

A standard detector for spectroscopic applications on small areas

Synapse[®] 512 × 512 Front-Illuminated CCD Detector



The HORIBA Scientific Front-Illuminated 512 × 512 CCD is ideal for low-noise acquisitions required in a wide variety of spectroscopic applications. Its 24 μm square pixel size offers a high full well capacity, a large dynamic range, and an excellent signal-to-noise ratio. The large 12.3 mm height of this sensor makes it ideal for multi-track spectroscopy by filling the focal plane of HORIBA Scientific spectrometers.

Feature	Spectroscopy Benefits
Deep Thermoelectric Cooling	Low dark signal with no need for liquid nitrogen
Lifetime Vacuum Warranty	All-metal sealed technology allows a permanent vacuum, letting us offer a lifetime warranty
Excellent Linearity	Increased accuracy of data over the full dynamic range
USB 2.0 Interface	Standard connection to PC notebooks and desktops with 100% data integrity
Auxiliary Signal Input	Unique ability to add measurements from single-channel detectors without additional electronics
Larger Sensor Height of 12.3 mm	Covers more of the spectrometer's focal plane for higher signal levels or multi-track imaging
Scientific Grade 1 CCD	Ideally suited for low light level detection in a variety of spectroscopic applications
HORIBA Scientific's SynerJY [®] Software	Complete control of a Synapse CCD and HORIBA Scientific Spectrograph system with full analysis capabilities
LabVIEW VIs and SDK Available	Flexible software to integrate a Synapse CCD into existing apparatus or as an OEM component

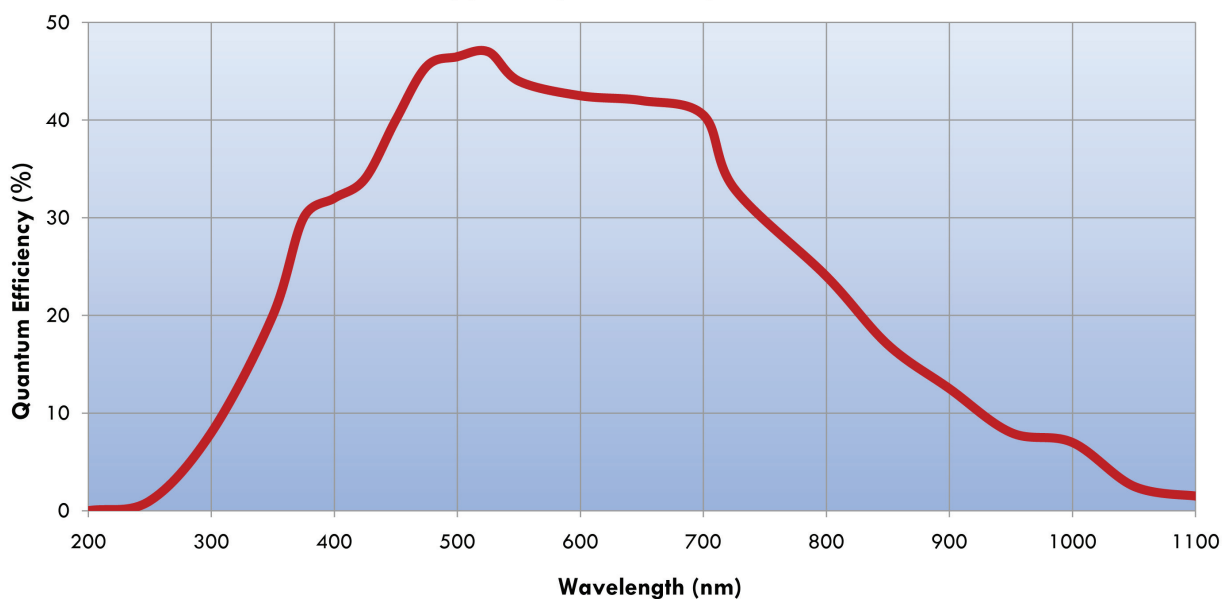


Specifications*

CCD Format	512 × 512, front-illuminated, Scientific Grade 1			
Pixel Size	24 μm × 24 μm			
Image Area	12.3 mm × 12.3 mm, 100% fill factor			
Cooling System	Four-stage thermoelectric cooling. Typical operating temperature -80°C, guaranteed to -75°C. External cooling option available (-95°C typical).			
		Minimum	Typical	Maximum
Readout Noise	20 kHz		3.5 e ⁻ rms	6 e ⁻ rms
	1 MHz		20 e ⁻ rms	25 e ⁻ rms
Pixel Well Capacity		300 ke ⁻	350 ke ⁻	
Register Well Capacity			1000 ke ⁻	
Dark Current			0.002 e ⁻ /pixel/s	
Nonlinearity	< 0.4% at 20 kHz < 1% at 1 MHz			
Scan Rates	20 kHz and 1 MHz, software-selectable			
Software-Selectable Gains	3 software-selectable gains			
Dynamic Range	16 bits			
Vertical Shift Rates	36 μs, 9 μs			
Maximum Spectral Rate	20 kHz	18 Hz		
	1 MHz	49 Hz		

*Specifications subject to change without notice.

Typical Spectral Response



HORIBA

Scientific

Ordering Information:

CCD-512x512-FIVS-SYN Synapse Thermoelectric Cooled CCD System

Our CCD packages include a CCD shutter for clean CCD charge transfer and background subtraction.

ELEMENTAL ANALYSIS

FLUORESCENCE

GRATINGS &
OEM SPECTROMETERS

OPTICAL COMPONENTS

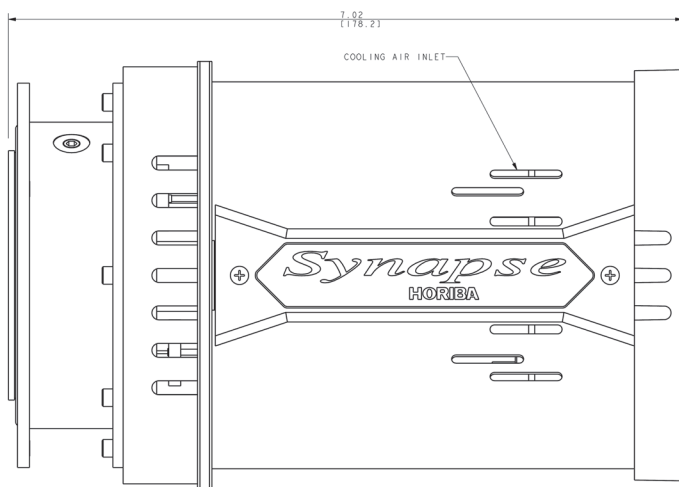
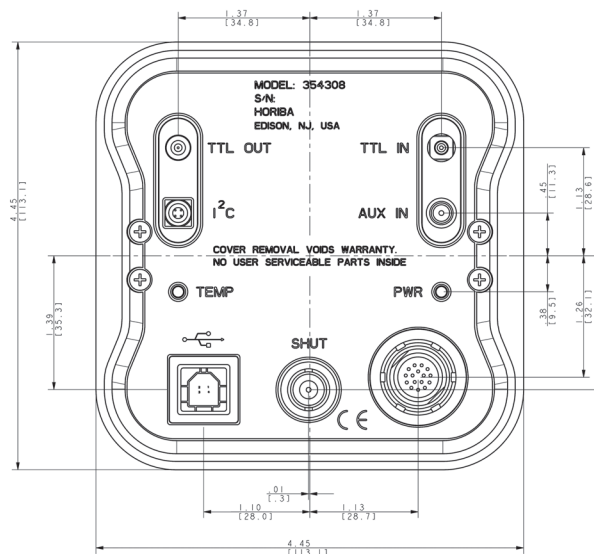
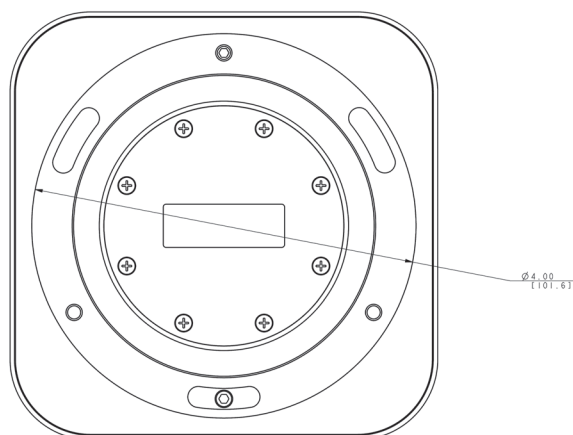
PARTICLE CHARACTERIZATION

RAMAN

SPECTROSCOPIC ELLIPSOMETRY

SPR IMAGING

Mechanical Dimensions



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