

Spec-10: 256

1024 x 256 imaging array | 26 x 26- μ m pixels



The Princeton Instruments Spec-10: 256 is a fully integrated spectroscopic CCD system. A choice of industry standard, spectroscopic-format E2V sensors are offered. The Spec-10: 256E incorporates an open electrode sensor which offers a broadband response over a wide spectral region, while the Spec-10:256BR incorporates a back illuminated deep depletion sensor with anti-etaloning technology for the ultimate signal-to-noise ratios in the NIR. Liquid nitrogen cooling of the CCD effectively eliminates dark noise, even for long exposures.

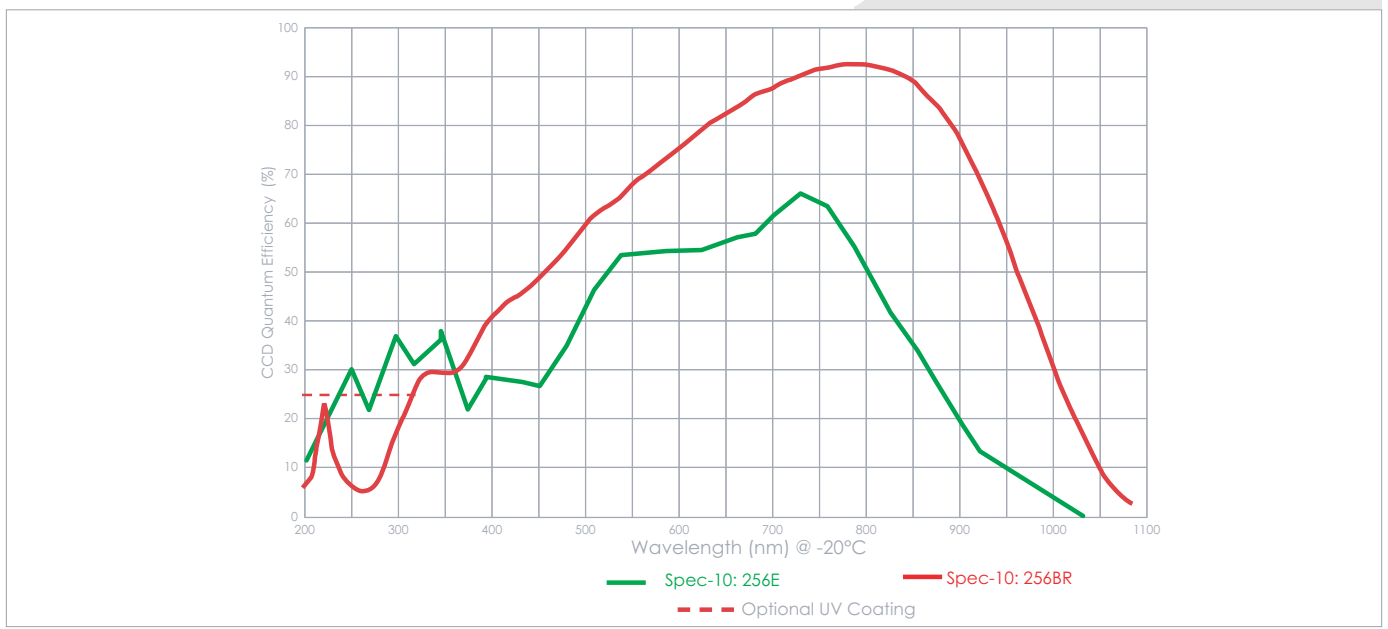
Features	Benefits
1024 x 256 CCD array	Industry standard 26.6mm x 6.6mm spectroscopic format array
26 x 26- μ m pixels	Large pixels provide large full well and high signal-to-noise ratio (SNR)
Cryogenic cooling	Eliminates dark noise even for long exposure times
Standard spectrometer interface	Will interface with most spectrometers
Dual-digitizer option	Multiple-speed digitization allows complete freedom to select between "slow operation" for low noise and highest SNR 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

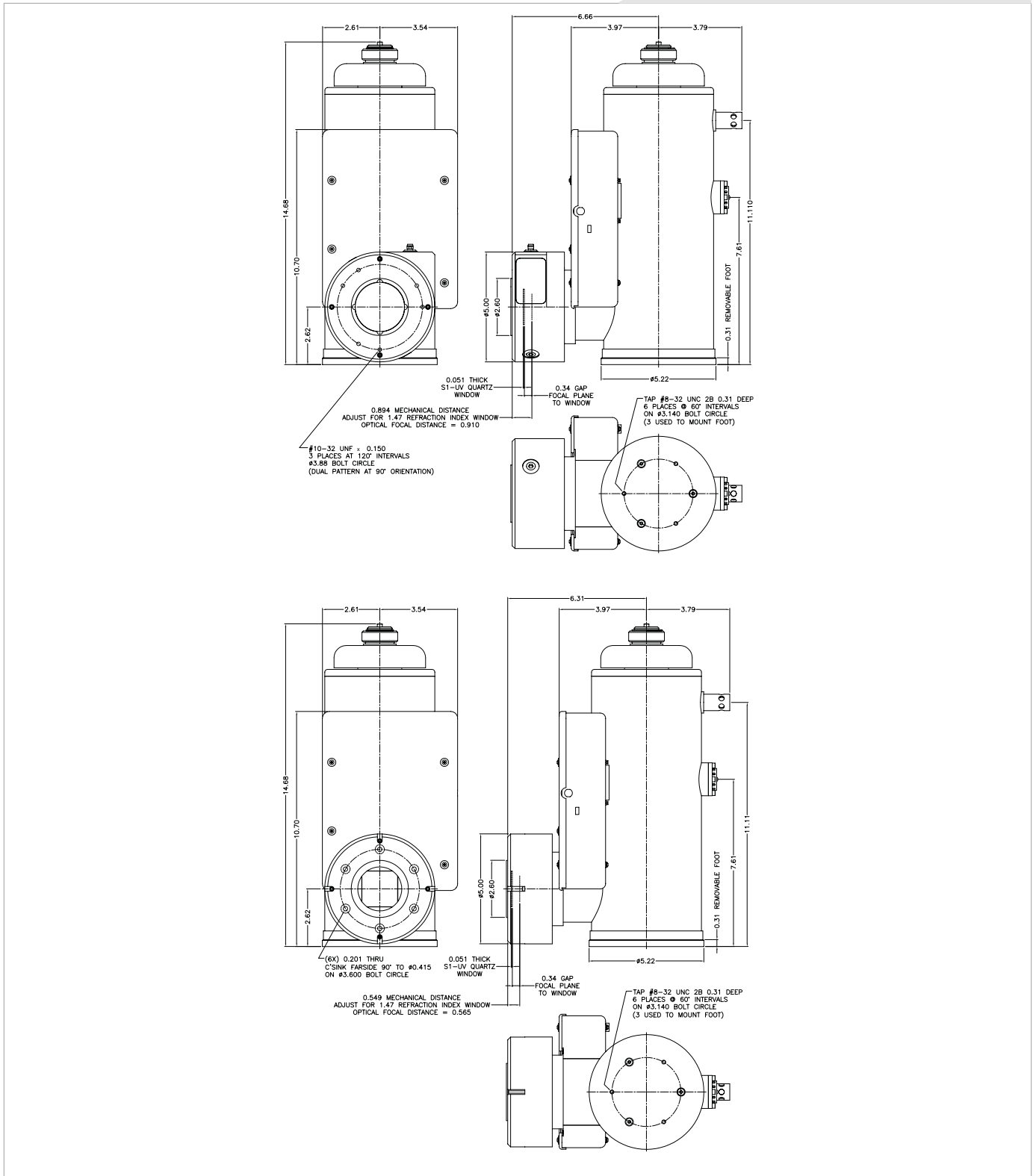
Spec-10: 256 Specifications

	Spec-10: 256E		Spec-10: 256BR	
CCD Image Sensor	E2V CCD30-11; scientific grade 1; AIMO; MPP Open-electrode		E2V CCD30-11; scientific grade 1; NIMO; Back-illuminated deep depletion with anti-etaloning technology	
CCD format	1024 x 256 imaging pixels; 26 x 26- μ m pixels; 100% fill factor; 26.6 x 6.7-mm imaging area			
	Typical	Maximum	Typical	Maximum
Dark Current @ -120°C operation	0.5 e-/p/hr	2 e-/p/hr	2e-/p/hr	5e-/p/hr
System Read Noise				
@ 100 kHz readout	6 e- rms	8 e- rms	6 e- rms	8 e- rms
@ 1 MHz readout	17 e- rms	20 e- rms	18 e- rms	20 e- rms
@ 2 MHz readout	22 e- rms	28 e- rms	22 e- rms	35 e- rms
Vertical shift rate (software adjustable)	30 μ sec/row		15 μ sec/row	
Spectral Rate*				
@ 100 kHz	35 spectra/sec		70 spectra/sec	
@ 1 MHz	60 spectra/sec		206 spectra/sec	
@ 2 MHz	90 spectra/sec		220 spectra/sec	
Output saturation (e-; typical)**	1,000,000		1,600,000	
	Minimum	Typical	Minimum	Typical
Spectrometric Well Capacity				
Single pixel	200 ke-	300 ke-	400 ke-	500 ke-
Binned	500 ke-	800 ke-	900 ke-	1100 ke-
Deepest Cooling Temperature	-120°C			
Thermostat Precision	$\pm 0.05^\circ\text{C}$ across entire temperature range			
Software-selectable gains	High		Mid	Low
High Sensitivity	3 e-/ct		6 e-/ct	12 e-/ct
Dynamic Range	16 bits			
Nonlinearity				
@ 100 kHz readout	< 1%			
@ 1 MHz readout	< 2%			
@ 2 MHz readout	< 2%			

*Spectral rate measured with all rows vertically binned.

QE Curve





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