

Helios DRF

Full Digital

R&F

Tilting Table



SUMMARY

PRODUCT DATA	2
INSIDE: FULLY DIGITAL R&F ACQUISITION SYSTEM	12
TOMOSYNTHESIS (OPTIONAL)	20

ASSING S.p.A.

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Cap. Soc. € 2.500.000 \ P. Iva IT01603091008 \ C.F. 06725640582

PRODUCT DATA

GENERAL	
Manufacturer	Assing SpA
Kind of equipment and class According to IEC60601-1	Class II with applied parts of B type
Protection degree according to IEC 60529	Continuous working
Covers	ABS PUR Metallic
Colors	Standard: - White RAL9001 - Green NCS S 0575G40Y
ELECTRICAL	
Standard power supply	3N - 380-400 Vac
Frequency	50-60 Hz
Net isolation	Transformer 2 kVA
Protection	8A with thermo magnetic switch
Line impedance	< 1.0 Ω 380-400 Vac \pm 10%
Loaded voltage fall	< 2%
MECHANICAL CHARACTERISTICS	
Table height in vertical position	2580 mm
Vertical mount height	1960 mm
Width	2545 mm
Maximum height with table in horizontal position and focus to film at 180 cm	2370 mm
Minimum height from ground (table in horizontal position)	450 mm (weight plate sank into the mat) 470 mm (weight plate on the floor)
Maximum height from ground (table in horizontal position)	1450 mm
Tilting range (continuous movement)	$\pm 90^\circ$
X-ray tube rotation range, motorized and with stop each 90°	$\pm 180^\circ$
X-ray focus minimum distance from ground with table at $+90^\circ$	≤ 61 cm
Footrest minimum distance from ground with table at $+90^\circ$	10 cm
Depth (distance between mounting base and tabletop edge)	2040 mm

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Access from forth side (back)		300 mm
Column run		2240 mm
Detector holder run		2250 mm
Rx covering area		430 x 2090 mm
Focus to Film distance, continuously adjustable. Also, with preset position according to chosen exam. Chest exams can be performed directly on the table without an external stand		105-200 cm
Tube angulations for oblique projections		± 40°
Tabletop to flat panel detector distance		70 mm
X-ray tube maximum height with table at +90°		2000 mm
Return to Zero position push button		✓
Magnification and reduction factor	<ul style="list-style-type: none">- magnification factor at 105 cm = x1,06- magnification factor at 180 cm = x1,03- area reduction factor at 105 cm = x0,93- area reduction factor at 180 cm = x0,96	
DIMENSIONS AND WEIGHTS		
ITEM	Dimensions (mm)	Weight (Kg)
Vertical Mounting	1960x900x650	580
Tube Column	760x340x1170	115
Electric cabinet	800x800x1760	173
Translator group	2460x310x30	235
Tabletop	2500x750x50	57
Detector holder	900x640x280	30
Lateral arms	1110x120x70	40
Console	1080x600x610	70
Covers		70
Standard set of accessories		45
Total NET Wight		1415
Weight distribution plate	152x1520x15	262
PATIENT TABLETOP		
Standard Tabletop in Laminated	Overall dimension 249,5 x 75 cm. Width 27 mm X-ray useful area: 232x50,5 cm Material: carbon fiber covered with laminated Filtration: 0,7 mm al @100 kV Max patient weight: 270 kg without limitation	
Lateral Movement	30 cm (±15 cm)	

Optional Tabletop in carbon fiber		Overall dimension 249,5 x 71,5 cm. Width 27 mm X-ray useful area: 232x50,5 cm Material: carbon fiber Filtration: <0,5 mm al @100 kV Max patient weight: 300 kg without limitation
Lateral Movement		30 cm (±15 cm)
Optional Tabletop, large size, in Laminated		Overall dimension 249,5 x 80 cm. Width 27 mm X-ray useful area: 232x59 cm Material: carbon fiber covered with laminated Filtration: 0,7 mm al @100 kV Max patient weight: 270 kg without limitation
Lateral Movement		22 cm (+ 15 cm/ - 7 cm)
Optional Tabletop, large size, in carbon fiber		Overall dimension 249,5 x 80 cm. Width 27 mm X-ray useful area: 232x59 cm Material: carbon fiber covered with laminated Filtration: <0,5 mm al @100 kV Max patient weight: 270 kg without limitation
Lateral Movement		22 cm (+ 15 cm/ - 7 cm)
Longitudinal excursion	Tube column longitudinal run: 188 cm Flat panel (center) run: 168,5 cm The movement of both column and flat panel allows for patient total scanning: 210 cm at adjustable speed up to 15 cm/sec, controlled through joystick. Important: The movement of the longitudinal tabletop is not necessary as the complete exposure of the patient is guaranteed by the field of movement of the column and the flat panel.	
ACCESSORIES		
Standard	<ul style="list-style-type: none">• Removable footrest with surface 400x600 mm• Removable GRID 10:1• Shoulder rest• Pair of ergonomic handlers• Pedal (in control room) for RAD/Fluoro	
Optional	<ul style="list-style-type: none">• Paper roll bearer• LDC glass bearer• Compression band• OB-GYN legs bearer	

	<ul style="list-style-type: none"> • Lateral cassette holder for oblique projection • Hand safety stripes • Additional pedal (in examination room) for RAD/Fluoro • Pediatric contention kit
	<ul style="list-style-type: none"> • TLK Movement - it consists of tabletop lifting and freeing the exposure area from itself, allowing exams on an x-ray stretching or contact exams.

DYNAMIC CHARACTERISTICS	
Tabletop rise time from lower to max height (horizontal position)	15 sec
Tabletop combined rotation from 0° to +90°	25 sec
Tabletop combined rotation from 0° to -90°	26 sec
Tabletop combined rotation from -90° to +90°	37 sec
Tabletop lateral run	From 1cm/sec to 2,5 cm/sec
Lined translation (tube+receptor) along the horizontal axis	12 sec
Rotation only from 0° to +90°	16 sec
Focus to film extension from 105 to 180 cm	18 sec

TOMOGRAPHY	
Type	Planigraph with homothetic linear movement and electronic fulcrum calculation
Stratum max height	400 mm (physical limit 450 mm)
Increase / decrease	Manual, 1 mm step Automatic (auto step function) with step mm program and selectable according to starting tomo angle
Speed	10° - 21° / sec. Adjustable
Tilting angles	Preset: 8° - 15° - 20° - 30° - 40° According to customer preference within max 80° with respect to the chosen anatomical area and FFD
Tomo timings	Up to 5 speeds can be chosen that represent a percentage of the max speed: 3525 cm/sec (21° /sec) For each tilting angles the speed can be decreased in 5 steps of approx. 10% per step. A tomography at 40° and FFD 105cm at the maximum speed will take approx. 2,2 sec.
Direction	Bi-directional in each position of table and FPD/column group
Sequence tomography	Sequence program with outward and inward emission up to the limits set by the operator or to the reaching of preset limit; stratum, area, etc.
Receptor movement range	Tomography is achieved at different receptor position according to the angle, to the FFD and the selected stratum.

COMPRESSOR CONE SET (OPTIONAL)	
Positions	On field Compression Out of field, laterally positioned
Commands	On the touch screen, through the joystick and on table control boards
Compression power	Can be set from 5 kg to 20 kg with 1 kg step
Min. distance compressor cone from tabletop	80 mm
Max. distance compressor cone from tabletop	520 mm
Compressor run	440 mm
Protections	Programmable Compressor limit control Automatically deductible compressor
Movements and parking	Motorized
Other characteristics	Remote controlled with automatic parking. It can be separately installed.

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	Display of the dynamic pressure and of the set pressure.
STITCHING	
EXAMS OF THE COLUMN AND LOWER ARTS	
Images size	43 x 70 (2 images) 43 x 100 (3 images) 43 x 130 (4 images)
Direction	Head to foot
Interface	Integrated with HF Generator, collimator and digital images acquisition system

COLLIMATOR	
Functioning	Manual with push buttons and knob Automatic, microprocessor controlled and CAN-BUS interface
Field	Square & rectangular
Inherent filtration	1,2 Al eq.
Square field covering at 1 mt FFD	430x430 mm
Field light indicator	> 160 lux
Light indicator accuracy	< 1% FFD
Laser pointer	Direct line projection
Additional filtering	Disk support with automatic filter exchange device; it can be manual of automatically controlled by CAN-BUS <ul style="list-style-type: none"> • 1mm Al + 0.1mm Cu • 1mm Al + 0.2mm Cu 2mm Al
OPTIONAL	
Collimator patient camera	Video camera mounted on the collimator for patient display on the remote console
Touch screen display	Collimator touch screen display with controls

REMOTE CONSOLE	
Description	19" Control console Medical Grade Panel PC Touch Screen with all commands. N. 4 joysticks duplicating the most frequent commands: tube angulation movements; FFD; tabletop tilting and elevation movements; longitudinal and transversal movements.
Touch screen characteristics	Dimensions: 19" Resolution: 1600 x 1200 pixel Brightness: 350 cd/m2 Number of colors: 32 bits View angle: 170° H - 170° V Aspect ratio: 4:3
Available connections	<ul style="list-style-type: none"> • Dedicated LAN connected to control CPU • Standard LAN for networking • N. 4 RS 232 ports
Safety features	All movements are protected by end-of-run switches.
ADDITIONAL CONTROLS	
N.2 additional membrane keyboards are located on the image receptor front and a X-ray tube front duplicating ALL table controls.	
DAP METER	
DAP display	Integrated Dose Area Product display with automated readout into DICOM tag
ADDITIONAL REMOTE CONSOLE SYSTEM IN EXAM ROOM (OPTIONAL)	
Description	Additional remote-control console consisting of a Wifi Tablet for the control of the main functions of the generator and collimator and the parameters of the acquired image.
PC Tablet specifications	W10 Display 1280x800 dual mode (capacitive touch screen and digitizer) Supporting docking station with integrated charger Elastic handler
Generator controls	<ul style="list-style-type: none"> • Setting of kV, mA, ms, mAs • Working place selection • Exposure technique selection (2points, 3 points, AEC) • Setting ion chamber active areas • Selecting tube focus
Collimator controls	<ul style="list-style-type: none"> • Setting shutters opening • Select Auto/Manual mode • Filter selection • Light and laser turn on/off
Image controls	<ul style="list-style-type: none"> • Brightness and contrast • B/W inversion

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	<ul style="list-style-type: none"> • H/V inversion • Image rotation 90°
VERTICAL STAND	
Vertical bucky stand with motorized movement and EM brakes	
Vertical wall bucky stand with fully integrated detector bucky housing	✓
GRID RATIO 10:1	✓
Buttonless manual elevation handle	✓
Counterbalanced for smooth vertical travel with easy handling	✓
Electromagnetic brake secures vertical position	✓
Vertical travel	1520 mm
Designed for easy installation	✓
Minimum height from floor to centre of detector	280 mm
Maximum height from floor to centre of detector	1800 mm
Chest PA and LAT handgrips	✓

PROGRAM H.F. US3			
HIGH FREQUENCY GENERATOR WITH ALL-IN-ONE CONSOLE WITH TABLE			
Power	50 Kw	65 kW	80 kW
Application	Digital Radiography & Fluoroscopy	Digital Radiography & Fluoroscopy	Digital Radiography & Fluoroscopy
Kind of generator	High frequency	High frequency	High frequency
Anode speed	3000 rpm standard 9000 rpm optional	3000 rpm standard 9000 rpm optional	3000 rpm standard 9000 rpm optional
Performance mA/kV	630 mA @ 80 kV 500 mA @ 100 kV 400 mA @ 125 kV 320 mA @ 150 kV	800 mA @ 80 kV 630 mA @ 100 kV 500 mA @ 119 kV 400 mA @ 150 kV	1000 mA @ 80 kV 800 mA @ 100 kV 630 mA @ 126 kV 500 mA @ 150 kV
Impedance	0.2 ohm	0.15 ohm	0.13 ohm
No. Of tube	1 tube, 2 or 3 tube as option	1 tube, 2 or 3 tube as option	1 tube, 2 or 3 tube as option
Anatomical techniques	525 programmable	525 programmable	525 programmable
Tube protection	Max load, anode thermal load, anode	Max load, anode thermal load, anode	Max load, anode thermal load, anode rotation, anode

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	rotation, anode thermal safety, filament overcharge, max voltage protection	rotation, anode thermal safety, filament overcharge, max voltage protection	thermal safety, filament overcharge, max voltage protection
Working places	3 + direct	3 + direct	3 + direct
RADIOGRAPHY			
kV _p range	40-150 kV (1kV step)	40-150 kV (1kV step)	40-150 kV (1kV step)
mA range	10-630 mA (30 steps)	10-800 mA (31 steps)	10-1000 mA (32 steps)
Exposure time	0,001s to 6s (36 steps)	0,001s to 6s (36 steps)	0,001s to 6s (36 steps)
mAs range (non-AEC)	0.4-600 mAs	0.4-600 mAs	0.4-1000 mAs
Frames per second	61 fps	62 fps	63 fps
0 point technique	Yes (parameter transfer from fluoroscopy to HCF to radiography)	Yes (parameter transfer from fluoroscopy to HCF to radiography)	Yes (parameter transfer from fluoroscopy to HCF to radiography)
1 point technique	(kV)	(kV)	(kV)
2 points technique	(kv/mAs)	(kv/mAs)	(kv/mAs)
3 points technique	(Kv/mA/time)	(Kv/mA/time)	(Kv/mA/time)
Automatic exposure control	AEC up to 3 chambers	AEC up to 3 chambers	AEC up to 3 chambers
AEC settable parameters	4 film screen combinations 3 fields 7 blackening levels Adjustment: -50% +200%	5 film screen combinations 3 fields 7 blackening levels Adjustment: -50% +200%	6 film screen combinations 3 fields 7 blackening levels Adjustment: -50% +200%
FLUOROSCOPY			
kV range	40-150 kV	40-150 kV	40-150 kV
mA range (continuous)	0.5-8 mA	0.5-8 mA	0.5-8 mA
mA max (pulsed)	125 mA	125 mA	125 mA
Timer	Yes	Yes	Yes
Automatic fluoro	Yes	Yes	Yes
Pulsed fluoro	Yes	Yes	Yes
Power supply	400 VAC Triphase		
Frequency	50/60 Hz		

Maximum mains power (active)	63 kW	82 kW	100 kW
Maximum mains power (apparent)	90 kVA	117 kVA	120 kVA
Power Rack dimensions	56,5x50x201		

X-Ray Tube

- Proven x-ray tube that ensures trouble free operation year over year
- Designed to handle volume of patients

Brand	I.A.E (Italy)			
Tube Model	RTM90HS	RTM101HS	RTC600HS	RTC700HS
Anode heat capacity	300 KHU (225 kJ)	400 KHU (300kJ)	600 KHU (450kJ)	800 KHU (600 KJ)
Standard focus	0.6x1.2mm	0.6x1.2mm	0.6x1.2mm	0.6x1.2mm
Other focus combinations	0.3x0.6mm 0.6x1.0mm 0.6x1.3mm 0.6x1.5mm 1.0x2.0mm	0.6x1.0mm 0.6x1.3mm 0.6x1.5mm 1.0x2.0mm	0.6x1.0mm 0.6x1.3mm 0.6x1.5mm 1.0x2.0mm	0.3x1.0mm 0.6x1.0mm 0.6x1.3mm 0.6x1.5mm 1.0x2.0mm
Power	24-60 low speed 35-85 high speed	26-63 low speed 40-100 high speed	24-63 low speed 43-100 high speed	40-100 high speed
Voltage	150 kV	150 kV	150 kV	150 kV
Anode Angle	12,5°	12,5°	13°	12,5°
Anode Diameter	90 mm	102 mm	102mm	102 mm
Maximum anode dissipation	1300 W (104.000 HU/min)	1000 W (80.000 HU/min)	1000 W (80.000 HU/min)	1000 W (80.000 HU/min)
Max continuous heat dissipation	750 W (60.000 HU/min)		1500 W (125.000 HU/min)	1500 W (125.000 HU/min)
Anode speed	3000 rpm 10000 rpm (depending on generator board)	3000 rpm 10000 rpm (depending on generator board)	3000 rpm 10000 rpm (depending on generator board)	3000 rpm 10000 rpm (depending on generator board)
Inherent filtration	0.7 mm Al eq.	0.7 mm Al eq.	0.7 mm Al eq.	0.7 mm Al eq.
Housing	C352	C52Super	C52Super	C52Super
High voltage	150 kV	150 kV	150 kV	150 kV
Heat storage capacity	1280 kJ 1700 KHU	1280 kJ 1700 KHU	1280 kJ 1700 KHU	1280 kJ 1700 KHU
Cooling rate	230 W (18400 HU/min)	230 W (18400 HU/min)	230 W (18400 HU/min)	230 W (18400 HU/min)

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INSIDE: FULLY DIGITAL R&F ACQUISITION SYSTEM

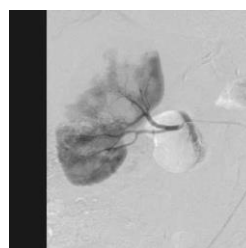
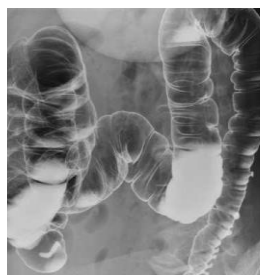
INSIDE is a full field direct to digital imaging system with flat panel detector combined with Varex PaxScan 4343 DXV

INSIDE makes for fast examination and therefore high patient workflow, as well as offering cost savings and excellent image quality at lower doses.

It covers a huge range of examinations in General Radiology studies like:

Musculoskeletal
Swallowing
Chest
Genitourinary
Gastrointestinal
Interventional

Tomography
Lymphography
Myelography
ERCP procedures
Long leg & spine stitching
Angiography (optional)



MONITOR SPECIFICATIONS

Screen Technology/Type	Color TFT LCD Panel (VA)
Screen Size (diagonal)	48 cm / 19 Inches (481 mm diagonal)
Display Resolution	1280 x 1024 (5:4 aspect ratio)
Pixel Pitch	0.294 x 0.294 mm
Viewing Angle (H, V)	178° / 178°
Maximum Luminance	300 cd/m ²

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Contrast Ratio	2000:1
Response Time	20 ms (On/Off), 8 ms (Midtone)
Video Input Connectors	DVI-D x 1, D-Sub mini 15 pin x 1
Certifications	CE (Medical Device Directive), EN60601-1, UL60601-1, CSA C22.2 No. 601-1, IEC60601-1, VCCI-B, FCC-B, Canadian ICES-003-B, C-tick, RoHS, China RoHS, WEEE, CCC, GOST-R

DYNAMIC DETECTOR SPECIFICATIONS

MODEL	PAXSCAN 4343DXV
Technology	Csi - amorphous silicon
Detector Area	42,7 cmx42,7 cm
Pixel size	3072x3072 effective 3032x3032
Matrix size	139 µm
Limiting resolution	3.6 lp/mm @4 fps (1x1)
Image quality (RQA5)	Typical
MTF@ 0 lp/mm	100%
MTF @ 1 lp/mm	54%
MTF @ 2 lp/mm	33%
MTF @ 3 lp/mm	12%
DQE @ 0 pl/mm	78%
Quantum limited dose (2x2)	6 nGy (3x3)
Energy range	40-150 kV
Fill factor	60%
Lag	3% (first frame)
Scan method	Progressive
A/D Conversion	16-bit
Cooling	Passive

WIRELESS STATIC DETECTOR SPECIFICATIONS

Model	Paxscan 4343W CSI Standard
X-ray Conversion Layer	Amorphous Silicon with TFT/PIN diode Technology, CSI standard
Active Area	42,1 (H)×42,1 (V) cm (17×17 inch)
Pixel Matrix	3072(H)×3072(V)
Pixel Pitch	139 µm
Cycle Time	< 5 sec
Dimensions	460×460×15 (mm)
Weight	3.3 kg including battery
Limiting Resolution	3.6Lp/mm typ.
MTF (2.0Lp/mm, 70kVp, 1×1)	CSI Standard 32% typ.

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DQE @ 0 lp/mm	CSI Standard 65% typ.
A/D Conversion	16 bit
BATTERY	
Type	Lithium Polymer (prevents overcharging)
Charge Capability	1600 images over 8 hrs
Expected Life	500 cycles of charge/discharge
BATTERY RECHARGER	
Outline Dimensions	281.6×206.6×21.2 mm (W(H)×D(V)×(H))
Weight	500g
Number of slots	3

RADIOGRAPHY

Area	Resolution	Frequency	Intended use
43x43 cm	3072x3072x16bits	1~3 fps	For large format diagnostic images, at very high resolution, static images or with low dynamics needed like Gastrointestinal
43x43 cm	1536x1536x16 bit	1 ~ 15 fps	For diagnostics and angiographic interventional procedures

CONTINUOUS FLUOROSCOPY

Area	Resolution	Frequency	Purpose
43x43 cm	1024x1024x16bits	Up to 18 fps	For patient positioning in large format studies
30x30 cm	1024x1024x16bits	Up to 18 fps	For patient positioning in limited area studies
20x20 cm	684x684x16 bits	Up to 30 fps	For studies of quick events where low dose is needed
15x15 cm	1024x1024x16bit	Up to 18 fps	For patient positioning in very limited area studies

PULSED FLUOROSCOPY

Area	Resolution	Frequency	Purpose
43x43 cm	1024x1024x16bits	Up to 15 fps	For patient positioning in large format studies, low dose and lack of

			of dragging, like in many pediatric procedures
30x30 cm	1024x1024x16bits	Up to 15 fps	For dynamic procedures on limited area and lowest radiation applied
20x20 cm	684x684x16 bits	Up to 15 fps	For studies of elevated dynamics and cinematic clearness.
15x15 cm	1024x1024x16bit	Up to 30 fps	For patient positioning in very limited area studies

CONTROL CONSOLE

- + Multi-tasking environment capable to manage simultaneously
 - o System control
 - o Acquisition, images reconstruction and processing
 - o Images Display
 - o Images Storage and Print
- + Reduced image display time in radiography (After each single shot in less than 1 second the image is available with all exposure data (kV, mAs) on the monitor)

PC Cabinet

- + Integrated control system: examination table, collimator, generator, ion chamber, grid, DAM PID. PID PC Architecture (minimum configuration, expandable upon request): Windows 10 OS, Intel i9 / RAM 16GB/ HD SSD 500 GB (> 30.000 images store)
- + Mouse and keyboard
- + UPS 1000 VA - 600 W

Instant ready Image

- + > 10.000 APR programs. More than 30 preset parameters for each anatomical study.
- + Anatomical presentation of the images for the best intuitive use;
- + Choice of the lowest X dose for each selected study;
- + Reduce examination time;
- + Better comfort for the patient and the operator.

Virtual Scan, ultimate dose saving solution

- + The Virtual Scan allows radiography image centering starting from the last fluoroscopy image (LIH).
- + When the operator enables the "Virtual Scan" control on the console, using the joysticks he will surf on the image searching the right point to centre for radiography; the machine moves simultaneously and gets positioned on that area.

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- ✚ The Virtual Scan grants a certain dose saving as the operator will not make additional fluoroscopy investigations and finds the right place to explore using the last fluoroscopy image (LIH).

A.T.H. - Anatomical Tissue Harmonization

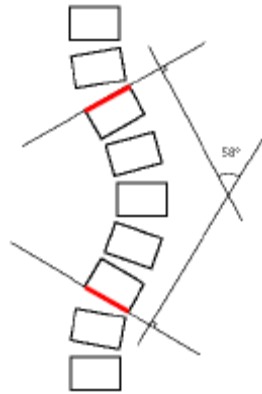
An advanced image processing in DR modality, an image quality enhancement as never before.

- ✚ A greater flexibility by adapting the processing to the anatomical region
- ✚ A good detail visibility in under and over penetrated areas
- ✚ Increasing of latitude without loss of detail contrast
- ✚ A.T.H. reduces the need to window and level the images presented on a workstation display in PACS system
- ✚ Images with inherent large latitudes as chest, skull and lateral spine strong enhanced without noise amplification and edge artifacts
- ✚ A great benefit thanks to a better diagnostics accuracy and radiologist productivity

Images processing

- ✚ Sharp spatial filtering, kernel 3X3 to 11x11;
- ✚ Automatic or manual Windowing: contrast, brightness; grey level inversion;
- ✚ Automatic or manual magnification of the image: zoom on detector and on the image;
- ✚ Multi image display, with “imasette” for a quick exam check;
- ✚ Automatic or manual electronic collimators;
- ✚ Measurement SW: distances, angles, stenosis.
- ✚ Image display: H/V inversion, 90° rotation, true size image editing;
- ✚ Text editing with large fixed strings selection.

Images processing	<p>Image display: Magnification from 1:1 up to 3:1, inversion H/V, 90° rotation, windowing (CW and CCW adjustment), gamma correction grey scale inversion, spatial filters (sharp/smooth), kernel, harmonization.</p> <p>Image review: FW/RW, search images, cine-loop, mosaic mode (4,9,16, 1+5, 1+7).</p> <p>Image delete: images from mosaic view or entire study.</p> <p>Image collimation: free collimation with automatic centering.</p> <p>Patient data input, exam and texting</p> <p>Contrast and brightness, noise reduction, edge enhancement, LUT inversion, grey scale optimization, zoom and roam, electronic collimation.</p>
Graphic tools	<p>Text - Adding text to the image.</p> <p>Angle - Measuring the angles in the image.</p>

	<p>Calibration - Getting an estimate of the actual size of the “objects” shown in the image</p> <p>Catheter - Using a catheter in the image of known diameter for calibration purposes</p> <p>Grid - Adding a grid to the image</p> <p>Ruler - Measuring the image</p> <p>Solid rectangle - Covering parts of the image to hide them</p> <p>Statistics - This function is normally used by the Technical Service when checking the system</p> <p>Frame - Drawing a frame around the body part of interest</p> <p>Arrow - Drawing an arrow on the image</p>
Software Measure (optional)	<p>These optional graphic functions are available for all images, but especially useful for images of the spine and legs obtained using the stitching functions</p> <p>Level difference - Measuring the difference in level between two parts of the image.</p> <p>Cobb angle - Measuring the curve of the vertebrae using the Cobb method.</p> <p>Double Cobb angle - If the patient has scoliosis with an “S” shaped spine, this function lets you calculate the two angles of curvature of the vertebrae.</p> <p>To do this, you need to define 3 segments, as shown in the figure here:</p> <ul style="list-style-type: none"> - 2 segments on the top and bottom “end vertebrae” (at the top and bottom of the curve), - 1 segment in the centre, corresponding to the vertebra where the direction of the curve changes. <p>Right-angle lines - Measuring the distance between points of interest and a vertical drawn line.</p> <p>Leg measurements - Measuring the length and angles of legs with respect to certain important points in the same.</p> 
DSA Software pack (Optional)	<p>PROCESSING</p> <ul style="list-style-type: none"> - Peak opacification - Road mapping - Image subtraction - Auto Masking <p>POST PROCESSING</p> <ul style="list-style-type: none"> - Mask Shifting

	<ul style="list-style-type: none"> - Image subtraction - Pixel shift - Vascular tracing - Landmarking - QA Analysis
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NETWORKING - IT INTEGRATION, RIS/PACS INTERFACE

- ✚ DICOM SEND SCU: possibility to send single frames, selected frames, non-selected frames or complete study. Spooler system to manage queues. It is possible to automatically store the images sent to print;
- ✚ DICOM STORAGE SCU: sending images to a DICOM server for storage;
- ✚ DICOM GSPS: dicom grayscale presentation state;
- ✚ DICOM VERIFY SCU: checking on the links, from both directions, with the existing DICOM modules;
- ✚ DICOM WORKLIST SCU: Checking and receiving from a DICOM server the patient list to exam on the acquisition system;
- ✚ DICOM PRINT SCU: sending to Dicom printer the images (panoramic view or through film composer);
- ✚ DICOM CDR/DVD SCU (Media Interchange) Burning images on DVD or CD with a Dicom viewer;
- ✚ DICOM MPPS SCU: Modality Performed Procedure Step: informing the server about exam being in process or completed.
- ✚ DICOM STORAGE COMMITMENT SCU: checking on the server that images be properly saved, in order to cancel images from local archive
- ✚ DICOM QUERY/RETRIEVE SCU: checking and receiving from a server the images of a given patient.
- ✚ DICOM DOSE STRUCTURED REPORT: sending to a server the dose report of a study.

IMAGES STITCHING

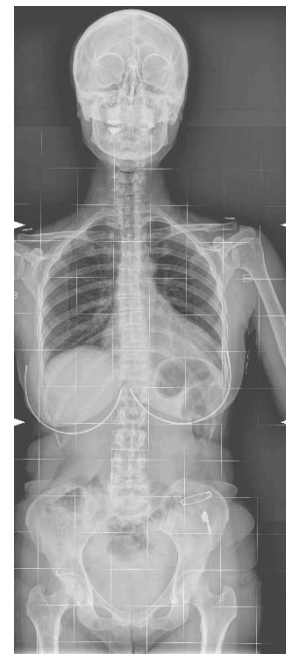
Integrated procedures for leg & spine images stitching.

The stitching function, (usually used for spine and legs scan) is needed for the automatic reconstruction of an X-ray image starting from a series of images acquired at fixed frequency during the scanning of the patient.

The image is reconstructed, keeping all original pixels, and can be viewed on the monitor, processed, printed or sent to the network.

As for standard acquisition, stitching is done giving the x-ray command from the generator control panel - the system automatically generates the required exposures (2,3,4) each time irradiating a different part of the patient.

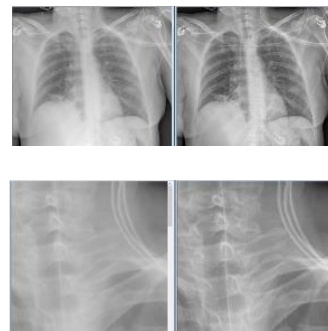
After the exposure, the system automatically processes the acquired images and then recomposes them creating a single image shown on the monitor after approx. 30 seconds.



SOFTWARE GRID - OPTIONAL

This Software removes the signal coming from diffuse radiation on images taken without anti-diffusion grid. Starting from the exposure parameters, the software calculates and deletes the amount of diffuse signal, recovering the contrast and clearness of the image at the same level of an image take with grid. The use of the Software Grid gives two great advantages:

- 1) Without the grid, there is zero risk to create artifacts and remake the exam for this reason
- 2) Without the grid, that absorbs huge amount of incident radiation, there is a massive patient dose reduction



IHE - INTEGRATION PROFILES

INSIDE supports all IHE Integration profile for radiology as below specified:

IHE Profiles	IHE Actors	IHE Transactions
SWF	Acquisition Modality	Broad Worklist Query Patient Based Worklist Query Modality Group Case
	Image Display	None
Patient Information	Patient Information	Patient Information
Reconciliation (PIR)	Reconciliation (PIR)	Reconciliation (PIR)
REM	Acquisition Modality	None

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TOMOSYNTHESIS (OPTIONAL)

The tomosynthesis is a digital technique that allows the reconstruction of volumetric images starting from a finite number of bidimensional projections taken at different tube angulations. This is given by the separation of the acquisition process from the visualization one. Among the advantages with respect to CT scan technique, it is well accepted by those patients affected by severe claustrophobia. Tomosynthesis features several applications like:

- Weight bearing views
- Knee pain
- Spontaneous osteonecrosis
- Bone on bone
- Worn cartilage

TOMOSYNTHESIS SPECIFICATIONS	
Frame rate	4/6/8 fps
Single exposure duration	4msec
Number of exposures per exam	Up to 60
Projection angle	40°
Scanning speeds	7.5 sec
Stratum selection	Can be set by the operator from 0 to 400 mm