

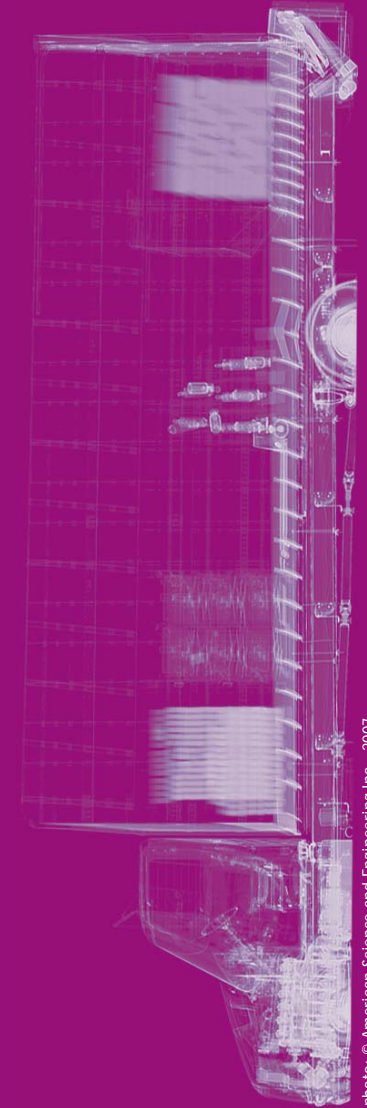
X-Scan LCS Detector Sub-system for Cargo and Container Imaging

Features

- x Standard pixel sizes 2.3mm, 4.6mm and 9.2mm
- x Extremely high conversion efficiency and dynamic range for demanding high-energy applications
- x Compliant with single and dual energy non-continuous sources (Linear Accelerators / Betatrons)
- x Compliant with continuous sources (X-ray tubes / Gamma radiation sources)
- x Modular design for cost-effective and easy customisation

Applications

- x Fixed and mobile X-ray systems for:
 - a) Cargo and container scanning
 - b) Truck, train and vehicle scanning
- x Industrial NDT (Non-Destructive Testing)



X-Scan LCS



X-Scan LCS

X-Scan LCS is a powerful linear array detector for high-energy container and cargo imaging applications utilizing Linear Accelerators as radiation source. X-Scan LCS can also be used for continuous sources such as 450 kVp tubes or gamma radiation sources (Co60) for applications requiring extremely high conversion efficiency. The detector can be set to non-continuous image acquisition mode for Linear Accelerators and continuous mode for X-ray tubes and other continuous sources.

Standard pixel sizes for X-Scan LCS are 2.3mm, 4.6mm and 9.2mm. Each Detector Module (DM) with 2.3mm pixel size houses 64channels, and Detector Module with 4.6mm pixel size houses 32channels and Detector Modules with 9.2mm pixel size houses 16 channels as shown in the General characteristics sheet. Other components within Detector Sub-System delivery include X-Scan Control Unit, X-Scan Power Unit and cabling.

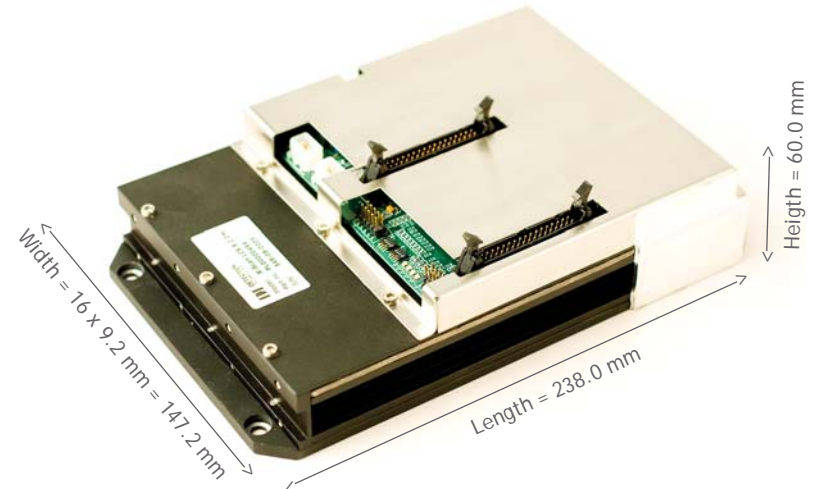
The basic detection element of X-Scan LCS Detector Module is formed by a pixelated Cadmium Tungstate (CdWO₄) or Cesium Iodide (CsI) scintillators coupled to low-leakage silicon photodiodes. The detector elements are separated using a reflector between the pixels for best light collection and minimized optical crosstalk. Absorption length of 30mm provides very high conversion efficiency for up to 15MeV accelerators and integrated read-out electronics provides up to 20-bit A/D resolution. Digital interface from control unit to PC is provided through an Ethernet connection.

Two standard Detector Module mechanical dimensions are available:

- x 147mm (Width) * 178mm (Depth) * 60mm (Height) (without anti-scatter-grid option)
- x 147mm (Width) * 238mm (Depth) * 60mm (Height) (with anti-scatter-grid option)

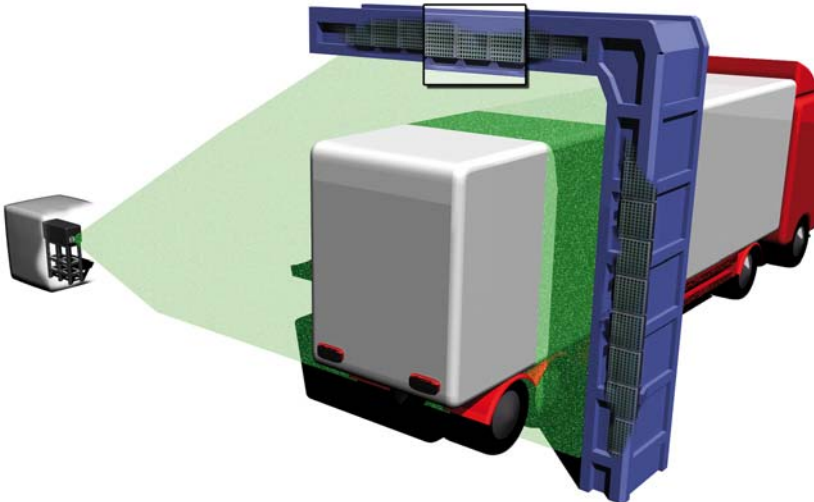
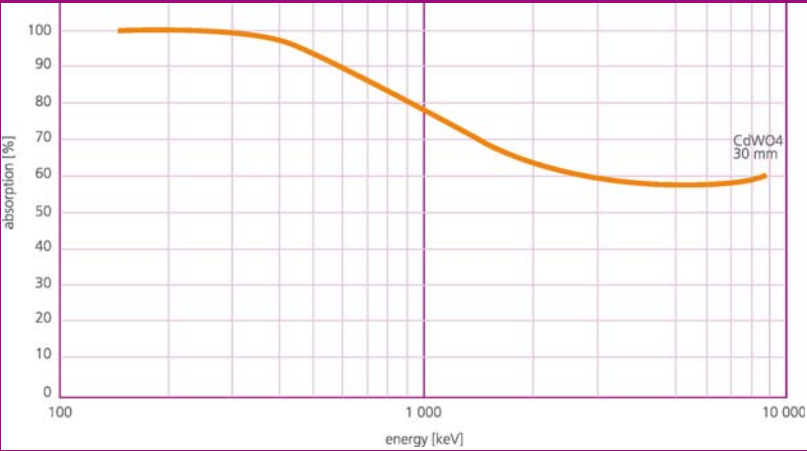
DT also provides solutions for specific requirements using DT's X-Scan design building blocks. Please contact us to negotiate a tailored solution to your needs.

General characteristics			
	LCS 2.3	LCS 4.6	LCS 9.2
Detector Configuration	Modular scintillator-photodiode linear array		
Energy Range	450 kVp - 9 MeV		
Scintillator	Cadmium Tungstate (CdWO ₄) / Caesium Iodide (CsI)		
Number of channels / pixels 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 (Linac repetition rate)	300 - 500 Hz (1000Hz optional)		
Operating Speed (continuous mode)	1.0 - 128 ms integration time		
Data Correction Functions	Digital correction of offset and gain after ADC		
A/D Resolution	20-bits		
Dynamic Range	>16-bits (depending on sensitivity settings)		
Data Digital Interface to PC	Ethernet		
Operational Voltage	240/110 VAC, 50/60 Hz		



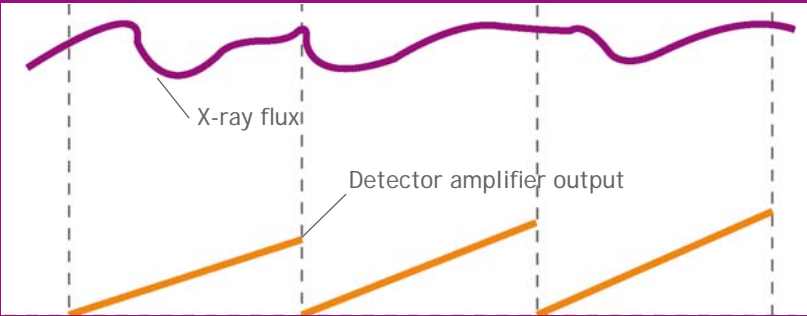
Above: Detector Module outline dimensions of LCS 9.2

CdWO4 absorption efficiency (thickness 30mm)



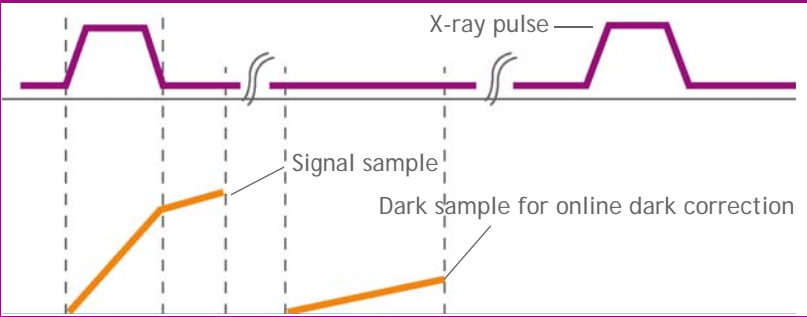
Above: Illustration of truck inspection system

Principal timing diagram: continuous image acquisition



Below: Array of Detector Modules with data and power cabling

Timing diagram: non-continuous image acquisition mode



Detection Technology, Inc.

Detection Technology (DT) is a micro-electronics company, operating worldwide, that contributes to the improvement of people's health and security through its products and innovations. The company designs, manufactures and markets detector products for Medical Imaging and Security & Safety Imaging.

By combining state of the art technology and cost effective processing, DT offers its customers significant improvements in the accuracy, speed and safety of their imaging process. DT cares - in every stage of the process - and proves customer orientation and cost effectiveness go hand in hand.

The corporate headquarters of DT are in Ii, in the north of Finland. The company has offices and production facilities in Hong Kong and Beijing, China and a sales and technical office in Cleveland, USA. In the south of Finland, in Espoo, close to Helsinki, DT has its Research & Development Center.



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