X-Frame DR – EZ

PRODUCT DATA

Product Data

X-Frame DR-EZ - Rev.3 (May 2016)

DESCRIPTION

X-Frame DR-EZ is the latest Italray product: it represents a **highly flexible instrument** in Digital Radiography that is mainly used as **DR upgrade for analogue traditional x-ray**.

This innovative system it is based on the cassette-size digital flat panel detector featuring amorphous Silicon (a-Si) technology and a Gadolinium (Gadox) scintillator (option: Caesium Iodide scintillator), that for its standard formats (35x43 cm and 24x30 cm) can be used **inside traditional bucky and cassette-holder of every analogue x-ray rooms**.

Built-in technology of these detectors permits wireless communication between flat panel and digital workstation, and battery power, by means a removable battery positioned inside the detector size, make installation of X-frame DR-EZ very easy in main existing radiological systems so that **no physical connections are needed** to set up this up-grade kit.

In a short, the main difference between X-Frame DR-EZ and Digital Radiography systems is that while these ones require to pre-set accessories in order to hold/supply specific digital detectors, **X-Frame DR-EZ works on existing radiological environment without any hardware change**. The synchronization between x-ray emission and acquisition onset can occur in the following modes.
1. Either using an X-ray push button, properly connected to x-ray generator;
2. Or using the detector "autotriggering" property that synchronizes autonomously acquisition beginning with x-ray emission.

**X-Frame DR-EZ** configuration includes, in the 1st case:
1) Digital X-frame DR workstation with:
    - computer with network board for connection with wi-fi access point
    - x-ray generator interface
    - X-Frame DR software for image acquisition
    - User interface: 19" LCD monitor, keyboard and mouse (or optional 23" touch screen monitor)
2) access point for wireless communication with digital detector
3) Pixium EZ 3543 digital detector (BUC cable, power supply, batteries and battery charger)
4) X-ray push button.

And in the 2nd case (**auto-triggering** mode):
1) Digital X-frame DR workstation with:
    - computer with network board for connection with wireless access point
    - X-Frame DR software for image acquisition
    - User interface: 19" LCD monitor, keyboard and mouse (or optional 23" touch screen monitor)
2) access point for wi-fi communication with digital detector
3) Pixium EZ3543 digital detector with "autotriggering" (BUC cable, power supply, batteries and battery charger)

Wireless connection between digital detector and acquisition workstation manages not only commands for panel acquisition, but also **acquired image downloading** and the **sending detector state messages**.

X-Frame DR-EZ is equipped with X-Frame DR software, developed in Windows, for an easy and fast selection of patient and exams from daily Worklist downloaded from hospital RIS, and for radiological parameters setting. X-Frame DR offers a wide interface for image post-processing with large and intuitive buttons (marker insertion, grayscale inversion, flip/mirror, zoom, rotation ...).
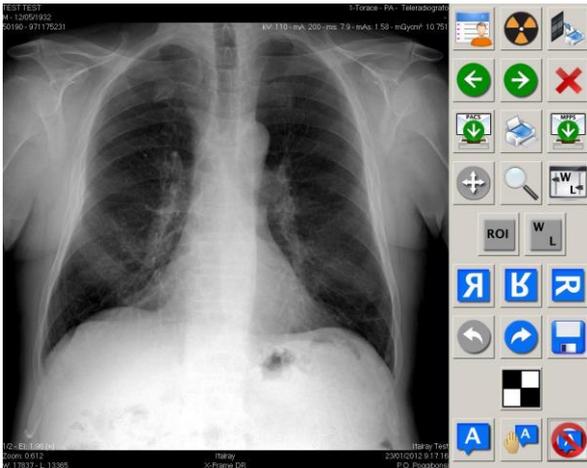
X-Frame DR software GUI for image view and processing.

By means of LAN connection X-Frame DR-EZ is always interfaced with RIS, PACS and any review stations inside clinical department. Thanks to **full DICOM 3.0 compatibility** X-Frame DR-EZ is ready to download daily Worklist and to send acquired exams to PACS or to a DICOM printer for data archiving.

After a quick preview (less than 3 seconds after exposure), the acquired image is presented (within 5 seconds) and it consists in a processed image ready for diagnosis. These images have a typical size of 12.4 MB and X-Frame DR-EZ hard-disk grants for a local archive of more than 25.000 images.

TRIXELL FLAT PANEL DETECTOR 3543 EZ

Wireless detector **Trixell Pixium 3543 EZ** is a new generation WiFi flat panel whose characteristics and performance offer unprecedented freedom. While providing outstanding image and diagnosis quality, the new Pixium 3543 EZ is designed to simplify examination conditions and the versatility and autonomy of this portable, ultra-light and robust detector optimise patient workflow.

Wireless cassette-size Pixium 3543 EZ is a solid state detector, featuring amorphous Silicon (a-Si) technology and Gadolinium (Gadox) (or optional Caesium Iodide) scintillator: that providing a very efficient x-ray absorption, guarantees high DQE (65% @ 0 lp/mm RQA5) and reduced patient dose. Images are acquired with a minimum pixel pitch thus producing brilliant images with an extremely sharp resolution matrix. Also, thanks to the 16 bits grayscale acquisition depth and the very-low-noise electronics, an incredible grayscale dynamic range is guaranteed, and even the most subtle details and the most diverse structures can be effectively identified in only one image, with image retakes practically eliminated.

Various are the main features of this flat panel detector. First is the possibility to **communicate in wireless mode**: no physical connection is required with the digital workstation to transfer controls and acquired images. This feature, together with its **"cassette-size" dimensions**, make the detector perfect to be used inside every potter of every already existent radiological accessory, to acquire images of unusual and difficulty projections, also in contact with the patient, and on traditional analogic x-ray systems. Wireless technology allows for a free use of the detector inside Radiology Department, to acquire images of patient both on a wheelchair and on a stretcher, increasing the flexibility of the radiological system.

The **"auto-triggering"** feature (i.e. automatic detection of exposition) offers a fast and strong way to use digital acquisition and processing of x-ray images on every traditional radiological system. In this way the image acquisition starts just once the detector is subject to x-ray emission, without requiring any **physical synchronization with x-ray generator**. Now the detector is completely independent by hardware connection to the radiographic system and can acquire images from every x-ray system, just requiring the obvious presence of an x-ray generator.

An internal memory (to store about 80 images) is available on Pixium 3543 EZ; this allows to work with this wireless flat panel detector also outside the radiographic room (i.e. on the ward, in intensive care unit …) wherever both an x-ray generator and X-Frame DR system are available.


Trixell Pixium 3543 has an external battery charger that provides power up to 3 batteries at the same time, for a practically unlimited operativity.

The *autonomy* is defined from the time a battery fully charge is plugged into the detector to the time when there is no more power to do an image and this time is about 8 hours.

The battery, positioned inside detector case, can be removed manually without tool, and it is automatically recharged when in the battery charger. It needs, from complete discharge, to reach full charge (100%) maximum 4 hours.

Detector border is covered with plastic strongly resistant to mechanical shocks. Trixell Pixium 3543 EZ preserves its performances also if loaded with a mechanical weight of 150 kg uniformly distributed over its complete surface. Moreover it remains at full performance also after a drop test of 0,7 m (*drop height*).

The detector casing is completely built in carbon fiber and inside it LED for status information are integrated. On the back of the shield there is the site for removable batteries.
Detector, battery charger and batteries offer IP 41 protection to liquid, in agreement with IEC 60529.
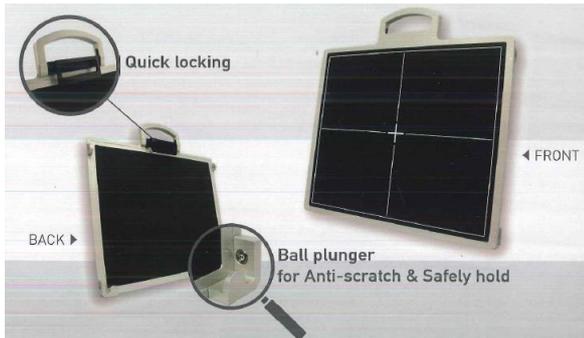
As option for X-Frame DR-EZ system, a **grid detector holder** can be provided. A stable and simple designed support with handle to carry detector and grids whenever requested. This light weighted devices guarantees for quick-locking, easy handling and movement and anti-scratch and safety-hold for its reinforced borders.

ENSURE VERSATILITY FOR ALL EXAMS

Digital detector Pixium 3543 EZ can upgrade to the benefits of Direct Radiography (DR), without replacing existing equipment: maximizing their use by means of a **very simple installation**.
Thanks to "autoriggering" feature Pixium 3543 EZ performs an easy and affordable way to go Direct Digital and perform image processing on high quality x-ray images, on every radiological system, without requiring any physical connections in every radiological environment.

With their *cassette- size*, and *battery-power* features, these detectors fit into any standard bucky tray and can be removed to **ensure versatility for all exams**.

Wireless communication and internal memory (to store locally up to 80 images) improve operator comfort, exam flexibility and ergonomics also in very difficult situation.

X-Frame DR-EZ together with the optional medical tablet, can expand applications in Digital Radiography, to perform x-ray examinations also outside a fixed radiography system (for example on ward, using the x-ray generator of a traditional mobile).

Here below the description of this optional X-frame DR-EZ modality:

Operator downloads the RIS Worklist on X-Frame DR-EZ workstation. He identifies those exams/patients to be performed outside the x-ray room and sends all information about them to the portable system composed by the tablet and the wireless detector.

Once in the ward, the operator prepares the patient for acquisition, positioning the detector to perform the required exam displayed on tablet X–frame DR software.

On the available x-ray source, the operator sets correspondent radiological parameters and once the detector is ready for acquisition, makes the exposure. The image is locally stored on the internal memory of Pixium 3543 EZ (thus allowing the operator to make up to 80 exposure in full autonomy).

The image is immediately displayed on the tablet screen to check the correct acquisition in terms of collimation, positioning, and once all the programmed examinations have been acquired (and stored on the internal memory) the operator came back to X–Frame DR-EZ workstation, download them upgrading the original Worklist with acquired images.

Here below the graphics that describes the use of tablet for acquisition with auto-triggering mode:
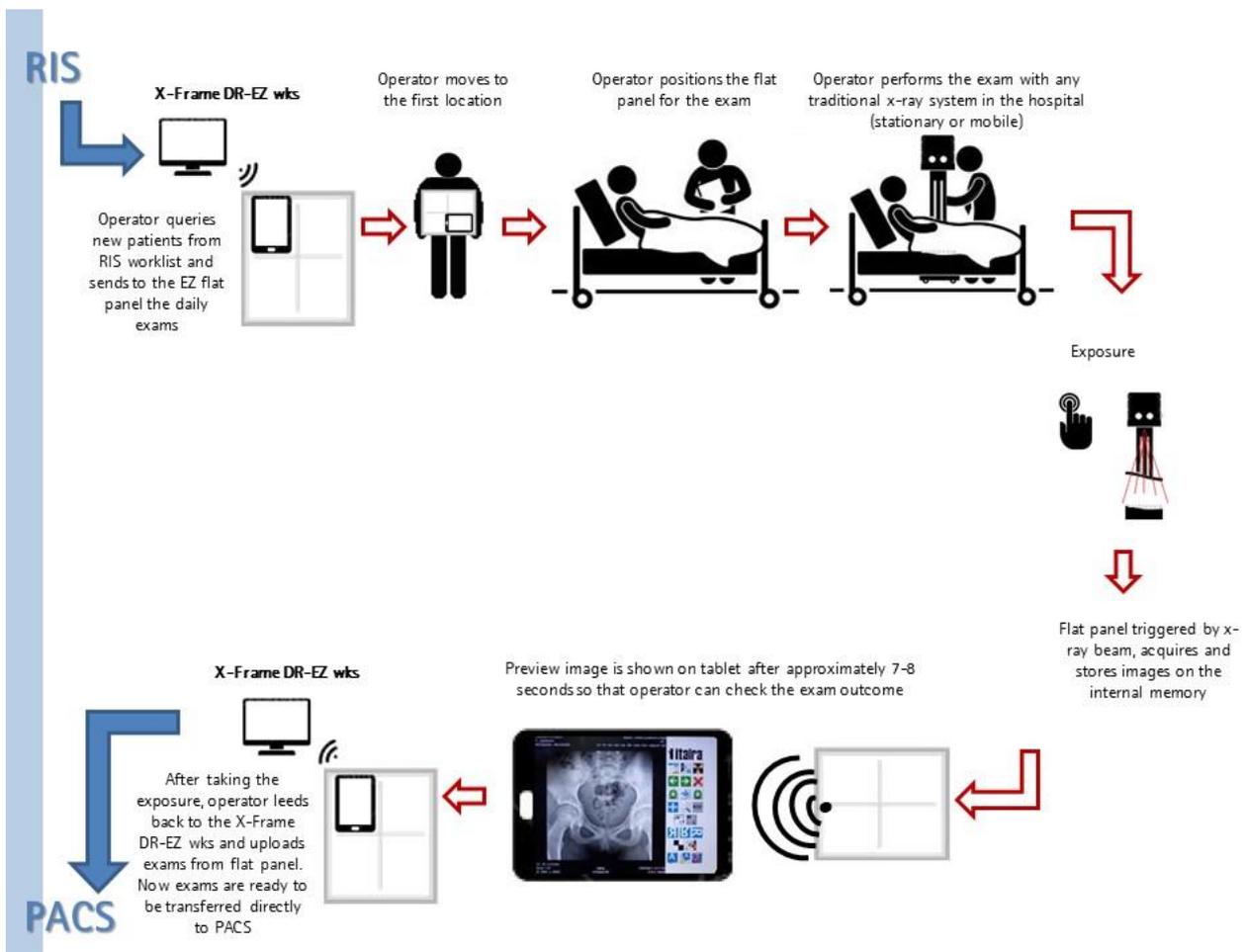
TECHNICAL FEATURES

ACQUISITION SYSTEM	
IMAGE ACQUISITION & STORAGE	**Flat panel detector:*Pixium portable 3543 Ez***
	Processing, resolution — 2880x2400x16 bit
	Technology — Amorphous silicium
	Scintillator — Gadolinium (Gadox) Option: Caesium Iodide (CsI)
	Pixel pitch — 148 µm
	Active area — 35x43 cm
	Detector dimensions — 383.5 x 459.5 x 15 mm
	Detector weight — 2,8 kg
	Battery autonomy — 3 hours typ. @ 180 images/hour, up to 5 h. in non-operative conditions
	Source-Image distance (SID) — min: 85 cm; max: 300 cm;
	Processor unit
	Processor — Intel Celeron, 1,4 GHz Dual Core, fan-less
	RAM — 4 GB RAM DDRIII
	Hard-disk — 320 GB (SATA) + 64 GB (MSATA)
	USB — YES
	CD/DVD Writer — YES
	Network — 3x Ethernet 10/100/1000 Mbit, Base-T, RJ45 integrate
	Image size — 15 MB (12,4 MB typical)
	Num. of images locally archived — More than 25.000 images on local archive
	Image and data communication/transfer — Wi-fi or with back-up cable (BUC)
	Automatic LUT — YES, Linear and Logarithmic
	Image Enhancement — YES, Automatic *Everest* -X
	R.O.I. — YES
	Pan/Zoom — YES
	Window/Level — YES
	Automatic Window/Level — YES
	Edge Enhancement — YES
	Linear and angular measures — YES
	Annotations — YES
	Greyscale Inversion — YES
	Image Rotation — YES
	Image Flip/Mirror — YES
	Spatial Filters — YES
	Multi-Images Visualization — YES
	Operating System — MS Windows Embedded

ACQUISITION SYSTEM		
DICOM 3.0	Print SCU	YES, with Print Composer
	Store SCU/SCP	YES
	Worklist Management SCU	YES
	Media Store SCU	YES, Optional
	MPPS SCU	YES
	Storage Commitment SCU	YES
	Verification SCU/SCP	YES
	Query/Retrive SCU	YES

SIZE AND DIMENSIONS

Front view	Top view
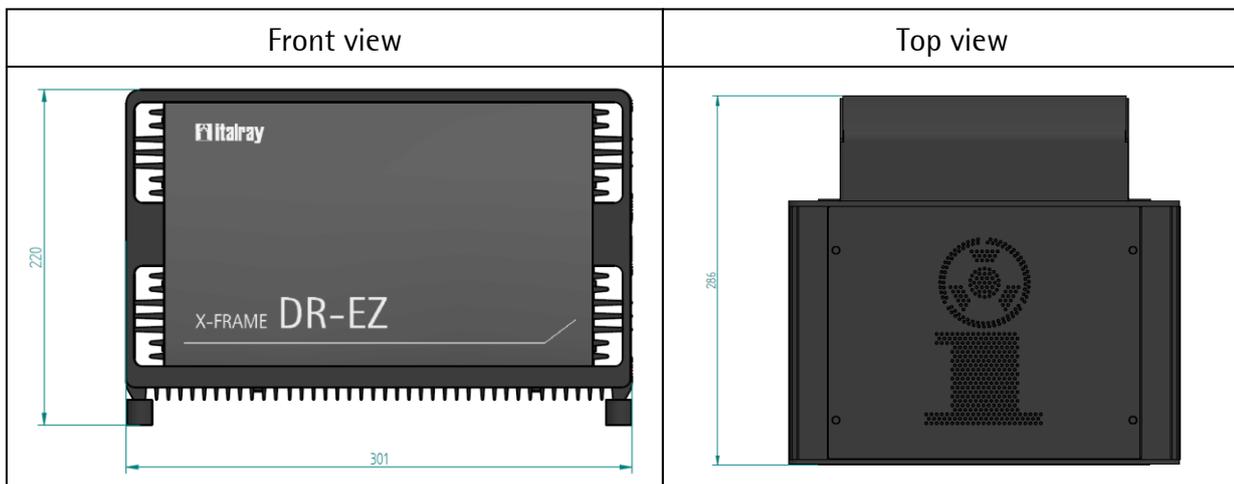
CLASSIFICATIONS

According to European Directive 93/42 CEE X-Frame DR-EZ is a **class II b** device. X-Frame DR-EZ has been developed in compliance with the UNI EN ISO 9001:2008 UNI EN ISO 13485:2012 and according to IEC 60601 family:

Directive: 93/42/CEE and subsequent 07/47 CE
CEI EN 60601-1
CEI EN 60601-1-2
CEI EN 60601-1-3
CEI EN 62304
UNI CEI EN ISO 15223-1:2012

INSTALLATION AND WARRANTY

X-Frame DR-EZ can be installed only by authorized technical personnel that has been appropriately trained by ITALRAY. Upon request, ITALRAY Installation Office can prepare system installation layouts (including eventual construction/electrical).

ITALRAY guarantees its products for 1 (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.

ITALRAY reserves the right to make modifications without any prior notice.

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