HORIBA Scientific

ELEMENTAL ANALYSIS
FLUORESCENCE
GRATINGS & OEM SPECTROMETERS
OPTICAL COMPONENTS
PARTICLE CHARACTERIZATION
RAMAN
SPECTROSCOPIC ELLIPSOMETRY
SPR IMAGING

The high-resolution, large-format camera for low spectroscopic signals

Synapse® 2048 × 512 Front-Illuminated CCD Detector

The HORIBA Scientific Front-Illuminated 2048 × 512 CCD is ideal for low-noise acquisitions required in spectroscopic applications. Its 13.5 µm × 13.5 µm pixels offer very high spectral resolution, designed with a low-noise amplifier for extremely low readout noise. The height of this chip makes it the best choice for multi-tracking measurements or a full 6.9 mm binning in the visible to near-IR spectral regions or when the highest resolution is required.

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
High-resolution 13.5 µm pixels	Pixels are matched to spectrograph slits for highest resolution
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

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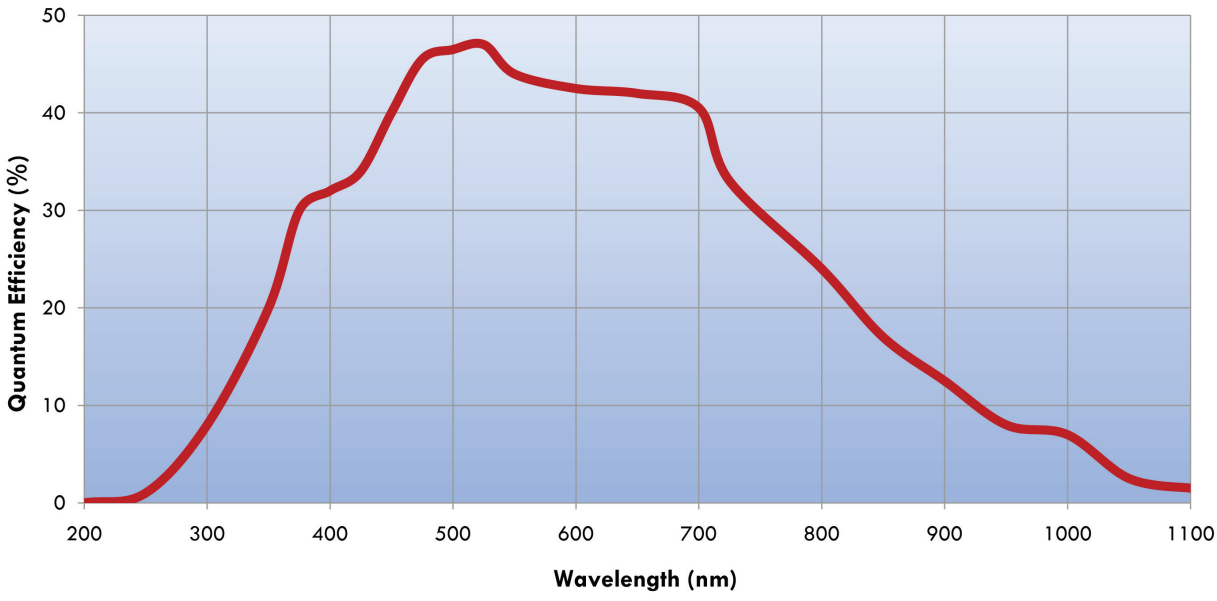
Specifications*

CCD Format		2048 × 512, front-illuminated, Scientific Grade 1		
Pixel Size		13.5 µm × 13.5 µm		
Image Area		27.6 mm × 6.9 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 e^- rms	4 e^- rms
	1 MHz		9 e^- rms	15 e^- rms
Pixel Well Capacity		150 ke^-	250 ke^-	
Register Well Capacity			1000 ke^-	
Dark Current			0.001 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	6 Hz		
	1 MHz	140 Hz		

*Specifications subject to change without notice.

Typical Spectral Response



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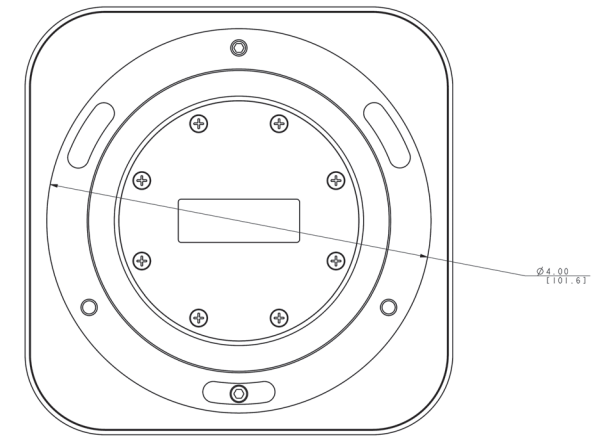
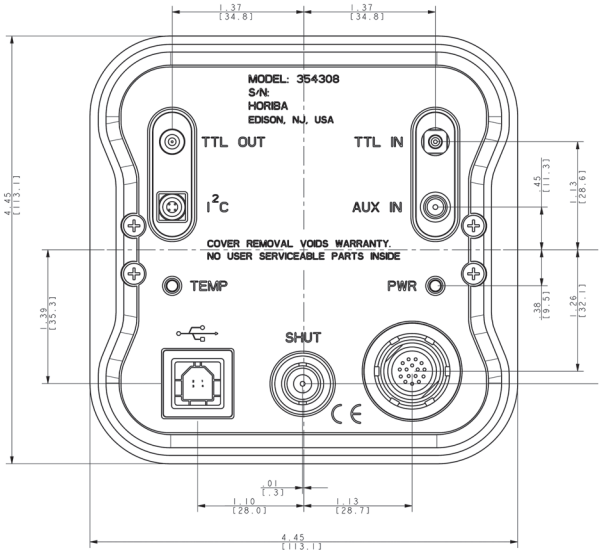
Ordering Information:

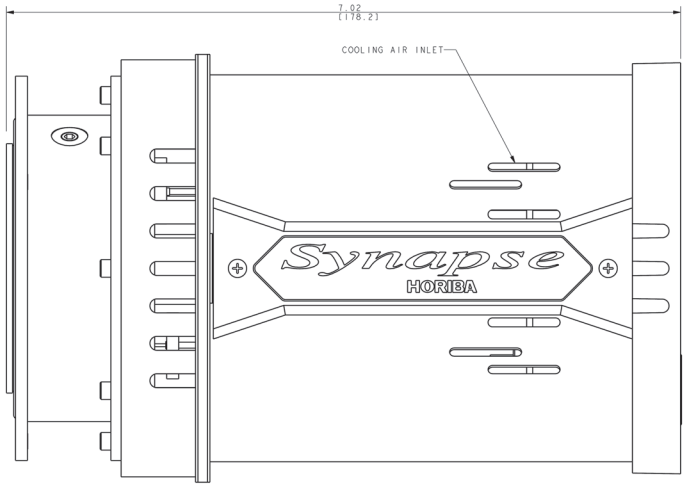
CCD-2048x512-FIVS-SYN **Synapse Thermoelectric Cooled CCD System**

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

Mechanical Dimensions







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