

CS 7200







User and Installation Guide

Notice

The CS 7200 User Guide describes and illustrates the workflow for digital dental radiography using an imaging plate (storage phosphor screen) for radiographic diagnostic intraoral images. We recommend that you thoroughly familiarize yourself with this Guide in order to make the most effective use of your system.



Important:

- Read and follow the operating instructions in this guide carefully and always keep it within easy reach.
- The room in which this unit is to be installed must comply with all official applicable regulations.
- Improper use and handling can create hazards and cause damage to the unit.
- To prevent personal injury or material damage, you must observe all safety information.
- Consult the CS 7200 Safety, Regulatory and the Technical Specifications User Guide before using the CS 7200.

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U.S. Federal law restricts this device to sale by or on the order of a dentist or physician.

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1 Conventions in this Guide

Conventions in this Guide

The following special messages emphasize information or indicate potential risk to personnel or equipment:



WARNING: Warns you to avoid injury to yourself or others by following the safety instructions precisely.



CAUTION: Alerts you to a condition that might cause serious damage.



Important: Alerts you to a condition that might cause problems.



Note: Emphasizes important information.



Tip: Provides extra information and hints.

2 CS 7200 Overview

Indications for Use

The CS 7200 is intended for digital dental radiography using an imaging plates (phosphor storage screens) for dental intra-oral X-ray imaging.

Introduction



Note: The CS 7200 is intended for dental professionals. You are required to have training to use the CS 7200.

The CS 7200 system is used to scan and review intraoral dental X-ray images. When scanning the X-ray exposed imaging plate a digital image is displayed on the workstation screen. After scanning, the scanner erases the imaging plate and ejects it. The imaging plate is ready for re-use.

The exam acquisition's scanned image is sent to the Dental Imaging Software on the workstation. Using the Dental Imaging Software, the image is processed and reviewed.

The system is composed of the following elements:

- CS 7200 scanning device (page 4)
- Imaging plates (page 7)



Note: The scanner is supplied with a separate viewing and archiving software package: *Dental Imaging Software*, approved by Carestream Health.



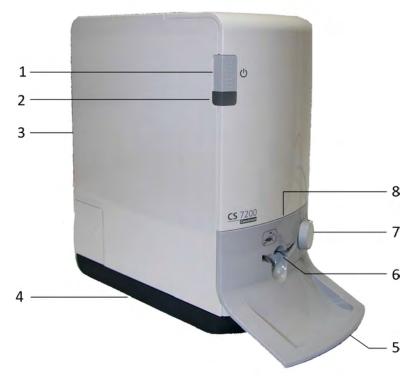
Note: The CS 7200 User Guide is provided on the supplied CD/DVD-ROM.

CS 7200 Components Overview

Scanner Overview

The CS 7200 scanner includes the functions necessary for scanning and acquiring images from the imaging plates.

Figure 1 CS 7200 Front View



On/Off switch

Turn scanner On: press for 1 second

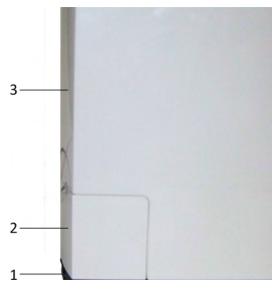
Shut down the scanner:

- press for 2 seconds to reset the scanner, run BIT.
 The scanner remains turned on.
 - press for 5 seconds to turn off the scanner.
- 2 Indication LEDs
- 3 Cover

1

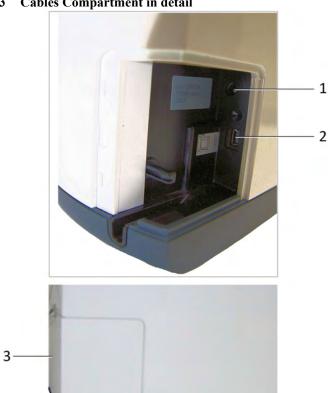
- 4 Base
- 5 Intraoral imaging plates tray
- 6 Plate insertion entry
- 7 Plate size selection knob
- 8 Insertion panel.

Figure 2 CS 7200 Back View



- Base
- Cables compartment
- 3 Cover

Figure 3 Cables Compartment in detail



- Power supply inlet
- USB port
- Cable Compartment cove

Indication LEDs Statuses

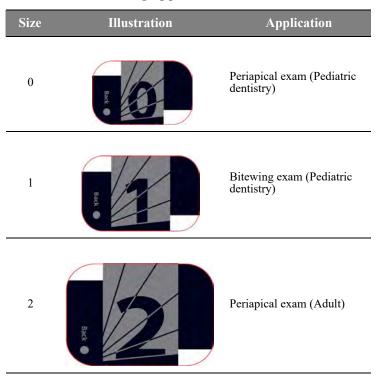
The scanner LEDs status indicator shows the following scanner states:

LED Color		Scanner State	Remark
Off		Off	
Blinking Yellow		Power up	Blinking yellow
Yellow		Stand by (door closed)	Yellow
Yellow	0	Disconnected	Type 1: Blinking yellow 1 - cable is disconnected Type 2: Fast Blinking yellow - no driver Type 3: Constant yellow: no UltraLite or scanner is not ready
Blinking Cyan		Plate is fully loaded. Take out envelope.	Beeps twice, sync with light,
Green		Insert plate (Door opened)	Green
Green		Load & recovery	Green
Green		Recovery	If plate is not fully loaded for a number of times (three consecutive attempts), the scanner performs a reset and returns to loading position.
Green		Ready for scan	Green
Blinking Green		Scanning	
Fast Blinking Green		Erasing/Eject	
Blinking Red		Error	

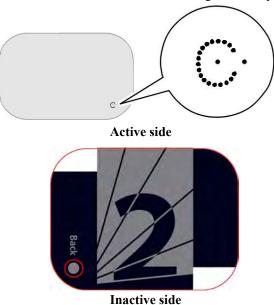
Imaging Plates Overview

The CS 7200 works with three imaging plate sizes: 0, 1 and 2. The scanned image file size depends on the imaging plate size and the scanning resolution set by the user.

Table 2-1 Intraoral imaging plates sizes



The imaging plate has two sides: the active side for capturing the X-ray image and the inactive side. The active side of the imaging plate includes an orientation 'c' mark with a dot inside to facilitate positioning protocols within the patients' mouth. The inactive side has a printed dot that corresponds to the location of the orientation mark on the active side. This dot is visible through the transparent side of the hygienic sheath.



Hygienic Sheaths

For each imaging plate size, a one-time use, disposable, hygienic sheath is used for preventing cross contamination. The transparent side allows you to see the dot, while the opaque side protects the active side of the inserted imaging plate from image degradation.

Figure 4 Hygienic Sheath (front view)



- 1 Adhesive strip (for sealing the hygienic sheath)
- 2 Sheath transparent side to see the plate refernce
- 3 Tear line to be opened when inserting the plate into the scanner

Setting Up CS 7200

Environmental Requirements

Check the following ambient operating condition requirements of the room, before installing the unit:

Temperature: 15–35 °C

Relative humidity: 30–85 % Non-condensing

Atmospheric pressure: 700-1060 hPa

For optimal results it is recommended that the light level in the room is approximately 500 lux (normal light conditions) to minimize the imaging plates exposure to light.



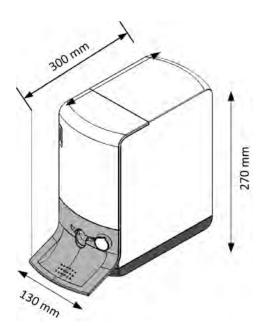
Important: The scanner should be positioned so that there is always easy access to the mains power supply socket.



Important: It is recommended not to install the scanner close to the opened window to prevent the exposure to the direct sunlight.

Unit dimensions and Space Requirements

The scanner should be placed on a flat stable surface.



The unit dimensions illustrated in the above figure are as follows:

- Height of the unit 270 mm. (10.6 in.)
- Width 130 mm. (5.1 in.)
- Depth 300 mm. (11.8 in.)

Electrical Requirements

 Table 2
 Electrical installation specifications

Electrical Installation Specifications				
Power Supply	100 V AC – 240 V AC, 0.8 - 0.4 A			
Frequency	50/60 Hz			
UPS (online, recommended)	700 VA (UPS is connected to the scanner, computer and monitor)			
Minimum clearance between the table and the mains wall outlet	10 cm / 3.5 in.			

Minimum System Requirements

For installation of the CS 7200 intraoral imaging software, the computer must meet the minimum computer system requirements, specified in the CS 7200 Safety, Regulatory & Technical Specification Guide.



Important:

It is MANDATORY to check that the computer system configuration is compatible with the computer minimum system requirements specified in the Safety, Regulatory & Technical Specifications Guide. If necessary you must update your computer system configuration.

Setting Up CS 7200

Connecting Cables

This chapter describes how to connect the Power Supply and USB cables to CS 7200:

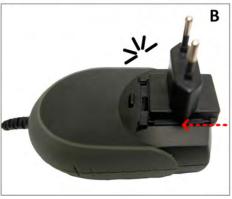


Note: CS 7200 must be powered by the dedicates AC/DC adapter model TR30RAM240, manufactured by Cincon Electronics Co., Ltd.

1. Install the power supply adaptor on power supply as shown below:







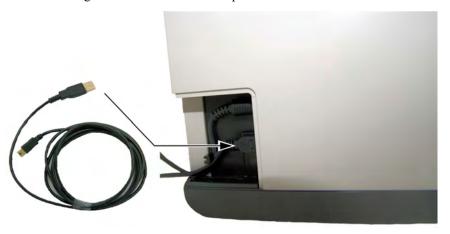


2. Remove the cable compartment cover.

3. Connect the Power supply cable to the power supply inlet in the cable compartment and route the cable as shown on the below image to secure the cable in its place:



4. Connect the USB cable to the dedicated connector in the cable compartment, and route the cable as shown on the below image to secure the cable in its place:



5. Close the cable compartment cover.



- 6. Connect the free end of the USB cable to the main USB port in the back of the computer.
- 7. Connect the Power Supply cable plug to the Mains wall socket.

CS Imaging Software Installation

This chapter describes the installation procedure of the Carestream Imaging Software (CSI).



NOTE:

Before installing CS Imaging Software check that:

- The computer meets the minimum computer system requirements. See CS 7200 Safety, Regulatory & Technical Specifications Guide.
- You have the two software DVD-ROMs: one for CS Imaging Software and the other one for Scanner Driver Software.
- The sleep mode in the computer is disabled.

To install the CSI software, follow these steps:

Insert the Carestream Imaging software DVD-ROM in the DVD-ROM drive of the PC.
The installation wizard is automatically loaded.



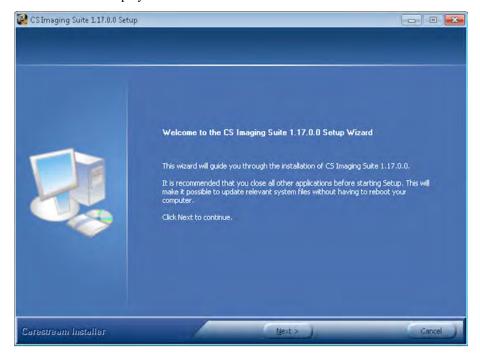


Note: If the installation wizard is not loaded, run the CSISuiteSetup 1.17 file located on the installation DVD-ROM.

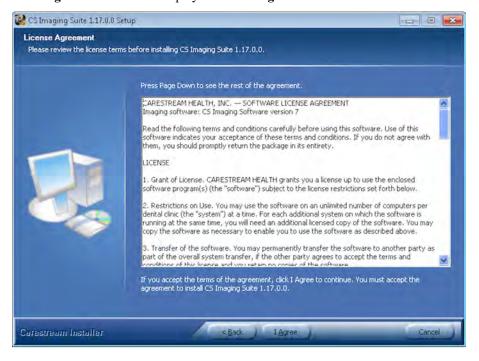
2 The **Installer Language** dialog box is displayed. Select the required language and click **OK** to continue.



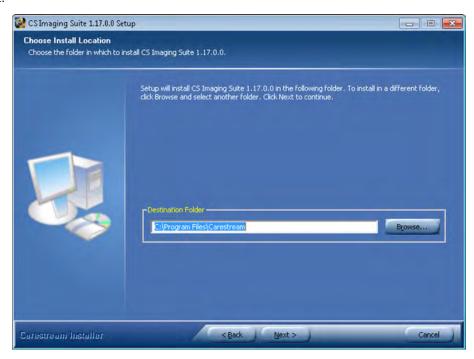
3 The **Welcome** screen is displayed. Click **Next** to continue.



4 The License Agreement screen is displayed. Click I Agree to continue the installation.

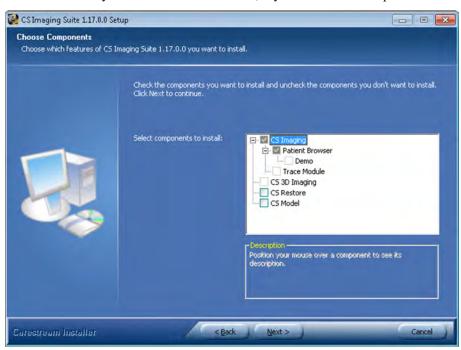


5 Click **Browse** to choose the location for the installation folder or leave the default location and click **Next**.



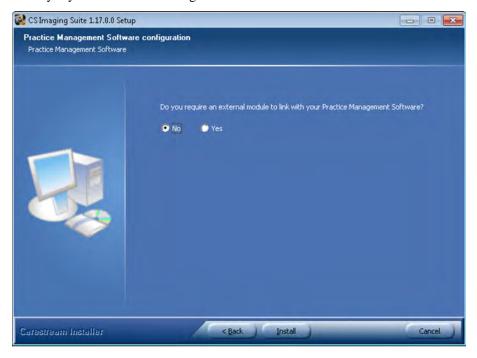
6. Select the components to install and then click Install.

Patient file: is selected by default. You can deselect it, if you do not want the patient database.

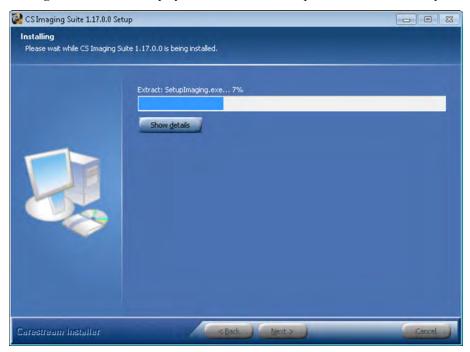


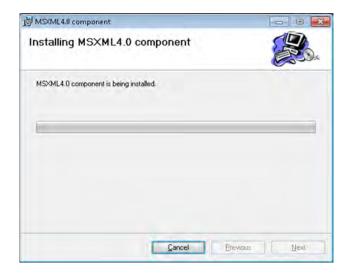
7 The Practice Management Software Configuration screen is displayed. Click No.

Click Yes only if you use Practice Management Software.



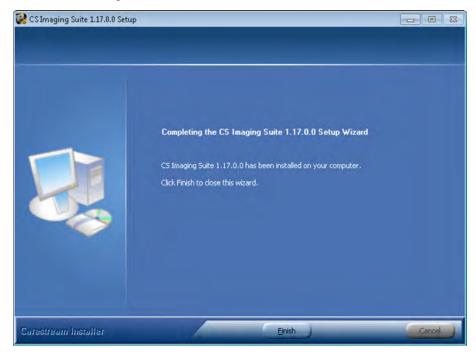
8 The **Installing** wizard screen is displayed. Let the installation process run automatically.





The Installation Complete screen is displayed when the installation is finished.

9. Select Reboot now to complete the installation and then click Finish.



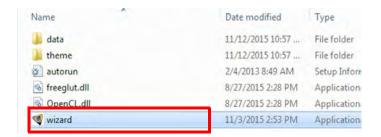
After the computer is restarted, proceed to "CS 7200 Drivers Installation" on page 18.

CS 7200 Drivers Installation

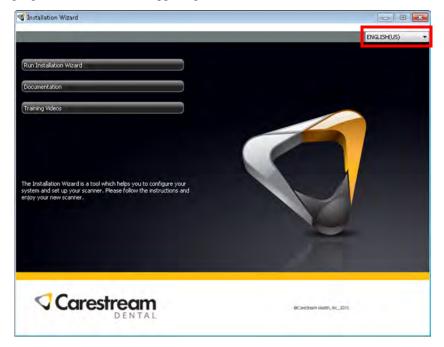
- 1 Insert the Scanner Driver Software DVD-ROM into the DVD-ROM drive.
- 2 Wait for the installation program to start.



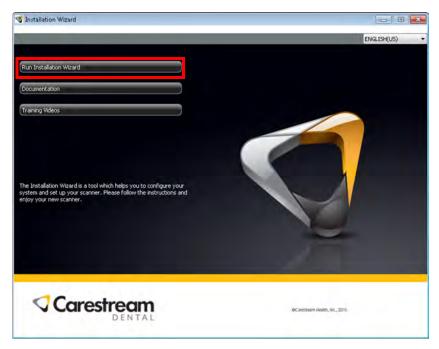
Note: If the installation wizard is not loaded, run the wizard file located on the installation DVD-ROM.



3. Select language from the list on the upper right side of the Installation Wizard window.



4. Click Run Installation Wizard to continue the installation.



5. Minimum system requirements are verified and the status of each checked item is displayed. Click **Next** to continue the installation.

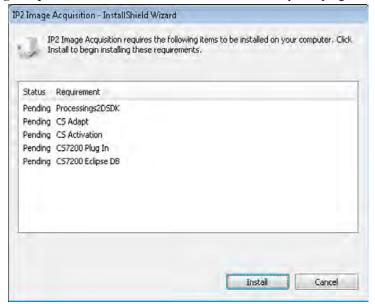




Note: If a red X mark appears next to one of the items, click Help? to view the description of the problem. Then, make sure your computer meets minimum system requirements.



6. In the IP2 Image Acquisition window, click Install to install the required plug-ins on your computer.



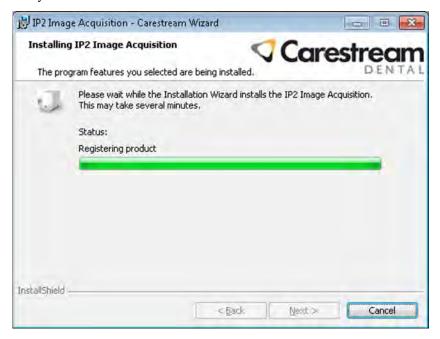
7. The **Welcome** window is displayed. Click **Next** to continue the installation process.



8. The **Destination Folder** window is displayed. Click **Next**, if you accept the default destination folder or browse to choose another destination folder, and then click **Next**.



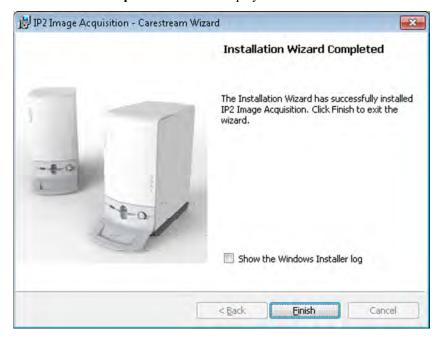
9. Wait until the system installs the software.



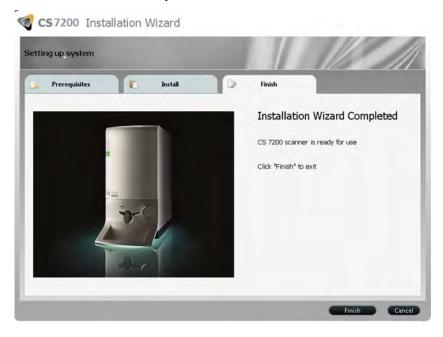
10. The **New Scanner Files** window is displayed. Click **Next** to continue without updating the scanner files.



11. The Installation Wizard Completed window is displayed. Click Finish to finish the installation.



12. On the **Finish** tab, click **Finish** to complete the installation.

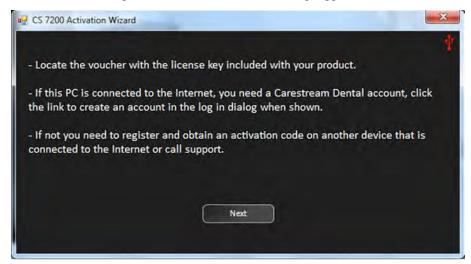


13. Perform "License Activation" on page 24.

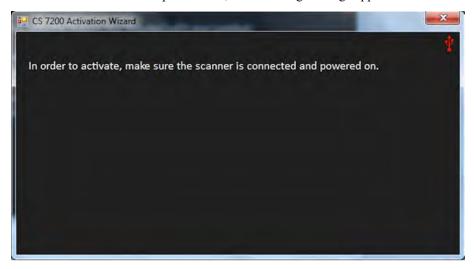
License Activation

After completing the installation, a license activation for the purchased scanner should be performed.

1. After the installation is complete, the license activation message appears:. Click Next to continue.



2. If the scanner is not connected and powered on, the following message appears:

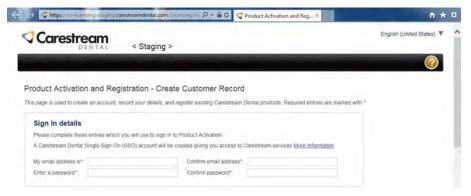


3. Connect the scanner and turn it on.

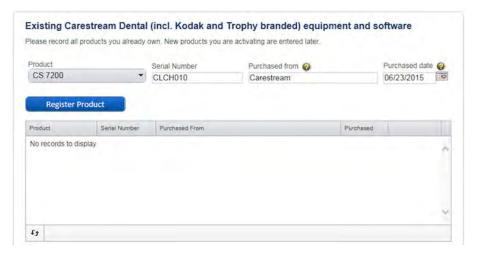
4. The Login window appears. Enter your Carestream user name and password if you are a registered user. If not, click **Create a new user account** and follow the link to the Carestream License Registration site.



5. On the Product Activation and Registration page, fill in the sign in details.



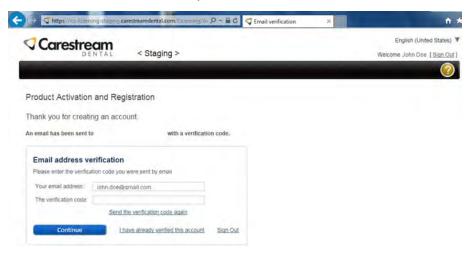
6. Select the product type, fill in the product details and click **Register Product**.



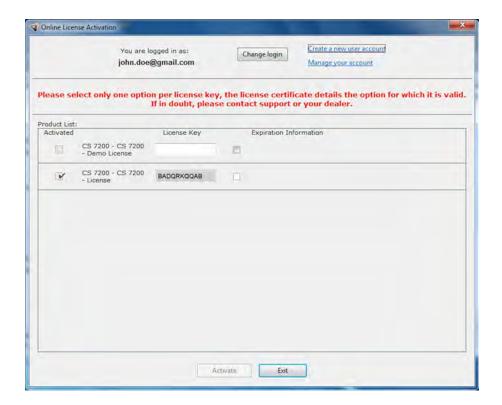
7. Click **Continue** to continue the registration process.

The verification code is sent to your email.

8. In the Email address verification section, enter the received verification code and click Continue.



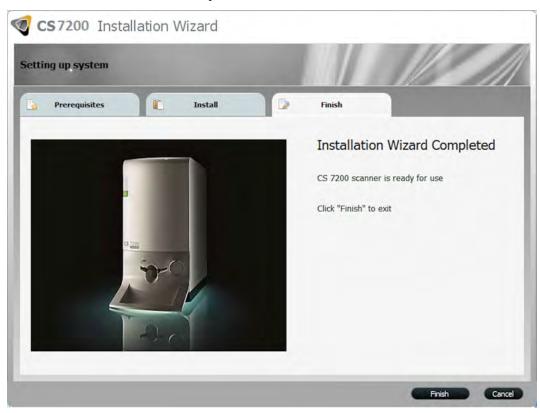
9. In the **Online License Activation** window, enter the license key received with the scanner, select the license check box and click **Activate**.



10. After the license activation process is complete, click Exit.

You are returned to the CS 7200 Installation Wizard.

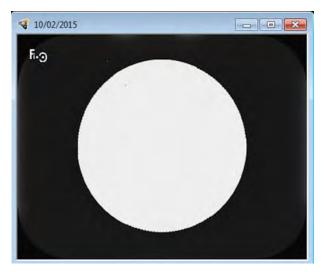
11. Click **Finish** to finish the installation process.



CS 7200 Post Installation Test

After software and scanner installation, check that all scanner components are properly installed and the scanned images are properly displayed in the CS Imaging Software.

- 1. Start the CS Imaging Software and select or create test patient. See "Starting the Imaging Software" on page 42.
- 2. Expose a plate size 2 with a metal object (such as coin or key) on it.
- 3. Load the exposed plate into the scanner and wait until the scan is complete and the image is displayed on the CS Imaging Software main screen. .



4. Close the CS Imaging Software main screen.

Adapt Filtering Options

The adapt filtering options enable user to choose the preferable look of the scanned image

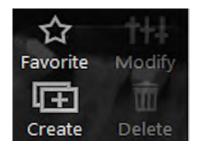
Access Adapt Library

- 1. Click **Modify favorite** to change the preferable look that will be applied after the scan.
- 2. The gallery of the available looks is displayed at the bottom of the screen.



- 3. Click **Apply at acquisition** to apply this view during the image acquisition process.
- 4. Hover the mouse pointer over the selected frame in the gallery. The following options are available:





Action	Description
Favorite	Click to add the selected look to the favorites list.
Create	Click to create a new look based on the selected look.
Modify	Click to modify the selected look. The option is vailable only for the looks created by user.
Delete	Click to delete the selected look from the gallery. The option is available only for the looks created by user.

Create Customized Look

To create and add a customized look to the favorites gallery, perform the following steps:

- 1. Select the frame to be customized.
- 2. Hover with the mouse pointer over the selected frame.
- 3. Click Create.



4. Adjust brightness and contrast of the new look by using **Brightness** and **Contrast** sliders.

Use the zoom slider to zoom in or out certain areas of the image.



Choose either Navigation or Histogram view when adjusting the new look.

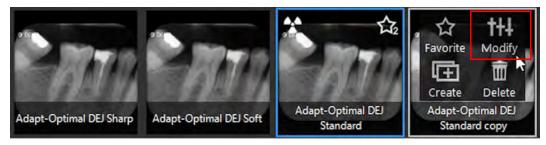




5. Click Create to create a new modified look and add it to the frames gallery.

Modify the Exisiting Customized Look

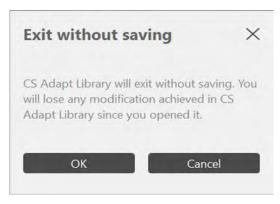
- 1. Select the frame to be customized.
- 2. Hover with the mouse pointer over the selelcted frame.
- 3. Click Modify.



4. Perform the required changes and click **Save Changes**.



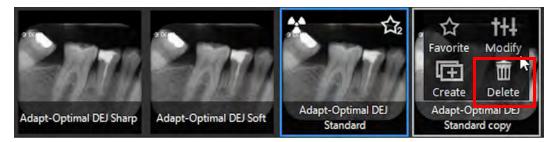
5. If you close the CS Adapt Library screen without saving the performed actions,. the following dialog box appears:



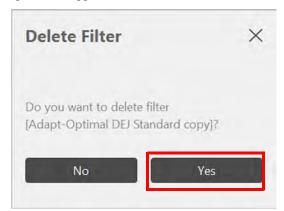
6. Click **OK** if you really want to exit without saving chnages or click **Cancel** to return to the CS Adapt Library screen.

Delete Existing Filter

- 1. Select the frame to be customized.
- 2. Hover with the mouse pointer over the selected frame.
- 3. Click **Delete.**



4. In the **Delete Filter** dialog box that appears, click **Yes** to confirm the action.



CS Imaging Software Overview

General Software Overview

CS 7200 operates with the CS Imaging Software. You can acquire:

- Single images.
- Full Mouth Series (FMS).

Single Image Acquisition Overview

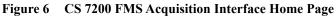
You can acquire individual images using the CS Imaging Software.

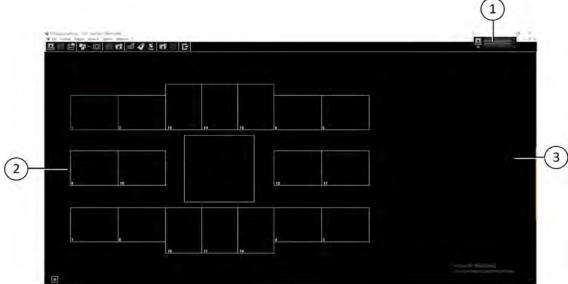
Figure 5 CS Imaging Software with Active CS 7200 Scanner Connected



Full Mouth Series (FMS) Image Acquisition Overview

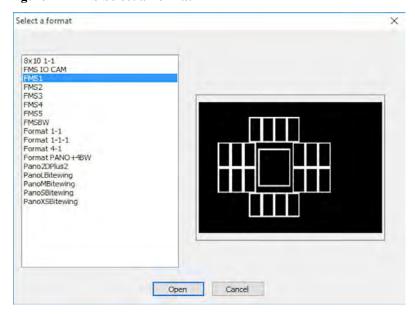
The Full Mouth Series (FMS) is a static representation of the mouth of the patient using a series of intraoral images. The images are placed in fixed numbered frames.





- Dental arch: Highlights the acquisition zone.
- FMS template: Displays frame templates for acquisition.
 - Green highlight: Frame ready for new acquisition
 - Blue highlight: Frame in the revue and retake mode. This mode interrupts the automatic acquisition sequence.
- Preview screen: Displays the currently acquired image.

Figure 7 **FMS Select a Format**



Select a Format enables you to select FMS template options to select for acquisition. You can modify existing templates and create new templates (see the Carestream Imaging Software Online Help).



Note: Only FMS templates for CR images can be used. Using other FMS will cause images not to be displayed.

Figure 8 **Control Panel with CS Adapt Buttons**



Control Panel: enables you to adjust the brightness and contrast of the image. For more information on Control Panel functions, see the CS Imaging Software Online Help.



Optiview: Maps pure black to blue and pure white to green, leaving other shades unchanged.



Negative: Displays the image as a photo negative.



Colors #1: Maps pure black to blue and pure white to red.



Colors #2: Maps middle-gray to orange and leaves pure white and pure black in their original states.



CS Adapt Library: Opens the CS Adapt Library software that allows to manage your filters.



Adapt - Unfiltered Perio: Enhances the display of periodontal tissue.



Adapt - Unfiltered Endo1: Enhances contrast at the canals and roots (produces brighter images).



Adapt - Unfiltered DEJ1: Optimizes contrast at crowns, amelo-dentinal junctions, and roots (produces brighter images).



Adapt - OptimizedContrastEndo: Enhances contrast at the canals and roots.

Figure 9 Intraoral Toolbar



INTRA toolbar: enables you to adjust the image display. For more information on Intraoral toolbar functions, see the *Carestream Dental Imaging Software Online Help*.



Sharpness filter: click to apply sharpnes filter on the image.



Highlight: click to optimize contrast within a region of interest.



Measurements: click to draw measuring lines on the image.



Flip: .click to rotate the image by 180° clockwise..



90° rotation: click to rotate the image by 90° clockwise.



Acquisition correction: click to create a mirror image of the original image.



Edit annotations: click to open the image in an annotations editor.



Display annotations: click to display any annotations on the image. Click again to hide the anotations.



Pseudo - 3D: click to display gray scale levels as height values.



Relief filter: click to enhabce the outlines of the shapes in an image by displaying the image in relief mode.



Isodensity dots: click to apply color to pixels of the same bone density.

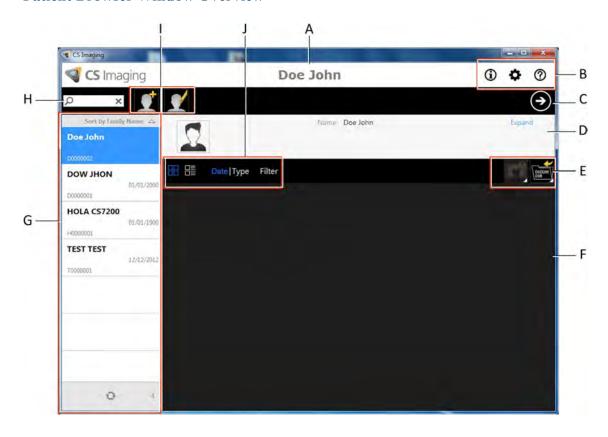


Densitometric analysis: click to analyze bone density.



Caries Detector: click to open the Logicon Caries module for detecting interproximal

Patient Browser Window Overview



- A Title bar: name of the selected patient.
- **B** System icons: About, Prefernces and Online Help.
- C Imaging Software Button: click to open the Imaging Window.
- **D** Patient Card:information on the selected patient..
- E Image Management Tools: import/export and print functions.
- **F** Patient History: displays the list of available patients.
- G Patient List: displays the list of available patients.
- H Patient Search: allows searching in the patient list.
- I Patient Management Tools: contain create/modify patient functions.
- J Patient History Tools: contain patient history functions.

Acquiring Images

Image Acquisition Workflow

This chapter describes the acquisition procedure for acquiring dental images.

A typical workflow consists of the following steps:

- Selecting or Creating a Patient Record and Accessing the imaging window. See "Starting the Imaging Software" on page 42.
- Inserting the Imaging Plate into a hygienic sheath and sealing it. See "Preparing the Imaging Plates" on page 43.
- Positioning, exposing and removing the imaging plate from the patient's mouth . See "Performing the 3 X-rays" on page 44.
- Disinfecting the Hygienic Sheath. Refer to the CS 7200 Safety and Regulatory Guide (6K9678).
- Scanning the imaging plate and reviewing the image. See "Scanning Imaging Plate" on page 47.

Acquiring Single Image

Starting the Imaging Software

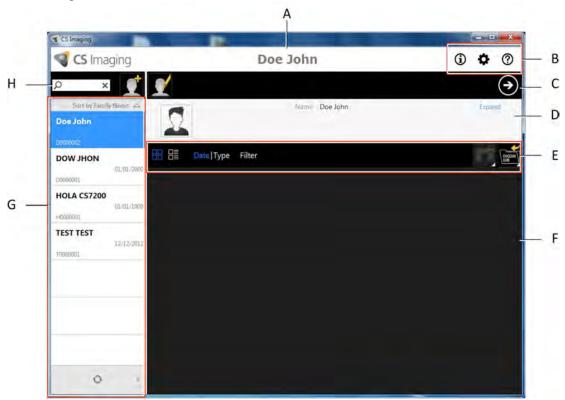
Open your Imaging Software.

1 On your desktop, double-click the CS Imaging Software icon or click **Start > All Programs > (** the name of your) **Dental Imaging Software.**



The Patient Browser window is displayed:

- 2 Create or open an existing patient record:
 - To open an existing patient record: In the Patient Browser search field (H), start typing to search for a patient card.



• To create a new patient record: Click the Create New Patient Card button alongside the search field to create a new patient card. For more details, see "Create a New Patient Card" on page 75

The CS 7200 indication LED turns from yellow to green, indicating that the scanner is ready for use and the **Imaging Window** appears.

3. Once you have selected or created a patient, in the Patient Browser Toolbar (C) click the arrow button to open the Imaging application. The Patient Browser window remains open and the Imaging Window is displayed.

4. Wait for the Scanner Status icon to turn green on the **Imaging Window** toolbar indicating that the CS 7200 scanner is connected to the workstation and is ready for acquisition.



Preparing the Imaging Plates

To prepare the intraoral imaging plate, follow these steps:

Choose an imaging plate of the appropriate size for your examination.



Important: Use only CS 7200 intraoral imaging plates from Carestream and hygienic sheaths from Carestream. The use of plates or hygienic sheaths from a third party supplier may cause a malfunction of the system and void the warranty.



Important: Use a NEW hygienic sheath for each new patient to prevent cross contamination.



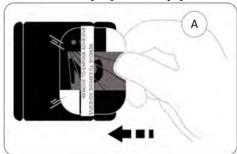
Important: Use a NEW hygienic sheath for each new image to prevent humidity and contamination of the plate.

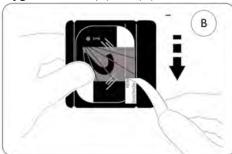


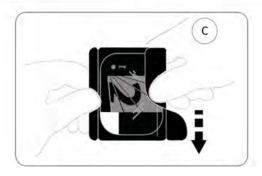
Tip: If the imaging plate has not been used for a while, proceed to erasing it first. See "Manually Erasing the Plate" on page 56..

Insert the imaging plate into its protective hygienic sheath with the inactive side facing the adhesive strip, so the imaging plate's size number is seen through the transparent side of the hygienic sheath and the orientation mark visible in the bottom corner (A).

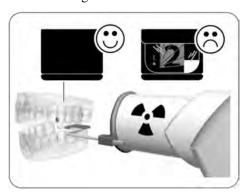
Peel the adhesive strip's protective paper to seal the hygienic sheath (B) and (C).







- Handle the imaging plate by holding the hygienic sheath's empty edge where the silicone strip is.
- Select an appropriate positioner for the region of interest and the size of the plate.



Performing the X-rays

Perform the required X-rays according to your clinical procedure.

It is recommended to continue using X-ray positioning techniques and tools to ensure the resulting image is complete and includes all the information required for diagnosis. To facilitate matching the orientation of the image in the software to the clinical reality, we recommend to position the imaging plate in the mouth of the patient with the orientation mark always towards the bottom.



Important: Make sure the active side of the imaging plate is facing the X-ray tube.

Select the X-ray exposure time according to the region of interest and the patient type. Follow the user instructions of your X-ray generator. The following tables provide guidelines for exposure times for an X-ray generator at 70 kV and 7 mA. Add your values for the exposure time in seconds in the column on the right.



Important: These are suggested exposure times and need to be adjusted for your specific X-ray generator.

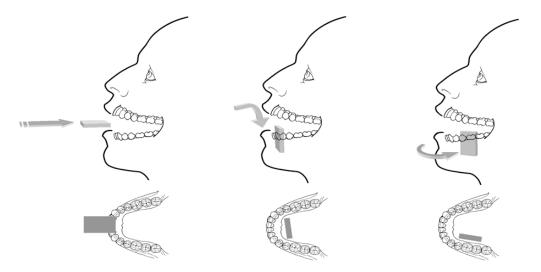


Tip: If images are too dark, reduce the exposure time. If images are too white or look grainy, increase the exposure time.

Table 3 Exposure times

Parameter	DC-emitter, 7mA, tube length 20 cm		DC-emitter, 7mA, tube length 30 cm	
	recommended exposure time (s)		recommended e	exposure time (s)
Upper jaw	60kV	70kV	60kV	70kV
incisors	0.1	0.08	0.2	0.16
pre-molars	0.125	0.1	0.25	0.2
molars	0.16	0.125	0.32	0.25
Lower jaw	60kV	70kV	60kV	70kV
incisors	0.1	0.08	0.2	0.16
pre-molars	0.125	0.1	0.25	0.2
molars	0.125	0.1	0.25	0.2
Bitewing	0.16	0.125	0.32	0.25

2. Position the CS 7200 imaging plate in the mouth of the patient depending on the region of interest.



3. Move the X-ray generator tube head close to the patient and align it with the tooth of the patient and the CS 7200 imaging plate.



Important: Respect the X-ray techniques to avoid image distortion and minimize magnification.



Important: Make sure that the tube head is not shaking.



Important: Perform the required X-rays according to your clinical procedure.

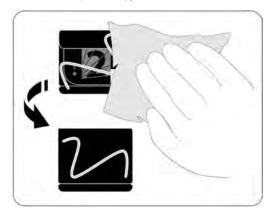
- 4 Tell the patient to remain still without moving the tongue.
- 5. Position yourself either two meters behind the X-ray generator or outside the room.



Important: Make sure you can keep visual contact with the patient during the X-ray.

- 6. Trigger the X-ray with the remote switch of the X-ray generator.
- 7. Remove the CS 7200 imaging plate from the mouth of the patient.

8. Clean and disinfect the hygienic sheath after each patient (see the CS 7200 Safety, Regulatory, and Technical Specifications User Guide (6K9678)).

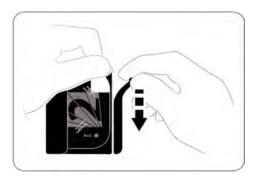


Scanning Imaging Plate

Move to the CS 7200 scanner and make sure the plate size selector knob is set for the same size as indicated on the plate.



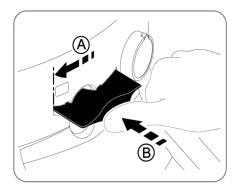
Open the hygienic sheath.

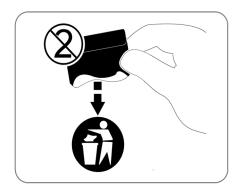


Load the plate into the scanner while positioning the plate to the left direction. The indication LED is blinking blue, indicating that the plate is loaded and the hygienic sheath can be removed.



Note: Make sure you insert the plate with the active side facing up. If the plate is inserted when positioned upside down, an error message is displayed: Plate loaded upside down.





Remove the hygienic sheath to start the scanning process.

CS 7200 starts scanning. The indication LED is blinking green during the process and the Preview window appears showing the scan progress.

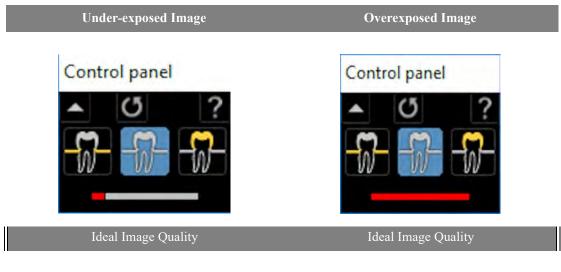


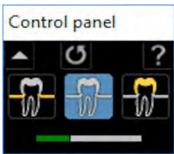
When the scan is complete, the imaging plate is erased and then ejected. The indication LED stops blinking and remains steady green.

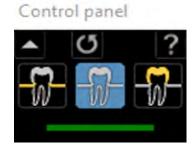
The image is displayed on the imaging software main screen.

5. Check the image quality.

The ideal image quality is when the indicator of the quality of exposure is a full green bar in the Control Panel. Avoid under-exposed or over-exposed images indicated by a partial or full red bar.







Acquiring Multiple Images

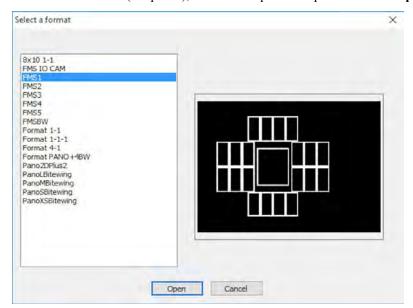
Preparing the Acquisition of FMS Images

To prepare the acquisition of FMS images, follow these steps:

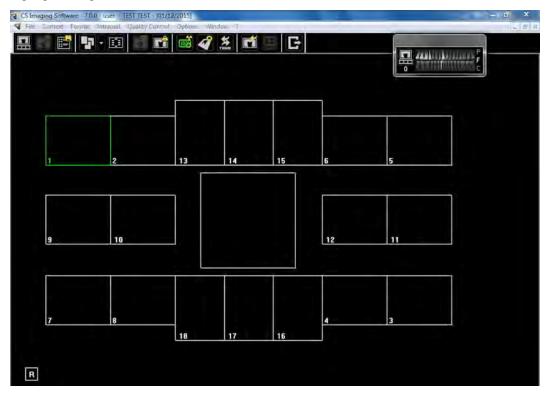
- Access the Dental Imaging Software. See "Starting the Imaging Software" on page 42.
- Click the Use a format button in the Imaging Window toolbar to access the Select a format window. 2



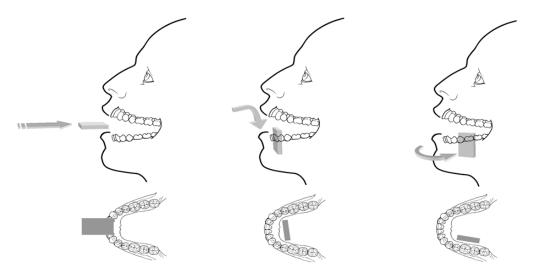
3. From the list of available formats (templates), select the required template and click **Open**.



The selected format is loaded and displayed in the Dental Imaging window. The first frame for scan is highlighted in green.



- 4. Select an appropriate positioner for the region of interest and the size of the plate.
- Prepare all imaging plates required for completing FMS template. See "Preparing the Imaging Plates" 5 on page 43.
- 6. Position the imaging plate in the mouth of the patient depending on the region of interest.



7. Move the X-ray generator tube head to the patient and align it with the tooth of the patient and the imaging plate.



Important: Make sure that the tube head is not shaking.

8. Select the X-ray exposure time according to the region of interest and the patient type. Follow the user instructions of your X-ray generator. The following tables provide guidelines for exposure times for an X-ray generator at 70 kV and 7 mA. Add your values for the exposure time in seconds in the column on the right.

Table 4 Exposure times

Parameter	DC-emitter, 7mA, tube length 20 cm		DC-emitter, 7mA, tube length 30 cm	
	recommended exposure time (s)		recommended e	exposure time (s)
Upper jaw	60kV	70kV	60kV	70kV
incisors	0.1	0.08	0.2	0.16
pre-molars	0.125	0.1	0.25	0.2
molars	0.16	0.125	0.32	0.25
Lower jaw	60kV	70kV	60kV	70kV
incisors	0.1	0.08	0.2	0.16
pre-molars	0.125	0.1	0.25	0.2
molars	0.125	0.1	0.25	0.2
Bitewing	0.16	0.125	0.32	0.25



Important: These are suggested exposure times and need to be adjusted for your specific X-ray generator. For dark images, reduce the exposure time and for grainy images, increase the exposure time.

Acquiring FMS Images

To acquire FMS images, follow these steps:

- For each imaging plate you prepared, perform the X-ray. See "Performing the X-rays" on page 44.
- Scan all X-rayed imaging plates in the required order displayed on the Dental Imaging screen. See "Scanning Imaging Plate" on page 47.

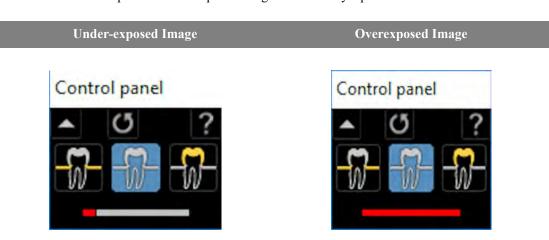
The next frame to be scanned is always highlighted in green on the displayed FMS format.

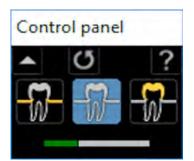


Tip: For FMS, it is recommened to use the transportation box that helps to sort the plates in the correct order.

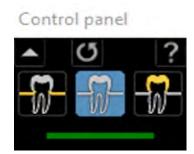
Check the image quality.

The ideal image quality is when the indicator of the quality of exposure is a full green bar in the Control Panel. Avoid under-exposed or over-exposed images indicated by a partial or full red bar.





Ideal Image Quality

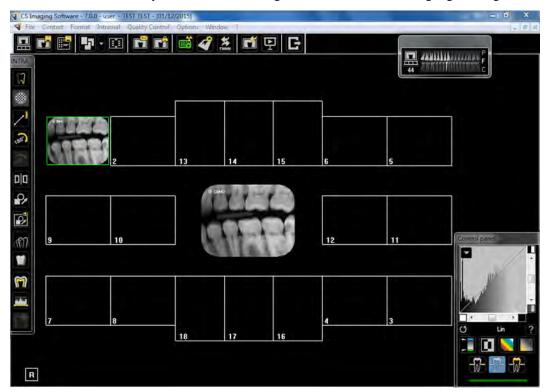


Ideal Image Quality

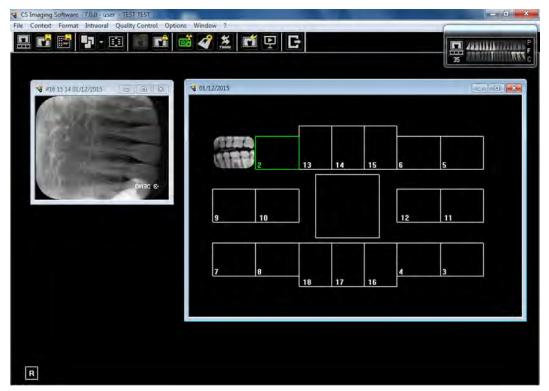
Retaking Images

If you need to retake images, after the FMS template acquisition is complete, follow these steps:

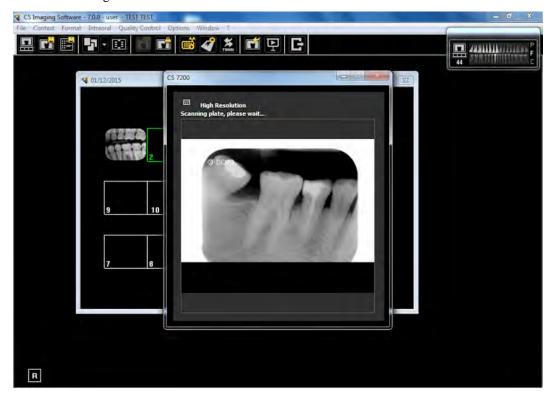
1. Click the frame for which you want to retake images. The selected frame is highlighted in green.



2. Using the mouse cursor, drag the selected image outside the template window.



- 3 Close the CS 7200 window with the image to be relaced. The image is deleted from the template.
- 4. Perform a scan again.



- After the scan is complete, the new image appears in the FMS template. 5
- 6 Close the template window to save the performed changes.

Manually Erasing the Plate

To manually erase a plate, perform the following steps:

On the Dental Imaging Software main tool bar, click the CS 7200 Configuration icon. The CS 7200 window appears:



Click Erase Plate. The following dialog box appears:



- Load the late into the scanner. 3
- Wait until the erase process is complete.



To erase more plates, perform steps 1 - 4.

After the earse process is complete, close the CS 7200 window.

Changing Scanner User Preferences

To change the Scanner User Preferences, perform the following steps:

On the Dental Imaging Software main tool bar, click the CS 7200 Configuration icon. The CS 7200 window appears:



Click **Preferences** to open the CS 7200 Preferences window.

The CS 7200 Prefernces window contains three tabs:

- Settings
- **Tools**
- About

Settings Tab

The Settings tab enables user to change the scanner preferences:

- **DICOM Character Sets**: select from th list of the available options.
- **Default scan resolution**: select one of the available scan resolutions from the list
 - Ultra High Resolution
 - Super high resolution
 - High resolution
 - High speed
- **Scanner sound**: select the check box to mute the scanner sound.
- 4 **SMPTE**: click to adjust monitor brightness and contrast.
- **Default exposure values**: change the default exposure values if required.



Tools Tab

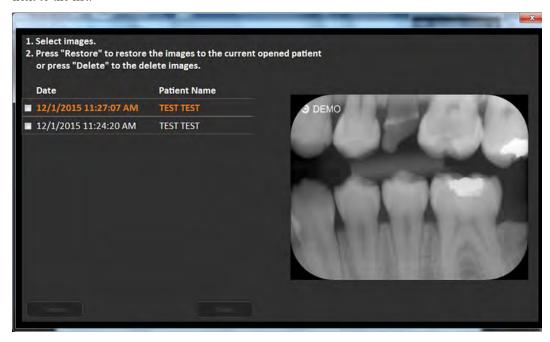
The tools tab enables the user to retrieve a scanned image in case the Dental Imaging Software crashed unexpectedly during the scan. To retrieve the images, perform the following steps:

- Start the Dental Imaging Software. 1
- 2 Open the file of the patient whose images you want to retrieve.
- 3 On the Dental Imaging Software main tool bar, click the CS 7200 Configuration icon. The CS 7200 window appears.
- Click **Preferences** to open the CS 7200 Preferences window and select the Tools tab. The Retrieve Images button is enabled and the number of pending images is diplayed.



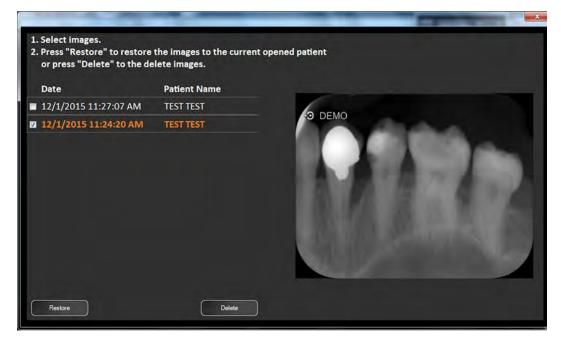
Click Retrieve Images.

The retrieved images are displayed. The image highlighted in orange is displayed in the preview area next to the list.

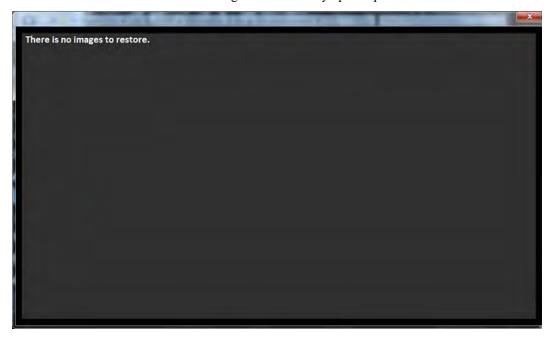


Seelect the required images from the list by selecting the check box next to each image.

The **Restore** and **Delete** buttons become available.



Click **Restore** to restore the selected image to the currently opened patient.



About Tab

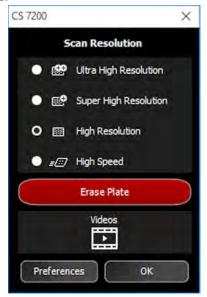
Open the about tab to view scanner information that includes firmware, hardware and software versions, serial number and other details.



Changing Scan Resolution

To chnage scan resolution, perform the following steps:

On the Dental Imaging Software main tool bar, click the CS 7200 Configuration icon. The CS 7200 window appears:



Select the desired scan resolution and click **OK** to save the selection.

For all maintenance information, refer to CS 7200 Technical Specifications, Safety and Regulatory Guide.

Troubleshooting

Quick Troubleshooting

Occasionally, malfunctions can occur during use in the event of an incorrect action. An error message is displayed.

During the CS 7200 power up, system performs a self test: ejects a plate (if left in the scanner) and reports whether the system is ready for operation or a malfunction is detected.

The detected malfunction is indicated by the CS 7200 LED status and sound notification and/or by an error message that appears on screen.



When the system functions properly, the LED is green. If the LED color is yellow or red, it indicates an existence of the malfunction.

Indication LEDs Statuses

The below table lists the scanner LEDs status indicator states that require a corrective action:

LED Color	Scanner State	Remark
Blinking Yellow	Power up/unload	
Yellow	Stand by (door closed)	
Yellow	Disconnected	Type 1: Blinking yellow - cable is disconnected Type 2: Fast Blinking yellow - no driver Type 3: Constant yellow: no UltraLite or scanner is not ready
Blinking/Steady Red	Error	

The following table lists the error messages, their description and the action to take:



IMPORTANT

If an Error Code message is displayed, the malfunction persists or more serious conditions occur, contact a qualified technician. When you call the qualified technician have the following information ready:

- **Model Serial Number**
- **Error Code Message**

Table 5 System Errors

Symptom	Cause	Corrective Action
Plate size selector knob is stuck.	The scanner is turned off. The Dental Imaging Software main screen is not opened.	Turn on the scanner. Open the Dental Imaging Software main screen.
The plate cannot be loaded into the scanner.	The scanner is turned off. The Dental Imaging Software main screen is not opened.	Turn on the scanner. Open the Dental Imaging Software main screen.
Scanner returns to home position unexpectedly.	The scanner was exposed to a very strong ambient light or to a camera flash directed to the insertion panel.	Reduce the ambient light to the level specified in CS 7200 Technical Specifications, Safety and Regulatory Guide.
Scanner performs a spontaneous reboot.	Electrical noise from the peripheral devices.	 Make sure the scanner is located away from the suspected noise generators. Connect the power supply to a separate mains wall outlet.
The plate loading process is not smooth and requires some force to apply.	The hygienic sheath is partially sealed.	Make sure the hygienic sheath is fully open, before loading the plate.
Scanner returns to home position before the loading is completed.	The imaging plate was retrieved before it was completely loaded into the scanner.	Wait for the scanner to return to its home position. Perform a complete loading process.
Vertical lines appear on the scanned image.	Scanner was not stable or hit during the scan.	Make sure the scanner is positioned on a stable surface. Make sure you do not touch the scanner during the scan.
During the power up, scanner remains off and the indication LED is off. The CR icon disappears from the Dental Imaging Software toolbar.	 There is no power supply to the system: Power Supply is not connected to the mains wall outlet. Power supply is not connected to the scanner. Problems with the facility power supply. Power Supply is damaged. Scanner malfunciton. 	Make sure the Power Supply is properly connected
LED indicator is steady yellow.	The Dental Imaging Software is closed.	 Start the Dental Imaging Software. If the problem persists, restart the scanner.
LED indicator remains blinking yellow for more than one minute.	There is no USB communication between the scanner and the computer. Scanner malfunction.	 Make sure you use the USB cable supplied with the scanner. Make sure the USB cable is properly connected on both sides. Try to connect the USB cable to another USB port on the computer. Replace the USB cable. Call Service.

Symptom	Cause	Corrective Action
LED indicator blinks red.		 Restart the Scanner. If problem persists, call Service.
No error message is displayed.	The cause is unknown.	in problem persists, can service.
LED indicator blinks red during the Scanner power on and the noise is sounded.	Scanner hardware malfunction.	 Restart the Scanner. If the problem persists, repeat for three times. If problem persists, call Service.
LED indicator is red. Error code #9011	Scanner hardware malfunction.	Restart the Scanner. If problem persists, call Service.
LED indicator blinks red Error code #9012	Scanner hardware malfunction.	Restart the Scanner. If problem persists, call Service.
LED indicator is red or off. Error code #9014	Scanner hardware malfunction.	Restart the Scanner. If problem persists, call Service.
LED indicator blinks red Error code #9015	Insertion panel is detached from the scanner.	 Properly attach the panel to the scanner. Warning: Do not change the position of the plate selector knob. Click OK to close the error message and proceed.
LED indicator blinks red Error code #9016	The plate was not scanned and remained inside the scanner.	 Remove the insertion panel. While holding the visible part of the plate, lift the scanner protection door. Remove the plate from the scanner. If the plate fell inside the scanner, remove the service tray and remove the plate. Attach the insertion panel. Click OK to close the error message. Perform a scan.
LED indicator blinks red Error code #9021, 9022, 9023	Scanner hardware malfunction.	Restart the Scanner. If problem persists, call Service.
LED indicator blinks red Error code #9024	Scanner hardware malfunction. Power Supply malfunction.	 Restart the Scanner. Replace Scanner Power Supply. If problem persists, call Service.
LED indicator blinks red Error code #9025	Scanner hardware malfunction.	 Turn off the scanner. Wait for five minutes and restart the Scanner. If problem persists, call Service.
LED indicator blinks red Error code #9030	Software files version does not match the scanner files version.	Update scanner files.
LED indicator blinks red Error code #9031	Scanner hardware malfunction.	 Click OK to shut down the scanner. Restart the scanner. The plate is ejected. Rescan the plate. If the problem persists, call Service.
LED indicator blinks red Error code #9032, 9036	Scanner hardware malfunction.	 Click OK to eject the plate. Rescan the plate. If the problem persists, call Service.
LED indicator blinks red Error code #9039	Scanner hardware malfunction.	Restart the scanner. If the problem persists, call Service.
LED indicator blinks red Error code #9043	Plate was not loaded properly.Scanner hardware malfunction.	 Click OK to eject the plate. Rescan the plate. If the problem persists, restart the Scanner. If the problem persists, call Service.

Symptom	Cause	Corrective Action
LED indicator blinks red Error code #9044, 9047 LED indicator blinks red	 Plate was not ejected and erased properly. Scanner hardware malfunction. Plate was not scanned properly. 	 Click OK to eject the plate. Erase the plate manually. If the problem persists, restart the Scanner. If the problem persists, call Service. Click OK to eject the plate.
Error code #9045, 9048, 9052, 9053, 9054	Scanner hardware malfunction.	Reload the plate.
LED indicator blinks red Error code #9061-69	Scanner hardware malfunction.	Click OK to shut down the scanner. Restart the scanner.
LED indicator blinks red Error code #9046, 9049	 Plate was not scanned properly. Scanner hardware malfunction.	 Click OK to eject the plate. Rescan the plate. If the problem persists, restart the Scanner. If the problem persists, call Service.
LED indicator blinks red Error code #9060	Scanner hardware malfunction.	 Click OK to close the error message. Call Service and continue with regular scanner operation. Note: This error will appear on each power up, until it is fixed by the Service.
LED indicator blinks red Error code #9080	Scanner hardware malfunction.	 Click OK to close the error message. Restart the Scanner. If the problem persists, call Service.
LED indicator blinks red Error code #9081	Scanner hardware malfunction. Plate was not erased properly.	 Click OK to eject the plate. Manually erase the plate. If the problem persists, call Service.
LED indicator is steady red Error beeps are sounded when loading a plate	Plate was loaded upside down or diagonally.	Retrieve the plate and load the plate properly.
LED indicator blinks red Error code #9090	Plate was loaded upside down or diagonally. Plate was not scanned.	Click OK to eject the plate.Load the plate properly.
LED indicator blinks red Error code #90120	Scanner hardware malfunction.	 Click OK to shut down the scanner. Restart the Scanner. Rescan the plate. If the problem persists, call Service.
LED indicator blinks red Error code #90800	The Scanner files are not up to date.	Update the scanner files.
LED indicator blinks red Error code #90801	Scanner drivers files are not up to date.	Update the Scanner drivers files.
LED indicator blinks red Error code #90852	Scanner hardware malfunction. Plate was not scanned or erased properly.	 Click OK to close the error message. Restart the Scanner. Reload the plate for scan. If the problem persists, call Service.
Plate was not ejected	Plate was not properly ejected.	 Remove the insertion panel. Remove the service tray and remove the plate. Attach the insertion panel.
Scanner disconnects during the scan/half image appears after scan is completed/ther are lines on the image	External electronic noise that interferes with communication between the scanner and the computer.	Verify using the original CS7200 USB cable with the ferrites on ot. Verify that devices emitting high electronic noise (such as Wi Fi routers, UPS and etc.) are not connected in close proximity to the scanner and do not use the same power inlet. Replace the Controller Card.

8 Appendix

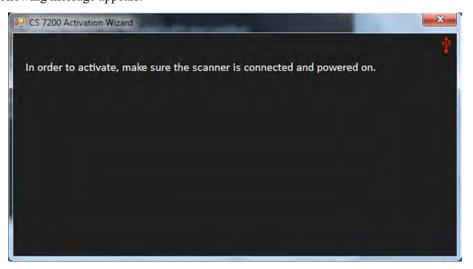
Offline License Activation

If the working station computer is not connected to the internet, you need to acquire license activation code from another device that is connected to the internet.. The following sequence takes place, when the license activation is performed offline:

1. After the installation is complete, the license activatuion message appears:. Click Next to continue.

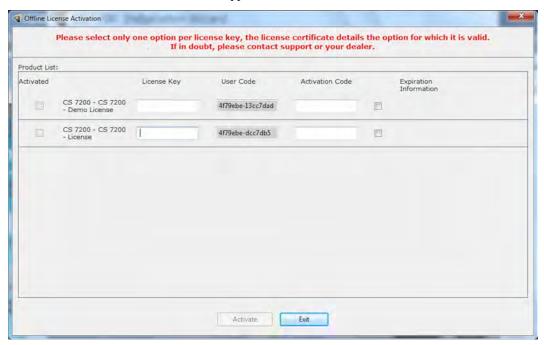


2. The following message appears:

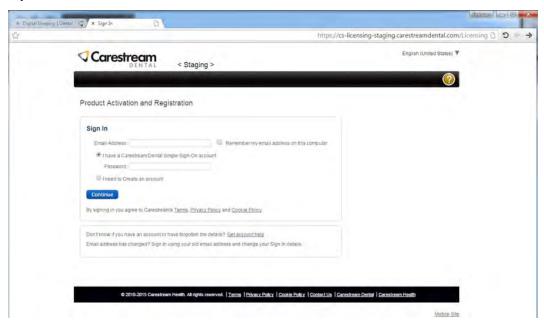


3. Turn on the scanner.

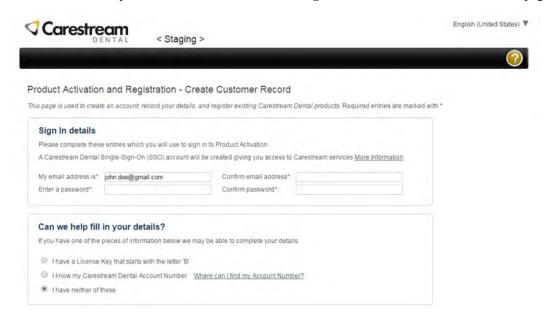
4. The Offline License Activation window appears:



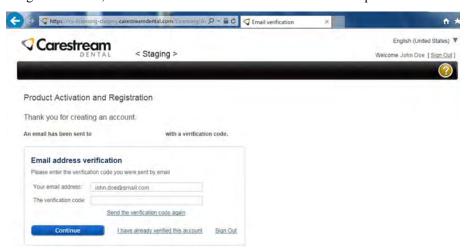
5. Go to https://cs-licensing-staging.carestreamdental.com/Licensing and sign in or create an account, if you do not have one.



6. Click Continue to open the Product Activation and Registration - Create Customer Record page.



- 7. Fill in all required details and click **Continue** at the bottom of the page.
- 8. After filling in all details, an account is created and an email is sent to the provided email address.



9. Open the received email and click the provided link to activate your Carestream account.

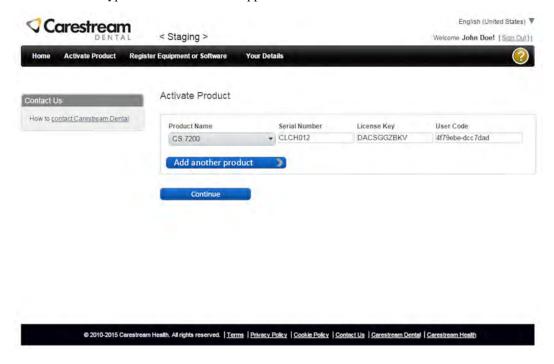


10. After email verification is complete, click Continue.

11. Select Activate a license for a Carestream Dental Product.

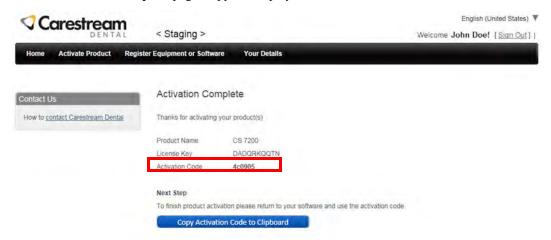


- 12. Fill in the required product details as follows:
 - **Product Name**: select CS 7200 from the available products list.
 - **Serial Number**: type in the serial number that appears on the Data Plate label located on the bottom of the scanner.
 - License Key: type in the license key that appears on the post card received with the scanner.
 - User Code: type in the user code that appears in the Offline License Activation window.

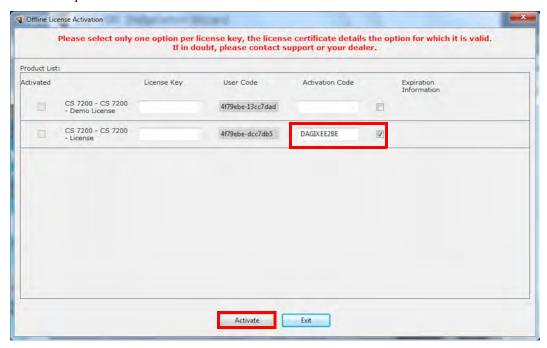


13. Click **Continue**. An email that contains product nem, product license number and activation code is sent to your email address.

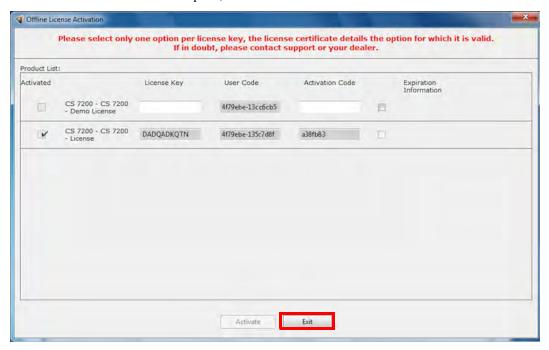
14. On the Activation Complete page, copy the displayed activation code..



15. Paste the copied activation code into the Offline License Activation window and click Activate.

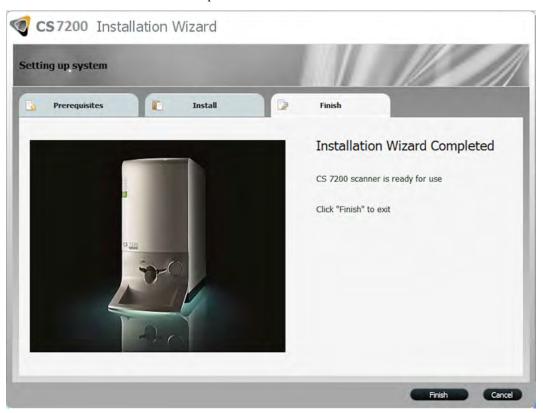


16. After the license activation is complete, click Exit to close the Offline License Activation window.



You are returned to the CS 7200 Installation Wizard.

17. Click **Finish** to finish the installation process.



Create a New Patient Card

To create a new patient card, follow the below steps:

1. In the Patient Browser toolbar, click the Create New Patient Card button.

The Patient Card window is displayed:



2. In the **Patient Card** window, enter patient information.



Note: First Name, Last Name and Gender are mandatory fields. All other fields are optional. Grayed out fields are not editable.

- 3. Click **Create patient** to save the patient card.
- 4. The Patient Card window closes and the new patient appears in the patient list.

Contact Information

Manufacturer's Address



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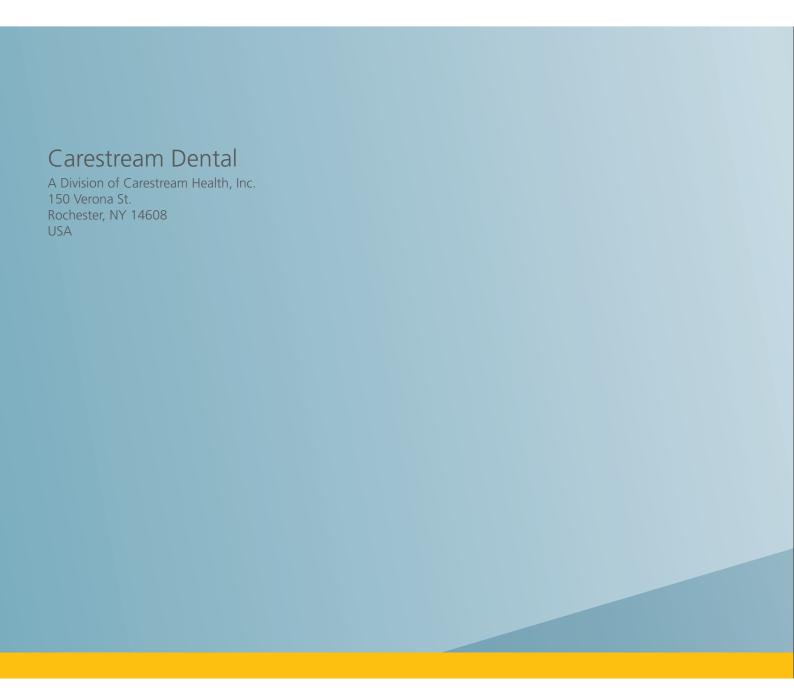
10 List of Consumables

List of Consumables

P/N	Description	Qty
1067495	Hygienic Sheaths #0	200 Pcs
1067503	Hygienic Sheaths #1	200 Pcs
1067511	Hygienic Sheaths #2	200 Pcs
1067545	Imaging Plate #0	4 Pcs
1067552	Imaging Plate #1	4 Pcs
1067560	Imaging Plate #2	4 Pcs
1030428	Carestream Screen Cleaner	

11 Publications History

Publication Date	Publication No.	Changed Chapters	File Name	Notes
2015-03	6M0940		CS 7200 User and Installation Guide	First Release
2015-06	6M0940	Added table to the Consumables List	CS 7200 User and Installation Guide	Revision 2
2017-05	6M0940	Updated manual to match the new SW version	CS 7200 User and Installation Guide	Revision 4



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