Princeton Instruments

VersArray:2048F

2048 x 2048 imaging array
13.5 x 13.5-µm pixels

The Princeton Instruments VersArray:2048F from Roper Scientific® is a high-performance, full-frame digital camera system that utilizes a front-illuminated, scientific-grade CCD. With a 2048 x 2048 imaging array, 100% fill factor, and 13.5 x 13.5-micron pixels, this system provides a very large imaging area with very high spatial resolution. Dark current is reduced through a thermoelectrically cooled option for easy maintenance or a liquid-nitrogen-cooled option for long exposures. The large field of view, good quantum efficiency, low readout noise, and low binning noise make this camera ideal for a variety of low-light applications.

Features	Benefits
2048 x 2048 imaging array 13.5 x 13.5-µm pixels	Provides large full well with maximum sensitive area
Front-illuminated CCD	Offers affordable, high-quality performance
Scientific-grade CCD	Low noise, few defects, linear response
User-selectable amplifiers	Ability to configure system to best meet requirements of experiment
Flexible, user-selectable binning and subarray readout	Increases frame rate and signal-to-noise ratio (SNR)
High intrascene dynamic range	Quantifies both strong and weak signals in the same image
Dual-digitizer option	Slow speed for low noise and highest SNR High speed for rapid image acquisition
LN cooling option	Allows long exposures and very low dark current
Thermoelectric cooling option	Easy maintenance
Software-selectable gains	Allows optimization of system performance for lowest noise to highest dynamic range
PCI interface	Industry standard Fast, reliable data transfer
WinView and PVCAM®	Offers easy-yet-sophisticated Windows® GUI controls Automates data acquisition, analysis, and display
Linux® drivers and SITK™ plug-in for National Instruments' LabVIEW™	Extends system utility

Specifications

CCD image sensor	E2V CCD42-40; scientific grade 1; MPP; front-illuminated device; available with UV-enhancement coating					
CCD format	2048 x 2048 imaging pixels; 13.5 x 13.5-µm pixels; 100% fill factor; 27.6 x 27.6-mm imaging area (optically centered)					
	Minimum		Typical		Maximum	
CCD read noise			3 e- rms		4 e- rms	
System read noise			low noise	high capacity	low noise	high capacity
@ 50-kHz digitization			3.5 e- rms	11 e- rms	5.5 e- rms	13 e- rms
@ 100-kHz digitization			5.5 e- rms	13 e- rms	7 e- rms	15 e- rms
@ 1-MHz digitization			9 e- rms	25 e- rms	12 e- rms	30 e- rms
Single-pixel full well	80 ke-		100 ke-			
Output amplifier	low noise	high capacity	low noise	high capacity		
	100 ke-	700 ke-	150 ke-	800 ke-		
Dark current						
@ -40°C operation			0.05 e-/p/s		0.1 e-/p/s	
@ -110°C operation			0.3 e-/p/hr		1 e-/p/hr	
Deepest operating temperature						
TE cooling (air)	-35°C		-40°C			
TE cooling (chilled liquid)	-45°C		-55°C			
LN cooling (liquid nitrogen)	-80°C		-110°C			
Outputs	Low-noise (high-sensitivity) or high-capacity amplifier; user selectable*					
Software-selectable gains	1/2x, 1x, 2x (low-noise mode) 1x, 2x, 4x (high-capacity mode)					
Nonlinearity @ 100 kHz	<2%					
Dynamic range	16 bits					
Scan rates	"100 kHz / 1 MHz" or "50 kHz / 1 MHz"					
Frame readouts						
@ 1-MHz digitization	<4.5 seconds for full frame					
@ 100-kHz digitization	<41 seconds for full frame					
@ 50-kHz digitization	<81 seconds for full frame					
Thermostating precision	±0.05°C across entire temperature range					
LN hold time	>25 hours					

VersArray®

Note: Specifications are subject to change.
*Applies to thermoelectric head only.

When you're *SERIOUS* about high-performance imaging...

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VersArray:2048F Rev C2

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