

NAI INDUSTRIAL

# Flat Panel X-Ray Detectors

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## NAI FOR ALL YOUR NDT NEEDS

NAI Industrial has been providing superior industrial imaging products for over 30 years. NAI is a one-stop shop for all components in the imaging chain – from image intensifiers and cameras to flat panel detectors, X-ray tubes and post-processing software.

## Designed to Meet a Range of Applications and Needs

Our industrial flat panel detectors prevent geometric distortion and minimize effects of magnetic field and radiation. Get high resolution throughout the field of view from NAI Industrial's flat panel detectors. We have excellent, digital image quality with high throughput.

Contact Josh Hunt at 805.383.2214 or [jhunt@NAImaging.com](mailto:jhunt@NAImaging.com) for more information.

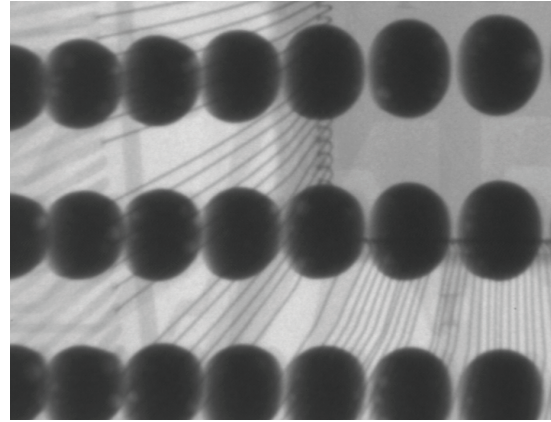
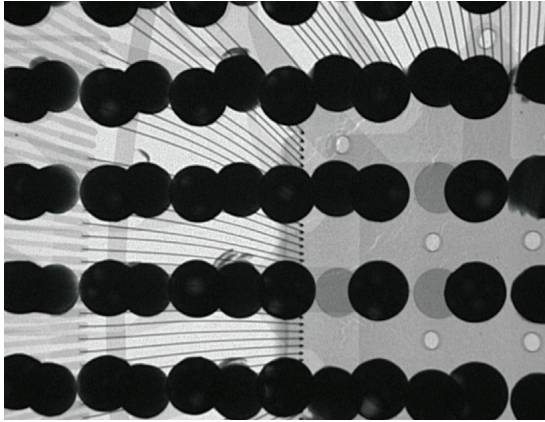


# Digital vs. Analog Image Comparison

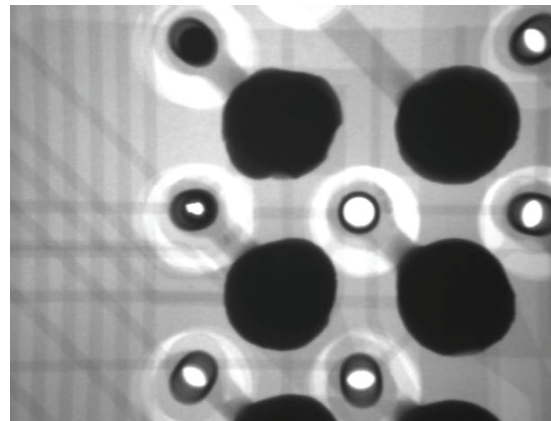
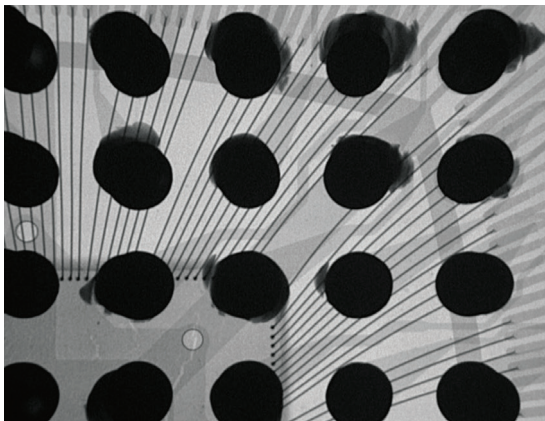
D I G I T A L

A N A L O G

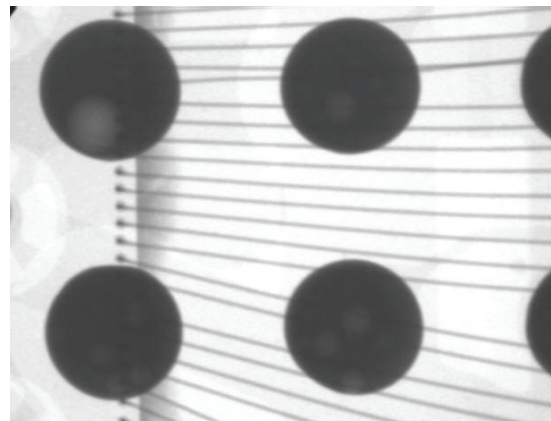
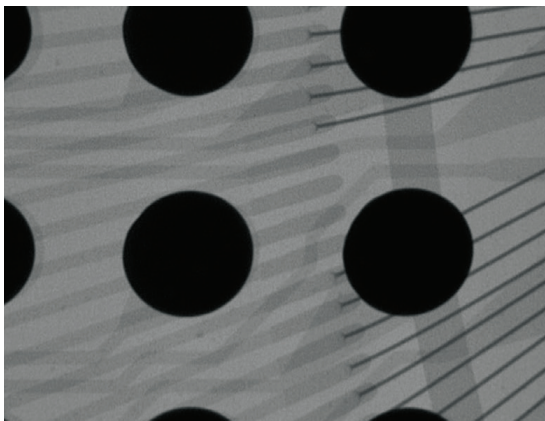
BGA solder balls and bond wires tilt view



BGA solder balls irregular shapes



BGA solder balls and bond wires high magnification

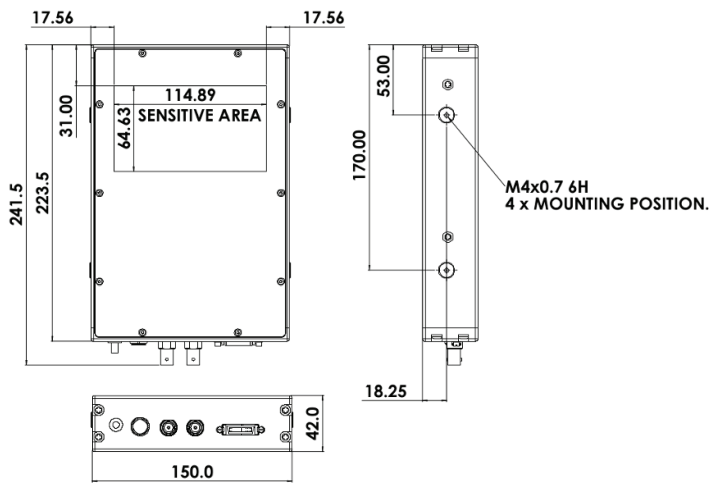


# Flat Panel X-Ray Detector Specifications

## Model 1207

Sensor	
Pixel Size ( $\mu\text{m}$ )	74.8
Sensitive Area ( $\text{mm}^2$ )	114.9 x 64.6
Pixel Matrix (px)	1536 x 864
Max Frame Rate (fps)	
Pixel Binning	Camera Link    GigE Vision
1x1	60                    32
2x2	156                   127
4x4	191                   191
Image Performance	
Dynamic Range (dB)	
High Dynamic Range Mode	typ. 66
High Sensitivity Mode	typ. 65
X-Ray Energy Range (kV)	12 – 130
Mechanical	
Weight (kg)	1.9
Dimensions ( $\text{mm}^3$ )	223.5 L x 150 W x 42 H

Case Dimensions (mm)



Communications	
Camera Link	Base 80 MHz (1 cable)
GigE Vision	1000BaseT
Control Channel	115 kBaud serial link Camera Link / GigE Vision
Sync Ports	BNC
Sync In Port	3 – 15 V edge or level trigger
Sync Out Port 1	TTL (0 – 5 V)
Sync Out Port 2	NA
Software	Support for 32 and 64 bit Windows OS

Power		
	Camera Link	GigE
Dissipation	11 W	13 W

Scintillator Options	
High Resolution CsI	
High Efficiency CsI	
Various $\text{Gd}_2\text{O}_2\text{S:Tb}$ (GOS) fluorescent screens	

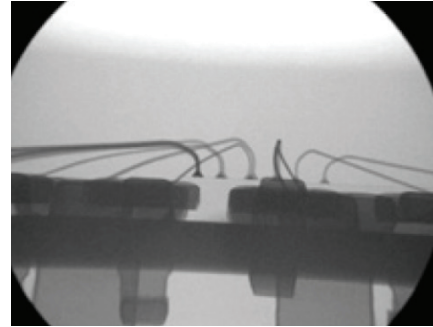
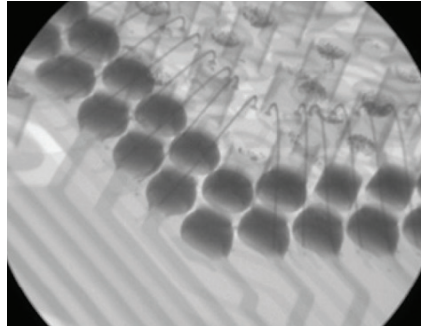
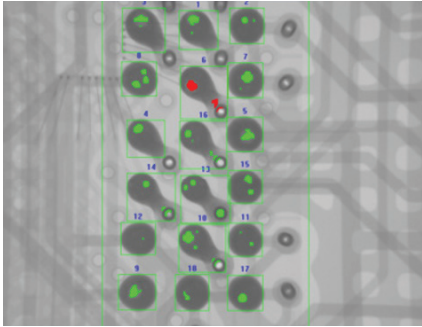
Temperature Range	
Operating Temperature	+10 °C to +40 °C
Storage Temperature	- 10 °C to +50 °C

Accessories		
	Camera Link	GigE
Power Supply	50 – 60 Hz	110 V – 240 VAC
Power Cable	3m Lemo Low Voltage	3m Lemo Low Voltage
Interface Card	EPIX EB1	Intel PRO1000/PT

Unless otherwise specified, PerkinElmer Flat Panel X-ray Detectors are components intended to be integrated into products by X-ray system manufacturers. System manufacturers are responsible for qualifying and validating their products for their intended uses and meeting all applicable regulatory requirements. Contents in this document are subject to change without notice.



# Post-Processing Software



Vital to quality control, NAI Industrial software allows manufacturers to find contamination, scratches, cracks, blemishes, gaps, pits and other production flaws. Post-processing software can detect defects invisible to the human eye – faster and more accurately.

We offer several user-friendly software packages to meet a variety of applications for a wide range of industries. Choose from one of our three software packages or let us put together a customized package to fit your unique needs. Contact Josh Hunt at 805.383.2214 or [jhunt@NAImaging.com](mailto:jhunt@NAImaging.com) for more information.

## Standard Software Package

- Image capturing and saving (.jpg, .bmp, .tif)
- Auto Live image averaging
- Post capture image enhancements:
  - *Brightness and contrast adjustments*
  - *Image filters (sharpen, pseudo color, negative)*
- Point-to-point distance measurement tool
- Measurement calibration (inches, mm, mils)
- Image annotation tool:
  - *On screen text tool*
  - *Arrow drawing*
  - *Line, circular or rectangular shape drawing*
- Quad view imaging tool (allows user to capture four images and combine them into one picture)

## Optimum Software Package

- Standard Software Package features
- BGA measurement algorithm tools
- Solder ball size:
  - *Ball area*
  - *Ball diameter*
  - *Ball roundness*
  - *Percent void*
  - *Pass fail criteria*
  - *Image reporting*

## Advanced Software Package

- Optimum Software Package features
- QFN measurement algorithm tools:
  - *Joint area*
  - *Percent void*
  - *Pass/fail criteria*
- Semiconductor measurement algorithm tools:
  - *Bond wire sweep*
  - *Die attach void measurement*
  - *Pass/fail criteria*
- Gull wing joint measurement algorithm tools:
  - *Joint area*
  - *Percent void*
  - *Pass/fail criteria*
  - *Drill offset measurement*
  - *Center to center offset (X & Y distance)*