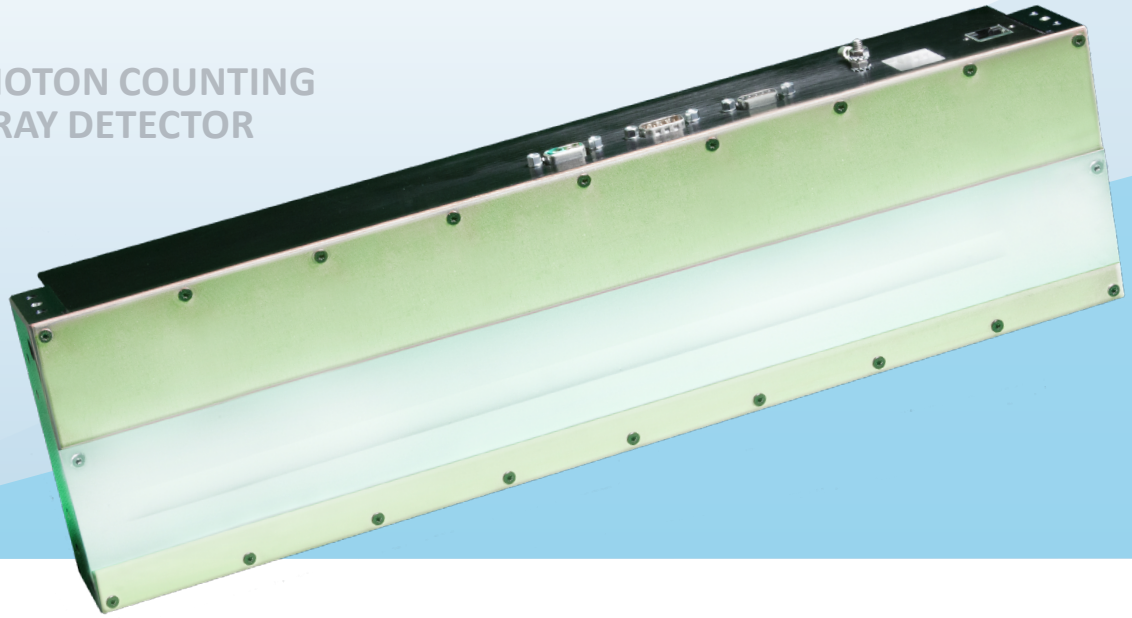
Direct Conversion
A VAREX IMAGING COMPANY

VAREX IMAGING

XC-TDI

PHOTON COUNTING X-RAY DETECTOR



NDT | Electronics | Food | Inline Inspection

FAST INDUSTRIAL DUAL ENERGY PHOTON COUNTING DETECTOR

The TDI range of photon counting detectors are ideal for line scan applications demanding high speed inspection and optional dual energy capability. The technology enables high spatial resolution even at fast scanning speeds with the ability to differentiate between subject materials.

The extreme sensitivity combined with efficient TDI scanning maximises the use of available X-rays in generating high quality images thereby decreasing X-ray tube power requirements. The radiation hardness of CdTe supports reliability and a long lifetime.

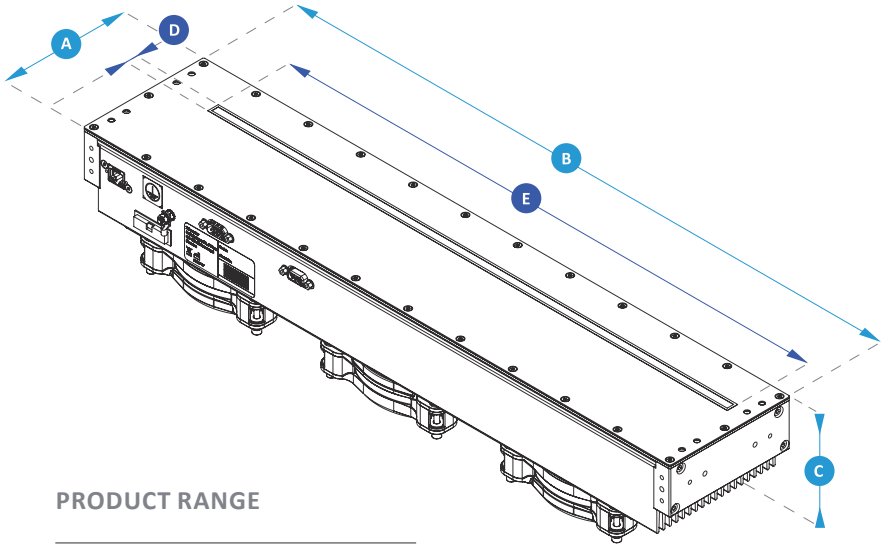
FEATURES

- Dual energy imaging for material discrimination
- Different energy range options
- High speed inspection
- Lower X-ray source power requirement
- High resolution images
- Noise free read-out
- Low-dose
- Long lifetime

TECHNICAL SPECIFICATIONS

Direct Conversion X-ray detectors, unless specified otherwise, are components intended to be integrated into products by X-ray system manufacturers.

System manufacturers are responsible for qualifying and validating their products for their intended uses and meeting all applicable regulatory requirements.



PRODUCT RANGE

XC-TDI	100x6	150x6	200x6	350x6	500x6	650x6	1000x6
ACTIVE AREA E x D mm²	102 x 6	154 x 6	205 x 6	359 x 6	513 x 6	688 x 6	1027 x 6
PHYSICAL DIMENSIONS A x B x C mm²	120 x 277 x 66 [1]	120 x 277 x 66 [1]	120 x 277 x 66 [1]	120 x 428 x 66 [1]	120 x 585 x 66 [1]	120 x 739 x 66 [1]	120 x 1098 x 66 [1]
WEIGHT (kg) [2]	3.0 – 3.5	3.0 – 3.5	3.0 – 3.5	5.0 – 5.8	7.2 – 8.0	9.0 – 10.0	16.5 – 17.0
PIXEL MATRIX	1027 x 60	1541 x 60	2055 x 60	3597 x 60	5139 x 60	6681 x 60	10279 x 60
MAX SPEED (lps) [3]	20000	20000	20000	20000	19000	15000	9000
POWER CONSUMPTION (w)	120	120	120	170	240	300	480
ENERGY RANGE (kVp)							
100L = 20 – 100	✓	✓	✓	✓	✓	✓	
160 = 40 – 160	✓	✓	✓	✓	✓	✓	✓
300 = 40 – 300			✓	✓	✓		
VARIANTS							
A = Fan Cooling	✓	✓	✓	✓	✓	✓	✓
B = No Fans	✓	✓	✓	✓	✓		

[1] Excluding fans which add 33 mm to thickness C

[2] Depends on the energy range and options

[3] Continuous 8-bit single-energy scanning at 25 % active time. Burst speed might be higher. Pixel binning and cropping can increase the maximum speed as well as reducing the active time

COMMUNICATIONS

Data Interface	1000Base-T
Power Supply	12 VDC
External Trigger Signals	Opto-coupled 12-24V Start, Encoder

REGULATORY

EU/CE	IEC/EN 60601-1:2012

ENVIRONMENTAL TYPICAL

Ingress Protection	IP20
Operating Temperature	0 to +35 °C
Operating Humidity Non-condensing	30 to 55 %
Storage Temperature	-10 to +50 °C
Storage Humidity Non-condensing	10 to 95 %

SENSOR

Technology	Photon Counting Dual Energy
Modes	Single Energy High Speed TDI Dual Energy High Speed TDI Dual Energy Spectral TDI
Converter	Cadmium Telluride (CdTe)
Pixel Pitch	100 µm
Pixel Fill-factor	100 %
Tile Gap	100 µm
Count Rate High Speed Modes Spectral Mode	 200 Mcnts / s / mm² 20 Mcnts / s / mm²
Pixel Depth	up to 18 bits / frame
Active Area	See PRODUCT RANGE
Imaging Speed	See PRODUCT RANGE
Binning	2x2, 4x4
Temperature Control	Integrated thermo-electric with a PWM controlled fan

IMAGE QUALITY *	High Speed	Spectral
MTF @ 1.0 lp / mm	95 %	90 %
MTF @ 2.5 lp / mm	70 %	70 %
MTF @ 4.0 lp / mm	50 %	60 %
DQE @ 1.0 lp / mm	70 %	75 %
DQE @ 2.5 lp / mm	55 %	55 %
DQE @ 4.0 lp / mm	40 %	35 %
Lag	0 % (after X-ray 6 µGy)	
Ghosting	< 0.1 % (1 min after 6 µGy)	

* Typical values (actual values depend on configuration)

MATERIALS

Energy Range	Housing	X-Ray Window
100L	Al/Cu	Al Coated Polymer
160	Al/Cu	Carbon Fiber
300	Al/Wcu	Carbon Fiber

SOFTWARE INTERFACE

Direct	UDP Based
SDK Operating System	Windows 7 (onwards)

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