

FLAT DETECTOR FOR EXCEPTIONAL FINE-TUNED IMAGES IN ONCOLOGY

# LARGE FIELD OF VIEW, FAST FRAME SPEED AND RAPID SYSTEM INTEGRATION



The **XD300** flat panel X-ray detector delivers exceptional images fine-tuned to **the needs of oncology, with a large field of view, fast frame speed for quick delivery, great ease of use and rapid system integration.** Our image chain uses flat detector technology that provides excellent soft tissue visualization to verify the precise location of the tumor and to match contours to planning data.

## KEY BENEFITS

### Enhanced soft tissue visualization

- Low detector lag due to reset light technology

### Superb image quality

- State-of-the-art performance in DQE, linearity, MTF and high dynamic range

### Large active area

- 43 x 43 cm (17 x 17 in) field of view

DUNLEE

Description	Definition	Min	Typical	Max	Unit
<b>SENSITIVE ELEMENTS</b>					
Sensor technology	a-Si (Amorphous silicon array)				
Scintillator	Csl				
Pixel Pitch		-	148	-	um
X-ray sensitive area					
width (X)		2860	-	-	pel
width (X)		423	-	-	mm
height (Y)		2874	-	-	pel
height (Y)		425	-	-	mm
<b>OPERATIONAL FEATURES</b>					
A/D conversion		-	16	-	bits
Number of gains	6 settings from g0 (high gain) to g5 (smallest)	-	6	-	gains
Available non binned or binned modes	1x1, 2x2, 3x3, 4x4				
Zoom	programmable				
Number of Available modes	32 modes				
<b>DOSE RANGE</b>					
X-ray generator voltage range		40	-	150	kVp
Maximum usable dose per frame in radiographic mode, 1x1, lowest gain (g4 gain), RQA5		-	-	65	uGy
Maximum linear dose per frame in radiographic mode, 1x1, lowest gain (g4 gain), RQA5		50	-	-	uGy
Maximum linear dose per frame in Fluoroscopic mode, 3x3, highest gain (g0 gain), RQA5		1.7	-	-	uGy
<b>IMAGE QUALITY PERFORMANCE</b>					
Sensitivity in Radiographic mode, 1x1, lowest gain (g4 gain), RQA5		0.38	-	0.75	LSB/nGy
Amplification factor high gain (g0 gain) compared to low gain (g4 gain) for all binnings		-	20	-	-

Description	Definition	Min	Typical	Max	Unit
Overall detector dynamic range, 1x1 <sup>[1]</sup>		-	96	-	dB
DQE @ 2 µGy, 148 µm, low gain RQA5 <sup>[2]</sup>	0 lp/mm	69	73	-	%
	1 lp/mm	-	51	-	%
	2 lp/mm	-	42	-	%
	3 lp/mm	-	28	-	%
	3.4 lp/mm	-	19	-	%
DQE @ 200 nGy, 148 µm, high gain RQA5 <sup>[2]</sup>	0 lp/mm	-	73	-	%
	1 lp/mm	-	51	-	%
	2 lp/mm	-	42	-	%
	3 lp/mm	-	27	-	%
	3.4 lp/mm	-	19	-	%
DQE @ 20 nGy, 148 µm, high gain RQA5 <sup>[2]</sup>	0 lp/mm	-	70	-	%
	1 lp/mm	-	47	-	%
	2 lp/mm	-	31	-	%
	3 lp/mm	-	16	-	%
	3.4 lp/mm	-	11	-	%
MTF @ 1lp/mm <sup>[2]</sup>		55	66	-	%
MTF @ 2lp/mm <sup>[2]</sup>		25	35	-	%
MTF @ 3lp/mm <sup>[2]</sup>		10	19	-	%
MTF @ 3.4lp/mm <sup>[2]</sup>		7	15	-	%
SENR @ 1µGy, Radiographic mode (1x1), 70ms X-Ray window <sup>[3]</sup>		39.8	46	-	dB
NED in Radiographic mode (1x1), 70 ms X-Ray window <sup>[4]</sup>		-	50	100	nGy
NED in Fluoroscopic mode (3x3), 13 ms X-Ray window <sup>[4]</sup>		-	3.5	10	nGy
Residual signal on 1st frame after X-Ray <sup>[5]</sup>		-	-	2	%
Residual signal on 2nd frame after X-Ray <sup>[5]</sup>		-	-	2	%
Residual memory @ 1s in radiographic mode <sup>[6]</sup>		-	-	2.2	%
Residual memory @ 10s in radiographic mode <sup>[6]</sup>		-	-	0.5	%

<sup>[1]</sup>Overall dynamic range =  $20 \times \log(\text{saturation dose Radiographic mode} / \text{dose providing a signal equal to electronic noise in Fluoroscopic mode})$

<sup>[2]</sup>All DQE and MTF values are according to IEC 62220-1-3 standard

<sup>[3]</sup>SENR = Signal-to-electronic Noise Ratio =  $20 \times \log(\text{sensitivity} \times \text{dose} / \text{electronic noise})$

<sup>[4]</sup>NED = Noise equivalent Dose = Dose giving a quantum noise equivalent to electronic noise

<sup>[5]</sup>Residual signal = additional offset in % of previous image signal

<sup>[6]</sup>Residual memory = after a 150 µGy image, additional offset + additional sensitivity in % of current image

Description	Definition	Min	Typical	Max	Unit
<b>MAXIMUM FRAME RATE</b>					
In blue the actual size of pixel ■ = size of the smallest pixel: 148µm x 148µm					
Overview, 148 µm pixel, pulsed mode		-	FPS <sup>[7]</sup> : 12Hz XRD <sup>[7]</sup> : 35.5ms	-	-
Overview, 296 µm pixel, pulsed mode		-	FPS <sup>[7]</sup> : 38Hz XRD <sup>[7]</sup> : 8ms	-	-
Overview, 444 µm pixel, pulsed mode		-	FPS <sup>[7]</sup> : 65Hz XRD <sup>[7]</sup> : 5ms	-	-
Overview, 592 µm pixel, pulsed mode		-	FPS <sup>[7]</sup> : 73Hz XRD <sup>[7]</sup> : 5ms	-	-
Overview, 592 µm pixel, Continuous mode	 Optimal for CBCT	-	FPS <sup>[7]</sup> : 150Hz	-	-
<b>ELECTRICAL INTERFACES</b>					
DC supply voltage	24V				
DC supply current	0.6 A				
Communication, data interfaces	Ethernet 10G base T				
Synchronization	Electrical synchronisation signals				
<b>MECHANICAL INTERFACES</b>					
Detector dimensions				518 x 508 x 52	mm
Detector weight			23		Kg
Heat dissipation	Passive cooling				
<b>ENVIRONMENTAL CONDITIONS</b>					
Cold start	Time to reach full performance after powering ON	10	-	-	mn
<b>STORAGE</b>					
Storage temperature		-25	-	55	degC
Storage air relative humidity <sup>[8]</sup>		9	-	95	%HR
Storage air pressure		500	-	1060	mbar
<b>OPERATION</b>					
Operating temperature		10	-	35	°C
Operation air relative humidity <sup>[8]</sup>		20	-	75	%Rh
Operating pressure		700	-	1060	Mbar

<sup>[7]</sup>FPS: Maximum number of images per second in the specified mode; XRD: Maximum X-ray window at specified FPS

<sup>[8]</sup>non condensing

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