

X-Scan c5 Series

X-ray linear array detector



X-Scan c5 Series | The X-Scan c5 Series is an enhanced product family of fast and compact linear array detectors for Food, Pharmaceutical and Industrial Inspection applications. In order to cut down the overall system cost and to simplify the structure of industrial X-ray machines, the X-Scan c5 not only introduces a broad range of new

features, but also significantly improved radiation hardness for the detector lifetime and reduced dark image noise to achieve better quality.

With more and more demanding market requirements, the X-Scan c5 can also be cost-optimized for X-ray machines targeted to replacing metal detectors in the food processing lines.

APPLICATIONS

- Food inspection
- Pharmaceutical inspection
- Raw material sorting
- Foreign particle detection
- Thickness measurement
- Non-destruction testing

KEY FEATURES AND BENEFITS

- X-ray tube energy range: 30-160kVp
- Active length: from 102 mm to 614 mm
- Pixel pitch options 0.2 mm, 0.4 mm and 0.8 mm
- Conveyor speed: up to 8 m/s
- 14-bit A/D-conversion, Dynamic range: > 4000
- Firmware upgrade via USB interface
- Compact (30 mm thickness), water resistance enclosure with IP67 classification
- New functionalities including binning function, temperature drift correction, pixel discontinuity correction and adaptive constant integration time
- CE marking (EMC standard compliance)
- Increased radiation hardness for longer detector lifespan and reduced life time cost
- Industry leading image quality and speed with high performance DT proprietary photodiode and ASIC designs
- Increased sensitivity and reduced dark image noise for improved image quality
- Robust design for harsh environment
- Cost-effective solution with high performance DT proprietary photodiode and ASIC design
- Software with USB 2.0 interface as easy plug-and-play system
- Easy software design based on DT's software development kit



GENERAL CHARACTERISTICS

PRODUCT	X-Scan 0.2c5	X-Scan 0.4c5	X-Scan 0.8c5
X-ray tube voltage Vp range	30-160 kVp		
Scintillator material	GOS		
Active area length	102-614 mm		
Number of pixels	512 - 3072	256 - 1536	128 - 768
Pixel pitch (spacing)	0.20 mm	0.40 mm	0.80 mm
Pixel height	0.30 mm	0.60 mm	0.80 mm
Pixel width	0.15 mm	0.32 mm	0.72 mm
Maximum scanning speed			
- Active lengths of (102 - 307 mm)	61 cm/s	222 cm/s	800 cm/s
- Active lengths of (410 - 614 mm)	31 cm/s	121 cm/s	444 cm/s
Minimum integration time			
- Active lengths of (102 - 307 mm)	0.33 ms	0.18 ms	0.10 ms
- Active lengths of (410 - 614 mm)	0.64 ms	0.33 ms	0.18 ms
Maximum integration time	128 ms		
A/D resolution	14 bits		
Dynamic range	> 4000		
Data digital interface	16 bits		
Interface	USB 2.0		
Non-linearity	< 1 %		
Operational voltage	+12 V DC		
Power consumption	10 W max		
IP classification	IP67		
Operational temperature	0 - +40°C		
Operational humidity	30 - 80 %		
Storage temperature	-10 - +50°C		
On-board calibration	Yes		
Binning function	Yes		
AD gain / Offset calibration	Yes		
Averaging and summing function	Yes		
Temperature drift compensation	Yes		
Support multi USB detectors	Yes		
CE marking	EMC standard compliance (EN61326-1:2013, EN61000-3-2:2014 and EN61000-3-3:2013)		

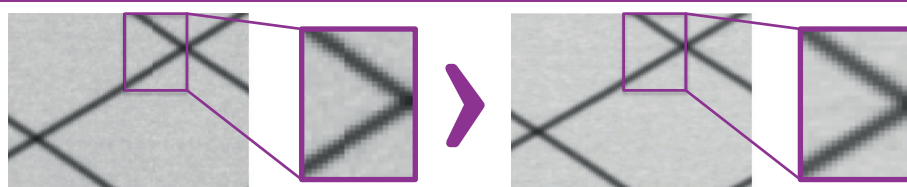
ENCLOSURES OF THE X-SCAN C5 SERIES

ENCLOSURE MODEL	Active length	Length	Width	Height	Weight
X-Scan c5-102	102 mm (4.0")	230 mm (9.1")	200 mm (7.9")	30 mm (1.2")	2.5 kg (5.5 lbs)
X-Scan c5-154	154 mm (6.0")	230 mm (9.1")	200 mm (7.9")	30 mm (1.2")	2.5 kg (5.5 lbs)
X-Scan c5-205	205 mm (8.1")	230 mm (9.1")	200 mm (7.9")	30 mm (1.2")	2.5 kg (5.5 lbs)
X-Scan c5-256	256 mm (10.1")	355 mm (13.2")	200 mm (7.9")	30 mm (1.2")	3.1 kg (6.8 lbs)
X-Scan c5-307	307 mm (12.1")	355 mm (13.2")	200 mm (7.9")	30 mm (1.2")	3.7 kg (8.2 lbs)
X-Scan c5-410	410 mm (16.1")	438 mm (17.2")	200 mm (7.9")	30 mm (1.2")	4.8 kg (10.6 lbs)
X-Scan c5-512	512 mm (20.2")	540 mm (21.3")	200 mm (7.9")	30 mm (1.2")	5.9 kg (13.0 lbs)
X-Scan c5-614	614 mm (24.2")	643 mm (25.3")	200 mm (7.9")	30 mm (1.2")	7.0 kg (15.4 lbs)

Pixel Discontinuity Correction

Problem to solve
An image discontinuity issue where the threads, wires or others are diagonal to scanning direction.

Methodology
Get "edgeless image" through stringent hardware assembly control and firmware correction.



"Edgeless image" after PDC is enabled

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DS0000076B