

# EXPEDITION

PreXion3D



More vivid, more accurate, more reliable.  
Diagnostic imaging technology crafted in Japan  
and recognized around the world.

make IT visible

# “Make IT Visible”

## Making more sophisticated diagnoses and reliable medical treatment possible with 3D imaging

PreXion has made high resolution clinical image quality our first priority in development of dental cone beam CT. We have built up 15 years of experience working with three-dimensional DICOM image processing and software, and we are currently contributing to dentistry around the world.



### Full customer support and strict quality control standards are the defining characteristics of our in-house development.

Every aspect of the PreXion3D Expedition, from our rigid quality control standards and manufacturing to our comprehensive customer support, is developed in Japan. Our software has been used for more than 15 years in clinical procedures, and we have been conducting in-house development of X-ray generator, the central components of a cone beam CT.



X-ray generator



Software



## The benefits of incorporating a cone beam CT into daily diagnoses

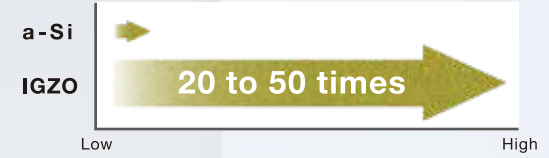
- 01 | Practitioners can make diagnoses and provide treatment with more precision by understanding factors that could not be perceived with conventional flat images, such as the spatial structure of teeth and the jawbone as well as the location of nerves.
- 02 | Cone beam CT allows for low dosage without compromising on precise, clear image quality. This not only ensures accurate diagnosis, but also reduces the burden on the patient's body.
- 03 | Easy-to-understand icons and intuitive operation during imaging allow for stress-free diagnosis and patient counseling.

### IGZO FPD

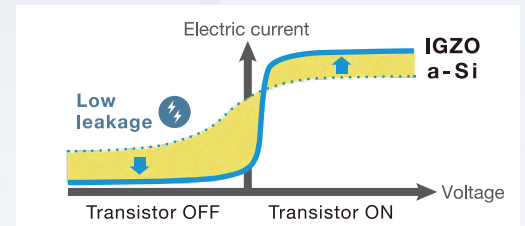
The IGZO semiconductor can conduct 20 to 50 times more current than the amorphous silicon (a-Si) semiconductor that was previously in wide usage, resulting in higher electron mobility and less leakage current. As a result, the amount of transmission per pixel can be increased, allowing for higher resolution image generation and noise reduction.



#### Comparison of electric current in an IGZO and a-Si semiconductor



#### Comparison of leakage current in an IGZO and a-Si semiconductor



With IGZO, there is only a small leakage current when the transistor is turned off, and when the transistor is turned on, the electric current is strong. This allows for generation of high-quality images with little noise.

# In Pursuit of High Image Quality

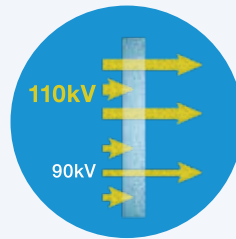
Superior image quality is produced by combining a high-quality X-ray generator, the key component for X-ray irradiation, with a variety of imaging technologies.

EXPEDITION  
PreXion3D



## 360° rotation

PreXion3D Expedition makes higher resolution images possible by obtaining information content from the entire circumference with 360° scanning.



## 110kV High X-ray Tube Voltage

The high X-ray tube voltage of 110kV allows PreXion3D Expedition to deliver optimum image quality for all kinds of tissue while decreasing image artifacts.



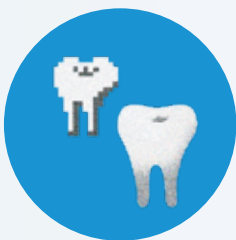
## X-Ray Tube Focal Spot 0.3 × 0.3mm

The focal spot is the part of the X-ray tube where electrons strike a target and emit X-rays. PreXion3D Expedition features a 0.3mm X-ray tube focal spot, the smallest class in the industry.



## Voxel Size Minimum : 0.06mm Maximum : 0.3mm

PreXion3D Expedition uses voxel sizes of 0.06/0.08/0.1/0.12/0.15/0.2/0.3mm. It displays 3D images with high resolution and high image quality.



## 16-bit grayscale

While many dental CT scanners have 14 bits (16,384 gradations), PreXion3D Expedition has a high gradation of 16 bits (65,536 gradations), enabling it to produce even smoother, higher resolution images.

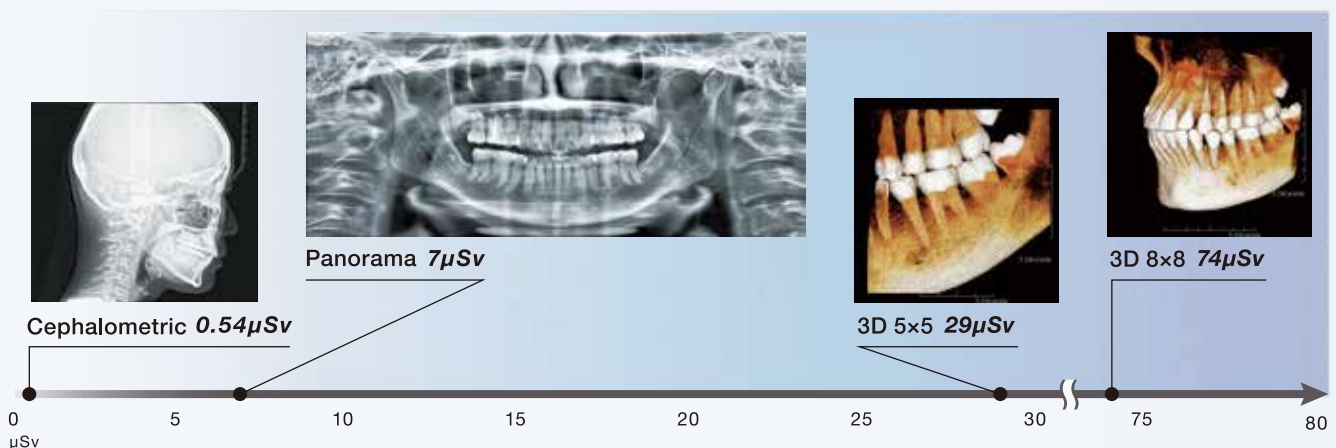


## Making Low Radiation Exposure a Reality

The PreXion3D Expedition is equipped with features such as pulse irradiation that emits X-rays intermittently and a low dose mode which can deliver high image quality even with low doses of radiation, making accurate medical examinations possible while using an exposure dose that's easy on the patient's physical constitution.

### Exposure dose

Comparison of radiation doses when taking cephalometric, panorama, or 3D scans. Although 3DCT has a very large amount of information, it achieves low exposure.



### Low Dose mode

Reduces radiation exposure and shortens the scan time.

FOV	Exposure dose	Scan time
5x5cm	29µSv	8 seconds
8x8cm	74µSv	
12.5x10cm	109µSv	



\*Values are for scanning in Medium Adult mode.


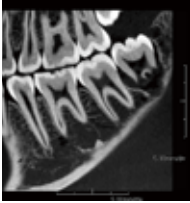
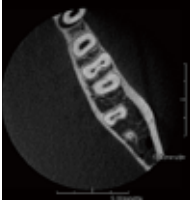


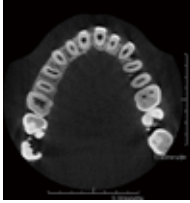




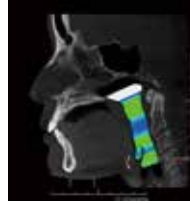
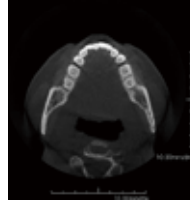


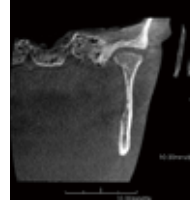
### Pulse irradiation

The exposure dose on the patient can be greatly reduced through the use of intermittent X-ray irradiation rather than continuous irradiation. Theoretically, this also reduces wear on the X-ray tube.



# Fields of View (FOV)

PreXion3D Expedition is equipped with CT image acquisition capabilities applicable for all clinical situations at 5×5cm, 8×8cm, 12.5×10cm, and 15×15cm (optional), covering local to broader regions. PreXion3D Expedition uses a 360° rotation to generate high resolution images for all FOVs.

	5×5cm	8×8cm	12.5×10cm	15×15cm (optional)	CT TMJ
Voxel size	0.06mm / 0.1mm	0.08mm / 0.1mm / 0.15mm	0.12mm / 0.15mm / 0.2mm	0.2mm / 0.3mm	0.15mm
Image	  	  	  	  	  
Endodontic treatment	●	●			
Periodontal treatment	●	●	●		
Implant treatment	●	●	●		
Oral surgery		●	●	●	●
Maxillofacial treatment			●	●	
Treatment of sleep disorders				●	

## 2D Panorama

In addition to 3D analysis, 2D panorama scanning is also possible.



Bite wing



TMJ



Panorama

# 2D One Shot Ceph

The cephalo unit equipped on PreXion3D Expedition takes clear cephalometric images with one shot, reducing the burden on the patient's body.

\*The cephalo unit is an option.



Ceph (LA)



Ceph (PA)



Carpus



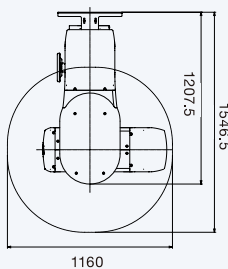
ONE SHOT  
ULTRA-FAST IMAGE  
ACQUISITION  
at **0.16**  
seconds

Device Type		Cone Beam Computed Tomography System
Product Name		PreXion3D Expedition
Model		P04B
Rated Power		Voltage: 100-240V AC Frequency: 50/60Hz
X-ray Tube Focal Spot		0.3mm x 0.3mm
Tube Voltage		90-110kV (varies depending on scan mode)
Tube Current		1-5.3mA
Total Filtration		Greater than 2.7mm aluminum equivalent
FPD Specifications	With binning	0.19mm x 0.19mm, 16bit, matrix 896 x 896
	Without binning	0.095mm x 0.095mm, 16bit, matrix 1792 x 1792
FOV		Full : φ125mm x H100mm
		Arch : φ80mm x H80mm
		Teeth : φ50mm x H50mm
		Complete: φ150mm x H150mm (optional)
		CT-TMJ: φ125mm x H100mm
Voxel Size		0.3mm, 0.2mm, 0.15mm, 0.12mm, 0.1mm, 0.08mm, 0.06mm
Scanner dimension	(W)	CT mode: 1,160mm Cephalometric mode: 1,833.6mm
	(D)	CT mode: 1,546.5mm Cephalometric mode: 1,546.5mm
	(H)	CT mode: 2,226mm Cephalometric mode: 2,226mm
Scanner weight		170 kg (without cephalo) 200kg (with cephalo)

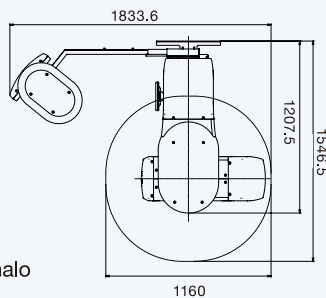
Scan time	CT Scan Mode	Low Dose Mode: 8sec
		HD Mode: 12sec
		Endo Mode: 25sec
		Complete Mode: 12sec x 2
		CT-TMJ Mode: 7sec x 2
	Panoramic scan mode	FullArch: Standard: 14sec Narrow: 12sec
		TMJ2: 4sec x 2
		TMJ4: 4sec x 2 x 2
		Bite Wing: 4sec x 2
	Cephalometric exposure mode	LA: 0.16sec
PA: 0.16sec		
Carpus: 0.16sec		

## Dimensions

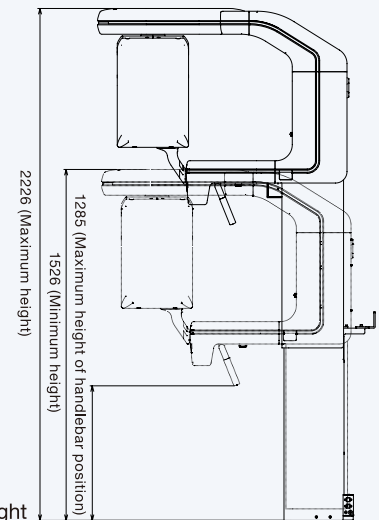
Without cephalo



With cephalo



Height



\*A dedicated pedestal stand is available as an option.



**PreXion Corporation**

<https://prexion.co.jp/en/>

1-14-1 Kanda Suda-cho, Chiyoda-ku, Tokyo, 101-0041 Japan  
TEL : +81-3-5297-7551



\*Product specifications may change without prior notice.

PJ004/2310 EN2