

Spec-10:2K

2048 x 512 imaging array | 13.5 x 13.5- μm pixels



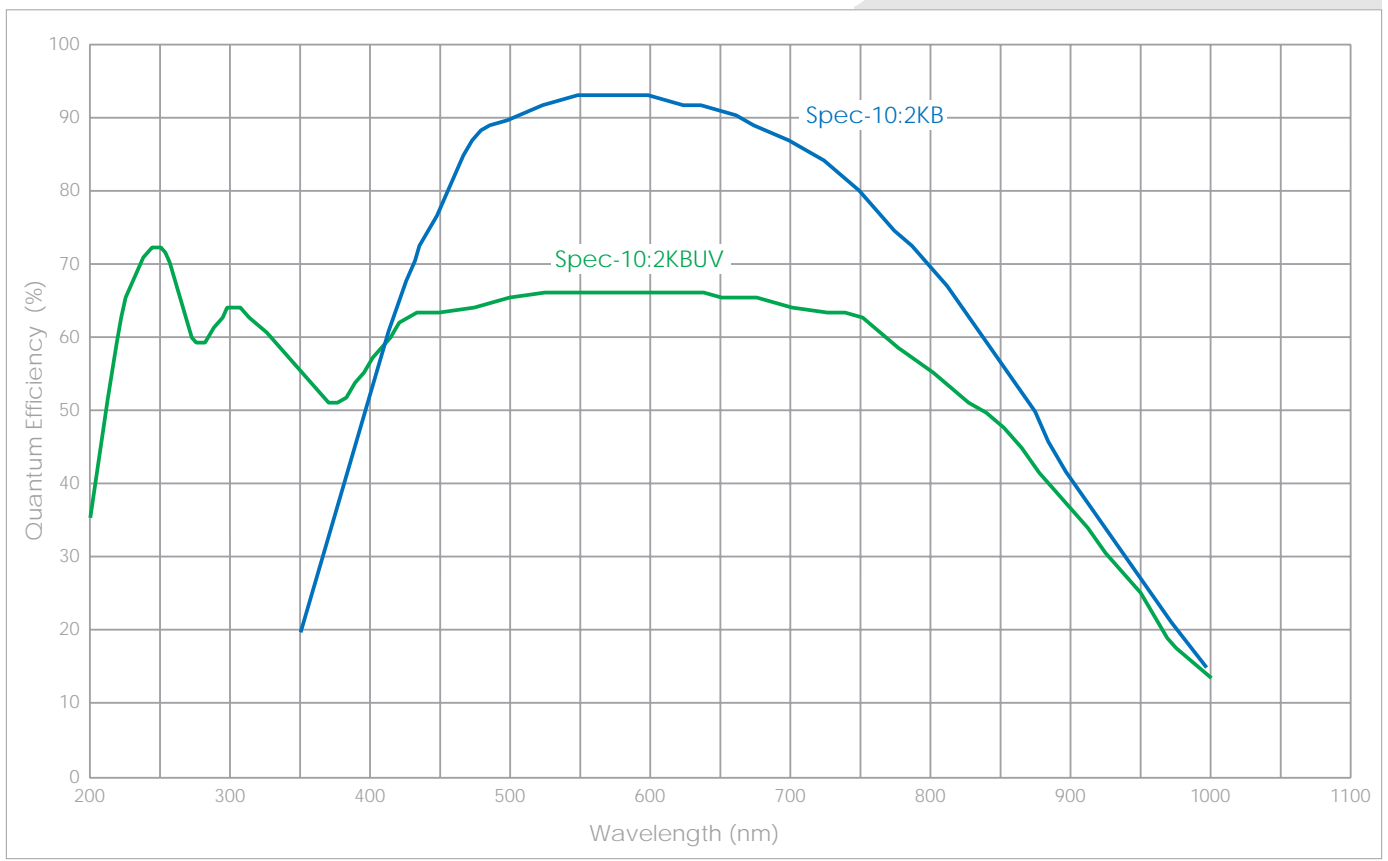
The Spec-10:2K from Princeton Instruments utilizes a high-performance, back-illuminated CCD with a format ideal for high-resolution spectroscopy applications. The UV/AR-coated detector offers excellent sensitivity in the ultraviolet. A “Princeton Instruments exclusive” CCD feature provides software-selectable amplifiers that permit operation in either high-capacity mode (absorbance spectroscopy) or high-sensitivity mode (Raman or fluorescence spectroscopy). This feature delivers sensitivity and dynamic range unmatched by industry-standard “1024 pixel” CCDs. Cooling the CCD to cryogenic temperatures effectively eliminates dark noise, even for long exposure times.

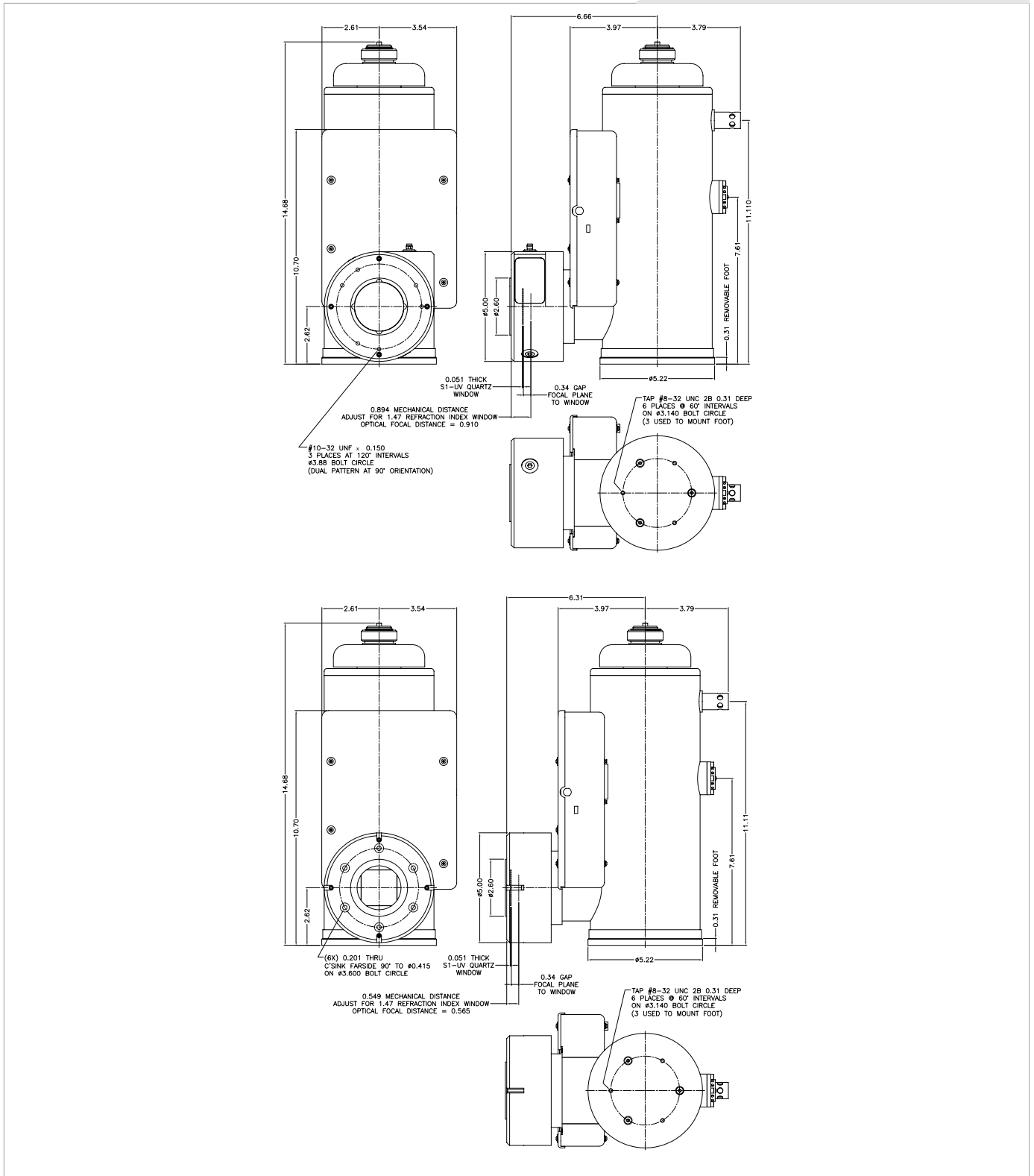
Features	Benefits
2048 x 512 imaging array	Provides highest level of resolution for demanding applications
13.5 x 13.5- μm pixels	Small pixel size supports high resolution
Back-illuminated, UV/AR-coated CCD	High quantum efficiency for low-light applications in the ultraviolet
Cryogenic cooling	Effective elimination of dark noise, even for long exposure times
Software-selectable amplifiers	Exclusive feature provides highest level of sensitivity and dynamic range for absorbance, Raman, and fluorescence applications
Standard spectrometer interface	Will interface with most spectrometers
Dual-digitizer option	Multiple-speed digitization allows complete freedom to select between “slow operation” for low noise and highest SNR (signal-to-noise ratio) or “fast operation” for rapid image acquisition
“USB 2.0 interface” configuration	Seamless, plug-and-play connection to PC notebooks and desktops Easy OEM integration
“PCI interface” configuration	Industry standard for fast, reliable data transfer
WinSpec 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

Spec-10:2K Specifications

	Spec-10:2KB	Spec-10:2KBUV	
CCD Image Sensor	back-illuminated	back-illuminated, enhanced UV	
	All Spec-10:2Ks		
	e2v CCD42-10, scientific grade 1, MPP device		
	2048 x 512, 13.5 x 13.5 μm pixels, 27.6 x 6.9 mm imaging area		
	Typical	Maximum	
Dark Current @ -120°C	0.3 e/p/hr	1 e/p/hr	
System Read Noise			
@ 100 kHz readout	3.5 e-rms	5 e-rms	
@ 1 MHz readout	8 e-rms	10 e-rms	
@ 2 MHz readout	13 e-rms	18 e-rms	
Vertical shift rate (software adjustable)	15.2 $\mu\text{sec}/\text{row}$		
Spectral rate*			
@ 100 kHz	35 spectra/sec		
@ 1 MHz	60 spectra/sec		
@ 2 MHz	90 spectra/sec		
	Minimum	Typical	
Spectrometric Well Capacity			
High Sensitivity	150 ke-	250 ke-	
High Capacity	600 ke-	800 ke-	
Deepest Cooling Temperature	-120°C	-110°C	
Thermostat Precision	$\pm 0.05^\circ\text{C}$ across entire temperature range		
Software-selectable gains	High	Mid	Low
High Sensitivity	1.5 e-/ct	3 e-/ct	6 e-/ct
High Capacity	6 e-/ct	12 e-/ct	24 e-/ct
Dynamic Range	16 bits		
Nonlinearity			
@ 100 kHz readout	< 1%		
@ 1 MHz readout	< 2%		
@ 2 MHz readout	< 2%		

*Spectral rates measured with all rows vertically binned.





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