Planmeca ProMax 3D concept

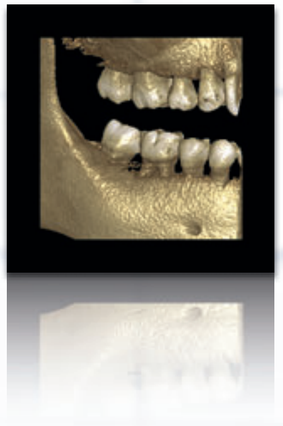
ENGLISH

PLANMECA

Profound understanding of anatomy

Planmeca ProMax 3D concept is an intelligent and multipurpose X-ray unit series designed to obtain complete information on patient anatomy in the minutest detail. The units provide digital panoramic, cephalometric, 3D CBVT imaging, and 3D photo, as well as advanced imaging software tools to comply with every possible need in dental radiology. The Planmeca ProMax 3D concept's models share the same platform but differ in imaging field size. All existing Planmeca ProMax units can be upgraded to a 3D imaging unit by simply changing the imaging sensor.

Perfect field size for all needs

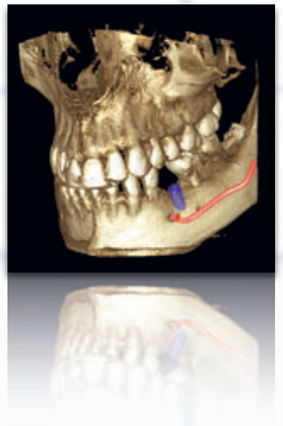


Planmeca ProMax 3D s

Planmeca ProMax 3D s is ideal for imaging with a smaller Field of View. The volume size varies between Ø42 x 42 mm and Ø50 x 80 mm and the image can be taken anywhere within the maxillofacial region. The basic volumes can also be stitched together to generate a larger view.

The imaging size of Planmeca ProMax 3D s is optimal for e.g. single implant and wisdom tooth cases as well as for implant surgery and orthodontic and periodontal treatment.

Thanks to the unique SmartPan system, the 3D sensor adapts perfectly to 2D imaging, including panoramic, TMJ and sinus imaging. In addition, the system maximises the image quality by enabling the most optimal focal layer selection after exposure. The unit can be equipped with a 2D cephalostat.



Planmeca ProMax 3D

Planmeca ProMax 3D is the best solution for routine 3D imaging. The basic volume size, Ø80 x 80 mm, is optimal for most imaging purposes, as it covers the whole dentition area giving a clear view of the maxilla and the mandible.

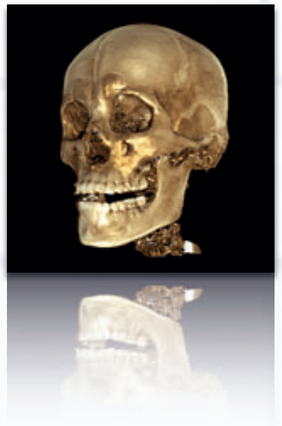
The Field of View can be decreased to cover only one tooth for e.g. implant cases. For larger views, the basic volumes can be stitched together. Planmeca ProMax 3D is the optimum imaging solution for orthodontic and periodontal procedures, as well as for TMJ and sinus studies.

Like Planmeca ProMax 3D s, Planmeca ProMax 3D also uses SmartPan imaging system. With SmartPan both 2D and 3D images can be acquired by the same sensor, which makes changing from one imaging mode to another extremely easy. The unit can be equipped with a 2D cephalostat.

Planmeca ProMax 3D Mid

Planmeca ProMax 3D Mid offers the widest selection of volume sizes, including everything from small size (Ø34 x 42 mm) for single tooth imaging to the maxillofacial image size (Ø160 x 160 mm). An optimal volume size can be found for all applications, e.g. for endodontics requiring high resolution, for implantology requiring images of with a smaller Field of View, and for orthodontics requiring large image sizes. The basic volumes can also be stitched together to generate a larger view of patient anatomy.

Like Planmeca ProMax 3D s, Planmeca ProMax 3D Mid also uses SmartPan imaging system. With SmartPan both 2D and 3D images can be acquired by the same sensor, which makes changing from one imaging mode to another extremely easy. The unit can be equipped with a 2D cephalostat.

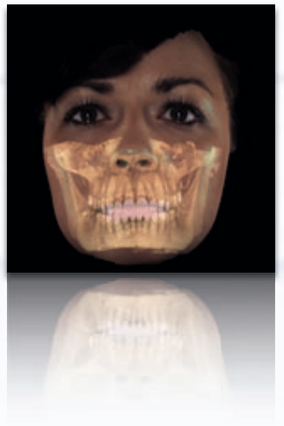


Planmeca ProMax 3D Max

With Planmeca ProMax 3D Max, a dedicated 3D unit, imaging any region of interest is effortless, as the volume sizes include everything from full maxillofacial volume size to a very small volume size intended for single tooth imaging.

The largest volume size Ø230 x 260 mm covers the whole head and is therefore extremely useful for surgical and orthodontic procedures, as well as for TMJ, ear, sinus, and airways studies. From the large volume size, it is also possible to generate a 2D cephalometric image.

However, the imaging area can also be reduced to acquire images of smaller regions of interest. With the smallest imaging size it is possible to zoom into an area of one tooth, whereas the medium volume size is ideal for imaging of the whole maxilla and mandible.



Planmeca ProMax 3D ProFace

Planmeca ProMax 3D ProFace is a Cone Beam Volumetric Tomography (CBVT) imaging device with a unique combination of 3D images: it produces a realistic 3D face photo in addition to traditional maxillofacial 2D and 3D radiography.

The 3D face photo is a result of totally radiation-free process: Lasers scan the facial geometry, and digital cameras capture the colour texture of the face. Planmeca Romexis software then combines the information into a 3D photo which can be analysed as a separate image or as part of a CBVT image. When combined with the patient's CBVT image, the 3D photo is a valuable asset for operation preplanning and treatment follow-up.

Detailed diagnostics with 3D imaging

The Planmeca ProMax 3D concept X-ray units feature a modern flat panel, which produces accurate, distortion-free images for 3D reconstruction. Unlike image intensifier sensors that use old vacuum tube technology and multi-step focusing, flat panels use single step image readouts with no geometric distortion, no loss of sensitivity, and therefore no need for frequent calibration.

Planmeca's proprietary 3D reconstruction algorithm converts the original 2D transillumination images to a 3D volume study, making it the core component for high quality 3D imaging. The algorithm handles high contrast objects, eliminating effectively the artefacts caused by implants, metal fillings or braces.

The reconstructed image volume consists of millions of voxels. These voxels are isotropic, enabling accurate 1:1 measurements and ensuring geometric relations throughout the image. The extremely small voxels produce detailed high-resolution images without artefacts.

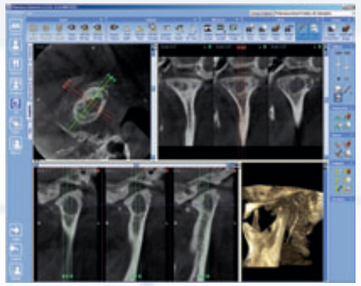
In modern dentistry, the demand for implant surgery is steadily growing, which has created a need for more advanced X-ray imaging systems. To meet the needs of modern surgical dentistry and to supply clear, dependable imaging in a three-dimensional format with limited patient dose, the Planmeca ProMax 3D concept X-ray units utilise Cone Beam Volumetric Tomography (CBVT) technology.

Cone beam scan is ideal for dedicated imaging of the maxillofacial complex as it uses a pyramid-shaped beam to scan the entire region of interest in a single semicircle scan, as opposed to a medical CT that takes multiple axial slices in multiple full circle scans. The volumes are manipulated by computer software into one cylindrical image for viewing. During the scan, each image is generated using a short X-ray pulse instead of continuous radiation. The total scanning time is 18–26 seconds for one volume, but the actual exposure time is only 3 seconds at shortest.

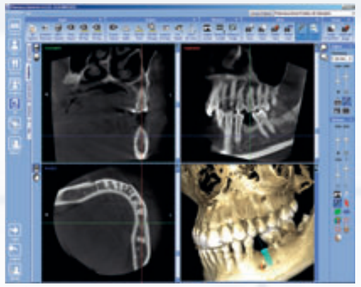
This technology reduces patient radiation dose considerably and forms stroboscopic X-ray effect which, together with the short rotation scan (only 200 degrees in miminum), virtually eliminates artefacts, contributing to outstanding image quality. In addition, effective three-dimensional imaging is possible in every dental practice, thanks to the small footprint of the units. This innovative, versatile, and dynamic imaging concept will open up new possibilities for on-site dentists, saving office space and investment costs.

The unique SCARA technology (Selectively Compliant Articulated Robot Arm) enables free geometry based on image formation. The patented, computer-controlled SCARA robotic arm can produce any movement pattern required, ensuring perfectly accurate and reliable image volume positioning and enabling image volume diameter adjustment. All controls are accessed via a full colour graphical user interface in the language of your choice.

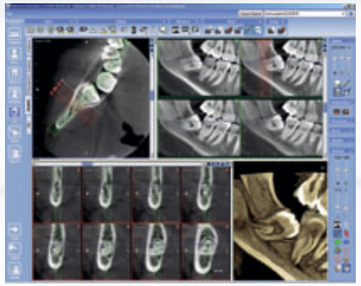
Unequalled imaging programs



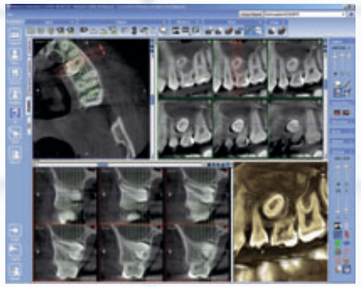
TMJ study
The condyle is displayed sharply. The condition of the temporomandibular joint is clearly visible. Malignant finding can be seen inside the condyle head.



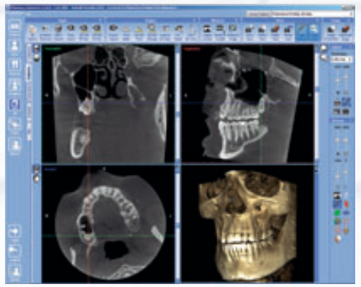
Implant case
The lower first molar on the right is missing. The image clearly shows that there is enough bone to place an implant.



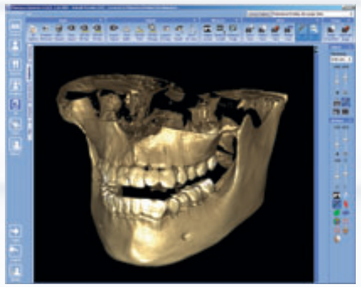
Wisdom tooth extraction



Impacted premolar



Sinus study



Large View image
Three volumes stitched together for a full view.

The Planmeca ProMax 3D concept X-ray units comply with a multitude of diagnostic requirements: those of endodontics, periodontics, orthodontics, implantology, as well as dental and maxillofacial surgery, and TMJ analysis. They are also excellent tools for diagnosing ear, maxillary sinus, and respiratory tract diseases.

The study volume sizes can be selected within the concept to meet diagnostic needs without excess radiation outside the area of interest.

The small volumes can be used for single views of the mandible or maxilla. As the volume size is zoomed to match the small region of interest, the radiation dose remains low. The small volumes are ideal for molar area studies or for planning 3rd molar extractions, for example.

The medium image sizes are ideal for most diagnostic applications that require whole dentition, mandible, and maxilla in the same study volume. The volumes can also be stitched together to generate larger views.

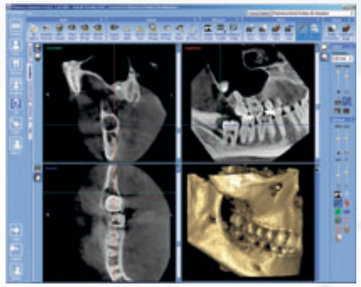
The largest volume sizes are optimal for orthodontics and maxillofacial surgery where information on a larger area is required.

The Planmeca ProMax 3D concept X-ray units produce high-resolution volumetric studies of the mandible and maxilla for analysing the available bone structure, the location of the mandibular canal, and the correct position for the implant. Pre-surgical planning will reach a new level of precision, as the prospective site becomes visible in all three imaging planes: sagittal, axial, and coronal.

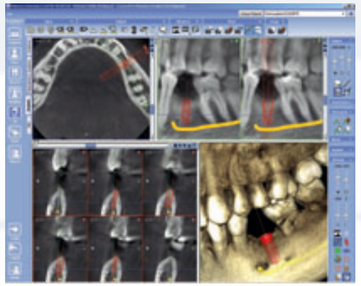
Third molars, maxillary cuspids, supernumerary teeth, and impactions challenge the clinician to identify the tooth's orientation. By using the Planmeca ProMax 3D concept X-ray units, all angles and orientations become clearly visible.

The studies accompanied by digital cephalometric images provide full visualisation of all classes of orthodontic malocclusion. This is highly advantageous for orthodontic planning, as time is saved and patient radiation dose reduced. Unlike traditional orthodontic analyses, the Planmeca ProMax 3D concept X-ray units provide the orthodontist with image data in the correct anatomic 1:1 ratio, with no need to correct for geometric magnification.

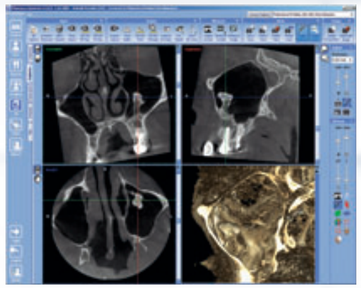
They also provide high-resolution TMJ studies for true and accurate evaluations of the joint arthritis, condylar morphology, and the condyle-fossa relationship.



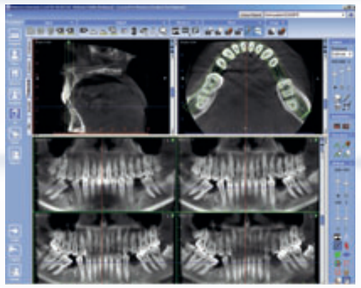
Cyst in right mandible
A large solitary bone cyst is clearly visible in the right mandible.



Planmeca Romexis 3D Implant Planning module



Sinus study
A cyst and inflammation can be found in the left maxillary sinus.



Panoramic view

Planmeca Romexis 3D Explorer, the 3D image acquisition software for Planmeca ProMax 3D concept, enables flexible viewing in all three relevant projections: axial, coronal, and sagittal. The software incorporates a re-slicing feature, which enhances the projections and enables real-time three-dimensional viewing from the desired angle. A rendered 3D view provides a realistic overview of the anatomy.

With the Planmeca Romexis 3D Explorer software, each patient study can be stored on a CD with Planmeca Romexis Viewer for others to view.

The Planmeca Romexis 3D Cross Sections module produces cross-sectional images of anatomy along with the defined panoramic curve. The image number and their exact positions can be freely chosen.

The 3D Cross Sections module also includes reconstructed panoramic view, which creates a panoramic image from the acquired volume of data without the undesired artefacts, commonly visible in normal panoramic images. As the image is reconstructed through software, the user can determine the location and thickness of the focal trough.

The optional Planmeca Romexis 3D Implant Planning module offers superior tools for implant placing and nerve drawing. Implant library containing realistic implant models from a variety of manufacturers greatly assist the treatment planning. The drawing tool allows clear marking of the mandibular nerve.

Planmeca Romexis software supports DICOM standard, which allows 3D studies to be transferred to other implant planning software or any other software that receives images in DICOM format. Studies can also be transferred to PACS or to a high quality DICOM printer in the network. For quick remote diagnostics, all images can be sent to iPhone and iPad with one click. The image data can also be used for ordering Planmeca ProModel, a patient specific physical model that serves as a beneficial tool for preoperative planning of advanced implant, oral and maxillofacial surgeries.

Planmeca Romexis is pure Java based software that runs in modern web environments and supports Windows and Mac OS operating systems: as all Planmeca X-ray units are fully compatible with both systems, the user may acquire, view, process, and store images in the operating system of his choice.

Planmeca Romexis for accurate diagnosis

Planmeca Romexis software

Planmeca Romexis is a complete dental imaging software, including all dental imaging modalities: intraoral, panoramic, cephalometric, 3D imaging, dental tomography as well as intraoral video and still camera imaging. With a complete set of tools for image viewing, enhancement, measurements, and annotations, Planmeca Romexis also improves the diagnostic value of radiographs. Printing, image import and export, and DICOM functionalities are also included.

Planmeca Romexis platform fully integrates digital imaging with the patient's other clinical data. The system provides direct image capture from Planmeca's X-ray equipment, and interfaces with 3rd party devices via TWAIN. Together with Planmeca's X-ray equipment, Planmeca Romexis provides a unique safety feature especially useful for teaching environment: the X-ray image capture is inhibited until the supervisor has approved the student's image capture request.

Planmeca Romexis computer recommendations

	Planmeca Romexis client workstation	**Planmeca Romexis server**
Processor	2 GHz Core Duo or equivalent	3 GHz Core Duo or equivalent
RAM	4 GB	4 GB
Hard disk space	40 GB	2 x 500 GB (RAID1 mirroring)
Graphics card	ATI or NVIDIA, 128 MB minimum memory	Not required
Monitor	1280 x 1024	1024 x 768
Peripherals	CD R/W or DVD R/W drive	CD R/W or DVD R/W drive
Backup medium	None necessary	DAT or equivalent
Operating system	Windows XP (32 bit) Windows Vista (32 or 64) Windows 7 (32 or 64) Mac OS X	Windows XP Pro (32 bit) Windows 2003 (32 or 64) Windows Vista (32 or 64) Windows 7 (32 or 64)
Other	Java platform (Java Virtual Machine 1.6 or later)	Java platform (Java Virtual Machine 1.6 or later)

The disk space requirements are determined by digital images. Thus the space requirements vary, but a rough estimate is in the order of 1 MB per 2D X-ray image, 7–9 MB per extraoral image, depending on a variety of image specific factors, and 250 MB per 3D image.

It is recommended to use the same computer as an application server and as a database server. If Planmeca Romexis server computer is also used for client activities, the hardware should meet both client and server specifications.

These specifications are recommended minimum requirements. Not meeting them may lead to degraded performance.

DICOM compatibility

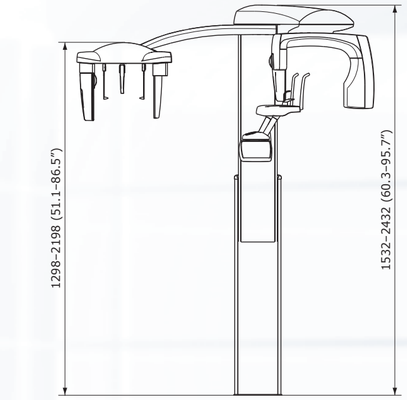
- Media Storage – saving images into removable DICOM media
- Print – printing images on film or paper with a DICOM medical printer
- Storage – saving images into DICOM image archive
- Query/ Retrieve – importing digital images from DICOM image archive
- Worklist – importing a patient list from DICOM patient management
- Storage Commitment – confirmation of a successful image storage

Technical specifications

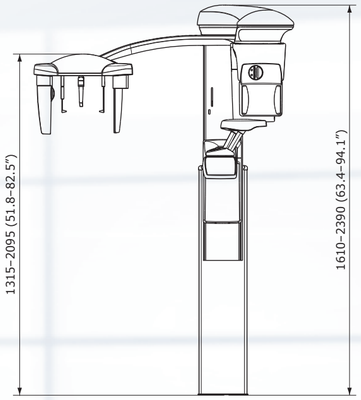
	Planmeca ProMax 3D s	**Planmeca ProMax 3D**	**Planmeca ProMax 3D Mid**	**Planmeca ProMax 3D Max**
X-ray beam	Cone	Cone	Cone	Cone
Focal spot	0.5 mm, fixed anode	0.5 mm, fixed anode	0.5 mm, fixed anode	0.6 mm, fixed anode
Image detector	Amorphous silicon flat panel	Amorphous silicon flat panel with CsI scintillator	Amorphous silicon flat panel with CsI scintillator	Amorphous silicon flat panel with CsI scintillator
Gray scale	15 bit	15 bit	15 bit	15 bit
Detector resolution	630 x 1024 pixels, pixel size 127 µm x 127 µm	1024 x 1024 pixels, pixel size 127 µm x 127 µm	1024 x 1024 pixels, pixel size 127 µm x 127 µm	1516 x 1900 pixels, pixel size 127 µm x 127 µm
Voxel size	100 x 100 x 100 µm, isotropic 200 x 200 x 200 µm, isotropic	100 x 100 x 100 µm, isotropic 200 x 200 x 200 µm, isotropic 400 x 400 x 400 µm, isotropic	100 x 100 x 100 µm, isotropic 200 x 200 x 200 µm, isotropic 400 x 400 x 400 µm, isotropic 600 x 600 x 600 µm, isotropic	100 x 100 x 100 µm, isotropic 200 x 200 x 200 µm, isotropic 400 x 400 x 400 µm, isotropic 600 x 600 x 600 µm, isotropic
Image acquisition	Single 200 degree rotation	Single 200 degree rotation	200 / 360 degree rotation	210 / 360 degree rotation
Total scan time	18 s, pulsed X-ray	18 s, pulsed X-ray	18–26 s, pulsed X-ray	18–26 s, pulsed X-ray
Reconstruction time	15–60 s	30–150 s	30 s at minimum	30 s at minimum
Standard volumes (diam. x height)	Ø50 x 80 mm (child mode Ø42 x 68 mm) Ø50 x 50 mm (child mode Ø42 x 42 mm)	Ø80 x 80 mm (child mode Ø68 x 68 mm) Ø80 x 50 mm (child mode Ø68 x 42 mm) Ø40 x 80 mm (child mode Ø34 x 68 mm) Ø40 x 50 mm (child mode Ø34 x 42 mm)	Ø160 x 90 mm (child mode Ø160 x 90mm) Ø160 x 50 mm (child mode Ø160 x 50 mm) Ø90 x 90 mm (child mode Ø75 x 75 mm) Ø90x 50 mm (child mode Ø75 x 42 mm) Ø70 x 70 mm (child mode Ø60 x 60 mm) Ø70 x 50 mm (child mode Ø60 x 42 mm) Ø40 x 70 mm (child mode Ø34 x 60 mm) Ø40 x 50 mm (child mode Ø34 x 42 mm)	Ø230 x 160 mm (child mode Ø230 x 160 mm) Ø130 x 160 mm (child mode Ø110 x 136 mm) Ø130 x 130 mm (child mode Ø110 x 110 mm) Ø130 x 90 mm (child mode Ø110 x 75 mm) Ø130 x 55 mm (child mode Ø110 x 50 mm) Ø100 x 130 mm (child mode Ø85 x 110 mm) Ø100 x 90 mm (child mode Ø85 x 75 mm) Ø100 x 55 mm (child mode Ø85 x 50 mm) Ø50 x 55 mm (child mode Ø42 x 50 mm)
Stitched volume (diam. x height)	90 x 60 x 130 mm	140 x 105 x 130 mm	Ø160 x 160 mm (child mode Ø160 x 160 mm)	Ø230 x 260 mm (child mode Ø230 x 260 mm)
3D reconstruction server	Proprietary Feldkamp type back projection reconstruction algorithm Improved Artefact Removal (IAR) for high contrast object compensation	Proprietary Feldkamp type back projection reconstruction algorithm Improved Artefact Removal (IAR) for high contrast object compensation	Proprietary Feldkamp type back projection reconstruction algorithm Improved Artefact Removal (IAR) for high contrast object compensation	Proprietary Feldkamp type back projection reconstruction algorithm Improved Artefact Removal (IAR) for high contrast object compensation

Dimensions and space requirements

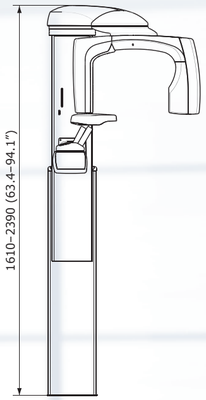
Planmeca ProMax 3D s, Planmeca ProMax 3D

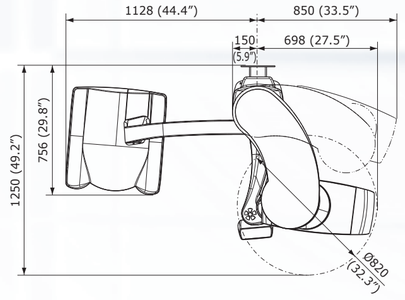


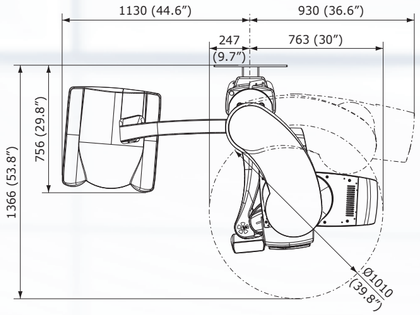
Planmeca ProMax 3D Mid

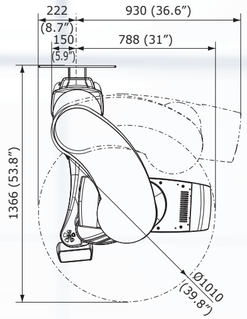


Planmeca ProMax 3D Max







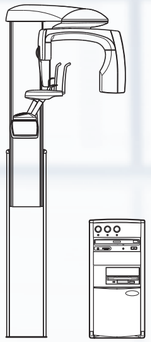


		Planmeca ProMax 3D s, Planmeca ProMax 3D, and Planmeca ProMax 3D ProFace	Planmeca ProMax 3D s, Planmeca ProMax 3D, and Planmeca ProMax 3D ProFace with cephalostat	Planmeca ProMax 3D Mid	Planmeca ProMax 3D Mid with cephalostat	Planmeca ProMax 3D Max
Physical space requirements	Width	96 cm (38 in.)	194 cm (76 in.)	118 cm (47 in.)	206 cm (82 in.)	116 cm (46 in.)
	Depth	125 cm (49 in.)	125 cm (49 in.)	137 cm (54 in.)	137 cm (54 in.)	137 cm (54 in.)
	Height*	153–243 cm (60–96 in.)	153–243 cm (60–96 in.)	161–239 cm (64–94 in.)	161–239 cm (64–94 in.)	161–239 cm (64–94 in.)
Minimum operational space requirements	Width	150 cm (59 in.)	215 cm (85 in.)	158 cm (63 in.)	225 cm (89 in.)	156 cm (62 in.)
	Depth	163 cm (64 in.)	163 cm (64 in.)	175 cm (69 in.)	175 cm (69 in.)	175 cm (69 in.)
	Height*	243 cm (96 in.)	243 cm (96 in.)	239 cm (94 in.)	239 cm (94 in.)	239 cm (94 in.)
	Weight	113 kg (lbs 248)	128 kg (lbs 282)	131 kg (lbs 289)	146 kg (lbs 322)	134 kg (lbs 296)

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

Example installation

Planmeca ProMax 3D with the 3D reconstruction server (included in delivery)



Minimum set up:

Client workstation and database server

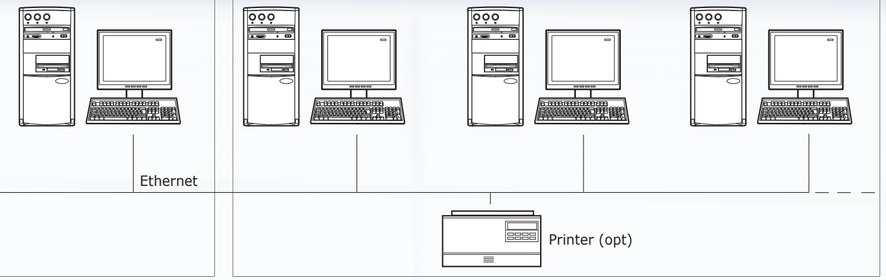
- Planmeca Romexis 3D Explorer (std)
- Database server (std)
- Planmeca Romexis Image Database (std)

The client workstation and database server can also be in separate computers.

Additional diagnostic workstations with different software configurations

- Planmeca Romexis 3D Explorer (opt)
- Planmeca Romexis 3D Cross Sections module (opt)
- Planmeca Romexis 3D TMJ module (opt)
- Planmeca Romexis 3D Implant Planning module (opt)
- Planmeca Romexis DICOM module (opt)

Please see Planmeca Romexis computer recommendations.



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