CLARIS XT

The Next Dimension of 3D Imaging

Low Dose Imaging Solution | **430 x 430mm Sensor** | **XC Aquisition & Reconstruction**

The Claris XT CBCT captures diagnostic studies with three curved 17" by 17" detectors while providing the functionality of a traditional x-ray room. With its cesium sensor technology, studies for abdominal, chest, cranial, dental, and orthopedic applications are available through one streamlined workflow. The Claris XT's low dose tomosynthesis modality provides low dose studies and high patient throughput. With the Claris XT it's easier than ever to expand your clinical care with an all-in-one solution. By using Cesium Sensor technology, the Claris XT can output amazing, complete chest images at an astonishing 17" by 17" field-of-view. The Claris XT captures high detailed chest information as well as studies expected from a traditional x-ray room. The result for the Claris XT is a streamlined, all-in-one cone beam CT machine that addresses emergency care, surgical planning and general imaging needs.

iCRco | Image Capture Review

CLARIS XT

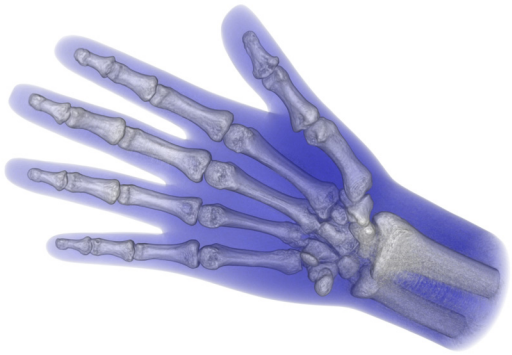
Sparse Sample Cone Beam CT Solution

As a new type of 3D imaging, the Claris XT focuses on low dose 3D imaging to improve patient outcomes while at the same time greatly reduces x-ray radiation.

The Claris XT takes large anatoomy full field high resolution x-ray images representating an x-ray room replacement in an ultra compact format. Optional built in shielding allows for portable deployment.

Tomosynthesis, the ultimate in Low Dose imaging, is a limited dose pseduo 3D imaging technique that provides enhanced diagnostic capability with limited x-ray exposure.

Limited exposure sparse sample CBCT solutions provide enhanced results and screening capabilities with the lowest does desirable.



IMAGE

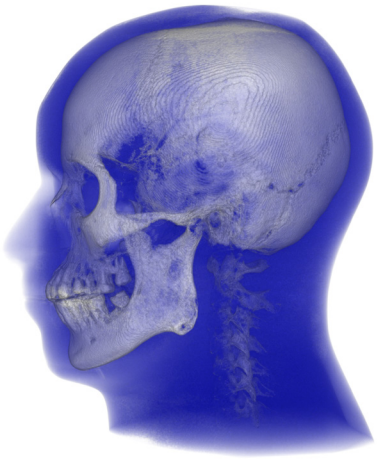
CLARIS XT | TOMOGRAPHY

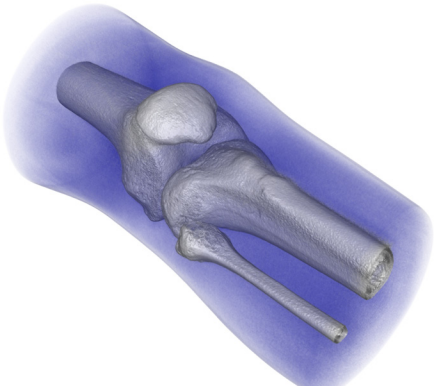
ClarisXT with Cesium Sensor detector technology, allowing for a larger field-of-view, full chest X-Ray image with superior image quality. The Claris XT is capable of replacing your entire X-Ray room in a smaller, more efficient form-factor.

CAPTURE

XC ICE-3 | ACQUISITION

XC touchscreen acquisition with ICE-3 Enhancement Processing provides all-new features including, "Image Display State" to ensure balanced presentation of both soft tissue, overlapping bone structures, and automatic analysis of image characteristics to optimize processing.





REVIEW

CLARITY PACS | ARCHIVE

Our fully web-enabled and integrated PACS solutions help transition your practice into a safe, secure, and filmless environment. Clarity PACS™ supports all your current and future imaging needs.

ADVANTAGES OF CBCT 3D

Computed Tomography is also called Fan Beam Computed Tomography. It creates 3D models by imaging narrow, axial slices of the patient while rotating. In order to create a full field 3D model, slices must be reconstructed to form a 3D object.

Fan beam CT is a high dose modality. Slices must be stitched together to create a 3D model, which is limited in resolution. In Cone Beam CT, a cone beam of x-rays is used to take full field x-ray images and a reconstruction algorithm is used to reconstruct a 3D model from that data. There is a great potential to reduce dose using CBCT reconstruction methodologies. A traditional CT system recreates a 3D model from the equivalent dose of 200 chest x-rays.*

The ClarisXT solution uses sparse sample CBCT to recreate a model using 60 chest x-ray exposures. An alternative solution is through tomosynthesis with 18 images creating a TS reconstruction. This is diagnostically superior to traditional x-rays. Normal digital modalities provide one view or three views of a patient. CBCT can provide many views and improves diagnostic certainty without high dosage.

**Radiation Risks, Jan. 2015*

ADVANTAGES

AT A GLANCE

√ Low Dose 3D Imaging Solution

√ Large Anatomy X-Ray Imaging

V Cesium Sensor Advantage

√ Large Area Sensor

√ Very Low Dose 3D Models

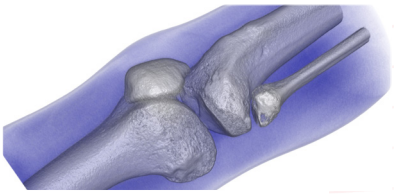
√ X-Ray and Tomosynthesis

√ Large Field of View

√ 430 x 430mm Sensor

√ Advanced Reconstruction Algorithms for Optimization of Image Quality and Throughput

Comparing Medical Imaging Technologies

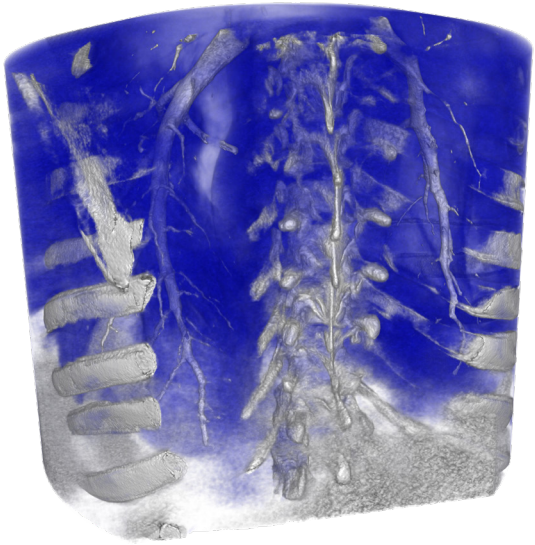
Type of Technology	 CT Scan	 Magnetic Resonance Imaging (MRI)	 Ultrasound	 X-ray	 CBCT
Advantages	Fast, detailed images in three dimensions.	Can be more detailed than CT and uses no radiation.	Cheaper than CT and uses no radiation.	Fast and cheap with a relatively low radiation dose.	Low dose improved patient outcomes over x-ray, low cost, and provides multiple 2-D images that can be reconstructed to create 3-D models.
Disadvantages	Requires the most radiation.	More expensive than CT. Requires patients to be still for a half hour or more.	Lower image quality than CT with effectiveness on technician skills.	Only proved a 2-D image with less detail than other methods.	Movement artifacts possible due to time of study, compared to traditional CT. Very large data sets. Short capture time.
Common Uses	Detects solid tumor and other problems in the abdomen and chest.	Detects brain abnormalities and diagnosing soft-tissue injuries.	Fetal ultrasound and diagnosing appendicitis in children.	Diagnosing broken bones, pneumonia, and intestinal blockages.	Diagnosis of broken bones. TB screening, lung nodule detection, abdominal and chest imaging, extremities, intestinal blockages.

Sources: Howstuffworks.com, New England Journal of Medicine, IMV Medical Information Division, Medical Imaging & Technology Alliance, Times reporting

CLARIS XT

Sparse Sample Cone Beam CT Solution

LOW DOSE — HIGH RESOLUTION IMAGES

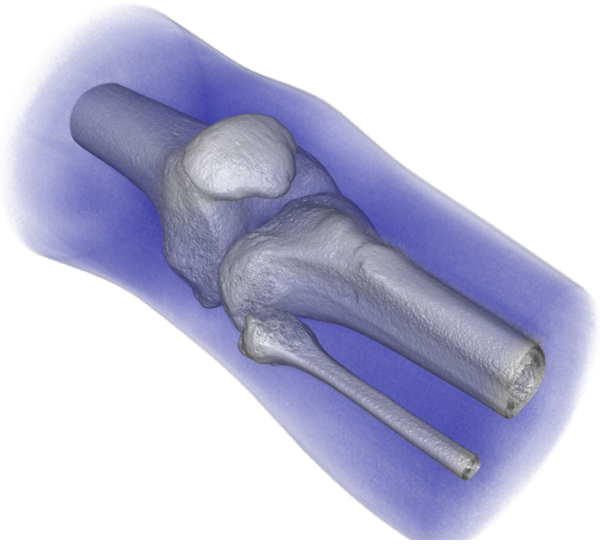


The estimated dose for a Chest study is 200 X-ray images. However the dose for a ClarisXT Cone Beam exam results is much lower than one absorbed performing the same exame with a standard CT scan with 200 chest images. This new technology promises to replace standard X-ray as a modality.

Claris XT is a low dose modality. It captures a sample set of high resolution chest images to generate a 3D model. The Claris XT is not a traditional CT. It has a dose limit and it is utlized for advanced x-ray visualizations, screening, early detection of tuberculosis, and detection of lung nodules. Extremeity images allow for better diagnosis using more x-ray views and anatomical analysis based on 3D model. 3D printing of patient 3D models add to diagnostic capability.

HIGH RESOLUTION RECONSTRUCTIONS

Claris XT represents a breakthrough in CBCT technology. The system captures full field X-ray images, using a novel spinning curved sensor. It is capable of creating full field X-ray images, tomosynthesis reconstructions (TS) and sparse sample CBCT imaging. The Claris XT is an X-ray room replacement device, enhancing diagnostic capability of general X-ray imaging with low dose, high resolution full field X-ray images, reconstructed into 3D models.



LARGE FIELD OF VIEW

The scanner's large Field of View (FOV) determines how much of the patient's anatomy will be visualized. If using a flat panel detecotr's (FPD), the dimensions of their cylindrical FOV can be described as Diameter by Height (DxH). Nowadays the need to scan differenct R.O.I. with differenct dimensions is regulated by international standards in order to reduce the effective dose to the patient following the "As Low As Reasonable Achievable" (ALARA) dose principles. The new Claris XT is extending CBCT to a new level, using iterative reconstruction, and the powerful XC software acquisition station, images can be captured and reconstructed in seconds, rather than minutes. Capture time of the claris XT settings is from 25 to 50 seconds, with standard and high resolution settings of 140 Micron and 280 Micron Voxel sizes. Motion blur correction, metal implant artifact reduction, and soft tissue enhancement capabilities, along with fully motorized table, allow for stitching, and full control of patient positioning.

2D & 3D EVALUATION

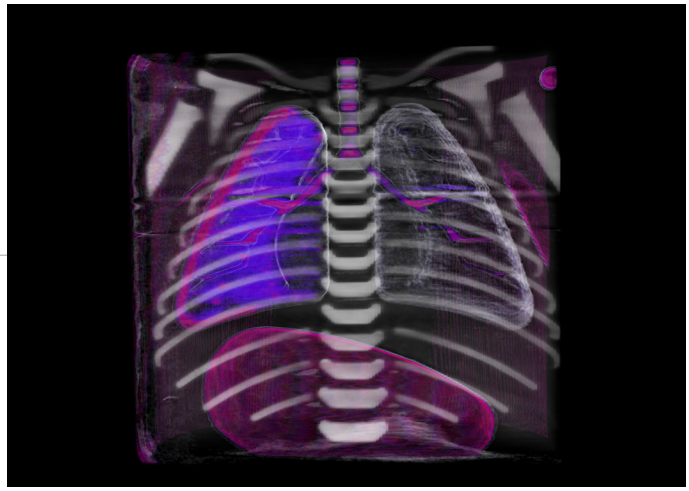
ClarisXT offers fast examination with greater safety for the patient and increasingly better performance and efficient workflow.

REPRRINT IN 3D

With the power of the ClarisXT, captured images can be converted to STL files and printed in 3D using any available 3D printer. Printed objects can be used during pre-operative planning and allow for new level patient care.

ADVANCED EXAMINATION

With large FOV's and low dose imaging, the ClarisXT can enable the diagnosis of respiratory diseases, such as Neonatal respiratory distress syndrome (NDS) or pnemothrox.



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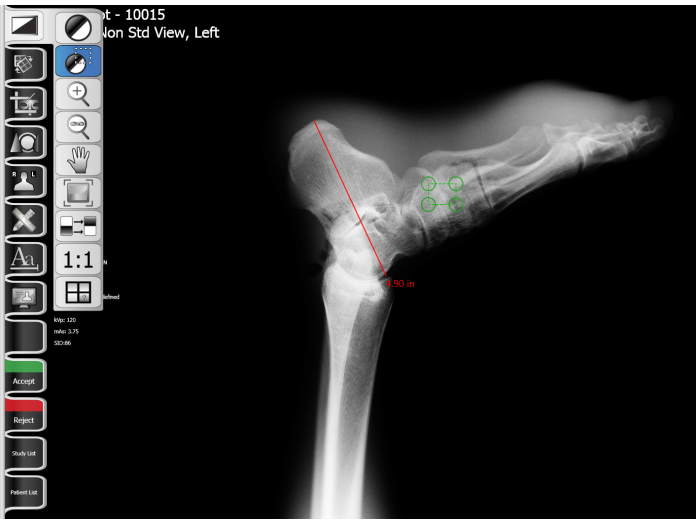
THE CLARIS XT WORKFLOW

XC ACQUISTION SOFTWARE OPTIONS

XC-CBCT is a powerful acquisition and processing worstation software used to generate 16 bit full-field images from the ClarisXT hardware platform.

XC-CBCT uses a novel reconstruction algorithm to greatly reduce the number of images needed to generate a diagnositc result. Using 3000 GPU's, the XC worstation server reconstructs a chest study in under 10 minutes.



XC-CBCT IMAGE COMPATIBILITY

Image data sets are natively DICOM and can be exported to any DICOM compliant imaging solution. It is possible to convert files from DICOM to STL and print with many of the commercially available 3D printers on the market today.

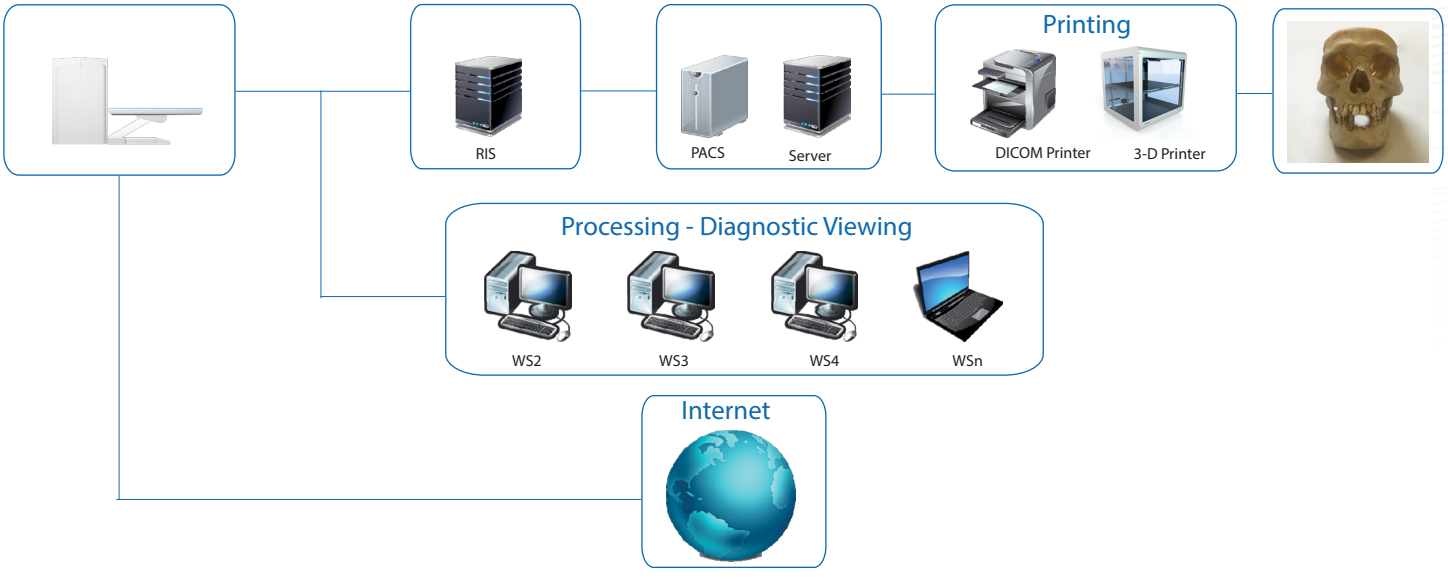
3D Slicer (open source) can be used to create and manipulate 3D models generated from the ClarisXT when processing through XC-CBCT.

ORTHOPEDIC APPLICATIONS

Bone X-ray is used to detect fractures or dislocated joint, ensure that a fracture has been properly aligned, evaluate injury or damage from conditions such as infections, arthritis, abnormal bone growths, locate foreign objects, evaluate changes in bones and detect degenerative conditions of the bone. The multiple views due to the 3D dataset allows specialists to assess the degree of pathological displacement of any fractures or dislocations. Foot X-ray requires an AP view for better viewing the medial aspect of the foot (i.e. talus, navicular, medial and middle cuneiform 1st and 2nd metatarsals), while the lateral foot structures are partially obscured by radiographic overlap. The AP view allows better visualization of the lateral structures, but now it is difficult to properly visualize the medial structures of the foot. Hand X-rays may also be formed to assist in determining the "bone age" of a child in order to determine if metabolic or nutritional disorders are interfering with proper growth. For all these pathologies, the multiple views due to the 3D dataset allows specialists to assess the degree of pathological displacement of any fractures or dislocations.

The 3D data set creates multiple views allowing specialists to assess the degree of pathological displacement of any fracture or dislocations.

CONFIGURATION & INSTALLATION



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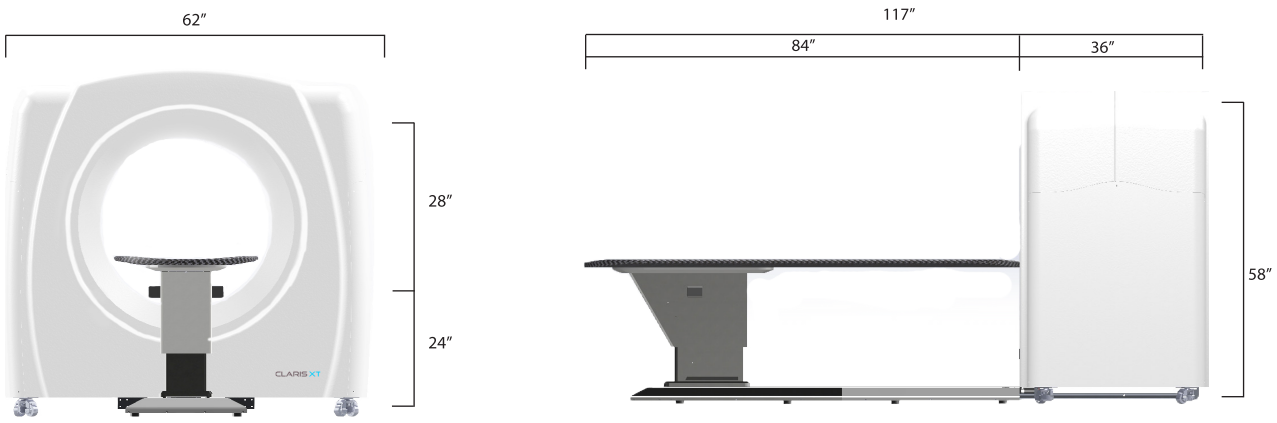
CLARIS XT DIMENSIONS



CLARIS XT SPECIFICATIONS

X-ray Source	High frequency, constant potential (DC), rotating anode Tube Power: 5kW (e.g. 100kV, 50mA) Max. Tube Voltage: 120 kV Max. Tube Current: 100 mA Focal Spot Size: 300 µm / 600 µm		
Acquisition Technique	Single X-ray images multiple exposures. Built in AEC for dose control. Sparse sample methods used to reduce patient dose.		
Scan Time Tomosynthesis	150 seconds; 360 images		
Image Detector	17x17″ amorphous SiTFT w/ CSL TL 140 µm pixel pitch		
Possible Single Image Resolution	3072x3072 1536x1536 1024x1024		
Grey Scale	16 bit (65,536 gray levels)		
Voxel Size	≥ 85 µm		
Patient Position	Supine		Motorized Table
Reconstruction	< 3 minutes		
Weight and Dimensions	Scan Unit	Width	60″
		Depth (max)	116″ (with patient bed)
		Height	60″
		Total Weight	500 lb (with patient bed)
		Bore	28″
Software	XT-CBCT acquisition workstation with export capabilities to PACs and multiple viewing software. DICOM Compatible		
Power Required	220V single phase power Input Voltage: 6 kVA		

Specification subject to change without prior notice.
This product is manufactured and developed in Goleta, USA.