



Spec-10:100

1340 x 100 imaging array
20 x 20 μm

The Princeton Instruments Spec-10:100 utilizes a high performance, spectroscopic-format CCD designed exclusively for Princeton Instruments. Liquid nitrogen cooling to -120°C minimizes the dark charge, giving the best detection limits for long exposures, while the 1340 x 100 imaging array is ideal for spectroscopy applications, providing small chip height for fast spectral rates and 27-mm spectral coverage. Another exclusive feature is the integration of software-selectable amplifiers, which offers the user an easy choice of either high sensitivity or high signal-to-noise ratio (SNR). For spectroscopic applications, Princeton Instruments' Spec-10:100 delivers much higher resolution and sensitivity than industry-standard "1024 pixel" sensors.

FEATURE	BENEFITS
Cryogenic cooling	Eliminates noise attributable to dark current, even for long exposure times
1340 x 100 imaging array	Exclusive feature that provides superior resolution over industry-standard "1024 pixel" format
Exclusive CCD architecture	Provides the industry's lowest-noise CCD system
20 x 20- μm pixels	Optimum pixel size for full well and high resolution
2-mm chip height	Ideal for rapid spectral acquisition
Software-selectable amplifiers	Exclusive feature provides choice of superior sensitivity or superior SNR
Standard spectrometer interface	Will interface with most spectrometers
Optional dual digitizers	High speed provides fast data acquisition and easy focusing, Slow scan provides lowest noise
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 data transfer over long distances
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

Applications:

Raman, Fluorescence, Photoluminescence

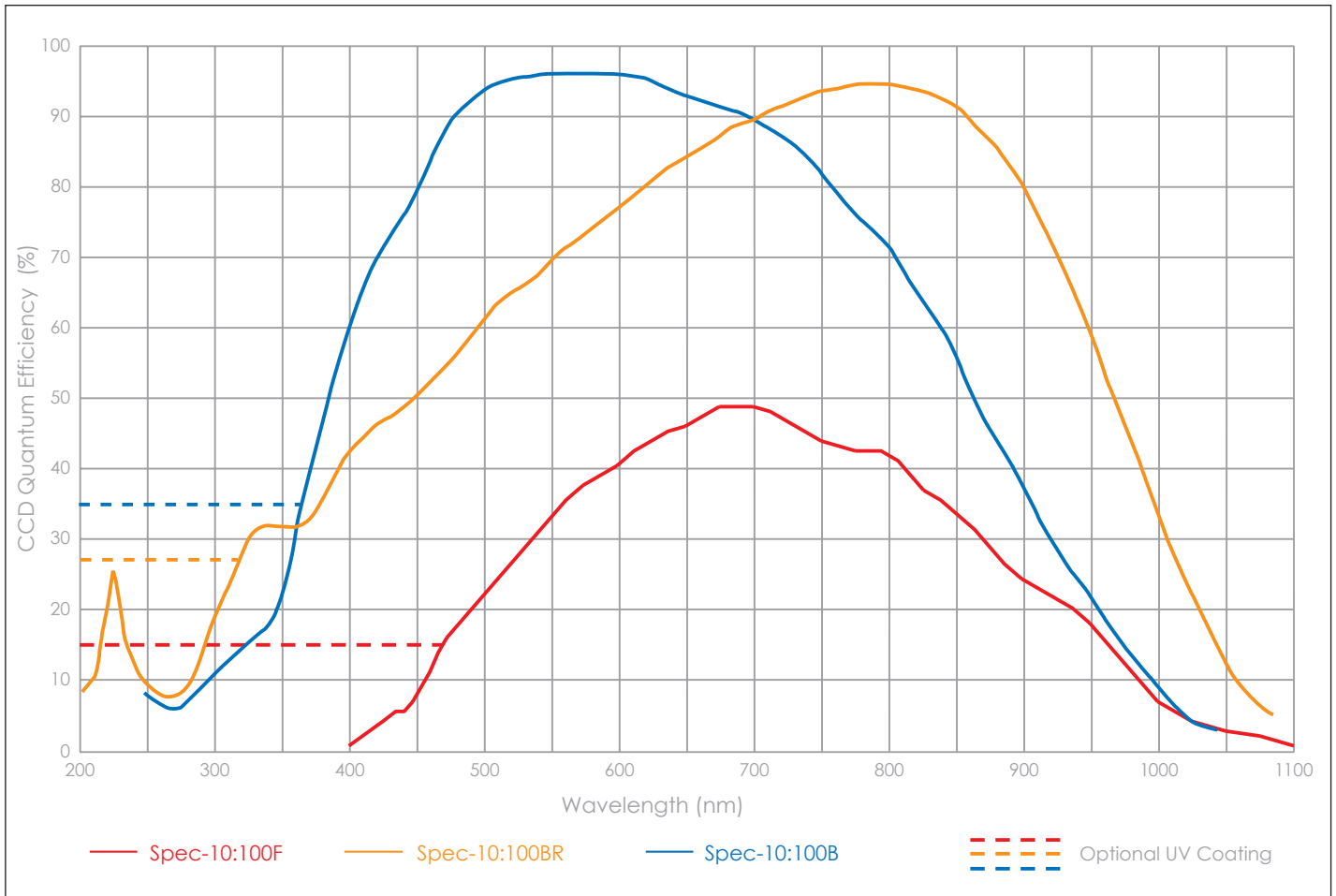
Spec-10:100 Specifications

	Spec-10:100F		Spec-10:100B		Spec-10:100BR	
CCD Image Sensor	front-illuminated		back-illuminated		back-illuminated; deep depletion with anti-etaloning technology	
Dark Current LN @ -120° C (e/p/hr)	Typical 0.3	Maximum 1	Typical 0.3	Maximum 1	Typical 0.3	Maximum 2.5
	Front-illuminated			Back-illuminated		
	Typical		Maximum		Typical	
					Maximum	
System Read Noise @ 100 kHz readout @ 1 MHz readout @ 2 MHz readout	3 e-rms 6 e-rms 12 e-rms		4 e-rms 8 e-rms 15 e-rms		3.5 e-rms 8 e-rms 10 e-rms	
Vertical shift rate (software selectable)	15 μ sec/row					
Spectral Rate* @ 100 kHz @ 1 MHz @ 2 MHz @ 2 MHz	65 spectra/sec (FVB) 350 spectra/sec (FVB) 450 spectra/sec (FVB) 1000 spectra/sec (1.0 mm high)					
	All Spec-10:100s					
CCD Image Sensor	Princeton Instruments exclusive, scientific grade 1, MPP device, optional UV coatings available					
CCD Format	1340 x 100, 20 x 20 μ m pixels, 26.8 x 2.0 mm imaging area					
	Minimum			Typical		
Spectrometric Well Capacity High Sensitivity High Capacity	250 ke- 800 ke-			300 ke- 1 Me-		
Deepest Cooling Temperature LN cooled (LN)	-120° C			-120° C		
Thermostat Precision	$\pm 0.05^\circ$ C across entire temperature range					
Software-selectable gains High Sensitivity High Capacity	HIGH 1 e-/ct 4 e-/ct		MID 2 e-/ct 8 e-/ct		LOW 4 e-/ct 16 e-/ct	
Dynamic Range	16 bits					
Nonlinearity @ 100 kHz readout @ 1 MHz readout @ 2 MHz readout	< 1% < 2% < 2%					

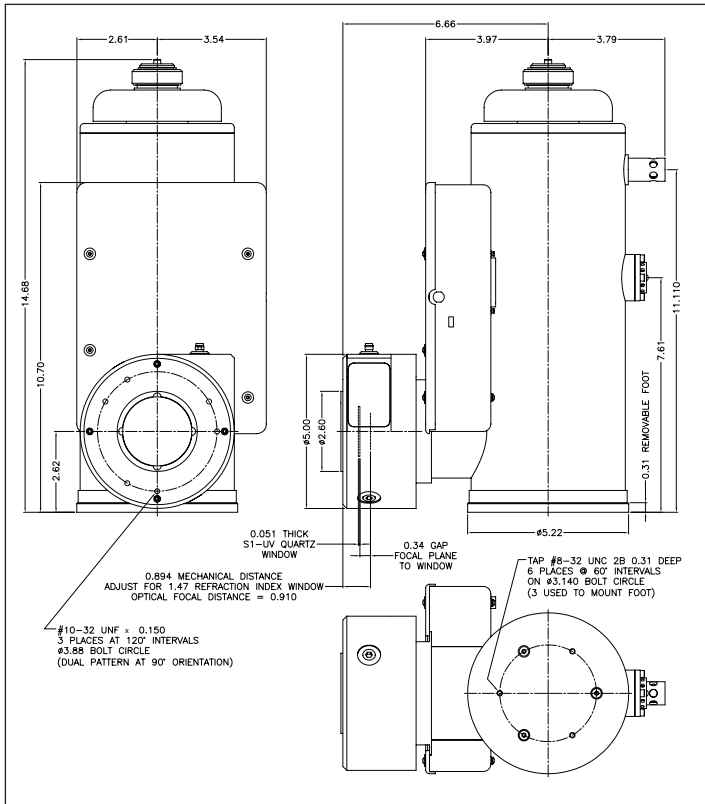
All specifications subject to change.

* Typical spectral rates achievable using custom timing modes

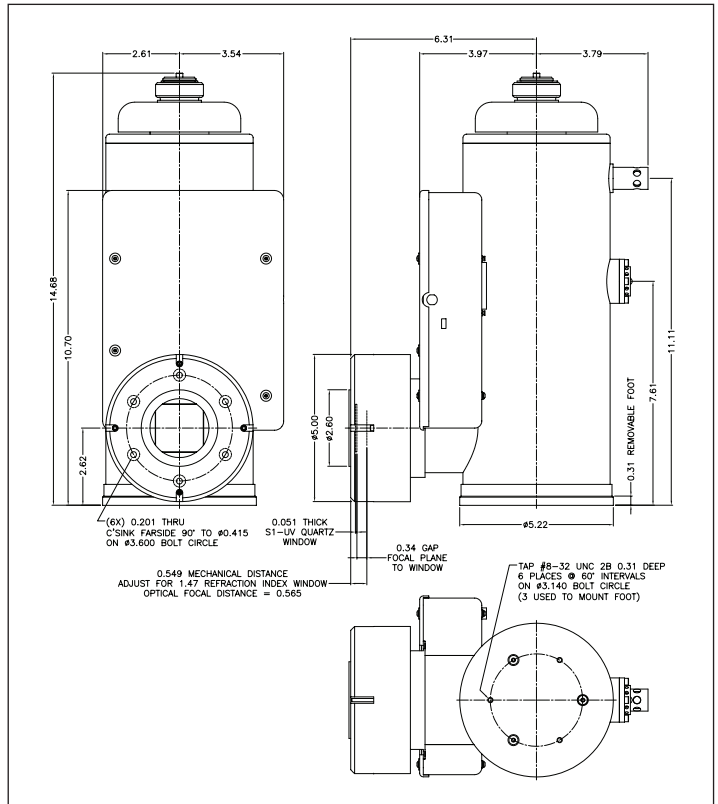
Quantum Efficiency Curve



Spec-10:100 Drawings (LN cooled)



With Shutter



Without Shutter