Clinically superior, 2D and 3D diagnostics
X-Radius Trio is the ultimate answer to all your two and three dimensional radiographic imaging requirements in the dental surgery. An easy-to-use, quick-to-upgrade 3 in 1 solution: X-Radius Trio is a lasting investment enabling 2D panoramic imaging, cephalometric exams and cone beam 3D imaging with up to Ø 11 cm full arch volumetric scan capability.
Ready for today’s needs and all set for tomorrow’s evolution

With the X-Radius Trio open platform concept, you can upgrade in no time at all for tomorrow’s evolving requirements. In addition to its comprehensive range of standard and specialised 2D examinations, X-Radius Trio is ready to incorporate cephalometric options and everything needed to obtain clinical 3D radiographic images, whenever you wish.

2D exams

An extensive range of bidimensional examinations also covering specific requirements such as orthogonal projections, bitewing exposures, advanced TMJ views.

Cephalometrics

To perform cephalometric projections, you can opt for a second sensor, but the option of a relocatable sensor is also possible. The single sensor can be switched to and from the ceph arm and incorporates a no-risk safety device to prevent it being dislodged accidentally.

3D radiography

A straightforward upgrade to volumetric examinations is a no more than a step away from your initial purchase. With 3D capability, one scan generates a wealth of data taking you into a wider realm of diagnostic imaging.
Reduced FOV for specific needs
Proper adjustment of the FOV means your patients receive considerably lower X-ray doses.
A reduced FOV is recommended for full arch scans of children’s upper and lower jaws.
A 5 x 5 cm FOV is suitable for localised diagnostic requirements, as in the case of single implant planning, certain endodontic procedures or third molar extractions.

High resolution, low emission
X-RADIUS Trio offers two different volumetric scan modes for each FOV:
- Peak resolution with 75µm voxel images achieved with an exposure time of just 9 seconds (pulsed mode emission).
- High resolution images with an extremely low radiogenic dose thanks to pulsed mode exposure totaling a mere 3.6 seconds.

Full arch volumetric scans for complete diagnostic data
The most important aspect of 3D imaging is linked to the field of view (FOV). Small FOV are fine for localised diagnostics, whereas full arch 3D scans of adult dentition are only technically possible with an adequate field of view, which is at least Ø 10 cm. Castellini goes even further to give you a Ø 11 cm FOV.

FOV and image detector to suit your needs
X-RADIUS Trio allows you the chance to choose a small or large image detector when you equip your surgery.
This determines the height of the 3D scans you make, going from 5 to 8 cm.
With a Ø 11 cm FOV, the region examined will cover third molars and their surrounding bone structure, allowing you to plan multiple implants, also with the use of surgical drilling guides.
With the Extended View function, the height of the examined area is set at 8 cm enabling simultaneous scanning of both upper and lower jaws.
When equipped with a large image detector, the Extended View function allows the height of the examined area to be increased to 13 cm, also making it possible to acquire the maxillary sinuses at the same time.
A dedicated sensor for each imaging modality

Nothing is left to chance when the right technology is at hand. Dedicated 14-bit image detectors for 2D imaging and 16-bit Amorphous Silicon detectors for 3D scans ensure the sharpest of images thanks to a specific dynamic range for each imaging modality.

360° scan

The best way to avoid artefacts in the resulting image: volumetric acquisition based on a full 360° scan.

Steadiness first

A rigid positioning system with no less than 7 support points, including a chin rest, an adjustable forehead support and a replaceable bite block, ensures constant stability during the scan, an essential prerequisite for sharp volumetric images.

Simple, speedy positioning system

Thanks to the innovative positioning system, designed to maximise comfort for both patient and operator, the former can be aligned using a highly flexible procedure that involves just a few simple steps, thus ensuring examinations are carried out correctly whatever the projection.

Panoramic projections

A sampler of three very different morphologies: a child, an adult and an elderly patient benefiting from Wide Focus panoramic projection.

Laser-guided positioning

Thanks to laser guides, lining up the patient is fast and precise. 4 laser positioning guides are available for 3D and 2D projections, 1 laser positioning guide for teleradiographic projections (Frankfurt Plane).

A better experience for the best results

When you can count on a relaxed patient, the positioning process is not only faster and friendlier, it also leads to more accurate results in terms of image quality. No walls, panels or mirrors. No claustrophobic feelings to make your patients anxious or fidgety. Just you to reassure them and help achieve the best possible results.

Unerupted maxillary third molar

Thorough radiographic assessment, showing the intricate roots in sharp detail, this level of diagnosis is achieved without multiple radiographic projections, one exam does it all.
Superior kinematics
X-Radius Trio adopts a specially coordinated movement pattern comprising one rotary movement combined with two simultaneous translatory movements. This ensures constant magnification in all projections, resulting in highly reliable diagnostic images.

Reduced dosage through targeted collimation
The primary server-controlled collimator allows you to select the appropriate area for X-ray exposure. This makes it possible to minimise radiation whenever possible.

Simple kinematics with just one translatory movement would result in uneven magnification.

Outstanding panoramic imagery made simple
X-Radius Trio offers dozens of different examination types covering all possible 2D requirements. For each single program, radiographic data acquired is based on a dedicated radogenic trajectory. This means optimised data, not cropped views based on more generic trajectories.

12 Panoramic Examinations
- Standard Panoramic and Reduced Panoramic for children
- Orthogonal pan with wider focal trough anterior region
- Orthogonal projection for dentition only, to reduce overlapping of crowns
- Centric and Harmony dedicated projections
- Frontal pan, dedicated projection with wide focal trough
- 4 segments: Bitewing exposures limited to crowns, to detect interproximal caries

10 Cephalometric Examinations
- Latero-Lateral Ceph projections, selectable length of 18 to 30cm
- Latero-Lateral Ceph projection, short scan reduced in height for children, reduced X-ray dose
- Antero-Posterior or Postero-Anterior Ceph projections
- Submento vertex projection, including Waters and reverse Towne positions
- Carpus projection

14 TMJ Examinations (open or closed mouth)
- Lateral projection of both TMJs
- Postero-Anterior projection of both TMJs
- Multi-angle (x3) Lateral projection of one TMJ
- Multi-angle (x3) Postero-Anterior projection of one TMJ

3 Maxillary Sinus Examinations
- Frontal or Lateral view of Left and Right maxillary sinuses

Competitor equipment:
1 rotary movement and 1 simultaneous translatory movement only.

X-Radius Trio:
1 rotary movement and 2 simultaneous translatory movements

The focal trough is optimised for morphology and misses out on none of the vital details. The simultaneous translatory movements keep the X-ray detector at a constant distance from the midline of the dental arch, throughout the entire scan, so that the image magnification is constant and uniform in the resulting radiograph.

Constant magnification
Uneven magnification

Reduced dosage through targeted collimation
The primary server-controlled collimator allows you to select the appropriate area for X-ray exposure. This makes it possible to minimise radiation whenever possible.

The secondary collimator is concealed within the rotating module, allowing more space for both operator and patient.
Step-by-step acquisition process
Improving workflow, either through a user-friendly interface, purpose-oriented software or pre-acquisition tools to guide you is part of our philosophy.

Navigate and select your settings for each exam using the easy-to-follow symbols and clear visual icons.

Onboard controls for simple procedures
Available for both 2D and 3D scans, Morphology Recognition Technology avoids all needs to manually program exposure times, kV or mA technical factors or even choose patient size. Clear graphics and straightforward controls reduce time while your patient stands ready for the scan. Simplicity in all imaging modes makes for faster procedures and a more relaxed patient experience.

Scout Method
Prior to 3D scans, a two dimensional preview image is obtained to identify the exact region of interest. Thanks to its servo-controlled kinematics, X-RADIUS Trio will automatically reposition the FOV according to any adjustments made by the operator with a simple mouse click. These scout images are acquired at extremely low dosage and ensure that acquisition will not need to be repeated due to possible alignment errors.

Ultra-high-speed processing and easy-to-use software
With the supplied software, you can select the interface most suited to your professional needs, from oral and maxillofacial surgery for dental surgeons to the more specific needs of a radiologist.

Real-time data evaluation
Even 3D data is processed in less than a minute, but what really matters is that you can navigate between all different views without requiring the software to re-process the previously-generated data. Thanks to multiple desktop management, the software system conserves all views on screen, so you can skip from one set of data to another on screen 2D and 3D images can be viewed simultaneously, making subsequent surgery safer and simpler thanks to the precision and amount of available data.

Implant planning
Data comprising bone density, position of the mandibular canal and virtual implant models will make implant surgery a faster process.

Pre-loaded libraries
A selection of implant models are pre-loaded, but you can also generate your own made-to-measure models.

Third party compatibility
Data is exported in DICOM® standard format and has been validated by all major and most widely-used third party implant systems.

Complex data made simple
Feeling at ease when you are manipulating complex 3D data is reassuring. The quantity and quality of the information X-RADIUS Trio provides and the simple way you can manage that data makes for a clear diagnosis and helps effective planning, ready for efficient treatment.

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Implant case with sinus lift
Sample of views, extracted from the same CB3D dataset acquired right after surgery, showing the correct relationship between implant, bone, augmented sinus membrane and mucosa.
### Technical specifications

#### 3D detector specs
- **Detector technology:** Amorphous Silicon (a-Si)
- **X-ray conversion method:** CsI (Cesium Iodide) Scintillator
- **Image voxel size:** 75 µm
- **Dynamic range:** 16bit
- **Gray shades:** 65535
- **Minimum slice thickness:** 0.075mm
- **Dataset format:** iRYS proprietary and DICOM 3.0

#### Large Detector
- **Field of view, Diameter x Height:** 108x80mm
- **Available FOV sizes (DxH):** 11x13 - 11x8 - 8x8 - 11x5 - 8x5 - 5x5cm
- **Image dataset, largest size:** 720MB

#### Small Detector
- **Field of view, Diameter x Height:** 108x50mm
- **Available FOV sizes (DxH):** 11x8 - 11x5 - 8x5 - 5x5cm
- **Image dataset, largest size:** 450MB

#### 2D detector specs
- **Detector technology:** CCD (Charge Coupled Device)
- **X-ray conversion method:** CsI (Cesium Iodide) Scintillator
- **Protection from direct X-ray exposure:** FOP (Fibre Optics Plate)
- **Pixel size:** 48µm
- **Dynamic range:** 14bit
- **Gray shades:** 16383
- **Detector resolution:** 10.4lp/mm
- **Signal to Noise Ratio:** minimum 74dB - typical 86dB
- **Original file format:** TIFF, 16bit
- **Image resolution:** more than 5lp/mm
- **Pan Detector height:** 146mm
- **Image pixel matrix, max.:** 1528x2797
- **Image file, largest size:** 8MB

#### Ceph Detector height:** 220mm
- **Image pixel matrix, max.:** 2291x3125
- **Image file, largest size:** 14MB

#### X-ray generator specs
- **Generator type:** Constant potential (DC)
- **X-ray emission type:** Pulsed, square shaped pulses
- **Anode Voltage:** 60 - 90kV
- **Anode Current:** 1 - 10mA
- **Exposure time range:** 160ms - 14s (R10 scale)
- **Focal spot dimension, IEC 60336-1993:** 0.5mm

#### X-ray exposure
- **Embedded X-ray shielding behind receptor, conforming to IEC60601-1-3**
- **X-ray exposure time**
  - CB3D, High Resolution: 3.6s
  - CB3D, Peak Resolution: 3.0s
  - Adult HD Panoramic: 13s
  - Child Dentition: 7.5s
  - Child Ceph Lateral: 3.4s
- **Minimum scan time for CB3D:** 18s
- **Minimum render time for CB3D dataset:** 15s
- **Typical effective dose (ICRP 103)**
  - CB3D 11x8, High Resolution: 33.5 µSv
  - CB3D 11x8, Peak Resolution: 78.6 µSv
  - CB3D 11x5, Peak Resolution: 78.6 µSv
  - Panoramic: 6.3 µSv
  - Dentition only: 4.3 µSv
  - Ceph Lateral: Reduced, 10.9 µSv

#### Equipment dimensions
- **Minimum required operation dimensions,**
  - Width x Depth: 1310x1520mm
  - Including ceph (W x D): 1830x1520mm
- **Motorised column, adjustable height:** 1610-2400mm
- **Packed dimensions,**
  - Crate, no Ceph (H x W x D): 1515x1750x670mm
  - Ceph option, cardboard: 822x1430x580mm
- **Weight,**
  - no Ceph: 170Kg - 375lbs
  - with teleradiographic arm: 190Kg - 419lbs
  - Wall or floor support, free standing base available
  - Accessible for patients on wheelchair

#### Power supply specification
- **Automatic adaptation for voltage and frequency**
- **Voltage:** 115 - 240 Vac, ± 10%
- **Frequency:** 50 / 60 Hz ± 2 Hz
- **Current,**
  - peak absorption: 7A at 240V, 13A at 115V
  - nominal temporary peak absorption: 7A at 240V, 13A at 115V
- **Maximum current absorption in standby mode:** 1A