Accuvue MED User Manual

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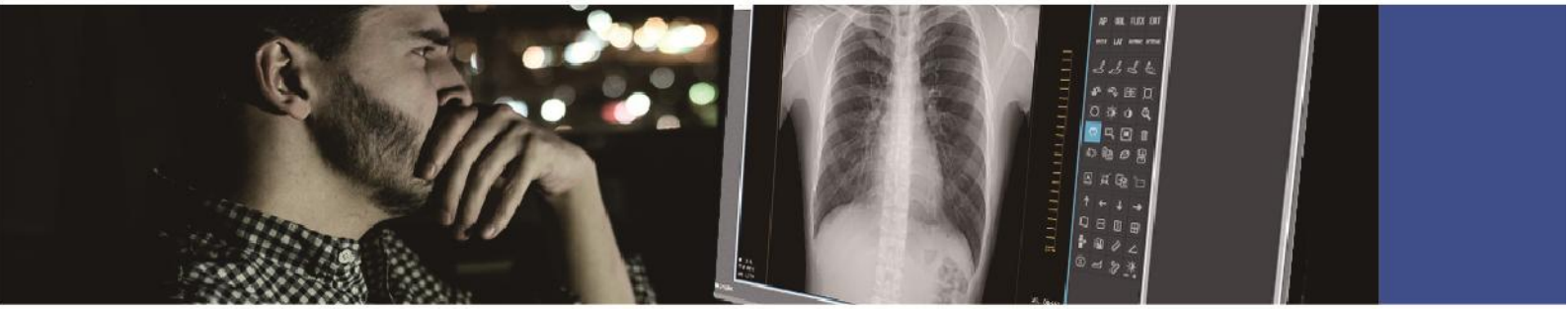

About This Manual

The AccuVueMED User Manual provides instructions for the configuration and use of AccuVueMED radiological software, developed by RadmediX.

The manual contains the following contents.

- ✓ Operation Environment, Installation and Method for AccuVueMED
- ✓ Functions and Instructions for AccuVueMED

Please contact us if there are any problems during the use of the product.

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About This Manual

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1 Introduction

AccuVueMED is a complete digital image processing console software specialized for the digital X-ray detector FLAATZ and EVS series developed by DRTECH Co, Ltd.
AccuVueMED provides the best image processing solution for fine tuned quality images by integrating with the X-ray generator and the digital detector. AccuVueMED not only processes the acquired images but also complies with DICOM standards which allow the user to transmit and receive data with the PACS system and print images through the DICOM printer.

Figure 1. AccuVueMED Image Processing Workflow (Wired Detector)

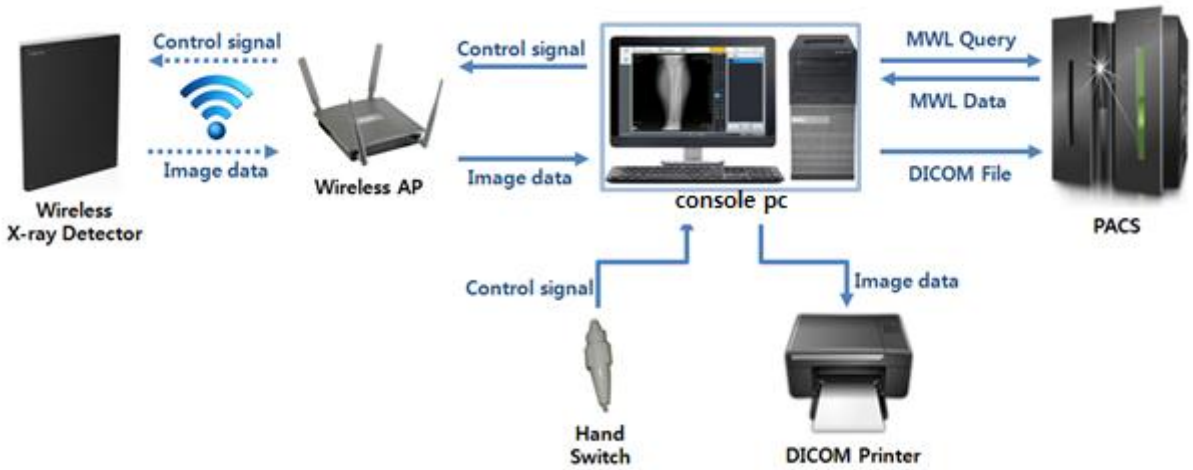


Figure 2. AccuVueMED Image Processing Workflow (Wireless Detector)

2 System Requirements

2.1 Supported Digital X-ray Detector

AccuVueMED supports the following Digital X-ray Detectors manufactured by DRTECH Co, Ltd.

- ✓ FLAATZ 330N
- ✓ FLAATZ 500
- ✓ FLAATZ 560
- ✓ FLAATZ 600 Wireless
- ✓ FLAATZ 750E
- ✓ FLAATZ 760
- ✓ EVS 4343 Series
- ✓ EVS 4343 A Series
- ✓ EVS 4343 W Series
- ✓ EVS 3643 Series
- ✓ EVS 3643 A Series
- ✓ EVS 3643 W Series
- ✓ EVS 2430 Series
- ✓ EVS 2430 W Series

2.2 System Requirements for AccuVueMED

The table provides the minimum recommended specifications for the operating system that runs AccuVueMED. All specifications are subject to change without notice.

Table 1. Recommended Operating System Specifications

Items	Recommended
CPU	Intel i5-3470
RAM	8 GB
HDD	500 GB
VGA	NVIDIA GeForce GT630 1GB
ODD	DVD Recorder
OS	Windows 7 Pro 32 / 64bit Win8, Win10
Display Size	23 inch
Display Resolution	1920 x 1080

* Optimal performance is not guaranteed for PC that does not comply with the recommended specifications.

3 Overview

3.1 Program Start-up

In order to run the program, double click the [AccuVueMED] icon on the desktop or select 'AccuVueMED' from 'Windows Menu' – 'All Programs' – 'AccuVueMED'.

Figure 3. AccuVueMED Shortcut Icon

A login window as seen in [Figure 4] will appear if the program is properly initiated.

Figure 4. Login Window

Enter the ID and Password, and click the [Login] icon.

If you enter an invalid ID or Password, an ‘Error Window’ will appear as shown in [Figure 5] and you will not be able to log in.

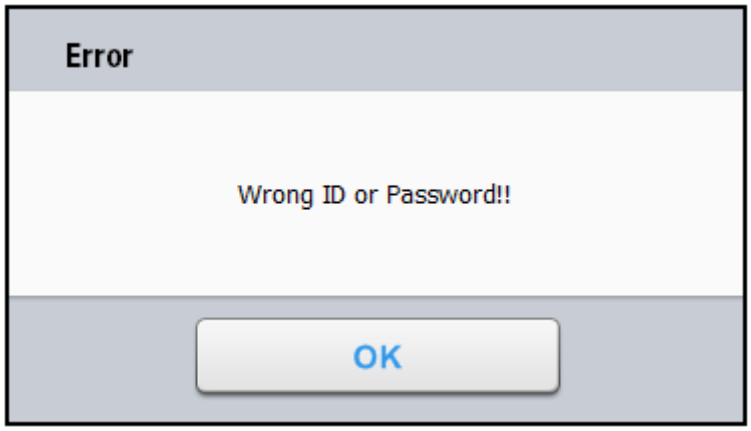


Figure 5. Login Error

3.2 Main Screen of Program

You will see the AccuVueMED main screen as in [Figure 6] after logging in.

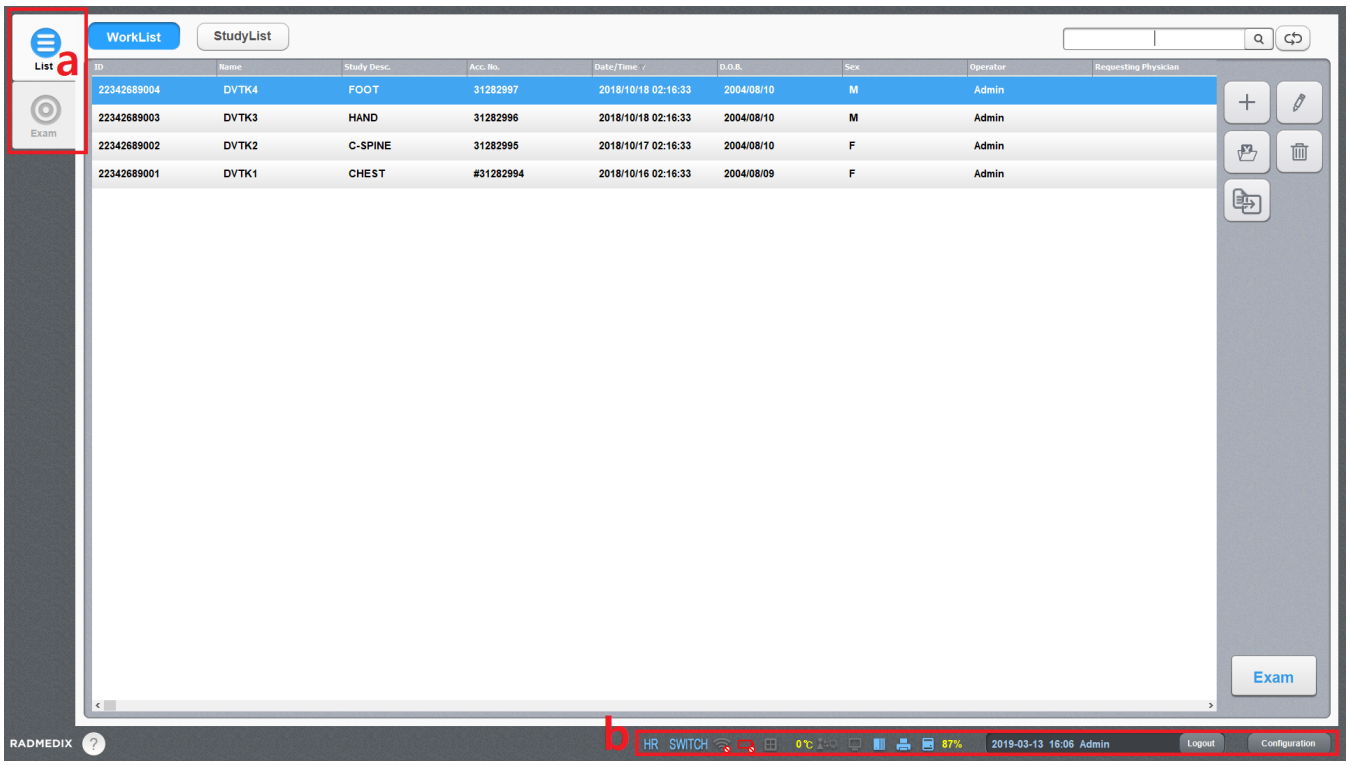


Figure 6. Main Screen of the AccuVueMED

a) Function Tabs

b) Status Display

3.2.1 Function Tabs

Two tab icons can be found on the upper left corner in the main screen as in [Figure 7]

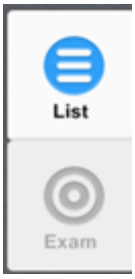
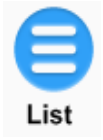
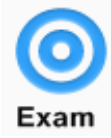


Figure 7. Tab Icons of the AccuVueMED

The functions of these tabs are as follows.

	- Manage the Worklist and Studylist. ・ Worklist: List of patients. ・ Studylist: List of examined studies. - Refer to **4. List** for more details
	- Perform X-ray projection of the selected patient in the Worklist - Review the examined study of the selected patient in the Studylist. - Refer to **5. Exam** for more details.

3.2.2 Status Display

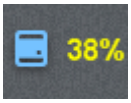
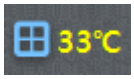
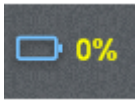
Status display bar can be found on the bottom in the main screen as in [Figure 8].

Figure 8. Status Information Bar

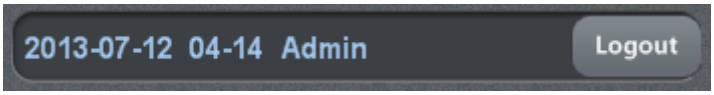
① Hardware & Connection Status Display

Display the status of hardware and the connection status between equipment.

HR	**[EVS-2430W Series (Support model only)]** Display the current image transfer option setting of the detector. (HR : High Resolution / HT : High Transfer)
AED	Display the current acquisition mode set in detector **[FLAATZ-600]** - AED mode - Switch box mode **[EVS4343, EVS3643, EVS2430]** - AED mode - Switch box mode - Sync mode Click this icon to change the mode. You can change the default setting using ECali1. (ECali1 - Configuration - Detector X - Exposure mode) Mode change sequence. • USB Switch box : USB Switch box <-> AED • Sync Trigger : Sync Trigger <-> AED • AED : AED only

	Display the connection status and the available space left on the currently connected HDD. The displayed number indicates the remaining HDD capacity.
  	Display the connection status (On/Off) with the X-ray detector. **[EVS Series]** Display the temperature.
	Display the connection status with the Storage Server. When you click this icon, a pop-up window will appear. You can change the PACS settings or conduct a test in the new window. The UI is very similar to the PACS menu of Configuration. . Refer to 6.8.3 PACS for more details.
	Display the connection status with the DICOM Printer.
	Display the connection status with the Modality Worklist Server.
	**[Wireless model only]** Display the remaining battery life in the wireless connection.
	[Wireless model only] Battery is in wireless charging.
	[Wireless model only] Display the signal strength of the wirelessly connected detector.
	Display the connection status with the MPPS server.

② Current Time & Log-in Information Display



- ✓ Display the current date, time and user name.
- ✓ You can terminate the program by clicking the [Logout] icon.

③ Configuration

- ✓ Open the ‘Configuration Window’ for various settings.
- ✓ Refer to **6. Configuration** for more details.

4 List

The List tab displays the lists of patients and studies, which can be divided into two categories as described below.

✓ **Worklist (prior to examination)**

- Display the list of patients to be examined.
- You can add/edit/delete patients on the list.
- You can select the patient on the list to proceed with the examination.
- When you run the AccuVueMED Vet for the first time, you will be asked to set the length of the list. The setting will be saved automatically.
- Refer to **4.1 Work List** for more details.

✓ **Studylist (post examination)**

- Display the examined studies.
- You can edit and delete the examined studies on the list.
  Note: The changes such as editing and deleting images on the list will not affect the data in the PACS server.
- You can transmit examined images to the PACS server.
- Refer to **4.2 Studylist** for more details.

✓ **Please Note!**

- The information on the Worklist and Studylist is stored on the Local Storage (HDD) as default settings.
- Every time AccuVueMED runs, a new Worklist is retrieved from the Worklist server and stored on the Local Storage.
- Only the contents on the list which are edited and deleted in the AccuVueMED Vet affect the Local Storage as default. However, edited records may be transmitted to the PACS server using the 'Send' command.

4.1 Work List

Display the list of patients. The list is displayed by clicking the [Work List] icon on the upper left side of the List tab.

4.1.1 Main Screen of Worklist

The main screen of the Worklist is as seen in [Figure 9].

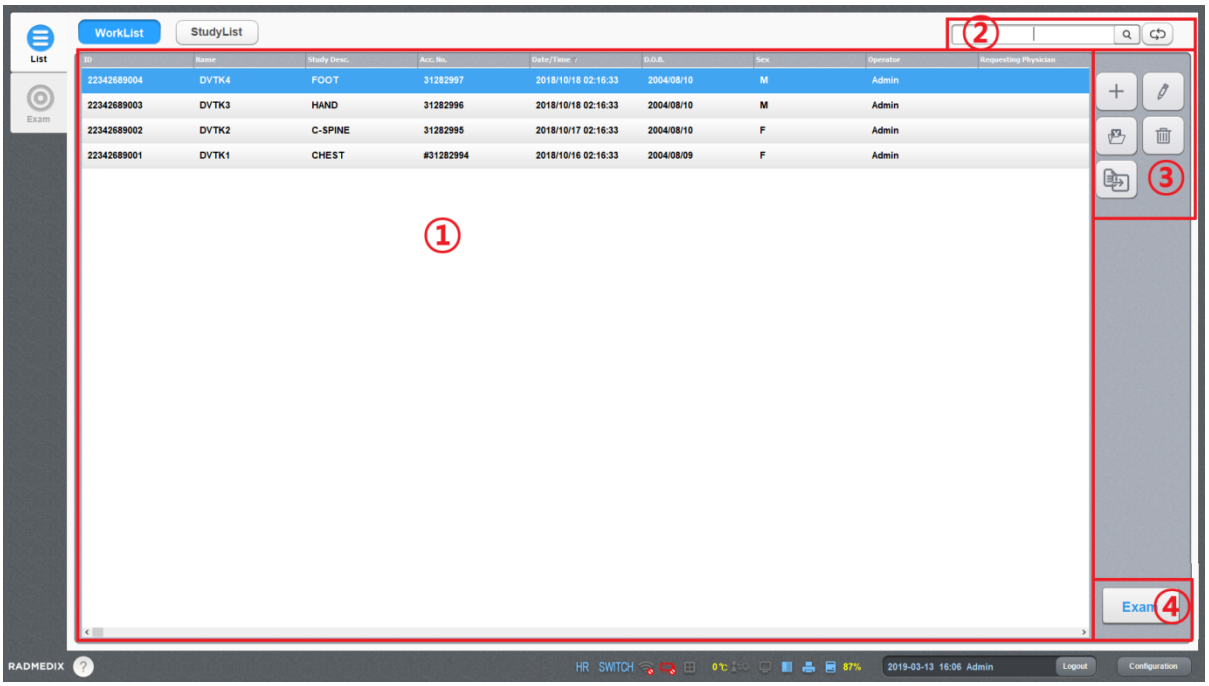


Figure 9. Worklist Screen

① List of Patients

✓ **The types of information are as noted in [Table 2].**

- The displayed information as well as its order can be set in ‘Configuration’.
- Click or drag the name of the information type (ID,Name,and etc.) to change the order.

Table 2. Information Type of the Worklist

Type	Description
ID	Patient ID
Name	Patient name
Study Desc.	Study Description
Acc. No.	Accession Number. X-ray study registration number
Date/Time	Time of Registration
D.O.B.	Date of Birth
Sex	Sex of the patient
Order Date	Time of order
Operator	Radiographer Name
Requesting Physician	Exam requesting physician’s name

✓ **Patient selection in the Worklist.**

- Click the patient to select..
- The selected patient is displayed in blue.
- Patient can be edited and deleted after selection.

✓ **Projection can be performed in the Exam tab by double clicking on the selected patient.**

- You can also click [Exam] icon after selecting a specific patient to perform projection. Refer to **5. Exam** for more details.

② Search Bar & Refresh Icon

✓ Search Bar

- Search the entered value such as Patient, ID, Name, and Access Number in the Worklist (when ‘Modality Query Base’ is selected in Configuration options)
- Search the entered value in the Worklist server that has selected the entered value as Base. (when ‘Patient Query Base’ is selected in Configuration options)
- If you click the [Search] icon after entering the value to be searched, only the relevant works will be displayed on the list.
- If you click the [Search] icon without entering a specific value, an ‘Advanced Search Window’ will appear.

✓ Advanced Search Window

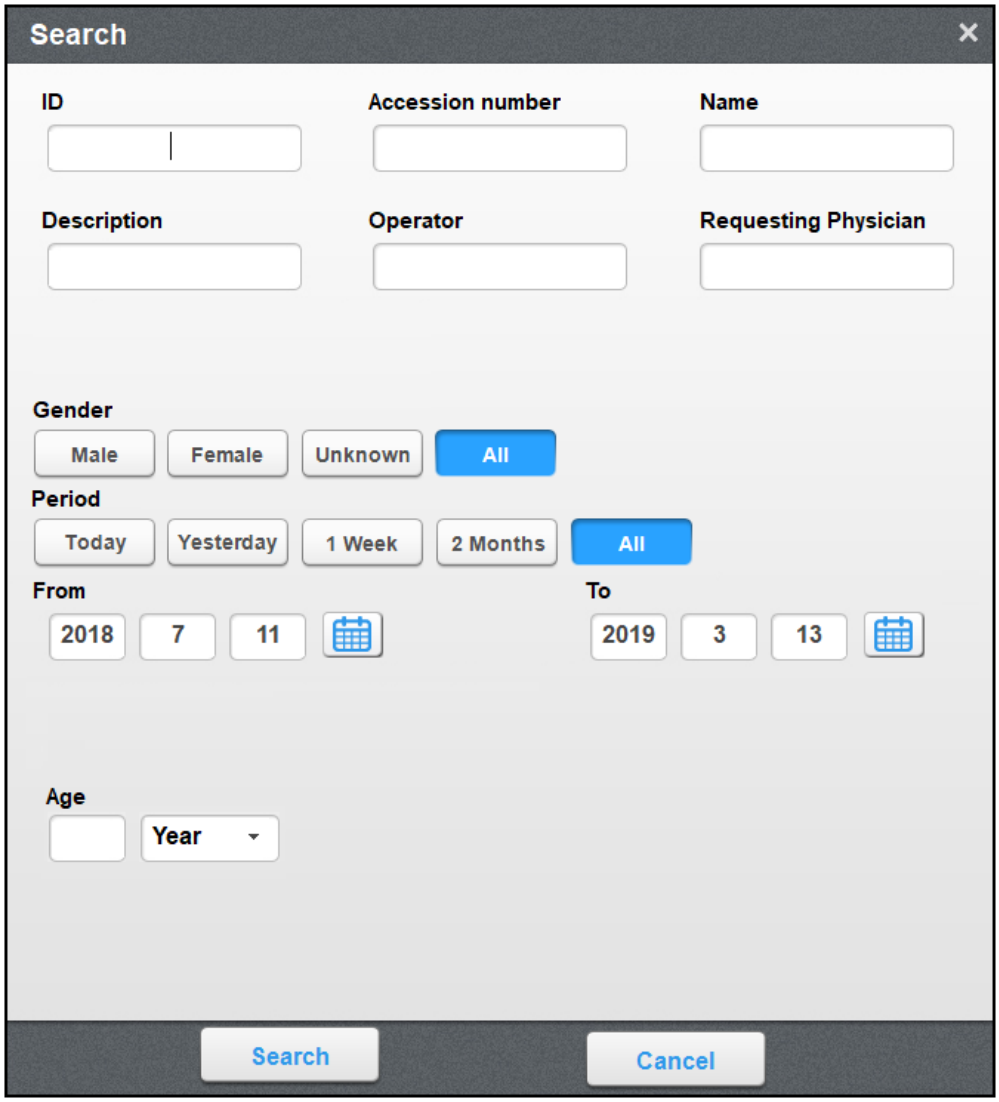


Figure 10. Advanced Search Window

- Search by specifying multiple options to be searched simultaneously.
- Only the search results that satisfy the entered details will be displayed. .

✓ Refresh icon

- Retrieve recently registered patients from the PACS server.

③ Add / Edit / Delete Icon

Table 3. Add/Edit/Delete Icon

Icon	Description
Add	Add a new patient. When clicking the icon, an 'Add Examination Window' will appear. Refer to **4.1.2 Add Examination Window** for more details.
Edit	Edit the selected patient information in the Worklist. This function is only available for the patient info which has been added by Econosole1. When clicking this icon after selecting the patient, an 'Edit Window' will appear. Refer to **4.1.4 Edit Window** for more details.
Delete	Delete the selected patient. This function is only available for the patient info which has been added by Econosole1.
Excel import	Import the excel file to the Worklist Refer to **4.1.5 Excel Import Window** for more details.
Portable	Save the patient list in detector. This function works only with FLAATZ600, EVS3643 and EVS2430 W. The CR Mode of the EVS2430W is available through this portable function of AccuVueMED. Refer to **Appendix D. Portable Function** for more details.

④ Exam

- ✓ Switch to the Exam tab for examination of the selected patient.
- ✓ Refer to **5. Exam** for more details.

4.1.2 Add Examination Window

An ‘Add Examination Window’ appears when clicking the + icon as shown in [Figure 11] below.

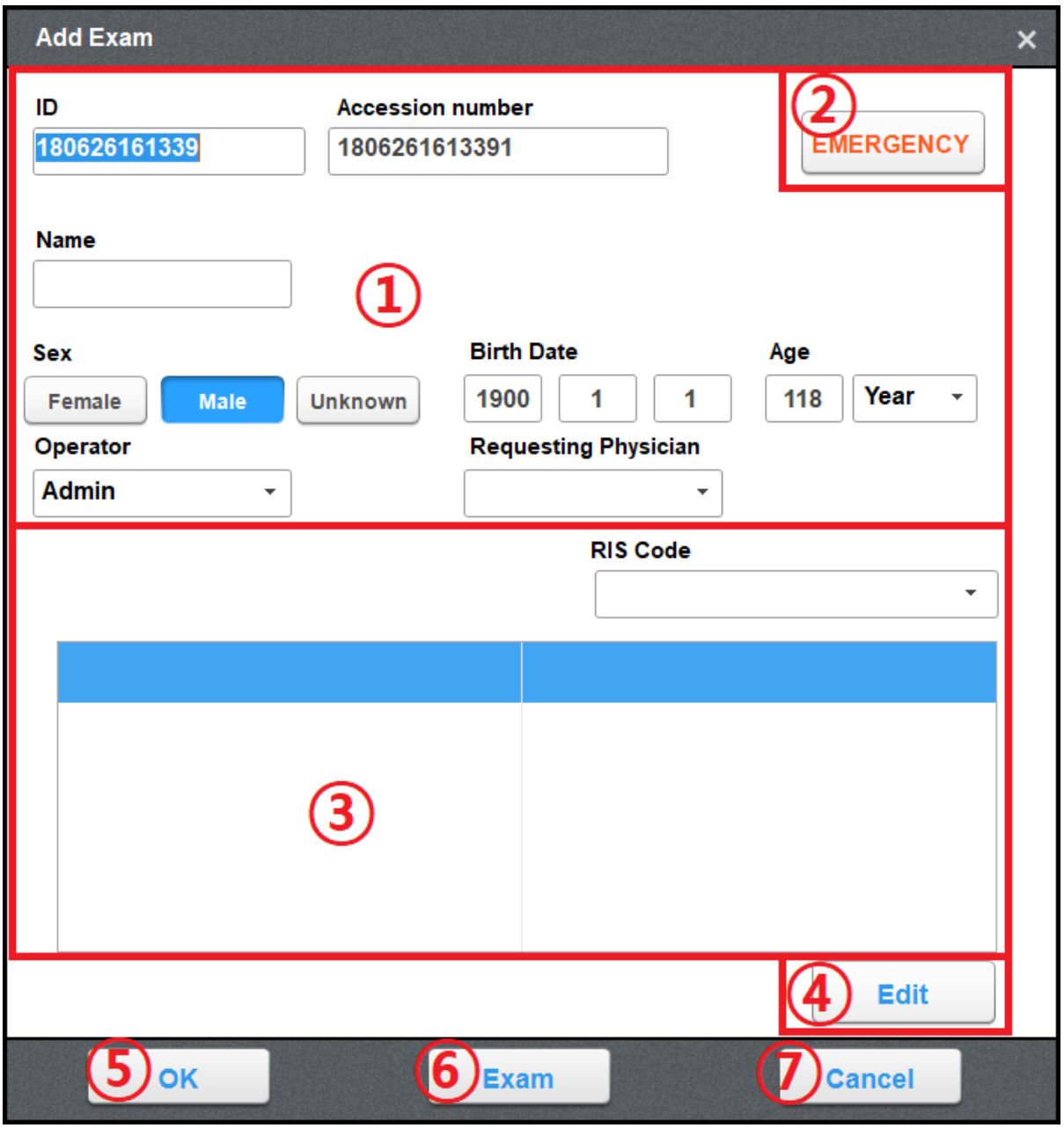


Figure 11. Add Examination Window

① Patient Information

Patient information is entered according to the category described in [Table 4].

Table 4. Patient Information (Add Examination Window)

Category	Description
ID	Patient ID
Accession Number	Registered identification number
Name	Patient Name
Operator	Radiographer Name
Gender	Gender of the patient
Birth Date	Date of birth of the patient
Age	Age of the patient (Year / Month selection available)
RIS Code	RIS Code to be used for examination
Requesting Physician	Exam requesting physician's name

② Emergency

✓ When clicking this icon, the default values are automatically entered as ID and Accession Number and it switches to the Exam tab.

③ Projection Information

✓ Display the information related to projection

✓ No information is provided initially. Set the projection information by clicking registered RIS code or [Edit] icon(④).

④ Edit

✓ Open an 'Edit Projection Window' where projection information can be entered.

✓ Refer to **4.1.3 Edit Projection Window** for more details.

⑤ OK

✓ Save the patient with the entered information and close the window.

⑥ Exam

✓ Save the patient with the entered information and directly switch to the Exam tab for examination.

✓ Refer to **5. Exam** for more details.

⑦ Cancel

✓ Cancel the work and close the window.

*** Please Note!**

If multiple projections are registered for a single patient, each projection receives a different Accession Number [Figure 12].

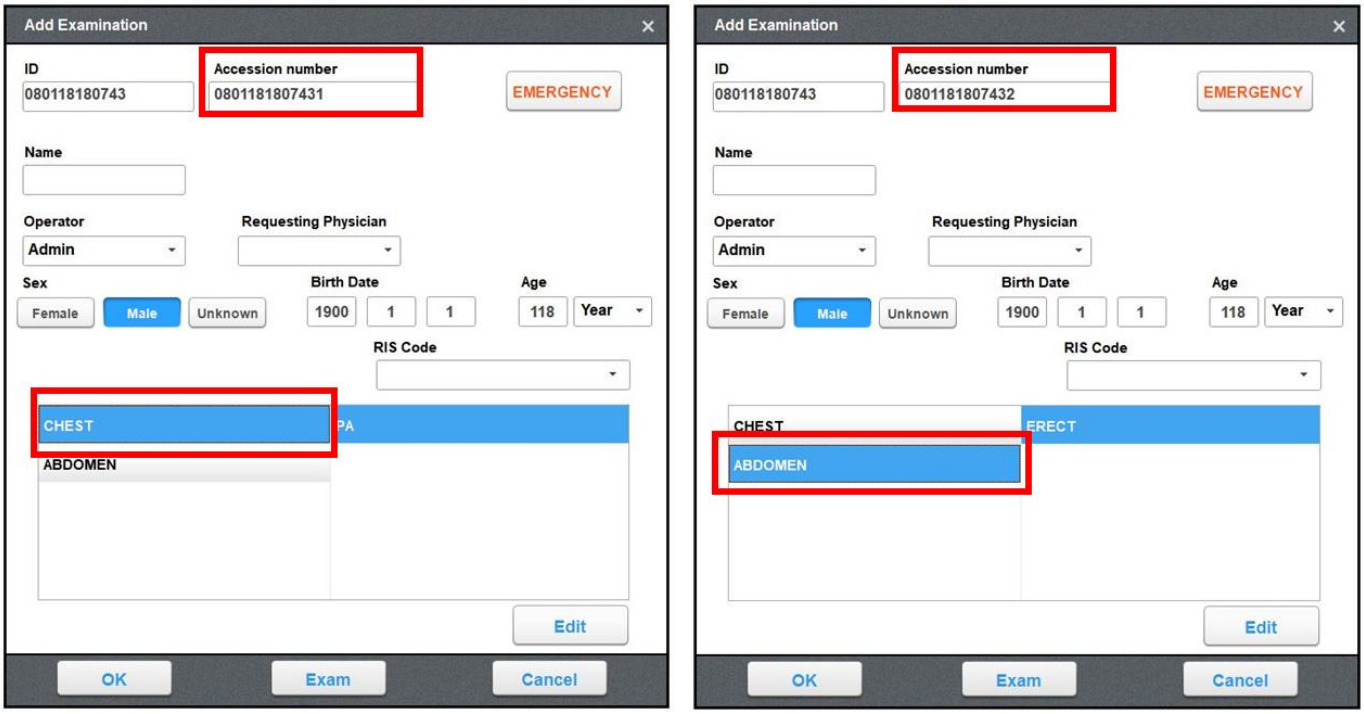


Figure 12. Multiple Projections Registration in a Single Event

Click the [OK] icon to register each projection for two separate studies in the Worklist as seen in [Figure 13]

ID	Name	Study Desc.	Acc. No.	Date/Time	D.O.B.	Sex
080118180743	Drtech	CHEST	0801181807431	2018/01/18 18:09:46	1900/01/01	M
080118180743	Drtech	ABDOMEN	0801181807432	2018/01/18 18:09:46	1900/01/01	M

Figure 13. Two studies for one patient

4.1.3 Edit Projection Window

The ‘Edit Projection Window’ will appear when clicking the [Edit] icon.

Figure 14. Edit Projection Window

① Anatomy Information

✓ Select the anatomical region to be examined.

- Projection and Position are determined based on the selected anatomical region.

✓ Receptor Type will be changed by clicking the icons below

② Projection & Position List

✓ Specific projection as well as position selection in the region selected in Anatomy.

③ Add

✓ Register the currently set Projection, Position, and Receptor Type information.

✓ The currently set Projection, Position and Receptor Type are also registered when clicking the selected Position.

④ Registered Projection Information

✓ Display the list of registered Projection, Position and Receptor Type.

✓ The Receptor Type can be changed by double clicking the Position in Dual Mode.

⑤ Projection Information Sequence Edit Icon

✓ Change the order of projections on the list.

Up

Down

⑥ Delete

✓ Delete the selected item.

⑦ OK

✓ Save and close the window.

⑧ Cancel

✓ Cancel and close the window.

4.1.4 Edit Window

The ‘Edit Window’ will appear when selecting a study from the Worklist and then clicking the [Edit] icon.

Note: The ‘Edit Window’ is not activated if the study information is retrieved from the PACS server.

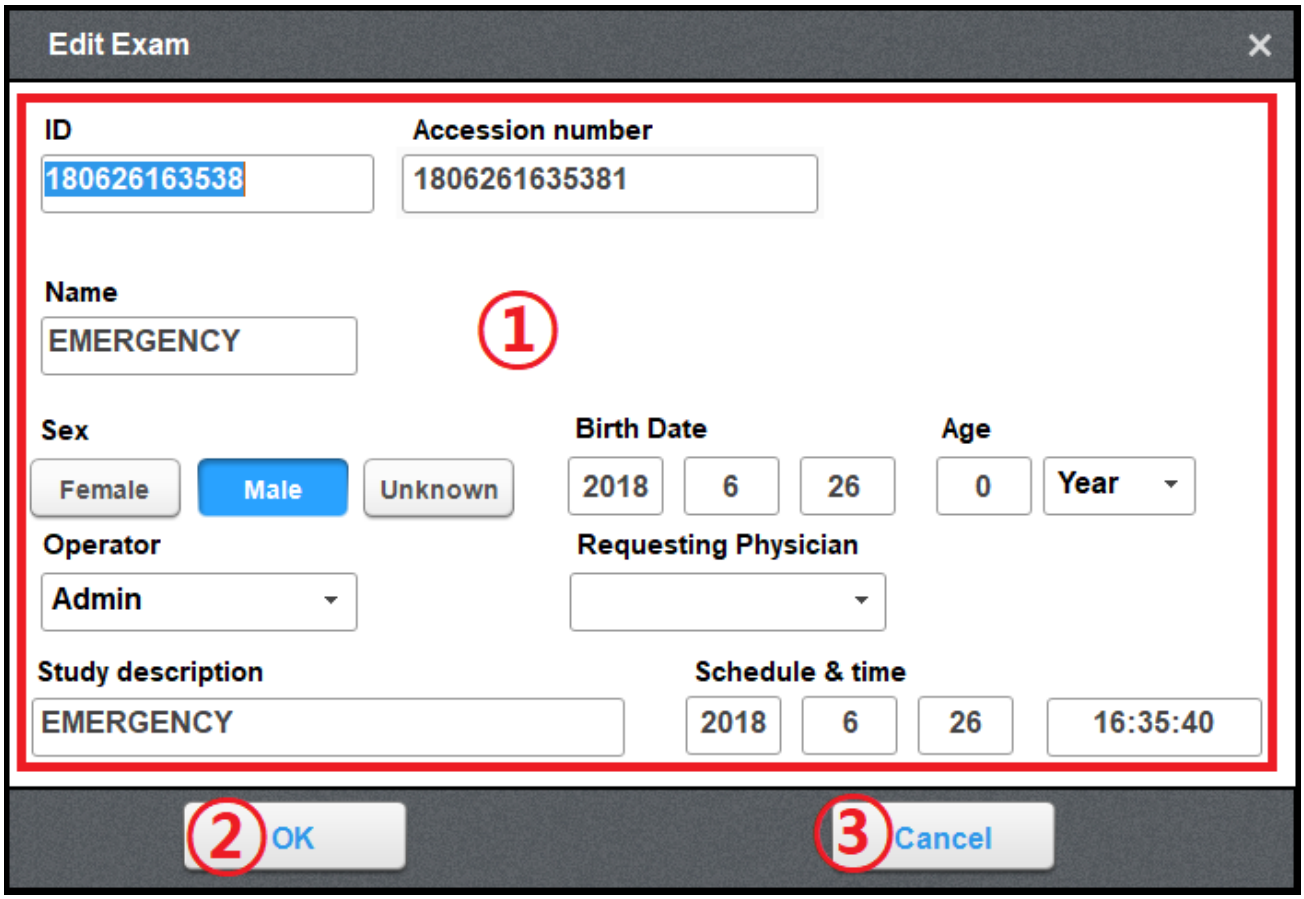


Figure 15. Edit Window

① Study Information

- ✓ Edit the information of the radiographer(s) and the patient(s).
- ✓ The study information described in [Table 5] below is entered.

Table 5. Study Information (Edit Window)

Category	Detail
ID	Patient ID
Name	Patient Name
Accession Number	Registered Identification Number
Operator	Radiographer Name
Study Description	Study Description
Sex	Sex of the Patient
Birth Date	Date of Birth of the Patient
Age	Age of the Patient (Year/Month Selection Available)
Schedule date & time	Scheduled date and time of imaging
Requesting Physician	Exam requesting physician's name

② OK

- ✓ Save changes and close the window.

③ Cancel

- ✓ Cancel changes and close the window.

4.1.5 Excel Import Window

① Create a patient list

- ✓ Use the template found at 'installed path\ Config\Worklist_sample.xlsx' to create a patient list.

② Limitation

- ✓ You can select the patient’s sex among the 'M', 'F', and 'U'.
- ✓ The format of Birth Date and Study Date is 'MM/DD/YYYY'. Any other format is not provided.
- ✓ The format of Birth Time and Study Time is 'HH:MM:SS'. Any other format is not provided.

③ Excel import

- ✓ Click the [Excel Import] and load the file.

4.2 Studylist

Display the examined study list. When clicking the [Study List] icon on the upper side of the screen, the study list will be activated.

4.2.1 Main Screen of the Studylist

The main screen of the Studylist is displayed as seen in [Figure 16].

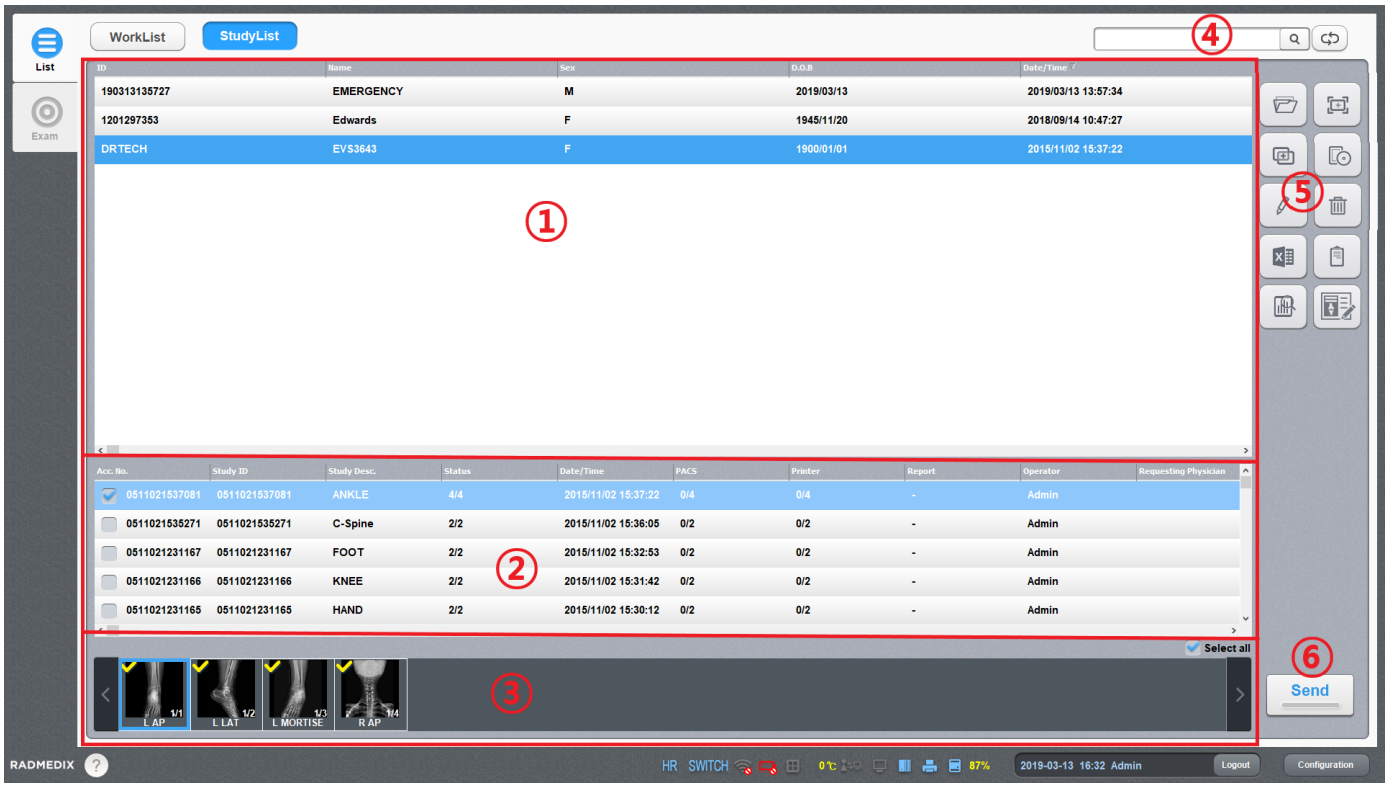


Figure 16. Main Screen of the Studylist

① List of the Examined Patients

✓ Display the list of examined patients' information.

- Each row represents the information of one patient and one ID can have multiple studies.
- The column of the list can be changed by dragging the names of the categories (e.g. ID, Name, and etc.).

✓ Height of the list is adjustable using [Ctrl key] + Mouse wheel or using [Ctrl key] + [Arrow key].

✓ Types of information are as noted in [Table 6].

Table 6. Information Types of Patient

Category	Description
Name	Patient name
ID	Patient ID
Sex	Sex of the patient
D.O.B.	Date of Birth
Date/Time	Date / time for recent examined study

✓ Patient Selection

- Patient can be selected by left-clicking. .
- The selected patient is highlighted in blue. In the '① Examined Patient List' and '② Examined Study List per Patient', an activated study is highlighted in darker color, while an inactivated study is highlighted in lighter color.
- The selected patients can be edited or deleted.

② Examined Study List per Patient

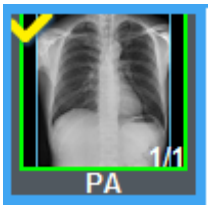
✓ Display detailed study information of the selected patient on '① List of the Examined Patients'.

✓ Types of information are as noted in [Table 7].

Table 7. Information Types of Examined Study List

Items	Description
Acc. No.	Accession Number. Registered Identification Number
Study ID	RIS code
Study Desc.	Study Description
Status	[Number of images] / [Number of projections]
Date/Time	Date / Time for examined study
PACS	[Number of images transmitted] / [Number of projections]
Printer	[Number of images printed] / [Number of projections]
Report	Report documentation
Operator	Radiographer Name
Requesting Physician	Exam requesting physician's name

③ Thumbnail



- ✓ Display the images from the selected patient.
- ✓ A check mark is added to the thumbnail of the selected images, for opening or transmitting the images
  - ・ The thumbnail can be selected by double-clicking on it.
- ✓ Images transmitted to the PACS server are shown in green outlines.
- ✓ 1/1 : Series number / Image number

④ Search Bar & Refresh Icon

- ✓ Search Bar
  - ・ Search the values of Patient ID, Name, and Access Number within the Studylist.
  - ・ If you click the search icon after entering the value to be searched, only the relevant works will be displayed on the list.
- ✓ Refresh Icon

⑤ Tool Icons

Table 8. Studylist Icons

Icon or Button	Description
Open Study	Open detailed overview of a single selected image from the list of thumbnails. Refer to **5. Exam** for more details.
Repeat Exam	Repeat exam for the selected study in the Exam tab. Refer to **5. Exam** for more details.
Merge	Perform merging two images or studies. Refer to **4.2.2 Merge Window** for more details.
Export	Stores images on a USB, CD, or DVD, and print through the DICOM Printer. Refer to **4.2.3 Export Window** for more details.
Edit	Edit the selected patient or study information in the Studylist. The 'Edit Window' appears when clicking the [Edit] icon. Refer to **4.2.4 Edit Window** for more details.
Delete	Delete the selected item.
EXCEL Export	Save the patient list in an EXCEL file format
Report	Make the selected series report. Refer to **4.2.5 Report** for more details.
Statistics	Display the statistics of exams during the selected period Refer to **4.2.6 Analysis** for more details.
Bodypart Editor	Body part and position editor. Change and apply exam information at study list. Refer to **4.2.7 Bodypart Editor**

⑥ Send

✓ Transmit the selected images to the PACS server.

4.2.2 Merge Window

- ✓ Merge the images and studies.
- ✓ **If a patient has multiple 'Patient ID', it is more convenient to group them by using this function.** Edit if the image and patient information do not match with each other.

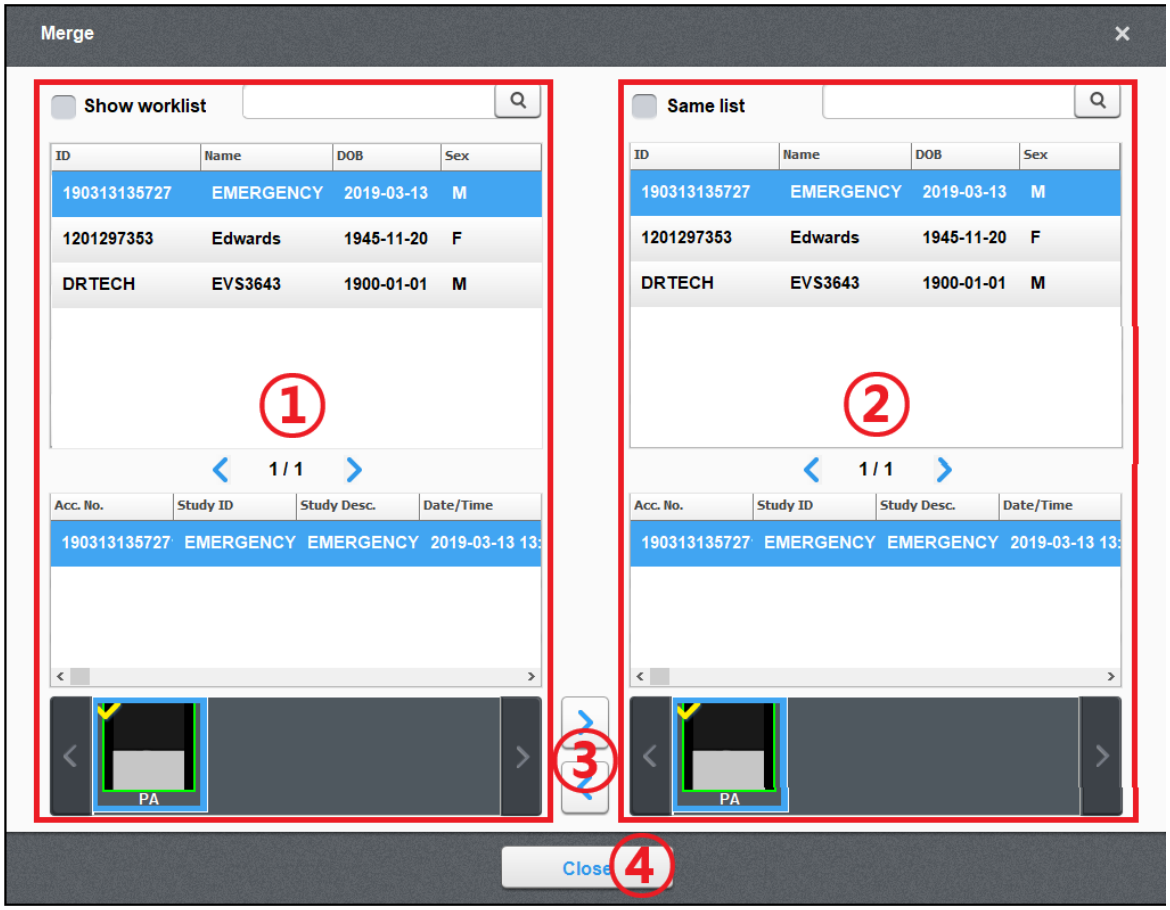


Figure 17. Merge Window

① & ② Merge Subject Imaging Information

- ✓ Study lists appear on each side. (One page only shows 100 items.)
- ✓ Required items can be easily searched by using the search tool.
- ✓ Identical items selected in ① will be also located in ② if the same list is checked.
- ✓ You can view the list of taken jobs, detailed list of shooting, and thumbnails at a glance.
- ✓ If 'Show worklist' is selected, patient list information is displayed in ①. You can merge the images by selecting the patient on the patient list.

③ Merge Icon

- ✓ Transmit the selected items.
- ✓ Every change is saved while being transmitted.

④ Close

- ✓ Close the ‘Merge Window’.

4.2.3 Export Window

Save the images of the selected study from the Studylist in a USB, CD, DVD, or PDF and print it through the DICOM Printer.

4.2.3.1 Drive

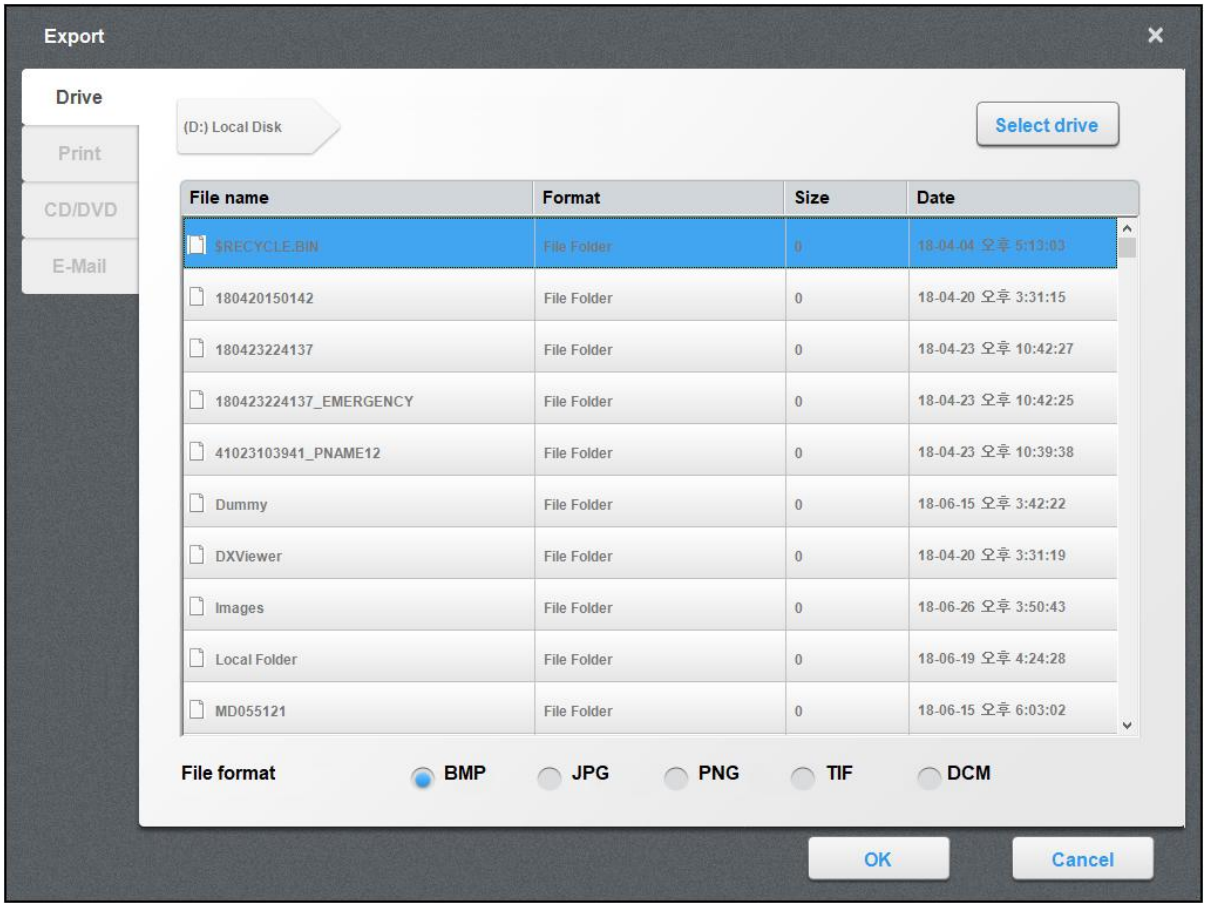


Figure 18. Export drive Screen

- ✓ Store the images in the local drive.
- ✓ Only the files in DCM, BMP, JPG, PNG, and TIF format can be exported.
- ✓ If a local drive is selected, the current lists of stored files are displayed.
- ✓ New folders can be created by right clicking the mouse after selecting the designated Drive.
- ✓ Export File Format
  - · Select the file format for storage.
- ✓ Image is stored in a USB when clicking the [OK] icon
  - · File name is automatically designated and it will be stored in 'Selected folder/Patient ID/Acc No/' folder.

4.2.3.2 Print

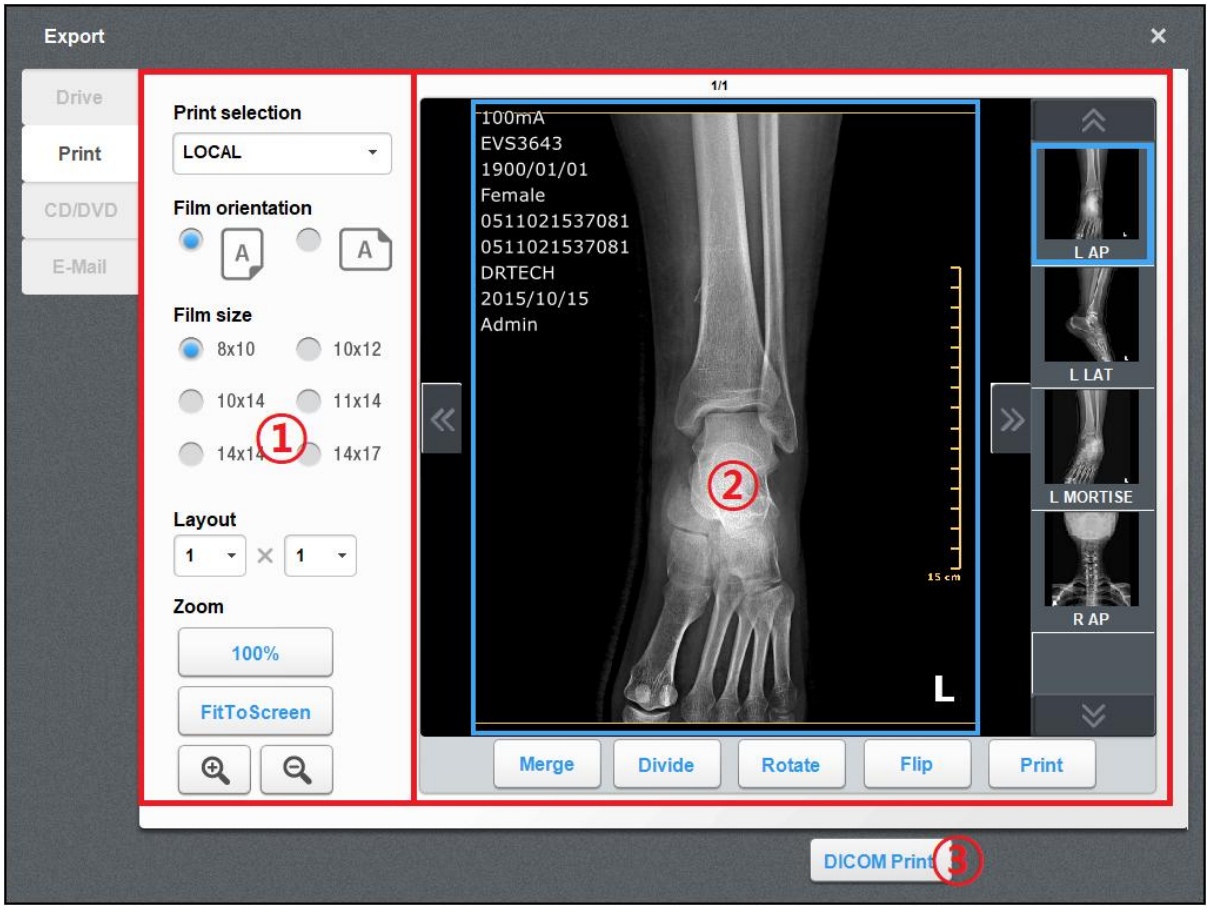


Figure 19. Export - Print Screen

✓ Print through the DICOM Printer.

- The DICOM Printer must be connected.

① Print Setting

✓ Printer Selection

- Select a DICOM Printer.
- Register the Printer using 'Config' - 'Network' - 'Printer' menu.

✓ Film Orientation

- Select a film orientation between portrait / landscape.

✓ Film Size

- Select the size of the film.

✓ Layout

- Set the print layout.

- The [Divide] icon must be clicked in order to apply any changes made in the Layout.

✓ Zoom

- Perform zoom in/out of the image.

② Preview

✓ Thumbnail

- The image to be printed appears in the thumbnail list on the right.

✓ Preview

- If an image is selected in the thumbnail, a large image appears in the center as a preview screen.

✓ Merge

- Merge the divided screen which has been separated by the ‘Divide’ function.
- Only adjacent screens of the same sizes can be merged
- The merged shape must be a square.

✓ Divide

- Divide the screen by the value set in ‘Layout’.

✓ Rotation

- Rotate the screen 90 degrees clock-wise.

✓ Flip

- Reverse the up and down sides.

✓ Print

- Print out using general printer.

✓ 100%

- Perform paper printing in the actual object size.

✓ Fit to Screen

- Perform paper printing according to the screen size.

③ DICOM Print

✓ Perform printing with the DICOM Printer.

4.2.3.3 CD / DVD

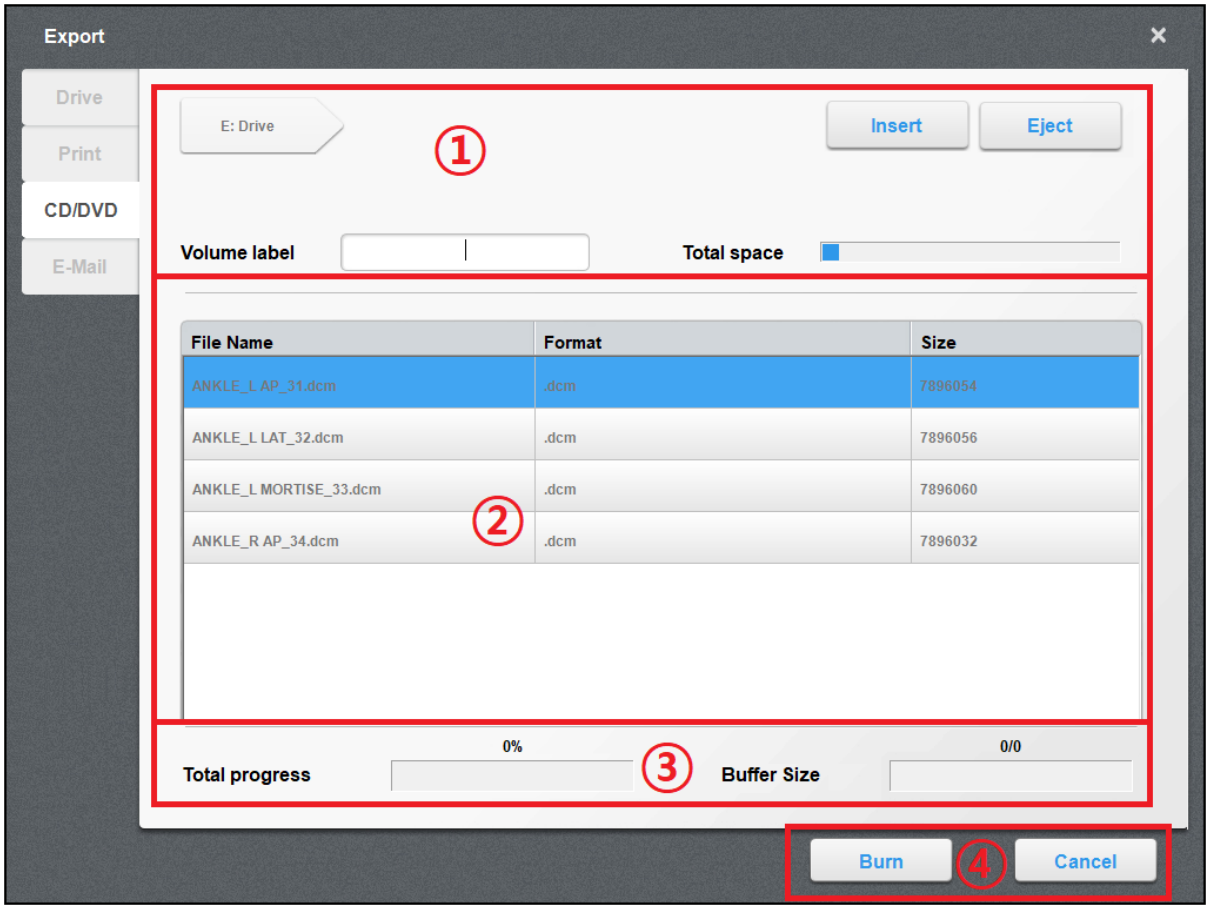


Figure 20. Export - CD / DVD

- ✓ Store the images on a CD or DVD.
- ✓ Only DICOM files can be exported.
- ✓ A CD/DVD Writer is required.

① CD / DVD Media Configuration

- ✓ Select the target media to be exported.
  - · CD and DVD can be used.
- ✓ Volume Label
  - · Set the name of the target media.
- ✓ Total Space
  - · Display the total available space of the target media.
- ✓ Insert
  - · Close the CD / DVD Writer.

✓ Eject

- Eject the tray of the CD / DVD Writer.

② Export File List

✓ Display the list of files to be exported.

③ Export Process

✓ Estimated Time

- Present the expected time needed for Export.

✓ Time Left

- Display the estimated time left to the completion of Export.

④ Task Icons

✓ Burn

- Perform the Export task.

✓ Cancel

- Cancel the Export task.

4.2.3.4 E-Mail

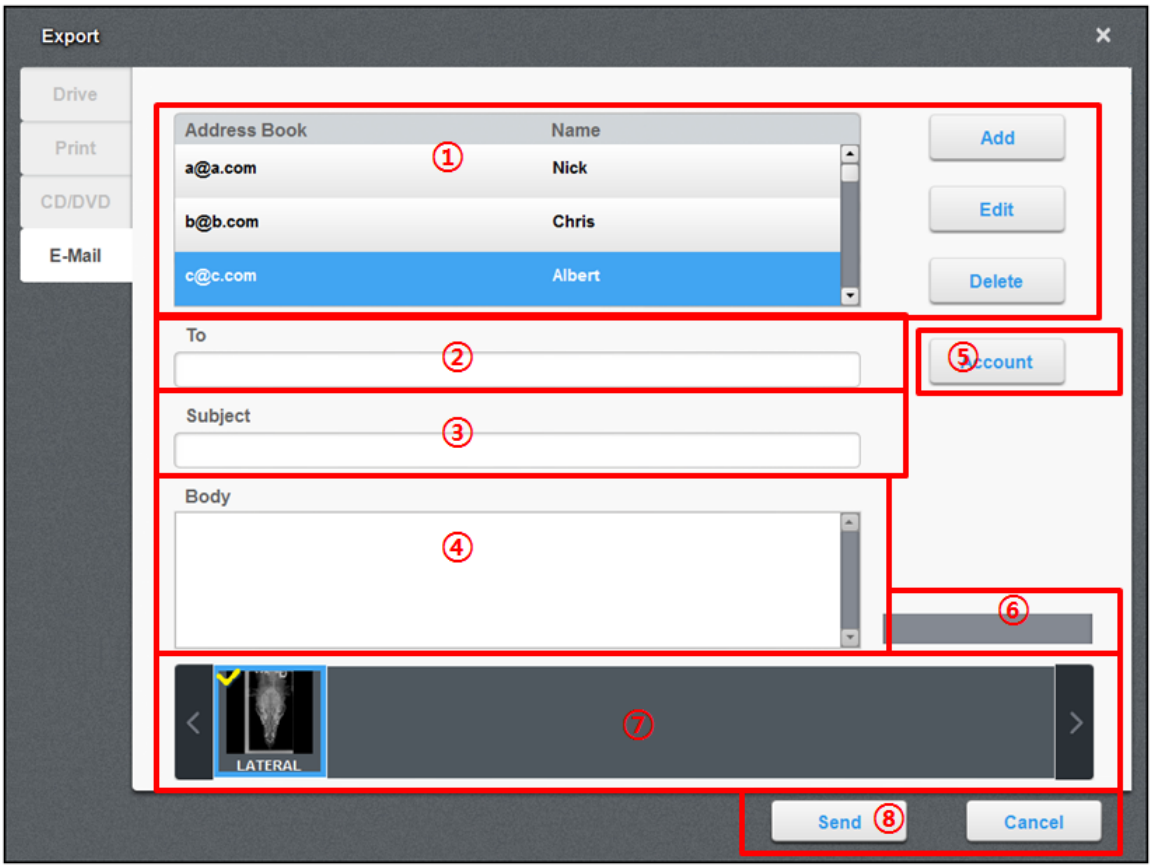


Figure 21. E-mail

① Address Book

- ✓ Select E-mail address and double-click to populate the “To:” field automatically.
- ✓ User can add or edit or delete addresses using add, edit, delete button.

② To

- ✓ Adds the recipient E-mail address.
- ✓ If you want to add more than 1 recipient, use ';' delimiter.

③ Subject

- ✓ Adds the E-mail subject.

④ Body

- ✓ Adds the E-mail text.

⑤ Account

- ✓ Add or Edit sender's E-mail account.
- ✓ E-mail account must be a gmail.com address
- ✓ E-mail account credentials are encrypted in the database.

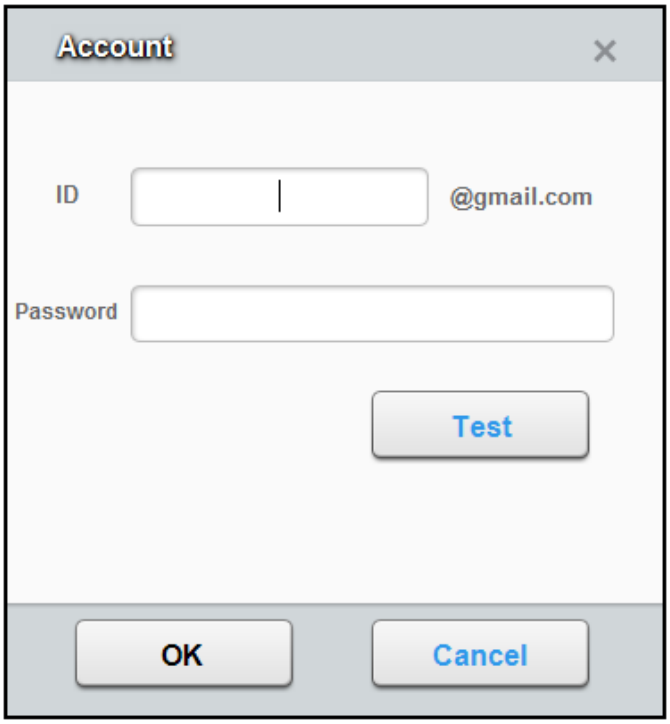


Figure 22. E-mail

⑥ Sending status

- ✓ It shows sending status.

⑦ Sending image choose

- ✓ Select the sending image.

⑧ Send or Cancel

- ✓ Images are converted to JPG format before sending.

4.2.4 Edit Window

4.2.4.1 Edit Patient Information

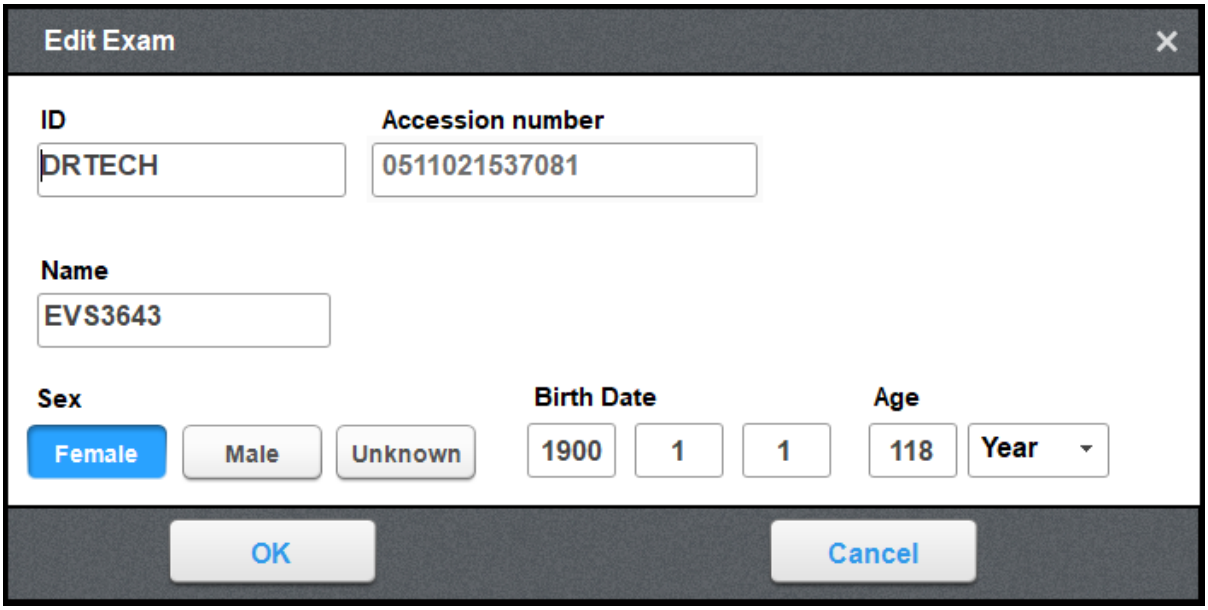


Figure 23. Edit Window in Studylist (Patient Information)

- ✓ Only the patient information (ID, Name, Sex, Birth Date, and Age) can be edited when clicking the [Edit] icon in the patient list of the Studylist (upper part of the list).
- ✓ OK
  - ・ Save and close the window.
- ✓ Cancel
  - ・ Cancel and close the window.

4.2.4.2 Edit Study Information

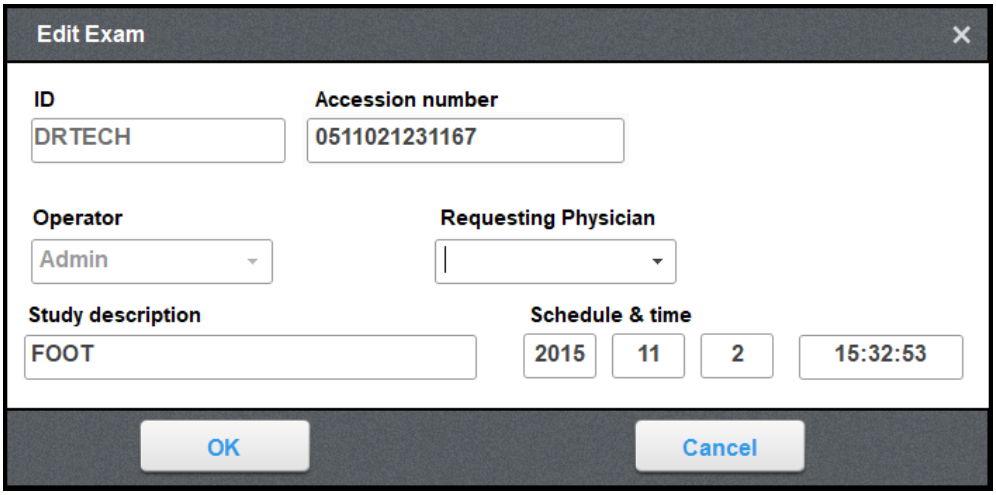


Figure 24. Edit Window in Studylist (Study Information)

- ✓ Only the study information (Accession Number, Study Description, Requesting Physician and Schedule date & time) can be edited when clicking the [Edit] icon in the projection list (lower part of the list) of the Studylist.
- ✓ OK
  - · Save and close the window.
- ✓ Cancel
  - · Cancel and close the window.

4.2.5 Report Window

4.2.5.1 Report

Create a report using the Report button in the StudyList.

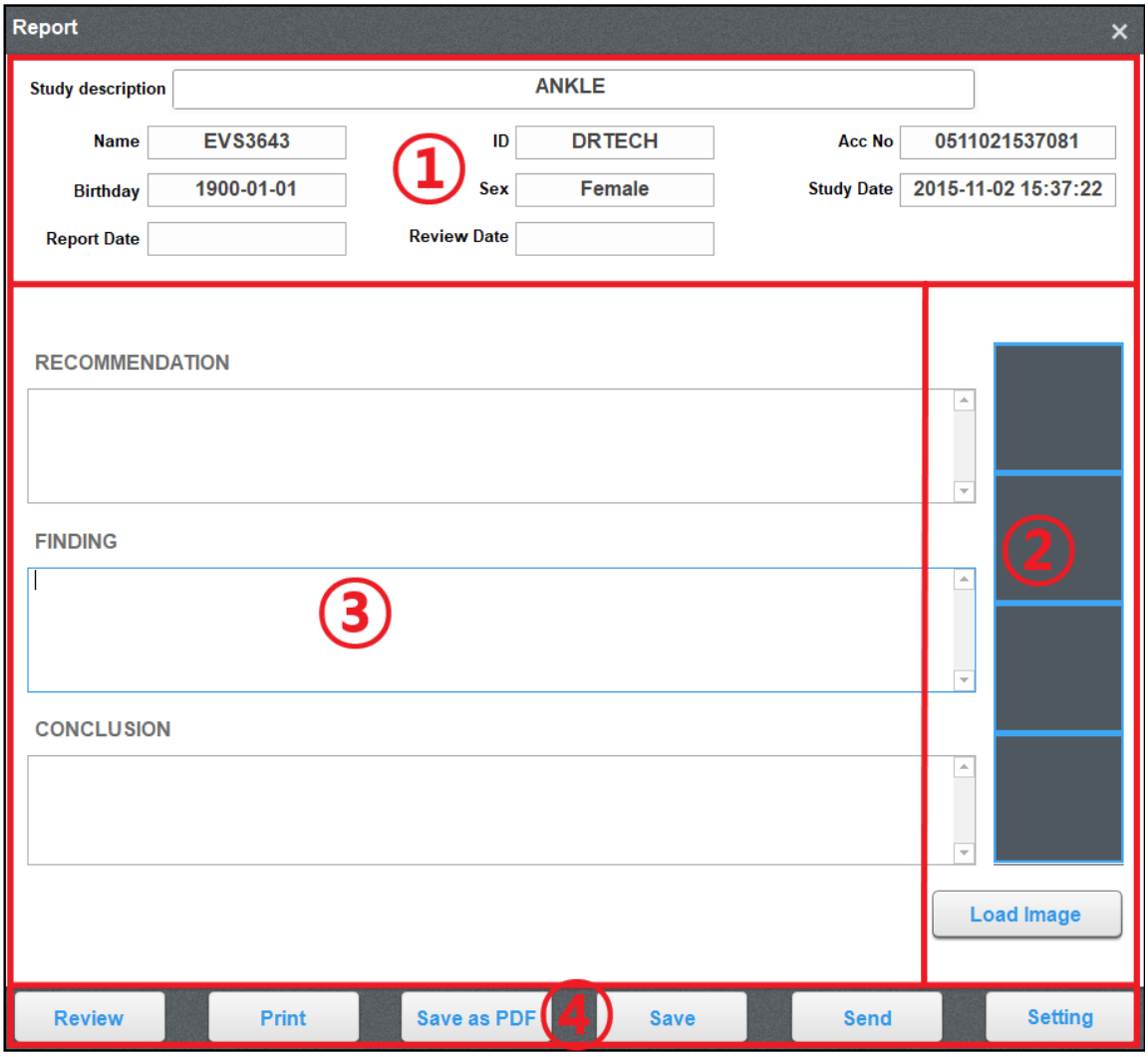


Figure 25. Create Report

① Patient and Exam information

✓ Check or change the patient information of the selected series.

② Attached image

✓ The User can attach up to 4 images using the 'Image load' button.

③ Write opinion

✓ The User can write an opinion.

④ Review / Print / Save as PDF / Save / Send / Setting

✓ Review can review report. (Mark as reviewed)

✓ The User can print the report.

✓ Save a report as PDF file.

✓ Save a report.

✓ Report can be sent in DICOM format to the designated PACS.

✓ Set the report format.

4.2.5.2 Image load

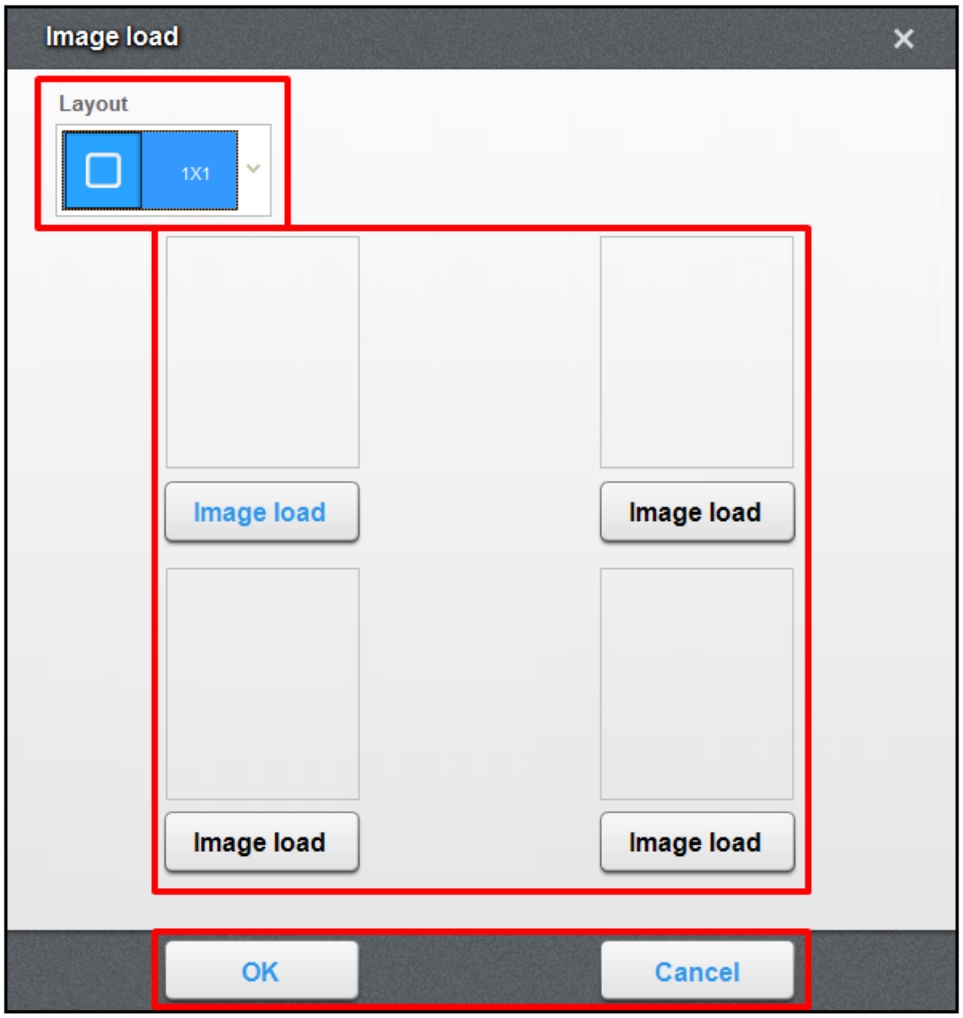


Figure 26. Create Report

✓ Layout button

- Select 1X1, 1X2, 2X2 layout.

✓ Image load button

- Select an image

✓ OK / Cancel button

- Attach the selected image to the report / Cancel and close image load window.

4.2.5.3 Select the image

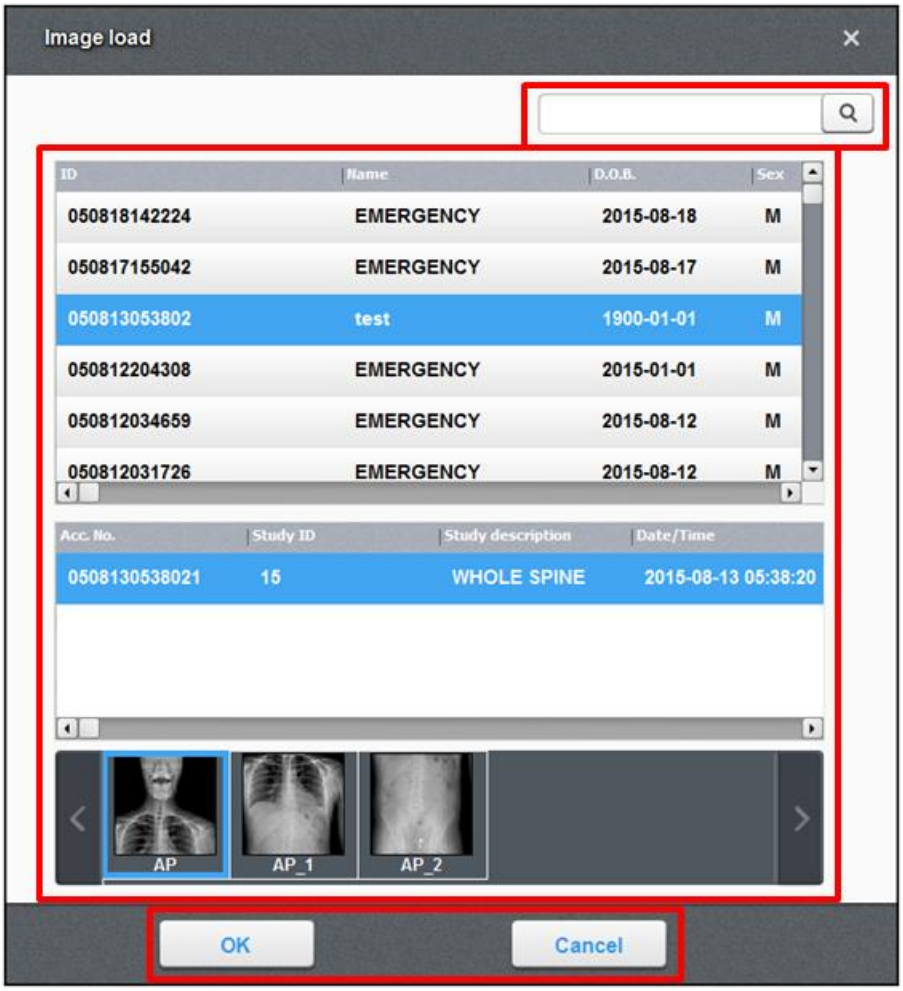


Figure 27. Select the image

✓ You can select the image when clocking "Image load" button

✓ Search area

- Search the patient

✓ Patient/Series/Image list

- Select an image.

✓ OK button

- Load the selected patient`s image.

✓ Cancel button

- Cancel to load the image.

4.2.5.4 Input the opinion

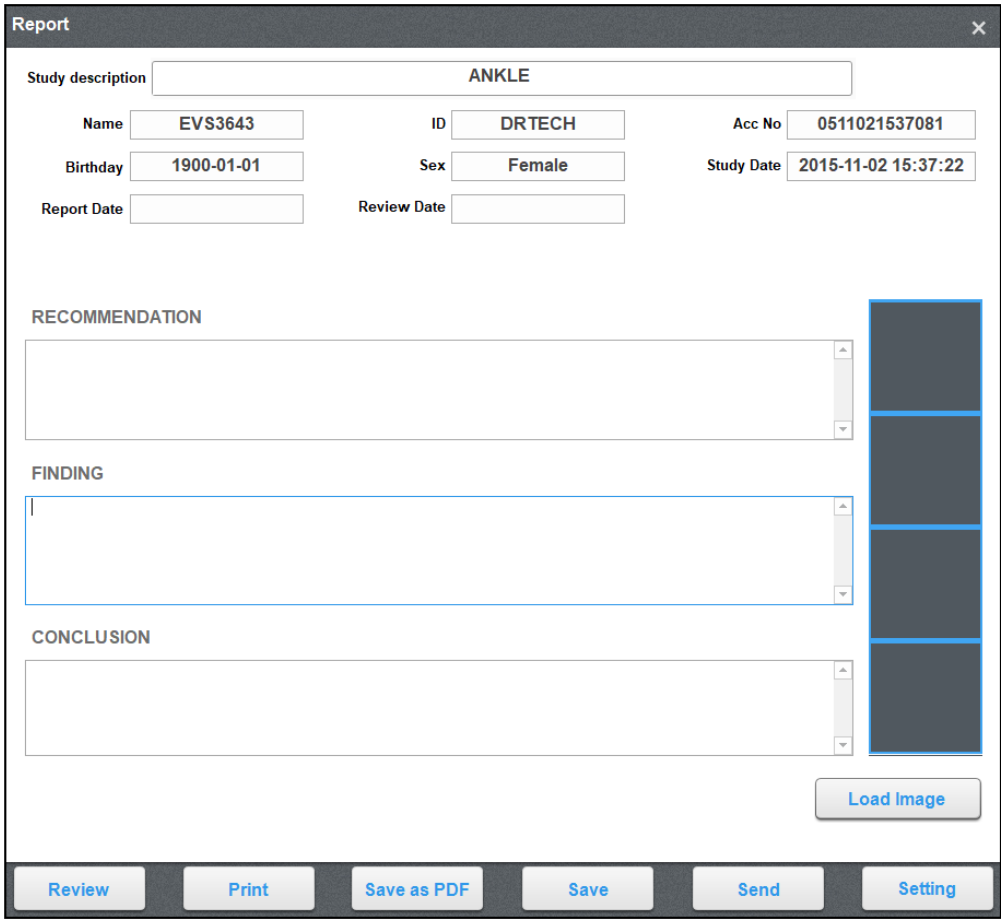


Figure 28. Input the opinion

✓ Input the opinion on the selected series of images.

4.2.5.5 Set report form

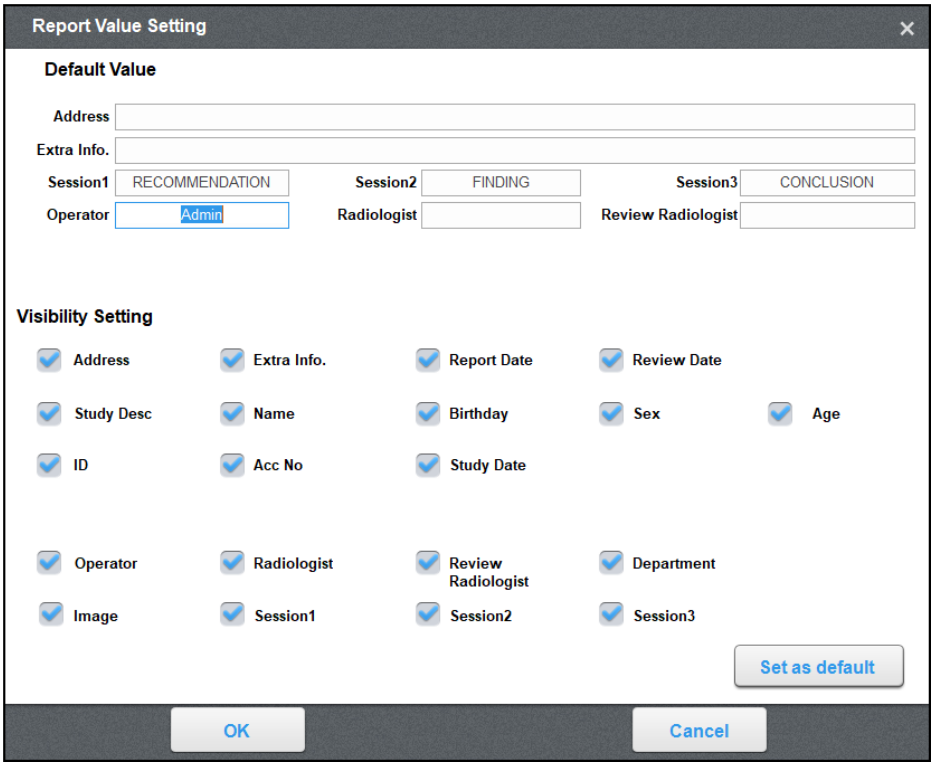


Figure 29. Set report form

- ✓ The User can set the report form using the 'setting' menu.
- ✓ Address/ Extra Info
  - · Input the Hospital address or further information.
- ✓ Session
  - · Input the titles of each Session.
- ✓ Visible setting
  - · Select the contents of the report to be printed.
  - · All items are selected as default.
- ✓ Save as default button
  - · Save the current setting as default.
- ✓ OK button
  - · Use the selected form.
- ✓ Cancel button
  - · Cancel the selected form.

4.2.5.6 Print

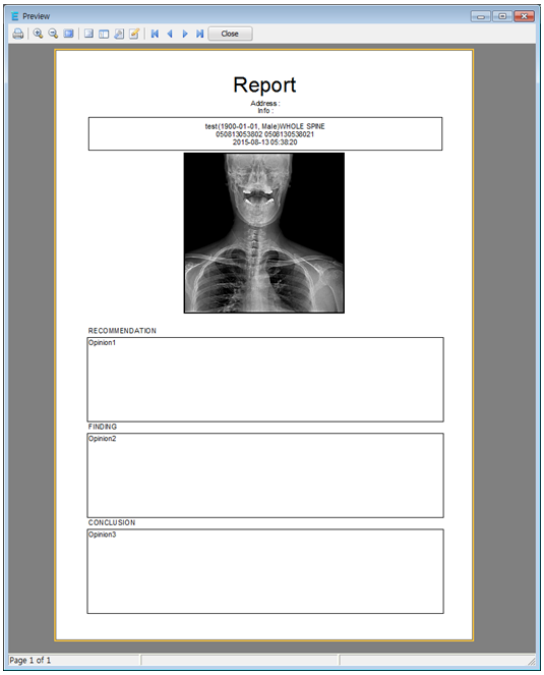


Figure 30. Print

✓ Print the report using the [Print] button.

4.2.5.7 Save as PDF

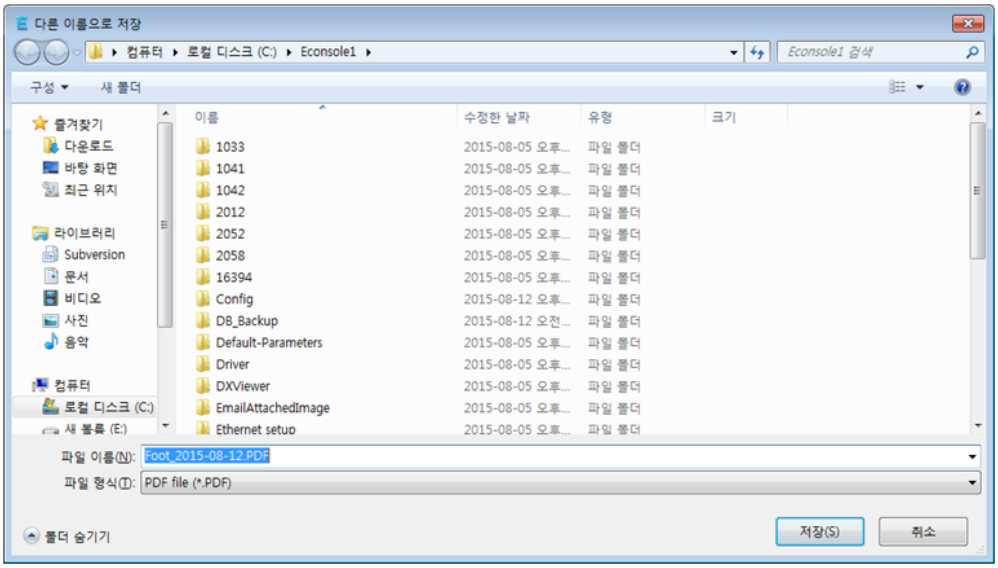


Figure 31. Save the report as a PDF file

✓ Click the [Save PDF] button to save the path and file name as a PDF file.

4.2.5.8 Export of DCM report

- ✓ DCM report is created when the send button is clicked. The created DCM report is then sent to PACS.
- ✓ The report can be found and viewed on the PACS.

4.2.6 Analysis

You can check the shooting statistics (number of captured patients, number of shots, number of regas, number of PACS transmissions, number of prints, etc.) during the set period.

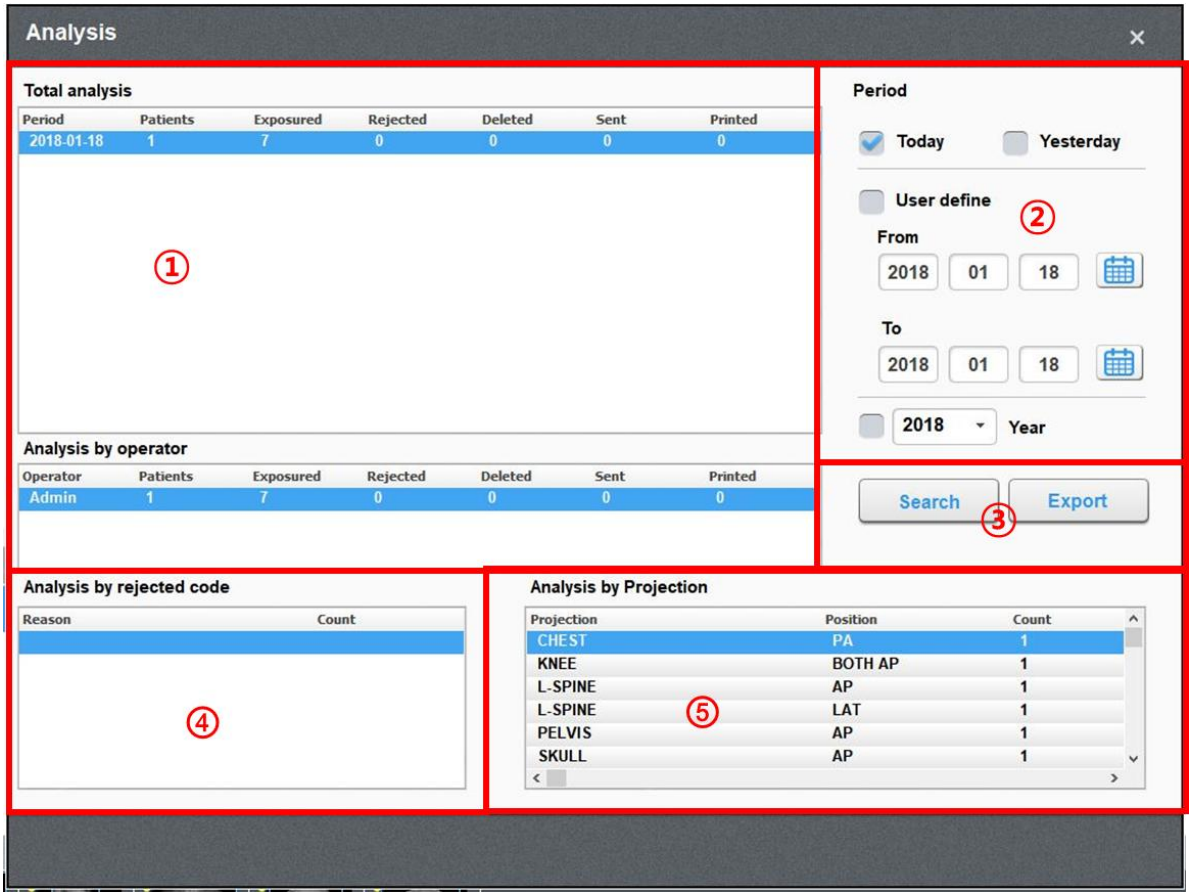


Figure 32. Statistics

① Statistical results

- ✓ Date based analysis
  - · Show the shooting statistics by date.
- ✓ User Account Based Analysis
  - · Show statistics by patient.
- ✓ Reject code based analysis
  - · Show statistics by Reject code.

② Period setting

✓ Set the period for which statistics are recorded.

③ Search and Export

✓ Search

- Show the statistics according to the set period.

✓ Export

- Save the statistics according to the set period as an Excel file.

④ Analysis by rejected code

✓ Show the statistics of reject code by type

⑤ Analysis by projection

✓ Show the statistics of all projected positions

4.2.7 Bodypart Editor

Apply body part position and information at study list.

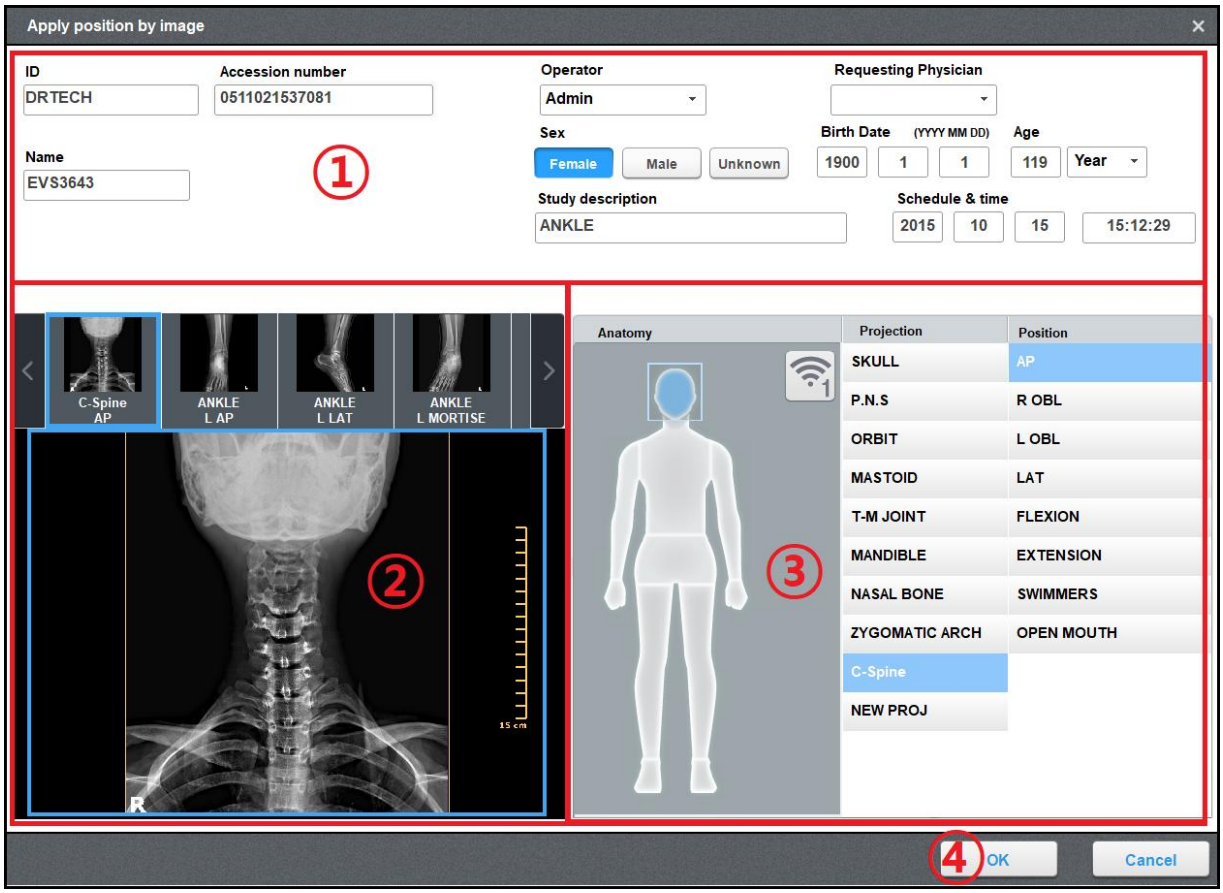


Figure 33. Body part editor

① Patient information

✓ Possible to change information of selected patient.

② Images

✓ Select image of patient and select body part from **③Body part position** for change body part

③ Body part position

✓ Select body part, it will change body part of selected image.

④ OK & Cancel

✓ Click OK button to apply changes and Click Cancel button to cancel changes.

✓ If click OK, changed information, Body part and image parameter will apply to select.

5 Exam

The Exam tab processes the exam and edits images.

* Review mode is same as Exam tab bun cannot process exposure.

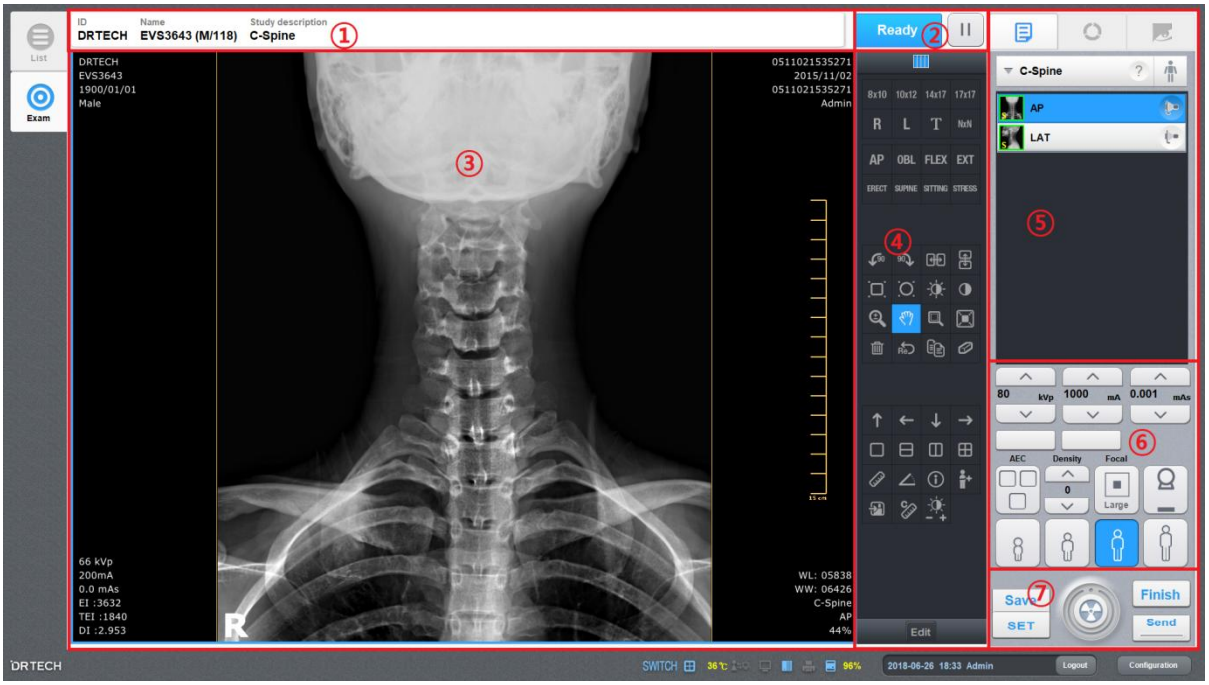


Figure 34. Main Screen of Exam Tab

① Patient Information

✓ Display ID, patient name, and study description.

② X-ray Detector Status Display and Suspend

✓ Display the status of the detector to be used for exam.

✓ READY: The state where shooting can start

✓ BUSY: The acquisition is being performed or the detector is being ready for the next shooting

✓ FLATTENING: Status in preparation for shooting

✓ SLEEP: Weak sleep mode

✓ DEEP SLEEP: Strong sleep mode

✓ : Pauses the current patient's imaging session and the screen is returned to

the patient list. The patient information currently in session is highlighted in orange on the patient list.

③ Image Display Screen

- ✓ Area - display images.
- ✓ To adjust window leveling base on mouse pointer nearby area, CTRL + Double click. (This will adjust window leveling base on pointed area nearby.)

④ Toolbar

- ✓ Collection of image editing icons
- ✓ The width of the column can be adjusted.
- ✓ Refer to **5.1 Toolbar** for more details.

⑤ Projection List & Image Processing Tab

- ✓ View the list for images, or set the post-processing parameters which will be applied to the images.
- ✓ Refer to **5.2 Projection List & Image Processing Tab** for more details.

⑥ Generator Condition Setting

- ✓ Some settings are only available when integrated with X-ray generator.
- ✓ Tube Voltage (kVp), Tube Current (mA), Tube Current Amount (mAs) setting.
  - · When clicking the tube current amount icon (mAs), the unit can be changed to exposure time (seconds).
- ✓ Patient Size
  - · Select the volume of the patient‘s body.
  - · The values of the tube current, tube voltage and tube current amount are renewed subsequent to the patient’s volume.
- ✓ AEC
  - · Set the AEC to be used.
- ✓ Density

- Configure the imaging density.

✓ Focus

- Configure the Focal Size.

✓ Grid

- Configure the applied Grid.

⑦ Save / Indicator / Finish / Send

✓ Save

- Store the images on the Local Storage.

✓ Finish

- Save the captured (or edited) image to Local Storage and automatically move to the list screen.

✓ Send

- Transmit the images to the PACS server.
- If long-clicking the icon, all the images that have been acquired or edited are transmitted to the PACS server.

✓ Indicator Icon

Standby

Ready

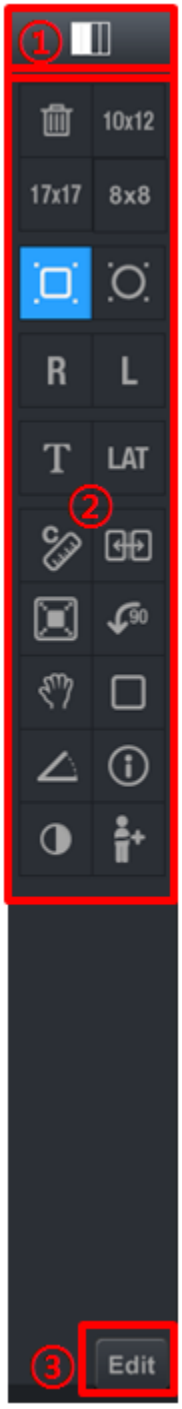
Exposure

- Standby: Default status. Exam can start..
- Ready: Ready for the detector to acquire image.
- Exposure: Emit x-ray to the detector.

5.1 Toolbar

Collection of the icons to analyze and edit

5.1.1 Toolbar Overview



① Toolbar Width Adjustment Icon

- ✓ Adjust the width of the toolbar.
- ✓ The width can be set from 1 to 4.

② Tools List

- ✓ Display the currently configured list of icons.
- ✓ The icons can be edited in the ‘Edit Toolbar Window’.

③ Edit

- ✓ Open the ‘Edit Toolbar Window’ to edit the icons.
- ✓ Refer to **5.1.2 Edit Toolbar** for more details.

5.1.2 Edit Toolbar

Figure 35. Edit Toolbar Window

① Applied Icons Box

- ✓ The currently applied icons in the Exam tab are displayed in this box.
- ✓ Icons in this box can be deleted by dragging & dropping the icon into '② Tools Collection' on the right.
- ✓ Icons can be added into this box by dragging icons in '② Tools Collection' and dropping it on any empty location.
- ✓ When the horizontal width of the Toolbar changes from 1 to 4, the column will be visible from the left.

② Available Icons

- ✓ All the available image editing icons are listed.
- ✓ Icons can be added in '① Applied Icons Box' by dragging & dropping the icons.
- ✓ The icons that have already registered in the icon list appear dark.

③ Add Shutter Icon

- ✓ Add the icons with ROI Shutter Sizes specified by the User.
- ✓ The following window appears when clicking the icon.

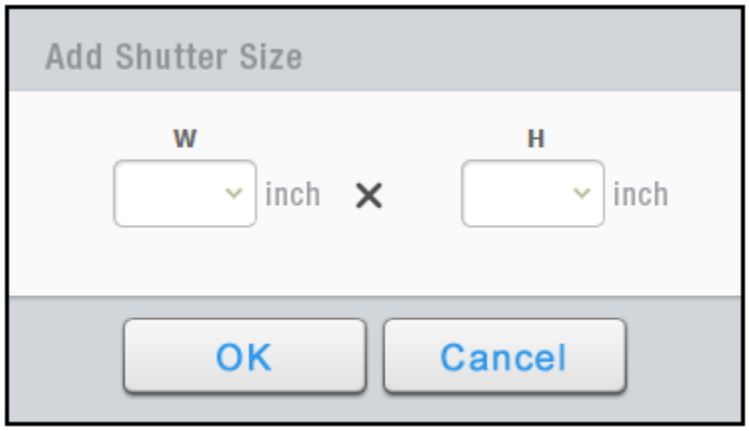


Figure 36. Add Sutter Size Window

- ✓ Enter the size (Width and Height) and click [OK] to add a new ROI.

④ Shutter Delete Icon

- ✓ Delete the Shutter size added by the User only.
- ✓ Shutter icon that have been added can be deleted by dragging and dropping it on the trash box icon

⑤ OK

- ✓ Apply the modified tool arrangement and close the window.

⑥ Cancel

- ✓ Cancel and close the window.

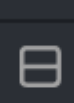
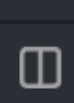
5.1.3 Toolbar Icons

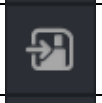
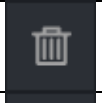
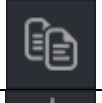
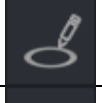
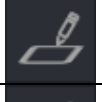
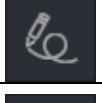
The functions of all the icons in the toolbar are described in [Table 9].

For more details about certain tools, please refer **Appendix E.**

Table 9. Toolbar Icons

Icon	Description
8x10	Set the ROI size to 8×10
10x12	Set the ROI size to 10×12
14x17	Set the ROI size to 14×17
17x17	Set the ROI size to 17×17
NxN	Set the ROI size to the user specified size
	Set the ROI into a square shape
	Set the ROI into a circular shape
R	Display the “R" marker on the screen
L	Display the "L" marker on the screen
ERECT	Display the "ERECT" marker on the screen
SUPINE	Display the "SUPINE" marker on the screen
SITTING	Display the "SITTING" marker on the screen
STRESS	Display the "STRESS" marker on the screen
T	Display the text entered by the User on the screen (Check box checked items are added to tool bar)
PA	Display the "PA" marker on the screen
AP	Display the "AP" marker on the screen

	OBL		Display the "OBL" marker on the screen
	LAT		Display the "LAT" marker on the screen
	FLEX		Display the "FLEX" marker on the screen
	EXT		Display the "EXT" marker on the screen
			Display the "↑" marker on the screen
			Display the "←" marker on the screen
			Display the "↓" marker on the screen
			Display the "→" marker on the screen
			Arrange windows side-by-side symmetrically
			Arrange windows up-and-down symmetrically
			Rotate the image 90 degrees clockwise
			Rotate the image 90 degrees counter-clockwise
			Zoom-in and out of the image by using left mouse button drag.
			Fit image to screen
			Partially expand the image
			Move the image by using left mouse button drag
			Display the screen in 1×1
			Display the screen in 2×1
			Display the screen in 1×2
			Display the screen in 2×2

	Measure the length of the image
	Measure the angle of the image
	Verify the DICOM Header information
	Delete any annotation or markers indicated on the image using other tools
	Adjust the window level and width of the image
	Invert the image
	Stitch images
	Capture the image.
	Print the image.
	Reset the edited image into its initial form
	Delete the image
	Ruler calibration
	Duplicate the image
	Change mouse sensitivity
	Run the dark scan manually(EVS-4343, EVS-3643 only)
	Draw ellipse annotation
	Draw rectangle annotation
	Draw polygon annotation
	Draw free line annotation
	Draw arrow annotation

	Select annotation
	Add Free Text Annotation
	Add VHS Annotation
	Fit image to real pixel size
	Activates Truview Binning
	Displays grid pattern on the image
	Retrieves images acquired with portable mode (only for detectors supporting this function)
	Adjusts the size of Free Text Annotation
	Activates TPLO measurement tool (Only for AccuVueMED Vet)
	Activates TTA measurement tool (Only for AccuVueMED Vet)
	Activates Noberg measurement tool (Only for AccuVueMED Vet)
	Cobb`s Angle tool. Measure angle between 2 lines.
	Display the screen in 3×3
	Display the screen in 4×4
	Window leveling adjust with selected area`s window leveling average
	Free angle image rotate tool (Draw angle will rotate image)
	Free area image crop and rotate (Draw rectangle will crop image)

5.2 Projection List & Image Processing Tab

The Projection List & Image Processing Tab can be used through the tab icon on the upper right corner.

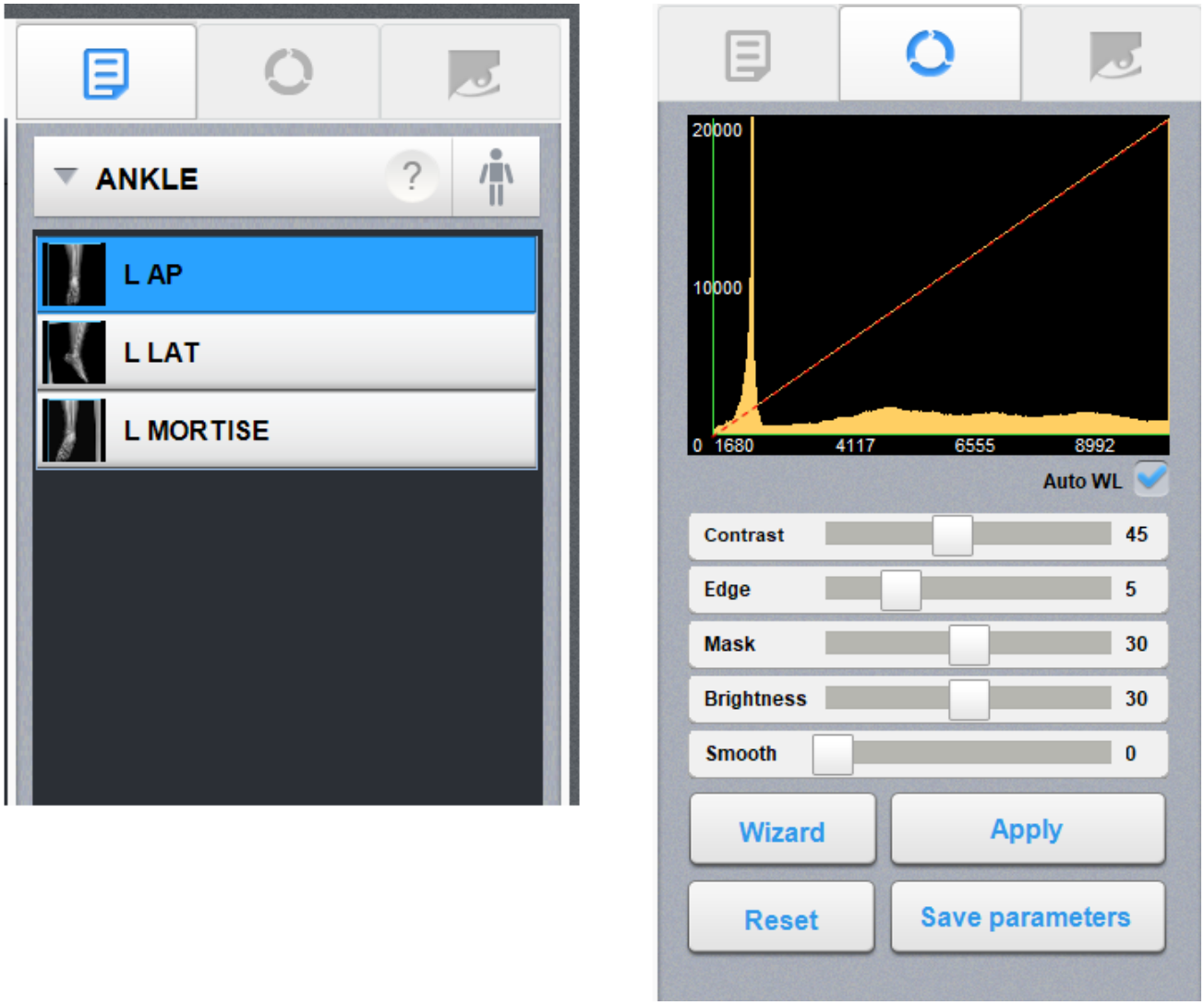


Figure 37. Projection List (Left) & Image Processing Tab (Right)

5.2.1 Projection List

Display a list of studies categorized by projections.

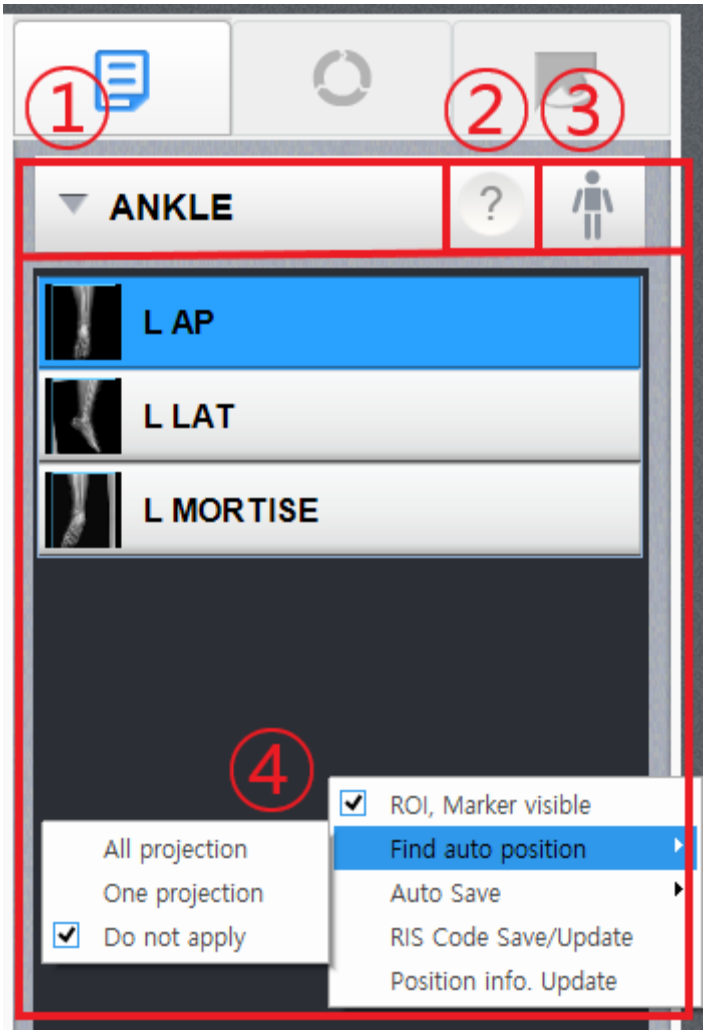


Figure 38. Projection List Tab

① & ④ Projection and Position

✓ Projection can be selected by clicking ① icon.

✓ ④ presents the available positions of the selected projection.

· It allows verification of thumbnails, position designations, and Receptor type.

POP-UP function

✓ When right clicking, you can change the options.

✓ ROI Marker visible: Set the use of ROI and Marker of the positions that are set as

default when receiving the image from the detector.

- ✓ Find auto position

  • All projection: Find unexposed position among the all projections when you save or send an image.

  • One projection: Find unexposed position in the selected projection when you save or send an image.

  • Do not apply: do not find unexposed position when you save or send an image.

- ✓ Auto Save

  • Use : Enable auto save. If enabled, image will auto saved according to time interval when exposure end.

  • Time setting : Set the time interval for image auto save after exposure.

- ✓ RIS Code Save/Update : Update RIS code to current exposure list. If no RIS code, create new RIS code using current exposure list.
- ✓ Position info. Update : Update position information according to current position`s information. (Marker / rotation / flip / bucky type)

② Projection Guide

- ✓ The projection guide for the selected projection.

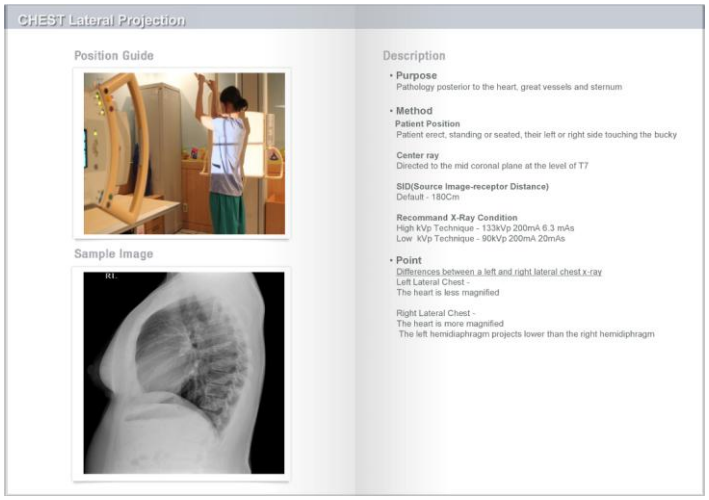


Figure 39. Projection Guide

- ✓ Left-click to close the presented projection guide.

③ Edit Projection

- ✓ You can edit the shooting list.
- ✓ Refer to **4.1.3 Edit Projection Window** for more details.

5.2.2 Image Processing Tab

* Function for advanced users *

✓ It is utilized to acquire a more optimized image by adjusting the post-processing parameters of the completed image.

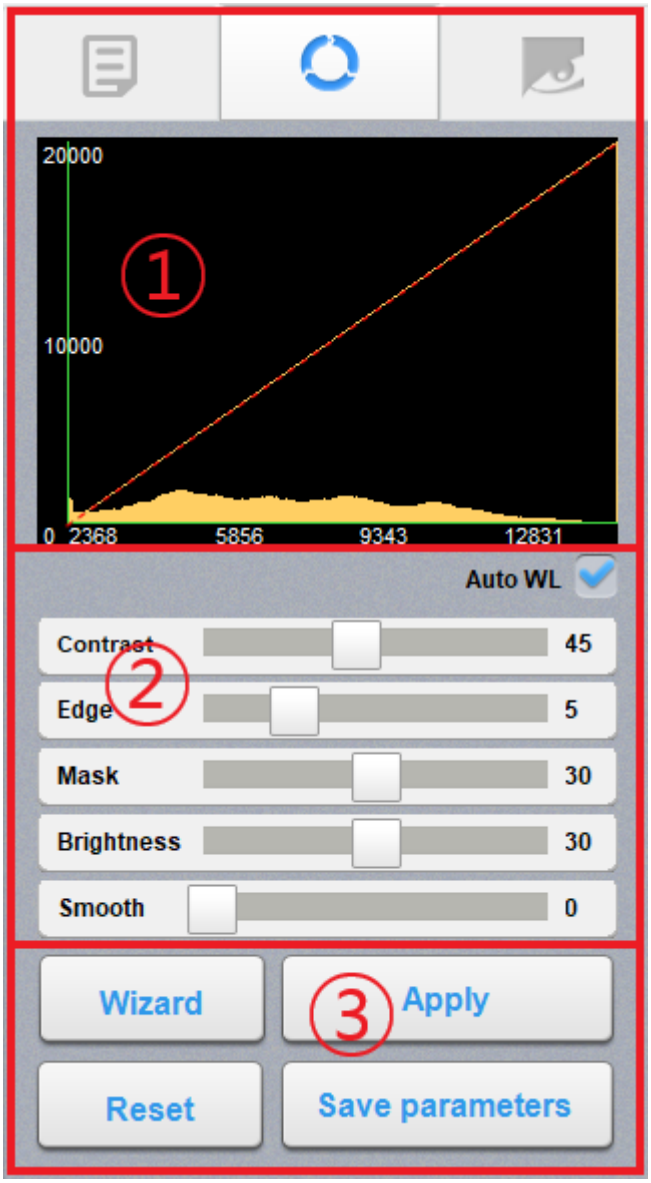


Figure 40. Image Processing Tab

① Histogram

✓ Display the histogram of the currently selected image.

✓ Auto WL: Set the window level automatically.

② Image Enhancing Parameters

✓ Adjust the image enhancing parameters.

✓ The adjustable parameters are as noted in [Table 10].

Table 10. Image Enhancing Parameters

Image Processing	Description
Contrast	Adjust the contrast
Edge	Adjust the Edge
Mask	Adjust the Mask
Brightness	Adjust the Brightness
Smooth	Adjust the Smooth

③ Parameter Functions

✓ Wizard

- Open the multi-image viewer window.
- 8 types of images are shown based on the currently set parameter.

✓ Apply

- Apply the currently set parameters to the image.

✓ Reset

- Reset the parameter to its initial setting.

✓ Save

- Save the currently set parameters and apply them when performing the projection of the relevant projection-position.

5.3 Truview ART

* Function for advanced users *

✓ It works only EVS series detector for image sharpness

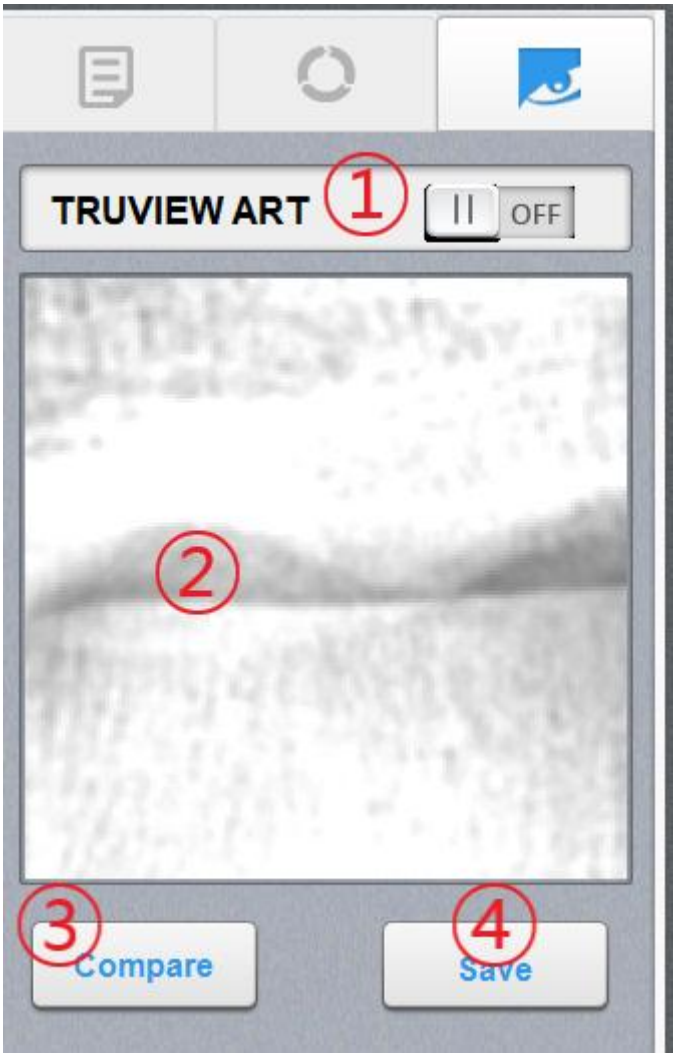


Figure 41. Truview ART Tab

① Use TRUVIEW ART

✓ Default : "OFF".

✓ If you set "ON", it will be adjusted selected image.

② Magnified screen

✓ It magnifies selected position in the image viewer.

✓ You can magnify the certain area by double clicking the area.

③ Compare

✓ Compare the two images with and without applying Truview ART.

✓ 2 images will appear. Left image is not adjusted by TRUVIEW ART, and Right image is adjusted by TRUVIEW ART.

④ Save

✓ Save TruviewART enable / disable status to parameter.

6 Configuration

Configure the user settings of AccuVueMED.

- ✓ Administrator privileges are required for configuration.
- ✓ Contents of configuration are saved and applied immediately following any changes made.

Categories of Configuration are as noted in [Table 11].

Table 11. Configuration Category

Category	Description
Display	The tab (List/Exam) of AccuVueMED may be viewed simultaneously by division depending on the number of connected monitors, and performs relevant configurations. Refer to 6.1 Display for more details
System	Configure language, date display, hospital information and etc. Refer to 6.2 System for more details.
Image	Configure image storage folder, delete policy, annotation information and etc. Refer to 6.3 Image for more details.
Storage	Set configuration related to PC Storage (HDD). Refer to 6.4 Storage for more details.
Account	Manage the accounts of AccuVueMED users Refer to 6.5 Account for more details.

Blocked List	Configure unnecessary RIS code filtering subsequent to ultrasound or other devices. Refer to **6.6 Block List** for more details.
Dataset	Configure the DICOM Header Format. Refer to **6.7 Dataset** for more details.
Network	Configure the network information, such as Local, PACS, Printer and etc. Refer to **6.8 Network** for more details.
Detector	Configure the Detector which will be connected with the AccuVueMED. Refer to **6.9 Detector** for more details.
RIS Code	Configure the RIS Code. Refer to **6.10 RIS Code** for more details.
Projection	Configure projection and position. Refer to **6.11 Projection Editor** for more details.
Recycle Bin	Configure deleted images Refer to **6.12 Recycle Bin** for more details.
Generator	Not use. Will be deleted.

6.1 Display

✓ Display mode will be added soon.

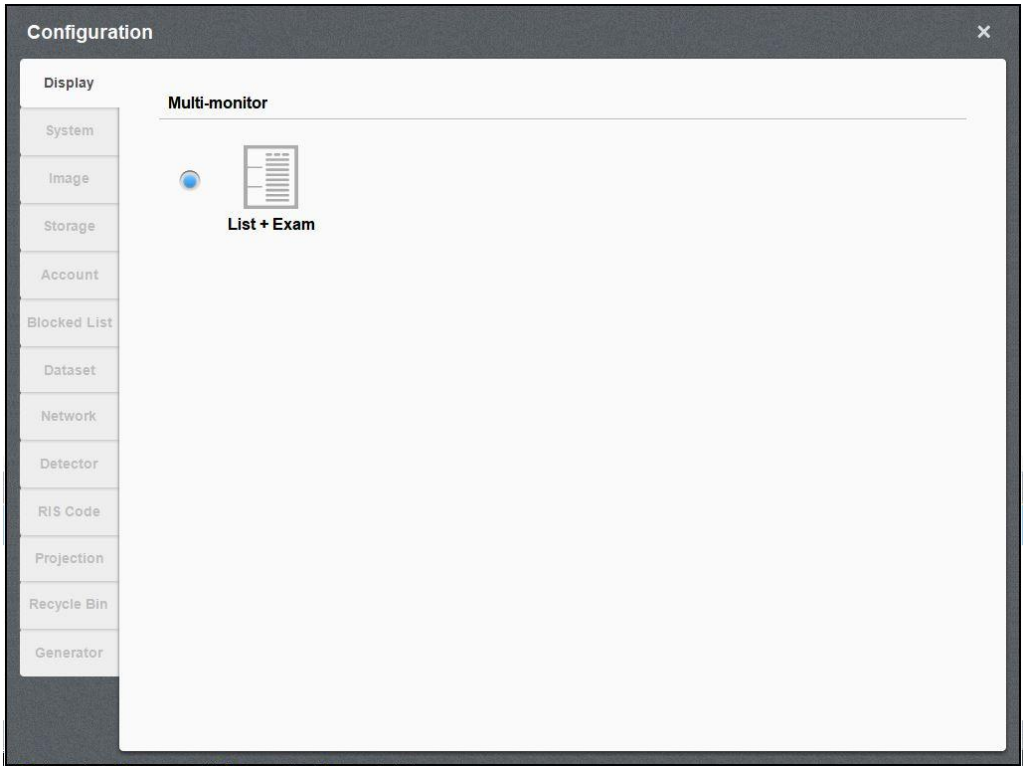


Figure 42. Display Configuration

6.2 System

✓ Perform configurations affecting the overall AccuVueMED.

Subcategory	Description
Language	Select system language.
Format	Select date and name format.
Institution	Enter the information of the institution.
Options	Enable and disable automatic running of AccuVueMED at startup of Windows.
Workflow	Set miscellaneous function.

6.2.1 Language

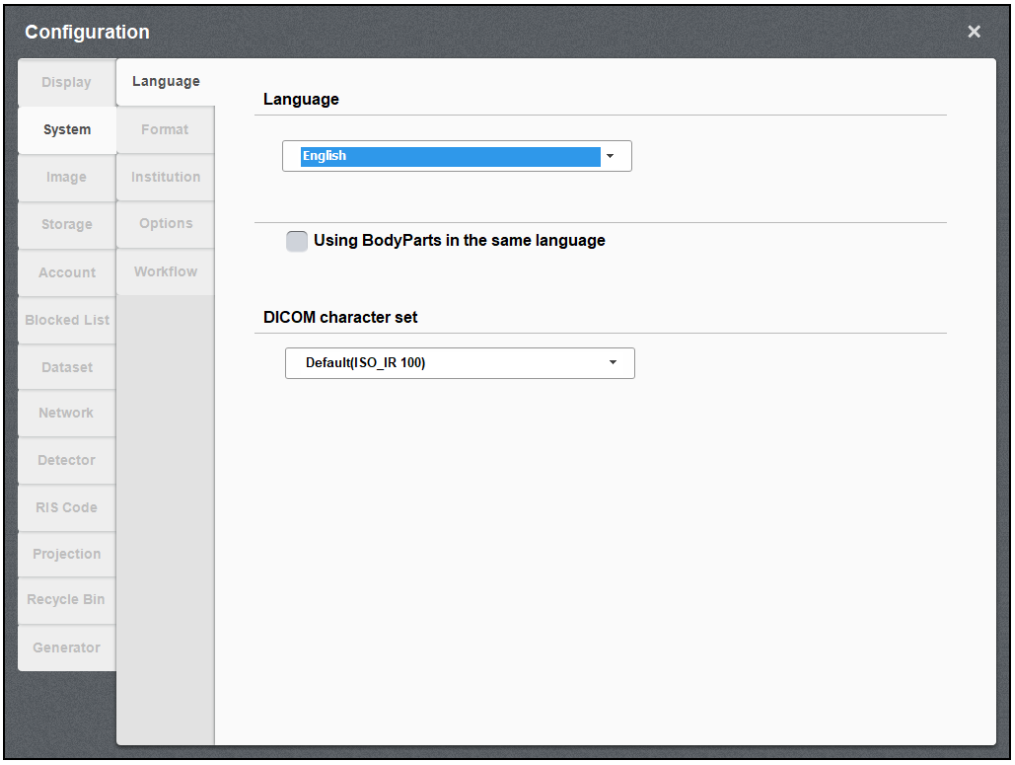


Figure 43. Language Configuration

✓ Configure the system language.

✓ DICOM character set

Note that DICOM character set is defined separately from system language. It is set by the language that was chosen when installing the program.

Items	DICOM character set
Korean	\ISO 2022 IR 149
Chinese	GB18030
Japanese	ISO 2022 IR 13\ISO 2022 IR 87
Default	ISO_IR 100
Turkish	ISO_IR 148
Thai	ISO_IR 166
Ukrainian, Russian	ISO_IR 144
UTF-8	ISO_IR 192
Japanese	\ISO 2022 IR 87

6.2.2 Format

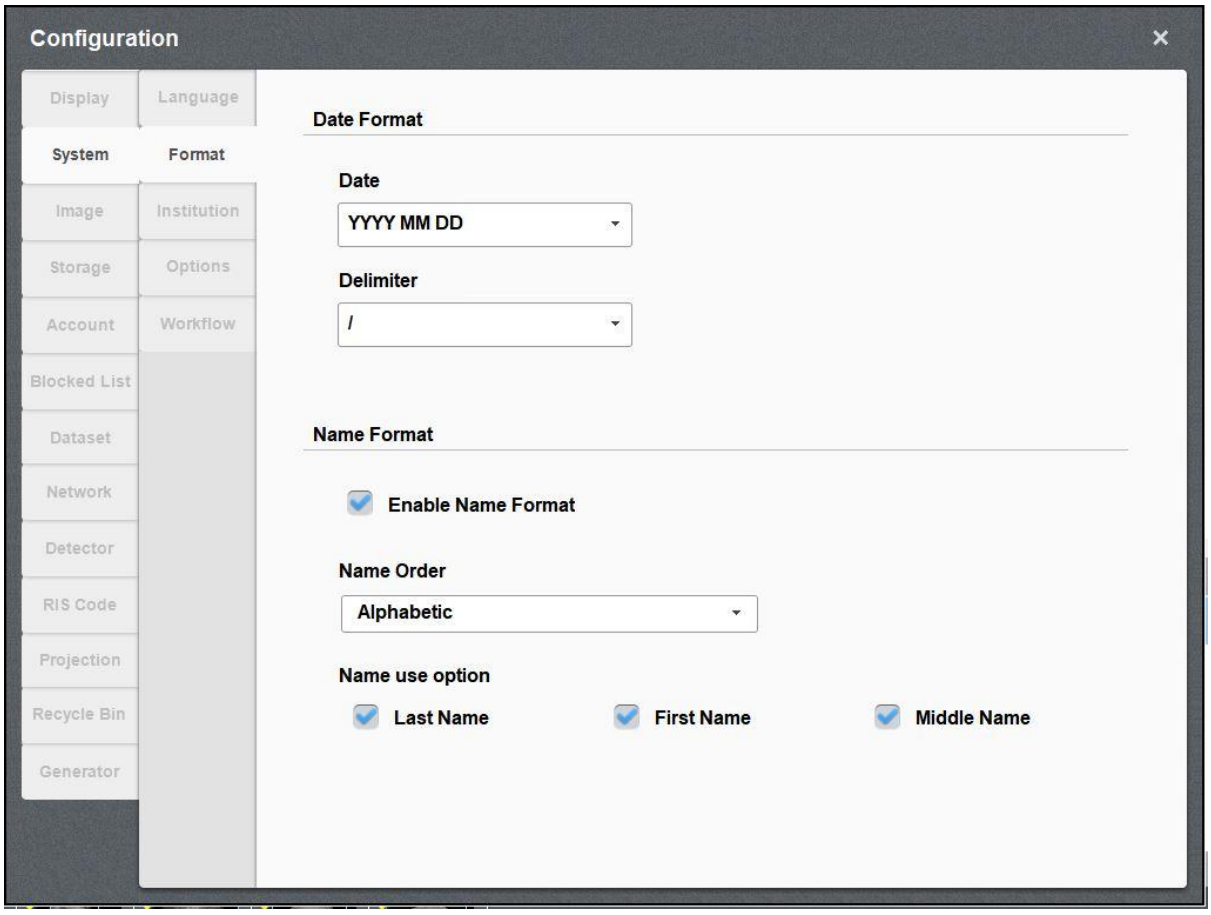


Figure 44. Date Configuration Screen

- ✓ Configure the date format.
- ✓ Date
  - Y: Year , M: Month, D: Day
- ✓ Delimiter
  - Set the symbol to be used between Y, M, and D.
- ✓ For example, If today is May 31st, 2012

Date	Delimiter	Final Notation
MM DD YYYY	/	5/31/2012
MM DD YYYY	-	5-31-2012
MM DD YYYY	.	5.31.2012
YYYY MM DD	/	2012/5/31
MM DD YY	-	5-31-12
YY MM DD	.	12.5.31

- ✓ Enable Name Format
  - Name format configuration is available when this checkbox is checked.
- ✓ Name Order
  - Alphabetic
  - Ideographic
  - Phonetic
- ✓ Name Use Option: Select the type of name to use. At least one option should be selected.
  - Last Name
  - First Name
  - Middle Name

6.2.3 Institution

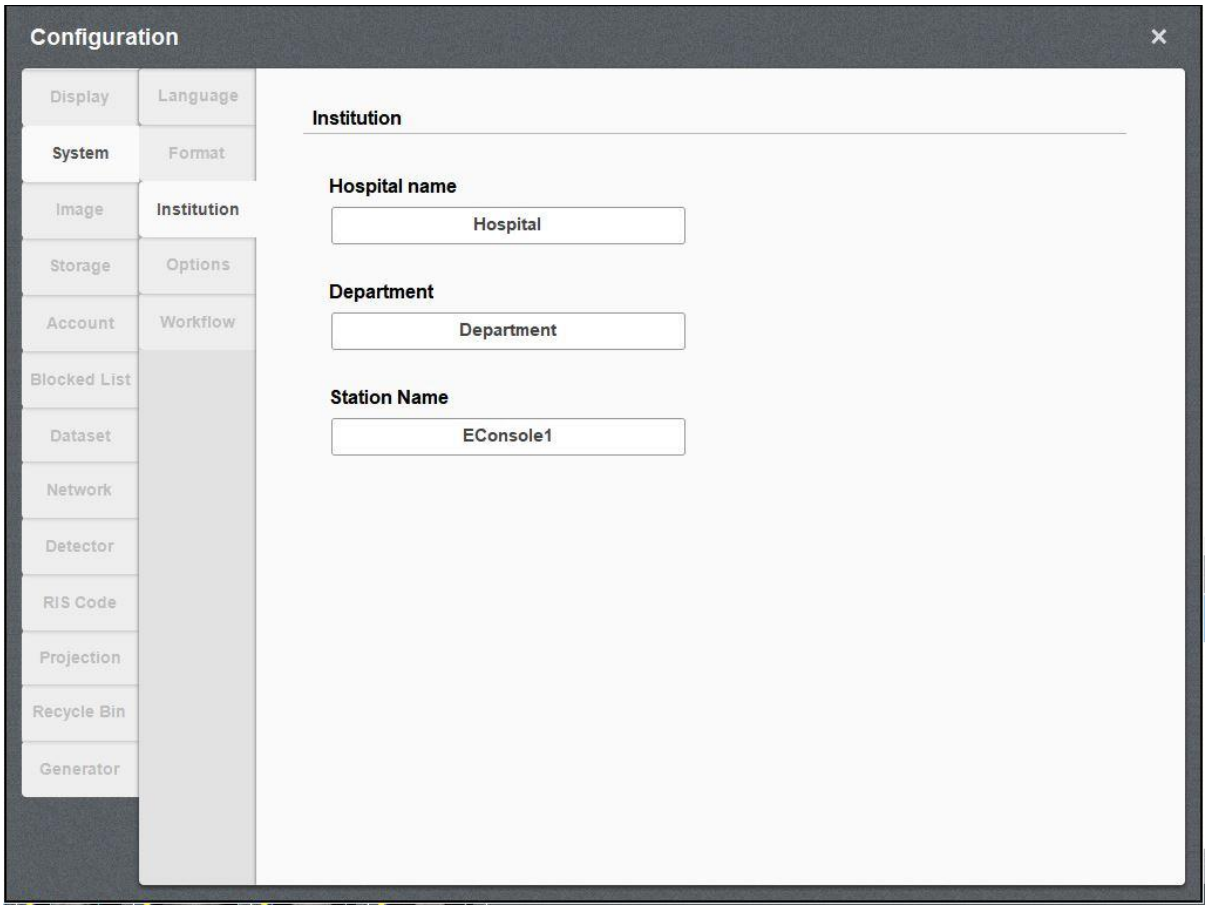


Figure 45. Institution Configuration

- ✓ Input the hospital/institution information using the AccuVueMED.
- ✓ Hospital
  - · Hospital Name
- ✓ Department
  - · Department name of the hospital.
- ✓ Station Name
  - · The name of projection station that is used at the hospital

6.2.4 Options

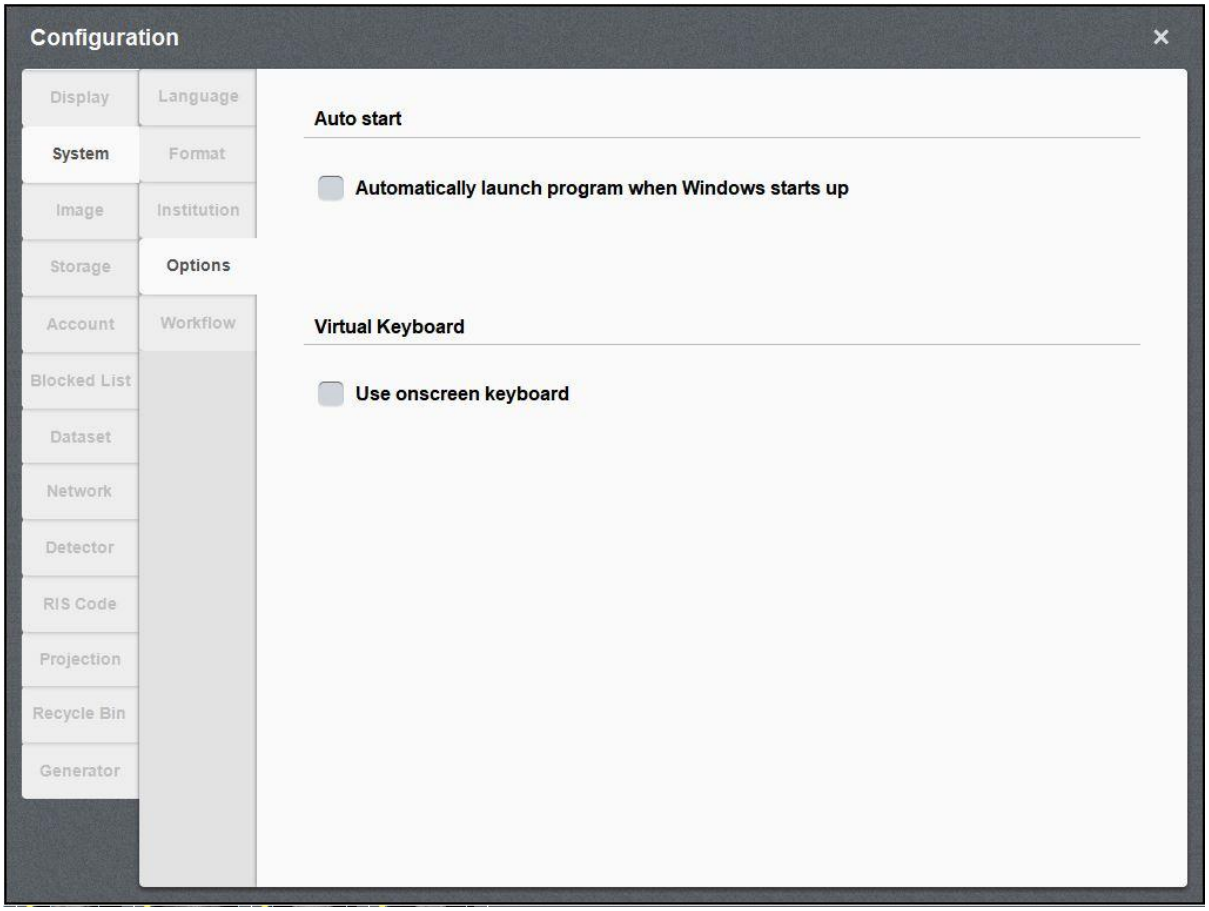


Figure 46. Options Configuration

- ✓ Auto Start
  - If checked, AccuVueMED will automatically start when Windows starts.
  - Not available on Win8.
- ✓ Virtual Keyboard
  - If checked, virtual keyboard will be available for use.

6.2.5 Workflow

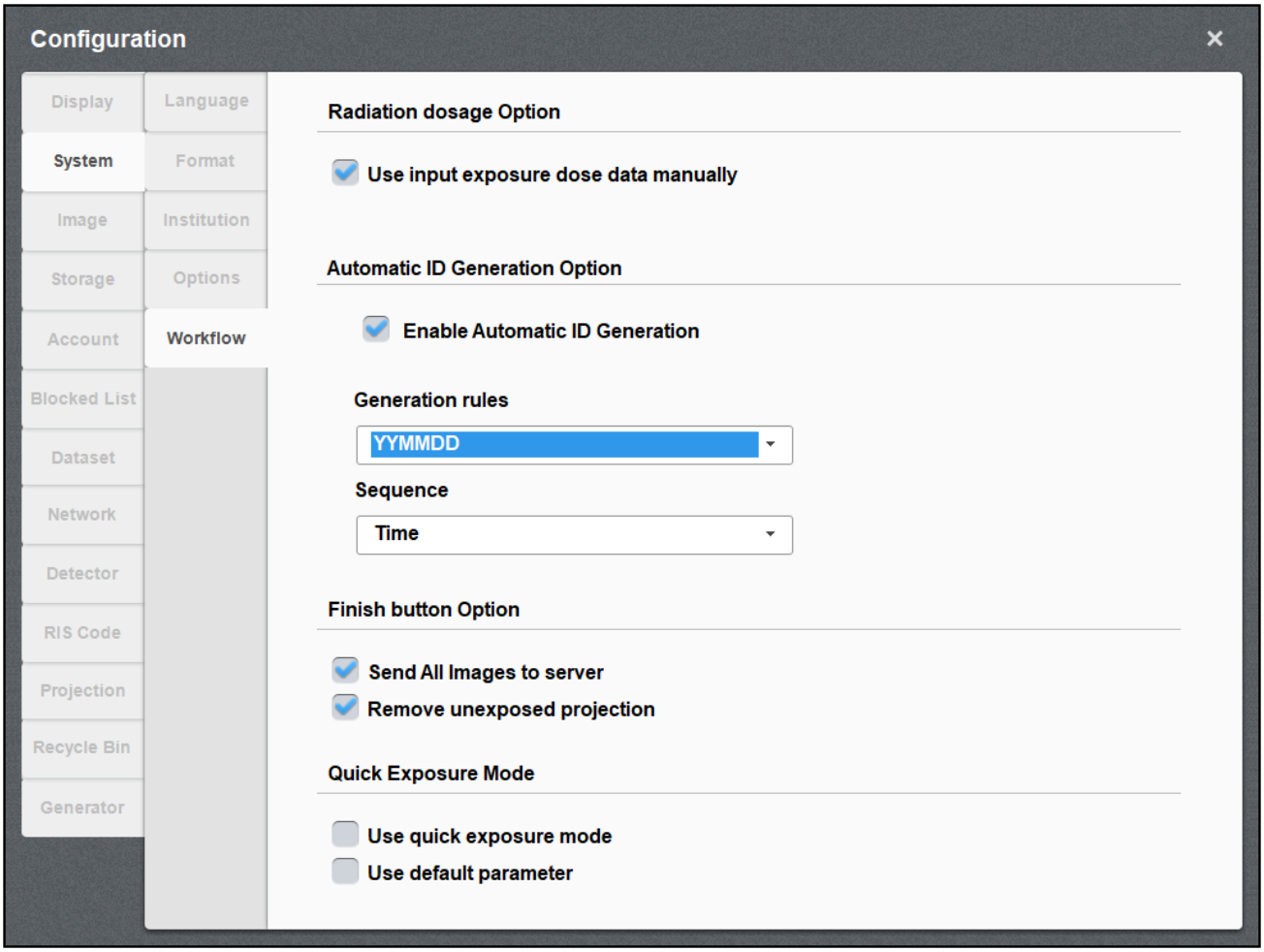


Figure 47. Workflow Configuration Screen

✓ Use input exposure dose data manually

- If checked, you can enter the dose information manually.
- Use of automatic ID generation option
- If checked, patient ID is generated automatically

✓ ID generation rule

- ID is created based on the creation date.
- Y: Year , M: Month, D: Day

✓ Identifier

- Select an identifier to be combined with the ID generated based on the creation date.
- Time : Based on patient generation time
- Automatic Sequencing: Generated in sequence according to the ID generation order

Example) Patient ID Generation on May 31st 2012 at 23:45

Generation Rule	Identifier	ID Generation Example
YYMMDD	Time	120531112345
MMDDYY	Automatic Sequencing	120531000001
DDMMYY	Time	310512112345
YYYYMMDD	Automatic Sequencing	20120531000001
MMDDYYYY	Time	05312012112345
DDMMYYYY	Automatic Sequencing	31052012000001

✓ Send all images to server

- If checked, when sending 2 or more images to the server, all images are sent to the server.

✓ Remove unexposed projection

- If checked, projections which were unexposed during the imaging session are deleted.

✓ Quick Exposure Mode

- Use quick exposure mode : activate quick exposure mode. Please refer **6.2.5.1 Quick exposure mode(Add patient)** and **6.2.5.2 Quick exposure mode (exam)**
- Use default parameter : Apply default image parameter when exposure via quick exposure mode

6.2.5.1 Quick exposure mode (Add patient)

✓ Exposure mode and exam sequence will changed when activate quick exposure mode.

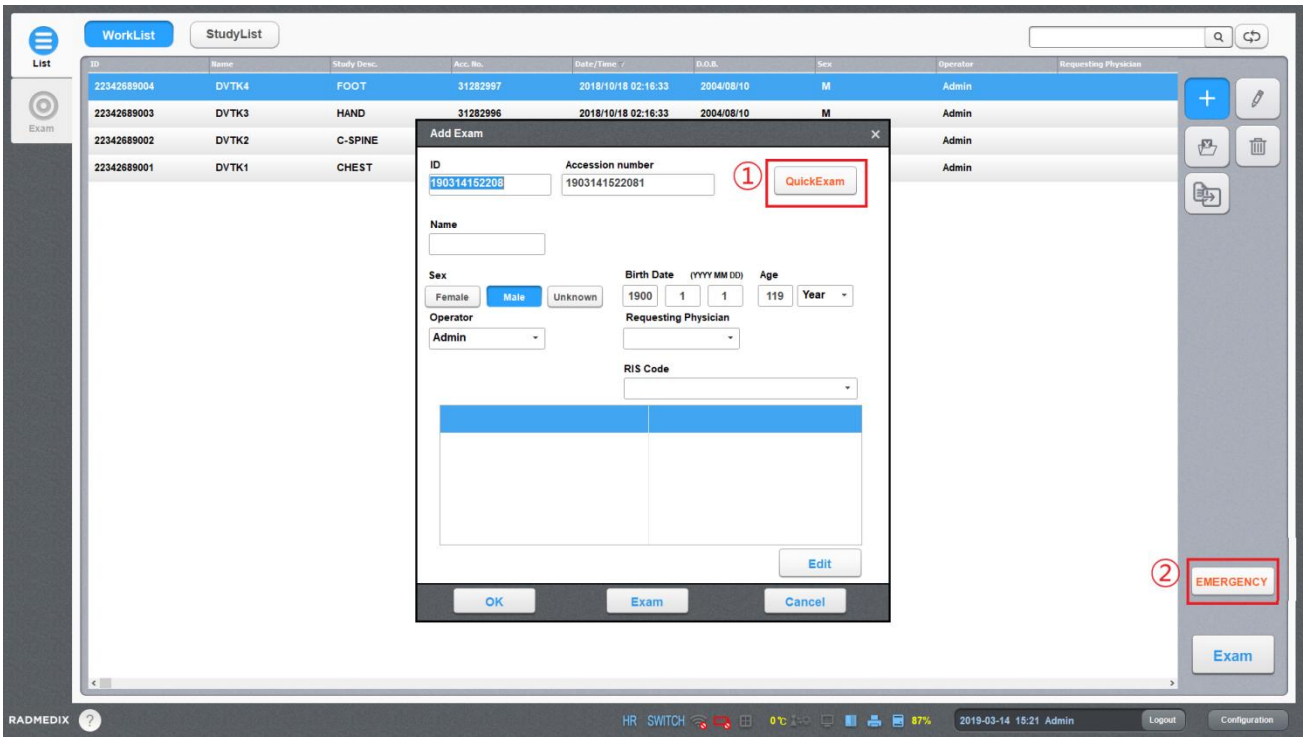


Figure 48. Quick exposure mode (Add patient)

① Quick Exam

✓ Originally located EMERGENCY button will replaced to QuickExam button.

✓ Click QuickExam button to enter Quick exposure. Quick exposure has no position and patient information.(Added patient`s information, position and other information will filled “UNKNOWN”)

② EMERGENCY

✓ Originally EMERGENCY button moved to work list.

✓ For exposure EMERGENCY patient, no need to enter add patient window.

6.2.5.2 Quick exposure mode (exam)

✓ More quickly exposure will possible when entering exam window with QuickExam.

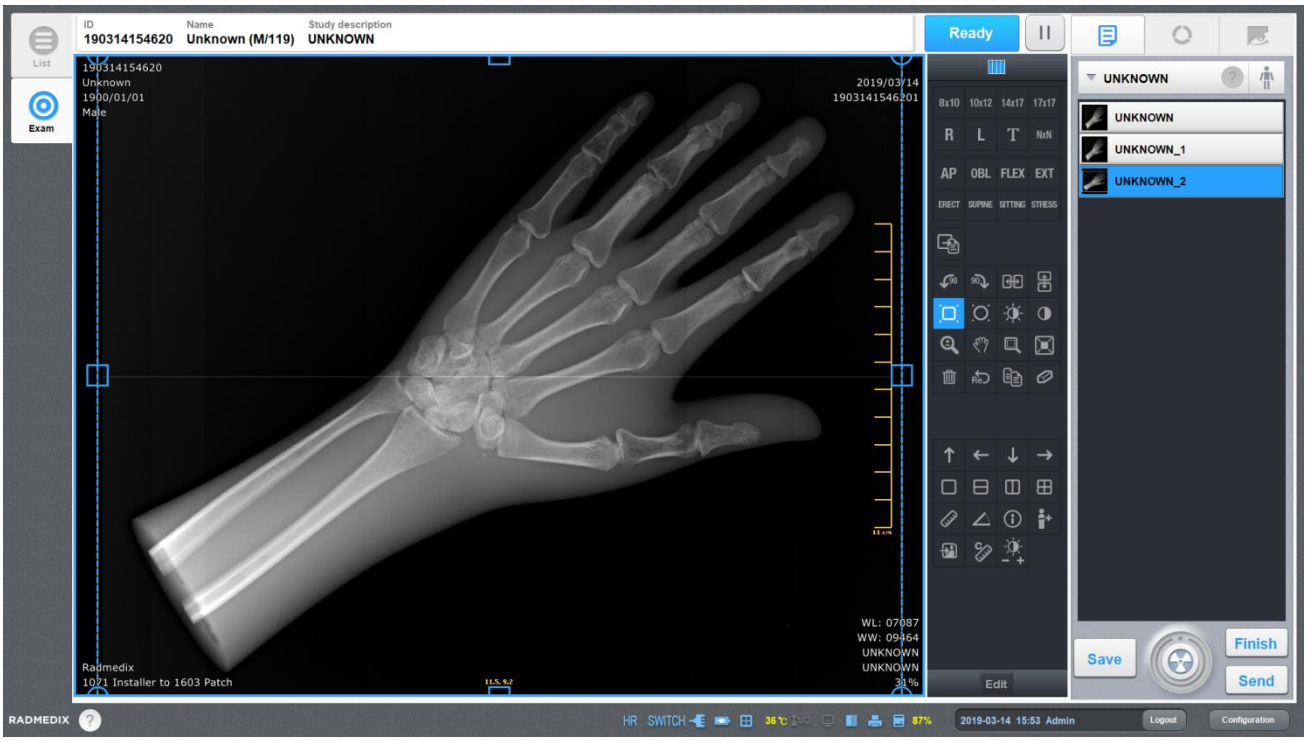


Figure 49. Quick exposure mode (exam)

✓ After using quick exposure mode, PACS sending function will not work till change patient`s information. (correct position and patient name will need to send image to PACS)

✓ To change information of quick exposure study, recommend 4.2.7 Bodypart Editor to change information. 4.2.7 Bodypart Editor is more easily and fast.

6.3 Image

✓ Allow configuration relevant to examined images.

Subcategories	Description
Image Folder	Set the location to save the images.
Delete Option	Set delete options for image files.
Overlay	Set overlay on the images.
Import	Import images to the Studylist.
Truview ART	Enable or disable the Truview ART feature

6.3.1 Image Folder

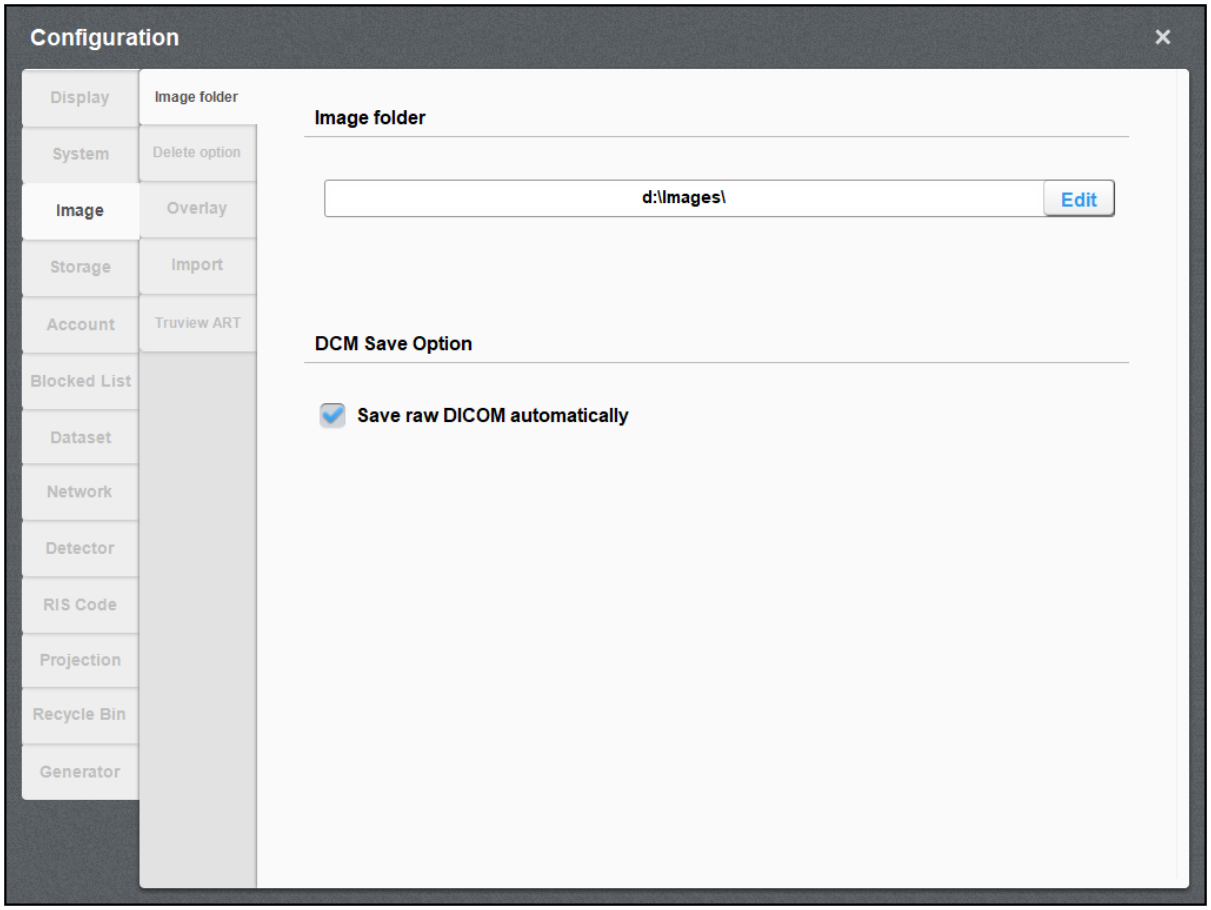


Figure 50. Image Folder Configuration

✓ Set the location to save the images in the operating PC.

✓ Edit

- Open the folder selection window.
- Select the folder where the images are to be stored.
  (The folder path to save the images must be set to Drive: \Images\)

✓ Save Raw DICOM automatically

- If checked, Raw DICOM is created automatically when acquired images are saved.

6.3.2 Delete Option

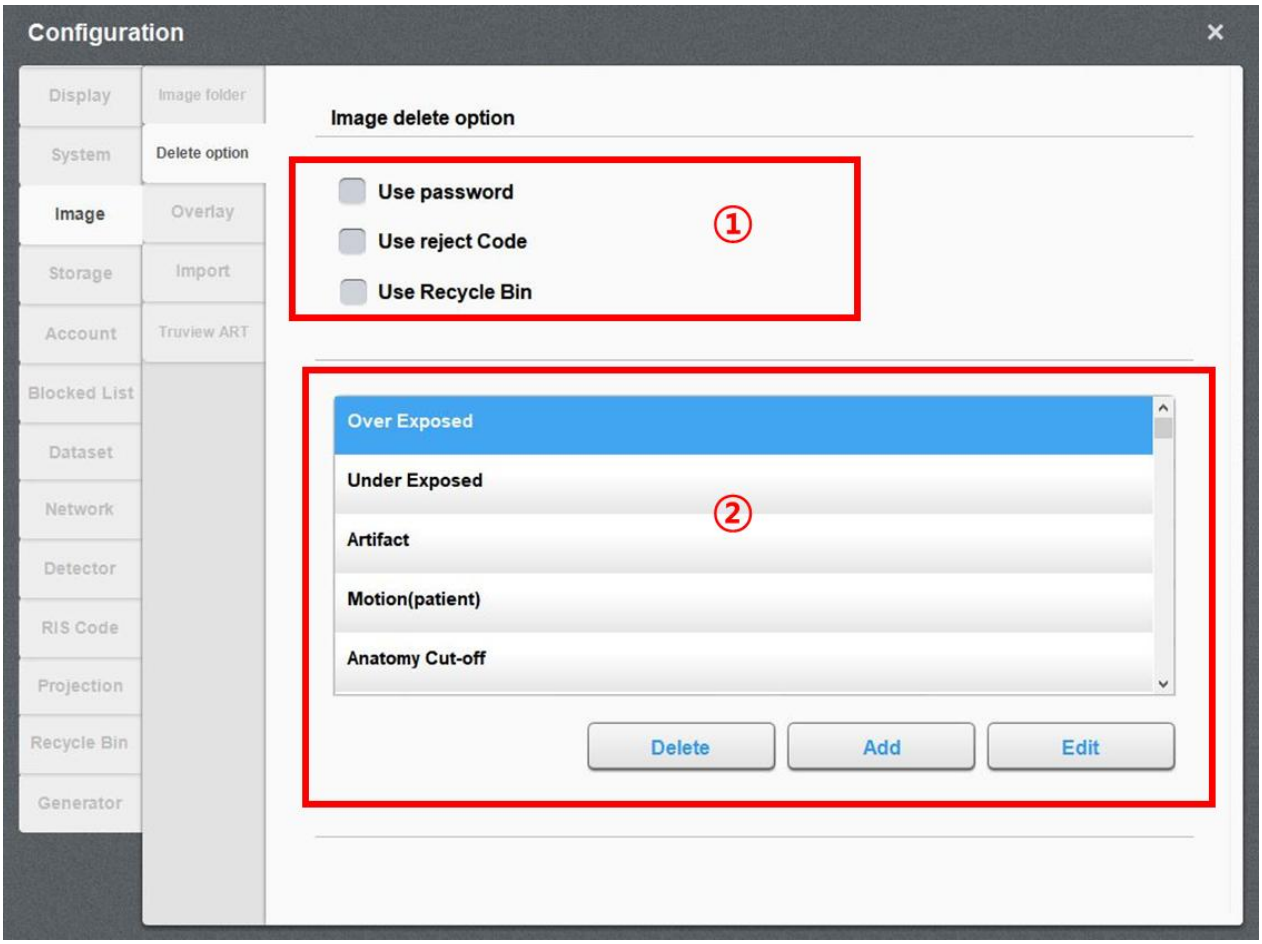


Figure 51. Delete Option Configuration

① Image Delete Option

✓ Use Password

- If checked, deletion of image requires a password.

✓ Use Reject Code

- If checked, a reject code (reason for deletion) is required whenever attempting to delete an image file.

✓ Use Recycle Bin

- If checked, recycle bin function is activated.

② Reject Code

✓ List of reasons for deletion.

✓ Statistics

- Display the statistical record of each applied Reject Code.
- The statistics can be exported to the Microsoft Excel file when clicking the [Export] Icon on the statistics display window.

✓ Delete

- Delete the selected Reject Code from the list.

✓ Add

- Add a new Reject Code.

✓ Edit

- Edit the selected Reject Code.

6.3.3 Overlay

✓ Allow overlay configuration.

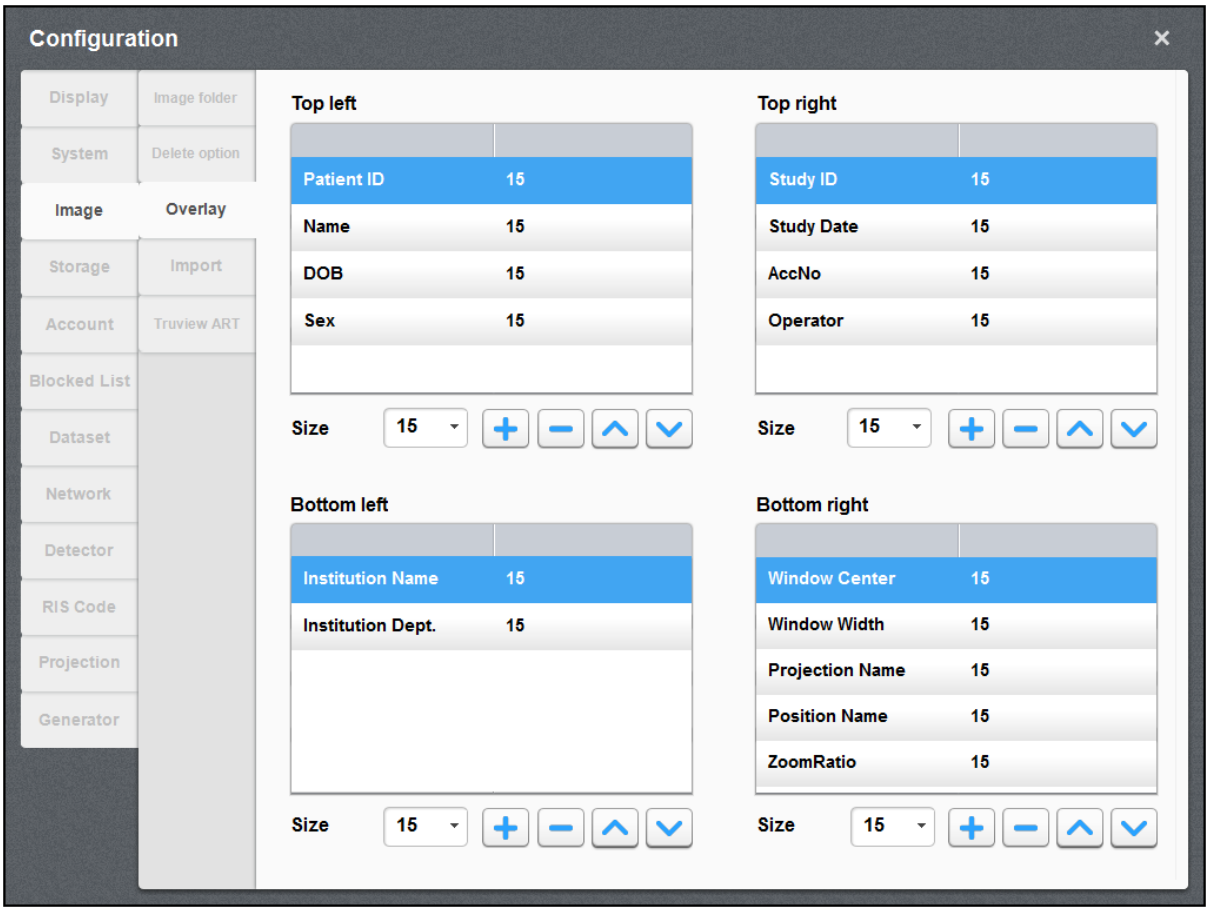


Figure 52. Overlay Configuration

✓ Edit types of overlay to be displayed on the top left, top right, bottom left and bottom right of the images.

✓ The editing method is the same while the displaying locations differ.

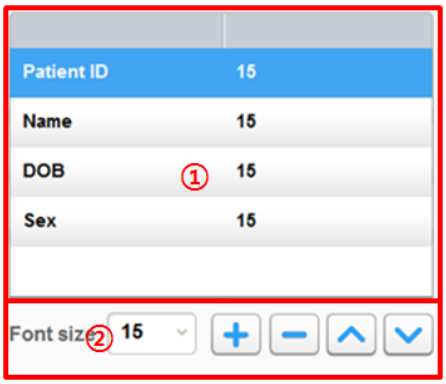


Figure 53. Edit Overlay

① Registered Overlay Type & Font Size

- ✓ Overlay: Information which will be displayed.
- ✓ Size: Font size of the relevant information.
- ✓ Information is displayed in accordance with the arrangement on the list.

② Edit Icon

- ✓
  - · Add a new overlay to the list.
  - · The following window as shown in [Figure 50] appears when clicking the icon.

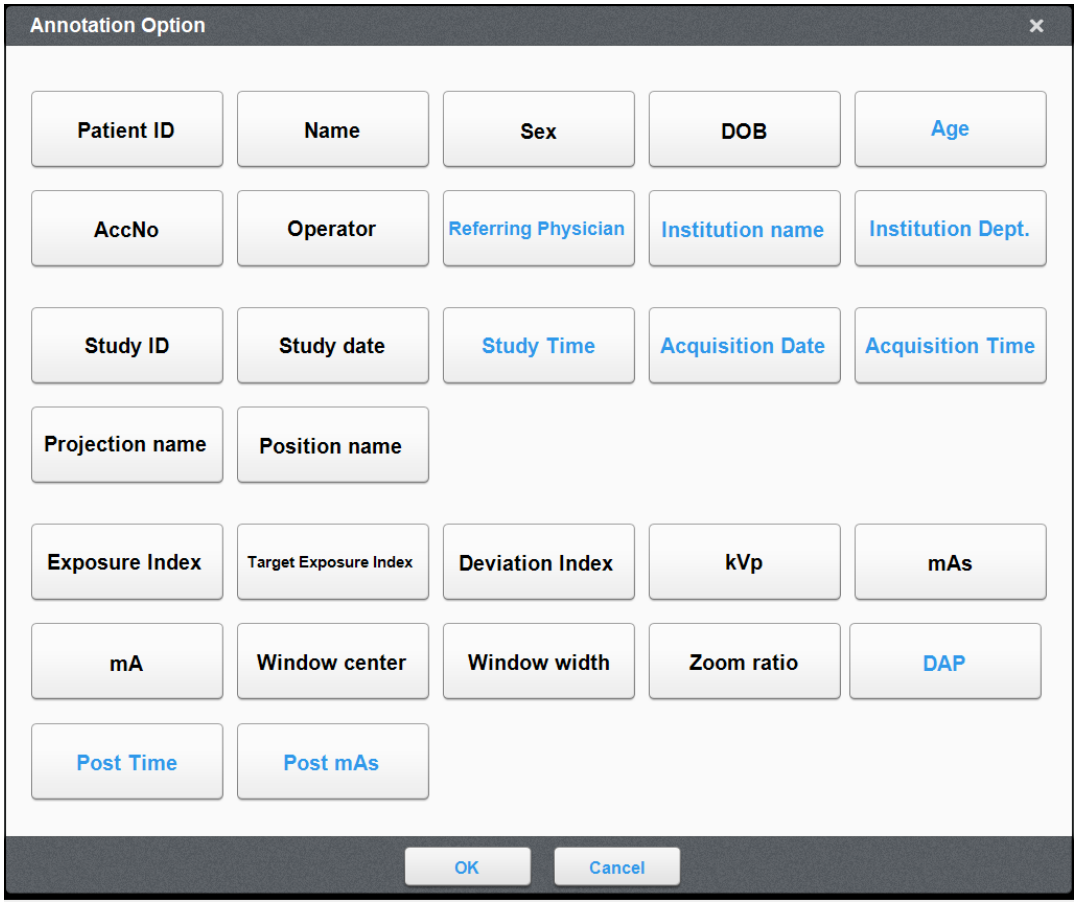


Figure 54. Overlay Option

  - · The selected overlay is added after entering the size and clicking [OK].
  - · The Texts that have already been registered will be displayed in black.

✓

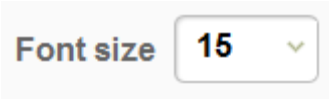
- Delete the selected annotation from the list.

✓

- The selected annotation moves up by one row.

✓

- The selected annotation moves down by one row.

✓ 

- Change font size of each location.

6.3.4 Import

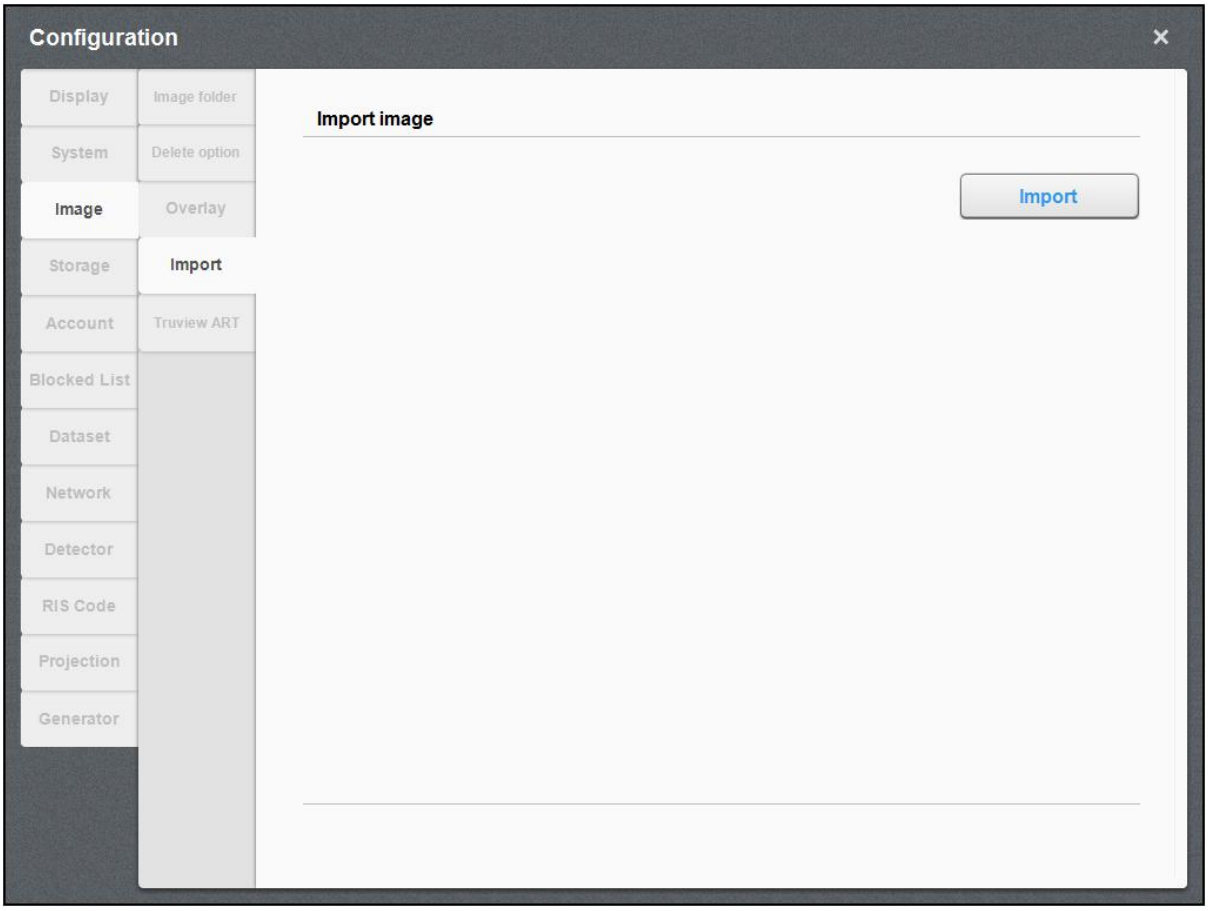


Figure 55. Import Configuration Screen

- ✓ Import an external image into the Studylist.
- ✓ Import
  - Open the file selection window.
  - Select the image to be imported.

6.3.5 Truview ART

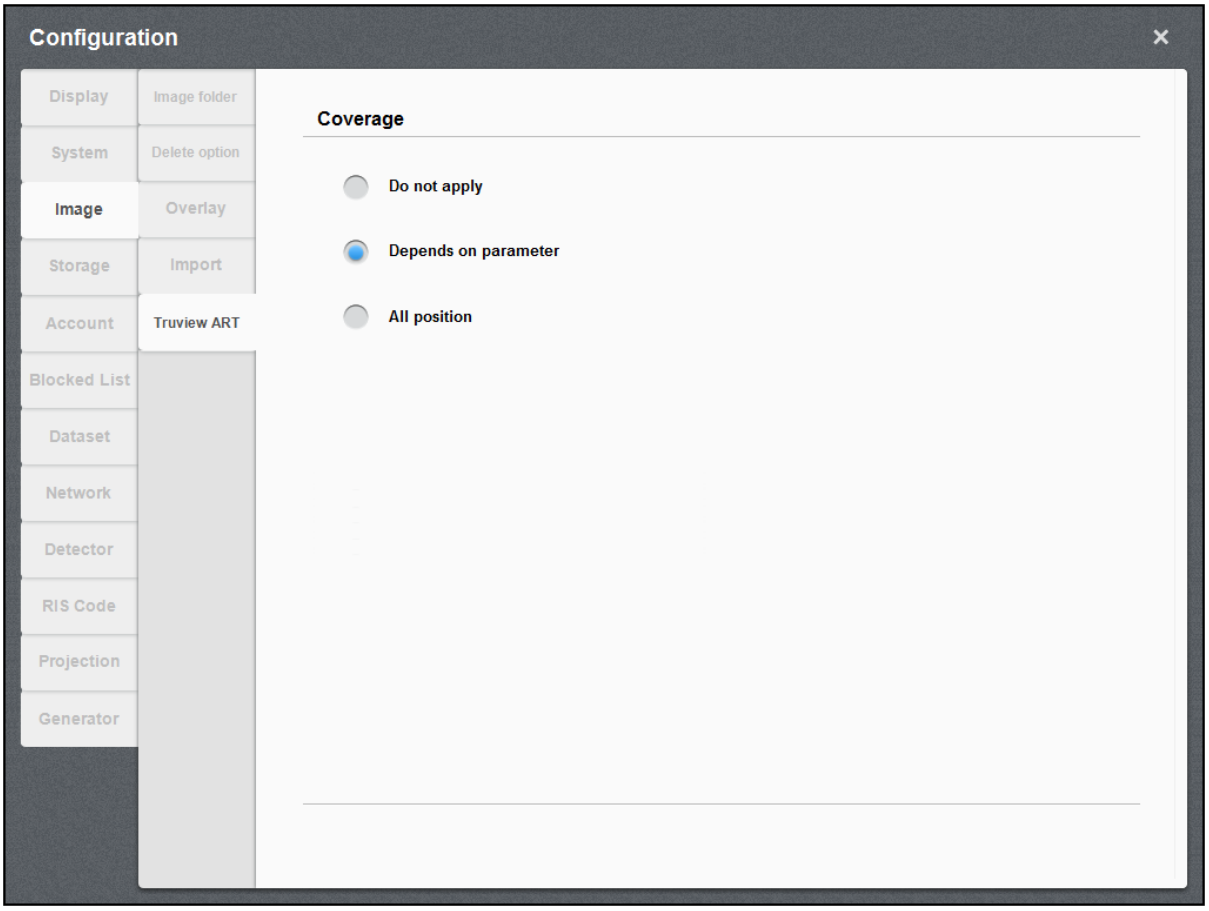


Figure 56 Truview ART Configuration

✓ Set the scope for applying TRUVIEW ART

6.4 Storage

✓ Configurations concerning the deletion and storage of data in the operating pc where the images will be saved.

Details	Description
Delete	Configure the deletion and automatic deletion function of images stored in Local Storage.
Backup	Compress and back-up the images stored in Local Storage.

6.4.1 Delete

✓ Configure the deletion and automatic deletion function of images stored in Local Storage.

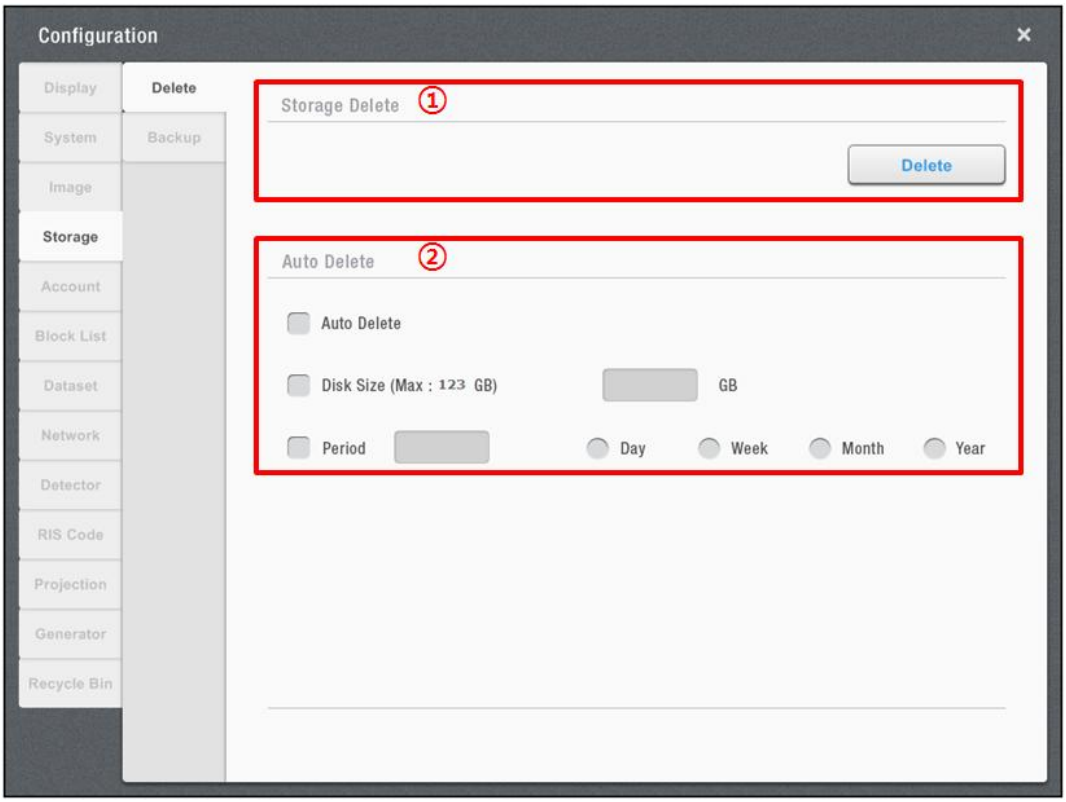


Figure 57. Delete Configuration

① Storage Delete

✓ The [Delete] Icon deletes all images stored in the Local Storage.

✓ Deleted images cannot be restored, so please make sure to perform a backup prior to deleting images!

② Auto Delete

✓ Auto Delete

- If checked, all images satisfying the specified conditions are automatically deleted from the PC Storage.

✓ Disk Size

- If checked, images in the PC Storage are automatically deleted once the used disk space exceeds the set limit.
- If remaining storage is less than 'Disk Size', overflowed images will be automatically deleted. (Whole disk volume except 'Disk Size' is allocated for AccuVueMED.)
- Max: maximum limit of disk space set for storage of images in the PC Storage.

✓ Period

- If checked, images in the PC Storage are continuously deleted automatically during the set period below.
- ex1) Set to "2", "Month": Delete all images that were stored 2 months earlier as of today..
- ex2) Set to "1" "Day": Delete all images that were stored 1 day earlier as of today.
- The cycle may be set by one of the followings; Day/Week/Month/Year.

✓ Only one of the two auto deleting methods, 'Disk Size' and 'Period', may be selected at a time.

6.4.2 Backup

✓ Compress and back-up the images stored in Local Storage.

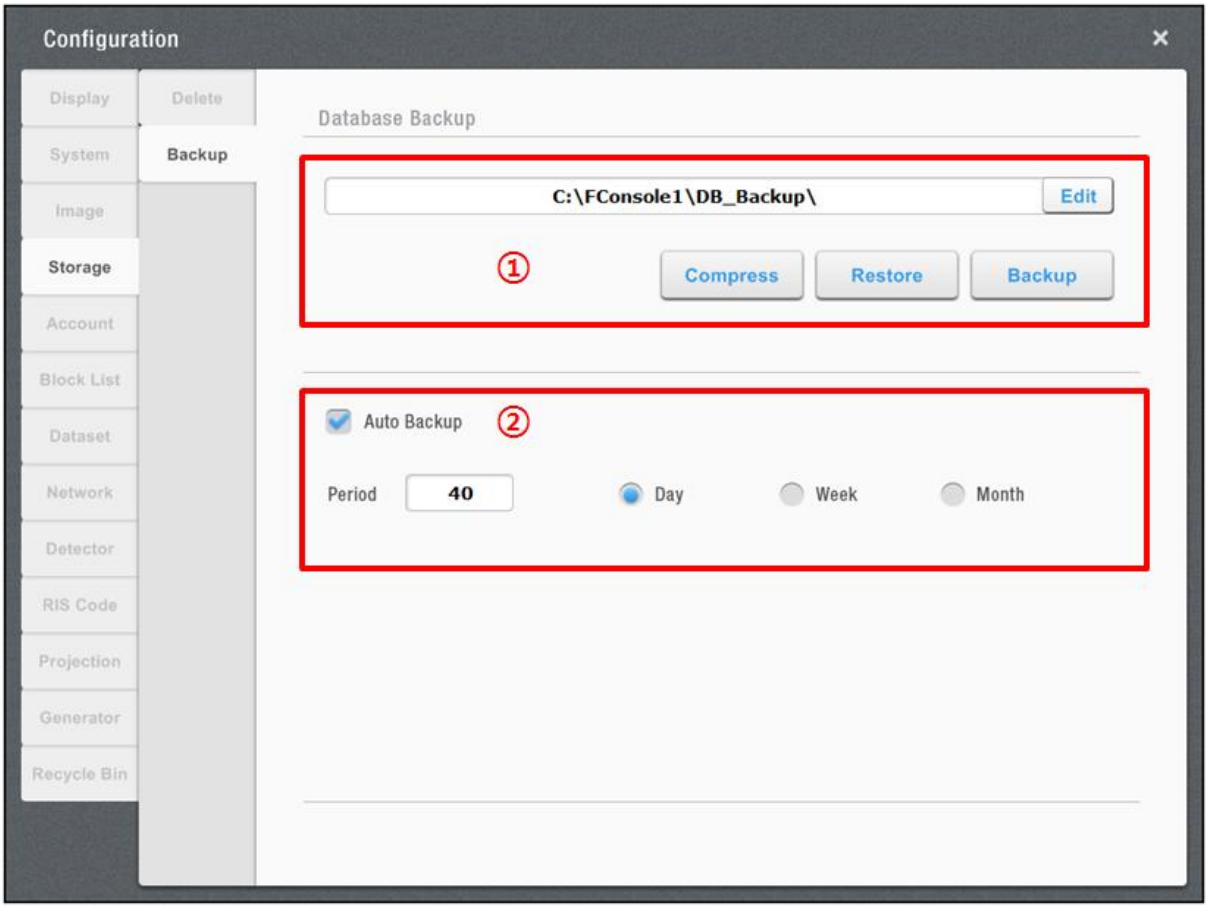


Figure 58. Backup Configuration

① Database Backup Configuration

✓ Display the location of the folder used for Data Backup.

✓ Edit

- Open the selection window for choosing a folder to be used in backup.

✓ Compress

- Compress and then store the currently used data in the selected folder.

✓ Restore

- File selection window opens.
- Restore the selected database file and store it in the system.

✓ Backup

- Back-up the currently used database in the selected folder.

② Automatic Backup

✓ Auto Backup Check

- If checked, automatic backup is performed during the set period explained below.

✓ Period

- Set the automatic backup period.
- Available units consist of Day / Week / Month.

6.5 Account

✓ Configure the account of the AccuVueMED user.

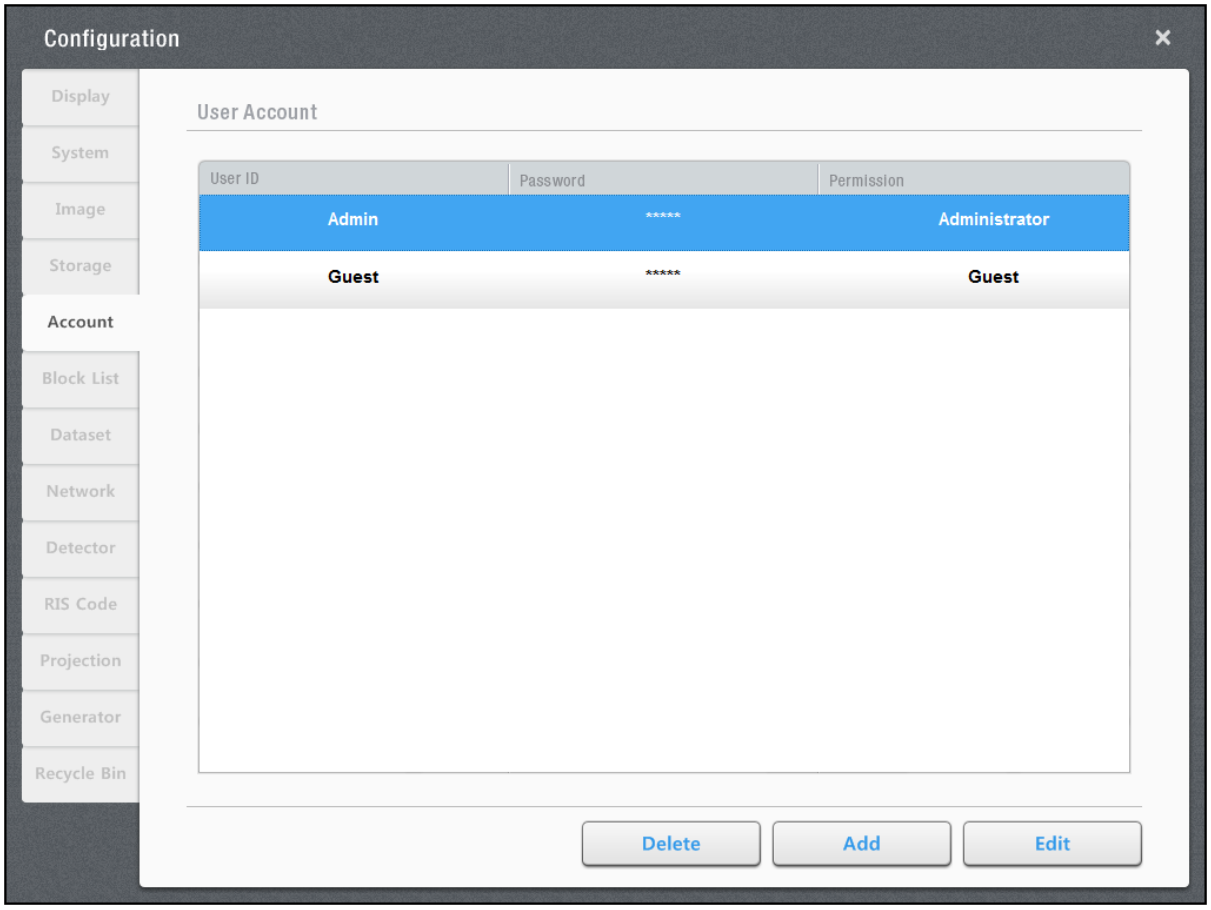


Figure 59. User Account Configuration

✓ The currently registered user information is available on the list.

✓ Configure the user ID, Password, and authorization.

✓ Delete

- Delete the selected user account.

✓ Add

- Add a new user account.

✓ Edit

- Edit an existing user account.

6.6 Block List

✓ Filter unnecessary RIS codes such as codes related to ultrasound or other devices.

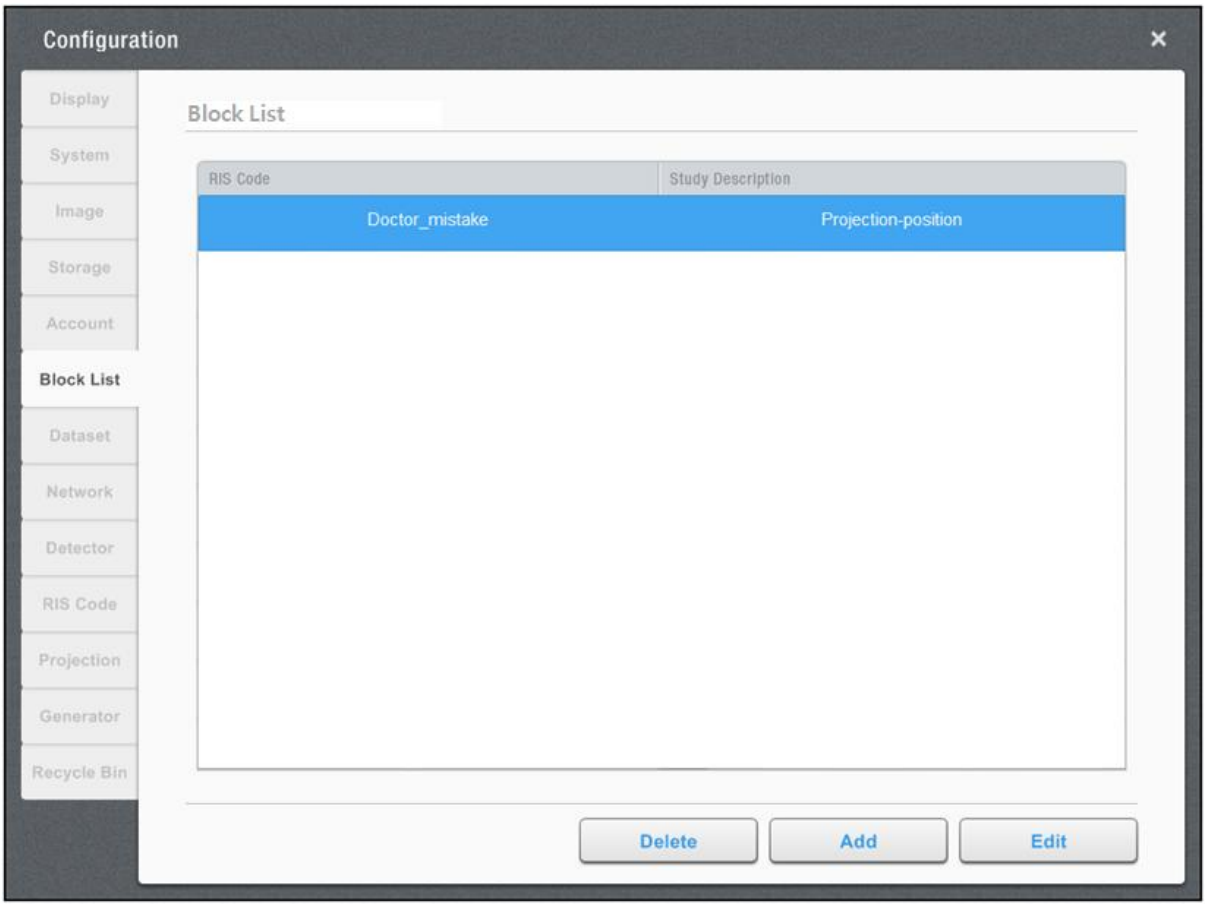


Figure 60. Block List Configuration

✓ The currently registered Block List information is available on the list.

✓ Delete

- Delete the selected Block List entry.

✓ Add

- Add a new entry to the Block List.

✓ Edit

- Edit the existing Block List entry.

6.7 Dataset

✓ Configure the DICOM Header Format.

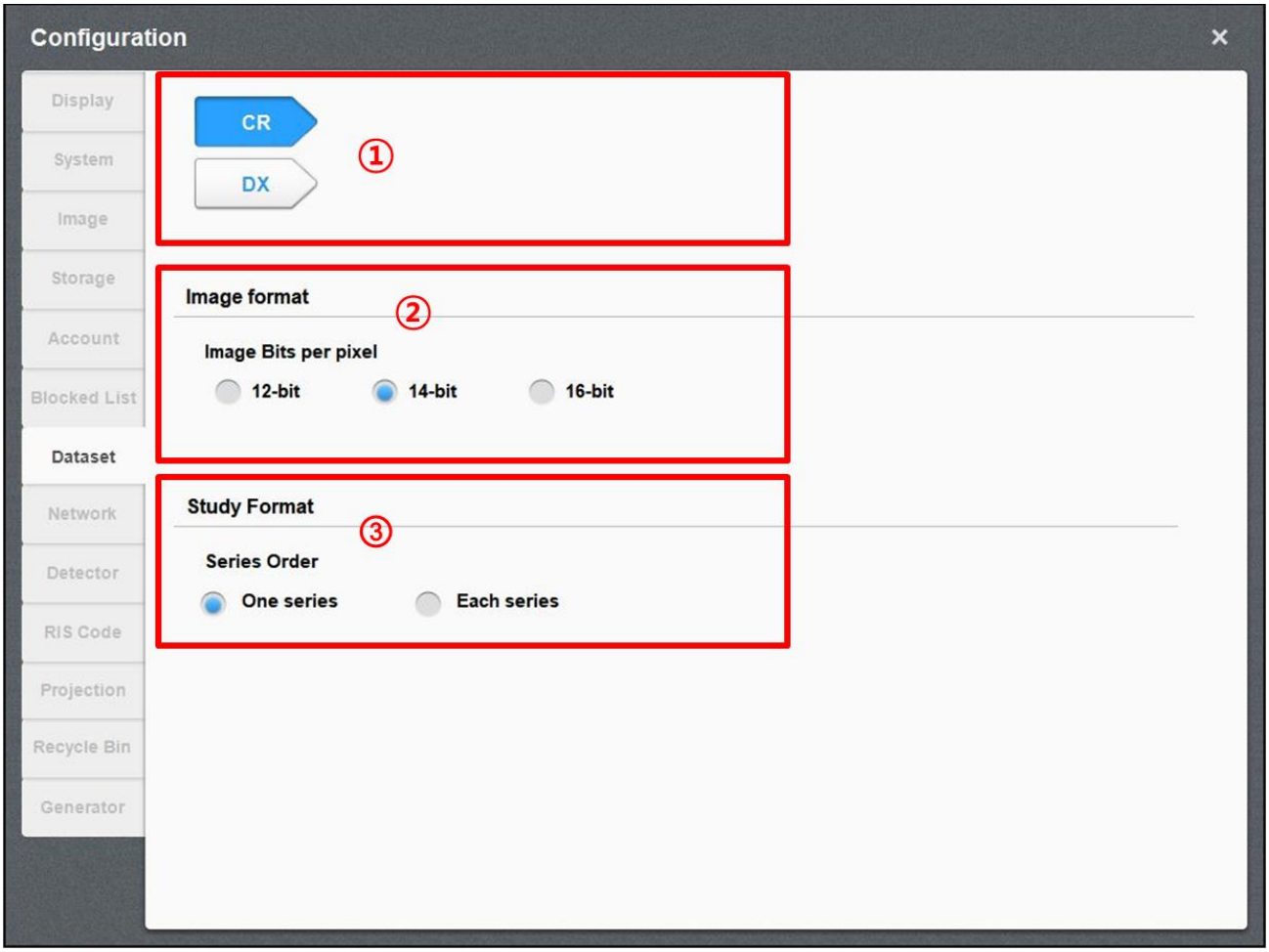


Figure 61. Dataset Configuration

① DICOM Header Item Configuration

✓ CR and DR are separately applied.

② Image format

✓ Configure the Image format information.

③ Study Format

✓ Series Order

- Set the series order to be used when transmitting the images to PASC
- One series: Combine the images in the same study into one series (DR method)
- Each series: Separate the images in the same study into individual series.

6.8 Network

✓ Configure network information such as IP addresses.

Subcategory	Description
Local	Network connection is required. Configure the network information of the PC (or Work Station) currently operating AccuVueMED.
MWL	Network connection is required. Configure the network information of the server storing the Modality Worklist.
Storage	Network connection is required. Configure the network information of the Storage Server, which stores the image files.
Printer	Printer connection is required. Configure the connection information of the printer.
MPPS	Network connection is required. Configure the network information of the MPPS server

6.8.1 Local

✓ Configure the network information of the PC (or Work Station) currently operating AccuVueMED.

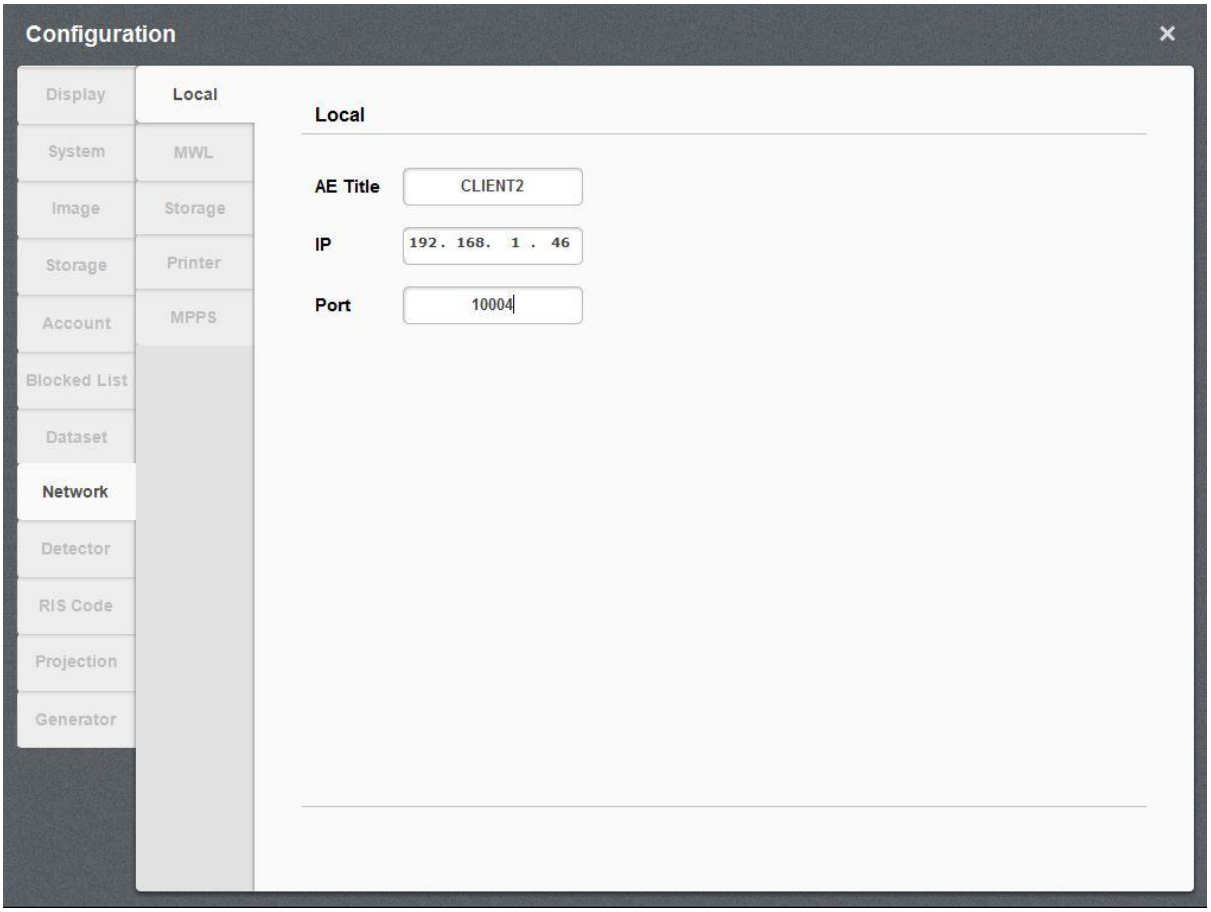


Figure 62. Local Configuration Screen

✓ AE Title

- Enter the name of the local PC (or Work Station) which will be displayed on the Network.

✓ IP

- Enter the IPv4 Address of the PC (or Work Station) currently operating AccuVueMED.

✓ Port

- Enter the Port number.
- It should be configured in accordance with the linked server.

✓ All entered information will be automatically saved and applied.

6.8.2 MWL

- ✓ Modality Worklist Server.
- ✓ Set the server retrieving the patient lists.

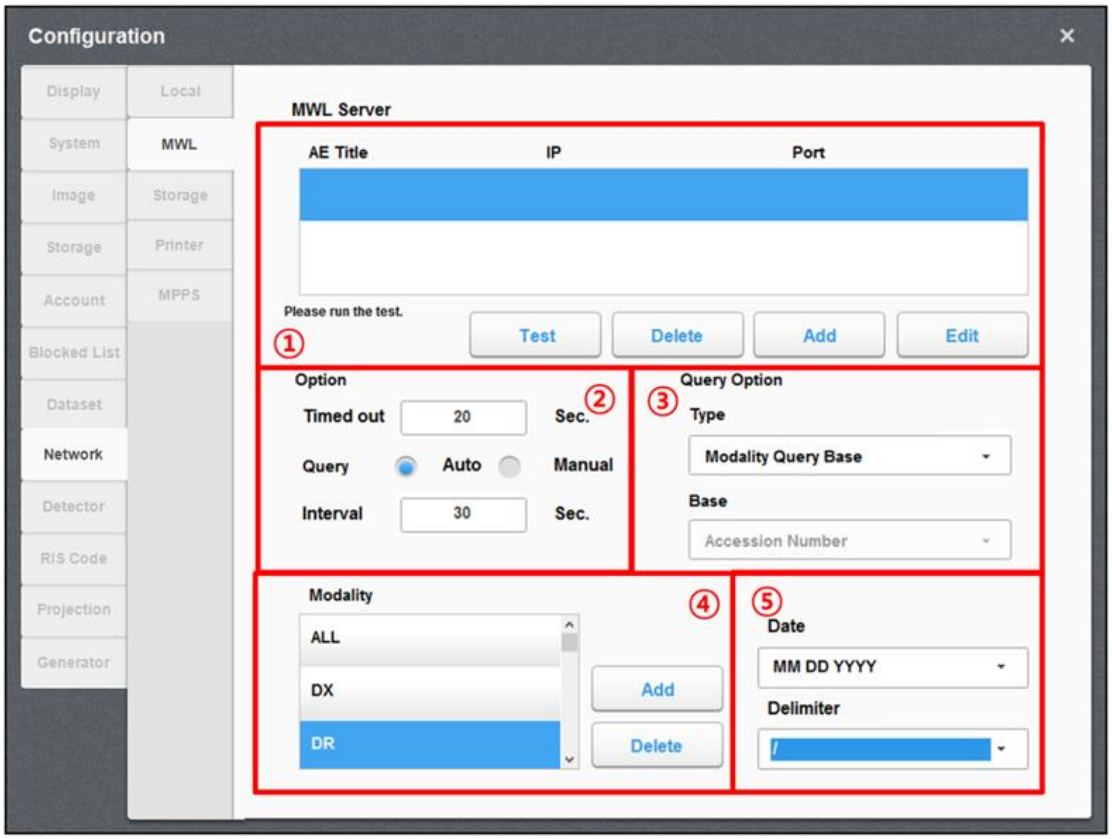


Figure 63. MWL Configuration Screen

① Information of server being accessed

- ✓ Manage the information of server being accessed.
- ✓ List of AE Title(Access Server Name), IP, and Port information.
- ✓ Test
  - · Verify the connection with the selected server.
- ✓ Delete
  - · Delete the selected server from the list.
- ✓ Add
  - · Add an access server.
- ✓ Edit
  - · Edit the selected server information.

② Option

- ✓ Time-out
  - · Response standby time with the server.
  - · It is regarded as connection failure if the server is unresponsive for the set period of time.
- ✓ Query
  - · Decide whether you want to perform the refresh automatically or manually.
- ✓ Interval
  - · Refresh is performed automatically every input interval.

③ Query

- ✓ Decide which item to use for the condition to load the worklist
- ✓ Type
  - · Modality Query Base : Invokes the Worklist only in terms of duration and modality.
  - · Patient Query Base : The Worklist is loaded in addition to the items set as Base in the Period and Modality types.
- ✓ Base
  - · Perform a Patient Query Base with the set items.

④ Modality

- ✓ Select the modality type of the imaging equipment.
  - · E.g. CR, DR
- ✓ Add
  - · Add Modality.
- ✓ Delete
  - · Delete the selected Modality.

⑤ MWL Date type

- ✓ Specify the format of the date to be used for the condition in which the Worklist is to be loaded.

6.8.3 PACS

✓ Configure the Storage Server (PACS).

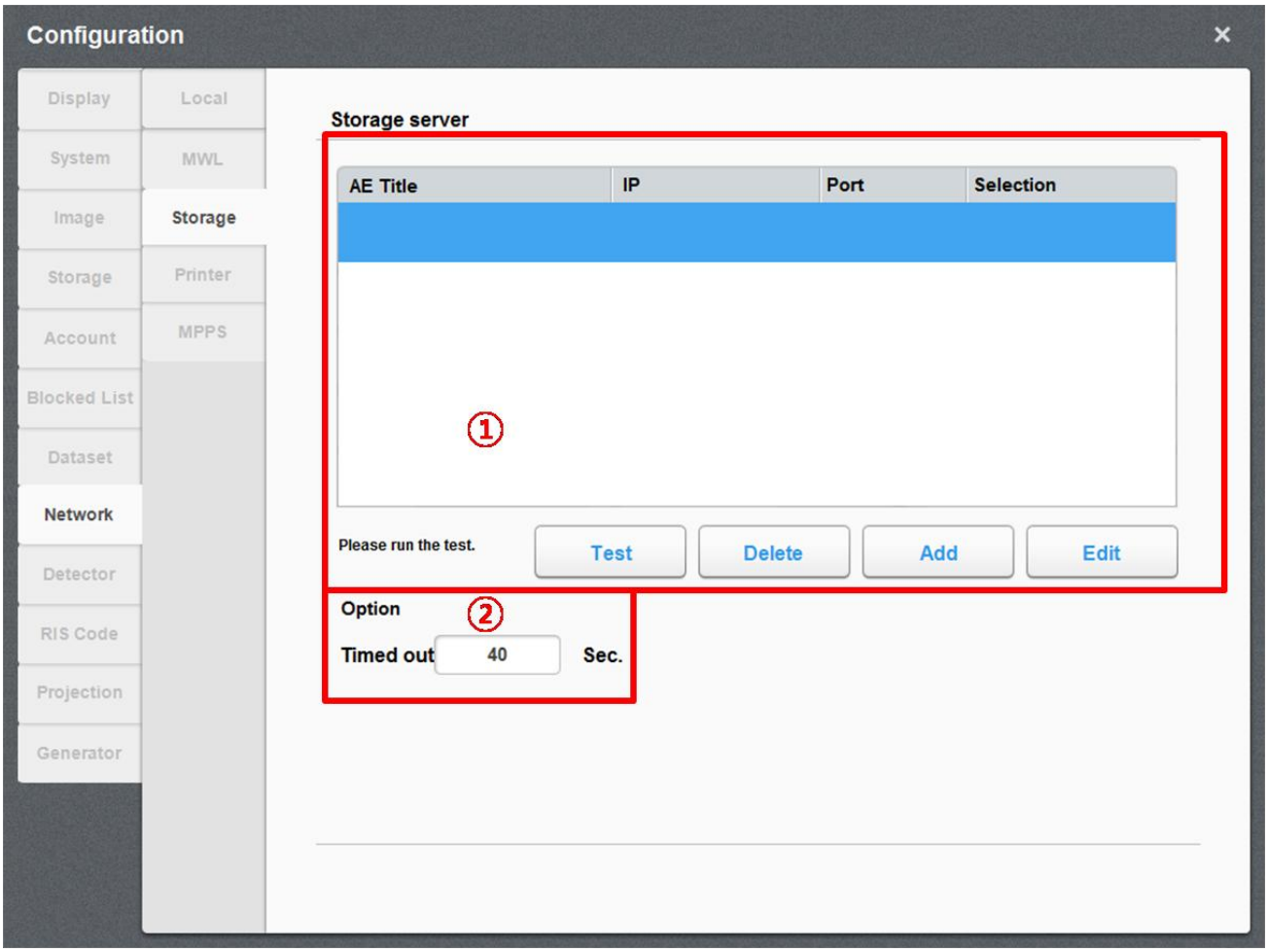


Figure 64. Storage Configuration

① Storage Server

✓ Manage the information of accessing storage server.

✓ It consists of AE Title (Access server name), IP, Port and Selection information.

✓ DICOM images are sent to the PACS server if the selection item of the server is 'O'. More than one PACS server can be selected at a time.

✓ Test

- Verify the connection with the selected server.

✓ Delete

- Delete the selected server from the list.

✓ Add

- Add an access server.

✓ Edit

- Edit the selected server information.

② Option

✓ Time-out

- Response standby time with the server.
- It is regarded as connection failure if the server is unresponsive for the set period of time.

6.8.4 Printer

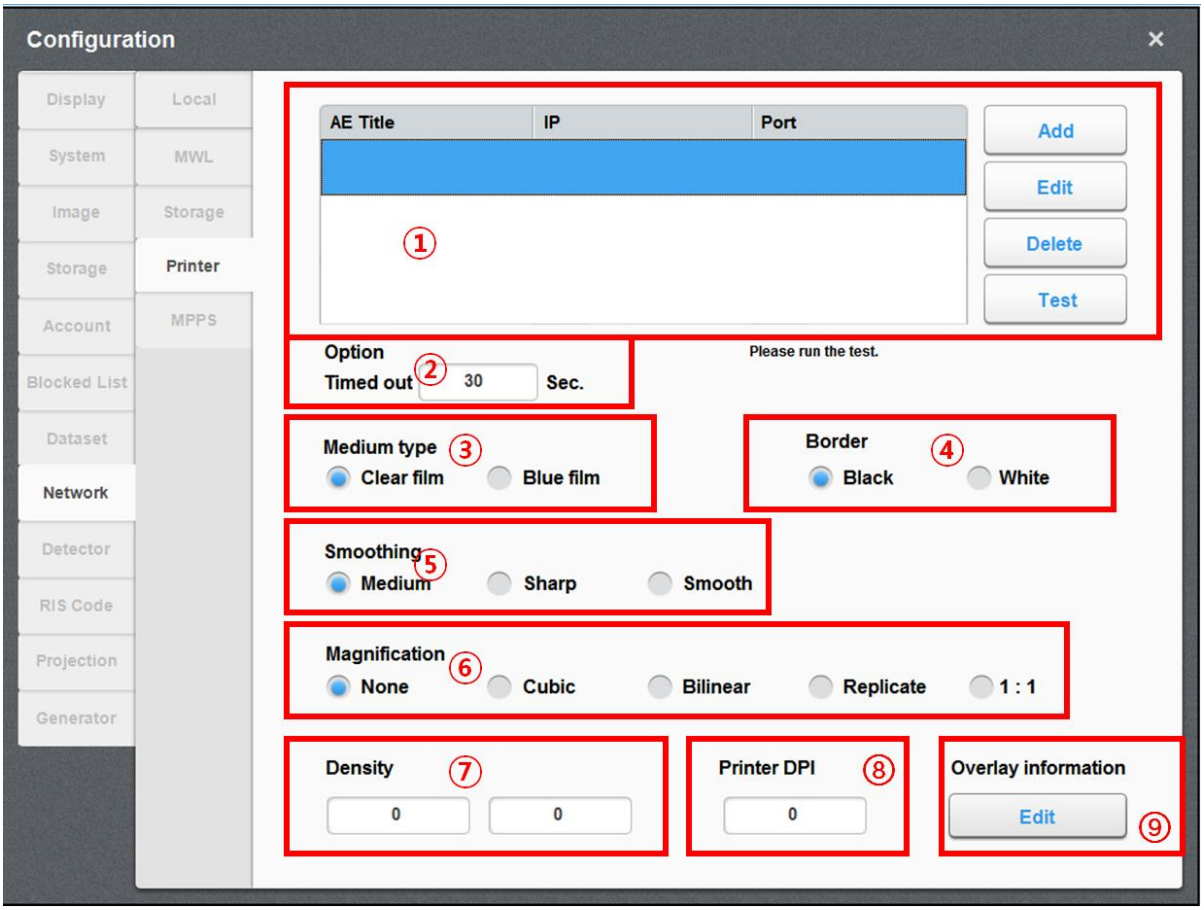


Figure 65. Printer Configuration

① Printer Information & Printer Selection for Connection

✓ Manage the information of the printer to be connected.

✓ Select the printer from the list.

✓ Add

- Add a printer.

✓ Edit

- Edit the selected printer information.

✓ Delete

- Delete the selected printer from the list.

✓ Test

- Verify the connection with the selected printer.

② Option

✓ Restrict the response time by the Printer.

③ Medium Type

✓ Select the type of film. (Clear Film / Blue Film)

④ Border

✓ Set the color of the border line. (Black / White).

⑤ Smoothing

✓ Apply an ‘Smoothing’ effect. (Medium / Sharp / Smooth)

⑥ Magnification

✓ Set the Magnification.

⑦ Density

✓ Adjust the Gray-Level Scale.

⑧ Printer DPI

✓ Select the resolution of the printer.

⑨ Overlay information

✓ Select the additional annotation information added on the film.

✓ The following pop-up window in [Figure 62] appears when clicking the [Edit] icon.

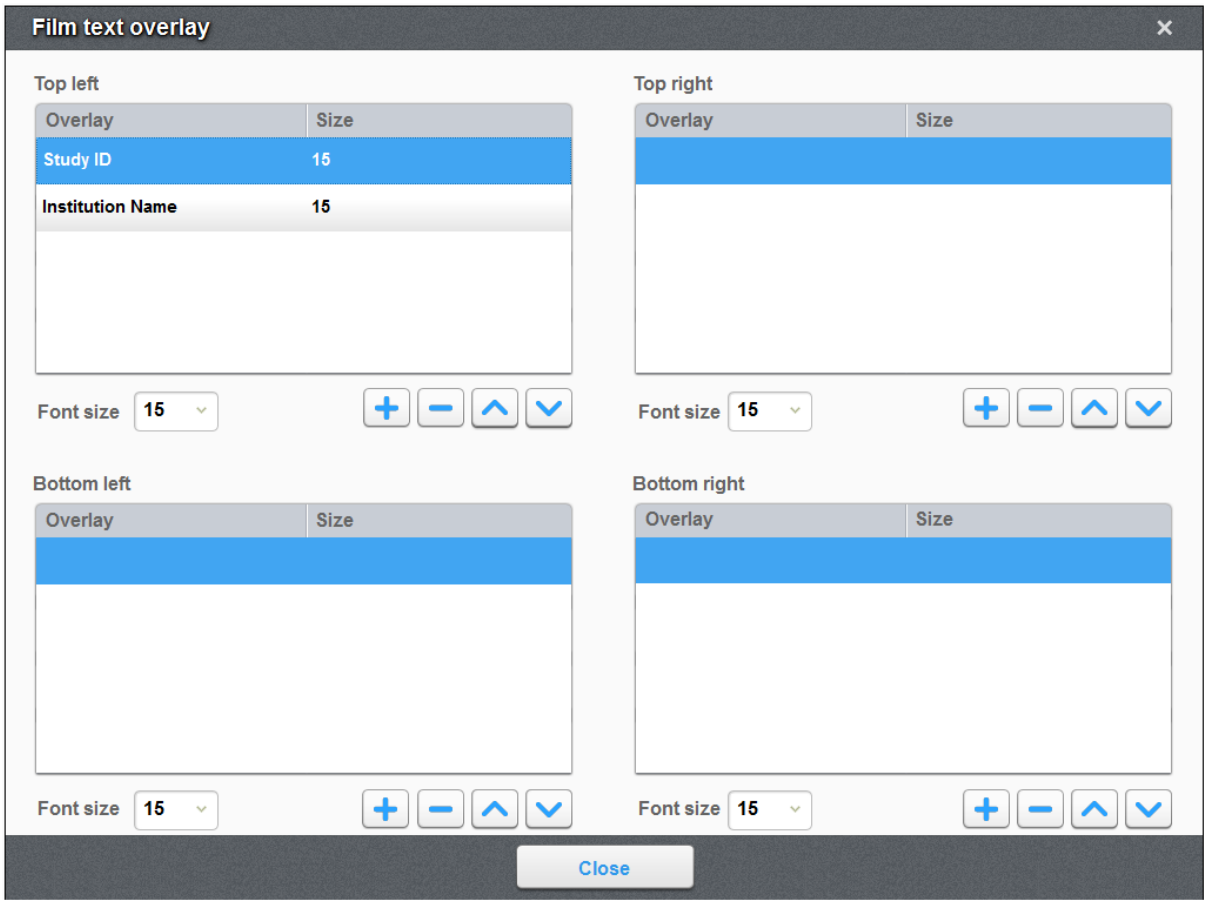


Figure 66. Printer Overlay Information Edit

✓ Instructions for use are identical with the overlay configuration of the image.

Refer to **6.3.3 Overlay** for more details.

6.8.5 MPPS

✓ Modality Performed Procedure Step

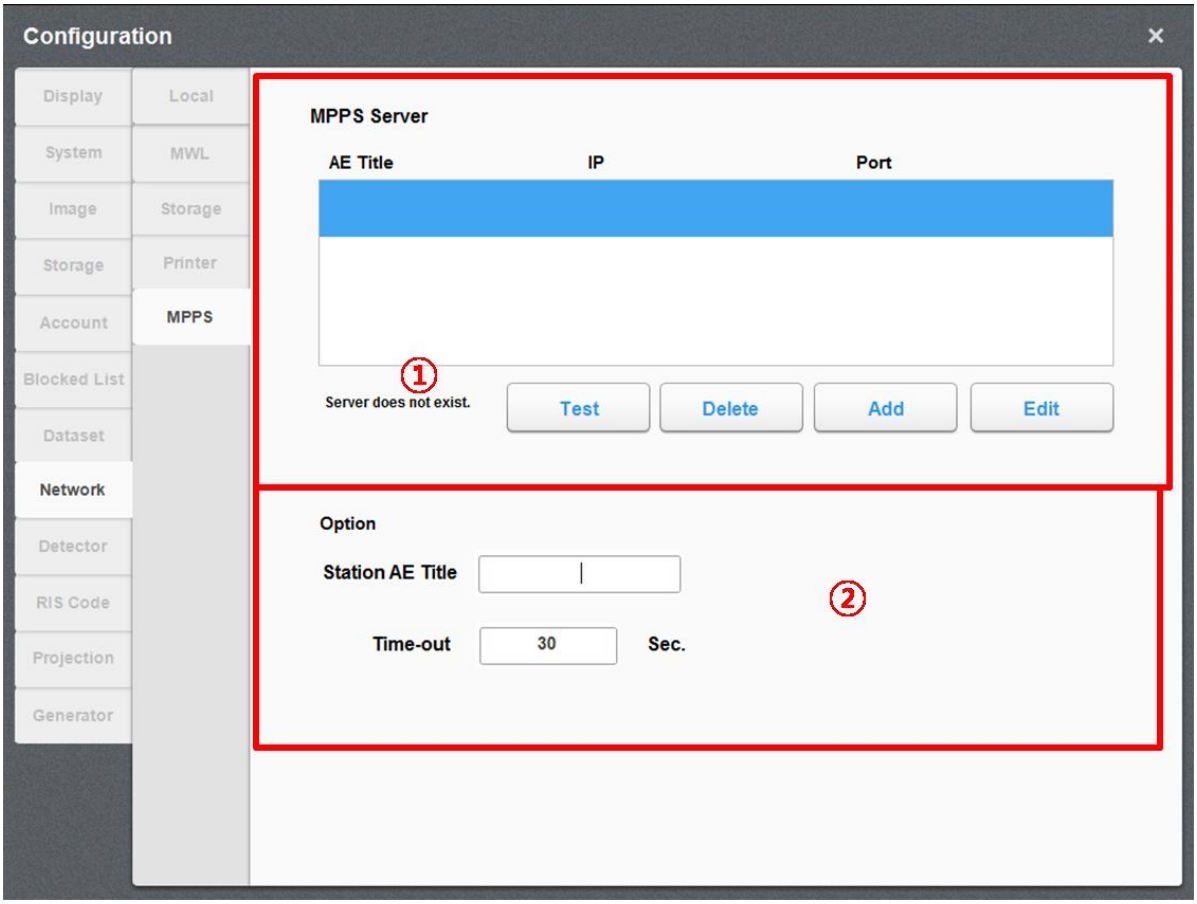


Figure 67. MPPS Information Edit

① Information of server being accessed

✓ Manage the information of server being accessed.

✓ It consists of AE Title (Access Server Name), IP, and Port information.

✓ TEST

- Verify the connection with the selected server.

✓ Delete

- Delete the selected server from the list.

✓ Add

- Add an access server.

✓ Edit

- Edit the selected server information.

② Option

- ✓ Station AE Title
  - · Inner Name of MPPS Server
- ✓ Time-out
  - · Response standby time with the server.
  - · It is regarded as connection failure if the server is unresponsive for the set period of time.

6.9 Detector

- ✓ Detector related configurations.
- ✓ Run Calibration Tool and Terminal Console programs.

Subcategory	Description
General	Register and edit the model of panel (detector) being used. Execute detector software, ECali1 (or Caliview) and Terminal Emulator.
Panel A	Detailed configuration screen related to Panel A, registered in ‘General’ tab. Detailed configuration items for panel are created in accordance with the number of panels registered in ‘General’.

6.9.1 General

- ✓ Register and edit the panel (detector) to be used.
- ✓ Execute calibration software, ECali1 (or Caliview) and Terminal Emulator.

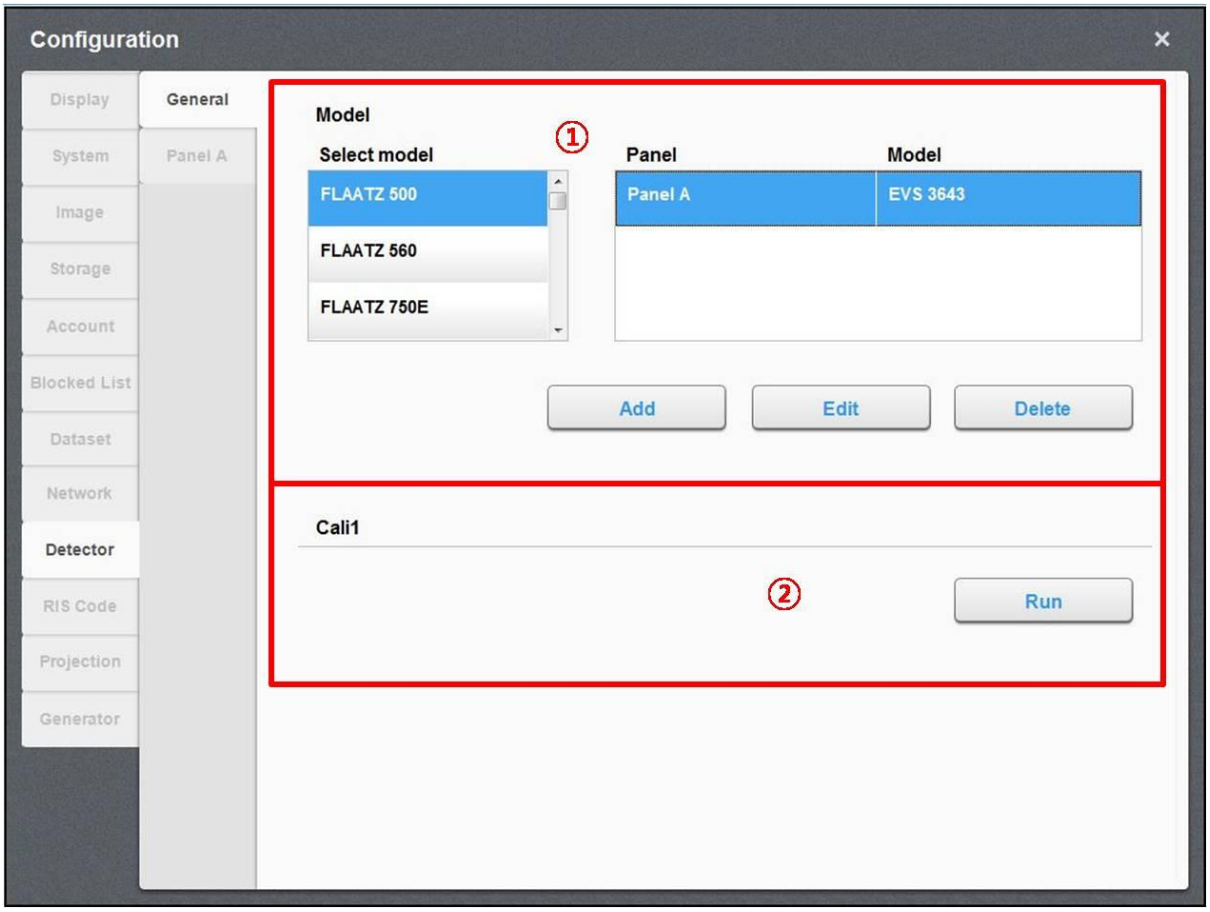


Figure 68. General Configuration

① Panel(Detector) Model Registration and Editing

- ✓ Register the panel to be connected.
- ✓ Add
  - · Register the detector selected from ‘Model Select’.
- ✓ Edit
  - · Replace the currently registered detector with the detector selected from the ’Model Select’.
- ✓ Delete
  - · Delete the most recently registered detector.

② ECali1

✓ Press [Run] icon to execute the ECali1 (or Caliview) program.

③ Terminal

✓ [Run] icon executes the Terminal Emulator.

✓ It only works with FLAATZ Model.

6.9.2 Detailed Configuration by Panel

✓ Perform detailed configuration for each panel (detector).

✓ A menu such as ‘Panel A’ and ‘Panel B’ are generated in accordance with the number of panels registered in ‘General’.

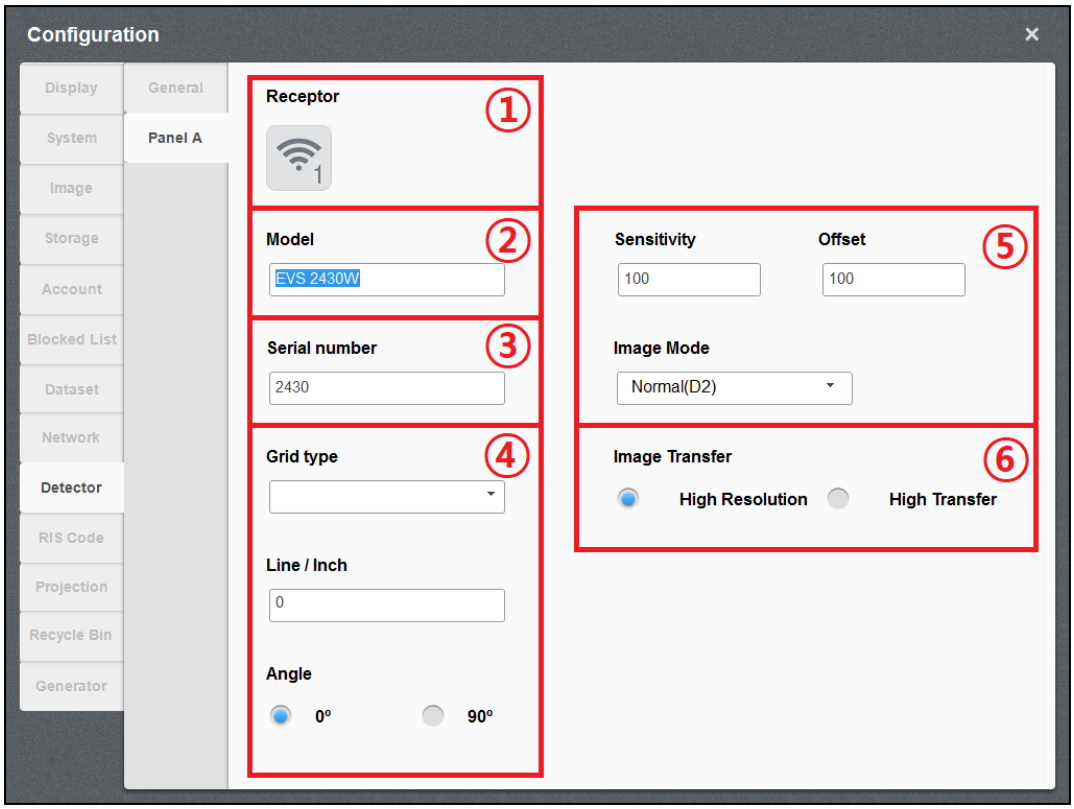


Figure 69. Detector Detailed Configuration Screen

① Receptor

- ✓ Set which Receptor type the detector will utilize.
- ✓ Stand, Table and Wireless mode are available.
- ✓ Wireless Mode is only available for wireless detectors

② Model

- ✓ Model types of the detector.
- ✓ Automatically set by the value registered in ‘General’ tab.

③ Serial Number

- ✓ Enter the serial number of the Detector.

④ Grid Type

- ✓ Grid Type: Select type of grid.
- ✓ Line / Inch: Enter the line/inch value of the grid.
- ✓ Angle: Enter the angle value of the grid.
- ✓ The information about the Grid that has been set in Ecali (Grid sensitivity, Offset, etc) can be checked.

⑤ Image Mode

- ✓ Configure the sensitivity of the image.
- ✓ Configure the offset value of the image.
- ✓ Configure image mode.

⑥ Transmission Mode

- ✓ Select the transmission mode for the acquired images.
- ✓ You can select between the transmission mode with high resolution image and fast transmission mode. .
- ✓ This function is only available for EVS 2430.

6.10 RIS Code

- ✓ RIS (Radiology Information System) Code is a collection of projections.
- ✓ It regulates contents in areas. For example, “A, B, C regions are to be imaged for RIS Codes for certain cancers.”
- ✓ It allows the rearrangement of sequence of projections.

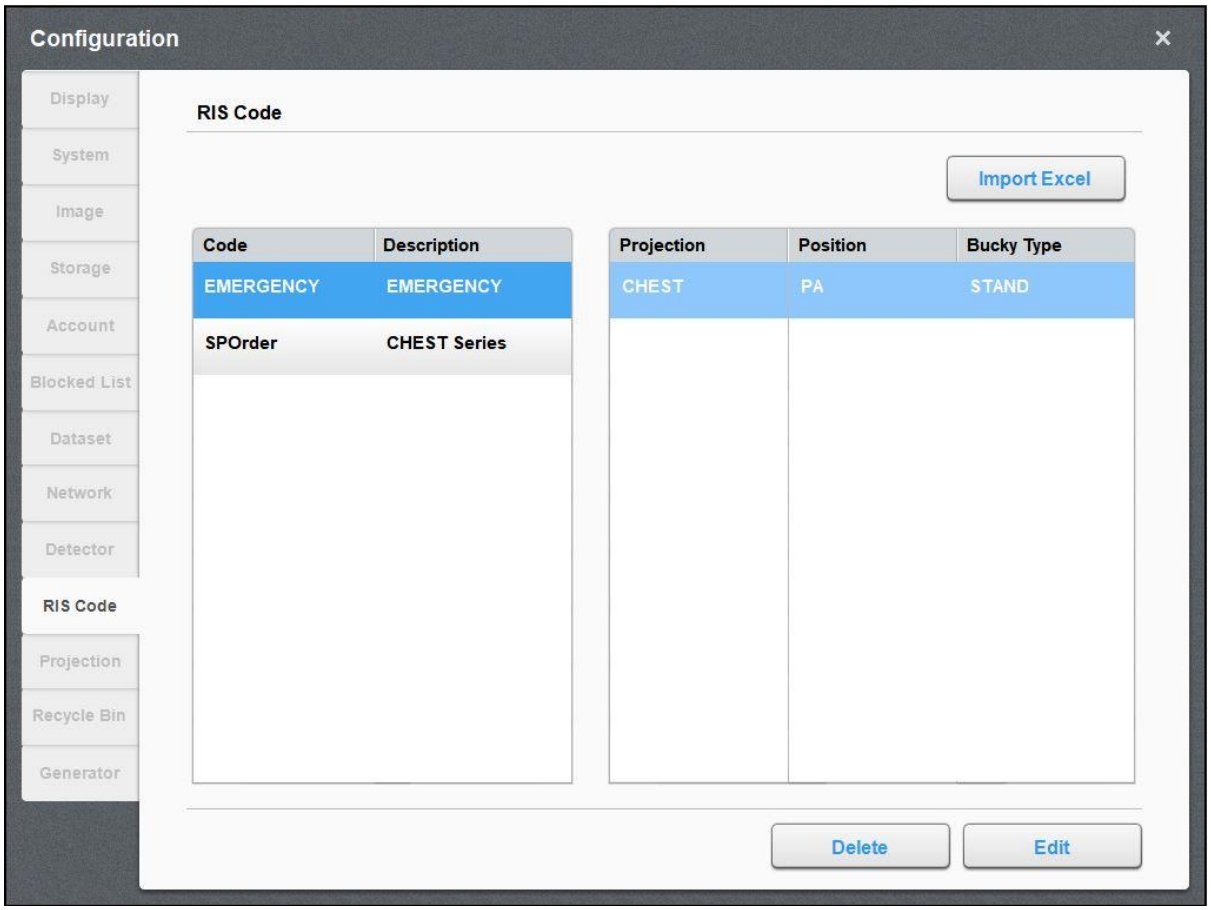


Figure 70. RIS Code Configuration

- ✓ RIS Coode Import from Excel
  - · Add the RIS Code value from an Excel file.
  - · Note: Duplicate code values are overwritten with contents of the Excel file. (It overwrites the existing data).
- ✓ Delete
  - · Delete the selected RIS Code.
  - · Deletion of information part of the Code, such as the projection, is executed by

using the [Edit] icon.

✓ Edit

- Manage the information, such as detailed projection information and imaging environment, of the RIS Code.
- Refer to 6.10.1 Edit RIS Code Window for more details.

6.10.1 Edit RIS Code Window

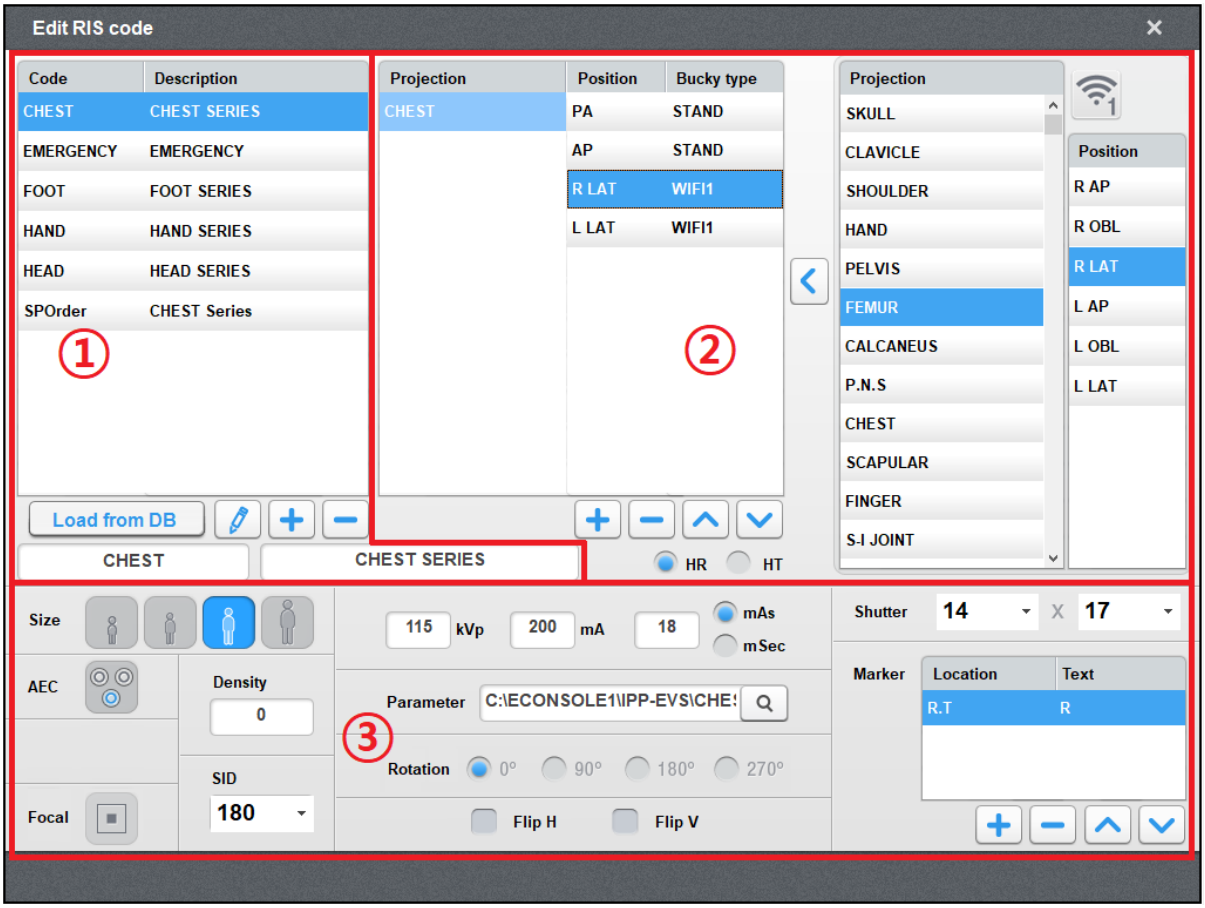


Figure 71. RIS Code Edit Window

① RIS Code List

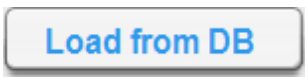
✓ Manage the code and provide description of RIS Codes.

✓ Text Box

- Used to view the Code and Description when adding or editing the RIS Code.

✓ 3 task icons are available. The descriptions are as noted in [Table 12].

Table 12. RIS Code List Management Icon

Icon	Description
Edit	Edit the code and description of the RIS Code selected from the list with the information entered in the text box below the icon. [Editing Sequence] 1) Select the code to be edited from the list. 2) Enter in new information in the textbox below the icon. 3) Click the [Edit] icon.
Add	Add the RIS Code with the information entered into the textbox below the icon. [Adding Sequence] 1) Enter new information in the textbox below the icon. 2) Click the [Add] icon.
Delete	Delete the RIS Code selected from the list. [Deleting Sequence] 1) Select the code to be deleted from the list. 2) Click the [Delete] icon.
	Extract and add the RIS code from the patient list retrieved from the MWL server. RIS Code and description is added but position information is not included

② Editing of projections included in the RIS Code

✓ Manage the projections to be included in the selected RIS Code.

✓ Descriptions concerning the task icons are as noted in [Table 13].

Table 13. RIS Code Projection Management Icon

Icon	Description
Add	Both icons perform identical tasks. Add the projections relevant to the selected Projection/Position in the RIS Code.
Delete	Delete the Projection category from the RIS Code.
Move up	Move the selected Projection category up by one row.
Move down	Move the selected Projection category down by one row.

③ Imaging Environment Configuration

✓ Enter the automatically configured environment value when imaging of the pertinent RIS Code is performed.

✓ HR / HT

- Select the image transfer mode according to the imaging body part.(EVS-2430 Only)
- HR : High Resolution, HT : High Transfer

✓ Patient Size

- Select the patient size.
- 4 levels of selections are available.

✓ AEC

- Set the AEC.

✓ Grid

- Select the Grid Type being used. (None / Fixed / Moving).

✓ Focal Spot

- Set the focus. (Large / Small)

✓ Density

- Set the density.

✓ SID

- Set the distance between the Detector and X-ray Tube.

✓ kVp, mA, mAs(mSec)

- Set the Generator condition.

✓ Parameter

- Locate the parameter file of the image processing which will be applied after talking image.

✓ Rotation

- Set the rotation rate of the image.

✓ Flip H, Flip V

- Select whether to flip the image horizontally or vertically.

✓ Shutter

- Select the ROI Size.

✓ Marker

- Set and manage the marker, which will be automatically inserted in the image.
- Descriptions regarding the Marker Icon are as noted in [Table 14].

Table 14. Marker Icon

Icon	Description
Add	Add a new Marker. Refer to 6.10.2 Add Marker Window for more details.
Delete	Delete the selected marker.
Move up	Move the selected Marker up.
Move down	Move the selected Marker down.

6.10.2 Add Marker Window

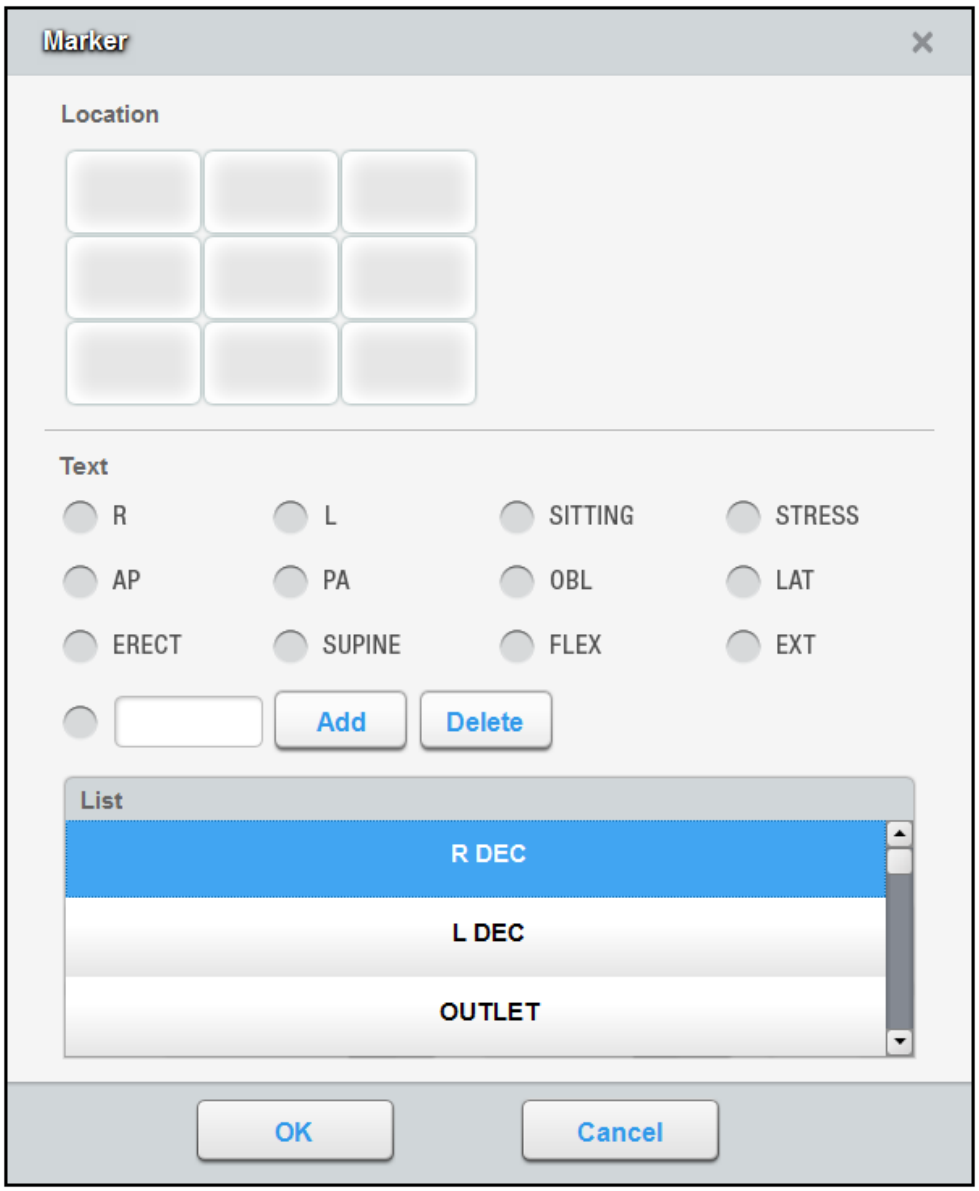


Figure 72. Add Marker Window

- ✓ Location
  - Select the location for the marker to appear on the image
- ✓ Text
  - Select the type of Marker
  - In addition to the texts provided by default, random texts can be used as a marker
  - User registered markers can be selected from the list
  - The Marker list window can be edited by using the [Add] Icon and [Delete] Icon
- ✓ To change overall marker size, go to 'Projection' tab – "Marker font size" menu.

6.11 Projection Editor

✓ Manage the Projection type

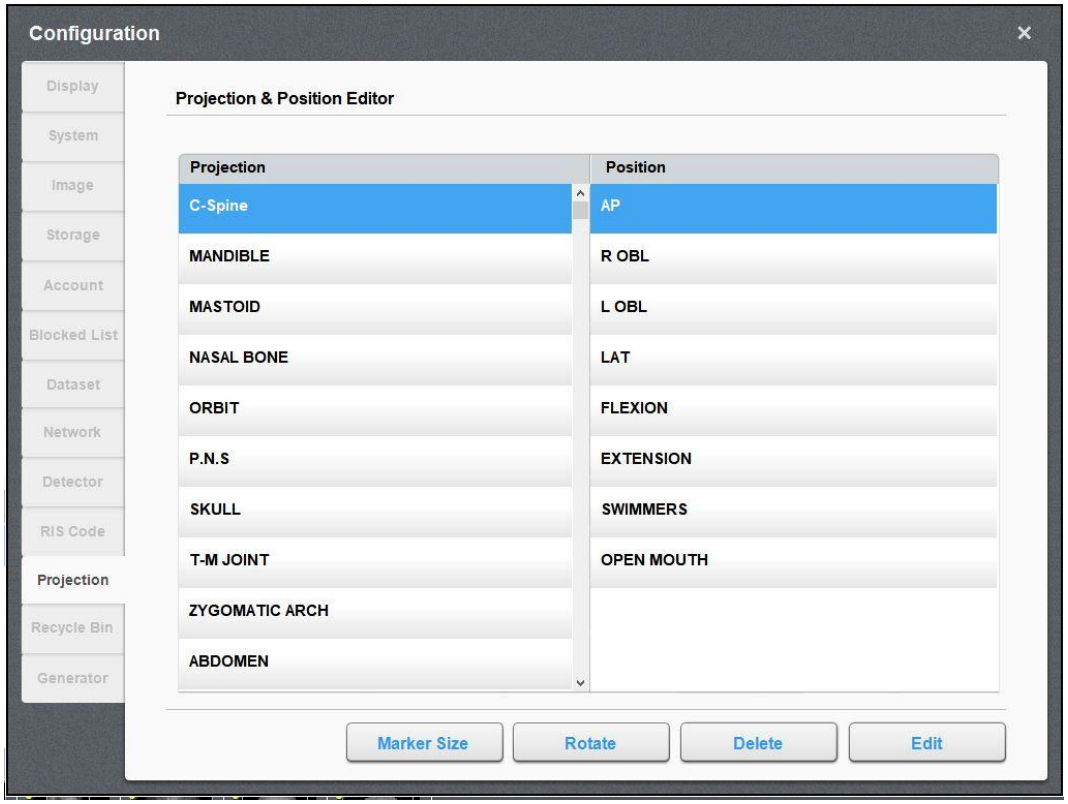


Figure 73. Projection Editor Configuration

✓ Marker Size

- Change marker size.

✓ Rotation

- Set rotation selected receptor's all projection & position.
- Flip V and Flip H are first applied and then Rotation is applied.

✓ Delete

- Delete the selected Projection or Position
- Recent selections which will be deleted by clicking the [Delete] icon are highlighted in yellow

✓ Edit

- Edit the Projection and Position after opening the 'Project Editor Window'.
- Refer to **6.11.1 Projection Editor Window** for more details.

6.11.1 Projection Editor Window

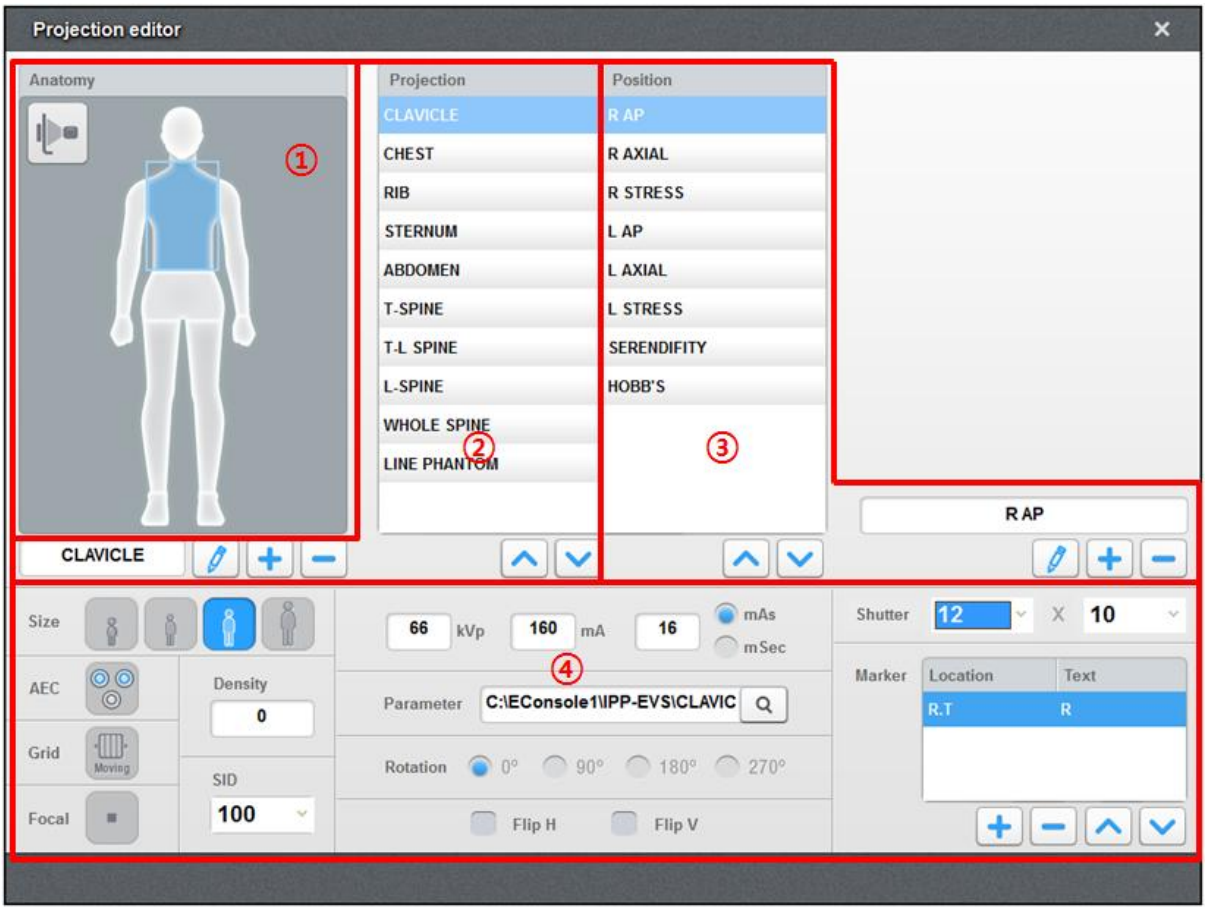


Figure 74. Projection Editor Window

① Anatomy

- ✓ It must be selected first.
  - · Projection and position will not appear unless an anatomical region is selected from the Anatomy
- ✓ Select the projection
- ✓ If the Receptor Type is different, even if the anatomical regions are the same, it will be saved as a different setting
  - · Make sure to set the anatomical region, as well as the Receptor type.

② Projection

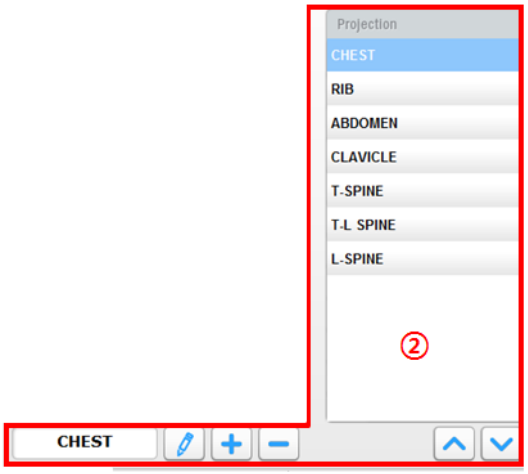


Figure 75. Projection Configuration

- ✓ Manage the Projection list
- ✓ Refer to [Table 15] for instructions of each icon

Table 15. Projection/Position List Management Icon

Icon	Description
Edit	Edit the name of the selected category from the list with the entry in the left textbox [Edit Sequence] 1) Select the category to be edited from the list 2) Enter the new information in the textbox on the left of the icon 3) Click the [Edit] icon
Add	Add the category with the information entered into the textbox on the left of the icon [Add Sequence] 1) Enter the new information in the textbox on the left of the icon 2) Click the [Add] icon
Delete	Delete the selected category from the list [Delete Sequence] 1) Select the category to be deleted from the list 2) Click the [Delete] icon
Move up	Move the selected projection category up one row in the list
Move down	Move the selected projection category down one row in the list

③ Position

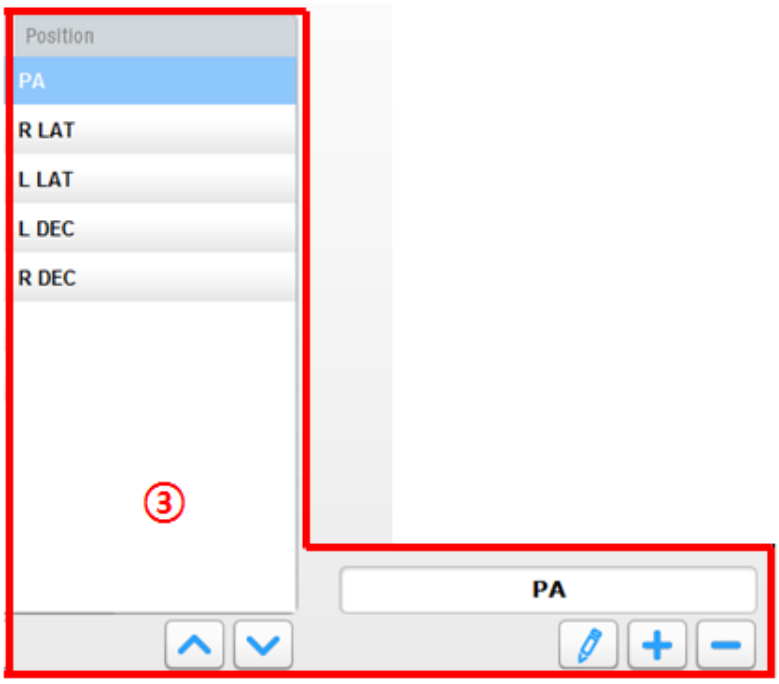


Figure 76. Position Configuration

- ✓ Manage the Projection list
- ✓ Refer to [Table 15] for instructions concerning each icon

④ Imaging Environment

- ✓ Set the appropriate imaging environment for the selected projection
- ✓ Detailed information concerning the Imaging Environment Configuration is identical to the Imaging Environment Configuration of the 'RIS Code Edit Window'.
  - Refer to '③Imaging Environment Configuration' of **6.10.1. Edit RIS Code Window**.

6.12 Recycle Bin

- ✓ Configure deleted images.
- ✓ Recycle Bin setting is available if “Use Recycle Bin” is checked in “Delete” option of “Image” tab.

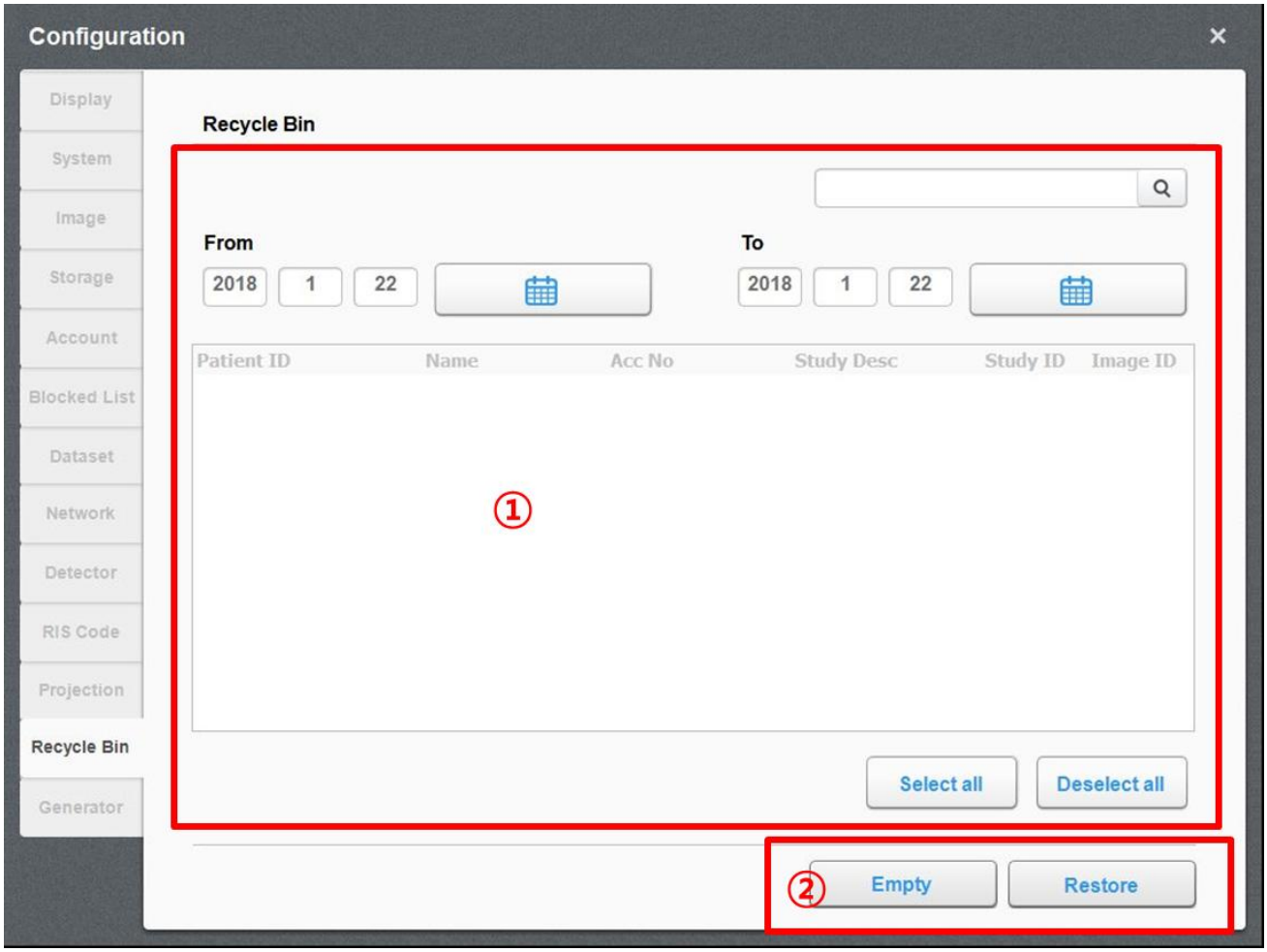


Figure 77. Recycle Bin Setting

- ✓ If an image is deleted while the recycle bin option is activated, you can see the information of the deleted image through “Recycle Bin” tab.

① **Deleted image information**

- Show the list of deleted images
- Search an image by date using Search button.

- Select all the images stored in recycle bin at once using “Select all” button.
- All selected items are unselected when clicking “Deselect all” button.

② **Recycle Bin Function**

✓ Delete

- Delete the selected image permanently.

✓ Restore

- Restore the selected file.

Appendix A. Glossary

Terms	Description
PACS	Picture Archiving and Communication System. System for the storage, interpreting and access of medical imaging information
DICOM	Digital Imaging and Communication in Medicine. Standards and regulations regarding medical digital imaging and communications.
DICOMDIR	DICOM Directory. DICOM directory information file is stored in the root folder of the media (CD/DVD).
HIS	Hospital Information System. Information of registration/administrative system, including OCS, PACS, etc.
OCS	Order Communication System
RIS	Radiology Information System. Operated as part of HIS or independently
MWL	Modality Worklist. DICOM standards for sharing scheduled examination information
CUDA	Computer Unified Device Architecture. High speed parallel processing architecture utilizing a GPU developed by NVIDIA
GPU	Graphic Processing Unit.
GUI	Graphical User Interface. Computer interface for the user, developed by graphic elements
Detector	Flat Panel Digital X-ray Detector.
Compiler	Program which converts source codes in high level language into specific machine codes

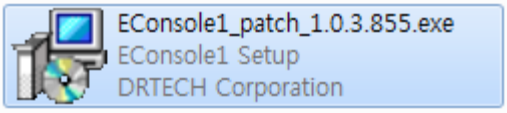
Build	Process where the source code is being converted for computer operation
API	Application Programming Interface. Interface developed for use of specific functions in the application program
Installer	Program run for installation, maintenance and removal of a specific application program.
Login	Process authenticating the user for permission to access the system
Coding Convention	Style guideline to create a source code
Code Review	Process where developers inspect and verify the created/edited source code
Code Coverage	Tested number of code components/Total number of code components * 100
Static Code Analysis	Process of discovering potential defects of the program without operating it by analyzing the source code
Cyclomatic Complexity	Digitized level of complexity of the program's source code
CI	Continuous Integration. Automated integration process of the source code, and the process of improvement and receiving feedback through periodic build, test analysis
Encryption	Encrypting the data
Protection (Anti-Crack)	Protection preventing program hacking through Reverse Engineering
SCP	Service Contents Provider
Annotation	Text and various shapes marked on the completed image
LUT	Lookup Table. Table of previously calculated values.

ROI	Region of Interest. Actual region necessary in a completed image.
Exception	Task calibrating the quality of the detector image.
Calibration	Generic term of data files used for the calibration of detector image quality.
Map File	Lookup Table. Table of previously calculated values.
Pixel Map	Data file used to calibrate bad pixels in detectors.
Gain Map	Data file used to calibrate the properties of the detector subsequent to installation environment.
Panel Map	Data file used to calibrate the properties of the detector panel itself.

Appendix B. Update

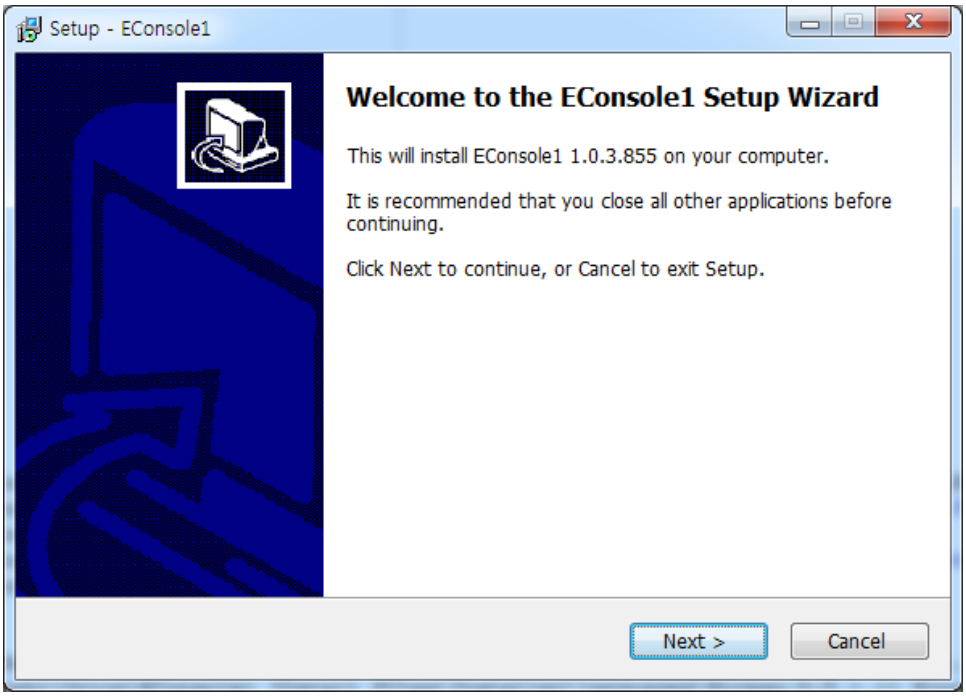
If currently using version has bugs, please contact CS team so that CS team send you an update (patch) installer.

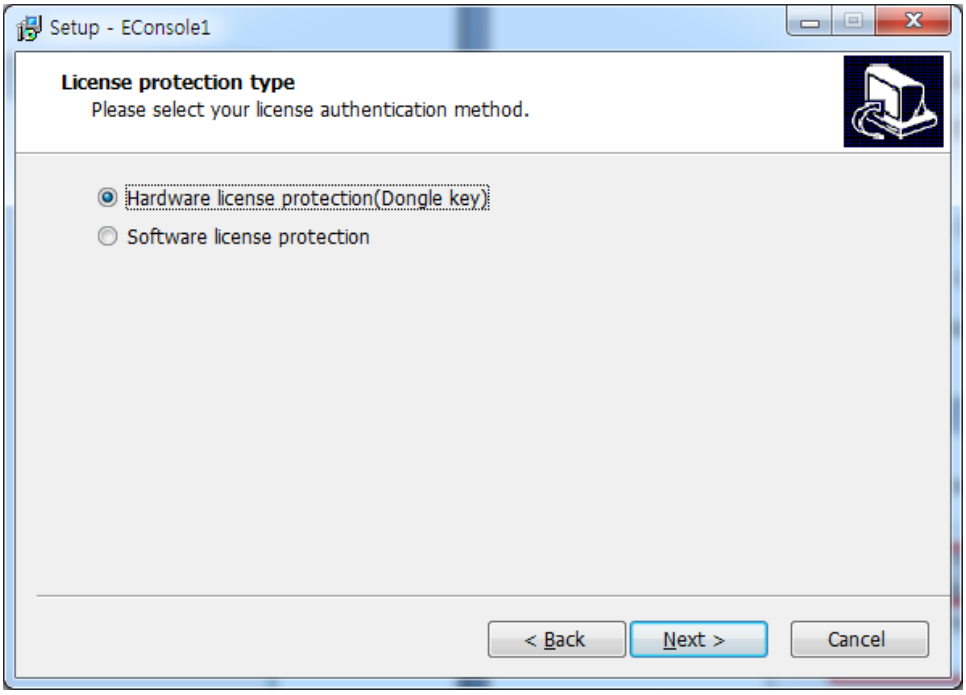
If you receive the update installer file, please run the provided setup file.



✓ Please back up original AccuVueMED folder (ex: C:\EConsole1) in order to prevent a fatal error.

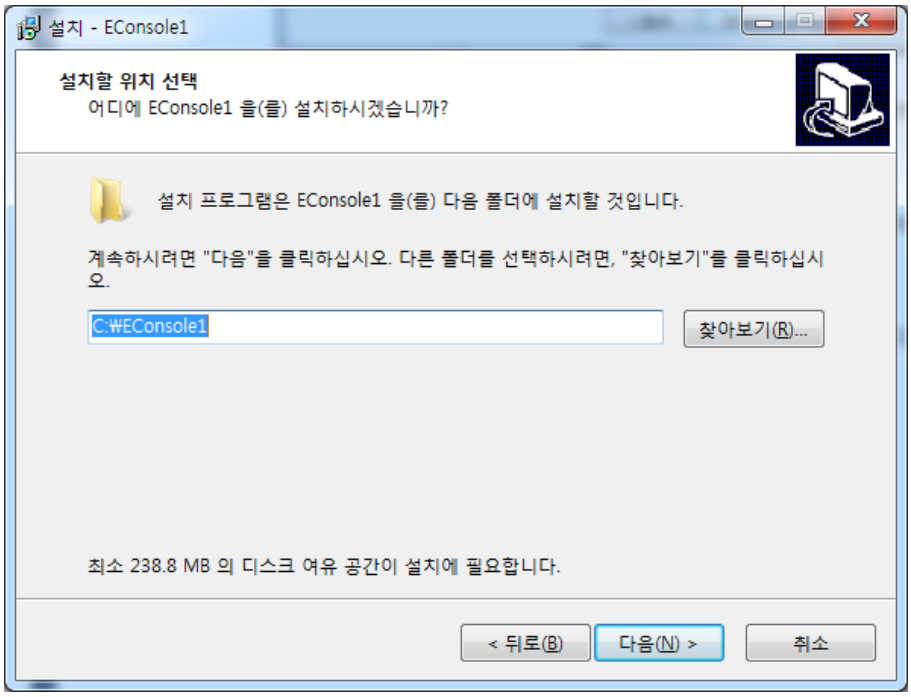
If the setup file runs the following screen will appear..
Click [Next] to start the installation.





Select license protection type you purchased.

- ✓ Hardware License Protection (Dongle Key)
  - Provide special USB
  - You can run AccuVueMED only when the USB connected.
- ✓ Software License Protection
  - Provide the license on the special PC.



Do not change installation folder and click [Next].

It will update the program automatically. When the installation is finished, please run the AccuVueMED and check the version.

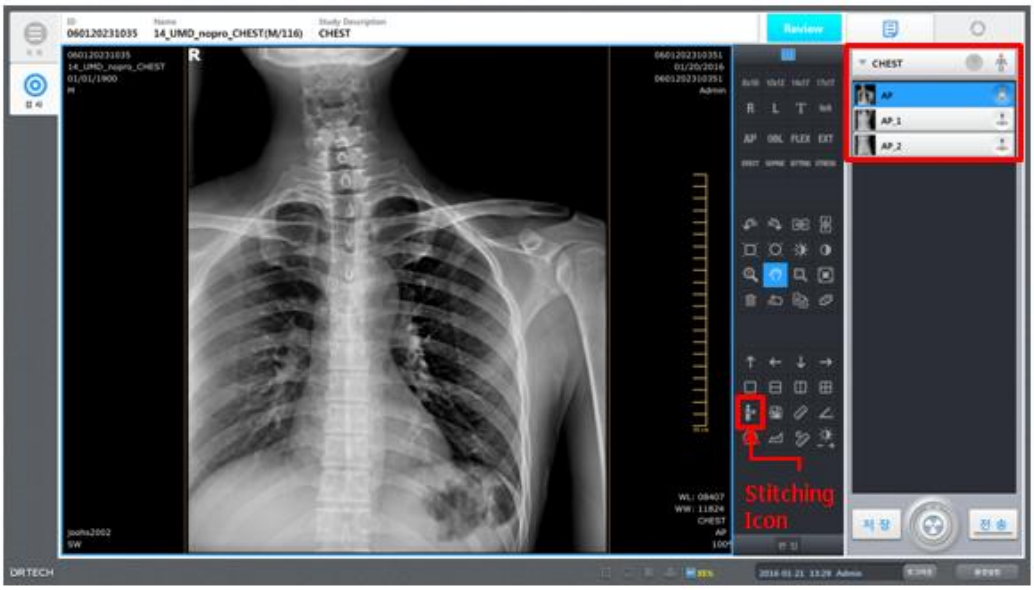
Appendix C. Stitching

Stitching provides the ability to automatically align images taken from multiple sites and one of the features that combine Images.

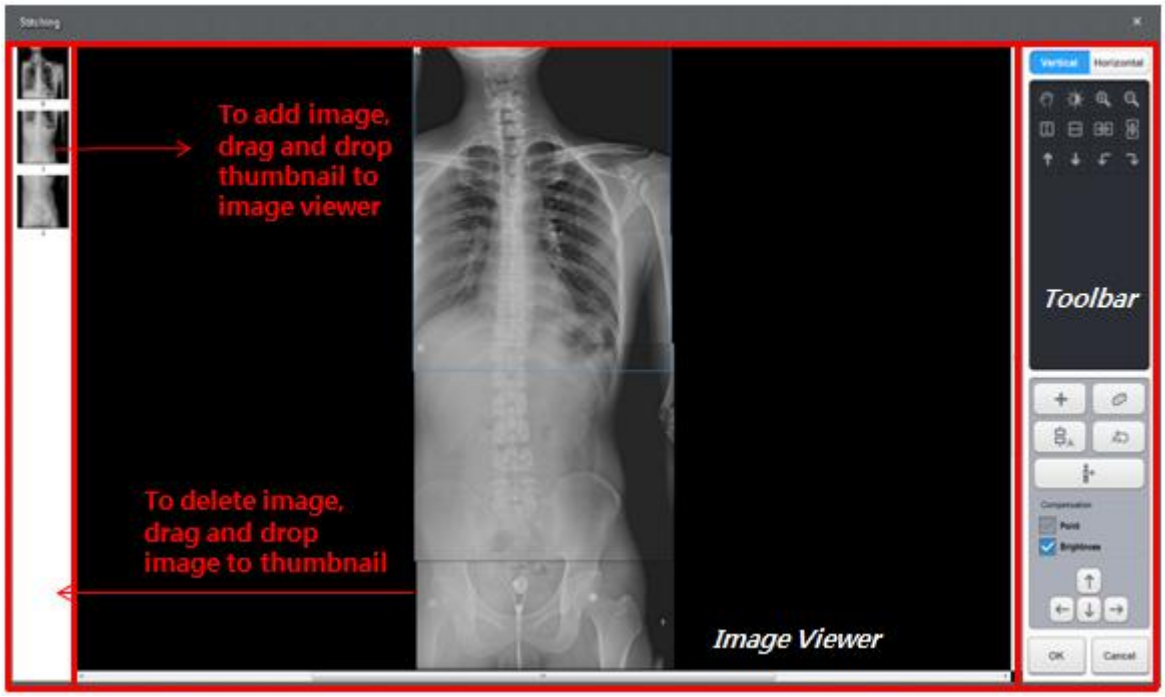
Caution	· Support up to 4 mages. · Set SID as 180cm. · When performing the projection, please minimize the patient's movements. · When performing the projection, please make sure that the overlapping area is at least 10cm. · Please note there may be errors in automatic alignment according to projection environment.

In order to perform the stitching function, you should select the projection in following two ways.

✓ WHOLE SPINE
✓ LONG BONE



Same projection – After acquiring the images to be stitched, press the toolbar icon. A ‘Stitching Window’ will pop-up. Then images that are used for stitching will be automatically sorted.



Stitching screen is split into three areas.

- ✓ Thumbnail
  - Display an image that can be used for stitching.
- ✓ Image Viewer
  - Display aligned the images automatically.
- ✓ Toolbar
  - A collection of icons and buttons that let you perform various commands.

Common course of stitching are as follows.

- ✓ When automatically aligned images are in right position.
  - Press the button to apply stitching.
- ✓ When the automatically aligned images are not in right position.
  - Place images to be stitched in image viewer and align the images manually.

- Press the button in the Toolbar and click the overlapped part of the image to be stitched.
- Press the button to apply stitching.

✓ When you want to align the images in the image viewer automatically.

- Press the button to align the images automatically.

When you finish all the stitching works, press the [OK] button to exit.

Descriptions of the icons in the toolbar are as follows.

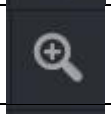
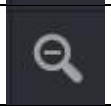
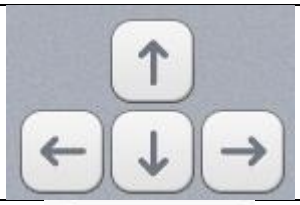
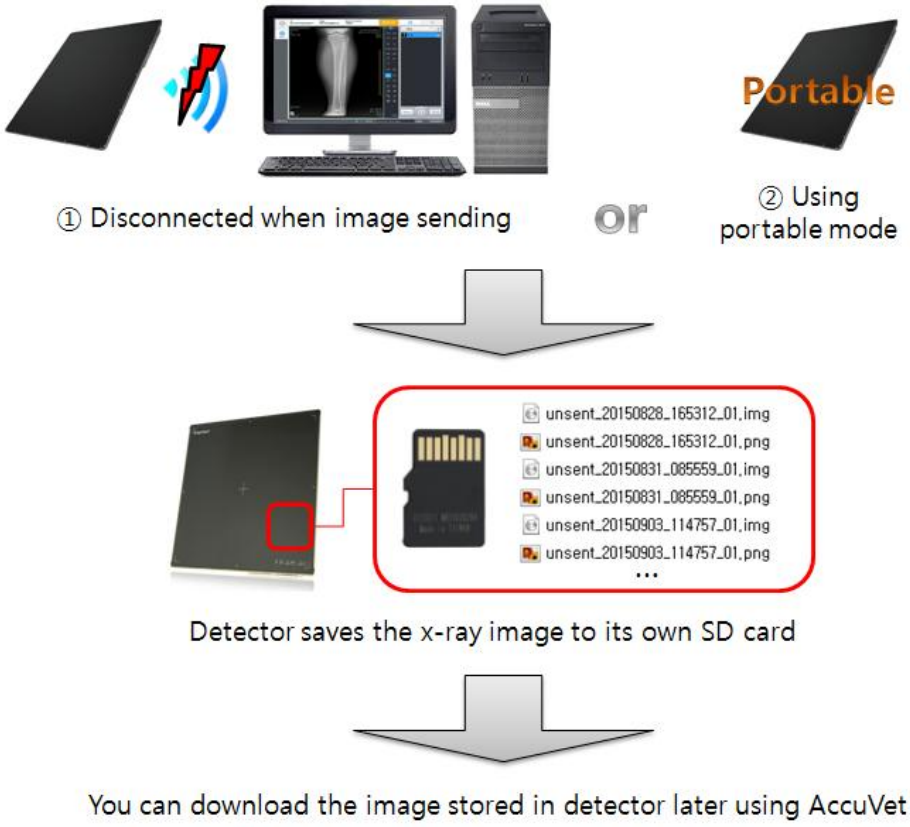
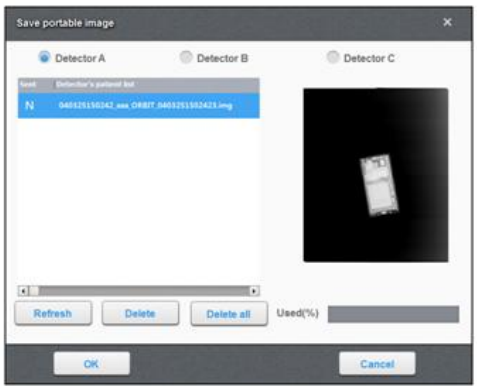
Icon	Description
	Stitching direction.
	Move the image.
	Change the W/L.
	Zoom In
	Zoom Out
	Perform zoom in/out of image according to the height of the Viewer.
	Perform zoom in/out of image according to the width of the Viewer.
	Left and right Flip
	Up and down Flip
	Change the image sequence (top)
	Change the image sequence (bottom)

	Image rotation (counter clock-wise)
	Image rotation (clock-wise)
	Enter stitching point
	Clear stitching point
	Align images in image viewer.
	Separate pasted the image.
	When entering the stitching point, two images are synthesized. When no stitching point is input, all the aligned images are synthesized in the image viewer.
	Additional image processing options Point: When you enter the stitching point, revise Hand tremors in touch environments. (Default is OFF) Brightness: Revise the brightness between the images. (Default is ON)
	Move the selected image to the pixel unit.
	Store all the stitching operation and then end the procedure.
	Clear the stitching operation, and shutdown.

Appendix D. Portable function

* The CR Mode of the EVS2430W is available through this portable function of AccuVueMED. Some of wireless detectors offer a function to save a x-ray image.
If the user shot a x-ray without using the software, the image will be saved in the detector.
This saved image control function is called "Portable function".





Portable function summary

AccuVueMED Vet's portable has two following functions.

✓ Download the image saved in detector

✓ Register the exam order to detector

1) Download the image saved in detector.

Proceed in the following order

① Select an exam order and go to acquisition.

② Click icon in the ToolBar

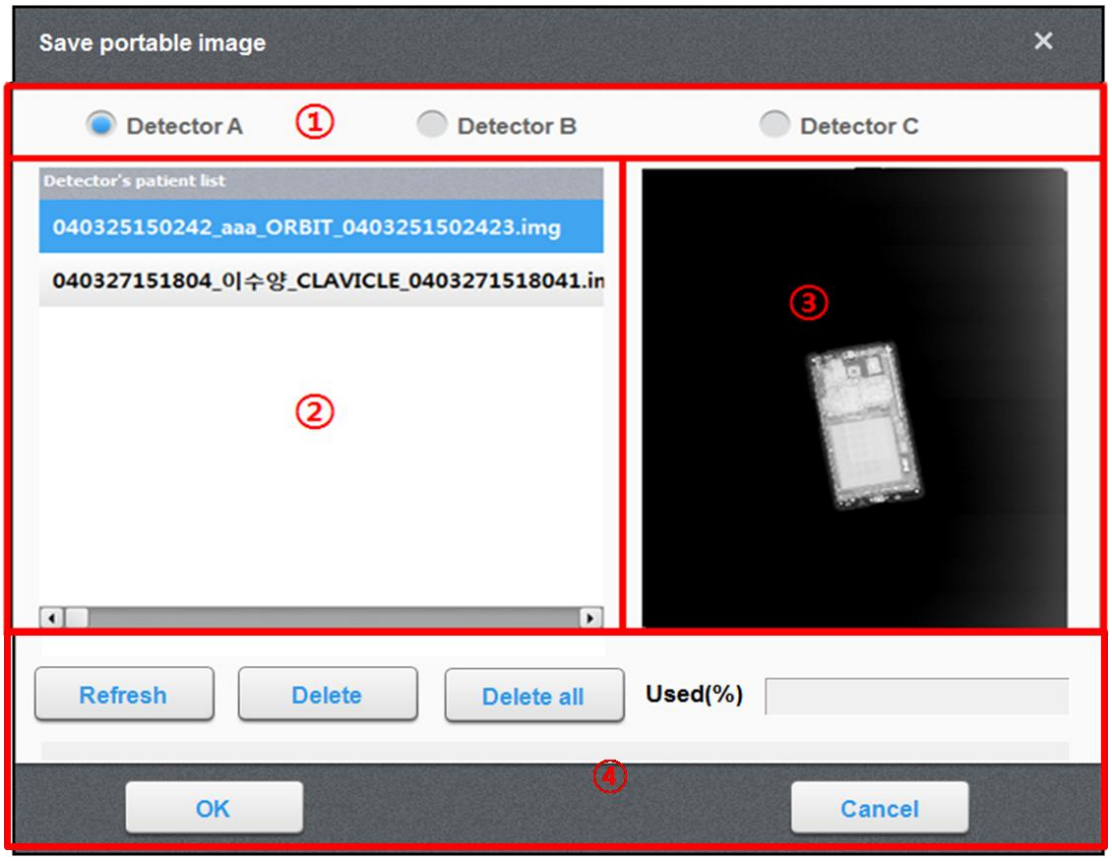
✓ If it is not in the toolbar, click the [Edit]' and add it.

③ Save portable image pop-up comes up.

✓ Select an image in the Detector.

✓ Click [OK].

Save Portable Image Window



Save portable image

① Select an image saved detector.

② Show the file names of the saved images of the selected detector

③ The preview image of the selected image.

④ Function button and UI.

- ✓ Refresh
  - · Refresh a image list
- ✓ Delete
  - · Delete the selected image in detector.
- ✓ Delete all
  - · Delete all the images in the selected detector.
- ✓ Used(%)
  - · Used storage of the selected detector.
- ✓ OK
  - · Get the selected image and show it to AccuVueMED Vet's image viewer.
- ✓ Cancel
  - · Close the 'Save Portable Image Window’.

2) Register the exam order to detector

It is the function that saves exam orders to the detector and shots an image without PC depending on the given exam list.

Save exam order function

① Click button.

② The 'Save Image List Window’ comes up.

- ✓ Select a detector.
- ✓ Select List on the right side and click '<' button.
- ✓ The list on the left side is saved to the detector when clicking the [Save] button.

Save Image List

Save image list

① Select a detector.

② The list will be saved in detector.

③ Show Current work list.

④ Function buttons.

- ✓ < Button
  - · Add a selected list.
- ✓ Delete
  - · Delete selected list.
- ✓ Delete all
  - · Delete all work list.
- ✓ UP/Down
  - · Change work list's order.
- ✓ Refresh
  - · Refresh work list.
- ✓ Set portable
  - · Change the detector's image acquisition mode to portable mode.
  - · Caution: If it is set to portable mode, AccuVueMED vet and detector's connection will be disconnected.

- If you want to connect AccuVueMED Vet and detector, press [AP] button on the detector's side.

✓ Used (%)

- Used storage of the selected detector.

✓ Save

- Save worklist on the left side to the detector.

✓ Cancel

- Close the 'Save Image List Window'.

Appendix E. How to use rotation tools

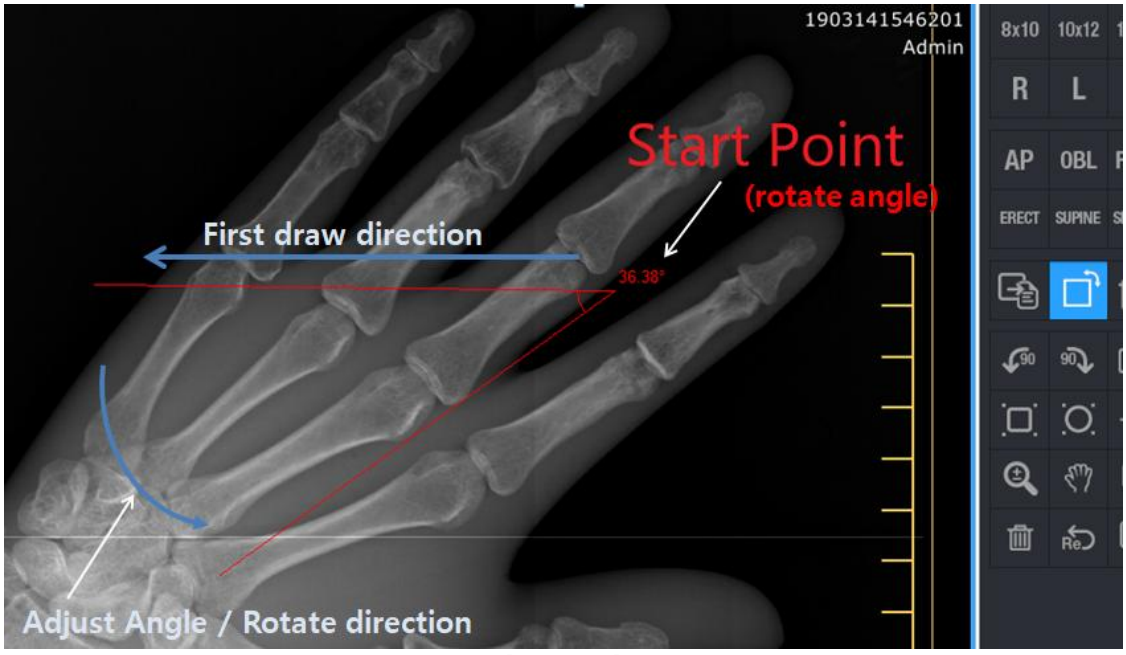
1) Image rotate

✓ Image rotate tool operation procedure.

① Click tool for activate rotate mode.

② Draw angle to rotate. Rotate direction will same as finish direction.

Prepare rotation



Apply rotation

③ Click tool again to apply rotation and save image.

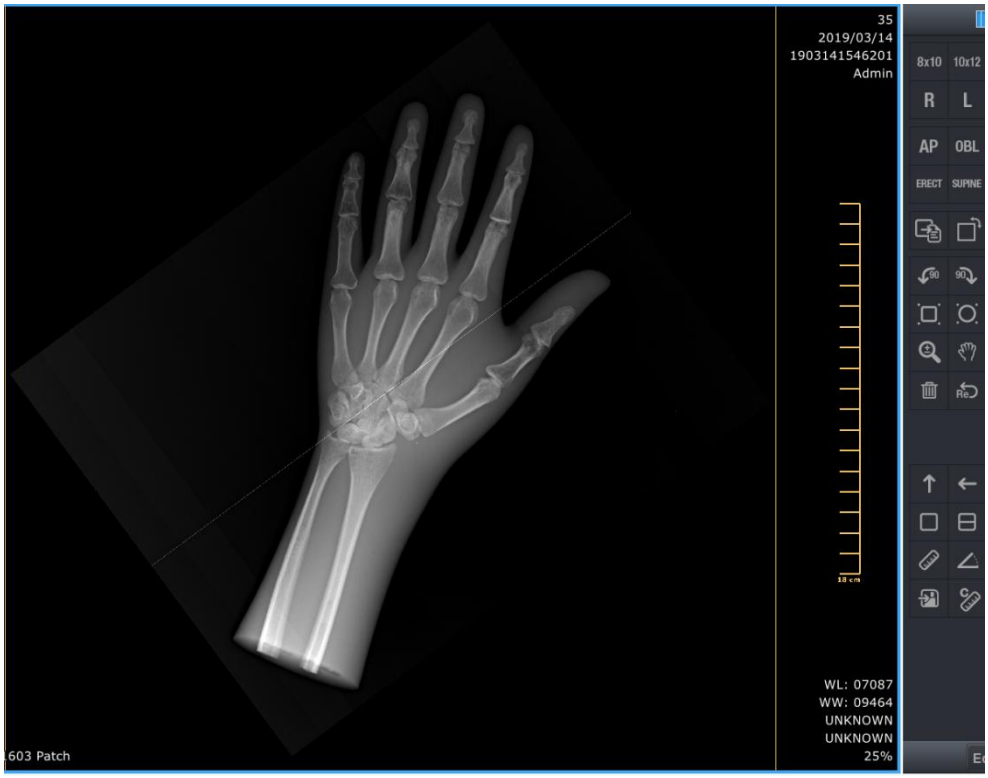
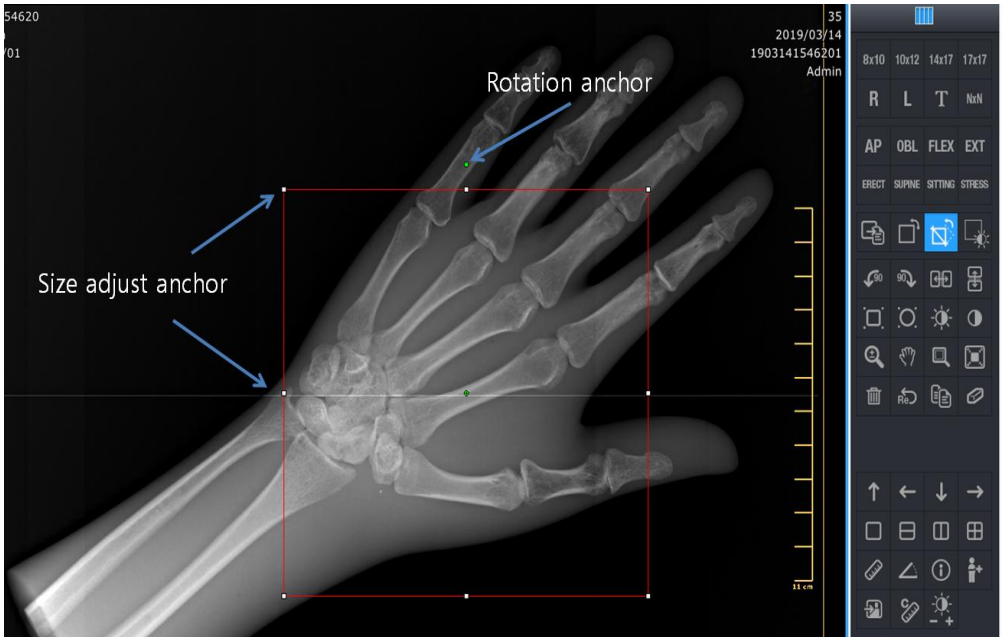


Image rotation applied

2) Free area image cropping and rotate

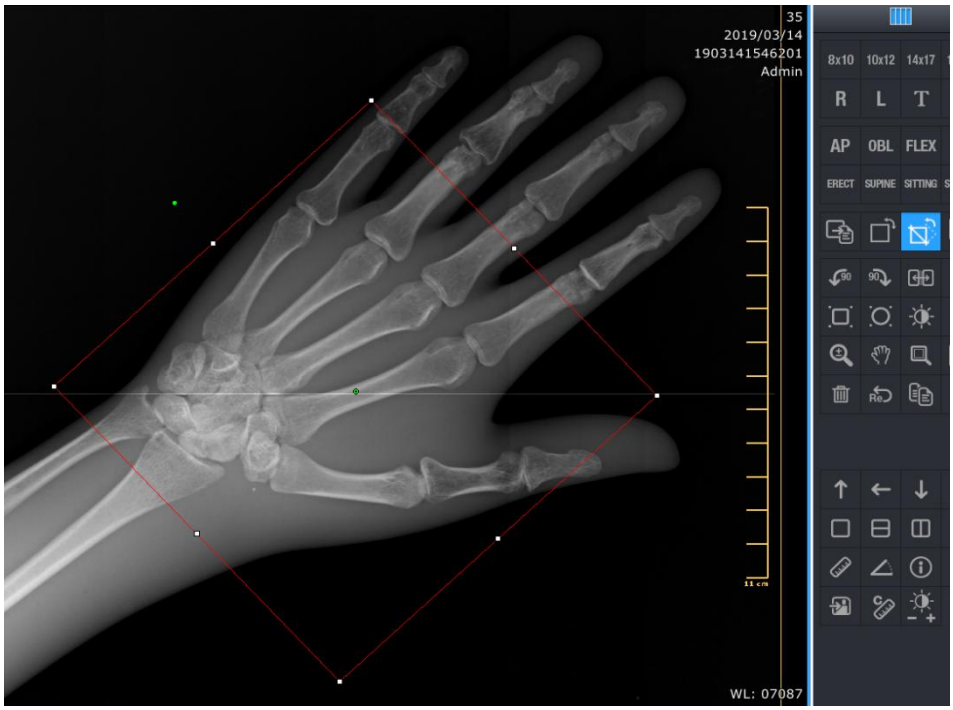
① Click tool for activate free area crop and rotate mode.

Draw rectangle to crop and rotate.



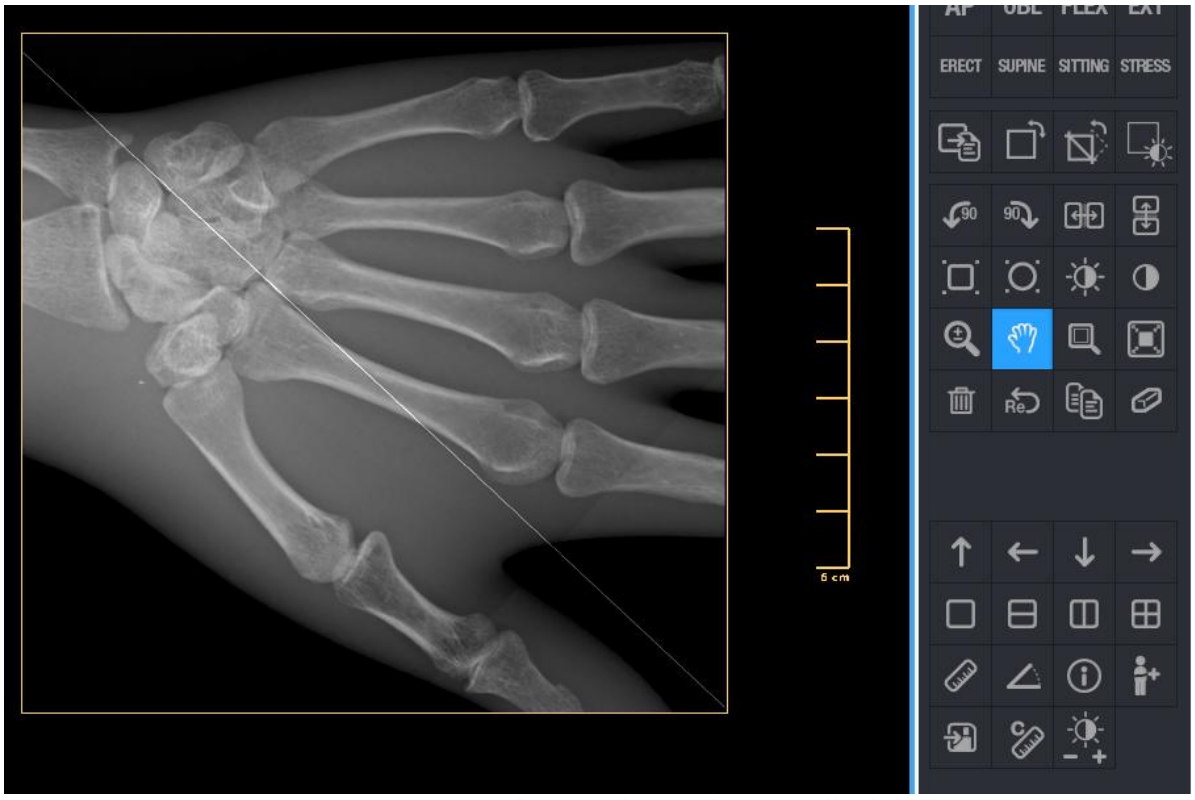
Activate tool and draw rectangle to crop

② Adjust rectangle area and angle.



Adjust rectangle area.

③ Click tool again to apply



Cropping and rotation applied

Appendix F. Gain Calibration

Please perform gain calibration every 6 months in order to avoid any abnormal effects.

Preparation

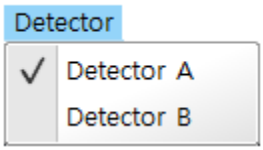
- Aging for 20 minutes before starting calibration
- Fully open Collimator to cover X-ray on the whole detector area.
- Put an Acryl Phantom (4cm) on Bucky.
- Set Grid type as “None” in ECali1 configuration. (When Grid Line Pattern appears, set Grid Type depending on the product model)

Calibration Procedure

* Check the radiation field and clear Acryl Phantom as well as Bucky before calibration.
* If the Mean values of every image have more than 300Gy difference, you have to re-take images.

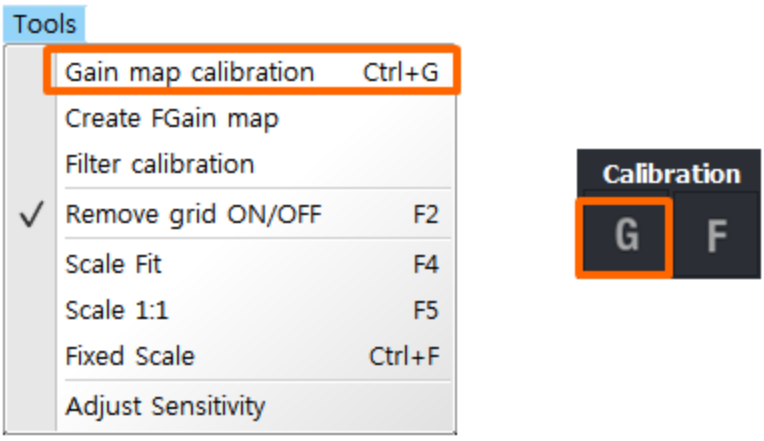
1. Run Ecali1

2. Select the detector to perform the Gain Calibration from the Detector Menu. (Tool bar → Detector)



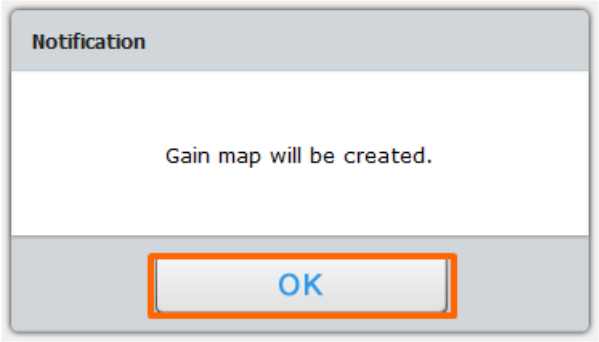
Detector Selection

3. Select Gain Map Calibration from the Tool bar or select the shortcut icon.



Starting Gain Calibration

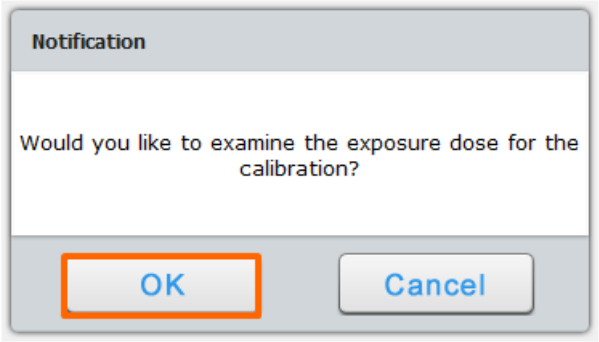
4. When a notification message appears, select [OK]



Gain Calibration Start Notification

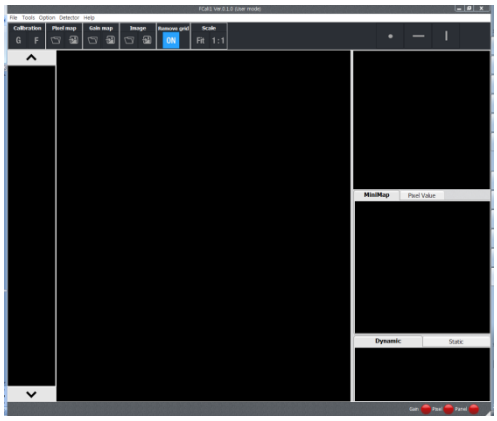
5. ECali1 alerts whether the radiation dose is appropriate or whether it should be automatically calculated. Proceed by selecting [OK].

* Set OP console manually (approx. 28kVp 80mAs)
* Mean value should be 2,200 ~ 2,500Gy.



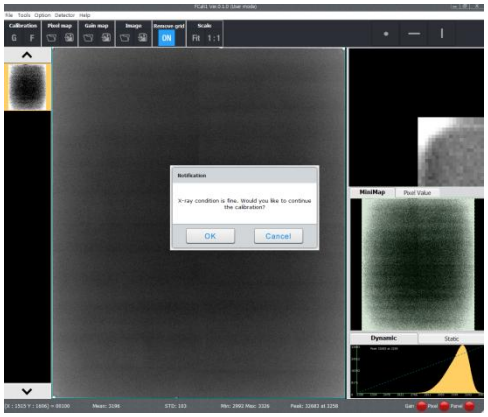
X-ray Radiation Dose Check Activation

6. A main screen will appear. Proceed with the X-ray projection at this point in order to acquire an image.



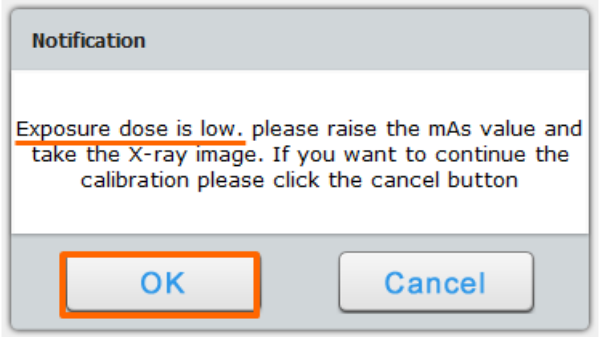
Projection Standby Main Screen

7. The program automatically determines the appropriateness of the X-ray radiation dose when the image is acquired.



X-ray Radiation Dose Verification Notification

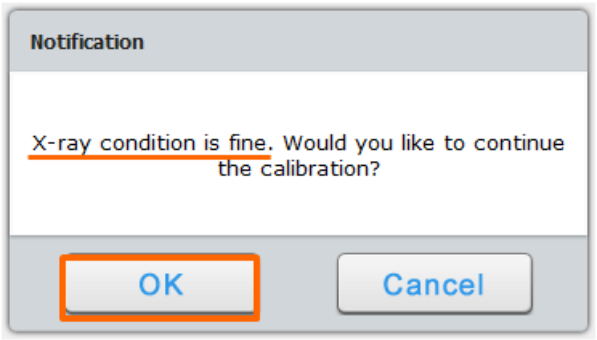
8. If provided with a notification of low radiation dose, please select [OK] then increase the X-ray radiation dose and re-project.



Notification for Low X-ray Radiation Dose

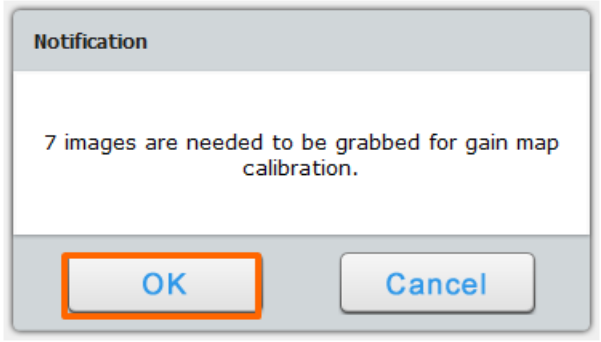
9. A notification will also appear if the X-ray radiation dose is high. Please select [OK] then reduce the X-ray radiation dose and re-project.

10. If the X-ray radiation dose is appropriate, please select [OK] and proceed with the projections



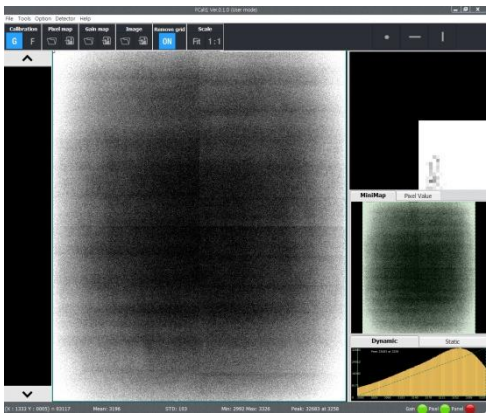
Notification for Appropriate X-ray Radiation Dose

11. A notification informing the requirement of 7 images will appear. The required number of images may be set in Configuration. Select [OK] and proceed with the projections of 7 images.

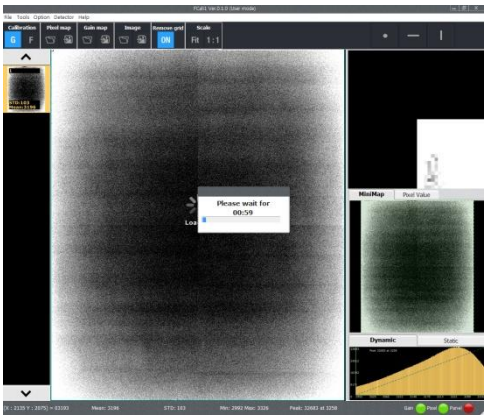


.

Notification Informing 7 Images Requirement

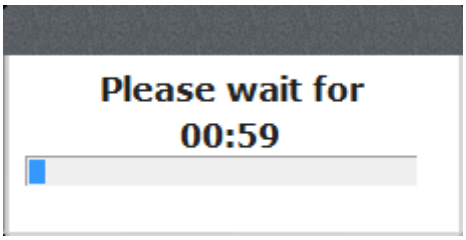


Starting the Gain Calibration Projection



Standby post Projection of 1 Image

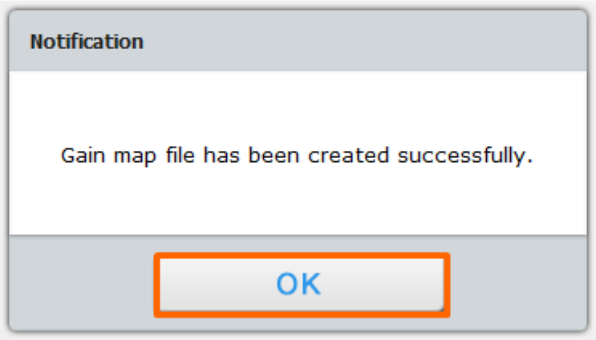
12. Wait until the next designated projection is ready after the initial projection.



Projection Standby Timer

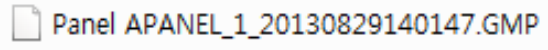
13. The next projection will take place after the projection standby timer (60 seconds) disappears. The projection standby time may be set in Configuration.

14. The Gain Calibration results are automatically saved as Gain Map (*.GMP) when all required images are projected and the existing files are backed-up.



Notification for Gain Calibration Completion

15. The existing GMP files are backed up in the [ECali1 Installation Folder]\MAP folder. The file name is as noted in [Figure 89]



Example of back-up file