

# X-Scan LCS Series

## X-ray linear array detector



**X-Scan LCS Series** | The X-Scan LCS series is a powerful linear array detector for high-energy X-Ray imaging applications utilizing Linear Accelerators or Betatrons as radiation source. X-Scan LCS can also be used for continuous sources such as 450 kVp X-ray tubes or gamma radiation sources (Co60).

The detector can be set to non-continuous image acquisition mode for linear accelerators and betatrons and continuous mode for X-ray tubes and other continuous sources.

The basic detection element of X-Scan LCS detector module is formed by a pixelated Cadmium Tungstate (CdWO<sub>4</sub>) or Cesium Iodide (CsI) scintillators coupled to

low-leakage silicon photodiodes. The detector elements are separated using a reflector between the pixels for best light collection and minimized optical crosstalk.

Absorption length of 30mm provides very high conversion efficiency for up to 15MeV accelerators and integrated read-out electronics provides up to 18-bit A/D resolution. Digital interface from control unit to PC is provided through an Ethernet connection.

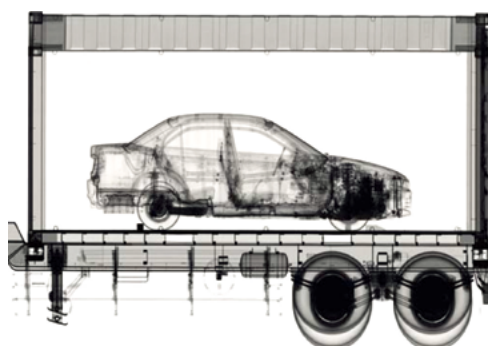
Lead alloy post-collimator and tungsten anti-scatter grids can be integrated into detector module mechanics depending on customer system imaging geometry and requirements.

### APPLICATIONS

- Cargo, container, vehicle and train screening
- Industrial high energy NDT
- Industrial CT

### KEY FEATURES AND BENEFITS

- Varying standard pixel sizes for optimizing imaging system sensitivity, dynamic range for increased steel penetration (>400mm @ 6MeV) and resolution
- Support for multi-energy imaging for material recognition
- Fast scanning speed to support high through-put systems
- Extremely high conversion efficiency and dynamic range
- Modular design for easy and cost-effective customization
- Optimized detector dynamic range and sensitivity with DT's in-house ASIC and photodiode design.
- Optimized detector dynamic range with 63 gain range/sensitivity settings
- The post-collimator and anti-scatter vanes can be integrated into detector module mechanics depending on customer requirements
- On-line dark/offset correction for eliminating the dark level drifting
- Pulse to pulse gain range switching to support dual-energy linear accelerators/betatrons with interlaced energy outputs
- Evaluation software package X-View included with complete software libraries (DLL) to support customer application development



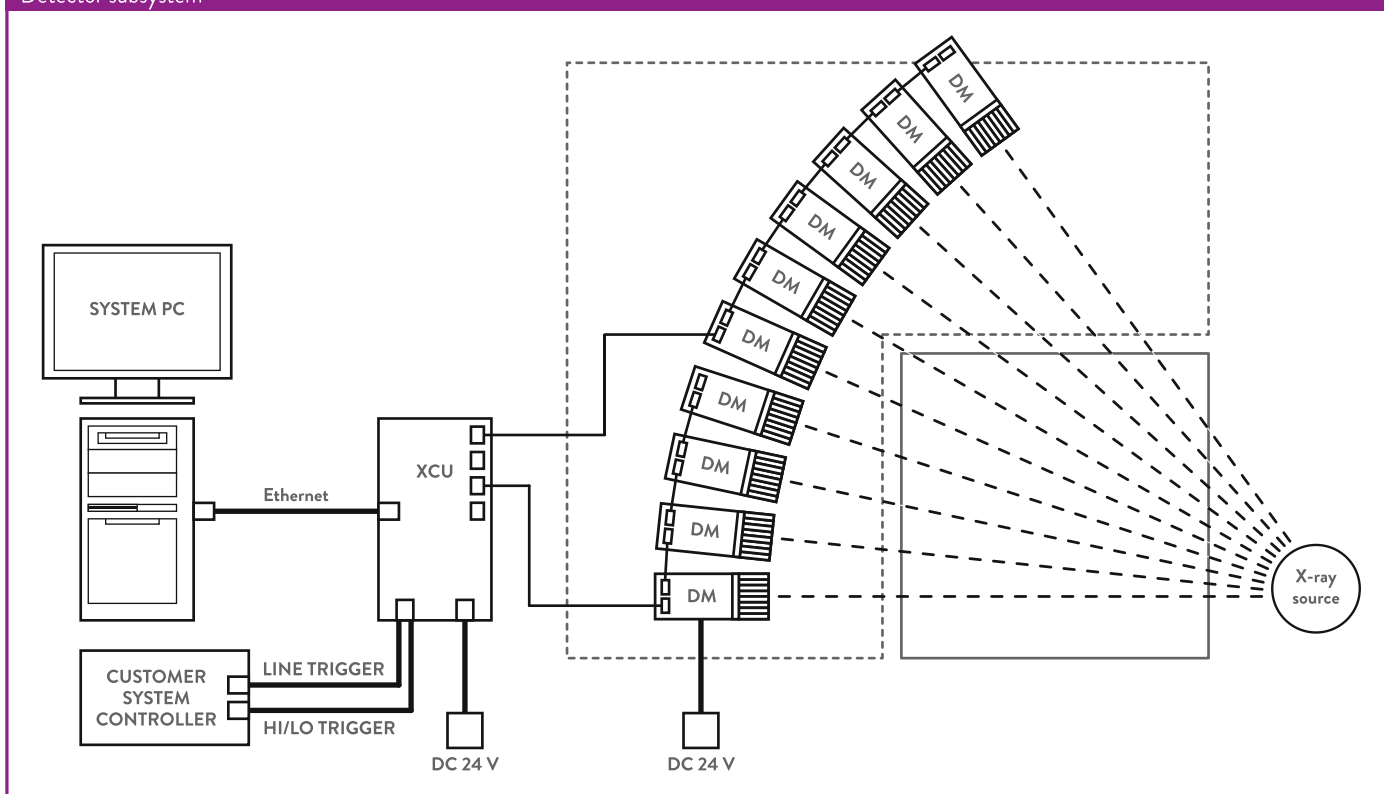
## GENERAL CHARACTERISTICS

TYPE	LCS 2.3	LCS 4.6	LCS 9.2
Detector configuration	Modular scintillator-photodiode linear array		
Energy range	450kVp – 9MeV+		
Scintillator material	Cadmium Tungstate (CdWO <sub>4</sub> ) or Cesium Iodide (Thallium) (CsI(Tl))		
Number of channels in one detector module	64	32	16
Pixel pitch (perpendicular to movement)	2.3 mm	4.6 mm	9.2 mm
Pixel height (parallel to movement)	7.0 mm	7.0 mm	15.0 mm
Pixel width (perpendicular to movement)	2.0 mm	4.0 mm	8.8 mm
Pixel absorption length	30 mm	30 mm	30 mm
Max operating speed (non-continuous mode)	300 – 500 Hz (1000 Hz Optional) (integration time 100us)		
Operating Speed (continuous mode)	1.0ms – 128ms integration time		
Data correction functions	Digital correction of offset and gain after ADC		
A/D resolution	18-bits		
Dynamic range	>15-bits (depending on sensitivity settings)		
Number of sensitivity settings	63		
Data digital interface to PC	Ethernet		
Operational voltage	DC +24 V, Optional 240/110VAC, 60/60Hz		

## MECHANICAL DIMENSIONS

	Width	Length	Height
X-Scan LCS 4.6 Detector Module	147.2 mm	184 mm	60 mm
X-Scan LCS 9.2 Detector Module	147.2 mm	184 mm	70 mm
X-Scan LCS Control Unit (XCU)	160 mm	353 mm	60 mm

### Detector subsystem



## DETECTION TECHNOLOGY PLC

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