TELEDYNE
PRINCETON INSTRUMENTS
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Part of the Teledyne Imaging Group

Now Powered by LightField™

PIXIS-XB: 1024BR

The PIXIS-XB: 1024BR is a fully integrated camera that utilizes a back illuminated, deep depletion CCD for direct detection of X-rays between < 3keV and 20 keV. This highly sensitive, high resolution camera is designed for very low X-ray flux imaging. With13 x 13 µm pixels and 100% fill factor, this system provides high spatial resolution. A thin beryllium window in front vacuum seals the unit for deep cooling, protects the CCD, and reduces background by filtering low-energy X-rays. The thermoelectrically cooled option delivers maintenance-free operation. The software-selectable gains, output amplifiers, and readout speeds offer users highly flexible configuration capabilities to optimize system performance.

FEATURE	BENEFITS
Back-illuminated, deep depletion CCD	Provides very low X-ray flux imaging with high sensitivity and high resolution (MTF) for X-ray energy ranging from < 3 keV to 20 keV
All-metal, hermetic vacuum seals	No out-gassing (as in epoxy seals) which can compromise vacuum performance
Thermoelectric cooling Air Cooling Water cooling	Allows maintenance free operation Allows vibration free operation with room temperature, coolant circulation for temperature fluctuation sensitive applications (CoolCUBE II required)
1024 x 1024 imaging array, 13 µm x 13 µm pixels	High spatial resolution
Scientific grade CCD	Low noise, few defects, linear response
Low noise electronics	Best performance with high dynamic range
Dual digitizers	Dual-speed digitization allows complete freedom to select between “slow operation” for low noise and highest SNR or “fast operation” for rapid image acquisition
Software selectable system gains	Flexibility to optimize signal-to-noise ratio and dynamic range
Kinetics readout mode	Custom readout mode offers microsecond resolution
USB2.0 data interface, Optional fiber optic interface	Plug-n-play operation; Use it with laptop; Fiber optic interface is ideal for remote operation
WinView/Spec (for Windows XP/7; 32-bit) or LightField™ (for Windows 7; 64-bit)	Powerful, yet easy-to-use software packages for acquisition, display and analysis; LightField offers cutting edge interface, direct to hard drive streaming, time stamping & more
PVCAM/PICAM software interface	Universal programming interface for easy custom programming; PVCAM for Windows XP/7 (32-bit) and Linux; PICAM for Windows 7 (64-bit)
LabView® Scientific Imaging ToolKit (SITK™)	Predefined vis for easy integration of camera controls into large experiment

Applications:
X-ray Spectroscopy, X-ray Photon Correlation Spectroscopy (XPCS), X-ray Intensity Fluctuation Spectroscopy (XIFS), X-ray diffraction and X-ray lithography

SPECIFICATIONS

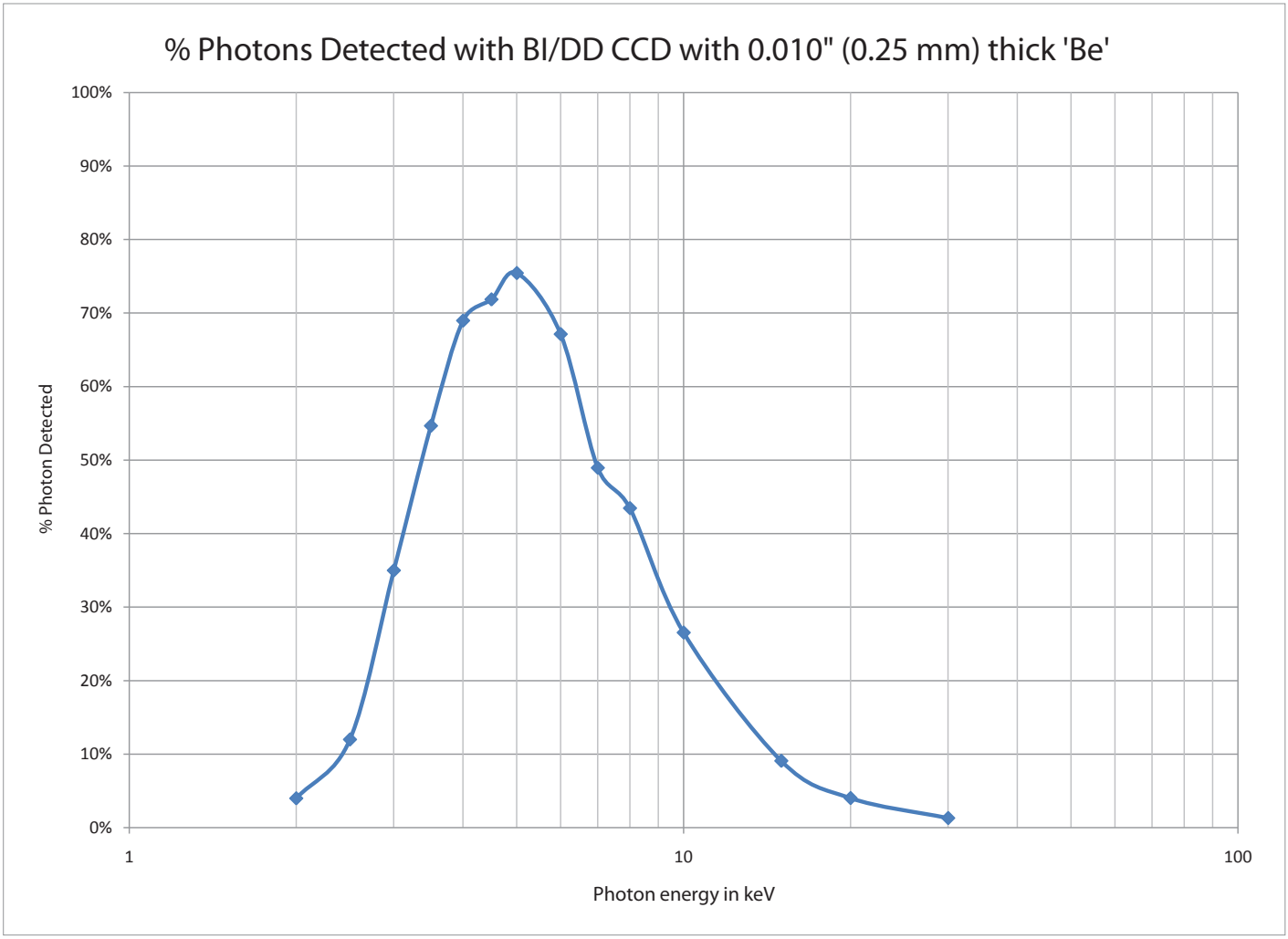
	PIXIS: 1024BR
Features	Back-illuminated, deep depletion CCD. High sensitivity in X-ray range from < 3 keV to 20 keV.
CCD Image Sensor	e2v CCD47-10, back-illuminated, deep depletion, grade 1, NIMO
Dark current @ -70° C (e-/p/sec)	0.02 (typical) 0.07 (max)
CCD format	1024 x 1024 imaging pixels; 13 x 13 µm pixels; 100% fill factor
Imaging area	13.3 x 13.3 mm (optically centered)
Deepest cooling temperature	-90° C typical; -70° C guaranteed, specified at ambient temperature of +20° C
Thermostating precision	±0.05° C
Cooling method	Thermoelectric air or liquid cooling (CoolCUBE II liquid circulator available)
Full well: Single pixel Output node	100 ke- (typical), 60 ke- (min) 250 ke- (typical), 220 ke- (min)
ADC speed/bits	100kHz/16-bit and 2MHz/16-bit
System read noise @100 kHz @2 MHz	3.0 e- rms (typical), 5 e- rms (max) 9.0 e- rms (typical), 15 e- rms (max)
Vertical shift speed	< 3.2 µsec/row to18 µsec/row (programmable)
Non-linearity	<1% @ 100 kHz
Software selectable gains	1, 2, 4 e-/ADU (typical); available at all speeds
Operating systems supported	Windows XP/7 (32-bit), Windows 7 (64-bit) and Linux
Data interface	USB2.0 (5m interface cable provided); Optional Fiberoptic interface is available for remote operation
I/O signals	Two MCX connectors for programmable frame readout, shutter, trigger in
Operating environment	+5 to +30° C non-condensing
Certification	CE
Dimensions / Weight	16.59 cm (6.53") x 11.81 cm (4.65") x 11.38 cm (4.48") (L x W x H) / 2.27 kg (5 lbs)

NOTE: All specifications subject to change

FRAME RATE

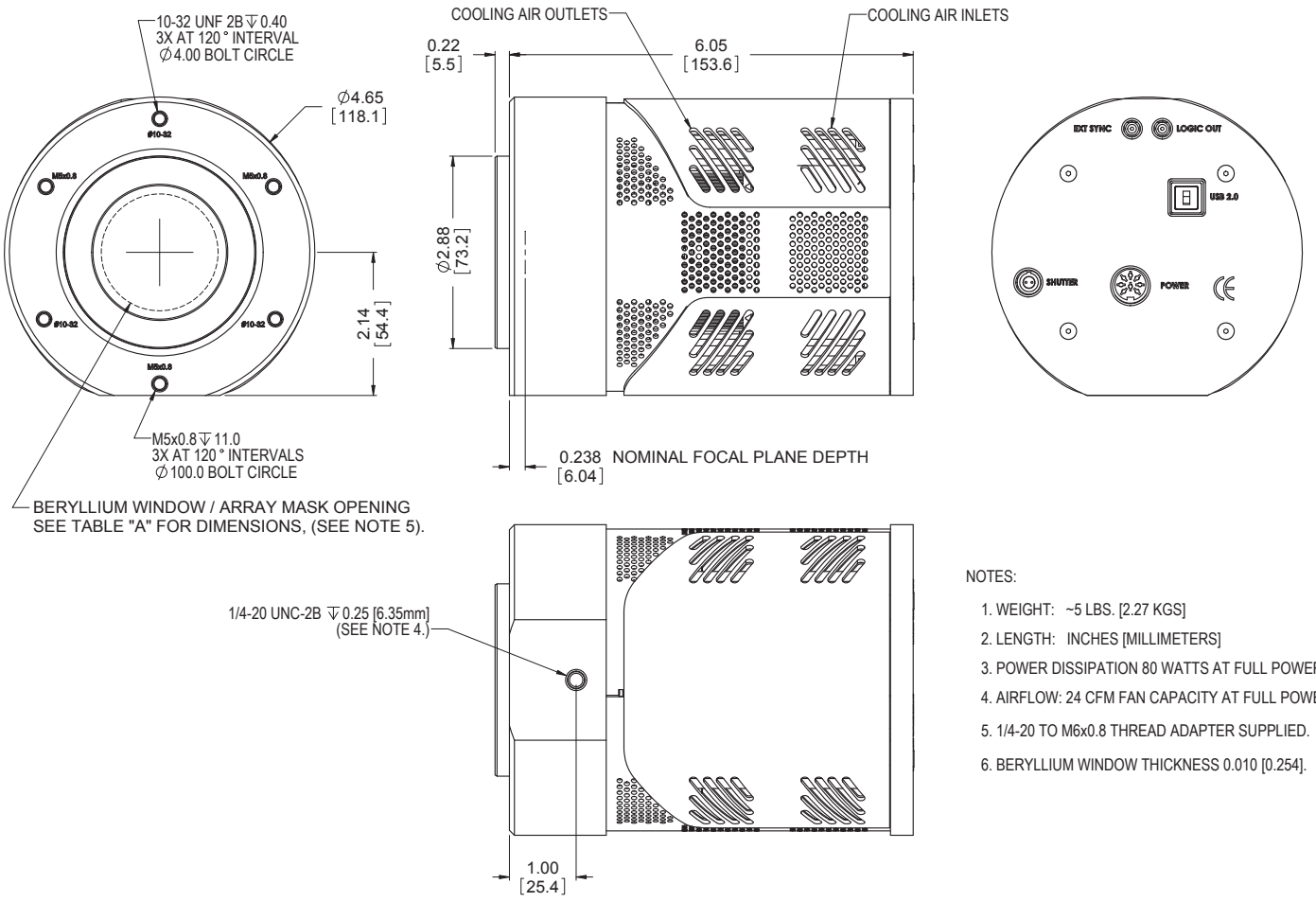
		Readout Time	
		@ 2 MHz	@ 100 kHz
Binning	1 x 1	0.58 sec	10.0 sec
	2 x 2	0.28 sec	2.8 sec
	8 x 8	0.14 sec	0.85 sec

QE DATA


% Photons Detected with BI/DD CCD with 0.010" (0.25 mm) thick 'Be'
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
% Photon Detected
1
10
100
Photon energy in keV

OUTLINE DRAWING

PIXIS-XB: 1024BR AIR COOLED

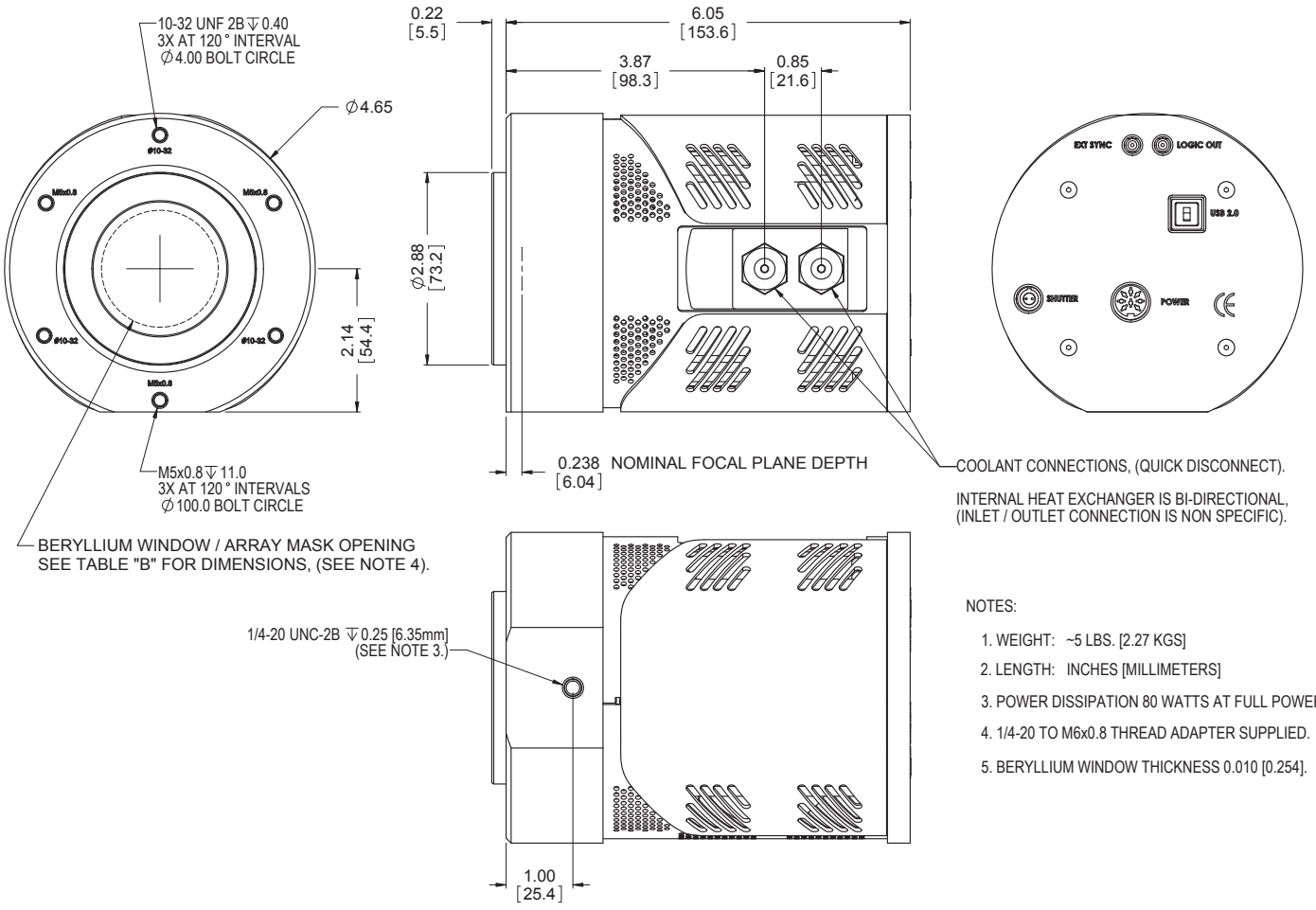


NOTES:

1. WEIGHT: ~5 LBS. [2.27 KGS]
2. LENGTH: INCHES [MILLIMETERS]
3. POWER DISSIPATION 80 WATTS AT FULL POWER.
4. AIRFLOW: 24 CFM FAN CAPACITY AT FULL POWER.
5. 1/4-20 TO M6x0.8 THREAD ADAPTER SUPPLIED.
6. BERYLLIUM WINDOW THICKNESS 0.010 [0.254].

OUTLINE DRAWING

PIXIS-XB: 1024BR LIQUID COOLED



NOTES:

1. WEIGHT: ~5 LBS. [2.27 KGS]
2. LENGTH: INCHES [MILLIMETERS]
3. POWER DISSIPATION 80 WATTS AT FULL POWER.
4. 1/4-20 TO M6x0.8 THREAD ADAPTER SUPPLIED.
5. BERYLLIUM WINDOW THICKNESS 0.010 [0.254].