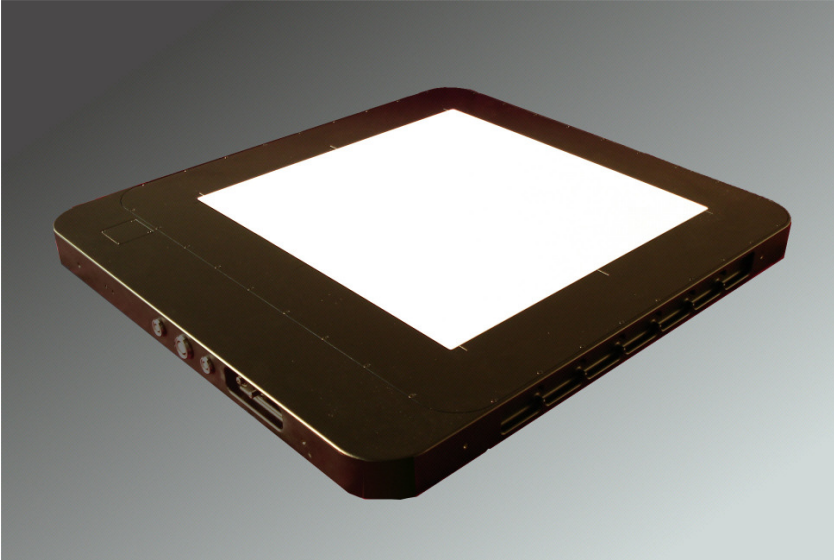


# XRD 1621 AN

## Digital X-Ray Detector



### Overview

The XRD 1621 AN is a digital X-Ray detector based on a 16" amorphous silicon sensor operating as a two-dimensional photodiode array. The XRD 1621 AN is well suited to perform digital X-Ray imaging and contains all drive and read-out electronics including an X-Ray interlock. X-Rays are converted into light using a Kasei DRZ Standard, DRZ Plus, Kodak Lanex™Fine, or a Csl scintillator. The information is digitized in 16 bits to achieve highest dynamic range and contrast. With a pixel size of 200 μm, an image size of 2048 x 2048 pixels, and a frame rate of 7.50 Hz, the detector is designed to fulfil the requirements of a variety of Industrial and Medical Applications.

The XRD 1621 AN series provides the advantage of synchronization between the detector and X-Ray source or manipulator by using an external trigger signal.

The XRD 1621 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 1621 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 134 ms and 5 sec in steps of 1 ms (internal timer) or can be set between 133 ms and 2 sec in eight fixed steps (free running).

### Features and Benefits

- Complete digital X-Ray detector
- Monolithic flat panel
- > 4 million pixels
- 200 μm pixel pitch
- 65.536 grey levels
- Ultra high sensitivity
- Live images @ 7.50 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

<b>Panel Specification</b>	
Scintillator screen <sup>*</sup> (standard)	Lanex™Fine/ DRZ Plus / DRZ Standard
(optional)	CsI
Pixel number:	2048 x 2048
Active pixel number	2024 x 2024
Pitch	200 µm
Total area	409.6 x 409.6 mm <sup>2</sup>
Diode capacity	2.1 pF
<b>Electronics Specification</b>	
Charge amplifier	32 x 128 channel ASIC
Feedback capacitance (gain)	0.25 pF, 0.5 pF, 1 pF, 2 pF, 4 pF, 8 pF
ADC	32 x 16bit A/D @ 1MSps
Integration time (minimum)	133.2 ms @ 200µm 66.5 ms @ 400µm (2x2 Binning)
Non-linearity <sup>1</sup>	< 1 % (10 % to 90 % FSR)
<b>Detector Specification</b>	
Dynamic range <sup>1</sup>	> 80 dB
Response non uniformity <sup>1</sup>	±2 % (10 % to 90 % FSR)
Image lag (standard)	< 8 % (1 <sup>st</sup> frame)
(CsI-option)	< 10 % (1 <sup>st</sup> frame)
Frame rate (max)	7.5 Hz @ 200µm 15 Hz @ 400µm (2x2 Binning)
Radiation energy	40 keV – 15 MeV (XRD 1621 AN) 20 keV – 15 MeV (XRD 1621 CN)
Detector housing	672 x 599 x 44 mm <sup>3</sup>
For CsI Option (75 kVp, 20 mm Al filtration, 7 mm Al HVL):	
MTF (0.5 lp/mm)	80% (typical 90%)
MTF (2.0 lp/mm)	30% (typical 38%)
DQE (0.5 lp/mm)	56% (typical 58%)
DQE (2.0 lp/mm)	28% (typical 37%)
<b>Requirements</b>	
Power supply	XRD-EP (95510254H)
Frame grabber	XRD-FGX Opto (95510215H)
PC-requirements <sup>**</sup>	CPU > 3 GHz
	RAM > 1 GB
	PCI-X Bus
	Windows™2000, XP Professional

<sup>1</sup> At 1pF Gain and 7.5 frames per second

<sup>\*</sup>Lanex™ is a registered trademark of Eastman Kodak Company; DRZ is a trademark of Kasei Optonix

<sup>\*\*</sup>Windows™2000 and Windows™ XP are registered trademarks of Microsoft Cooperation

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