

## Synapse FIVS

Scientific CCD Camera

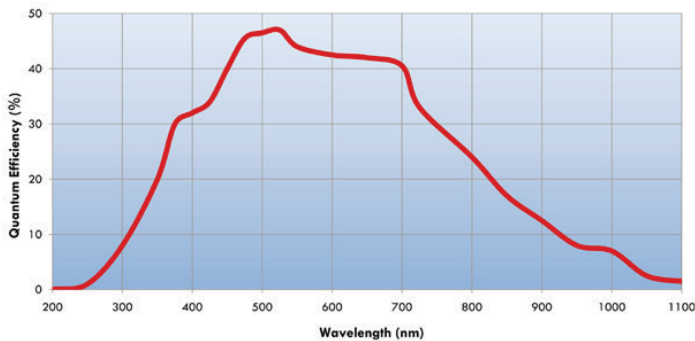
ELEMENTAL ANALYSIS
FLUORESCENCE
GRATINGS & OEM SPECTROMETERS
OPTICAL COMPONENTS
FORENSICS
PARTICLE CHARACTERIZATION
RAMAN
SPECTROSCOPIC ELLIPSOMETRY
SPR IMAGING

Front illuminated visible sensor,  $-80^{\circ}\text{C}$   
 Three chip formats to choose from:  
 512x512, 2048x512, 1024x256



The Synapse FIVS scientific CCD camera is the ideal camera for a variety of spectroscopy applications. This series of cameras offers three different chip array formats to choose from with a peak quantum efficiency of 56%.

### QE Curve, Synapse FIVS CCD



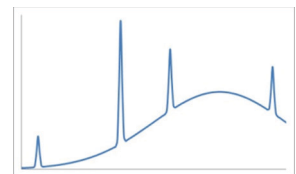
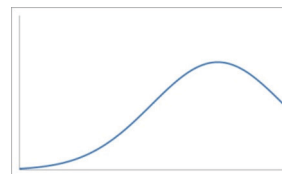
### Features and Benefits

- Deep thermoelectric cooling
- Ideal for low light level detection without etaloning
- Excellent linearity
- Single channel detector port extends wavelength range
- E2V Scientific Grade 1 CCD
- Lifetime vacuum warranty
- USB 2.0 Interface
- HORIBA SynerJY acquisition and analysis software
- LabVIEW VI's and SDK available

### Primary Applications

Primarily chosen for broad spectrum analysis such as photoluminescence, it is also well suited for studying fine spectral features on a broad spectral background.

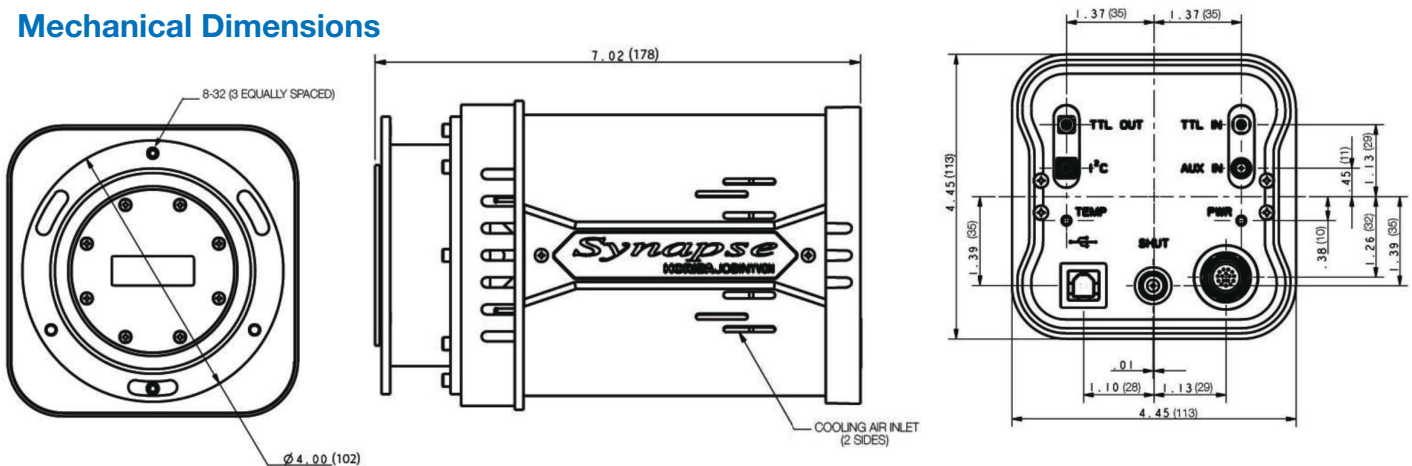
- Fluorescence
- Photoluminescence
- Absorption
- Transmission
- Reflectance
- Raman



## Specifications

<b>CCD format</b>	512 x 512, front-illuminated, Scientific Grade 1	
<b>Pixel size</b>	24 $\mu\text{m}$ x 24 $\mu\text{m}$	
<b>Image area</b>	12.3 mm x 12.3 mm, 100% fill factor	
<b>Cooling system</b>	Four-stage thermoelectric cooling. Typical operating temperature -80°C, guaranteed to -75°C. External cooling option available (-95°C typical.)	
<b>Typical readout noise</b>	<b>20 kHz:</b> 3.5 e <sup>-</sup> rms	<b>1 MHz:</b> 20 e <sup>-</sup> rms
<b>Maximum readout noise</b>	<b>20 kHz:</b> 6 e <sup>-</sup> rms	<b>1 MHz:</b> 25 e <sup>-</sup> rms
<b>Minimum pixel well capacity</b>	300 ke <sup>-</sup>	
<b>Typical pixel well capacity</b>	350 ke <sup>-</sup>	
<b>Typical register well capacity</b>	1000 ke <sup>-</sup>	
<b>Typical dark current</b>	0.002 e <sup>-</sup> /pixel/s	
<b>Nonlinearity</b>	<b>20 kHz :</b> <0.4%	<b>1 MHz:</b> <1%
<b>Scan rates</b>	20 kHz and 1 MHz, software-selectable	
<b>Software-selectable gains</b>	3 software-selectable gains	
<b>Dynamic range</b>	16 bits	
<b>Vertical shift rates</b>	36 $\mu\text{s}$ , 9 $\mu\text{s}$	
<b>Maximum spectral rate</b>	<b>20 kHz:</b> 18 Hz	<b>1 MHz:</b> 49 Hz
<b>Physical dimensions (L x W x H)</b>	7 x 4.5 x 4.5 inches	
<b>Physical weight</b>	5.8 lbs	

## Mechanical Dimensions



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**HORIBA**  
Scientific