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Digital Dental X-Ray Imaging System
HDR-500
HDR-600
Manual

Before attempting to connect or operate this product, please read these instructions completely!

Version: 1.00

Preface

Dear users:

Thank you for using 's Digital Dental X-Ray Imaging System HDR-500/600 and the trust to 's products. We will provide our best to ensure the satisfaction when you using the Digital Dental X-Ray Imaging System HDR-500/600.

The Digital Dental X-Ray Imaging System HDR-500/600 is operated through the software Dentist. Dentist is designed to take full advantage of HDR-500/600. To get the best imaging and processing quality, the combine between HDR-500/600 and Dentist is necessary.

To ensure your safety and effective use of the Digital Dental X-Ray Imaging System HDR-500/600, please read the manual carefully before use.

remind: Any copy of the contents in this manual is not allowed without the permission of .

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1. Notice

1.1 Indication of Use

The Digital dental X-ray imaging system is intended to generate intraoral x-ray image ,require to working with x-ray source and imaging software in dental clinic for dentist and orthodontists.

1.2 Brief Introduction of this Manual

This manual consist of the safety issue, HDR-500 and HDR-600 brief introduction, software introduction, how to use sensor and the warranty policy.

1.3 Manufacturer

Manual Name: Digital Dental X-Ray Imaging System Manual

Revision Number: 01

Print Date: April, 2013

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The system shall be in accordance with IEC60601-1-1. The person connect the product to the host computer shall insure its compliance.



Manufacturer



Shanghai Equipment Co., Ltd

2nd Floor, Blg 3, No.2688 Jinqiu Rd., Baoshan District, Shanghai 600444 China

European Representative:

Shanghai International Holding Corp.GmbH











1.4 Packinglist

- | | |
|-----------|-----|
| 1. Manual | 1pc |
| 2. CD | 1pc |

- 3. X-Ray Sensor with controller 1pc
- 4. Holder 1pc
- 5. Sleeves 1 bag

1.5 Symbols

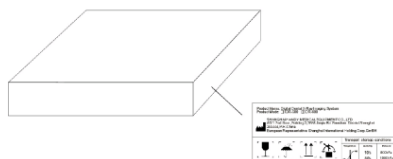
Marking and Labeling Symbols

Symbol	Description
	Caution , refer to accompanying documentation
	Class- II Device
	Type BF applied part
SN	Manufacture's serial number
	MANUFACTURE Manufacture's name and address
	FRAGILE Contents of the transport package are fragile therefore it shall be handled with care
	THIS WAY UP Indicates correct upright position of the transport package.
	KEEP AWAY FROM RAIN Transport package shall be kept away from rain.
	Antiroll
	Max and Min. temperature
	Indicates that in the European Union, at the end of product life this device must be disposed of in accordance with the requirements of the Waste Electrical and Electronic Equipment (WEEE) directive 6002/96/EC
CE	Conforms to European Union Medical Devices Directive (MDD) 93/42/EEC

Label Location

The following Figure indicates the label locations of The HDR-500 and HDR-600 Systems.

Figure 1 HDR-500 and HDR-600 Label Locations



2. Safety issue

2.1 Check Sensor and controller before using them

Before each usage, check the outer surface of the Sensor and controller for any signs of physical damage or defect. Sensor and controller surfaces should have a smooth finish, with no evidence of chipping or damage. If detected, contact your local distributor of this product for further instructions.

2.2 Protect Sensor from Potential ESD Damage

Like other electronic devices, Sensor is susceptible to electrostatic discharge (ESD), particularly when the device is used in or around carpeted areas or low humidity environments. During cable replacement, when Sensor contacts are exposed, it is especially important to protect the device from potential ESD damage. Touching a metal surface prior to replacing the cable will reduce the risk of damaging Sensor components by accidental static discharge. The use of anti-static floor mats or floor treatments (for example Staticide 6005/6002) will also help eliminate static build-up in your office.

2.3 Do Not Touch Exposed Connectors on Non-Medical Equipment and the Patient at the Same Time

When the Sensor and controller are in use, avoid touching exposed connectors on non-medical electrical equipment and the patient at the same time. The human body is capable of conducting electrical current and may cause a shock hazard to patients if appropriate safety practices are not observed.

2.4 Ensure Proper System and PC Workstation Installation and Operation

The Sensor and controller have been determined to be in accordance with international safety standards and are deemed suitable for use within the patient area, which extends from the patient for a distance of 5 ft (1.5m). To comply with these standards, do not operate non-medical equipment (such as a PC workstation) inside the patient area. Outside the patient area, the presence of approved non-medical grade equipment and

Listed / Approved / IEC 60950-1 certified Information Technology Equipment (ITE) computer equipment is acceptable. The host computer (PC workstation) should be CE-approved and conform to the Low Voltage [73/23/EC] and EMC Directive [89/336/ERC]. The system shall be in accordance with IEC60601-1-1. The person connect the product to the host computer shall insure its compliance. Also, to help ensure optimal performance, ensure that all software programs residing on the workstation are virus-free and have been adequately tested so they will not impact imaging applications after installation. Any questions please contact your local distributor

2.5 Safety Classifications

Safety Type: Class- II BF

Power: DC5V Maximum 600MA.Rate of Work: Max 1W

Degree of protection against ingress of water: IPX7

Non AP equipment, non APG equipment

Mode of operation: Continuous operation

2.6 Conditions required in operation, transportation, and storage

2.6.1 Operating conditions

Environment Temperature : +10°C~+40°C

Environment relative humidity : ≤95%;

Air pressure : 860hPa~1060hPa;

2.6.2 Transport and Storage conditions

Environment Temperature: -25°C~+60°C;

Environment relative humidity : 10%~93%;

Air pressure : 860hPa~1060hPa;

3. Waste Electrical and Electronic Equipment

3.1 Background

The European Union’s Waste Electrical and Electronic Equipment (WEEE) Directive (6002/96/EC) has been implemented in member states as of August 13, 2005. This directive, which seeks to reduce the waste of electrical and electronic equipment through re-use, recycling, and recovery, imposes several requirements on producers and its Dealers are committed to complying with the Directive.

3.2 WEEE Marking

All products subject to the WEEE Directive and shipped after August 13, 2005 will be compliant with the WEEE marking requirements. These products will be identified with the “crossed-out wheeled bin” WEEE symbol shown below, as defined in European Standard EN 50419, and in accordance with WEEE Directive 6002/96/EC.



This “crossed-out wheeled bin” symbol on the product or on its packaging indicates that this product must not be disposed of with other unsorted municipal waste. Instead, it is user’s responsibility to dispose of EE waste equipment by handing it over to a designated collection point for the reuse or recycling of waste electrical and electronic equipment. The separate collection and reuse or recycling of Electrical & Electronic waste equipment will help to conserve natural resources and ensure that it is recycled in a manner that protects the environment and human health. For more information about where you can drop off your waste equipment for recycling, please contact your local officials.

3.3 Reporting

According to the WEEE Directive, or its Dealers will ensure that information needed to calculate the financial obligations with respect to EEE products will be provided as required.

3.4 WEEE from Users other than Private Households

According to the WEEE Directive, or its Dealers will fulfill its obligations for the management of WEEE from users other than private households.

Furthermore, as required by the WEEE Directive, in order to enable the date upon which the equipment was put on the market to be determined unequivocally, a mark on the equipment will be placed to specify that the equipment was put on the market after August 13, 2005.

3.5 Information for Reuse Centers, Treatment and Recycling Facilities

After August 13, 2005, and as required by the WEEE Directive, or its Dealers will provide reuse, treatment, and recycling information for each type of new EEE put on the market within one year of the date in which the equipment is put on the market.

Information will include the different EEE components and materials as well as the location of substances in these items. The information will be provided as a printed document or in electronic media (on CD-ROM or by web download, for example)

3.6 Warning and Safety Instructions

For Device:

- Read and comprehend this Safety Instruction before using the HDR500/600 Systems.
- The operation and maintenance of this device must be taken charge by you. This device only can be operated by the legally qualified persons. If necessary, have a authorized qualified technician carry out inspection and maintenance operations.
- This device must be installed in a X-ray room that complies with current installation standards. From this location, Any visual or audio communication with the patient must be maintained by you and the Acquisition interface module during exposure.
- X-ray equipment is hazardous to patients and the operator if you do not comply with the exposure safety factors and operating instructions.
- This device must not be allowed to be operated if there is the threat of an earthquake. After an earthquake, ensure that the device is operating satisfactorily before using it again. Failure to observe patients to hazards.
- DO NOT place any objects within the field of operation of the device.
- Connect this equipment ONLY to a mains power supply with protective ground to avoid any risk of electric shock.
- Disposing of the device or its components must be executed by a qualified service technician.
- Never be allowed to modify the device.
- This device is never allowed to be applied in conjunction with oxygen-rich environments. Nor intended for apply with flammable anesthetics or flammable agents. Using accessories

other than those specified in this document with the exception of those sold by Health may result in a lower level of security for the entire system.

For Computer:

- DO NOT place the computer and the peripheral equipment connected to it in the immediate vicinity of the patient in the unit. Leave at least 1.5m distance between the patient and the unit. The computer and the peripheral equipment must conform to the IEC60950 standard.
- Read your computer installation guide for details of the data processing system and screen. Ensure the proper ventilation with leaving a sufficient amount of clear space around the CPU.
- In order to acquire maximum image quality and visual comfort, direct light reflections from internal or external lighting should be avoided when position the screen.

3.7 Hygiene and Disinfection Instruction

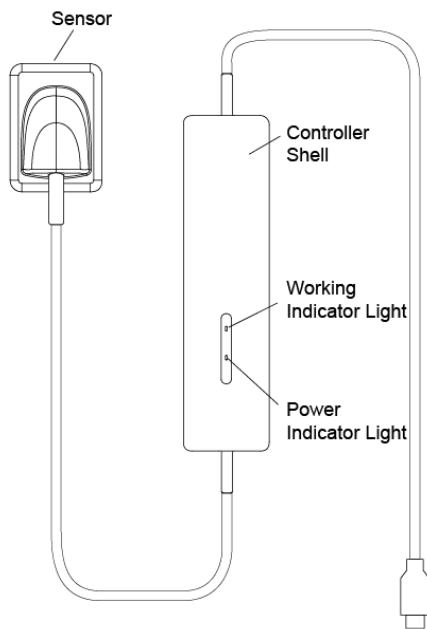
- DO NOT place the sensor in an autoclave environment as which could cause serious damage to the sensor.
- Never immerse the RVG sensor in any solution.
- The sensor head should be disinfected after each patient.
- Do not apply chemical autoclave for the toothbrush holders and avoid direct contact with the metallic part of the autoclave.
- To prevent from cross-contamination , apply a new hygienic barrier for each new patient

4. HDR-500 & 600 General Introduction

Dental digital x-ray imaging system is consisted of sensor, image controller, image capture system and connection cable (USB port) , connected with PC or notebook via USB cable. The power of controller and sensor is supplied by USB port, require no battery or power charge system. The whole equipment need to work together with imaging software.

4.1 Functional Components

4.11 HDR sensor

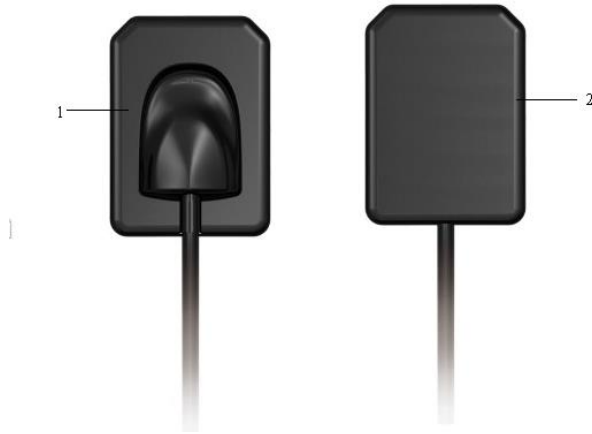


The sensor active surface is flat including the size 1 and size 2.

- ◆ Size1, universal sensor---Use for regular procedures, both for children and adult .
- ◆ Size2 sensor---Use for bitewings procedures.

The sensor non-reactive to X-Rays surface, contains the cable attachment.

Figure 2 HDR Sensor



- 1 Sensor non-reactive to X-Rays surface
- 2 Sensor active surface

4.12 Control Box

The sensor control box contains all the electronics of the sensor. The two LED light shows whether the sensor is workable.

Figure 3



4.2 Technical Specifications

Sensor: APS CMOS sensor
 External dimension (mm) :44×32(HDR-600) ; 40×26(HDR-500)
 Sensor Active Area : 36×27(HDR-600) ; 30×22.5(HDR-500)
 Sensor Thickness : 6mm
 Dynamic Range : 0~4,096
 Power : 5V±0.5V
 Image Transfer :USB2.0
 Cable Length :.≥ 3m

4.3 Sharing the Sensor Between Rooms

You can share the sensor between several rooms to provide access for several dentist based on Server software. The computer must have the Dentist dental imaging software, and Server must installed in one computer.

To share the sensor between several computers, move it from room to room. When you connect the sensor to a USB 2.0 port on the computer, the sensor is recognized automatically and is operational.

To share data between rooms, you can connect them to remote data---Server database. The Dentist dental imaging software needs only to access a shared database on the same computer or on a remote computer, which means Server database.

4.4 Using the different Positioning Systems

There are two ways to position the sensor in the patient mouth to get an classic radiology. You may spend some time to adapt due to the rigidity of the sensor.

One method is angular bisector technique, the other method is paralleling technique. It is just the way to position sensor, which can be chosen by practitioner's experience.

X-Ray Generator Compatibility

Normally, the sensor is compatible with all generators which meets the present standard of intraoral radiology. You can use a high frequency or conventional generator. To achieve gaining better images, the generator must operate with a voltage of **65 to 70kV**.

4.5 Attentions

- 1 As a precision devices, avoid flop, pulling and long-time disinfectant soak
2. Put disposable plastic jackets before used, avoid cross infection and allergy
3. No bite, for fear that the sensor or the jacket been broken
4. Caution for epileptic or psychopath
5. Learn the user manual carefully before use
6. User should be the professional dental or technician

5. Imaging Software General Introduction

5.1 Computer System Requirements

Processor: Intel 1.2GHz chip or above;

Memory: Above 1G ;

Hard disk: Above 40G;

Interface: USB 2.0;

Display: Resolution 1024 × 758 (15") or above

Operating System: Windows XP

The computer connected to system shall be in accordance with IEC 60950-1:6005.

5.2 Imaging Software

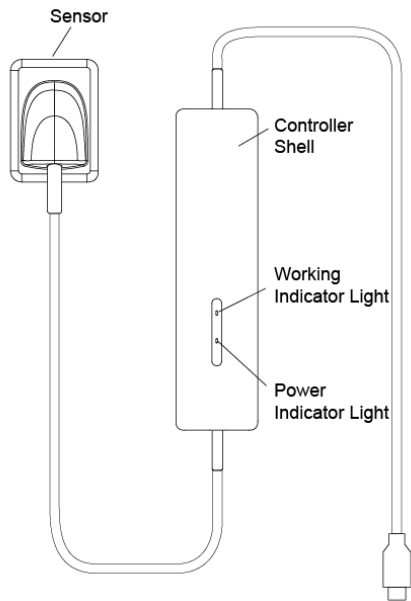
The HDR-500 and 600 dental imaging system operates with the following software:

- Dentist
- Server for sharing information between workstations.

Dentist Software is a user-friendly working interface that was designed and developed specifically for radiological diagnosis. It is the common imaging platform for all our digital systems for dentistry.

6. Working Sketch

The sensor and control box is connected already, please check the light on control box, before taking x-ray image. The power indicator on the control box displays yellow light and working indicator flash green light.



Working Sketch map

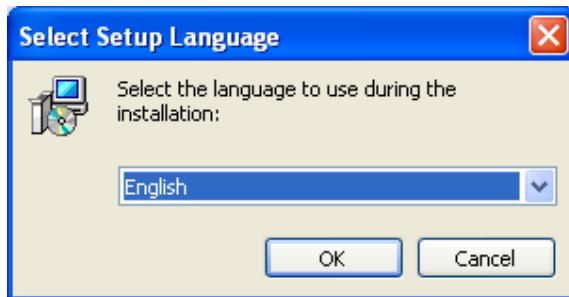


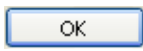
7. Driver Installation

1. Insert the CD into CD-ROM or DVD drive, installation screen will appear,

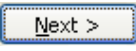


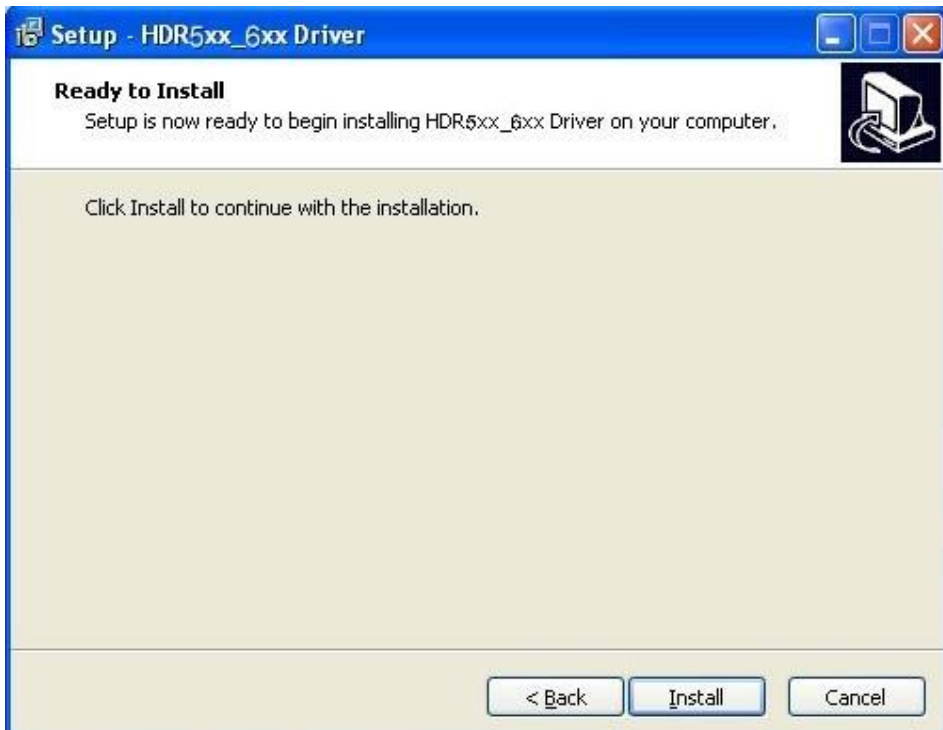
2. Click on Install Driver, or browse CD then double click on the icon to continue. It will show



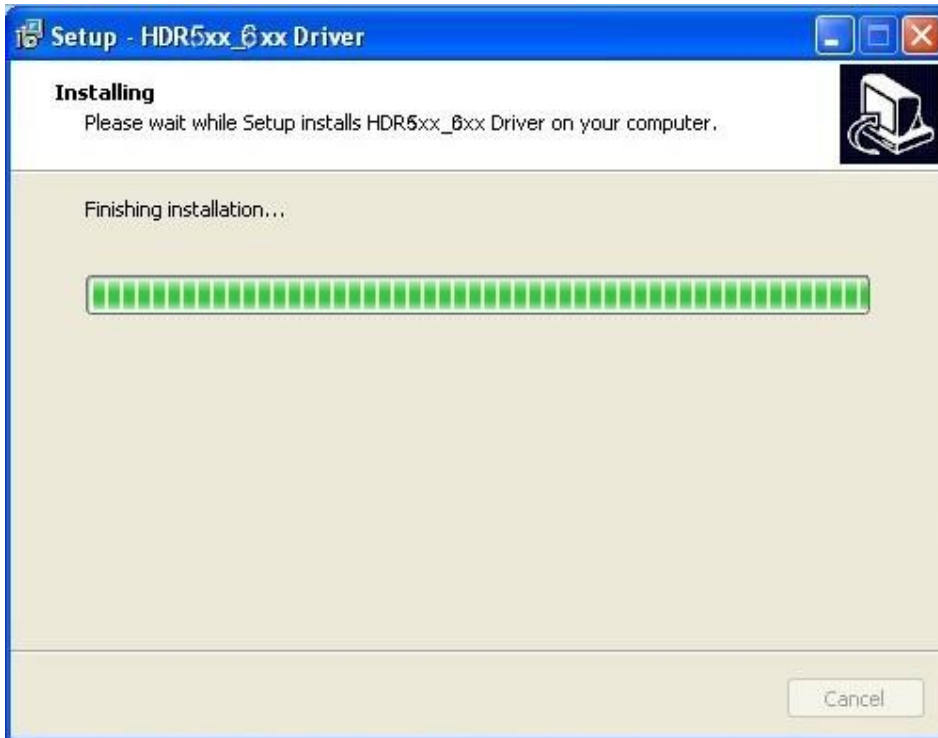
3. Click , it will show





4. Click , it will show



5. Click , it will show



6. Click , the driver is installed. Then connect the sensor to computer via USB cable, the computer will recognize it, and will show it is ready to use. You can check the drive name in Device Manager. The right driver name is  HDR5xx/6xx Digital Intraoral Imaging Sensor .

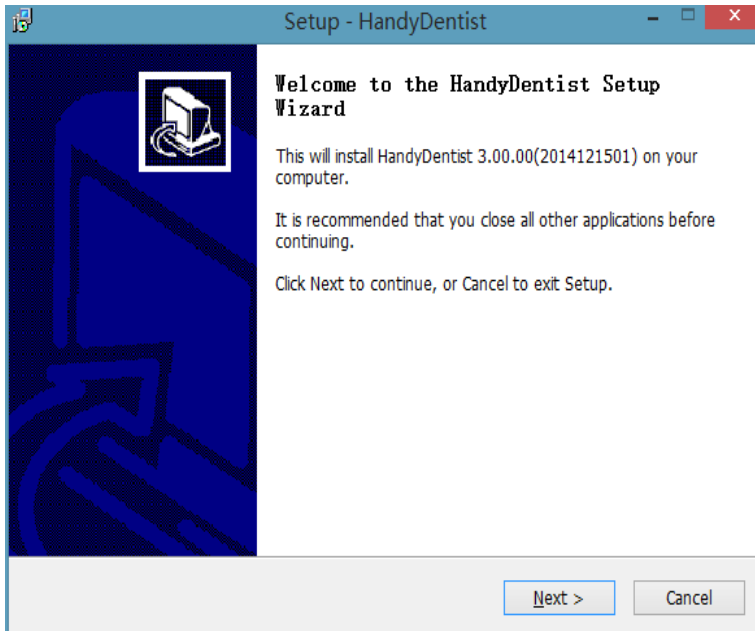
8. Software Installation

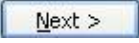
We provide CD together with camera within the package. To begin the installation, insert the CD into your CD-ROM drive. The CD is equipped with an *Autorun* feature and will start on its own. Should the *Autorun* feature not work with the CD-ROM drive in your computer, you can launch the installation menu manually: Double-click on the *My Computer* icon on your desktop, then open the CD-ROM drive by double clicking.

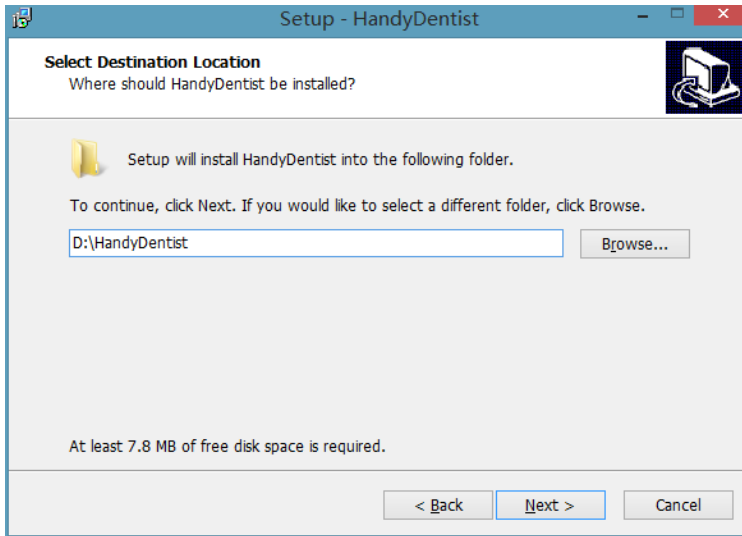
1 Click the button  on the interface of the CD or



double-click the icon in the CD, and then it shows:

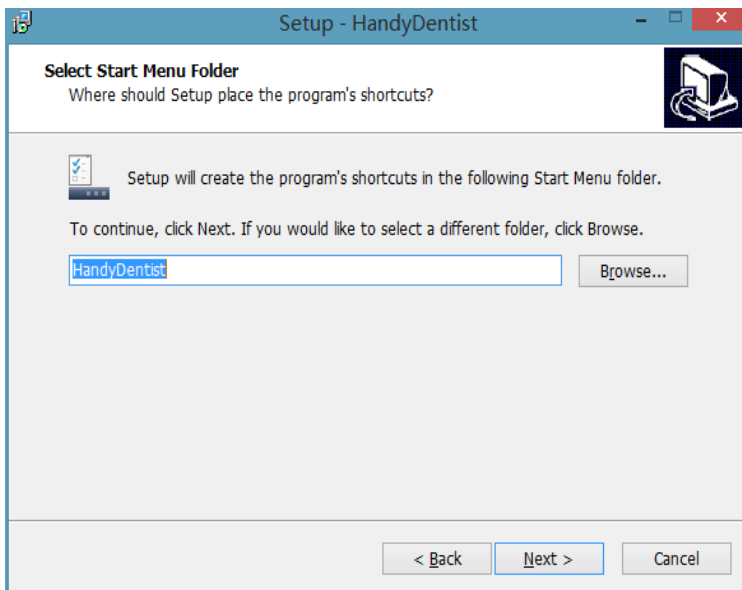


2 Click on the button , and then it shows:

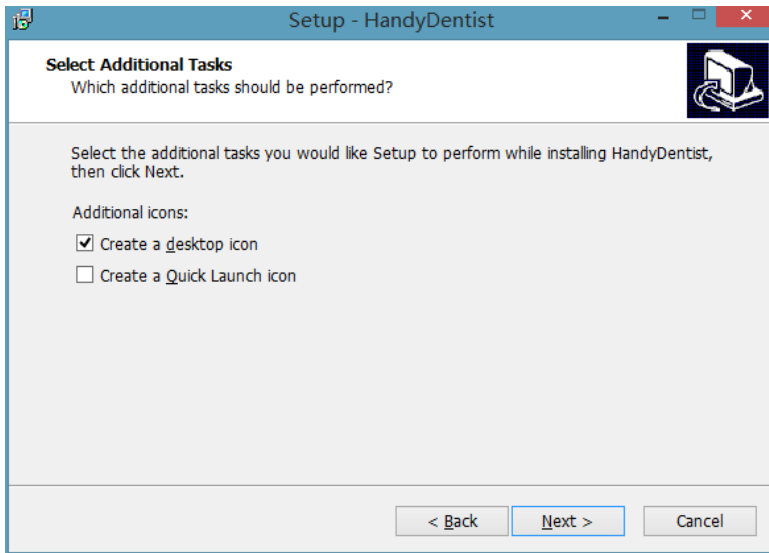


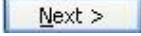
3 The default destination folder is “D: /Dentist”. If you want to change the route, please click on the button of **Browse...** to select the folder you want.

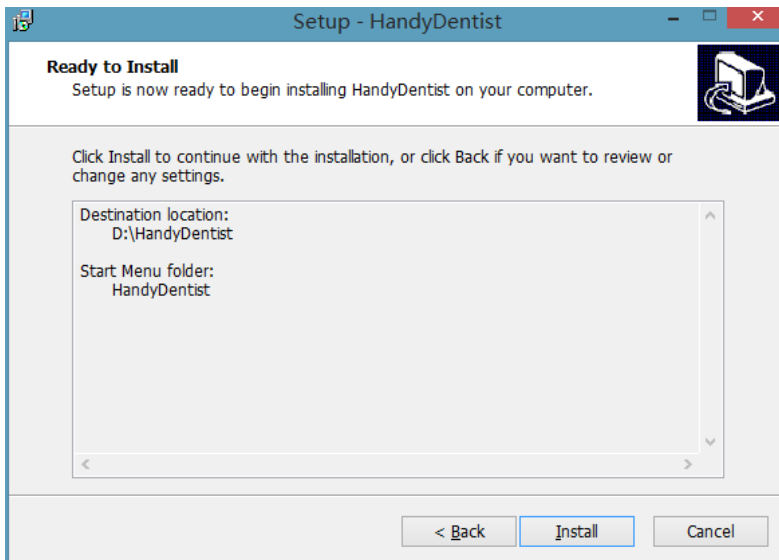
Then click on **Next >**, and then it shows



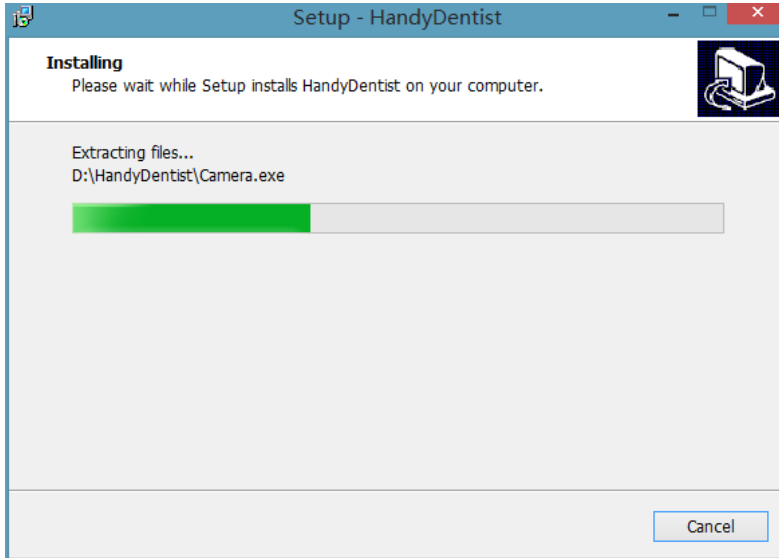
4 Click on **Next >**, then it shows. There are two selections for creating the icon, please make the selection according to your needs click **Next >**, then it shows:



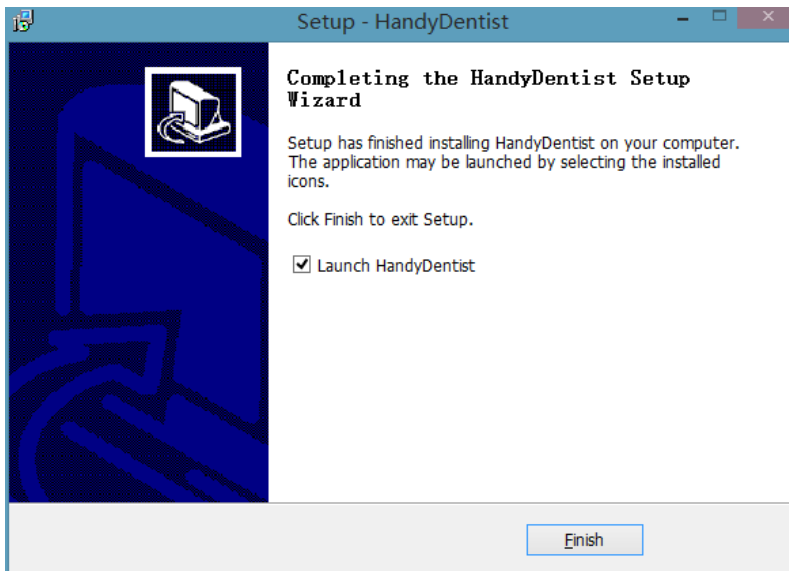
5 Click on the button , then it shows:

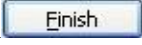



7 Click on  the following window will be shown:



6 When the installation is finished, the following window will be show:



7 Then click on the button , the whole installation was completed and the

software will be launched automatically, and there will be a shortcut  on the desktop.

9 Register Key

30 days later since the date of software installation, the software will ask for register. Double click on the target frame, register key windows will come. Please remember to register the software within 30 days of installation.

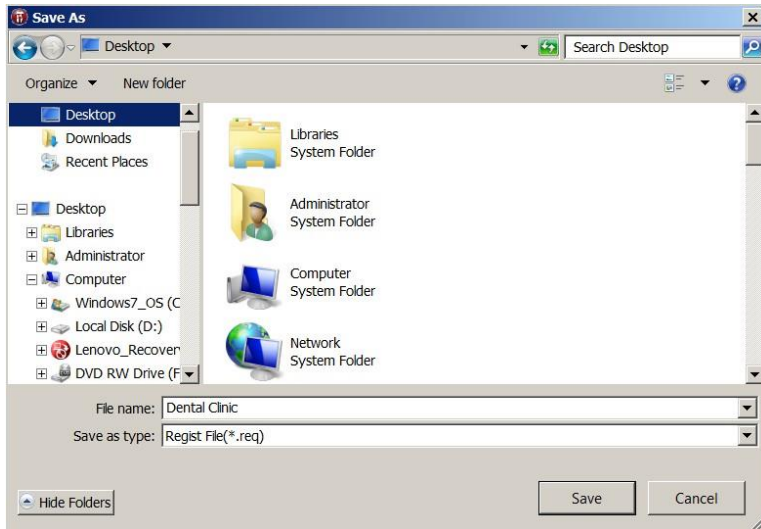


Click on Help in menu bar then select Register .

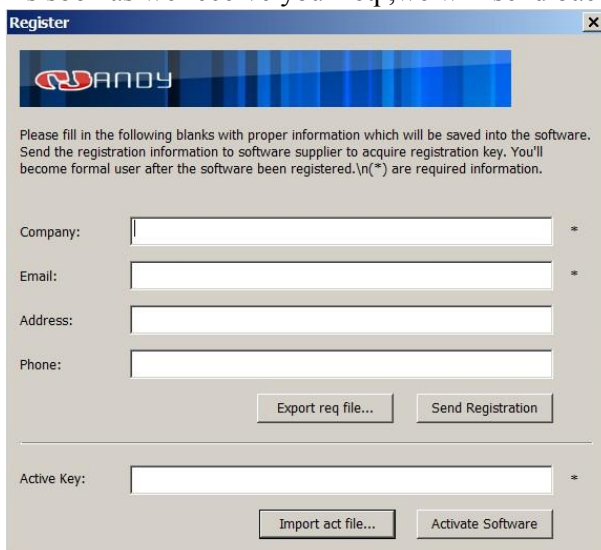
Input the information in the frame, and then click on Send Registration button, in normal situation, there will be a auto-run email jumping out.

If your computer have no email support server, you may meet the following notice.

Please click on OK and then click on the button of Export Req file .



And then please send this Req file to email : support@create.com
As soon as we receive your req ,we will send back the registration key to you .



After you receive the registration file, please click on Import act file, and click on Active Software button.

10 Install Calibration File

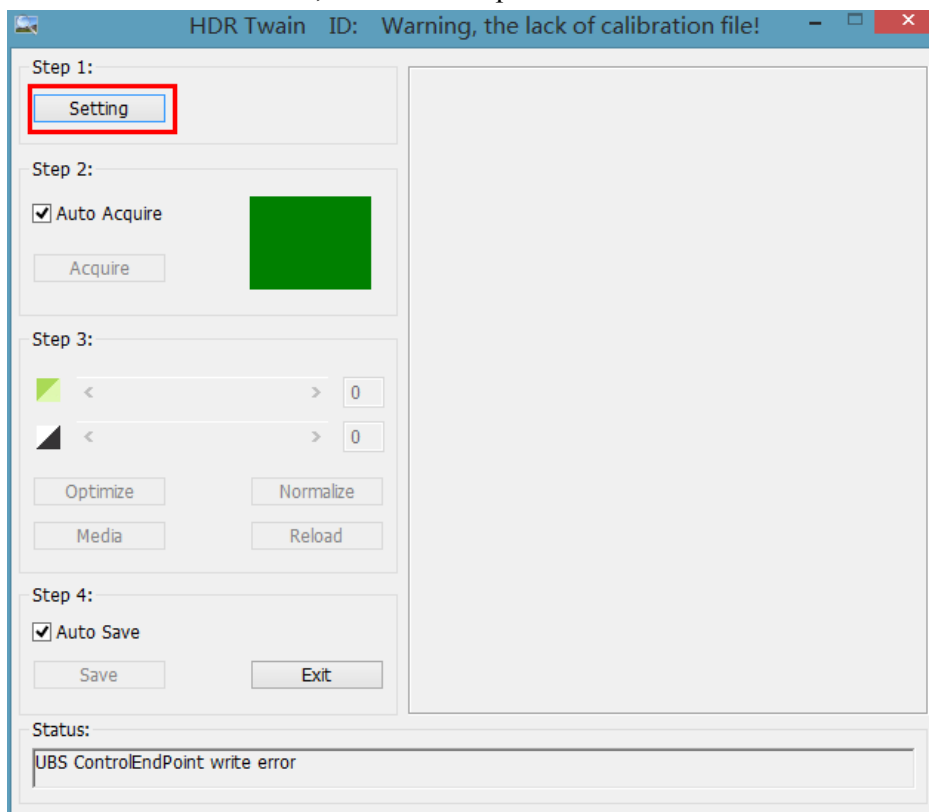
10.1 Install To dentist

Provided with every sensor is a disk containing the sensor calibration file. Each calibration file is unique to the sensor it was shipped with and the file must be installed on every computer systems before using that sensor. Every calibration file is consisted of 3 files , copy these 3 files from the CD and then paste into software installed destination folder , the default destination folder is *D:/Dentist/Sensor*.And then the calibration files installation is finished .

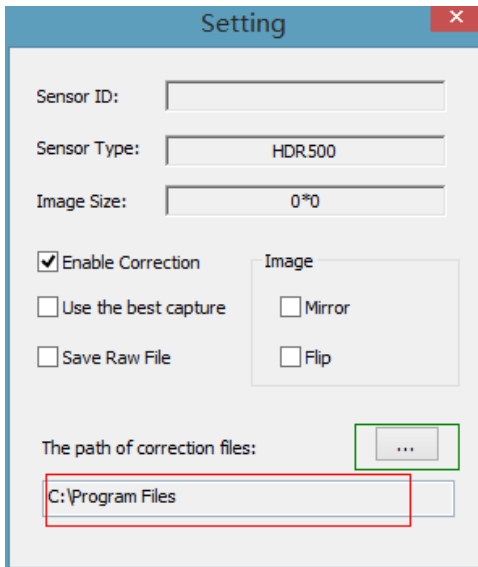
10.2 Install to other software with Twain function. If you prefer to use your own software, pls follow this procedures.

10.2.1 Find the correct installation path.

Connect sensor into the PC and open the software which you are going to use, then enter into Twain interface, see reference picture below:



Click “Setting” then will show following picture (If the “Setting” button is in gray and can’ t be clicked, please unplug the sensor and try again from the start.)




C:\Program Files ” in red mark is the installation path for calibration files in Twain, or, you may change the path by clicking button in green mark and the new path you set will be the one for calibration files installation.

10.2.2 Install the Calibration Files

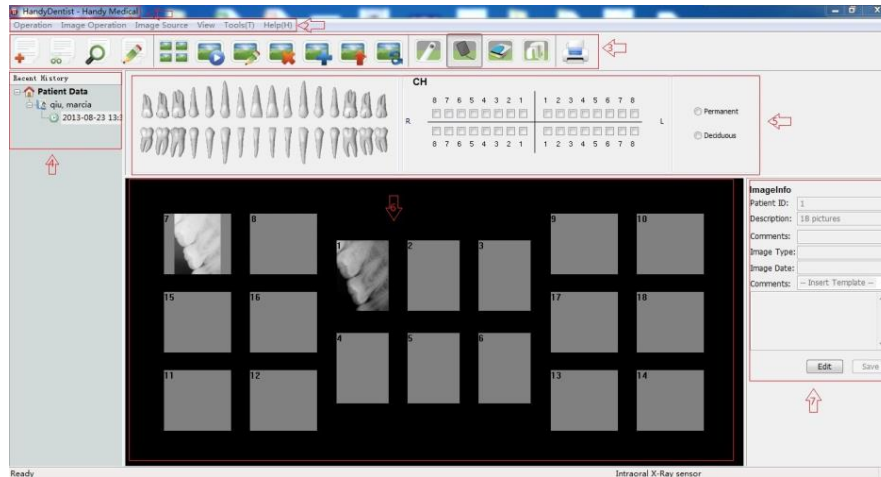
Copy the 3 files under “Calibration file” in CD and paste them into the correct installation path file folder, then it’s finished.

11 Software Operation

User interface

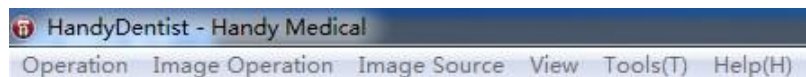
Double click on the icon  to launch the software, the Client window will be shown:

Example Screen:



1. System menu of the program windows
2. Menu bar
3. Tool bar
4. Patient account list
5. Teeth chart
6. Target frame
7. Image information

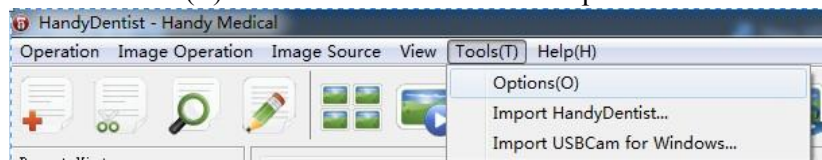
Menu Bar

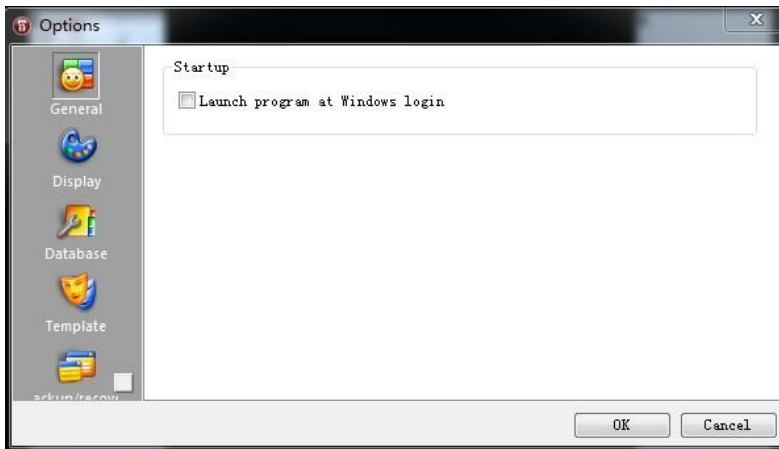


Each item contains a drop-down menu, and some of function can be achieved directly from the icon in toolbar

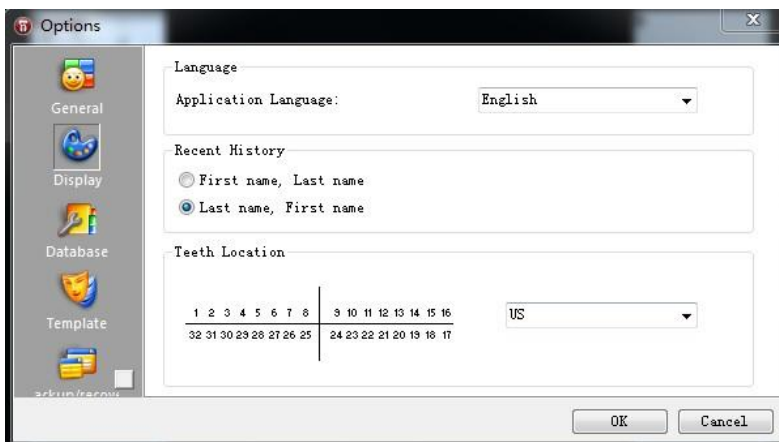
Change language

Click on Tools(T) on the menu bar and select Option.



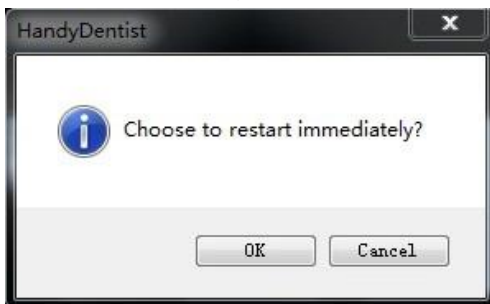


Click on Display, then select the your target language.



In Recent history part, there are two options, it arranges the order of First name and Last, this depends on countries custom .

Please click on OK, it will show




Click OK, the software will be restarted automatically and switch to be the language you selected.

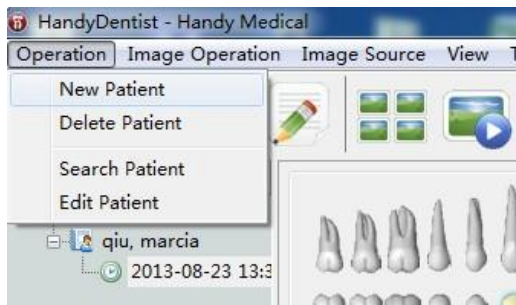
Toolbar



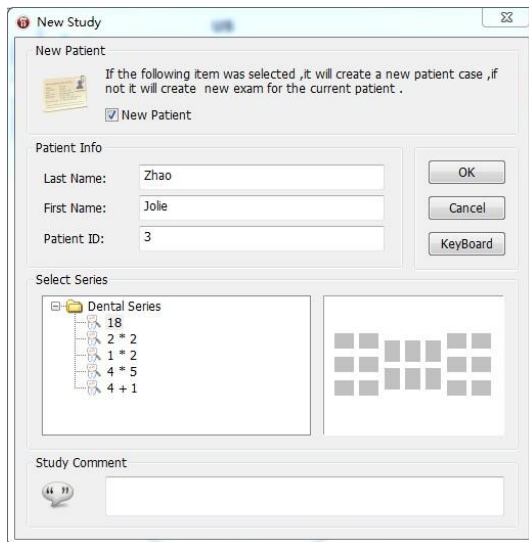
Each button contains a icon and will show a short message to explain corresponding function by moving the mouse pointer to the icon.

Establish Patient account

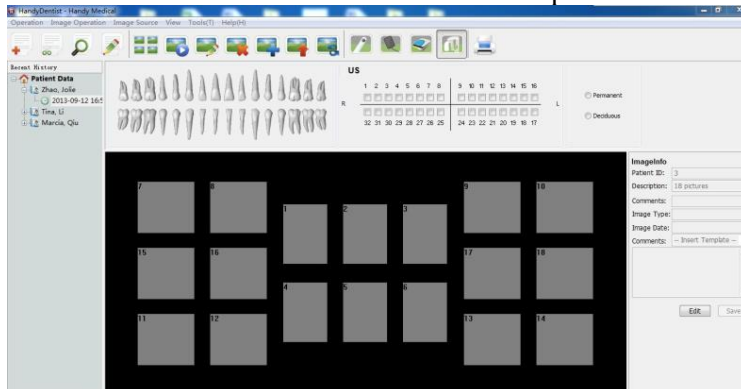
1. Click the icon  in the toolbar or select new patient in file of menu bar

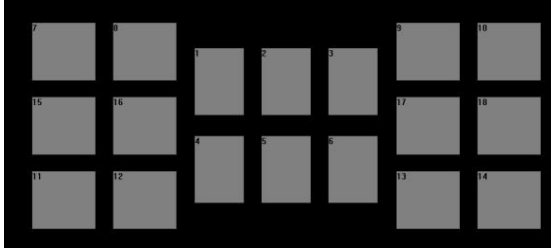


Then it will show




Input patient information ,select picture series and you can also input study comments in the frame and then click on OK . The new patient account has been created .





Target frame (18 pcs)

If the first one is full (Maximum 20 images for each account)

Click on  for creating another account under the same patient.

For establishing a account for another patient , please select “ new patient ” in this windows

New Study

New Patient

If the following item was selected ,it will create a new patient case ,if not it will create new exam for the current patient .

New Patient

Patient Info

Last Name:

First Name:

Patient ID:

OK

Cancel

Keyboard

Select Series

Dental Series

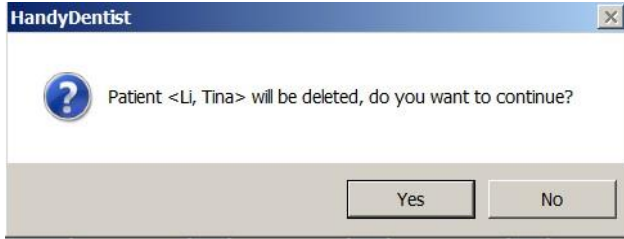
- 18
- 2 * 2
- 1 * 2
- 4 * 5
- 4 + 1

Study Comment

A new patient case has been created successfully.

Delete patient account 

Please select the patient case that you want to delete it will show the following notice window

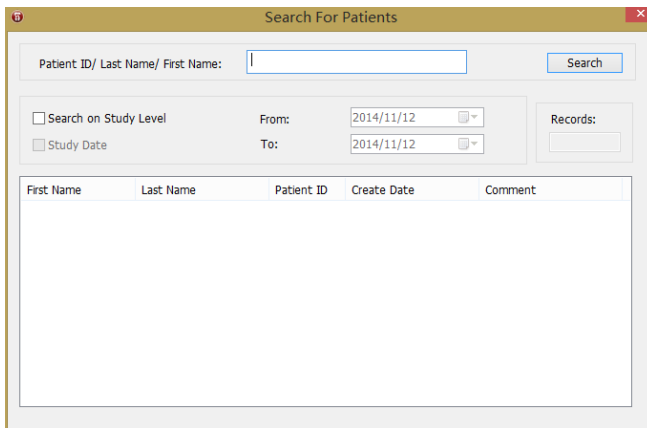


Click on “Yes”, and this patient will be deleted.

Search a patient case



Click on this icon, and input the patient information, the target patient patient will be showed.



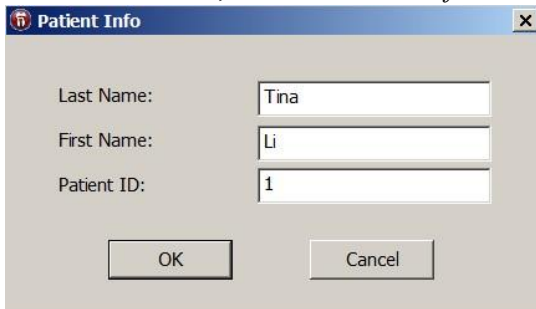
Input basic information of patient and click on search button to find a detailed patient account.

Please attention that the software only display 30 pcs recent patients case , all others will be hidden inside , so it need search tool if the patient case was not display in patient Data area .

Edit basic information of patient



Click on this icon, and the *Patient Info* window will be show:

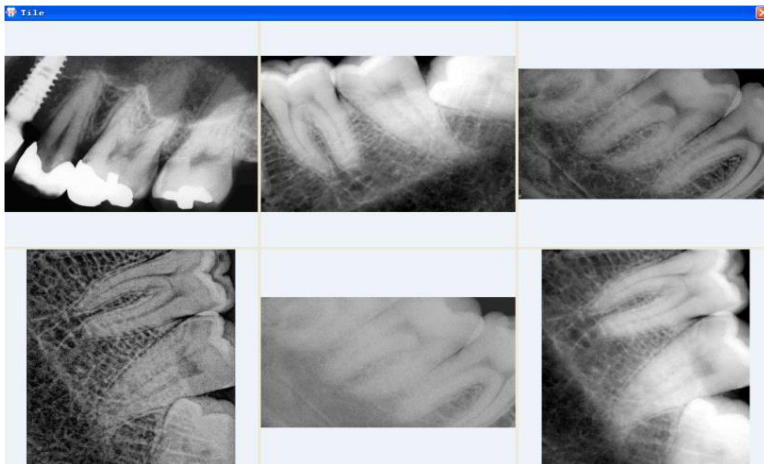


If there is something wrong with the basic information of the patient, it could be modified here.

Tile



Pave several pictures together (the maximum quantity is 6).
Keep on pressing the “ctrl” on the keyboard for selecting several pictures at the same time, then click on this icon, and the pictures selected will be tiled.



Press “ESC” to exit.

Play 

Click on this icon to view the image one by one.



The default time is 3 seconds and it could be changed depend on your requirement.

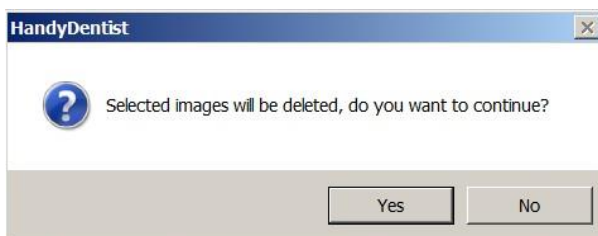
Press “ESC” to exit.

Edit Image 

Select a image then click on this icon to open “ Image” windows, and you can also open it with double-click on the image. More information refers to 9.3.

Delete Image 

Select the image you want to delete then click on this icon. The following windows will show



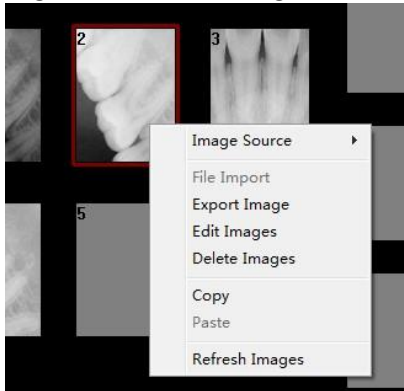
Choose “yes” or “no” to delete the image or not.

Export Image

Select a captured image then click on this icon to export this image.

Copy & Paste

Right click on the image, there will be a pull-down menu.



Select copy and then choose a empty target frame right click and select paste, this image will be paste into another frame.



Refresh images

Click this icon to refresh the images, or Right click on any image, and then select Refresh images.




Print Image


Note: To achieve this function, please be sure that the computer has been connected to a printer.


Print one image: left-click on that target frame and then click on print icon in the tool bar directly.


Print more images: Keep on pressing the “ctrl” on the keyboard and then left click on the target frames to select several frames at the same time, then click on this icon to print these selected images.

* Before use the hardware, please chick the equipment icon first:

The icon  is for Intraoral Camera or Film Reader.

The icon  is for Intraoral X-ray Sensor.

The icon  is to make other third-party hardwares which have Twain function compatible to this software.

The icon  is for Panoramic Machine.

Image(Enhance image)

For enhancing the original image quality please double click the target frame with

image or click on the button of  to come into Image.



All of these feature buttons are use to change the attributes not the image itself.
All of these tools could be divided into six parts

Color Adjust

Color adjusted by moving the slider either to left or right depending on your needs.

Bright/Contrast

Brightness and contrast could be adjusted also by moving the slider to left the to decrease the brightness/contrast, move the slider to right to increase.

Desoft

To remove useless soft tissue and adjust gamma value to improve the image quality for those unsatisfied pictures:



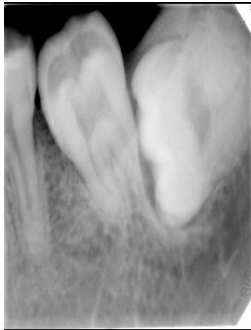
Before



After

Image process

There are eight feature buttons listed in this section, to achieve its function just by clicking on corresponding button.



Before contrast
[Smart contrast](#)



After contrast

To enhance the contrast on the image



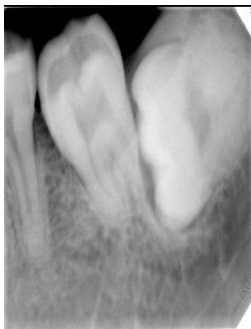
Before Sharpen



After sharpen

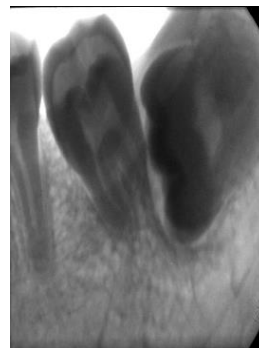
[Smart sharpen](#)

Inverts the gray shades of the image-negative images appear as positive, and positive images as negative.



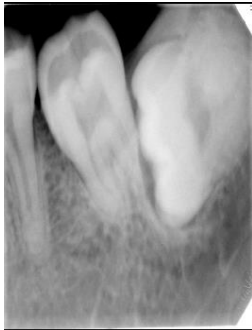
Before Negative

[Negative](#)

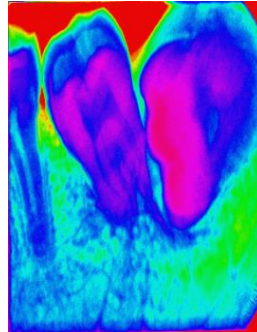


After Negative

Click on the colorize button, you'll notice the significant color contrast between different elements of the image. Because some differences can be easier to distinguish in color, colorizing provides another means to identify potential problem areas during examinations.



Before Colorize



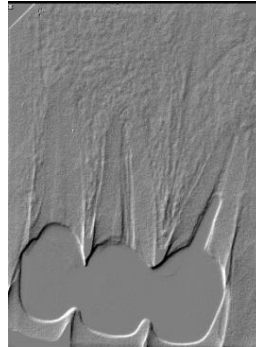
After Colorize

Colorize

This function can optimize your image.



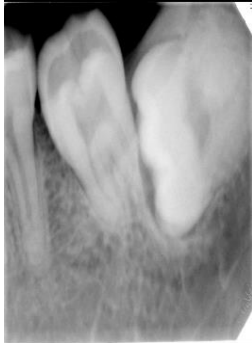
Before Embossment



After Embossment

Embossment

Show better structures and improve underexpose or overexpose images' quality.



Before Normalize



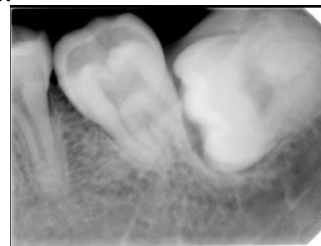
After Normalize

Normalize

Removes fixed pattern noise from an image.



Before



After

Denoise

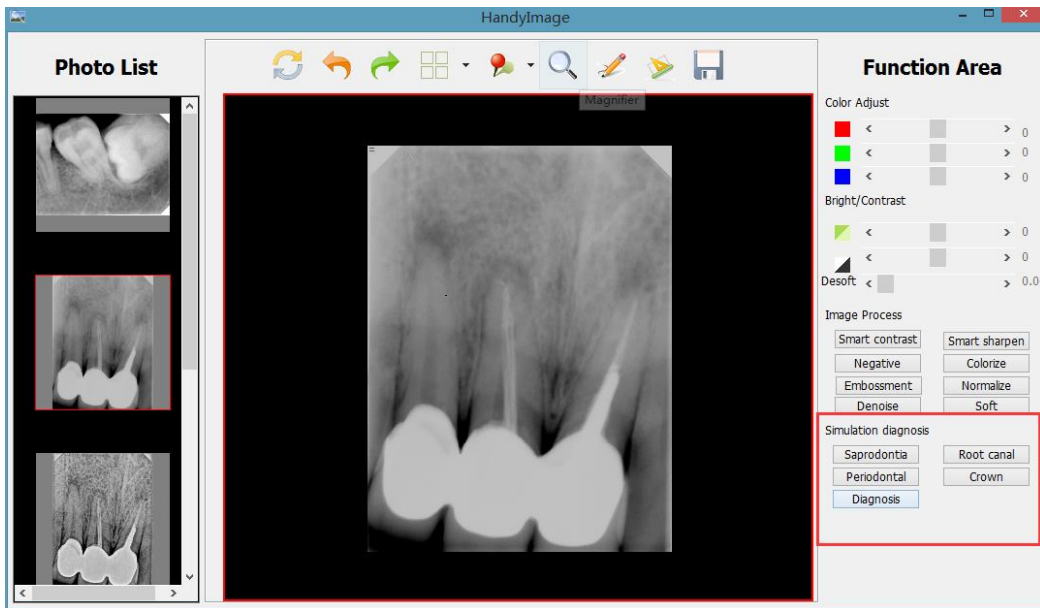
Make the images smoother



Soft

Simulation Diagnosis

In order dentist have a better dental practice and more easy to dignose for particular dentition. Saprodontia, Root Canal, Periodontal, Crown and Diagnosis, four different enhanced image make easier to check.



And With one button of Dignosis, you will see four different enhanced image.



Image Toolbar

To apply the function, click on corresponding button.



Apply this tool for come back to original image at one time .



Undo: Used to withdraw the previous operation







Redo: Used to repeat previous operation.



Choose the display mode you prefer.



-  Mirror
-  Flip
-  Rotate Left
-  Rotate Right

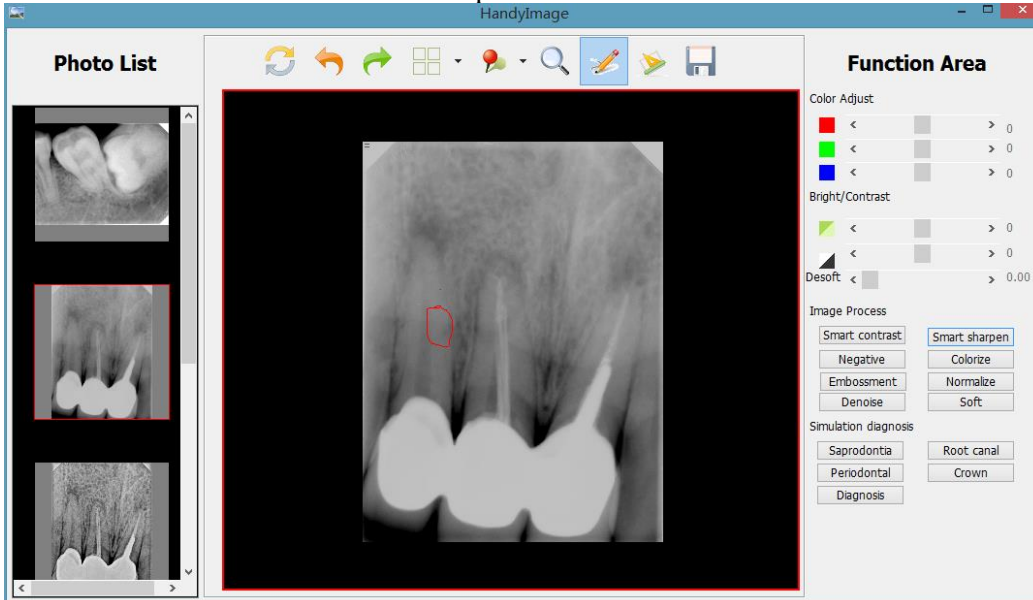
This function is used to view the image from different angle .



Click this button, there's a small window for choosing the magnifier parameter you prefer.



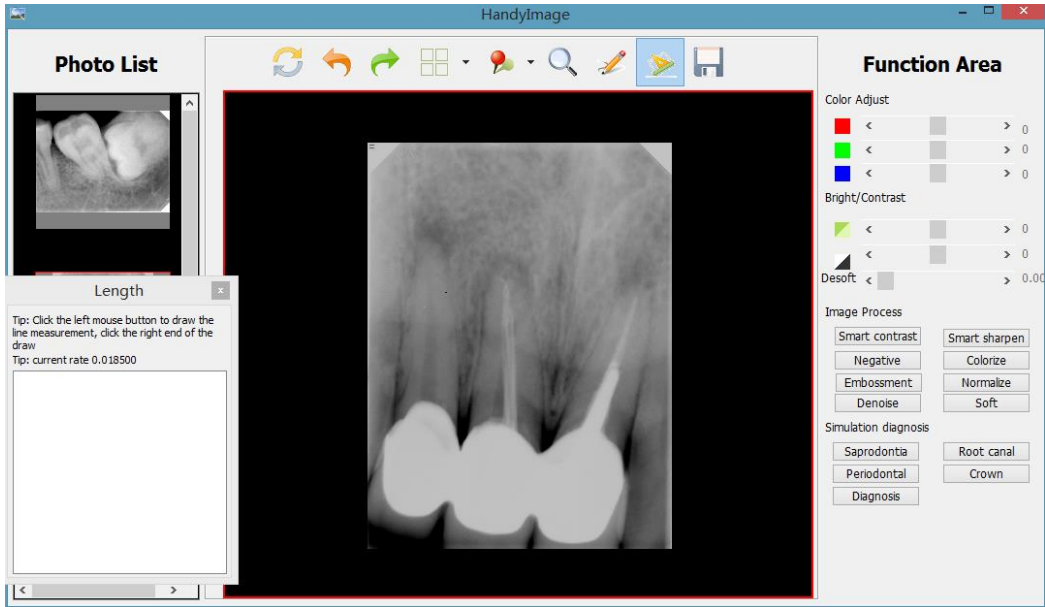
This function was set for making a mark on the image to point out the tooth problem and for better communication between patient and dentist.



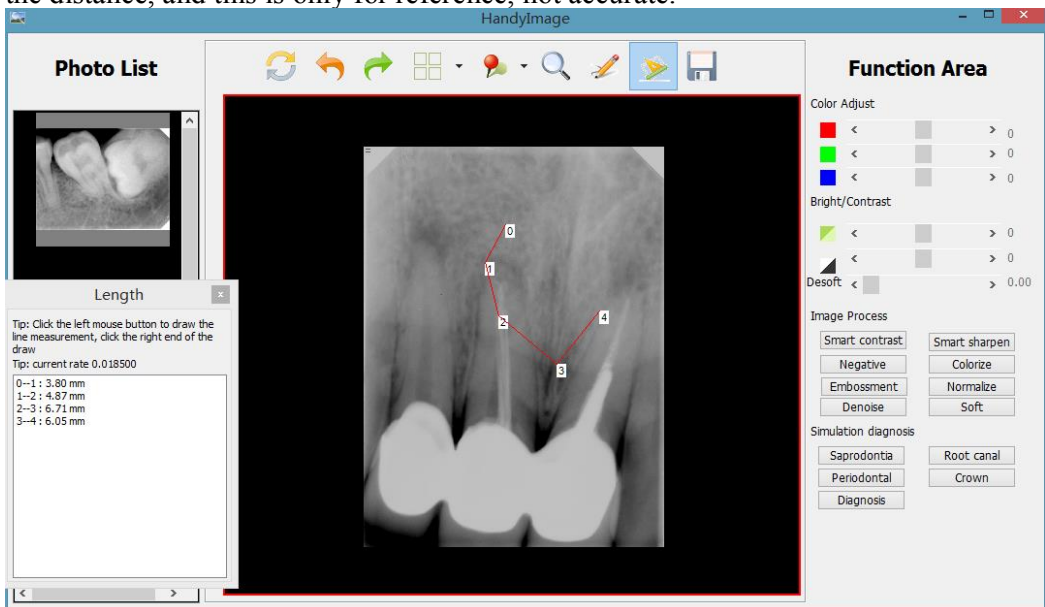
Click on this Drawing icon, then keep on left pressing of mouse, then move the pointer on the picture, the red line will appear following the mouse pointer.



Click on this icon, the following windows will show



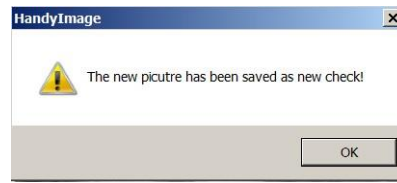
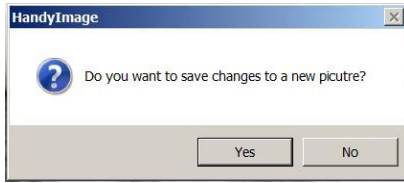
Left Click on two points that you want to know the distance. And left frame will show the distance, and this is only for reference, not accurate.



And if you calibrate the image taken from other brand sensor or intraoral camera, you will need calibrate first.



By Pressing this button the edited image will be saved automatically. And it will give the following notice.



Click on OK, the edited image will be saved into software automatically.

12 Acquiring an Image


To acquire an image with the HDR sensor, follow the instructions in the presented order.

12.1 Preparing the HDR sensor

To prepare the HDR sensor, follow these steps:

Select an appropriate positioner for the region of interest and the sensor size.

Cover with a disposable hygienic sleeves specifically designed for each sensor size.

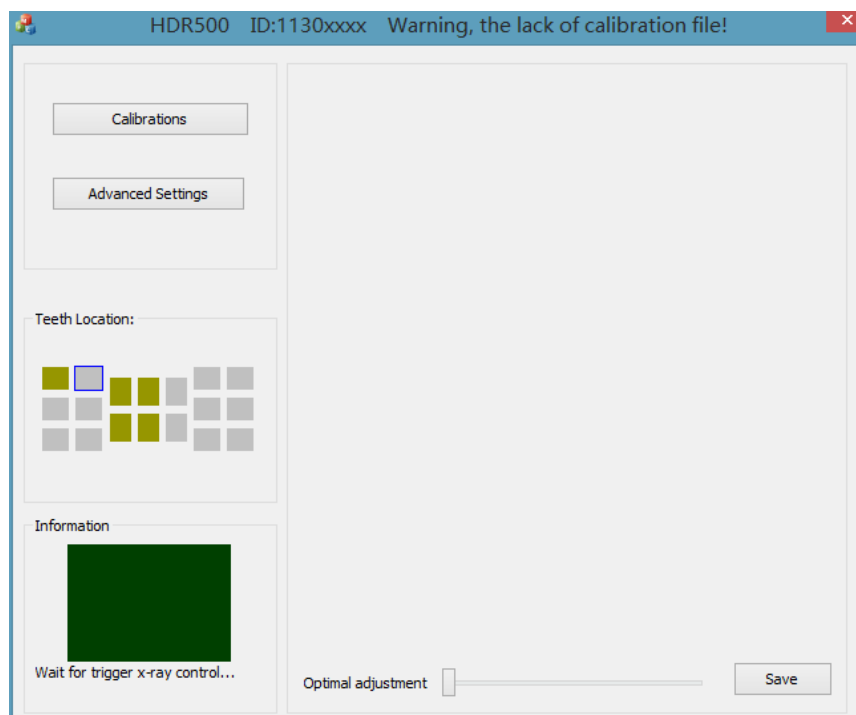
 **Notice:** To prevent cross-contamination, use a new hygienic sleeve for each new patient.

12.2 Preparing for Acquisition

To prepare for acquisition, follow these steps:

1 Open software, establishing the patient account

2 Click  to access the capture interface, or double click the blank frame .



3 Select the x-ray timing according to the region of interest and the patient type (follow the user instructions of your x-ray generator).

4 Insert the sensor holding it horizontally in the patients mouth. Positioning in the patient's mouth depends on region of interest.

5 Approach the x-ray generator tube head to the patient.

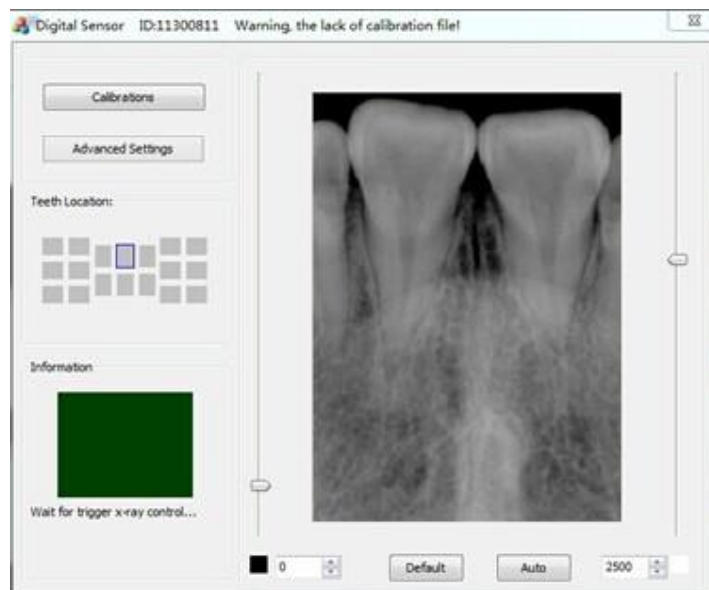
6 Align the x-ray tube head with the patient's tooth and the sensor and make sure that the tube head is not shaking.

12.3 Launching the X-Ray

To launch the x-ray, follow these steps:

1. Ask the patient to remain still
2. Position yourself either 2 meters behind the x-ray generator or outside the door.
3. Keep visual contact with the patient during the x-ray generator.
4. Trigger the x-ray with the remote control of the x-ray generator.

The image appears in the capture windows of the capture interface.



The image has been captured and the information frame return back to green color. It's ready to capture another image, without closing the window.

As soon as the image was captured it will be saved into software.

5. Check the image quality. If not satisfactory, redo the x-ray.
6. If satisfactory, remove the generator tube head.
7. Remove the HDR sensor from patient's mouth. Remove the hygienic sensor protection.

⚠ Notice: DO NOT pull the sensor by its cable when you remove the hygienic protection.

12.4 How to get X-Ray Image

Note: First of all, please confirm that you have installed the calibration files, more information refers to chapter 9.

Connect the sensor to the controller then connect it to computer


The power indicator light will shine, and then the working indicator light will flash green light.

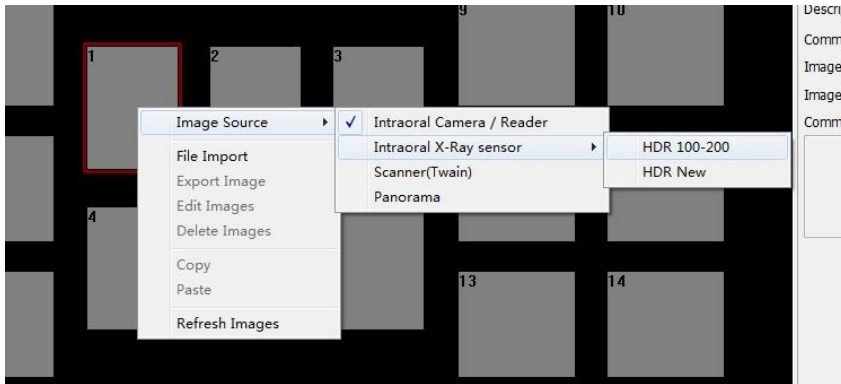
Using disposable sheath

Please place the sensor on the holder and cover the sensor with disposable sheath, then place the sensor into patient's mouth with flat side facing the X-Ray tube.

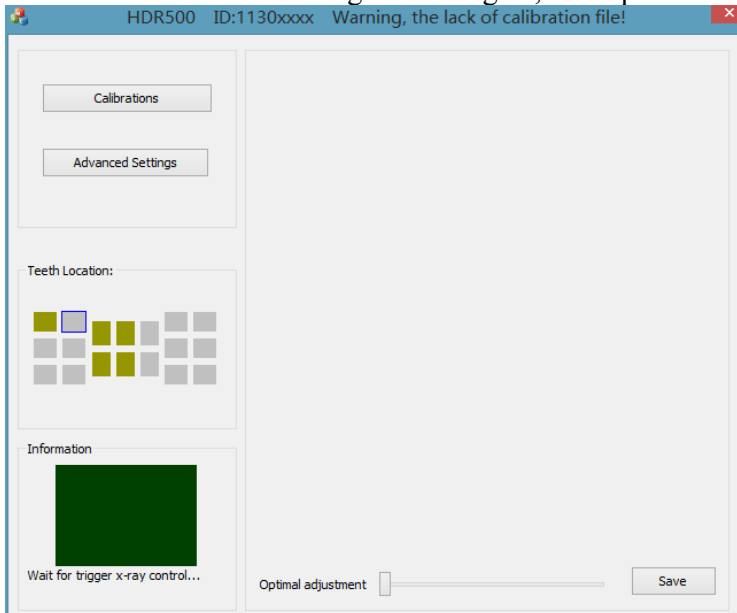
Check the x-ray exposure settings.



Select one target frame , right click and select Intraoral X-Ray sensor and pls select HDR NEW.



9.2.6 Double click on the target frame again, the capture windows will show:

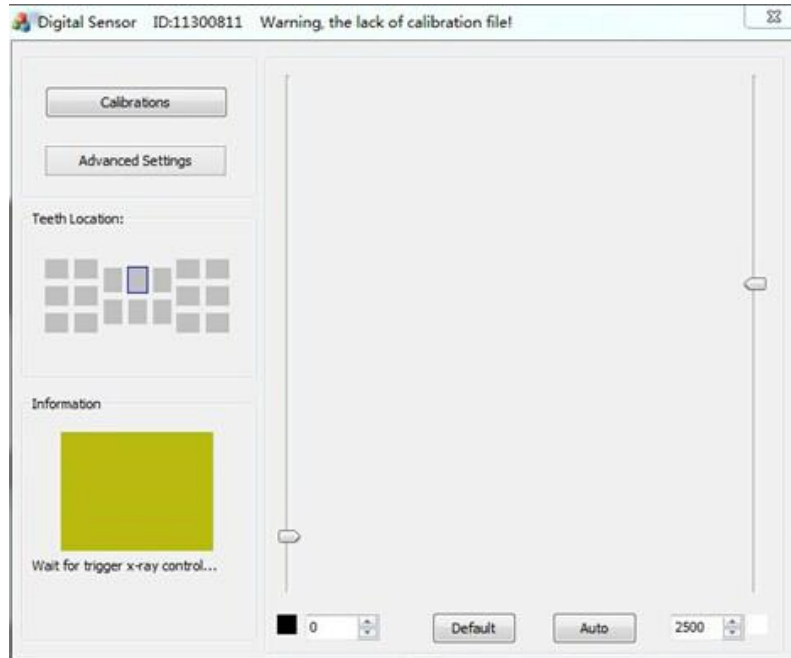


The capture windows will come and appear flash green light (default setting) .

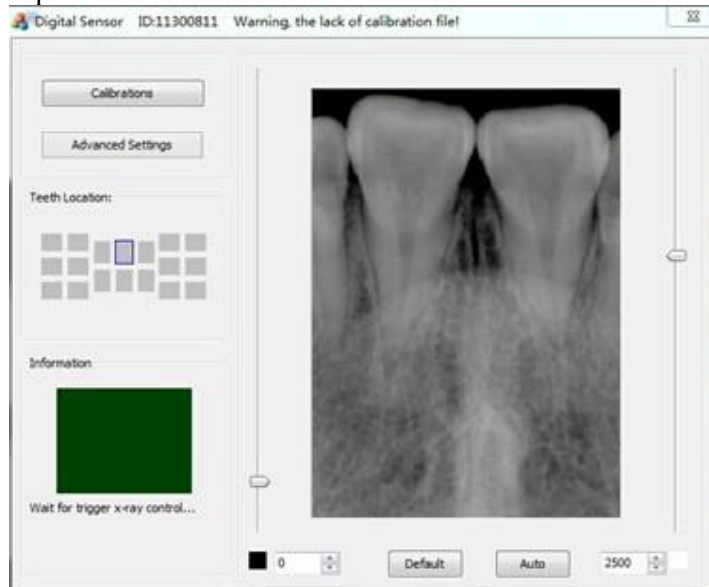
The sensor ID # of the sensor you are using is shown directly on the title. And it will remind you if the calibration file hasn't been installed in the
 Digital Sensor ID:11300811 Warning, the lack of calibration file!
meanwhile.

Active the x-ray source.

After activate the x-ray source , the sensor will detect the x-ray automatically and it will show .

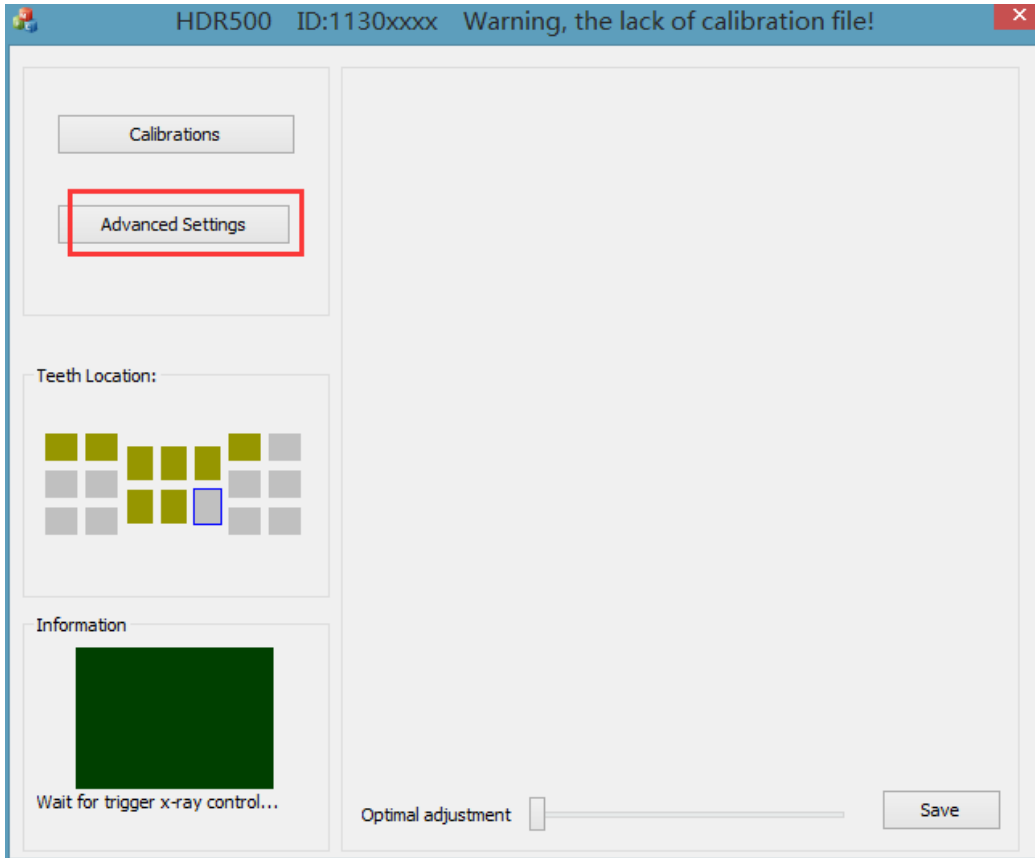


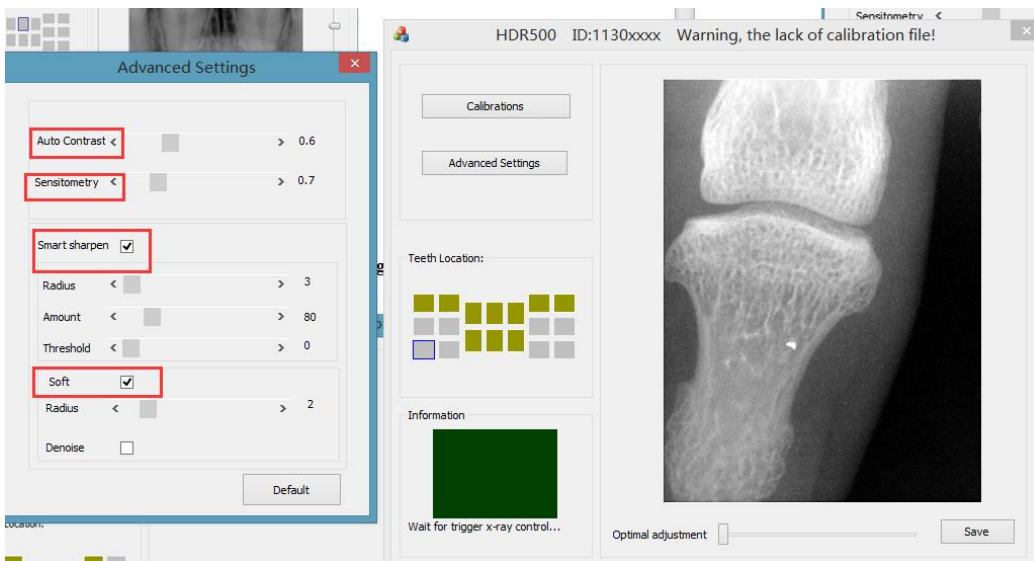
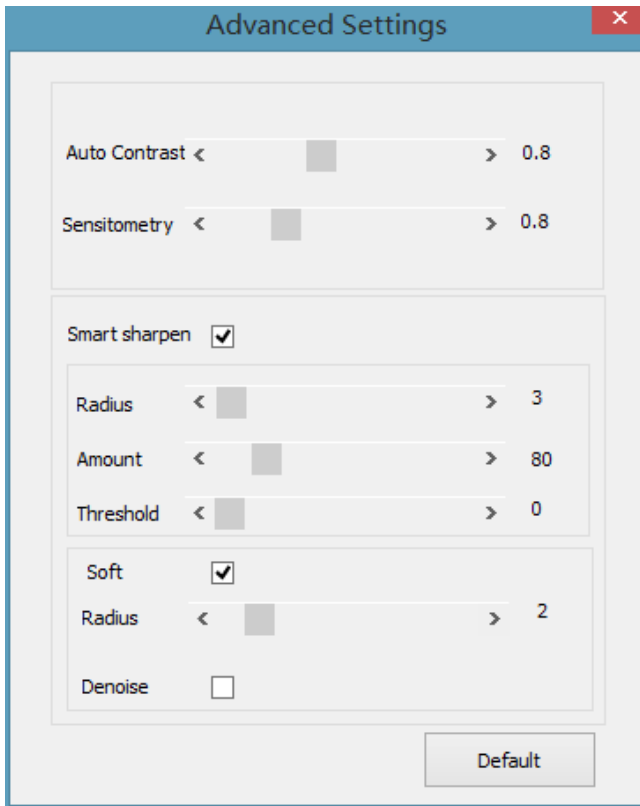
The green flash frame will change to be yellow color , it means that the sensor has detected the x-ray successfully .And around two seconds later , the image will be captured as below show .



Advanced Settings

If you find out that some images need do some imaging process to enhance the image quality, you can use Advanced Settings





And you can slide these buttons one the left to adjust to what you expect on the right side, and next time you will take the image just exactly you want to enhance without any other action.

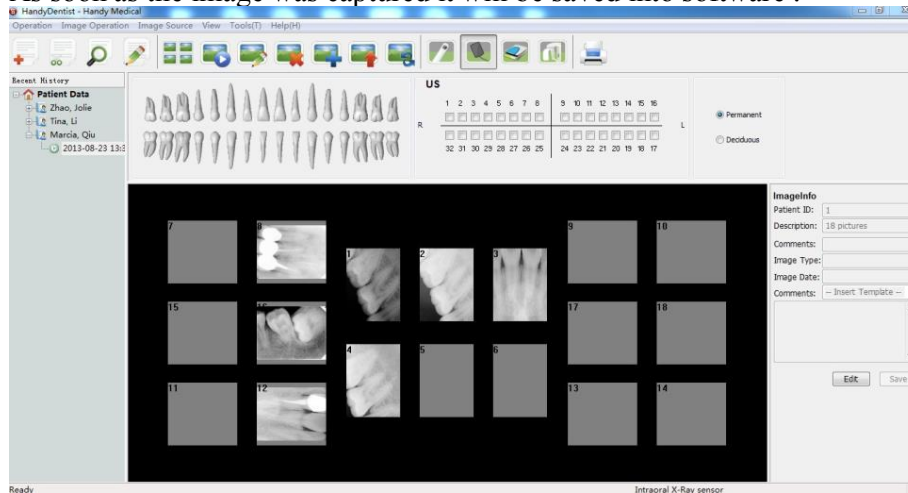
****However, we will recommend you keep the default figures in normal cases.****

**** To optimize the final image processing quality, please adjust the window level first and save to a new picture, then using processing function buttons on this saved new**

picture. **

The image has been captured and the information frame return back to green color .It's ready to capture another image ,without closing the window .

As soon as the image was captured it will be saved into software .



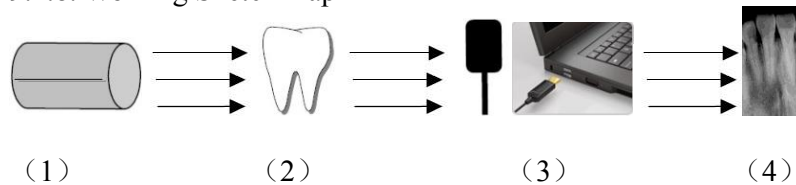
For taking another x-ray image, please repeat this procedure.

! Important: When the device is not in use, please disconnect it form USB port to avoid over heat.

! Important: The disposable sheath is for single use; please change it for every patient.

! Important: The disposable sheath shall conform to ISO 10993.

9.2.8. Working Sketch map



Descriptions:

- (1) x-ray source
- (2) Tooth
- (3) Digital x-ray sensor
- (4) Connect to computer via USB cable
- (5) Show the image in software

13 Troubleshooting Images

Troubleshooting images using the troubleshooting table below. If the problem persists, or if it is not outlined below, contact your representative.


 **Notice:** If the malfunction persist or more serious conditions occur, contact your representative.

Table 1

Malfunction	Possible Cause & Action
No images is displayed after triggering the x-rays.	Make sure the capture window is open, Check the connection of the sensor on the USB2.0 port.
The image is pale, too light	<ul style="list-style-type: none"> ● The exposure time is too short; increase it. ● The generator voltage is too low; have the generator checked. ● The generator is too far from the patient with respect to the selected dose. ● Check the monitor setting (contrast and brightness) and ensure there are no reflections on the screen.
The image is too dark.	<ul style="list-style-type: none"> ● The exposure time is too high; lower it. ● Check the monitor setting (contrast and brightness) and ensure there are no reflections on the screen.
The image is blurred.	<ul style="list-style-type: none"> ● Patient moved during exposure. ● Generator head was not stable ● Use an image filter.
The image is white.	<ul style="list-style-type: none"> ● Active face of sensor was not exposed to x-rays. ● X-Ray dose is insufficient. ● Sensor is not connected, or is improperly connected. ● Ensure the generator is producing x-rays; have it checked by a certified technician.
There is white lines on the image	<ul style="list-style-type: none"> ● Make sure install the calibration files.

14 Maintenance

14.1 Visual Inspection

Like all electrical equipment, the product requires not only correct use, but also visual inspection prior to operation, and routine checks at regular intervals. These precautions will help ensure that the product operates accurately, safely, and efficiently.

Before operating the system, users shall check it for any signs of physical damage or defect. If detected, contact your local distributor of this product for further instructions.

14.2 Periodic Maintenance

Periodic maintenance is performed as needed, but at least once a month. It consists of various checks performed by the operator or by a qualified service technician.

- Check that the labels are intact, readable, and adhere well to the surfaces on which they are positioned
- Check that all of the cables are undamaged
- Check that there is no external damage to the product which could compromise its ability to operate safely
- Check the installation, then do the step 1, 2 and 5 of operation and check that the indicator lights and indicator area in software are in normal.

14.3 Cable Care

Improper coiling of a sensor's cable is the most common cause of the sensor failure.

The following instruction is important to be followed for preventing cable damage.

- Grasp the connector not the sensor cable when disconnecting the sensor from USB control box. Pull it gently.
- Once unpacked, never coil the sensor cable, repeated coiling may cause kinks and irreversible damage.
- Store the sensor in its holder when it's not in use.
- Don't let the cable hang on or near the floor where can become tangled.
- Don't tangle the cable during use.

Note: The length is actual only when it was calibrated. If not, the value is just for reference.

14.4 Damaged or Non-Functioning Sensor

In the event of obvious physical damage to the Sensor or in the event that the sensor can't work properly, customers shall discontinue use of the Sensor, and contact their local distributor of the products to substitute another Sensor if available.

15 .Warranty

The Company guarantees for a period of essential 18 months for the sensors products starting from the date of the delivery , that the aforementioned product does not contain any defects neither in the materials used nor in the manufacturing process. This guarantee is only applicable where the product is correctly used and maintained.

Only damage affecting the products themselves will be taken into account.

The customer shall on no account have a claim for compensation of damage that does not affect the product as such. This exclusion of liability shall not apply insofar as mandatory law provides otherwise.

This warranty does not cover damages and faults caused by accident, incorrect or excessive repetitive use, negligence or general wear and tear due to normal everyday use.

Shanghai Equipment Co.,ltd cannot therefore be held responsible for any consequences resulting from the non-application of the instructions contained in the installation and user manuals, namely bodily harm, profit loss, loss of production, data loss, financial loss or any other direct or consequential damage.

If, however, the product is proven to be defective or faulty in materials or manufacture, the responsibility of Shanghai Equipment Co.,ltd will be limited to the repair of the aforementioned product at Shanghai Equipment Co.,ltd 's premises or, at Shanghai Equipment Co.,ltd discretion, its replacement. Regardless of the solution chosen by Shanghai Equipment Co.,ltd, the customer must return the faulty product at his own expense. Other than cost incurred for repair, cost of spare parts and labor, Shanghai Equipment Co.,ltd will only take on the cost of return to the delivery address initially communicated by the client.

Shanghai Equipment Co.,ltd shall be given the opportunity to examine any alleged defect.

Customers are not entitled to withhold payment of invoices or make deductions on account of products claimed to be defective.

Due to the continuous development of its products, Shanghai Equipment Co.,ltd reserves the right to amend at any time and without justification or obligation to notify those concerned the manual and products mentioned therein.

Given that our products are guaranteed in their original packaging at the point when they leave the place of manufacture, Shanghai Equipment Co.,ltd cannot be held liable for any damages caused during transportation.

Consumable spares, software and accessories are excluded under this warranty.

