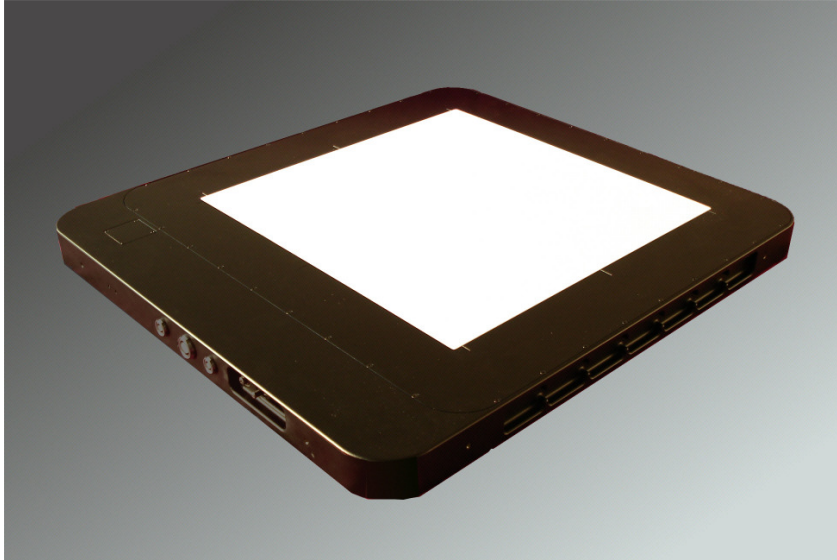


XRD 1641 AN

Digital X-Ray Detector



Overview

The XRD 1641 AN is a digital X-Ray detector based on a 16" amorphous silicon sensor operating as a two-dimensional photodiode array. X-Rays are converted into light using a Kodak LanexTMFast, LanexTMFine, Kasei DRZ High, DRZ Plus or a CsI scintillator. The information is digitized in 16 bits to achieve highest dynamic range and contrast. With a pixel size of 400 μm , an image size of 1024 x 1024 pixels, and a frame rate of 15 Hz, the detector is designed to fulfil the requirements of a variety of Industrial and Medical Applications.

The XRD 1641 AN series provides the advantage of synchronization between the detector and X-Ray source or manipulator by using an external trigger signal.

The XRD 1641 AN series detectors are connected to the XRD FGX Opto Frame Grabber with a customized glass fiber optical interface. The robust glass fiber interface provides galvanic isolation between detector and frame grabber and IP68 proofed plugs at the detector and both sides of the extension cables.

The XRD FGX Opto Frame Grabber provides an FPGA and 256 MB RAM to perform on-board corrections including Multiple Gain Correction at up to 10 signal levels.

The XRD 1641 AN, the XRD-EP Power Supply Unit and the XRD FGX Opto Frame Grabber are optimized for the highest performance with real time corrections. The image integration time is variable between 66.5 ms and 5 sec in steps of 1 ms (internal timer) or can be set between 66.45 ms and 2 sec in eight fixed steps (free running).

Features and Benefits

- Complete digital X-Ray detector
- Monolithic flat panel
- > 1 million pixels
- 400 μm pixel pitch
- 65.536 grey levels
- High sensitivity
- Live images @ 15 fps
- Suitable for a wide range of X-Ray energies
- Selectable gain setting
- Galvanic isolation by optical glass fiber interface

Applications

- Radiotherapy simulation and portal imaging
- Non-destructive testing
- 3D CT reconstruction
- Scientific & medical applications

The XRD image acquisition and demonstration software and the XRD image acquisition software library are included. The software library can be used to integrate the specific detector functions into various types of image processing software. The library supports functions for

- acquisition of a single frame or a sequence
- selection of integration times
- selection of gain setting
- selection of trigger modes
 - Free running;
 - External trigger source
 - Internal timer
 - Software trigger
- calibration procedures to acquire offset and gain correction files
- perform real-time (on-board) corrections for
 - Offset correction
 - Multiple gain correction with up to 10 signal levels
 - Pixel correction

Panel Specification	
Scintillator screen* (standard)	Lanex™Fine*/ Lanex™Fast*/ DRZ High / DRZ Plus
(optional)	CsI
Pixel number	1024 x 1024
Active pixel number	1000 x 1000
Pitch	400 µm
Total area	409.6 x 409.6 mm ²
Electronics Specification	
Charge amplifier	16 x 128 channel ASIC
Feedback capacitance (gain)	1 pF, 2 pF, 4 pF
ADC	16 x 16bit A/D @ 1MSps
Integration time (minimum)	66.5 ms @ 400µm
Non-linearity ¹	< 1 % (10 % to 90 % FSR)
Detector Specification	
Dynamic range ¹	> 75 dB
Response Non Uniformity ¹	±2 % (10 % to 90 % FSR)
Image lag (standard)	< 8 % (1 st frame)
(CsI-option)	< 10 % (1 st frame)
Frame rate (max)	15 Hz @ 400µm
Radiation energy	40 keV – 15 MeV (XRD 1641 AN) 20 keV – 15 MeV (XRD 1641 CN)
Detector housing	672 x 599 x 44 mm ³
For CsI Option (75 kVp, 20 mm Al filtration, 7 mm Al HVL)	
MTF (0.25 lp/mm)	80% (typical 86%)
MTF (1.0 lp/mm)	30% (typical 45%)
DQE (0.25 lp/mm)	56% (typical 65%)
DQE (1.0 lp/mm)	28% (typical 37%)
Requirements	
Power supply	XRD-EP (95510254H)
Frame grabber	XRD-FGX Opto (95510215H)
PC-requirements**	CPU > 3 GHz
	RAM > 1 GB
	PCI-X Bus
	Windows™2000, XP

¹ At 1pF Gain and 7.5 frames per second
 *Lanex™ is a registered trademark of Eastman Kodak Company
 **Windows™2000 and Windows™ XP are registered trademarks of Microsoft Cooperation
 ***DRZ is a trademark of Kasei Optonix

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