107 Bonaventura Drive | San Jose, CA 95134
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X-Scanimaging.com

X-ray Time Delay Integration (TDI) CMOS camera

Harrier CMOS TDI

The Harrier XTI9080X series of time delayed integration (TDI) cameras provide high sensitivity and resolution compared to traditional linear diode arrays. The accumulation of signal by combining 8 rows of pixels increases signal, decreases signal to noise ratios, providing higher sensitivity that allows faster scan rates or reduction in X-Ray power.

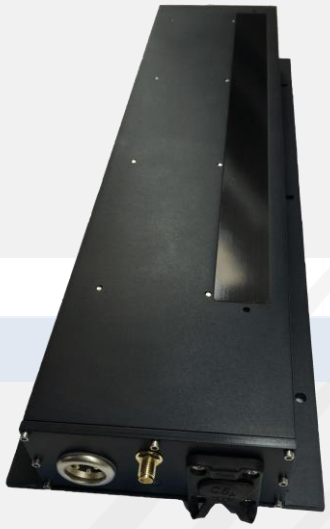
Normally, reducing pixel size in half will reduce the signal to each pixel by 4 times but TDI technology allows the resolution to be doubled while retaining very similar sensitivity. The 0.2mm TDI has the same sensitivity per pixel as a 0.4mm LDA.

Key Features

Wide range of resolutions & selection of lengths
Compact form factor

- 0.2mm Resolution available for all applications
- 0.4 and 0.8mm resolution available for all nonfood related applications
- Low noise, wide dynamic range, high sensitivity
- High MTF

16-bit analog-to-digital conversion
Supports variable scan speed with position synchronization
Software development kit
Device drivers, libraries, standard API
With x-ray tube voltages 15 – 160 kV
GigE/Camera Link/USB3 interface

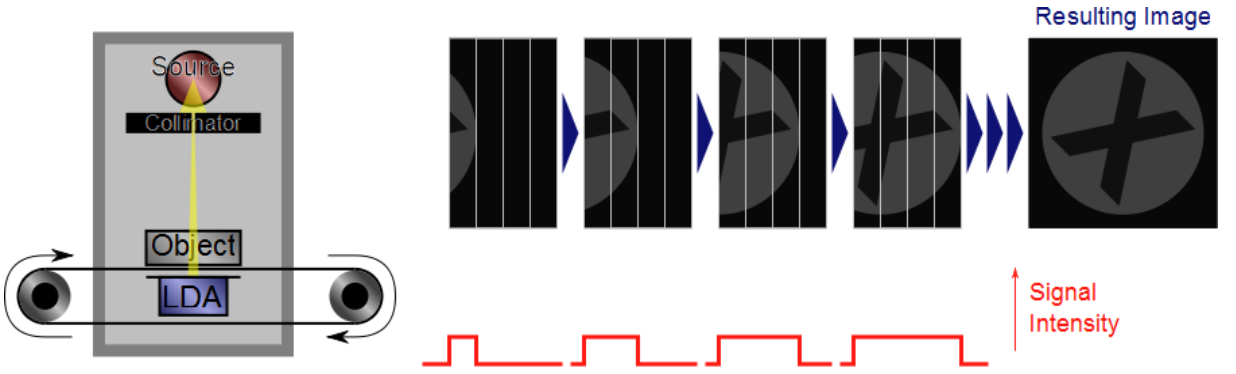


Applications

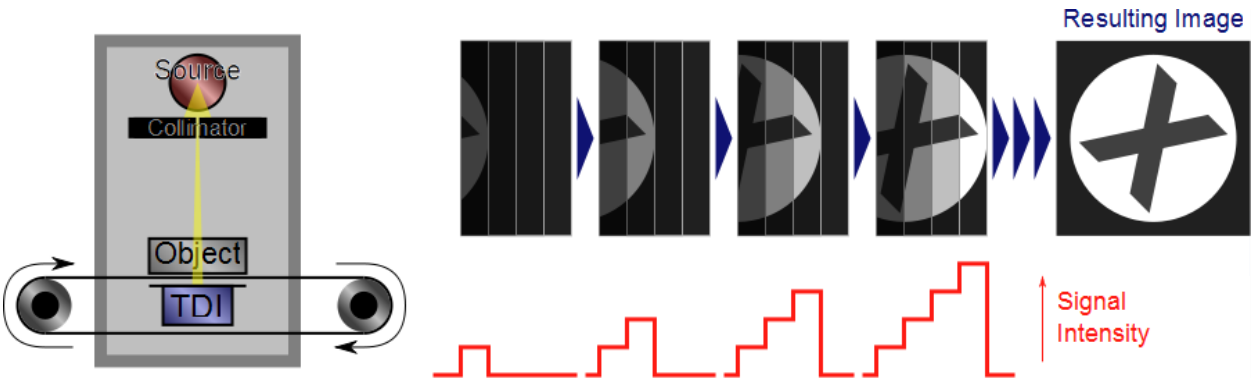
Security Screening
Food and Industrial applications
Package content inspection
Security and cargo screening
Industrial non-destructive testing (NDT)

Principal of operation

In the operation of both traditional Linear Diode Array (LDA) and TDI detectors, objects must be moving relative to the detectors. In an LDA, a single line of diodes collect signal. Once the object has past the diode line, no more signal is collected. A TDI device has multiple diode lines and the signal for each line can be passed to the next line. As the object passes over each line, each line collects signal and then passes the signal to the following line. After the object passes the final line, the full integrated signal is read out. When the TDI device is synchronized to the moving object, an image with higher resolution at lower light level is achieved. As a result, signal-to-noise ratio in TDI camera is much higher than that in a line-scan camera.



Traditional LDA Application



TDI Application

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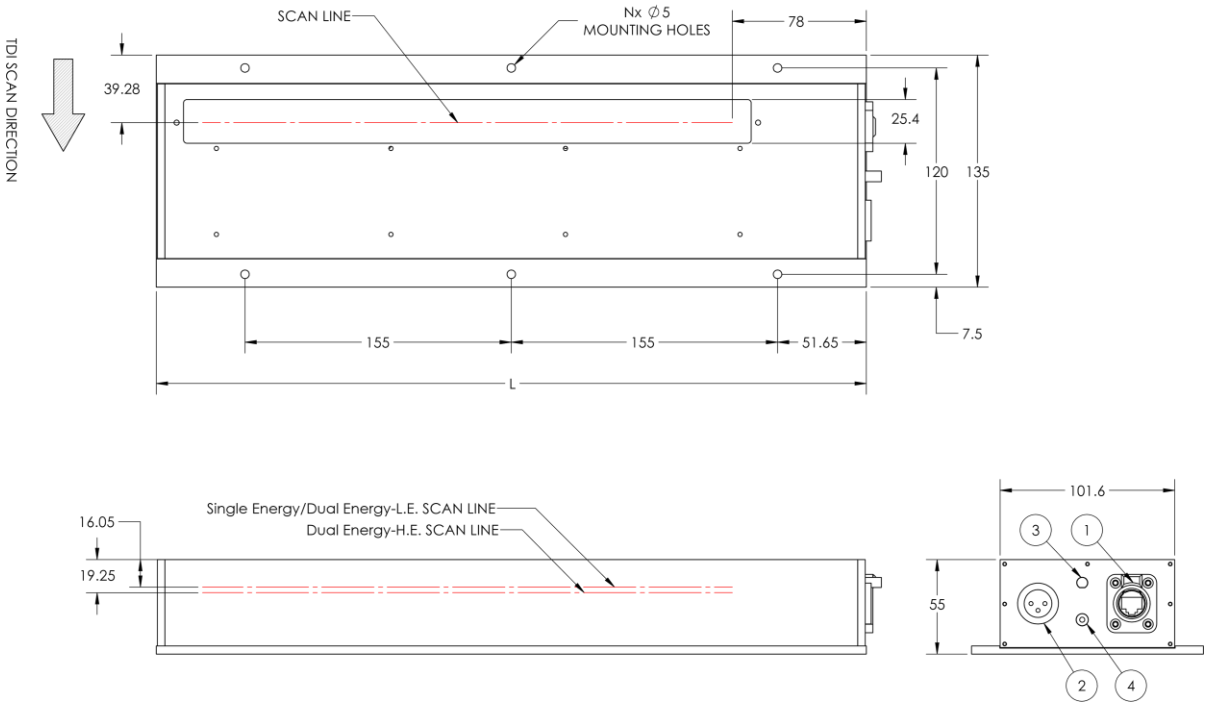
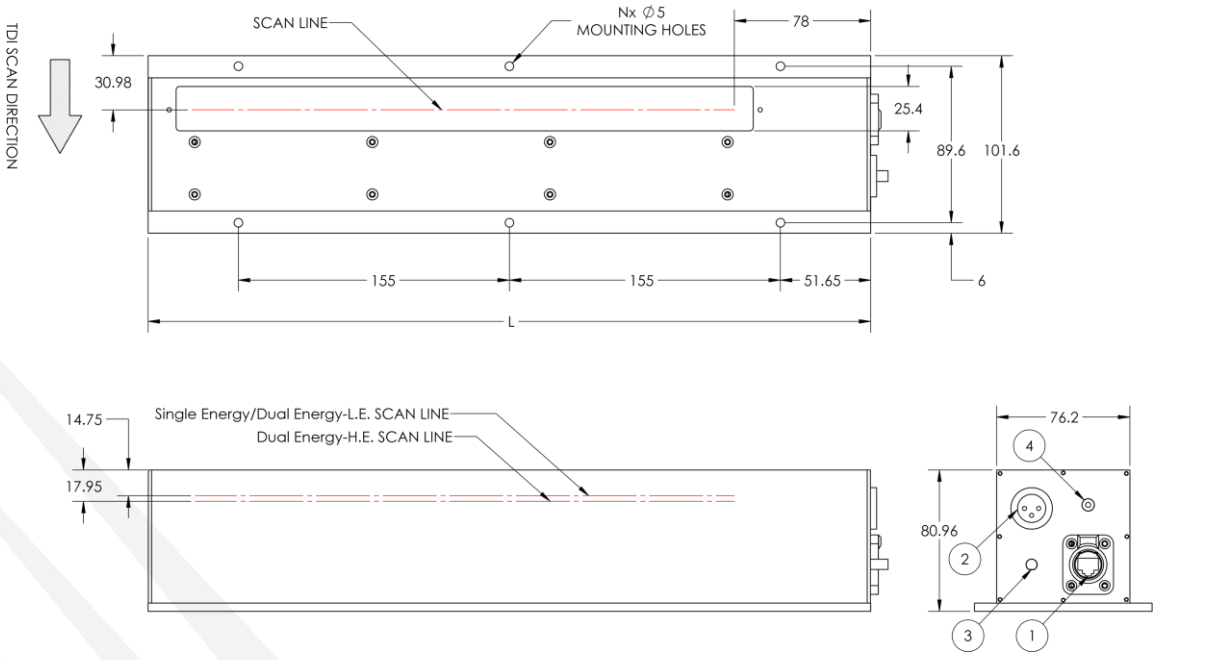
Mechanical Configurations

X-Scan Imaging housings are available in two form factors. The DR housing is a low profile, wider detector to fit under conveyor systems or other tight spaces. The DS housing is a taller, narrower profile. The standard X-Scan Imaging detectors, Single Energy, Dual Energy, and CMOS TDI all share the same mounting hole pattern.

DR:



DS:



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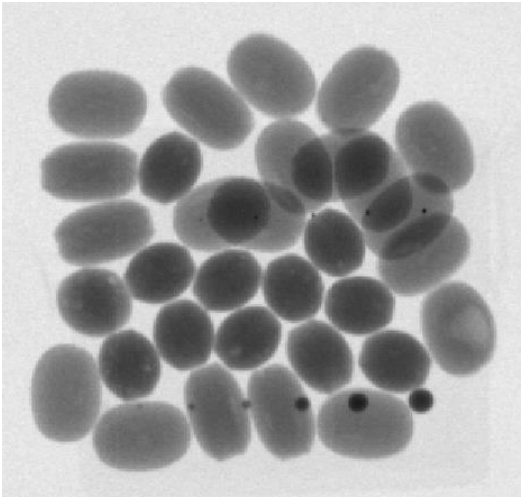
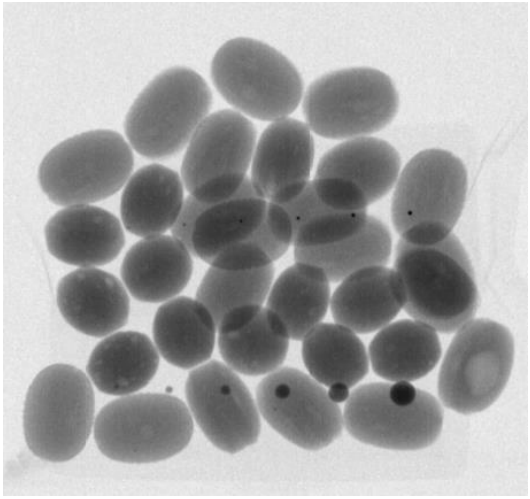
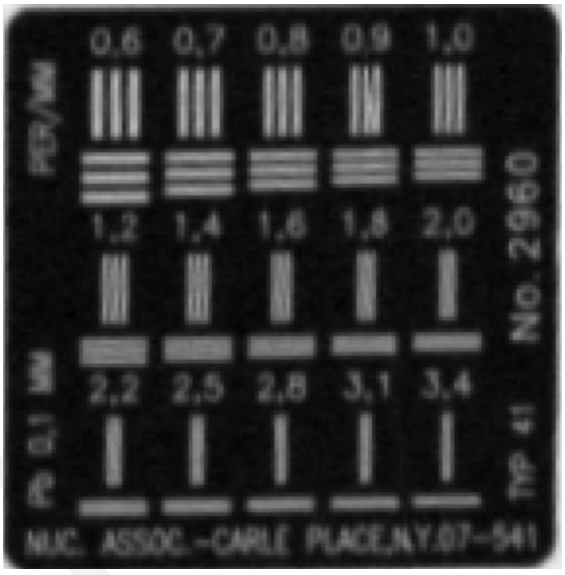
Comparison images



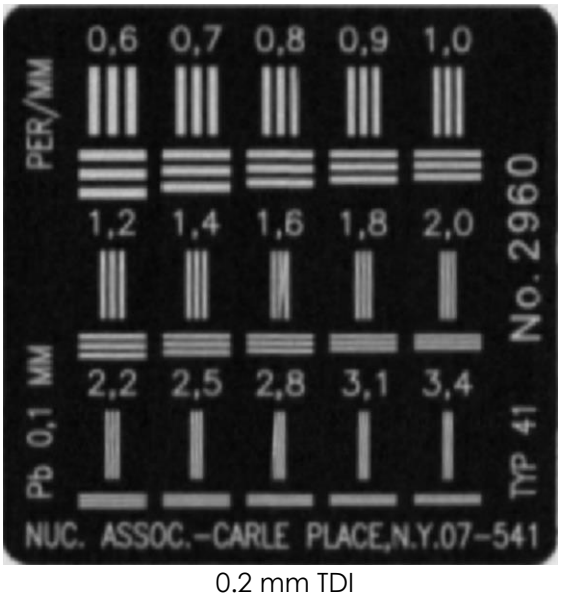
0.4 mm LDA



0.2 mm TDI



0.4 mm LDA



0.2 mm TDI

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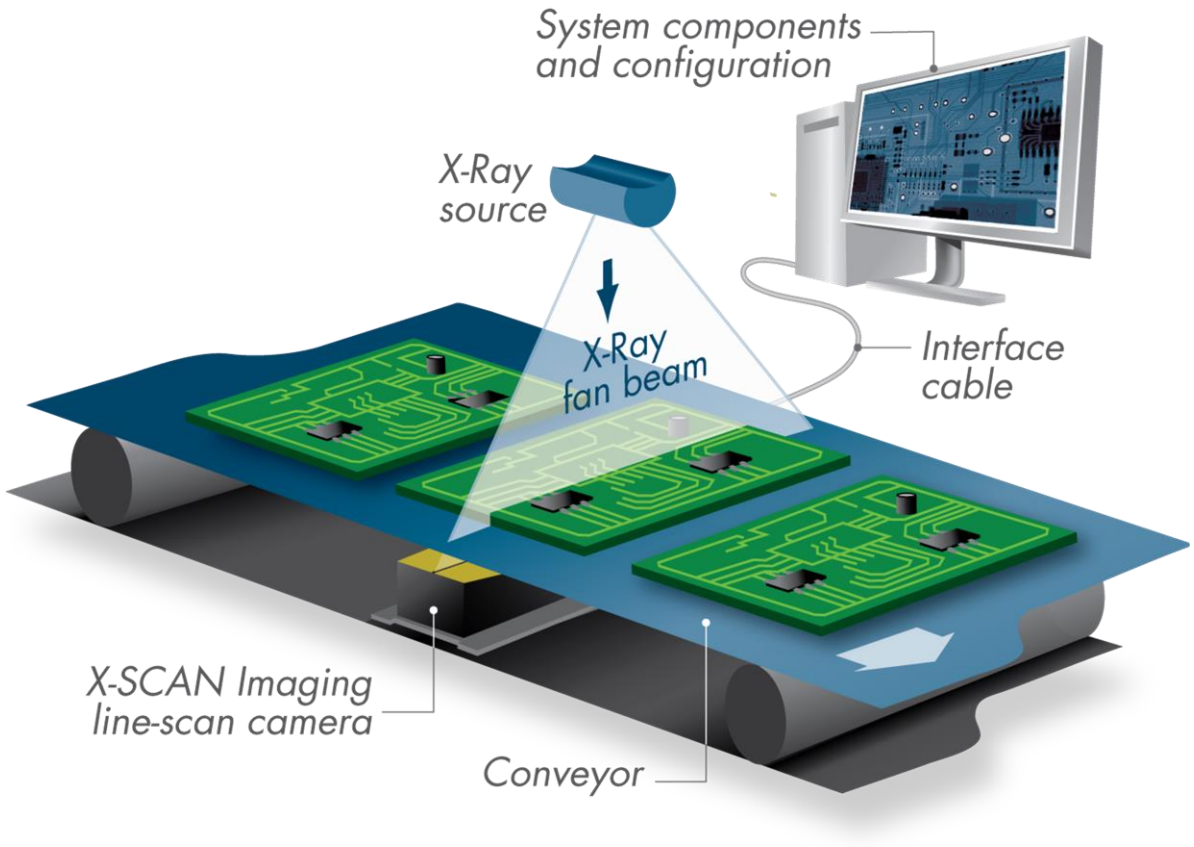
Setup

The XI8800 series camera system includes a camera unit, a software development kit, power adapter and cabling. The frame-grabber to be installed in the computer is provided optionally. Interfaces available include GigE, Camera Link, and USB3.0.



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