X-SCAN IMAGING

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X-Scanimaging.com

X-Ray Time Delay Integration (TDI) CMOS

HARRIER

Harrier CMOS TDI

The Harrier XTI90800 series of time delayed integration (TDI) cameras provide high sensitivity and resolution compared to a traditional linear diode array (LDA). The accumulation of signals by combining eight rows of pixels increases signal, decreases signal to noise ratios, provides 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 four times but TDI technology allows the resolution to be doubled while retaining similar sensitivity. The 0.2 mm TDI has the same sensitivity per pixel as a 0.4 mm LDA.

Key Features

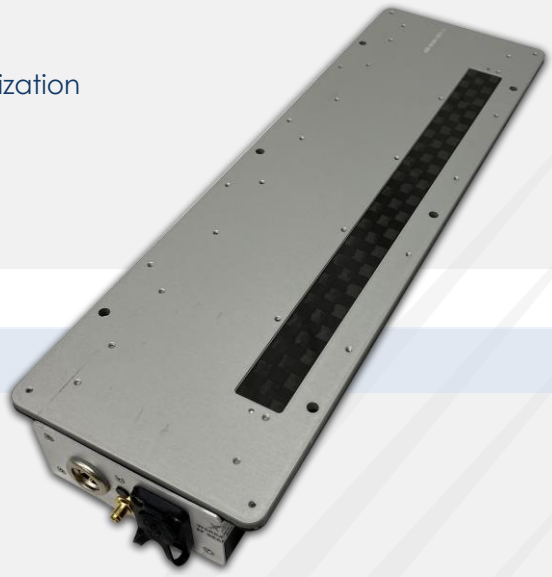
Wide range of resolutions & selection of lengths
Compact form factor

- 0.2 mm resolution available for all applications
- 0.4 and 0.8 mm resolution available for non-food 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

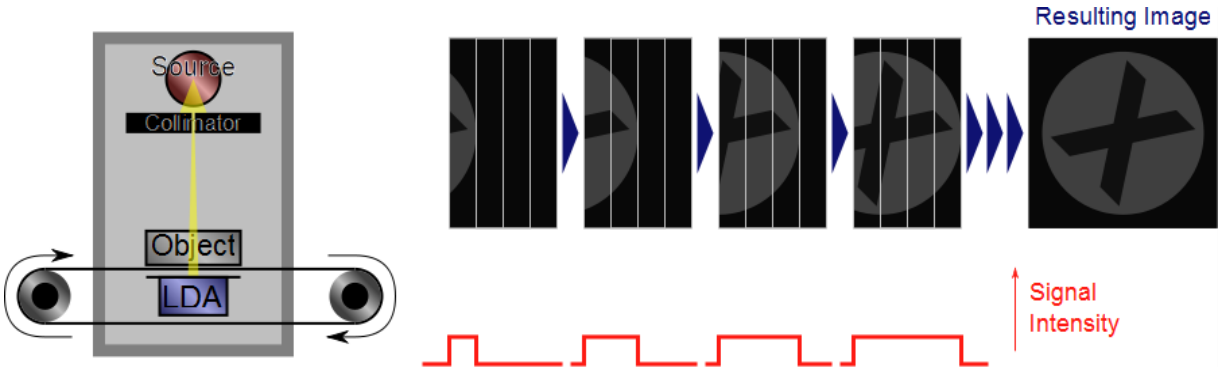


Applications

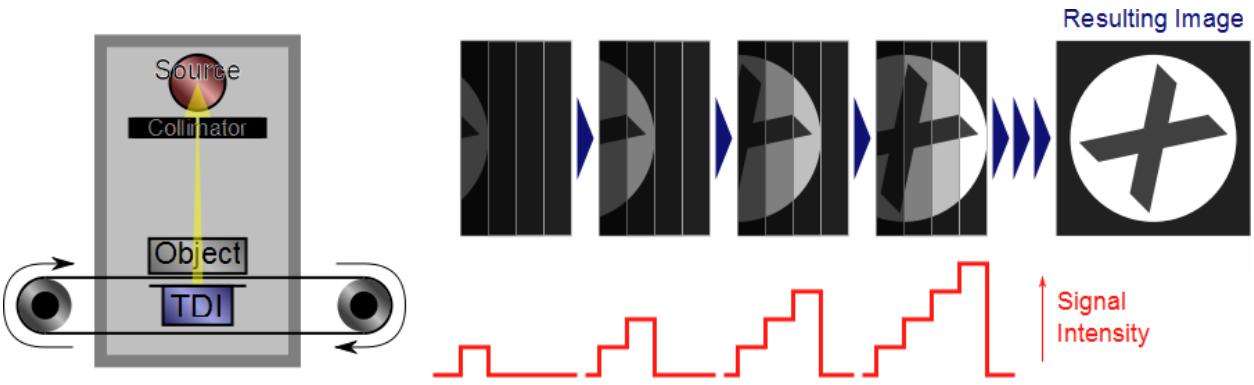
Security screening
Food and industrial applications
Package content inspection
Security and cargo screening
Industrial non-destructive testing (NDT)

Principal of operation

In the operation of both traditional 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 passed 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 a TDI camera is much higher than that in a line-scan camera.



Traditional LDA Application



TDI Application

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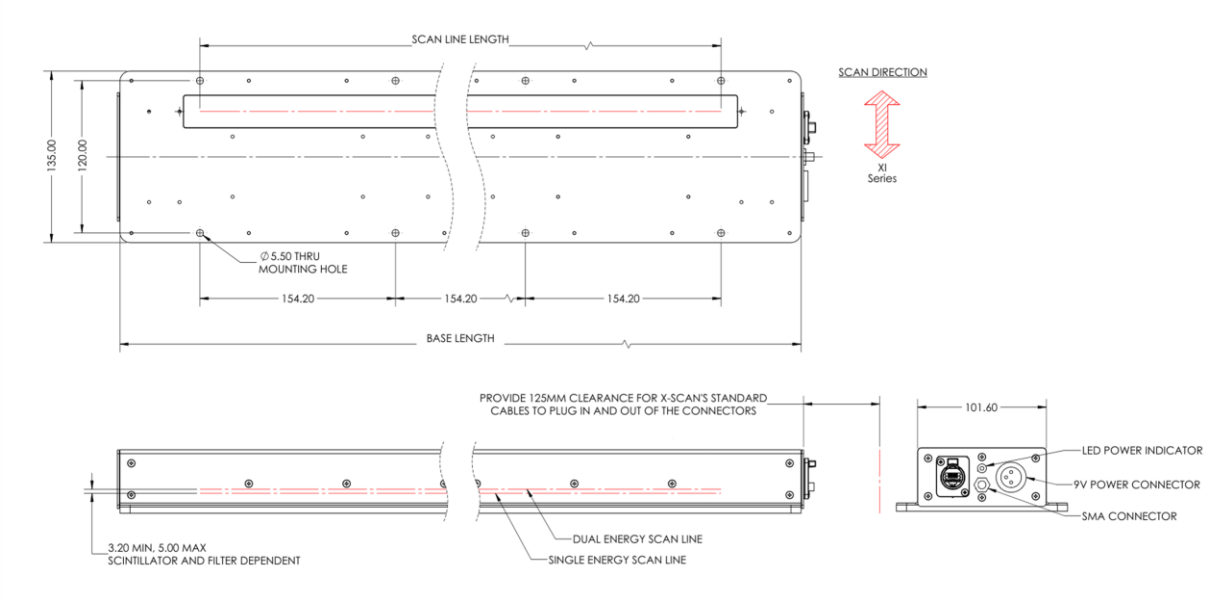
Mechanical Configurations

X-Scan Imaging's Harrier CMOS TDI is available in a low-profile SR housing. It is designed to fit under conveyor systems or other tight spaces. The standard X-Scan Imaging detectors, Single Energy, Dual Energy, and CMOS TDI all share the same mounting hole pattern.

SR (dimensions in mm):



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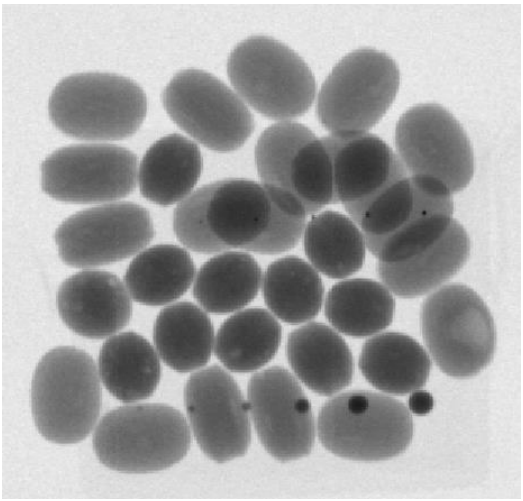
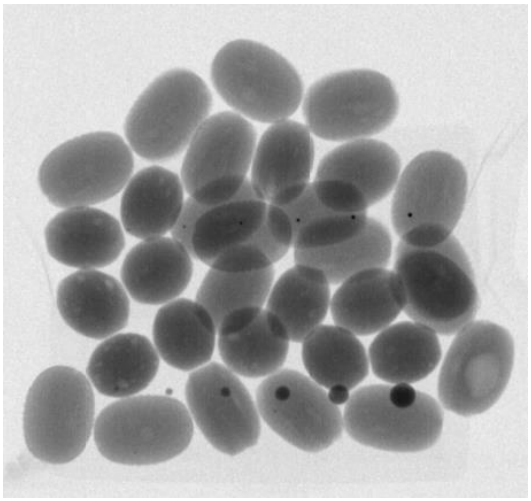
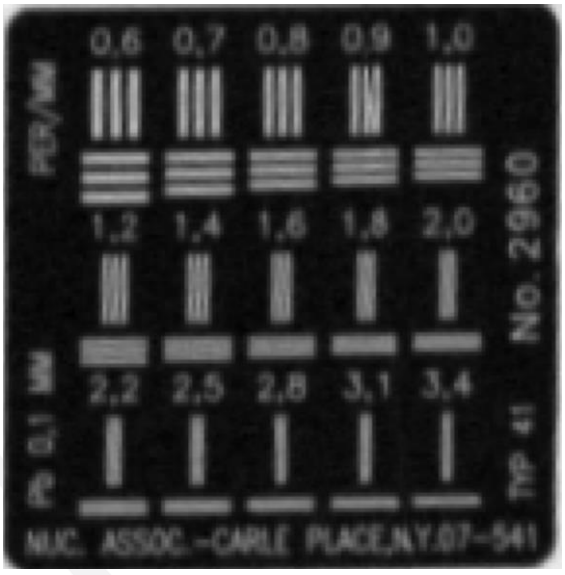
Comparison images



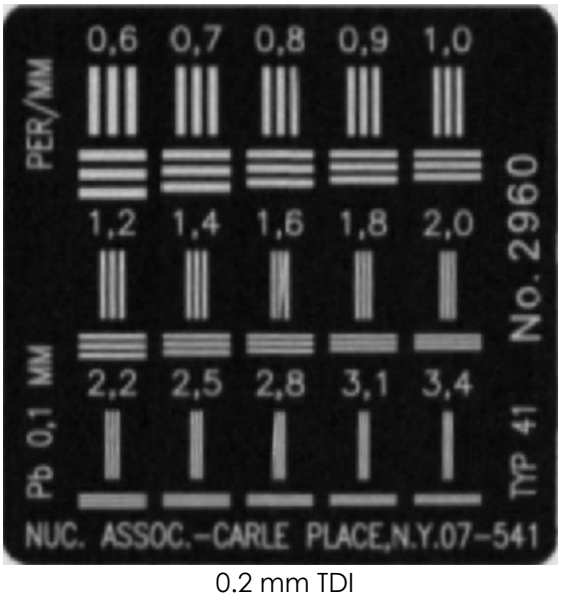
0.4 mm LDA



0.2 mm TDI



0.4 mm LDA



0.2 mm TDI

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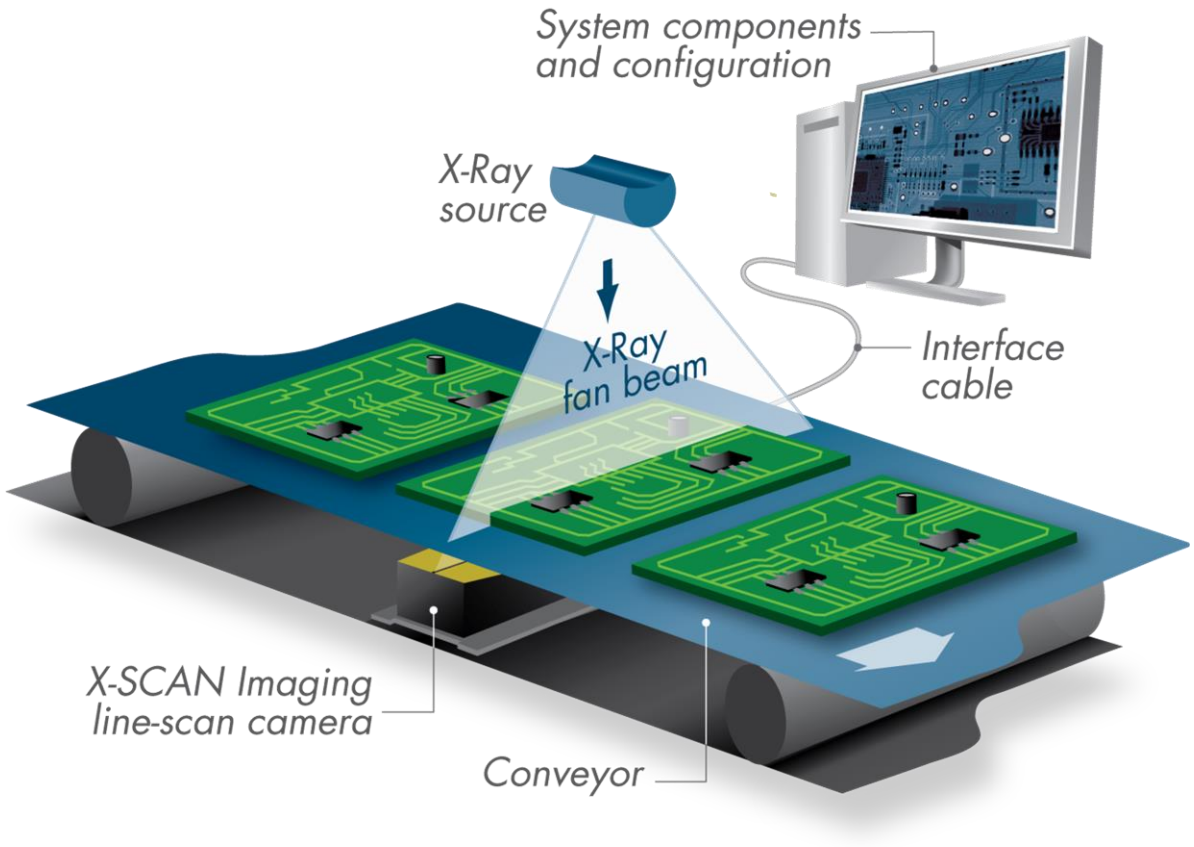
Setup

The XTI90800 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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