



## X RADIUS TRIO PLUS

EVERY DIAGNOSTIC DIMENSION

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### **PLANT**

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According to the relevant regulations, in the extra-EU areas, some products and/or characteristics might have different availability and specifications. Please contact your local supplier. All images are for illustrative purposes only.

08/2018 CXRTPGBI81S00



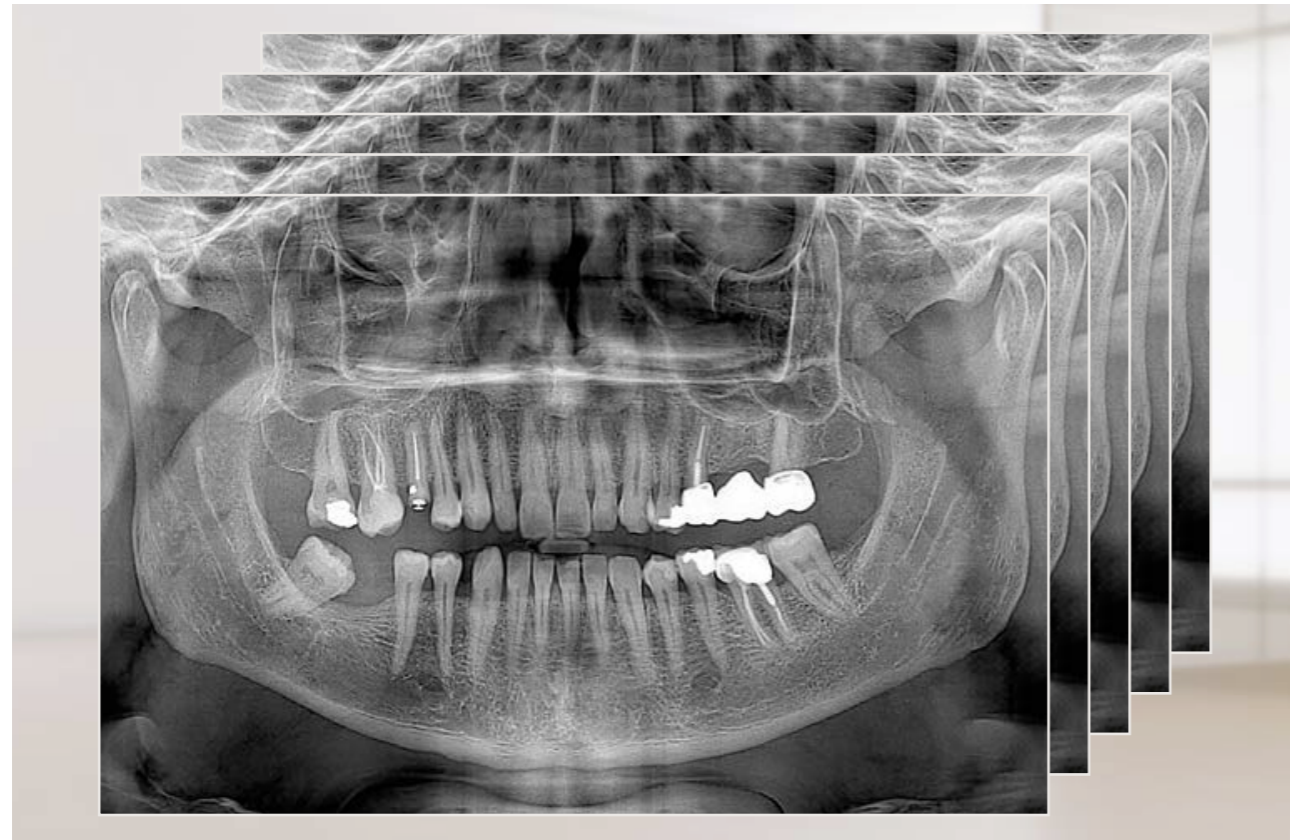
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# PERFECT COMBINATION FOR ALL DIAGNOSTIC NEEDS

X-Radius Trio Plus represents the latest in 2D and 3D imaging technologies combined with ease of use across a vast range of applications. As a modular solution, the device enables countless upgrade opportunities and includes user-friendly software developed together with university specialists and radiologists. Ensuring state-of-the-art clinical performance and superb image quality, X-Radius Trio Plus is also conceived to safeguard patient health by minimising radiation exposure in all possible ways.



# CLINICAL EXCELLENCE



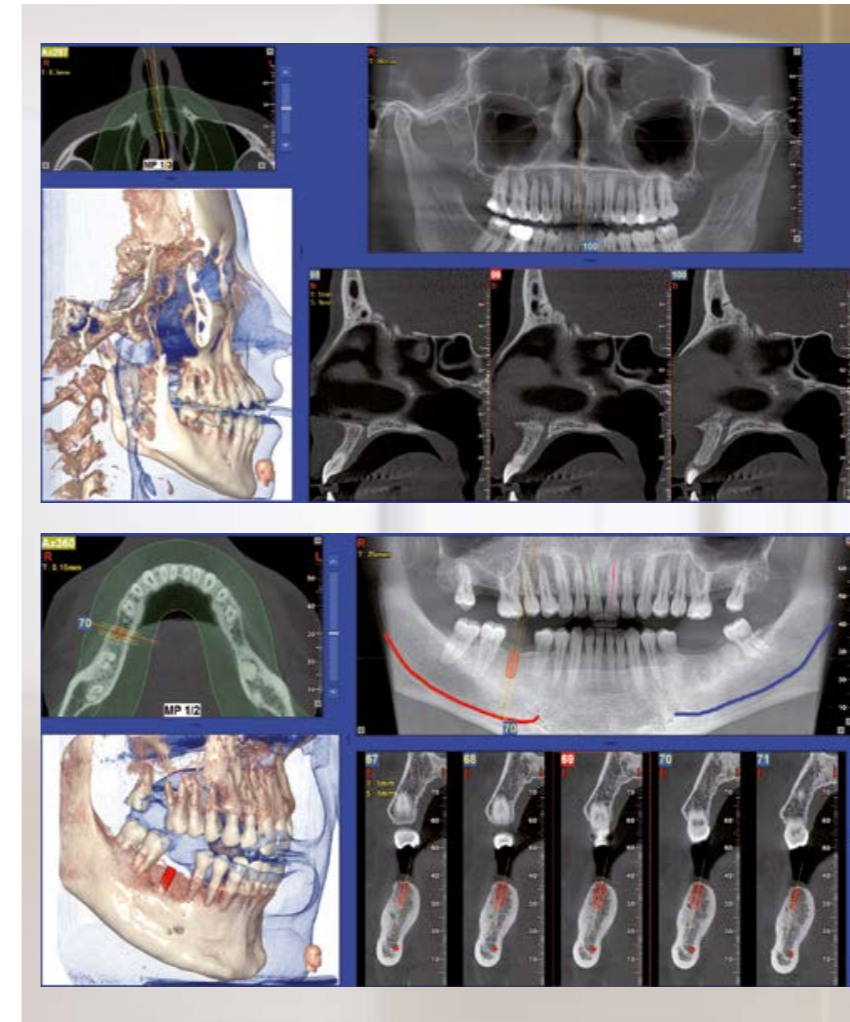
## PREMIUM QUALITY PAN AND CEPH EXAMS

2D radiology is taken to new levels thanks to the highly sensitive CMOS Csl sensor, which can be switched from its initial position to complete the teleradiographic set-up for CEPH exams. Castellini's advanced hybrid radiographic platform includes protocols for adults and children. It is designed to cover all 2D diagnostic requirements, from standard dentition to panoramic images with excellent orthogonality, high-resolution bitewing images and views of temporomandibular joints and maxillary sinuses.

Highly detailed, precise images are achieved thanks to special filters. Panoramic X-rays are optimised through the use of PLUS image-enhancement filters ensuring critical detail of anatomical areas are improved, in particular the front roots. The MULTILAYER function provides a set of five images from a single scan allowing dentists to select the one best suited to their diagnostic needs.



Providing a full range of 2D and 3D examination possibilities and supported by application-specific software functions to optimise diagnostic results, X-Radius Trio Plus is a hybrid system using CBCT technology for volumetric scans and high-performance filters ensuring the best clinical 2D radiography available today. As a modular platform, the initial configuration can be upgraded in several ways to cover all future needs of the surgery. X-Radius Trio Plus has been designed to facilitate such upgrades, optimising the investment and minimising the downtime for each upgrade.

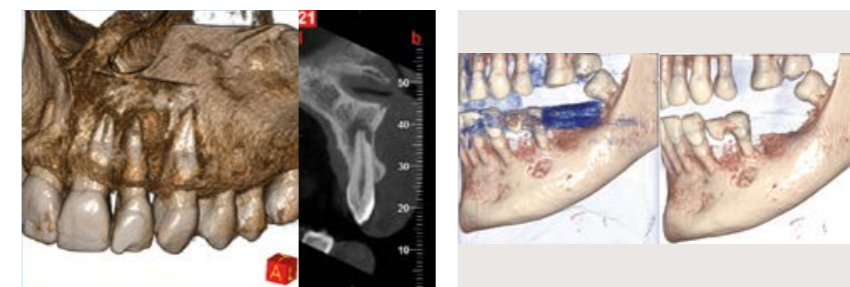


## 3D COMFORT

Complete dental applications and ENT requirements are adequately catered for in this advanced configuration. Large 3D volumes using a 13 x 16 cm FOV cover all aspects of dentition, maxillary sinuses and airways. Maximum precision is ensured and details regarding micro-fractures, bone height, root shape and tilt are highlighted.

## 3D EASY

With a 10 x 8 cm FOV, the standard configuration allows dentists to acquire volumetric data for both dental arches, including adult wisdom teeth, by means of a single scan. Perfect for implant assessments, endodontics and orthodontics, finely defined 3D volumes will provide valuable, comprehensive data for subsequent treatment.



## 3D EXTREME FUNCTIONS

Superb image quality and considerable reduction of the radiated area is possible with the eXtreme Functions of the XF Pack. FOV 4 x 4 cm in low dose scans or ultra-high-resolution 68 µm provide exceptionally high quality diagnostic images to help especially in endodontics applications, revealing any secondary canals.

## 3D MAR FILTERS

Metal Artifact Reduction filters will significantly reduce artifacts caused by amalgam or implants that would otherwise compromise planning of specialist treatments requiring segmentation of anatomical structures.

# ADVANCED FEATURES FOR COMPLETE 2D NEEDS



## AUTOMATIC EXPOSURE CONTROL

Correct parameters are ensured thanks to patented exposure control mechanism built into X-Radius Trio Plus. Patient morphology is assessed prior to exposure, so that X-ray dosage is calibrated according to the actual physical characteristics and build of the person being examined. This results in suitable clinical images and avoids unnecessary exposure.

Enabling excellent orthogonality and constant magnification in all projections, the synchronised rotary and translatory movements together achieve high-quality diagnostic images by following the focal trough which closely adapts to the patient's anatomy.



Versatile and with a software suite designed to enable simple and immediate access to a host of 2D applications, X-Radius Trio Plus offers the broadest range of diagnostic protocols for adults and children. Each programme is refined to minimise exposure based on the actual needs. Complete panoramic images, high-resolution images of dentition and bitewing, as well as TMJ views and those of the maxillary sinuses are possible. Fractures, bone irregularities, unerupted teeth, braces, implants and prostheses can be examined in great detail.



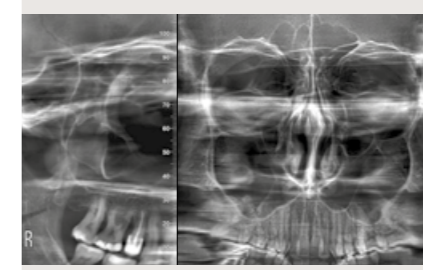
## PERIODONTAL PROCEDURES (ORTHO PAN)

Panoramic X-ray with high-quality orthogonality and constant magnification to perform complete analyses without compromise.



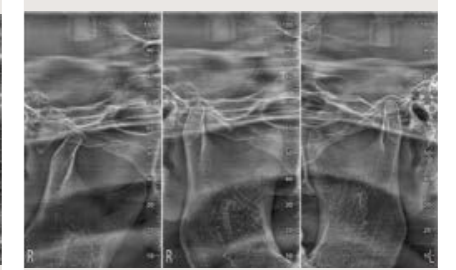
## PAEDIATRIC DENTISTRY (CHILD PAN)

Complete analysis with limited exposure area and fast or partial scanning with minimum dose.



## PARANASAL SINUSES (SIN)

Maxillary sinuses imaging with frontal and side views for pathology detection.



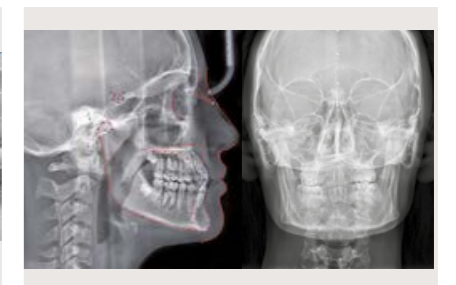
## GNATHOLOGY (TMJ)

Examination of the temporomandibular joint with open and closed mouth, frontal and side views.



## CONSERVATIVE DENTISTRY (DENT & BITEWING)

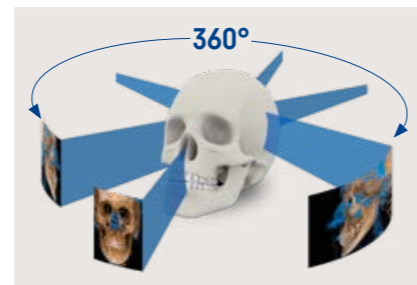
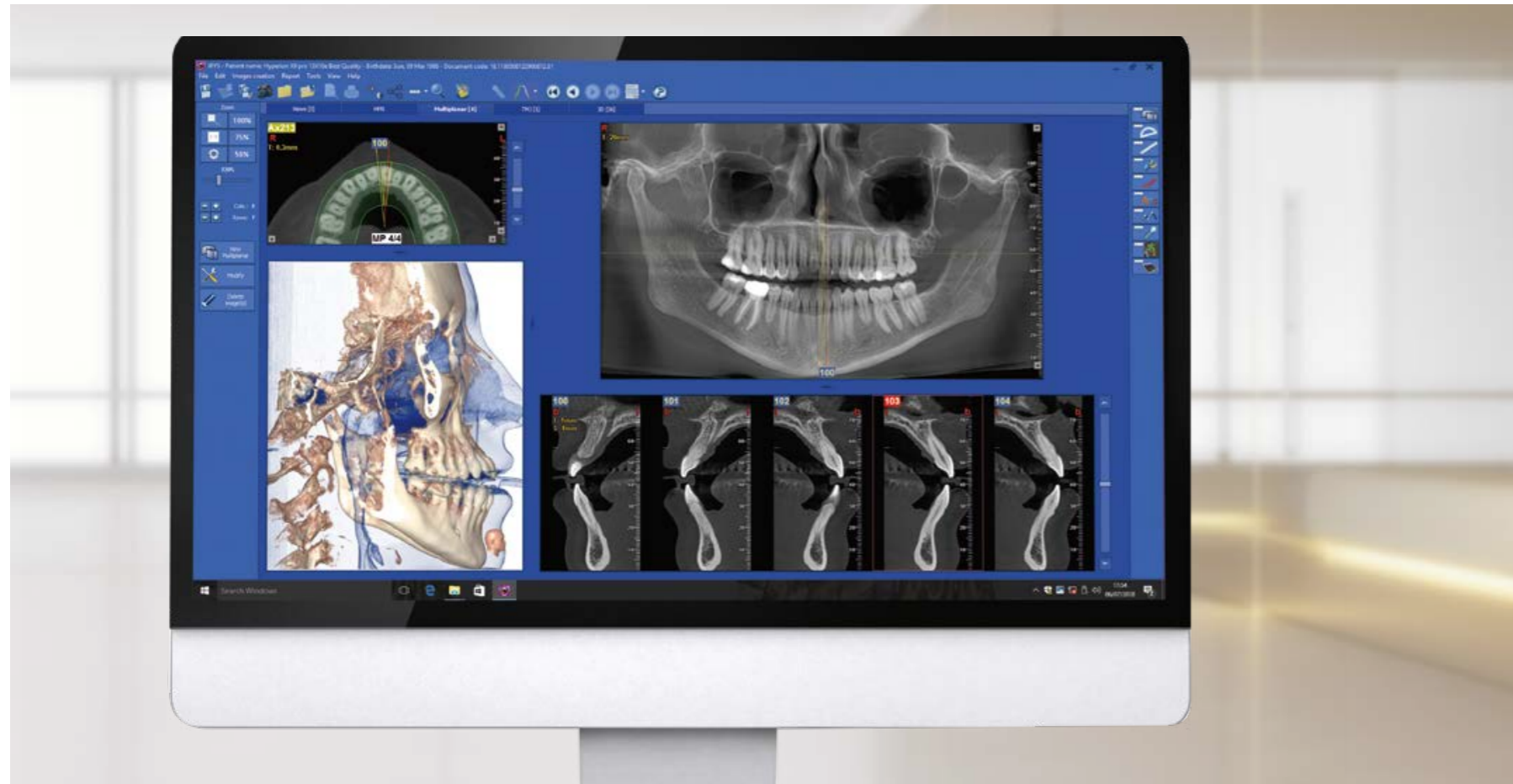
High-resolution examination of partial dentition with optimised interproximal view.



## ORTHODONTICS (TELERADIOGRAPHY)

Analysis of complete frontal AP/PA or side views for cephalometric examinations, as well as automatic Ceph-X tracing.

# ULTIMATE 3D DIAGNOSTIC POTENTIAL



## LATEST GENERATION SCANNING TECHNOLOGY

Built to cover the vast majority of volumetric scans, X-Radius Trio Plus can easily be upgraded to provide the best 3D diagnostic imaging data using a selection of standard FOV sizes which go from 6 x 6 cm to 13 x 8 cm. A 4 x 4 cm FOV is also available with the optional XF Pack. Supported by specific software programmes, dentists will obtain comprehensive clinical data for all dentistry applications such as implant planning simulation with volume and bone density evaluation and those for otorhinolaryngology with a dedicated software mode.

Integrated, fast 360° scanning technology together with pre-established algorithms consistently ensure excellent examination outcome. This acquisition method reduces artifacts and yields high-quality images.

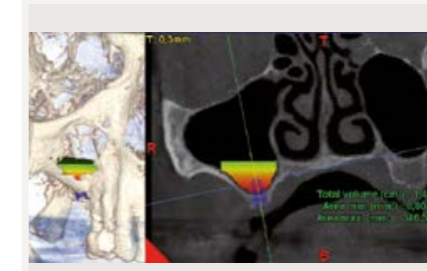
Together with a wide choice of dynamic FOV dimensions and dedicated examination protocols, X-Radius Trio Plus ensures high-resolution volumetric images for diagnostic purposes. Thanks to specialist functions, it provides dental professionals with a new level of clinical workflow, enabling analyses of areas up to and including the zygomatic maxillary region and complete airways.

## 3D EASY



### IMPLANTOLOGY PROJECT (FOV 10X8)

High-resolution (75 µm) analysis of the whole dentition on two dental arches to be used to plan implants, also in guided surgery.



### SINUS-LIFT SIMULATION (FOV 8X8)

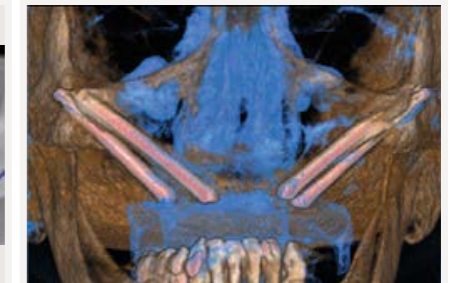
Upper dental arch analysis, including the maxillary sinuses, to correctly plan a sinus lift for implant surgery.



### ENDODONTIC ANALYSIS (FOV 6X6)

Localised high-definition (75 µm) analysis with exposure limited only to the area of interest.

## 3D COMFORT



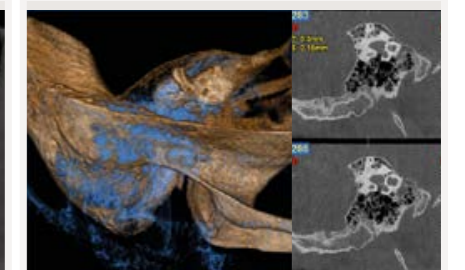
### FOLLOW-UP OF ZYGOMATIC IMPLANTS (FOV 13X8)

Low-dose post-operative analysis of zygomatic implants to assess the current state of the patient's treatment.



### ORTHODONTIC TREATMENT (FOV 10X10)

Analysis of the whole dentition, including the third molars, to provide a correct treatment assessment also with impacted or supernumerary teeth.



### EAR ANALYSIS (FOV 7X6)

eXtreme Functions up to 68 µm resolution for better evaluation of small inner ear structures.

# ETHICAL TECHNOLOGIES

While providing the greatest diagnostic accuracy thanks to unrivalled image quality, Castellini also ensures that aspects regarding patient health and safety are a constant priority. First of all, patient comfort is achieved with efficient positioning procedures and extremely short scan times, avoiding both physical discomfort and unnecessary exposure to radiation in respect of the ALARA principle. Accurate positioning conducted face-to-face, as well as SCOUT VIEWS also ensure first-time satisfactory images and no need to repeat acquisition. Low dosage, variable scan-specific collimation, pulsed emissions and high-speed scans all contribute to safeguarding patient health.



**LOW DOSE**  
**2D 6 s**

**SPEED SCAN**

**LOW DOSE**  
**3D 3,4 s - 6 s**



**SIMPLE DENTITION**  
The exposure area can be adjusted according to the actual X-ray imaging needs for adults or children to include the whole or partial dentition, also dividing it into Bitewing quadrants or sectors.



**SMART CEPH**  
Selection of the exposure area according to the real needs, thanks to the smart collimation system on the rotating arch, which optimises imaging without getting in the patient's way.



**DYNAMIC 3D FOV**  
The dynamic FOV selection makes it possible to limit the exposure only to the area of interest and perform dedicated analyses for various applications, both for adults and children.

# SUPERIOR PRACTICALITY

Operators will appreciate a host of practical solutions that Castellini has integrated into X-Radius Trio Plus. Starting from the entirely modular concept which enables any configuration with countless upgrade opportunities optimising initial investment and leaving doors open to future professional growth. Available with one, two or three sensors, dentists can select the version best suited to their existing needs.



## ULTIMATE FLEXIBILITY

Dentists can initially opt for the basic PAN version, with or without the CEPH arm. PAN together with one of two 3D configurations, based on FOV dimensions, is possible as well as a 3-in-1 solution including PAN, CEPH and 3D. XF Pack as an optional upgrade provides additional functions for more specific 3D applications. Exposure parameters are selected automatically and workflow is simplified by a series of guided procedures.

A dedicated 2D (PAN/CEPH) sensor and a wide 3D detector are fitted side-by-side. Once the examination protocol is selected on the console, the rotating sensor unit positions itself according to the sensor required. When not in use, this unit regains the position to make the equipment as compact as possible.



## RELOCATABLE SENSOR

Fitted with the teleradiographic arm, a second 2D sensor is available, whereas the equipment is usually supplied with a single sensor which can be switched from

PAN to CEPH position. Manually released in all positions, switching the sensor can be performed quickly and safely.

## KEYPAD

The control unit features a handy keypad incorporating the position reset button, up-down keys for column height and chin support adjustments and two keys to achieve TMJ centring or servo-assisted 2D (PAN/DENT), pre-scan focusing.

# EFFICIENT WORKFLOW

Obtaining the correct diagnosis is key to any treatment, obtaining it with the support of technologies designed to facilitate the entire procedure is the best approach to combine efficiency with a prompt return on investment. Operators are guided at all times in selecting the best-suited investigation protocols. The touchscreen console is intuitive and lets users quickly identify the appropriate mode, speeding up workflow in the surgery.



## TAKE CONTROL FOR OPTIMAL RESULTS

Dentists can select the virtual console of their choice; on-board as a 10" touchscreen panel with attractive graphics or on a PC or iPad. Dentists are free to use all three platforms simultaneously, obtaining 2D previews only on iPad and complete volumetric data via PC with the embedded Castellini software. The multiple platform console enables access to all device features and the guided procedure entails exam selection and FOV positioning. Favourites can be personalised to access the programmes most frequently used in the surgery.



Smart alignment for correct positioning prior to 3D scans and two Scout View images make sure no time is wasted in obtaining volumetric data exactly according to needs.

## LOW DOSE



## SPEED SCAN

Routine or post-surgical follow-up exams can be handled with low dosage scans, also suited to macro-structural analyses.

## REGULAR



## STANDARD SCAN

High-resolution 3D images obtained with standard scans are ideal for initial diagnosis and treatment planning.

## BEST QUALITY



## ULTRA SCAN

Top-quality, ultra-high-resolution scan mode for the most detailed, comprehensive volumetric data, especially for microstructures.



# PERFECT PATIENT POSITIONING

Relaxed patients will always improve efficiency and workflow, so Castellini provides dentists with every means to involve patients in a smooth procedure, which leads to less time immobilised during the examination. The greater the degree of collaboration obtained, the better the results of the diagnosis and subsequently the treatment outcome.



## ACCURACY STARTS WITH THE RIGHT POSITION

Patients are made to feel at ease with a face-to-face procedure during pre-scan set-up. Guided by an effective alignment system with 4 laser beams, patient positioning is both fast and precise, and an ergonomic head support using 7 stabilising points ensures the correct position is maintained throughout the scan procedure.

Precise instructions are provided on the on-board control panel to make the procedure easier and faster, matching positioning to the selected protocol.



## COMPLETE CEPH CAPABILITY

Available with left-hand or right-hand side configuration, the CEPH unit is fitted with a positioning device to assist both adult patients and children. Full ceph projections are made with reduced thyroid exposure and a skullcap is included for children.



## CARPUS POSITIONING

A Plexiglas panel representing the carpus helps speed up image acquisition to assess residual growth.



## CEPH ARM KEYPAD

Featured on the teleradiographic arm, a convenient keypad is available to adjust column height as part of the positioning procedure for CEPH exams. The keypad can be switched according to which side the CEPH arm is configured on.

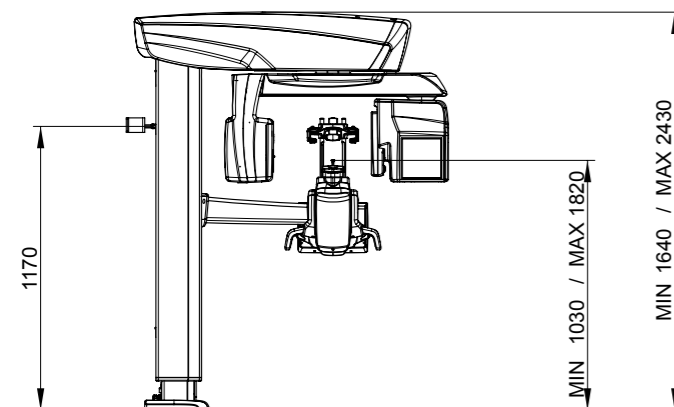
# TECHNICAL SPECIFICATIONS

DIMENSIONS	PAN AND CB3D	WITH TELERADIOGRAPHIC ARM
Minimum available work space requirement (L x D)	1390 x 1140 mm	1390 x 1800 mm
Package dimensions (HxLxD)	1515 x 1750 x 670 mm (basic machine); 360 x 530 x 1030 mm (telerradiographic arm)	
2-speed motorized column, adjustable height	1660 - 2450 mm	
Weight	155 Kg - 342 lbs	175 Kg - 386 lbs
Notes	Wall or floor support, free standing base available. Accessible for patients on wheelchair	

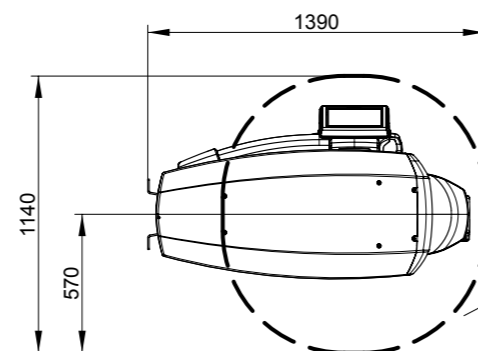
POWER SUPPLY	AUTOMATIC ADAPTATION OF VOLTAGE AND FREQUENCY
Voltage   Frequency	115 - 240 Vac, ± 10% single phase   50 / 60 Hz ± 2 Hz
Maximum current temporary peak absorption	20A at 115V, 12A at 240V
Current absorption in standby mode	25 Watt

CONNECTIVITY	
Connections	LAN / Ethernet
Software	Castellini iRYS and App iPad
Supported protocols	DICOM 3.0, TWAIN, VDDS
DICOM nodes	IHE- compliant (Print; Storage Commitment; WorkList MPPS; Query Retrieve)

dimensions in millimetres (dimensions in inches)



X RADIUS TRIO PLUS



EVERY DIAGNOSTIC DIMENSION

3D IMAGES	FOV EASY VERSION	FOV COMFORT VERSION
Detector technology	Amorphous silicon - CsI with direct deposition	
Dynamic range	16 bit (65,535 grey levels)	
Typical scan time	14.4 s	
Rotation	360°/180°	
Image voxel size	Minimum 75 µm	Minimo 68 µm
Available FOV sizes (Øxh)	6x6 - 8x6 - 8x8 - 10x6 - <b>10x8</b>	6x6 - 8x6 - 8x8 - 10x6 - 10x8 10x10 - 13x8 - 13x10 - 13x16 4x4 - 7x6 [Extreme Functionality]
Typical image size	495 MB	820 MB
Minimum scan time	6,4 s	3,6 s
Typical X-ray exposure time	1.6 s (Low-dose QuikScan) - 8.0 s (SuperHD Mode)	
Patient alignment	Servo-assisted: Scout View method	
Image format	Exclusive iRYS and DICOM 3.0 software	
Minimum render times for CB3D data	15 s on average	On average, real-time for FOV XF 4x4 QuickScan

2D IMAGES	PANORAMIC X RAY	CEPHALOMETRY
Detector technology	CMOS	
Pixel size	100 µm	
Dynamic range	14 bit (16,383 grey levels)	
Signal to noise ratio	Minimum 74dB - Typical 86dB	
Detector height	148 mm	223 mm
Image pixel matrix	max: 1470 x 2562	max: 2155 x 2935
Maximum image file size	8 MB (single image)	14 MB
Typical scan time	6 s - 12,3 s	3,3 s - 9 s
Theoretical image resolution	PAN: 6.3 (pixel pitch of 80µm) BITEWING: 7.5 lp/mm (pixel pitch of 70µm)	CEPH: 5.6 (pixel 90 µm)
Image format	TIFF 16 bit, DICOM	
Patient alignment	Servo-assisted: 4 laser guides	

X-RAY GENERATOR	
Generator type	Constant potential (DC)
Frequency	100 -180 kHz
X-ray emission type	Continuous or Pulsed
Anode voltage	2D SCAN: 60 - 85 kV   3D SCAN: 90 kV (Pulsed Mode)
Anode current	2 - 16 mA
Exposure time	1 s - 18 s
Focal spot	0.5 mm (IEC 60336)
Exposure control	Automatic. MRT
Compensation of spine absorption	Automatic (modularity of X-ray beam kV)
mA and kV configuration	Modulated in real time during X-ray exposure, automatically or manually selectable in discrete increments.
Maximum continuous anode input power	42W (1:20 at 85kV/10mA)
Inherent filtration	2D: >2.5 mm Al eq. [at 85 kV]   3D: 6.5 mm Al eq. [at 90 kV]
Integrated X-ray shielding behind receptor	In compliance with IEC60601-1-3