

Nikon

**Application for Inverted Research Microscope
ECLIPSE Ti2 Series**

Ti2 Control

Ver.1.1.0

Instruction Manual

(for Windows)

Introduction

Thank you for purchasing a Nikon product.

This manual describes how to install and use the application software “Ti2 Control” for Nikon Inverted Research Microscope ECLIPSE Ti2 series.

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

Refer to the hardware manual for detailed information on how to connect your microscope and explanations about system configuration.

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- The equipment described in this manual might differ in its appearance from that of the actual product.
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- 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 might be impaired.
- The images shown in this document are for reference only, and may appear somewhat different from those actual application images.

Prerequisite knowledge

This manual assumes a basic familiarity with Windows.

If you come across unfamiliar terms or operations while reading through this manual, see the user's manual for your version of PC.

Screens used in this manual

This manual describes various operations in Windows 7 and Windows 10 by showing Windows 7 screens as examples. Procedures are virtually identical for Windows 7 and Windows 10.

Depending on the specific operating system (hereinafter referred to as OS) type or version, the actual appearance of the screen or operations may not correspond precisely to the example screens shown at various points throughout the manual. For information on operations or screens specific to your version of Windows, see the user's manual of your version of Window.

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Disclaimer

Nikon shall not be liable for any damage or problems experienced by a user or third-party caused by the use of this software.

Notes on Using "Ti2 Control"

- This application is used to make settings for the Ti2-E/Ti2-A, control the Ti2-E, and display the Ti2-A status.
- For the first use of the Ti2-E or Ti2-A, always perform microscope system settings with the setup function, and transfer this information to the microscope system using "SEND."
- When setup information is transferred to the microscope system, the previous information held in memory is overwritten.
- We recommend that the information (including arbitrary registrations performed with the setup function or other setting function) be assigned a file name and saved on the application side using the [Export] function in the [Import/Export] area on the setup screen.
- When controlling the microscope main body by the application other than Ti2 Control, operation from Ti2 Control on the Windows PC can be limited.
"Locked" is shown in red on the top right of the Ti2 Control screen on the Windows PC during the limiting period.

Screens used in this manual

Menus and items displayed in "Ti2 Control" vary depending on the microscope system configuration and the connected motorized devices.

The descriptions in this manual are mainly based on the screens of the Ti2-E.

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Chapter

1

Preparation

This chapter describes the hardware and software required for “Ti2 Control” and how to install this application software.

1.1 Hardware and Software Requirements

⚠ CAUTION

Install the application before connecting your PC and the microscope system (Ti2-E, Ti2-A).

Item	Specifications
Processor	1GHz or faster processor
LAN	1000 Base-T
RAM	1 GB or more (for 32-bit OS) 2GB or more (64-bit OS)
Storage	There shall be 100 MB or more free space.
Resolution	Shall support 1280×1024-dot true color mode (recommended).
Video RAM	128MB or more
Platform	Windows 7 Professional SP1 or later (32-bit or 64-bit Japanese or English) Windows 10 Pro (64-bit Japanese or English)
Remarks	Installer The “Ti2 Control” installer program can be downloaded from the Internet. “Ti2 Control” is not guaranteed to be compatible with all personal computers. Please contact your distributor for detailed compatibility information.

1.2 Installing the Application

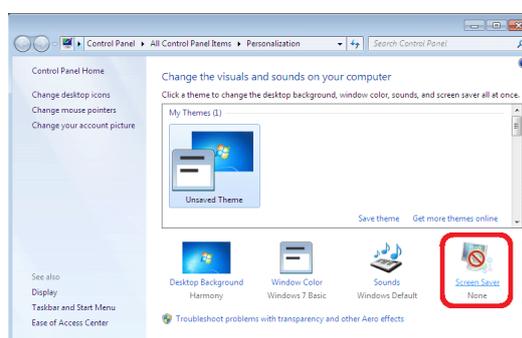
This section describes how to install the application.

CAUTION

- Be sure to install the application before connecting a PC to the microscope system using a USB. Connection using a USB before the installation may disable the correct installation of the device driver, making microscope system recognition by the PC impossible.
- To install “Ti2 Control,” you must log in to your PC with a user account with administrator rights.
- The uninstallation procedure for “Ti2 Control” is the same as that for other Windows applications.
- Uninstalling “Ti2 Control” from a PC in which both “Ti2 Control” and NIS-Elements are installed deletes the device driver, making Ti2 microscope recognition by NIS-Elements impossible. Do not uninstall “Ti2 Control” from a PC in which both “Ti2 Control” and NIS-Elements are installed.

1. Before installing “Ti2 Control,” end all system-resident programs, such as the screen saver and anti-virus software.

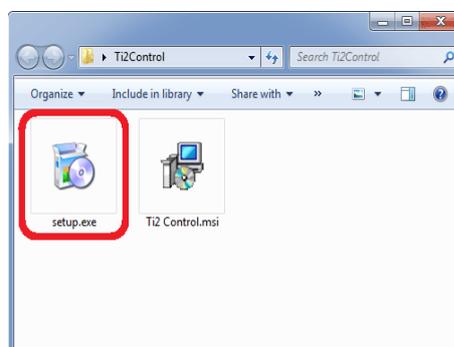
Preparing for installation



2. Execute the setup wizard.

To install “Ti2 Control,” start the downloaded setup wizard (setup.exe) and follow the displayed messages.

Starting the setup wizard



3. The installation destination setting screen appears when [Next] is clicked on the welcome screen of the setup wizard.

Welcome screen of the setup wizard



4. On the installation destination setting screen, specify a folder to install “Ti2 Control.”

The following are the default installation destination folders.

32-bit version: C:\Program Files\Nikon\Ti2 Control

64-bit version: C:\Program Files(x86)\Nikon\Ti2 Control

To change folders, click [Browse...].

5. Specify the user that will use “Ti2 Control.”

Everyone: All users that will use this PC are applicable.

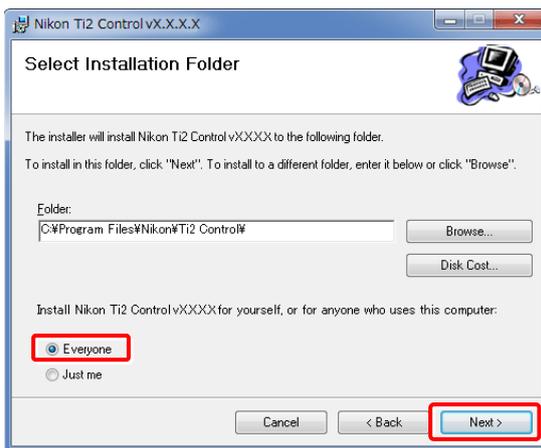
Just me: Only the user who is currently logged in is applicable.

6. After specifying a folder, click [Next] to display the installation screen.

7. Click [Next] on the installation confirmation screen to start the installation.

If the [User Account Control] confirmation screen is displayed, click [Yes] to start the installation.

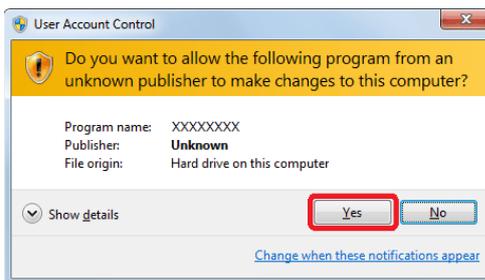
▼ Installation destination setting screen



▼ Installation screen

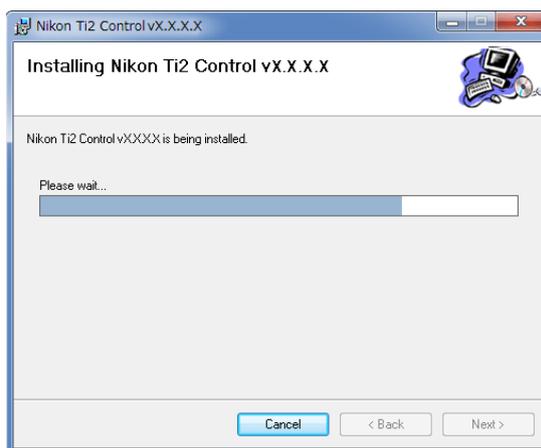


▼ [User Account Control] confirmation screen



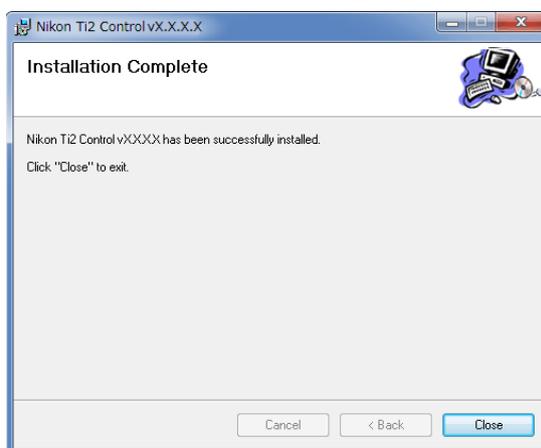
The installation progress screen appears.

▼ Installation progress screen



When installation is completed, the screen as shown on the left appears.
Click [Close] to end the installation procedure.

▼ Installation Complete screen



This completes the installation of “Ti2 Control.”

Installing the driver

After the “Ti2 Control” installation, connect the PC to the microscope system (the Ti2-CTRE controller for Ti2-E in the case of the Ti2-E, or the microscope main body in the case of the Ti2-A) via a USB connector. The driver is installed automatically if the microscope system is connected to the PC for the first time.

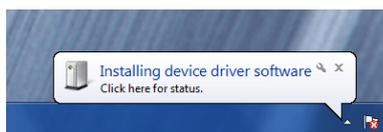
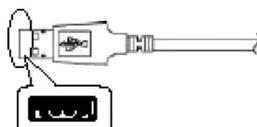
1. **Connect USB connector A of the USB cable to the PC.**
2. **Connect the other end of the cable to the USB connector of the microscope system.**

The detection wizard start screen appears.

After they are connected, the driver is installed automatically.

Installation will end.

▼ USB connector A



1.3 Starting and Exiting the Application

This section describes how to start and exit the application.

There are several ways to start or exit the application. Here is explained the typical method of starting from the [Start] menu and exiting by clicking [x] in the upper right corner of the operation screen.

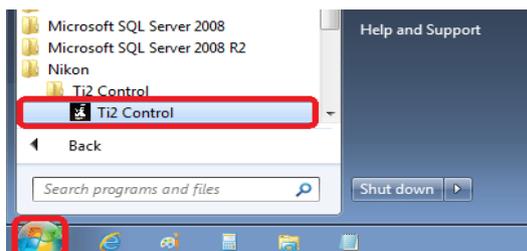
1.3.1 Starting the Application

Make sure that the microscope system is connected to the PC, and then start the PC.

1. Click the [Start] button.
2. Click [All Programs], [Nikon], [Ti2 Control], and then [Ti2 Control].

The “Ti2 Control” splash screen appears.

▼ Starting the application

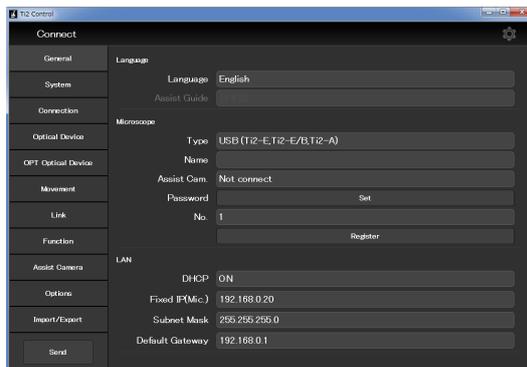


3. The microscope information is read and “Ti2 Control” starts.

CAUTION

Do not unplug the USB cable that connects to the microscope after starting “Ti2 Control.”

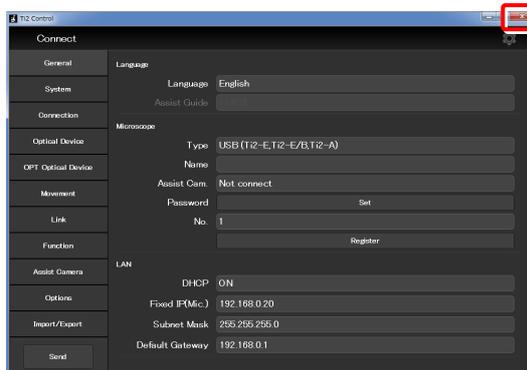
▼ Starting the application



1.3.2 Exiting the Application

1. Click the [x] button in the upper right corner of the screen.

▼ Exiting the application



Chapter

2

Setup

This chapter describes how to register new microscope system settings when using the “Ti2 Control” application for the first time.

When microscope system settings are changed, this setup process allows only the relevant information of the microscope system to be changed.

2.1 Basic Setup Operations and Screens

2.1.1 Configuration of the Setup Screen

■ Setting item selection area

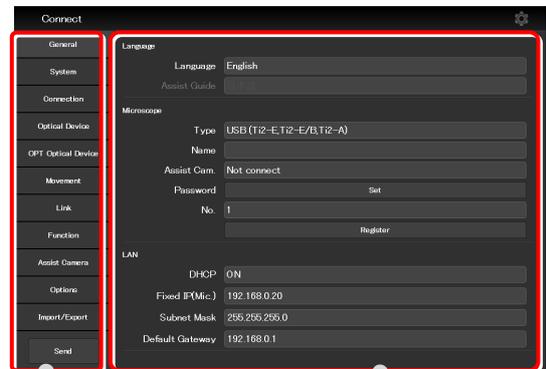
Click each button to change a setting item.

■ Setting area

Click a desired button in the setting item selection area to change the display items and settings.

✔ **Differences by microscope main body**
The setting items for the Ti2-E differ from those for the Ti2-A.

▼ Configuration of the setup screen



Setting item selection area

Setting area

2.1.2 Setting Items

The setup function consists of 12 setting screens and one button:

✔ SUPPLEMENTAL REMARKS

Depending on the window size, not all items may be displayed.
Scroll the setting item selection area to select [General] or [Information].

- [General]: Basic settings of the microscope and the application
- [System]: Display and manual registration of the microscope configuration
- [Connection]: Settings of the connection destinations of devices
- [Optical Device]: Settings of optical devices
- [OPT Optical Device]: New registration of optical devices
- [Movement]: Settings of the movement (Ti2-E Only)
- [Link]: Settings of linked control
- [Function]: Assignment of functions
- [Assist Camera]: Setting the assist camera
- [Options]: Settings of the motorized devices
- [Import/Export]: Reading and saving the settings
- [Information]: Display of the version information
- [Send]: Transmission of the setting information to the microscope system

▼ Setting items

General
System
Connection
Optical Device
OPT Optical Device
Movement
Link
Function
Assist Camera
Options
Import/Export
Information
Send

2.1.3 Sending Microscope System Information

■ Sending information to the microscope system ▼ Setup screen

Click [Send] in the setting item selection area to display the confirmation screen.
Click [OK] to send the information set by the application to the microscope system.

Category	Item	Value	Action
General	Language	English	
	Assist Guide		
Microscope	Type	USB (Ti2-E, Ti2-E/B, Ti2-A)	
	Name		
Assist Cam.	Assist Cam.	Not connect	
	Password		Set
Link	No.	1	
			Register
LAN	DHCP	ON	
	Fixed IP(Mac)	192.168.0.20	
	Subnet Mask	255.255.255.0	
	Default Gateway	192.168.0.1	
	Send		

2.2 [General]: Basic Settings of the Microscope and the Application

The General screen allows basic settings of the microscope and the application.

1. Select [General] from the setting item selection area.

▼ General settings

The screenshot shows the 'Connect' settings interface. On the left, a vertical menu lists various settings categories: General, System, Connection, Optical Device, OPT Optical Device, Movement, Link, Function, Assist Camera, Options, Import/Export, and Send. The 'General' tab is highlighted with a red box. The main area displays settings for the 'Language' (English), 'Microscope' (Type: USB (T12-E, T12-E/B, T12-A), Name, Assist Cam: Not connect, Password: Set, No: 1, Register), and 'LAN' (DHCP: ON, Fixed IP(Mic): 192.168.0.20, Subnet Mask: 255.255.255.0, Default Gateway: 192.168.0.1).

2.2.1 Setting the Language

Set the language of this application.

1. Set as follows in the [Language] area.

Language:

Select the language to use.

▼ Setting the language

This screenshot is identical to the previous one, but the 'Language' dropdown menu is highlighted with a red box, showing the current selection of 'English'.

2.2.2 Registering the Microscope System

This section describes how to register a microscope, a password and an assist camera.

1. Set the following items in the [Microscope] area.

Type:

Select the microscope to be connected.

Name:

Enter a registration name of the microscope system.

Assist Cam.:

Click the box to display a list of MAC addresses of the assist cameras.

Click the target MAC address and then [OK] to register the assist camera.

▼ Registering the microscope system

⚠ CAUTION

When an assist tube base unit is used, connect the LAN cable to the [LAN (CAM)] port at the back of the microscope main body to connect to the wireless router.

⚠ When registering a new microscope system

To register a new microscope system, be sure to register an assist camera too.

When using a wireless router in this case, it is recommended to connect only one microscope system to the wireless router.

Password:

It is possible to make a setting so that a password is requested when accessing the microscope from a PC which is not registered for the microscope.

Enter any letters for the password. (Enter nothing if no password is to be set.)

No password is requested during an access if the microscope system is already registered on the PC.

No.:

Select a microscope number to be registered with the PC.

Up to 20 microscopes can be registered.

For each registered number, a registered name of the microscope system (or a MAC address) is displayed.

Regist button:

Click this button to register the connected microscope as a “trusted microscope” with a microscope number specified in “No.” and save it in the device.

Connection to the microscope registered here is possible without a password.

⚠ CAUTION

Make sure any new microscope system is registered.

2.2.3 Setting the LAN

1. Set the following items in the [LAN] area.

DHCP:

Select whether to enable or disable the automatic allocation of the microscope's IP address.

Fixed IP(Mic):

Displays the fixed IP address of the microscope.

This IP address is not used when DHCP is enabled (ON).

Subnet Mask:

Allows displaying or specifying the subnet mask of the microscope.

Default Gateway:

Allows displaying or specifying the default gateway of the microscope.

▼ Setting the LAN

The screenshot shows the 'Connect' settings page with a sidebar on the left containing menu items: General, System, Connection, Optical Device, OPT Optical Device, Movement, Link, Function, Assist Camera, Options, Import/Export, and Send. The main content area is divided into sections: Language (English), Assist Guide, Microscope (Type: USB (T12-E, T12-E/B, T12-A), Name, Assist Cam: Not connect, Password: Set, No: 1, Register), and LAN. The LAN section is highlighted with a red box and contains the following settings: DHCP: ON, Fixed IP(Mic): 192.168.0.20, Subnet Mask: 255.255.255.0, and Default Gateway: 192.168.0.1.

2.3 [System]: Display and Manual Registration of the Microscope Configuration

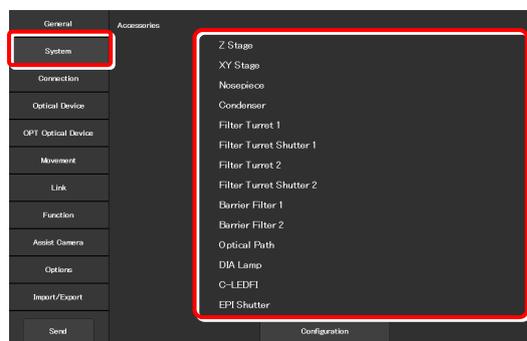
Clicking [System] displays a list of accessories mounted on the microscope system.

1. Select [System] from the setting item selection area.

A list of accessories connected to the microscope system is displayed.

1. Confirm the items displayed in the [Accessories] area.

▼ Display of the microscope configuration



2.3.1 Manually Registering the Microscope Configuration

This section describes how to register the accessories which cannot be automatically detected.

The following is the basic registration procedure.

The condenser is used as an example here.

✔ Using a D-LH/LC precentered lamphouse (halogen lamp) for dia-illumination with the Ti2-A

When using a D-LH/LC precentered lamphouse as dia-illumination with the Ti2-A, manually register the lamphouse by the following procedure:

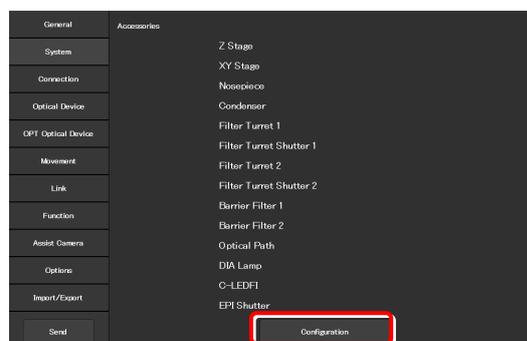
- 1) Disconnect the cable coming from the dia-illumination unit from the connector box on the rear surface of the microscope main body.
- 2) Specify [D-LH/LC Precentered Lamphouse] for the [DIA_Lamp] in the microscope configuration setting screen for manual configuration, of Ti2 Control.
- 3) Click [Send] in the setting item selection area to send the registration information.
- 4) End the application.
- 5) Power off the microscope system.
- 6) Connect the cable coming from the dia-illumination unit with the connector box on the rear surface of the microscope main body.
- 7) Power on the microscope system.

To continue registration, start up the application.

1. Click [Configuration] in the setting area.

A microscope configuration setting screen appears.

▼ Manually registering the microscope configuration



2. Click the area where accessory mounting information is to be registered.

A registration screen of the area is displayed.

✔ **Differences by microscope main body**

The selectable areas for the Ti2-E differ from those for the Ti2-A.

✔ **In a stage-up configuration**

In a 2-tier stage-up microscope configuration, click [Stage up] to change the configuration shown in the application to the state-up configuration.

3. Click a parts area or the parts list on the left.

A list of products that can be registered for that part is displayed.

4. Select the name of the product to be registered.

5. Click [OK].

A product code of the selected product is displayed on the second line of each item in the left parts list. (“-----” is displayed if no product is selected.)

The parts area where a product is already registered is indicated in green.

6. Click [Overall Image] to register an accessory for another parts area.

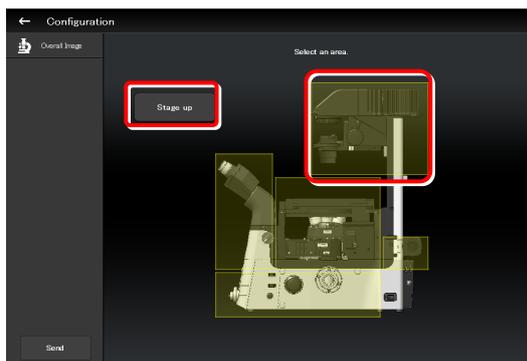
The screen returns to the microscope configuration setting screen.

7. Repeat steps 2 to 5 for each part to be registered.

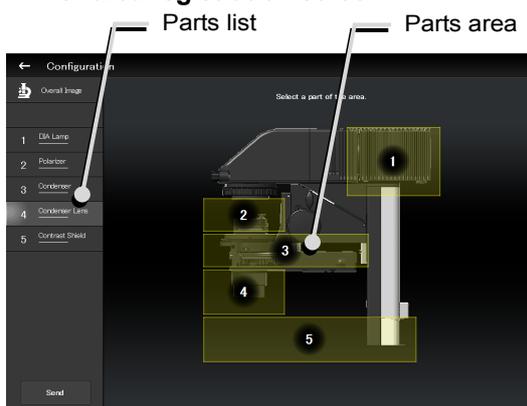
8. To finish manual registration of a microscope configuration, click [Send] to send the registration information or click [←].

If the edited information is not sent, the information will not be saved.

▼ **Microscope configuration setting screen**



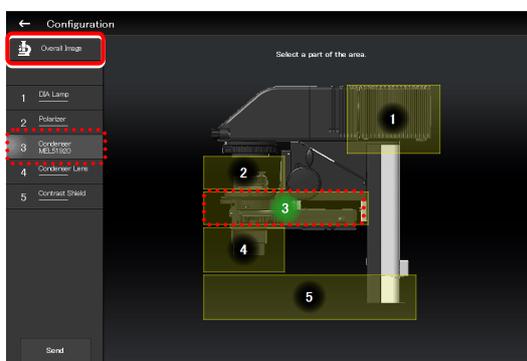
▼ **Per-area registration screen**



▼ **Product list dialog**



▼ **Per-area registration screen**



When using epi-illumination

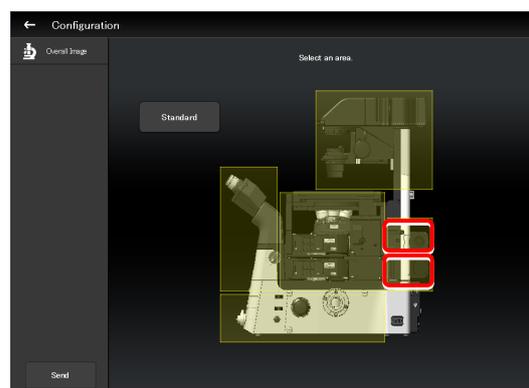
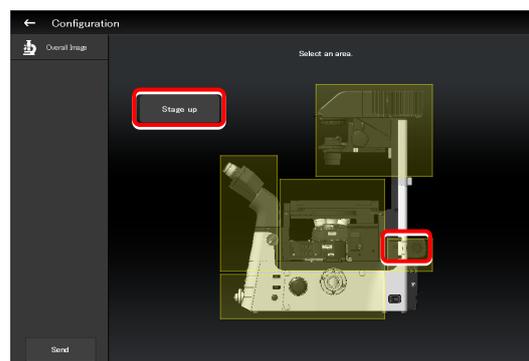
Click the area that includes the epi-illumination attachment.

The registration screen for the epi-illumination attachment is displayed.

If a stage-up kit is used, epi-illumination attachments can be mounted in two tiers.

To register two tiers of epi-illumination attachments, click [Stage up].

▼ Registering an epi-illumination attachment



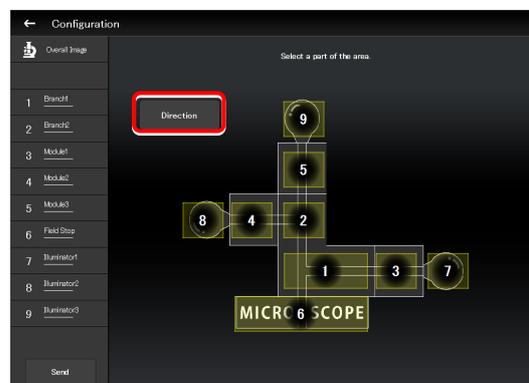
In a two-tier configuration, the upper and lower epi-illumination attachments are mounted in opposite directions. However, the application shows the two epi-illumination attachments in the same orientation.

The orientations of the two epi-illumination attachments can be shown in the same way as the actual ones by using the following procedure.

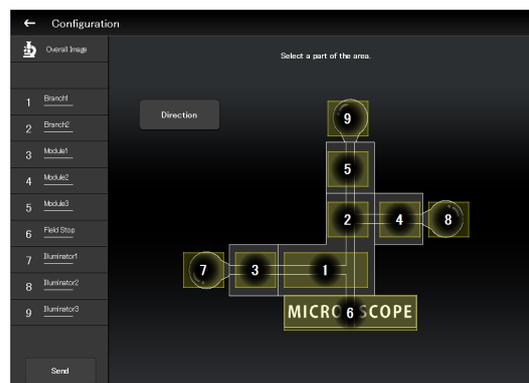
Select the epi-illumination attachment which is shown in the orientation opposite to the actual one.

Click [Direction] to invert the part orientation horizontally so that the display on the application is the same as the actual epi-illumination attachment.

▼ Inverting the orientation of the epi-illumination attachment



▼ Inverted layout diagram



✔ Using the T12-F-FLS Simple Epi-FL Attachment

When specifying the T12-F-FLS simple epi-fl attachment for [Branch1], set [Illuminator3] to the epi-illumination attachment.

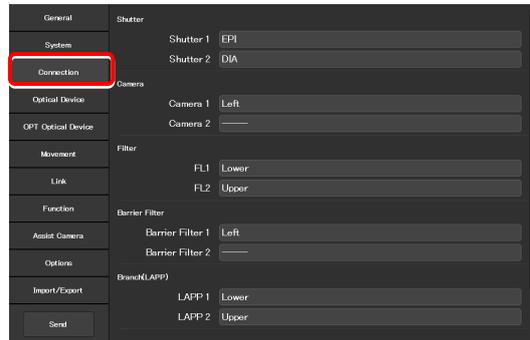
2.4 [Connection]: Setting the Connection Destinations of Devices

This section describes how to set the connection (mounting) destinations of devices.

1. **Select [Connection] from the setting item selection area.**

The connection setting screen appears.

▼ Setting the connections of devices



2.4.1 Setting the Connections of Motorized Shutters

When the NI-SH-E motorized shutter is mounted, epi-illumination (EPI), dia-illumination (DIA), or auxiliary (AUX) can be selected and set as the mounting destination.

1. **Set the following items in the [Shutter] area.**

Shutter 1:

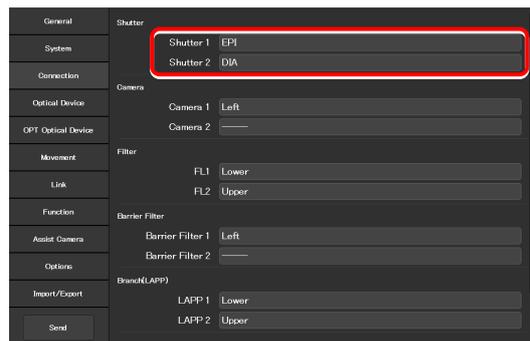
Select the mounting destination of the motorized shutter.

If no motorized shutter is mounted, select [---].

Shutter 2:

Select the mounting destination of the second motorized shutter. If only one motorized shutter is mounted, select [---].

▼ Setting the connections of motorized shutters



✔ SUPPLEMENTAL REMARKS

The same value cannot be specified for [Shutter 1] and [Shutter 2].

2.4.2 Setting the Connections of Cameras

Select and set the ports to which connected cameras are attached from [Front] (tube base unit side port), [Left] (left side port of the microscope main body), [Right] (right side port of the microscope main body), or [Aux] (back port (for the Ti2-E only), or bottom port (for the Ti2-E/B only)).

1. Set the following items in the [Camera] area.

Camera 1:

Select the port to which the camera is attached.

If no camera is attached, select [---].

Camera 2:

Select the port to which the second camera is attached.

If only one camera is attached, select [---].

▼ Setting the connections of cameras

General	Shutter
System	Shutter 1 EPI
Connection	Shutter 2 DIA
Optical Device	Camera
OPT Optical Device	Camera 1 Left
Movement	Camera 2 ---
Link	Filter
Function	FL1 Lower
Assist Camera	FL2 Upper
Options	Barrier Filter
Import/Export	Barrier Filter 1 Left
Send	Barrier Filter 2 ---
	Brand(LAPP)
	LAPP 1 Lower
	LAPP 2 Upper

2.4.3 Setting the Connections of FL Turrets

In a stage-up configuration, specify the location to which each FL turret is attached, the upper tier (Upper) or the lower tier (Lower).

1. Set the following items in the [Filter] area.

FL1:

Select the position to which the FL turret is attached.

If no FL turret is attached, select [---].

FL2:

Select the position to which the second FL turret is attached.

If only one FL turret is attached, select [---].

▼ Setting the connections of FL turrets

General	Shutter
System	Shutter 1 EPI
Connection	Shutter 2 DIA
Optical Device	Camera
OPT Optical Device	Camera 1 Left
Movement	Camera 2 ---
Link	Filter
Function	FL1 Lower
Assist Camera	FL2 Upper
Options	Barrier Filter
Import/Export	Barrier Filter 1 Left
Send	Barrier Filter 2 ---
	Brand(LAPP)
	LAPP 1 Lower
	LAPP 2 Upper

2.4.4 Setting the Connections of BA Filter Wheels: Ti2-E Only

Select and set the ports to which BA filter wheels are attached from [Left] (left side port), [Right] (right side port), or [Center] (lower tier of the stage-up kit).

1. Set the following items in the [Barrier Filter] area.

BA1:

Select the port to which the BA filter wheel is attached.

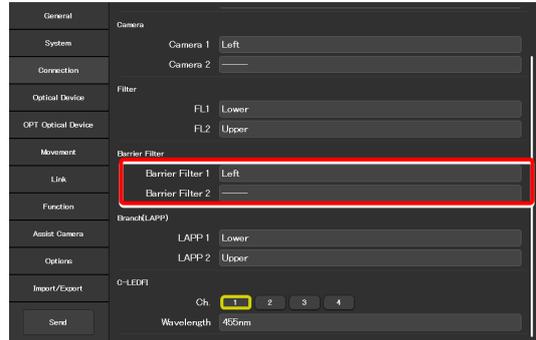
If no BA filter wheel is attached, select [---].

BA2:

Select the port to which the second BA filter wheel is attached.

If only one BA filter wheel is attached, select [---].

▼ Setting the connections of BA filter wheels



2.4.5 Setting the Branch(LAPP)

In a stage-up configuration, specify the location (the upper tier: Upper, or the lower tier: Lower) to which each main branch of the epi illumination attachment is attached.

1. Set the following items in the [Branch(LAPP)] area.

LAPP1:

Select the position to which the main branch is attached.

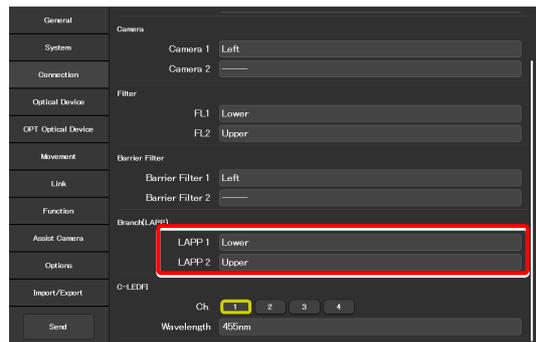
If no main branch is attached, select [---].

LAPP2:

Select the position to which the second main branch is attached.

If only one main branch is attached, select [---].

▼ Setting the Branch(LAPP)



2.4.6 Setting the C-LEDFl Epi-fl LED Illuminator

Set the LED wavelength of each channel of the C-LEDFl epi-fl LED illuminator.

1. Set the following items in the [C-LEDFl] area.

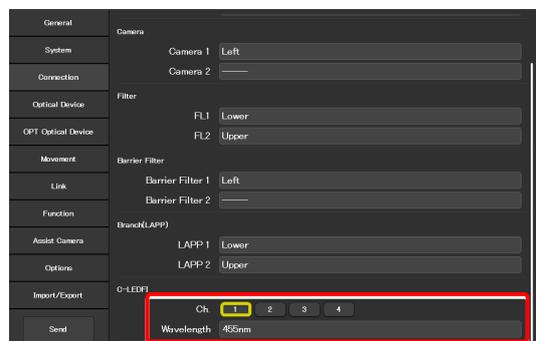
Channel:

Select the channel number of the LED.

Wavelength:

Allows displaying or specifying the wavelength of the LED selected in [Channel].

▼ Setting the C-LEDFl



2.5 [Optical Device]: Setting the Optical Devices

This section describes how to set the objective, condenser module, fluorescence filter cube, barrier filter (BA filter), intermediate magnification, and external phase contrast.

1. **Select [Optical Device] from the setting item selection area.**

The optical device setting screen appears.

▼ Setting optical devices

The screenshot shows the 'Setting optical devices' interface. On the left, a vertical menu has 'Optical Device' highlighted with a red box. The main area is divided into sections: 'Nosepiece' with an 'Address' field (1-6) where '4' is selected; 'Observation' with fields for 'Series' (Plan Apo), 'Mag' (40x), 'Objective' (0.95/Dry/NZ/NI/PFS/MFD00405), and 'DIC Slider' (40x); 'Condenser' with 'Address' (1-7) where '1' is selected and 'Name' (OPEN); and 'FL1' with 'Address' (1-6) where '2' is selected, and 'Name' (C-FL-C DAPI (DAPL1)). Other fields include 'EX' (EX361-389), 'DM' (DM415), and 'BA' (EM430-490). 'Clear' buttons are present for Observation, Condenser, and FL1.

2.5.1 Setting the Nosepiece

Specify which objective is attached to each address of the nosepiece.

1. **Select the address of the nosepiece for which objective information is to be set.**

(Be sure to select this item first.)

▼ Setting the nosepiece

This screenshot is identical to the previous one, but the 'Address' field in the 'Nosepiece' section (1-6) is highlighted with a red box, and the number '4' is selected.

2. **Set the following items.**

Selecting [Observation], [Series] or [Mag.] displays a list of objectives that match the conditions.

Observation:

Allows a list of objectives to be narrowed down by specifying a microscopy technique. (If the list does not include the target microscopy technique or the microscopy technique is unknown, select “---”.)

Series:

Allows a list of objectives to be narrowed down by specifying a series name. (If the series name is unknown, specify “---”.)

Mag.:

Allows a list of objectives to be narrowed down by specifying a magnification. (If the magnification is unknown, specify “---”.)

▼ Setting the nosepiece

This screenshot is identical to the previous one, but the 'Observation' field in the 'Nosepiece' section is highlighted with a red box, showing a list of objectives with 'Plan Apo' selected. The 'Address' field (1-6) still has '4' selected.

3. Click the [Objective] field, select the target objective from the list or enter the product code, and click [OK].

The information about the objective is registered and displayed in the [Objective] field.

▼ Setting the nosepiece

▼ List of objectives

4. For DIC objectives, click the [DIC Slider] field, select the required objective-side DIC slider from the list, and click [OK].

The information about the objective-side DIC slider is registered and displayed in the [DIC Slider] field.

▼ Setting the nosepiece

▼ List of DIC sliders

5. To register another objective, select another number in [Address] and repeat steps 1 to 4.

2.5.2 Setting the Condenser Module

Specify which condenser module is attached to each address of the condenser turret.

1. Set the following items in the [Condenser] area.

Address:

Select the address of the condenser turret for which condenser module information is to be set.

Name:

Select a condenser module name.

2. To register another condenser module, select another number in [Address] and repeat step 1 above.

▼ Setting the condenser module

2.5.3 Setting the Filter Cube

Specify which filter cube is attached to each address of the FL turret.

1. Set the following items in the [FL1] area.

Address:

Select the address of the FL turret for which filter cube information is to be set.
(Select this item first.)

Name:

Select a filter cube name.
(When this item is selected, the other values are read automatically.)

EX:

Displays the name of the excitation filter.

DM:

Displays the name of the dichroic mirror.

BA:

Displays the name of the BA filter.

2. To register another filter cube, select another number in [Address] and repeat step 1 above.

▼ Setting the filter cube

✔ SUPPLEMENTAL REMARKS

When a stage-up kit is used, up to two FL turrets can be connected.
When two FL turrets are connected, set the [FL2] area too.

▼ For the second FL turret

2.5.4 Setting the BA Filter: Ti2-E Only

Specify which BA filter (barrier filter) is attached to each address of the BA filter wheel.

1. Set the following items in the [Barrier Filter 1] area.

Address:

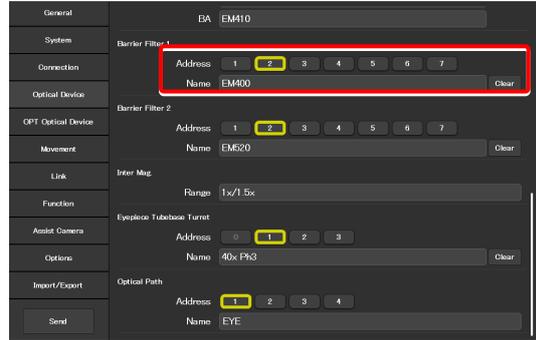
Select the address of the BA filter wheel for which BA filter information is to be set.

Name:

Select a BA filter name.

2. To register another BA filter, select another number in [Address] and repeat step 1 above.

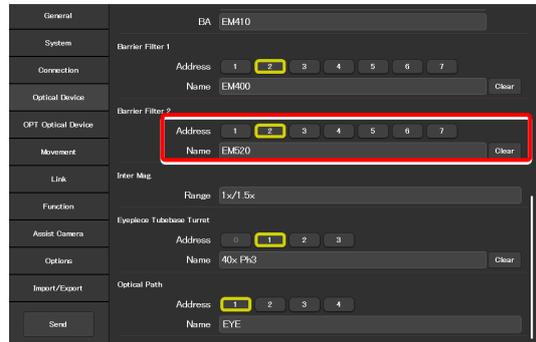
▼ Setting barrier filter 1



✔ **SUPPLEMENTAL REMARKS**

Up to two BA filter wheels can be connected. When two BA filter wheels are connected, also set the [Barrier Filter 2] area.

▼ For the second BA filter wheel



2.5.5 Setting the Intermediate Magnification

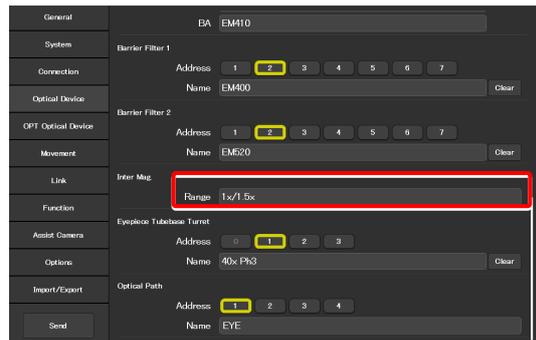
Set the intermediate magnification.

1. Set the following items in the [Inter Mag.] area.

Range:

Select the type of intermediate magnification lens (second objective) attached.

▼ Setting the intermediate magnification



2.5.6 Setting the External Phase Ring: Ti2-E Only

When the motorized tube base unit for external phase contrast is used, specify which phase ring is attached to each address of the phase ring turret.

1. Set the following items in the [Eyepiece Tubebase Turret] area.

Address:

Select the address of the turret for which external phase ring information is to be set.

Address 0 is open, which cannot be used for the setting.

Name:

Select an external phase ring name.

2. To register another external phase ring, select another number in [Address] and repeat step 1 above.

▼ Setting the external phase ring

The screenshot shows a configuration menu for 'BA EM410'. The 'Eyepiece Tubebase Turret' section is expanded, showing 'Address' set to 2 and 'Name' set to '40x PK3'. A red box highlights these two fields. Other sections like 'Barrier Filter 1', 'Barrier Filter 2', 'Inter Map', and 'Optical Path' are also visible.

2.5.7 Setting the Optical Path Name

Set the optical path name (output port name) to be displayed on the remote control button or the subscreen of the optical path.

1. Set the following items in the [Optical Path] area.

Address:

Select the address of the port for which the optical path name is to be set.

1: Eyepiece observation port

2: Right side port

3: 80% to the left side port and 20% to the eyepiece observation port (when using the Ti2-E optical path split prism or the Ti2-A E20L80)

Bottom port (when using the Ti2-E/B)

4: Left side port

Name:

Specify the optical path name. (Within 10 single-byte alphanumeric characters)

2. To register another address, select another number in [Address] and repeat step 1.

▼ Setting the optical path name

The screenshot shows the same configuration menu for 'BA EM410'. The 'Optical Path' section is expanded, showing 'Address' set to 1 and 'Name' set to 'EYE'. A red box highlights these two fields. The 'Eyepiece Tubebase Turret' section is also visible above it.

2.6 [OPT Optical Device]: Registering a New Optical Device

This section describes how to newly register an optical device not listed in the [Optical Device] setting, such as an objective, a condenser module, a filter cube, or a BA filter.

1. Select [OPT Optical Device] from the setting item selection area.

The optional optical device setting screen appears.

▼ Registering a new optical device

2.6.1 Registering a New Objective

Up to 10 new objectives can be registered.

The objectives registered here can be selected in [Objective] in [Optical Device].

1. Set the following items in the [Optional Objective] area.

Number:

Register the number for which new objective information is to be registered. (Up to 10 objectives can be registered.)

Name:

Specify a name.

Series:

Select the type of the objective.

Mag.:

Select the magnification of the objective.

Type:

Select the immersion liquid type of the objective.

NA:

Enter the numerical aperture (NA) of the objective.

Method:

Select the usage of the objective.

WD Type:

Select the long-working-distance type of the objective.

PFS:

Select whether the PFS objective is used or not.

Observation:

Select a microscopy technique.

▼ Registering a new objective

Correction Collar:

For an objective with a correction collar, choose from Manual and Motorized.

Ph:

For a phase contrast objective, select a PH code.

EX. Ph.:

For a phase contrast objective, select the magnification of the objective.

DIC:

For a DIC objective, select a corresponding condenser module.

DIC Slider:

For a DIC objective, select a corresponding objective-side DIC slider.

DIC HR/HC:

Select a high-resolution or high-contrast condenser module.

DIC Slider HR/HC:

Select a high-resolution or high-contrast objective-side DIC slider.

DF:

For an objective for DF microscopy, select a corresponding condenser module.

NAMC:

For an objective for NAMC microscopy, select a corresponding condenser module.

WID:

Select whether the objective supporting the water immersion dispenser is used or not.

2. To register another objective, select another number in [Number] and repeat step 1 above.

▼ Registering a new objective (continued from the previous page)

2.6.2 Registering a New Condenser Module

Up to 10 new condenser modules can be registered.

The condenser modules registered here can be selected in [Optional Condenser] in [Optical Device].

1. Set the following items in the [Optional Condenser] area.

Number:

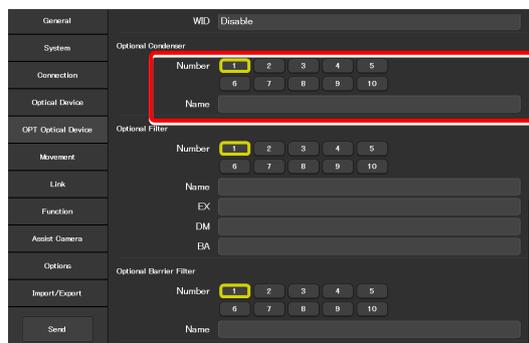
Select a number with which a new condenser module is to be registered.

Name:

Specify a name.

2. To register another condenser module, select another number in [Number] and repeat step 1.

▼ Registering a new condenser module



2.6.3 Registering a New Filter Cube

Up to 10 new filter cubes can be registered.

The filter cubes registered here can be selected in [Filter 1] (or [Filter 2]) in [Optical Device].

1. Set the following items in the [Optional Filter] area.

Number:

Select a number with which a new filter cube is to be registered.

Name:

Specify a name.

EX:

Specify an excitation filter name.

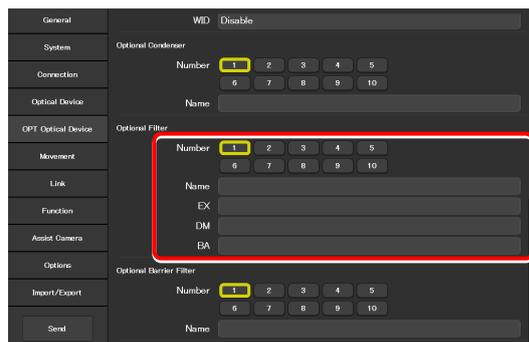
DM:

Specify a dichroic mirror name.

BA:

Specify a BA filter name.

▼ Registering a new filter cube



✔ **When specifying an excitation filter or a dichroic mirror name**

For an excitation filter name, specify “EX” as the first two letters and then specify the wavelength information.

Examples: “EX450”, “EX450-490” (delimited by a hyphen) or “EX450/40” (the center wavelength and width are delimited by a slash)

Similarly, for a BA filter name, specify “BA” as the first two letters. For a dichroic mirror name, specify “DM” as the first two letters.

2. To register another filter cube, select another number in [Number] and repeat step 1.

2.6.4 Registering a New BA Filter: Ti2-E Only

Up to 10 new barrier (BA) filters can be registered.

The BA filters registered here can be selected in [Barrier Filter 1] (or [Barrier Filter 2]) in [Optical Device].

1. Set the following items in the [Optional Barrier Filter] area.

Number:

Select a number with which a new BA filter is to be registered.

Name:

Specify a name.

2. To register another BA filter, select another number in [Number] and repeat step 1.

▼ Registering a new BA filter

The screenshot shows the 'Optional Barrier Filter' configuration screen. On the left is a sidebar with categories: General, System, Connection, Optical Device, OPT Optical Device, Movement, Link, Function, Assist Camera, Options, Import/Export, and Send. The main content area is titled 'Optional Barrier Filter' and includes a 'Number' field (with '1' selected) and a 'Name' field. A red box highlights the 'Number' and 'Name' fields.

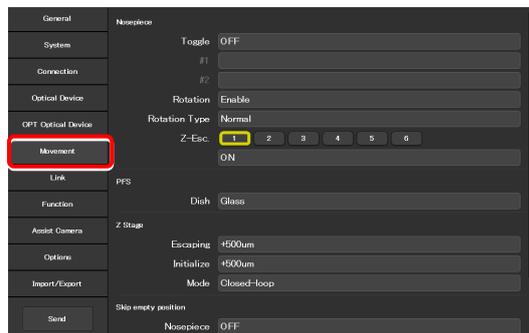
2.7 [Movement]: Setting the Movement: Ti2-E Only

This section describes how to set the movement of each motorized device.

- Select [Movement] from the setting item selection area.**

The movement setting screen appears.

▼ Setting the movement



2.7.1 Setting the Motorized Nosepiece

Set the movement of the motorized nosepiece.

- Set the following items in the [Nosepiece] area.**

Toggle:

If two objectives are registered, they can be toggled using the objective changeover switch of the microscope main body.

Assign toggle numbers (1 and 2) to the objectives.

("#1" and "#2" below allow settings for the objectives.)

#1:

Select the address of the nosepiece to which the first objective is attached.

#2:

Select the address of the nosepiece to which the second objective is attached.

Rotation:

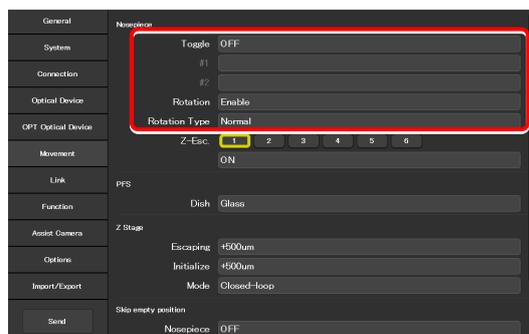
Select whether the nosepiece rotation is enabled or not.

Revolving Type:

Select the operating pattern of the nosepiece.

- Normal: Normal operation pattern
- Shuttle: The nosepiece moves from 1 to 6 (or 6 to 1) via all addresses.
- ACC Type: This is selected automatically when a motorized nosepiece of the motorized correction collar type is used.

▼ Setting the motorized nosepiece

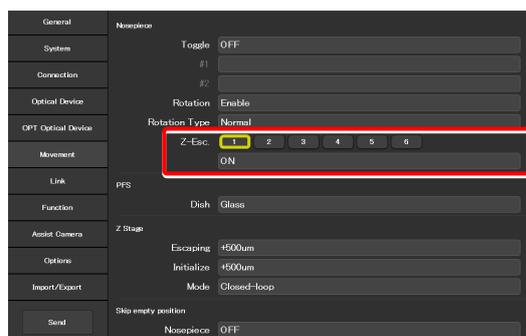


Z-Esc.:

It is possible to specify for each nosepiece address whether or not the objective is moved to the escape position when the nosepiece rotates.

Select the address of the nosepiece to which the target objective is attached.

If ON is set for an address, the objective is moved to the escape position before passing the selected address.



2.7.2 Setting the PFS

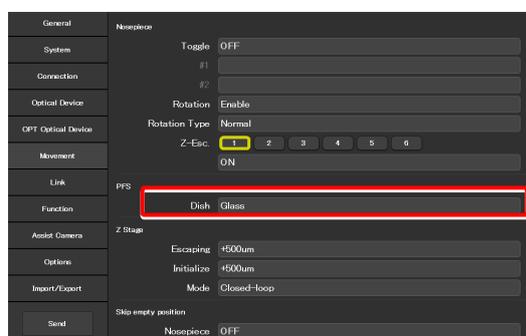
Set the type of the dish observed by using the PFS.

1. Set the following items in the [PFS] area.

Dish:

Select the dish type from [Glass] and [Plastic].

▼ Setting the PFS



2.7.3 Setting the Focusing Device (Z-Stage)

Set the movement of the focusing device (Z-stage).

1. Set the following items in the [Z-Stage] area.

Escaping:

Specify how far the objective is to be escaped when replacing the specimen.

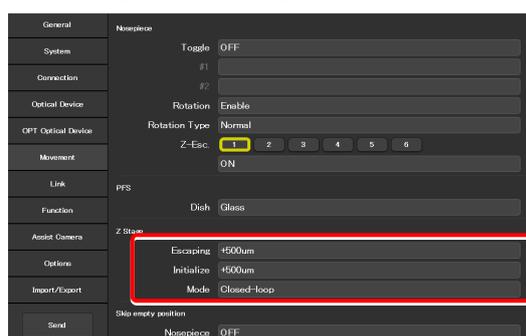
Initialize:

Specify where the objective is to be stopped when the microscope system is initialized.

Mode:

Select the focusing device control method from open loop and closed loop. (This setting becomes effective when the controller for T12-E is turned back on.)

▼ Setting the focusing device



2.7.4 Setting the Unallocated Address Skipping Function

If there is an address for which no optical device information is set when a motorized device rotates, specify whether to skip this address.

1. Set the following items in the [Skip empty position] area.

Nosepiece:

The nosepiece rotation when there is an address for which no objective information is set can be selected.
(ON: The address for which no objective information is set is skipped.)

FL1:

The FL turret 1 rotation when there is an address for which no filter cube information is set can be selected.
(ON: The address for which no filter cube information is set is skipped.)

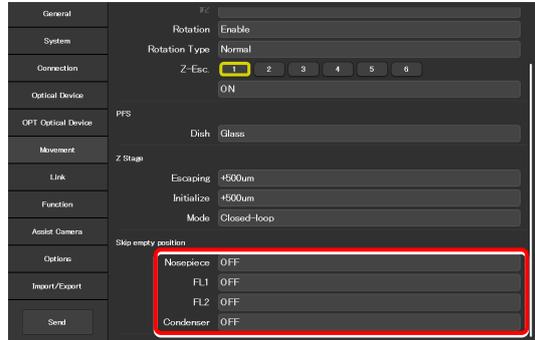
FL2:

(Only when there is a second FL turret)
The FL turret 2 rotation when there is an address for which no filter cube information is set can be selected.
(ON: The address for which no filter cube information is set is skipped.)

Condenser:

Select the condenser turret rotation when there is an address for which no condenser module information is set.
(ON: The address for which no condenser module information is set is skipped.)

▼ Setting the unallocated address skipping function



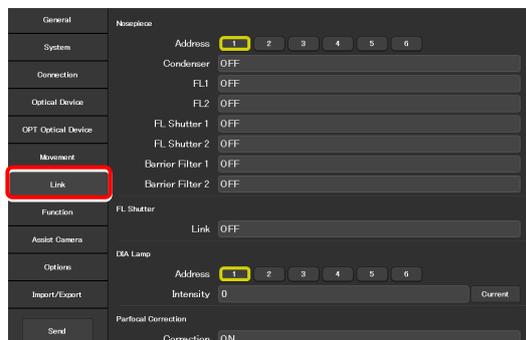
2.8 [Link]: Setting the Linking Function: Ti2-E Only

This section describes how to set the linking (interlocking) of other motorized devices when switching the objective.

1. Select [Link] from the setting item selection area.

The link control setting screen appears.

▼ Setting linked control



2.8.1 Setting a Linked Operation When the Objective Is Switched

Specify whether or not the devices are interlocked with the shuttle switches on the main body when they are depressed after the objective is switched.

1. Set the following items in the [Nosepiece] area.

Address:

Select the address of the nosepiece to which the target objective for link control is attached.

Condenser:

Select the condenser module to be linked when the objective is switched.

FL1:

Select the filter cube of FL turret 1 to be linked when the objective is switched.

FL2:

(Only when there is a second FL turret)

Select the filter cube of FL turret 2 to be linked when the objective is switched.

FL Shutter 1:

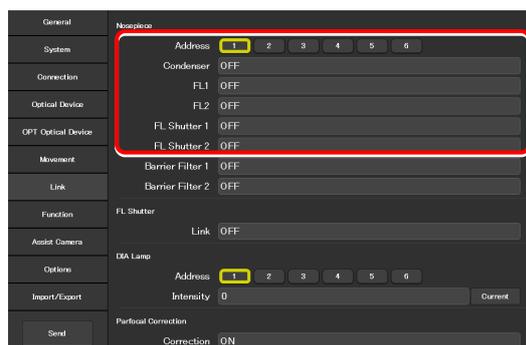
Select the state of the shutter of FL turret 1 to be linked when the objective is switched.

FL Shutter 2:

(Only when there is a second FL turret)

Select the state of the shutter of FL turret 2 to be linked when the objective is switched.

▼ Setting a linked operation when the objective is switched



BA1:

Select the BA filter of BA filter wheel 1 to be linked when the objective is switched.

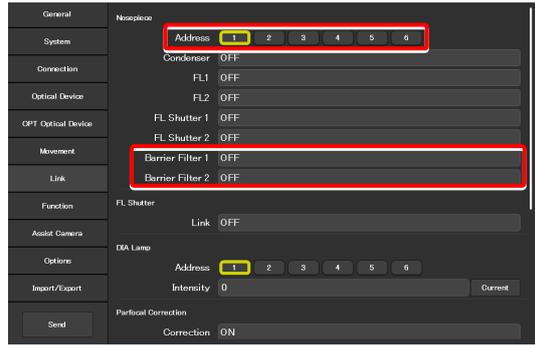
BA2:

(Only when there is a second BA filter wheel)

Select the BA filter of BA filter wheel 2 to be linked when the objective is switched.

- If there is another objective as the target of link control, repeat step 1.**

▼ **Setting a linked operation when the objective is switched**



2.8.2 Setting a Linked Operation of the Shutter

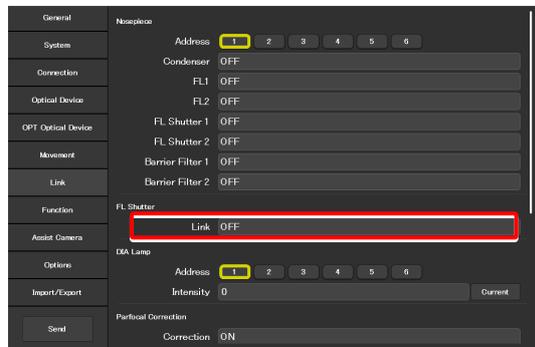
Specify whether the shutter in the FL turret is to be linked when the objective is switched.

- Set the following items in the [FL Shutter] area.**

Link:

Select [ON] to link the shutter when the objective is switched.

▼ **Setting a linked operation of the shutter**



2.8.3 Setting the Illumination Intensity of Dia-Illumination (DIA)

Specify whether diascopic LED illumination intensity is to be changed when the objective is switched.

- Set the following items in the [DIA Lamp] area.**

Address:

Select the address of the nosepiece to which the target objective for link control is attached.

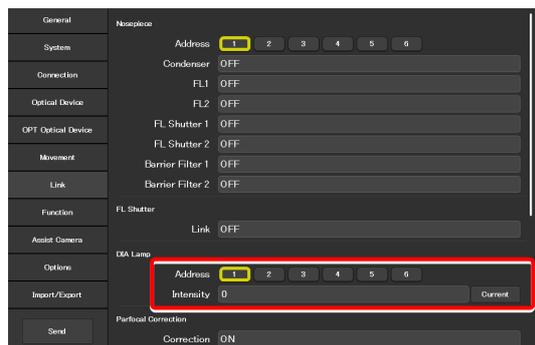
Light Value:

Specify an illumination intensity. (Input range: 0 to 100)

Current button:

Allows the current value of the device to be read.

▼ **Setting the illumination intensity of dia-illumination (DIA)**



2.8.4 Setting the Parfocal Correction

If there is a shift in focal position when the objective is switched, this setting allows a correction.

1. Set and confirm the following items in the [Parfocal Correction] area.

Address:

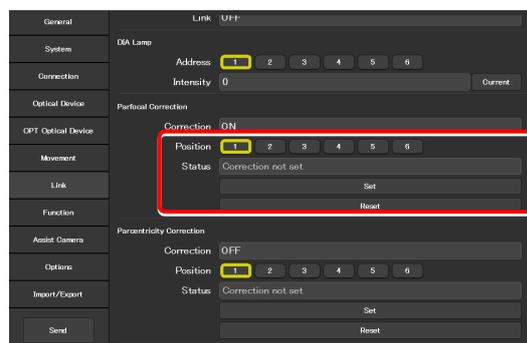
Select the address of the nosepiece to which the target objective is attached.

Status:

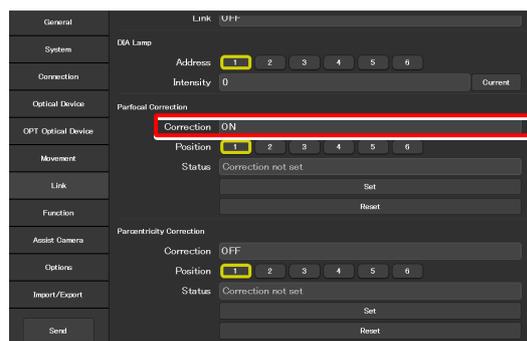
Indicates whether the objective is corrected or not.

2. Change the current objective to the maximum magnification objective on the microscope main body.
3. Focus on the specimen on the microscope main body.
4. Click [Set].
5. Repeat steps 1 to 4 to set the focal position for all addresses.
6. Click [Correction] to enable or disable the parfocal correction.

▼ Setting the parfocal correction



▼ Setting the parfocal correction



2.8.5 Setting the Parcentricity Correction

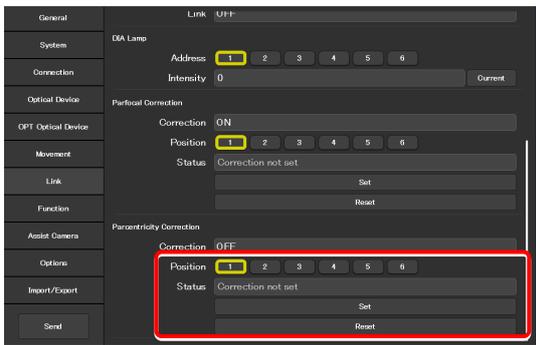
If there is a shift in center position when the objective is switched, this setting allows for correction.

1. **Set and confirm the following items in the [Parcentricity Correction] area.**

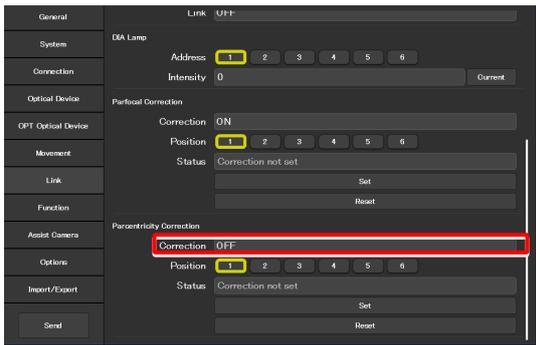
Address:
Select the address of the nosepiece to which the target objective is attached.

Status:
Indicates whether correction of the objective is set or not.
2. **Change the current objective to the maximum magnification objective on the microscope main body.**
3. **Move the XY-stage so that an easy-to-identify object is at the center of the field of view.**
Use this object as a mark to correct the objective at another address.
4. **Click [Set].**
5. **Repeat steps 1 to 4 to set the center position for all addresses.**
6. **Click [Correction] to enable or disable the parcentricity correction.**

▼ Setting the parcentricity correction



▼ Setting the parcentricity correction



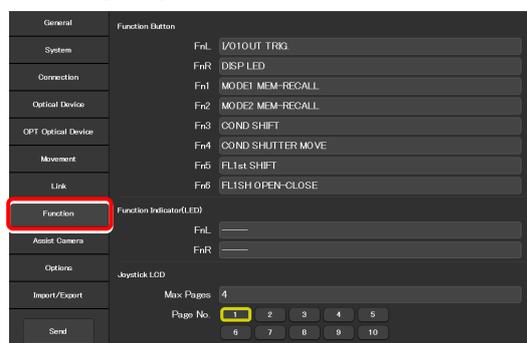
2.9 [Function]: Assigning Functions: Ti2-E Only

This section describes how to assign functions to the function buttons and LED indicators on the Ti2-E microscope main body, and the function buttons and LCD screen of the joystick.

1. Select [Function] from the setting item selection area.

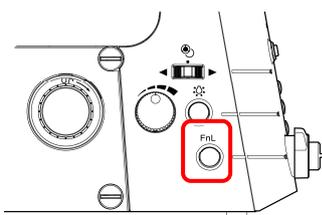
The function setting screen appears.

▼ Assigning functions

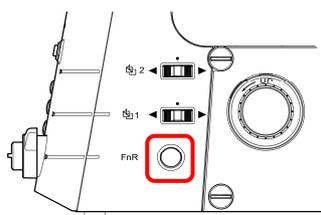


2.9.1 Setting the Function Buttons

Assign functions to the function buttons (FnL and FnR buttons on the operation panels on the right and left sides) on the Ti2-E microscope main body, and the function buttons of the joystick.



Left operation panel



Right operation panel



Joystick

1. Set the following items in the [Function Button] area.

Select functions to be assigned to the microscope main body (FnL, FnR) and function buttons (Fn1 to Fn6) on the joystick.

2. To change the assigned function, click the function field of the corresponding function button.

The subscreen of the function list for assignment is displayed.

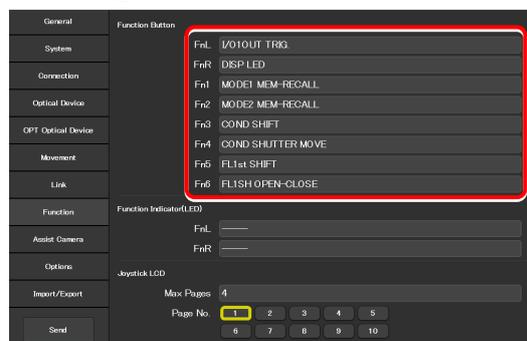
3. From the list, select the function to be assigned to the selected function button.

Selecting a group from [1] to [9] will change the functions to be displayed on the list.

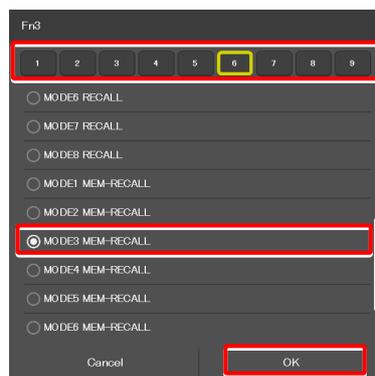
For the assignable functions, see 3.1 List of Functions Assigned to Function Buttons.

4. Click [OK].

▼ Setting the Function Buttons



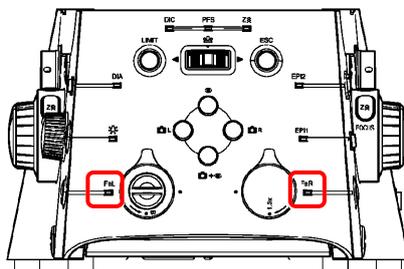
▼ Subscreen of the function list for assignment



2.9.2 Setting the FnL and FnR Indicators on the Microscope

Assign the operating status of an arbitrary function to the FnL or FnR LED indicator on the front operation panel of the Ti2-E microscope main body.

In the initial state, no function is assigned to the FnL and FnR indicators. The indicators do not light unless functions are assigned to them.



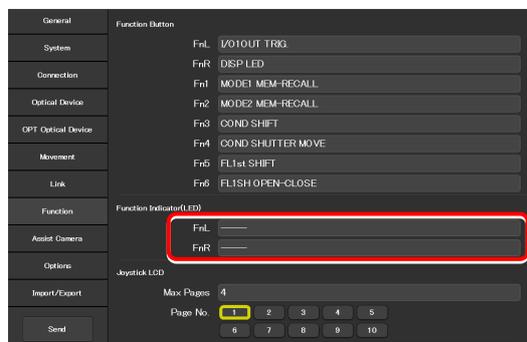
Front operation panel

1. Set the following items in the [Function Indicator(LED)] area.

Select the status indication to be assigned to the LED indicators (FnL and FnR) on the front operation panel of the microscope main body.

For the assignable indication functions, see 3.2 List of Indication Functions Assigned to the LED Indicators of the Ti2-E Microscope Main Body.

▼ Setting the LED indicators



2.9.3 Setting the LCD Display Screen of the Joystick

Set the function to be displayed on each LCD screen page of the joystick.

1. Set the following items in the [Joystick LCD] area.

Max Pages:

Set the maximum number of pages.

Page No.:

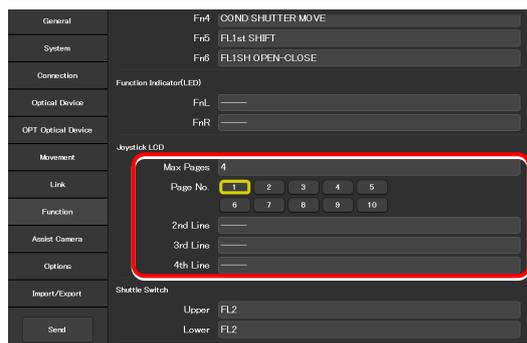
Select the target page number.

2nd Line to 4th Line:

Select the function to be assigned to each line.

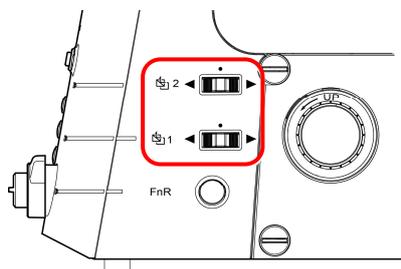
For the assignable functions, see 3.3 List of Functions Assigned to Joystick LCD Screen.

▼ Setting the LCD display screen of the joystick



2.9.4 Setting the Shuttle Switches

The motorized FL turrets (1st and 2nd), barrier filters (1st and 2nd), or external Ph turret operation functions can be assigned to shuttle switches 1 and 2 of the Ti2-E microscope main body. (The default setting is the filter cube switches.)



Right operation panel

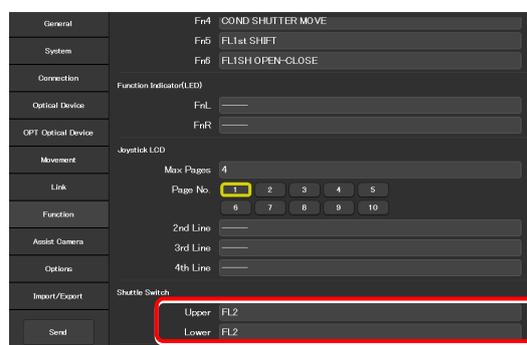
1. Set the following items in the [Shuttle Switch] area. ▼ Setting the shuttle switches

Upper:

Assign another operation function to shuttle switch 2 of the microscope main body.

Lower:

Assign another operation function to shuttle switch 1 of the microscope main body.



2.10 [Assist Camera] Setting the Assist Camera

This section describes how to set the save destination of the images, the frame rate, and the field of view adjustment of the assist camera when the assist tube base unit is used.

1. Select [Assist Camera] from the setting item selection area.

The assist camera setting screen appears.

2. Set the following items in the [Assist Camera] area.

Frame Rate:

Select the frame rate of the assist camera.

Dest. to save:

Specify where the image data is to be saved (path to the folder), when an image is obtained by clicking the capture button.

Adjustment:

Click this to display the Adjustment screen.

The Adjustment screen allows the field of view of the assist camera to be adjusted to the same position and size of the field of view of the binocular part.

✔ SUPPLEMENTAL REMARKS

The field of view of the assist camera must be adjusted in each status of the Bertrand lens (in/out).

Perform the following procedure:

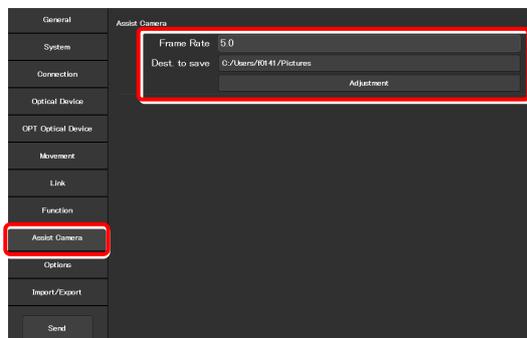
- 1) Adjust the field of view of the assist camera in the current Bertrand lens in/out status.
- 2) Click [OK] in the adjustment screen to save the setting.
- 3) Turn the Bertrand lens in/out dial of the microscope main body to place/remove the lens into/from the optical path. (from Out to In or from In to Out)
- 4) Select [Assist Camera] from the setting item selection area, and then click the [Adjustment] button to display the adjustment screen.
- 5) Adjust the field of view of the assist camera in the current Bertrand lens in/out status.
- 6) Click [OK] in the adjustment screen to save the setting.

Note that if an attempt is made to place/remove the Bertrand lens with the adjustment screen open, an error message appears and the adjustment screen is closed.

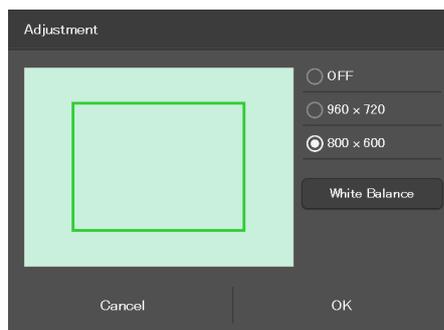
White Balance:

Automatically adjust the white balance of the current image displayed on the screen.

▼ Setting the assist camera



▼ Adjustment screen



2.11 [Options]: Setting the Motorized Devices: For Ti2-E

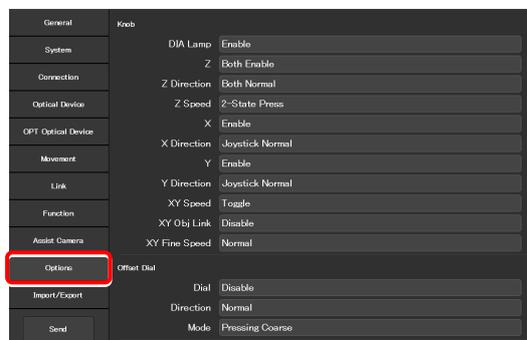
This section describes how to set the operation speed of the motorized device and whether the motorized device is to be controlled from the Ti2-E microscope main body or the joystick.

For details on the controllable functions of the Ti2-A, see “2.11.6 Ti2-A.”

1. Select [Options] from the setting item selection area.

The motorized device setting screen appears.

▼ Setting the motorized devices



2.11.1 Controlling Each Knob

This section describes how to control each knob.

Items to be displayed on the list depend on the firmware version of your microscope main body.

Firmware Ver.1.10 or later

1. Set the following items in the [Knob] area.

DIA Lamp:

Enable or disable the dia-illumination brightness adjuster operation.

Z:

Enable or disable the focusing device (Z-stage) control by the focus knob of the microscope main body or the joystick.

Both Disable: Both are disabled.

Ti2 Enable: Only the microscope main body is enabled.

Joystick Enable: Only the joystick is enabled.

Both Enable: Both are enabled.

Z Direction:

Select the rotation direction of the focus knob and the moving direction of the focusing device (Z-stage) of the microscope main body and joystick.

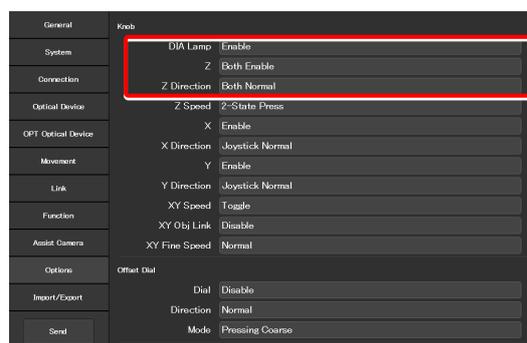
Both Invert: Both rotations are inverted.

Ti2 Normal/Joystick Invert:
Normal rotation of the microscope main body, and inverted rotation of the joystick

Ti2 Invert/Joystick Normal:
Inverted rotation of the microscope main body, and normal rotation of the joystick

Both Normal: Both rotations are normal.

▼ Setting each knob (firmware Ver.1.10 or later)



Z Speed:

Select the behavior when the Z coarse-motion buttons of the microscope main body and the joystick are used.

2-State Press: Coarse motion only while the Z coarse-motion button is pressed

2-State Toggle: Switches between the coarse motion and the fine motion when the Z coarse-motion button is pressed once.

3-State: Switches among the coarse motion, the fine motion, and the ultrafine motion when the Z coarse-motion button is pressed each time.

▼ **Setting each knob (firmware Ver.1.10 or later)**



✔ **SUPPLEMENTAL REMARKS**

When 2-State Press or 2-State Toggle is selected, the movement speed of the focusing device (Z-stage) by the focus knob depends on the NA of the objective.

X:

Enable or disable the stage control in the X-axis direction by using the stage drive lever of the joystick.

X Direction:

Select the stage movement direction on the X-axis initiated by using the stage drive lever of the joystick.

Joystick Normal: The stage moves in the direction of the joystick motion.

Joystick Invert: The stage moves in the opposite direction of the joystick motion.

Y:

Enable or disable the stage control in the Y-axis direction by using the stage drive lever of the joystick.

Y Direction:

Select the stage movement direction on the Y-axis initiated by using the stage drive lever of the joystick.

Joystick Normal: The stage moves in the direction of the joystick motion.

Joystick Invert: The stage moves in the opposite direction of the joystick motion.

XY Speed:

Select the behavior when the XY coarse-motion button of the joystick is used.

Pressing Coarse: Coarse motion only while the button is held down

Toggle: Switches between coarse motion and fine motion.

XY Obj Link:

Specify whether the speed of the XY stage is to be changed according to the magnification of the objective.

XY Fine Speed:

When "Normal" is selected, the XY stage moves in normal fine motion. When "Low" is selected, it moves in finer motion than "Normal".

Firmware version earlier than Ver.1.10

For details on the firmware upgrade, contact your local Nikon representative.

1. Set the following items in the [Knob] area.

DIA Lamp:

Enable or disable the dia-illumination brightness adjuster operation.

Z:

Enable or disable the focusing device (Z-stage) control by the focus knob of the microscope main body or the joystick.

Both Disable: Both are disabled.

Ti2 Enable: Only the microscope main body is enabled.

Joystick Enable: Only the joystick is enabled.

Both Enable: Both are enabled.

Z Direction:

Select the rotation direction of the focus knob and the moving direction of the focusing device (Z-stage) of the microscope main body and joystick.

Both Invert: Both rotations are inverted.

Ti2 Normal/Joystick Invert:
Normal rotation of the microscope main body, and inverted rotation of the joystick

Ti2 Invert/Joystick Normal:
Inverted rotation of the microscope main body, and normal rotation of the joystick

Both Normal: Both rotations are normal.

Z Mode:

Select the behavior when the Z coarse-motion button of the joystick is used.

Pressing Coarse: Coarse motion only while the button is held down

Toggle: Switches between coarse motion and fine motion.

Z DOF:

Specify whether to make the focusing device (Z-stage) move by the focus knob of the microscope main body or the joystick at a speed according to the NA.

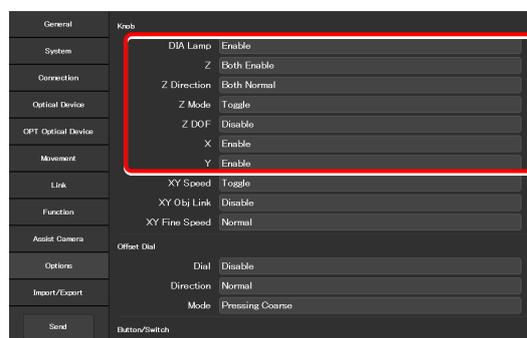
X:

Enable or disable the stage control in the X-axis direction by using the stage drive lever of the joystick.

Y:

Enable or disable the stage control in the Y-axis direction by using the stage drive lever of the joystick.

▼ Setting each knob (firmware version earlier than Ver.1.10)



XY Speed:

Select the behavior when the XY coarse-motion button of the joystick is used.

Pressing Coarse: Coarse motion only while the button is pressed

Toggle: Switches between coarse motion and fine motion.

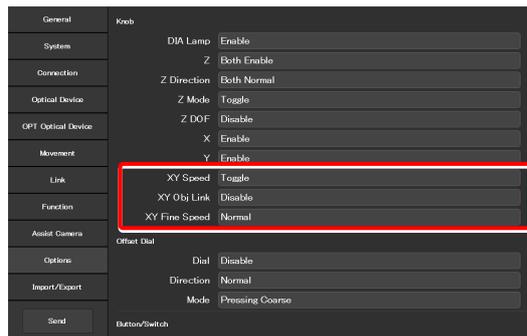
XY Obj Link:

Specify whether the speed of the XY stage is to be changed according to the magnification of the objective.

XY Fine Speed:

When “Normal” is selected, the XY stage moves in normal fine motion. When “Low” is selected, it moves in finer motion than “Normal”.

▼ Setting each knob (firmware version earlier than Ver.1.10)



2.11.2 Controlling the PFS Offset Dial

This section describes how to control the PFS offset dial.

1. Set the following items in the [Offset Dial] area.

Dial:

Enable or disable the control of the PFS offset dial.

Direction:

Select the rotation direction of the PFS offset dial.

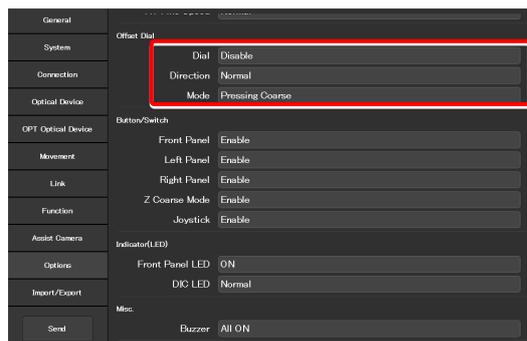
Mode:

Select the behavior when the Z coarse-motion button of the offset dial is used.

Pressing Coarse: Coarse motion only while the button is pressed

Toggle: Switches between coarse motion and fine motion.

▼ Setting the offset dial



2.11.3 Controlling the Buttons and Switches

This section describes how to control each button (switch) of the microscope main body and joystick.

1. Set the following items in the [Button/Switch] area.

Front Panel:

Enable or disable operation by the buttons or switches on the front operation panel of the microscope main body.

Left Panel:

Enable or disable operation by the buttons or switches on the left operation panel of the microscope main body.

Right Panel:

Enable or disable operation by the buttons or switches on the right operation panel of the microscope main body.

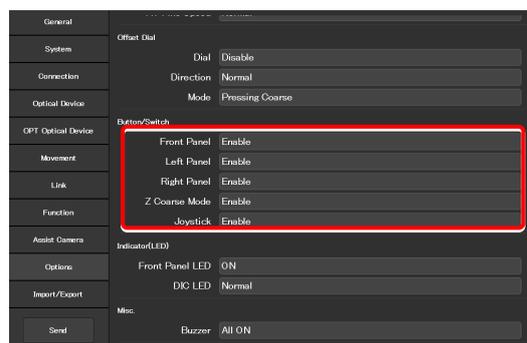
Z Coarse Mode:

Enable or disable operation by the Z coarse-motion button of the focus knob on the both sides of the microscope main body.

Joystick:

Enable or disable operation by the buttons of the joystick.

▼ Controlling the buttons and switches



2.11.4 Controlling the LED Indicators

This section describes how to control the indicator (LED) of the microscope main body and the joystick.

1. Set the following items in the [Indicator(LED)] area.

Front Panel LED:

Turn on or off the LED on the front panel of the microscope main body.

DIC LED:

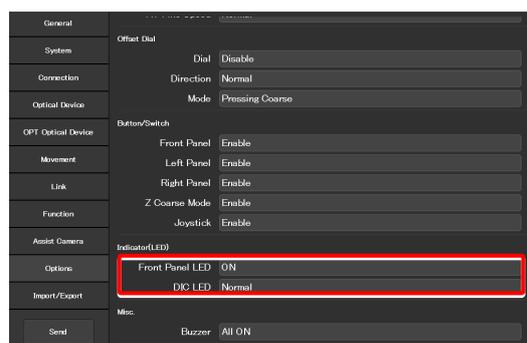
Select the behavior of the DIC indicator on the front panel of the microscope main body, which is used for identifying whether the DIC microscopy conditions are satisfied or not.

Always OFF: The indicator is always off. (It does not light nor blink even though DIC microscopy conditions are satisfied.)

ON-OFF: The indicator is lit when the DIC microscopy conditions are satisfied. (Not blinking)

Normal: The indicator is lit when the DIC microscopy conditions are satisfied, and it blinks when they are partly satisfied.

▼ Controlling the indicators (LED)



2.11.5 Other Control Items

This section describes other control items.

1. Set the following items in the [Misc.] area.

Buzzer:

Select the buzzer setting of the microscope main body.

All OFF: All buzzers are disabled.

PFS OFF: Only the PFS buzzer is disabled.

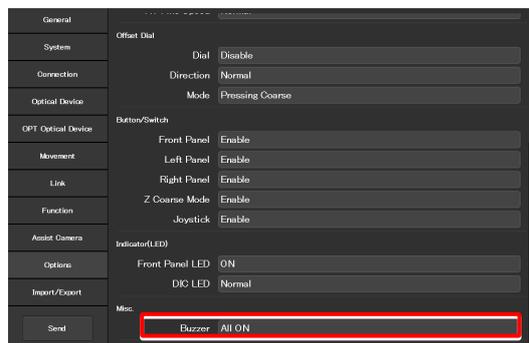
All ON: All buzzers are enabled.

✔ SUPPLEMENTAL REMARKS

When using the microscope firmware version earlier than Ver.1.10, the selection of the buzzer setting is only ON or OFF. The PFS buzzer setting is not available.

For details on the firmware upgrade, contact your local Nikon representative.

▼ Other control items



2.11.6 Ti2-A

Set the controllable functions of the Ti2-A.

1. Set the following items in the [Knob] area.

DIA Lamp:

Enable or disable the dia-illumination brightness adjuster operation.

2. Set the following items in the [Button/Switch] area.

Left Panel:

Enable or disable operation by the buttons or switches on the left operation panel of the microscope main body.

3. Set the following items in the [Indicator(LED)] area.

Front Panel LED:

Turn on or off the LED on the front panel of the microscope main body.

DIC LED:

Select the behavior of the DIC indicator on the front panel of the microscope main body, which is used for identifying whether the DIC microscopy conditions are satisfied or not.

Always OFF: The indicator is always off.
(It does not light nor blink even though DIC microscopy conditions are satisfied.)

ON-OFF: The indicator is lit when the DIC microscopy conditions are satisfied.
(Not blinking)

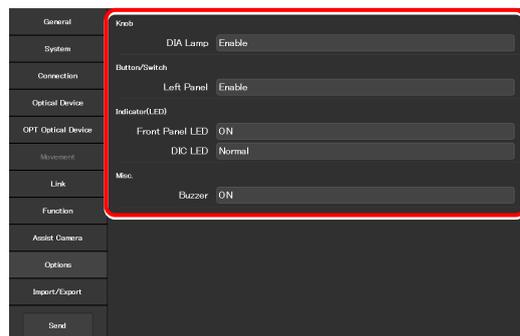
Normal: The indicator is lit when the DIC microscopy conditions are satisfied, and it blinks when they are partly satisfied.

4. Set the following items in the [Misc.] area.

Buzzer:

Enable (ON) or disable (OFF) the buzzer of the microscope main body.

▼ Settings when using the Ti2-A



2.12 [Import/Export]: Importing and Exporting the Settings

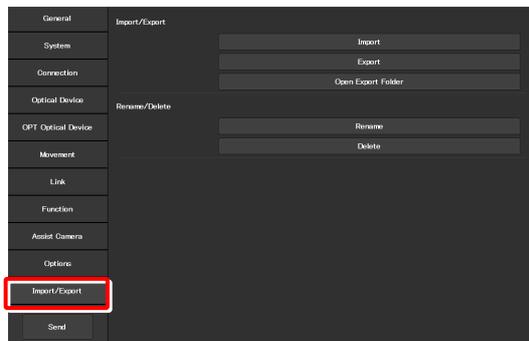
This section describes how to import and export the settings.

The settings made by using the “Ti2 Control” application can be saved (as a configuration file) in the PC and read later.

More than one configuration file can be saved, with a file for each user. The settings of the microscope system can be changed by reading different configuration files.

1. Select [Import/Export] from the setting item selection area.

▼ Import and export settings

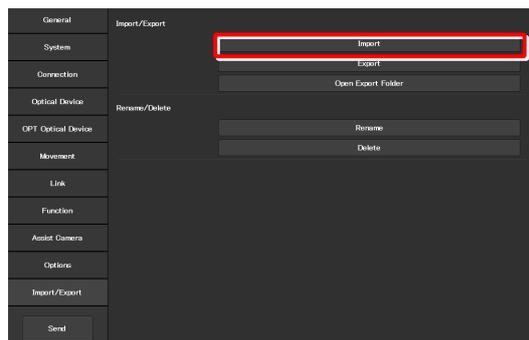


2.12.1 Importing the Settings

1. Click [Import] in the [Import/Export] area.

The Import screen appears.

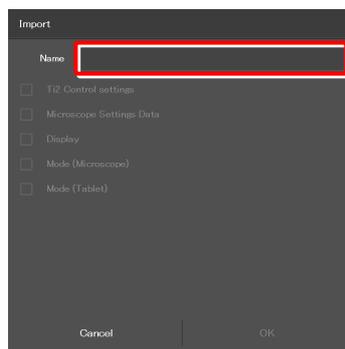
▼ Importing the settings



2. Click [Name].

The file selection screen appears.

▼ Import screen



3. Select the setting information file to be imported.

4. Click [OK].

The Import screen appears.

5. Select the type of the setting information to be imported.

6. Click [OK].

The setting information that is saved is loaded and reflected on each setting screen.

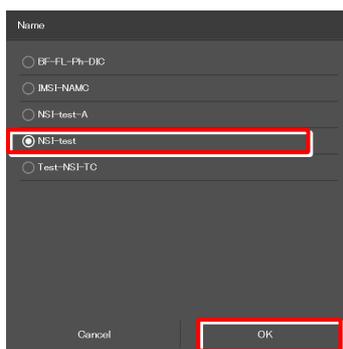
✔ SUPPLEMENTAL REMARKS

Click [Open Export Folder] to open the destination folder of the file in the Explorer.

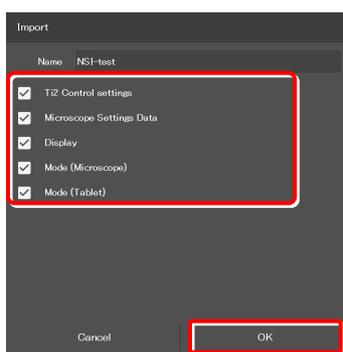
The path of the destination folder is as follows:

```
<C:\Users (user)\%USERPROFILE%\AppData\Local\Nikon\Ti2 Control\Export>
```

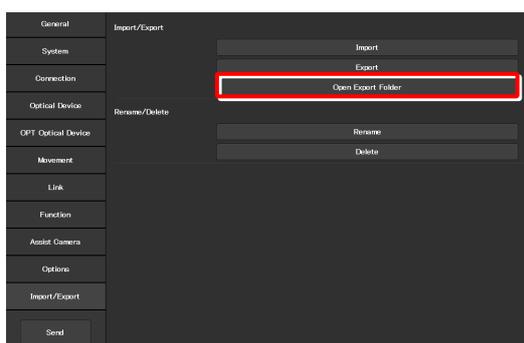
▼ File selection screen



▼ Import screen



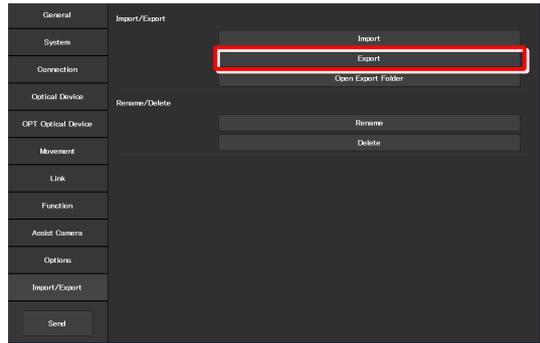
▼ Open the export folder



2.12.2 Exporting the Settings

1. Click [Export] in the [Import/Export] area.

▼ Exporting the settings



2. Specify a file name in the [Name] field.

▼ Exporting the settings

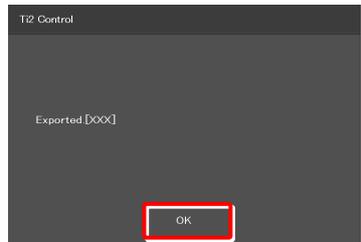


3. Click [OK].

The setting information is saved.

4. On the export complete screen, click [OK].

▼ Completed

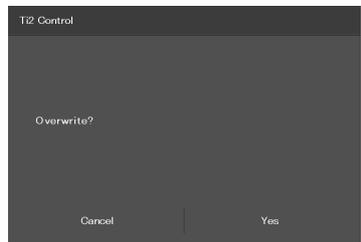


✔ SUPPLEMENTAL REMARKS

If the file name specified in step 2 already exists, a confirmation message appears after [Save] is clicked, asking whether the file is to be overwritten.

Click [Yes] to overwrite the file or [Cancel] to cancel saving the file.

▼ Confirmation of overwriting

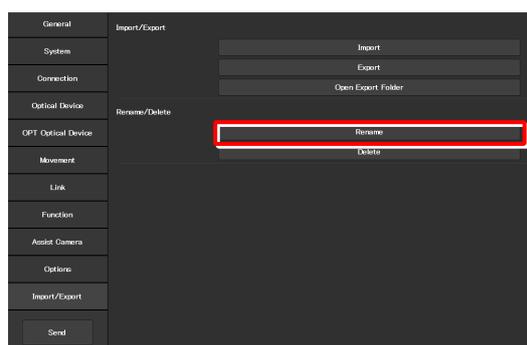


2.12.3 Changing the Setting Name

1. Click [Rename] in the [Rename/Delete] area.

The selection screen of the file to be renamed appears.

▼ Changing the setting name

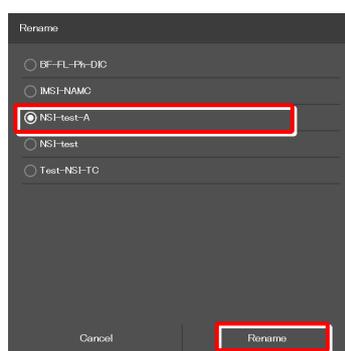


2. Select the file to be renamed.

3. Click [Rename].

The rename screen appears.

▼ Selecting a file



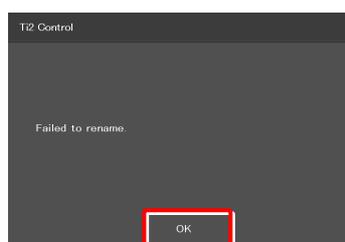
4. Specify a file name in the [Name] field.

5. Click [OK].

▼ Rename



▼ Confirmation of overwriting



✔ SUPPLEMENTAL REMARKS

If the file name specified in step 4 already exists, the name is not saved even though [OK] is clicked.

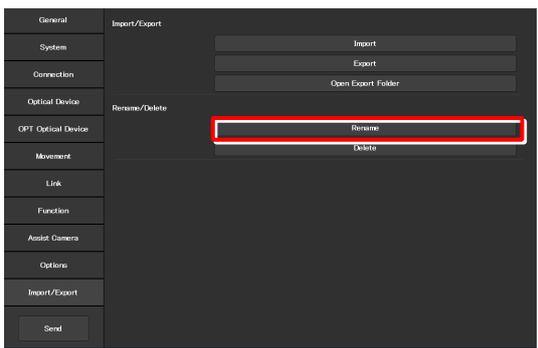
In this case, perform the procedure from step 1 again with another name.

2.12.4 Deleting the Configuration File

1. Click [Delete] in the [Rename/Delete] area.

The file selection screen of the file to be deleted appears.

▼ Deleting the configuration file

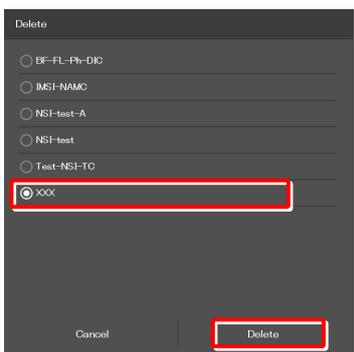


2. Select the file to be deleted.

3. Click [Delete].

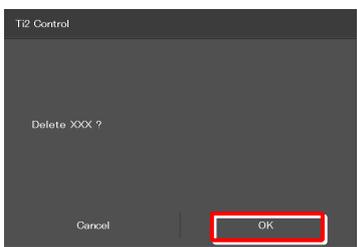
A deletion confirmation screen is displayed.

▼ Selecting a file



4. Click [OK] to delete the file.

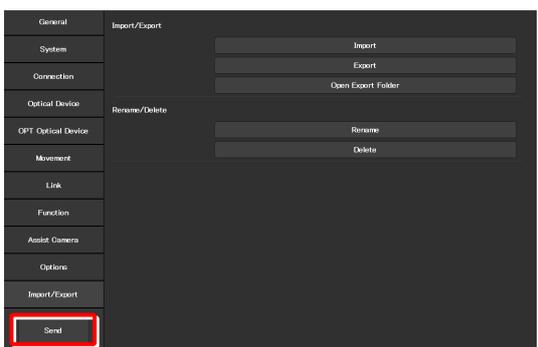
▼ Confirmation of deletion



This completes the setup procedure.

Click [Send] in the setting item selection area to send the setting information to the microscope.

▼ Transmission



2.13 [Information]: Version Information

This section describes how to confirm the version of the application and the controller for the microscope.

1. Select [Information] from the setting item selection area.

The application, controller and microscope main body versions are displayed.

The version information on each Ti2 series microscope is displayed.

Version:

Ti2 Control version (this application)

Microscope:

Model: Name of the currently used microscope system

Main Body FPGA: FPGA version of the Ti2-E main body when the Ti2-E main body is in use

CTRE FW: Firmware version of the controller for Ti2-E when the Ti2-E main body is in use

CTRE FPGA: FPGA version of the controller for Ti2-E when the Ti2-E main body is in use

FW: Firmware version of the Ti2-A main body when the Ti2-A main body is in use

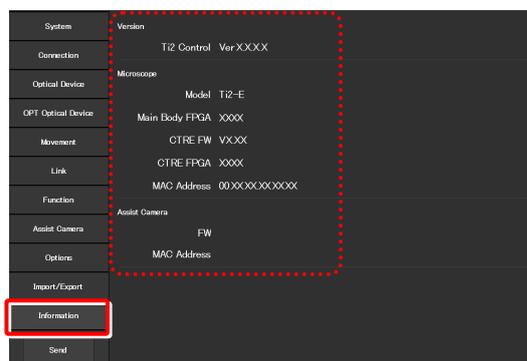
MAC Address: MAC address of the microscope main body

Assist Cam.:

FW: Firmware version of the assist camera when the assist tube base unit is in use

MAC Address: MAC addresses of the assist camera

▼ Version information (For Ti2-E)



▼ Version information (For Ti2-A)



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Appendix (Ti2-E Only)

This chapter lists the functions assigned to function buttons on the Ti2-E microscope main body and the joystick.

3.1 List of Functions Assigned to Function Buttons

3.1.1 Initial Setting of the Function Buttons on the Ti2-E Microscope Main Body

The table below lists the default functions assigned to the function buttons on the Ti2-E microscope main body.

Button name	Indicated name	Functional overview
FnR button	I/O1OUT TRIG.	Trigger output of digital I/O channel 1
FnL button	DISP LED	Turns on or off the LED indicators on the front of the microscope main body.

3.1.2 Initial Setting of the Function Buttons on the Joystick

The table below lists the default functions assigned to the function buttons on the joystick.

Button name	Indicated name	Functional overview
Fn1	MODE1 MEM-RECALL	Memorizes and recalls Mode 1.
Fn2	MODE2 MEM-RECALL	Memorizes and recalls Mode 2.
Fn3	COND SHIFT	Shifts the condenser.
Fn4	COND SHUTTER MOVE	Shifts the condenser shutter address.
Fn5	FL1st SHIFT	Shifts FL turret 1.
Fn6	FL1SH OPEN-CLOSE	Opens or closes FL turret 1 shutter.

3.1.3 Functions That Can Be Registered

The table below lists the functions that can be assigned to the function buttons on the Ti2-E microscope main body and the joystick.

All these functions can be assigned from “Ti2 Control.”

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
1	1	----- (NULL)	Nothing is to be set.	✓	✓
2	1	REVO SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns the nosepiece clockwise. Move the joystick to the right in the X direction while pressing the button: Turns the nosepiece counterclockwise.	✓	
3	1	REVO 1	Moves to nosepiece address 1.		
4	1	REVO 2	Moves to nosepiece address 2.		
5	1	REVO 3	Moves to nosepiece address 3.		
6	1	REVO 4	Moves to nosepiece address 4.		
7	1	REVO 5	Moves to nosepiece address 5.		
8	1	REVO 6	Moves to nosepiece address 6.		
9	1	REVO CW	Turns the nosepiece clockwise.		
10	1	REVO CCW	Turns the nosepiece counterclockwise.		
11	1	COND SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns the condenser clockwise. Move the joystick to the right in the X direction while pressing the button: Turns the condenser counterclockwise.	✓✓ (Fn3)	
12	1	COND 1	Moves to condenser address 1.		
13	1	COND 2	Moves to condenser address 2.		
14	1	COND 3	Moves to condenser address 3.		
15	1	COND 4	Moves to condenser address 4.		
16	1	COND 5	Moves to condenser address 5.		

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
17	1	COND 6	Moves to condenser address 6.		
18	1	COND 7	Moves to condenser address 7.		
19	1	COND CW	Turns the condenser clockwise.		
20	1	COND CCW	Turns the condenser counterclockwise.		
21	2	FL1st SHIFT	Move the joystick to the left in the X direction while holding down the button: Turns FL turret 1 clockwise. Move the joystick to the right in the X direction while holding down the button: Turns FL turret 1 counterclockwise.	✓✓ (Fn5)	
22	2	FL1st 1	Moves FL turret 1 to address 1.		
23	2	FL1st 2	Moves FL turret 1 to address 2.		
24	2	FL1st 3	Moves FL turret 1 to address 3.		
25	2	FL1st 4	Moves FL turret 1 to address 4.		
26	2	FL1st 5	Moves FL turret 1 to address 5.		
27	2	FL1st 6	Moves FL turret 1 to address 6.		
28	2	FL1st CW	Turns FL turret 1 clockwise.		
29	2	FL1st CCW	Turns FL turret 1 counterclockwise.		
30	2	FL2nd SHIFT	Move the joystick to the left in the X direction while holding down the button: Turns FL turret 2 clockwise. Move the joystick to the right in the X direction while holding down the button: Turns FL turret 2 counterclockwise.	✓	
31	2	FL2nd 1	Moves FL turret 2 to address 1.		
32	2	FL2nd 2	Moves FL turret 2 to address 2.		
33	2	FL2nd 3	Moves FL turret 2 to address 3.		
34	2	FL2nd 4	Moves FL turret 2 to address 4.		
35	2	FL2nd 5	Moves FL turret 2 to address 5.		
36	2	FL2nd 6	Moves FL turret 2 to address 6.		
37	2	FL2nd CW	Turns FL turret 2 clockwise.		
38	2	FL2nd CCW	Turns FL turret 2 counterclockwise.		
39	2	BA1st SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns BA filter wheel 1 clockwise. Move the joystick to the right in the X direction while pressing the button: Turns BA filter wheel 1 counterclockwise.	✓	
40	2	BA1st 1	Moves BA filter wheel 1 to address 1.		
41	2	BA1st 2	Moves BA filter wheel 1 to address 2.		
42	2	BA1st 3	Moves BA filter wheel 1 to address 3.		
43	2	BA1st 4	Moves BA filter wheel 1 to address 4.		
44	2	BA1st 5	Moves BA filter wheel 1 to address 5.		
45	2	BA1st 6	Moves BA filter wheel 1 to address 6.		
46	2	BA1st 7	Moves BA filter wheel 1 to address 7.		
47	2	BA1st CW	Turns BA filter wheel 1 clockwise.		✓
48	2	BA1st CCW	Turns BA filter wheel 1 counterclockwise.		✓
49	2	BA2nd SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns BA filter wheel 2 clockwise. Move the joystick to the right in the X direction while pressing the button: Turns BA filter wheel 2 counterclockwise.	✓	
50	2	BA2nd 1	Moves BA filter wheel 2 to address 1.		
51	2	BA2nd 2	Moves BA filter wheel 2 to address 2.		
52	2	BA2nd 3	Moves BA filter wheel 2 to address 3.		

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
53	2	BA2nd 4	Moves BA filter wheel 2 to address 4.		
54	2	BA2nd 5	Moves BA filter wheel 2 to address 5.		
55	2	BA2nd 6	Moves BA filter wheel 2 to address 6.		
56	2	BA2nd 7	Moves BA filter wheel 2 to address 7.		
57	2	BA2nd CW	Turns BA filter wheel 2 clockwise.		✓
58	2	BA2nd CCW	Turns BA filter wheel 2 counterclockwise.		✓
59	3	PATH SHIFT	Move the joystick along the XY direction of the joystick while pressing the button for optical path switching: X+: R100, X-: L100, Y+: EYE, Y-: L80	✓	
60	3	PATH EYE	Switches the optical path to EYE.		
61	3	PATH R100	Switches the optical path to R100.		
62	3	PATH L100	Switches the optical path to L100.		
63	3	PATH AUX	Switches the optical path to AUX.		
64	3	PATH EYE-R100	Toggles the optical path between EYE and R100.		
65	3	PATH EYE-L100	Toggles the optical path between EYE and L100.		
66	3	PATH EYE-AUX	Toggles the optical path between EYE and AUX.		
67	3	PATH R100-L100	Toggles the optical path between R100 and L100.		
68	3	PATH R100-AUX	Toggles the optical path between R100 and AUX.		
69	3	PATH L100-AUX	Toggles the optical path between L100 and AUX.		
70	3	PATH ALL	Switches the optical path from EYE to R100, AUX, L100 and then back to EYE.		
71	3	Z SPEED CHANGE	Switches the Z-movement between fine and coarse.		
72	3	Z ZERO RESET	Resets the elevating movement (Z-axis coordinate) to 0.		
73	3	Z ESCAPE-REFOCUS	Toggles the elevating movement between escape and original positions.	✓	
74	3	Z ESCAPE	Places the elevating section in the escape position.		
75	3	Z REFOCUS	Restores the elevating section in the original position.		
76	3	Z LIMIT	Sets or releases the software limit (Z limit) on the elevating section.		
77	3	XY SPEED CHANGE	Switches the XY-movement between fine and coarse.		
78	3	X ZERO RESET	Resets the XY stage (X-axis coordinate) to 0.		
79	3	Y ZERO RESET	Resets the XY stage (Y-axis coordinate) to 0.		
80	3	XY ZERO RESET	Resets the XY stage (XY-axis coordinates) to 0.		
81	3	XY CONSTANT SPEED	Turns on or off the joystick constant speed mode for the XY stage.	✓	
82	3	XY JOYFINESPEED	Sets the joystick fine speed for the XY stage to normal or low speed.	✓	
83	4	SH1 OPEN-CLOSE	Opens or closes motorized shutter 1.	✓	✓
84	4	SH2 OPEN-CLOSE	Opens or closes motorized shutter 2.	✓	✓
85	4	FL1SH OPEN-CLOSE	Opens or closes FL turret 1 shutter.	✓✓ (Fn6)	
86	4	FL2SH OPEN-CLOSE	Opens or closes FL turret 2 shutter.	✓	
87	4	COND SHUTTER MOVE	Moves the condenser shutter position.	✓✓ (Fn4)	
88	4	LED SHIFT	Adjusts brightness by turning the focus knobs while pressing the button.	✓	
89	4	LED ON-OFF	Turns on and off diascope LED illumination.		
90	4	LED UP	Increases the illumination intensity of diascope LED illumination.		
91	4	LED DOWN	Decreases the illumination intensity of diascope LED illumination.		
92	4	HALOGEN SHIFT	Adjusts brightness by turning the focus knobs while pressing the button.	✓	

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
93	4	HALOGEN ON-OFF	Turns on and off halogen dia-illumination.		
94	4	HALOGEN UP	Increases the illumination intensity of halogen dia-illumination.		
95	4	HALOGEN DOWN	Decreases the illumination intensity of halogen dia-illumination.		
96	4	PFS ON-OFF	Turns on or off PFS4.		
97	4	PFS DM	Brings the PFS dichroic mirror to the IN or OUT position.	✓	
98	4	PFS OFFSET ZERO	Offset lens: Moves the offset lens to offset 0 position.		✓
99	4	PFS LED OFF	Turns on or off the PFS LED.		
100	4	OLSP COARSE-FINE	Switches the PFS4 offset knob between coarse motion and fine motion.		
101	5	TUBEBASE SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns the tube base's external Ph turret clockwise. Move the joystick to the right in the X direction while pressing the button: Turns the tube base's external Ph turret counterclockwise.	✓	
102	5	TUBEBASE 1	Moves the tube base's external Ph turret to address 1.		
103	5	TUBEBASE 2	Moves the tube base's external Ph turret to address 2.		
104	5	TUBEBASE 3	Moves the tube base's external Ph turret to address 3.		
105	5	TUBEBASE 4	Moves the tube base's external Ph turret to address 4.		
106	5	TUBEBASE CW	Turns the tube base's external Ph turret clockwise.		✓
107	5	TUBEBASE CCW	Turns the tube base's external Ph turret counterclockwise.		✓
108	5	MBRANCH1st IN-OUT	Brings the epi-illumination attachment's Lapp main branch 1 to the IN or OUT position.	✓	✓
109	5	MBRANCH2nd IN-OUT	Brings the epi-illumination attachment's Lapp main branch 2 to the IN or OUT position.	✓	✓
110	5	SBRANCH IN-OUT	Brings the epi-illumination attachment's Lapp sub-branch to the IN or OUT position.	✓	✓
111	5	EPILED UNIT#1	Selects LED unit #1 of the epi-fl LED illuminator.		
112	5	EPILED UNIT#2	Selects LED unit #2 of the epi-fl LED illuminator.		
113	5	EPILED UNIT#3	Selects LED unit #3 of the epi-fl LED illuminator.		
114	5	EPILED UNIT#4	Selects LED unit #4 of the epi-fl LED illuminator.		
115	5	EPILED UNIT ALL	Switches LED unit of the epi-fl LED illuminator from #1 to #2, #3, #4, and then back to #1.		
116	5	EPILED UP	Increases the illumination intensity of the selected LED unit of the epi-fl LED illuminator.		
117	5	EPILED DOWN	Decreases the illumination intensity of the selected LED unit of the epi-fl LED illuminator.		
118	5	EPILED ON-OFF	Turns on or off the selected LED unit of the epi-fl LED illuminator.		
119	5	INTSL SHIFT	Move the joystick to the left in the X direction while pressing the button: Turns the ND clockwise. Move the joystick to the right in the X direction while pressing the button: Turns the ND counterclockwise.		
120	5	INTSL ND CW	Turns the Intensilight ND clockwise.		
121	5	INTSL ND CCW	Turns the Intensilight ND counterclockwise.		
122	5	INT.SH OPEN-CLOSE	Opens or closes the Intensilight shutter.		
123	5	CORCOL SHIFT	Moves the motorized correction collar in the +/- direction when the focus knobs are turned while the button is pressed.	✓	
124	6	MODE1 MEMORY	Memorizes Mode 1 setting.		
125	6	MODE2 MEMORY	Memorizes Mode 2 setting.		
126	6	MODE3 MEMORY	Memorizes Mode 3 setting.		
127	6	MODE4 MEMORY	Memorize Mode 4 setting.		

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
128	6	MODE5 MEMORY	Memorizes Mode 5 setting.		
129	6	MODE6 MEMORY	Memorizes Mode 6 setting.		
130	6	MODE7 MEMORY	Memorizes Mode 7 setting.		
131	6	MODE8 MEMORY	Memorizes Mode 8 setting.		
132	6	MODE1 RECALL	Recalls Mode 1 setting.		
133	6	MODE2 RECALL	Recalls Mode 2 setting.		
134	6	MODE3 RECALL	Recalls Mode 3 setting.		
135	6	MODE4 RECALL	Recalls Mode 4 setting.		
136	6	MODE5 RECALL	Recalls Mode 5 setting.		
137	6	MODE6 RECALL	Recalls Mode 6 setting.		
138	6	MODE7 RECALL	Recalls Mode 7 setting.		
139	6	MODE8 RECALL	Recalls Mode 8 setting.		
140	6	MODE1 MEM-RECALL	Short press: Recalls Mode 1 setting. Long press: Memorizes Mode 1 setting.	✓✓ (Fn1)	✓
141	6	MODE2 MEM-RECALL	Short press: Recalls Mode 2 setting. Long press: Memorizes Mode 2 setting.	✓✓ (Fn2)	✓
142	6	MODE3 MEM-RECALL	Short press: Recalls Mode 3 setting. Long press: Memorizes Mode 3 setting.	✓	✓
143	6	MODE4 MEM-RECALL	Short press: Recalls Mode 4 setting. Long press: Memorizes Mode 4 setting.	✓	✓
144	6	MODE5 MEM-RECALL	Short press: Recalls Mode 5 setting. Long press: Memorizes Mode 5 setting.		
145	6	MODE6 MEM-RECALL	Short press: Recalls Mode 6 setting. Long press: Memorizes Mode 6 setting.		
146	6	MODE7 MEM-RECALL	Short press: Recalls Mode 7 setting. Long press: Memorizes Mode 7 setting.		
147	6	MODE8 MEM-RECALL	Short press: Recalls Mode 8 setting. Long press: Memorizes Mode 8 setting.		
148	7	I/O1OUT TRIG.	Trigger output of control box I/O channel 1	✓	✓✓ (FnR)
149	7	I/O2OUT TRIG.	Trigger output of control box I/O channel 2	✓	✓
150	7	I/O3OUT TRIG.	Trigger output of control box I/O channel 3		
151	7	I/O4OUT TRIG.	Trigger output of control box I/O channel 4		
152	7	I/O5OUT TRIG.	Trigger output of control box I/O channel 5		
153	7	I/O6OUT TRIG.	Trigger output of control box I/O channel 6		
154	7	I/O7OUT TRIG.	Trigger output of control box I/O channel 7		
155	7	I/O8OUT TRIG.	Trigger output of control box I/O channel 8		
156	7	I/O1OUT TOGGLE	Switches the control box I/O channel 1 output between High and Low.	✓	✓
157	7	I/O2OUT TOGGLE	Switches the control box I/O channel 2 output between High and Low.	✓	✓
158	7	I/O3OUT TOGGLE	Switches the control box I/O channel 3 output between High and Low.		
159	7	I/O4OUT TOGGLE	Switches the control box I/O channel 4 output between High and Low.		
160	7	I/O5OUT TOGGLE	Switches the control box I/O channel 5 output between High and Low.		
161	7	I/O6OUT TOGGLE	Switches the control box I/O channel 6 output between High and Low.		
162	7	I/O7OUT TOGGLE	Switches the control box I/O channel 7 output between High and Low.		
163	7	I/O8OUT TOGGLE	Switches the control box I/O channel 8 output between High and Low.		

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
164	7	I/O1OUT PUSH	Drives the control box I/O channel 1 output. High when pushed	✓	✓
165	7	I/O2OUT PUSH	Drives the control box I/O channel 2 output. High when pushed	✓	✓
166	7	I/O3OUT PUSH	Drives the control box I/O channel 3 output. High when pushed		
167	7	I/O4OUT PUSH	Drives the control box I/O channel 4 output. High when pushed		
168	7	I/O5OUT PUSH	Drives the control box I/O channel 5 output. High when pushed		
169	7	I/O6OUT PUSH	Drives the control box I/O channel 6 output. High when pushed		
170	7	I/O7OUT PUSH	Drives the control box I/O channel 7 output. High when pushed		
171	7	I/O8OUT PUSH	Drives the control box I/O channel 8 output. High when pushed		
172	8	EXI/O1OUT TRIG.	Trigger output of extension box I/O channel 1		
173	8	EXI/O2OUT TRIG.	Trigger output of extension box I/O channel 2		
174	8	EXI/O3OUT TRIG.	Trigger output of extension box I/O channel 3		
175	8	EXI/O4OUT TRIG.	Trigger output of extension box I/O channel 4		
176	8	EXI/O5OUT TRIG.	Trigger output of extension box I/O channel 5		
177	8	EXI/O6OUT TRIG.	Trigger output of extension box I/O channel 6		
178	8	EXI/O7OUT TRIG.	Trigger output of extension box I/O channel 7		
179	8	EXI/O8OUT TRIG.	Trigger output of extension box I/O channel 8		
180	8	EXI/O9OUT TRIG.	Trigger output of extension box I/O channel 9		
181	8	EXI/O10OUT TRIG.	Trigger output of extension box I/O channel 10		
182	8	EXI/O11OUT TRIG.	Trigger output of extension box I/O channel 11		
183	8	EXI/O12OUT TRIG.	Trigger output of extension box I/O channel 12		
184	8	EXI/O13OUT TRIG.	Trigger output of extension box I/O channel 13		
185	8	EXI/O14OUT TRIG.	Trigger output of extension box I/O channel 14		
186	8	EXI/O15OUT TRIG.	Trigger output of extension box I/O channel 15		
187	8	EXI/O16OUT TRIG.	Trigger output of extension box I/O channel 16		
188	8	EXI/O1OUT TOGGLE	Switches the extension box I/O channel 1 output between High and Low.		
189	8	EXI/O2OUT TOGGLE	Switches the extension box I/O channel 2 output between High and Low.		
190	8	EXI/O3OUT TOGGLE	Switches the extension box I/O channel 3 output between High and Low.		
191	8	EXI/O4OUT TOGGLE	Switches the extension box I/O channel 4 output between High and Low.		
192	8	EXI/O5OUT TOGGLE	Switches the extension box I/O channel 5 output between High and Low.		
193	8	EXI/O6OUT TOGGLE	Switches the extension box I/O channel 6 output between High and Low.		
194	8	EXI/O7OUT TOGGLE	Switches the extension box I/O channel 7 output between High and Low.		
195	8	EXI/O8OUT TOGGLE	Switches the extension box I/O channel 8 output between High and Low.		
196	8	EXI/O9OUT TOGGLE	Switches the extension box I/O channel 9 output between High and Low.		
197	8	EXI/O10OUT TOGGLE	Switches the extension box I/O channel 10 output between High and Low.		
198	8	EXI/O11OUT TOGGLE	Switches the extension box I/O channel 11 output between High and Low.		
199	8	EXI/O12OUT TOGGLE	Switches the extension box I/O channel 12 output between High and Low.		
200	8	EXI/O13OUT TOGGLE	Switches the extension box I/O channel 13 output between High and Low.		

No.	Group	Indicated name	Functional overview	Operations that can be set from the joystick (✓✓ indicates the default.)	
				Fn1 to 6 buttons on the joystick	FnL/FnR button on the microscope main body
201	8	EXI/O14OUT TOGGLE	Switches the extension box I/O channel 14 output between High and Low.		
202	8	EXI/O15OUT TOGGLE	Switches the extension box I/O channel 15 output between High and Low.		
203	8	EXI/O16OUT TOGGLE	Switches the extension box I/O channel 16 output between High and Low.		
204	9	EXI/O1OUT PUSH	Drives the extension box I/O channel 1 output. High when pushed.		
205	9	EXI/O2OUT PUSH	Drives the extension box I/O channel 2 output. High when pushed.		
206	9	EXI/O3OUT PUSH	Drives the extension box I/O channel 3 output. High when pushed.		
207	9	EXI/O4OUT PUSH	Drives the extension box I/O channel 4 output. High when pushed.		
208	9	EXI/O5OUT PUSH	Drives the extension box I/O channel 5 output. High when pushed.		
209	9	EXI/O6OUT PUSH	Drives the extension box I/O channel 6 output. High when pushed.		
210	9	EXI/O7OUT PUSH	Drives the extension box I/O channel 7 output. High when pushed.		
211	9	EXI/O8OUT PUSH	Drives the extension box I/O channel 8 output. High when pushed.		
212	9	EXI/O9OUT PUSH	Drives the extension box I/O channel 9 output. High when pushed.		
213	9	EXI/O10OUT PUSH	Drives the extension box I/O channel 10 output. High when pushed.		
214	9	EXI/O11OUT PUSH	Drives the extension box I/O channel 11 output. High when pushed.		
215	9	EXI/O12OUT PUSH	Drives the extension box I/O channel 12 output. High when pushed.		
216	9	EXI/O13OUT PUSH	Drives the extension box I/O channel 13 output. High when pushed.		
217	9	EXI/O14OUT PUSH	Drives the extension box I/O channel 14 output. High when pushed.		
218	9	EXI/O15OUT PUSH	Drives the extension box I/O channel 15 output. High when pushed.		
219	9	EXI/O16OUT PUSH	Drives the extension box I/O channel 16 output. High when pushed.		
220	9	DISP LED	Turns on or off the LED indicators on the front of the microscope main body.	✓	✓✓ (FnL)
221	9	OBJ COMBINATION	Linked operation of the nosepiece and optical devices		

3.2 List of Indication Functions Assigned to the LED Indicators of the Ti2-E Microscope Main Body

3.2.1 Indication Functions That Can Be Registered

The table below lists the LED indications that can be assigned to the FnL and FnR indicators on the Ti2-E microscope main body.

No.	Indicated name	Functional overview	States when set
1	-----	Nothing is to be set.	None
2	Shutter 1 Open/Close Status	Shutter 1 open/closed status	Lit: Open, Extinguished: Closed
3	Shutter 2 Open/Close Status	Shutter 2 open/closed status	Lit: Open, Extinguished: Closed
4	Main Branch 1 IN/OUT Status	Main branch 1 status	Lit: In, Extinguished: Out
5	Main Branch 2 IN/OUT Status	Main branch 2 status	Lit: In, Extinguished: Out
6	Sub Branch IN/OUT Status	Sub branch status	Lit: In, Extinguished: Out
7	C-LEDFl ON/OFF Status	Selected LED unit status of the epi-fl LED illuminator	Lit: On, Extinguished: Off
8	Intensilight Shutter Open/Close Status	IntensiLight Shutter Status	Lit: Open, Extinguished: Closed
9	DIC Polarizer IN/OUT Status	DIC polarizer status	Lit: In, Extinguished: Out
10	DIC Analyzer IN/OUT Status	Analyzer slot status	Lit: In, Extinguished: Out
11	Optical Zoom 1.5x/1x Status	Intermediate magnification	Lit: 1.5x, Extinguished: 1x
12	Eyepiece Tubebase Camera Port IN/OUT Status	Tube base unit camera port status	Lit: EYE (motorized tube and port tube) with assist tube open Extinguished: DSC (motorized tube and port tube) with assist tube closed
13	Bertrand Lens IN/OUT Status	Bertrand lens status	Lit: In, Extinguished: Out
14	Assist Camera ON/OFF Status	Assist camera power status	Lit: On, Extinguished: Off
15	Control Box I/O 1 Output Hi/Low Status	Control box I/O channel 1 output status	Lit: High, Extinguished: Low
16	Control Box I/O 2 Output Hi/Low Status	Control box I/O channel 2 output status	Lit: High, Extinguished: Low
17	Control Box I/O 3 Output Hi/Low Status	Control box I/O channel 3 output status	Lit: High, Extinguished: Low
18	Control Box I/O 4 Output Hi/Low Status	Control box I/O channel 4 output status	Lit: High, Extinguished: Low
19	Control Box I/O 5 Output Hi/Low Status	Control box I/O channel 5 output status	Lit: High, Extinguished: Low
20	Control Box I/O 6 Output Hi/Low Status	Control box I/O channel 6 output status	Lit: High, Extinguished: Low
21	Control Box I/O 7 Output Hi/Low Status	Control box I/O channel 7 output status	Lit: High, Extinguished: Low
22	Control Box I/O 8 Output Hi/Low Status	Control box I/O channel 8 output status	Lit: High, Extinguished: Low
23	Extension I/O Box I/O 01 Output Hi/Low Status	Extension box I/O channel 1 output status	Lit: High, Extinguished: Low
24	Extension I/O Box I/O 02 Output Hi/Low Status	Extension box I/O channel 2 output status	Lit: High, Extinguished: Low
25	Extension I/O Box I/O 03 Output Hi/Low Status	Extension box I/O channel 3 output status	Lit: High, Extinguished: Low
26	Extension I/O Box I/O 04 Output Hi/Low Status	Extension box I/O channel 4 output status	Lit: High, Extinguished: Low
27	Extension I/O Box I/O 05 Output Hi/Low Status	Extension box I/O channel 5 output status	Lit: High, Extinguished: Low
28	Extension I/O Box I/O 06 Output Hi/Low Status	Extension box I/O channel 6 output status	Lit: High, Extinguished: Low
29	Extension I/O Box I/O 07 Output Hi/Low Status	Extension box I/O channel 7 output status	Lit: High, Extinguished: Low
30	Extension I/O Box I/O 08 Output Hi/Low Status	Extension box I/O channel 8 output status	Lit: High, Extinguished: Low
31	Extension I/O Box I/O 09 Output Hi/Low Status	Extension box I/O channel 9 output status	Lit: High, Extinguished: Low

No.	Indicated name	Functional overview	States when set
32	Extension I/O Box I/O 10 Output Hi/Low Status	Extension box I/O channel 10 output status	Lit: High, Extinguished: Low
33	Extension I/O Box I/O 11 Output Hi/Low Status	Extension box I/O channel 11 output status	Lit: High, Extinguished: Low
34	Extension I/O Box I/O 12 Output Hi/Low Status	Extension box I/O channel 12 output status	Lit: High, Extinguished: Low
35	Extension I/O Box I/O 13 Output Hi/Low Status	Extension box I/O channel 13 output status	Lit: High, Extinguished: Low
36	Extension I/O Box I/O 14 Output Hi/Low Status	Extension box I/O channel 14 output status	Lit: High, Extinguished: Low
37	Extension I/O Box I/O 15 Output Hi/Low Status	Extension box I/O channel 15 output status	Lit: High, Extinguished: Low
38	Extension I/O Box I/O 16 Output Hi/Low Status	Extension box I/O channel 16 output status	Lit: High, Extinguished: Low

3.3 List of Functions Assigned to Joystick LCD Screen

3.3.1 Initial Settings of LCD Display

The table below lists the default indication functions assigned to the LCD screen on the joystick. In the initial setting, the LCD screen of the joystick has four pages.

Page	Line	Indicated name	Functional overview
Page 1	2nd line	Nosepiece	Information about objectives
	3rd line	Condenser	Information about condensers
	4th line	Optical Path	Information about optical path switching
Page 2	2nd line	FL1	Information about FL turret 1
	3rd line	Inter Mag.	Information about intermediate magnification
	4th line	Bertrand Lens	Information about the Bertrand lens
Page 3	2nd line	DIC Prism	Information about the DIC slider
	3rd line	DIC Polarizer/Analyzer Slot	Information about the DIC polarizer and analyzer slot
	4th line	-----	(Nothing is set.)
Page 4	2nd line	DIA Lamp	Information about LED dia-illumination
	3rd line	C-LEDFI	Information about the Epi-fl LED
	4th line	C-HGFI	Information about the Intensilight

3.3.2 Indication Functions That Can Be Registered

The table below lists the functions that can be assigned to the LCD screen on the joystick.

No.	Indicated name	Functional overview
1	-----	(Nothing is set.)
2	Nosepiece	Information about objectives
3	Condenser	Information about condensers
4	FL1	Information about FL turret 1
5	FL2	Information about FL turret 2
6	BA1	Information about BA filter wheel 1
7	BA2	Information about BA filter wheel 2
8	Optical Path	Information about optical path switching
9	Eyepiece Tubebase	Information about the tube base unit camera port
10	LAPP Main Branch 1	Main branch 1 (epi-illumination information)
11	LAPP Main Branch 2	Main branch 2 (epi-illumination information)
12	LAPP Sub Branch	Sub-branch (epi-illumination information)
13	Shutter	Information about the motorized shutter
14	DIA Lamp	Information about LED dia-illumination
15	DIC Prism	Information about the DIC slider
16	DIC Polarizer/Analyzer Slot	Information about the DIC polarizer and analyzer slot
17	Inter Mag.	Information about intermediate magnification
18	Bertrand Lens	Information about the Bertrand lens
19	C-LEDFI	Information about the Epi-fl LED
20	C-HGFI	Information about the Intensilight