

## *Synapse™ CCD*



The superior quantum efficiency of the HORIBA Jobin Yvon Back Illuminated UV Sensitive 512 x 512 CCD makes this detector ideal for extremely low signal acquisitions in UV, VIS, and NIR spectroscopic applications. Its 24  $\mu\text{m}$  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 Jobin Yvon spectrometers.

### Features

### Benefits

Deep Thermoelectric Cooling	Low dark signal operation without the need for liquid nitrogen or auxiliary power
Excellent Linearity	Increased accuracy of data over the full dynamic range
Scientific Grade 1 CCD	Ideally suited for low light level detection in a variety of spectroscopic applications
Auxiliary Signal Input	Provides automatic reference corrections or extends wavelength scanning ranges with NIR detectors
Large Sensor Height, 12.3 mm	Covers height of the spectrometer's focal plane to optimize signal levels and multi-track imaging
USB 2.0 Interface	Standard connection interfaces to PC notebooks and desktops with 100% data integrity
HORIBA Jobin Yvon's SynerJY® Software	Complete control of a Synapse CCD and HORIBA Jobin Yvon 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 x 512, Back Illuminated UV Coated, Scientific Grade 1		
Pixel Size		24 $\mu\text{m}$ x 24 $\mu\text{m}$		
Image Area		12.3 mm x 12.3 mm, 100% Fill Factor		
Cooling System		4 Stage Thermoelectric Cooling Guaranteed to -70 °C		
		Minimum	Typical	Maximum
System Read Noise	20 kHz		3.5 e- rms	6 e- rms
	1 MHz		15 e- rms	20 e- rms
Pixel Well Capacity		300 ke-	350 ke-	
Register Well Capacity			1000 ke-	
Dark Current			0.004 e-/pixel/s	0.01 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 $\mu\text{s}$ , 8 $\mu\text{s}$ <sup>1</sup>		
Maximum Spectral Rate	20 kHz	18 Hz		
	1 MHz	185 Hz <sup>1,2</sup>		

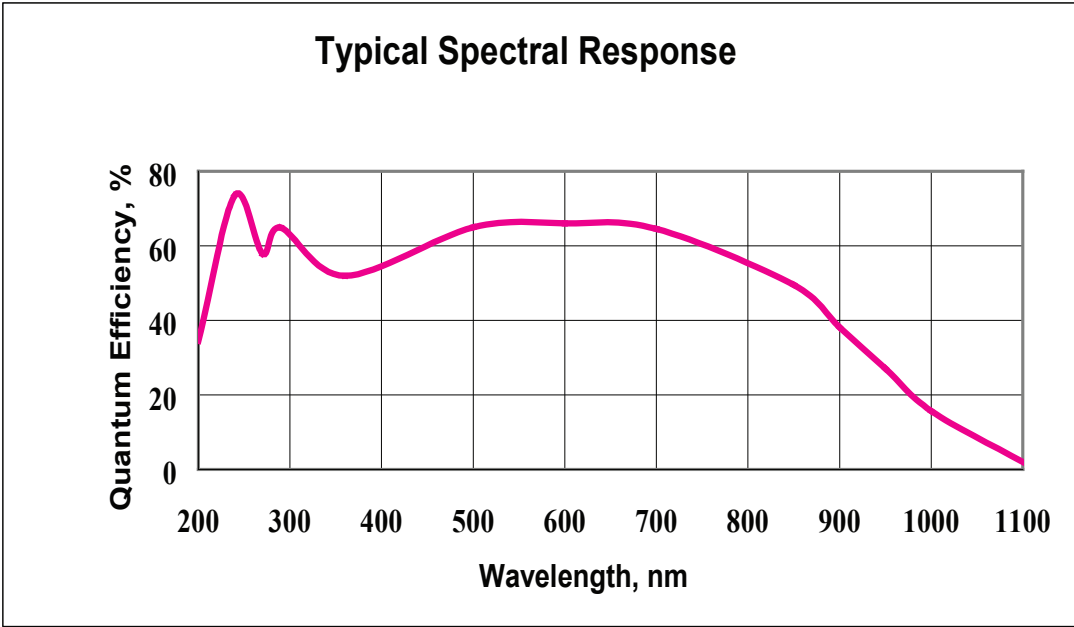
Specifications subject to change without notice.

### Notes:

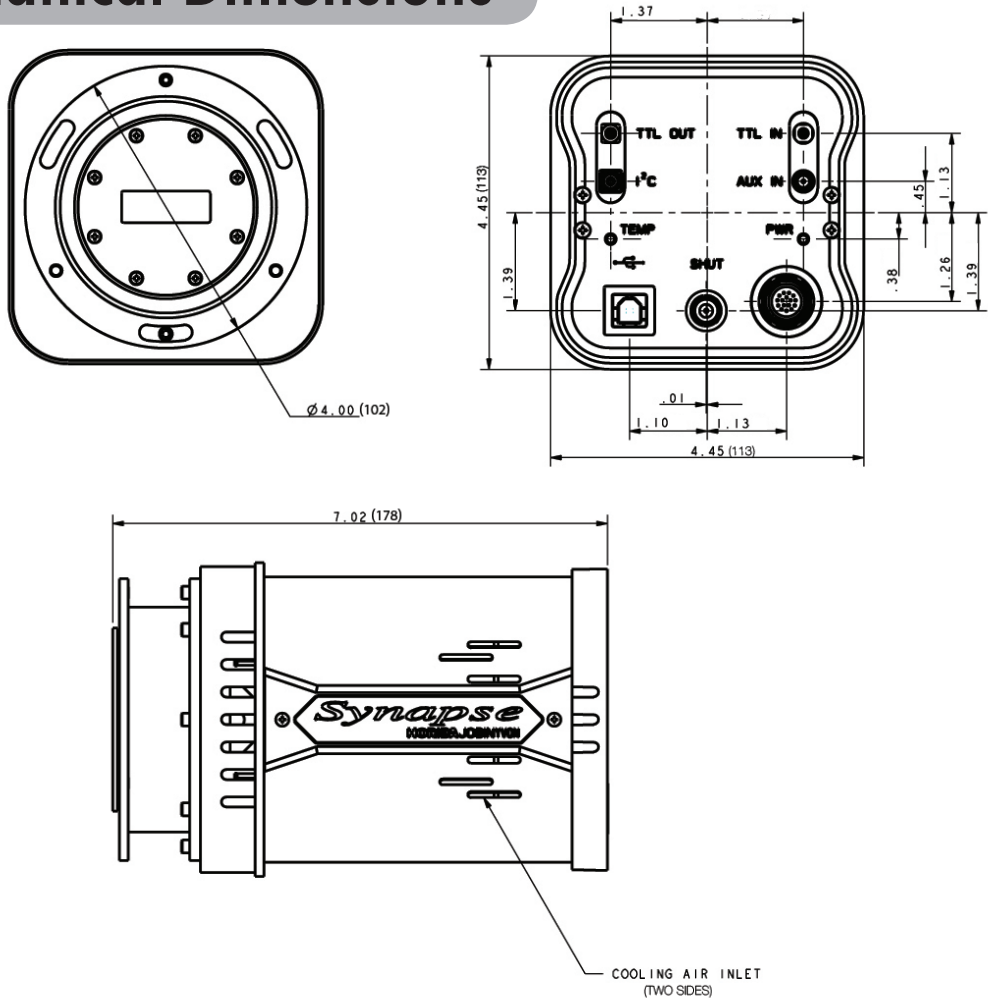
1 CCDs are guaranteed to have full Charge Transfer Efficiency (CTE) at our standard shift rate of 36  $\mu\text{s}$ . At faster shift rates, a decrease in CTE may be observed.

2 Highest Spectral Rates are achieved when using the 1 MHz ADC, a Vertical Transfer Time of 8  $\mu\text{s}$ , with no mechanical shutter.

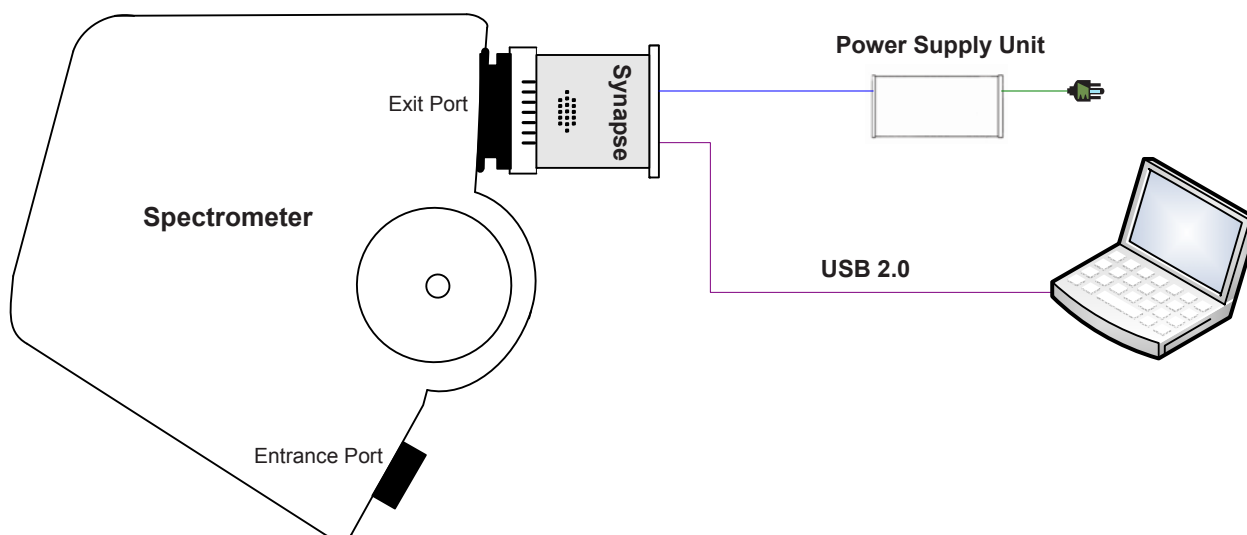
# Quantum Efficiency



# Mechanical Dimensions



## Configuration



Spectrometer and computer are not supplied with the basic Synapse package.

## Ordering Information

CCD-512x512-BIUV-SYN: Synapse Thermoelectric Cooled CCD System

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