![italray — Your X-ray Solution]

X-FRAME DR2S SYSTEM

Chest and General X-Ray DR system

Product Data
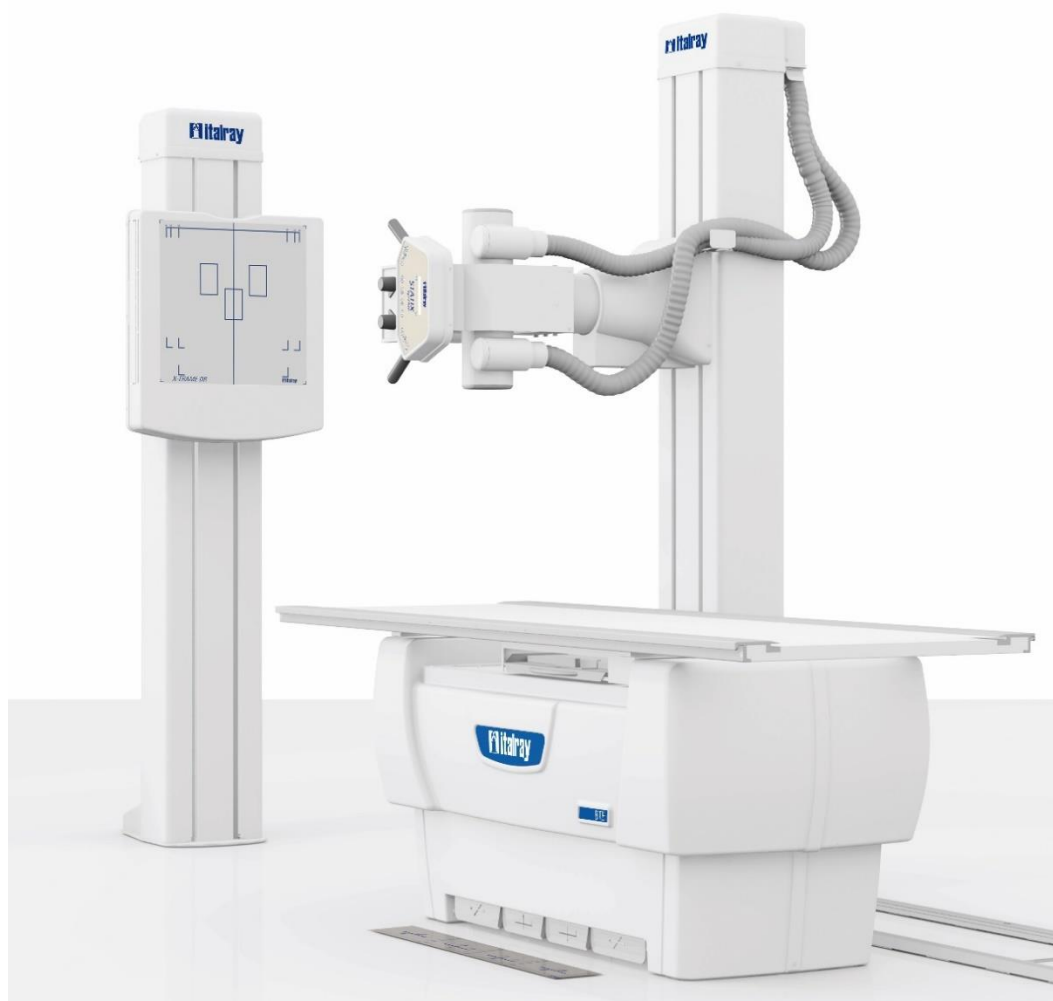
ITALRAY X-FRAME DR2S SYSTEM is a high productivity system for General and Chest examinations, with minimal space requirements, with the following configuration:

- ITALRAY PIXEL CP X-ray Generator
- ITALRAY **STATIX** column tube stand
- ITALRAY **BS45** Vertical Stand
- ITALRAY **BT** radiographic 4-way table (optional **BTE** radiographic 4-way elevating table)
- ITALRAY **X-FRAME DR** Digital Workstation with flat panel detector.

With ITALRAY X-FRAME DR2S SYSTEM, flexibility and performances are granted in any application: projections with patient in horizontal/vertical position, chest exams with minimum patient-detector distance, and examinations with grid removal.

ITALRAY X-FRAME DR2S SYSTEM SYNCHRO is a fully integrated system with all system functions controlled by a single console for both x-ray parameters and image acquisition/processing.

The ITALRAY PIXEL CP X-ray generator is capable of a tube output frequency up to 450 kHz. Thanks to this feature a very high X-ray beam quality is guaranteed at all load conditions. Once the exam is selected on the digital workstation, all the radiological acquisition parameters are immediately set on x-ray generator. This important feature moreover increasing the department productivity reduces the occasion of errors during exam procedure.

ITALRAY X-FRAME DR2S SYSTEM is based on the solid-state detectors, featuring amorphous Silicon (a-Si) technology and Gadolinium (GoS) or Cesium Iodide (CsI) scintillator: a combination that guarantees high quality X-ray images for immediate diagnosis, in real time and with low exposure.

ITALRAY X-FRAME DR2S SYSTEM versatility is greatly increased thanks to the wireless cassette-size detector that can be positioned either in vertical/horizontal bucky and out of them, in in contact to the patient. This detector is battery powered and employs wireless image data transmission, thus freeing the room from cumbersome and risky cables for an unlimited operation autonomy.

ITALRAY X-FRAME DR2S SYSTEM can be supplied with a number of automatic/motorized movements that greatly enhances system productivity.

The everest-X algorithm automatically optimizes image-processing based on exam type and anatomical region. everest-X enhances image content details in both high attenuation image areas (shoulders, abdomen) and, at the same time, low attenuation image areas (lungs, cavities).

Additional post-processing tools are also available such as Edge Enhancement, Unlimited Zoom and Real Size, Window/Level (auto and manual), Measurements, Annotations, Electronic Collimators, Image Stitching (auto and manual), Deviation Index (DI), Exposure Index (EI). The X-FRAME DR software is integrated with an easily configurable Full DICOM package compatible with any RIS and PACS system or DICOM Printer.

X-FRAME DR2S SYSTEM

ITALRAY X-FRAME DR-2S SYSTEM can be supplied with fixed and/or mobile Wi-Fi flat panel detectors, in order to perfectly fit all customer needs.

A wide number of configurations are available as shown in the table below:

X-FRAME DR 2S SYSTEMS: DETECTOR CONFIGURATIONS		
N° of detectors	**Vertical Bucky**	**Horizontal Bucky**
I) 1 Wireless detector	Wireless	
II) 2 Fixed detectors	Fixed	Fixed
III) 1 Fixed detector + 1 Wireless detector	Fixed	Wireless
IV) 2 Wireless detectors	Wireless	Wireless

X-FRAME DR2S SYSTEM
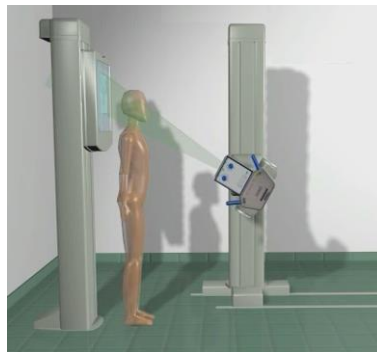
MAIN CARACHTERISTICS

AUTOTRACKING (*)

Automatic tube-detector vertical focal distance.

AUTOMATIC CENTERING AND COLLIMATION (*)

Automatic centering and collimation also in oblique examinations


AUTOMATIC STITCHING (*)

For Full-Spine and Full-Leg images, X-FRAME DR2S SYSTEM acquires images with a fully automatic and very fast procedure (rotational stitching). Adjacent images are automatically stitched together in just one single image.
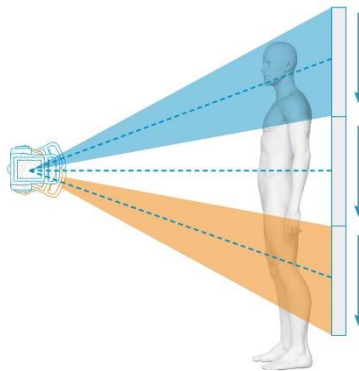
The complete procedure guarantees a maximum patient comfort and optimal image quality minimizing risk of patient movement with very short exposure times, providing also dedicated orthopaedic tools,

SPECIAL COLLIMATION FOR PAEDIATRIC PATIENTS

For paediatric patients, the collimation is aligned with the superior border of the detector and not centered on the detector center. In this way patient is not exposed to unnecessary radiation.
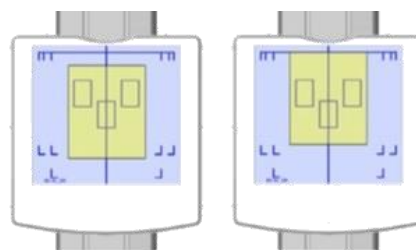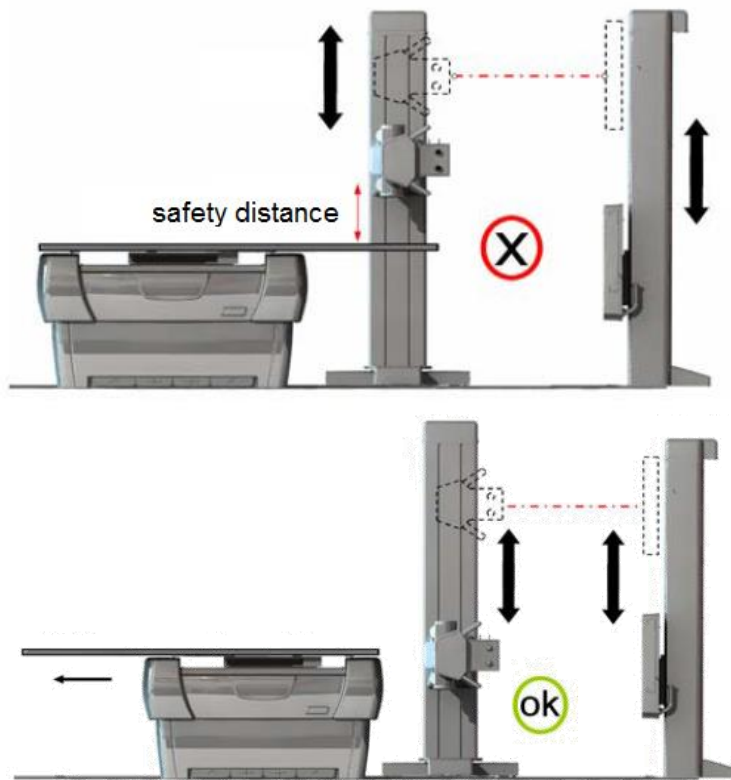

NORMAL CENTRING   PAEDIATRIC CENTRING

CONTROL AND SAFETY

COLLISION PREVENTION

Automatic movements are instantaneously blocked when the proximity sensors detect an obstacle in the direction of motion, only after removing the obstacle, the system restarts.
In addition to keep everything under control, each movement is only of intentional type (deadman).

SHARING SOLUTIONS

The wireless digital flat panel detectors can also be shared with ALL other Italray DR and DRF systems, for a maximum optimization of investment.

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS

PATIENT TABLE	BTE(*)	BT
Elevating table	Yes	No
Height	[55; 88,5] cm – Motorized	75 cm
Elevating speed	2,4 cm/sec	-
Max load	Dynamic max load: 250 kg	
Controls	Foot pedals: Elevating Up/ Down, Floating Table Top	Touch-less IR pedals: Floating Table Top
Braking system	Electromagnetic brakes	
TABLE TOP		
Material	Composite – Carbon Fiber Equivalent	
Size	220 x 77 cm (240 x 80 cm optional)	
Tabletop - detector distance	6,8 cm	
Absorption	< 0,5 mm Al @ 70kVp	
Movement	6-way movement	4-way movement
Long. travel	± 50 cm	
Tranvers. travel	± 13 cm	
Detector travel	Up to 60 cm (Motorized (*))	
Detector speed	7,5 cm/s	
Automatic and synchro movement	Auto-centring / Auto-tracking (*) (also in oblique projections)	
Detector tray	Predisposed for both fixed and wireless ISO 4090 detector	

(*) Optional

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS	
VERTICAL BUCKY	**BS45**
Min Detector Centre Height (Vert. Pos.)	44 cm
Max Detector Centre Height (Vert. Pos.)	202 cm
Vertical travel	158 cm Manual Counterbalanced (Motorized [*])
Vertical travel speed	6,6 cm/s
Max patient coverage	201 cm
Automatic and synchro movement	Auto-centring / Auto-tracking [*] (also in oblique projections)
Collision Detection	Proximity sensor
Detector insertion	Configurable for either left or right side insertion
Surface – detector distance	6 cm
Radiation absorption	< 0.5 mm Al eq @ 70 kVp
Detector tray	Predisposed for both fixed and wireless detector
GRID	
Grid Control	Yes. Automatic.
Grid type	Oscillating
Grid for vertical stand (BS45)	Oscillating grid. SID: 140 cm – R12 – 40 l/cm – ejectable
Grid for bucky table (BT/BTE)	Oscillating grid. SID: 100 cm – R12 – 40 l/cm - ejectable
X-RAY TUBE STAND	**STATIX**
Longitudinal Rails	248 cm Front, 300 cm Rear
Rails Height	2 cm
Longitudinal travel	207,6 cm
Longitudinal movement	Manual
Max X-ray Tube Focus Height	200,8 cm
Min X-ray Tube Focus Height (Vertical beam)	41,8 cm
Min X-ray Tube Focus Height (Horizontal beam)	39,5 cm
Vertical Travel	159 cm
Focal Distance with BS45	>180 cm (for Chest examinations)
Vertical Movement	Manual (standard) - Motorized with Automatic Detector Centering and Automatic Focal Distance[*]
Brakes Type	Electromagnetic brakes
Horizontal Axis Tube Rotation Angle	±135° (mechanical stops every 90°)
Vertical Axis Tube Rotation Angle	±90° (mechanical stops every 90°)
Console	Handgrip with Ergonomic Controls
Console Display	LCD, with SID, linear and angular position, and status/error messages[*]

[*] Optional

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS

X-RAY TUBE [**]

Anode speed	3000 and 10.000 routes/min
Tube construction	RT-TZM
Tube voltage	Up to 150 kV
Anode Storage Capacity	300 kHU
Maximum Heat Dissipation Rate	60 kHU/min
Housing capacity	1700 kHU
Housing heat dissipation rate	29600 HU/min - 750W
Target angle	12,5°
Focal spot size	06x0,6 mm (small focus) - 1,2x1,2 mm (large focus)
Focal spot power	P_{max}=32 kW (small focus) - P_{max}=78 kW (large focus)
Inherent filtration	0,7 mm Al @ 75 kV

COLLIMATOR

Blade control	Manual. Automatic and Motorized [*]
Collimator rotation	±45°
Light source	Halogen lamp. LED [*]
Light time on	Default: 20 s (adjustable)
Collimation	Square field multilayer (0x0 cm – 48x48 cm @ SID=1 m) Laser centering [*]
Al eq contribution to total filtering	Min 1,2 mm Al
Additional filtration	• 1 mm Al + 0,1 mm Cu • 1 mm Al + 0,2 mm Cu • 2 mm Al + 0,3 mm Cu Manual selection / Remote control (motorized)[*]

[*] Optional
[**] These data are only indicative and referred to standard configurations. Different solutions can be supplied according to customer needs.

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS			
HIGH VOLTAGE GENERATOR	PIXEL CP 650	PIXEL CP 850	PIXEL CP 1050
Output frequency	Up to 450 kHz		
Output power	50 kW 500mA @ 100kV @ 0.1s	65 kW 650mA @ 100kV @ 0.1s	80 kW 8000mA @ 100kV @ 0.1s
Low ripple	< 1%		
kV range	40 - 150 kV. Precision: 1 kV		
mA range	10 to 630 mA	10 to 800 mA	10 to 1000 mA
Range mAs	0,1 - 630 mAs	0,1 - 1000 mAs	0,1 - 1000 mAs
Time range	0,001 - 6,3 s. Precision: 77 steps.		
HSS	Yes [*]		
APR	More than 1024 anatomic programs. 3 points technique, 2 points technique, 1 point technique		
Independent Operation	Yes. X-ray Generator can also work independently with other imaging supports i.e. film and/or CR		
Generator Console	Integrated in the Acquisition Workstation Monitor – All Generators parameters can be set from the Acquisition Workstation		
Automatic Exposure Control (AEC)	3-field sensors [*]		
Dose Area Product (DAP)	YES [*], with dose information stored in image DICOM header [*]		
Auto Diagnosis	Incorporated with multiple error and status messages		

[*] Optional

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS

DIGITAL IMAGING SYSTEM

FLAT PANEL DETECTOR	Mars1717		
Detector type	Wired & Wireless		
Technology	Amorphous silicon		
Scintillator	Cesium Iodide (CsI)		
Format (ISO 4090)	43 x 43 cm		
Active detector Resolution	3072 x 3072 pixels		
Pixel pitch	139 µm		
DQE	52%		
Spatial resolution	3,6 lp/mm		
Communication interface	Wireless & Tethered		
X-ray generator synchronization	X-ray push button – *Autotriggering* mode		

TECHNICAL SPECIFICATIONS

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS	
ACQUISITION WORKSTATION	
HARDWARE	
HDD	System Hard disk: 64 GB Hard disk for image archive: 320 GB
CPU	Intel Dual Core 64bit, Fanless 3.0GHz
RAM	4 GB
CD/DVD recorder	Yes
Operating system	Windows 7 Professional Embedded
Network - USB	Gigabit Ethernet – 5 USB 2.0 Ports
Access point	Yes [*]. 802.11g/108 Mbps 2,4 GHz Wireless Access Point
UPS	Yes [*]. Emergency power unit system that grants for safe and controlled switch off preventing any data loss or damage.
Image storage capacity	20.000 images (no compression) 40.000 images (lossless compression)
SOFTWARE	
Image acquisition times	For diagnostic image: < 7 s (tethered) - < 10 s (wireless) For preview image: 3 s
Image size	16 MB
Image enhancement	Everest-X
Display functions	Image Flip/Mirror, R.O.I., Pan/Zoom, Window/Level, Automatic Window/Level, Annotations, Linear and angular measurements, Greyscale Inversion, Image Rotation, Electronic Collimators, Spatial Filters, Multi-Images Visualization
APR	YES, preconfigured and editable
Exposure Index	Yes
Deviation Index	Yes
Reject analysis	Yes
Multi-language	English, Italian, Russian, French, ...
STITCHING PROCEDURE [*]	
Image Paste	Automatic / Manual
Max. n° of images	3
Max. length	120 cm

[*] Optional

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS

ACQUISITION WORKSTATION

STANDARD MONITOR	
Type	LCD colour, 2 MP
Size	23.8""
Recommended resolution	1920 x 1080 pixel
Contrast	1000:1

NETWORKING

DICOM functions	
DICOM Storage (SCU)	Yes. Send Image to PACS
DICOM Modality worklist (SCU)	Yes. Interface with HIS / RIS with auto refresh option
DICOM Print management Class	Yes. Covers the general cases of printing medical images in standardized layouts
DICOM Media exchange (DICOM DIR)	Yes [*]. Patient images export to DVD/CD
DICOM MPPS (SCU)	Yes [*]. Send the status of exams to HIS / RIS
DICOM Storage commitment (SCU)	Yes [*]. Send commitment status
DICOM Verification (SCU) [*]	Yes [*].
DICOM Query / Retrieve (SCU)	Yes [*]. Query and retrieve images from PACS
DICOM Grayscale print (SCU)	Yes [*]. Support DICOM printers
DICOM Structured Dose Report	To exchange structured data produced in the course of image acquisition or post-processing
IHE Integration Profile	
Scheduled Workflow	Acquisition Modality : Patient Based Worklist Query / Assisted Acquisition protocol Setting / PPS Exception Management
Patient Information Reconciliation	Acquisition Modality
Consistent Presentation of Image	Acquisition Modality
Radiation Exp. Monitoring	Acquisition Modality

REMOTE ASSISTANCE

Remote access	ITALRAY X-FRAME DR SYSTEMS are equipped with a remote service system that allows ITALRAY service engineers to have access the system via remote network for servicing and upgrading purposes. The remote servicing system availability is subordinate upon the technical/policy characteristics of the local Hospital network.

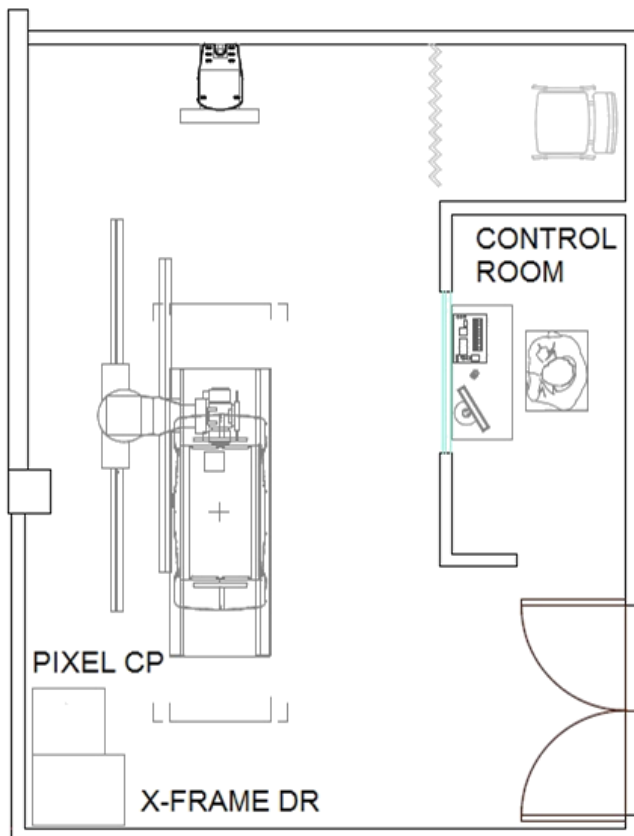[*] Optional

X-FRAME DR2S SYSTEM

TECHNICAL SPECIFICATIONS

INSTALLATION DATA

Power supply	230 Vac +/- 10%, 50/60 Hz (110 Vac [*])
Wall stand (BS45)	DIMENSIONS: : 81 x 56 x 229 cm WEIGHT: 200 kg
X-ray tube stand (STATIX)	DIMENSIONS: 300 x 107 x 233 cm FRONTAL LONGITUDINAL RAILS: 248 cm POSTERIOR LONGITUDINAL RAILS : 300 cm RAIL HEIGHT: 2 cm WEIGHT: 219 kg
Patient table	DIMENSIONS: 220 x 77 x 55 cm (BTE) - 220 x 77 x 75 cm (BT) WEIGHT: 250 kg (BTE) - 140 kg (BT)
Generator cabinet	DIMENSIONS: 55,9 x 40,6 x 123,7 cm WEIGHT: 107 kg
System cabinet	DIMENSIONS: 55 x 70 x 135 cm WEIGHT: 100 kg

ENVIRONMENTAL CONDITIONS

OPERATING	
Temperature Humidity Atmospheric Pressure	+15°C ÷ +35°C 20% ÷ 75% 700 mbar ÷ 1060 mbar
TRANSPORT AND STORAGE	
Temperature Humidity Atmospheric Pressure	0°C ÷ +50°C 20% ÷ 80% 500 mbar ÷ 1060 mbar

ROOM CONSIDERATION (TYPICAL LAYOUTS)

[*] Optional

SIZE AND DIMENSIONS

BS45 14/19

FRONT VIEW	810	
LATERAL VIEW	2196 2290 2020 440 560	
TOP VIEW	340 560 810	

SIZE AND DIMENSIONS

PRODUCT DATA   14/19
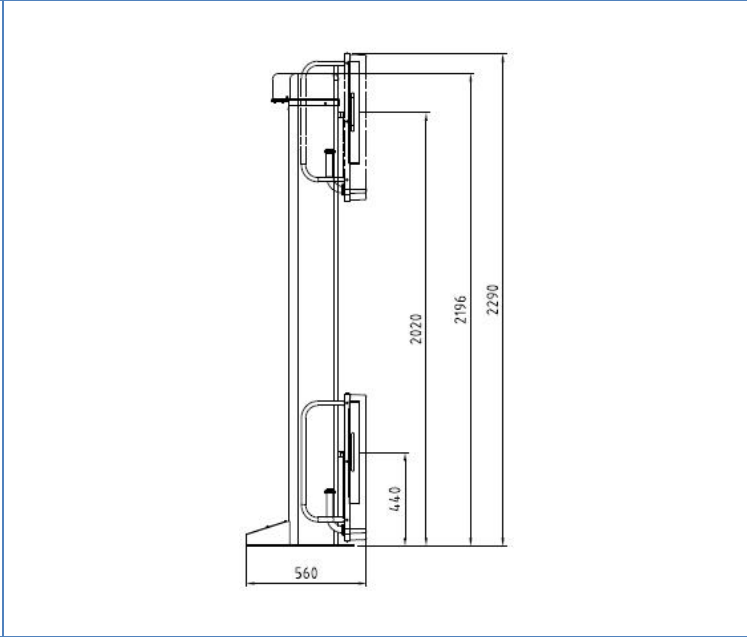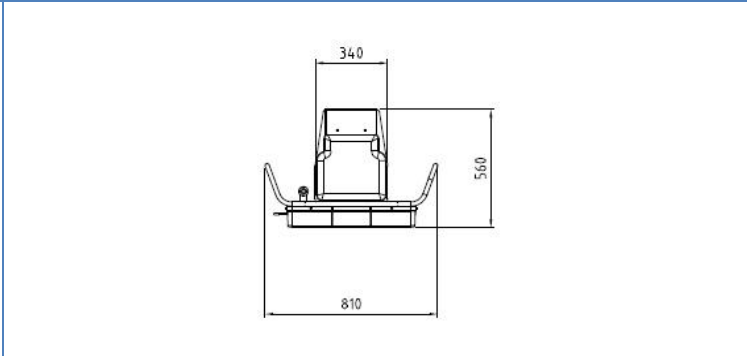
X-FRAME DR2S SYSTEM

FRONT VIEW		
BT LATERAL VIEW		
BTE LATERAL VIEW		
TOP VIEW		
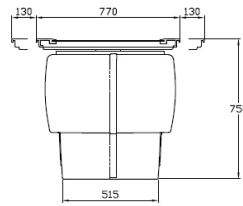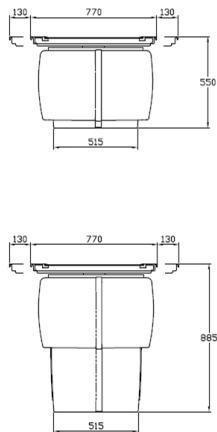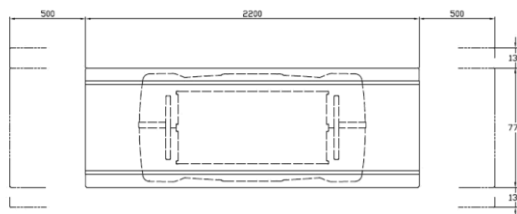
X-FRAME DR2S SYSTEM
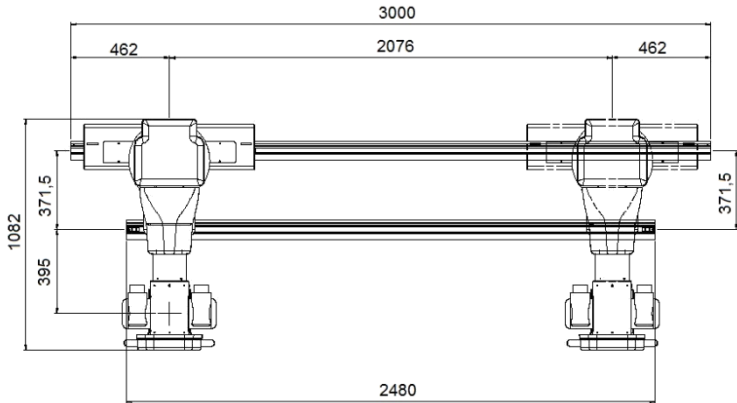
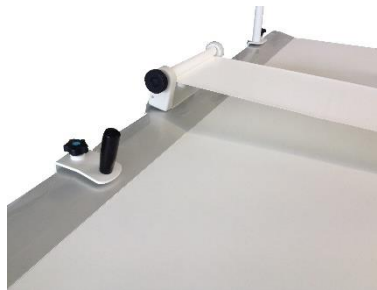|	
TOP VIEW	
LATERAL VIEW	
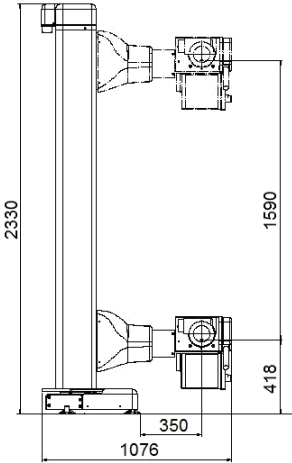
X-FRAME DR2S SYSTEM

ACCESSORIES

Accessory for stitching exams: it supports the patient during several expositions. With double footrest and optional compression band		

ACCESSORIES FOR BT/BTE HORIZONTAL BUCKY (*)

Compression band Handles (couple) Leg support (couple)		
Lateral wireless detector holder for lateral projection on lying patient		

(*) Optional

ACCESSORIES

ACCESSORIES FOR WIRELESS DETECTOR (*)

Wireless detector holder for weight bearing examinations		
Snap-on Grid System, including 80 lp/cm grid		

(*) Optional

CERTIFICATION, INSTALLATION AND WARRANTY

CERTIFICATION

According to European Directive 93/42 CEE X-FRAME DR2S SYSTEM is a class II b device. X-FRAME DR2S SYSTEM has been developed in compliance with the UNI EN ISO 9001:2008 and UNI EN ISO 13485:2012.

Moreover X-FRAME DR2S SYSTEM complies with the following Technical Norms: CEI EN 60601-series:

- EN 60601-1:2006 Medical electrical equipment– Part 1: General requirement for safety.
- EN 60601-1-2:2007/AC:2010 Medical electrical equipment– Part 1: General requirement for safety. 2- Collateral standard: Electromagnetic compatibility – Requirements and tests.
- EN 60601-1-3:2008 Medical electrical equipment– Part 1: General requirement for safety. 3: Collateral standard:: General Requirements for Radiation Protection in Diagnostic X-Ray Equipment
- EN 60601-1-6:2007 Medical electrical equipment. - Part 1: General requirements for basic safety and essential performance - Collateral standard: Usability

INSTALLATION

Only authorized technical personnel that has been appropriately trained by ITALRAY can install ITALRAY X-FRAME DR2S SYSTEM. Upon request, ITALRAY Installation Office can prepare system installation layouts (including eventual construction/electrical).

WARRANTY

ITALRAY guarantees its products for one year from the delivery date. ITALRAY can offer to its customers a wide range of service plans that will perfectly fit all needs and preferences.

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