

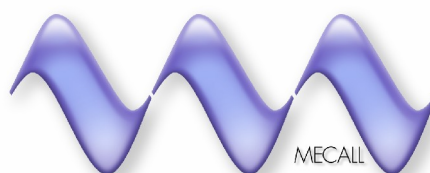
# HIRIS rad2

## *Flat panel digital radiography*



3001 x 3001 x 14bits  
43 x 43cm square  
interval between two exposure <4s  
3 times more DQE compared with 400film/screen

higher resolution  
larger useful area  
higher productivity  
a lower X-ray dose



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# A new step in digital radiography

## INTRODUCTION

The HIRIS RAD is based on an aSi flat panel technology .  
 Designed to replace conventional film and computed radiography, this system will allow a very speed examination time, and therefore a high patient work flow, as well as cost savings and excellent image quality with a lower dose.



## ADVANTAGE

- /// **Ergonomics** layout for the best patient and operator comfort.
- /// **High Image Quality:** High DQE – Low pixel size 143 um.
- /// **Speed:** Full image processing in less than 4 sec.
- /// **Connectivity** : integrated Hospital IT management
- /// **Dose saving** in all operation
- /// **High productivity**

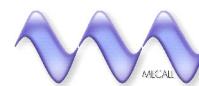
## APPLICATION

- /// **Skeleton and Chest examinations.**

## DETECTOR

- /// Technology: amorphous silicon with a Caesium Iodide Scintillator
- /// Detector area: 43 cm x 43 cm.
- /// Matrix size : 3001 x 3001 pixels.
- /// Pixel size : 143 x 143 um.
- /// Pixel data . 14 bits
- /// External dimensions: 556 x 488 x 45 mm
- /// Weight : 20 kg





## A new step in digital radiography

### SYSTEM CONTROL

- /// X-Ray beam quality and dose level controlled by a dedicated “System” computer.
- /// Multi Grids Control: anti scattered grids ratio 12, L/cm 80 (suggested).
- /// Ionisation chamber: selectable areas for Automatic Dose Control.
- /// X-Ray beam size digitally controlled, in pre acquisition, via a CAN BUS collimator.
- /// X-Ray generator digitally settled before image acquisition.

### OPERATIONAL MODE

/// Radiography :			
useful area	image resolution	frames rate	
43x43 cm	3001x3001x14bits	4s/frame	

## ADVANCED IMAGE PROCESSING

### **Unlimited APR programs**

### **“Instant Ready Image”**

More than 20 pre selected parameters for each anatomical study

- Best particular image anatomical view
- Lower X-Ray dose
- Shorter examination time
- Best patient and operator comfort

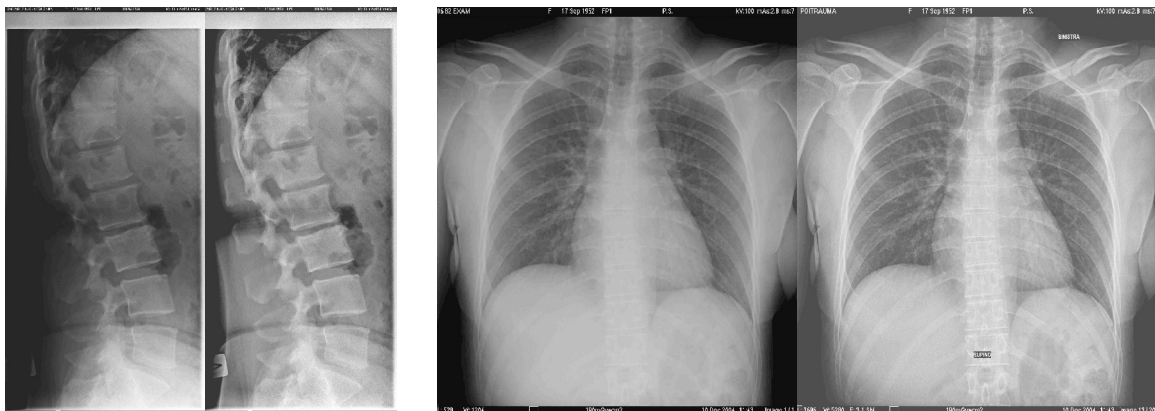
### **A.T.H , Anatomical Tissue Harmonization**

A.T.H. 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 artefacts
- A great benefit thanks to a better diagnostic accuracy and radiologist productivity

**“Instant Ready Image”**

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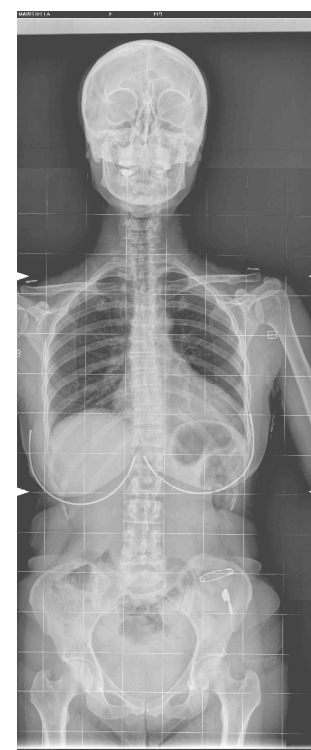


### Images Stitching

Integrated procedures for long leg & spine images stitching

### Digital Tomography

Combining the flat detector image quality with the remote Control table ergonomics the digital tomography becomes again very effective



## IMAGES PROCESSING

*“Instant Ready Image”*

- /// Sharp spatial filtering, kernel 3x3 to 11x11.
- /// Auto and manual Windowing: contrast, brightness, grey levels reverse.
- /// Auto and manual image magnification: zoom on detector and on image.
- /// Multi-Image overview display, “imagette” presentation for fast exam overview.
- /// Auto and manual electronic collimators.
- /// Measuring software tools : distance, angles.
- /// Image presentation: H/V reverse, 90°rotation, true size image editing
- /// Text editing with large fixed strings selection

# Instant Ready Image Anywhere

## NETWORKING

- /// Dicom worklist management – RIS connection.
- /// Dicom storage service – Send images to workstation &/or archiving system.
- /// Dicom storage commitment
- /// Dicom print service – Print with film editor program.
- /// Dicom CDROM – Archiving on CDROM directly from HIRIS.
- /// DICOM– Modality Performed Procedures Step.



## DISPLAY

19"LCD display, DICOM transfer function, medical imaging display.

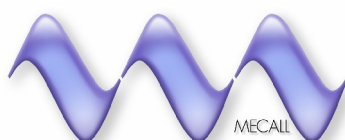
## Technical data

TECHNICAL SPECIFICATIONS			
HIRIS rad2	Function & Features	S	O
<b>User interface</b>	-Windows 2000 operating system, intuitive icons, 3F mouse driver -Operator information in multi-language setting: English, Italian, French, German and Spanish, others on demand.	√	
<b>Archive frame</b>	Patient data archive: patient working list, studies to be done, studies terminated, studies documented (print, store,...)	√	
<b>Operative frame</b>	<u>Frame area</u> of 1280x1024 pixels <u>Image area</u> of 1024x1024 pixels, overlay of: patient data, image data, exposure dose, text symbol and graphic. <u>Icons area</u> : pre-acquisition function selection, image post-processing, images destination for reporting, system status, exposure dose rate evaluation. Thumbnails of the mains 6 images/run acquired.	√	
<b>Display</b>	Control desk :19" LCD, medical display image, colours for icons and graphic (live image display)	√	
	In room: one 18" LCD high brightness (700cd/m <sup>2</sup> ), medical display, Dicom LUT, native monochrome (live image)		√
<b>Special operative modes (Table f. depending)</b>	<u>Tomography</u> : linear tomography with selectable angles <u>Stitching</u> : serial images acquisition and automatic reconstruction for 60cm,90cm,120cm area		√
<b>Automatic pre-acquisition setting of Anatomical Studies</b>	-dose in radiography, 4 patient size/dose -kV-mA / mAs -AEC on/off, measurement fields of ion. chamber -X-Ray tube focal spot -X-Ray focus-detector image plane distance (S.I.D.) -Antiscattered grid :on /off, grid type 1,2 selection -X-ray beam pre-collimation, filter selection -Patient positioning: table tilting, X-ray tube angulations, table top -Image processing in radiography: ROI, LUT, algorithms -Displayed image size, zoom programming -Image windowing (contrast and level)	√	
<b>Post processing</b>	<u>Images review</u> : Fv/Rv research using thumbnails facility, cine-loop mosaic mode images display (4,9,16,1+5,1+7) <u>Image delete</u> :selected images in mosaic mode or full study <u>Image presentation</u> : image magnification from 1:1 pixel detector/display (M1)up to 3:1 (M3),image reverse H/V,90° rotation, windowing (mouse drive C.and L. adjustment), gamma correction, grey scale inversion, spatial filters (sharp/smooth, kernel, Harmonisation), graphic overlay: angles & distances measurement, measure calibre, free text, black area overlapping, ruler, grid, arrow Image collimation: free collimation with automatic image centering	√	
<b>Networking</b>	Dicom 3 class: Store and Storage Commitment, Print, Worklist Modality Performed Procedure Step (RIS-PACS)		√
<b>Archiving (automatic /manual)</b>	Local archiving on removable media (CDRom/DVD,Dicom or Raw format) Remote archiving in mass storage device (PACS) Remote printing using film editor program: format true size standard, row, col, slide, super slide.		√



## Technical data

	<b>CONFIGURATION</b>	<b>S</b>	<b>O</b>
<b>Flat panel detector</b>	Dimensions (mm): max 535x490x45,5cm Weight :< 20kg Cooling: ambient air flow, NO water cooling required X-ray sensitive area : 43x43cm, X-ray detection layer: Csl (T) Photodiode+TFT plate Image size : 3000x3000 pixels Pixel pitch : 143x143µm <sup>2</sup> Dynamic range :14bits	√	
<b>Detector assembly</b>	Pixium 4600 aSi flat panel Ion chamber :3/5 dominant fields	√	
	Antiscattered grid: carbon fiber, ratio>12:1,>80 blades/cm		√
<b>Computer's cabinet</b>	<u>Main Controller</u> M.C.is the master computer of the diagnostic system, interface & controls of : table, X-ray collimator, X-ray generator, ion chamber, grid, DAM ,PID. <u>PID</u> Image processing computer, PC architecture, Windows 2000 OS, Pentium 4/3GHz /2GBRAM /80GB H.D. (typical configuration) Remote cabinet with standard 15mt cables (mouse and Keyboard included) Control desk-cabinet with table top supporting display, mouse keyboard and Cdrom writer devices	√	
<b>Display</b>	Control desk :19" LCD, medical display with colours for icons and graphic (live image display)	√	
	In room: one/two 18" LCD high brightness (700cd/m <sup>2</sup> ), medical display, Dicom LUT, native monochrome (live image display)		√
	1-2 LCD display trolley with integrated cables		√
<b>Dose Area Meter</b>	Radiography studies and image Dose Area Product acquisition, processing, storing , Dicom conversion format	√	
	DAP Meter chamber		√
	DAP data printer		√



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