

# Eagle

Deep Cooled Vacuum CCD

2048 x 2048 and 1024 x 1024 • 75kHz and 2MHz • High resolution scientific imaging •



## Key Features and Benefits

*The BEST CCD on the market today!*

- **Lifetime vacuum guarantee**  
Protection and integrity of the sensor
- **Extremely low dark current**  
Deep cooled with a 110°C delta which enables long exposure times
- **Back illuminated 4MP sensor from e2v**  
Enables large field of view imaging
- **High QE: >90% @ 525nm and 50% @ 380nm & 720nm**  
Optimum photon collection
- **Ultra high intrascene dynamic range - 93dB**

Resolution	<b>2048 x 2048</b> <b>1024 x 1024</b>
Dark Current	<b>0.0001 e/p/s</b>
Full Well Capacity	<b>100Ke-</b>
Readout Noise	<b>2.3e-rms</b>
Camera Link	<b>16bit</b>

## Specification for Eagle

Sensor	E2V CCD42-40	E2V CCD47-10
	Front and Back Illuminated	
Active Pixel	2048 × 2048	1024 × 1024
Pixel Size	13.5µm × 13.5µm	13µm × 13µm
Active Area	27.65mm × 27.65mm (39.10mm diagonal)	13.3 × 13.3mm (18.81mm diagonal)
Binning	Programmable, up to 64×64 pixels	
Full Well Capacity	Minimum: 80ke- Typical: 100ke-	
Shift Register Well Depth	150ke-	
Non-Linearity	< 1%	
Typical Readout Noise (RMS)	2.3e- @ 75kHz pixel readout rate 9.0e- @ 2MHz pixel readout rate	
Binned Readout Noise	@75kHz pixel readout rate, 16×16 binning < 5.0 e- rms	
Peak Quantum Efficiency (QE)	> 90% @ 550nm	
Spectral Response	180 - 1100nm	
Dark Current (e/p/s)	<0.0001 @ -90°C	
Dynamic Range	81dB (2MHz pixel readout rate) 93dB (75kHz pixel readout rate)	
Shutter	Mechanical, aperture φ = 45mm	
Cooling	Active, ΔT > 110°C	
Cooling Method	TEC with liquid (utilizing PentaVac™ Technology)	
Lens Mount	Nikon F mount (others on request)	
Synchronization	Trigger IN and OUT – TTL compatible	
Digital Output Format	16-bit Camera Link (base)	
Power Supply	12V DC ±10%	
Total Power Consumption <sup>1</sup>	TEC OFF < 9W TEC ON < 100W (Steady State)	
Operating Temperature Range	0°C to +55°C	
Storage Temperature Range	-30°C to +60°C	
Dimensions (L*W*H) <sup>2</sup>	155.08mm x 140.89mm x 110.00mm	
Weight (excluding lens)	3.0kg [6.6lb]	

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## Ordering Information

### Camera

Eagle CCD 4MP Deep cooled digital camera Back thinned visible	EA4240V-BV-CL
Eagle CCD 4MP Deep cooled digital camera Enhanced UV	EA4240V-UV-CL
Eagle CCD 1MP Deep cooled digital camera Back thinned visible	EA4710V-BV-CL
Eagle V PSU	EA4240V-PSU

### Optional Accessories

Mini PC with Xcap STD and frame grabber	RPL-PC-EL1
EPIX® EB1 base CL card	RPL-EPIX-EB1
EPIX® XCAP STD software	RPL-XCAP-STD
Camera Link Cable, 2m <sup>3</sup>	RPL-CL-CBL-2M
Thermoelectric Water Chiller Unit <sup>4</sup>	RPL-CHILLER
Water tubing for Eagle (3M) M-M	RPL-WTUBE-EAGLE
Optical lenses <sup>5</sup>	RPL-xx-xxxx

Note 1: Peak power consumption is < 120W with the TEC ON

Note 2: Dimensions include all connector parts on camera interface

Note 3: Longer CL cable available

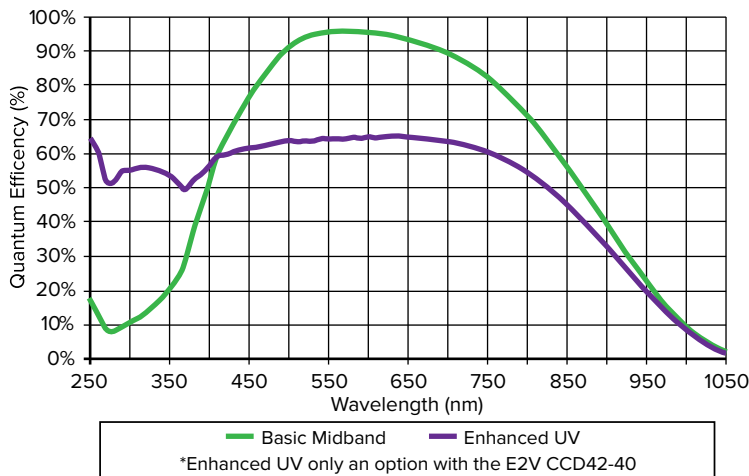
Note 4: Recommended coolant flow rate >0.5liters per min. & cooling capacity >100W @ 20°C

Note 5: Please consult us to check our range of lenses

Demo is available on request.  
Pricing AOR subject to volumes.

Detailed technical drawings  
can be downloaded at  
[www.raptorphotonics.com](http://www.raptorphotonics.com)

## Quantum Efficiency



## Applications

- Astronomy
- Calcium signaling
- Fluorescence imaging / spectroscopy
- Luminescence
- Xray