CORSIX DR

Digital Mobile Unit

Product Data

Cod. PDE-COD Rev. 01

CORSIX DR (power: **32 kW**) is a **plug and play compact all in one digital mobile x-ray unit with innovative design and advanced technology**. Thanks to the **digital flat panel detector**, CORSIX DR allows the user to perform radiologic examinations and diagnostic investigations both in the department (Operating room, Sports Medicine, Plaster Room, Emergency Department, Paediatrics, Orthopaedics) and in the ward.

CORSIX DR combines **portability** and **ease of use** of ITALRAY mobile systems with the innovation of digital technology for the optimization of both image quality and patient dose. CORSIX DR is strongly characterized by its **extremely lightweight**, **easy manoeuvrability**, **compact design** and **limited overall dimensions**. This grants for easy moving around every hospital with perfect visibility.

This digital mobile system operates with a **3-points technique** (kV, mA, ms), or a **2-points technique** (kV/mAs) selection generator, with more than **900 anatomical programs** (**APR**) for adult and paediatric applications. Values and exposure time are always selected and displayed, automatically by the microprocessor.

CORSIX DR is characterized with **a "dead man" breaking system** that with a comfortable handle both facilitates the push of the unit and its positioning. The breaking system is a "dead man" type and blocks the unit in any position, just releasing the handle.

CORSIX DR can be provided with an **optional battery package** that permits to perform up to 100 examinations without having to reconnect to the unit to the power supply during the exam. CORSIX DR is also available with rotation of +/- 90° of the counterbalanced arm, **CORSIX R DR**.

Other main elements are:

- **LCD Touch Screen Display**: CORSIX DR is built with a large area **23,8" LCD high contrast touch screen display** for the digital imaging system and for the generator parameters. This offers the operator the complete control of all generator parameters and APR Programs: from patient and exam selection on RIS Worklist to radiological parameter setting by means of a step-by-step procedure, to image acquisition and processing, up to exam transfer to PACS system;
- **Digital Flat Panel Detector**: Images are acquired with a portable **digital flat panel detector** featuring **amorphous Silicon** (a-Si) technology; this detector employs wireless image data transmission, thus freeing the room from cumbersome and risky cables. The unit is also provided with a storage container for the detector;
- **Software:** The software provides the system of the **essential pre and post tools** for immediate, reliable and high-quality image visualization, with the guarantee of minimum radiation dose for patient in any type of examination. The **Everest-X algorithm** embedded in the software, 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);
- **Post-processing tools**: 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);
- **Full DICOM Package**: The software is integrated with an easily configurable Full DICOM package compatible with any RIS and PACS system or DICOM Printer;
- **Generator Only mode**: CORSIX DR is also capable, in case of need, to perform radiological examinations also on Film or CR Cassettes, simply running the system in "Generator Only" modality;

- **Dose Monitoring**: The display, documentation and storage system of the dispensed dose is achieved thanks to the DAP meter positioned at the exit of the X-ray tube and connected to an electronic unit for the detection and measurement of the product dose per area (DAP meter). The software manages all the dosimetry data acquired in the patient file and generates a report of the individual exposures or of the entire examination. These data can then be exported in DICOM format to a network node;
- **Other optional accessories**: as optional accessories, CORSIX DR can be provided with a Printer, a Potter Bucky, AEC, an Additional Battery package for 3 independent exposures (Up to 100 exams with one single charge).

MAIN CARACHTERISTICS

TOUCH SCREEN INTERFACE

Friendly GUI that provides an easy and intuitive access to any available feature through its **large icons**, on the lateral toolbar on the high-quality touch screen.

MOVEMENT AND BREAKING SYSTEM

Comfortable **handle** that both facilitates the push of the unit and its positioning

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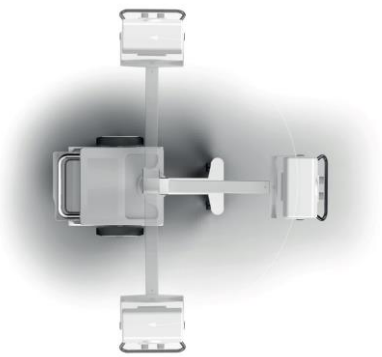
"CORSIX R DR" (*) VERSION WITH ROTATING ARM

Version with **+90°/-90° rotation** of the the x-ray monoblock arm



"ENERGY" OPTION FOR BATTERY POWERED SYSTEM (*)

32 kW version can be provided with internal power supply (**Energy*** option) to protect the electronics from any voltage variation.
The **Energy** option(*) of CORSIX DR has an internal battery (**UPS**) that guarantees an operating autonomy up to 100 x-ray** exposures.

(*) Optional
(**) Value calculated with a standard settlement of radiological values

TECHNICAL SPECIFICATIONS	
MECHANICAL CHARACTERISTICS	
X-ray monoblock arm rotation (only for CORSIX R DR version)	± 90°
X-ray tube rotation (x axis)	± 180°
Collimator tube rotation (z axis)	± 90°
Width (parking position)	64.1 cm
Length (parking position)	124.6 cm
Height (parking position)	150 cm
Max. focus height	209 cm
Min. focus height	37.8 cm
Rear wheel diameter	30 cm
Front wheel diameter	7.5 cm
Wheel type	**Large wheels** in the back, **small 360° rotating wheels** in the front with high quality braking system. Wheel guided system with foot lift to overcome obstacles
Handling	Dead man brake
Weight (CORSIX DR)	190 kg (AR) – 205 kg (**Energy** option[*])
Weight (CORSIX R DR)	273 kg (AR) – 318 kg (**Energy** option[*])
Arm type	Spring balanced foldable cross arm to minimize the movement of the main unit. Locked in its rest position during system movement. Tube is freely adjustable
Docking station	35x43 cm
Battery Level Indicator	Yes, on software interface

(*) Optional

TECHNICAL SPECIFICATIONS

RADIOLOGICAL CHARACTERISTICS

Maximum power	**32 kW**
Generator type	High frequency inverter type microprocessor controlled
Generator console	Embedded into acquisition software (FULL DR Solution, kV, mA, mAs, mS all controllable from the software)
Inverter frequency	40 ÷ 100 kHz
Max ripple	< 3%
Monoblock type	MQD-30R/ MR32AR
mAs range	0.2 – 250 (29 steps) 0.2 – 350 (30 steps) * 0.2 – 100 (with **Energy*** option, when battery powered)
mA range	10 - 400 mA ± 5%
kV range	40 - 125 kV ± 5% (step di 1 kV)
Exposure time	0.002 – 5 sec.
Exposure number	Unlimited (Limited only by dedicated hard disk dimension supplied by the mains) Max. 100 (with **Energy*** option, when battery powered)
X-ray push button	- Manual with double click and 4 m extensible cable - Wireless(*)
Total filtration	> 3 mm Al
Monoblock thermic capacity	860 kJ (1150 kHU)
Monoblock continuous thermal dissipation	87 W
Dose Area Product (DAP)	YES, with dose information stored in image DICOM header (*). Preset for DAP camera possible as optional*
Anode type	Rotating (R.A)
Anode speed	3000 gg/min
Anode Thermic capacity	112 kHU optionally upgradable to 300 kHU
Anode angle	15°
Focal spot	0.6 mm – 1.3 mm 0.6 mm – 1.2 mm
Maximum power	11 kW (S.F.) – 32 kW (L.F.) 17 kW (S.F.) – 43 kW (L.F.)
Safety devices	–mA_{min} and mA_{max} safety device –Maximum X-ray tube load safety device –Maximum exposure time safety device –Temperature and Monoblock –Max kV, min kV, max I –Capacitor faulty –Starter anode faulty –Microprocessor auto-test with display of diagnostic messages

(*) Optional

TECHNICAL SPECIFICATIONS

COLLIMATOR

Blade control	Multi-leaf Led light collimator manually adjustable with retractable tape for SID measurement, cross hair indicators, adjustable timer and rotation +/-90°
Light field source	Led lamp (>250 lux @ SID=1m)
Time on	Standard: 30 s (adjustable)
Collimation	Square field, up to 48 x 48 cm @ SID=1 m
Al eq contribution to total filtering	2 mm Al eq
Additional filtration (*)	Additional filters are available for paediatric applications: - 0 mm Al eq - 1 mm Al eq + 0.1 Cu - 1 mm Al eq + 0.2 Cu - 2 mm Al eq
SID measurement and display	- Extensible meter (at collimator window) - - Optical meter with a display on the cover of monoblock

(*) Optional

INTERFACE TECHNICAL SPECIFICATIONS

DIGITAL IMAGING DEVICE COMPATIBLE WITH THE DEVICE

FLAT PANEL DETECTOR	**Pixium 3543 DR**	**Pixium 3543 EZ**	**Pixium 2430 EZ**
Detector type	Portable wireless		
Technology	Amorphous silicon		
Scintillator	Cesium Iodide (CsI)		
Format (ISO 4090)	35 x 43 cm	35 x 43 cm	24 x 30 cm
Active detector matrix (Effective Pixel matrix)	2664x2156 pixels	2880x2400 pixels	1560x1920 pixels
Image depth	16 bit		
Pixel pitch	160 µm	148 µm	
Spatial resolution	3.13 lp/mm	3.4 lp/mm	
Detector Battery Indicator and Charger	Yes, within the GUI		
Battery autonomy	Max. 8 hours		
Max.load capacity	Distributed: 150 kg	Distributed: 300 kg	
Ingress Protection	IP43	IP67	
DQE Type	70% (@ 0,05 lp/mm)	70% (@ 0 lp/mm)	
Image time	< 6 s (Preview: 2 s)	< 6 s (Preview: 1 s)	4 s (Preview: 1 s)
Weight	Battery included: 3.1 kg Battery excluded: 2.9 kg	Battery included: 2.8 kg Battery excluded: 2.6 kg	Battery included: 1.6 kg Battery excluded: 1.4 kg
Communication interface	Wireless / Tethered(*)		
Standard component	One detector One battery	One detector Two batteries One 3-slot battery charger	
Optional component	One 3-slot battery charger(*) One battery(*)	-	

(*) Optional

INTERFACE TECHNICAL SPECIFICATIONS

DIGITAL IMAGING DEVICE COMPATIBLE WITH THE DEVICE

DETETTORE FLAT PANEL	**Mars 1417X**	**Mars 1717X**	**Mars 1417V3**	**Mars 1717V3**
Detector Type	Portable wireless			
Technology	Amorphous silicon			
Scintillator	Cesium Iodide (CsI)			
Format (ISO 4090)	35 x 43 cm	43 x 43 cm	35 x 43 cm	43 x 43 cm
Active detector matrix (Effective Pixel matrix)	3500 x 4300 pixels	4267 x 4267 pixels	2304 × 2800 pixel	3072 x 3072 pixels
Image depth	16 bit			
Pixel pitch	100 µm		150 µm	139 µm
Spatial resolution	4.3 lp/mm		3.3 lp/mm	3.6 lp/mm
Battery indicator	Yes, with multi-format battery charger			
Battery autonomy	8.5 h	< 7.5 h	8 h	5 h
Max. load capacity	Distributed: 300 kg		Distributed: 150 kg	
Ingress Protection IP	IP56		IPX1	
DQE (typ.) (@ 0lp e RQA5, per IEC 62220-1)	73.4 % (@ 0 lp/mm)		61% (@ 0 lp/mm)	66% (@ 0 lp/mm)
Image time	<3s (Preview: 1s)		<5s (Preview: 3s)	
Weight (battery included)	3 kg	3.4 kg	3.3 kg	4.6 kg
Communication interface	Wireless/ Tethered (*)			
Standard Components	One detector Two batteries One battery charger			

(*) Optional

TECHNICAL SPECIFICATIONS	
ACQUISITION WORKSTATION	
HARDWARE	
Type	Integrated high performance workstation with acquisition software, patient and exam management and post processing and DICOM features on board
Hard-Disk	System Hard Disk: 64 GB Local archive for images: 1 TB
CPU	Intel quad-core
RAM	8 GB
Operating system	Microsoft® Windows 10 IoT
UPS(*)	Yes
Image storage capacity	More than 62.000 images (full resolution).
SOFTWARE	
X-ray generator interface	Yes (*)
DAP Interface	Yes (*)
Image size	15 MB (12,5 MB typ.)
Image enhancement	Everest-X
Automatic LUT	Linear and logarithmic
Patient/Exam data management	Includes manual image patient registration, emergency exam and RIS patient/exam selection
Post processing functions	Wireless image transfer, Exposure Index, Deviation Index, Graphic collimators, R.O.I., Pan / Zoom, Window / Level, Automatic Window / Level, Edge enhancement, Annotations, (Angular - Linear) Distances, Gray scale inversion, Image rotation, Image Flip / Mirror, Spatial Filters, Multi-image viewer, Image export (DICOM, JPEG).
APR	Yes, preconfigured and editable
Exposure Index	Yes
Deviation Index	Yes
Reject analysis	Yes
Multi-language	English, Italian, French, Spanish, Danish, Slovenian
Exposure status indication	Embedded into the acquisition software (preparation, exposure)
IMAGE DISPLAY SYSTEM	
Size & Type	23.8" LCD high contrast touch screen
Recommended resolution	1920 x 1080 pixel
Contrast	3000:1
Brightness	300 cd/mq

(*) Optional

TECHNICAL SPECIFICATIONS

NETWORKING

DICOM 3.0 functions

DICOM Storage (SCU)	Yes. Send Image to PACS
DICOM Modality worklist (SCU)	Yes. Interface with HIS / RIS with auto refresh option
DICOM Print (SCU)	Yes. Covers the general cases of printing medical images in standardized layouts.
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 Storage SCP	Yes (*). DICOM images reception.
DICOM Structured Dose Report	To exchange structured data produced in the course of image acquisition or post-processing.
Network	2 x RJ-45 PCIe GbE by Intel® I211 controller

REMOTE ASSISTANCE

Remote access	ITALRAY 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

TECHNICAL SPECIFICATIONS

INSTALLATION DATA

Voltage	230 Vac (115 Vac(*)) Single phase
Frequency	50/60 Hz
Max. absorbed current	13 A (intermittent functioning) <1 A (continuous functioning)

ENVIRONMENT CONDITIONS

OPERATIVE CONDITIONS CORSIX DR	
Temperature	10°C ÷ 40°C
Humidity	30% ÷ 75%
Pressure	700 ÷ 1060 hPa

OPERATIVE CONDITIONS WIRELESS FLAT PANEL DETECTOR	Pixium 3543 DR	Pixium 3543 EZ	Pixium 2430 EZ	Mars 1417X	Mars 1717X	Mars 1417V3	Mars 1717V3
Temperature	10°C ÷ 40°C	10°C ÷ 35°C	10°C ÷ 35°C	10°C ÷ 35°C	10°C ÷ 35°C	5°C ÷ 35°C	5°C ÷ 35°C
Humidity	20% ÷ 90%	30% ÷ 70%	30% ÷ 70%	5% ÷ 90%	5% ÷ 90%	10% ÷ 90%	10% ÷ 90%
Pressure	700 ÷ 1100 hPa	700 ÷ 1100 hPa	700 ÷ 1100 hPa	700 ÷ 1060 hPa	700 ÷ 1060 hPa	700 ÷ 1060 hPa	700 ÷ 1060 hPa

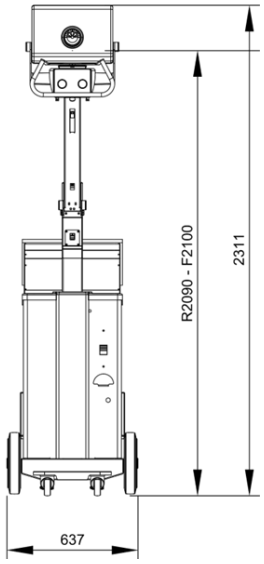
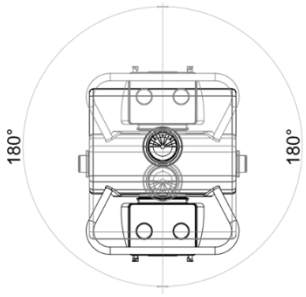
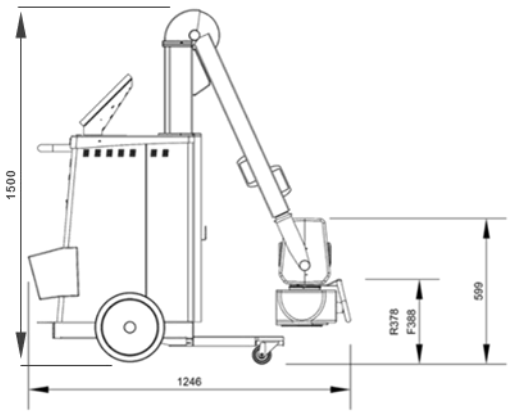
TRANSPORT AND STORAGE CORSIX DR	
Temperature	0°C ÷ 40 °C
Humidity	20% ÷90%
Pressure	500 ÷ 1060 hPa

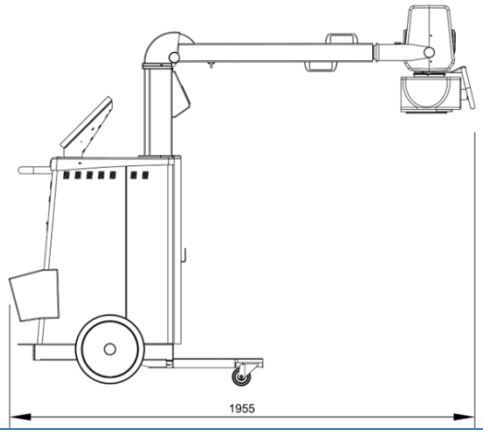
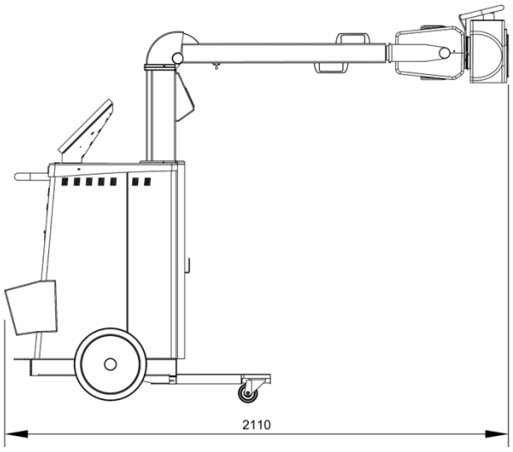
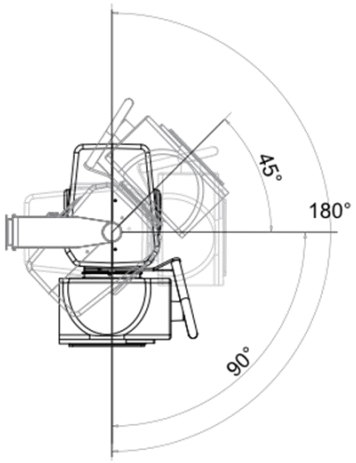
TRANSPORT AND STORAGE WIRELESS FLAT PANEL DETECTOR	Pixium 3543 DR	Pixium 3543 EZ	Pixium 2430 EZ	Mars 1417X	Mars 1717X	Mars 1417V3	Mars 1717V3
Temperature	-10°C ÷ 55°C	0°C ÷ 55°C	0°C ÷ 55°C	-20°C ÷ 55°C	-20°C ÷ 55°C	-20°C ÷ 55°C	-20°C ÷ 55°C
Humidity	5% ÷ 95%	5% ÷ 95%	5% ÷ 95%	5% ÷ 95%	5% ÷ 95%	5% ÷ 95%	5% ÷ 95%
Pressure	500 ÷ 1100 hPa	500 ÷ 1100 hPa	500 ÷ 1100 hPa	600 ÷ 1060 hPa	600 ÷ 1060 hPa	700 ÷ 1060 hPa	700 ÷ 1060 hPa

(*) Optional

SIZE AND DIMENSIONS

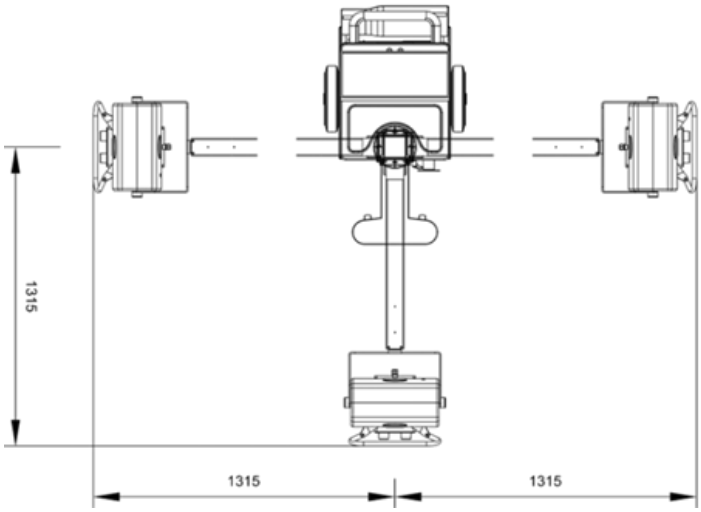
CORSIX DR

FRONT VIEW (Operational position)		
FRONT VIEW (Detector movement)		
LATERAL VIEW (Transport condition)		

LATERAL VIEW (X-ray beam perpendicular to the floor)		
LATERAL VIEW (X-ray beam parallel to the floor)		
LATERAL VIEW (detector movement)		

SIZE AND DIMENSIONS

CORSIX R DR

TOP VIEW		

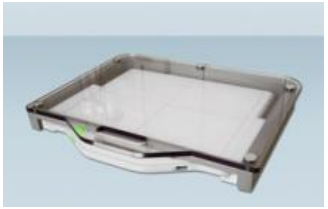
ACCESSORIES

DOUBLE-CLICK WIRELESS CONTROL (*)

CORSIX DR is provided also with:

- handswitch pushbutton with double click 4 meter cable for Radiography exposure control
- Optional wifi double switch exposure remote control so to avoid to the operator to stay in the same room with the patient (*)

WEIGHT DISTRIBUTION SUPPORT FOR WIRELESS DETECTOR - UP TO 350 kg(*)



CLIP-ON GRID SUPPORT WITH HANDLE (*)

- Holds DR Panel during exam
- Protects DR Panel during routine handling.
- Provides ergonometric handle and double positive lock to secure DR Panel during transport.
- Made of shock absorbing materials

(*) Optional

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