RF SYSTEM lab.

NAOMI SYSTEM **User Guide**

WM_0810-04

FDA 510(k) Number K062376

This document includes the important information to ensure the safe usage of the item. Before using the system, read through this User Guide and safety information carefully.

Direct Digital Radiography CCD Imaging Sensor

NAOMI

The images are not shown to scale on this User Guide. The exterior and specifications may vary and may be changed without a prior notice.

User Guide Index

Precautions for Safe Use

Do not put a finger into connectors or jacks.
It may cause injuries, an electrical shock, or damages to the product.

Handle the product with caution, and avoid the followings.
- Drop the product.
- Strong impact on the product.

Avoid the installation or storage of the product under the following environment.
- Temperature below 55 degrees Fahrenheit (15 degrees Celsius) or above 95 degrees Fahrenheit (35 degrees Celsius).
- Under direct sunlight.
- Places where water splashes.
- Environment with 30%RH or less in humidity, or 70%RH or more in humidity.
- Environment with a sudden and extreme temperature change, or condensation.
- Near heat generating units (stove, heater, etc.).
- Dusty location.
- Places with strong vibration, or unstable ground.

Dismantling Prohibited.
- Do not dismantle or modify the product.
- Do not open the case. It is dangerous to touch the parts inside NAOMI, and may cause damages. If the product case is opened, the product warranty will be voided regardless of warranty term.

Turn off the power immediately and discontinue the use of the product if there is smoke, strange smell or sound. Disconnect the power cable from the power outlet.
It may cause a fire and/or damages to the product if the product is continuously used.

Turn off the power immediately and discontinue the use of the product if liquid or any other material make contacts with the inside of the main product hardware. Disconnect the power cable from the power outlet immediately.
It may cause a fire and/or damages to the product if the product is continuously used.

Follow the instruction below to install and uninstall the product.
- Follow the enclosed user manual.
- Turn off the power and unplug the power cable from the power outlet.

Precautions for Safe Use


Warning

It may malfunction if the product is placed and operated near a machine, which generates a strong electromagnetic radiation. Move the product away from such equipment at least one meter (three feet).


Warning

Use the included or recommended accessories with the product.
If anything other than the included or recommended accessories are used, it may cause damages and/or malfunctioning.


Warning

Use the included AC Adapter only.
It may cause a electrical shock and/or damages to the product with any different AC Adapter.
- Connect the power cable to the AC100-240V power source only.
- To unplug the power cable, pull out from the plug, not from its cord.
  It may cause a fire and/or an electrical shock from disconnection and short on the power cable if it is pulled from its cord.
- Do not forcefully twist or bend the power cable.
- Do not put heavy weights onto the cable.
- Do not use any damaged power cable.
- Do not touch the power cable and AC Adapter with a wet hand.
  It may cause electrical shock.


Warning

Use appropriate power source for the product, which is 100-240 V, 1.5A, 47-63Hz. Any inappropriate power source may cause a fire and/or damages to the product.


Warning

Use a soft cloth to wipe the product. Do not use the thinner, benzenes, or any harsh chemicals. They may damage the surface of the product.
Wipe with a damp cloth with diluted mild detergent and dry the product with a cloth.
Wipe with a damp cloth with diluted mild detergent and dry the product with a cloth.


Unplug

Turn off the power of the product by unplugging the power cable from the outlet if it is not being used for a long time.

Note

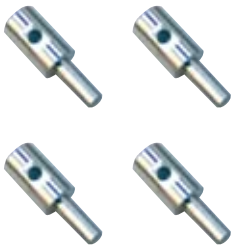
This product captures images of radiation penetration with the equipped CCD sensors. It digitally processes and displays images to the monitor. The purpose of this product is to assist diagnosis and utilize the captured images as an explanation tool to patients.

Packaged Items

NOTE ! Please make sure the following items are included in the package. If any items are missing, please contact us.

Sensor (x1)

Calibration Scale (x1)



Scale Pins (x4)

AC Adapter (x1)

Power Cable (x1)

USB Cable (16 ft. / 5m) (x1)

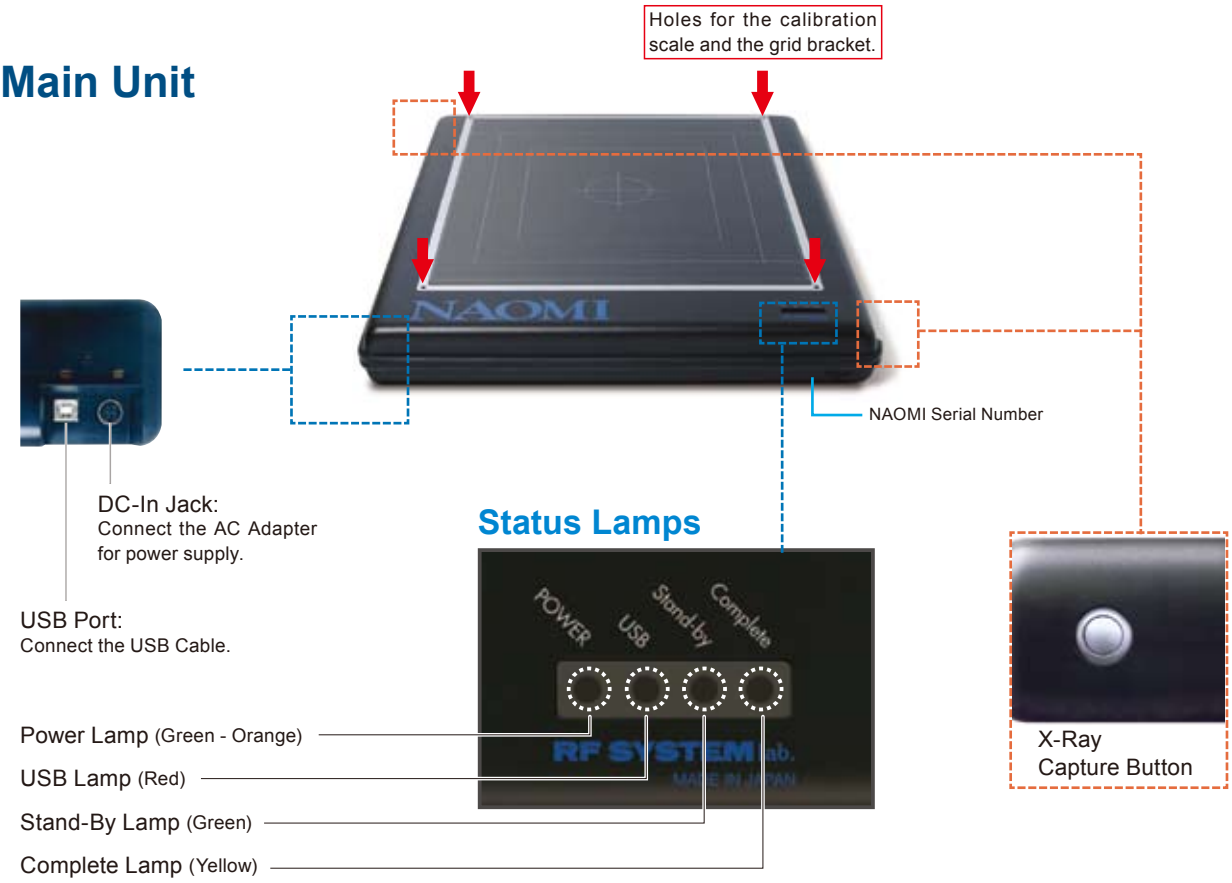
System Application
/System Driver CD-ROM (x1)

Data CD-ROM (x1)

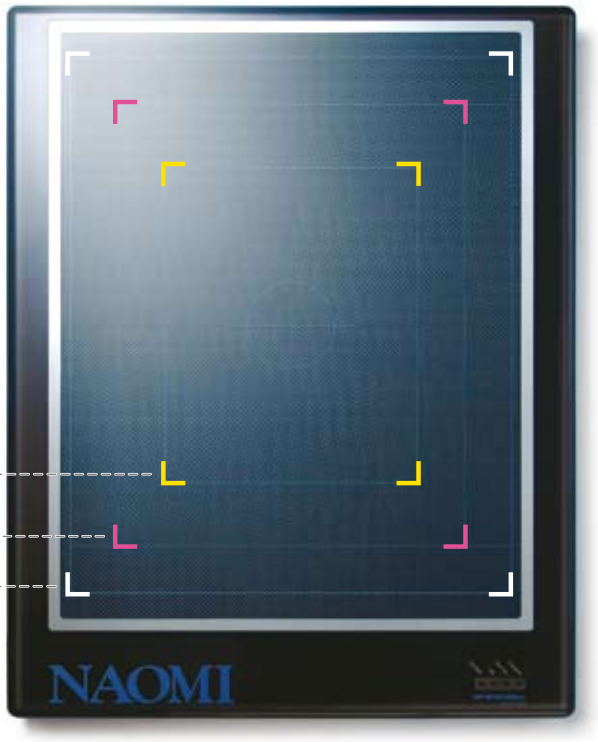
Cable Clip (x4)

Features

Main Unit

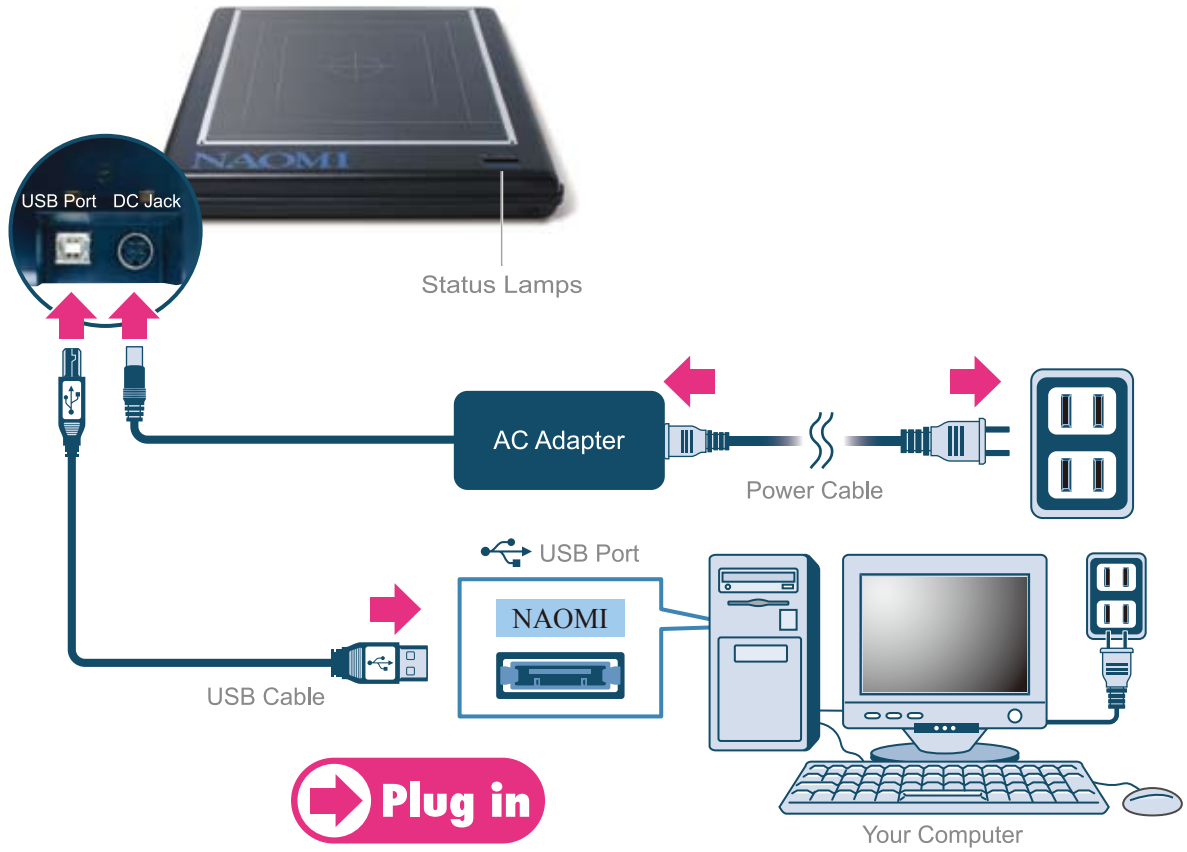


Area Target for Irradiation



Set up the NAOMI Sensor

Place the sensor.
Plug in AC Adapter, Power Cable, and connect USB Cable.



CHECK THE STATUS LAMPS ON THE SENSOR. They indicate proper cable connections.

When you connect Power Cable properly, Power Lamp on the sensor illuminates in **GREEN**.

When you connect USB Cable properly, USB Lamp on the sensor illuminates in **RED**.

NOTE !

If the NAOMI driver and/or software are not installed in your computer, refer to the Installation Section (Install-03-10, for Driver Installation ; Install-11-21, for Software Installation).

NOTE !

Refer to the upright stand (or upright stand bracket) installation guide for the upright position setting.

⚠ CAUTION

Make sure to turn off the photo timer, electricity bucky equipment, or any other equipment close to the NAOMI unit. The strong magnetic field may cause the malfunctioning on the image capturing process.

Installation

Follow the next three steps to install the NAOMI Driver and Imaging Software.

STEP 1 ***Install the NAOMI Driver***

STEP 2 ***Install the NAOMI Imaging Software***

STEP 3 ***Copy the NAOMI Imaging Data***

STEP 1

Install the NAOMI Driver

NOTE ! Prior to use the NAOMI sensor, **the NAOMI driver must be installed** to your computer. Without installing the driver information to your computer, the NAOMI sensor will not work properly.

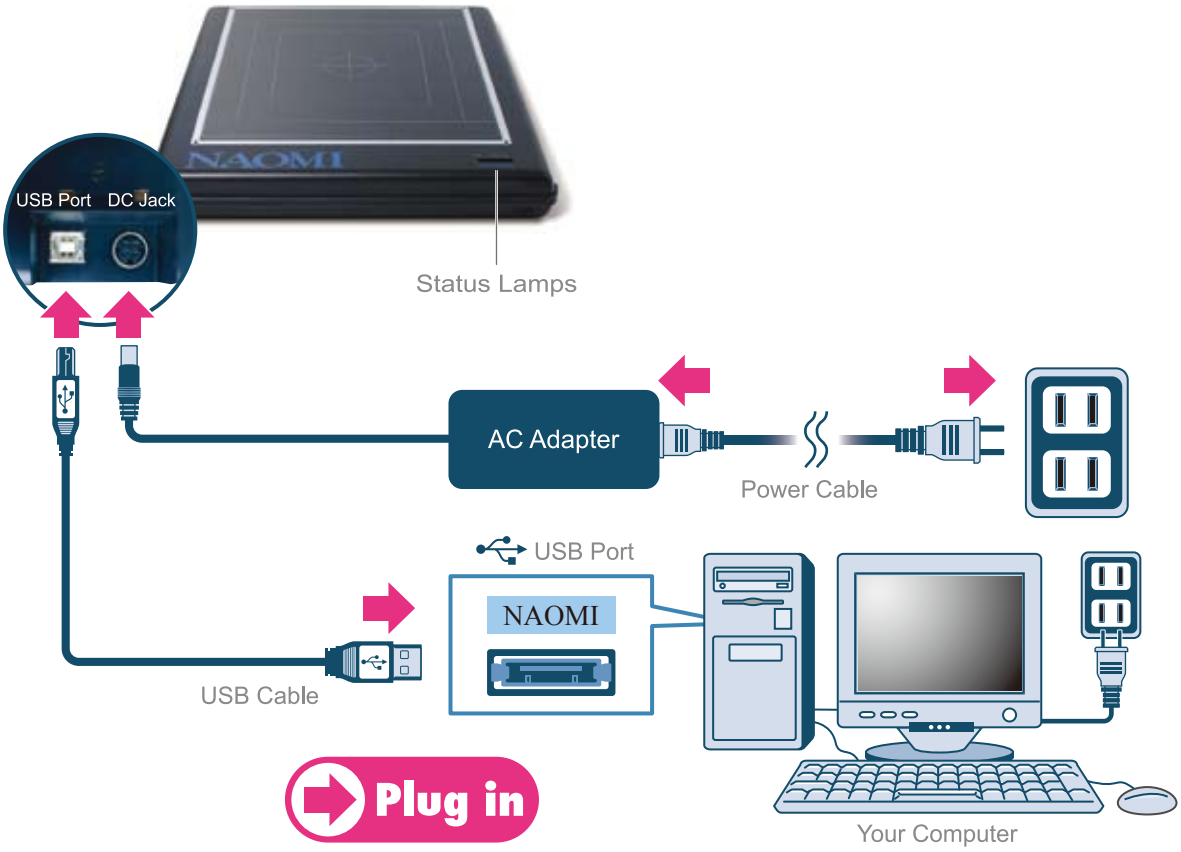
NOTE ! RF SYSTEM lab. has installed the driver already, if you purchase a computer together with NAOMI. In such case, you do not need to install the driver. Connect the USB cable to the USB port with the "NAOMI" sticker on the back of the computer.

CHECK!!

Confirm the NAOMI system is properly connected.

Follow the instruction below to set up the sensor to your computer.

(Refer to the **"Set up the NAOMI Sensor"** page for more details on the setup process.)



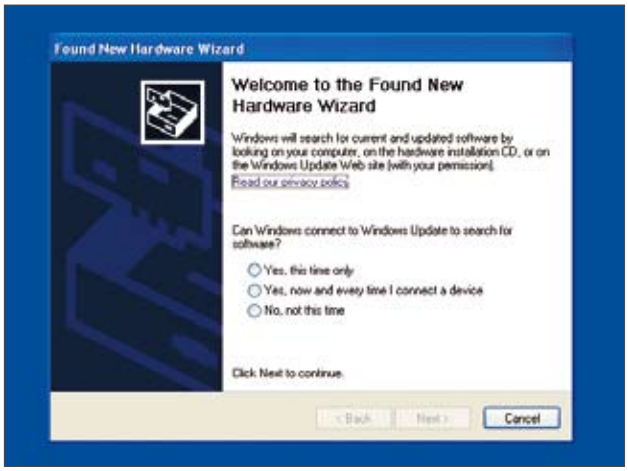
1. Place the NAOMI sensor on to the upright stand or x-ray table.

2. Connect the AC adapter to the power outlet and to the NAOMI sensor.

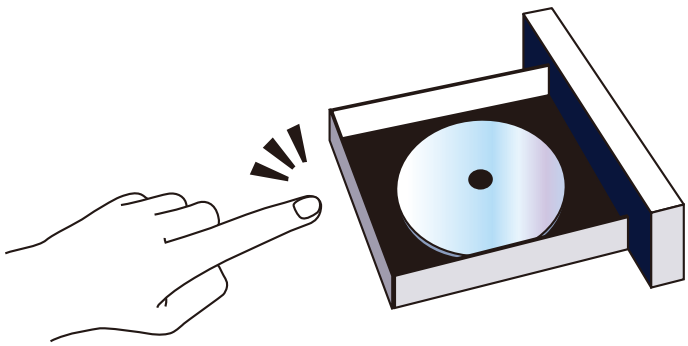
3. Connect the USB cable to the NAOMI sensor and to your computer.

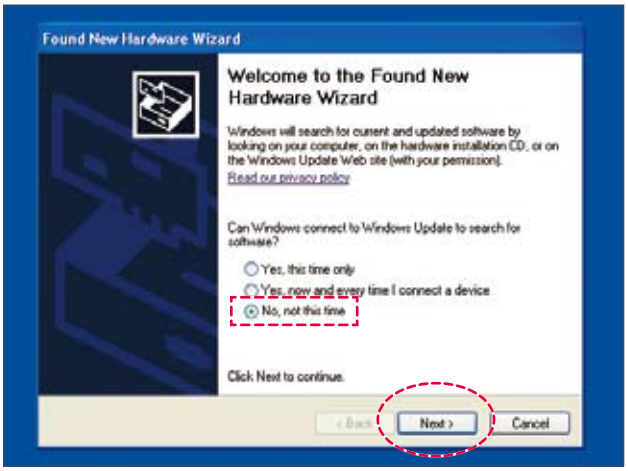
Windows 2000 or XP

1. After connecting the USB cable to the NAOMI sensor and the computer's USB port, the message,
"Found New Hardware USB Device", appears on the right bottom corner of the computer monitor.
Click on the message to start the installation process.

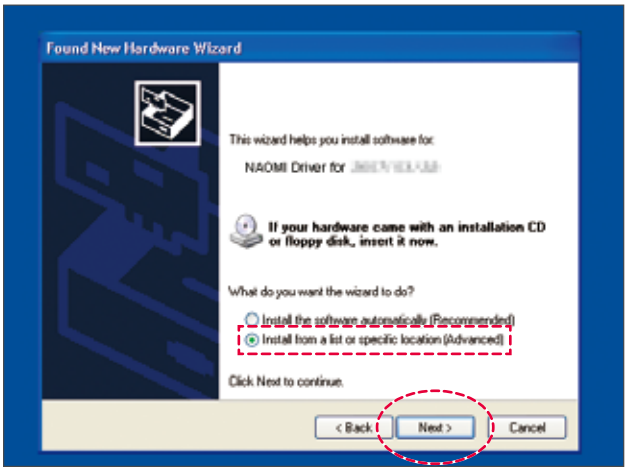


2. After a few seconds, "Found New Hardware Wizard" appears.
Insert **NAOMI System Application/ NAOMI Driver CD-ROM** to the CD-ROM drive of the computer.

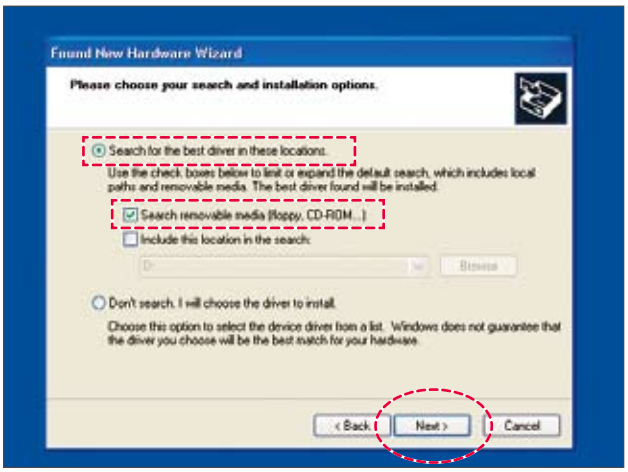




3. The wizard asks “Can windows connect to windows update to search for software?”.
Select “No, not this time” and click Next >.

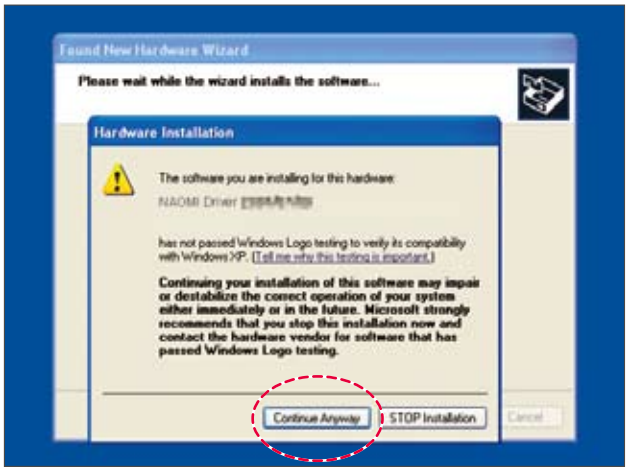


4. Select “Install from a list or specific location [Advanced]” and click Next >.



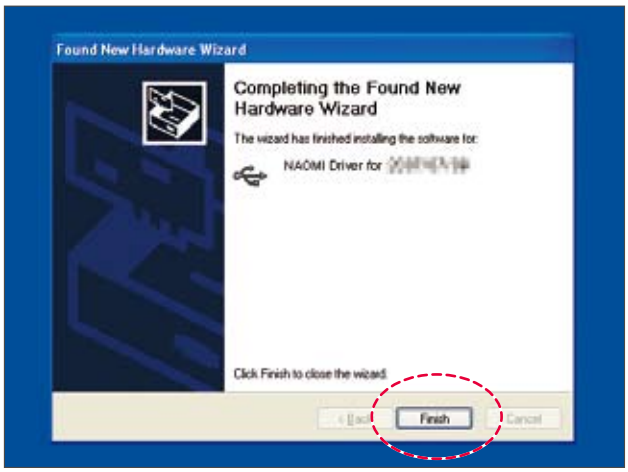
5. Select “Search for the best driver in these locations.”
Check “Search removable media,” and click Next >.

6. The wizard automatically starts the installation process of the NAOMI driver.



7. If the Hardware Installation window is displayed,
click Continue Anyway.

The installation process continues.



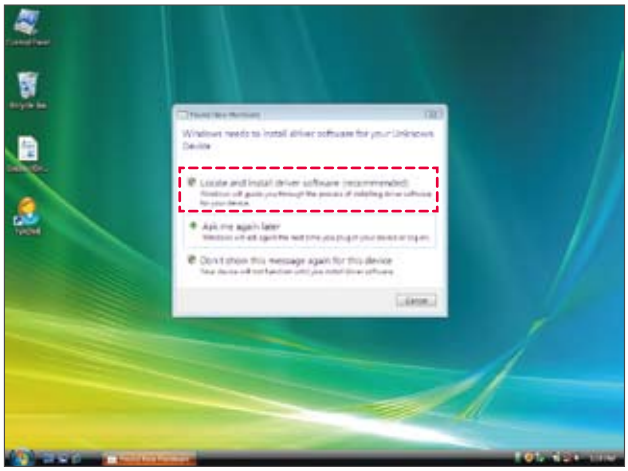
8. The NAOMI driver installation is completed.

Click Finish.

9. After a few seconds, the message, "Found New Hardware. Your new hardware is installed and ready to use." appears on the right bottom of the computer monitor.
The NAOMI driver is successfully installed.

The driver installation process for Windows XP / 2000 is completed. Proceed to Install the NAOMI Imaging Software (Install - 11)***.***

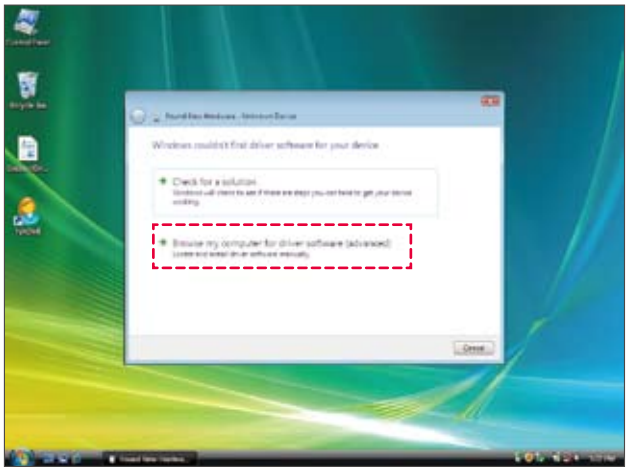
Windows Vista



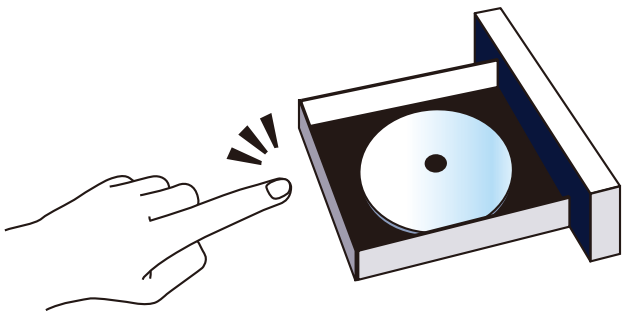
1. After connecting the USB cable to the NAOMI sensor and the computer's USB port, the menu, "Found New Hardware," shows up on the middle of the desktop menu.
Click "Locate and install driver software (recommended)" to start the installation process.

NOTE !

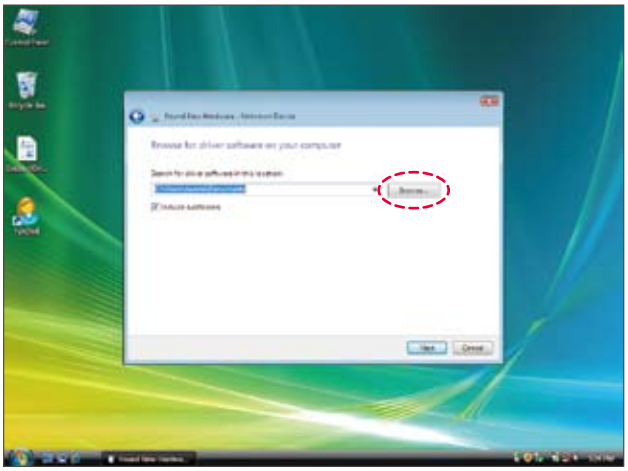
If the window "Found New Hardware" dose not appear on the desktop, minimize other windows. Or, click "Found New Hardware" on the task bar.



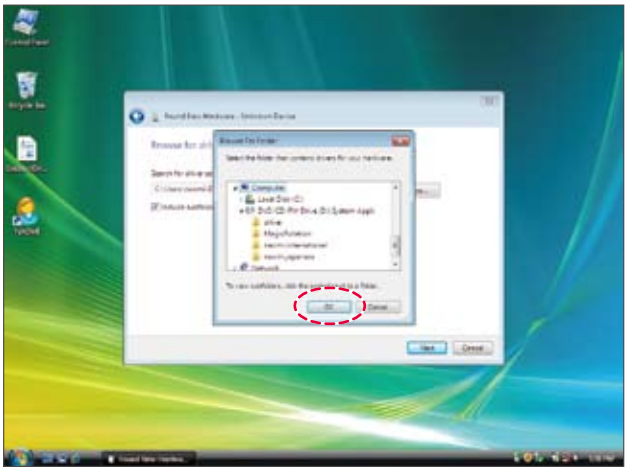
2. Click "Browse my computer for driver software (advanced)".



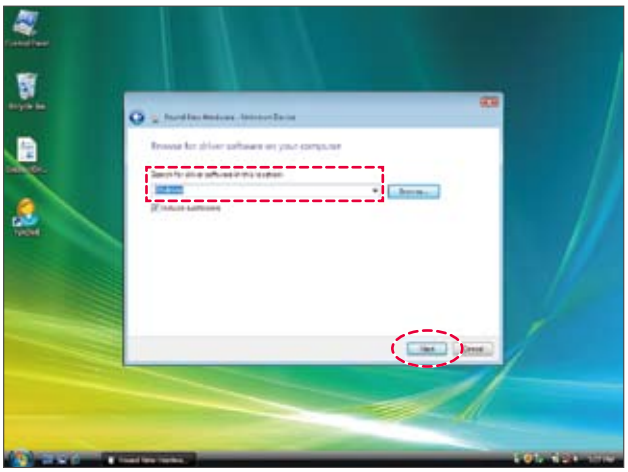
3. Insert **NAOMI System Application/ NAOMI Driver CD-ROM** to the CD-ROM drive of the computer.



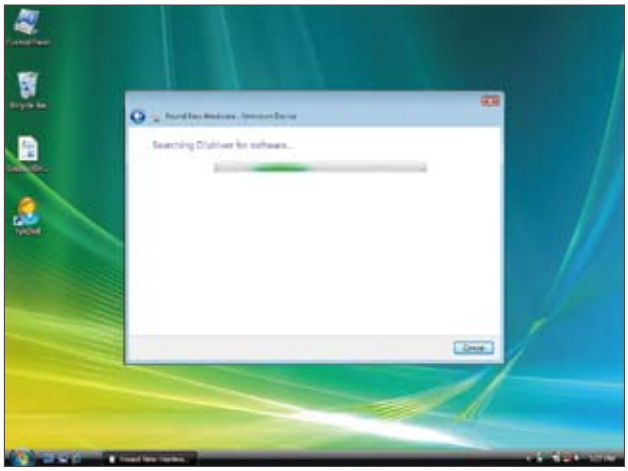
4. In order to locate the driver software, click “Browse…”



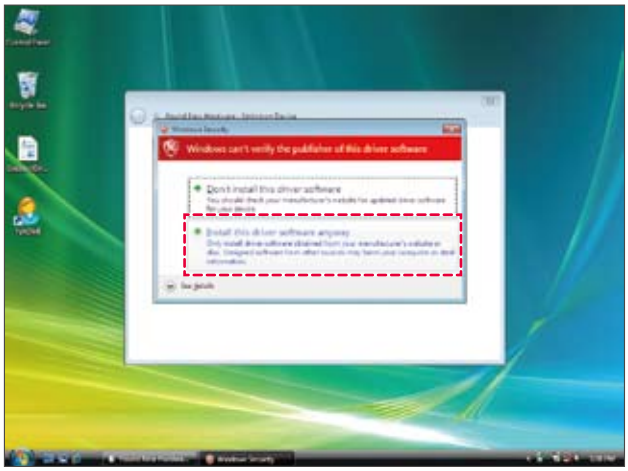
5. “Browse For Folder” menu shows up. Click “▷” next to “Computer”, click “▷” next to “DVD/CD-RW Drive (D:)” and select “driver” folder. Then, click OK .



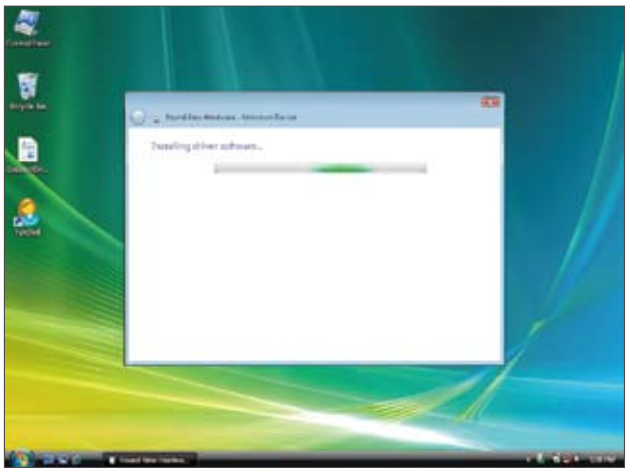
6. Make sure that the search location is set as “D:/driver”. Click Next .



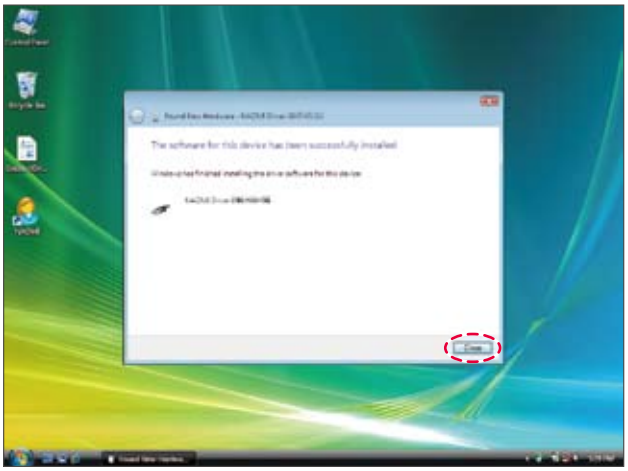
7. Wait for the computer to search the driver software.



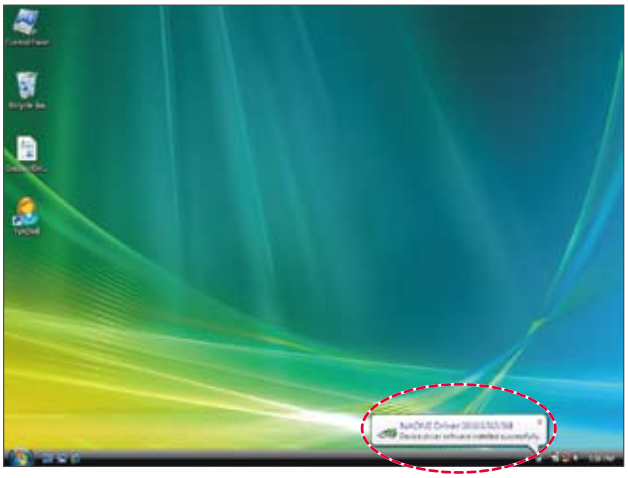
8. When the Windows Security menu shows up, click “Install this driver software anyway”.



9. The installation process continues.



10. The NAOMI driver installation is completed.
Click Close .



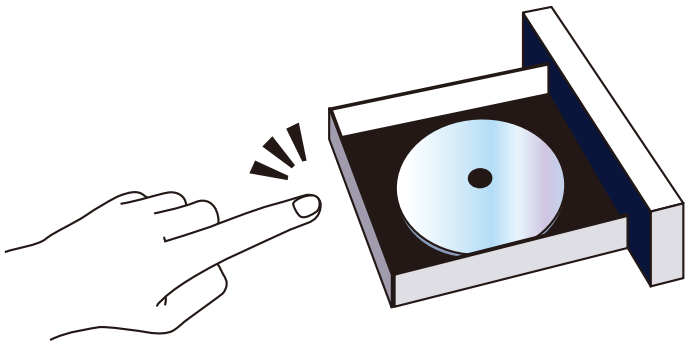
11. After a few seconds, the message, “Device driver software installed successfully” appears on the right bottom of the computer screen.
The NAOMI driver has been installed successfully.

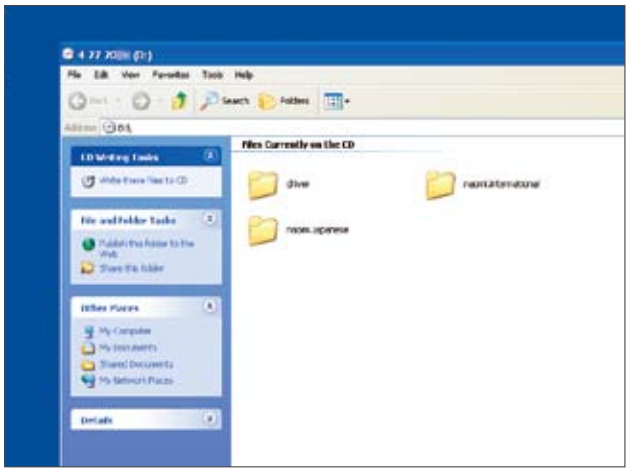
The installation process for Windows Vista is completed.
Proceed to Install the NAOMI Imaging Software (Install - 11)***.***

STEP 2 Install the NAOMI Imaging Software

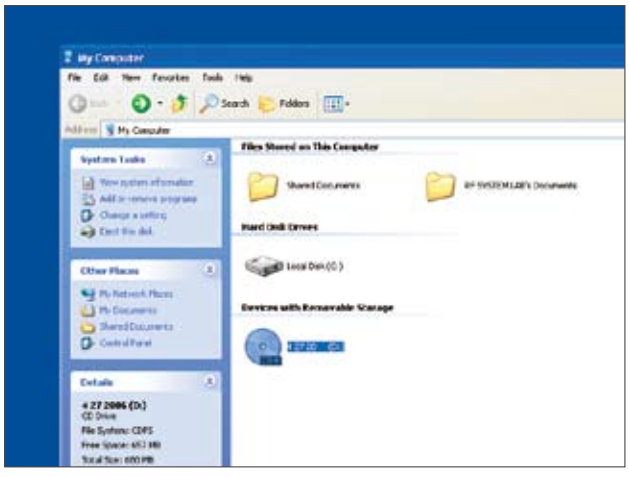
NOTE ! This process is to install the NAOMI software into a computer for the first time.

1. Insert **System Application and System Driver CD-ROM** into the CD-ROM drive on your computer.

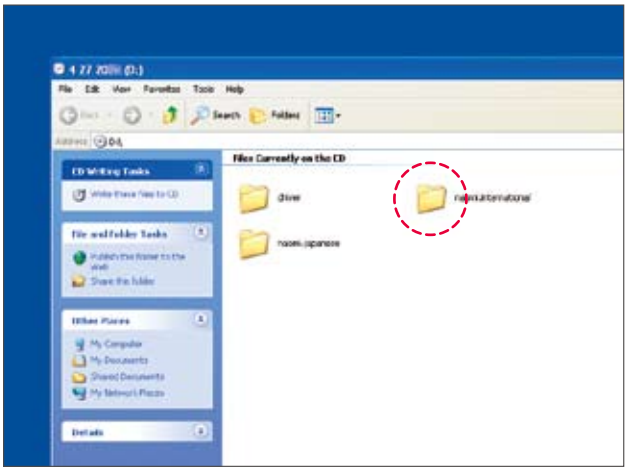




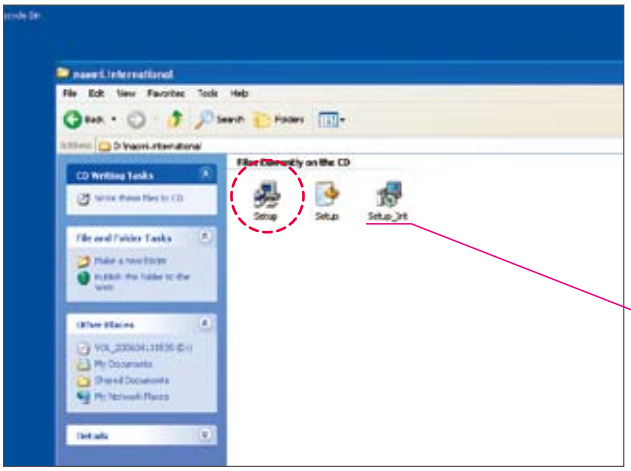
2. After a few seconds, the CD-ROM window will automatically appear.



If the above window does not appear automatically, double click the CD-ROM drive from My Computer.



3. Double click the naomi.international folder to open.



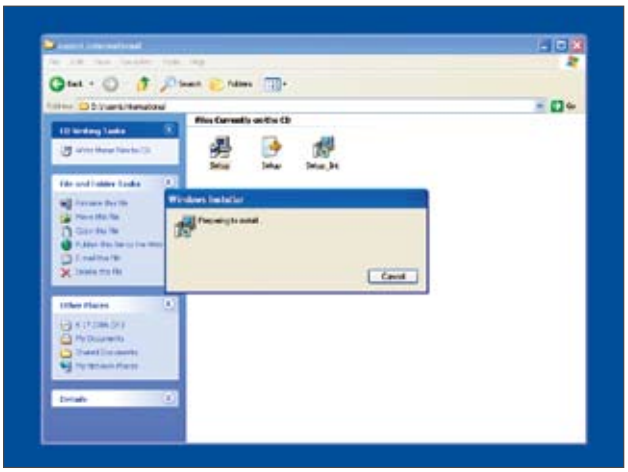
4. Double click Setup.exe to start the installation process.

NOTE ! Windows Vista

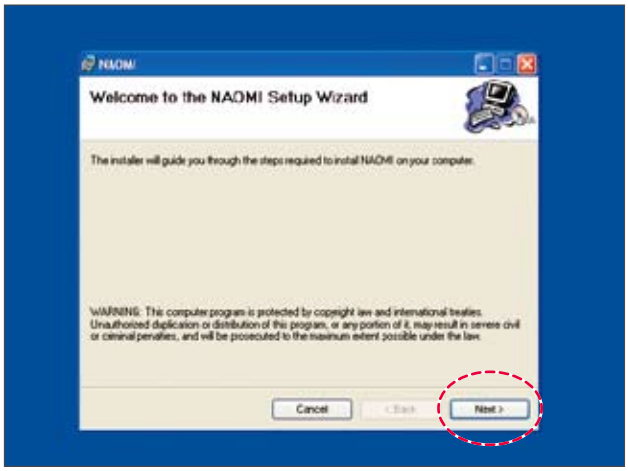
When double-clicking on “Setup.exe” on a computer with Windows Vista, “User Account Control” wizard may show up, stating “An unidentified program wants access to your computer.” Click “Allow: I trust this program. I know where it’s from or I’ve used it before” to start the installation.

NOTE ! Windows 2000

If your computer is Windows 2000, **right click** on Setup_Int.msi and select "install" to start the installation process.

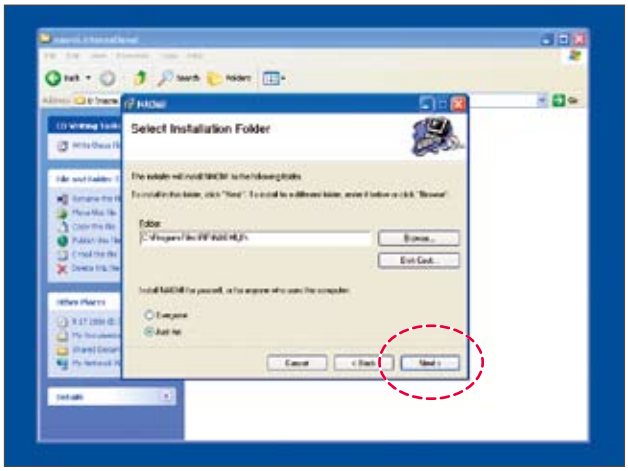


5. The computer prepares for the installation process.



6. NAOMI Setup Wizard automatically opens. The wizard will guide you through the steps to install NAOMI on your computer.

Click Next >.



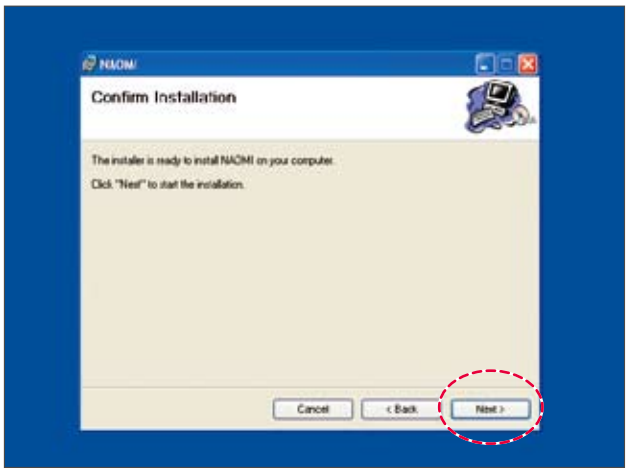
7. Click Next > unless you need to change the folder to install NAOMI.

NOTE !

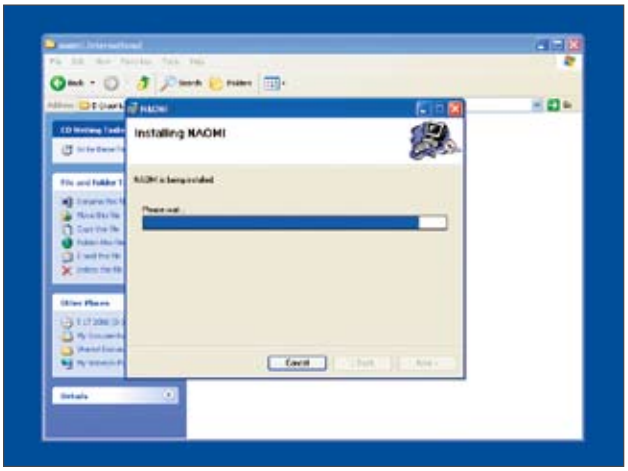
This manual shows you how to install NAOMI to C:/Program Files/RF/NAOMI_II (default setting).

NOTE !

Record the location that NAOMI is installed in this process. You may need to access the location later.



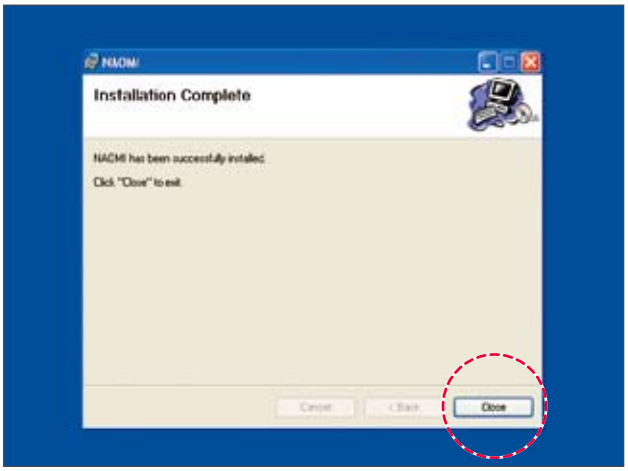
8. Click Next > to start the installation.



9. Wait until the NAOMI software installation is completed.

NOTE !

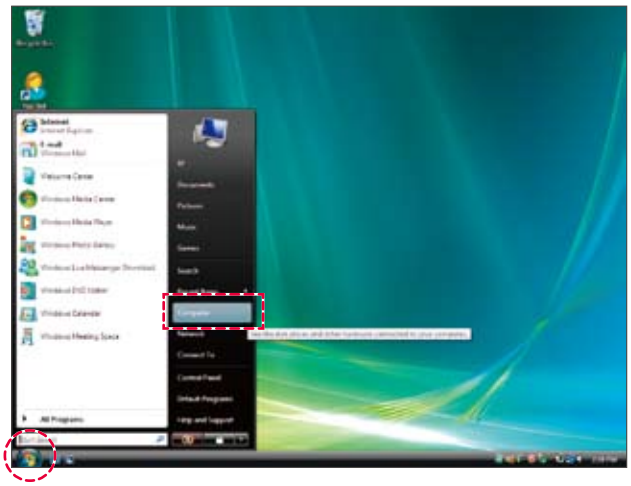
It may take few minutes to complete.



10. "Installation Complete" appears, after the NAOMI Software has been installed to your computer successfully.

Click Close to exit.

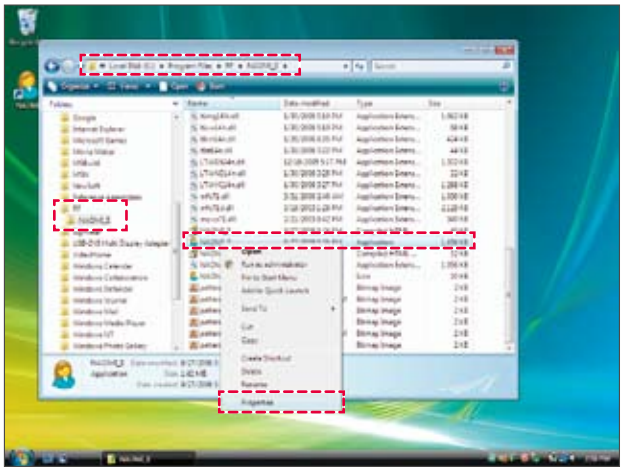
The NAOMI icon will be displayed on the desktop.



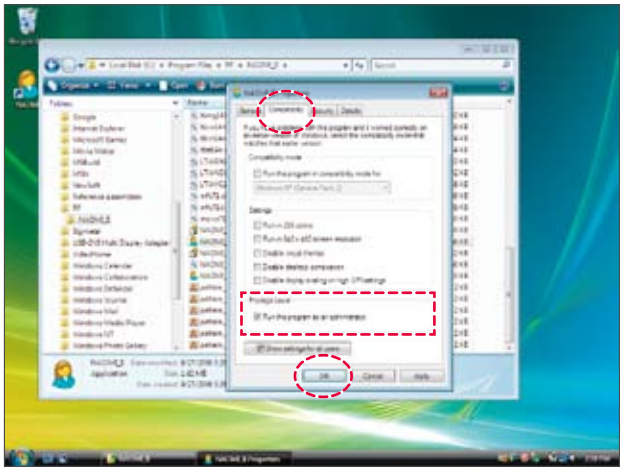
Privilege level on Windows Vista

In order to set the correct compatibility for NAOMI software to operate in Windows Vista, the privilege level must be set up with the following instructions.

Click "Start", then select "Computer".

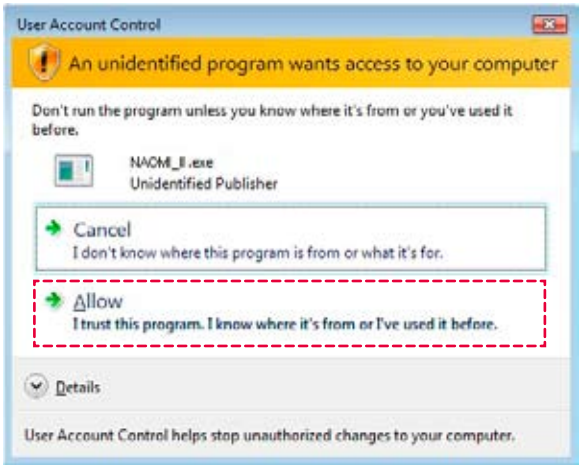


1. Double-click on Local Disk (C:), then Program Files. Double-click on RF folder, then NAOMI_II folder. Inside of NAOMI_II folder, right click on **NAOMI_II.exe** file and then select “Properties”.



2. Click “Compatibility” tab on NAOMI_II properties window. Check on “Run this program as an administrator” under Privilege Level.

Click “OK”.



3. When you open the NAOMI software in the next time, the windows ask to either allow or cancel accessing the software.

Click “Allow”.

STEP 3

Copy the NAOMI Imaging Data

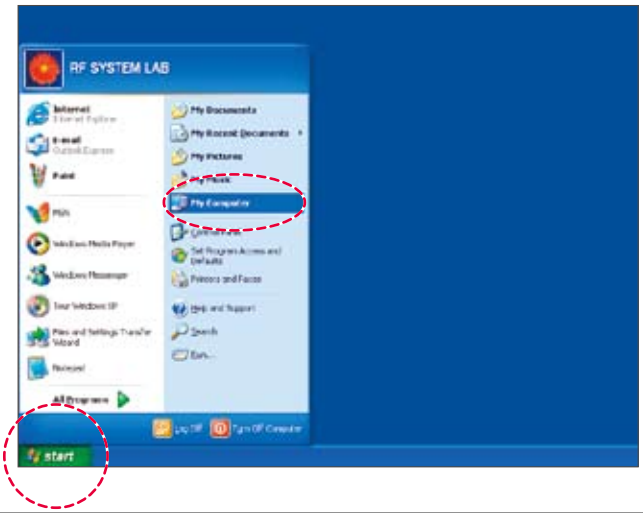
Follow this instruction to copy the imaging data when RF customer support instructs to do so, or the NAOMI software is installed on a computer for the first time.

In this process, you are to copy **the NAOMI imaging data to your computer**. The imaging data controls the proper image capturing on the NAOMI sensor.

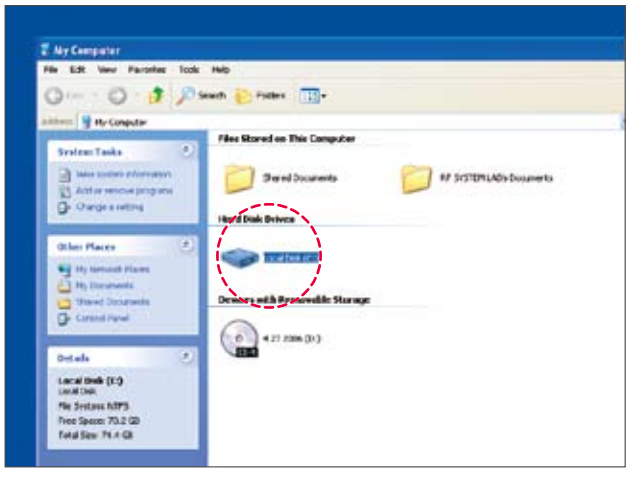
Prior to use the NAOMI sensor, the NAOMI imaging data must be copied to your computer. The NAOMI sensor cannot capture digital images properly without copying the imaging data.

NOTE ! If you change the software location in the installation process, open the NAOMI folder and follow the process from #6.

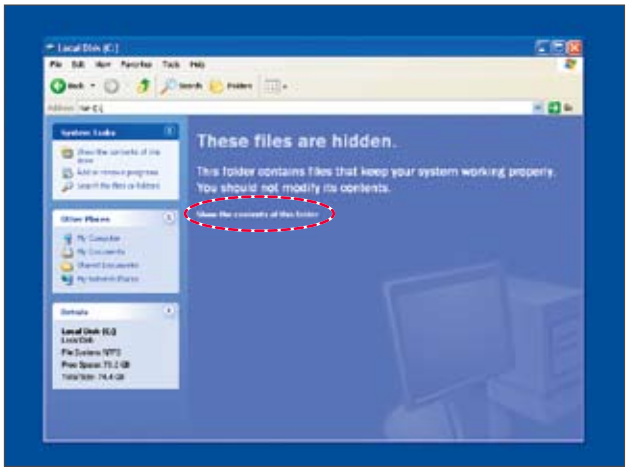
NOTE ! It is not necessary to copy the imaging data when the NAOMI software is re-installed, as the data remains stored in the map folder.



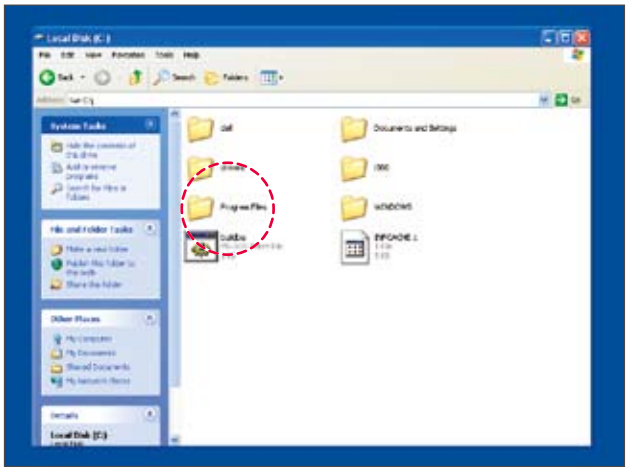
1. Click Start and go to My Computer.



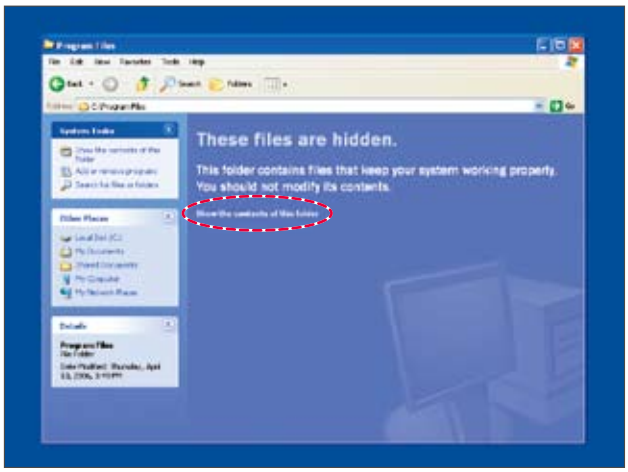
2. Double click Local Disk (C:) on My Computer.



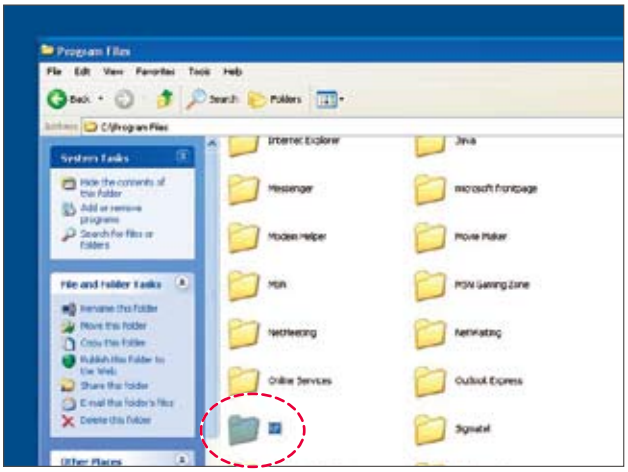
The window may show "These files are hidden."
Click "Show the contents of this folder".



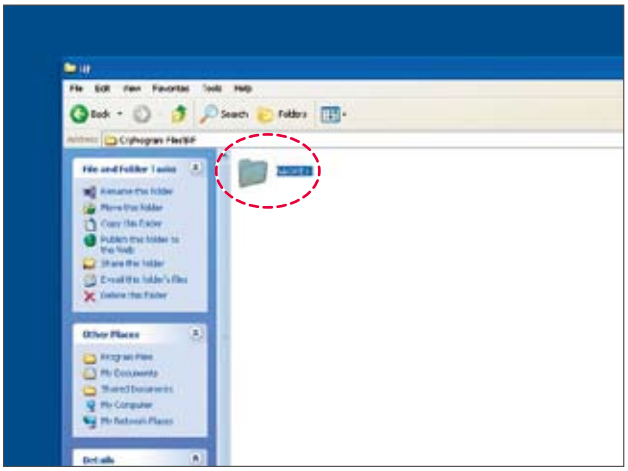
3. Double click Program Files to open.



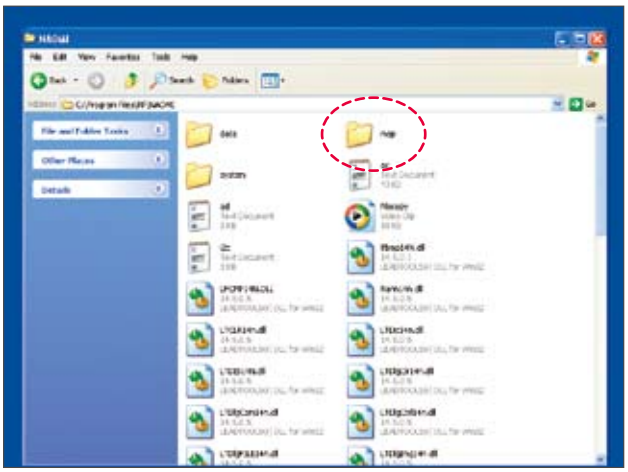
The window may show "These files are hidden."
Click "Show the contents of this folder".



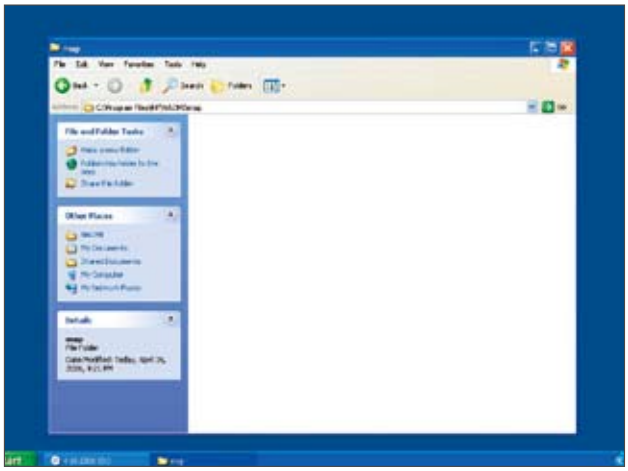
4. Double click the RF folder to open.



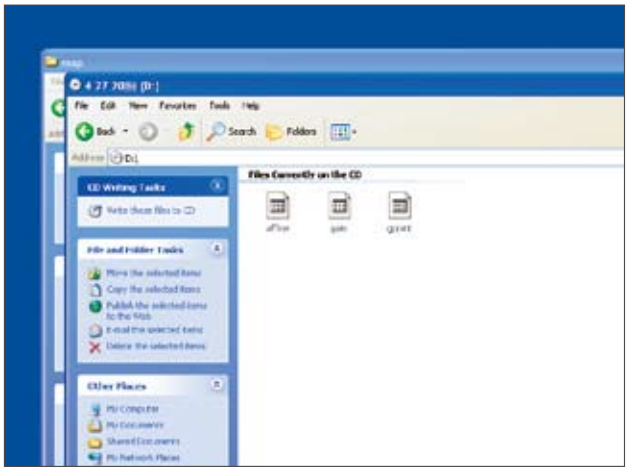
5. Double click the NAOMI folder (or NAOMI_ II folder) to open.



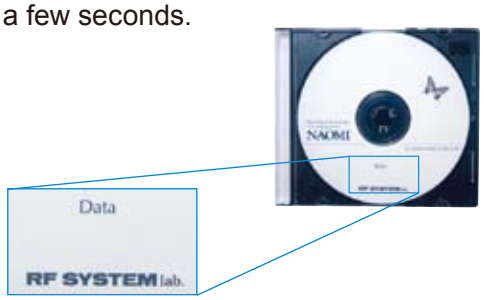
6. Double click the map folder to open.

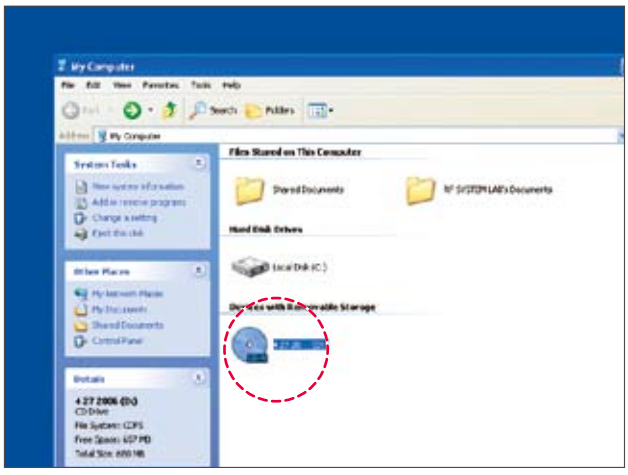


If there are any files in this folder, delete all files.
The map folder must not contain any files before proceeding to the next step if you are to use NAOMI with your computer for the first time. This is where the new files are copied to in the next step.

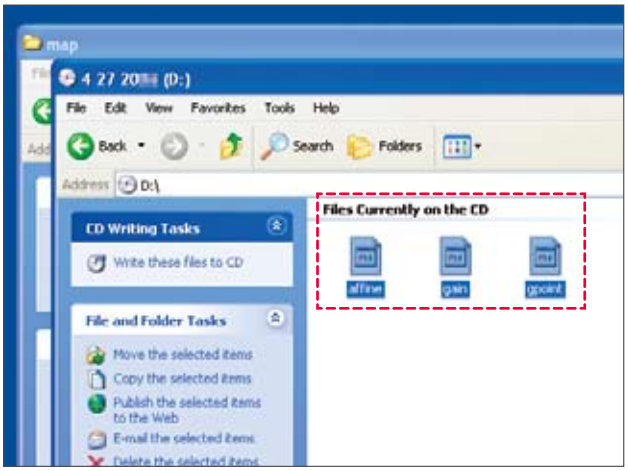


7. Insert Data CD-ROM, which come with the sensor you are currently trying to set up with, into your computer's CD-ROM drive. The window automatically appears in a few seconds.





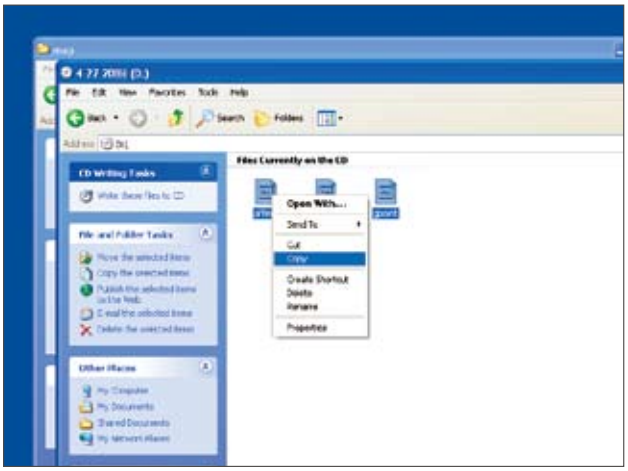
If the above window does not appear automatically, double click the CD-ROM drive on My Computer.



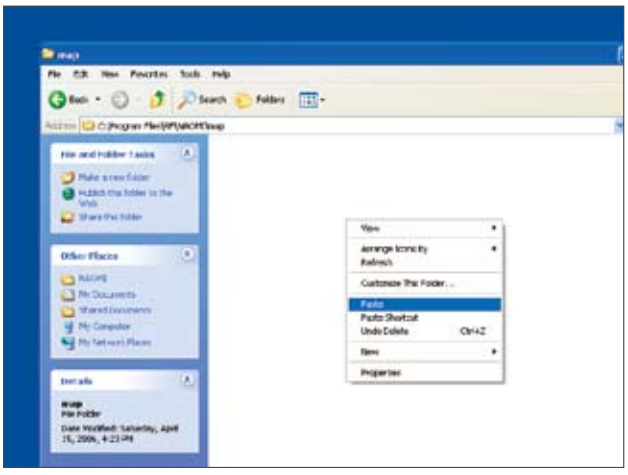
8. There are three files in the CD-ROM. Use the mouse to **select all three files.**

NOTE !

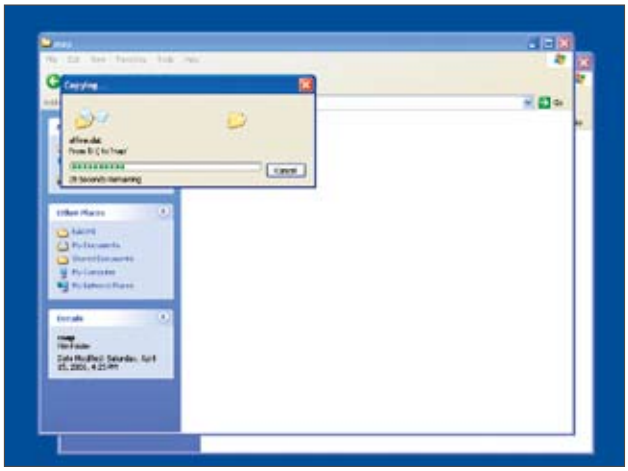
All three files must be selected.



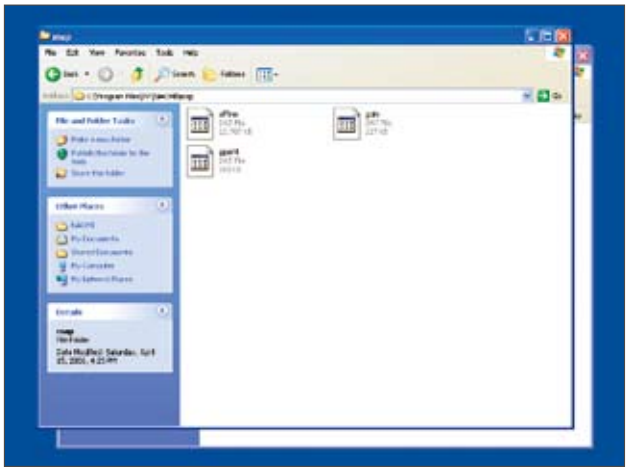
9. Copy all three files.
(Or, you may copy the files by right-clicking on the mouse and select “Copy”.)



10. Paste three files on the map folder.
(Or, you may paste the files by right-clicking on the mouse and select “Paste”. Or click and drag the files into the map folder.)



11. It starts copying the deta.



12. After the copying process is completed, confirm there are **three files in the map folder.**

NOTE !

Right click on each copied file and select properties.
Confirm the “Read-only“ checkbox is unchecked.

Close “map” window to finish.

NOTE !

If the NAOMI system or software does not work or an image does not appear after capturing, please go through this chapter again. Make sure you have followed every step properly on the installation process. If the problem remains unsolved, contact RF Technical Support.

Copying the NAOMI imaging data has been finished.
The installation has been completed.

Operation Check

Before you start using the NAOMI system, follow the instruction in this chapter to check the sensor for its functionality.

Prior to the shipment, the system has been tested and calibrated for both positioning and luminance for immediate use upon its arrival. However, in rare cases, calibration may be required to be processed. (Calibration is the process to correct misalignment and contrast unevenness on each CCD sensor in NAOMI. Refer to Calibration section for details.)

If there is a problem during the operation, refer to Troubleshooting Guide section or contact RF Technical Support.

This section includes...

STEP 1 *Set up the NAOMI sensor*

↓

STEP 2 *Confirm the irradiation area*

↓

STEP 3 *Set the calibration scale*

↓

STEP 4 *Set the x-ray exposure factors*

↓

STEP 5 *Start the NAOMI software*

↓

STEP 6 *Capture the x-ray image of the calibration scale*

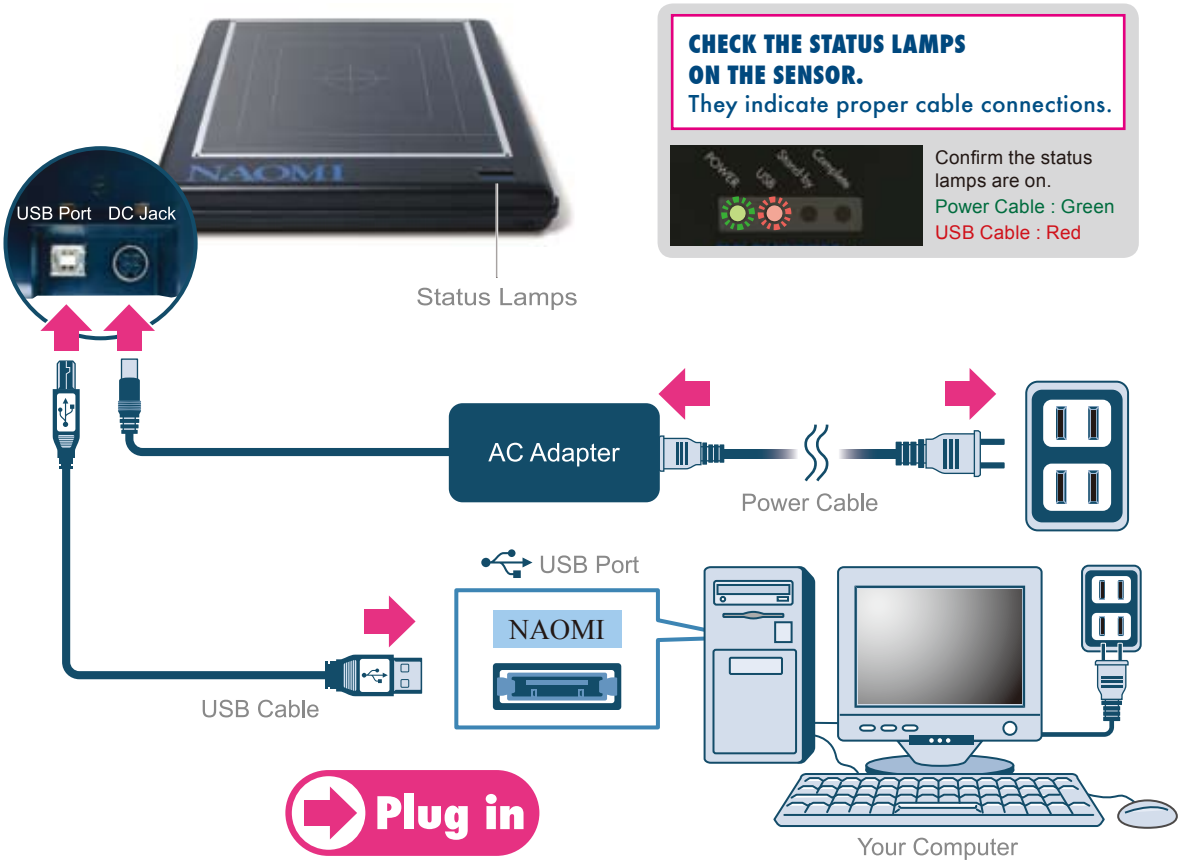
↓

STEP 7 *Confirm if calibration is necessary*

STEP 1

Set up the NAOMI Sensor

Place the sensor.
Plug in AC Adapter, Power Cable, and connect USB Cable.



NOTE !

If the NAOMI software and/or driver are not installed in your computer, refer to the Installation section (Driver: Installation 03-10, Software: Installation 11-21)

NOTE !

Refer to the upright stand (or upright stand bracket) installation guide for the upright position setting.

⚠ CAUTION

Make sure to turn off the photo timer, electric bucky equipment, or any other equipment close to the NAOMI unit. The strong magnetic field may cause the malfunctioning on the image capturing process.

STEP 2

Confirm the Irradiation Area

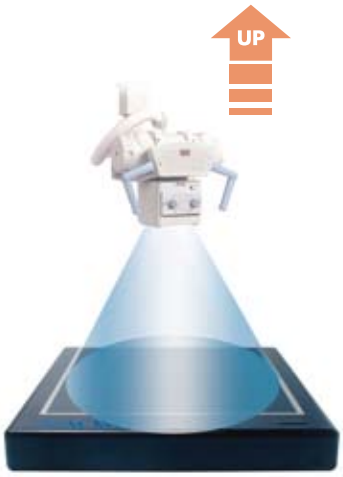
Set the irradiation area larger than the sensor imaging area.

NOTE !

Raise the x-ray tube to ***approximately*** 100cm (39 inch) in order to set the irradiation area wide enough to cover the entire sensor.

NO INCORRECT

The irradiation area is not covering the entire sensor.



YES CORRECT

The irradiation area is covering the entire sensor.

NOTE !

If your irradiation area cannot cover the entire sensor,
refer to **Sensor Area Question** in **Troubleshooting Guide** to change the active sensor area.

STEP 3

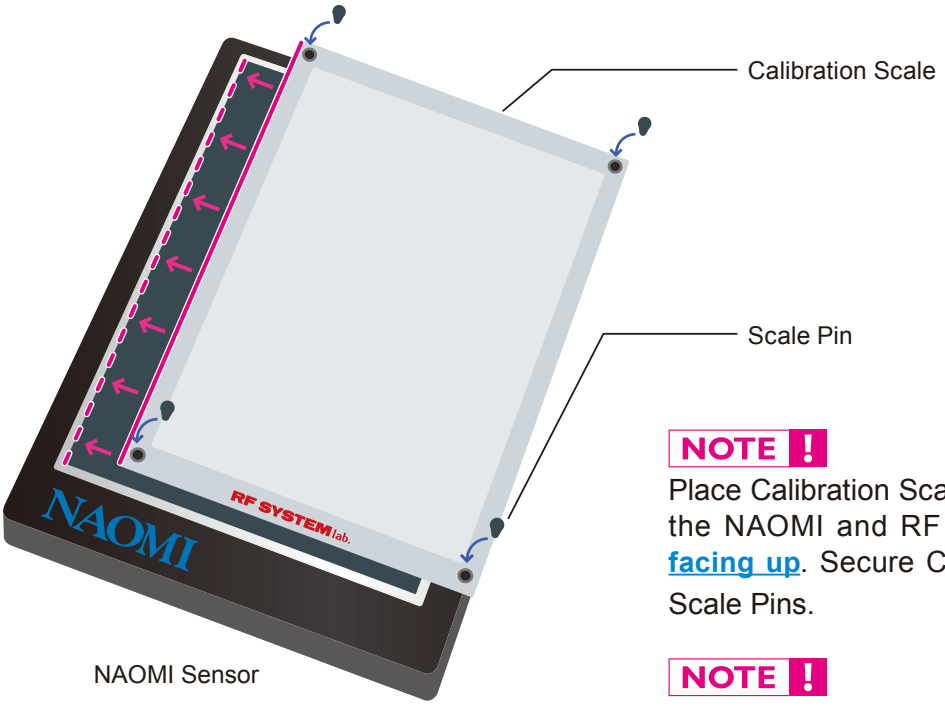
Set the Calibration Scale

Set Calibration Scale on the NAOMI sensor securely with Scale Pins.

CAUTION

Handle the calibration scale with care to avoid any injuries or crease on the scale.

Align to the Left



NAOMI Sensor

NOTE

Place Calibration Scale on the sensor with the NAOMI and RF SYTEM lab's logos facing up. Secure Calibration Scale with Scale Pins.

NOTE

Align Calibration Scale to the far left side of the NAOMI sensor, so that the NAOMI sensor detects Calibration Scale properly.

STEP 4

Set the X-Ray Exposure Factors

Set the x-ray machine to the following technique:*

Tube Distance	**100cm / 39-inch**
Tube Voltage	**52kvp**
Irradiation Strength	**5mAs**

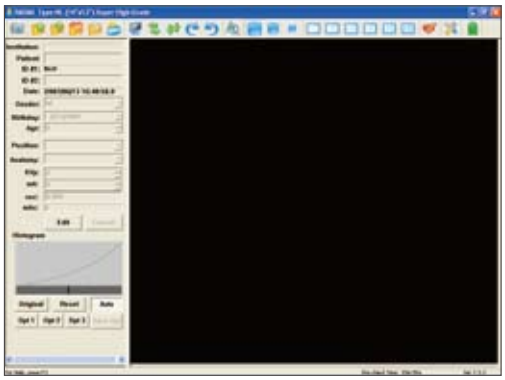
•Recommended Tube Current : 100mA
•Recommended Exposure Time : 1/20 sec. (0.05sec. / 6 pulse)
The above equals to 5mAs.

*The technique value may vary depending on the x-ray machine or its tube distance.

STEP 5

Start the NAOMI Software

1. Double click the NAOMI icon  on the desktop.



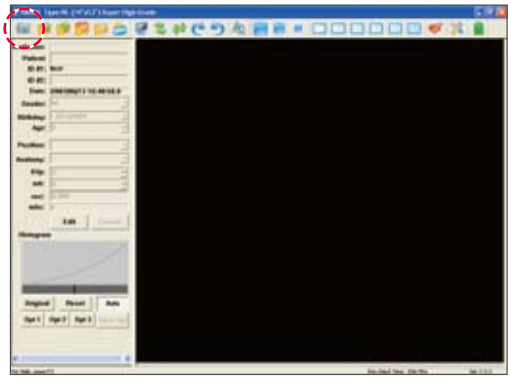
2. The software starts automatically.

NOTE !

If the NAOMI imaging software has not been previously installed, refer to Software Installation section (Install 11 - 15).

STEP 6

Capture the X-Ray Image of the Calibration Scale



1. Click the camera icon to prepare the software and the sensor for the exposure.
2. Type in ID.
   Click Single.

NOTE !

Refer to "How to Capture X-Ray Images" (Software 09-13).

3. The message "Please irradiate X-ray" appears to indicate that it is ready for the irradiation.

Irradiate x-ray before the time runs out.

NOTE !

The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.

NOTE !

The image of the calibration scale will be downloaded and displayed on the screen.

STEP 7

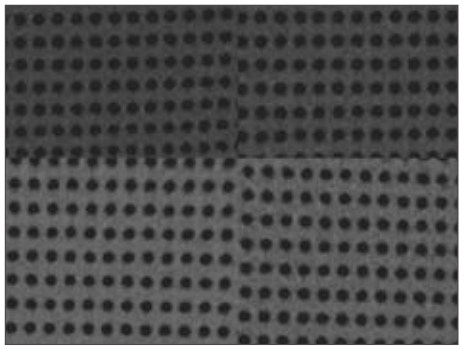
Confirm if Calibration is Necessary

After the image is displayed, confirm if calibration is necessary, by comparing the image on the screen with three example images below. If the calibration process seems to be needed, refer to the Calibration section.

There is at least one area on the displayed image that...

Example Image A The dots are overlapping with each other in at least one area of the image.

(Proceed to page Calibration 01-17.)



Enlarged View

If your image is...

NO *Each dot is aligned with each other.*

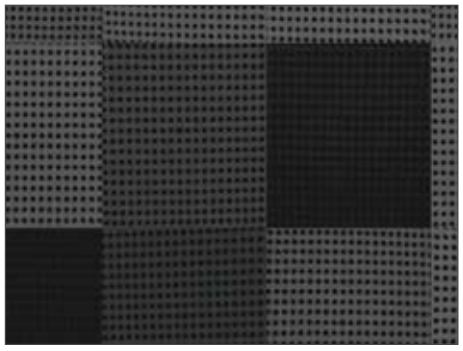
NO *Each block of dots is even in contrast.*

Necessary Calibration → Pre-Check + Positioning Calibration + Luminance Calibration

---

Example Image B The image contrast is not even.

(Proceed to page Calibration 01-07, and 13-17.)



Enlarged View

If your image is...

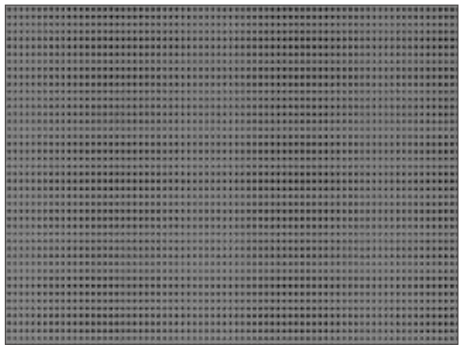
YES *Each dot is aligned with each other.*

NO *Each block of dots is even in contrast.*

Necessary Calibration → Pre-Check + Luminance Calibration

Example Image C The image does not have any overlapped dots or uneven contrast.

(Proceed to page Software -05.)



Enlarged View

If your image is...

YES *Each dot is aligned with each other.*

YES *Each block of dots is even in contrast.*

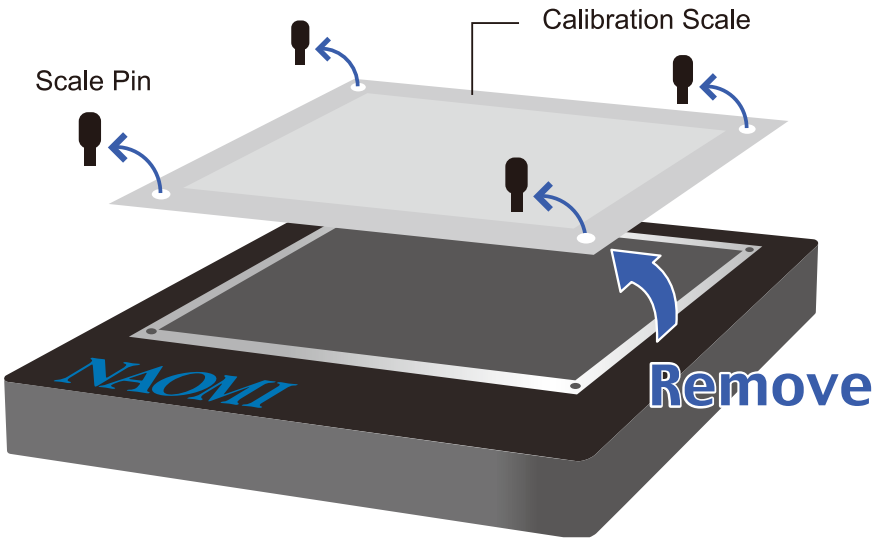
Necessary Calibration → **NONE**

Your sensor is ready to use.

Ready to Use

If the displayed image looks like Example Image C *in the previous page, your sensor is ready to use. Remove the calibration scale prior to start using the sensor.*

REMOVE CALIBRATION SCALE.



CAUTION

Handle the calibration scale with care to avoid any injuries or crease on the scale.

NOTE !

Store the calibration scale and the scale pins where they are quickly available.
They are necessary for the calibration process.

Now it is ready to use. Be sure to read the "Before Capturing X-Ray..." section in the software chapter (Software -05).

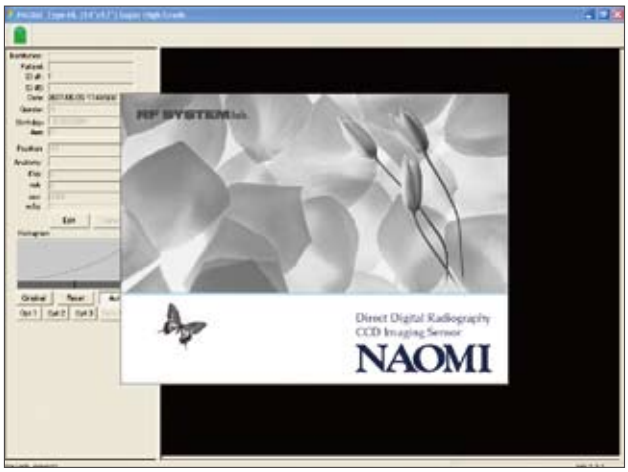
NAOMI Software

Start the NAOMI software.

Double click the NAOMI icon on the desktop to start the NAOMI software.

NOTE !

If there is no NAOMI icon on the desktop, install the NAOMI software. Refer to Software Installation section (Installation 11 - 15).



NAOMI software contains two different management modes.

A ***Capture / Manipulation Mode*** (Refer to Software - 02 - 03)

B ***Patient Information Mode*** (Refer to Software - 04)

NOTE NAOMI Requirement for Computer

Operation System
Windows2000 / XP / Vista

CPU
Intel Celeron 1GHz

Memory
1GB (2GB or more recommended)

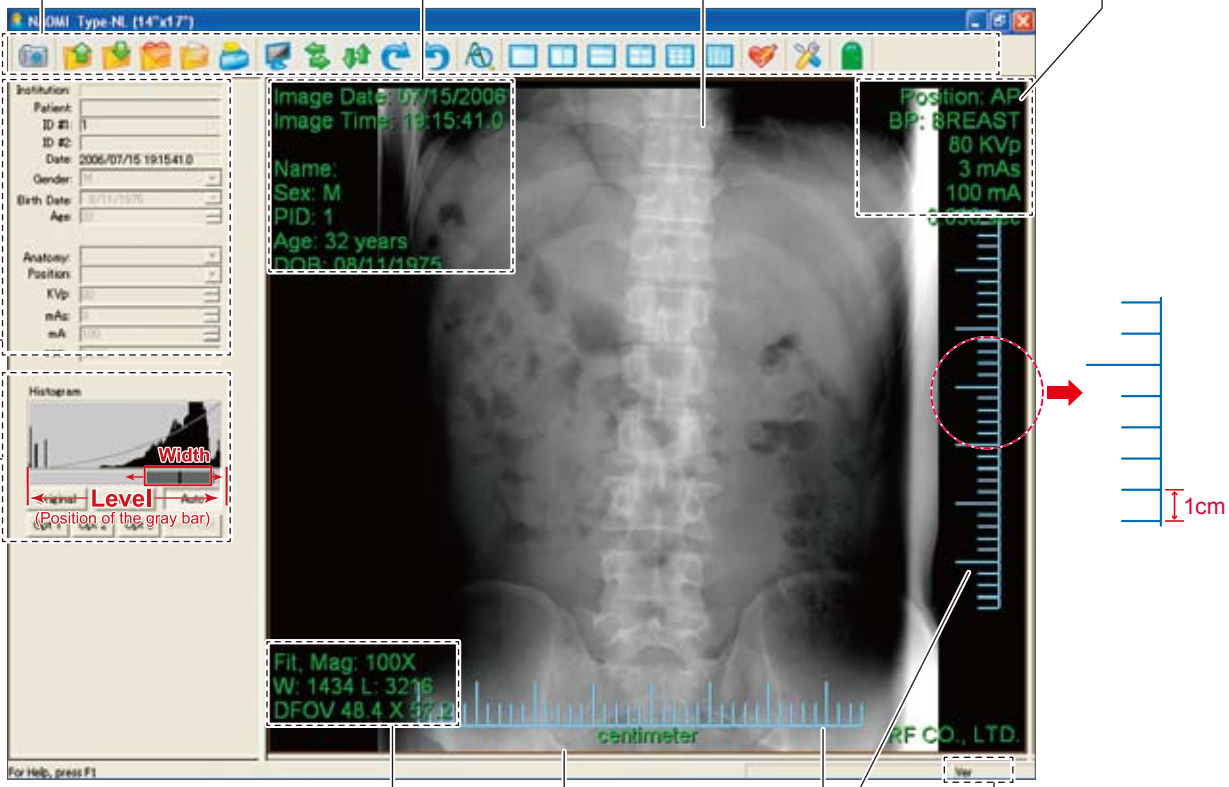
Hard Disk Drive
80GB Memory

Monitor
XGA Size (1024 x 768) (recommended)

Peripheral
USB 2.0 Port x 1, CD-ROM Drive x 1

A Capture / Manipulation Mode

Click the image screen area to change to Capture / Manipulation Mode.



Patient Data Menu
shows the patient's information of the selected image.

Orange Frame
indicates the image is selected.

Software Version

Ruler in Centimeter.
Each scale is 1cm.

Histogram Window
shows the data of the selected image.
The bar under the graph shows width and level of the adjustment setting.

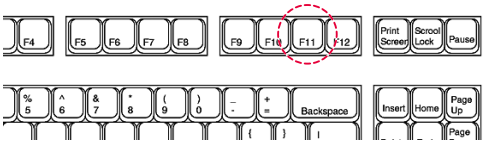
Image Data Information

Fit, Mag: 100X ---------- Magnification Scale

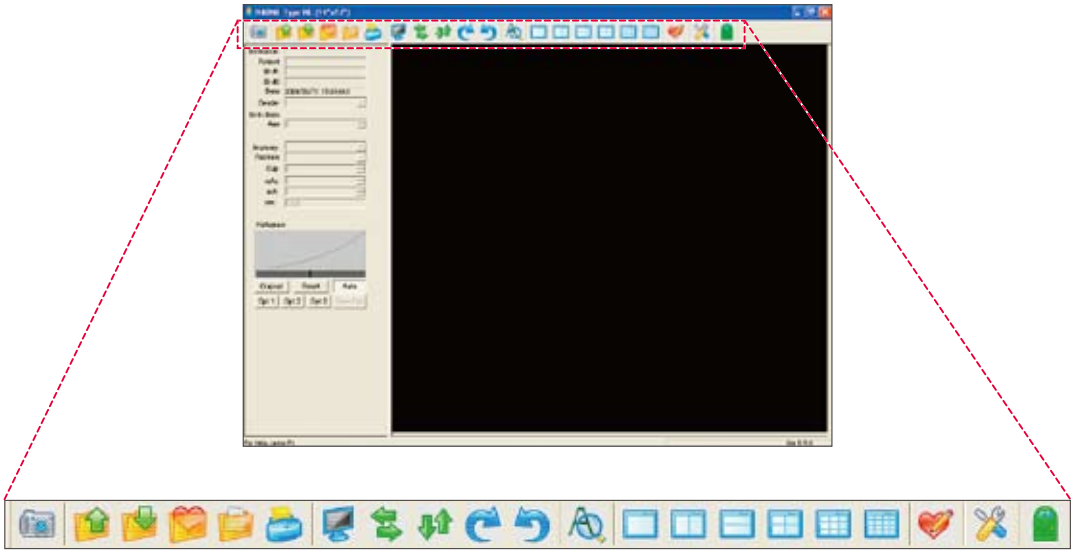
W: 1083 L : 3315 ---------- Image Data
(Width = Contrast) (Level = Brightness)

DFOV: 48.4 x 57.9 -------- Display Field of View

NOTE By pressing F11 key on the keyboard, display or hide the green imprints (Patient's Data, Irradiation Technique, and Image Data Information) on the image screen area.



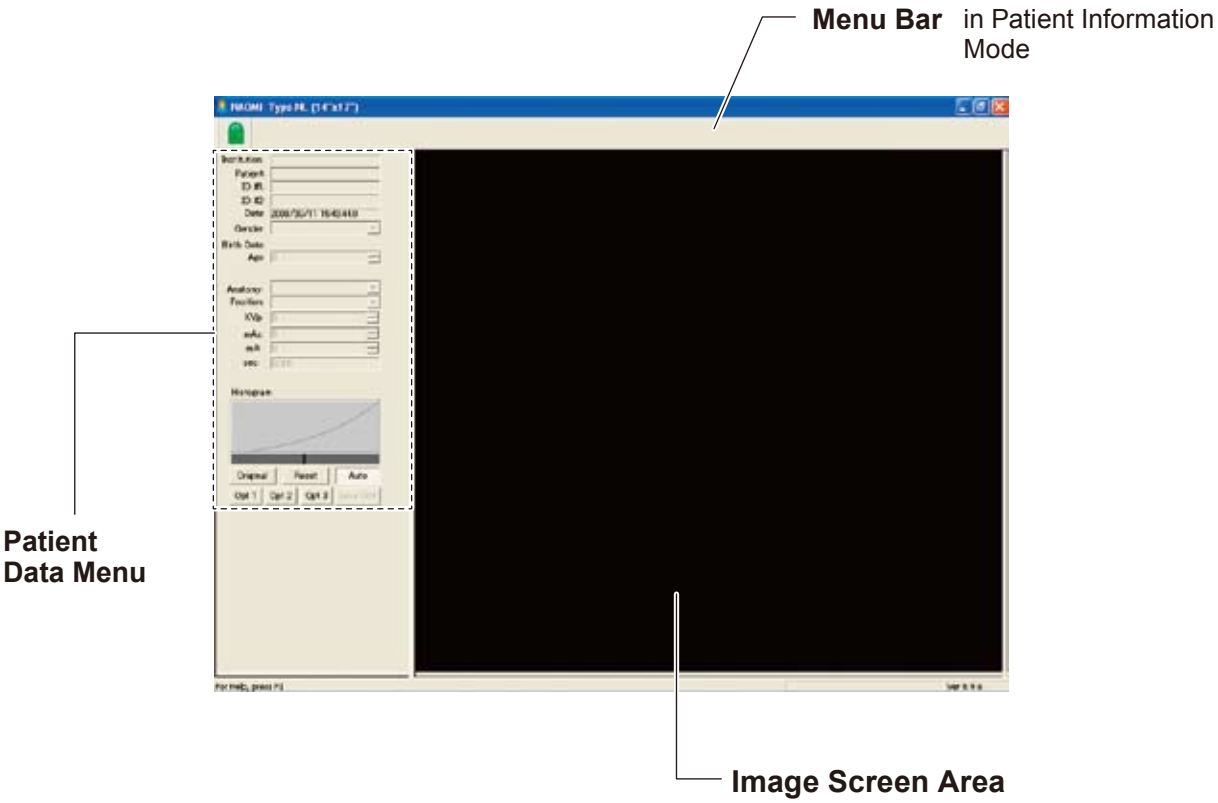
Menu Bar Icons *(in Capture / Manipulation Mode)*



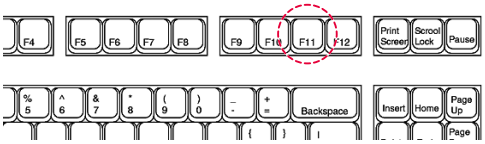
Capture Icon	: Prepare the sensor and the computer for the x-ray irradiation and for a digital x-ray image capture.
Open Icon	: Open the saved image.
Save As Icon	: Save the selected image as a different file format.
Update Icon	: Update (Save) the change of the adjustment in brightness, contrast, and gamma correction.
Close Icon	: Close the selected image from the computer monitor.
Print Icon	: Print out the selected image.
Negative/Positive Change Over Icon	: Reverse negative and positive.
Reflection Icon (Horizontal)	: Invert the selected image horizontally.
Reflection Icon (Vertical)	: Invert the selected image vertically.
Rotation Icon (Clockwise)	: Rotate the selected image in clockwise by every 90 degrees.
Rotation Icon (Counterclockwise)	: Rotate the selected image in counterclockwise by every 90 degrees.
Enhancement Icon	: Turn On/Off the enhancement on the selected image.
Single Window Icon	: Display one image.
Double Window Icon (Vertical)	: Display two images vertically.
Double Window Icon (Horizontal)	: Display two images horizontally.
Quarter Window Icon	: Display up to four images on one window.
3x3 Window Icon	: Display up to nine images on one window.
4x4 Window Icon	: Display up to sixteen images on one window.
Annotation Icon	: Open the annotation menu.
Setup Icon	: Open the setup menu to change the NAOMI system's configuration.
Exit Icon	: Close the NAOMI software.

B Patient Information Mode

Click the Patient Data Menu area to change to Patient Information Mode.



NOTE By pressing F11 key on the keyboard, display or hide the green imprints (Patient's Data, Irradiation Technique, and Image Data Information) on the image screen area.



NOTE Click on Image Screen Area to go back to the Capture / Manipulation mode.

Before Capturing the X-Ray

This section explains the preparation steps in order to use the software more effectively. Please refer to the following instruction to set up your software before using the NAOMI system.

A ***Check the file storage location.***

This is to check where the captured images are automatically saved into, so that the x-ray images can be managed easily.

(Refer to Software-06 for details)

B ***Set up the MSE function.***

This is to set the image enhancement function. MSE, Multi-Scale Enhancement, optimizes the displayed image by emphasizing the contrast and sharpness levels.

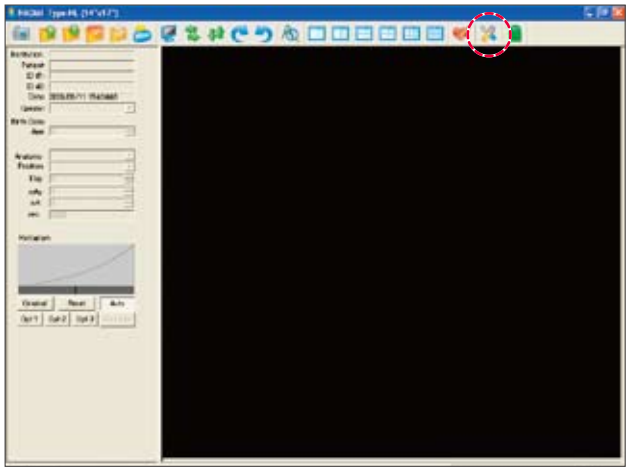
C ***Change the file storage location.***

This is to change where the captured images are automatically saved. If you already have a filing structure in the computer system you would like to use, you may select a folder in your computer to maintain the image files effectively.

(Refer to Software-08 for details)

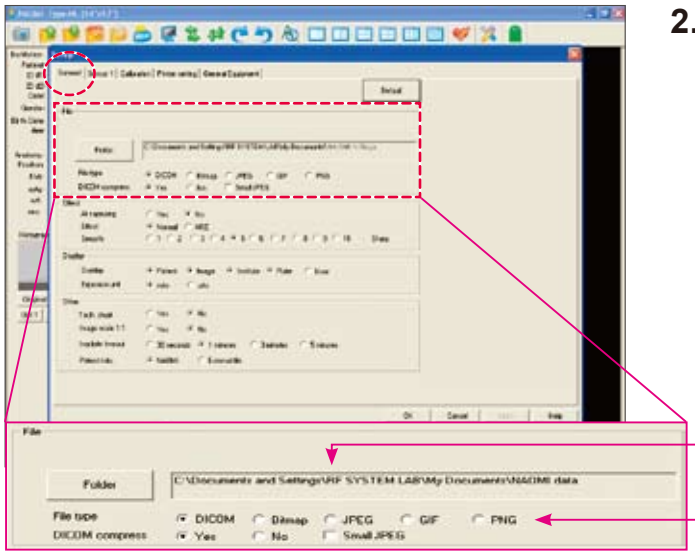
1 Before Capturing the X-Ray...

The image is automatically saved in the folder, which is selected in Setup Menu. prior to use, it is necessary to set the location for the captured images to be automatically stored.



A. To check the folder's location

1. Click the Setup icon.



2. Setup Menu is displayed.

Select the **General** tab.

Check under "File". The folder's location is displayed next to the "Folder" button.

The folder's location: where the image is automatically stored.

File format type.

NOTE !

The recommended file type is DICOM, because all patient information is stored with the image, and there is more pixel capacity on the image compared to other file types.

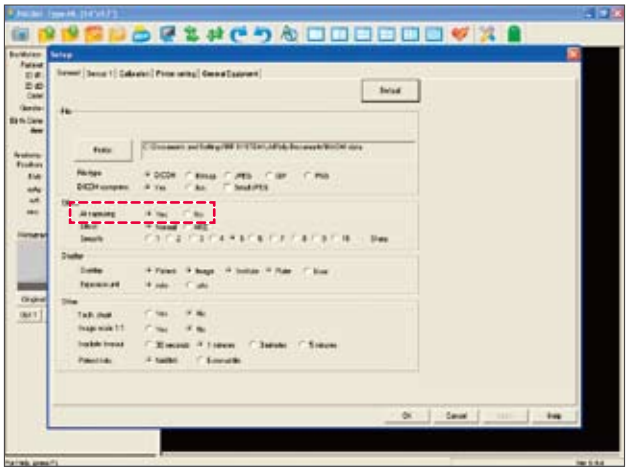
NOTE !

The default location for images to be stored automatically, is set as "C:\Documents and Settings\Administrator\My Documents\NAOMI data"*

(To access this folder, go to My Computer, Local Disk C Drive, Documents and Settings, Administrator, My Documnets, and then NAOMI data.)

*This is only applicable to the NAOMI software, when it was installed to the default location during the installation process. If the NAOMI software was installed in a different location, the above does not apply.

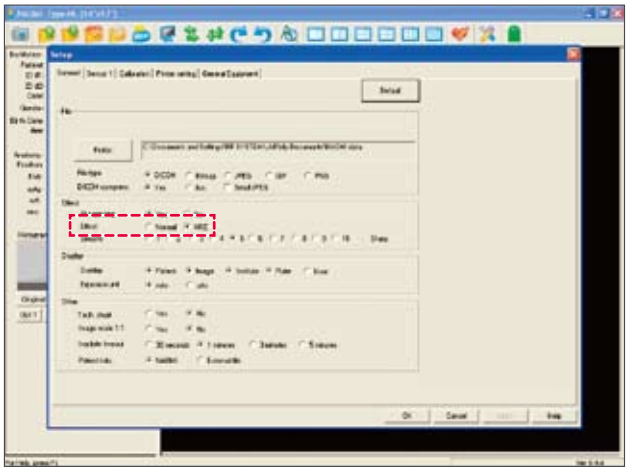
B. To set up MSE function



1. Select **"Yes"** on **"At Capturing"**.

NOTE !

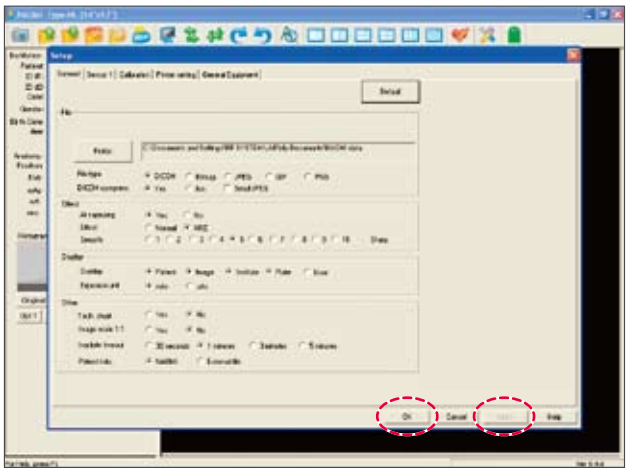
By selecting **"Yes"**, the captured image is going to be displayed with the enhanced sharpness.



2. Select **"MSE"** (=Multi-Scale Effect) on **"Effect"**.

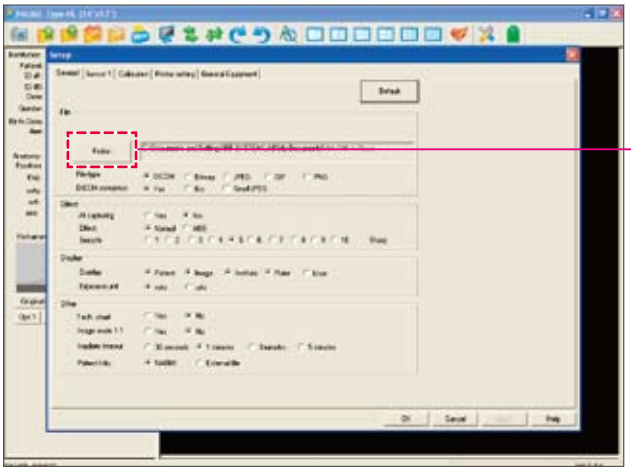
NOTE !

The captured image is going to be displayed in MSE mode. When opening the saved image, the same effect will be applied.

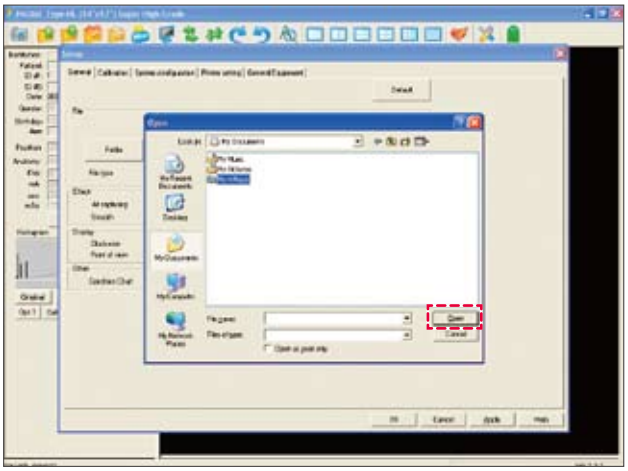


3. Click "Apply" and "OK".

C. To change the folder's location



1. Click the "Folder" button.

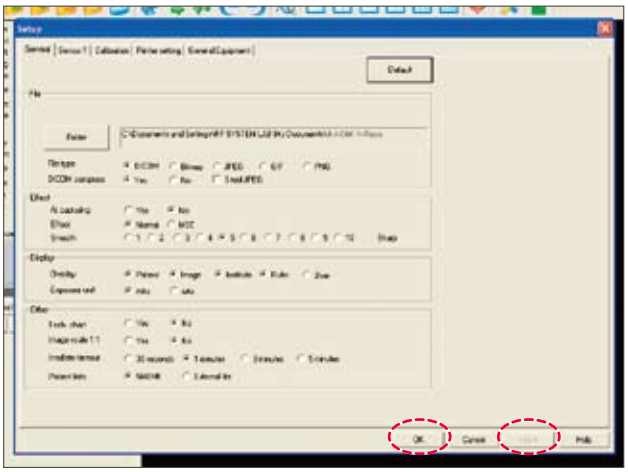


2. The open window appears.
Select the folder, where you wish to save images.

Example !

I would like to save images into "My X-Rays" folder, which I have created in My Documents.

Step 1 Select My Documents
Step 2 Select My X-Rays folder.
Step 3 Click Open.

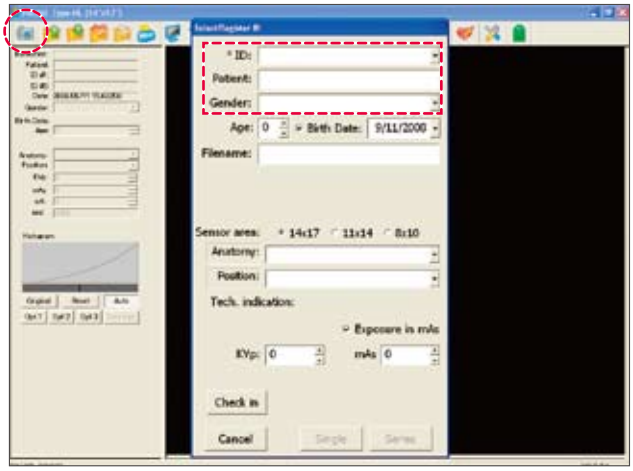


3. The selected folder's name will be displayed.

Click Apply and OK.

2 How to Capture X-Ray Images

Capture Mode



1. Click the Camera icon  on the menu bar. Select / Register ID menu shows up. Type in ID, or select from the list by clicking the arrow next to ID.

The folder will be named the same as ID, and created in the location you have selected in Setup Menu. ID can be anything such as a carte number, a patient's name or a social security number.

If the ID number is entered with comma (,), the entered ID number cannot be saved. Refer to Troubleshooting-14 for the supported letters by the NAOMI software.

NOTE !

The Capture button (Single and Series buttons) does not become available without the ID number.

[Patient Name and Gender]

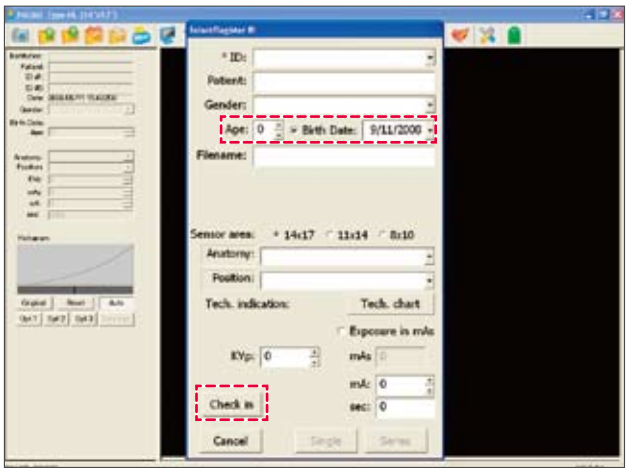
Type in a patient name and/or select a gender if necessary.
The information will be imprinted on the image.

NOTE !

Do not use a comma(,), when you type in the patient information.

Example

- ✕ Smith,Mike (comma)
- ○ Smith_Mike (underscore)
- ○ Smith-Mike (hyphen)
- ○ Smith Mike (space)

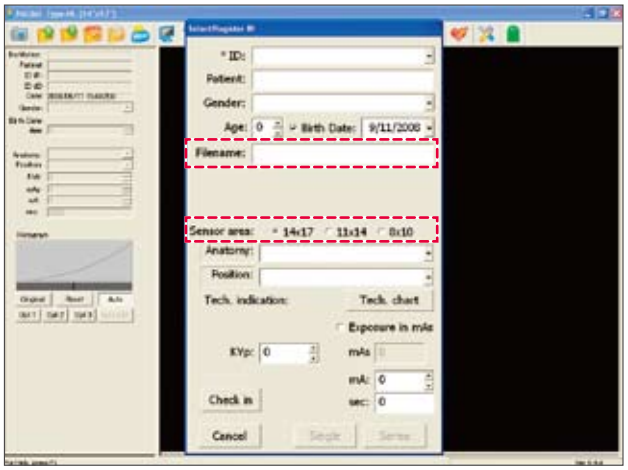


Age & Birth Date

Uncheck when the birth date is not necessary.

Check in

Click this button to update the patient information.



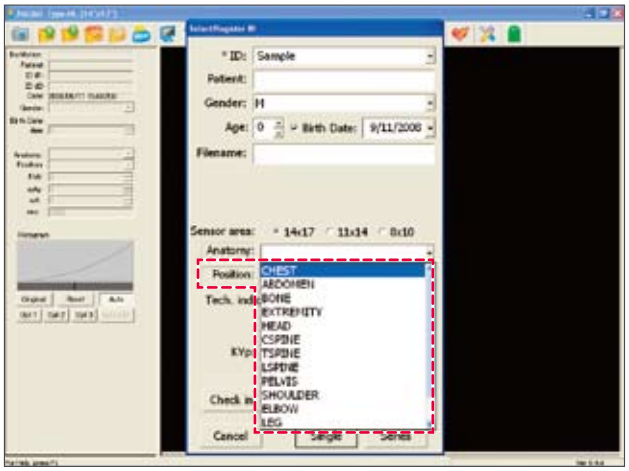
[Sensor Area]

Sensor Area
Select the collimated sensor area size.

File Name
If the file name field is left blank, the image is named with the date and time at capturing.

NOTE !

If the file name is left the same for the next x-ray, the message, “Do you want to update?” will appear. By selecting “Yes” on this message, the previous captured image will be overwritten by the image to be captured next.



[Anatomy and Position]

Select the anatomy and position from the list if necessary. When selected, the information will be imprinted on the image.

NOTE !

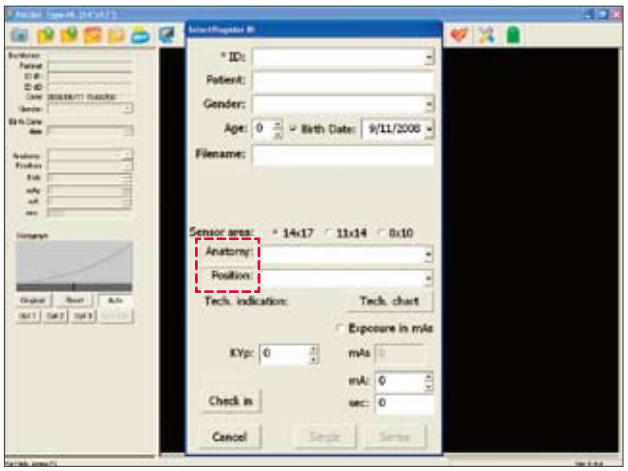
When selected, the anatomy will be added to the file name.

Example !

The file name of the image you captured at 11:00 on November 19, 2008 will be following:

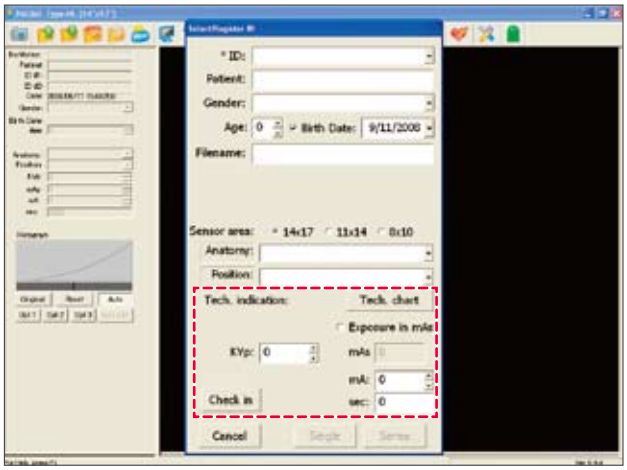
without the anatomy information
20081119110000.dcm

with the anatomy information
20081119110000-CSPINE.dcm (by selecting “CSPINE”)



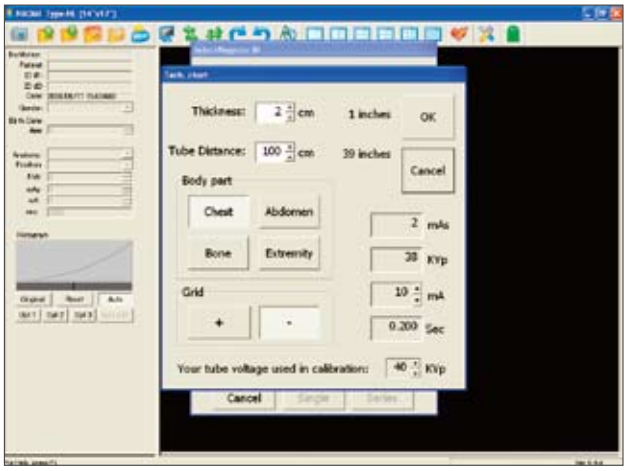
NOTE !

The list of the Anatomy and Position information can be customized. Click directly on “Anatomy” or “Position”, the list will open as a text data. Add and/or delete the item(s) as necessary.



[Tech. Chart]

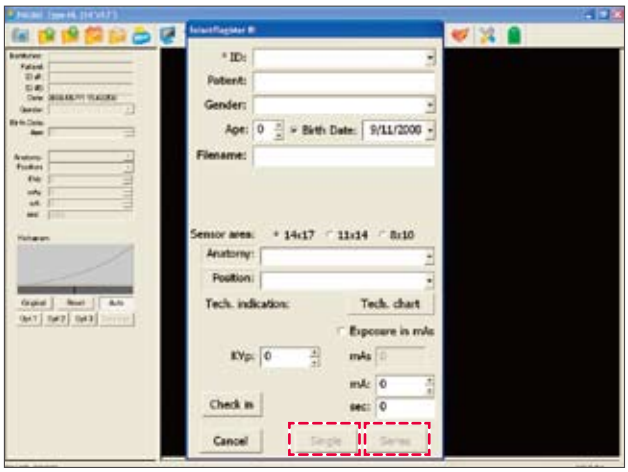
Remove the checkmark on “Exposure in mAs”, to input the “mA” and “second” values.



NOTE !

“Tech. chart” button is displayed when the “Tech. chart” is selected “Yes” in Setup Menu. (Refer to Software-47 to display or to hide the “Tech. chart” button.)

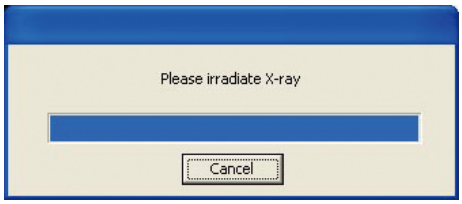
Select the exposure settings from the chart. And click “OK” to close the chart window.



3. Click “Single” or “Series” to start capturing an image.

“Single”: Capture one image.

“Series”: Capture the series of x-ray images for the displayed patient. Each time the capturing finishes, this menu window will be displayed with the same patient information.

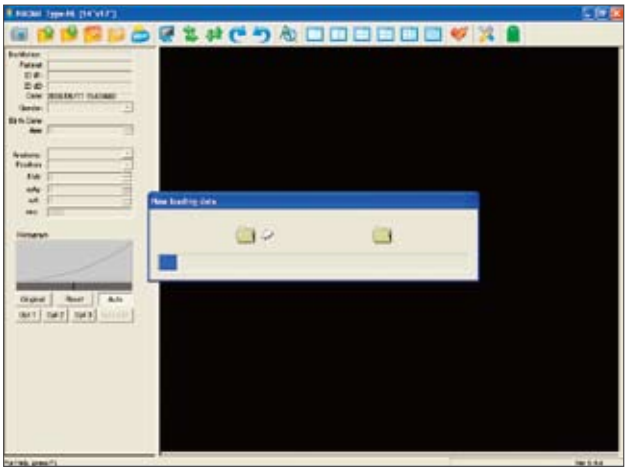


4. When you click “Single” or “Series” button, the message, "Please irradiate x-ray" appears.

Irradiate x-ray before the time runs out.

NOTE

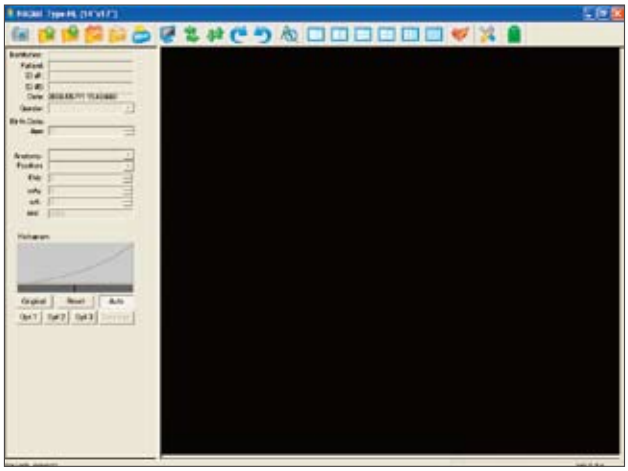
The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.

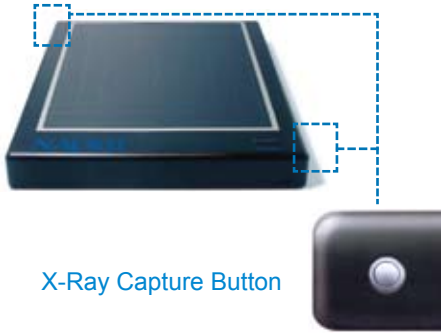


5. Once you shoot the x-ray, the image will be automatically downloaded.

6. The x-ray image will be displayed.

with X-Ray Capture Button

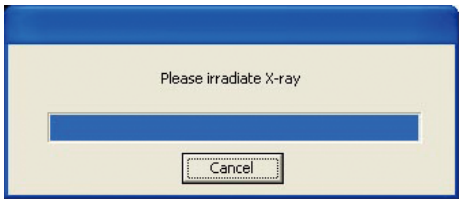




1. Press X-Ray Capture Button on the NAOMI sensor.

NOTE !

The NAOMI foot switch can activate the sensor as well.



2. The message, "Please irradiate X-Ray" appears.

Irradiate x-ray before the time runs out.

NOTE !

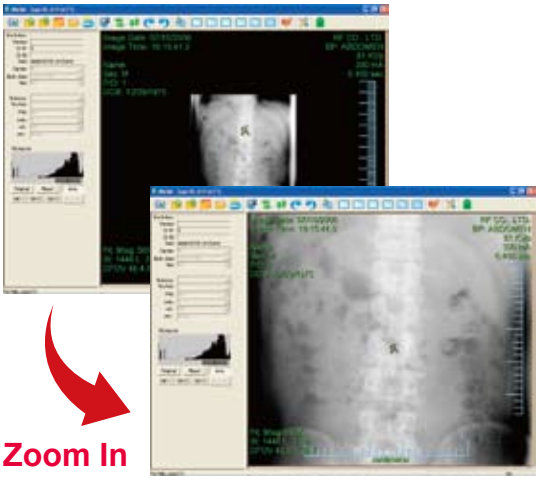
The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.

3. The x-ray image will be automatically downloaded and displayed on the screen.

NOTE !

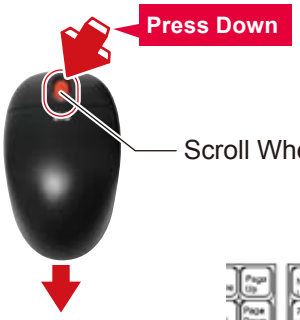
When taking X-ray with X-Ray Capture Button, the image will be saved with the last ID and patient information you have used.

3 Zoom In / Out on the X-Ray Images



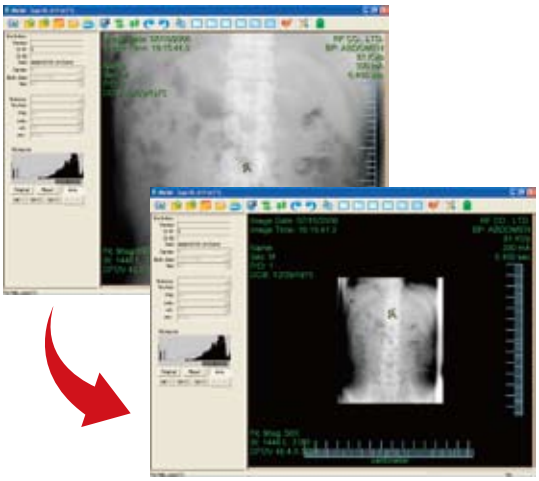
Zoom In

Select the image.
Press the scroll button and drag **DOWN** to zoom in.



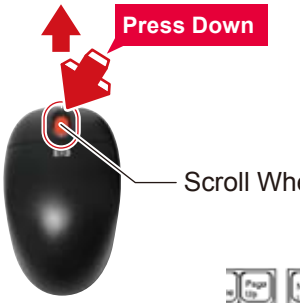
NOTE

You can zoom in by pressing [+] key ([Fn] key + [+] key for laptop) on the keyboard.
You can go back to x100 view by double-clicking the right button.



Zoom Out

Select the image.
Press the scroll button and drag **UP** to zoom out.



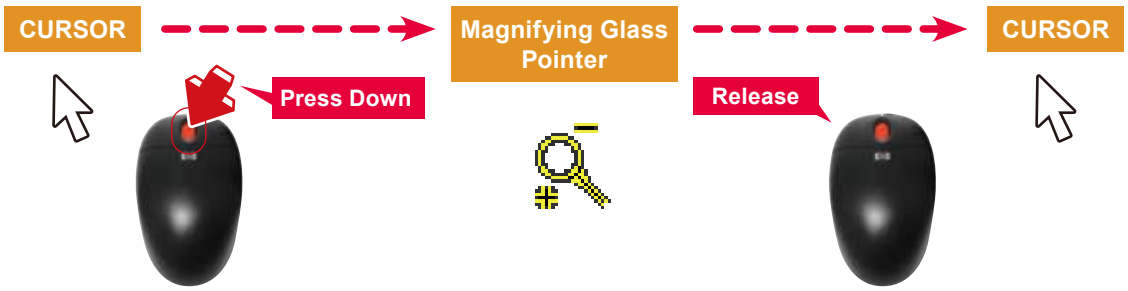
Zoom Out

NOTE

You can zoom out by pressing [−] key ([Fn] key + [−] key for laptop) on the keyboard.
You can go back to x100 view by double-clicking the right button.

NOTE

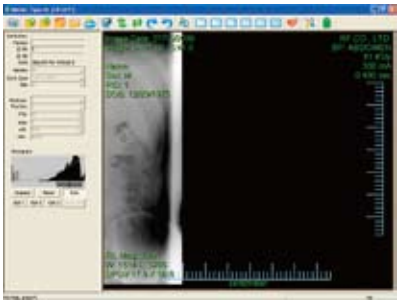
While holding the scroll button down, the cursor changes to Magnifying Glass Pointer. While the cursor becomes pointer, you can zoom in and out the image.

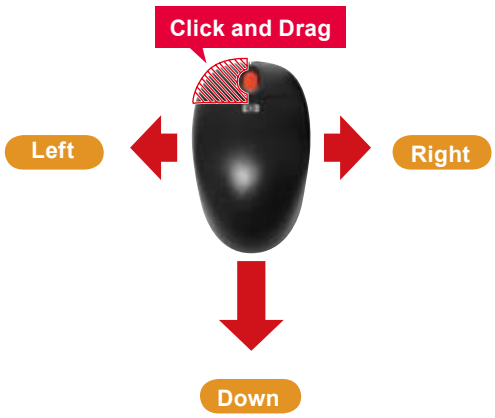


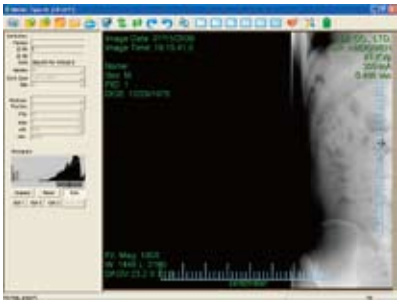
4 Move the Image

Move the Image

Select the image.
Click **LEFT** and drag the mouse to move the image.

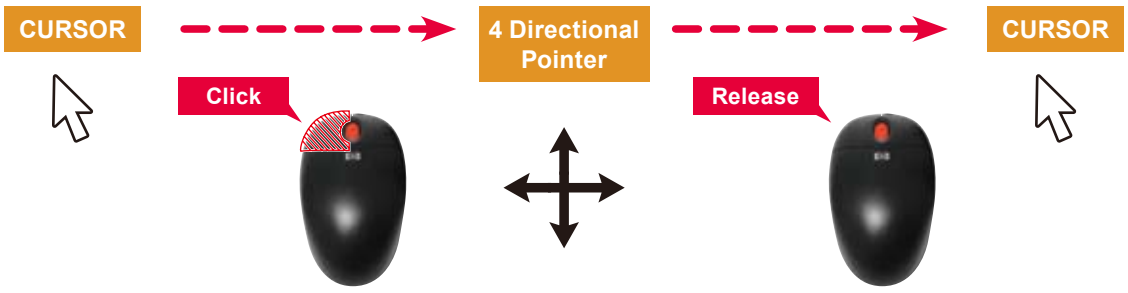






NOTE !

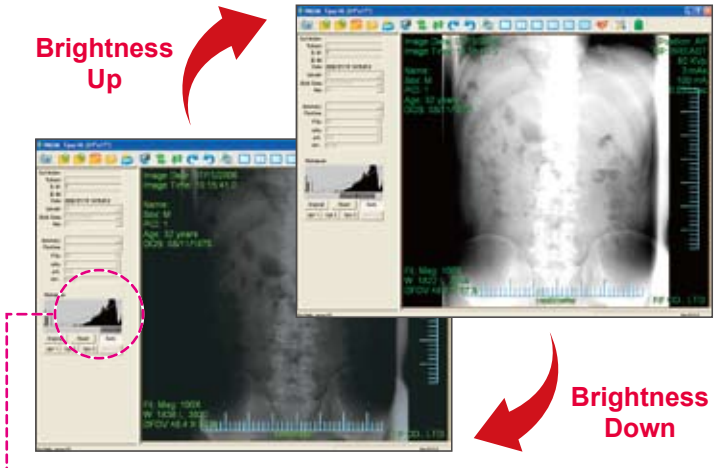
Once the left button is clicked, the cursor changes to 4 Directional Pointer until the left button is released. While the cursor becomes 4 Directional Pointer, you can move the image.



5 Adjust the Brightness / Contrast

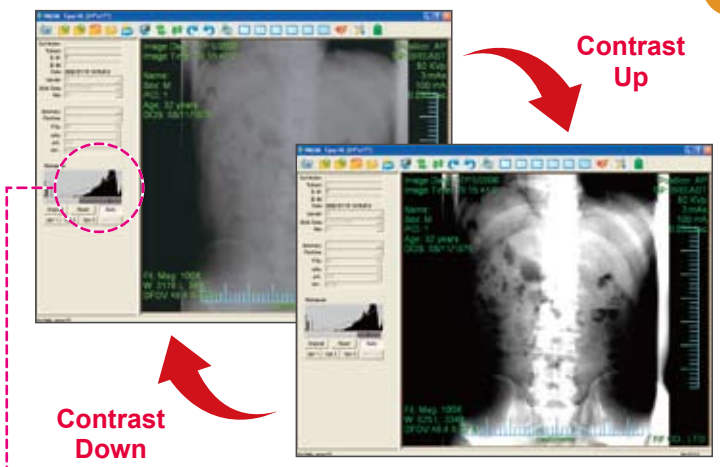
Brightness / Contrast

Select the image.
Click **RIGHT** and drag the mouse to adjust brightness and contrast.



*The number and the histogram of level changes as you change the brightness.

Brightness

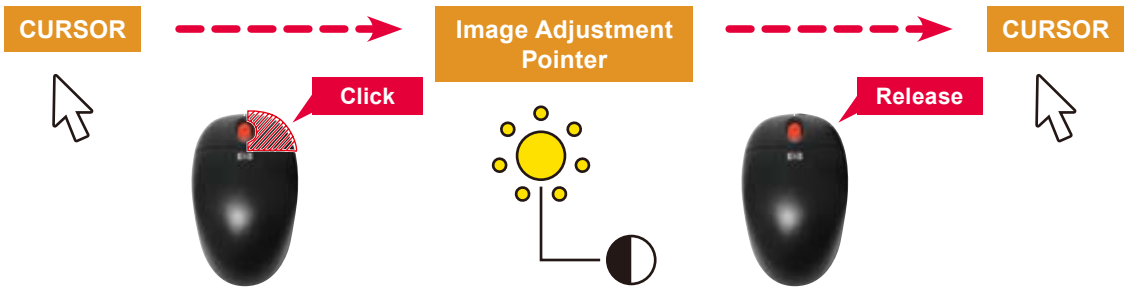


*The number and the histogram of width changes as you change the contrast.

Contrast

NOTE !

Once the right button is clicked, the cursor changes to Image Adjustment Pointer until the right button is released.



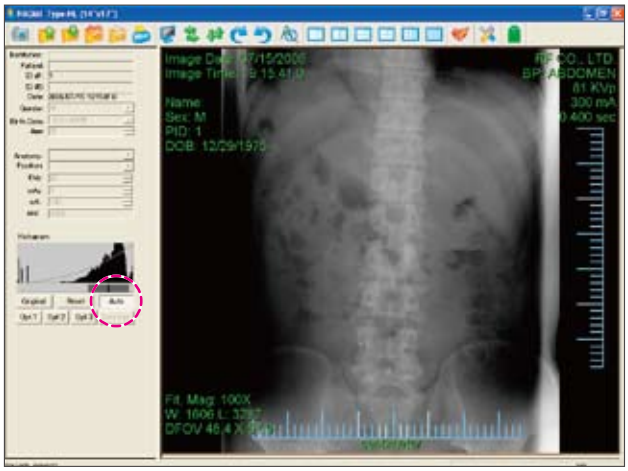
6 How to Adjust the X-Ray Images

One-Click Image Adjustment

Original (Original Adjustment)

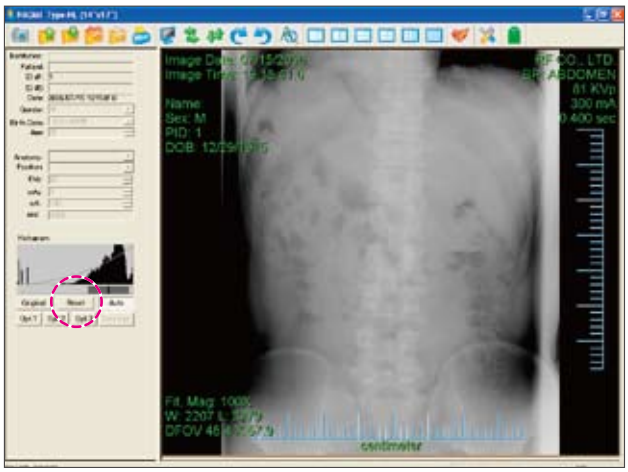
Click **"Original"** to go back to the adjustment setting, which has been previously saved on the image file.

(Refer to Software-20)



Auto (Automatic Adjustment)

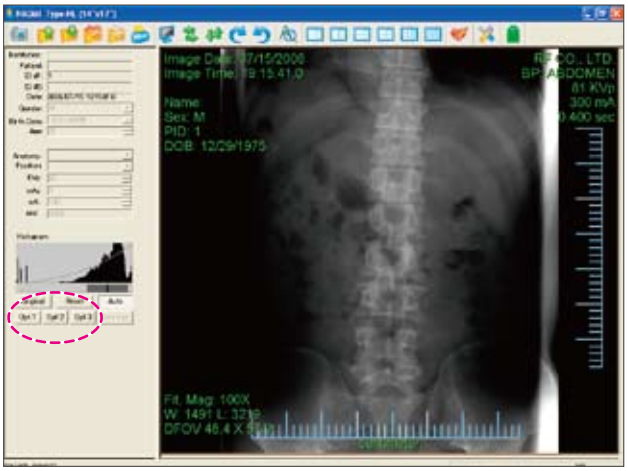
Click **"Auto"** under Histogram.
It automatically optimizes the brightness, contrast, and gamma-correction of the selected image.



Reset (Resetting Adjustment)

Once clicking on **"Reset"**, the adjustment setting will return to the raw data image (Originally captured image).

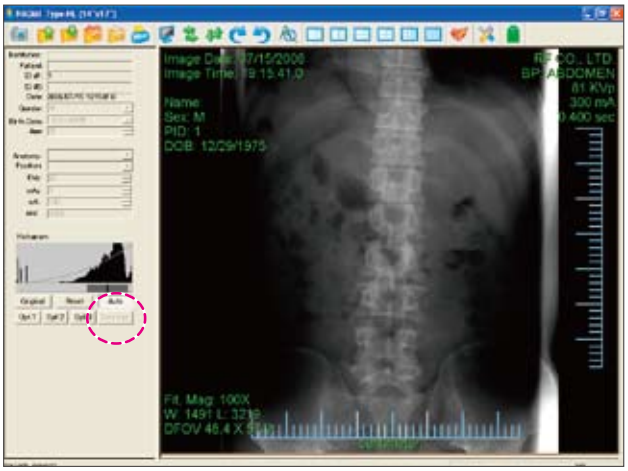
Preset Function



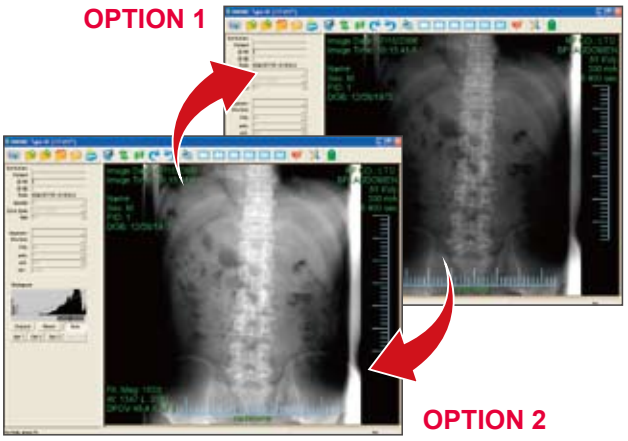
Opt 1 (Customized Adjustment)

1. Click **"Opt 1"** (Option 1), **"Opt 2"** (Option 2), or **"Opt 3"** (Option 3) button.

2. Change the brightness and contrast by right-clicking the mouse and/or the gamma-correction by scrolling the scroll wheel.



3. Click **"Save Opt (option)"** button to save the adjustment you have made to the displayed image.



Once you save the adjustment setting to the option button, you can recall the same adjustment condition by clicking the same option button for any displayed images.

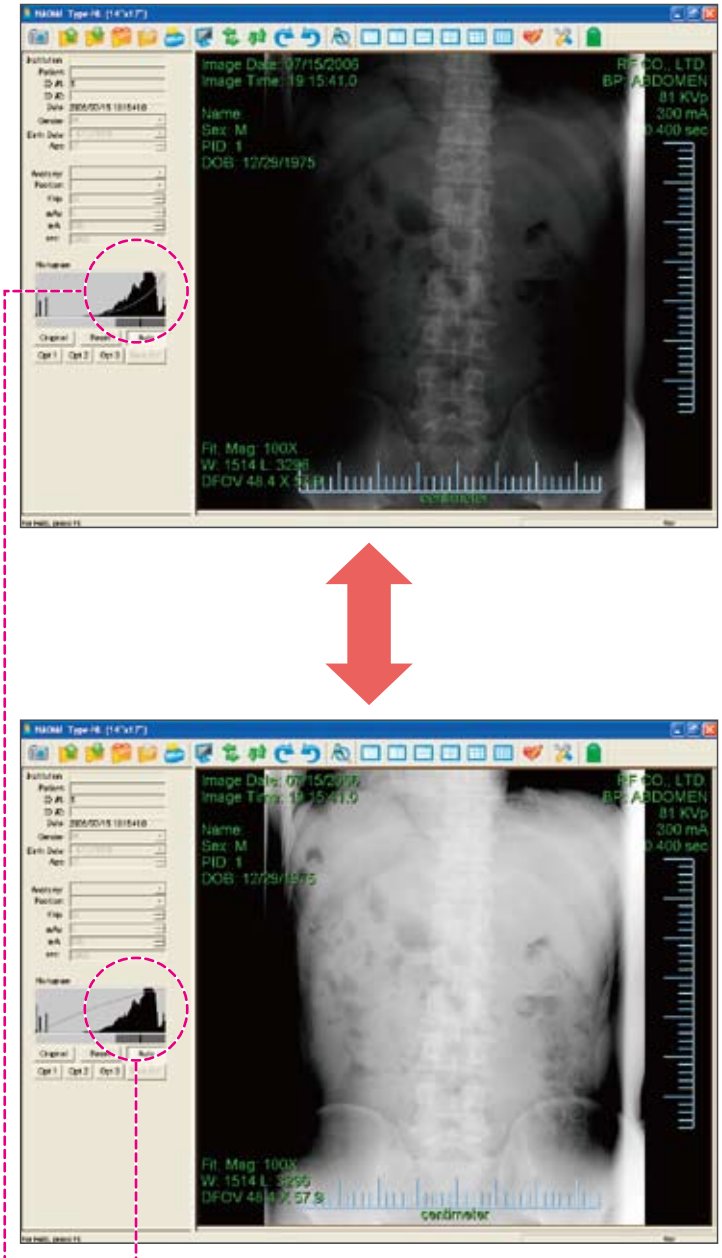
Example !

You can save the adjustment condition focusing more for abdomen on Option 1, chest on Option 2, and spine on Option 3.

7 Adjust Gamma Setting

Gamma-Correction

Select the image.
Scroll the wheel **UP** or **DOWN** to adjust the gamma-setting of the image



Darker

Scroll **up** Darker

Scroll **down** Brighter

Brighter

*The curve of the histogram changes to indicate gamma-correction adjustment.

8 How to Save the Adjusted Image

Once you find out the appropriate image adjustment level for your clinical application, save it for the future review. DICOM image can save its adjustment setting.

Update Icon	

You can update the original data by clicking "Update Icon" on Menu Bar as well. It saves the changes in the contrast, brightness, and gamma-correction.

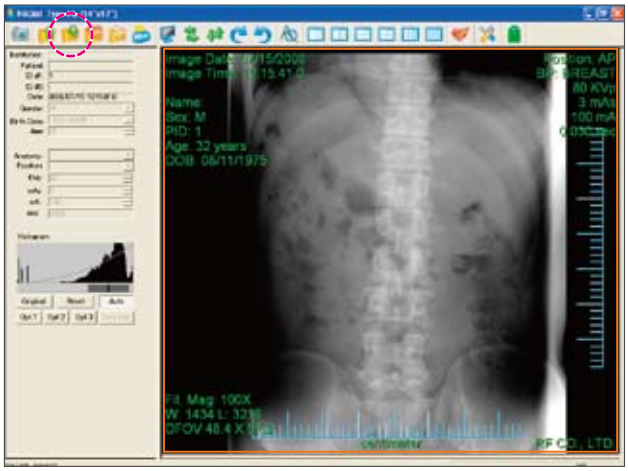
NOTE !

Use caution to update your data.

If the image data is saved in other than DICOM file format, the original image data will be erased and overwritten with the adjusted image data by the Update icon. If the image data is saved as DICOM file format, the original data is stored with the adjusted data, so it will not be overwritten.

9 How to Save as a Different File Format

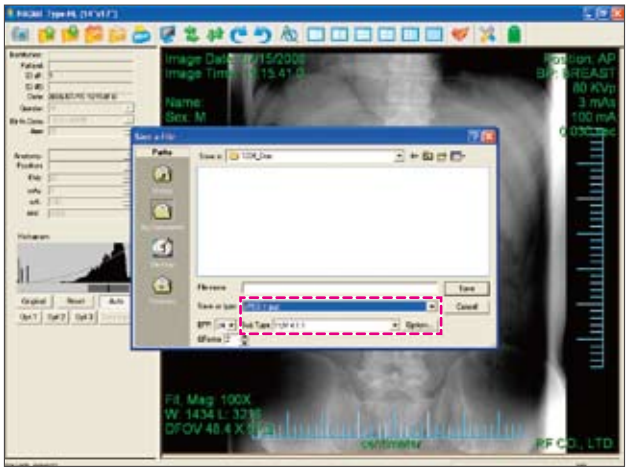
Save As Icon	



1. Select the image you wish to save as a different file format.

NOTE

The selected image is highlighted in orange.

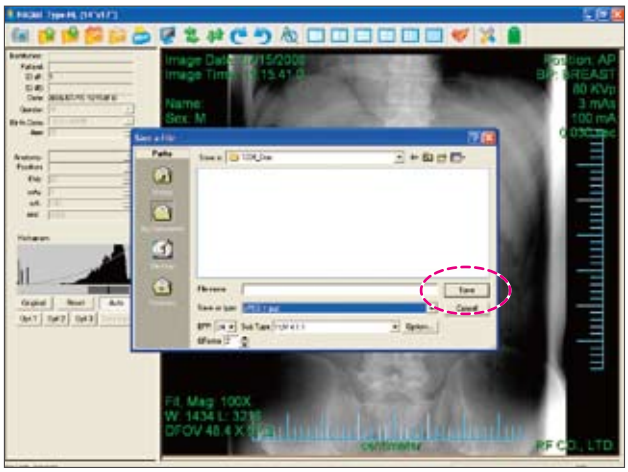


2. "Save a File" window appears.
Type in the file name.

Select the file type, BPP (bit per pixel), Sub Type (compression type) and QFacter (recommended as 2) as you need.

NOTE

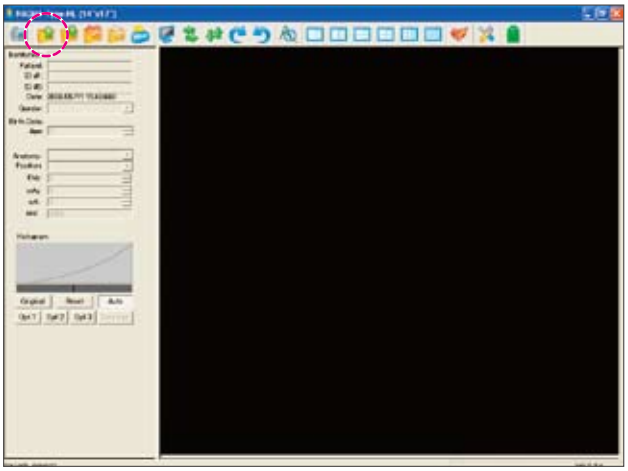
You can save as:
DICOM, BMP(bitmap), JPEG, PNG, GIF



3. Click Save to save the selected images with the selected file format.

10 How to Open the Saved Image

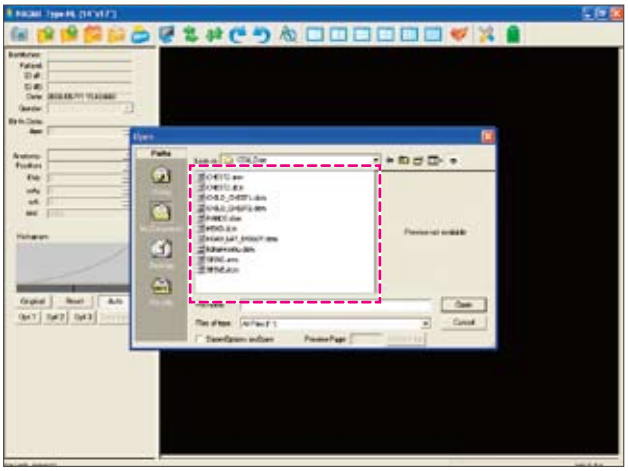
Open Icon	



1. Click the Open icon.

NOTE !

You may check the automatic file storage location on the Setup Menu.
(Refer to page Software - 06)



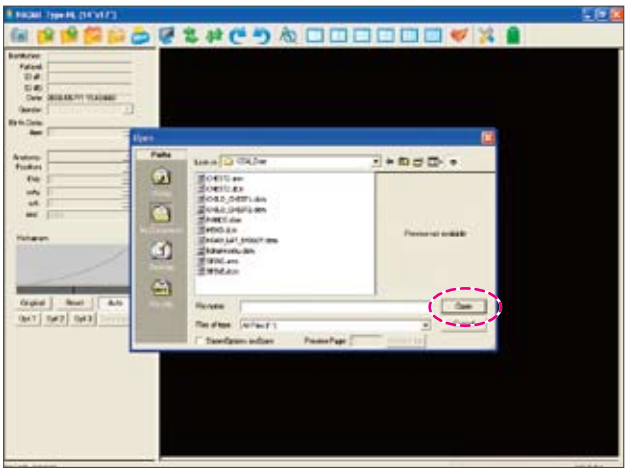
2. "Open" window appears.
Select the file you wish to open.

NOTE !

You can select multiple images by holding ctrl key and directly clicking on the file names. Do not select any annotation file (.ann) when trying to open multiple images at once.

NOTE !

The following files can be opened with NAOMI software:
DICOM, BMP(bitmap), JPEG, PNG, GIF



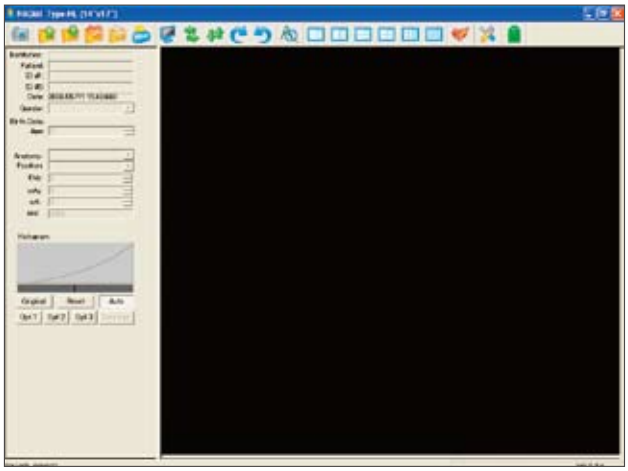
3. Click Open to open the saved images.

11 How to Close the Selected Image

Close Icon	

1. Select the image you wish to close.
Click the Close icon.

NOTE !
The selected image is highlighted in orange.

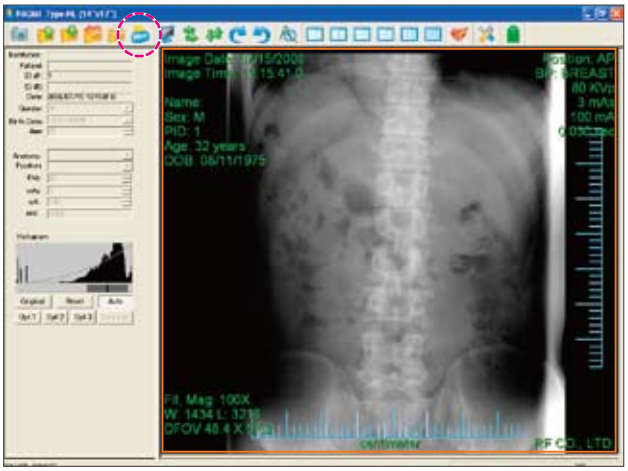


2. The selected image is now closed.

NOTE !
To reopen the file, refer to "How to Open the Saved Image"
(Page: Software - 22).

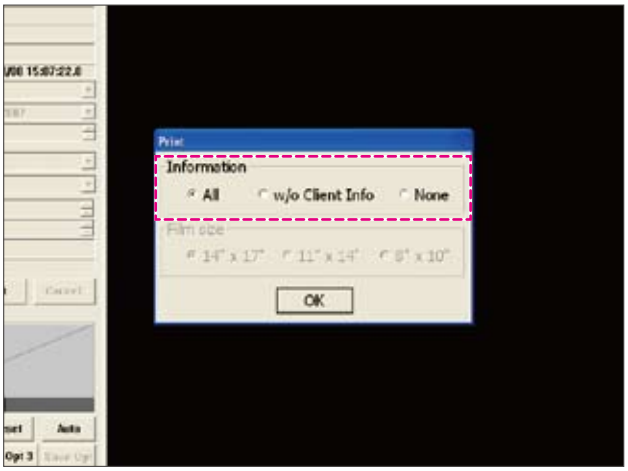
12 How to Print the Selected Image

Print Icon	



1. Select the image you wish to print.
Click the Print icon.

NOTE !
The selected image is highlighted in orange.



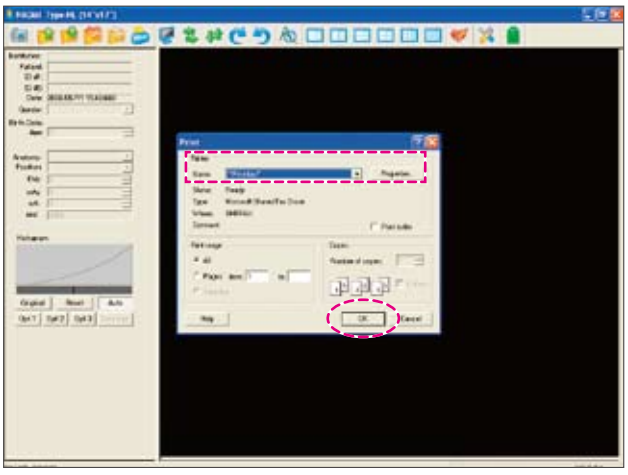
2. The Print window appears. Select the information type to be printed.

All: It prints all of the client information.

w/o Client Info:
It prints the information other than the client's information.
(The client information includes client's ID, client's name and gender.)

None: It does not print any information. It only prints the image you have selected.

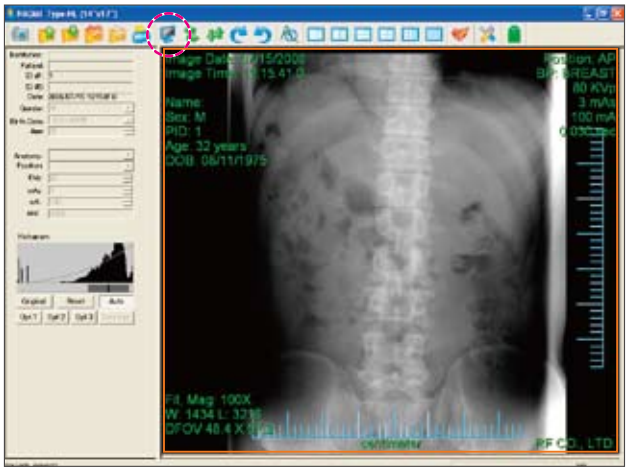
Click OK.



3. The Print window appears. Select the printer you wish to use. Click OK.

13 How to Reverse Negative / Positive

Negative / Positive Change Over Icon 



1. Select the image you wish to reverse negative / positive.
Click the Negative / Positive Change Over icon.

NOTE !
The selected image is highlighted in orange.

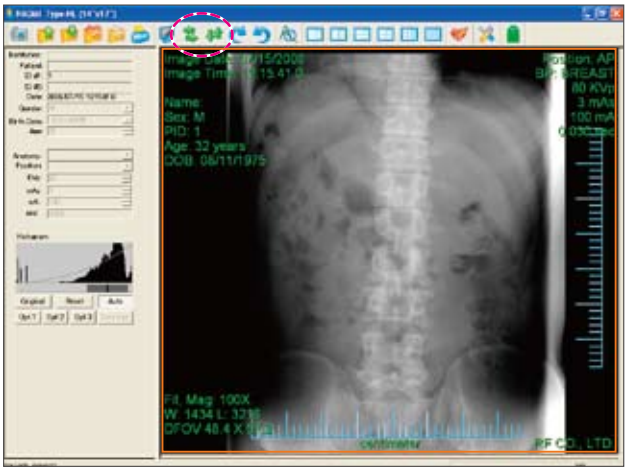
2. Each time you click the Negative / Positive Change Over icon, it switches between Negative and Positive on the image.

Negative

Positive

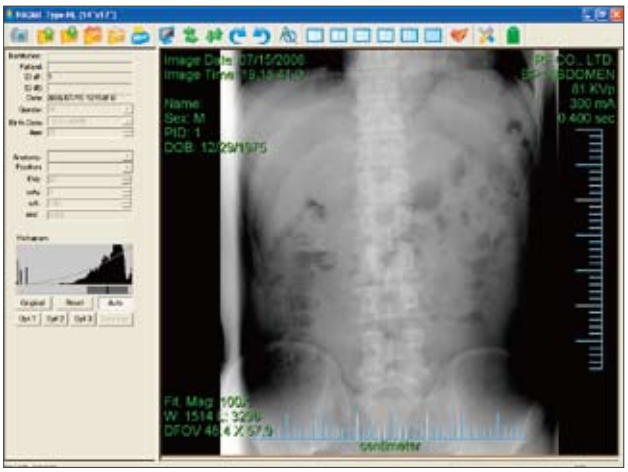
14 How to Invert the Selected Image

Reflection Icon (Horizontal) 



1. Select the image you wish to change its direction.
Click the Reflection icon (Horizontal).

NOTE !
The selected image is highlighted in orange.

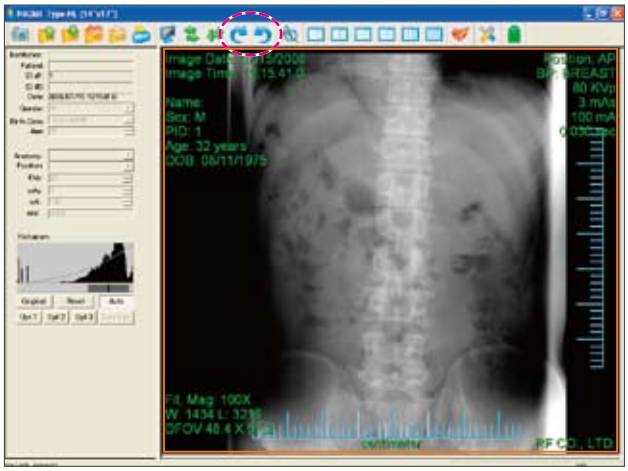


2. Each time you click the Reflection icon (Horizontal), it switches its direction horizontally.

NOTE !
To change vertically, press the Reflection icon (vertical)  .

15 How to Rotate the Selected Image

Rotation Icon (Clockwise) 

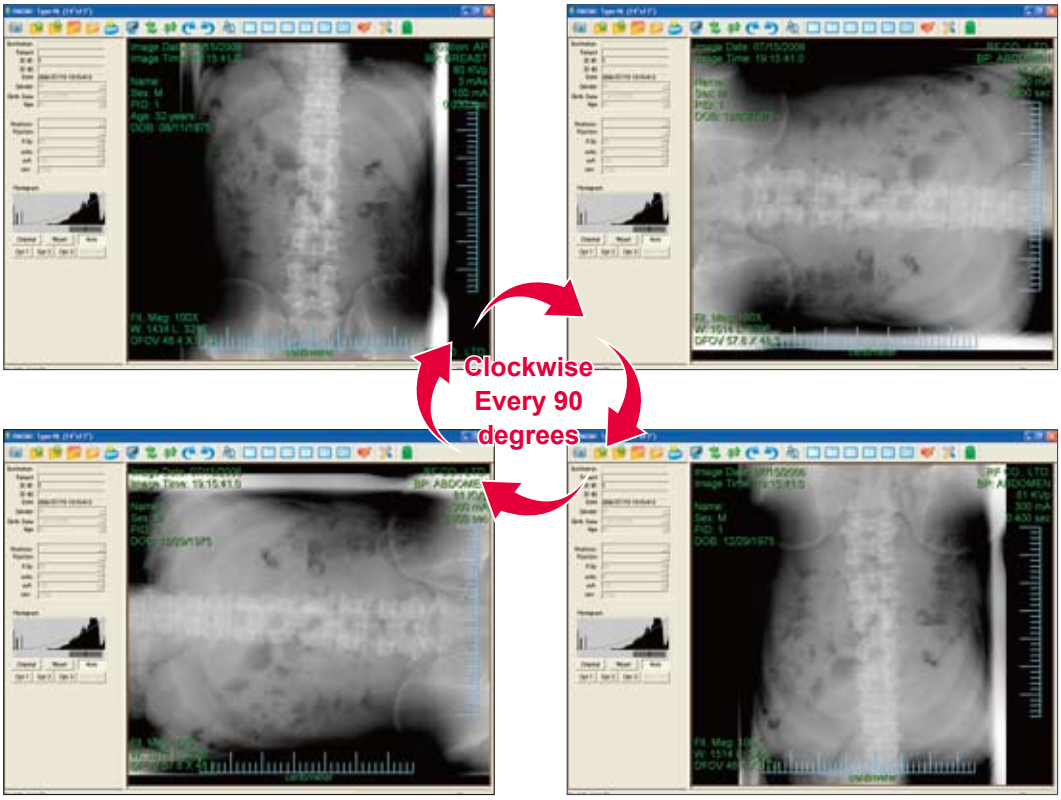


1. Select the image you wish to rotate in clockwise direction.
Click the Rotation icon (Clockwise).

NOTE !
The selected image is highlighted in orange.

---

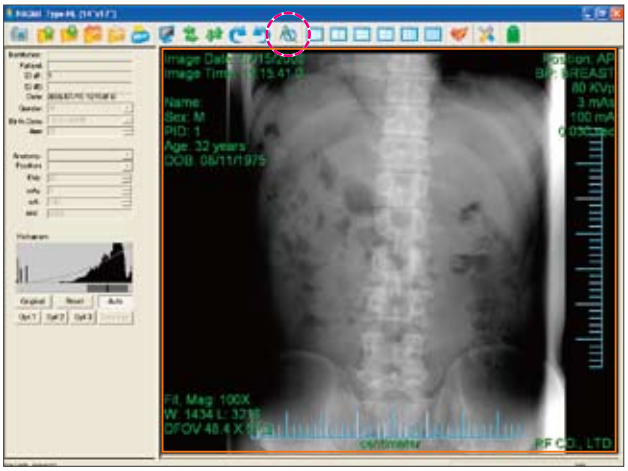
2. Each time you click the Rotation icon (Clockwise), it rotates the image clockwise in every 90 degrees.



NOTE !
The image can be rotated counterclockwise by pressing Rotation Icon (counterclockwise)  .

16 How to Turn On/Off the Enhancement

Enhancement Icon



1. Select the image you wish to change its sharpness.
Click the Enhancement icon.

NOTE !

The selected image is highlighted in orange.

Normal: Standard Sharpness

MSE : Multi-Scale Enhancement (Recommended)

(Refer to page Software -46 for the enhancement setting.)

2. Each time you click the Enhancement icon, it changes the sharpness of the selected image.

NOTE !

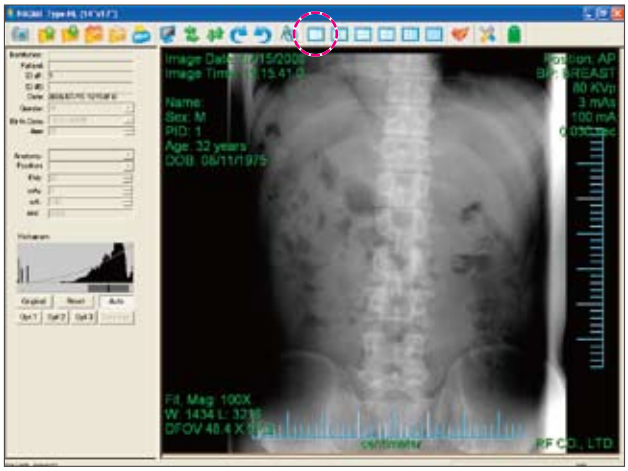
The sharpness level is adjustable in Setup Menu.
Refer to "How to Change the Setting" (Page: Software - 46).

NOTE !

You can activate the sharpness function for every image you capture by changing the settings.
Refer to [3] **Effect** on Page Software - 46 for details.

18 How to Display One Image on Screen

Single Window Icon	



1. Click the Single Window icon.

NOTE !

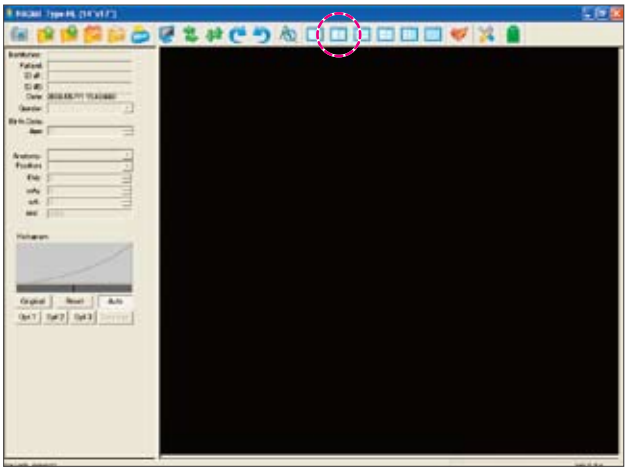
If you wish to display multiple images at the same time on the screen, refer to

2 images : Double Window
4 images : Quarter Window
9 images : 3 x 3 Window
16 images : 4 x 4 Window

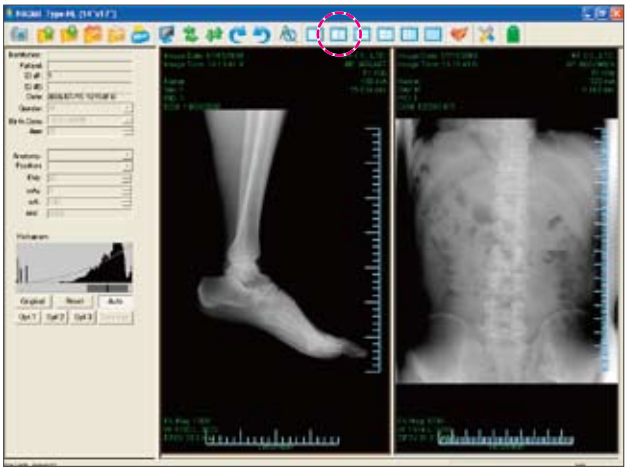
Press the Single Window icon to return to the single window from the multiple image display.

19 How to Display Two Images on Screen

Double Window Icon (Vertical) 



1. Click the Double Window icon (Vertical).



2. Two Image Window (Vertical) appears.

NOTE !

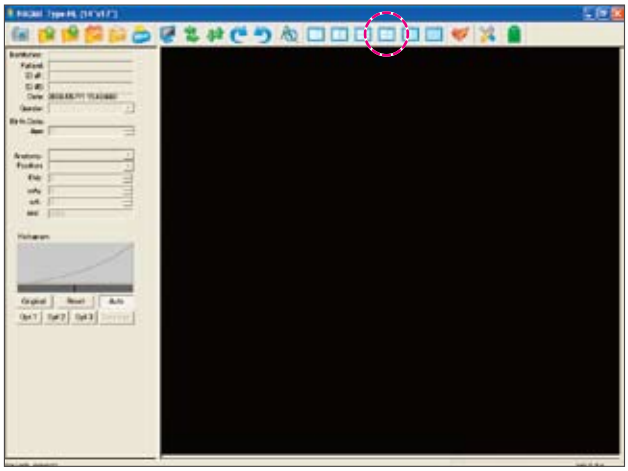
- The selected image is highlighted in orange.
- You may capture or open new images. A new image appears in the top left window, and other images are moved by one block.
- Double click an image to display in single window.

NOTE !

To display two images horizontally, press the Double Window icon (horizontal). 

20 How to Display Four Images on Screen

Quarter Window Icon 



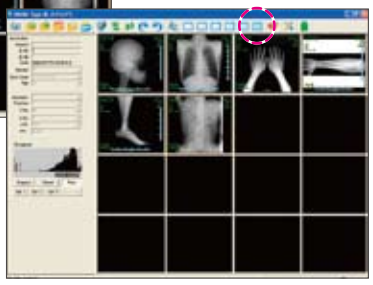
1. Click the Quarter Window icon.

2. Four Image Window appears.
You may display up to 4 images.

NOTE !

- The selected image is highlighted in orange.
- You may capture or open new images. A new image appears in the top left window, and other images are moved by one block.
- Double click an image to display in single window.

[3 x 3]



[4 x 4]

NOTE !

To display 3x3 or 4x4, press 3x3 Window icon  or 4x4 Window icon. 

To display the desired images indifferent view, select them by pressing ctrl key on the keyboard. then click on double window icon  or quarter window icon  to display.

21 How to Open / Close Annotation Menu

Annotation Icon	

To Open

Click  icon.

NOTE !

The annotation window has functions to insert text, shapes, and lines or to measure the specific areas on the x-ray images.

The annotation window opens.

Click  icon to open the image file you wish to put the annotation.

To Close

Click  icon.

NOTE !

The annotation window closes.

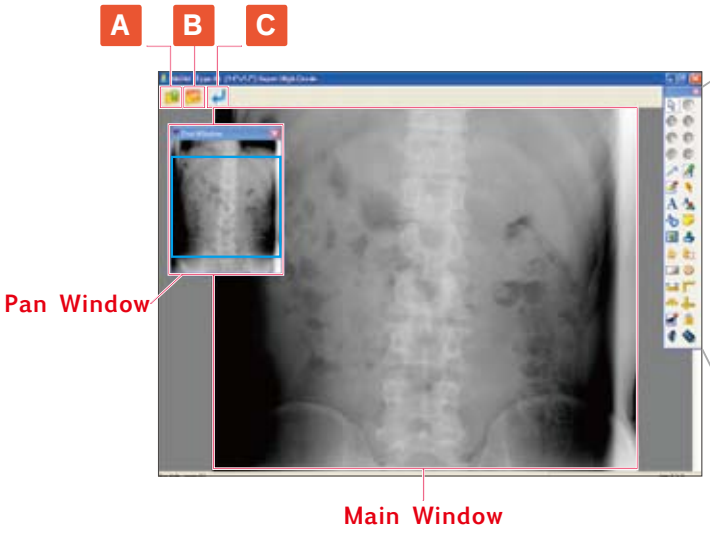
NOTE !

The window goes back to the main screen.

Annotation Menu

Annotation Menu Window

Annotation Menu Window



Annotation bar

Annotation Menu Icon

A: **Open Icon**: To open the image file.
(Software-32)

B: **Save Icon**: To save changes in the annotation menu.

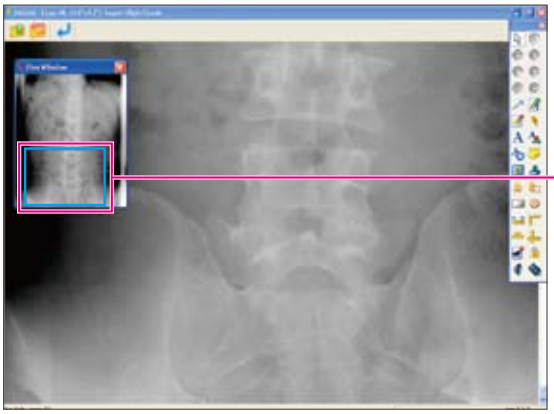
C: **Close Icon**: To close the annotation menu.
(Software-32)

Annotation Bar Icon

1 Selection Pointer	2 Line Annotation	3 Rectangle Annotation
4 Ellipse Annotation	5 Polyline Annotation	6 Polygon Annotation
7 Curve Annotation	8 Closed Curve Annotation	9 Pointer Annotation
10 Plain Annotation	11 Rich Text Annotation	12 Text Pointer Annotation
13 Ruler Annotation	14 Polyruler Annotation	15 Protractor Annotation
16 Cross Product Annotation		

Pan Window (Navigation Window)

The pan window is the navigation window, which shows where the main window is focusing on the displayed image. It helps to avoid the orientation especially when the displayed image is highly magnified.



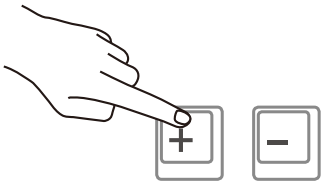
Navigate

Click and drag the **blue frame** on the pan window to navigate through the displayed image.
As the blue frame is moved in the pan window, the image on the main window changes the displaying area correspondingly.

The blue frame becomes smaller when the image is zoomed in.
The blue frame becomes larger when the image is zoomed out.

Zoom In / Out

Press [+] for zoom in or [−] for zoom out.

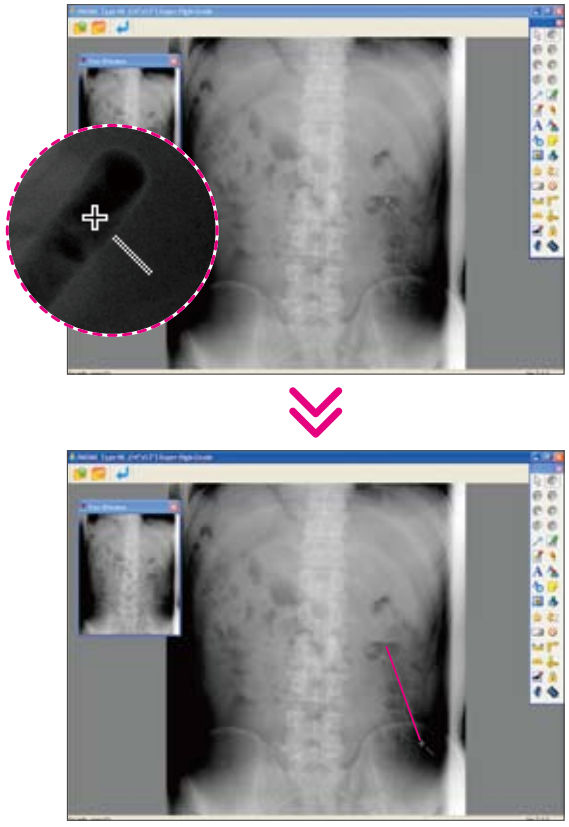


NOTE !
Click on the main window (displayed image) to zoom in/out.

This Section Explains How to...

- **A** *Draw a Straight Line / Arrow / Polyline*
- **B** *Draw a Shape*
- **C** *Draw a Curved Line / Shape*
- **D** *Insert the Text or Note*
- **E** *Measure the Length*
- **F** *Measure the Angle*
- **G** *Select the Annotation Object*

A Draw a Straight Line / Arrow / Polyline



Straight Line

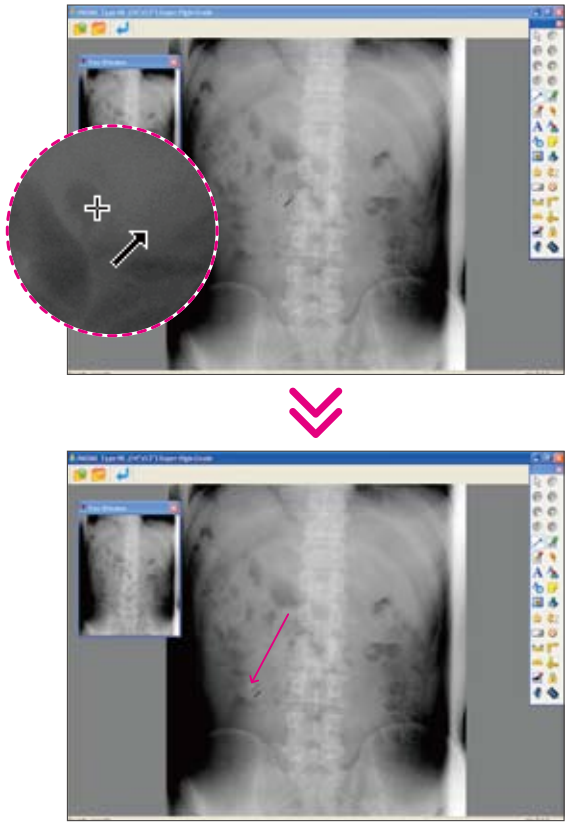
Click icon.
The cursor changes to

Click left button on the mouse and drag to draw a straight line.

NOTE !

Hold shift key to draw a straight line in 45 degrees angle.

Release the left mouse button to complete the line.



Arrow

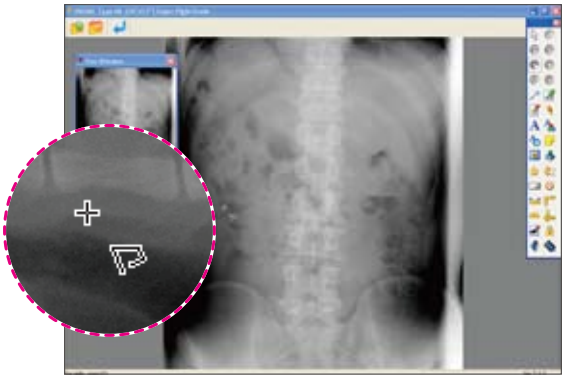
Click icon.
The cursor changes to

Click and drag to draw an arrow.
The starting point becomes the pointed end of the drawn arrow.

Release the left mouse button to complete the arrow.

NOTE !

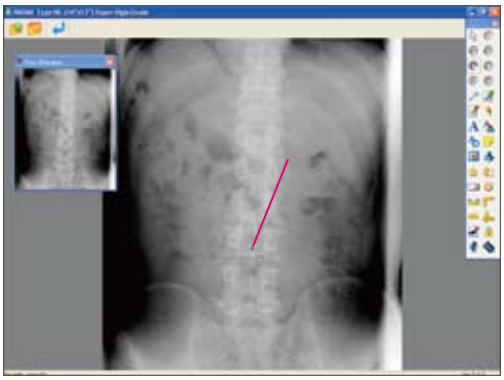
Hold shift key to draw an arrow in 45 degrees.



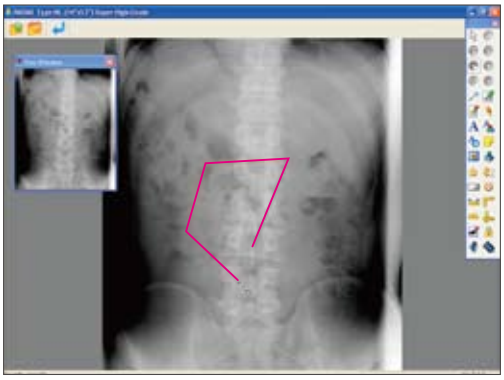
Polyline

The polyline is an array of points with a sequence of joined lines.

Click  icon.
The cursor changes to 



Click and drag to draw the first line.



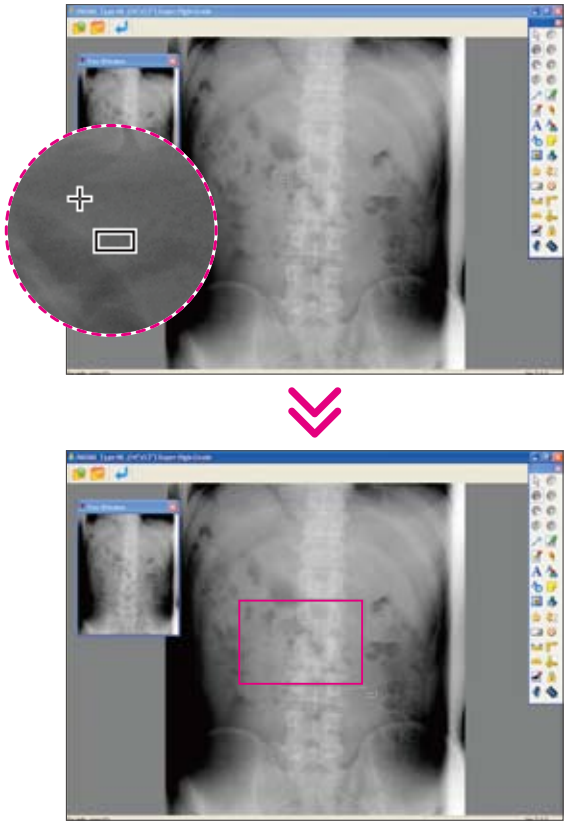
Click again to create another line.

NOTE !

Repeat until the desired number of points and lines are achieved.

Double click to complete.

B Draw a Shape



Rectangle

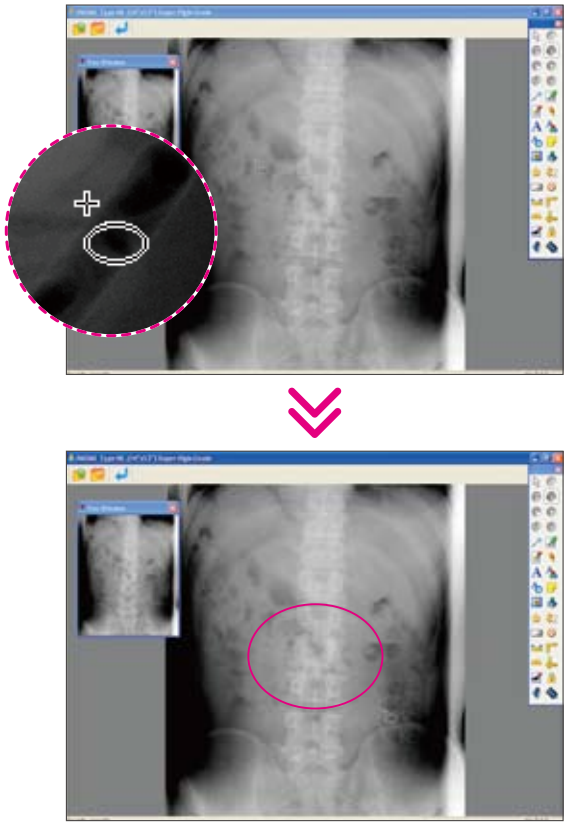
Click  icon
The cursor changes to 

Click and drag to draw a rectangle.

NOTE !

Hold shift key to draw a square.

Release the left mouse button to complete.



Ellipse

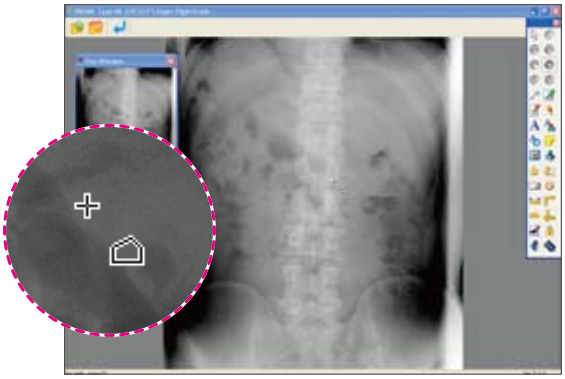
Click  icon.
The cursor changes to 

Click and drag to draw an ellipse.

NOTE !

Hold shift key to draw a circle.

Release the left mouse button to complete.

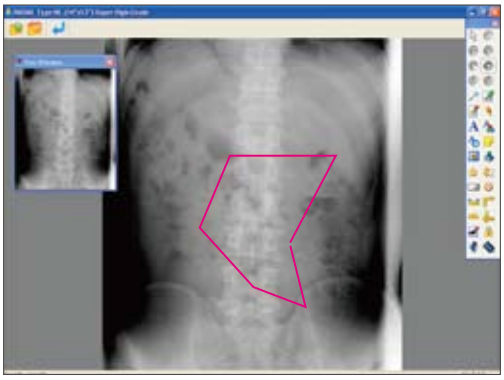


Polygon

The polygon is an array of points with the vertices of a polygon.

Click  icon.
The cursor changes to 

Click and drag to draw the first line.



Click again to create another line.

NOTE !

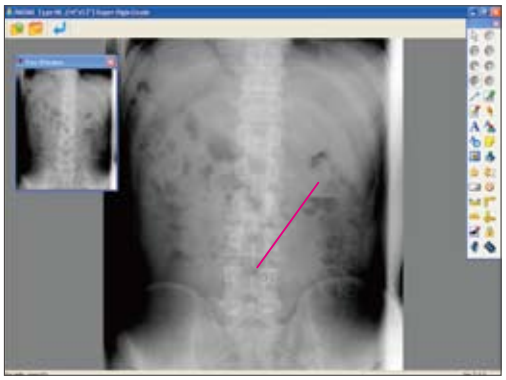
Repeat until the desired number of points and lines are achieved.

Double click to close the shape you have drawn.

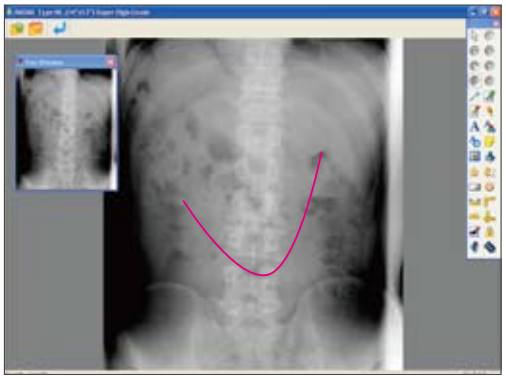
C Draw a Curved Line / Shape

Curved Line

Click  icon.
The cursor changed to 



Click and drag to draw the first line.



Click again to create first curving point and drag to change the degree of curve.

NOTE !

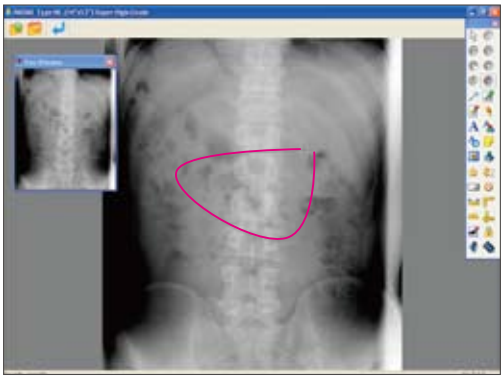
Repeat until the desired number of points and lines are achieved.

Double click to complete.

Curved Shape

Click  icon.
The cursor changed to 

Click and drag to draw the first line.



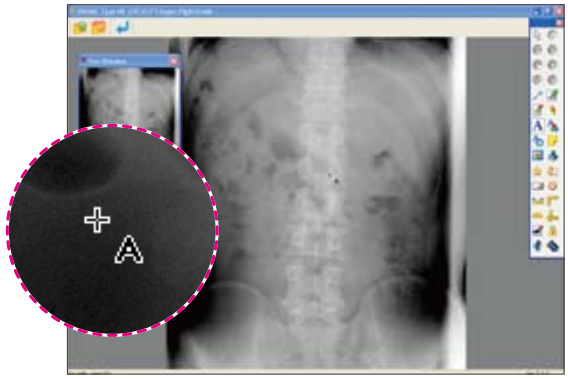
Click again to create first curving point and drag to change the degree of curve.

NOTE !

Repeat until the desired number of points and lines are achieved.

Double click to close the shape you have drawn.

D Insert the Text or Note

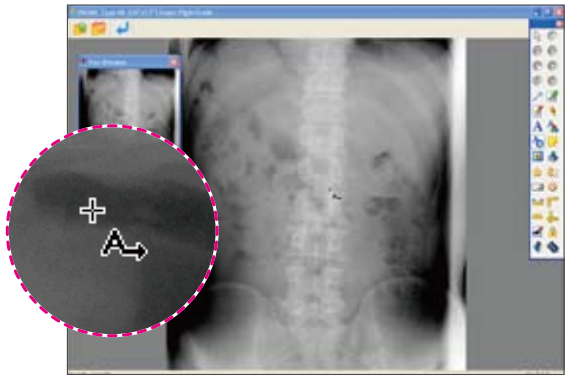


Plain / Rich Text

Click  for Plain Text or  for Rich Text.

The cursor changes to  

Click and drag to create the text box.
The text box appears on the screen. Type the note in the text box.



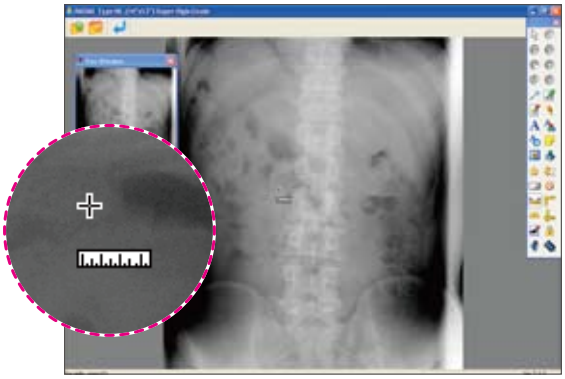
Text Pointer

Click  icon.
The cursor changes to 

Click and drag to create the text box. Once the text box is drawn, drag the cursor to create the pointer to desired location.

The text box with an arrow appears on the screen. Type the note in the text box.

E Measure the Length



Ruler

Click    to measure.

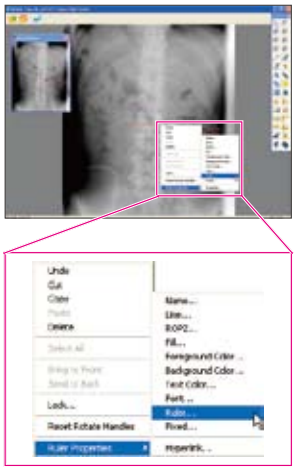
The cursor changes to   

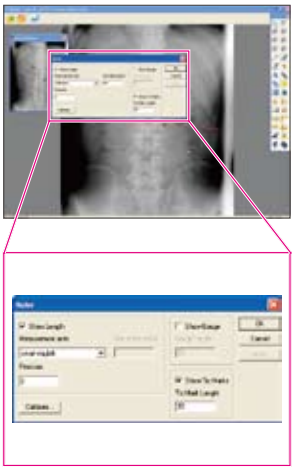
Click and drag to draw the desired ruler.

The length appears on the screen.

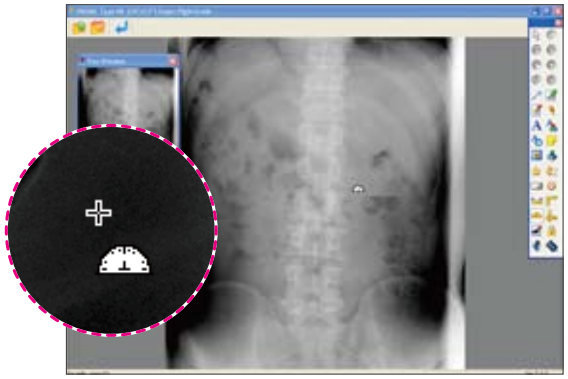
NOTE !

The length unit can be changed on the ruler property.
To open the property, right click the image screen and select Ruler Property.
Select Ruler to open the ruler property.





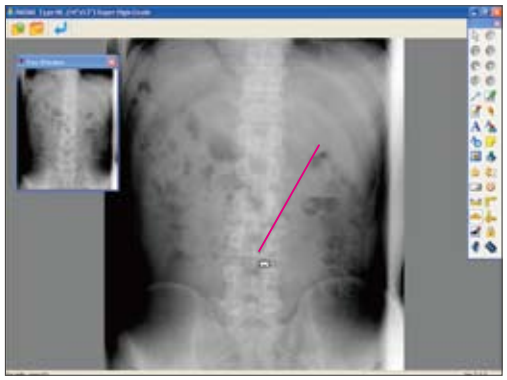
F Measure the Angle



Protracter

Click  icon.

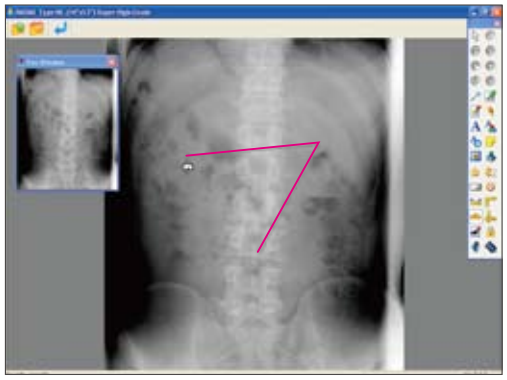
The cursor changes to 



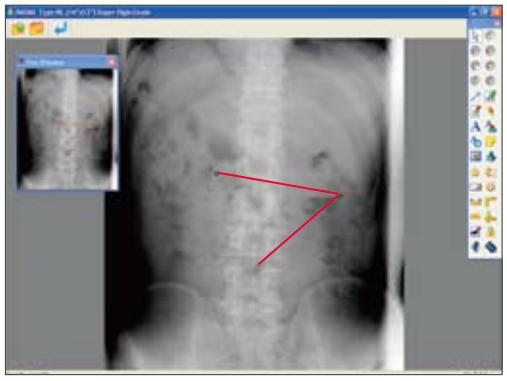
Click and drag to draw an first line.

NOTE !

This line becomes an anchor.

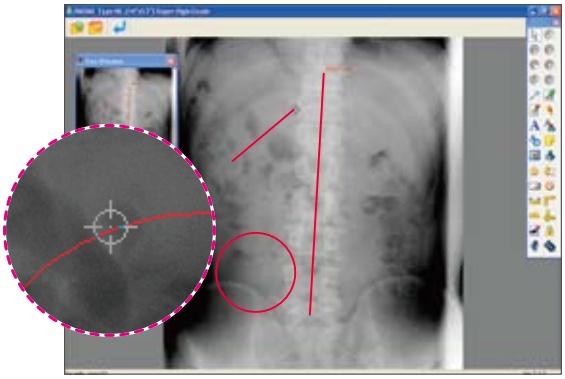


Click again and move the cursor to create the desired degree of angle.



Click again to complete.

G Select the Annotation Object



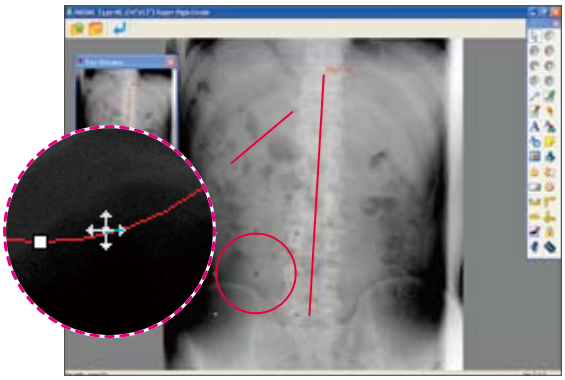
To Select

Click  icon.

Place the cursor over the object.

The cursor changes to 

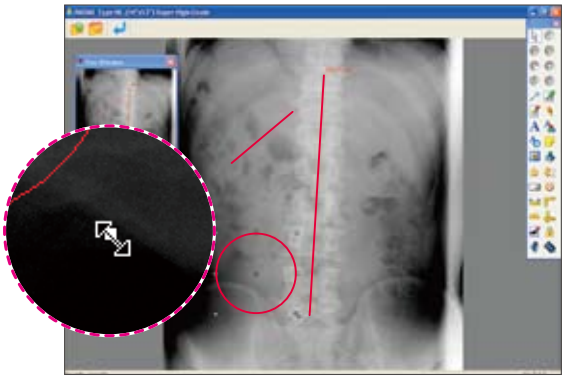
Click on the object to select.



To Move

Place the cursor over the selected object. The cursor changes to 

Click and drag to move the object location.



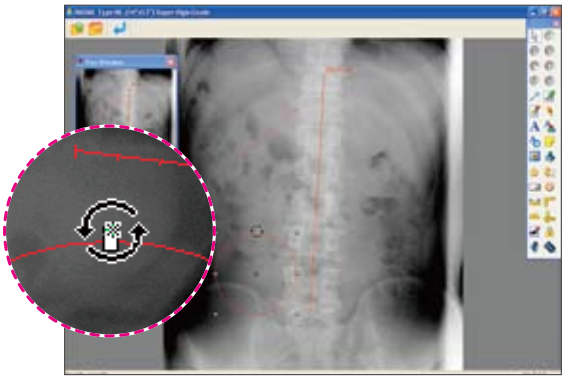
To Resize

The selected object shows a white small dot on each corner or each end of the line.

Place the cursor over the white dot.

The cursor changes to 

Click and drag to resize the object.



To Rotate

The selected object shows two green circles. One green circle is to show the center of the object. The other green circle is to show the anchor point of the rotation.

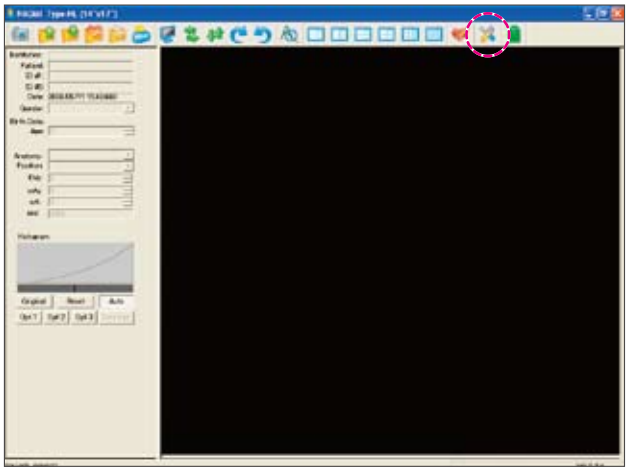
Place the cursor over the green circle. (Anchor point)

The cursor changes to 

Click and drag to rotate the object.

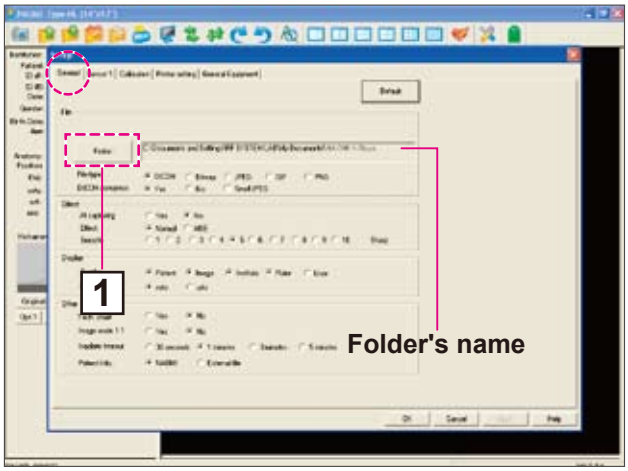
22 How to Change the Setting

Setup Icon 



Click the Setup icon.

General Tab



1 Folder

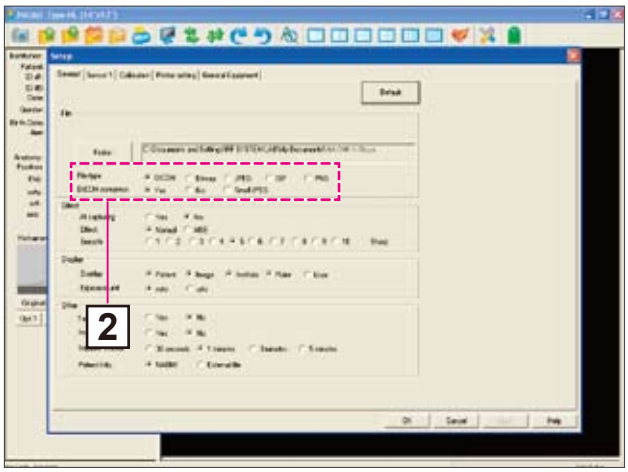
You can change the location of folder to save images.

Click "Folder" to select the saving location.

The image will be automatically saved in the selected folder.

NOTE !

Refer to "Before Capturing the X-Ray..." on page Software - 05.



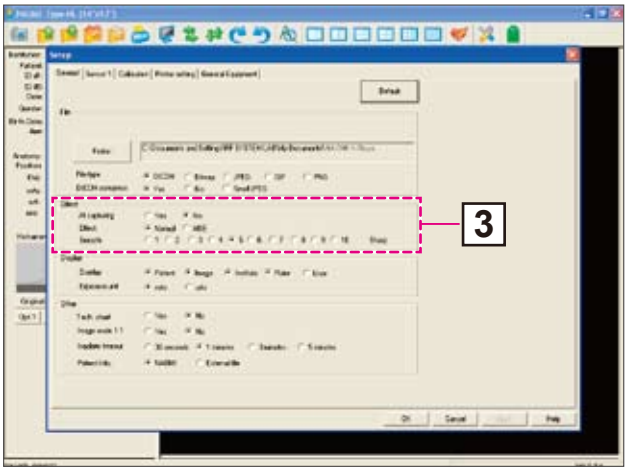
2 File Type

DICOM	DICOM Format (standard)
DICOM	DICOM Format (compressed)
Bitmap	BMP Format
JPEG	JPEG Format
GIF	GIF Format
PNG	PNG Format (for Mac. user)
Small JPEG	JPEG Format (compressed)

NOTE !

This is to set the default file format, which the captured images are automatically stored as.

By selecting multiple file format types, the software will save the images as selected file formats.



3 Effect (Enhancement)

This is for Enhancement Function. You can activate / deactivate by clicking icon on the main menu.

At capturing

"Yes": automatically activate the enhancement function for every captured image.

"No": deactivate the enhancement function at the time of capturing.

Effect

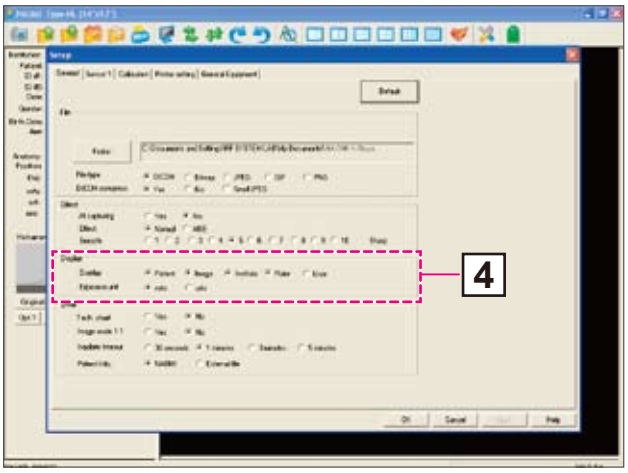
The selected image is highlighted in orange.

Normal: Standard Sharpness

MSE : Multi-Scale Enhancement (Recommended)

Smooth - Strong

• The level of the enhancement. Select the Enhancement effect level (1 to 10), and click OK. “1” is the minimum, “10” is the maximum level of the enhancement function.



4 Display

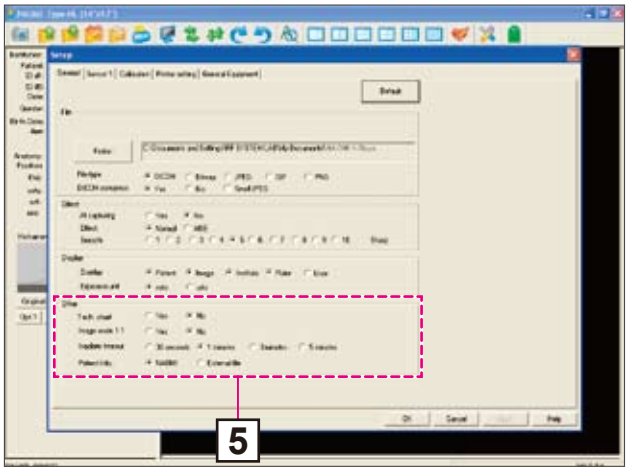
The orientation of the displayed image. You may change the orientation of the captured image to be displayed on the NAOMI software.

Overlay

By clicking each check box on Patient, Image, Institute, Ruler and User can select the information to be displayed on the image.

Exposure unit

The exposure can be entered in mAs or uAs by checking on the check box.



5 Other

Tech Chart

Yes: To activate the exposure technique chart menu when capturing x-ray images. The Tech. Chart button appears on the Select / Register ID menu.

No: To deactivate the exposure technique chart menu when capturing x-ray images. It hides the Tech. Chart button on the Select/Register ID menu.

Image scale 1:1

Yes: To display the x-ray image in actual size (full-scale).

No: To display the x-ray image in fit-to-window size.

Irradiate timeout

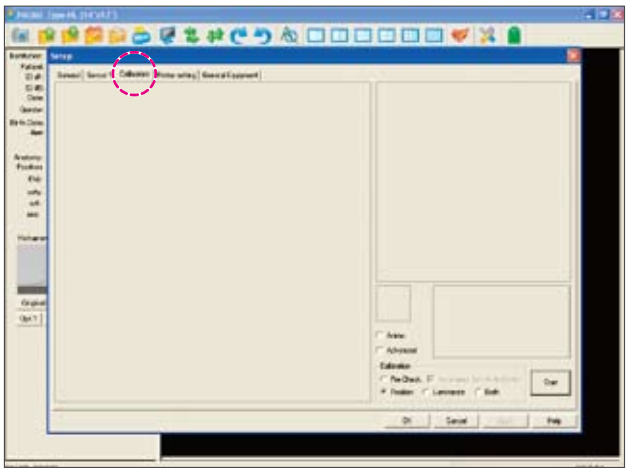
The timeout period after the message, “Please irradiate x-ray” appears, can be selected from 30 seconds to 5 minutes.

Patient Info

NAOMI: The patient information list is created and opened from the NAOMI software.

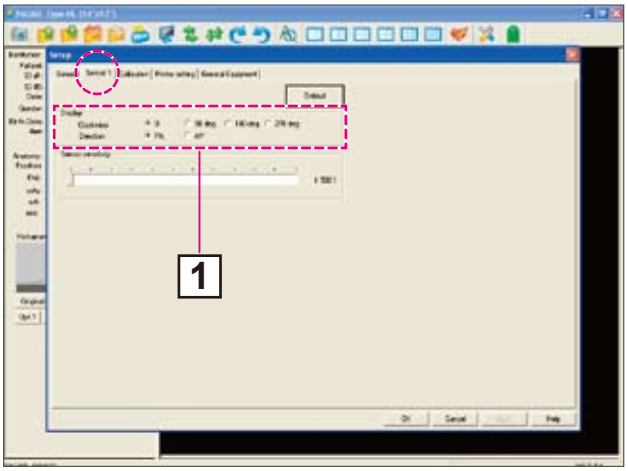
External file: The patient information list is created by a different software (i.e. Electronic Medical Record), and imported into the NAOMI software.

Calibration Tab



Calibration is only for maintenance. Refer to the Calibration section in User's Guide.

Sensor 1 Tab



1 Display

The orientation of the displayed image. You may change the orientation of the captured image to be displayed on the NAOMI software.

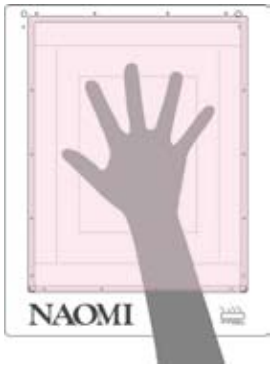
Clockwise

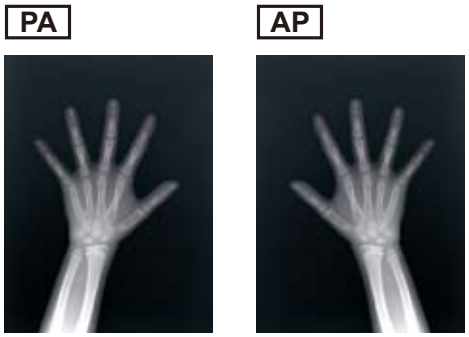
To display the captured image by rotating 0, 90, 180, 270 degrees.

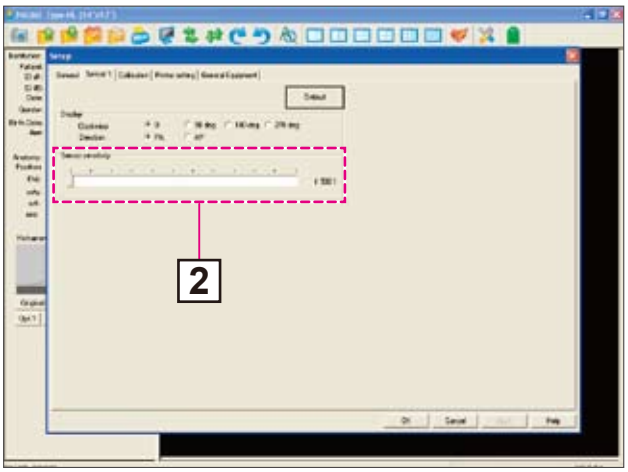
Direction

To display the captured image from different directions as following.

Irradiation Area



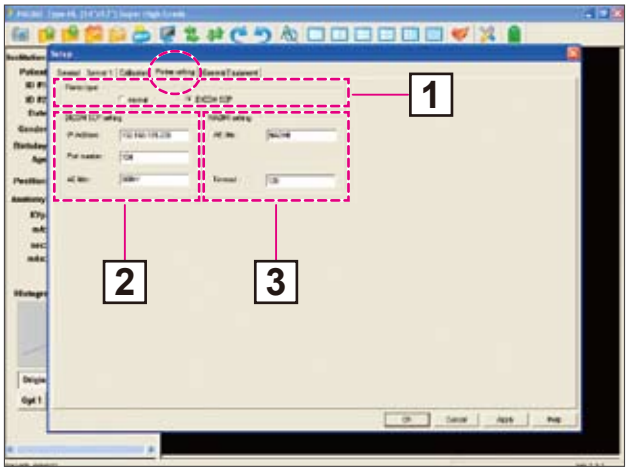




2 Sensor sensitivity

This is only for maintenance.
The default sensitivity is 500.

Printer Setting Tab

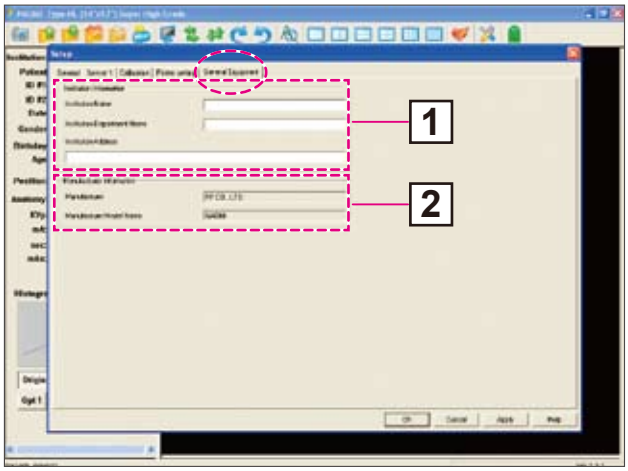


1 Printer Type
Normal Printer - Select "normal".
DICOM Printer - Select "DICOM SCP".

2 DICOM SCP Setting
Only available when "DICOM SCP" is selected. Enter your DICOM printer's information.

3 NAOMI Setting
Only available when "DICOM SCP" is selected.

General Equipment Tab



1 Institution Information
Enter your office information. This information will be saved with the images as the institution information, when the images are captured.

2 Manufacturer information
It shows the manufacturer's information.

24 How to Close the NAOMI Software

Exit Icon	

1. Before you close the NAOMI Software, save the necessary files.

NOTE !

Refer to "How to Save the Adjusted Image" (Page: Software - 20).

2. Click  icon.

Calibration

Calibration is the process to correct misalignment and contrast unevenness on each CCD sensor in NAOMI before the first use.
There are three calibration processes: Pre-Check, Positioning Calibration and Luminance Calibration.

Pre-Check To set the most suitable sensor sensitivity automatically.

Positioning Calibration To align each CCD sensor in NAOMI by using the calibration scale.

Luminance Calibration To adjust each CCD sensor's contrast (brightness level) to create even contrast level on the NAOMI sensor.

NOTE !
Both Positioning and Luminance Calibration have been performed prior to the shipment for immediate use. However, in rare cases, there is a possibility of needs to process calibration.

NOTE !
Follow the calibration process when....
- You have reinstalled the software to your computer.
- The NAOMI sensor received strong shock.
- There are misalignment in images.

→ Positioning Calibration and Luminance Calibration

- There are uneven contrast in images. → Luminance Calibration

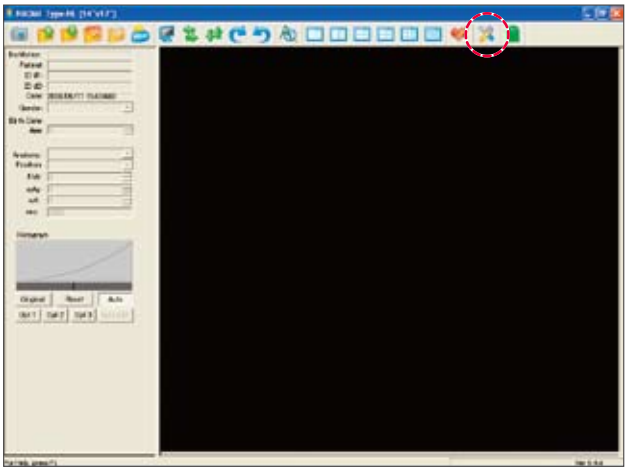
NOTE !
If Positioning Calibration is required, Luminance Calibration must be performed after Positioning Calibration is completed.
Please refer to "Confirm the Necessary Calibration Process" to check which calibration process your NAOMI sensor needs.

In this chapter, it explains the following processes.

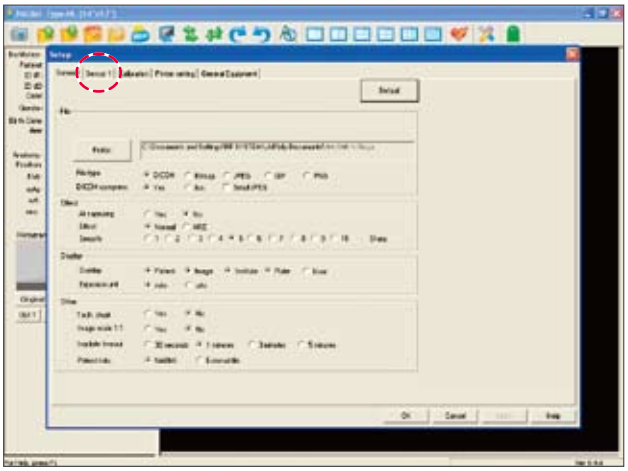
1: Pre-Check (Automated Sensitivity Control)
2: Positioning Calibration
3: Luminance Calibration

Pre-Check (Automated Sensitivity Control)

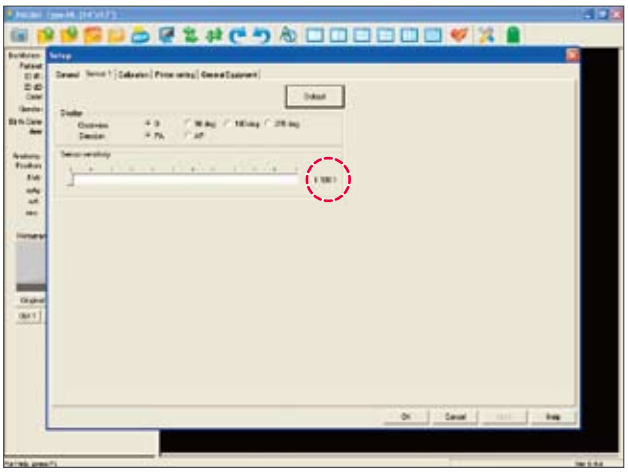
The process of Pre-Check is to measure the radiation dose from your x-ray machine and change the sensor sensitivity automatically so that the NAOMI sensor can be operated in the same environment at the time of the shipment from our facility. Once this process has been completed, the technique on the included irradiation technique chart can be applied to your clinic.



1. Click the Setup icon  .



2. Click the **Sensor 1** tab.

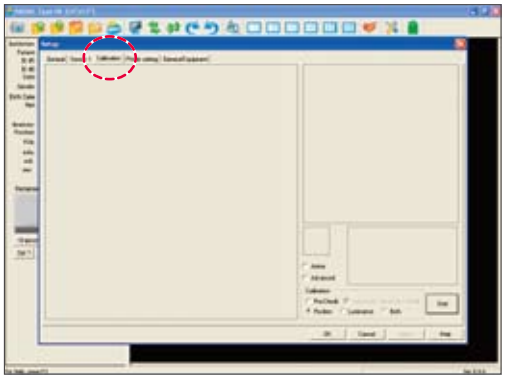


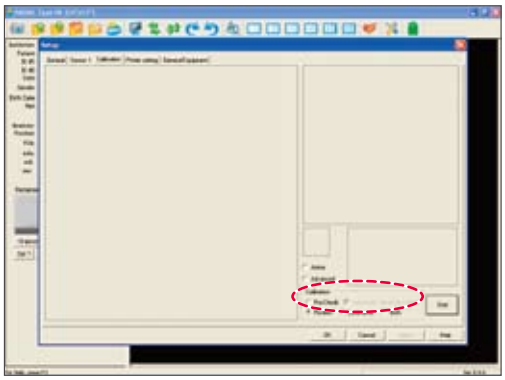
NOTE !

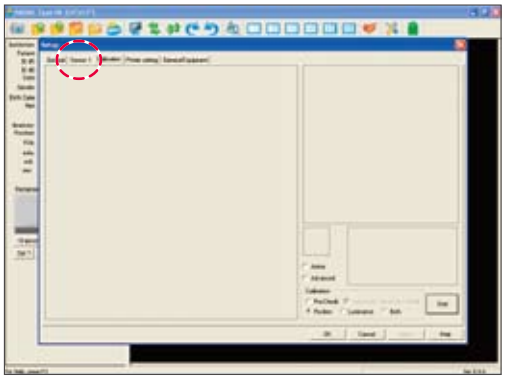
If the sensitivity is not set at default, please change the sensitivity to default. This Pre-Check and calibration process may not go through properly if the sensor sensitivity is not at default.

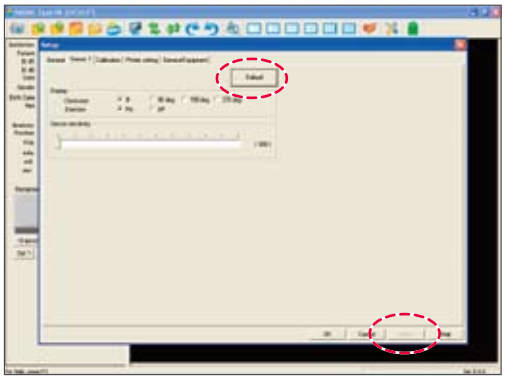
Confirm the sensor sensitivity is set at the following.

500 (Default)









How to change the sensitivity

1. Click the Calibration tab.

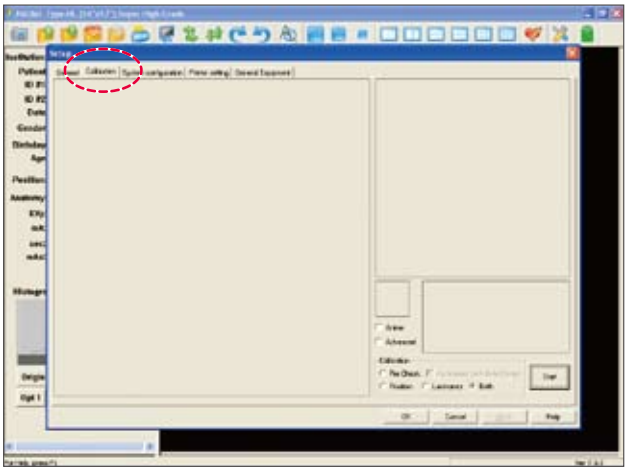
2. Verify that the Automated Sensitivity Control is UNCHECKED.

3. Click the Sensor 1 tab.

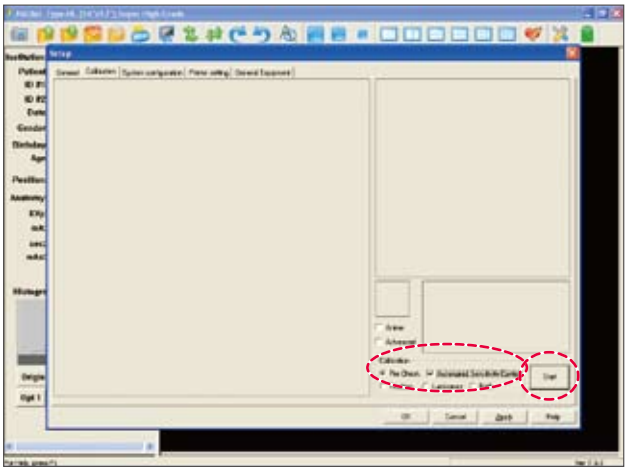
4. Change the sensor sensitivity setting to default by clicking the default button.

500 (Default)

Click Apply.

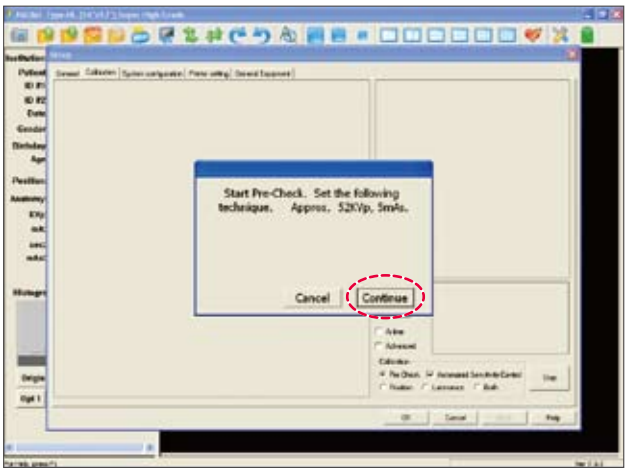


3. Click the Calibration tab.



4. Click the check box on Pre-Check and Automated Sensor Sensitivity.

Click Start.



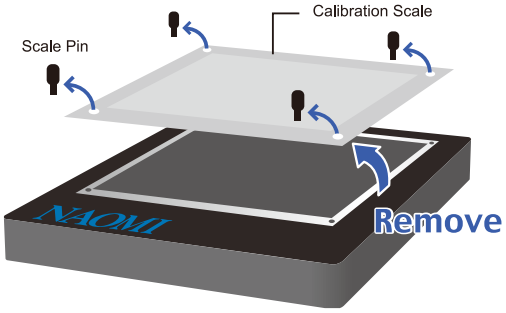
5. Click Continue.

6. Collimate your x-ray machine to cover the entire sensor area.

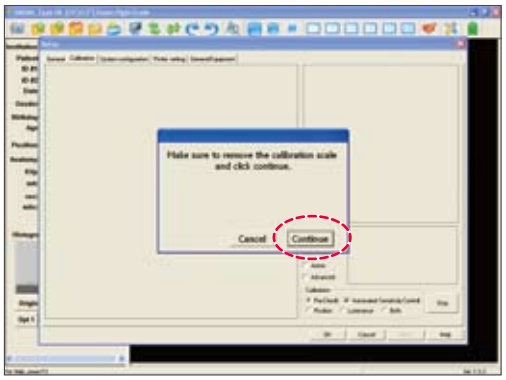
Set your x-ray machine to the following exposure technique.

52kVp, 5mAs **(Tube Distance: approx. 100cm)**

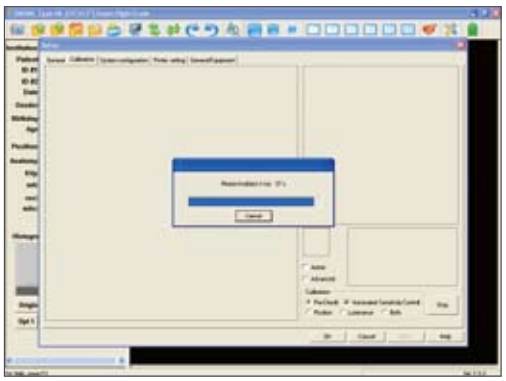
Recommended Tube Current : 100 mA
Recommended Exposure Time : 1/20 sec (0.05sec / 6 pulse)
The above equals to 5mAs.



7. Verify that the calibration scale is removed from the sensor.



Click Continue.



8. The message, "Please irradiate X-ray" appears to indicate the software and the sensor is ready for irradiation.

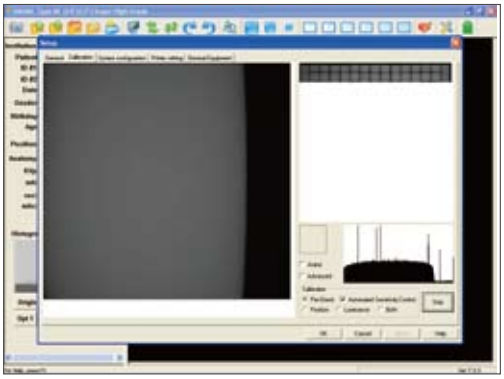
Irradiate x-ray.

NOTE !

Irradiate x-ray within one minute.

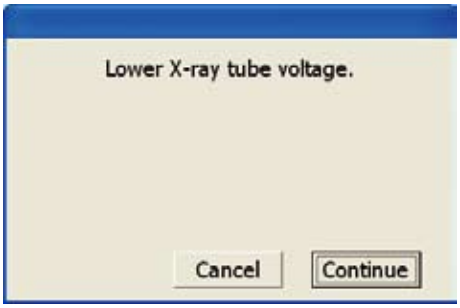
NOTE !

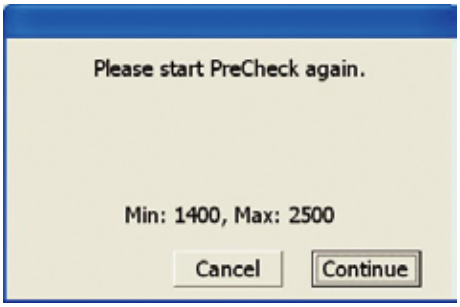
The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.



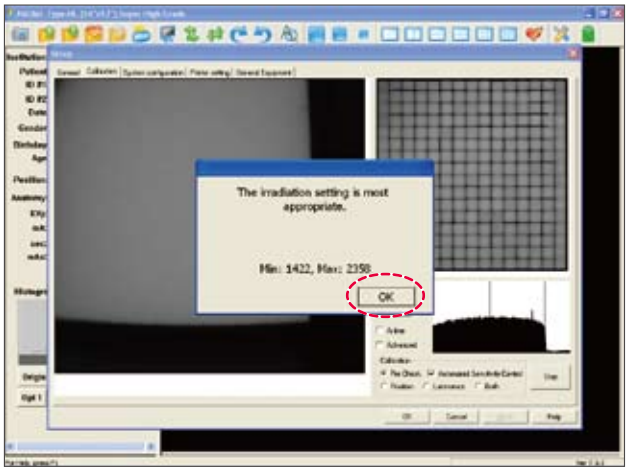
9. Pre-Check starts.

Error Message





If an error message appears, refer to the Calibration section in Troubleshooting Guide.



10. Once the software sets the sensitivity of the sensor automatically, it indicates so with the message, "The irradiation setting is most appropriate".

Click OK to proceed to the calibration process.

Proceed to Positioning Calibration.
If Pre-Check does not go through, contact RF Technical Support.

Positioning Calibration

This calibration process is to correct the position of each CCD in the NAOMI sensor.
This process must be performed if your image seems similar to Example Image A *on page : Operation Check-06.*

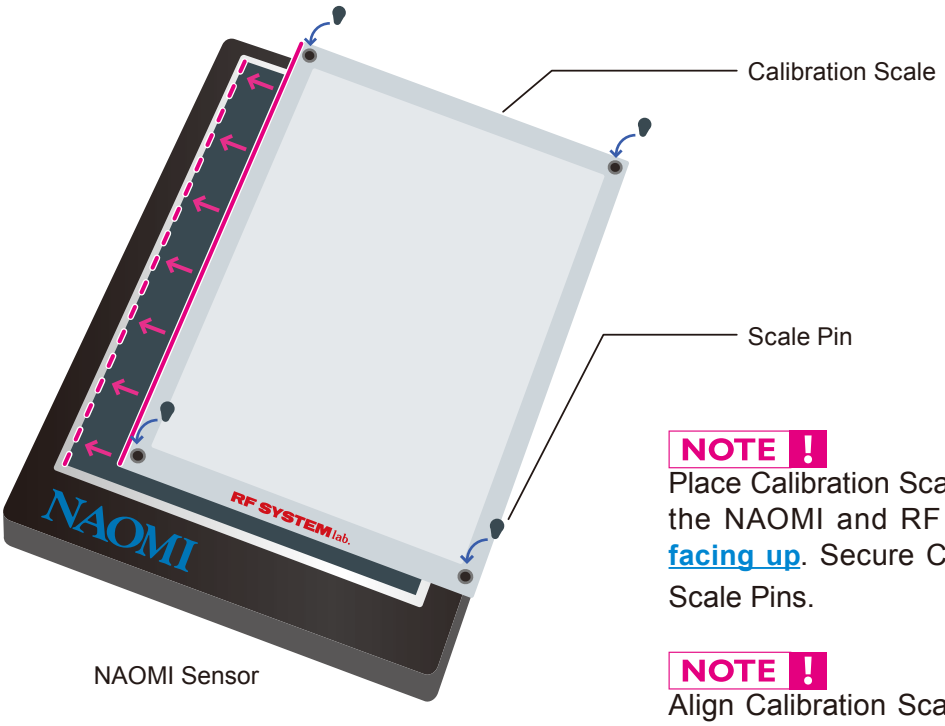
Calibration Scale is required to perform Positioning Calibration.

Set Calibration Scale on the NAOMI sensor securely with Scale Pins.

CAUTION

DO NOT HOLD CALIBRATION SCALE BY EDGES. Calibration Scale contains very sharp edges, and it may cause serious injuries. Handle Calibration Scale with special care. In the case of the injuries caused by Calibaration Scale, RF would not assume any responsibility.

Align to the Left



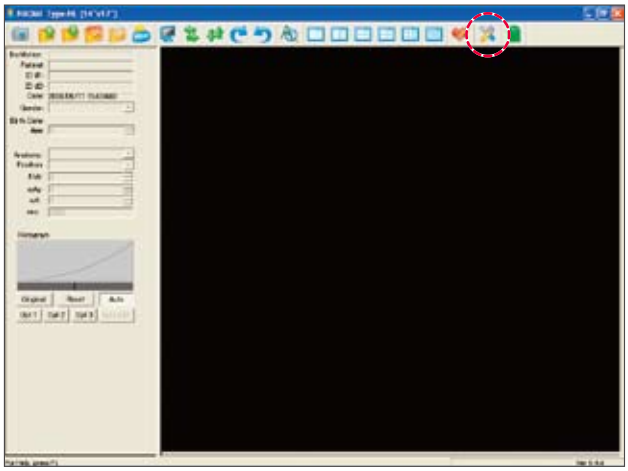
NAOMI Sensor

NOTE

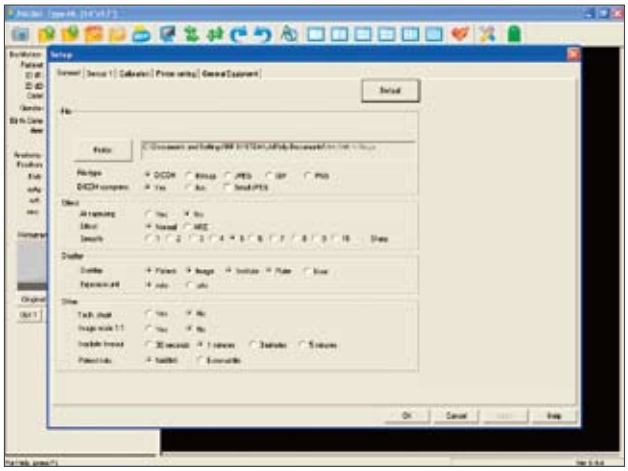
Place Calibration Scale on the sensor with the NAOMI and RF SYTEM lab's logos facing up. Secure Calibration Scale with Scale Pins.

NOTE

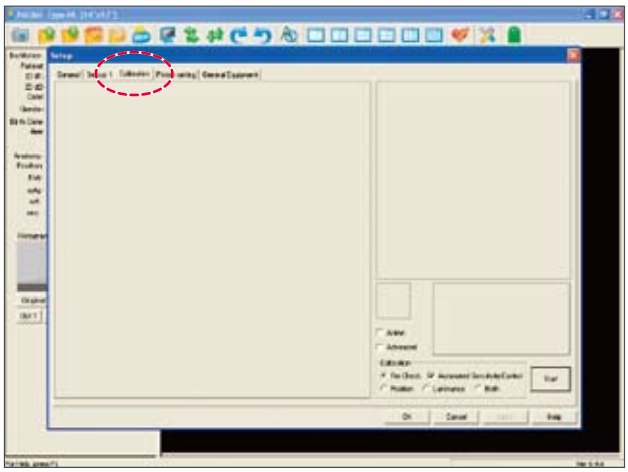
Align Calibration Scale to the far left side of the NAOMI sensor, so that the NAOMI sensor detects Calibration Scale properly.



1. Click the Setup icon  to open Setup Window.



2. “Setup Menu” window appears.



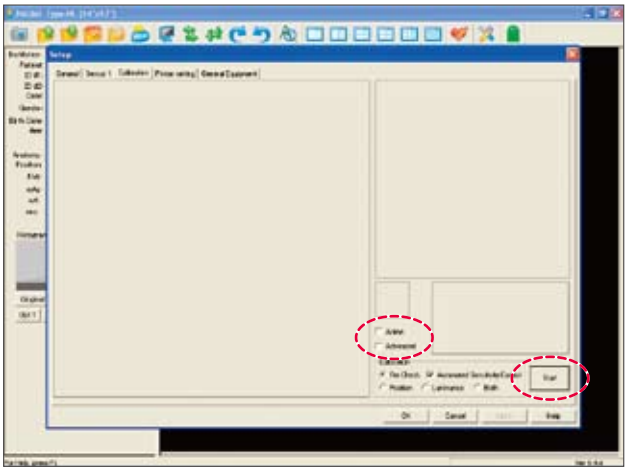
3. Click the Calibration tab.

Positioning Calibration contains 2 steps.

- STEP A Preparation Check
- STEP B Positioning Calibration

Now, proceed to

STEP A Preparation Check

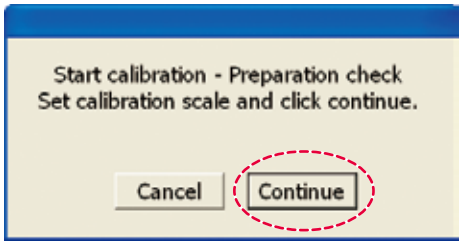


1. Select Position.

Click [Start].

NOTE !

Confirm there are no check marks on “Anime” and “Advanced”.
They are for the shipment inspections only.

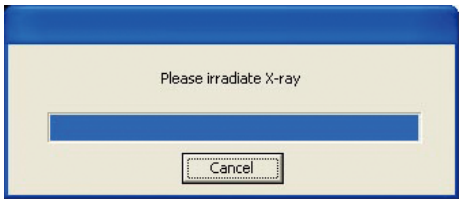


2. The message, "Start calibration - Preparation check" appears.

Click [Continue].

NOTE !

Before proceeding further, confirm that Calibration Scale is set on the NAOMI sensor and secured with Scale Pins.
*Refer to page: **Operation Check - 04**, to set Calibration Scale.



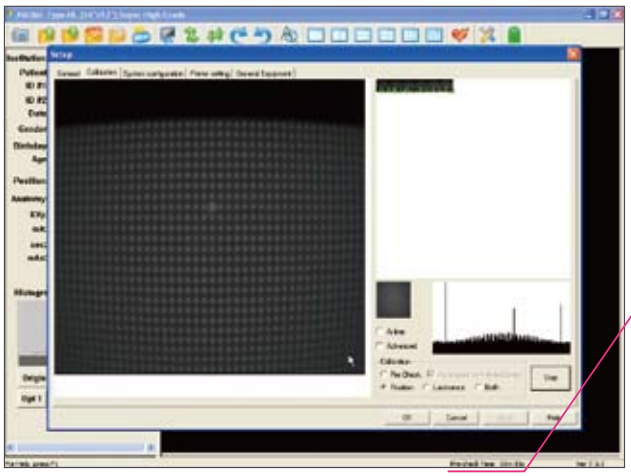
3. The message, "Please irradiate X-ray" appears to indicate the software and the sensor is ready for irradiation.
Irradiate x-ray before the time runs out.

NOTE !

If the software starts reading data without irradiation, or it does not read data at all after irradiation, refer to Question 1 of the Capturing X-Ray Image section in Troubleshooting Guide.

NOTE !

The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.

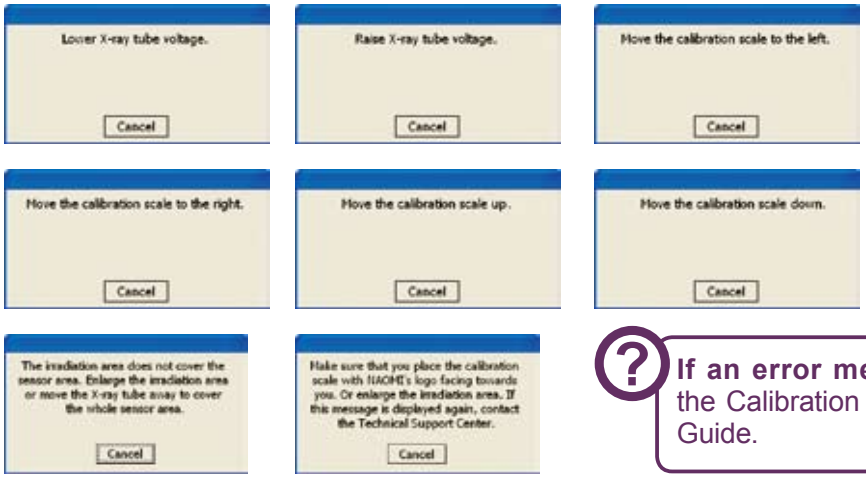


4. Once x-ray is irradiated, Preparation Check for Positioning Calibration automatically starts.

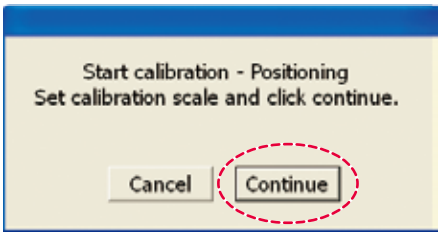
NOTE !

The processing time is displayed at the bottom of the window.

Error Message



If an error message appears, refer to the Calibration section in Troubleshooting Guide.

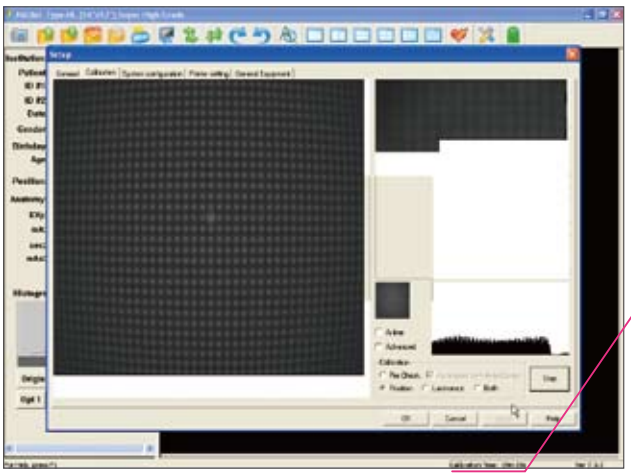


5. After the Preparation Check for Positioning Calibration is completed, the message "Start calibration - Positioning " appears.

Click Continue.

Now STEP A Preparation Check is completed.

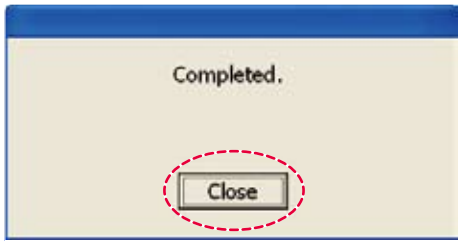
Proceed to STEP B Positioning Calibration.



1. Positioning Calibration starts automatically.

NOTE

The processing time is displayed at the bottom of the window.

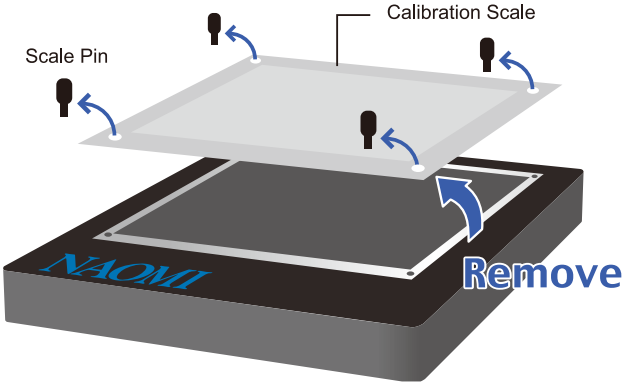


2. After Positioning Calibration is completed, the message, "Completed" appears.

Click Close.

NOTE

If the NAOMI software freezes or crashes (closes by itself) before this message appears on the screen, check if the map data is set on "Read - Only ". (Refer to Install - 21 for details)



3. Remove Calibration Scale from the NAOMI sensor.

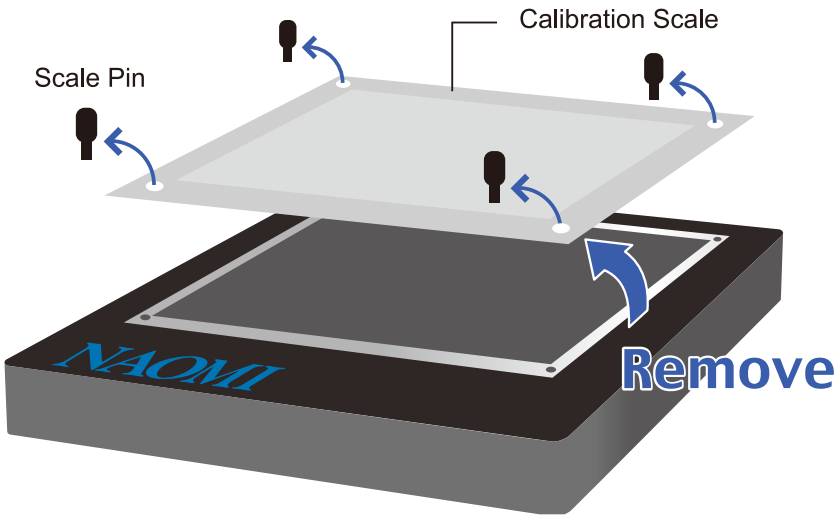
CAUTION

Handle the calibration scale with care to avoid any injuries or crease on the scale.

Now, proceed to Luminance Calibration.

Luminance Calibration

Luminance Calibration is necessary to adjust the brightness level on each CCD in the NAOMI sensor. This will unify brightness level and create the image evenly adjusted. This process must be performed if you have completed Positioning Calibration or your image is similar to Example Image A *or* Example Image B *on page :* **Operation Check-06.**



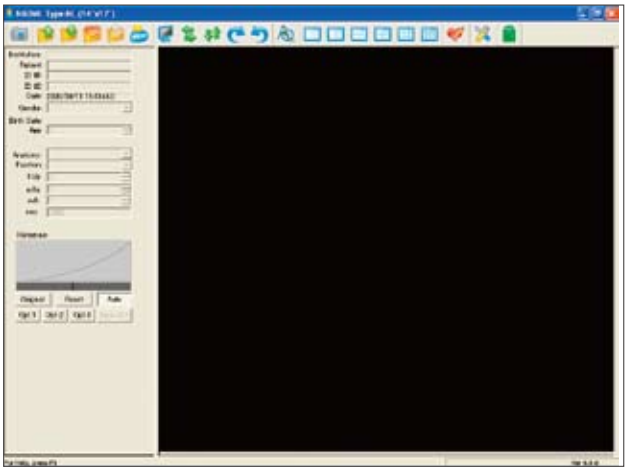
REMOVE CALIBRATION SCALE.

Calibration Scale is used only for Positioning Calibration.
Calibration Scale must be removed before the Luminance Calibration process.

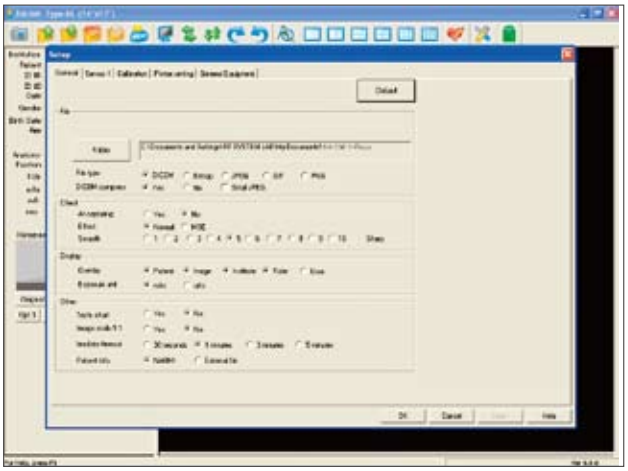
CAUTION

Handle the calibration scale with care to avoid any injuries or crease on the scale.

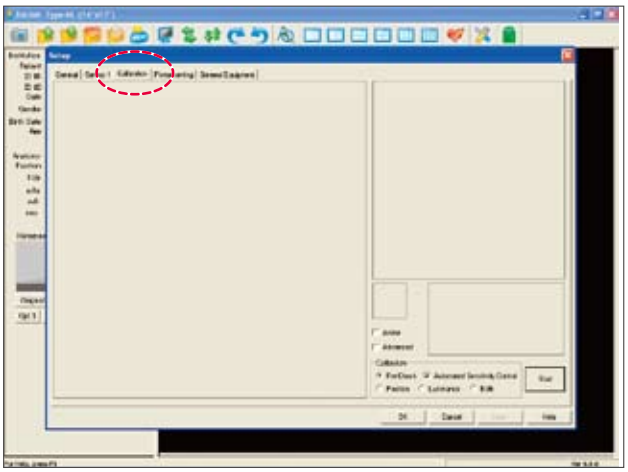
Now, it is ready for Luminance Calibration.



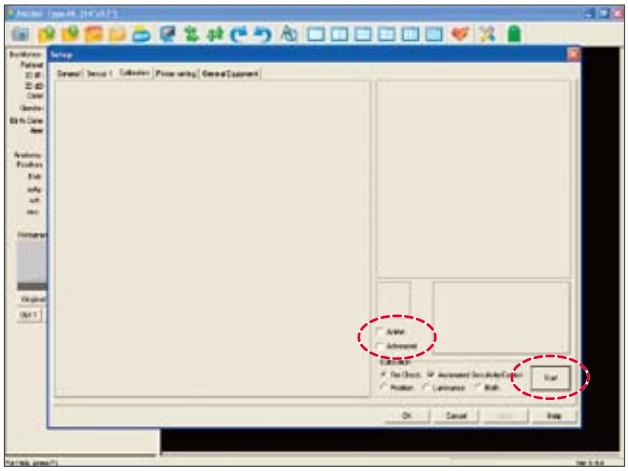
1. Click the Setup icon  to open Setup Window.



2. “Setup Menu” window appears.



3. Click the Calibration tab.

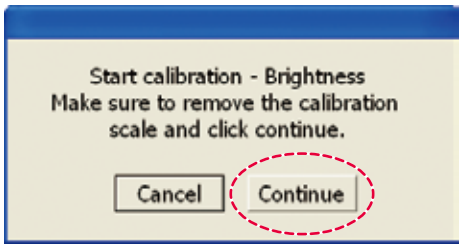


4. Select Luminance.

Click Start.

NOTE

Confirm there are no check marks on “Anime” and “Advanced”.
They are for the purpose of shipment inspections only.

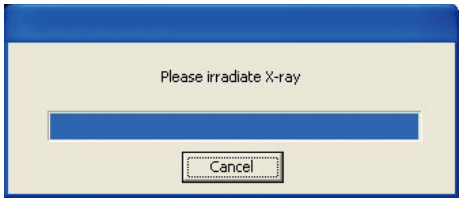


5. The message, "Start Calibration - Brightness" appears.

NOTE

Before proceeding further, please confirm that the Calibration Scale has been removed from the NAOMI sensor.

Click Continue.



NOTE

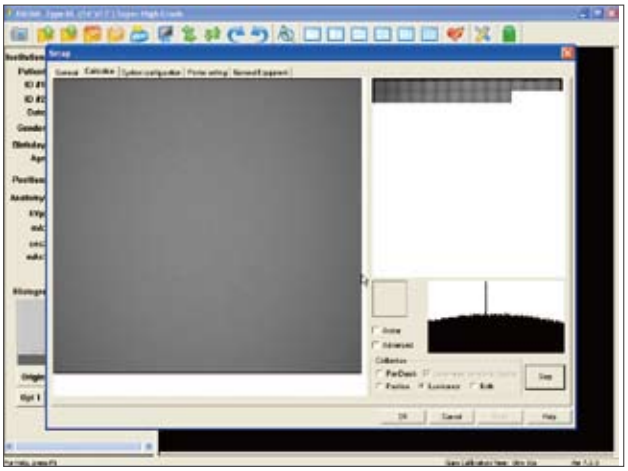
If the software starts reading data without irradiation, or it does not read data at all after irradiation, refer to Question1 of the Capturing X-Ray Image section in **Troubleshooting Guide**.

6. The message, "Please irradiate X-ray" appears to indicate that the software and NAOMI sensor is ready for exposure.

Irradiate x-ray before the time runs out.

NOTE

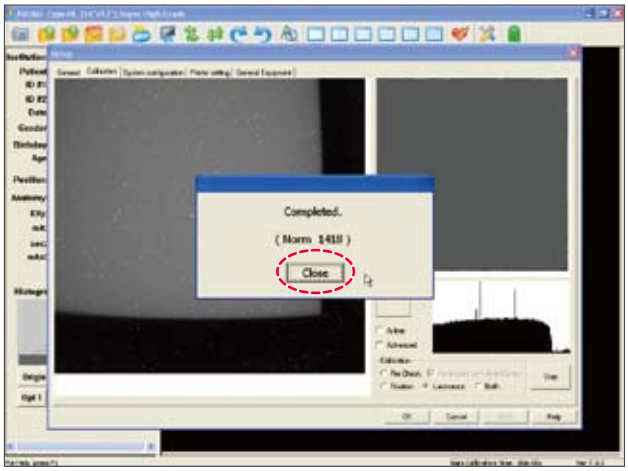
The software starts counting down the remaining once the message appears on the screen. It alerts when the time is running out. It alerts 10 seconds remaining, 5 seconds remaining and when it is timed out.



7. The software automatically starts calibrating each CCD sensor to adjust the brightness level.

Error Message

If there is any error message on the screen, refer to the Calibration Section in Troubleshooting Guide.

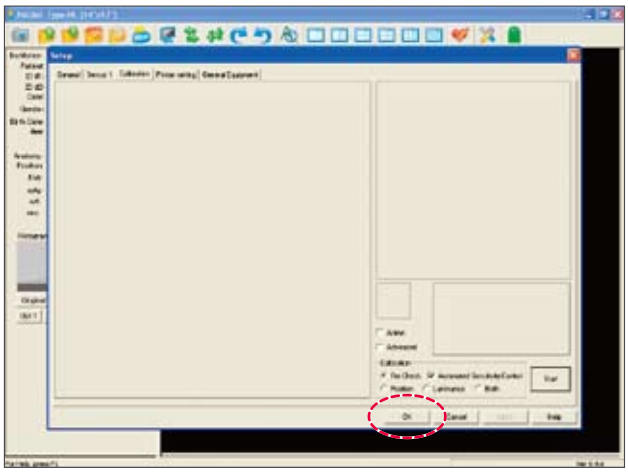


8. Once Luminance Calibration is successfully completed, the message, "Completed" appears.

Click [Close].

NOTE !

If the NAOMI software freezes or crashes (closes by itself) before this message appears on the screen, check if the map data is set on "Read - Only ". (Refer to Install - 21 for details)



9. Click [OK] to save and close the Setup Menu.

NOTE !

OK must be selected to save the adjustment made by this calibration process.

Now, the calibration process has been completed.
It is ready for capturing x-ray images.

Troubleshooting Guide Index

Setup / Installation

Question 1 *The NAOMI sensor does not work.*

A: Is the Power Lamp lit up in GREEN?

YES The power is going into the NAOMI sensor.
Check the USB connection.

NO Check the connections. Unplug the cable and plug it again or try other power source. If it does not light up, contact RF Technical Support.

B: Is the USB Lamp lit up in RED?

YES The USB cable is recognized by the NAOMI sensor and your computer. NAOMI is ready for installation.

NO
- Check the connections. Unplug the USB cable and plug it again.
- Change the cable to a different USB port on your computer.
- If it does not light up, contact RF Technical Support.

Question 2 *I cannot install the software to my computer.*

What is your Operating System?

A: Windows XP / Vista

Check the CD-ROM drive. Check CD-ROM for any scratches or smudges.
If the problem still exists, contact RF Technical Support.

B: Windows 2000

Check the CD-ROM drive. Check CD-ROM for any scratches or smudges.
Right click **Setup_Int.msi** and select “install” to start the installation process.
If the problem still exists, contact RF Technical Support.

How can I check what kind of Operating System I am running off of?

Right click "My Computer" ▶ Click "Property" ▶ Click "General" tab.
It lists the specification of Operating System your computer is based on.

Question 3 Installation Wizard does not come up.

The problem may be on CD-ROM or CD-ROM drive.
Contact RF Technical Support.

Question 4 I want to uninstall the software.

A: Insert the CD-ROM. Follow its steps to uninstall the software.
B: Go to "Control Panel" ▶ Click "Add or Remove Programs" ▶ Select "NAOMI" ▶ Follow the steps to complete the uninstallation process.

Question 5 I want to reinstall the software.

Refer to **Install the NAOMI software** in User`s Guide. It will overwrite the existing software.

Question 6 I want to install the software to my second computer.

Contact RF Technical Support.

Question 7 I cannot install the driver for the NAOMI sensor.

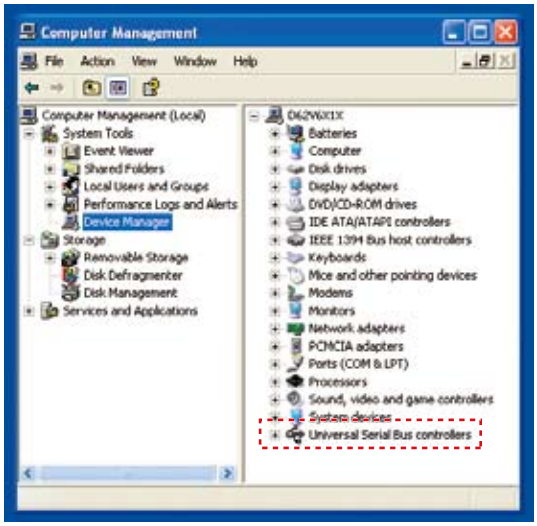
Your computer must be compatible with USB 2.0.

A: Did the pop-up balloon appear on the screen when you plug in the USB cable?

YES Refer to the driver installation manual.

NO Install the driver manually.

Right click "My Computer"
▼
Click "Property"
▼
Click "Hardware"
▼
Click "Device Manager"
▼
Click + next to "Universal Serial Bus Controllers"



Is there any "unknown device" or "NAOMI Driver for High Grade 2006/11/27" ?

YES Update the driver.

Right click on "Unknown Device "or "NAOMI Driver 2007/07/09"
▼
Select "Update driver"
▼
"Update Driver" wizard shows up. Insert the CD-ROM into the CD-ROM drive.

NO Check the USB Connection.
Change the USB port and check if there is any "Unknown Device" appears under "Universal Serial Bus Controllers".
If the problem still exists, contact RF Technical Support.

Question 8 I cannot find the map data folder.

Refer to **Copy the NAOMI imaging data in User`s Guide** for its location.
(Page Installation - 16)

Capturing X-Ray Images

Question 1 *It starts reading the data without the irradiation.*

A: Is the Power Lamp lit up in GREEN?

YES The power is going into the NAOMI sensor. Check the USB connection.

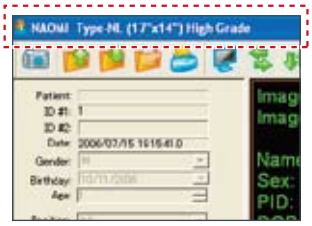
NO Check the connections. Unplug the cable and plug it again or try other power source.
If it does not light up, contact RF Technical Support.

B: Is the USB Lamp lit up in RED?

YES The USB cable is recognized by the NAOMI sensor and your computer.

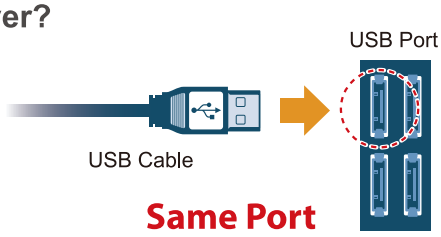
NO
- Check the connections. Unplug the cable and plug it again.
- Change the cable to a different USB port.
- If it does not light up, contact RF Technical Support.

C: Which does the title bar on the NAOMI software display?



Your sensor type	Display
14"x17"	"NAOMI TYPE-NL (17"x14") "
11"x14"	"NAOMI TYPE-NS (11"x14") "
USB is not recognized	"NAOMI (Not Connected)"

D: Did you plug the USB Cable to the exactly same USB port when you installed the driver?



YES Update the driver.
Refer to **Question 7** on **Setup / Installation Troubleshooting Guide**.

NO Plug the USB Cable to the exact same USB port when you installed the driver.

Question 2 *It takes longer than 1 minute for images to come up to the screen.*

A: Are you using USB 2.0 port on your computer?

YES Close other applications you are running on the computer.
The NAOMI system requires at least 1 GB memory on your computer.

If the problem still exists, contact RF Technical Support.

NO Use USB 2.0 port. The NAOMI sensor must be used with USB 2.0 due to the data transfer speed.

Question 3 *It does NOT start reading the data AFTER the irradiation.*

A: Is Power Lamp lit up in GREEN?

YES The Power is going into the NAOMI Sensor. Check the USB connection.

NO Check the connections. Unplug the cable and plug it again or try other power source. If it does not light up, contact RF Technical Support.

B: Is USB Lamp lit up in RED?

YES The USB cable is recognized by the NAOMI sensor and your computer.

NO
- Check the connections. Unplug the cable and plug it again.
- Change the cable to a different USB port.
- If it does not light up, contact RF Technical Support.

C: Does your irradiation area cover your active sensor area?

YES If the problem still exists, contact RF Technical Support.

NO Refer to **Sensor Area troubleshooting guide**.

D: Start irradiation after the message "Please irradiate X-ray" appears on the screen.
If the problem still exists, contact RF Technical Support.

Question 4 *The message "Please irradiate X-ray" appears twice.*

Do not double click (click twice) the Camera icon. It needs to be clicked only once.

Sensor Area

Question 1 *My generator does not cover the sensor area.*

A: Can the generator be raised to increase the tube distance?

YES Please raise the generator to the position, which increases the area, which the sensor light covers. The target of the tube distance is approximatery 100 cm / 39 inch Refer to page : **Operation Check-03**

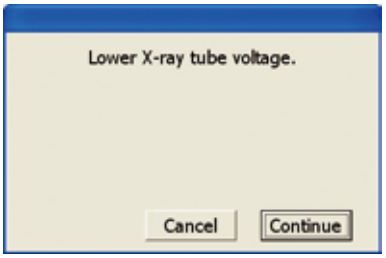
NO The active sensor area must be adjusted. Refer to Question 2 below.

Calibration

Pre-Check

Question 1 *I got the error message during Pre-Check.*

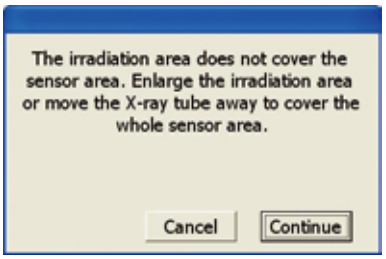
Error A **Lower x-ray tube voltage.**



- Click Continue.
  Decrease the tube voltage by 5kVp and try again.
- Or click Cancel to stop PreCheck.

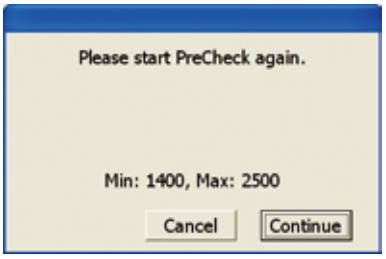
  If you still have the message to lower the tube voltage, contact RF Technical Support.

Error B **Irradiation area does not cover the sensor area. Enlarge the irradiation area or move the x-ray tube away to cover the whole sensor area.**



- Click Continue.
  Increase the tube distance.
  Expand the irradiation area.
  Refer to Sensor Area Troubleshooting Guide.
- Or click Cancel to stop PreCheck.

Error C **Please start Pre Check again**



- The software could not find the most appropriate sensitivity for your sensor.

  Click Continue and start PreCheck again.
- Or click Cancel to stop PreCheck.

Positioning Calibration

Question 2 *I got the error message during Positioning Calibration.*

STEP 1 **Check the following.**

Is your irradiation area covering the whole active sensor area?

YES Proceed to **STEP 2**

NO Increase the tube distance.
Expond the irradiation area. (Refer to Sensor Area Troubleshooting Guide)

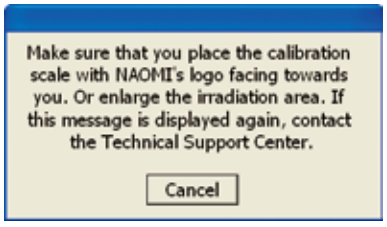
STEP 2 **Check the following error message and restart Positioning Calibration again.**
(Or contact RF Technical Support. RF Staff will walk you through each step to correct the error message.)

Error A **Irradiation area does not cover the sensor area. Enlarge the irradiation area or move the x-ray tube away to cover the whole sensor area.**

Click Cancel.
Increase the tube distance.

Expand the irradiation area.
Refer to **Sensor Area Troubleshooting Guide**.

Error B **Make sure that you place the calibration scale with NAOMI's logo facing towards you. Or enlarge the irradiation area. If this message is displayed again, contact Technical Support Center.**



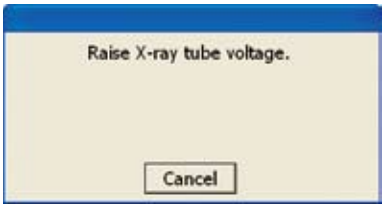
Click Cancel.
Confirm that you place Calibration Scale with the logos facing up.

Increase the tube distance.

Expand the irradiation area.
Or, refer to Sensor Area Troubleshooting Guide.

If the same message displayed again, contact RF Technical Support.

Error C Raise x-ray tube voltage.



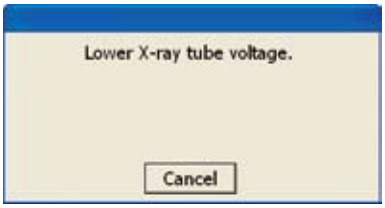
Click Cancel.
Increase the tube voltage by 5kVp and try again.

Increase the tube voltage by 5kVp until the error message shows to lower x-ray tube voltage.

After the error message shows to lower x-ray tube voltage, lower the tube voltage gradually.

If you still have the message to raise the tube voltage, contact RF Technical Support.

Error D Lower x-ray tube voltage.



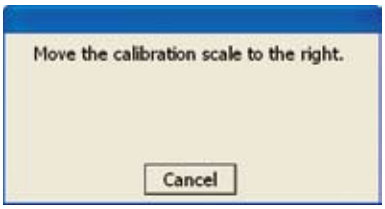
Click Cancel.
Decrease the tube voltage by 5kVp and try again.

Decrease the tube voltage by 5kVp until the error message shows to raise x-ray tube voltage.

After the error message shows to raise x-ray tube voltage, increase the tube voltage gradually.

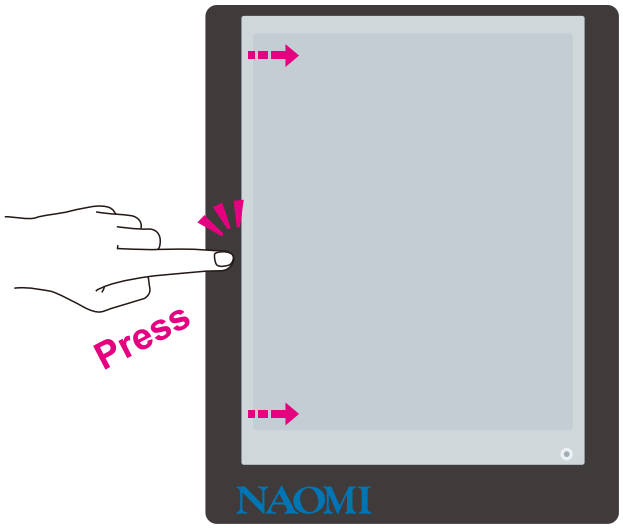
If you still have the message to lower the tube voltage, contact RF Technical Support.

Error E Move the calibration scale to the right.

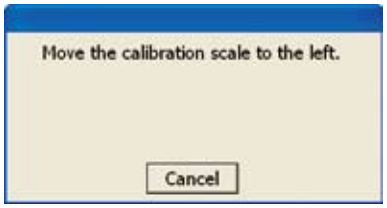


Click Cancel.
Press Calibration Scale itself slightly **(NOT the NAOMI sensor)** **to your right**.

If you cannot slide Calibration Scale or receive the same error message, contact RF Technical Support.

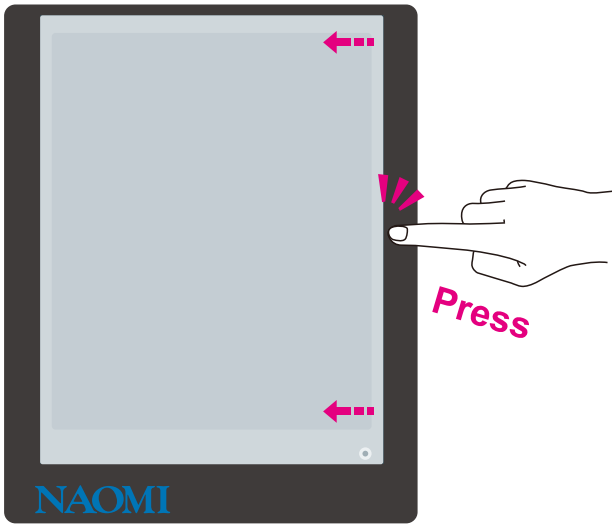


Error F Move the calibration scale to the left.



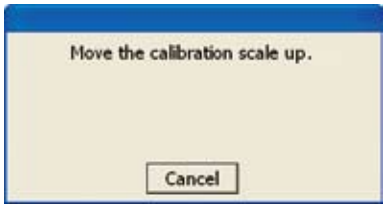
Click Cancel.
Press Calibration Scale itself slightly **(NOT the NAOMI sensor)** **to your left**.

If you cannot slide Calibration Scale or receive the same error message, contact RF Technical Support.



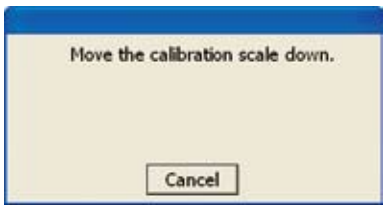
<Front>

Error G Move the calibration scale up.



Click Cancel.
Contact RF Technical Support.

Error H Move the calibration scale down.



Click Cancel.
Contact RF Technical Support.

Luminance Calibration

Question 3 *I got the error message, during Luminance Calibration.*

STEP 1 **Check the following.**

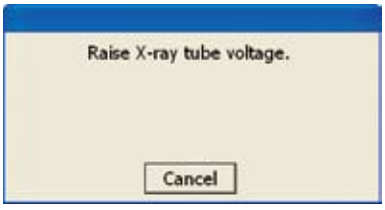
Is your irradiation area covering the whole active sensor area?

YES Proceed to **STEP 2**

NO Increase the tube distance.
Expond the irradiation area. (Refer to Sensor Area Troubleshooting Guide).

STEP 2 **Check the following error message and restart Luminance Calibration again.**
(Or contact RF Technical Support. RF Staff will walk you through each step to correct the error message.)

Error A **Raise x-ray tube voltage.**



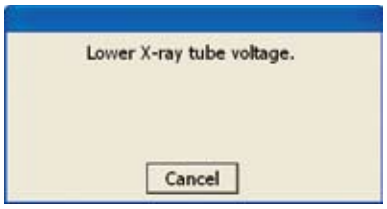
Click Cancel.
Increase the tube voltage by 5kVp and try again.

Increase the tube voltage by 5kVp until the error message shows to lower x-ray tube voltage.

After the error message shows to lower x-ray tube voltage, lower the tube voltage gradually.

If the tube distance is 100 cm / 39 inch, irradiation condition is 5 mAs, and the tube voltage reaches 100kVp, and your still have the message to raise the tube voltage, contact RF Technical Support.

Error B Lower x-ray tube voltage



Click Cancel.
Decrease the tube voltage by 5kVp and try again.
Decrease the tube voltage by 5kVp until the error message shows to raise x-ray tube voltage.

After the error message shows to raise x-ray tube voltage, increase the tube voltage gradually.

If the tube distance is 100 cm / 39 inch, irradiation condition is 5 mAs, and the tube voltage reaches 100kVp, and your still have the message to raise the tube voltage, contact RF Technical Support.

Open / Save Images

Question 1 *I cannot save images.*

A: Is there any letter in the file name, which is not supported by the NAOMI software?

The NAOMI software supports the following letters.
0-9, A-Z (UPPER CASE), a-z (lower case), _ (underscore), - (hyphen)

YES Rename the file name.

NO Contact RF Technical Support.

B: Hard disk may be full.

Clean up the hard disk, or increase the hard disk space.

Question 2 *I cannot open the saved images.*

A: Is there any letter in the file name, which is not supported by the NAOMI software?

The NAOMI software supports the following letters.
0-9, A-Z (UPPER CASE), a-z (lower case), _ (underscore), - (hyphen)

YES Rename the file name.

NO Check the file type. Refer to C:(file types).

B: The file may be broken.

You cannot open a broken file. Contact RF Technical Support.

C: The file type is not supported by the NAOMI software.

The NAOMI software supports the following file types.
DICOM, BMP (bitmap), JPEG, PNG, GIF

Question 3 *I don't know where to find the save image.*

A: Click Setup Icon  . Select General tab.
Under "file", the file location is listed.
Refer to "How to Change Setting" for details.

Crash

Question 1 *The NAOMI software crashes. (closes by itself)*

A: Check the Map folder.
Map folder location c:/Program Files/RF/NAOMI_II/map

Do you have the following three files in your map folder?

① affine ② gain ③ gpoint

YES Check the property of these three files.
Confirm if Read-Only is checked.
If it is checked, remove the checkmark.
If the problem still exists, contact RF Technical Support.

NO Copy the map data to your map folder from Data CD-ROM.
Refer to How to copy map data to your computer Page : **Installation 16-21**

B: The file you are trying to open may be broken.

You cannot open the broken image file with the NAOMI Software. Contact RF Technical Support.

Daily Maintenance

For Long-Term Use

- NAOMI Imaging Sensor is a precision mechanical equipment. Avoid moisture, dirt, and dust.
- Use a soft, dry cloth to wipe off dirt and dust. If you cannot clean them up, use the firmly squeezed wet towel. You may use alcohol to clean, but do not use any other cleaning substance.
- Do not use volatile organic colvents, like benzenes or thinner, and chemical clothes.
- The rapid temperature changes may cause condensation inside the sensor, which might influence in the system function. Use the sensor with the environment of 15-35 ºC (59-95 ºF), and the humidity 30-70%RH.
- Avoid direct sunlight.
- Handle the sensor with care, since it may get damaged from shocks.
- The expected lifetime of the scintillator is about 5 years depending on frequency of use. After this period, it may start gradually loosing its performance. Contact our technical support when you feel its performance may have become less.
- Stop using the system when you have any troubles, and contact our technical support.

Safety Check

For Long-Term Use

Wipe off dirt with a soft, dry cloth. If the dirt is heavy, squeeze a wet towel well and wipe off the dirt. You may use alcohol but do not use any other cleaning substance.

Regular Check

Please check the followings for each three months for your safety.

1. *Any screws are not loose.*
2. *No cracks or fracture on the main unit.*
3. *The DC-in Jack and USB ports have not become loose.*
4. *Power Lamp illuminates in green when the AC Adapter is connected.*
5. *USB Lamp illuminates in red when the USB cable is connected.*

RF Technical Support Center

Contact the RF Technical Support Center if you have any inquiries about the product. Call us or fax your inqurries. Technical experts will contact you and answer your questions.

How to contact RF Technical Support Center?

■ By Phone:

1-800-759-9557	from USA
1-866-742-5610	from Canada
1-800-151-319	from Australia
+81-26-225-7744	from other countries

■ By Fax:

Copy the Request Form on the next page and fax it to us. You may upload the images for your inquiries or questions.

1-800-799-9895	from USA
1-866-742-5611	from Canada
1-800-151-320	from Australia
+81-26-225-7747	from other countries

■ By E-mail:

os@rfsystemlab.com

■ By Website:

www.rfsystemlab.com

Technical Support Request Form

When you have troubles with the product, or when you cannot acquire the proper images, please let us know the following information.

■ Your information

Date	

Purchase Date	Year Month Date
Office Name	
Doctor's Name	

Address	
TEL	
FAX	

■ Description of the trouble

What trouble do you have?	☐ Setup/Installation ☐ Calibration ☐ Image ☐ Other
Since when have you had the problem?	From Today / Day(s) Ago
Frequency of the problem	Times

■ Irradiation Setting - *If the trouble is about Calibration or Image, provide us the following information.*

Tube Distance		Feet	Inches /	m	cm
Tube Voltage	kVp	Tube Current			mA
Irradiation Time	Second(s) /	Pulse			
Irradiation Condition	mAs				
X-Ray Irradiator Manufacturer Name					
Type of Irradiator					

*Please circle one from A to E, when the trouble is regarding to the image quality.

Contrast	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Brightness	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Sharpness	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Dynamic Range	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
The Part of Focus	(A. Bone	B. Abdomen	C. Chest	D. Extremeties)	
Bone	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Abdomen	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Lung Field	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Cranial Bone	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Extrimeties	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Comment					

FAX : 1-800-799-9895 (from US) **1-866-742-5611** (from Canada)

1-800-151-320 (from AUS) **+81-26-225-7747** (from other countries)

Technical Support Request Form

When you have troubles with the product, or when you cannot acquire the proper images, please let us know the following information.

■ Your information

Date	

Purchase Date	Year	Month	Date
Office Name			
Doctor's Name			

Address	
TEL	
FAX	

■ Description of the trouble

What trouble do you have?	☐ Setup/Installation	☐ Calibration	☐ Image	☐ Other
Since when have you had the problem?	From Today /			Day(s) Ago
Frequency of the problem				Times

■ Irradiation Setting - *If the trouble is about Calibration or Image, provide us the following information.*

Tube Distance	Feet	Inches /	m	cm	
Tube Voltage	kVp	Tube Current	mA		
Irradiation Time	Second(s) /	Pulse			
Irradiation Condition	mAs				
X-Ray Irradiator Manufacturer Name					
Type of Irradiator					

*Please circle one from A to E, when the trouble is regarding to the image quality.

Contrast	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Brightness	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Sharpness	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Dynamic Range	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
The Part of Focus	(A. Bone	B. Abdomen	C. Chest	D. Extremeties)	
Bone	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Abdomen	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Lung Field	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Cranial Bone	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Extrimeties	(A. Very Good	B. Good	C. Fair	D. Poor	E. Very Poor)
Comment					

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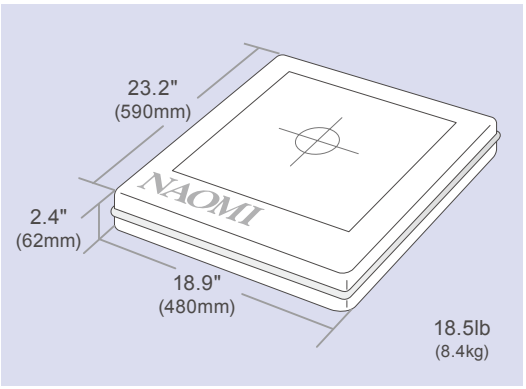
Specifications

NAOMI Specifications (14" x 17")

Method	Imaging Sensor and Scintillator
Scintillator	GOS (Gd2O2S:Tb)
Image Size	14" x 17" (Maximum)
Data Output	DICOM, Bitmap, JPEG, PNG, GIF
Power Usage	AC Adaptor (12V / 12.5A)
Power Requirement	100-240V (50Hz / 60Hz)
Power Consumption	42W
Dimensions/Weight	18.9" x 23.2" x 2.4" / 18.5lb 480 x 590 x 62 (mm) / 8.4 (kg)

NAOMI Dimensions (14"x17")



NAOMI Requirements for Computer Environment

Operation System	Windows 2000 / XP / Vista
CPU	Intel Celeron 1GHz
Memory	1GB (2GB or more recommended)
Hard Disk Drive	160GB
Monitor	XGA Size (1024 x 768)
Peripheral	USB 2.0 Port x 1, CD-ROM Drive x 1

Manufacturered by **RF Co., Ltd**

Inspired by dreams.
RF SYSTEM lab.

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FAX : +81-26-225-7747 URL : www.rfsystemlab.com