
Q/HD 14.73-03-SM

INTRAORAL CAMERA

USER MANUAL

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1. Product Presentation

By using advanced digital imaging and computer technologies, the intraoral camera is with slight weight / smart appearance / portable design /easy to operate, as well be able to provide clearer & better images. Compared with the conventional intraoral camera, this device not only designed by removing the image capture card, saves costs, but also avoid the faults of image quality degradation during image format conversion processed by image capture card.

The camera can be directly connected to the USB port on computer without battery or external power supply for plug and play, then imaging directly in the software that comes with the device, which is convenient for both installation and maintenance.

1.1 Technical parameters

	HDI-812	HDI-712B HDI-712D	HDI-220C/210	HDI-200A
pixel	1280x720	1280x720	1280x720	640x480
Focus Range	5mm ~ ∞	5mm ~ ∞	5mm~35mm	5mm~35mm
Angle of View	≥60°	≥60°	≥60°	≥60°
illuminance	≥500lx	≥500lx	≥500lx	≥500lx
signal output	WIFI	USB	USB	USB

1.2 Requirement

I. Operating environment

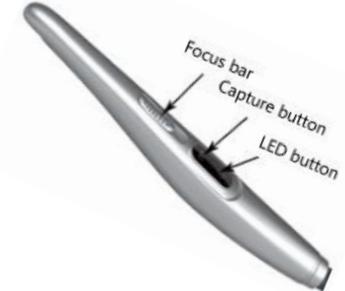
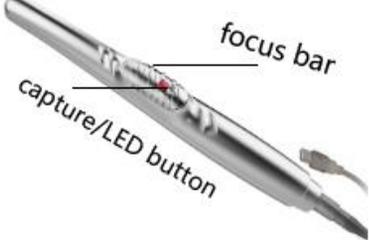
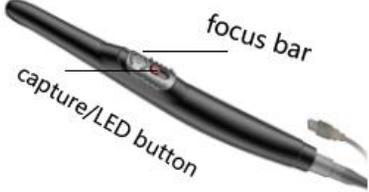
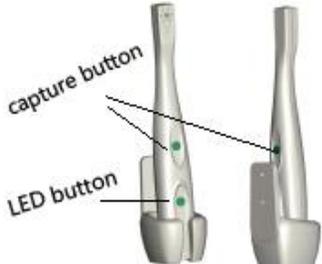
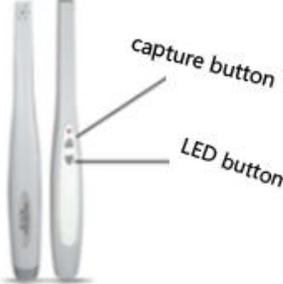
- a) Temperature: 5~35°C
- b) Humidity: ≤ 80%
- c) Power&Voltage: 5V DC (USB direct supply)
- d) Air pressure: 86kpa~106kpa
- e) Altitude: <4000m

II. Transport and Storage conditions

- a) Environment Temperature: -25°C~+60°C;
- b) Environment relative humidity : 10%~90%;
- c) Air pressure : 86kPa~106kPa;

1.3 Product photo and accessories

Model	Product photo	Accessories
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HDI-812		1)CD 1pc 2)Handpiece 1pc 3)Holder 1pc 4)Manual 1pc
HDI-712D		1)CD 1pc 2)Handpiece 1pc 3)USB cable 1pc 4)Holder 1pc 5)Manual 1pc
HDI-712B		1)CD 1pc 2)Handpiece 1pc 3)USB cable 1pc 4)Holder 1pc 5)Manual 1pc
HDI-220C		1)CD 1pc 2)Handpiece 1pc 3)USB cable 1pc 4)Holder 1pc 5)Manual 1pc
HDI-210		1)CD 1pc 2)Handpiece 1pc 3)USB cable 1pc 4)Holder 1pc 5)Manual 1pc
HDI-200A		1)CD 1pc 2)Handpiece 1pc 3)USB cable 1pc 4)Holder 1pc 5)Manual 1pc

1.4 Operation on handpiece

- Focus bar: To get the best focus range by moving focus bar up and down (apply to HDI-712B /712D/812)
- Capture button: Images can be saved automatically in software by press the button gently.
- LED button: First press on the button to light up the lamp, then press again to turn off the lighth.(Lights on HDI-712B/712D will be turned off automatically after a while non-using)

1.5 Computer System Requirements

Items	Minimum configuration
PC processor	Intel 1.5GHz chip or above
Memory	Above 4G
Hard disk	Above 40G (1GB for software installation,40GB for software operation)
Graphics card	NVIDIA/ATI 256MB RMA
Display	Resolution 1024 × 768 or above; 32-bit color mode
Interface	At least 2 available USB2.0 ports (If used desktop computer, 2 available USB ports must be have at the back of compute)
Operating System	Windows XP/Win7/Win10 (32bit&64bit)
Backup medium	Mobile disk (using mobile disk to avoid loss of patient data,some case like PC disk is corrupt/full,PC is attacked by virus,etc.)

Caution:

- The computer and other peripheral devices(like monitor, printer, etc.) should comply with GB4943/ IEC 60950.
- The computer and other peripheral devices (like monitor, printer, etc.) are equipped by the user own self.

- The requirement form above is the suggested minimum configuration for the computer and the product performance might be affected if those above are not reached.
- The user are strictly forbidden to use the computer that do not comply with GB4943,such as an assembled one may present potential safety hazards.

1.6 Troubleshooting

FAULT	SOLUTION
LED lights are not lit	Please check the USB connection state,make sure its tight
No response when connecting to the computer	Check the capture source in the UVC capture windows
	Re-connect to the computer
	Switch to a different USB port to eliminate USB port failure(The USB port should be USB2.0,back side USB ports of host computer would be better)
	Please do not connect other devices into the computer USB ports at the same time, that could be make the computer unable to detect this Camera properly
Unable to capture the image	Please check the USB connection state,make sure its tight
	Update image management software
	Restart your computer after software installation
Images are blurred	Please adjust to proper focus range: Fixed range camera: 5mm~35mm Adjustable focus range camera:5mm~∞
	Please hold the camera steady when taking images
Back dot on images or videos	Please check that if the dot is on your computer screen
	Use a soft cloth with a little bit alcohol to clean the camera lens gently
	Contact your local distributor or the manufacturer

 **Note:** Any problems occurs during operation, please refer to the above troubleshooting table first. If the problem persists, please contact the after-sales team for support.

1.7 After-sales Policy

- (1) This device is warranted to be free from defects in materials and workmanship from the date of shipping for a period of 1 year (12 months).
- (2) In one of the following situations, the warranty is not covered:

- * Damage caused by improper operation/maintenance/storage against the instructions in the manual or by user's carelessness;
- * Damage caused by unauthorized disassembly;
- * Damage caused by irresistible factors;
- * The warranty period has expired;

(3) Regarding a reasonable complain about the product failure or delivery, we would provide replacement or maintenance. We reserve the right to take repair, include some kind of natural or special damage, which is only under the compliance with legal provisions to avoid default / malfeasance / wilful misconduct..

(4) Please contact your local distributor for the maintenance executed by our company in case of malfunction occurred. Please do not disassemble the product without permission, and we shall bear no responsibility for any damage due to unauthorized disassemble by customer or the third-party.

(5) The expectant lifetime of the product is 4 years under normal operating conditions. Calculation method as below:

The number of exposures	Lifetime(The calculation is based on the average 10,000 times shooting per year)
40000	4 years

1.8 Cautions

- (1) Please use USB2.0 interface.
- (2) When using the intraoral camera, do not use other USB devices (especially other cameras) simultaneously, otherwise the camera may be affected or not function properly.
- (3) As a precision electronic product, please do not drop when use it, and always prevent the lens from dusts. Always keep the camera handpiece away from any liquid. To clean the lens' surface via wiping it gently with a soft cloth from end to end in straight lines without applying pressure. The intraoral cameras are not sterile medical devices, no matter in use or not, please cover a disposable sleeve complied with bio-compatibility requirements, to protect the lens.
- (4) Place the camera handpiece in the holder or in the box when not use.
- (5) The lens can not be disassembled, nor can it be directly immersed into any liquids for disinfection, cover a disposable sheathes to achieve disinfection. Use a soft cloth moistened by little bit alcohol to clean the housing.
- (6) Check the intraoral camera before each usage and do not face LED lights to the patient's eyes when it on.

(7) To avoid cross-infection, please change a new disposable sheath before each usage.

2. Software Instruction

Preparation: Directly plug the intraoral camera into computer USB port, the computer will recognize the camera automatically.

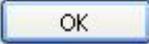
Software installation

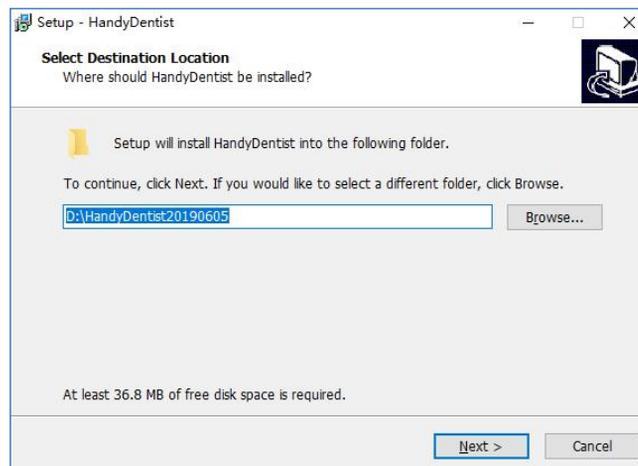
We provide CD / USB disk together with the camera in package. Please insert the CD / USB disk into your computer to start installation.

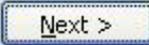
2.1 Find HandyDentist software icon  HandyDentist_3.20.01(2019060501).exe (The name might change with update version, please refer to the actual using name)

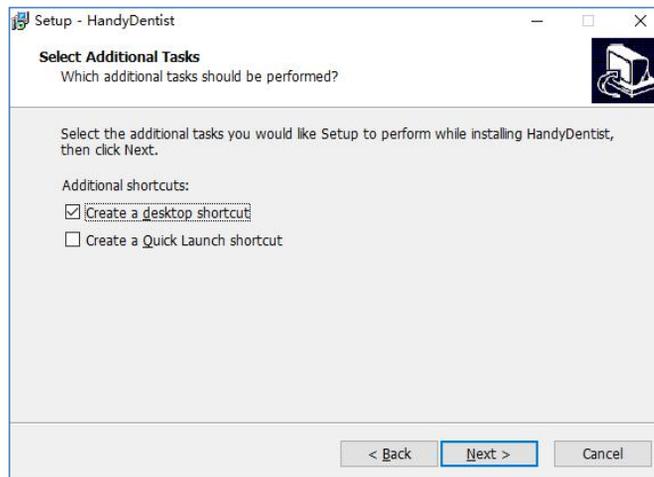
2.2 Double click to launch software installation, then choose the language you'd like



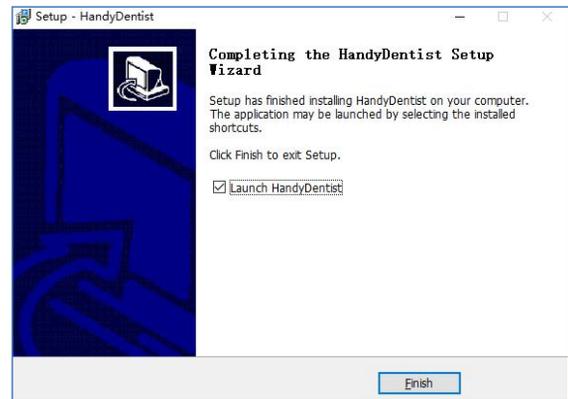
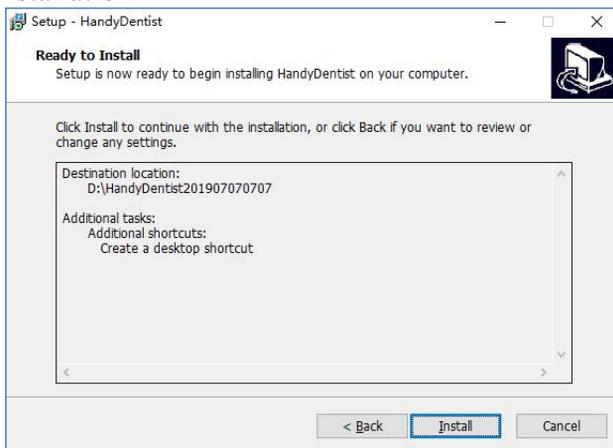
2.3 Click , select its installation path you want



2.4 Click , choose the below two options as needed



2.5 Click **Next >** , it will show the left lower pop up window,then click **Install** to continuing.After automatically installing,click **Finish** to complete HandyDentist software installation

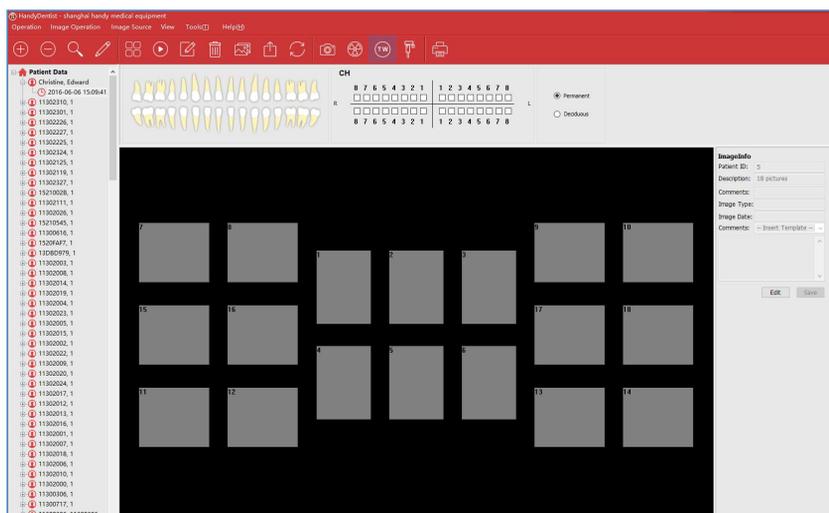


3. Software Operation



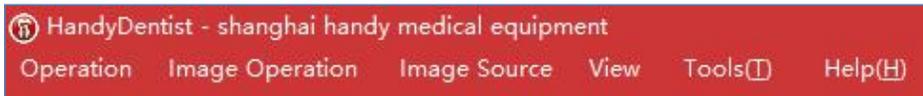
Double click on the icon **HandyDe...** to launch the software, the HandyDentist window will be shown:

Example Screen:



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

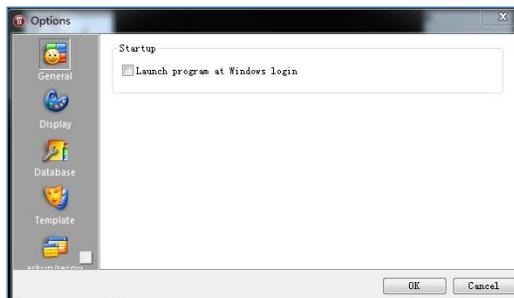
Menu Bar



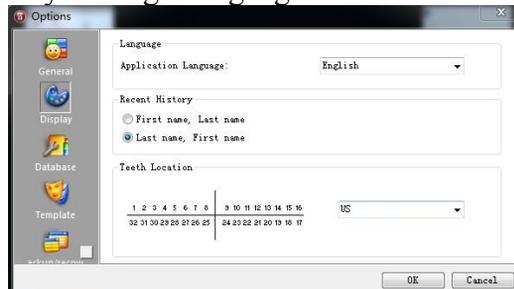
Each item contains a drop-down menu, and some of function can be achieved directly from the icon in toolbar

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



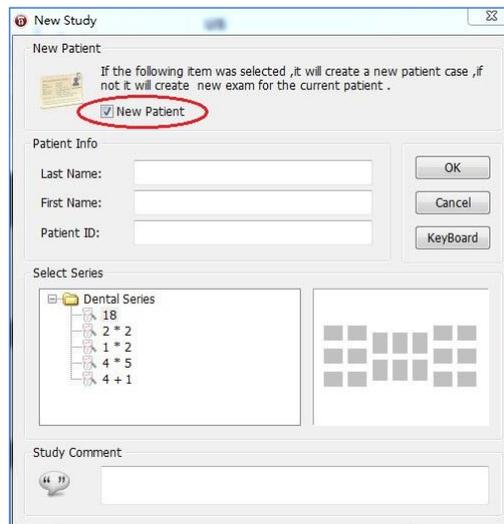
Each button contains a icon and will show a short message to explain corresponding function by moving the mouse pointer to the icon.



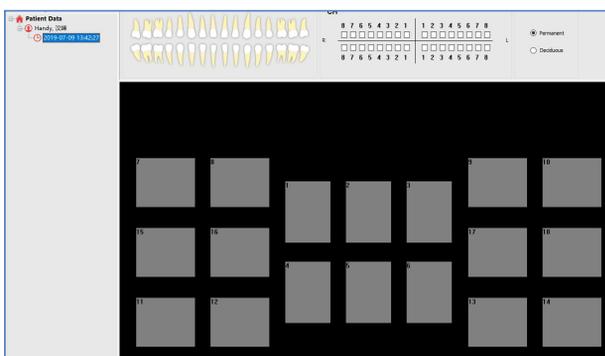
Establish patient record

Click on this icon directly in toolbar or select “new patient” in pop-up window by click on “Operation” in menu bar

Then it will show

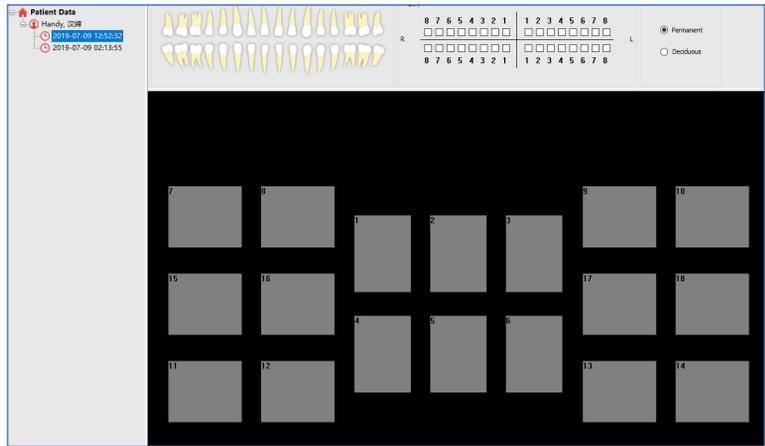
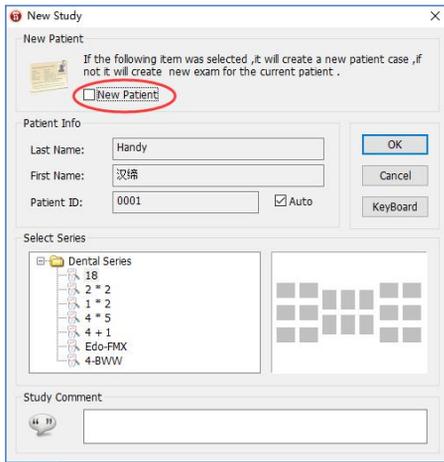


Select “New Patient” option to create a new patient record, fill in the patient information, select picture series you’d like, also it’s available to write study comments in the bottom blank, then click ‘OK’ button.



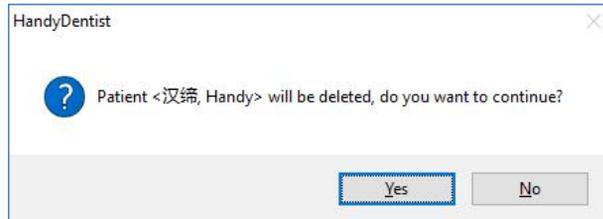
Target frame (18 pcs)

Take 18 pcs as an example, If this account is full (Maximum 20 images), please click on new patient icon, but **no need to** tick “New Patient” option as the below picture showing, keep the same patient information, just create another new target frame for this patient.



Delete patient record

Please select the patient data that you want to delete,click on this icon button,it will show the following notification window.

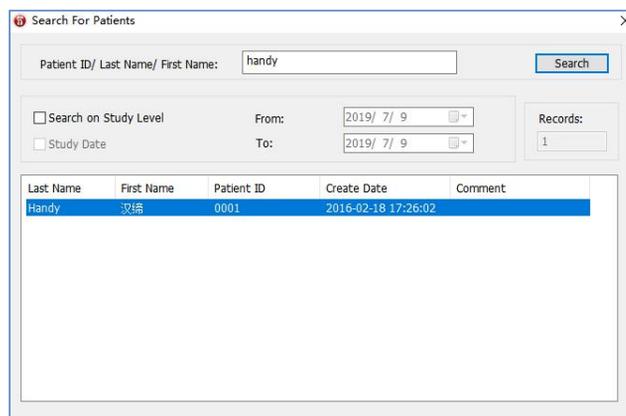


Chose “Yes” button, and this patient will be deleted.



Search a patient case

Click this icon to search registered patient by use its ID, last name or first name.An accurate searching is based on the examination date. Double click the target patient, ‘Searching’ window will be closed automatically,and back to home screen,this patient will display and be chosen in the ‘Recent Cases List’ area.

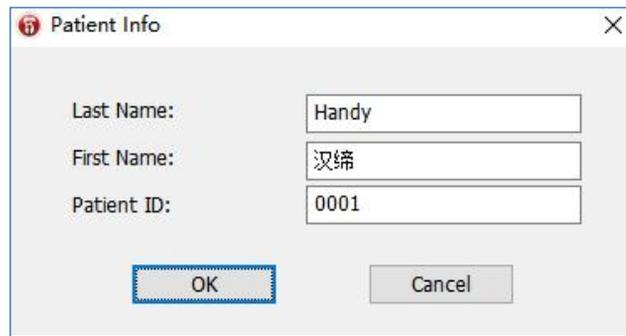


Please note that only 200 patient data will be displayed in the left side of interface,so this search tool is needed when the patient you are going to find is not show in software window.



Edit basic information of patient

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



Modify patient information here when needed.



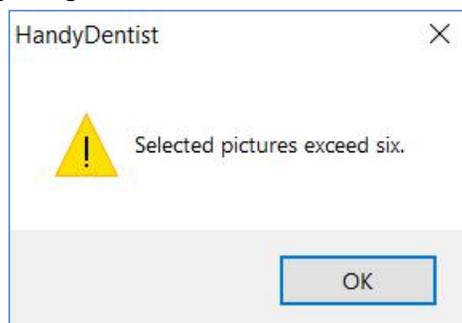
Tile

Pave several pictures together.

Press the“Ctrl”button on your keyboard,hold it down,then right click on several pictures at the same time to make selection (the maximum quantity is 6), then click on this icon to tile those pictures.



Note: The maximum comparing image number is 6, if exceeded, it will remind that



Press the “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 “ Handy Image” windows, and you can also open it with double-click on the image. More information refers to below **Handy Image Toolbar**.



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.



Import image

Please select an empty target frame first and then click on this icon to import the image into software.

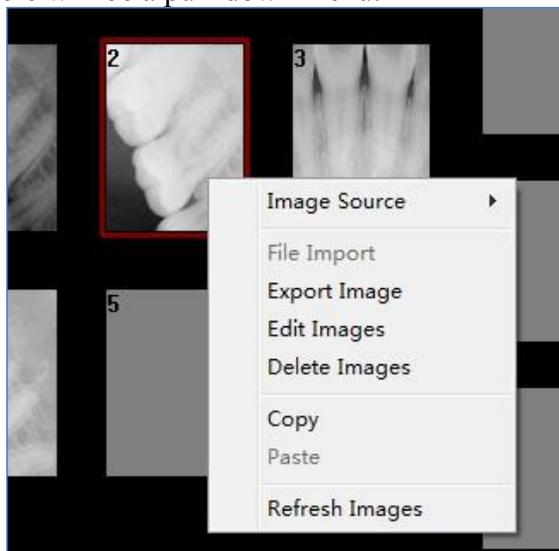


Export image

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.



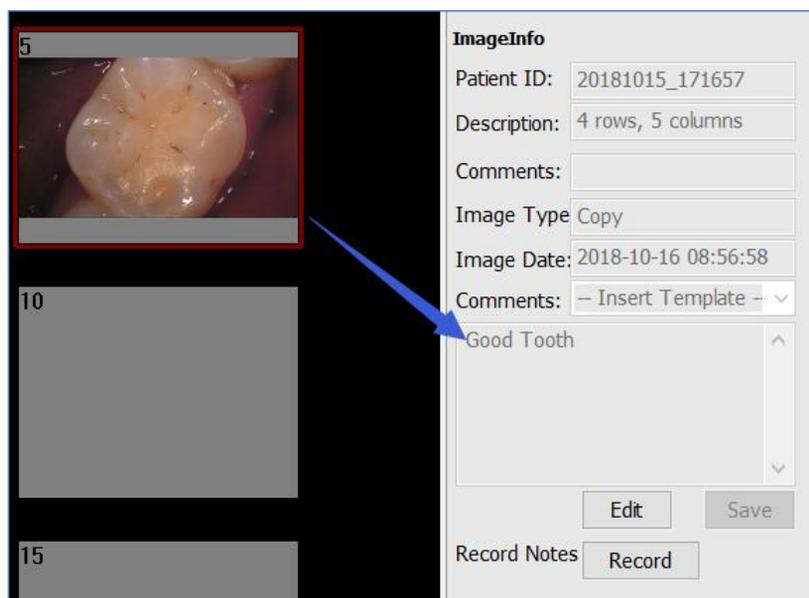
Refresh images

Click this icon to refresh images, or choose ‘Refresh’ option in drop-down menu by right click any image.



Print Image

Note: To achieve this function, please ensure that the computer has been connected to a printer. Print one image: Left-click to select a target frame,then choose this icon directly Print more images: Press and hold down “Ctrl” key,left-click to select several pictures at the same time,then choose this icon.



Put the comments for each picture by Edit, and then click on Print. To have diagnostic comments be printed :



(4 pictures as maximum for one page), then click the Print icon. The selected images will be printed altogether after preview.

How to capture image?

Before capturing image please be sure that the camera has been connected to the computer well .

*** Before using, please select the correct icon first :**



This icon is for Intraoral Camera or Film Reader.



This icon is for Intraoral X-ray Sensor.



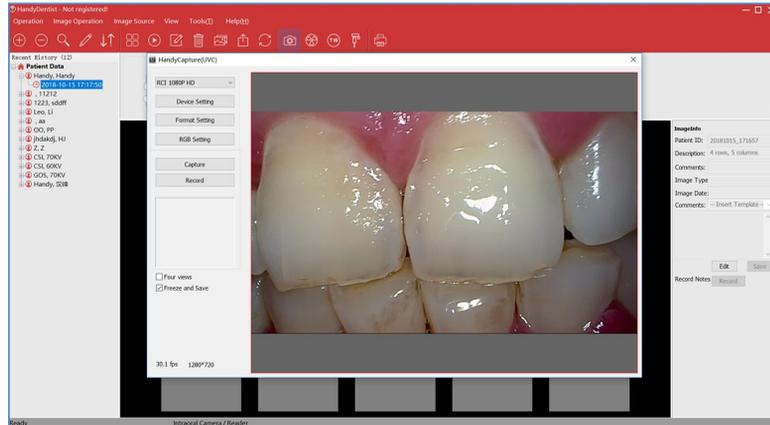
This icon is to make other third-party hardwares which have Twain function compatible to this software.



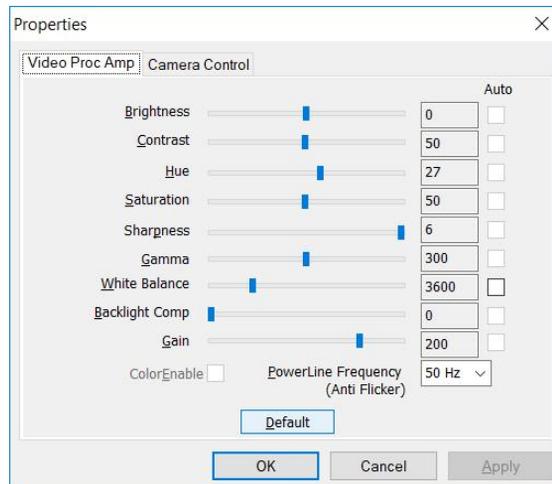
This icon is for Panoramic Machine.

Device setting

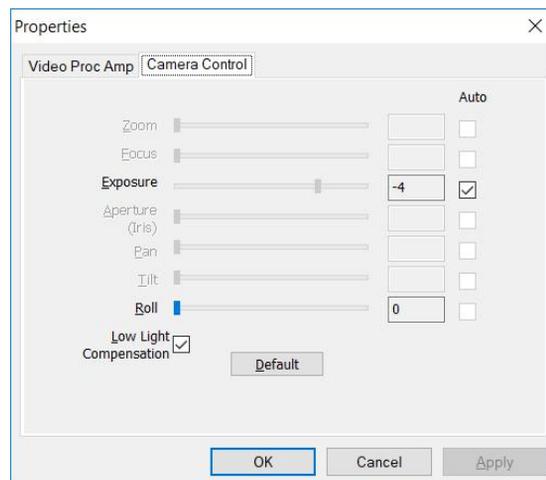
1) Double click on one of the target frames ,then capture window will show .



2) Click on the button of Device setting ,it will show properties windows



3) Select the frame of Video Image

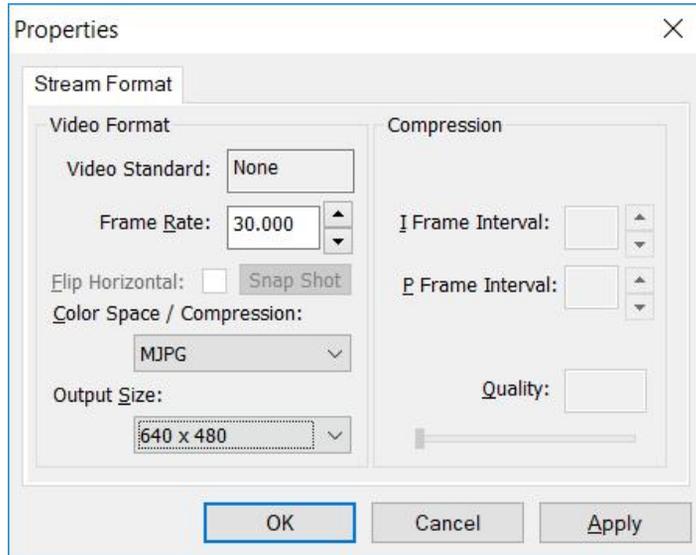


Have the normal image display after click Ok, no need to reset.

Format setting

Click on Format Setting button, it will show the Properties windows and then select output size as per your needs and then click on Apply. (The default format is 640x480.)

Please choose Color Space as MJPG, and Output size as 1280×720, like following:



Capture Image: Click the capture button on the hand piece, The image will be saved into the software automatically. It's able to capture images sequentially in the HandyCapture window till the maximum frame numbers of one frame page is reached. Open new frame pages by clicking  when needed. Close the capture window after image capturing, then it returns to the main interface .

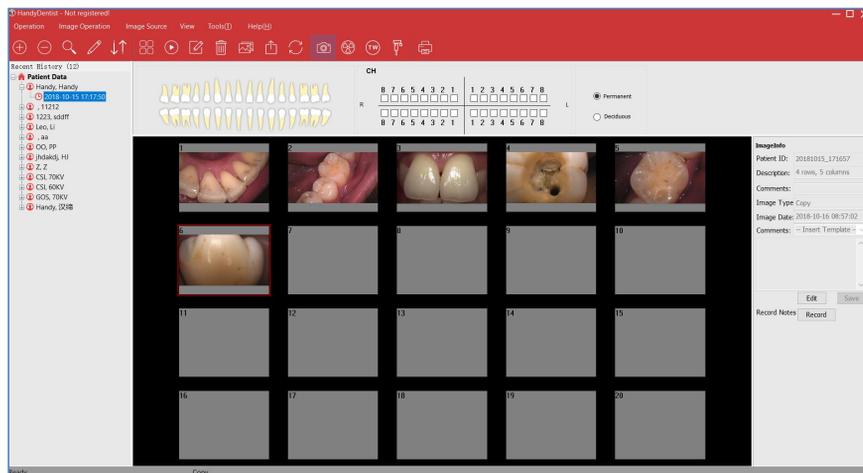


Table1: Electromagnetic Emissions

Guidance and manufacturers declaration– Electromagnetic Emissions		
The Equipemnt is intended for use in the electromagnetic environment specified below .The customer or the user of the Equipemnt should assure that it is used in such an enviroment.		
Emissions test	Compliance Level	Electromagnetic Environment Guidance
RF Emissions CLSPR11/E N55011	Group 1,	The Equipemnt uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment .
RF Emissions CLSPR11/E N55011	Class A	The Equipemnt is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions EN61000-3-2	Not applicable	
Voltage fluctuations/ flicker emissions EN61000-3-3	Not applicable	

Table2: Electromagnetic Immunity 1

Guidance and manufacturer’s declaration – Electromagnetic immunity				
The Equipemnt is intended for use in the electromagnetic environment specified below .The customer or the user of the Equipemnt should assure that it is used in such an enviroment.				
Immunity test		IEC 60601 test level	Compliance level	Electromagnetic Environment Guidance
Electrostatic (ESD) EN61000-4-2	Discharge	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.

Electrical Transients/burst EN61000-4-4	Fast	±2 kV for power supply lines ±1KV for input/output lines	±2 kV for power supply lines ±1KV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN61000-4-5		±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines EN61000-4-11		<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 Sec.	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 Sec.	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Equipemnt requires continued operation during power mains interruptions, it is recommended that the Equipemnt be powered from an uninterruptible power supply or a battery.
Power Frequency(50Hz/60Hz) magnetic field EN61000-4-8		3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to application of the test level.				

Table 3: Electromagnetic Immunity 2

Guidance and manufacturer's declaration - Electromagnetic immunity			
The Equipemnt is intended for use in the electromagnetic environment specified below .The customer or the user of the Equipemnt should assure that it is used in such an enviroment.			
Immunity test	IEC 60601 Test level	Compliance level	Electromagnetic Environment- Guidance
Conducted RF EN61000-4-6	3 Vrms 150 kHz to 80 MHz	$[V_1]V$	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Equipemnt, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance:</p> $d = \left[\frac{3.5}{V_1} \right] \sqrt{P}$ $d = \left[\frac{3.5}{E_1} \right] \sqrt{P} \text{ 80 MHz to 800 MHz}$ $d = \left[\frac{7}{E_1} \right] \sqrt{P} \text{ 800 MHz to 2.5 GHz}$ <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).</p> <p>Field strength from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the</p>  <p>following symbol.</p>
Radiated RF EN61000-4-3	3 V/m 80 MHz to 2,5 GHz	$[E_1]V/m$	
NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people			
a			
Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Equipemnt is used exceeds the applicable RF compliance level above, the Equipemnt should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Equipemnt.			
b			

Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 4: Recommended separation distances

Recommended separation distances between portable and mobile RF communications equipment and the Equipemnt			
The Equipemnt is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Equipemnt can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Equipemnt as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter (W)	Separation distance according to frequency of transmitter (m)		
	150 k Hz to 80 MHz $d = \left[\frac{3.5}{V1} \right] \sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E1} \right] \sqrt{P}$	800 MHz to 2.5 GHz $d = \left[\frac{7}{E1} \right] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where p is the maximum output power rating of the transmitter in watts (w) according to the transmitter manufacturer. Note1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. Note2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Shanghai Handy Medical Equipment Co.,Ltd

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File Edition: 2020.3.10