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ENVISAGE THE FUTURE

N-Cam

Intensified GADOX sCMOS Camera

The N-Cam is an easy to use neutron camera with high sensitivity and excellent resolution. N-Cam achieves fast radiography/tomography, dynamic imaging, energy specific imaging, and single neutron counting all in a single camera. With N-Cam you can dramatically decrease image acquisition time without sacrificing spatial resolution and quality.

N-Cam is an novel intensified neutron camera system with the Gadox layer directly applied to the image intensifier. This provides greater sensitivity and excellent spatial resolution simultaneously, producing faster integration times and outstanding signal-to-noise. N-Cam can be gated down to 50ns providing precise gating for time of flight energy specific imaging. The standard N-Cam comes with a 4.2 Megapixel cooled sCMOS camera and a 75mm diameter field of view capable of high speed or energy-specific radiography with >10 lp/mm resolution.

A variable detector FOV can be offered as an option. Contact Photek to learn more about our standard and bespoke solutions for your neutron imaging challenges.

Key Attributes

- High Sensitivity
- High Spatial Resolution
- Moderate Field of View
- Precise Gating
- Fully integrated gating control
- Easy-to-use Software

Applications

- Neutron Radiography
- Computed Tomography
- Dynamic Imaging
- Energy Specific Imaging
- Stroboscopic Imaging

Benefits

- Faster integration times
- Produce more radiographs quickly
- Identify smaller features
- Identify subtler substrate variations
- Fewer radiographs required for larger samples
- Precise energy selection from time-of-flight

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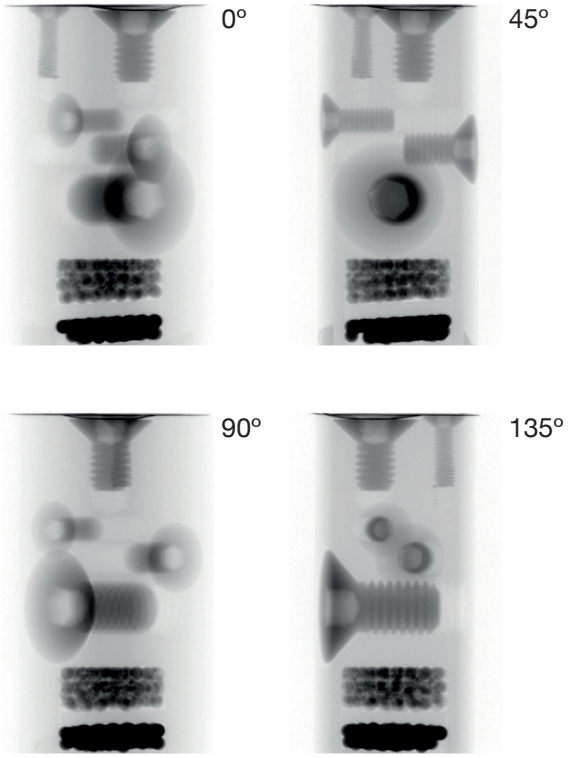
Complete Solution For Neutron Imaging

N-Cam's superior sensitivity and easy to use software facilitates a significant reduction in image acquisition time while maintaining excellent spatial resolution and great signal-to-noise. N-Cam identifies smaller voids and subtler compositional changes in test articles using shorter exposures, allowing for more samples to be processed or much faster tomography.

N-Cam uses a 20µm Gadox scintillator layer applied directly onto a 75mm Photek Image Intensifier. Using a single microchannel plate with a P46 Phosphor screen the Gadox emission is amplified by up to 104 prior to being focused onto a cooled 4.2 Megapixel sCMOS camera, yielding 38 µm pixels. By amplifying the scintillator light at the image intensifier, sensitivity is significantly improved without degrading spatial resolution, as compared to traditional neutron cameras. With an estimated neutron flux of 2×10^{7}n/cm^{2}/s, N-Cam demonstrates excellent Signal-to-Noise ratio. N-Cam is so sensitive that at lower neutron flux single neutron events can be imaged.

A combination of Boron carbide and Flexi-boron shielding protects electronics from damage and single event upsets as well as limiting activation of internal components. Image acquisition and camera control software is provided with N-Cam to ensure smooth operation and precise control of your system. The system has been designed to facilitate integration with external user hardware and contains specific acquisition modes for radiography, tomography, and time resolved phenomena.

N-Cam can be securely mounted on a variety of surfaces or robotics. N-Cam offers a complete, tailored, ready-to-use solution to your neutron imaging needs. For more detailed information about N-Cam, please read our white paper or contact Photek with your neutron challenges to discuss our solutions.



Above: Radiographs of Al block with M3-M8 titanium screws, copper balls, and borosilicate balls.

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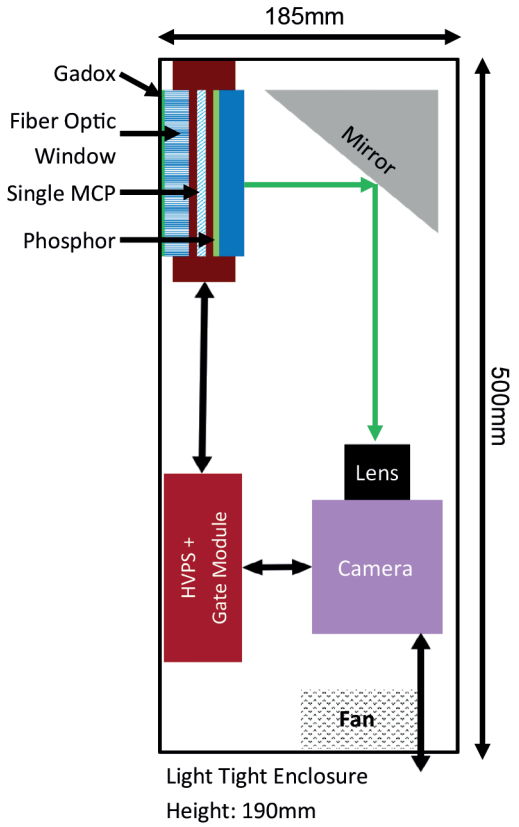
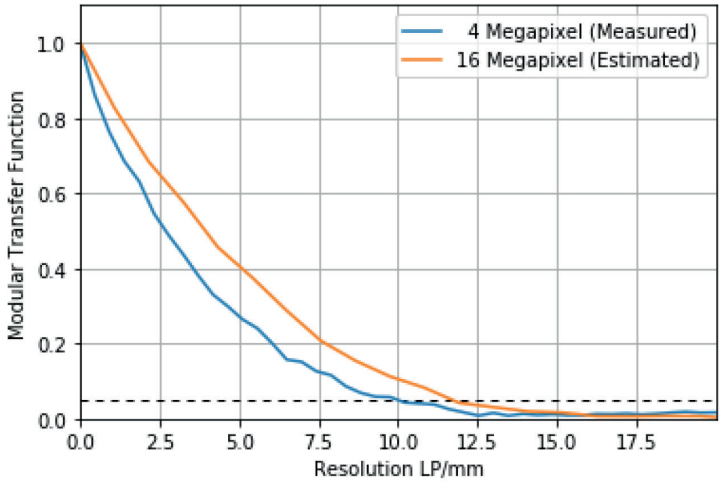
Standard N-Cam Specifications

System	
Effective Resolution	> 10 lp/mm
Detective QE	> 16%
Detector	
Scintillator	Gd_2O_2S:Tb (Gadox) (Optional: Gd_2O_2S:Pr)
Thickness	20 µm
Field of View	75 mm
Gate Control	Internal or external trigger
Gate Width	100 ns to DC on
sCMOS Camera	
Format	2048 x 2048
Effective Pixel Size	38 µm
Frame Rate	35 fps at full resolution
Interfaces	
Command & Data	USB 3.0
Gate Trigger	SMA



Above: N-Cam configuration diagram



Above: Spatial resolution with standard 4 Megapixel camera and estimated performance with 16 Megapixel option.

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About Photek

Photek is a specialist manufacturer of vacuum based tubes and camera systems for photon detection.

Our product range includes; Camera Systems, Image Intensifiers, Photomultiplier Tubes, Streak Tubes plus a range of associated electronics.

We are experts in large area and ultra-high speed imaging and advanced photon counting camera systems.

Our continuing success is built upon continuous innovation and product development, and by harnessing and applying knowledge to find solutions for all of our customers' applications.

Photek is accredited to ISO 9001 and ISO 14001.

Contact Us

Our team of specialist engineers and scientists are ready to discuss your application requirements in depth.

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