



# *rotograph prime*

## Digital Panoramic X- Ray unit

### Product Data

#### Standard examination programs

- **Standard panoramic:** adult/child panoramic exam
- **TMJ open/close mouth:** 4 slices are taken in the same image (left/right condyle, open/close mouth). Condyles are examined in lateral projection
- **Maxillary Sinus P-A:** one P-A projection, where both the maxillary sinuses are represented.

In every program the compensation of spinal column is obtained by means of parameters modulation, optimized in function of the anatomic program.

#### Optional examinations package “Panoramic XP – eXtended Programs”

- **Half-panoramic:** panoramic acquired only on the right or left side of the mouth.
- **Improved orthogonality dentition:** panoramic projection limited to the dentition, obtained with X-ray beam constantly perpendicular to the arch. It allows to reduce superimposition of adjacent teeth and to improve visualization of possible interproximal caries.
- **Frontal dentition:** panoramic limited to the frontal dentition (canine to canine), that allows to improve the detail definition on incisors.
- **Low dose panoramic:** panoramic with reduced angle of rotation to exclude the ascending ramus from the image. The result is a panoramic limited to the dentition area using a reduced patient dose.
- **Bite-wing (right, left, double):** the right or left projection allows the examination of lateral dentition (from eighth to fourth approximately), with optimized trajectory of rotating arm for a higher orthogonality of the x-ray beam on the adjacent teeth, to improve visualization of possible interproximal caries. Double Bite-wing projection performs both Bite-wing views in sequence, joining them on the same image.



## Image magnification

Image magnification	Geometric magnification (*)	Magnification after software correction (**)
Adult / Child standard Panoramic	1 : 1.23 (constant over dentition part)	1 : 1
TMJ open/closed mouth, 4 images	1 : 1.20 (nominal)	1 : 1
Sinus	1 : 1.22 (nominal)	1 : 1

**(\*) Note:** the magnification factor is calculated in the centre of the focal layer, which is based on a shape of the mouth-ascending ramus complex, as defined in international literature.

**(\*\*) Note:** The declared image magnification value for digital images depends on the calibration of the specific SW used and is therefore valid after proper software calibration.

## Patient positioning

Patient positioning is assured through multiple references:

- 2 temple clamps
- 5 types of positioning supports are included: standard with bite stick, reduced height with bite stick, for edentulous patients, for ATM and for Sinuses.
- Two laser pointers allow to locate the reference planes: mid-sagittal, Frankfurt
- Selection of dentition morphology through dedicated function on the virtual keyboard, without patient repositioning
- Pair of patient handles, covered with a special antibacterial paint that prevents the development of microorganisms thanks to the emission of silver ions

## Anatomic programs

- Patient type: 2 choices: adult, child
- Patient size: 3 choices: small, medium, large
- Arch shape: 3 choices: retracted, standard, protruded



## Tube-head features

Inverter frequency	90 kHz typical
kV range	60 ÷ 70 kVp, 2 kV step
kV accuracy	± 8 %
mA range	2 ÷ 7.1 mA, according to R20 scale
mA accuracy	± 10 %
Nominal power	497 W (70 kVp - 7.1 mA)
Duty cycle	1:16
Total filtration	2 mm Al eq. @ 70 kVp
HVL (Half value layer)	> 2.5 mm Al eq. @ 70 kVp
Transformer insulation	Oil bath
Cooling	By convection
Leakage radiation at 1 m	< 0.5 mGy/h @ 70 kVp - 7.1 mA - 3 s duty cycle 1/16
Tube-head maximum thermal capacity	310 kJ (413 kHU)
X-ray shielding	Lead free

## X-ray Tube

Model	D-058
Focal spot size	0.5 mm (EN 60336)
Inherent filtration	1.0 mmAl eq.
Anode angle	12.5°
Anode material	Tungsten
Nominal maximum voltage	70 kVp
Filament max. current	3 A
Filament max. voltage	3.6 V
Anode thermal capacity	13 kJ (17 kHU)
Maximum anode heat dissipation	300 W

## Exposure times

### Standard programs

Panoramic	14.4 s adult / 13.3 s child
TMJ Open/Close mouth	4 x 2.44 s (total 9.7 s)
Maxillary sinus P-A	9.4 s

### Examinations package "Panoramic XP - eXtended Programs"

Hemipanoramic	7.8 s adult / 7.3 s child
Improved orthogonality dentition	11.9 s adult / child
Frontal dentition	4.4 s adult / child
Low dose panoramic	11.9 s adult / 10.8 s child
Bite-wing	3.2 s right / left 6.3 s right and left



## Accessories

- Standard chin support with bite stick (standard)
- Reduced height chin support with bite stick (standard)
- Chin support for edentulous patients (standard)
- Reduced height support for Sinus (standard)
- Specific support for TMJ analyses (standard)
- 10 bites (standard)
- X-ray push button with extensible cable (standard)
- Disposable bite protective sleeves (optional)

## Onboard user interface



### LEGEND:

1 - 2: Height adjustment of panoramic unit – Up / Down pushbuttons

3: Laser centring device – On / Off pushbuttons

4: Light signalling “Ready for X-rays” / “Cooling down” / “Axis reset” (green led)

5: Light signalling “X-rays in progress” (yellow led)

6: Light signalling the computer connection status or error status (blue led)

7: “Centring” / “Patient entry” Pushbutton for:

> Positioning the rotating arm to the initial position to start the exam

> Repositioning of the rotating arm to the patient entrance position at the end of the exposure

8: Knob for manual opening/closing of the temple clamps



## Virtual control panel



### LEGEND:

- 1: Exam selection on two different levels: exam family, exam type
- 2: Exam information: selected exam, exposure time, DAP value, exposure parameters
- 3: Patient selection: Adult / Child
- 4: Patient size selection: Small / Medium / Large
- 5: Dentition morphology selection: Retracted / Standard / Protruded
- 6: mA selection
- 7: kV selection
- 8: Function not in use
- 9: "Test mode" selection
- 10: Service menu selection
- 11: Unit status
- 12: Service messages bar



## Panoramic image sensor

- Technology: CCD sensor with Cesium Iodide (CsI) scintillator screen
- Sensor size: 146 x 6 mm
- Pixel size: 48  $\mu\text{m}$  (96  $\mu\text{m}$  in 2x2 binning mode)
- Image matrix: 1536 x 2805 pixels in 2x2 binning mode (standard panoramic)
- Sensor resolution: 10.4 lp/mm maximum theoretical  
5.2 lp/mm with CTF 60% real (in 2x2 binning modality)
- Grey levels: 4096 (12 bits) in acquisition (A/D converter)
- Max useful image size: equivalent to a 15x30 cm film

## Image acquisition

Rotograph Prime requires a Ethernet connection to the PC in order to acquire the digital images.

## Software QuickVision

Rotograph Prime is equipped with QuickVision software for image acquisition, storage and processing (see dedicated product data for specific details).

## Software DAP meter (Dose–Area product)

Irradiated dose is estimated by software according to the exam exposure factors.

Reading accuracy:  $\pm 20\%$

DAP value is displayed on the virtual control panel for each selected examination program.



## Mechanical features

- Source to image distance: 500 mm (19,7")
- Vertical column movement: 660 mm (33,5"), motorized telescopic movement
- Weight: 62 kg (136,6 lb) complete unit, wall mounted version
- Total height max: 2180 mm (85,8")
- Room size: minimum 1200 x 1150 mm (47,2" x 45,3")  
recommended 1600 x 1500 mm (63" x 59")
- Type of installation: wall mounted

## Electrical features

- Power supply voltage: 220-240 V / 110-120 V ( $\pm 10\%$ ) single phase
- Frequency: 50/60 Hz
- Maximum line current: 3,5 A @ 230 V / 7 A @ 115 V
- Power consumption: 0,8 kVA @ 230 V / 0,8 kVA @ 115 V
- Line apparent resistance: 0,5  $\Omega$

## Environmental features

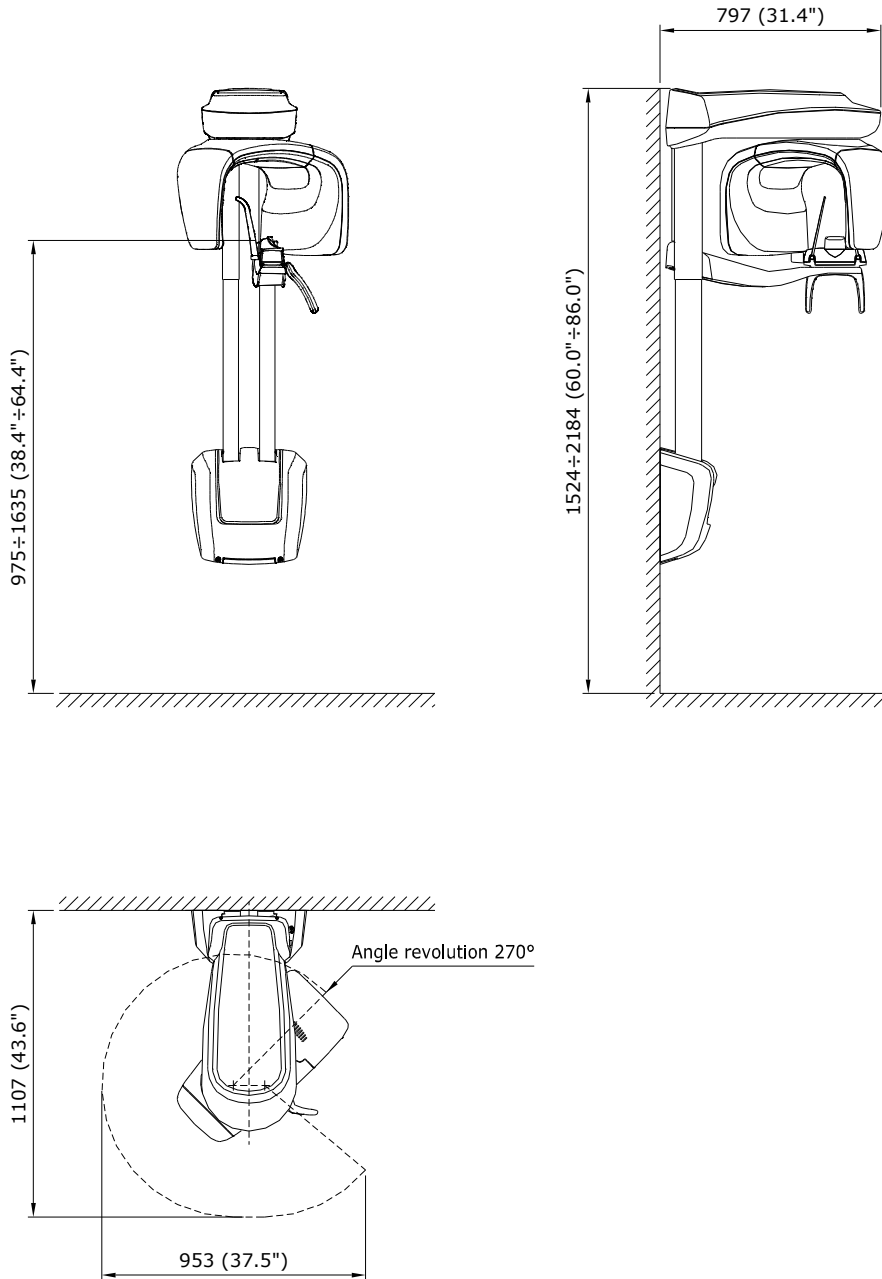
Operating temperature	+10°C ÷ +40°C
Operating relative humidity	30% ÷ 75%
Operating atmospheric pressure	630 hPa
Transport and storage temperature	-20°C ÷ +70°C
Transport and storage relative humidity	< 95 % non condensing
Transport and storage atmospheric pressure	630 hPa

## Standards and Regulations

 0051	CE symbol grants the product compliance to the European Directive for Medical Devices 93/42/EEC and its revised versions as a class IIB device
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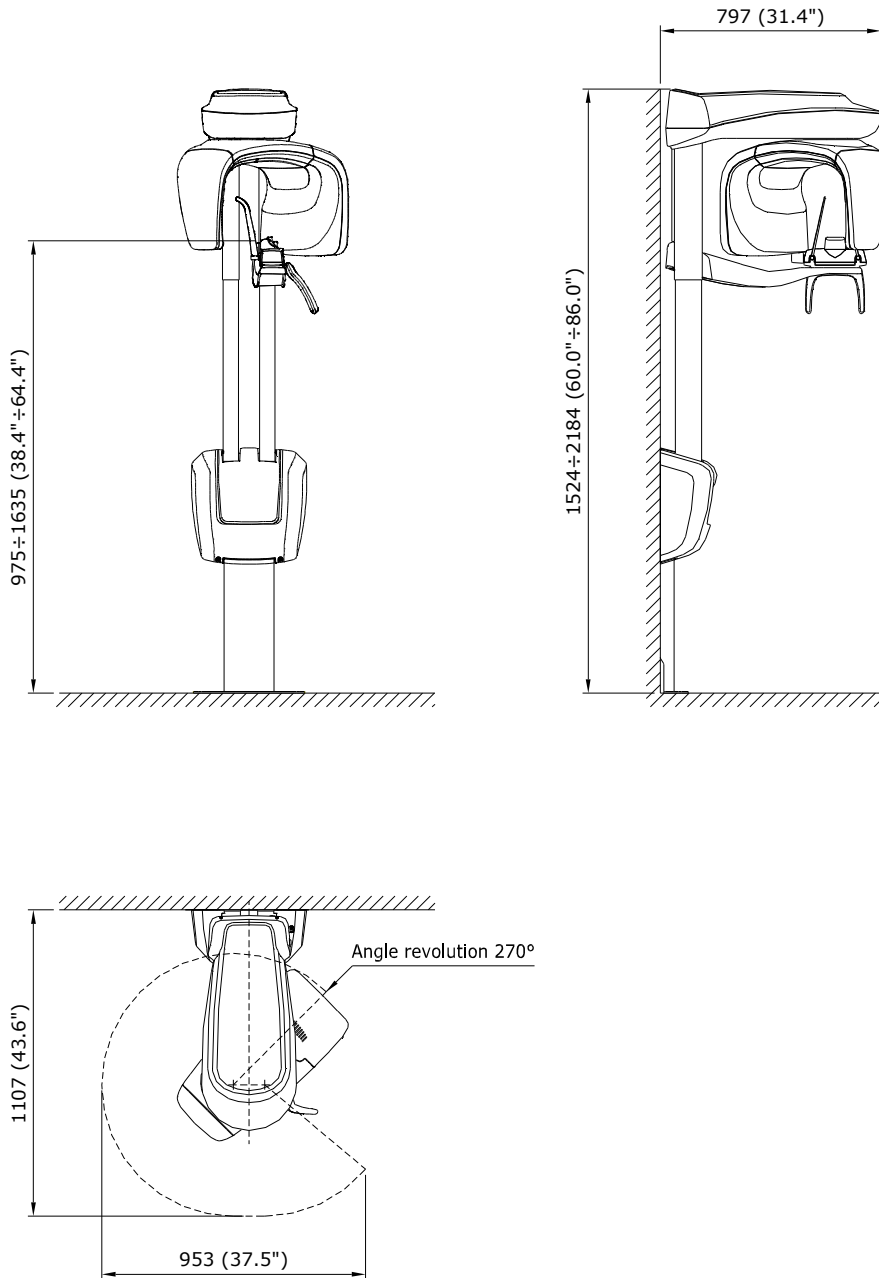
Dimensions – wall mounted version (all quotes in mm and inches)







**Dimensions – wall mounted with support version (all quotes in mm and inches)**



**Note:** Products are continuously under review in the light of technical advancement. The actual specification may therefore be subject to improvement or modification without notice.

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Company with Quality System certified by



ISO 9001:2008

EN ISO 13485: 2012