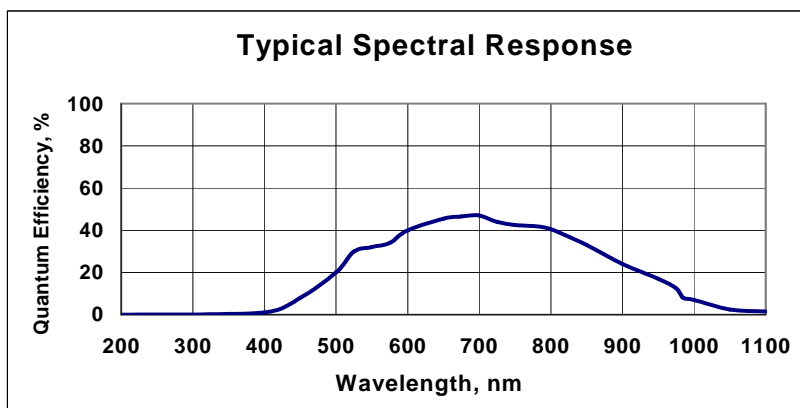


Symphony

2048 x 512 Cryogenic Front Illuminated CCD Detector

The High Resolution, Large Format Camera for Low Spectroscopic Signals

The Jobin Yvon Front Illuminated 2048 x 512 CCD is ideal for low noise acquisitions required in spectroscopic applications. Its 13.5 μm x 13.5 μm pixels offer a very high spectral resolution capability and it has been 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 Visible to NIR spectral regions or when the highest resolution is required.

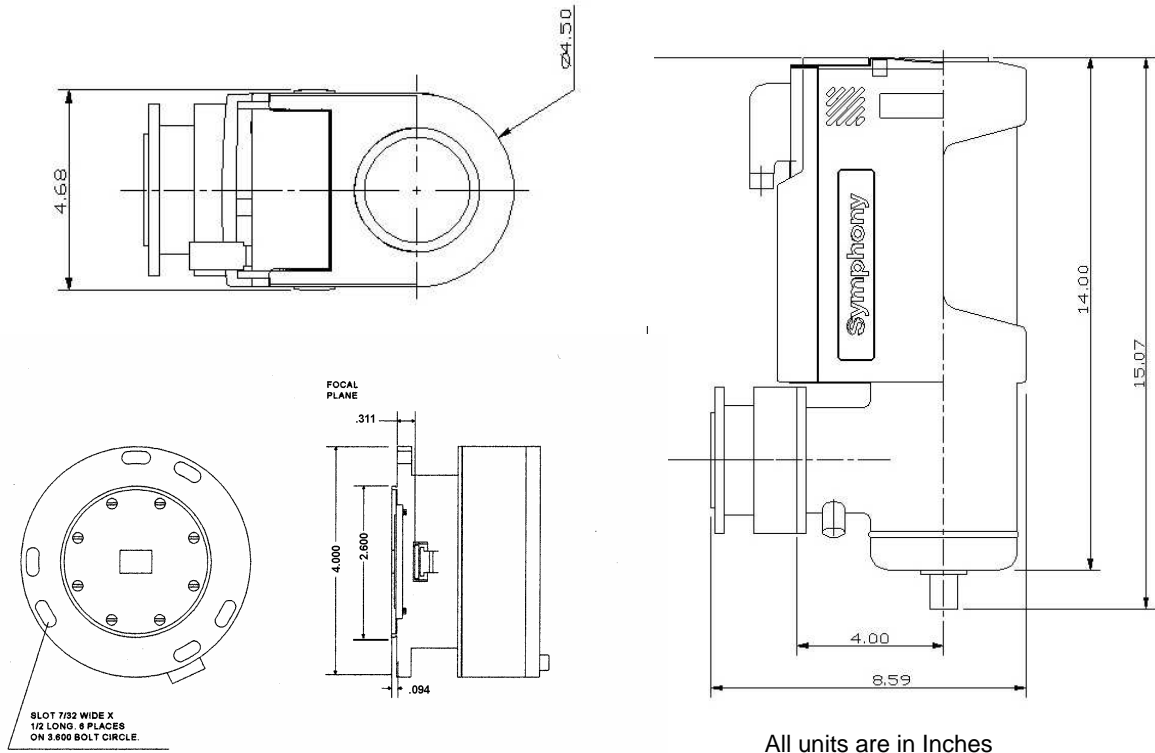


Features	Benefits
Scientific Grade 1 CCD	Ideally suited for low light level detection in a variety of spectroscopic applications
13.5 μm pixels	Pixels are matched to spectrograph slits for highest resolution
Liquid Nitrogen Cooling	Extremely low dark signal operation for extended integration times required with low signal levels
Excellent Linearity	Increased accuracy of data over the full dynamic range
Software Selectable Scan Rates	Optimize an experiment for the best combination of speed and sensitivity
Ethernet Connection to Host PC	Standard, easy to use interface with 100% data integrity
HORIBA Jobin Yvon's SynerJY™ Software	Complete control of a Symphony CCD and HORIBA Jobin Yvon Spectrograph system with full analysis capabilities
LabVIEW VIs and SDK Available	Flexible software to integrate a Symphony CCD into existing apparatus or as an OEM component

Specifications				
CCD Format		2048 x 512, Front Illuminated, Scientific Grade 1		
Pixel Size		13.5 μm x 13.5 μm		
Image Area		26.6 mm x 6.9 mm, 100% Fill Factor		
Cooling System		Liquid Nitrogen		
Liquid Nitrogen Hold Time	1LS Model	24 hours with 1 Liter Dewar		
	3LS Model	72 hours with 3 liter Dewar		
		Minimum	Typical	Maximum
Readout Noise	20 kHz		2 e ⁻ rms	4 e ⁻ rms
	1 MHz		13 e ⁻ rms	15 e ⁻ rms
Pixel Well Capacity		150 ke ⁻	250 ke ⁻	
Register Well Capacity			1000 ke ⁻	
Dark Current			0.5 e ⁻ /pixel/hr	1 e ⁻ /pixel/hr
Nonlinearity		< 0.4 % at 20 kHz scan rate < 1 % at all other scan rates		
Scan Rates		Software Selectable from 20 kHz to 1 MHz		
Software Selectable Gains		5 Software Selectable Gains		
Dynamic Range		16 bits		
Vertical Shift Rate per row		48 μs , 24 μs , 8 μs ¹		
Maximum Spectral Rate	20 kHz	14 Hz		
	1 MHz	150 Hz ^{1,2}		

Specifications subject to change without notice.

Mechanical Dimensions



All units are in Inches

Ordering Information:

- CCD-2048x512-FIVS-1LS Liquid Nitrogen Cooled CCD System with 1 Liter Side Looking Dewar
- CCD-2048x512-FIVS-3LS Liquid Nitrogen Cooled CCD System with 3 Liter Side Looking Dewar
- CCD-2048x512-FIVS-1LD Liquid Nitrogen Cooled CCD System with 1 Liter Down Looking Dewar
- CCD-2048x512-FIVS-3LD Liquid Nitrogen Cooled CCD System with 3 Liter Down Looking Dewar

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

Notes:

- 1 CCDs are guaranteed to have full Charge Transfer Efficiency (CTE) at our standard shift rate of 48 μ s. At faster shift rates, a decrease in CTE may be observed
- 2 Highest Spectral rates are achieved when using the 1MHz ADC, a Vertical Transfer Time of 8 μ s, with no mechanical shutter