the sample.

No.	Name	Function
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Image capture conditions and environmental information	This area displays the Image capture conditions and the temperature, humidity, and CO_2 concentration and O_2 concentration (optional) in the CO_2 incubator.
(4)	Operation window switch tabs	Click a tab to switch the operation window. The Download tab includes the functions shown below: **Timelapse button:** Create a download file for images captured in all rounds at the same observation point as that of the image displayed.
(5)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **100% button:** Display the image with the actual size.
(6)	Overlap button	Click this button to overlay the fluorescence image and the phase contrast image.
(7)	Brightness adjustment of a displayed image	Adjust the brightness of a displayed image. **Gain:** Click the +/- button to adjust the contrast by ±0.1. **Offset:** Click the +/- button to adjust the brightness by ±10. **Reset button:** Reset the brightness of a displayed image.
(8)	Close button	Click this button to close the Point image display window (FL).
(9)	Ph button	Click this button to switch to Point image display window (Ph). (See Section 3.5.3.1.)
(10)	Timelapse images playback button	**► button:** Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. **I►/◄I button:** Play one frame forward /one frame backward **FF button:** Fast-forward an image. **Skip button:** Skip the image for the predefined frame during playback.
(11)	Multi-images button	Click this button to display the Multi images display window. Selected multiple scheduled observation images can be displayed and played back side by side. (See Section 3.7, “Multi Images Display of Captured Images.”)
(12)	FL option button	Click this button to display analysis results showing a histogram of the intensity value for the images captured in chronological order. This button is displayed only when the image captured in scheduled observation appears. (See Section 3.6, “Analysis of Fluorescence Intensity.”)
(13)	Display switch tabs	Click a tab to switch the channel to check an image.

3. Change the display size of the image.

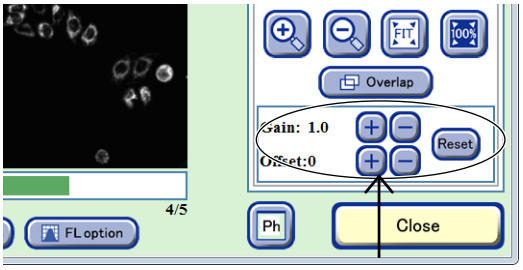
Click +/-, FIT or the 100% button to change the display size of the image.

Overlay the phase contrast image with the fluorescence image by clicking the Overlap button.



4. Adjust the contrast and brightness of an image.

Click the Gain and Offset +, - buttons to adjust the contrast and brightness of a displayed image.



5. To play back the displayed timelapse images, click the · button, and to proceed to the next image or to return to the previous image, click either the I· button or the ·I button.

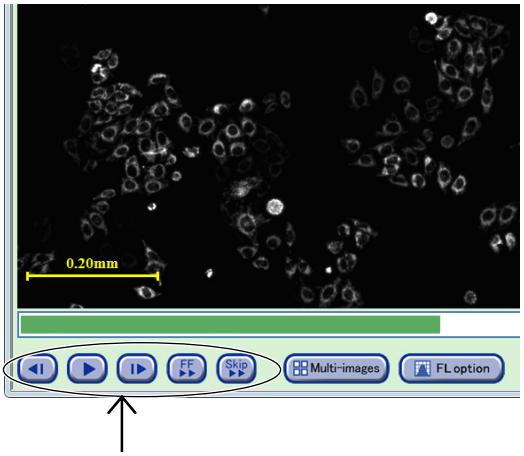
To fast-forward the image, click the FF button.

Each time the FF button is clicked, the playback speed is switched. (The speed is switched in the order of 1-step → 2-step → Normal.)

To skip the playback with a frame specified, click the Skip button.

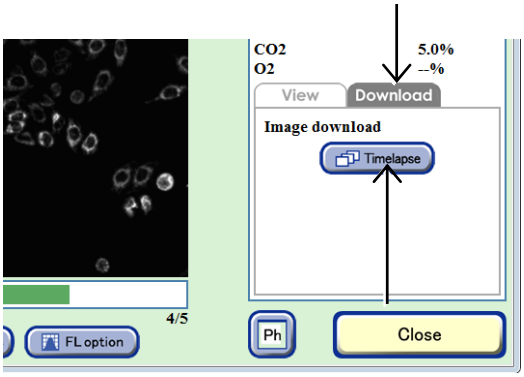
A dialog box to specify the frame to skip is displayed.

When no image is to be downloaded, go to step (6) and close the window.



(3) Select the Download tab and click the Timelapse button in Image download area.

The Image download setting window appears.



(4) Set the format conditions of the images to be downloaded.

Set the format conditions of the images to be downloaded, and then click the OK button.
After download preparation is completed, the download preparation complete dialog box appears.

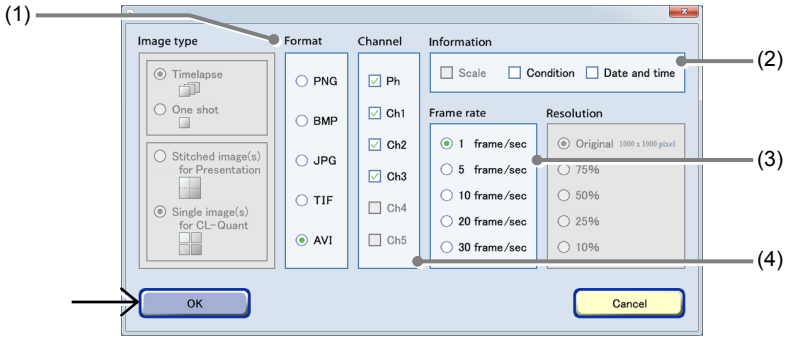


Image download settings window

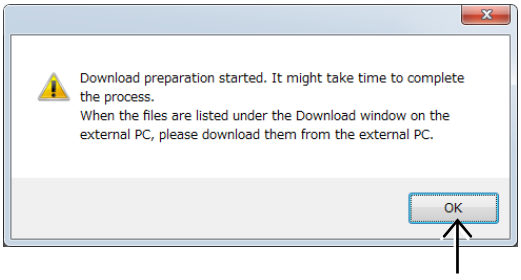
No.	Name	Function
(1)	Format area	Select the format of the images to be downloaded.
(2)	Information area	Select the image information to be added. Three types of image information can be added: Scale, Condition and Date and time. In addition, when AVI is selected for the format, Scale cannot be selected.
(3)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(4)	Channel area	Select the channels to be downloaded.

(5) Click the OK button.

Download preparation for the micro images is completed.

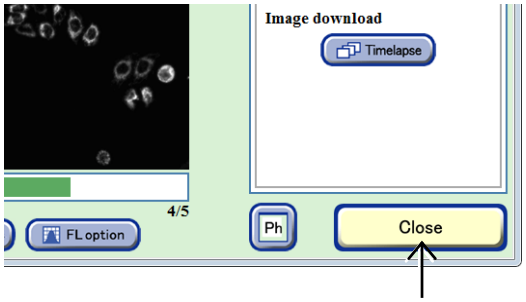
The Point image display window (FL) appears.

> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual download).”



Download preparation complete dialog box

(6) Click the Close button to close the Point image display window (FL).



Point image display window (FL)

Caution

The scale bar displayed in the Point image display window (FL) is not included in the original image.
An image data file prepared for download includes the original image only.

The image size is calculated as shown below. The dynamic range of the CCD camera is 8 mm × 8 mm (1000 × 1000 pixels), and when the image is captured at 2x, the above size becomes 8/2 mm × 8/2 mm (4 mm × 4 mm) (1 pixel=4 µm).

The image size of each observation magnification is calculated based on the above information.

- **2x of the image size becomes 4 mm × 4 mm (1 pixel=4 µm)**
- **4x of the image size becomes 2 mm × 2 mm (1 pixel=2 µm)**
- **10x of the size becomes 0.8 mm × 0.8 mm (1 pixel=0.8 µm)**
- **20x of the image size becomes 0.4 mm × 0.4 mm (1 pixel=0.4 µm)**
- **40x of the image size becomes 0.2 mm × 0.2 mm (1 pixel=0.2 µm)**

Caution

When creating AVI files with the image download function, if the number of frames is too large, the AVI file is fragmented into multiple files because the number of frames in one AVI file is limited.

The maximum number of frames is determined by the number of pixels in the image to be downloaded.

The number of pixels for one side of the image	The maximum number of frames
1000 pixels or less	1000 frames
1001 pixels or more 2000 pixels or less	250 frames
2001 pixels or more 3000 pixels or less	110 frames
3001 pixels or more 4000 pixels or less	60 frames

* **In the Full Scan image display window (Download tab), if the number of vertical pixels is different from the number of horizontal pixels on a download area that has been specified with Area select area, the limitation is applied to the larger one.**

* **For standard images (single images), since the number of pixels is 1000 × 1000 pixels, the maximum number of frames is 1000 frames.**

3.5.3.3 Viewing the macro image and preparing download

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

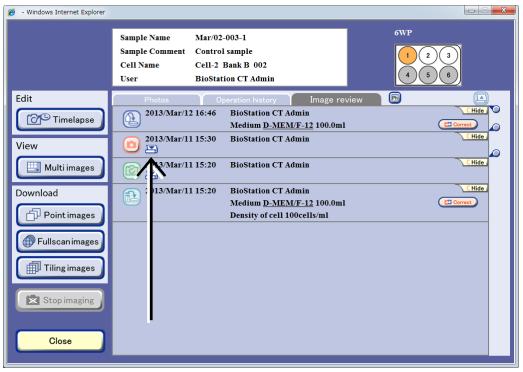
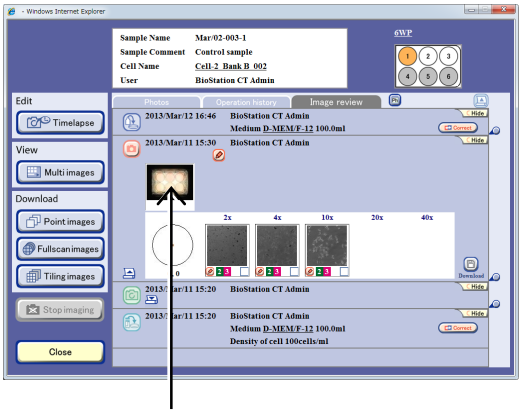


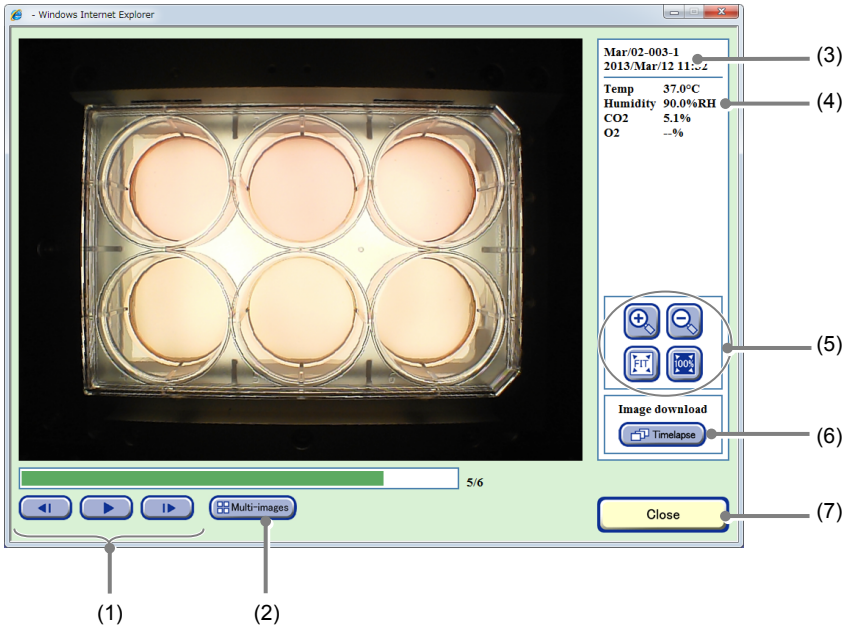
Image review window

(2) Display the macro image.

1. Click a thumbnail image of the macro image.

The Macro image display window appears.



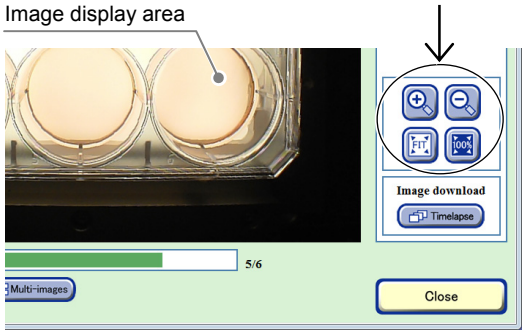


Macro image display window

No.	Name	Function
(1)	Timelapse images playback button	► button: Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. I►/◄I button: Play one frame forward /one frame backward
(2)	Multi-images button	Click this button to display the Multi images display window. Selected multiple scheduled observation images can be displayed and played back side by side. (See Section 3.7, “Multi Images Display of Captured Images.”)
(3)	Sample information	This area displays the observation point, sample name, and captured date and time.
(4)	Image capture conditions and environmental information	This area displays the Image capture conditions and the temperature, humidity, and CO_2 concentration and O_2 concentration (optional) in the CO_2 incubator.
(5)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **100% button:** Display the image with the actual size.
(6)	Timelapse button	Click this button to create a download file for images captured in all rounds at the same observation point as that of the image displayed.
(7)	Close button	Click this button to close the Macro image display window.

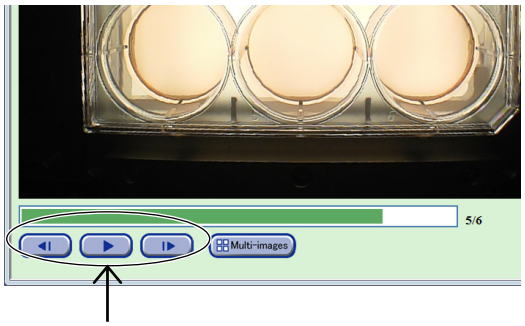
2. Change the display size of the image.

Click the +/-, FIT, or the 100% button to change the display size of the image.



3. To play back the displayed image, click the ► button, and to proceed to the next image or to return to the previous image, click the I► button or the ◄I button.

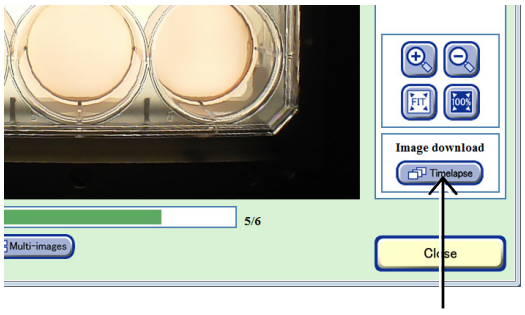
When no image is to be downloaded, go to step (4) and close the window.



(3) To create a download file in which all macro images of the samples displayed on the screen are arranged in chronological order

1. Click the Timelapse button.

The Image download setting window appears.



2. Set the format conditions of the images to be downloaded.

Set the format conditions of the images to be downloaded, and then click the OK button.
After download preparation is completed, the download preparation complete dialog box appears.

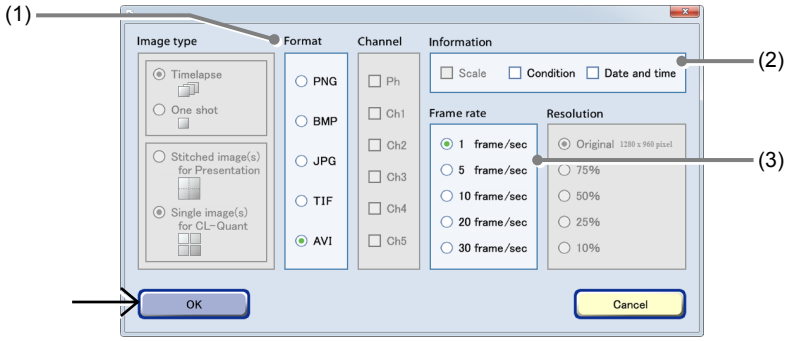


Image download settings window

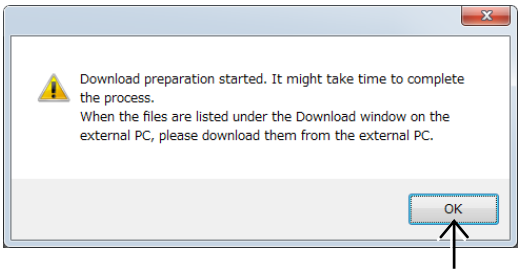
No.	Name	Function
(1)	Format area	Select the format of the images to be downloaded.
(2)	Information area	Select the image information to be added. Two types of image information can be added: Condition or Date and time.
(3)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.

3. Click the OK button.

Download preparation for the macro images is completed.

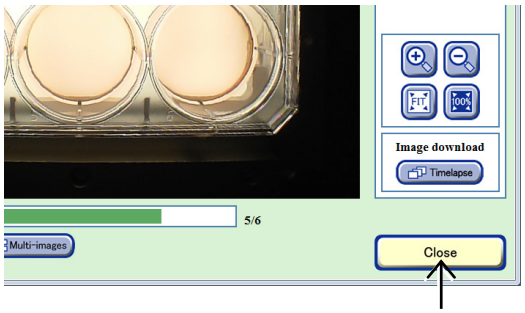
The Macro image display window appears.

> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual download).”



Download preparation complete dialog box

(4) Click the Close button to close the Macro image display window.



Macro image display window

3.5.3.4 Viewing the Full Scan image and preparing download

This section describes the procedure for displaying the Full Scan image captured by scheduled Full Scan observation and also the procedure for preparing those images for download using the Full Scan image display window.

Various operations can be performed in the Full Scan image display window such as enlarging, reducing and scrolling the displayed image, playing back images in chronological order, and also preparing images of a specified area for download.

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

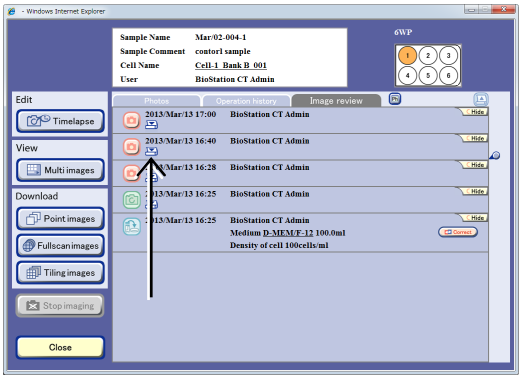
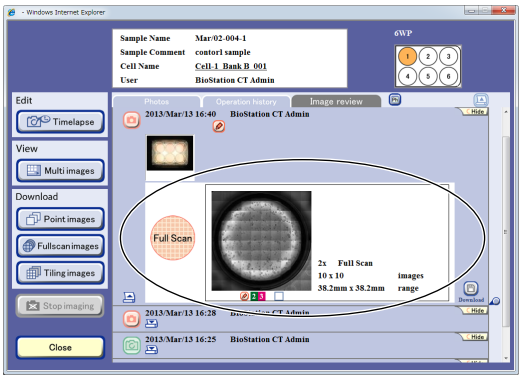


Image review window

If images captured by Full Scan observation are included, “Full Scan” is displayed in the observation position information in the culture vessel and tiled thumbnail images are displayed.

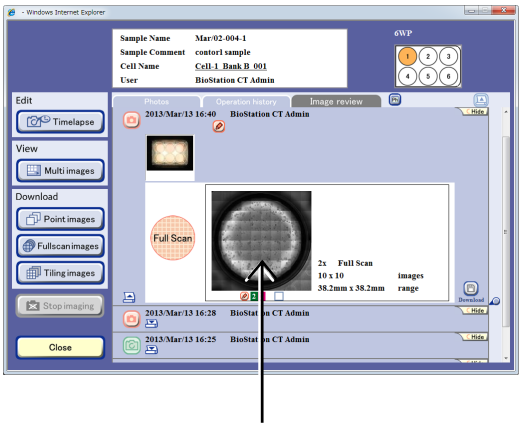
In addition, the observation magnification, number of images, and observation range are displayed on the side of the thumbnail images.

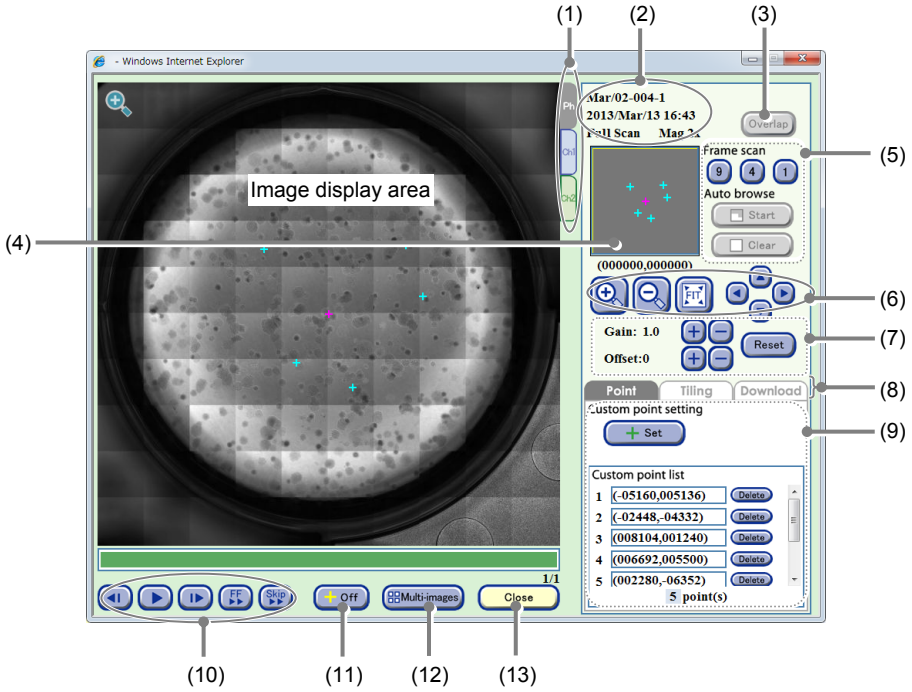


(2) Display the Full Scan image.

1. Click a thumbnail image of the Full Scan image.

The Full Scan image display window appears.





Full Scan image display window (Point tab)

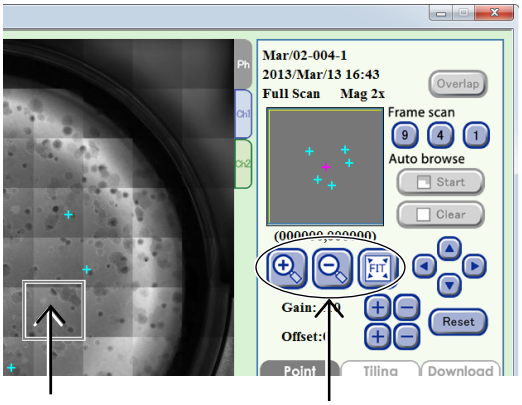
No.	Name	Function
(1)	Channel tabs	These tabs are displayed when fluorescence images are captured. Select a tab to switch the image displayed among Ph (a phase contrast image) and Ch1 to 3 (FL channel images).
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Overlap button	Click this button to overlay the fluorescence image and the phase contrast image.
(4)	Observation point display area	This area displays all custom observation points registered in the entire sample area or the position and size of observation field of view displayed in the image display area.
(5)	Scan playback function	Click this button to play back scan of the entire field of view automatically. **Frame scan:** Plays back scan of entire field of view with the selected frame size. **Auto browse:** Plays back scan with the displayed magnification from the currently displayed point. Also enables pause, resume, or clear playback of scan.
(6)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **Field of view 1 frame move button:** Shift the field of view up/down, left/right by one frame.

No.	Name	Function
(7)	Brightness adjustment of a displayed image	Adjust the brightness of a displayed image. **Gain:** Click the +/- button to adjust the contrast by ±0.1. **Offset:** Click the +/- button to adjust the brightness by ±5 when the Ph channel tab is displayed. Click the +/- button to adjust the brightness by ±10 when the FL channel tab is displayed. **Reset button:** Reset the brightness of a displayed image.
(8)	Operation window switch tabs	Click a tab to switch the operation window. **Point tab:** Enable registration of custom observation point. **Tiling tab:** Enable registration of capture area for Tiling observation. (See Section 3.4.2.3, “Tiling observation.”) **Download tab:** Enable download preparation for a Full Scan image.
(9)	Custom point setting area	**+Set button:** Register the X-Y coordinate of the center of the field of view displayed in the image display area as the custom observation point. (Up to 25 positions) **Custom point list:** Display the registered custom observation point. Select a custom observation point from the list moves the field of view to that position. **Delete buttons:** Delete the registered custom observation point.
(10)	Timelapse images playback button	► button: Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. I►/◄I button: Play one frame forward /one frame backward **FF button:** Fast-forward an image. **Skip button:** Skip the image for the predefined frame during playback.
(11)	+Off button	Click this button to display or hide pointers displayed in the image display area.
(12)	Multi-images button	Click this button to display the Multi images display window. Register Full Scan observation thumbnail images in the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(13)	Close button	Click this button to close the Full Scan image display window.

2. Change the display size of the image.

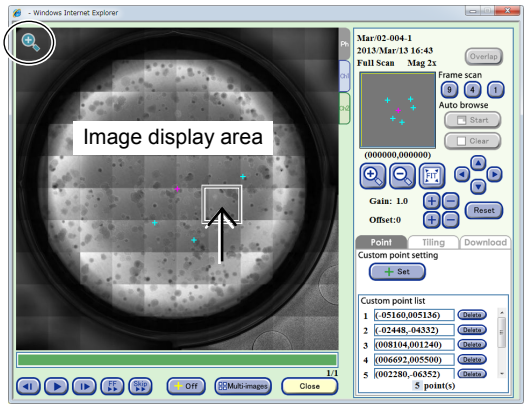
Click the + or - button, or the FIT button to change the display size of the image.

When the entire image is displayed, click a point on the tiled image displayed in the image display area to enlarge the image at the selected point.

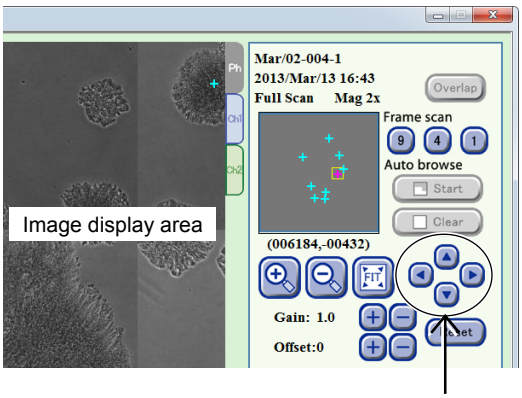


When the magnifying glass icon is displayed in the image display area, select a point in the image display area to enlarge the image at the selected point.

When the magnifying glass icon is not displayed, click a point in the image display area to move the center of the field of view to the clicked position.

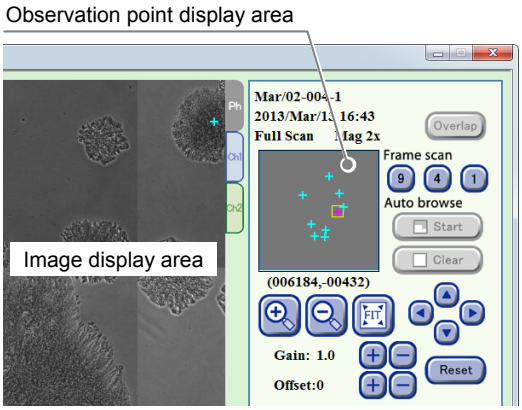


Click the Field of view 1 frame move button to shift the field of view upward, downward, leftward or rightward by the same amount as the size of the current field of view displayed in the image display area.



In the observation point display area, the observation field of view displayed in the image display area is displayed with a yellow rectangle, which indicates the position and size of the observation range relative to the entire image.

The registered custom observation points are indicated with light blue pointers.



3. The entire field of view can be played back automatically.

There are two types of scan playback: Frame scan and Auto browse.

Frame scan:

Scan playback is performed for the entire field of view at the selected field size.

There are three sizes for the field of view: [9] (3×3 images), [4] (2×2 images), and [1] (1 image). Select the size of the field of view. A scan playback start confirmation dialog box appears.

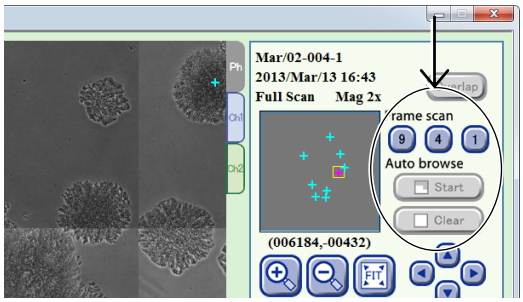
Click the OK button to start the scan playback from the upper left of the image to the right.

Auto browse:

Scan playback is performed using the magnification of the currently displayed point. Scan playback can be paused, resumed or cleared using the buttons.

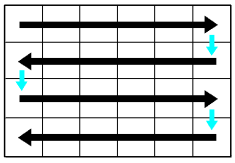
Click the Start button in the Auto browse field. A scan playback start confirmation dialog box appears.

Click the OK button to start the scan playback from the currently displayed position to the right.



The scan playback performs a reciprocating scan to play back.

The first line at the starting point is scanned from left to right (forward), and the second line is scanned from right to left (return).



An area already displayed by scan playback turns green in the observation point display area.

During scan playback, both Frame scan and Auto browse can be performed using the buttons in the Auto browse field.

When scan playback starts, the Start button changes to the Stop button.

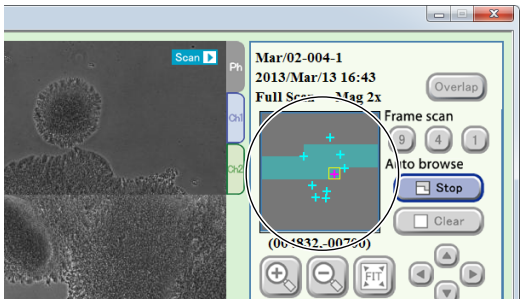
Click the Stop button to pause scan playback. The button name changes to Continue.

Click the Continue button to resume scan playback.
The button name changes to Stop.

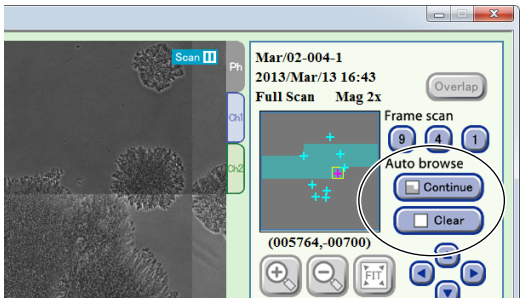
Click the Clear button to restore the original color of the green area in the observation point display area that indicates the area played back by scan playback.

Click the Start button to display the scan playback start confirmation dialog box. Click the OK button to start scan playback from the current position. The button name changes to Stop.

Alternatively, when an enlarged image is displayed, click the Start button in the Auto browse field to start scan playback from the current position at the current size of the field of view.



During scan playback



While scan playback is paused

4. **To play back the displayed image, click the ► button, and to proceed to the next image or to return to the previous image, click the I► button or the ◄I button.**

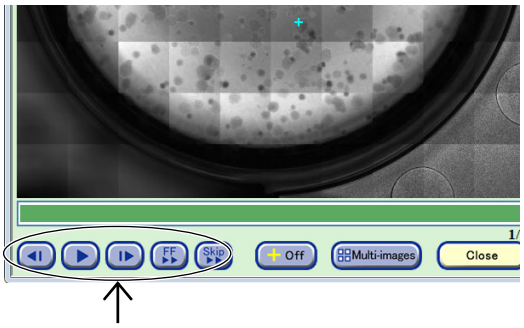
   To fast-forward the image, click the FF button.

   Each time the FF button is clicked, the playback speed is switched. (The speed is switched in the order of 1-step → 2-step → Normal.)

   To skip the playback with a frame specified, click the Skip button.

   A dialog box to specify the frame to skip is displayed.

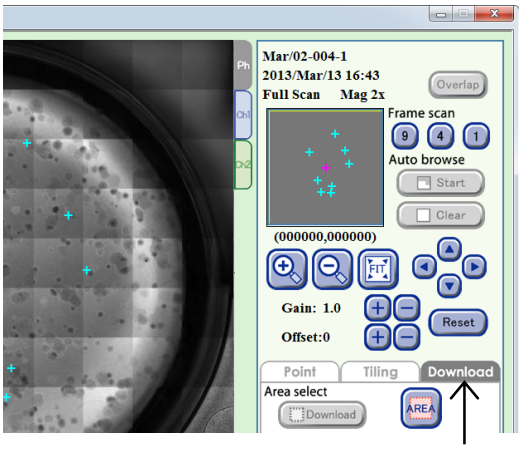
   When no image is to be downloaded, go to step (5) and close the window.

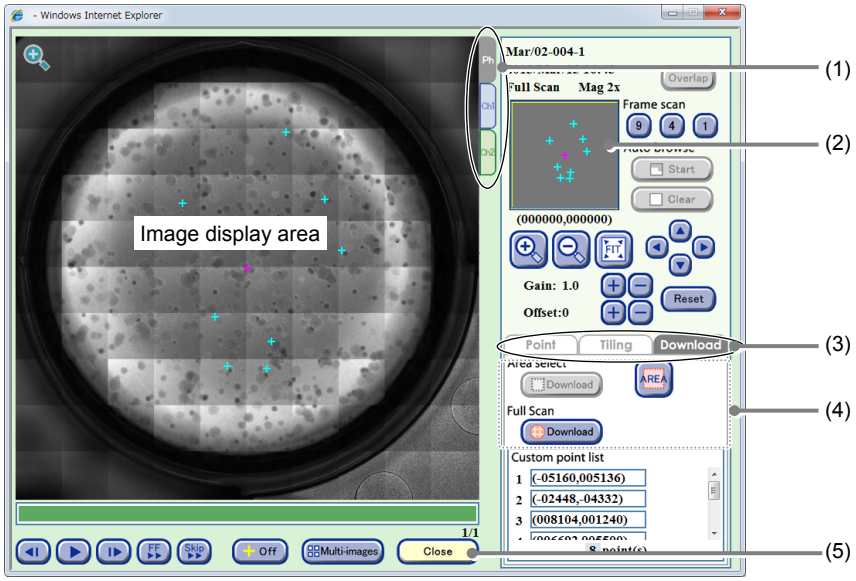


(3) Open the Download preparation setting area.

1. **Select the Download tab.**

   The Download tab window appears.





Full Scan image display window (Download tab)

No.	Name	Function
(1)	Channel tabs	These tabs are displayed when fluorescence images are captured. Select a tab to switch the image displayed among Ph (a phase contrast image) and Ch1 to 3 (FL channel images).
(2)	Observation point display area	This area displays all custom observation points registered in the entire sample area or the position and size of observation field of view displayed in the image display area.
(3)	Operation window switch tabs	Click a tab to switch the operation window. **Point tab:** Enable registration of custom observation point. **Tiling tab:** Enable registration of capture area for Tiling observation. (See Section 3.4.2.3, “Tiling observation.”) **Download tab:** Enables download preparation for a Full Scan image.
(4)	Download area	**Area select area:** Download the image of the specified area. **Full scan area:** Perform download preparation for a Full Scan image.
(5)	Close button	Click this button to close the Full Scan image display window.

(4) Specify the area to be downloaded.

The setting procedure differs depending on the area to be downloaded.

a. Download preparation of the Full Scan image

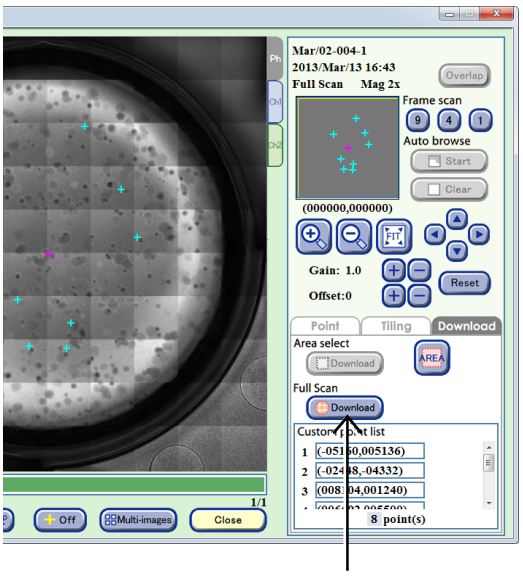
b. Download preparation of a specified area

The following describes each case.

a. Download preparation of the Full Scan image

a-1. Click the Download button in the Full Scan area.

The Image download setting window appears.



a-2. Set the format conditions of the images to be downloaded.

The allowable conditions depend on the type of image to be downloaded.
The format conditions set here are applied to all images to be downloaded.

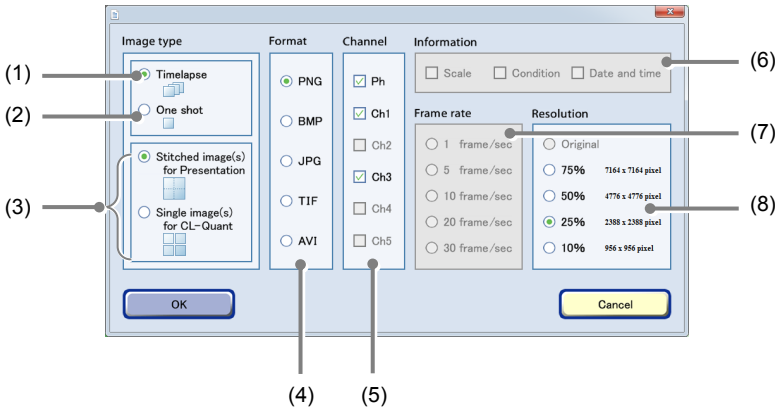


Image download settings window

No.	Name	Function
(1)	Timelapse	A download file is created in which all images taken of the same area as the displayed image are arranged in chronological order.
(2)	One shot	Download preparation of only the currently displayed image is performed.
(3)	Image stitching area	Enabled when download of Full Scan or Tiling is selected. **Stitched image(s) for Presentation** A large image is created by stitching all capture areas. **Single image(s) for CL-Quant** An independent single image for each capture area is created.
(4)	Format area	Select the format of the images to be downloaded.
(5)	Channel area	Select the channels to be downloaded. Enabled only when an image captured also by fluorescence capturing is selected.
(6)	Information area	Select the image information to be added. Three types of image information can be added: Scale, Condition and Date and time. Enabled only when [Original] (no compression) is selected in the Resolution area. Also, when AVI is selected for the format, Scale cannot be selected.
(7)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(8)	Resolution area	Set the compression rate (resolution) of the images. Select [Original] (no compression), [75%], [50%], [25%], or [10%]. The resolution of each compression rate is displayed on the right side.

a-3. After the settings are completed, click the OK button.

After download preparation is completed, the download preparation complete dialog box appears.

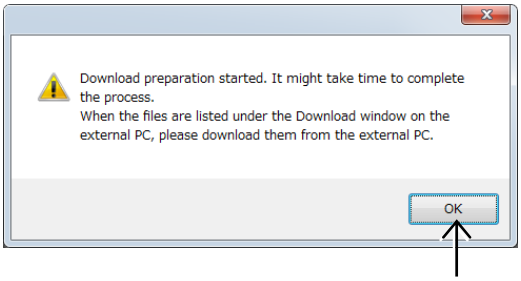
a-4. Click the OK button.

Image download preparation is completed.

The Full Scan image display window appears.

Go to step (5).

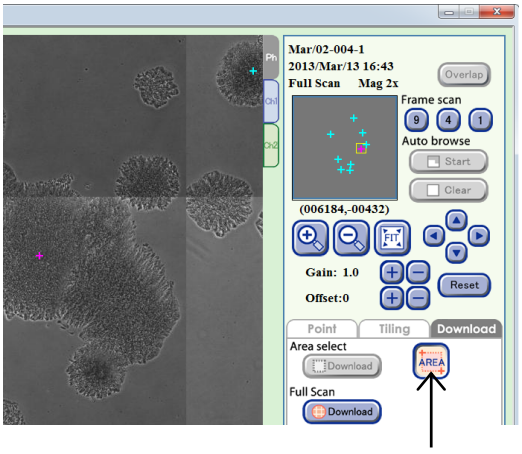
> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”



Download preparation complete dialog box

b. Download preparation of the specified area

b-1. Click the AREA button in the Area select area area.

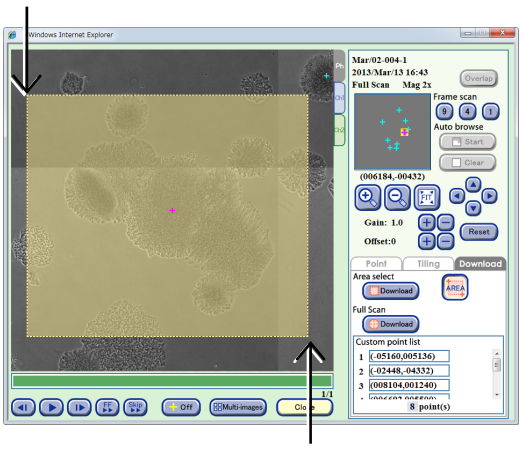


Full Scan image display window (Download tab)

b-2. In the image display area, specify the area to be downloaded by clicking the starting point and ending point of a rectangle.

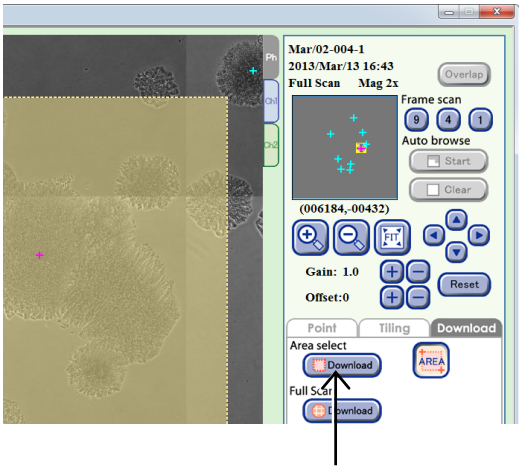
After the rectangle area is specified, the selected area is displayed in yellow in the image display area.

Click the image display area once again to cancel the selected area and display the starting point of the new rectangle area.



b-3. Click the Download button in the Area select area.

The Image download setting window appears.



b-4. Set the format conditions of the images to be downloaded.

The allowable conditions depend on the type of image to be downloaded.
The format conditions set here are applied to all images to be downloaded.

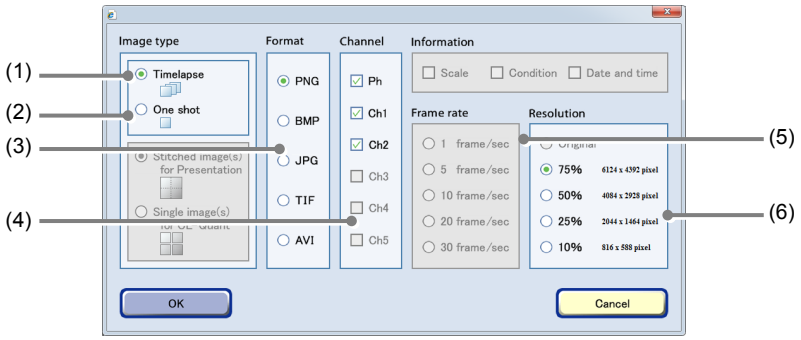
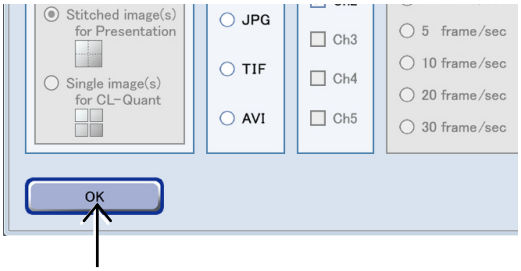


Image download settings window

No.	Name	Function
(1)	Timelapse	A download file is created in which all images taken of the same area as the displayed image are arranged in chronological order.
(2)	One shot	Download preparation of only the currently displayed image is performed.
(3)	Format area	Select the format of the images to be downloaded.
(4)	Channel area	Select the channels to be downloaded. Enabled only when an image captured also by fluorescence capturing is selected.
(5)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(6)	Resolution area	Set the compression rate (resolution) of the images for the specified area. Select [Original] (no compression), [75%], [50%], [25%], or [10%]. The resolution of each compression rate is displayed on the right side.

b-5. After the settings are completed, click the OK button.

After download preparation is completed, the download preparation complete dialog box appears.

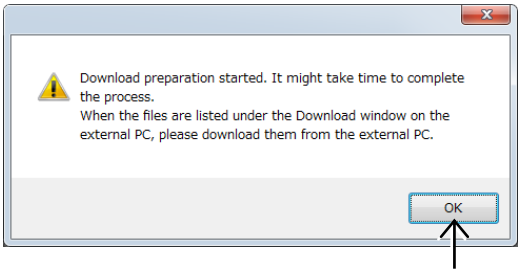


b-6. Click the OK button.

Image download preparation is completed.

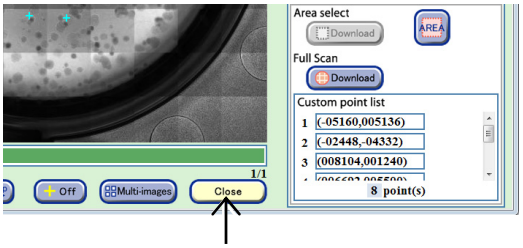
The Full Scan image display window appears.

> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”



Download preparation complete dialog box

(5) Click the Close button to close the Full Scan image display window.



Full Scan image display window

Registering the custom observation point

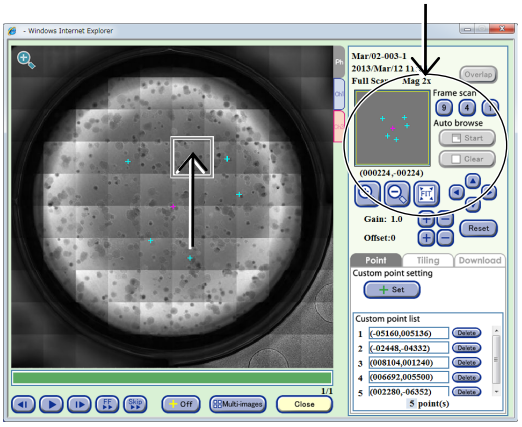
Custom observation points can be registered or deleted in the Full Scan image display window (Point tab).

a. To register custom observation points

a-1. Select the observation position.

Enlarge, reduce, or shift the field of view to move the position to be registered as a custom observation point to the center of view.

Alternatively, click a point in the tiled image displayed in the image display area to enlarge the selected point.



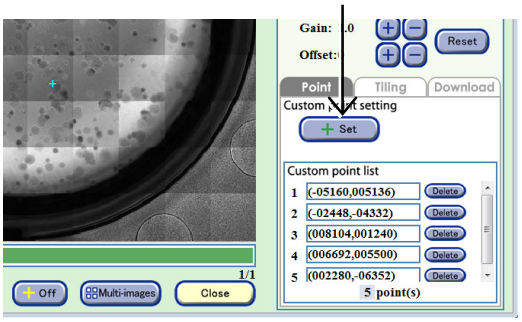
Full Scan image display window (Point tab)

a-2. Click the Set button.

The XY coordinates of the center of view displayed in the image display area are registered as a custom observation point.

The registered custom observation point is added to the custom point list field and indicated with a light blue pointer (crosshair) in the image display area and observation point display area.

The pointer in the image display area can be shown/hidden using the +Off button.



b. To delete custom observation points

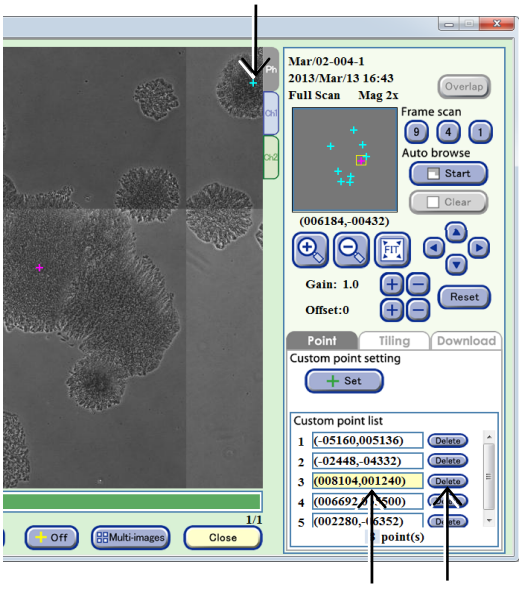
b-1. Select the custom observation point to be deleted.

Select the observation position to be deleted from the custom point list field.

Alternatively, click the light blue pointer displayed in the image display area to select the position.

b-2. Click the Delete button next to the selected custom observation point.

The custom observation point is deleted.



3.5.3.5 Viewing the Tiling image and preparing download

This section describes the procedure for displaying the tiled images captured by scheduled Tiling observation and the procedure for preparing those images to be downloaded using the Tiling image display window.

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

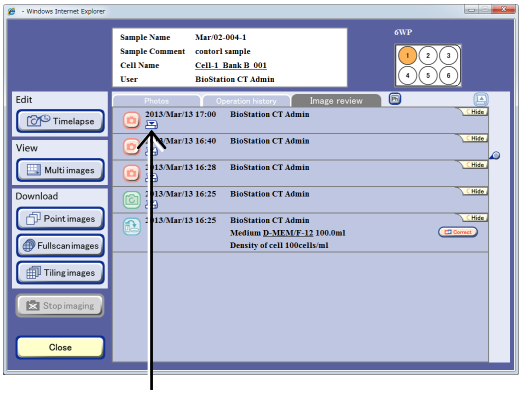
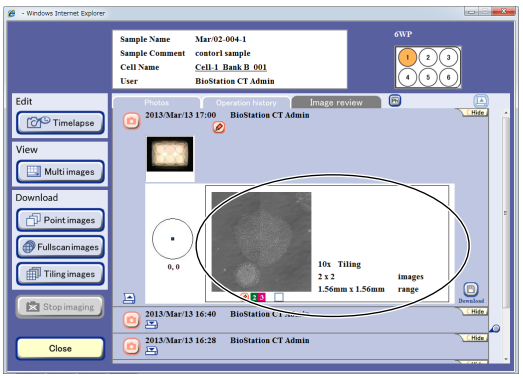


Image review window

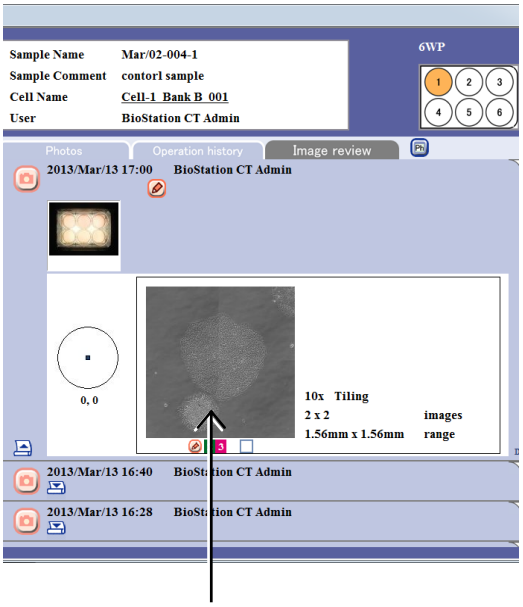
The observation magnification, number of images, and observation range are displayed on the side of the thumbnail images.

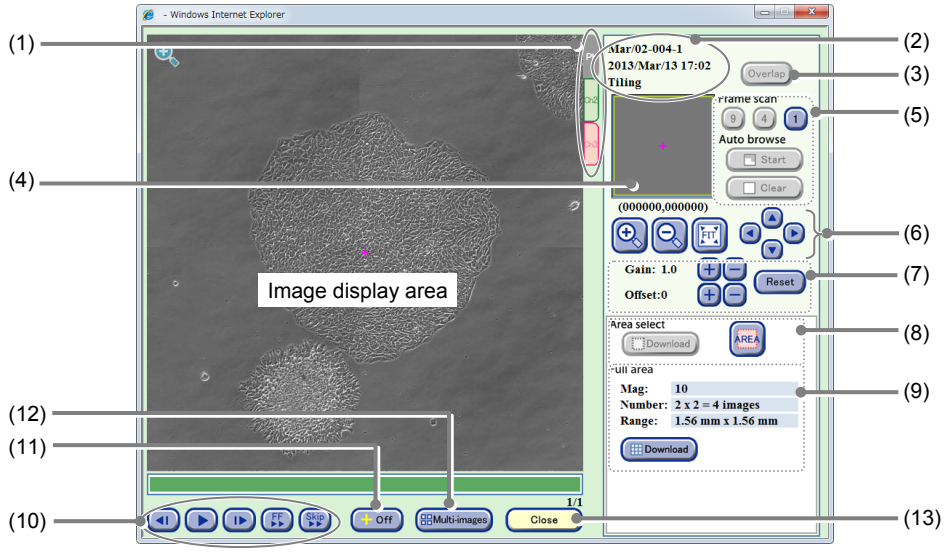


(2) Display the Tiling image.

1. Click a thumbnail image of the Tiling image.

The Tiling image display window appears.





Tiling image display window

No.	Name	Function
(1)	Channel tabs	These tabs are displayed when fluorescence images are captured. Select a tab to switch the image displayed among Ph (a phase contrast image) and Ch1 to 3 (FL channel images).
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Overlap button	Click this button to overlay the fluorescence image and the phase contrast image.
(4)	Observation point display area	This area displays the position and size of the observation field of view displayed in the image display area.
(5)	Scan playback function	Scanning of the entire field of view is played back automatically. **Frame scan:** Play back scan of entire field of view with the selected frame size. **Auto browse:** Play back scan with the displayed magnification from the currently displayed point. Also enables pause, resume, or clear playback of scan.
(6)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **Field of view 1 frame move buttons:** Shift the field of view up/down, left/right by one frame.
(7)	Brightness adjustment of a displayed image	Adjust the brightness of a displayed image. **Gain:** Click the +/- button to adjust the contrast by ±0.1. **Offset:** Click the +/- button to adjust the brightness by ±5 when the Ph channel tab is displayed. Click the +/- button to adjust the brightness by ±10 when the FL channel tab is displayed. **Reset button:** Reset the brightness of a displayed image.
(8)	Area select	Download the image of the specified area. **Download button:** Prepare to download an image of the specified area on a Tiling image. **AREA button:** Set the area to download by specifying the start point and end point on a Tiling image.

No.	Name	Function
(9)	Full area	Download an entire Tiling image. **Tiling information:** Display the observation magnification, observation area, etc. for Tiling observation. **Download button:** Perform download preparation of the entire Tiling image.
(10)	Timelapse images playback button	**► button:** Play back timelapse images continuously. During playback, this button changes to the pause button and clicking the button pauses playback. **I►/◄I button:** Play one frame forward /one frame backward **FF button:** Fast-forward an image. **Skip button:** Skip the image for the predefined frame during playback.
(11)	+Off button	Click this button to display or hide pointers displayed in the image display area.
(12)	Multi-images button	Click this button to display the Multi images display window. Register the thumbnail images of Tiling observation on the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(13)	Close button	Click this button to close the Tiling image display window.

2. Change the display size of the image.

Click the + or - button, or the FIT button to change the display size of the image.

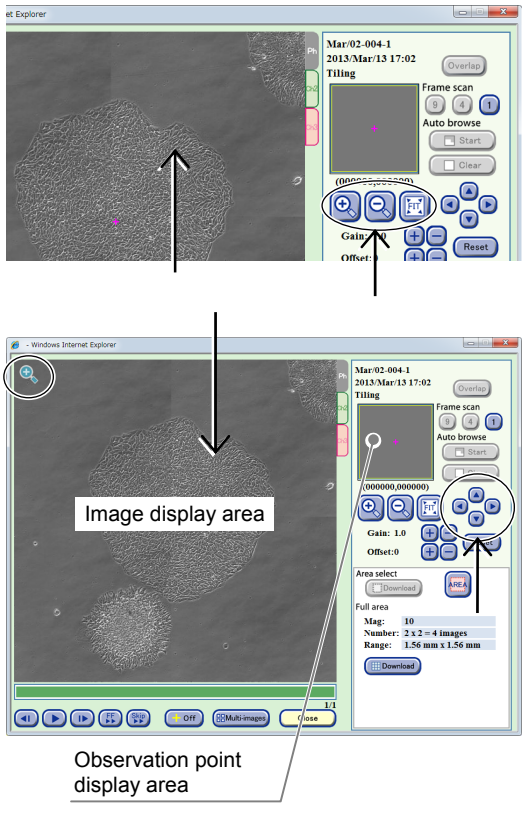
When the entire tiled image is displayed, click a point on the tiled image displayed in the image display area to enlarge the image at the selected point.

When the magnifying glass icon is displayed in the image display area, select a point in the image display area to enlarge the image at the selected point.

When the magnifying glass icon is not displayed, click a point in the image display area to move the center of the field of view to the clicked position.

Click the Field of view 1 frame move button to shift the field of view upward, downward, leftward or rightward by the same amount as the size of the current field of view displayed in the image display area.

In the observation point display area, the observation field of view displayed in the image display area is displayed with a yellow rectangle, which indicates the position and size of the observation range relative to the entire image.



3. The entire field of view can be played back automatically.

There are two types of scan playback: Frame scan and Auto browse.

Frame scan:

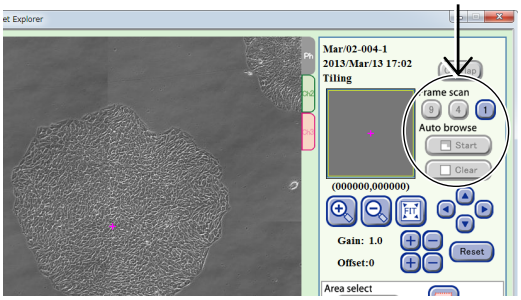
Scan playback is performed for the entire field of view at the selected field size.

There are three sizes for the field of view: [9] (3×3 images), [4] (2×2 images), and [1] (1 image).
Click the button for the size of the field of view. A scan playback start confirmation dialog box appears.

Click the OK button to start the scan playback from the upper left of the image to the right.

Auto browse:

Scan play back is performed using the display magnification of the currently displayed point. Scan playback can be paused, resumed or cleared by operating the buttons.

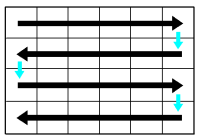


Click the Start button in the Auto browse field. A scan playback start confirmation dialog box appears.

Click the OK button to start the scan playback from the currently displayed position to the right.

The scan playback performs a reciprocating scan to play back.

The first line at the starting point is scanned from left to right (forward), and the second line is scanned from right to left (return).



An area already displayed by scan playback turns green in the observation point display area.

During scan playback, both Frame scan and Auto browse can be performed using the buttons in the Auto browse field.

When scan playback starts, the Start button changes to the Stop button.

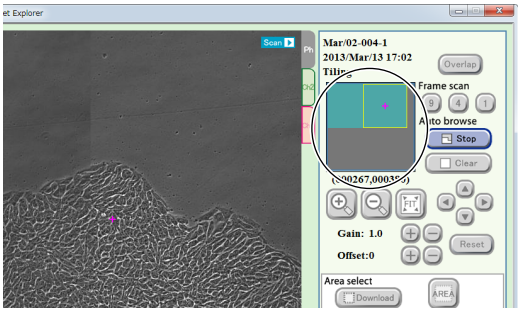
Click the Stop button to pause scan playback. The button name changes to Continue.

Click the Continue button to resume scan playback.
The button name changes to Stop.

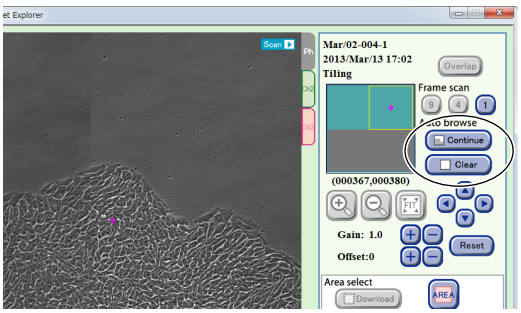
Click the Clear button to restore the original color of the green area in the observation point display area that indicates the area played back by scan playback.

Click the Start button to display the scan playback start confirmation dialog box. Click the OK button to start scan playback from the current position. The button name changes to Stop.

Alternatively, when an enlarged image is displayed, click the Start button in the Auto browse field to start scan playback from the current position at the current size of the field of view.

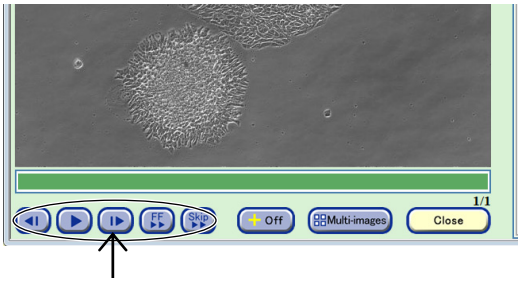


During scan playback



While scan playback is paused

4. To play back the displayed image, click the ► button, and to proceed to the next image or to return to the previous image, click the I► button or the ◄I button.



To fast-forward the image, click the FF button.

Each time the FF button is clicked, the playback speed is switched. (The speed is switched in the order of 1-step → 2-step → Normal.)

To skip the playback with a frame specified, click the Skip button.

A dialog box to specify the frame to skip is displayed.

When no image is to be downloaded, go to step (4) and close the window.

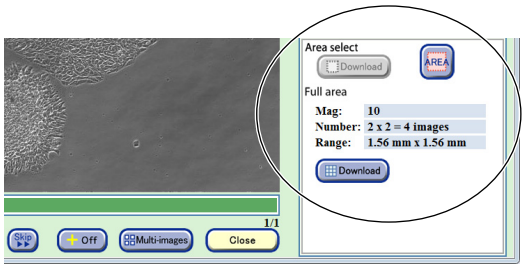
(3) Set the download preparation.

Specify the area to be downloaded.

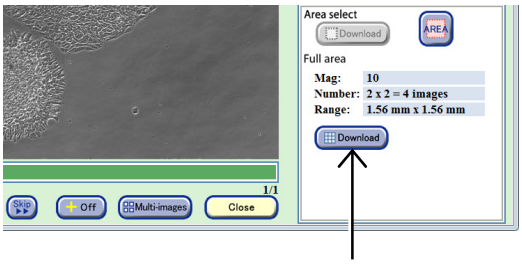
The setting procedure differs depending on the area to be downloaded.

a. Download preparation of entire Tiling image.

b. Download preparation of an image in the area specified in a Tiling image



The following describes each case.



a. Download preparation of entire Tiling image

a-1. Click the Download button in the Full area.

The Image download setting window appears.

a-2. Set the format conditions of the images to be downloaded.

The allowable conditions depend on the type of image to be downloaded.
The format conditions set here are applied to all images to be downloaded.

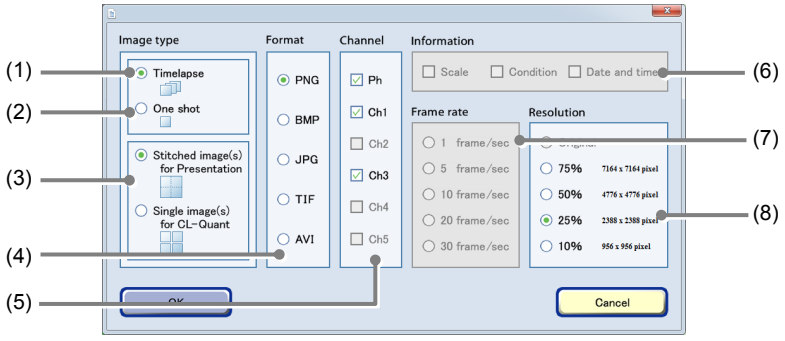
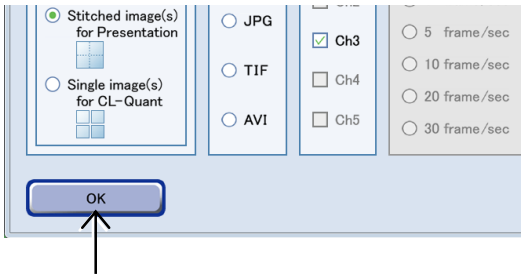


Image download settings window

No.	Name	Function
(1)	Timelapse	A download file is created in which all images taken of the same area as the displayed image are arranged in chronological order.
(2)	One shot	Download preparation of only the currently displayed image is performed.
(3)	Image stitching area	Enabled when download of Full Scan or Tiling is selected. **Stitched image(s) for Presentation** A large image is created by stitching all capture areas. **Single image(s) for CL-Quant** An independent single image for each capture area is created.
(4)	Format area	Select the format of the images to be downloaded.
(5)	Channel area	Select the channels to be downloaded. Enabled only when an image captured also by fluorescence capturing is selected.
(6)	Information area	Select the image information to be added. Three types of image information can be added: Scale, Condition and Date and time. Enabled only when [Original] (no compression) is selected in the Resolution area. Also, when AVI is selected for the format, Scale cannot be selected.
(7)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(8)	Resolution area	Set the compression rate (resolution) of the images. Select [Original] (no compression), [75%], [50%], [25%], or [10%]. The resolution of each compression rate is displayed on the right side.

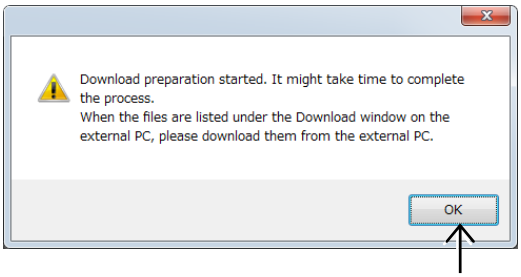
a-3. After the settings are completed, click the OK button.

After download preparation is completed, the download preparation complete dialog box appears.



a-4. Click the OK button.

Image download preparation is completed.
The Tiling image display window appears.
Go to step (4).

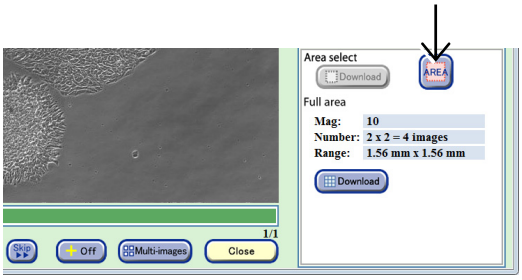


Download preparation complete dialog box

For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”

b. Download preparation of an image in the area specified in a Tiling image

b-1. Click the AREA button in the Area select area.

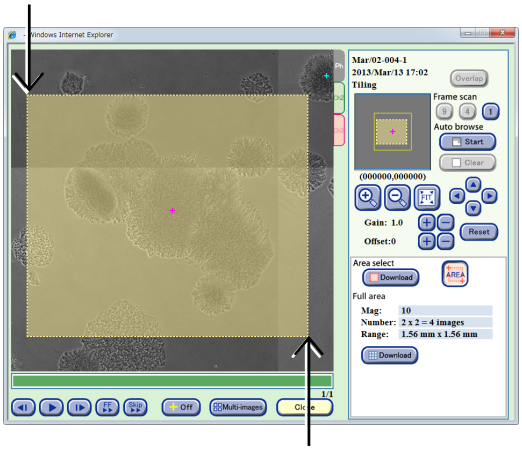


Tiling image display window

b-2. In the image display area, specify the area to be downloaded by clicking the starting point and ending point of a rectangle.

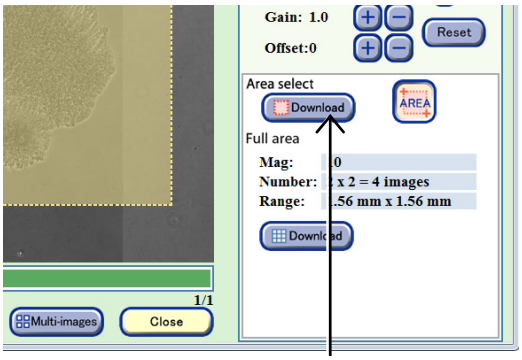
After the rectangle area is specified, the selected area is displayed in yellow in the image display area.

Click the image display area once again to cancel the selected area and display the starting point of the new rectangle area.



b-3. Click the Download button in the Area select area.

The Image download setting window appears.



b-4. Set the format conditions of the images to be downloaded.

The allowable conditions depend on the type of image to be downloaded.
The format conditions set here are applied to all images to be downloaded.

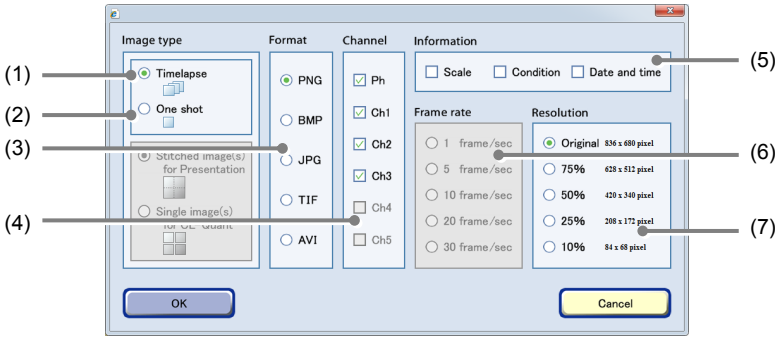
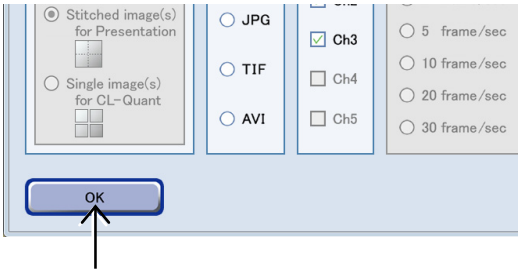


Image download settings window

No.	Name	Function
(1)	Timelapse	A download file is created in which all images taken of the same area as the displayed image are arranged in chronological order.
(2)	One shot	Download preparation of only the currently displayed image is performed.
(3)	Format area	Select the format of the images to be downloaded.
(4)	Channel area	Select the channels to be downloaded. Enabled only when an image captured also by fluorescence capturing is selected.
(5)	Information area	Select the image information to be added. Three types of image information can be added: Scale, Condition and Date and time. Enabled only when [Original] (no compression) is selected in the Resolution area. Also, when AVI is selected for the format, Scale cannot be selected.
(6)	Frame rate area	Select the duration of playback per image. Enabled only when the AVI format is set.
(7)	Resolution area	Set the compression rate (resolution) of the images for the specified area. Select [Original] (no compression), [75%], [50%], [25%], or [10%]. The resolution of each compression rate is displayed on the right side.

b-5. After the settings are completed, click the OK button.

After download preparation is completed, the download preparation complete dialog box appears.

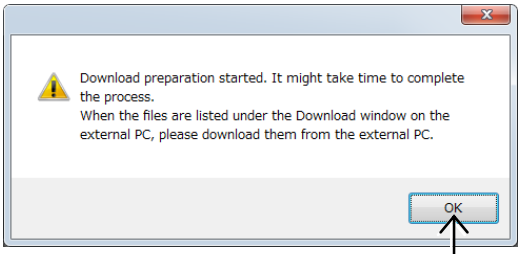


b-6. Click the OK button.

Image download preparation is completed.

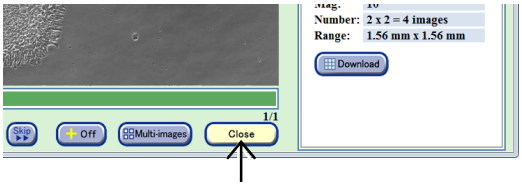
The Tiling image display window appears.

> For details on the procedure for downloading the prepared file data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”



Download preparation complete dialog box

(4) Click the Close button to close the Tiling image display window.



Tiling image display window

3.5.3.6 Displaying vessel product information

(1) Click the vessel name in the Image review window to display the vessel product information.

The Vessel information window appears.

> When a culture vessel name is underlined, its product information is linked and can be opened. When a culture vessel name is not underlined, no information can be opened.

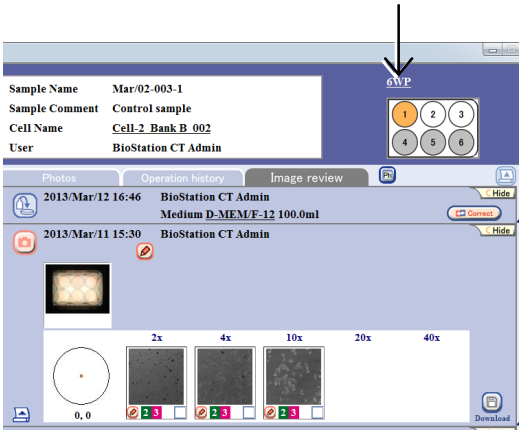
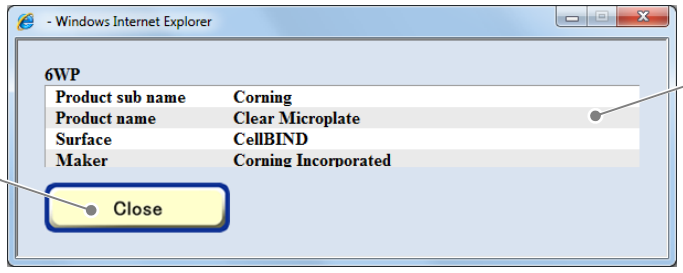


Image review window

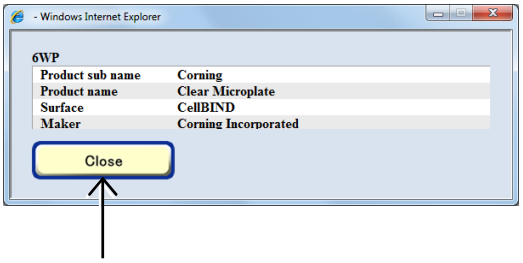


Close button
Close the Vessel information window.

Vessel information display area

Vessel information window

(2) After checking the vessel information, click the Close button to close the window.



3.5.3.7 Displaying medium information

(1) Click the medium name in the Image review window.

The Medium information window appears.

When a medium name is underlined, its culture information is linked and can be opened.
When a medium name is not underlined, information cannot be opened.

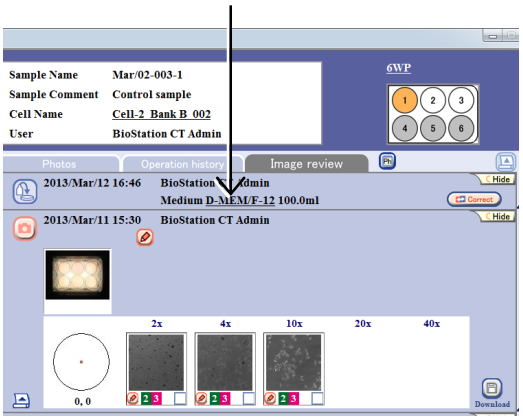
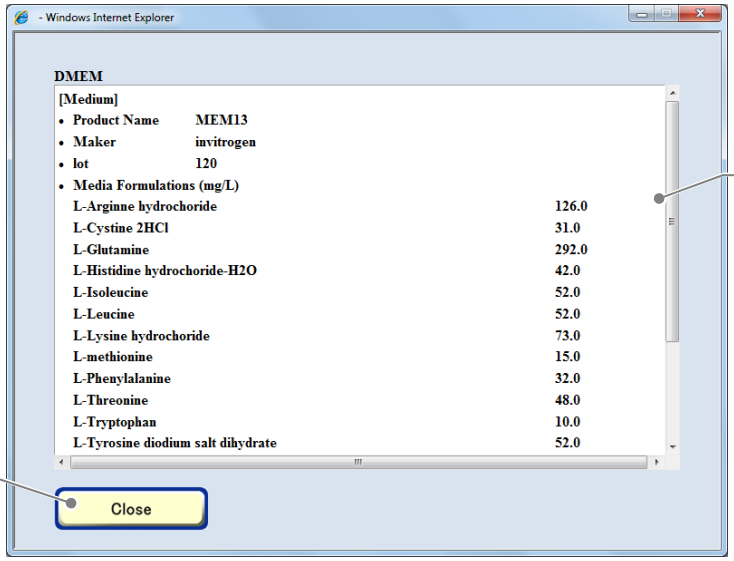


Image review window



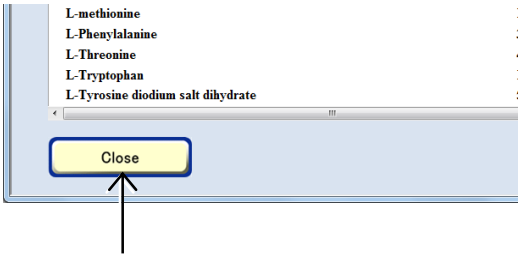
Medium information display area

Close button

Close the Medium information window.

Medium information window

(2) After checking the medium information, click the Close button to close the window.



3.5.3.8 Switching to the display of other sample

(1) The observation data of other sample in the same holder can be displayed.

a. When a vessel other than a 96- or 48-well plate is used

a-1. Click the Holder map in the Image review window to select the desired sample.

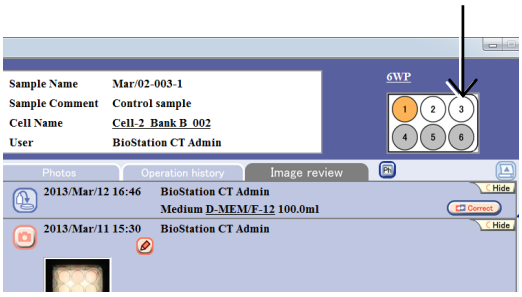


Image review window

b. When a 96- or 48-well plate is used

b-1. Click the Holder map in the Image review window. The 96-well or 48-well plate sample selection window appears.

b-2. Select the desired sample in the well plate sample selection window.

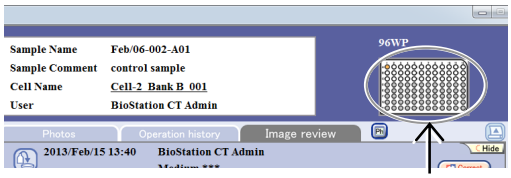
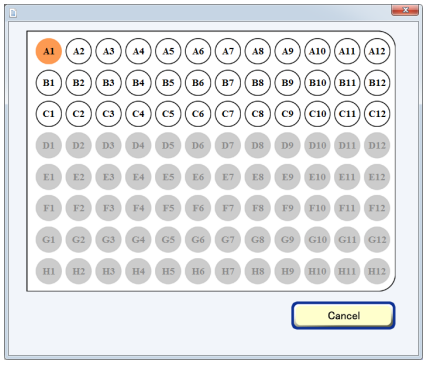


Image review window



Well plate sample selection window (96-well)

(2) The Image review window for the selected sample appears.

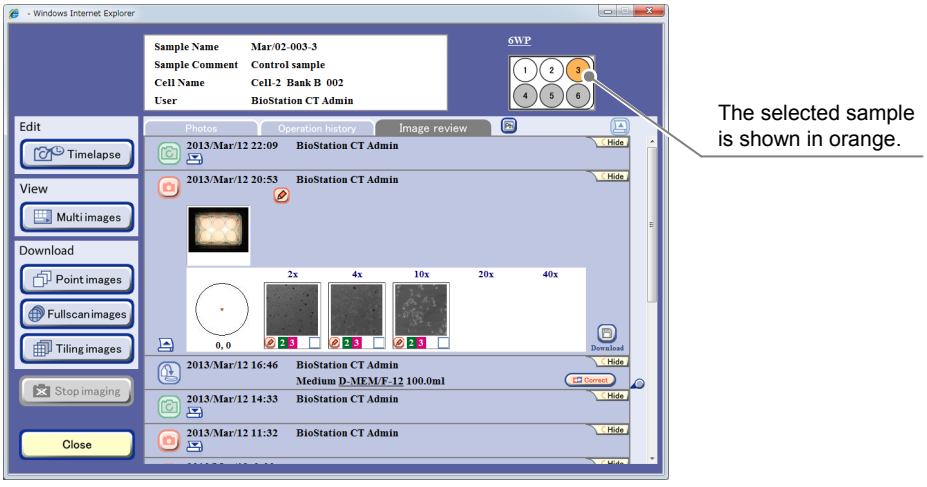


Image review window

3.5.4 Editing the Observation History

This section describes the procedure for editing the history information in the Image review window.
The following buttons are used to switch the Image review window to each edit window.

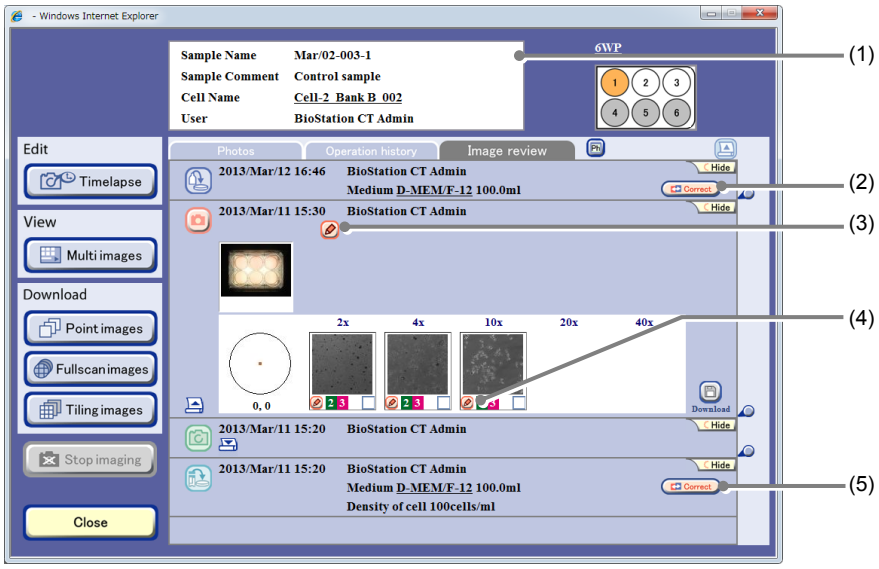


Image review window

No.	Name	Function
(1)	Basic information display area	This area displays the Basic information edit window. (See Section 3.5.4.1.)
(2)	Correct Medium change information edit button	Click this button to display the Medium change information edit window. (See Section 3.5.4.2.)
(3)	Observation history comment button	Click this button to display the Observation history comment edit window. (See Section 3.5.4.4.)
(4)	Micro image comment button	Click this button to display the Micro image comment edit window. (See Section 3.5.4.5.)
(5)	Correct Load information edit button	Click this button to display the Load information edit window. (See Section 3.5.4.3.)

3.5.4.1 Editing the basic information

(1) Click the basic information display area in the Image review window.

The Basic information edit window appears.

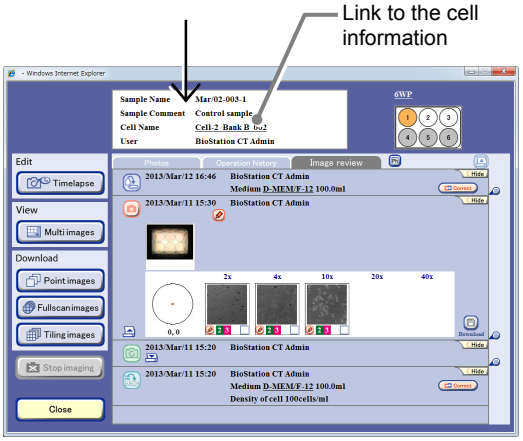
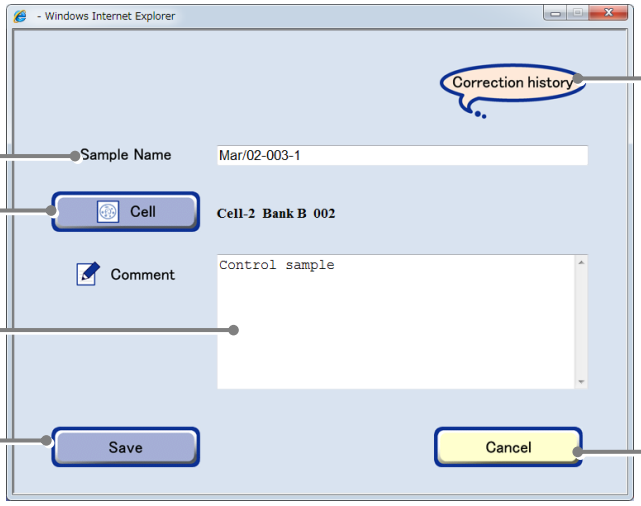


Image review window



Sample Name field

Cell button

Display the Cell selection window.

Comment field

Save button

Save the basic information.

Correction history button

Display the Basic information edit history window.

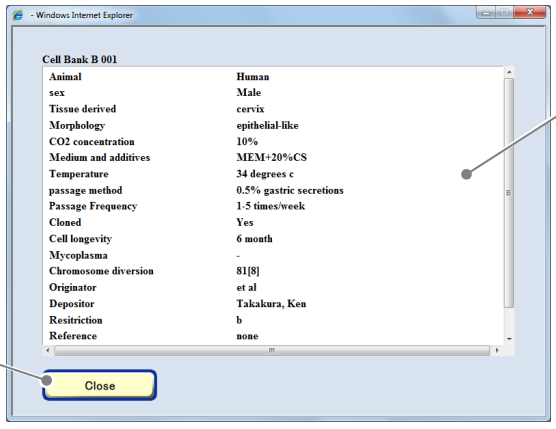
If there is no edit history, this button is not displayed.

Cancel button

Close the Basic information edit window without saving.

Basic information edit window

When a cell name is underlined in the Basic information display area (cell information link) and the name is clicked, the Cell information window appears. To open the Basic information edit window, click the Basic information display area somewhere other than the cell information link.



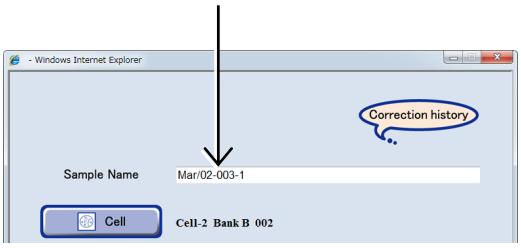
Cell information display area

Close button

Close the Cell information window.

Cell information window

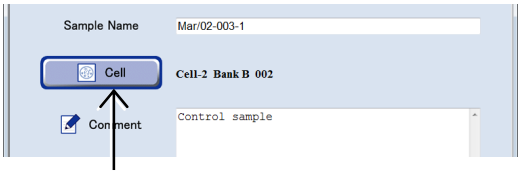
(2) To edit the sample name, click the Sample Name field and enter the name.

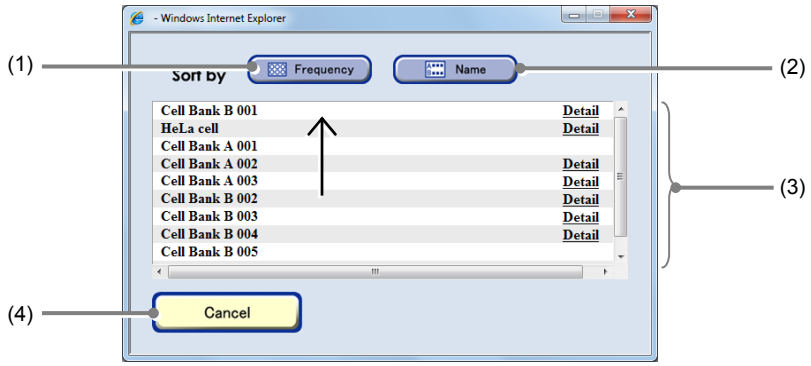


Basic information edit window

(3) To change the cell information, click the Cell button and select the cell to be changed in the Cell selection window.

Click the cell name in the Cell selection window. The cell is selected and the Cell selection window is closed.

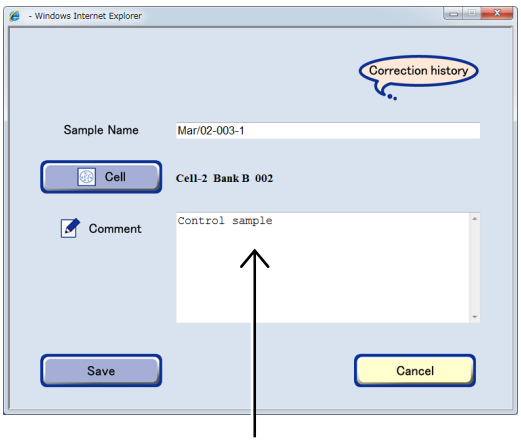




Cell selection window

No.	Name	Function
(1)	Frequency button	Click this button to sort the list in descending order of frequency of the usage.
(2)	Name button	Click this button to sort the cell names in alphabetical order.
(3)	Cell list	Click “Detail” on the right side of the list to display the Cell information window.
(4)	Cancel button	Click this button to close the window without selecting the cell.

(4) To edit a comment, enter the comment in the Comment field.

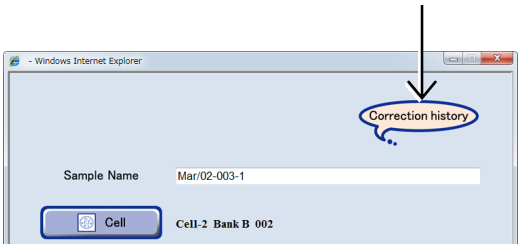


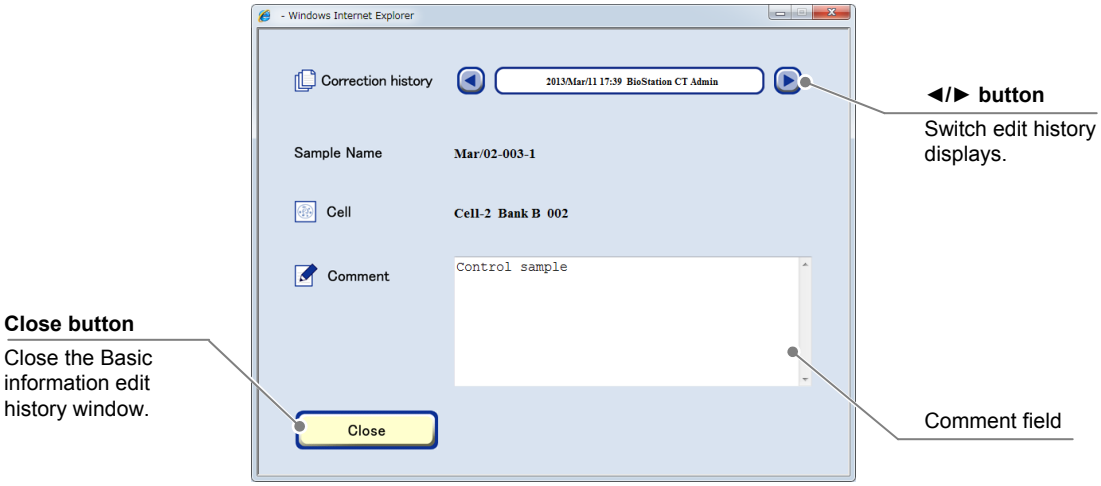
Basic information edit window

(5) Displaying the basic information edit history.

1. Click the Correction history button.

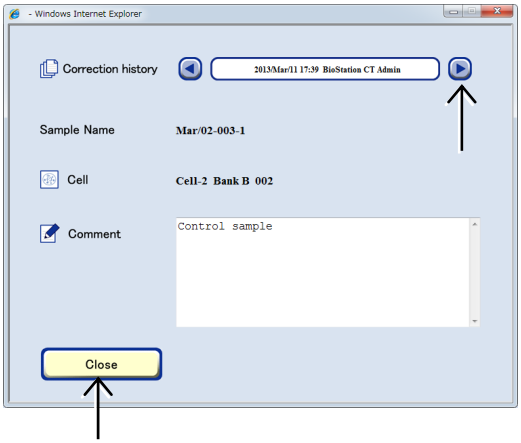
The Basic information edit history window appears.





Basic information edit history window

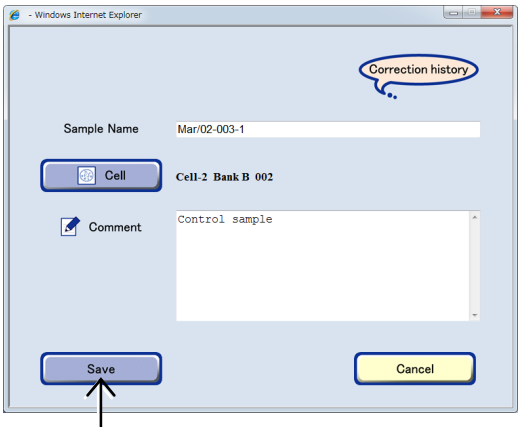
2. Click the ◄/► button to change the history.



3. To close the Basic information edit history window, click the Close button.

(6) Click the Save button in the Basic information edit window.

The edited basic information is saved and the Basic information edit window is closed.



Basic information edit window

3.5.4.2 Editing the medium change information

This section describes the procedure for editing the medium change information in the Image review window.

(1) Click the Correct button in the medium change history area of the Image review window.

The Medium change information edit window appears.

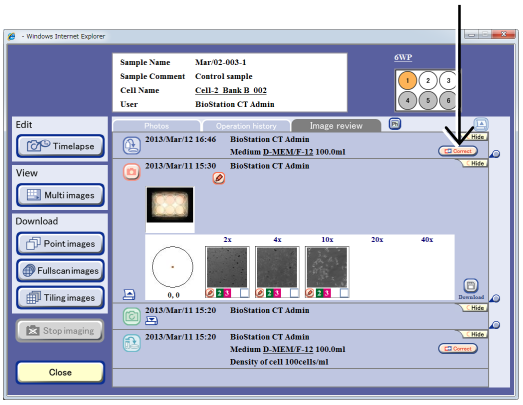
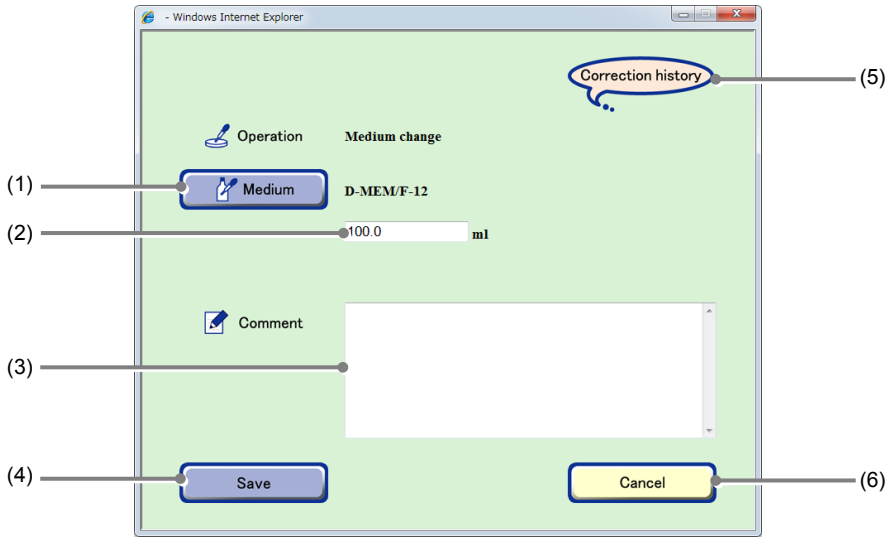


Image review window

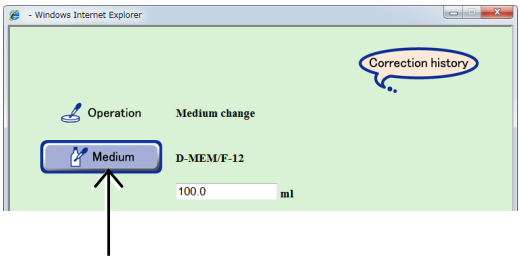


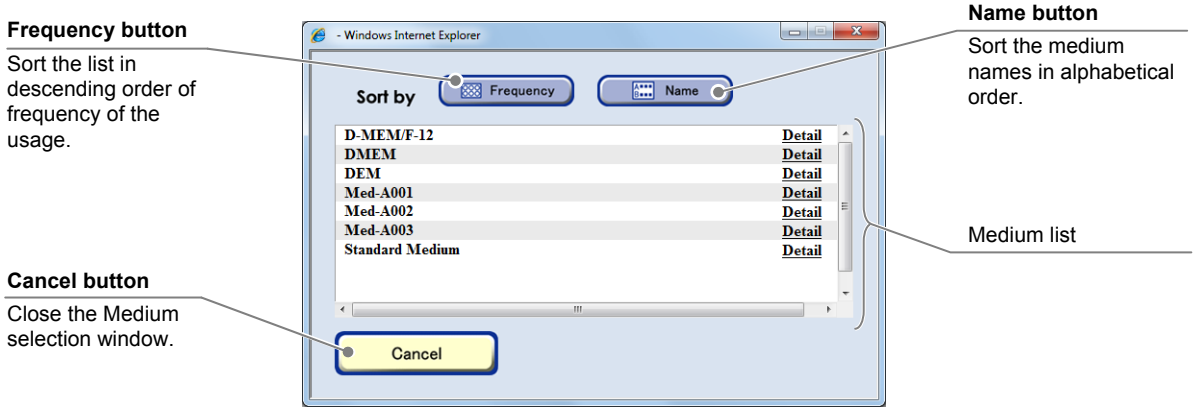
Medium change information edit window

No.	Name	Function
(1)	Medium button	Click this button to display the Medium selection window.
(2)	Medium quantity field	To change the medium quantity, enter the new quantity in the Medium quantity field.
(3)	Comment field	To change the comment, enter the new comment in the Comment field.
(4)	Save button	Click this button to save the sample operation information.
(5)	Correction history button	Click this button to display the Medium change information edit history window. If there is no edit history, this button is not displayed.
(6)	Cancel button	Click this button to close the Medium change information edit window without saving.

(2) To change the medium name, click the Medium button.

The Medium selection window appears.

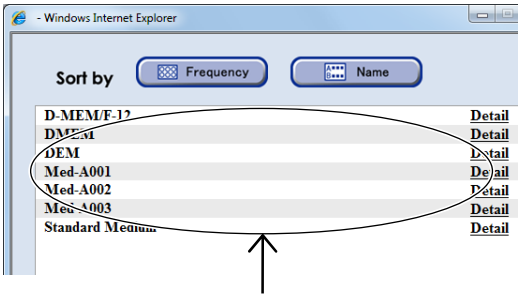




Medium selection window

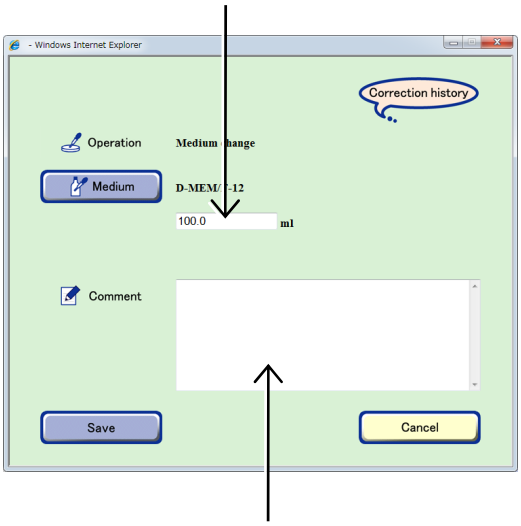
(3) Select the medium name to be changed in the Medium list by clicking it.

The medium name to be changed is selected and the Medium change information edit window appears.



(4) To change the medium quantity, enter the new quantity in the Medium quantity field.

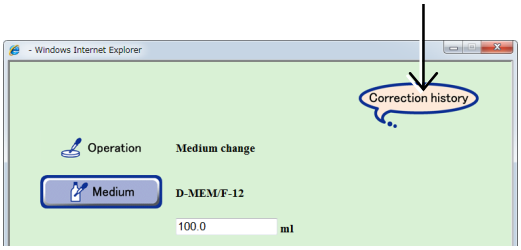
(5) To change the comment, enter the new comment in the Comment field.



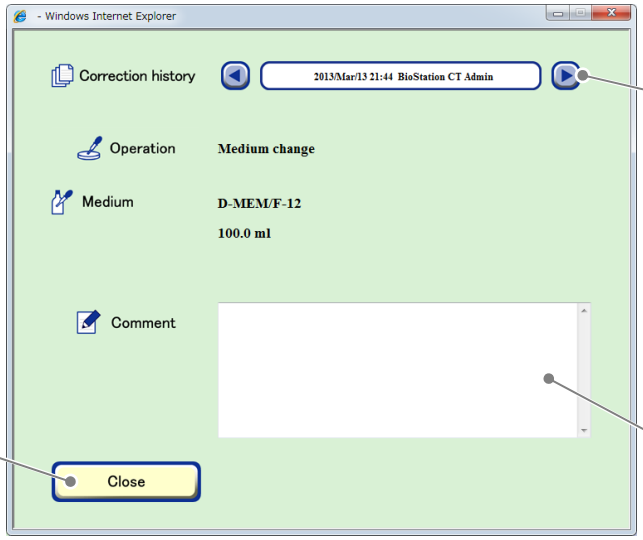
Medium change information edit window

(6) To display the Medium change information edit history window, click the Correction history button.

The Medium change information edit history window appears.



Medium change information edit window



◄/► button
Switch the edit history displays.

Close button
Close the Medium change information edit history window.

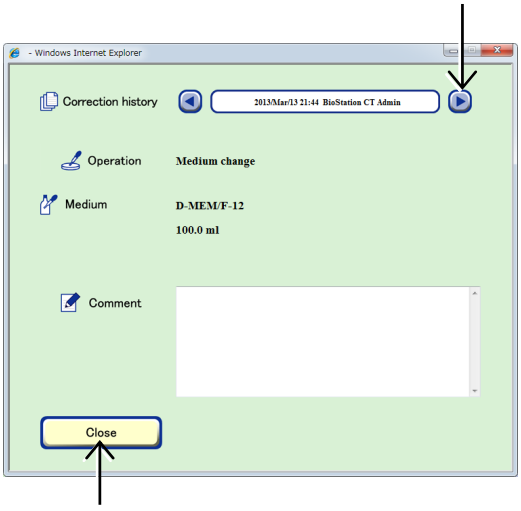
Comment field

Medium change information edit history window

1. Click the ◄/► button to change the history.

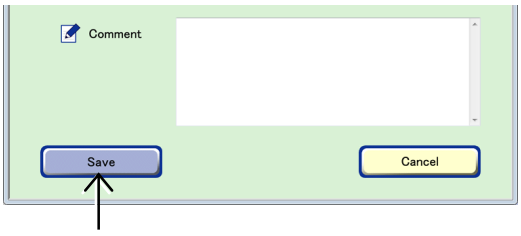
2. To close the Medium change information edit history window, click the Close button.

The Medium change information edit history window is closed.



(7) Click the Save button in the Medium change information edit window.

The edit content is saved and the Medium change information edit window is closed.



Medium change information edit window

3.5.4.3 Editing the load information

This section describes the procedure for editing the load information in the Image review window.

(1) Click the Correct button in the load history area of the Image review window.

The Load information edit window appears.

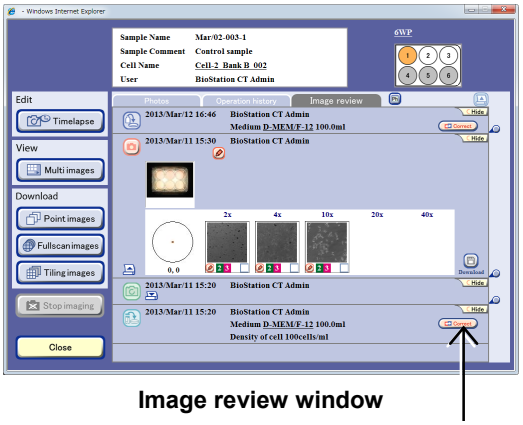
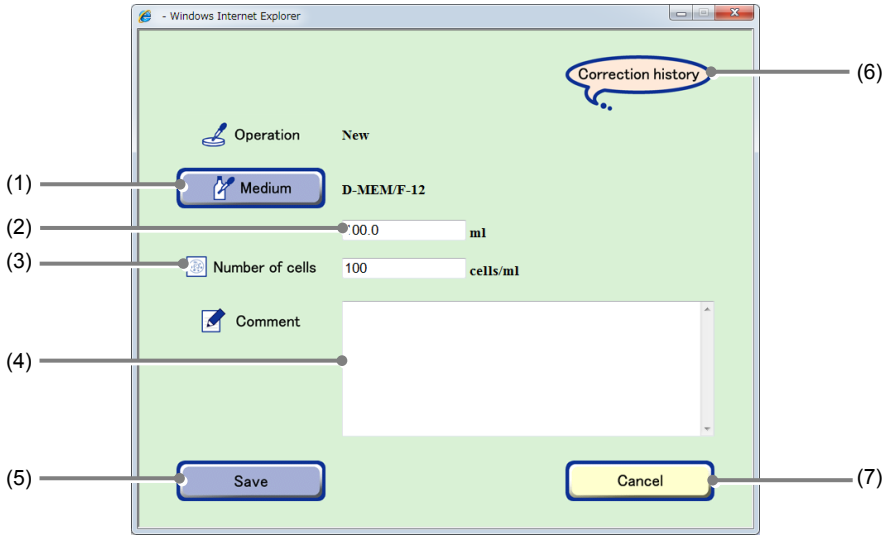


Image review window

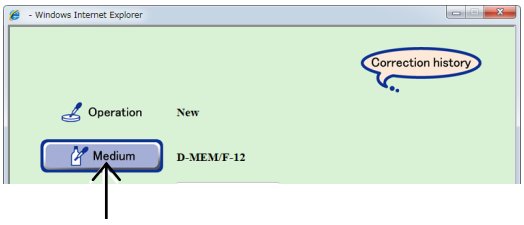


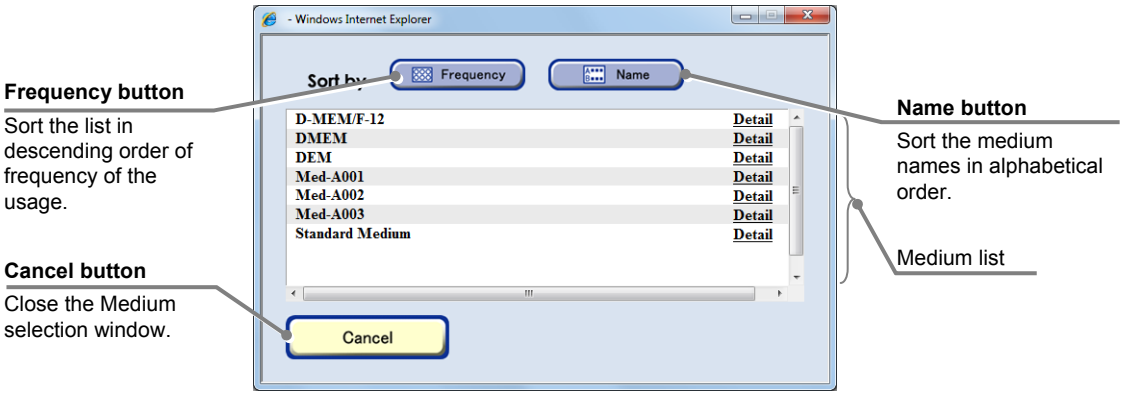
Load information edit window

No.	Name	Function
(1)	Medium button	Click this button to display the Medium selection window.
(2)	Medium quantity field	To change the medium quantity, enter the new quantity in the Medium quantity field.
(3)	Number of cells field	To change the cell density, enter the new cell density value in the Number of cells field.
(4)	Comment field	To change the comment, enter the new comment in the Comment field.
(5)	Save button	Click this button to save the edited load information.
(6)	Correction history button	Click this button to display the Load information edit history window. If there is no edit history, this button is not displayed.
(7)	Cancel button	Click this button to close the Load information edit window without saving.

(2) To change the medium name, click the Medium button.

The Medium selection window appears.

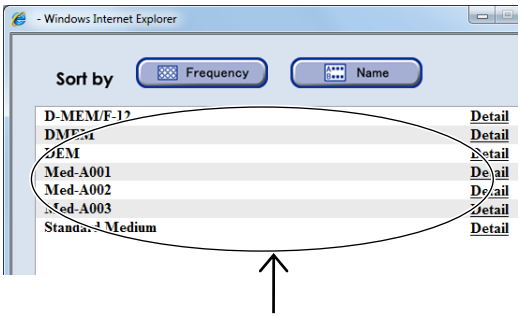




Medium selection window

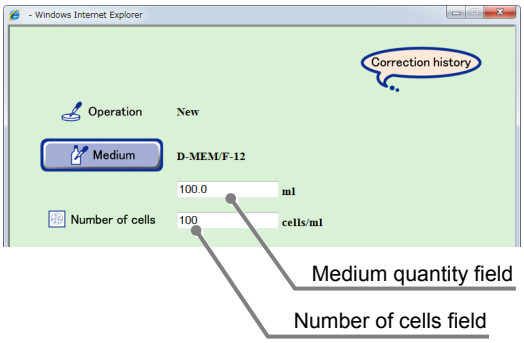
(3) Select the medium name to be changed in the Medium list by clicking it.

The medium name to be changed is selected and the Load information edit window appears.



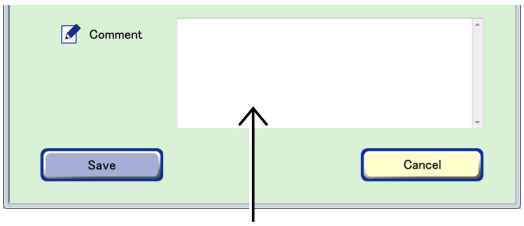
(4) To change the medium quantity, enter the new quantity in the Medium quantity field.

(5) To change the cell density, enter the new cell density value in the Number of cells field.



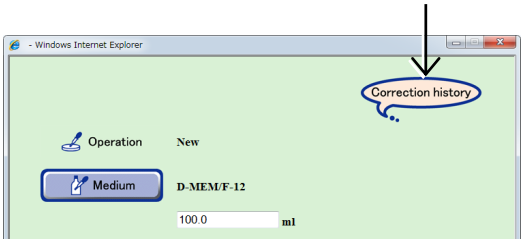
Load information edit window

(6) To change the comment, enter the new comment in the Comment field.

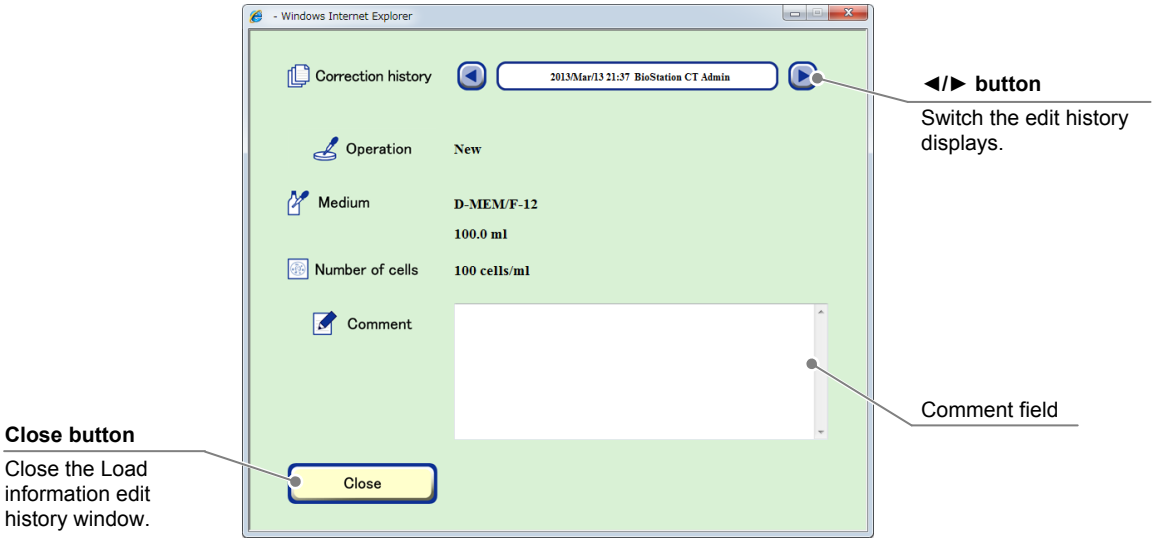


(7) To display the Load information edit history window, click the Correction history button.

The Load information edit history window appears.

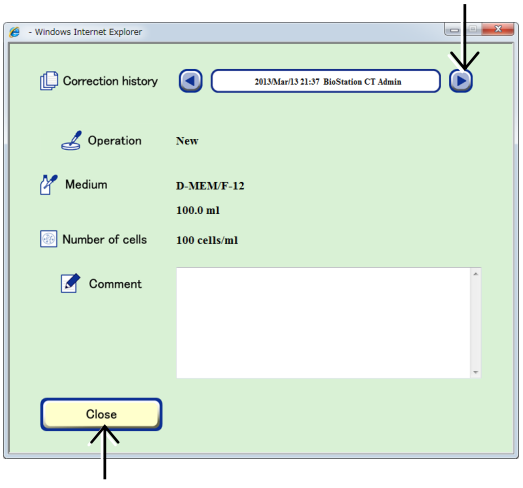


Load information edit window



Load information edit history window

1. Click the ◄/► button to change the history.

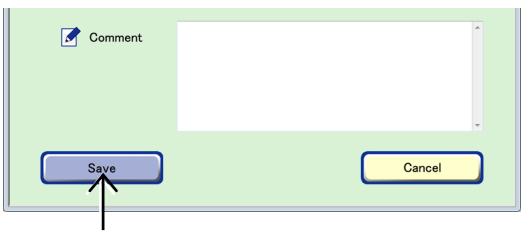


2. To close the Load information edit history window, click the Close button.

The Load information edit history window is closed.

(8) Click the Save button in the Load information edit window.

The edit content is saved and the Load information edit window is closed.



Load information edit window

3.5.4.4 Editing the comment of the observation history

This section describes the procedure for entering or changing the observation history comment.

(1) Click the Observation history comment edit button in the Observation field of the Image review window.

The Observation history comment edit window appears.

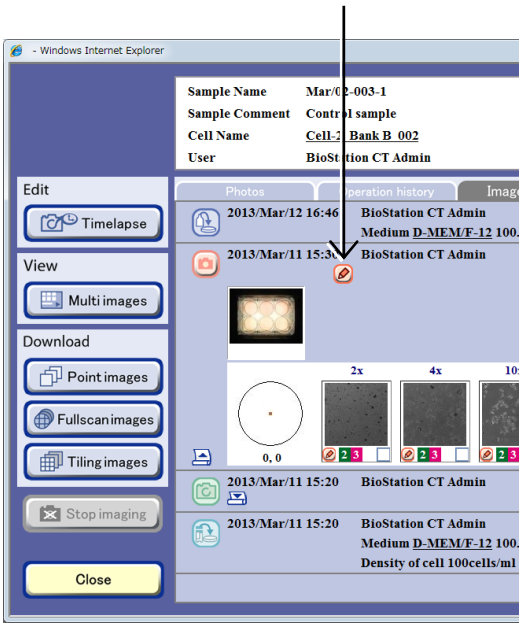
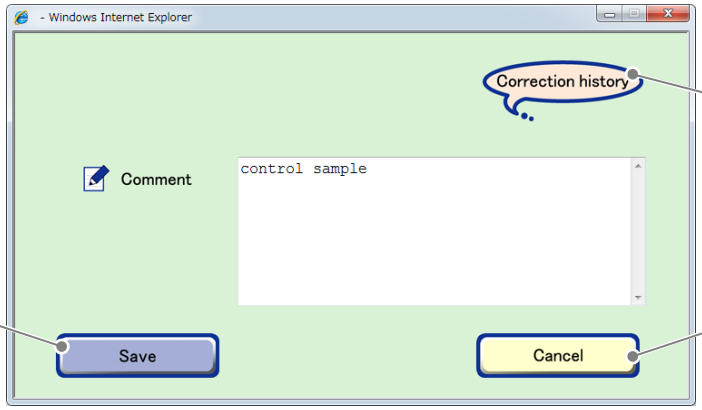


Image review window



Correction history button

Display the Observation history comment edit history window. If there is no edit history, this button is not displayed.

Save button

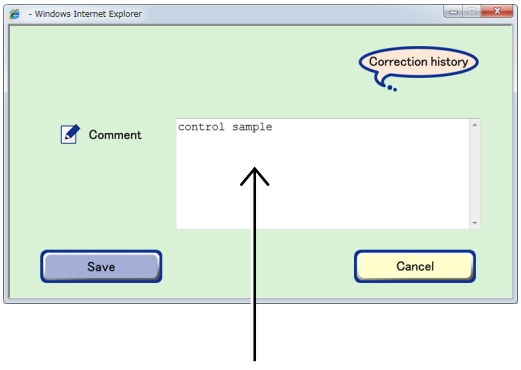
Save the observation history comment.

Cancel button

Close the Observation history comment edit window without saving the comment.

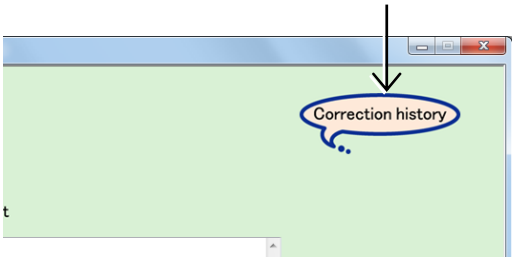
Observation history comment edit window

(2) Enter a comment in the Comment field.

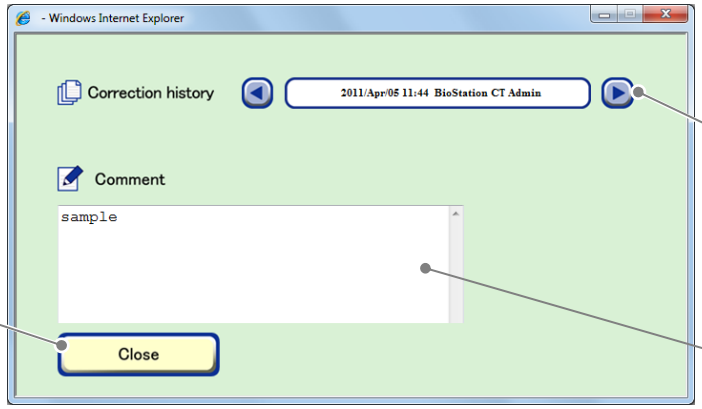


(3) To display the comment edit history of the observation history, click the Correction history button.

The Observation history comment edit history window appears.



Observation history comment edit window



◄/► button
Switch edit history displays.

Close button
Close the Observation history comment edit history window.

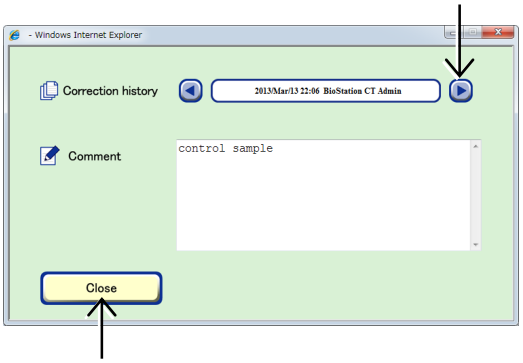
Comment field

Observation history comment edit history window

1. Click the ◄/► button to change the history.

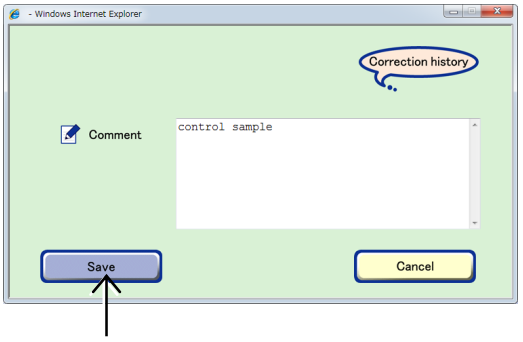
2. To close the Observation history comment edit history, click the Close button.

The Observation history comment edit history window is closed.



(4) Click the Save button in the Observation history comment edit window.

The observation history comment is saved and the Observation history comment edit window is closed.



Observation history comment edit window

3.5.4.5 Editing the comment for the micro image

This section describes the procedure for entering or changing the comment for each microscopic image of cultured sample.

(1) Click the Microscopic image comment edit button below the image in the Image review window.

The Micro image comment edit window appears.

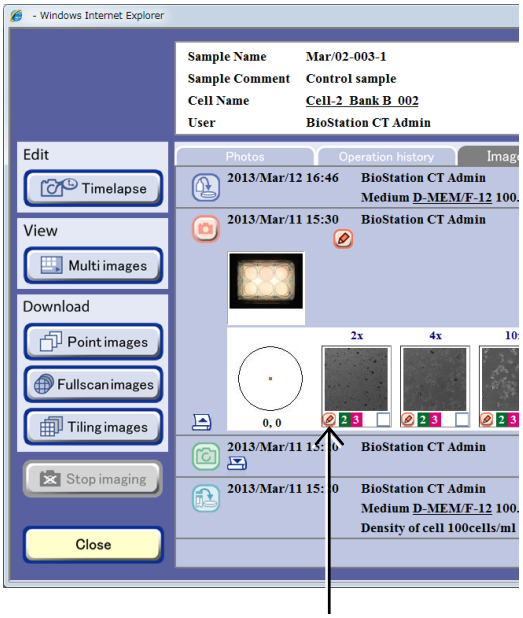
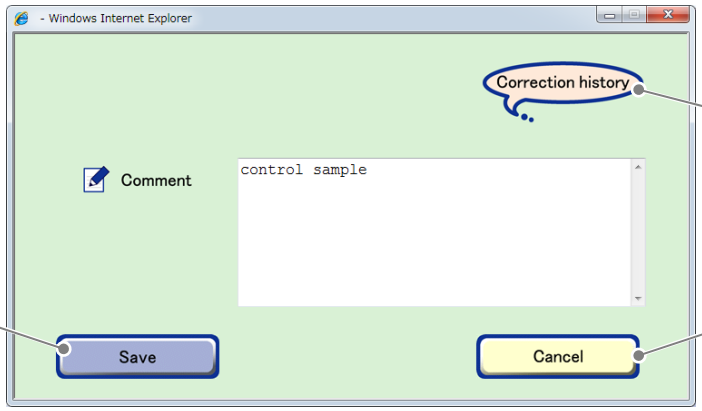


Image review window



Correction history button

Display the Micro image comment edit history window. If there is no edit history, this button is not displayed.

Save button

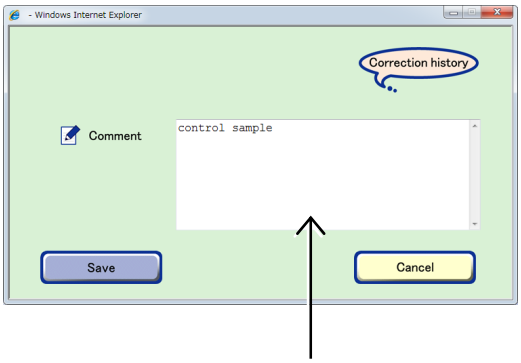
Save the comment for the micro image.

Cancel button

Close the Micro image comment edit window without saving the comment.

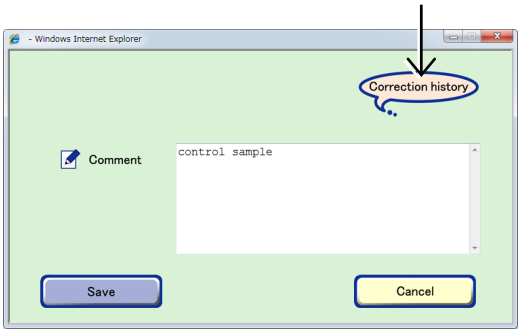
Micro image comment edit window

(2) Enter a comment in the Comment field.

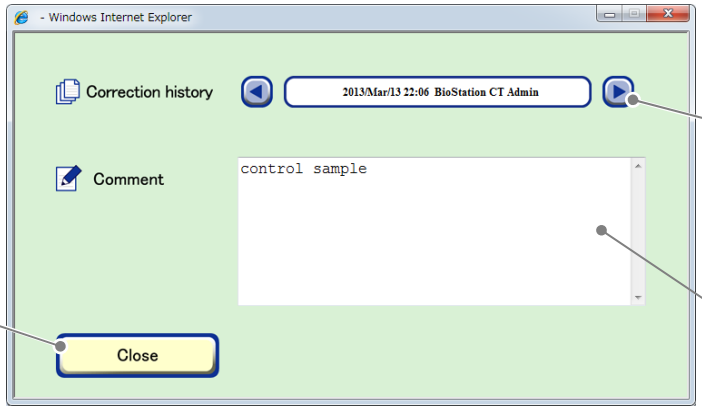


(3) To display the comment edit history of the micro image, click the Correction history button.

The Micro image comment edit history window appears.



Micro image comment edit window



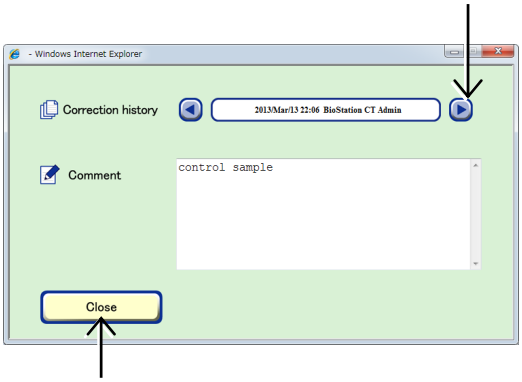
◄/► button
Switch edit history displays.

Close button
Close the Micro image comment edit history window.

Comment field

Micro image comment edit history window

1. Click the ◄/► button to switch the history.

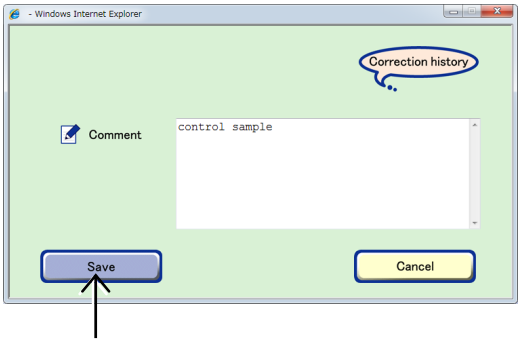


2. To close the Micro image comment edit history, click the Close button.

The Micro image comment edit history window is closed.

(4) Click the Save button in the Micro image comment edit window.

The micro image comment is saved and the Micro image comment edit window is closed.



Micro image comment edit window

3.5.5 Entering the Basic Information in a Batch

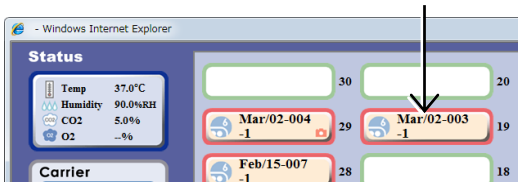
This section describes the procedure for entering the basic information of multiple samples in a batch.

(1) Display the Sample list window.

a. To select the stocker where the sample is being cultured

a-1. To enter the basic information for a sample, click the button on the System status screen for the stocker where the sample is stored.

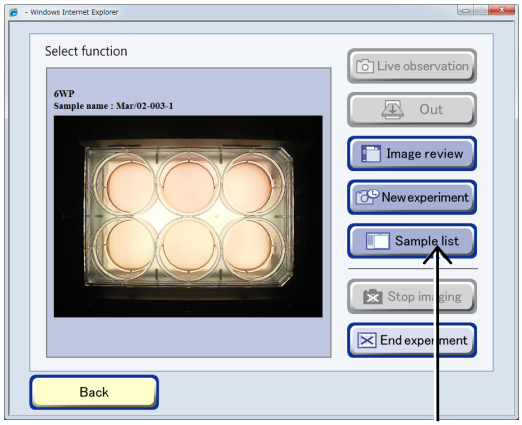
The Sample list window appears.



System status screen

a-2. Click the Sample list button.

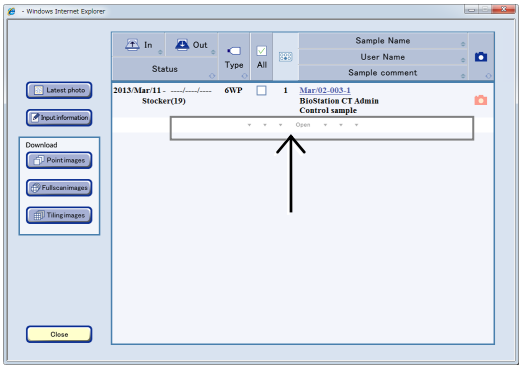
The first sample stored in the selected holder is displayed in the Sample list window.



Select function window

a-3. Click the Open area.

A list of samples stored in the selected holder is displayed.

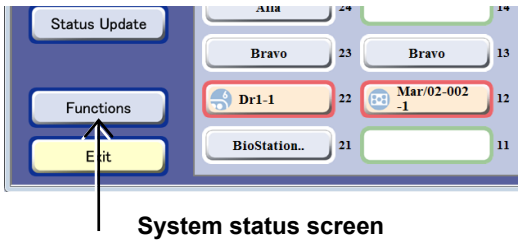


Sample list window (by holder)

b. To select the sample(s) on the sample list

b-1. Click the Functions button on the System status screen.

The Functions window appears.

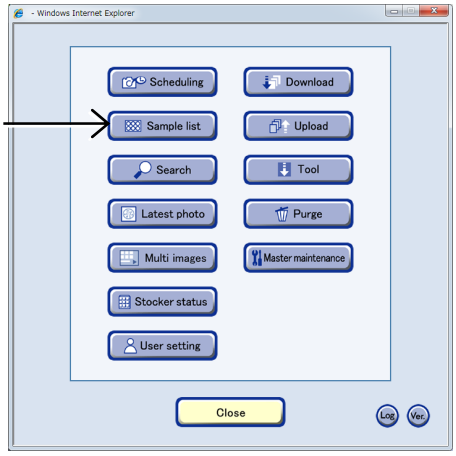


System status screen

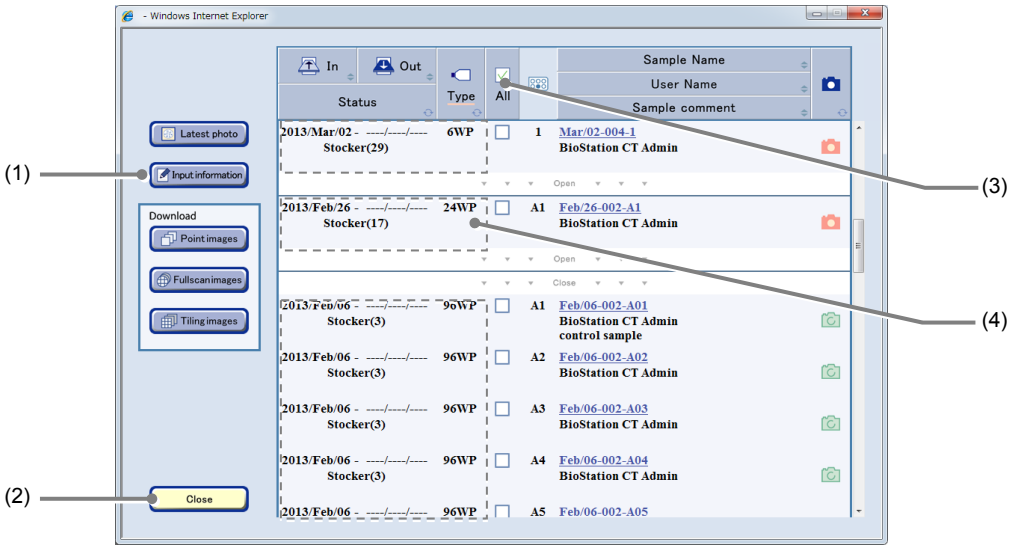
b-2. Click the Sample list button in the Functions window.

The Sample list window appears.

All samples cultured by the user are displayed in this Sample list window.



Functions window



Sample list window (all samples)

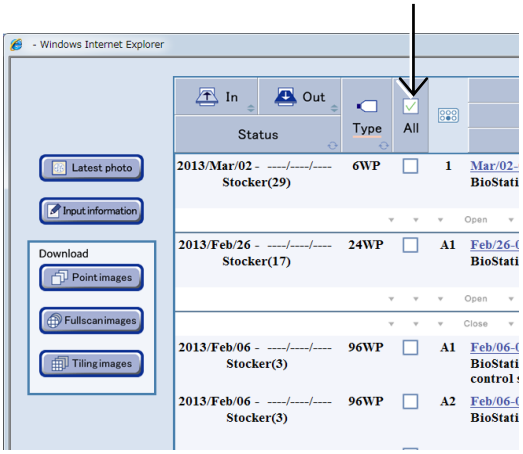
No.	Name	Function
(1)	Input information button	Click this button to display the Basic information batch input window.
(2)	Close button	Click this button to close the Sample list window.
(3)	All check button	Click this button to select all displayed samples or cancel the selection.
(4)	Stocker area	Clicking an area in the Stocker/Container field selects all samples in the holder or cancels the selection.

To display the list of the already observed culture samples in the Sample list, use the search function.
For details on the search function, see Section 3.8, “Searching for Observation Data.”

(2) Select the samples for which basic information is to be entered in a batch.

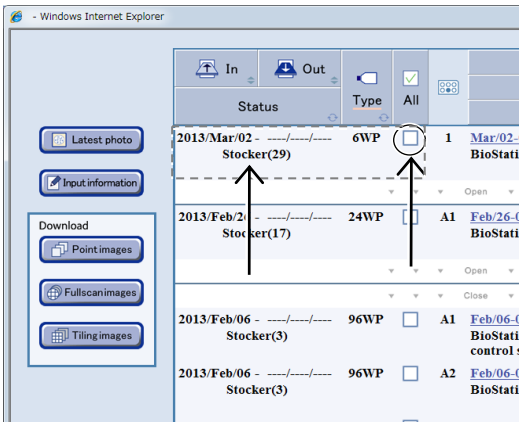
Select all samples

To select all samples in all stockers displayed in the Sample list window, select the All check button.



Select by holder

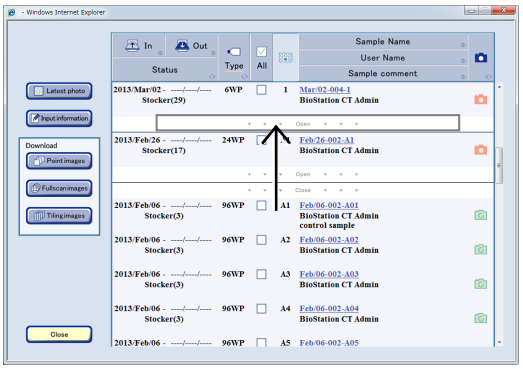
When check boxes are checked with only the first sample in the holder displayed, all samples in the holder are selected.
Also to select all samples in the holder, click the Stocker/Container field.

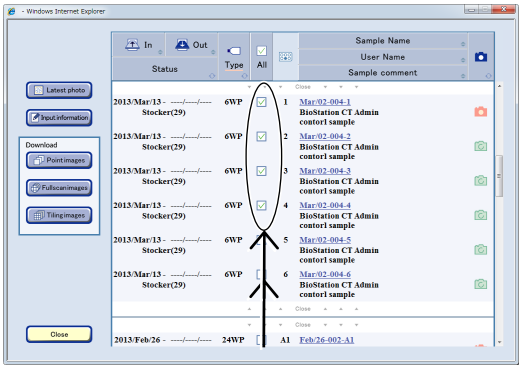


> For details on vessel name abbreviations used in the Sample list window, see the list on Page 95, “Abbreviation and description for vessels.”

Select samples individually

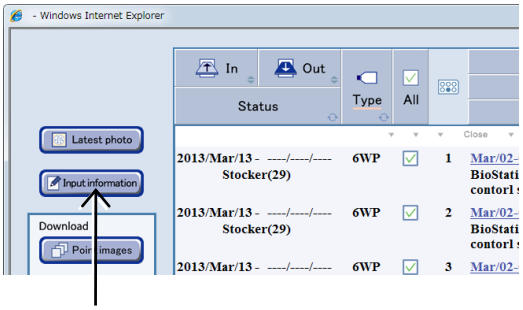
To select each sample, click the Open area to display all samples in the holder and then check the check box of a desired sample.

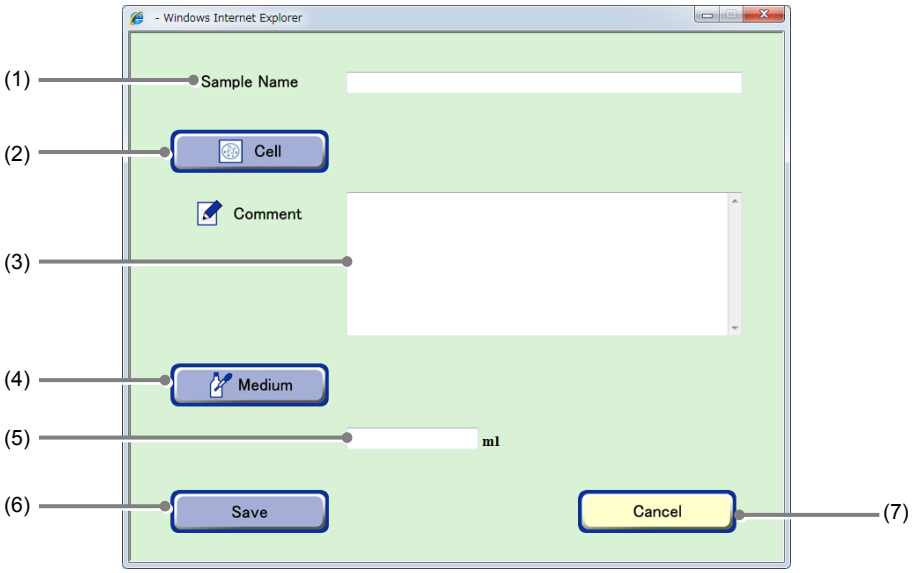




(3) Click the Input information button.

The Basic information batch input window is displayed.

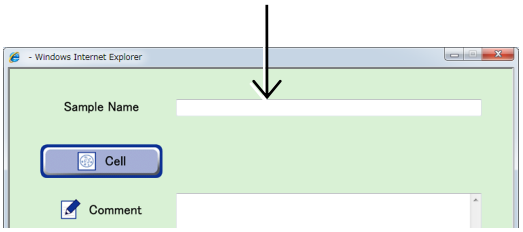




Basic information batch input window

No.	Name	Function
(1)	Sample Name field	Enter the sample name.
(2)	Cell button	Click this button to display the Cell selection window.
(3)	Comment field	Enter the comment.
(4)	Medium button	Click this button to display the Medium selection window.
(5)	Medium quantity field	Enter the culture media quantity.
(6)	Save button	Click this button to save the basic information.
(7)	Cancel button	Click this button to close the Basic information batch input window without saving.

(4) Enter the sample name to be entered in a batch in the Sample Name field.

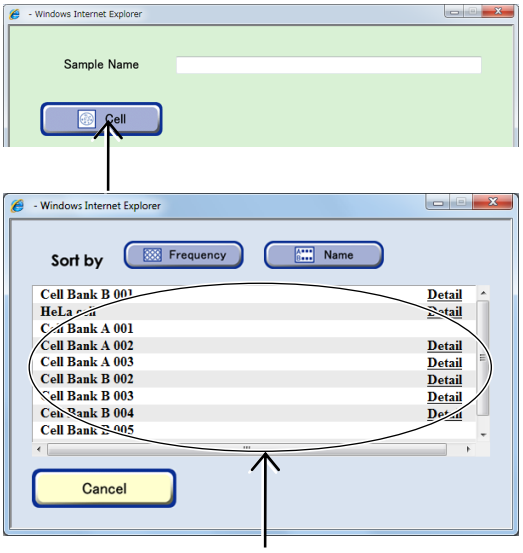


(5) Select the cell names to be entered in a batch.

1. Click the Cell button to display the Cell selection window.

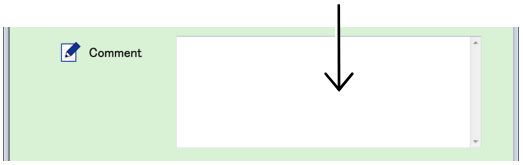
2. Select the cell names from the list to be entered in a batch.

The Basic information batch input window is displayed and the selected cell names are displayed to the side of the Cell button.



Cell selection window

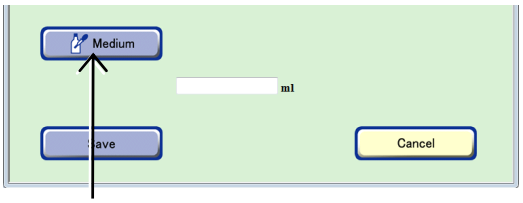
(6) Enter the comment to be entered in a batch in the Comment field.



Basic information batch input window

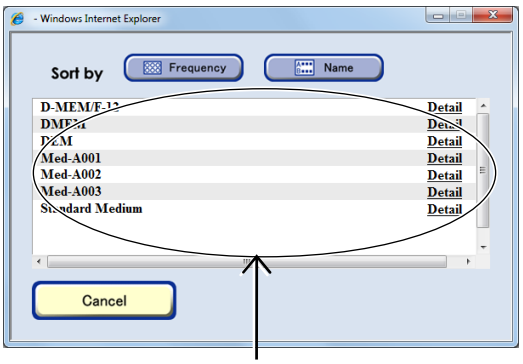
(7) Select the medium names to be entered in a batch.

1. Click the Medium button to display the Medium selection window.



2. From the list, select the medium names to be entered in a batch.

The Basic information batch input window is displayed and the selected medium names are displayed on the side of the Medium button.

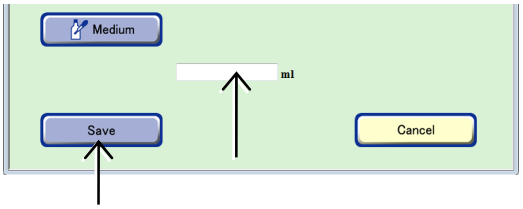


Medium selection window

(8) Enter the medium quantity to be entered in a batch in the Medium quantity field.

(9) Click the Save button.

The entered basic information is entered in a batch.



Basic information batch input window

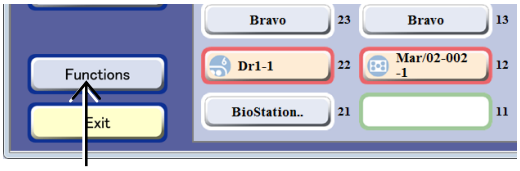
3.5.6 Displaying Thumbnails of the Latest Images

This section describes the procedure for displaying the latest images captured in scheduled observations for all samples cultured by the logged in user.

3.5.6.1 Latest photo list of samples in all holders

(1) Click the Functions button on the System status screen.

The Functions window appears.

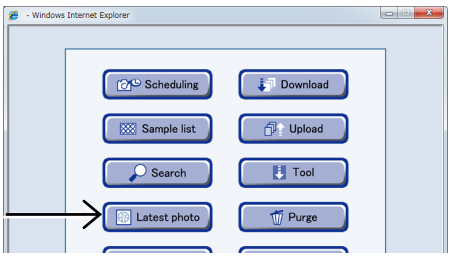


System status screen

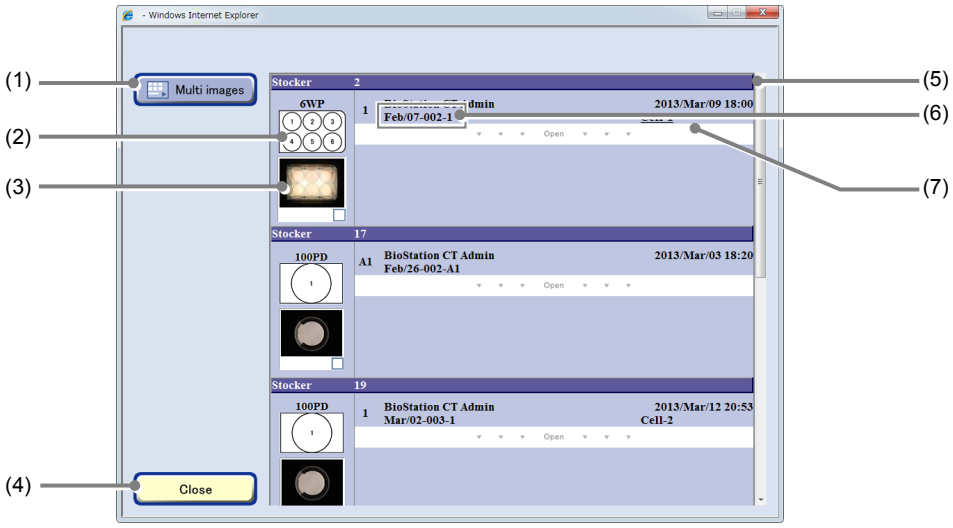
(2) Click the Latest photo button.

The Latest photo list window appears.

The Latest photo list window lists the latest images captured in scheduled observation for all samples cultured by the logged in user. This window does not list the images captured during a live observation or images captured during a scheduled observation in the stage exclusive mode.



Functions window



Latest photo list window (holder list)

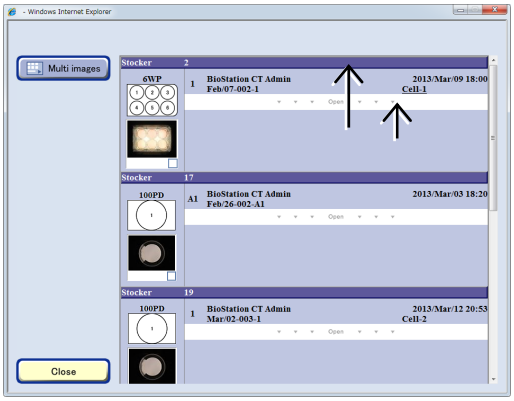
No.	Name	Function
(1)	Multi images button	Click this button to display the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(2)	Holder information	This area displays the vessel name, the vessel shape, and the holder map number.
(3)	Macro image	This area displays the macro image thumbnail. To enlarge an image, click the thumbnail.
(4)	Close button	Click this button to close the Latest photo list window.

No.	Name	Function
(5)	Stocker number display area	This area displays the stocker number. Click the area to switch information to be displayed.
(6)	Sample name area	This area displays the sample name. Click the area to display the thumbnail of latest images for the relevant sample.
(7)	Open area	Click the area to spread the holder list and open a sample list.

(3) Switch the display to view the desired information.

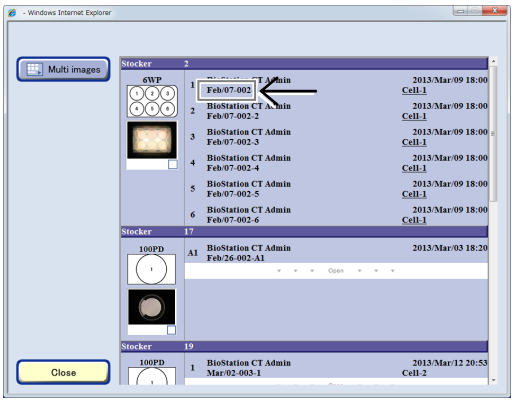
Click the Stocker number display area to change the information displayed. The display can be switched in the following order: holder list – sample list – latest photo list.

The Open area is displayed in the holder list when the relevant holder contains multiple samples. When the Open area is clicked, the holder list expands and a sample list appears.

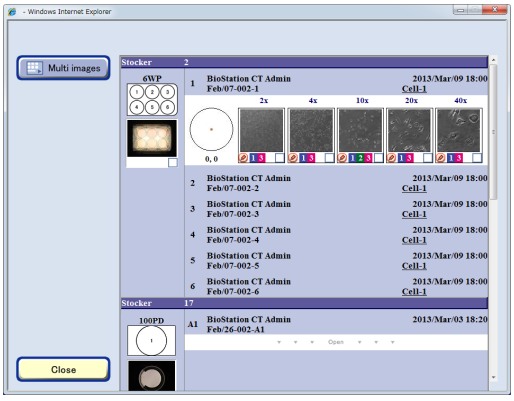


Holder list

When the Sample name area of the sample list is clicked, the latest photo list for the relevant sample appears.

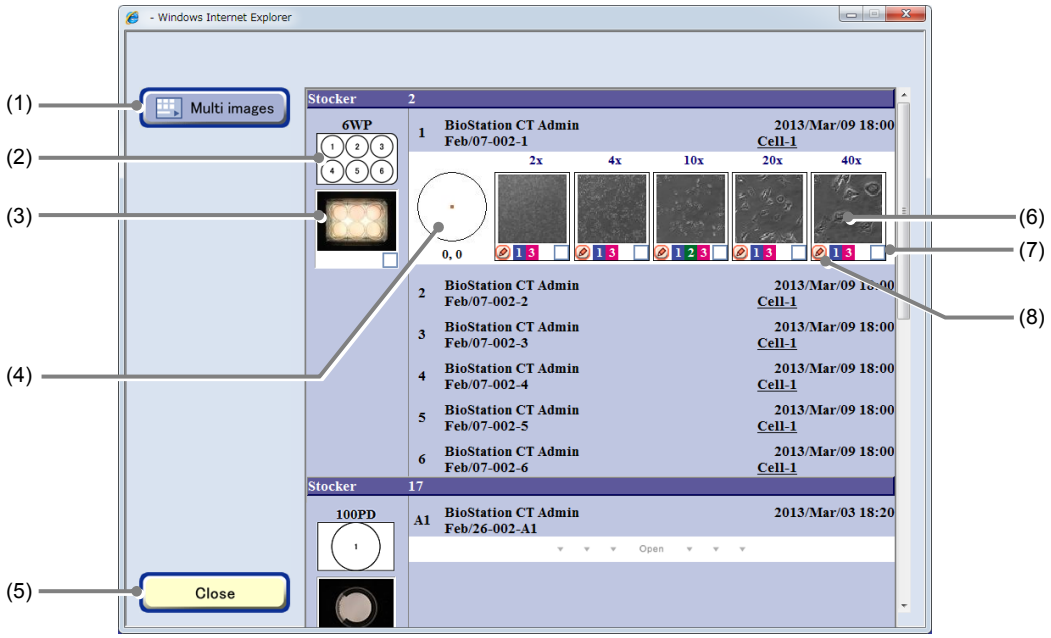


Sample list



Latest photo list window

In the Latest photo list window, the observed image thumbnails are displayed in order of the stocker number, the holder map number, and the observation position.



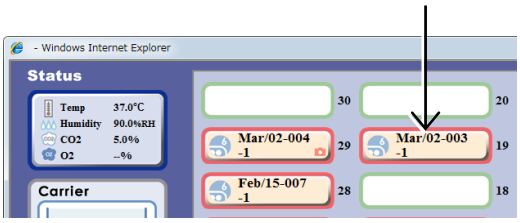
Latest photo list window

No.	Name	Function
(1)	Multi images button	Click this button to display the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(2)	Holder information	This area displays the vessel name, the vessel shape, and the holder map number.
(3)	Macro image	This area displays the macro image thumbnail. To enlarge an image, click the thumbnail.
(4)	Observation point display	The observation position in the culture vessel is displayed.
(5)	Close button	Click this button to close the Latest photo list window.
(6)	Micro image	This area displays the micro image thumbnail. To enlarge an image, click the thumbnail.
(7)	Image selection button	Click this button to select an image to be displayed in the Multi images display window. When selected, a checked symbol appears in the check box for the image.
(8)	Comment button	To enter a comment for a micro image, click the Comment button at the bottom left of the image.

3.5.6.2 Latest photo list of samples in the specified holder

(1) To display the latest photos, click the button on the System status screen for the stocker in which the desired sample is stored.

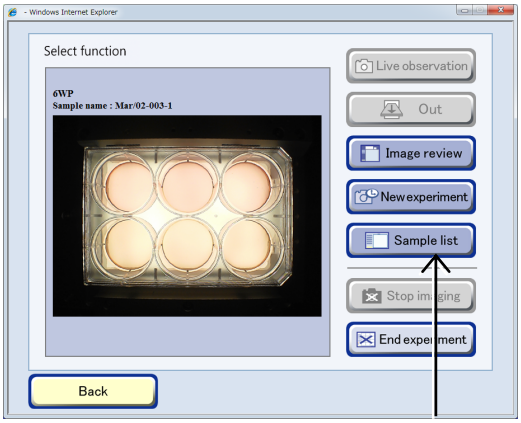
The Select function window appears.



System status screen

(2) Click the Sample list button.

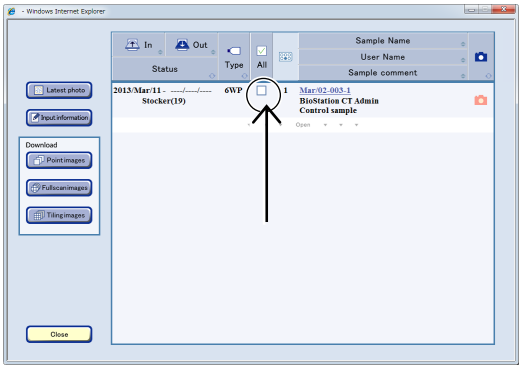
The first sample stored in the selected holder is displayed in the Sample list window.



Select function window

(3) Click the check box.

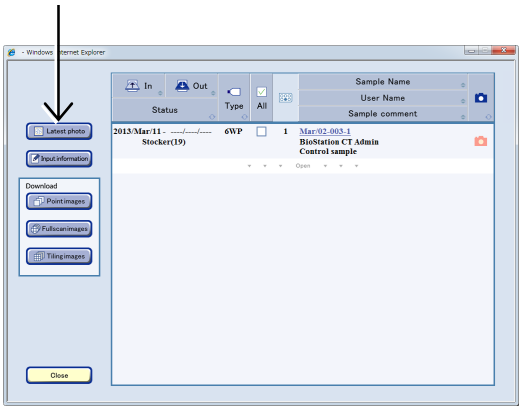
When check boxes are checked with only the first sample in the holder displayed, all samples in the holder are selected.
Also to select all samples in the holder, click the Stocker/Container field.



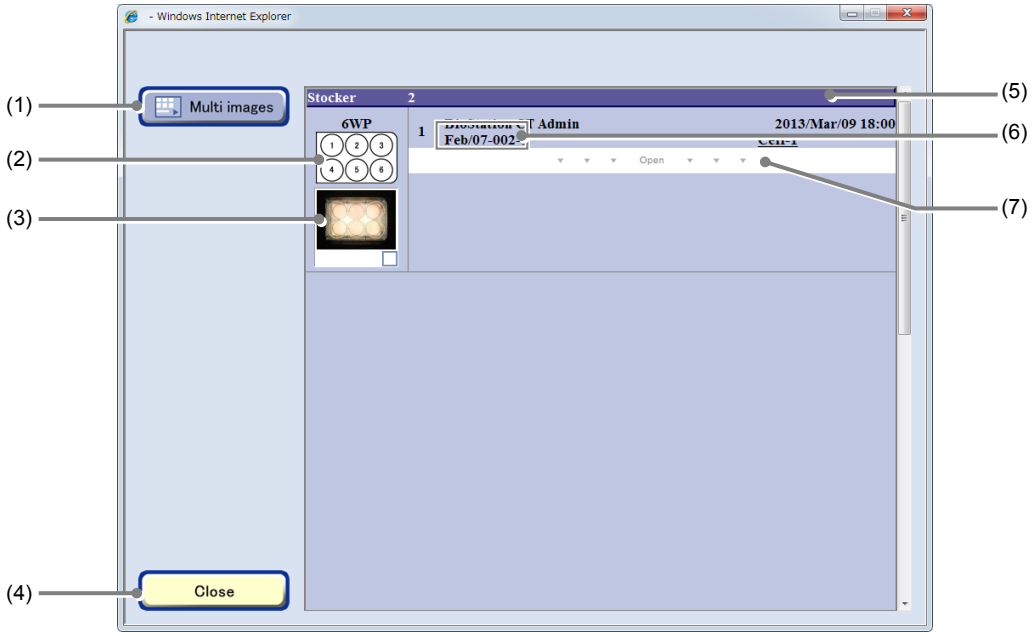
Sample list window (holder list)

(4) Click the Latest photo button.

The Latest photo list window appears.



The Latest photo list window lists the latest images captured in scheduled observations for the samples in the selected holder.
This window does not list the images captured during live observation or images captured during scheduled observation in the stage exclusive mode.



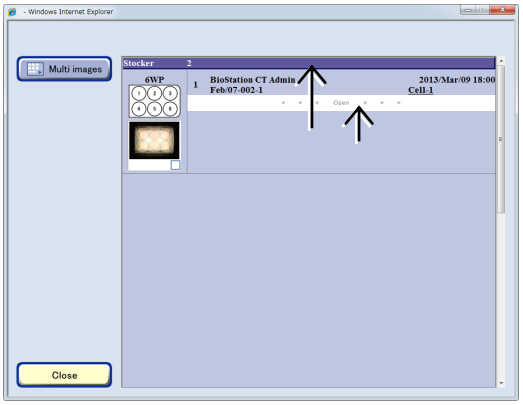
Latest photo list window (holder list)

No.	Name	Function
(1)	Multi images button	Click this button to display the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(2)	Holder information	This area displays the vessel name, the vessel shape, and the holder map number.
(3)	Macro image	This area displays the macro image thumbnail. To enlarge an image, click the thumbnail.
(4)	Close button	Click this button to close the Latest photo list window.
(5)	Stocker number display area	This area displays the stocker number. Click the area to switch information to be displayed.
(6)	Sample name area	This area displays the sample name. Click the area to display the thumbnail of latest images for the relevant sample.
(7)	Open area	Click the area to spread the holder list and open a sample list.

(5) Switch the display to view the desired information.

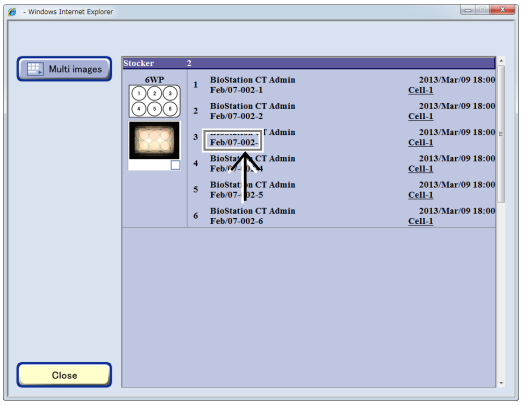
Click the Stocker number display area to change the information displayed. The display can be switched in the following order: holder list – sample list – latest photo list.

The Open area is displayed in the holder list when the relevant holder contains multiple samples. When the Open area is clicked, the holder list expands and a sample list appears.

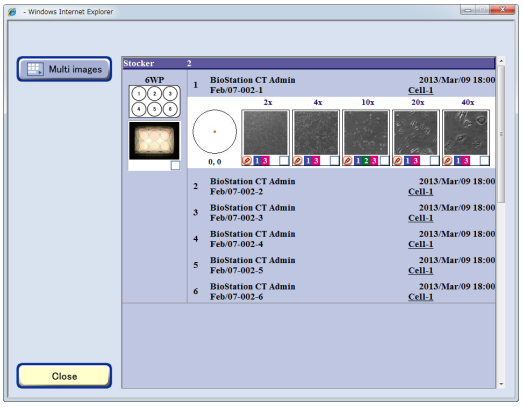


Holder list

When the Sample name area of the sample list is clicked, the latest photo list for the relevant sample appears.

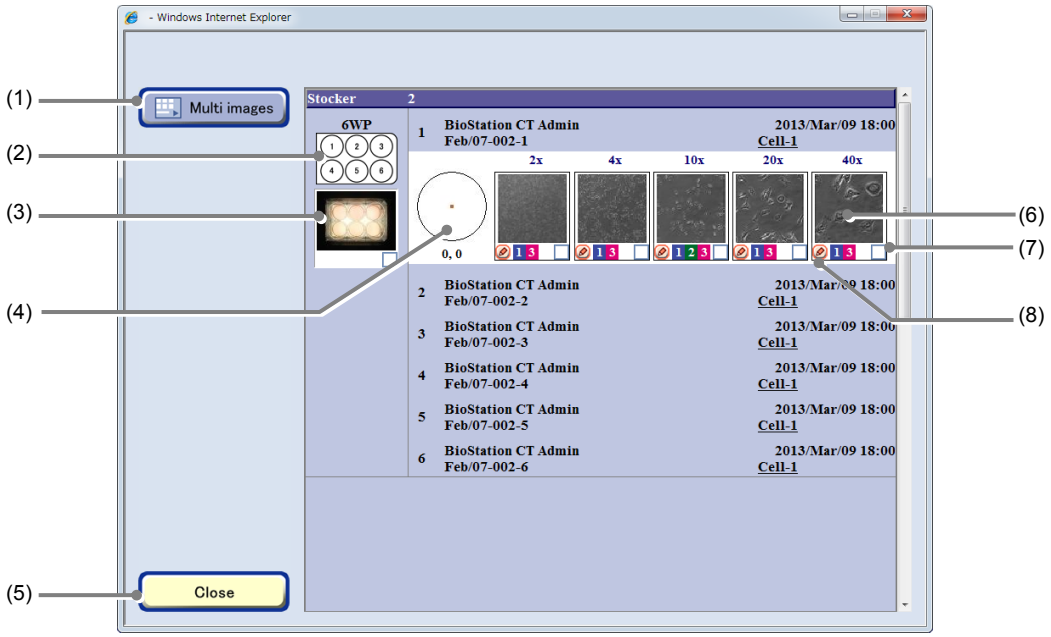


Sample list



Latest photo list window

In the Latest photo list window, the observed image thumbnails are displayed in order of the stocker number, the holder map number, and the observation position.



Latest photo list window

No.	Name	Function
(1)	Multi images button	Click this button to display the Multi images display window. (See Section 3.7, “Multi Images Display of Captured Images.”)
(2)	Holder information	This area displays the vessel name, the vessel shape, and the holder map number.
(3)	Macro image	This area displays the macro image thumbnail. To enlarge an image, click the thumbnail.
(4)	Observation point display	The observation position in the culture vessel is displayed.
(5)	Close button	Click this button to close the Latest photo list window.
(6)	Micro image	This area displays the micro image thumbnail. To enlarge an image, click the thumbnail.
(7)	Image selection button	Click this button to select an image to be displayed in the Multi images display window. When selected, a checked symbol appears in the check box for the image.
(8)	Comment button	To enter a comment for a micro image, click the Comment button at the bottom left of the image.

3.6 Analysis of Fluorescence Intensity

This section describes the functionality of and the procedures for using fluorescence intensity analysis as provided by the fluorescence unit.

Fluorescence images of the same observation points on the same sample are captured in scheduled observation, classified into target areas based on their intensity values, and then the following chart, histogram and the analysis results image are created.

To display the FL analysis results display window, select the desired channel tab in the Point image display window (FL) for the target fluorescence image and then click the FL option button.

The procedure for displaying the FL analysis results display window from the Image review window is as follows.

(1) Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

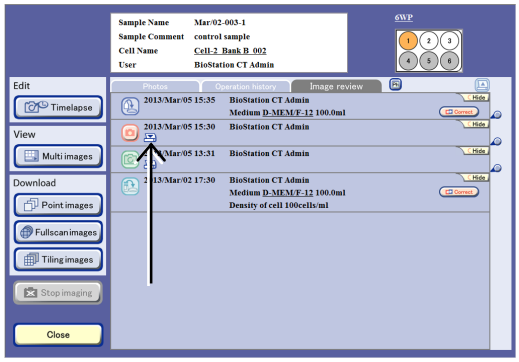


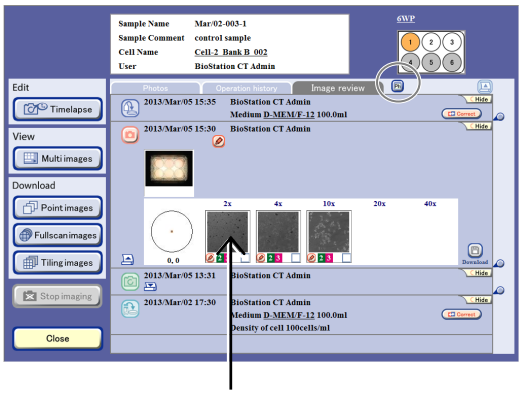
Image review window

(2) Display the FL image.

1. Change the Thumbnail display switch button to [FL].

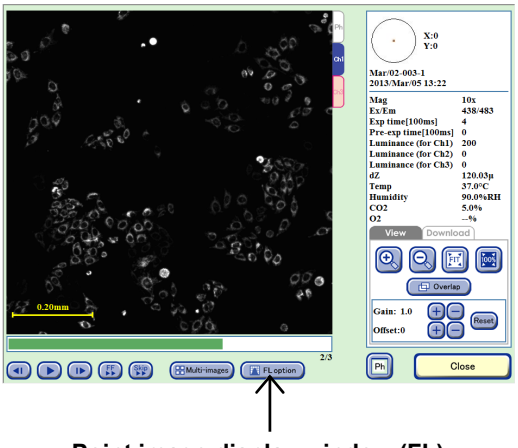
2. Click the thumbnail image of the micro image.

The Point image display window (FL) appears.



(3) Click the FL option button.

The FL analysis results display window appears.



Point image display window (FL)

3.6.1 Functions for Analysis of Fluorescence Intensity

Fluorescence intensity analysis is performed to analyze the intensity values of the fluorescence images captured in scheduled observation so they can be categorized and displayed in chronological order.

FL analysis results display window

Analysis results data display area

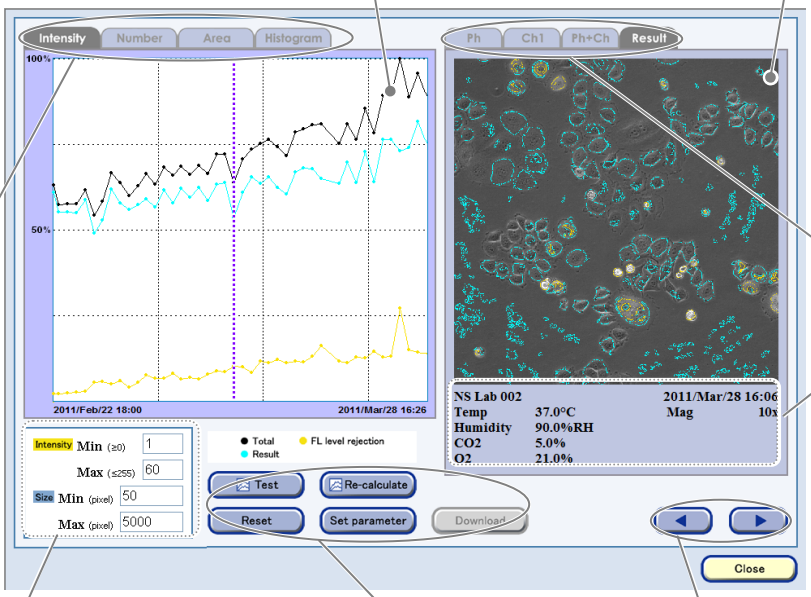
Display the following chart or histogram corresponding to the selected Display data switch tab.

- Intensity: Chart of the fluorescence intensity value
- Number: Chart of the number of fluorescence expression area
- Area: Chart of the size of fluorescence expression area
- Histogram: Histogram of the intensity values for various fluorescence images

Image display area

Display the following chart or histogram corresponding to the selected Display image switch tab.

- Ph： Phase contrast image
- Chn (n indicates a channel number): Fluorescence image to be analyzed
- Ph+Ch: Image overlaid with the fluorescence image and the phase contrast image
- Result: Analysis results image



Display data switch tabs

Display image switch tabs

Condition (Environmental information display)

Analysis parameter settings area

Execution buttons

Chronological data adjust buttons

FL analysis results display window

3.6.1.1 Analysis results

In the FL analysis results display window, the following chart, histogram, or analysis results images are created and displayed when an analysis is performed.

a. Chart of the fluorescence intensity values
Display the total intensity values of all categorized expression areas in chronological order.

b. Chart of the number of fluorescence expression areas
Display the number of categorized expression areas in chronological order.

c. Chart of the size of fluorescence expression areas
Display the total size of categorized expression areas in chronological order.

d. Histogram of the intensity values for the fluorescence images
The ratio of the generation frequency of each intensity value in the image to the entire image shown.

e. Analysis results images
Display analysis results in various colors on the image overlaid with the fluorescence image and the phase contrast image.

Histogram “d” and analysis results image “e” are created each time a fluorescence image is captured or analyzed in scheduled observation. Additionally, charts “a,” “b,” or “c” and the analysis results file (.csv) are created during analysis and at initial image capturing in scheduled observation. When analysis is performed, the data is added.

Additionally, the analysis conditions parameter can be changed, and re-calculated with the Re-calculate button in order to update charts “a”, “b”, and “c” and the analysis results files (.csv).

The analysis results file (.csv) can be downloaded in the FL analysis results display window.

For details on the procedure for using the FL analysis results display window, see Section 3.6.2.2, “Procedure for checking analysis results.”

An analysis result may be incorrect under the following conditions:

- In the case of a sample that uses a medium with strong self-fluorescence
- When, for example, the captured object is large because it is forming a colony
- When the captured object is close to the inner walls of the culture vessel
- When the object is captured at a high magnification

3.6.1.2 Analysis method

Analysis of the fluorescence images in the Scheduled settings is performed for each image. (Note that this function is not available for images captured in live observation.)

Extract a fluorescence expression area from the threshold by using the following four parameters.

a. Threshold of cell expression area (Intensity: Min. (≥0))

The intensity values lower than this parameter are excluded from the expression area.

b. Threshold of the area for the over intensity of fluorescence (Intensity: Max. (≤255))

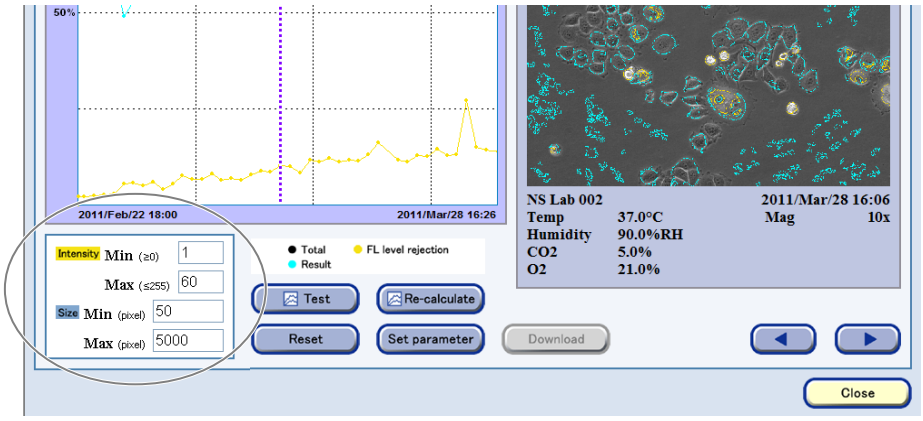
The intensity values higher than this parameter are excluded from the expression area for the over intensity of fluorescence.

c. Smallest value for expression area size (Size: Min. (pixel) (≥0))

When expression areas are extracted from the parameters “a” and “b”, the areas smaller than this parameter are excluded from these expression areas.

d. Largest value for expression area size (Size: Max. (pixel) (≤1,000,000))

When expression areas are extracted from the parameters “a” and “b”, the areas bigger than this parameter are excluded from these expression areas.



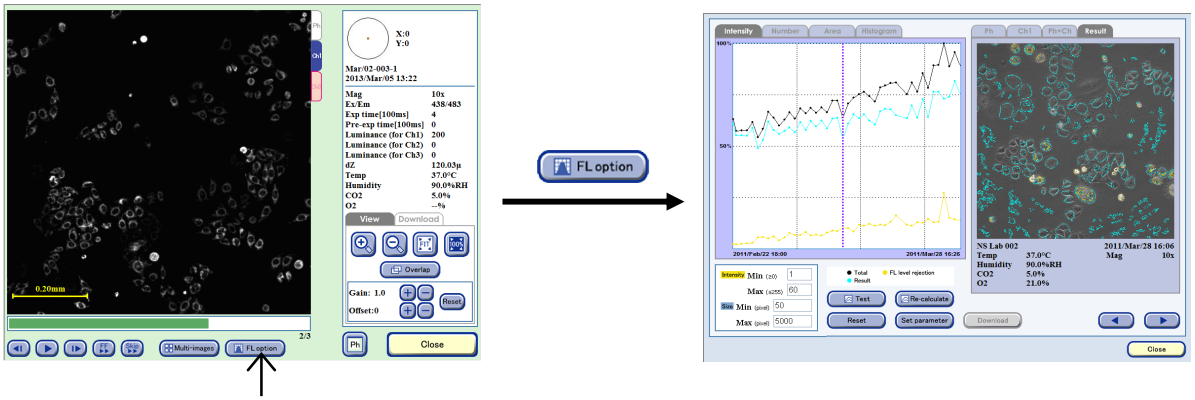
The system default values are used as the default values for these parameters when performing analysis. These default parameter values can be changed to be used as default analysis conditions for each user when checking the analysis results. For details, see Section 3.6.2.2, “Procedure for checking analysis results.”

The following two areas can be extracted using the above analysis methods.

- Fluorescence standard intensity area
- Fluorescence over intensity area

3.6.2 Using the FL analysis results display window

The FL analysis results display window is displayed by selecting an appropriate channel for the fluorescence image in the Point image display window (FL) with the FL option button.



Point image display window (FL) **FL analysis results display window**

Additionally, the FL option button is enabled by selecting an appropriate channel tab.

Additionally, the FL option button is enabled by selecting an appropriate channel tab.

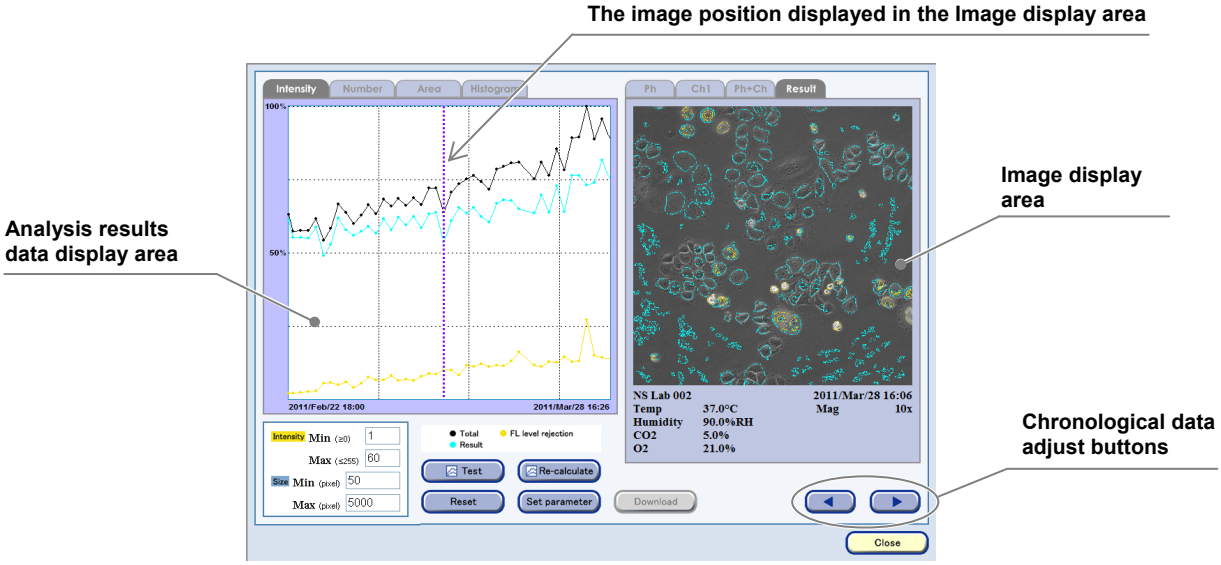
For details on displaying the Point image display window (FL), see Section 3.5.3.2, “Viewing the micro image (FL image) and preparing download.”

Check the analysis results in the FL analysis results display window.

3.6.2.1 Displaying analysis result contents

The analysis results for an image captured in scheduled observation appear in the FL analysis results display window allowing the following to be confirmed.

The analysis results data of the chart or the histogram appears in the Analysis results data display area on the left side. Additionally, the vertical purple line on the chart shows the display position (for image capture timing) of the image displayed in the Image display area. Click an appropriate position on the chart to indicate the current position or click the Chronological data adjust button to switch it.



Viewing the Analysis results data display area

The following section describes the Analysis results data display area.
The chart or histogram corresponding to the selected Display data switch tab is displayed in this area.

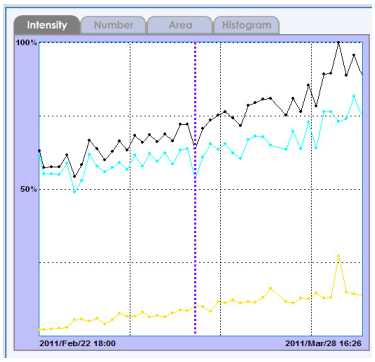
Displaying the chart

The data in the area extracted by analysis is displayed in the chart as follows:

Blue: Normal expression area

Yellow: Over-expression area

Black: The total areas in the above expressions



The horizontal axis of each chart shows time between the first observation date and time and the latest observation date and time.

The vertical axis of each chart shows the maximum value of 100 % (the maximum value of the vertical axis) to be plotted.

The data of the vertical axis for each chart varies depending on the tab selected as shown below.

a. Chart displayed in the [Intensity] tab

This is a chart of the fluorescence intensity value. The intensity value of the fluorescence expression area shows in chronological order.

The vertical axis of the chart shows the total intensity values of fluorescence expression areas extracted from each fluorescence image.

b. Chart displayed in the [Number] tab

This is a chart of the number of the fluorescence expression area. This chart displays the number of the fluorescence expression areas in chronological order.

The vertical axis of the chart shows the number of the fluorescence expression area extracted from each image.

c. Chart displayed in the [Area] tab

This is a chart of the size of the fluorescence expression area. The area size in the fluorescence expression shows in chorological order.

The vertical axis of the chart shows the total size (the number of pixels) of the fluorescence expression areas extracted from each image.

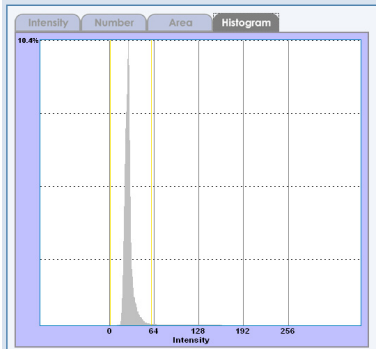
Displaying the histogram

This histogram indicates the ratio of the areas that contain each intensity value to the entire image displayed with the [Histogram] tab.

The horizontal axis of this histogram indicates the intensity value displayed in 256 (between 0 and 255) gradations.

The vertical axis of this histogram indicates the ratio of the areas (number of pixels) that contain each intensity value to the entire image (1,000,000).

Its maximum value indicates the maximum value of the vertical axis.



Viewing the Image display area

The image captured in one schedule observation and the Analysis results image appear in the Image display area. Clicking the Display image switch tab switches the display image as follows:

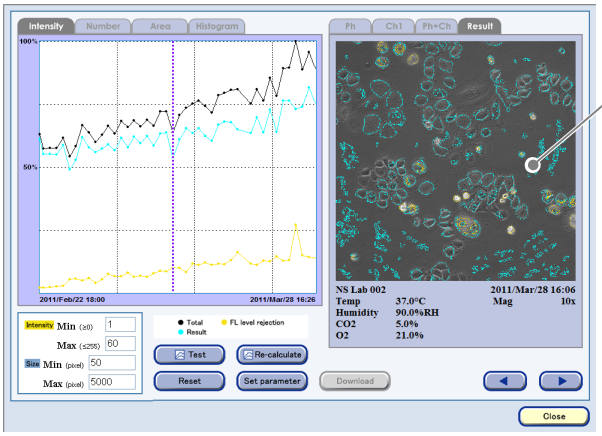


Image display area

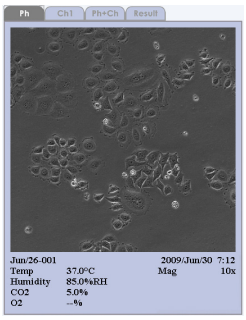
The following image compatible with the selected Display image switch tab appears.

- Ph: Phase contrast image
- Chn (n indicates a channel number): The fluorescence image for object to be analyzed.
- Ph+Ch: Image overlaid with the fluorescence image and the phase contrast image.
- Result: Analysis results image

Image display area

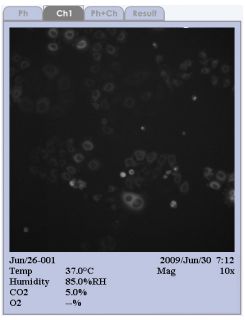
a. Image displayed with the [Ph] tab

The phase contrast image captured at the specified timing.



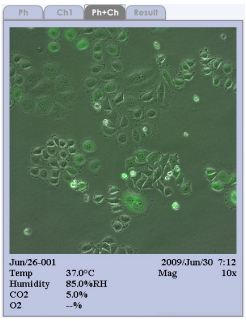
b. Image displayed with the [Chn] tab (n indicates a Fluorescence channel number)

The analyzed fluorescence image.



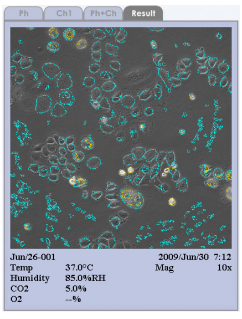
c. Image displayed with the [Ph+Ch] tab

Display the overlaid image of the fluorescence and phase contrast image captured in the specified timing.



d. Image displayed with the [Result] tab

Display the area extracted by an analysis in color over a black and white image of the overlaid image of the fluorescence and phase contrast images. The extracted area color is the same as the one displayed in the chart (the area for the standard intensity of fluorescence: Blue; the area for the over intensity of fluorescence: Yellow).



3.6.2.2 Procedure for checking analysis results

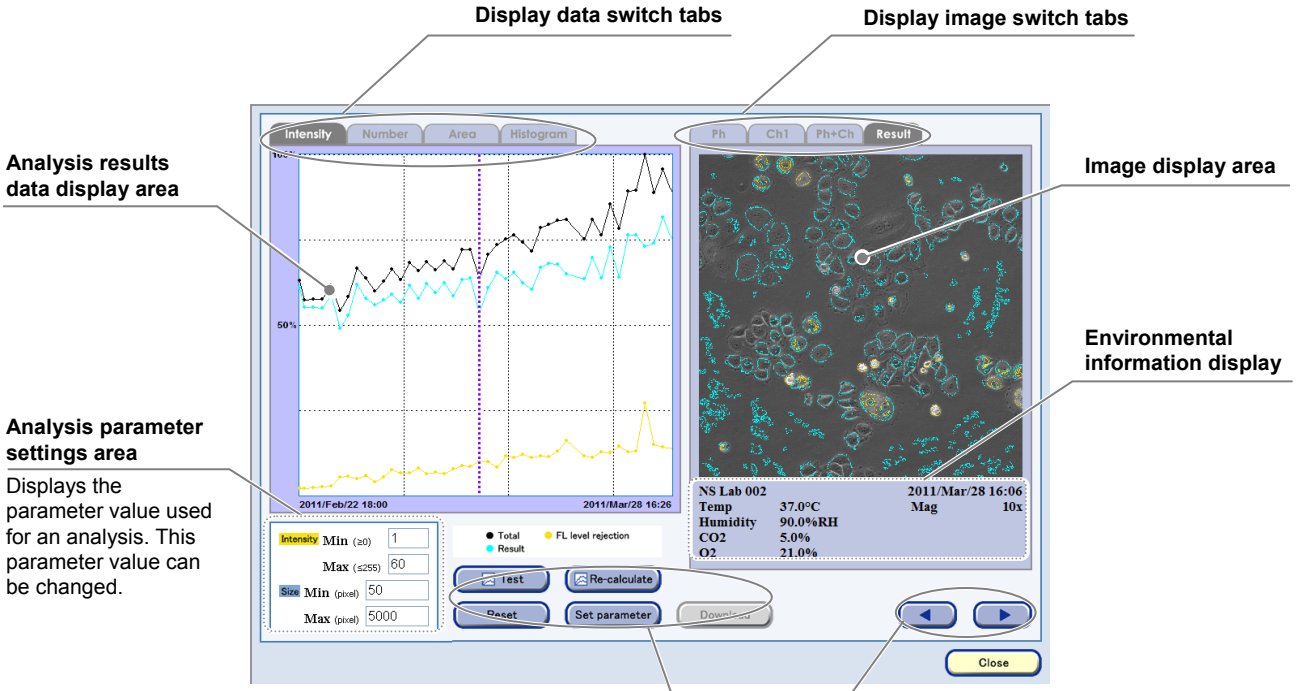
To check the analysis results, follow the procedure below.

(1) Check the content of the Analysis results data display area or Image display area.

If necessary, switch the charts, the histogram or the image to be displayed with the Display data switch tab.

Additionally, to switch the display position (for image capture timing) to check the image, use the Chronological data adjust button.

For details on checking the content of the Analysis results data display area or the Image display area, see Section 3.6.1.1, “Analysis Results.”



Execution buttons

Test	Re-calculate the data displayed in the analysis data display area using the parameter value displayed in the window.
Re-calculate	Re-calculate all data using the parameter value displayed in the window.
Reset	Reset the re-calculated-result with the Test button. When the button is clicked while the re-calculation is not performed, the parameter value is applied to be reset.
Set parameter	Display the parameter value to be registered for the analysis conditions of the logged in user.
Download	Download the analysis result file (.csv) to an external PC. This button is effective only when an external PC is operated.

Chronological data adjust button

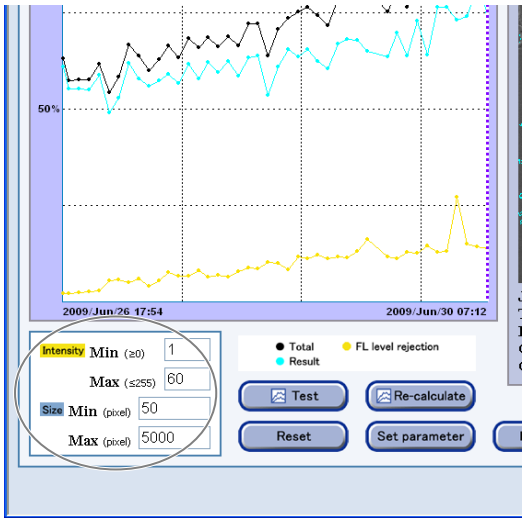
Switch the displayed image in the chronological order. Additionally, when a chart is displayed in the Analysis results data display area, the vertical axis that indicates the corresponding position of the image is also moved.

FL analysis results display window

(2) If necessary, change the analysis conditions, and then re-calculate them to extract an appropriate analysis result.

Follow the steps below.

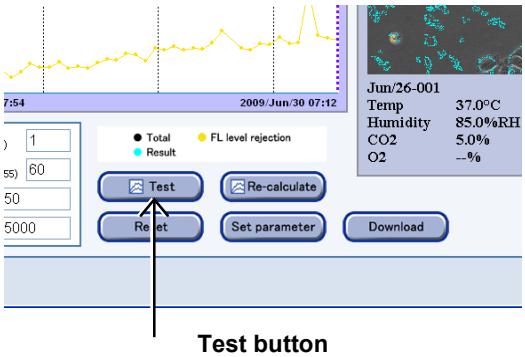
1. **Change parameters in the Analysis parameter settings area in the FL analysis results display window.**



Analysis parameter settings area

2. **Click the Test button, and then re-calculate the analysis results of the selected display position (for image capture timing).**

   The Result display and the chart in the Analysis results data display area are changed.



Test button

3. **Check the image in the Image display area.**

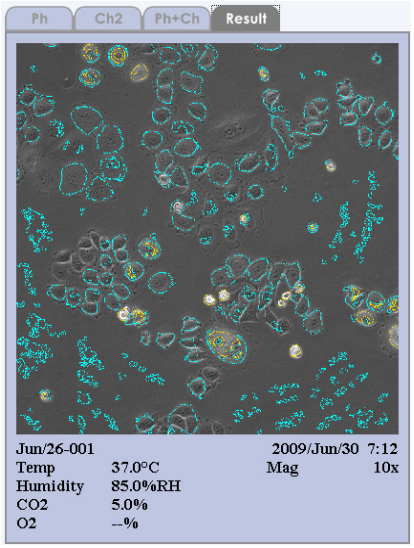
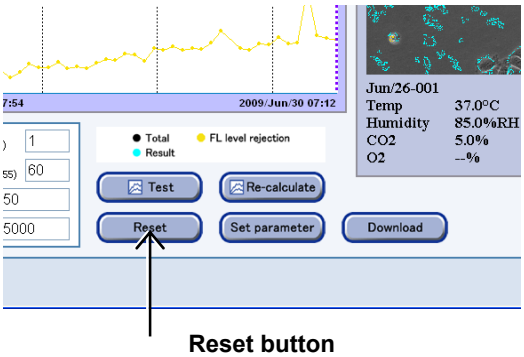


Image display area

4. Repeat steps 1 to 3 until the appropriate image conditions are met.

To return the current parameter values to the default settings, click the Reset button.

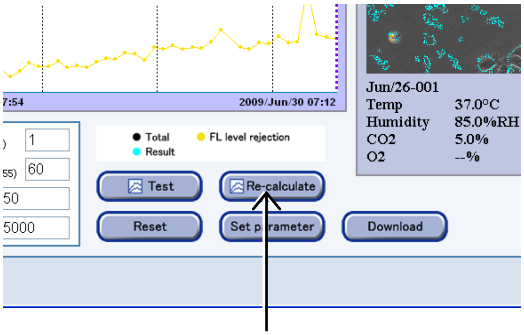


Reset button

5. When the image in the image display area is properly adjusted, click the Re-calculate button to re-analyze all data.

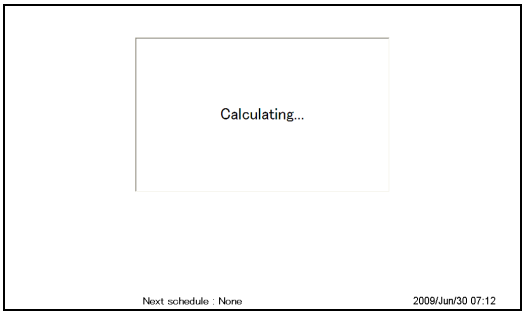
Because it takes time for re-calculation, a message asking you to confirm whether to re-calculate all data appears.

To continue, click the OK button.



Re-calculate button

The dialog box indicating that the calculation is being processed appears.



6. If necessary, check the chart in the Analysis results data display area.

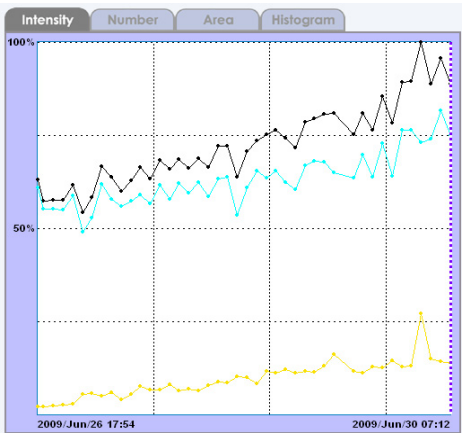
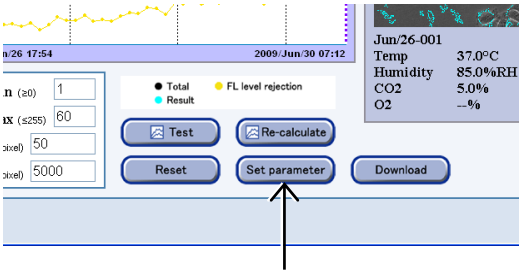


Chart in the Analysis results data display area

(3) To register the analysis conditions specified in step (2) for each user default channel, perform the following operations.

1. Click the Set parameter button.

The following Analysis conditions register window appears.

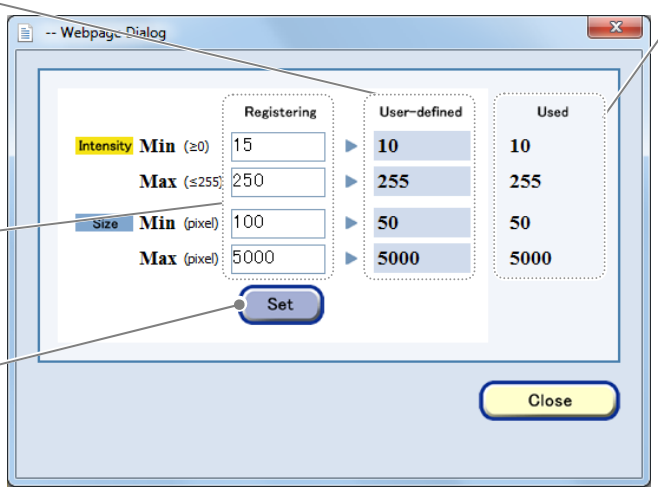


FL analysis results display window

User-defined
Parameter values registered as analysis conditions.

Registering
Parameters displayed in the FL analysis results display window.

Set
Register the analysis conditions displayed in the Registering field as default analysis conditions of each channel specified for each user.



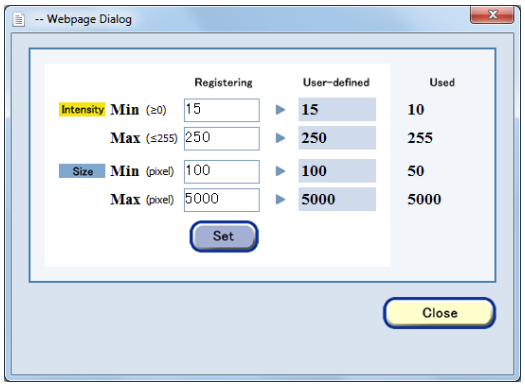
Used
Parameters used for the calculation of the analysis result currently displayed. Change the parameters in the FL analysis results display window, and then click the Re-calculate button to re-calculate all data of the displayed channels.
The values in the Used field are modified. However, if only one image is re-calculated as a test the display of the field is not changed.

Analysis conditions register window (Immediately after the window is displayed)

2. To use the analysis conditions for the parameters displayed in the Registering field, click the Set button.

The values in the Registering field can be changed for registration.

The values in the Registering field are replaced with the values displayed on the screen. The values in the User-defined field can also be changed.

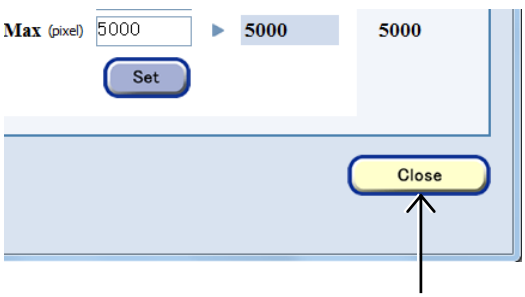


Analysis conditions register window (after the conditions are set)

3. When the registration of the analysis conditions is completed, click the Close button.

The FL analysis results display window appears.

If you do not need to register analysis conditions in the Analysis condition register window, click the Close button without performing step 2.



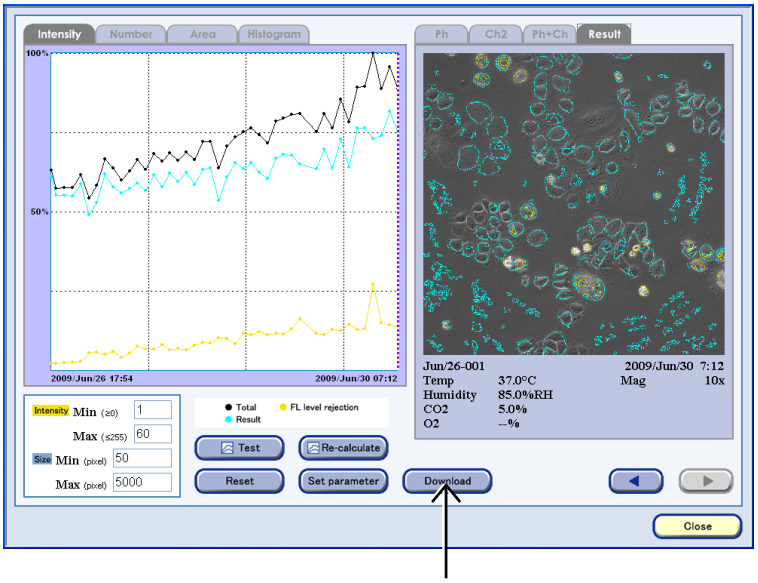
3.6.3 Downloading Analysis Results

Analysis results can be downloaded in cvs file format. The download operation can be performed only from an external PC.

To download analysis results, perform the procedure below.

(1) Click the Download button in the FL analysis results display window.

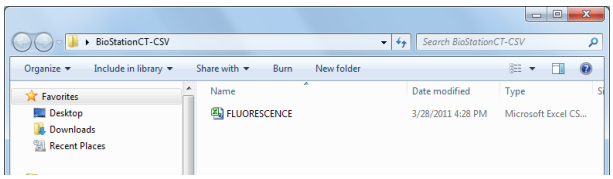
A download confirmation dialog box appears. Download the file to the external PC in accordance with the instructions.



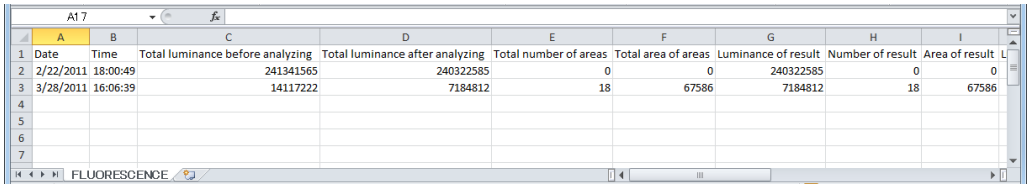
FL analysis results display window

(2) Check the downloaded file.

Open the downloaded file to check detailed analysis results of the fluorescence intensity.



Downloaded file of analysis results



	A	B	C	D	E	F	G	H	I
1	Date	Time	Total luminance before analyzing	Total luminance after analyzing	Total number of areas	Total area of areas	Luminance of result	Number of result	Area of result
2	2/22/2011	18:00:49	241341565	240322585	0	0	240322585	0	0
3	3/28/2011	16:06:39	14117222	7184812	18	67586	7184812	18	67586
4									
5									
6									
7									

FLUORESCENCE

Fluorescence intensity analysis results list file

The following table shows the items contained in the fluorescence intensity analysis results list file (FLUORESCENCE.CSV).

Items in a fluorescence intensity analysis results list file

Item	Description
Date	A date value
Time	A time value
Total luminance before analyzing	The total intensity value of original image
Total luminance after analyzing	The total intensity value of fluorescence expression areas (= The areas for the standard intensity of fluorescence + the areas for the over intensity of fluorescence)
Total number of areas	The total number of the fluorescence expression areas (= The areas for the standard intensity of fluorescence + the areas for the over intensity of fluorescence)
Total area of areas	The total area size of the fluorescence expression areas (= The areas for the standard intensity of fluorescence + the areas for the over intensity of fluorescence)
Luminance of result	The intensity value of the areas for the standard intensity of fluorescence
Number of result	The number of areas for the standard intensity of fluorescence
Area of result	The size of the areas for the standard intensity of fluorescence
Luminance of FL level rejection	The intensity value of the areas for the over intensity of fluorescence
Number of FL level rejection	The number of areas for the over intensity of fluorescence
Area of FL level rejection	The size of the areas for the over intensity of fluorescence
Luminance of Ph level rejection	(Not used)
Number of Ph level rejection	(Not used)
Area of Ph level rejection	(Not used)

3.7 Multi Images Display of Captured Images

3.7.1 Multi Images Settings

Multiple captured images can be selected, displayed, and played back side by side.
Note that an image captured with a normal scheduled observation and an image captured in the Stage exclusive modes cannot be displayed simultaneously in the Multi images display.

(1) Open the Each image window.

a. To open the Each image window in the Image review window

a-1. Click the Expand button for the desired history data to display images in the Image review window.

The history area expands to display the captured thumbnail images.

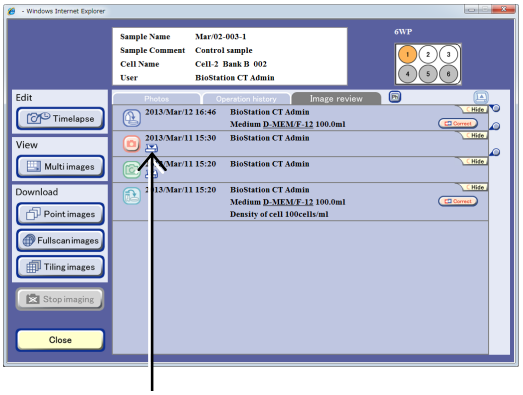
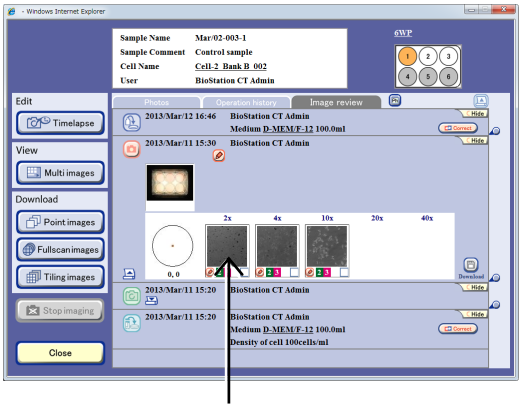


Image review window

a-2. Click the thumbnail image of various images.

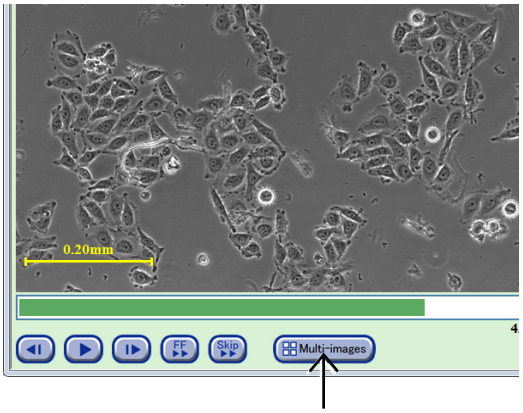
The Image display window appears.



a-3. Click the Multi-images button in the various image display window.

The Multi images display window to which the various images previously displayed in the display window were added appears.

Go to step (2).

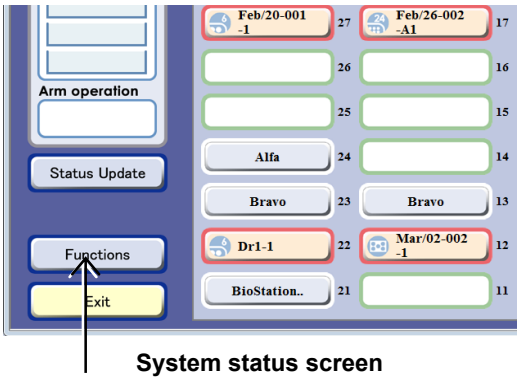


Various images display window

b. To open the each image window in the Functions window

b-1. Click the Functions button on the System status screen.

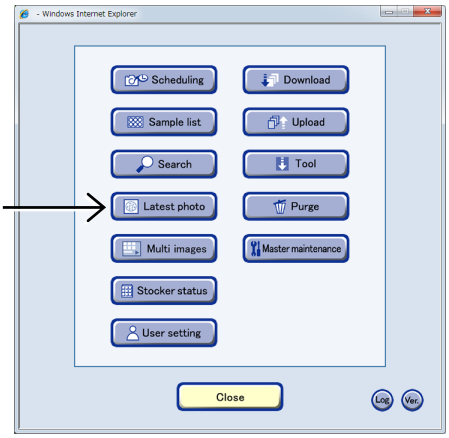
The Functions window appears.



System status screen

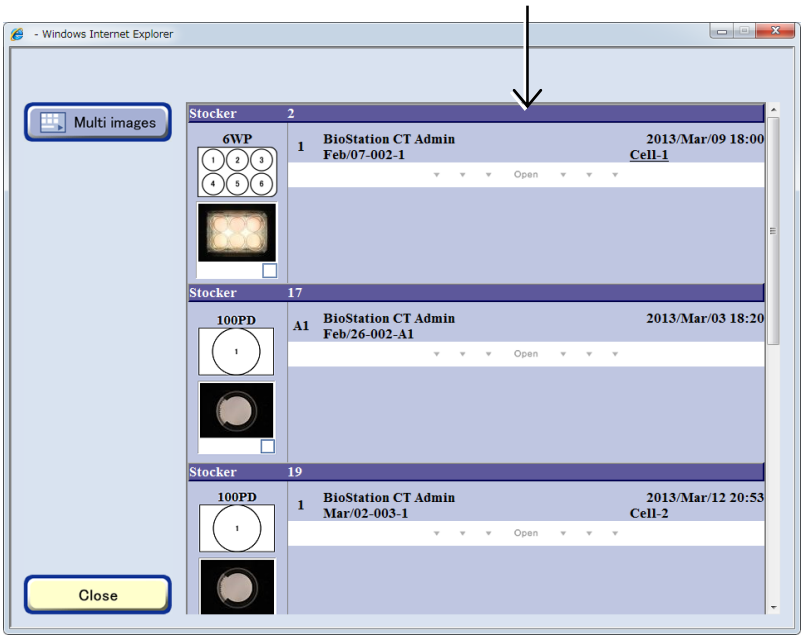
b-2. Click the Latest photo button.

The Latest photo list window appears. The latest images for all the samples cultured by the logged in user are displayed.



Functions window

b-3. Click the Stocker number display area twice to open the Image display window.



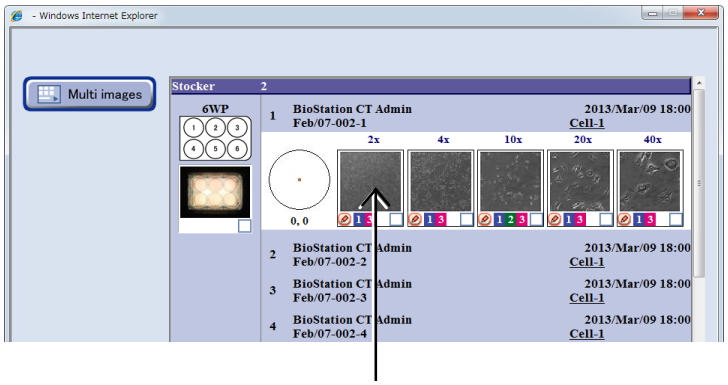
Latest photo list window (holder list)

b-4. Select an image to be displayed in the Multi images display window.

To register an image on the Multi images display from the display window of each image

Click the thumbnail image of the image to be displayed in the Multi images display window.

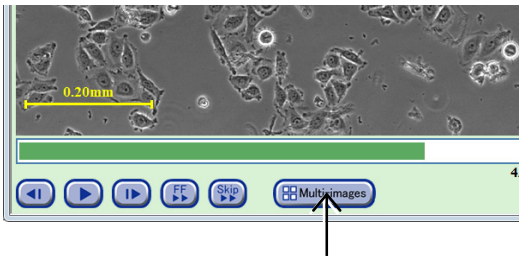
The various images display window appears.



Latest photo list window (latest photo list)

Click the Multi-images button in the various image display window.

The Multi images display window to which the various images previously displayed in the display window were added appears.

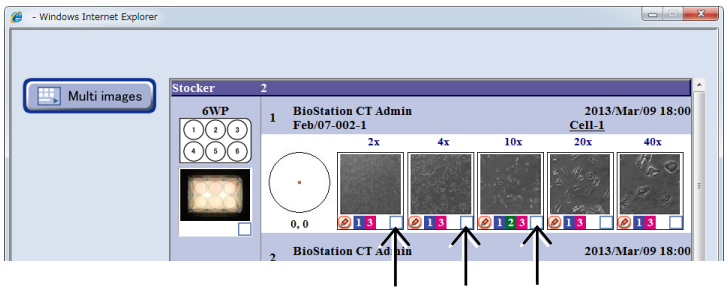


Various images display window

Go to step (2).

To register multiple images on the Multi images display in a batch

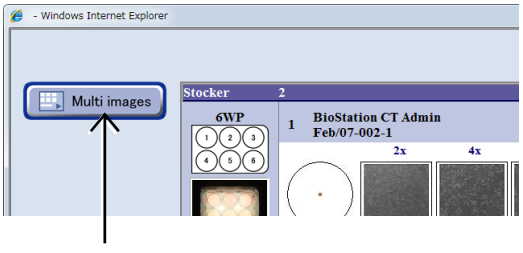
Click the image selection button below the thumbnail images to select the images to be displayed in the Multi images display window.



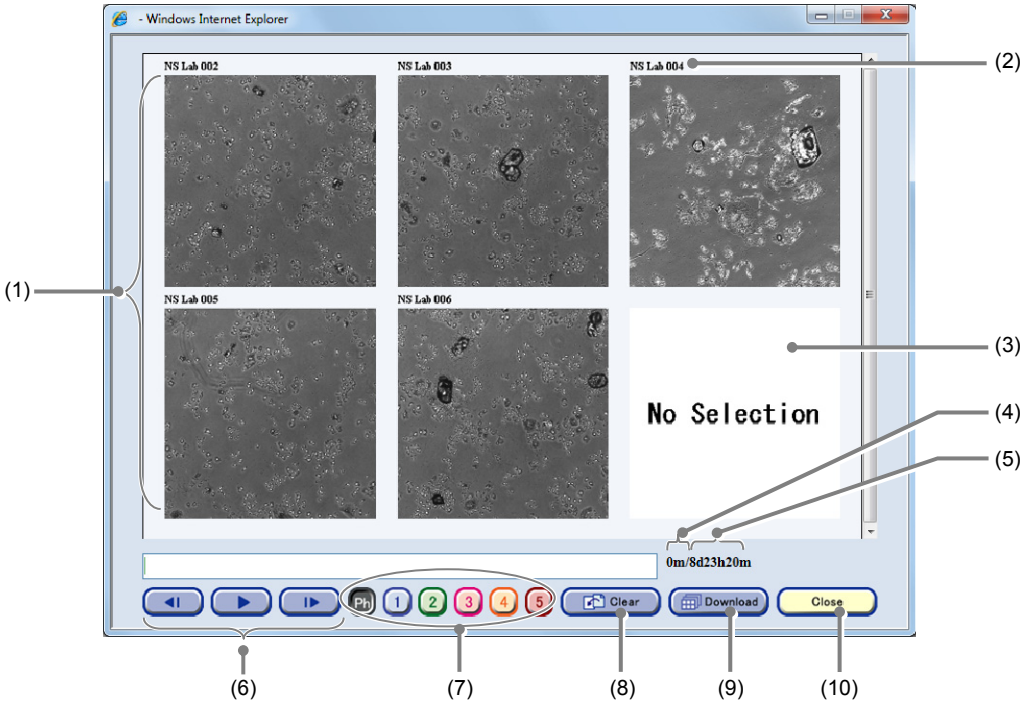
Latest photo list window (latest photo list)

Click the Multi images button.

The Multi images display window to which the selected image was added appears.



(2) To add an image to the Multi images display window, repeat step (1).



Multi images display window

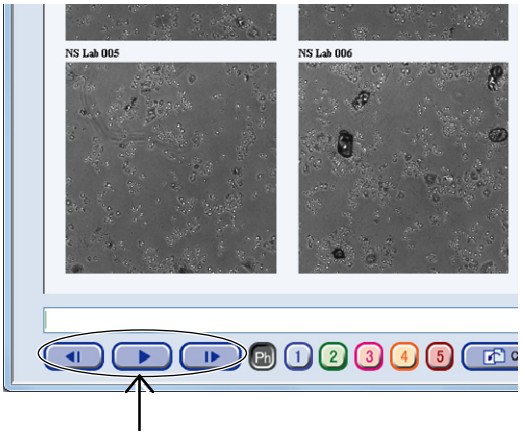
No.	Name	Function
(1)	Scheduled observation images	Click the image to display the Multi images display menu window.
(2)	Sample name area	This area displays the sample name.
(3)	No Selection area	Area not in use.
(4)	Playback time	This area displays the playback time from start to end.
(5)	Playback time for a single frame	The interval for the shortest scheduled time is defined as a single frame.
(6)	Multi images playback buttons	**► button:** Play back images. This button functions as the pause button during playback. **I►/◄I buttons:** Play one frame forward /one frame backward
(7)	Overlay display buttons	Effective for fluorescence images only. Click this button to overlay images of the selected channel.
(8)	Clear button	Click this button to clear all displayed images. To delete only a selected image, click the image, and then delete it on the Multi images display menu window.
(9)	Download button	Click this button to download the Multi images display window. (Not displayed on the touch panel display.)
(10)	Close button	Click this button to close the Multi images display window.

3.7.2 Multi Images Playback

Multiple selected scheduled observation images can be played back side by side.

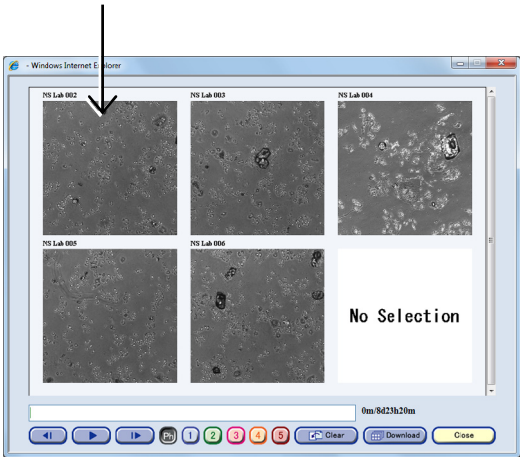
(1) Click the ► button to play back an image or the I► /◄I buttons to go forward or backward a frame.

The shortest interval for scheduled observation is played back as a single frame.

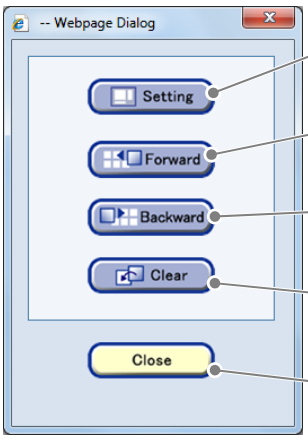


Multi images display window

(2) To set an image, click the desired scheduled observation image.



The Multi images display menu window appears.



Setting button
Display the Multi images playback setting window.

Forward button
Move the selected image forward on the Multi images display window.

Backward button
Move the selected image backward on the Multi images display window.

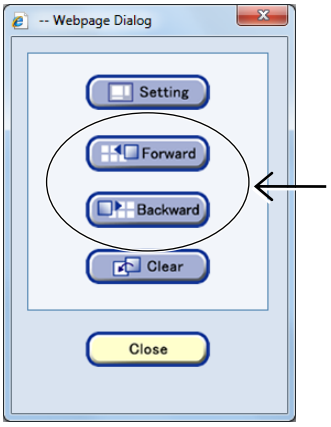
Clear button
Delete the selected image on the Multi images display window.

Close button
Return to the Multi images display window.

Multi images display menu window

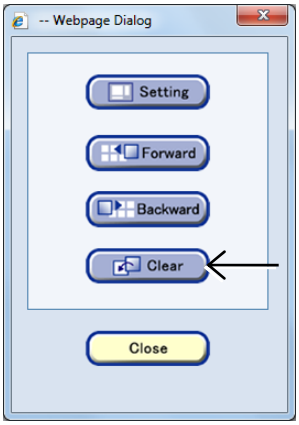
1. **Click the Forward/Backward button to move the selected images forward or backward in the Multi images display window.**

   The selected image that was moved forward or backward appears in the Multi images display window.



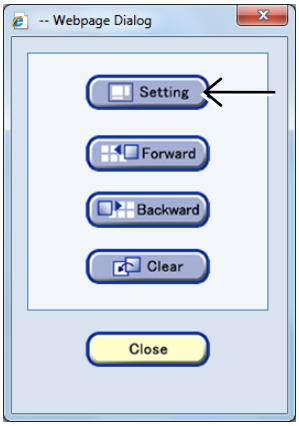
2. **To delete the selected image in the Multi images display window, click the Clear button.**

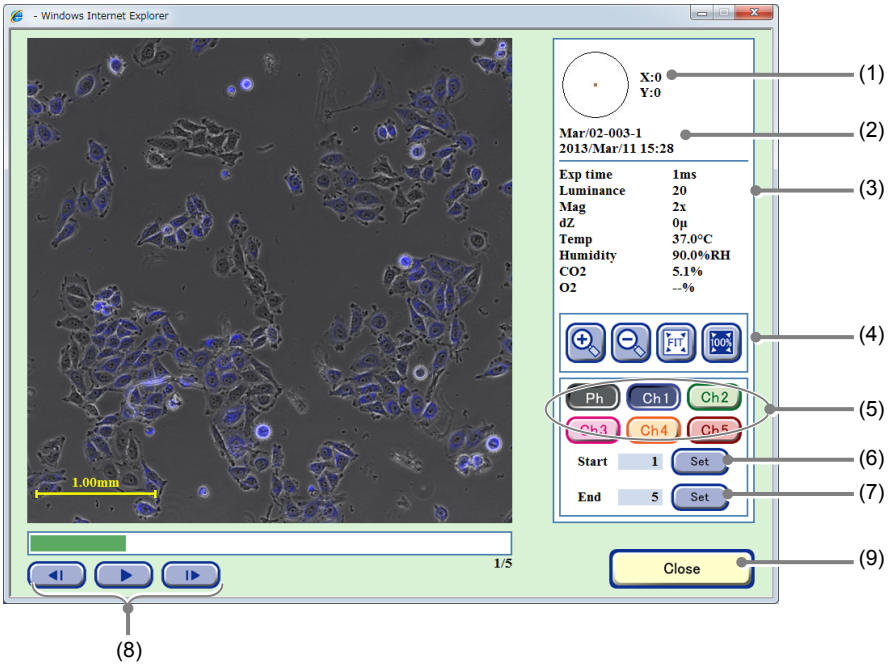
   The Multi images display window without the selected image appears.



3. **To change the start time or the end time of playback for the selected image, click the Setting button.**

   The Multi images playback setting window appears.

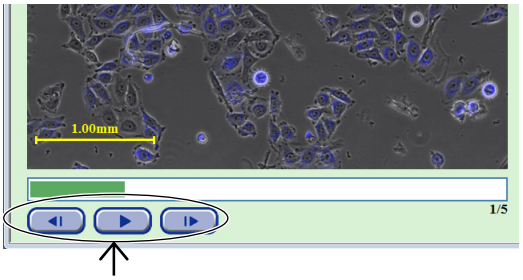




Multi images playback setting window

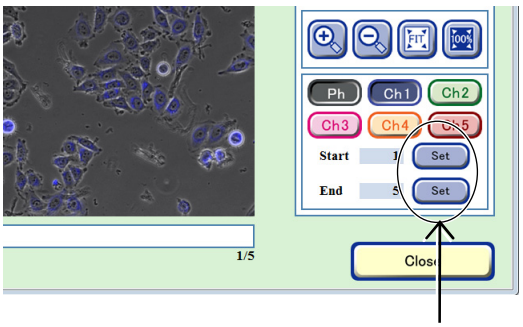
No.	Name	Function
(1)	Coordinate of the observation point	This area displays the coordinate (x,y) for the observation point where (0,0) is the center of the sample.
(2)	Sample information	This area displays the observation point, sample name, and captured date and time.
(3)	Image capture conditions and environmental information	This area displays the Image capture conditions and the temperature, humidity, and CO_2 concentration and O_2 concentration (optional) in the CO_2 incubator.
(4)	Display size change buttons	**+, - buttons:** Enlarge or reduce the image. **FIT button:** Display the image on the full screen. **100% button:** Display the image in the original size.
(5)	FL channel Display	Effective for images captured in scheduled observation only. Click this button to display the selected FL channel image.
(6)	Set button for Start	Click this button to set the playback start position.
(7)	Set button for End	Click this button to set the playback end position.
(8)	Timelapse images playback button	**► button:** Play back timelapse images continuously. During playback, this button changes to a pause button and clicking the button pauses playback. **I►/◄I button:** Play one frame forward /one frame backward
(9)	Close button	Click this button to return to the Multi images display window.

4. **Click |►/◄| or ► button to display the image of the playback start position or the playback complete position.**



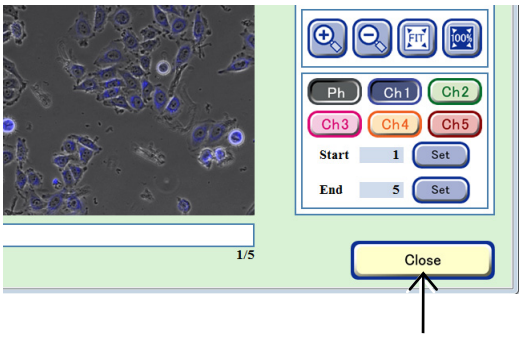
5. **For the playback start position, click the Set button for Start, or for the playback complete position, click the Set button for End.**

   The selected image is saved as the playback start position or playback complete position.

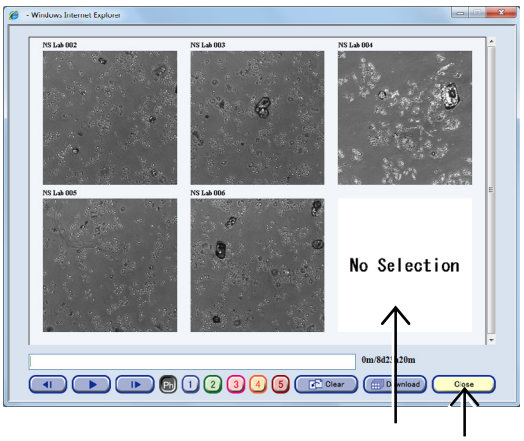


6. **Click the Close button to close the Multi images playback setting window.**

   The Multi images display window appears.



(3) To close the Multi images display window, click the Close button or the No selection area.



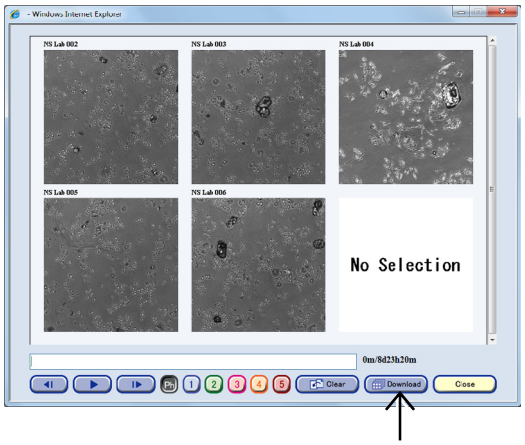
Multi images display window

3.7.3 Downloading a Multi Images Display Window

This section describes the procedure for downloading a Multi images display window to an external PC. This function can be operated only on the external PC.

(1) Click the Download button in the Multi images display window.

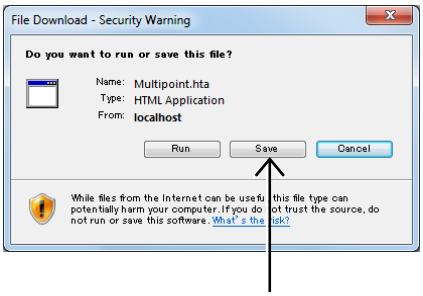
A dialog box for installing downloader (Multiimages.hta) required for batch downloading appears.



Multi images display window

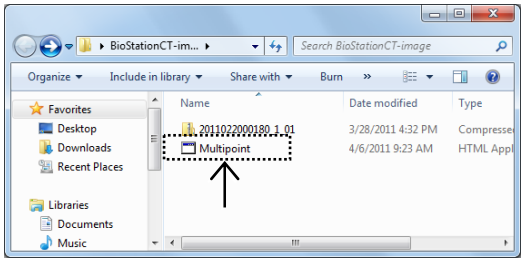
(2) Click the Save button in the "File Download – Security Warning" dialog box.

(3) Specify the folder to save the downloader, and then click the Save button.



(4) Double-click the saved Multiimages.hta to run it.

The downloaded files are also saved in the folder selected here.

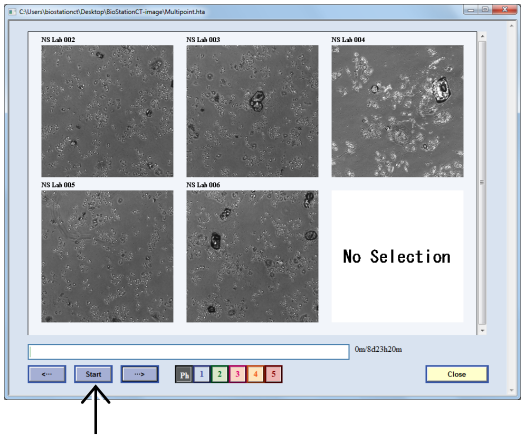


(5) Click the Start button on Multiimages.hta.

The Multi images window is played and file download starts.

When all Multi images are fully shown, the download is completed.

The batch downloader (Multiimages.hta) used for batch downloading of images can also be used as the off-line Multi images viewer on the PC.



3.7.4 Displaying the Multi Images Display Window

There are three ways to display the Multi images display window selected in Section 3.7.1, “Multi Images Settings.”
Once the image is selected, it remains until it is canceled for logout.

a. To open from the Image review window

a-1. Click the Multi images button in the Image review window.

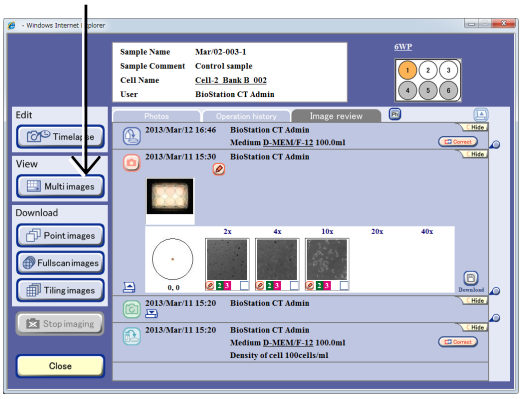
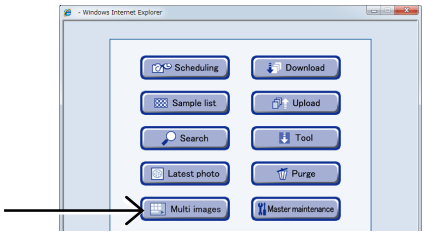


Image review window

b. To open from the Functions window

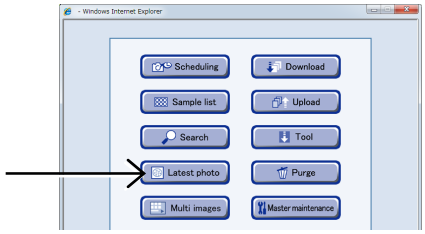
b-1. Click the Multi images button in the Functions window.



Functions window

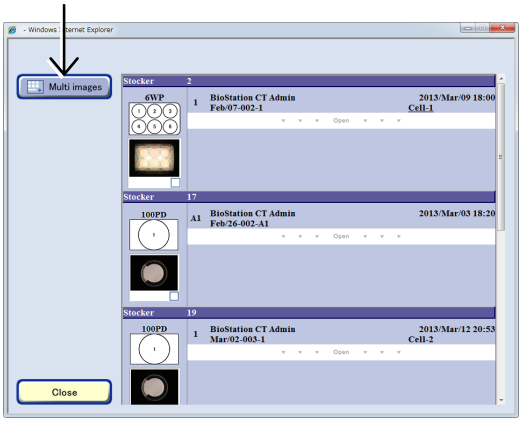
c. To open from the Latest photo window

c-1. Click the Latest photo button in the Functions window.



Functions window

c-2. Click the Multi images button in the Latest photo list window.



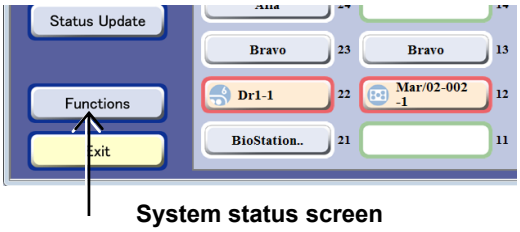
Latest photo list window

3.8 Searching for Observation Data

This section describes the procedure for performing a keyword search for a sample in the observation data in the file server of the product. The observation data for cultured samples can be also searched for in the search window.

(1) Click the Functions button on the System status screen.

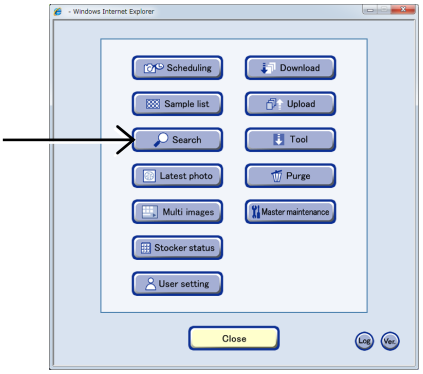
The Functions window appears.



System status screen

(2) Click the Search button.

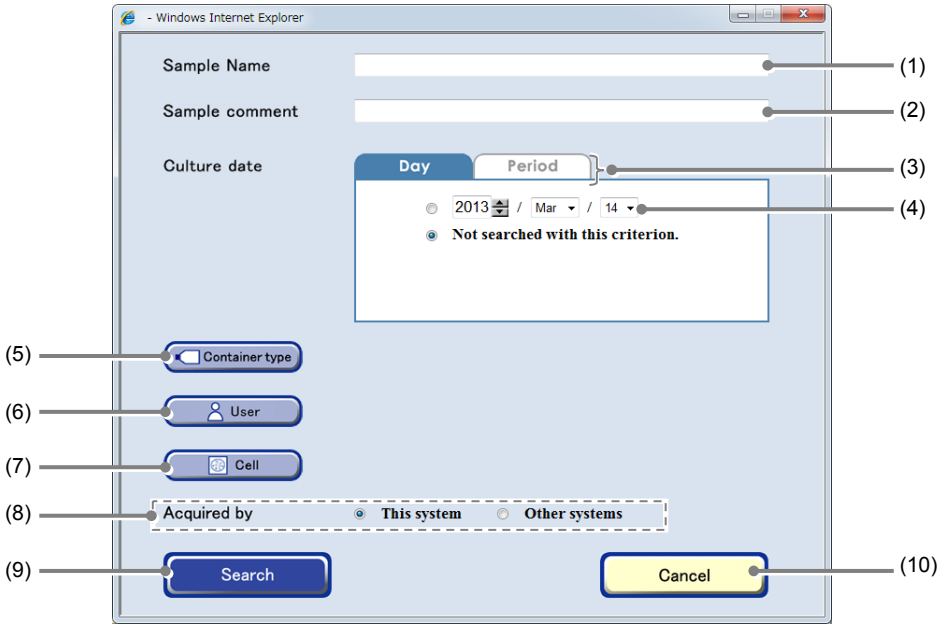
The Search window appears.



Functions window

(3) Specify the search criterion to search for a sample in the Search window.

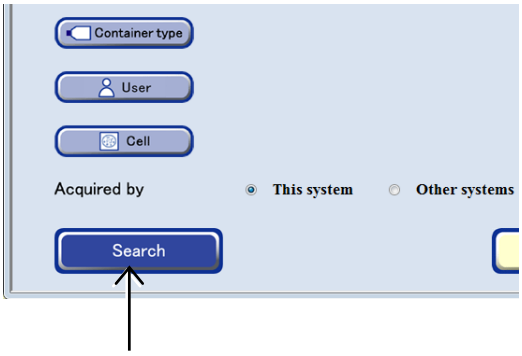
Multiple search criteria can be selected.
For details on the procedure for specifying the search criterion, see Section 3.8.1, “Entering the Search Criterion.”



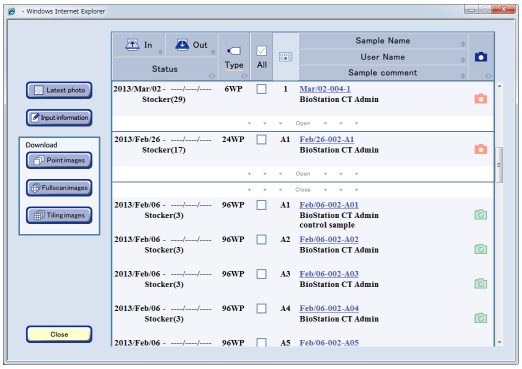
Search window

No.	Name	Function
(1)	Sample Name field	Enter a sample name to search for a sample.
(2)	Sample comment field	Enter a comment registered for a sample to search for a sample.
(3)	Date selection method tab	Select the specification method between the culture date and culture period.
(4)	Culture date field	Specify a culture date to search for a sample.
(5)	Container type button	Specify a culture vessel type to search for a sample. Click this button to display the Vessel selection window.
(6)	User button	Specify a user name to search for a sample. Click this button to display the User selection window.
(7)	Cell button	Specify a cell name to search for a sample. Click this button to display the Cell selection window.
(8)	Observation equipment selection	Specify the observation equipment to search for a sample.
(9)	Search button	Click this button to start searching.
(10)	Cancel button	Click this button to close the Search window.

(4) After specifying the search criterion, click the Search button.



The samples that satisfy the search criterion are displayed in the Search result sample list window.



Search result sample list window

In the Search result sample list window, samples are listed in accordance with their stocker number and grouped by holder.

The display order of the sample list can be changed with the sort function at the top of the Search result sample list window.

Click the Open area to display all sample names in the holder. Click the Close area to display only the first sample.

> For details on vessel name abbreviations used in the Search result sample list window, see the list on Page 95, “Abbreviation and description for vessels.”

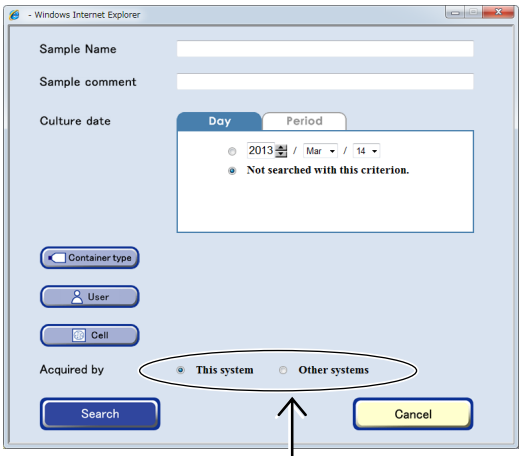
3.8.1 Entering the Search Criterion

This section describes the procedure for specifying the search criterion in the Search window.
Each search criterion can be specified separately and multiple search criteria can be combined.

(1) Select the equipment to observe.

Click the This system radio button to search for the Observation data observed by this system.

Click the Other systems radio button to search for the Observation data uploaded from other systems.



Search window

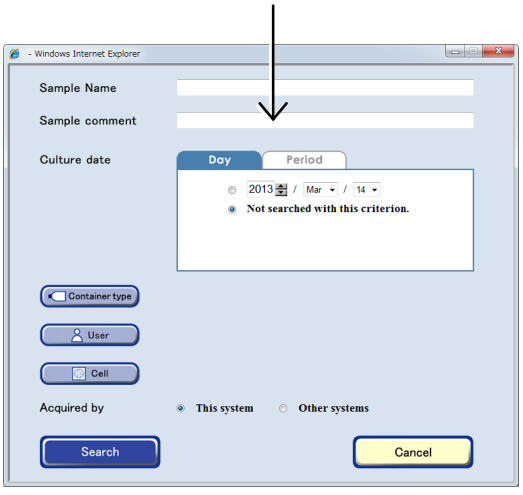
(2) Select the search criterion.

Searching by sample name

1. Enter a full or partial sample name in the Sample Name field in the Search window.

Searching by sample comment

1. Enter a full or partial sample comment in the Sample comment field in the Search window.



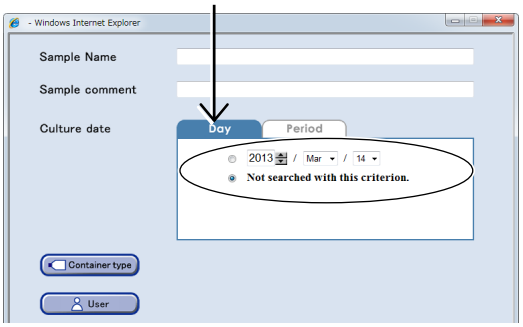
Searching by the culture date

1. **Select the Day tab in the Search window.**
2. **Specify the culture date for the search.**

   All samples that are cultured on the specified date will be searched for.

3. **Click the Radio button on the left of the date display.**

   When not searching by the culture date, turn ON the “Not searched with this criterion.” radio button.



Search window (Day tab)

Searching by specifying the culture date period

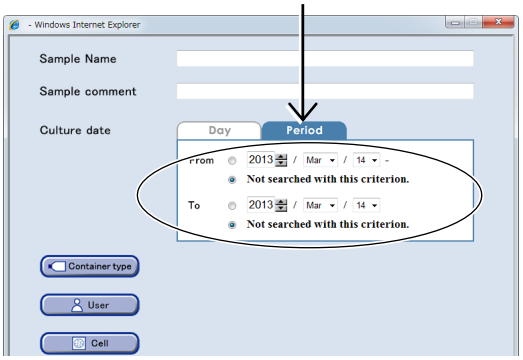
1. **Select the Period tab in the Search window.**
2. **Specify the period to search.**

   Specify the start date of the period to search in the From field.
   Specify the end date of the period to search in the To field.

   All samples that are cultured during the specified period will be searched for.

3. **Click the Radio button on the left of the date display.**

   When not specifying the date, turn ON the “Not searched with this criterion.” radio button.

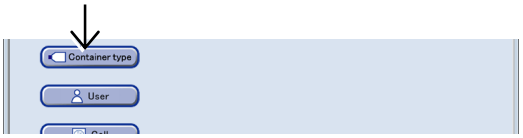


Search window (Period tab)

Searching by the culture vessel

1. **Click the Container type button in the Search window.**

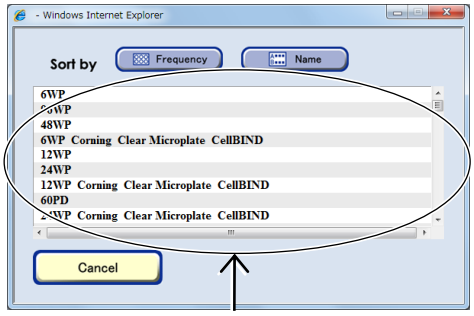
   The Vessel selection window appears.



Search window

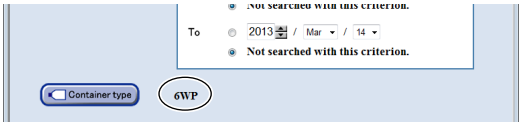
2. **Select the culture vessel in which the targeted sample is stored.**

   The Vessel selection window is closed and the Search window appears.



Vessel selection window

   The selected vessel name is displayed on the side of the Container type button in the Search window.

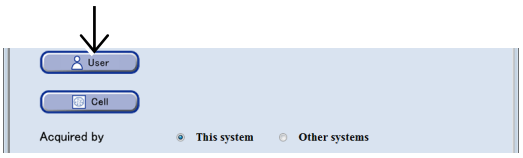


Search window

Searching by the User name

1. **Click the User button in the Search window.**

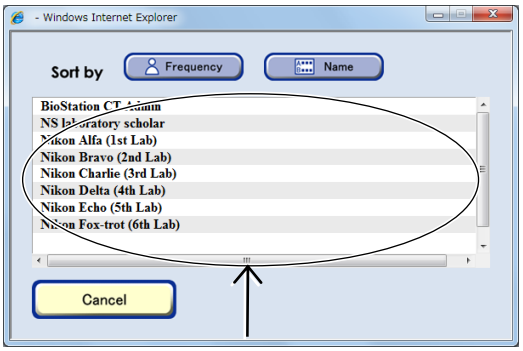
   The User selection window appears.



Search window

2. **Select the user name for the sample to be searched for.**

   The User selection window closes and the Search window appears.



User selection window

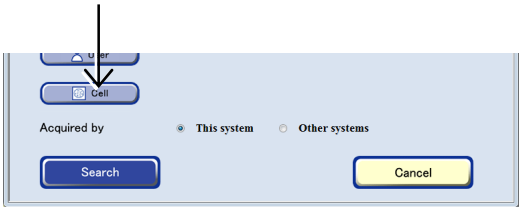
   The selected user name is displayed on the side of the User button on the Search window.

Search window

Searching by the cell name

1. **Click the Cell button in the Search window.**

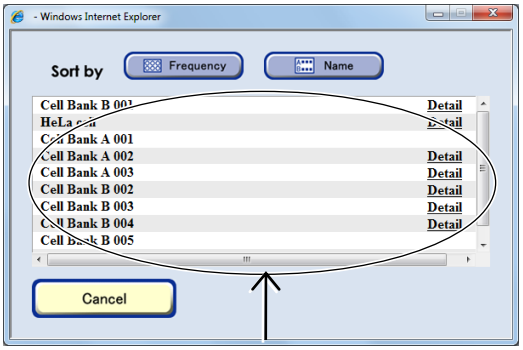
   The Cell selection window appears.



Search window

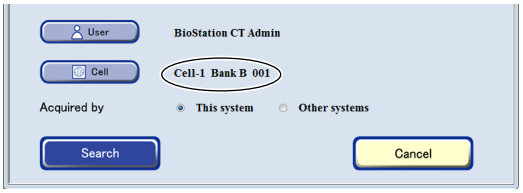
2. **Select the cell name of the sample to be searched for.**

   The Cell selection window closes and the Search window appears.



Cell selection window

   The selected cell name is displayed on the side of the Cell button on the Search window.



Search window

3.9 Managing the Observation Data

This section describes the procedures for preparation for downloading, downloading and uploading the observation data of the sample.

There are two ways data can be downloaded:

Automatic download: (Using BioCT communicator)
By setting automatic download with the BioCT communicator beforehand, captured images are automatically downloaded to the specified folder on an external PC each time scheduled observation completes.
For a timelapse observation, the latest images will be added to the downloaded data as appropriate.

Automatic download is set on an external PC.
For details on the procedure for setting automatic download, see Section 3.9.1, “Downloading the Observation Data (Automatic Download).”

Manual download: The user manually prepares and performs download each time if required.
Download is prepared by specifying the observation data to be downloaded and then the data is downloaded to the external PC.
For details on the procedure for setting download preparation, see Section 3.9.2, “Download Preparation for the Observation Data (Manual Download).”

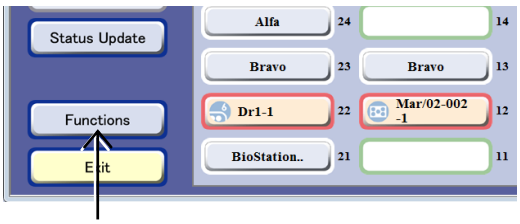
For details on the procedure for downloading the observation data which has been prepared for downloading, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”

To manually download the observation data, it is necessary to prepare the download in advance.

3.9.1 Downloading the Observation Data (Automatic Download)

(1) Click the Functions button on the System status screen.

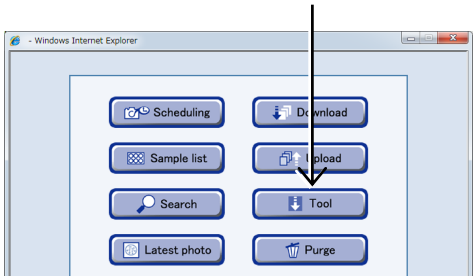
The Functions window appears.



System status screen

(2) Click the Tool button.

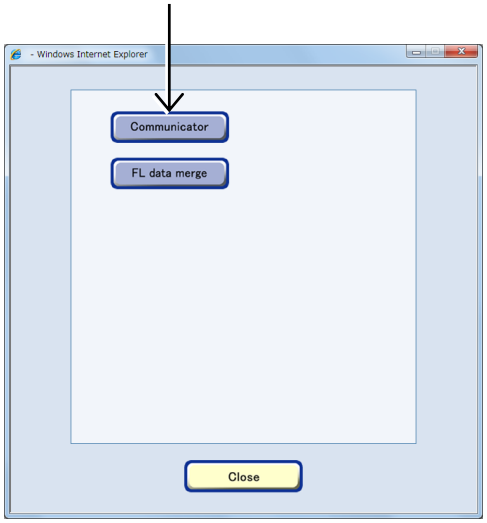
The Tool window appears.



Functions window

(3) Click the Communicator button.

A dialog box for installing the BioCT communicator (BioCTcom.exe) required for setting automatic download appears.

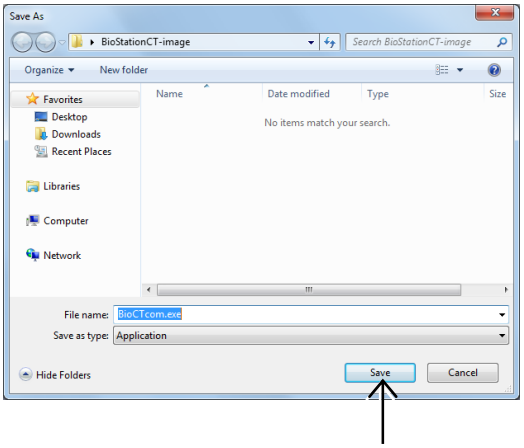


Tool window

(4) Click the Save button in the "File Download – Security Warning" dialog box.

If the Run button is clicked before the Save button, the BioCT communicator does not run correctly, even though the BioCT communicator's window appears. Be sure to save the BioCT communicator before pressing the Run button.

(5) Specify the folder to save the BioCT communicator (BioCTcom.exe), and then click the Save button.



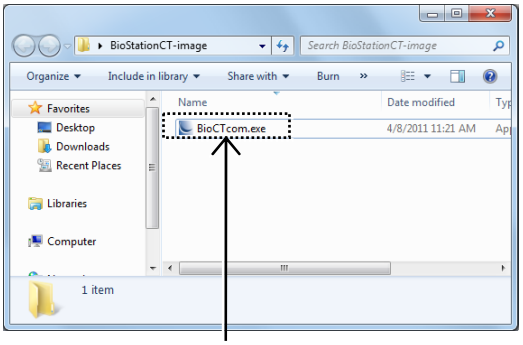
Do not change the extension (.exe) of the file “BioCTcom.exe.” If it is changed, the automatic download function (BioStation CT communicator) will not work.

Changing the file name may automatically change the extension if Windows is set to hide extensions. Confirm that the extension is “.exe” if the file name was changed.

* For details on how to show or hide the file extensions, see Windows Help.

(6) Double-click the savedBioCTcom.exe file to run the BioCT communicator.

The BioCT communicator starts to run.

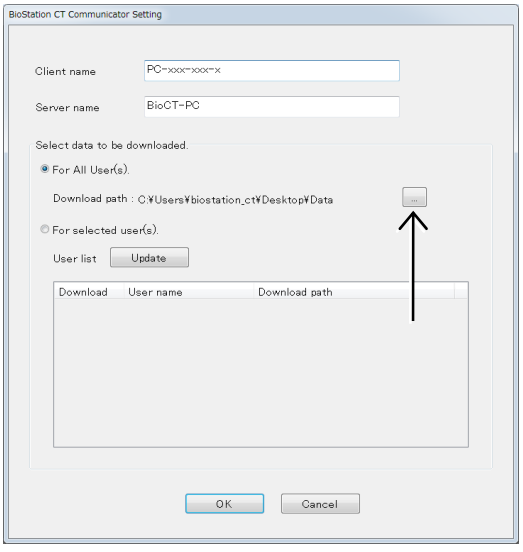


(7) Specify the destination folder to save the download data.

1. Click the ... button in the Data folder field and specify the folder to save the data to be downloaded by automatic download.

The same folder as the one for BioCTcom.exe specified in step (5) is selected by default.

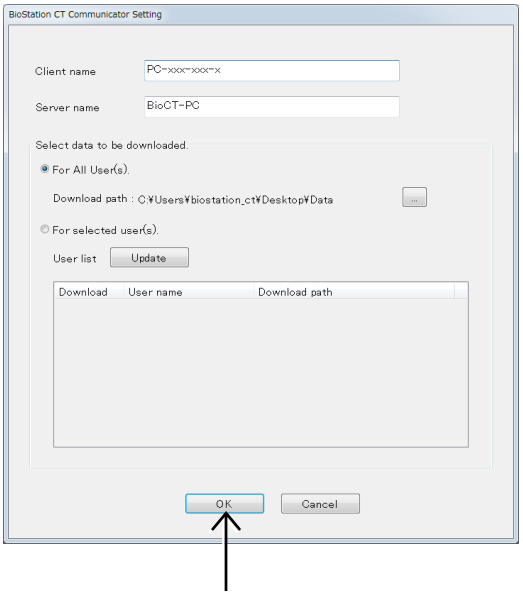
Do not change the default setting of the Client name and Sever name.



Setting window

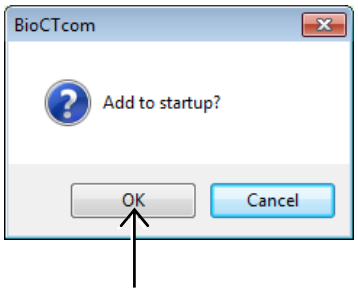
2. **Click the OK button.**

   The Automatic download function (BioCT communicator) is set and a registration confirmation dialog box for start-up appears.



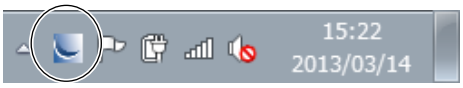
3. **To add BioCT communicator to the Startup, click the OK button.**

   Adding it to Startup runs the BioCT communicator automatically when the PC is turned on.

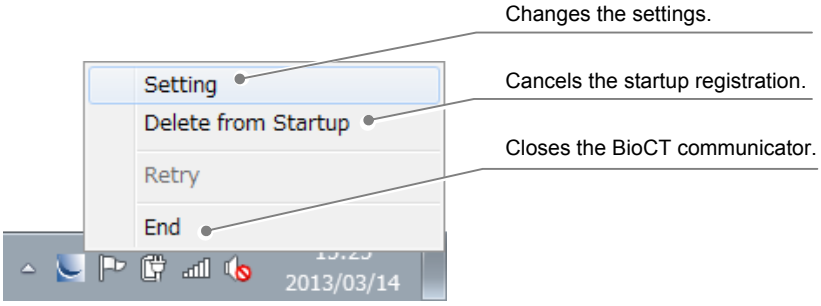


BioCT communicator

While the BioCT communicator is running, the task bar shows its icon.

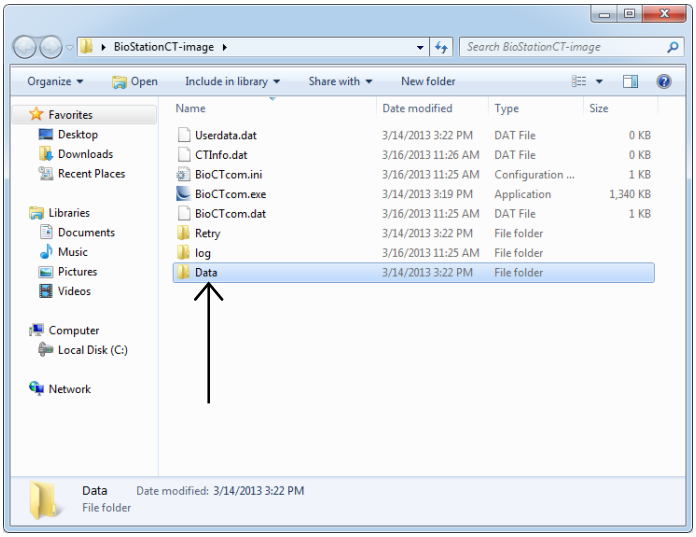


Right-clicking the icon allows operations such as setting change, deleting from Startup, and ending the BioCT communicator.

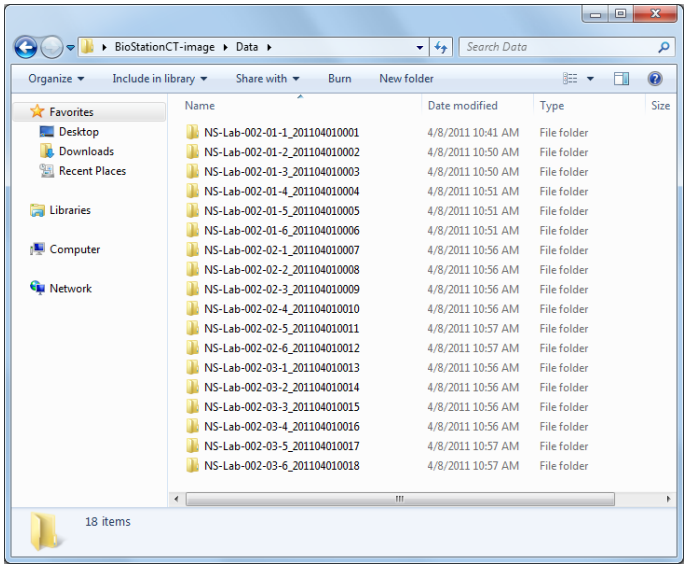


Data after automatic download

Performing the scheduled observation downloads the data to the Data folder automatically.



Data will be saved in separate folders by sample (each well).



3.9.2 Download Preparation for the Observation Data (Manual Download)

This section describes the procedure for preparing observation data for download.
When download preparation is completed, a download file is created in this system.

The following methods can be used to prepare data for downloading:

To individually prepare download of currently displayed images

See the following sections for details.
Section 3.5.3.1, “Viewing the micro image (Ph image) and preparing download”
Section 3.5.3.2, “Viewing the micro image (FL image) and preparing download”
Section 3.5.3.3, “Viewing the macro image and preparing download”
Section 3.5.3.4, “Viewing the Full Scan image and preparing download”
Section 3.5.3.5, “Viewing the Tiling image and preparing download”

To prepare download of observation data specifying a specific sample

For details, see Section 3.9.2.1, “Download Preparation of Observation Data for Each Sample.”

To batch download preparation of observation data for multiple holders/samples

For details, see Section 3.9.2.2, “Batch Download Preparation of Multiple-Holder/Sample Observation Data.”

To batch download preparation of images for sample

For details, see Section 3.9.2.3, “Batch Download Preparation of Images for Sample.”

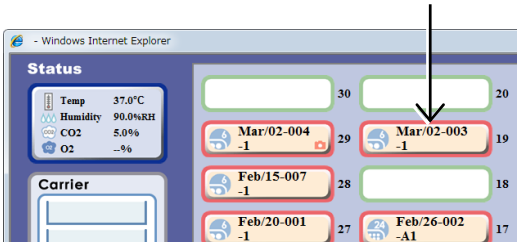
3.9.2.1 Download preparation of observation data for each sample

(1) Display the Image review window.

a. To select the stocker where the sample is being cultured

a-1. On the System status screen, click the button of the stocker that contains the sample to be downloaded.

The Select function window appears.



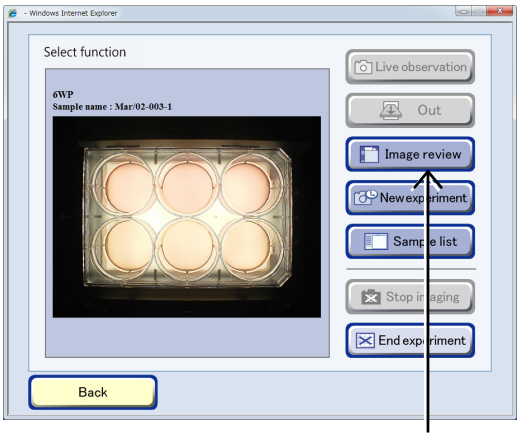
System status screen

a-2. Click the Image review button.

The Image review window of the selected sample appears.

Go to step (2).

For information on the Image review window, see Section 3.5.2, “Image review window.”

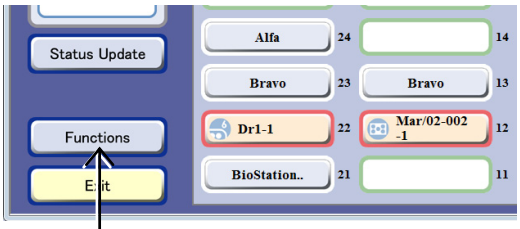


Select function window

b. To select the observation data from the sample list

b-1. Click the Functions button on the System status screen.

The Functions window appears.

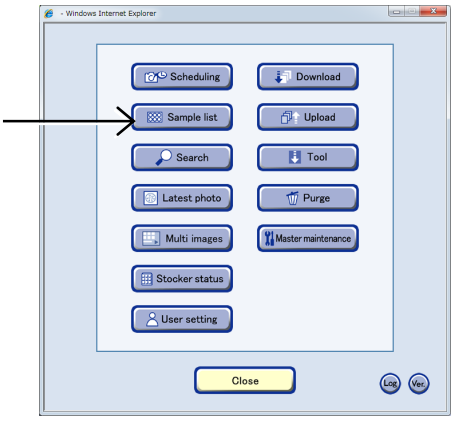


System status screen

b-2. Click the Sample list button.

All samples cultured by the user are displayed in the Sample list window.

> To display the list of the already observed culture samples onto the sample list, use the search function.
> For details on the search function, see Section 3.8, “Searching for Observation Data.”



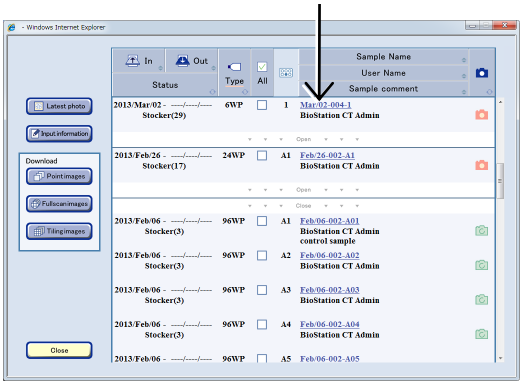
Functions window

b-3. Click the sample name to prepare for download.

The Image review window of the selected sample appears.

Click the Open area to display all sample names in the holder.

> For details on vessel name abbreviations used in the Sample list window, see the list on Page 95, “Abbreviation and description for vessels.”



Sample list window

(2) Perform download preparation of images

1. Click the Image selection button below the thumbnail images and select the image to prepare for download.

A checked symbol appears in the check box for the image corresponding to the selected Image selection button.

Multiple images can be selected.

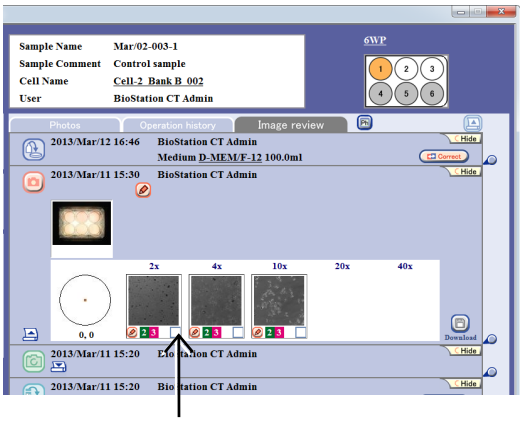
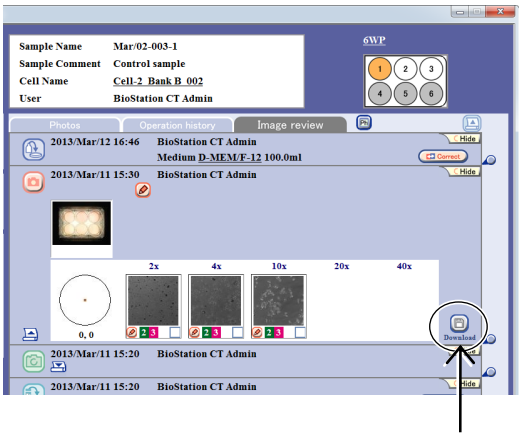


Image review window

2. Click the Download button on the right of the Observation history area.

The Image download setting window appears.

> To download a set of time-sequential images or images with different Z positions, display the original image by clicking the Enlarge button under the images for the download preparation.
> For details, see Section 3.5.3.1, “Viewing the micro image (Ph image) and preparing download.”



3. Set the format conditions of the images to be downloaded.

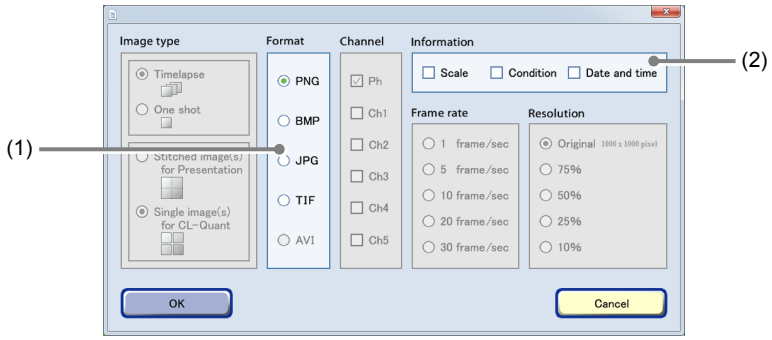


Image download settings window

No.	Name	Function
(1)	Format area	Select the format of download images.
(2)	Information area	Select the image information to be added. Three types of image information are available for Scale, Condition and Date and time.

4. Click the OK button.

After download preparation is complete, the download preparation complete dialog box appears.

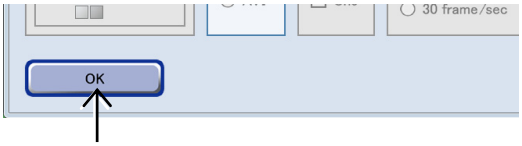
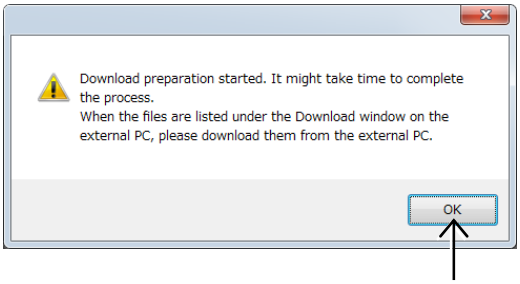


Image download setting window

5. Click the OK button.

Download preparation of the image is complete.



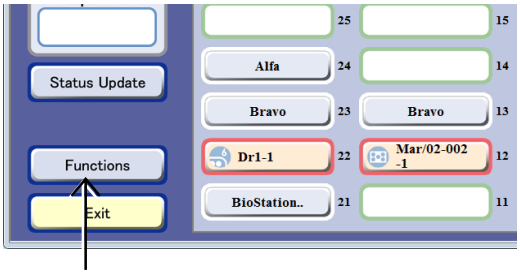
Complete dialog box for image download preparation

3.9.2.2 Batch download preparation of multiple-holder/sample observation data

(1) Display the Sample list window.

1. Click the Functions button on the System status screen.

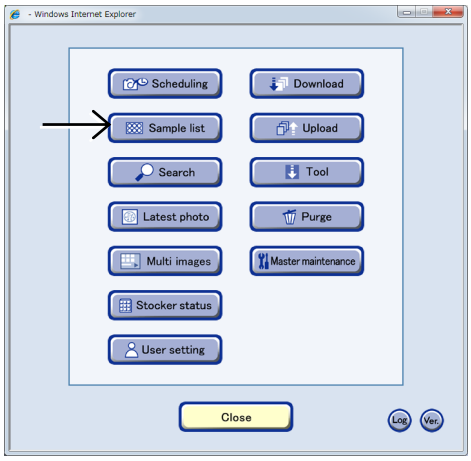
The Functions window appears.



System status screen

2. Click the Sample list button in the Functions window.

All samples cultured by the logged in user are displayed in the Sample list window.

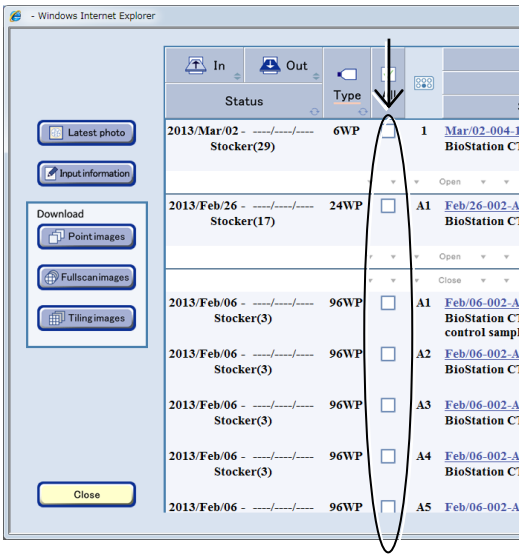


Functions window

(2) Select holders or samples for download preparation.

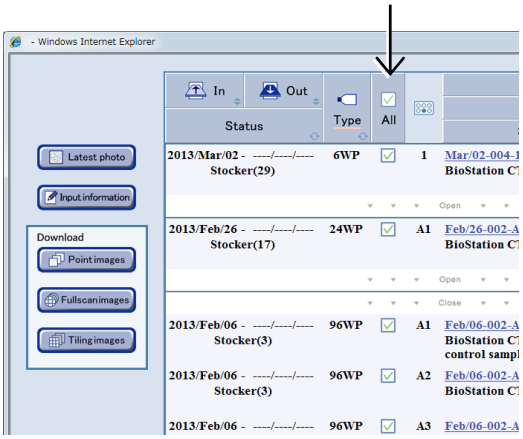
Check the check boxes in the Sample list window to select multiple holders or samples for download preparation.

> For details on vessel name abbreviations used in the Sample list window, see the list on Page 95, “Abbreviation and description for vessels.”



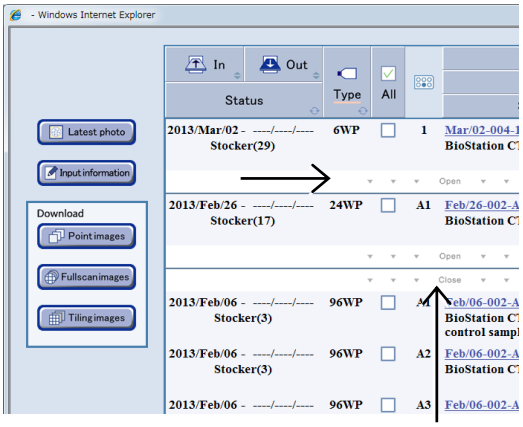
Sample list window

Clicking the All button selects all samples in all displayed holders.



Click the Open area to display all sample names in the holder. Click the Close area to display only the first sample.

When the check box is checked with only the first sample in the holder displayed, all samples in the holder are selected.



(3) Perform download preparation of images.

1. Click the Point images button to prepare download of timelapse images captured by Point observation.

Creation of a download file for timelapse observation images is prepared from images of the holder and sample selected in step (2).

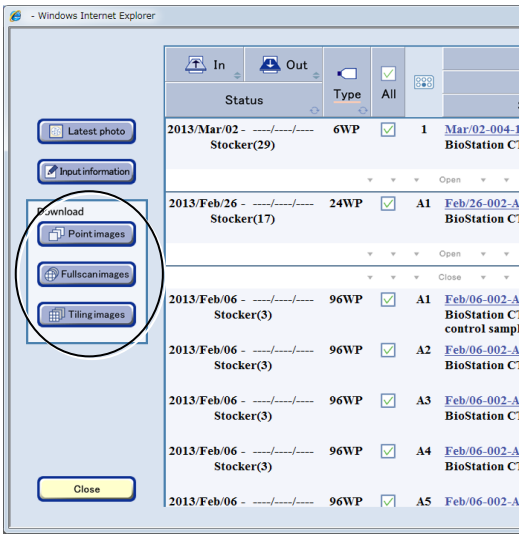
Click the Fullscan images button to prepare download of timelapse images captured by Full Scan observation.

Creation of a download file for Full Scan images is prepared from the images of the holder and sample selected in step (2).

Click the Tiling images button to prepare download of timelapse images captured by Tiling observation.

Creation of a download file for Tiling images is prepared from the images of the holder and sample selected in step (2).

The Image download setting window appears.



Sample list window

When the Point images button is clicked, all the images captured by Point observation during scheduled observation (normal mode) are set to be downloaded.
When the Fullscan images button is clicked, all the images captured by Full Scan observation during scheduled observation (normal mode) are set to be downloaded.
When the Tiling images button is clicked, all the images captured by Tiling observation during scheduled observation (normal mode) are set to be downloaded.

Images captured during live observation and images captured during scheduled observation in stage exclusive mode are not included.
For information on download preparation of images captured during live observation, see Section 3.5.3.3, “Viewing the macro image and preparing download.”
For information on download preparation of images captured by stage exclusive mode scheduled observation, see Section 3.5.3.1, “Viewing the micro image (Ph image) and preparing download” or Section 3.5.3.2, “Viewing the micro image (FL image) and preparing download.”

2. Set the format conditions of the image for the download preparation.

The format conditions set here are applied to all images to be downloaded.

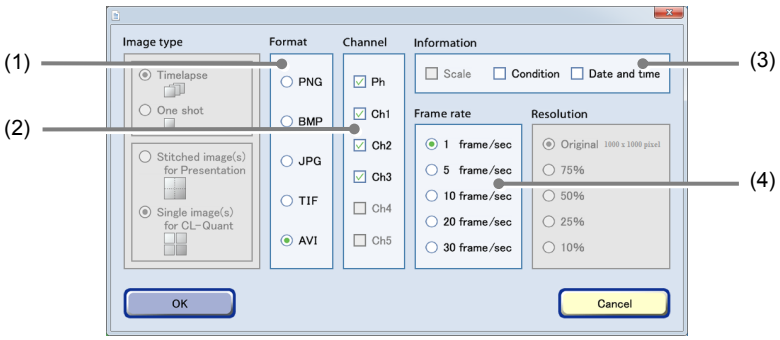


Image download setting window

No.	Name	Function
(1)	Format area	Select the format of download images.
(2)	Channel area	Select the channels to be downloaded. Enabled only when fluorescence image is selected. (Live observation data cannot be selected.)
(3)	Information area	Select the image information to be added. Three types of image information are available for Scale, Condition and Date and time. When AVI is selected for the format, Scale cannot be selected.
(4)	Frame rate area	Select the duration of playback per image. Enabled only when AVI is selected for the format.

4. Click the OK button.

After download preparation is complete, the download preparation complete dialog box appears.

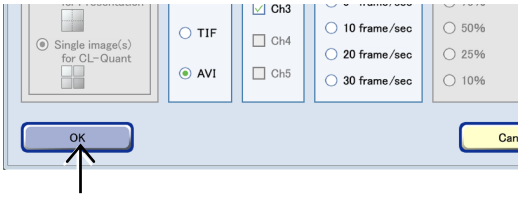
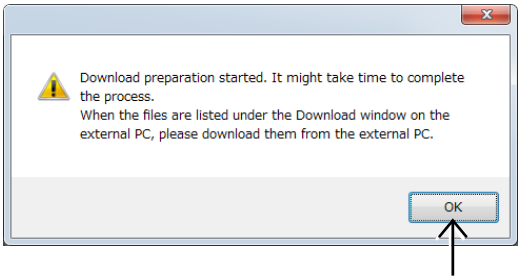


Image download setting window

5. Click the OK button.

Download preparation of the image is complete.



Complete dialog box for download preparation

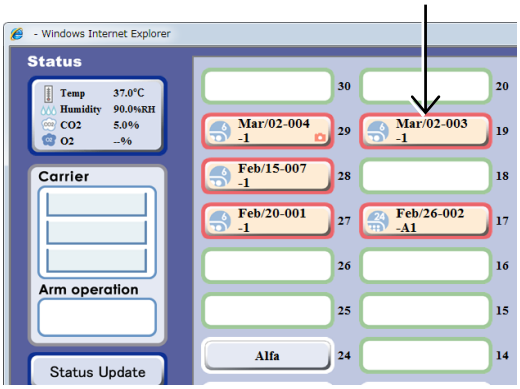
For details on the procedure for downloading the prepared data to an external PC, see Section 3.9.3, “Downloading the Prepared Observation Data (Manual Download).”

3.9.2.3 Batch download preparation of images for sample

(1) Display the Image review window.

1. On the System status screen, click the button of the stocker that contains the sample to be downloaded.

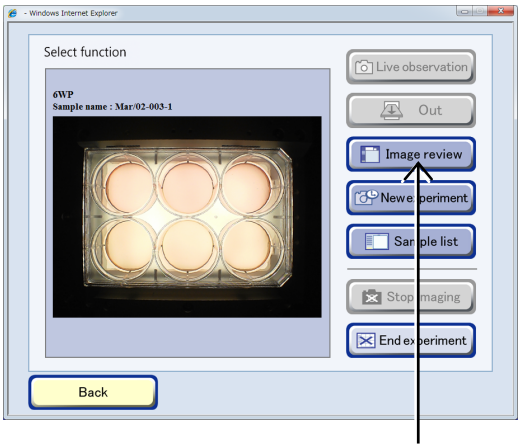
The Select function window appears.



System status screen

2. Click the Image review button.

The Image review window of the selected sample appears.



Select function window

(2) Prepare download processing.

1. Check that the right culture history is selected to be prepared for download processing, and prepare for batch download.

To prepare batch download of all Point observation timelapse images, click the Point images button.

To prepare batch download of all Full Scan observation timelapse images, click the Fullscan images button.

To prepare batch download of all Tiling observation timelapse images, click the Tiling images button.

The Image download setting window appears.

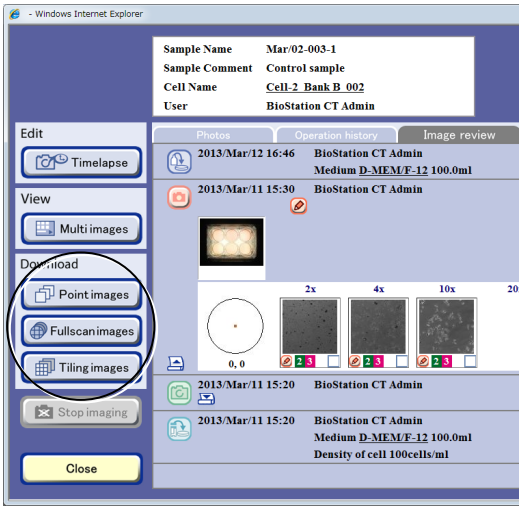


Image review window

When the Point images button is clicked, all the images captured by Point observation during scheduled observation (normal mode) are set to be downloaded.
When the Fullscan images button is clicked, all the images captured by Full Scan observation during scheduled observation (normal mode) are set to be downloaded.
When the Tiling images button is clicked, all the images captured by Tiling observation during scheduled observation (normal mode) are set to be downloaded.

Images captured during live observation and images captured during scheduled observation in stage exclusive mode are not included.
For information on download preparation of images captured during live observation, see Section 3.5.3.3, “Viewing the macro image and preparing download.”
For information on download preparation of images captured by stage exclusive mode scheduled observation, see Section 3.5.3.1, “Viewing the micro image (Ph image) and preparing download” or Section 3.5.3.2, “Viewing the micro image (FL image) and preparing download.”

2. Set the format conditions of the image for the download preparation.

The allowable conditions depend on the type of image to be downloaded.

Set the format conditions of the images to be downloaded, and then click the OK button.
After download preparation is completed, the download preparation complete dialog box appears.

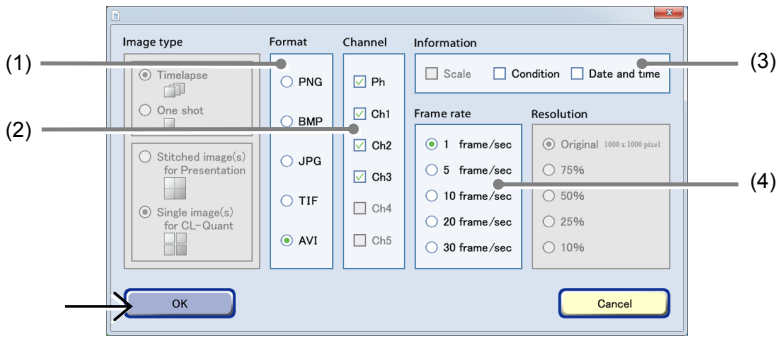
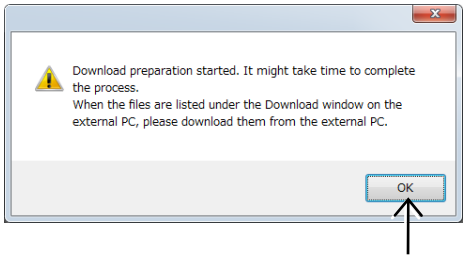


Image download setting window

No.	Name	Function
(1)	Format area	Select the format of download images. AVI is enabled only when the Point images button in the Image review window is used for download.
(2)	Channel area	Select the channels to be downloaded. Enabled only when fluorescence image is selected.
(3)	Information area	Select the image information to be added. Three types of image information are available for Scale, Condition and Date and time. When AVI is selected for the format, Scale cannot be selected.
(4)	Frame rate area	Select the duration of playback per image. Enabled only when AVI is selected for the format.

3. **Click the OK button.**

   Download preparation of the image is complete.



Complete dialog box for download preparation

> For details on the procedure for downloading the prepared data to an external PC, see Section 3.9.3, "Downloading the Prepared Observation Data (Manual Download)."

Caution

The scale bar displayed in the Various image display window is not included in the original image. An image data file prepared for download includes the original image only.

The image size is calculated as shown below. The dynamic range of the CCD camera is 8 mm × 8 mm (1000 × 1000 pixels), and when the image is captured at 2x, the above size becomes 8/2 mm × 8/2 mm (4 mm × 4 mm) (1 pixel=4 µm).

The image size of each observation magnification is calculated based on the above information.

- **2x of the image size becomes 4 mm × 4 mm (1 pixel=4 µm)**
- **4x of the image size becomes 2 mm × 2 mm (1 pixel=2 µm)**
- **10x of the size becomes 0.8 mm × 0.8 mm (1 pixel=0.8 µm)**
- **20x of the image size becomes 0.4 mm × 0.4 mm (1 pixel=0.4 µm)**
- **40x of the image size becomes 0.2 mm × 0.2 mm (1 pixel=0.2 µm)**

Caution

When creating AVI files with the image download function, if the number of frames is too large, the AVI file is fragmented into multiple files because the number of frames in one AVI file is limited.

The maximum number of frames is determined by the number of pixels in the image to be downloaded.

The number of pixels for one side of the image	The maximum number of frames
1000 pixels or less	1000 frames
1001 pixels or more 2000 pixels or less	250 frames
2001 pixels or more 3000 pixels or less	110 frames
3001 pixels or more 4000 pixels or less	60 frames

* **In the Full Scan image display window (Download tab), if the number of vertical pixels is different from the number of horizontal pixels on a download area that has been specified with Area select area, the limitation is applied to the larger one.**

* **For standard images (single images), since the number of pixels is 1000 × 1000 pixels, the maximum number of frames is 1000 frames.**

3.9.3 Downloading the Prepared Observation Data (Manual Download)

The observation image data that are prepared for downloading can be downloaded to an external PC. If the data is not yet prepared for downloading, create a download file first. See Section 3.9.2, “Download Preparation for the Observation Data (Manual Download).”

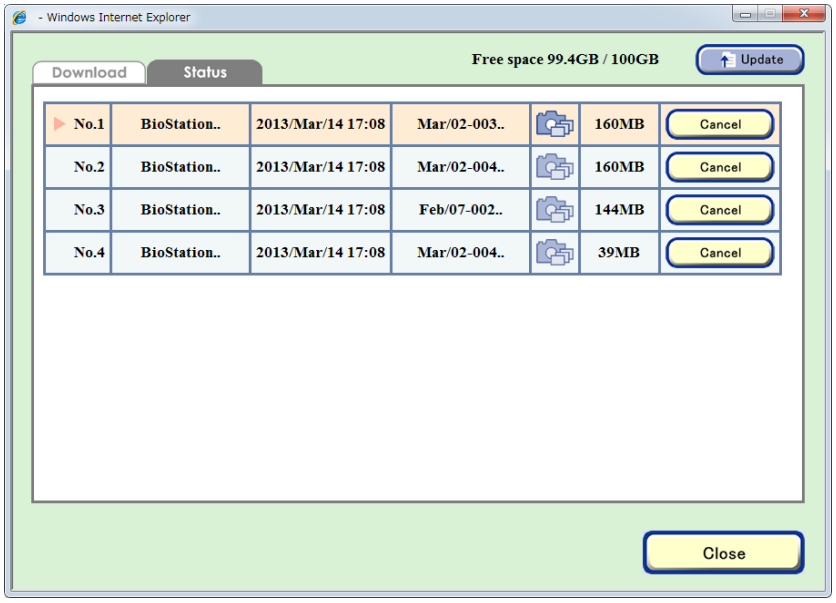
Before downloading the observation image data, make sure to complete “external PC setup” on the PC. If the PC setup for downloading the data is not properly applied as instructed in this manual, the file downloaded to the PC may not be opened because of a file attribute difference.

For details on how to download a Multi images display window, see Section 3.7.3, “Downloading a Multi Images Display Window.”

When the free space on the file server is insufficient, old image data is automatically deleted in the order it was saved. Download the Observation data of the observed sample to a PC to delete the data from the file server. For details on the procedure for deleting the Observation data on the file server, see Section 5.2, “Deleting the Observation data.”

When no file is displayed in the Download window:

- A download file is automatically deleted seven days after it was created. If a download file created seven or more days earlier is required for download, create it again by performing the download preparation.
- The download file may not be displayed in the Download window immediately after preparation because the data is being created.
  When a sample has been cultured for a long period, its download file may have many images and be very large. Creating such a large file takes a long time.
  To check the download files while they are being created, display the Status window by clicking the Status tab at the top of the Download window. A list of files being created is displayed in the Status window. Those files in the Status window are moved to the Download window when file creation is completed.

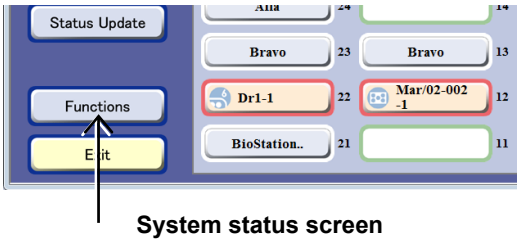


Status window

3.9.3.1 Downloading a single file

(1) Click the Functions button on the System status screen.

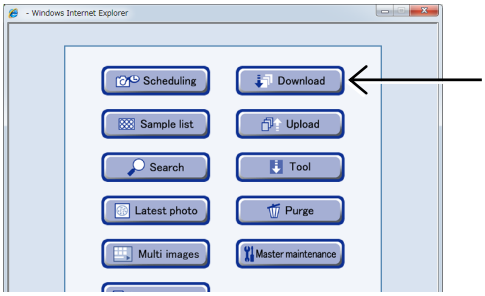
The Functions window appears.



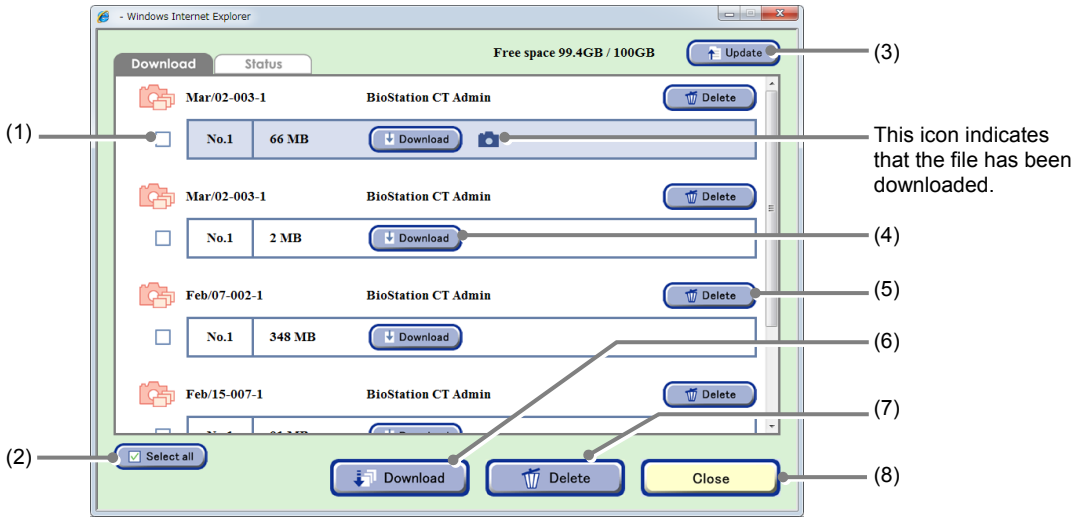
System status screen

(2) Click the Download button.

Clicking the Download button in the Functions window opens the Download preparation setting area which shows a list of files prepared for download.



Functions window



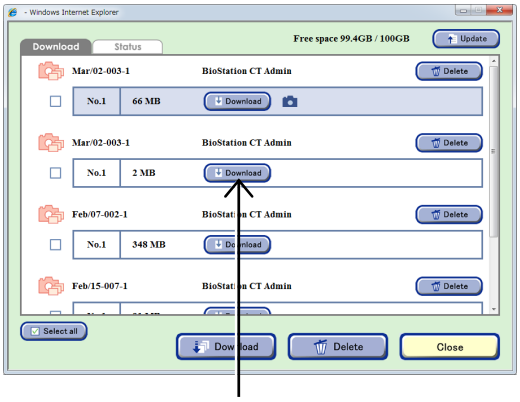
Download window

No.	Name	Function
(1)	File selection check box	Select or deselect individual download files.
(2)	Select all button	Click this button to select/deselect all download files.
(3)	Update button	Click this button to refresh the screen.
(4)	Download button (Individual)	Click this button to download files individually.
(5)	Delete button (Individual)	Click this button to delete files individually.
(6)	Download button (Selective)	Click this button to download multiple selected files at a time.
(7)	Delete button (Selective)	Click this button to download multiple files at a time.
(8)	Close button	Click this button to close the Download window.

(3) Download a file.

1. Click the Download button of a file to be downloaded in the Download window.

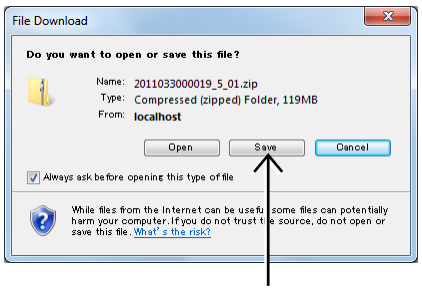
The Download confirmation dialog box appears.



Download window

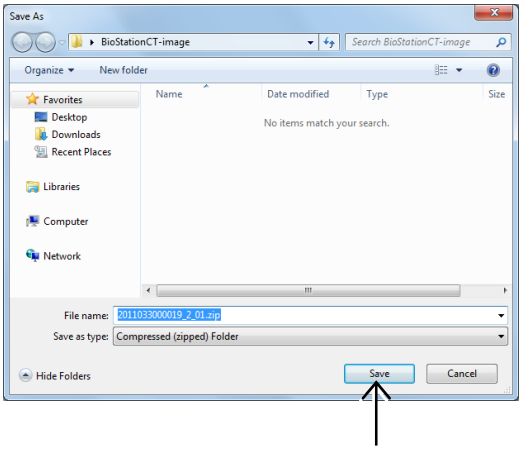
2. Click the Save button in the file download confirmation dialog box.

If the Open button is clicked before the Save button, the files may not be downloaded properly. Be sure to save the file before starting downloading.



3. Specify the folder in which the file is to be saved, and then click the Save button.

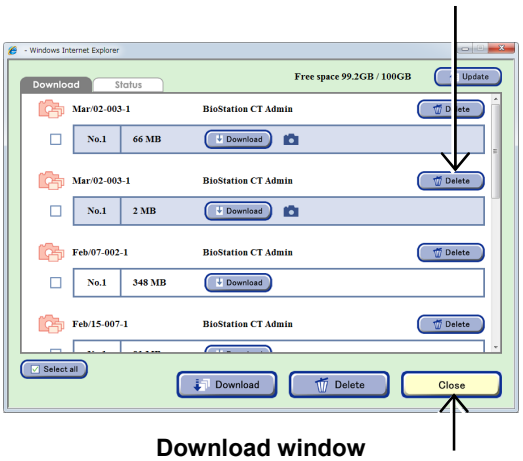
When downloading images, any double-byte character used for “sample name” part of the folders or image file names in the zip file is converted into “$”. (Example: “テスト A1” -> “$$$A1”)



(4) Delete the file for download from the file server.

After confirming that download has been completed successfully, click the Delete button.

(5) Click the Close button in the Download window to close it.

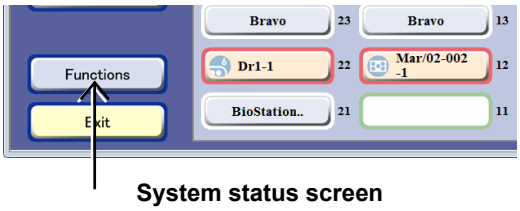


Download window

3.9.3.2 Downloading multiple files at a time

(1) Click the Functions button on the System status screen.

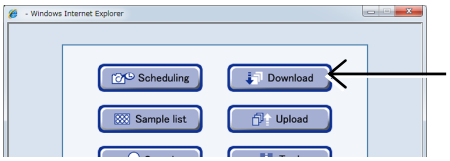
The Functions window appears.



System status screen

(2) Click the Download button.

Clicking the Download button in the Functions window opens the Download window which shows a list of files prepared for download.

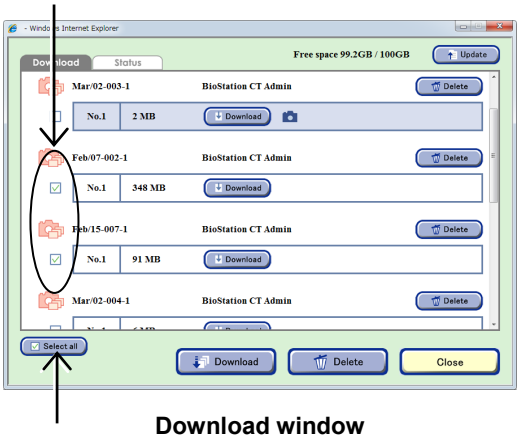


Functions window

(3) Click the check box on the left side of the files to be downloaded in the Download window.

Multiple files can be selected.

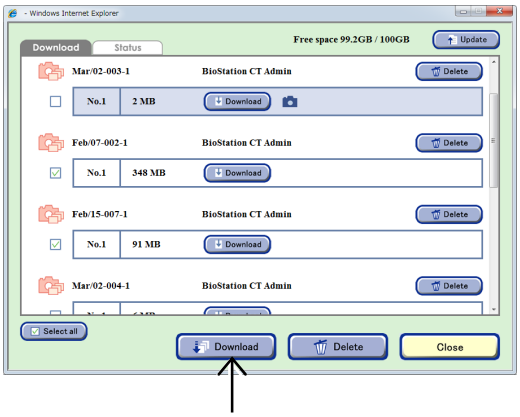
All files are selected by clicking the Select all button.



Download window

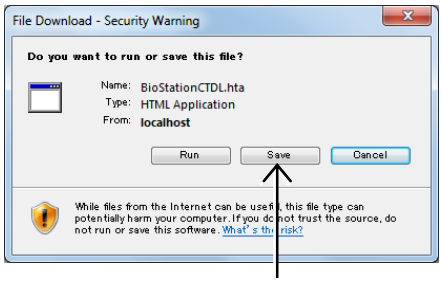
(4) Click the Download button at the bottom of the Download window.

A dialog box for downloading the downloader (BioStationCTDL.hta) for batch downloading appears.



(5) Click the Save button in the "File Download – Security Warning" dialog box.

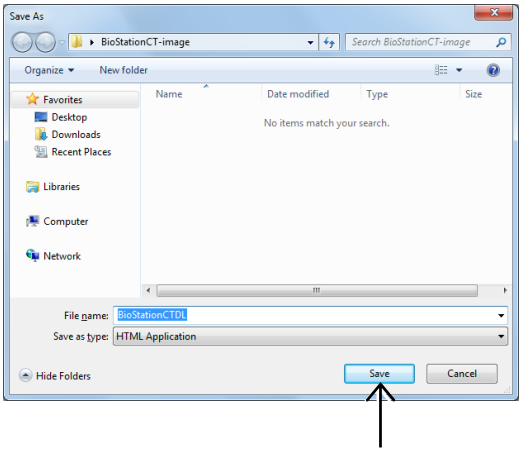
If the Run button is clicked before the Save button, the downloader does not run correctly, even though the downloader window appears. Be sure to save the downloader before pressing the Run button.



Warning dialog box

(6) Specify the folder to save the downloader, and then click the Save button.

The downloaded files are also stored in the folder selected here.



Do not include a “%” in the path where the file is to be downloaded.
Otherwise, download may fail.

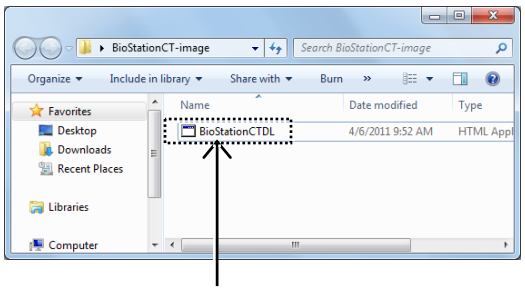
Do not change the file extension “BioStationCTDL.hta.” Otherwise the downloader (BioStation CT Downloader) will not work.

Changing the file name may automatically change the extension if Windows is set to hide extensions. Confirm that the extension is “.hta” if the file name was changed.

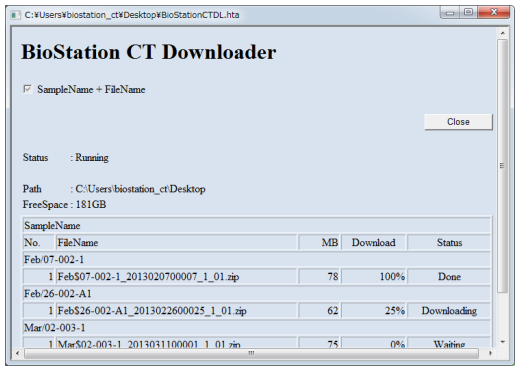
* For details on how to show or hide the file extensions, see Windows Help.

(7) Double-click the saved BioStationCTDL.hta file to run the downloader.

The BioStation CT Downloader starts to run.



(8) Download starts when the BioStation CT Downloader opens.



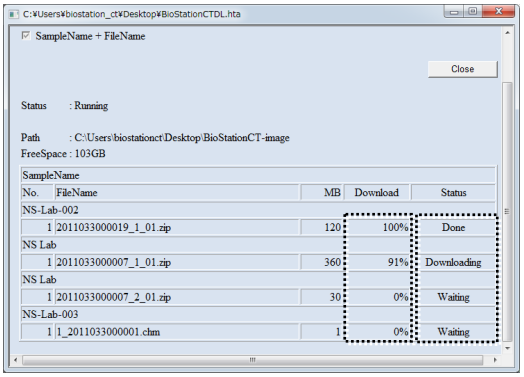
Downloader

Status indication for download files

Depending on the volume of the file to be downloaded, it may take a long time to complete downloading. For each download file, the progress of downloading is shown in the Download field and the status of the file is indicated in the Status field.

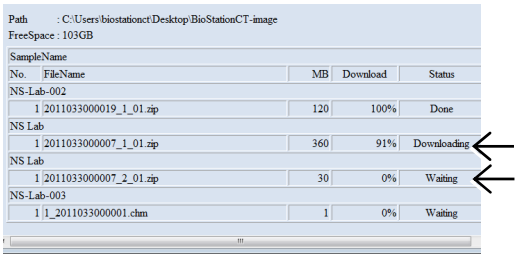
The Download field shows the progress of downloading of the file.

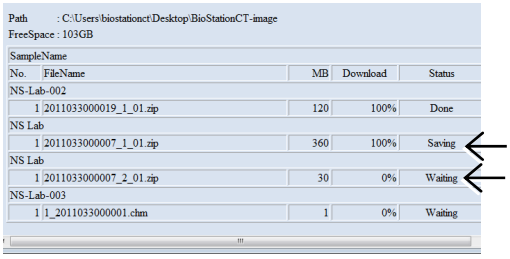
The Status field shows the status of the download file. The following statuses are indicated during download.



Downloader

- **Waiting**
  The file is waiting to be downloaded.
- **Downloading**
  The file is being downloaded.
- **Saving**
  The file was downloaded and is being saved.
- **Done**
  The file was downloaded.





If an error relating to the downloaded file occurs:

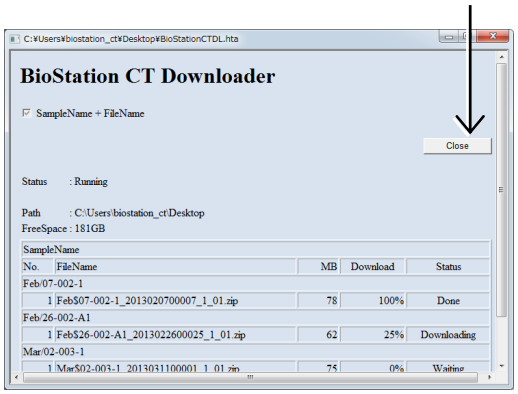
- **File Error**
  The size of the file being downloaded is abnormal. Delete the zip file being downloaded from the folder and start downloading again.
- **Server Error**
  Connection to the server does not work, or there is no downloaded file. Check the connection to the server or check if there is a zip file having been downloaded.

To stop downloading halfway:

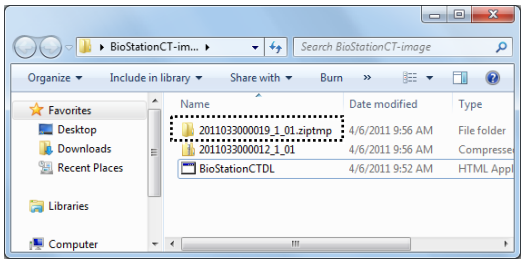
Downloading can be stopped halfway through by clicking the Close button.

Downloading can be restarted from the stopped point by running the downloader (BioStationCTDL.hta) again.

During download, folders named .chmtmp and .ziptmp are created in the destination folder. Do not delete these folders because files are saved in these folders during download.
When download is complete, these files are deleted automatically.



Downloader



Data in the destination folder during download

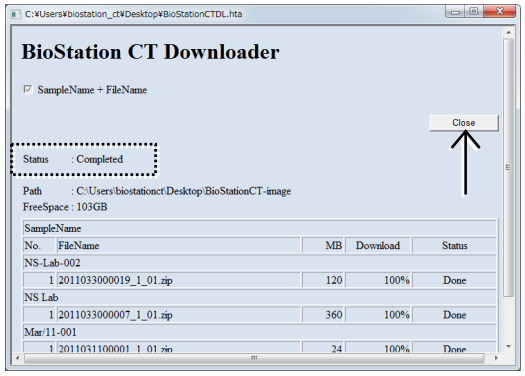
If an error occurs during download:

If an error occurs during download, the Status field of the downloader shows any of the following:

- **Server Error**
  Connection to the server does not work. Check if the connection to the server is properly established.
- **Save Error**
  The downloaded file failed to be saved. Check the amount of free space on the hard disk and retry download.

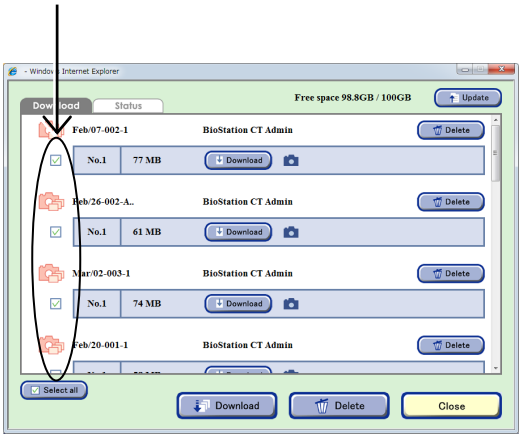
(9) Exit the downloader.

When all files have been downloaded, the Status indicator shows "Completed" to indicate that download of all files is finished. Click the Close button and exit the downloader.



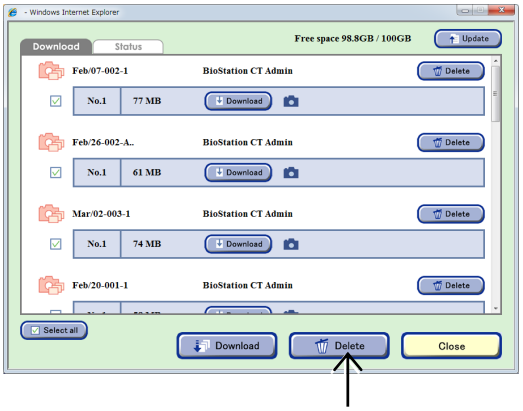
Downloader

(10) Check unnecessary download files after making sure that the files have been downloaded successfully.

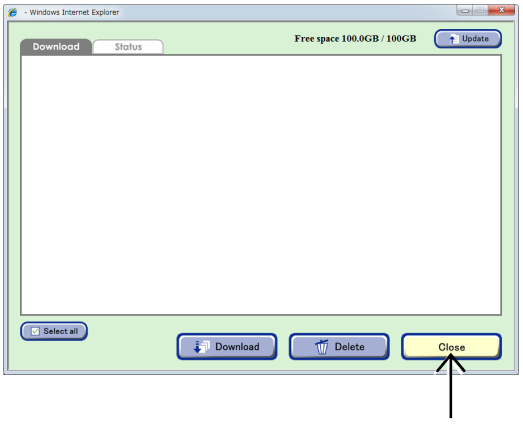


Download window

(11) Confirm that the download is successful and click the Delete button at the bottom of the Download window to delete download files from the file server.

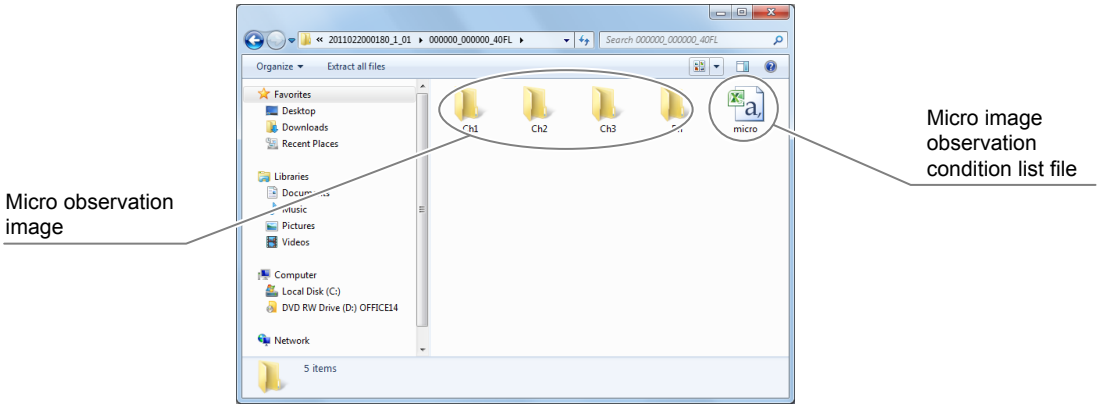


(12) Click the Close button in the Download window to close it.



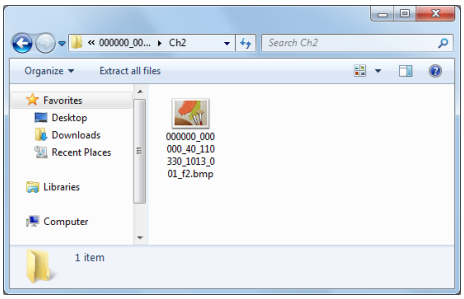
3.9.4 Download File

A download file for live or scheduled observation images is downloaded as a compressed ZIP file (.zip). When this file is extracted, both the observation image file and observations conditions list file (.csv) created during image capturing appear. The selected images are stored in the folder for each channel of the phase contrast image and that of the fluorescence image.



Downloaded observation image files

The figure below shows an example of a file downloaded with the BMP selected for the file format.

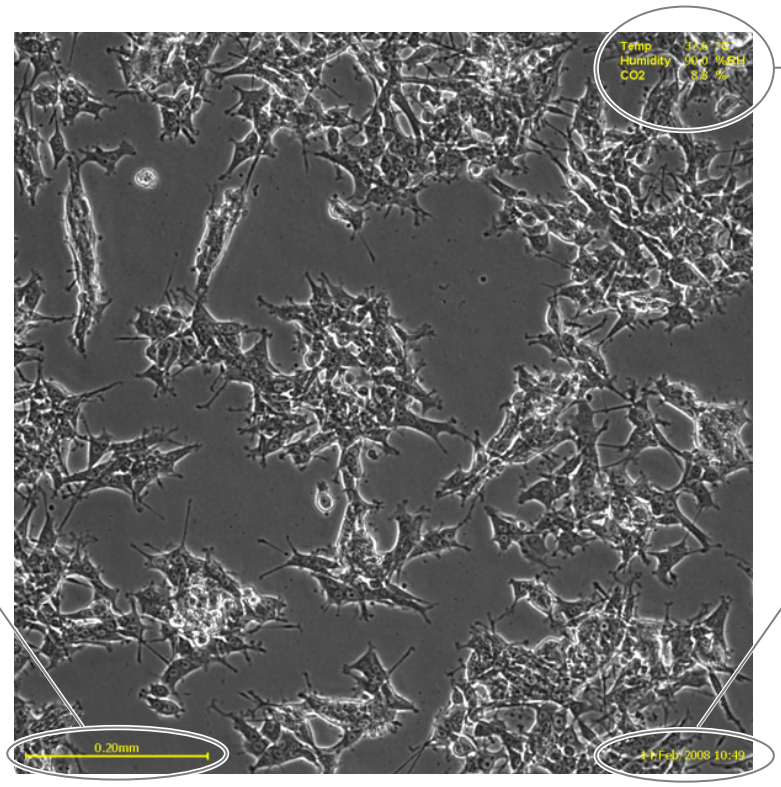


If the size of the observation image data is very large, the download file (.zip) is divided into multiple files. The first file contains zipfiles.txt, which includes the information on how the files were divided.

In the case of Full Scan observation, the observation condition list file (micro.csv) is contained in the last download file (.zip).

Condition

Check the “Condition” check box when setting format conditions for download preparation to add the condition information to the image.



Scale

Check the “Scale” condition check box when setting format conditions for download preparation to add the scale to the image.

Date and time

Check the “Date and time” check box when setting format conditions for download preparation to add the capture date and time to the image.

Downloaded phase contrast image

Open the observation conditions list file to check the detailed conditions of the downloaded image.

Sample Name	Cell	Vessel Type	File Name	Time Stamp	CO2(%)	Temperature(deg C)	Humidity(%RH)	O2(%)	Exposure Time(msec)	Luminance	Position
NS-Lab-002	HeLa cell	6Well-Plate	MACRO_110330_1011_00.bmp	11/03/30_10:11	1.7	32.9	97	11.8	5	50	0

Macro image observation condition list file

Date	Time	Total luminance before analyzing	Total luminance after analyzing	Total number of areas	Total area of areas	Luminance of result	Number of result	Area of result
2/22/2011	18:00:49	241341565	240322585	0	0	240322585	0	0
3/28/2011	16:06:39	14117222	7184812	18	67586	7184812	18	67586

Micro image observation condition list file

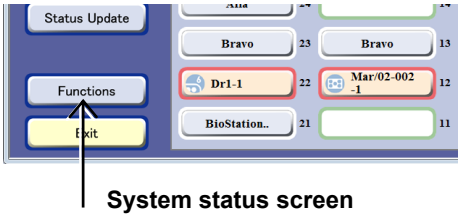
Uploading culture history data downloaded in Ver. 3.7 or earlier

The procedure for uploading the culture history data (chm file) that has been downloaded to the system is described here.

(Culture history data download is not supported in Ver. 3.8 or later.)

Note that, uploaded cultured history data is excluded from automatic deletion. It is not deleted even though it is old.

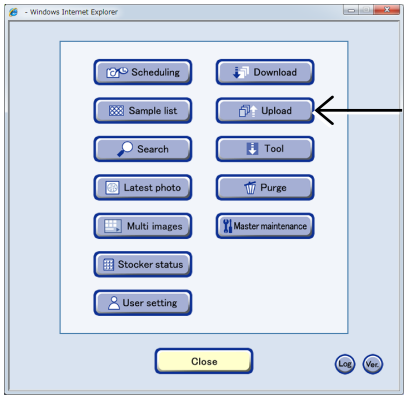
(1) Click the Functions button on the System status screen.



System status screen

(2) Click the Upload button in the Functions window.

The Upload window appears.



Functions window

(3) Click the Browse... button to select the file to be uploaded to the product.

Culture history: chm file

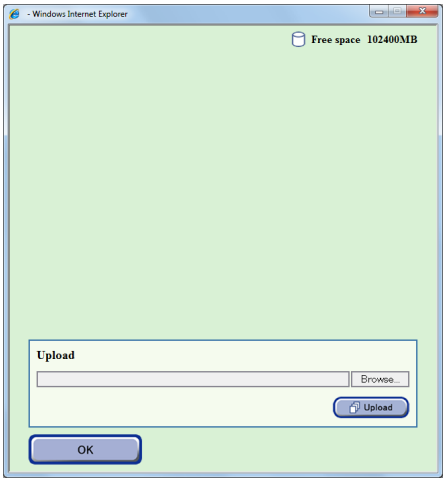
If multiple files are created from a large capacity culture history data, upload all the divided downloaded files.

(4) Click the Upload button.

The selected files are uploaded to the product.

(5) Click the OK button to end the uploading.

The Upload window is closed.



Upload window

4 Environmental Settings

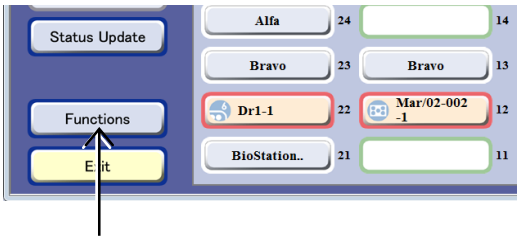
This chapter describes the procedure for setting environmental settings for this product.

4.1 User Settings

User settings window

(1) Click the Functions button on the System status screen.

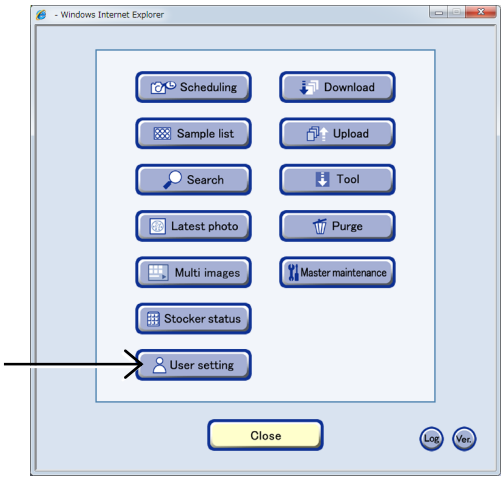
The Functions window is displayed.



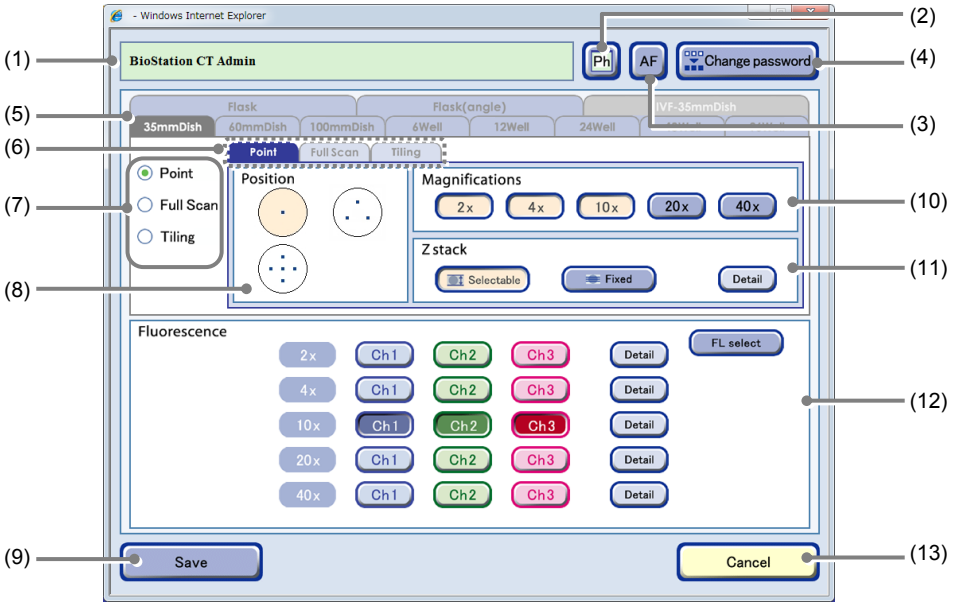
System status screen

(2) Click the User setting button.

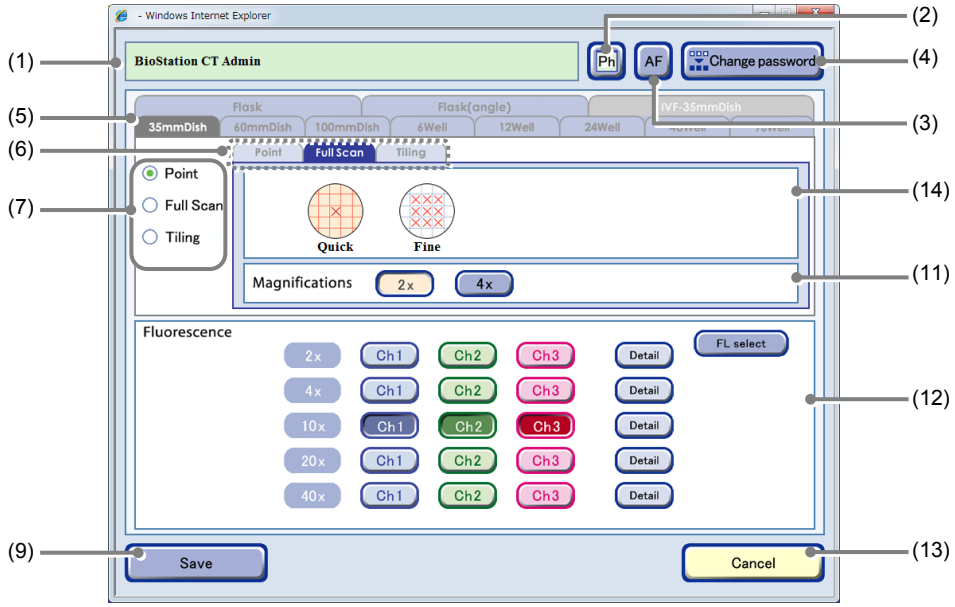
The User settings window is displayed.



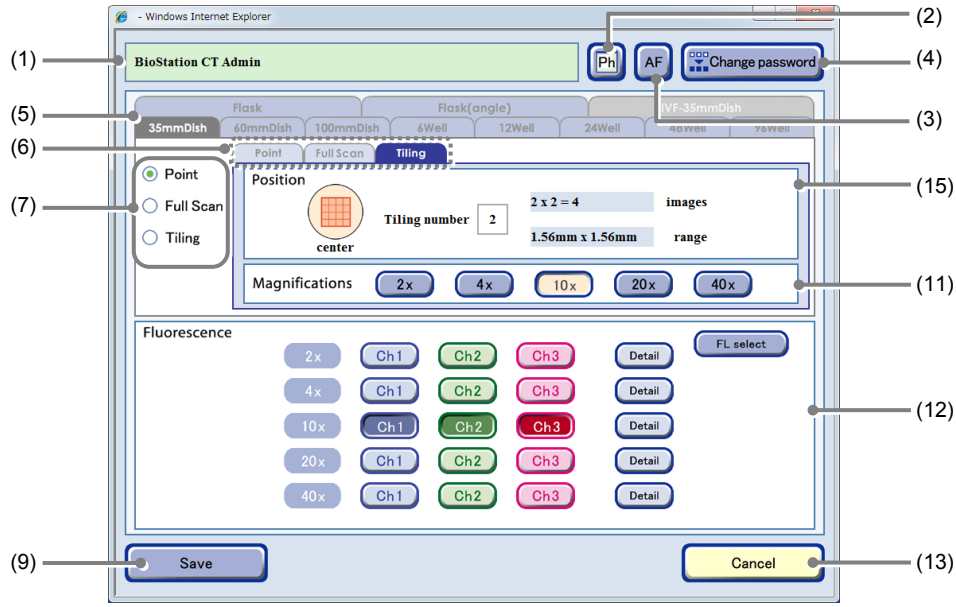
Functions window



User settings window (Point tab selected)



User settings window (Full Scan tab selected)



User settings window (Tiling tab selected)

No.	Name	Function
(1)	User name	This area displays the current user name.
(2)	Thumbnail image display switch button 	Set the type of thumbnail image to be displayed in the Image review window. If the displayed thumbnail images are phase contrast images, [Ph] is displayed, and [FL] is displayed for fluorescence images.
(3)	AF button	Enable or disable autofocus when starting observation of the Live observation window. (Convex): AF is enabled. (Concave): AF is disabled.

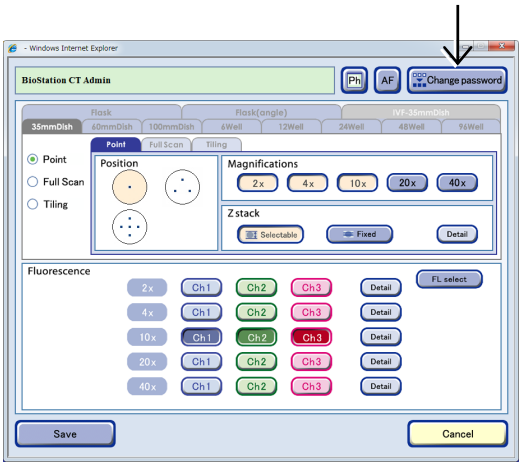
No.	Name	Function
(4)	Change password button	Click this button to change the login password of the current user. Open the Password change window. (See Section 4.1.1.)
(5)	Culture vessel tabs	Select the culture vessel for which the default settings for scheduled observation are to be set up.
(6)	Observation method tabs	Set the observation conditions for each of the observation methods. Display the Observation condition setting window for each observation method by switching over the tab. Each Observation method tab has its own setting procedure: Point: See “Default Setting for Point Tab.” Full Scan: See “Default Setting for Full Scan Tab.” Tiling: See “Default Setting for Tiling Tab.”
(7)	Default display selection for the Observation method selection tabs	Set the Observation method selection tabs initially displayed when the Observation condition setting window is opened. (See Section 4.1.2.)
(8)	Position area	Set the default observation point initially displayed when the Point tab in the Observation condition setting window is opened.
(9)	Save button	Click this button to save the default settings for scheduled observation.
(10)	Magnifications area	Set the observation magnification initially displayed in the Observation condition setting window. Multiple observation magnifications cannot be selected for Tiling observation. The selectable observation magnifications depend on each vessel for Full Scan observation.
(11)	Z stack setting area	Set the Z stack condition initially displayed when the Point tab in the Observation condition setting window is opened.
(12)	FL channel settings area (optional)	With the Fluorescence unit connected, settings in the FL channel settings field for setting the default observation conditions of the fluorescence image can be edited in the User settings window. Multiple channels can be selected for each magnification as default settings in Point tab. When any channel from FL channel button(s) is selected for the Fluorescence observation, the magnification select button is automatically selected, and the phase contrast image is captured as a set. When the Tiling tab or Full Scan tab is selected, multiple FL channels can be selected only within the observation magnification selected in the Magnifications area. The values set here are applied when the Default button is clicked in the Observation condition setting window. (See Section 3.4.2.)
(13)	Cancel button	Click this button to cancel the settings and close the window.
(14)	Full Scan observation AF position setting area	Select the AF position initially displayed when the Full Scan tab in the Observation condition setting window is opened. **Quick:** Autofocus is performed at the center of the sample. **Fine:** Autofocus is performed at multiple points. Disabled when a 96-/48-well plate is used. Depending on the selected vessel, this may not be displayed because it is not applicable for observation.
(15)	Tiling observation position setting area	Set a numeric value for the tiling area initially displayed when using Center to set the observation conditions for Tiling observation. Select a tiling area from the number selection box showing a number from 1 to 20 which is displayed by clicking the Tiling number field. (Selecting 5 captures 25 images in a 5×5 grid.)

4.1.1 Changing the Password

To change the login password of the current user, perform the following:

(1) Click the Change password button in the User settings window.

The Password change window is displayed.



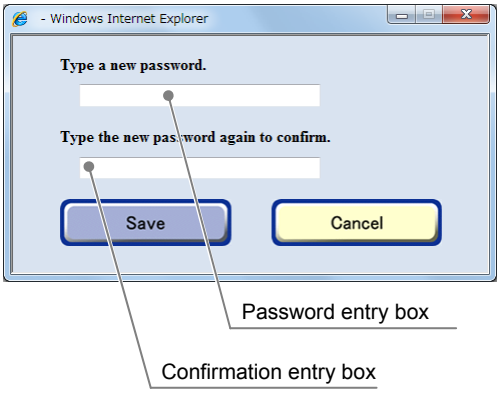
User settings window

Password change window

(2) Enter a new password.

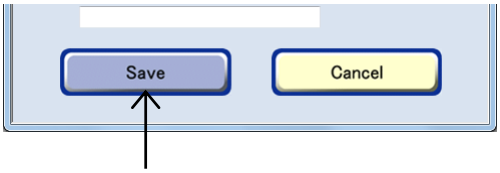
Enter a new password in the box under "Enter a new password."

(3) Enter the new password again in the box under "Type the new password again to confirm."



(4) Click the Save button.

The new password is saved and the Password change window closes.



4.1.2 Scheduled Observation Default Settings

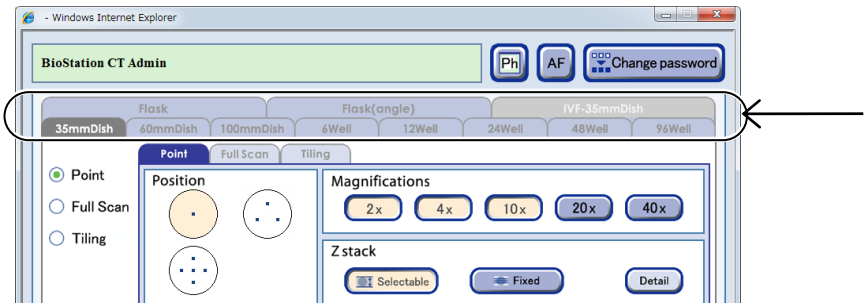
This section describes the procedures for setting the initial screen of the Observation condition setting window.

Setting frequent observation conditions as default settings reduces the time required for setting the scheduled observation settings. Values that are set here will be displayed on the initial screen of the Observation condition setting window. The values can be edited in the scheduled observation settings.

(1) Click the Culture vessel tab in the User settings window and then select the culture vessel for which the default settings for scheduled observation are to be set up.

In the case of a flask type culture vessel, settings can be made for slant neck type and straight angle neck type flasks. To use a slant neck type flask, select the Flask tab. To use a straight angle neck type flask, select the Flask (angle) tab.

Default scheduled observation settings can be set for each culture vessel.

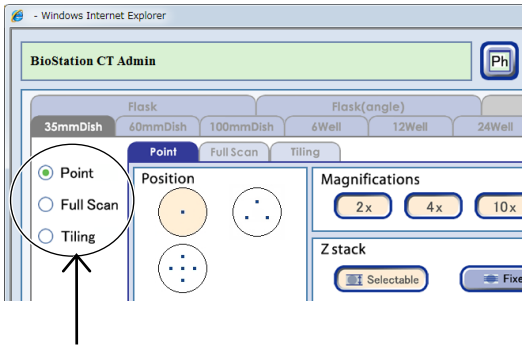


User settings window

(2) Set the Default window from the Observation method selection tab.

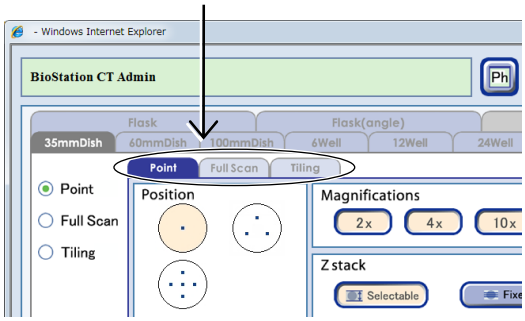
Select one of the three radio buttons; Point, Full Scan or Tiling.

The observation method set here is the default displayed on the Observation method selection tab when displayed from the Observation condition setting window.



(3) Set the observation conditions for each of the observation methods.

Display the Observation condition setting window for each observation method by switching over the tab.



User settings window (Point setting tab)

Each Observation method tab has its own setting procedure:

Point: See “Default Setting for Point Tab.”

Full Scan: See “Default Setting for Full Scan Tab.”

Tiling: See “Default Setting for Tiling Tab.”

Each procedure is explained below.

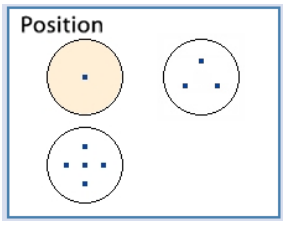
Default Setting for Point Tab

Set the default observation position, observation magnification, and Z stack that are initially displayed when opening the Point tab in the Observation condition setting window.

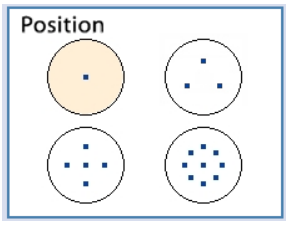
(1) Select a scheduled observation position.

Each culture vessel has several observation position layouts.

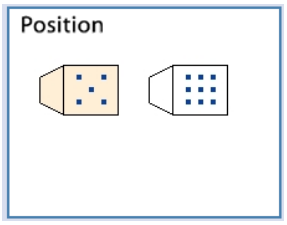
Observation positions are indicated as small blue squares in each culture vessel.



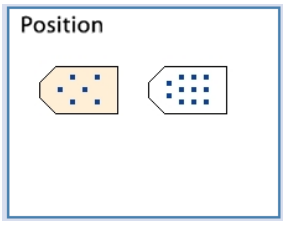
35 mm Dish / 60 mm Dish / 6 Well / 12 Well / 24 Well / 48 Well / 96 Well



100 mm Dish



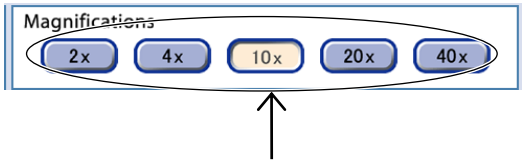
Flask



Flask(angle)

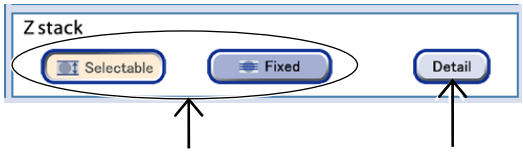
(2) Select the Magnifications to be used for scheduled observation.

Click a magnification button to select it.



(3) Configure the Z stack setting.

There are two Z stack settings: Selectable pitch and Fixed pitch. Click the Selectable or Fixed button to select the setting.



a. When Selectable pitch is selected

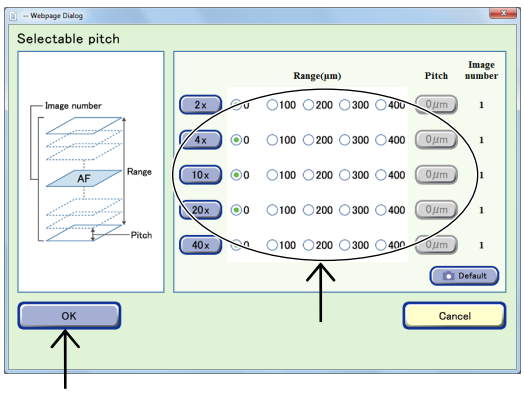
a-1. Click the Selectable button and then click the Detail button.

The Selectable pitch setting window appears.

a-2. Select a Range and Pitch for each magnification.

In accordance with the selected Range and Pitch, the number of capturing images is determined and displayed on the right side of the window.

a-3. Click the OK button.



Selectable pitch setting window

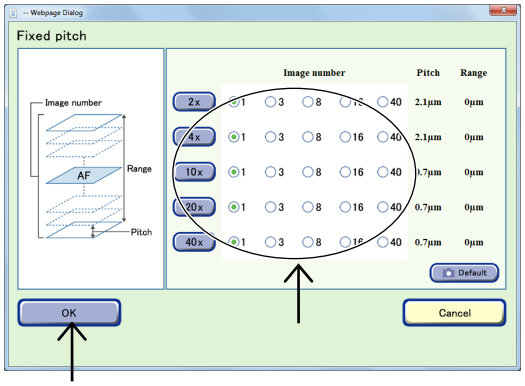
b. When Fixed pitch is selected

b-1. Click the Fixed button and then click the Detail button.

The Fixed pitch setting window appears.

b-2. Directly select the number of images to be captured (1, 3, 8, 16, or 40).

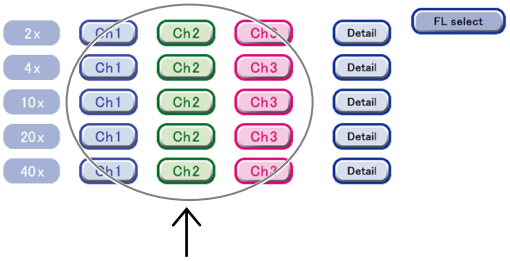
b-3. Click the OK button.



Fixed pitch setting window

(4) Select the desired channel button for each observation magnification used in scheduled observation.

Multiple FL channels can be selected.

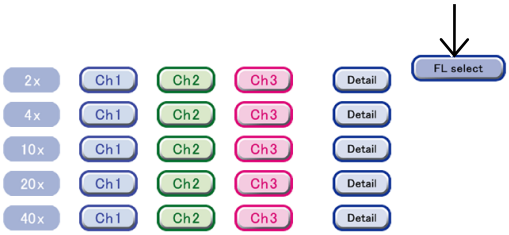


User settings window (Fluorescence image exposure conditions)

When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be displayed by default can be changed to the added fluorescence filter channels (Ch4, Ch5).

1. Click the FL select button in the FL channel settings area in the User settings window.

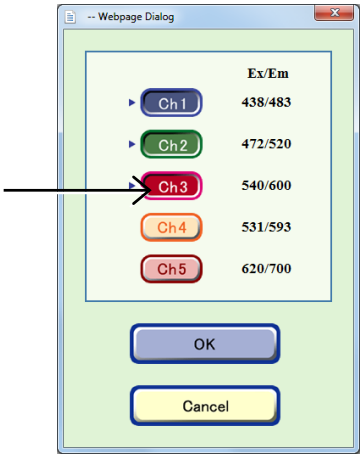
The FL channel selection window appears.



FL channel settings area

2. Select the button for the fluorescence channel not to be used.

The channel is deselected and the surface becomes convexed.



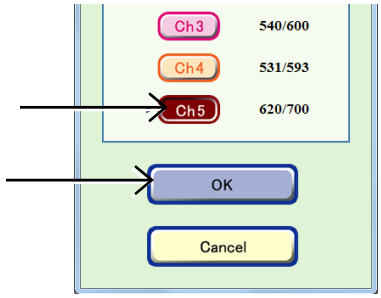
FL channel selection window

3. **Select the desired fluorescence channel button.**

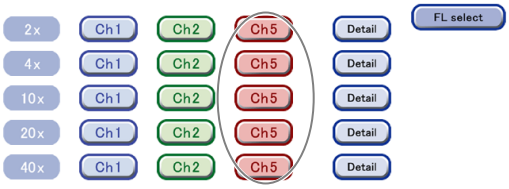
   The channel is selected and the surface becomes concaved.

4. **Click the OK button.**

   The User setting window appears again.



The selected channel is applied to the FL channel settings area.

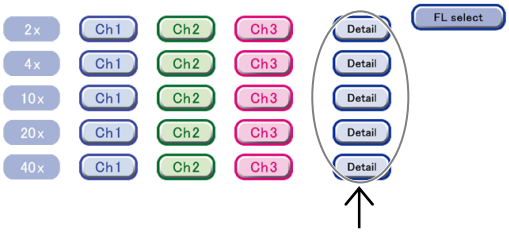


FL channel settings area

(5) Set the exposure time and the intensity of each excitation light source for the observation.

1. **Click the Detail button for the observation magnification to be specified.**

   The Fluorescence image exposure conditions setting window appears.

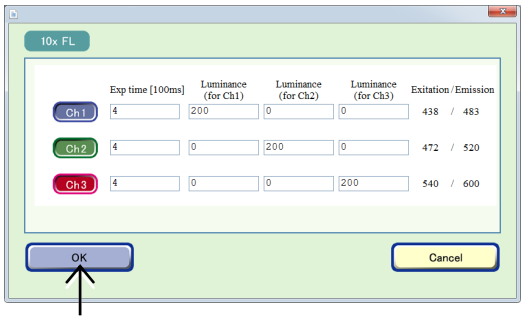


2. **Click the Exp time field and the Luminance field on the right side of the FL channel button to enter the exposure time and the intensity of each excitation light source.**

   These values are used for image exposure conditions for scheduled observation and default observation conditions of live observation.

   The unit of the exposure time is [100ms], but up to the 2nd decimal digit (i.e. unit: 1 ms) can be entered.
   And the maximum value of the intensity of excitation light source is 240.

   Channels can be selected also by clicking the FL channel buttons on the left side in the window.



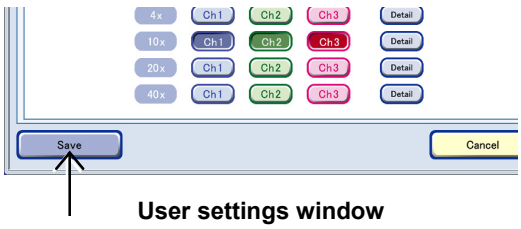
Fluorescence image exposure conditions setting window

3. **Click the OK button.**

   The exposure time and the intensity of each excitation light source are set and the Fluorescence image exposure conditions setting window is closed.

(6) Click the Save button in the User settings window.

The default settings are saved and the User settings window closes.



User settings window

Default Setting for Full Scan Tab

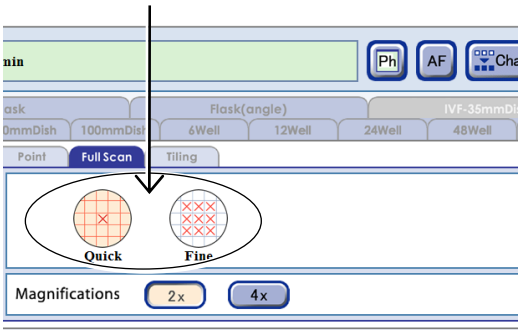
Set the default AF position, observation magnification, and FL channel that are initially displayed when the Full Scan tab is opened in the Observation condition setting window.

(1) Select the AF position.

Select the autofocus position.

Quick: Autofocus is performed at the center of the sample.

Fine: Autofocus is performed at multiple points. Disabled when a 96-/48-well plate is used.



User settings window (Full Scan setting tab)

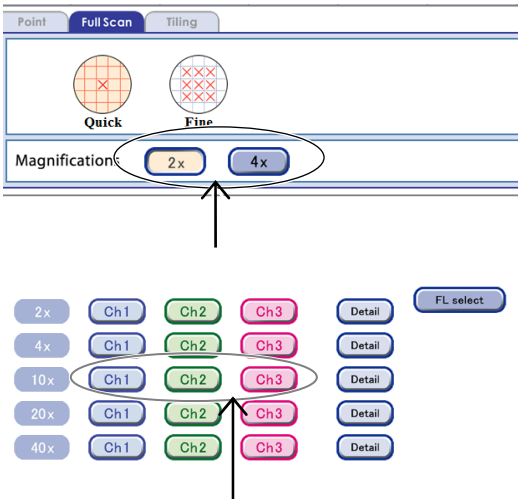
(2) Select an observation magnification to be used for scheduled observation.

An observation magnification displayed in the Magnification area depends on the combination of the type of a culture vessel and Quick or Fine in the AF position setting area.

(3) Select the FL channel button for the observation magnification selected in step (2).

Multiple channels can be selected for the same magnification.

Selecting an FL channel button other than the observation magnification selected in the Magnifications area does not affect the default display of the Observation condition setting window.



User settings window (Fluorescence image exposure conditions)

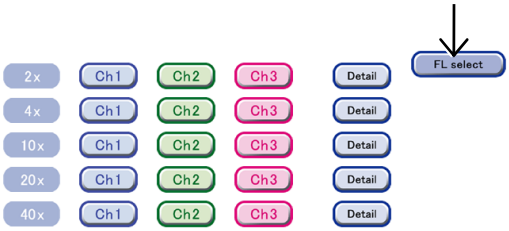
When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be displayed by default can be changed to the added fluorescence filter channels (Ch4, Ch5).

1. **Click the FL select button in the FL channel settings area in the User settings window.**

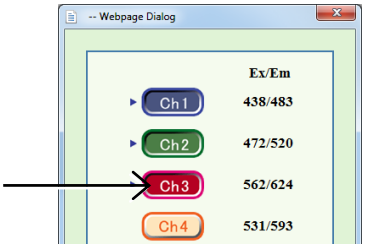
   The FL channel selection window appears.

2. **Select the button for the fluorescence channel not to be used.**

   The channel is deselected and the surface becomes convexed.



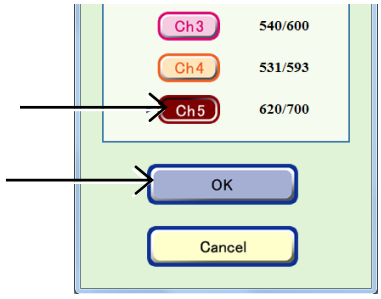
FL channel settings area



FL channel selection window

3. **Select the desired fluorescence channel button.**

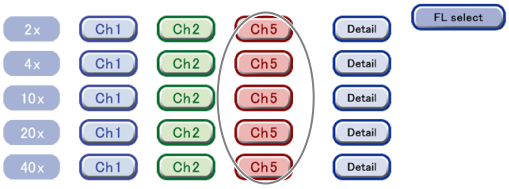
   The channel is selected and the surface becomes concaved.



4. **Click the OK button.**

   The User setting window appears again.

   The selected channel is applied to the FL channel settings area.

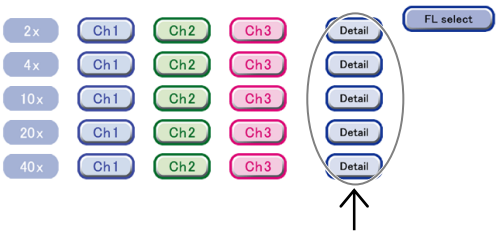


FL channel settings area

(4) Set the exposure time and the intensity of each excitation light source for the observation.

1. **Click the Detail button for the observation magnification to be specified.**

   The Fluorescence image exposure conditions setting window appears.

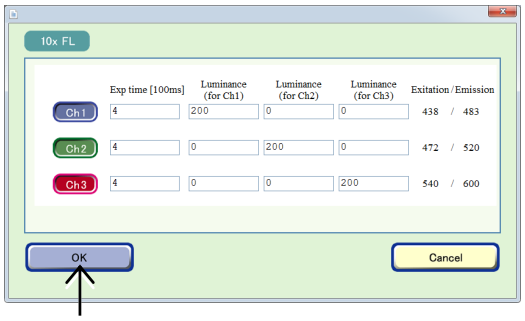


2. **Click the Exp time field and the Luminance field on the right side of the FL channel button to enter the exposure time and the intensity of each excitation light source.**

   These values are used for image exposure conditions for scheduled observation and default observation conditions of live observation.

   The unit of the exposure time is [100ms], but up to the 2nd decimal digit (i.e. unit: 1 ms) can be entered.
   And the maximum value of the intensity of excitation light source is 240.

   Channels can be selected also by clicking the FL channel buttons on the left side in the window.



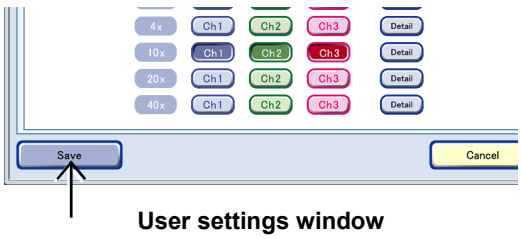
Fluorescence image exposure conditions setting window

3. **Click the OK button.**

   The exposure time and the intensity of each excitation light source are set and the Fluorescence image exposure conditions setting window is closed.

(5) Click the Save button in the User settings window.

The default settings are saved and the User settings window closes.



User settings window

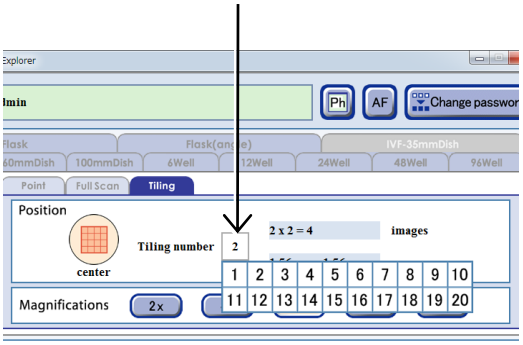
Default Setting for Tiling Tab

Set the Tiling number, observation magnification, and FL channel that are initially displayed when the Tiling tab is opened in the Observation condition setting window and Center is selected as the observation position.

(1) Set the area for tiling observation in the Tiling number column.

Select an area for tiling observation from a number selection box (1 to 20) that pops up when the Tiling number column is clicked.

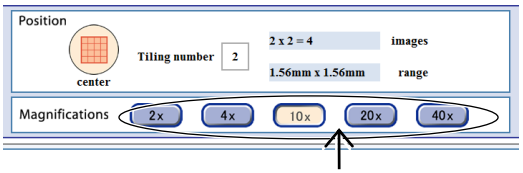
Select “5” to capture 25 images in 5×5 cells.



User settings window (Tiling setting tab)

(2) Select an observation magnification to be used for scheduled observation.

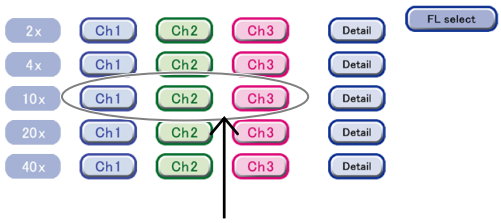
Selecting more than one magnification is not possible for Tiling observation.



(3) Select the FL channel button for the observation magnification selected in step (2).

Multiple channels can be selected for the same magnification.

Selecting an FL channel button other than the observation magnification selected in the Magnifications area does not affect the default display of the Observation condition setting window.

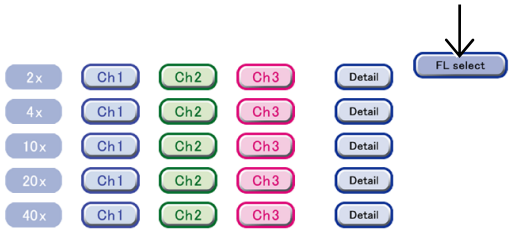


User settings window (Fluorescence image exposure conditions)

When up to 5 types of fluorescence filter cube are mounted, channels (Ch1 to Ch3) to be displayed by default can be changed to the added fluorescence filter channels (Ch4, Ch5).

1. **Click the FL select button in the FL channel settings area in the User settings window.**

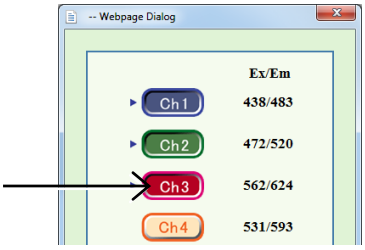
   The FL channel selection window appears.



FL channel settings area

2. **Select the button for the fluorescence channel not to be used.**

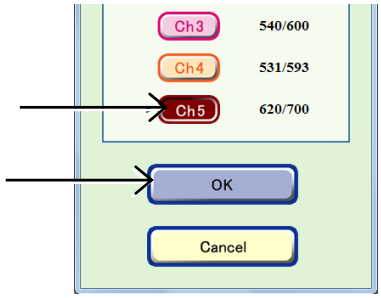
   The channel is deselected and the surface becomes convexed.



FL channel selection window

3. **Select the desired fluorescence channel button.**

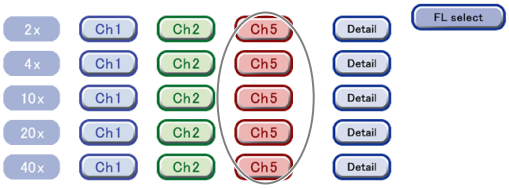
   The channel is selected and the surface becomes concaved.



4. **Click the OK button.**

   The User setting window appears again.

   The selected channel is applied to the FL channel settings area.

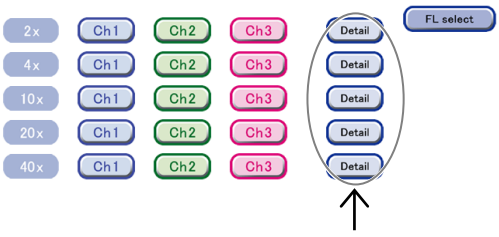


FL channel settings area

(4) Set the exposure time and the intensity of each excitation light source for the observation.

1. **Click the Detail button for the observation magnification to be specified.**

   The Fluorescence image exposure conditions setting window appears.

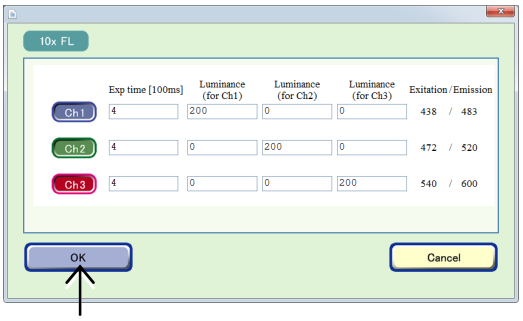


2. **Click the Exp time field and the Luminance field on the right side of the FL channel button to enter the exposure time and the intensity of each excitation light source.**

   These values are used for image exposure conditions for scheduled observation and default observation conditions of live observation.

   The unit of the exposure time is [100ms], but up to the 2nd decimal digit (i.e. unit: 1 ms) can be entered.
   And the maximum value of the intensity of excitation light source is 240.

   Channels can be selected also by clicking the FL channel buttons on the left side in the window.



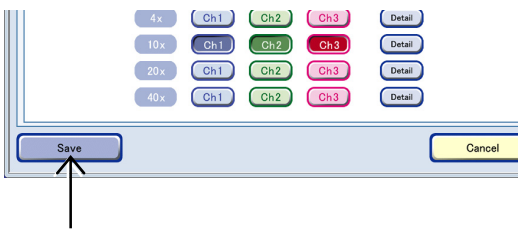
Fluorescence image exposure conditions setting window

3. **Click the OK button.**

   The exposure time and the intensity of each excitation light source are set and the Fluorescence image exposure conditions setting window is closed.

(5) Click the Save button in the User settings window.

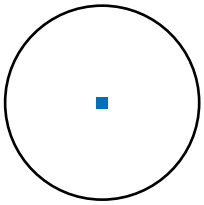
The default settings are saved and the User settings window closes.



4.1.3 Default Observation Position

Dishes, well plates

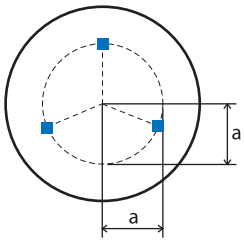
1-point observation



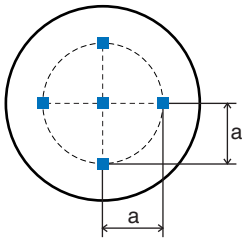
This is the default point for single point photography.

> In observation of the vessel center area on a 24-well, 48-well or 96-well plate using an observation magnification of 2x or 4x, the acquired image might be unclear. See Section 3.3.1, “Observation Area.”

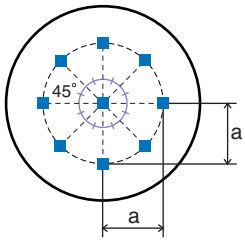
3-point observation



5-point observation



9-point observation

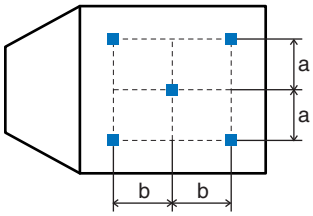


	35 mm dish 6-well plate 12-well plate	24-well plate	48-well plate	96-well plate	60 mm dish	100 mm dish
a	4 mm	2 mm	1.5 mm	0.8 mm	10.2 mm	23.125 mm

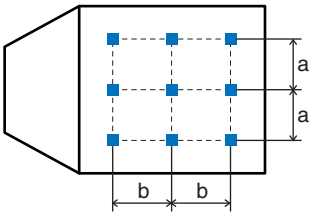
> Note that the default observation positions for 35 mm dishes may produce unclear images with an observation magnification of 2x. Likewise, the default observation positions for the 12-well, 24-well, 48-well and 96-well plates may produce unclear images with an observation magnification of 2x or 4x. See Section 3.3.1, “Observation Area.”
>
> When using a Nunc 4-well multidish, load it as a 100 mm dish because there is no corresponding vessel selection button in the Vessel selection window when loading. Note that the default observation position for a 100 mm dish cannot be used in this case.

Flasks (slant neck)

5-point observation



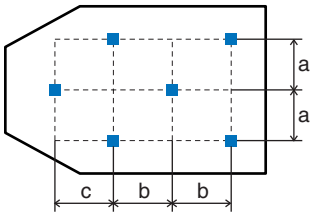
9-point observation



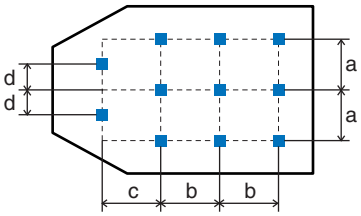
	25 cm^2 culture flask	75 cm^2 culture flask
a	5 mm	20 mm
b	8 mm	22 mm

Flasks (straight angle neck)

6-point observation



11-point observation



	25 cm^2 culture flask	75 cm^2 culture flask
a	5 mm	20 mm
b	8 mm	22 mm
c	14 mm	20 mm
d	2.5 mm	10 mm

5 Administrative Functions

This chapter describes the administrative functions of the system. The functions can be used by administrators only.

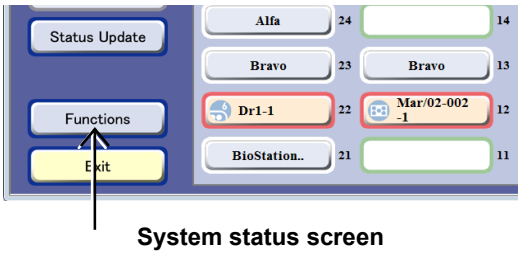
5.1 Functions Window for Administrators

When an administrator logs in to the product on an external PC, buttons for administrators are displayed in the Functions window. This section describes the Functions window for administrators.

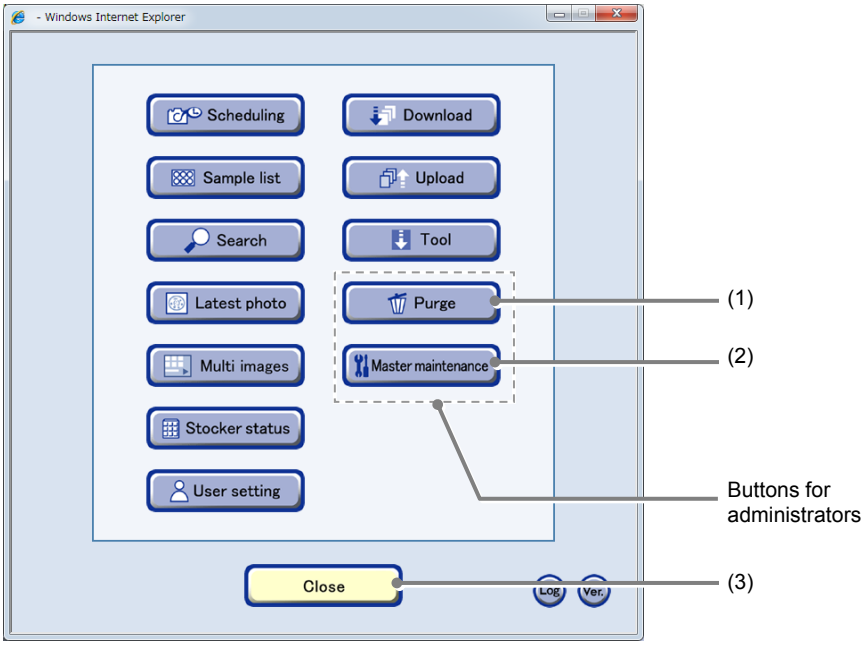
(1) Log in the product as a user who has administrative privileges.

(2) Click the Functions button on the System status screen.

The Functions window for administrators appears.



System status screen



Functions window (for administrators)

No.	Name	Function
(1)	Purge button	Click this button to display the Purge window. (See Section 5.2.)
(2)	Master maintenance button	Click this button to display the Master data maintenance window. (See Section 5.3.)
(3)	Close button	Click this button to close the Functions window.

5.2 Deleting the Observation Data

If the Full icon is displayed on the System status screen, the free space on the file server is insufficient. Delete the observation data in accordance with the following procedure to increase free space on the file server.

When the free space on the file server is insufficient, old observation data will be automatically deleted in the order it was saved. Therefore, download the observation data of cultured samples to a PC to delete unnecessary observation data in the file server. For the procedure for downloading the observation data from the file server, see Section 3.9, “Managing the Observation Data.”

Caution

Once the observation data is deleted without an appropriate download file, it cannot be restored.

Before executing the deletion, be sure that the data to be deleted is no longer necessary, and if the data is necessary, it must be downloaded.

Caution

The observation data of samples being cultured cannot be deleted.

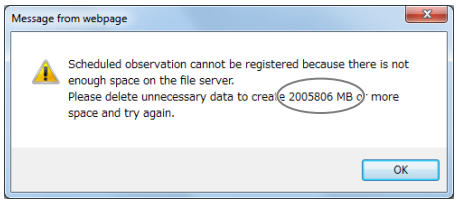
Note that if a sample is unloaded for the purpose of “Medium change” the sample can be manually deleted.

When schedule cannot be set:

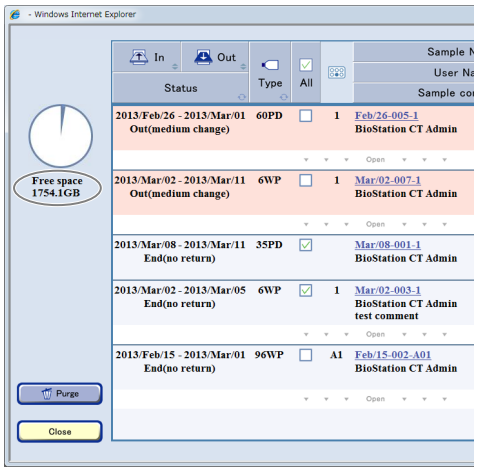
If sufficient space to save the observation data cannot be allocated on the file server, scheduled observations cannot be set. In this case, unnecessary observation data must be deleted so that sufficient space can be allocated.

The data space shown in a message on the Insufficient data space warning dialog box is the estimated amount of observation data to be deleted. Delete the observation data so that amount of space on the file server shown on the left of the Purge window exceeds the amount of space shown in the Insufficient data space warning dialog box.

In addition, the data space shown in the Insufficient data space warning dialog box is in MB (megabytes) while the data space shown in the amount of space display area on the Purge window is in GB (gigabytes). When deleting images, use a formula GB = MB/1024 to calculate required amount.



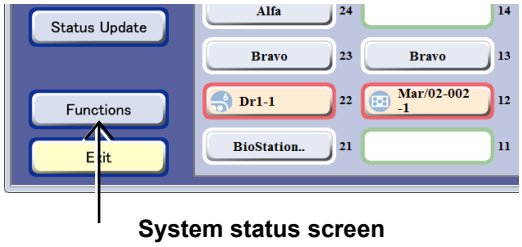
Insufficient data space warning dialog box



Purge window

(1) Click the Functions button on the System status screen.

The Functions window is displayed.

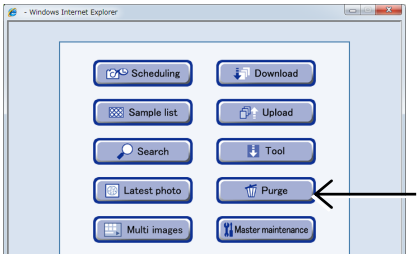


System status screen

(2) Click the Purge button in the Functions window.

The list of the cultured samples is displayed.

> The data of samples in culture and the data uploaded after downloaded are not displayed in the Purge window.

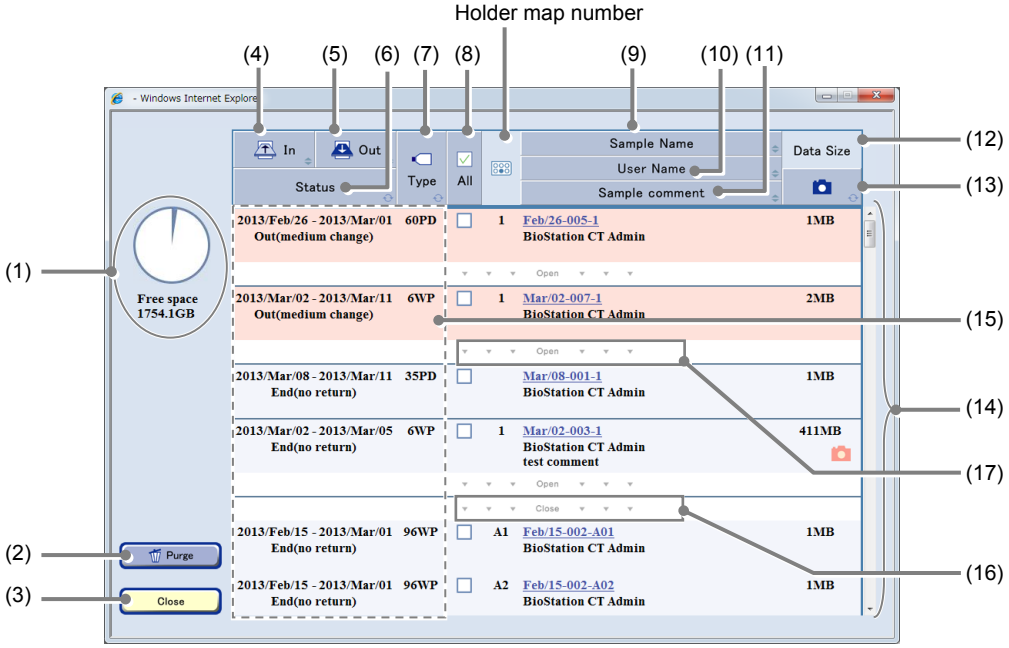


Functions window

mark ⋯ Switches between the ascending order and descending order to display the sorted result.

mark ⋯ Displays the sorted result from the top sequentially as a loop.

* The most recently used Sort button is underlined in pink.



Purge window

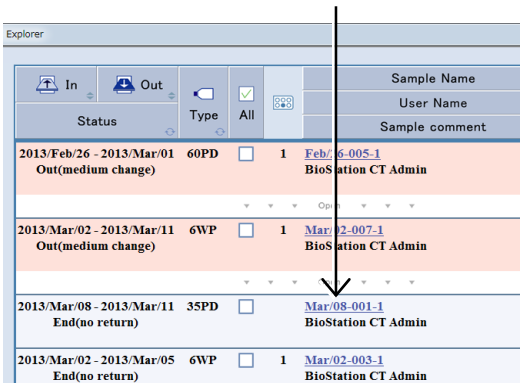
No.	Name	Function
(1)	Free space indicator	The free space on the file server is displayed. The blue area of the pie chart shows the used area of the file server and the white area shows the free space of the file server.
(2)	Purge button	Click this button to delete the selected data.
(3)	Close button	Click this button to close the Purge window.
(4)	In sort button	Click this button to sort the list in order of loaded date.

No.	Name	Function
(5)	Out sort button	Click this button to sort the list in order of unloaded date.
(6)	Status sort button	Click this button to sort the list in order of status.
(7)	Type sort button	Click this button to sort the list by the type of culture vessels.
(8)	All check button	Click this button to select or cancel all displayed or selected samples.
(9)	Sample Name sort button	Click this button to sort the list in order of sample name.
(10)	User Name sort button	Click this button to sort the list in order of user name.
(11)	Sample comment sort button	Click this button to sort the list in order of sample comment.
(12)	Data Size area	Click this button to sort the list in order of data size.
(13)	Observation status sort button	Click this button to sort the list in order of observation status. (Pink) : Scheduled observation images are included (Green) : Live observation images are included (No icon) : No observation images
(14)	Sample list	The user name and the sample name of the cultured samples and samples being unloaded for a medium change are listed.
(15)	Stocker/Container area	Click this area to select all samples in the holder or cancel the selection.
(16)	Close area	Click this area to display only the first sample in the holder.
(17)	Open area	Click this area to display all sample names in the holder.

(3) Verify the observation data to be deleted.

1. Click the sample name to check its observation data.

The Image review window is displayed.



2. Verify the contents of the observation data to be deleted.

3. Click the Close button.

The Image review window is closed and the Purge window is displayed.

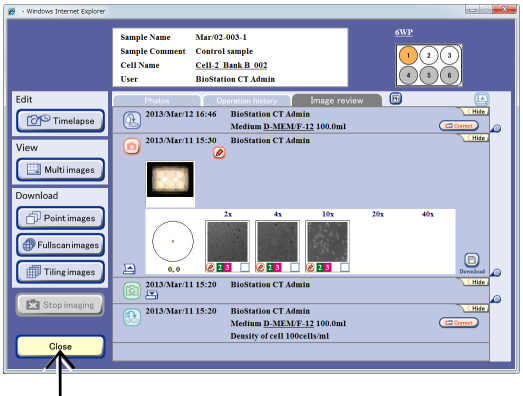


Image review window

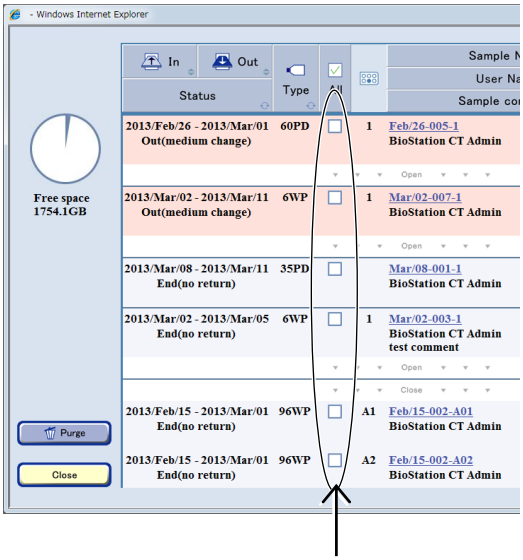
(4) Select the check box of the observation data to be deleted.

When check boxes are checked with only the first sample in the holder displayed, all samples in the holder are selected.

Also to select all samples in the holder, click the Stocker/Container area.

To select each sample, click the Open area to display all samples in the holder and then check the check box of a desired sample.

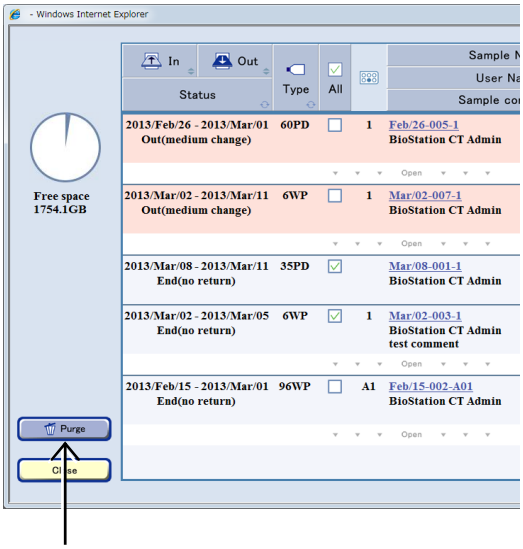
To select all observation data, click the All check button. All the data in the Purge window is selected.



Purge window

(5) Click the Purge button.

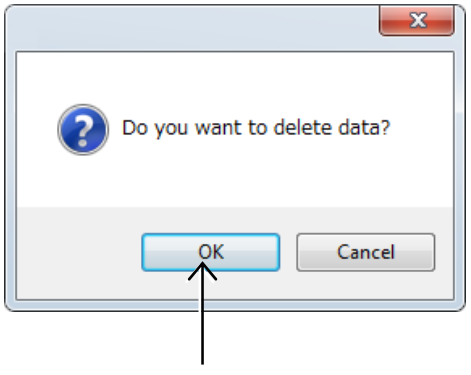
A delete confirmation dialog box appears.



(6) Click the OK button.

The selected observation data is deleted.

When the free space on the file server is 200 GB or more, the Full icon disappears from the System status screen.



Confirmation dialog box

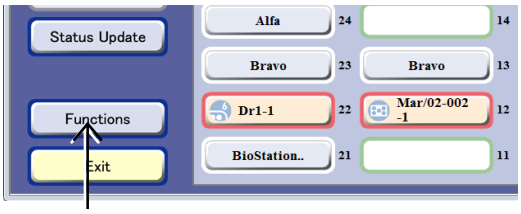
5.3 Master Data Maintenance

Before starting the culture observation with the product, register the master data in accordance with the following instructions.

5.3.1 Master Data Maintenance Window

(1) Click the Functions button on the System status screen.

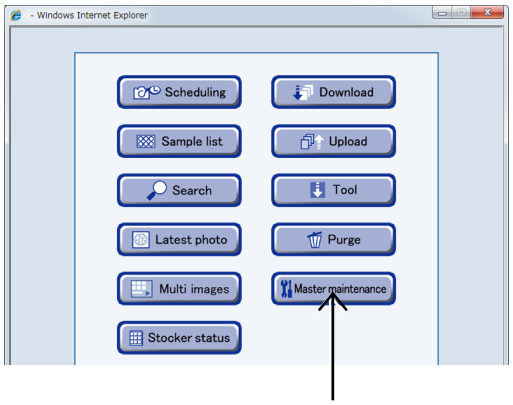
The Functions window is displayed.



System status screen

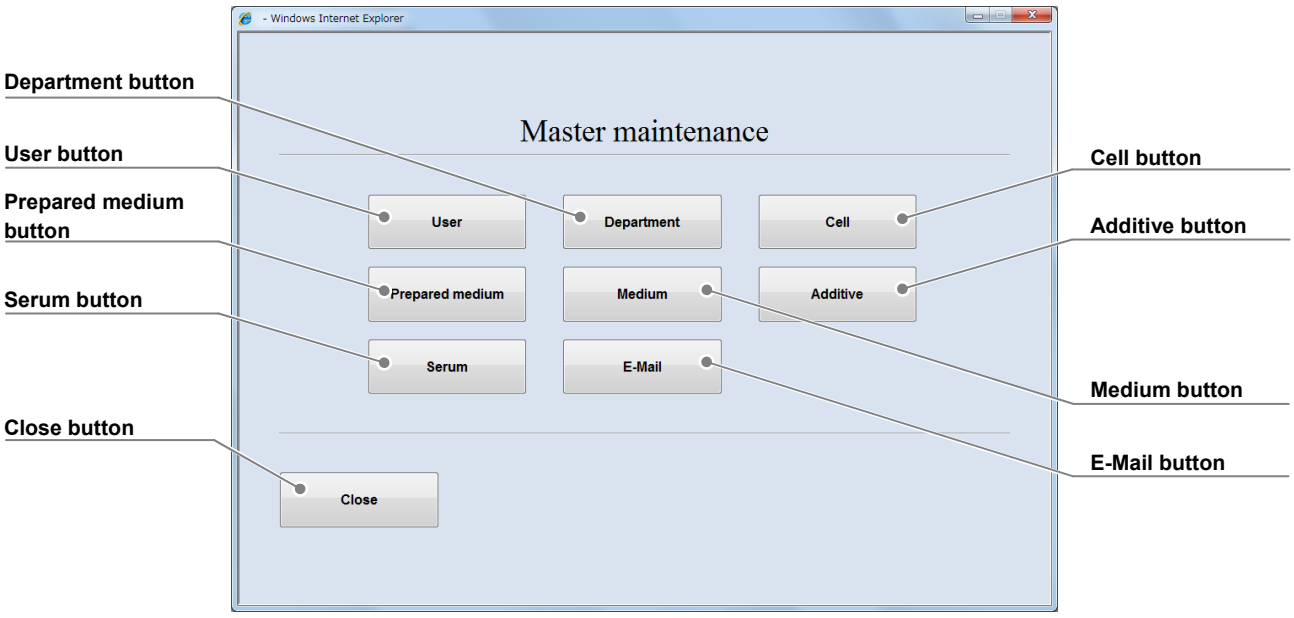
(2) Click the Master maintenance button in the Functions window.

The Master data maintenance window is displayed.



Functions window

Click the buttons in the Master data maintenance window to perform master data maintenance.



Master data maintenance window

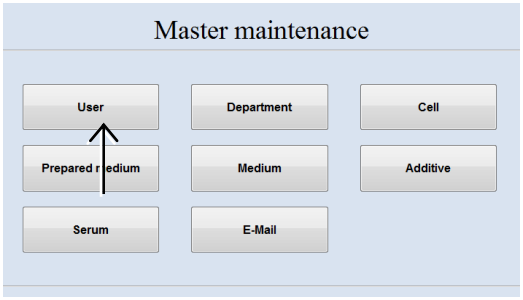
5.3.2 User Master Data

This section describes the procedure for registering, editing, or deleting a user master data.
If the user master data is registered, it is possible to log in to the product using the registered name. To enter the department name into the user master data, register the department name master data in advance.

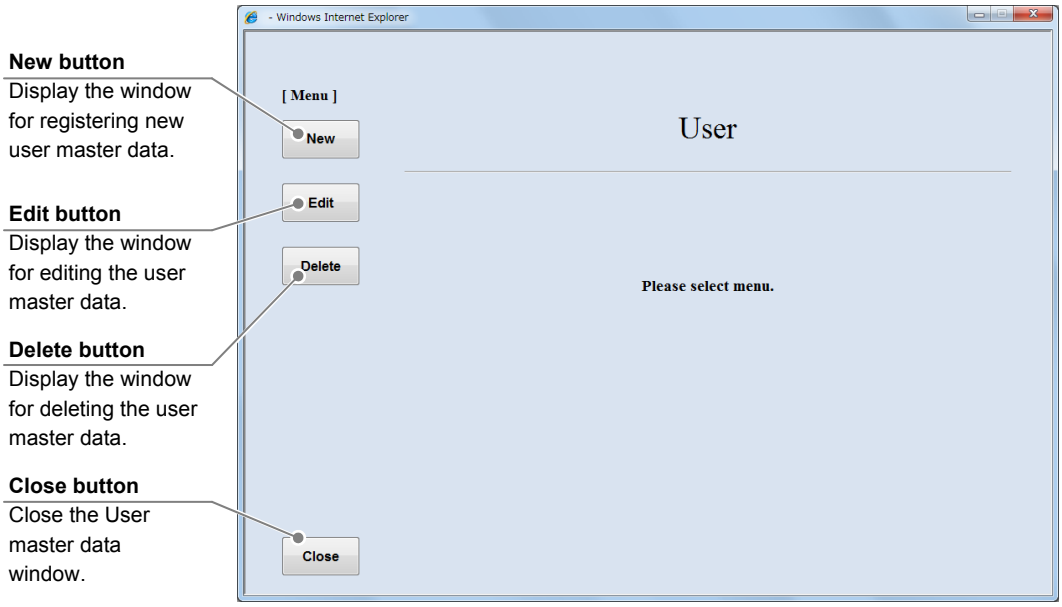
5.3.2.1 Registering new user master data

(1) Click the User button in the Master data maintenance window.

The User master data window is displayed.



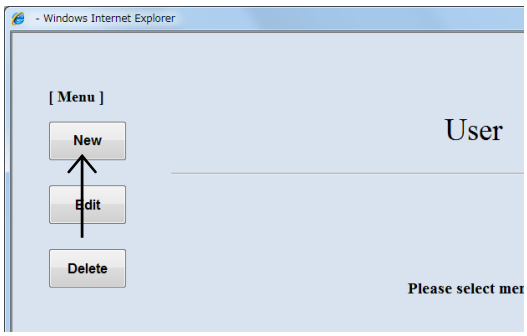
Master data maintenance window



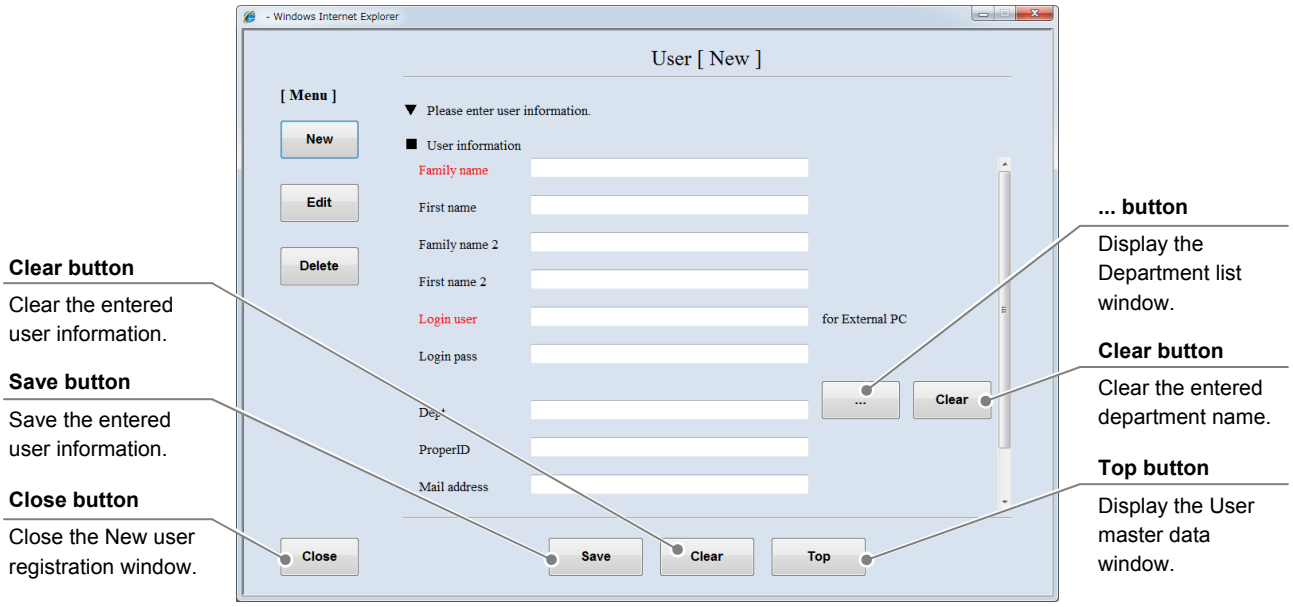
User master data window

(2) Click the New button.

The New user registration window is displayed.



Fill in the items displayed in red. For other items, fill in if necessary.

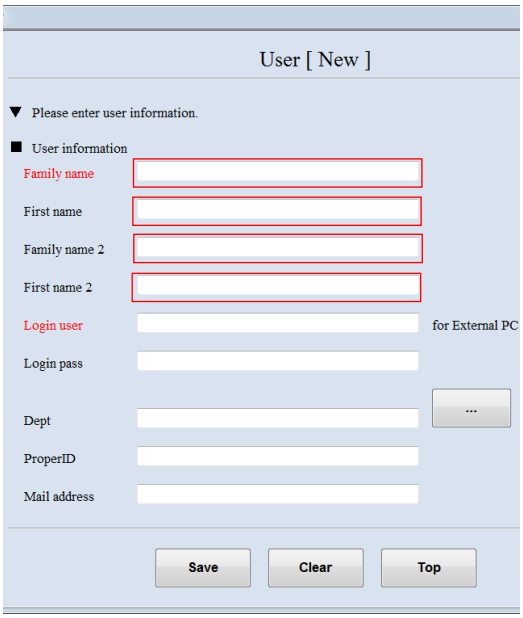


New user registration window

(3) Enter the user name.

1. Enter the user name into the Family name field and the First name field.

The user name entered here is added to the user list displayed in the Select User window.
Enter the login name of the user in the Login name field.
A user who does not have a login name is not displayed in the user list.



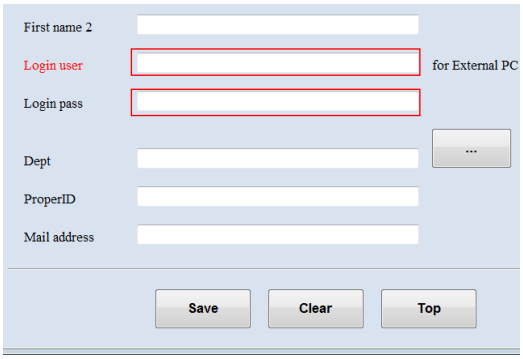
2. Enter the middle name or an alias into the Family name 2 field and the First name 2 field if necessary.

When the Family name 2 field and the First name 2 field are filled, the Select User window display users in a order sorted by Family name 2, First name 2, Family name, and First name.

If a name already registered as a combination of the First name and Family name is entered, it cannot be saved in the master data.

(4) Enter the login name into the Login user field.

If the login name is not entered, the person cannot be recognized as a user to operate the BioStation either from an external PC or directly on this product.

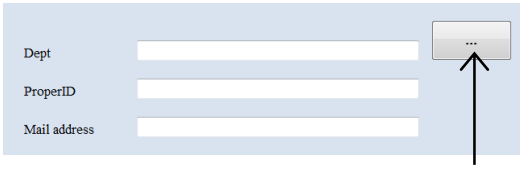


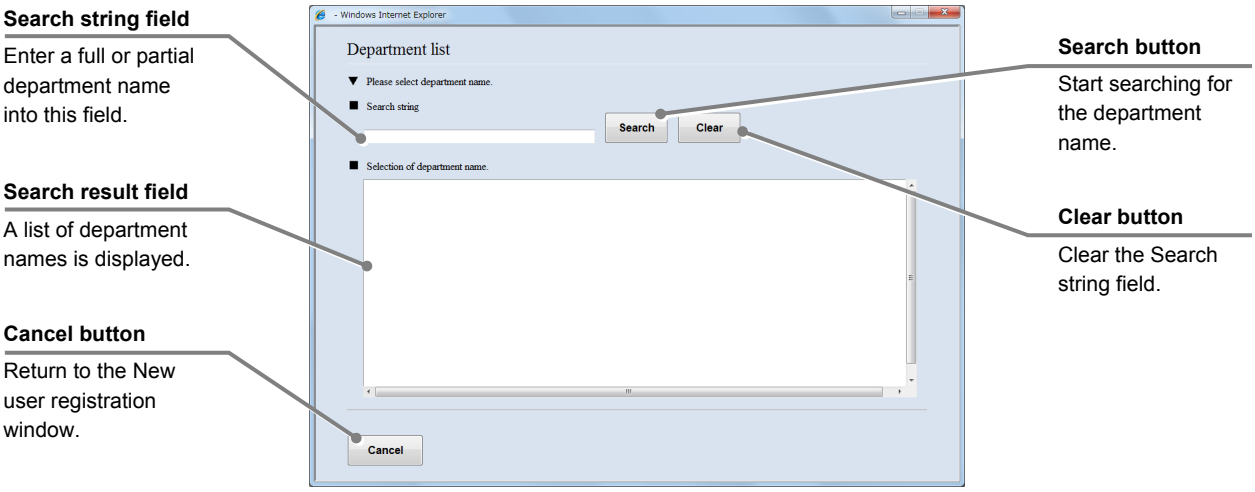
(5) Enter the login password into the Login pass field.

The login name and the login password must be composed of alphanumeric characters.
When the login password is entered, the Password window is displayed in the login procedure.

(6) Enter the department name into the Dept field.

1. Click the ••• button to display the Department list window.

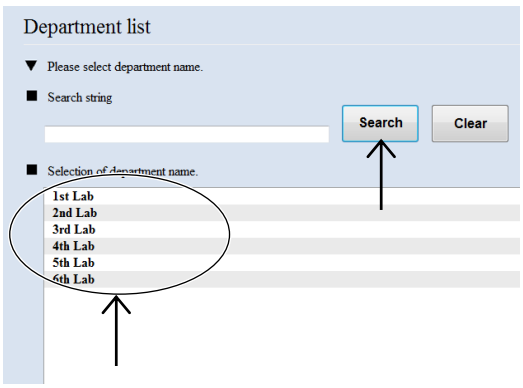




Department list window

2. Enter a partial department name into the Search string field and click the Search button.
If you do not know any characters of the search department name, click the Search button without data entry.

The found department names are displayed in the Search result field.



> Department names registered in the department master data are displayed. If there is no department name to select, register the department name in accordance with the procedure in 5.3.3.1, “Registering new department master data” in advance.

3. Click the department name to be entered.

The New user registration window is displayed and the selected department name is displayed in the Dept field.

(7) Fill in the Proper ID field.

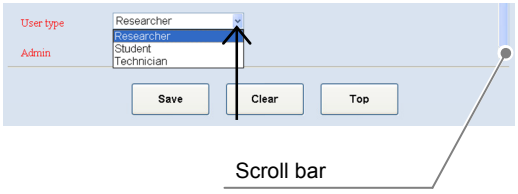
(8) Fill in the Mail address field.

(9) Select the user type.

1. **Scroll down the window by clicking the scroll bar on the right side of the New user registration window.**

   The User type field and the Admin field are displayed.

2. **Select a user type (Researcher, Student, or Technician) from the list box displayed by clicking the User type field.**

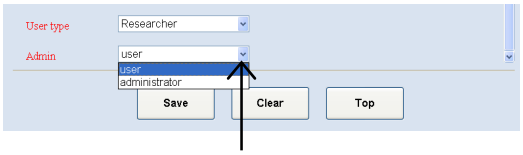


(10) Select the authorization of the user.

1. **Select the authorization of the user (user or administrator) from the list box displayed by clicking the Admin field.**

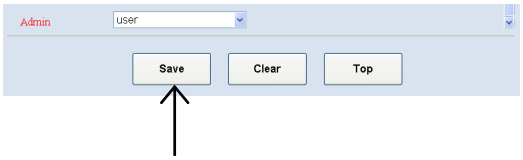
   user:
   Select “user” to use the general user’s functions only.

   administrator:
   Select “administrator” to use all functions including administrative functions.



(11) Click the Save button.

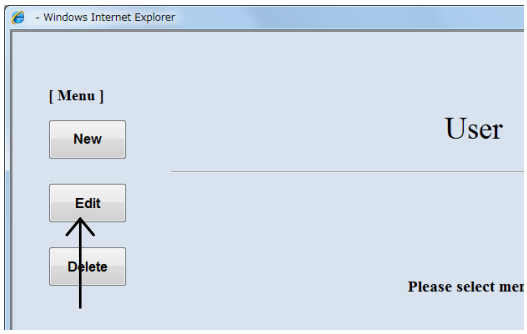
The entered user information is saved into the master data.



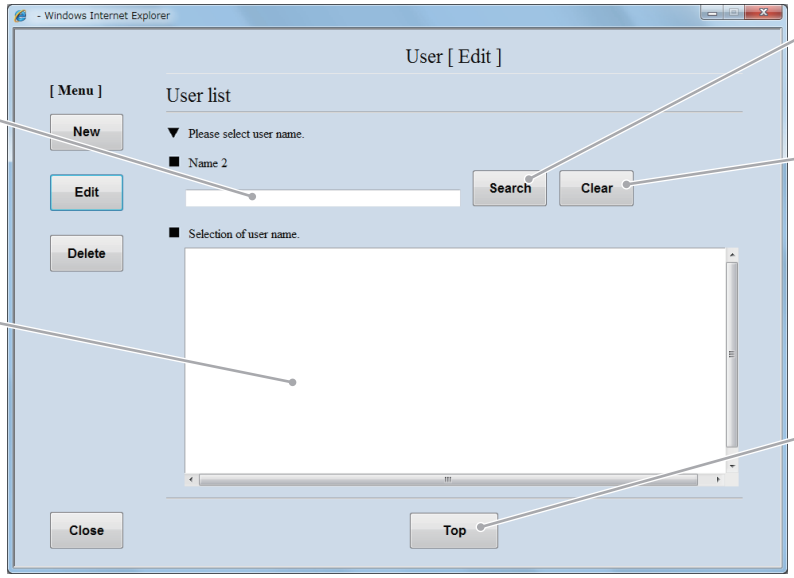
5.3.2.2 Editing the user master data

(1) Click the Edit button in the User master data window.

The User edit search window is displayed.



User master data window



Search string field
Enter a full or partial user name into this field.

Search result field
The found user names are listed in this field.

Search button
Start searching for the user name.

Clear button
Clear the Search string field.

Top button
Display the User master data window.

User edit search window

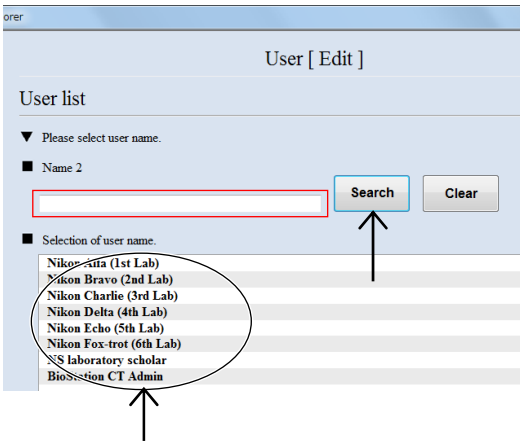
(2) Search for the user master data to be edited.

1. Enter a full or partial user name in the search string field and click the Search button. If you do not know any characters of the search user name, click the Search button without data entry.

The found user names are listed in the Search result field.

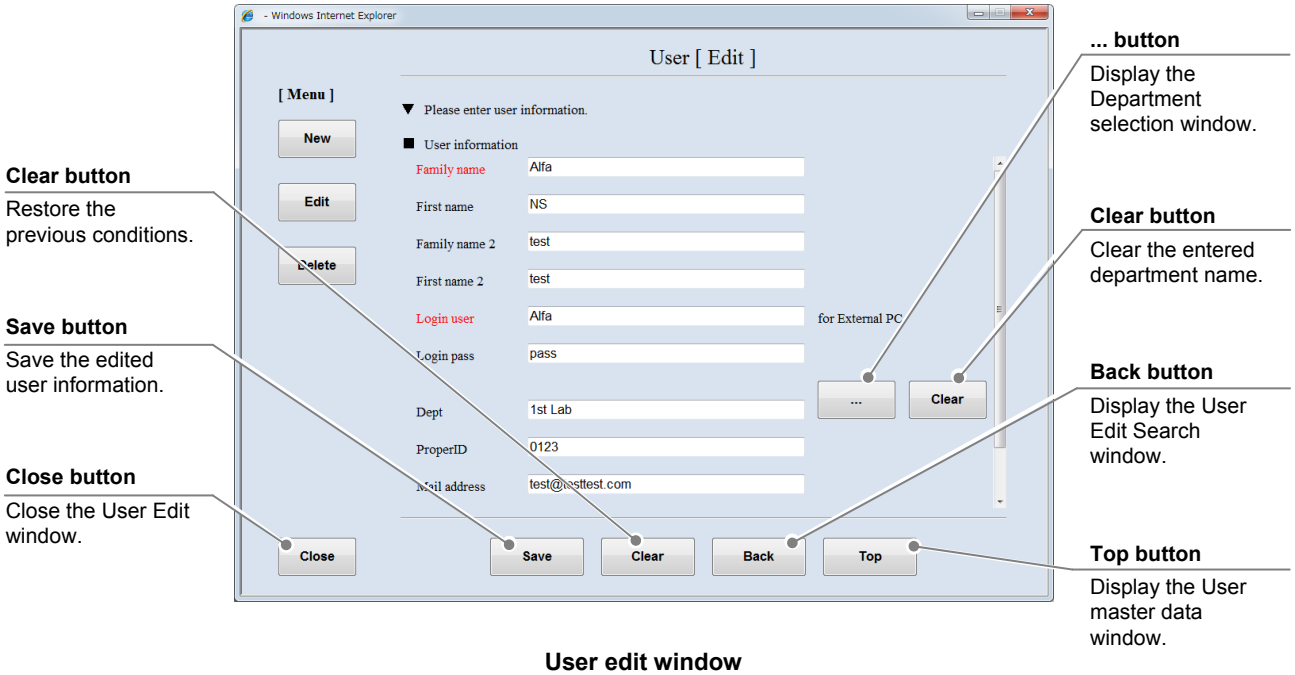
2. Select a user name from the Search result field.

The selected user master data is displayed in the User edit window.



(3) Edit the user master data.

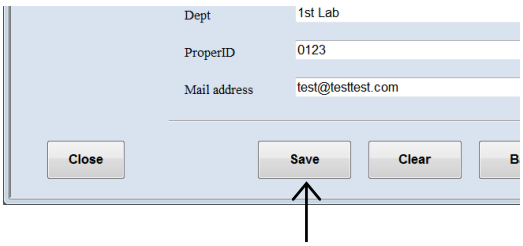
The procedure for editing the user master data is the same as the procedure for registering new user master data. For the procedure for editing each item, see Section 5.3.2.1, “Registering new user master data.”



User edit window

(4) Click the Save button.

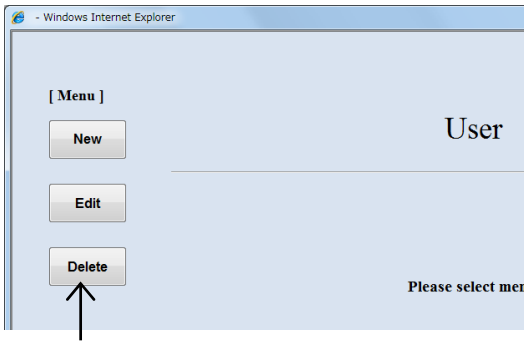
The edited user information is saved into the master data.



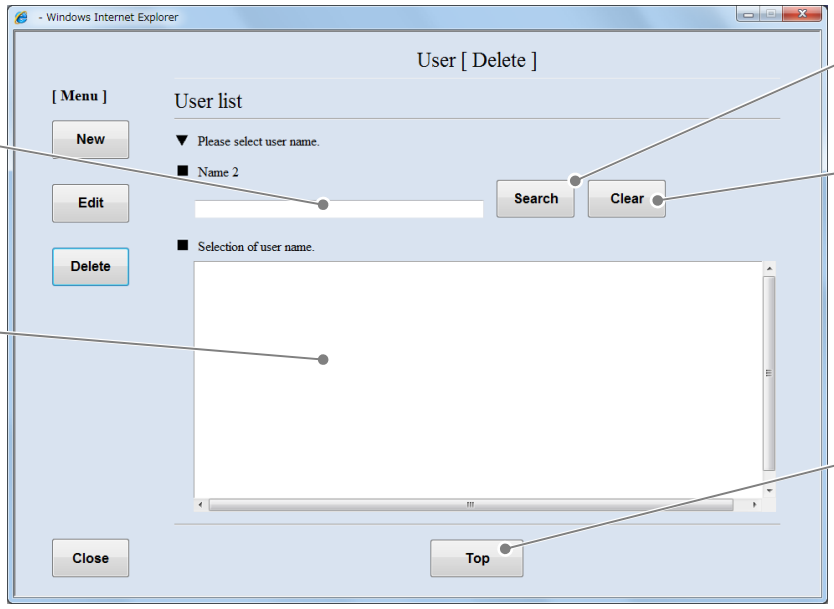
5.3.2.3 Deleting the user master data

(1) Click the Delete button in the User master data window.

The User delete search window is displayed.



User master data window



Search string field

Enter a full or partial user name into this field.

Search result field

The found user names are listed in this field.

Search button

Start searching for the user name.

Clear button

Clear the Search string field.

Top button

Display the User master data window.

User delete search window

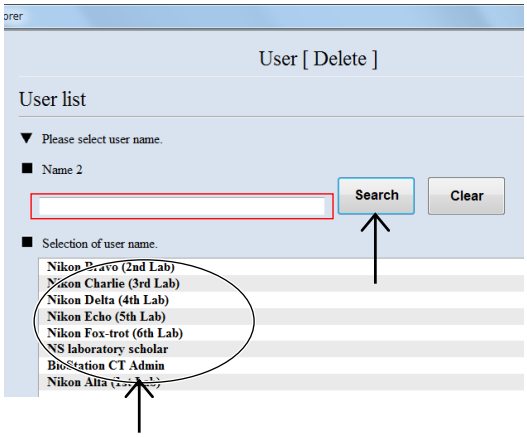
(2) Search for the user master data to be deleted.

1. Enter a full or partial user name into the Search string field and click the Search button.
If you do not know any characters of the user name, click the Search button without data entry.

The found user names are listed in the Search result field.

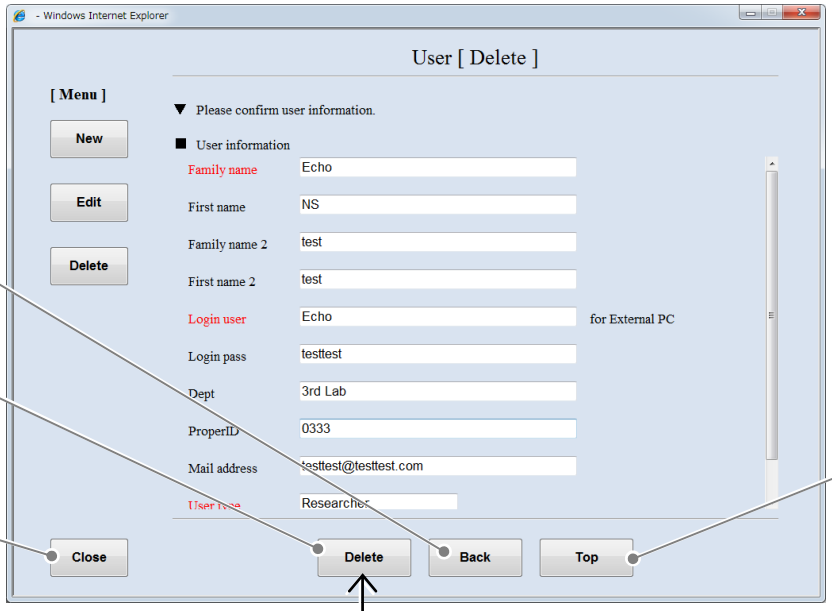
2. Select the user name to be deleted from the Search result field.

The selected user master data is displayed in the User delete window.



(3) Click the Delete button.

The displayed user information is deleted from the master data.



Back button

Display the User delete Search window.

Delete button

Delete the displayed user master data.

Close button

Close the User delete window.

Top button

Display the User master data window.

User delete window

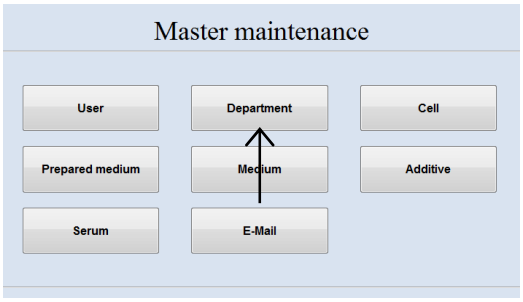
5.3.3 Department Master Data

This section describes the procedure for registering, editing or deleting a department master data. If the department name is registered into the department master data, it can be selected in the User master data registration window.

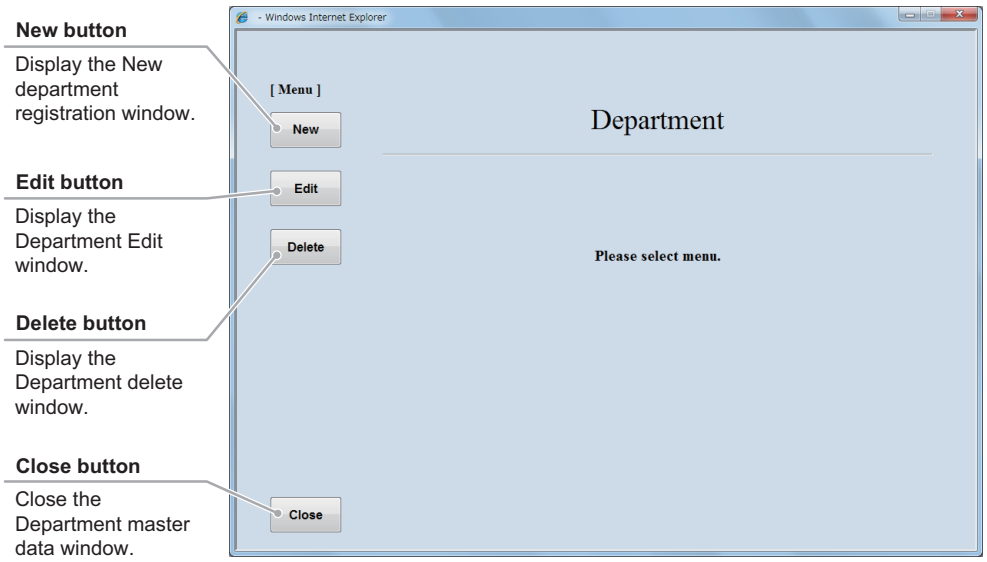
5.3.3.1 Registering new department master data

(1) Click the Department button in the Master data maintenance window.

The Department master data window is displayed.



Master data maintenance window

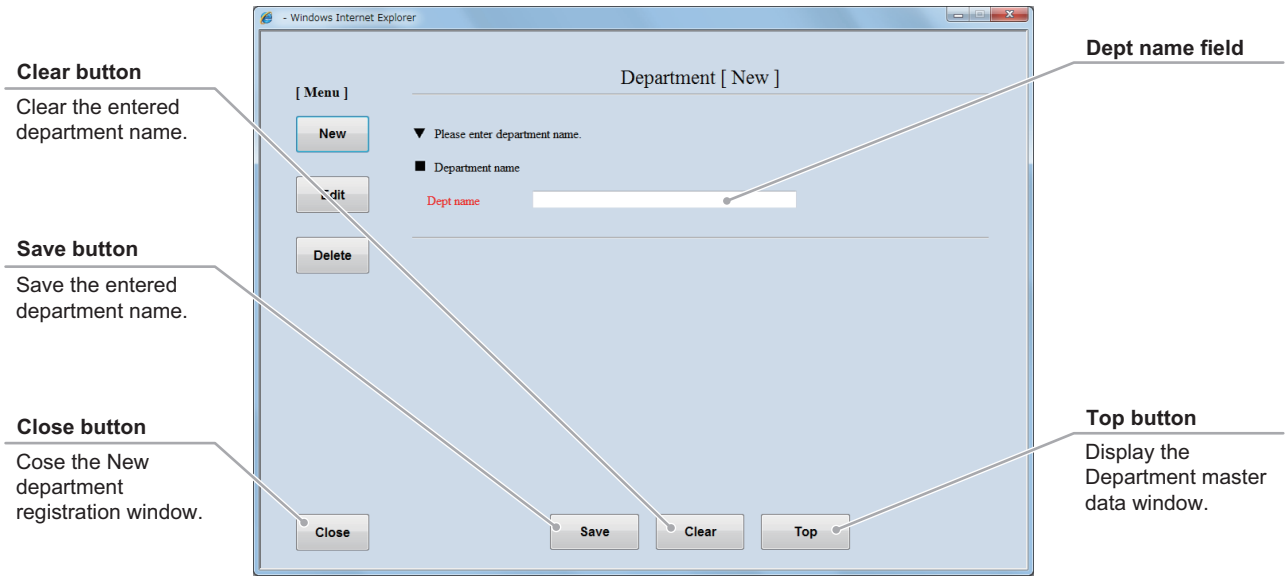


Department master data window

(2) Click the New button.

The New department registration window is displayed.

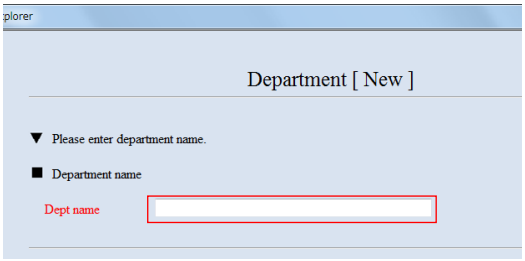
Fill in the Dept name field.



New department registration window

(3)　Enter the department name into the Dept name field.

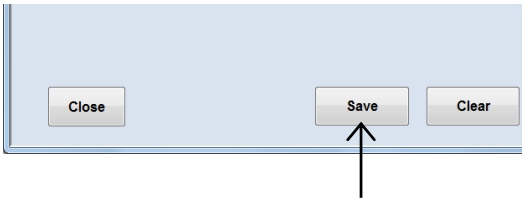
The entered department name can be selected in the User master data registration window.



> When the Dept name is already registered, it cannot be saved in the user master data.

(4)　Click the Save button.

The entered department name is saved into the master data.

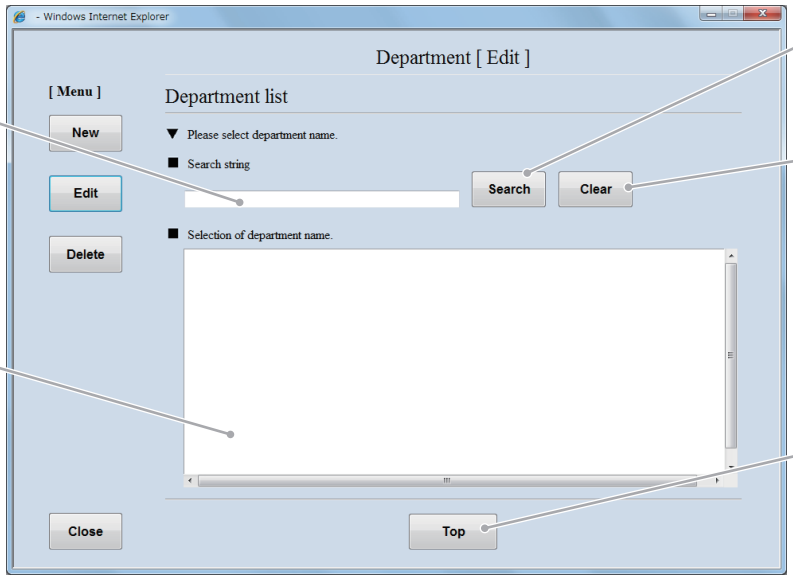


5.3.3.2 Editing the department master data

(1) Click the Edit button in the Department master data window.

The Department edit search window is displayed.

Department master data window



Search string field
Enter a full or partial department name into this field.

Search result field
A list of department names is displayed.

Search button
Start searching for the department name.

Clear button
Clear the Search string field.

Top button
Display the Department master data window.

Department edit search window

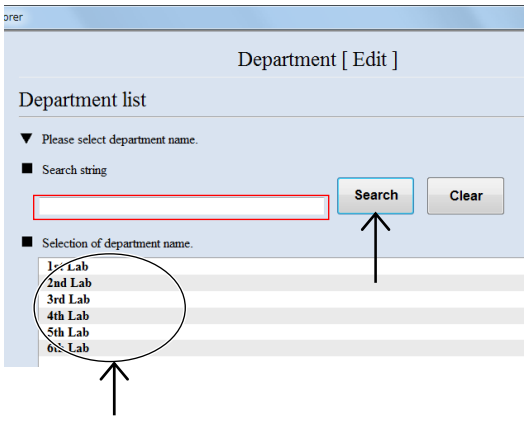
(2) Search for the department master data to be edited.

1. Enter a full or partial department name into the Search string field and click the Search button.
If you do not know any characters of the department name, click the Search button without data entry.

The found department names are listed in the Search result field.

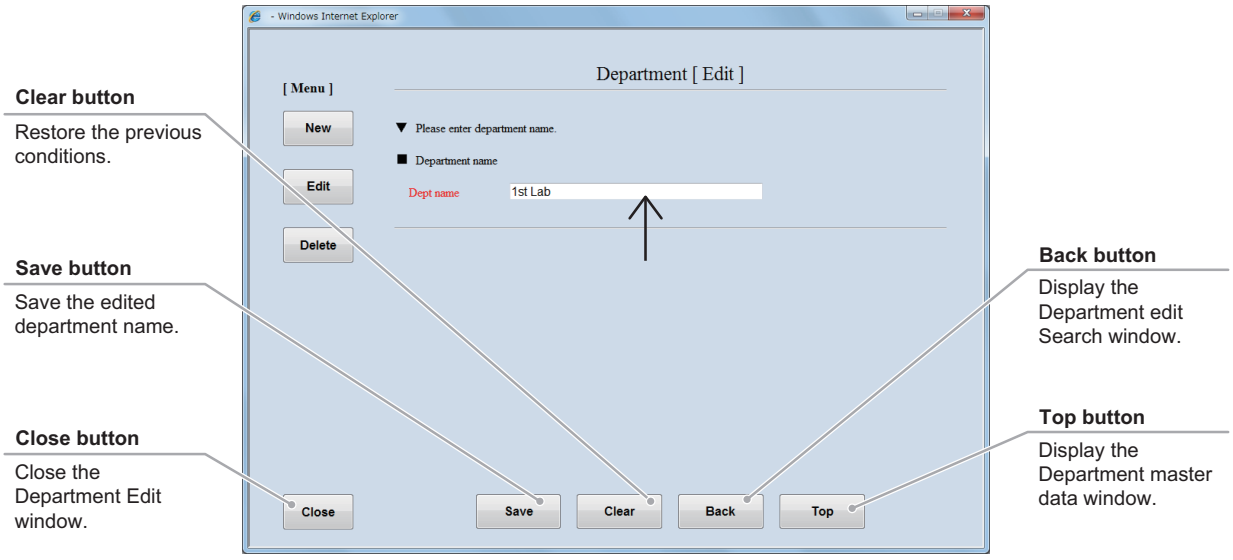
2. Select a department name from the Search result field.

The selected department master data is displayed in the Department edit window.



(3) Click the Dept name field and edit the department name.

When the Dept name is already registered, it cannot be saved in the user master data.



Department edit window

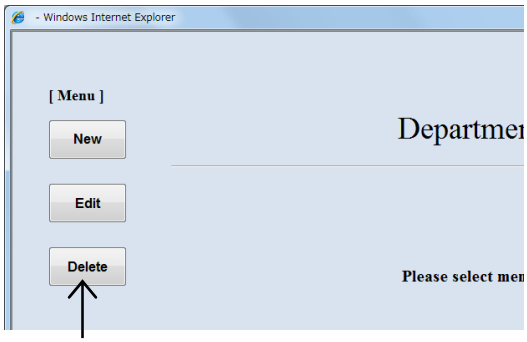
(4) Click the Save button.

The edited department name is saved into the master data.

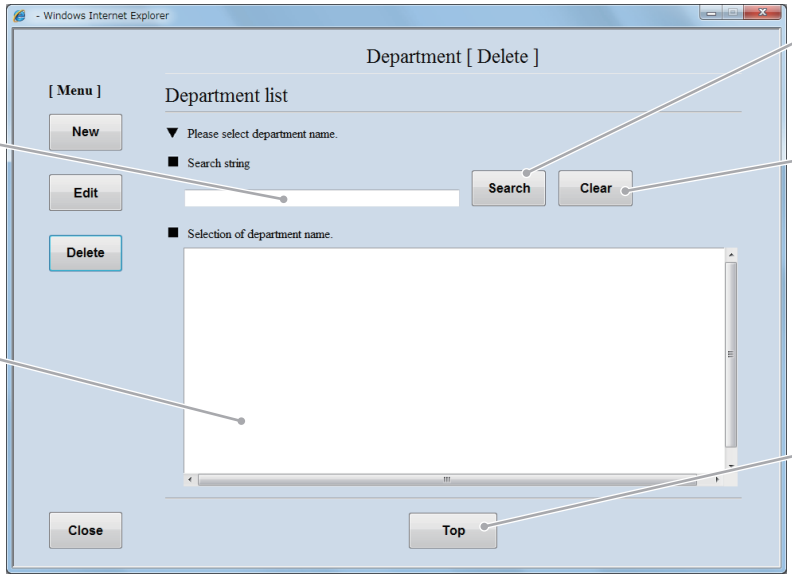
5.3.3.3 Deleting the department master data

(1) Click the Delete button in the Department master data window.

The Department delete search window is displayed.



Department master data window



Search string field
Enter a full or partial department name into this field.

Search result field
The found department names are listed.

Search button
Start searching for the department name.

Clear button
Clear the Search string field.

Top button
Display the Department master data window.

Department delete search window

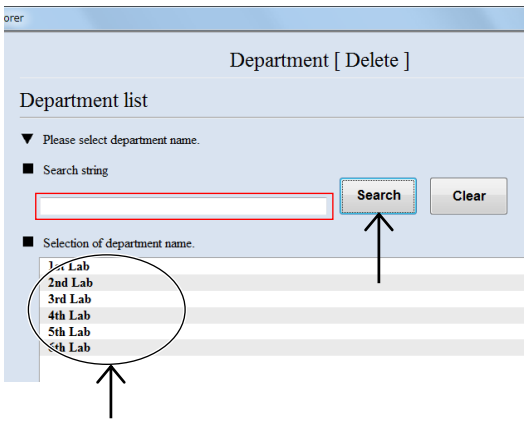
(2) Search for the department master data to be deleted.

1. Enter a full or partial department name into the Search string field and click the Search button.
If you do not know any characters of the department name, click the Search button without data entry.

The found department names are listed in the Search result field.

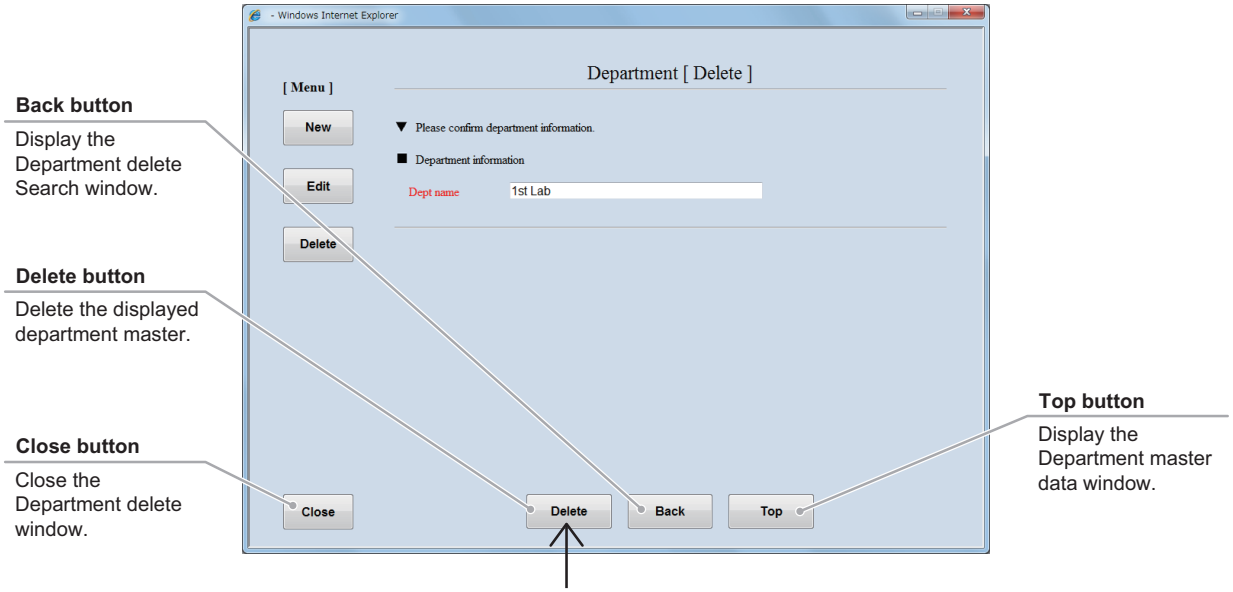
2. Select a department name from the Search result field.

The selected department master data is displayed in the Department delete window.



(3) Click the Delete button.

The displayed department name is deleted from the master data.



Department delete window

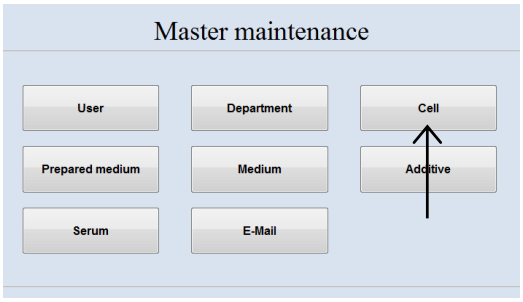
5.3.4 Cell Master Data

This section describes the procedure for registering, editing or deleting cell master data.

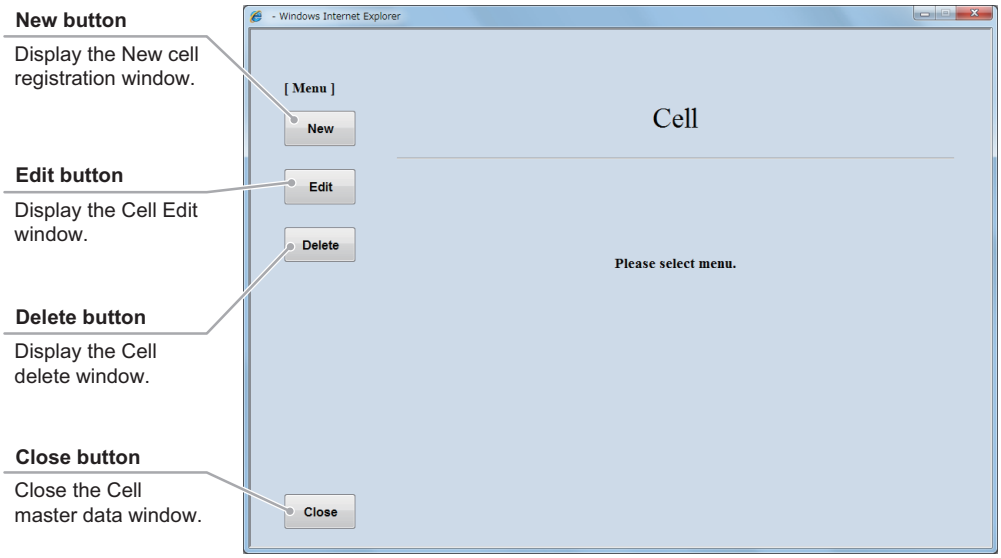
5.3.4.1 Registering new cell master data

(1) Click the Cell button in the Master data maintenance window.

The Cell master data window is displayed.



Master data maintenance window

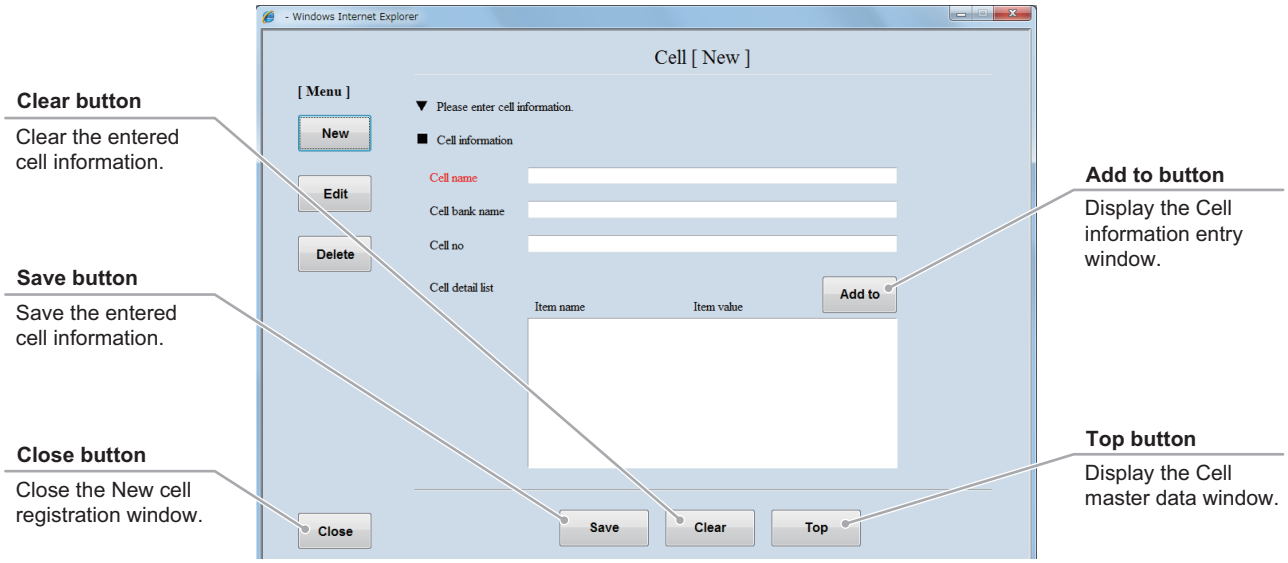


Cell master data window

(2) Click the New button.

The New cell registration window is displayed.

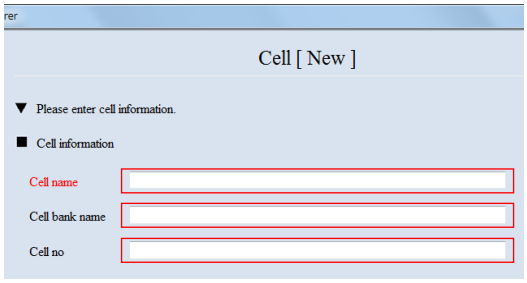
Fill in the items displayed in red. For other items, fill in if necessary.



New cell registration window

(3) Enter the cell name into the Cell name field.

> When the Cell name is already registered, it cannot be saved in the user master data.

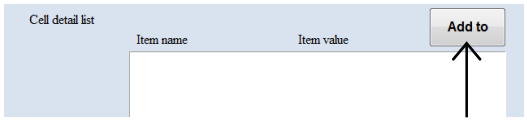


(4) Enter the cell bank name into the Cell bank name field.

(5) Enter the cell number into the Cell no field.

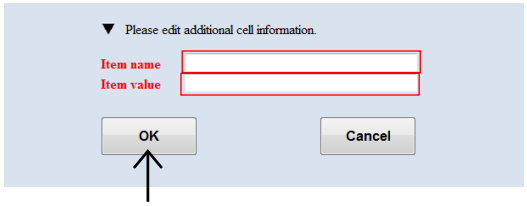
(6) Enter the cell information.

1. **Click the Add to button to display the Cell information entry window.**



2. **Enter the item name of the cell information into the Item name field.**
3. **Enter the item value of the cell information into the Item value field.**
4. **Click the OK button.**

   The entered cell information is saved and the New cell registration window is displayed.

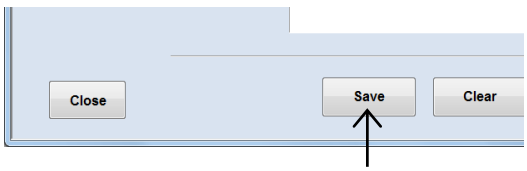


Cell information entry window

5. **To enter other cell information, repeat steps 1 to 4.**

(7) Click the Save button.

The entered cell information is saved into the master data.



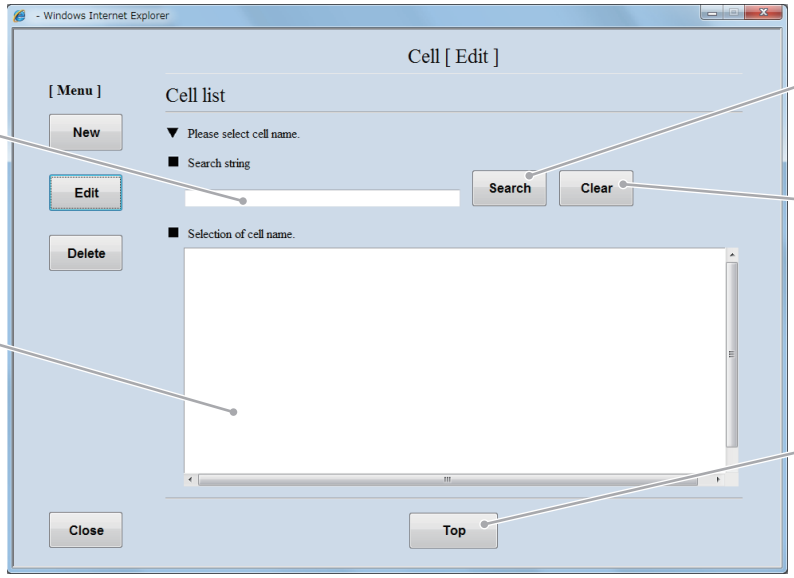
New cell registration window

5.3.4.2 Editing the cell master data

(1) Click the Edit button in the Cell master data window.

The Cell edit search window is displayed.

Cell master data window



Search string field
Enter a full or partial cell name into this field.

Search result field
The found cell names are listed in this field.

Search button
Start searching for the cell name.

Clear button
Clear the Search string field.

Top button
Display the Cell master data window.

Cell edit search window

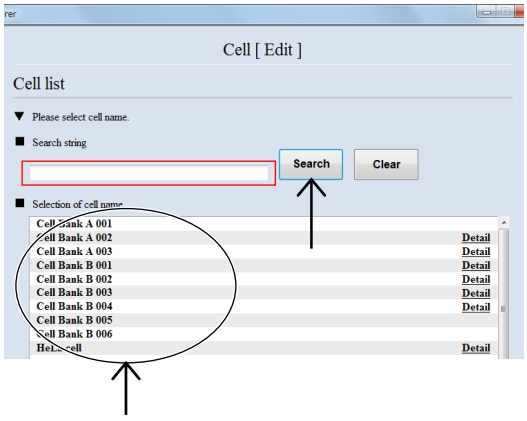
(2) Search for the cell master data to be edited.

1. Enter a full or partial cell name into the Search string field and click the Search button.
If you do not know any characters of the cell name, click the Search button without data entry.

The found cell names are listed in the Search result field.
If the details of the cell information are registered, it can be displayed by clicking the Detail button on the right side of the Search result field.

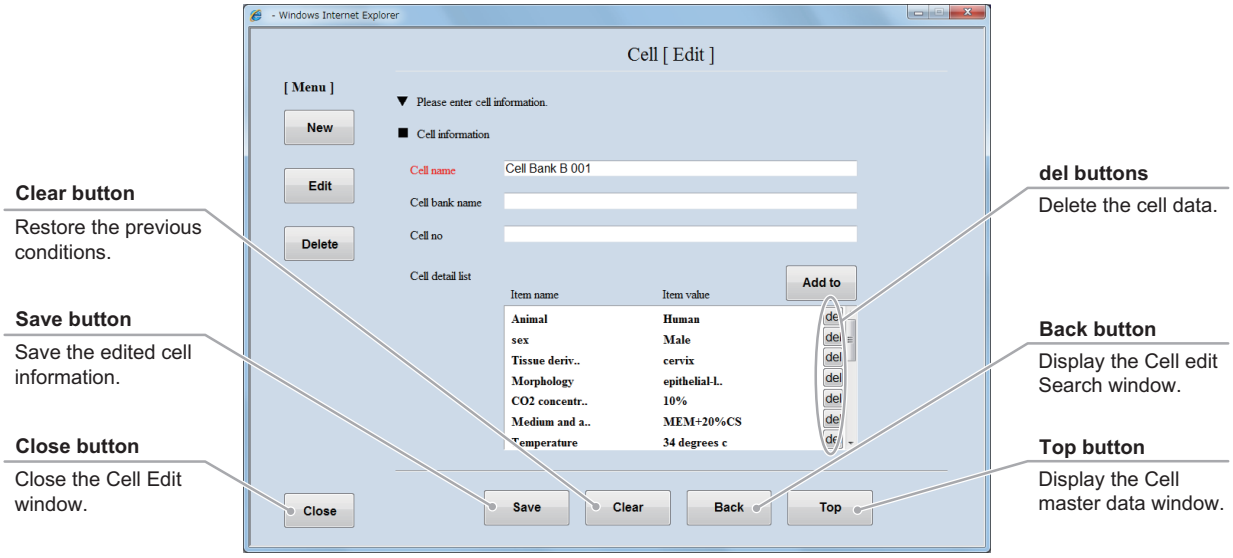
2. Select a cell name from the Search result field.

The selected cell master data is displayed in the Cell edit window.



(3) Edit the cell master data.

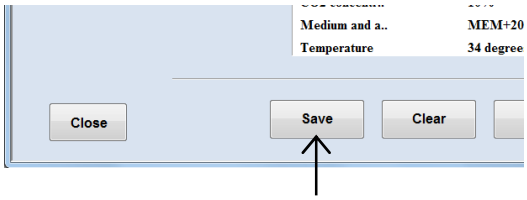
The procedure for editing the cell master data is the same as the procedure for registering the new cell master data. For the procedure of editing each item, see Section 5.3.4.1, “Registering new cell master data.”



Cell edit window

(4) Click the Save button.

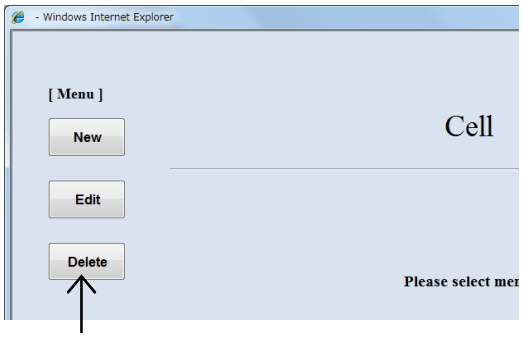
The edited cell information is saved into the master data.



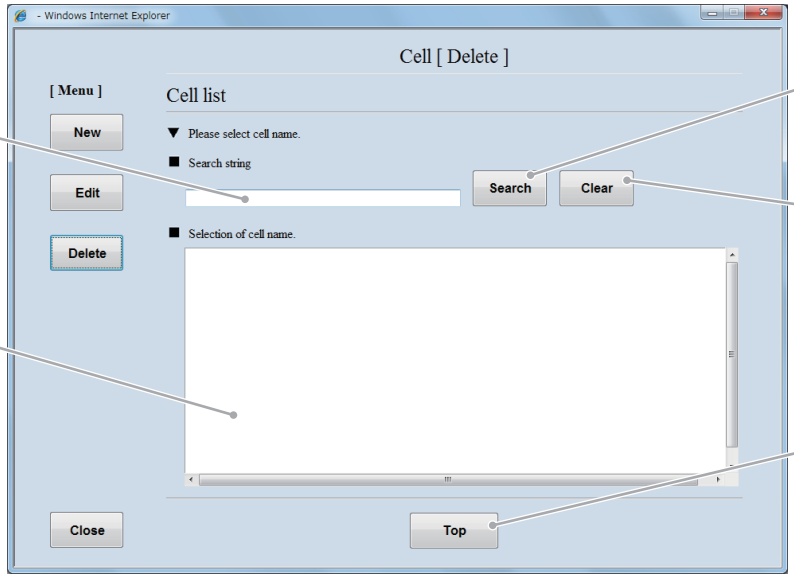
5.3.4.3 Deleting the cell master data

(1) Click the Delete button in the Cell master data window.

The Cell delete search window is displayed.



Cell master data window



Search string field
Enter a full or partial cell name into this field.

Search result field
The found cell names are listed in this field.

Search button
Start searching for the cell name.

Clear button
Clear the Search string field.

Top button
Display the Cell master data window.

Cell delete search window

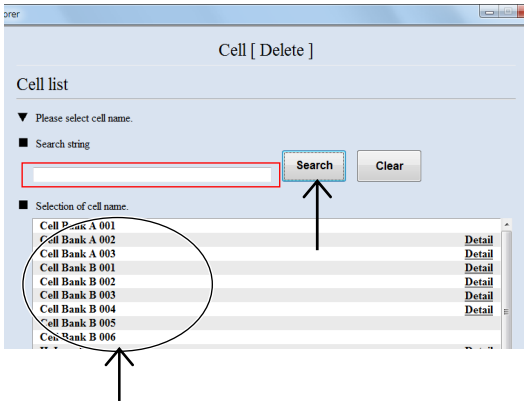
(2) Search for the cell master data to be deleted.

1. Enter a full or partial cell name into the Search string field and click the Search button. If you do not know any characters of the cell name, click the Search button without data entry.

The found cell names are listed in the Search result field.

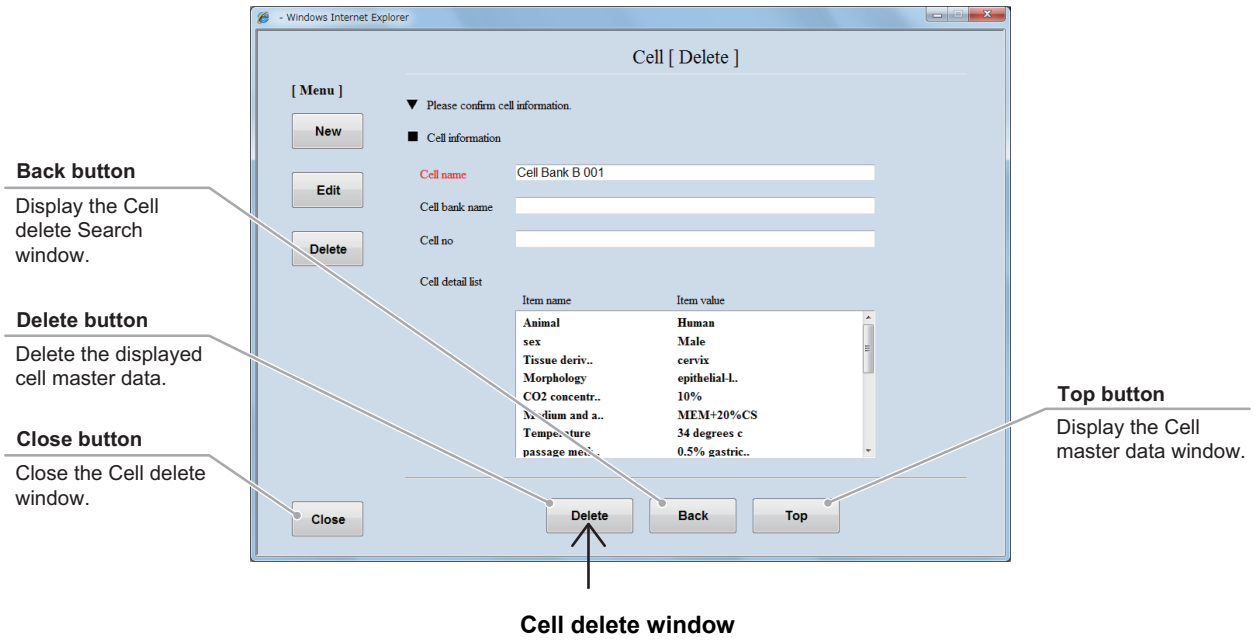
2. Select the cell name to be deleted from the Search result field.

The selected cell master data is displayed in the Cell delete window.



(3) Click the Delete button.

The displayed cell name is deleted from the master data.



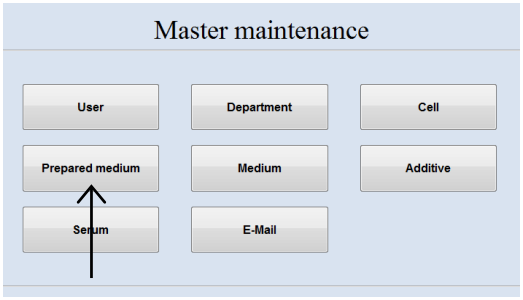
5.3.5 Prepared Medium Master Data

This section describes the procedure for registering, editing or deleting the prepared medium master data. To enter the medium, the additive or the serum in the prepared medium master data, register the medium master data, the additive master data, and the serum master data in advance.

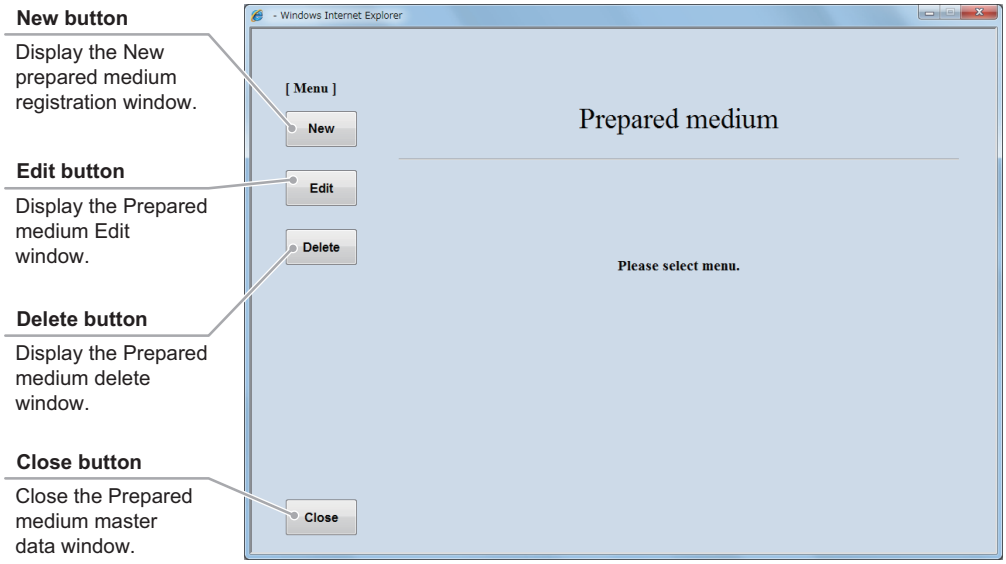
5.3.5.1 Registering new prepared medium master data

(1) Click the Prepared medium button in the Master data maintenance window.

The Prepared medium master data window is displayed.



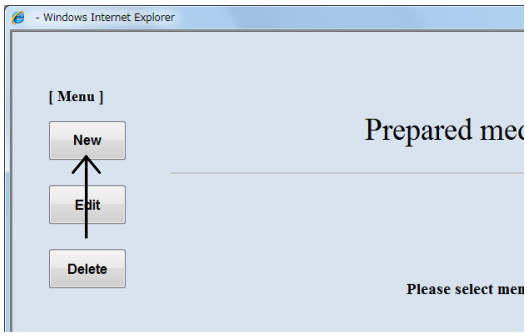
Master data maintenance window



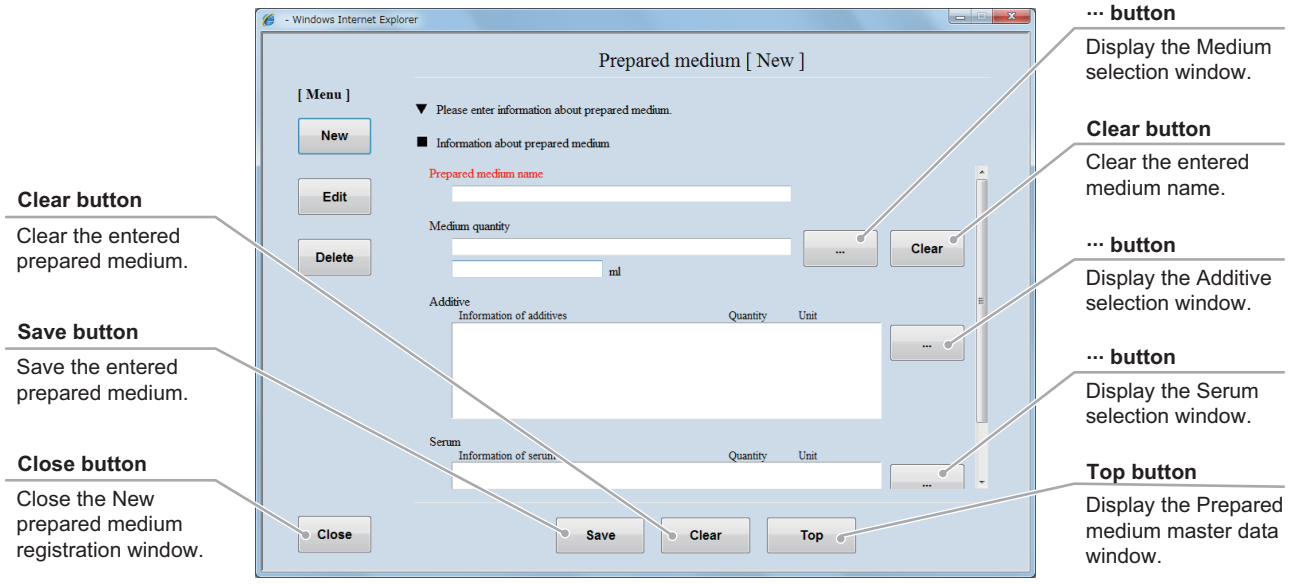
Prepared medium master data window

(2) Click the New button.

The New prepared medium registration window is displayed.

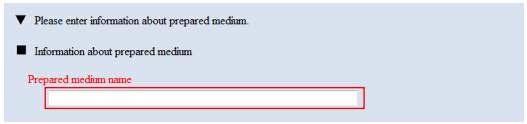


Fill in the items displayed in red. For other items, fill in if necessary.



New prepared medium registration window

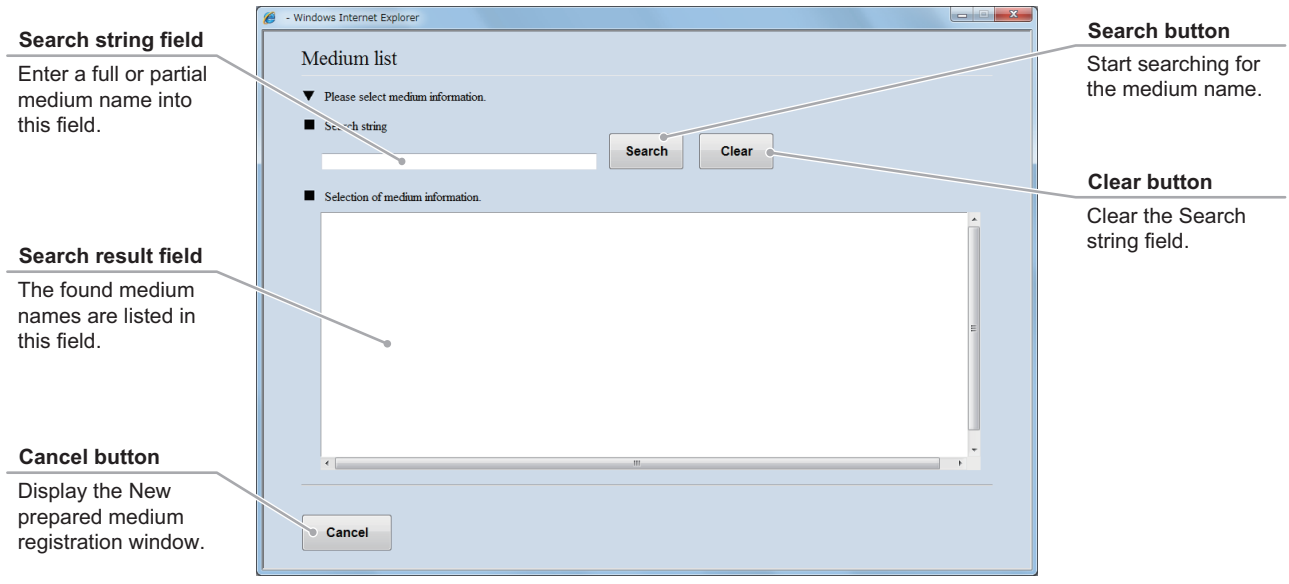
(3) Enter the prepared medium name into the Prepare medium name field.



> The prepared medium, whose name has already been registered in the Prepare medium name, cannot be saved in the user master data.

(4) Enter the medium name and the medium quantity.

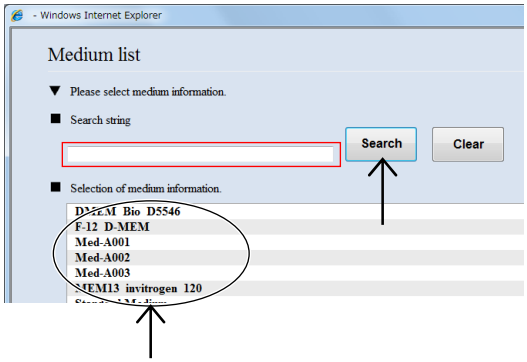
1. Display the Medium list window by clicking the ··· button on the right side of the Medium quantity field.



Medium list window

2. **Enter a full or partial medium name into the Search string field and click the Search button.**
   If you do not know any characters of the medium name, click the Search button without data entry.

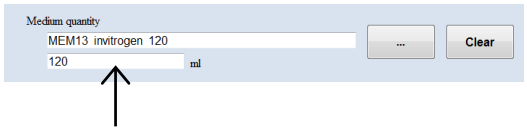
   The found medium names are listed in the Search result field.



3. **Select a medium name from the Search result field.**

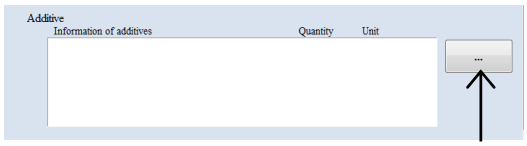
   The selected medium name is displayed in the New prepared medium registration window.

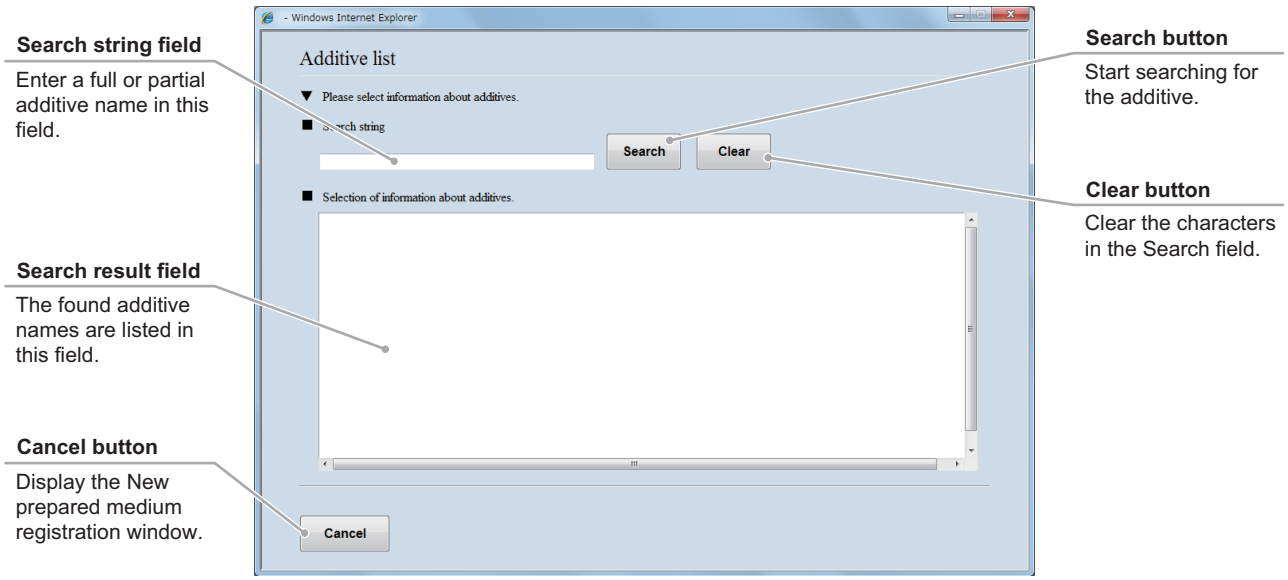
4. **Enter the medium quantity into the Medium quantity field.**



(5) Enter the information of the additive used for the prepared medium.

1. **Display the Additive list window by clicking the ··· button on the right side of the Additive field.**





Additive list window

2. **Enter a full or partial additive name into the Search string field and click the Search button.**
   If you do not know any characters of the additive name, click the Search button without data entry.

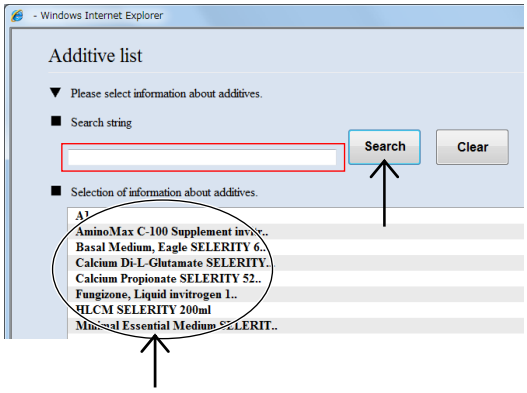
   The found additive names are listed in the Search result field.

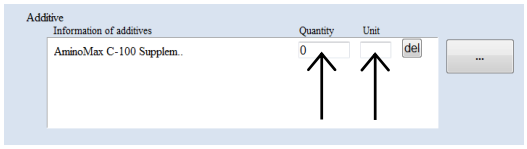
3. **Select an additive name from the Search result field.**

   The selected additive name is displayed in the New prepared medium registration window.

4. **Enter the quantity and the unit of the additive into the Quantity field and the Unit field.**

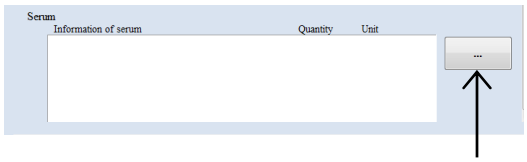
5. **To enter other additive information, repeat steps 1 to 4.**

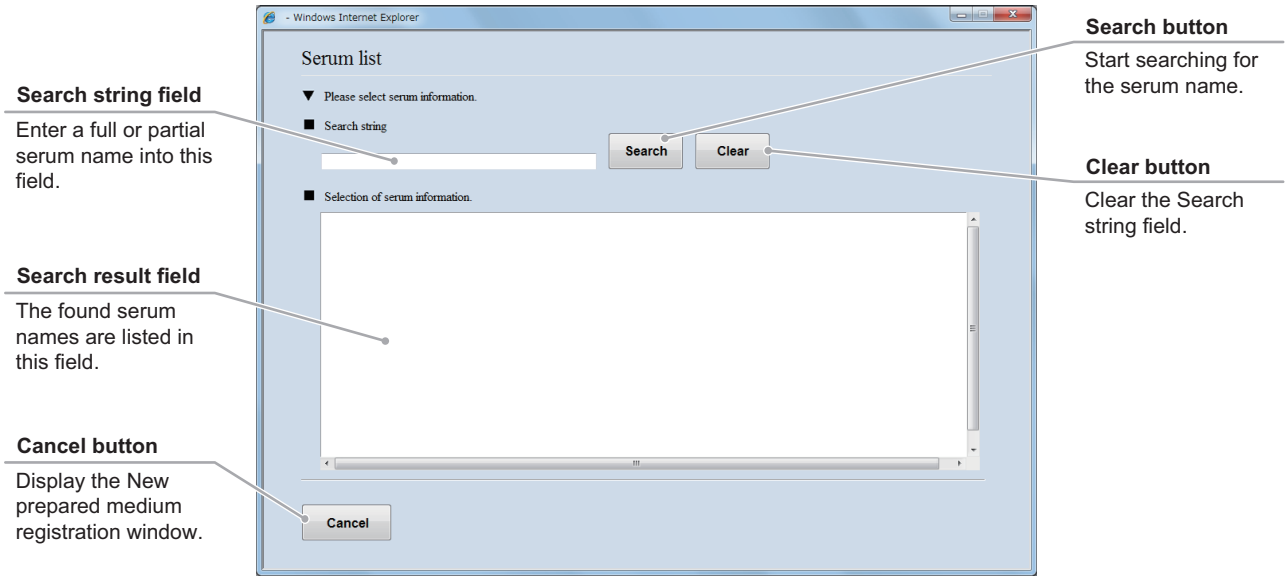




(6) Enter the serum name used for the prepared medium.

1. **Display the Serum list window by clicking the ··· button on the right side of the Serum field.**

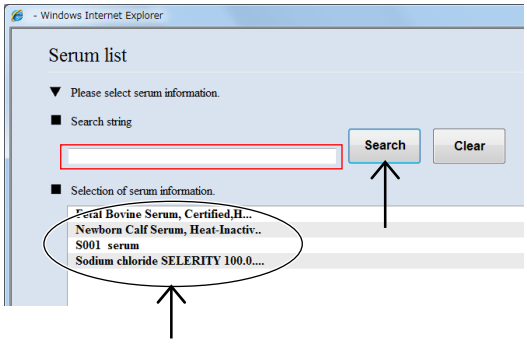




Serum list window

2. **Enter a full or partial serum name into the Search string field and click the Search button.**
   If you do not know any characters of the serum name, click the Search button without data entry.

   The found serum names are listed in the Search result field.

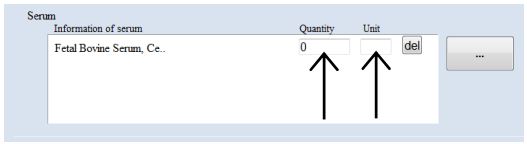


3. **Select a serum name from the Search result field.**

   The selected serum name is displayed in the New prepared medium registration window.

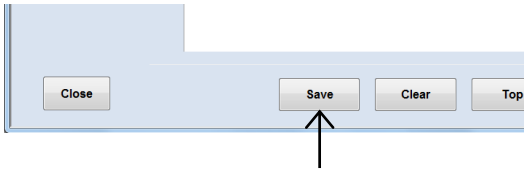
4. **Enter the quantity and the unit of the serum into the Quantity field and the Unit field.**

5. **To enter other serum information, repeat steps 1 to 4.**



(7) Click the Save button.

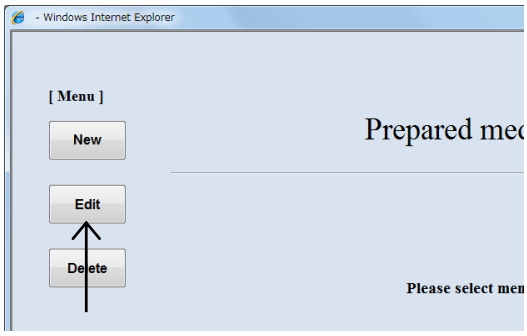
The entered prepared medium information is saved into the master data.



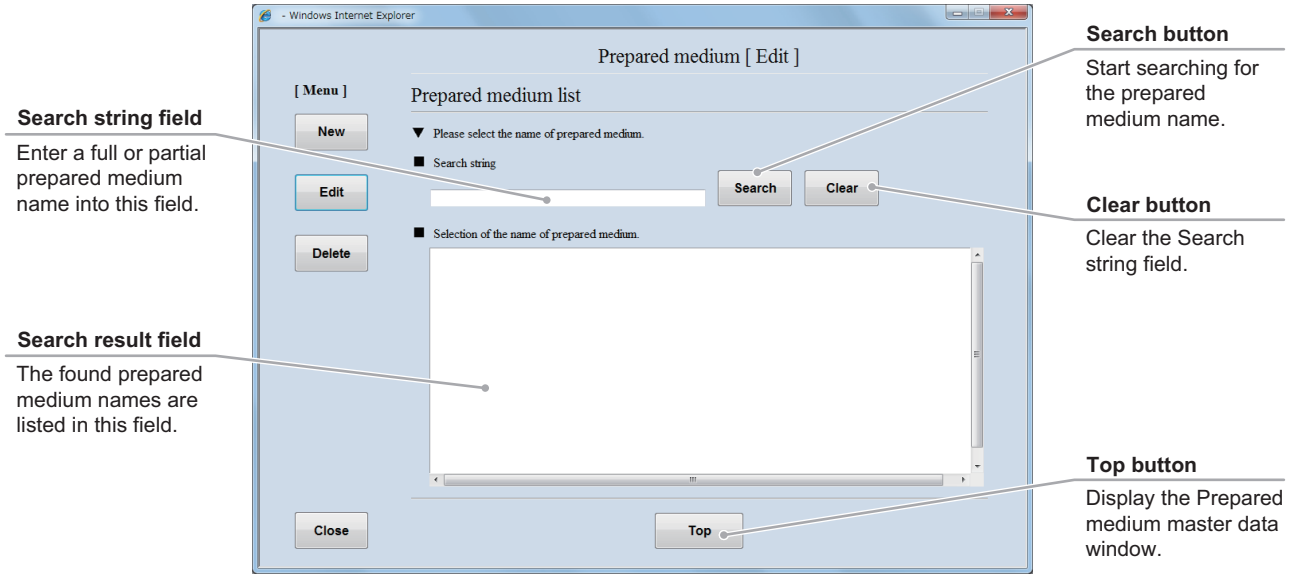
5.3.5.2 Editing the prepared medium master data

(1) Click the Edit button in the Prepared medium master data window.

The Prepared medium edit search window is displayed.



Prepared medium master data window



Prepared medium edit search window

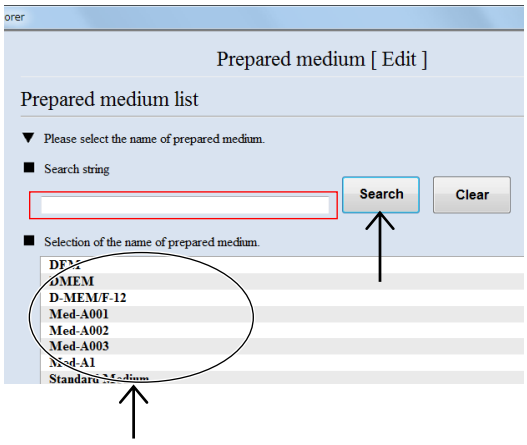
(2) Search for the prepared medium master data to be edited.

1. **Enter a full or partial prepared medium name into the Search string field and click the Search button.**
   If you do not know any characters of the prepared medium name, click the Search button without data entry.

   The found prepared medium names are listed in the Search result field.

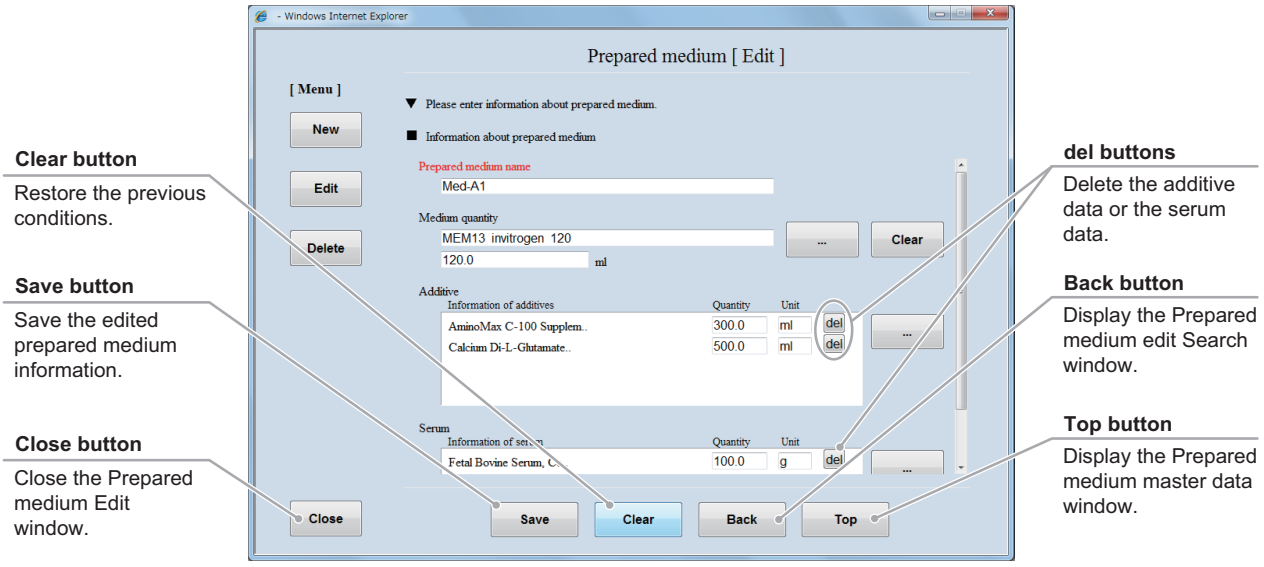
2. **Select a prepared medium to edit from the Search result field.**

   The selected prepared medium master data is displayed in the Prepared medium edit window.



(3) Edit the prepared medium master data.

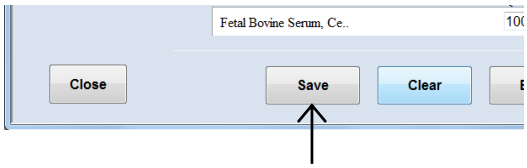
The procedure for editing the prepared medium master data is the same as the procedure for registering the new prepared medium master data. For the procedure for editing each item, see Section 5.3.5.1, “Registering new prepared medium master data.”



Prepared medium edit window

(4) Click the Save button.

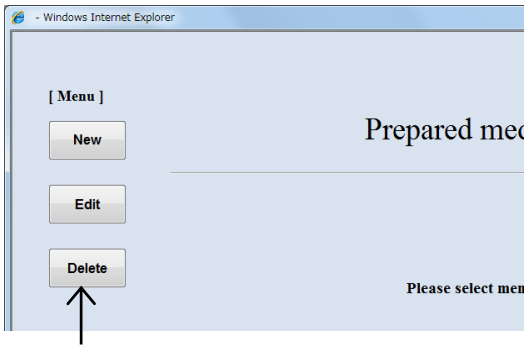
The edited prepared medium information is saved into the master data.



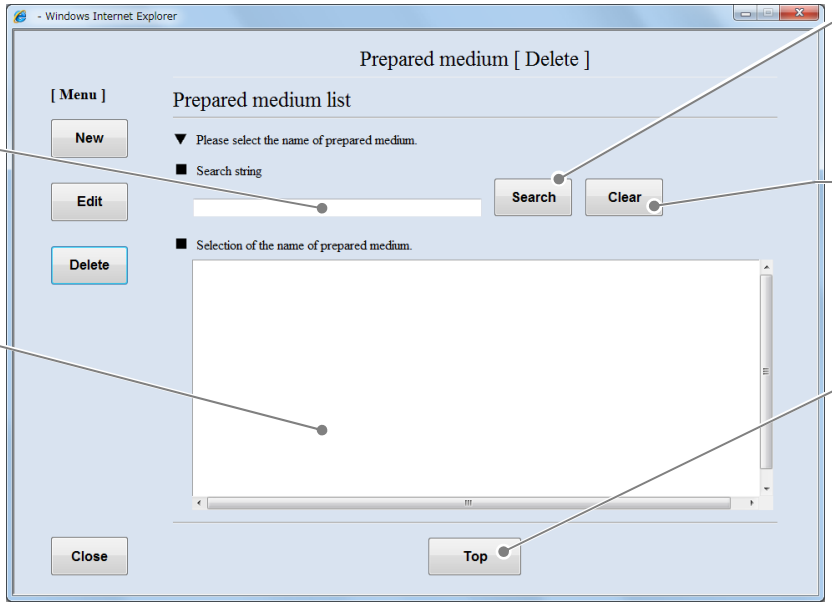
5.3.5.3 Deleting the prepared medium master data

(1) Click the Delete button in the Prepared medium master data window.

The Prepared medium delete search window is displayed.



Prepared medium master data window



Search string field
Enter a full or partial prepared medium name into this field.

Search result field
The found prepared medium names are listed in this field.

Search button
Start searching for the prepared medium name.

Clear button
Clear the Search string field.

Top button
Display the Prepared medium master data window.

Prepared medium delete search window

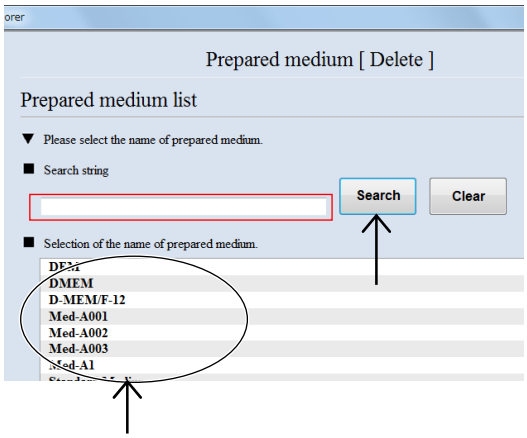
(2) Search for the prepared medium master data to be deleted.

1. Enter a full or partial prepared medium name into the Search string field and click the Search button.
If you do not know any characters of the prepared medium name, click the Search button without data entry.

The found prepared medium names are listed in the Search result field.

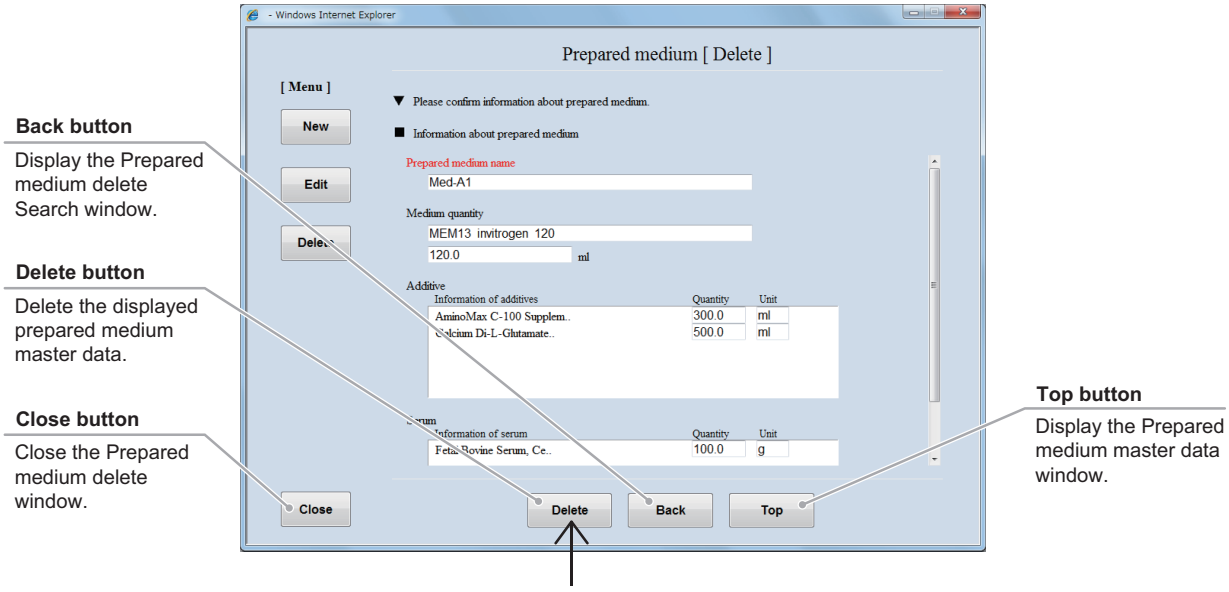
2. Select a prepared medium name to be deleted from the Search result field.

The selected prepared medium master data is displayed in the Prepared medium delete window.



(3) Click the Delete button.

The displayed prepared medium information is deleted from the master data.



Prepared medium delete window

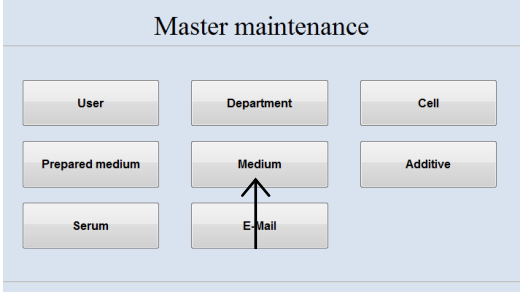
5.3.6 Medium Master Data

This section describes the procedure for registering, editing or deleting the medium master data.

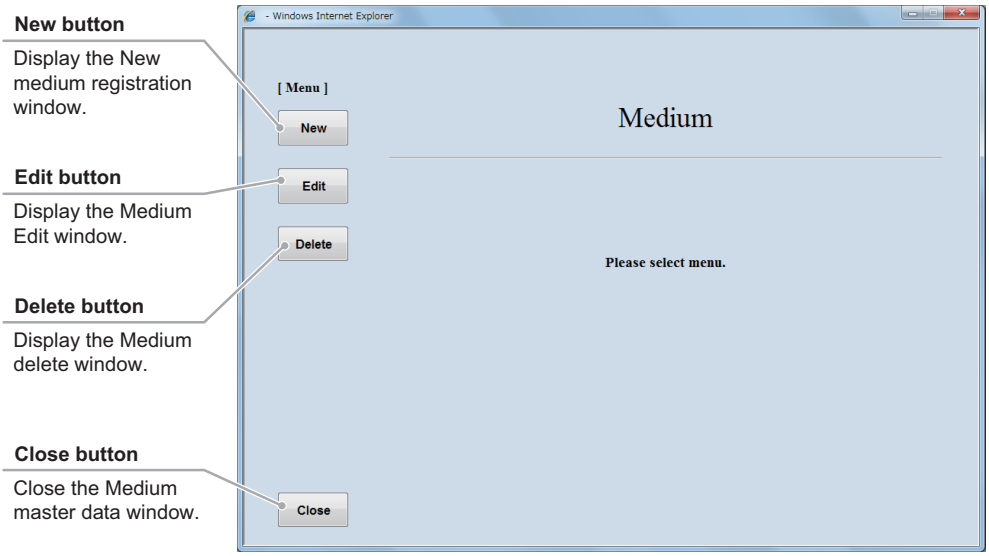
5.3.6.1 Registering new medium master data

(1) Click the Medium button in the Master data maintenance window.

The Medium master data window is displayed.



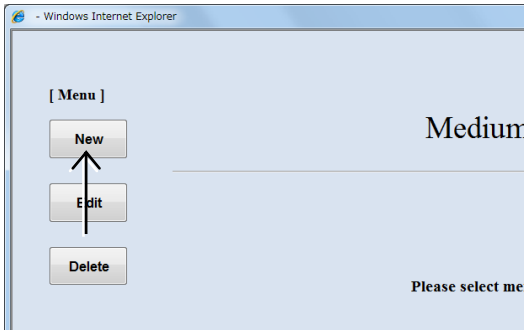
Master data maintenance window



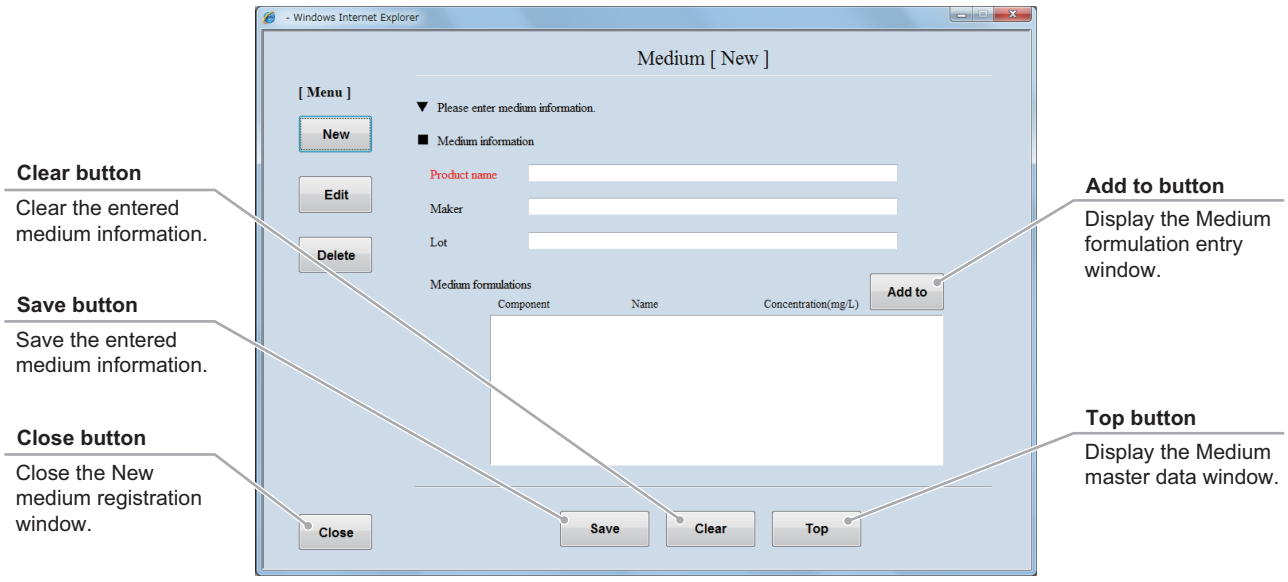
Medium master data window

(2) Click the New button.

The New medium registration window is displayed.



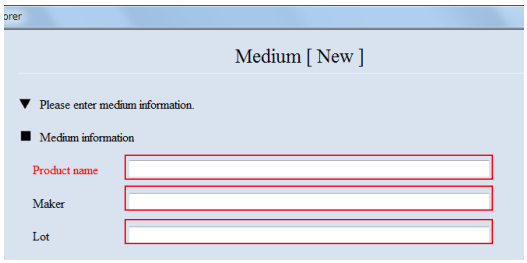
Fill in the items displayed in red. For other items, fill in if necessary.



New medium registration window

(3) Enter the medium name into the Product name field.

> When the Product name is already registered, it cannot be saved in the user master data.

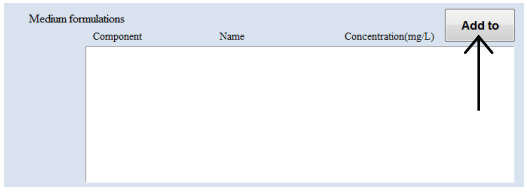


(4) Enter the supplier name of the medium into the Maker field.

(5) Enter the lot number into the Lot field.

(6) Enter the medium formulation information.

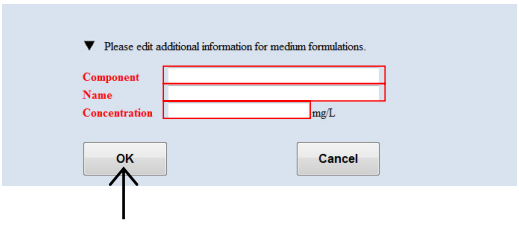
1. Click the Add to button to display the Medium formulation entry window.



2. Enter the medium formulation information into the Component, the Name, and the Concentration field.

3. Click the OK button.

The entered medium formulation information is saved and the New medium registration window is displayed.

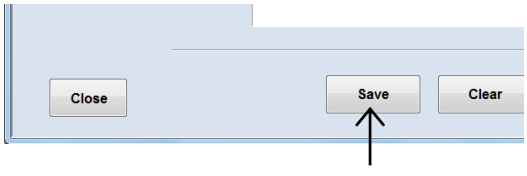


Medium formulation entry window

4. To enter other medium formulation information, repeat steps 1 to 3.

(7) Click the Save button in the New medium registration window.

The entered medium information is saved into the master data.



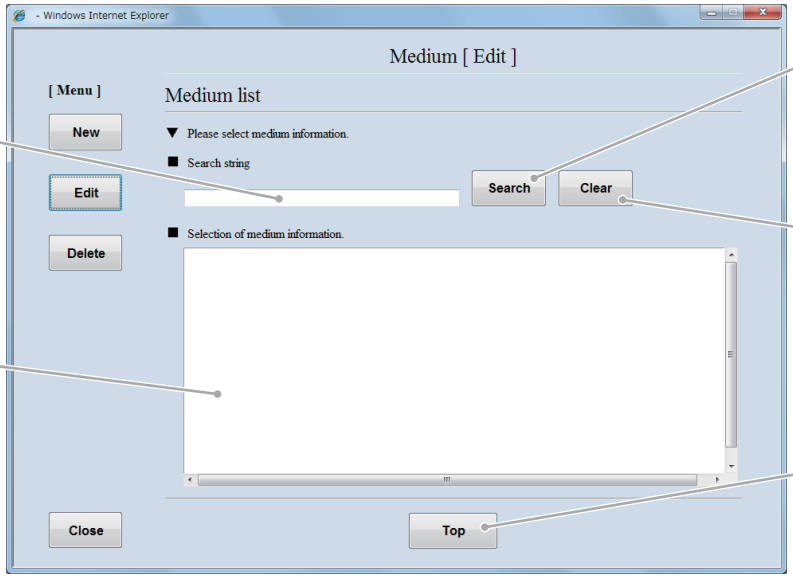
New medium registration window

5.3.6.2 Editing the medium master data

(1) Click the Edit button in the medium master data window.

The Medium edit search window is displayed.

Medium master data window



Search string field
Enter a full or partial medium name into this field.

Search result field
The found medium names are listed in this field.

Search button
Start searching for the medium name.

Clear button
Clear the Search string field.

Top button
Display the Medium master data window.

Medium edit search window

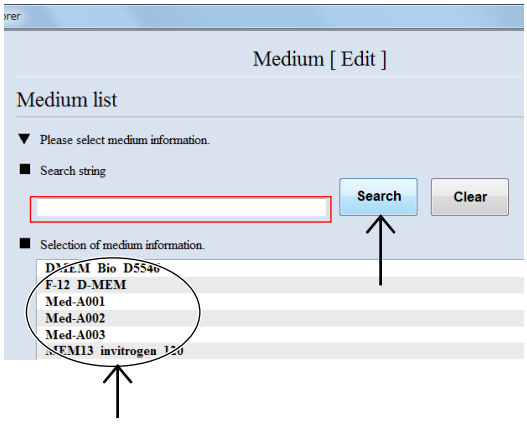
(2) Search for the medium master data to be edited.

1. Enter a full or partial medium name into the Search string field and click the Search button.
If you do not know any characters of the medium name, click the Search button without data entry.

The found medium names are listed in the Search result field.

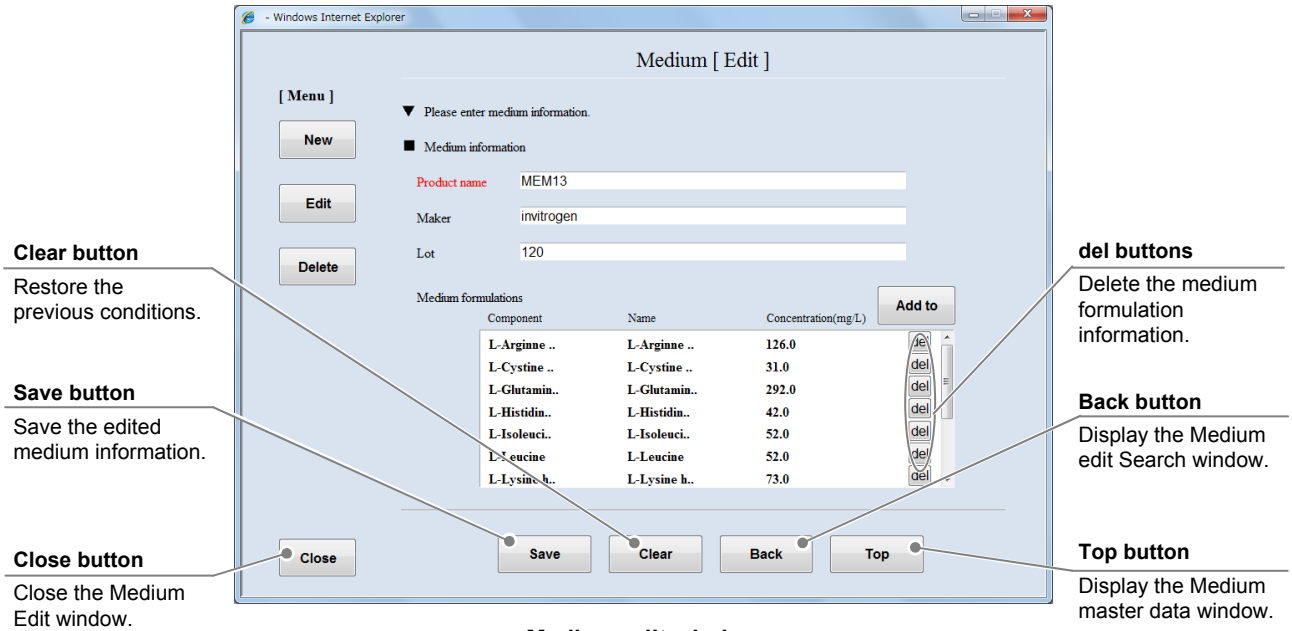
2. Select a medium name from the Search result field.

The selected medium master data is displayed in the Medium edit window.



(3) Edit the medium master data.

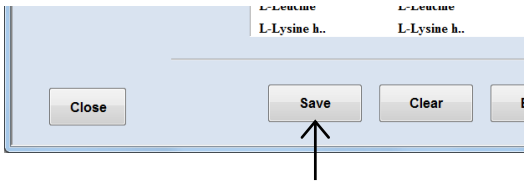
The procedure for editing the medium master data is the same as the procedure for registering the new medium master data. For the procedure for editing each item, see Section 5.3.6.1, “Registering new medium master data.”



Medium edit window

(4) Click the Save button.

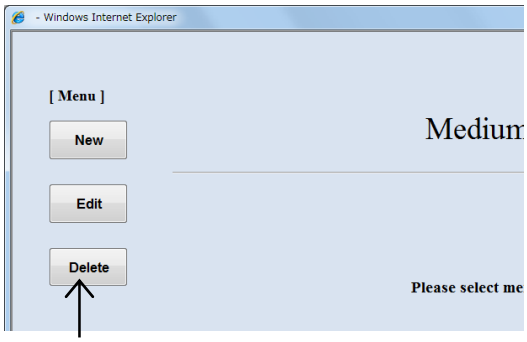
The edited medium information is saved into the master data.



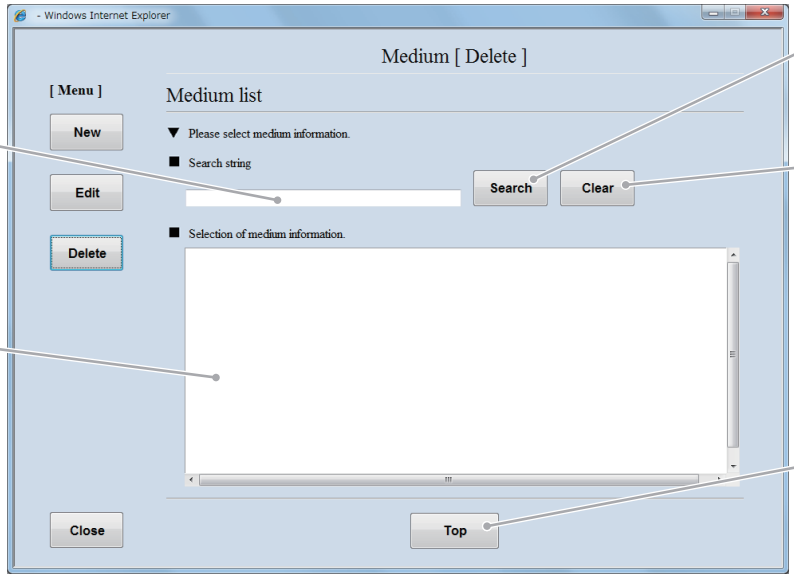
5.3.6.3 Deleting the medium master data

(1) Click the Delete button in the Medium master data window.

The Medium delete search window is displayed.



Medium master data window



Search string field
Enter a full or partial medium name into this field.

Search result field
The found medium names are listed in this field.

Search button
Start searching for the medium name.

Clear button
Clear the Search string field.

Top button
Display the Medium master data window.

Medium delete search window

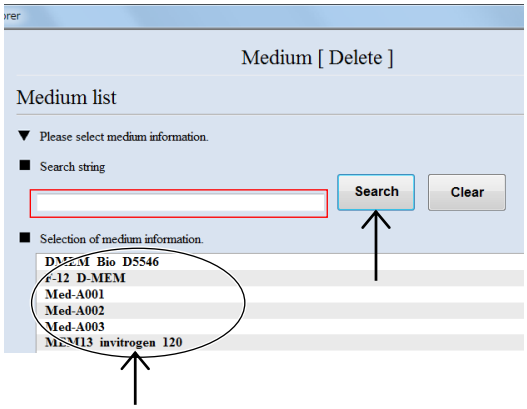
(2) Search for the medium master data to be deleted.

1. Enter a full or partial medium name into the Search string field and click the Search button.
If you do not know any characters of the medium name, click the Search button without data entry.

The found medium names are listed in the Search result field.

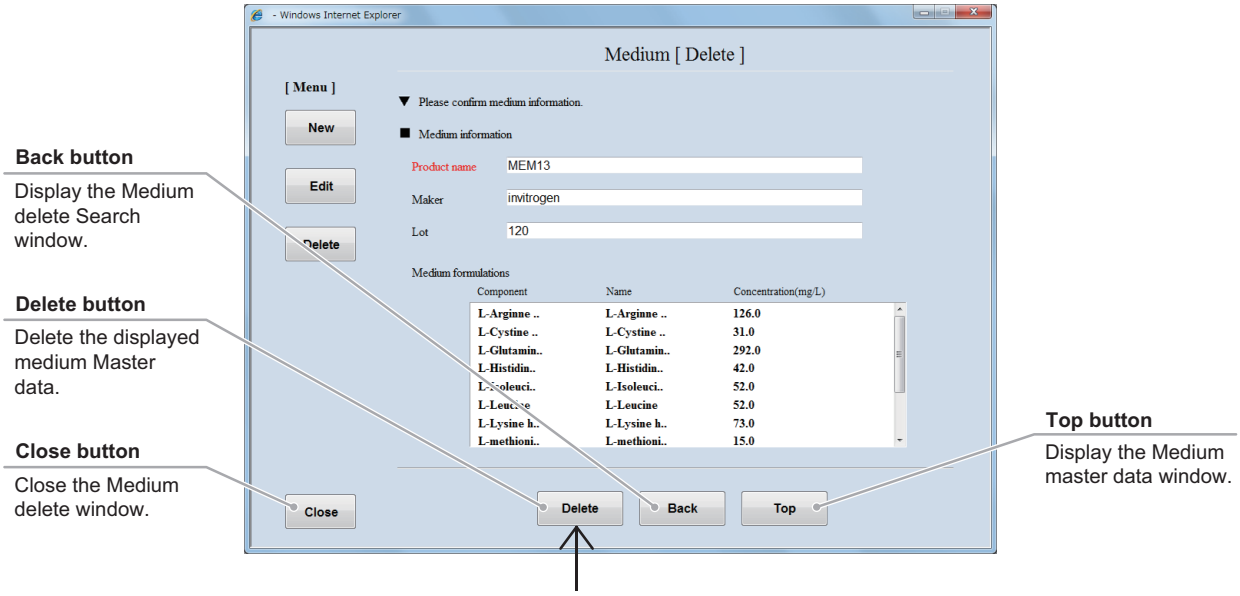
2. Select a medium name to be deleted from the Search result field.

The selected medium master data is displayed in the Medium delete window.



(3) Click the Delete button.

The displayed medium name is deleted from the master data.



Medium delete window

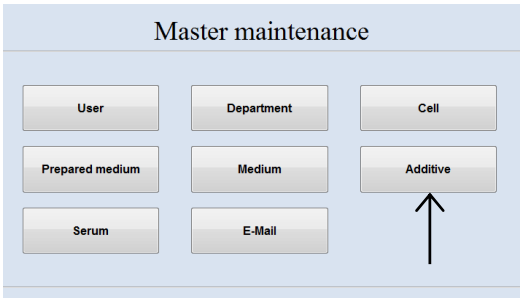
5.3.7 Additive Master Data

This section describes the procedure for registering, editing or deleting the additive master data.

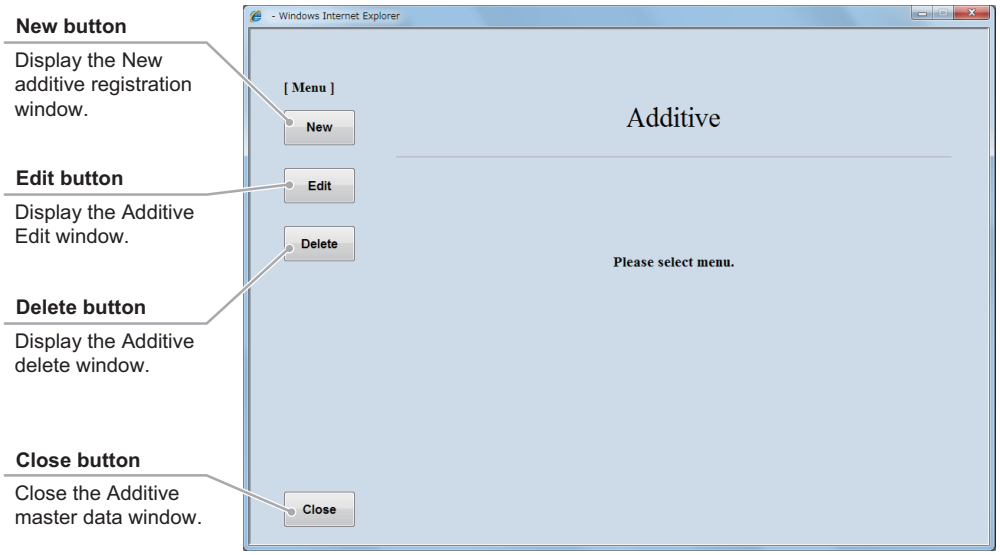
5.3.7.1 Registering new additive master data

(1) Click the Additive button in the Master data maintenance window.

The Additive master data window is displayed.



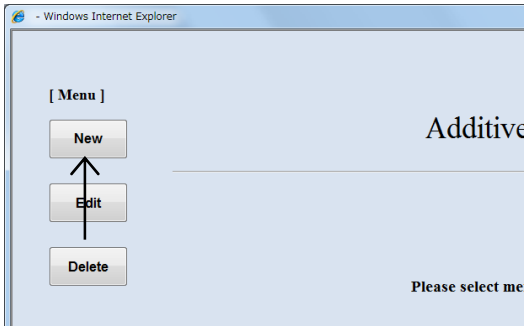
Master data maintenance window



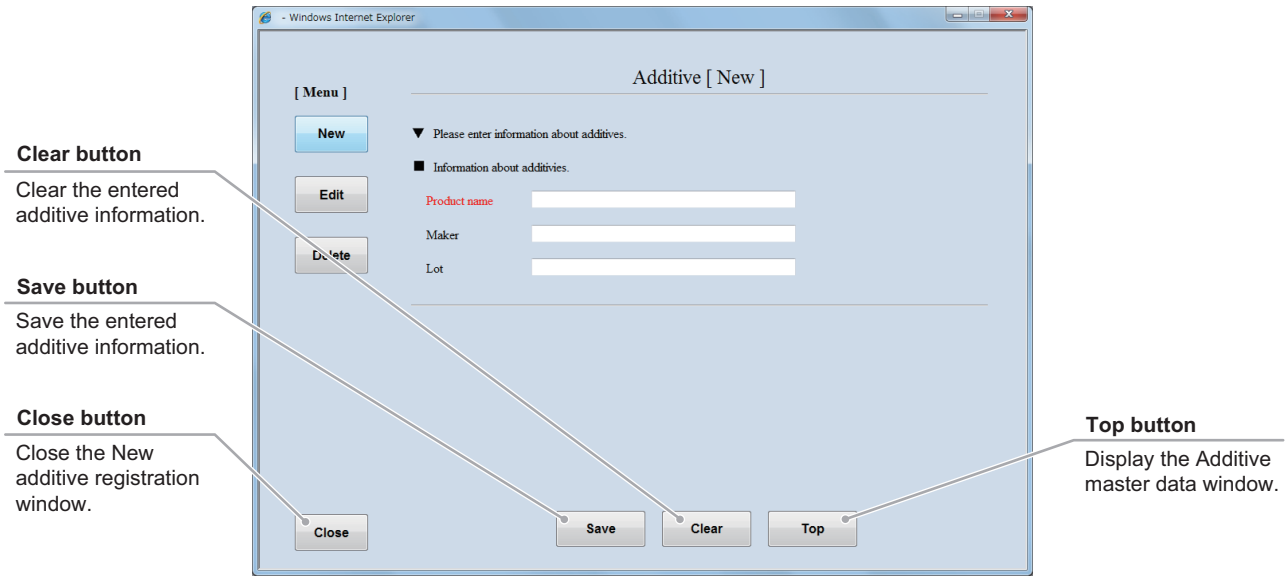
Additive master data window

(2) Click the New button.

The New additive registration window is displayed.



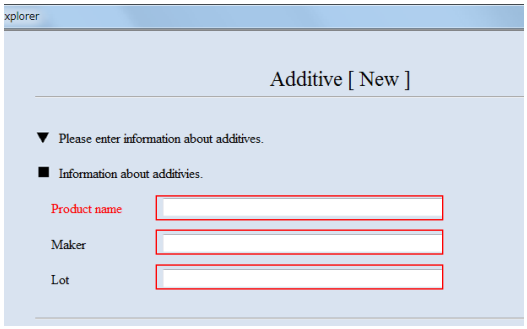
Fill in the items displayed in red. For other items, fill in if necessary.



New additive registration window

(3) Enter the additive name into the Product name field.

When the Product name is already registered, it cannot be saved in the additive master data.

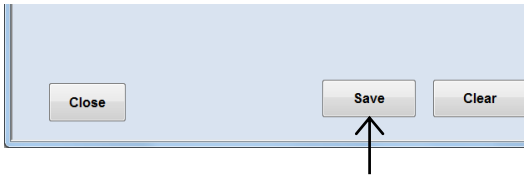


(4) Enter the supplier name of the medium into the Maker field.

(5) Enter the lot number into the Lot field.

(6) Click the Save button.

The entered additive information is saved into the master data.

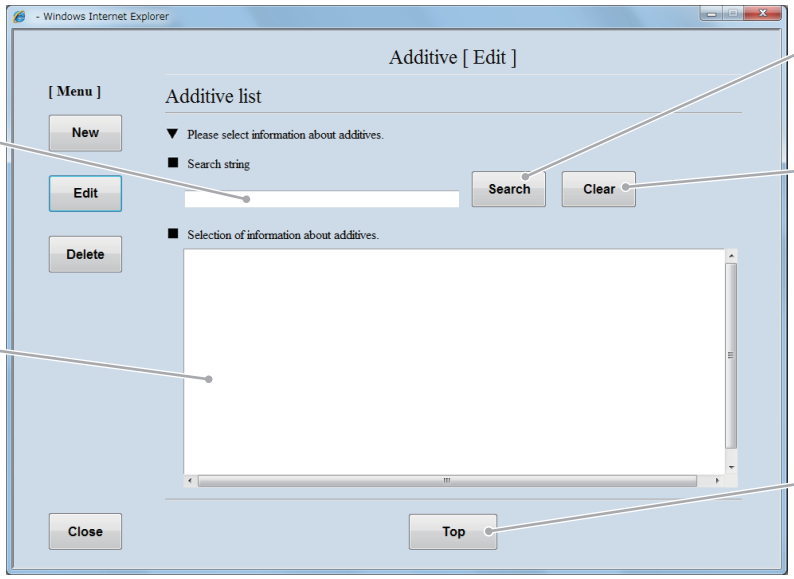


5.3.7.2 Editing the additive master data

(1) Click the Edit button in the Additive master data window.

The Additive edit search window is displayed.

Additive master data window



Search string field
Enter a full or partial additive name into this field.

Search result field
The found additive names are listed in this field.

Search button
Start searching for the additive.

Clear button
Clear the Search string field.

Top button
Display the Additive master data window.

Additive edit search window

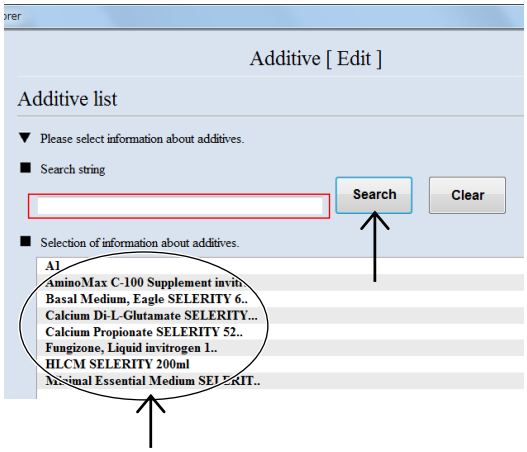
(2) Search for the additive master data to be edited.

1. Enter a full or partial additive name into the Search string field and click the Search button.
If you do not know any characters of the additive name, click the Search button without data entry.

The found additive names are listed in the Search result field.

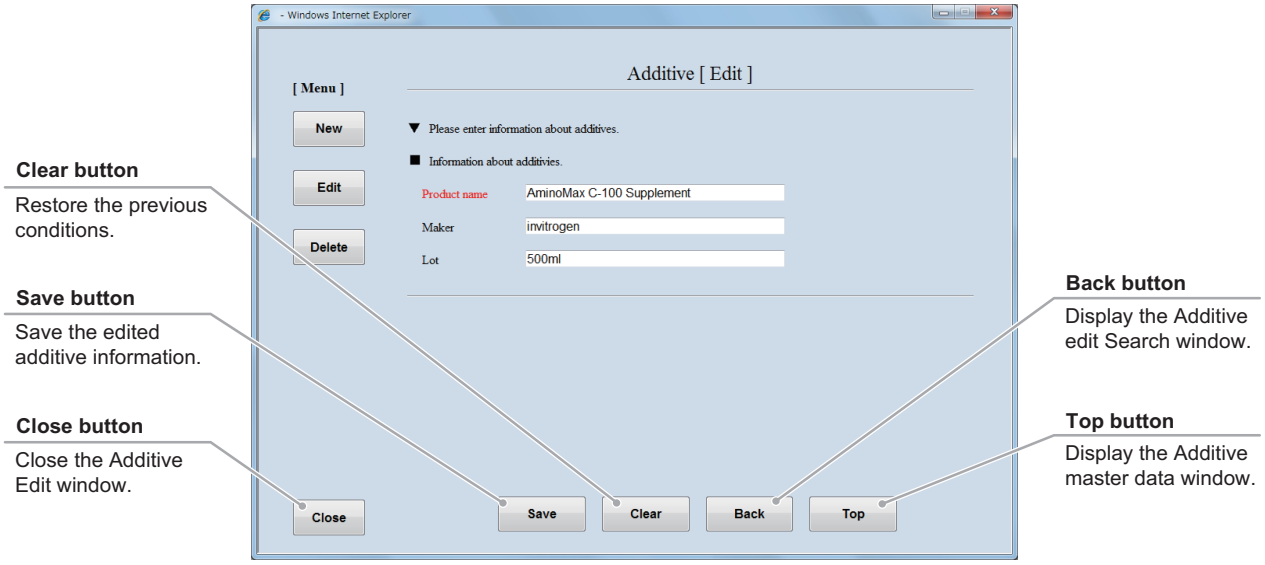
2. Select an additive name from the Search result field.

The selected additive master data is displayed in the Additive edit window.



(3) Edit the additive master data.

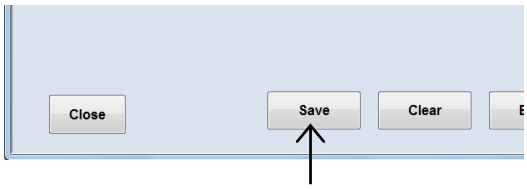
The procedure for editing the additive master data is the same as the procedure for registering the new additive master data. For the procedure for editing each item, see Section 5.3.7.1, “Registering new additive master data.”



Additive edit window

(4) Click the Save button.

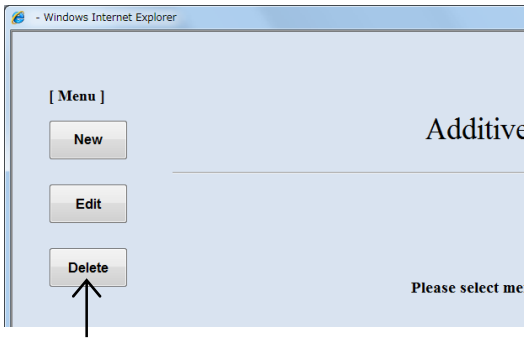
The edited additive information is saved into the master data.



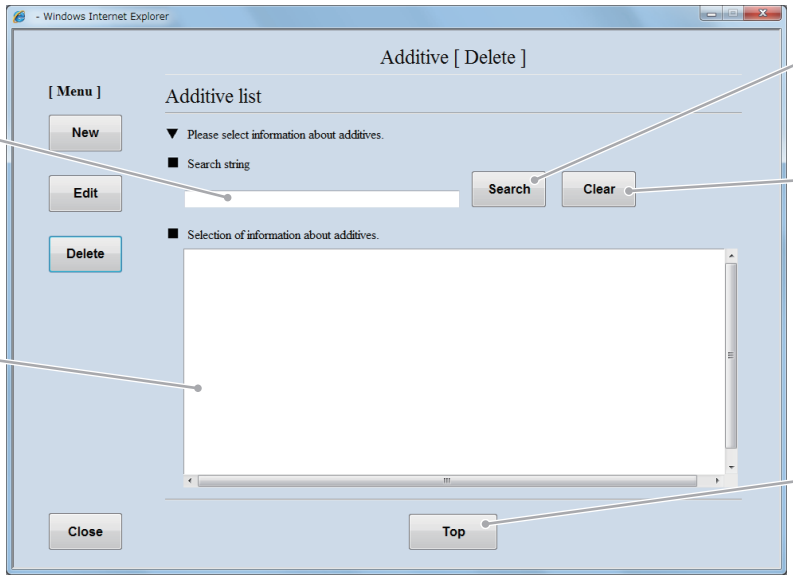
5.3.7.3 Deleting the additive master data

(1) Click the Delete button in the Additive master data window.

The Additive delete search window is displayed.



Additive master data window



Search string field
Enter a full or partial additive name into this field.

Search result field
The found additive names are listed in this field.

Search button
Start searching for the additive.

Clear button
Clear the Search string field.

Top button
Display the Additive master data window.

Additive delete search window

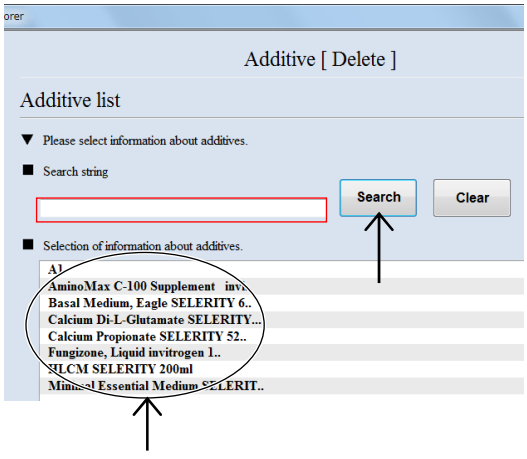
(2) Search for the additive master data to be deleted.

1. Enter a full or partial additive medium name into the Search string field and click the Search button.
If you do not know any characters of the additive name, click the Search button without data entry.

The found additive names are listed in the search result field.

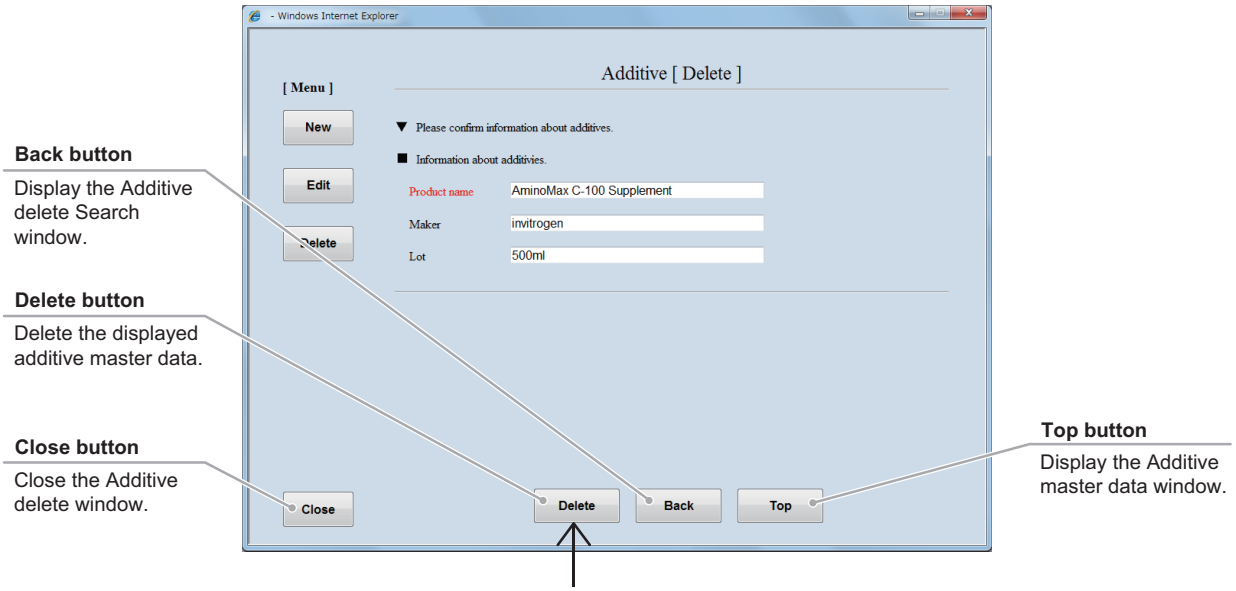
2. Select an additive name to be deleted from the search result field.

The selected additive master data is displayed in the Additive delete window.



(3) Click the Delete button.

The displayed additive name is deleted from the master data.



Additive delete window

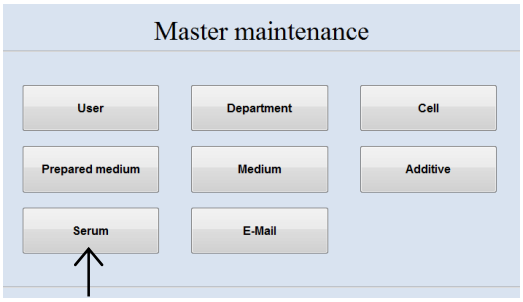
5.3.8 Serum Master Data

This section describes the procedure for registering, editing or deleting the serum master data.

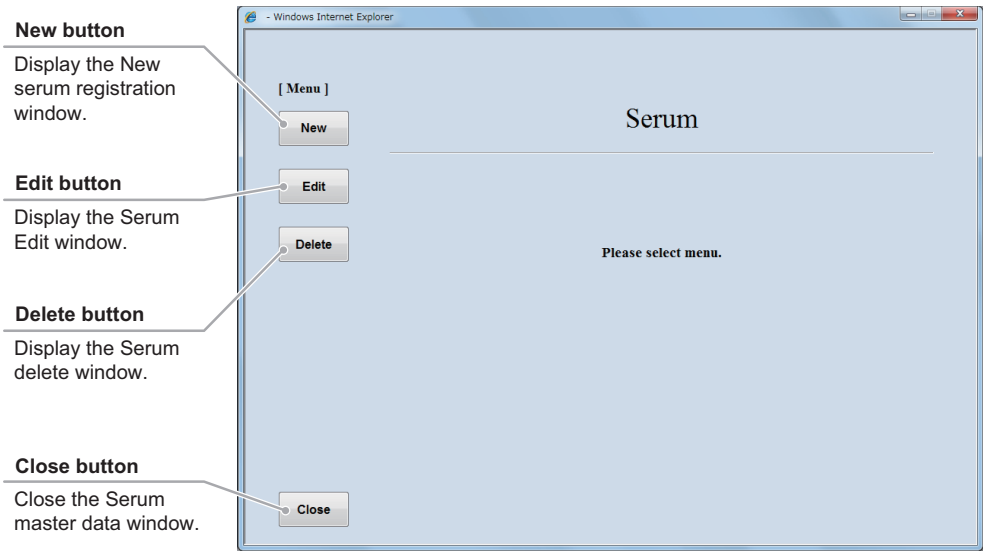
5.3.8.1 Registering new serum master data

(1) Click the Serum button in the Master data maintenance window.

The Serum master data window is displayed.



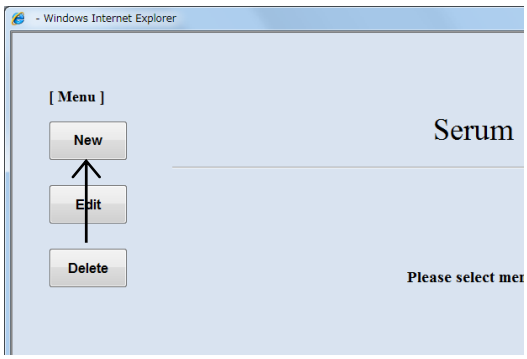
Master data maintenance window



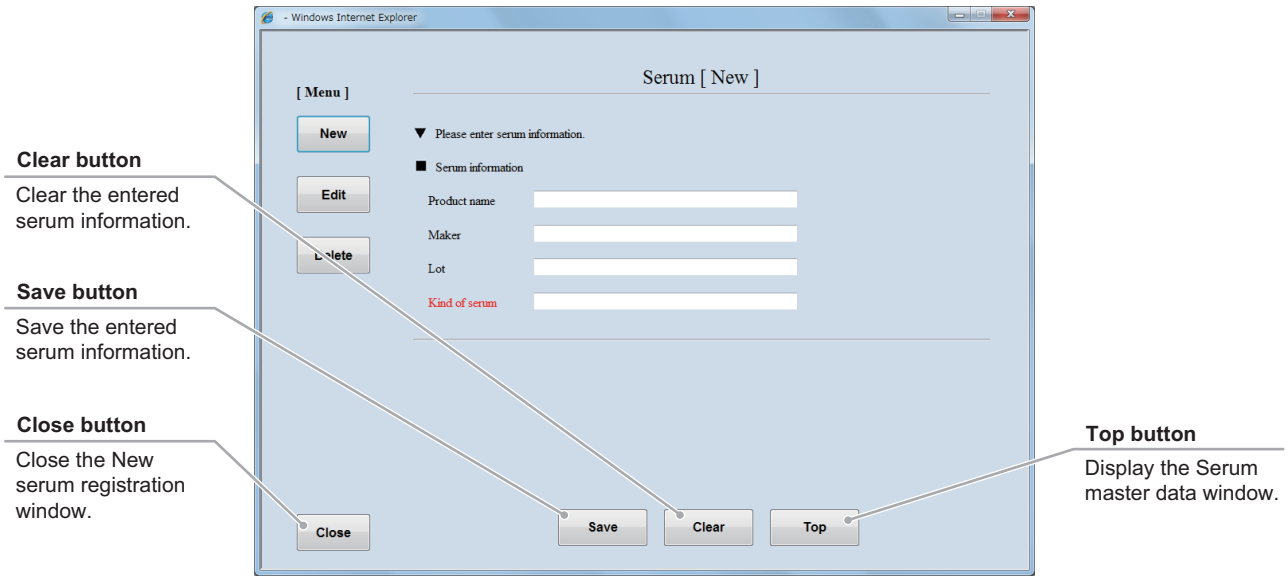
Serum master data window

(2) Click the New button.

The New serum registration window is displayed.



Fill in the items displayed in red. For other items, fill in if necessary.



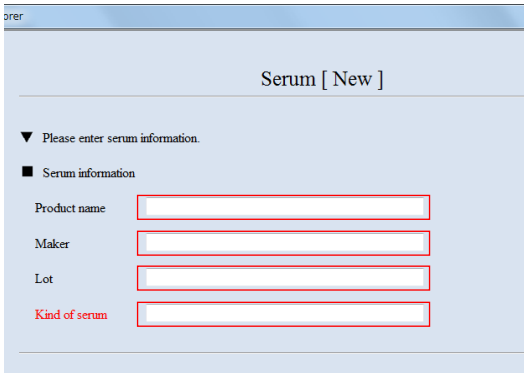
New serum registration window

(3) Enter the serum name into the Product name field.

(4) Enter the supplier name of the serum into the Maker field.

(5) Enter the lot number into the Lot field.

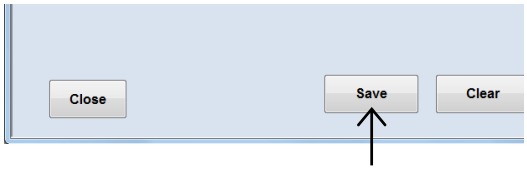
(6) Enter the kind of the serum into the Kind of serum field.



> When the Kind of serum is already registered, it cannot be saved in the user master data.

(7) Click the Save button.

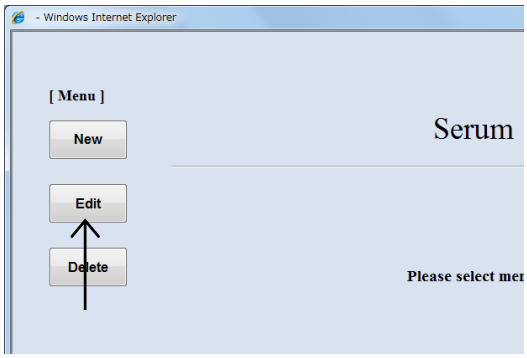
The entered serum information is saved into the master data.



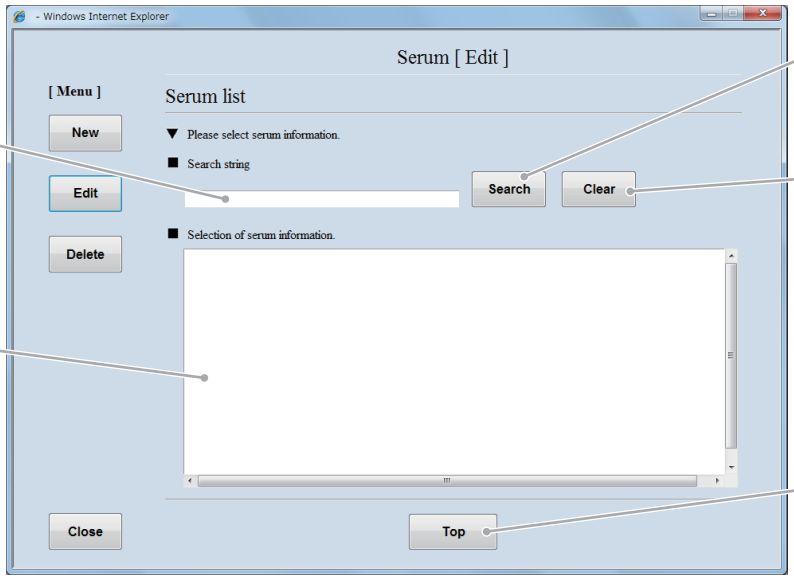
5.3.8.2 Editing the serum master data

(1) Click the Edit button in the Serum master data window.

The Serum edit search window is displayed.



Serum master data window



Search string field
Enter a full or partial serum name into this field.

Search result field
The found serum names are listed in this field.

Search button
Start searching for the serum name.

Clear button
Clear the Search string field.

Top button
Display the Serum master data window.

Serum edit search window

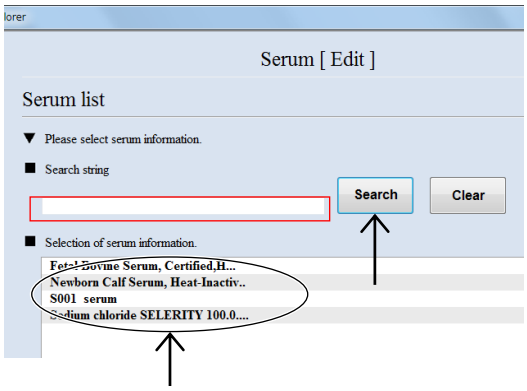
(2) Search for the serum master data to be edited.

1. Enter a full or partial serum name into the Search string field and click the Search button.
If you do not know any characters of the serum name, click the Search button without data entry.

The found serum names are listed in the Search result field.

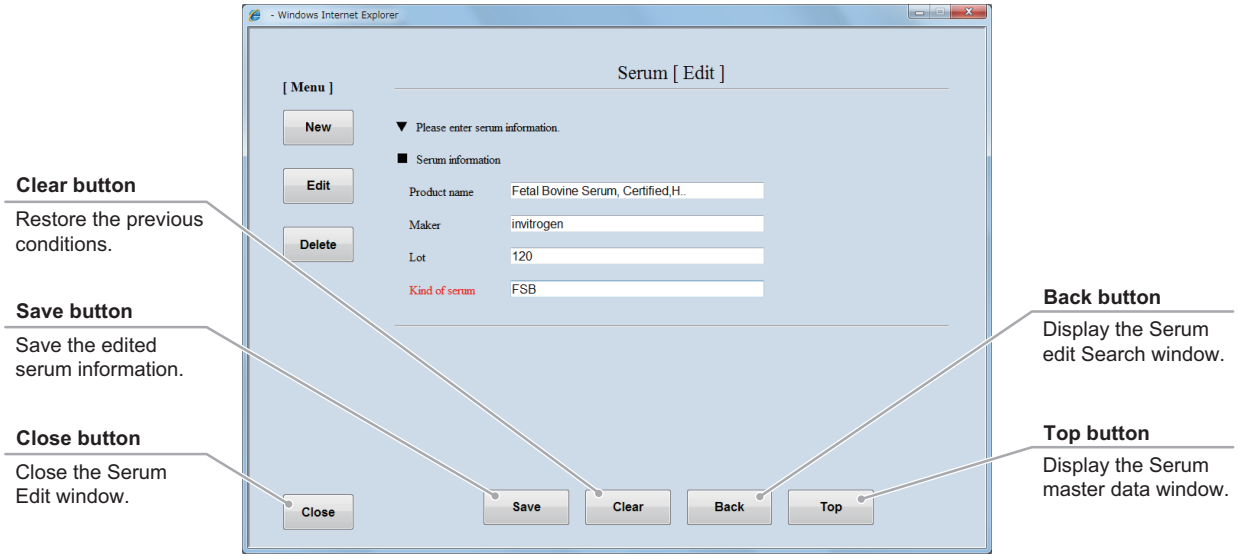
2. Select a serum name from the Search result field.

The selected serum master data is displayed in the Serum edit window.



(3) Edit the serum master data.

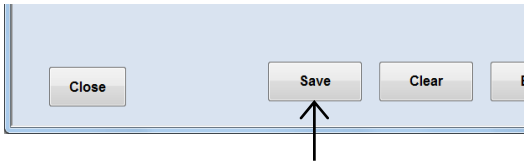
The procedure for editing the serum master data is the same as the procedure for registering the new serum master data. For the procedure for editing each item, see Section 5.3.8.1, “Registering new serum master data.”



Serum edit window

(4) Click the Save button.

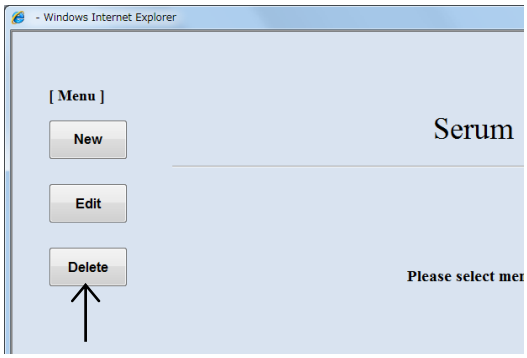
The edited serum information is saved into the master data.



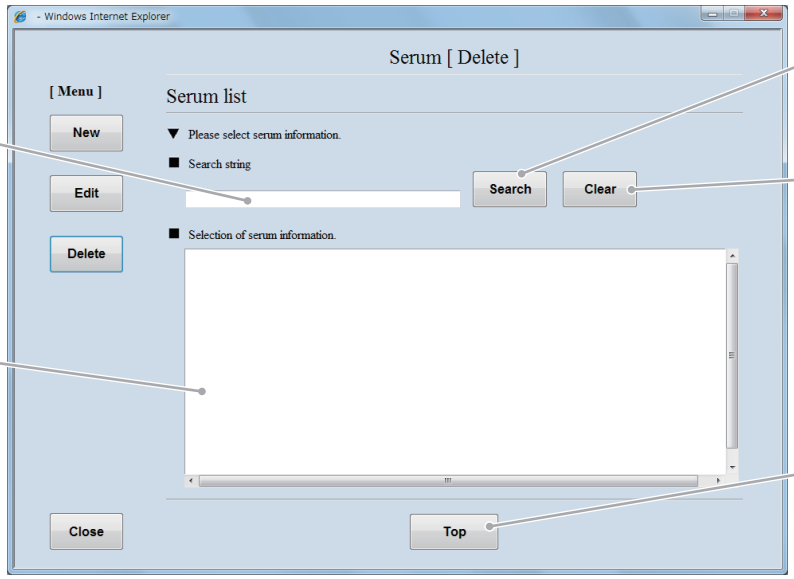
5.3.8.3 Deleting the serum master data

(1) Click the Delete button in the serum master data window.

The Serum delete search window is displayed.



Serum master data window



Search string field
Enter a full or partial serum name into this field.

Search result field
The found serum names are listed in this field.

Search button
Start searching for the serum name.

Clear button
Clear the Search string field.

Top button
Display the Serum master data window.

Serum delete search window

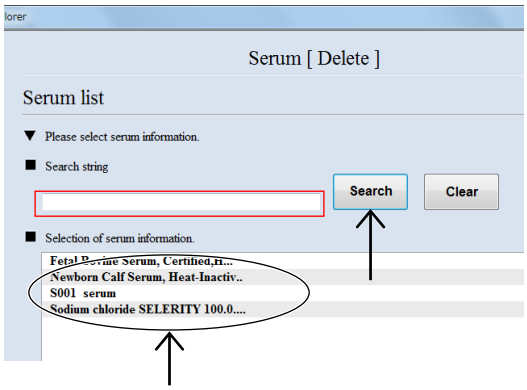
(2) Search for the serum master data to be deleted.

1. Enter a full or partial serum name into the Search string field and click the Search button.
If you do not know any characters of the serum name, click the Search button without data entry.

The found serum names are listed in the Search result field.

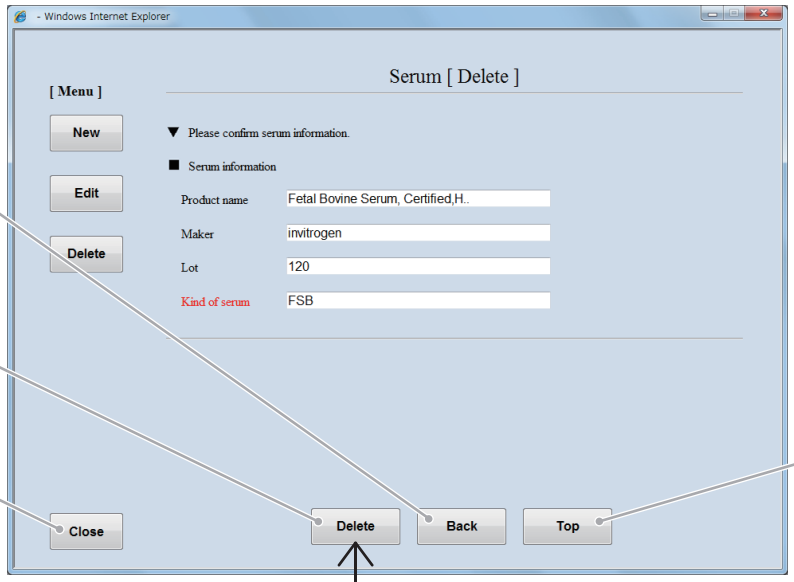
2. Select a serum name to be deleted from the Search result field.

The selected serum master data is displayed in the Serum delete window.



(3) Click the Delete button.

The displayed serum name is deleted from the master data.



Back button

Display the Serum delete Search window.

Delete button

Delete the displayed serum master data.

Close button

Close the Serum delete window.

Top button

Display the Serum master data window.

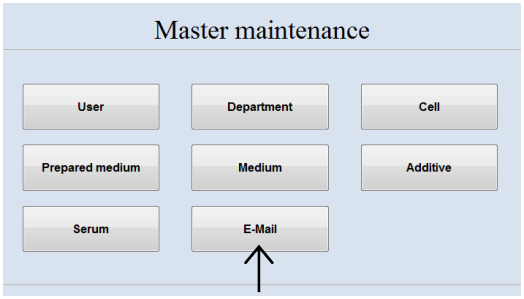
Serum delete window

5.3.9 E-mail Notification Setting

This section describes the procedure for configuring the e-mail notification function, which provides notification of the occurrence of problems on the equipment via e-mail.

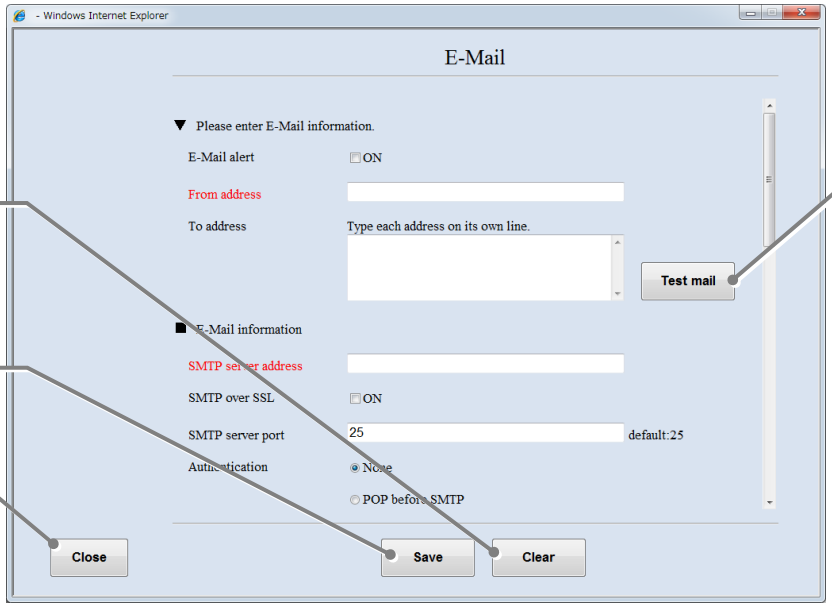
(1) Click the E-mail button in the Master data maintenance window.

The E-mail setting window is displayed.



Master data maintenance window

Fill in the items displayed in red. For other items, fill in if necessary.



Clear button

Clear the entered information.

Save button

Save the entered information.

Close button

Close the E-mail setting window.

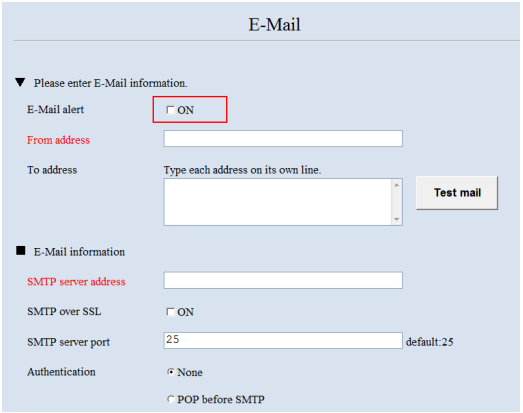
Test mail button

Send a test mail to the sender address (From address) based on the current setting.

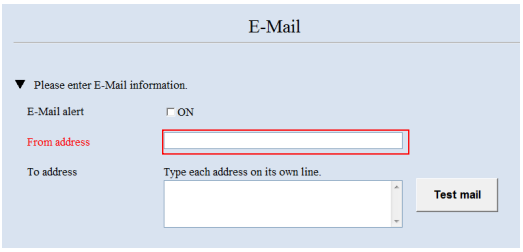
E-mail setting window

(2) Select ON for the E-Mail alert to enable the E-mail notification setting.

OFF is selected by default.



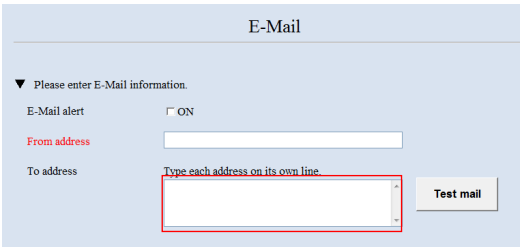
(3) Enter the e-mail address of the sender.



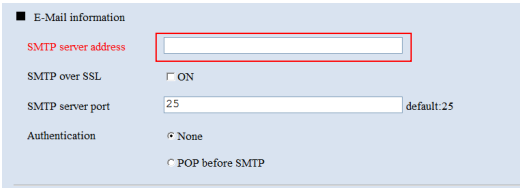
The From address must be entered.

(4) Enter the destination e-mail address(es) in the To address field.

To enter more than one destination address, enter a line break between addresses.



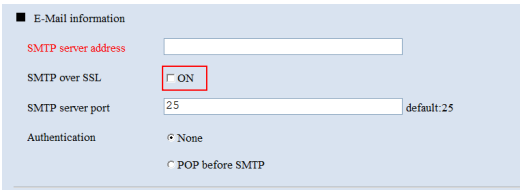
(5) Enter the address of the e-mail (SMTP) server.



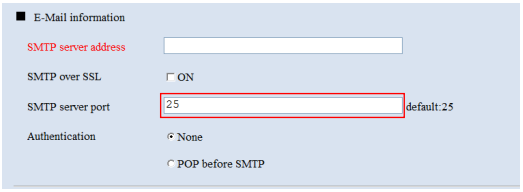
The SMTP server address must be entered.

For details on the setting of the e-mail (SMTP) server, ask the network administrator of your facility.

(6) Check the SMTP over SSL check box when using SSL to encrypt the communication between a user and the mail server.



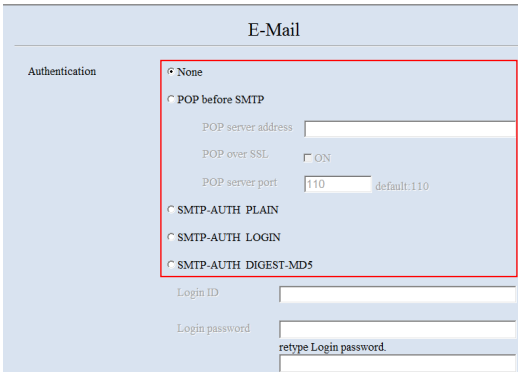
(7) Enter the port number of the e-mail (SMTP) server.



(8) Select an SMTP user authentication method.

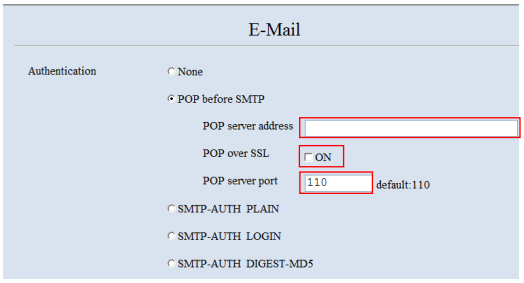
Select it from POP before SMTP, SMTP-AUTH PLAIN, SMTP-AUTH LOGIN, and SMTP-AUTH DIGEST-MD5.

Select None if the user authentication method is not used.



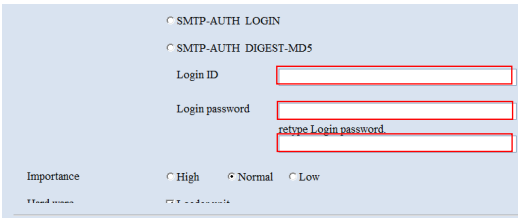
If POP before SMTP is selected, enter the address and port number of the POP server.

Check the SMTP over SSL check box when using SSL to encrypt the communication between the mailer and the mail server when receiving an email.



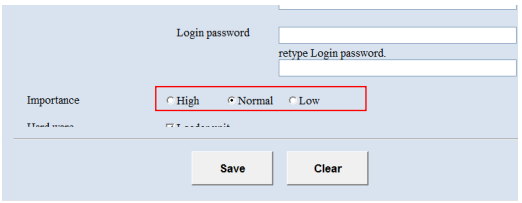
(9) Enter the user ID and password for the SMTP server and the POP server.

> When the SMTP AUTH (SMTP Authentication) feature is used on the SMTP server, the password is must be entered.



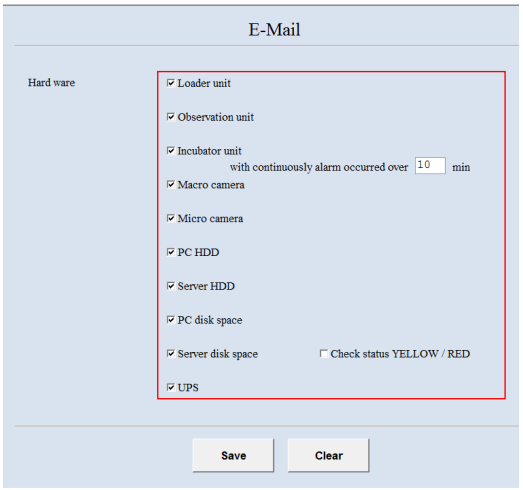
(10) Select the importance (High, Normal, or Low) of the notification mail.

Normal is selected by default.



(11) Select item(s) to be monitored for e-mail notification.

If an error occurs on the selected item, notification is sent via e-mail.



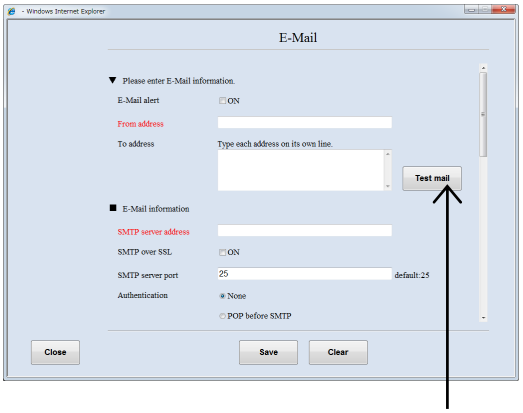
Monitored items

Loader unit:	The loader unit
Observation unit:	The observation unit
Incubator unit:	The environmental unit The value for the “Incubator unit with continuously alarm occurred over” can be specified in minutes. Default value: 10
Macro camera:	The macro camera
Micro camera:	The micro camera
PC HDD:	The hard disk drive of the control PC
Server HDD:	The hard disk drive of the file server
PC disk space:	The disk space in the hard disk drive of the control PC
Server disk space:	The disk space in the hard disk drive of the file server
UPS:	The uninterruptible power system

(12) Click the Test mail button to send a test mail to check that the settings are correctly configured.

A notification e-mail is sent to the mail address of the sender.

If the notification e-mail is not sent, check the e-mail settings.



(13) Click the Save button.

The entered e-mail notification settings are saved.