

XRD 0840 CN

Digital X-Ray Detector



Overview

The XRD 0840 CN is a digital X-Ray detector based on a 8" amorphous silicon sensor operating as a two-dimensional photodiode array. The XRD 0840 CN 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 Kodak™ Lanex Fast, Lanex Fine, Kasei DRZ Standard, 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 512 x 512 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 0840 CN series detectors are connected to a PCI computer, with the data transferred via a customized parallel interface. Up to four detectors, each using its own Frame Grabber can be connected to one PC. The XRD 0840 CN, the XRD-EP Power Supply Unit and the PCI I/O board are optimized for the highest performance. The image integration time is variable between 66.25 ms and 5 sec in steps of 1 ms (internal timer) or can be set between 66.25 ms and 2 sec in eight fixed steps (free running). The XRD 0840 CN series provides the advantage of synchronization between the detector and x-ray source or manipulator by using an external trigger signal.

Features and Benefits

- Complete Digital X-Ray Detector
- Monolithic Flat Panel
- 200 μm Pixel Pitch
- 65.536 Grey Levels
- Ultra High Sensitivity
- Live Images @ 15fps
- Suitable for a wide range of X-Ray energies
- Selectable Gain Setting
- Carbon Fiber Cover provides excellent imaging at low X-Ray energies

Applications

- 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 online corrections for
 - Offset correction
 - Multiple Gain Correction
 - Pixel Correction

Panel Specification	
Scintillator screen* (standard):	Lanex™Fine*/Lanex™Fast/DRZ**-STD/DRZ**-PLUS
(optional):	CsI
Pixel number:	512 x 512
Active Pixel number	500 x 500
Pitch:	400 µm
Total area:	204.8 x 204.8 mm ²
Diode Capacity	8.4 pF

Electronics Specification	
Charge Amplifier	8 x 128 channel ASIC
Feedback capacitance (gain)	0.5 pF, 1 pF, 2 pF, 4 pF, 8 pF
ADC:	8 x 16bit A/D @ 1MSps
Integration time (minimum):	66.2 ms
Non-Linearity ¹	< 1 % (10 % to 90 % FSR)

Detector Specification	
Dynamic range ¹	> 80 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 fps
Radiation energy:	25 keV – 225 keV
Detector housing:	335 x 320 x 52 mm ³

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%)

Requirements	
Power Supply	XRD-EP (95510254H)
Frame Grabber:	XRD-FG (95510214H)
PC-Requirements***:	CPU > 3 GHz
	RAM > 1 GB
	PCI Bus
	Windows™2000, XP

¹ At 1pF Gain and 15 frames per second
 *Lanex™ is a registered trademark of Eastman Kodak Company; **DRZ is a trademark of Kasei Optonix
 ***Windows™2000 and Windows™ XP are registered trademarks of Microsoft Cooperation

Worldwide Headquarters
PerkinElmer Optoelectronics
 44370 Christy Street
 Fremont, CA 94538-3180
 Telephone: +1 510-979-6500
 Toll free: (North America) +1 800-775-OPTO (6786)
 Fax: +1 510-687-1140
 Email: opto@perkinelmer.com
www.optoelectronics.perkinelmer.com

European Headquarters
PerkinElmer Optoelectronics
 Wenzel-Jaksch-Str. 31
 65199 Wiesbaden, Germany
 Telephone: (+49) 611-492-247
 Fax: (+49) 611-492-430
 Email: opto.Europe@perkinelmer.com

Asia Headquarters
PerkinElmer Optoelectronics
 47 Ayer Rajah Crescent #06-12
 Singapore 139947
 Telephone: (+65) 6775-2022
 Fax: (+65) 6775-1008
 Email: opto.Asia@perkinelmer.com



For a complete listing of our global offices, visit www.optoelectronics.perkinelmer.com
 ©2007 PerkinElmer, Inc. All rights reserved. The PerkinElmer logo and design are registered trademarks of PerkinElmer, Inc. All other trademarks not owned by PerkinElmer, Inc. or its subsidiaries that are depicted herein are the property of their respective owners. PerkinElmer reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.
 600226_01 DTS1007