

"IS" User Manual for Windows

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1. INSTALL

1.1 System requirements

Hardware: 256 Mo RAM, USB 2.0 interface, graphical card with 32 Mo
Windows version: XP SP3 (32 bits), Vista Ultimate SP2 (32/64 bits), Seven Professional SP1 (32/64 bits)

1.2 Warning

Preferably use the USB X-Ray sensor directly plugged on your workstation rather than on an USB Hub or an USB extension cable.

1.3 Installation procedure

Before installing "IS" software verify that other applications are closed and no X-Ray sensor is plugged.

Double-click on the executable file SetupBX.X.X.exe and follow the instructions.



If your sensor has not a software license active refer to the sensor activation §11.4.

2. IMAGING SOFTWARE INTERFACE

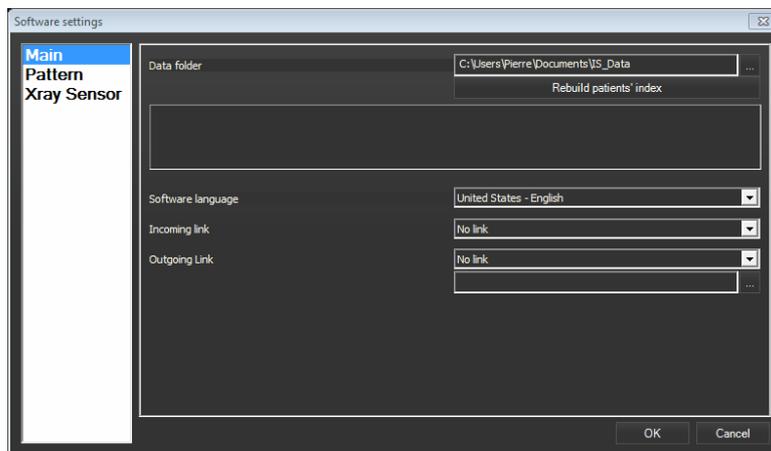
2.1 Interface



- 1- Menus
- 2- Patient identity
- 3- X-Ray thumbnail images
- 4- Image display
- 5- Contrast / Brightness / Gamma adjustment
- 6- Radiology tools
- 7- Locator
- 8- Text box for comments
- 9- Radiology sensor control module

3. MENUS

3.1 “IS” settings menu



Data directory: Data storage path (editable, e.g. network path).

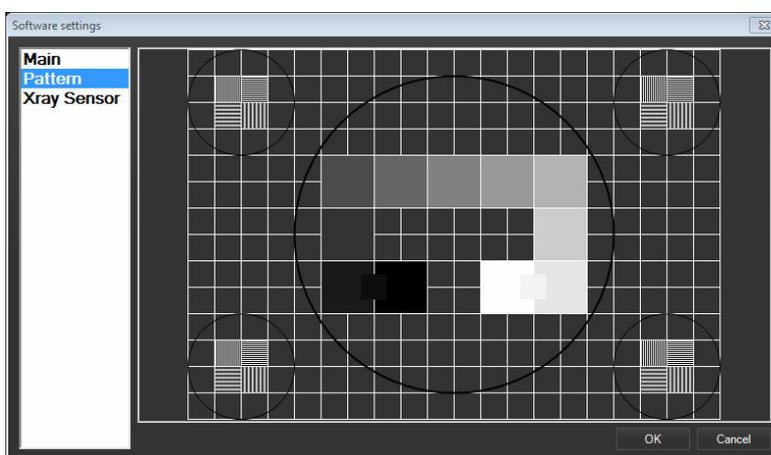
Patient index reconstruction: In the event of problems with the patients' database (maintenance operation).

Programme language: The computer's operating system language is applied by default; English is used by default where no language is specified in the imaging software.

Incoming link: Links the imaging software to management software, e.g. command line (Imaging-Software.exe Last name First name).

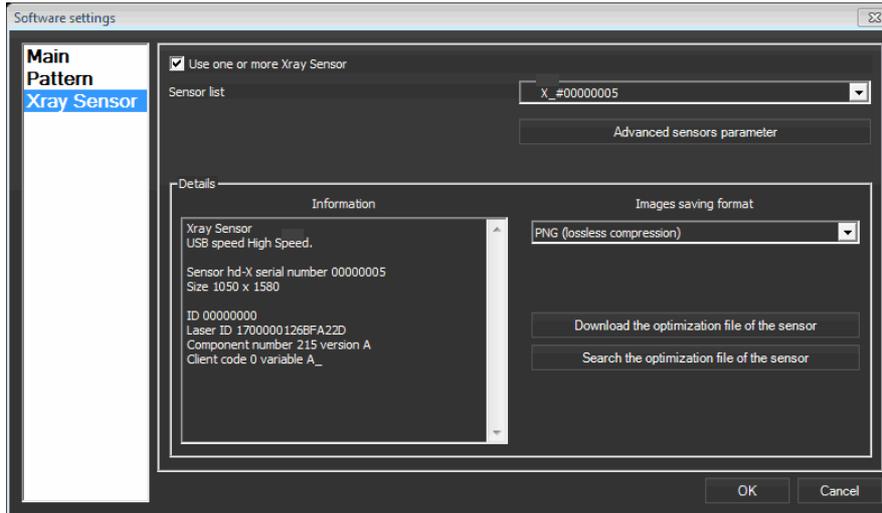
Outgoing link: Used to execute the preferred software (e.g. Word) from the imaging software in the IS / Execute menu.

3.1.1 Test pattern



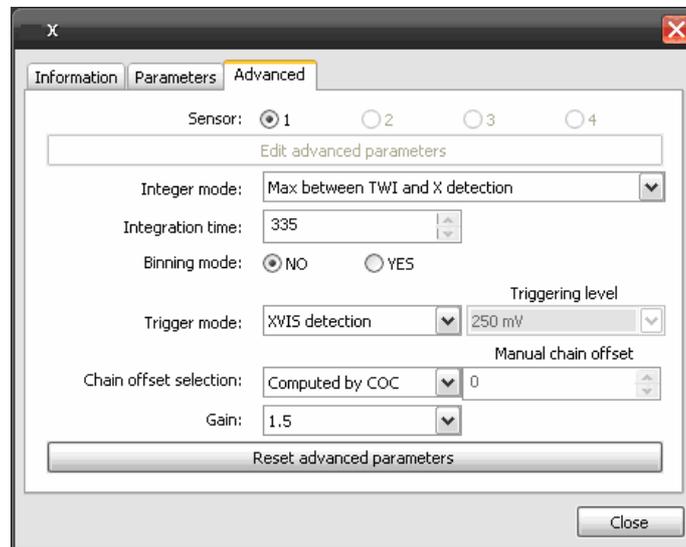
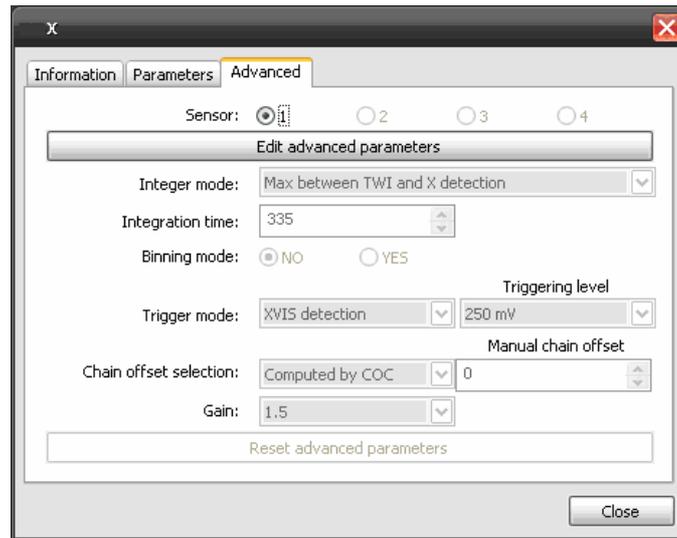
The test pattern is used to check that the monitor is set properly (contrast, brightness, and resolution). If not all detail is visible after setting, change the monitor.

3.1.2 XRay Sensor



- Use One or several Xray Sensors:** The acquisition module is able to manage two sensors simultaneously.
- List of sensors:** Indicates the sensor’s user name and its hex serial number.
- Detailed information:** Designates various elements (sensor name, connection speed (full speed “USB 1.1”, high speed “USB 2.2”).
- Record structure:** Indicates the images’ record structure (uncompressed BMP, lossless PNG compression, lossy JPEG compression, lossless TIFF LZW compression, uncompressed TIFF).
- Download optimisation file:** Each sensor must have a separate optimization file, downloaded to each computer on which the sensor operates with the imaging software; it is stored in the computer in the format (*serial number.FFC*). An Internet connection is required.
- Search optimisation file:** When the computer does not have an Internet connection: Applies as above.

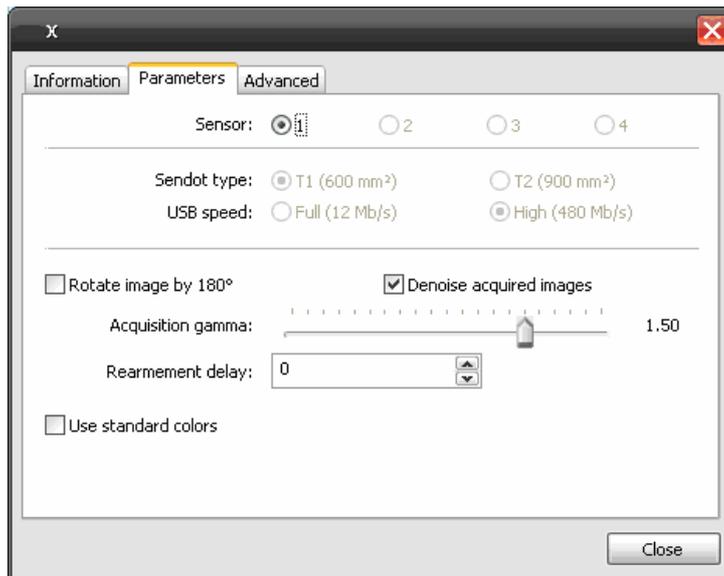
3.1.3 Advanced sensor parameter



This menu is for use by technical services only, for installation or maintenance operations. It is therefore not translated into the user language and remains in English only. Any changes to the menu settings by unqualified persons may lead to dysfunctions, such as failure to operate with the sensor.

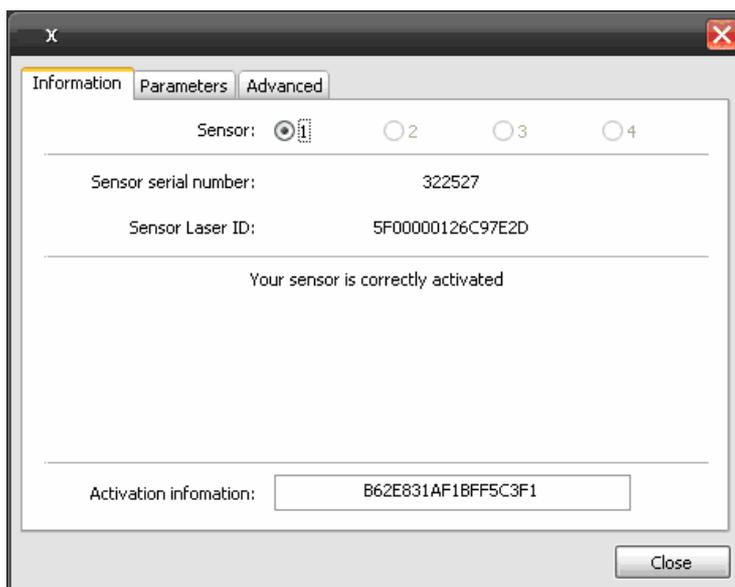
Edit advanced settings: These settings are not described in the manual (please contact your retailer). In the event of incorrect operation, press the “Reset advanced settings” key to restore factory settings).

Sensor: Describes the actual sensor and not the settings.



- Sensor:** Describes the actual sensor and not the settings.
- Sensor type:** Describes the sensor model (size 1 or size 2).
- USB Speed:** Describes the type of USB connection (USB 1.1, USB 2.0).
- Rotate image by 180°:** Rotates the image by 180° during acquisition. The image is saved this way.
- Denoise acquired images:** Applies a denoise filter during acquisition. The image is saved this way.
- Gamma acquisition:** Can be used to change the gamma applied to the image during acquisition. The image is saved this way (gamma > 1.5 darker image, gamma < 1.5 lighter image).
- Reset time:** Resets the sensor after acquisition according to the time indicated in seconds (may be useful for older computers, slow clock frequency, 4 seconds are often sufficient).
- Use standard colour:** Used to downgrade the sensor's acquisition module to a basic Windows™ function (useful for computers with low-power graphics).

3.1.4 Sensor Information



Sensor: Describes the actual sensor and not the settings.

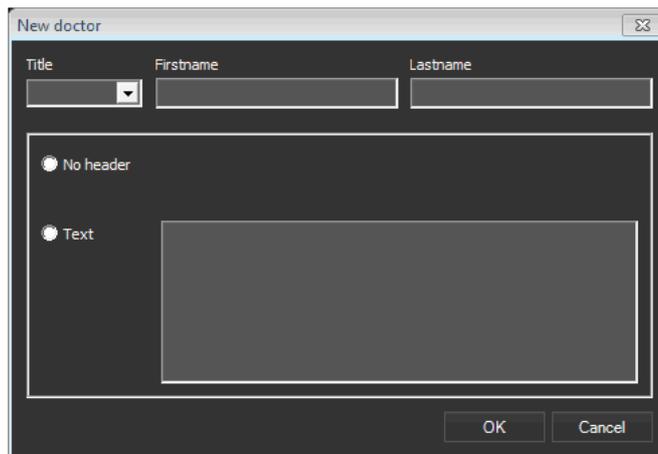
Sensor serial number: Describes the sensor serial number (in decimals, XRay Sensor label number without prefix).

Sensor laser ID: Displays the sensor laser ID.

Activation Information: Display the activation status.

3.2 “User” menu (practitioner)

3.2.1 New



Civil status: Select from the list (Dr, Prof. Etc.).

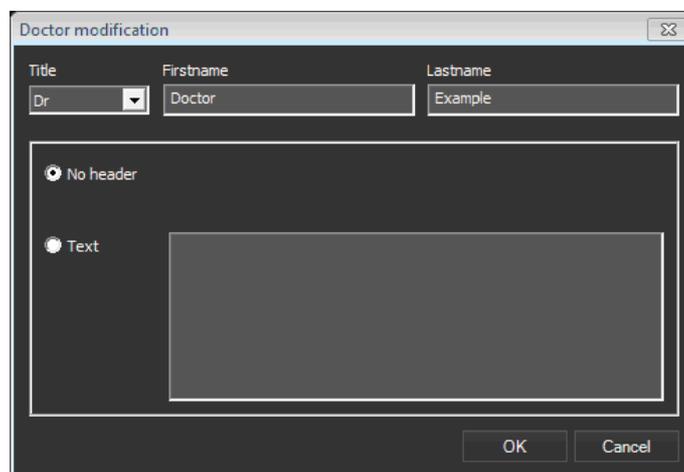
First name: Enter first name.

Last name: Enter last name.

No header: If the option is ticked, the header will not be printed.

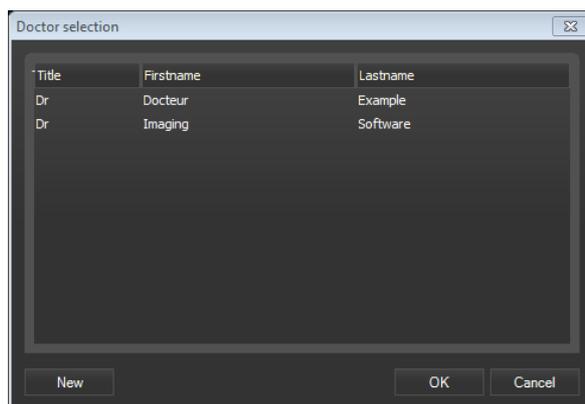
Text: Text in the header.

3.2.2 Edit



Used to edit the Practitioner’s card. When the changes have been made, confirm by clicking on OK. Click on Cancel to correct mistakes.

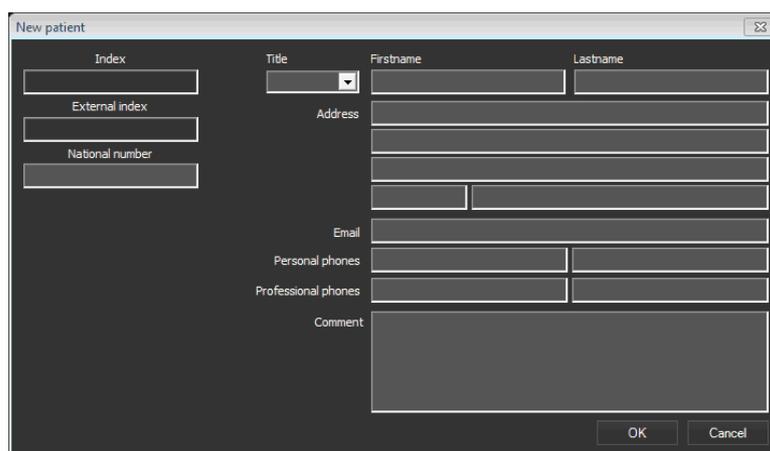
3.2.3 Change



Used to change Practitioner as required. Click on OK to confirm. (Warning: changing practitioner does not affect the Patients' database. Only the practitioner's name will be different when printing).

3.3 "Patient" menu

3.3.1 New



- Index:** Managed by the software.
- Civil status:** Select from the list (Mr, Mrs, and Ms Etc.).
- First name:** Enter first name.
- Last name:** Enter last name.
- Address:** Enter address. (5 fields)
- Email:** Enter the email address.
- Personal phones:** Enter the personal phones numbers (2 fields).
- Professional phones:** Enter the personal phones numbers (2 fields).
- Comment:** Enter comment.

3.3.2 Edit

The 'Patient modification' dialog box is used for editing patient information. It features several input fields: 'Index' (containing '1'), 'External index', 'National number', 'Title' (a dropdown menu), 'Firstname' (containing 'Jacques'), 'Lastname' (containing 'Martin'), 'Address', 'Email', 'Personal phones', 'Professional phones', and a large 'Comment' text area. 'OK' and 'Cancel' buttons are located at the bottom right.

Used to edit the patients' card. When the changes have been made, confirm by clicking on OK. Click on Cancel to correct mistakes.

3.3.3 Change

The 'Patient selection' dialog box displays a list of patients. It includes a 'Filter' field at the top. Below it is a table with the following data:

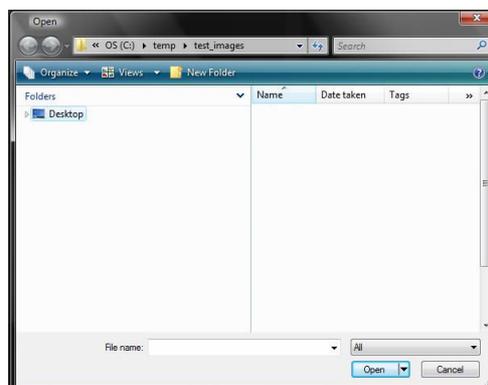
Index	Title	Firstname	Lastname
1	M.	Jacques	Martin
2	Mr.	Peter	Demo

'New', 'OK', and 'Cancel' buttons are positioned at the bottom of the dialog.

Used to change patient. Select the patient and confirm by clicking on OK.

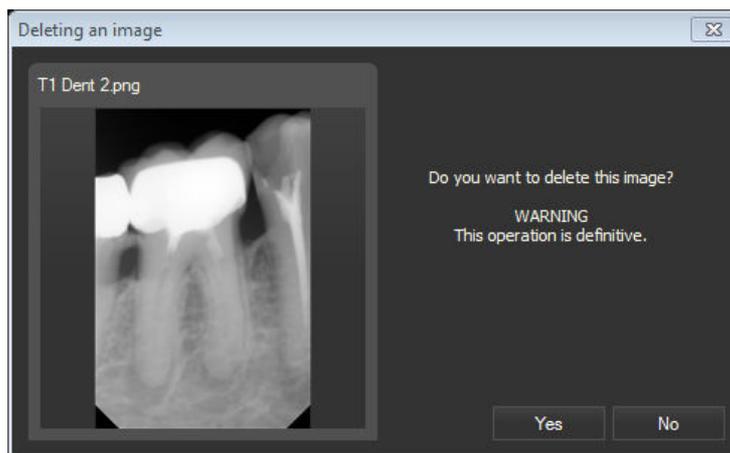
3.4 "Data" menu

3.4.1 Import



Select the image to be imported and click on "Open".

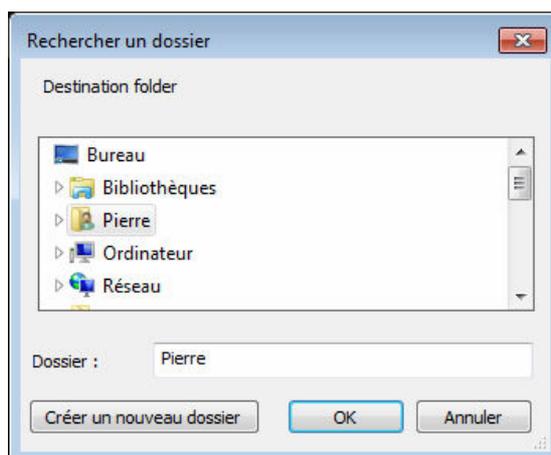
3.4.2 Delete



Select the image to be deleted and confirm by clicking on “Yes” (if an image is deleted by mistake it is placed in the trash and can be restored).

N.B.: It is not possible to delete several images at the same time.

3.4.3 Export



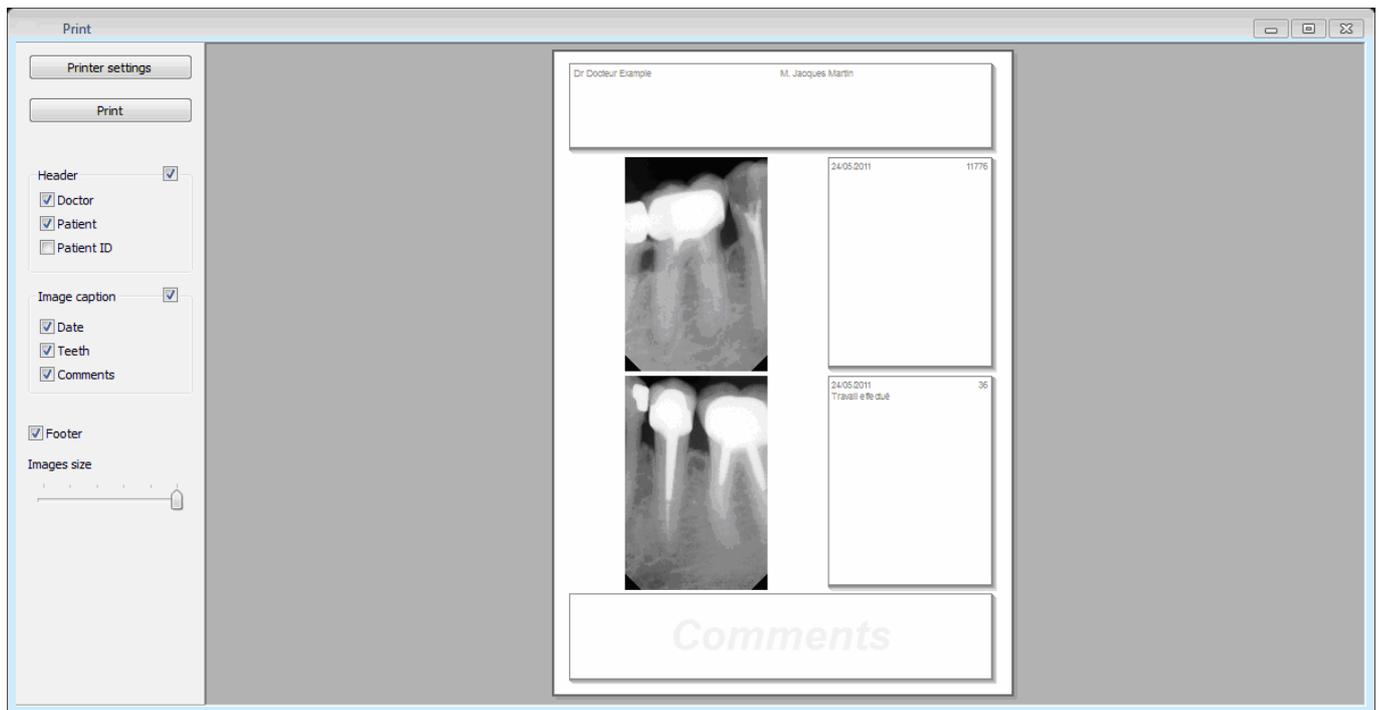
Select the image to be exported and select the destination (the image is exported in its initial format).

3.4.4 Send by mail

Select the image to be sent and send using the standard e-mail procedure.

3.4.5 Print

The “print” function shows a preview print page (see example below).



- Select printer:** Used to select any of the printers installed on the computer.
- Print:** Starts printing.
- Header:** Prints with a header if yes is ticked (confirm Practitioner, Patient, Record number selection).
- Image caption:** Prints with a caption if yes is ticked (confirm Date, Teeth, Comments selection).
- Page footer:** Prints a blank box for completion by hand after printing (“Comments”).

3.5 Display

Selects the number of sections into which the central image display should be divided; the number depends on the size of the screen (1, 2, 4, 6 and 8 maximum). The sections are resized according to the size of the main window. This function is duplicated in the icons to the right of the title bar.

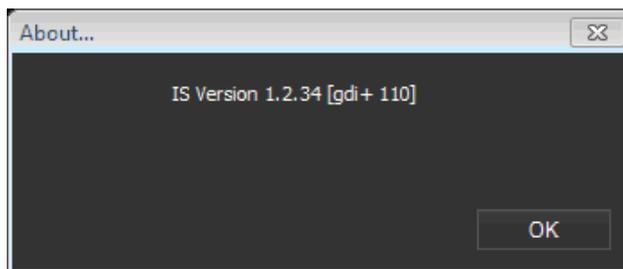


3.6 “?” menu

3.6.1 “Update ...”

Searches imaging software updates on the Web.

3.6.2 “About ...”



Provides information about the software version and copyright.

4. PATIENT IDENTITY

Patient card information is displayed here.

5. THUMBNAIL IMAGE

Shows x-rays as thumbnail images along with the following information:

- Image name and extension (PNG, TIFF, BMP, etc.)
- Image weight in KB
- Date image taken

The images are sorted by date, the most recent being at the top of the list.

6. IMAGE HISTOGRAM

6.1 Contrast Brightness Histogram

This function shows the greyscale histogram for the image.

Contrast and brightness can both be adjusted: Place the mouse cursor inside the histogram rectangle and left click, drag from left to right to adjust the contrast or from top to bottom to adjust brightness.

Right clicking with the mouse inside the histogram rectangle resets the initial values.

6.2 Gamma

The rectangle under the histogram shows the gamma of the image which can be adjusted: Left click on the mouse inside the gamma rectangle, dragging to the right increases the gamma, dragging to the left decreases the gamma.

Right clicking with the mouse inside the histogram rectangle resets the initial values.

7. RADIOLOGY TOOLS

All tools take 2 statuses: Active and inactive. When active, the tool icon is blue.

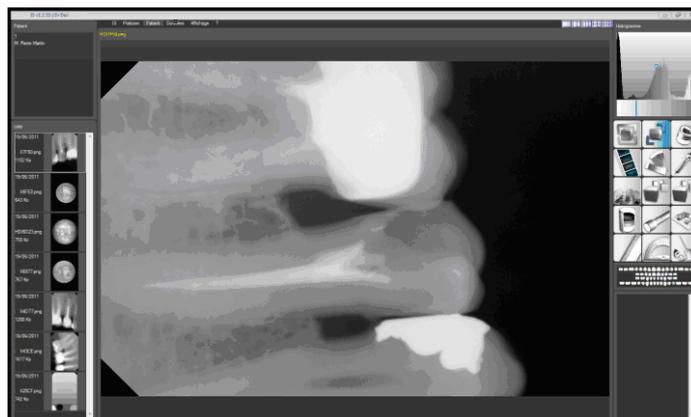
Balloon help displays the name of each tool when the mouse is rolled over the icons.

7.1 Analysis tools

7.1.1 180° Rotation

The 180° Rotation tool is shown to be active  or inactive .

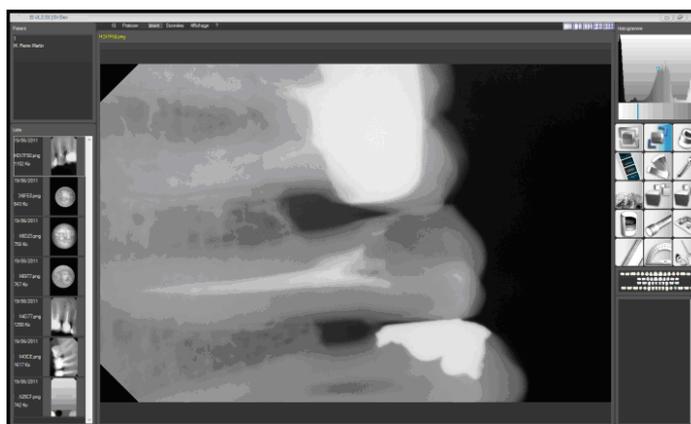
This command rotates the image by 180°:



Click on the tool again to return to the initial position.

7.1.2 90° Rotation

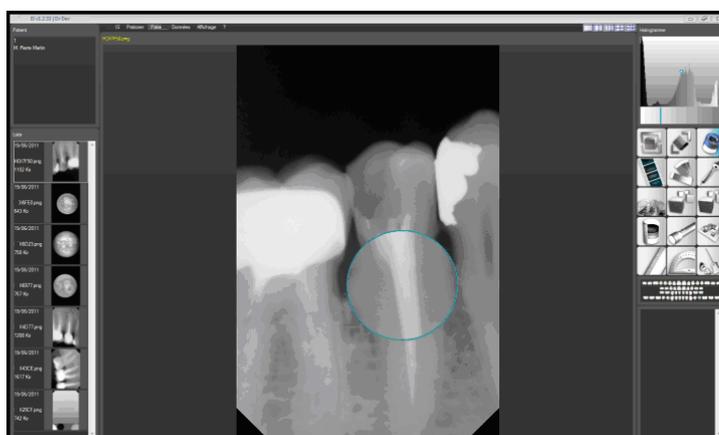
The 90° Rotation tool is shown to be active  or inactive .



This command rotates the image by 90°. By clicking again the image is rotated by 180° making the tool 90° inactive and 180° active.

7.1.3 Zoom

The Zoom tool is shown to be active  or inactive .



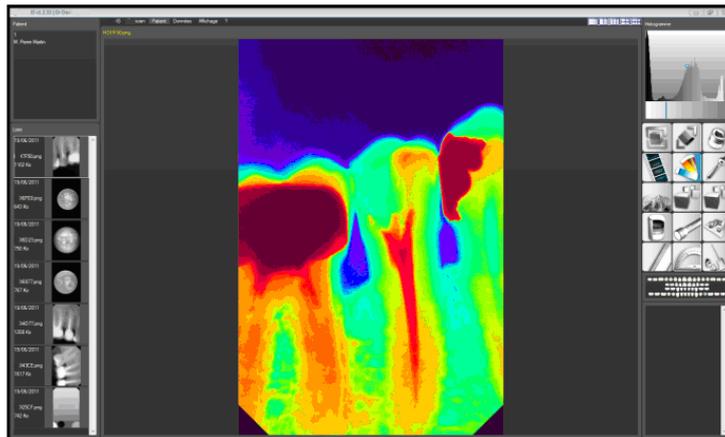
Using the Zoom:

- Click on the Zoom icon
- Move the mouse onto the image: The area selected by the Zoom is magnified to 1/1; use the mouse scroll wheel to increase the zoom factor

Click on the button again to deactivate this function.

7.1.4 Pseudo-Colour

The Pseudo-colour tool is shown to be active  or inactive  .
This command changes an image from greyscale to colour:



A pseudo-colour image is created by allocating a colour to a greyscale (from black and white) in accordance with a transformation.

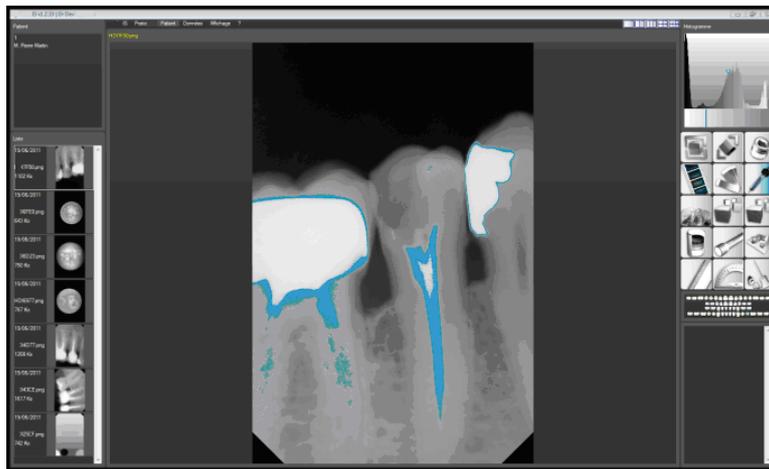
The quality of the image is improved, bearing in mind that the human eye is more sensitive to changes in colour than in greyscale. The wide ranging colours of the rainbow can be used in many ways.

Simple transformation is applied (correspondence table) and improves “analysis-interpretation” of the image in real-time. This function is used to more effectively highlight a result (detection of tooth lesions, extraction of an outline etc.).
Use the mouse wheel to vary the intensity of the filter on the image.

Click on the button again to deactivate this function.

7.1.5 Level extraction

The Level extraction tool is shown to be active  or inactive  .
This tool extracts all points of the same intensity to show them in colour:



Once the function is activated, use the mouse wheel to select the levels to be extracted. Clicking on the image extracts all levels under the mouse cursor. Click on the button again to deactivate this function.

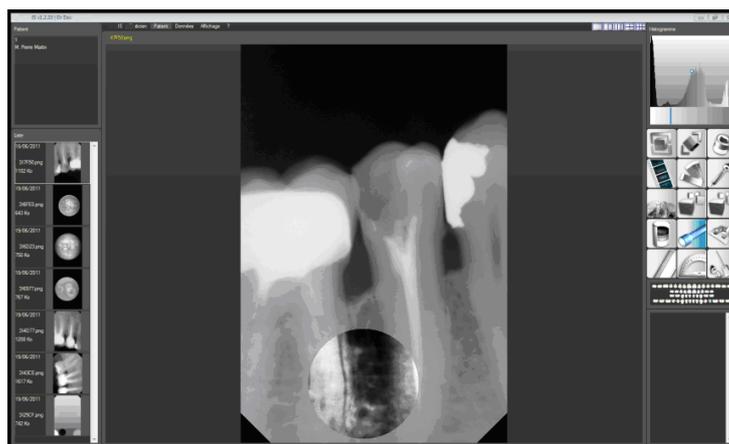
7.1.6 Emboss

The Emboss tool is shown to be active  or inactive . This function can be used to increase greyscale to highlight details that were initially barely perceptible. In some cases, this may avoid having to take another x-ray. Click on the button again to deactivate this function.

7.1.7 Torch

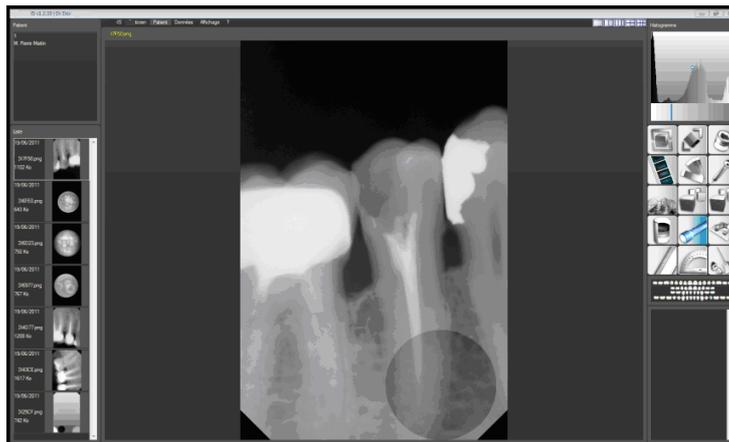
The Torch tool is shown to be active  or inactive . This function enables 3 other functions, by alternate forward and backward scrolling with the mouse wheel:

Histogram equalization:



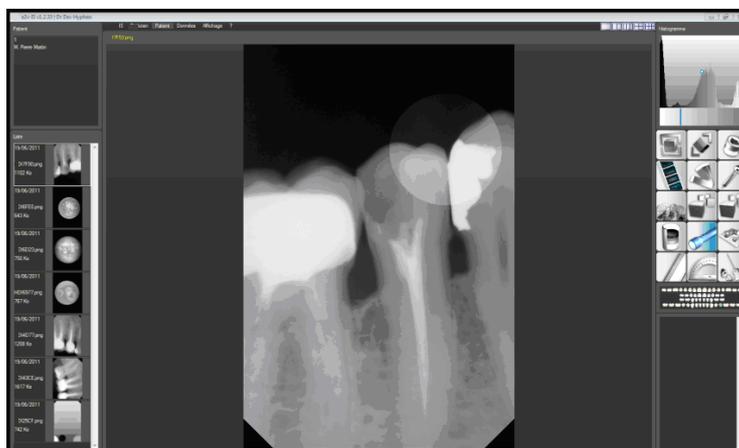
This function adjusts the part of the image under the torch in order to equalize the histogram. Specific details are highlighted although the image may be distorted.

More Gamma:



This function darkens the image and shows all radiopaque areas of the image in detail.

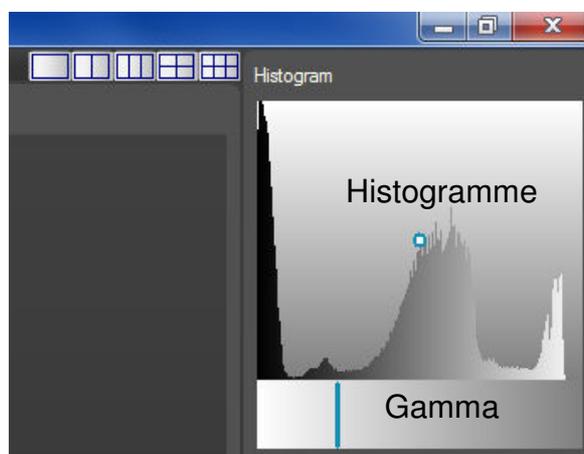
Less Gamma:



This function lightens the image, thus highlighting dark areas. Click on the button again to deactivate this function.

7.1.8 Histogram

The Histogram function does not have a specific tool but a specific frame.



7.1.9 Reset

The Reset tool is shown to be active  or inactive .

This function cancels all changes made to an image. The software stores the image as it was acquired.

7.1.10 Full-screen

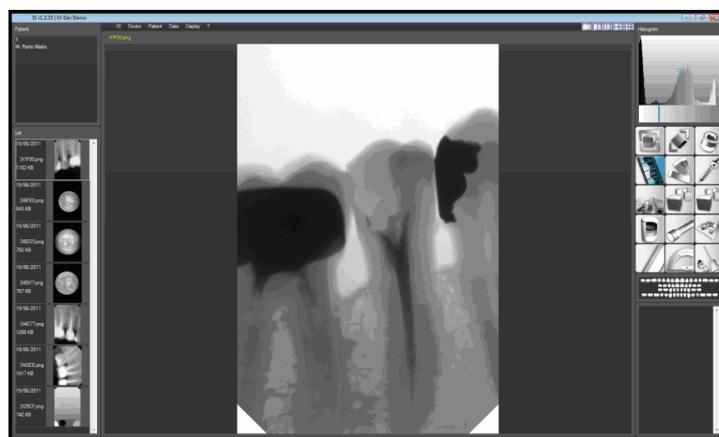
Double-clicking on an image displays the full-screen version of the image; the tool selected can be used (e.g. level extraction).

Double-clicking on the full-screen version of the image restores it to its initial size.

7.2 Processing tools

7.2.1 Video Inversion

The Video Inversion tool is shown to be active  or inactive .



This function inverts the brightness of the image, changing it from a greyscale image on a black background to an image on a white background. Click on the button again to deactivate this function.

7.2.2 Sharpness

The Sharpness tool is shown to be active  or inactive .



This function improves the sharpness of the image, highlighting the outlines. Click on the button again to deactivate this function.

7.2.3 Blur



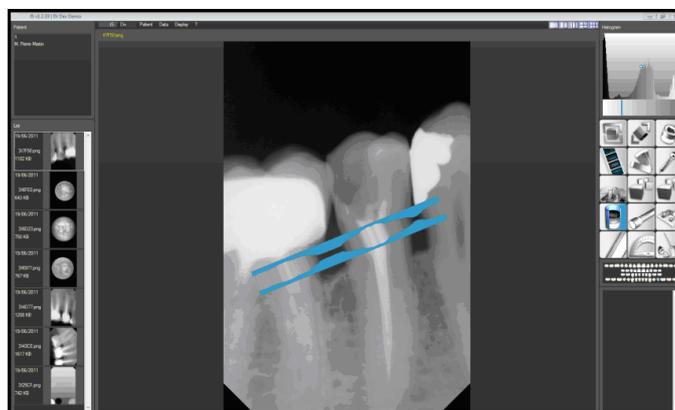
The Blur tool is shown to be active or inactive. This function denoises the image. Click on the button again to deactivate this function.

7.2.4 Densitometry



The Densitometry tool is shown to be active or inactive. This function produces a cross-section of the image on a pre-traced segment. To produce a cross-section:

- Click on the tool then on the starting point of the segment,
- Release the mouse button then click on the end point.

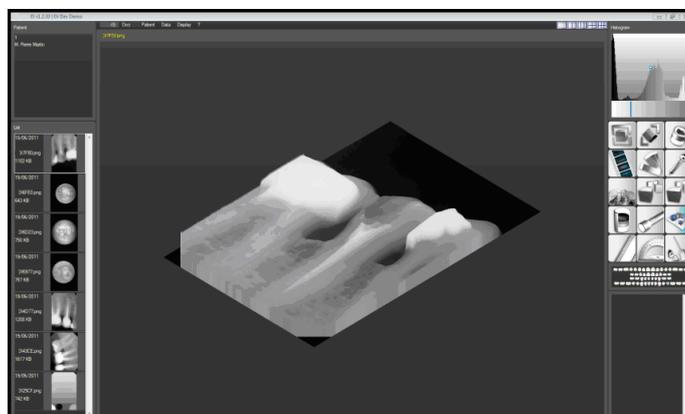


The densitometry cross-section appears immediately along the segment. Click on the button again to deactivate this function.

7.2.5 3D



The 3D tool is shown to be active or inactive. This function transforms the single-perspective image into a 3-dimensional image:



Click on the button again to deactivate this function.

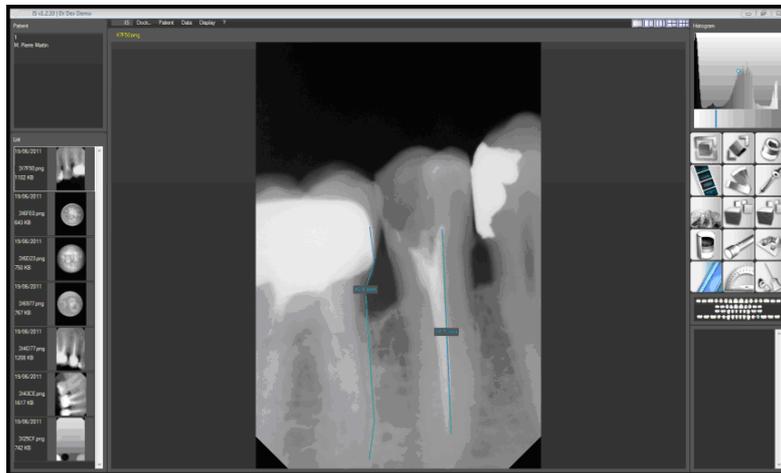
7.2.6 Length Measurement

The Length Measurement tool is shown to be active  or inactive .

To take a measurement (straight line), click on the measurement starting point and release the mouse button at the end point.

The operation can be repeated when several measurements are required.

To take a measurement (broken line), left-click on the measurement starting point then release (right click) to finish, or right click again and end with a left-click.



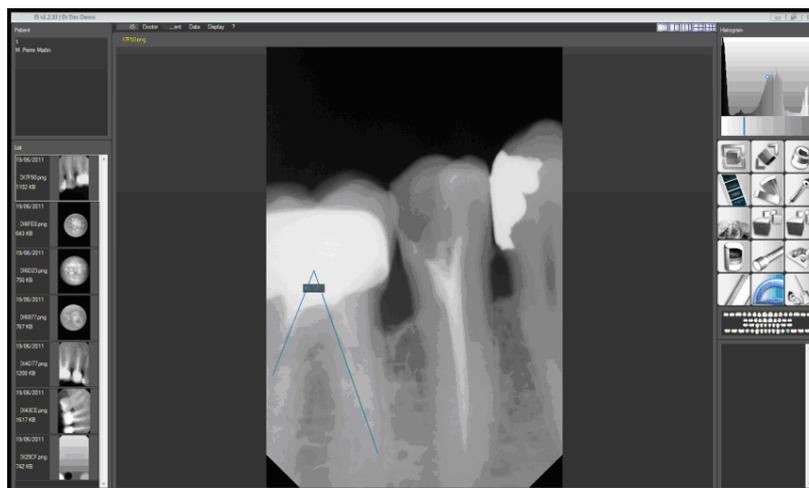
Click on the button again to hide the measurements.
Use the reset function to delete the measurements.

7.2.7 Angle Measurement

The Angle Measurement tool is shown to be active  or inactive .

This function can be used to measure angles. To do this:

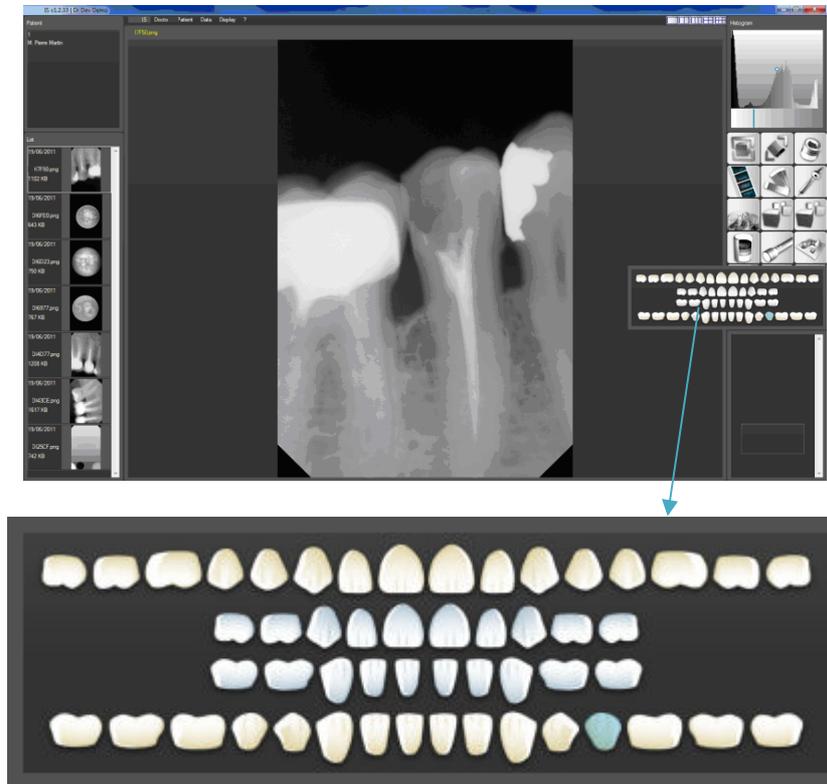
- Click on the measurement starting point, release the mouse button, then click on the summit of the angle, release the mouse button, then click on the end point.



Click on the button again to hide the measurements.
Use the reset function to delete the measurements.

8. LOCATION

Localization is used to allocate tooth numbers to the image. Roll the mouse over the localizer to open it as shown below, and then indicate the numbers:



The localisation selector above is displayed on the screen. It proposes 2 dental charts:

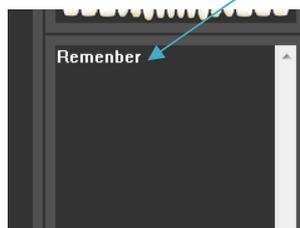
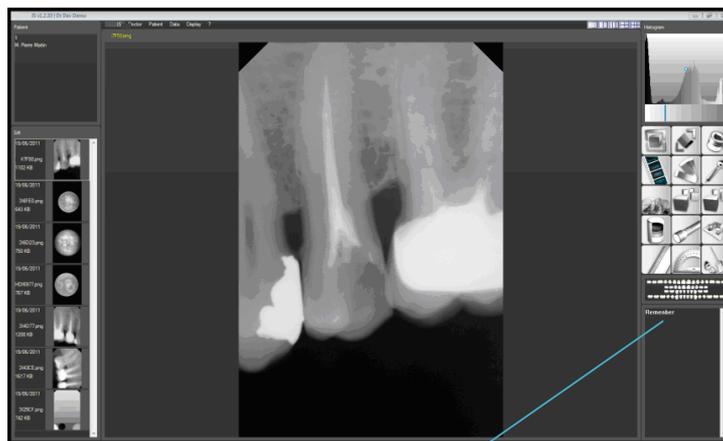
- Permanent (adult) teeth chart,
 - Primary (baby) teeth chart,
- Simply click on the teeth that you wish to number to see them displayed in the localization frame. Up to 4 teeth can be numbered. The selected teeth appear in blue on the dental chart.
 - To deselect one or more teeth, click on them again.
 - The reset function does not affect the localizer.

To deactivate this function, remove the cursor from the frame.

9. COMMENTS

A typed comment can be added to each image. This is a permanent reminder of information specific to the image.

Simply type the comment in the comments field, see below:



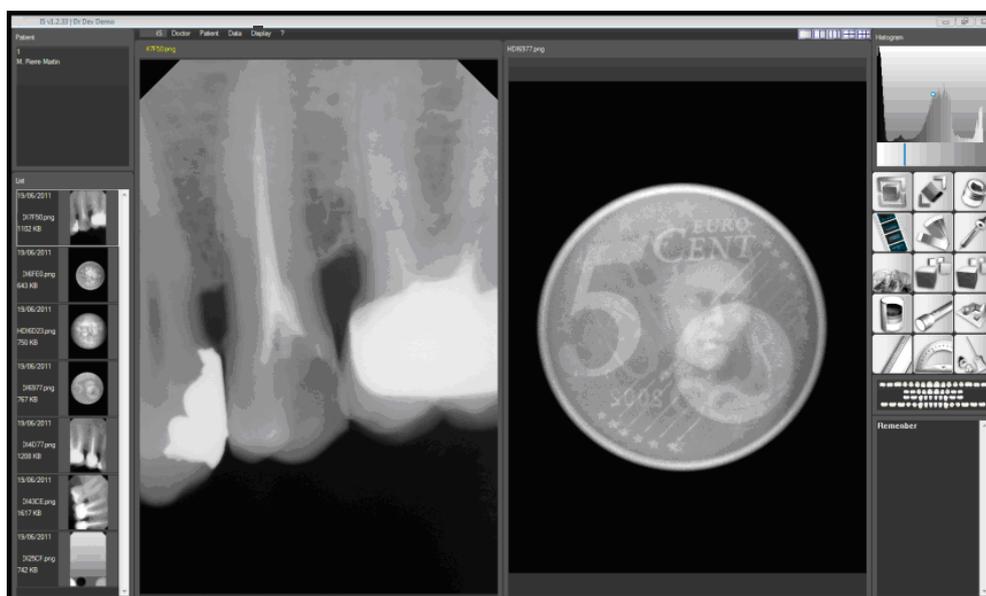
Comments are saved automatically. The reset function does not affect the comments field.

10. IMAGE DISPLAY FRAME

This frame displays the images. It can be divided into sub-areas (2, 3, 4, 6 and 8) with at least 1 sub-area and at most 8 sub-areas.

How the screen is divided depends on the user and the size of the screen. For example, for a 15-inch screen, the software will provide for 4 sub-areas maximum.

The active area is shown below the yellow highlighted title as shown below:



To display an image, select an area by clicking inside the area with the mouse, then by clicking on the selected thumbnail image.

11. RADIOLOGY SENSOR CONTROL MODULE

11.1 Position

When the imaging software is run for the first time, the module is executed but does not have a predefined position. Thus, it must be placed in a location where it will always be visible (it is the only element providing information about the sensor and therefore informs you when it is ready to take an x-ray).

Left-click on the module and drag to move it to the desired location.

E.g.:

In the patient's name frame or the comments field.



11.2 Sensor data

The module uses 4 indicators with a yellow location and can manage up to 2 sensors (2 indicator line).

If no indicators are displayed, no sensor is detected (see driver, USB port, sensor installation etc.).

	Led	Inactive (dark blue)	Active (light blue)
①	1		Sensor detected
②	2	Sensor connected without active license	Sensor connected with active license
③	3	Sensor ready to receive X-rays without calibration file.	Sensor ready to receive X-rays with calibration file.
④	4		Sensor acquiring, the third and the fourth light are switching alternatively

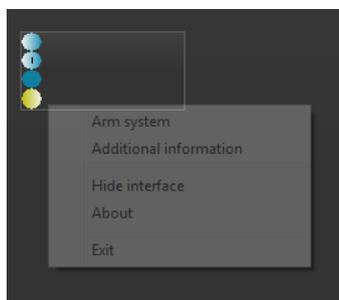
Examples :

	No sensor detected.		Sensor connected without active license.
	Sensor ready to receive X-rays without calibration file.		Sensor ready to receive X-rays with calibration file.

Note: If only the first two indicators are on, the sensor is disarmed, try "Arm System" §11.3.1.

11.3 Module menu

The radiology sensor control module has its own menu, part of which is also integrated in the imaging software menu. To open the menu, place the cursor inside the module and right-click.

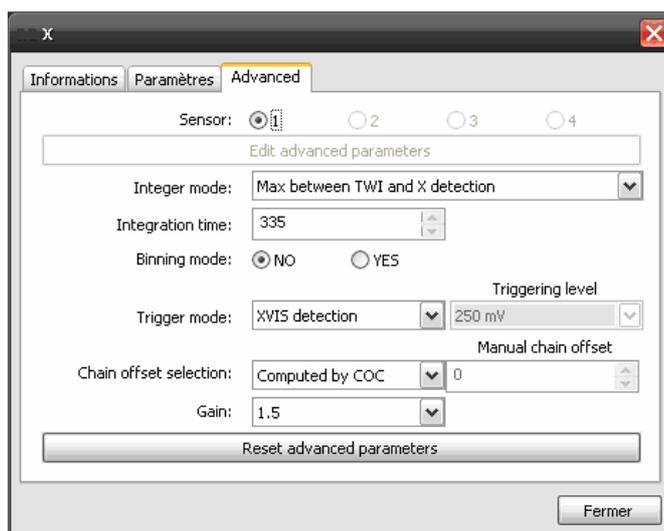


11.3.1 Arm system

Clicking on the "Arm System" line sets the sensor (little likely to be required as the sensor is set automatically).

11.3.2 Additional information

Clicking on this line opens the "Advanced sensor settings" menu.



11.3.3 Hide Interface

Clicking on this line hides the module in the task bar. To display it again, go to the task bar and on the module, right click then left click on the "Show interface" line.

11.3.4 About

Clicking on this line provides information about the version number and Copyright.

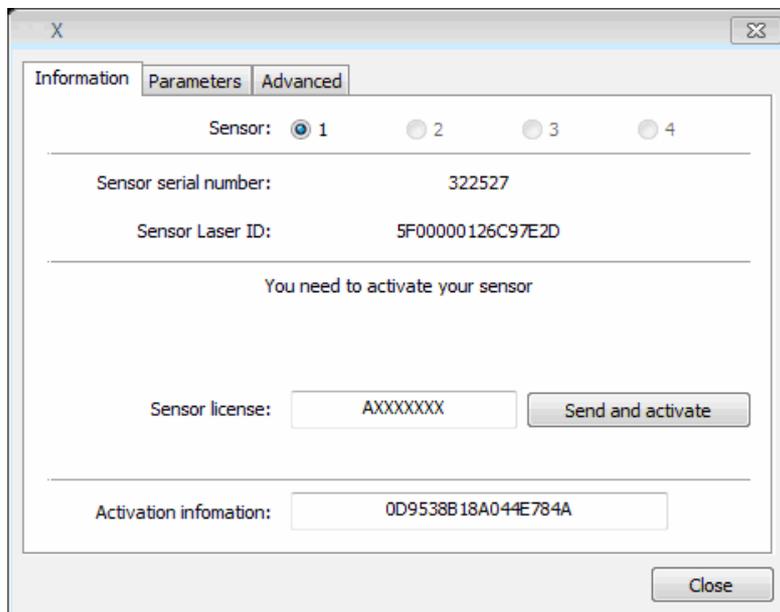
11.3.5 Exit

Clicking on this line exits the module (sensor no longer managed). Quit the imaging software then run it again.

11.4 Sensor activation

11.4.1 Online Activation

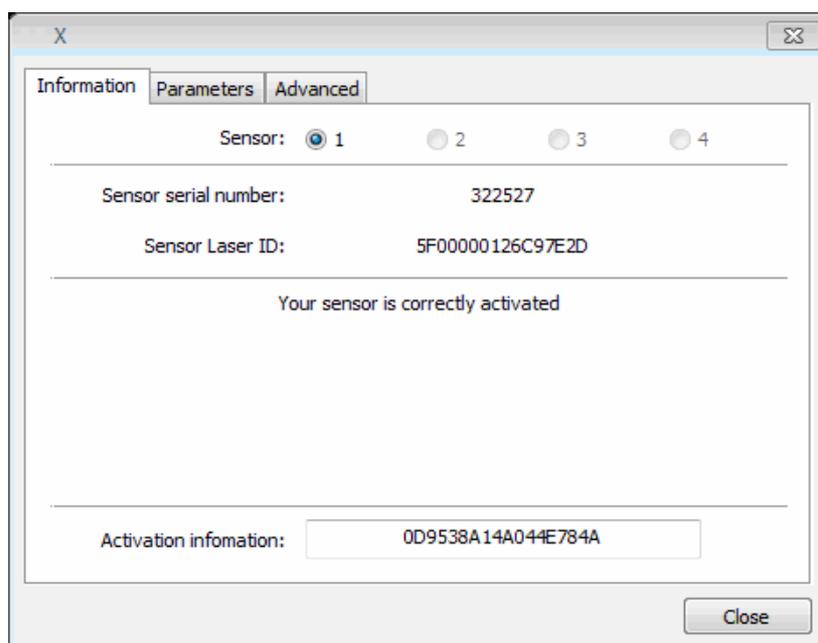
This activation mode requires an internet connection. After having installed the software, connect the sensor. Launch the “IS” software, the following window appears.



Enter your license in the “Sensor license” field (8 alphanumeric characters eg: XXXXXXXX), and click on the “Send and activate” button.

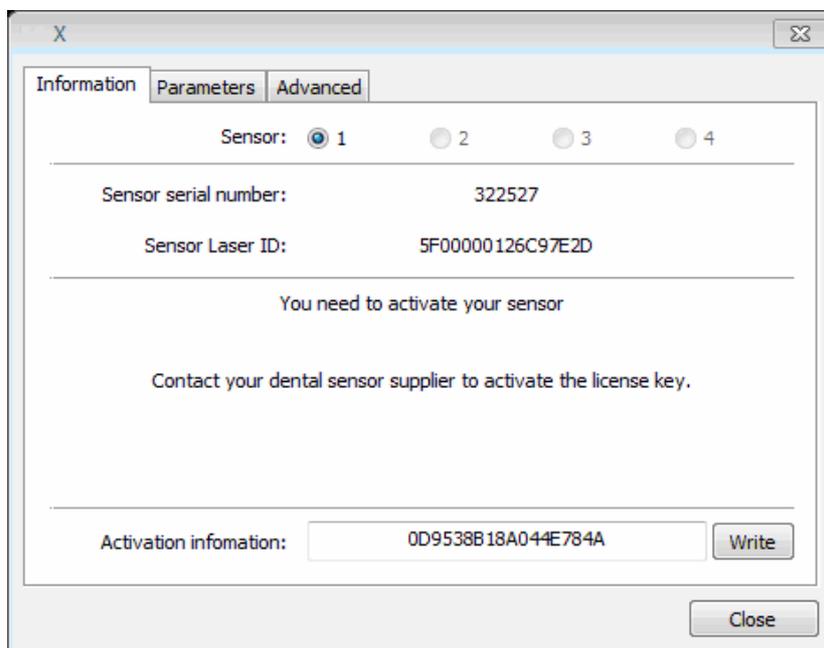
⚠ Warning: Be careful when entering the 8 sensor license characters. Rather use a paste function to enter code.

The following screen appears “Your sensor has been properly activated”, the operation is successful. If an error message appears, check your license number and retry. If the problem persists, contact your vendor.



11.4.2 Off-line activation (without internet)

This activation mode does not require an internet connection. After having installed the software, connect the sensor. Launch the “IS” software, the following window appears.



Enter you key (received from your distributor) in the “Activation information” field, and click on the “Write” button.

⚠ Warning: Be careful when entering the sensor license characters. Rather use a paste function to enter code.

The following screen appears “Your sensor is correctly activated”, the operation is successful. If an error message appears, check your license number and retry. If the problem persists, contact your vendor.

