SPECIFICATIONS

	ProEM:1024B_eXcelon	ProEM: 1024B
Features	Back-illuminated CCD. High sensitivity and extremely low etaloning, grade 1, AIMO	Back-illuminated CCD. High sensitivity in visible region
CCD sensor	Princeton Instruments proprietary CCD, grade 1, AIMO	e2v CCD 201, grade 1, AIMO
CCD format	1024 x 1024, 13 µm imaging pixels 13.3 x 13.3 mm imaging area (optically centered)	1024 x 1024, 13 µm imaging pixels 13.3 x 13.3 mm imaging area (optically centered)
Shutter	Electromechanical	Mechanical
	EM mode	Normal CCD mode
Read noise (typical)	20 e- rms @ 5 MHz 40 e- rms @ 10 MHz Read noise effectively reduced to <1 e- rms with on-chip multiplication gain enabled	2.5 - 3 e- rms @ 100 kHz 6 e- rms @ 1 MHz 10 e- rms @ 5 MHz
Full well (typical)	730 ke- (output node)	80 ke- (single pixel)
Non-Linearity	<2%	<1%
Analog gain (typical)	12, 6, 3 e-/ADU	3, 1.5, 0.8 e-/ADU
Deepest cooling temperature (@ +20°C ambient)	–55°C +/- 0.05°C (guaranteed) Maximum Cooling: -65°C (air), -70°C (+20°C liquid), -75°C (+10°C liquid)	
Dark current @ -55°C	0.002 e-/p/sec (typical) 0.04 e-/p/sec (maximum)	
Clock induced charge (CIC) (typical)	0.01 e-/pixel/frame measured at ~1000x multiplication gain	
Electron multiplication (EM) gain	1 to 1000x, controlled in linear, absolute steps	
Digitization	16 bits @ 10 MHz, 5 MHz, 1 MHz and 100kHz	
Vertical shift rate*	800 nsec/row - 5 µsec/row (variable)	
Binning	Flexible binning in vertical and 2x to 32x in horizontal	
Operating systems supported	Windows XP/Vista	
I/O signals	Exposure, Readout, Trigger In, Image Shift, Waiting for Trigger	
Operating environment	0 to 30°C ambient, 0 to 80% relative humidity, non-condensing	

NOTE: All specifications subject to change

FRAME RATE (fps)

ROI/Bin	1024 x 1024	512 x 512	256 x 256	128 x 128
1 x 1	8.9	17	33	62
2 x 2	17	33	62	108
4 x 4	33	61	106	168
8 x 8	61	104	162	225

NOTE: Frame rate measured at 10 MHz digitization and 800 nsec/row vertical shift.
"Custom chip" mode increases frame rate at reduced ROI by 2x to 4x.
** CTE and image quality are optimized even at the fastest vertical shift rate.*