

The most versatile front-illuminated camera for spectroscopy

Synapse[®] 1024 × 256 Open-Electrode CCD Detector

The thermoelectrically cooled Front-Illuminated Open-Electrode 1024 × 256 CCD has the best value of all CCD detectors on the market today. With an averaged quantum efficiency of 40% from 200 nm to 1000 nm and a relatively flat response, this detector is the optimal choice for general-purpose optical measurements. Open Electrode technology allows an increased response in the UV over standard front-illuminated CCDs. In the near-IR, this detector is a lower-cost alternative to the deep-depletion CCDs with no etaloning because of its front-illuminated design and similar signal-to-noise performance.



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
Open Electrode Technology	Good spectral response from 200–1000 nm with no etaloning
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	1024 × 256		
Pixel Size	26 μm × 26 μm		
Image Area	26.6 mm × 6.7 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
Readout	20 kHz		3.4 e ⁻ rms
Noise	1 MHz		12 e ⁻ rms
Pixel Well Capacity		200 ke ⁻	450 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	20 kHz	13 Hz	
Spectral Rate	1 MHz	278 Hz	

*Specifications subject to change without notice.

Typical Spectral Response



