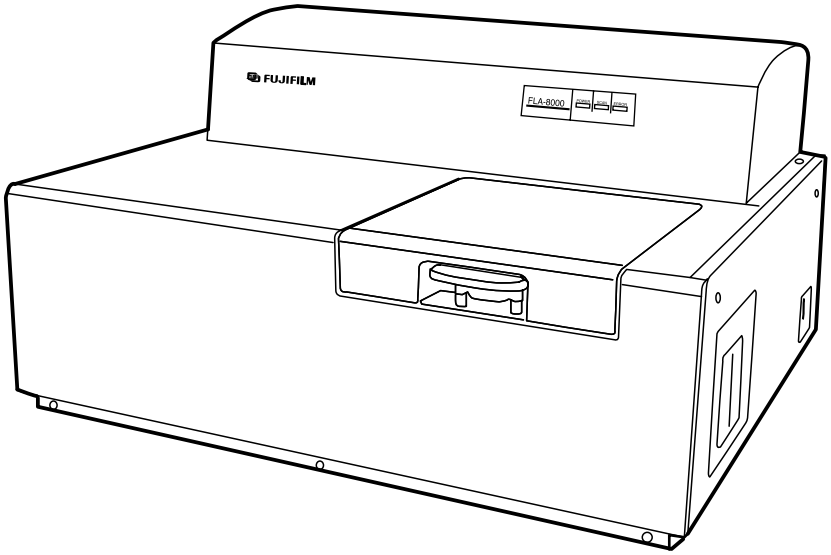
FUJIFILM

# FLA-8000

OPERATION MANUAL




**Version 3**

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# Contents


**Part 1 PRECAUTIONS ..... 3**

**1. Grounding Safety ..... 5**

Purposes of grounding ..... 5

Grounding work ..... 5

**2. Laser Safety ..... 6**

Lasers used ..... 6

Applicable safety standards ..... 6

Laser safety ..... 6

Instrument cover ..... 6

**3. High-Voltage Safety ..... 8**

**4. Regulations and Standards ..... 8**

**5. Radiation Safety ..... 9**

Relationship with radiation hazard prevention law ..... 9

Radio isotope pollution ..... 9

**6. Radiation Hazard Prevention Related to Radioisotope Pollution ..... 10**

Controlled area ..... 10

Limit of superficial pollution ..... 10

Installation site of instrument ..... 10

Carrying out of the controlled area ..... 10

**7. Radioisotope (RI) Pollution ..... 11**

RI pollution of IP ..... 11

Pollution of instrument body ..... 12

**8. Maintenance of SHG Laser ..... 12**

**9. Installation Environment ..... 12**

**10. Precaution for Disposal ..... 12**

**11. Other Instructions ..... 13**

Slide carrier ..... 13

Gel Carrier ..... 14

IP Carrier ..... 15

**Part 2 SYSTEM CONFIGURATION ..... 17**

**1. Features of Instrument ..... 18**

**2. Standard System Configuration ..... 19**

**Part 3 Switching On and Off ..... 21**

**Part 4 Scanning Slide Glass Samples ..... 23**

**Part 5 Usage of IPs ..... 49**
**1. Usage of IPs ..... 50**
**1.1 About IPs ..... 50**
**1.2 Available IPs ..... 50**
**1.3 Checking the exposure surface ..... 50**
**1.4 Instructions on handling IPs ..... 51**
**1.5 Precaution before exposure ..... 52**
**1.6 Erasing IPs ..... 53**
**2. Exposing and Scanning IPs ..... 54**
**2.1 Tools and materials ..... 54**

**Part 6 Scanning IPs ..... 57**

**Part 7 Scanning Gel Samples ..... 77**

**Part 8 Setting Optional Filters ..... 101**

**Part 9 Daily Maintenance ..... 105**
**1. Maintenance of SHG Laser ..... 106**

**Part 10 Troubleshooting ..... 107**
**Troubles in FLA-8000 body ..... 108**
**Countermeasures according to warning and error messages ..... 111**
**Other Troubles ..... 127**

**Part 11 Specifications ..... 129**
**Major Specifications ..... 130**
**Image Scanning Specifications ..... 130**
**Power Supply Facilities ..... 131**

**Part 12 Warranty ..... 133**
**Warranty of FLA-8000 ..... 134**
**Repair Service Period of Product ..... 134**

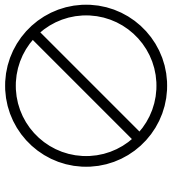
# Part 1

# PRECAUTIONS

This section describes the matters that require special attention to the safe use of the FLA-8000.
This section shows the general precautions for using the FLA-8000, some of which are also described in other sections.

## ⚠ CAUTION

* Do not place a vase, flowerpot or glass containing water in it or metallic object on this instrument. If water or metallic object penetrates into the instrument, it may cause a fire, electric shocks or electrocution.



* Do not place a heavy object on this instrument. If it falls down or drops, it may cause injury.

## ⚠ WARNING

* Do not modify this instrument. Unauthorized modification may cause a fire, electric shocks or electrocution.

* If a metallic piece, water, fluid or foreign matter is put in the instrument, turn off the instrument, disconnect the AC power cable, and contact the dealer. Using the instrument with foreign matters in it may cause a fire, electric shocks or electrocution.

## ⚠ CAUTION

* Ask the dealer to move this instrument when needed.

* When you use the instrument for a long time, take a rest for 10 to 15 minutes every hour and give your eyes and hands a rest.

# 1. Grounding Safety

**Purposes of grounding**

It is quite important to ground an electric or electronic instrument.
The purposes of grounding are as shown below:

(1) Preventing damages to the instrument caused by charging of the metallic casing originating from deterioration or defects of insulating material of the electrical circuits of the instrument.

(2) Preventing electrostatic hazards caused by static electricity in the instrument.

(3) Eliminating noises by equalizing the potential levels of the instrument casing and ground.

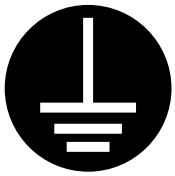
(4) Preventing lightning damages.

**Grounding work**

This instrument requires class D grounding.
Class D grounding prevents electric shocks or electrocution in the case where electric current leaks from an instrument whose source voltage is 300 VAC or less.
The class D grounding resistance must obligatorily be 100 ohms or less.
Exclusive grounding work should desirably be carried out in conformity to the electric facility technical standards.

**⚠ WARNING**

Ground this instrument. A failure to ground the instrument may cause leakage, resulting in a fire, electric shocks or electrocution. Consult the dealer if it is impossible to ground the instrument.



## 2. Laser Safety

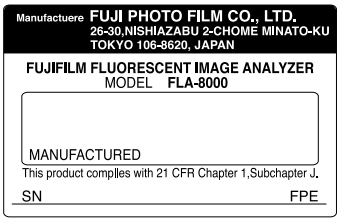
**Lasers used**

The FLA-8000 uses the following three lasers:
(1) LD laser, class IIIb, wavelength of 635 nm, maximum power of 20 mW (CW)
(2) SHG laser, class IIIb, wavelength of 532 nm, maximum power of 5.5 mW (CW)
(3) SHG laser, class IIIa, wavelength of 473 nm, maximum power of 2 mW (CW) (Optional)

**Applicable safety standards**

This instrument meets the laser radiation safety requirements specified in the Code of Federal Regulations (21 CFR, Chapter 1, Subchapter J).

It also conforms to EN60825-1/A11 (1996), Class 1 Laser Product.





**Laser safety**

This instrument conforms to the above-mentioned standards and is designed to be safe against laser radiation. The laser leak level is suppressed below 22.1 mJ for sufficiently safe operation, provided the user carries out operation (including user maintenance) of the instrument properly.

**Instrument cover**

The cover is fixed with screws to the instrument. If you loosen these screws or detach the cover, laser beam may leak out. Never loosen these screws or detach the cover. Such an act is allowed to a serviceman only.

**⚠ WARNING**

Never detach the inner cover screwed to this instrument. If it is detached, laser beam may leak and you may loose your eye-sight.

Manufactuere **FUJI PHOTO FILM CO., LTD.**
26-30,NISHIAZABU 2-CHOME MINATO-KU
TOKYO 106-8620, JAPAN

**FUJIFILM FLUORESCENT IMAGE ANALYZER**
MODEL **FLA-8000**

50Hz/60Hz
200-230V~
1.5A

SN

Manufactuere **FUJI PHOTO FILM CO., LTD.**
26-30,NISHIAZABU 2-CHOME MINATO-KU
TOKYO 106-8620, JAPAN

**FUJIFILM FLUORESCENT IMAGE ANALYZER**
MODEL **FLA-8000**

ELECTRICAL RATING
INPUT 1PHASE 50Hz/60Hz
AC 100-115~
MAX. INPUT CURRENT
3.0A

SN

**DANGER-Laser radiation when open and interlock defeated.**
**AVOID DIRECT EXPOSURE TO BEAM**

Covered by one or more of U.S. parts. 4,653,056, 4,656,635, 4,701,929, 4,756,003, 4,872,177, 4,865,967, 5,260,190, 5,270,162, 5,315,613, 5,415,743, 5,446,750, 5,497,388, 5,506,860, 5,568,308 and 5,594,746.

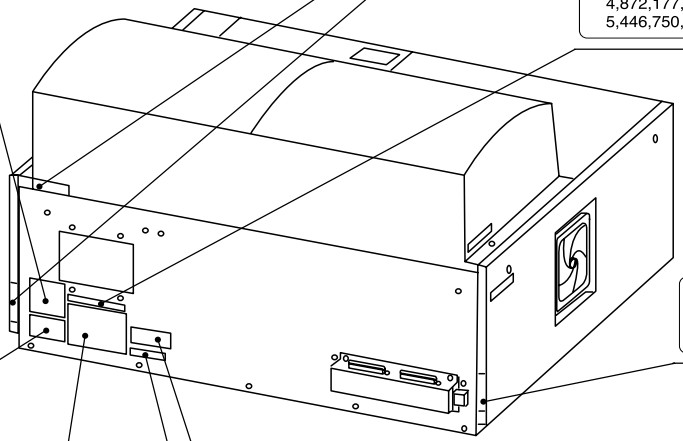
Manufactuere **FUJI PHOTO FILM CO., LTD.**
26-30,NISHIAZABU 2-CHOME MINATO-KU
TOKYO 106-8620, JAPAN

**FUJIFILM FLUORESCENT IMAGE ANALYZER**
MODEL **FLA-8000**

MANUFACTURED

This product compllies with 21 CFR Chapter 1,Subchapter J.

SN FPE



**DANGER-Laser radiation when open and interlock defeated.**
**AVOID DIRECT EXPOSURE TO BEAM**

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference,and
(2) this device must accept any interference received,
including interference that may cause undesired operation.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le materiel bouilleur du Canada.

クラス 1 レーザー製品
CLASS 1 LASER PRODUCT
LASER KLASSE 1
APPAREIL A RAYONNEMENT LASER DE CLASS 1
RAGGIO LASER DI CLASSE 1
PRODUCTO LASER DE CLASE 1
PRODUTO LASER DA CLASSE 1
EN60825-1:1996

製造元　富士機器工業株式会社

住　所　神奈川県南足柄市竹松1250

## 3. High-Voltage Safety

This instrument employs a high-voltage power supply for photo-multipliers (PMTs). However, the user is completely free from the possibility of touching the high-voltage power supply, provided the user carries out operation (including user maintenance) of the instrument properly.

**⚠ WARNING**

Never detach the cover from the instrument. This instrument has high-voltage circuits. If you detach the cover, you may possibly get an electric shock or be electrocuted in the worst case.

## 4. Regulations and Standards

This instrument fits or conforms to the regulations and standards shown below.

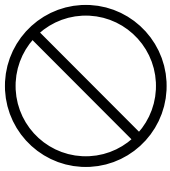
* Standard List
  EMC
    Japan VCCI, Class A (Conformance)
    USA FCC Rules, Part 15, Class A
    Europe EMI EN55022 (1998)
    EMS EN55024 (1998)
  Safety
    Europe EN61010-1 (1993)
    TUV approval (TUV PS)
  Laser
    USA 21 CFR, Chapter I, Subchapter J, Part 1040.10 Laser Products
    Europe EN60825-1/A11 (1996)
  CE
    LV Instruction (73/23/EEC)
    EMC Instruction (89/336/EEC)

* Use a host PC that conforms to the European Standards when this instrument is used in an European country.

## 5. Radiation Safety

**CAUTION**

Follow the instructions of your radiation administrator if radio isotope pollution occurs.



**Relationship with radiation hazard prevention law**

This instrument is not equipped with any radioisotope (RI) or radiation generating unit. Therefore, it is not regulated by the radiation hazard prevention law or relevant regulations.

**Radio isotope pollution**

This instrument is, however, capable of reading image plates (IPs). The IP surface may be polluted by radioisotope (RI), depending on the sample condition.
Such pollution is greatly influenced by the sample condition, and it is quite difficult to foresee the degree of pollution.
Radioisotope pollution may harm the FLA-8000 body due to improper operation or an unexpected trouble. The performances of the FLA-8000 will not be deteriorated even if it is polluted by radioisotope.
However, it is not easy to know about the degree of pollution of objects that sustain such radioisotope pollution.

# 6. Radiation Hazard Prevention Related to Radioisotope Pollution

**Controlled area**

Article 1, paragraph 1 of the law enforcement rules (Prime Minister's Office ordinance No.56) for prevention of radiation hazards due to radioisotope and so forth defines the controlled area as "a place where the dose equivalent related to external radiation exceeds the dose equivalent determined by the Director General of the Science and Technology Agency (hereinafter referred to as the Director General), the concentration of radioisotope in the air exceeds the concentration determined by the Director General, or the radioisotope concentration on the surface polluted by radioisotope exceeds the concentration determined by the Director General."

**Limit of superficial pollution**

Article 4, paragraph 3 of Notice No. 15 of the Science and Technology Agency that determines the quantity, etc. of radiating isotope specifies that radioisotope concentration on the surface polluted by radioisotope must be one tenth of the concentration defined in Article 8.
Article 8 and Table 3 of this Notice define the limits as shown below:
(1) Superficial concentration of radioisotope that radiates alpha rays: 4 Bq/$cm^2$
(2) Superficial concentration of radioisotope that does not radiate alpha rays: 40 Bq/$cm^2$

**Installation site of instrument**

This instrument is capable of reading not only IP but also fluorescent pigment label samples (Non-RI method). Therefore, it is recommended that the user should install it outside the controlled area and use RI-indicated samples without contacting them with IPs directly.
When a sample is in direct contact with an IP, it is generally known that the sample for making an auto-radiogram contains quite a small quantity of radioisotope. However, the degree of superficial pollution of the IP is greatly influenced by the dryness of the sample and dose of radioisotope in an experiment and may exceed the limits mentioned in [Limit of superficial pollution] above.
When the instrument reads an IP with a polluted non-exposure area, it may be polluted. The degree of such superficial pollution greatly differs with users' operation conditions. Superficial pollution may exceed the limit mentioned above.

As mentioned above, install this instrument in the RI controlled area if the user uses RI-indicated samples in direct contact with IPs.

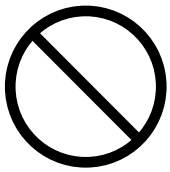
**Carrying out of the controlled area**

If it is necessary to carry out the instrument and its laboratory, which were installed and have been used in the controlled area, out of the controlled area, it should be made sure that the degree of the superficial pollution is below the limits mentioned in [Limit of superficial pollution] above.

## 7. Radioisotope (RI) Pollution

**CAUTION**

Follow the instructions of your radiation administrator if radio isotope pollution occurs.



**RI pollution of IP**

This instrument is capable of reading IPs. The IP surface may be polluted by radioisotope (RI), depending on the sample conditions, if a sample is in direct contact with the IP surface. If a part of the protection layer is damaged and the fluorescent material surface is RI-polluted, such pollution may not be eliminated.

Dispose of RI-polluted IPs as non-flammable radioactive waste.

If RI-polluted IPs are stored with other non-polluted IPs, pollution may be transcribed to the non-polluted IPs. Be very careful.

IPs may be used repetitively and accordingly should be protected against RI pollution. If an RI sample is used in direct contact with an IP, cover the RI sample with Saran Lap® or other lapping film to prevent it from touching the IP surface.

Note this it is difficult to eliminate the RI pollution completely if the IP surface is RI-polluted.

***Note:*** Saran Lap® is the registered trademark of Asahi Chemical Industry Co., Ltd.

**Pollution of instrument body**

The IP surface may be polluted by radioisotope. Therefore, RI pollution may expand to the inside of the instrument in the case of improper operation.

It is necessary to use the instrument properly in order to prevent expansion of RI pollution (to the inside of the instrument), though the performances of the instrument will not be deteriorated even if the instrument is RI-polluted.

## 8. Maintenance of SHG Laser

The SHG laser employed in this instrument requires periodical calibration. If it is not calibrated periodically, SHG-laser reading may be disabled or the life of the SHG laser may be reduced.
See Part 9 "Daily Maintenance" of this manual for the details of the SHG laser maintenance procedures.

> ***Note:*** *When the user turns on and starts the instrument, the SHG laser is calibrated automatically. Thus, the user need not pay special attention to periodical calibration. If the user does not use the instrument for a long time, start it once every 30 days to execute calibration.*

## 9. Installation Environment

This instrument reads IPs and fluorescent samples in a well-lighted room. However, do not install it in a place exposed to the direct sunlight, which is not suitable to IP reading and may cause temperature rise inside the instrument or shield leakage, resulting in a failure of proper operation of the instrument. Install the instrument in a place that meets the temperature and humidity conditions shown in "Major Specifications" (shown on page 128).

## 10. Precaution for Disposal

It is not certain that this instrument will not be RI-polluted, depending on the operating conditions, even if it is installed out of the controlled area. Before disposing of the instrument body, IPs and other materials and tools, check superficial pollution as mentioned in 6 "Radiation Hazard Prevention Related to Radioisotope Pollution" above. Dispose of them as radioactive waste if the superficial pollution level exceeds the limit. Most of the parts composing of this system fall under the category of the industrial waste. If the superficial pollution level is below the limit, dispose of the instrument body, IPs and other materials and tools as industrial waste in conformity to the "law with regard to disposal and cleaning of waste." (The instrument body and IPs are industrial waste.)

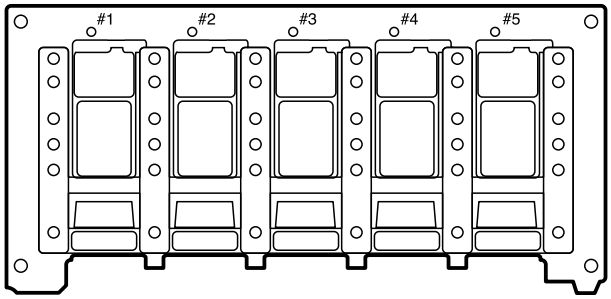
## 11. Other Instructions

### Slide carrier

**⚠ CAUTION**

* The slide carrier weighs 420 g. If it drops onto your feet, your feet will be injured.

* The slide carrier consists of precision parts. Handle it with great care. If it drops or impact or external force is applied to it, it may be deformed and become unusable.

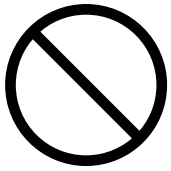



Slide carrier

**Gel Carrier**

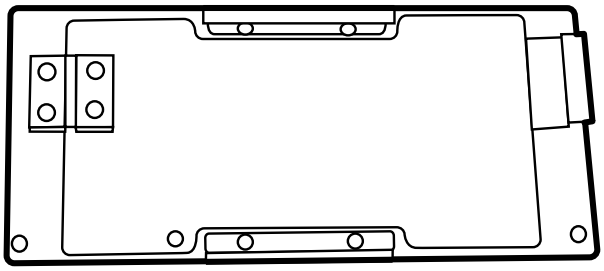
## ⚠ CAUTION

* The gel carrier weighs 460 g.
  The gel carrier has built-in glass. Be very careful not to drop it.
  Never put any objects other than samples on the glass or apply pressure to the glass.



* Be very careful not to break the gel carrier glass. Broken glass may cause injury.

* The gel carrier with the following defects are unusable:
  Distortion
  Lack of ends
  Flaws of the glass
  Breakage of the glass



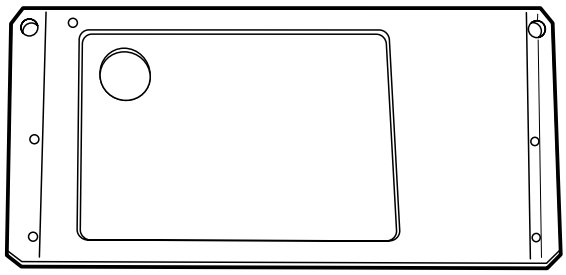
Gel Carrier

**IP Carrier**

## ⚠ CAUTION

* The IP carrier weighs 370 g.
  If it drops onto your feet, your feet will be injured.

* The IP carrier becomes unusable if it drops and deforms or its ends are lost.



IP Carrier

# Part 2

# SYSTEM CONFIGURATION

## 1. Features of Instrument

The FLA-8000 employs solid lasers of wavelengths suitable to excitation of fluorescent pigments originally developed by Fuji Photo Film Co., Ltd. It combines several lasers of different wavelengths with three types of filters and reads slide glass and gel dyed with various fluorescent pigments.
In addition, it may read image plates (IPs) originally developed as radiation energy sensors by Fuji Photo Film Co., Ltd.

After reading an IP, the FLA-8000 emits beams onto it uniformly inside the eraser to erase the after-image. It is possible to use IPs repeatedly by erasing after-images. This feature saves costs. Besides, compactly designed IPs are easier to handle than the traditional X-ray film.
With these features, a single FLA-8000 enables not only gel imaging of DNA, RNA and protein but also automatic radiography.

This instrument system has the following features:

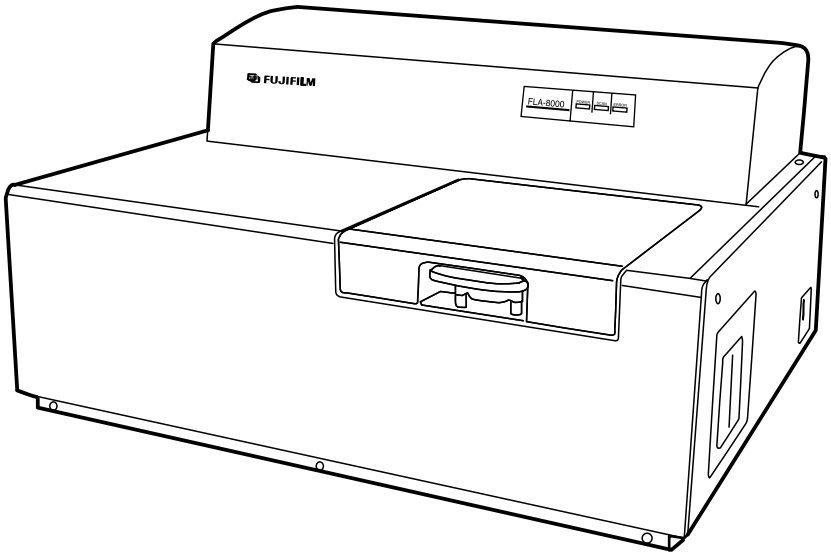
* Making a high-sensitivity and high-resolution image of slide glass and gel dyed with fluorescent pigments.
* Provides very-high-resolution images equivalent to X-ray film.
* Reusable IPs featuring very high sensitivity, wide dynamic range, reliable linearity and high resolution.
* Capability of executing other analysis during IP exposure.
* High resolution, high sharpness and linearity high above other film-less systems.
* System configuration requiring no darkrooms or automatic development systems.

## 2. Standard System Configuration

The standard components of this instrument are as shown below.

**1. Instrument Body**

The instrument body reads IPs or slide glass, gel, etc. dyed with fluorescent pigments and transfers image data immediately to the analyzer unit.
(*Hereinafter, the instrument body is merely referred to as the body in this manual.)



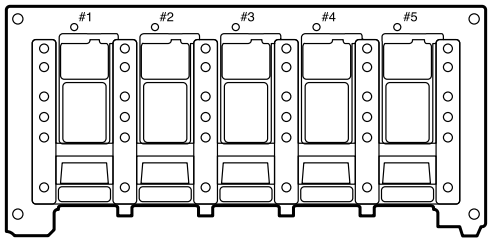

Body

**2. AC Power Cable**

The AC power cable is exclusive for this instrument.

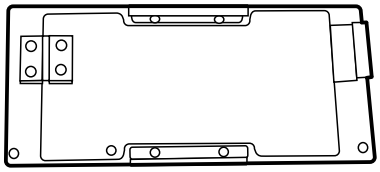
**3. Slide Carrier**

The slide carrier is used to read slide glass.
Mount slide glass in any position (#1 to #5) of the slide carrier and set the slide carrier to the instrument.



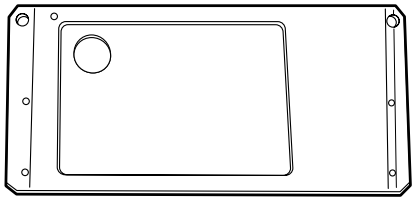

Slide Carrier

**4. Gel Carrier**



Gel Carrier

**5. IP Carrier**



IP Carrier

**6. IP Filter**
The IP filter is used to read IP.
Take the optional filter block out of the instrument, remove the shielding plate from the block with the jig included in the accessories, mount the IP filter, and set the folder to the instrument.

**7. Reading Software "Image Reader"**
Install "Image Reader" in the analyzer unit and set the reading conditions to control the instrument.

**8. Air Blower**
Use the air blower to clean the inside of the instrument.

**9. Active Terminator**
An SCSI terminator.

**10.Operation Manual**
This printing

# Part 3

# Switching On and Off

# Operation Procedures

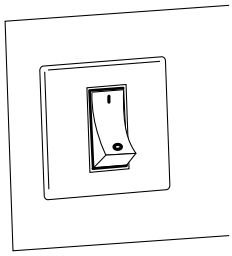
## Switching On and Off the FLA-8000

Switch on the FLA-8000 as shown below.

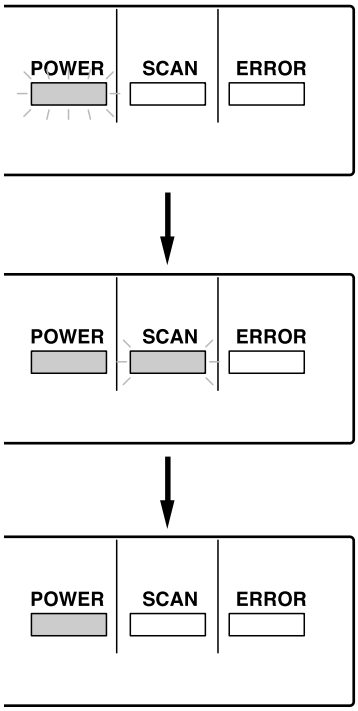
***Note:*** Make sure that the carrier locking cover and sample setting door are set (closed) securely before switching on the FLA-8000. Sensors detect the conditions of both doors. If the FLA-8000 is switched on in the condition where either or both doors are not set (closed) securely, the SCAN lamp on the FLA-8000 blinks and a buzzer sounds.

### Switching On

1. Push the "I" side of the power switch on the right side panel of the FLA-8000 as shown below.



2. When the FLA-8000 is switched on, the indicator lamps indicate its conditions as shown below.




Immediately after the FLA-8000 is switched on
The POWER lamp goes on.

During startup adjustment
The POWER lamp is lit and the SCAN lamp blinks.

It takes about four minutes.

Ready for operation
Only the POWER lamp is lit.

***Note:*** *If the buzzer sounds (and the SCAN lamp blinks) when switching on the FLA-8000, check if both the carrier locking cover and sample setting door are set (closed) securely. If the buzzer sounds even though both are set securely, contact the dealer where you purchased the FLA-8000 or FUJI PHOTO FILM CO., LTD.*

### Switching Off

Push the "O" side of the power switch on the right side panel of the FLA-8000 in the condition where the FLA-8000 is not scanning samples.

# Part 4

# Scanning Slide Glass Samples

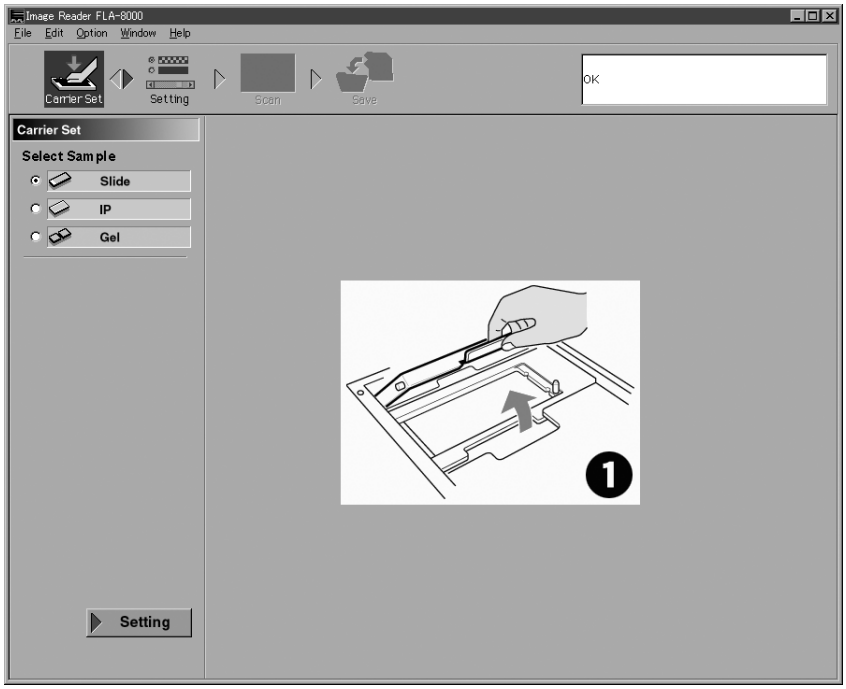
## Scanning Slide Glass Samples

### Setup of Hardware and Software

1. Switch on the FLA-8000 and peripheral devices.
2. Switch on the PC.
3. Make sure that warming-up is completed and the FLA-8000 is ready.
   Activate the FLA-8000 Image Reader from the Startup menu or using the shortcut key.



4. The main window of the FLA-8000 Image Reader is displayed.

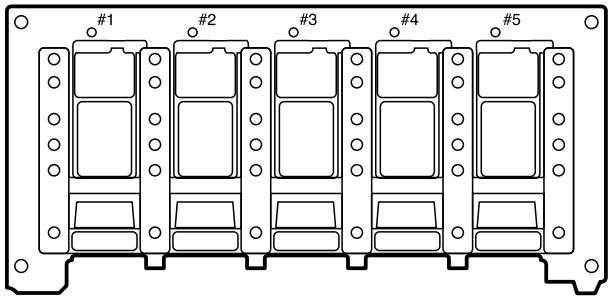


Carrier Set Mode

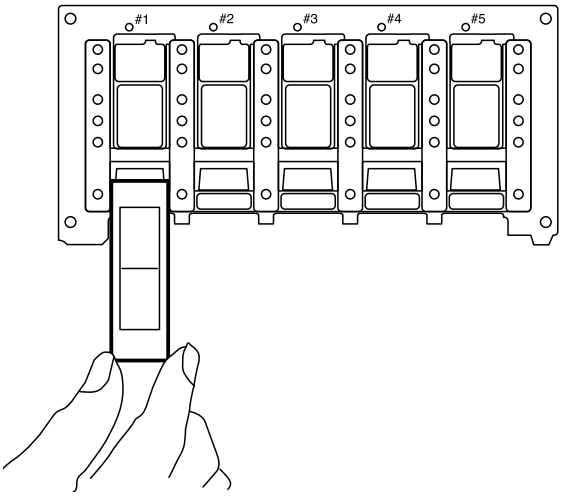
1. Select "Slide" in "Select Sample" in the Carrier Set mode. Click on the Slide icon or the radio button on the left of the Slide icon to select the slide.

Not selected. Selected.


2. Set slide glass on the slide glass carrier.
   2-1. Place the slide glass carrier with the slide numbers upside as shown below.



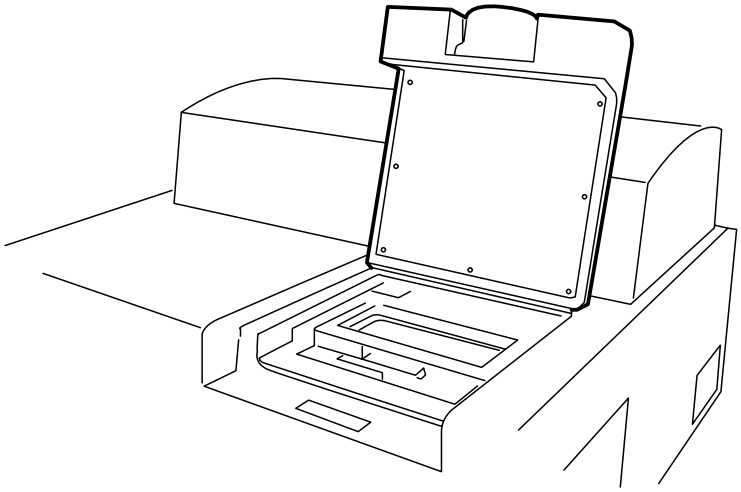

   2-2. Push slide glass with the scanning side (with a sample) upside fully to the very end through the opening of the slide glass carrier.



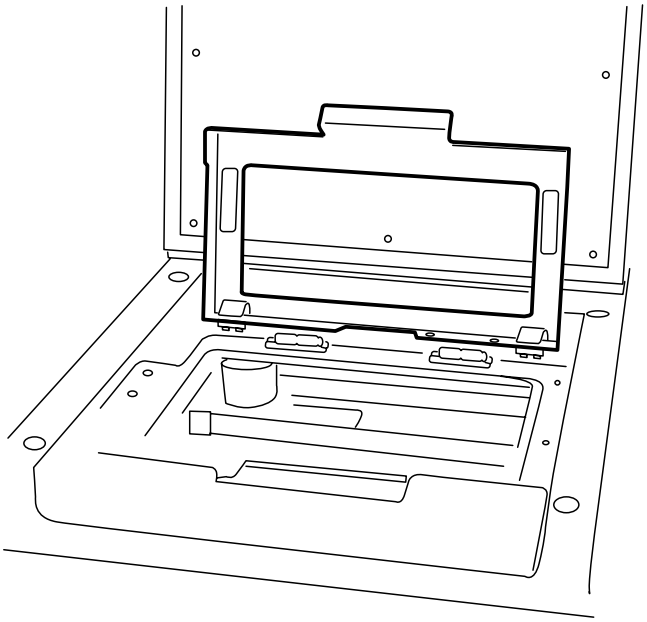

**Note:** *In an image scanned by the FLA-8000, the slide numbers on the slide glass carrier are displayed in the upper part of the monitor screen. Scanning starts at the upper left position of the slide glass set in the carrier.*

**Note:** *It is possible to set a maximum of five pieces of slide glass, which are scanned from left. However, it is not always necessary to set slide glass from #1. When setting two pieces of slide glass, you may set them in #2 and #4 and so forth, instead of #1 and #2.*

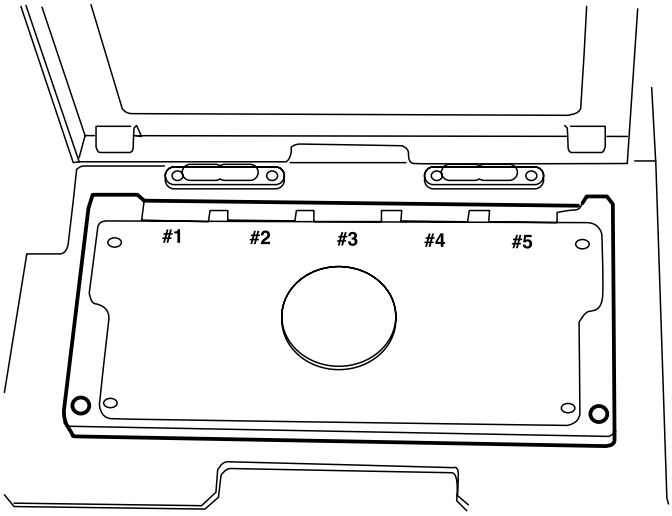
2-3. Open the sample setting door.



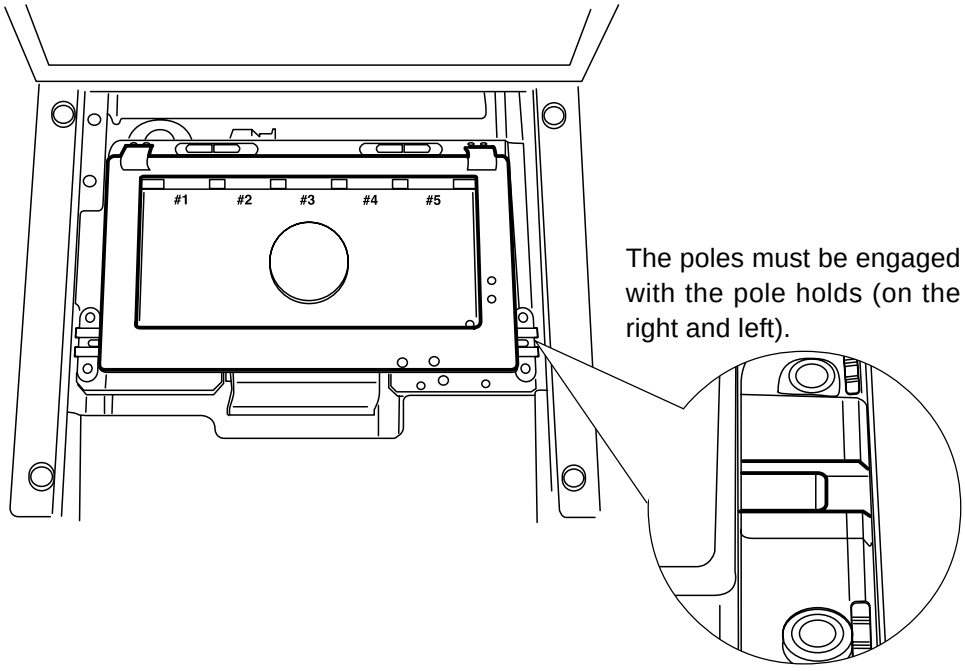
2-4. Open the carrier locking cover.



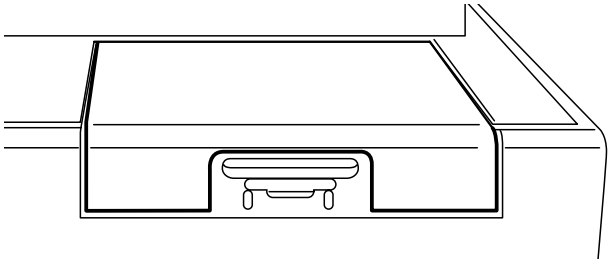
2-5. Set the slide glass carrier.
Hold the handle in the center of the carrier, and set the carrier so that the poles on the FLA-8000 are engaged with the holes in the carrier.




2-6. Close the carrier locking cover firmly.
Close the carrier locking cover so that the poles on both sides of the carrier locking cover are securely engaged with the pole holds on the FLA-8000. (The pole holds are located on the right and left.)

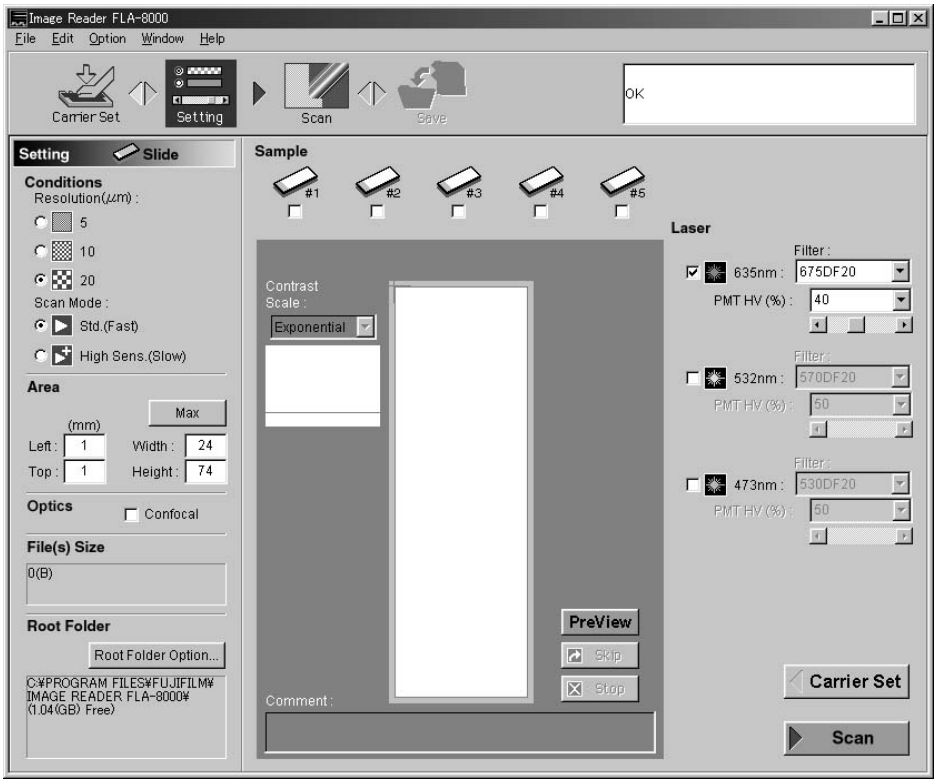


2-7. Close the sample setting door.



3. Go back to the PC, and click on Setting in the PC window. (On the right of Carrier Set in the upper part of the window or lower left of the window)

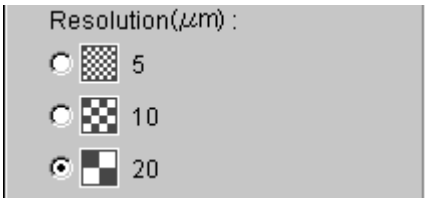
4. The window for setting the scanning conditions appears.



## Setting Mode

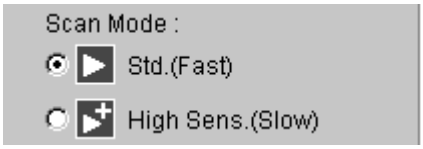
1. The following shows the details of the scanning conditions.

1-1. Resolution (μm)



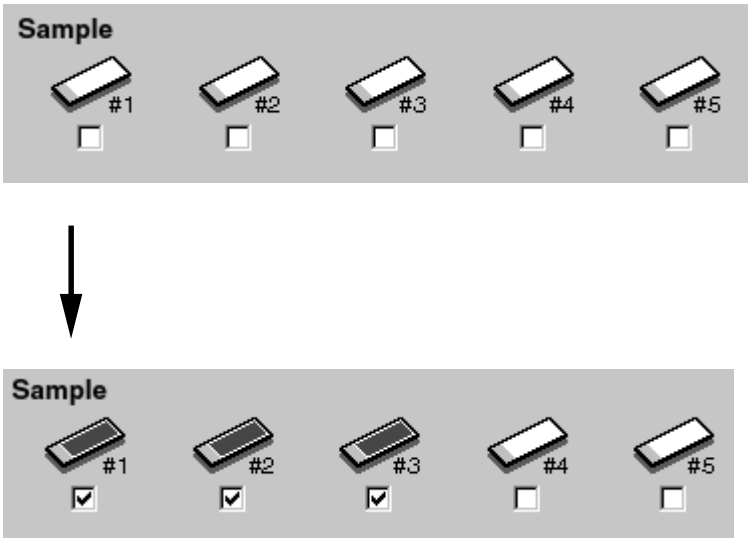

Resolution: Select a pixel scanning size. The scanning time becomes longer in inverse proportion to the pixel scanning size.

1-2. Scan Mode



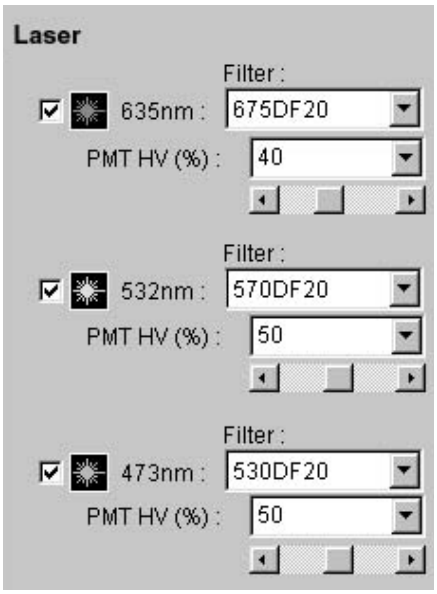

Scan Mode: Select a scanning mode (speed).
Std. (Fast): Scans pixels at 400 mm/second.
High Sens. (Slow): Scans pixels at 200 mm/second.
The sensitivity is higher at the slower scanning speed.

1-3. Slide glass selection as well as laser, filter and high voltage conditions Tick the check boxes below the icons of slide glass to be scanned as shown below.




> ***Note:*** *You may select slide glass after setting the laser, filter and high voltage conditions described below.*

***Note:*** It is impossible to set the laser conditions independently for several pieces of glass slide in one-time scanning. All pieces of slide glass are scanned in the laser conditions displayed before clicking the Scan button.
You may set the filter and high voltage conditions independently for each piece of slide glass.




Tick the check boxes on the left side of the icons of the lasers to be used for scanning.

Use the pull-down menu to select a filter used for each laser. The filter types available for a laser differ with the laser types. The available combinations are as shown below.

635 mm: 675 DF 20
Optional filter added

532 mm: 570 DF 20
675 DF 20
Optional filters added

473 mm: 530 DF 20
570 DF 20
675 DF 20
Optional filters added

* See page 99 for the method of adding optional filters.

Input the voltage to be applied to the PMT (photo-multiplier tube) in percentage (an integer only) or select it by dragging the adjuster button below the box. 1000 V is applied to the PMT when 100% is input.

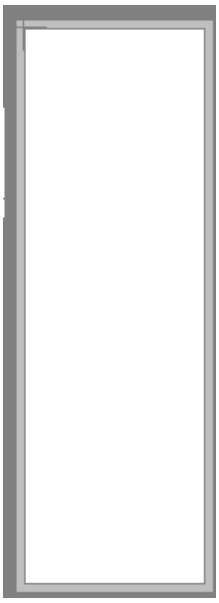
1-4. Specifying the scanning range

* It is effective to specify the scanning range based on the PreView result described below. The narrower the scanning range is, the shorter the scanning time is and the smaller the data quantity is.

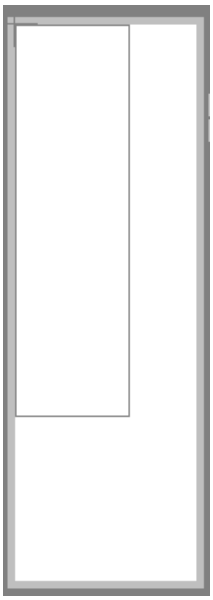
Two methods are available for specifying the scanning range as shown below.

a) Inputting numeric values
Input numeric values in the boxes shown below directly. (Integers only)


b) Dragging the mouse
The white area is the scannable area, and the red frame area is the scanning range.



Drag the red frame area with the mouse to vary the scanning range. As the red frame area changes, the numeric values in the Area boxes also change.



1-5. Selecting Confocal Mode or Non-Confocal Mode

It is possible to select the confocal mode or non-confocal mode when reading slide glass.


Confocal Mode ..... Fluorescent light from dust or foreign matters on slide glass and background components in the slide glass may be reduced in the confocal mode. On the contrary, unevenness on the slide glass surface may be detected.

Non-Confocal Mode..... The apparent evenness of images is higher than in the confocal mode.

Selection method

1. Select either by clicking the check box.

Confocal Mode ⟶ Non-Confocal Mode

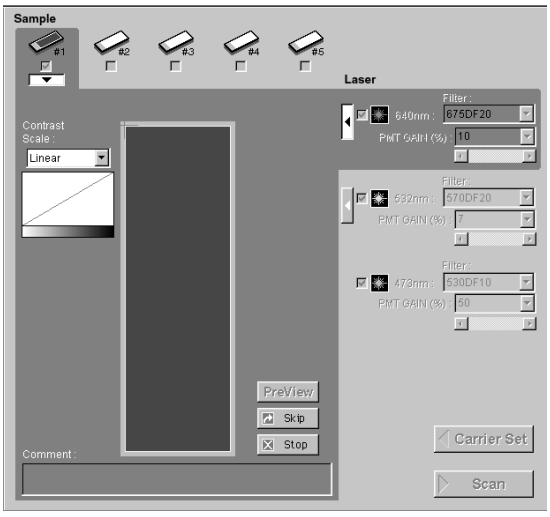

2. The selected reading mode goes valid. It is also valid in preview reading.

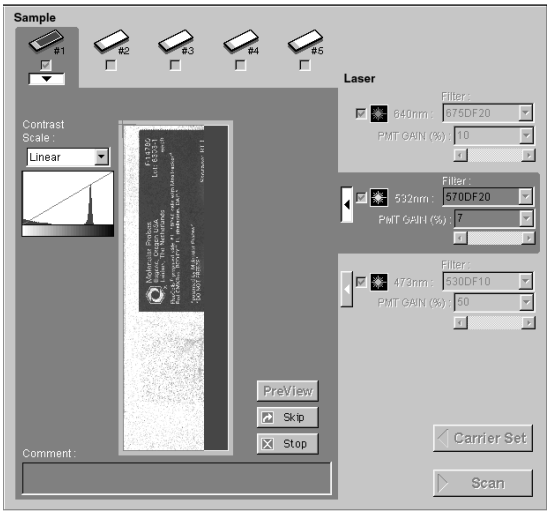
2. PreView
   The PreView function allows you to view the approximate results of scanning before final scanning.

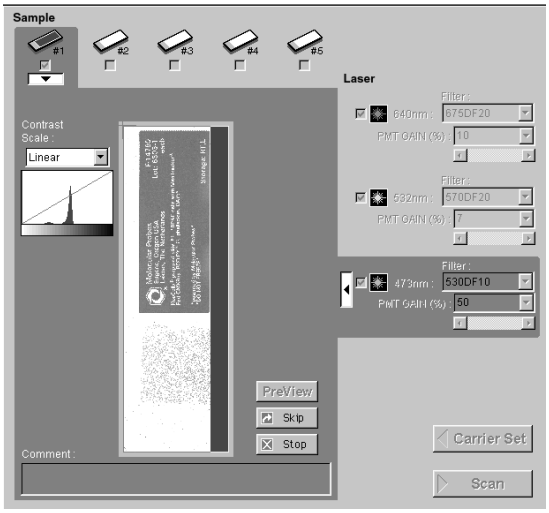
   2-1. Set the slide glass to be scanned, and specify the laser, filter and high voltage condition. Then, click the PreView button.


   2-2. Preview starts in set conditions.
   In the Preview mode, the pixel size is larger and the reading speed is higher than in the final reading.

   2-3. If scanning with three lasers is specified above, for example, the FLA-8000 scans the sample preliminary with these lasers three times in all as shown below.

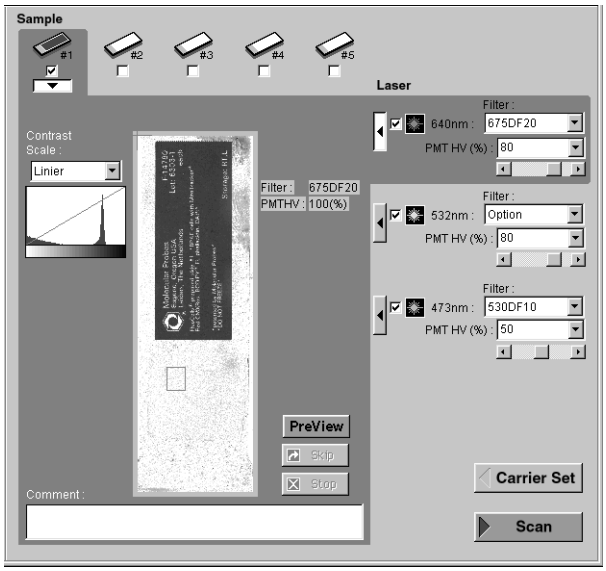




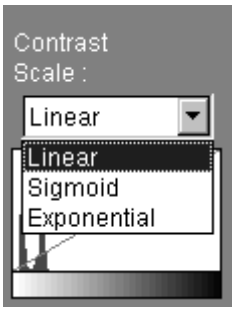

When scanning two pieces of slide glass using three lasers, the FLA-8000 pre-scans the sample with these lasers twice each, amounting to six times in all.

2-4 On completion of PreView, the window shown below appears.




Click the change-over button  to view the PreView images.

2-5. Select a contrast scale to be applied to the PreView images.
You may change the contrast scale as you like in order to observe the PreView images more clearly. Select a proper scale in the pull-down menu.




2-6. You may set the following three in the PreView image window.

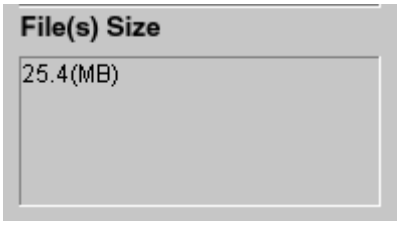
1) Final scanning range
Drag the red frame to specify the scanning range.

2) Adjusting the high voltage to be applied to the PMT in final scanning
Drag the adjuster button below PMT HV (%). The density of the PreView image changes as the adjuster button is dragged. Adjust the high voltage to be applied to the PMT with reference to this image density.

3) Inputting a comment
You may input a comment in the box below "Comment". The comment input in this box is saved together with scanned image data in the information file for saving the image data.

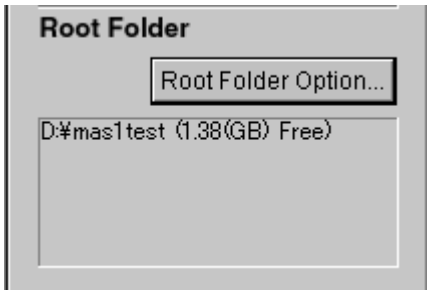

3. Other items in the setting mode

3-1. Scanned data amount
The numeric value in the box below "Files(s) Size" shows the (total) amount of data obtained by scanning the slide glass in the specified conditions.



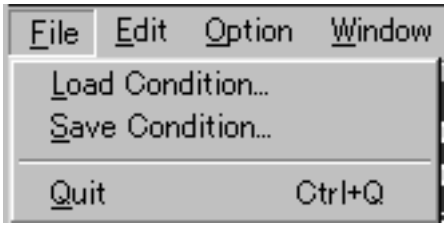
3-2. Root Folder Option

The folder where the scanned data file is stored is displayed in the box below "Root Folder Option".




If you want to change the folder, click the button  and change the folder.


3-3. Saving and loading the scanning conditions

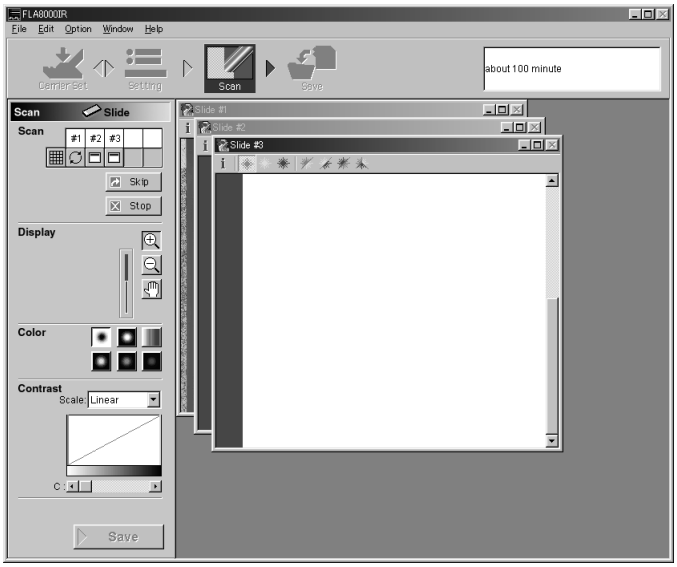



You may save and load (recall) the scanning conditions.

| | |
|---|---|
| Saving the scanning conditions: | Select "Save Condition" in the pull-down menu of the File menu. A dialog box opens. Input an intended name in the dialog box and save the file. |
| Loading the scanning conditions: | Select "Load Condition" in the pull-down menu of the File menu. A dialog box opens. Select a file name in the dialog box and load the file. |

***Note:*** *Number of gradations and dynamic range*
*The number of gradations and dynamic range of the FLA-8000 are fixed to the values shown below, regardless of the sample types.*
*Number of gradations: Sixteen bits*
*Dynamic range: Five digits*

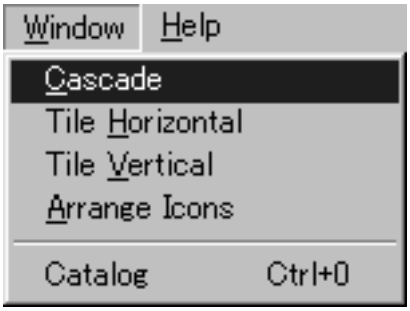
4. Click the Scan icon in the upper part of the Setting window or the Scan button in the lower right of the window to start final scanning.



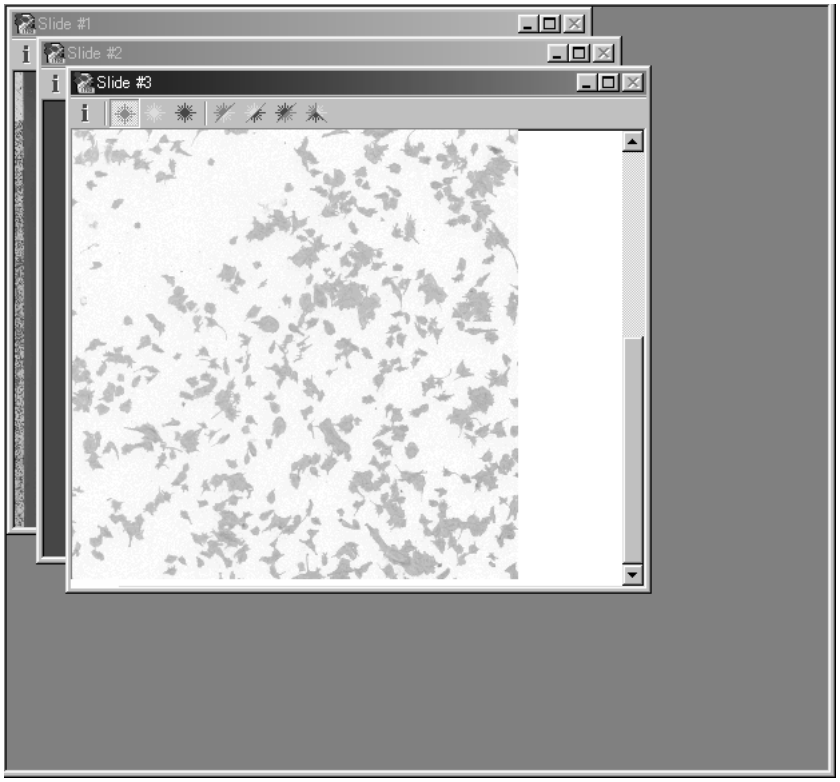

Scan Mode

1. Slide glass being scanned is marked with ↻. Scanned images are displayed in the window in sequence.

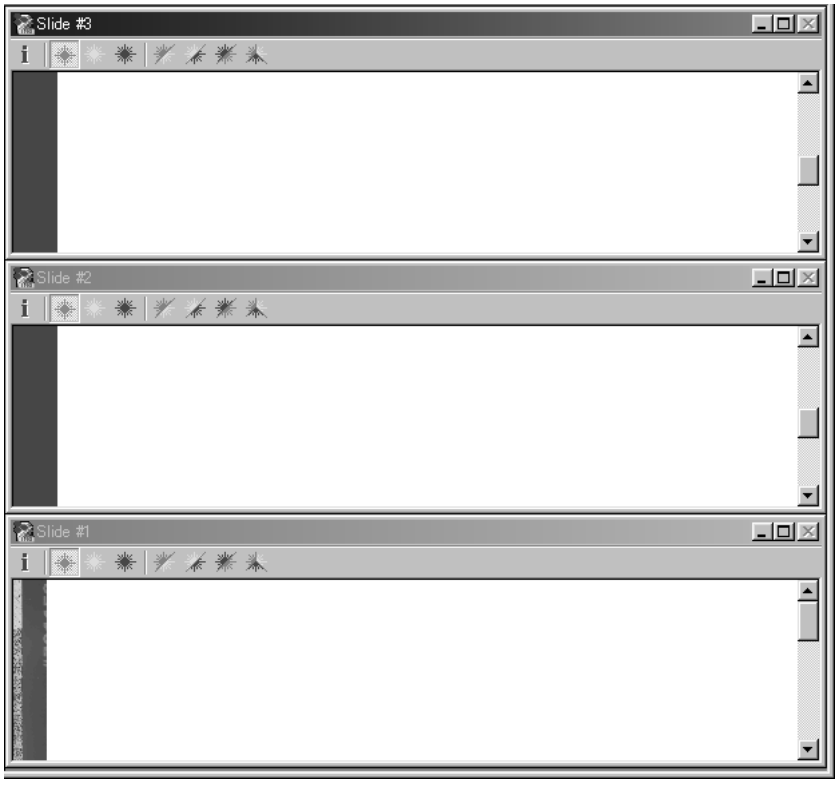
2. Image window in the Scan mode
   There are several methods to display the slide glass windows.
   Click on the Window menu to display the pull-down menu, and select an intended method.



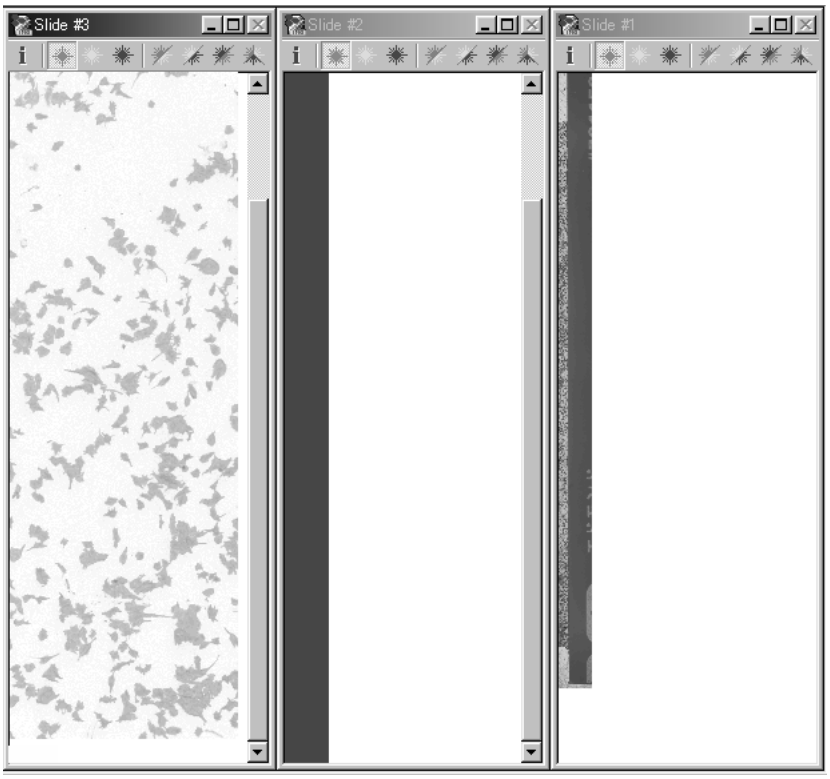
Cascade ..... Displays overlaid images.



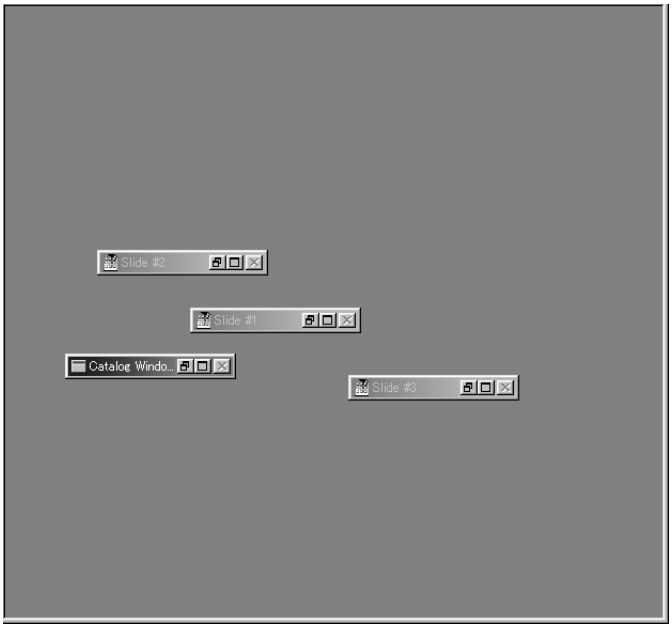

Tile Horizontal ..... Displays images horizontally.



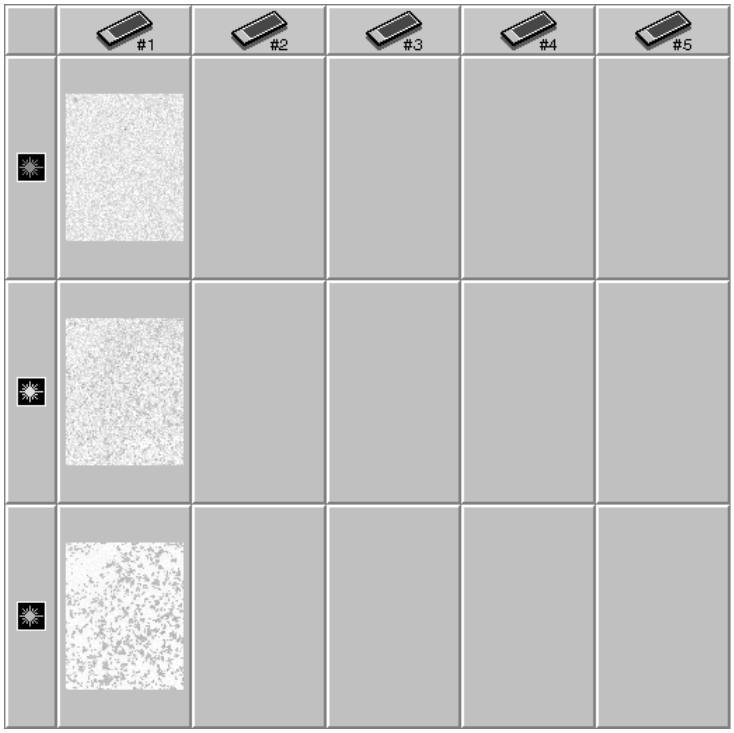
Tile Vertical ..... Displays images vertically.




Arrange Icons ..... Windows illustrated as title bars are arranged.




3. When Catalog is selected on the Window menu, the minimized catalog window is enlarged and displayed in the forefront.




4. Change images scanned by three types of lasers in the slide glass window as shown below.

Click on the mark in the upper part of the window to change the images as shown below.

Red ..... Image scanned by the red 635 nm laser

Green ..... Image scanned by the green 532 nm laser

Blue ..... Image scanned by the blue 473 nm laser

Red/green ..... Image scanned by the red 635 nm laser overlaid on the image scanned by the green 532 nm laser

Green/blue ..... Image scanned by the green 532 nm laser overlaid on the image scanned by the blue 473 nm laser

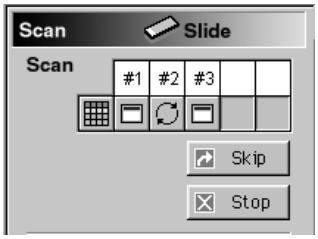
Blue/red ..... Image scanned by the blue 473 nm laser overlaid on the image scanned by the red 635 nm laser

Red/green/blue .... Images scanned by the three lasers all overlaid

Click on the mark in the upper left of the window frame or move the cursor pointer into the image window, and you may check the reading conditions.


5. Other functions in the Scan mode

5-1. Skipping or stopping scanning

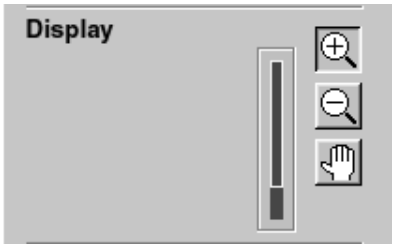




Skip ..... Click this button to skip the current scanning and proceeds to the following scanning.


Stop ..... Click this button to stop scanning.

5-2. Enlarging or contracting the image display size



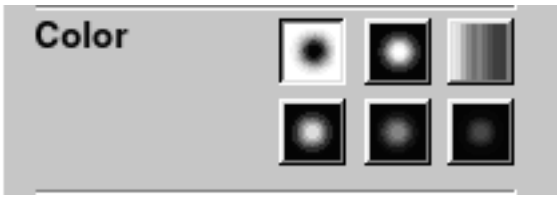
..... The red frame of the small image corresponds to the part displayed in the image window.

..... To enlarge a displayed image, click the  button, and click the mouse button in a position to be enlarged in the image window.

..... To contract a displayed image, click the  button, and click the mouse button in a position to be contracted in the image window.

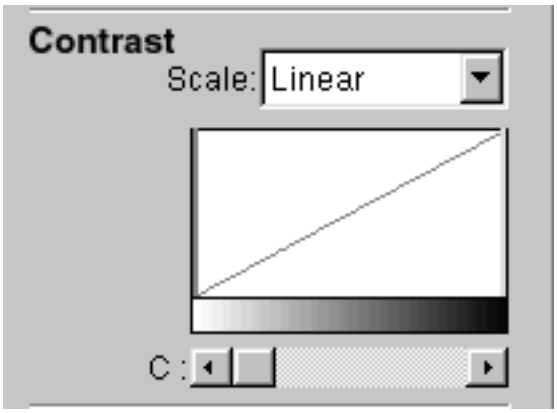
..... To move a displayed image without changing the magnification, click the  button and drag the mouse in the image window.

5-3. Changing the color of displayed images

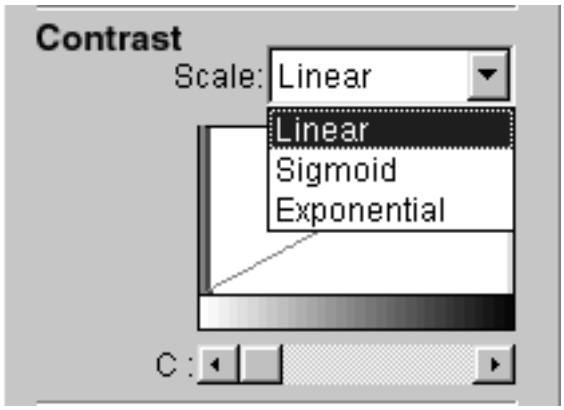



You may change the color of displayed images by clicking one of six buttons shown above.

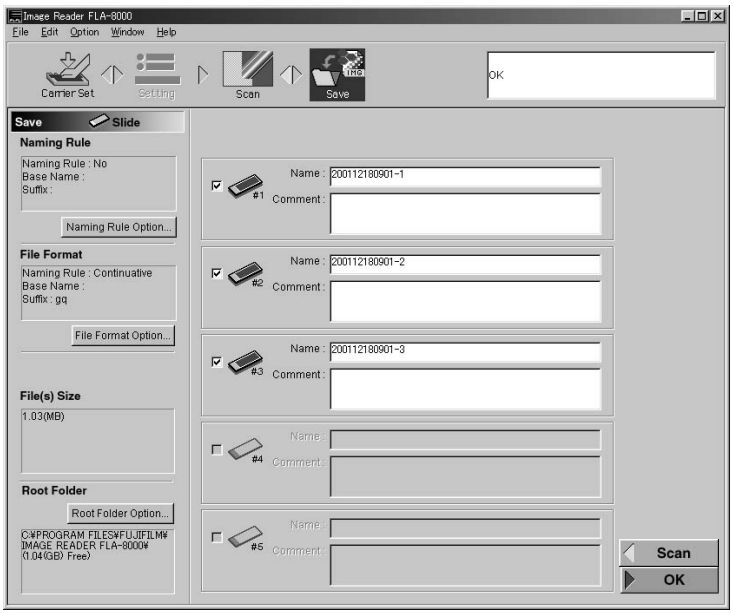
5-4. Adjusting the gradation of displayed images



If you want to change the gradation of displayed images, select a scale in the pull-down menu and adjust the gradation with the adjuster bar on the histogram or by dragging the button below the histogram.



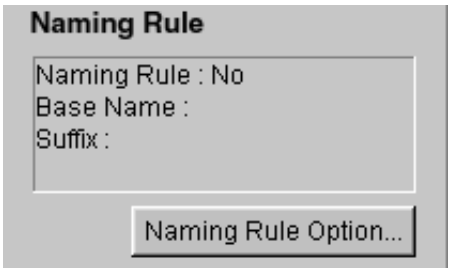

6. Click on the Save icon in the Scan mode window or the Save button in the lower left. The Scan mode window changes into the Save mode window, in which scanned images are saved.




Save Mode

You may set the following in the Save mode window.

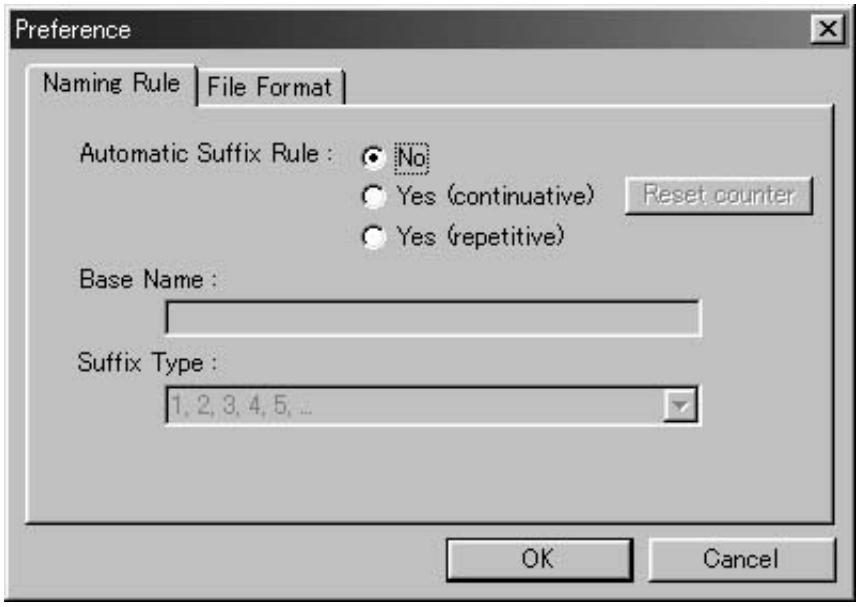
1. Giving an image file name



It is possible to give names to image files automatically in a certain rule. (Serial numbers are added to the end of image file names.) Each file name consists of the characters shown in the following example, in principle. xxx 1_473

Characters input in the Base Name box | Serial No. | Laser waveform

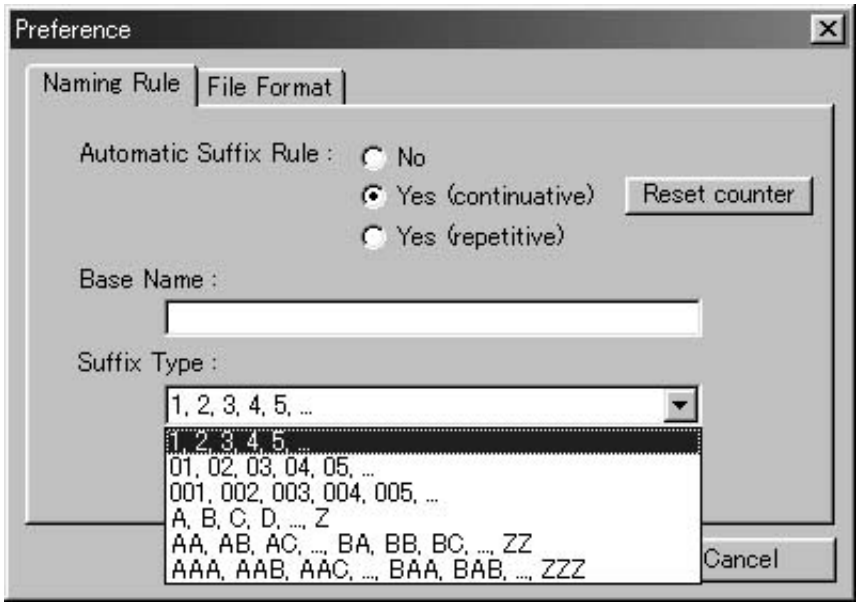
Click the Naming Rule Option... button.
The Preference dialog box shown below is displayed.




Automatic Suffix Rule

No ..... Automatic file naming is not executed. The operator should input a file name of each image file.

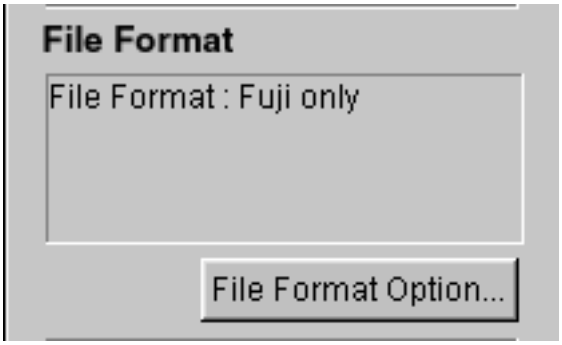
Yes (continuative) ..... Automatic file naming is executed. Suffices are added to file names. Select the suffix type in the pull-down menu.



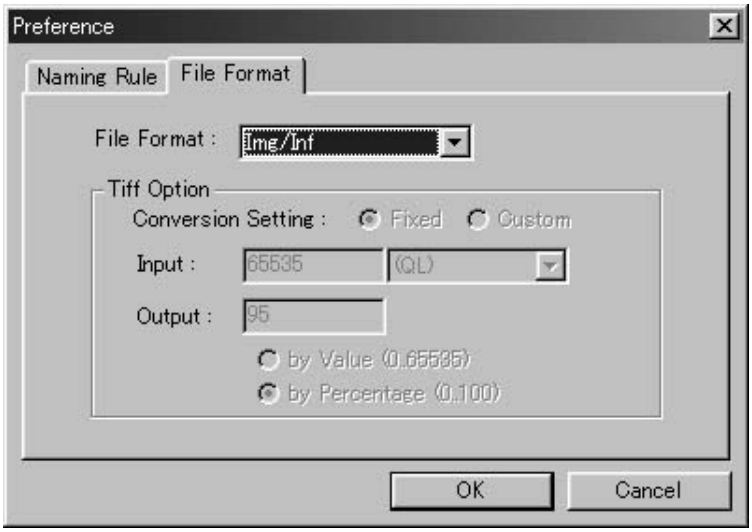
When Yes (continuative) and suffix type of 1, 2, 3, 4, 5 and so forth are selected and the latest scanned image is stored in the file "xxx-6", for example, the file name "xxx-7" is given to the first one of newly scanned images.
Clicking the Reset counter button resets the suffices added to the previous data and gives the file name "xxx-1" to the first one of newly scanned images.
If you input a character string in the Base Name box, each file name consists of that character string and the suffix. If you input "test" in the Base Name box, for example, the file name "test1_473" is given to the first one of images scanned by the 473 nm laser.

Yes (repetitive) ..... Automatic file naming is executed. Every time scanning is executed, suffices given to file names begin with the initial suffix. Even though the previous scanning ended with the file name "xxx3_ xxx", new scanning begins with "xxx1_ xxx".

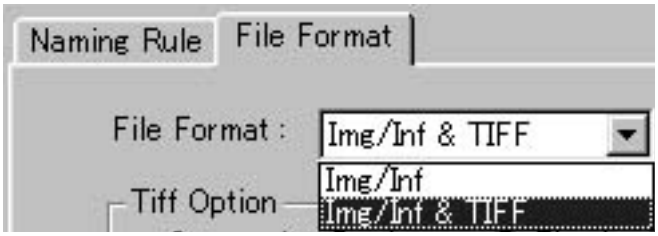
2. Specifying an image file format




Click the File Format Option... button or the File Format tag in the Preference dialog box of the Naming Rule Option described above. A dialog box for specifying a file format is displayed.



You may select one of the following two file formats.




Img/Inf ..... This is the standard file format of the BAS/FLA series. Each file of this format consists of a luster file (xxx.img) and an information file (xxx.inf). Use this Img/Inf file format if you want to analyze scanned images with the ScienceLab or Array Gauge made by Fuji Photo Film Co., Ltd. in the next step.

Img/Inf & TIFF ..... Scanned images are saved in both the Img/Inf-format file and TIFF-format file.

Select TIFF Option to specify a method of converting a file into a TIFF file.

Conversion setting ..... Fixed: Images are automatically converted into the TIFF file format using the algorithm in the software based on the maximum value of the images.

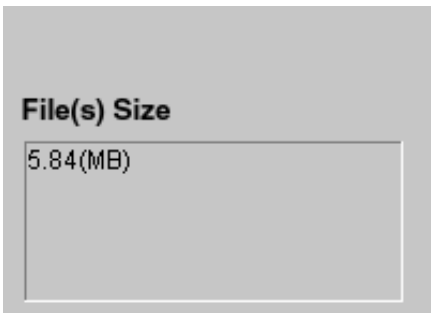
Custom: Input a numeric value, which indicates the conversion method.

Input:/Output: Input a numeric value, which indicates the number of TIFF files for saving raw data of original images.

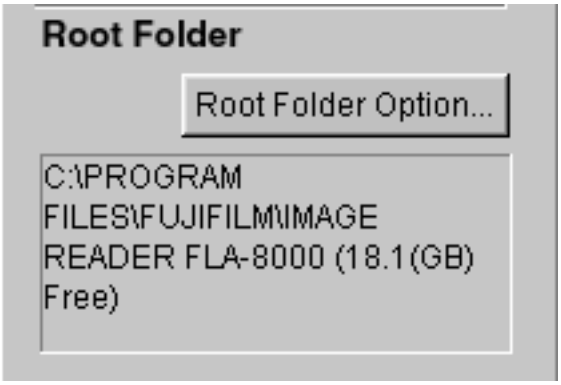
by Value: The value in the Output box is regarded as the value (0 to 65535) of raw data in process of conversion.

by Percentage: The value in the Output box is regarded as the percentage with respect to 65535 in process of conversion.

3. Image file size and file storage folder
   The total size of scanned images is displayed in the box below File(s) Size.

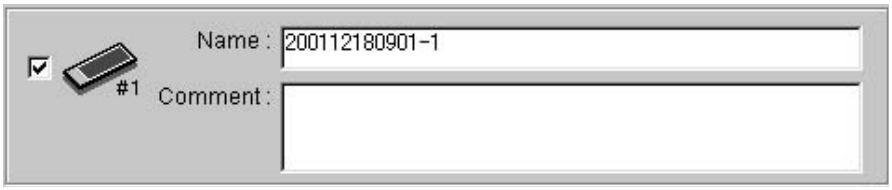


The box below Root Folder shows where the folder for saving the images resides.




If you want to change the folder, click the Root Folder Option... button and select an intended folder.

4. Inputting a comment
   You may input a comment in the Comment box below the Name box.
   The comment input in this box is saved together with the image data.




5. Selecting an image to be saved
   The file will be saved as long as the check box on the left side of the slide icon is chosen.
   Deselecting the check box by clicking the mouse button will not save the file.

6. Rechecking the image
   Clicking the Scan button in the lower right allows you to recheck the image read out before it is saved.

7. Click the OK button in the lower right, and the selected image data is saved.

# Part 5

# Usage of IPs

# 1. Usage of IPs

## 1.1 About IPs

The imaging plate (IP) is quite a new radiation energy memory type two-dimensional sensor, which has an image recording layer consisting of polyester base material densely coated with accelerated phosphorescent fluorescent material of fine crystals.

* Exposure
  An IP accumulates and stores radiation energy while it is exposed. It is exposed in close contact with an RI sample in a cassette like X-ray film.

* Scanning
  The recording surface of an exposed IP is scanned with a laser beam inside the FLA-8000 and emits fluorescent light according to the exposure level. A photomultiplier tube (PMT) detects the fluorescent light and converts it into electric signals. A radiation image recorded on the IP during exposure is read as digital image information at the maximum resolution of 10 $\mu$m per pixel (100 pixels/ mm) and recorded in the analyzer unit.

* Erasure
  You may reuse a general-purpose IP by erasing an after-image.

## 1.2 Available IPs

The FLA-8000 may use the BAS-SR 0813 (85 mm x 127 mm) only at the time when this operation manual is prepared.

* Use conditions
  It is necessary to stick a non-curled IP to the carrier free from separation.
  A separated IP may cause a failure of the equipment.

## 1.3 Checking the exposure surface

1.3 Checking the exposure surface
The overall bluish white surface is the exposure surface. A sample is brought into contact with and radiation is irradiated onto this surface.

Exposure surface: Bluish white

Exposure surface of IP

## 1.4 Instructions on handling IPs

* General handling
  While handling IPs, always wear gloves to maintain the quality of the IPs. Be very careful not to bend, damage or soil them. Do not handle them in a dusty place.

* Cleaning
  General-purpose IPs:
  Clean the back surfaces of IPs with proper cleaning material such as KIMWIPE, etc. If IPs are very dirty, clean them with unwoven cotton cloth moistened with ethanol (of grade I or guaranteed reagent).

> ***Notes:*** ** Ethanol stored in bad conditions may deteriorate IPs. Use ethanol stored in a brown reagent bottle or in accordance with manufacturer's handling method.*
> ** Never wipe IPs with water. The sensitivity of the fluorescent material on IPs may be deteriorated by water.*

* Environmental conditions
  Do not expose IPs to the direct sunlight. Do not use them in a place with much ultraviolet rays or natural radiation. Do not use them in a hot and humid place.

* Storage
  Store IPs level in order not to let them curl. (Curled IPs may cause failures of the equipment.)

  Store IPs in a dry place. It is recommended that IPs be stored in a dry booth if they will not be used for a long time.

**PRECAUTIONS**

The fluorescent material on IPs may be deteriorated by water. Be very careful not to moisten them.
Some organic solvents may curl IPs. Even if samples are covered with lapping film, organic solvents may penetrate it and the cassette may be filled organic solvent vapor since organic solvents are volatile, in general.

* Examples of solvents that may let IPs curl
  Dichloromethane, chloroform, acetone, acetic acid, acetic acid derivative, etc.

## 1.5 Precaution before exposure

**Tools required for exposure (Membrane filters and other RI indicator samples)**

Prepare the following before exposure:

* IPs
* Cassette
* Samples labeled with radioisotope
* Gloves (Put them on when handling IPs.)
* Saran Lap® or equivalent lapping films (Lap the samples with the lapping film before exposing them.)
* KIMWIPE® and ethanol (Use them to clean dirty IPs and inside of the cassette.)

**Checking the safety light (darkroom condition)**

Conventional X-ray film are quite sensitive to visible light and requires works in a darkroom. On the contrary, IPs may be handled in a normal room, though they are much more sensitive to radiation than conventional X-ray film. However, turn down the room light (below 20 luxes) and use the safety light (darkroom condition) only when carrying out the following:

* Taking exposed IPs out of the cassette, sticking them on the IP carrier, and setting the IP carrier into the FLA-8000.

**Setting the exposure time**

The highest image quality is guaranteed when an IP is scanned by the FLA-8000 immediately after it is exposed. Therefore, it is important to set the exposure start time and exposure time so that exposure ends just before scanning starts.

**Cleaning IPs and cassette**

Before exposing an IP, clean its exposure surface and inside of the cassette with KIMWIPE®, etc. to remove dust and dirt.

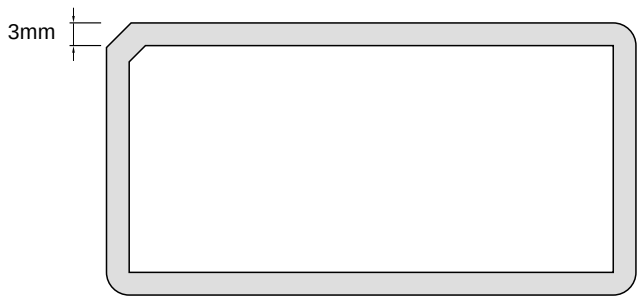
**Precautions**

1. Be sure to erase an IP before exposing it. (A failure of erasure may cause noises (fogging) due to environmental radiation.)

2. Scan an exposed IP as soon as possible.

3. An IP detects quite a small quantity of radiation. Thus, do not expose it in a place easily affected by the environmental radiation (near a concrete wall, for example).

4. Exposing the edges of an IP shown below may disorder the image data. Thus, do not expose these parts.



## 1.6 Erasing IPs

Erase an IP sufficiently before exposing it.

> ***Note:*** *If an IP is exposed excessively, it may not be erased completely.*
> *In such a case, scan it once by way of trial to check if it is erased completely.*

### ■ Erasing IPs with IP eraser

Refer to the manual of the IP eraser.

The IP eraser may erase an IP in fourteen minutes (if it is not exposed excessively). For the usage of the IP eraser, refer to its manual.

## 2. Exposing and Scanning IPs

Expose an IP as shown below.

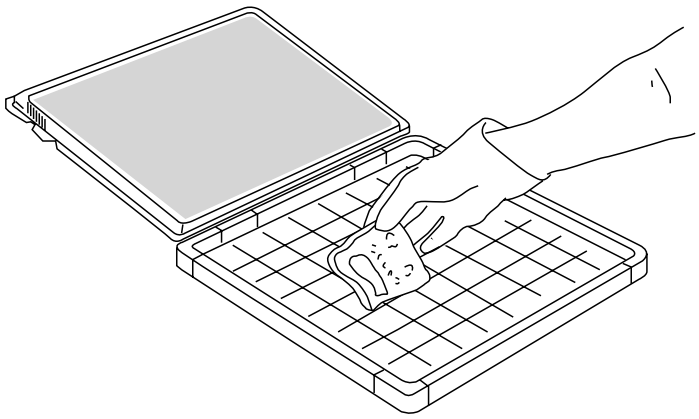
### 2.1 Tools and materials needed for exposing IPs

*** Sample**
*** Saran lap (Lapping film)**
*** IP cassette**
*** IP**

**1** Cover the sample with Saran Lap® or equivalent lapping film.

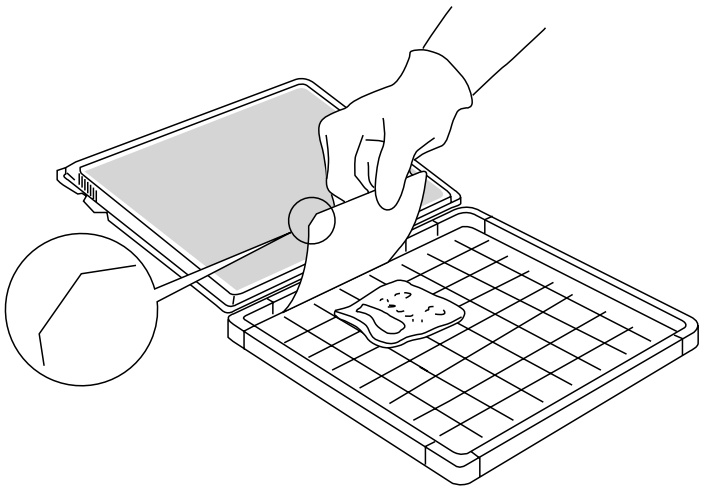
> ***Note:*** *Do not wrinkle the lapping film.*

**2** Set the sample face up on the cassette.
Use the gauge grating (25 mm) to adjust the sample position with the IP position.



***User Tip:*** If the sample is smaller than the IP, put the sample to the side of the IP scanned first (i.e., left side when the IP is set in the FLA-8000) and expose it. Partial exposure reduces the scanning time.

**3** Set the IP on the cassette so that its exposure surface is in contact with the sample as shown below. Use the notch of the IP to adjust the sample direction with the IP direction and the direction of sticking on the carrier (i.e., scanning direction).



**4** Close the cassette cover.
(Close it firmly until a click sound is heard.)

***Note:*** *Do not have any IP corners be caught by the cassette cover.*
*Be very careful not to apply an impact to the cassette. An impact applied to the cassette may shift the sample and IP.*
*Do not expose the IP in a place with much environmental radiation (in order to avoid the increase of background).*

**PRECAUTION**

Do not expose the exposed IP to the light. If an exposed IP is exposed to the light, the image on the IP may be lost.

# Part 6

# Scanning IPs

## Scanning IPs

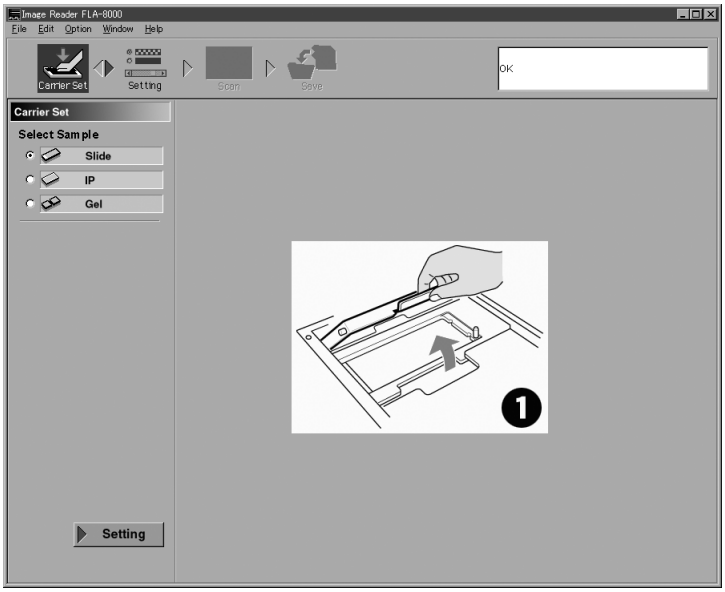
Setup of Hardware and Software

1. Switch on the FLA-8000 and peripheral devices.

2. Switch on the PC.

3. Make sure that the FLA-8000 has warmed up and is ready for operation. Activate the FLA-8000 Image Reader from the Startup menu or using the shortcut key.

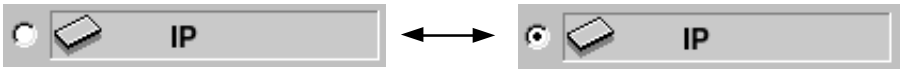

4. The main window of the FLA-8000 Image Reader is displayed.




## Carrier Set Mode

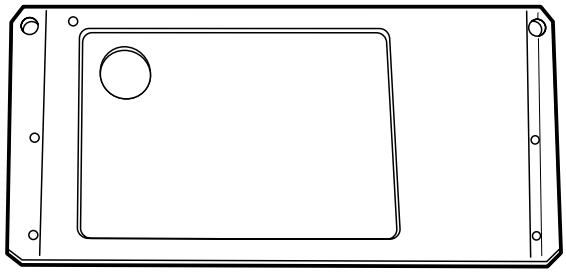
1. Select the IP using Select Sample in the Carrier Set mode. Click on the IP icon or the radio button on the left of the IP icon to select the IP.

Not selected. Selected.

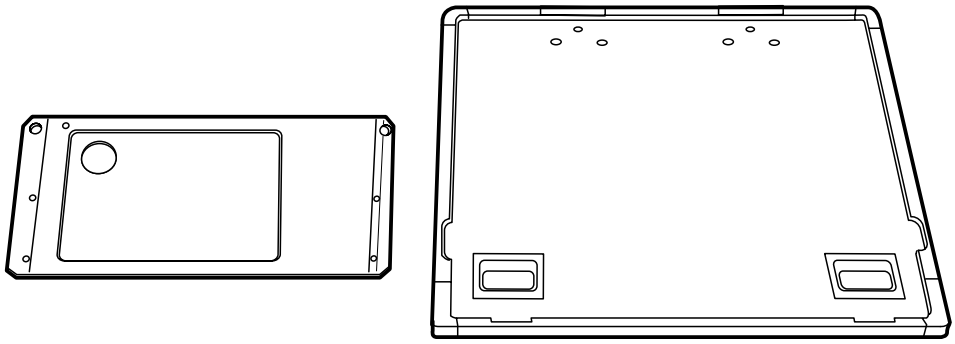



2. Set the IP on the IP carrier.

   2-1. Put the IP carrier with the magnet surface upside as shown below.

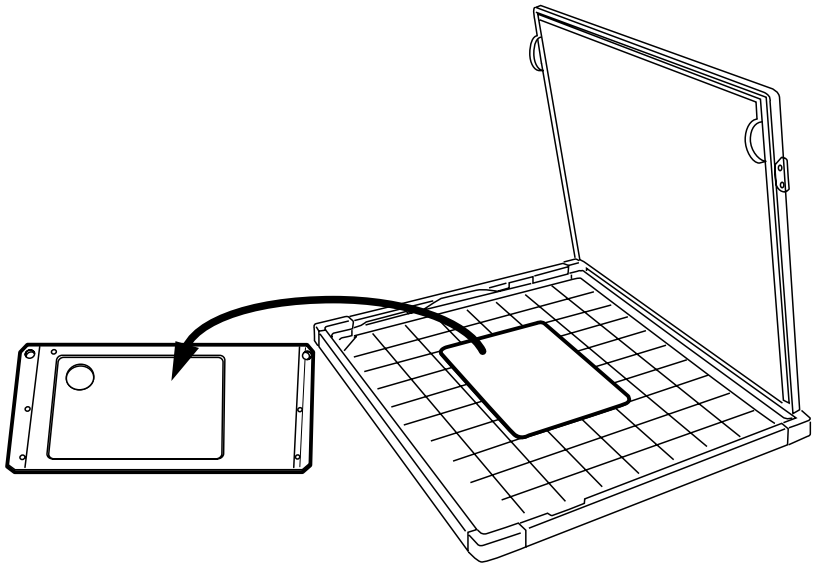


2-2. Put the IP cassette with an exposed IP on the side of the IP carrier.



2-3. Turn down the room lighting (below 20 luxes).
(Keep the lighting turned down until the IP carrier is set and the main cover is closed.)

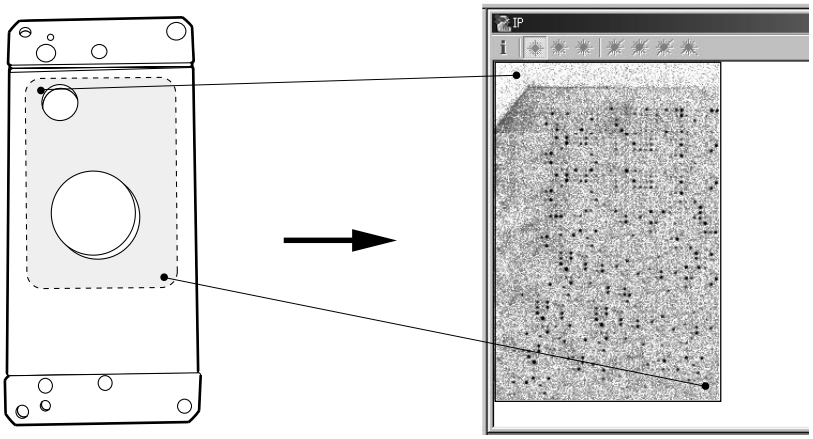
2-4. Take the IP out of the IP cassette and set it on the IP carrier immediately.



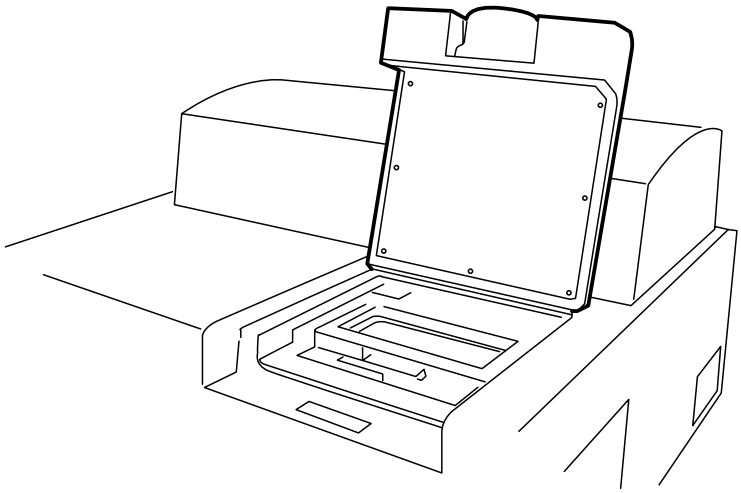
Set the IP on the IP carrier so that the scanning surface (i.e., blue surface coated with fluorescent material) faces up.

***Note:*** *The following figure shows the relationship between the IP setting position and the image position on the monitor. When the IP is viewed from the back as shown below, scanning starts at the upper left corner.*

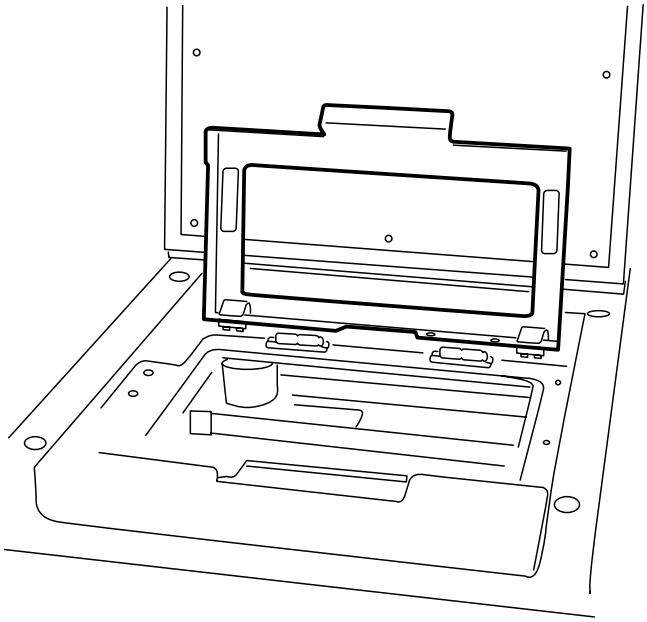
Back surface of the IP carrier



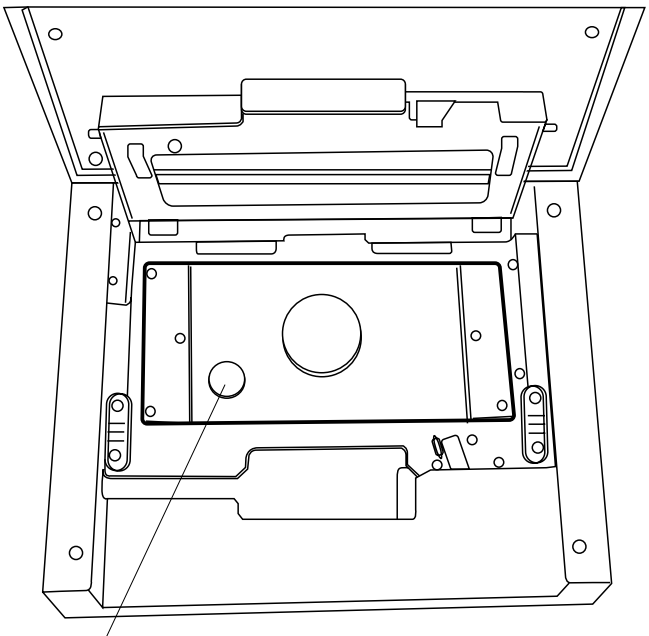

2-5. Open the sample setting door.



2-6. Open the carrier locking cover.

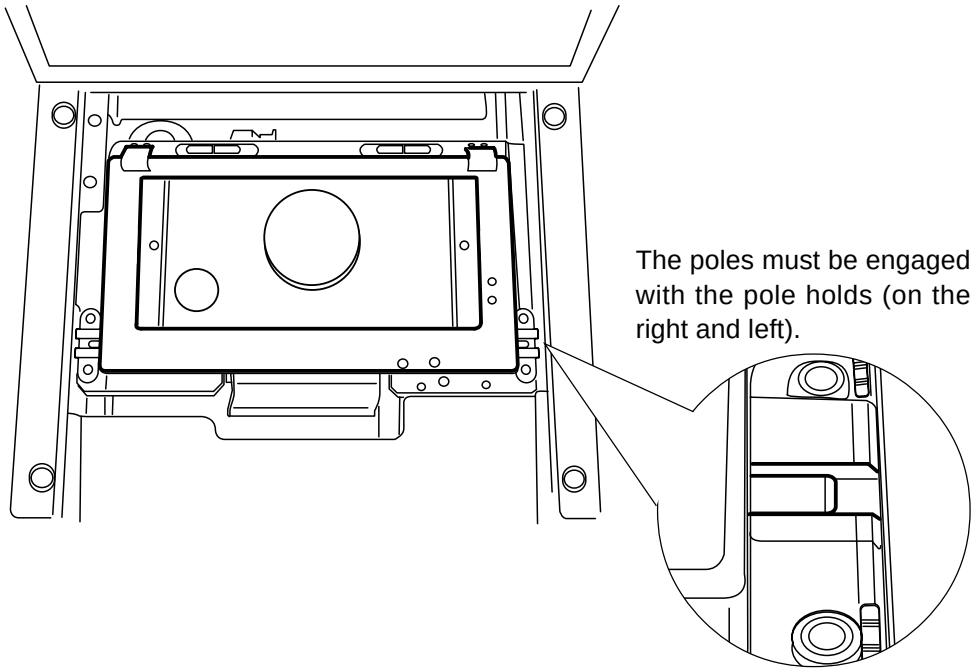


2-7. Set the IP carrier.
Set the IP carrier so that the large hole for removing the IP in the carrier is located on the front side and the poles on the FLA-8000 are engaged with the holes in the carrier.

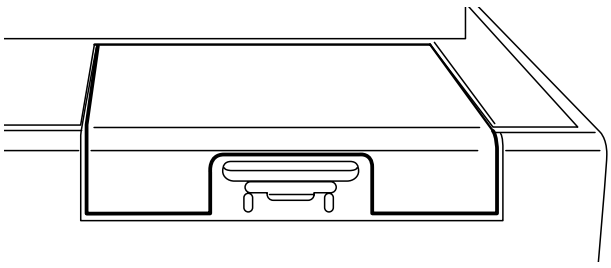


Large hole for removing the IP

2-8. Close the carrier locking cover firmly.
Close the carrier locking cover so that the poles on both sides of the cover are securely engaged with the pole holds on the FLA-8000. (The pole holds are located on the right and left.)

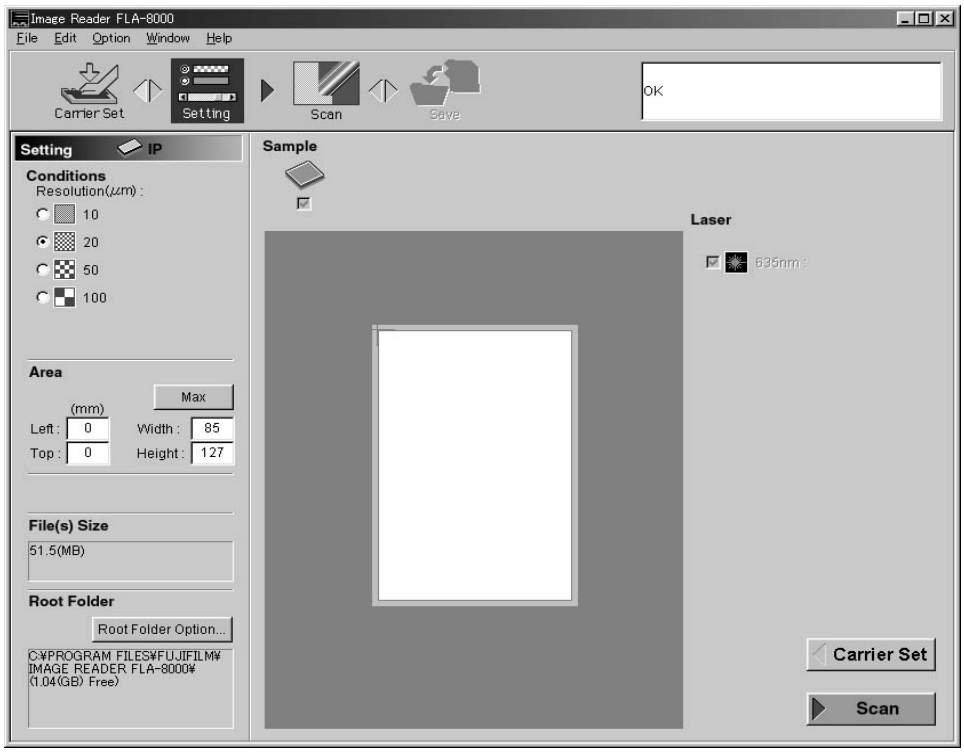



2-9. Close the sample setting door.



3. Go back to the PC, and click on Setting in the PC window. (On the right of Carrier Set in the upper part of the window or lower left of the window)

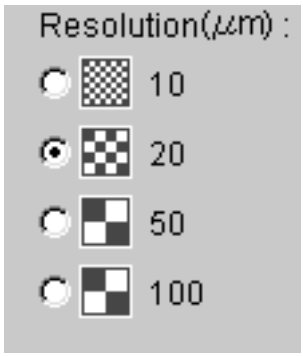
4. The window for setting the scanning conditions appears.




## Setting Mode

1. The following shows the details of the scanning conditions.

1-1. Resolution (μm)




***Resolution:*** Select a pixel scanning size.
The scanning time becomes longer in inverse proportion to the pixel scanning size.

***Note:*** IP scanning speed
The IP scanning speed is fixed to 800 mm/second.

1-2. Laser, filter, and high voltage conditions

The laser, filter and high voltage conditions for scanning an IP are fixed as shown below.

| | |
|---|---|
| Laser: | 635 nm LD |
| Filter: | The added optional B390 filters are used. (Three t2.5 filters) |
| High voltage: | Fixed in each model. |

* Filter and high voltage conditions are not displayed on the screen.

***Note:*** Filters for scanning an IP

Be sure to set the optional FUJI B390 filters for scanning IPs in the FLA-8000 before scanning an IP. The FLA-8000 Image Reader does not automatically check whether the B390 filters are set. If they are not set properly, no image may be obtained or, in the worst case, the built-in PMT may be damaged.

1-3. Specifying the scanning range

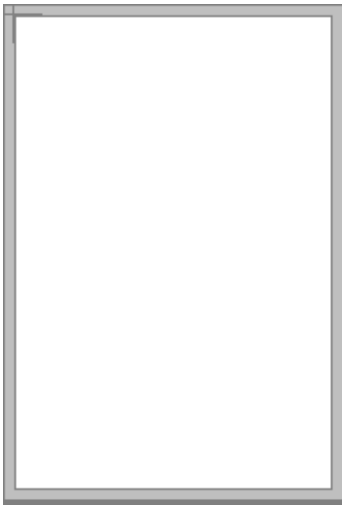
Two methods are available for specifying the scanning range as shown below.

a) Inputting numeric values

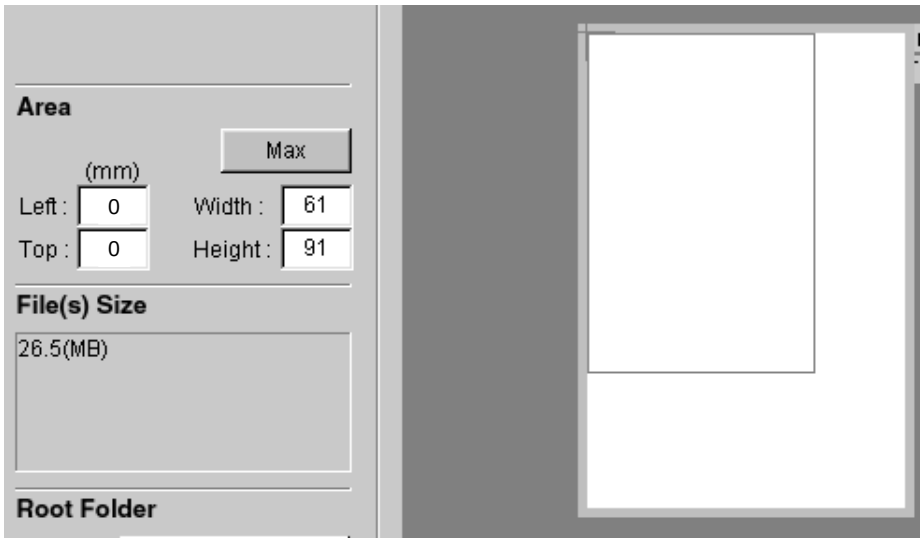
Input numeric values in the boxes shown below directly.


b) Dragging the mouse

The white area is the scannable area, and the red frame area is the scanning range.



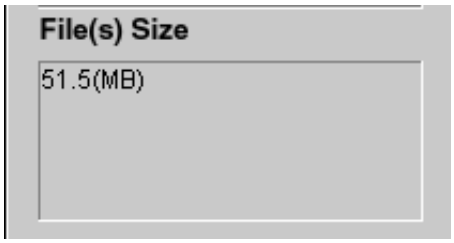
Drag the red frame area with the mouse to vary the scanning range.
As the red frame area changes, the numeric values in the Area boxes also change.




2. Other items in the Setting mode

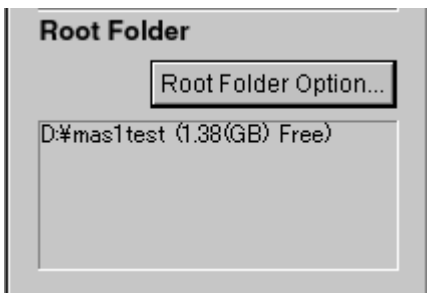
2-1. Scanned data amount

The numeric value in the box below "Files(s) Size" shows the amount of data obtained by scanning the IP in the specified conditions.



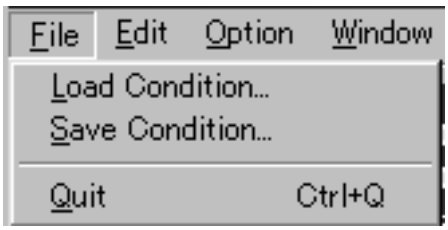

2-2. Root Folder Option

The folder where the scanned data file is stored is displayed in the box below "Root Folder Option".




If you want to change the folder, click the Root Folder Option... button and change the folder.

2-3. Saving and loading the scanning conditions

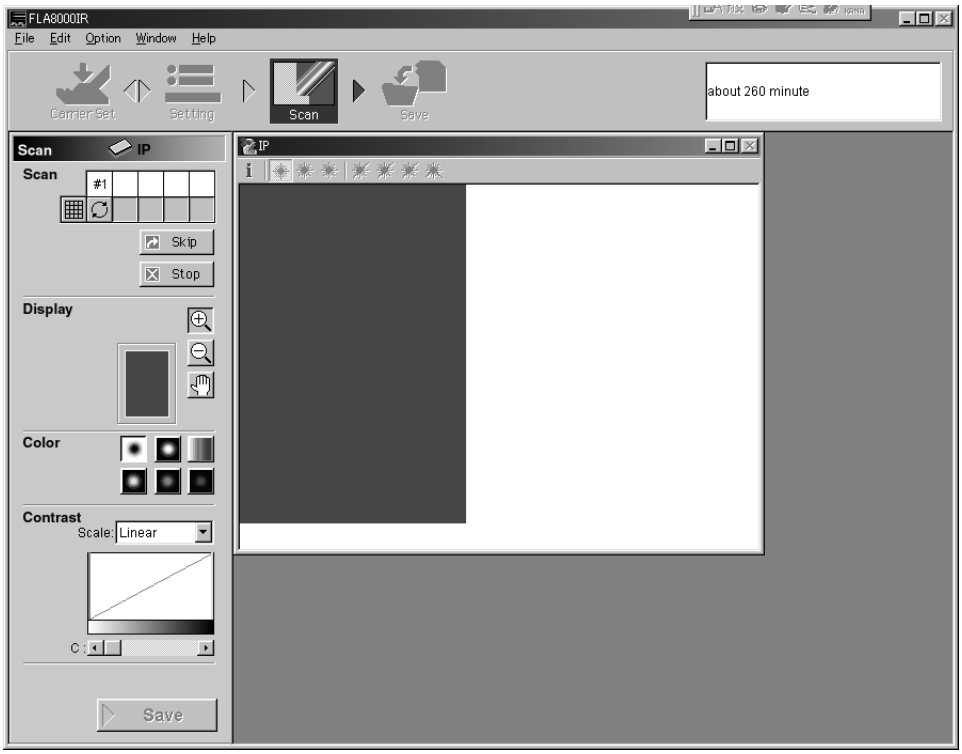



You may save and load (recall) the scanning conditions.

Saving the scanning conditions: Select "Save Condition" in the pull-down menu of the File menu. A dialog box opens. Input an intended name in the dialog box and save the file.

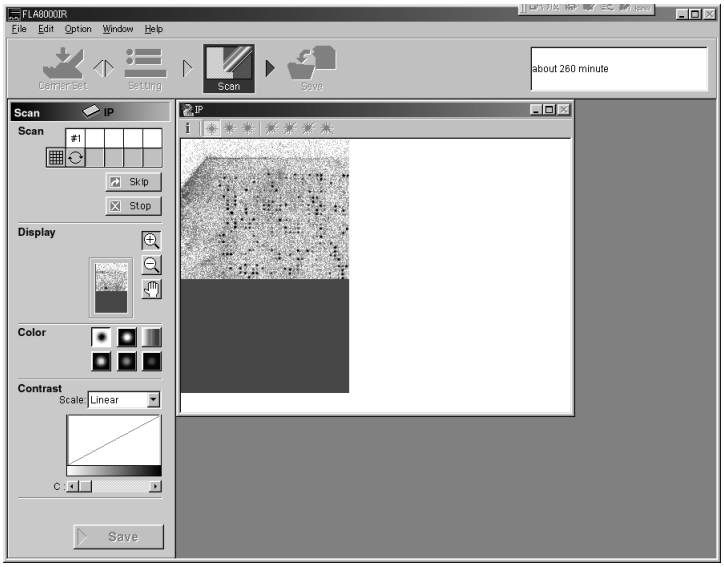
Loading the scanning conditions: Select "Load Condition" in the pull-down menu of the File menu. A dialog box opens. Select a file name in the dialog box and load the file.

3. Click on the Scan icon in the Setting window or the Scan button in the lower right of the window to start final scanning.

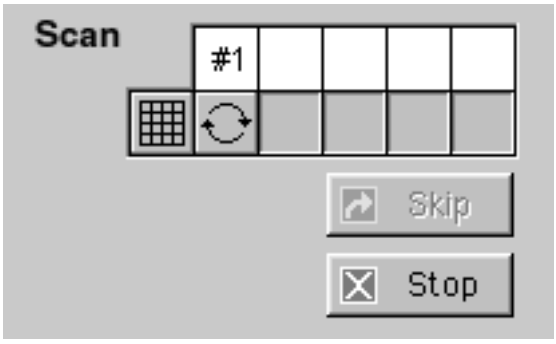


Scan Mode

1. A scanned image is displayed in the main window and the small window in the display area as soon as it is scanned.



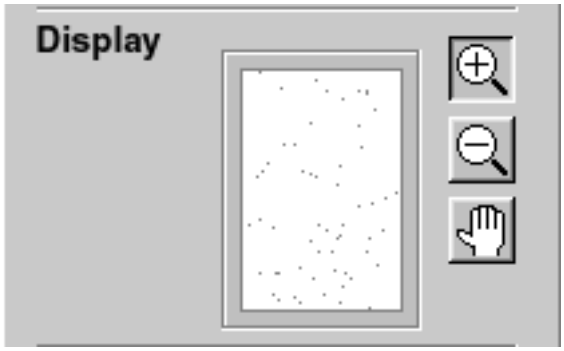

2. You may execute the following in the Scan mode.
   2-1. Skipping or stopping scanning

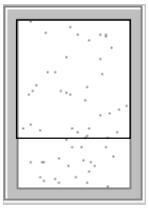




Stop ..... Click this button to stop scanning completely.

2-2. Enlarging or contracting the image display size



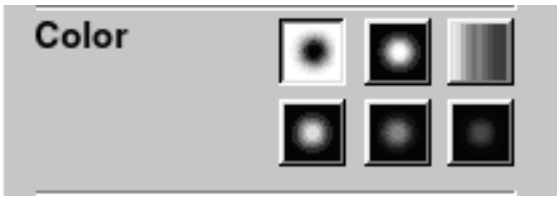

 ..... The red frame of the small image corresponds to the part displayed in the image window.

 ..... To enlarge a displayed image, click the  button, and click the mouse button in a position to be enlarged in the image window.

 ..... To contract a displayed image, click the  button, and click the mouse button in a position to be contracted in the image window.

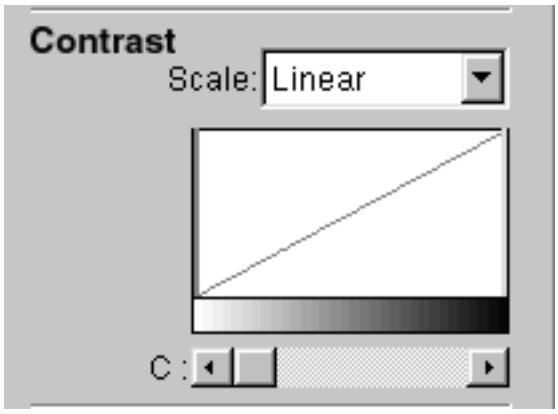
 ..... To move a displayed image without changing the magnification, click the  button and drag the mouse in the image window.

2-3. Changing the color of displayed images

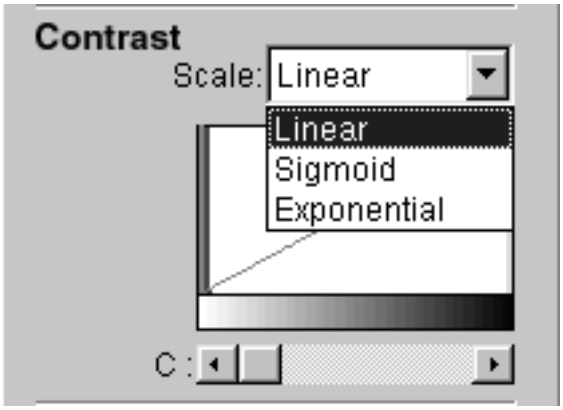



You may change the color of displayed images by clicking one of six buttons shown above.

2-4. Adjusting the gradation of displayed images



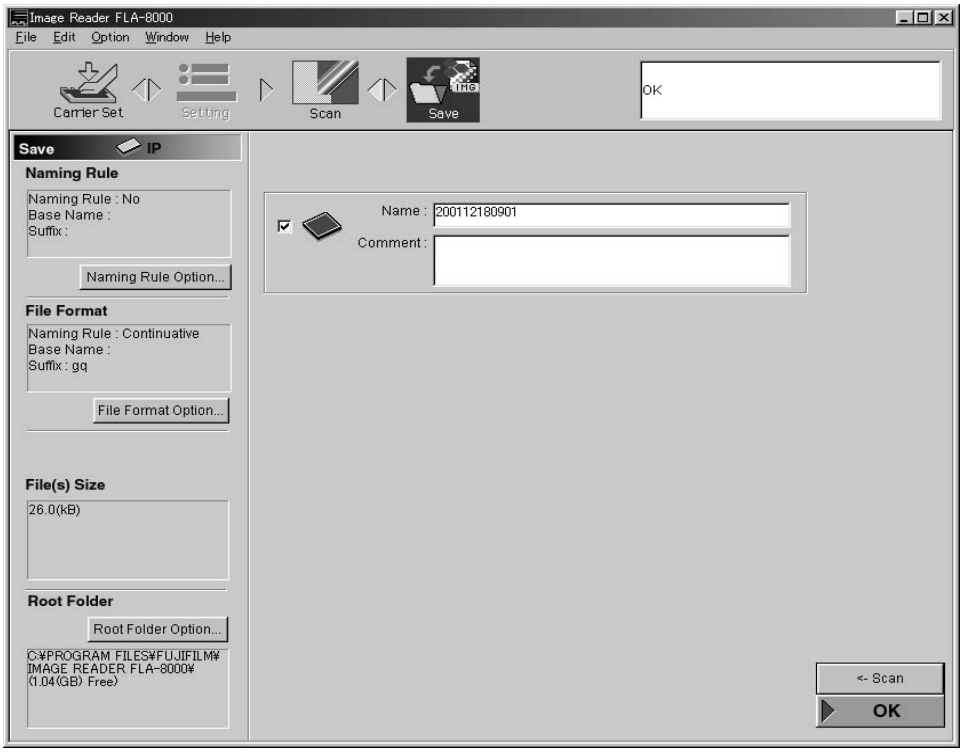

If you want to change the gradation of displayed images, select a scale in the pull-down menu and adjust the gradation with the adjuster bar on the histogram or by dragging the button below the histogram.




2-5. Displaying Reading Conditions

Click on the i mark in the upper left of the window frame or move the cursor pointer into the image window, and you may check the reading conditions.

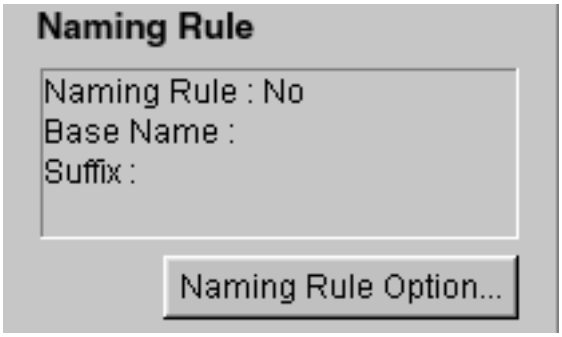
3. Click on the Save icon in the Scan mode window or the Save button in the lower left. The Scan mode window changes into the Save mode window, in which scanned images are saved.




## Save Mode

You may set the following in the Save mode window.

1-1. Giving an image file name

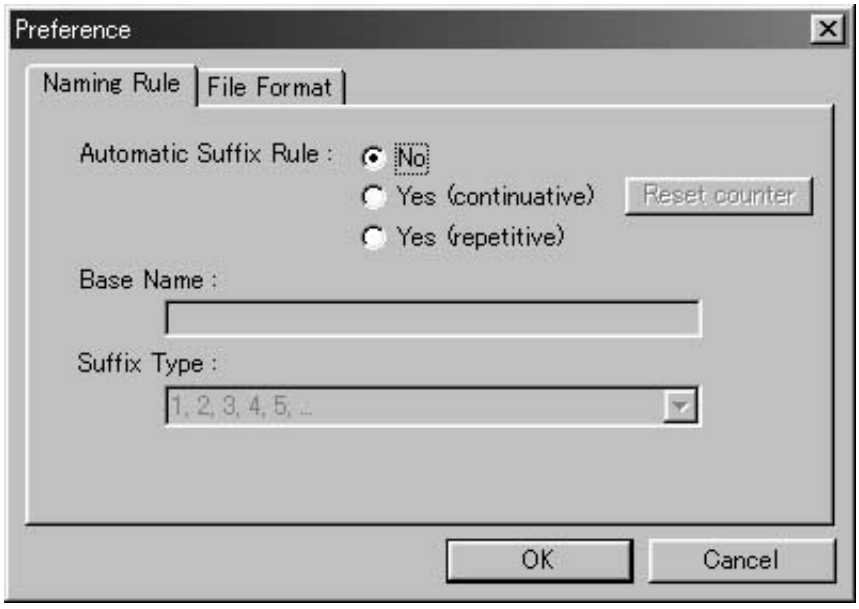



It is possible to give names to image files automatically in a certain rule. (Serial numbers are added to the end of image file names.) Each file name consists of the characters shown in the following example, in principle. xxx 1_640

Characters input in the Base Name box | Serial No. | Laser waveform

Click the Naming Rule Option... button.

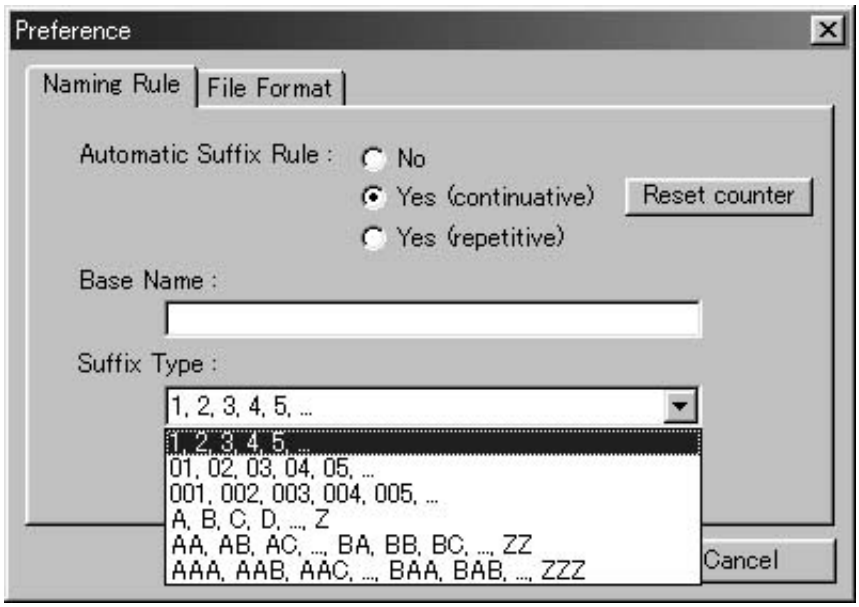
The Preference dialog box shown below is displayed.




Automatic Suffix Rule

No ..... Automatic file naming is not executed. The operator should input a file name of each image file.

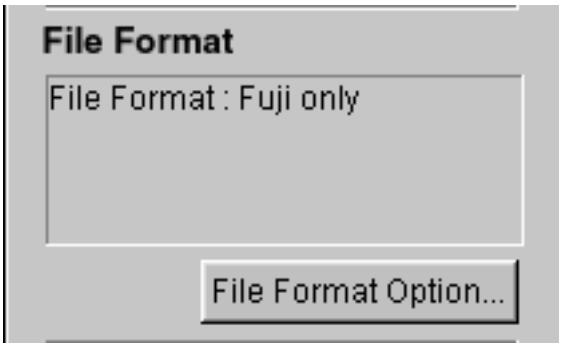
Yes (continuative) ..... Automatic file naming is executed. Suffices are added to file names. Select the suffix type in the pull-down menu.



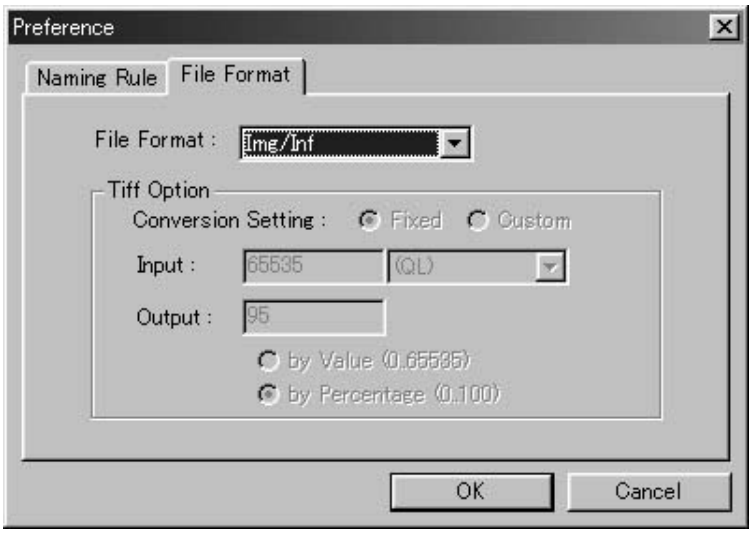
When Yes (continuative) and suffix type of 1, 2, 3, 4, 5 and so forth are selected and the latest scanned image is stored in the file "xxx-6", for example, the file name "xxx-7" is given to the first one of newly scanned images.
Clicking the Reset counter button resets the suffices added to the previous data and gives the file name "xxx-1" to the first one of newly scanned images.
If you input a character string in the Base Name box, each file name consists of that character string and the suffix. If you input "test" in the Base Name box, for example, the file name "test1_640" is given to the first one of images scanned by the 640 nm laser.

Yes (repetitive) ..... Automatic file naming is executed. Every time scanning is executed, suffices given to file names begin with the initial suffix. Even though the previous scanning ended with the file name "xxx3_ xxx", new scanning begins with "xxx1_ xxx".

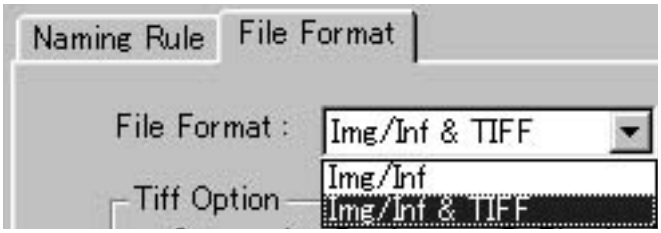
2. Specifying an image file format




Click the File Format Option... button or the File Format tag in the Preference dialog box of the Naming Rule Option described above. A dialog box for specifying a file format is displayed.



You may select one of the following two file formats.




Img/Inf ..... This is the standard file format of the BAS/FLA series. Each file of this format consists of a luster file (xxx.img) and an information file (xxx.inf). Use this Img/Inf file format if you want to analyze scanned images with the ScienceLab or Array Gauge made by Fuji Photo Film Co., Ltd. in the next step.

Img/Inf & TIFF ..... Scanned images are saved in both the Img/Inf-format file and TIFF-format file.

Select TIFF Option to specify a method of converting a file into a TIFF file.

Conversion setting ..... Fixed: Images are automatically converted into the TIFF file format using the algorithm in the software based on the maximum value of the images.

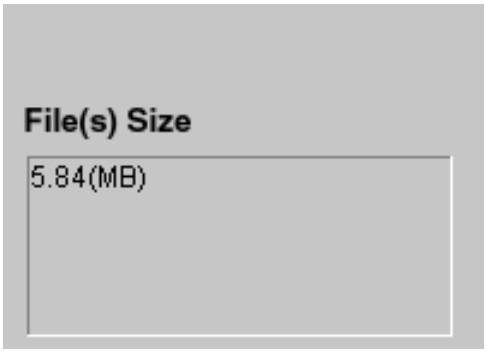
Custom: Input a numeric value, which indicates the conversion method.

Input:/Output: Input a numeric value, which indicates the number of TIFF files for saving raw data of original images.

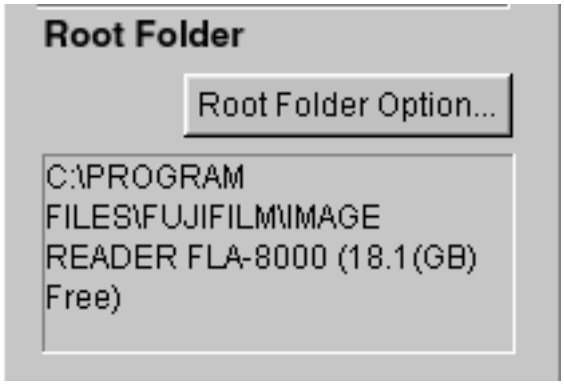
by Value: The value in the Output box is regarded as the value (0 to 65535) of raw data in process of conversion.

by Percentage: The value in the Output box is regarded as the percentage with respect to 65535 in process of conversion.

3. Image file size and file storage folder
   The total size of scanned images is displayed in the box below File(s) Size.



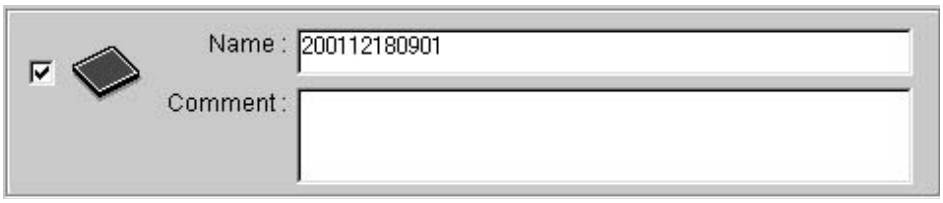
The folder where the scanned data file is stored is displayed in the box below "Root Folder ".




If you want to change the folder, click the 

button and change the folder.

4. Inputting a comment
   You may input a comment in the Comment box below the Name box. The comment input in this box is saved together with the image data.




5. Cancelling your saving action
   If you do not want to save the IP image file read out, deselect the check box next to the IP icon by clicking the mouse button.

6. Rechecking the image
   Clicking the 

button in the lower right allows you to recheck the image read out before it is saved.

7. Click the OK button in the lower right, and the selected image data is saved.

# Part 7

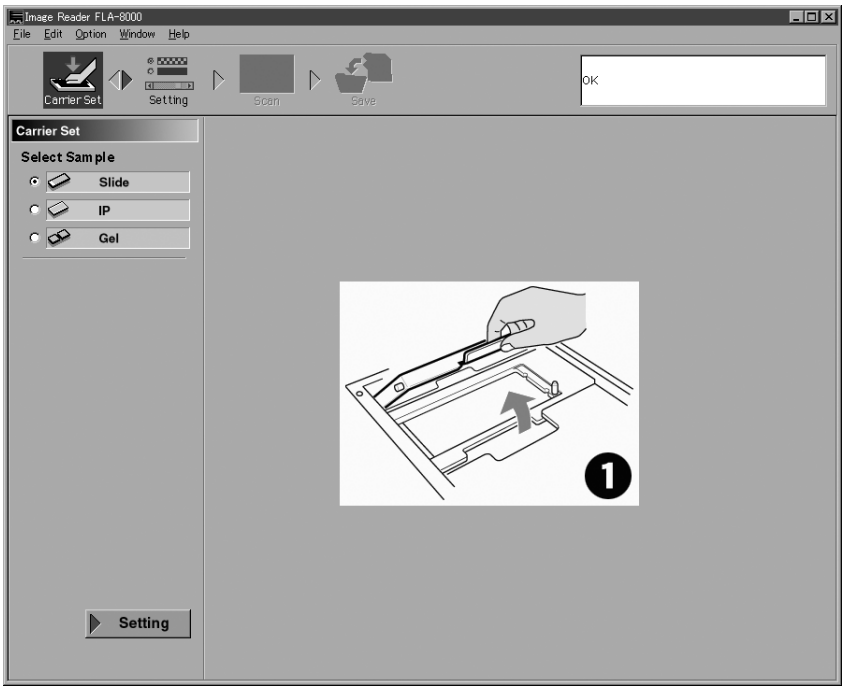
# Scanning Gel Samples

## Scanning Gel Samples

### Setup of Hardware and Software

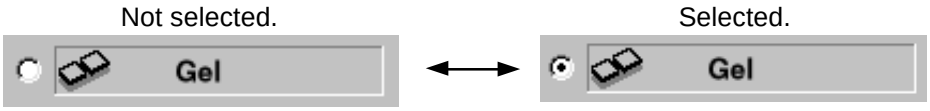
1. Switch on the FLA-8000 and peripheral devices.
2. Switch on the PC.
3. Make sure that the FLA-8000 has warmed up and is ready for operation. Activate the FLA-8000 Image Reader from the Startup menu or using the shortcut key.


4. The main window of the FLA-8000 Image Reader is displayed.



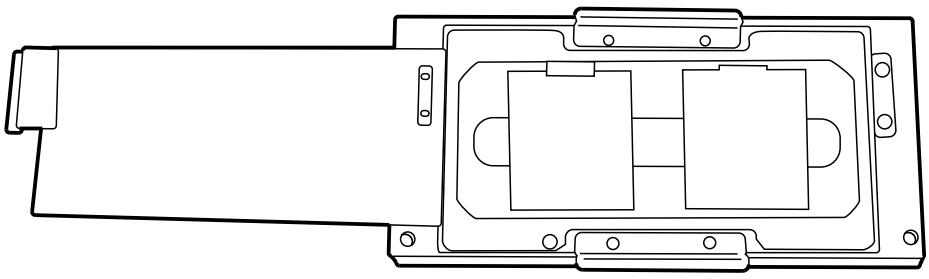

## Carrier Set Mode

1. Select "Gel" in "Select Sample" in the Carrier Set mode.
   Click on the Slide icon or the radio button on the left of the Slide icon to select the gel.

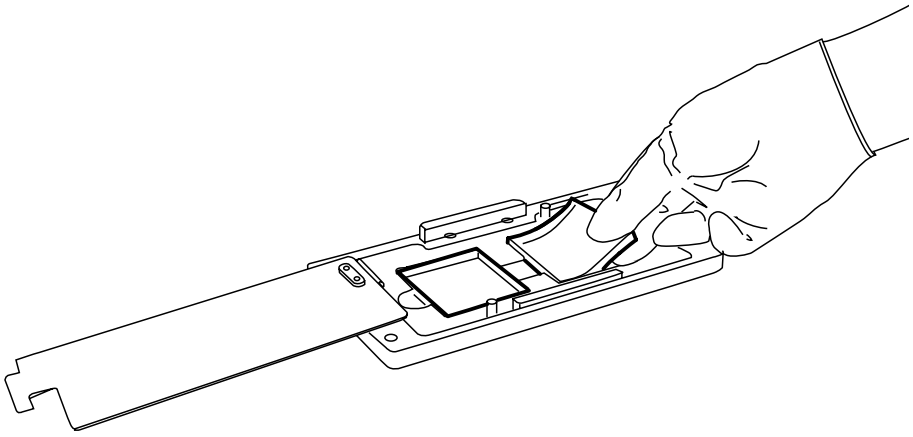



2. Set gel on the gel carrier.

   2-1. Place the gel carrier with the gel setting cover opened toward the left as shown below.

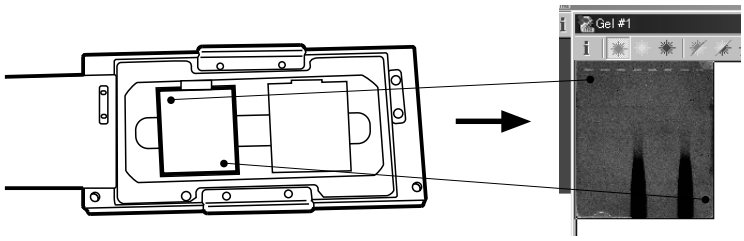


2-2. Push gel with the sample charging holes upside on the gel carrier.



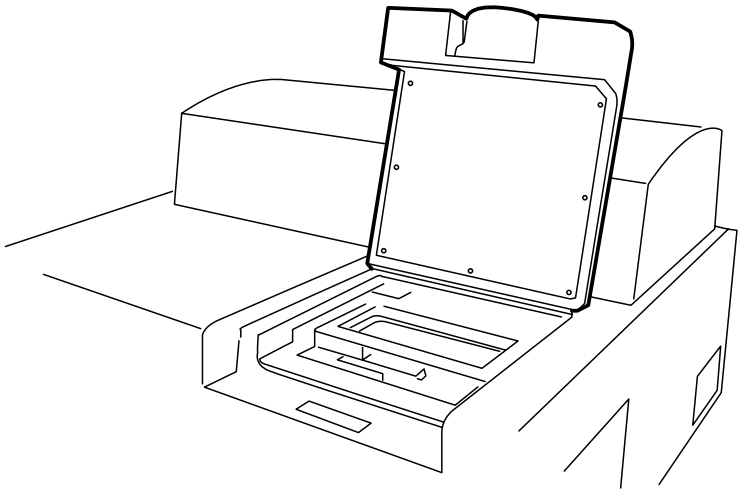
***Note:*** It is possible to set a maximum of two pieces of gel, which are scanned from left in the above-shown condition.

***Note:*** The relationship between the gel setting position and the scanned image displayed on the monitor is as shown below.

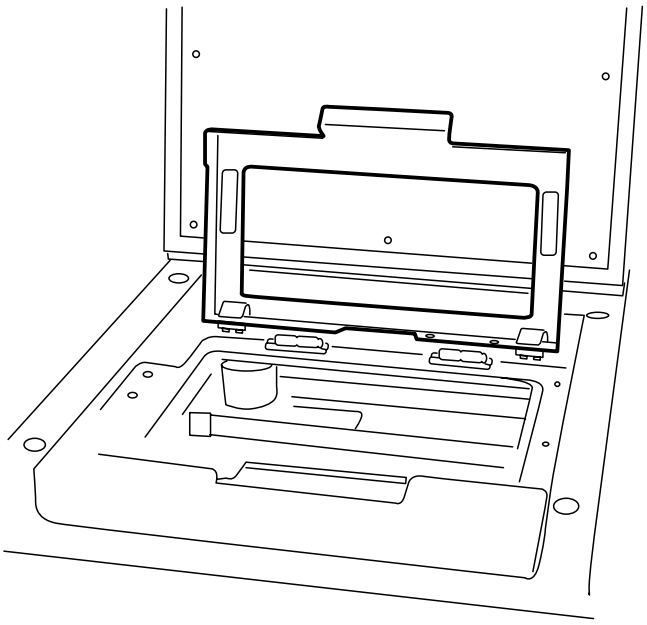



***Note:*** Be careful not to make the gel buffer solution exceed the gel stopper inside the carrier. The carrier is transported at high speed in the FLA-8000 during scanning. If buffer solution is too much, it may spill inside, resulting in breakdown of the equipment.

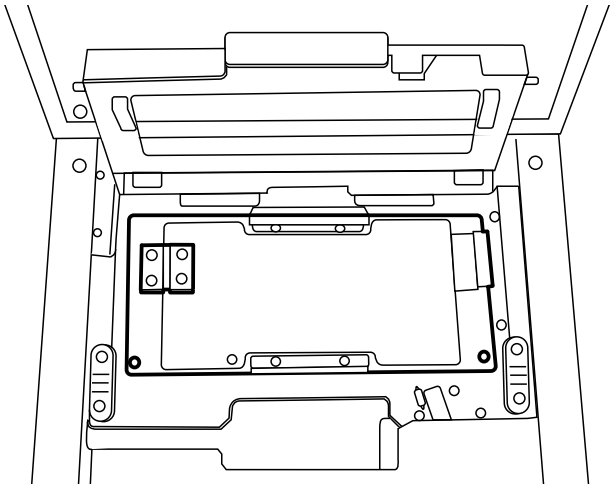
2-3. Open the sample setting door.



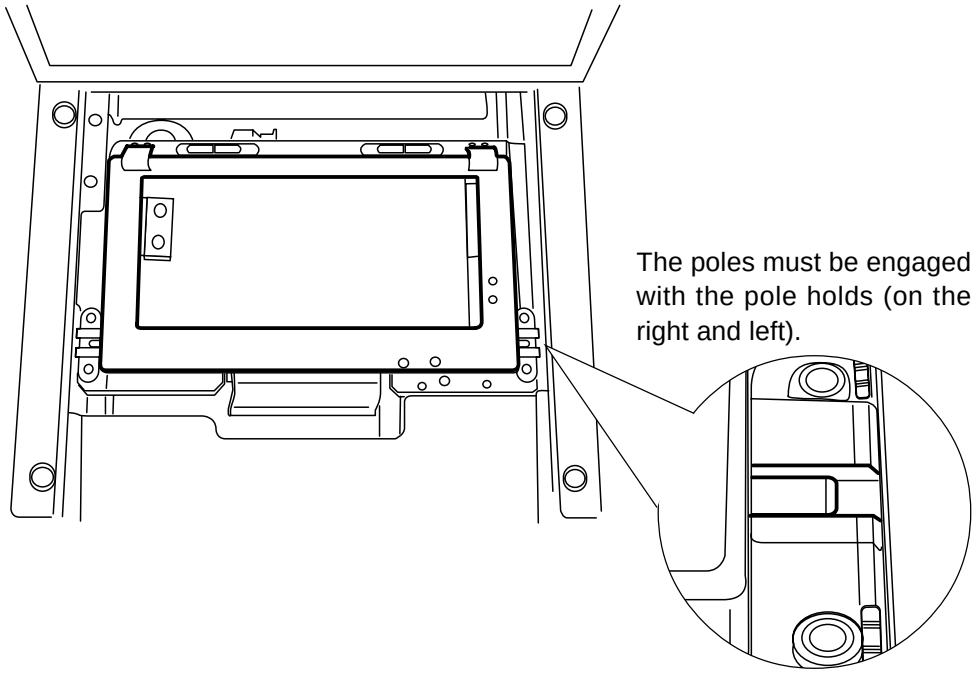
2-4. Open the carrier locking cover.



2-5. Set the gel carrier. Set it so that the hinge of the gel setting cover is located on the left and the poles on the FLA-8000 are engaged with the holes in the carrier.

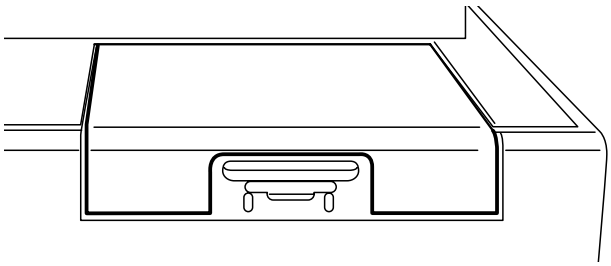


2-6. Close the carrier locking cover firmly. Close it so that the poles on both sides of the carrier locking cover are securely engaged with the pole holds on the FLA-8000. (The pole holds are located on the right and left.)



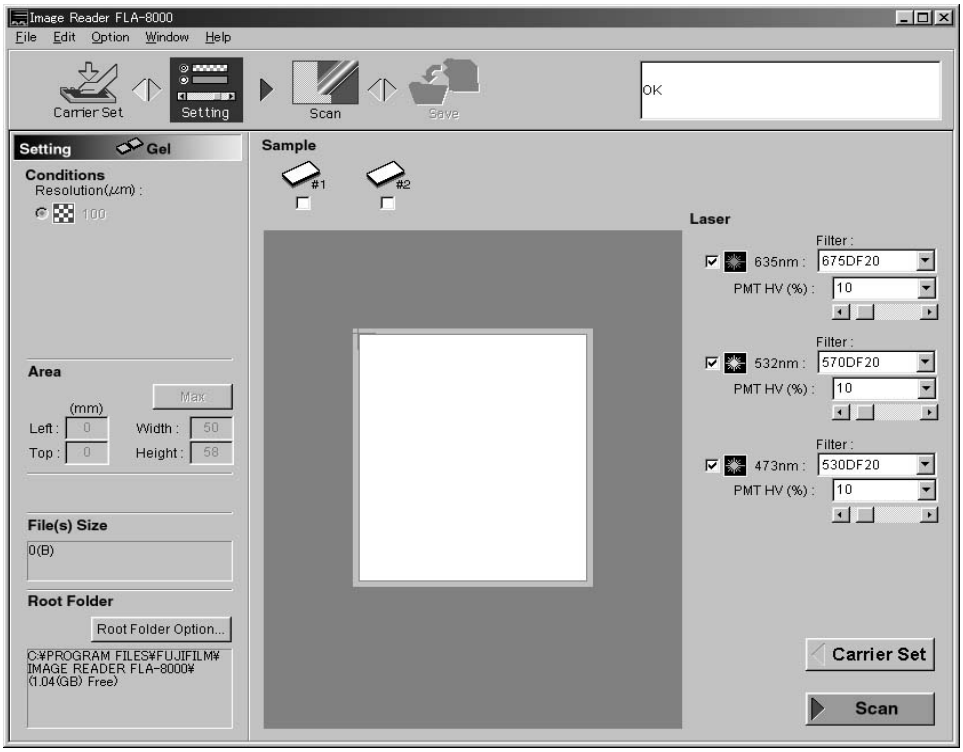
The poles must be engaged with the pole holds (on the right and left).

2-7. Close the sample setting door.



3. Go back to the PC, and click on Setting in the PC window (on the right of Carrier Set in the upper part of the window or lower left of the window).

4. The window for the setting the scanning conditions appears.



Setting Mode

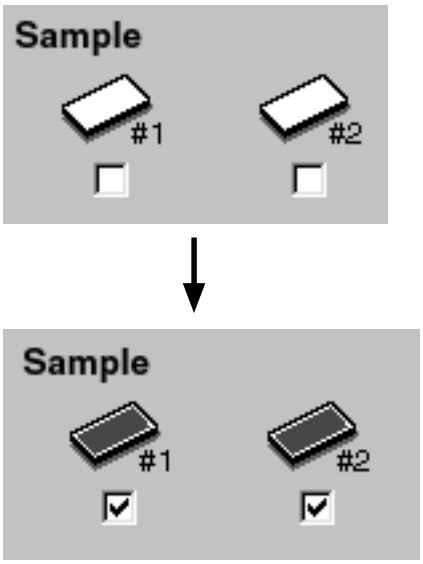
1. The following shows the details of the scanning conditions.

1-1. Resolution (㎛)


The size of scanned gel pixels is fixed to 100 ㎛.

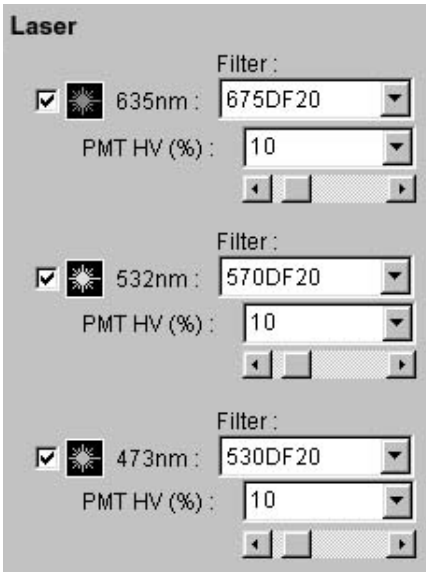
***Note:*** Gel scanning speed
The gel scanning speed is fixed to 400 mm/second.

1-2. Specifying gel to be scanned and laser, filter, and high voltage conditions
Tick the box below an intended gel icon to select the gel.




***Note:*** You may select gel after specifying the laser, filter, and high voltage conditions described below.

***Note:*** It is impossible to set the laser conditions independently for several pieces of gel in one-time scanning. All pieces of gel are scanned in the laser conditions displayed before clicking the Scan button.
You may set the filter and high voltage conditions independently for each piece of gel.




Tick the check boxes on the left side of the icons of the lasers to be used for scanning.

Use the pull-down menu to select a filter used for each laser. The filter types available for a laser differ with the laser types. The available combinations are as shown below.

635 mm: 675 DF 20
Optional filter added

532 mm: 570 DF 20
675 DF 20
Optional filters added

473 mm: 530 DF 10
570 DF 20
675 DF 20
Optional filters added

* See page 99 for the method of adding optional filters.

Input the voltage to be applied to the PMT (photo-multiplier tube) in percentage (an integer only) or select it by dragging the adjuster button below the box. 1000 V is applied to the PMT when 100% is input.

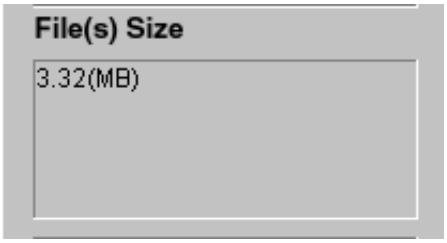
1-3. Scanning range


The gel scanning range is fixed.
The allover surface of gel (58 W X 50 H mm) is scanned.

1-2. Other items in Setting mode

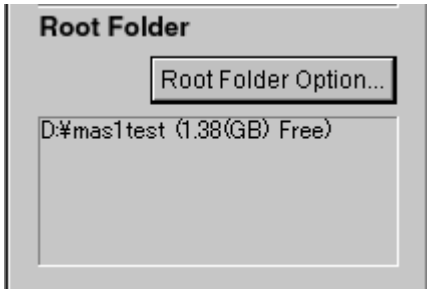
2-1. Scanned data amount

The numeric value in the box below "Files(s) Size" shows the (total) amount of data obtained by scanning the gel in the specified conditions.




2-2. Root Folder Option

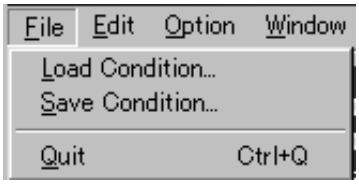
The folder where the scanned data file is stored is displayed in the box below "Root Folder Option".




If you want to change the folder, click the 

button and change the folder.

2-3. Saving and loading the scanning conditions




You may save and load (recall) the scanning conditions.

Saving the scanning conditions: Select "Save Condition" in the pull-down menu of the File menu. A dialog box opens. Input an intended name in the dialog box and save the file.

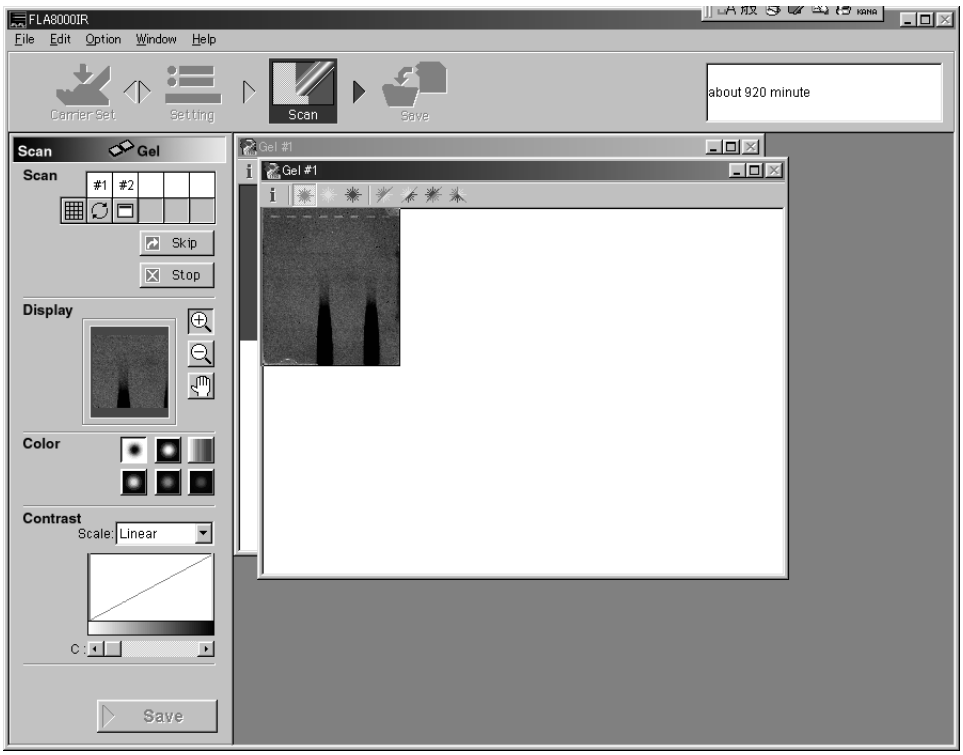
Loading the scanning conditions: Select "Load Condition" in the pull-down menu of the File menu. A dialog box opens. Select a file name in the dialog box and load the file.

***Note:*** *Number of gradations and dynamic range The number of gradations and dynamic range of the FLA-8000 are fixed to the values shown below, regardless of the sample types.*

*Number of gradations: Sixteen bits*

*Dynamic range: Five digits*

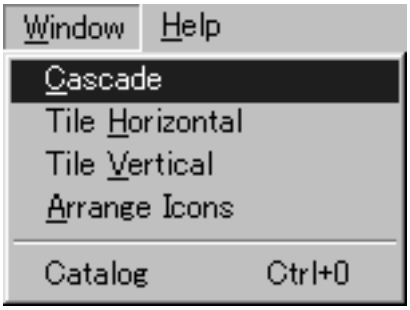
3. Click the Scan icon in the upper part of the Setting window or the Scan button in the lower right of the window to start final scanning.



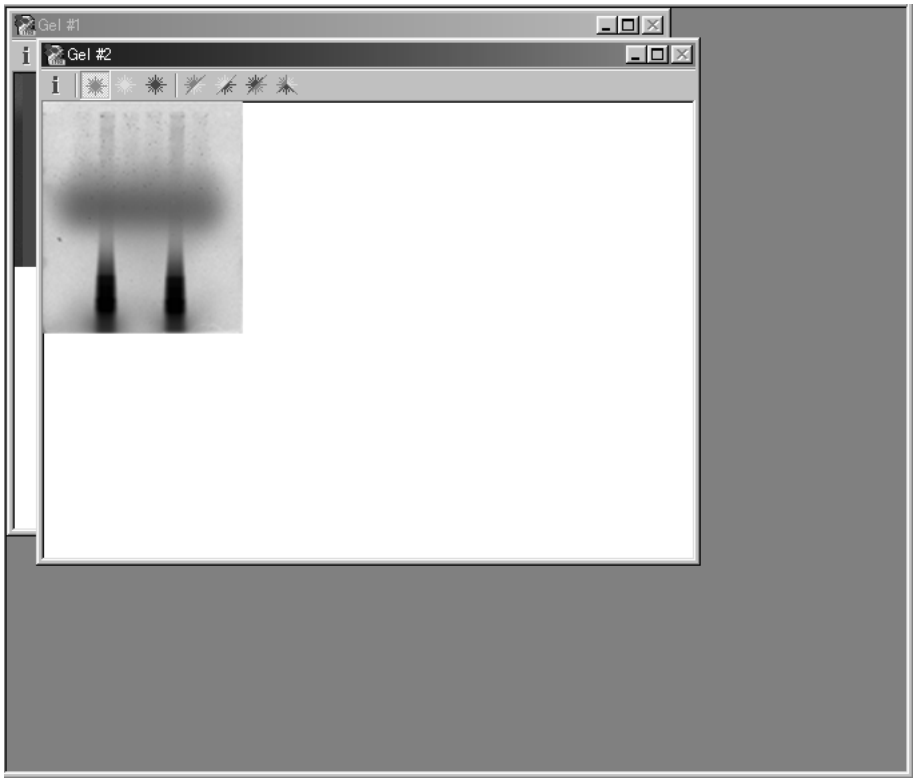

## Scan Mode

1. Gel being scanned is marked with ↻. Scanned images are displayed in the window in sequence.

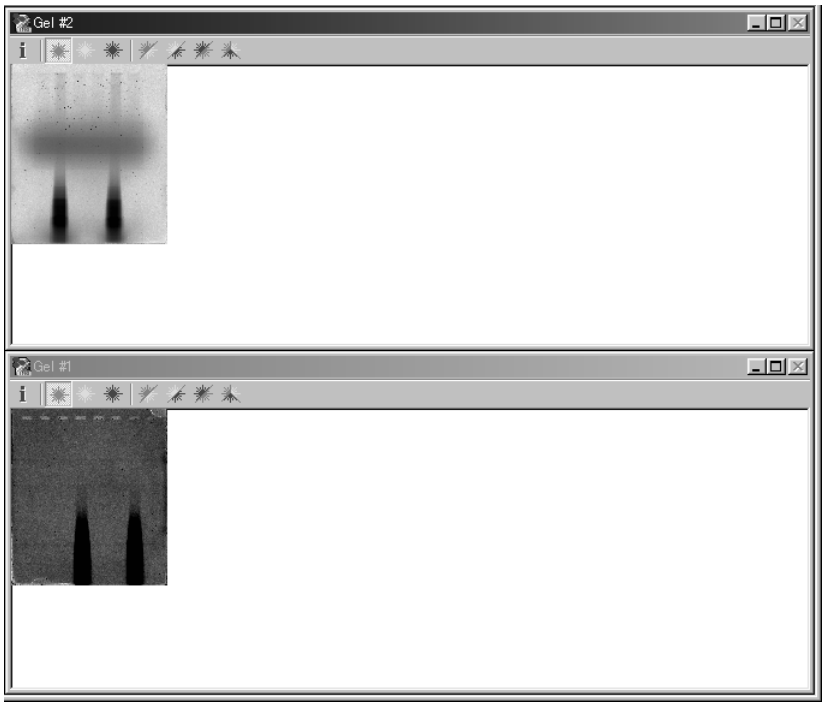
2. Image window in the Scan mode
   There are several methods to display the gel windows. Click on the Window menu to display the pull-down menu, and select an intended method.



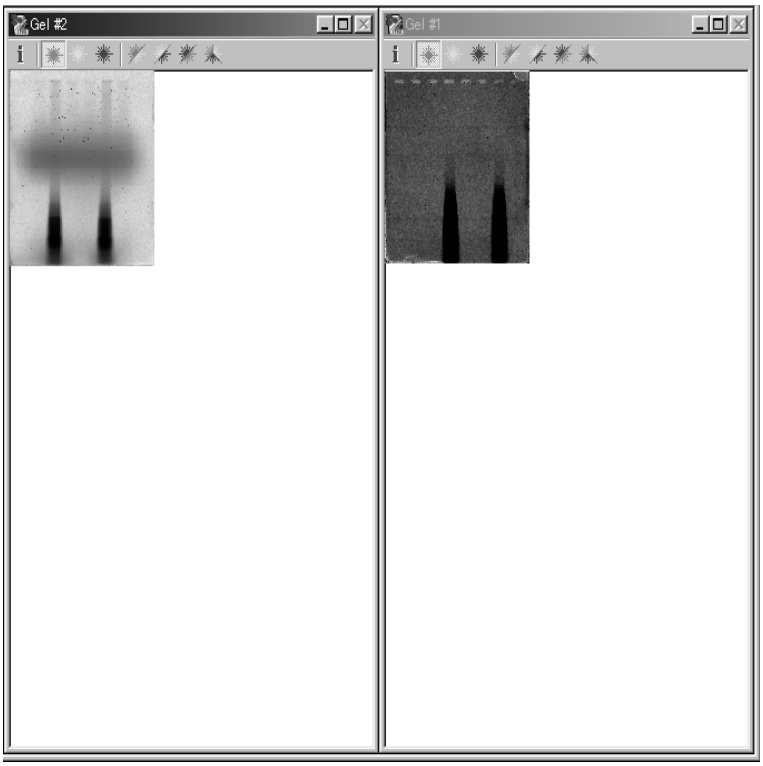
Cascade ..... Displays overlaid images.



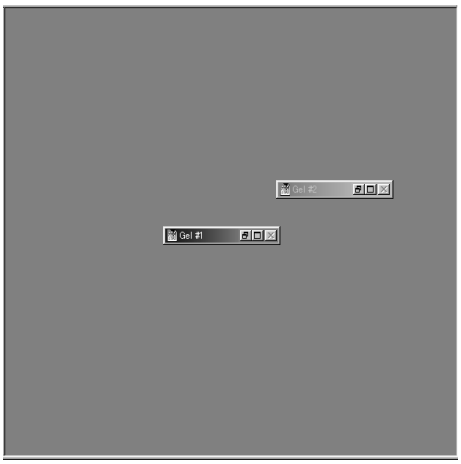

Tile Horizontal ..... Displays images horizontally.

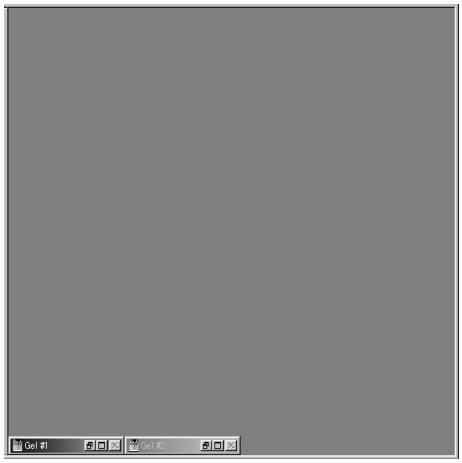


Tile Vertical ..... Displays images vertically.

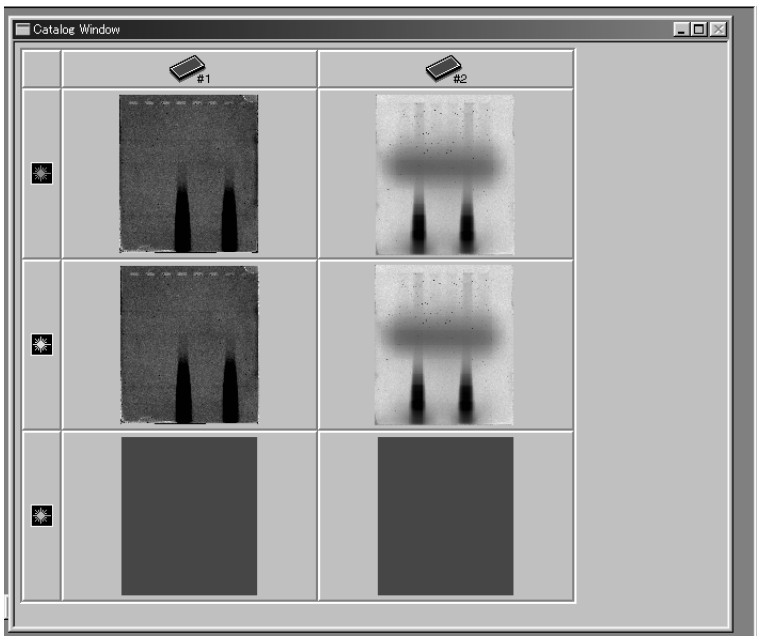



Arrange Icons ..... Windows illustrated as title bars are arranged.






3. When Catalog is selected on the Window menu, the minimized catalog window is enlarged and displayed in the forefront.



4. Change images scanned by three types of lasers in the image window as shown below.

   Click on the mark in the upper part of the window to change the images as shown below.

Red ..... Image scanned by the red 635 nm laser

Green ..... Image scanned by the green 532 nm laser

Blue ..... Image scanned by the blue 473 nm laser

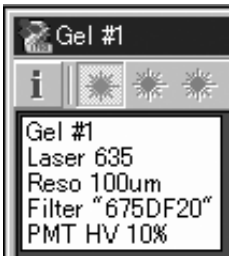
Red/green ..... Image scanned by the red 635 nm laser overlaid on the image scanned by the green 532 nm laser

Green/blue ..... Image scanned by the green 532 nm laser overlaid on the image scanned by the blue 473 nm laser

Blue/red ..... Image scanned by the blue 473 nm laser overlaid on the image scanned by the red 635 nm laser

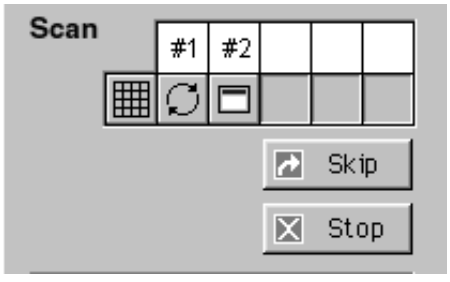
Red/green/blue .... Images scanned by the three lasers all overlaid

Click on the mark in the upper left of the window frame or move the cursor pointer into the image window, and you may check the reading conditions.




5. Other functions in the Scan mode

   5-1.Skipping or stopping scanning

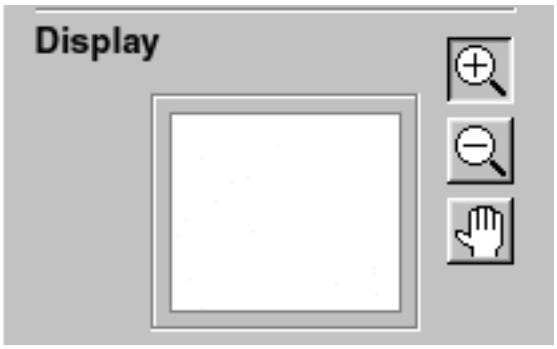


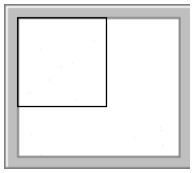


Skip ..... Click this button to skip the current scanning and proceeds to the following scanning.


Stop ..... Click this button to stop scanning.

5-2. Enlarging or contracting the image display size



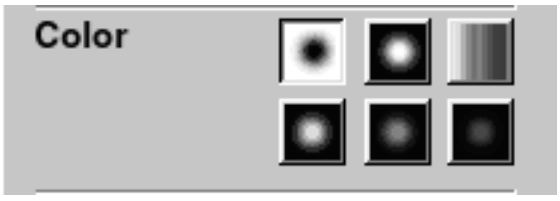

 .... The red frame of the small image corresponds to the part displayed in the image window.

 ..... To enlarge a displayed image, click the  button, and click the mouse button in a position to be enlarged in the image window.

 ..... To contract a displayed image, click the  button, and click the mouse button in a position to be contracted in the image window.

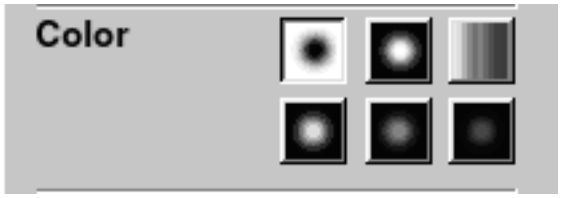
 ..... To move a displayed image without changing the magnification, click the  button and drag the mouse in the image window.

10-3. Changing the color of displayed images



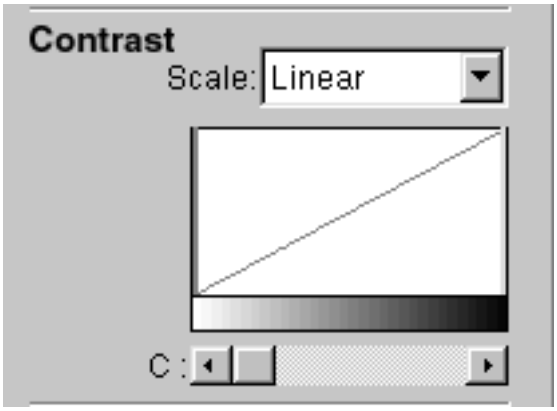

You may change the color of displayed images by clicking one of six buttons shown above.

5-3. Changing the color of displayed images

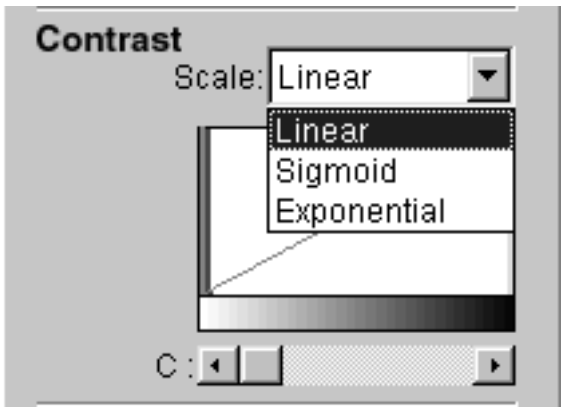



You may change the color of displayed images by clicking one of six buttons shown above.

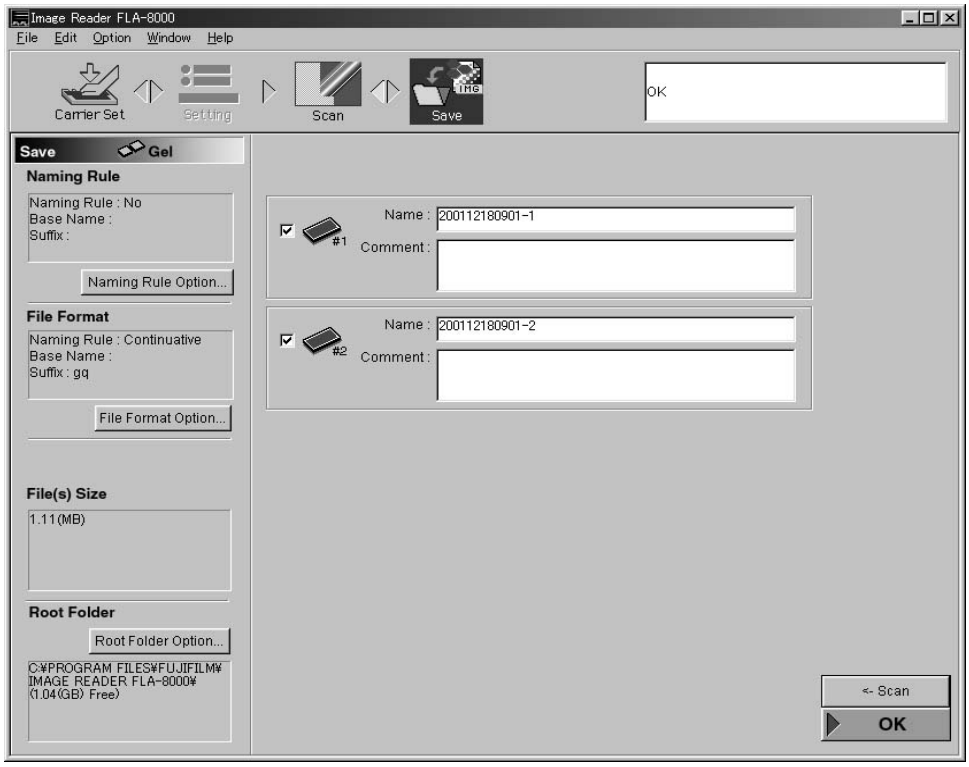
5-4. Adjusting the gradation of displayed images




If you want to change the gradation of displayed images, select a scale in the pull-down menu and adjust the gradation with the adjuster bar on the histogram or by dragging the button below the histogram.



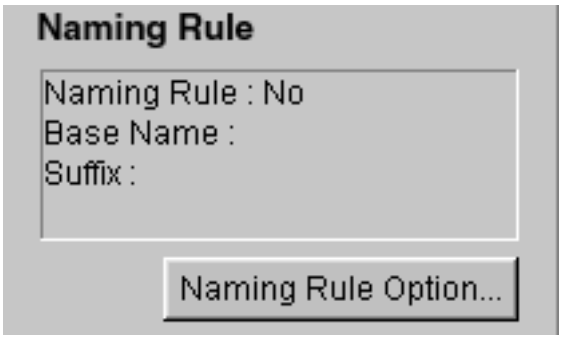
6. Click on the Save icon in the Scan mode window or the Save button in the lower left. The Scan mode window changes into the Save mode window, in which scanned images are saved.



## Save Mode

You may set the following in the Save mode window.

1. Giving an image file name



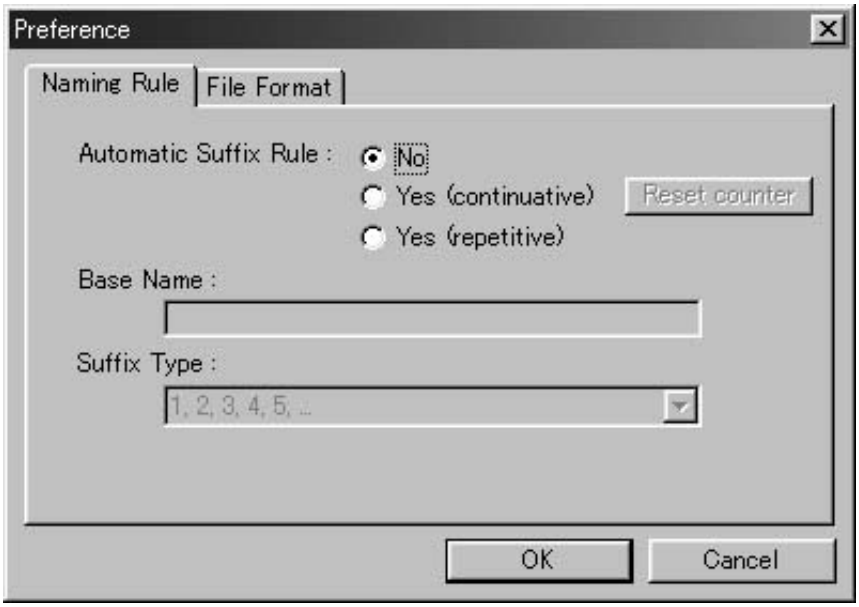

It is possible to give names to image files automatically in a certain rule. (Serial numbers are added to the end of image file names.) Each file name consists of the characters shown in the following example, in principle.

xxx 1_473

- Laser waveform
- Serial No.
- Characters input in the Base Name box

Click the  button.
The Preference dialog box shown below is displayed.

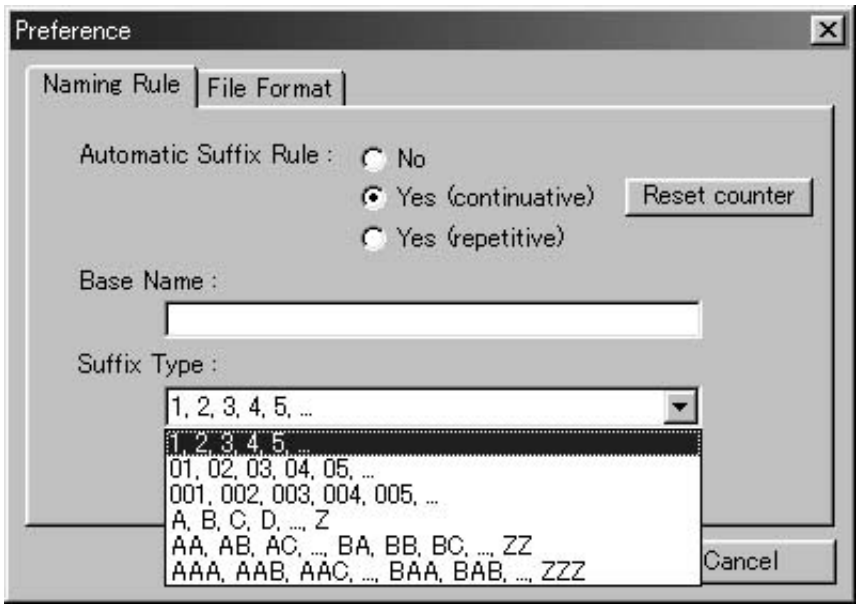




Automatic Suffix Rule

No ..... Automatic file naming is not executed. The operator should input a file name of each image file.

Yes (continuative) ..... Automatic file naming is executed. Suffices are added to file names. Select the suffix type in the pull-down menu.



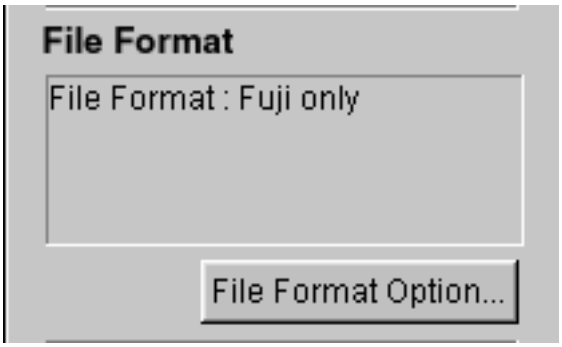

When Yes (continuative) and suffix type of 1, 2, 3, 4, 5 and so forth are selected and the latest scanned image is stored in the file "xxx-6", for example, the file name "xxx-7" is given to the first one of newly scanned images.

Clicking the Reset counter button resets the suffices added to the previous data and gives the file name "xxx-1" to the first one of newly scanned images.

If you input a character string in the Base Name box, each file name consists of that character string and the suffix. If you input "test" in the Base Name box, for example, the file name "test1_473" is given to the first one of images scanned by the 473 nm laser.

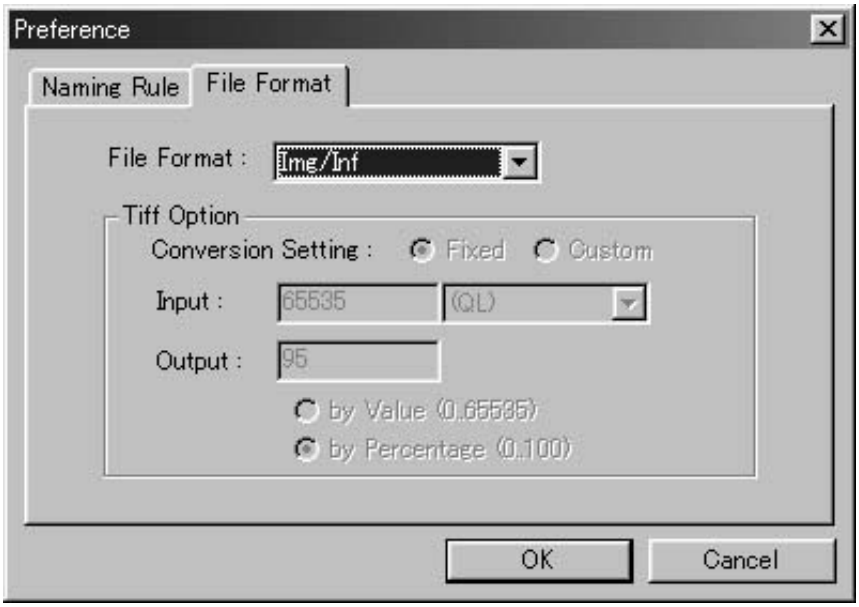
Yes (repetitive) ..... Automatic file naming is executed. Every time scanning is executed, suffices given to file names begin with the initial suffix. Even though the previous scanning ended with the file name "xxx3_ xxx", new scanning begins with "xxx1_ xxx".

2. Specifying an image file format

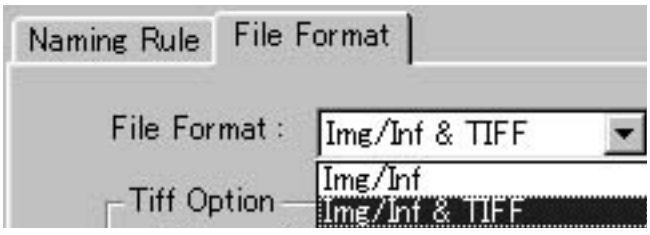



Click the 

button or the File Format tag in the Preference dialog box of the Naming Rule Option described above. A dialog box for specifying a file format is displayed.




You may select one of the following two file formats.



Img/Inf ..... This is the standard file format of the BAS/FLA series. Each file of this format consists of a luster file (xxx.img) and an information file (xxx.inf). Use this Img/Inf file format if you want to analyze scanned images with the ScienceLab or Array Gauge made by Fuji Photo Film Co., Ltd. in the next step.

Img/Inf & TIFF ..... Scanned images are saved in both the Img/Inf-format file and TIFF-format file.

Select TIFF Option to specify a method of converting a file into a TIFF file.

Conversion setting ..... Fixed: Images are automatically converted into the TIFF file format using the algorithm in the software based on the maximum value of the images.

Custom: Input a numeric value, which indicates the conversion method.

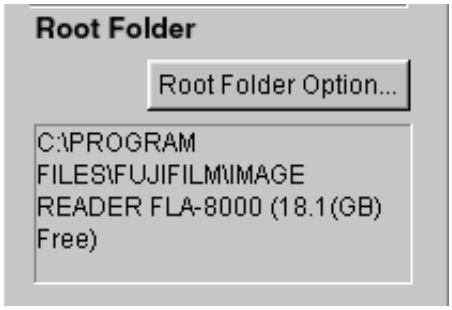
Input:/Output: Input a numeric value, which indicates the number of TIFF files for saving raw data of original images.

by Value: The value in the Output box is regarded as the value (0 to 65535) of raw data in process of conversion.

by Percentage: The value in the Output box is regarded as the percentage with respect to 65535 in process of conversion.

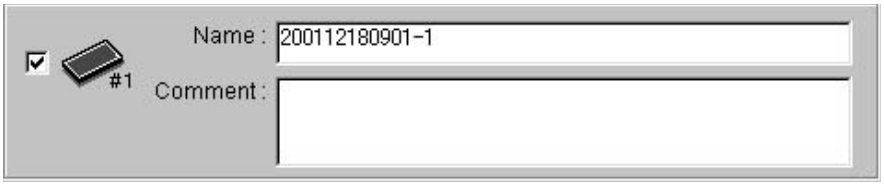
3. Image file size and file storage folder
   The total size of scanned images is displayed in the box below File(s) Size.

The box below Root Folder shows where the folder for saving the images resides.




If you want to change the folder, click the Root Folder Option... button and change the folder.

4. Inputting a comment
   You may input a comment in the Comment box below the Name box. The comment input in this box is saved together with the image data.




5. Selecting an image to be saved
   The file will be saved as long as the check box on the left side of the gel icon is chosen.
   Deselecting the check box by clicking the mouse button will not save the file.

6. Rechecking the image
   Clicking the Scan button in the lower right allows you to recheck the image read out before it is saved.

7. Click the OK button in the lower right, and the selected image data is saved.

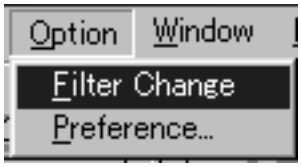
# Part 8

# Setting Optional Filters

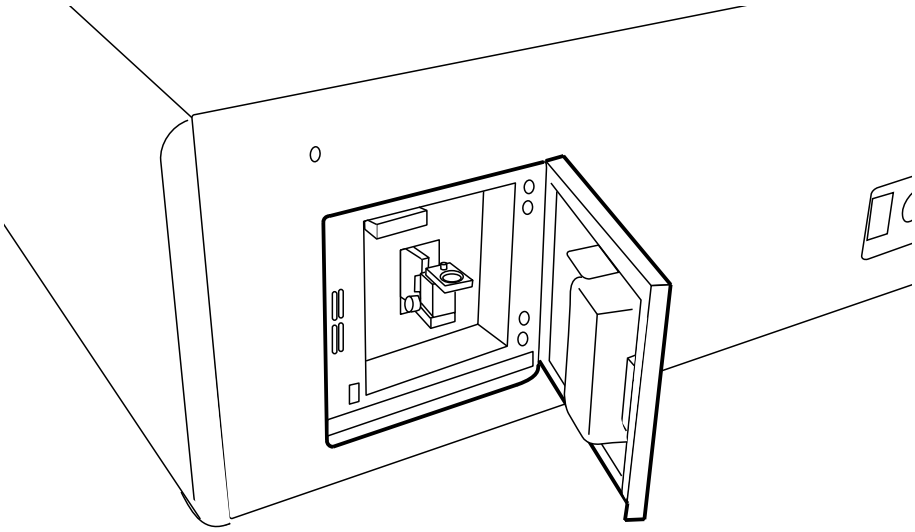
## Setting Optional Filters

You may add another set of optional filters to the FLA-8000, in addition to three types of built-in standard filters Set the optional filters in the procedures shown below.

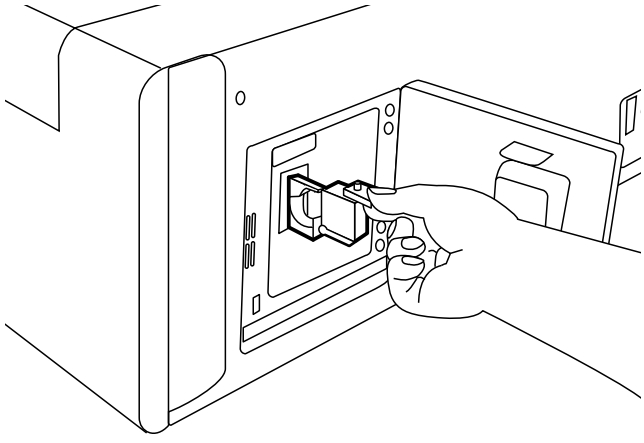
1. Click on the Option menu to display the pull-down menu. Select "Filter Change".




2. Open the filter-adding door on the right side of the FLA-8000.

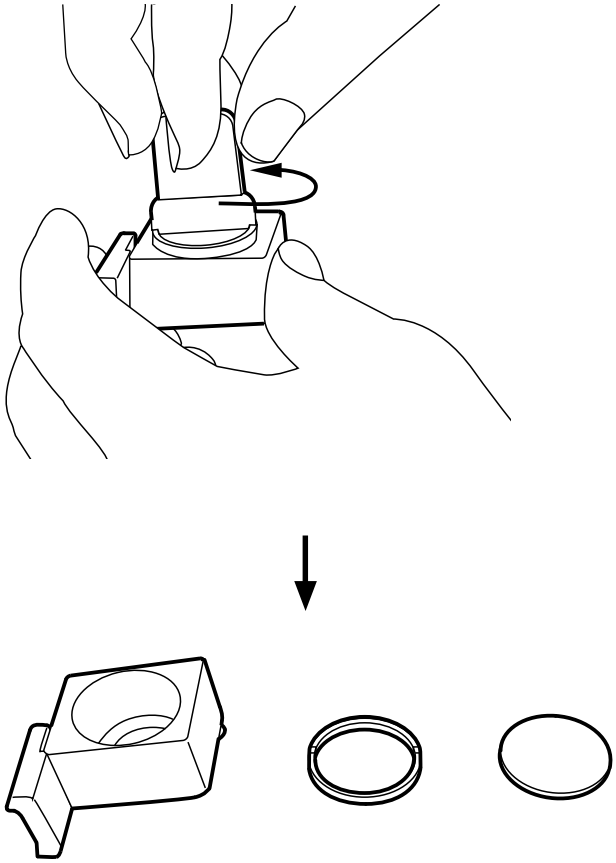


3. The filter setting unit comes out. Take out the additional filter block.



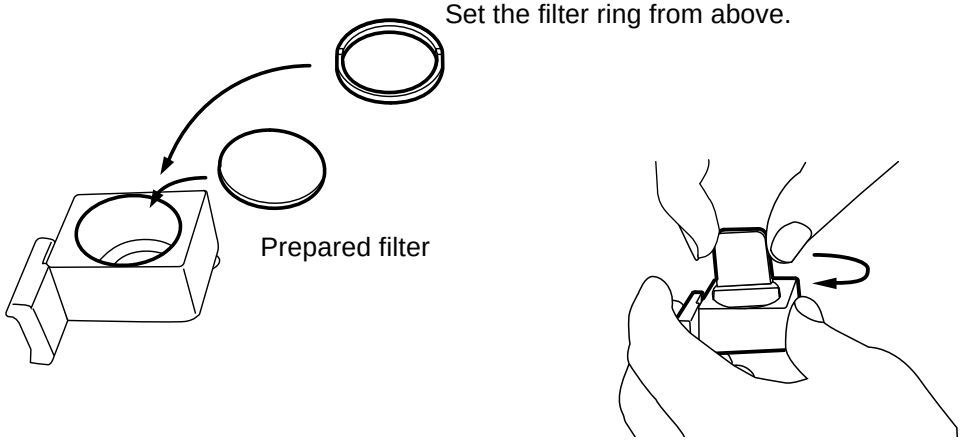
In the shipment condition, the additional filter block has a shield plate for protecting the photo-multiplier tube (PMT).

4. Remove the filter ring from the filter block using the tool and remove the shield plate.

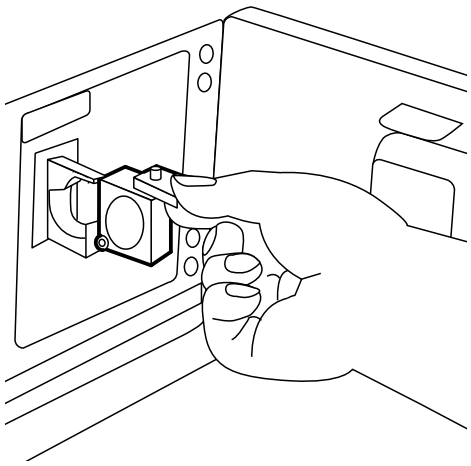


5. Prepare a filter of the following dimensions:
   Diameter: 25 mm
   Thickness: 4 mm or more, 12 mm or less

6. Put the prepared filter in the block and set it with the filter ring using the tool.



7. Set the filter block with the filter on the front side.



8. Close the filter-adding door.

# Part 9

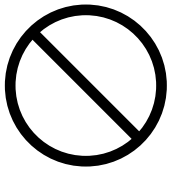
# Daily Maintenance

## 1. Maintenance of SHG Laser

The SHG laser employed in the FLA-8000 requires periodical calibration.
When the FLA-8000 is switched on, it automatically executes calibration.
Thus, you need not carry out calibration intentionally if you use the FLA-8000 repeatedly at a short time interval (shorter than a month).

**⚠ CAUTION**

* Activate the FLA-8000 once every 30 days, at least, to execute calibration even though it is not used for a long time. If the FLA-8000 is not calibrated for a long time, the life of the SHG laser may be reduced or scanning with the laser may be disabled.



Operation procedures

1 Switch on the FLA-8000 body and analyzer unit.
2 Make sure that they have started up. Then, turn them off.

# Part 10

# Troubleshooting

## Troubles in FLA-8000 body

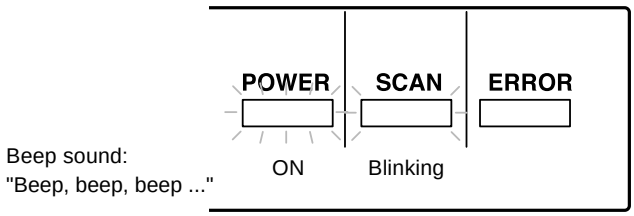
Troubles that occur in the FLA-8000 body are classified into the following three levels:

1 **Request to close the cover**
A request to close the cover does not imply a trouble. The cover of the FLA-8000 body must be closed when it starts up or scans samples. If the cover is open in such a condition, the indicator lamps and beep sound indicate that the cover must be closed.

2 **Warning**
A warning indicates that only the scanning mode where a trouble occurs is not functional. The major warning causes are as shown below:
1. The laser is defective.
   You may not use the specific scanning mode where the defective laser is used. Other scanning modes are available.
2. Analog circuits are adjusted improperly.
   You may not use the combination of that scanning size and the scanning speed as well as the combination adjusted at the same sampling timing.
3. PMT protective function works.
   As soon as the PMT protective function works, scanning stops. You may restart scanning if you change the sample to be scanned or reduce the sensitivity.

3 **Errors**
An error means the condition where all scanning modes of the FLA-8000 are not available. The indicator lamps and beep sound indicate that an error occurs.

### ■ Request to close the cover




When a request to close the cover occurs

## Causes and Countermeasures

### *CASE 1*

| Cause |
| --- |
| Didn't you open the cover during the self-diagnosis and startup adjustment of the FLA-8000 (about fifteen minutes after turning on the power)? |

| Countermeasure |
| --- |
| Close the cover. |

### *CASE 2*

| Cause |
| --- |
| Didn't you open the cover during scanning? |

| Countermeasure |
| --- |
| Close the cover immediately.<br>Scanning stops if you open the cover during scanning. |

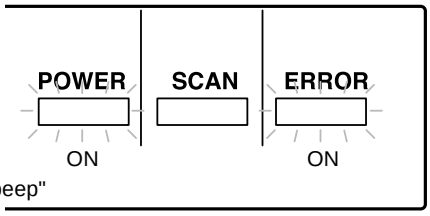
***Note:*** Never open the cover during scanning.

## ■ Warning

A warning message dialog box is displayed on the Image Reader screen displayed on the analyzer unit.
Refer to "Countermeasures according to warning and error messages" below.
The indicator lamps and beep sound do not indicate occurrence of a warning.

## ■ Errors

An error occurs in the FLA-8000 body.




Beep sound:
"Be-beep, be-beep, be-beep"

When an error occurs

An error message dialog box is displayed on the Image Reader screen displayed on the analyzer unit.
Refer to "Countermeasures according to warning and error messages" below.

NOTE

No error message may be displayed if an error occurs after completion of scanning.
In such a case, execute scanning using the Image Reader in the analyzer unit.
An error message is displayed on the analyzer unit.

## Countermeasures according to warning and error messages

This section describes the method of executing a self-diagnosis and the countermeasures to be taken according to the warning and error messages, which are displayed on the monitor of the analyzer unit.

* The FLA-8000 has a self-diagnosis function.
  The self-diagnosis function allows you to know about the details of troubles.
  Execute a self-diagnosis first when a trouble occurs in order to solve a trouble smoothly.

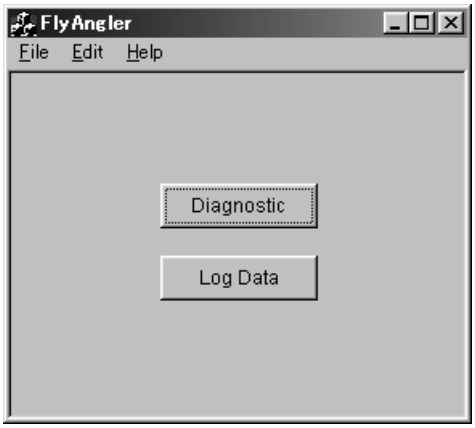
Self-diagnosis procedures
<When an error occurs, remove the carrier, close the cover, and execute a self-diagnosis without switching off the FLA-8000.>

* If you switch off the FLA-8000 by mistake, remove the carrier, switch on the FLA-8000, and execute a self-diagnosis.

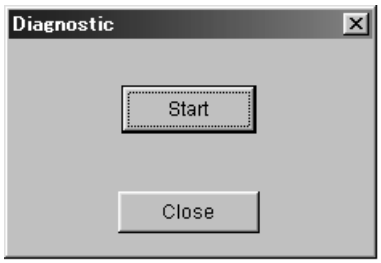
1. Activate the maintenance software from the Startup menu or using the shortcut key. (The maintenance software resides in the same folder as the FLA-8000 Image Reader.)

FLA8000MAINTE.e...

2. The following dialog box is displayed. Click the Diagnostic button.



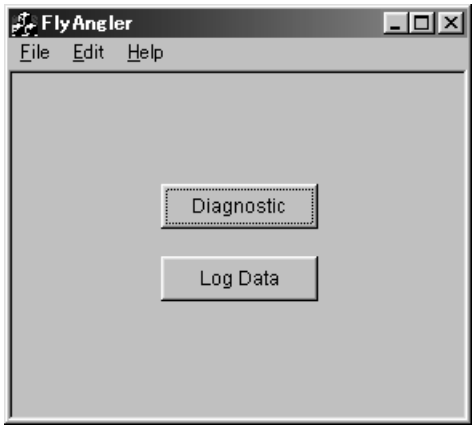
3. The following dialog box appears. Click the Start button.



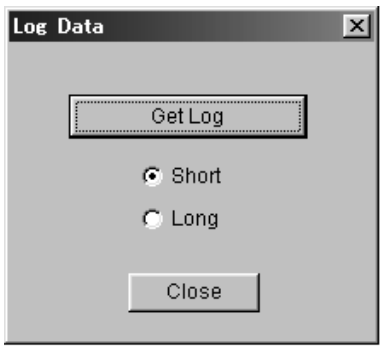

4. When an error code is displayed, memorize it and click the OK button.
   Self-diagnosis is executed for about five minutes, and a text file having the following file name is created automatically.

   xxxx_DIAG_xxxx
   Serial No. Date (Year, month, day, hour, minute, and second)

5. The following dialog box is displayed again. Click the Log Data button.




6. Click on "Short" to select it in the dialog box shown below. Click the Get Log button.



7. When an error code is displayed, memorize it and click the OK button.
   A text file having the following file name is created automatically.

   xxxx Log xxxx
   Serial No. Date (Year, month, day, hour, minute, and second)

8. Print two text files created in steps 4 and 7. Facsimile the printout to the dealer you purchased the FLA-8000 (dealer having engineers) or Fuji Photo Film Co., Ltd.

**Terms**

Restarting the (FLA-8000) body: Turning off the body once and then turning it on again after several seconds.

On-call: Calling the dealer you purchased the FLA-8000. Inform the dealer of the following when calling it.
1. Model name of the equipment where a trouble occurs
2. Model name of the analyzer unit (DELL Optiplex GX1, for example), as well as the name and version of the software for the FLA-8000 (FLA-8000 Image Reader V. 1.0, for example)
3. Details of the condition where the trouble occurs, displayed message, key, and code (Example -- The trouble occurred two minutes after switching on the FLA-8000 body. The error message is "Self diagnosis: Connection error". Key: 4H. Code: B1H.)

| Code | Displayed message | Description | Countermeasures |
|---|---|---|---|
| | | ** Warning during scanning ** | |
| 8001H (Warning) | FLA-8000 detected continuing very strong signals and stopped scanning. Please change scanning conditions and try again. | "PMT over-exposure detected during scanning" All data exceed the specified over-exposure value continuously during scanning of six lines. | Change the conditions and retry scanning. (Lower the sensitivity by reducing the PMT value, reducing the resolution or selecting the Std. scan mode, or increase the area height.) If the phenomenon does not change, on-call, or execute self-diagnosis. |
| | | | |
| | | ** Door-related warning due to user's maloperation ** | |
| 9201H (Warning) | Please close the main door and the filter door. | The sample setting door or filter exchanging door was open. (During startup self-diagnosis or scanning) | Close the sample setting door or filter exchanging door. If the phenomenon does not change, on-call, or execute self-diagnosis. |

| | | | |
|---|---|---|---|
| 9202H (Warning) | Please close the sample set door and the filter door. | The sample setting door or filter exchanging door was open. (During startup self-diagnosis or scanning) | Close the sample setting door or filter exchanging door. If the phenomenon does not change, on-call, or execute self-diagnosis. |
| 9204H (Warning) | Please close the carrier lock cover. | The carrier holder was open. (During startup self-diagnosis or scanning) | Close the carrier holder. If the phenomenon does not change, on-call, or execute self-diagnosis. |
| | | Three low-order bits are ORed if several warnings occur. | |
| | | | |
| 9401H (Warning) | 473 laser unit is not in the stable condition. Please wait and try later. | ** Laser warning ** Warning due to unstable SHG473 temperature or improper temperature control | Retry scanning after a mean while. If the phenomenon does not change yet, restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |
| 9402H (Warning) | 532 laser unit is not in the stable condition. Please wait and try later. | Warning due to unstable SHG532 temperature or improper temperature control | Retry scanning after a mean while. If the phenomenon does not change yet, restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |
| 9404H (Warning) | 640 laser unit is not in the stable condition. Please wait and try later. | Warning due to unstable LD temperature or improper temperature control | Retry scanning after a mean while. If the phenomenon does not change yet, restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |
| 9410H (Warning) | 473 laser unit has a problem and can not continue scanning. Please restart FLA-8000 and try. | "SHG473 stoppage error" The optimum temperature detection results in NG. The current exceeds the LD current upper limit. A Peltier error bit is detected. A thermistor error bit is detected. No lasers are installed. | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |

| | | | |
|---|---|---|---|
| 9420H (Warning) | 532 laser unit has a problem and can not continue scanning. Please restart FLA-8000 and try. | "SHG532 stoppage error" The optimum temperature detection results in NG. The current exceeds the LD current upper limit. A Peltier error bit is detected. A thermistor error bit is detected. No lasers are installed. | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |
| 9440H (Warning) | 640 laser unit has a problem and can not continue scanning. Please restart FLA-8000 and try. | "LD stoppage error" The optimum temperature detection results in NG. The current exceeds the LD current upper limit. A Peltier error bit is detected. A thermistor error bit is detected. No lasers are installed. | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning with other lasers is enabled, except special cases.) |
| | | | |
| | | ** Analog warning in startup self-diagnosis ** | |
| 9A01H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "5 um-400 mm/s analog adjustment error when starting up" The log amplifier could not be adjusted within the target value range. A line interruption is failed while monitoring the integral current. The integral current could not be adjusted within the target value range. A line interruption is failed while monitoring the integral voltage. The integral voltage could not be adjusted within the target value range. | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| 9A02H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "5-200, 10-400 or 20-800 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| 9A04H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "10-200 or 20-400 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| 9A08H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "20-200 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |

| | | | |
|---|---|---|---|
| 9A10H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "100-800 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| 9A20H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "100-400 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| 9A40H (Warning) | FLA-8000 has a problem and can not scan with the current scanning condition. Please change resolution or scan mode and try again. | "50-800 analog adjustment error when starting up" Ditto | Restart the FLA-8000 body. If the phenomenon does not change, on-call, or execute self-diagnosis. (Scanning in Scan mode may be enabled at other resolutions.) |
| | | Seven low-order bits are ORed if several warnings oc- | |
| B0xxH | | cur. | |
| B011H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | During startup self-diagnosis of CPDV Pinhole unit error Time-out error while moving toward the part with pin- | Execute self-diagnosis as is. |
| B012H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | holes Pinhole unit error Sensor OFF error after moving toward the part with | Execute self-diagnosis as is. |
| B013H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | pinholes Pinhole unit error Time-out error while moving toward the part without | Execute self-diagnosis as is. |
| B014H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | pinholes Pinhole unit error Sensor ON error after moving toward the part without | Execute self-diagnosis as is. |
| B021H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | pinholes Filter unit error Time-out error while moving out of the origin | Execute self-diagnosis as is. |
| B022H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B023H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B024H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error Sensor OFF error after moving to the origin | Execute self-diagnosis as is. |
| B025H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error Time-out error while moving a specified filter | Execute self-diagnosis as is. |
| B026H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error Sensor ON error after moving a specified filter other | Execute self-diagnosis as is. |
| B031H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | than the optional filter Main scanning unit error Time-out error while moving out of the origin | Execute self-diagnosis as is. |

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| B031H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B033H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B034H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Time-out error while moving to the origin after receiving an origin command | Execute self-diagnosis as is. |
| B041H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving out of the origin | Execute self-diagnosis as is. |
| B042H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B043H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B044H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving to the origin after receiving an origin command | Execute self-diagnosis as is. |
| B051H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Time-out error while moving out of the origin | Execute self-diagnosis as is. |
| B052H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B053H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B054H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Time-out error while moving to the origin after receiving an origin command | Execute self-diagnosis as is. |
| B061H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Shutter unit error<br>Sensor ON after opening the shutter | Execute self-diagnosis as is. |
| B062H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Shutter unit error<br>Sensor OFF after closing the shutter | Execute self-diagnosis as is. |
| | | During processing before CPDV scanning | |
| B111H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Pinhole unit error<br>Time-out error while moving toward the part with pinholes | Execute self-diagnosis as is. |
| B112H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Pinhole unit error<br>Sensor OFF error after moving toward the part with pinholes | Execute self-diagnosis as is. |
| B113H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Pinhole unit error<br>Time-out error while moving toward the part without pinholes | Execute self-diagnosis as is. |
| B114H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Pinhole unit error<br>Sensor ON error after moving toward the part without pinholes | Execute self-diagnosis as is. |
| B121H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving out of the origin | Execute self-diagnosis as is. |

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| B122H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B123H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B124H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor OFF error after moving to the origin | Execute self-diagnosis as is. |
| B125H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving a specified filter | Execute self-diagnosis as is. |
| B126H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor ON error after moving a specified filter other than the optional filter | Execute self-diagnosis as is. |
| B135H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| B145H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| B154H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| | | Processing after CPVD scanning | |
| B335H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| B345H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| | | While checking for setting on the CPVD sample table | |
| B835H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Main scanning unit error<br>Time-out error while moving after receiving specified pulses | Execute self-diagnosis as is. |
| | | While changing the CPDV filters | |
| B721H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving out of the origin | Execute self-diagnosis as is. |
| B722H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor ON error after moving out of the origin | Execute self-diagnosis as is. |
| B723H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving to the origin | Execute self-diagnosis as is. |
| B724H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor OFF error after moving to the origin | Execute self-diagnosis as is. |
| B725H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Time-out error while moving a specified filter | Execute self-diagnosis as is. |
| B726H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Filter unit error<br>Sensor ON error after moving a specified filter other than the optional filter | Execute self-diagnosis as is. |

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| | | While setting the CPVD focusing unit | |
| B454H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Time-out error while moving to the origin after receiving an origin command | Execute self-diagnosis as is. |
| B455H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Exceeding the specified positive position | Execute self-diagnosis as is. |
| B456H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Focusing unit error<br>Exceeding the specified negative position | Execute self-diagnosis as is. |
| B445H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Time-out error while moving after receiving specified pulses or an origin command | Execute self-diagnosis as is. |
| B446H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Exceeding the specified positive position | Execute self-diagnosis as is. |
| B447H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Sub-scanning unit error<br>Exceeding the specified negative position | Execute self-diagnosis as is. |
| | | When deciding the CPVD focus | |
| B554H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Time-out error while moving to the specified position after returning to the origin | Execute self-diagnosis as is. |
| B557H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Failure to return the correct focus position now | Execute self-diagnosis as is. |
| | | CPMO | |
| C50xH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Connector error | Execute self-diagnosis as is. |
| C501H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SCSI connector error<br>No connector is plugged. | Execute self-diagnosis as is. |
| C502H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Drive board connector error<br>No connector is plugged. | Execute self-diagnosis as is. |
| C504H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Panel board connector error<br>No connector is plugged. | Execute self-diagnosis as is. |
| C508H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Analog board connector error<br>No connector is plugged. | Execute self-diagnosis as is. |
| | | Four bits shown above are ORed. | |
| C100H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DRAM check error<br>Read values were different from the written values. | Execute self-diagnosis as is. |
| C200H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | EEPROM check error<br>The sum of the values at EEPROM addresses 1 to 53 was different from the value at address 95. | Execute self-diagnosis as is. |
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| C401H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | High-voltage power supply check error<br>The monitored high-voltage is below the standard. | Execute self-diagnosis as is. |

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| C402H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Light leak check error<br>Values over a specified level are counted more frequently than the specified number of times. | Execute self-diagnosis as is. |
| C404H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Lamp current check error<br>The monitored lamp current is below the standard. | Execute self-diagnosis as is. |
| C408H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | PMT sensitivity check error<br>The difference between the data of the equipment and the sensitivity factor, which is found from the monitored values of the reference lamp on four high-voltage values, exceeds the standard. | Execute self-diagnosis as is. |
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| A20xH | | CPDV processing time-out<br>A processing complete signal was not received from the CPDV within the specified time. | |
| A201H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | During initialization | Execute self-diagnosis as is. |
| A202H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Carrier check during startup self-diagnosis | Execute self-diagnosis as is. |
| A203H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | All diagnostic processing during startup self-diagnosis | Execute self-diagnosis as is. |
| A204H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Carrier check before scanning | Execute self-diagnosis as is. |
| A205H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | All scanning pre-processing before scanning | Execute self-diagnosis as is. |
| A206H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Waiting for completion of scanning during scanning | Execute self-diagnosis as is. |
| A207H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Moving to the carrier setting position after scanning | Execute self-diagnosis as is. |
| A208H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Stopping the motor when scanning is stopped | Execute self-diagnosis as is. |
| A209H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Moving to the carrier setting position when scanning is stopped | Execute self-diagnosis as is. |
| A20AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Stopping the motor when the cover is closed | Execute self-diagnosis as is. |
| A20BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Moving to the exchange position when exchanging the filter | Execute self-diagnosis as is. |
| A20CH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Moving in SetCarriage | Execute self-diagnosis as is. |

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| A20DH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Moving when focusing | Execute self-diagnosis as is. |
| A30xH | | CPLD processing time-out<br>A processing complete signal was not received from the CPLD within the specified time. | |
| A301H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | During initialization | Execute self-diagnosis as is. |
| A302H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | In startup self-diagnosis | Execute self-diagnosis as is. |
| A303H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Turning on the light before scanning | Execute self-diagnosis as is. |
| A304H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Turning off the light after scanning | Execute self-diagnosis as is. |
| A305H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Carrier check when scanning is stopped | Execute self-diagnosis as is. |
| A306H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | Carrier check when scanning is stopped | Execute self-diagnosis as is. |
| A307H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | In SetLaser | Execute self-diagnosis as is. |
| A308H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | In SetCalib | Execute self-diagnosis as is. |
| A4xxH | | CPDV serial communication error<br>When the response command type and error code received from the CPDV were OK and 0000, respectively | |
| A401H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A402H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | READY | Execute self-diagnosis as is. |
| A403H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SCAN | Execute self-diagnosis as is. |
| A404H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LOCATE | Execute self-diagnosis as is. |
| A405H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SETPINT | Execute self-diagnosis as is. |
| A406H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | USERFILTER | Execute self-diagnosis as is. |
| A407H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |

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| A408H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PINT COMMAND | Execute self-diagnosis as is. |
| A409H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PRINT DATA | Execute self-diagnosis as is. |
| A40AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A40BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |
| A40CH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LOG COMMAND | Execute self-diagnosis as is. |
| A412H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A413H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A414H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |
| A415H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |
| A5xxH | | CPLD serial communication error<br>When the response command type and error code received from the CPLD were OK and 0000, respectively | |
| A501H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A507H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |
| A50AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A50BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |
| A50CH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LOG COMMAND | Execute self-diagnosis as is. |
| A50DH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LASER | Execute self-diagnosis as is. |
| A50EH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP COMMAND | Execute self-diagnosis as is. |
| A50FH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP DATA | Execute self-diagnosis as is. |

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| A510H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP COMMAND | Execute self-diagnosis as is. |
| A511H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP DATA | Execute self-diagnosis as is. |
| A512H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A513H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A514H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |
| A515H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |
| A6xxH | | CPDV serial time-out error<br>No response to a command sent to the CPDV was received within four seconds. | |
| A601H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A602H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | READY | Execute self-diagnosis as is. |
| A603H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SCAN | Execute self-diagnosis as is. |
| A604H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LOCATE | Execute self-diagnosis as is. |
| A605H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SETPINT | Execute self-diagnosis as is. |
| A606H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | USERFILTER | Execute self-diagnosis as is. |
| A607H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |
| A608H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PINT COMMAND | Execute self-diagnosis as is. |
| A609H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PRINT DATA | Execute self-diagnosis as is. |
| A60AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A60BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |

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| A612H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A613H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A614H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |
| A615H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |
| A616H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CHECK | Execute self-diagnosis as is. |
| A7xxH | | CPLD serial time-out error<br>No response to a command sent to the CPLD was received within four seconds. | |
| A701H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A707H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |
| A70AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A70BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |
| A70DH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LASER | Execute self-diagnosis as is. |
| A70EH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP COMMAND | Execute self-diagnosis as is. |
| A70FH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP DATA | Execute self-diagnosis as is. |
| A710H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP COMMAND | Execute self-diagnosis as is. |
| A711H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP DATA | Execute self-diagnosis as is. |
| A712H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A713H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A714H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |

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| A715H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |
| A716H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CHECK | Execute self-diagnosis as is. |
| A8xxH | | CPDV retry error<br>NG codes are received three times continuously from the CPDV in response to the command. | |
| A801H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A802H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | READY | Execute self-diagnosis as is. |
| A803H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SCAN | Execute self-diagnosis as is. |
| A804H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LOCATE | Execute self-diagnosis as is. |
| A805H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SETPINT | Execute self-diagnosis as is. |
| A806H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | USERFILTER | Execute self-diagnosis as is. |
| A807H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |
| A808H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PINT COMMAND | Execute self-diagnosis as is. |
| A809H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | GET PRINT DATA | Execute self-diagnosis as is. |
| A80AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A80BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |
| A812H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A813H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A814H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |
| A805H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |

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| A806H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CHECK | Execute self-diagnosis as is. |
| A9xxH | | CPLD retry error<br>NG codes are received three times continuously from the CPLD in response to the command. | |
| A901H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | INIT | Execute self-diagnosis as is. |
| A907H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CANCEL | Execute self-diagnosis as is. |
| A90AH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC COMMAND | Execute self-diagnosis as is. |
| A90BH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | DIAGNOSTIC DATA | Execute self-diagnosis as is. |
| A90DH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | LASER | Execute self-diagnosis as is. |
| A90EH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP COMMAND | Execute self-diagnosis as is. |
| A90FH | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | TEMP DATA | Execute self-diagnosis as is. |
| A910H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP COMMAND | Execute self-diagnosis as is. |
| A911H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | SHG MAP DATA | Execute self-diagnosis as is. |
| A912H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ COMMAND | Execute self-diagnosis as is. |
| A913H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY READ DATA | Execute self-diagnosis as is. |
| A914H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | MEMORY WRITE | Execute self-diagnosis as is. |
| A915H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | BATOOL | Execute self-diagnosis as is. |
| A916H | FLA-8000 detected a problem. Please see the user manual and run diagnostics. | CHECK | Execute self-diagnosis as is. |

**IMPORTANT**

*If a sample adheres to the equipment as a result of scanning an IP with the sample on it and drops onto the inner part of the FLA-8000, the inside of the FLA-8000 may possibly be RI-polluted.*
*If inner parts of the FLA-8000 may be RI-polluted, use a radiation measuring instrument, etc. to check if abnormal counts are not detected.*
*Or, do not use polluted IPs.*

## Other Troubles

### *CASE 1*

Error phenomenon

* The FLA-8000 is not switched on.

Countermeasure

* Check if the AC power cable of the FLA-8000 is connected with an AC outlet properly.

### *CASE 2*

Error phenomenon

* An abnormal image is displayed.
* A virtually impossible image is displayed.
* An image is displayed in a wrong position.

Countermeasure

1) Impacts or vibrations are applied to the FLA-8000 during scanning.
   If you touch or vibrate the FLA-8000 during scanning, stripes may be displayed on the image.
   * Do not touch the FLA-8000 body or the base on which it is installed during scanning.
2) The exposed IP itself is flawed or deteriorated.
   Check the IP. If some defects are found, do not use that IP.
3) IP may be polluted.
   Use a radiation measuring instrument, etc. to check if abnormal counts are not detected.

# Part 11

# Specifications

## Major Specifications

| | | |
|---|---|---|
| Equipment dimensions (W x D x H): | 850 x 730 x 480 mm (Projections not included) | |
| Equipment weight: | 110 kg | |
| Power supply: | 100 to 115 VAC ±10%, single-phase, 50 or 60 Hz<br>200 to 230 VAC ±10%, single-phase, 50 or 60 Hz | |
| Power capacity: | 3.0 A (100 V)<br>1.5 A (200 V) | |
| Temperature conditions | Operating | 15 to 30°C |
| | Storage | -25 to +60°C |
| Humidity conditions | Operating | 35 to 70% RH<br>(No dew condensation) |
| | Storage | No dew condensation |
| Noises: | 56 dB max. when measured with the JEIC Sound Level Meter (Fuji Calibration No. 8697) at the position of 1 meter from the equipment surface and 1.2 meters from the floor | |
| Gerauschentwicklung: | Max. 56 dB bei Messung mit dem JEIC Gerauschpegelmesser (Fuji Kalibrierung Nr. 8697) in einer Entfernung von 1 m vom Gerat und einer Hohe von 1,2 m uber dem Boden. | |

### Image Scanning Specifications

| | | | |
|---|---|---|---|
| Applicable samples | : | Slide glass for microscopes | Five pieces may be set simultaneously. |
| | | Gel | Two pieces may be set simultaneously. |
| | | IP (micro-plate size) | One IP may be set. |
| Scanning ranges | : | Slide | 74 mm x 23 mm (per slide) x 5 pieces |
| | | Gel | 51 mm x 59 mm (per gel) x 2 pieces |
| | | IP | 85 mm x 127 mm |
| Pixel sizes | : | 5, 10, 20, 50, and 100 μm (square)<br>(Gel: 100 μm, IP: 10, 20, 50, and 100 μm) | |
| Linear speed of scanning | : | 200, 400 and 800 mm/sec. | |
| Scanning time | : | 13 minutes or less (One mono-color slide, 400 mm/sec., 10 μm) | |
| Dynamic range | : | 4 digits or more (L5 recording) | |
| Density gradations | : | 16 bits | |

Using the FLA-8000 in the micro-array method is allowed to licensees only in U.S.A.
Using the FLA-8000 in the micro-array method is not allowed in any countries other than U.S.A.

## Power Supply Facilities

| | | |
|---|---|---|
| (1) Voltage | 100 to 115 VAC ±10% | |
| | 200 to 230 VAC ±10% | |
| (2) Phase | Single-phase | |
| (3) Frequency | 50 or 60 Hz | |
| (4) Power consumption | * FLA-8000 | 3.0 A (100 V) |
| | | 1.5 A (200 V) |
| | * Analyzer unit | Approx. 13 A (100 V) |
| | | Approx. 7 A (200 V) |
| | * IP eraser | 1.25 A (100 V) |
| | | 0.7 A (200 V) |
| | * Pictorography | 12 A (100 V) |
| | | 6 A (200 V) |
| (5) Grounding | Class D grounding. This equipment must be grounded by connecting the power cable plug with a 2P + E AC outlet for securing the safety, preventing external noises and providing stable operations. The AC outlet must be grounded in Class 3 in conformity to the electric facility technical standards. | |

# Part 12

# Warranty

## Warranty of FLA-8000

The FLA-8000 is warranted as shown below.

Warranty period: One year from the date of installation
Warranty condition: Fuji Photo Film Co., Ltd. will repair, without charge, the defective product in the warranty period shown above.

However, charge will be made even in the warranty period in the following cases.

1) If the product is used in a place that does not meet the environmental conditions
2) If an unauthorized personnel repairs or modifies the product
3) If a peripheral device or software whose performances are not confirmed by Fuji Photo Film Co., Ltd. is installed
4) If the user carries out improper operation or maintenance
5) If a trouble originates from moving or transportation after installation
6) If a trouble is caused by irresistible forces (such as natural calamities, riot, radiation pollution or the like)
7) If a trouble is caused by computer viruses

The customer is liable for the costs of any repair services after expiration of the warranty period. (Fuji Photo Film Co., Ltd. will provide a maintenance contract service.)

## Repair Service Period of Product

The guaranteed repair service period of this product is seven years from the end of sales. Thereafter, repair services may not be provided if repair parts become out of stock. Please note this.