PLANMECA

Planmeca ProMax®

New era of dental imaging

Planmeca ProMax® X-ray unit provides a wide range of extraoral imaging modalities:

- panoramic imaging for dental arch
- maxillary sinus imaging
- temporomandibular joint imaging
- 2D linear tomography
- cephalometry

Revolutionary technology

The **Planmeca ProMax®** platform uses robotic SCARA technology to provide utterly precise arm movements needed in digital rotational radiography for maxillofacial imaging. The three-axis SCARA robot arm moves freely without any mechanical restrictions, offering superior imaging capabilities for both existing and future technologies.

Easy upgrades

An existing digital Planmeca ProMax can be easily upgraded to 3D unit and new imaging programs can be added with software upgrades ensuring superior maxillofacial radiographs every time and complying with future imaging needs.

Succesfull radiographs with open patient positioning

Intuitive controls for efficient workflow

Clear commands and graphic icons make the graphical user interface (GUI) very easy to use which allows for the user to focus on positioning and communicating with the patient. When imaging is completed a preview image shows on the main display.

Open positioning

One of the most common reasons for failed radiographs is incorrect patient positioning. With **Planmeca ProMax®** open positioning concept patient positioning is extremely easy. The imaging arm can be moved aside leaving the area free for the operator to observe the patient from all directions.

Side entry – easy access, relaxed patient

The side entry allows easy access for all types of patients. The exposure can be taken the patient standing – the recommended way for short procedures – or seated. If necessary, the patient can even remain seated on a wheelchair. Side entry allows the patient to maintain direct visual contact with the operator the whole time – or in case of a child with accompanying adult – helping the patient to relax.

Precise positioning with advanced positioning beams

A triple laser beam system indicates the correct anatomical positioning points ensuring proper alignment and completely eliminating the need for mirrors.

• The midsagittal plane positioning beam indicates the correct sideways alignment of the patient's head resulting in symmetric and undistorted image in the left-right direction.

• The Frankfort horizontal plane positioning beam shows the correct forward tilt of the patient's head, so that the dental arch lines up straight in the radiograph.

• The focal layer positioning beam indicates the focal layer's position in the incisor region and ensures the patient is positioned fully inside the focal layer for sharp and clear images.

## Improved image quality with Dynamic Exposure Control (DEC)

The unique digital Dynamic Exposure Control (DEC) automatically adjusts the exposure values individually for each patient based on their anatomic structure and bone density. DEC clearly improves the image quality by producing images of more consistent brightness and contrast. DEC is available both for panoramic and cephalometric imaging.

Accurate images with autofocus

With the unique Autofocus feature patient positioning is practically error-free. Automatically positioned focal layer uses a brief scout exposure reducing retakes remarkably.
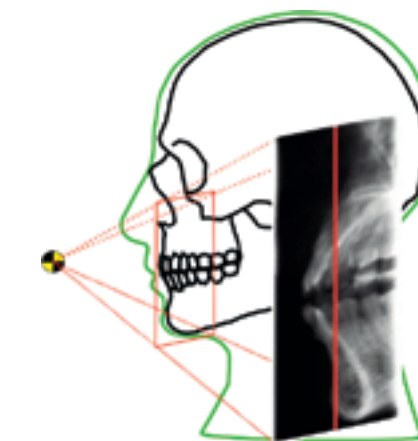
Special programs for various diagnostic needs
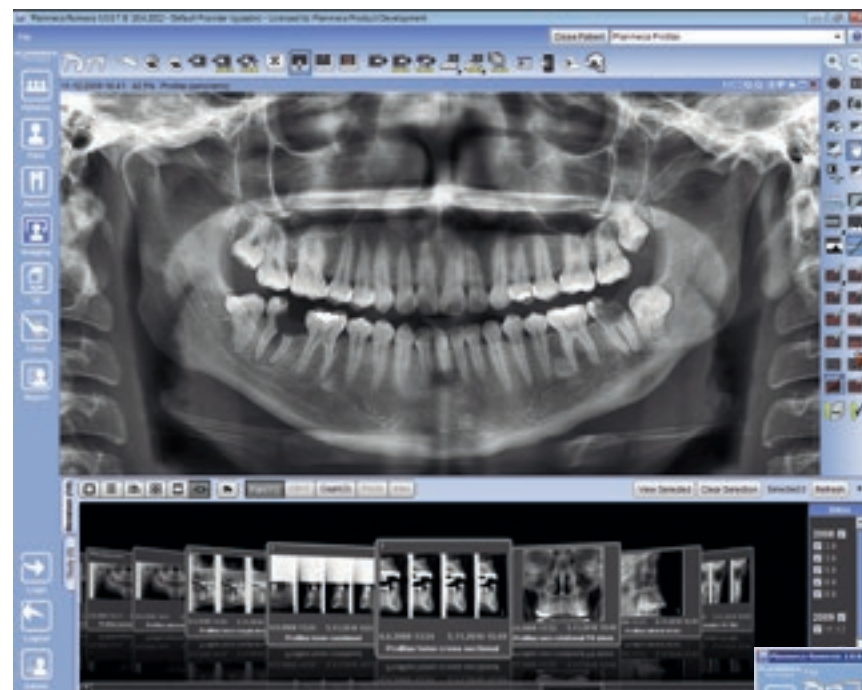
Besides the Standard Panoramic program the following programs are offered:

Interproximal panoramic program generates an image where interproximal teeth contacts are open, and it is most often used for caries detection.

Orthogonal panoramic program produces an image with clearly visible alveolar crest for improved diagnostics, and it is ideal for periodontal imaging and implant planning.


Bitewing Panoramic program uses improved interproximal angulation geometry, resulting in an intraoral bitewing image pair with very low patient dose.
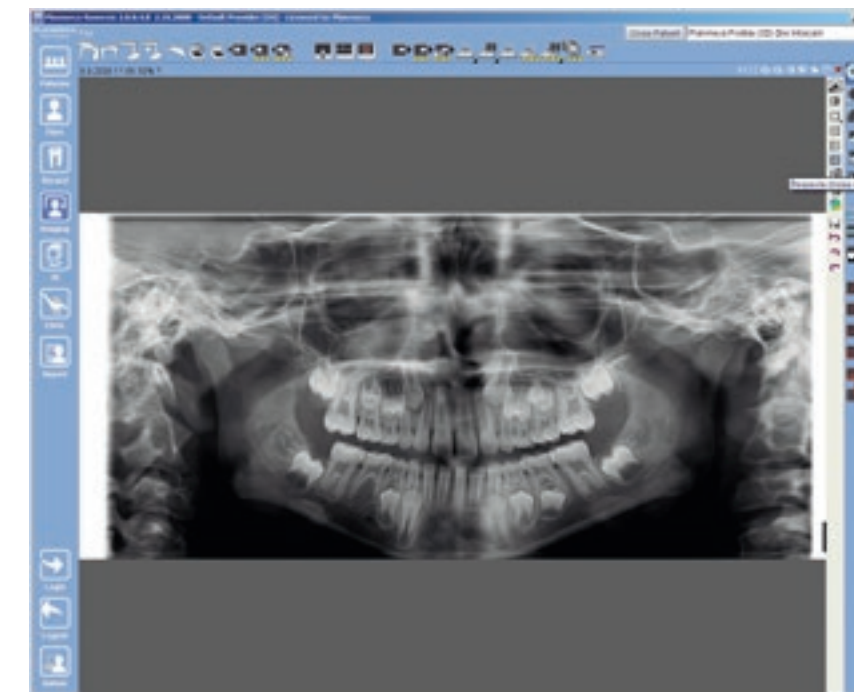
In child mode, the imaging area and exposure values in all programs are reduced and in the panoramic program focal layer can be narrowed. This reduces the patient dosage by 35%, while providing full diagnostic information.
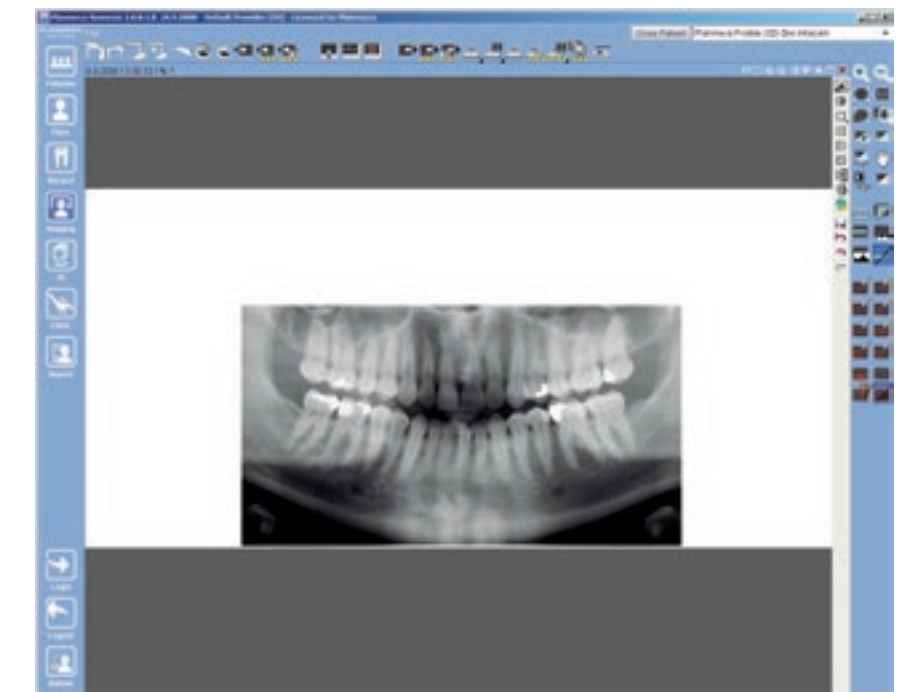

With the horizontal and vertical segmenting option, the exposure can be limited strictly to the diagnostic region of interest. Compared to full panoramic exposure patient dosage is reduced by up to 93%.*
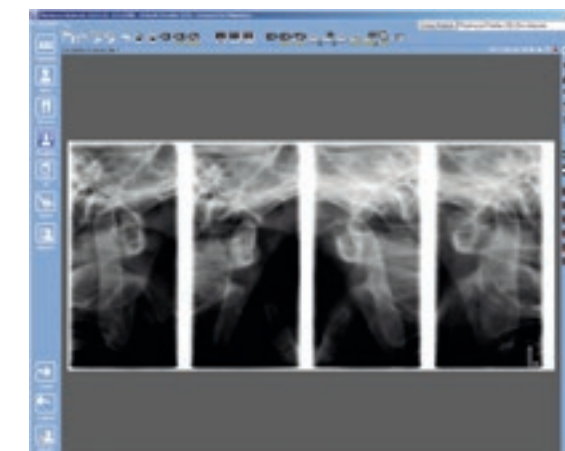

The TMJ imaging programs produce lateral or posteroanterior views of open or closed temporomandibular joints. The imaging angle and position can be adjusted to correspond to the individual anatomy of each patient.

The standard Double TMJ programs produce mouth open and mouth closed images of the TMJs on the same radiograph either from lateral or from posteroanterior view.
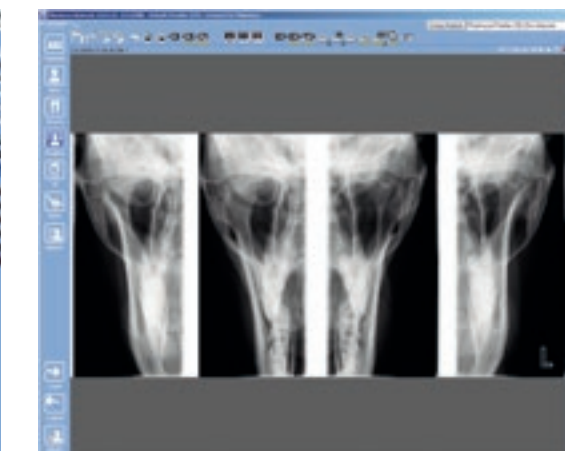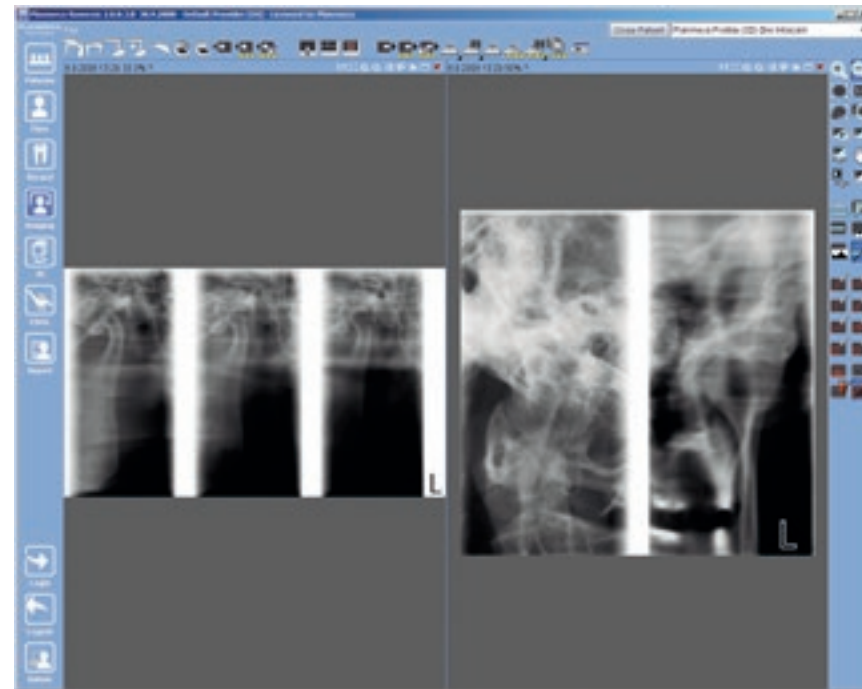

The optional Lateral-PA TMJ program produces lateral and PA views on the same radiograph and the Multi-angle TMJ programs produce radiographs with images from three different angles either from the lateral or posteroanterior view.
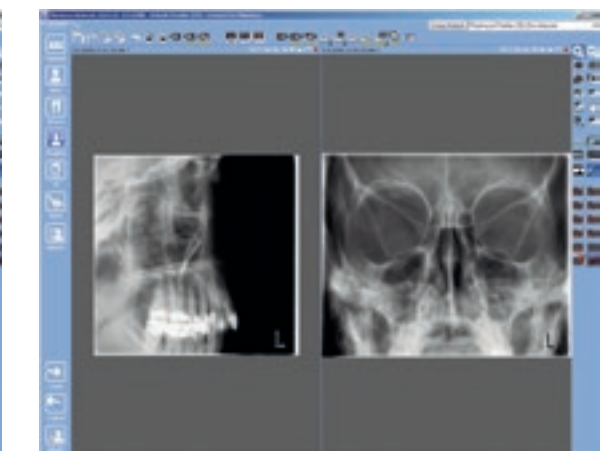
The sinus programs provide a clear view of the maxillary sinuses.

Valuable tool for implantology

Planmeca ProMax® tomography programs provide correct topographic information and all required images for the analysis, planning and follow-up of implant and surgery procedures.

The Planmeca ProMax tomography system produces clear tomographic slices of any part of the maxilla, mandible, or temporomandibular joints. The cross-sectional or longitudinal tomographs can be adjusted to any specific angle and the constant 1.5-fold magnification factor and combination programs enable exact measurements.
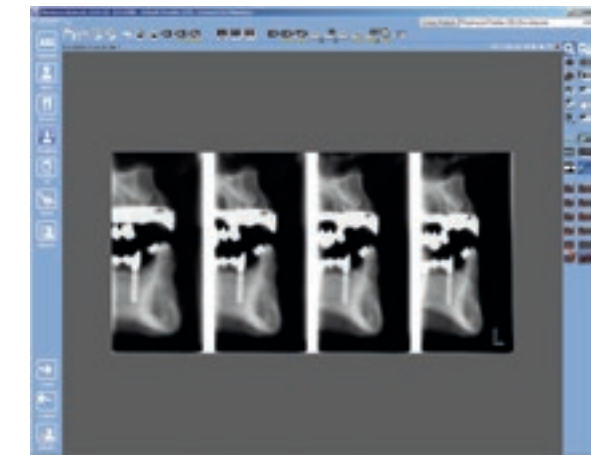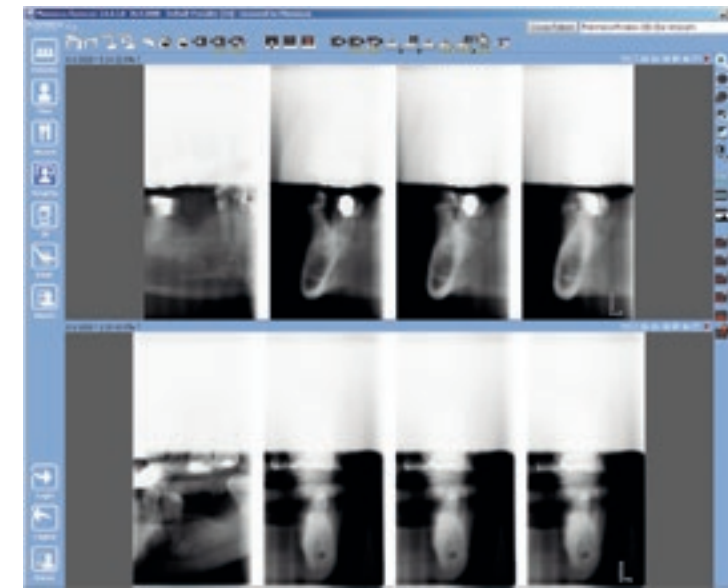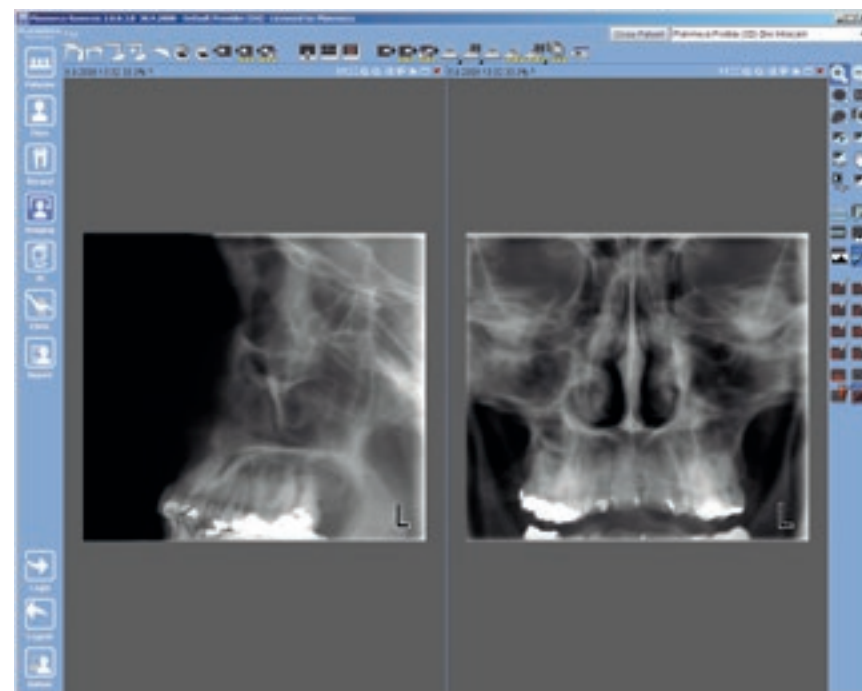
Automated and accurate tomography

The pre-adjustment of the position and angle of the tomographic exposure is done automatically according to the operator's program and target selection on the main display. Fine-alignment using the smart positioning joystick is highly practical and intuitive. The dual laser beams indicate the exact site and orientation of the tomographic cut. An impression model of the patient's dental arch can be used for easy and reliable fine-alignment of the position and the angle.
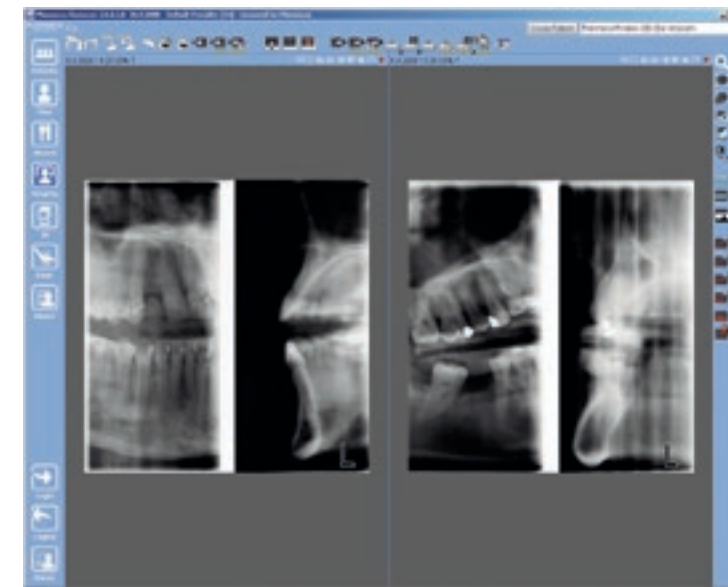
Ingenious Transtomography®

The digital tomography option in Planmeca ProMax offers two imaging systems: digital linear tomography and **Transtomography®**.

The patented ingenious Transtomography allows easier patient positioning and enhances the diagnostic value of the image. Transtomography uses a multiple sweep method to produce linear tomography effect with a narrow X-ray beam. Transtomography combines the translation movement with an oscillation movement where the centre of the rotation moves over the region of interest.*

Combined tomography

Integrating cross-sectional and longitudinal views on the same radiograph the combined tomography is highly valuable in implant planning since both transversal and longitudinal views record the same vertical position. The level measurement tool of the **Planmeca Romexis®** software can be applied to the combined radiograph, confirming the exact position of the images.
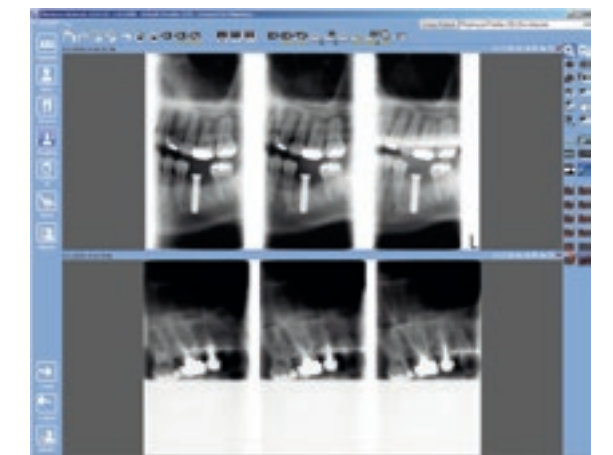

Cross-sectional tomography

With cross-sectional tomography programs, 1–4 cross-sectional images can be taken either manually or using the versatile automatic programs on one radiograph. The automatic programs provide a series of images with adjacent (adjustable interval) and multi-angle tomographic cuts, or targeted images of the sinus and the nasal cavity.

Longitudinal tomography

The longitudinal programs provide 1–4 longitudinal tomographic cuts on one radiograph either manually or with versatile automatic programs. The automatic programs provide series of images with adjacent images (adjustable interval), multi-angle images, or special images of the sinus and the nasal cavity. Longitudinal slices are ideal for instance for third molar assessment and diagnostics of the temporomandibular joints.

Functional technology

Rotational freedom with SCARA technology

Planmeca ProMax® utilises unique SCARA technology (Selectively Compliant Articulated Robot Arm). SCARA is a revolutionary electro-mechanical construction, providing flexible, precise and complex movements required in rotational maxillofacial radiography. SCARA technology is combined with real-time computation of dynamic rotation patterns. These enable optimised radiography of each patient's anatomy, meeting with virtually any diagnostic requirement in maxillofacial dentistry.

Different models for different needs

The three-joint model (SCARA3) has been designed for all imaging needs: panoramic, TMJ, sinus, 2D tomography and 3D imaging.

The two-joint model (SCARA2) includes basic programs for panoramic imaging completed with Bitewing panoramic, TMJ and sinus imaging programs. A third joint can also be retrofitted to the unit.

Both models can be equipped with a cephalostat.

Superior clinical quality images

In order to get accurate and clear panoramic radiographs, the form of the X-ray unit focal layer must follow the actual patient anatomy. In Planmeca ProMax, the form of the focal layer follows the scientifically defined shape of human dental arch and jaw resulting in panoramic radiographs with clearly superior clinical quality.*

The jaw shape and size varies between individuals according to their size, gender, race and age. Consequently, a single panoramic focal layer form does not suit for all patients. In Planmeca ProMax, the operator may adjust the shape of the focal layer according to the jaw shape and size characteristic to the patient.**

Direct digital radiography: fluent workflow, easy diagnostics and efficient communications

Direct digital radiography provides several advantages both for the patient and for the X-ray imaging workflow. Direct digital X-ray imaging saves time, as images appear on screen within seconds after the exposure and are immediately available for diagnosis anywhere in the practice network.

Digital images can be enhanced in imaging software. This gives new opportunities for diagnostics and allows adjustment of the image darkness and contrast to optimise diagnostically relevant regions.

Networked imaging equipment, work stations and digital archives enable efficient image communications. Electronic image copies match the original in quality and thus the highest quality image is always accessible for on-site diagnostics as well as for remote consultation.

Self-diagnostic system for easy servicing

The self-diagnostic system continuously monitors the unit, and help messages with the language of choice guide the operator in the correct use of the unit. In addition, the unit control system records an event log, which in case of abnormal operation helps both the operator and technical service.

* Standard Forms of Dentition and Mandible for Applications in Rotational Panoramic Radiography, U. Welander, P. Nummikoski, G. Tronje, W.D. McDavid, P.E. Legrell and R.P. Langlais, Dento-Maxillofacial Radiology, 1989, Vol. 18, May

** Dental and Mandibular Arch Widths in Three Ethnic Groups in Texas: A Radiographic Study, P. Nummikoski, T. Prihoda, R.P. Langlais, W.D. McDavid, U. Welander and G. Tronje, Oral Surgery & Oral Medicine & Oral Pathology 1988; 65:609–17

Clear images with advanced imaging geometry

Planmeca ProMax's imaging geometry efficiently eliminates redundant shadows and ghost images caused by objects outside the image layer significantly increasing the diagnostic value of panoramic radiographs.

The shadow of the cervical vertebrae, which commonly disturbs the clarity of the anterior region, is automatically eliminated by adjusting the amount of radiation in the central incisor region. This computer-controlled correction ensures that there is no loss of image contrast or density.

Straightforward cephalometrics
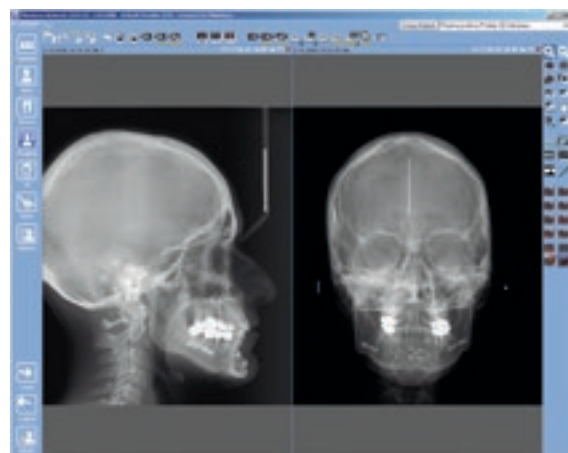
Lateral and PA projections
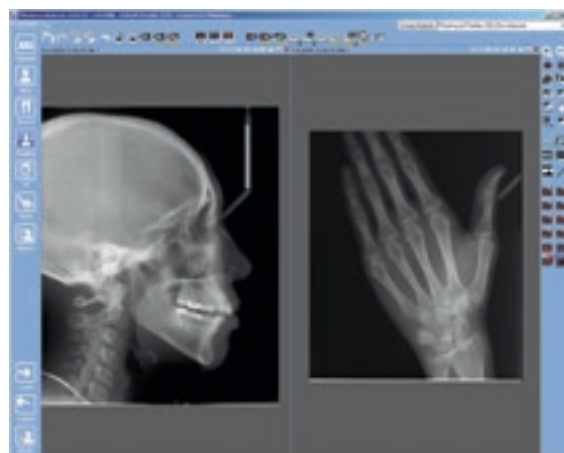
Lateral image and hand image

All common cephalometric projections are possible

Easy cephalometry

With **Planmeca ProMax®** Cephalostat cephalometric imaging is easier and more accurate than ever before. By changing the place of the digital sensor the unit switches from panoramic to cephalometric imaging modality. The unit can also be equipped with two fixed digital sensors.

The functionally designed, easy-to-use head support guarantees accurate patient positioning in all cephalometric projections. The carbon fibre ear posts and nasal support are extremely durable, hygienic and fully transparent to radiation.

Wide range of image sizes

The unique design allows an exceptional range of image sizes and formats with field sizes of up to 30 x 27 cm (11.8 x 10.6 in.) making digital lateral radiographs of the whole skull very easy. With the soft tissue filter applied in the **Planmeca Romexis®** imaging software the images can be viewed with or without the filter.

Special features for film units

Automatic exposure control – optimum image quality

The thickness of the patient's bone and soft tissue varies according to the size, race and age of the patient. By measuring the patient's radiation transparency and adjusting the exposure values accordingly the Automatic Exposure Control (AEC) helps to achieve the optimum darkness and contrast. AEC is available both for panoramic and cephalometric imaging.

Cephalometric film systems

Planmeca ProMax Cephalostat CA automatically selects the correct cephalometric aperture according to the cassette size and its position on the cassette holder. An automatic laser beam assist in soft tissue filter positioning.

Planmeca ProMax Cephalostat CM adjusts the cephalometric apertures and the soft tissue filter according to the operator's selection on the GUI with motorised controls.

The Planmeca ProMax film units can be converted entirely digital any time in the future. This applies to all imaging modalities – panoramic, tomographic and cephalometric imaging – as well as to all imaging programs.

3D upgrade made simple
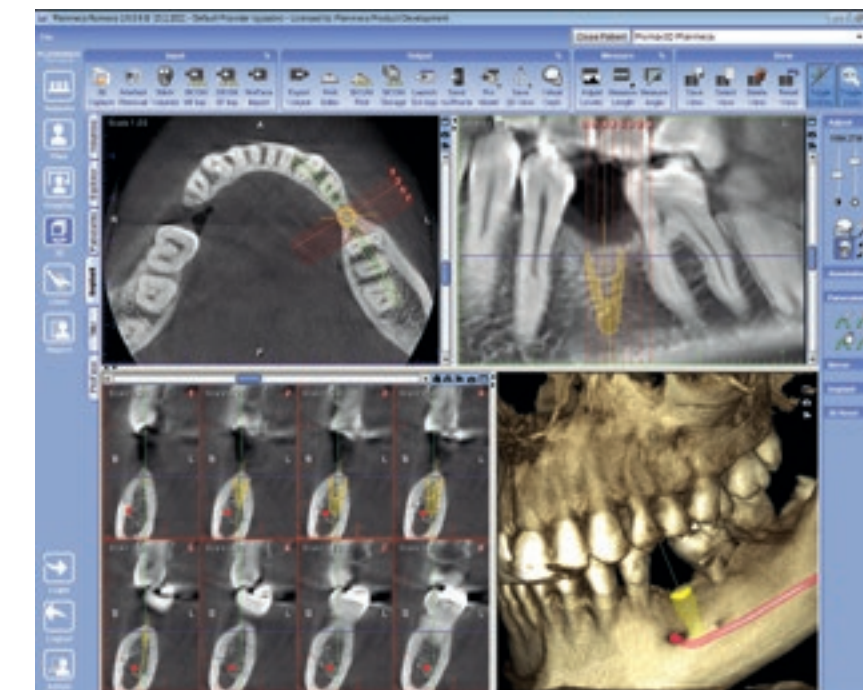
Simple upgradeability to a 3D unit

Any Planmeca ProMax film or digital X-ray unit can be easily upgraded to **Planmeca ProMax® 3D s** or **Planmeca ProMax® 3D** unit by simply changing the imaging sensor and uploading software upgrades.

Both units are also available with 3D face scan.

Volume sizes for all needs

	Planmeca ProMax 3D s	Planmeca ProMax 3D	Voxel size, isotropic
Standard volume (child mode)	Ø50 x 80 mm (Ø42 x 68 mm)	Ø80 x 80 mm (Ø68 x 68 mm)	100 µm, 200 µm, 400 µm
	Ø50 x 50 mm (Ø42 x 42 mm)	Ø80 x 50 mm (Ø68 x 42 mm)	
		Ø40 x 80 mm (Ø34 x 68 mm)	
		Ø40 x 50 mm (Ø34 x 42 mm)	
Stitched volume	90 x 60 x 130 mm	140 x 105 x 130 mm	200 µm, 400 µm

Planmeca Romexis® imaging software

Planmeca Romexis® is a comprehensive software for acquiring, viewing and processing 2D and 3D images. Full support for both Windows and Mac OS operating systems provides additional freedom in operating your clinic.

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Supported 2D X-ray modalities	Intraoral
	Panoramic
	Cephalometric
	2D linear tomography
Supported 3D modalities	3D CBCT
	3D photo
	3D surface scan
Supported photo sources	Intraoral camera
	Digital camera or scanner (import or TWAIN capture)
Operating systems	Windows XP
	Windows Vista
	Windows 7
	Windows 2003 Server
	Windows 2008 Server
	Mac OS X*
	For detailed information please see system requirements of Planmeca Romexis www.planmeca.com
	*Planmeca Romexis Cephalometric Analysis module is not supported on Mac OS.
Image formats	JPEG or TIFF (2D image)
	DICOM (2D and 3D image)
	STL (3D image import/export)
	TIFF, JPEG, PNG, BMP (import/export)
Image size	2D X-ray image: 1–9 MB
	3D X-ray image: typically 50 MB–1 GB
DICOM 3.0 support	DICOM Import/Export
	DICOM DIR Media Storage
	DICOM Print SCU
	DICOM Storage SCU
	DICOM Worklist SCU
	DICOM Query/Retrieve
	DICOM Storage Commitment
	DICOM MPPS
Interfaces	TWAIN Client
	PMBridge (patient information and images)
	VDDS (patient information and images)
	InfoCarrier (patient information)
	Datagate (patient and user information)
Installation options	Client–Server
	Java Web Start deployment

Planmeca ProMax®

Generator	Constant potential, resonance mode high frequency 80–150 kHz	
X-ray tube	D-054SB-P	
Focal spot size	0.5 x 0.5 mm (IEC 336)	
Total filtration	min. 2.5 mm Al equivalent	
Anode voltage	50–84 kV	
Anode current	0.5–16 mA DC	
Exposure time	Pan	2.7–16 s
	Ceph	0.2–19 s
	Tomo	3–24 s / frame
SID	Pan	500 mm (19 in.)
	Ceph	163–170 cm (64–67 in.)
Magnification	Pan	constant 1.2
	Ceph	1.08–1.13
CCD pixel size	48 µm	
Image pixel size	48/96/144 µm selectable	
CCD active surface	Pan	6 x 147 mm
	Ceph	6 x 295 mm
Resolution (digital)	Pan	max. 9 lp/mm
	Ceph	max. 5.7 lp/mm
Image field (digital)	Pan	14 x 30 cm (5.5 x 12 in.)
	Ceph	24/27 x 18/30 cm (9/10.6 x 7/11.8 in.)
File size, uncompressed (digital)	Pan	4–33 MB
	Ceph	7–16 MB
Line voltage	100–240 V, 50 or 60 Hz	
Regulation	Automatic, ±10 %	
Line current	8–16 A	
Colour	White (RAL 9016)	

Available features for Planmeca ProMax®

Imaging programs for SCARA3	
Basic panoramic programs	Standard
	Lateral double TMJ
	PA double TMJ
	Sinus
	Horizontal and vertical segmenting for panoramic program
Advanced panoramic programs	Interproximal
	Orthogonal
	Bitewing
	Lateral-PA double TMJ
	Lateral multiangle TMJ
	PA multiangle TMJ
	PA non rotational sinus
	Lateral non rotational sinus
	Horizontal segmenting
Tomography	Digital linear tomography and Transtomography in digital machine
	True linear tomography or Linear tomography in film unit

Imaging programs for SCARA2	
Basic panoramic programs	Standard
	Lateral double TMJ
	PA double TMJ
	Sinus
	Horizontal and vertical segmenting for panoramic program
	Bitewing

Dimensions for Planmeca ProMax® with film-based cephalostat
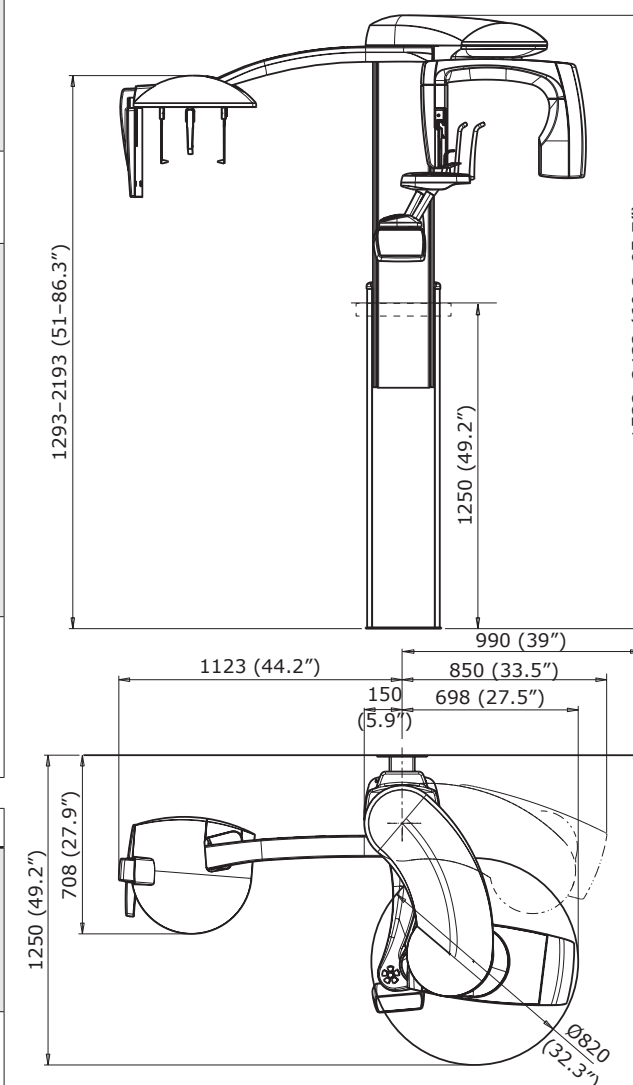
Dimensions for Planmeca ProMax® with digital cephalostat
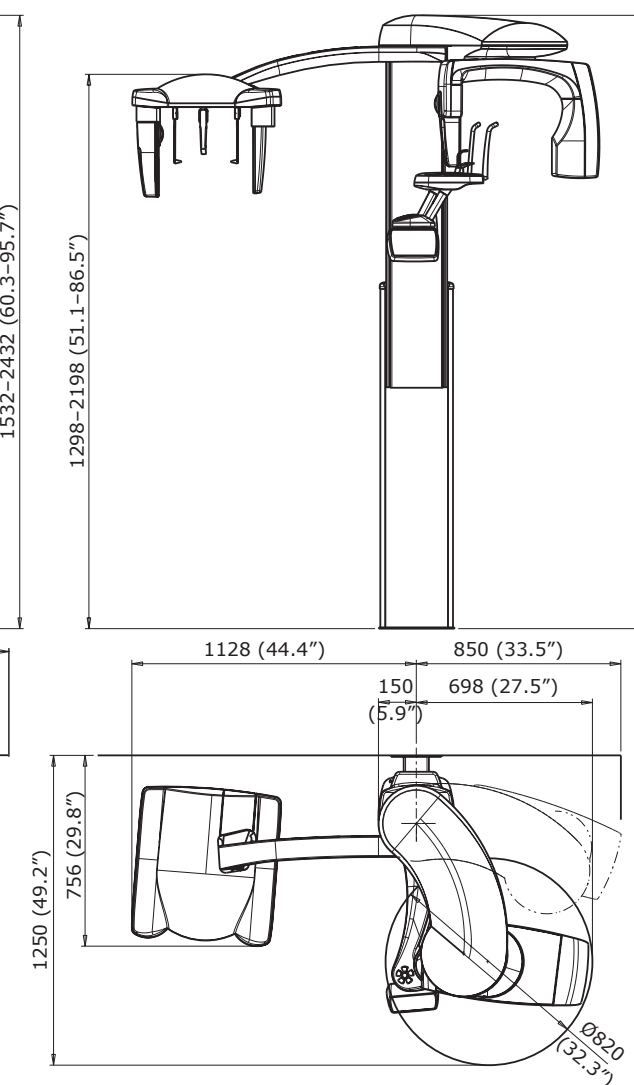
Physical space requirements

	Planmeca ProMax panoramic	Planmeca ProMax panoramic with cephalostat
Width	96 cm (38 in.)	194 cm (76 in.)
Depth	125 cm (49 in.)	125 cm (49 in.)
Height*	153–243 cm (60–96 in.)	153–243 cm (60–96 in.)
Weight	113 kg (lbs 248)	128 kg (lbs 282)

Minimum operational space requirements

	Planmeca ProMax panoramic	Planmeca ProMax panoramic with cephalostat
Width	150 cm (59 in.)	215 cm (85 in.)
Depth	163 cm (64 in.)	163 cm (64 in.)
Height*	243 cm (96 in.)	243 cm (96 in.)

*The maximum height of the unit can be adjusted for offices with limited ceiling space.

Planmeca Oy designs and manufactures a full line of high technology dental equipment, including dental care units, panoramic and intraoral X-ray units, and digital imaging products. Planmeca Oy, the parent company of the Finnish Planmeca Group, is strongly committed to R&D, and is the largest privately held company in the field.

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