



The Princeton Instruments VersArray: 2048B is a high-performance, full-frame digital camera system that utilizes a back-illuminated, scientific-grade CCD. With a 2048 x 2048 imaging array, 100% fill factor, and 13.5 x 13.5 μm pixels, this system provides a very large imaging area with very high spatial resolution. Dark current is reduced to near zero with liquid-nitrogen cooling*, even for long exposures. The large field of view, exceptionally high quantum efficiency, low readout noise, and low binning noise make this camera ideal for a variety of low-light applications, including macro-imaging of chemiluminescence.

Applications: Astronomy, Large format imaging, Phosphor/scintillator imaging, Chemiluminescence

*For convenient thermo-electric cooling, the CCD is also available in the latest PIXIS platform. See PIXIS: 2048 datasheet for further information.

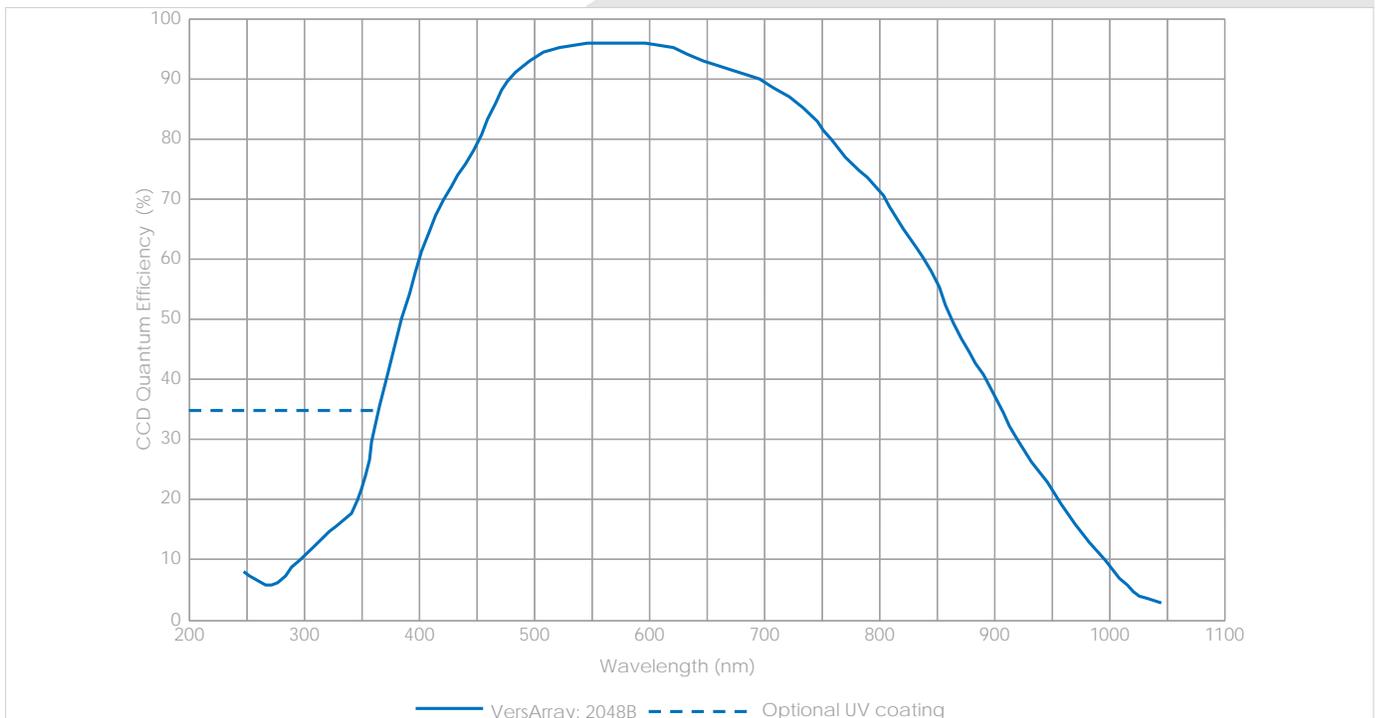
Features	Benefits
2048 x 2048 imaging array 13.5 x 13.5 μm pixels	High-resolution, megapixel sensor
Back-illumination	Highest QE (>90%) possible
Low-noise readout	Able to measure smaller signals
Flexible binning and readout	Increases light sensitivity while increasing the frame rate
100 kHz/1MHz readout speed	Selectable readout to optimize for low noise or high speed operation
16-bit digitization	Quantifies both bright and dim signals in the same image
Kinetics (optional)	Allows faster frame rates when only partial number of rows are shifted
Liquid-nitrogen cooling	Very long integration times for higher sensitivity
F-mount	Easily attaches to standard lenses or optical equipment
USB2.0	Plug-n-play interface for easy setup
PCI interface	Works with PC
Fiber optic interface (optional)	For remote operation. Available for USB2.0 and PCI
Video output	Compatible with standard video equipment

VersArray: 2048B Specifications

CCD image sensor	e2v CCD42-40; scientific grade, back-illuminated, full frame CCD	
CCD format	2048 x 2048 imaging pixels 13.5 x 13.5 μm pixels; 27.6 x 27.6 mm imaging area (optically centered)	
Grade*	< 3 column for Grade 1 (Contact factory for detailed grade specifications)	
	Typical	Maximum
Linear full well	single pixel 2 x 2 binned pixel	>80,000 e- >800,000 e-
Read noise	1-MHz digitization 100-kHz digitization	8 e- rms 5 e- rms
Cooling Temperature @ +20°C ambient	-110°C with +/-0.05°C thermo staging precision	
Dark Current @ -110°C	1 e-/p/hr	
Nonlinearity	<2%	
Readout bits/speed	16 bits @ 1 MHz; 16 bits @ 100 kHz	
Frame readout	4.5 seconds for full frame @ 1 MHz 41 seconds for full frame @ 100kHz	
LN hold time	24 hours	
Operating environment	0 to 30°C ambient, 0 to 50% relative humidity noncondensing	

*based on CCD manufacturer's cosmetic blemish definitions
All specifications subject to change without notice

Quantum Efficiency Curve



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