M705E 21.5.NX.12

Nikon

Application for Inverted Research Microscope ECLIPSE Ti2 Series

Ti2 Control

Instruction Manual

(for Android)

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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Prerequisite knowledge

This manual assumes a basic familiarity with Android.
If you come across unfamiliar terms or operations while reading through this manual, see the user's manual for your smart device version.

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Reference data

Reference spectrum data of the fluorescence probe in Ti2 Control are provided from Takara BIO USA Inc.
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Disclaimer

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Notes on Using “Ti2 Control”

- This application is used to make settings for the Ti2-E/Ti2-A, control the Ti2-E, display the Ti2-A status, and display the Assist Guide.
- For the first use of the microscope main body, 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 smart device can be limited.
  “Locked” is shown in red on the top right of the Ti2 Control screen on the smart device during the limiting period.
  When using the Assist Guide, a message indicating the limiting period is displayed on the smart device screen if the limitation is enabled from the application other than Ti2 Control. Tap [OK] to display the top screen of the Assist Guide.
- Interruption by the OS or other applications during Live display of Ti2 Control in the Android terminal may close the Live screen and display the Home screen.

Screens used in this manual

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

This manual describes functions for the Ti2-E and the Ti2-A separately by chapters. The screens of the Ti2-E are used as examples in the common chapters.

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Chapter
1

Preparation

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

1.1 Hardware and Software Requirements

CAUTION

When placing a smart device close to the laptop computer, the laptop computer may enter sleep mode depending on the combination of the smart device and the laptop computer.

Item	Specifications
Processor	Compatible with ARM
LAN	Wireless LAN: IEEE802.11ac or IEEE802.11n (IEEE802.11ac is recommended.)
RAM	2 GB or more
Storage	16 GB or more
Resolution (aspect ratio)	Tablet PC: 1,920 x 1,200 or more (4:3, 16:9 or 16:10) Smartphone: 640 x 480 or more (4:3 or 16:9)
Recommended device	NEC Lavie Tab E Google Pixel 3
Platform	Android OS Ver. 5.1 or later
Remarks	Installer The “Ti2 Control” installer program can be downloaded from Google Play. “Ti2 Control” is not guaranteed to work with all devices. Contact your distributor for detailed compatibility information.

1.2 Installing the Application

This section describes how to install the application.

CAUTION

- The uninstallation procedure for “Ti2 Control” is the same as that for other Android applications.

Notes on updating or reinstalling the application

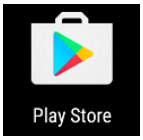
If “Ti2 Control” installed without using Google Play is in the device, first uninstall it, and then reinstall it. Otherwise the application cannot be updated.
For details, see “1.2.3 Uninstallation of the Application Installed Without Using Google Play.”

1.2.1 Installation From Google Play

1. **Tap the [Play Store] icon on the device to access Google Play.**

2. **Search for “Ti2 Control” and then install it.**

▼ Installation



1.2.2 Installation Without Using Google Play

Prepare the installer file (*.apk) of “Ti2 Control” in your computer.

For details on how to obtain the installer, contact your local Nikon representative.

Preparation

1. Tap the [Settings] icon on the device.

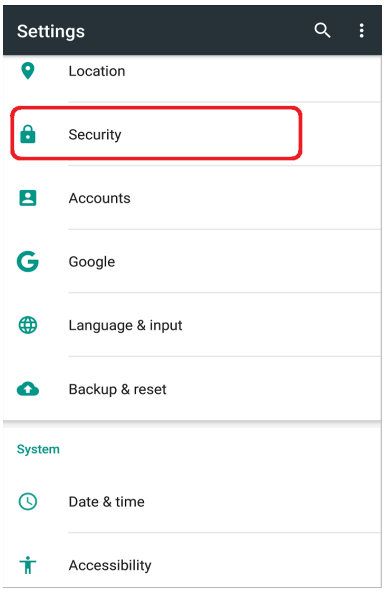
The setting screen appears.

▼ Preparation

2. Tap [Security].

The Security screen appears.

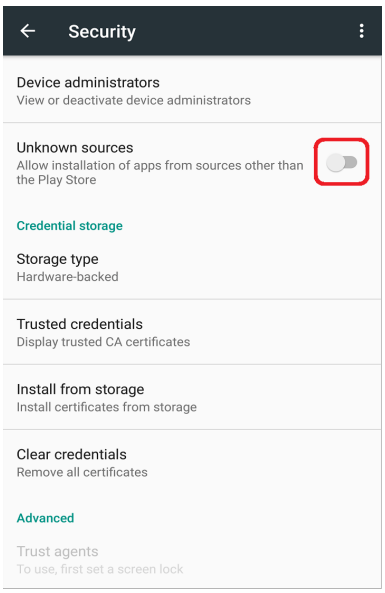
▼ Setting screen



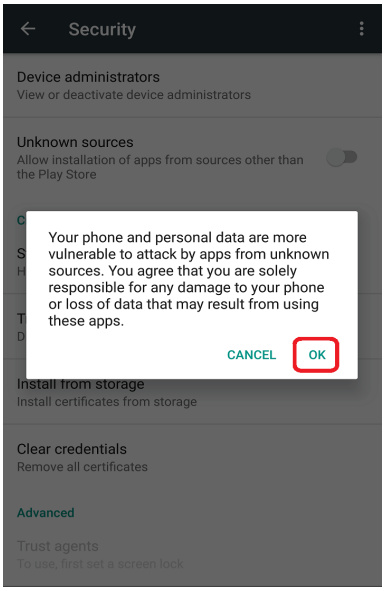
3. Turn on the [Unknown sources] switch.

The warning screen appears.

▼ Security screen

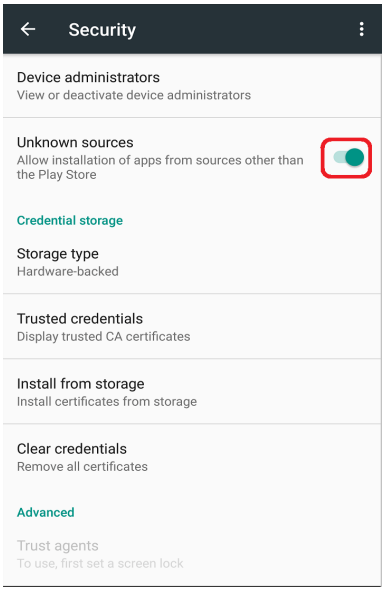


4. Tap [OK].



The [Unknown sources] switch is turned on.

This completes the preparation for the installation.



Uninstalling the Application

CAUTION

- To install the application, a file management application (file manager) is required.
  Use a file management application (file manager) supplied with your smart device.
- When using a Nexus series, which does not have file manager, use a free file management application for Android.
- Before updating or reinstalling the “Ti2 Control”, uninstall “Ti2 Control” and then reinstall it. For details on how to uninstall “Ti2Control”, see “1.2.3 Uninstallation of the Application Installed Without Using Google Play.”

1. **Connect a smart device and the computer using a USB cable.**

   The smart device is recognized as storage from the computer.

2. **Access the smart device from the computer, and copy the installer file (*.apk) to the smart device.**

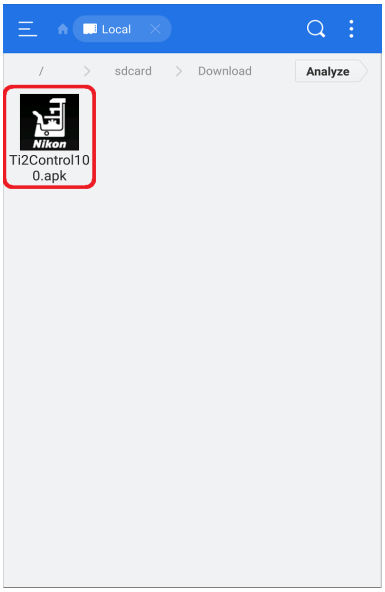
3. **Start the file manager on the smart device, and display the folder in which a copied installer is saved.**

   The free management file “ES file explorer” for Android is used as an example here.

4. **Tap the installer.**

   The Properties screen appears.

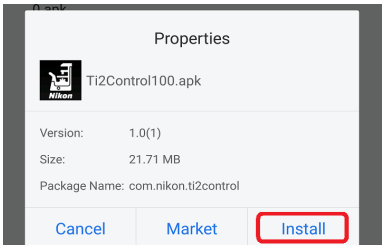
▼ Installation start



5. **Tap [Install].**

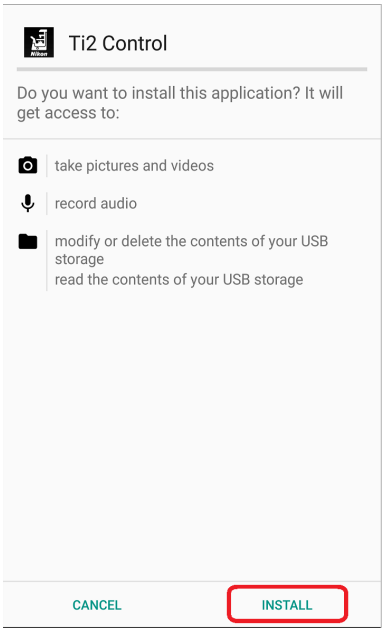
   A confirmation message is displayed.

▼ Properties



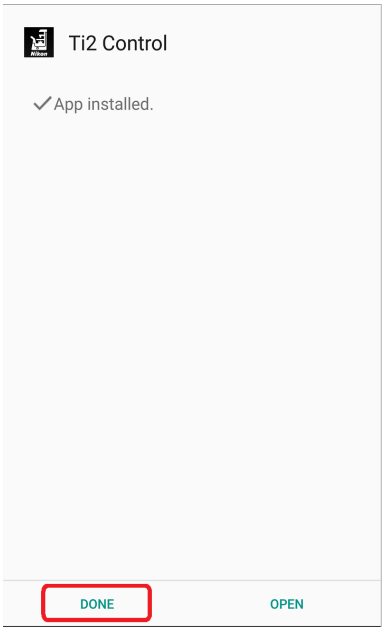
6. Tap [Install].

▼ Installation start



7. When the installation is complete, tap [DONE].

▼ Installation is complete.



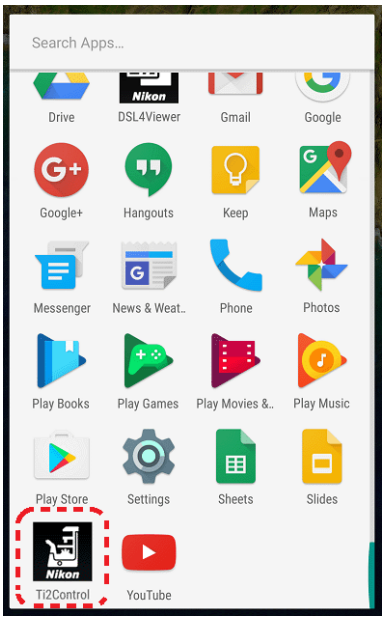
When installation is completed, an icon appears on the home screen.

▼ **Home screen of Android**

If the application's icon does not appear on the home screen, tap the Drawer button. "Ti2 Control" is included in the list of applications.

To display the application's icon on the home screen, hold down the "Ti2 Control" icon in the list of applications in the Drawer.

▼ **Android's drawer screen**



1.2.3 Uninstallation of the Application Installed Without Using Google Play

CAUTION

The user interface and the setting procedure may vary depending on the device type and the OS version.

1. Tap the [Settings] icon on the device.

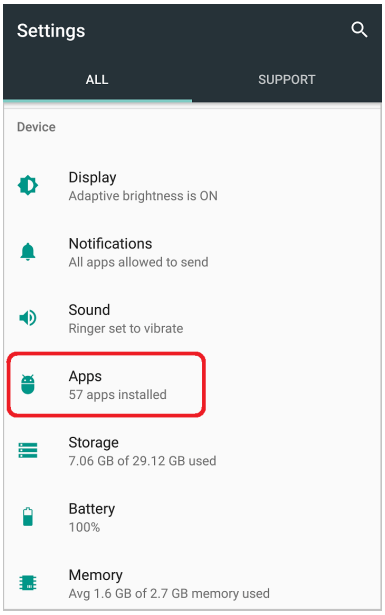
The setting screen appears.

▼ Preparation

2. Tap [Apps].

The Apps screen appears.

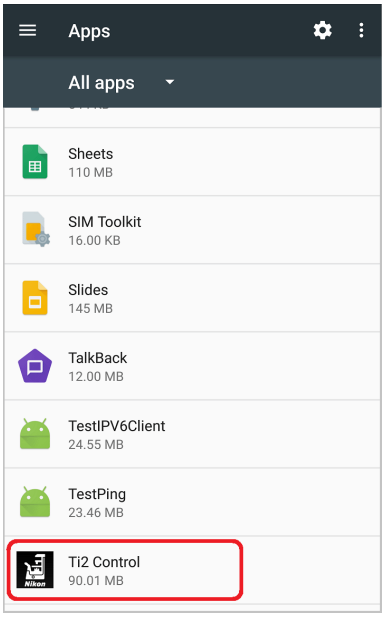
▼ Setting screen



3. In the list of application, tap [Ti2 Control].

The App info screen appears.

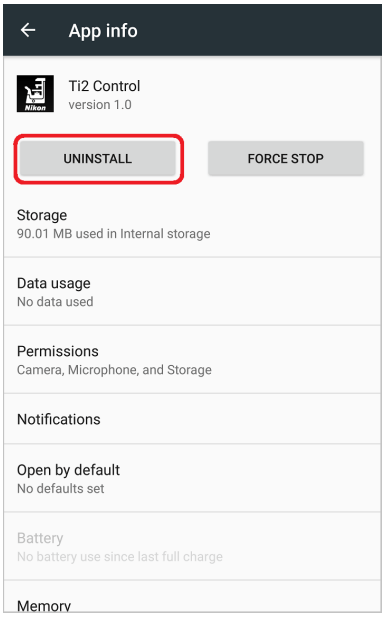
▼ Apps screen



4. Tap [UNINSTALL].

“Ti2 Control” is uninstalled.

▼ App info screen



1.3 Starting the Application

This section describes how to start the application.

> **CAUTION**
>
> Using a certain smart device with mobile data and Wi-Fi data communications enabled may disconnect the connection to the Wi-Fi router not connecting to the Internet.
>
> Turn off the mobile data communication of the device before using Ti2 Control.

1.3.1 Starting the Application

1. Tap the icon of the application on the home screen of the device.

"Ti2 Control" starts.

> **CAUTION**
>
> For initial setup of a microscope system, use the device in landscape orientation.

> **CAUTION**
>
> If the Ti2 Control screen is displayed again after recovering from the sleep or the suspend mode, or switching back from other application, the last-used screen is not displayed.
> Note that the Home screen of the Ti2 Control is displayed instead, and the settings in the last-used screen are lost.

▼ Starting the application

1.4 Connecting the Microscope System to the LAN

After the "Ti2 Control" application installation, connect the microscope system to a wireless router using a LAN cable.

Connect the microscope system (controller for TI2-E when using the Ti2-E, or microscope main body when using the Ti2-A) to the LAN to enable communications between the microscope system and the smart device which is connected to the LAN via a Wi-Fi router (wireless router).

> **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.

For how to connect the cable, see the Inverted Research Microscope ECLIPSE Ti2-E and Ti2-E/B Instruction Manual, or the Inverted Research Microscope ECLIPSE Ti2-A Instruction Manual.

1.4.1 Accessing the Microscope From the Device

Access the microscope system via the wireless router.

1. **Set the device's Wi-Fi setting to ON.**

   On the device, select [Settings], [Wireless and network], and [Wi-Fi], and then set the Wi-Fi setting to ON.

   The device will display a list of available networks.

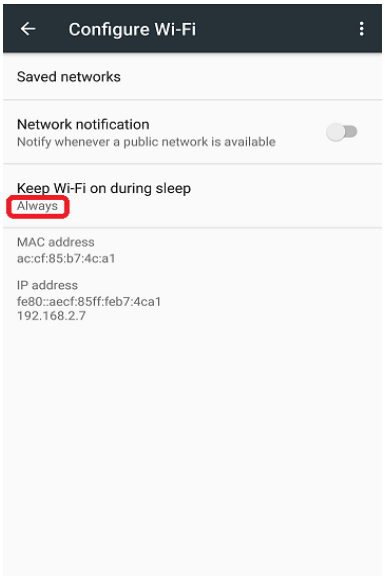
▼ Wi-Fi setting screen

2. **In the list of available networks, tap the wireless router to be connected to the microscope system to complete the connection.**

3. **On the Configure Wi-Fi screen, select [Always] for [Keep Wi-Fi on during sleep].**

> **CAUTION**
>
> The setting procedure may vary depending on the device type and the OS version.

▼ Wi-Fi setting screen



4. **Tap the “Ti2 Control” app icon to start up the application.**

▼ Starting up the “Ti2 Control”

The application start screen is displayed, after which the “Ti2 Control” Home screen is displayed.

The “Ti2 Control” application is now ready for use.

▼ “Ti2 Control” Home screen

CAUTION

To connect more than one microscope to a single wireless router, see “Multiple microscope systems are connected to a single wireless router” in “1.4.2　Connection Procedure for Each Combination of Wireless Router and Microscope System.”

1.4.2 Connection Procedure for Each Combination of Wireless Router and Microscope System

The connection procedure differs depending on the combination of wireless router and microscope system.

A single microscope system is connected to a single wireless router

1. **On the device, tap [Settings] and then [Wi-Fi] to connect to the wireless router.**

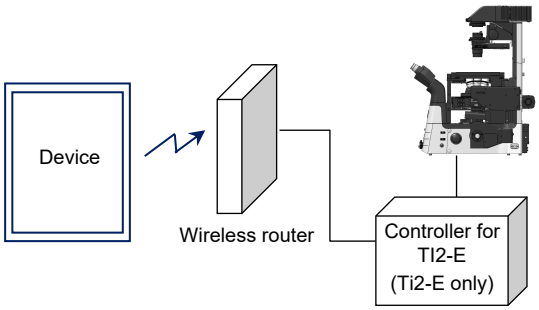
   For how to connect to the wireless router, see “1.4.1 Accessing the Microscope From the Device.”

2. **Start up the “Ti2 Control” application.**

   “Ti2 Control” is connected to the microscope automatically.

   If the connected microscope is already registered, operation from the device is now enabled.

▼ Connection diagram



Multiple microscope systems are connected to a single wireless router

CAUTION

When more than one microscope system is to be connected to a single wireless router, connect and configure each microscope individually.

1. **On the device, tap [Settings] and then [Wi-Fi] to connect to the wireless router.**

   For how to connect to the wireless router, see “1.4.1 Accessing the Microscope From the Device.”

2. **Start up the “Ti2 Control” application.**

   When more than one microscope is connected to the wireless router, tap [⚙] in the upper right corner of the “Ti2 Control” application, [General], [LAN], and then [IP (Mic.)] to display a list of connected microscopes.

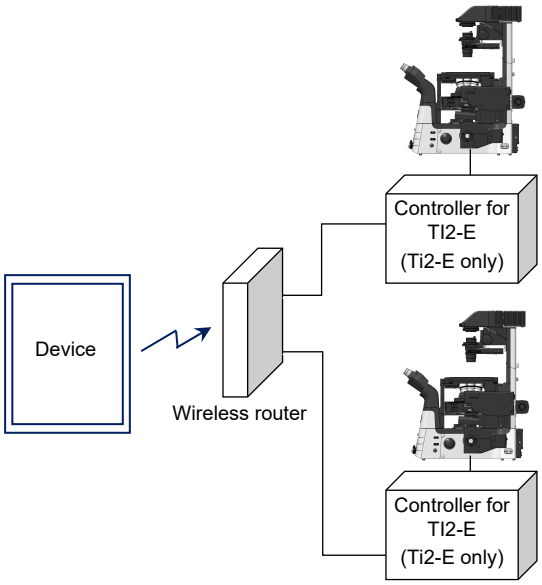
3. **Select the IP address of the microscope to be connected, and tap [OK].**

   If the connected microscope is already registered, operation from the device is now enabled.

4. **To configure the next microscope, tap [⚙] in the upper right corner of the “Ti2 Control” application, and then [General] to register the microscope system and repeat steps 1 to 3.**

   For how to register the Ti2-E microscope system, see “7.2.3 Registering the Microscope System”, and for the Ti2-A microscope system, see “3.2.3 Registering the Microscope System.”

▼ Connection diagram



A single microscope is connected respectively to each wireless router

1. **On the device, tap [Settings] and then [Wi-Fi] to connect to the wireless router.**

   Configure each wireless router that is connected to a microscope system via a cable.

   For how to connect to the wireless router, see “1.4.1 Accessing the Microscope From the Device.”

2. **Start up the “Ti2 Control” application.**

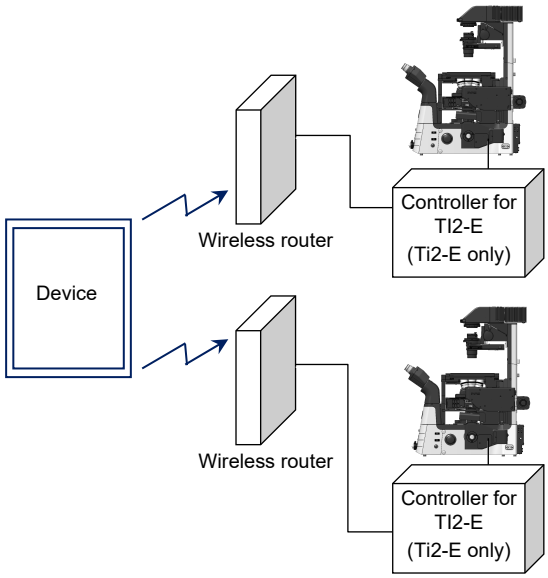
   “Ti2 Control” connects to the microscope automatically.

   If the connected microscope is already registered, operation from the device is now enabled.

3. **To configure the next microscope, tap [⚙] in the upper right corner of the “Ti2 Control” application, and then [General] to register the microscope system and repeat steps 1 and 2.**

   For how to register the Ti2-E microscope system, see “7.2.3 Registering the Microscope System”, and for the Ti2-A microscope system, see “3.2.3 Registering the Microscope System.”

▼ Connection diagram



Multiple microscope systems are connected to each wireless router

1. **On the device, tap [Settings] and then [Wi-Fi] to connect to the wireless router.**

   Configure each wireless router that is connected to a microscope system via a cable.

   For how to connect to the wireless router, see “1.4.1 Accessing the Microscope From the Device.”

2. **Start up the “Ti2 Control” application.**

   When more than one microscope is connected to the wireless router, tap [⚙] in the upper right corner of the “Ti2 Control” application, [General], [LAN], and then [IP (Mic.)] to display a list of connected microscopes.

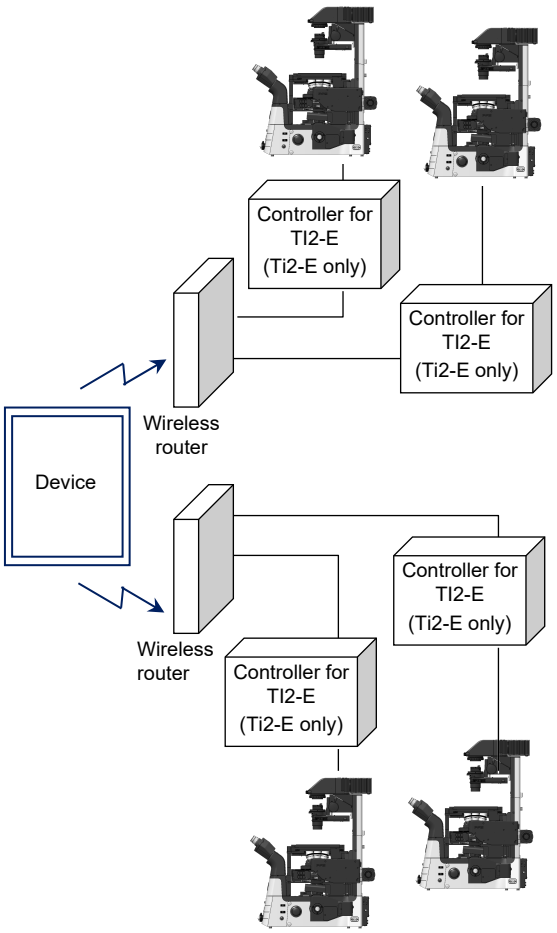
3. **Select the microscope to be connected and tap [OK].**

   If the connected microscope is already registered, operation from the device is now enabled.

4. **To configure the next microscope, tap [⚙] in the upper right corner of the “Ti2 Control” application, and then [General] to register the microscope system and repeat steps 1 to 3.**

   For how to register the Ti2-E microscope system, see “7.2.3 Registering the Microscope System”, and for the Ti2-A microscope system, see “3.2.3 Registering the Microscope System.”

▼ Connection diagram



Chapter
2

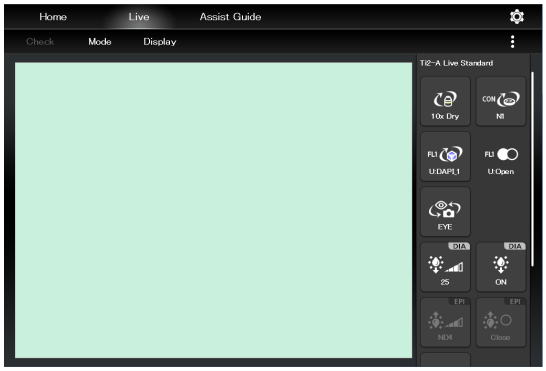
Functional Configuration of the Application: Ti2-A

This chapter describes the functional configuration of the “Ti2 Control” application used with the Ti2-A microscope.

2.1 Functional Configuration of the Application

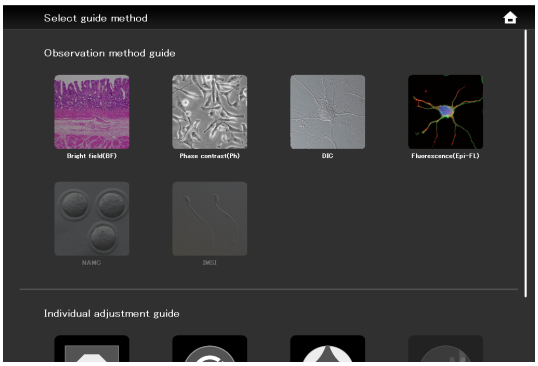
This application consists of the following four screens:

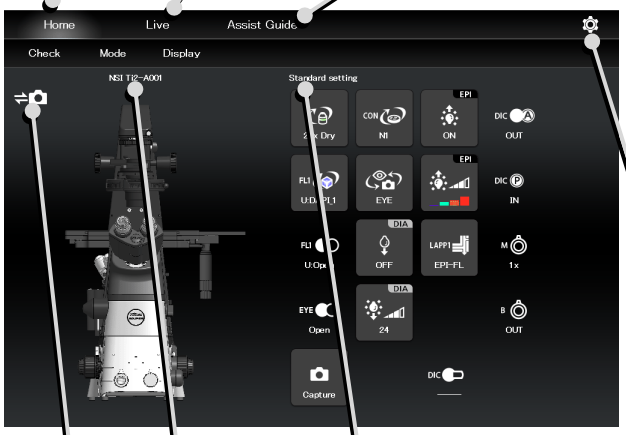
Live screen display
Used to display the images from the assist camera.
(See “4.2 Live Screen.”)



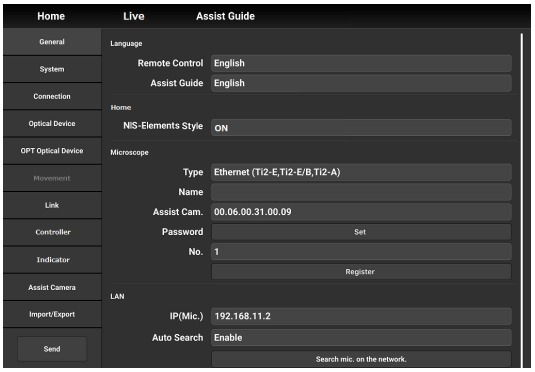
Display the Home screen.
Used to display the state of each device.
(See “4.1 Home Screen.”)

Display the Assist Guide screen.
Used to display a guide for optimum setup of the microscope.
(See “Chapter 10 How to Use the Assist Guide.”)





Display the Setup screen.
Used to set up the microscope.
(See “Chapter 3 Setup: Ti2-A.”)



Name of the current remote control button layout

Registered microscope name

Assist camera connection status

Chapter
3

Setup: Ti2-A

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.

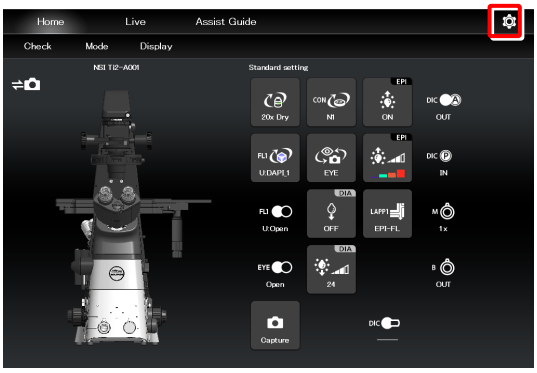
> **CAUTION**
> When more than one microscope system is connected to a single wireless router, connect and configure each microscope system individually.

3.1 Basic Setup Operations and Screens

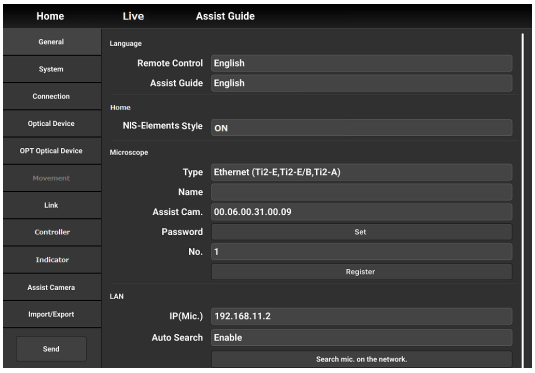
3.1.1 Starting the Setup

Tap [⚙] on the home screen or the Live screen to open the setup screen.

▼ **Starting the setup**



▼ **Setup screen**



3.1.2 Configuration of the Setup Screen

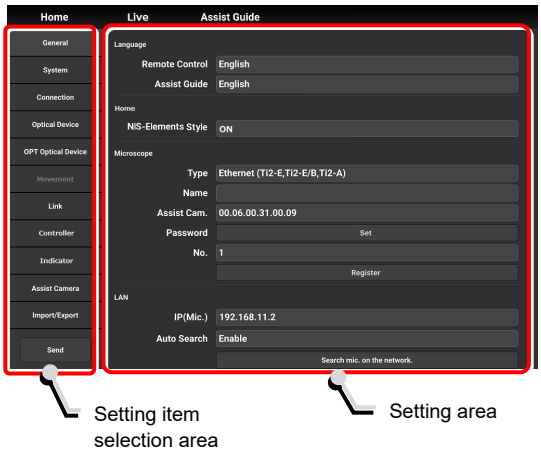
■ **Setting item selection area**

Tap each button to change a setting item.

■ **Setting area**

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

▼ **Configuration of the setup screen**



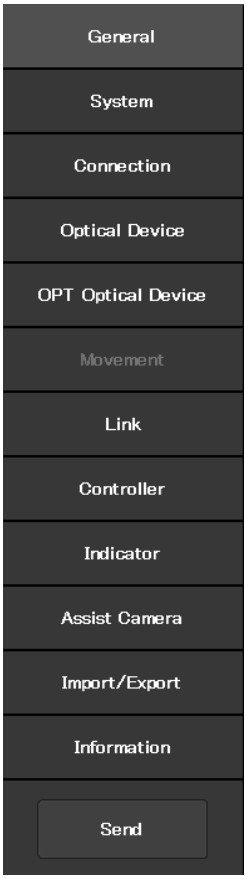
3.1.3 Setting Items

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
- [Link]: Settings of linked control
- [Controller]: Setting the Controllable Functions
- [Indicator]: Setting the indicators
- [Assist Camera]: Setting the assist camera
- [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

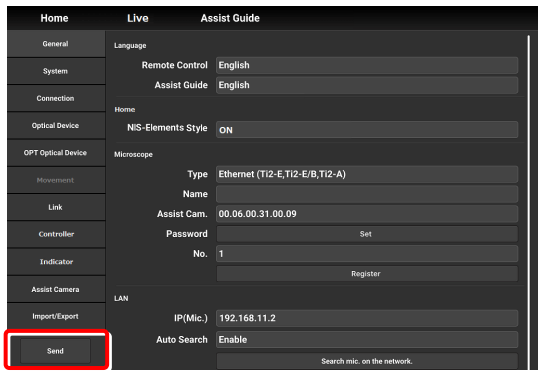


3.1.4 Sending Microscope System Information

■ Sending information to the microscope system

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

▼ Setup screen

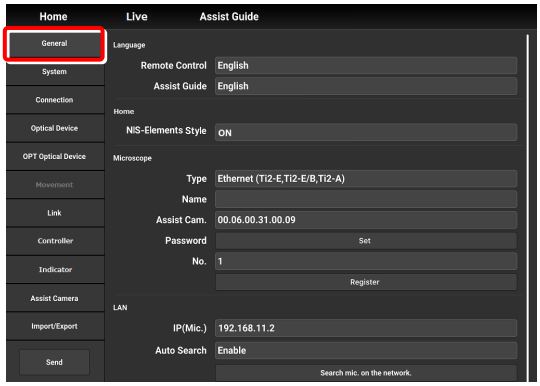


3.2 [General] Basic Settings of the Microscope and the Application

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

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

▼ General settings

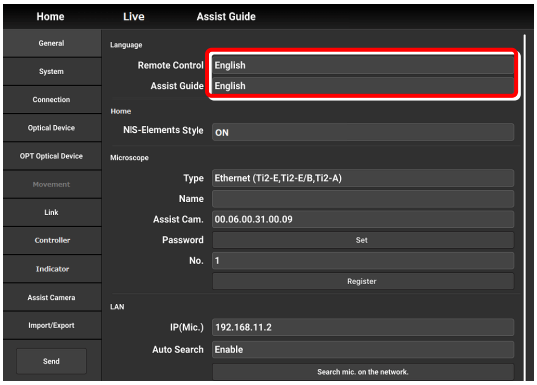


3.2.1 Setting the Language

Set the language of this application.

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

▼ Setting the language



Remote Control:

Select the language used on the setting screens.

Assist Guide:

Select the language used in the Assist Guide.

3.2.2 Display Setting of the Home Screen (Tablet)

Set the display style of the Home screen.

1. Set the following item in the [Home] area.

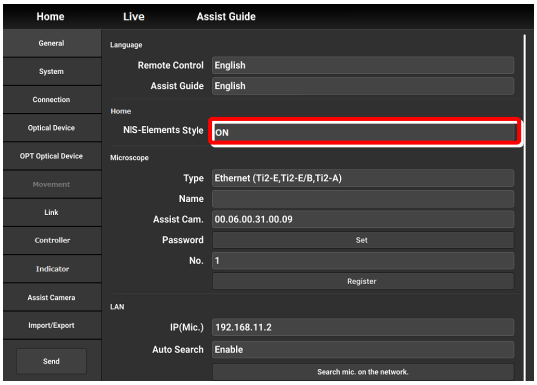
NIS-Elements style:

Setting the NIS-Elements Style to ON switches the Home screen display style to the NIS-Elements style.

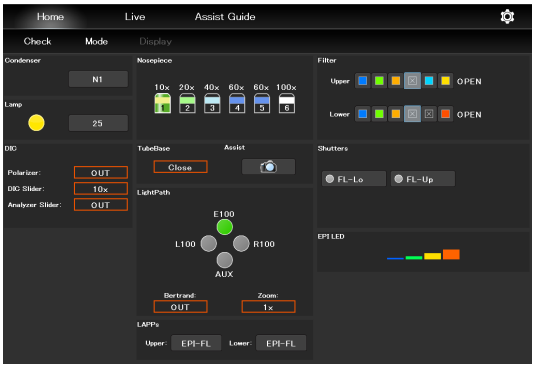
> **CAUTION**
>
> This function is not displayed on the smart phone screen.

Subscreens may be displayed by tapping some items.

▼ Display setting of the Home screen



▼ Home screen (NIS-Elements style)



3.2.3 Registering the Microscope System

This section describes how to register the microscope, the password and the 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.:

Tap the box to display a list of MAC addresses of the assist cameras.
Tap the target MAC address and then [OK] to register the assist camera.

> **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, never fail 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 [⚙] is tapped to access the microscope on a device 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 device.

No.:

Select a microscope number to be registered with the device.
Up to 20 microscopes can be registered.

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

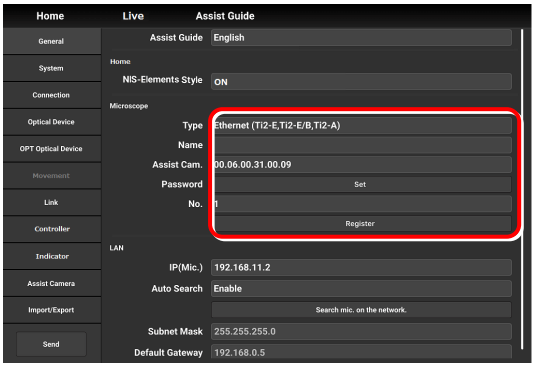
Register button:

Tap 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.

▼ Registering the microscope system



3.2.4 Setting the LAN

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

IP (Mic.):

Allows displaying or specifying the IP address of the microscope.

If not using [Auto Search] or [Search mic. on the network], directly enter the IP address of the microscope.

To enter the fixed IP address of the microscope, see “3.2.5 Fixed IP Address of the Microscope.”

Auto Search:

Sets whether to automatically search the network for the IP address of the microscope and connect to the network upon “Ti2 Control” startup.
(Enable: Automatically connected)

If more than one microscope is connected, all the microscopes connected to the network are displayed. Select the IP address of the microscope to be used.

Search mic. on the network:

If more than one microscope is connected, all the microscopes connected to the network are searched for. Select the IP address of the microscope to be used.

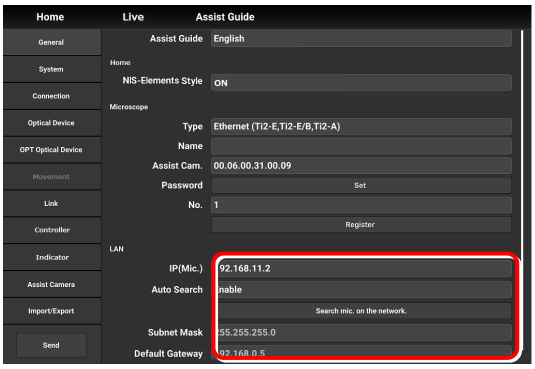
Subnet Mask:

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



CAUTION

Connection to the microscope or the assist camera may not be possible from the application depending on the wireless router (Wi-Fi) or the smart device in use.

In this case, close the application and perform the following procedure:

- On the device, tap [Settings] and [Wi-Fi] to turn off the Wi-Fi, and then turn on [Wi-Fi] to connect to the wireless router.
- Restart the microscope system.

After performing the above procedure, start up the application again, and check that it can be connected to the microscope or the camera.

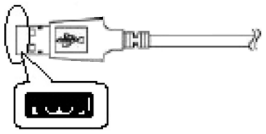
3.2.5 Fixed IP Address of the Microscope

This section describes how to find the fixed IP address of the microscope.

> **CAUTION**
>
> The fixed IP address of the microscope can be found only by “Ti2 Control” for Windows.
>
> Perform the procedure in this section in a Windows PC.

1. Connect the Windows PC and the Ti2-A using a USB connector.

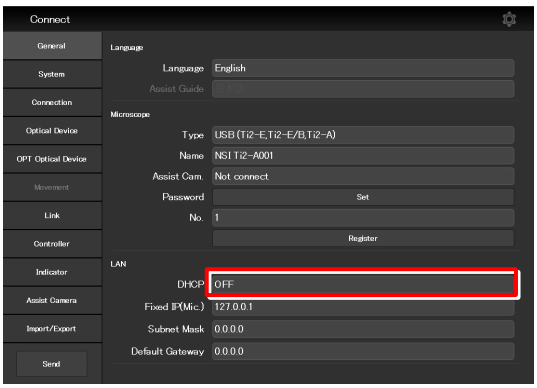
▼ USB connector A



2. In the [LAN] area, set [DHCP] to OFF (disabled).

3. Take a note of the microscope’s fixed IP address displayed in the [Fixed IP(Mic)] field.

▼ Fixed IP address of the microscope



The steps in the Windows PC are complete.

Enter the noted IP address in the smart device.
(See “3.2.4 Setting the LAN.”)

3.3 [System] Display and Manual Registration of the Microscope Configuration

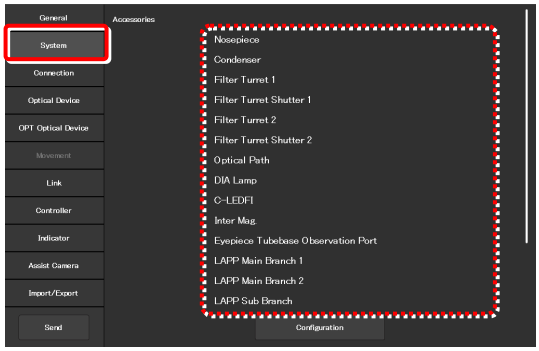
Tapping [System] displays a list of accessories mounted on the microscope system.

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

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

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

▼ Display of the microscope configuration



3.3.1 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:

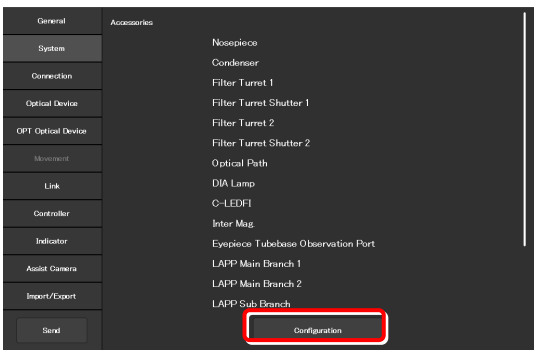
1) Disconnect the cable coming from the dia-illumination unit from the connector box on the rear surface of the microscope main body.
2) Specify [D-LH/LC Precentered Lamphouse] for the [DIA Lamp] in the microscope configuration setting screen for manual configuration, of TI2 Control.
3) Tap [Send] in 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. Tap [Configuration] in the setting area.

A microscope configuration setting screen appears.

▼ Manually registering the microscope configuration

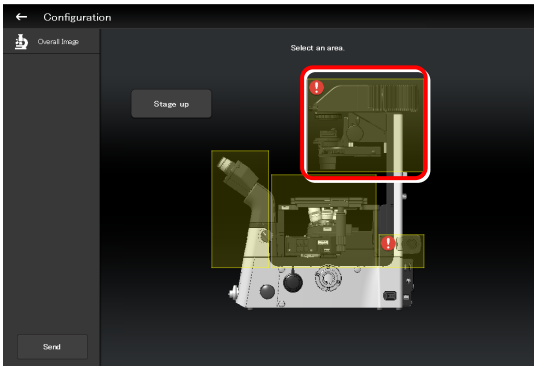


2. Tap the area where accessory mounting information is to be registered.

A registration screen of the area is displayed.

> **SUPPLEMENTAL REMARKS**
>
> The mark is displayed at the upper left of the parts area if there is an accessory with no device information registered.

▼ **Microscope configuration setting screen**

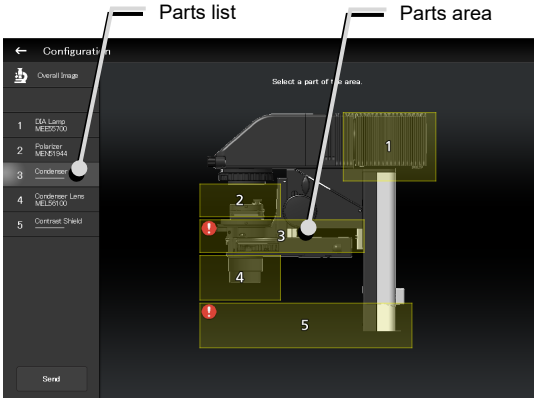


3. Tap the parts area or the parts list on the left.

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

> **SUPPLEMENTAL REMARKS**
>
> The motorized devices and intelligent accessories mounted on the microscope, which are automatically detected, are displayed as being selected.
>
> If the selected and registered accessories are different from those actually mounted on the microscope, the accessory information is overwritten by the information on the automatically detected accessories.
>
> However, a different but similar product may be selected depending on the accessory even after automatic detection. Although this does not affect anything, the product can also be selected and registered again.

▼ **Per-area registration screen**



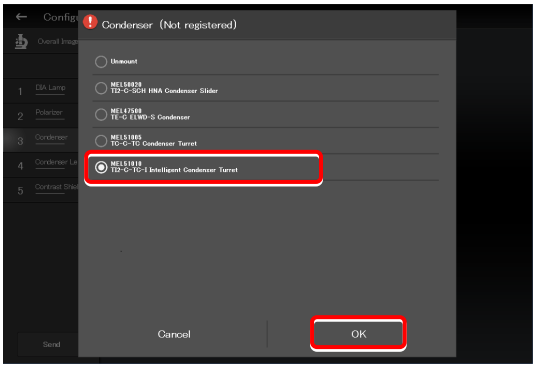
4. Select the name of the product to be registered.

> **SUPPLEMENTAL REMARKS**
>
> To register the accessory not being mounted, select [Unmount].

> **SUPPLEMENTAL REMARKS**
>
> When motorized devices and intelligent accessories are mounted on the microscope, only detected products are displayed in the product list.

5. Tap [OK].

▼ **Product list dialog**

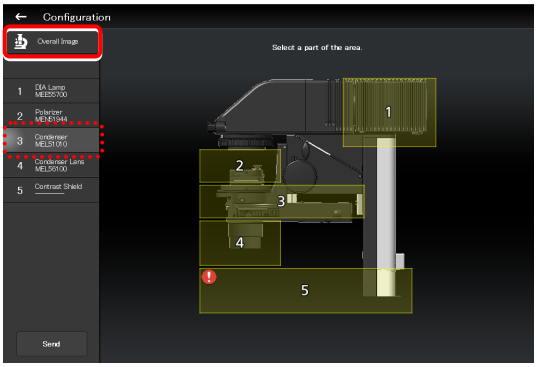


A product code of the selected product is displayed on the second line of each item in the left parts list.

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

The screen returns to the microscope configuration setting screen.

▼ **Per-area registration screen**



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

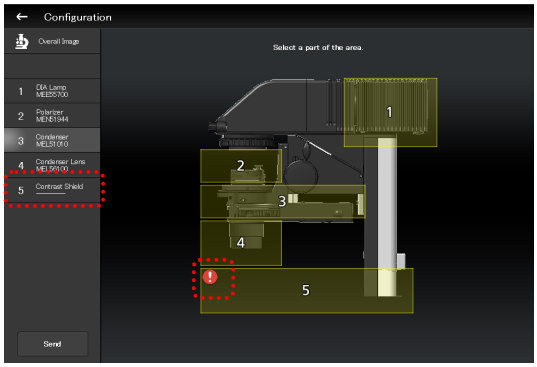
8. To finish manual registration of the microscope configuration, tap [Send] to send the registration information or tap [←].

The edited information is not saved unless it is sent.

Sending information on the microscope configuration when there is a part without device information

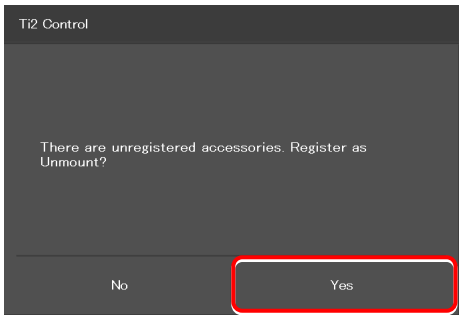
If there is a part without device information, the mark is displayed in the parts area, and [--------] is displayed in the parts list.

▼ **Per-area registration screen**



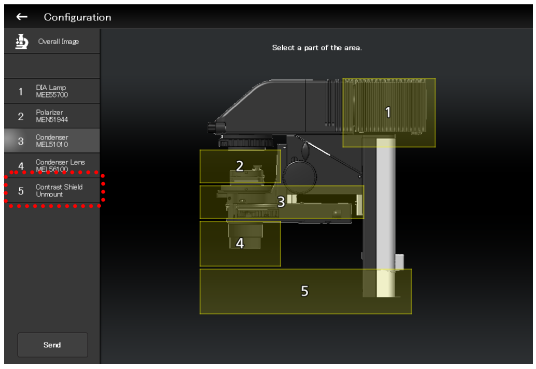
If transmission of the microscope configuration information is attempted in this state, a confirmation message for registering the part without device information to be [Unmount] appears.

▼ **Confirmation message**



After the transmission, [Unmount] is displayed under the part without device information.

▼ **Per-area registration screen after the transmission**



When using epi-illumination

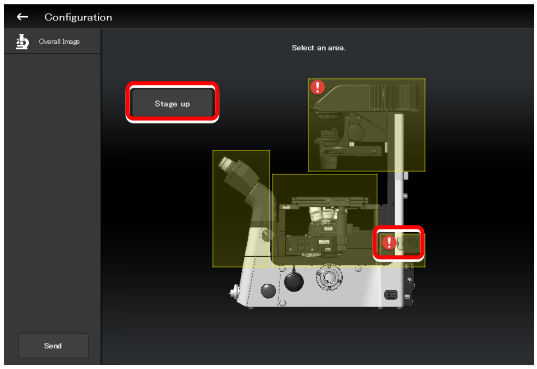
Tap the area that includes the epi-illumination attachment.

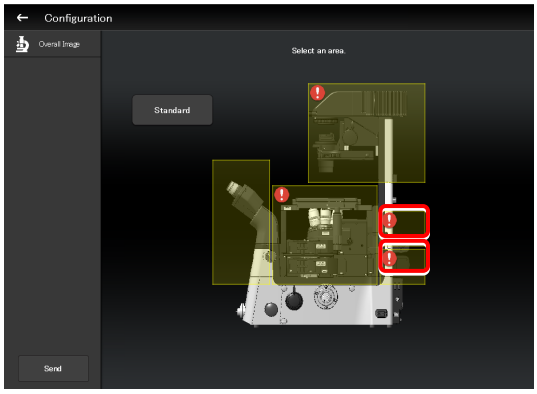
The registration screen for the epi-illumination attachment is displayed.

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

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

▼ Registering an epi-illumination attachment





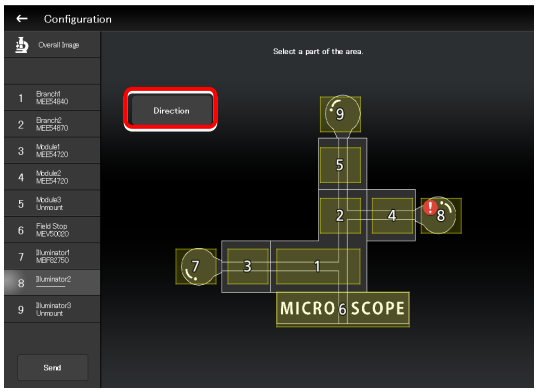
In a two-tier configuration, the upper and lower epi-illumination attachments are mounted in opposite directions. However, the application shows the two epi-illumination attachments in the same orientation.

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

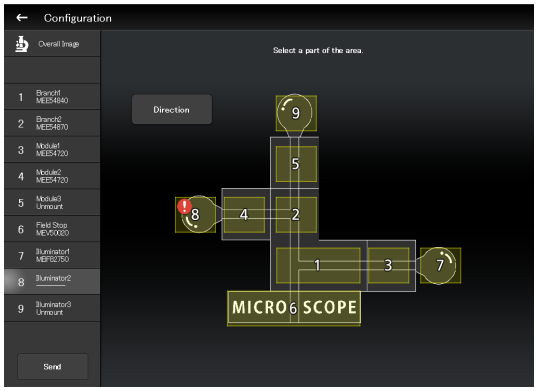
Select the epi-illumination attachment which is shown in the orientation opposite to the actual one.

Tap [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



> **Using the TI2-F-FLS Simple Epi-FL Attachment**
>
> When specifying the TI2-F-FLS simple epi-fl attachment for [Branch1], set [Illuminator3] to the epi-illumination attachment.

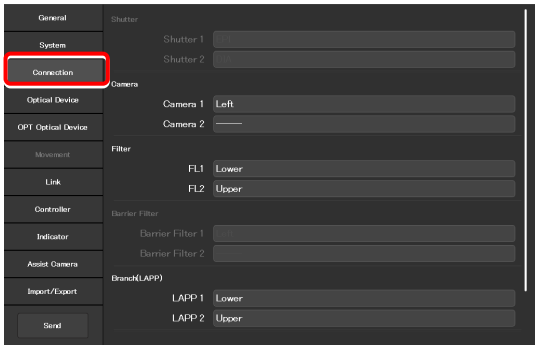
3.4 [Connection] Setting the Connection Destinations of Devices

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



3.4.1 Setting the Connections of Cameras

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

Set the camera installation position to display the camera in the microscope view on the Home screen.

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

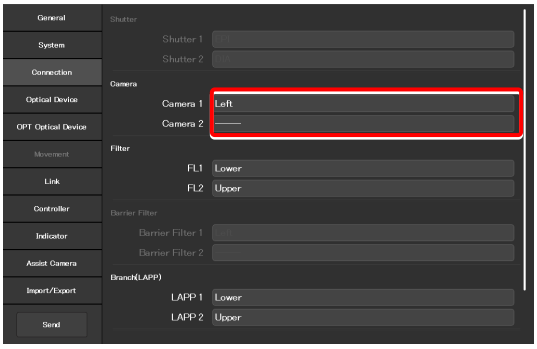
Camera 1:

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 cameras



3.4.2 Setting the Connections of FL Turrets

When the microscope system is set up in a stage-up configuration and two FL turrets are attached, 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.

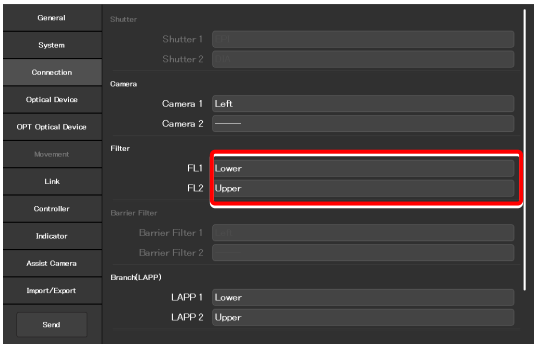
FL1:

Select the location to which the FL turret is attached.
If no FL turret is attached or only one FL turret is attached, this function cannot be set.

FL2:

Select the location to which the second FL turret is attached.
If only one FL turret is attached, this function cannot be set.

▼ Setting the connections of FL turrets



3.4.3 Setting the Connections of Branches (LAPP)

When the microscope system is set up in a stage-up configuration and two main branches are attached, 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.

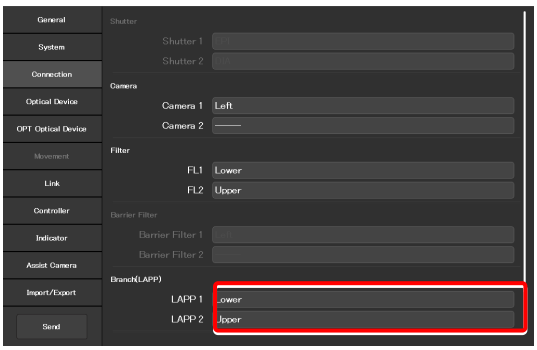
LAPP1:

Select the position to which the main branch is attached.
If no main branch is attached or only one main branch is attached, this function cannot be set.

LAPP2:

Select the position to which the second main branch is attached.
If only one main branch is attached, this function cannot be set.

▼ Setting the branch (LAPP)



3.4.4 Setting the C-LEDFI Epi-fl LED Illuminator

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

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

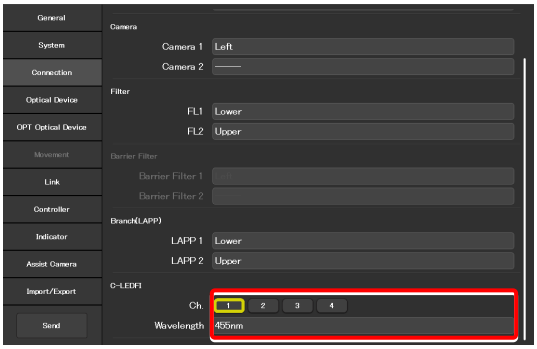
Ch:

Select the channel number of the LED.

Wavelength:

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

▼ Setting the C-LEDFI



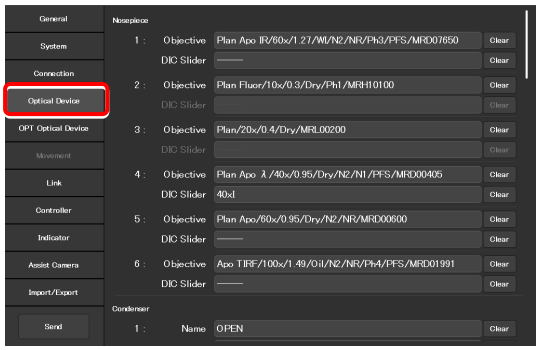
3.5 [Optical Device] Setting the Optical Devices

This section describes how to set objectives, condenser modules, fluorescence filter cubes, intermediate magnifications and optical path names.

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

The optical device setting screen appears.

▼ **Setting optical devices**



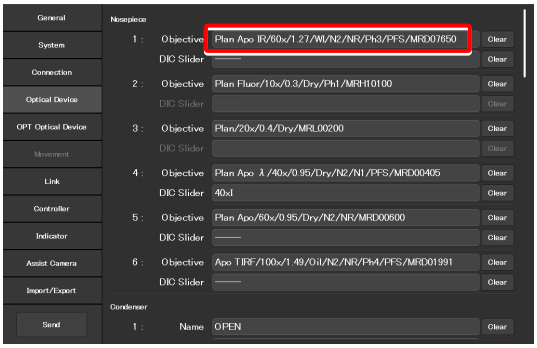
3.5.1 Setting the Nosepiece

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

1. Tap the [Objective] field in the [Nosepiece] area.

The list of the objectives is displayed.

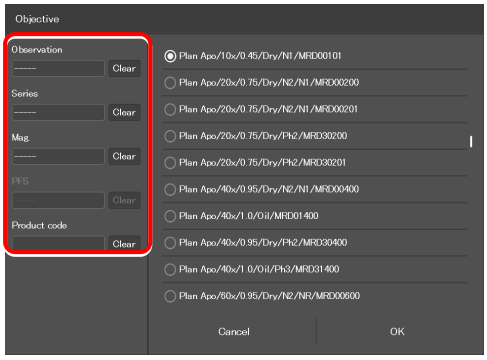
▼ **Setting the nosepiece**



2. Select an objective.

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

▼ **List of objectives**



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 "---.")

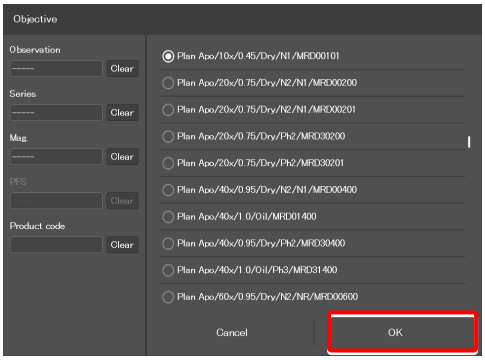
Product code

Enter the product code of the objective.

3. Tap [OK].

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

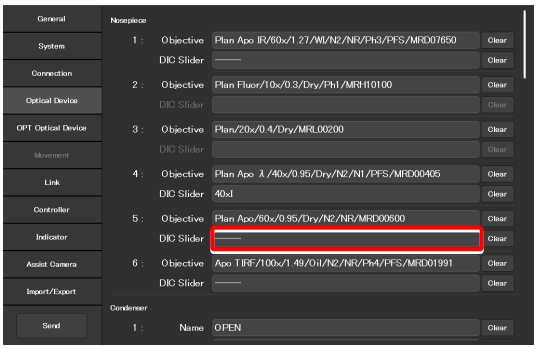
▼ **List of objectives**



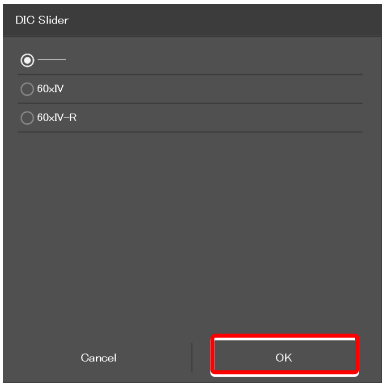
4. For objectives supporting DIC observation, tap the [DIC Slider] field, select the required objective-side DIC slider from the list, and then tap [OK].

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. Repeat steps 1 to 4 for each address of the nosepiece to be registered.

3.5.2 Setting the Condenser Module

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

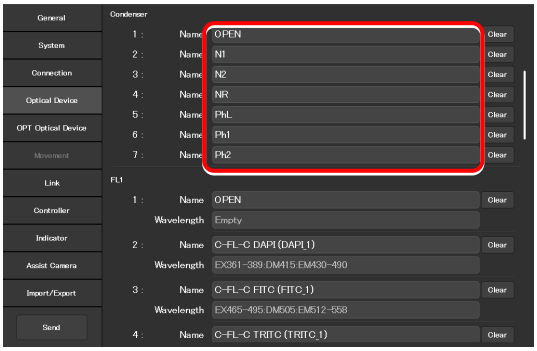
1. **In the [Condenser] area, tap the [Name] field of each condenser turret address for which condenser module information is to be set.**

   The list of the condenser modules is displayed.

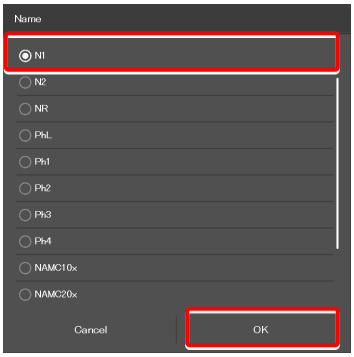
2. **Select a condenser module from the list, and then tap [OK].**

3. **Repeat steps 1 and 2 for each condenser turret address for which condenser module information is to be set.**

▼ **Setting the condenser module**



▼ **Condenser module list**



3.5.3 Setting the Filter Cube

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

1. **In the [FL1] area, tap the [Name] field of each FL turret address for which filter cube information is to be set.**

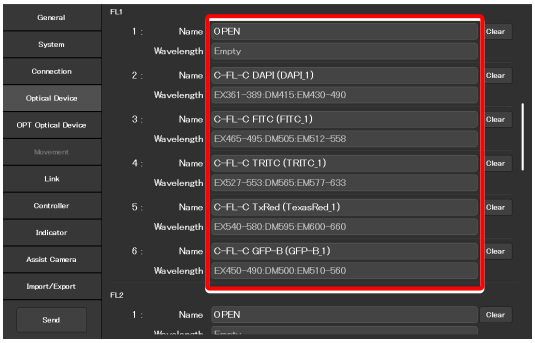
   The list of the filter cubes is displayed.

2. **Select a filter cube from the list, and then tap [OK].**

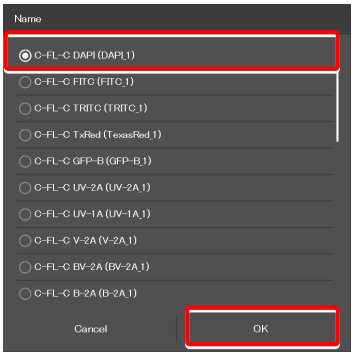
   When a filter cube name is selected, the [Wavelength] field is filled automatically.

3. **Repeat steps 1 and 2 for each FL turret address for which filter cube information is to be set.**

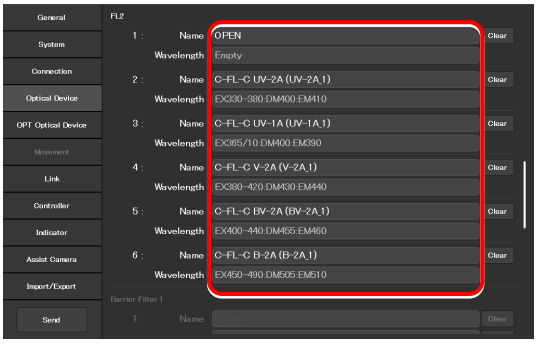
▼ Setting the filter cube



▼ Filter cube list



▼ For the second FL turret



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.

3.5.4 Setting the Intermediate Magnification

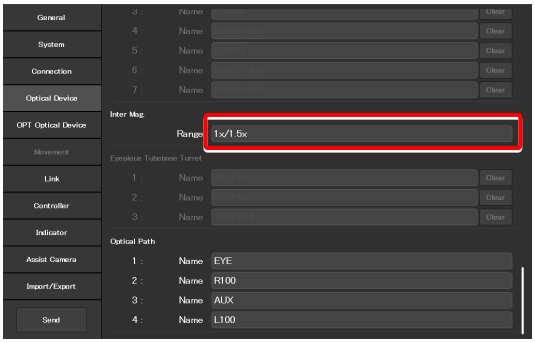
Set the intermediate magnification.

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

Range:

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

▼ Setting the intermediate magnification



3.5.5 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. In the [Optical Path] area, tap the [Name] field of each port address for which optical path information is to be set.

(Within 10 single-byte alphanumeric characters)

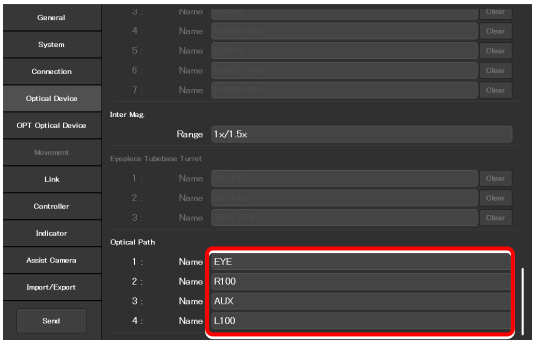
1: Eyepiece observation port

2: Right side port

3: 80% to the left side port and 20% to the eyepiece observation port (when using the Ti2-A E20L80)

4: Left side port

▼ Setting the Optical Path Name



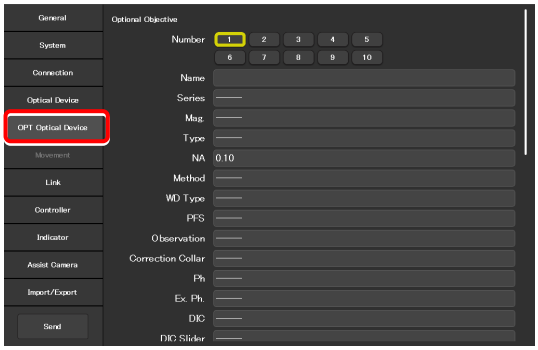
3.6 [OPT Optical Device] Registering a New Optical Device

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

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

The optional optical device setting screen appears.

▼ Registering a new optical device



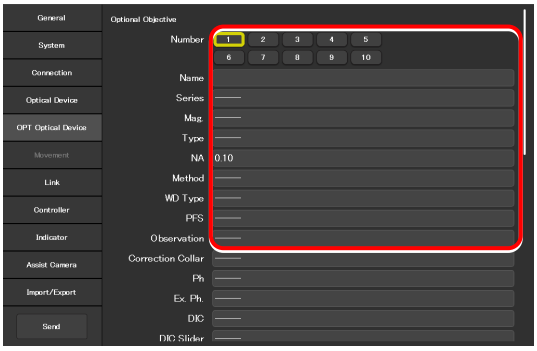
3.6.1 Registering a New Objective

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.

▼ Registering a new objective



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:

(Selection not needed)

Observation:

Select a microscopy technique.

Correction Collar:

For an objective with a correction collar, select Manual.

Ph:

For a phase contrast objective, select a PH code.

EX. Ph.:

(Selection not needed)

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 type of the high-resolution or high-contrast condenser.

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:

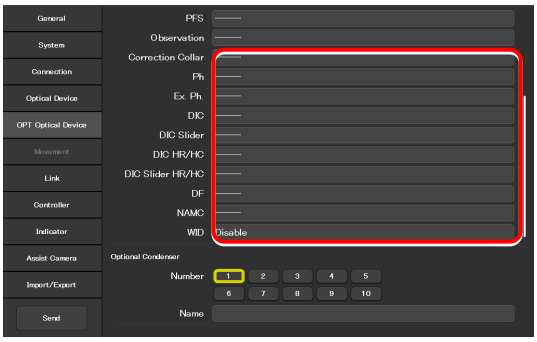
For an objective for NAMC microscopy, select a corresponding condenser module.

WID:

(Selection not needed)

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

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



3.6.2 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:

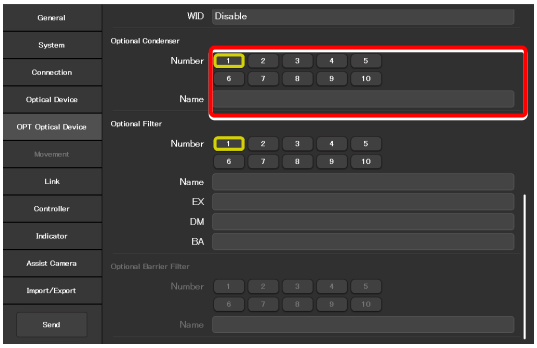
Select a number with which a new condenser module is to be registered.

Name:

Specify a name.

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

▼ Registering a new condenser module



3.6.3 Registering a New Filter Cube

Up to 10 new filter cubes can be registered.

The filter cubes registered here can be selected in [FL1] (or [FL2]) 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.

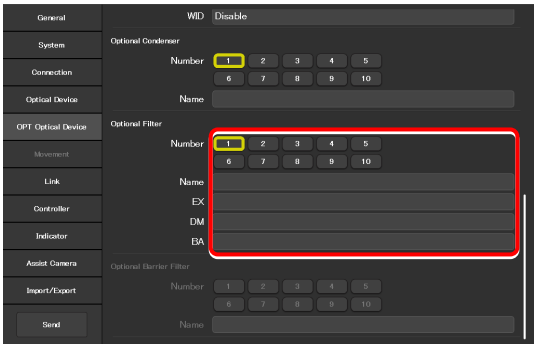
BA:

Specify a BA filter name.

> **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.

▼ Registering a new filter cube



3.7 [Link] Setting the Linking Function

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

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

The link control setting screen appears.

2. 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.

Intensity:

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

Current button:

Use this button to read the current value of the device.

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

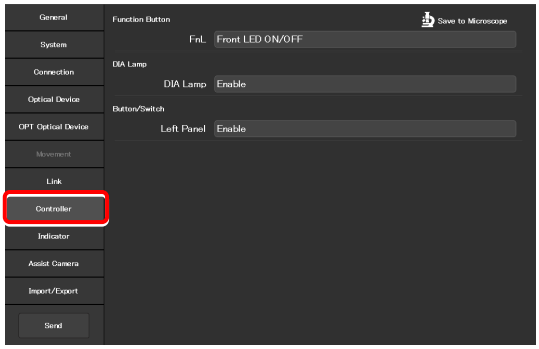
3.8 [Controller] Setting the Controllable Functions

This section describes how to assign functions to the function buttons on the Ti2-A microscope main body.

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

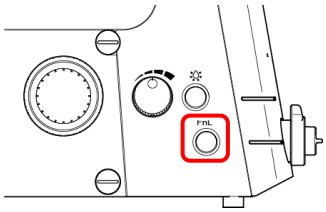
The function setting screen appears.

▼ Assigning functions



3.8.1 Setting the Function Buttons

Assign functions to the function button (FnL button) on the left operation panel of the Ti2-A microscope main body.

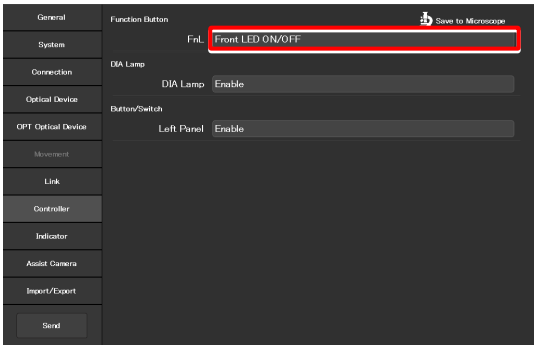


Left operation panel

1. To change the assigned function, tap the [Function Button] area.

The subscreen of the function list for assignment is displayed.

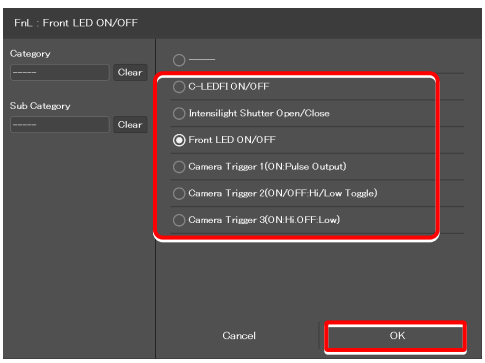
▼ Setting the function buttons



2. From the list, select the function to be assigned.

3. Tap [OK].

▼ Subscreen of the function list for assignment



List of Functions Assigned to Function Buttons on the Ti2-A Microscope Main Body

The table below lists the functions that can be assigned to the function buttons on the Ti2-A microscope main body. (✓✓: Default setting, ✓: Settable)

No.	Indicated name	Functional overview	Settable
1	------- (NULL)	Nothing is to be set.	✓
2	C-LEDFI ON/OFF	Turns on or off the epi-fl LED Illuminator.	✓
3	Intensilight Shutter OPEN/CLOSE	Opens or closes the HG precentered fiber illuminator shutter.	✓
4	Front LED ON/OFF	Turns on or off the LED indicators on the front of the microscope main body.	✓✓
5	Camera Trigger 1 (ON: Pulse Output)	Output camera trigger 1 (pulse output)	✓
6	Camera Trigger 2 (ON/OFF: Hi/Low Toggle)	Output camera trigger 2 (toggling between Hi and Low)	✓
7	Camera Trigger 3 (ON: Hi, OFF: Low)	Output camera trigger 3 (momentary switching between High and Low)	✓

3.8.2 Setting Other Controllable Functions

1. Set the following item in the [DIA Lamp] area.

DIA Lamp:

Enable or disable the dia-illumination brightness adjuster operation.

2. Set the following item 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.

▼ Other settings

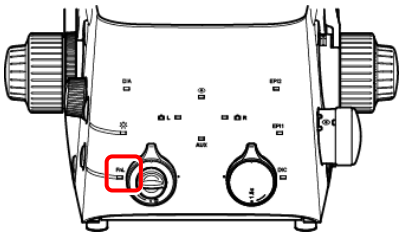
3.9 [Indicator] Setting the Indicators

This section describes the indicator settings of the Ti2-A microscope main body.

3.9.1 Setting the FnL Indicator on the Microscope

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

In the initial state, no function is assigned to the FnL indicator. The indicators do not light unless a function is assigned.

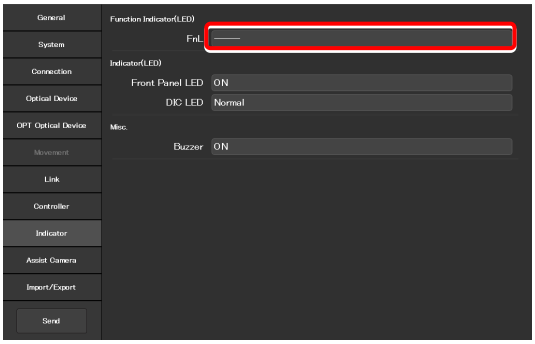


Front operation panel

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

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

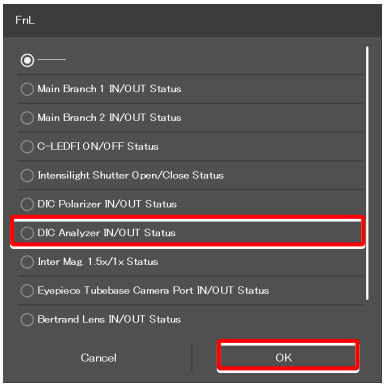
▼ Setting the LED indicators



2. From the list, select the function to be assigned to the selected LED indicator.

3. Tap [OK].

▼ Subscreen of the function list for assignment



List of Indication Functions Assigned to the LED Indicator of the Ti2-A Microscope Main Body

The table below lists the LED indications that can be assigned to the FnL indicator on the Ti2-A microscope main body.

No.	Indicated name	Functional overview	States when set
1	-------	Nothing is to be set.	None
2	Main Branch 1 IN/OUT Status	Main branch 1 status	Lit: In, Extinguished: Out
3	Main Branch 2 IN/OUT Status	Main branch 2 status	Lit: In, Extinguished: Out
4	C-LEDFI ON/OFF Status	Selected LED unit status of the epi-fl LED illuminator	Lit: On, Extinguished: Off
5	Intensilight Shutter Open/Close Status	IntensiLight shutter status	Lit: Open, Extinguished: Closed
6	DIC Polarizer IN/OUT Status	DIC polarizer status	Lit: In, Extinguished: Out
7	DIC Analyzer IN/OUT Status	Analyzer slot status	Lit: In, Extinguished: Out
8	Inter Mag. 1.5x/1x Status	Intermediate magnification	Lit: 1.5x, Extinguished: 1x
9	Eyepiece Tubebase Camera Port IN/OUT Status	Tube base unit camera port status	Lit: EYE (port tube) with assist tube open Extinguished: DSC (port tube) with assist tube closed

No.	Indicated name	Functional overview	States when set
10	Bertrand Lens IN/OUT Status	Bertrand lens status	Lit: In, Extinguished: Out
11	Assist Camera ON/OFF Status	Assist camera power status	Lit: On, Extinguished: Off

3.9.2 Controlling the LED Indicators

This section describes how to control the indicator of the microscope main body.

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:

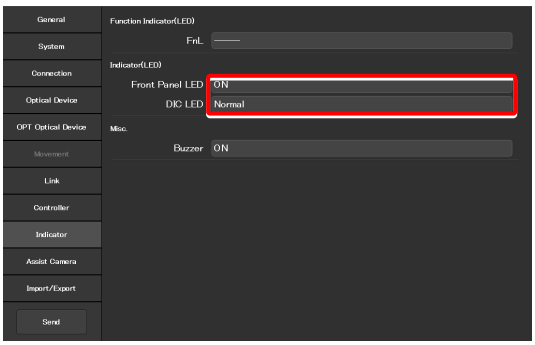
Select the behavior of the DIC indicator on the front panel of the microscope main body, which is be used for identifying whether the DIC microscopy conditions are satisfied or not.

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)



3.9.3 Other Control Items

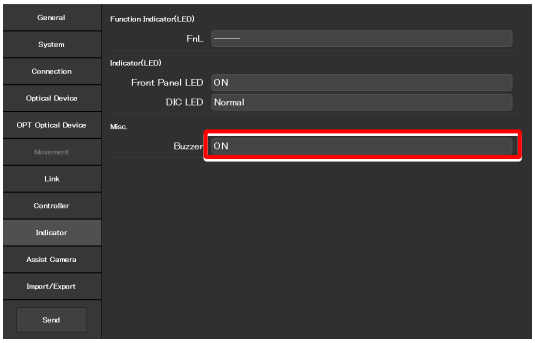
This section describes other control items.

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

Buzzer:

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

▼ Other control items



3.10 [Assist Camera] Setting the Assist Camera

This section describes how to set the frame rate of the assist camera and the field of view adjustment options 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.

Adjustment:

Tap 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

It is necessary to adjust the assist camera's field of view in both states (in and out) of the Bertrand lens.

Follow the procedure below:

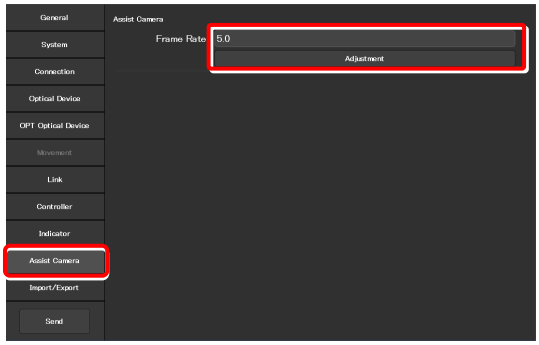
1) Adjust the assist camera's field of view in the current Bertrand lens state (in or out).
2) Tap [OK] to apply the settings on the Adjustment screen.
3) Turn the Bertrand lens in/out dial on the microscope main body to place/remove the Bertrand lens into/from the optical path.
(Out -> In, or In -> Out)
4) Select [Assist Camera] from the setting item selection area, and then tap the [Adjustment] button to display the Adjustment screen.
5) Adjust the assist camera's field of view in the current Bertrand lens state (in or out).
6) Tap [OK] to apply the settings on the Adjustment screen.

Note that if an attempt is made to change the Bertrand lens position (in/out) with the Adjustment screen open, an error message appears and the Adjustment screen is closed.

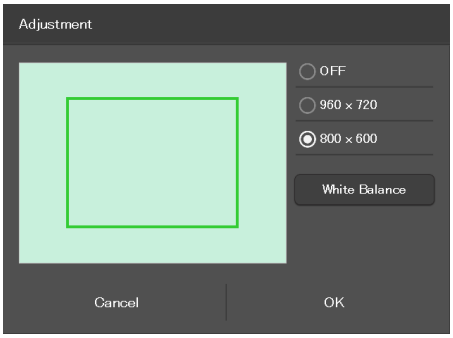
White Balance:

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

▼ Setting the assist camera



▼ Adjustment screen



3.11 [Import/Export] Importing and Exporting the Settings

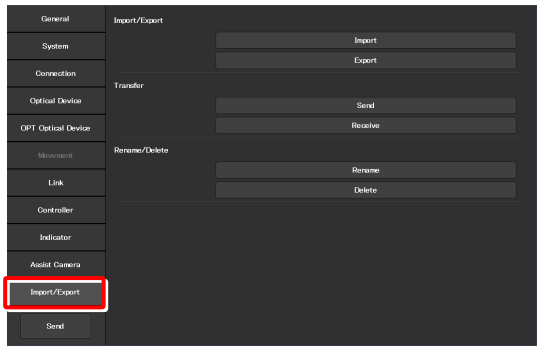
This section describes how to import and export the settings.

The settings made by using the "Ti2 Control" application can be saved (as a configuration file) in the device and imported 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 importing different configuration files.

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

▼ Import and export settings

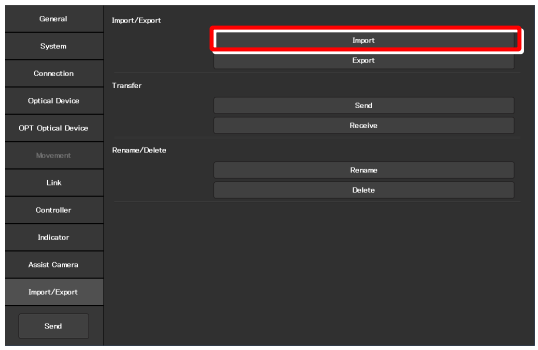


3.11.1 Importing the Settings

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

The Import screen appears.

▼ Importing the settings

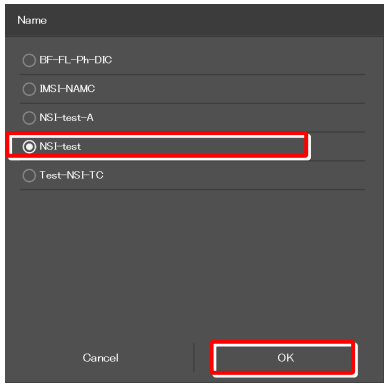


2. Select the setting information file to be imported.

3. Tap [OK].

The Import screen appears.

▼ File selection screen

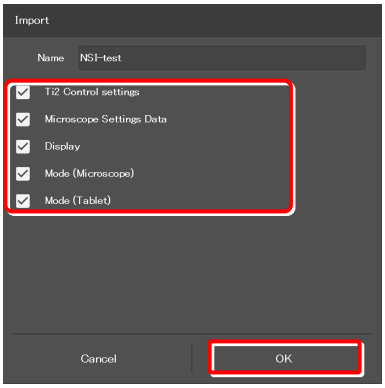


4. Select the type of the setting information to be imported.

5. Tap [OK].

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

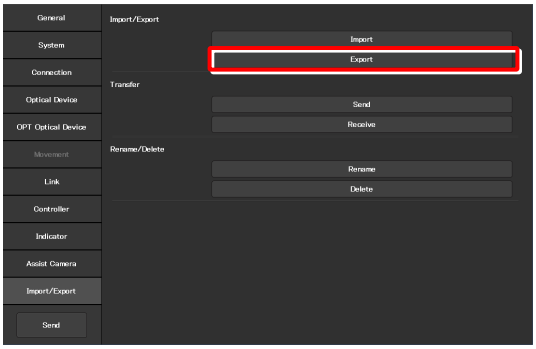
▼ Import screen



3.11.2 Exporting the Settings

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

▼ **Exporting the settings**



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

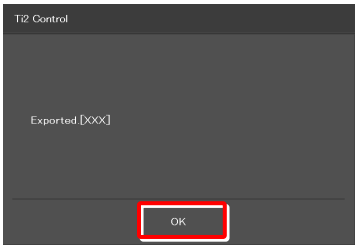
3. Tap [OK].

The setting information is exported.

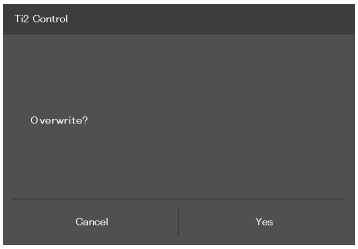
▼ **Exporting the settings**

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

▼ **Completed**



▼ **Confirmation of overwriting**



SUPPLEMENTAL REMARKS

If the file name specified in step 2 already exists, a confirmation message appears after [Save] is tapped, asking whether the file is to be overwritten.
Tap [Yes] to overwrite the file or [Cancel] to cancel the export.

3.11.3 Transmitting the settings

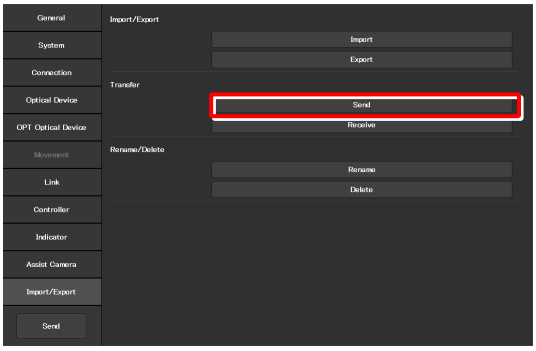
The setting files saved by the “Ti2 Control” application can be sent to or received from other terminals.

> **SUPPLEMENTAL REMARKS**
>
> Connect the transmission terminal and the reception terminal to the same wireless router.

1. **In the [Transfer] area of the transmission terminal, tap [Send].**

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

▼ Sending the settings (transmission terminal)

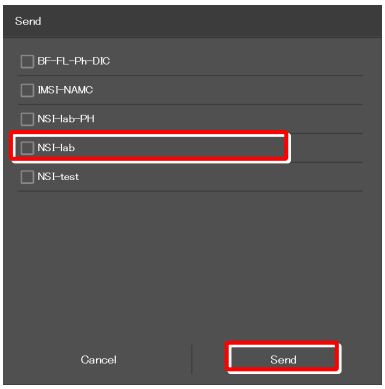


2. **Select a file to be sent.**

3. **Tap [Send].**

   A transfer confirmation screen is displayed.

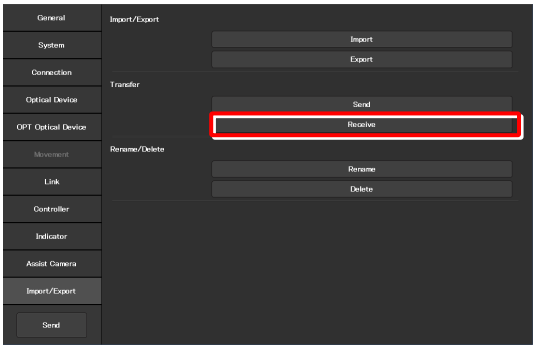
▼ Selecting a file to be sent (transmission terminal)



4. **In the [Transfer] area of the reception terminal, tap [Receive].**

   The data reception standby screen appears.

▼ Receiving the settings (reception terminal)



5. Take a note of the IP address of the reception terminal displayed on the reception standby screen.

▼ **Reception standby screen**

6. In the transmission terminal, enter the receiver's IP address displayed in step 5 in the [Destination IP address] field.

7. Tap [Send].

Data transfer starts.

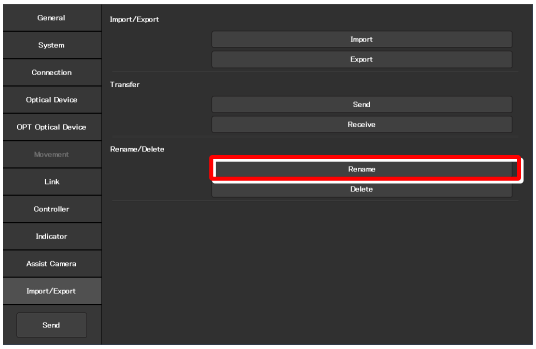
▼ **Confirming the transmission (transmission terminal)**

3.11.4 Changing the Setting Name

1. **Tap [Rename] in the [Rename/Delete] area.**

   The selection screen of the file to be renamed appears.

▼ **Changing the setting name**

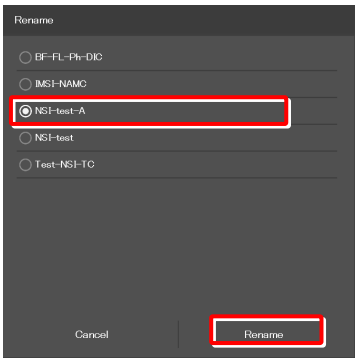


2. **Select the file to be renamed.**

3. **Tap [Rename].**

   The rename screen appears.

▼ **Selecting a file**

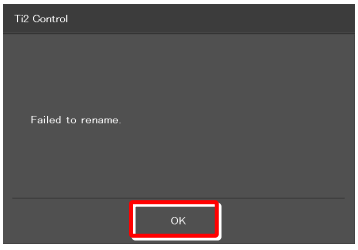


4. **Specify a file name in the [Name] field.**

5. **Tap [OK].**

▼ **Rename**

▼ **Confirmation of overwriting**



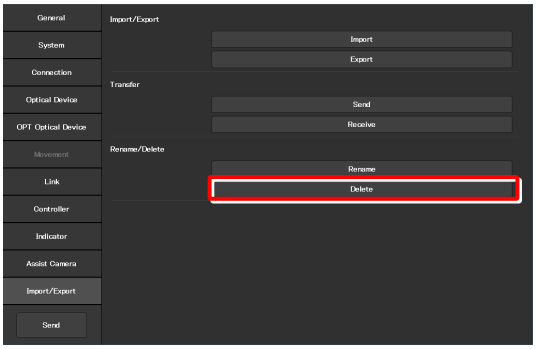
> **SUPPLEMENTAL REMARKS**
>
> If the file name specified in step 4 already exists, the name is not saved even though [OK] is tapped.
> In this case, perform the procedure from step 1 again with another name.

3.11.5 Deleting the Configuration File

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

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

▼ **Deleting the configuration file**

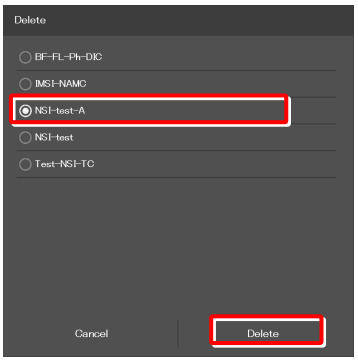


2. Select the file to be deleted.

3. Tap [Delete].

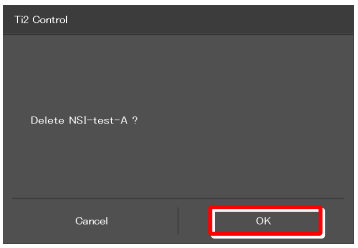
A deletion confirmation screen appears.

▼ **Selecting a file**



4. Tap [OK] to delete the file.

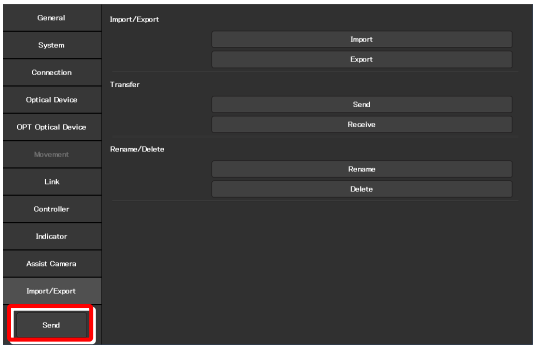
▼ **Confirmation of deletion**



This completes the setup procedure.

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

▼ **Sending the information to the microscope**



3.12 [Information] Version Information

This section describes how to display the versions of the application and the microscope main body.

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

The application 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

FW: Firmware version of the Ti2-A main body

MAC Address: MAC address of the microscope main body

Assist Camera:

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

Chapter
4

Device Status Display: Ti2-A

This chapter describes how to check the Ti2-A microscope from the application. (No operation except for the LED illumination unit is available.)

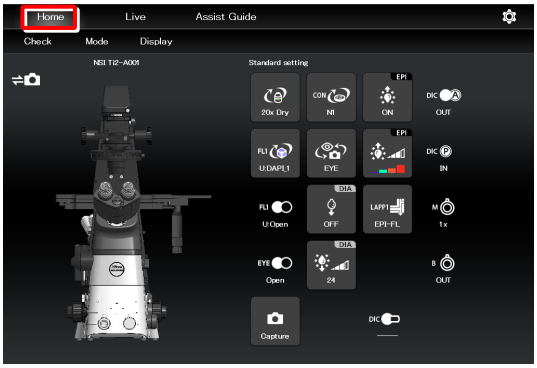
4.1 Home Screen

The Home screen displays the current Ti2-A microscope configuration state. (No operation except for the LED illumination unit is available.)

1. Tap [Home].

The home screen appears.

▼ **Home screen**



4.1.1 Configuration of the Home Screen

■ **View of the microscope**

Tapping a remote control button highlights the corresponding location in the microscope view.

The registration name of the currently displayed microscope system is displayed above the microscope view. (See “3.2.3 Registering the Microscope System.”)

When the assist tube base unit is mounted, the assist camera connection status is displayed on the top left of the microscope view.

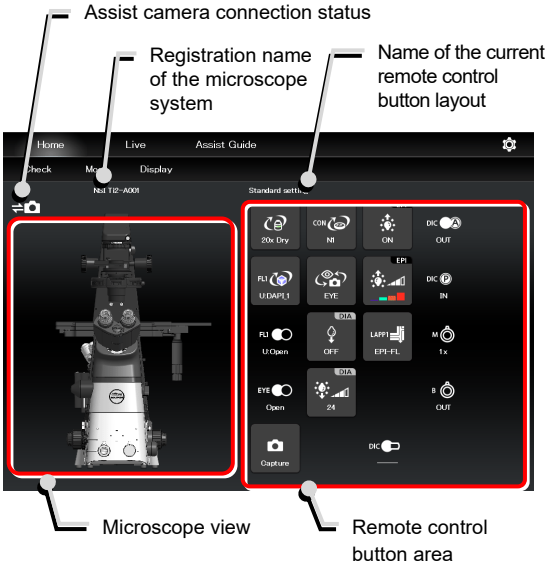
■ **Remote control button area**

Each button shows the current status of the devices.

> **SUPPLEMENTAL REMARKS**
>
> “?” is displayed on the button of the optical element which is not properly in the optical path.

The name of the current remote control button layout is displayed above the remote control button area.
(See “5.2.2 Calling the Saved Remote Control Button Arrangement.”)

▼ **Configuration of the Home screen**



■ **Check**

The Check screen allows the user to check if a specimen can be observed properly by the specified microscopy technique. (See “5.1 Check Mode.”)

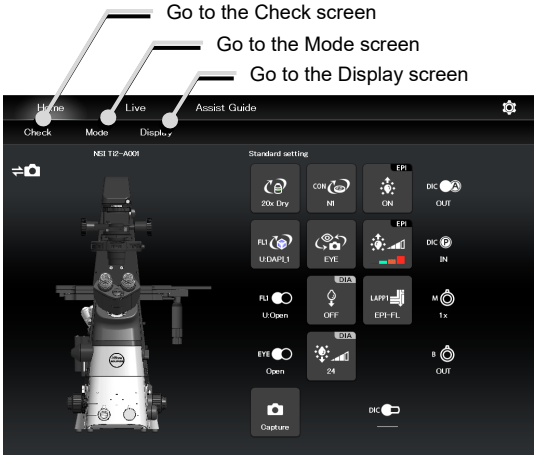
■ **Mode**

The Mode screen allows the user to register the device state as a mode.
Select a registered mode to check if the current microscope state is the same as the state registered in the selected mode.
(See “5.3 Registering and Recalling Modes.”)

■ **Display**

The Display screen allows the user to arrange the remote control buttons. (See “5.2 Remote Control Button Arrangement.”)

▼ **Configuration of the Home screen**



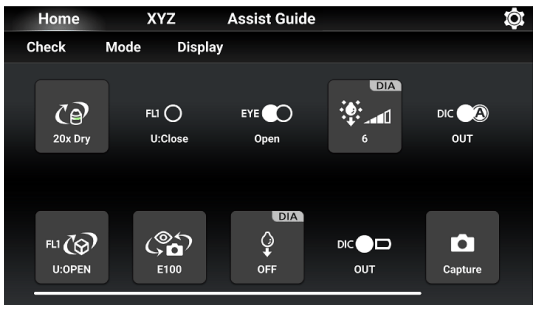
When operating “Ti2 Control” from a smartphone

When a smartphone is used, the microscope view is not displayed on the Home screen.

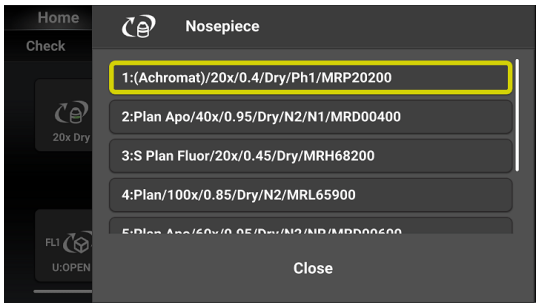
Also, no drawing of a turret is displayed on the subscreen opened when a remote control button is tapped. Only a list is displayed.

In addition, the name of the current remote control button layout is not displayed.

▼ **Smartphone screen**

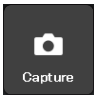


▼ **Subscreen when a smartphone is used**



4.1.2 List of Remote Control Buttons

The table below gives an overview of each remote control button and the section numbers to be referred to.

Button	Functional overview and reference	Button	Functional overview and reference
	Displaying the objective status (See “4.1.3 Displaying the Objective Status.”)		**Displaying the condenser module status** (See “4.1.4 Displaying the Condenser Module Status.”)
	Displaying the filter cube status of FL turret 1 (See “4.1.5 Displaying the filter cube status.”)		**Displaying the filter cube status of FL turret 2** (See “4.1.5 Displaying the filter cube status.”)
 	Displaying the shutter status of FL turret 1 (open/close) (See “4.1.8 Displaying the Shutter Status of FL Turret 1 (Open/Close).”)	 	**Displaying the shutter status of FL turret 2 (open/close)** (See “4.1.8 Displaying the Shutter Status of FL Turret 1 (Open/Close).”)
	Adjusting the illumination intensity of dia-illumination (See “Adjusting the illumination intensity of dia-illumination (DIA)” in “4.1.7 Controlling the Dia-Illumination Unit (DIA).”)		**Adjusting the epi-illumination LED by wavelength** (See “Selecting an LED to be used” in “4.1.12 Operation When Using an LED for the Epi Illuminator.”)
 	Turning on and off dia-illumination (See “Turning on or off the dia-illumination (DIA)” in “4.1.7 Controlling the Dia-Illumination Unit (DIA).”)	 	**Turning on and off the epi-illumination LED** (See “Turning on or off the LED” in “4.1.12 Operation When Using an LED for the Epi Illuminator.”)
 	Opening and closing the Intensilight shutter (See “Opening and closing the Intensilight shutter” in “4.1.13 Operation When Using the Intensilight for the Epi Illuminator.”)		**Switching the Intensilight ND filter** (See “Switching the Intensilight ND filter” in “4.1.13 Operation When Using the Intensilight for the Epi Illuminator.”)
	Displaying the optical path status of epi-illumination 1 (See “4.1.11 Displaying the Optical Path Status of Epi-illumination.”)		**Displaying the optical path status of epi-illumination 2** (See “4.1.11 Displaying the Optical Path Status of Epi-illumination.”)
	Displaying the optical path status (See “4.1.6 Displaying the optical path status.”)		**Displaying the intermediate magnification status** (See “4.1.10 Other Buttons.”)
	Displaying the objective-side DIC slider in/out status (See “4.1.10 Other Buttons.”)		**Displaying the Bertrand lens in/out status** (See “4.1.10 Other Buttons.”)
	Displaying the analyzer in/out status (See “4.1.10 Other Buttons.”)		**Capturing images through the assist camera** (See “4.1.9 Capturing Images With the Assist Camera (Only With the Assist Tube Base Unit).”)
	Displaying the polarizer in/out status (See “4.1.10 Other Buttons.”)		

4.1.3 Displaying the Objective Status

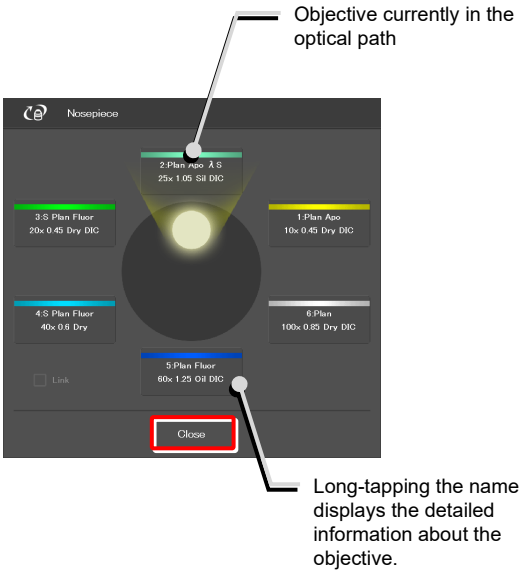
When using an intelligent nosepiece, the name of the objective which is in the optical path is displayed.

1. Tap this button to display the objective subscreen.

▼ Displaying the objective status

2. Long-tap the name of the objective to be used to display the detailed information about the objective.

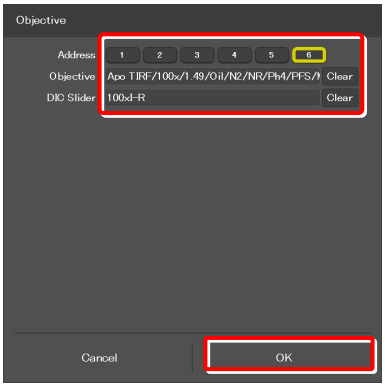
▼ Objective subscreen



> **SUPPLEMENTAL REMARKS**
>
> The magnification color code of the objective is displayed on each objective button.
>
> Black: 1x, gray: 2x, red: 4x, yellow: 10x, green: 20x, pale green: 25x, bright blue: 40x, dark blue: 60x, white: 100x

3. Tap [Close] to close the objective subscreen.

▼ Objective detailed information screen



> **SUPPLEMENTAL REMARKS**
>
> The displayed detailed information about the objective can be changed by tapping each item.
>
> Tap [OK] at the bottom of the screen to send the changed information to the microscope.
>
> For how to change information about objectives, see “3.5.1 Setting the Nosepiece.”

4.1.4 Displaying the Condenser Module Status

When using an intelligent condenser turret, the name of the condenser module which is in the optical path is displayed.

1. Tap this button to display the condenser subscreen.

2. Long-tap the name of the condenser module to be used to display the detailed information about the module.

3. Tap [Close] to close the condenser module subscreen.

SUPPLEMENTAL REMARKS

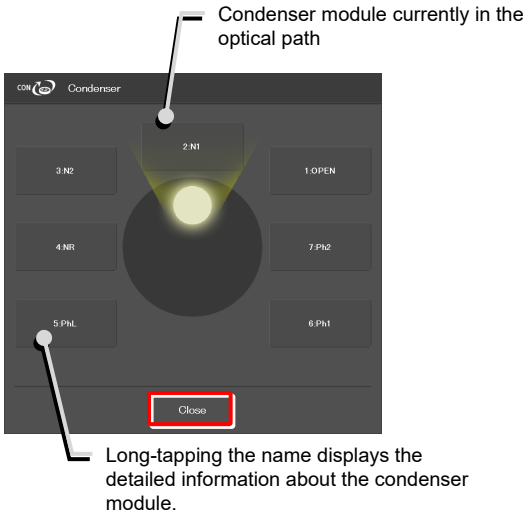
Detailed information about the condenser module can be changed by tapping each item.

Tap [OK] at the bottom of the screen to send the changed information to the microscope.

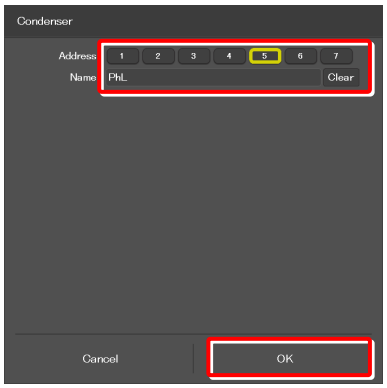
For how to change information about condenser modules, see “3.5.2 Setting the Condenser Module.”

▼ Displaying the condenser module status

▼ Condenser module subscreen



▼ Condenser module detailed information screen



4.1.5 Displaying the filter cube status

When using an intelligent FL turret, the name of the filter cube which is in the optical path is displayed.

(For the second FL turret)

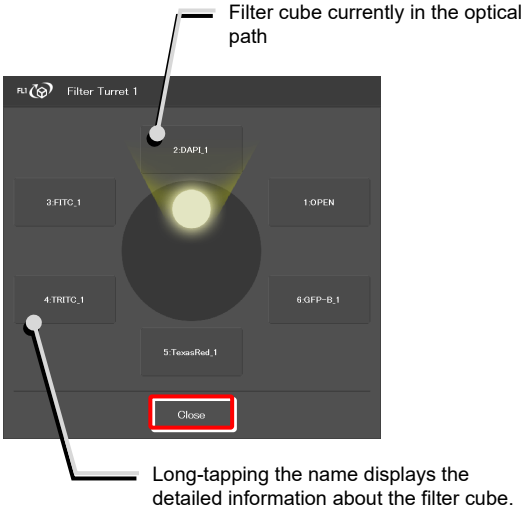
1. Tap this button to display the filter cube subscreen.

2. Long-tap the name of the filter cube to be used to display the detailed information about the filter cube.

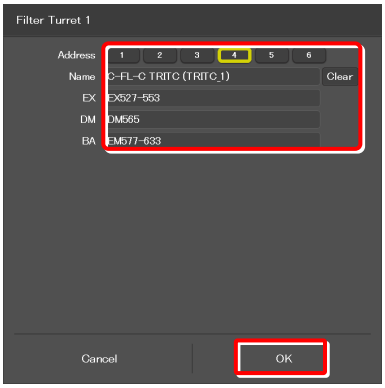
3. Tap [Close] to close the filter cube subscreen.

▼ Displaying the filter cube status

▼ Filter cube subscreen



▼ Filter cube detailed information screen



SUPPLEMENTAL REMARKS

Detailed information about the filter cube can be changed by tapping each item.
Tap [OK] at the bottom of the screen to send the changed information to the microscope.

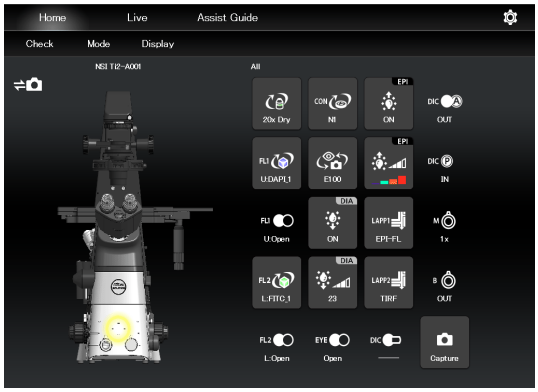
For how to change information about filter cubes, see “3.5.3 Setting the Filter Cube.”

4.1.6 Displaying the optical path status

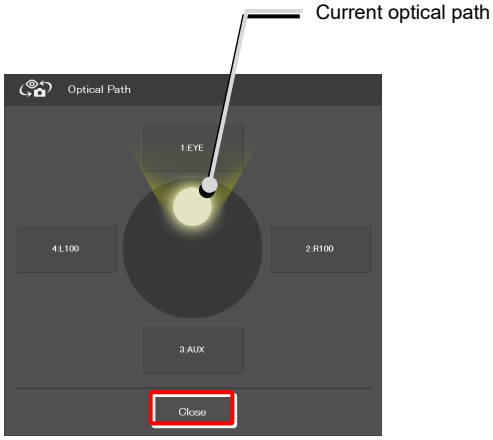
The port of the current optical path is displayed.

1. Tap this button to display the optical path subscreen.

▼ **Displaying the optical path status**



▼ **Optical path subscreen**



SUPPLEMENTAL REMARKS

The output port name of the optical path set in “3.5.5 Setting the Optical Path Name” is displayed.

1: Eyepiece observation port (Default: EYE)

An optical output port for visually observing a microscope image through a binocular part of a tube.
(Switch the output port to [1] Eyepiece observation port to output the image to the assist camera when using the assist tube base unit.)

2: Right side port (Default: R100)

An optical output port for the microscope image on the right side of the microscope.
(Microscopy camera, photometer sensor, etc.)

3: AUX (Default: L80)

80% of a microscope image is output to the optical output port on the left side of the microscope, and 20% is output to the eyepiece observation port. (when using the Ti2-A E20L80)

4: Left side port (Default: L100)

An optical output port for the microscope image on the left side of the microscope. (Microscopy camera, photometer sensor, etc.)

2. Tap [Close] to close the optical path subscreen.

4.1.7 Controlling the Dia-Illumination Unit (DIA)

Adjusting the illumination intensity of dia-illumination (DIA)

Illumination intensity of the dia-illumination unit (DIA) is displayed.

1. Tap this button to display the DIA intensity adjustment subscreen.

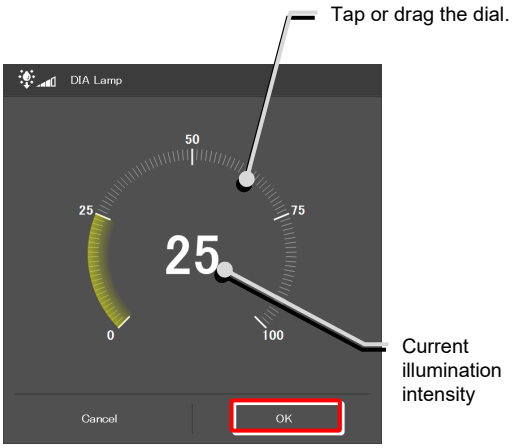
▼ Adjusting the illumination intensity of dia-illumination unit (DIA)

2. To adjust the illumination intensity, tap the dial in the center or drag the vicinity of the dial.

3. Tap [Close] to close the dia-illumination intensity adjustment subscreen.

Tap [Cancel] to reset the intensity to that before the subscreen is opened, and to close the screen.

▼ Dia-illumination intensity adjustment subscreen



Turning on or off the dia-illumination (DIA)

1. Tap the buttons shown below.

Lit. The LED is turned off when this button is tapped.

Extinguished. The LED is turned on when this button is tapped.

▼ Controlling the dia-illumination (DIA)

4.1.8 Displaying the Shutter Status of FL Turret 1 (Open/Close)

When using an intelligent FL turret, the FL turret shutter state (open/close) is displayed.

The shutter of the FL turret is open.

The shutter of the FL turret is closed.

For the second FL turret

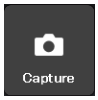
The shutter of the second FL turret is open.

The shutter of the second FL turret is closed.

▼ Displaying the FL turret shutter state (open/close)

4.1.9 Capturing Images With the Assist Camera (Only With the Assist Tube Base Unit)

1. Tap the button shown below.



The images from the assist camera are captured.

If the optical path is switched to [EYE], the images from the assist camera are captured and saved in the storage in the smart device.

SUPPLEMENTAL REMARKS

The captured images are saved in the [Ti2Control] folder displayed by tapping [Pictures] on the smart device.

The saved images can be viewed by the image viewer application.

▼ Capturing images through the assist camera

4.1.10 Other Buttons

Other information is indicated as follows:

The following buttons indicate the current intermediate magnifications.

1x

1.5x

2x

Indicates the objective-side DIC slider in/out status.

Inserted

Removed

Indicates the DIC analyzer slider in/out status.

Inserted

Removed

Indicates the DIC polarizer in/out status.

Inserted

Removed

Indicates the Bertrand lens in/out status.

Inserted

Removed

SUPPLEMENTAL REMARKS

If an indication-only button is tapped, the location of the module is indicated in the left microscope view.

4.1.11 Displaying the Optical Path Status of Epi-illumination

1. Tap the buttons shown below.

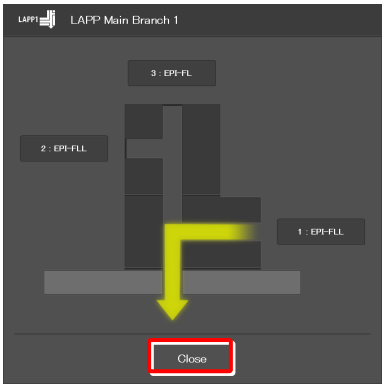
(Also tap this button in a stage-up configuration.)

The epi-illumination control subscreen appears, showing the optical path currently in use.

▼ Epi-illumination control

2. Tap [Close] to close the epi-illumination control subscreen.

▼ Epi-illumination control subscreen



Microscope main body side

4.1.12 Operation When Using an LED for the Epi Illuminator

The epi-fl LED illuminator (C-LEDFI) has built-in LEDs for each excitation wavelength. The LEDs can be turned on or off and the brightness can be adjusted to achieve illumination with the specified wavelength.

Selecting an LED to be used

1. Tap the buttons shown below.

All LEDs are off.

Each LED is on.

The C-LEDFI control subscreen appears showing the on/off state, the wavelength and the illumination intensity of each LED.

▼ **C-LEDFI control**

2. Tapping the [OFF] indication button turns the corresponding LED on. Tapping the [ON] indication button turns it off.

3. Tap [<] and [>] to set the illumination intensity per LED.

4. Tap [OK] to save the C-LEDFI control.

▼ **C-LEDFI control subscreen**

Turning on or off the LED

1. Tap the buttons shown below.

Lit. The LED is turned off when this button is tapped.

Extinguished. The LED is turned on when this button is tapped.

The LEDs set above on the C-LEDFI control subscreen are turned on or off.

▼ **C-LEDFI control**

4.1.13 Operation When Using the Intensilight for the Epi Illuminator

When the motorized Intensilight (motorized HG precentered fiber illuminator (C-HGFIE)) is used as the epi illuminator, the shutter can be opened or closed and the ND filter attached to the Intensilight can be switched.

Opening and closing the Intensilight shutter

1. Tap the buttons shown below.

Indicates that the Intensilight shutter is open. The shutter closes when this button is tapped.

Indicates that the Intensilight shutter is closed. The shutter opens when this button is tapped.

▼ Opening and closing the Intensilight shutter

Switching the Intensilight ND filter

1. Tap the button shown below.

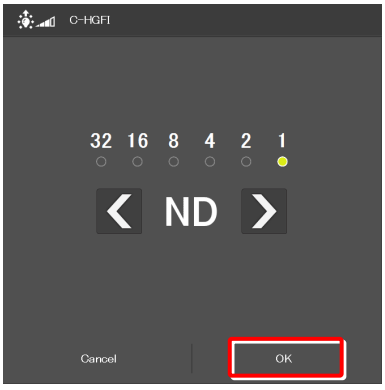
The ND filter changeover subscreen appears.

▼ Switching the ND filter

2. To switch the ND filter, tap [<] or [>].

3. Tap [OK] to save the ND filter change.

▼ ND filter changeover subscreen



4.2 Live Screen

When Ti2-A is used, a live image of the assist camera is displayed on the Live screen.

> **CAUTION**
>
> Even though the assist tube base unit is mounted, the live image from the assist camera may not be displayed in the live image display area.
>
> If live image reception fails, a message dialog appears. Retry live image reception by following the message.
>
> If this error still persists after several attempts, contact your local Nikon representative.

4.2.1 Configuration of the Live Screen

This section describes the basic configuration of the Live screen.

■ **Remote control button area**

Shows the state of each device of the microscope main body. The layout of remote control buttons can be changed freely in the display screen.
For details, see “5.2 Remote Control Button Arrangement.”

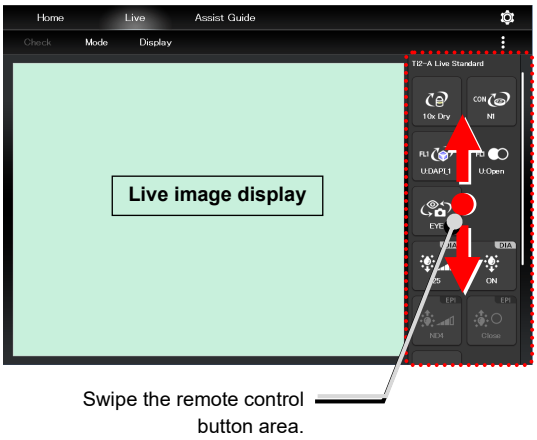
■ **Swiping the remote control button area**

The items displayed in the remote control button area can be scrolled by swiping the area up or down.

■ **Live image display area**

Displays the live image of the assist camera.

▼ **Remote control button area**



■ **(Display changeover)**

Select an item from the submenu displayed by tapping this button to show or hide the remote control button area.

Hide:

Select [Hide] to hide the remote control button area.

Microscope Control:

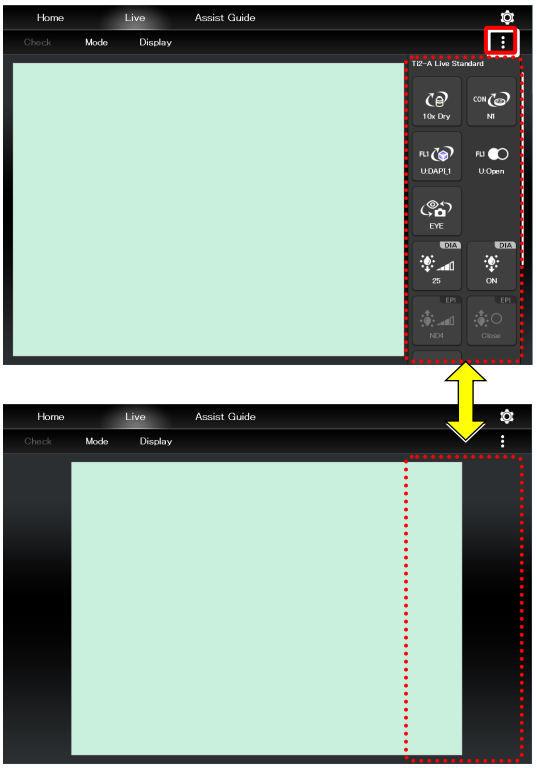
Select [Microscope Control] to show the remote control button area.

Camera Control:

Select [Camera Control] to show the adjustment screen of the assist camera image.

In this screen, white balance can be adjusted and the FOV of the assist camera can be adjusted to be in the same position and the size as the FOV of the binocular part.

▼ **Display or hide**



Chapter
5

Advanced Uses: Ti2-A

This chapter describes advanced uses of “Ti2 Control” to control the microscope.

5.1 Check Mode

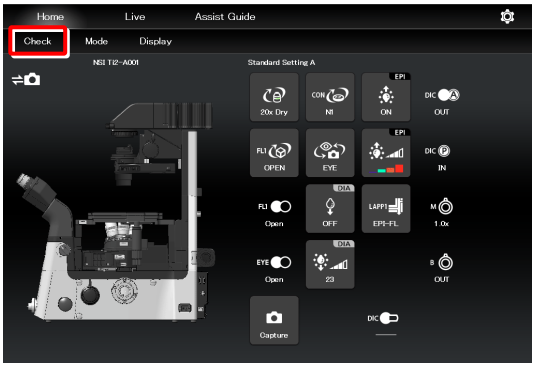
The check mode allows the user to check if a specimen can be observed properly by the specified microscopy technique.

5.1.1 How to Use the Check Mode

1. Tap [Check] on the home screen.

A list of microscopy techniques is displayed.

▼ **Starting the check mode**

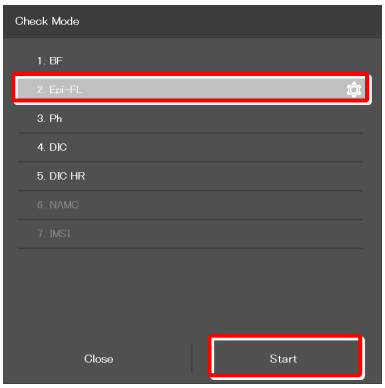


2. Select the microscopy technique for the check, and then tap [Start].

The home screen in check mode is displayed, and the buttons are arranged to be suitable for the selected microscopy technique.

> **SUPPLEMENTAL REMARKS**
>
> Only the available microscopy techniques, based on the mounted accessories, are selectable on the screen.

▼ **Selecting the microscopy technique to be checked**



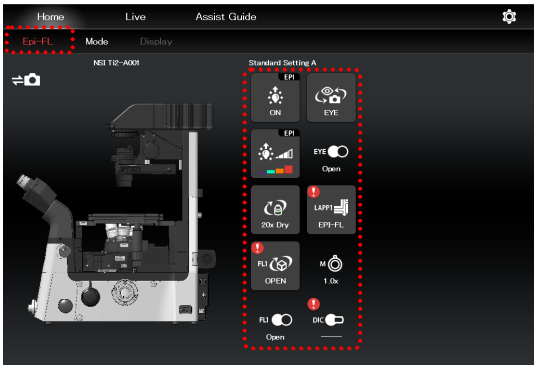
During check mode, [Check] in the menu field is switched to the name of the selected microscopy technique, which is shown in red or green.

If an accessory not suitable for the microscopy technique is in the optical path or it is in a state not suitable for the microscopy technique, the name of the microscopy technique in the menu field is shown in red and a mark is placed on the remote control button for the accessory.

If an objective not suitable for the microscopy technique is in the optical path, the mark is placed on only the remote control button for the objective even when other accessories are in the state not suitable for the microscopy technique. After the objective is replaced with a suitable objective, the mark is placed on the remote control button for the accessories not suitable for the microscopy technique.

When the microscope system is in a state suitable for the microscopy technique, the [name of the microscopy technique] is shown in green.

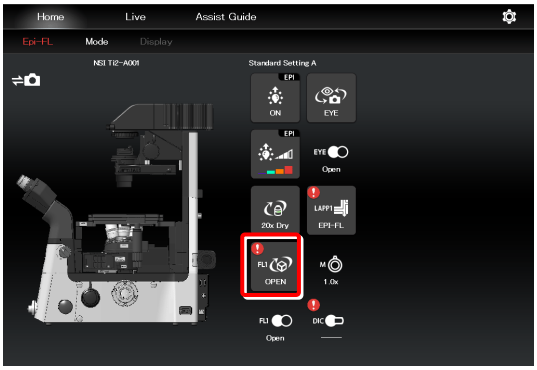
▼ **Home screen in check mode**



3. Tap the remote control button with the mark.

The subscreen appears.

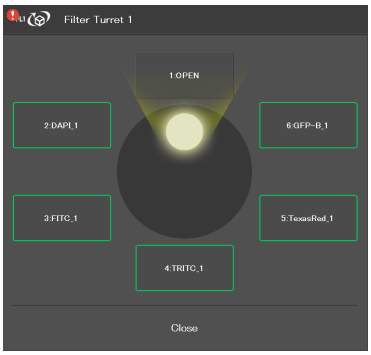
▼ **Home screen in check mode**



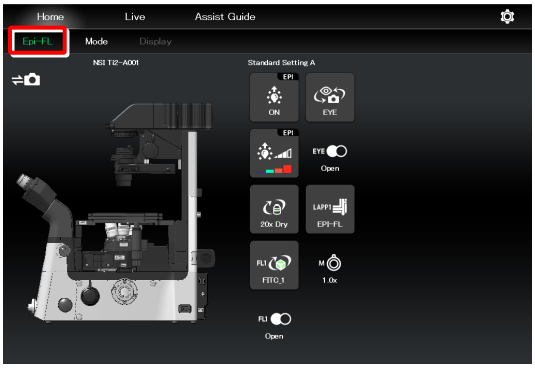
The item suitable for the microscopy technique is indicated by the green frame.

On the microscope main body, change the device state to be suitable for the microscopy technique.

▼ **Subscreen**



When all devices are in the states suitable for the microscopy technique, all the marks disappear and the microscopy technique in the menu field is shown in green.



SUPPLEMENTAL REMARKS

To cancel the check mode, tap the [microscopy technique name].

5.2 Remote Control Button Arrangement

The remote control buttons can be arranged freely and this can be registered as a remote control button layout.

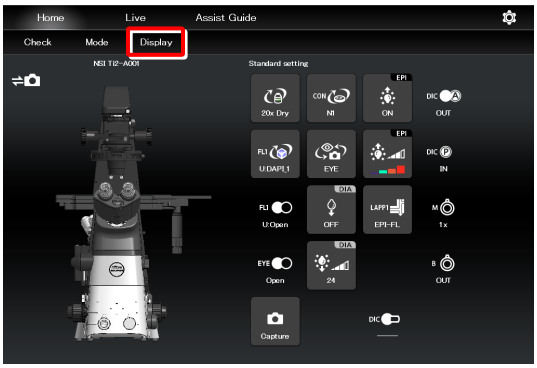
5.2.1 Remote Control Button Rearrangement

1. Tap [Display] on the home screen or the Live screen.

The selection list is displayed.

> **SUPPLEMENTAL REMARKS**
>
> The remote control button layout is managed separately on the Home screen and the Live screen.
>
> The selection list screen to be displayed next depends on which screen [Display] was tapped on.

▼ **Starting remote control button rearrangement**



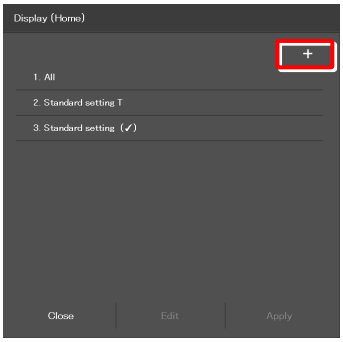
2. To create a new remote control button layout, tap [+].

The remote control button rearrangement screen appears.

> **SUPPLEMENTAL REMARKS**
>
> A mark (✔) is displayed next to the name of the current remote control button layout.

> **SUPPLEMENTAL REMARKS**
>
> To edit the created remote control button layout, select the corresponding layout, and then tap [Edit].
>
> Note that the layout cannot be saved with a different name when [Edit] is selected.

▼ **Selection list screen - Display (Home)**



▼ **Selection list screen - Display (Live)**

3. To delete a button from the remote control button area, tap the button.

A selected button is highlighted in a yellow frame.

4. Tap [ ].

The selected button is deleted.

(The button can also be deleted by tapping [ ] first, and then tapping the button to be deleted.)

▼ **Deleting a button**

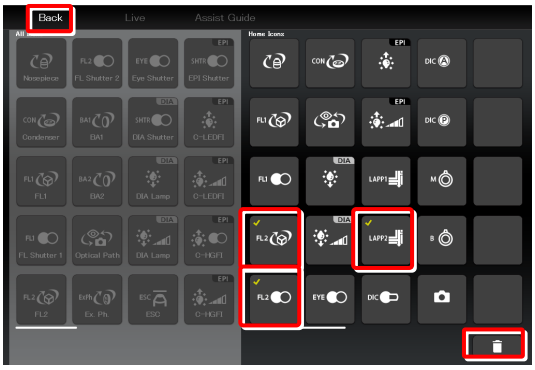
To delete multiple buttons at a time, first long-tap a button. After the yellow check mark appears on the top left of the long-tapped button, select the next button.

Tapping a button with the check mark cancels the selection.

To cancel the multiple selections, use [Back] on the top left of the screen.

Tap [ ] to delete the selected buttons.

▼ **Deleting multiple buttons**



5. Select the desired button from a group of arrangeable buttons on the left side of the screen.

The displayed button group can be scrolled by swiping the area to the right or the left.

The selected button is highlighted in a yellow frame.

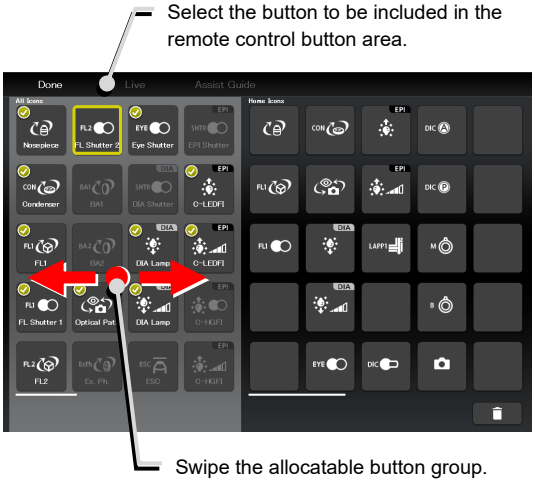
The button, which has already been arranged, has a check mark in the upper right corner of the button.

Example: (not arranged yet) → (already arranged)

SUPPLEMENTAL REMARKS

For a functional overview of each remote control button, see "4.1.2 List of Remote Control Buttons."

▼ **Remote control button rearrangement screen**

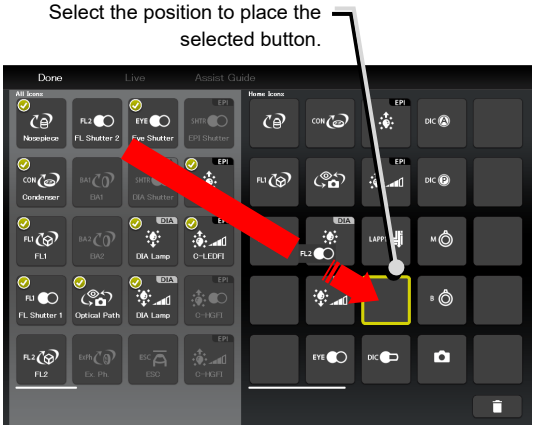


6. On the arrangement screen on the right, tap the position to place the selected button.

The button is displayed at the tapped position.

(The button can also be placed at a desired position by tapping the position first, and then tapping the desired button from the bottom of the screen.)

▼ **Allocating a button**



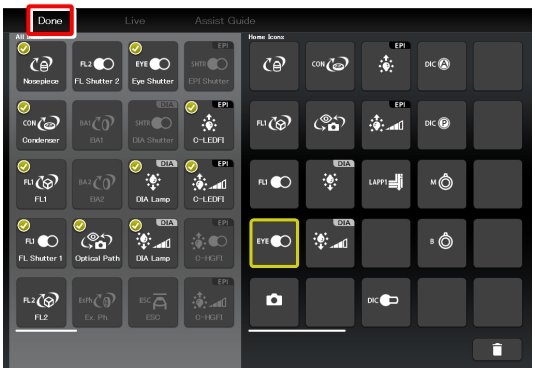
7. To swap the buttons, tap the buttons to be swapped.

▼ **Swapping buttons**

8. After arranging all buttons, tap [Done].

The Save Display screen appears.

▼ **Saving the rearranged remote control button layout**



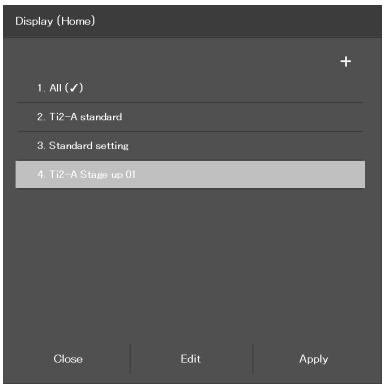
9. To save the customized button arrangement as a remote control button layout, specify a name in the [Name] field, and then tap [Save].

Use within 20 single-byte alphanumeric characters for the name.

The customized button arrangement is registered as a remote control button layout.

▼ **Save Display screen**

▼ **Selection list screen**



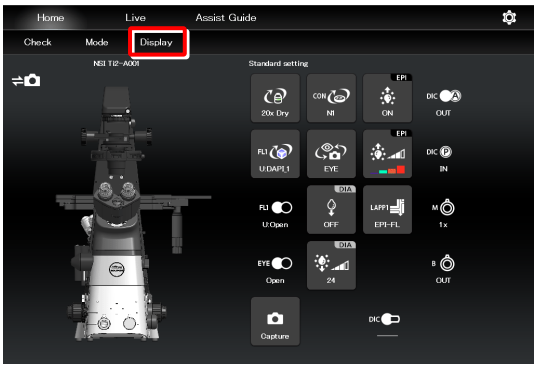
> **SUPPLEMENTAL REMARKS**
>
> To delete the saved remote control button layout, long-tap the button layout name on the selection list screen.
>
> When a confirmation message is displayed, tap [OK] to delete the layout.

5.2.2 Calling the Saved Remote Control Button Arrangement

1. Tap [Display] on the home screen or the Live screen.

The selection list is displayed.

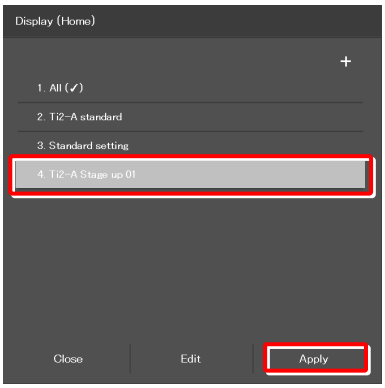
▼ **Calling the button arrangement**



2. Select the name of the remote control button layout from the list, and then tap [Apply] to arrange the remote control buttons accordingly.

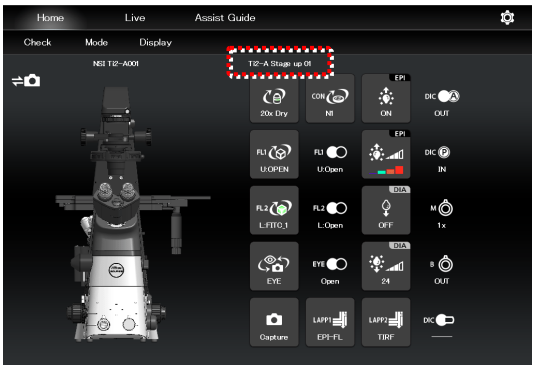
> **SUPPLEMENTAL REMARKS**
>
> Selecting [ALL] and then tapping [Apply] displays all remote control buttons that can be displayed.

▼ **Selecting a remote control button layout**



The remote control buttons are arranged according to the registered button layout.

The name of the recalled remote control button layout is displayed above the remote control button area.



5.3 Registering and Recalling Modes

The Mode screen allows the user to register the device state as a mode, and to check if the current microscope state is the same as that of the registered mode.

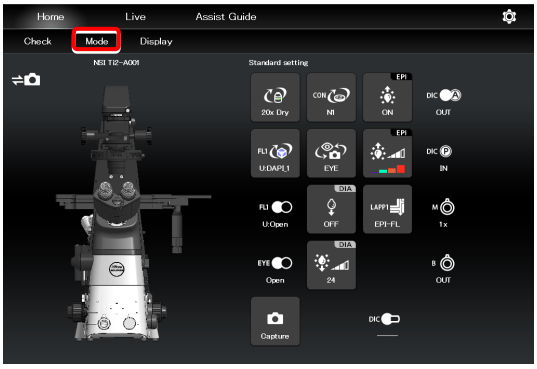
5.3.1 Saving a Mode

Multiple observation states can be saved in the Mode function.

1. Tap [Mode] on the home screen.

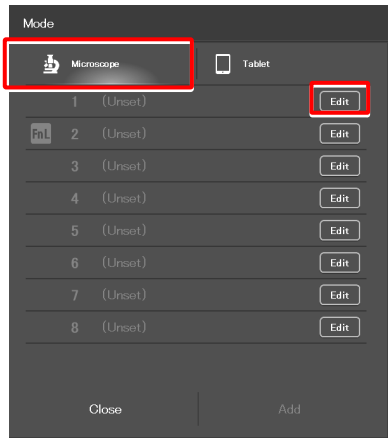
The Mode screen appears.

▼ Mode setting



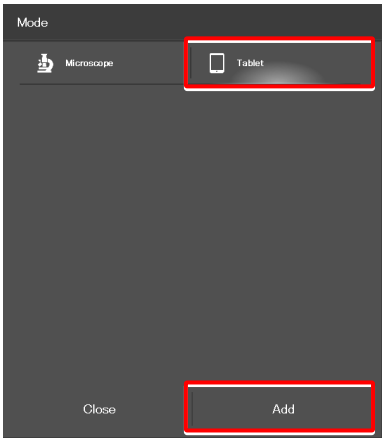
Select the [Microscope] tab and tap [Edit] of the desired mode number to save the mode in the microscope.

▼ Mode screen (saved in the microscope)



Select the [Tablet] tab and tap [Add] to save the mode in the tablet.

▼ Mode save destination (saved in the tablet)



The setting requirements differ depending on where the mode is saved: in the microscope or in the tablet.

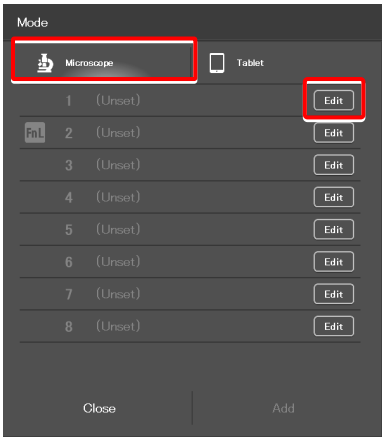
For details, see the following pages.

Setting the devices and the states (saved in the microscope)

1. Select the [Microscope] tab, and then tap [Edit] of the desired mode number.

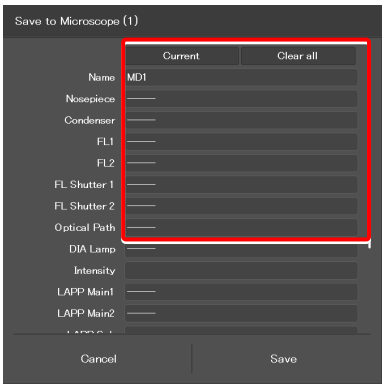
The mode setting subscreen appears.

▼ **Mode screen**



2. Set the following items.

▼ **Mode setting (saved in the microscope)**



Current:

Tap this to read the current states of the devices when an intelligent device is connected.

Clear all:

Tap this to clear all displayed values.

Name:

Specify the name for the mode to be registered.
(Up to 14 single-byte alphanumeric characters can be used.)

Nosepiece:

Select the address of the nosepiece.

Condenser:

Select the address of the condenser turret.

FL1:

Select the address of FL turret 1 that has the filter cube to be used.

FL2:

If there is a second FL turret in a stage-up configuration, select the address of FL turret 2 that has the filter cube to be used.

FL Shutter 1:

Select the FL turret 1 shutter state.

FL Shutter 2:

If there is a second FL turret in a stage-up configuration, select the FL turret 2 shutter state (open or close.)

Optical path:

Select an optical path.

DIA Lamp:

Select the state (on or off) of dia-illumination.

Intensity:

Specify the illumination intensity of dia-illumination. (The input range is 0 to 100.)

LAPP Main1:

Select the optical path of main branch 1 of the epi-illumination attachment.

LAPP Main2:

Select the optical path of main branch 2 when the upper and lower epi-illumination attachments are provided in a stage-up configuration.

LAPP Sub:

Select the optical path of the epi-illumination attachment's sub branch.

Intermediate magnification:

Select an intermediate magnification value.

DIC slider:

Select the DIC slider in/out status.

DIC Polarizer:

Select the DIC polarizer in/out status.

Analyzer Slot:

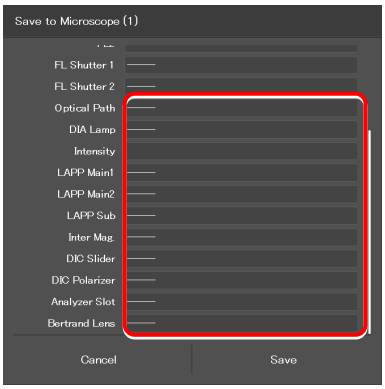
Select the analyzer slider in/out status.

Bertrand Lens:

Select the Bertrand lens in/out status.

3. Tap [Save] to save the setting.

▼ Mode setting (saved in the microscope) (Cont.)

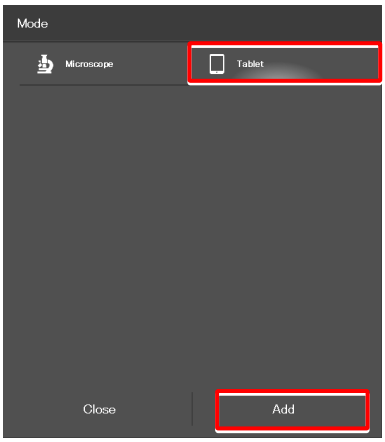


Setting the devices and the states (saved in the tablet)

1. Select the [Tablet] tab, and then tap [Add].

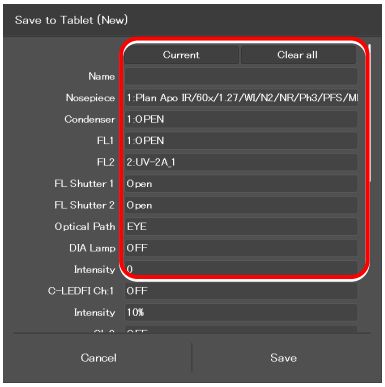
The mode setting subscreen appears.

▼ **Mode screen**



2. Set the following items.

▼ **Mode setting (saved in the tablet)**



Current:

Tap this to read the current states of the devices when an intelligent device is connected.

Clear all:

Tap this to clear all displayed values.

Name:

Specify the name for the mode to be registered.
(Up to 14 single-byte alphanumeric characters can be used.)

Nosepiece:

Select an objective to be used.

Condenser:

Select the condenser to be used.

FL1:

Select the filter cube to be used.

FL2:

If there is a second FL turret in a stage-up configuration, select the filter cube to be used.

FL Shutter 1:

Select the FL turret 1 shutter state.

FL Shutter 2:

If there is a second FL turret in a stage-up configuration, select the FL turret 2 shutter state (open or close.)

Optical path:

Select an optical path.

DIA Lamp:

Select the state (on or off) of dia-illumination.

Intensity:

Specify the illumination intensity of dia-illumination.
(The input range is 0 to 100.)

C-HGFI:

Select the state (on or off) of the Intensilight.

C-LEDFI Ch:1:

Select the state (on or off) of channel 1 of the C-LEDFI epi-fl LED illuminator.

Intensity:

Select the illumination intensity of channel 1 of the C-LEDFI epi-fl LED illuminator.

Ch:2:

Select the channel 2 status (ON/OFF) of the C-LEDFI epi-fl LED illuminator.

Intensity:

Select the illumination intensity of channel 2 of the C-LEDFI epi-fl LED illuminator.

Ch:3:

Select the channel 3 status (ON/OFF) of the C-LEDFI epi-fl LED illuminator.

Intensity:

Select the illumination intensity of channel 3 of the C-LEDFI epi-fl LED illuminator.

Ch:4:

Select the channel 4 status (ON/OFF) of the C-LEDFI epi-fl LED illuminator.

Intensity:

Select the illumination intensity of channel 4 of the C-LEDFI epi-fl LED illuminator.

Observation port:

Displayed when the eyepiece tube base unit with port is used.
Select the optical output port (observation port) of the tube base unit.

Eyepiece Shutter:

Displayed when the assist tube base unit is used.
Select the state (open or closed) of the shutter in the optical path to the binocular part.

LAPP Main1:

Select the optical path of main branch 1 of the epi-illumination attachment.

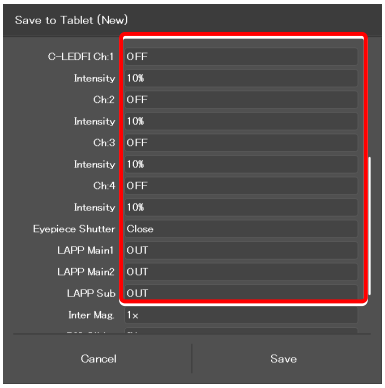
LAPP Main2:

Select the optical path of main branch 2 when the upper and lower epi-illumination attachments are provided in a stage-up configuration.

LAPP Sub:

Select the optical path of the sub-branch of the epi-illumination attachment.

▼ Mode setting (saved in the tablet) (Cont.)



Inter Mag.:

Select an intermediate magnification value.

DIC slider:

Select the DIC slider in/out status.

DIC Polarizer:

Select the DIC polarizer in/out status.

Analyzer Slot:

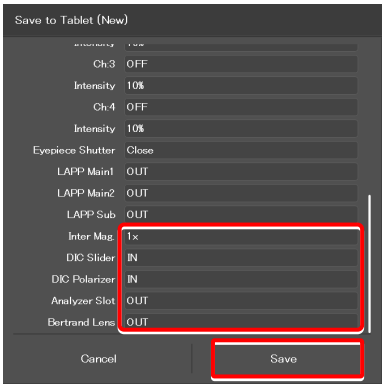
Select the analyzer slider in/out status.

Bertrand Lens:

Select the Bertrand lens in/out status.

3. Tap [Save] to save the setting.

▼ Mode setting (saved in the tablet) (Cont.)



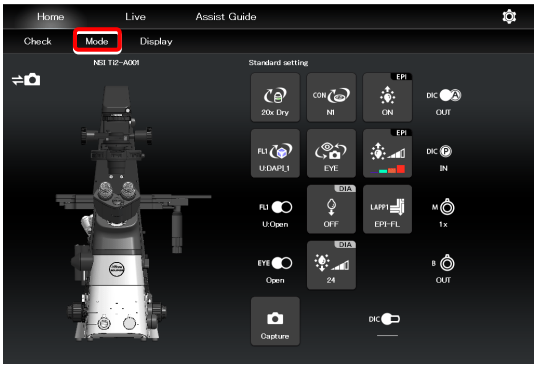
5.3.2 Calling a Registered Mode

The state of each device is shown when the mode to be called is tapped. A mark is placed on the right to the button corresponding to the device whose state is different from the registered state.

1. Tap [Mode] on the Home screen.

The Mode screen appears.

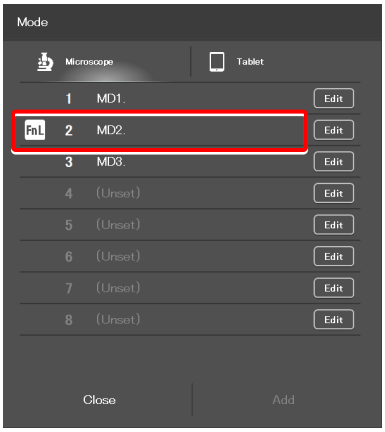
▼ **Recalling the mode**



2. From the displayed list, tap the mode to be called.

The registered mode is read.

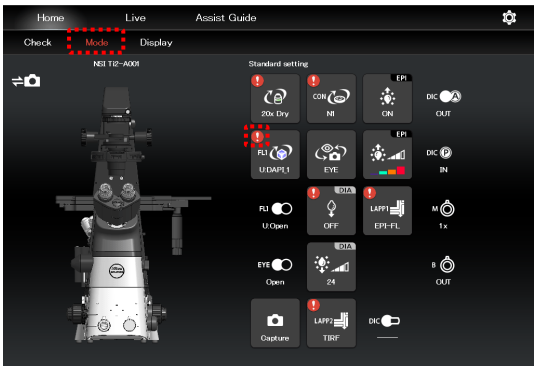
▼ **Mode recall screen**



[Mode] in the menu field is shown in red or green during the [Mode] mode.

If an accessory not suitable for the registered mode is in the optical path, or it is in a state not suitable for the registered mode, a mark is placed on the remote control button for the accessory, and [Mode] is shown in red.

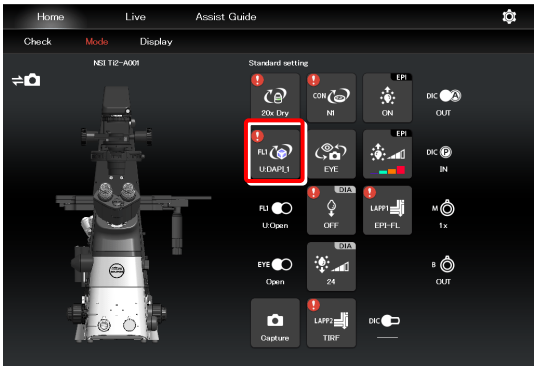
▼ **Home screen during the [Mode] mode**



3. Tap the remote control button with the mark.

The subscreen appears.

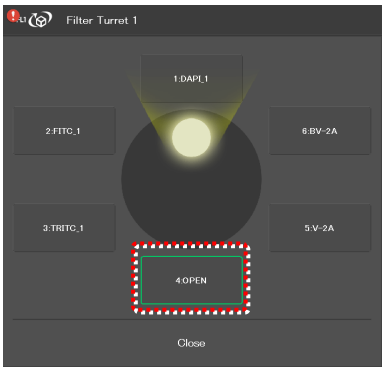
▼ **Home screen during the [Mode] mode**



The item registered in the mode is shown by the green frame.

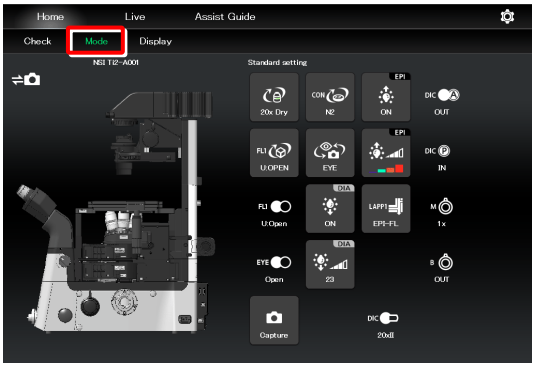
On the microscope main body, change the device state to be suitable for the microscopy technique.

▼ **Subscreen**



When all devices are in the states suitable for the registered mode, all the marks disappear and Mode in the menu field is shown in green.

▼ **Home screen during the [Mode] mode**



SUPPLEMENTAL REMARKS

To cancel the mode, tap [Mode] once again.

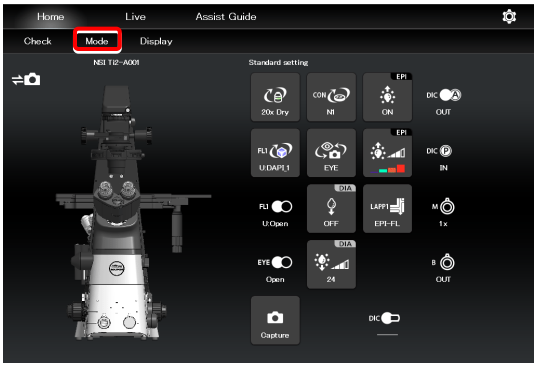
5.3.3 Editing a Registered Mode

This section describes how to edit the registered mode.

1. Tap [Mode] on the Home screen.

The Mode screen appears.

▼ Mode edition

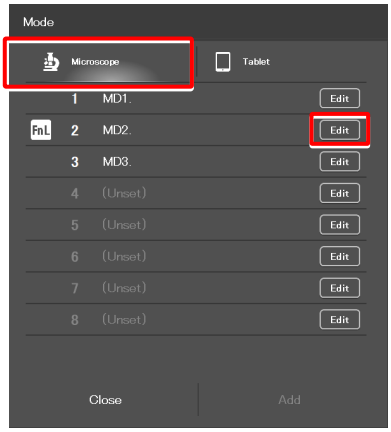


2. Tap [Edit] of the desired mode number.

Select the [Microscope] tab and tap [Edit] of the desired mode number to display the screen of the mode in the microscope.

The subsequent steps are the same as those for newly registering the mode.
For details, see “5.3.1 Saving a Mode” in “Setting the devices and the states (saved in the microscope).”

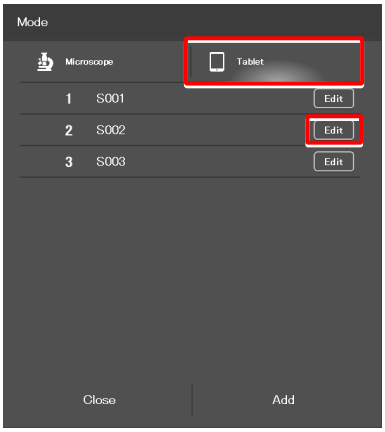
▼ Mode screen (saved in the microscope)



Select the [Tablet] tab and tap [Edit] of the desired mode number to display the screen of the mode in the tablet.

The subsequent steps are the same as those for newly registering the mode.
For details, see “5.3.1 Saving a Mode” in “Setting the devices and the states (saved in the tablet).”

▼ Mode save destination (saved in the tablet)



Chapter 6

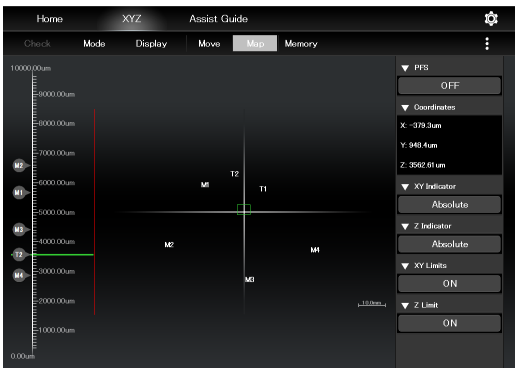
Functional Configuration of the Application: Ti2-E

This chapter describes the functional configuration of the “Ti2 Control” application used with the Ti2-E microscope.

6.1 Functional Configuration of the Application

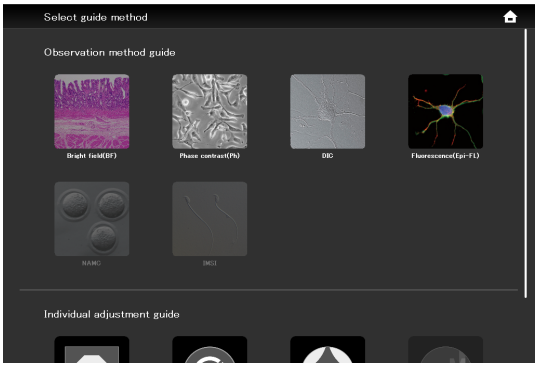
This application consists of the following four screens:

Display the XYZ screen.
Used to control the motorized stage (XY stage) and the focusing device (Z stage) of the microscope.
(See “8.2 XYZ screen.”)

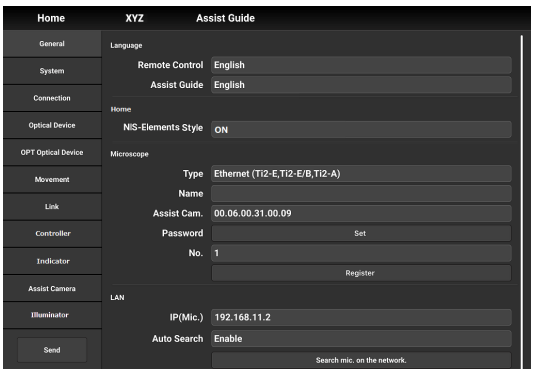


Display the Home screen.
Used to control the microscope.
(See “8.1 Home screen.”)

Display the Assist Guide screen.
Used to display a guide for optimum setup of the microscope.
(See “Chapter 10 How to Use the Assist Guide.”)



Setup screen display
Used to set up the microscope.
(See “Chapter 7 Setup: Ti2-E.”)



Name of the current remote control button layout

Display the registered microscope name.

Display the assist camera connection status.

Chapter 7

Setup: Ti2-E

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.

> **CAUTION**
> When more than one microscope system is connected to a single wireless router, connect and configure each microscope system individually.

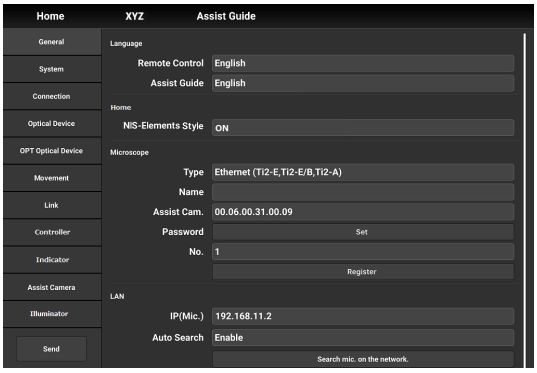
7.1 Basic Setup Operations and Screens

7.1.1 Starting the Setup

Tap [⚙] on the Home screen or the XYZ screen to open the setup screen.

▼ **Starting the setup**

▼ **Setup screen**



7.1.2 Configuration of the Setup Screen

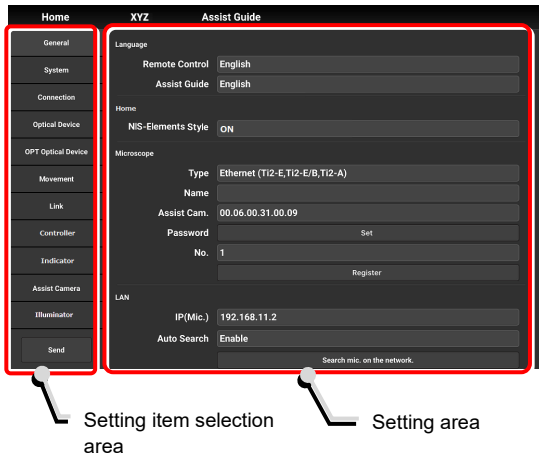
■ **Setting item selection area**

Tap each button to change a setting item.

■ **Setting area**

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

▼ **Configuration of the setup screen**



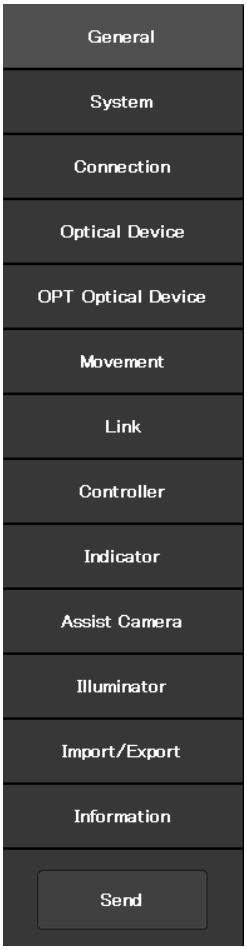
7.1.3 Setting Items

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
- [Link]: Settings of linked control
- [Controller]: Setting the motorized control of the motorized devices
- [Indicator]: Setting the indicators
- [Assist Camera]: Setting the assist camera
- [Illuminator]: Setting the DLEDI
- [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**

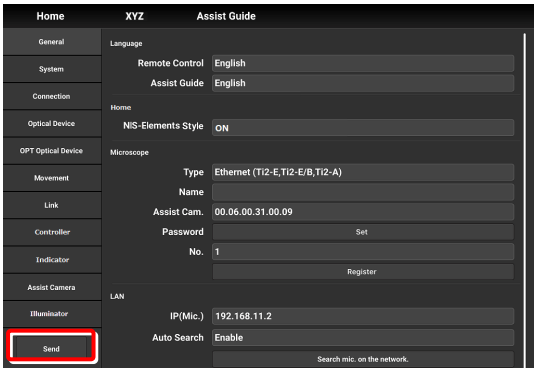


7.1.4 Sending Microscope System Information

■ **Sending information to the microscope system**

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

▼ **Setup screen**

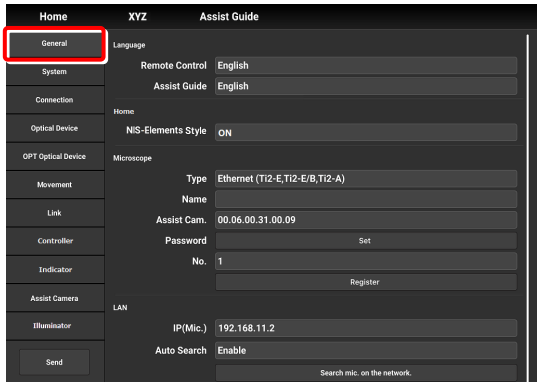


7.2 [General] Basic Settings of the Microscope and the Application

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

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

▼ General settings

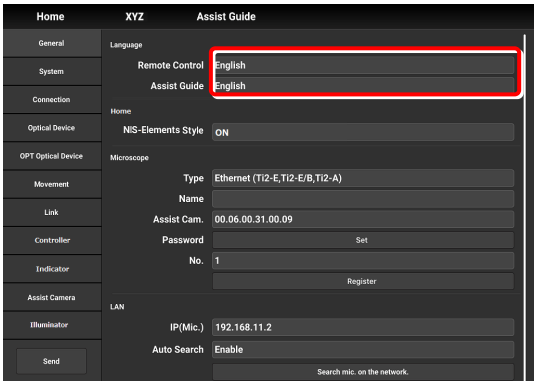


7.2.1 Setting the Language

Set the language of this application.

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

▼ Setting the language



Remote Control:

Select the language used on the setting screens.

Assist Guide:

Select the language used in the Assist Guide.

7.2.2 Display Setting of the Home Screen (Tablet)

Set the display style of the Home screen.

1. Set the following item in the [Home] area.

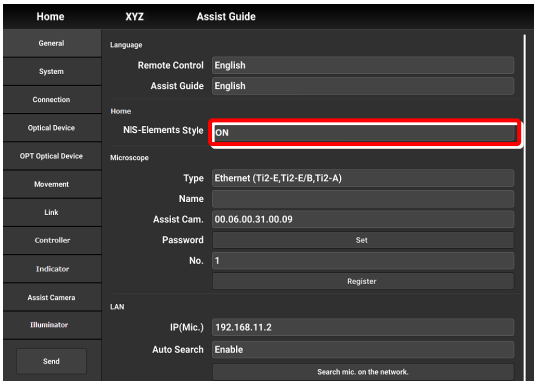
NIS-Elements style:

Setting the NIS-Elements Style to ON switches the Home screen display style to the NIS-Elements style.

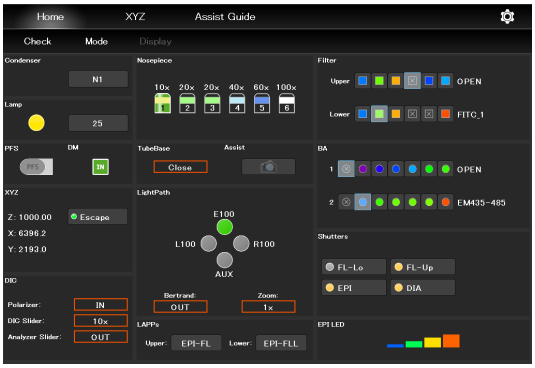
> **CAUTION**
>
> This function is not displayed on the smart phone screen.

Subscreens may be displayed by tapping some items.

▼ Display setting of the Home screen



▼ Home screen (NIS-Elements style)



7.2.3 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.:

Tap the box to display a list of MAC addresses of the assist cameras.
Tap the target MAC address and then [OK] to register the assist camera.

> **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, never fail 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 [⚙] is tapped to access the microscope on a device 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 device.

No.:

Select a microscope number to be registered with the device.
Up to 20 microscopes can be registered.

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

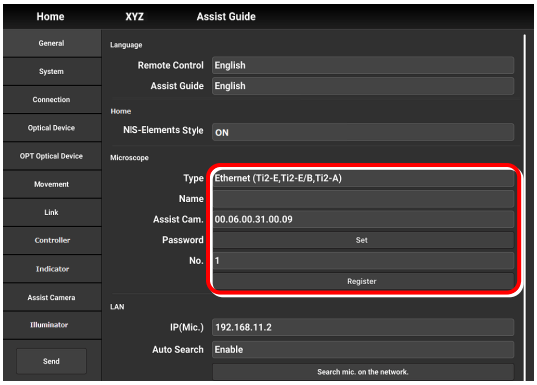
Register button:

Tap 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.

▼ Registering the microscope system



7.2.4 Setting the LAN

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

IP (Mic.):

Allows displaying or specifying the IP address of the microscope.

If not using [Auto Search] or [Search mic. on the network], directly enter the IP address of the microscope.

To enter the fixed IP address of the microscope, see “7.2.5 Fixed IP Address of the Microscope.”

Auto Search:

Sets whether to automatically search the network for the IP address of the microscope and connect to the network upon “Ti2 Control” startup.
(Enable: Automatically connected)

If more than one microscope is connected, all the microscopes connected to the network are displayed. Select the IP address of the microscope to be used.

Search mic. on the network:

If more than one microscope is connected, all the microscopes connected to the network are searched for. Select the IP address of the microscope to be used.

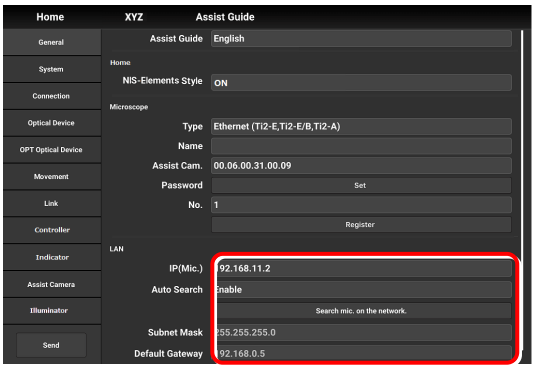
Subnet Mask:

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



CAUTION

Connection to the microscope or the assist camera may not be possible from the application depending on the wireless router (Wi-Fi) or the smart device in use.

In this case, close the application and perform the following procedure:

- On the device, tap [Settings] and [Wi-Fi] to turn off the Wi-Fi, and then turn on [Wi-Fi] to connect to the wireless router.
- Restart the microscope system.

After performing the above procedure, start up the application again, and check that it can be connected to the microscope or the camera.

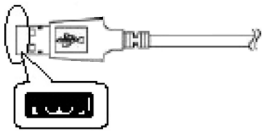
7.2.5 Fixed IP Address of the Microscope

This section describes how to find the fixed IP address of the microscope.

> **CAUTION**
>
> The fixed IP address of the microscope can be found only by “Ti2 Control” for Windows.
>
> Perform the procedure in this section in a Windows PC.

1. Connect the Windows PC and the controller for TI2-E using a USB connector.

▼ USB connector A



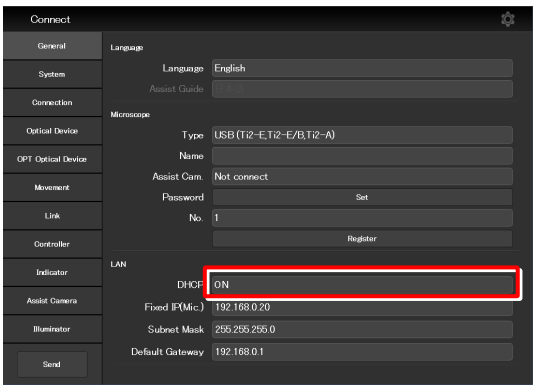
2. In the [LAN] area, set [DHCP] to OFF (disabled).

3. Take a note of the microscope’s fixed IP address displayed in the [Fixed IP(Mic)] field.

The steps in the Windows PC are complete.

Enter the noted IP address in the smart device.
(See “7.2.4 Setting the LAN.”)

▼ Fixed IP address of the microscope



7.3 [System] Display and Manual Registration of the Microscope Configuration

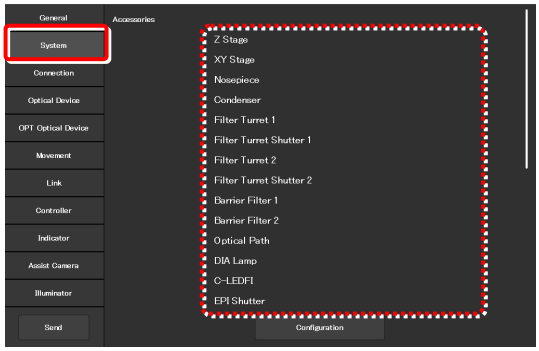
Tapping [System] displays a list of the accessories mounted on the microscope system.

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

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

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

▼ Display of the microscope configuration



7.3.1 Manually Registering the Microscope Configuration

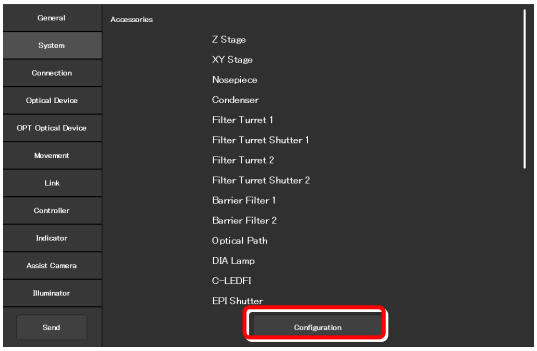
This section describes how to register the accessories which cannot be automatically detected.

The following is the basic registration procedure.

1. Tap [Configuration] in the setting area.

A microscope configuration setting screen appears.

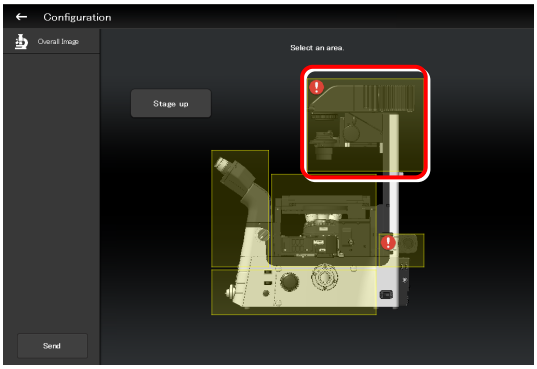
▼ Manually registering the microscope configuration



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

A registration screen of the area is displayed.

▼ Microscope configuration setting screen



> **SUPPLEMENTAL REMARKS**
>
> The ⚠ mark is displayed at the upper left of the parts area if there is an accessory with no device information registered.

> **In a stage-up configuration**
>
> When the microscope system is in a 2-tier stage-up configuration, tap [Stage up] to change the configuration shown in the application to the stage-up configuration.

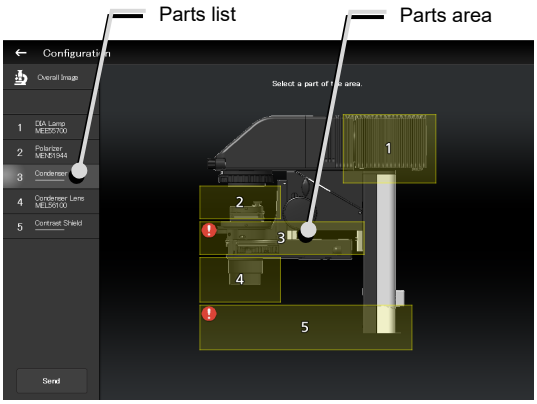
> **When the motorized BA filter wheel for stage up is mounted**
>
> When the FL turret and the motorized BA filter wheel for stage up (TI2-P-FWBS-E) are mounted in two tiers using a stage-up kit, tap [Stage up] to manually register the motorized BA filter wheel for stage up to the lower tier.

3. Tap the parts area or the parts list on the left.

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

> **SUPPLEMENTAL REMARKS**
>
> The motorized devices and intelligent accessories mounted on the microscope, which are automatically detected, are displayed as being selected.
>
> If the selected and registered accessories are different from those actually mounted on the microscope, the accessory information is overwritten by the information on the automatically detected accessories.
>
> However, a different but similar product may be selected depending on the accessory even after automatic detection. Although this does not affect anything, the product can also be selected and registered again.

▼ **Per-area registration screen**

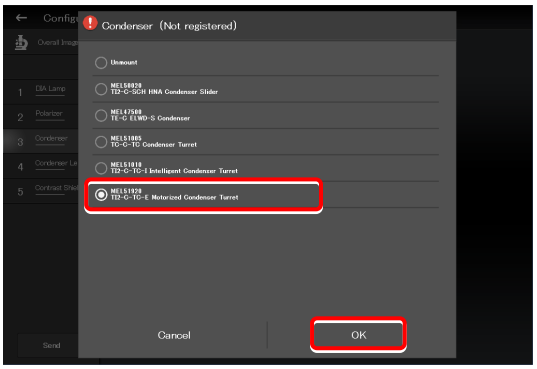


4. Select the name of the product to be registered.

> **SUPPLEMENTAL REMARKS**
>
> To register the accessory not being mounted, select [Unmount].

> **SUPPLEMENTAL REMARKS**
>
> When motorized devices and intelligent accessories are mounted on the microscope, only detected products are displayed in the product list.

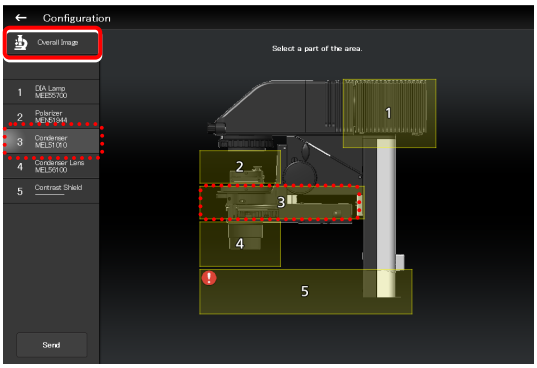
▼ **Product list dialog**



5. Tap [OK].

A product code of the selected product is displayed on the second line of each item in the left parts list.

▼ **Per-area registration screen**



6. Tap [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.

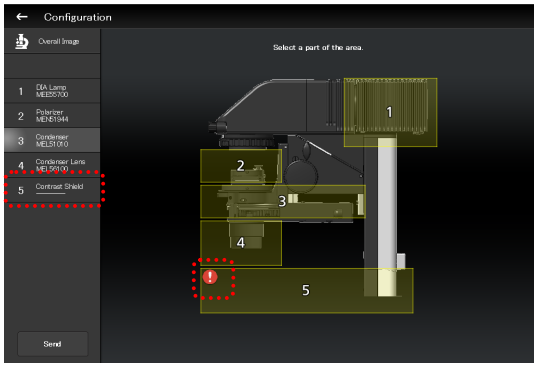
8. To finish manual registration of the microscope configuration, tap [Send] to send the registration information or tap [←].

The edited information is not saved unless it is sent.

Sending information on the microscope configuration when there is a part without device information

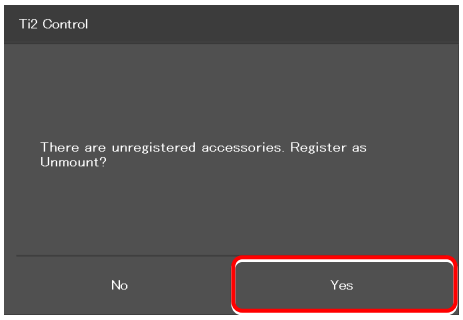
If there is a part without device information, the mark is displayed in the parts area, and [--------] is displayed in the parts list.

▼ **Per-area registration screen**



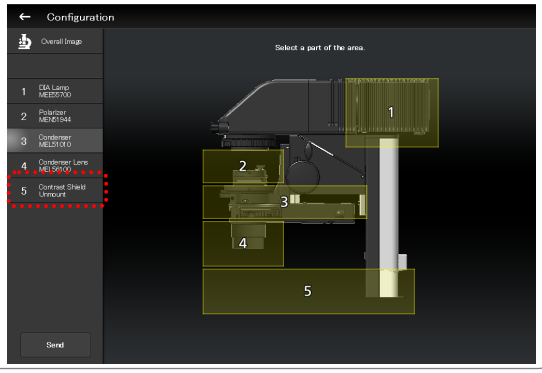
If transmission of the microscope configuration information is attempted in this state, a confirmation message for registering the part without device information to be [Unmount] appears.

▼ **Confirmation message**



After the transmission, [Unmount] is displayed under the part without device information.

▼ **Per-area registration screen after the transmission**



When using epi-illumination

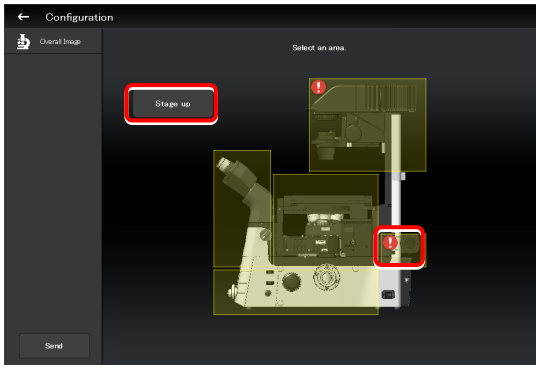
Tap the area that includes the epi-illumination attachment.

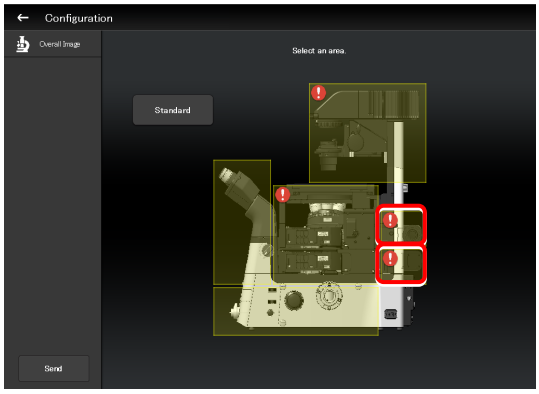
The registration screen for the epi-illumination attachment is displayed.

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

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

▼ Registering an epi-illumination attachment





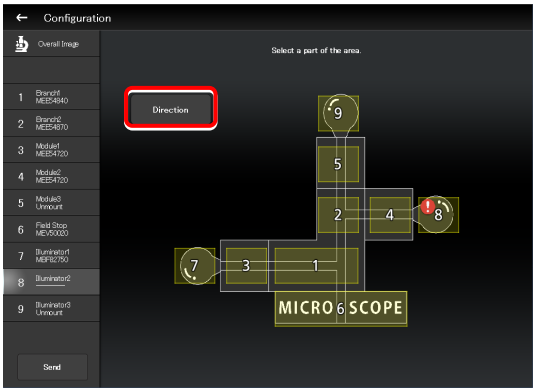
In a two-tier configuration, the upper and lower epi-illumination attachments are mounted in opposite directions. However, the application shows the two epi-illumination attachments in the same orientation.

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

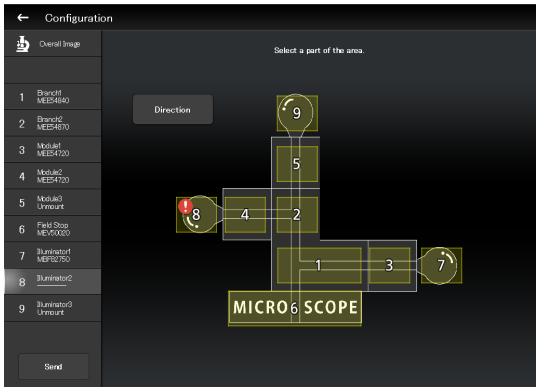
Select the epi-illumination attachment which is shown in the orientation opposite to the actual one.

Tap [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



> **Using the TI2-F-FLS Simple Epi-FL Attachment**
>
> When specifying the TI2-F-FLS simple epi-fl attachment for [Branch1], set [Illuminator3] to the epi-illumination attachment.

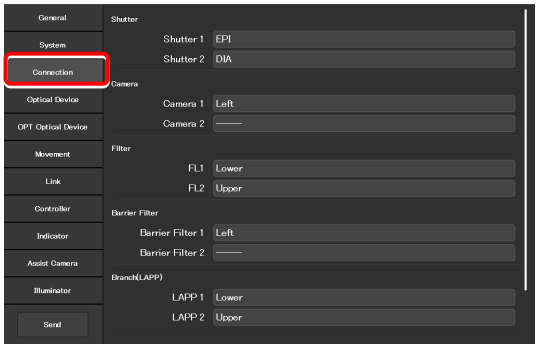
7.4 [Connection] Setting the Connection Destinations of Devices

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



7.4.1 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:

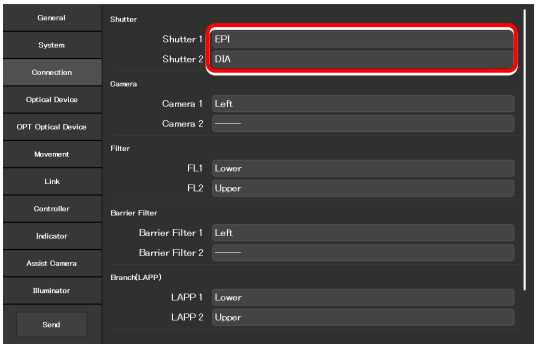
Select the mounting destination of the motorized shutter. If no motorized shutter is mounted, select "---."

Shutter 2:

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

> **SUPPLEMENTAL REMARKS**
>
> The same value cannot be specified for [Shutter 1] and [Shutter 2].

▼ Setting the connections of motorized shutters



7.4.2 Setting the Connections of Cameras

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

Set the camera installation position to display the camera in the microscope view on the Home screen.

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

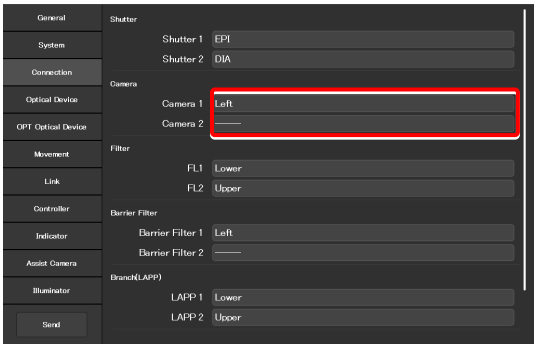
Camera 1:

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 cameras



7.4.3 Setting the Connections of FL Turrets

When the microscope system is set up in a stage-up configuration and two FL turrets are attached, 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.

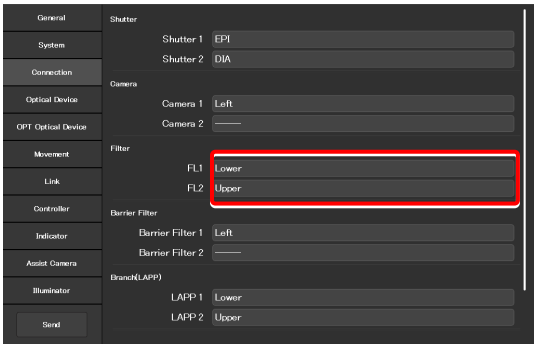
FL1:

Select the location to which the FL turret is attached.
If no FL turret is attached or only one FL turret is attached, this function cannot be set.

FL2:

Select the location to which the second FL turret is attached.
If only one FL turret is attached, this function cannot be set.

▼ Setting the connections of FL turrets



7.4.4 Setting the Connections of BA Filter Wheels

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.

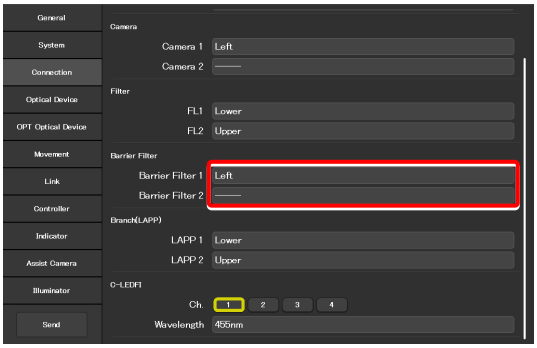
Barrier Filter 1:

Select the port to which the BA filter wheel is attached.
If no BA filter wheel is attached, select "---."

Barrier Filter 2:

Select the port to which the second BA filter wheel is attached.
If only one BA filter wheel is attached, this function cannot be set.

▼ Setting the BA filter wheels



7.4.5 Setting the Connections of Branches (LAPP)

When the microscope system is set up in a stage-up configuration and two main branches are attached, 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.

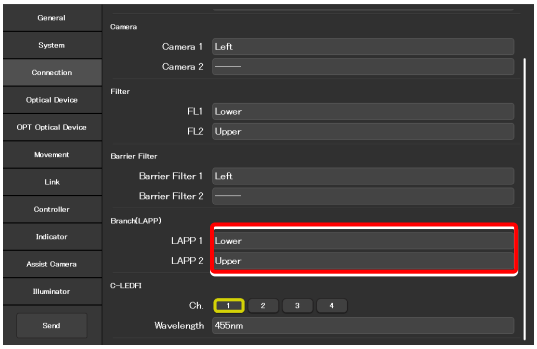
LAPP1:

Select the position to which the main branch is attached.
If no main branch is attached or only one main branch is attached, this function cannot be set.

LAPP2:

Select the position to which the second main branch is attached.
If only one main branch is attached, this function cannot be set.

▼ Setting the Branch (LAPP)



7.4.6 Setting the C-LEDFI Epi-fl LED Illuminator

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

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

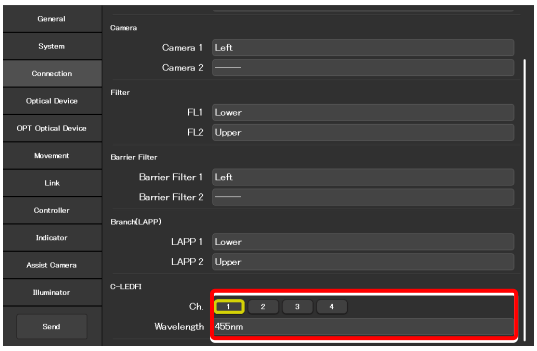
Ch:

Select the channel number of the LED.

Wavelength:

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

▼ Setting the C-LEDFI



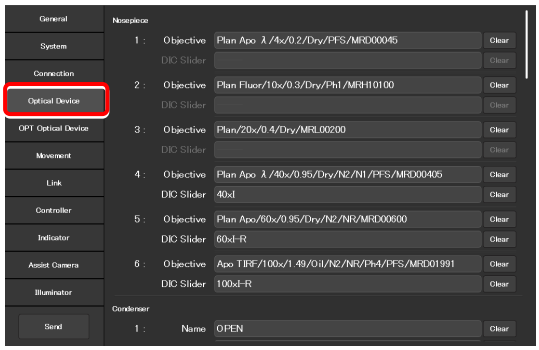
7.5 [Optical Device] Setting the Optical Devices

This section describes how to set objectives, condenser modules, fluorescence filter cubes, barrier filters (BA filters), intermediate magnifications, external phase contrast ring, and optical path names.

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

The optical device setting screen appears.

▼ **Setting optical devices**



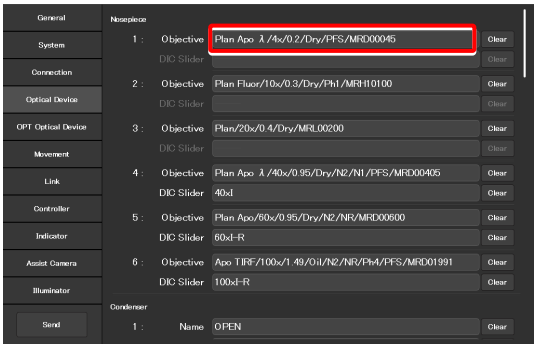
7.5.1 Setting the Nosepiece

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

1. Tap the [Objective] field in the [Nosepiece] area.

The list of the objectives is displayed.

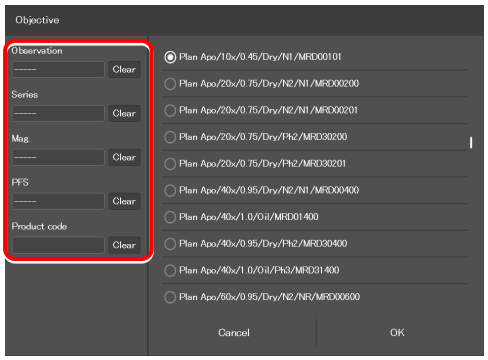
▼ **Setting the nosepiece**



2. Select an objective.

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

▼ **List of objectives**



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, select “---.”)

Mag.:

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

PFS:

Allows a list of objectives to be narrowed down by objectives that support PFS.

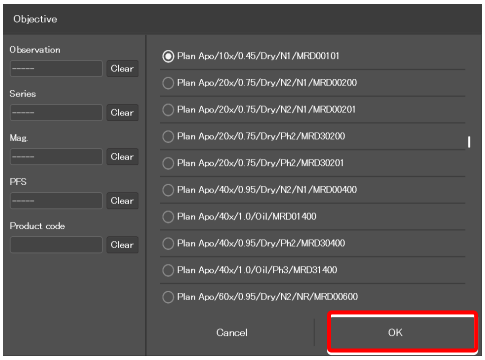
Product code:

Enter the product code of the objective.

3. Tap [OK].

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

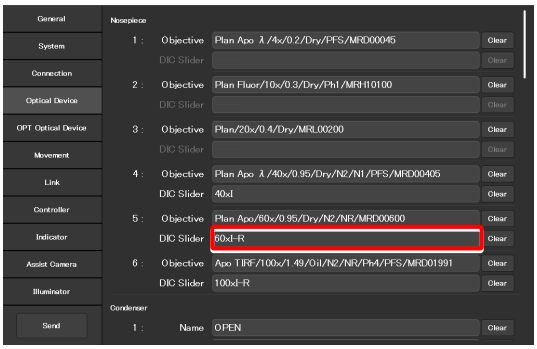
▼ **List of objectives**



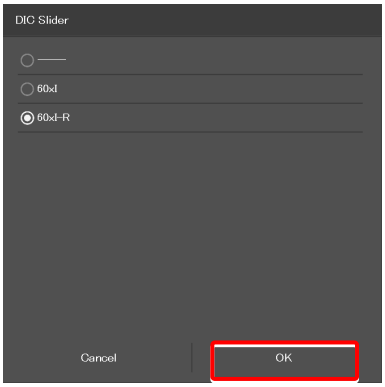
4. For objectives supporting DIC observation, tap the [DIC Slider] field, select the required objective-side DIC slider from the list, and then tap [OK].

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. Repeat steps 1 to 4 for each address of the nosepiece to be registered.

7.5.2 Setting the Condenser Module

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

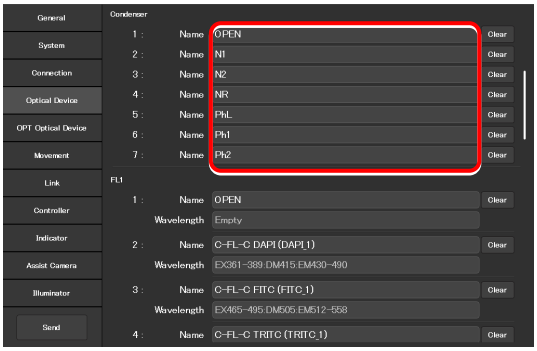
1. **In the [Condenser] area, tap the [Name] field of each condenser turret address for which condenser module information is to be set.**

   The list of the condenser modules is displayed.

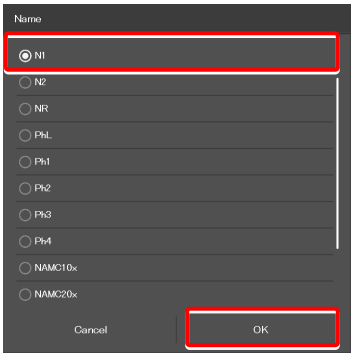
2. **Select a condenser module from the list, and then tap [OK].**

3. **Repeat steps 1 and 2 for each condenser turret address for which condenser module information is to be set.**

▼ **Setting the condenser module**



▼ **Condenser module list**



7.5.3 Setting the Filter Cube

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

1. **In the [FL1] area, tap the [Name] field of each FL turret address for which filter cube information is to be set.**

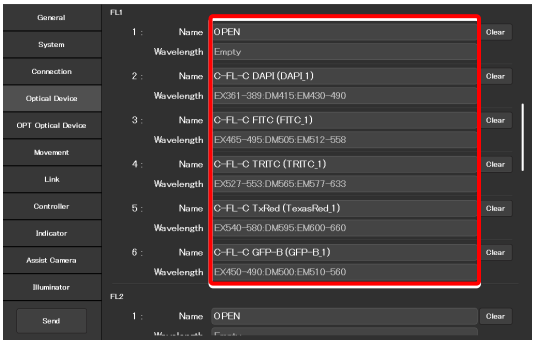
   The list of the filter cubes is displayed.

2. **Select a filter cube from the list, and then tap [OK].**

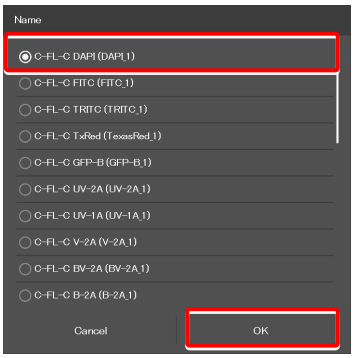
   When a filter cube name is selected, the [Wavelength] field is filled automatically.

3. **Repeat steps 1 and 2 for each FL turret address for which filter cube information is to be set.**

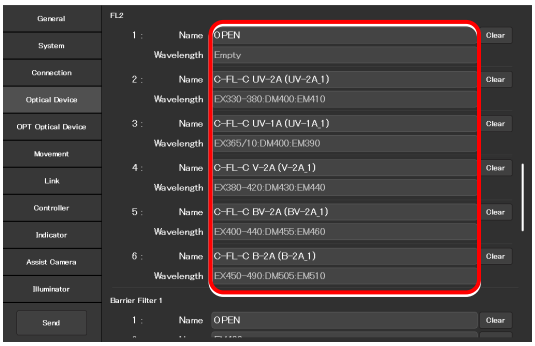
▼ Setting the filter cube



▼ Filter cube list



▼ For the second FL turret



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.

7.5.4 Setting the BA Filter Wheels

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

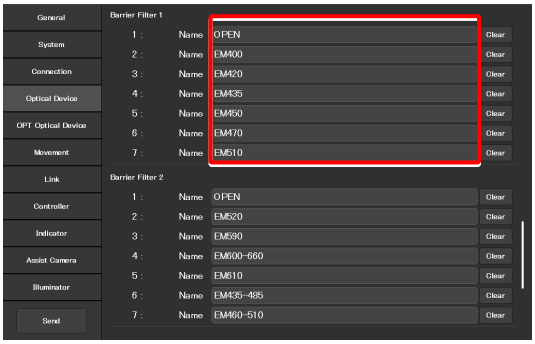
1. **In the [Barrier Filter 1] area, tap the [Name] field of each BA filter wheel address for which BA filter information is to be set.**

   The list of the BA filters is displayed.

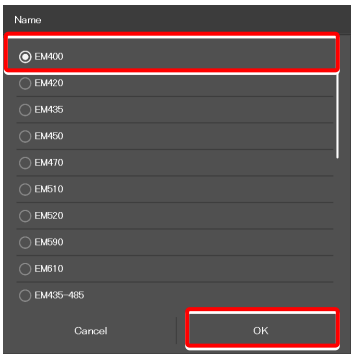
2. **Select a BA filter from the list, and then tap [OK].**

3. **Repeat steps 1 and 2 for each BA filter wheel address for which the BA filter information is to be set.**

▼ **Setting barrier filter 1**



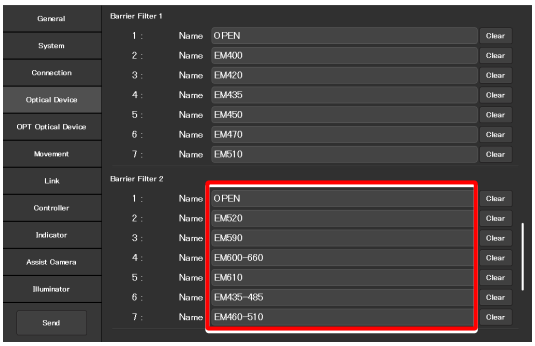
▼ **BA filter list**



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**



7.5.5 Setting the Intermediate Magnification

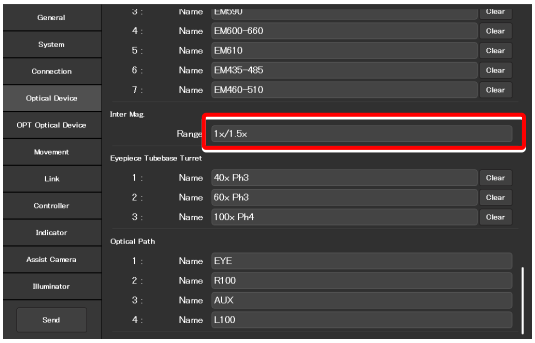
Set the intermediate magnification.

1. **Set the following item in the [Inter Mag.] area.**

   Range:

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

▼ Setting the intermediate magnification



7.5.6 Setting the External Phase Ring

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.

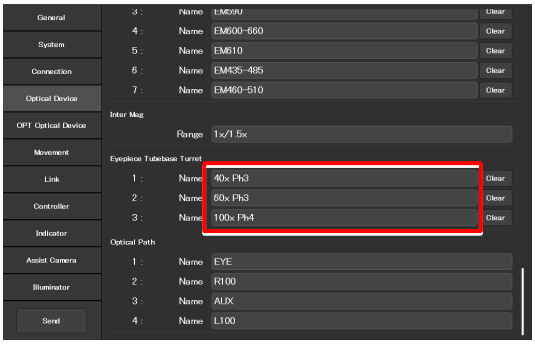
1. **In the [Eyepiece Tubebase Turret] area, tap the [Name] field of each turret address for which external phase ring information is to be set.**

   The list of the external phase rings is displayed.

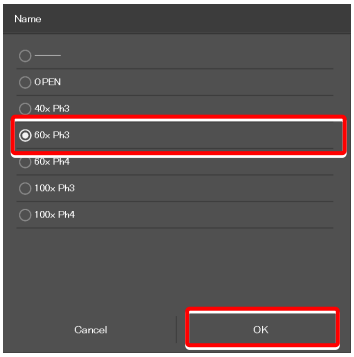
2. **Select a phase ring from the list, and then tap [OK].**

3. **Repeat steps 1 and 2 for each turret address for which phase ring information is to be set.**

▼ Setting the external phase ring



▼ External phase ring list



7.5.7 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. In the [Optical Path] area, tap the [Name] field of each port address for which optical path information is to be set.

(Within 10 single-byte alphanumeric characters)

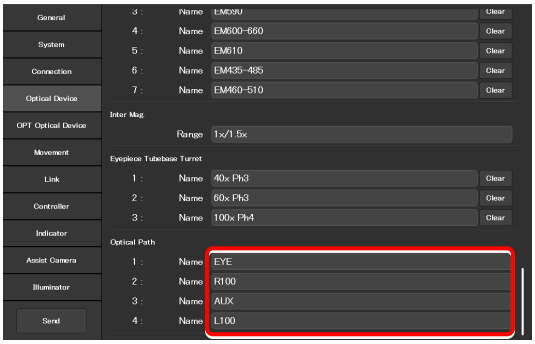
1: Eyepiece observation port

2: Right side port

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

4: Left side port

▼ Setting the Optical Path Name



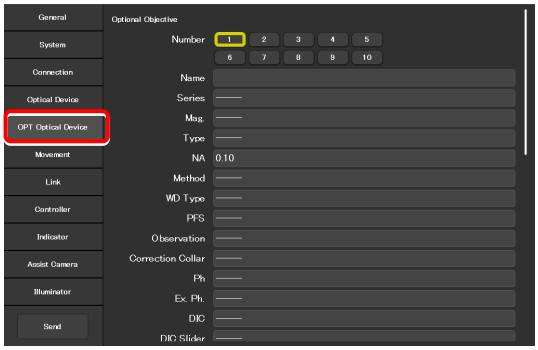
7.6 [OPT Optical Device] Registering a New Optical Device

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**



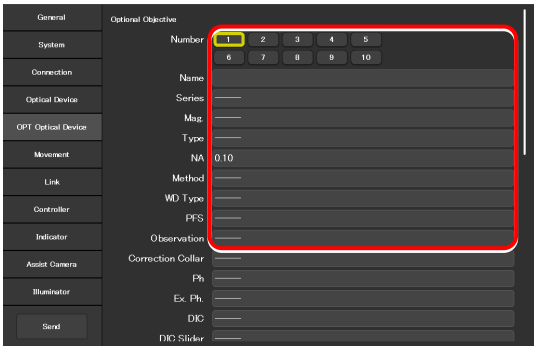
7.6.1 Registering a New Objective

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.

▼ **Registering a new objective**



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.

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 an external 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 type of the high-resolution or high-contrast condenser.

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:

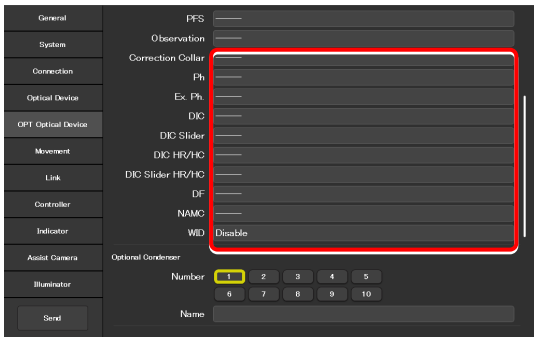
For an objective for NAMC microscopy, select a corresponding condenser module.

WID:

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

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

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



7.6.2 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:

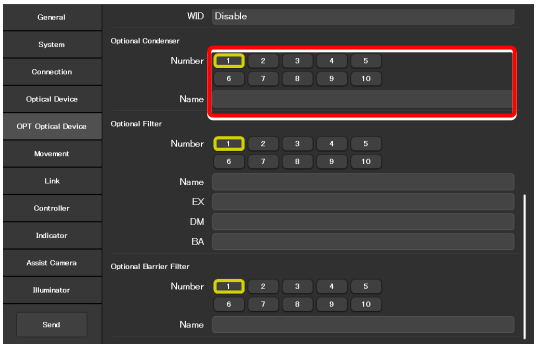
Select a number with which a new condenser module is to be registered.

Name:

Specify a name.

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

▼ Registering a new condenser module



7.6.3 Registering a New Filter Cube

Up to 10 new filter cubes can be registered.

The filter cubes registered here can be selected in [FL1] (or [FL2]) 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.

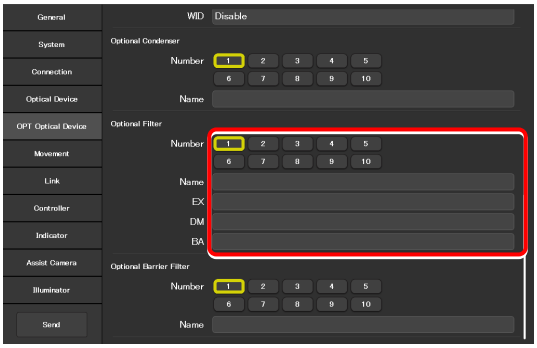
BA:

Specify a BA filter name.

> **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.

▼ Registering a new filter cube



7.6.4 Registering a New BA Filter

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:

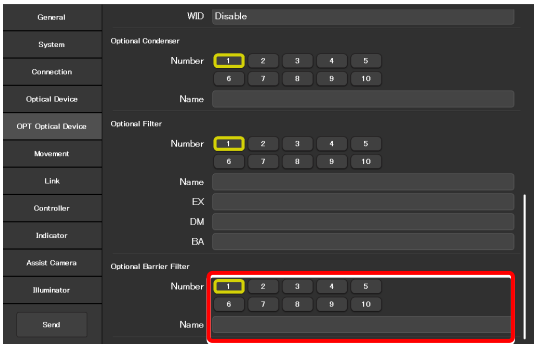
Select a number with which a new BA filter is to be registered.

Name:

Specify a name.

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

▼ Registering a new BA filter



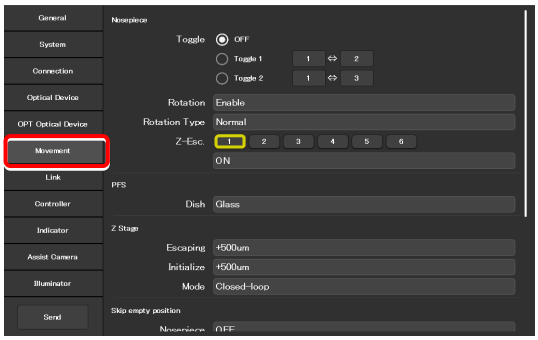
7.7 [Movement] Setting the Movement

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

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

The movement setting screen appears.

▼ **Setting the movement**



7.7.1 Setting the Motorized Nosepiece

Set the movement of the motorized nosepiece.

1. Set [Toggle] in the [Nosepiece] area.

With this [toggle] setting, only registered two objectives can be toggles using the objective changeover switch of the microscope main body.

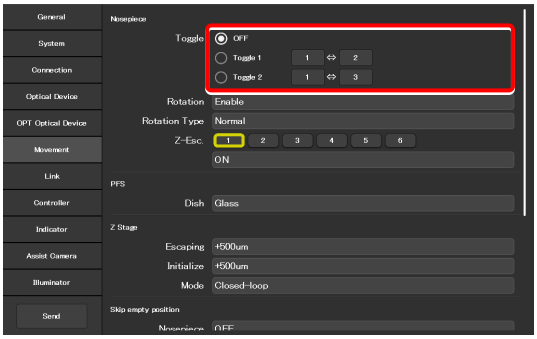
2. To use [Toggle], select a toggle number ([Toggle 1] or [Toggle 2].)

To rotate the nosepiece without using the toggle function, select [OFF].

3. From the left number filed, select the address of the nosepiece to which the first objective is attached.

4. From the right number filed, select the address of the nosepiece to which the second objective is attached.

▼ **Toggle setting**



5. Set the motorized nosepiece rotation.

Rotation:

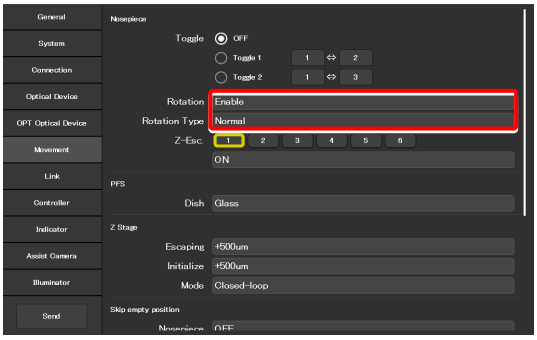
Select whether the nosepiece rotation is enabled or not.

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.

▼ **Motorized nosepiece rotation**

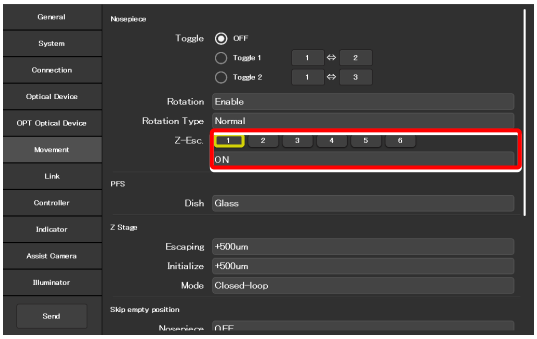


Z-Esc.:

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.



7.7.2 Setting the PFS

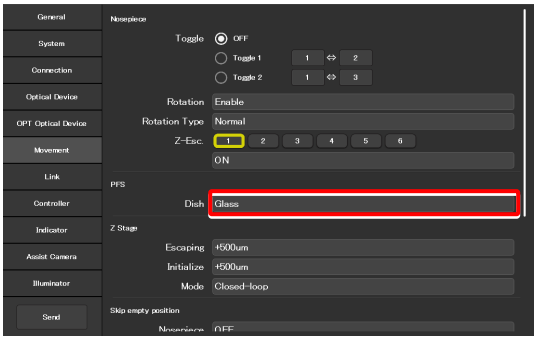
Set the type of the dish observed using the PFS.

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

Dish:

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

▼ Setting the PFS



7.7.3 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.

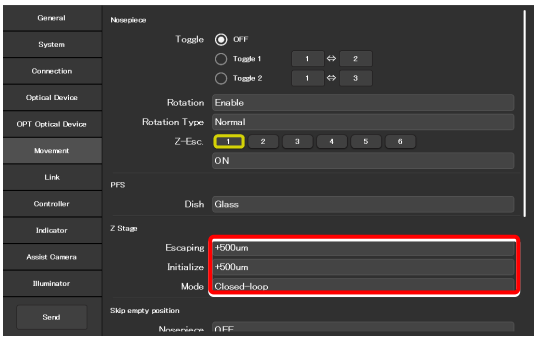
Initialize:

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 TI2-E is turned back on.)

▼ Setting the focusing device



7.7.4 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:

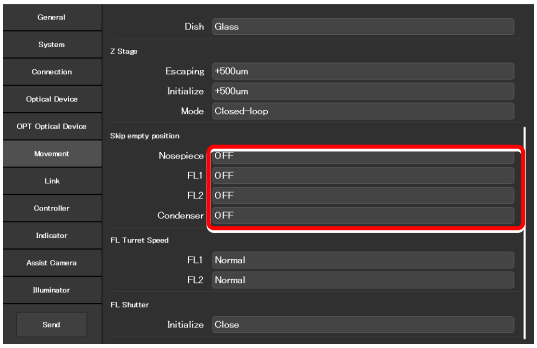
(Only when there is a second FL turret)

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



7.7.5 Setting the Rotation Speed of FL Turrets

Set the rotation speed of the FL turret.

1. Set the following items in the [FL Turret Speed] area.

FL1:

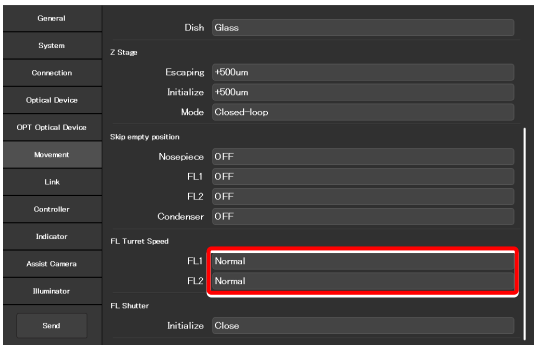
Select the rotation speed of FL turret 1 from [Normal] or [Slow].

FL2:

(Only when there is a second FL turret)

Select the rotation speed of FL turret 2 from [Normal] or [Slow].

▼ Setting the drive speed of FL turrets



7.7.6 Setting the Filter Shutter

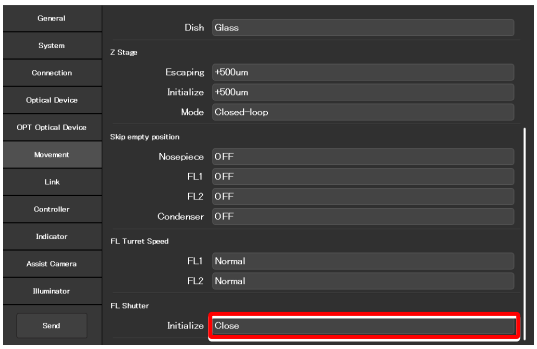
Set the FL turret shutter state when the microscope system is started.

1. Set the following item in the [FL Shutter] area.

Initialize:

From [Close] and [Open], select the FL turret shutter state when the microscope system is started.

▼ Setting the filter shutter



7.7.7 Setting the Optical Path

Set the optical path position when the microscope system is started.

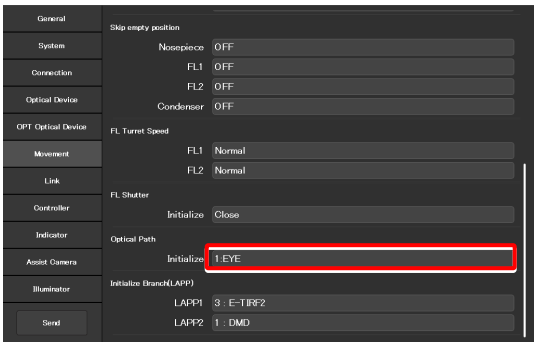
1. Set the following item in the [Optical Path] area.

Initialize:

Select the optical path position when the microscope system is started.

1:EYE:	Eyepiece observation port
2:R100:	Right side port
3:L80:	AUX (when using the Ti2-E)
3:B100:	Bottom port (when using the Ti2-E/B)
4:L100:	Left side port

▼ Setting the optical path



SUPPLEMENTAL REMARKS

The output port name of the optical path set in “7.5.7 Setting the Optical Path Name” is displayed.

7.7.8 Setting the Initialize Branch(LAPP)

Set the initial position of the optical path for a Branch (LAPP) when the microscope system is started.

1. **Tap [LAPP1] in the [Initialize Branch(LAPP)] area.**

   The optical path changeover subscreen for main branch 1 of the epi-illumination attachment appears.

2. **To switch the optical path when the microscope system is started, tap the target output port name.**

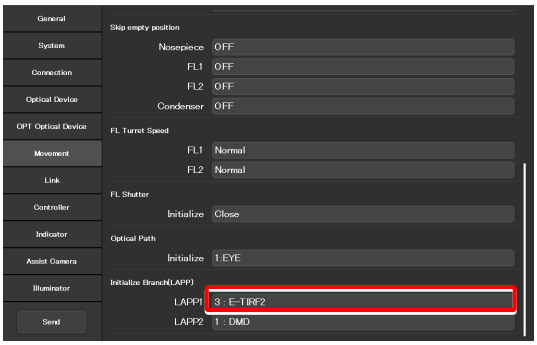
   The yellow arrow indicates the current optical path.

   The optical path when the microscope is started is enclosed in a yellow frame.

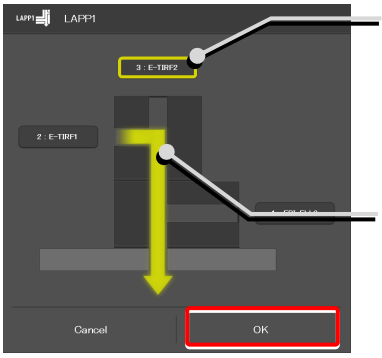
3. **Tap [OK] to close the optical path changeover subscreen.**

4. **Repeat steps 1 to 3 for [LAPP2] when the upper and lower epi-illumination attachments are provided in a stage-up configuration.**

▼ Setting the initialize branch(LAPP)



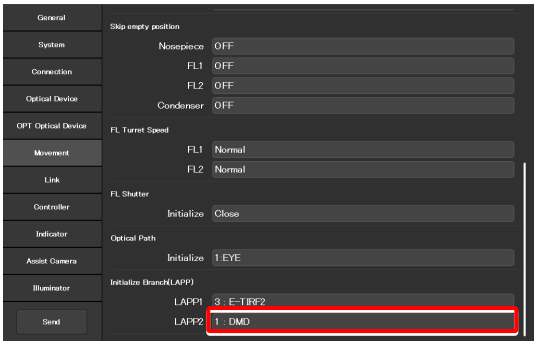
▼ Optical path changeover subscreen



Specified optical path when the microscope is started

Current optical path

▼ Setting the initialize branch(LAPP)



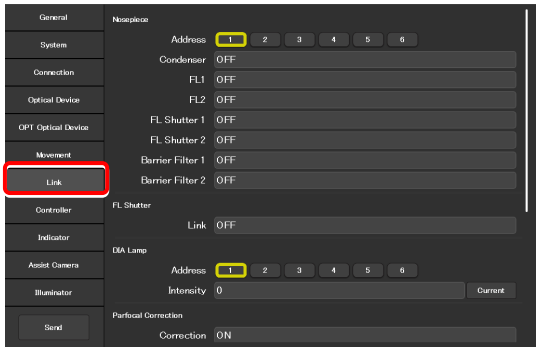
7.8 [Link] Setting the Linking Function

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



7.8.1 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:

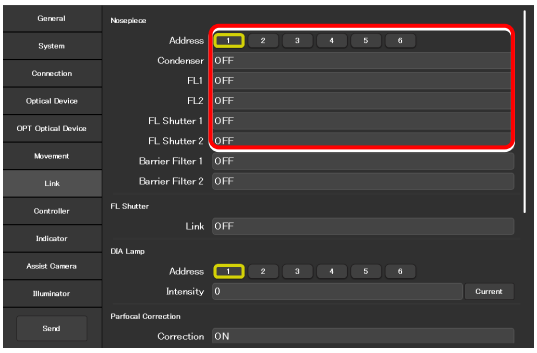
Select the state of the shutter of FL turret 1 to be linked when the objective is switched.

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



Barrier Filter 1:

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

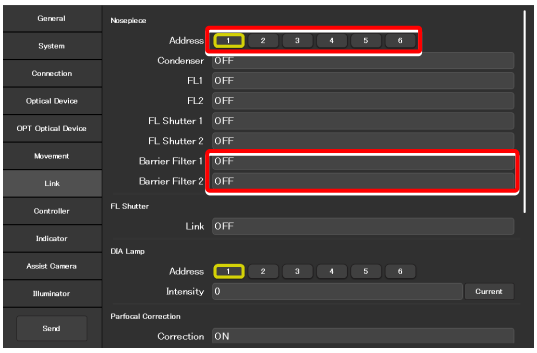
Barrier Filter 2:

(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.

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

▼ Setting a linked operation when the objective is switched



7.8.2 Setting a Linked Operation of the Shutter

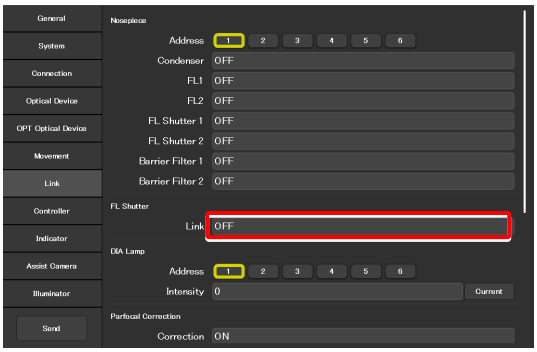
Specify whether the shutter (open/close) in the FL turret is to be linked when the FL turret is rotated.

1. Set the following item in the [FL Shutter] area.

Link:

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

▼ Setting a linked operation of the shutter



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

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

1. 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.

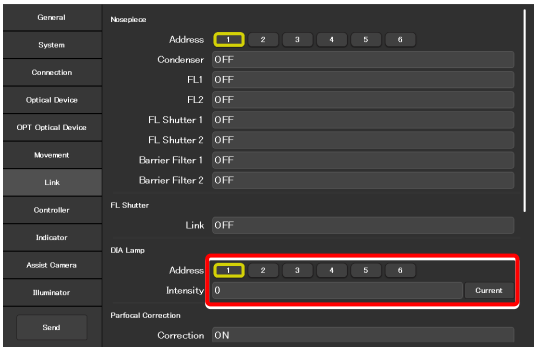
Intensity:

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

Current button:

Use this button to read the current value of the device.

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



7.8.4 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 objective that is in the optical path 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.**

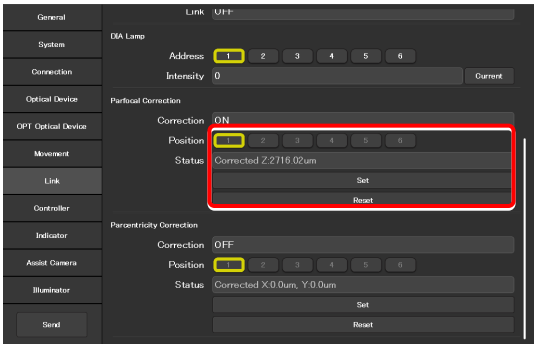
3. **Focus on the specimen on the microscope main body.**

4. **Tap [Set].**

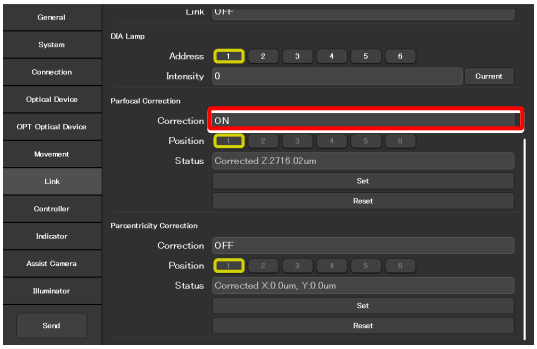
5. **Repeat steps 1 to 4 to set the focal position for all addresses.**

6. **Tap [Correction] to enable (ON) or disable (OFF) the parfocal correction.**

▼ Setting the parfocal correction



▼ Setting the parfocal correction



7.8.5 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 objective that is in the optical path 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.**

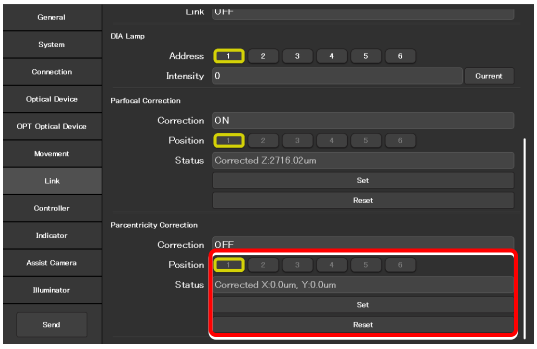
   Use this object as a mark to correct the objective at another address.

4. **Tap [Set].**

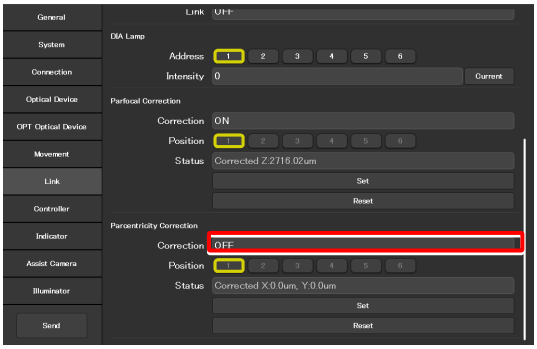
5. **Repeat steps 1 to 4 to set the center position for all addresses.**

6. **Tap the [Correction] field to select [ON] or [OFF] to enable or disable the parcentricity correction.**

▼ Setting the parcentricity correction



▼ Setting the parcentricity correction



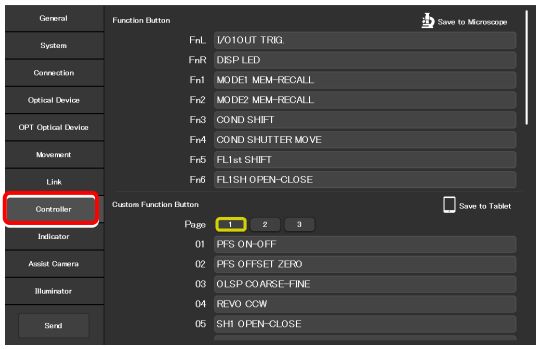
7.9 [Controller] Assigning Functions

This section describes how to assign functions to the function buttons and knobs on the Ti2-E microscope main body, the joystick function buttons, and the function buttons in the remote control area of the tablet.

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

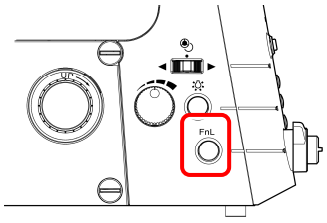
The function setting screen appears.

▼ Assigning functions

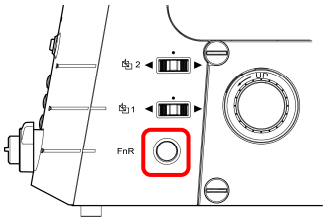


7.9.1 Setting the Function Buttons on the Microscope Main Body and the Joystick

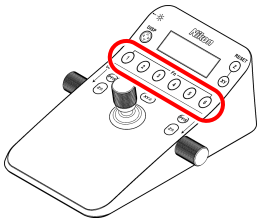
Assign functions to the function buttons (FnL and FnR) on the right and left operation panels of the Ti2-E microscope main body, or the function buttons (Fn1 to Fn6) of the joystick.



Left operation panel



Right operation panel

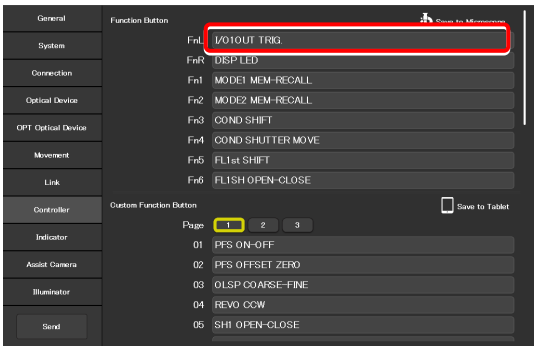


Joystick

1. To change the assigned function, tap the relevant function button field in the [Function Button] area.

The subscreen of the function list for assignment is displayed.

▼ Setting the function buttons

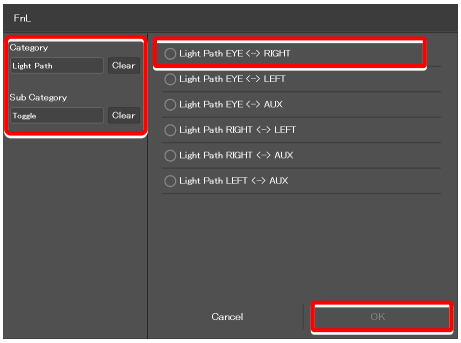


2. Narrow down the list by selecting an item from [Category] and [Sub Category] on the left pane, and then select a function to be assigned from the list on the right pane.

For the assignable functions, see “11.1 List of Functions Assigned to Function Buttons.”

3. Tap [OK].

▼ Subscreen of the function list for assignment



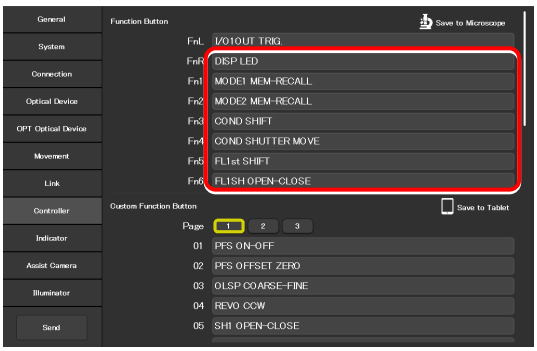
4. Repeat steps 1 to 3 for each function to be registered.

> **SUPPLEMENTAL REMARKS**
>
> Setting information of the function buttons on the microscope main body and the joystick is saved in the microscope main body.

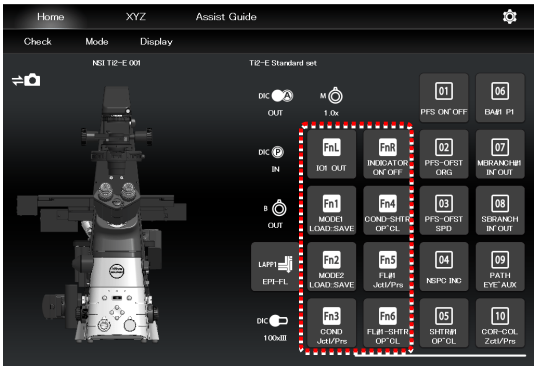
The registered function buttons are displayed also in the remote control button area on the Home screen.

If they are not displayed, change the display by selecting the relevant remote control button layout.
For details, see “9.2.1 Remote Control Button Rearrangement.”

▼ **Setting the Function Buttons**



▼ **Remote control button area on the Home screen**



7.9.2 Setting the Custom Function Buttons

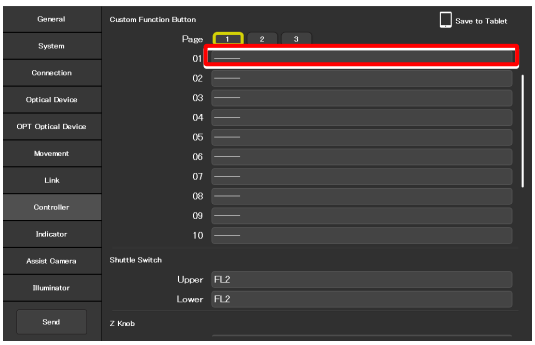
Set the custom function buttons to be displayed in the remote control button area on the right side of the Home screen in Ti2 Control.

Up to 30 custom function buttons can be registered.

1. **Tap the relevant function button field (01 to 10) in the [Custom Function Button] area.**

   The subscreen of the function list for assignment is displayed.

▼ Setting the custom function buttons



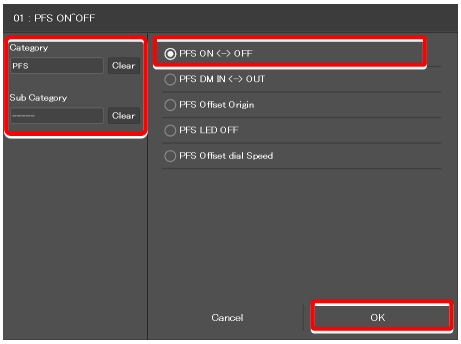
2. **From the list, select the function to be assigned.**

   Narrow down the list by selecting an item from [Category] and [Sub Category] on the left pane.

   For the assignable functions, see “11.1 List of Functions Assigned to Function Buttons.”

3. **Tap [OK].**

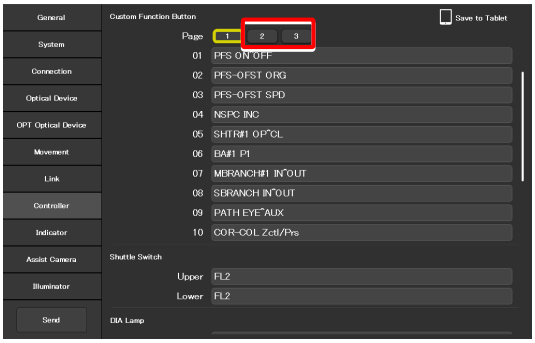
▼ Subscreen of the function list for assignment



4. **Repeat steps 1 to 3 for each custom function to be registered.**

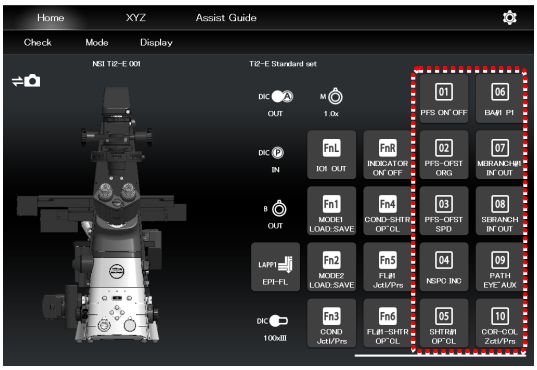
5. **To register the custom function buttons from 11 to 30, tap a page button ([2] or [3]) to switch the page.**

▼ Setting the custom function buttons



If the registered function buttons are not displayed in the remote control button area on the Home screen, change the display by selecting the relevant remote control button layout. For details, see “9.2.1 Remote Control Button Rearrangement.”

▼ Remote control button area on the Home screen



SUPPLEMENTAL REMARKS

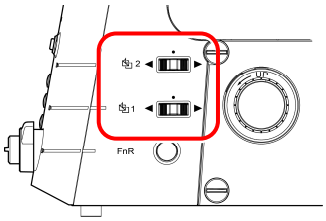
The setting information on the custom function buttons is saved in the tablet.

7.9.3 Setting the Shuttle Switches

Assign a different function to shuttle switch1 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.

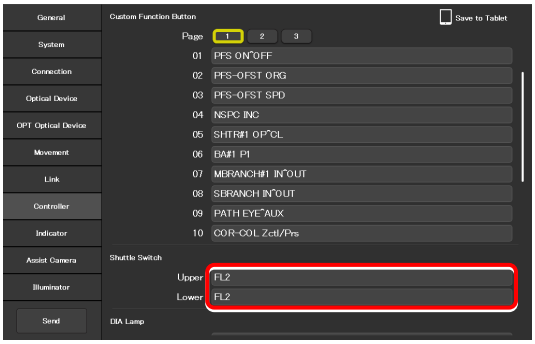
Upper:

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.

▼ **Setting the shuttle switches**



Shuttle switch function list

The table below lists the functions that can be assigned to the shuttle switches of the Ti2-E microscope main body.

Indicated name	Functional overview
FL1	Rotation of the 1st motorized FL turret, shutter state (open/close)
FL2	Rotation of the 2nd motorized FL turret, shutter state (open/close)
BA1	Rotation of the 1st BA1 wheel
BA2	Rotation of the 2nd BA2 wheel
Ex.Ph.	Rotation of the turret of the motorized tube base unit for external phase contrast
IntensiLight	Switching of the Intensilight ND filter, shutter state (open/close) * Supported in the firmware Ver.1.2.0 and later
FL1<Shutter only opens>	Rotation of the 1st motorized FL turret, shutter state (open only) * Once the shutter is open, the shutter does not close using this switch.
FL2<Shutter only opens>	Rotation of the 2nd motorized FL turret, shutter state (open only) * Once the shutter is open, the shutter does not close using this switch.

7.9.4 Setting the DIA Lamp

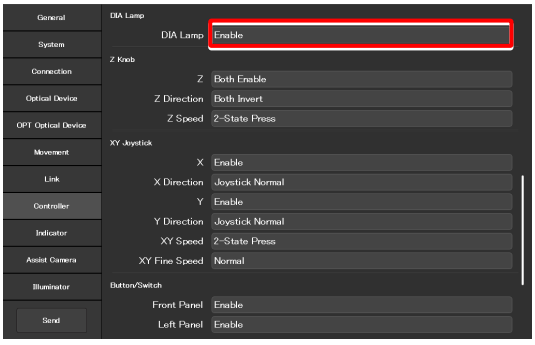
This section describes how to control the dia-illumination brightness adjuster.

1. Set the following item in the [DIA Lamp] area.

DIA Lamp:

Enable or disable the dia-illumination brightness adjuster operation.

▼ **Setting the DIA Lamp**



7.9.5 Setting the Z Knob

This section describes how to control the Z knob of the microscope main body and the joystick.

1. Set the following items in the [Z knob] area.

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 Speed

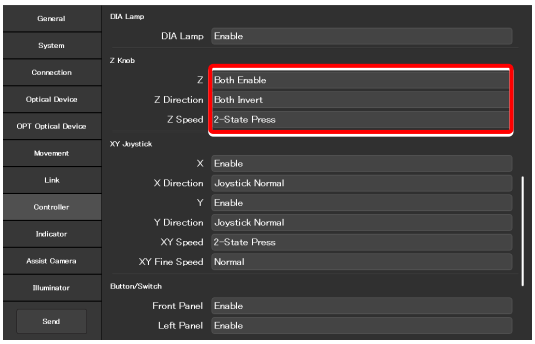
Select the behavior when the Z coarse-motion buttons of the microscope main body and the joystick are used.

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 extra fine motion when the Z coarse-motion button is pressed each time.

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.

▼ Setting the Z knob



7.9.6 Setting the XY Joystick

This section describes how to control the XY movement by using the stage drive lever of the joystick.

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

Firmware Ver.1.2.0 or later

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

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:

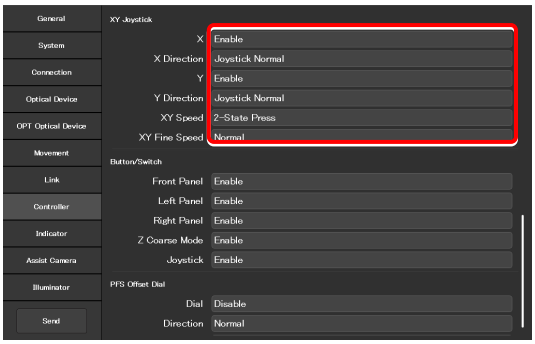
Select the behavior when the XY coarse-motion button of the joystick is used.

2-State Press:	Coarse motion only while the XY coarse-motion button is pressed
2-State Toggle:	Switches between the coarse motion and the fine motion when the XY coarse-motion button is pressed once.
3-State:	Switches among the coarse motion, the fine motion, and the extra fine motion when the XY coarse-motion button is pressed each time.

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 the XY Joystick (firmware Ver.1.2.0 or later)



Firmware Ver.1.1.1 or earlier

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

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

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

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.

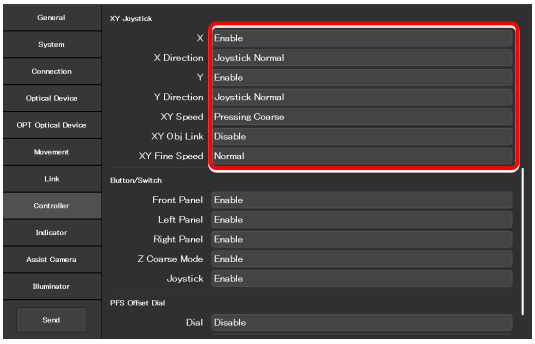
XY Obj Link:

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 the XY Joystick (firmware Ver.1.1.1 or earlier)



7.9.7 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.

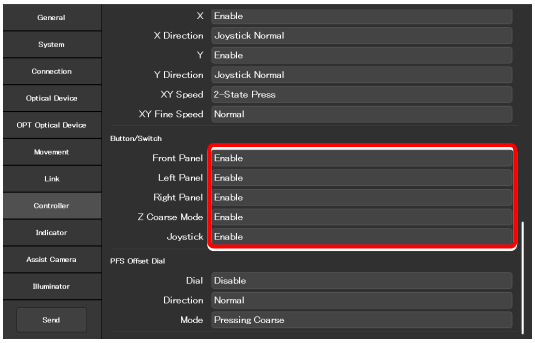
Z Coarse Mode:

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



7.9.8 Controlling the PFS Offset Dial

This section describes how to control the PFS offset dial.

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

Dial:

Enable or disable the control by the offset dial.

Direction:

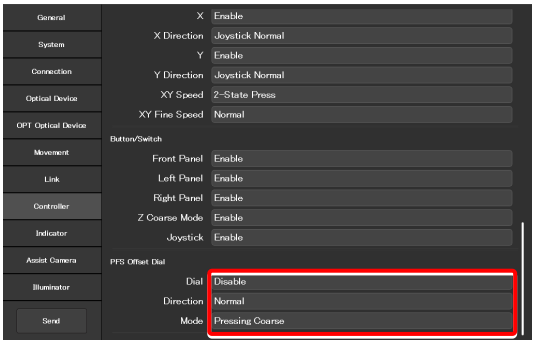
Select the rotation direction of the PFS offset dial.

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 PFS offset dial



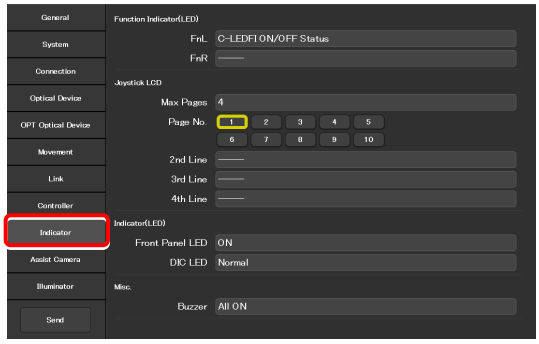
7.10 [Indicator] Setting the Indicators

Set the indicators of the Ti2-E.

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

The motorized device setting screen appears.

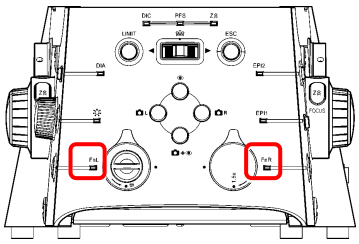
▼ **Setting the indicators**



7.10.1 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.

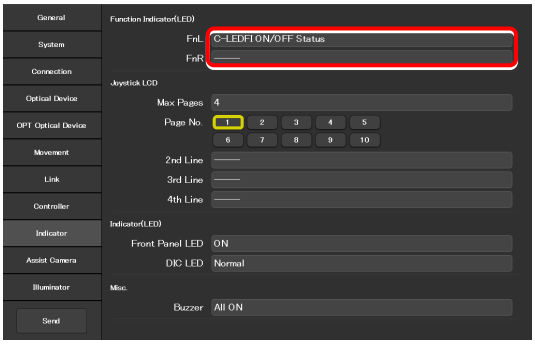


Front operation panel

1. Set the following item 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.

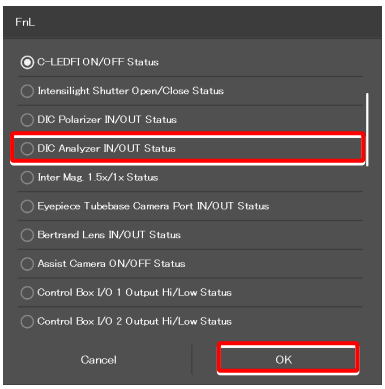
▼ **Setting the LED indicators**



2. From the list, select the function to be assigned to the selected LED indicator.

For the assignable indication functions, see “11.2 List of Indication Functions Assigned to the LED Indicators of the Ti2-E Microscope Main Body.”

▼ **Subscreen of the function list for assignment**



3. Tap [OK].

7.10.2 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.

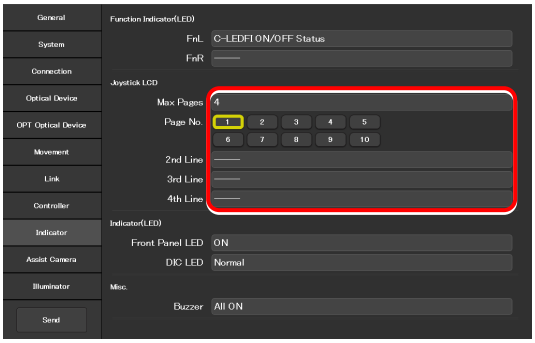
Page No.:

Select the target page number.

2nd Line to 4th Line:

Select the function to be assigned to each line.

▼ Setting the LCD display screen of the joystick

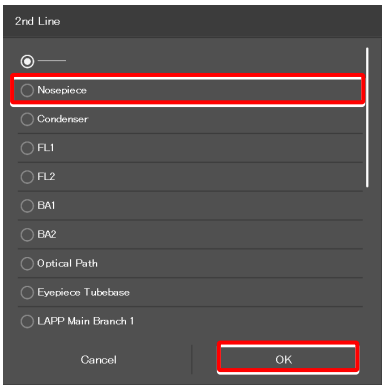


2. From the list, select the function to be assigned to the selected display area.

For the assignable functions, see “11.3 List of Functions Assigned to Joystick LCD Screen.”

3. Tap [OK].

▼ Subscreen of the function list for assignment



7.10.3 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:

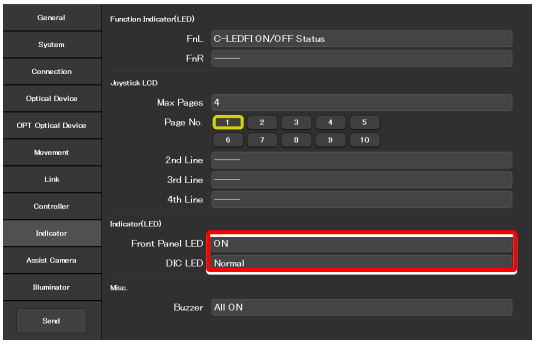
Turn on or off the LED on the front panel of the microscope main body.

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)



7.10.4 Other Control Items

This section describes other control items.

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

Buzzer:

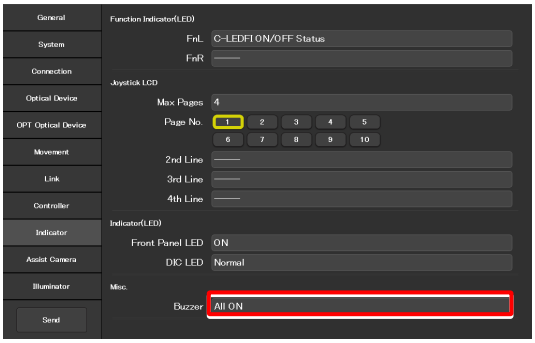
Select the buzzer setting of the microscope main body.

All OFF: All buzzers are disabled.

PFS OFF: Only the PFS buzzer is disabled.

All ON: All buzzers are enabled.

▼ Other control items



7.11 [Assist Camera] Setting the Assist Camera

This section describes how to set the frame rate of the assist camera and the field of view adjustment options 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.

Adjustment:

Tap 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

It is necessary to adjust the assist camera's field of view in both states (in and out) of the Bertrand lens.

Follow the procedure below:

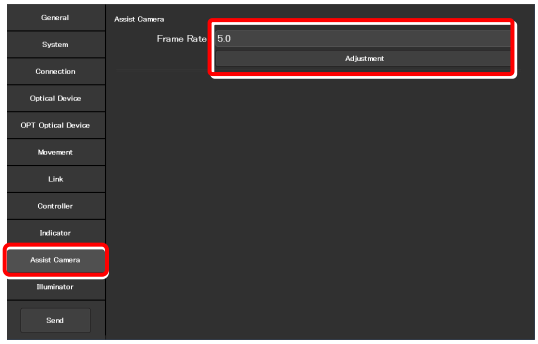
1) Adjust the assist camera's field of view in the current Bertrand lens state (in or out).
2) Tap [OK] to apply the settings on the Adjustment screen.
3) Turn the Bertrand lens in/out dial on the microscope main body to place/remove the Bertrand lens into/from the optical path.
(Out -> In, or In -> Out)
4) Select [Assist Camera] from the setting item selection area, and then tap the [Adjustment] button to display the Adjustment screen.
5) Adjust the assist camera's field of view in the current Bertrand lens state (in or out).
6) Tap [OK] to apply the settings on the Adjustment screen.

Note that if an attempt is made to change the Bertrand lens position (in/out) with the Adjustment screen open, an error message appears and the Adjustment screen is closed.

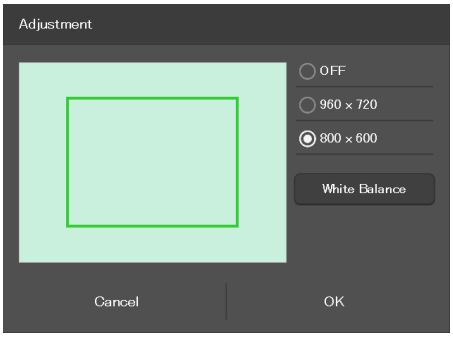
White Balance:

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

▼ Setting the assist camera



▼ Adjustment screen



7.12 [Illuminator] Setting the D-LEDI

This section describes how to set the mode and torigger setting of the epi-illminator D-LEDI.

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

The illuminator setting screen appears.

2. Set the following items in the [D-LEDI] area.

Mode:

Select the mode.

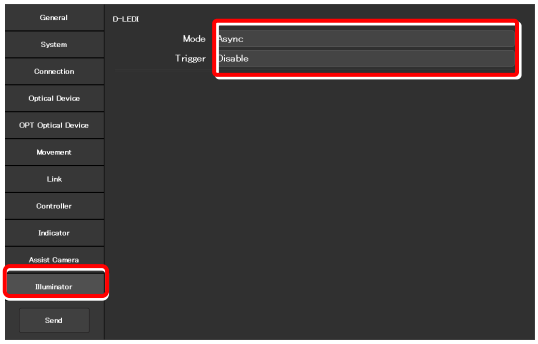
Sync mode: Control is synchronized for all the four types of LED.

Async mode: The four LED types of different wavelengths are controlled individually to turn them on or off, or for their adjustment.

Trigger:

Enable or disable the trigger.

▼ Setting the D-LEDI



7.13 [Import/Export] Importing and Exporting the Settings

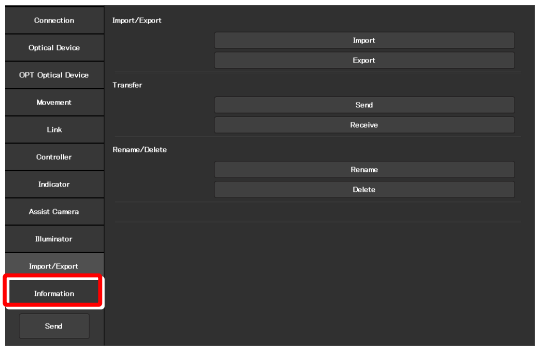
This section describes how to import and export the settings.

The settings made by using the "Ti2 Control" application can be saved (as a configuration file) in the device and imported 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 importing different configuration files.

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

▼ Import and export settings

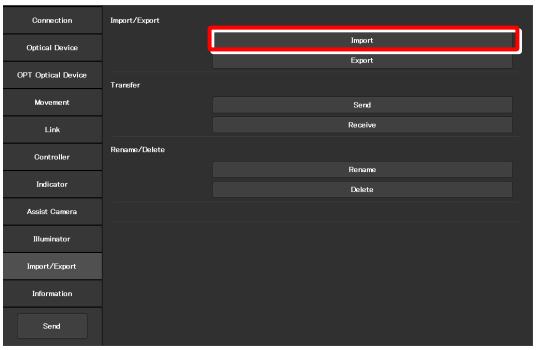


7.13.1 Importing the Settings

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

The Import screen appears.

▼ Importing the settings

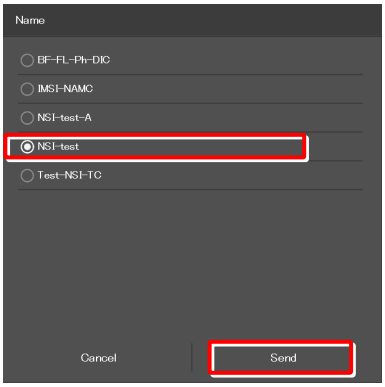


2. Select the setting information file to be imported.

3. Tap [OK].

The Import screen appears.

▼ File selection screen

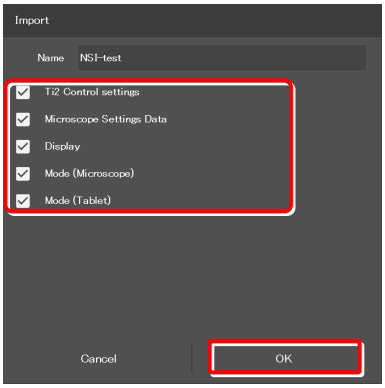


4. Select the type of the setting information to be imported.

5. Tap [OK].

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

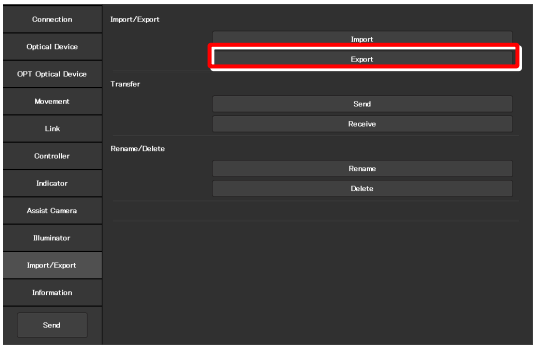
▼ Import screen



7.13.2 Exporting the Settings

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

▼ **Exporting the settings**



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

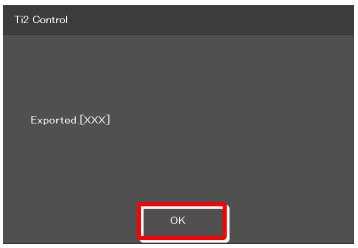
▼ **Exporting the settings**

3. Tap [OK].

The setting information is exported.

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

▼ **Completed**



▼ **Confirmation of overwriting**

SUPPLEMENTAL REMARKS

If the file name specified in step 2 already exists, a confirmation message appears after [Save] is tapped, asking whether the file is to be overwritten.
Tap [Yes] to overwrite the file or [Cancel] to cancel the export.

7.13.3 Transmitting the settings

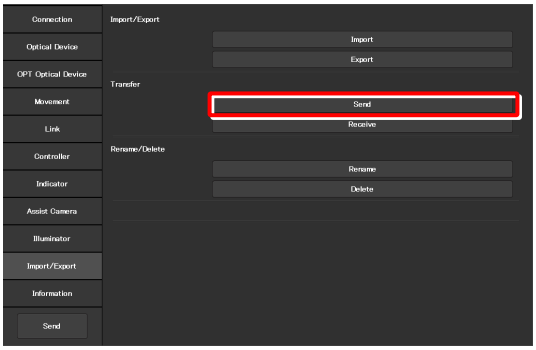
The setting files saved by the “Ti2 Control” application can be sent to or received from other terminals.

> **SUPPLEMENTAL REMARKS**
>
> Connect the transmission terminal and the reception terminal to the same wireless router.

1. In the [Transfer] area of the transmission terminal, tap [Send].

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

▼ **Sending the settings (transmission terminal)**

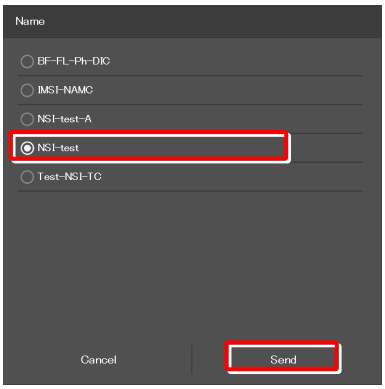


2. Select a file to be sent.

3. Tap [Send].

A transfer confirmation screen is displayed.

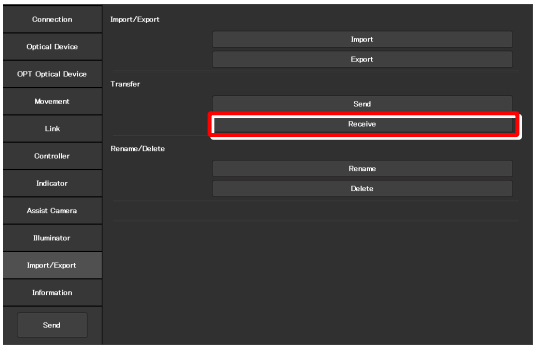
▼ **Selecting a file to be sent (transmission terminal)**



4. In the [Transfer] area of the reception terminal, tap [Receive].

The data reception standby screen appears.

▼ **Receiving the settings (reception terminal)**



5. Take a note of the IP address of the reception terminal displayed on the reception standby screen.

▼ **Reception standby screen**

6. In the transmission terminal, enter the receiver's IP address displayed in step 5 in the [Destination IP address] field.

7. Tap [Send].

Data transfer starts.

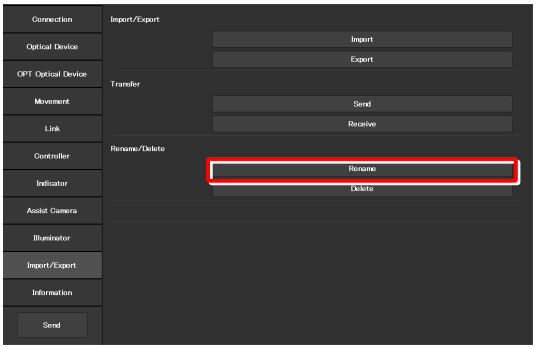
▼ **Confirming the transmission (transmission terminal)**

7.13.4 Changing the Setting Name

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

The selection screen of the file to be renamed appears.

▼ **Changing the setting name**

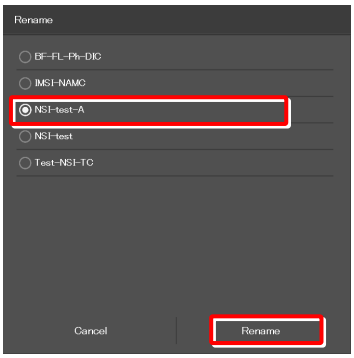


2. Select the file to be renamed.

3. Tap [Rename].

The rename screen appears.

▼ **Selecting a file**

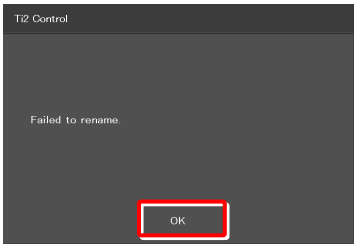


4. Specify a file name in the [Name] field.

5. Tap [OK].

▼ **Rename**

▼ **Confirmation of overwriting**



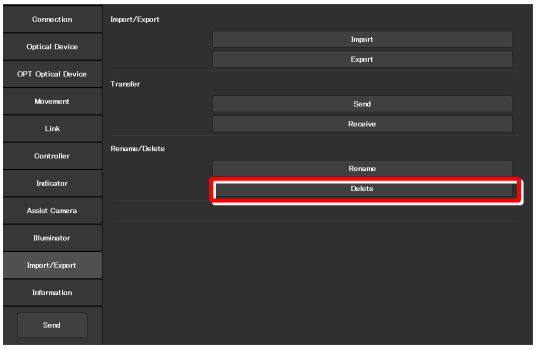
> **SUPPLEMENTAL REMARKS**
>
> If the file name specified in step 4 already exists, the name is not saved even though [OK] is tapped.
> In this case, perform the procedure from step 1 again with another name.

7.13.5 Deleting the Configuration File

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

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

▼ **Deleting the configuration file**

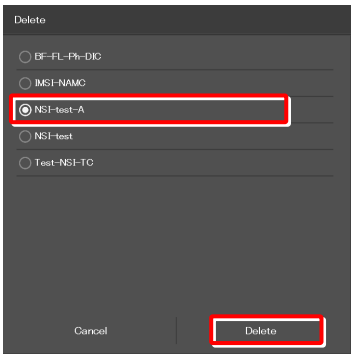


2. Select the file to be deleted.

3. Tap [Delete].

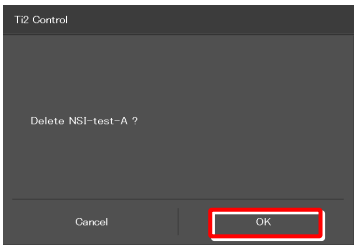
A deletion confirmation screen appears.

▼ **Selecting a file**



4. Tap [OK] to delete the file.

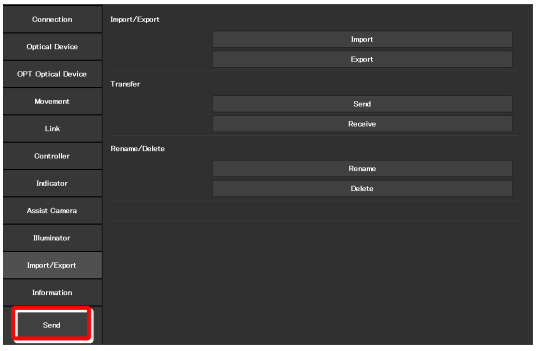
▼ **Confirmation of deletion**



This completes the setup procedure.

▼ **Sending the information to the microscope**

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



7.14 [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 the Ti2 series is displayed as follows:

Version:

Ti2 Control version (this application)

Microscope:

Model: Name of the currently used microscope system

Main Body FPGA: FPGA version of the microscope main body

CTRE FW: Firmware version of the controller for TI2-E

CTRE FPGA: FPGA version of the controller for TI2-E

MAC Address: MAC address of the microscope main body

D-LEDI FW: Firmware version of the D-LEDI when the D-LEDI is in use

Assist Camera:

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

Chapter 8

Control and Display of Each Device: Ti2-E

This chapter describes how to operate the Ti2-E microscope from the application.

8.1 Home screen

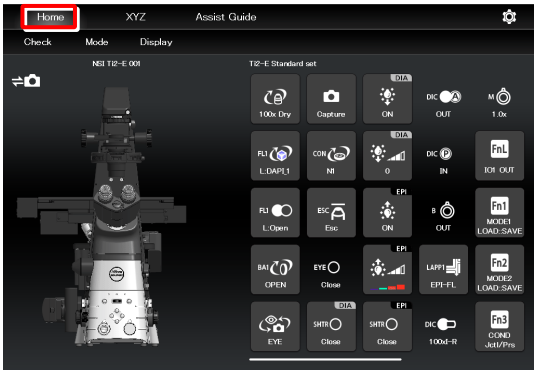
The home screen allows the user to control the Ti2-E microscope main body.

1. Tap [Home].

The home screen appears.

The view of the microscope on the left side of the screen shows the locations to be controlled.

▼ **Home screen**



8.1.1 Configuration of the Home Screen

■ **View of the microscope**

Tapping a remote control button highlights the corresponding location to be controlled in the microscope view.

The registration name of the currently displayed microscope system is displayed above the microscope view.
(See “7.2.3 Registering the Microscope System.”)

When the assist tube base unit is mounted, the assist camera connection status is displayed on the top left of the microscope view.

■ **Remote control button area**

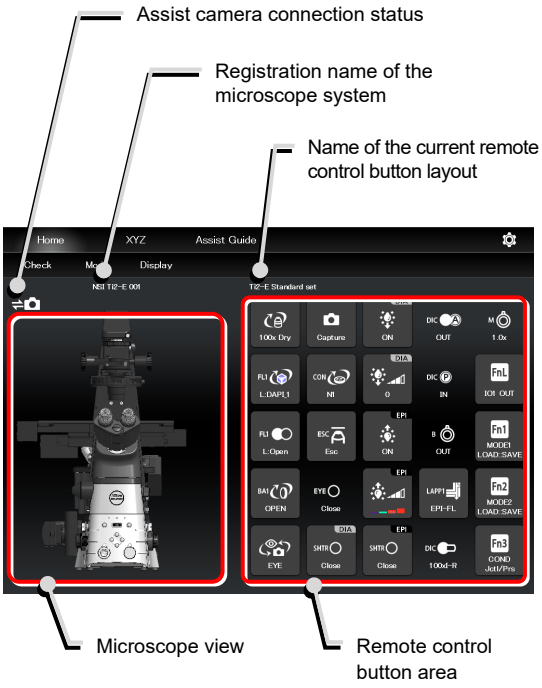
Each button shows the current status of the devices.
Tapping each button allows the user to control the corresponding device of the microscope main body.

> **SUPPLEMENTAL REMARKS**
>
> “?” is displayed on the button of the optical element which is not properly in the optical path.

> **SUPPLEMENTAL REMARKS**
>
> Long-tapping each button only highlights the corresponding location of the accessory to be controlled in the microscope view, and it does not control the accessory.

The name of the current remote control button layout is displayed above the remote control button area.
(See “9.2.2 Calling the Saved Remote Control Button Arrangement.”)

▼ **Configuration of the Home screen**



■ Check

The Check screen allows the user to check if a specimen can be observed properly by the specified microscopy technique.
(See “9.1 Check Mode.”)

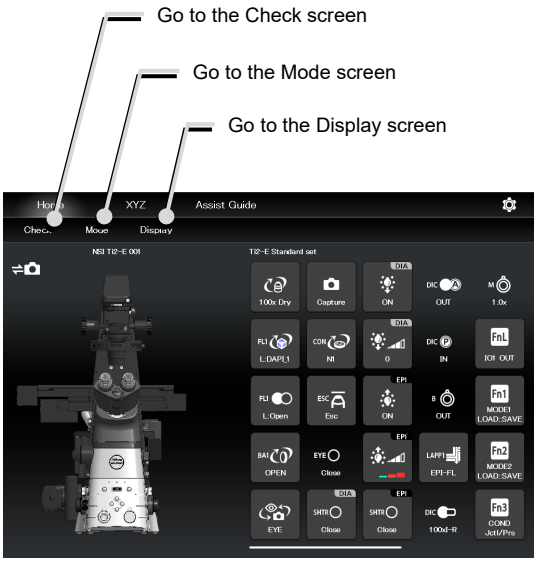
■ Mode

The Mode screen allows the user to register modes of motorized devices and place them in the registered statuses just by selecting a mode.
(See “9.3 Registering and Recalling Modes Linked With Devices.”)

■ Display

The Display screen allows the user to arrange the remote control buttons. (See “9.2 Remote Control Button Arrangement.”)

▼ Configuration of the Home screen



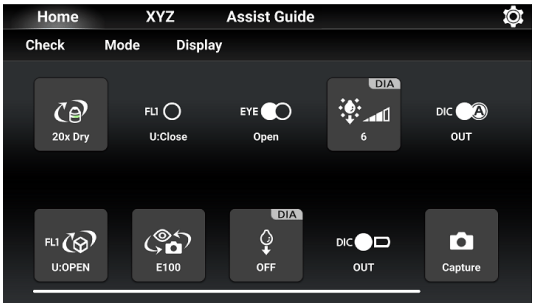
When operating “Ti2 Control” from a smartphone

When a smartphone is used, the microscope view is not displayed on the Home screen.

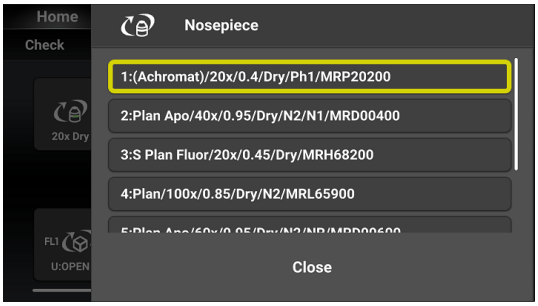
Also, no drawing of a turret is displayed on the subscreen opened when a remote control button is tapped. Only a list is displayed.

In addition, the name of the current remote control button layout is not displayed.

▼ Smartphone screen

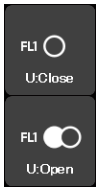


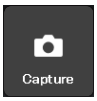
▼ Subscreen when a smartphone is used



8.1.2 List of Remote Control Buttons

The table below gives an overview of each remote control button and the section numbers to be referred to.

Button	Functional overview and reference	Button	Functional overview and reference
	Switching of objectives (See “8.1.3 Controlling the Objective.”)		**Escaping and restoring the objective** (See “8.1.14 Escaping and Restoring the Objective.”)
	Switching the filter cube of FL turret 1 (See “8.1.5 Controlling the Filter Cube.”)		**Switching the filter cube of FL turret 2** (See “8.1.5 Controlling the Filter Cube.”)
	**Opening and closing the shutter of FL turret 1** (See “8.1.10 Opening and Closing the Shutter of the FL Turret.”)		**Opening and closing the shutter of FL turret 2** (See “8.1.10 Opening and Closing the Shutter of the FL Turret.”)
	Switching the barrier filter of BA filter wheel 1 (See “8.1.6 Controlling the BA Filter.”)		**Switching the barrier filter of BA filter wheel 2** (See “8.1.6 Controlling the BA Filter.”)
	Opening and closing the motorized dia-illumination shutter (See “8.1.12 Opening and Closing the Motorized Dia-Illumination Shutter.”)		**Opening and closing the motorized epi-illumination shutter** (See “8.1.11 Opening and Closing the Motorized Epi-illumination Shutter.”)
	Adjusting the illumination intensity of dia-illumination (See “Adjusting the illumination intensity of dia-illumination (DIA)” in “8.1.9 Controlling the Dia-Illumination Unit (DIA).”)		**Adjusting the epi-illumination LED by wavelength** (See “Selecting an LED to be used” in “8.1.17 Operation When Using an C-LEDFI for the Epi Illuminator.”) (See “Async mode: Selecting and controlling an LED to be used” in “8.1.18 Operation When Using an D-LEDI for the Epi Illuminator.”)
	Turning on and off dia-illumination (See “Turning on or off the dia-illumination (DIA)” in “8.1.9 Controlling the Dia-Illumination Unit (DIA).”)		**Turning on and off the epi-illumination LED** (See “Turning on or off the LED” in “8.1.17 Operation When Using an C-LEDFI for the Epi Illuminator.”) (See “Turning on or off the LED” in “8.1.18 Operation When Using an D-LEDI for the Epi Illuminator.”)
	Opening and closing the Intensilight shutter (See “Opening and closing the Intensilight shutter” in “8.1.19 Operation When Using the Intensilight for the Epi Illuminator.”)		**Switching the Intensilight ND filter** (See “Switching the Intensilight ND filter” in “8.1.19 Operation When Using the Intensilight for the Epi Illuminator.”)

Button	Functional overview and reference	Button	Functional overview and reference
	Switching the optical path of epi-illumination 1 (See “8.1.16 Switching the Optical Path of Epi-Illumination.”)		**Switching the optical path of epi-illumination 2** (See “8.1.16 Switching the Optical Path of Epi-Illumination.”)
	Switching the condenser module (See “8.1.4 Controlling the Condenser.”)		**Switching the external phase ring** (See “8.1.8 Controlling the External Phase Ring.”)
	Switching the optical path (See “8.1.7 Switching the Optical Path.”)		**Displaying the intermediate magnification status** (See “8.1.15 Indication-Only Buttons.”)
	Displaying the opened/closed status of the shutter of the tube base unit (See “8.1.15 Indication-Only Buttons.”)		**Displaying the Bertrand lens in/out status** (See “8.1.15 Indication-Only Buttons.”)
	Displaying the objective-side DIC slider in/out status (See “8.1.15 Indication-Only Buttons.”)		**Capturing images through the assist camera** (See “8.1.13 Capturing Images With the Assist Camera (Only With the Assist Tube Base Unit).”)
	Displaying the analyzer in/out status (See “8.1.15 Indication-Only Buttons.”)		**Displaying the polarizer in/out status** (See “8.1.15 Indication-Only Buttons.”)
	Function buttons on the left panel of the microscope main body (See “8.1.20 Control with the Function Buttons in the Application.”)		**Function buttons on the right panel of the microscope main body** (See “8.1.20 Control with the Function Buttons in the Application.”)
 ⋮ 	**Function buttons on the joystick** (See “8.1.20 Control with the Function Buttons in the Application.”)	 ⋮ 	**Custom function buttons** (See “8.1.21 Control with the Custom Function Buttons.”)

8.1.3 Controlling the Objective

1. Tap the button shown below.

The objective changeover subscreen appears.

▼ Switching the objective

2. To switch the objective, tap the name of the objective to be used.

> **SUPPLEMENTAL REMARKS**
>
> The magnification color code of the objective is displayed on each objective button.
>
> Black: 1x, gray: 2x, red: 4x, yellow: 10x, green: 20x, pale green: 25x, bright blue: 40x, dark blue: 60x, white: 100x

3. Long-tap the name of the objective to be used to display the detailed information about the objective.

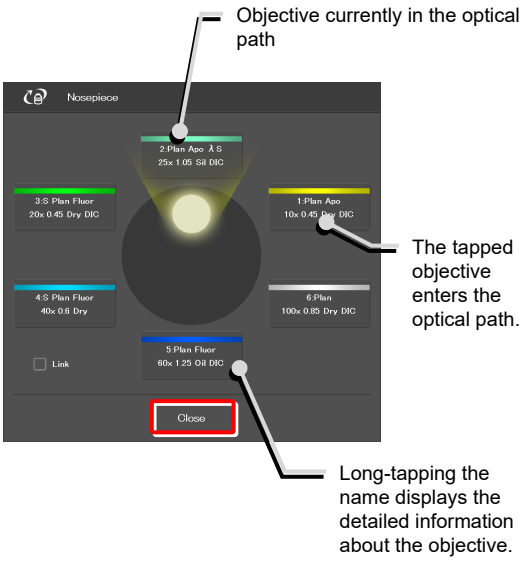
4. When the [Link] check box is selected, the linked control function is enabled.

For the linked control function, see “7.8 [Link] Setting the Linking Function.”

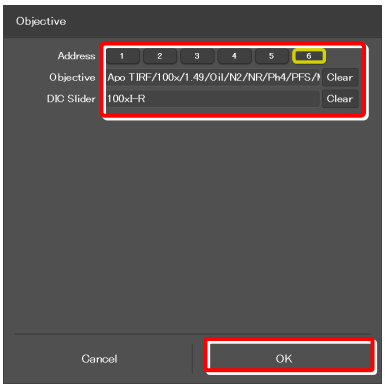
5. Tap [Close] to close the objective changeover subscreen.

> **SUPPLEMENTAL REMARKS**
>
> The displayed detailed information about the objective can be changed by tapping each item.
>
> Tap [OK] at the bottom of the screen to send the changed information to the microscope.
>
> For how to change information about objectives, see “7.5.1 Setting the Nosepiece.”

▼ Objective changeover subscreen



▼ Objective detailed information screen



8.1.4 Controlling the Condenser

1. Tap the button shown below.

The condenser module changeover subscreen appears.

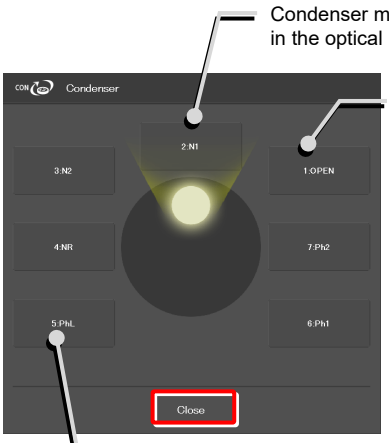
2. To switch the condenser module, tap the name of the module to be used.

3. Long-tap the name of the condenser module to be used to display the detailed information about the module.

4. Tap [Close] to close the condenser module changeover subscreen.

▼ Switching the condenser module

▼ Condenser module changeover subscreen



Condenser module currently in the optical path

The tapped condenser module enters the optical path.

Long-tapping the name displays the detailed information about the condenser module.

▼ Condenser module detailed information screen

SUPPLEMENTAL REMARKS

Detailed information about the condenser module can be changed by tapping each item.

Tap [OK] at the bottom of the screen to send the changed information to the microscope.

For how to change information about condenser modules, see “7.5.2 Setting the Condenser Module.”

8.1.5 Controlling the Filter Cube

1. Tap the buttons shown below.

(Tap this button to control the second FL turret.)

The filter cube changeover subscreen appears.

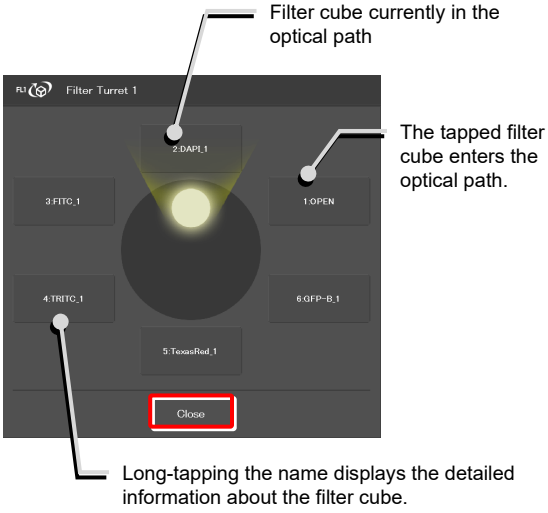
2. To switch the filter cube, tap the name of the filter cube to be used.

3. Long-tap the name of the filter cube to be used to display the detailed information about the filter cube.

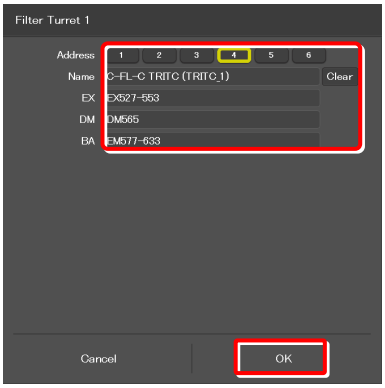
4. Tap [Close] to close the filter cube changeover subscreen.

▼ Switching the filter cube

▼ Filter cube changeover subscreen



▼ Filter cube detailed information screen



SUPPLEMENTAL REMARKS

Detailed information about the filter cube can be changed by tapping each item.
Tap [OK] at the bottom of the screen to send the changed information to the microscope.

For how to change information about filter cubes, see “7.5.3 Setting the Filter Cube.”

8.1.6 Controlling the BA Filter

1. Tap the buttons shown below.

(Tap this button to control the second BA filter turret.)

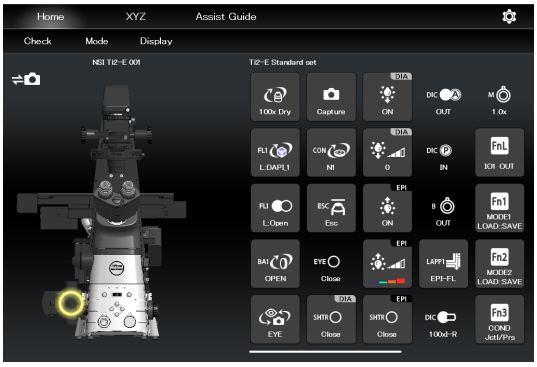
The BA filter changeover subscreen appears.

2. To switch the BA filter, tap the name of the BA filter to be used.

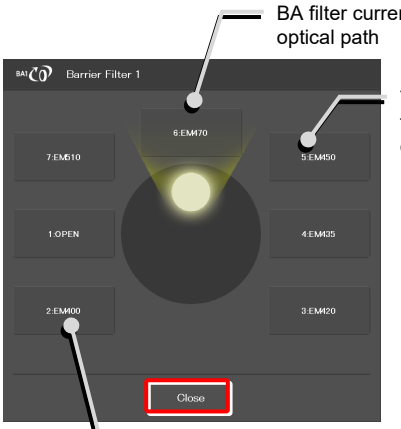
3. Long-tap the name of the BA filter to be used to display the detailed information about the BA filter.

4. Tap [Close] to close the BA filter changeover subscreen.

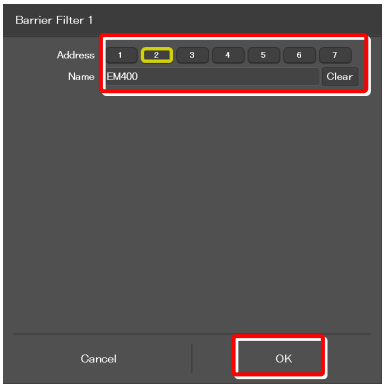
▼ Switching the BA filter



▼ BA filter changeover subscreen



▼ BA filter detailed information screen



SUPPLEMENTAL REMARKS

Detailed information about the BA filter can be changed by tapping each item.

Tap [OK] at the bottom of the screen to send the changed information to the microscope.

For how to change information about BA filters, see “7.5.4 Setting.”

8.1.7 Switching the Optical Path

1. Tap the button shown below.

The optical path changeover subscreen appears.

▼ Switching the optical path

2. To switch the optical path, tap the target output port.

> **SUPPLEMENTAL REMARKS**
> The output port name of the optical path set in “7.5.7 Setting the Optical Path Name” is displayed.

1: Eyepiece observation port (Default: EYE)

An optical output port for visually observing a microscope image through a binocular part of a tube.
(Switch the output port to [1] Eyepiece observation port to output the image to the assist camera when using the assist tube base unit.)

2: Right side port (Default: R100)

An optical output port for the microscope image on the right side of the microscope.
(Microscopy camera, BA filter wheel, confocal head, photometer sensor, etc.)

3: AUX (Default: L80) (on the Ti2-E)

80% of a microscope image is output to the optical output port on the left side of the microscope, and 20% is output to the eyepiece observation port.

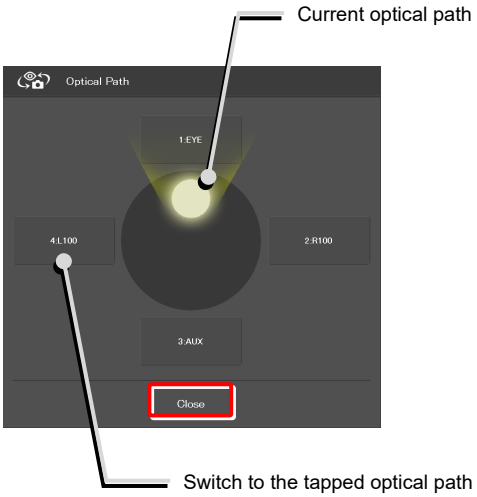
3: Bottom port (Default: B100) (on the Ti2-E/B)

An optical image output port at the bottom of the microscope.

4: Left side port (Default: L100)

An optical output port for the microscope image on the left side of the microscope. (Microscopy camera, BA filter wheel, confocal head, photometer sensor, etc.)

▼ Optical path changeover subscreen



3. Tap [Close] to close the optical path changeover subscreen.

8.1.8 Controlling the External Phase Ring

1. Tap the button shown below.

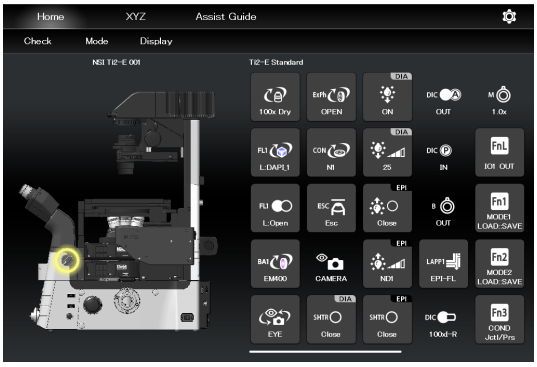
The external phase ring changeover subscreen appears.

2. To switch the external phase ring, tap the name of the external phase ring to be used.

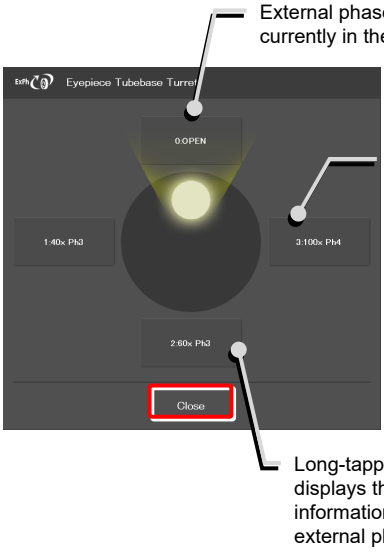
3. Long-tap the name of the external phase ring to be used to display the detailed information about the external phase ring.

4. Tap [Close] to close the external phase ring changeover subscreen.

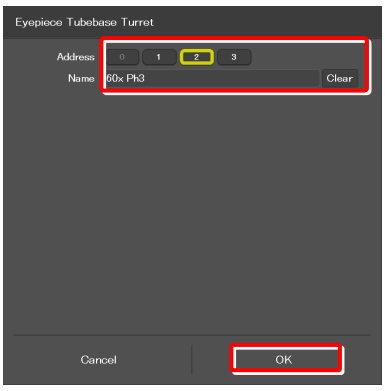
▼ Switching the external phase ring



▼ External phase ring changeover subscreen



▼ External phase ring detailed information screen



SUPPLEMENTAL REMARKS

The displayed detailed information about the external phase ring can be changed by tapping each item.

Tap [OK] at the bottom of the screen to send the changed information to the microscope.

For how to change information about external phase rings, see “7.5.6 Setting the External Phase Ring.”

8.1.9 Controlling the Dia-Illumination Unit (DIA)

Adjusting the illumination intensity of the DIA

1. Tap the button shown below.

The dia-illumination intensity adjustment subscreen appears.

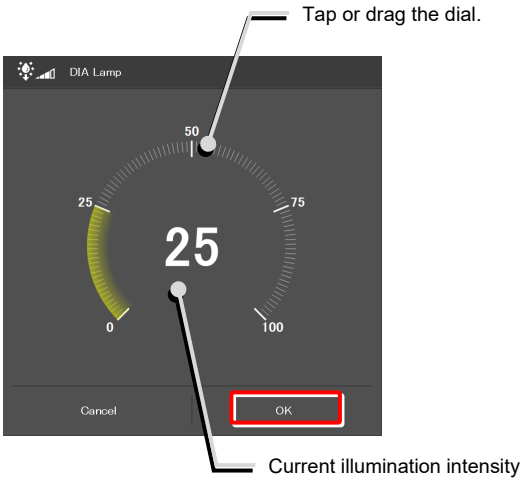
▼ Adjusting the illumination intensity of dia-illumination (DIA)

2. To adjust the illumination intensity, tap the dial in the center or drag the vicinity of the dial.

3. Tap [Close] to close the dia-illumination intensity adjustment subscreen.

Tap [Cancel] to reset the intensity to that before the subscreen is opened, and to close the screen.

▼ Dia-illumination intensity adjustment subscreen



Turning on or off the dia-illumination (DIA)

1. Tap the buttons shown below.

Lit. The LED is turned off when this button is tapped.

Extinguished. The LED is turned on when this button is tapped.

▼ Controlling the dia-illumination (DIA)

8.1.10 Opening and Closing the Shutter of the FL Turret

When a motorized FL turret is used, the shutter of the FL turret can be opened or closed from the application.

1. Tap the buttons shown below.

The shutter of the FL turret is open. The shutter closes when this button is tapped.

The shutter of the FL turret is closed. The shutter opens when this button is tapped.

To control the second FL turret:

The shutter of the FL turret is open. The shutter closes when this button is tapped.

The shutter of the FL turret is closed. The shutter opens when this button is tapped.

▼ Opening and closing the shutter of the FL turret

8.1.11 Opening and Closing the Motorized Epi-illumination Shutter

When a motorized epi-illumination shutter is used, the shutter can be opened or closed from the application.

1. Tap the buttons shown below.

The motorized epi-illumination shutter is open. The shutter closes when this button is tapped.

The motorized epi-illumination shutter is closed. The shutter opens when this button is tapped.

▼ Opening and closing the motorized epi-illumination shutter

8.1.12 Opening and Closing the Motorized Dia-Illumination Shutter

When a motorized dia-illumination shutter is used, the shutter can be opened or closed from the application.

1. Tap the buttons shown below.

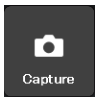
The dia-illumination shutter is open. The shutter closes when this button is tapped.

The dia-illumination shutter is closed. The shutter opens when this button is tapped.

▼ Opening and closing the dia-illumination shutter

8.1.13 Capturing Images With the Assist Camera (Only With the Assist Tube Base Unit)

1. Tap the button shown below.



The images from the assist camera are captured.

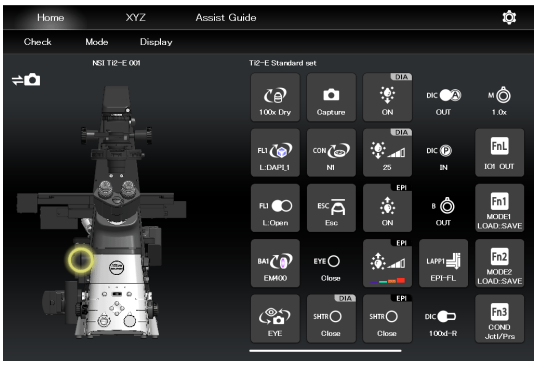
If the optical path is switched to [EYE], the images from the assist camera are captured and saved in the storage in the smart device.

SUPPLEMENTAL REMARKS

The captured images are saved in the [Ti2Control] folder displayed by tapping [Pictures] on the smart device. The captured images are saved in the [Camera Roll] on the smart device.

The saved images can be viewed by the image viewer application.

▼ Capturing images through the assist camera



8.1.14 Escaping and Restoring the Objective

1. Tap the buttons shown below.

Lowers the objective temporarily to the escape position.

Restores the objective to the original position.

SUPPLEMENTAL REMARKS

Turning the focus knob does not move the focusing device while the objective is at the escape position.

If is tapped while the objective is at the escape position, a confirmation message "Do you want to move the objective to original position Z?" appears. The Save Display screen appears.

Tap [Move] to move the objective to original position Z.

Tap [No] to allow the focus knob to be used without returning the objective to original position Z.

In this case, the position in which the focus knobs are stopped is then stored as the new focal position.

▼ Escaping and restoring the objective

8.1.15 Indication-Only Buttons

The following are indication-only buttons.

The following buttons indicate the current intermediate magnifications.

1x

1.5x

2x

The following buttons indicate the objective-side DIC slider in/out status.

Inserted

Removed

The following buttons indicate the DIC analyzer slider in/out status.

Inserted

Removed

The following buttons indicate the DIC polarizer in/out status.

Inserted

Removed

The following buttons indicate the Bertrand lens in/out status.

Inserted

Removed

SUPPLEMENTAL REMARKS

If an indication-only button is tapped, the location of the module is indicated in the left microscope view.

8.1.16 Switching the Optical Path of Epi-Illumination

1. Tap the buttons shown below.

(Also tap this button in a stage-up configuration.)

The epi-illumination control subscreen appears, showing the optical path currently in use.

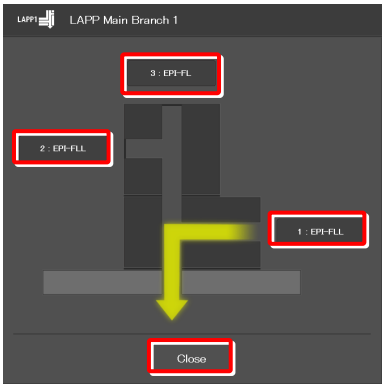
▼ **Epi-illumination control**

2. Tap an FL module button displayed on the subscreen.

The optical path is switched.

3. Tap [Close] to close the epi-illumination control subscreen.

▼ **Epi-illumination control subscreen**



Microscope main body side

8.1.17 Operation When Using an C-LEDFI for the Epi Illuminator

The epi-fl LED illuminator (C-LEDFI) has built-in LEDs for each excitation wavelength. The LEDs can be turned on or off and the brightness can be adjusted to achieve illumination with the specified wavelength.

Selecting an LED to be used

1. Tap the buttons shown below.

All LEDs are off.

Each LED is on.

The C-LEDFI control subscreen appears showing the on/off state, the wavelength and the illumination intensity of each LED.

▼ **C-LEDFI control**

2. Tapping the [OFF] indication button turns the corresponding LED on. Tapping the [ON] indication button turns it off.

3. Tap [<] and [>] to set the illumination intensity per LED.

4. Tap [OK] to save the C-LEDFI control.

▼ **C-LEDFI control subscreen**

Turning on or off the LED

1. Tap the buttons shown below.

Lit. The LED is turned off when this button is tapped.

Extinguished. The LED is turned on when this button is tapped.

The LEDs set to ON above on the C-LEDFI control subscreen are turned on or off.

▼ **C-LEDFI control**

8.1.18 Operation When Using an D-LEDI for the Epi Illuminator

The epi-fl LED illuminator (D-LEDI) has built-in LEDs for each excitation wavelength. The LEDs can be turned on or off and the brightness can be adjusted to achieve illumination with the specified wavelength.

Turning on or off the LED

1. Tap the buttons shown below.

Lit. The LED is turned off when this button is tapped.

Extinguished. The LED is turned on when this button is tapped.

The LEDs set to ON above on the D-LEDI control subscreen are turned on or off.

> **SUPPLEMENTAL REMARKS**
>
> LED operation is not available if [Trigger] is enabled via [⚙] –> [Illuminator].

▼ **D-LEDI control**

Async mode: Selecting and controlling an LED to be used

1. Tap the buttons shown below.

All LEDs are off.

Each LED is on.

The D-LEDI control subscreen appears showing the on/off state, and the illumination intensity of each LED.

▼ **D-LEDI control**

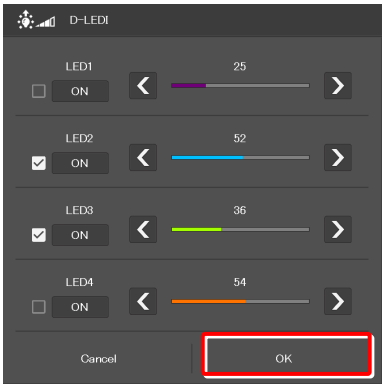
2. Tapping the [OFF] indication button turns the corresponding LED on. Tapping the [ON] indication button turns it off.

3. Tap [<] and [>] to set the illumination intensity per LED.

Selecting multiple LEDs by turning on their check boxes interlocks the control of their illumination intensity, and the intensity ratio among them is kept constant.

4. Tap [OK] to determine the D-LEDI control.

▼ **D-LEDI control subscreen**



Sync mode: Controlling an LED to be used

1. Tap the buttons shown below.

LED is off.

LED is on.

The D-LEDI control subscreen appears showing the on/off state, and the illumination intensity of LED.

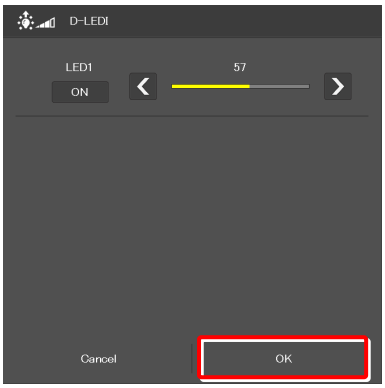
2. Tapping the [OFF] indication button turns the LED on. Tapping the [ON] indication button turns it off.

3. Tap [<] and [>] to set the illumination intensity LED.

4. Tap [OK] to determine the D-LEDI control.

▼ D-LEDI control

▼ D-LEDI control subscreen



8.1.19 Operation When Using the Intensilight for the Epi Illuminator

When the motorized Intensilight (motorized HG precentered fiber illuminator (C-HGFIE)) is used as the epi illuminator, the shutter can be opened or closed and the ND filter attached to the Intensilight can be switched.

Opening and closing the Intensilight shutter

1. Tap the buttons shown below.

Indicates that the Intensilight shutter is open. The shutter closes when this button is tapped.

Indicates that the Intensilight shutter is closed. The shutter opens when this button is tapped.

The LEDs set above on the C-LEDFI control subscreen are turned on or off.

▼ Opening and closing the Intensilight shutter

Switching the Intensilight ND filter

1. Tap the button shown below.

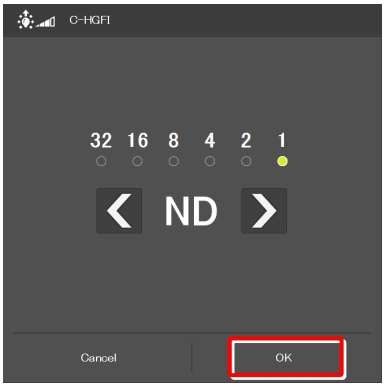
The ND filter changeover subscreen appears.

▼ Switching the ND filter

2. To switch the ND filter, tap [<] or [>].

3. Tap [OK] to save the ND filter change.

▼ ND filter changeover subscreen



8.1.20 Control with the Function Buttons in the Application

The functions set to the the function buttons on the microscope main body or the joystick can be executed using the function buttons in the Application.

The abbreviation of the assigned function is shown on each button.

Functions assigned to the function buttons on the microscope main body

1. Tap the buttons shown below.

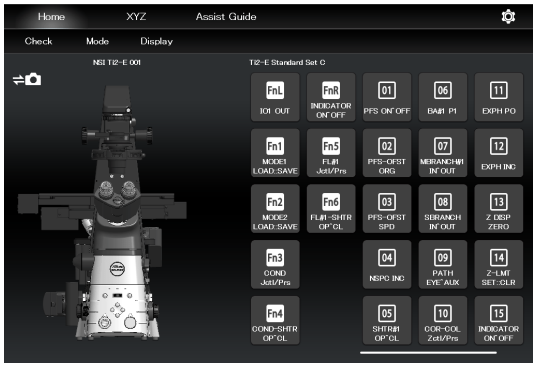
The function assigned to the FnL button on the left panel of the microscope main body starts.

The function assigned to the FnR button on the right panel of the microscope main body starts.

For how to configure the initial settings of the function buttons, see “11.1.1 Initial Setting of the Function Buttons on the Ti2-E Microscope Main Body.”

To change the assigned functions, see “7.9.1 Setting the Function Buttons on the Microscope Main Body and the Joystick.”

▼ Control by function buttons



Functions assigned to the function buttons on the joystick

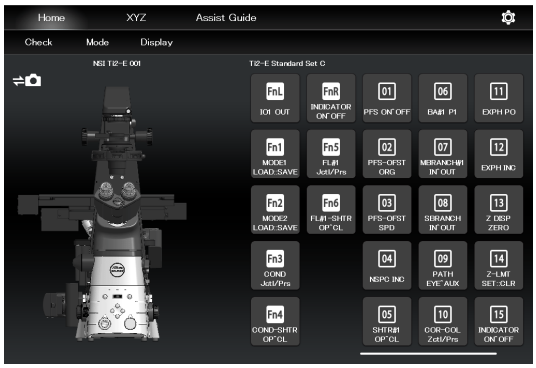
1. Tap the buttons shown below.

The functions assigned to the function buttons (Fn1 to Fn6) on the joystick start.

For how to configure the initial settings of the function buttons, see “11.1.2 Initial Setting of the Function Buttons on the Joystick.”

To change the assigned functions, see “7.9.1 Setting the Function Buttons on the Microscope Main Body and the Joystick.”

▼ Control by function buttons



8.1.21 Control with the Custom Function Buttons

Control the assigned functions using the custom function buttons.

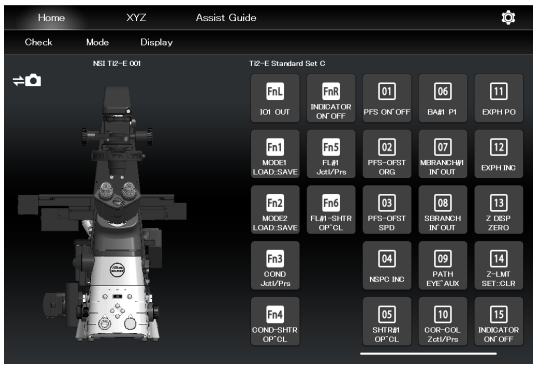
The abbreviation of the assigned function is shown on each button.

1. Tap the buttons shown below.

The functions assigned to the custom function buttons (up to 30 buttons) start up.

To change the assigned functions, see “7.9.2 Setting the Custom Function Buttons.”

▼ Control by custom function buttons



8.2 XYZ screen

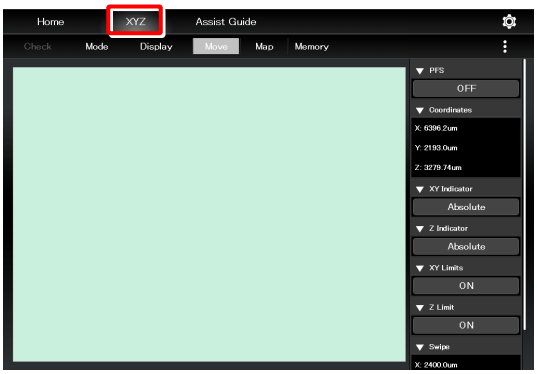
The motorized stage (XY) and the focusing device (Z) can be operated by using the displayed buttons and the operation area of the XYZ screen.

The XYZ screen displays some functions in common with the Home screen.
This section describes the functions specific to the XYZ screen.
For the functions common with the Home screen, see “8.1 Home screen.”

1. Tap [XYZ].

The XYZ screen appears.

▼ **XYZ screen**



2. Tap [Move].

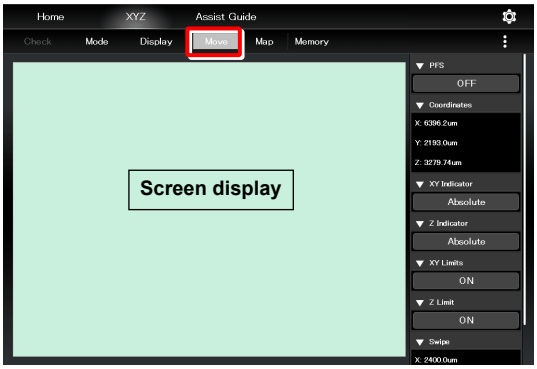
The XYZ screen is placed in Move mode.

For the functions and operation procedure, see the following sections.

If an assist tube base unit is mounted, an image from the assist camera is displayed in the display area of the screen.

> **CAUTION**
>
> Even though the assist tube base unit is mounted, the live image from the assist camera may not be displayed in the image display area.
>
> If live image reception fails, a message dialog appears. Retry live image reception by following the message.
>
> If this error still persists after several attempts, contact your local Nikon representative.

▼ **XYZ screen (Move mode)**



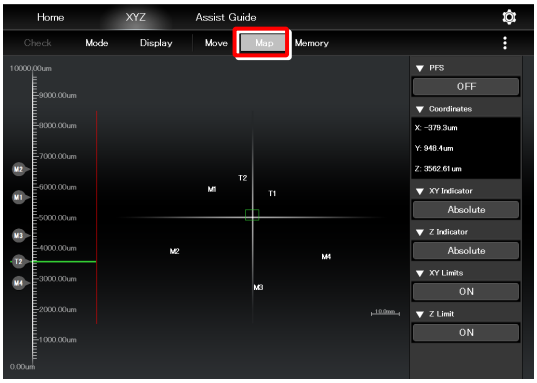
3. Tap [Map].

The XYZ screen is placed in Map mode.

For the functions and operation procedure common to Move mode, see the following sections.

For the functions and operation procedure specific to Map mode, see “8.2.7 Map Mode.”

▼ **XYZ screen (Map mode)**



8.2.1 Configuration of the XYZ Screen

This section describes the basic configuration of the XYZ screen.

■ ⋮ (Display changeover)

Select an item from the submenu displayed by tapping this button to switch the display on the right side of the screen.

Hide:

Select [Hide] to hide the remote control button area and the information display area.

Information:

Select [Information] to show the information display area.

Microscope Control:

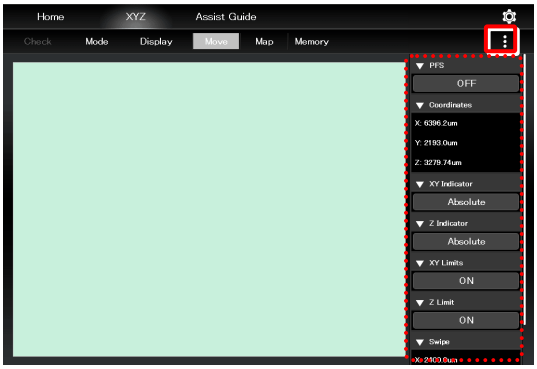
Select [Microscope Control] to show the remote control button area.

Camera Control:

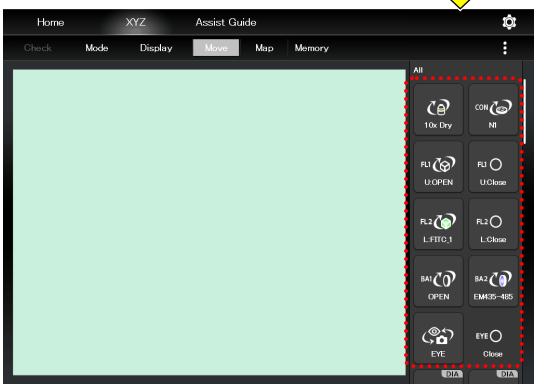
Select [Camera Control] to show the adjustment screen of the assist camera image.

In this screen, white balance can be adjusted and the FOV of the assist camera can be adjusted to be in the same position and the size as the FOV of the binocular part.

▼ Information display area



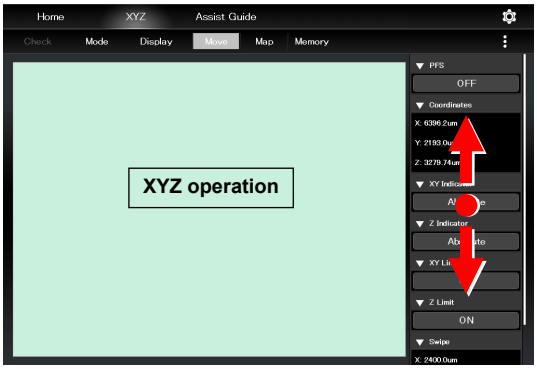
▼ Remote control button area



■ Swiping the display area

The items displayed in the display area can be scrolled by swiping the area up or down.

▼ Information display area



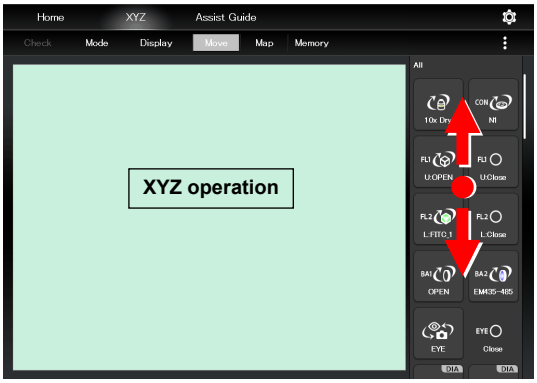
■ Information display area

Displays the information about the motorized stage (XY) or the focusing device (Z).
For details, see “8.2.2 Information Display Area.”

■ Remote control button area

Tapping each button allows the user to control the corresponding device of the microscope main body.
For details, see “8.2.3 Remote Control Button Area.”

▼ Remote control button area



■ XYZ operation area

For details, see “8.2.5 XYZ operation area.”

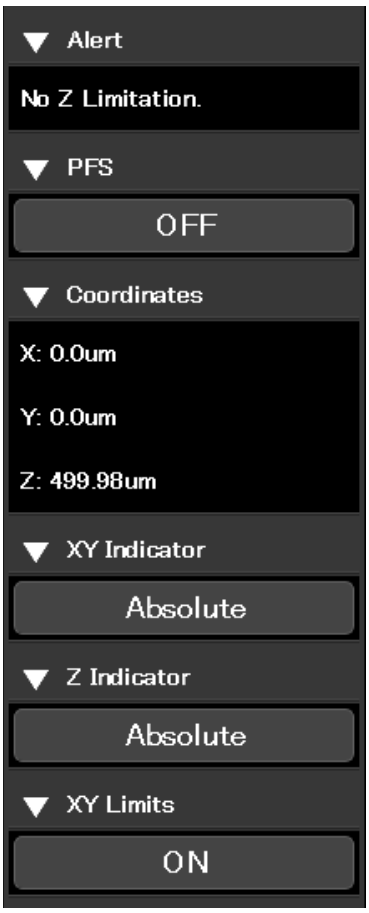
8.2.2 Information Display Area

This area displays the information about the motorized stage (XY) or the focusing device (Z).

> **SUPPLEMENTAL REMARKS**
>
> The display of detailed information can be collapsed by tapping ▼ on the title of each item.
>
> The collapsed information can be expanded by tapping ▲.

Select [Information] from the submenu displayed by tapping ⋮ to switch the display area on the right side.

▼ Information display area



Alert:

Displays the recent alert information.

PFS:

Displays the on/off state of the PFS.
The on/off state can be switched by tapping the on/off state indication button.

Coordinates:

Displays the coordinates of the motorized stage (XY) and the focusing device (Z).

XY Indicator:

Switches the coordinate indication for the motorized stage (XY) between the absolute value and the relative value.

> **SUPPLEMENTAL REMARKS**
>
> The relative indication of the XY indicator is a function to display the relative coordinates, considering the position when the RESET-XY button of the joystick is pressed, as the origin.

Z Indicator:

Switches the coordinate indication for the focusing device (Z) between the absolute value and the relative value.

> **SUPPLEMENTAL REMARKS**
>
> The relative indication of the Z indicator is a function to display the relative coordinates, considering the position when the RESET-Z button of the joystick is pressed, as the origin.

XY Limits:

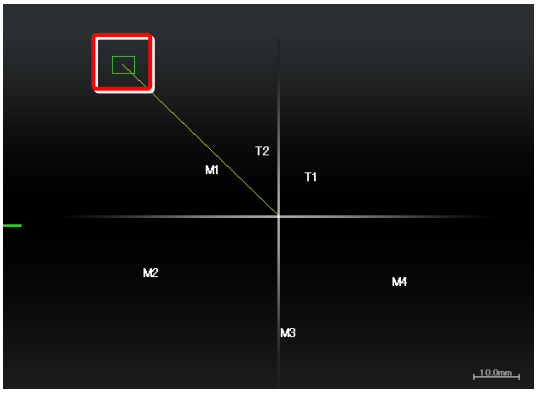
Indicates the on/off state of the software limits on the motorized stage (XY).

The XY Limits subscreen appears when the on/off state indication button is tapped.

Follow the XY software limit setting procedure below:

1) Move the motorized stage to the position (X: left side, Y: far side) to be set as a software limit on the top left.

▼ **Setting the XY Limit**



2) Tap the XY limit ON/OFF state display area in the information area.

   The XY Limits subscreen appears.

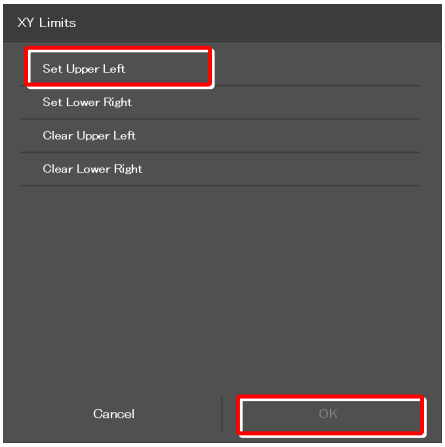
▼ **Information display area**

3) Select [Set Upper Left], and then tap [OK].

   The current XY coordinates are set as the upper left XY software limits.

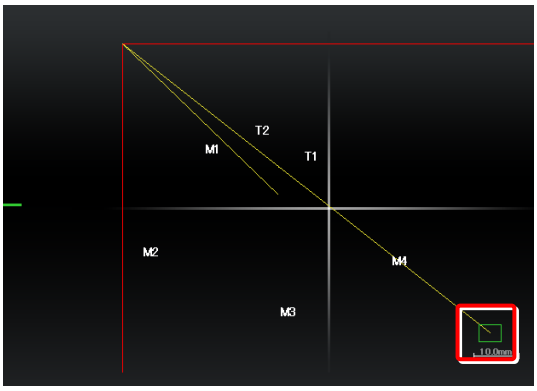
   The specified software limits can be cleared by selecting [Clear Upper Left].

▼ **XY Limit subscreen**



4) Move the motorized stage to the position (X: right side, Y: front side) to be set as a software limit on the bottom right.

▼ **Setting the XY Limit**



5) Tap the XY limit ON/OFF state display area in the information area.

   The XY Limits subscreen appears.

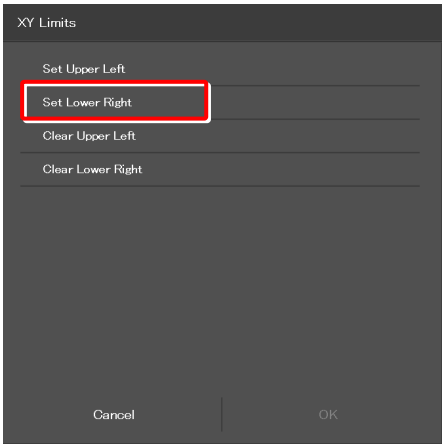
▼ **Information display area**

6) Select [Set Lower Right], and then tap [OK].

The current XY coordinates are set as the lower right XY software limits.

The specified software limits can be cleared by selecting [Clear Lower Right].

▼ **XY Limit subscreen**

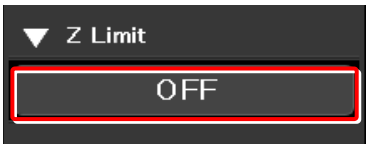


Z Limit:

Indicates the on/off state of the software limits on the focusing device (Z).

The Z Limit subscreen appears when the on/off state indication button is tapped.

▼ **Information display area (continued from the previous page)**



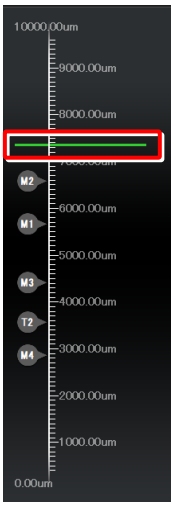
Follow the Z software limit setting procedure below:

1) Raise the focusing device (Z) to the position to be set as the upper limit.

2) Tap the Z limit ON/OFF state display area in the information area.

The Z Limit subscreen appears.

▼ **Setting the Z Limit**

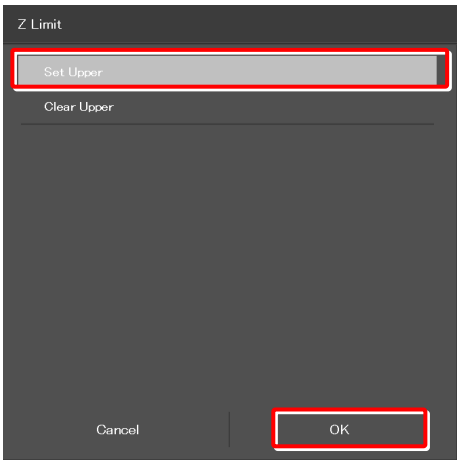


3) Select [Set Upper], and then tap [OK].

The current Z coordinate can be set as the Z software upper limit.

The specified software limits can be cleared by selecting [Clear Upper].

▼ **XY Limit subscreen**



8.2.3 Remote Control Button Area

Each motorized device of the microscope main body can be controlled from the remote control button area.

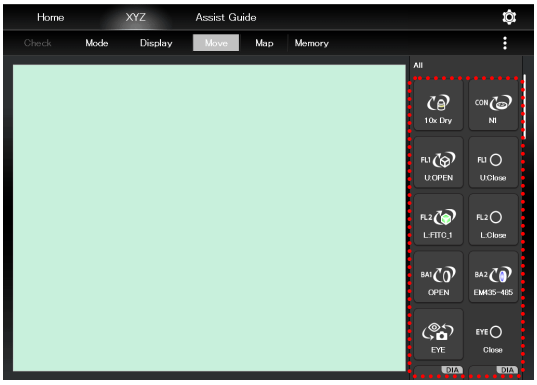
Select [Microscope Control] from the submenu displayed by tapping ⋮.

■ **Remote control button area**

Tapping each button allows the user to control the corresponding motorized device of the microscope main body.

The layout of remote control buttons can be changed freely in the display screen.
For details, see “9.2 Remote Control Button Arrangement.”

▼ **Remote control button area**



8.2.4 Camera Control

Display the adjustment screen of the assist camera.

Select [Camera Control] from the submenu displayed by tapping ⋮.

■ **Setting area**

Frame Rate:

Tap this to display the frame rate selection screen.
Select the frame rate of the assist camera.

ROI:

Tap this to display the ROI screen.
This screen allows the adjustment of the size and the position of the FOV of the assist camera.
For details, see “7.11 [Assist Camera] Setting the Assist Camera.”

■ **Control area**

White Balance:

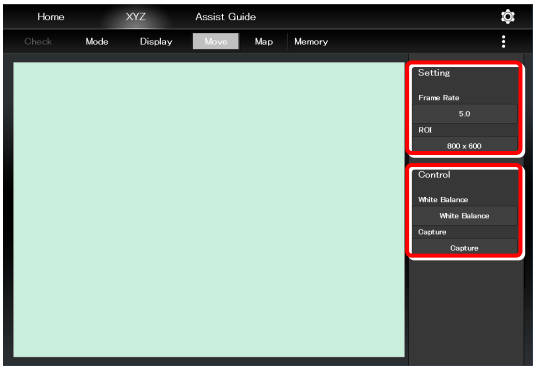
Automatically adjust the white balance of the current image displayed on the screen.

Capture:

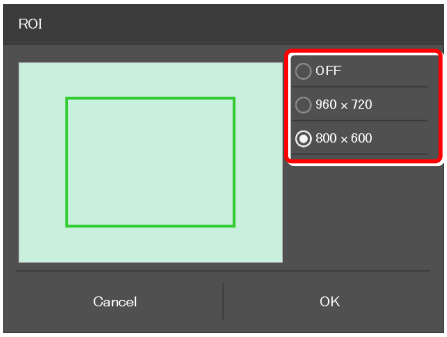
Tap this to capture the image from the assist camera.
If the optical path is switched to [EYE], the images from the assist camera are captured and saved in the storage in the smart device.

> **SUPPLEMENTAL REMARKS**
>
> The captured images are saved in the [Ti2Control] folder displayed by tapping [Pictures] on the smart device. The captured images are saved in the [Camera Roll] on the smart device.
>
> The saved images can be viewed by the image viewer application.

▼ **Camera control**



▼ **ROI screen**



8.2.5 XYZ operation area

This area allows the focusing device (Z) or the motorized stage (XY) to be moved.

If an assist tube base unit is mounted, an image from the assist camera is displayed.

■ Controlling the focusing device (Z)

When the PFS is turned OFF, the focusing device (Z) can be moved by dragging or swiping the XYZ operation area with two fingers up and down.

Dragging or swiping up:

Swiping with two fingers moves the focusing device (Z) up a constant amount.

Dragging with two fingers moves the focusing device (Z) up by the amount of movement.

Dragging or swiping down:

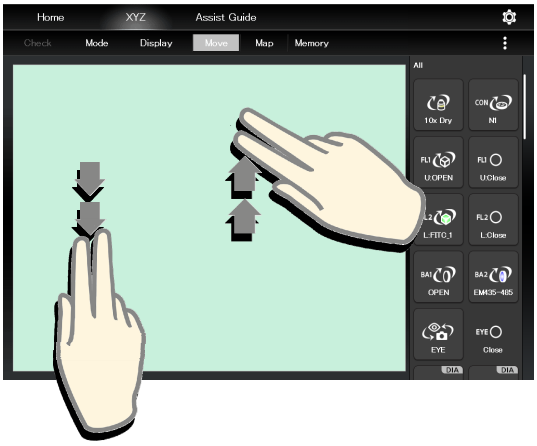
Swiping with two fingers moves the focusing device (Z) down a constant amount.

Dragging with two fingers moves the focusing device (Z) down by the amount of movement.

When the PFS is turned ON, the focusing device (Z) can be moved by the offset amount by dragging the XYZ operation area with two fingers up and down.

> **SUPPLEMENTAL REMARKS**
>
> If [Z Limit] is set and it is ON, the focusing device can move only within the coordinates of the specified upper and lower software limits.
>
> The software limit in the Z direction is indicated by a red line in the XYZ operation area.

▼ XYZ operation area



■ Controlling the motorized stage (XY):

The motorized stage (XY) can be moved by dragging or swiping the XYZ operation area with one finger up or down, or to the right or left.

Dragging:

Dragging up: Moves the Y stage to the back.

Dragging down: Moves the Y stage to the front.

Dragging to the right: Moves the X stage to the right.

Dragging to the left: Moves the X stage to the left.

The motorized stage (XY) can be moved by dragging in the XYZ operation area with one finger up or down, or to the right or left within 0.5 second after tapping the area.

Swiping:

Swiping up: Moves the Y stage to the back by one field of view.

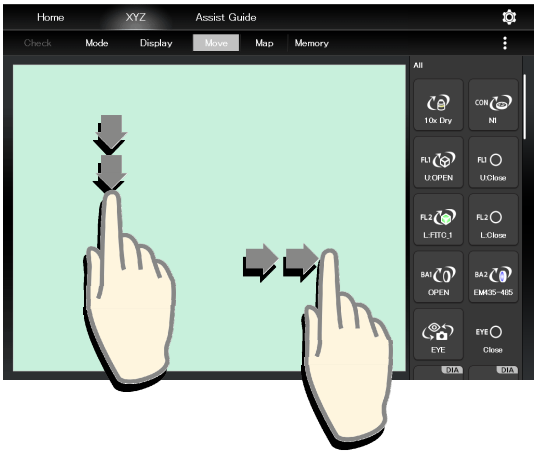
Swiping down: Moves the Y stage to the front by one field of view.

Swiping to the right: Moves the X stage to the right by one field of view.

Swiping to the left: Moves the X stage to the left by one field of view.

> **SUPPLEMENTAL REMARKS**
>
> If [XY Limit] is set and it is ON, the motorized stage (XY) can move only within the coordinates of the specified upper and lower software limits.
>
> The software limits in the XY directions are indicated by red lines in the XYZ operation area.

▼ XYZ operation area



8.2.6 Memory

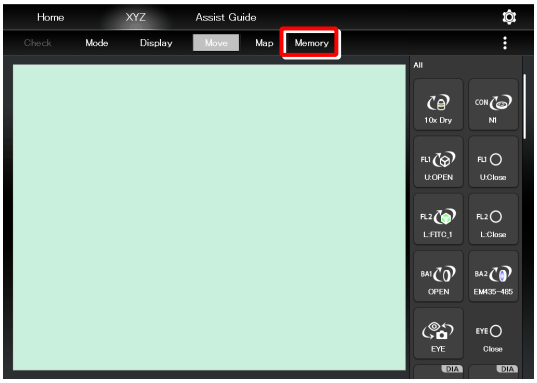
The coordinates of the motorized stage (XY) and the focusing device (Z) can be saved up to four on the microscope and up to ten on the tablet

The motorized stage (XY) and the focusing device (Z) can be moved to the recalled coordinates which were saved in memory.

1. In the Move mode or in the Map mode, tap [Memory].

The Memory subscreen appears.

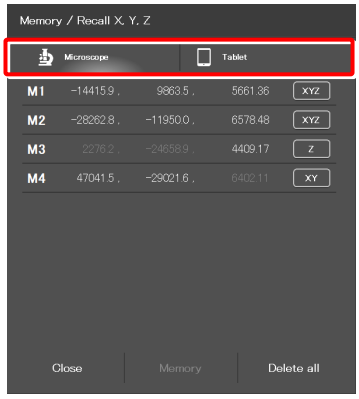
▼ **Memory**



Saving the coordinates in memory (Memory)

1. In the Memory subscreen, select the tab (Microscope or Tablet) in which the coordinates are to be saved.

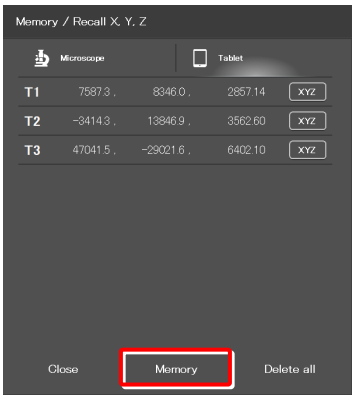
▼ **Memory subscreen ([Microscope] tab)**



2. Tap [Memory].

The coordinates of the current motorized stage (XY) and the focusing device (Z) are saved in memory.

▼ **Memory subscreen ([Tablet] tab)**



> **SUPPLEMENTAL REMARKS**
>
> No more coordinates can be saved if four coordinates are already saved in the microscope or ten coordinates are already saved in the tablet.

> **SUPPLEMENTAL REMARKS**
>
> Numbers M1 to M4 are assigned to the coordinates saved in the microscope and numbers T1 to T10 are assigned to the coordinates saved in the tablet.
>
> These numbers are displayed at the corresponding coordinates on the Map mode screen.

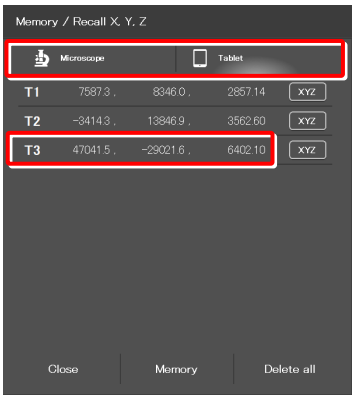
Deleting the selected coordinates

1. **In the Memory subscreen, select the tab (Microscope or Tablet) in which the coordinates are to be saved.**

2. **Long-tap the coordinates to be deleted.**

   A deletion confirmation message is displayed.

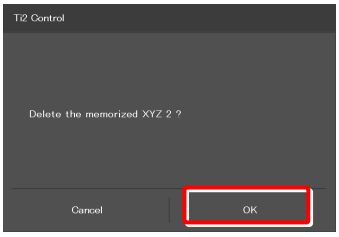
▼ Memory subscreen



3. **Tap [OK].**

   The selected coordinates are deleted.

▼ Confirmation of deletion



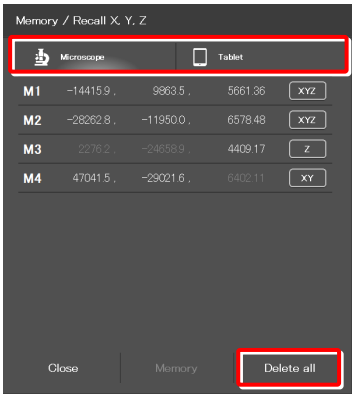
Deleting all coordinates

1. **In the Memory subscreen, select the tab (Microscope or Tablet) in which the coordinates are to be saved.**

2. **Tap [Delete all].**

   A deletion confirmation message is displayed.

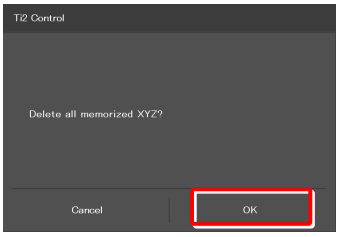
▼ Memory subscreen



3. **Tap [OK].**

   All coordinates saved in the tablet are deleted.

▼ Confirmation of deletion



Moving the stage to the coordinate point saved in memory

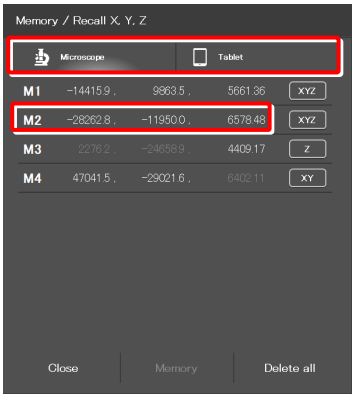
1. **In the Memory subscreen, select the tab (Microscope or Tablet) in which the coordinates are to be saved.**

2. **Tap the coordinates to be recalled.**

   A movement confirmation message will appear.

> **SUPPLEMENTAL REMARKS**
>
> The coordinate axes of the stage to be moved can be changed by tapping the button next to the coordinates.
>
> (See "Specifying the coordinate axes of the stage to be moved.")

▼ **Memory subscreen**

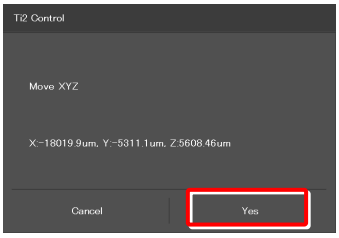


3. **After making sure that the objective does not touch the stage, tap [Yes].**

   The specified stage will move.

   The stage does not move and the screen will go back to the Move mode screen if [Cancel] is tapped.

▼ **Confirmation of movement**

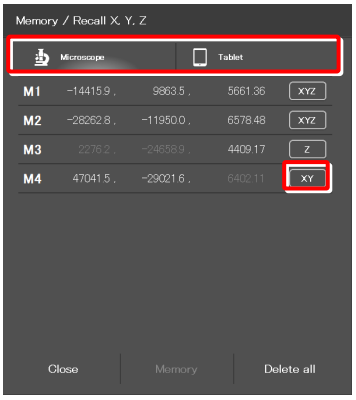


Specifying the coordinate axes of the stage to be moved

1. **In the Memory subscreen, select the tab (Microscope or Tablet) in which the coordinates are to be saved.**

2. **Tap the button next to the coordinates.**

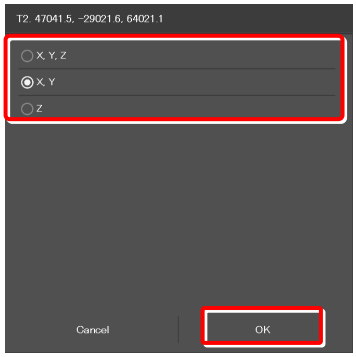
▼ **Memory subscreen**



3. **Select the stage to be moved, and then tap [OK].**

   (Z = focusing device, XY = motorized stage, XYZ = both)

▼ **Selecting the stage to be moved**



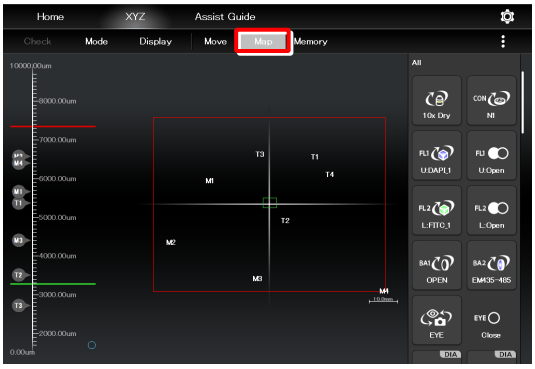
8.2.7 Map Mode

The Map mode screen allows the user to know which position in the movable area of the focusing device (Z) or the motorized stage (XY) the user is observing.

1. Tap [Map] on the XYZ screen.

The Map mode screen appears.

▼ Map mode screen



Displaying the Map mode screen

■ Position display area of the motorized stage (XY)

Green rectangle:

Shows the approximate size and position of the current field of view.

Red solid line:

Shows the XY limits.

Numbers:

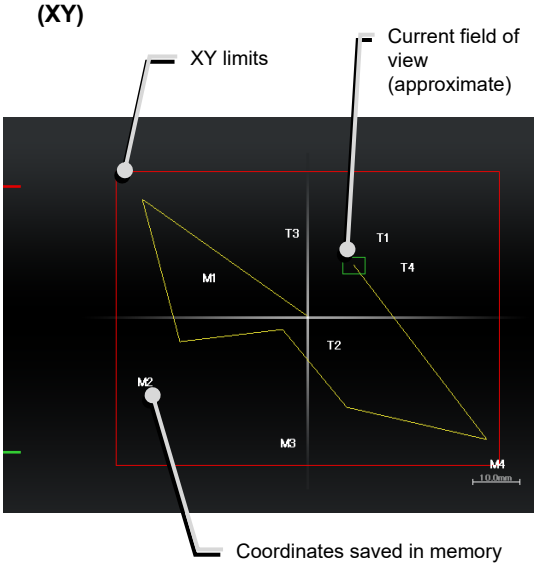
Show the coordinates saved in memory.

M1 to M4: Coordinates saved in the microscope
T1 to T10: Coordinates saved in the tablet

Yellow solid line:

Shows the trace of the XY stage movement.

▼ Position display area of the motorized stage (XY)



■ Position display area of the focusing device (Z)

Green solid line:

Shows the current Z position.

Red solid line:

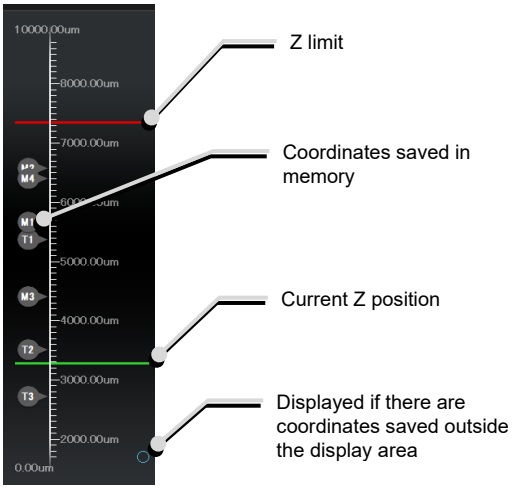
Shows the Z limit.

Numbers:

Show the coordinates saved in memory.

If there are coordinates saved outside the display area, a circle is displayed in the upper or lower end of the display area.

▼ Position display area of the motorized stage (XY)



Map mode operation

■ Operation in the position display area of the motorized stage (XY)

Double tapping:

Allows the XY position to move fast.

A movement confirmation message is displayed when the position display area is double-tapped.

Tap [Yes] to move the motorized stage to the double-tapped position.

> **CAUTION**
>
> If the XY limits are turned off, an alert message appears to make sure that the objective will not touch the stage.

Long tapping:

The full-stroke range is displayed over the entire screen.

Pinch in and pinch out:

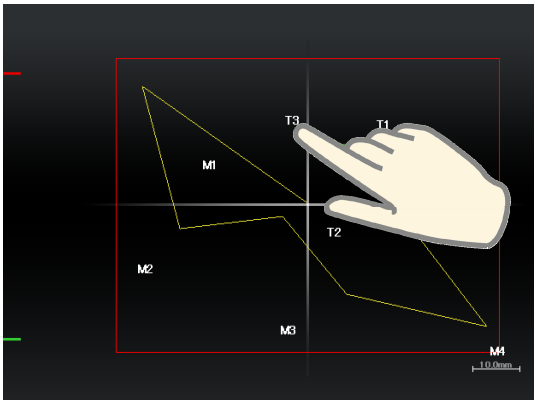
Pinch out for a zoom in view and pinch in for a zoom out view.

Dragging/swiping:

Moves the displayed screen.

> **SUPPLEMENTAL REMARKS**
>
>
>
> Tapping this button in the remote control button area deletes the yellow lines (trace of the XY stage movement) displayed on the Map mode screen.

▼ Position display area of the motorized stage (XY)



■ Operation in the position display area of the focusing device (Z)

Double tapping:

Allows the Z position to move fast.

A movement confirmation message is displayed when the position display area is double-tapped.

Tap [Yes] to move the focusing device to the double-tapped position.

Long tapping:

The full-stroke range is displayed over the entire screen.

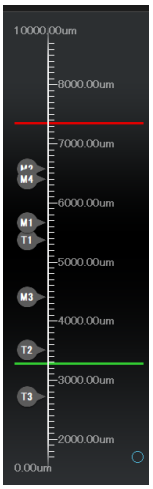
Pinch in and pinch out:

Pinch out for a zoom in view and pinch in for a zoom out view.

Dragging/swiping:

Moves the displayed screen.

▼ Position display area of the focusing device (Z)



Chapter 9

Advanced Uses: Ti2-E

This chapter describes advanced uses of “Ti2 Control” to control the microscope.

9.1 Check Mode

The check mode allows the user to check if a specimen can be observed properly by the specified microscopy technique.

9.1.1 How to Use the Check Mode

1. Tap [Check] on the home screen.

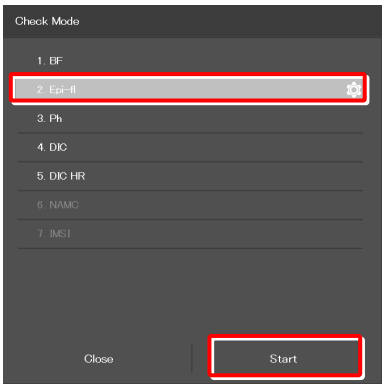
A list of microscopy techniques is displayed.

▼ **Starting the check mode**

2. Select the microscopy technique for the check, and then tap [Start].

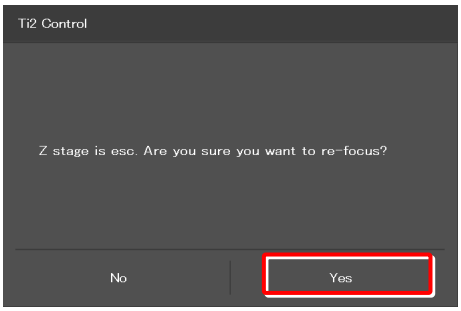
The Home screen in check mode is displayed, and the buttons are arranged to be suitable for the selected microscopy technique.

▼ **Selecting the microscopy technique to be checked**



> **SUPPLEMENTAL REMARKS**
>
> Only the available microscopy techniques, based on the mounted accessories, are selectable on the screen.

> **SUPPLEMENTAL REMARKS**
>
> If the focusing device (Z stage) is at the escape position when [Start] is tapped after a microscopy technique is selected, a message appears asking if the objective is to be restored to the original position.
>
> To start the check mode, tap [Yes] to restore the objective to the original position.
> If [No] is tapped, a message saying that the check mode cannot be started appears and the screen returns to the Home screen.



During check mode, [Check] in the menu field is switched to the name of the selected microscopy technique, which is shown in red or green.

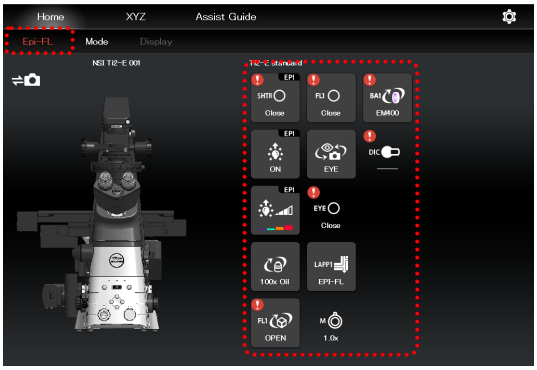
If an accessory not suitable for the microscopy technique is in the optical path or it is in a state not suitable for the microscopy technique, the name of the microscopy technique in the menu field is shown in red and a mark is placed on the remote control button for the accessory.

If an objective not suitable for the microscopy technique is in the optical path, the mark is placed on only the remote control button for the objective even when other accessories are in the state not suitable for the microscopy technique. After the objective is replaced with a suitable objective, the mark is placed on the remote control button for the accessories not suitable for the microscopy technique.

If a motorized device not suitable for the microscopy technique is in the optical path or it is in a state not suitable for the microscopy technique, it is automatically changed to an optimal state.

When the microscope system is in a state suitable for the microscopy technique, the [name of the microscopy technique] is shown in green.

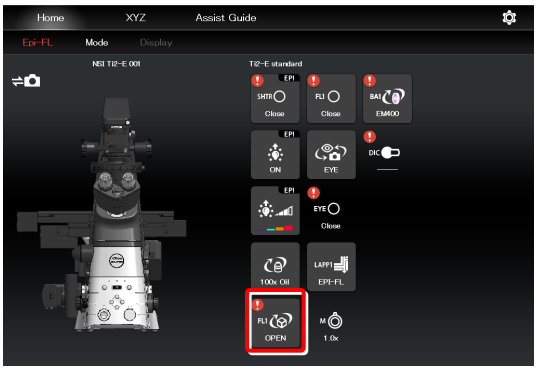
▼ **Home screen in check mode**



3. Tap the remote control button with the mark.

The corresponding accessory state is changed to the optimal state, or a subscreen to change the state is displayed.

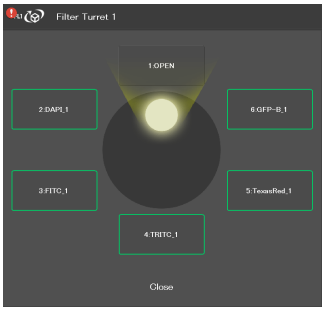
▼ **Home screen in check mode**



When the subscreen appears, select an item suitable for the microscopy technique.

The item suitable for the microscopy technique is indicated by the green frame.

▼ **Subscreen**



When all devices are in the states suitable for the microscopy technique, all the marks disappear and the microscopy technique in the menu field is shown in green.

SUPPLEMENTAL REMARKS

To cancel the check mode, tap the [microscopy technique name].

9.2 Remote Control Button Arrangement

The remote control buttons can be arranged freely and this can be registered as a remote control button layout.

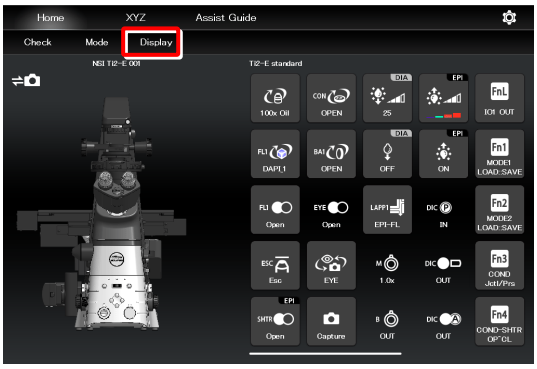
9.2.1 Remote Control Button Rearrangement

1. Tap [Display] on the home screen or the XYZ screen.

The selection list is displayed.

> **SUPPLEMENTAL REMARKS**
>
> The remote control button layout is managed separately on the Home screen and the XYZ screen.
>
> The selection list screen to be displayed next depends on which screen [Display] was tapped on.

▼ Starting remote control button rearrangement



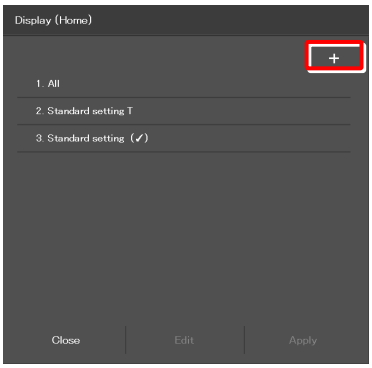
2. To create a new remote control button layout, tap [+].

The remote control button rearrangement screen appears.

> **SUPPLEMENTAL REMARKS**
>
> A mark (✔) is displayed next to the name of the current remote control button layout.

> **SUPPLEMENTAL REMARKS**
>
> To edit the created remote control button layout, select the corresponding layout, and then tap [Edit].
>
> Note that the layout cannot be saved with a different name when [Edit] is selected.

▼ Selection list screen - Display (Home)



▼ Selection list screen - Display (XYZ)

3. Select the desired button from a group of arrangeable buttons on the left side of the screen.

The displayed button group can be scrolled by swiping the area to the right or the left.

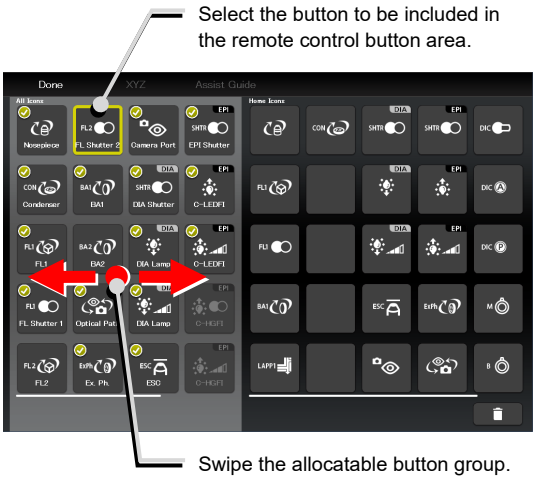
The selected button is highlighted in a yellow frame.

The button, which has already been arranged, has a check mark in the upper right corner of the button.

Example: (not arranged yet) → (already arranged)

> **SUPPLEMENTAL REMARKS**
>
> For a functional overview of each remote control button, see "8.1.2 List of Remote Control Buttons."

▼ **Remote control button rearrangement screen**

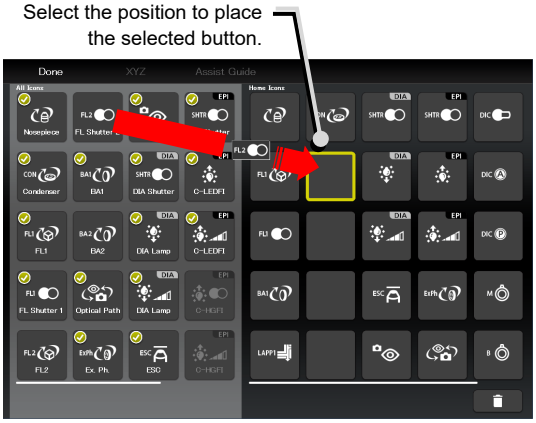


4. On the arrangement screen on the right, tap the position to place the selected button.

The button is displayed at the tapped position.

(The button can also be placed at a desired position by tapping the position first, and then tapping the desired button from the bottom of the screen.)

▼ **Allocating a button**



5. To delete a button from the remote control button area, tap the button.

A selected button is highlighted in a yellow frame.

6. Tap [ ].

The selected button is deleted.

(The button can also be deleted by tapping [ ] first, and then tapping the button to be deleted.)

▼ **Deleting a button**

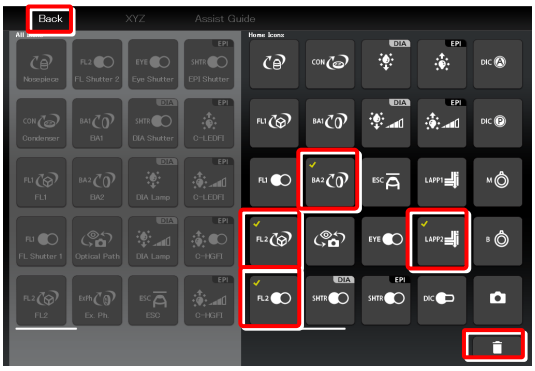
To delete multiple buttons at a time, first long-tap a button. After the yellow check mark appears on the top left of the long-tapped button, select the next button.

Tapping a button with the check mark cancels the selection.

To cancel the multiple selections, use [Back] on the top left of the screen.

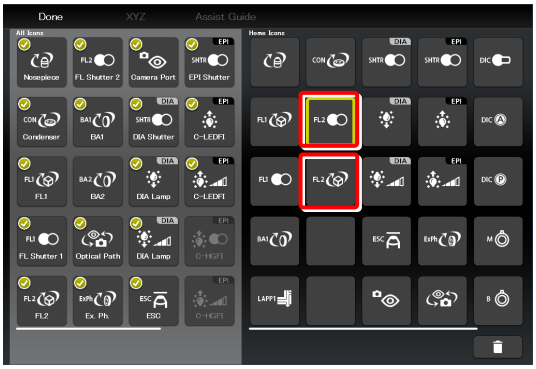
Tap [ ] to delete the selected buttons.

▼ **Deleting multiple buttons**



7. To swap the buttons, tap the buttons to be swapped.

▼ **Swapping buttons**



8. After arranging all buttons, tap [Done].

The Save Display screen appears.

▼ **Saving the rearranged remote control button layout**

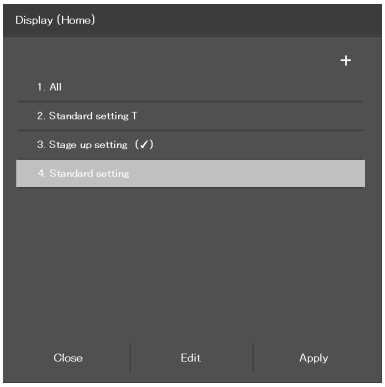
9. To save the customized button arrangement as a remote control button layout, specify a name in the [Name] field, and then tap [Save].

Use within 20 single-byte alphanumeric characters for the name.

The customized button arrangement is registered as a remote control button layout.

▼ **Save Display screen**

▼ **Selection list screen**



SUPPLEMENTAL REMARKS

To delete the saved remote control button layout, long-tap the button layout name on the selection list screen.

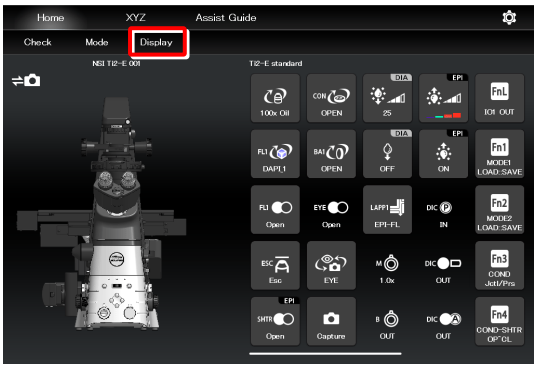
When a confirmation message is displayed, tap [OK] to delete the layout.

9.2.2 Calling the Saved Remote Control Button Arrangement

1. Tap [Display] on the home screen or the XYZ screen.

The selection list is displayed.

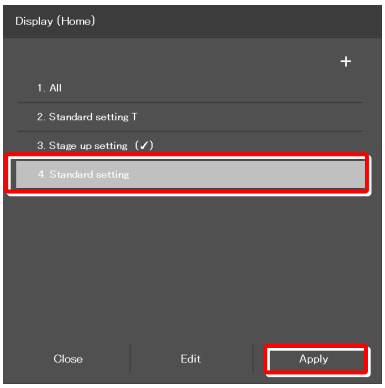
▼ **Calling the button arrangement**

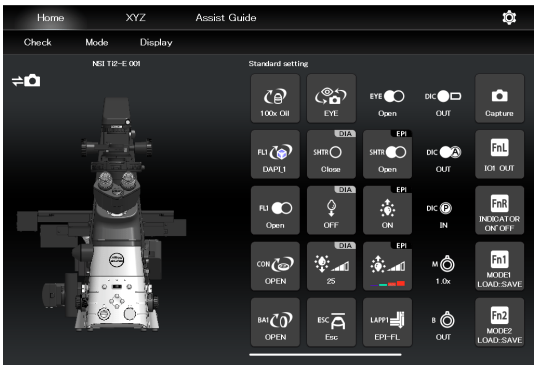


2. Select the name of the remote control button layout from the list, and then tap [Apply] to arrange the remote control buttons accordingly.

The remote control buttons are arranged according to the registered button layout.

▼ **Selecting a remote control button layout**





> **SUPPLEMENTAL REMARKS**
>
> Selecting [ALL] and then tapping [Apply] displays all remote control buttons that can be displayed.

9.3 Registering and Recalling Modes Linked With Devices

The state of each motorized device can be registered as a mode, and an observation condition can be called just by switching the mode.

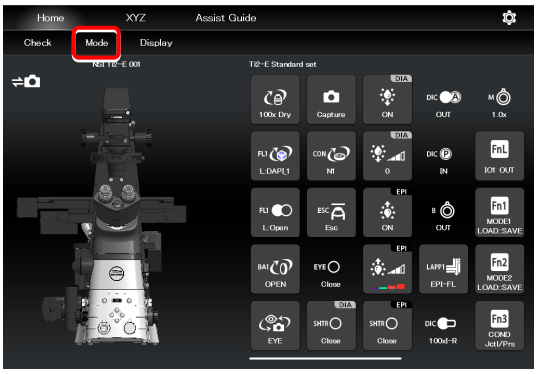
9.3.1 Saving Modes Linked With Devices

Save the multiple observation conditions in the mode linkage function.

1. Tap [Mode] on the home screen.

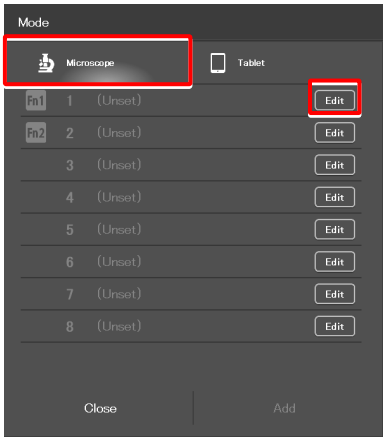
The Mode screen appears.

▼ Setting the mode



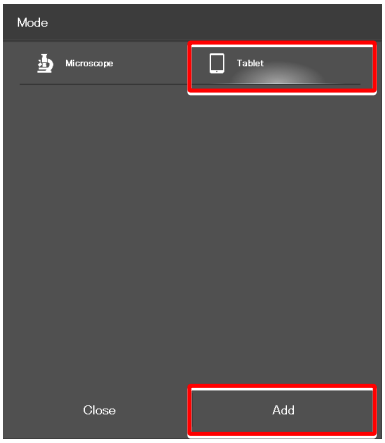
Select the [Microscope] tab and tap [Edit] of the desired mode number to save the mode in the microscope.

▼ Mode linkage screen (saved in the microscope)



Select the [Tablet] tab and tap [Add] to save the mode in the tablet.

▼ Mode linkage save destination (saved in the tablet)



The setting requirements differ depending on where the mode is saved: in the microscope or in the tablet.

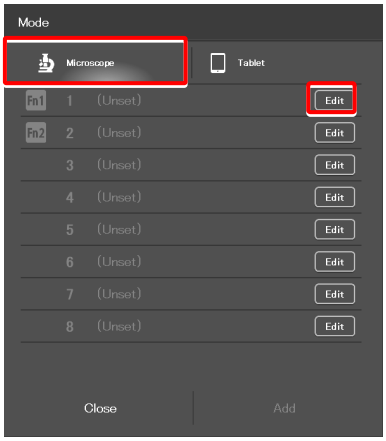
For details, see the following pages.

Setting the devices and operation to be linked (saved in the microscope)

1. Select the [Microscope] tab, and then tap [Edit] of the desired mode number.

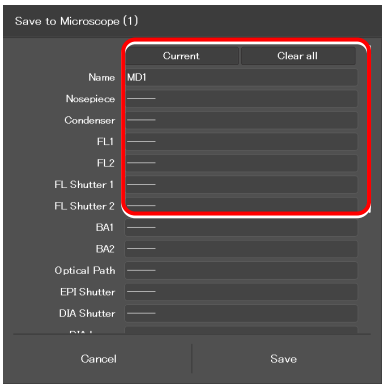
The mode setting subscreen appears.

▼ **Mode screen**



2. Set the following items.

▼ **Mode setting (saved in the microscope)**



Current:

Tap this to read the current state of the system.

Clear all:

Tap this to clear all displayed values.

Name:

Specify the name for the mode to be registered.
(Up to 14 single-byte alphanumeric characters can be used.)

Nosepiece:

Select the address of the motorized nosepiece.
(No linked operation is performed if "---" is selected.)

Condenser:

Select the address of the condenser turret.
(No linked operation is performed if "---" is selected.)

FL1:

Select the address of FL turret 1 that has the filter cube to be used.
(No linked operation is performed if "---" is selected.)

FL2:

If there is a second FL turret in a stage-up configuration, select the address of FL turret 2 that has the filter cube to be used.
(No linked operation is performed if "---" is selected.)

FL Shutter 1:

Specify whether the shutter of FL turret 1 is to be open or closed.
(No linked operation is performed if "---" is selected.)

FL Shutter 2:

If there is a second FL turret in a stage-up configuration, specify whether the shutter of FL turret 2 is to be open or closed.
(No linked operation is performed if "---" is selected.)

BA1:

Select the address of BA filter wheel 1 that has the BA filter to be used.
(No linked operation is performed if "---" is selected.)

BA2:

If there is a second BA filter wheel in a stage-up configuration, select the address of BA filter wheel 2 that has the BA filter to be used.
(No linked operation is performed if "---" is selected.)

Optical Path:

Select an optical path.
(No linked operation is performed if "---" is selected.)

EPI Shutter:

Select the state of the motorized epi-illumination shutter.
(No linked operation is performed if "---" is selected.)

DIA Shutter:

Select the state of the motorized dia-illumination shutter.
(No linked operation is performed if "---" is selected.)

DIA Lamp:

Select the state (on or off) of dia-illumination.
(No linked operation is performed if "---" is selected.)

Intensity:

Specify the illumination intensity of dia-illumination.
(The input range is 0 to 100. No linked operation is performed if nothing is entered.)

Eyepiece tubebase turret:

Select the address of the turret for the tube base unit for external phase contrast.
(No linked operation is performed if "---" is selected.)

LAPP Main1:

Select the optical path of main branch 1 of the epi-illumination attachment.
(No linked operation is performed if "---" is selected.)

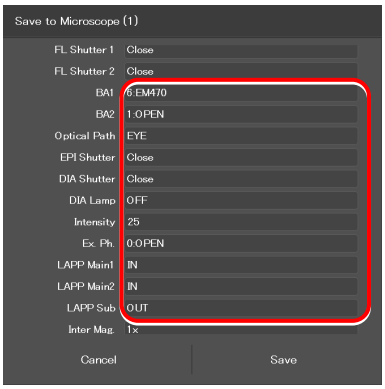
LAPP Main2:

Select the optical path of main branch 2 when the upper and lower epi-illumination attachments are provided in a stage-up configuration.
(No linked operation is performed if "---" is selected.)

LAPP Sub:

Select the optical path of the sub-branch of the epi-illumination attachment.
(No linked operation is performed if "---" is selected.)

▼ Mode setting (saved in the microscope) (Cont.)



Inter Mag.:

Select an intermediate magnification value.

DIC slider:

Select the DIC slider in/out status.

DIC Polarizer:

Select the DIC polarizer in/out status.

Analyzer Slot:

Select the analyzer slider in/out status.

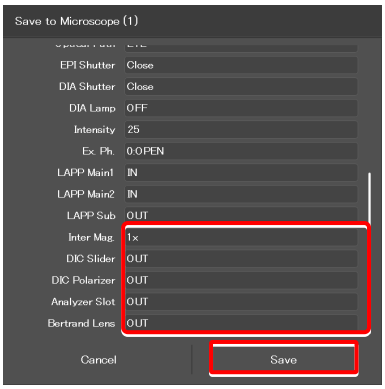
Bertrand Lens:

Select the Bertrand lens in/out status.

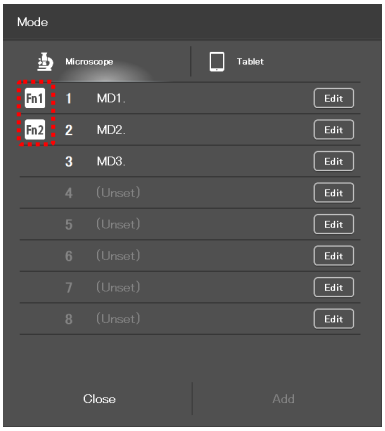
3. Tap [Save] to save the setting.

> **SUPPLEMENTAL REMARKS**
>
> To assign the saved mode to the function buttons of the microscope or the joystick, see “7.9.1 Setting the Function Buttons on the Microscope Main Body and the Joystick.”
>
> When the mode is assigned to the function button, the icon of the function button is displayed at the right end of the mode name field on the Mode screen.

▼ Mode setting (saved in the microscope) (Cont.)



▼ Mode assignment to function buttons

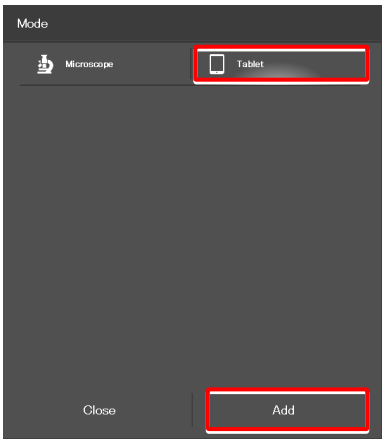


Setting the devices and operation to be linked (saved in the tablet)

1. Select the [Tablet] tab, and then tap [Add].

The mode setting subscreen appears.

▼ **Mode screen**



2. Set the following items.

Current:

Tap this to read the current state of the system.

Clear all:

Tap this to clear all displayed values.

Name:

Specify the name for the mode to be registered.
(Up to 14 single-byte alphanumeric characters can be used.)

Nosepiece:

Select an objective to be used.
(No linked operation is performed if "---" is selected.)

Condenser:

Select the condenser to be used.
(No linked operation is performed if "---" is selected.)

FL1:

Select the filter cube to be used.
(No linked operation is performed if "---" is selected.)

FL2:

If there is a second FL turret in a stage-up configuration, select the filter cube to be used.
(No linked operation is performed if "---" is selected.)

FL Shutter 1:

Specify whether the shutter of FL turret 1 is to be open or closed.
(No linked operation is performed if "---" is selected.)

FL Shutter 2:

If there is a second FL turret in a stage-up configuration, specify whether the shutter of FL turret 2 is to be open or closed.
(No linked operation is performed if "---" is selected.)

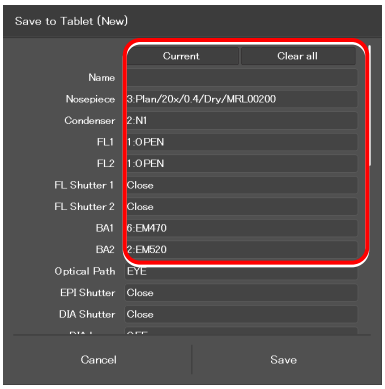
BA1:

Select the BA filter to be used.
(No linked operation is performed if "---" is selected.)

BA2:

If there is a second BA filter wheel, select the BA filter to be used.
(No linked operation is performed if "---" is selected.)

▼ **Mode setting (saved in the tablet)**



Optical Path:

Select an optical path.
(No linked operation is performed if "---" is selected.)

EPI Shutter:

Select the state of the motorized epi-illumination shutter.
(No linked operation is performed if "---" is selected.)

DIA Shutter:

Select the state of the motorized dia-illumination shutter.
(No linked operation is performed if "---" is selected.)

DIA Lamp:

Select the state (on or off) of dia-illumination.
(No linked operation is performed if "---" is selected.)

Intensity:

Specify the illumination intensity of dia-illumination.
(The input range is 0 to 100. No linked operation is performed if nothing is entered.)

C-HGFI:

Select the state (on or off) of the Intensilight.

C-LEDFI Ch:1 or D-LEDI Ch:1:

Select the state (on or off) of channel 1 of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

> **Using the Sync mode for the Epi-fl LED illuminator (D-LEDI)**
>
> When Sync mode is selected, Ch 1, 2, 3, and 4 are displayed with the same value.

Intensity:

Select the illumination intensity of channel 1 of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

Ch:2:

Select the channel 2 status (ON/OFF) the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

Intensity:

Select the illumination intensity of channel 2 of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

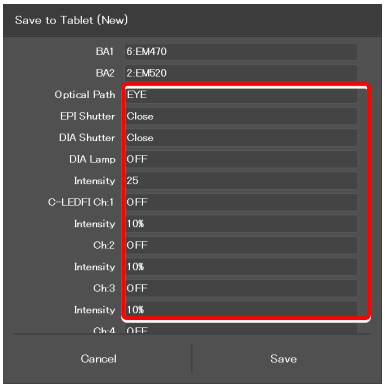
Ch:3:

Select the channel 3 status (ON/OFF) of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

Intensity:

Select the illumination intensity of channel 3 of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

▼ Mode setting (saved in the tablet) (Cont.)



Ch:4:

Select the channel 4 status (ON/OFF) of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

Intensity:

Select the illumination intensity of channel 4 of the epi-fl LED illuminator (C-LEDFI or D-LEDI).
(No linked operation is performed if “---” is selected.)

Observation port:

Displayed when the tube base unit for external phase contrast or the eyepiece tube base unit with port is used.
Select the optical output port (observation port) of the tube base unit. (No linked operation is performed if "---" is selected.)

Eyepiece Shutter:

Displayed when the assist tube base unit is used.
Select the state (open or closed) of the shutter in the optical path to the binocular part. (No linked operation is performed if "---" is selected.)

Ex. Ph.:

Select the external phase ring to be used when the tube base unit for external phase contrast is used.
(No linked operation is performed if "---" is selected.)

LAPP Main1:

Select the optical path of main branch 1 of the epi-illumination attachment.
(No linked operation is performed if "---" is selected.)

LAPP Main2:

Select the optical path of main branch 2 when the upper and lower epi-illumination attachments are provided in a stage-up configuration.
(No linked operation is performed if "---" is selected.)

LAPP Sub:

Select the optical path of the sub-branch of the epi-illumination attachment.
(No linked operation is performed if "---" is selected.)

Inter Mag.:

Select an intermediate magnification value.

DIC slider:

Select the DIC slider in/out status.

DIC Polarizer:

Select the DIC polarizer in/out status.

Analyzer Slot:

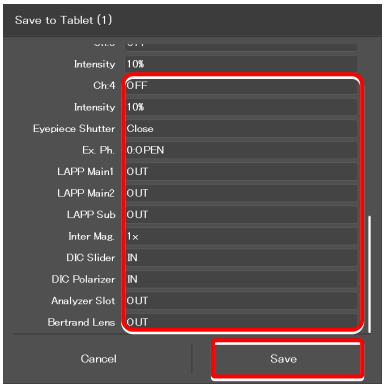
Select the analyzer slider in/out status.

Bertrand Lens:

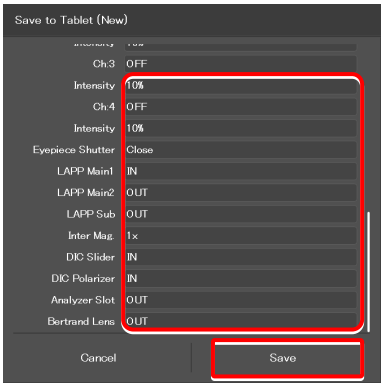
Select the Bertrand lens in/out status.

3. Tap [Save] to save the setting.

▼ Mode setting (saved in the tablet) (Cont.)



▼ Mode setting (saved in the tablet) (when the assist tube base unit is used)



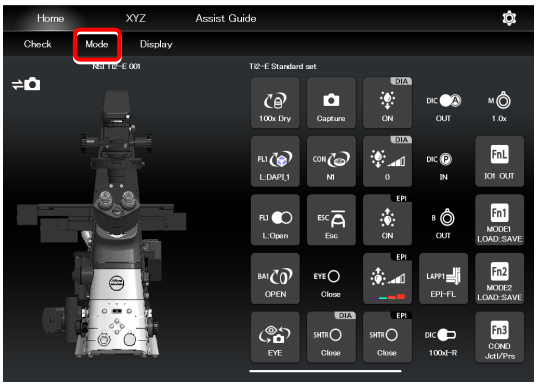
9.3.2 Calling a Registered Mode

The saved mode can be called to switch the system to be in the desired control state.

1. Tap [Mode] on the home screen.

The Mode screen appears.

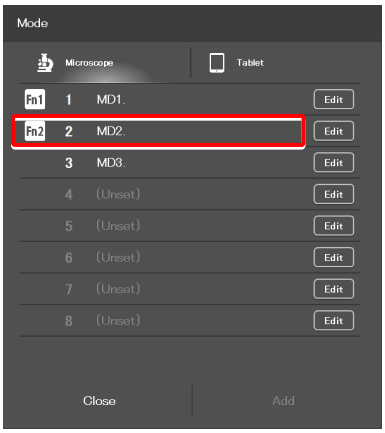
▼ **Calling mode-linked operation**



2. From the displayed list, tap the mode to be called.

The registered mode is read.

▼ **Mode-linked operation calling screen**



During mode-linked operation, [Mode] in the menu field is shown in red or green.

The state of the motorized device is automatically changed to the state registered in the mode, and [Mode] is shown in green.

If an accessory not suitable for the registered mode is in the optical path, or it is in a state not suitable for the registered mode, a mark is placed on the remote control button for the accessory, and [Mode] is shown in red.

▼ **Home screen in mode-linked operation**

SUPPLEMENTAL REMARKS

To cancel the mode-linked operation, tap [Mode] once again.

3. Tap the remote control button with the mark, if any.

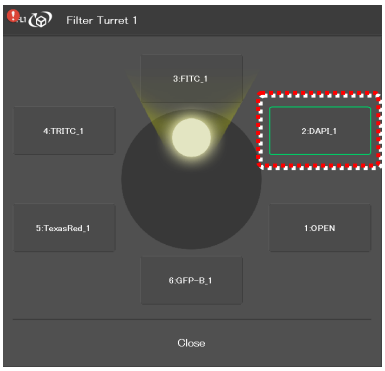
The subscreen to change the state of the corresponding accessory is displayed.

▼ **Screen during mode-linked operation**

Select the item registered in the mode-linkage.

The item registered in the mode is shown by the green frame.

▼ **Subscreen**

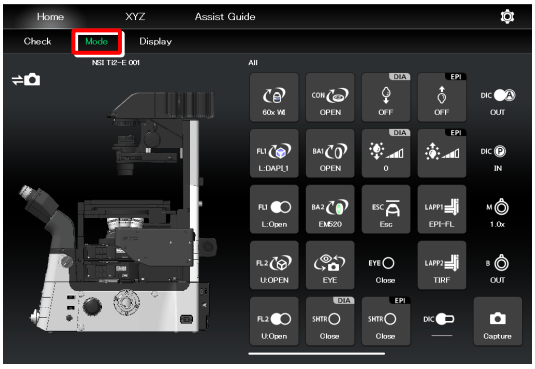


4. If the mark is indicated on the status indication button, change the device states to be suitable for the registered mode on the microscope main body.

▼ **Screen during mode-linked operation**

When all devices are in the states suitable for the registered mode, all the marks disappear and Mode in the menu field is shown in green.

▼ **Screen during mode-linked operation**



SUPPLEMENTAL REMARKS

To cancel the mode-linked operation, tap [Mode] once again.

9.3.3 Editing a Registered Mode

This section describes how to edit the registered mode.

1. Tap [Mode] on the Home screen.

The Mode screen appears.

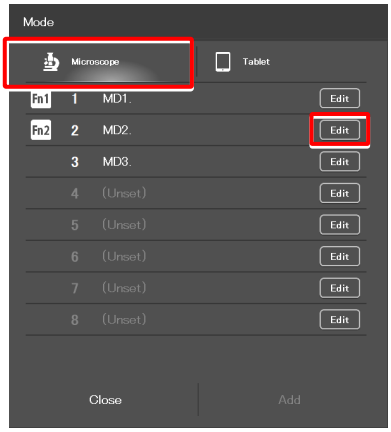
▼ **Mode edition**

2. Tap [Edit] of the desired mode number.

Select the [Microscope] tab and tap [Edit] of the desired mode number to display the screen of the mode in the microscope.

The subsequent steps are the same as those for newly registering the mode.
For details, see “9.3.1 Saving Modes Linked With Devices” in “Setting the devices and operation to be linked (saved in the microscope).”

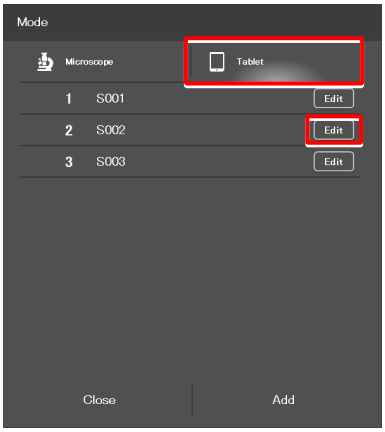
▼ **Mode screen (saved in the microscope)**



Select the [Tablet] tab and tap [Edit] of the desired mode number to display the screen of the mode in the tablet.

The subsequent steps are the same as those for newly registering the mode.
For details, see “9.3.1 Saving Modes Linked With Devices” in “Setting the devices and operation to be linked (saved in the tablet).”

▼ **Mode save destination (saved in the tablet)**



Chapter
10

How to Use the Assist Guide

This chapter describes how to use the Assist Guide.

10.1 About the Assist Guide

The Assist Guide is the function that helps to put the microscope in an optimum observation state.

10.1.1 Assist Guide Screen (Top Screen)

Each Assist Guide screen has the following buttons:

■ **(Home)**

Go back to the home screen.

■ **Observation method guide**

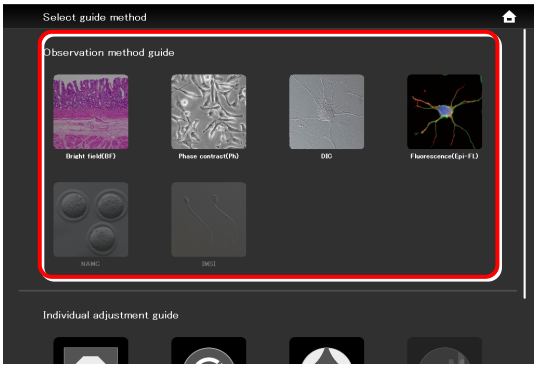
The screen changes to an Assist Guide screen based on the tapped microscopy technique.

> **SUPPLEMENTAL REMARKS**
> Only the available microscopy techniques, based on the mounted accessories, are selectable on the screen.

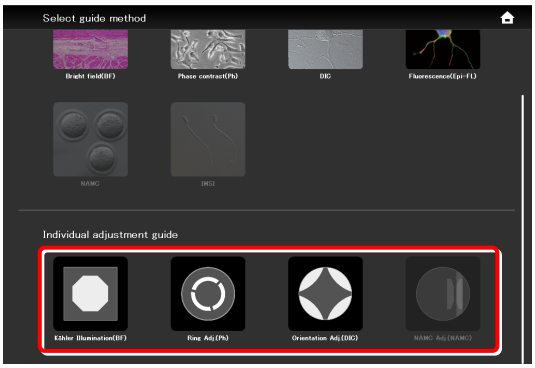
■ **Individual adjustment guide**

The screen changes to an Assist Guide screen based on the tapped adjustment item.

▼ **Assist Guide screen configuration (top)**



▼ **Assist Guide screen configuration (top)**



10.1.2 Assist Guide Screen (Guiding)

■ TOP **(Top)**

Go back to the Assist Guide screen (Top).

■ **(Break)**

Tapping this button suspends the guide and displays the message "Taking a break".
Tapping [OK] resumes the guide.

> **SUPPLEMENTAL REMARKS**
> Tap to close the motorized shutters.
> When tapping [OK] to resume the guide, the shutters are also resumed to the original states.

■ **Guide items**

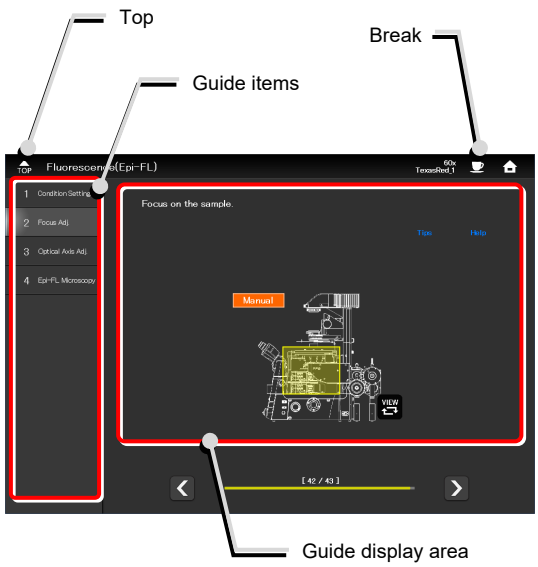
Show guide item overviews.
Guidance can be started from the tapped item.

■ **Guide display area**

Guidance content is displayed.
Tapping the image in the center of the screen enlarges it.
Tapping the image again restores the original size.

> **When using the assist tube base unit**
> If an assist tube base unit is in use, a live image of the assist camera is displayed on the left side of the guide display area.
> Tapping the image enlarges it. Tapping the image again restores the original size.

▼ **Assist Guide screen configuration (guiding)**

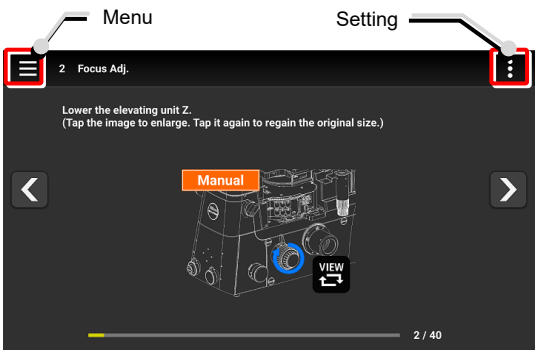


When using a smartphone

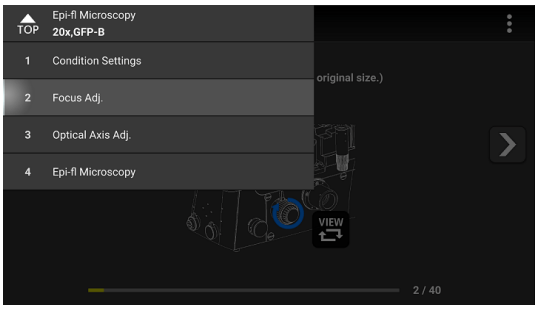
To display the Top icon and guide items, tap [Menu] ( ).

To display the Home and Break icons, tap [Setting] ( ).

▼ Screen when using a smartphone



▼ Menu display when using a smartphone



▼ Setting display when using a smartphone

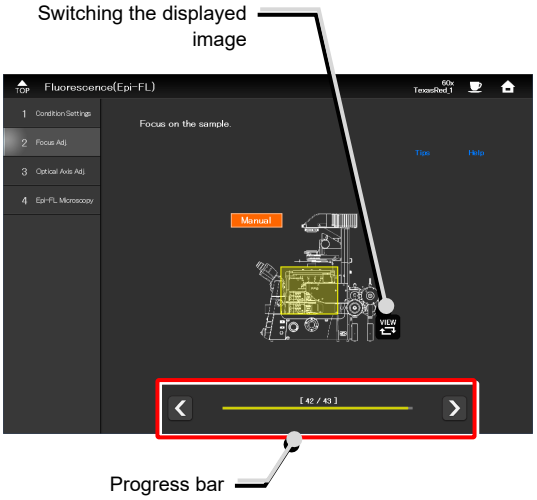
■ Page transition

The page transition is displayed on the screen.
The previous page or the next page is displayed using the arrows ([<] and [>]).

■ VIEW (Switching the displayed image)

Allows the image to be switched between the entire image and an image showing which location should be operated.

▼ Switching the screen



■ **Live image of the assist camera**

Tapping the image enlarges it.

■ **(Turning on/off the adjustment guide tool)**

Display the adjustment guide tool in the live image of the assist camera.

> **CAUTION**
>
> It may not be displayed properly depending on the brightness setting.

■ **Adjustment state display bar**

The adjustment state is displayed during focus value or brightness adjustment. The more the bar reaches the right, the more the adjustment is correctly done.

■ **Assist camera adjustment**

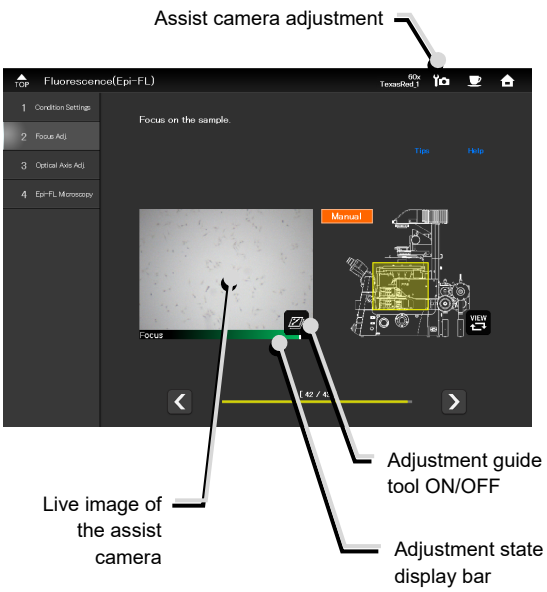
Display the adjustment screen of the assist camera.

In this screen, white balance can be adjusted and the FOV of the assist camera can be adjusted to be in the same position and the size as the FOV of the binocular part.

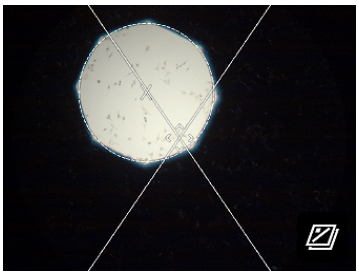
■ **Optical axis adjustment**

If white crossed lines are displayed in the Live image of the assist camera, continue adjustment until the color of the crossed lines changes to green.

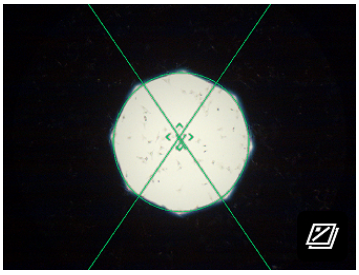
▼ **Live image of the assist camera**



▼ **Optical axis adjustment (Example: Köhler illumination needing adjustment)**



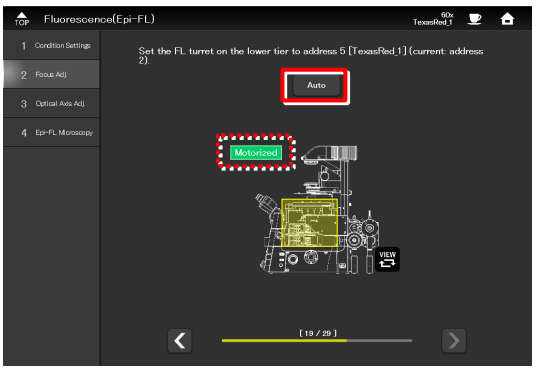
▼ **Optical axis adjustment (Example: Köhler illumination adjusted)**



■ **Controlling motorized devices** Motorized

When the motorized devices are used and Motorized is displayed on the screen, tap [AUTO] to automatically control the motorized devices in accordance with the guide.

▼ **Controlling motorized devices**



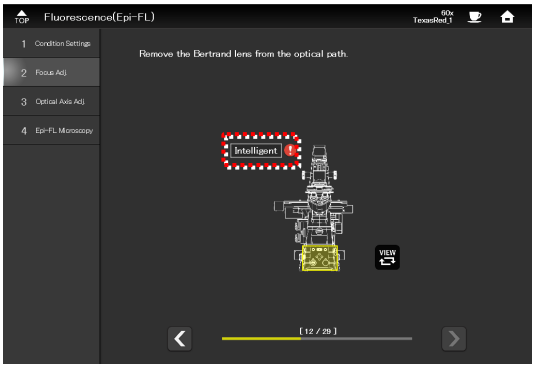
■ Controlling intelligent accessories Intelligent

If an accessory not suitable for the microscopy technique is in the optical path or it is in a state not suitable for the microscopy technique, a mark is displayed.

Changing the accessory state to be suitable for the microscopy technique in accordance with the guide hides the mark, making the next step possible.

> **When using motorized intelligent accessories**
>
> The associated guide screen is skipped and the next guide screen appears when accessories with the status detection function (motorized or intelligent accessories) are mounted and their settings are suitable for the microscopy technique.
>
> If an accessory set to be suitable for the microscopy technique is changed by mistake, the associated guide screen re-appears.

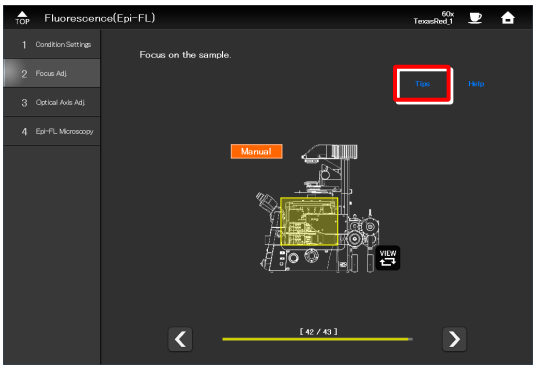
▼ Controlling intelligent accessories



■ Tips

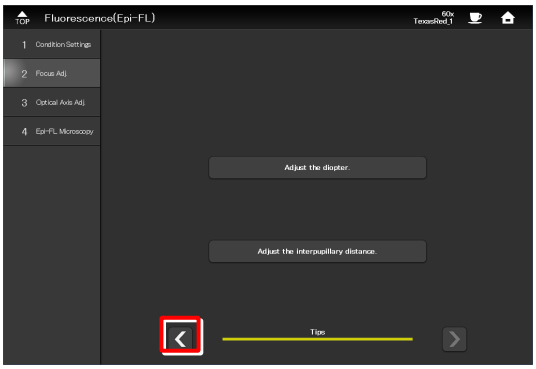
Displays tips.

▼ Tips



Tap [<] to go back to the guide.

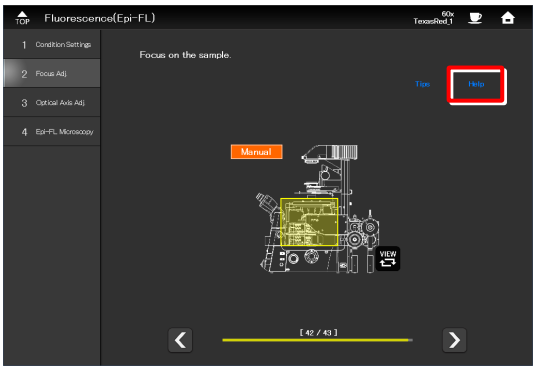
▼ Tips screen



■ Help

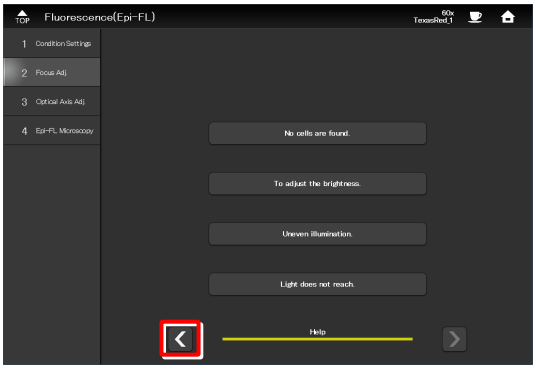
Displays the help screen which shows a solution when adjustment is unsuccessful.

▼ Help function



Tap [<] to go back to the guide.

▼ **Help screen**

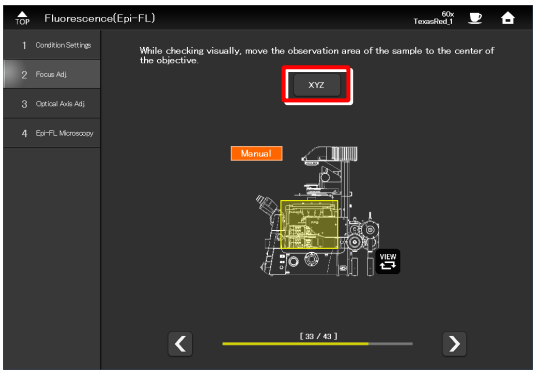


■ XYZ (Ti2-E only)

Tapping [XYZ] in the guide screen for the motorized stage changes the screen to the XYZ screen.

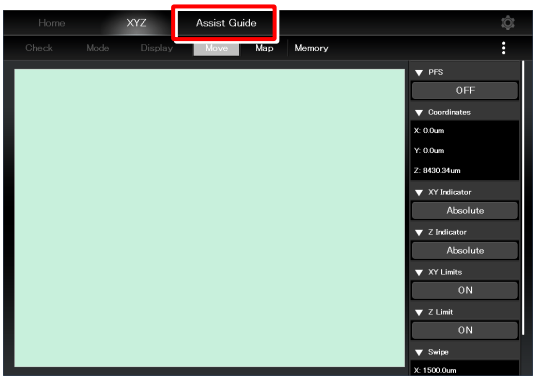
For how to operate the XYZ screen, see “8.2 XYZ screen.”

▼ **Calling the XYZ screen**



To return to the Assist Guide screen from the XYZ screen, tap [Assist Guide].

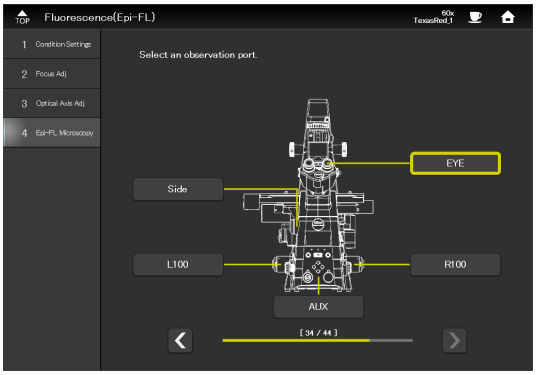
▼ **Going back to the Assist Guide screen from the XYZ screen**



■ Optical path selection

Select an optical path used for observation.
The next page appears when an optical path is selected.

▼ **Optical path selection screen**



10.2 Starting up the Assist Guide

Selecting the microscopy technique from the Observation method guide, and then setting the conditions for the microscopy starts the guidance.
Selecting the adjustment item from the Individual adjustment guide starts the corresponding adjustment guidance.

The conditions to be set vary depending on the selected guide. Set the conditions according to the displayed guidance.

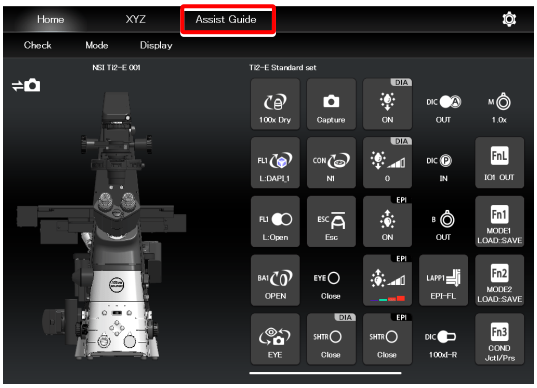
> **CAUTION**
>
> Before starting the Assist Guide, the microscope configuration and optical devices (such as objectives) must be registered.
>
> See the following:
>
> - Ti2-A
> "3.3 [System] Display and Manual Registration of the Microscope Configuration"
> "3.5 [Optical Device] Setting the Optical Devices"
> - Ti2-E
> "7.3 [System] Display and Manual Registration of the Microscope Configuration"
> "7.5 [Optical Device] Setting the Optical Devices"

Follow the basic condition setting procedure below.

3. Tap [Assist Guide].

The Assist Guide screen appears.

▼ **Starting the Assist Guide**



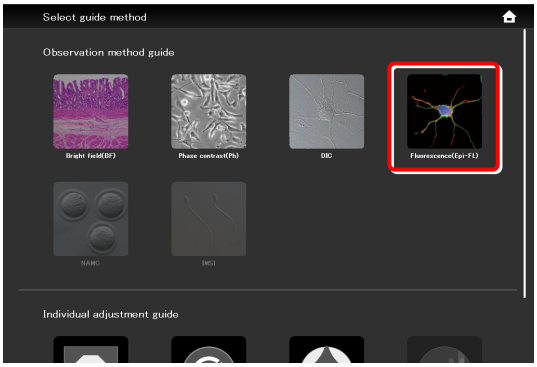
4. Select a microscopy technique or an adjustment item.

The microscope setting guide sequence starts according to the selection.

(Epi-fl microscopy is used as an example here.)

> **SUPPLEMENTAL REMARKS**
>
> Only the available microscopy techniques, based on the mounted accessories, are selectable on the screen.

▼ **Selecting a guiding method**

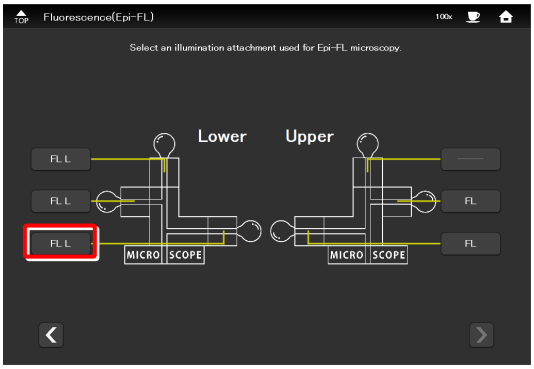


5. Select the objective to be used for observation.

▼ **Selecting an objective for observation**

6. Select an optical path used for observation.

▼ **Selecting an illumination attachment**



7. When the C-LEDFI is attached, select the wavelength of the light source used for epi-fl microscopy.

▼ **Selecting a light source wavelength (when the C-LEDFI is attached)**

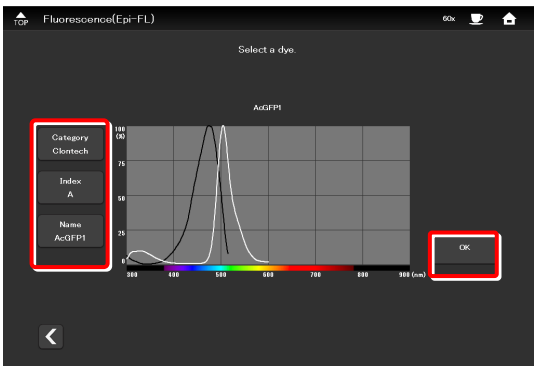
When the D-LEDI is attached and Async mode is selected, select the wavelength of the light source used for epi-fl microscopy.

When Sync mode is selected, the wavelength selection screen for the light source is not displayed.

▼ **Selecting a light source wavelength (when the D-LEDI is attached)**

8. Select a dye and tap [OK].

▼ **Selecting a dye**



9. Select a filter cube.

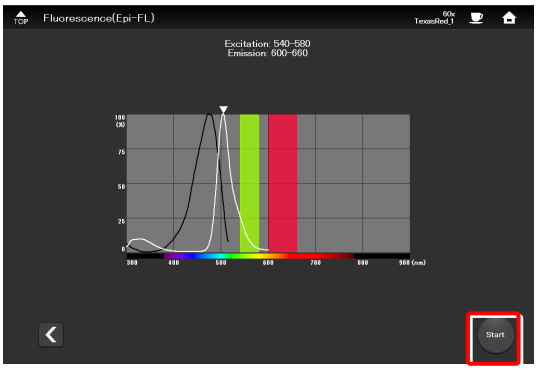
▼ **Selecting a filter cube**

This completes the condition settings.

Tapping [Start] starts up the guide.

After this, operate the microscope according to the message displayed on the screen.

▼ **Completing the condition settings**



▼ **Starting up the Assist Guide**

CAUTION

To connect the microscope's LAN cable or the LAN cable of the wireless router, which is connected to the microscope, to a corporate network, consult with the network administrator.

(It is not recommended to connect to a corporate network because a large number of packets flow into the LAN when the assist camera is used.)

Chapter
11

Appendix: Ti2-E

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

11.1 List of Functions Assigned to Function Buttons

11.1.1 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	Display name in the application	Display name on the Joystick LCD and the remote controller extension buttons	Functional overview
FnR button	I/O 1 TRIG.	IO1 OUT	Trigger output of control box I/O channel 1
FnL button	Indicator LED On<->Off	INDICATOR ON^OFF	Turns on or off the LED indicators on the front of the microscope main body.

11.1.2 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	LCD display name of the joystick	Indicated name in the application	Functional overview
Fn1	MODE1 LOAD::SAVE	MODE 1 LOAD::SAVE	Short press: Recalls Mode 1 setting. Long press: Memorizes Mode 1 setting.
Fn2	MODE2 LOAD::SAVE	MODE 2 LOAD::SAVE	Short press: Recalls Mode 2 setting. Long press: Memorizes Mode 2 setting.
Fn3	COND Jctl/Prs	Condenser Control with Joystick while pressing	Moving the joystick to the left in the X direction while holding down the button moves the condenser to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves the condenser to the previous address (backward.)
Fn4	COND-SHTR OP^CL	Condenser Shutter OPEN <-> CLOSE	Moves the condenser shutter position.
Fn5	FL#1 Jctl/Prs	Filter Turret 1 Control with Joystick while pressing	Moving the joystick to the left in the X direction while holding down the button moves FL turret 1 to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves FL turret 1 to the previous address (backward.)
Fn6	FL#1-SHTR OP^CL	FL Shutter OPEN <-> CLOSE	Opens or closes the FL turret 1 shutter.

11.1.3 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 (J/S).
All these functions can be assigned from "Ti2 Control."

(✓✓: Default setting, ✓: Settable)

No.	Category	Sub-category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick: J/S Fn1 to 6	Setting availability from the joystick: Main body FnL/FnR	Setting availability from the application: J/S Fn1 to 6	Setting availability from the application: Main body FnL/FnR	Setting availability from the application: Remote controller extension button
	------ (NULL)								
1		-------	------ (NULL)	Nothing is to be set.	✓	✓	✓	✓	✓
	Nosepiece								
2		-------	Nosepiece Control with Joystick while pressing (NSPC Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves the nosepiece to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves the nosepiece to the previous address (backward.)	✓		✓	✓	
3		-------	Nosepiece Position 1 (NSPC P1)	Moves nosepiece to address 1.			✓	✓	✓
4		-------	Nosepiece Position 2 (NSPC P2)	Moves nosepiece to address 2.			✓	✓	✓
5		-------	Nosepiece Position 3 (NSPC P3)	Moves nosepiece to address 3.			✓	✓	✓
6		-------	Nosepiece Position 4 (NSPC P4)	Moves nosepiece to address 4.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category		Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick		Setting availability from the application		
		Sub-category			J/S Fn1 to 6	Main body FnL/FnR	J/S Fn1 to 6	Main body FnL/FnR	Remote controller extension button
7		-------	Nosepiece Position 5 (NSPC P5)	Moves nosepiece to address 5.			✓	✓	✓
8		-------	Nosepiece Position 6 (NSPC P6)	Moves nosepiece to address 6.			✓	✓	✓
9		-------	Nosepiece Increment (NSPC INC)	Turns the nosepiece to the adjacent address (forward)			✓	✓	✓
10		-------	Nosepiece Decrement (NSPC DEC)	Turns the nosepiece to the adjacent address (backward)			✓	✓	✓
	Condenser								
11		-------	Condenser Control with Joystick while pressing (COND Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves the condenser to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves the condenser to the previous address (backward.)	✓✓ (Fn3)		✓✓ (Fn3)	✓	
12		-------	Condenser Position 1 (COND P1)	Moves condenser to address 1.			✓	✓	✓
13		-------	Condenser Position 2 (COND P2)	Moves condenser to address 2.			✓	✓	✓
14		-------	Condenser Position 3 (COND P3)	Moves condenser to address 3.			✓	✓	✓
15		-------	Condenser Position 4 (COND P4)	Moves condenser to address 4.			✓	✓	✓
16		-------	Condenser Position 5 (COND P5)	Moves condenser to address 5.			✓	✓	✓
17		-------	Condenser Position 6 (COND P6)	Moves condenser to address 6.			✓	✓	✓
18		-------	Condenser Position 7 (COND P7)	Moves condenser to address 7.			✓	✓	✓
19		-------	Condenser Increment (COND INC)	Turns the condenser to the adjacent address (forward)			✓	✓	✓
20		-------	Condenser Decrement (COND DEC)	Turns the condenser to the adjacent address (backward)			✓	✓	✓
	Filter Turret 1								
21		-------	Filter Turret 1 Control with Joystick while pressing (FL#1 Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves FL turret 1 to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves FL turret 1 to the previous address (backward.)	✓✓ (Fn5)		✓✓ (Fn5)	✓	
22		-------	Filter Turret 1 Position 1 (FL#1 P1)	Moves FL turret 1 to address 1.			✓	✓	✓
23		-------	Filter Turret 1 Position 2 (FL#1 P2)	Moves FL turret 1 to address 2.			✓	✓	✓
24		-------	Filter Turret 1 Position 3 (FL#1 P3)	Moves FL turret 1 to address 3.			✓	✓	✓
25		-------	Filter Turret 1 Position 4 (FL#1 P4)	Moves FL turret 1 to address 4.			✓	✓	✓
26		-------	Filter Turret 1 Position 5 (FL#1 P5)	Moves FL turret 1 to address 5.			✓	✓	✓
27		-------	Filter Turret 1 Position 6 (FL#1 P6)	Moves FL turret 1 to address 6.			✓	✓	✓
28		-------	Filter Turret 1 Increment (FL#1 INC)	Turns FL turret 1 to the adjacent address (forward)			✓	✓	✓
29		-------	Filter Turret 1 Decrement (FL#1 DEC)	Turns FL turret 1 to the adjacent address (backward)			✓	✓	✓
	FL Turret 2								
30		-------	Filter Turret 2 Control with Joystick while pressing (FL#2 Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves FL turret 2 to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves FL turret 2 to the previous address (backward.)	✓		✓	✓	
31		-------	Filter Turret 2 Position 1 (FL#2 P1)	Moves FL turret 2 to address 1.			✓	✓	✓
32		-------	Filter Turret 2 Position 2 (FL#2 P2)	Moves FL turret 2 to address 2.			✓	✓	✓
33		-------	Filter Turret 2 Position 3 (FL#2 P3)	Moves FL turret 2 to address 3.			✓	✓	✓
34		-------	Filter Turret 2 Position 4 (FL#2 P4)	Moves FL turret 2 to address 4.			✓	✓	✓
35		-------	Filter Turret 2 Position 5 (FL#2 P5)	Moves FL turret 2 to address 5.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category: Sub-category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick: J/S Fn1 to 6	Setting availability from the joystick: Main body FnL/FnR	Setting availability from the application: J/S Fn1 to 6	Setting availability from the application: Main body FnL/FnR	Setting availability from the application: Remote controller extension button
36	--------	Filter Turret 2 Position 6 (FL#2 P6)	Moves FL turret 2 to address 6.			✓	✓	✓
37	--------	Filter Turret 2 Increment (FL#2 INC)	Turns FL turret 2 to the adjacent address (forward)			✓	✓	✓
38	--------	Filter Turret 2 Decrement (FL#2 DEC)	Turns FL turret 2 to the adjacent address (backward)			✓	✓	✓
	BA Filter Wheel 1							
39	--------	BA Filter Wheel 1 Control with Joystick while pressing (BA#1 Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves BA filter wheel 1 to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves BA filter wheel 1 to the previous address (backward.)	✓		✓	✓	
40	--------	BA Filter Wheel 1 Position 1 (BA#1 P1)	Moves BA filter wheel 1 to address 1.			✓	✓	✓
41	--------	BA Filter Wheel 1 Position 2 (BA#1 P2)	Moves BA filter wheel 1 to address 2.			✓	✓	✓
42	--------	BA Filter Wheel 1 Position 3 (BA#1 P3)	Moves BA filter wheel 1 to address 3.			✓	✓	✓
43	--------	BA Filter Wheel 1 Position 4 (BA#1 P4)	Moves BA filter wheel 1 to address 4.			✓	✓	✓
44	--------	BA Filter Wheel 1 Position 5 (BA#1 P5)	Moves BA filter wheel 1 to address 5.			✓	✓	✓
45	--------	BA Filter Wheel 1 Position 6 (BA#1 P6)	Moves BA filter wheel 1 to address 6.			✓	✓	✓
46	--------	BA Filter Wheel 1 Position 7 (BA#1 P7)	Moves BA filter wheel 1 to address 7.			✓	✓	✓
47	--------	BA Filter Wheel 1 Increment (BA#1 INC)	Turns BA filter wheel 1 to the adjacent address (forward)		✓	✓	✓	✓
48	--------	BA Filter Wheel 1 Decrement (BA#1 DEC)	Turns BA filter wheel 1 to the adjacent address (backward)		✓	✓	✓	✓
	BA Filter Wheel 2							
49	--------	BA Filter Wheel 2 Control with Joystick while pressing (BA#2 Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves BA filter wheel 2 to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves BA filter wheel 2 to the previous address (backward.)	✓		✓	✓	
50	--------	BA Filter Wheel 2 Position 1 (BA#2 P1)	Moves BA filter wheel 2 to address 1.			✓	✓	✓
51	--------	BA Filter Wheel 2 Position 2 (BA#2 P2)	Moves BA filter wheel 2 to address 2.			✓	✓	✓
52	--------	BA Filter Wheel 2 Position 3 (BA#2 P3)	Moves BA filter wheel 2 to address 3.			✓	✓	✓
53	--------	BA Filter Wheel 2 Position 4 (BA#2 P4)	Moves BA filter wheel 2 to address 4.			✓	✓	✓
54	--------	BA Filter Wheel 2 Position 5 (BA#2 P5)	Moves BA filter wheel 2 to address 5.			✓	✓	✓
55	--------	BA Filter Wheel 2 Position 6 (BA#2 P6)	Moves BA filter wheel 2 to address 6.			✓	✓	✓
56	--------	BA Filter Wheel 2 Position 7 (BA#2 P7)	Moves BA filter wheel 2 to address 7.			✓	✓	✓
57	--------	BA Filter Wheel 2 Increment (BA#2 INC)	Turns BA filter wheel 2 to the adjacent address (forward)		✓	✓	✓	✓
58	--------	BA Filter Wheel 2 Decrement (BA#2 DEC)	Turns BA filter wheel 2 to the adjacent address (backward)		✓	✓	✓	✓
	Light Path							
59	Set	Light Path Control with Joystick while pressing (PATH Jctl/Prs)	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	Set	Light Path EYE (PATH EYE)	Switches the optical path to EYE.			✓	✓	✓
61	Set	Light Path RIGHT (PATH RIGHT)	Switches the optical path to R100.			✓	✓	✓
62	Set	Light Path LEFT (PATH LEFT)	Switches the optical path to L100.			✓	✓	✓
63	Set	Light Path AUX (PATH AUX)	Switches the optical path to AUX.			✓	✓	✓
64	Toggle	Light Path EYE <-> RIGHT (PATH EYE^R)	Toggles the optical path between EYE and R100.			✓	✓	✓
65	Toggle	Light Path EYE <-> LEFT (PATH EYE^L)	Toggles the optical path between EYE and L100.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category: Sub-category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick: J/S Fn1 to 6	Setting availability from the joystick: Main body FnL/FnR	Setting availability from the application: J/S Fn1 to 6	Setting availability from the application: Main body FnL/FnR	Setting availability from the application: Remote controller extension button
66	Toggle	Light Path EYE <-> AUX (PATH EYE^AUX)	Toggles the optical path between EYE and AUX.			✓	✓	✓
67	Toggle	Light Path RIGHT <-> LEFT (PATH R^L)	Toggles the optical path between R100 and L100.			✓	✓	✓
68	Toggle	Light Path RIGHT <-> AUX (PATH R^AUX)	Toggles the optical path between R100 and AUX.			✓	✓	✓
69	Toggle	Light Path LEFT <-> AUX (PATH L^AUX)	Toggles the optical path between L100 and AUX.			✓	✓	✓
70	Set	Light Path Rotation (PATH ROT)	Switches the optical path from EYE to R100, AUX, L100 and then back to EYE.			✓	✓	✓
	Z Drive							
71	-------	Z Drive Speed change (Z SPD)	Switches the Z-movement: Coarse/Fine (2-state), Coarse/Fine/Extra fine (3-state)			✓	✓	✓
72	-------	Z Drive Display 0 Reset (Z DISP ZERO)	Resets the elevating movement (Z-axis coordinate) to 0.			✓	✓	✓
73	-------	Z Drive ESCAPE <-> REFOCUS (Z ESC^ REFOCUS)	Toggles the elevating movement between escape and restore positions.	✓		✓	✓	✓
74	-------	Z Drive ESCAPE (Z ESC)	Places the elevating section in the escape position.			✓	✓	✓
75	-------	Z Drive REFOCUS (Z REFOCUS)	Restores the elevating section to the original position.			✓	✓	✓
76	-------	Z Drive Limit SET <-> CLEAR (Z-LMT SET::CLR)	Short pressing the button sets the current value to the software limit (Z limit). Long pressing the button releases the limit.			✓	✓	
77	LOAD::SAVE	Z Drive LOAD::SAVE 1 (Z M1 LOAD::SAVE)	Short-tap: Recalls Z position 1. Long-tap: Memorizes Z position 1.			✓	✓	
78	LOAD::SAVE	Z Drive LOAD::SAVE 2 (Z M2 LOAD::SAVE)	Short-tap: Recalls Z position 2. Long-tap: Memorizes Z position 2.			✓	✓	
79	LOAD::SAVE	Z Drive LOAD::SAVE 3 (Z M3 LOAD::SAVE)	Short-tap: Recalls Z position 3. Long-tap: Memorizes Z position 3.			✓	✓	
80	LOAD::SAVE	Z Drive LOAD::SAVE 4 (Z M4 LOAD::SAVE)	Short-tap: Recalls Z position 4. Long-tap: Memorizes Z position 4.			✓	✓	
81	SAVE	Z Drive SAVE 1 (Z M1 SAVE)	Memorizes Z position 1.			✓	✓	✓
82	SAVE	Z Drive SAVE 2 (Z M2 SAVE)	Memorizes Z position 2.			✓	✓	✓
83	SAVE	Z Drive SAVE 3 (Z M3 SAVE)	Memorizes Z position 3.			✓	✓	✓
84	SAVE	Z Drive SAVE 4 (Z M4 SAVE)	Memorizes Z position 4.			✓	✓	✓
85	LOAD	Z Drive LOAD 1 (Z M1 LOAD)	Recalls Z position 1.			✓	✓	✓
86	LOAD	Z Drive SAVE 2 (Z M2 LOAD)	Recalls Z position 2.			✓	✓	✓
87	LOAD	Z Drive LOAD 3 (Z M3 LOAD)	Recalls Z position 3.			✓	✓	✓
88	LOAD	Z Drive LOAD 4 (Z M4 LOAD)	Recalls Z position 4.			✓	✓	✓
	XY Stage							
89	-------	XY Stage Speed Change (XY SPD)	Switches the XY-movement: Coarse/Fine (2-state), Coarse/Fine/Extra fine (3-state)			✓	✓	✓
90	-------	XY Stage X Display 0 Reset (X DISP ZERO)	Resets the XY stage (X-axis coordinate) to 0.			✓	✓	✓
91	-------	XY Stage Y Display 0 Reset (Y DISP ZERO)	Resets the XY stage (Y-axis coordinate) to 0.			✓	✓	✓
92	-------	XY Stage XY Display 0 Reset (XY DISP ZERO)	Resets the XY stage (XY-axis coordinates) to 0.			✓	✓	✓
93	-------	XY Stage FIXED SPEED Enable <-> Disable (XY FIXSPD ENA^DIS)	Turns on or off the joystick constant speed mode for the XY stage.	✓		✓	✓	✓
94	-------	XY Stage Change FINE SPEED Standard <-> Slow (XY FIN-SPD STD^LO)	Sets the joystick fine speed for the XY stage to normal or low speed.	✓		✓	✓	✓
95	LOAD::SAVE	XY Stage LOAD::SAVE 1 (XY M1 LOAD::SAVE)	Short-tap: Recalls XY position 1. Long-tap: Memorizes XY position 1.			✓	✓	
96	LOAD::SAVE	XY Stage LOAD::SAVE 2 (XY M2 LOAD::SAVE)	Short-tap: Recalls XY position 2. Long-tap: Memorizes XY position 2.			✓	✓	
97	LOAD::SAVE	XY Stage LOAD::SAVE 3 (XY M3 LOAD::SAVE)	Short-tap: Recalls XY position 3. Long-tap: Memorizes XY position 3.			✓	✓	
98	LOAD::SAVE	XY Stage LOAD::SAVE 4 (XY M4 LOAD::SAVE)	Short-tap: Recalls XY position 4. Long-tap: Memorizes XY position 4.			✓	✓	
99	SAVE	XY Stage SAVE 1 (XY M1 SAVE)	Memorizes XY position 1.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category: Sub-category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick: J/S Fn1 to 6	Setting availability from the joystick: Main body FnL/FnR	Setting availability from the application: J/S Fn1 to 6	Setting availability from the application: Main body FnL/FnR	Setting availability from the application: Remote controller extension button
100	SAVE	XY Stage SAVE 2 (XY M2 SAVE)	Memorizes XY position 2.			✓	✓	✓
101	SAVE	XY Stage SAVE 3 (XY M3 SAVE)	Memorizes XY position 3.			✓	✓	✓
102	SAVE	XY Stage SAVE 4 (XY M4 SAVE)	Memorizes XY position 4.			✓	✓	✓
103	LOAD	XY Stage LOAD 1 (XY M1 LOAD)	Recalls XY position 1.			✓	✓	✓
104	LOAD	XY Stage SAVE 2 (XY M2 LOAD)	Recalls XY position 2.			✓	✓	✓
105	LOAD	XY Stage LOAD 3 (XY M3 LOAD)	Recalls XY position 3.			✓	✓	✓
106	LOAD	XY Stage LOAD 4 (XY M4 LOAD)	Recalls XY position 4.			✓	✓	✓
	External Shutter							
107	Shutter1	External Shutter OPEN <-> CLOSE (SHTR#1 OP^CL)	Opens or closes motorized shutter 1.	✓	✓	✓	✓	✓
108	Shutter2	External Shutter OPEN <-> CLOSE (SHTR# 2 OP^CL)	Opens or closes motorized shutter 2.	✓	✓	✓	✓	✓
	FL Shutter							
109	Shutter1	FL Shutter OPEN <-> CLOSE (FL#1-SHTR OP^CL)	Opens or closes the FL turret 1 shutter.	✓✓ (Fn6)		✓✓ (Fn6)	✓	✓
110	Shutter2	FL Shutter OPEN <-> CLOSE (FL#2-SHTR OP^CL)	Opens or closes the FL turret 2 shutter.	✓		✓	✓	✓
	Condenser Shutter							
111	-------	Condenser Shutter OPEN <-> CLOSE (COND-SHTR OP^CL)	Moves the condenser shutter position.	✓✓ (Fn4)		✓✓ (Fn4)	✓	✓
	DIA LED							
112	-------	DIA LED Control with Z handle while pressing (DIA-LED Zctl/Prs)	Adjusts brightness by turning the focus knobs while pressing the button.	✓		✓	✓	
113	-------	DIA LED ON <-> OFF (DIA-LED ON^OFF)	Turns on and off diascopic LED illumination.			✓	✓	✓
114	-------	DIA LED UP (DIA-LED UP)	Increases the illumination intensity of diascopic LED illumination.			✓	✓	✓
115	-------	DIA LED DOWN (DIA-LED DN)	Decreases the illumination intensity of diascopic LED illumination.			✓	✓	✓
	DIA Halogen							
116	-------	DIA Halogen Control with Z handle while pressing (DIA-LMP Zctl/Prs)	Adjusts brightness by turning the focus knobs while pressing the button.	✓		✓	✓	
117	-------	DIA Halogen ON <-> OFF (DIA-LMP ON^OFF)	Turns on and off halogen dia-illumination.			✓	✓	✓
118	-------	DIA Halogen UP (DIA-LMP UP)	Increases the illumination intensity of halogen dia-illumination.			✓	✓	✓
119	-------	DIA Halogen DOWN (DIA-LMP DN)	Decreases the illumination intensity of halogen dia-illumination.			✓	✓	✓
	PFS							
120	-------	PFS ON <-> OFF (PFS ON^OFF)	Turns on and off the PFS.			✓	✓	✓
121	-------	PFS DM IN <-> OUT (PFS-DM IN^OUT)	Moves the PFS dichroic mirror to the IN or OUT position.	✓		✓	✓	✓
122	-------	PFS Offset Origin (PFS-OFST ORG)	Moves the offset lens to the reference position.		✓	✓	✓	✓
123	-------	PFS LED OFF (PFS-LED OFF)	Turns off the PFS LED.			✓	✓	✓
124	-------	PFS Offset dial Speed (PFS-OFST SPD)	Switches the PFS offset knob between coarse motion and fine motion.			✓	✓	✓
	Tube Base							
125	-------	Tube Base Control with Joystick while pressing (EXPH Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button moves the external Ph turret of the tube base unit to the next address (forward.) Moving the joystick to the right in the X direction while holding down the button moves external Ph turret of the tube base unit to the previous address (backward.)	✓		✓	✓	
126	-------	Tube Base Position O (EXPH PO)	Moves the tube base's external Ph turret to the address O.			✓	✓	✓
127	-------	Tube Base Position 1 (EXPH P1)	Moves the tube base's external Ph turret to address 1.			✓	✓	✓
128	-------	Tube Base Position 2 (EXPH P2)	Moves the tube base's external Ph turret to address 2.			✓	✓	✓
129	-------	Tube Base Position 3 (EXPH P3)	Moves the tube base's external Ph turret to address 3.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick		Setting availability from the application		
	Sub-category			J/S Fn1 to 6	Main body FnL/FnR	J/S Fn1 to 6	Main body FnL/FnR	Remote controller extension button
130	-------	Tube Base Increment (EXPH INC)	Moves the external Ph turret of the tube base unit to the adjacent address (forward.)		✓	✓	✓	✓
131	-------	Tube Base Decrement (EXPH DEC)	Moves the external Ph turret of the tube base unit to the adjacent address (backward.)		✓	✓	✓	✓
Main Branch								
132	-------	Main Branch Mirror1 IN <-> OUT (MBRANCH#1 IN^OUT)	Brings the epi-illumination attachment's Lapp main branch 1 to the IN or OUT position.	✓	✓	✓	✓	✓
133	-------	Main Branch Mirror2 IN <-> OUT (MBRANCH#2 IN^OUT)	Brings the epi-illumination attachment's Lapp main branch 2 to the IN or OUT position.	✓	✓	✓	✓	✓
Sub Branch								
134	-------	Sub Branch Mirror IN <-> OUT (SBRANCH IN^OUT)	Brings the epi-illumination attachment's Lapp sub branch to the IN or OUT position.	✓	✓	✓	✓	✓
C-LEDFI								
135	-------	C-LEDFI Select UNIT 1 (C-LED SLCT1)	Selects LED unit #1 of the epi-fl LED illuminator.			✓	✓	✓
136	-------	C-LEDFI Select UNIT 2 (C-LED SLCT2)	Selects LED unit #2 of the epi-fl LED illuminator.			✓	✓	✓
137	-------	C-LEDFI Select UNIT 3 (C-LED SLCT3)	Selects LED unit #3 of the epi-fl LED illuminator.			✓	✓	✓
138	-------	C-LEDFI Select UNIT 4 (C-LED SLCT4)	Selects LED unit #4 of the epi-fl LED illuminator.			✓	✓	✓
139	-------	C-LEDFI Rotation (C-LED SLCT ROT)	Switches LED unit of the epi-fl LED illuminator from #1 to #2, #3, #4, and then back to #1.			✓	✓	✓
140	-------	C-LEDFI UP (C-LED UP)	Increases the illumination intensity of the selected LED unit of the epi-fl LED illuminator.			✓	✓	✓
141	-------	C-LEDFI DOWN (C-LED DN)	Decreases the illumination intensity of the selected LED unit of the epi-fl LED illuminator.			✓	✓	✓
142	-------	C-LEDFI ON <-> OFF (C-LED ON^OFF)	Turns on or off the selected LED unit of the epi-fl LED illuminator.			✓	✓	✓
Intensilight								
143	-------	Intensilight Control with Joystick while pressing (INTSL Jctl/Prs)	Moving the joystick to the left in the X direction while holding down the button increases the ND (brightness down.) Moving the joystick to the right in the X direction while holding down the button decreases the ND (brightness up.)			✓	✓	
144	-------	Intensilight DOWN (INTSL DN)	Increases the ND of the IntensiLight (brightness down.)			✓	✓	✓
145	-------	Intensilight UP (INTSL UP)	Decreases the ND of the IntensiLight (brightness up.)			✓	✓	✓
146	-------	Intensilight Shutter OPEN <-> CLOSE (INTSL-SHTR OP^CL)	Opens or closes the Intensilight shutter.			✓	✓	✓
Correction Collar								
147	-------	Correction Collar Control with Z handle while pressing (COR-COL Zctl/Prs)	Moves the motorized correction collar in the +/- direction when the focus knobs are turned while the button is pressed.	✓		✓	✓	
MODE								
148	SAVE	MODE 1 SAVE (MODE1 SAVE)	Memorizes Mode 1 setting.			✓	✓	✓
149	SAVE	MODE 2 SAVE (MODE2 SAVE)	Memorizes Mode 2 setting.			✓	✓	✓
150	SAVE	MODE 3 SAVE (MODE3 SAVE)	Memorizes Mode 3 setting.			✓	✓	✓
151	SAVE	MODE 4 SAVE (MODE4 SAVE)	Memorizes Mode 4 setting.			✓	✓	✓
152	SAVE	MODE 5 SAVE (MODE5 SAVE)	Memorizes Mode 5 setting.			✓	✓	✓
153	SAVE	MODE 6 SAVE (MODE6 SAVE)	Memorizes Mode 6 setting.			✓	✓	✓
154	SAVE	MODE 7 SAVE (MODE7 SAVE)	Memorizes Mode 7 setting.			✓	✓	✓
155	SAVE	MODE 8 SAVE (MODE8 SAVE)	Memorizes Mode 8 setting.			✓	✓	✓
156	LOAD	MODE 1 LOAD (MODE1 LOAD)	Recalls Mode 1 setting.			✓	✓	✓
157	LOAD	MODE 2 LOAD (MODE2 LOAD)	Recalls Mode 2 setting.			✓	✓	✓
158	LOAD	MODE 3 LOAD (MODE3 LOAD)	Recalls Mode 3 setting.			✓	✓	✓
159	LOAD	MODE 4 LOAD (MODE4 LOAD)	Recalls Mode 4 setting.			✓	✓	✓
160	LOAD	MODE 5 LOAD (MODE5 LOAD)	Recalls Mode 5 setting.			✓	✓	✓
161	LOAD	MODE 6 LOAD (MODE6 LOAD)	Recalls Mode 6 setting.			✓	✓	✓
162	LOAD	MODE 7 LOAD (MODE7 LOAD)	Recalls Mode 7 setting.			✓	✓	✓
163	LOAD	MODE 8 LOAD (MODE8 LOAD)	Recalls Mode 8 setting.			✓	✓	✓

(✓✓: Default setting, ✓: Settable)

No.	Category: Sub-category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick: J/S Fn1 to 6	Setting availability from the joystick: Main body FnL/FnR	Setting availability from the application: J/S Fn1 to 6	Setting availability from the application: Main body FnL/FnR	Setting availability from the application: Remote controller extension button
164	LOAD::SAVE	MODE 1 LOAD::SAVE (MODE1 LOAD::SAVE)	Short press: Recalls Mode 1 setting. Long press: Memorizes Mode 1 setting.	✓✓ (Fn1)	✓	✓✓ (Fn1)	✓	
165	LOAD::SAVE	MODE 2 LOAD::SAVE (MODE2 LOAD::SAVE)	Short press: Recalls Mode 2 setting. Long press: Memorizes Mode 2 setting.	✓✓ (Fn2)	✓	✓✓ (Fn2)	✓	
166	LOAD::SAVE	MODE 3 LOAD::SAVE (MODE3 LOAD::SAVE)	Short press: Recalls Mode 3 setting. Long press: Memorizes Mode 3 setting.	✓	✓	✓	✓	
167	LOAD::SAVE	MODE 4 LOAD::SAVE (MODE4 LOAD::SAVE)	Short press: Recalls Mode 4 setting. Long press: Memorizes Mode 4 setting.	✓	✓	✓	✓	
168	LOAD::SAVE	MODE 5 LOAD::SAVE (MODE5 LOAD::SAVE)	Short press: Recalls Mode 5 setting. Long press: Memorizes Mode 5 setting.			✓	✓	
169	LOAD::SAVE	MODE 6 LOAD::SAVE (MODE6 LOAD::SAVE)	Short press: Recalls Mode 6 setting. Long press: Memorizes Mode 6 setting.			✓	✓	
170	LOAD::SAVE	MODE 7 LOAD::SAVE (MODE7 LOAD::SAVE)	Short press: Recalls Mode 7 setting. Long press: Memorizes Mode 7 setting.			✓	✓	
171	LOAD::SAVE	MODE 8 LOAD::SAVE (MODE8 LOAD::SAVE)	Short press: Recalls Mode 8 setting. Long press: Memorizes Mode 8 setting.			✓	✓	
	I/O OUT							
172	TRIG.	I/O 1 TRIG. (IO1 OUT)	Trigger output of control box I/O channel 1	✓	✓✓ (FnR)	✓	✓✓ (FnR)	
173	TRIG.	I/O 2 TRIG. (IO2 OUT)	Trigger output of control box I/O channel 2	✓	✓	✓	✓	
174	TRIG.	I/O 3 TRIG. (IO3 OUT)	Trigger output of control box I/O channel 3			✓	✓	
175	TRIG.	I/O 4 TRIG. (IO4 OUT)	Trigger output of control box I/O channel 4			✓	✓	
176	TRIG.	I/O 5 TRIG. (IO5 OUT)	Trigger output of control box I/O channel 5			✓	✓	
177	TRIG.	I/O 6 TRIG. (IO6 OUT)	Trigger output of control box I/O channel 6			✓	✓	
178	TRIG.	I/O 7 TRIG. (IO7 OUT)	Trigger output of control box I/O channel 7			✓	✓	
179	TRIG.	I/O 8 TRIG. (IO8 OUT)	Trigger output of control box I/O channel 8			✓	✓	
180	High<-> Low Toggle	I/O 1 High <-> Low Toggle (IO1 HI^LO)	Switches the control box I/O channel 1 output between High and Low.	✓	✓	✓	✓	✓
181	High<-> Low Toggle	I/O 2 High <-> Low Toggle (IO2 HI^LO)	Switches the control box I/O channel 2 output between High and Low.	✓	✓	✓	✓	✓
182	High<-> Low Toggle	I/O 3 High <-> Low Toggle (IO3 HI^LO)	Switches the control box I/O channel 3 output between High and Low.			✓	✓	✓
183	High<-> Low Toggle	I/O 4 High <-> Low Toggle (IO4 HI^LO)	Switches the control box I/O channel 4 output between High and Low.			✓	✓	✓
184	High<-> Low Toggle	I/O 5 High <-> Low Toggle (IO5 HI^LO)	Switches the control box I/O channel 5 output between High and Low.			✓	✓	✓
185	High<-> Low Toggle	I/O 6 High <-> Low Toggle (IO6 HI^LO)	Switches the control box I/O channel 6 output between High and Low.			✓	✓	✓
186	High<-> Low Toggle	I/O 7 High <-> Low Toggle (IO7 HI^LO)	Switches the control box I/O channel 7 output between High and Low.			✓	✓	✓
187	High<-> Low Toggle	I/O 8 High <-> Low Toggle (IO8 HI^LO)	Switches the control box I/O channel 8 output between High and Low.			✓	✓	✓
188	PUSH	I/O 1 PUSH (IO1 HI/Prs)	Drives the control box I/O channel 1 output. High when pushed	✓	✓	✓	✓	
189	PUSH	I/O 2 PUSH (IO2 HI/Prs)	Drives the control box I/O channel 2 output. High when pushed	✓	✓	✓	✓	
190	PUSH	I/O 3 PUSH (IO3 HI/Prs)	Drives the control box I/O channel 3 output. High when pushed			✓	✓	
191	PUSH	I/O 4 PUSH (IO4 HI/Prs)	Drives the control box I/O channel 4 output. High when pushed			✓	✓	
192	PUSH	I/O 5 PUSH (IO5 HI/Prs)	Drives the control box I/O channel 5 output. High when pushed			✓	✓	
193	PUSH	I/O 6 PUSH (IO6 HI/Prs)	Drives the control box I/O channel 6 output. High when pushed			✓	✓	
194	PUSH	I/O 7 PUSH (IO7 HI/Prs)	Drives the control box I/O channel 7 output. High when pushed			✓	✓	
195	PUSH	I/O 8 PUSH (IO8 HI/Prs)	Drives the control box I/O channel 8 output. High when pushed			✓	✓	
	Ex.I/O OUT							
196	TRIG.	EXI/O 1 TRIG. (EXIO1 OUT)	Trigger output of extension box I/O channel 1			✓	✓	
197	TRIG.	EXI/O 2 TRIG. (EXIO2 OUT)	Trigger output of extension box I/O channel 2			✓	✓	
198	TRIG.	EXI/O 3 TRIG. (EXIO3 OUT)	Trigger output of extension box I/O channel 3			✓	✓	
199	TRIG.	EXI/O 4 TRIG. (EXIO4 OUT)	Trigger output of extension box I/O channel 4			✓	✓	
200	TRIG.	EXI/O 5 TRIG. (EXIO5 OUT)	Trigger output of extension box I/O channel 5			✓	✓	
201	TRIG.	EXI/O 6 TRIG. (EXIO6 OUT)	Trigger output of extension box I/O channel 6			✓	✓	

(✓✓: Default setting, ✓: Settable)

No.	Category	Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick		Setting availability from the application		
	Sub-category			J/S Fn1 to 6	Main body FnL/FnR	J/S Fn1 to 6	Main body FnL/FnR	Remote controller extension button
202	TRIG.	EXI/O 7 TRIG. (EXIO7 OUT)	Trigger output of extension box I/O channel 7			✓	✓	
203	TRIG.	EXI/O 8 TRIG. (EXIO8 OUT)	Trigger output of extension box I/O channel 8			✓	✓	
204	TRIG.	EXI/O 9 TRIG. (EXIO9 OUT)	Trigger output of extension box I/O channel 9			✓	✓	
205	TRIG.	EXI/O 10 TRIG. (EXIO10 OUT)	Trigger output of extension box I/O channel 10			✓	✓	
206	TRIG.	EXI/O 11 TRIG. (EXIO11 OUT)	Trigger output of extension box I/O channel 11			✓	✓	
207	TRIG.	EXI/O 12 TRIG. (EXIO12 OUT)	Trigger output of extension box I/O channel 12			✓	✓	
208	TRIG.	EXI/O 13 TRIG. (EXIO13 OUT)	Trigger output of extension box I/O channel 13			✓	✓	
209	TRIG.	EXI/O 14 TRIG. (EXIO14 OUT)	Trigger output of extension box I/O channel 14			✓	✓	
210	TRIG.	EXI/O 15 TRIG. (EXIO15 OUT)	Trigger output of extension box I/O channel 15			✓	✓	
211	TRIG.	EXI/O 16 TRIG. (EXIO16 OUT)	Trigger output of extension box I/O channel 16			✓	✓	
212	High<-> Low Toggle	EXI/O 1 High <-> Low Toggle (EXIO1 HI^LO)	Switches the extension box I/O channel 1 output between High and Low.			✓	✓	✓
213	High<-> Low Toggle	EXI/O 2 High <-> Low Toggle (EXIO2 HI^LO)	Switches the extension box I/O channel 2 output between High and Low.			✓	✓	✓
214	High<-> Low Toggle	EXI/O 3 High <-> Low Toggle (EXIO3 HI^LO)	Switches the extension box I/O channel 3 output between High and Low.			✓	✓	✓
215	High<-> Low Toggle	EXI/O 4 High <-> Low Toggle (EXIO4 HI^LO)	Switches the extension box I/O channel 4 output between High and Low.			✓	✓	✓
216	High<-> Low Toggle	EXI/O 5 High <-> Low Toggle (EXIO5 HI^LO)	Switches the extension box I/O channel 5 output between High and Low.			✓	✓	✓
217	High<-> Low Toggle	EXI/O 6 High <-> Low Toggle (EXIO6 HI^LO)	Switches the extension box I/O channel 6 output between High and Low.			✓	✓	✓
218	High<-> Low Toggle	EXI/O 7 High <-> Low Toggle (EXIO7 HI^LO)	Switches the extension box I/O channel 7 output between High and Low.			✓	✓	✓
219	High<-> Low Toggle	EXI/O 8 High <-> Low Toggle (EXIO8 HI^LO)	Switches the extension box I/O channel 8 output between High and Low.			✓	✓	✓
220	High<-> Low Toggle	EXI/O 9 High <-> Low Toggle (EXIO9 HI^LO)	Switches the extension box I/O channel 9 output between High and Low.			✓	✓	✓
221	High<-> Low Toggle	EXI/O 10 High <-> Low Toggle (EXIO10 HI^LO)	Switches the extension box I/O channel 10 output between High and Low.			✓	✓	✓
222	High<-> Low Toggle	EXI/O 11 High <-> Low Toggle (EXIO11 HI^LO)	Switches the extension box I/O channel 11 output between High and Low.			✓	✓	✓
223	High<-> Low Toggle	EXI/O 12 High <-> Low Toggle (EXIO12 HI^LO)	Switches the extension box I/O channel 12 output between High and Low.			✓	✓	✓
224	High<-> Low Toggle	EXI/O 13 High <-> Low Toggle (EXIO13 HI^LO)	Switches the extension box I/O channel 13 output between High and Low.			✓	✓	✓
225	High<-> Low Toggle	EXI/O 14 High <-> Low Toggle (EXIO14 HI^LO)	Switches the extension box I/O channel 14 output between High and Low.			✓	✓	✓
226	High<-> Low Toggle	EXI/O 15 High <-> Low Toggle (EXIO15 HI^LO)	Switches the extension box I/O channel 15 output between High and Low.			✓	✓	✓
227	High<-> Low Toggle	EXI/O 16 High <-> Low Toggle (EXIO16 HI^LO)	Switches the extension box I/O channel 16 output between High and Low.			✓	✓	✓
228	PUSH	EXI/O 1 PUSH (EXIO1 HI/Prs)	Drives the extension box I/O channel 1 output. High when pushed.			✓	✓	
229	PUSH	EXI/O 2 PUSH (EXIO2 HI/Prs)	Drives the extension box I/O channel 2 output. High when pushed.			✓	✓	
230	PUSH	EXI/O 3 PUSH (EXIO3 HI/Prs)	Drives the extension box I/O channel 3 output. High when pushed.			✓	✓	
231	PUSH	EXI/O 4 PUSH (EXIO4 HI/Prs)	Drives the extension box I/O channel 4 output. High when pushed.			✓	✓	
232	PUSH	EXI/O 5 PUSH (EXIO5 HI/Prs)	Drives the extension box I/O channel 5 output. High when pushed.			✓	✓	
233	PUSH	EXI/O 6 PUSH (EXIO6 HI/Prs)	Drives the extension box I/O channel 6 output. High when pushed.			✓	✓	
234	PUSH	EXI/O 7 PUSH (EXIO7 HI/Prs)	Drives the extension box I/O channel 7 output. High when pushed.			✓	✓	
235	PUSH	EXI/O 8 PUSH (EXIO8 HI/Prs)	Drives the extension box I/O channel 8 output. High when pushed.			✓	✓	
236	PUSH	EXI/O 9 PUSH (EXIO9 HI/Prs)	Drives the extension box I/O channel 9 output. High when pushed.			✓	✓	
237	PUSH	EXI/O 10 PUSH (EXIO10 HI/Prs)	Drives the extension box I/O channel 10 output. High when pushed.			✓	✓	

(✓✓: Default setting, ✓: Settable)

No.	Category		Indicated name (Display name on the Joystick LCD and the remote controller extension buttons)	Functional overview	Setting availability from the joystick		Setting availability from the application		
		Sub-category			J/S Fn1 to 6	Main body FnL/FnR	J/S Fn1 to 6	Main body FnL/FnR	Remote controller extension button
238		PUSH	EXI/O 11 PUSH (EXIO11 HI/Prs)	Drives the extension box I/O channel 11 output. High when pushed.			✓	✓	
239		PUSH	EXI/O 12 PUSH (EXIO12 HI/Prs)	Drives the extension box I/O channel 12 output. High when pushed.			✓	✓	
240		PUSH	EXI/O 13 PUSH (EXIO13 HI/Prs)	Drives the extension box I/O channel 13 output. High when pushed.			✓	✓	
241		PUSH	EXI/O 14 PUSH (EXIO14 HI/Prs)	Drives the extension box I/O channel 14 output. High when pushed.			✓	✓	
242		PUSH	EXI/O 15 PUSH (EXIO15 HI/Prs)	Drives the extension box I/O channel 15 output. High when pushed.			✓	✓	
243		PUSH	EXI/O 16 PUSH (EXIO16 HI/Prs)	Drives the extension box I/O channel 16 output. High when pushed.			✓	✓	
	Indicator								
244		-------	Indicator LED On<->Off (INDICATOR ON^OFF)	Turns on or off the LED indicators on the front of the microscope main body.	✓	✓✓ (FnL)	✓	✓✓ (FnL)	✓
	Objective Combination								
245		-------	Objective Combination Run (OBJ-COMBI)	Linked operation of the nosepiece and optical devices			✓	✓	✓

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

11.2.1 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-LEDFI 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	Inter Mag. 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
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

11.3 List of Functions Assigned to Joystick LCD Screen

11.3.1 Initial Settings of the 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 Slider	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

11.3.2 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 Slider	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
21	Z	Information about the Z drive position (*)

(*) Available in Firmware Ver. 1.40 or later